

General Type

Overview

This is a series of general-purpose cylinders with medium bore diameters (ø40 to ø100) where both end covers are fixed with tie rods. A wide variety of variations. This cylinder has the No. 1 reliability as a general-purpose cylinder.

Features

Easy Conversion to Switch-Equipped Type

A magnet is equipped as standard, allowing for easy conversion to a switch-equipped cylinder simply by mounting a detection switch suitable for your application.

Easy change of mounting brackets

Mounting brackets are interchangeable and can be easily changed. This simplifies inventory management. Aluminum is used for the main parts, including both end covers, the piston, and the tube. This results in a lightweight design with improved corrosion and impact resistance.

Lightweight and Highly Corrosion-Resistant

Aluminum is used for the main parts, including both end covers, the piston, and the tube. This results in a lightweight design with improved corrosion and impact resistance.

SCA2
Medium Bore Size Cylinder

ø40, ø50, ø63, ø80, ø100



C O N T E N T S

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●Double acting, Drop prevention type (SCA2-Q2)	686
● Double-acting, Low friction type (SCA2-O)	706
- Low friction at low pressure (0.2MPa or less) -	
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- Constant friction when pressurized -	
●Double-acting, Double rod type (SCA2-D)	718
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SCP□3

SCP□3

CMK2

CMA2

SCM

11

11

Switch

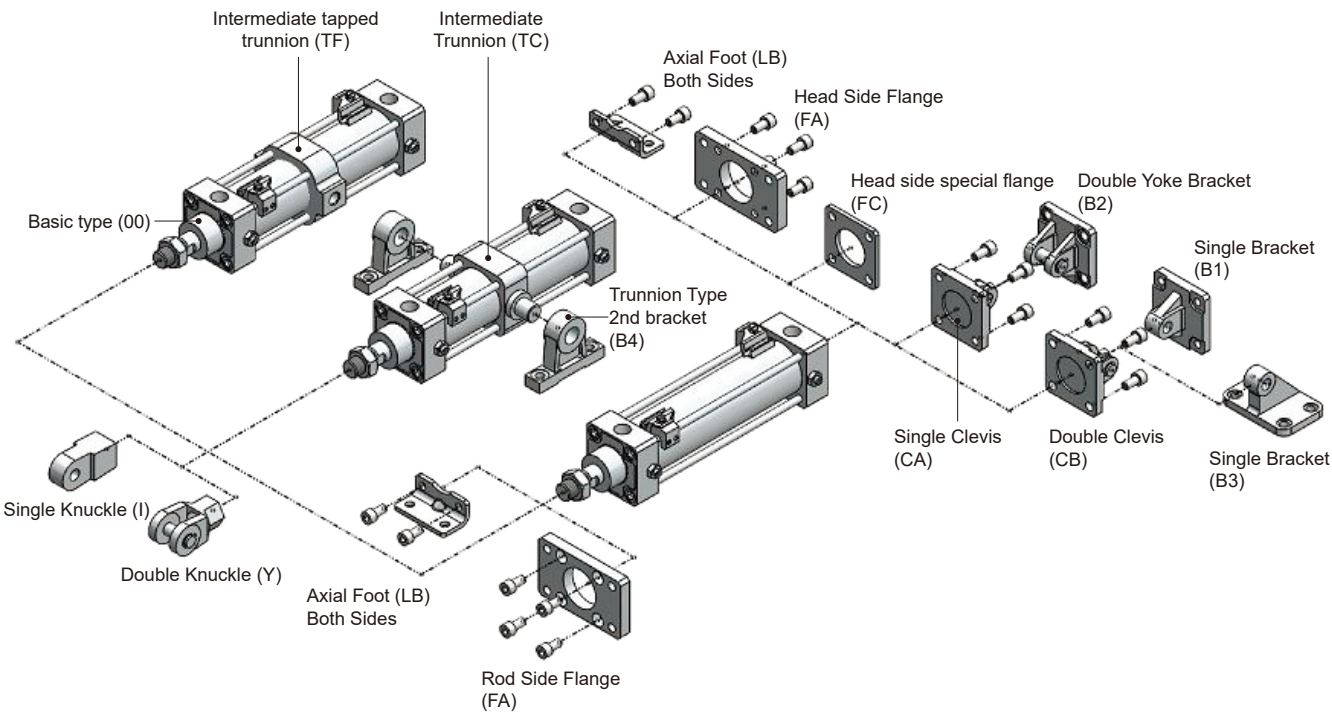
Ending

●: Standard, ◎: Option, ○: Custom Products, ■: Not manufacturable

[illegible]

Note: ø40 cannot be selected for tapped trunnion types (TF, TD, TE).

Combination of Mounting Brackets and Accessories



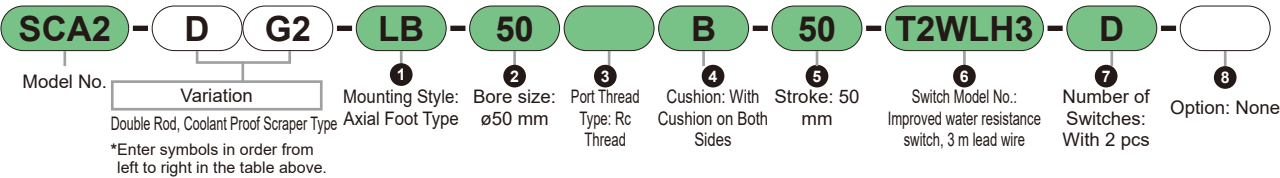
Variation / Option combinability table

Combination Availability Table for Variations and Option Items

- Symbol: Standard
- Symbol: Option
- Symbol: Custom Products
- △ Symbol: Manufacturable depending on conditions (Please consult us.)
- × Symbol: Not manufacturable
- H Symbol: Only head side fall prevention is supported (Custom product)
- R Symbol: Only rod side fall prevention is supported (Custom product)
- *1: Support only for S2 side
- *2: Increasing rod sealant and bearings leads to a larger resistance and thus causes a change in the min. starting pressure.
- *3: The valve mounting position differs from the standard.
- *4: The minimum starting pressure on the S2 side is higher than the standard for the low friction type. Please consult us.
- *5: The minimum starting pressure value increases due to the resistance during bellows expansion and contraction. Please consult us.
- *6: For coolant proof scraper G2 and G3, refer to "Coolant proof pneumatic components guide" CC-N-375.
- *7: The max. stroke available for the ø63 to ø100 bore size models with bellows is 2000 mm.

Category	Category	Variation																				Piping thread		Option					
		Code	Double Acting Basic Type	Double Acting Double Rod Type	Back-to-Back Type	Two-stage stroke type	Stroke adjustment Push	Stroke adjustment Pull	Drop prevention type	With Valve	Cylinder tube Steel pipe	Low Hydraulic Pressure Type	Heat resistant type (120°C)	Low friction type (low friction at low pressure)	Low friction type (constant friction when pressurized)	Heavy-Duty Scraper Type	Coil Scraper Type	Coolant Proof Scraper (NBR)	Coolant Proof Scraper (FKM)	Sputter adhesion prevention type	With Cylinder Switch	With cylinder switch, for strong magnetic field	With cylinder switch For heat resistance	NPT	G	With bellows, Polyolefin	With Bellows, Silicone Rubber	Piston Rod Material (Stainless Steel)	Cushion needle position specification
		None	D	B	W	P	R	Q2	V	K	H	T	O	U	G	G1	G2	G3	G4	None	L2	L2T	N	G	J	L	M	R,S,T	
Variation	Double Acting Basic Type	Blank																											
	Double Acting Double Rod Type	D		x	*1	x	x	○	△	○	△	△	*2	*2	○	○	○	○	○	●	○	○	○	○	*7	*7	○	○	○
	Back-to-Back Type	B				x	x	x	○	△	○	○	△	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○
	Two-stage stroke type	W					x	x	x	*3	○	○	○	*4	*4	○	○	○	○	○	●	○	○	○	○	○	○	○	○
	Stroke adjustment Push	P						x	H	○	○	△	△	*2	*2	△	△	△	△	●	○	○	○	○	○	○	○	○	○
	Stroke adjustment Pull	R							R	○	○	x	△	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○
	Drop prevention type	Q2							x	○	○	x	x	△	x	△	△	△	△	●	○	x	○	○	○	△	△	○	○
	With Valve	V								○	○	x	x	x	x	○	○	x	x	○	●	○	x	○	○	○	○	○	○
	Cylinder tube Steel pipe	K									○	○	x	○	○	○	○	x	x	○	○	x	○	○	○	○	○	○	○
	Low Hydraulic Pressure Type	H											x	x	x	△	x	x	x	x	●	○	x	○	○	○	○	○	○
	Heat resistant type (120°C)	T											x	x	x	△	x	x	x	x	x	x	○	○	x	○	○	○	○
	Low friction type (low friction at low pressure)	O												x	x	x	○	x	x	x	●	○	x	○	*5	*5	○	○	○
	Low friction type (constant friction when pressurized)	U														x	x	x	x	x	●	○	x	○	x	x	○	○	○
	Heavy-Duty Scraper Type	G																		●	○	x	○	○	○	○	○	○	○
	Coil Scraper Type	G1																		●	○	○	○	○	x	x	○	○	
	Coolant Proof Scraper (NBR)	G2																		●	○	x	○	○	x	x	○	○	○
	Coolant Proof Scraper (FKM)	G3																		●	○	x	○	○	x	x	○	○	○
Sputter adhesion prevention type	G4																		●	○	x	○	○	x	x	○	○	○	
With Cylinder Switch	Blank																				x	x	○	○	○	○	○	○	○
With cylinder switch, for strong magnetic field	L2																					x		○	○	○	○	○	○
With cylinder switch For heat resistance	L2T																								○	○	○	○	○
Piping thread	NPT	N																							○	○	○	○	○
	G	G																							○	○	○	○	○
Option	With bellows, Polyolefin	J																							○	○	○	○	○
	With Bellows, Silicone Rubber	L																							○	○	○	○	○
Accessories	Piston Rod Material (Stainless Steel)	M																								○	○	○	○
	Cushion needle position specification	R,S,T																									○	○	○
	Cylinder Switch	Separately Shown	○	○	○	○	○	○	○	x	○	x	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Single Knuckle	I	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Double Knuckle	Y	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Single Bracket	B1	○	x	x	○	x	x	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Double Yoke Bracket	B2	○	x	x	○	x	x	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Single Bracket	B3	○	x	x	○	x	x	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Bracket for trunnion	B4	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

[Model No. Notation Method]



- *1: Back-to-back type has two cylinders. When indicating each variation, use the following method.
- If only S1 has a variation, enter the variation symbol before the S1 stroke. (Example) SCA2-B-40-O100-150: Only S1 is low friction type.
- If only S2 has a variation, enter the variation symbol before the S2 stroke. (Example) SCA2-B-40-100-O150: Only S2 is low friction type.
- If S1 and S2 have the same variation, please enter the variation code before the bore size. (Example) SCA2-BO-40-100-150: Both S1 and S2 are low friction type.

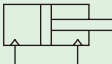


Medium Bore Size Cylinder
Double-acting, Single rod type, With switch

SCA2 Series

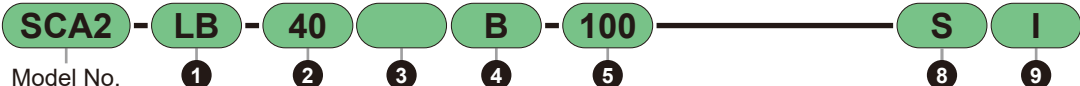
●Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

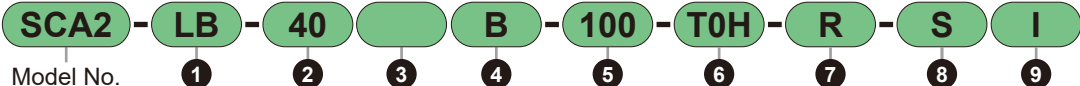


Model No. Notation Method

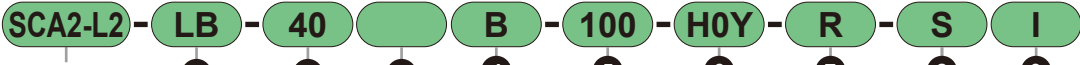
Without Switch
(Built-in magnet for switch)



With Switch
(Built-in magnet for switch)



Strong magnetic field resistant
(H0, H0Y switch)



With Switch
(Built-in magnet for switch)



1 Mounting type Mounting brackets are included to the product and shipped. However, trunnion type/bellows-equipped models with rod side flange will be shipped assembled.

Code	Content	Code	Content	Code	Content
00	Basic type	CA	Single Clevis Type	TF	Intermediate tapped trunnion type (ø50 to ø100)
LB	Axial Foot Type	CB	Double Clevis Type (Pin and Washer Split Pin Attached)	TD	Rod side tapped trunnion type (ø50 to ø100)
FA	Rod Side Flange Type	TC	Intermediate Trunnion Type	TE	Head side tapped trunnion type (ø50 to ø100)
FB	Head Side Flange Type	TA	Rod Side Trunnion Type		
FC	Head side special flange	TB	Head Side Trunnion Type		

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Cushion

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

5 Stroke (mm)

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

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T5V□	T5V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
	2-Color Improved Water Resistance	2-wire	—	24 ± 10%	—	5 to 20	T2YD□	-	
	2-Color for AC Magnetic Field	2-wire	—	24 ± 10%	—	5 to 20	T2YDT□	-	
	1-Color Off-Delay Type	2-wire	—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type	2-wire	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	
	For 1-color strong magnetic field	2-wire	110	12/24	7 to 20	5 to 50	H0□	-	
	For 2-color strong magnetic field	2-wire	—	24 ± 10%	—	5 to 20	H0Y□	-	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

SCA2 Series

Model No. Notation Method

9 Accessories

Code	Content	
I	Single Knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion Type 2nd Bracket (2 pieces/set)	

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

7 Number of Switches

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

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

8 Option

Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	
J	Bellows	100°C	200°C	
L		250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
Blank	Cushion needle position R (Standard)	*2	T	
S	Cushion needle position S			
T	Cushion needle position T			

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	-A2	With 2 Rod Nuts
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) **SCA2-.....-XP5**

Food Manufacturing Process Compatible Specification

(Catalog No. CC-1271AA)

●Uses food grade grease that can be used in food manufacturing processes

SCA2-.....-FP1

Outdoor series

(Catalog No. CC-1276AA)

●Outdoor equipment products that support outdoor facilities in harsh environments

SCA2-.....-W

Oil-free specification

(Catalog No. RJ-001AA)

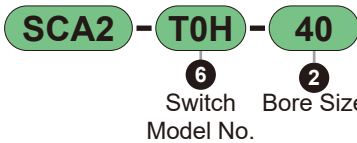
●Grease scatter prevention structure

SCA2-.....-P12

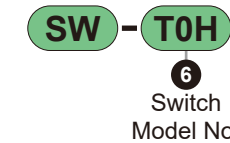
Switch Single Unit Model No. Notation Method

[T type switch]

●Switch body + Mounting bracket set



●Switch body only

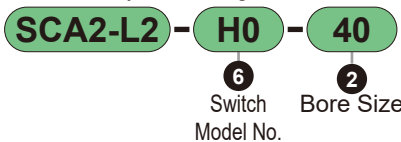


●Switch mounting bracket set

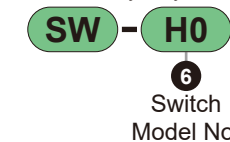


[H type switch]

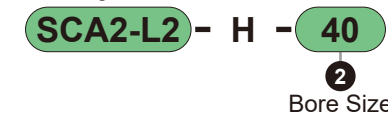
●Switch body + Mounting bracket set



●Switch body only

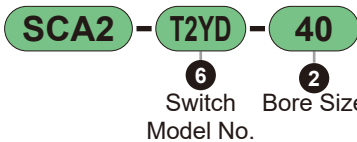


●Mounting bracket set

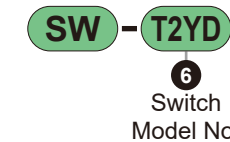


[T2YD type switch]

●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item		SCA2, SCA2-L2				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	−10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Producible Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	1600	1
ø50			2,000	
ø63		700	2500	
ø80				
ø100				
		800	*3	

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: If the maximum stroke is exceeded, the product specifications may not be met depending on the conditions, so please consult us.
*3: For bellows-equipped models with Bore sizes ø63 to ø100, the producible stroke is up to 2000 mm.

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1	1
ø40	20 (20)	20 (10)	60 (45)	110 (110)	110 (110)	50 (50)	50 (50)
ø50	20 (20)	15 (10)	20 (20)	135 (135)	135 (135)	60 (60)	60 (60)
ø63	20 (20)	15 (10)	20 (20)	110 (95)	110 (95)	50 (45)	50 (45)
ø80	25 (25)	15 (15)	25 (25)	115 (85)	115 (85)	55 (40)	55 (40)
ø100	25 (25)	15 (15)	25 (25)	125 (95)	125 (95)	60 (45)	60 (45)

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

●Minimum stroke with T8 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

●Minimum stroke with T1/T2YD type switch

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

*1: () indicates T□V (L-shaped lead wire type). However, T2YD does not have an L-shaped lead wire type (V).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

●Minimum stroke with T2W/T3W/T2WL type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm							Switch weight	Switch Mounting Bracket Weight		S = Added weight per 10 mm
	Basic Type (00)	Foot Type (LB)	Flange Type (FA, FB)	Special flange type (FC)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion Type (TA, TB, TC)		T type	H type	
ø40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Please refer to the weight listed in the switch specifications of P. 971	0.024	0.028	0.39
ø50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.022	0.026	0.46
ø63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.020	0.024	0.50
ø80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.026	0.029	0.90
ø100	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-T0H-D											
Product Weight at 0 mm stroke 1.45 kg											
Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg											
Weight of 2 T0H switches $0.018 \times 2 = 0.036$ kg											
Weight of 2 mounting brackets $0.022 \times 2 = 0.044$ kg											
Product Weight $1.45 + 0.92 + 0.036 + 0.044 = 2.450$ kg											

MEMO

Theoretical Thrust Table (Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06 × 10 ²	1.58 × 10 ²	2.11 × 10 ²	3.17 × 10 ²	4.22 × 10 ²	5.28 × 10 ²	6.33 × 10 ²	7.39 × 10 ²	8.44 × 10 ²	9.50 × 10 ²	1.06 × 10 ³
ø50	Push	98.2	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	82.5	1.65 × 10 ²	2.47 × 10 ²	3.30 × 10 ²	4.95 × 10 ²	6.60 × 10 ²	8.25 × 10 ²	9.90 × 10 ²	1.15 × 10 ³	1.32 × 10 ³	1.48 × 10 ³	1.65 × 10 ³
ø63	Push	1.56 × 10 ²	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	1.40 × 10 ²	2.80 × 10 ²	4.20 × 10 ²	5.61 × 10 ²	8.41 × 10 ²	1.12 × 10 ³	1.40 × 10 ³	1.68 × 10 ³	1.96 × 10 ³	2.24 × 10 ³	2.52 × 10 ³	2.80 × 10 ³
ø80	Push	2.51 × 10 ²	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	2.27 × 10 ²	4.54 × 10 ²	6.80 × 10 ²	9.07 × 10 ²	1.36 × 10 ³	1.81 × 10 ³	2.27 × 10 ³	2.72 × 10 ³	3.17 × 10 ³	3.63 × 10 ³	4.08 × 10 ³	4.54 × 10 ³
ø100	Push	3.93 × 10 ²	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	3.57 × 10 ²	7.15 × 10 ²	1.07 × 10 ³	1.43 × 10 ³	2.14 × 10 ³	2.86 × 10 ³	3.57 × 10 ³	4.29 × 10 ³	5.00 × 10 ³	5.72 × 10 ³	6.43 × 10 ³	7.15 × 10 ³

Mounting Bracket Model No. Notation Method

Bore Size (mm)		ø40	ø50	ø63	ø80	ø100
Mounting bracket						
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
Single Clevis (CA)		S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)		S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

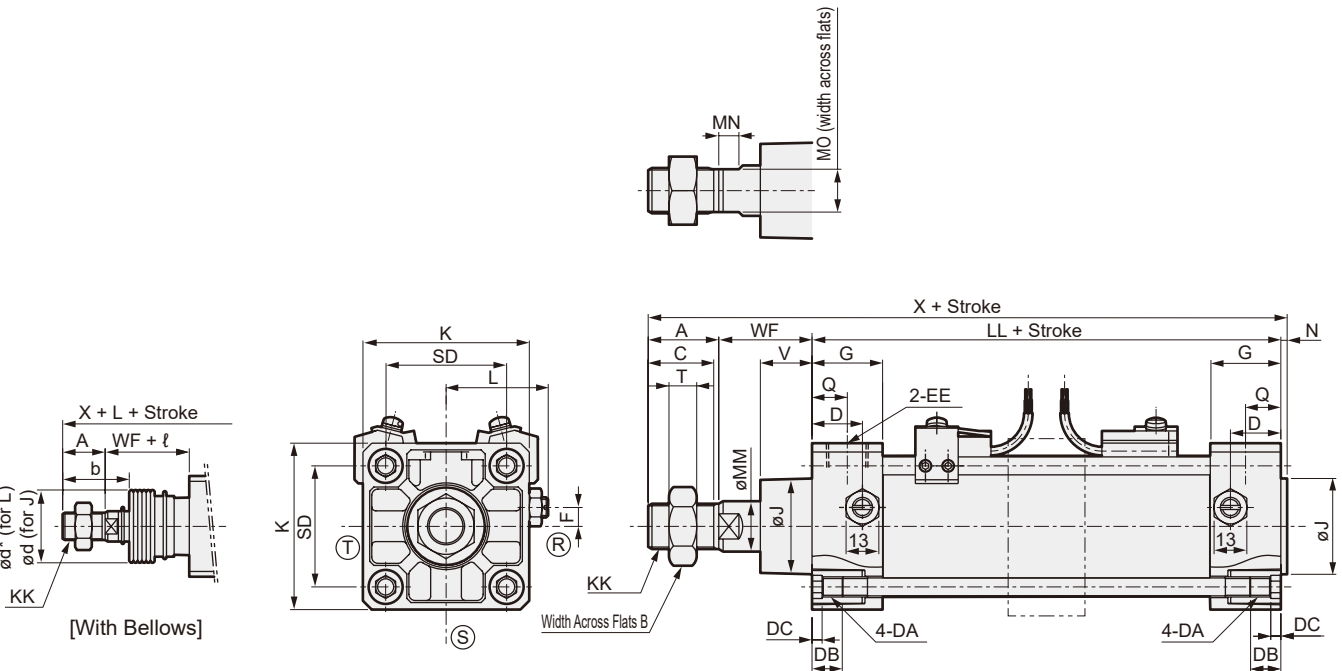
*1: For the material of the mounting brackets, please refer to P. 646.

*2: Foot type mounting brackets come in sets of 2.

*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

●Basic Type (OO)



Code	Basic Type (OO) Basic Dimensions																	
Bore Size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM	MN	MO
ø40	22	22	20	18	M8	12	4	Rc 1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	8	14
ø50	28	27	26	20	M8	12	4	Rc 3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	8.5	17
ø63	28	27	26	22	M8	12	4	Rc 3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	8.5	17
ø80	36	32	34	26	M12	16	5	Rc 1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	11	22
ø100	45	41	43	28	M12	16	5	Rc 1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	13	27

Code			
Bore Size (mm)			
		Over 400 to 500	*2 When exceeding 500
ø40		174.5	(Stroke/3.0) + 8
ø50		146	(Stroke/3.6) + 7.5
ø63		146	(Stroke/3.6) + 7.5
ø80		119	(Stroke/4.3) + 2.5
ø100		120	(Stroke/4.5) + 9

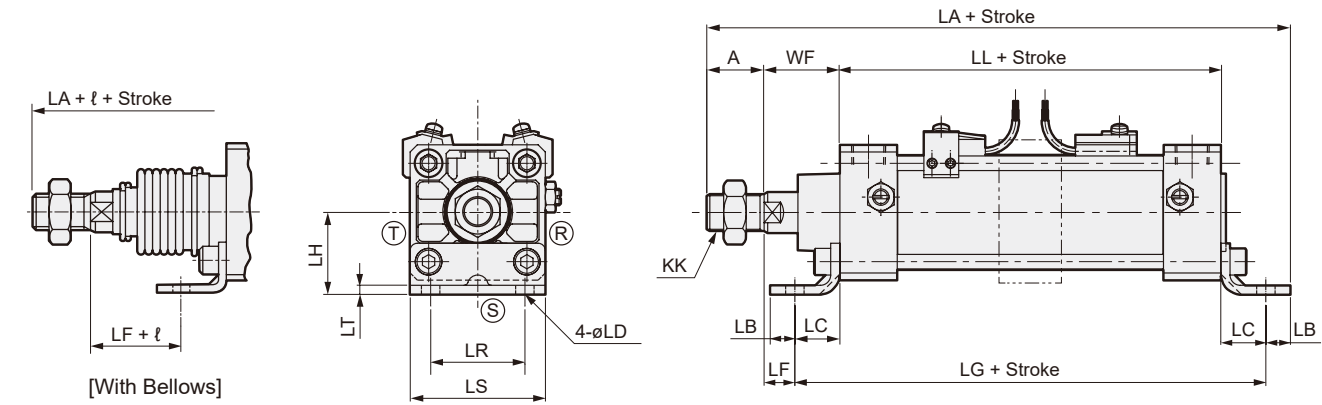
Code	With Bellows	
Bore Size (mm)	Over 400 to 500	*2 When exceeding 500
ø40	174.5	(Stroke/3.0) + 8
ø50	146	(Stroke/3.6) + 7.5
ø63	146	(Stroke/3.6) + 7.5
ø80	119	(Stroke/4.3) + 2.5
ø100	120	(Stroke/4.5) + 9

*1: (R) (S) (T) [Square symbol] indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting/Single Rod Type

Outline Dimension Drawing

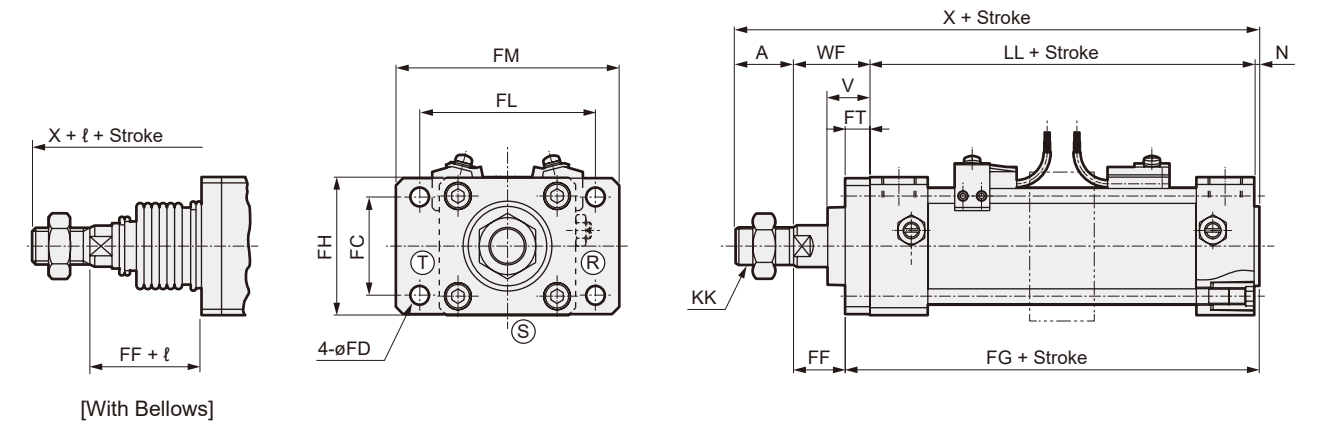
●Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions														With Bellows							
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	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	*2 When exceeding 500
ø40	22	M14 × 1.5	93	33.5	178	10	19.5	9	14	132	40	40	57	3.2	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	37	200	12	22	9	15	145	40	46	66	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	35	210	12	30	11	5	165	50	60	80	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	48	251	14	37	14	11	190	60	74	98	6.0	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	53	278	21	31	14	22	190	67	80	118	6.0	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R) (S) (T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Rod Side Flange Type (FA)

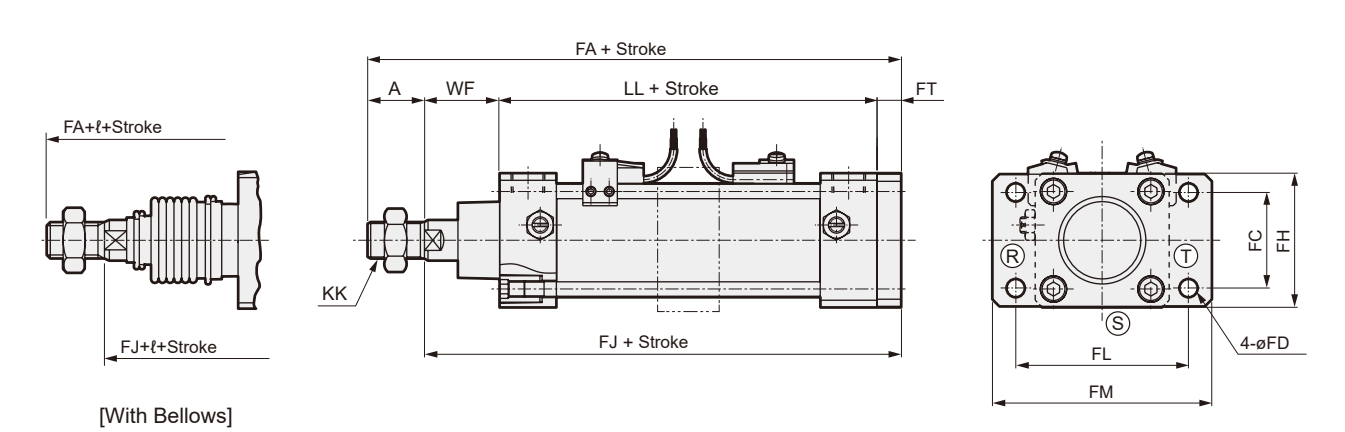


Code	Rod Side Flange Type (FA) Mounting Dimensions															With Bellows							
	A	KK	LL	N	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	ℓ							
50 or less																Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500	
ø40	22	M14 × 1.5	93	2	18.5	33.5	150.5	40	9	21.5	107	57	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	2.5	20.5	37	168.5	47	9	25	115.5	65	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	21	35	171	60	11	19	124	80	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	23.5	48	203.5	74	14	29	138.5	98	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	32	53	230	88	14	34	151	118	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R) (S) (T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

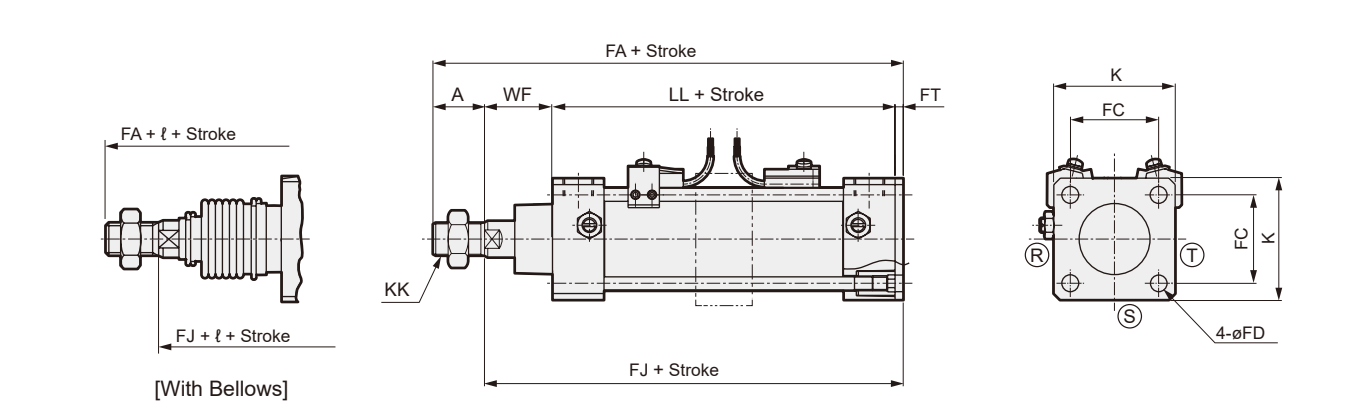
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions												With Bellows							
	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT	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	*2 When exceeding 500	
ø40	22	M14 × 1.5	93	33.5	160.5	40	9	57	138.5	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	37	178	47	9	65	150	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	35	184	60	11	80	156	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	48	219	74	14	98	183	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	53	245	88	14	118	200	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Head side special flange type (FC)



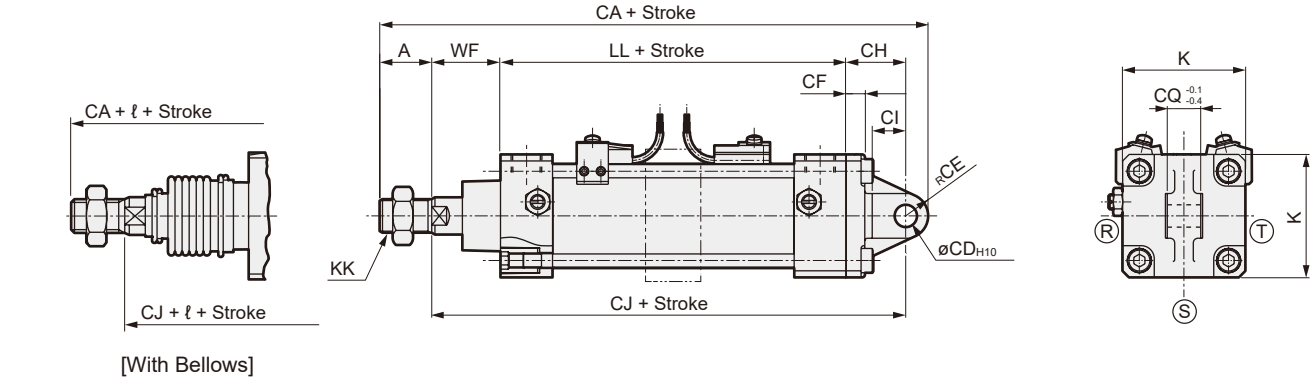
Code	Head side special flange type (FC) Mounting method										With Bellows							
	Bore Size (mm)	A	K	KK	LL	WF	FA	FC	FD	FJ	FT	ℓ						
50 or less												Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
ø40	22	57	M14 × 1.5	93	33.5	153	40.5	9	131	4.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	66	M18 × 1.5	101	37	170.5	48	9	142.5	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	80	M18 × 1.5	105	35	172.5	59	9	144.5	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	98	M22 × 1.5	116	48	206	74	14	170	6	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	118	M26 × 1.5	128	53	232	90	14	187	6	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting/Single Rod Type

Outline Dimension Drawing

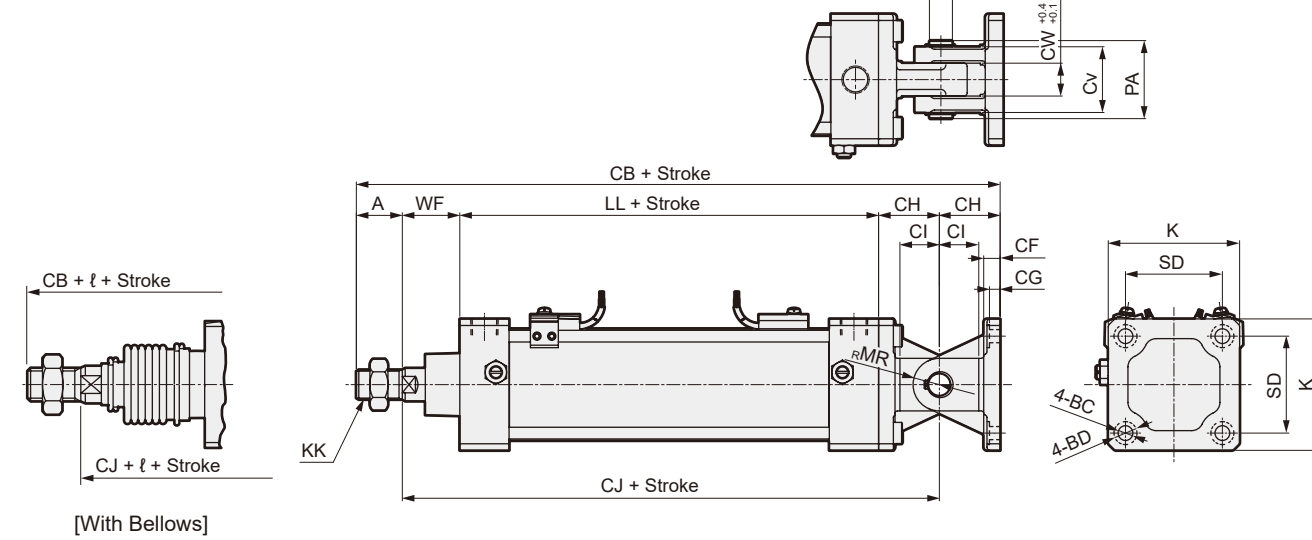
●Single Clevis Type (CA)



Code		Single Clevis Type (CA) Mounting Dimensions													With Bellows							
		A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	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	*2 When exceeding 500
ø40		22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50		28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

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

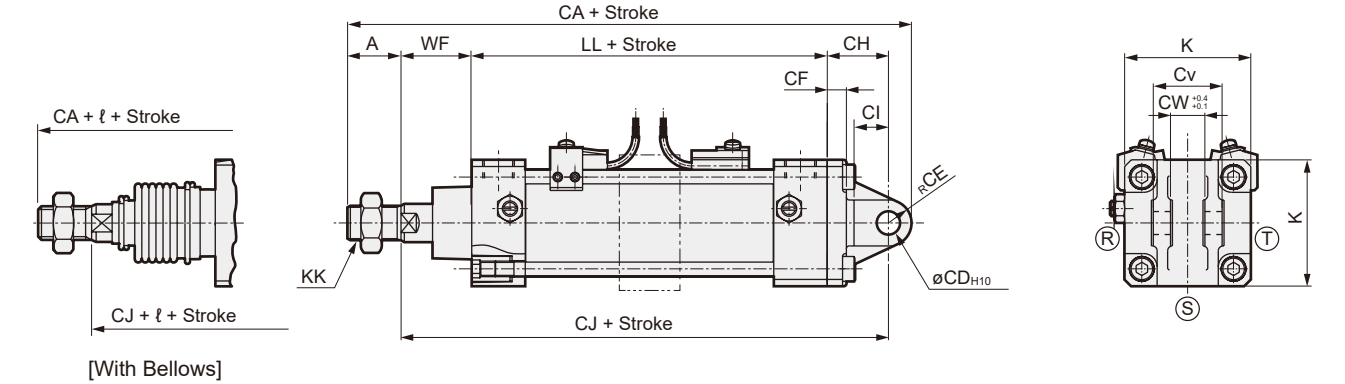


Code		Single Clevis Type (CA) With Bracket (Option Code B2) Mounting Dimensions																			With Bellows							
Bore Size (mm)	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	Cv	CW	BC	BD	MR	PA	SD	ℓ								
																				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500	
ø40	22	57	M14 × 1.5	93	33.5	212.5	12	10	6.5	32	18	158.5	36	18	9	14	12	43.5	40.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8	
ø50	28	66	M18 × 1.5	101	37	230	12	10	6.5	32	18	170	36	18	9	14	12	43.5	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	80	M18 × 1.5	105	35	242	14	10	6.5	37	24	177	40	20	9	14	16	47.5	59	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	98	M22 × 1.5	116	48	304	20	14	10.5	52	30	216	56	28	14	20	20	64	74	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	118	M26 × 1.5	128	53	330	20	16	10.5	52	30	233	56	28	14	20	20	64	90	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

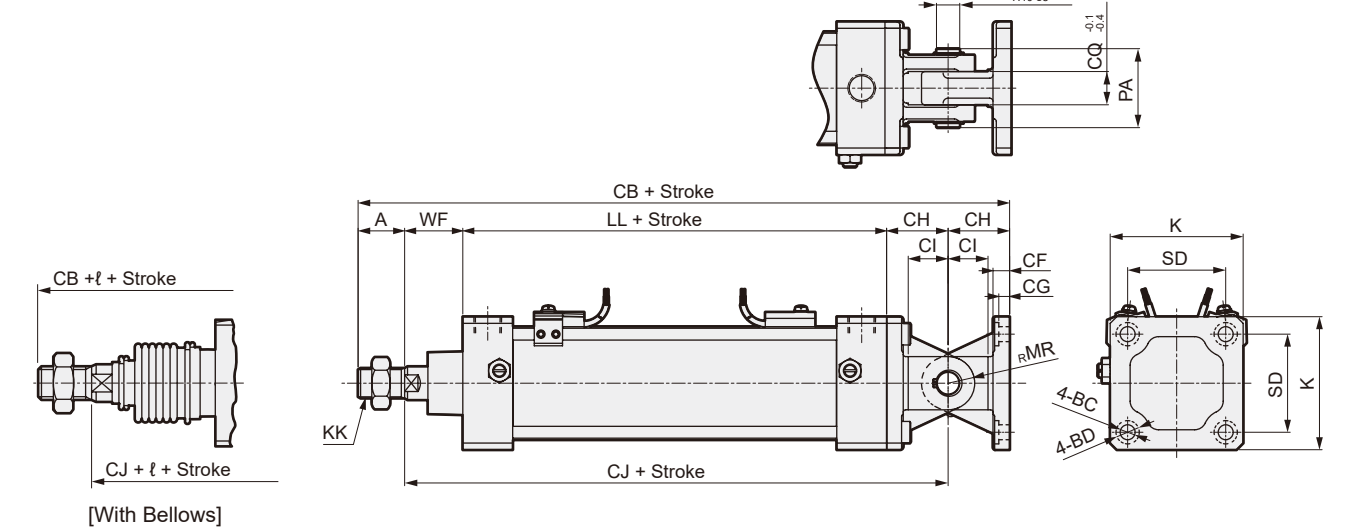
●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions														With Bellows							
	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	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	*2 When exceeding 500	
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	36	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	36	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	40	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	56	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	56	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: Pins are attached.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

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



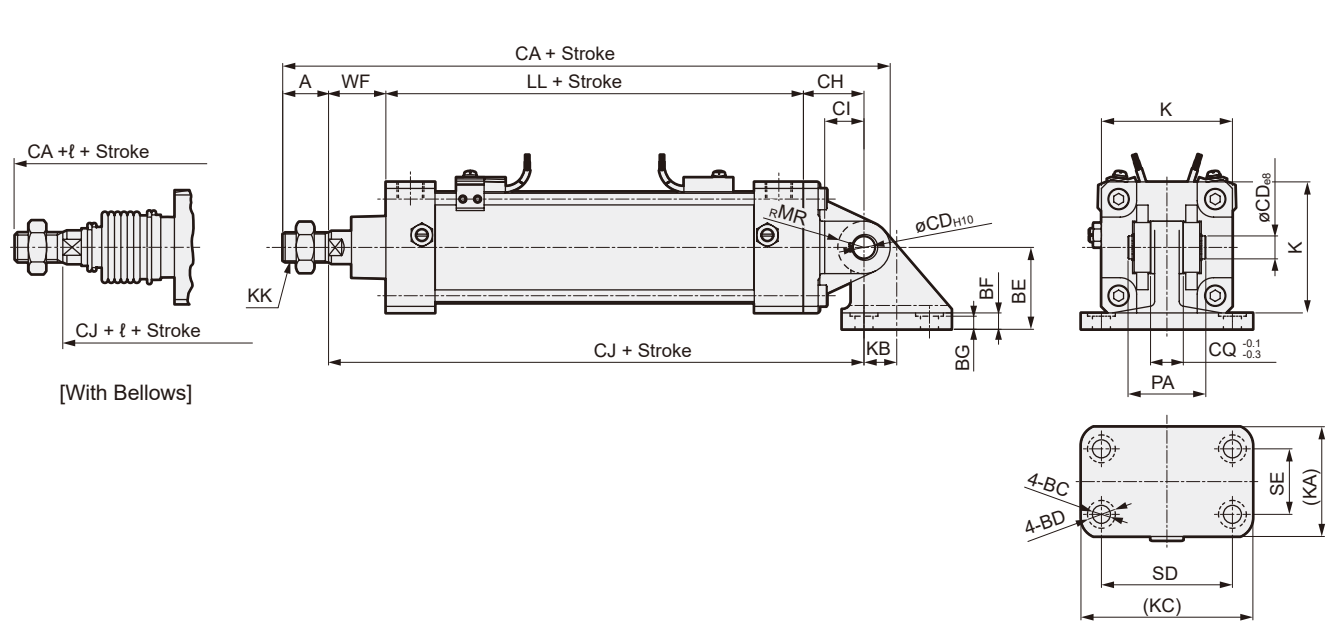
Code	Double Clevis Type (CB) With Bracket (Option Code B1) Mounting Dimensions																	With Bellows								
	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	CQ	BC	BD	MR	PA	SD	ℓ							
Bore Size (mm)																			50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø40	22	57	M14 × 1.5	93	33.5	232.5	12	10	6.5	32	18	158.5	18	9	14	12	43.5	40.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	66	M18 × 1.5	101	37	250	12	10	6.5	32	18	170	18	9	14	12	43.5	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	80	M18 × 1.5	105	35	263	14	10	6.5	37	24	177	20	9	14	16	47.5	59	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	98	M22 × 1.5	116	48	336	20	14	10.5	52	30	216	28	14	20	20	64	74	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	118	M26 × 1.5	128	53	362	20	16	10.5	52	30	233	28	14	20	20	64	90	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1:(R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: Pins are attached.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting/Single Rod Type

Outline Dimension Drawing

●Double clevis type (CB) with bracket (Option code B3)



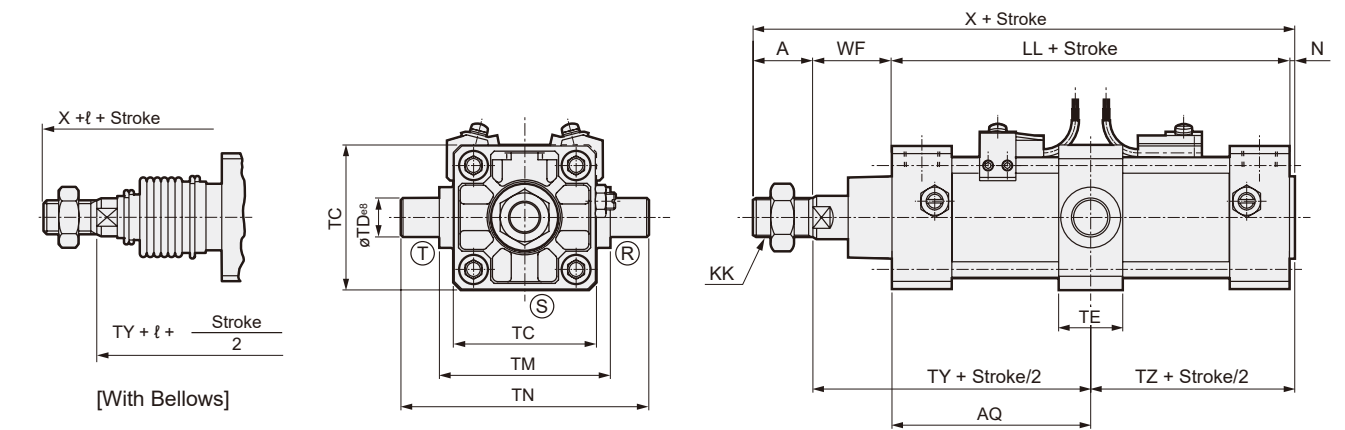
Code	Double clevis type (CB) with bracket (Option code B3) Mounting dimensions																							
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CH	CI	CJ	CQ	BC	BD	BE	BF	BG	KA	KB	KC	MR	PA	SD	SE	
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	32	18	158.5	18	9	14	40	8	6.5	57	17.5	85	12	43.5	65	35	
ø50	28	66	M18 × 1.5	101	37	210	12	32	18	170	18	9	14	40	8	6.5	57	17.5	85	12	43.5	65	35	
ø63	28	80	M18 × 1.5	105	35	221	14	37	24	177	20	9	14	50	10	8	67	20	105	16	47.5	80	40	
ø80	36	98	M22 × 1.5	116	48	272	20	52	30	216	28	14	20	65	12	10	93	30	130	20	64	100	60	
ø100	45	118	M26 × 1.5	128	53	298	20	52	30	233	28	14	20	65	12	10	93	30	130	20	64	100	60	

Code	With Bellows							
Bore Size (mm)	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	*2 When exceeding 500
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: Pins are attached.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

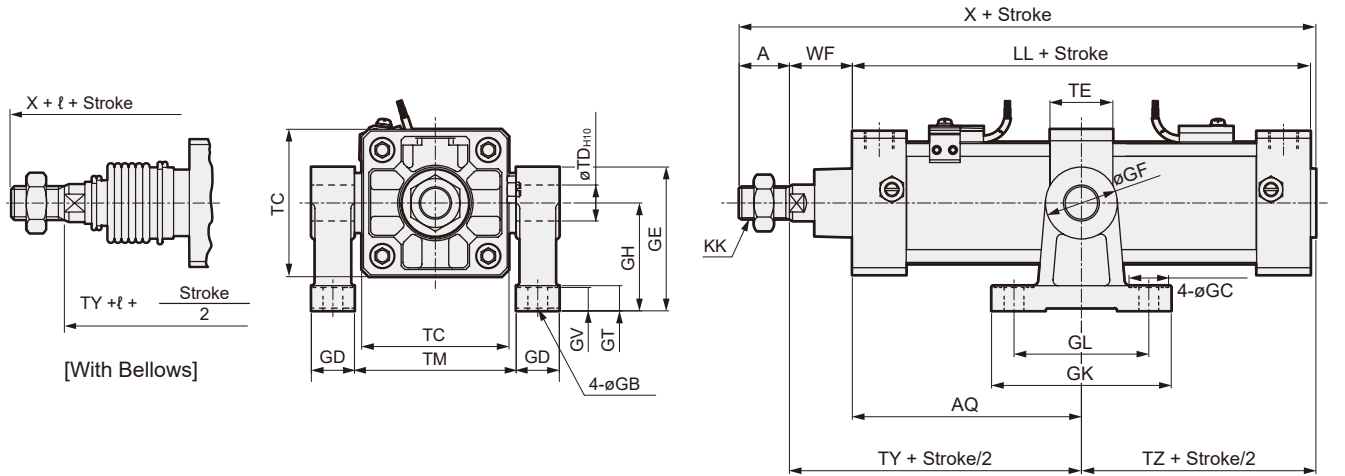
●Intermediate trunnion type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions																With Bellows							
	Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ	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	*2 When exceeding 500		
ø40	22	M14 × 1.5	93	2	33.5	150.5	46.5 + $\frac{\text{Stroke}}{2}$	57	16	30	63	95	80	48.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8		
ø50	28	M18 × 1.5	101	2.5	37	168.5	50.5 + $\frac{\text{Stroke}}{2}$	67	18	30	80	116	87.5	53	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5		
ø63	28	M18 × 1.5	105	3	35	171	52.5 + $\frac{\text{Stroke}}{2}$	82	20	35	90	130	87.5	55.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5		
ø80	36	M22 × 1.5	116	3.5	48	203.5	58 + $\frac{\text{Stroke}}{2}$	100	25	40	115	165	106	61.5	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5		
ø100	45	M26 × 1.5	128	4	53	230	64 + $\frac{\text{Stroke}}{2}$	121	35	50	135	205	117	68	20	32	42	53	76	98	120	(Stroke/4.5) + 9		

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

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



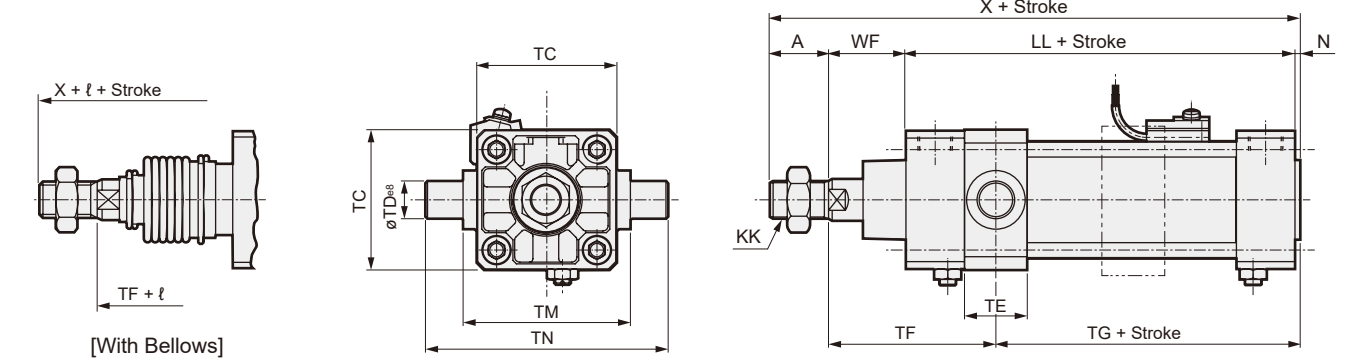
Code	Intermediate Trunnion Type (TC) with Bracket (Option Code B4) Mounting Dimensions																				With Bellows									
	A	KK	LL	WF	X	AQ	TC	TD	TE	TY	TZ	TM	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
Bore Size (mm)																														
ø40	22	M14×1.5	93	33.5	150.5	46.5 + $\frac{\text{Stroke}}{2}$	57	16	30	80	48.5	63	9	17	19	61	32	45	80	60	12	11	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18×1.5	101	37	168.5	50.5 + $\frac{\text{Stroke}}{2}$	67	18	30	87.5	53	80	9	17	19	63	36	45	85	65	12	11	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18×1.5	105	35	171	52.5 + $\frac{\text{Stroke}}{2}$	82	20	35	87.5	55.5	90	11	22	24	80	40	60	100	75	14	13	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22×1.5	116	48	203.5	58 + $\frac{\text{Stroke}}{2}$	100	25	40	106	61.5	115	14	24	26	85	50	60	115	85	14	13	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26×1.5	128	53	230	64 + $\frac{\text{Stroke}}{2}$	121	35	50	117	68	135	14	24	35	107	64	75	130	100	17	16	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting/Single Rod Type

Outline Dimension Drawing

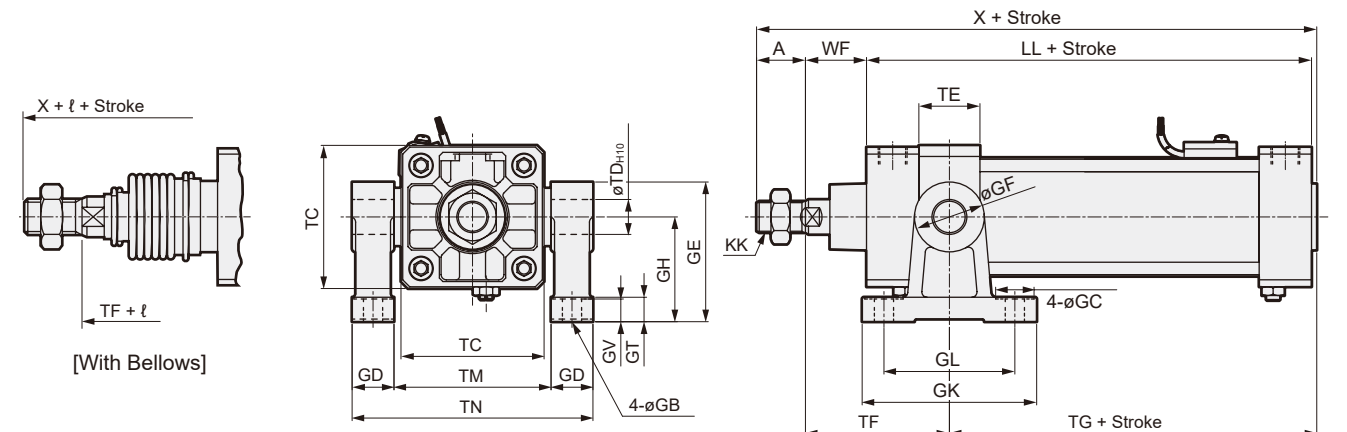
●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions														With Bellows							
	Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TF	TG	TM	TN	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	*3 When exceeding 500	
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	74.5	54	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8	
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	80	60.5	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	82.5	60.5	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	102	65.5	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	114	71	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the ℓ dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

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

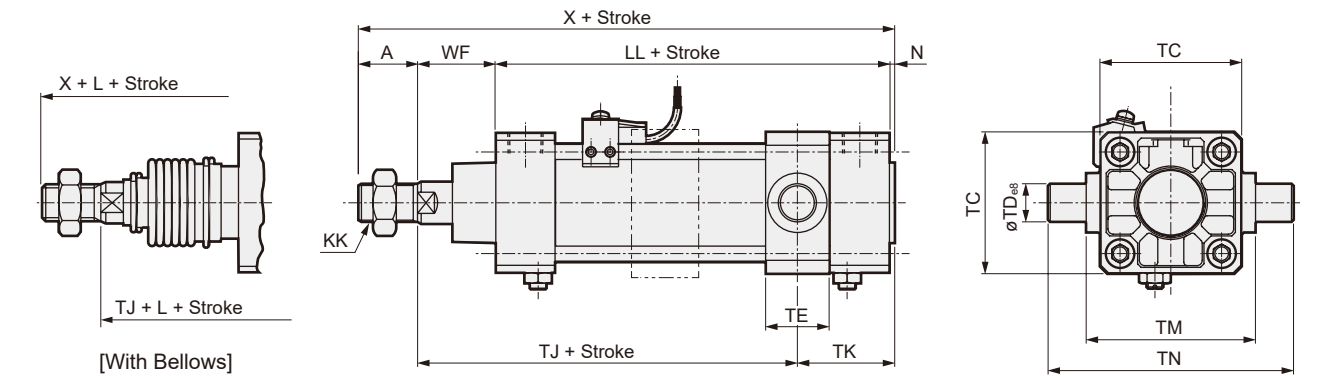


Code		Rod Side Trunnion Type (TA) with Bracket (Option Code B4) Mounting Dimensions																				With Bellows									
		A	KK	LL	WF	X	TC	TD	TE	TF	TG	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
Bore Size (mm)																															
ø40		22	M14 × 1.5	93	33.5	150.5	57	16	30	74.5	54	63	95	9	17	19	61	32	45	80	60	12	11	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50		28	M18 × 1.5	101	37	168.5	67	18	30	80	60.5	80	116	9	17	19	63	36	45	85	65	12	11	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	105	35	171	82	20	35	82.5	60.5	90	130	11	22	24	80	40	60	100	75	14	13	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	116	48	203.5	100	25	40	102	65.5	115	165	14	24	26	85	50	60	115	85	14	13	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	128	53	230	121	35	50	114	71	135	205	14	24	35	107	64	75	130	100	17	16	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the ℓ dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

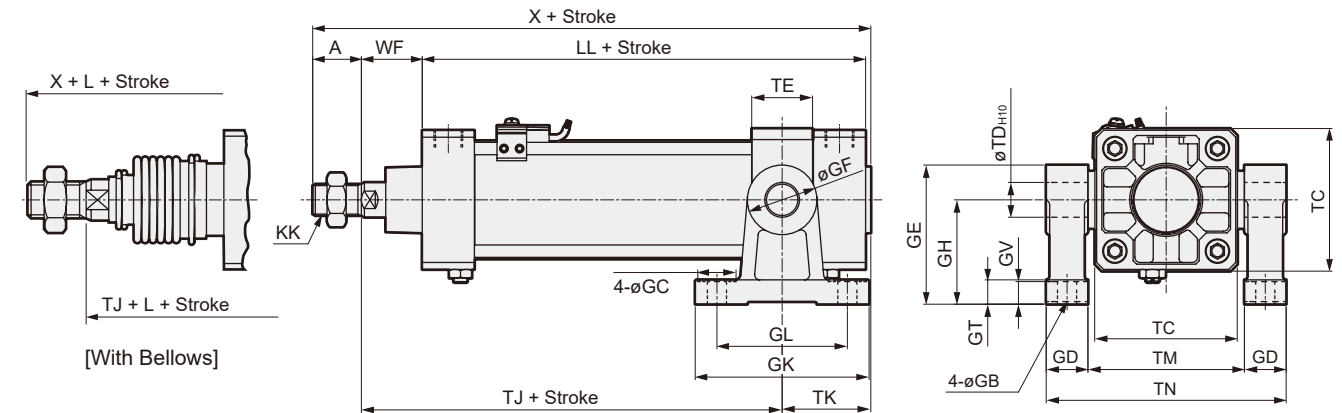
●Head Side Trunnion Type (TB)



Code	Head Side Trunnion Type (TB) Mounting Dimensions													With Bellows								
	Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TJ	TM	TN	TK	L							
															50 or less	Over 50 to 100	Over 100 to 150	150 Exceeding and 200 or less	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	85	63	95	43.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8	
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	94.5	80	116	46	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	92	90	130	51	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	109.5	115	165	58	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	119.5	135	205	65.5	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

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



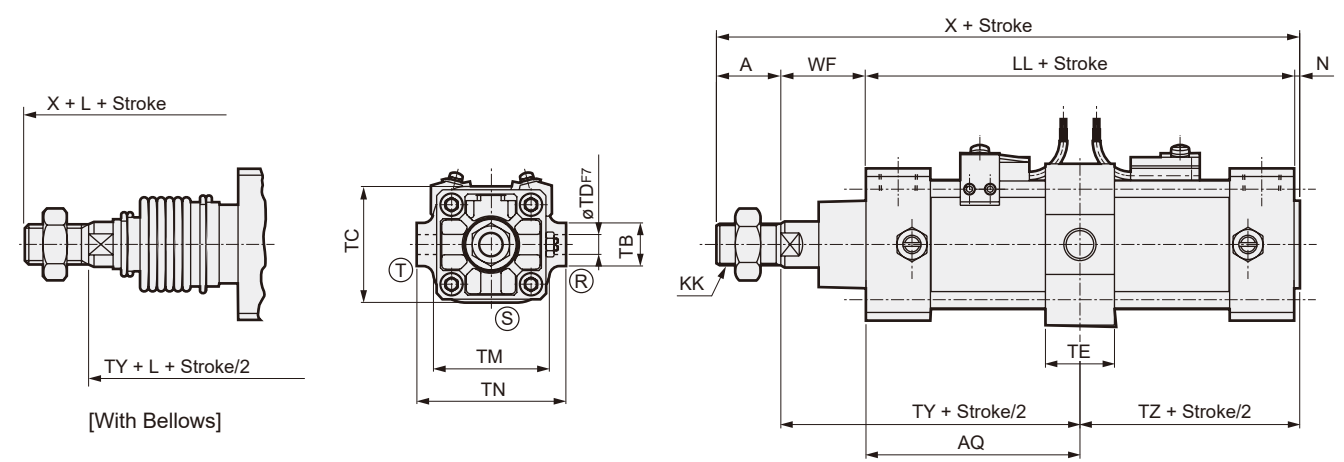
Code	Head Side Trunnion Type (TB) with Bracket (Option Code B4) Mounting Dimensions																				With Bellows									
	A	KK	LL	WF	X	TC	TD	TE	TJ	TK	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV	L							
Bore Size (mm)																							50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø40	22	M14 × 1.5	93	33.5	150.5	57	16	30	85	43.5	63	95	9	17	19	61	32	45	80	60	12	11	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	37	168.5	67	18	30	94.5	46	80	116	9	17	19	63	36	45	85	65	12	11	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	35	171	82	20	35	92	51	90	130	11	22	24	80	40	60	100	75	14	13	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	48	203.5	100	25	40	109.5	58	115	165	14	24	26	85	50	60	115	85	14	13	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	53	230	121	35	50	119.5	65.5	135	205	14	24	35	107	64	75	130	100	17	16	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting/Single Rod Type

Outline Dimension Drawing

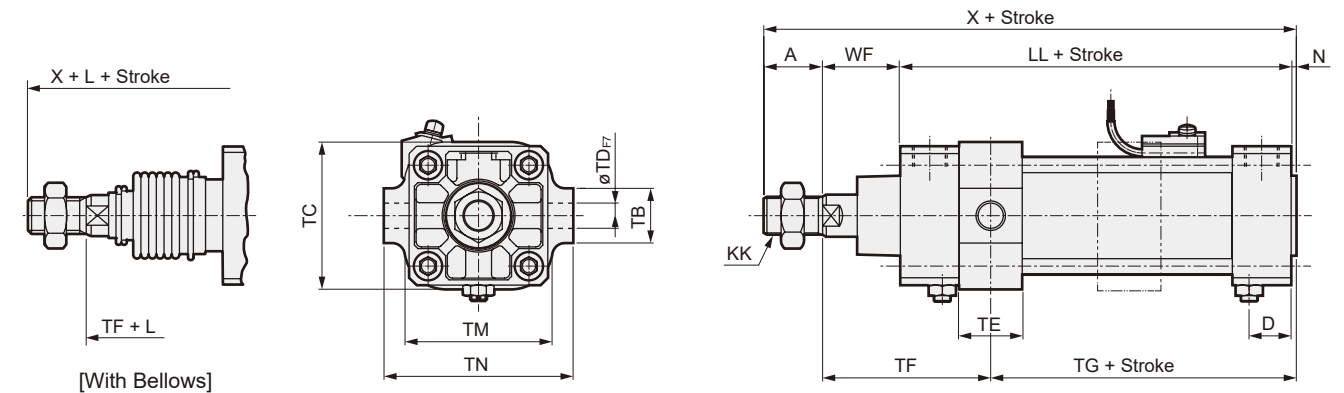
●Intermediate tapped trunnion type (TF)



Code		Intermediate tapped trunnion type (TF) Mounting dimensions															With Bellows							
		A	KK	LL	N	WF	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ	L							
Bore Size (mm)																	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 When exceeding 500
ø50		28	M18 × 1.5	101	2.5	37	168.5	50.5 + $\frac{\text{Stroke}}{2}$	26	70	12	30	70	90	87.5	53	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	105	3	35	171	52.5 + $\frac{\text{Stroke}}{2}$	30	86	14	35	86	104	87.5	55.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	116	3.5	48	203.5	58 + $\frac{\text{Stroke}}{2}$	35	105	20	40	105	134	106	61.5	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	128	4	53	230	64 + $\frac{\text{Stroke}}{2}$	40	123	20	40	127	150	117	68	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R) (S) (T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side tapped trunnion type (TD)

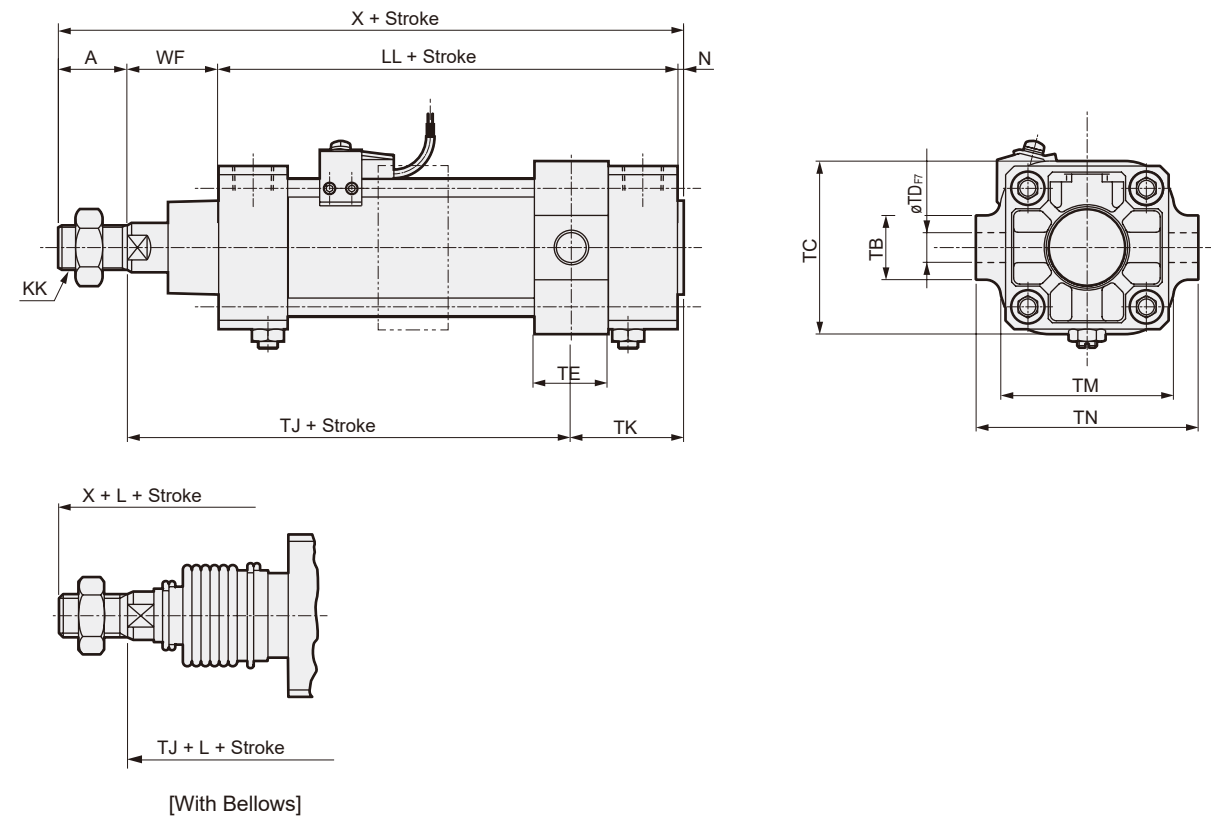


Code	Rod side tapped trunnion type (TD) Mounting dimensions															With Bellows																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

●Head side tapped trunnion type (TE)



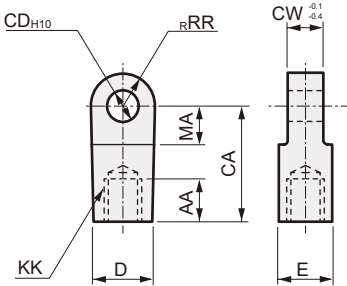
Code	Head side tapped trunnion type (TE) Mounting dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TJ	TM	TN	TK
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	94.5	70	90	46
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	92	86	104	51
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	109.5	105	134	58
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	124.5	127	150	60.5
Code	With Bellows													
Bore Size (mm)	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	*3 When exceeding 500						
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5						
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5						
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5						
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9						

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Accessories Outline Dimension Drawing

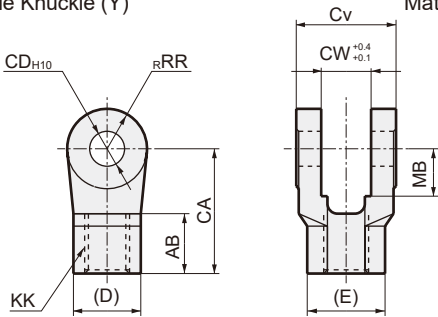
, The mounting dimensions (øCD, CW, CQ) of the clevis type, knuckle, and 2nd bracket are the same, and all combinations are possible.
, Please specify by model No. when ordering.

● Single Knuckle (I) Material: Cast iron coating



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

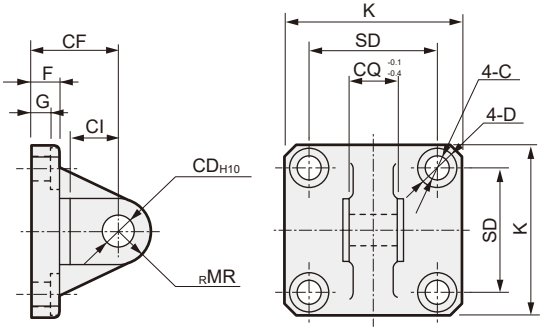
● Double Knuckle (Y) Material: Cast iron coating



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

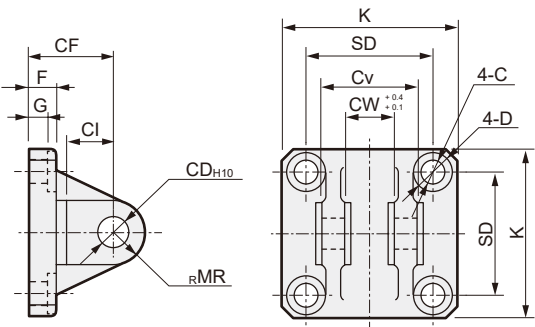
*1: Pin and retaining ring are included.
*2: MB dimension represents the effective length of CW dimension.

● Single Bracket (B1) Material: Cast iron coating



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

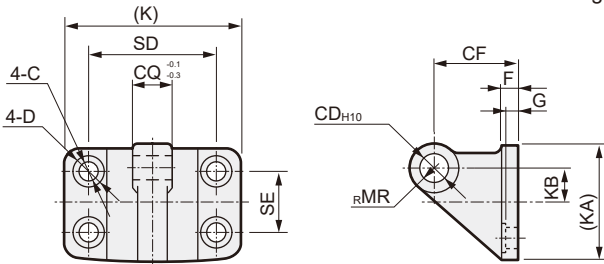
● Double Bracket (B2) Material: Cast iron coating



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

Note: The pin and retaining ring are included.

● Single Clevis Bracket (B3) Material: Cast iron coating

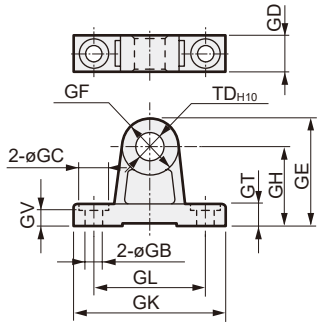


Model No.	Applicable Bore Size (mm)	C	CD	CF	CQ	D	F	G	K	KA	KB	MR	SD	SE	Weight (kg)
S1-B3-40	ø40, ø50	9	12	40	18	14	8	6.5	85	57	17.5	12	65	35	0.44
S1-B3-63	ø63	11	14	50	20	17	10	8	105	67	20	16	80	40	0.77
S1-B3-80	ø80, ø100	14	20	65	28	20	12	10	130	93	30	20	100	60	1.64

Accessories Outline Dimension Drawing

● Trunnion type 2nd bracket (B4)

Material: Cast iron coating



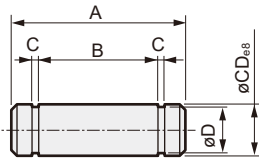
Code	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV	TD	Weight (kg)
S1-B4-40	9	17	19	61	32	45	80	60	12	11	16	0.25
S1-B4-50	9	17	19	63	36	45	85	65	12	11	18	0.28
S1-B4-63	11	22	24	80	40	60	100	75	14	13	20	0.52
S1-B4-80	14	24	26	85	50	60	115	85	14	13	25	0.70
S1-B4-100	14	24	35	107	64	75	130	100	17	16	35	1.48

Note: Brackets come in sets of 2.

● Pin (P)

Pin (P): For double clevis, double knuckle, double bracket

Material: Steel
Zinc Chromate

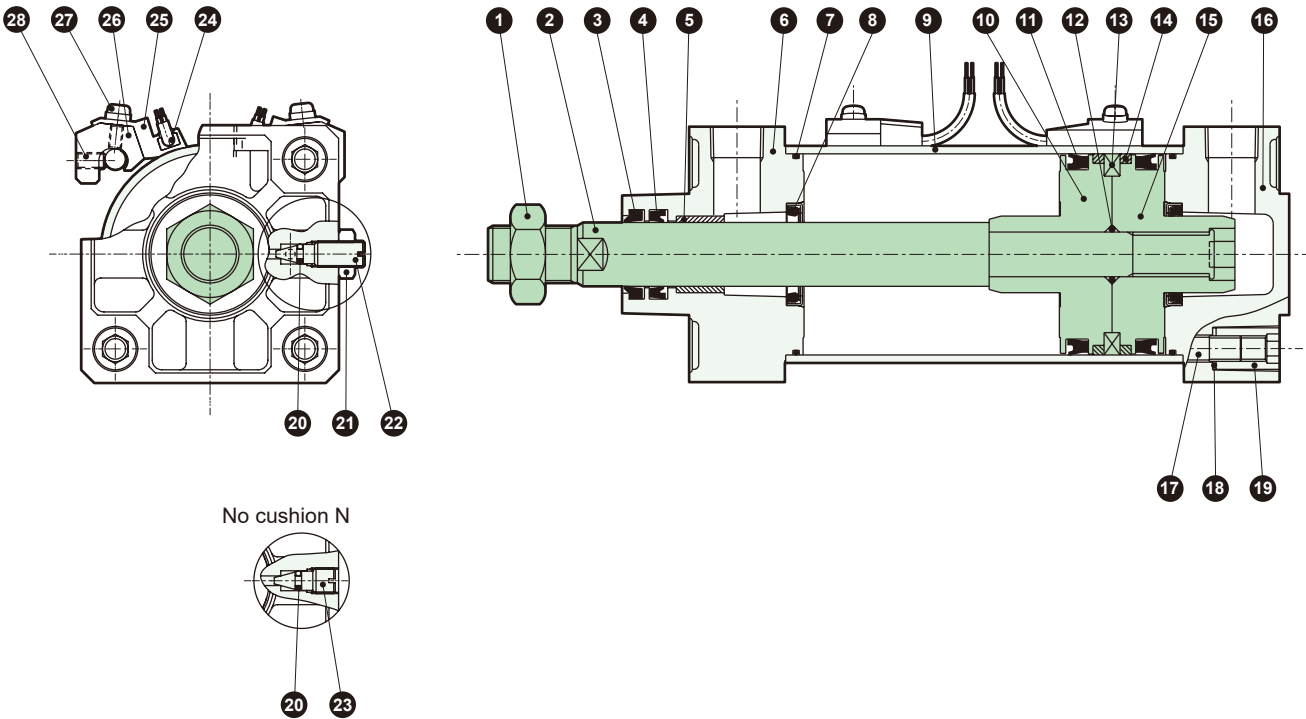


Model No.	Applicable Bore Size (mm)	A	B	C	D	CD	Retaining Ring to Use	Weight (kg)
S1-P-40	40, 50	43.5	36.2	1.15	11.5	12	C-type for Shaft 12	0.04
S1-P-63	63	47.5	40.2	1.15	13.4	14	C-type 14 for Shaft	0.06
S1-P-80	80, 100	64	56.2	1.35	19	20	C-type for shaft 20	0.16

Note: Retaining ring is included.

Internal Structure Diagram/Material

MEMO



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	16	Head Cover	Aluminum Alloy	Painting
2	Piston Rod	Steel	Industrial Hard Chrome Plating	17	Tie Rod	Steel	Zinc Chromate
3	Scraper	Nitrile Rubber		18	Belleville washer	Steel	Black Oxide
4	Rod Packing	Nitrile Rubber		19	Round Nut	Steel	Zinc Chromate
5	Bushing	Oil-Impregnated Bearing Alloy		20	Needle Gasket	Nitrile Rubber	
6	Rod Cover	Aluminum Alloy	Painting	21	Needle nut	Copper Alloy	Nickel plating (only with cushion)
7	Cylinder Gasket	Nitrile Rubber		22	Cushion Needle	Copper Alloy	Nickel plating (only with cushion)
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	23	Cushion plug	Copper Alloy	Nickel plating (only without cushion)
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	With Switch			
10	Piston R	Aluminum Alloy		24	Switch		
11	Piston Packing	Nitrile Rubber		25	Switch holder	Aluminum Alloy	
12	Piston Gasket	Nitrile Rubber		26	Switch mounting base	Aluminum Alloy	
13	Magnet	Plastic		27	With captive washer Phillips pan head screw	Steel	Zinc Chromate
14	Wear Ring	Polyacetal		28	Hexagon socket head set screw	Alloy Steel	Black Oxide
15	Piston H	Aluminum Alloy					

Mounting Bracket Material

Mounting type	Material	Remarks
Foot (LB)	Steel	Painting
Flange (FA, FB, FC)	Steel	Painting
Single clevis (CA), Double clevis (CB)	Cast Iron	Painting
Trunnion (TC, TA, TB)	Cast Iron	Painting

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

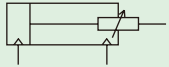


Medium Bore Size Cylinder
Double Acting, Stroke Adjustment Type (Push)

SCA2-P Series

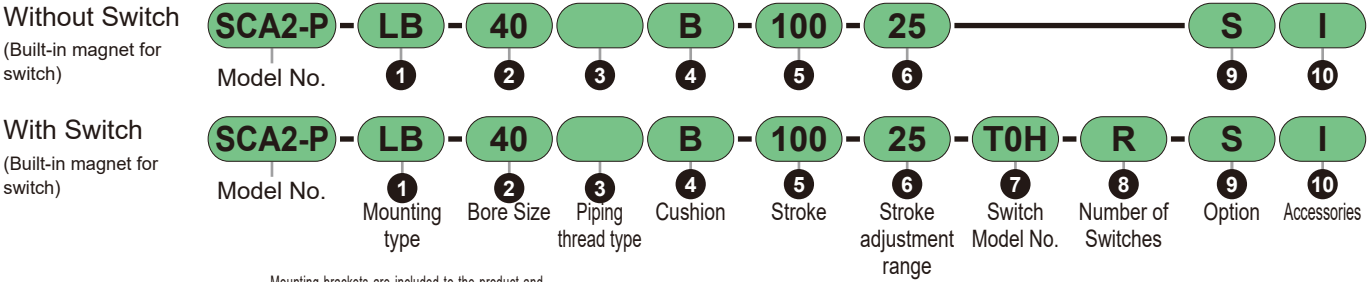
● Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol



RoHS

Model No. Notation Method



1 Mounting type

Mounting brackets are included to the product and shipped. (However, axial foot type, head side flange type, and each trunnion type are shipped assembled.)

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side Flange Type	
TC	Intermediate Trunnion Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TF	Intermediate tapped trunnion type (ø50 to ø100)	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom order)
G	G thread (Custom order)

4 Cushion

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

*1: Even if "B""R" cushion is selected, the PUSH side cushion effect may not be obtained depending on the adjustment stroke.

5 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø40	25 to 600	Every 1 mm
ø50	25 to 600	
ø63	25 to 600	
ø80	25 to 700	
ø100	25 to 800	

Note: For minimum stroke with switch, please refer to P. 650 and 651.

6 Stroke adjustment range (mm)

Code	Content
25	25
50	50
75	75
100	100

7 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
	2-Color Improved Water Resistance	2-wire	—	24 ± 10%	—	5 to 20	T2YD□	-	
	2-Color for AC Magnetic Field		—	24 ± 10%	—	5 to 20	T2YD□	-	
	1-Color Off-Delay Type		—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color No Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color	2-wire	110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

8 Number of Switches

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

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

9 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

SCA2-P Series

Model No. Notation Method

10 Accessories

Code	Content	
I	Single Knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	-A2	With 2 Rod Nuts
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) SCA2-P - - XP5

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

SCA2-P - - FP1

Switch Single Unit Model No. Notation Method

[T type switch]

● Switch body + Mounting bracket set

SCA2 - T0H - 40
Switch Model No. Bore Size

● Switch body only

SW - T0H
Switch Model No.

● Switch mounting bracket set

SCA2 - TS - 40
Mounting bracket Bore Size

*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

● Switch body + Mounting bracket set

SCA2 - T2YD - 40
Switch Model No. Bore Size

● Switch body only

SW - T2YD
Switch Model No.

● Mounting bracket set

SCA2 - T - 40
Bore Size

Switch Single Unit Model No. Notation Method

[T type switch]

● Switch body + Mounting bracket set

SCA2 - T0H - 40
Switch Model No. Bore Size

● Switch body only

SW - T0H
Switch Model No.

● Switch mounting bracket set

SCA2 - TS - 40
Mounting bracket Bore Size

*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

● Switch body + Mounting bracket set

SCA2 - T2YD - 40
Switch Model No. Bore Size

● Switch body only

SW - T2YD
Switch Model No.

● Mounting bracket set

SCA2 - T - 40
Bore Size

Specifications

Item		SCA2-P (Stroke adjustment type, Push)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.1				
Proof Pressure	MPa	1.6				
Ambient Temperature		−10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance		$\begin{smallmatrix} +0.9 \\ 0 \end{smallmatrix}$ (Up to 360), $\begin{smallmatrix} +1.4 \\ 0 \end{smallmatrix}$ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Stroke adjustment range		25, 50, 75, 100				
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With cushion (*1)	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

*1: Excluding PUSH side. The PUSH side may not have a cushion effect depending on the adjustment stroke.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	25
ø50			
ø63		700	
ø80			
ø100		800	

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

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting	Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1
ø40	25 (25)	25 (25)	60 (45)	110 (110)	110 (110)	50 (50)
ø50	25 (25)	25 (25)	25 (25)	135 (135)	135 (135)	60 (60)
ø63	25 (25)	25 (25)	25 (25)	110 (95)	110 (95)	50 (45)
ø80	25 (25)	25 (25)	25 (25)	115 (85)	115 (85)	55 (40)
ø100	25 (25)	25 (25)	25 (25)	125 (95)	125 (95)	60 (45)

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

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

● Minimum stroke with T8 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting	Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1
ø40	25 (25)	25 (25)	50 (35)	95 (85)	95 (85)	45 (40)
ø50	25 (25)	25 (25)	25 (25)	115 (115)	115 (115)	50 (50)
ø63	25 (25)	25 (25)	25 (25)	95 (75)	95 (75)	45 (35)
ø80	25 (25)	25 (25)	25 (25)	110 (70)	110 (70)	50 (35)
ø100	25 (25)	25 (25)	25 (25)	110 (80)	110 (80)	55 (40)

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

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

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting	Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1
ø40	25 (25)	25 (25)	60 (45)	105 (75)	105 (75)	50 (35)
ø50	25 (25)	25 (25)	25 (25)	105 (75)	105 (75)	45 (30)
ø63	25 (25)	25 (25)	25 (25)	110 (80)	110 (80)	50 (35)
ø80	25 (25)	25 (25)	25 (25)	115 (85)	115 (85)	55 (40)
ø100	25 (25)	25 (25)	25 (25)	125 (95)	125 (95)	60 (45)

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

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

● Minimum stroke with T1/T2YD type switch

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

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

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

● Minimum stroke with T2W/T3W/T2WL type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting	Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1
ø40	25 (25)	25 (25)	65 (50)	110 (80)	110 (80)	50 (35)
ø50	25 (25)	25 (25)	25 (25)	110 (80)	110 (80)	50 (35)
ø63	25 (25)	25 (25)	25 (25)	115 (85)	115 (85)	55 (40)
ø80	25 (25)	25 (25)	25 (25)	120 (90)	120 (90)	55 (40)
ø100	25 (25)	25 (25)	25 (25)	130 (100)	130 (100)	60 (45)

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

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

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type 00	Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		T type	
ø40	1.20	1.37	1.61	1.52	1.56	1.58	Refer to the mass described in the switch specifica- tions on P. 971	0.024	0.78
ø50	1.70	1.95	2.19	2.08	2.11	2.24		0.022	0.99
ø63	2.16	2.53	3.25	2.73	2.78	3.01		0.020	1.03
ø80	3.80	4.54	5.66	5.07	5.28	5.14		0.026	2.15
ø100	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-T0H-D Product Weight at 0 mm stroke 1.95 kg Added weight at 200 mm stroke $0.99 \times \frac{200}{100} = 1.98$ kg Weight of 2 T0H 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									

MEMO

Theoretical Thrust Table (Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push/Pull	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push/Pull	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push/Pull	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push/Pull	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push/Pull	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

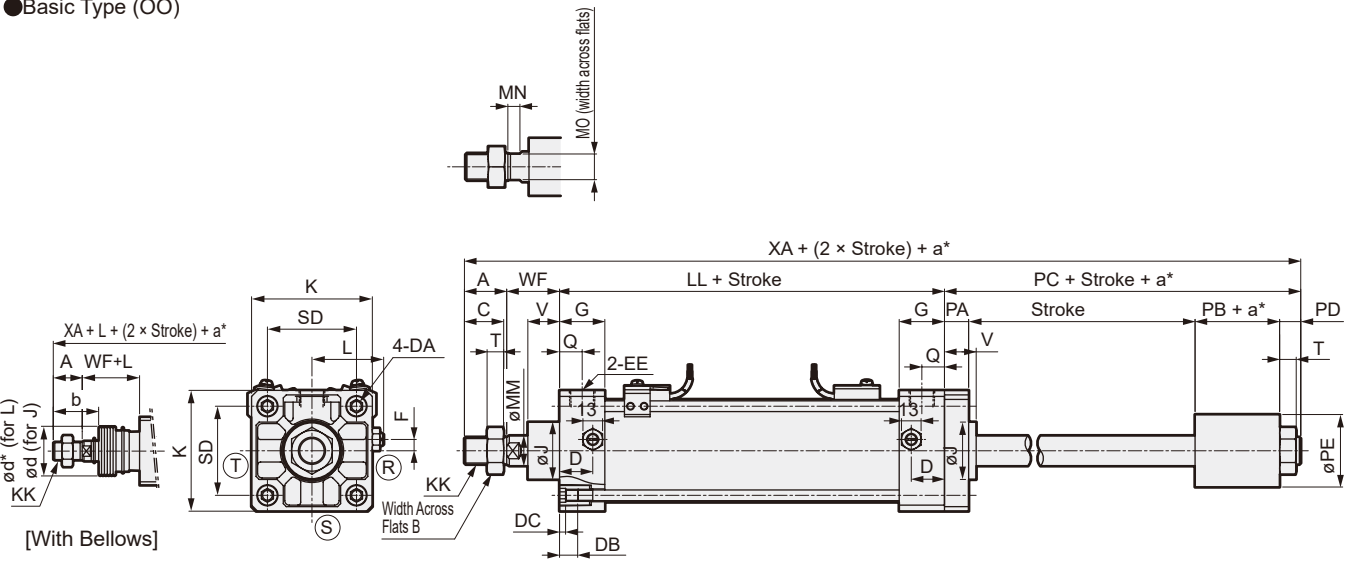
Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
Flange (FA)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100

*1: For the material of the mounting brackets, please refer to P. 646.
*2: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

●Basic Type (OO)



*: a is the adjustment stroke.

Code	Basic Type (OO) Basic Dimensions													
Bore Size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L
ø40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5
ø50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5
ø63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50
ø80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59
ø100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69

Code															
Bore Size (mm)	LL	MM	MN	MO	PA	PB	PC	PD	PE	Q	SD	T	V	WF	XA
ø40	93	16	8	14	12	29	52.5	11.5	40	13	40.5	8	18.5	33.5	201
ø50	101	20	8.5	17	12	35	61	14	48	14	48	11	20.5	37	227
ø63	105	20	8.5	17	16	31	61	14	48	15	59	11	21	35	229
ø80	116	25	11	22	19	33	68	16	60	17	74	13	23.5	48	268
ø100	128	30	13	27	19	50	90	21	70	18	90	16	32	53	316

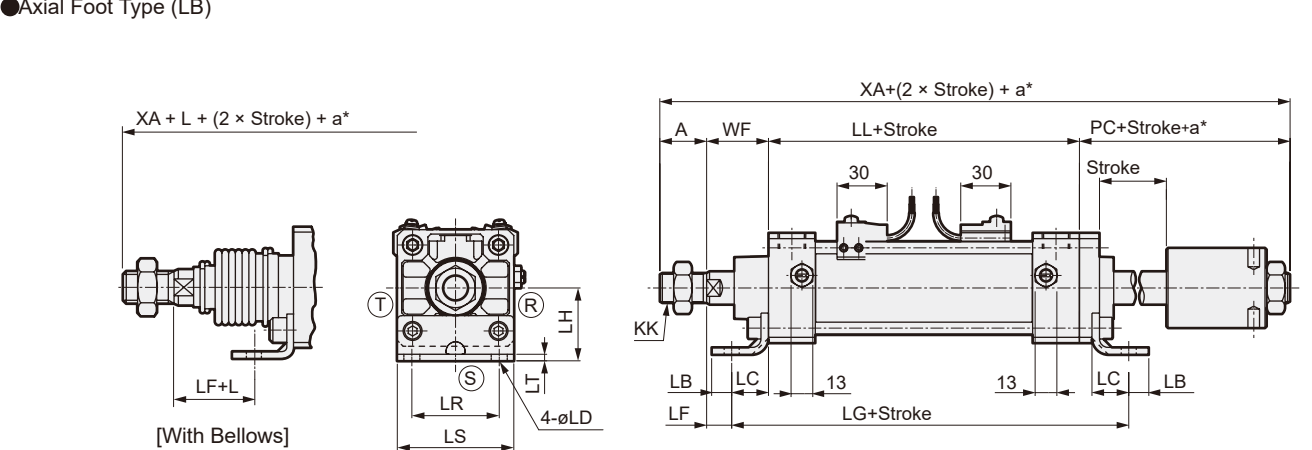
Code	With Bellows										
Bore Size (mm)	L										
	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	47	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	45	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	58.5	53	55	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	69.5	61	65	20	32	42	53	76	98	120	(Stroke/4.5) + 9

- *1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting, Stroke Adjustment Type (Push)

Outline Dimension Drawing

●Axial Foot Type (LB)

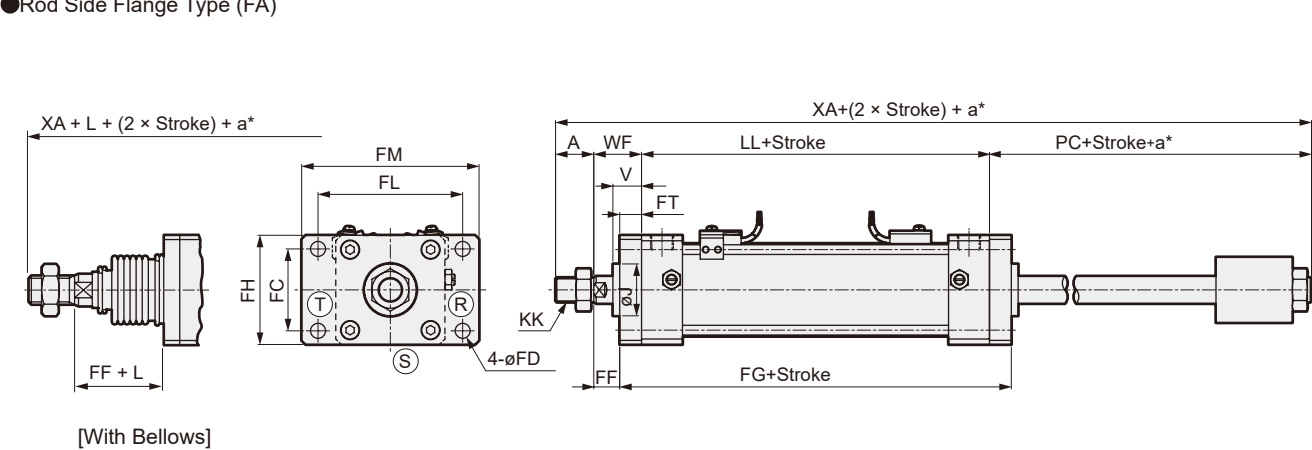


*: a is the adjustment stroke.

Code		Axial Foot Type (LB) Mounting Dimensions														With Bellows								
		A	KK	LL	PC	WF	XA	LB	LC	LD	LF	LG	LH	LR	LS	LT	L							
Bore Size (mm)																	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 When exceeding 500
ø40		22	M14 × 1.5	93	52	33.5	200.5	10	19.5	9	14	140.8	40	40	57	3.2	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50		28	M18 × 1.5	101	61	37	227	12	22	9	15	152.5	40	46	66	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	105	61	35	229	12	30	11	5	176.5	50	60	80	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	116	68	48	268	14	37	14	11	203	60	74	98	6.0	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	128	90	53	316	21	31	14	12	203	67	80	118	6.0	20	32	42	53	76	98	120	(Stroke/4.5) + 9

- *1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: In the case of foot type mounting, the axial pitch dimension of the mounting holes differs from the standard type.
*4: Refer to P. 850 to 853 for dimensions with switch. * "a" indicates the adjustment stroke.
*5: For outer dimensions diagram of accessories, refer to P. 644.

●Rod Side Flange Type (FA)



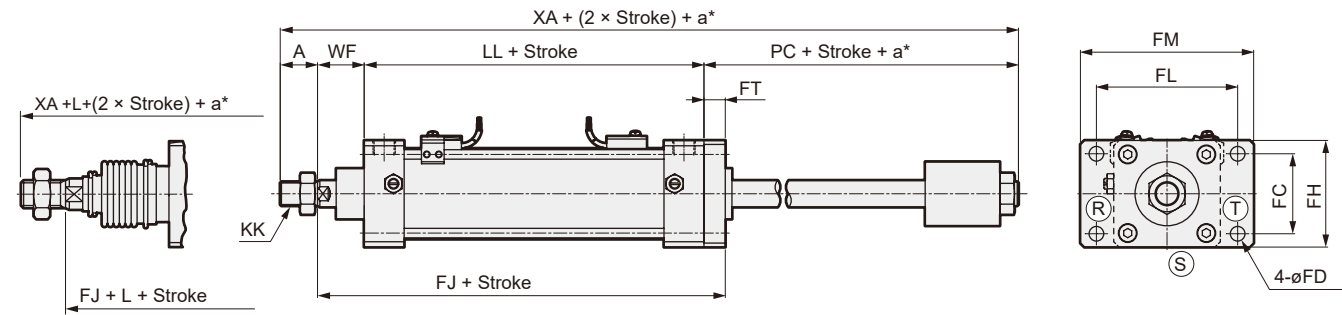
*: a is the adjustment stroke.

Code	Rod Side Flange Type (FA) Mounting Dimensions															With Bellows								
	A	J	KK	LL	PC	V	WF	XA	FC	FD	FF	FG	FH	FL	FM	FT	L							
Bore Size (mm)																	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 When exceeding 500
ø40	22	31	M14 × 1.5	93	52.5	18.5	33.5	201	40	9	21.5	117	57	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	38	M18 × 1.5	101	61	20.5	37	227	47	9	25	125	65	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	38	M18 × 1.5	105	61	21	35	229	60	11	19	137	80	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	43	M22 × 1.5	116	68	23.5	48	268	74	14	29	154	98	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	51	M26 × 1.5	128	90	32	53	316	88	14	34	166	118	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

- *1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

●Rod side flange type (FB)



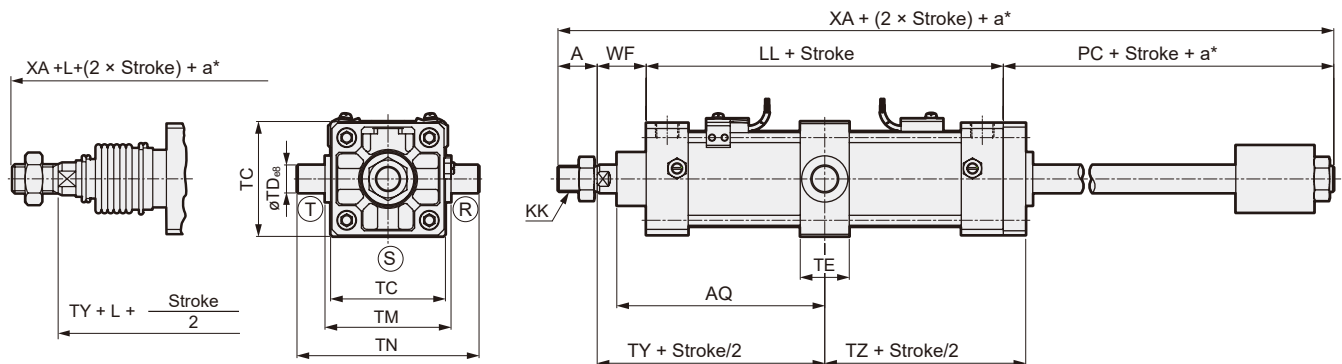
[With Bellows]

*: a is the adjustment stroke.

Code	Rod Side Flange Type (FB) Mounting Dimensions													With Bellows							
	A	KK	LL	PC	WF	XA	FC	FD	FJ	FH	FL	FM	FT	L							
Bore Size (mm)														50 or less	Over 50 to 100	Over 100 to 150	150 Exceeding and 200 or less	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø40	22	M14 × 1.5	93	52.5	33.5	201	40	9	138.5	57	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	61	37	227	47	9	150	65	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	61	35	229	60	11	156	80	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	68	48	268	74	14	183	98	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	90	53	316	88	14	200	118	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Intermediate trunnion type (TC)



[With Bellows]

*: a is the adjustment stroke.

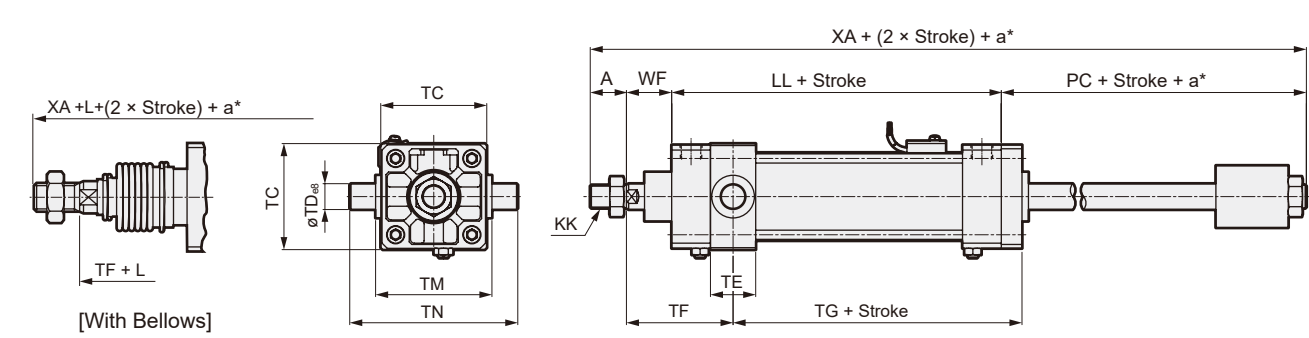
Code	Intermediate Trunnion Type (TC) Mounting Dimensions														With Bellows							
	A	KK	LL	PC	WF	XA	AQ	TC	TD	TE	TY	TZ	TM	TN	L							
Bore Size (mm)															50 or less	Over 50 to 100	Over 100 to 150	150 Exceeding and 200 or less	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø40	22	M14 × 1.5	93	52.5	33.5	201	46.5 + $\frac{\text{Stroke}}{2}$	57	16	30	80	58.5	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	61	37	227	50.5 + $\frac{\text{Stroke}}{2}$	67	18	30	87.5	62.5	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	61	35	229	52.5 + $\frac{\text{Stroke}}{2}$	82	20	35	87.5	68.5	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	68	48	268	58 + $\frac{\text{Stroke}}{2}$	100	25	40	106	77	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	90	53	316	64 + $\frac{\text{Stroke}}{2}$	121	35	50	117	83	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Stroke Adjustment Type (Push)

Outline Dimension Drawing

●Rod side trunnion type (TA)



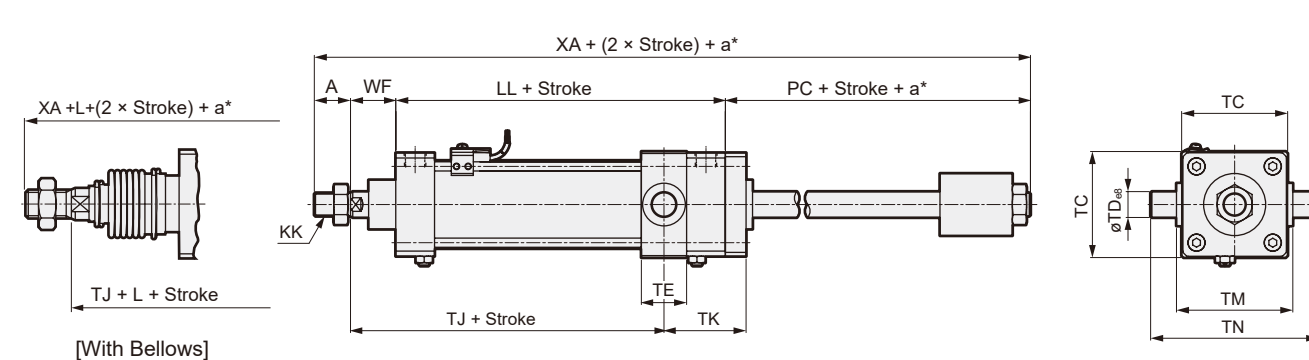
[With Bellows]

*: a is the adjustment stroke.

Code	Rod Side Trunnion Type (TA) Mounting Dimensions													With Bellows							
	A	KK	LL	PC	WF	XA	TC	TD	TE	TF	TG	TM	TN	L							
Bore Size (mm)														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 When exceeding 500
ø40	22	M14 × 1.5	93	52.5	33.5	201	57	16	30	74.5	64	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	61	37	227	67	18	30	80	60.5	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	61	35	229	82	20	35	82.5	60.5	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	68	48	268	100	25	40	102	65.5	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	90	53	316	121	35	50	114	71	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Head Side Trunnion Type (TB)



[With Bellows]

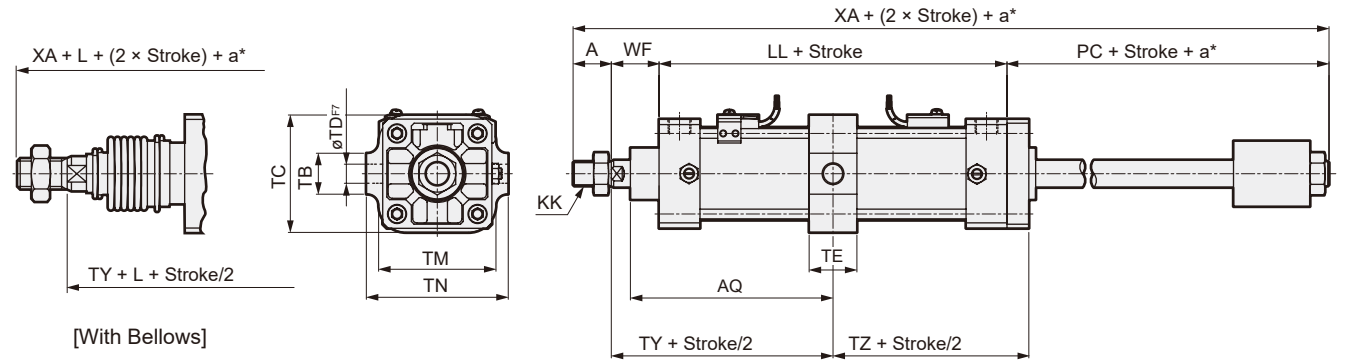
*: a is the adjustment stroke.

Code	Head Side Trunnion Type (TB) Mounting Dimensions													With Bellows							
	A	KK	LL	PC	WF	XA	TC	TD	TE	TJ	TK	TM	TN	L							
Bore Size (mm)														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 When exceeding 500
ø40	22	M14 × 1.5	93	52.5	33.5	201	57	16	30	85	53.5	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	61	37	227	67	18	30	94.5	55.5	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	61	35	229	82	20	35	92	64	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	68	48	268	100	25	40	109.5	73.5	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	90	53	316	121	35	50	119.5	80.5	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

●Intermediate tapped trunnion type (TF)

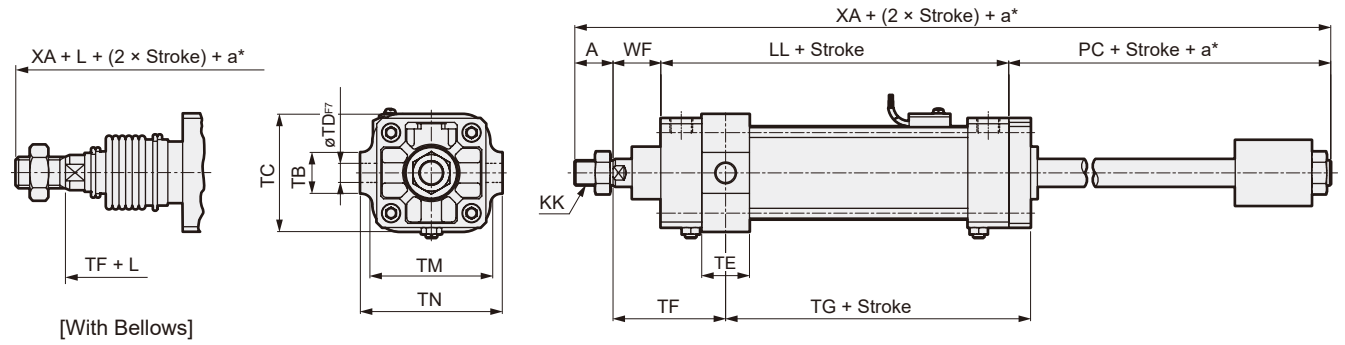


*: a is the adjustment stroke.

Code	Intermediate tapped trunnion type (TF) Mounting dimensions														With Bellows								
	A	KK	LL	PC	WF	XA	AQ	TB	TC	TD	TE	TY	TZ	TM	TN	L							
Bore Size (mm)																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 When exceeding 500
ø50	28	M18 × 1.5	101	61	37	227	50.5 + $\frac{\text{Stroke}}{2}$	26	70	12	30	87.5	62.5	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	61	35	229	52.5 + $\frac{\text{Stroke}}{2}$	30	86	14	35	87.5	68.5	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	68	48	268	58 + $\frac{\text{Stroke}}{2}$	35	105	20	40	106	77	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	90	53	316	64 + $\frac{\text{Stroke}}{2}$	40	123	20	40	117	83	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: $\textcircled{R}$ $\textcircled{S}$ $\textcircled{T}$ indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side tapped trunnion type (TD)



*: a is the adjustment stroke.

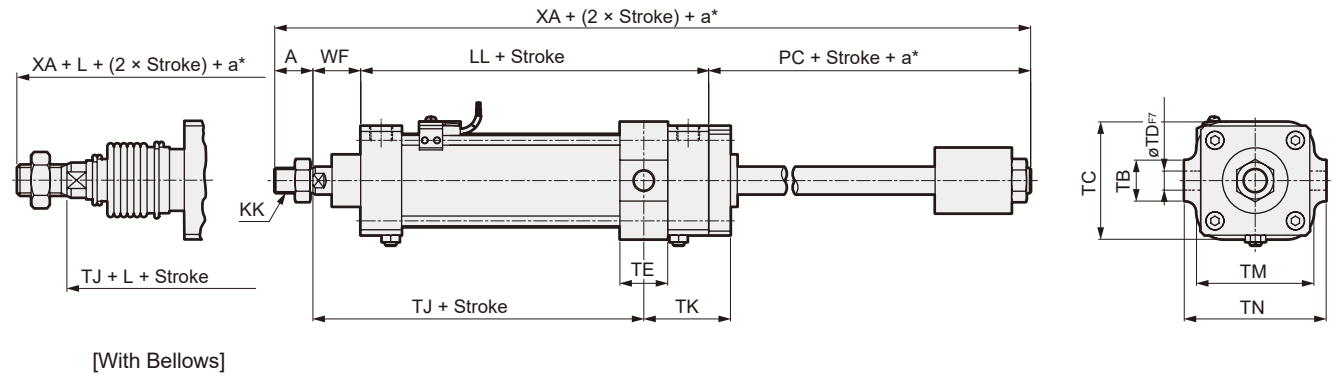
Code	Rod side tapped trunnion type (TD) Mounting dimensions														With Bellows							
	L														L							
Bore Size (mm)	A	KK	LL	PC	WF	XA	TB	TC	TD	TE	TF	TG	TM	TN	50 or less	Over 50 to 100	Over 100 to 150	150 Exceeding and 200 or less	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø50	28	M18 × 1.5	101	61	37	227	26	70	12	30	80	70	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	61	35	229	30	86	14	35	82.5	73.5	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	68	48	268	35	105	20	40	102	81	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	90	53	316	40	123	20	40	109	91	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting, Stroke Adjustment Type (Push)

Outline Dimension Drawing

●Head side tapped trunnion type (TE)



*: a is the adjustment stroke.

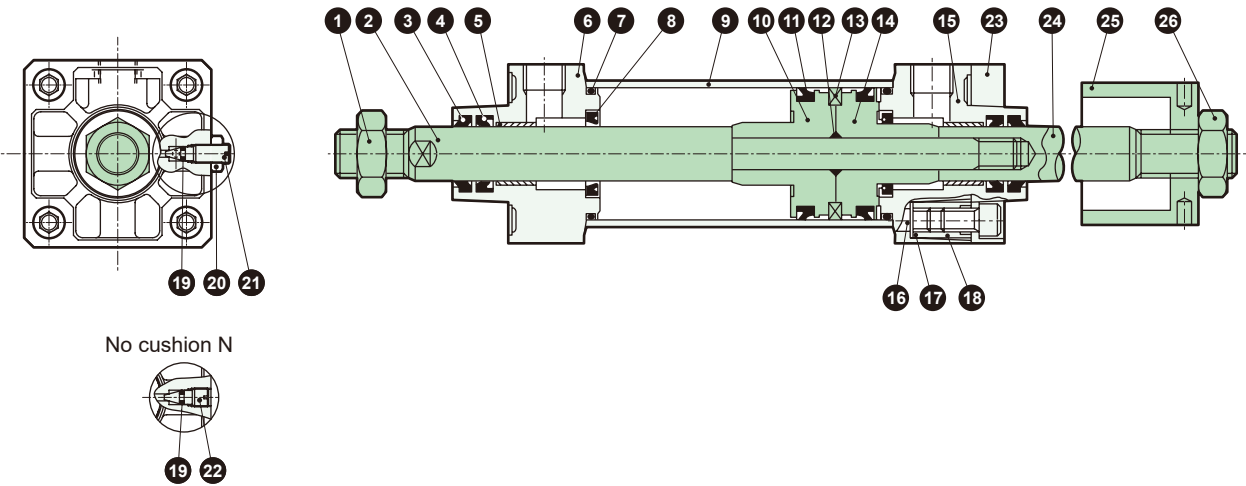
Code	Head side tapped trunnion type (TE) Mounting dimensions														With Bellows							
	L														L							
Bore Size (mm)	A	KK	LL	PC	WF	XA	TB	TC	TD	TE	TJ	TK	TM	TN	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø50	28	M18 × 1.5	101	61	37	227	26	70	12	30	94.5	55.5	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	61	35	229	30	86	14	35	92	64	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	68	48	268	35	105	20	40	109.5	73.5	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	90	53	316	40	123	20	40	124.5	75.5	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Internal Structure Diagram/Material

MEMO

General Type



SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	14	Piston H	Aluminum Alloy	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	15	Head Cover	Aluminum Alloy	Painting
3	Scraper	Nitrile Rubber		16	Tie Rod	Steel	Zinc Chromate
4	Rod Packing	Nitrile Rubber		17	Belleville washer	Steel	Black Oxide
5	Bushing	Oil-Impregnated Bearing Alloy		18	Round Nut	Steel	Zinc Chromate
6	Rod Cover	Aluminum Alloy	Painting	19	Needle Gasket	Nitrile Rubber	
7	Cylinder Gasket	Nitrile Rubber		20	Needle nut	Copper Alloy	Nickel Plating
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	21	Cushion Needle	Copper Alloy	Nickel Plating
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	22	Cushion plug	Copper Alloy	Nickel Plating
10	Piston R	Aluminum Alloy		23	Plate	Steel	Manganese phosphate
11	Piston Packing	Nitrile Rubber		24	Piston rod (2)	Steel	Industrial Hard Chrome Plating
12	Piston Gasket	Nitrile Rubber		25	Adjusting Stopper	Steel	Manganese phosphate
13	Magnet	Plastic		26	Lock Nut	Steel	Zinc Chromate

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

Cylinder Switch

Ending

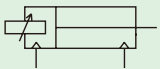


Medium Bore Size Cylinder
Double Acting, Stroke Adjustment Type (Retracting)

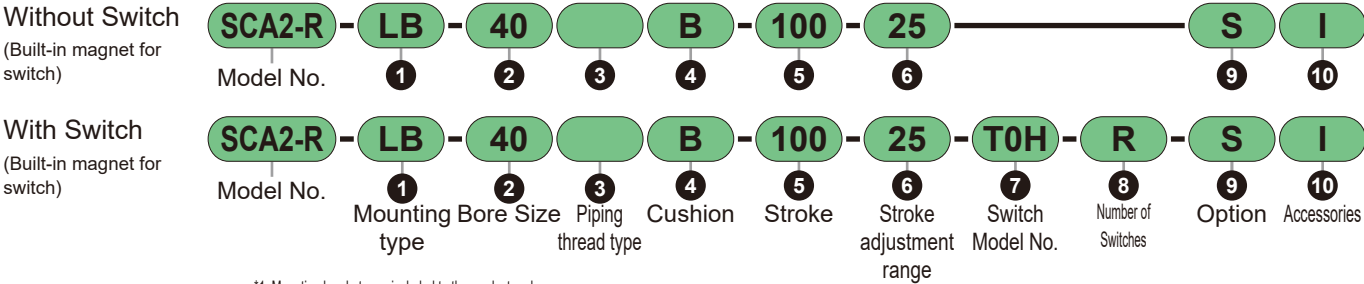
SCA2-R Series

● Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol



Model No. Notation Method



1 Mounting type

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
TC	Intermediate Trunnion Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TF	Intermediate tapped trunnion type (ø40 cannot be selected)	
TD	Rod side tapped trunnion type (ø40 cannot be selected)	
TE	Head side tapped trunnion type (ø40 cannot be selected)	

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom order)
G	G thread (Custom order)

4 Cushion

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

*1: Even if cushions "B" and "R" are selected, the PULL side cushioning may not be effective, depending on the adjustment stroke.

5 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø40	25 to 600	Every 1 mm
ø50	25 to 600	
ø63	25 to 600	
ø80	25 to 700	
ø100	25 to 800	

Note: For the minimum stroke with switch, please refer to P. 664 and P. 665.

6 Stroke adjustment range (mm)

Code	Content
25	25
50	50
75	75
100	100

7 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3H□	T3V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
			—	24 ± 10%	—	5 to 20	T2YD□	—	
			—	24 ± 10%	—	5 to 20	T2YDT□	—	
			—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+) 4PIN (-) Lead Wire 0.3 m

*5

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

8 Number of Switches

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

*1: When mounting styles TA, TD, TB, or TE are selected, the number of switches is limited to "H" (1 pc. on head side) for TA and TD, and "R" (1 pc. on rod side) for TB and TE.

9 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

SCA2-R Series

Model No. Notation Method

10 Accessories

Code	Content	
I	Single knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	Rod end Shape change	Refer to Ending P. 11.
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows		

Model No. Example) SCA2-R - - XP5

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

SCA2-R - - FP1

Switch Single Unit Model No. Notation Method

[T type switch]

● Switch body + Mounting bracket set

SCA2 - T0H - 40
7 2
Switch Bore Size
Model No.

● Switch body only

SW - T0H
7
Switch
Model No.

● Switch Mounting Bracket Set

SCA2 - TS - 40
2
Mounting bracket Bore Size

*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

● Switch body + Mounting bracket set

SCA2 - T2YD - 40
7 2
Switch Bore Size
Model No.

● Switch body only

SW - T2YD
7
Switch
Model No.

● Mounting bracket set

SCA2 - T - 40
2
Bore Size

Specifications

Item		SCA2-R (Stroke adjustment type, Pull)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	−10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Stroke adjustment range	mm	25, 50, 75, 100				
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With cushion (*1)	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

*1: Excluding PULL side. The PULL side may not have a cushion effect depending on the adjustment stroke.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	25
ø50			
ø63		700	
ø80			
ø100			

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

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1	1
ø40	25 (25)	25 (25)	60 (45)	110 (110)	110 (110)	50 (50)	50 (50)
ø50	25 (25)	25 (25)	25 (25)	135 (135)	135 (135)	60 (60)	60 (60)
ø63	25 (25)	25 (25)	25 (25)	110 (95)	110 (95)	50 (45)	50 (45)
ø80	25 (25)	25 (25)	25 (25)	115 (85)	115 (85)	55 (40)	55 (40)
ø100	25 (25)	25 (25)	25 (25)	125 (95)	125 (95)	60 (45)	60 (45)

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

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

●Minimum stroke with T8 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1	1
ø40	25 (25)	25 (25)	50 (35)	95 (85)	95 (85)	45 (40)	45 (40)
ø50	25 (25)	25 (25)	25 (25)	115 (115)	115 (115)	50 (50)	50 (50)
ø63	25 (25)	25 (25)	25 (25)	95 (75)	95 (75)	45 (35)	45 (35)
ø80	25 (25)	25 (25)	25 (25)	100 (70)	100 (70)	50 (35)	50 (35)
ø100	25 (25)	25 (25)	25 (25)	110 (80)	110 (80)	55 (40)	55 (40)

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

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

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1	1
ø40	25 (25)	25 (25)	60 (45)	105 (75)	105 (75)	50 (35)	50 (35)
ø50	25 (25)	25 (25)	25 (25)	105 (75)	105 (75)	45 (30)	45 (30)
ø63	25 (25)	25 (25)	25 (25)	110 (80)	110 (80)	50 (35)	50 (35)
ø80	25 (25)	25 (25)	25 (25)	115 (85)	115 (85)	55 (40)	55 (40)
ø100	25 (25)	25 (25)	25 (25)	125 (95)	125 (95)	60 (45)	60 (45)

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

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

● Minimum stroke with T1/T2YD type switch

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

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

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

● Minimum stroke with T2W/T3W/T2WL type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	2	1	2	1	2	1	1
ø40	25 (25)	25 (25)	65 (50)	110 (80)	110 (80)	50 (35)	50 (35)
ø50	25 (25)	25 (25)	25 (25)	110 (80)	110 (80)	50 (35)	50 (35)
ø63	25 (25)	25 (25)	25 (25)	115 (85)	115 (85)	55 (40)	55 (40)
ø80	25 (25)	25 (25)	25 (25)	120 (90)	120 (90)	55 (40)	55 (40)
ø100	25 (25)	25 (25)	25 (25)	130 (100)	130 (100)	60 (45)	60 (45)

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

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

Cylinder Weight

(Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic Type (00)	Foot Type (LB)	Flange type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion type (TA, TB, TC)		T type	
ø40	0.96	1.13	1.37	1.28	1.32	1.34	Refer to the mass described in the switch specifications on P. 971	0.024	0.55
ø50	1.45	1.70	1.94	1.83	1.86	1.99		0.022	0.71
ø63	1.88	2.25	2.97	2.45	2.50	2.73		0.020	0.75
ø80	3.15	3.89	5.01	4.42	4.63	4.49		0.026	1.26
ø100	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-T0H-D Product Weight at 0 mm stroke 1.70 kg Added weight at 200 mm stroke $0.71 \times \frac{200}{100} = 1.42$ kg Weight of 2 T0H switches.....$0.018 \times 2 = 0.036$ kg Weight of 2 mounting brackets$0.022 \times 2 = 0.044$ kg Product Weight $1.70 + 1.42 + 0.036 + 0.044 = 3.200$ kg									

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06 × 10 ²	1.58 × 10 ²	2.11 × 10 ²	3.17 × 10 ²	4.22 × 10 ²	5.28 × 10 ²	6.33 × 10 ²	7.39 × 10 ²	8.44 × 10 ²	9.50 × 10 ²	1.06 × 10 ³
ø50	Push	98.2	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	82.5	1.65 × 10 ²	2.47 × 10 ²	3.30 × 10 ²	4.95 × 10 ²	6.60 × 10 ²	8.25 × 10 ²	9.90 × 10 ²	1.15 × 10 ³	1.32 × 10 ³	1.48 × 10 ³	1.65 × 10 ³
ø63	Push	1.56 × 10 ²	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	1.40 × 10 ²	2.80 × 10 ²	4.20 × 10 ²	5.61 × 10 ²	8.41 × 10 ²	1.12 × 10 ³	1.40 × 10 ³	1.68 × 10 ³	1.96 × 10 ³	2.24 × 10 ³	2.52 × 10 ³	2.80 × 10 ³
ø80	Push	2.51 × 10 ²	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	2.27 × 10 ²	4.54 × 10 ²	6.80 × 10 ²	9.07 × 10 ²	1.36 × 10 ³	1.81 × 10 ³	2.27 × 10 ³	2.72 × 10 ³	3.17 × 10 ³	3.63 × 10 ³	4.08 × 10 ³	4.54 × 10 ³
ø100	Push	3.93 × 10 ²	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	3.57 × 10 ²	7.15 × 10 ²	1.07 × 10 ³	1.43 × 10 ³	2.14 × 10 ³	2.86 × 10 ³	3.57 × 10 ³	4.29 × 10 ³	5.00 × 10 ³	5.72 × 10 ³	6.43 × 10 ³	7.15 × 10 ³

Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
Flange (FA)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100

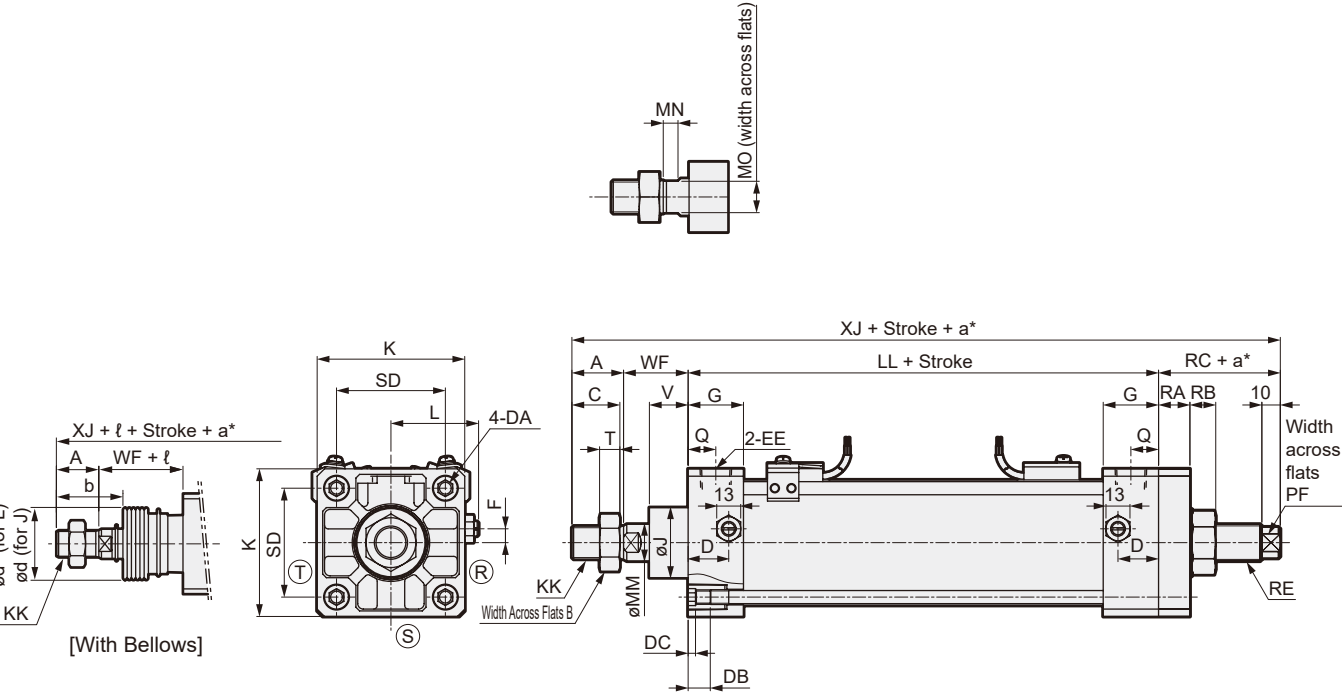
*1: For the material of the mounting brackets, please refer to P. 646.

*2: Mounting bolts are included to each mounting bracket.

MEMO

Outline Dimension Drawing

●Basic Type (OO)



*: a is the adjustment stroke.

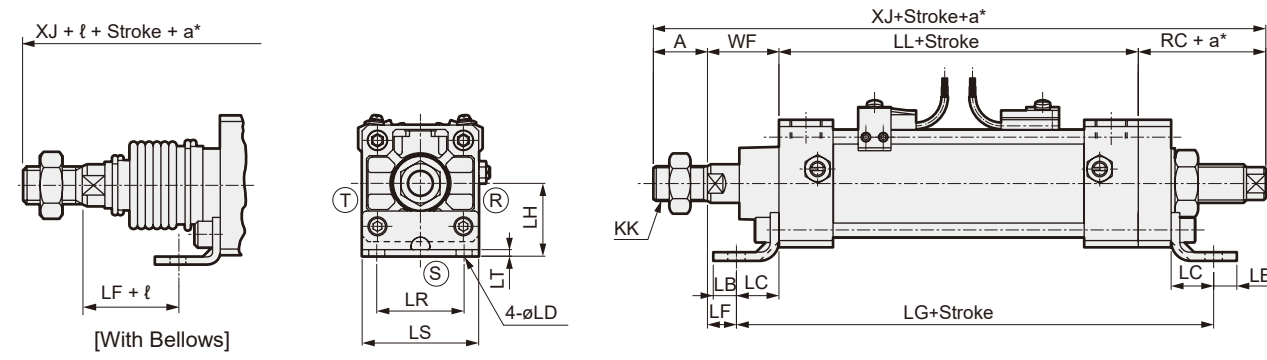
Code	Basic Type (OO) Basic Dimensions													
	Bore Size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK
	ø40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14 × 1.5
	ø50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18 × 1.5
	ø63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18 × 1.5
	ø80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22 × 1.5
	ø100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26 × 1.5
Code	With Bellows													
	Bore Size (mm)	MM	MN	MO	PF	Q	RA	RB	RC	RE	SD	T	V	WF
	ø40	16	8	14	11	13	14	11	35	M16 × 1.5	40.5	8	18.5	33.5
	ø50	20	8.5	17	14	14	17	14	41	M20 × 1.5	48	11	20.5	37
	ø63	20	8.5	17	14	15	17	14	41	M20 × 1.5	59	11	21	35
	ø80	25	11	22	17	17	20	16	46	M24 × 1.5	74	13	23.5	48
	ø100	30	13	27	17	18	20	16	46	M24 × 1.5	90	16	32	53
Code	With Bellows													
	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 When exceeding 500		
	ø40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8		
	ø50	47	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5		
	ø63	45	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5		
	ø80	58.5	53	55	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5		
	ø100	69.5	61	65	20	32	42	53	76	98	120	(Stroke/4.5) + 9		

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double-acting, Stroke adjustment type

Outline Dimension Drawing

●Axial Foot Type (LB)

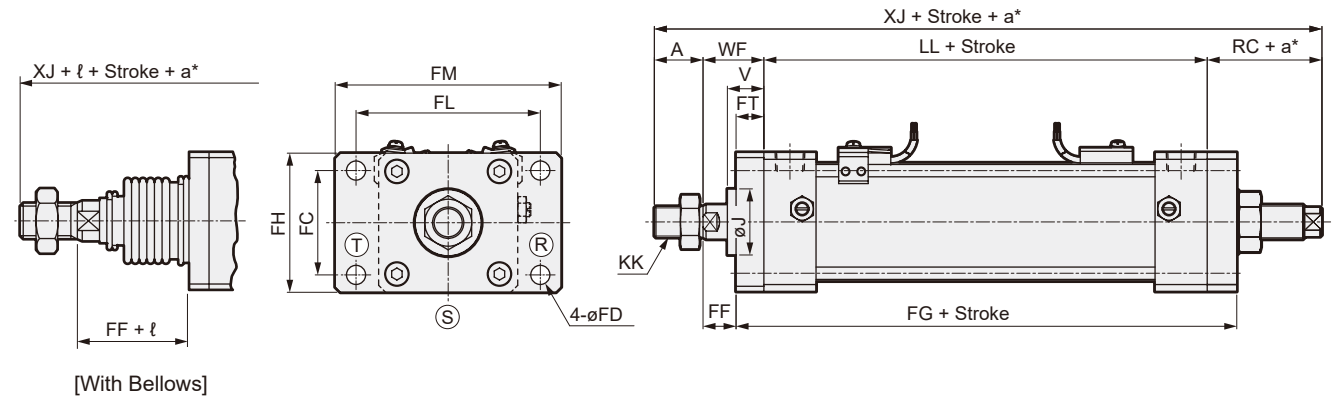


*: a is the adjustment stroke.

Code	Axial Foot Type (LB) Mounting Dimensions													
	Bore Size (mm)	A	KK	LL	RC	WF	XJ	LB	LC	LD	LF	LG	LH	LR
	ø40	22	M14 × 1.5	93	35	33.5	183.5	10	19.5	9	14	132	40	40
	ø50	28	M18 × 1.5	101	41	37	207	12	22	9	15	145	40	46
	ø63	28	M18 × 1.5	105	41	35	209	12	30	11	5	165	50	60
	ø80	36	M22 × 1.5	116	46	48	246	14	37	14	11	190	60	74
	ø100	45	M26 × 1.5	128	46	53	272	21	31	14	22	190	67	80
Code	With Bellows													
	Bore Size (mm)	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 When exceeding 500					
	ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8					
	ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
	ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
	ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5					
	ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9					

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: In the case of foot type mounting, the axial pitch dimension of the mounting holes differs from the standard type.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

●Rod Side Flange Type (FA)



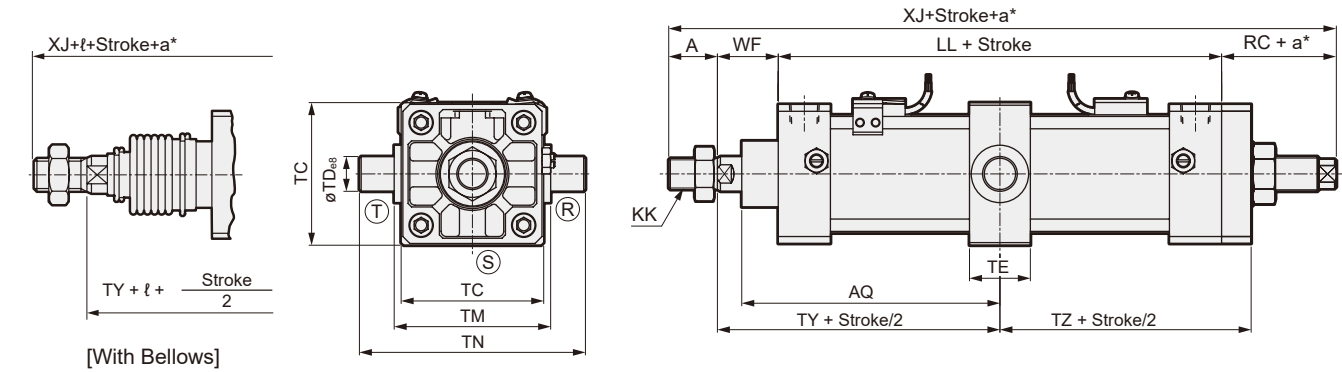
*: a is the adjustment stroke.

Code	Rod Side Flange Type (FA) Mounting Dimensions													
	Bore Size (mm)	A	J	KK	LL	RC	V	WF	XJ	FC	FD	FF	FG	FH
	ø40	22	31	M14 × 1.5	93	35	18.5	33.5	183.5	40	9	21.5	119	57
	ø50	28	38	M18 × 1.5	101	41	20.5	37	207	47	9	25	130	65
	ø63	28	38	M18 × 1.5	105	41	21	35	209	60	11	19	138	80
	ø80	36	43	M22 × 1.5	116	46	23.5	48	246	74	14	29	155	98
	ø100	45	51	M26 × 1.5	128	46	32	53	272	88	14	34	167	118
Code	With Bellows													
	Bore Size (mm)	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 When exceeding 500					
	ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8					
	ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
	ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
	ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5					
	ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9					

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

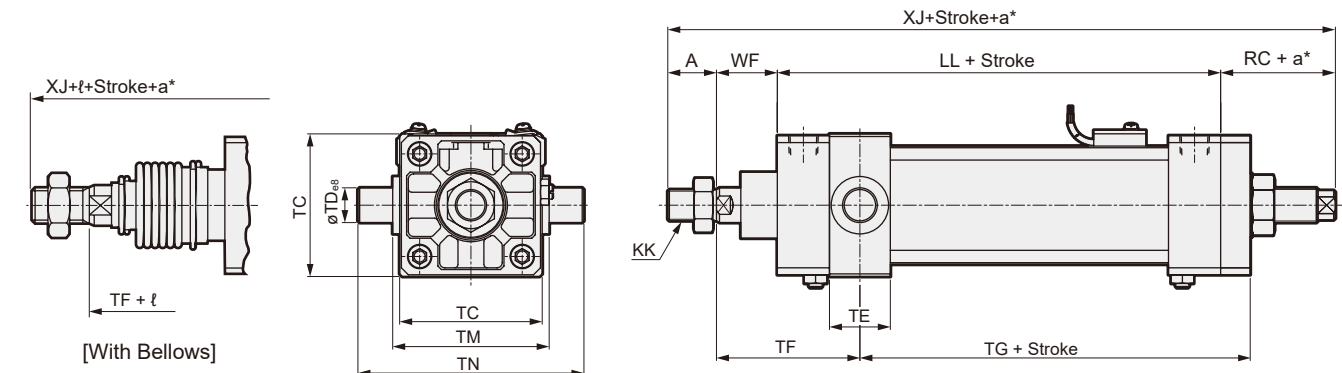
●Intermediate trunnion type (TC)



</

*1: RST indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side trunnion type (TA)



*: a is the adjustment stroke

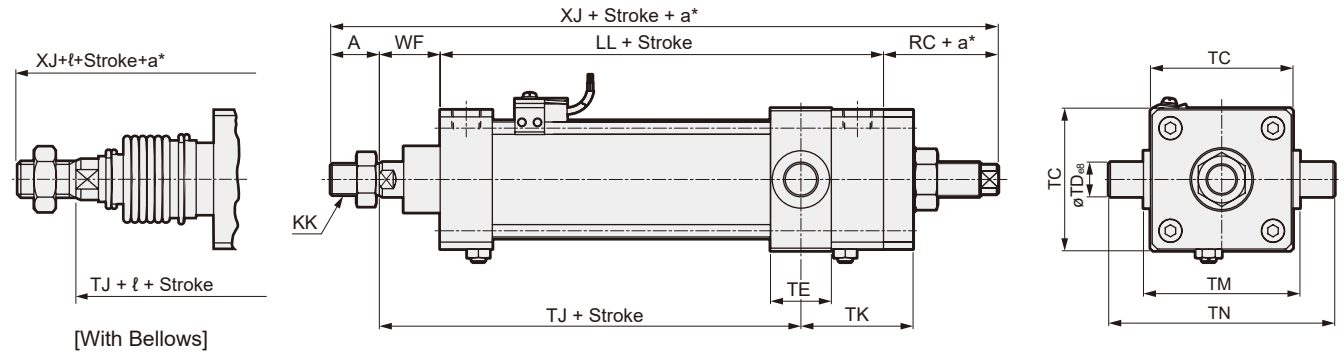
Code	Rod Side Trunnion Type (TA) Mounting Dimensions													With Bellows							
	A	KK	LL	RC	WF	XJ	TC	TD	TE	TF	TG	TM	TN	ℓ							
Bore Size (mm)														50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø40	22	M14 × 1.5	93	35	33.5	183.5	57	16	30	74.5	66	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	41	37	207	67	18	30	80	75	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	41	35	209	82	20	35	82.5	74.5	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	46	48	246	100	25	40	102	82	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	46	53	272	121	35	50	114	87	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the ℓ dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting, Stroke Adjustment Type (Retracting)

Outline Dimension Drawing

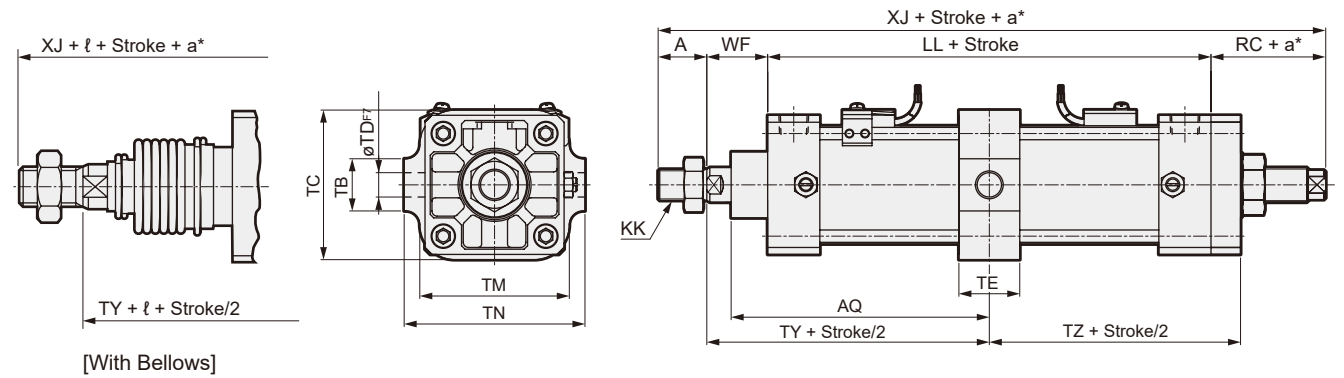
●Head Side Trunnion Type (TB)



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*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the ℓ dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Intermediate tapped trunnion type (TF)

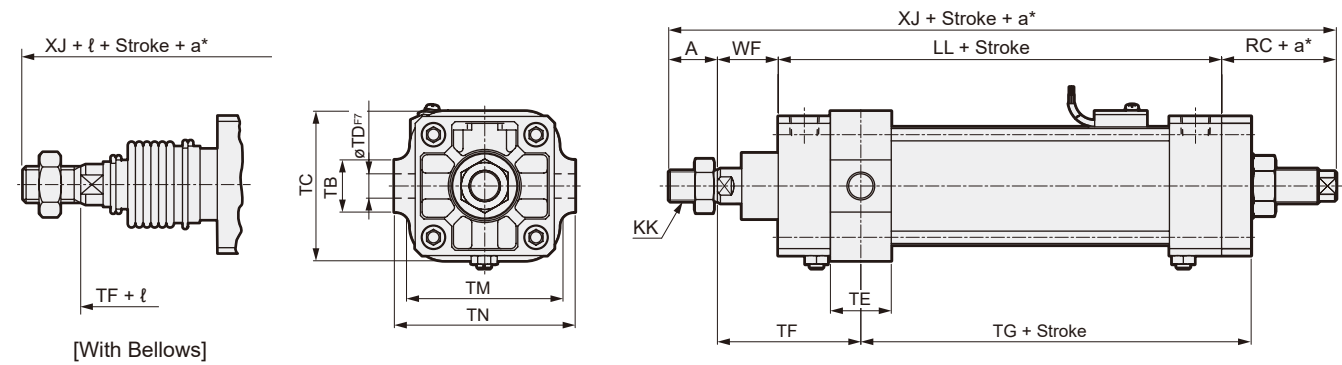


</

*1: RST indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Rod side tapped trunnion type (TD)

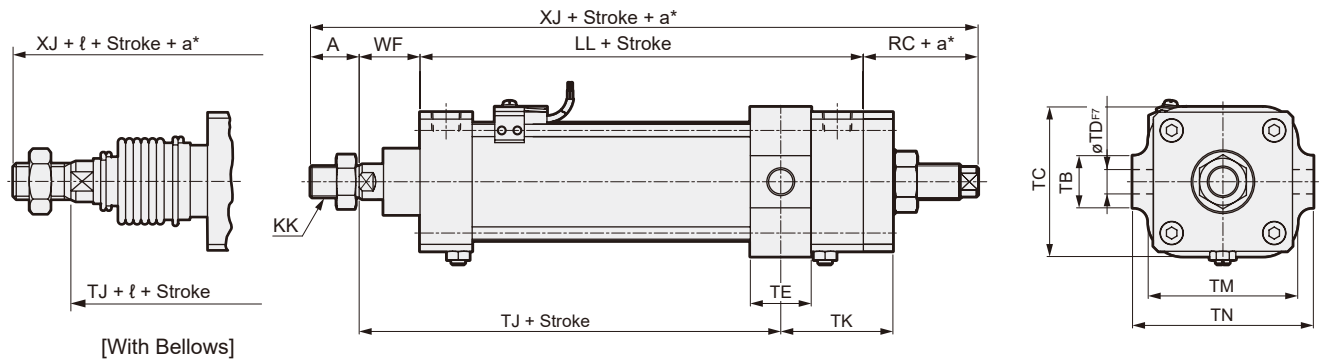


*: a is the adjustment stroke.

Code	Rod side tapped trunnion type (TD) Mounting dimensions														With Bellows							
															ℓ							
Bore Size (mm)	A	KK	LL	RC	WF	XJ	TB	TC	TD	TE	TF	TG	TM	TN	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 When exceeding 500
ø50	28	M18 × 1.5	101	41	37	207	26	70	12	30	80	75	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	41	35	209	30	86	14	35	82.5	74.5	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	46	48	246	35	105	20	40	102	82	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	46	53	272	40	123	20	40	109	92	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the ℓ dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Head side tapped trunnion type (TE)



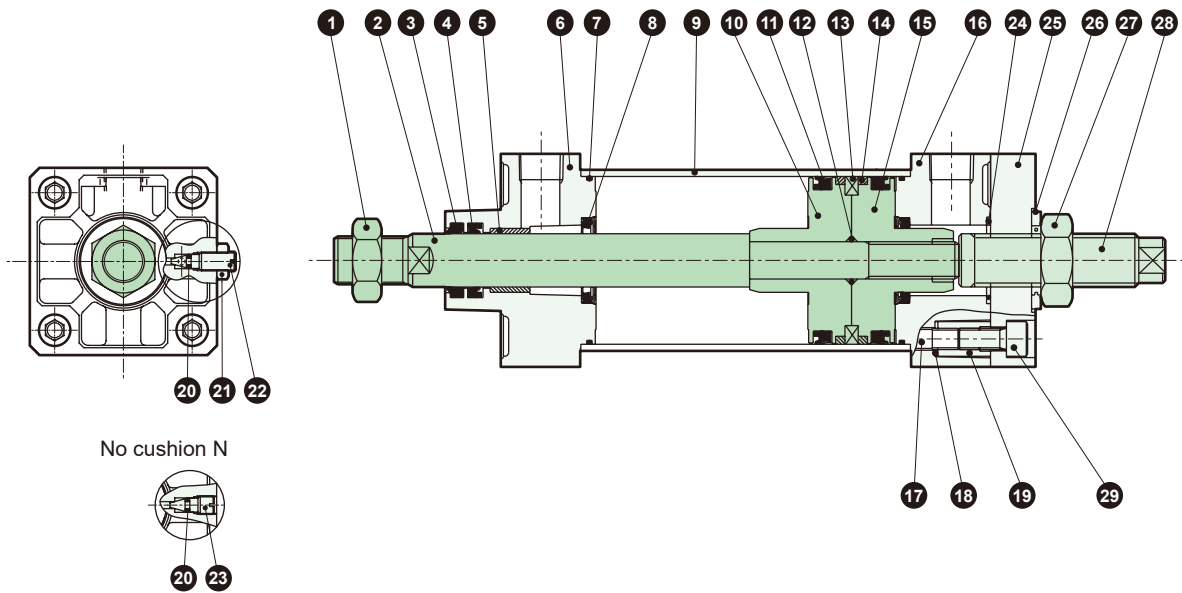
*: a is the adjustment stroke.

Code	Head side tapped trunnion type (TE) Mounting dimensions														With Bellows							
															ℓ							
Bore Size (mm)	A	KK	LL	RC	WF	XJ	TB	TC	TD	TE	TJ	TK	TM	TN	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 When exceeding 500
ø50	28	M18 × 1.5	101	41	37	207	26	70	12	30	94.5	60.5	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	41	35	209	30	86	14	35	92	65	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	46	48	246	35	105	20	40	109.5	74.5	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	46	53	272	40	123	20	40	124.5	76.5	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the ℓ dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Double Acting, Stroke Adjustment Type (Retracting)

Internal Structure Diagram/Material



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	16	Head Cover	Aluminum Alloy	Painting
2	Piston Rod	Steel	Industrial Hard Chrome Plating	17	Tie Rod	Steel	Zinc Chromate
3	Scraper	Nitrile Rubber		18	Belleville washer	Steel	Black Oxide
4	Rod Packing	Nitrile Rubber		19	Round Nut	Steel	Zinc Chromate
5	Bushing	Oil-Impregnated Bearing Alloy		20	Needle Gasket	Nitrile Rubber	
6	Rod Cover	Aluminum Alloy	Painting	21	Needle nut	Copper Alloy	Nickel Plating
7	Cylinder Gasket	Nitrile Rubber		22	Cushion Needle	Copper Alloy	Nickel Plating
8	Cushion Packing	Nitrile Rubber, Steel	(Only with cushion)	23	Cushion plug	Copper Alloy	Nickel Plating
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	24	Head cover gasket	Nitrile Rubber	
10	Piston R	Aluminum Alloy		25	Head plate	Steel	Manganese phosphate
11	Piston Packing	Nitrile Rubber		26	Seal Washer	Nitrile Rubber, Steel	Zinc Chromate
12	Piston Gasket	Nitrile Rubber		27	Nut	Steel	Zinc Chromate
13	Magnet	Plastic		28	Stud bolt	Steel	Zinc Chromate
14	Wear Ring	Polyacetal		29	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide
15	Piston H	Aluminum Alloy					

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

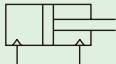


Medium Bore Size Cylinder
Double Acting/Heat Resistant Type

SCA2-T Series

●Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

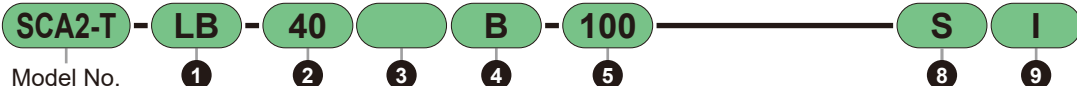


SCA2-T Series

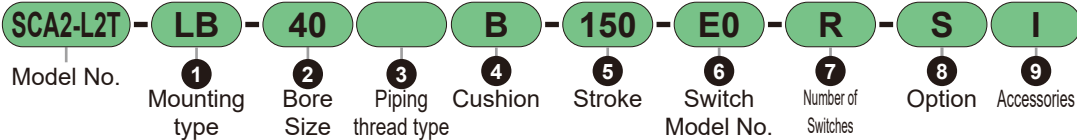
Model No. Notation Method

Model No. Notation Method

Without Switch
(Without magnet for switch)



With Switch
(Built-in magnet for switch)



*1: Mounting brackets are included to the product and shipped.
(However, trunnion types are shipped assembled.)

1 Mounting type

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side Flange Type	
FC	Head side special flange type	
CA	Single Clevis Type	
CB	Double Clevis Type (Pin and retaining ring included)	
TC	Intermediate Trunnion Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TF	Intermediate tapped trunnion type (ø50 to ø100)	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Cushion

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

5 Stroke (mm)

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

*1: If equipped with a switch, strokes of 150 mm or less cannot be selected.

*2: For minimum stroke with switch, refer to P. 676.

6 Switch Model No.

For switch details, please refer to P. 971.
Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire		
			AC	DC	AC	DC	Straight	L-shape	
Reed	1-Color Heat resistant	2-wire	110/220	12/24	7 to 20/7 to 10	5 to 50	E0*	-	

7 Number of Switches

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

8 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

9 Accessories

Code	Content	
I	Single knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

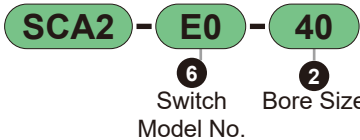
Code	Content	Code	Content	Code	Content
-XR	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XK	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	Rod end Shape change	Refer to Ending P. 11.
-XAQ	Trunnion Position Specification	-XM1	Tie rod material SUS		
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows		

Model No. Example)

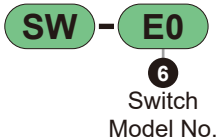
SCA2-T - - XP5

Switch Single Unit Model No. Notation Method

●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item		SCA2-T, SCA2-L2T (Heat resistant type)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	5 to 120				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360) ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Please use within the absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not possible *1				
Allowable Absorbed Energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

*1: Grease up regularly with heat-resistant grease.

Stroke

Bore Size (mm)	Standard stroke of main body without switch (mm)	Standard stroke of main body with switch (mm)	Maximum Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	150, 200, 250, 300, 350, 400, 450, 500	600	*2 1
ø50				
ø63				
ø80			700	
ø100			800	

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

*2: If equipped with a switch, please refer to the minimum stroke table for switches below.

Min. Stroke with Switch

Diagram	When mounting on different surfaces	When mounting on the same surface		Intermediate (tapped) trunnion mounting		Rod side (tapped) trunnion mounting	Head side (tapped) trunnion mounting
Number of Switches	2	1	2	1	2	1	1
Bore Size (mm)							
ø40	150	150	335	335	335	150	150
ø50	145	145	335	335	335	145	145
ø63	145	145	335	335	335	145	145
ø80	145	145	335	335	335	145	145
ø100	140	140	335	335	335	140	140

Specifications

Cylinder Weight

Bore Size (mm)	Product Weight when stroke (S) = 0 mm							Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type (OO)	Foot Type (LB)	Flange Type (FA, FB)	Special flange type (FC)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		EO type	
ø40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the mass described in the switch specifications on P. 971	0.043	0.39
ø50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.059	0.46
ø63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.070	0.50
ø80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.105	0.90
ø100	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 at 0 mm stroke 1.45 kg Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg Weight of 2 EO switches 0.164×2=0.328 kg Weight of 2 mounting brackets 0.059×2=0.118 kg Product weight 1.45+0.92+0.328+0.118=2.816 kg										

Theoretical Thrust Table

Bore Size (mm)	Operating Direction	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	98.2	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	82.5	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	1.56×10^2	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	1.40×10^2	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	2.51×10^2	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	2.27×10^2	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	3.93×10^2	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	3.57×10^2	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
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
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

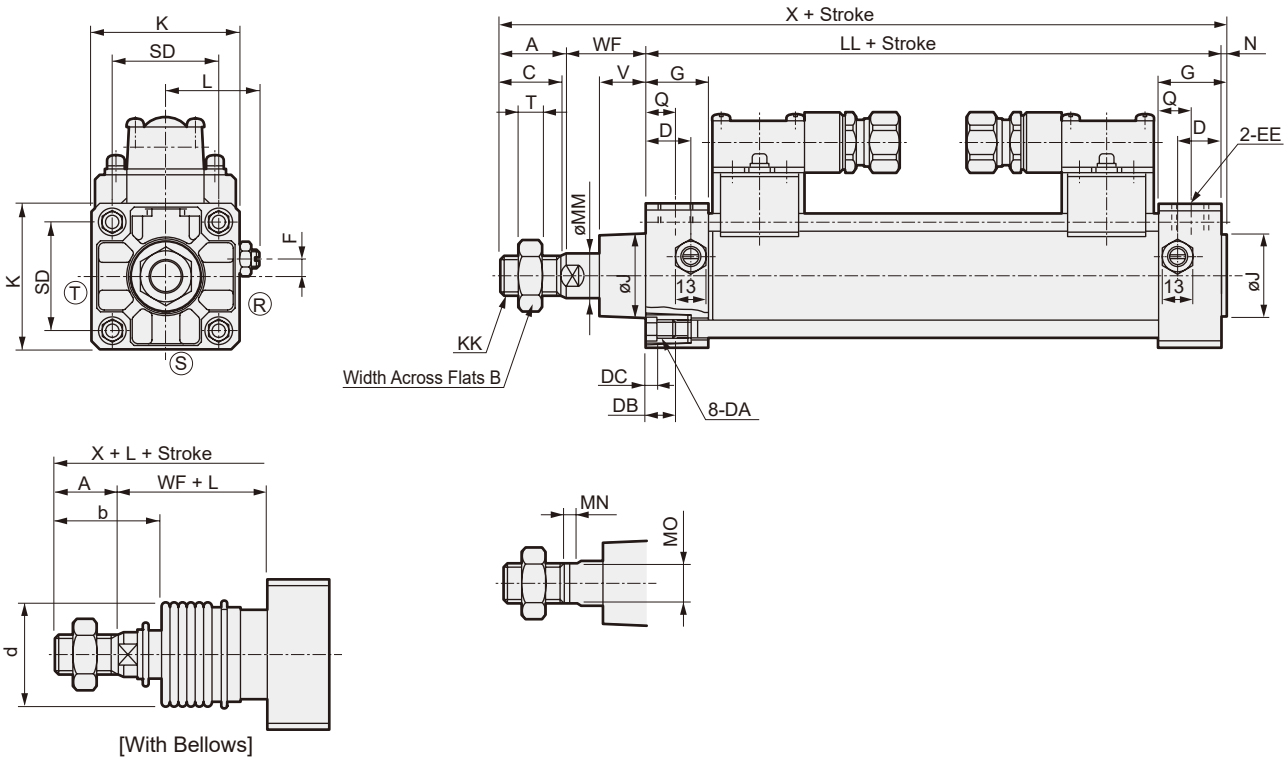
*1: For the material of the mounting brackets, please refer to P. 646.

*2: Foot type mounting brackets come in sets of 2.

*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

●Basic Type (OO)



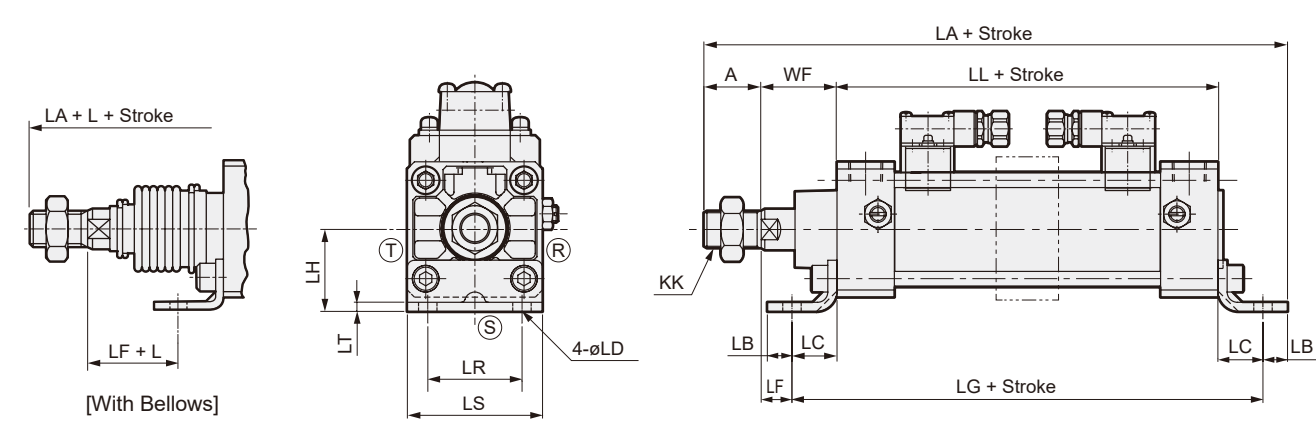
Code	Basic Type (OO) Basic Dimensions																			
	Bore Size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM	MN	MO	N
	ø40	22	22	20	18	M8	12	4	Rc 1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	8	14	2
	ø50	28	27	26	20	M8	12	4	Rc 3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	8.5	17	2.5
	ø63	28	27	26	22	M8	12	4	Rc 3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	8.5	17	3
	ø80	36	32	34	26	M12	16	5	Rc 1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	11	22	3.5
	ø100	45	41	43	28	M12	16	5	Rc 1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	13	27	4

Code	With Bellows											
	Bore Size (mm)	V	WF	X	b	d	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	*1
	ø40	18.5	33.5	150.5	41	40	25.5	41.5	58.5	75.5	108.5	(Stroke/3.0) + 8
	ø50	20.5	37	168.5	47	48	22	36	49	63	90	(Stroke/3.6) + 7.5
	ø63	21	35	171	45	48	22	36	49	63	90	(Stroke/3.6) + 7.5
	ø80	23.5	48	203.5	58.5	55	14	26	38	49	72	(Stroke/4.3) + 2.5
	ø100	32	53	230	69.5	65	20	32	42	53	76	(Stroke/4.5) + 9

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

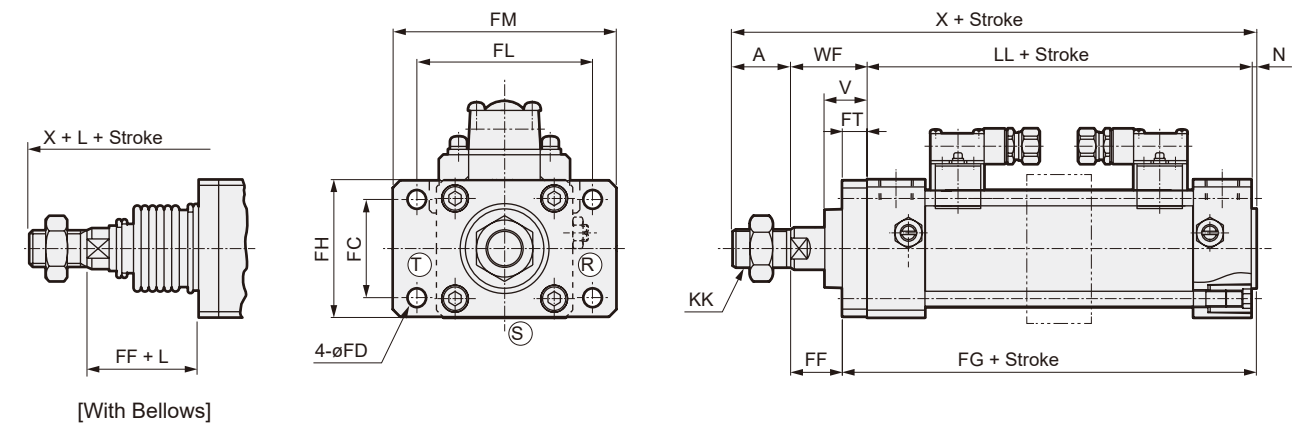
●Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions														With Bellows							
	Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	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	*2 When exceeding 500
ø40	22	M14 × 1.5	93	33.5	178	10	19.5	9	14	132	40	40	57	3.2	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	37	200	12	22	9	15	145	40	46	66	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	35	210	12	30	11	5	165	50	60	80	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	48	251	14	37	14	11	190	60	74	98	6.0	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	53	278	21	31	14	22	190	67	80	118	6.0	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Rod Side Flange Type (FA)

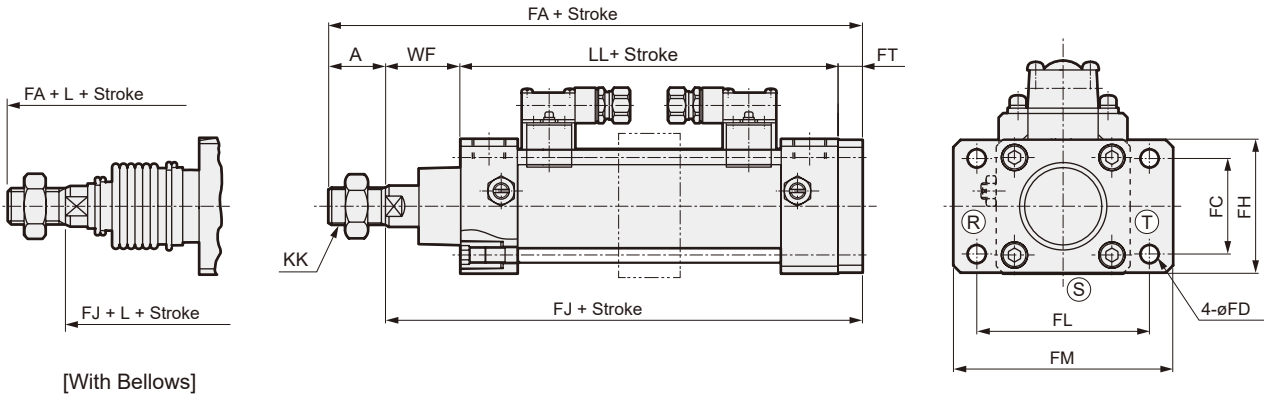


Code	Rod Side Flange Type (FA) Mounting Dimensions																With Bellows							
	Bore Size (mm)	A	KK	LL	N	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2
	ø40	22	M14 × 1.5	93	2	18.5	33.5	150.5	40	9	21.5	107	57	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
	ø50	28	M18 × 1.5	101	2.5	20.5	37	168.5	47	9	25	115.5	65	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
	ø63	28	M18 × 1.5	105	3	21	35	171	60	11	19	124	80	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
	ø80	36	M22 × 1.5	116	3.5	23.5	48	203.5	74	14	29	138.5	98	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
	ø100	45	M26 × 1.5	128	4	32	53	230	88	14	34	151	118	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

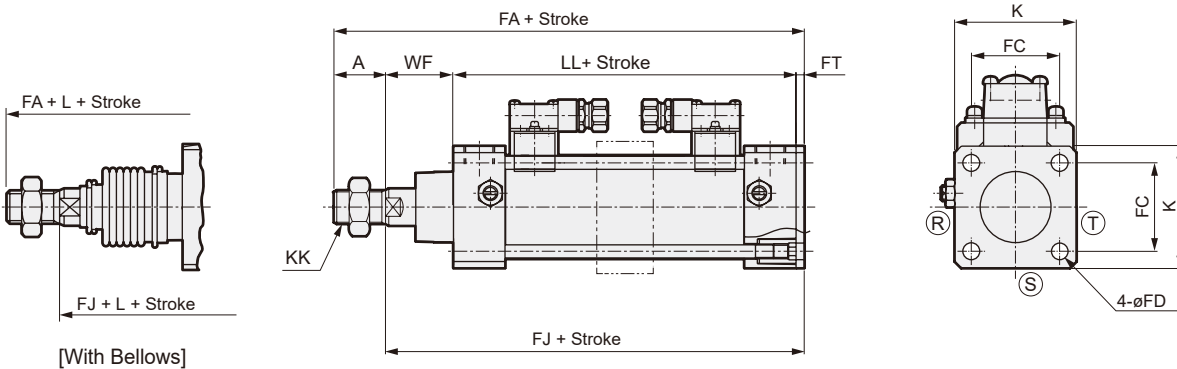
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions												With Bellows							
	Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT	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	*2 When exceeding 500
ø40	22	M14 × 1.5	93	33.5	160.5	40	9	57	138.5	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	37	178	47	9	65	150	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	35	184	60	11	80	156	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	48	219	74	14	98	183	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	53	245	88	14	118	200	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Head side special flange type (FC)

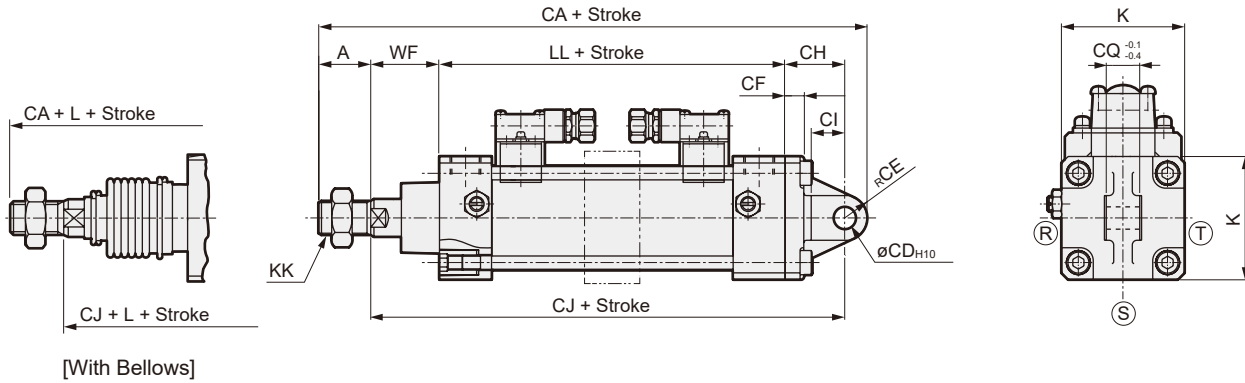


Code	Head side special flange type (FC) Mounting method										With Bellows							
	Bore Size (mm)	A	K	KK	LL	WF	FA	FC	FD	FJ	FT	L						
50 or less												Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø40	22	57	M14 × 1.5	93	33.5	153	40.5	9	131	4.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	66	M18 × 1.5	101	37	170.5	48	9	142.5	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	80	M18 × 1.5	105	35	172.5	59	9	144.5	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	98	M22 × 1.5	116	48	206	74	14	170	6	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	100	M26 × 1.5	128	53	232	90	14	187	6	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

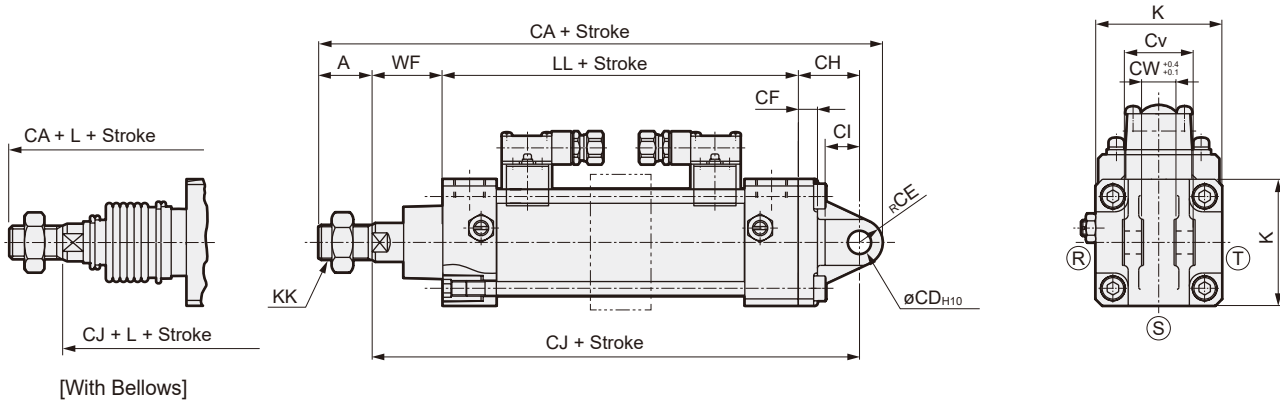
●Single Clevis Type (CA)



Code		Single Clevis Type (CA) Mounting Dimensions												With Bellows								
		A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	L							
Bore Size (mm)														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 When exceeding 500	
ø40		22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50		28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Double clevis type (CB)

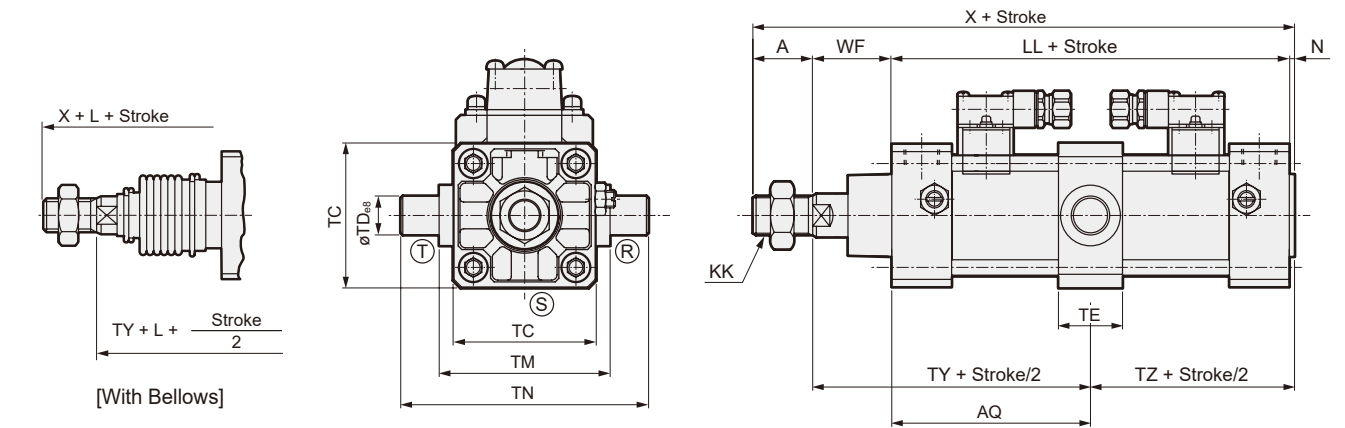


Code		Double Clevis Type (CB) Mounting Dimensions														With Bellows						
																L						
																50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW								
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	36	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	36	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	40	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	56	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	56	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: Pins are attached.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

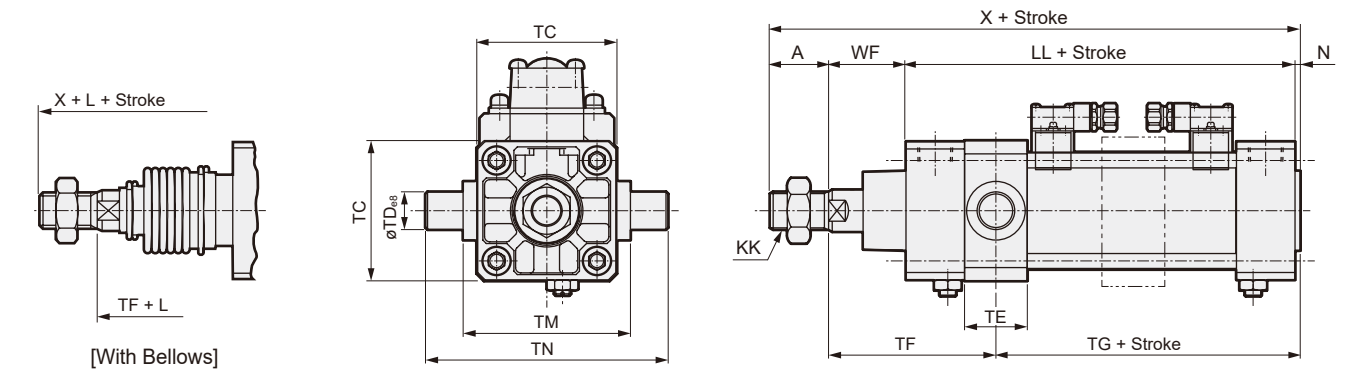
●Intermediate trunnion type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions														With Bellows							
	L														L							
Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ	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 When exceeding 500
ø40	22	M14 × 1.5	93	2	33.5	150.5	46.5 + $\frac{\text{Stroke}}{2}$	57	16	30	63	95	80	48.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	2.5	37	168.5	50.5 + $\frac{\text{Stroke}}{2}$	67	18	30	80	116	87.5	53	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	52.5 + $\frac{\text{Stroke}}{2}$	82	20	35	90	130	87.5	55.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	58 + $\frac{\text{Stroke}}{2}$	100	25	40	115	165	106	61.5	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	64 + $\frac{\text{Stroke}}{2}$	121	35	50	135	205	117	68	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side trunnion type (TA)

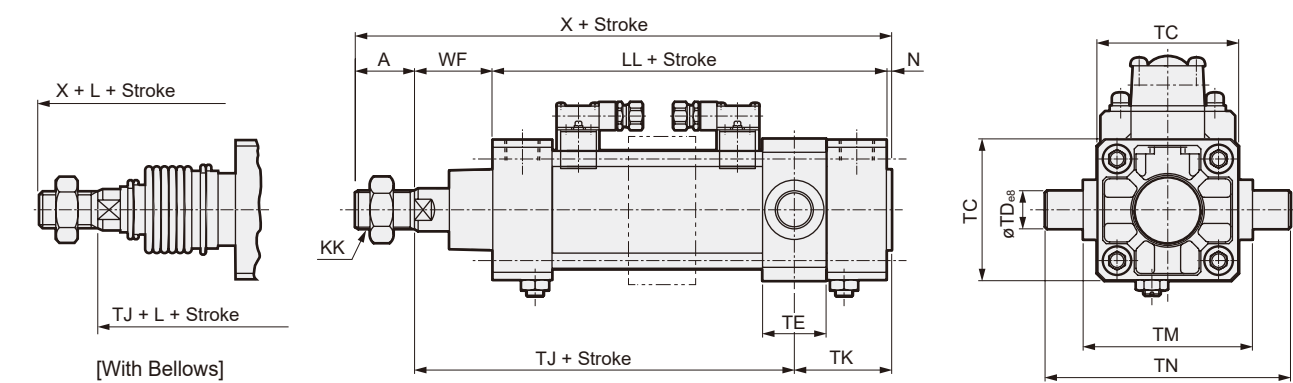


Code	Rod Side Trunnion Type (TA) Mounting Dimensions														With Bellows							
	L														L							
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TF	TG	TM	TN		50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	74.5	54	63	95		25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	80	60.5	80	116		22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	82.5	60.5	90	130		22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	102	65.5	115	165		14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	114	71	135	205		20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

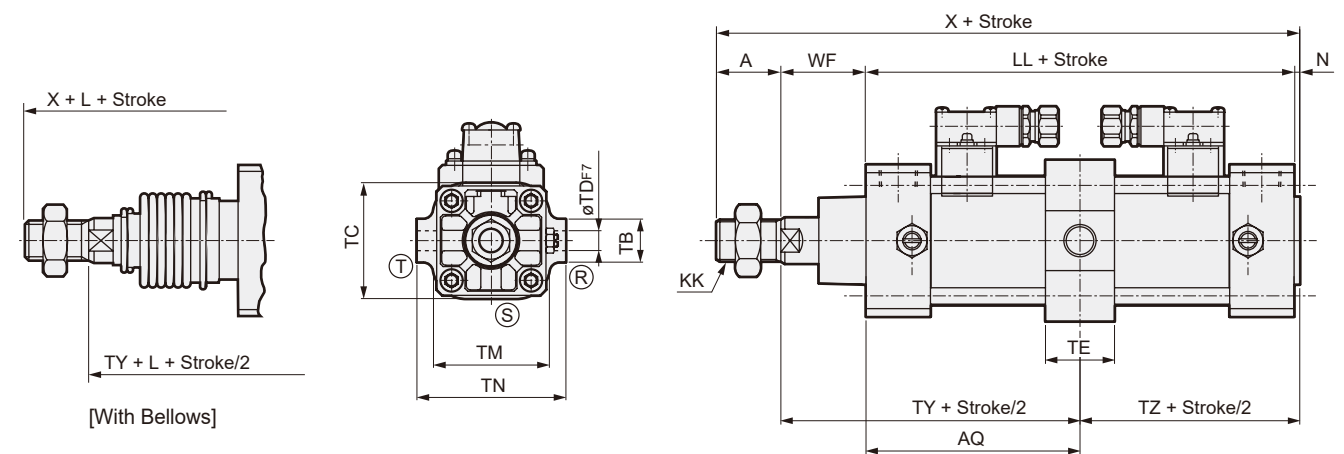
●Head Side Trunnion Type (TB)



Code	Head Side Trunnion Type (TB) Mounting Dimensions														With Bellows							
	L														L							
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TJ	TM	TN	TK		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 When exceeding 500
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	85	63	95	43.5		25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	94.5	80	116	46		22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	92	90	130	51		22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	109.5	115	165	58		14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	119.5	135	205	65.5		20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Intermediate tapped trunnion type (TF)

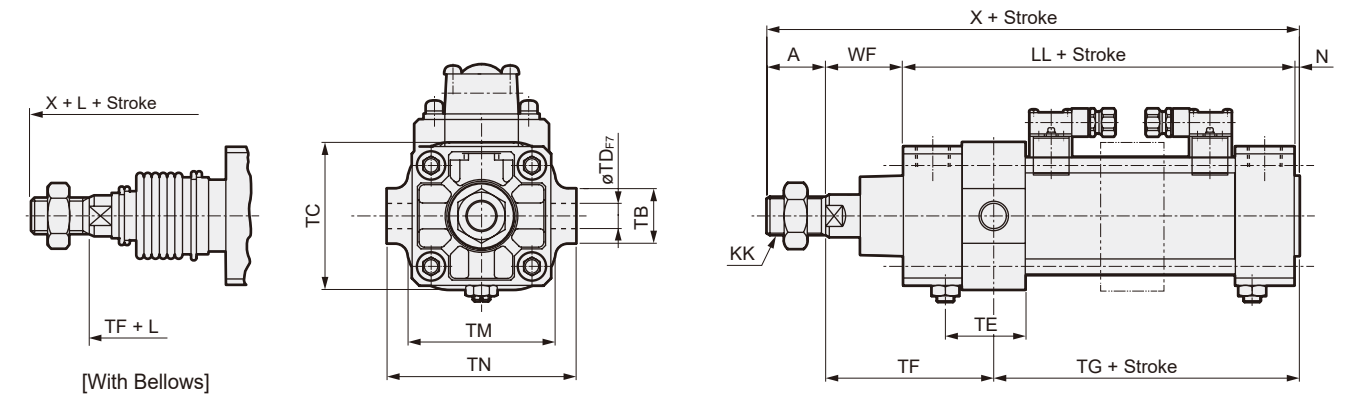


Code	Intermediate tapped trunnion type (TF) Mounting dimensions															With Bellows							
	A	KK	LL	N	WF	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ	L							
Bore Size (mm)																50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø50	28	M18 × 1.5	101	2.5	37	168.5	$50.5 + \frac{\text{Stroke}}{2}$	26	70	12	30	70	90	87.5	53	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	$52.5 + \frac{\text{Stroke}}{2}$	30	86	14	35	86	104	87.5	55.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	$58 + \frac{\text{Stroke}}{2}$	35	105	20	40	105	134	106	61.5	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	$64 + \frac{\text{Stroke}}{2}$	40	123	20	40	127	150	117	68	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

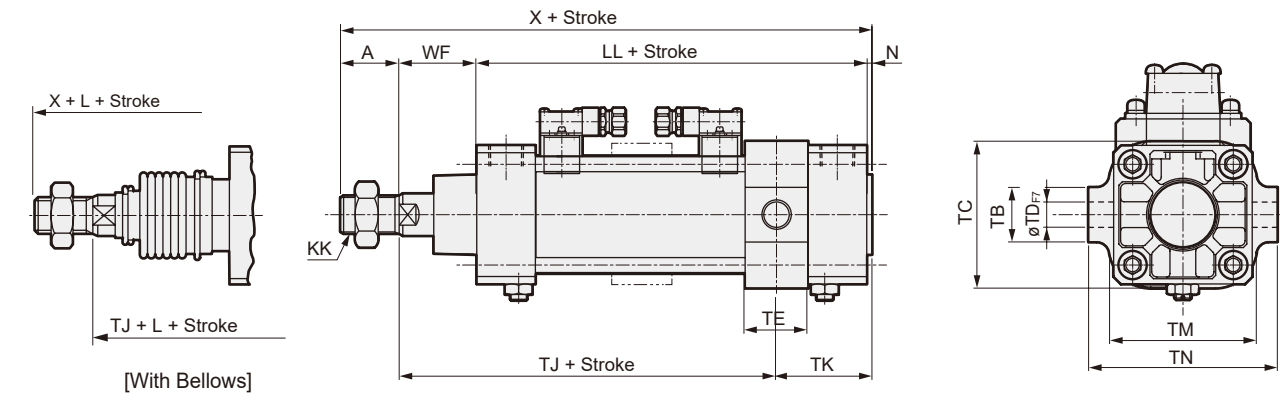
●Rod side tapped trunnion type (TD)



Code	Rod side tapped trunnion type (TD) Mounting dimensions														With Bellows							
	A	KK	LL	N	WF	X	TB	TC	TD	TE	TF	TG	TM	TN	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	*2 When exceeding 500	
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	80	60.5	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	82.5	60.5	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	102	65.5	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	109	76	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

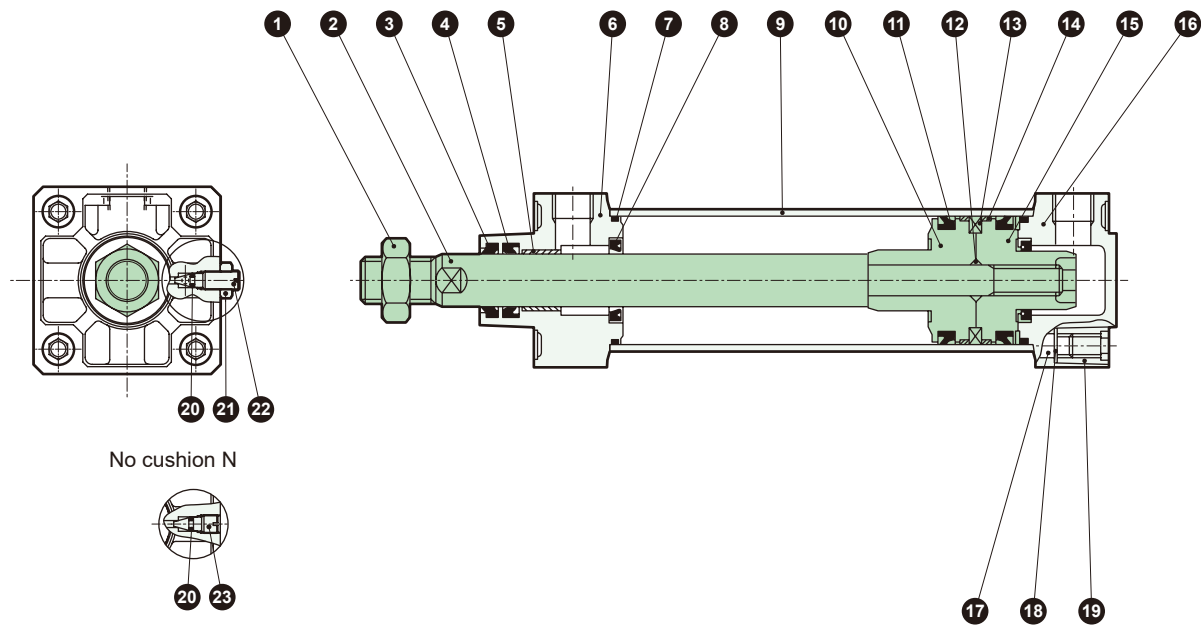
●Head side tapped trunnion type (TE)



Code	Head side tapped trunnion type (TE) Mounting dimensions														With Bellows							
	Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TJ	TM	TN	TK	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	*2 When exceeding 500
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	94.5	70	90	46	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	92	86	104	51	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	109.5	105	134	58	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	124.5	127	150	60.5	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Internal Structure Diagram/Material



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	13	Piston Ring	Steel	
2	Piston Rod	Steel	Industrial Hard Chrome Plating		Magnet	Rare earth plastic	Only with switch (L2T)
3	Scraper	Fluoro Rubber		14	Wear Ring	Special Resin	
4	Rod Packing	Fluoro Rubber		15	Piston H	Aluminum Alloy	
5	Bushing	Oil-impregnated Bearing Alloy		16	Head Cover	Aluminum Alloy	Painting
6	Rod Cover	Aluminum Alloy	Painting	17	Tie Rod	Steel	Zinc Chromate
7	Cylinder Gasket	Fluoro Rubber		18	Belleville washer	Steel	Black Oxide
8	Cushion Packing	Fluororubber, Steel	Only with cushion	19	Round Nut	Steel	Zinc Chromate
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	20	Needle Gasket	Fluoro Rubber	
10	Piston R	Aluminum Alloy		21	Needle nut	Copper Alloy	Nickel Plating
11	Piston Packing	Fluoro Rubber		22	Cushion Needle	Copper Alloy	Nickel Plating
12	Piston Gasket	Fluoro Rubber		23	Cushion plug	Copper Alloy	Nickel Plating

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

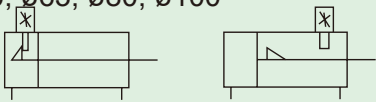


Medium Bore Size Cylinder
Double Acting, Drop Prevention Type

SCA2-Q2 Series

●Bore size: ø40, ø50, ø63, ø80, ø100

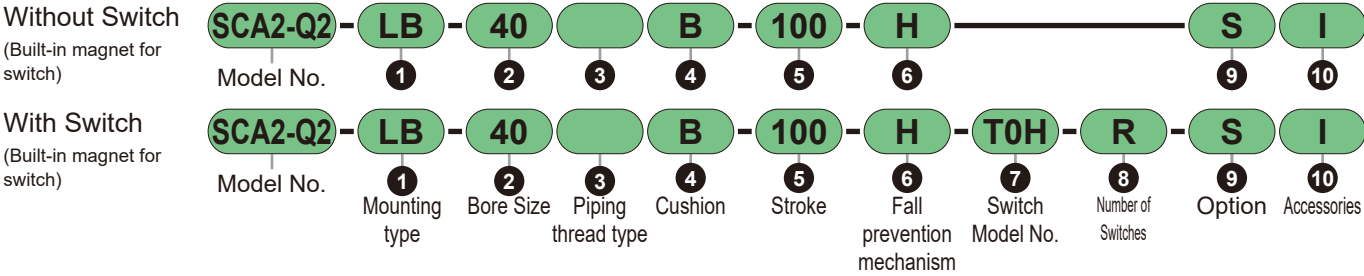
Circuit Diagram Symbol



SCA2-Q2 Series

Model No. Notation Method

Model No. Notation Method



1 Mounting type Mounting brackets are included to the product and shipped. (However, trunnion types are shipped assembled.)

Code	Content	Code	Content	Code	Content
00	Basic type	CA	Single Clevis Type	TF	Intermediate tapped trunnion type (ø50 to ø100)
LB	Axial Foot Type	CB	Double clevis type (pin and retaining ring included)	TD	Rod side tapped trunnion type (ø50 to ø100)
FA	Rod Side Flange Type	TC	Intermediate Trunnion Type	TE	Head side tapped trunnion type (ø50 to ø100)
FB	Head Side Flange Type	TA	Rod side trunnion type *1	*1: Mounting type TA, 6 fall prevention mechanism R cannot be manufactured. *2: Mounting type TB, 6 fall prevention mechanism H cannot be manufactured.	
FC	Head side special flange type	TB	Head side trunnion type *2		

2

Bore Size (mm)

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

3

Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

5

Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø40	5 to 600	Every 1 mm
ø50	5 to 600	
ø63	5 to 600	
ø80	5 to 700	
ø100	5 to 800	

Note: For minimum stroke with switch, please refer to P. 688 and 689.

6

Drop prevention mechanism

Code	Content	
H	With head side fall prevention	
R	With rod side fall prevention	

*1: ❶ Mounting type TA, fall prevention mechanism R cannot be manufactured.

*2: ❶ Mounting type TB, fall prevention mechanism H cannot be manufactured.

4

Cushion

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

7 Switch Model No. For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
	2-Color for AC Magnetic Field	2-wire	—	24 ± 10%	—	5 to 20	T2YD□	—	
	1-Color Off-Delay Type		—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
	1-Color No Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	
Reed	1-Color	2-wire	110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

8 Number of Switches

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

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

9 Option

Code	Content
M	Piston Rod Material (Stainless Steel)
Blank	Cushion needle position R (Standard)
S	Cushion needle position S
M0	Non-locking manual override (Release bolt included)
M1	Locking Manual Device

*1: If "M0" or "M1" is not selected as an option, only the non-locking manual device will be provided. Release bolt is not included.
*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

10 Accessories

Code	Content
I	Single Knuckle *1
Y	Double Knuckle (Pin and retaining ring included) *1
B1	Single Bracket
B2	Double Yoke Bracket (Pin and retaining ring included)
B3	Single Bracket
B4	Trunnion type 2nd bracket (2 pieces/set)

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

*For combinations of variations and options, see P. 625.

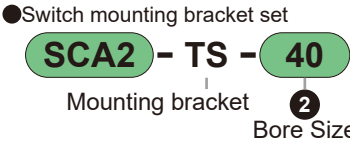
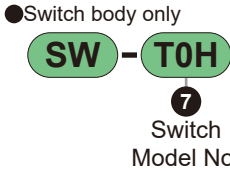
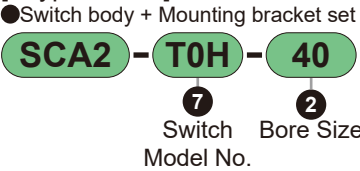
Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle Pin/Clevis Pin Split Pin Specification, Knuckle fixed by pinning	Rod end Shape change	Refer to Ending P. 11.
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS		
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XT9	Scraper/Rod packing only Fluoro Rubber		

Model No. Example) SCA2-Q2-.....-XP5

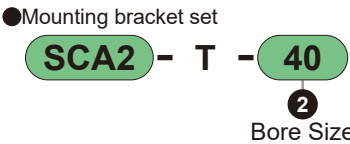
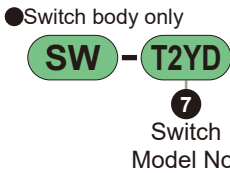
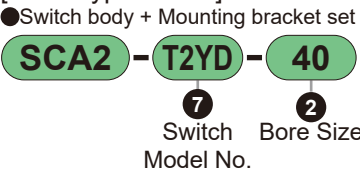
Switch Single Unit Model No. Notation Method

[T type switch]



*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]



Specifications

Item		SCA2-Q2 (Drop prevention type)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.1				
Proof Pressure	MPa	1.6				
Ambient Temperature		−10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	$\begin{smallmatrix} +0.9 \\ 0 \end{smallmatrix}$ (Up to 360), $\begin{smallmatrix} +1.4 \\ 0 \end{smallmatrix}$ (Up to 800)				
Operating Piston Speed	mm/s	50 to 500 (Please use within the allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Fall prevention mechanism		Head side, Rod side				
Holding Force	N	Max. Thrust × 0.7				
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	5
ø50			
ø63			
ø80		700	
ø100		800	

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

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1	1
ø40	20 (20)	20 (10)	60 (45)	135 (135)	135 (135)	50 (50)	50 (50)
ø50	20 (20)	15 (10)	20 (20)	160 (160)	160 (160)	60 (60)	60 (60)
ø63	20 (20)	15 (10)	20 (20)	135 (120)	135 (120)	50 (45)	50 (45)
ø80	25 (25)	15 (15)	25 (25)	140 (110)	140 (110)	55 (40)	55 (40)
ø100	25 (25)	15 (15)	25 (25)	150 (120)	150 (120)	60 (45)	60 (45)

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

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

●Minimum stroke with T8 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1	1
ø40	20 (20)	15 (10)	50 (35)	125 (125)	125 (125)	45 (40)	45 (40)
ø50	20 (20)	10 (10)	20 (20)	150 (150)	150 (150)	50 (50)	50 (50)
ø63	20 (20)	10 (10)	20 (20)	120 (110)	120 (110)	45 (35)	45 (35)
ø80	25 (25)	15 (15)	25 (25)	130 (100)	130 (100)	50 (35)	50 (35)
ø100	25 (25)	15 (15)	25 (25)	140 (110)	140 (110)	55 (40)	55 (40)

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

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

⚠ Before use, be sure to read "Precautions for Use"(Fall Prevention) Type, P. 862 to 865.

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1	1
ø40	20 (15)	20 (10)	60 (45)	130 (100)	130 (100)	50 (35)	50 (35)
ø50	15 (15)	15 (10)	15 (15)	130 (100)	130 (100)	45 (30)	45 (30)
ø63	15 (15)	15 (10)	15 (15)	135 (105)	135 (105)	50 (35)	50 (35)
ø80	15 (15)	15 (10)	15 (15)	140 (110)	140 (110)	55 (40)	55 (40)
ø100	15 (15)	10 (10)	15 (15)	150 (120)	150 (120)	60 (45)	60 (45)

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

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

●Minimum stroke with T1/T2YD type switch

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

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

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

●Minimum stroke with T2W/T3W/T2WL type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1	1
ø40	20 (10)	20 (5)	65 (50)	135 (105)	135 (105)	50 (35)	50 (35)
ø50	20 (10)	20 (5)	20 (10)	135 (105)	135 (105)	50 (35)	50 (35)
ø63	20 (10)	20 (5)	20 (10)	140 (110)	140 (110)	55 (40)	55 (40)
ø80	15 (10)	15 (5)	15 (10)	145 (115)	145 (115)	55 (40)	55 (40)
ø100	10 (10)	10 (5)	10 (10)	155 (125)	155 (125)	60 (45)	60 (45)

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

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

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm							Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type (00)	Foot type (LB)	Flange type (FA, FB)	Special flange type (FC)	Single clevis type (CA)	Double clevis type (CB)	Trunnion type (TA, TB, TC)		T type	
ø40	1.21	1.38	1.62	1.30	1.53	1.57	1.59	Refer to the mass described in the switch specifications on P. 971	0.024	0.39
ø50	1.70	1.95	2.19	1.81	2.08	2.11	2.24		0.022	0.46
ø63	2.36	2.73	3.45	2.54	2.93	2.98	3.21		0.020	0.50
ø80	3.84	4.58	5.70	4.20	5.11	5.32	5.18		0.026	0.90
ø100	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 at 0 mm stroke 1.95 kg										
Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg										
Weight of 2 T0H switches..... $0.018 \times 2 = 0.036$ kg										
Weight of 2 mounting brackets $0.022 \times 2 = 0.044$ kg										
Product Weight $1.95 + 0.92 + 0.036 + 0.044 = 2.950$ kg										

MEMO

Theoretical Thrust Table (Unit: N)

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

Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
Foot type (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange Type (FA/FB)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100
Single Clevis Type (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double clevis type (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

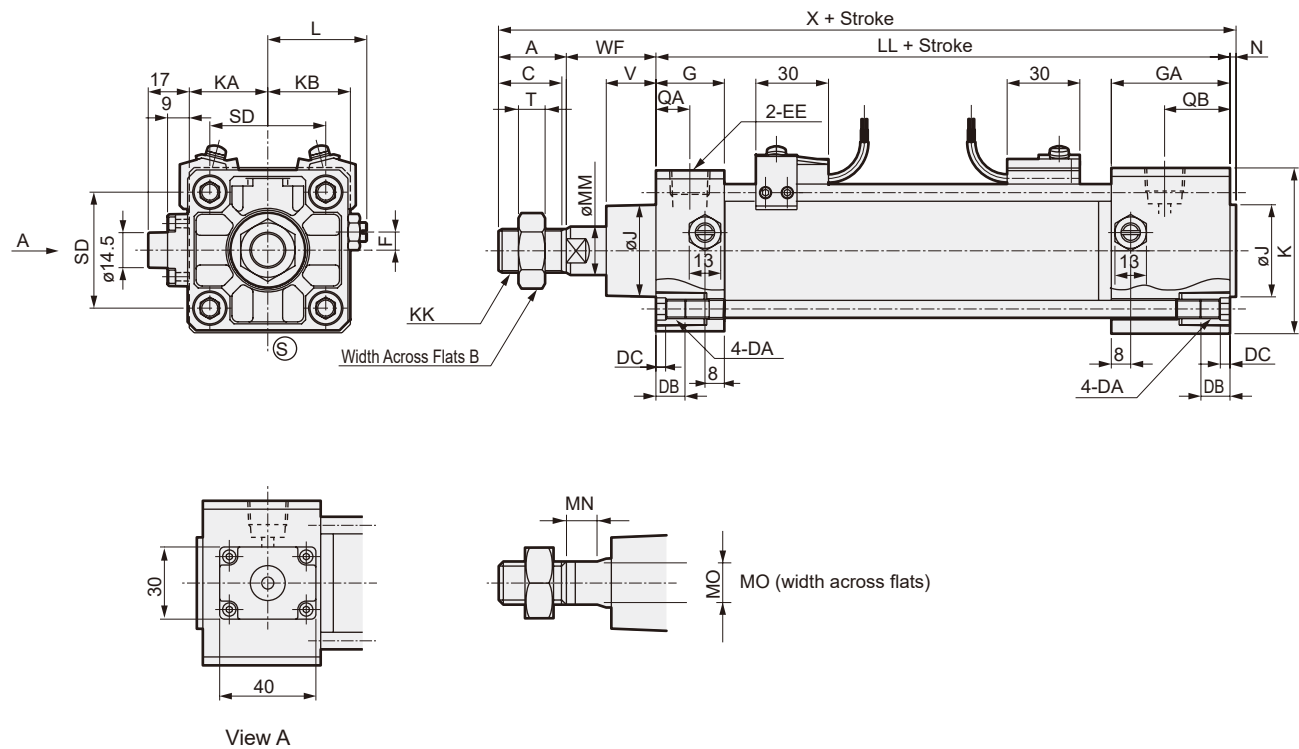
*1: For the material of the mounting brackets, please refer to P. 646.

*2: Foot type mounting brackets come in sets of 2.

*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

●Basic type (00) With head side fall prevention

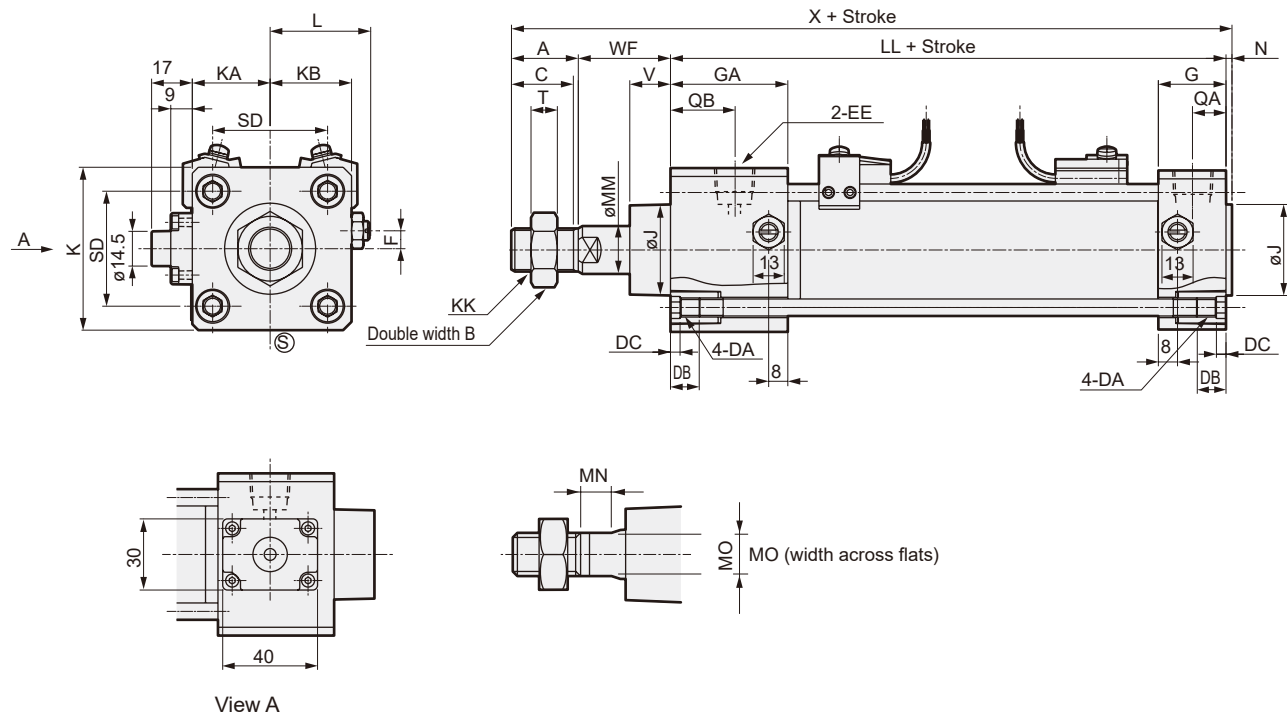


Code	Basic Type (OO)																
Bore Size (mm)	A	B	C	DA	DB	DC	EE	F	G	GA	J	K	KA	KB	KK	L	LL
ø40	22	22	20	M8	12	4	Rc 1/4	7.5	26	49	31	60	30	30	M14 × 1.5	38 to 39.5	120.5
ø50	28	27	26	M8	12	4	Rc 3/8	0	28	49	38	68	32.5	34	M18 × 1.5	41 to 43.5	127
ø63	28	27	26	M8	12	4	Rc 3/8	0	30	49	38	80	38	40	M18 × 1.5	47.5 to 50	130
ø80	36	32	34	M12	16	5	Rc 1/2	0	34	53	43	100	49	50	M22 × 1.5	56 to 59	144
ø100	45	41	43	M12	16	5	Rc 1/2	0	36	53	51	118	58.5	59	M26 × 1.5	66 to 69	156
Code																	
Bore Size (mm)	MM	MN	MO	N	QA	QB	SD	T	V	WF	X						
ø40	16	8	14	2	13	26	40.5	8	18.5	33.5	178						
ø50	20	8	17	2.5	14	27	48	11	20.5	37	194.5						
ø63	20	8	17	3	15	28	59	11	21	35	196						
ø80	25	11	22	3.5	17	27	74	13	23.5	48	231.5						
ø100	30	13	27	4	18	27	90	16	32	53	258						

***1: For dimensions with each switch, please refer to P. 850 to 853.**
***2: For outer dimensions diagram of accessories, refer to P. 644.**

Outline Dimension Drawing

●Basic type (00) With head side fall prevention

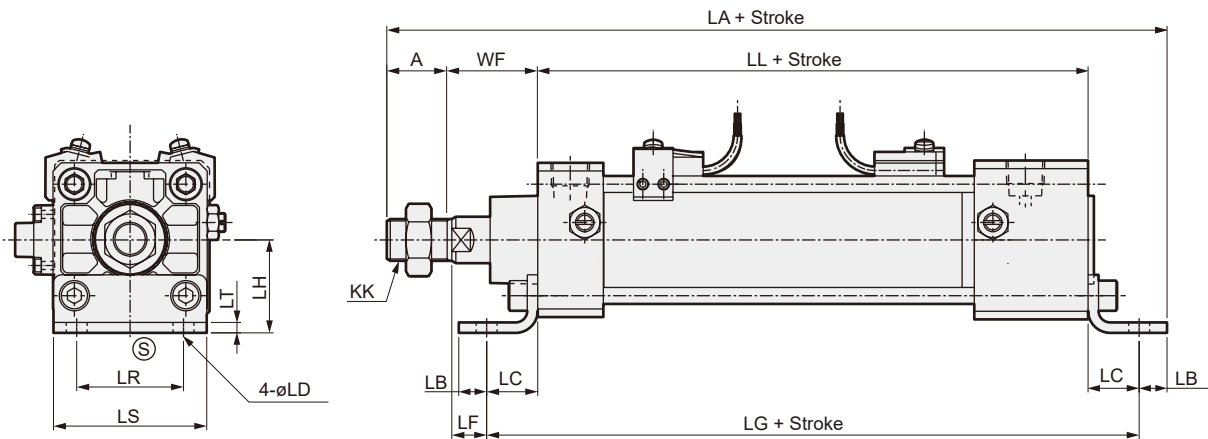


Code	Basic Type (OO)																		
Bore Size (mm)	A	B	C	DA	DB	DC	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN
ø40	22	22	20	M8	12	4	Rc 1/4	7.5	26	49	31	60	30	30	M14 × 1.5	38 to 39.5	120.5	16	8
ø50	28	27	26	M8	12	4	Rc 3/8	0	28	49	38	68	32.5	34	M18 × 1.5	41 to 43.5	127	20	8
ø63	28	27	26	M8	12	4	Rc 3/8	0	30	49	38	80	38	40	M18 × 1.5	47.5 to 50	130	20	8
ø80	36	32	34	M12	16	5	Rc 1/2	0	34	53	43	100	49	50	M22 × 1.5	56 to 59	144	25	11
ø100	45	41	43	M12	16	5	Rc 1/2	0	36	53	51	118	58.5	59	M26 × 1.5	66 to 69	156	30	13
Code																			
Bore Size (mm)	MO	N	QA	QB	SD	T	V	WF	X										
ø40	14	2	13	26	40.5	8	18.5	33.5	178										
ø50	17	2.5	14	27	48	11	17	33.5	191										
ø63	17	3	15	28	59	11	17	31	192										
ø80	22	3.5	17	27	74	13	18.5	43	226.5										
ø100	27	4	18	27	90	16	29	50	255										

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

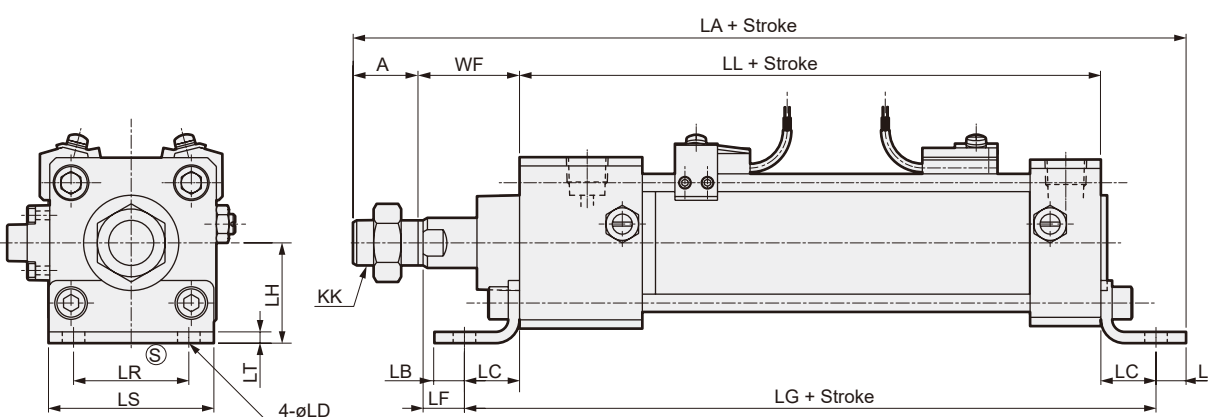
●Axial foot type (LB) With head side fall prevention



Code	Axial Foot Type (LB) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
ø40	22	M14 × 1.5	120.5	33.5	205.5	10	19.5	9	14	159.5	40	40	57	3.2
ø50	28	M18 × 1.5	127	37	226	12	22	9	15	171	40	46	66	4.5
ø63	28	M18 × 1.5	130	35	235	12	30	11	5	190	50	60	80	4.5
ø80	36	M22 × 1.5	144	48	279	14	37	14	11	218	60	74	98	6.0
ø100	45	M26 × 1.5	156	53	306	21	31	14	22	218	67	80	118	6.0

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Axial foot type (LB) With rod side fall prevention



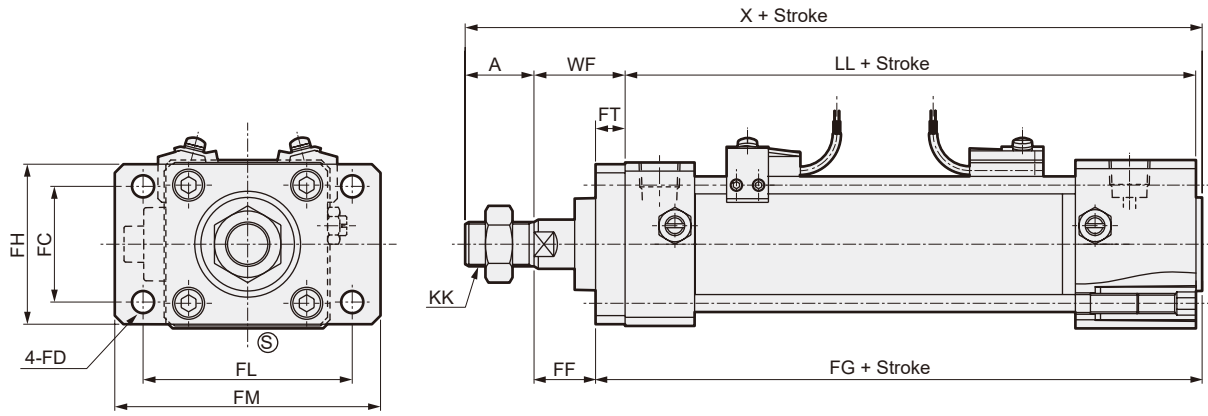
Code	Axial Foot Type (LB) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
ø40	22	M14 × 1.5	120.5	33.5	205.5	10	19.5	9	14	159.5	40	40	57	3.2
ø50	28	M18 × 1.5	127	33.5	222.5	12	22	9	11.5	171	40	46	66	4.5
ø63	28	M18 × 1.5	130	31	231	12	30	11	1	190	50	60	80	4.5
ø80	36	M22 × 1.5	144	43	274	14	37	14	6	218	60	74	98	6.0
ø100	45	M26 × 1.5	156	50	303	21	31	14	19	218	67	80	118	6.0

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Drop Prevention Type

Outline Dimension Drawing

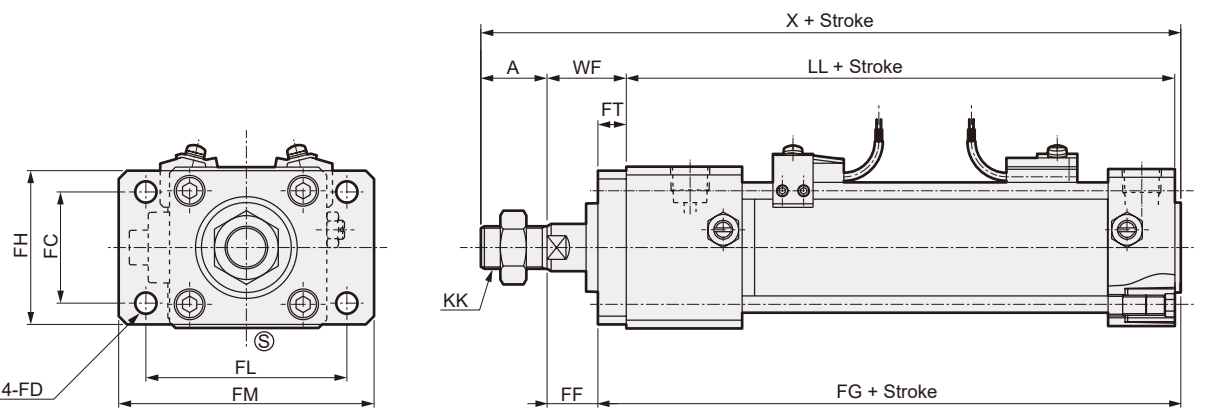
●Rod side flange type (FA) With head side fall prevention



Code	Rod Side Flange Type (FA) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø40	20	M14 × 1.5	120.5	33.5	178	40	9	21.5	134.5	57	80	100	12
ø50	26	M18 × 1.5	127	37	194.5	47	9	25	141.5	65	85	108	12
ø63	26	M18 × 1.5	130	35	196	60	11	19	149	80	106	130	16
ø80	34	M22 × 1.5	144	48	231.5	74	14	29	166.5	98	125	153	19
ø100	43	M26 × 1.5	156	53	258	88	14	34	179	118	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side flange type (FA) With rod side fall prevention

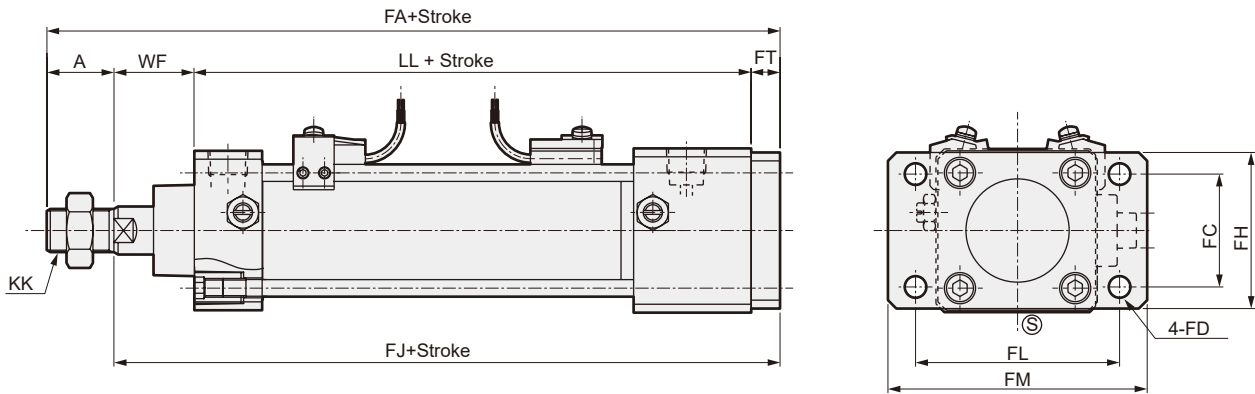


Code	Rod Side Flange Type (FA) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø40	22	M14 × 1.5	120.5	33.5	178	40	9	21.5	134.5	57	80	100	12
ø50	28	M18 × 1.5	127	33.5	191	47	9	21.5	141.5	65	85	108	12
ø63	28	M18 × 1.5	130	31	192	60	11	15	149	80	106	130	16
ø80	36	M22 × 1.5	144	43	226.5	74	14	24	166.5	98	125	153	19
ø100	45	M26 × 1.5	156	50	255	88	14	31	179	118	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

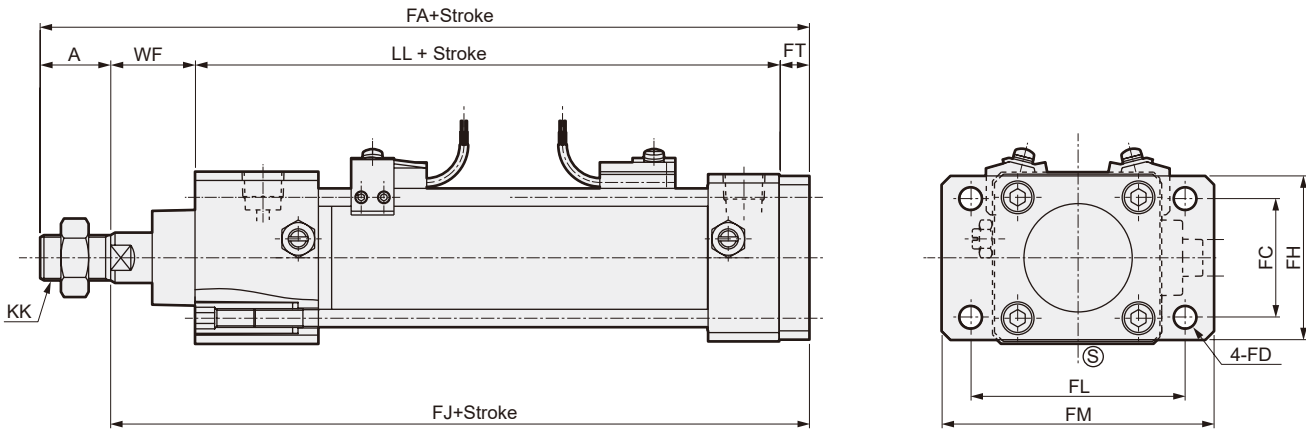
●Head side flange type (FB) With head side fall prevention



Code	Head Side Flange Type (FB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FJ	FH	FL	FM	FT
ø40	22	M14 × 1.5	120.5	33.5	188	40	9	166	57	80	100	12
ø50	28	M18 × 1.5	127	37	204	47	9	176	65	85	108	12
ø63	28	M18 × 1.5	130	35	209	60	11	181	80	106	130	16
ø80	36	M22 × 1.5	144	48	247	74	14	211	98	125	153	19
ø100	45	M26 × 1.5	156	53	273	88	14	228	118	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Head side flange type (FB) With rod side fall prevention

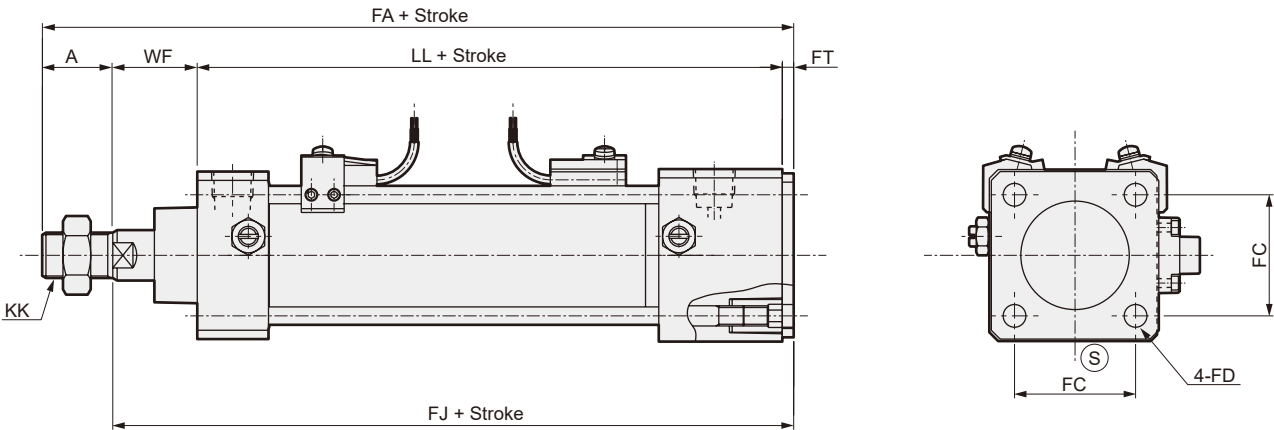


Code	Head Side Flange Type (FB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FJ	FH	FL	FM	FT
ø40	22	M14 × 1.5	120.5	33.5	188	40	9	166	57	80	100	12
ø50	28	M18 × 1.5	127	33.5	200.5	47	9	172.5	65	85	108	12
ø63	28	M18 × 1.5	130	31	205	60	11	177	80	106	130	16
ø80	36	M22 × 1.5	144	43	242	74	14	206	98	125	153	19
ø100	45	M26 × 1.5	156	50	270	88	14	225	118	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

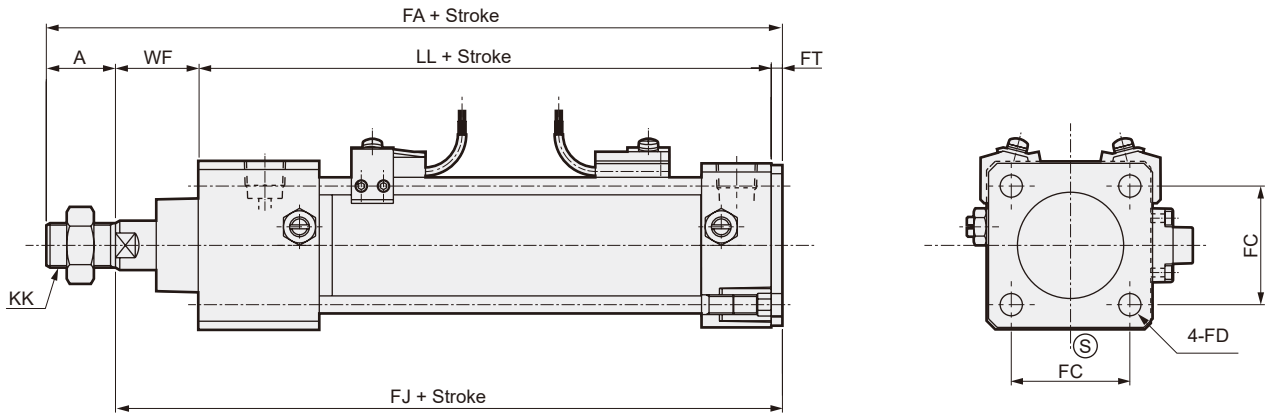
●Head side flange type (FC) With head side fall prevention



Code	Head side special flange type (FC) Mounting dimensions								
Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FJ	FT
ø40	22	M14 × 1.5	120.5	33.5	180.5	40.5	9	158.5	4.5
ø50	28	M18 × 1.5	127	37	196.5	48	9	168.5	4.5
ø63	28	M18 × 1.5	130	35	197.5	59	9	169.5	4.5
ø80	36	M22 × 1.5	144	48	234	74	14	198	6
ø100	45	M26 × 1.5	156	53	260	90	14	215	6

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Head side flange type (FC) With head side fall prevention

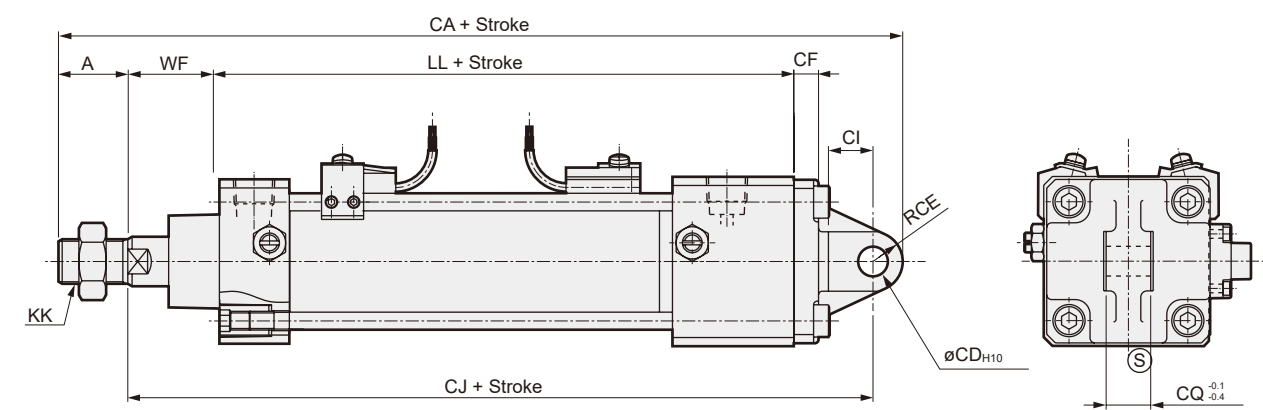


Code	Head side special flange type (FC) Mounting dimensions								
Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FJ	FT
ø40	22	M14 × 1.5	120.5	33.5	180.5	40	9	158.5	4.5
ø50	28	M18 × 1.5	127	33.5	193	47	9	165	4.5
ø63	28	M18 × 1.5	130	31	193.5	60	11	165.5	4.5
ø80	36	M22 × 1.5	144	43	229	74	14	193	6
ø100	45	M26 × 1.5	156	50	257	88	14	212	6

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

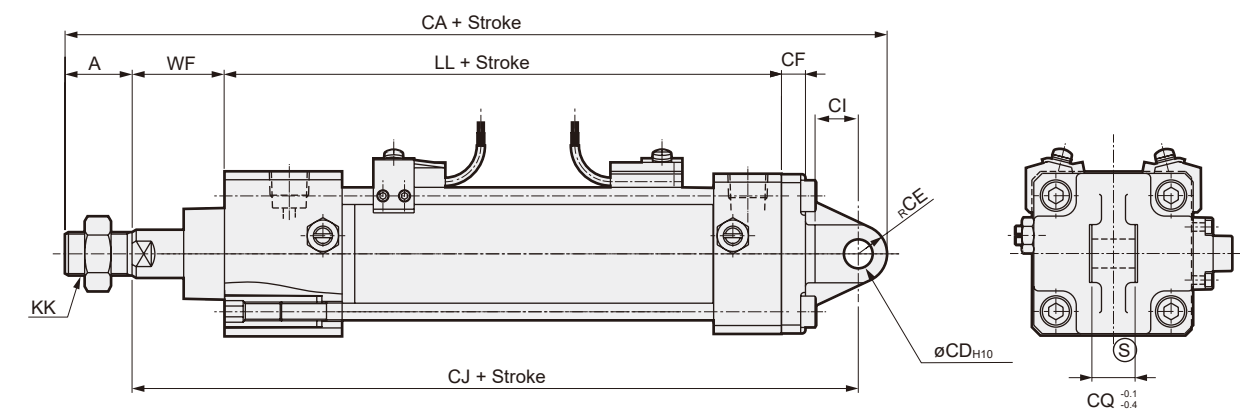
●Single clevis type (CA) With head side fall prevention



Code	Single Clevis Type (CA) Mounting Dimensions										
Bore Size (mm)	A	KK	LL	WF	CA	CD	CE	CF	CI	CJ	CQ
ø40	22	M14 × 1.5	120.5	33.5	220	12	12	10	18	186	18
ø50	28	M18 × 1.5	127	37	236	12	12	10	18	196	18
ø63	28	M18 × 1.5	130	35	246	14	16	10	24	202	20
ø80	36	M22 × 1.5	144	48	300	20	20	14	30	244	28
ø100	45	M26 × 1.5	156	53	326	20	20	16	30	261	28

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Single clevis type (CA) With rod side fall prevention



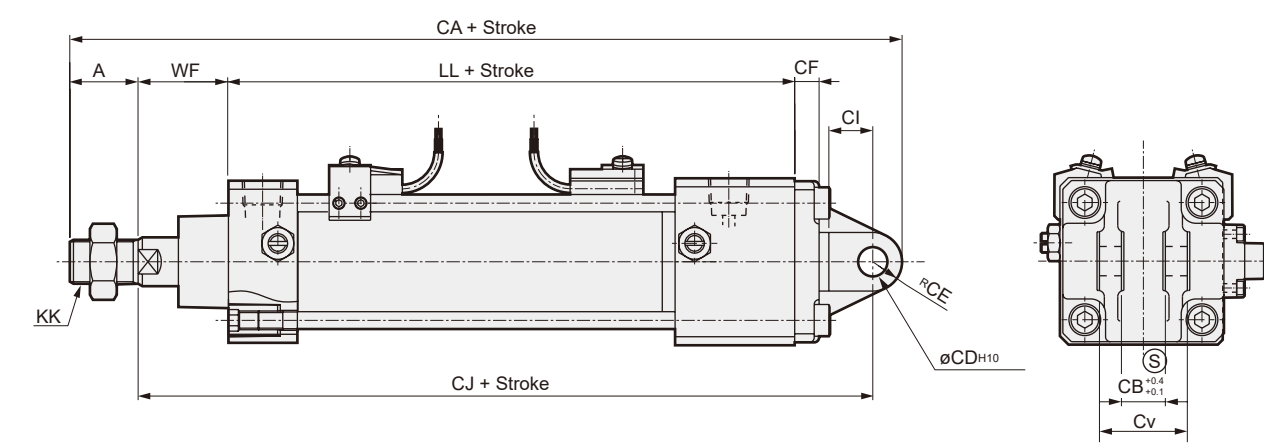
Code	Single Clevis Type (CA) Mounting Dimensions										
Bore Size (mm)	A	KK	LL	WF	CA	CD	CE	CF	CI	CJ	CQ
ø40	22	M14 × 1.5	120.5	33.5	220	12	12	10	18	186	18
ø50	28	M18 × 1.5	127	33.5	232.5	12	12	10	18	192.5	18
ø63	28	M18 × 1.5	130	31	242	14	16	10	24	198	20
ø80	36	M22 × 1.5	144	43	295	20	20	14	30	239	28
ø100	45	M26 × 1.5	156	50	323	20	20	16	30	258	28

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Drop Prevention Type

Outline Dimension Drawing

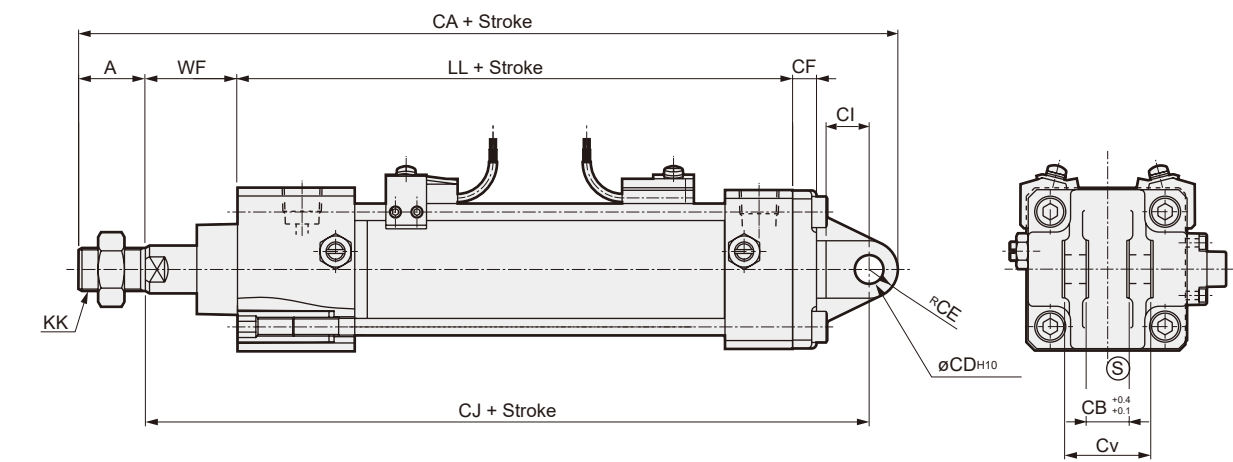
●Double clevis type (CB) With head side fall prevention



Code	Double Clevis Type (CB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	CA	CB	CD	CE	CF	CI	CJ	Cv
ø40	22	M14 × 1.5	120.5	33.5	220	18	12	12	10	18	186	36
ø50	28	M18 × 1.5	127	37	236	18	12	12	10	18	196	36
ø63	28	M18 × 1.5	130	35	246	20	14	16	10	24	202	40
ø80	36	M22 × 1.5	144	48	300	28	20	20	14	30	244	56
ø100	45	M26 × 1.5	156	53	326	28	20	20	16	30	261	56

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Double clevis type (CB) With rod side fall prevention

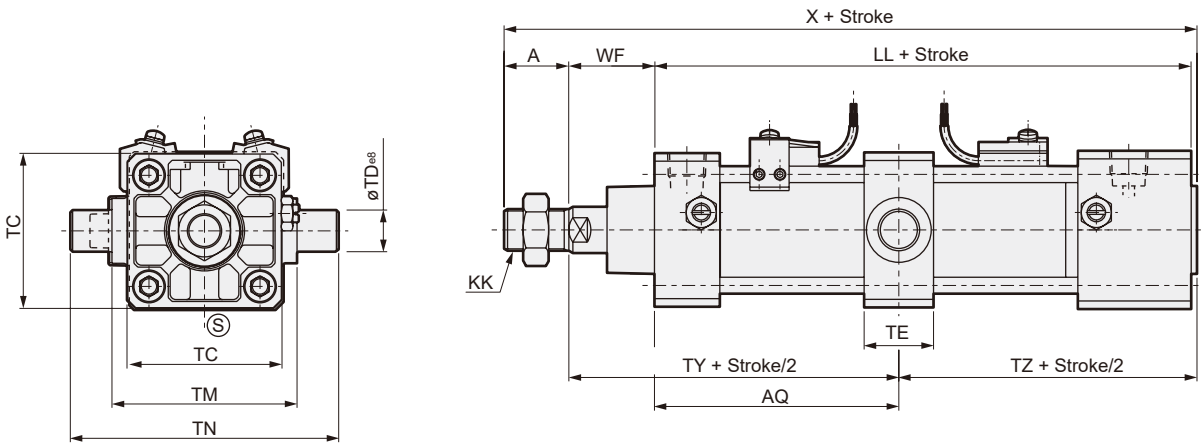


Code	Double Clevis Type (CB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	CA	CB	CD	CE	CF	CI	CJ	Cv
ø40	22	M14 × 1.5	120.5	33.5	220	18	12	12	10	18	186	36
ø50	28	M18 × 1.5	127	33.5	232.5	18	12	12	10	18	192.5	36
ø63	28	M18 × 1.5	130	31	242	20	14	16	10	24	198	40
ø80	36	M22 × 1.5	144	43	295	28	20	20	14	30	239	56
ø100	45	M26 × 1.5	156	50	323	28	20	20	16	30	258	56

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

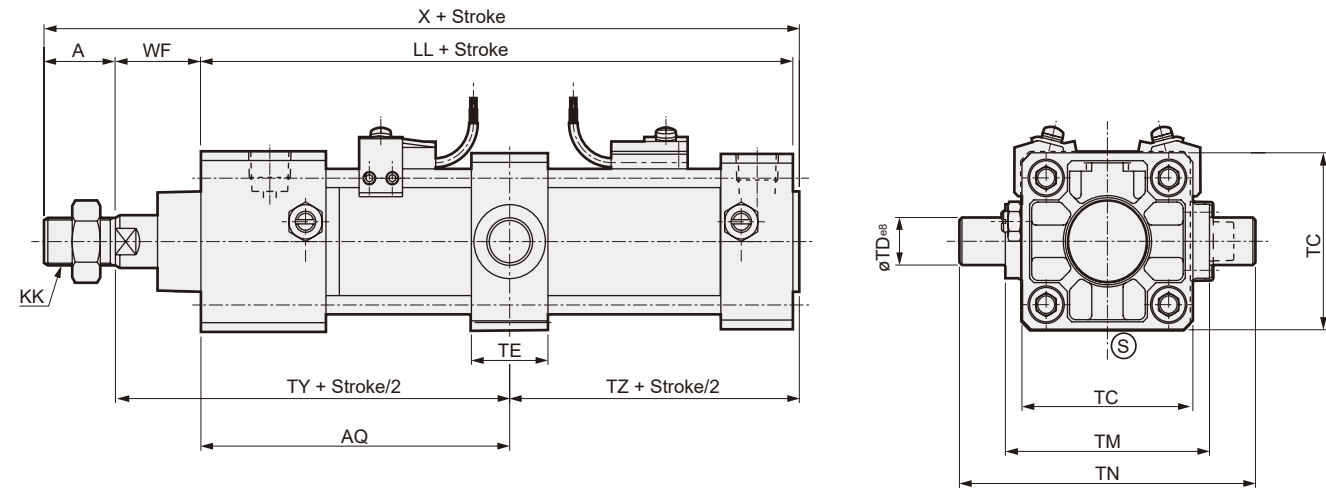
●Intermediate trunnion type (TC) With head side fall prevention



Code	Intermediate Trunnion Type (TC) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ
ø40	22	M14 × 1.5	120.5	33.5	178	60.5 + $\frac{\text{Stroke}}{2}$	57	16	30	63	95	94	62
ø50	28	M18 × 1.5	127	37	194.5	80 + $\frac{\text{Stroke}}{2}$	67	18	30	80	116	100.5	66
ø63	28	M18 × 1.5	130	35	196	65 + $\frac{\text{Stroke}}{2}$	82	20	35	90	130	100	68
ø80	36	M22 × 1.5	144	48	231.5	72 + $\frac{\text{Stroke}}{2}$	100	25	40	115	165	120	75.5
ø100	45	M26 × 1.5	156	53	258	78 + $\frac{\text{Stroke}}{2}$	121	35	50	135	205	131	82

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Intermediate trunnion type (TC) With rod side fall prevention

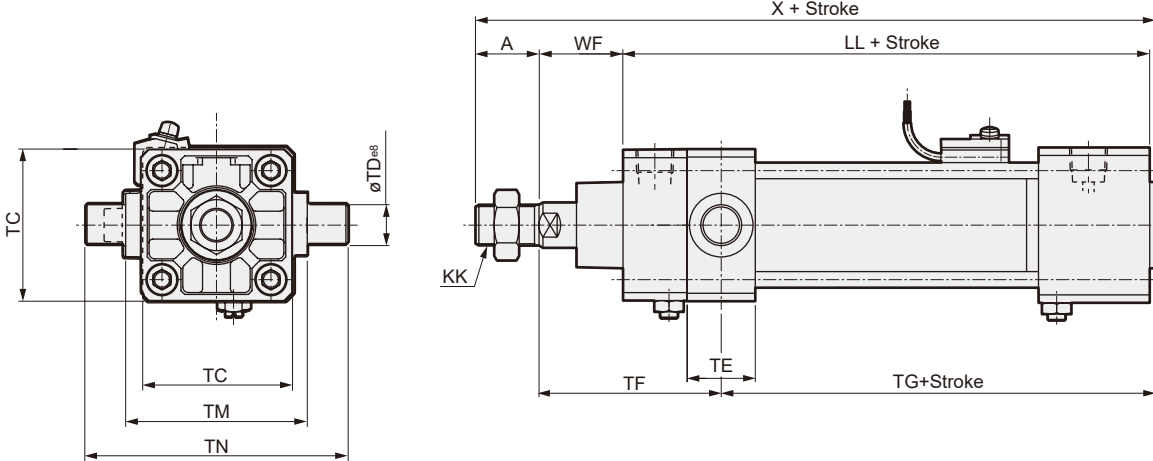


Code	Intermediate Trunnion Type (TC) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ
ø40	22	M14 × 1.5	120.5	33.5	178	60.5 + $\frac{\text{Stroke}}{2}$	57	16	30	63	95	94	62
ø50	28	M18 × 1.5	127	33.5	191	63.5 + $\frac{\text{Stroke}}{2}$	67	18	30	80	116	97	66
ø63	28	M18 × 1.5	130	31	192	65 + $\frac{\text{Stroke}}{2}$	82	20	35	90	130	96	68
ø80	36	M22 × 1.5	144	43	226.5	72 + $\frac{\text{Stroke}}{2}$	100	25	40	115	165	115	75.5
ø100	45	M26 × 1.5	156	50	255	78 + $\frac{\text{Stroke}}{2}$	121	35	50	135	205	128	82

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

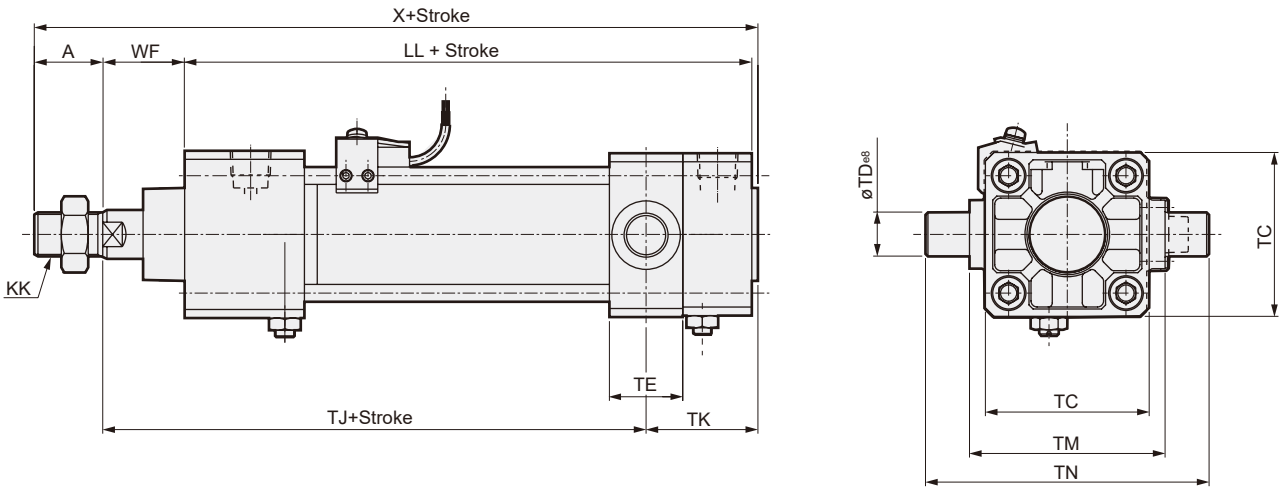
●Rod side trunnion type (TA) With head side fall prevention



Code	Rod Side Trunnion Type (TA) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TF	TG	TM	TN
ø40	22	M14 × 1.5	120.5	33.5	178	57	16	30	74.5	81.5	63	95
ø50	28	M18 × 1.5	127	37	194.5	67	18	30	80	86.5	80	116
ø63	28	M18 × 1.5	130	35	196	82	20	35	82.5	85.5	90	130
ø80	36	M22 × 1.5	144	48	231.5	100	25	40	102	93.5	115	165
ø100	45	M26 × 1.5	156	53	258	121	35	50	114	99	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.
*3: The position of the cushion needle cannot be changed.

●Head side trunnion type (TB) With rod side fall prevention

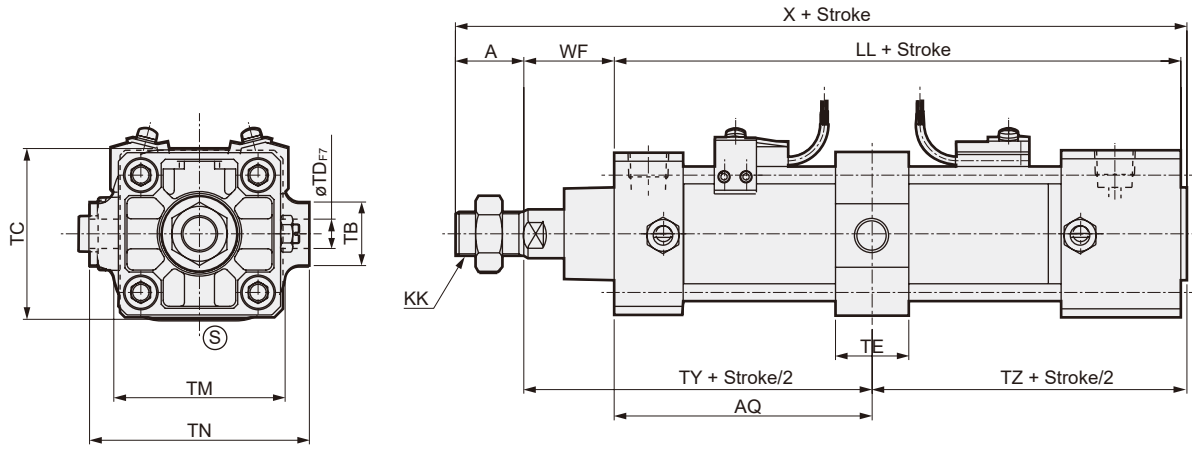


Code	Head Side Trunnion Type (TB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TJ	TK	TM	TN
ø40	22	M14 × 1.5	120.5	33.5	178	57	16	30	112.5	43.5	63	95
ø50	28	M18 × 1.5	127	33.5	191	67	18	30	117	46	80	116
ø63	28	M18 × 1.5	130	31	192	82	20	35	113	51	90	130
ø80	36	M22 × 1.5	144	43	226.5	100	25	40	132.5	58	115	165
ø100	45	M26 × 1.5	156	50	256	121	35	50	144.5	65.5	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.
*3: The position of the cushion needle cannot be changed.

Outline Dimension Drawing

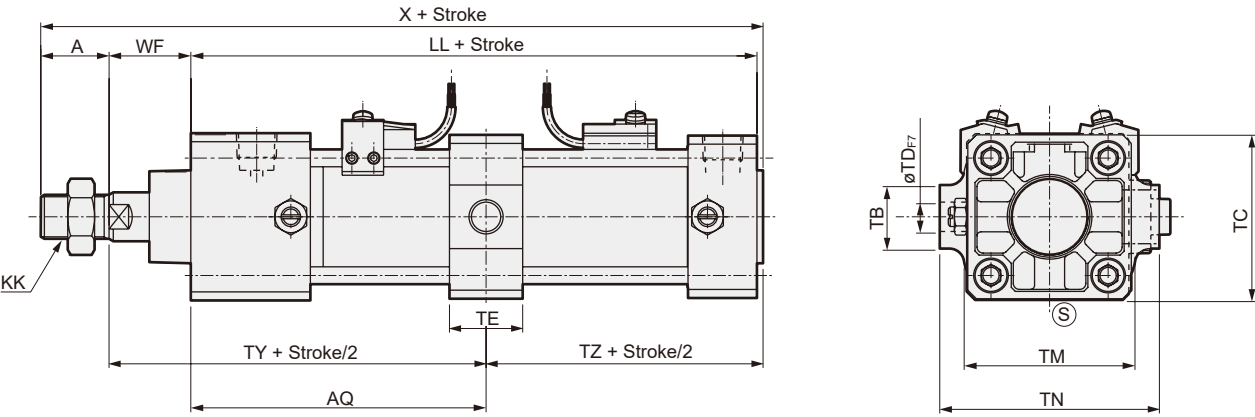
●Intermediate tapped trunnion type (TF) With head side fall prevention



Code	Intermediate tapped trunnion type (TF) Mounting dimensions													
Bore Size (mm)	A	KK	LL	WF	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ
ø50	28	M18 × 1.5	127	37	194.5	$63.5 + \frac{\text{Stroke}}{2}$	26	70	12	30	70	90	97	66
ø63	28	M18 × 1.5	130	35	196	$65 + \frac{\text{Stroke}}{2}$	30	86	14	35	86	104	96	68
ø80	36	M22 × 1.5	144	48	231.5	$72 + \frac{\text{Stroke}}{2}$	35	105	20	40	105	134	115	75.5
ø100	45	M26 × 1.5	156	53	258	$78 + \frac{\text{Stroke}}{2}$	40	123	20	40	127	150	128	82

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Intermediate tapped trunnion type (TF) With rod side fall prevention

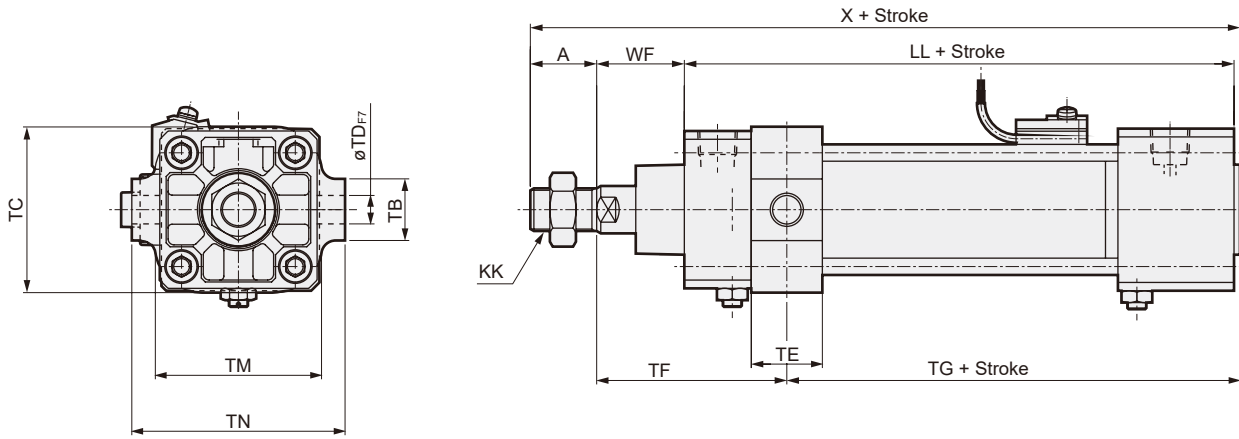


Code	Intermediate tapped trunnion type (TF) Mounting dimensions													
Bore Size (mm)	A	KK	LL	WF	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ
ø50	28	M18 × 1.5	127	33.5	191	$63.5 + \frac{\text{Stroke}}{2}$	26	70	12	30	70	90	97	66
ø63	28	M18 × 1.5	130	31	192	$65 + \frac{\text{Stroke}}{2}$	30	86	14	35	86	104	96	68
ø80	36	M22 × 1.5	144	43	226.5	$72 + \frac{\text{Stroke}}{2}$	35	105	20	40	105	134	115	75.5
ø100	45	M26 × 1.5	156	50	255	$78 + \frac{\text{Stroke}}{2}$	40	123	20	40	127	150	128	82

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

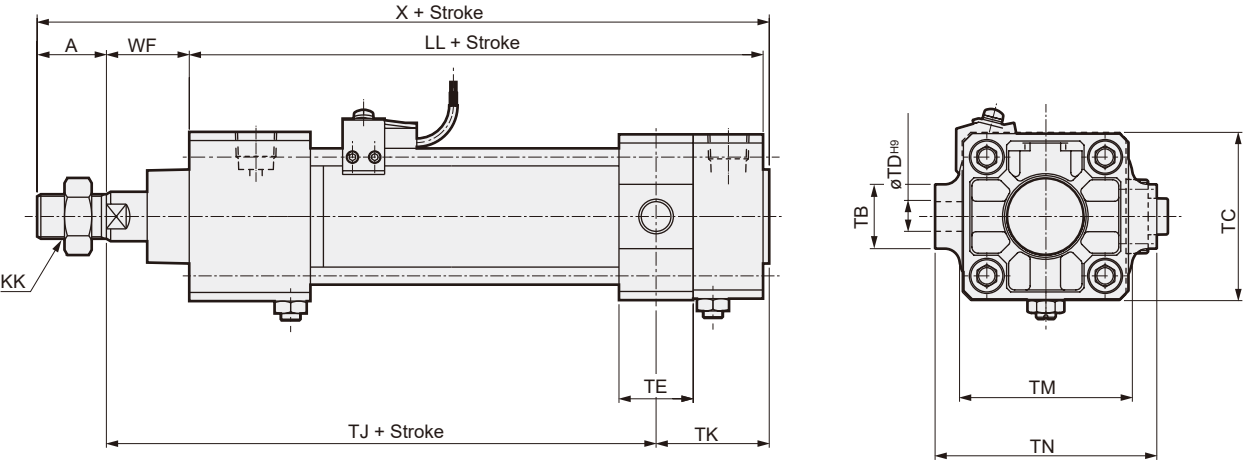
●Rod side tapped trunnion type (TD) With head side fall prevention



Code	Rod side tapped trunnion type (TD) Mounting dimensions												
Bore Size (mm)	A	KK	LL	WF	X	TB	TC	TD	TE	TF	TG	TM	TN
ø50	28	M18 × 1.5	127	37	194.5	26	70	12	30	80	86.5	70	90
ø63	28	M18 × 1.5	130	35	196	30	86	14	35	82.5	85.5	86	104
ø80	36	M22 × 1.5	144	48	231.5	35	105	20	40	102	93.5	105	134
ø100	45	M26 × 1.5	156	53	258	40	123	20	40	109	104	127	150

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.
*3: The position of the cushion needle cannot be changed.

●Head side tapped trunnion type (TE) With rod side fall prevention



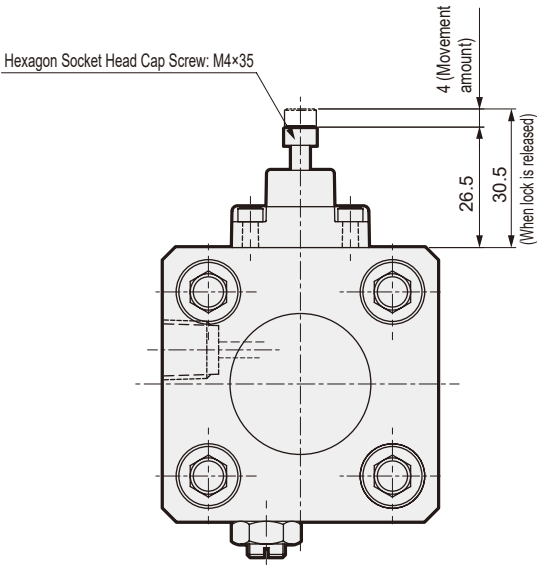
Code	Head side tapped trunnion type (TE) Mounting dimensions												
Bore Size (mm)	A	KK	LL	WF	X	TB	TC	TD	TE	TJ	TK	TM	TN
ø50	28	M18 × 1.5	127	33.5	191	26	70	12	30	117	46	70	90
ø63	28	M18 × 1.5	130	31	192	30	86	14	35	113	51	86	104
ø80	36	M22 × 1.5	144	43	226.5	35	105	20	40	132.5	58	105	134
ø100	45	M26 × 1.5	156	50	255	40	123	20	40	149.5	60.5	127	150

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: The position of the cushion needle cannot be changed.
*3: For outer dimensions diagram of accessories, refer to P. 644.

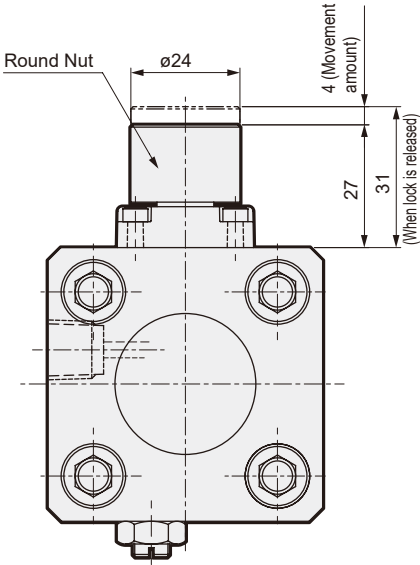
Outline Dimension Drawing

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

The manual override has common dimensions for all sizes (ø40 to ø100).



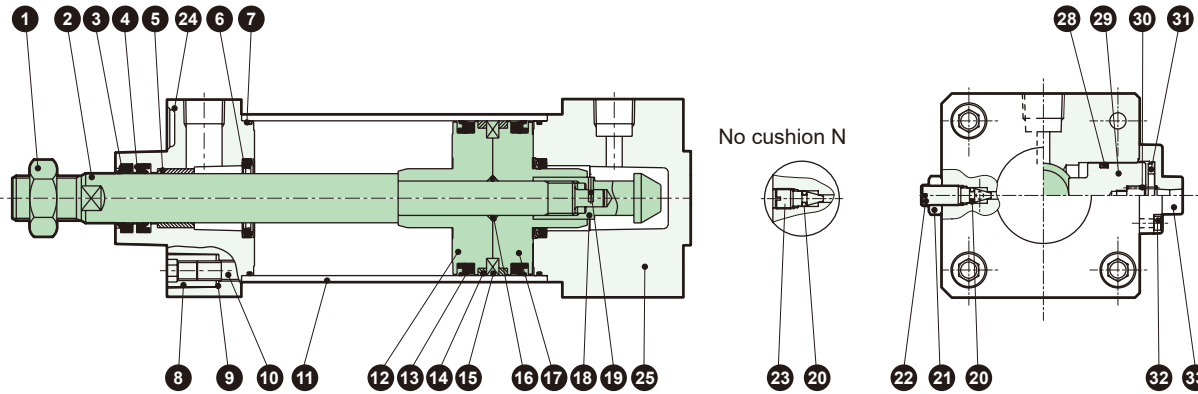
M0 (Non-locking manual override)



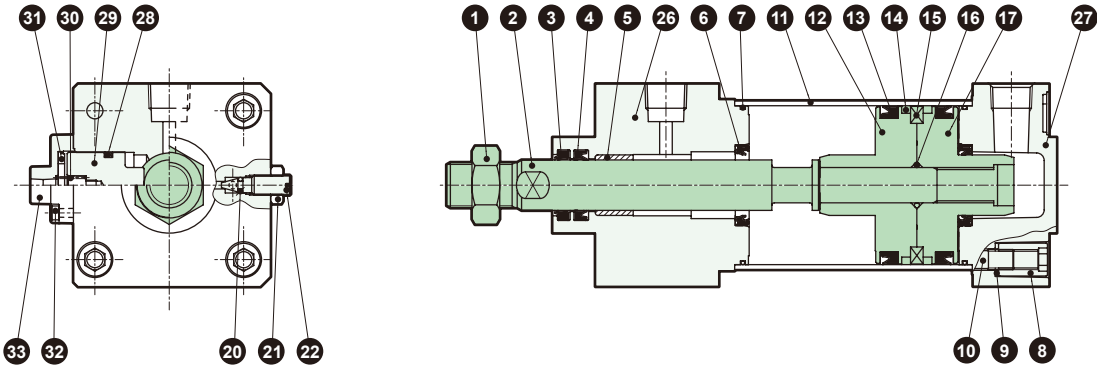
M1 (Locking manual override)

Internal Structure Diagram/Material

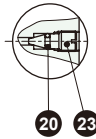
●With head side fall prevention



●With rod side fall prevention



No cushion N



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	18	Sleeve	Steel	Nitriding Treatment
2	Piston Rod	Steel	Industrial Hard Chrome Plating	19	Spring Pin	Steel	Black Oxide
3	Scraper	Nitrile Rubber		20	Needle Gasket	Nitrile Rubber	
4	Rod Packing	Nitrile Rubber		21	Hexagon Nut	Copper Alloy	Nickel Plating
5	Bushing	Oil-impregnated Bearing Alloy		22	Cushion Needle	Copper Alloy	Nickel Plating
6	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	23	Cushion plug	Copper Alloy	Nickel Plating
7	Cylinder Gasket	Nitrile Rubber		24	Rod cover (1)	Aluminum alloy *1	Painting
8	Round Nut	Steel	Zinc Chromate	25	Head cover (1)	Aluminum alloy *2	Painting
9	Belleville washer	Steel	Black Oxide	26	Rod cover (2)	Aluminum alloy *2	Painting
10	Tie Rod	Steel	Zinc Chromate	27	Head cover (2)	Aluminum alloy *1	Painting
11	Cylinder Tube	Aluminum Alloy	Hard Anodized	28	Stopper packing	Nitrile Rubber	
12	Piston (R)	Aluminum Alloy		29	Stopper Piston	Steel	Nitriding Treatment
13	Piston Packing	Nitrile Rubber		30	Coil Spring	Piano Wire	Electrodeposition Coating
14	Wear Ring	Polyacetal	Painting	31	Cushion Rubber	Urethane Rubber	
15	Magnet	Plastic		32	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
16	Piston Gasket	Nitrile Rubber		33	Stopper Cover	Aluminum Alloy	
17	Piston (B)	Aluminum Alloy					

*1: indicates aluminum alloy die-cast.

*2: indicates aluminum alloy casting.

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

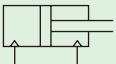


Medium Bore Size Cylinder
Double-acting, Low friction type (Low friction at low pressure (0.2MPa or less))

SCA2-O Series

●Bore size: ø40, ø50, ø63, ø80, ø100

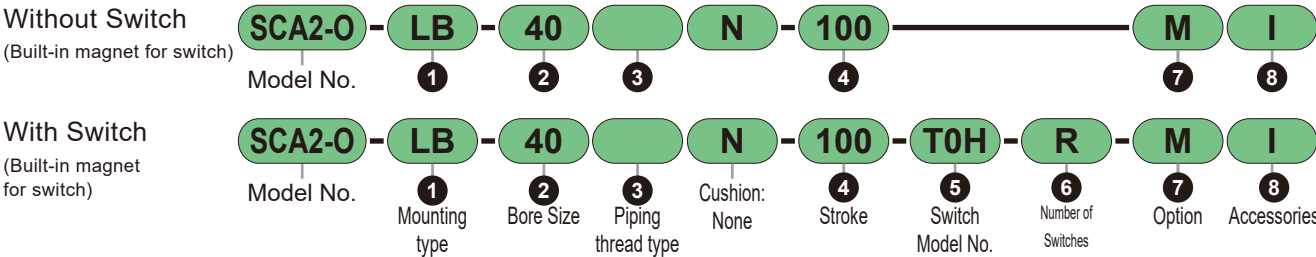
Circuit Diagram Symbol



SCA2-O Series

Model No. Notation Method

Model No. Notation Method



1 Mounting type

Mounting brackets are included to the product and shipped. (However, trunnion types are shipped assembled.)

Code	Content	Code	Content	Code	Content
00	Basic type	CA	Single Clevis Type	TF	Intermediate tapped trunnion type (ø50 to ø100)
LB	Axial Foot Type	CB	Double Clevis Type (Pin and retaining ring included)	TD	Rod side tapped trunnion type (ø50 to ø100)
FA	Rod Side Flange Type	TC	Intermediate Trunnion Type	TE	Head side tapped trunnion type (ø50 to ø100)
FB	Head Side Flange Type	TA	Rod Side Trunnion Type		
FC	Head side special flange type	TB	Head Side Trunnion Type		

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Stroke (mm)

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

Note: For minimum stroke with switch, please refer to P. 708 and 709.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T5V□	T5V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
	2-Color Improved Water Resistance	2-wire	—	24 ± 10%	—	5 to 20	T2YD□	—	
	2-Color for AC Magnetic Field	2-wire	—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
	1-Color Off-Delay Type	2-wire	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
	1-Color Flexible Lead Wire Type	2-wire	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color No Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color	2-wire	110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (–) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

6 Number of Switches

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

*1

*1

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

7 Option

Code	Content
M	Piston Rod Material (Stainless Steel)

8 Accessories

Code	Content	
I	Single Knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion Type 2nd Bracket (2 pieces/set)	

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

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

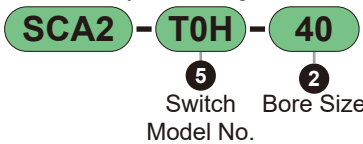
Code	Content	Code	Content	Code	Content
-XR□□□□	Port/Cushion needle position specification	-XP5	Knuckle Pin/Clevis Pin Split Pin	-XM1	Tie rod material SUS
-XK□	Mounting Bracket Rotational Assembly	-XP7	Knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XAQ□□	Trunnion Position Specification	-XP8	Knuckle Pin/Clevis Pin Split Pin Specification, Knuckle fixed by pinning	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) SCA2-O-..... - XP5

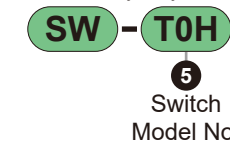
Switch Single Unit Model No. Notation Method

[T type switch]

●Switch body + Mounting bracket set



●Switch body only



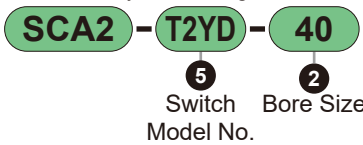
●Switch mounting bracket set



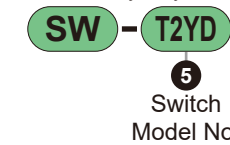
Note: Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item	SCA2-O (Low friction type)					
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method	Double Acting Type					
Operating Fluid	Compressed Air					
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.01				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	5 to 60				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360) ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	10 to 200 (Use within allowable absorbed energy.)				
Cushion		None				
Lubrication		Not Available				
Allowable Absorbed Energy J		0.067	0.079	0.079	0.201	0.301
		Since there is no cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	1
ø50			
ø63		700	
ø80			
ø100		800	

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

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

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

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

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

●Minimum stroke with T8 type switch

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

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

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

Specifications

Switch specifications

●Minimum stroke with T2/T3 type switch

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

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

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

●Minimum stroke with T1/T2YD type switch

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

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

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

●Minimum stroke with T2W/T3W/T2WL type switch

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

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

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

Cylinder Weight

(Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type 00	Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		T type	
ø40	0.83	1.00	1.24	1.15	1.19	1.21	Refer to the weight listed in the switch specifications on P. 971.	0.024	0.39
ø50	1.20	1.45	1.69	1.58	1.61	1.74		0.022	0.46
ø63	1.60	1.97	2.69	2.17	2.22	2.45		0.020	0.50
ø80	2.60	3.34	4.46	3.87	4.08	3.94		0.026	0.90
ø100	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 at 0 mm stroke 1.45 kg Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg Weight of 2 T0H switches.....$0.018 \times 2 = 0.036$ kg Weight of 2 mounting brackets$0.022 \times 2=0.044$ kg Product Weight $1.45 + 0.92 + 0.036 + 0.044 = 2.450$ kg									

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa											
		0.01	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	1.26×10^2	1.26×10^2	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	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	1.96×10^2	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	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	3.12×10^2	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	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	5.03×10^2	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	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	7.85×10^2	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	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
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
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: For the material of the mounting brackets, please refer to P. 646.

*2: Foot type mounting brackets come in sets of 2.

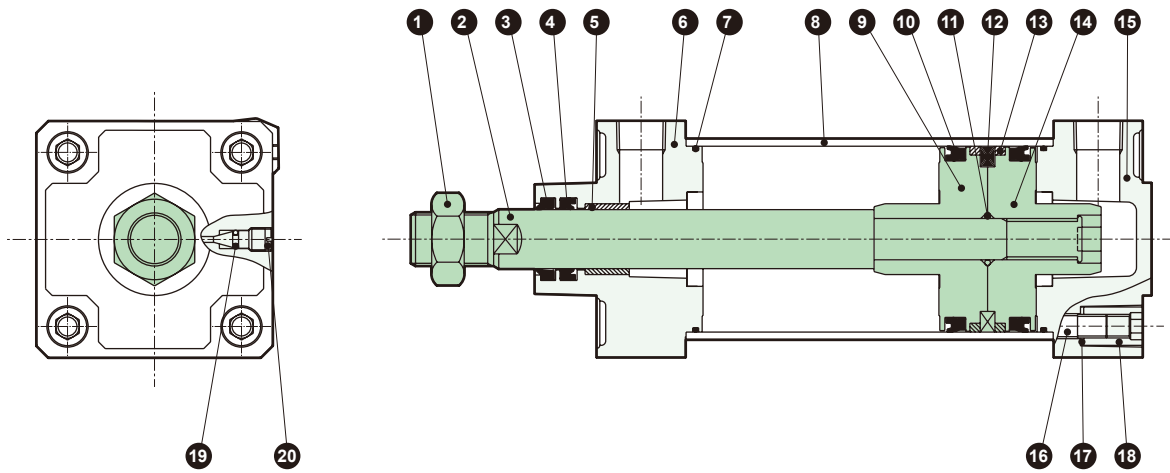
*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing/Internal Structure Diagram/Material

Outline Dimension Drawing

Same as double acting/single rod type. Please refer to P. 632 to 642.

Internal Structure Diagram/Material



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	11	Piston Gasket	Nitrile Rubber	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	12	Magnet	Plastic	
3	Scraper	Nitrile Rubber		13	Wear Ring	Polyacetal	
4	Rod Packing	Nitrile Rubber		14	Piston H	Aluminum Alloy	
5	Bushing	Oil-Impregnated Bearing Alloy		15	Head Cover	Aluminum Alloy	Painting
6	Rod Cover	Aluminum Alloy	Painting	16	Tie Rod	Steel	Zinc Chromate
7	Cylinder Gasket	Nitrile Rubber		17	Belleville washer	Steel	Black Oxide
8	Cylinder Tube	Aluminum Alloy	Hard Anodized	18	Round Nut	Steel	Zinc Chromate
9	Piston R	Aluminum Alloy		19	Needle Gasket	Nitrile Rubber	
10	Piston Packing	Nitrile Rubber		20	Cushion needle stop plug	Copper Alloy	Nickel Plating

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.



Medium Bore Size Cylinder
Double-acting, Low friction type (Constant friction when pressurized)

SCA2-U Series

●Bore size: ø40, ø50, ø63, ø80, ø100

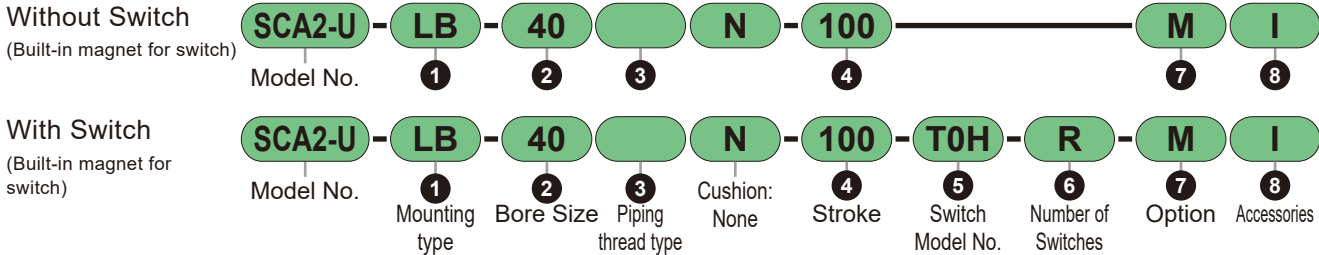
Circuit Diagram Symbol



SCA2-U Series

Model No. Notation Method

Model No. Notation Method



1 Mounting type

Mounting brackets are included to the product and shipped. (However, trunnion types are shipped assembled.)

Code	Content	Code	Content	Code	Content
00	Basic type	CA	Single Clevis Type	TF	Intermediate tapped trunnion type (ø50 to ø100)
LB	Axial Foot Type	CB	Double Clevis Type (Pin and retaining ring included)	TD	Rod side tapped trunnion type (ø50 to ø100)
FA	Rod Side Flange Type	TC	Intermediate Trunnion Type	TE	Head side tapped trunnion type (ø50 to ø100)
FB	Head Side Flange Type	TA	Rod Side Trunnion Type		
FC	Head side special flange type	TB	Head Side Trunnion Type		

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Stroke (mm)

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

Note: For minimum stroke with switch, please refer to P. 714 and 715.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
			—	24 ± 10%	—	5 to 20	T2YD□	—	
			—	24 ± 10%	—	5 to 20	T2YDT□	—	
	1-Color Off-Delay Type	2-wire	—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
			—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+) 4PIN (-) Lead Wire 0.3 m

*5

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

6 Number of Switches

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

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

7 Option

Code	Content
M	Piston Rod Material (Stainless Steel)

8 Accessories

Code	Content	
I	Single knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion Type 2nd Bracket (2 pieces/set)	

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

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

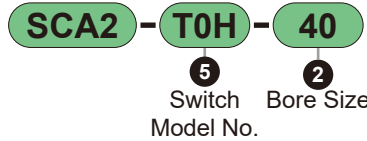
Code	Content	Code	Content	Code	Content
-XR□□□□	Port/Cushion needle position specification	-XP5	Knuckle Pin/Clevis Pin Split Pin	-XM1	Tie rod material SUS
-XK□	Mounting Bracket Rotational Assembly	-XP7	Knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XAQ□□	Trunnion Position Specification	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) SCA2-U-.....-XP5

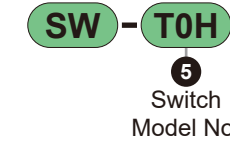
Switch Single Unit Model No. Notation Method

[T type switch]

●Switch body + Mounting bracket set



●Switch body only



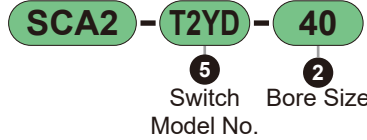
●Switch mounting bracket set



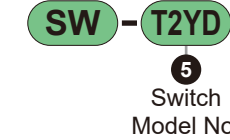
*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item	SCA2-U				
Bore Size	ø40	ø50	ø63	ø80	ø100
Actuation method	Double Acting Type				
Operating Fluid	Compressed Air				
Max. Working Pressure MPa	0.7				
Min. Operating Pressure MPa	0.03				
Proof Pressure MPa	1.0				
Ambient Temperature °C	5 to 60				
Port Size	Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm	+0.9 ₀ (Up to 360), +1.4 ₀ (Up to 800)				
Working piston speed mm	10 to 1000				
Cushion	None				
Lubrication	Not Available				
Internal leakage m³/min	0.005			0.008	
Allowable absorbed energy	0.067	0.079	0.079	0.201	0.301
	Since there is no cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250 300, 350, 400, 450, 500	600	1
ø50			
ø63			
ø80		700	
ø100		800	

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

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

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

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

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

●Minimum stroke with T8 type switch

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

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

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

Specifications

Minimum Stroke with Switch

●Minimum stroke with T2/T3 type switch

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

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

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

●Minimum stroke with T1/T2YD type switch

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

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

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

●Minimum stroke with T2W/T3W/T2WL type switch

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

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

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

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm							Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type (OO)	Foot Type (LB)	Flange Type (FA, FB)	Special flange type (FC)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		T type	
ø40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the mass described in the switch specifications on P. 971	0.024	0.39
ø50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.022	0.46
ø63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.020	0.50
ø80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.026	0.90
ø100	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 at 0 mm stroke 1.45 kg Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg Weight of 2 T0H switches.....$0.018 \times 2 = 0.036$ kg Weight of 2 mounting brackets$0.022 \times 2=0.044$ kg Product Weight $1.45 + 0.92 + 0.036 + 0.044 = 2.450$ kg										

Theoretical Thrust Table (Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa								
		0.03	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø40	Push	37.8	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
	Pull	31.8	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
ø50	Push	58.8	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
	Pull	49.5	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
ø63	Push	93.6	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
	Pull	84.0	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
ø80	Push	1.51×10^2	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
	Pull	1.36×10^3	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
ø100	Push	2.36×10^2	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
	Pull	2.15×10^4	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

Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
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
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: For the material of the mounting brackets, please refer to P. 646.

*2: Foot type mounting brackets come in sets of 2.

*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

Same as double acting/single rod type.
Please refer to P. 632 to 642.

Do not disassemble

Technical Data

For technical data on sliding resistance values, please refer to P. 412.
The data on P. 412 is for the "SCM-U series", but the "SCA2-U series" also shows the same trend.

MEMO



Medium Bore Size Cylinder
Double Acting/Double Rod Type

SCA2-D Series

●Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

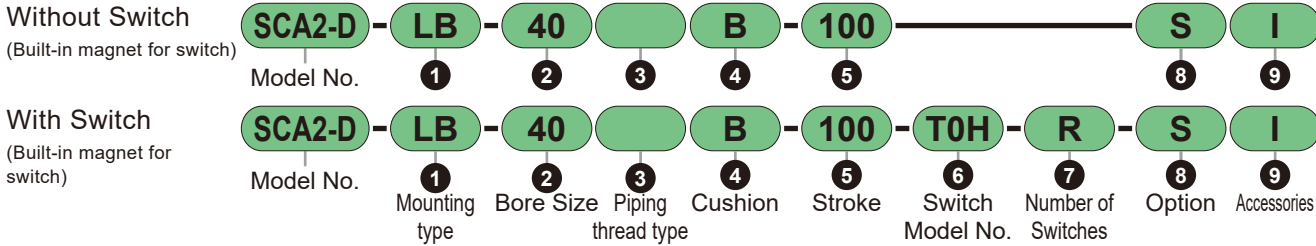


RoHS

SCA2-D Series

Model No. Notation Method

Model No. Notation Method



1 Mounting type

Mounting brackets are included to the product and shipped.
(However, trunnion types are shipped assembled.)

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side Flange Type	
TC	Intermediate Trunnion Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TF	Intermediate tapped trunnion type (ø50 to ø100)	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Cushion

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

5 Stroke (mm)

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

Note: For minimum stroke with switch, please refer to P. 720 and 721.

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1				
			AC	DC	AC	DC	Straight	L-shape			
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□			
			—	10 to 30	—	5 to 20 *2	T2H□	T2V□			
		3-wire (NPN)	—	—	100 or less	T3H□	T3V□				
		3-wire (PNP)	—	30 or less	—	T3PH□	T3PV□				
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□			
			3-wire (NPN)	—	30 or less	—	50 or less	T3WH□		T3WV□	
		2-Color Improved Water Resistance	2-wire	—	24 ± 10%	—	5 to 20	T2WLH□		T2WLV□	
				—	24 ± 10%	—	5 to 20	T2YD□		—	
	—			T2YDT□		—					
	1-Color Off-Delay Type			—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□		
1-Color Flexible Lead Wire Type	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3					
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□			
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□			
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□			

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (–) Lead Wire 0.3 m

*5

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

7 Number of Switches

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

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

9 Accessories

Code	Content	
I	Single knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B4	Trunnion Type 2nd Bracket (2 pieces/set)	

*1: Accessories I and Y come as 2 sets.

8 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

*3: If options J and L are selected, the bellows are attached to both rods.

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	-A2	With 2 Rod Nuts
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) SCA2-D-.....-XP5

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

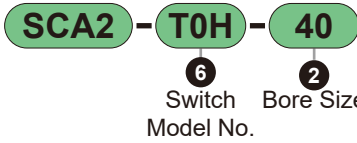
●Uses food grade grease that can be used in food manufacturing processes

SCA2-D-.....-FP1

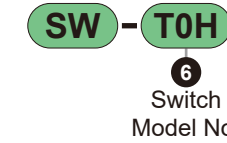
Switch Single Unit Model No. Notation Method

[T type switch]

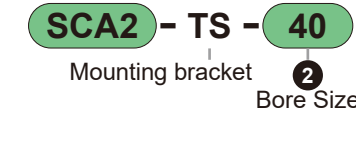
●Switch body + Mounting bracket set



●Switch body only



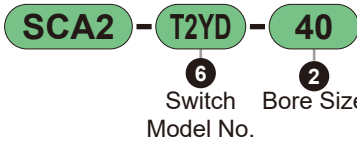
●Switch mounting bracket set



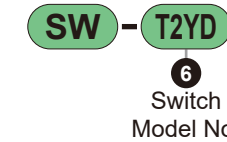
*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

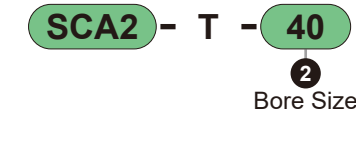
●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item		SCA2-D (Double rod type)					
Bore Size	mm	ø40	ø50	ø63	ø80	ø100	
Actuation method		Double Acting Type					
Operating Fluid		Compressed Air					
Max. Working Pressure	MPa	1.0					
Min. Operating Pressure	MPa	0.1					
Proof Pressure	MPa	1.6					
Ambient Temperature		-10 to 60 (Provided that freezing does not occur)					
Port Size		Rc 1/4	Rc 3/8		Rc 1/2		
Stroke tolerance		^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)					
Operating Piston Speed		50 to 1000 (Use within allowable absorbed energy.)					
Cushion		Air Cushion					
Effective air cushion length		mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8	
	Without Cushion	0.067	0.079	0.079	0.201	0.301	
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.					

Stroke

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Producible Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	800	1
ø50				
ø63				
ø80				
ø100				

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: If the maximum stroke is exceeded, the product specifications may not be met depending on the conditions, so please consult us.

Min. Stroke with Switch

● Minimum stroke with T0/T5 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● Minimum stroke with T8 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

Min. Stroke with Switch

● Minimum stroke with T2/T3 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● Minimum stroke with T1/T2YD type switch

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

*1: () indicates T□V (L-shaped lead wire type). However, T2YD does not have an L-shaped lead wire type (V).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● Minimum stroke with T2W/T3W/T2WL type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch weight	Switch Mount- ing Bracket Weight	S = Added weight per 10 mm
	Basic type 00	Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		T type	
ø40	1.15	1.32	1.56	1.47	1.51	1.53	Refer to the mass described in the switch specifications on P. 971	0.024	0.55
ø50	1.63	1.88	2.12	2.01	2.04	2.17		0.022	0.71
ø63	2.06	2.43	3.15	2.63	2.68	2.91		0.020	0.75
ø80	3.66	4.40	5.52	4.93	5.14	5.00		0.026	1.29
ø100	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-T0H-D — Product Weight at 0 mm stroke 1.88 kg Added weight at 200 mm stroke $0.71 \times \frac{200}{100} = 1.42$ kg Weight of 2 T0H switches.....$0.018 \times 2 = 0.036$ kg Weight of 2 mounting brackets$0.022 \times 2=0.044$ kg Product Weight $1.88 + 1.42 + 0.036 + 0.044 = 3.380$ kg									

MEMO

Theoretical Thrust Table (Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push/Pull	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push/Pull	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push/Pull	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push/Pull	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push/Pull	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

Mounting Bracket Model No. Notation Method

Bore Size (mm)		ø40	ø50	ø63	ø80	ø100
Mounting bracket						
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

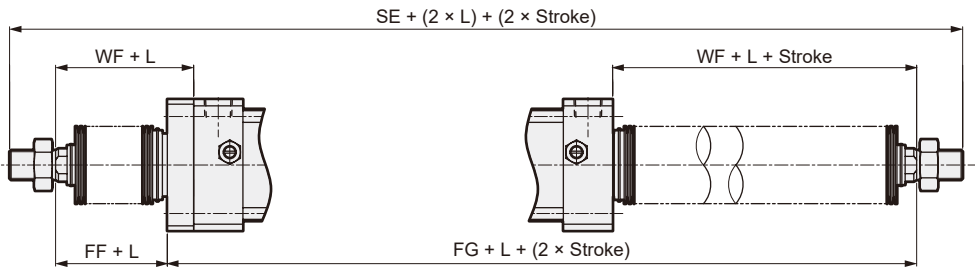
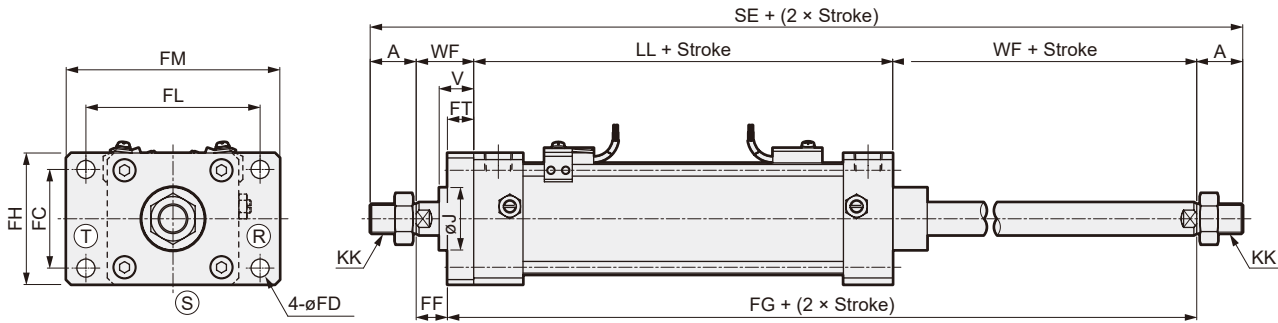
*1: For the material of the mounting brackets, please refer to P. 646.

*2: Foot type mounting brackets come in sets of 2.

*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

●Rod Side Flange Type (FA)



[With Bellows]

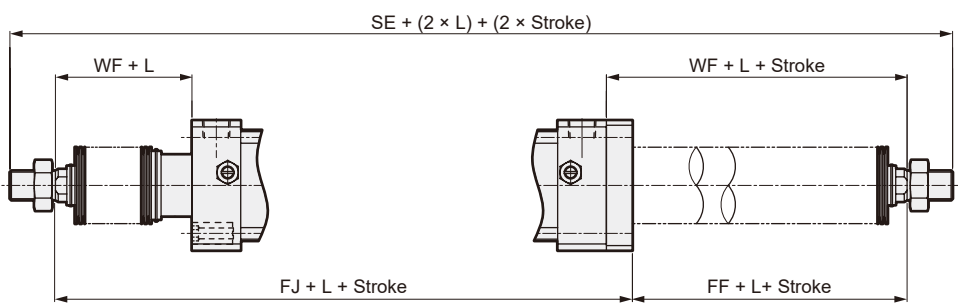
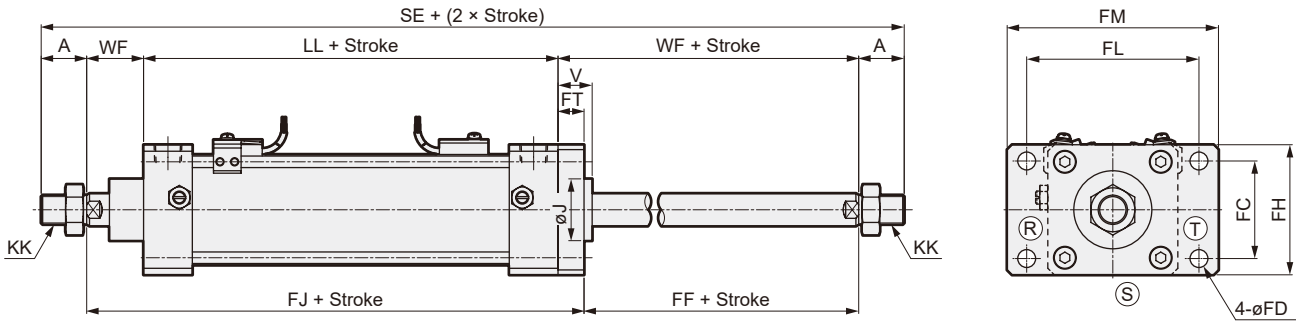
Code	Rod Side Flange Type (FA) Mounting Dimensions														
Bore Size (mm)	A	J	KK	LL	SE	V	WF	FC	FD	FF	FG	FH	FL	FM	FT
ø40	22	31	M14 × 1.5	93	204	18.5	33.5	40	9	21.5	138.5	57	80	100	12
ø50	28	38	M18 × 1.5	101	231	20.5	37	47	9	25	150	65	85	108	12
ø63	28	38	M18 × 1.5	105	231	21	35	60	11	19	156	80	106	130	16
ø80	36	43	M22 × 1.5	116	284	23.5	48	74	14	29	183	98	125	153	19
ø100	45	51	M26 × 1.5	128	324	32	53	88	14	34	200	118	144	180	19

Code	L							
Bore Size (mm)	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 When exceeding 500
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9

- *1: (R)(S)(T) indicates the position of the cushion needle.
*2: The position of the width across flats for wrench on left and right sides is not fixed.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Head Side Flange Type (FB)



[With Bellows]

Code	Head Side Flange Type (FB) Mounting Dimensions														
Bore Size (mm)	A	J	KK	LL	SE	V	WF	FC	FD	FF	FH	FJ	FL	FM	FT
ø40	22	31	M14 × 1.5	93	204	18.5	33.5	40	9	21.5	57	138.5	80	100	12
ø50	28	38	M18 × 1.5	101	231	20.5	37	47	9	25	65	150	85	108	12
ø63	28	38	M18 × 1.5	105	231	21	35	60	11	19	80	156	106	130	16
ø80	36	43	M22 × 1.5	116	284	23.5	48	74	14	29	98	183	125	153	19
ø100	45	51	M26 × 1.5	128	324	32	53	88	14	34	118	200	144	180	19

Code	L							
Bore Size (mm)	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 When exceeding 500
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9

- *1: (R)(S)(T) indicates the position of the cushion needle.
*2: The position of the width across flats for wrench on left and right sides is not fixed.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

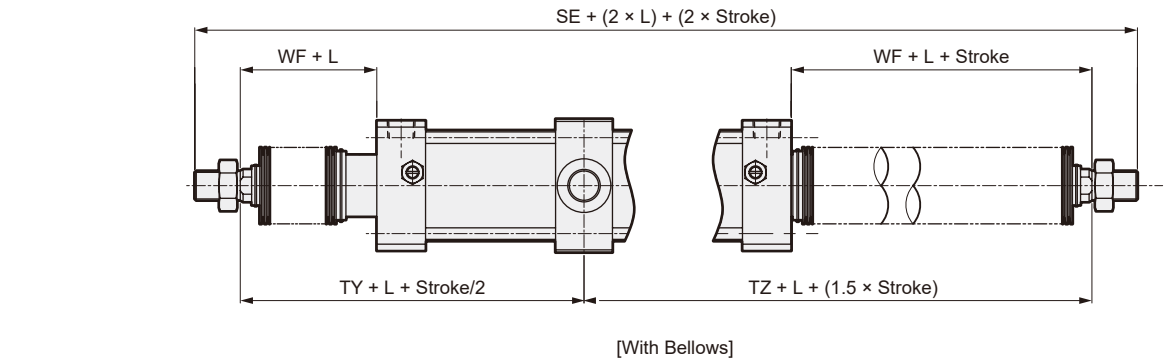
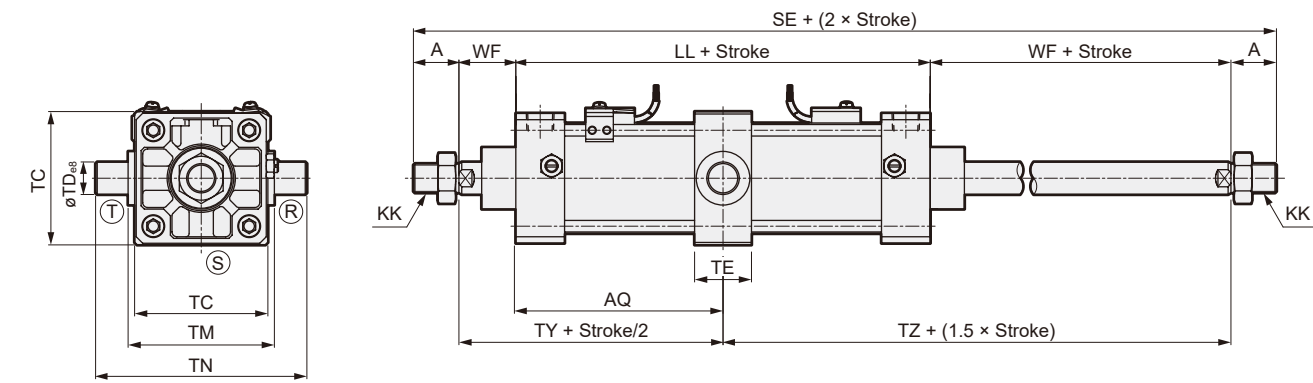
SCS2

Cylinder Switch

Ending

Outline Dimension Drawing

●Intermediate trunnion type (TC)



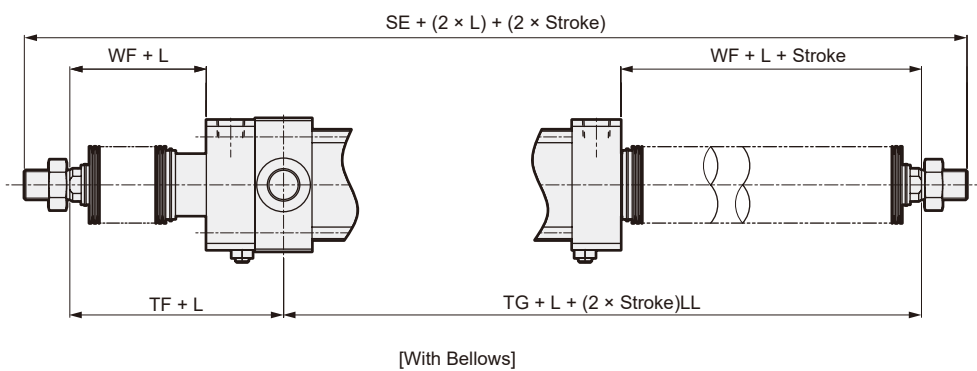
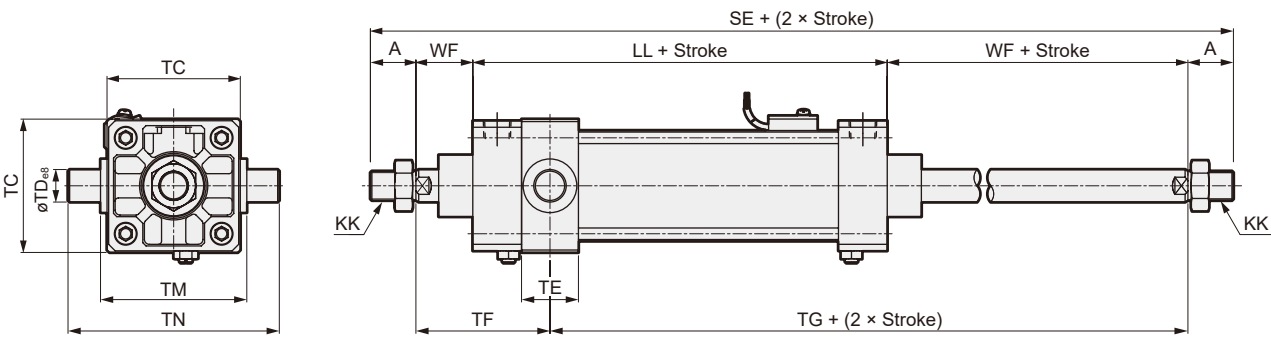
Code	Intermediate Trunnion Type (TC) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	SE	WF	AQ	TC	TD	TE	TY	TZ	TM	TN
ø40	22	M14 × 1.5	93	204	33.5	46.5 + Stroke/2	57	16	30	80	80	63	95
ø50	28	M18 × 1.5	101	231	37	50.5 + Stroke/2	67	18	30	87.5	87.5	80	116
ø63	28	M18 × 1.5	105	231	35	52.5 + Stroke/2	82	20	35	87.5	87.5	90	130
ø80	36	M22 × 1.5	116	284	48	58 + Stroke/2	100	25	40	106	106	115	165
ø100	45	M26 × 1.5	128	324	53	64 + Stroke/2	121	35	50	117	117	135	205

Code	L							
Bore Size (mm)	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 When exceeding 500
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: ⓇⓈⓉ indicates the position of the cushion needle.
*2: The position of the width across flats for wrench on left and right sides is not fixed.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	SE	WF	TC	TD	TE	TF	TG	TM	TN
ø40	22	M14 × 1.5	93	204	33.5	57	16	30	74.5	85.5	63	95
ø50	28	M18 × 1.5	101	231	37	67	18	30	80	95	80	116
ø63	28	M18 × 1.5	105	231	35	82	20	35	82.5	92.5	90	130
ø80	36	M22 × 1.5	116	284	48	100	25	40	102	110	115	165
ø100	45	M26 × 1.5	128	324	53	121	35	50	114	120	135	205

Code	L							
Bore Size (mm)	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 When exceeding 500
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the width across flats for spanners on the left and right is not fixed.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

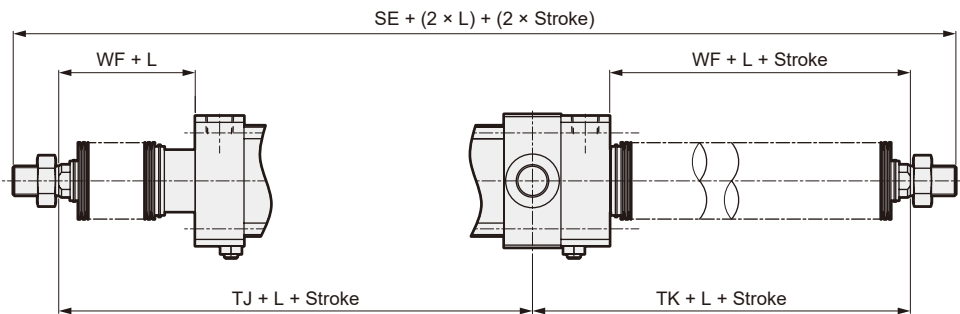
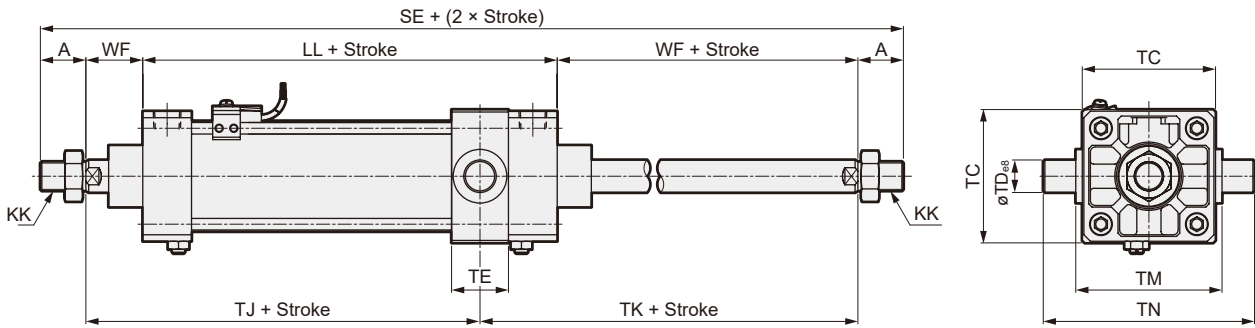
SCS2

Cylinder Switch

Ending

Outline Dimension Drawing

●Head Side Trunnion Type (TB)



[With Bellows]

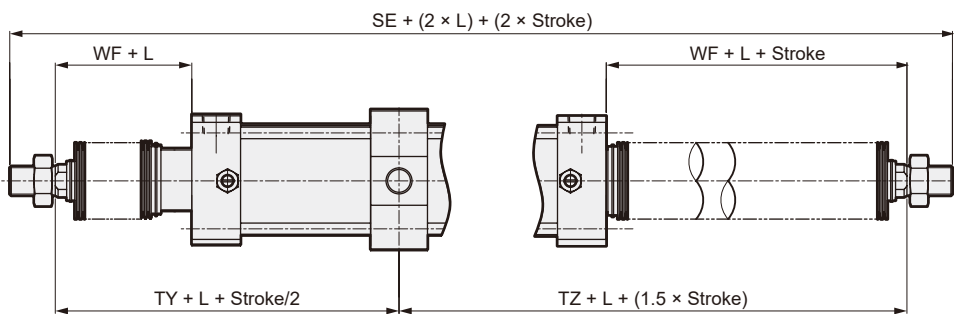
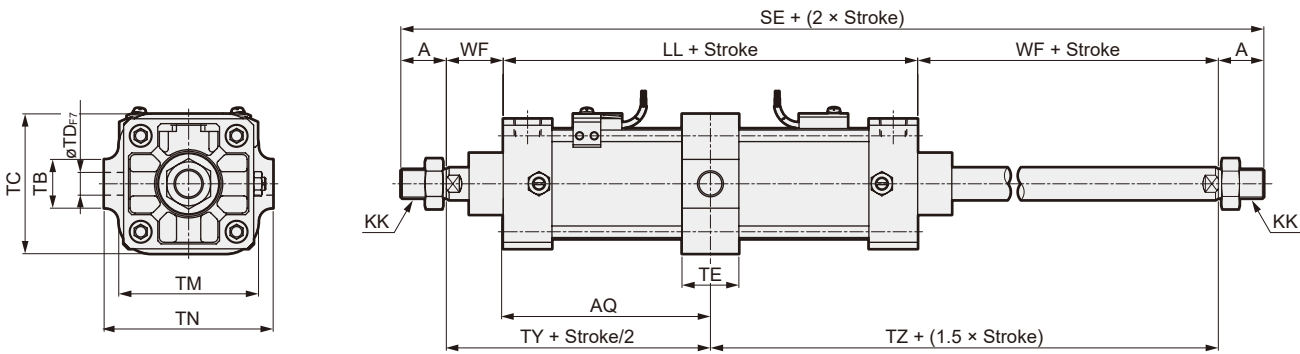
Code	Head Side Trunnion Type (TB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	SE	WF	TC	TD	TE	TJ	TK	TM	TN
ø40	22	M14 × 1.5	93	204	33.5	57	16	30	85	75	63	95
ø50	28	M18 × 1.5	101	231	37	67	18	30	94.5	80.5	80	116
ø63	28	M18 × 1.5	105	231	35	82	20	35	92	83	90	130
ø80	36	M22 × 1.5	116	284	48	100	25	40	109.5	102.5	115	165
ø100	45	M26 × 1.5	128	324	53	121	35	50	119.5	114.5	135	205

Code	L							
Bore Size (mm)	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 When exceeding 500
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the width across flats for spanners on the left and right is not fixed.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Intermediate tapped trunnion type (TF)



[With Bellows]

Code	Intermediate tapped trunnion type (TF) Mounting dimensions													
Bore Size (mm)	A	KK	LL	SE	WF	AQ	TB	TC	TD	TE	TY	TZ	TM	TN
ø50	28	M18 × 1.5	101	231	37	50.5 + Stroke/2	26	70	12	30	87.5	87.5	70	90
ø63	28	M18 × 1.5	105	231	35	52.5 + Stroke/2	30	86	14	35	87.5	87.5	86	104
ø80	36	M22 × 1.5	116	284	48	58 + Stroke/2	35	105	20	40	106	106	105	134
ø100	45	M26 × 1.5	128	324	53	64 + Stroke/2	40	123	20	40	117	117	127	150

Code	L							
Bore Size (mm)	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 When exceeding 500
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the width across flats for spanners on the left and right is not fixed.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

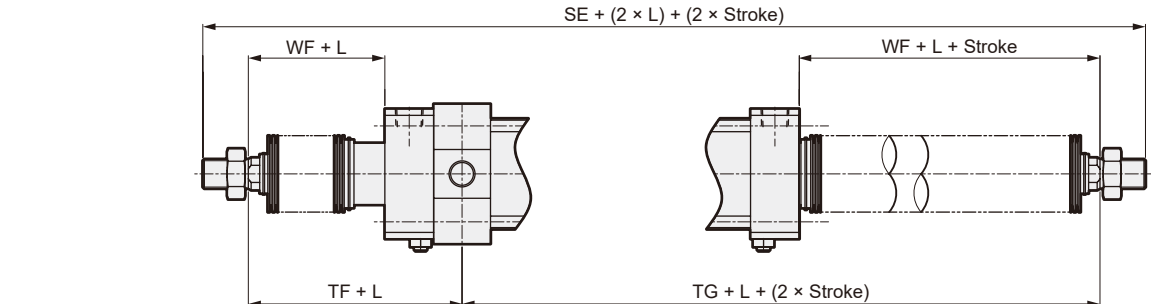
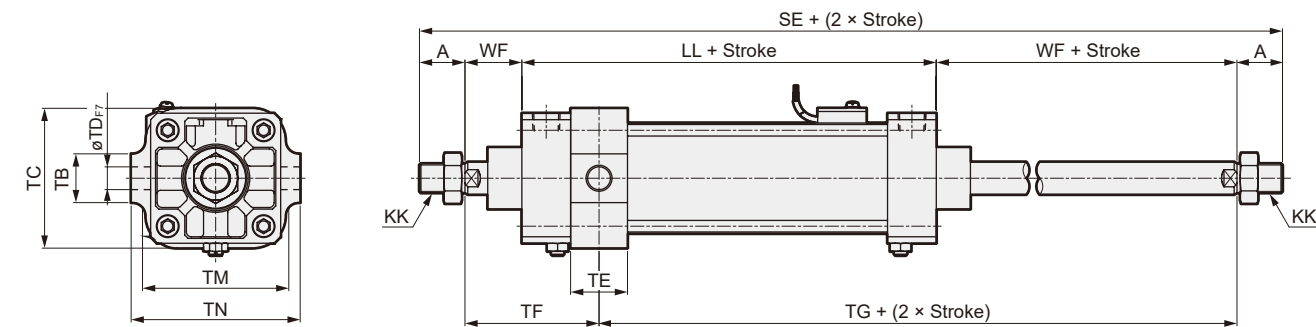
SCS2

Cylinder Switch

Ending

Outline Dimension Drawing

●Rod side tapped trunnion type (TD)



[With Bellows]

Code	Rod side tapped trunnion type (TD) Mounting dimensions												
Bore Size (mm)	A	KK	LL	SE	WF	TB	TC	TD	TE	TF	TG	TM	TN
ø50	28	M18 × 1.5	101	231	37	26	70	12	30	80	95	70	90
ø63	28	M18 × 1.5	105	231	35	30	86	14	35	82.5	92.5	86	104
ø80	36	M22 × 1.5	116	284	48	35	105	20	40	102	110	105	134
ø100	45	M26 × 1.5	128	324	53	40	123	20	40	109	125	127	150
Code	L												
Bore Size (mm)	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					
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5					
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9					

*1: The position of the width across flats for spanners on the left and right is not fixed.

*2: Round up the L dimension to the nearest whole number.

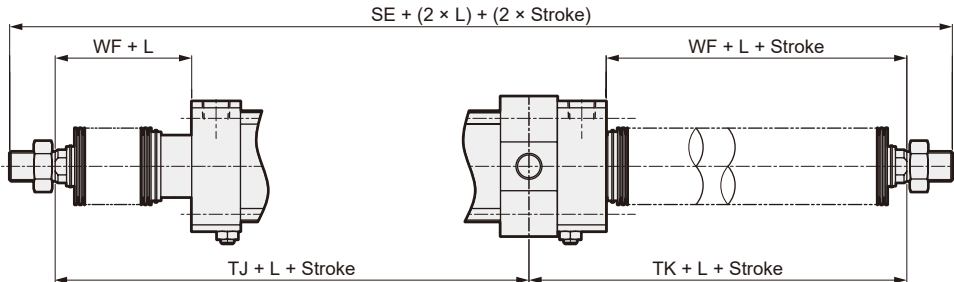
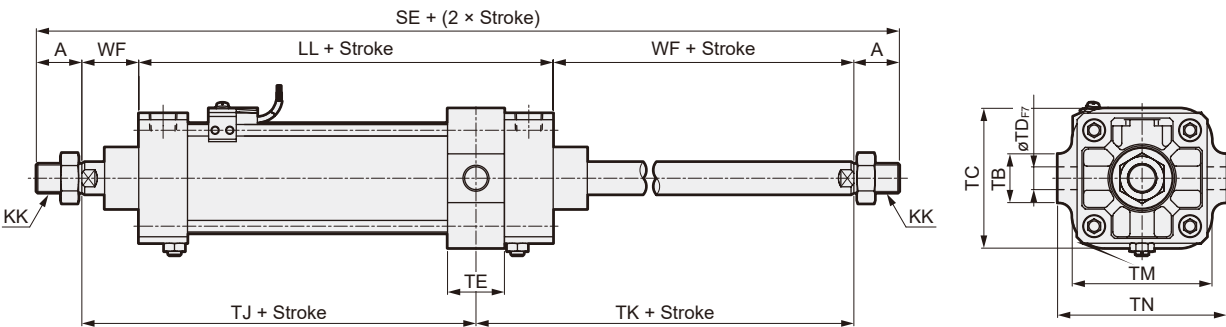
*3: For dimensions with each switch, please refer to P. 850 to 853.

*4: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting/Double Rod Type

Outline Dimension Drawing

●Head side tapped trunnion type (TE)



[With Bellows]

Code	Head side tapped trunnion type (TE) Mounting dimensions												
Bore Size (mm)	A	KK	LL	SE	WF	TB	TC	TD	TE	TJ	TK	TM	TN
ø50	28	M18 × 1.5	101	231	37	26	70	12	30	94.5	80.5	70	90
ø63	28	M18 × 1.5	105	231	35	30	86	14	35	92	83	86	104
ø80	36	M22 × 1.5	116	284	48	35	105	20	40	109.5	102.5	105	134
ø100	45	M26 × 1.5	128	324	53	40	123	20	40	124.5	109.5	127	150
Code	L												
Bore Size (mm)	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					
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5					
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5					
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9					

*1: The position of the width across flats for spanners on the left and right is not fixed.

*2: Round up the L dimension to the nearest whole number.

*3: For dimensions with each switch, please refer to P. 850 to 853.

*4: For outer dimensions diagram of accessories, refer to P. 644.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

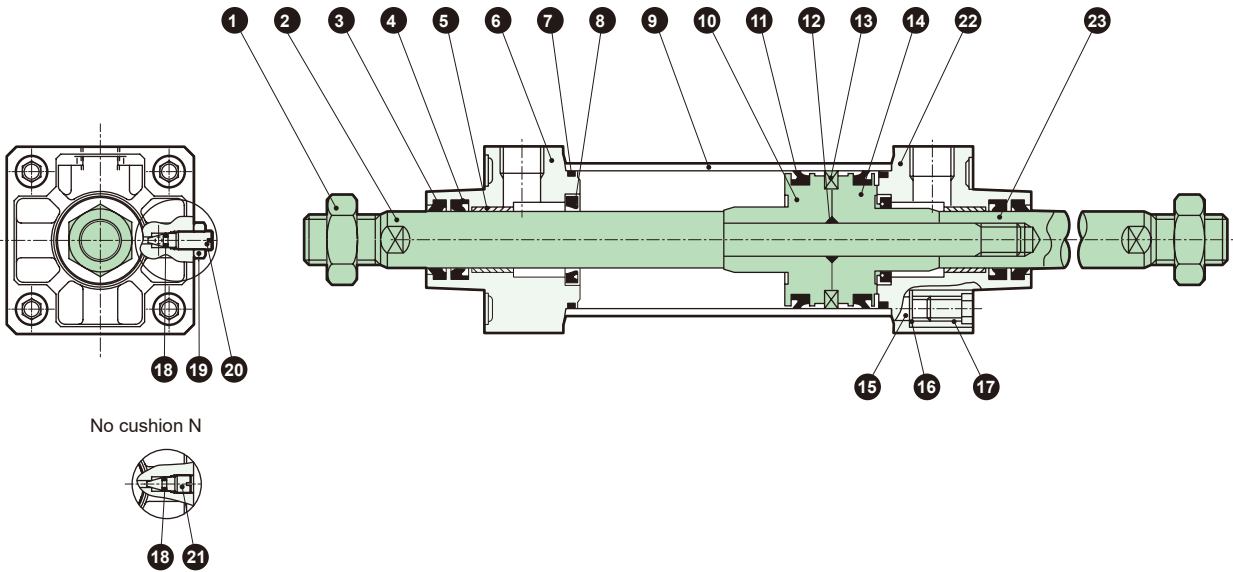
SCG

SCA2

SCS2

Cylinder Switch

Ending



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	13	Magnet	Plastic	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	14	Piston H	Aluminum Alloy	
3	Scraper	Nitrile Rubber		15	Tie Rod	Steel	Zinc Chromate
4	Rod Packing	Nitrile Rubber		16	Belleville washer	Steel	Black Oxide
5	Bushing	Oil-impregnated Bearing Alloy		17	Round Nut	Steel	Zinc Chromate
6	Rod Cover	Aluminum Alloy	Painting	18	Needle Gasket	Nitrile Rubber	
7	Cylinder Gasket	Nitrile Rubber		19	Needle nut	Copper Alloy	Nickel Plating
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	20	Cushion Needle	Copper Alloy	Nickel Plating
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	21	Cushion plug	Copper Alloy	Nickel Plating
10	Piston R	Aluminum Alloy		22	Rod Cover(T)	Aluminum Alloy	Painting
11	Piston Packing	Nitrile Rubber		23	Piston rod (2)	Steel	Industrial Hard Chrome Plating
12	Piston Gasket	Nitrile Rubber					

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

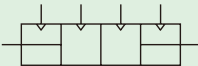


Medium Bore Size Cylinder
Double Acting, Back-to-Back Type

SCA2-B Series

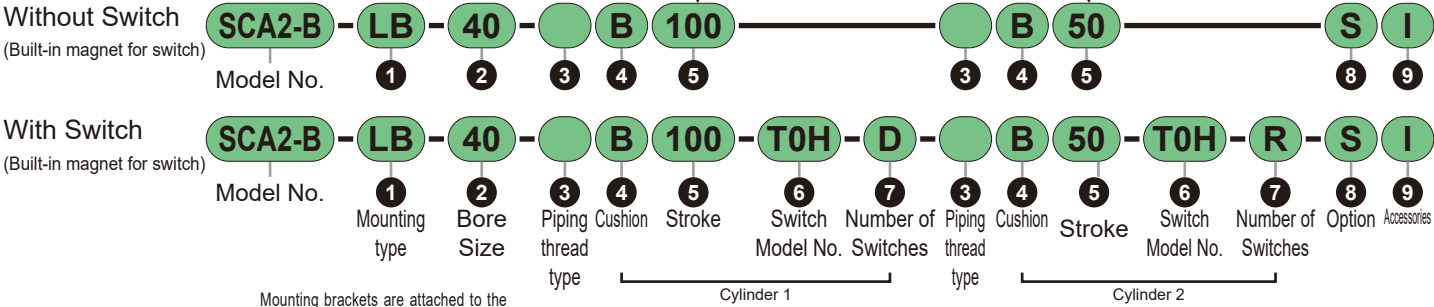
●Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol



RoHS

Model No. Notation Method



1 Mounting type

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom order)
G	G thread (Custom order)

4 Cushion

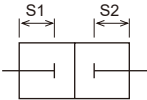
Code	Content
B	With Cushion on Both Sides
R	With rod side cushion
H	With head side cushion
N	Without Cushion

5 Stroke (mm)

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

*1: For minimum stroke with switch, refer to P. 738. For minimum stroke with switch, please refer to P. 738 and 739.
*2: Stroke display example

1st Stage Stroke 100 mm Indicated by S1
+ 2nd Stage Stroke 50 mm Indicated by S2
Total stroke 150 mm S1 + S2



6 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3H□	T3V□	
		3-wire (PNP)	—	30 or less	—	50 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
			—	24 ± 10%	—	5 to 20	T2YD□	—	
			—	24 ± 10%	—	5 to 20	T2YDT□	—	
			—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m

*5

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

7 Number of Switches

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

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

8 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.
*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

*For combinations of variations and options, please refer to P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	-A2	With 2 Rod Nuts
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) SCA2-B - - XP5

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

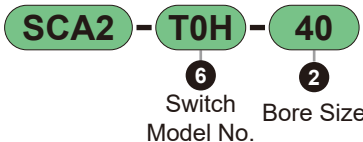
●Uses food grade grease that can be used in food manufacturing processes

SCA2-B - - FP1

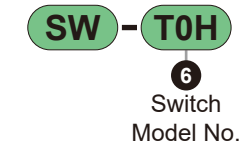
Switch Single Unit Model No. Notation Method

[T type switch]

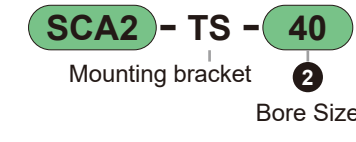
●Switch body + Mounting bracket set



●Switch body only



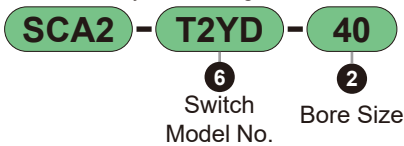
●Switch Mounting Bracket Set



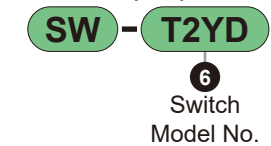
Note: Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

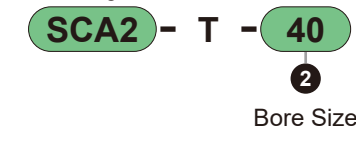
●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item		SCA2-B (Back-to-back type)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	-10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	1 (For both cylinder 1 and cylinder 2)
ø50			
ø63		700	
ø80			
ø100		800	

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

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (20)	20 (10)	60 (45)	50 (50)	50 (50)
ø50	20 (20)	15 (10)	20 (20)	60 (60)	60 (60)
ø63	20 (20)	15 (10)	20 (20)	50 (45)	50 (45)
ø80	25 (25)	15 (15)	25 (25)	55 (40)	55 (40)
ø100	25 (25)	15 (15)	25 (25)	60 (45)	60 (45)

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

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

●Minimum stroke with T8 type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (20)	15 (10)	50 (35)	45 (40)	45 (40)
ø50	20 (20)	10 (10)	20 (20)	50 (50)	50 (50)
ø63	20 (20)	10 (10)	20 (20)	45 (35)	45 (35)
ø80	25 (25)	15 (15)	25 (25)	50 (35)	50 (35)
ø100	25 (25)	15 (15)	25 (25)	55 (40)	55 (40)

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

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

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (15)	20 (10)	60 (45)	50 (35)	50 (35)
ø50	15 (15)	15 (10)	15 (15)	45 (30)	45 (30)
ø63	15 (15)	15 (10)	15 (15)	50 (35)	50 (35)
ø80	15 (15)	15 (10)	15 (15)	55 (40)	55 (40)
ø100	15 (15)	10 (10)	15 (15)	60 (45)	60 (45)

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

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

● Minimum stroke with T1/T2YD type switch

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

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

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

●Minimum stroke with T2W/T3W/T2WL type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (10)	20 (5)	65 (50)	50 (35)	50 (35)
ø50	20 (10)	20 (5)	20 (10)	50 (35)	50 (35)
ø63	20 (10)	20 (5)	20 (10)	55 (40)	55 (40)
ø80	15 (10)	15 (5)	15 (10)	55 (40)	55 (40)
ø100	10 (10)	10 (5)	10 (10)	60 (45)	60 (45)

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

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

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type (00)	Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		T type	
ø40	1.66	1.83	2.07	1.98	2.02	2.04	Refer to the mass described in the switch specifications on P. 971	0.024	0.39
ø50	2.40	2.65	2.89	2.78	2.81	2.94		0.022	0.46
ø63	3.20	3.57	4.29	3.77	3.82	4.05		0.020	0.50
ø80	5.20	5.94	7.06	6.47	6.68	6.54		0.026	0.90
ø100	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-T0H-D-B100-T0H-R Product Weight at 0 mm stroke 2.65 kg Added weight at S1 stroke 200 mm $0.46 \times \frac{200}{100} = 0.92$ kg Added weight at S2 stroke 100 mm $0.46 \times \frac{100}{100} = 0.46$ kg Weight of 3 T0H switches $0.018 \times 3 = 0.054$ kg Weight of 3 mounting brackets $0.022 \times 3 = 0.066$ 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	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	98.2	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	82.5	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	1.56×10^2	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	1.40×10^2	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	2.51×10^2	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	2.27×10^2	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	3.93×10^2	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	3.57×10^2	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

Mounting Bracket Model No. Notation Method

Bore Size (mm)		ø40	ø50	ø63	ø80	ø100
Mounting bracket						
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

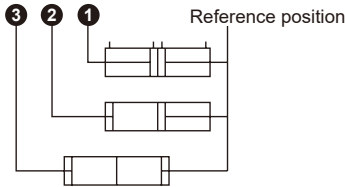
*1: For the material of the mounting brackets, please refer to P. 646.

*2: Foot type mounting brackets come in sets of 2.

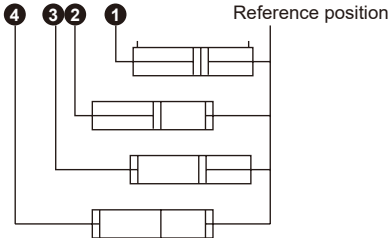
*3: Mounting bolts are included to each mounting bracket.

Usage Example

When combining the same stroke.
3 positions can be taken.

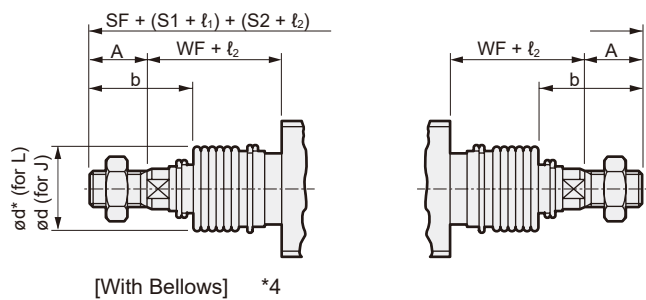
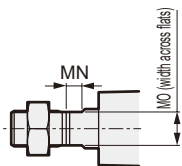
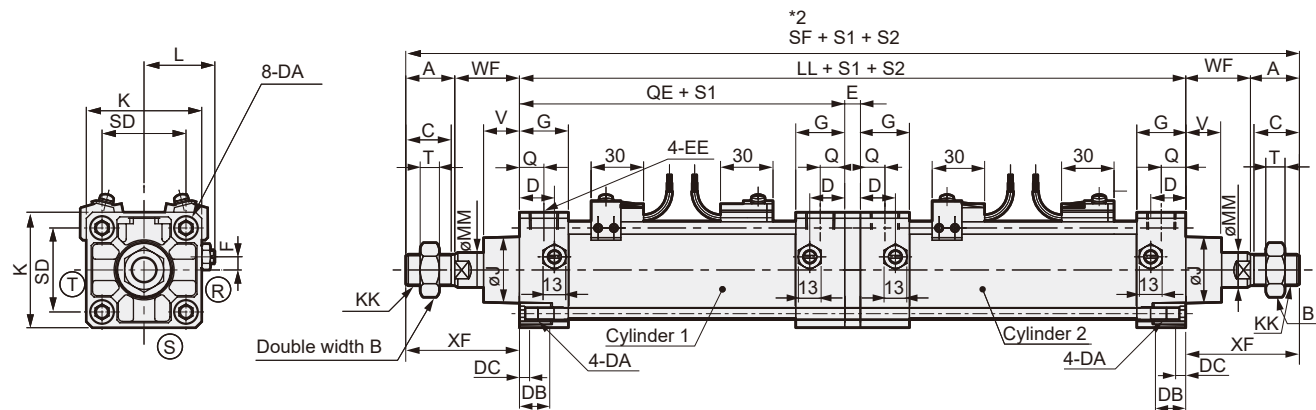


When combining different strokes.
4 positions can be taken.



MEMO

● Back-to-back type (00)



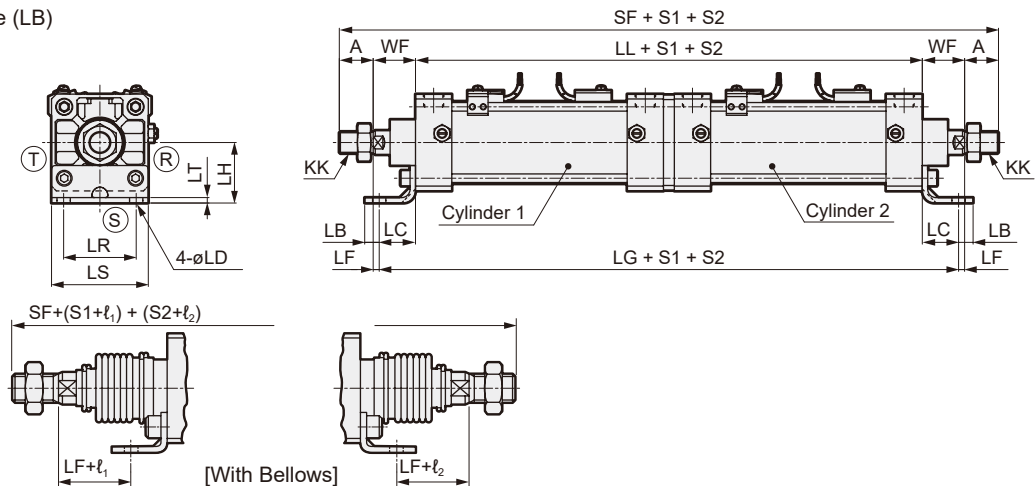
Code Bore Size (mm)	A	B	C	D	E	F	DA	DB	DC	EE	G	J	K	KK	L	LL	MM	Q	QE	SD	SF	T	V	WF	XF
ø40	22	22	20	18	4.5	7.5	M8	12	4	Rc 1/4	26	31	57	M14 × 1.5	38 to 39.5	190.5	16	13	93	40.5	301.5	8	18.5	33.5	55.5
ø50	28	27	26	20	9	0	M8	12	4	Rc 3/8	28	38	66	M18 × 1.5	41 to 43.5	211	20	14	101	48	341	11	20.5	37	65
ø63	28	27	26	22	9	0	M8	12	4	Rc 3/8	30	38	80	M18 × 1.5	47.5 to 50.0	219	20	15	105	59	345	11	21	35	63
ø80	36	32	34	26	12	0	M12	16	5	Rc 1/2	34	43	98	M22 × 1.5	56 to 59	244	25	17	116	74	412	13	23.5	48	84
ø100	45	41	43	28	12	0	M12	16	5	Rc 1/2	36	51	118	M26 × 1.5	66 to 69	268	30	18	128	90	464	16	32	53	98

Code	With Bellows										
	b	d	d*	ℓ ₁ , ℓ ₂							
Bore Size (mm)				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 When exceeding 500
ø40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	47	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	45	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	58.5	53	55	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	69.5	61	65	20	32	42	53	76	98	120	(Stroke/4.5) + 9

- *1: **Ⓡ** **Ⓢ** **Ⓢ** indicates the position of the cushion needle.
- *2: S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
- *3: Round up the ℓ_1 and ℓ_2 dimensions to the nearest whole number.
- *4: Bellows are included to both rods.
- *5: **For dimensions with each switch, please refer to P. 850 to 853.**
- *6: **For outer dimensions diagram of accessories, refer to P. 644.**

Outline Dimension Drawing

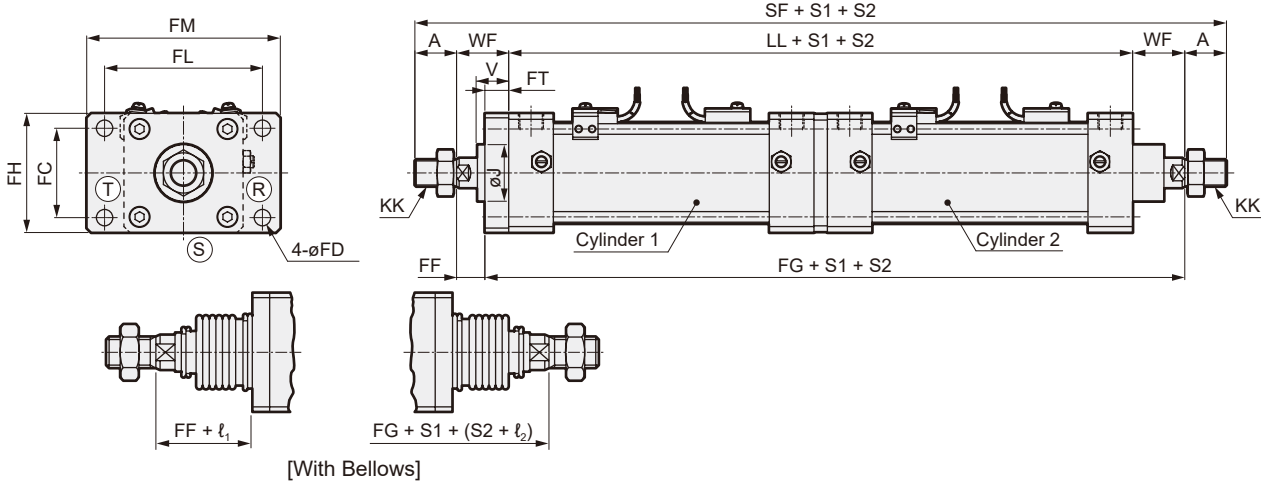
●Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions															With Bellows						
	A	KK	LL	SF	WF	LB	LC	LD	LF	LG	LH	LR	LS	LT	L1, L2							
Bore Size (mm)															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 When exceeding 500
ø40	22	M14 × 1.5	190.5	301.5	33.5	10	19.5	9	14	229.5	40	40	57	3.2	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	211	341	37	12	22	9	15	255	40	46	66	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	219	345	35	12	30	11	5	279	50	60	80	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	244	412	48	14	37	14	11	318	60	74	98	6	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	268	464	53	21	31	14	22	330	67	80	118	6	20	32	42	53	76	98	120	(Stroke/4.5) + 9

- *1: (R)(S)(T) indicates the position of the cushion needle.
- *2: S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
- *3: Round up the t_1 and t_2 dimensions to the nearest whole number.
- *4: Bellows are included to both rods.
- *5: For dimensions with each switch, please refer to P. 850 to 853.
- *6: For outer dimensions diagram of accessories, refer to P. 644.

●Rod Side Flange Type (FA)

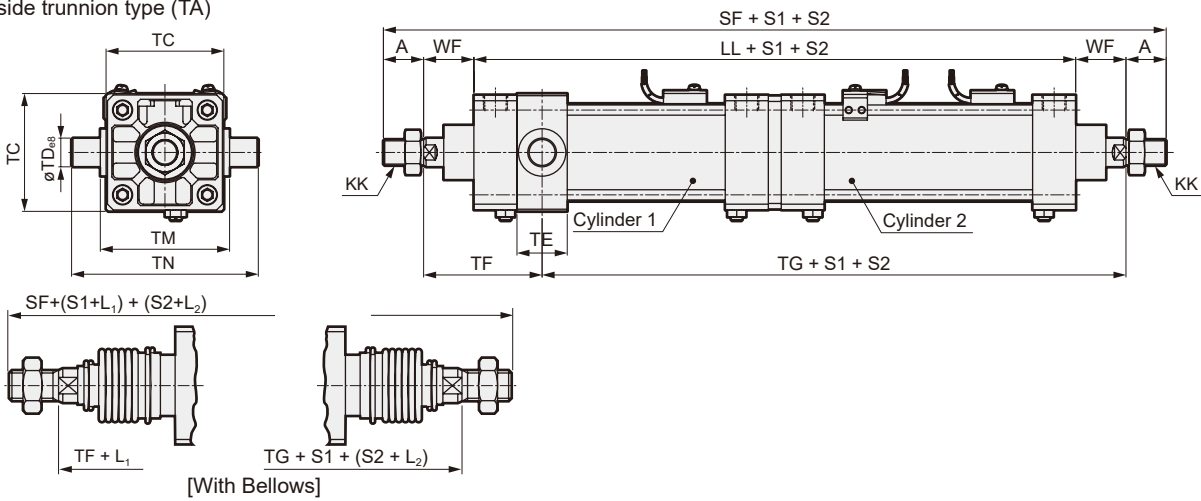


Code	Rod Side Flange Type (FA) Mounting Dimensions															With Bellows							
																ℓ_1, ℓ_2							
Bore Size (mm)	A	J	KK	LL	SF	V	WF	FC	FD	FF	FG	FH	FL	FM	FT	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø40	22	31	M14 × 1.5	190.5	301.5	18.5	33.5	40	9	21.5	236	57	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	38	M18 × 1.5	211	341	20.5	37	47	9	25	260	65	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	43	M18 × 1.5	219	345	21	35	60	11	19	270	80	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	48	M22 × 1.5	244	412	23.5	48	74	14	29	311	98	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	51	M26 × 1.5	268	464	32	53	88	14	34	340	118	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R) (S) (T) indicates the position of the cushion needle.
 *2: S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
 *3: Round up the t_1 and t_2 dimensions to the nearest whole number.
 *4: Bellows are included to both rods.
 *5: For dimensions with each switch, please refer to P. 850 to 853.
 *6: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

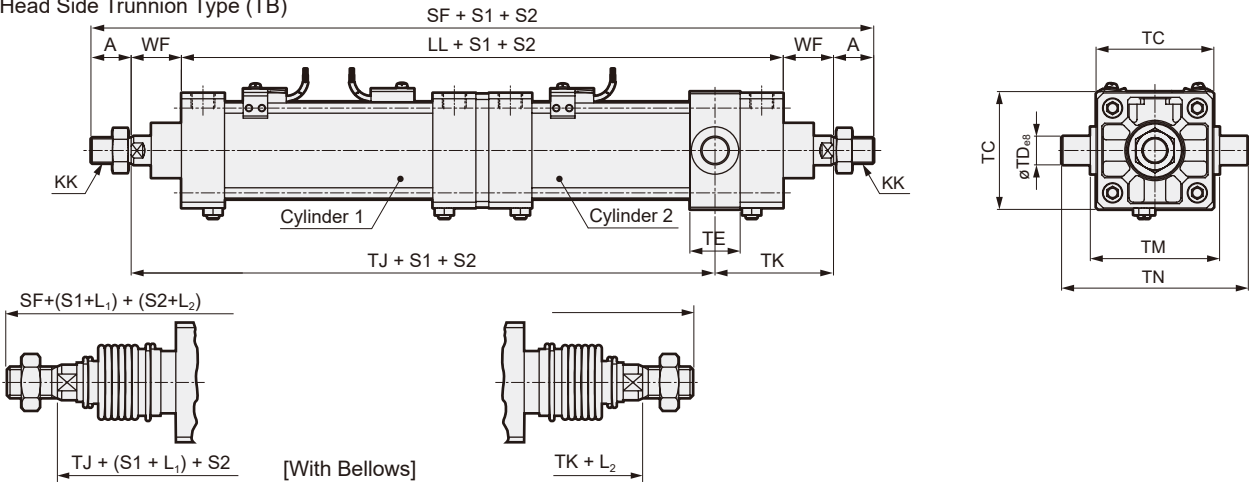
●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions												With Bellows							
	Bore Size (mm)	A	KK	LL	SF	WF	TC	TD	TE	TF	TG	TM	TN	L ₁ , L ₂						
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 When exceeding 500
ø40	22	M14 × 1.5	190.5	301.5	33.5	57	16	30	74.5	183	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	211	341	37	67	18	30	80	205	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	219	345	35	82	20	35	82.5	206.5	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	244	412	48	100	25	40	102	238	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	268	464	53	121	35	50	114	260	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
*3: Round up the L₁ and L₂ dimensions to the nearest whole number.
*4: Bellows are included to both rods.
*5: For dimensions with each switch, please refer to P. 850 to 853.
*6: For outer dimensions diagram of accessories, refer to P. 644.

●Head Side Trunnion Type (TB)

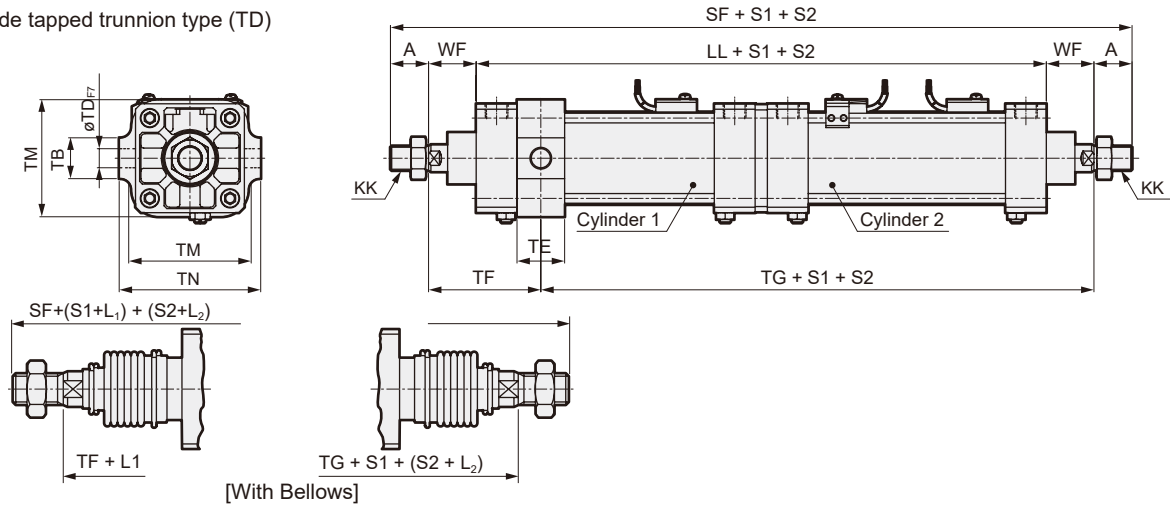


Code		Head Side Trunnion Type (TB) Mounting Dimensions												With Bellows							
		A	KK	LL	SF	WF	TC	TD	TE	TJ	TK	TM	TN	L ₁ , L ₂							
Bore Size (mm)	50 or less													Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500	
	ø40	22	M14 × 1.5	190.5	301.5	33.5	57	16	30	214	43.5	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	211	341	37	67	18	30	239	46	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	M18 × 1.5	219	345	35	82	20	35	238	51	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	M22 × 1.5	244	412	48	100	25	40	282	58	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	M26 × 1.5	268	464	53	121	35	50	308.5	65.5	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
*3: Round up the L₁ and L₂ dimensions to the nearest whole number.
*4: Bellows are included to both rods.
*5: For dimensions with each switch, please refer to P. 850 to 853.
*6: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

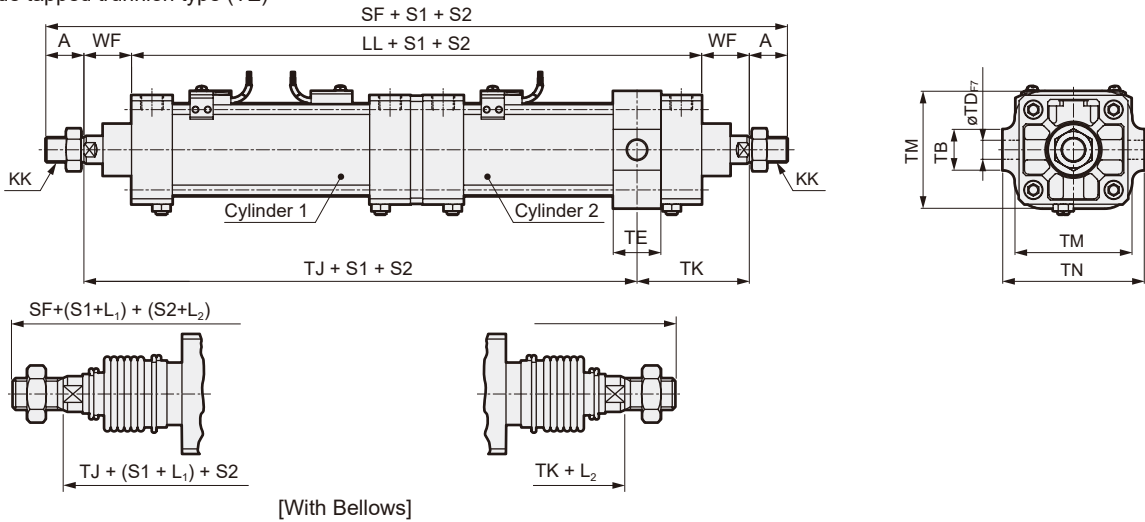
●Rod side tapped trunnion type (TD)



Code		Rod side tapped trunnion type (TD) Mounting dimensions												With Bellows							
		A	KK	LL	SF	WF	TB	TD	TE	TF	TG	TM	TN	L ₁ , L ₂							
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 When exceeding 500		
ø50		28	M18 × 1.5	211	341	37	26	12	30	80	205	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	219	345	35	30	14	35	82.5	206.5	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	244	412	48	35	20	40	102	238	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	268	464	53	40	20	40	109	265	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
*3: Round up the L₁ and L₂ dimensions to the nearest whole number.
*4: Bellows are included to both rods.
*5: For dimensions with each switch, please refer to P. 850 to 853.
*6: For outer dimensions diagram of accessories, refer to P. 644.

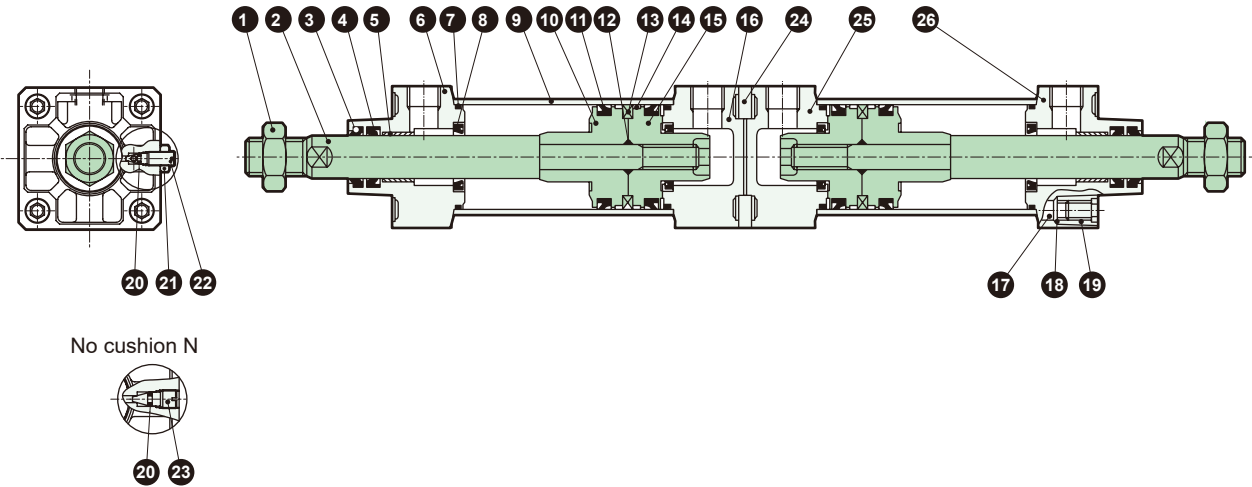
●Head side tapped trunnion type (TE)



Code	Head side tapped trunnion type (TE) Mounting dimensions												With Bellows							
	Bore Size (mm)	A	KK	LL	SF	WF	TB	TD	TE	TJ	TK	TM	TN	L ₁ , L ₂						
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	
ø50	28	M18 × 1.5	211	341	37	26	12	30	239	46	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	219	345	35	30	14	35	238	51	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	244	412	48	35	20	40	282	58	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	268	464	53	40	20	40	313.5	60.5	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
*3: Round up the L₁ and L₂ dimensions to the nearest whole number.
*4: Bellows are included to both rods.
*5: For dimensions with each switch, please refer to P. 850 to 853.
*6: For outer dimensions diagram of accessories, refer to P. 644.

General Type



SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	14	Wear Ring	Polyacetal	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	15	Piston H	Aluminum Alloy	
3	Scraper	Nitrile Rubber		16	Head Cover	Aluminum Alloy	Painting
4	Rod Packing	Nitrile Rubber		17	Tie Rod	Steel	Zinc Chromate
5	Bushing	Oil-Impregnated Bearing Alloy		18	Belleville washer	Steel	Black Oxide
6	Rod Cover	Aluminum Alloy	Painting	19	Round Nut	Steel	Zinc Chromate
7	Cylinder Gasket	Nitrile Rubber		20	Needle Gasket	Nitrile Rubber	
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	21	Needle nut	Copper Alloy	Nickel Plating
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	22	Cushion Needle	Copper Alloy	Nickel Plating
10	Piston R	Aluminum Alloy		23	Cushion plug	Copper Alloy	Nickel Plating
11	Piston Packing	Nitrile Rubber		24	Spacer	Steel	Manganese phosphate
12	Piston Gasket	Nitrile Rubber		25	Head CoverⒾ	Aluminum Alloy	Painting
13	Magnet	Plastic		26	Rod CoverⒾ	Aluminum Alloy	Painting

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending



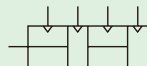
Selex Cylinder

Double Acting, Two-Stage Type

SCA2-W Series

●Bore size: ø40, ø50, ø63, ø80, ø100

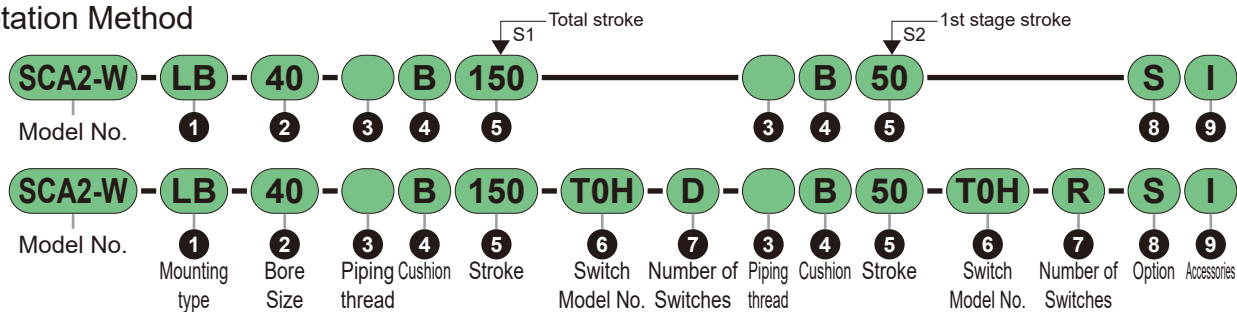
Circuit Diagram
Symbol



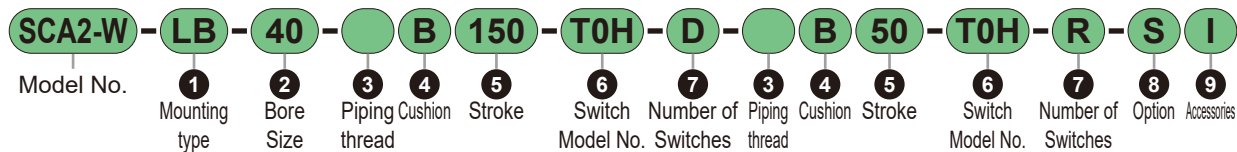
RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)



With Switch
(Built-in magnet for switch)



1 Mounting type

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side Flange Type	
FC	Head side special flange type	
CA	Single Clevis Type	
CB	Double Clevis Type (Pin and retaining ring included)	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

Mounting brackets are attached to the product and shipped. (However, trunnion types are shipped assembled.)

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom order)
G	G thread (Custom order)

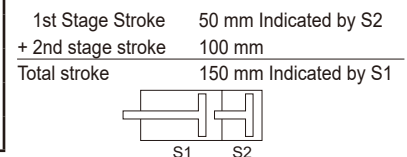
4 Cushion

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

5 Stroke (mm)

Bore Size	Total stroke S1	1st stage stroke S2	Intermedi-ate Stroke
ø40	2 to 600	1 to 200	Every 1 mm
ø50	2 to 600		
ø63	2 to 600		
ø80	2 to 700		
ø100	2 to 800		

*1: For minimum stroke with switch, please refer to P. 750 and 751.
*2: Stroke display example



6 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WL□	
	2-Color Improved Water Resistance	2-wire	—	24 ± 10%	—	5 to 20	T2YD□	—	
	2-Color for AC Magnetic Field	2-wire	—	24 ± 10%	—	5 to 20	T2YDT□	—	
	1-Color Off-Delay Type	2-wire	—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type	2-wire	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color No Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color	2-wire	110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+) 4PIN (-) Lead Wire 0.3 m

*5

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H [3]
3 m T0H [3]
5 m T0H [5]

7 Number of Switches

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

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

8 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.
*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

SCA2-W Series

Model No. Notation Method

9 Accessories

Code	Content	
I	Single Knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	-A2	With 2 Rod Nuts
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) **SCA2-W - - XP5**

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

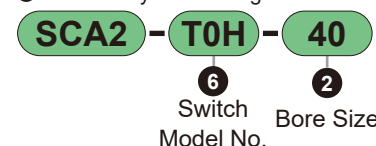
● Uses food-grade lubricant usable in food manufacturing processes

SCA2-W - - FP1

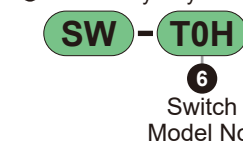
Switch Single Unit Model No. Notation Method

[T type switch]

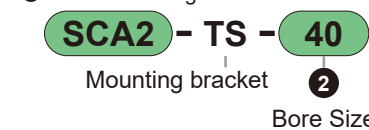
● Switch body + Mounting bracket set



● Switch body only



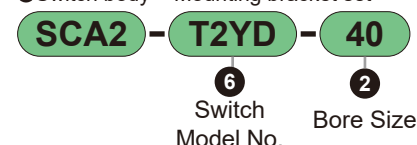
● Switch mounting bracket set



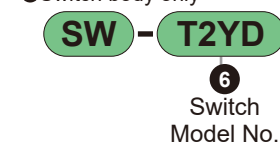
*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

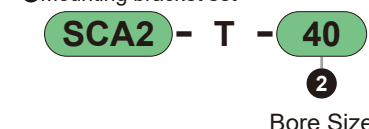
● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

Item		SCA2-W (Two-stage type)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0 *1				
Min. Operating Pressure	MPa	0.1				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	−10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
		0.067	0.079	0.079	0.201	0.301
	Without Cushion	Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

*1: If S1 and S2 are the same, please use with a maximum operating pressure of 0.5 MPa.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	2 (Total stroke)
ø50			
ø63		700	
ø80			
ø100		800	

Note: About Intermediate Stroke: Manufacturable every 1 mm.

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (20)	20 (10)	60 (45)	50 (50)	50 (50)
ø50	20 (20)	15 (10)	20 (20)	60 (60)	60 (60)
ø63	20 (20)	15 (10)	20 (20)	50 (45)	50 (45)
ø80	25 (25)	15 (15)	25 (25)	55 (40)	55 (40)
ø100	25 (25)	15 (15)	25 (25)	60 (45)	60 (45)

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

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

●Minimum stroke with T8 type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (20)	15 (10)	50 (35)	45 (40)	45 (40)
ø50	20 (20)	10 (10)	20 (20)	50 (50)	50 (50)
ø63	20 (20)	10 (10)	20 (20)	45 (35)	45 (35)
ø80	25 (25)	15 (15)	25 (25)	50 (35)	50 (35)
ø100	25 (25)	15 (15)	25 (25)	55 (40)	55 (40)

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

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

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (15)	20 (10)	60 (45)	50 (35)	50 (35)
ø50	15 (15)	15 (10)	15 (15)	45 (30)	45 (30)
ø63	15 (15)	15 (10)	15 (15)	50 (35)	50 (35)
ø80	15 (15)	15 (10)	15 (15)	55 (40)	55 (40)
ø100	15 (15)	10 (10)	15 (15)	60 (45)	60 (45)

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

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

●Minimum stroke with T1/T2YD type switch

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

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

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

●Minimum stroke with T2W/T3W/T2WL type switch

	Different Surface Mounting	Same Surface Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
Number of Switches	2	1	2	1	1
ø40	20 (10)	20 (5)	65 (50)	50 (35)	50 (35)
ø50	20 (10)	20 (5)	20 (10)	50 (35)	50 (35)
ø63	20 (10)	20 (5)	20 (10)	55 (40)	55 (40)
ø80	15 (10)	15 (5)	15 (10)	55 (40)	55 (40)
ø100	10 (10)	10 (5)	10 (10)	60 (45)	60 (45)

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

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

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type 00	Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		T type	
ø40	1.34	1.51	1.75	1.66	1.70	1.72	Refer to the mass described in the switch specifications on P. 971	0.024	0.78
ø50	1.97	2.22	2.46	2.35	2.38	2.51		0.022	0.92
ø63	2.74	3.11	3.83	3.31	3.36	3.59		0.020	1.00
ø80	4.14	4.88	6.00	5.41	5.62	5.48		0.026	1.80
ø100	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-T0H-R Product Weight at 0 mm stroke 2.22 kg Added weight at S1 stroke 200 mm $0.46 \times \frac{200}{100}$ [value missing] = 0.92 kg Added weight at S2 stroke 100 mm $0.46 \times \frac{100}{100}$ [value missing] = 0.46 kg Weight of 3 T0H switches $0.018 \times 3 = 0.054$ kg Weight of 3 mounting brackets $0.022 \times 3 = 0.066$ kg Product Weight $2.22 + 0.92 + 0.46 + 0.054 + 0.066 = 3.720$ kg									

Mounting Bracket Model No. Notation Method

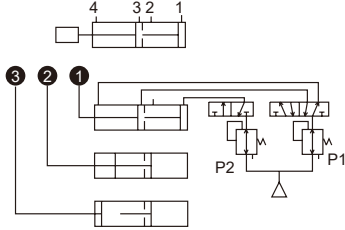
Bore Size (mm)		ø40	ø50	ø63	ø80	ø100
Mounting bracket						
Foot (LB)	*2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/FB)		S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100
Single Clevis (CA)		S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)		S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: For the material of the mounting brackets, please refer to P. 646.
*2: Foot type mounting brackets come in sets of 2.
*3: Mounting bolts are included to each mounting bracket.

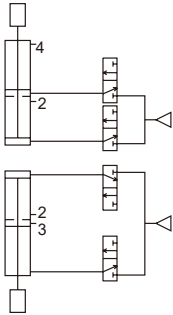
Usage Example

Set pressure P2 > P1.

- First stage push
With port 4 pressurized, pressurize port 1.
- Second stage push
With port 1 pressurized, pressurize port 3.

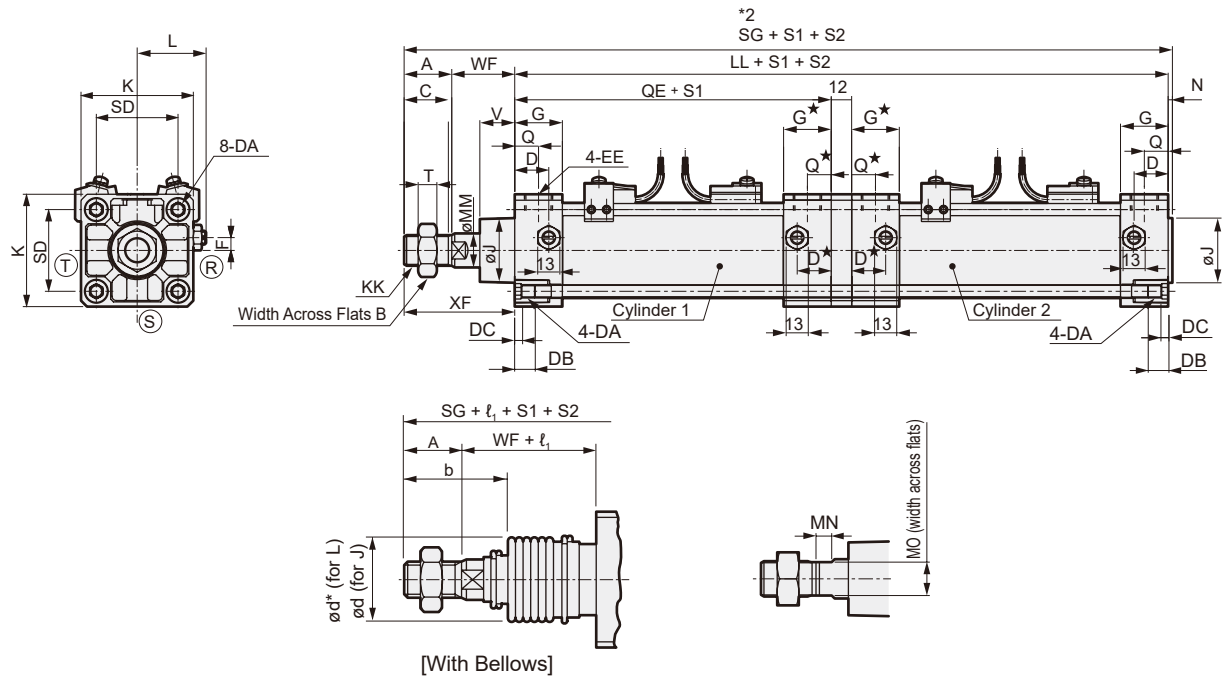


Depending on the load direction, P2 = P1 may be acceptable.
In case of single acting use due to natural drop of load, ports 2 and 4 in the upper diagram, and ports 2 and 3 in the lower diagram become breather ports. Basically, piping the port that does not require piping (port 2) will improve the cushion effect.



MEMO

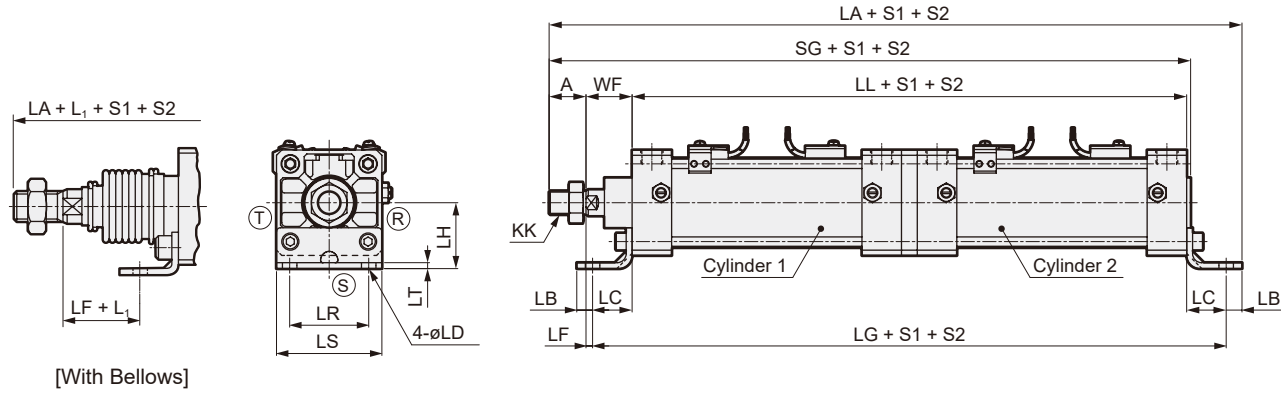
- Basic type (OO)



Code	Basic type (00)																									
	A	B	C	D	D*	DA	DB	DC	EE	F	G	G*	J	K	KK	L	LL	MM	N	Q	QE	Q*	SD	SG	T	
Bore Size (mm)	ø40	22	22	20	18	17.5	M8	12	4	Rc 1/4	7.5	26	25.5	31	57	M14 × 1.5	38 to 39.5	197	16	2	13	92.5	12.5	40.5	254.5	8
	ø50	28	27	26	20	19.5	M8	12	4	Rc 3/8	0	28	27.5	38	66	M18 × 1.5	41 to 43.5	213	20	2.5	14	100.5	13.5	48	280.5	11
	ø63	28	27	26	22	21.5	M8	12	4	Rc 3/8	0	30	29.5	38	80	M18 × 1.5	47.5 to 50.0	221	20	3	15	104.5	14.5	59	287	11
	ø80	36	32	34	26	25.5	M12	16	5	Rc 1/2	0	34	33.5	43	98	M22 × 1.5	56 to 59	243	25	3.5	17	115.5	16.5	74	330.5	13
	ø100	45	41	43	28	27.5	M12	16	5	Rc 1/2	0	36	35.5	51	118	M26 × 1.5	66 to 69	267	30	4	18	127.5	17.5	90	369	16
Code				With Bellows																						
	V	WF	XF	b	d	d*	ℓ ₁																			
Bore Size (mm)							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 When exceeding 500												
	ø40	18.5	33.5	55.5	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8											
	ø50	20.5	37	65	47	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5											
	ø63	21	35	63	45	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5											
	ø80	23.5	48	84	58.5	53	55	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5											
	ø100	32	53	98	69.5	61	65	20	32	42	53	76	98	120	(Stroke/4.5) + 9											

*1: $\textcircled{R}\textcircled{S}\textcircled{T}$ indicates the position of the cushion needle.
 *2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
 *3: Round up the l_i dimension to the nearest whole number.
 *4: For dimensions with each switch, please refer to P. 850 to 853.
 *5: For outer dimensions diagram of accessories, refer to P. 644.

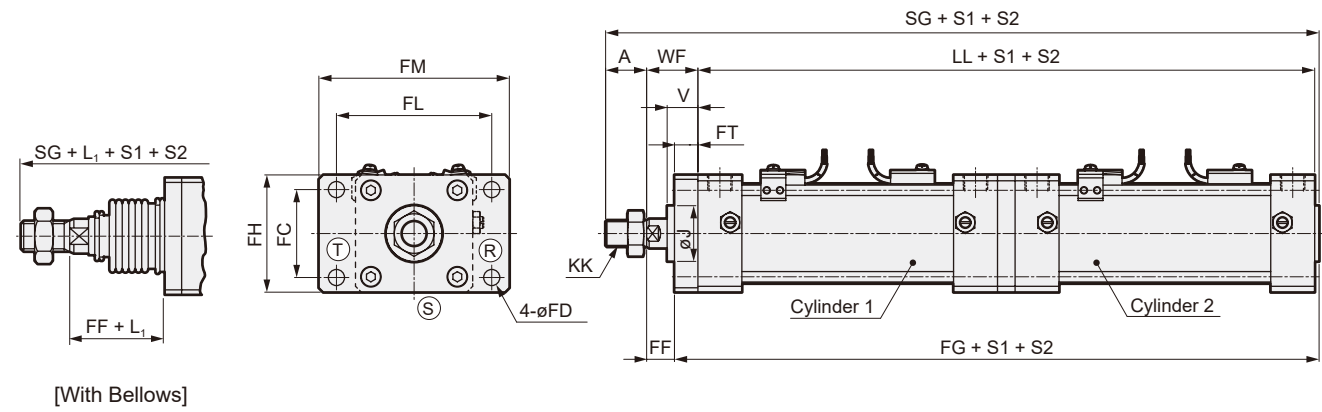
● Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions															With Bellows							
	A	KK	LL	SG	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	L ₁							
50 or less																Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500	
ø40	22	M14 × 1.5	197	254.5	33.5	272	10	19.5	9	14	236	40	40	57	3.2	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	213	280.5	37	300	12	22	9	15	257	40	46	66	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	221	287	35	314	12	30	11	5	281	50	60	80	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	243	330.5	48	364	14	37	14	11	317	60	74	98	6	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	267	369	53	396	21	31	14	22	329	67	80	118	6	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: $\textcircled{R}\textcircled{S}\textcircled{T}$ indicates the position of the cushion needle.
 *2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
 *3: Round up the L_1 dimension to the nearest whole number.
***4: For dimensions with each switch, please refer to P. 850 to 853.**
***5: For outer dimensions diagram of accessories, refer to P. 644.**

●Rod Side Flange Type (FA)

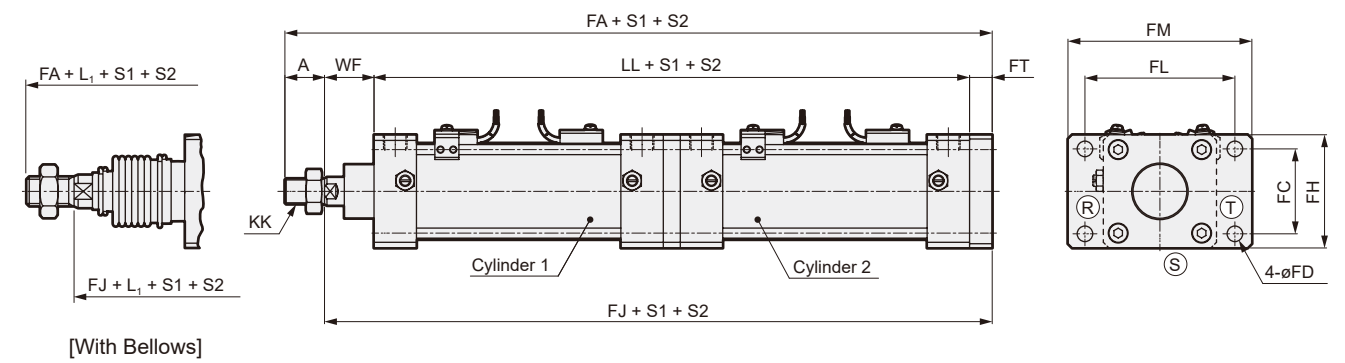


Code		Rod Side Flange Type (FA) Mounting Dimensions														With Bellows							
																L ₁							
Bore Size (mm)	A	J	KK	LL	V	SG	WF	FC	FD	FF	FG	FH	FL	FM	FT	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Exceeding 400 and 500 or less	*3 When exceeding 500
ø40	22	31	M14 × 1.5	197	18.5	254.5	33.5	40	9	21.5	211	57	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	38	M18 × 1.5	213	20.5	280.5	37	47	9	25	227.5	65	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	38	M18 × 1.5	221	21	287	35	60	11	19	240	80	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	43	M22 × 1.5	243	23.5	330.5	48	74	14	29	265.5	98	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	51	M26 × 1.5	267	32	369	53	88	14	34	290	118	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: $\textcircled{R}\textcircled{S}\textcircled{T}$ indicates the position of the cushion needle.
 *2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
 *3: Round up the L_1 dimension to the nearest whole number.
***4: For dimensions with each switch, please refer to P. 850 to 853.**
***5: For outer dimensions diagram of accessories, refer to P. 644.**

Outline Dimension Drawing

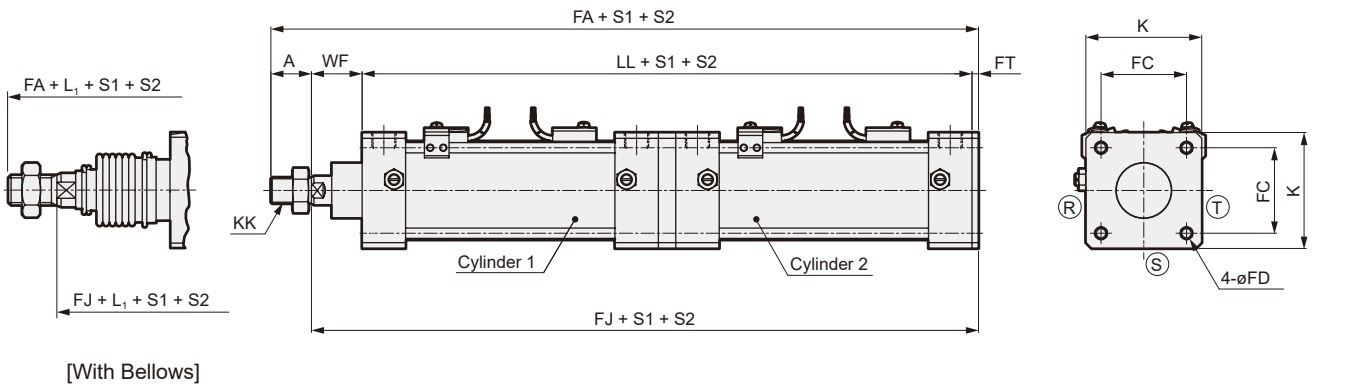
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions												With Bellows							
	Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT	L ₁						
50 or less														Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø40	22	M14 × 1.5	197	33.5	264.5	40	9	57	242.5	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	213	37	290	47	9	65	262	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	221	35	300	60	11	80	272	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	243	48	346	74	14	98	310	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	267	53	384	88	14	118	339	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.
***4: For dimensions with each switch, please refer to P. 850 to 853.**
***5: For outer dimensions diagram of accessories, refer to P. 644.**

●Head side special flange type (FC)

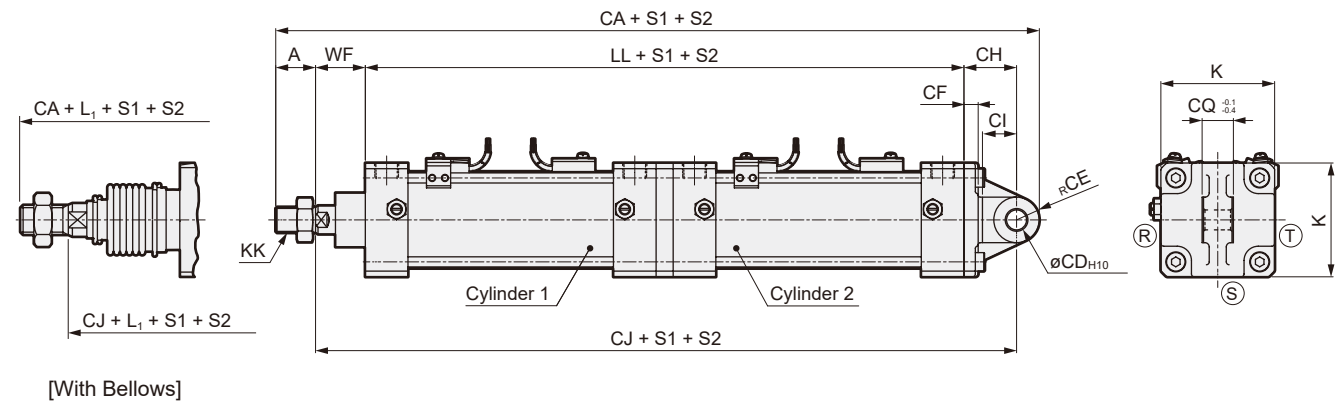


Code	Head side special flange type (FC) Mounting dimensions											With Bellows							
	Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FJ	FT	K	L ₁							
50 or less												Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500	
ø40	22	M14 × 1.5	197	33.5	257	40.5	9	235	4.5	57	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8	
ø50	28	M18 × 1.5	213	37	282.5	4	9	254.5	4.5	66	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	M18 × 1.5	221	35	288.5	59	9	260.5	4.5	80	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	M22 × 1.5	243	48	333	74	14	297	6	98	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	M26 × 1.5	267	53	371	90	14	326	6	118	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.
***4: For dimensions with each switch, please refer to P. 850 to 853.**
***5: For outer dimensions diagram of accessories, refer to P. 644.**

Outline Dimension Drawing

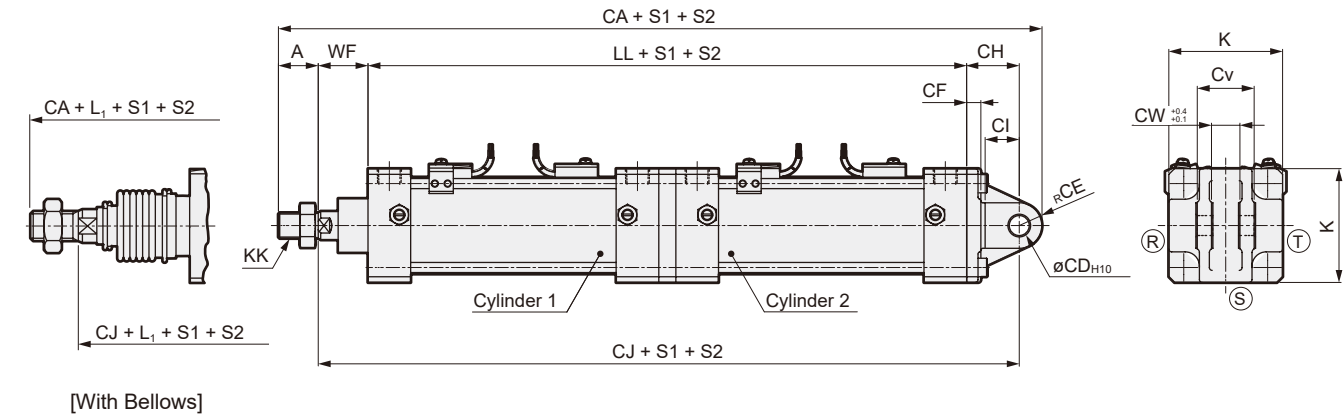
●Single Clevis Type (CA)



Code	Single Clevis Type (CA) Mounting Dimensions														With Bellows							
	Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	L ₁							
															50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
SCP□3	ø40	22	57	M14 × 1.5	197	33.5	296.5	12	12	10	32	18	262.5	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
CMK2	ø50	28	66	M18 × 1.5	213	37	322	12	12	10	32	18	282	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
	ø63	28	80	M18 × 1.5	221	35	337	14	16	10	37	24	293	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
CMA2	ø80	36	98	M22 × 1.5	243	48	399	20	20	14	52	30	343	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
	ø100	45	118	M26 × 1.5	267	53	437	20	20	16	52	30	372	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.
***4: For dimensions with each switch, please refer to P. 850 to 853.**
***5: For outer dimensions diagram of accessories, refer to P. 644.**

●Double clevis type (CB)

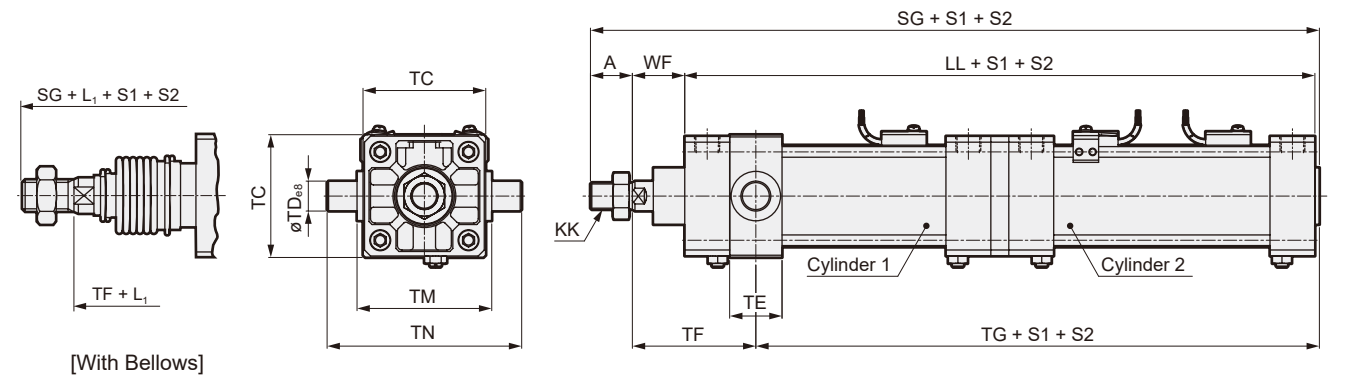


Code		Double Clevis Type (CB) Mounting Dimensions														With Bellows							
																L ₁							
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500	
ø40	22	57	M14 × 1.5	197	33.5	296.5	12	12	10	32	18	262.5	36	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8	
ø50	28	66	M18 × 1.5	213	37	322	12	12	10	32	18	282	36	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	80	M18 × 1.5	221	35	337	14	16	10	37	24	293	40	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	98	M22 × 1.5	243	48	399	20	20	14	52	30	343	56	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	118	M26 × 1.5	267	53	437	20	20	16	52	30	372	56	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.
***4: For dimensions with each switch, please refer to P. 850 to 853.**
***5: For outer dimensions diagram of accessories, refer to P. 644.**

Outline Dimension Drawing

●Rod side trunnion type (TA)

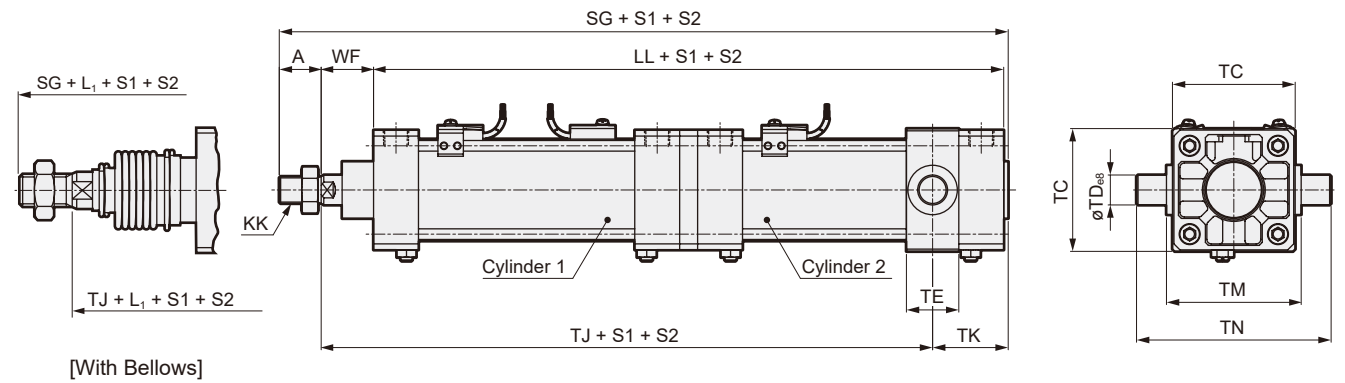


Code	Rod Side Trunnion Type (TA) Mounting Dimensions												With Bellows							
	Bore Size (mm)	A	KK	LL	SG	WF	TC	TD	TE	TF	TG	TM	TN	L ¹						
50 or less														Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø40	22	M14 × 1.5	197	254.5	33.5	57	16	30	74.5	158	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	213	280.5	37	67	18	30	80	172.5	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	221	287	35	82	20	35	82.5	176.5	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	243	330.5	48	100	25	40	102	192.5	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	267	369	53	121	35	50	114	210	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.

*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

●Head Side Trunnion Type (TB)



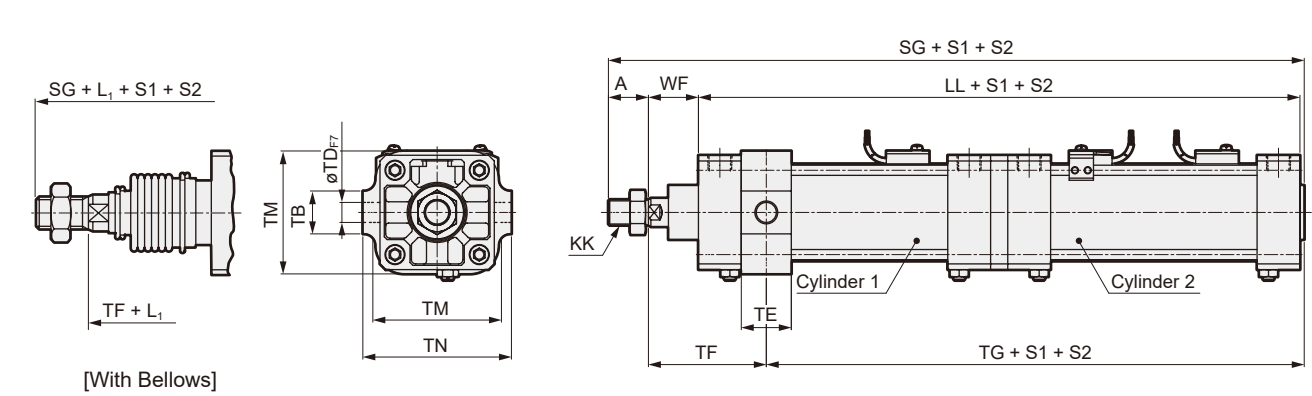
Code	Head Side Trunnion Type (TB) Mounting Dimensions												With Bellows							
	Bore Size (mm)	A	KK	LL	SG	WF	TC	TD	TE	TJ	TK	TM	TN	L ¹						
														50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500
ø40	22	M14 × 1.5	197	254.5	33.5	57	16	30	189	43.5	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	213	280.5	37	67	18	30	206.5	46	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	221	287	35	82	20	35	208	51	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	243	330.5	48	100	25	40	236.5	58	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	267	369	53	121	35	50	258.5	65.5	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.

*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Rod side tapped trunnion type (TD)

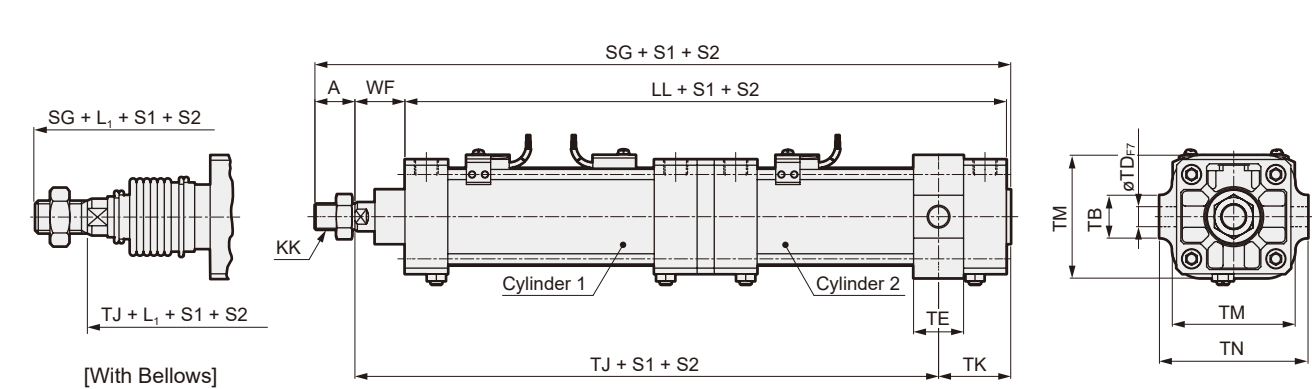


Code		Rod side tapped trunnion type (TD) Mounting dimensions												With Bellows							
		A	KK	LL	SG	WF	TB	TD	TE	TF	TG	TM	TN	L ₁							
50 or less	Over 50 to 100													Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500		
ø50		28	M18 × 1.5	213	280.5	37	26	12	30	80	172.5	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	221	287	35	30	14	35	82.5	176.5	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	243	330.5	48	35	20	40	102	192.5	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	267	369	53	40	20	40	109	215	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.

*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

●Head side tapped trunnion type (TE)

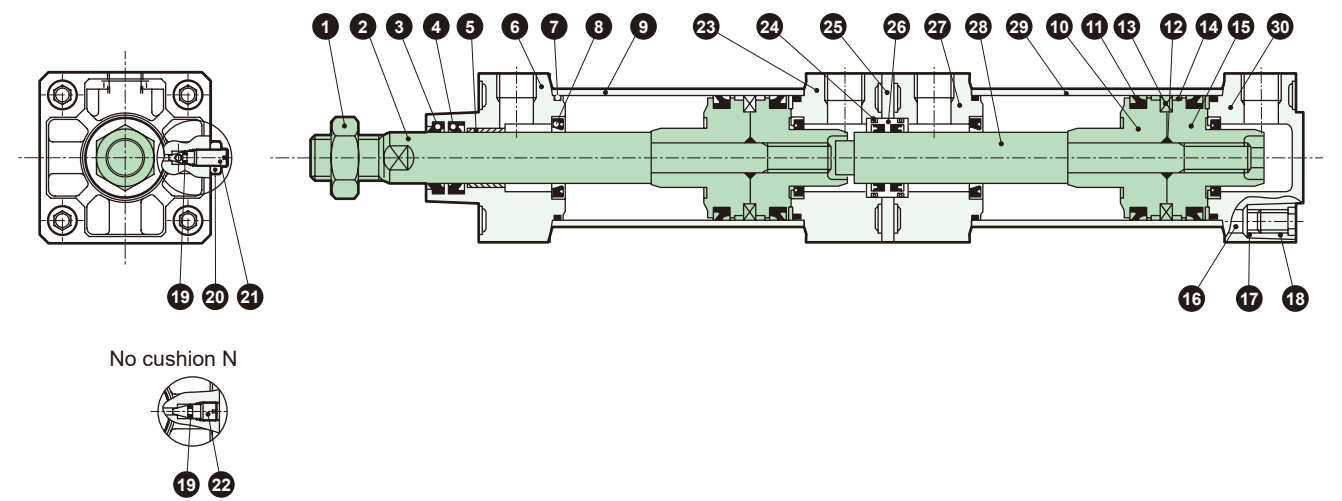


Code		Head side tapped trunnion type (TE) Mounting dimensions											With Bellows								
		A	KK	LL	SG	WF	TB	TD	TE	TJ	TK	TM	TN	L ₁							
50 or less	Over 50 to 100													Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500		
ø50		28	M18 × 1.5	213	280.5	37	26	12	30	206.5	46	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	221	287	35	30	14	35	208	51	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	243	330.5	48	35	20	40	236.5	58	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	267	369	53	40	20	40	263.5	60.5	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: S1: Stroke of cylinder 1 (becomes total stroke), S2: Stroke of cylinder 2 (becomes 1st stage stroke)
*3: Round up the L₁ dimension to the nearest whole number.

*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For outer dimensions diagram of accessories, refer to P. 644.

Internal Structure Diagram/Material



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	16	Tie Rod	Steel	Zinc Chromate
2	Piston Rod	Steel	Industrial Hard Chrome Plating	17	Belleville washer	Steel	Black Oxide
3	Scraper	Nitrile Rubber		18	Round Nut	Steel	Zinc Chromate
4	Rod Packing	Nitrile Rubber		19	Needle Gasket	Nitrile Rubber	With cushion
5	Bushing	Oil-impregnated Bearing Alloy		20	Needle nut	Copper Alloy	Nickel Plating
6	Rod Cover	Aluminum Alloy	Painting	21	Cushion Needle	Copper Alloy	Nickel Plating
7	Cylinder Gasket	Nitrile Rubber		22	Cushion plug	Copper Alloy	Nickel Plating
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	23	Intermediate cover H	Aluminum Alloy	Painting
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	24	Metal gasket	Nitrile Rubber	
10	Piston R	Aluminum Alloy		25	Spacer	Steel	Manganese phosphate
11	Piston Packing	Nitrile Rubber		26	Rod Metal	Cast Iron	Manganese phosphate
12	Piston Gasket	Nitrile Rubber		27	Intermediate cover R	Aluminum Alloy	Painting
13	Magnet	Plastic		28	Piston rod (2)	Steel	Industrial Hard Chrome Plating
14	Wear Ring	Polyacetal Resin		29	Cylinder tube (2)	Aluminum Alloy	Hard Anodized
15	Piston H	Aluminum Alloy		30	Head Cover	Aluminum Alloy	Painting

For Maintenance Parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts

MEMO

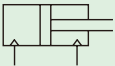


Medium Bore Size Cylinder
Double-acting, Steel tube type

SCA2-K Series

●Bore size: ø40, ø50, ø63, ø80, ø100

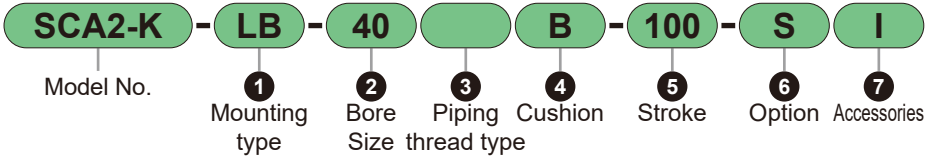
Circuit Diagram Symbol



SCA2-K Series

Model No. Notation Method

Model No. Notation Method



1 Mounting type

Mounting brackets are included to the product and shipped.
(However, trunnion types are shipped assembled.)

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side Flange Type	
FC	Head side special flange type	
CA	Single Clevis Type	
CB	Double Clevis Type (Pin and retaining ring included)	
TC	Intermediate Trunnion Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TF	Intermediate tapped trunnion type (ø50 to ø100)	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

Note: For ø50 to ø100, the outer dimension of the tube is different from that of the double acting, standard single rod type. Therefore, please note that the trunnion bracket is not compatible with the double-acting, standard single-rod type.

2 Bore Size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Cushion

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

5 Stroke (mm)

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

6 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.
*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

7 Accessories

Code	Content	
I	Single knuckle *1	
Y	Double Knuckle (Pin and retaining ring included) *1	
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products

Details: refer to P. 854 to 861.

Code	Content	Code	Content	Code	Content
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	-A2	With 2 Rod Nuts
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) SCA2-K - - XP5

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

●Uses food grade grease that can be used in food manufacturing processes

SCA2-K - - FP1

Specifications

Item		SCA2-K (Steel tube type)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	−10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Producible Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	1600	1
ø50			1900	
ø63				
ø80				
ø100		800		

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: If the maximum stroke is exceeded, the product specifications may not be met depending on the conditions, so please consult us.

Cylinder Weight

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						S=100 mm Added weight per
	Basic type 00	Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)	
ø40	1.01	1.18	1.42	1.33	1.37	1.39	0.56
ø50	1.42	1.67	1.91	1.80	1.83	1.96	0.72
ø63	1.85	2.22	2.94	2.42	2.47	2.70	0.82
ø80	2.94	3.68	4.80	4.21	4.42	4.28	1.37
ø100	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 at 0 mm stroke 1.67 kg

Added weight at 200 mm stroke 0.72 × $\frac{200}{100}$ = 1.44 kg

Product Weight 1.67 + 1.44 = 3.11 kg

Theoretical Thrust Table

Bore Size (mm)	Operating Direction	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06 × 10 ²	1.58 × 10 ²	2.11 × 10 ²	3.17 × 10 ²	4.22 × 10 ²	5.28 × 10 ²	6.33 × 10 ²	7.39 × 10 ²	8.44 × 10 ²	9.50 × 10 ²	1.06 × 10 ³
ø50	Push	98.2	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	82.5	1.65 × 10 ²	2.47 × 10 ²	3.30 × 10 ²	4.95 × 10 ²	6.60 × 10 ²	8.25 × 10 ²	9.90 × 10 ²	1.15 × 10 ³	1.32 × 10 ³	1.48 × 10 ³	1.65 × 10 ³
ø63	Push	1.56 × 10 ²	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	1.40 × 10 ²	2.80 × 10 ²	4.20 × 10 ²	5.61 × 10 ²	8.41 × 10 ²	1.12 × 10 ³	1.40 × 10 ³	1.68 × 10 ³	1.96 × 10 ³	2.24 × 10 ³	2.52 × 10 ³	2.80 × 10 ³
ø80	Push	2.51 × 10 ²	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	2.27 × 10 ²	4.54 × 10 ²	6.80 × 10 ²	9.07 × 10 ²	1.36 × 10 ³	1.81 × 10 ³	2.27 × 10 ³	2.72 × 10 ³	3.17 × 10 ³	3.63 × 10 ³	4.08 × 10 ³	4.54 × 10 ³
ø100	Push	3.93 × 10 ²	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	3.57 × 10 ²	7.15 × 10 ²	1.07 × 10 ³	1.43 × 10 ³	2.14 × 10 ³	2.86 × 10 ³	3.57 × 10 ³	4.29 × 10 ³	5.00 × 10 ³	5.72 × 10 ³	6.43 × 10 ³	7.15 × 10 ³

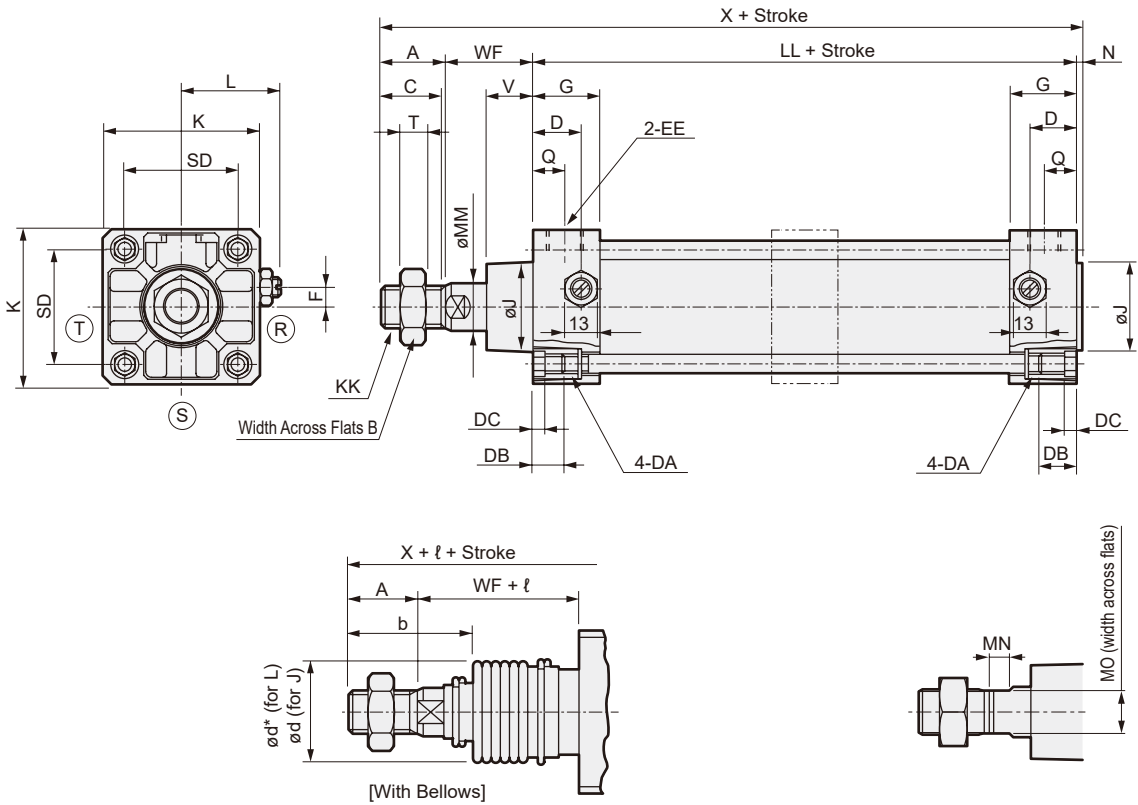
Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
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
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: For the material of the mounting brackets, please refer to P. 646.
*2: Foot type mounting brackets come in sets of 2.
*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

●Basic Type (OO)



Code	Basic Type (OO) Basic Dimensions																			
	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM	MN	MO	N	Q
ø40	22	22	20	18	M8	12	4	Rc 1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	8	14	2	13
ø50	28	27	26	20	M8	12	4	Rc 3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	8.5	17	2.5	14
ø63	28	27	26	22	M8	12	4	Rc 3/8	0	30	38	80	M18 × 1.5	47.5 to 50	105	20	8.5	17	3	15
ø80	36	32	34	26	M12	16	5	Rc 1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	11	22	3.5	17
ø100	45	41	43	28	M12	16	5	Rc 1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	13	27	4	18

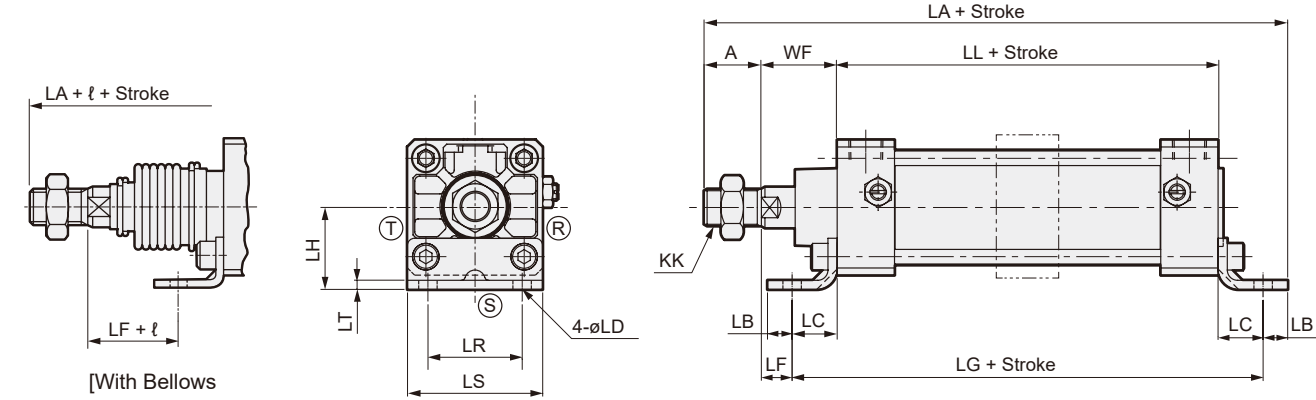
Code	With Bellows									
	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500
ø40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5
ø50	47	47	48	22	36	49	63	90	119	146
ø63	45	47	48	22	36	49	63	90	119	146
ø80	58.5	53	55	14	26	38	49	72	96	119
ø100	69.5	61	65	20	32	42	53	76	98	120

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.
*4: For the external dimensions diagram of accessories, please refer to P. 644.

Double-acting, Steel tube type

Outline Dimension Drawing

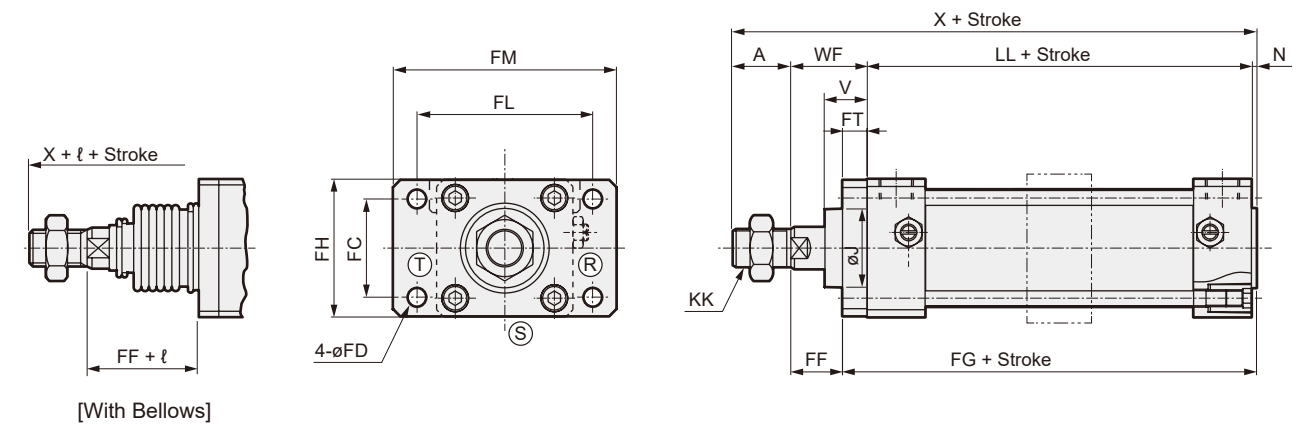
●Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions														With Bellows							
	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	ℓ							
Bore Size (mm)															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 When exceeding 500
ø40	22	M14 × 1.5	93	33.5	178	10	19.5	9	14	132	40	40	57	3.2	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	37	200	12	22	9	15	145	40	46	66	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	35	210	12	30	11	5	165	50	60	80	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	48	251	14	37	14	11	190	60	74	98	6.0	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	53	278	21	31	14	22	190	67	80	118	6.0	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Rod Side Flange Type (FA)

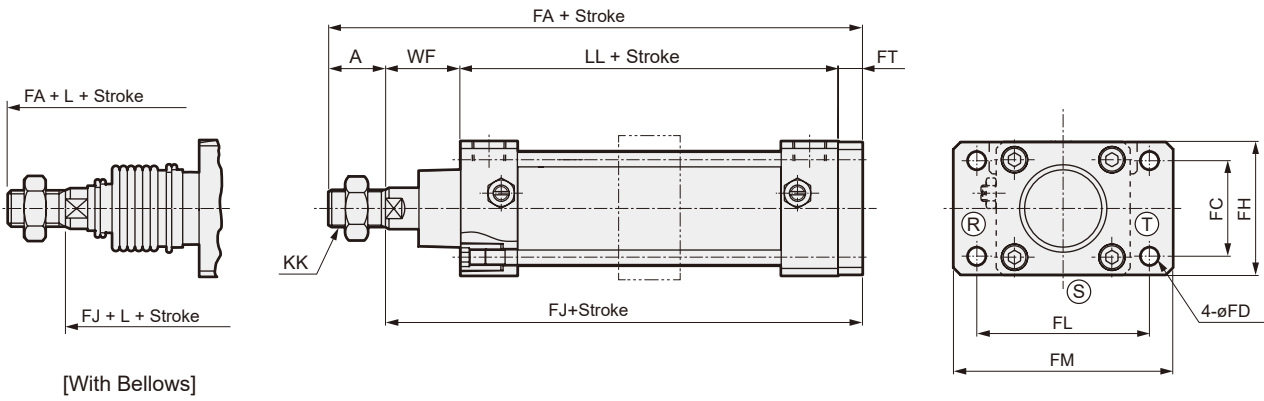


Code	Rod Side Flange Type (FA) Mounting Dimensions																With Bellows							
	A	J	KK	LL	N	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	ℓ							
Bore Size (mm)																	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø40	22	31	M14 × 1.5	93	2	18.5	33.5	150.5	40	9	21.5	107	57	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	38	M18 × 1.5	101	2.5	20.5	37	168.5	47	9	25	115.5	65	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	38	M18 × 1.5	105	3	21	35	171	60	11	19	124	80	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	43	M22 × 1.5	116	3.5	23.5	48	203.5	74	14	29	138.5	98	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	51	M26 × 1.5	128	4	32	53	230	88	14	34	151	118	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

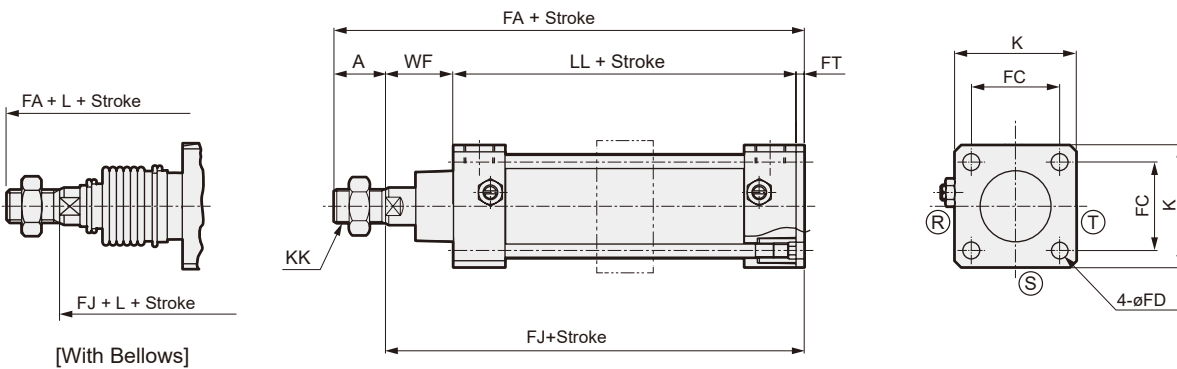
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions													With Bellows							
	Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT	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	*2 When exceeding 500
SCP□3	ø40	22	M14 × 1.5	93	33.5	160.5	40	9	57	138.5	80	100	12	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
CMK2	ø50	28	M18 × 1.5	101	37	178	47	9	65	150	85	108	12	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
	ø63	28	M18 × 1.5	105	35	184	60	11	80	156	106	130	16	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
	ø80	36	M22 × 1.5	116	48	219	74	14	98	183	125	153	19	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
SCM	ø100	45	M26 × 1.5	128	53	245	88	14	118	200	144	180	19	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Head side special flange type (FC)

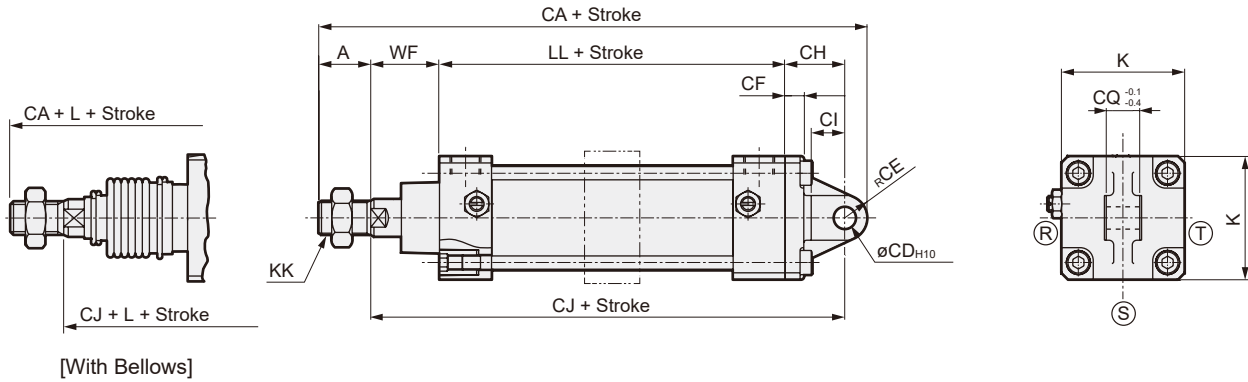


Code	Head side special flange type (FC) Mounting method										With Bellows							
	Bore Size (mm)	A	K	KK	LL	WF	FA	FC	FD	FJ	FT	L						
50 or less												Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
ø40	22	57	M14 × 1.5	93	33.5	153	40.5	9	131	4.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	66	M18 × 1.5	101	37	170.5	48	9	142.5	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	80	M18 × 1.5	105	35	172.5	59	9	144.5	4.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	98	M22 × 1.5	116	48	206	74	14	170	6	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	100	M26 × 1.5	128	53	232	90	14	187	6	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

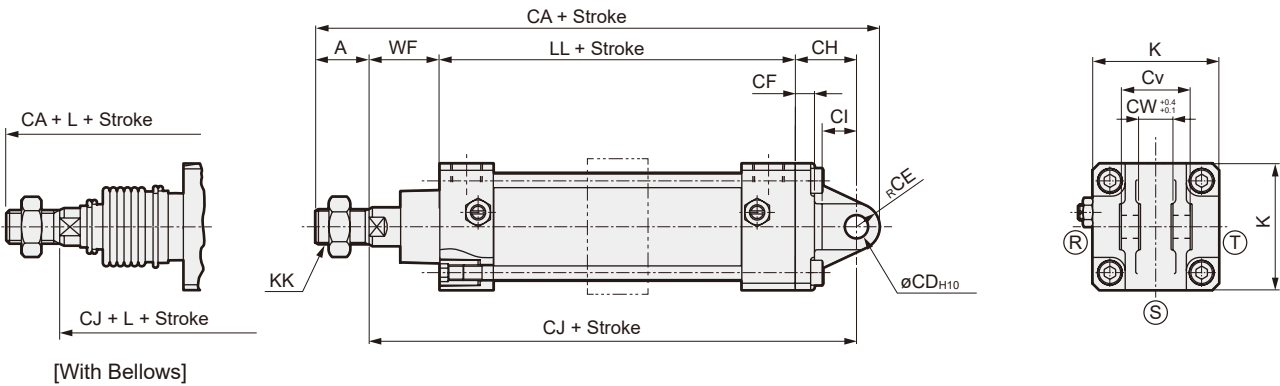
●Single Clevis Type (CA)



Code		Single Clevis Type (CA) Mounting Dimensions												With Bellows								
		A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	L							
Bore Size (mm)														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 When exceeding 500	
ø40		22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50		28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.
*5: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Double clevis type (CB)

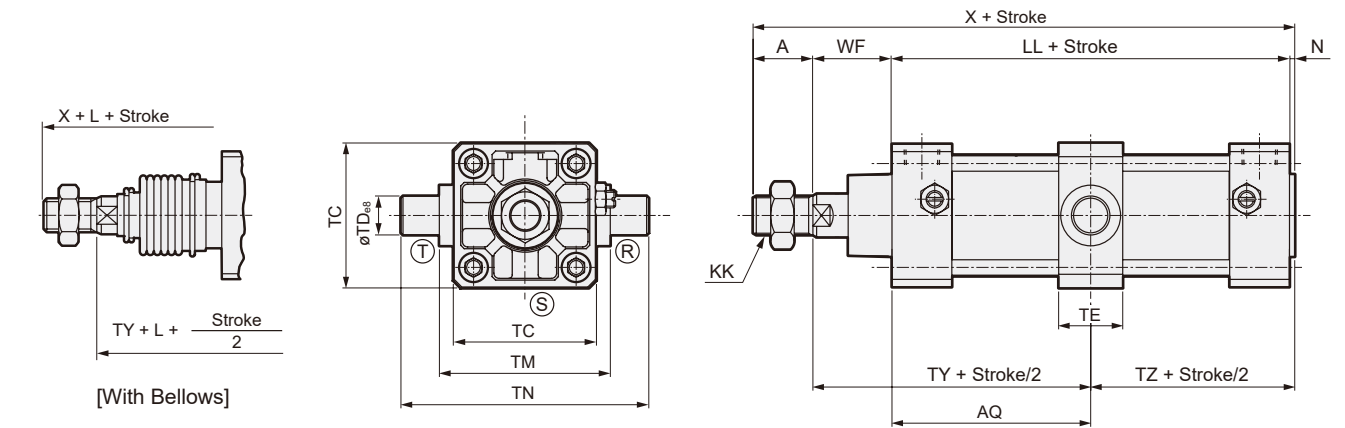


Code		Double Clevis Type (CB) Mounting Dimensions														With Bellows							
																L							
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500	
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	36	18	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8	
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	36	18	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	40	20	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	56	28	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	56	28	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: Pins are attached.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For the external dimensions diagram of accessories, please refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

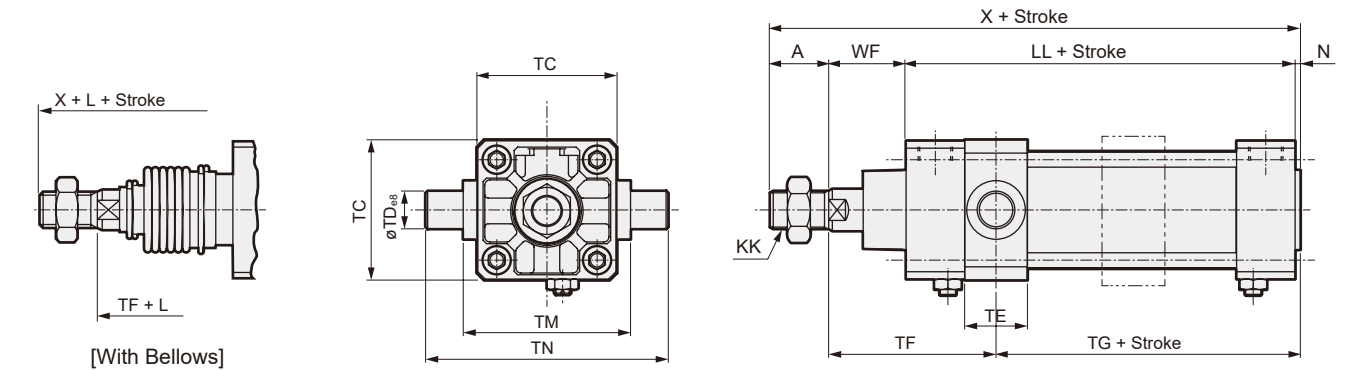
●Intermediate trunnion type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions														With Bellows							
	A	KK	LL	N	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ	L							
Bore Size (mm)															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 When exceeding 500
ø40	22	M14 × 1.5	93	2	33.5	150.5	46.5 + $\frac{\text{Stroke}}{2}$	57	16	30	63	95	80	48.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	2.5	37	168.5	50.5 + $\frac{\text{Stroke}}{2}$	67	18	30	80	116	87.5	53	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	52.5 + $\frac{\text{Stroke}}{2}$	82	20	35	90	130	87.5	55.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	58 + $\frac{\text{Stroke}}{2}$	100	25	40	115	165	106	61.5	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	64 + $\frac{\text{Stroke}}{2}$	121	35	50	135	205	117	68	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side trunnion type (TA)

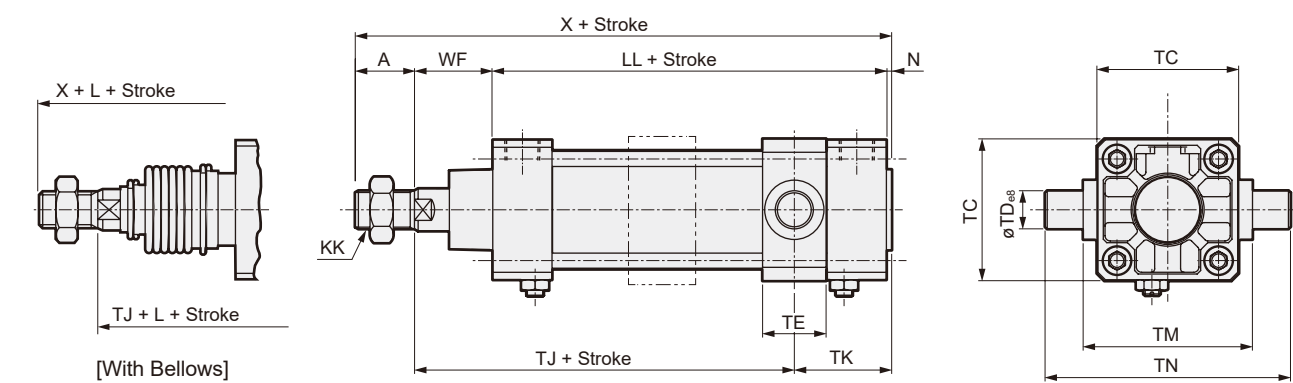


Code	Rod Side Trunnion Type (TA) Mounting Dimensions														With Bellows							
	Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TF	TG	TM	TN	L							
															50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	74.5	54	63	95	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8	
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	80	60.5	80	116	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	82.5	60.5	90	130	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5	
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	102	65.5	115	165	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5	
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	114	71	135	205	20	32	42	53	76	98	120	(Stroke/4.5) + 9	

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For the external dimensions diagram of accessories, please refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Outline Dimension Drawing

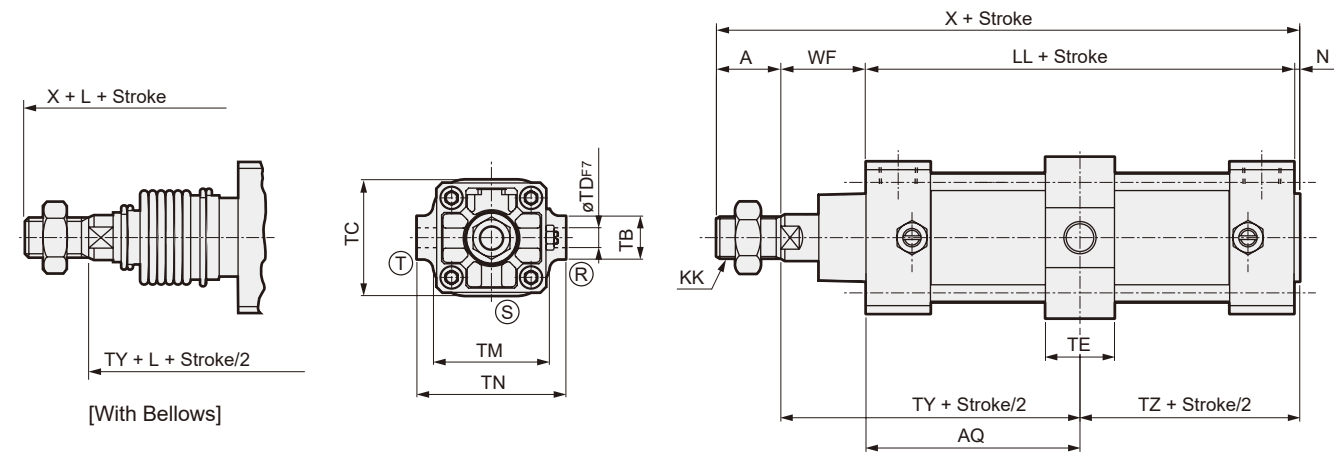
●Head Side Trunnion Type (TB)



Code	Head Side Trunnion Type (TB) Mounting Dimensions													With Bellows							
	A	KK	LL	N	WF	X	TC	TD	TE	TJ	TM	TN	TK	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	*3 When exceeding 500	
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	85	63	95	43.5	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	94.5	80	116	46	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	92	90	130	51	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	109.5	115	165	58	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	119.5	135	205	65.5	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For the external dimensions diagram of accessories, please refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Intermediate tapped trunnion type (TF)

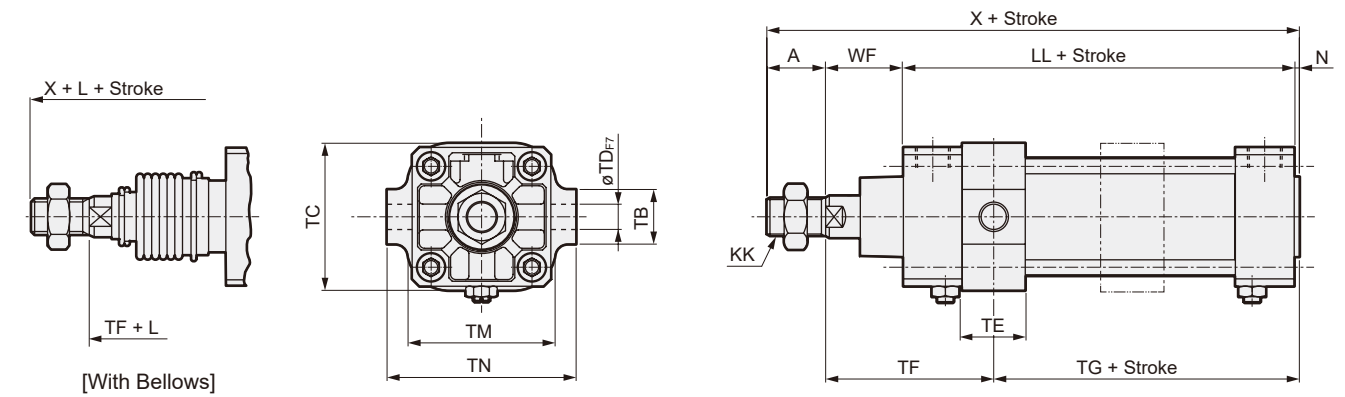


Code		Intermediate tapped trunnion type (TF) Mounting dimensions														With Bellows								
		A	KK	LL	N	WF	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ	L							
Bore Size (mm)																	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*2 When exceeding 500
ø50		28	M18 × 1.5	101	2.5	37	168.5	50.5 + $\frac{\text{Stroke}}{2}$	26	70	12	30	70	90	87.5	53	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	105	3	35	171	52.5 + $\frac{\text{Stroke}}{2}$	30	86	14	35	86	104	87.5	55.5	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	116	3.5	48	203.5	58 + $\frac{\text{Stroke}}{2}$	35	105	20	40	105	134	106	61.5	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	128	4	53	230	64 + $\frac{\text{Stroke}}{2}$	40	123	20	40	127	150	117	68	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: Round up the L dimension to the nearest whole number.
*3: For dimensions with each switch, please refer to P. 850 to 853.
*4: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

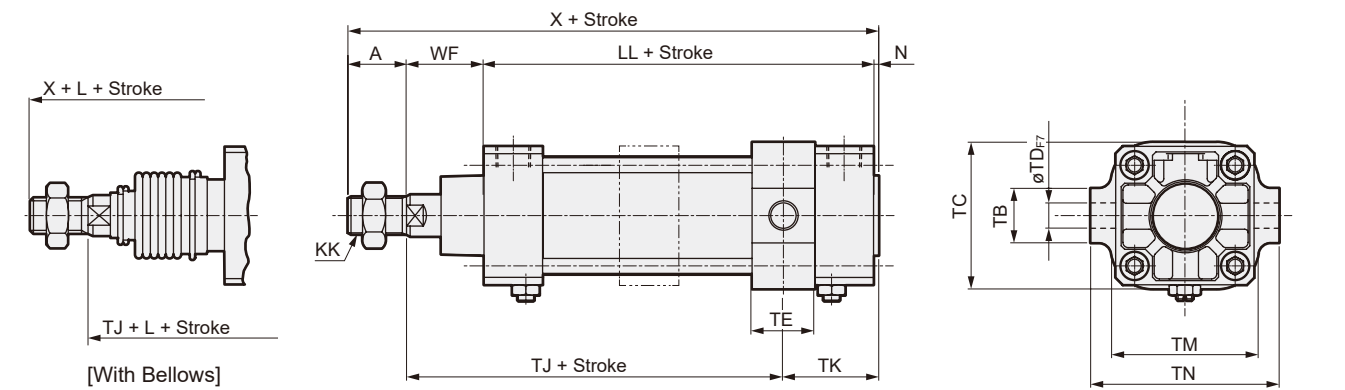
●Rod side tapped trunnion type (TD)



Code		Rod side tapped trunnion type (TD) Mounting dimensions														With Bellows							
		A	KK	LL	N	WF	X	TB	TC	TD	TE	TF	TG	TM	TN	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	*3 When exceeding 500
ø50		28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	80	60.5	70	90	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	105	3	35	171	30	86	14	35	82.5	60.5	86	104	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	102	65.5	105	134	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	128	4	53	230	40	123	20	40	109	76	127	150	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the rod side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For the external dimensions diagram of accessories, please refer to P. 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

●Head side tapped trunnion type (TE)

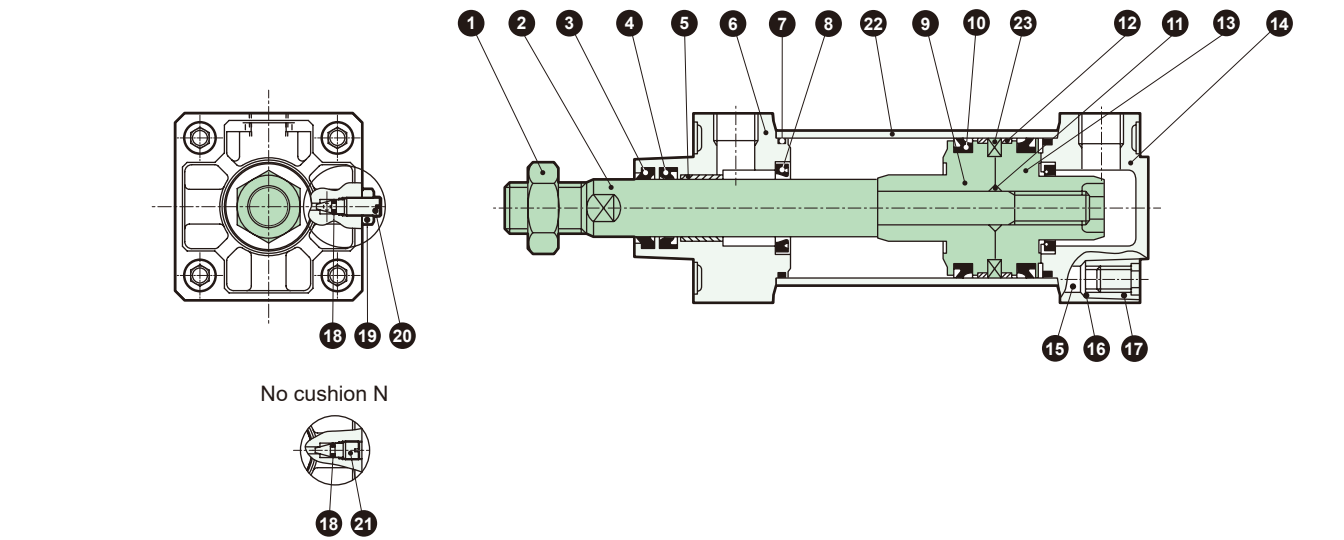


Code		Head side tapped trunnion type (TE) Mounting dimensions														With Bellows							
		A	KK	LL	N	WF	X	TB	TC	TD	TE	TJ	TM	TN	TK	L							
Bore Size (mm)	50 or less															Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 When exceeding 500	
ø50		28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	94.5	70	90	46	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø63		28	M18 × 1.5	105	3	35	171	30	86	14	35	92	86	104	51	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5
ø80		36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	109.5	105	134	58	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5
ø100		45	M26 × 1.5	128	4	53	230	40	123	20	40	124.5	127	150	60.5	20	32	42	53	76	98	120	(Stroke/4.5) + 9

*1: The position of the cushion needle cannot be changed.
*2: Position detection at the head side stroke end is not possible.
*3: Round up the L dimension to the nearest whole number.
*4: For dimensions with each switch, please refer to P. 850 to 853.
*5: For the external dimensions diagram of accessories, please refer to page 644.
*6: An intermediate support head (dashed-dotted line) is added depending on the stroke. For details on dimensions, please refer to P. 848.

Internal Structure Diagram/Material

Internal Structure Diagram/Material



Part Number	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	13	Piston H	Aluminum Alloy	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	14	Head Cover	Aluminum Alloy	Painting
3	Scraper	Nitrile Rubber		15	Tie Rod	Steel	Zinc Chromate
4	Rod Packing	Nitrile Rubber		16	Belleville washer	Steel	Black Oxide
5	Bushing	Oil-Impregnated Bearing Alloy		17	Round Nut	Steel	Zinc Chromate
6	Rod Cover	Aluminum Alloy	Painting	18	Needle Gasket	Nitrile Rubber	With cushion
7	Cylinder Gasket	Nitrile Rubber		19	Needle nut	Copper Alloy	Nickel Plating
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	20	Cushion Needle	Copper Alloy	Nickel Plating
9	Piston R	Aluminum Alloy		21	Cushion plug	Copper Alloy	Nickel Plating
10	Piston Packing	Nitrile Rubber		22	Cylinder Tube	Steel	Industrial Hard Chrome Plating
11	Piston Gasket	Nitrile Rubber		23	Piston Ring	Steel	Zinc Chromate
12	Wear Ring	Polyacetal Resin					

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts .



Medium Bore Size Cylinder
Double Acting, Low Hydraulic Pressure Type

SCA2-H Series

●Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

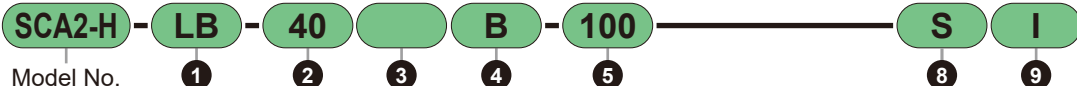


SCA2-H Series

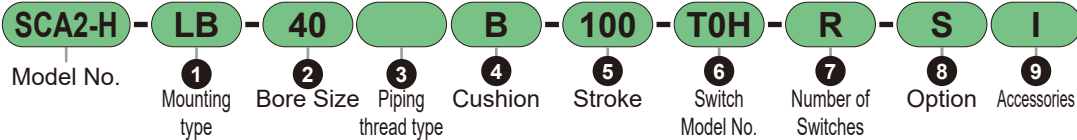
Model No. Notation Method

Model No. Notation Method

Without Switch
(Built-in magnet for switch)



With Switch
(Built-in magnet for switch)



1 Mounting type

Mounting brackets are attached to the product and shipped.
(However, trunnion types are shipped assembled.)

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side Flange Type	
FC	Head side special flange type	
CA	Single Clevis Type	
CB	Double Clevis Type (Pin and retaining ring included)	
TC	Intermediate Trunnion Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TF	Intermediate tapped trunnion type (ø50 to ø100)	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

2 Bore size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Cushion

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

5 Stroke (mm)

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

Note: For minimum stroke with switch, please refer to P. 776 and 777.

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
			—	24 ± 10%	—	5 to 20	T2YD□	—	
			—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
	1-Color Off-Delay Type	2-wire	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
	1-Color Flexible Lead Wire Type		—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

7 Number of Switches

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

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

8 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, cutting chips, etc., instantaneously hit the bellows.

*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

9 Accessories

Code	Content	
I	Single Knuckle *1	
Y	Double Knuckle (Pin and retaining ring included) *1	
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

*For combinations of variations and options, please refer to P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Contents	Code	Contents	Code	Contents
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle Pin/Clevis Pin Split Pin Specification, Knuckle fixed by pinning	Rod end Shape change	Refer to Ending P. 11.
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS		
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows		

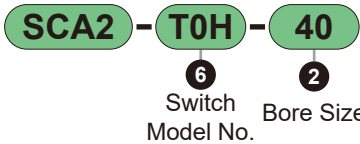
Model No. Example)

SCA2-H - - XP5

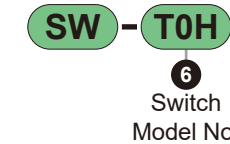
Switch Single Unit Model No. Notation Method

[T type switch]

●Switch body + Mounting bracket set



●Switch body only



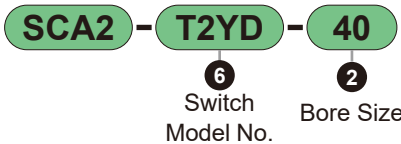
●Switch mounting bracket set



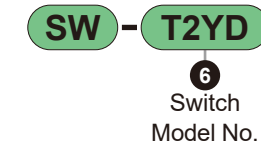
*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item		SCA2-H (Low hydraulic pressure type)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating fluid		*1 Hydraulic Operating Fluid				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.2		0.15		
Proof Pressure	MPa	1.6				
Ambient Temperature		°C 5 to 50				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Cushion		With Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Allowable surge pressure		MPa 2.9 (with cushion), 4.9 (without cushion)				
Allowable absorbed energy J	With Cushion	The cushioning capacity of low hydraulic pressure cylinders cannot absorb large energy. It is recommended to use an external shock absorber together.				
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

*1: Hydraulic oil with a viscosity of 40 mm²/S at the operating oil temperature is recommended. For oil, please use Fuji Kosan / FOCCOL Hydrol X22 or equivalent oils such as Mitsubishi / Diamond Powerful Fluid 18, Showa Shell / Shell Tellus Oil 22, Esso / Univis J26, Mobil / Mobil DTE22, Cosmo Hydro HV22, Nisseki / Highland Wide 22, Idemitsu / Daphne Super Hydro 22WR.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250 300, 350, 400, 450, 500	600	1
ø50			
ø63			
ø80		700	
ø100		800	

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

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

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

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

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

●Minimum stroke with T8 type switch

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

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

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

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

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

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

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

●Minimum stroke with T1/T2YD type switch

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

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

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

●Minimum stroke with T2W/T3W/T2WL type switch

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

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

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

Cylinder Weight

(Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm							Switch weight	Switch Mounting Bracket Weight	Per S=100 mm Added Weight
	Basic type (00)	Foot Type (LB)	Flange Type (FA, FB)	Special flange type (FC)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)		T type	
ø40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the weight listed in the switch specifications on P. 971.	0.024	0.39
ø50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.022	0.46
ø63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.020	0.50
ø80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.026	0.90
ø100	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-T0H-D Product Weight at 0 mm stroke 1.45 kg Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg Weight of 2 T0H switches.....$0.018 \times 2 = 0.036$ kg Weight of 2 mounting brackets$0.022 \times 2=0.044$ kg Product Weight $1.45 + 0.92 + 0.036 + 0.044 = 2.450$ kg										

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	-	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	-	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	-	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	-	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	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	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	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	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	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	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

Mounting Bracket Model No. Notation Method

Bore Size (mm)		ø40	ø50	ø63	ø80	ø100
Mounting bracket						
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
Single Clevis (CA)		S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)		S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

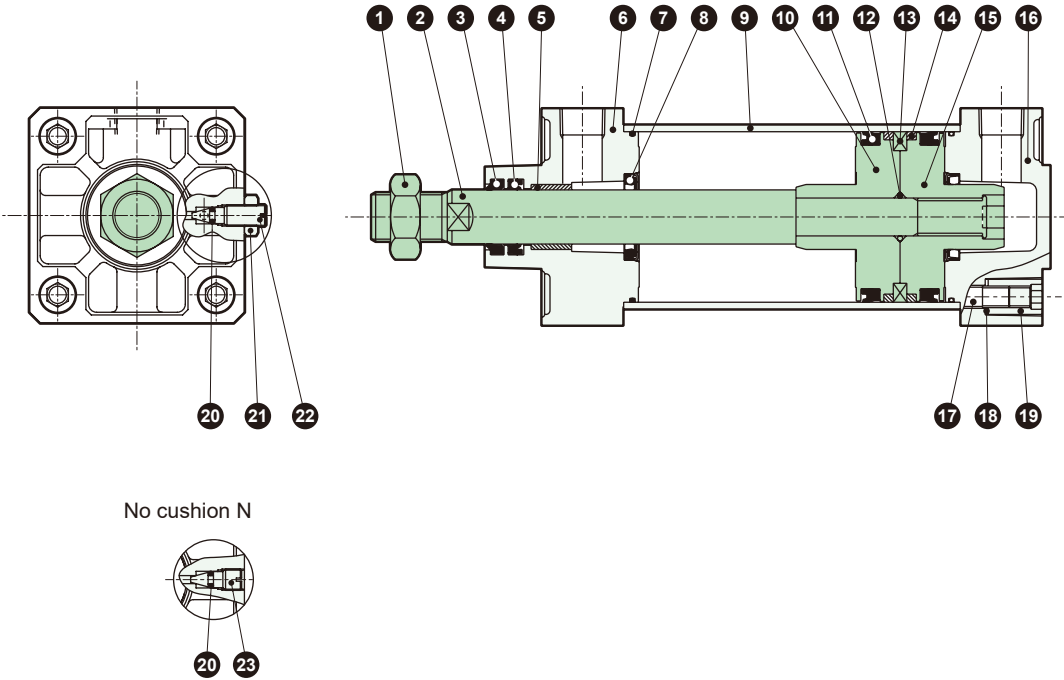
*1: For the material of the mounting brackets, please refer to P. 646.
*2: Foot type mounting brackets come in sets of 2.
*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing/Internal Structure Diagram/Material

Outline Dimension Drawing

Same dimensions as double-acting, single rod type. Please refer to P. 632 to 642.

Internal Structure Diagram/Material



Part Number	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	13	Magnet	Plastic	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	14	Wear Ring	Polyacetal	
3	Scraper	Nitrile Rubber		15	Piston H	Aluminum Alloy	
4	Rod Packing	Nitrile Rubber		16	Head Cover	Aluminum Alloy	Painting
5	Bushing	Oil-impregnated Bearing Alloy		17	Tie Rod	Steel	Zinc Chromate
6	Rod Cover	Aluminum Alloy	Painting	18	Belleville washer	Steel	Black Oxide
7	Cylinder Gasket	Nitrile Rubber		19	Round Nut	Steel	Zinc Chromate
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	20	Needle Gasket	Nitrile Rubber	
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	21	Needle nut	Copper Alloy	Nickel Plating
10	Piston R	Aluminum Alloy		22	Cushion Needle	Copper Alloy	Nickel Plating
11	Piston Packing	Nitrile Rubber		23	Cushion plug	Copper Alloy	Nickel Plating
12	Piston Gasket	Nitrile Rubber					

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

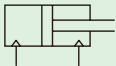


Medium Bore Size Cylinder
Double Acting, Heavy Duty Scraper Type

SCA2-G Series

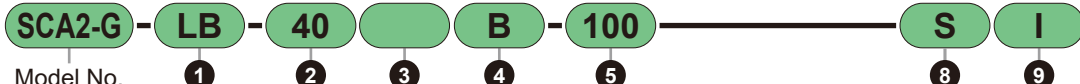
●Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

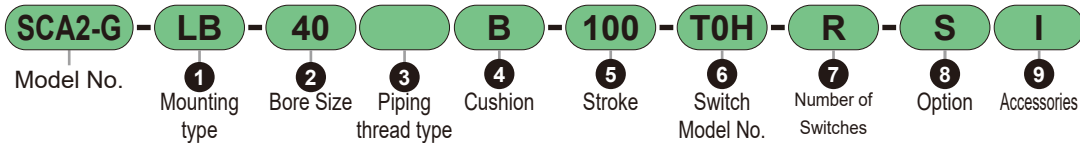


Model No. Notation Method

Without Switch
(Built-in magnet for switch)



With Switch
(Built-in magnet for switch)



1 Mounting type

Mounting brackets are included to the product and shipped.
(However, trunnion types are shipped assembled.)

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side Flange Type	
FC	Head side special flange type	
CA	Single Clevis Type	
CB	Double Clevis Type (Pin and retaining ring included)	
TC	Intermediate Trunnion Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	
TF	Intermediate tapped trunnion type (ø50 to ø100)	
TD	Rod side tapped trunnion type (ø50 to ø100)	
TE	Head side tapped trunnion type (ø50 to ø100)	

2 Bore size (mm)

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

3 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom product)
G	G thread (Custom product)

4 Cushion

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

5 Stroke (mm)

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

Note: For minimum stroke with switch, please refer to P. 782 and 783.

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T2WLH□	T2WLV□	
		2-Color Improved Water Resistance	—	24 ± 10%	—	5 to 20	T2YD□	—	
		2-Color for AC Magnetic Field	—	24 ± 10%	—	5 to 20	T2YDT□	—	
		1-Color Off-Delay Type	—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
		1-Color Flexible Lead Wire Type	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+) 4PIN (-) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

SCA2-G Series

Model No. Notation Method

9 Accessories

Code	Content	
I	Single Knuckle *1	
Y	Double Knuckle (Pin and retaining ring included) *1	
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

7 Number of Switches

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

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

8 Option

Code	Content
M	Piston Rod Material (Stainless Steel)
Blank	Cushion needle position R (Standard)
S	Cushion needle position S
T	Cushion needle position T

*1: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

*For combinations of variations and options, see P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Contents	Code	Contents	Code	Contents
-XR◇◇◇◇	Port/Cushion needle position specification	-XP5	Knuckle Pin/Clevis Pin Split Pin	-XM1	Tie rod material SUS
-XK◇	Mounting Bracket Rotational Assembly	-XP7	Knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XAQ◇◇	Trunnion Position Specification	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	Rod End Shape Modification	Refer to Ending P. 11.

Model No. Example) **SCA2-G - - XP5**

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

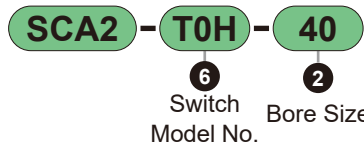
●Uses food grade grease that can be used in food manufacturing processes

SCA2-G - - FP1

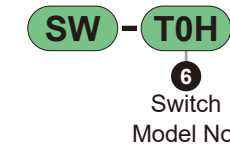
Switch Single Unit Model No. Notation Method

[T type switch]

●Switch body + Mounting bracket set



●Switch body only



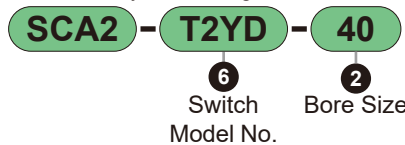
●Switch mounting bracket set



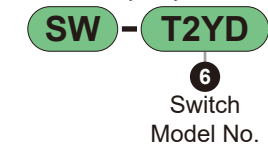
*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

●Switch body + Mounting bracket set



●Switch body only



●Mounting bracket set



Specifications

Item		SCA2-G (Heavy-duty scraper type)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature		−10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

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

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: If the maximum stroke is exceeded, the product specifications may not be met depending on the conditions, so please consult us.

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● Minimum stroke with T8 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

Min. Stroke with Switch

●Minimum stroke with T2/T3 type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● Minimum stroke with T1/T2YD type switch

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

*1: () indicates T□V (L-shaped lead wire type). However, T2YD does not have an L-shaped lead wire type (V).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● Minimum stroke with T2W/T3W/T2WL type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

Cylinder Weight (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Of switch Weight	Switch Mounting Bracket Weight	Added mass per S=100 mm
	Basic Type (00)	Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion type (TA, TB, TC)		T type	
ø40	0.83	1.00	1.24	1.15	1.19	1.21	Refer to the mass described in the switch specifications on P. 971	0.024	0.39
ø50	1.20	1.45	1.69	1.58	1.61	1.74		0.022	0.46
ø63	1.60	1.97	2.69	2.17	2.22	2.45		0.020	0.50
ø80	2.60	3.34	4.46	3.87	4.08	3.94		0.026	0.90
ø100	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-T0H-D Product Weight at 0 mm stroke 1.45 kg Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg Weight of 2 T0H switches.....$0.018 \times 2 = 0.036$ kg Weight of 2 mounting brackets$0.022 \times 2=0.044$ kg Product Weight $1.45 + 0.92 + 0.036 + 0.044 = 2.450$ kg									

Theoretical Thrust Table (Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	98.2	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	82.5	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	1.56×10^2	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	1.40×10^2	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	2.51×10^2	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	2.27×10^2	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	3.93×10^2	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	3.57×10^2	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
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
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: For the material of the mounting brackets, please refer to P. 646.

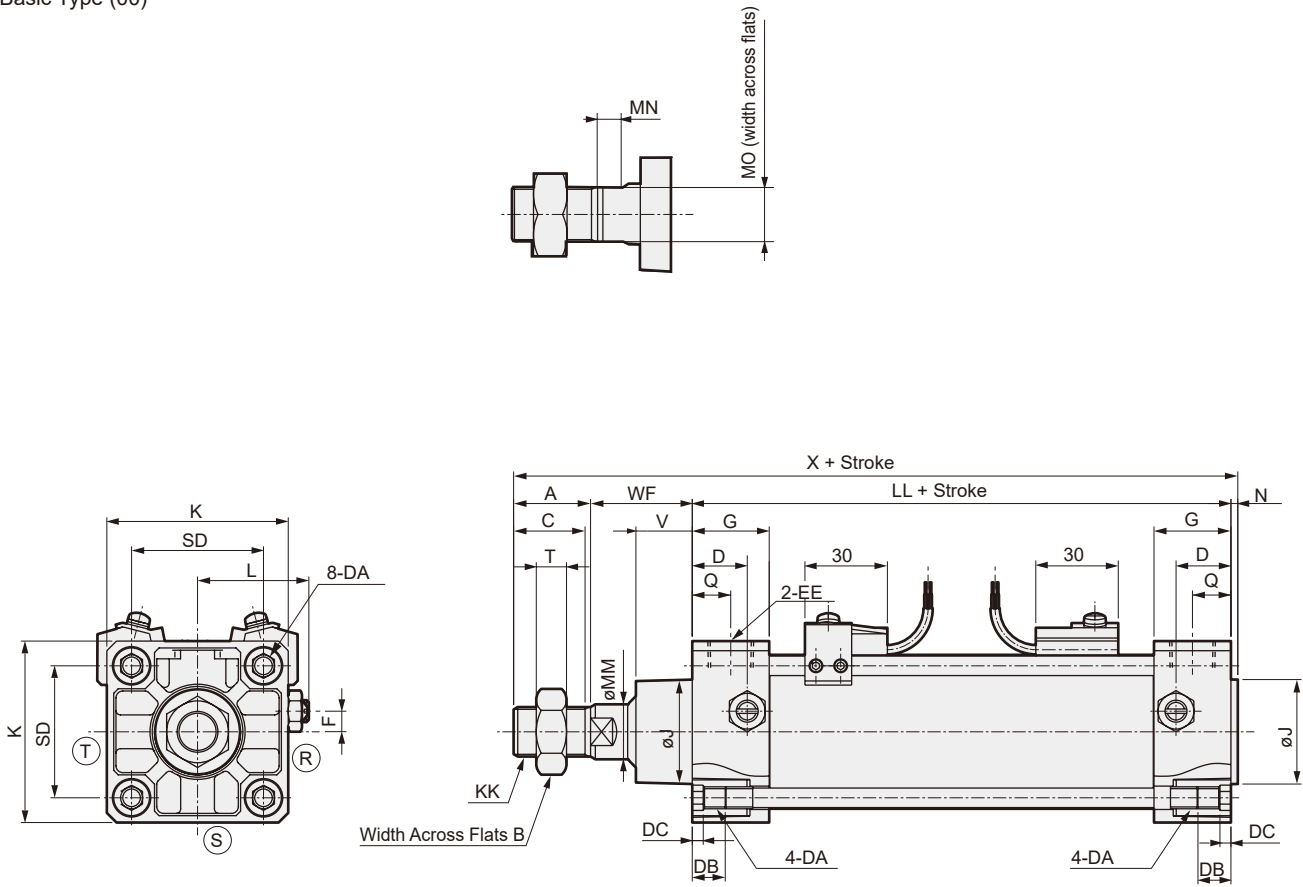
*2: Foot type mounting brackets come in sets of 2.

*3: Mounting bolts are included to each mounting bracket.

MEMO

Outline Dimension Drawing

● Basic Type (00)



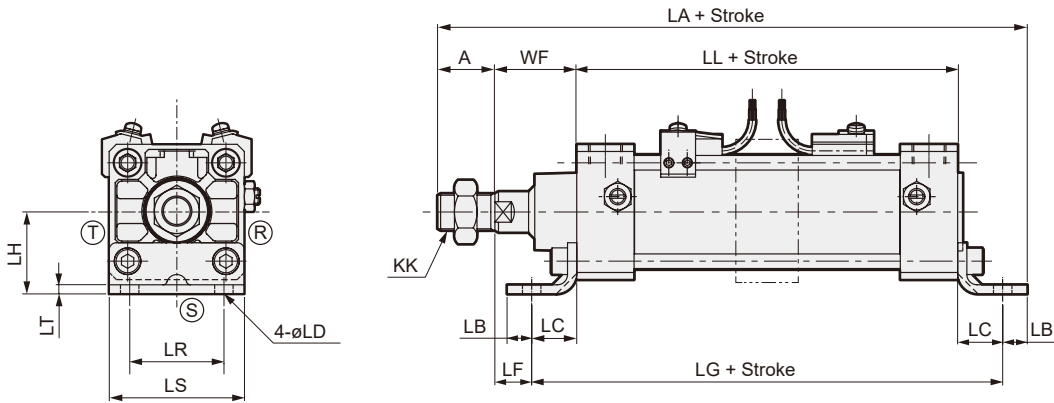
Code	With switch basic type (00)														
Bore Size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL
ø40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93
ø50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101
ø63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105
ø80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116
ø100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128
Code															
Bore Size (mm)	MM	MN	MO	N	Q	SD	T	V	WF	X					
ø40	16	8	14	2	13	40.5	8	17	33.5	150.5					
ø50	20	8.5	17	2.5	14	48	11	20	37	168.5					
ø63	20	8.5	17	3	15	59	11	20.5	35	171					
ø80	25	11	22	3.5	17	74	13	23	48	203.5					
ø100	30	13	27	4	18	90	16	30.5	53	230					

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Heavy Duty Scraper Type

Outline Dimension Drawing

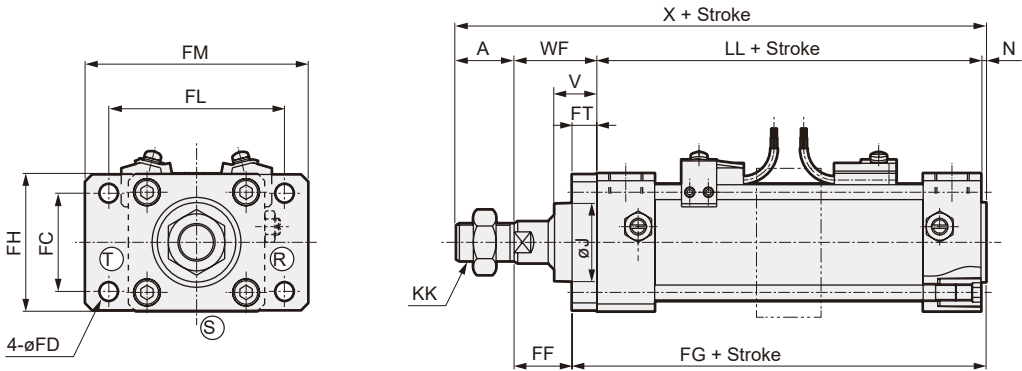
● Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
ø40	22	M14 × 1.5	93	33.5	178	10	19.5	9	14	132	40	40	57	3.2
ø50	28	M18 × 1.5	101	37	200	12	22	9	15	145	40	46	66	4.5
ø63	28	M18 × 1.5	105	35	210	12	30	11	5	165	50	60	80	4.5
ø80	36	M22 × 1.5	116	48	251	14	37	14	11	190	60	74	98	6
ø100	45	M26 × 1.5	128	53	278	21	31	14	22	190	67	80	118	6

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

● Rod Side Flange Type (FA)

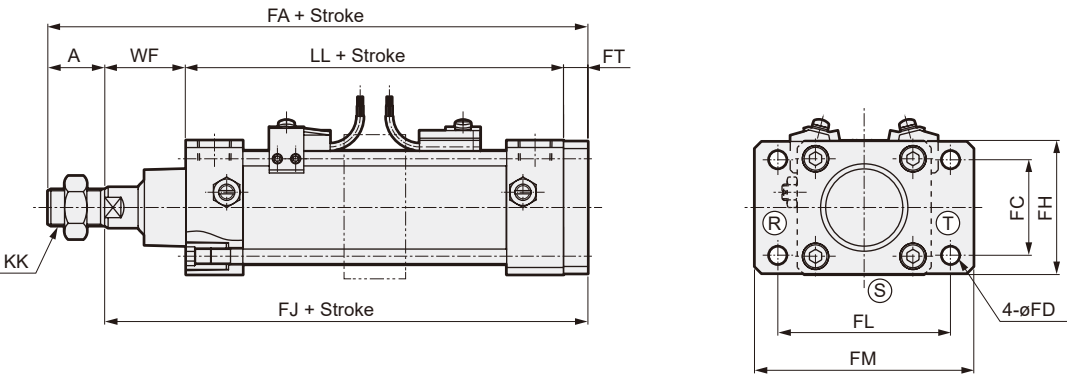


Code	Rod Side Flange Type (FA) Mounting Dimensions															
Bore Size (mm)	A	J	KK	LL	N	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø40	22	31	M14 × 1.5	93	2	17	33.5	150.5	40	9	21.5	107	57	80	100	12
ø50	28	38	M18 × 1.5	101	2.5	20	37	168.5	47	9	25	115.5	65	85	108	12
ø63	28	38	M18 × 1.5	105	3	20.5	35	171	60	11	19	124	80	106	130	16
ø80	36	43	M22 × 1.5	116	3.5	23	48	203.5	74	14	29	138.5	98	125	153	19
ø100	45	51	M26 × 1.5	128	4	30.5	53	230	88	14	34	151	118	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

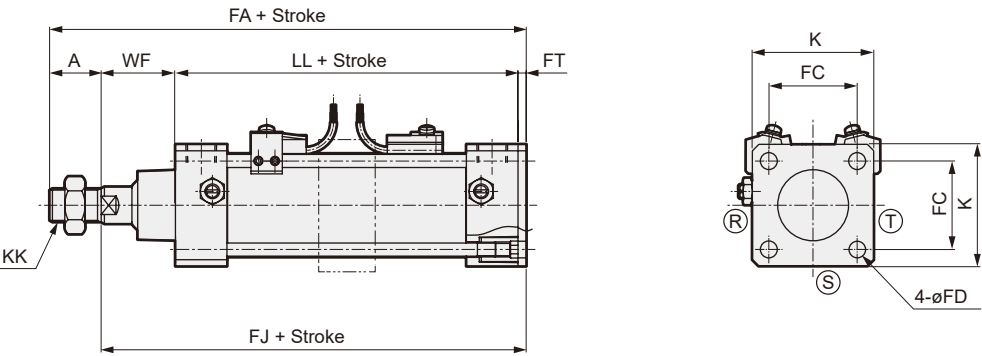
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT
ø40	22	M14 × 1.5	93	33.5	160.5	40	9	57	138.5	80	100	12
ø50	28	M18 × 1.5	101	37	178	47	9	65	150	85	108	12
ø63	28	M18 × 1.5	105	35	184	60	11	80	156	106	130	16
ø80	36	M22 × 1.5	116	48	219	74	14	98	183	125	153	19
ø100	45	M26 × 1.5	128	53	245	88	14	118	200	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Head side special flange type (FC)



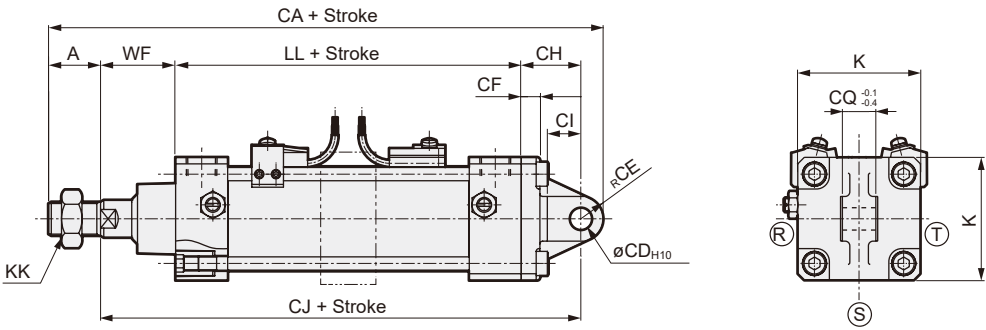
Code	Head side special flange type (FC) Mounting dimensions									
	Bore Size (mm)	A	K	KK	LL	WF	FA	FC	FD	FT
ø40	22	22	57	M14 × 1.5	93	33.5	153	40.5	9	131
ø50	28	28	66	M18 × 1.5	101	37	170.5	4	9	142.5
ø63	28	28	80	M18 × 1.5	105	35	172.5	59	9	144.5
ø80	36	36	98	M22 × 1.5	116	48	206	74	14	170
ø100	45	45	118	M26 × 1.5	128	53	232	90	14	187

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Heavy Duty Scraper Type

Outline Dimension Drawing

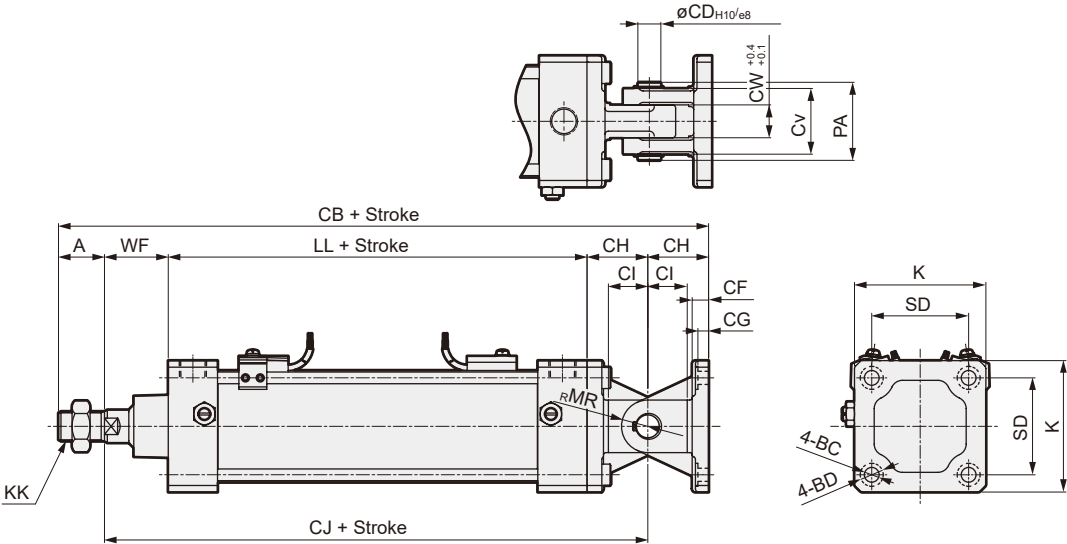
●Single Clevis Type (CA)



Code	Single Clevis Type (CA) Mounting Dimensions												
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	18
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	18
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	20
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	28
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	28

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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

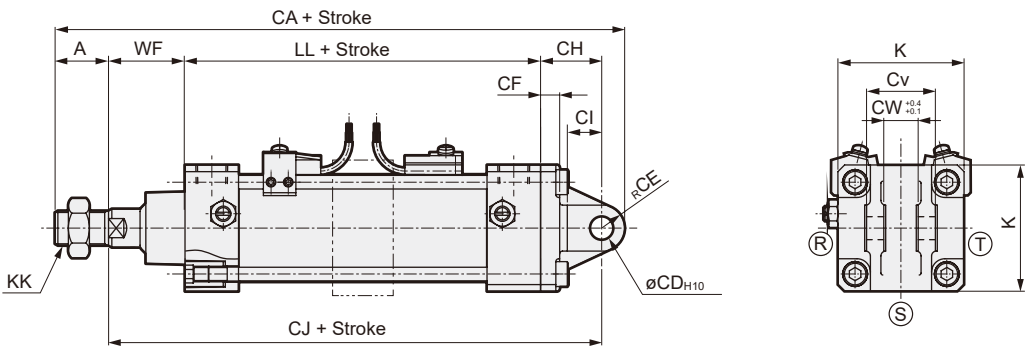


Code	Single Clevis Type (CA) With Bracket (Option Code B2) Mounting Dimensions																		
Bore Size (mm)	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	Cv	CW	BC	BD	MR	PA	SD
ø40	22	57	M14 × 1.5	93	33.5	212.5	12	10	6.5	32	18	158.5	36	18	9	14	12	43.5	40.5
ø50	28	66	M18 × 1.5	101	37	230	12	10	6.5	32	18	170	36	18	9	14	12	43.5	48
ø63	28	80	M18 × 1.5	105	35	242	14	10	6.5	37	24	177	40	20	9	14	16	47.5	59
ø80	36	98	M22 × 1.5	116	48	304	20	14	10.5	52	30	216	56	28	14	20	20	64	74
ø100	45	118	M26 × 1.5	128	53	330	20	16	10.5	52	30	233	56	28	14	20	20	64	90

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

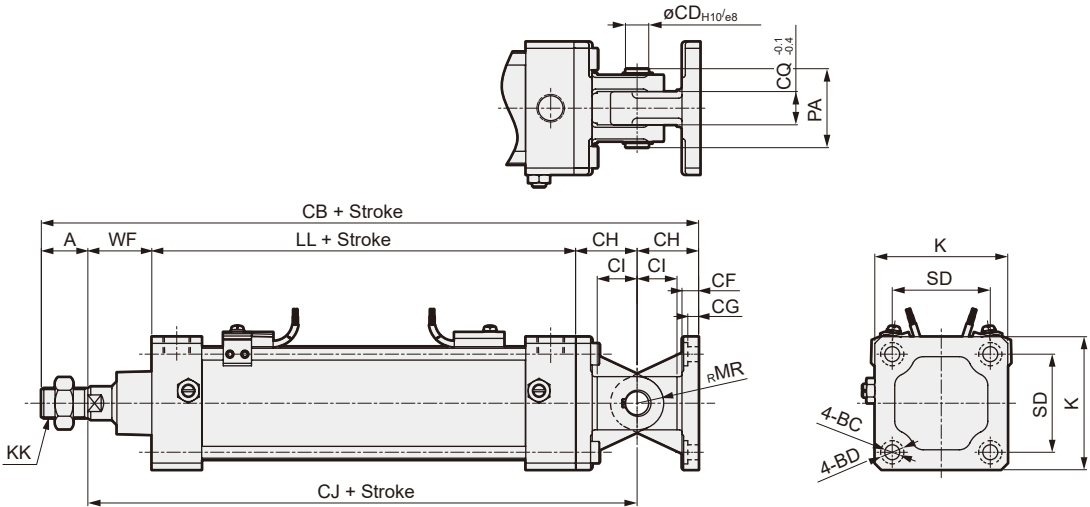
●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions													
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	36	18
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	36	18
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	40	20
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	56	28
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	56	28

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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



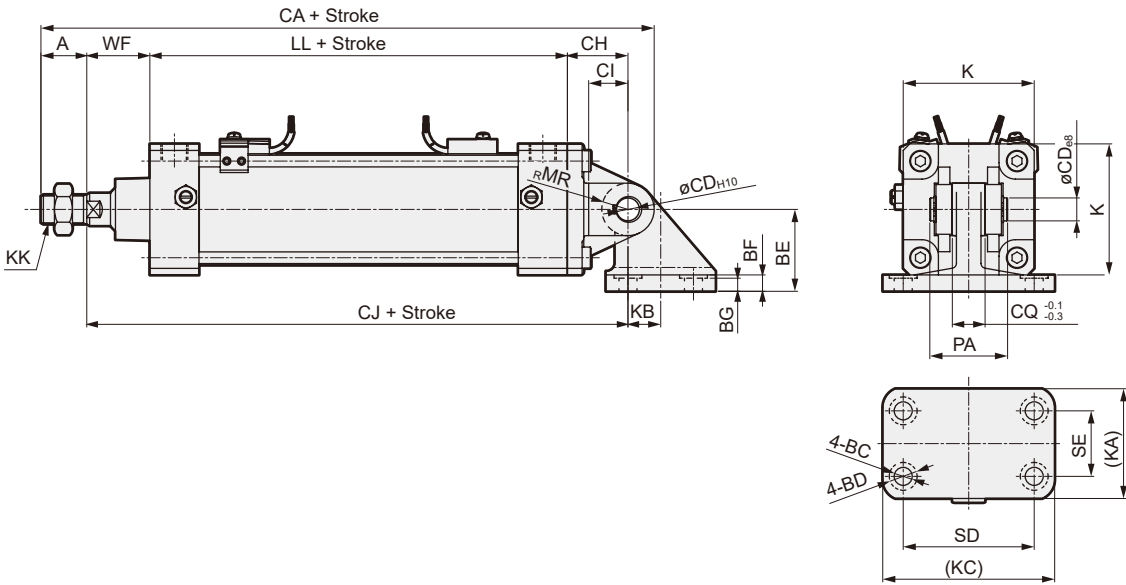
Code	Double Clevis Type (CB) With Bracket (Option Code B1) Mounting Dimensions																	
Bore Size (mm)	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	CQ	BC	BD	MR	PA	SD
ø40	22	57	M14 × 1.5	93	33.5	232.5	12	10	6.5	32	18	158.5	18	9	14	12	43.5	40.5
ø50	28	66	M18 × 1.5	101	37	250	12	10	6.5	32	18	170	18	9	14	12	43.5	48
ø63	28	80	M18 × 1.5	105	35	263	14	10	6.5	37	24	177	20	9	14	16	47.5	59
ø80	36	98	M22 × 1.5	116	48	336	20	14	10.5	52	30	216	28	14	20	20	64	74
ø100	45	118	M26 × 1.5	128	53	362	20	16	10.5	52	30	233	28	14	20	20	64	90

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Heavy Duty Scraper Type

Outline Dimension Drawing

●Double clevis type (CB) with bracket (Option code B3)

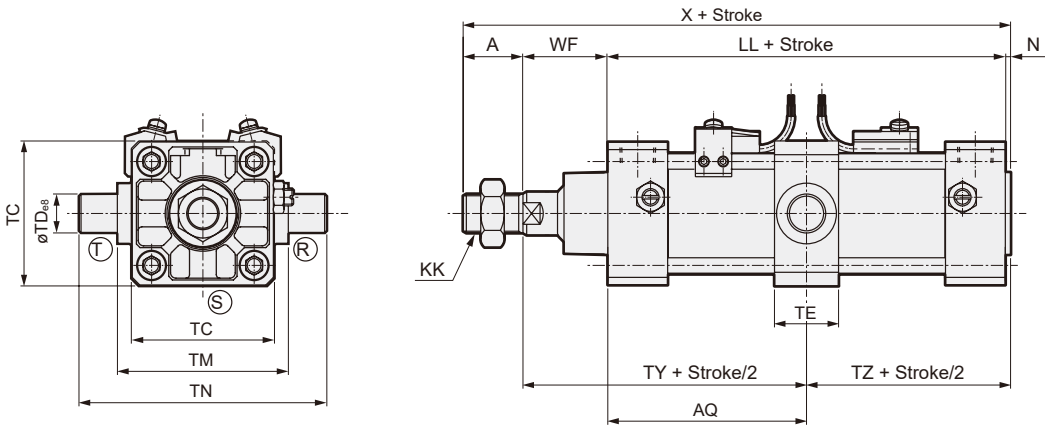


Code	Double clevis type (CB) with bracket (Option code B3) Mounting dimensions																						
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CH	CI	CJ	CQ	BC	BD	BE	BF	BG	KA	KB	KC	MR	PA	SD	SE
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	32	18	158.5	18	9	14	40	8	6.5	57	17.5	85	12	43.5	65	35
ø50	28	66	M18 × 1.5	101	37	210	12	32	18	170	18	9	14	40	8	6.5	57	17.5	85	12	43.5	65	35
ø63	28	80	M18 × 1.5	105	35	221	14	37	24	177	20	9	14	50	10	8	67	20	105	16	47.5	80	40
ø80	36	98	M22 × 1.5	116	48	272	20	52	30	216	28	14	20	65	12	10	93	30	130	20	64	100	60
ø100	45	118	M26 × 1.5	128	53	298	20	52	30	233	28	14	20	65	12	10	93	30	130	20	64	100	60

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

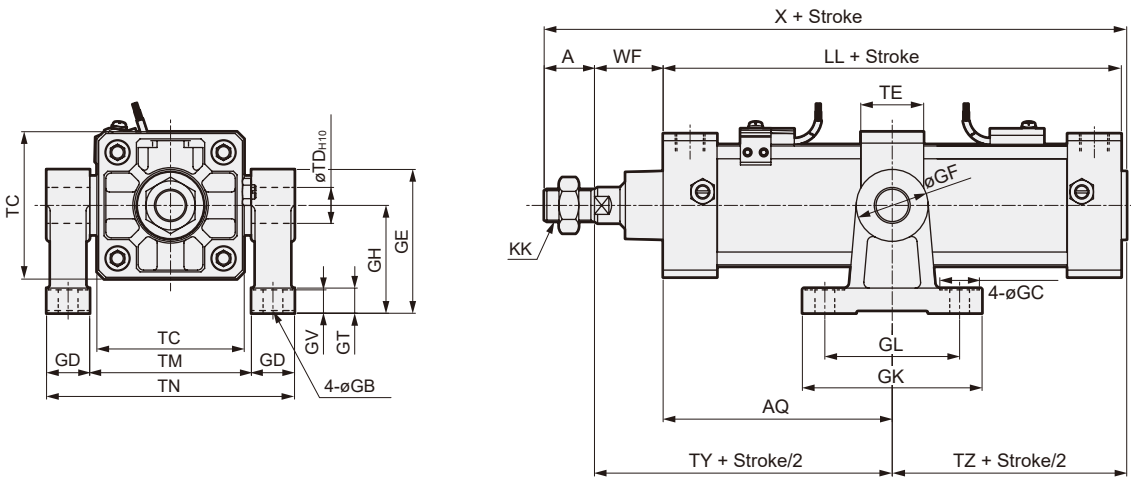
●Intermediate trunnion type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TC	TD	TE	TY	TZ	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	$46.5 + \frac{\text{Stroke}}{2}$	57	16	30	80	48.5	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	$50.5 + \frac{\text{Stroke}}{2}$	67	18	30	87.5	53	80	116
ø63	28	M18 × 1.5	105	3	35	171	$52.5 + \frac{\text{Stroke}}{2}$	82	20	35	87.5	55.5	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	$58 + \frac{\text{Stroke}}{2}$	100	25	40	106	61.5	115	165
ø100	45	M26 × 1.5	128	4	53	230	$64 + \frac{\text{Stroke}}{2}$	121	35	50	117	68	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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



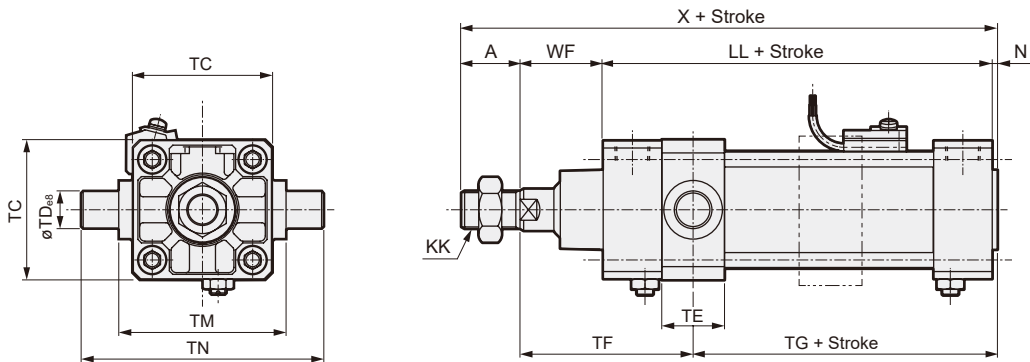
Code	Intermediate Trunnion Type (TC) with Bracket (Option Code B4) Mounting Dimensions																						
Bore Size (mm)	A	KK	LL	WF	X	AQ	TC	TD	TE	TY	TZ	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	M14 × 1.5	93	33.5	150.5	$46.5 + \frac{\text{Stroke}}{2}$	57	16	30	80	48.5	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	M18 × 1.5	101	37	168.5	$50.5 + \frac{\text{Stroke}}{2}$	67	18	30	87.5	53	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	M18 × 1.5	105	35	171	$52.5 + \frac{\text{Stroke}}{2}$	82	20	35	87.5	55.5	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	M22 × 1.5	116	48	203.5	$58 + \frac{\text{Stroke}}{2}$	100	25	40	106	61.5	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	M26 × 1.5	128	53	230	$64 + \frac{\text{Stroke}}{2}$	121	35	50	117	68	135	205	14	24	35	107	64	75	130	100	17	16

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Heavy Duty Scraper Type

Outline Dimension Drawing

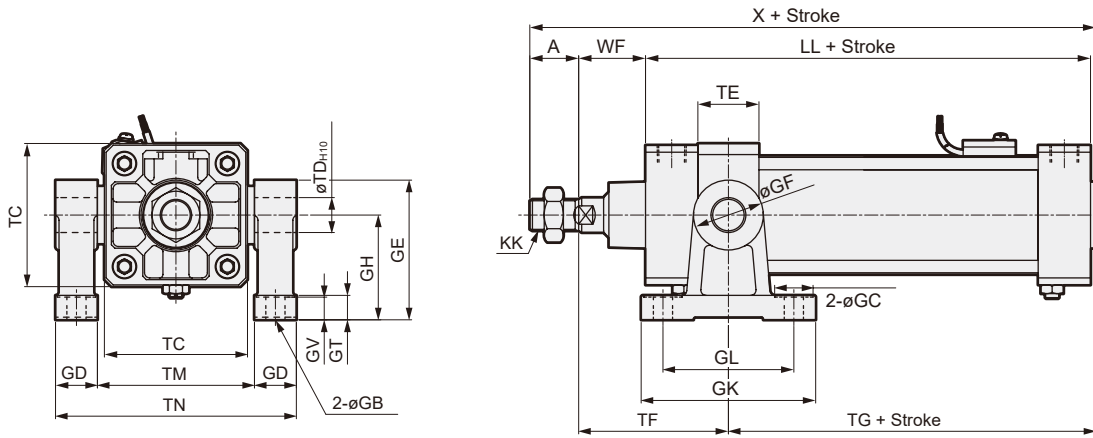
●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TF	TG	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	74.5	54	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	80	60.5	80	116
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	82.5	60.5	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	102	65.5	115	165
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	114	71	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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

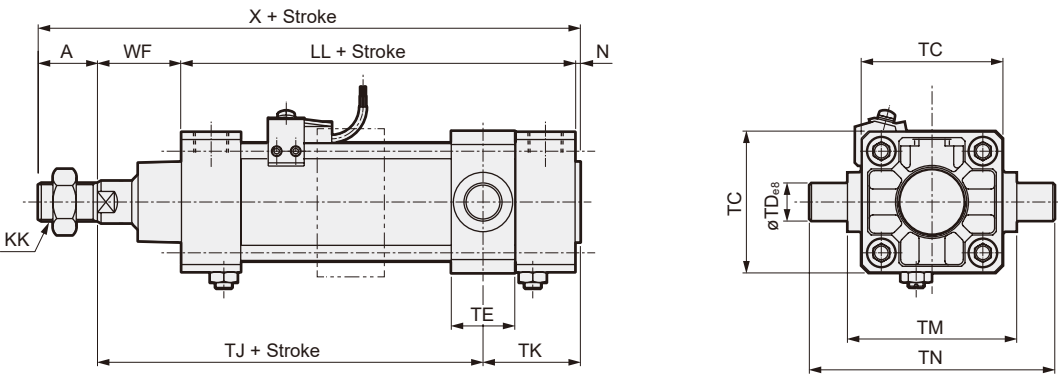


Code	Rod Side Trunnion Type (TA) with Bracket (Option Code B4) Mounting Dimensions																					
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TF	TG	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	M14 × 1.5	93	33.5	150.5	57	16	30	74.5	54	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	M18 × 1.5	101	37	168.5	67	18	30	80	60.5	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	M18 × 1.5	105	35	171	82	20	35	82.5	60.5	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	M22 × 1.5	116	48	203.5	100	25	40	102	65.5	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	M26 × 1.5	128	53	230	121	35	50	114	71	135	205	14	24	35	107	64	75	130	100	17	16

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

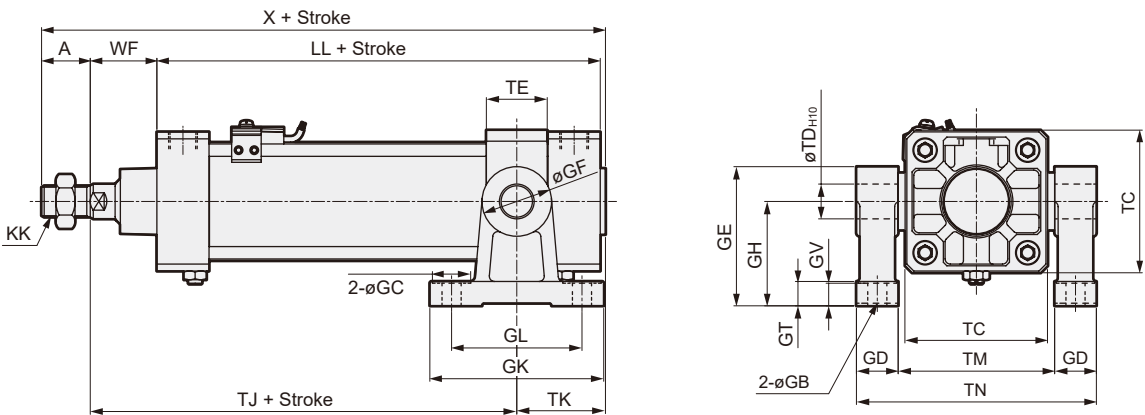
●Head Side Trunnion Type (TB)



Code	Head Side Trunnion Type (TB) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TJ	TK	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	85	43.5	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	94.5	46	80	116
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	92	51	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	109.5	58	115	165
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	119.5	65.5	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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



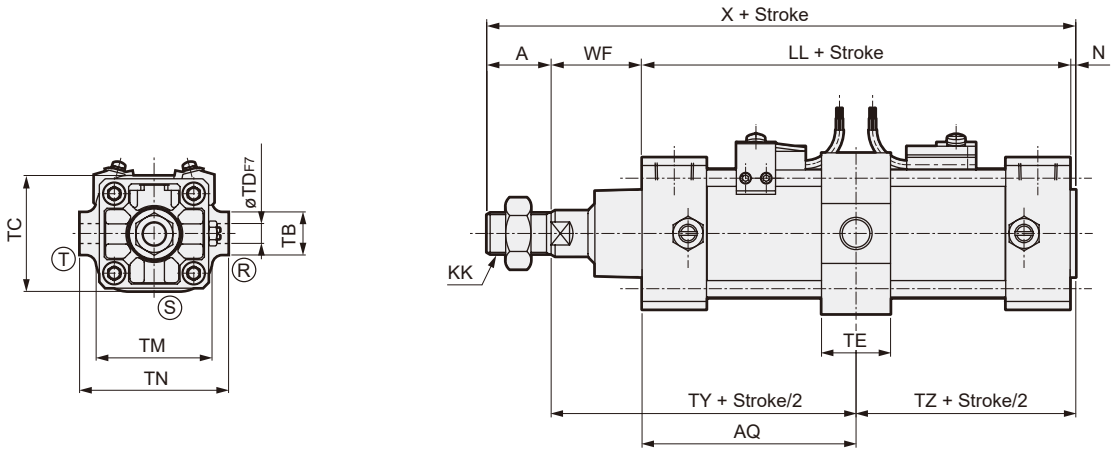
Code	Head Side Trunnion Type (TB) with Bracket (Option Code B4) Mounting Dimensions																					
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TJ	TK	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	M14 × 1.5	93	33.5	150.5	57	16	30	85	43.5	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	M18 × 1.5	101	37	168.5	67	18	30	94.5	46	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	M18 × 1.5	105	35	171	82	20	35	92	51	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	M22 × 1.5	116	48	203.5	100	25	40	109.5	58	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	M26 × 1.5	128	53	230	121	35	50	119.5	65.5	135	205	14	24	35	107	64	75	130	100	17	16

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Heavy Duty Scraper Type

Outline Dimension Drawing

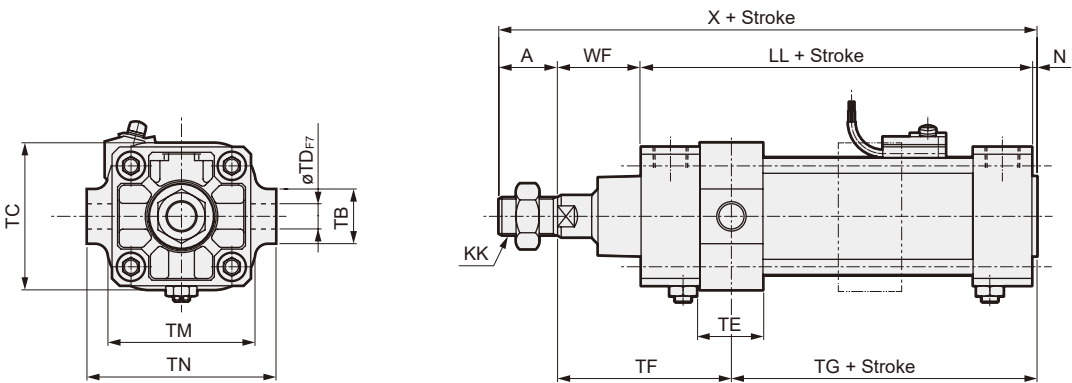
●Intermediate tapped trunnion type (TF)



Code	Intermediate tapped trunnion type (TF) Mounting dimensions														
Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TB	TC	TD	TE	TY	TZ	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	$50.5 + \frac{\text{Stroke}}{2}$	26	70	12	30	87.5	53	70	90
ø63	28	M18 × 1.5	105	3	35	171	$52.5 + \frac{\text{Stroke}}{2}$	30	86	14	35	87.5	55.5	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	$58 + \frac{\text{Stroke}}{2}$	35	105	20	40	106	61.5	105	134
ø100	45	M26 × 1.5	128	4	53	230	$64 + \frac{\text{Stroke}}{2}$	40	123	20	40	117	68	127	150

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side tapped trunnion type (TD)

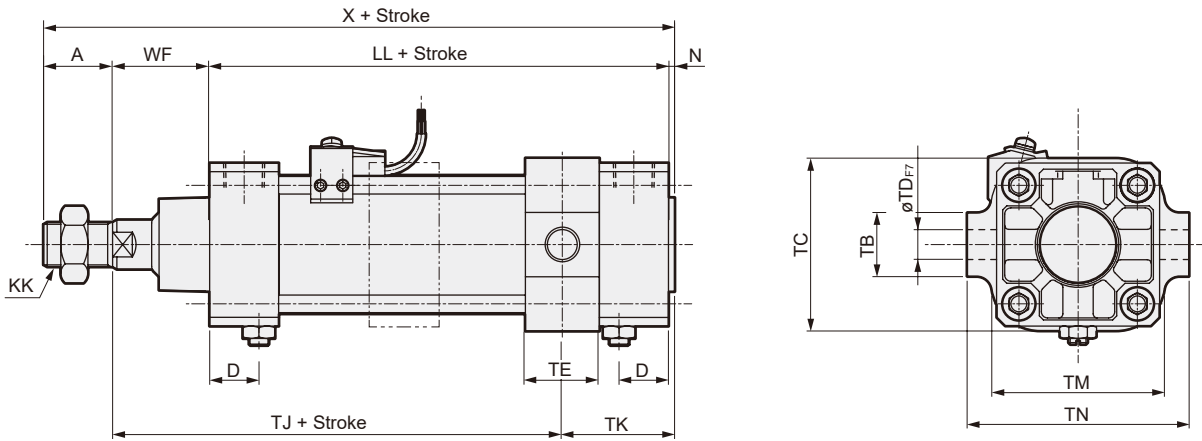


Code	Rod side tapped trunnion type (TD) Mounting dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TF	TG	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	80	60.5	70	90
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	82.5	60.5	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	102	65.5	105	134
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	109	76	127	150

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Head side tapped trunnion type (TE)

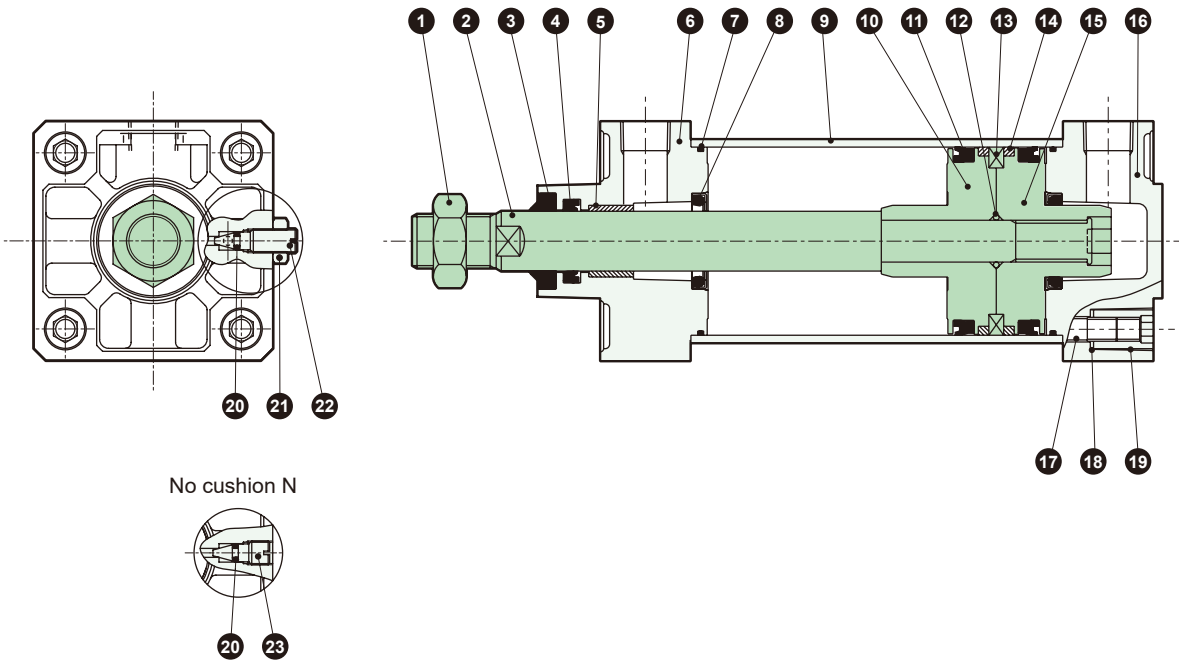


Code	Head side tapped trunnion type (TE) Mounting dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TJ	TK	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	94.5	46	70	90
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	92	51	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	109.5	58	105	134
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	124.5	60.5	127	150

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Heavy Duty Scraper Type

Internal Structure Diagram/Material



Part Number	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	13	Magnet	Plastic	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	14	Wear Ring	Polyacetal	
3	Scraper	Nitrile Rubber		15	Piston H	Aluminum Alloy	
4	Rod Packing	Nitrile Rubber		16	Head Cover	Aluminum Alloy	Painting
5	Bushing	Oil-Impregnated Bearing Alloy		17	Tie Rod	Steel	Zinc Chromate
6	Rod Cover	Aluminum Alloy	Painting	18	Belleville washer	Steel	Black Oxide
7	Cylinder Gasket	Nitrile Rubber		19	Round Nut	Steel	Zinc Chromate
8	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	20	Needle Gasket	Nitrile Rubber	
9	Cylinder Tube	Aluminum Alloy	Hard Anodized	21	Needle nut	Copper Alloy	Nickel Plating
10	Piston R	Aluminum Alloy		22	Cushion Needle	Copper Alloy	Nickel Plating
11	Piston Packing	Nitrile Rubber		23	Cushion plug	Copper Alloy	Nickel Plating
12	Piston Gasket	Nitrile Rubber					

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

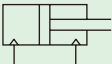


Medium Bore Size Cylinder
Double Acting, Coolant Proof Type

SCA2-G2/G3 Series

● Bore size: ø40, ø50, ø63, ø80, ø100

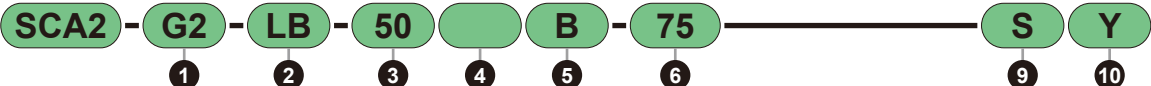
Circuit Diagram Symbol



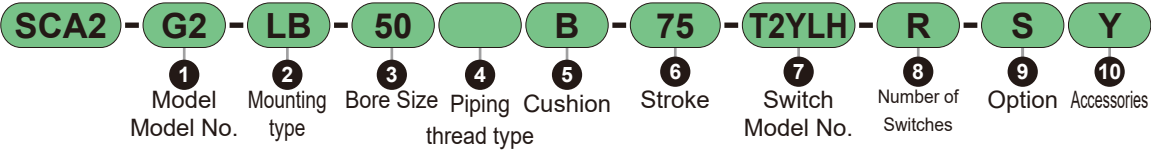
RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)



With Switch
(Built-in magnet for switch)



1 Model No.

Code	Content
G2	Cutting Oil Resistant Scraper + NBR Packing
G3	Cutting Oil Resistant Scraper + FKM Packing

2 Mounting type

Mounting brackets are included to the product and shipped.
(However, trunnion types are shipped assembled.)

Code	Content
00	Basic type
LB	Axial Foot Type (Double Side)
FA	Rod Side Flange Type
FB	Head Side Flange Type
FC	Head side special flange type
CA	Single Clevis Type
CB	Double Clevis Type (Pin and retaining ring included)
TC	Intermediate Trunnion Type
TA	Rod Side Trunnion Type
TB	Head Side Trunnion Type
TF	Intermediate tapped trunnion type (ø50 to ø100)
TD	Rod side tapped trunnion type (ø50 to ø100)
TE	Head side tapped trunnion type (ø50 to ø100)

3 Bore size (mm)

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

4 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT Thread (Custom Order Product)
G	G Thread (Custom Order Product)

5 Cushion

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

6 Stroke (mm)

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

Note: For minimum stroke with switch, refer to P. 800.

SCA2-G2/G3 Series

Model No. Notation Method

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m

*4: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T2YLH
3 m T2YLH^[3]
5 m T2YLH^[5]

7 Switch Model No.

For switch details, please refer to P. 971.
Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	2-Color Improved Water Resistance	2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
	2-Color For Cutting Oil		—	10 to 30	—	5 to 20	T2YLH□	T2YLV□	
	2-Color For Cutting Oil	3-wire (NPN)	—	30 or less	—	50 or less	T3YLH□	T3YLV□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*3: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

8 Number of Switches

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

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

9 Option

Code	Content
Blank	Cushion needle position change R (Standard)
S	Cushion needle position change S
T	Cushion needle position change T

*1: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

10 Accessories

Code	Content
I	Single Knuckle *1
Y	Double Knuckle (Pin and retaining ring included) *1
B1	Single Bracket
B2	Double Yoke Bracket (Pin and retaining ring included)
B3	Single Bracket
B4	Trunnion type 2nd bracket (2 pieces/set)

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

*For combinations of variations and options, please refer to P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Contents	Code	Contents	Code	Contents
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	Rod end Shape change	Refer to Ending P. 11.
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS		
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XT9	Scraper/Rod packing only Fluororubber		

Model No. Example) SCA2-G2/G3 - - XP5

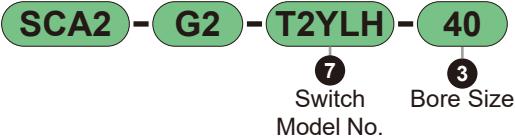
Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

SCA2-G2/G3 - - FP1

Switch Single Unit Model No. Notation Method

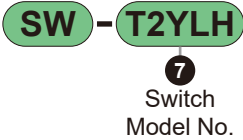
● Switch body + Mounting bracket set



● Mounting bracket set



● Switch body only



Specifications

Item		SCA2-G2/G3				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting, Coolant Proof Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature		-10 to 60 (However, no freezing)				
Port Size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance		^{+0.9} ₀ (Up to 360), ^{+1.4} ₀ (Up to 800)				
Operating piston speed		mm/s 50 to 1000 (Please 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 (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed Energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

Bore size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Producible stroke (mm)	Min. Stroke (mm)
ø40	25, 50, 75, 100, 150, 200, 250, 300, 350400450500	600	1600	1
ø50			2,000	
ø63		700	2500	
ø80				
ø100				

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: In the case of with switch, the minimum stroke changes depending on the mounting method. If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the positions of the two switches so that they are away from each other.
***3: If the maximum stroke is exceeded, the product specifications may not be met depending on the conditions, so please consult us.**

●Minimum stroke with T2YL/T3YL type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

●Minimum stroke with T2W/T3W/T2WL type switch

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

*1: () indicates T□V (L-shaped lead wire type).
*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

Specifications

Cylinder Weight

(Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm							Switch weight	Switch Mounting Bracket Weight	S = Added weight per 10 mm
	Basic type (OO)	Foot Type (LB)	Flange type (FA, FB)	Special flange type (FC)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion type (TA, TB, TC)		T type	
ø40	0.84	1.01	1.25	0.93	1.16	1.20	1.22	Refer to the mass described in the switch specifications on P. 971	0.024	0.39
ø50	1.23	1.48	1.72	1.34	1.61	1.64	1.77		0.022	0.46
ø63	1.63	2.00	2.72	1.81	2.20	2.25	2.48		0.020	0.50
ø80	2.63	3.37	4.49	2.99	3.90	4.11	3.97		0.026	0.90
ø100	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 at 0 mm stroke 1.48 kg Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ 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	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06 × 10 ²	1.58 × 10 ²	2.11 × 10 ²	3.17 × 10 ²	4.22 × 10 ²	5.28 × 10 ²	6.33 × 10 ²	7.39 × 10 ²	8.44 × 10 ²	9.50 × 10 ²	1.06 × 10 ³
ø50	Push	98.2	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	82.5	1.65 × 10 ²	2.47 × 10 ²	3.30 × 10 ²	4.95 × 10 ²	6.60 × 10 ²	8.25 × 10 ²	9.90 × 10 ²	1.15 × 10 ³	1.32 × 10 ³	1.48 × 10 ³	1.65 × 10 ³
ø63	Push	1.56 × 10 ²	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	1.40 × 10 ²	2.80 × 10 ²	4.20 × 10 ²	5.61 × 10 ²	8.41 × 10 ²	1.12 × 10 ³	1.40 × 10 ³	1.68 × 10 ³	1.96 × 10 ³	2.24 × 10 ³	2.52 × 10 ³	2.80 × 10 ³
ø80	Push	2.51 × 10 ²	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	2.27 × 10 ²	4.54 × 10 ²	6.80 × 10 ²	9.07 × 10 ²	1.36 × 10 ³	1.81 × 10 ³	2.27 × 10 ³	2.72 × 10 ³	3.17 × 10 ³	3.63 × 10 ³	4.08 × 10 ³	4.54 × 10 ³
ø100	Push	3.93 × 10 ²	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	3.57 × 10 ²	7.15 × 10 ²	1.07 × 10 ³	1.43 × 10 ³	2.14 × 10 ³	2.86 × 10 ³	3.57 × 10 ³	4.29 × 10 ³	5.00 × 10 ³	5.72 × 10 ³	6.43 × 10 ³	7.15 × 10 ³

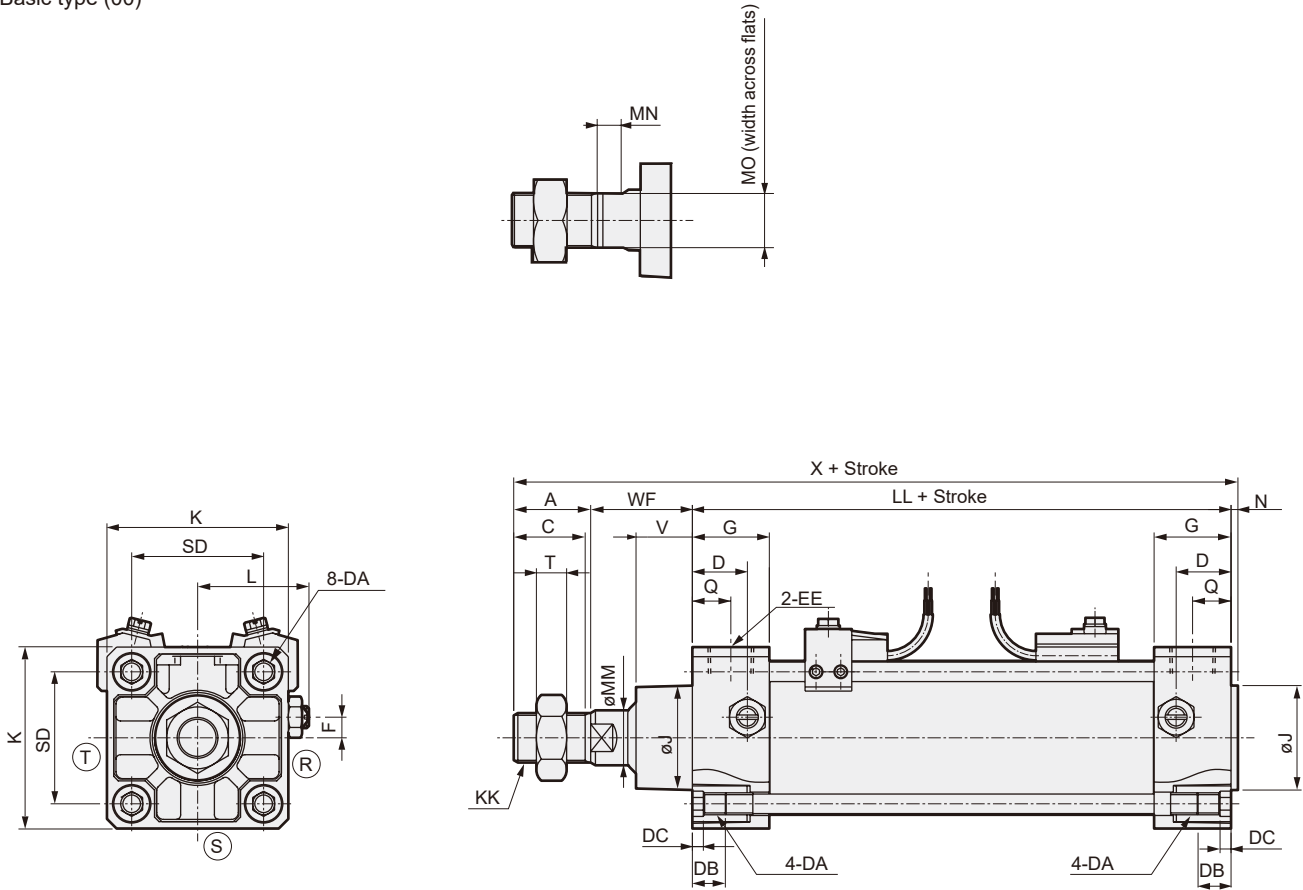
Mounting Bracket Model No. Notation Method

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
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
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

***1: For the material of the mounting brackets, please refer to P. 646.**
*2: Foot type mounting brackets come in sets of 2.
*3: Mounting bolts are included to each mounting bracket.

Outline Dimension Drawing

● Basic type (00)



Code	With switch basic type (00)														
Bore Size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL
ø40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93
ø50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101
ø63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105
ø80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116
ø100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128

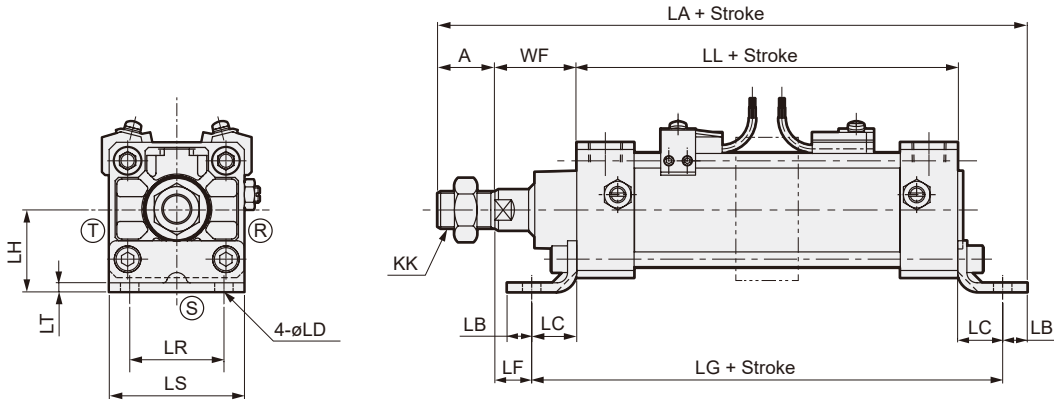
Code										
Bore Size (mm)	MM	MN	MO	N	Q	SD	T	V	WF	X
ø40	16	8	14	2	13	40.5	8	17	33.5	150.5
ø50	20	8.5	17	2.5	14	48	11	20	37	168.5
ø63	20	8.5	17	3	15	59	11	20.5	35	171
ø80	25	11	22	3.5	17	74	13	23	48	203.5
ø100	30	13	27	4	18	90	16	30.5	53	230

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Coolant Proof Type

Outline Dimension Drawing

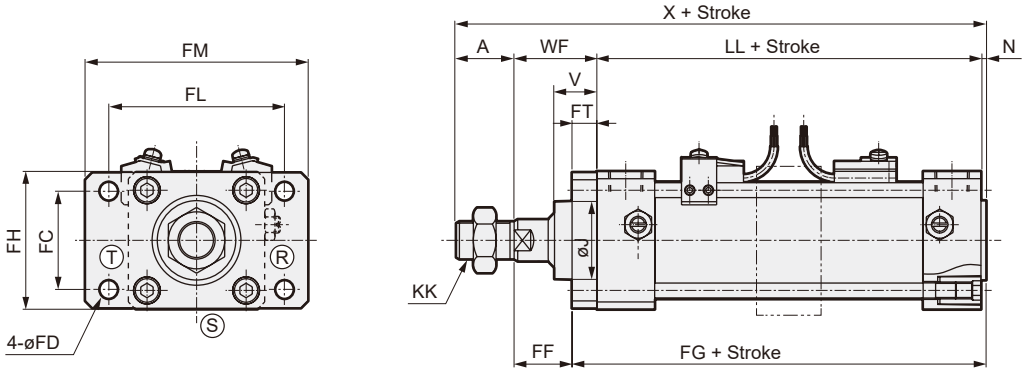
● Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
ø40	22	M14 × 1.5	93	33.5	178	10	19.5	9	14	132	40	40	57	3.2
ø50	28	M18 × 1.5	101	37	200	12	22	9	15	145	40	46	66	4.5
ø63	28	M18 × 1.5	105	35	210	12	30	11	5	165	50	60	80	4.5
ø80	36	M22 × 1.5	116	48	251	14	37	14	11	190	60	74	98	6
ø100	45	M26 × 1.5	128	53	278	21	31	14	22	190	67	80	118	6

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

● Rod Side Flange Type (FA)



Code	Rod Side Flange Type (FA) Mounting Dimensions															
Bore Size (mm)	A	J	KK	LL	N	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø40	22	31	M14 × 1.5	93	2	17	33.5	150.5	40	9	21.5	107	57	80	100	12
ø50	28	38	M18 × 1.5	101	2.5	20	37	168.5	47	9	25	115.5	65	85	108	12
ø63	28	38	M18 × 1.5	105	3	20.5	35	171	60	11	19	124	80	106	130	16
ø80	36	43	M22 × 1.5	116	3.5	23	48	203.5	74	14	29	138.5	98	125	153	19
ø100	45	51	M26 × 1.5	128	4	30.5	53	230	88	14	34	151	118	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

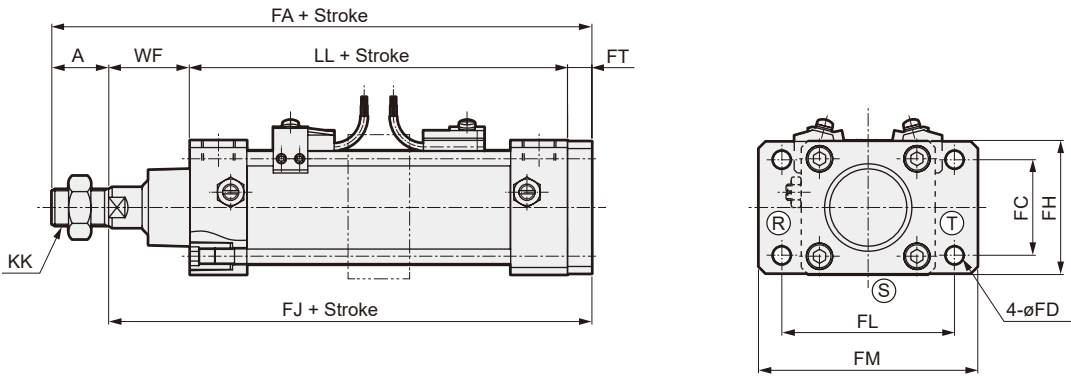
Ending

Cylinder Switch

Ending

Outline Dimension Drawing

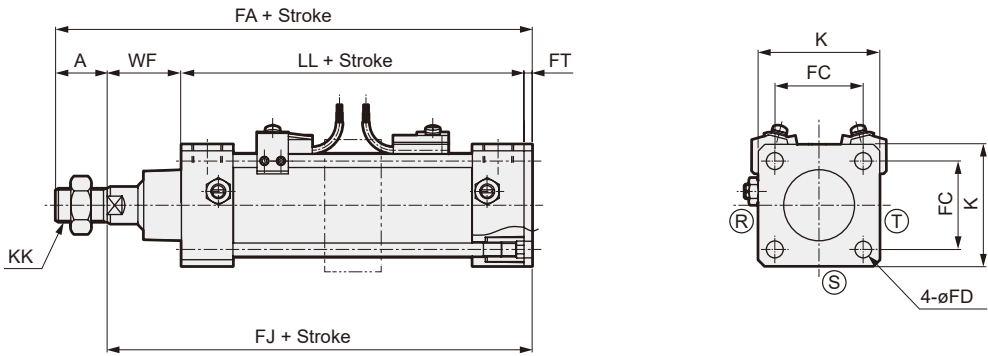
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT
ø40	22	M14 × 1.5	93	33.5	160.5	40	9	57	138.5	80	100	12
ø50	28	M18 × 1.5	101	37	178	47	9	65	150	85	108	12
ø63	28	M18 × 1.5	105	35	184	60	11	80	156	106	130	16
ø80	36	M22 × 1.5	116	48	219	74	14	98	183	125	153	19
ø100	45	M26 × 1.5	128	53	245	88	14	118	200	144	180	19

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Head side special flange type (FC)



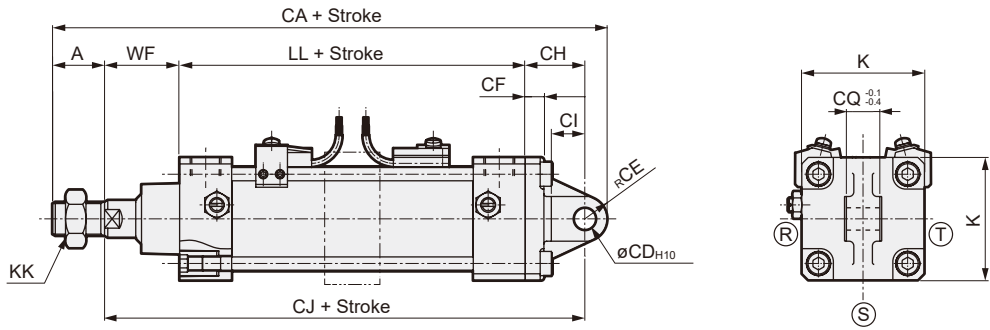
Code	Head side special flange type (FC) Mounting dimensions									
	Bore Size (mm)	A	K	KK	LL	WF	FA	FC	FD	FT
ø40	22	22	57	M14 × 1.5	93	33.5	153	40.5	9	131
ø50	28	28	66	M18 × 1.5	101	37	170.5	4	9	142.5
ø63	28	28	80	M18 × 1.5	105	35	172.5	59	9	144.5
ø80	36	36	98	M22 × 1.5	116	48	206	74	14	170
ø100	45	45	118	M26 × 1.5	128	53	232	90	14	187

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Coolant Proof Type

Outline Dimension Drawing

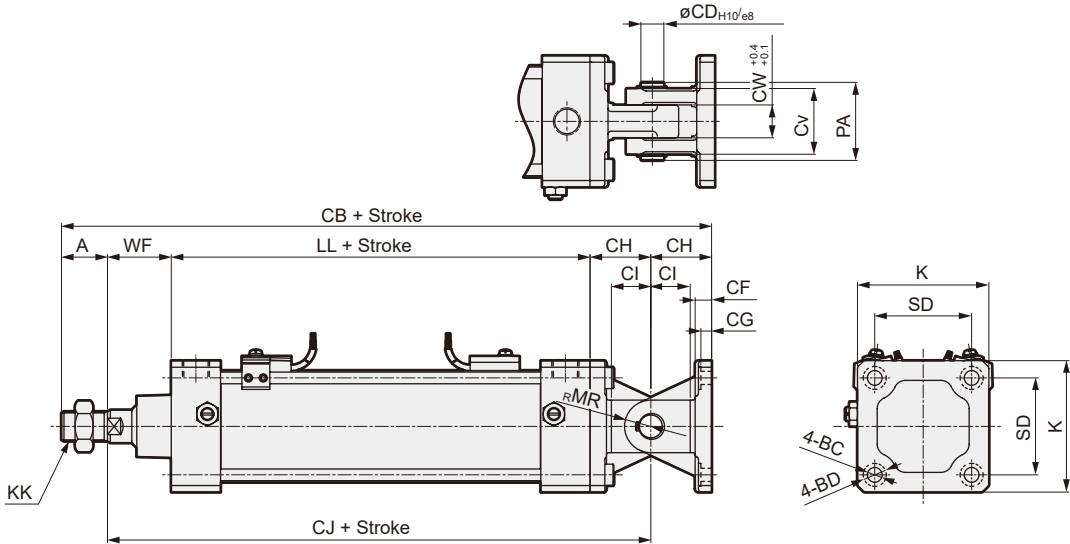
●Single Clevis Type (CA)



Code	Single Clevis Type (CA) Mounting Dimensions												
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	18
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	18
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	20
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	28
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	28

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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

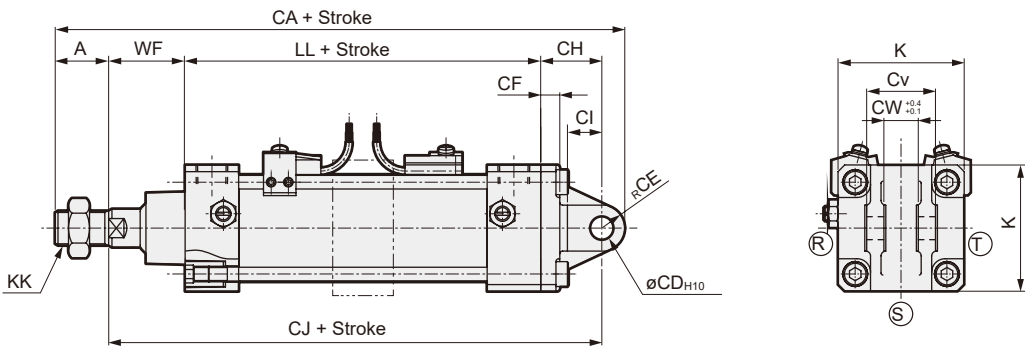


Code	Single Clevis Type (CA) With Bracket (Option Code B2) Mounting Dimensions																		
Bore Size (mm)	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	Cv	CW	BC	BD	MR	PA	SD
ø40	22	57	M14 × 1.5	93	33.5	212.5	12	10	6.5	32	18	158.5	36	18	9	14	12	43.5	40.5
ø50	28	66	M18 × 1.5	101	37	230	12	10	6.5	32	18	170	36	18	9	14	12	43.5	48
ø63	28	80	M18 × 1.5	105	35	242	14	10	6.5	37	24	177	40	20	9	14	16	47.5	59
ø80	36	98	M22 × 1.5	116	48	304	20	14	10.5	52	30	216	56	28	14	20	20	64	74
ø100	45	118	M26 × 1.5	128	53	330	20	16	10.5	52	30	233	56	28	14	20	20	64	90

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

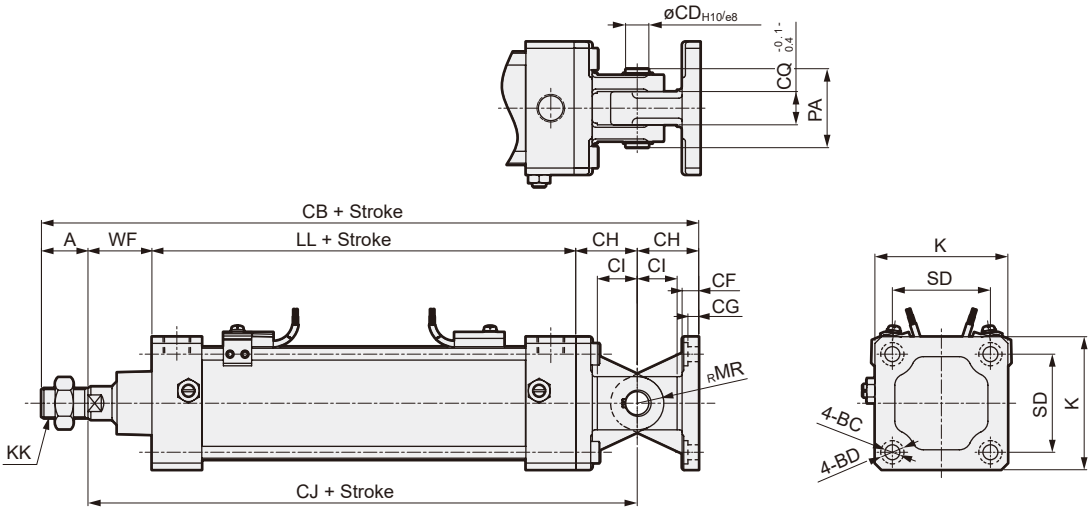
●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions													
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	36	18
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	36	18
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	40	20
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	56	28
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	56	28

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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



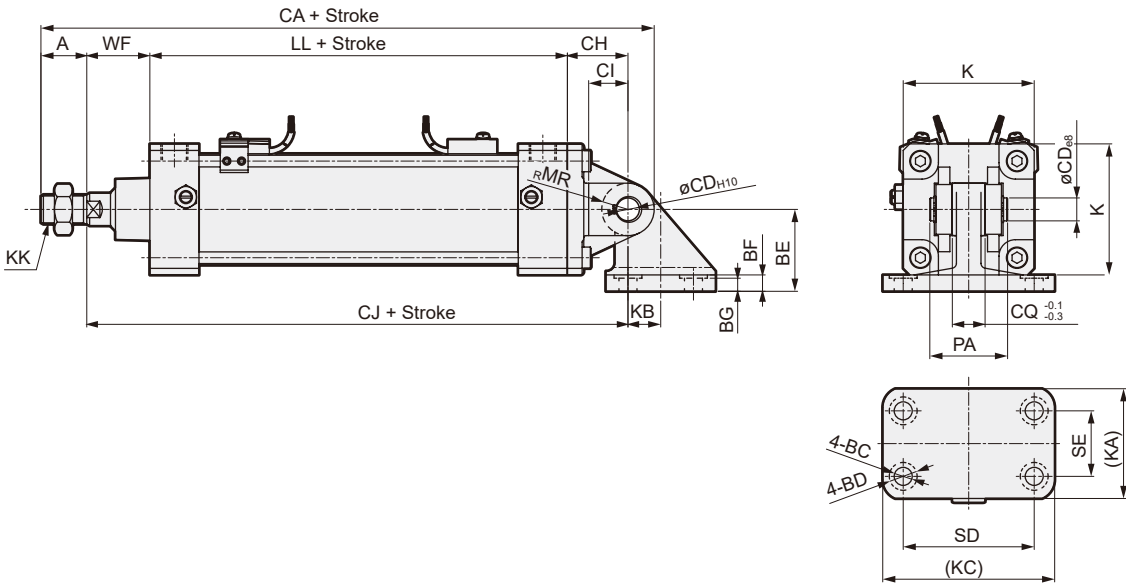
Code	Double Clevis Type (CB) With Bracket (Option Code B1) Mounting Dimensions																	
Bore Size (mm)	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	CQ	BC	BD	MR	PA	SD
ø40	22	57	M14 × 1.5	93	33.5	232.5	12	10	6.5	32	18	158.5	18	9	14	12	43.5	40.5
ø50	28	66	M18 × 1.5	101	37	250	12	10	6.5	32	18	170	18	9	14	12	43.5	48
ø63	28	80	M18 × 1.5	105	35	263	14	10	6.5	37	24	177	20	9	14	16	47.5	59
ø80	36	98	M22 × 1.5	116	48	336	20	14	10.5	52	30	216	28	14	20	20	64	74
ø100	45	118	M26 × 1.5	128	53	362	20	16	10.5	52	30	233	28	14	20	20	64	90

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Coolant Proof Type

Outline Dimension Drawing

●Double clevis type (CB) with bracket (Option code B3)

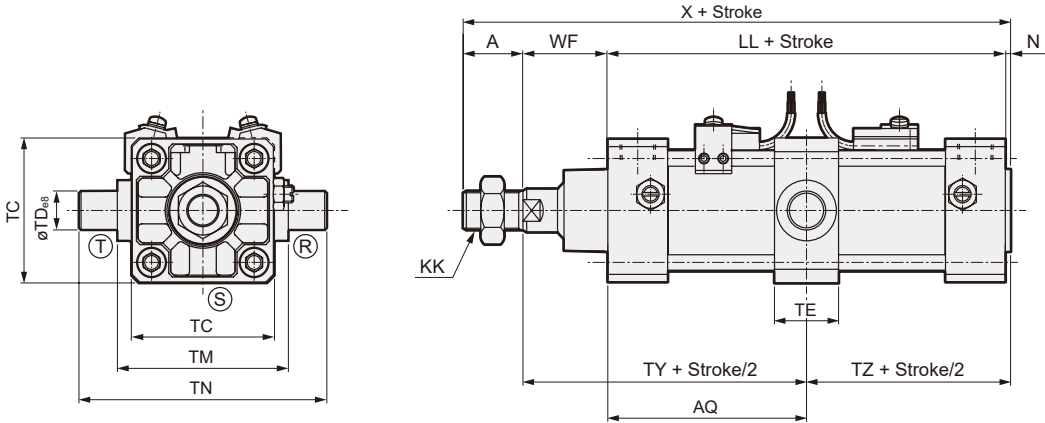


Code	Double clevis type (CB) with bracket (Option code B3) Mounting dimensions																						
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CH	CI	CJ	CQ	BC	BD	BE	BF	BG	KA	KB	KC	MR	PA	SD	SE
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	32	18	158.5	18	9	14	40	8	6.5	57	17.5	85	12	43.5	65	35
ø50	28	66	M18 × 1.5	101	37	210	12	32	18	170	18	9	14	40	8	6.5	57	17.5	85	12	43.5	65	35
ø63	28	80	M18 × 1.5	105	35	221	14	37	24	177	20	9	14	50	10	8	67	20	105	16	47.5	80	40
ø80	36	98	M22 × 1.5	116	48	272	20	52	30	216	28	14	20	65	12	10	93	30	130	20	64	100	60
ø100	45	118	M26 × 1.5	128	53	298	20	52	30	233	28	14	20	65	12	10	93	30	130	20	64	100	60

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

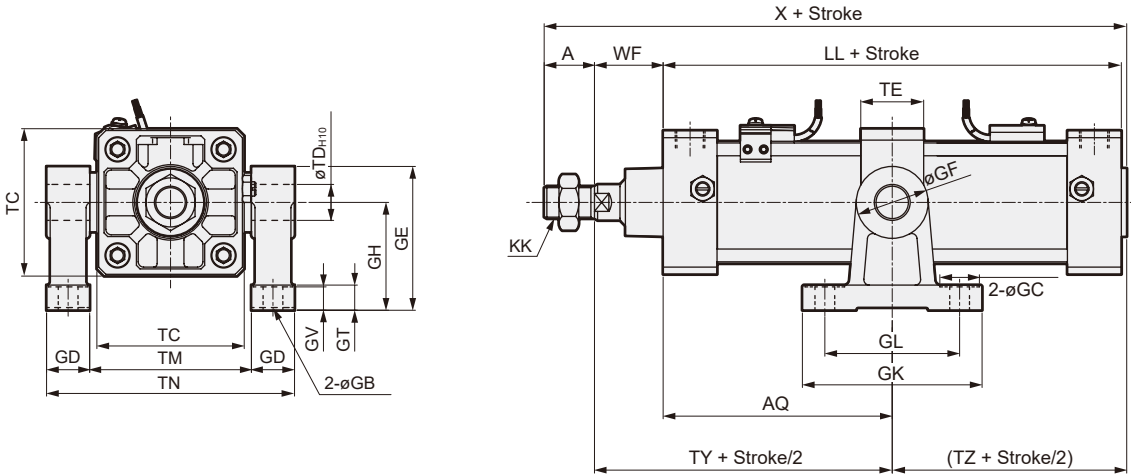
●Intermediate trunnion type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TC	TD	TE	TY	TZ	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	$46.5 + \frac{\text{Stroke}}{2}$	57	16	30	80	48.5	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	$50.5 + \frac{\text{Stroke}}{2}$	67	18	30	87.5	53	80	116
ø63	28	M18 × 1.5	105	3	35	171	$52.5 + \frac{\text{Stroke}}{2}$	82	20	35	87.5	55.5	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	$58 + \frac{\text{Stroke}}{2}$	100	25	40	106	61.5	115	165
ø100	45	M26 × 1.5	128	4	53	230	$64 + \frac{\text{Stroke}}{2}$	121	35	50	117	68	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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



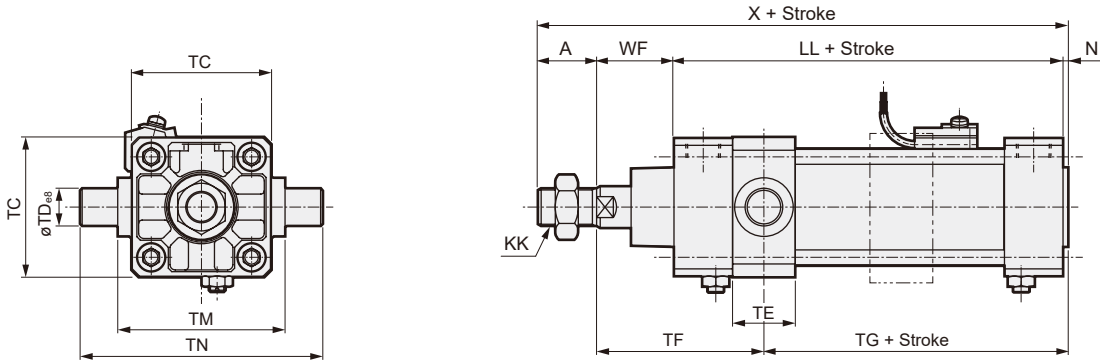
Code	Intermediate Trunnion Type (TC) with Bracket (Option Code B4) Mounting Dimensions																						
Bore Size (mm)	A	KK	LL	WF	X	AQ	TC	TD	TE	TY	TZ	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	M14 × 1.5	93	33.5	150.5	$46.5 + \frac{\text{Stroke}}{2}$	57	16	30	80	48.5	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	M18 × 1.5	101	37	168.5	$50.5 + \frac{\text{Stroke}}{2}$	67	18	30	87.5	53	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	M18 × 1.5	105	35	171	$52.5 + \frac{\text{Stroke}}{2}$	82	20	35	87.5	55.5	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	M22 × 1.5	116	48	203.5	$58 + \frac{\text{Stroke}}{2}$	100	25	40	106	61.5	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	M26 × 1.5	128	53	230	$64 + \frac{\text{Stroke}}{2}$	121	35	50	117	68	135	205	14	24	35	107	64	75	130	100	17	16

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Coolant Proof Type

Outline Dimension Drawing

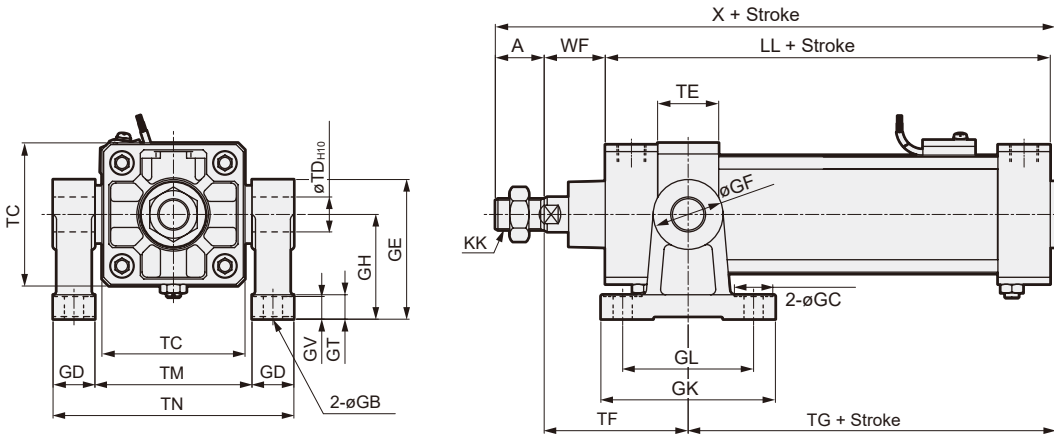
●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TF	TG	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	74.5	54	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	80	60.5	80	116
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	82.5	60.5	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	102	65.5	115	165
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	114	71	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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

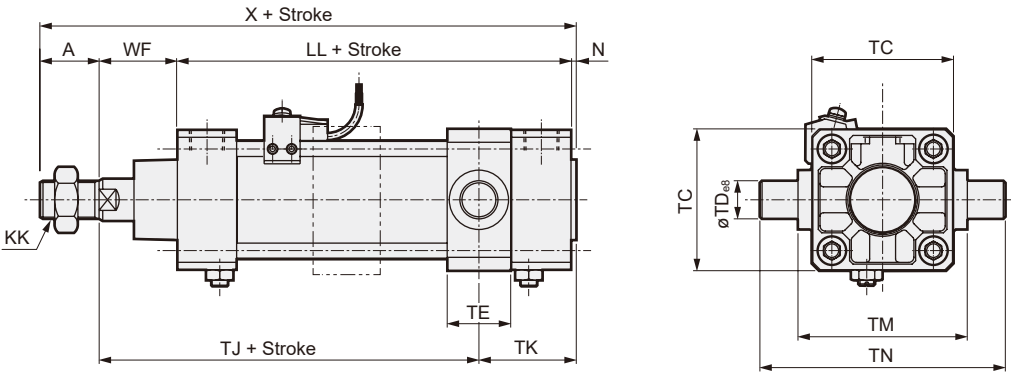


Code	Rod Side Trunnion Type (TA) with Bracket (Option Code B4) Mounting Dimensions																					
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TF	TG	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	M14 × 1.5	93	33.5	150.5	57	16	30	74.5	54	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	M18 × 1.5	101	37	168.5	67	18	30	80	60.5	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	M18 × 1.5	105	35	171	82	20	35	82.5	60.5	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	M22 × 1.5	116	48	203.5	100	25	40	102	65.5	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	M26 × 1.5	128	53	230	121	35	50	114	71	135	205	14	24	35	107	64	75	130	100	17	16

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

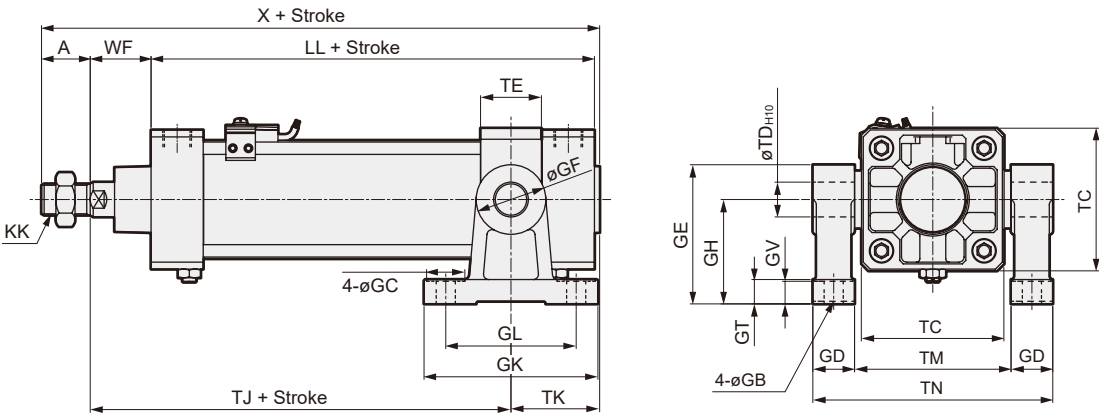
●Head Side Trunnion Type (TB)



Code	Head Side Trunnion Type (TB) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TJ	TK	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	85	43.5	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	94.5	46	80	116
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	92	51	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	109.5	58	115	165
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	119.5	65.5	135	205

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

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



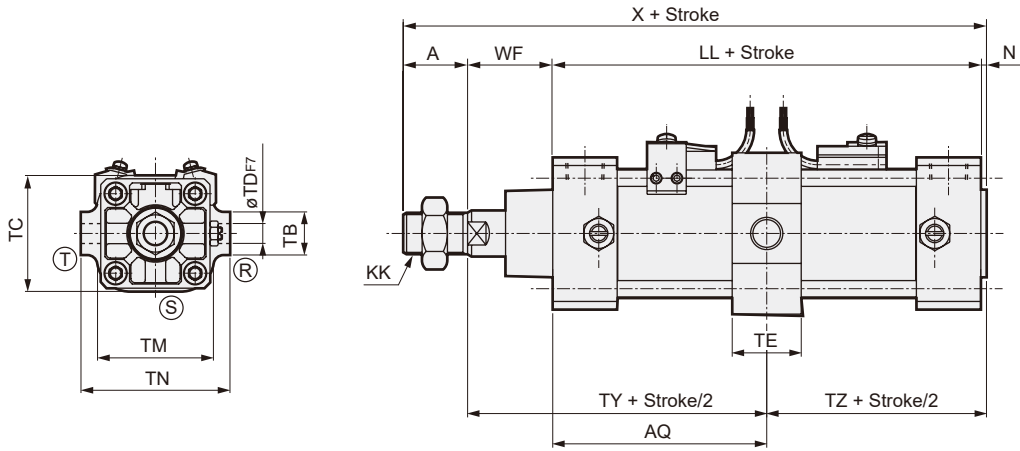
Code	Head Side Trunnion Type (TB) with Bracket (Option Code B4) Mounting Dimensions																					
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TJ	TK	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	M14 × 1.5	93	33.5	150.5	57	16	30	85	43.5	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	M18 × 1.5	101	37	168.5	67	18	30	94.5	46	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	M18 × 1.5	105	35	171	82	20	35	92	51	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	M22 × 1.5	116	48	203.5	100	25	40	109.5	58	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	M26 × 1.5	128	53	230	121	35	50	119.5	65.5	135	205	14	24	35	107	64	75	130	100	17	16

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, Coolant Proof Type

Outline Dimension Drawing

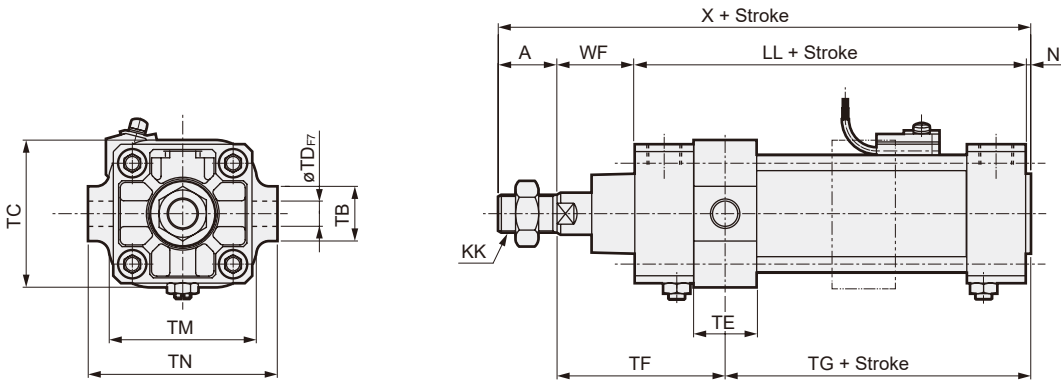
●Intermediate tapped trunnion type (TF)



Code	Intermediate tapped trunnion type (TF) Mounting dimensions															
Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TB	TC	TD	TE	TY	TZ	TM	TN	
ø50	28	M18 × 1.5	101	2.5	37	168.5	50.5 + $\frac{\text{Stroke}}{2}$	26	70	12	30	87.5	53	70	90	
ø63	28	M18 × 1.5	105	3	35	171	52.5 + $\frac{\text{Stroke}}{2}$	30	86	14	35	87.5	55.5	86	104	
ø80	36	M22 × 1.5	116	3.5	48	203.5	58 + $\frac{\text{Stroke}}{2}$	35	105	20	40	106	61.5	105	134	
ø100	45	M26 × 1.5	128	4	53	230	64 + $\frac{\text{Stroke}}{2}$	40	123	20	40	117	68	127	150	

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side tapped trunnion type (TD)

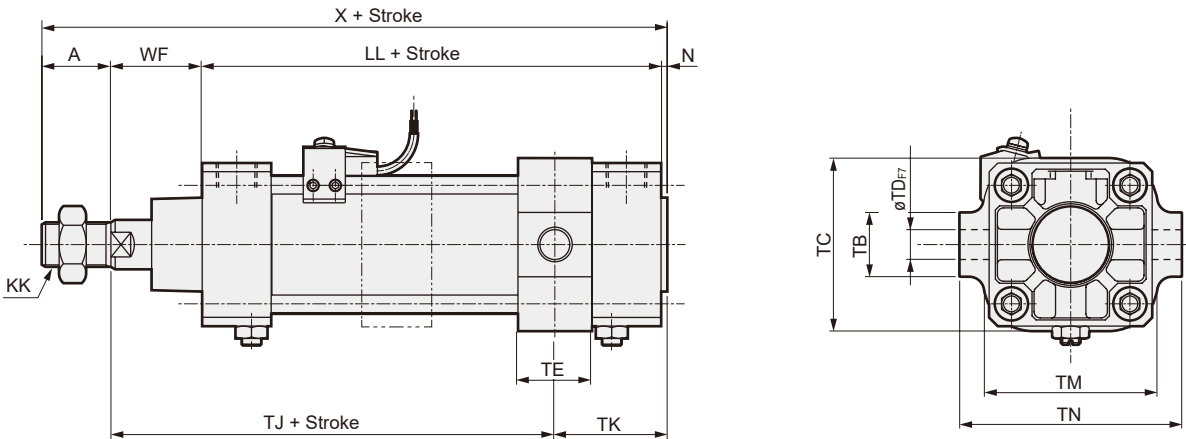


Code	Rod side tapped trunnion type (TD) Mounting dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TF	TG	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	80	60.5	70	90
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	82.5	60.5	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	102	65.5	105	134
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	109	76	127	150

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Head side tapped trunnion type (TE)



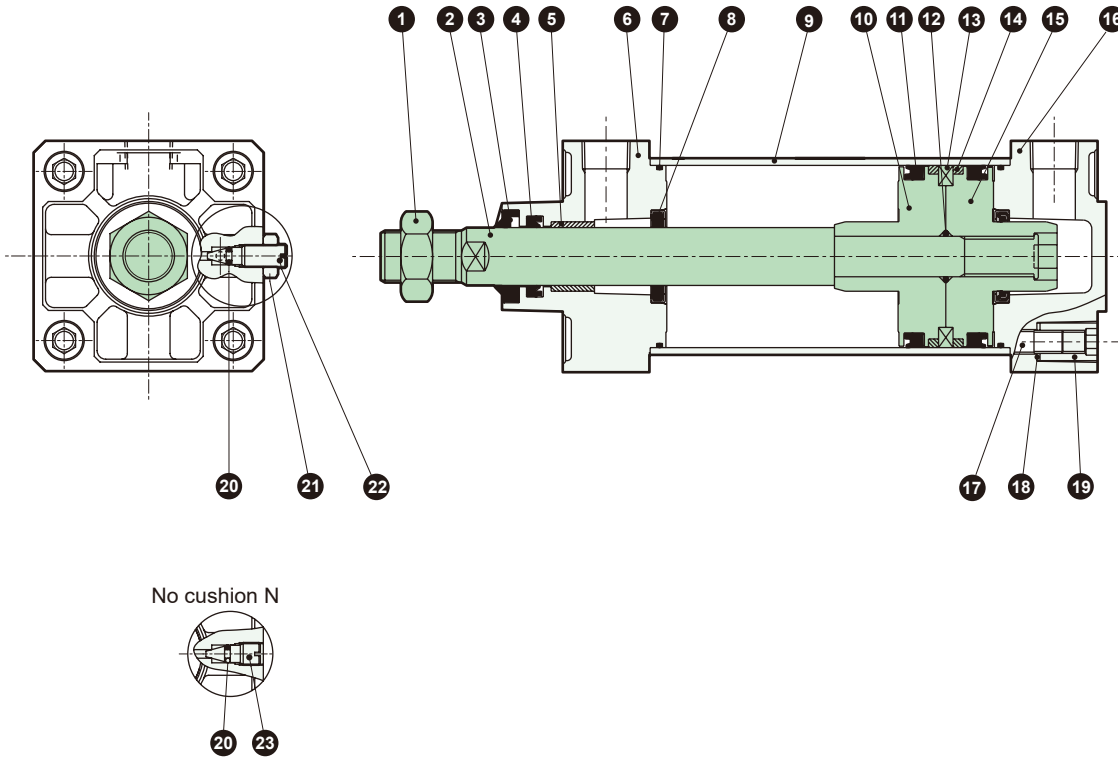
Code	Head side tapped trunnion type (TE) Mounting dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TJ	TK	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	94.5	46	70	90
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	92	51	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	109.5	58	105	134
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	124.5	60.5	127	150

*1: For dimensions with each switch, please refer to P. 850 to 853.
*2: For outer dimensions diagram of accessories, refer to P. 644.

Internal Structure Diagram/Material

● Protection structure level: NBR Packing
SCA2 - G2

● Protection structure level: FKM Packing
SCA2 - G3



Part No.	Part Name		Material	Remarks	Part No.	Part Name		Material	Remarks
1	Rod Nut		Stainless Steel		12	Piston Gasket		G2 Nitrile Rubber	
2	Piston Rod		Stainless Steel	Industrial Hard Chrome Plating				G3 Fluoro Rubber	
3	Scraper	G2	Nitrile Rubber		13	Magnet		Plastic	
		G3	Fluoro Rubber		14	Wear Ring		Polyacetal	
4	Rod Packing	G2	Nitrile Rubber		15	Piston H		Aluminum Alloy	Chromate
		G3	Fluoro Rubber		16	Head Cover		Aluminum Alloy	Painting
5	Bushing		Oil-Impregnated Bearing Alloy		17	Tie Rod		Steel	Zinc Chromate
6	Rod Cover		Aluminum Alloy	Painting	18	Belleville washer		Steel	Black Oxide
7	Cylinder Gasket	G2	Nitrile Rubber		19	Round Nut		Steel	Zinc Chromate
		G3	Fluoro Rubber		20	Needle Gasket	G2	Nitrile Rubber	
8	Cushion Packing	G2	Nitrile Rubber, Steel				G3	Fluoro Rubber	
		G3	Fluororubber, Steel		21	Needle nut		Copper Alloy	Nickel Plating
9	Cylinder Tube		Aluminum Alloy	Hard Anodized	22	Cushion Needle		Copper Alloy	Nickel Plating
10	Piston R		Aluminum Alloy	Chromate	23	Cushion plug		Copper Alloy	Nickel Plating
11	Piston Packing	G2	Nitrile Rubber						
		G3	Fluoro Rubber						

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.



Medium Bore Size Cylinder
Double acting/coil scraper Double acting/anti-spatter adherence type

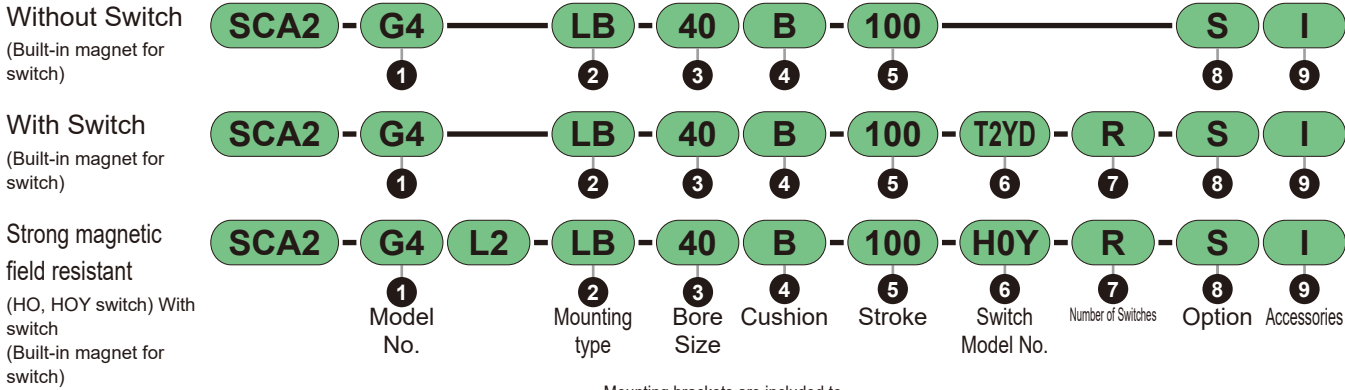
SCA2-G1 series SCA2-G4 series

●Bore size: ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

RoHS

Model No. Notation Method



1 Model No.

Code	Contents
G1	Double-acting, Coil scraper type
G4	Double Acting, Spatter Adhesion Prevention Type

2 Mounting type

Code	Content
00	Basic type
LB	Axial Foot Type
FA	Rod Side Flange Type
FB	Head Side Flange Type
FC	Head side special flange type
CA	Single Clevis Type
CB	Double Clevis Type
TC	Intermediate Trunnion Type
TA	Rod Side Trunnion Type
TB	Head Side Trunnion Type
TF	Intermediate tapped trunnion type (ø50 to ø100)
TD	Rod side tapped trunnion type (ø50 to ø100)
TE	Head side tapped trunnion type (ø50 to ø100)

3 Bore Size (mm)

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

4 Cushion

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

5 Stroke (mm)

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

Note: For minimum stroke with switch, refer to P. 816.

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	2-Color for AC Magnetic Field	2-wire	—	24 ± 10%	—	5 to 20	T2YD□	—	
			—	—	—	—	T2YDT□	—	
Reed	1-Color For strong magnetic field	2-wire	110	12/24	7 to 20	5 to 50	H0□	—	
			—	24 ± 10%	—	5 to 20	H0Y□	—	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length" table.

*2: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m T2YD
3 m T2YD[3]
5 m T2YD[5]

SCA2-G1/G4 Series

Model No. Notation Method

9 Accessories

Code	Content
I	Single Knuckle *1
Y	Double Knuckle (Pin and retaining ring included) *1
B1	Single Bracket
B2	Double Yoke Bracket (Pin and retaining ring included)
B3	Single Bracket
B4	Trunnion type 2nd bracket (2 pieces/set)

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

7 Number of Switches

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

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

8 Option

Code	Content
Blank	Cushion needle position R (Standard)
S	Cushion needle position S
T	Cushion needle position T

*1: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

*For combinations of variations and options, see P. 625.

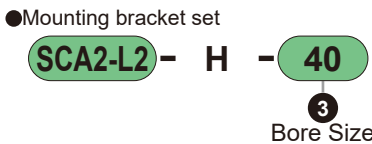
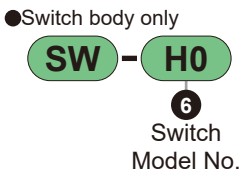
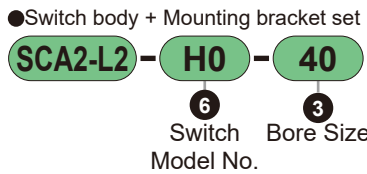
Regarding specifications of custom products

Details: refer to P. 854 to 861.

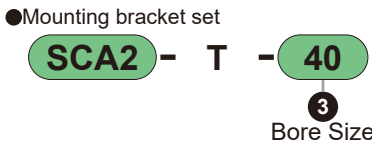
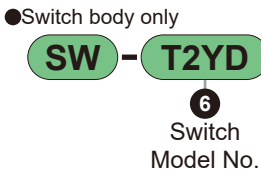
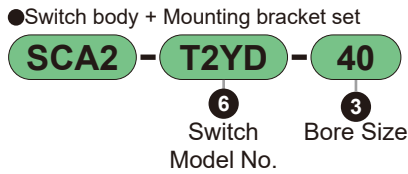
Code	Contents	Code	Contents	Code	Contents
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	Rod end Shape change	Refer to Ending P. 11.
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XT9	Scraper/Rod packing only Fluororubber		

Model No. Example) SCA2-G1/G4 - - XP5

H type switch single item model No. notation method



T2YD type switch single item model No. notation method



Specifications

Item		SCA2-G1/G4, SCA2-G1L2/G4L2				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.05				
Proof Pressure	MPa	1.6				
Ambient Temperature		-10 to 60 (Provided that freezing does not occur)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	+0.9 (Up to 360), +0.4 (Up to 800)				
Operating Piston Speed	mm/s	50 to 1000 (Use within allowable absorbed energy.)				
Cushion		Air Cushion				
Effective air cushion length	mm	14.6	16.6	16.6	20.6	23.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

Stroke

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

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: In the case of with switch, the minimum stroke changes depending on the mounting method. Please refer to the table below.
*3: If the maximum stroke is exceeded, the product specifications may not be met depending on the conditions, so please consult us.

Minimum stroke with switch (T2YD type switch)

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.	Position detection at the head side stroke end with head side trunnion mounting is not possible.
	Number of Switches	2	1	1	2	1	1
ø40	20	20	60	105	105	50	50
ø50	15	15	15	100	100	45	45
ø63	15	15	15	105	105	50	50
ø80	15	15	15	110	110	55	55
ø100	15	10	15	120	120	60	60

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

Minimum stroke with switch (H type switch)

Diagram	When mounting on different surfaces	When mounting on the same surface		Intermediate (tapped) trunnion mounting		Rod side (tapped) trunnion mounting	Head side (tapped) trunnion mounting
Number of Switches Bore size (mm)	2	1	2	1	2	1	1
ø40	20	10	50	86	86	38	38
ø50	20	10	50	86	86	36	36
ø63	20	10	35	91	91	41	41
ø80	20	10	20	96	96	44	44
ø100	20	10	20	106	106	50	50

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

Specifications

Cylinder Weight

Bore Size (mm)	Product Weight when stroke (S) = 0 mm							Switch weight	Switch Mounting Bracket Weight		S=100 mm Added weight per
	Basic Type (00)	Foot Type (LB)	Flange type (FA, FB)	Special flange type (FC)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion type (TA, TB, TC)		T type	H type	
ø40	0.84	1.01	1.25	0.93	1.16	1.20	1.22	Refer to the mass described in the switch specifications on P. 971	0.024	0.028	0.39
ø50	1.23	1.48	1.72	1.34	1.61	1.64	1.77		0.022	0.026	0.46
ø63	1.63	2.00	2.72	1.81	2.20	2.25	2.48		0.020	0.024	0.50
ø80	2.63	3.37	4.49	2.99	3.90	4.11	3.97		0.026	0.029	0.90
ø100	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 at 0 mm stroke 1.48 kg Added weight at 200 mm stroke$0.46 \times \frac{200}{100} = 0.92$ 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

Bore size (mm)	Operating Direction	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	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	52.8	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	98.2	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	82.5	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	1.56×10^2	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	1.40×10^2	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	2.51×10^2	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	2.27×10^2	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	3.93×10^2	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	3.57×10^2	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

Mounting Bracket Model No. Notation Method

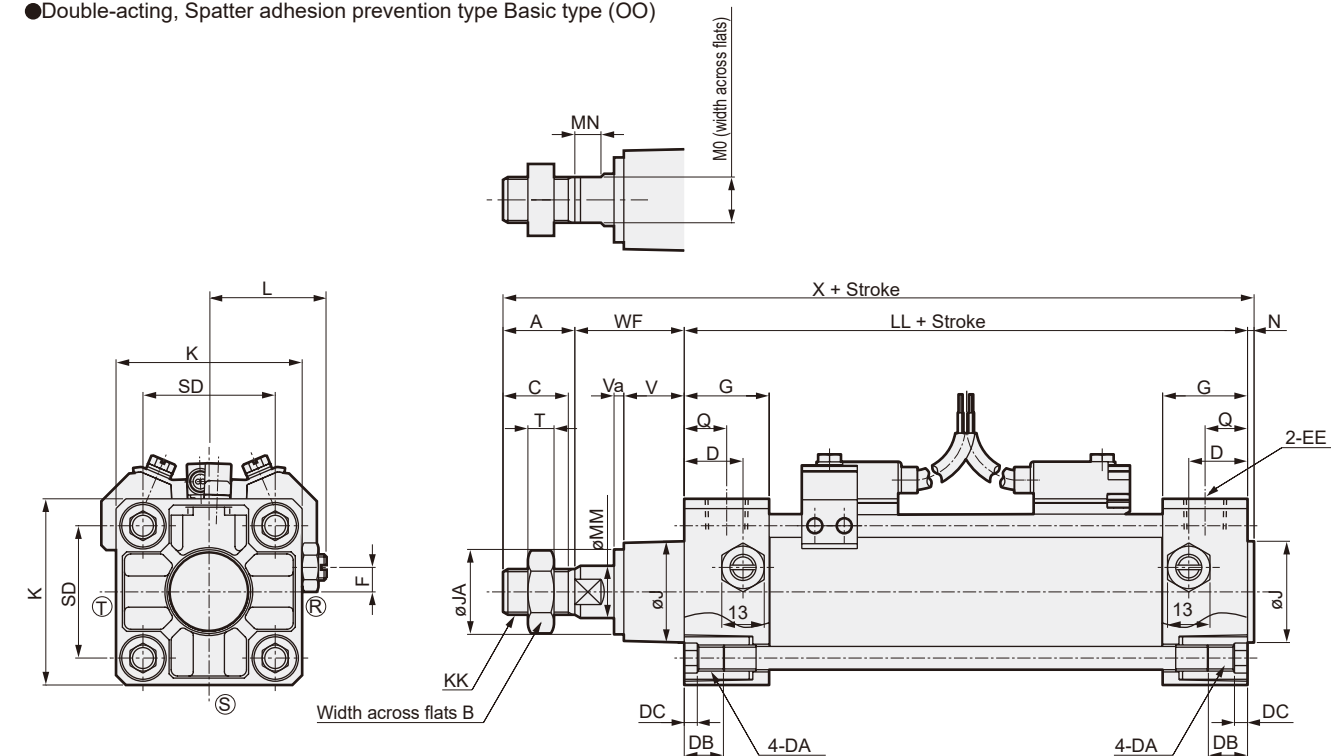
Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
Foot (LB)	*2 S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/FB)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: For the material of the mounting brackets, please refer to P. 646.
*2: Foot type mounting brackets come in sets of 2.
*3: Mounting bolts are included to each mounting bracket.

Same dimensions as double-acting, single rod type. Please refer to P. 632 to 642.

Outline Dimension Drawing

●Double-acting, Spatter adhesion prevention type Basic type (OO)



Code	Basic Type (OO) Basic Dimensions													
Bore Size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	JA	K	KK
ø40	22	22	20	18	M8	12	4	Rc 1/4	7.5	26	31	26	57	M14 × 1.5
ø50	28	27	26	20	M8	12	4	Rc 3/8	0	28	38	32	66	M18 × 1.5
ø63	28	27	26	22	M8	12	4	Rc 3/8	0	30	38	32	80	M18 × 1.5
ø80	36	32	34	26	M12	16	5	Rc 1/2	0	34	43	37	98	M22 × 1.5
ø100	45	41	43	28	M12	16	5	Rc 1/2	0	36	51	42	118	M26 × 1.5
Code	Basic Type (OO) Basic Dimensions													
Bore Size (mm)	L	LL	MM	MN	MO	N	Q	SD	T	V	Va		WF	X
											G1	G4		
ø40	38 to 39.5	93	16	8	14	2	13	40.5	8	18.5	0	3	33.5	150.5
ø50	41 to 43.5	101	20	8.5	17	2.5	14	48	11	20.5	0	3	37	168.5
ø63	47.5 to 50.0	105	20	8.5	17	3	15	59	11	21	0	3	35	171
ø80	56 to 59	116	25	11	22	3.5	17	74	13	23.5	0	3	48	203.5
ø100	66 to 69	128	30	13	27	4	18	90	16	32	0	2	53	230

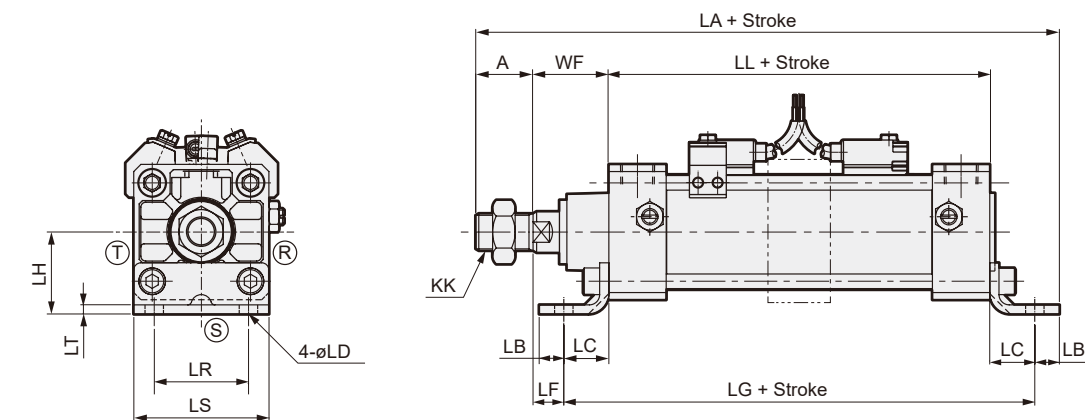
*1: (R)(S)(T) indicates the position of the cushion needle.

*2: For dimensions with each switch, please refer to P. 850 to P. 853.

***3: For outer dimensions diagram of accessories, refer to P. 644.**

Outline Dimension Drawing

●Axial Foot Type (LB)



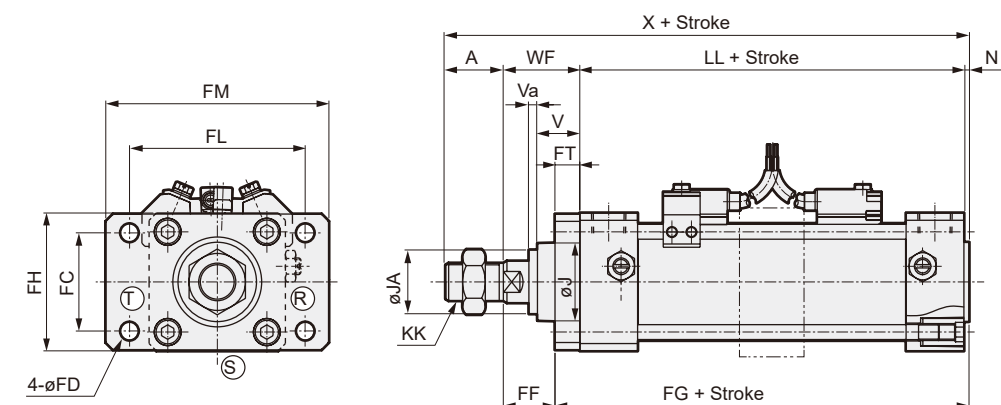
Code	Axial Foot Type (LB) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
ø40	22	M14 × 1.5	93	33.5	178	10	19.5	9	14	132	40	40	57	3.2
ø50	28	M18 × 1.5	101	37	200	12	22	9	15	145	40	46	66	4.5
ø63	28	M18 × 1.5	105	35	210	12	30	11	5	165	50	60	80	4.5
ø80	36	M22 × 1.5	116	48	251	14	37	14	11	190	60	74	98	6
ø100	45	M26 × 1.5	128	53	278	21	31	14	22	190	67	80	118	6

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

*2: For dimensions with each switch, please refer to P. 850 to P. 853.

***3: For outer dimensions diagram of accessories, refer to P. 644.**

●Rod Side Flange Type (FA)



Code		Rod Side Flange Type (FA) Mounting Dimensions																	
Bore Size (mm)	A	J	JA	KK	LL	N	V	Va		WF	X	FC	FD	FF	FG	FH	FL	FM	FT
								G1	G4										
ø40	22	31	26	M14 × 1.5	93	2	18.5	0	3	33.5	150.5	40	9	21.5	107	57	80	100	12
ø50	28	38	32	M18 × 1.5	101	2.5	20.5	0	3	37	168.5	47	9	25	115.5	65	85	108	12
ø63	28	38	32	M18 × 1.5	105	3	21	0	3	35	171	60	11	19	124	80	106	130	16
ø80	36	43	37	M22 × 1.5	116	3.5	23.5	0	3	48	203.5	74	14	29	138.5	98	125	153	19
ø100	45	51	42	M26 × 1.5	128	4	32	0	2	53	230	88	14	34	151	118	144	180	19

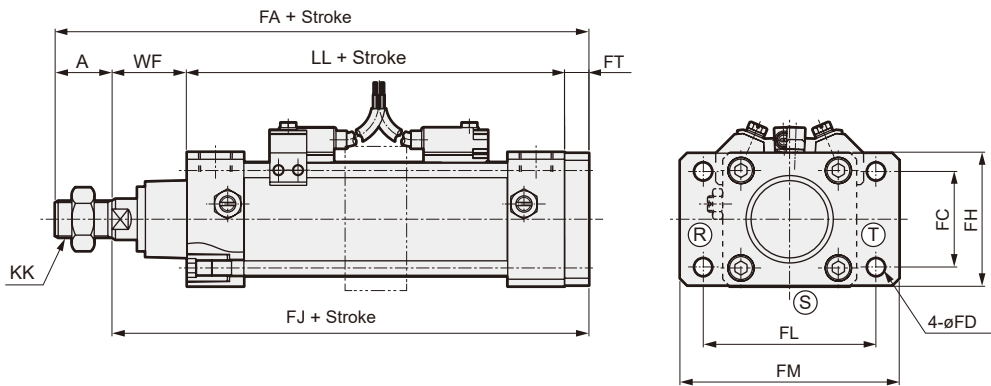
*1: (R)(S)(T) indicates the position of the cushion needle.

*2: For dimensions with each switch, please refer to P. 850 to P. 853.

***3: For outer dimensions diagram of accessories, refer to P. 644.**

Outline Dimension Drawing

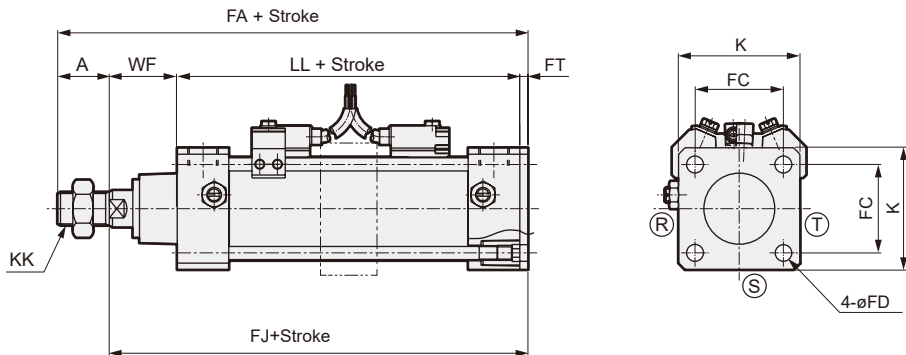
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions											
Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT
ø40	22	M14 × 1.5	93	33.5	160.5	40	9	57	138.5	80	100	12
ø50	28	M18 × 1.5	101	37	178	47	9	65	150	85	108	12
ø63	28	M18 × 1.5	105	35	184	60	11	80	156	106	130	16
ø80	36	M22 × 1.5	116	48	219	74	14	98	183	125	153	19
ø100	45	M26 × 1.5	128	53	245	88	14	118	200	144	180	19

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

●Head side special flange type (FC)



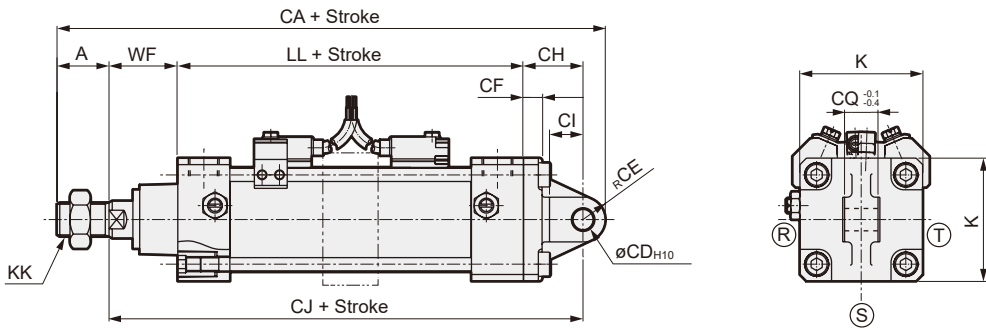
Code	Head side special flange type (FC) Mounting dimensions									
Bore Size (mm)	A	K	KK	LL	WF	FA	FC	FD	FJ	FT
ø40	22	57	M14 × 1.5	93	33.5	153	40.5	9	131	4.5
ø50	28	66	M18 × 1.5	101	37	170.5	4	9	142.5	4.5
ø63	28	80	M18 × 1.5	105	35	172.5	59	9	144.5	4.5
ø80	36	98	M22 × 1.5	116	48	206	74	14	170	6
ø100	45	118	M26 × 1.5	128	53	232	90	14	187	6

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double-acting, Coil scraper type, Spatter adhesion prevention type

Outline Dimension Drawing

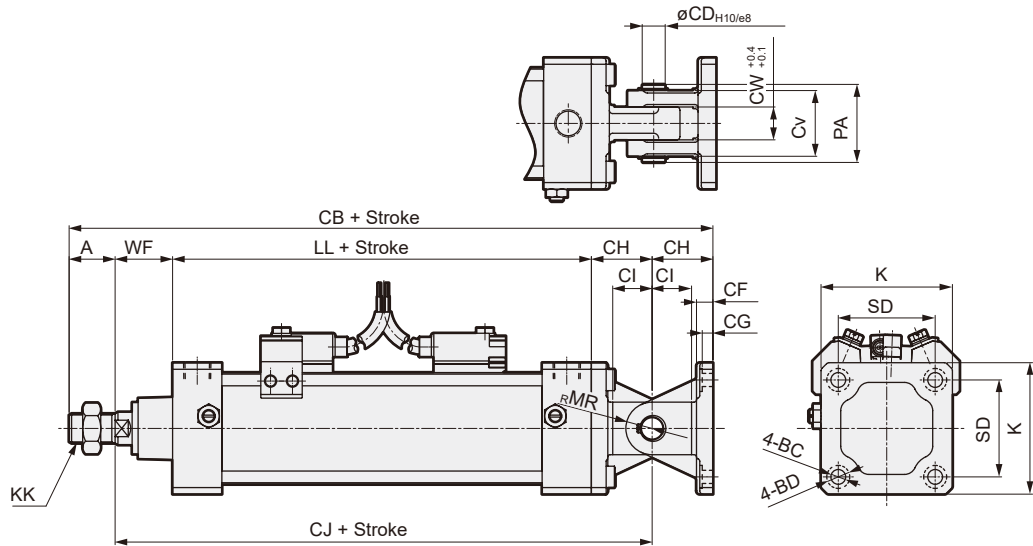
●Single Clevis Type (CA)



Code	Single Clevis Type (CA) Mounting Dimensions												
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	18
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	18
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	20
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	28
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	28

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

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

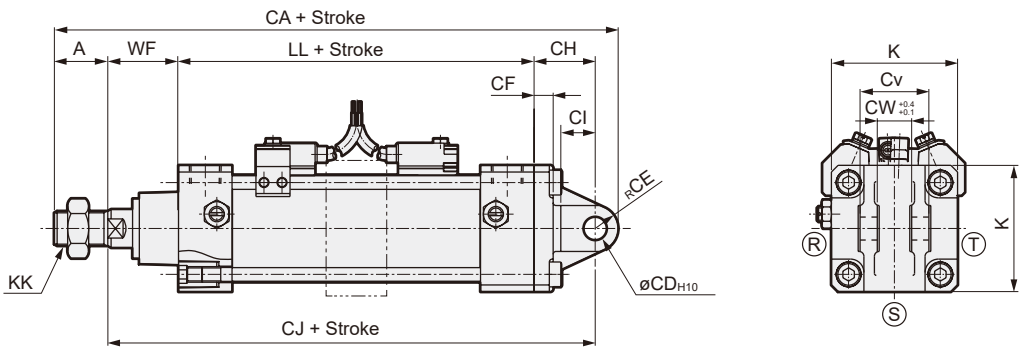


Code	Single Clevis Type (CA) With Bracket (Option Code B2) Mounting Dimensions																		
Bore Size (mm)	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	Cv	CW	BC	BD	MR	PA	SD
ø40	22	57	M14 × 1.5	93	33.5	212.5	12	10	6.5	32	18	158.5	36	18	9	14	12	43.5	40.5
ø50	28	66	M18 × 1.5	101	37	230	12	10	6.5	32	18	170	36	18	9	14	12	43.5	48
ø63	28	80	M18 × 1.5	105	35	242	14	10	6.5	37	24	177	40	20	9	14	16	47.5	59
ø80	36	98	M22 × 1.5	116	48	304	20	14	10.5	52	30	216	56	28	14	20	20	64	74
ø100	45	118	M26 × 1.5	128	53	330	20	16	10.5	52	30	233	56	28	14	20	20	64	90

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

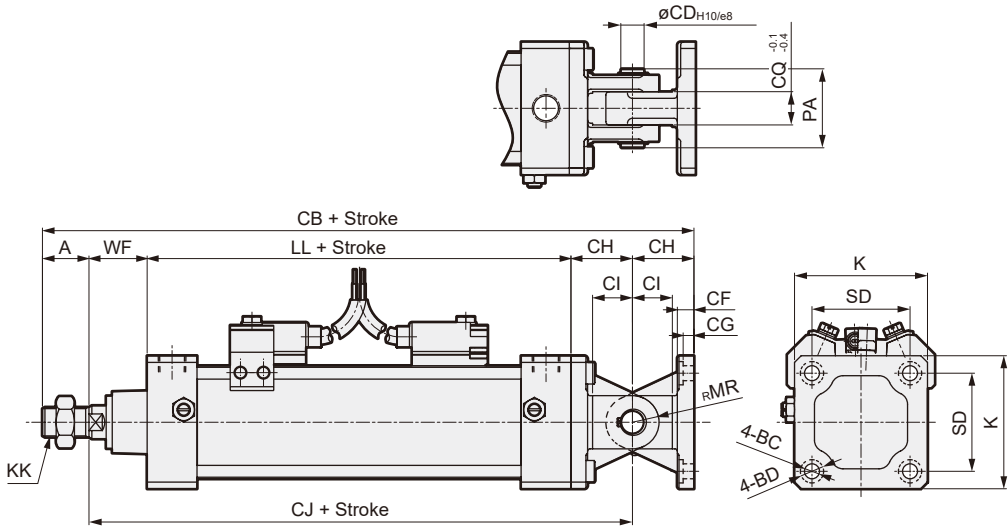
●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions													
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	12	10	32	18	158.5	36	18
ø50	28	66	M18 × 1.5	101	37	210	12	12	10	32	18	170	36	18
ø63	28	80	M18 × 1.5	105	35	221	14	16	10	37	24	177	40	20
ø80	36	98	M22 × 1.5	116	48	272	20	20	14	52	30	216	56	28
ø100	45	118	M26 × 1.5	128	53	298	20	20	16	52	30	233	56	28

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

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



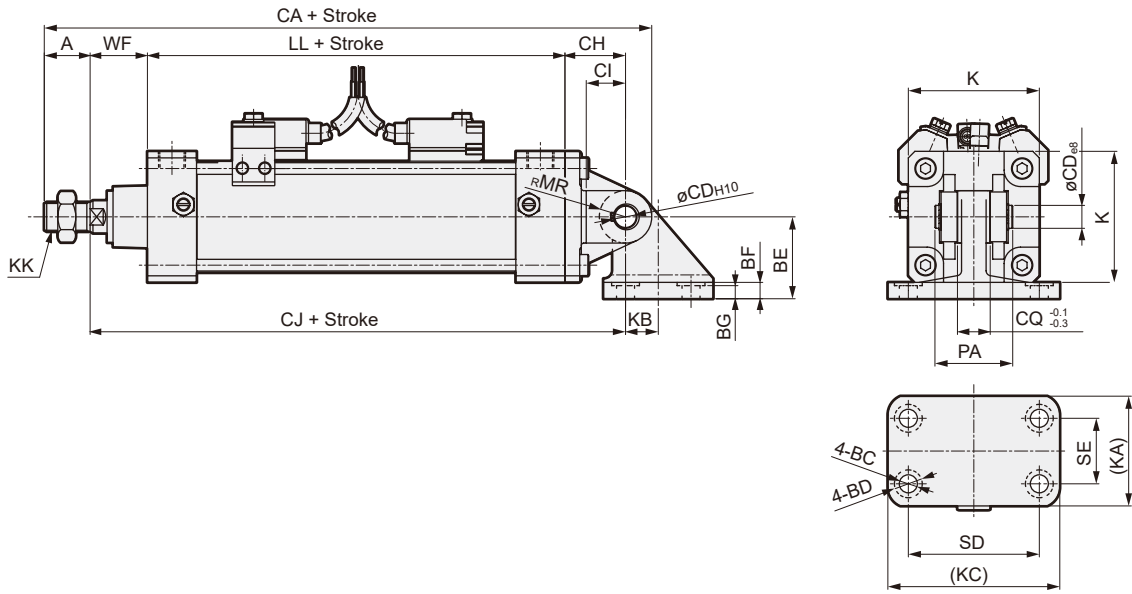
Code	Double Clevis Type (CB) With Bracket (Option Code B1) Mounting Dimensions																	
Bore Size (mm)	A	K	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	CQ	BC	BD	MR	PA	SD
ø40	22	57	M14 × 1.5	93	33.5	232.5	12	10	6.5	32	18	158.5	18	9	14	12	43.5	40.5
ø50	28	66	M18 × 1.5	101	37	250	12	10	6.5	32	18	170	18	9	14	12	43.5	48
ø63	28	80	M18 × 1.5	105	35	263	14	10	6.5	37	24	177	20	9	14	16	47.5	59
ø80	36	98	M22 × 1.5	116	48	336	20	14	10.5	52	30	216	28	14	20	20	64	74
ø100	45	118	M26 × 1.5	128	53	362	20	16	10.5	52	30	233	28	14	20	20	64	90

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double-acting, Coil scraper type, Spatter adhesion prevention type

Outline Dimension Drawing

●Double clevis type (CB) with bracket (Option code B3)

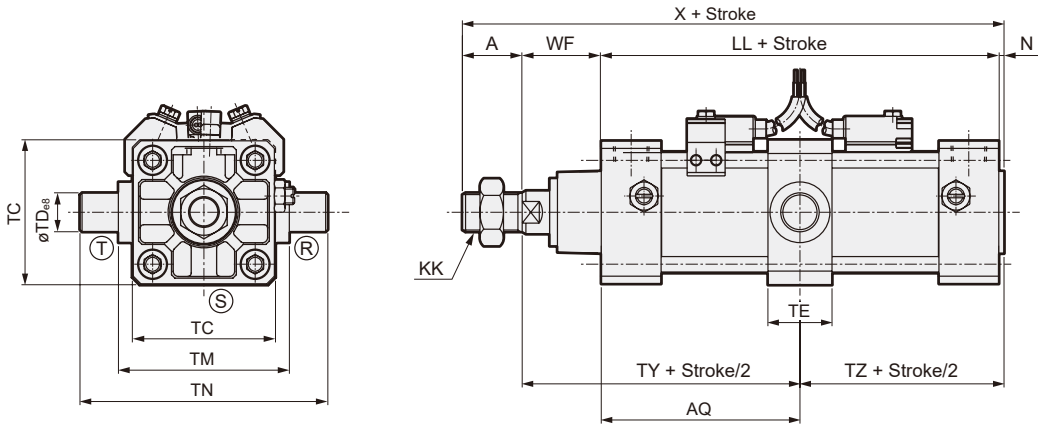


Code	Double clevis type (CB) with bracket (Option code B3) Mounting dimensions																			
Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CH	CI	CJ	CQ	BC	BD	BE	BF	BG	KA	KB	KC	MR
ø40	22	57	M14 × 1.5	93	33.5	192.5	12	32	18	158.5	18	9	14	40	8	6.5	57	17.5	85	12
ø50	28	66	M18 × 1.5	101	37	210	12	32	18	170	18	9	14	40	8	6.5	57	17.5	85	12
ø63	28	80	M18 × 1.5	105	35	221	14	37	24	177	20	9	14	50	10	8	67	20	105	16
ø80	36	98	M22 × 1.5	116	48	272	20	52	30	216	28	14	20	65	12	10	93	30	130	20
ø100	45	118	M26 × 1.5	128	53	298	20	52	30	233	28	14	20	65	12	10	93	30	130	20

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

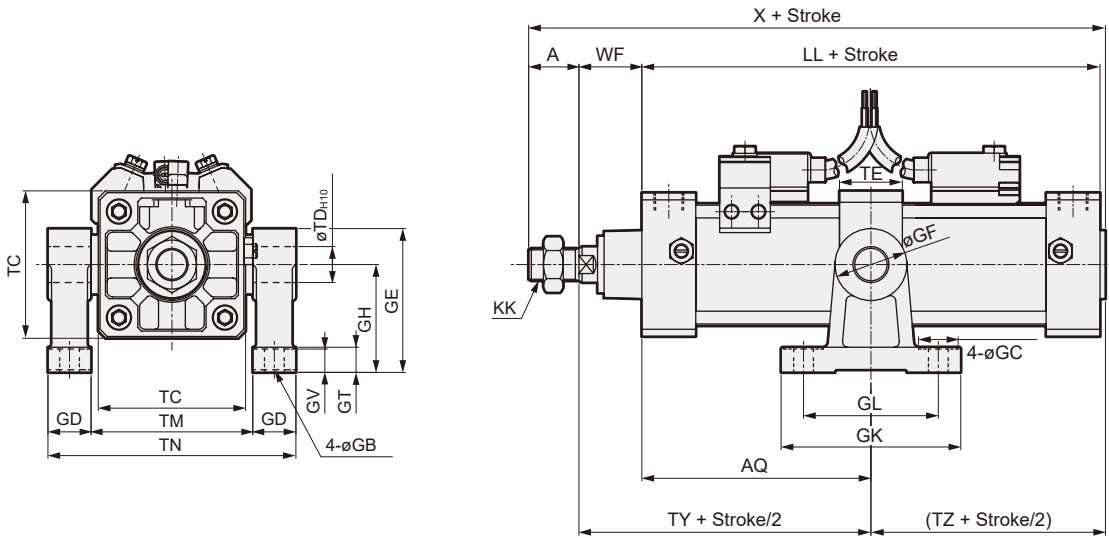
● Intermediate Trunnion Type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TC	TD	TE	TY	TZ	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	46.5 + Stroke/2	57	16	30	80	48.5	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	50.5 + Stroke/2	67	18	30	87.5	53	80	116
ø63	28	M18 × 1.5	105	3	35	171	52.5 + Stroke/2	82	20	35	87.5	55.5	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	58 + Stroke/2	100	25	40	106	61.5	115	165
ø100	45	M26 × 1.5	128	4	53	230	64 + Stroke/2	121	35	50	117	68	135	205

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

● Intermediate Trunnion Type (TC) with Bracket (Option Code B4)



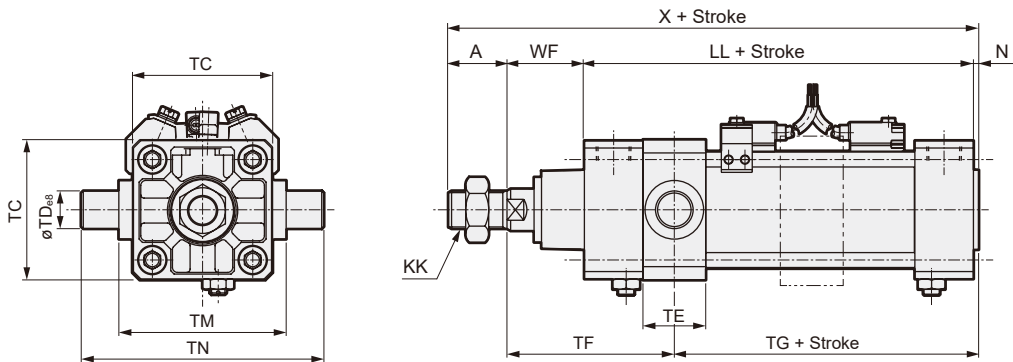
Code	Intermediate Trunnion Type (TC) with Bracket (Option Code B4) Mounting Dimensions																			
Bore Size (mm)	A	KK	LL	WF	X	AQ	TC	TD	TE	TY	TZ	TM	TN	GB	GC	GD	GE	GF	GH	GK
ø40	22	M14 × 1.5	93	33.5	150.5	46.5 + Stroke/2	57	16	30	80	48.5	63	95	9	17	19	61	32	45	80
ø50	28	M18 × 1.5	101	37	168.5	50.5 + Stroke/2	67	18	30	87.5	53	80	116	9	17	19	63	36	45	85
ø63	28	M18 × 1.5	105	35	171	52.5 + Stroke/2	82	20	35	87.5	55.5	90	130	11	22	24	80	40	60	100
ø80	36	M22 × 1.5	116	48	203.5	58 + Stroke/2	100	25	40	106	61.5	115	165	14	24	26	85	50	60	115
ø100	45	M26 × 1.5	128	53	230	64 + Stroke/2	121	35	50	117	68	135	205	14	24	35	107	64	75	130

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double-acting, Coil scraper type, Spatter adhesion prevention type

Outline Dimension Drawing

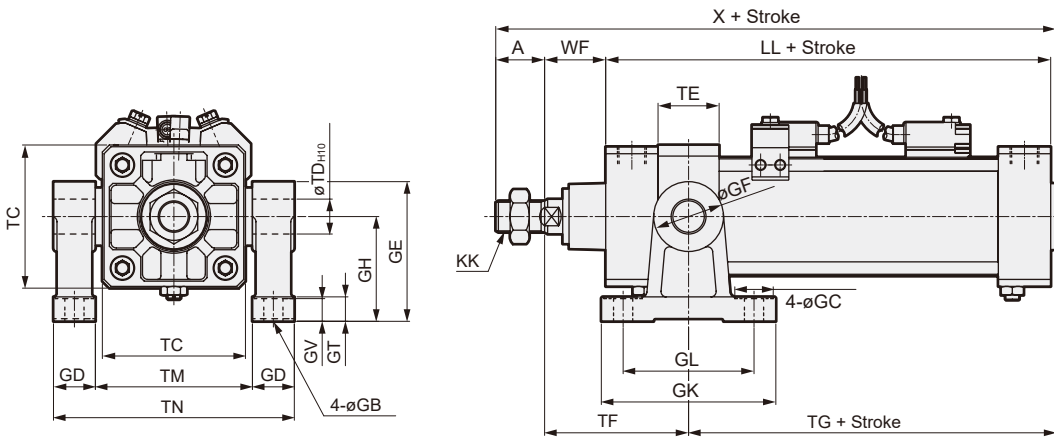
● Rod Side Trunnion Type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TF	TG	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	74.5	54	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	80	60.5	80	116
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	82.5	60.5	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	102	65.5	115	165
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	114	71	135	205

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

● Rod Side Trunnion Type (TA) with Bracket (Option Code B4)

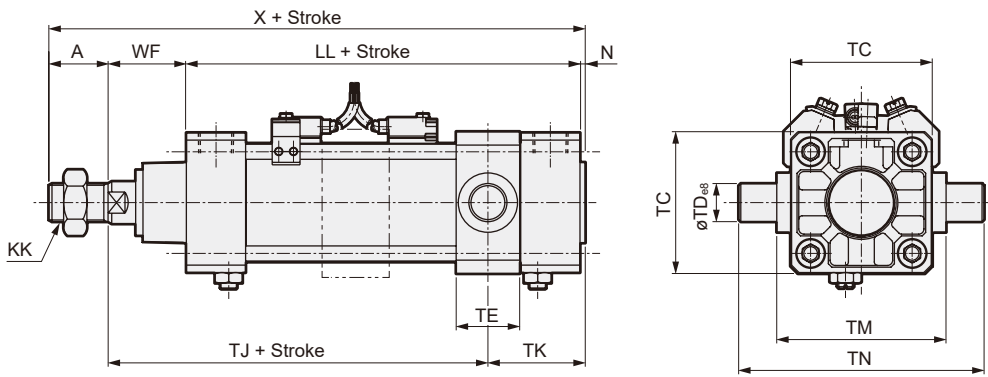


Code	Rod Side Trunnion Type (TA) with Bracket (Option Code B4) Mounting Dimensions																			
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TF	TG	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL
ø40	22	M14 × 1.5	93	33.5	150.5	57	16	30	74.5	54	63	95	9	17	19	61	32	45	80	60
ø50	28	M18 × 1.5	101	37	168.5	67	18	30	80	60.5	80	116	9	17	19	63	36	45	85	65
ø63	28	M18 × 1.5	105	35	171	82	20	35	82.5	60.5	90	130	11	22	24	80	40	60	100	75
ø80	36	M22 × 1.5	116	48	203.5	100	25	40	102	65.5	115	165	14	24	26	85	50	60	115	85
ø100	45	M26 × 1.5	128	53	230	121	35	50	114	71	135	205	14	24	35	107	64	75	130	100

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

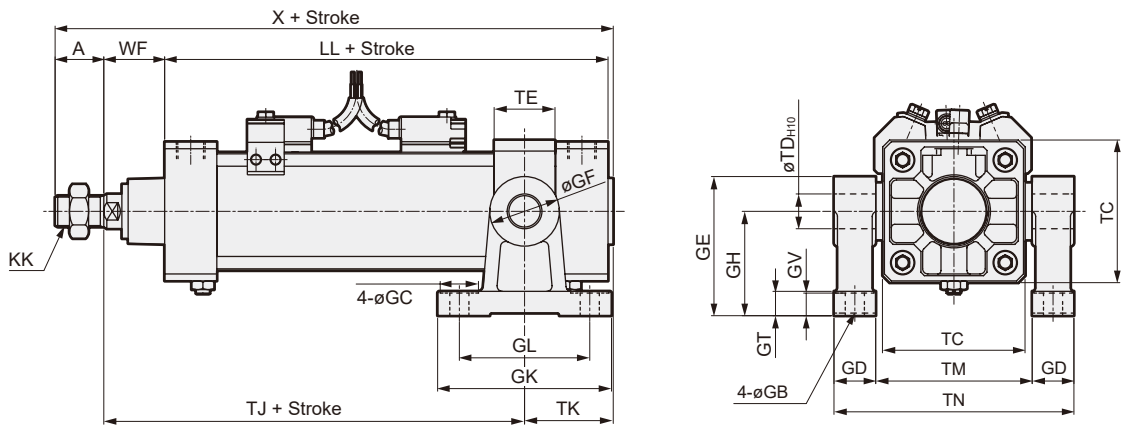
●Head Side Trunnion Type (TB)



Code	Head Side Trunnion Type (TB) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	N	WF	X	TC	TD	TE	TJ	TK	TM	TN
ø40	22	M14 × 1.5	93	2	33.5	150.5	57	16	30	85	43.5	63	95
ø50	28	M18 × 1.5	101	2.5	37	168.5	67	18	30	94.5	46	80	116
ø63	28	M18 × 1.5	105	3	35	171	82	20	35	92	51	90	130
ø80	36	M22 × 1.5	116	3.5	48	203.5	100	25	40	109.5	58	115	165
ø100	45	M26 × 1.5	128	4	53	230	121	35	50	119.5	65.5	135	205

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

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



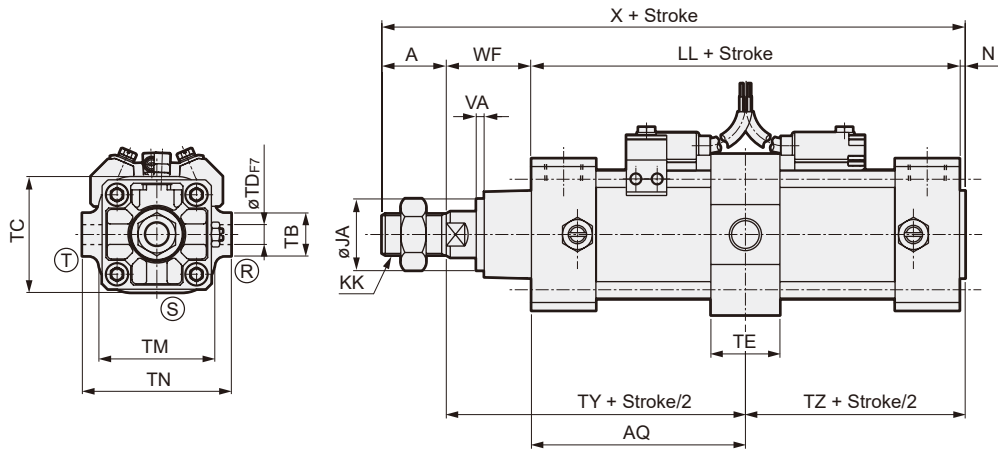
Code	Head Side Trunnion Type (TB) with Bracket (Option Code B4) Mounting Dimensions																					
Bore Size (mm)	A	KK	LL	WF	X	TC	TD	TE	TJ	TK	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	M14 × 1.5	93	33.5	150.5	57	16	30	85	43.5	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	M18 × 1.5	101	37	168.5	67	18	30	94.5	46	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	M18 × 1.5	105	35	171	82	20	35	92	51	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	M22 × 1.5	116	48	203.5	100	25	40	109.5	58	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	M26 × 1.5	128	53	230	121	35	50	119.5	65.5	135	205	14	24	35	107	64	75	130	100	17	16

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double-acting, Coil scraper type, Spatter adhesion prevention type

Outline Dimension Drawing

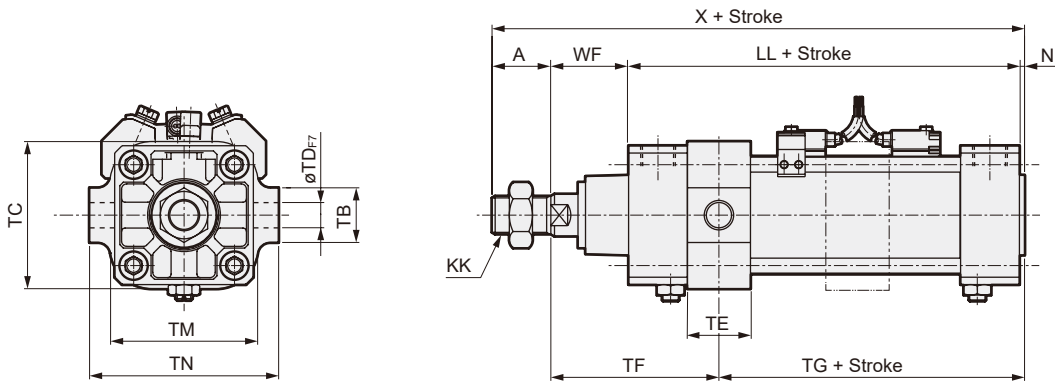
● Intermediate tapped trunnion type (TF)



Code	Intermediate tapped trunnion type (TF) Mounting dimensions														
Bore Size (mm)	A	KK	LL	N	WF	X	AQ	TB	TC	TD	TE	TY	TZ	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	50.5 + Stroke/2	26	70	12	30	87.5	53	70	90
ø63	28	M18 × 1.5	105	3	35	171	52.5 + Stroke/2	30	86	14	35	87.5	55.5	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	58 + Stroke/2	35	105	20	40	106	61.5	105	134
ø100	45	M26 × 1.5	128	4	53	230	64 + Stroke/2	40	123	20	40	117	68	127	150

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

●Rod side tapped trunnion type (TD)

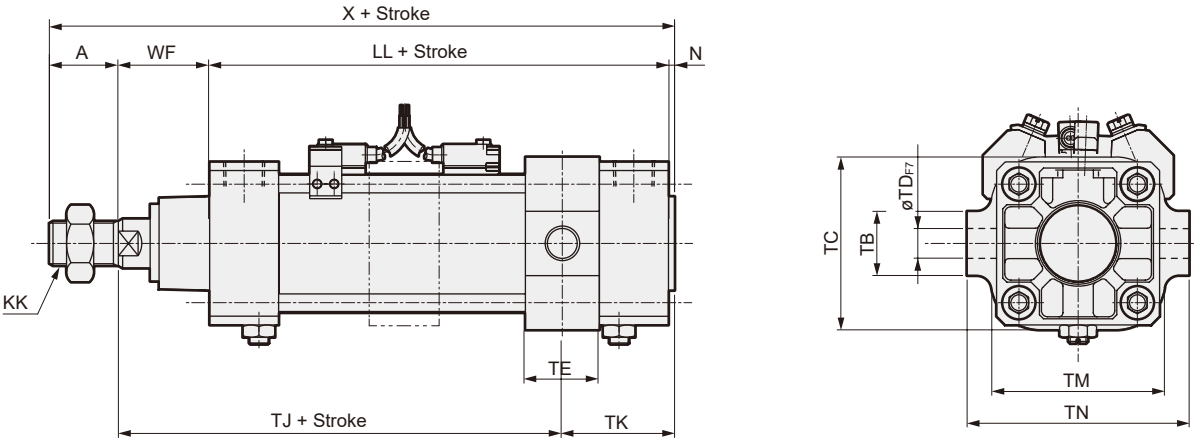


Code	Rod side tapped trunnion type (TD) Mounting dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TF	TG	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	80	60.5	70	90
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	82.5	60.5	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	102	65.5	105	134
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	109	76	127	150

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Head side tapped trunnion type (TE)

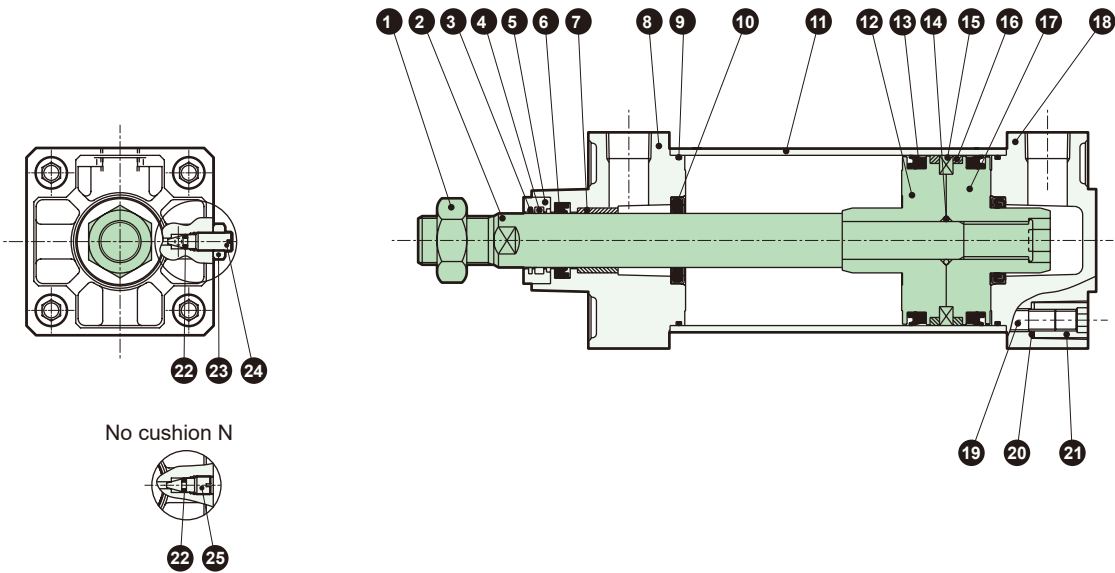


Code	Head side tapped trunnion type (TE) Mounting dimensions													
Bore Size (mm)	A	KK	LL	N	WF	X	TB	TC	TD	TE	TJ	TK	TM	TN
ø50	28	M18 × 1.5	101	2.5	37	168.5	26	70	12	30	94.5	46	70	90
ø63	28	M18 × 1.5	105	3	35	171	30	86	14	35	92	51	86	104
ø80	36	M22 × 1.5	116	3.5	48	203.5	35	105	20	40	109.5	58	105	134
ø100	45	M26 × 1.5	128	4	53	230	40	123	20	40	124.5	60.5	127	150

*1: (R)(S)(T) indicates the position of the cushion needle.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

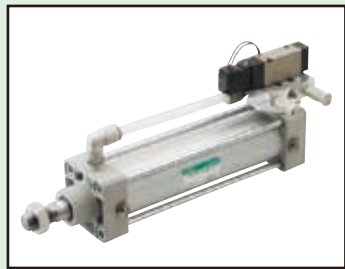
Internal Structure Diagram/Material

Internal Structure Diagram/Material



Part Number	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	14	Piston Gasket	Nitrile Rubber	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	15	Magnet	Plastic	
3	Coil scraper	Phosphor bronze		16	Wear Ring	Polyacetal	
4	Lube keeper	Special rubber	G4 only	17	Piston H	Aluminum Alloy	
5	Adapter	Stainless Steel		18	Head Cover	Aluminum Alloy	Painting
6	Rod Packing	Nitrile Rubber		19	Tie Rod	Steel	Zinc Chromate
7	Bushing	Oil-impregnated Bearing Alloy		20	Belleville washer	Steel	Black Oxide
8	Rod Cover	Aluminum Alloy	Painting	21	Round Nut	Steel	Zinc Chromate
9	Cylinder Gasket	Nitrile Rubber		22	Needle Gasket	Nitrile Rubber	
10	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	23	Needle nut	Copper Alloy	Nickel Plating
11	Cylinder Tube	Aluminum Alloy	Hard Anodized	24	Cushion Needle	Copper Alloy	Nickel Plating
12	Piston R	Aluminum Alloy		25	Cushion plug	Copper Alloy	Nickel Plating
13	Piston Packing	Nitrile Rubber					

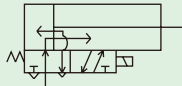
For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.



Medium Bore Size Cylinder
Double Acting, with Valve
SCA2-V Series

● Bore size: ø40, ø50, ø63, ø80, ø100

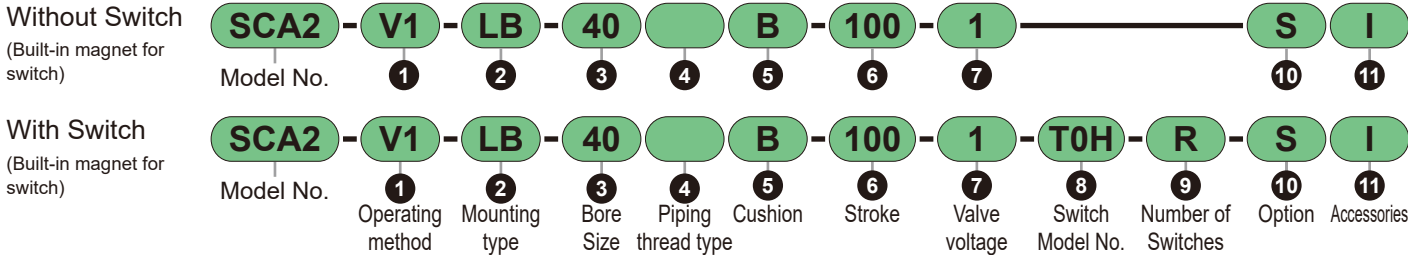
Circuit Diagram Symbol



(Single solenoid
Push when energized)



Model No. Notation Method



1 Operating method

Code	Contents
V1	Energized push / Single solenoid
V2	Energized pull / Single solenoid
V	Double solenoid

2 Mounting type

Mounting brackets are included to the product and shipped. (However, trunnion types are shipped assembled.)

Code	Contents	Code	Content
00	Basic type	CB	Double Clevis Type (Pin and retaining ring included)
LB	Axial Foot Type	TC	Intermediate Trunnion Type
FA	Rod Side Flange Type	TA	Rod Side Trunnion Type
FB	Head Side Flange Type	TF	Intermediate tapped trunnion type (ø50 to ø100)
CA	Single Clevis Type	TD	Rod side tapped trunnion type (ø50 to ø100)

3 Bore Size (mm)

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

4 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom order)
G	G thread (Custom order)

5 Cushion

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

6 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø40	50 to 600	Every 1 mm
ø50	50 to 600	
ø63	50 to 600	
ø80	50 to 700	
ø100	50 to 800	

7 Valve voltage

Code	Content
1	100 VAC
2	200 VAC
3	24 VDC

Note: For minimum stroke with switch, refer to P. 833.

8 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	—	T1H□	T1V□	
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (PNP)	—	30 or less	—	100 or less	T3PH□	T3PV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
		2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
			—	24 ± 10%	—	5 to 20	T2YD□	—	
			—	24 ± 10%	—	5 to 20	T2YDT□	—	
			—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
			—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
	Reed	1-Color	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
		No Indicator Lamp	110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+) 4PIN (-) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H[3]
5 m T0H[5]

9 Number of Switches

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

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

10 Option

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

*1: Instantaneous maximum temperature is the temperature when sparks, cutting chips, etc., instantaneously hit the bellows.

*2: When 1 mounting type "TA", "TD", "TB", "TE" is selected, the cushion needle position is fixed to "S" (Blank) and cannot be selected.

11 Accessories

Code	Content	
I	Single Knuckle	*1
Y	Double Knuckle (Pin and retaining ring included)	*1
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	
B3	Single Bracket	
B4	Trunnion type 2nd bracket (2 pieces/set)	

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

*For combinations of variations and options, please refer to P. 625.

Regarding specifications of custom products Details: refer to P. 854 to 861.

Code	Contents	Code	Contents	Code	Contents
-XR◇◇◇◇	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluoro Rubber
-XK◇	Mounting Bracket Rotational Assembly	-XP8	Knuckle Pin/Clevis Pin Split Pin Specification, Knuckle fixed by pinning	-T2	Cylinder part packing Fluorine type
-XAQ◇◇	Trunnion Position Specification	-XM1	Tie rod material SUS	-A2	With 2 Rod Nuts
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows	Rod end Shape change	Refer to Ending P. 11.

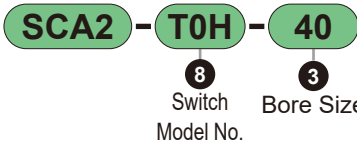
Model No. Example) SCA2-V - - XP5

Switch Single Unit Model No. Notation Method

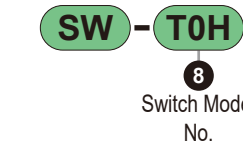
[T type switch]

For rod side

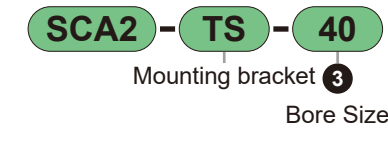
● Switch body + Mounting bracket set



● Switch body only



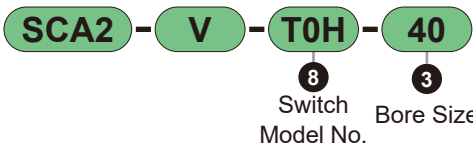
● Switch mounting bracket set



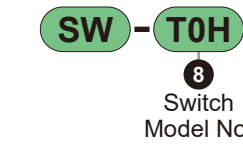
*Please consult us separately if using environmentally compatible T-type switches.

For head side

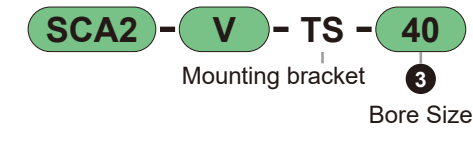
● Switch body + Mounting bracket set



● Switch body only



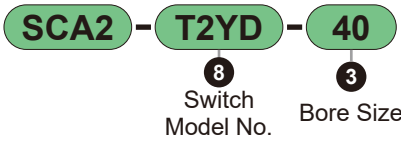
● Switch mounting bracket set



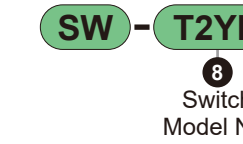
*Please consult us separately if using environmentally compatible T-type switches.

[T2YD type switch]

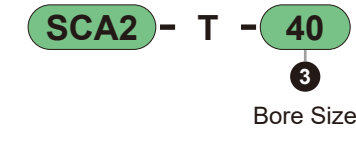
● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

Item		SCA2-V1, V2, V (With valve)				
Bore Size	mm	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	0.7				
Min. Operating Pressure	MPa	0.15				
Proof Pressure	MPa	1.05				
Ambient Temperature		-5 to 50 (However, no freezing)				
Port Size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance	mm	^{+0.9} ₀ (Up to 360) ^{+1.4} ₀ (Up to 800)				
Operating 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 (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorbed energy J	With Cushion	4.29	8.37	15.8	27.9	49.8
	Without Cushion	0.067	0.079	0.079	0.201	0.301
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.				

*1: Please use within the absorbed energy. For ø100, a piston speed of 500 mm/s is possible by using a silencer (SLW-10A) as an alternative to the metering valve (SMW-10A).

Valve specifications

Model No.	V1 SCA2-V2-40/50 V			V1 SCA2-V2-63 V			V1 SCA2-V2-80/100 V		
Item									
Model No. (*2)	4KB2□9-00-Voltage			4KB3□9-00-Voltage			4KB4□9-00-Voltage		
Rated voltage	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 VDC	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 VDC	100 VAC (50/60Hz)	200 VAC (50/60Hz)	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 range	±10%	±10%	±10%	±10%	±10%	±10%	±10%	±10%	±10%
Heat Resistance 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 Lead wire outlet method	Grommet lead wire (300 mm)								

*1: For details on the valve, please refer to "Directional Control Valve ②" (No. RJ-012AA).

*2: For operating method V, □ = 2; for operating methods V1, V2, □ = 1.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø40	50, 75, 100, 150, 200, 250 300, 350, 400, 450, 500	600	50
ø50			
ø63		700	
ø80			
ø100		800	

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

*2: Regardless of the presence of a switch, strokes of less than 50 mm cannot be manufactured.

Min. Stroke with Switch

●Minimum stroke with T0/T5 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1
ø40	50 (50)	50 (50)	60 (50)	110 (110)	110 (110)	50 (50)
ø50	50 (50)	50 (50)	50 (50)	135 (135)	135 (135)	60 (60)
ø63	50 (50)	50 (50)	50 (50)	110 (95)	110 (95)	50 (50)
ø80	50 (50)	50 (50)	50 (50)	115 (85)	115 (85)	55 (50)
ø100	50 (50)	50 (50)	50 (50)	125 (95)	125 (95)	60 (50)

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

*2: Strokes of less than 50 mm cannot be manufactured.

*3: T8 type switch cannot be installed.

●Minimum stroke with T2/T3 type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1
ø40	50 (50)	50 (50)	60 (50)	105 (75)	105 (75)	50 (50)
ø50	50 (50)	50 (50)	50 (50)	105 (75)	105 (75)	50 (50)
ø63	50 (50)	50 (50)	50 (50)	110 (80)	110 (80)	50 (50)
ø80	50 (50)	50 (50)	50 (50)	115 (85)	115 (85)	55 (50)
ø100	50 (50)	50 (50)	50 (50)	125 (95)	125 (95)	60 (50)

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

*2: Strokes of less than 50 mm cannot be manufactured.

● Minimum stroke with T1/T2YD type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1
ø40	50 (50)	50 (50)	60 (50)	105 (75)	105 (75)	50 (50)
ø50	50 (50)	50 (50)	50 (50)	100 (70)	100 (70)	50 (50)
ø63	50 (50)	50 (50)	50 (50)	105 (75)	105 (75)	50 (50)
ø80	50 (50)	50 (50)	50 (50)	110 (80)	110 (80)	50 (50)
ø100	50 (50)	50 (50)	50 (50)	120 (90)	120 (90)	60 (50)

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

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

● Minimum stroke with T2W/T3W/T2WL type switch

	Different Surface Mounting	Same Surface Mounting		Intermediate Trunnion Mounting		Position detection at the rod side stroke end with rod side trunnion mounting is not possible.
Number of Switches	2	1	2	1	2	1
ø40	50 (50)	50 (50)	65 (50)	110 (80)	110 (80)	50 (50)
ø50	50 (50)	50 (50)	50 (50)	110 (80)	110 (80)	50 (50)
ø63	50 (50)	50 (50)	50 (50)	115 (85)	115 (85)	55 (50)
ø80	50 (50)	50 (50)	50 (50)	120 (90)	120 (90)	55 (50)
ø100	50 (50)	50 (50)	50 (50)	130 (100)	130 (100)	60 (50)

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

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

Cylinder Weight

●SCA2-V (Unit: kg)

Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch weight	Switch Mounting Bracket Weight	Added mass per S=100 mm
	Basic Type (00)	Foot Type (LB)	Flange type (FA, FB)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion type (TA, TB, TC)		T type	
ø40	1.27	1.45	1.69	1.59	1.63	1.66	Refer to the mass described in the switch specifications on P. 971	0.030	0.39
ø50	1.64	1.89	2.14	2.02	2.05	2.18		0.027	0.46
ø63	2.39	2.76	3.48	2.96	3.01	3.24		0.027	0.50
ø80	4.17	4.91	6.03	5.44	5.65	5.51		0.040	0.90
ø100	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 (S) = 0 mm						Switch weight	Switch Mounting Bracket Weight	Added mass per S=100 mm
	Basic Type (00)	Foot Type (LB)	Flange type (FA, FB)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion type (TA, TB, TC)		T type	
ø40	1.23	1.40	1.64	1.55	1.59	1.61	Refer to the mass described in the switch specifications on P. 971	0.030	0.39
ø50	1.60	1.84	2.09	1.97	2.01	2.13		0.027	0.46
ø63	2.28	2.65	3.38	2.85	2.91	3.13		0.027	0.50
ø80	4.07	4.81	5.93	5.34	5.55	5.41		0.040	0.90
ø100	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-T0H-D Product Weight at 0 mm stroke 1.84 kg Added weight at 200 mm stroke $0.46 \times \frac{200}{100} = 0.92$ kg Weight of 2 T0H switches $0.018 \times 2 = 0.036$ kg Weight of 2 mounting brackets.....$0.027 \times 2 = 0.054$ kg Product Weight $1.45+0.92+0.036+0.054=2.460$ kg									

Theoretical Thrust Table (Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø40	Push	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
	Pull	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
ø50	Push	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
	Pull	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
ø63	Push	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
	Pull	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
ø80	Push	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
	Pull	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
ø100	Push	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
	Pull	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

Mounting Bracket Model No. Notation Method

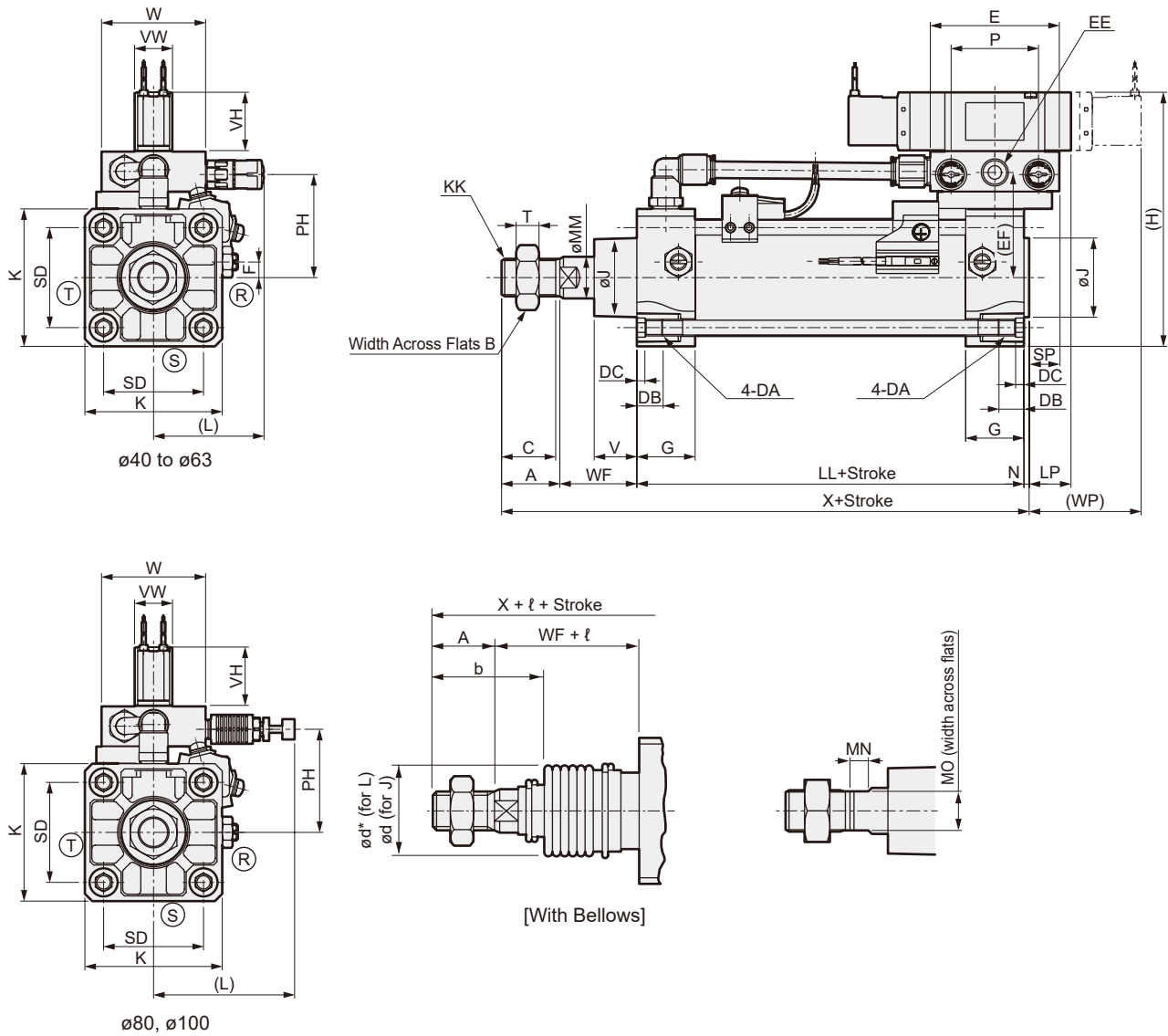
Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
Foot (LB)	*2 S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/FB)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100
Single Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: For the material of the mounting brackets, please refer to P. 646.
*2: Foot type mounting brackets come in sets of 2.
*3: Mounting bolts are included to each mounting bracket.

MEMO

Outline Dimension Drawing

●Basic Type (OO)



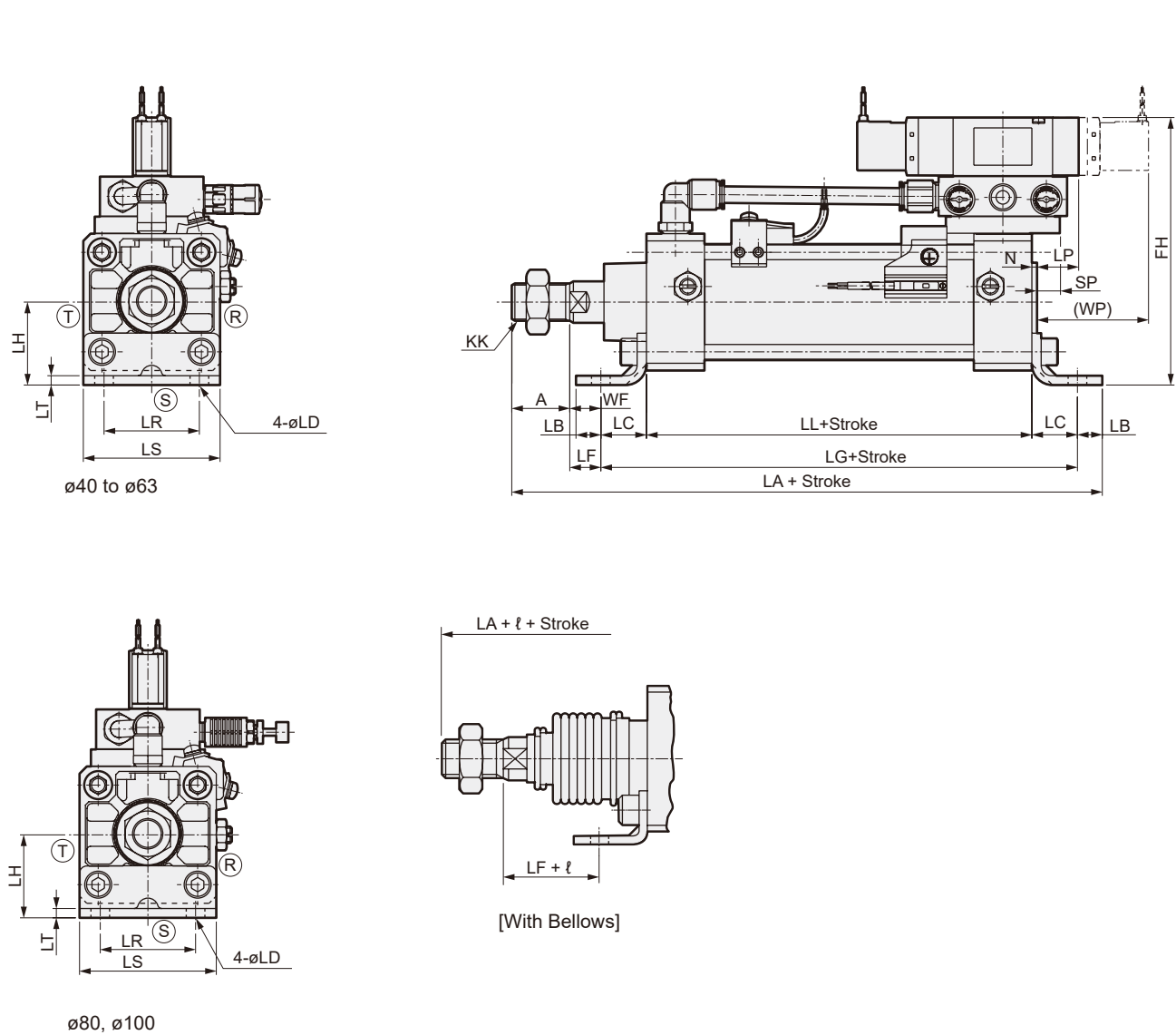
Code	Basic Type (OO) Basic Dimensions																			
	Bore Size	A	B	C	E	EE	EF	F	DA	DB	DC	G	H	J	K	KK	L	LL	LP	MM
	ø40	22	22	20	62	Rc 1/4	46	7.5	M8	12	4	26	113	31	57	M14 × 1.5	60	93	22	16
	ø50	28	27	26	62	Rc 1/4	50.5	0	M8	12	4	28	122	38	66	M18 × 1.5	60	101	20.5	20
	ø63	28	27	26	76	Rc 3/8	60	0	M8	12	4	30	149	38	80	M18 × 1.5	64	105	20	20
	ø80	36	32	34	94	Rc 1/2	78.5	-	M12	16	5	34	188	43	98	M22 × 1.5	122	116	26.5	25
	ø100	45	41	43	94	Rc 1/2	88.5	-	M12	16	5	36	208	51	118	M26 × 1.5	122	128	25	30
Code	With Bellows																			
	Bore Size	VH	VW	W	WF	WP	X	b	d	d*	ℓ									
	ø40	28	18	50	33.5	55	150.5	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	*1		
	ø50	28	18	50	37	54	168.5	47	47	48	22	36	49	63	90	119	146	(Stroke/3.0) + 8		
	ø63	36	23	60	35	62	171	45	47	48	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5		
	ø80	43	29	90	48	72.5	203.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5		
	ø100	43	29	90	53	71	230	69.5	61	65	20	32	42	53	76	98	120	(Stroke/4.5) + 9		

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, with Valve

Outline Dimension Drawing

●Axial Foot Type (LB)

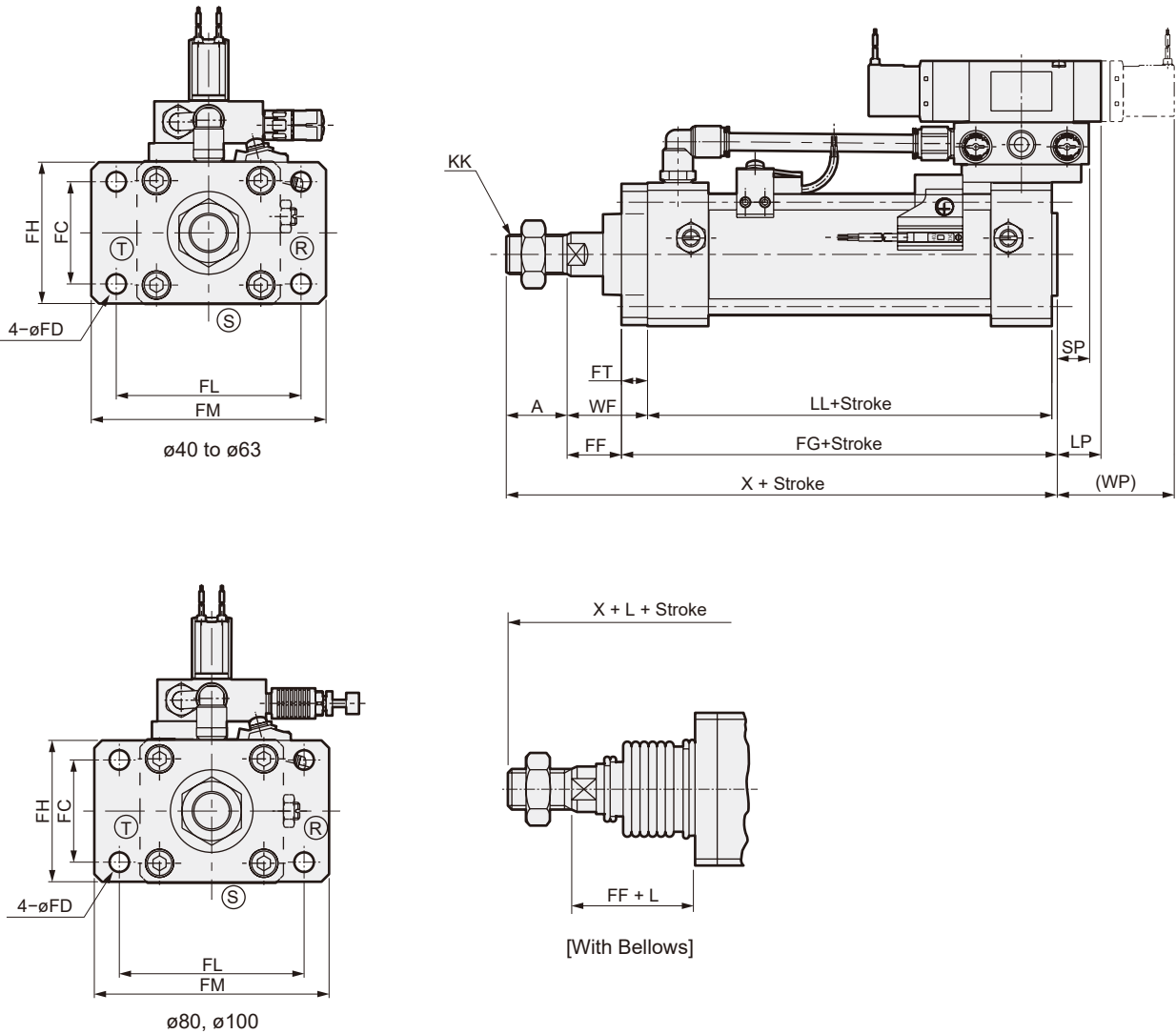


Code	Axial Foot Type (LB) Mounting Dimensions																			
	Bore Size	A	FH	KK	LL	LP	N	SP	WF	WP	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
	ø40	22	124.5	M14 × 1.5	93	22	2	16	33.5	55	178	10	19.5	9	14	132	40	40	57	3.2
	ø50	28	129	M18 × 1.5	101	20.5	2.5	14.5	37	54	200	12	22	9	15	145	40	46	66	4.5
	ø63	28	159	M18 × 1.5	105	20	3	20	35	62	210	12	30	11	5	165	50	60	80	4.5
	ø80	36	199	M22 × 1.5	116	26.5	3.5	26.5	48	72.5	251	14	37	14	11	190	60	74	98	6.0
	ø100	45	216	M26 × 1.5	128	25	4	25	53	71	278	21	31	14	22	190	67	80	118	6.0
Code	With Bellows																			
	Bore Size	ℓ																		
	ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	*1											
	ø50	22	36	49	63	90	119	146	(Stroke/3.0) + 8											
	ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5											
	ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5											
	ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9											

*1: Round up the ℓ dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Rod Side Flange Type (FA)



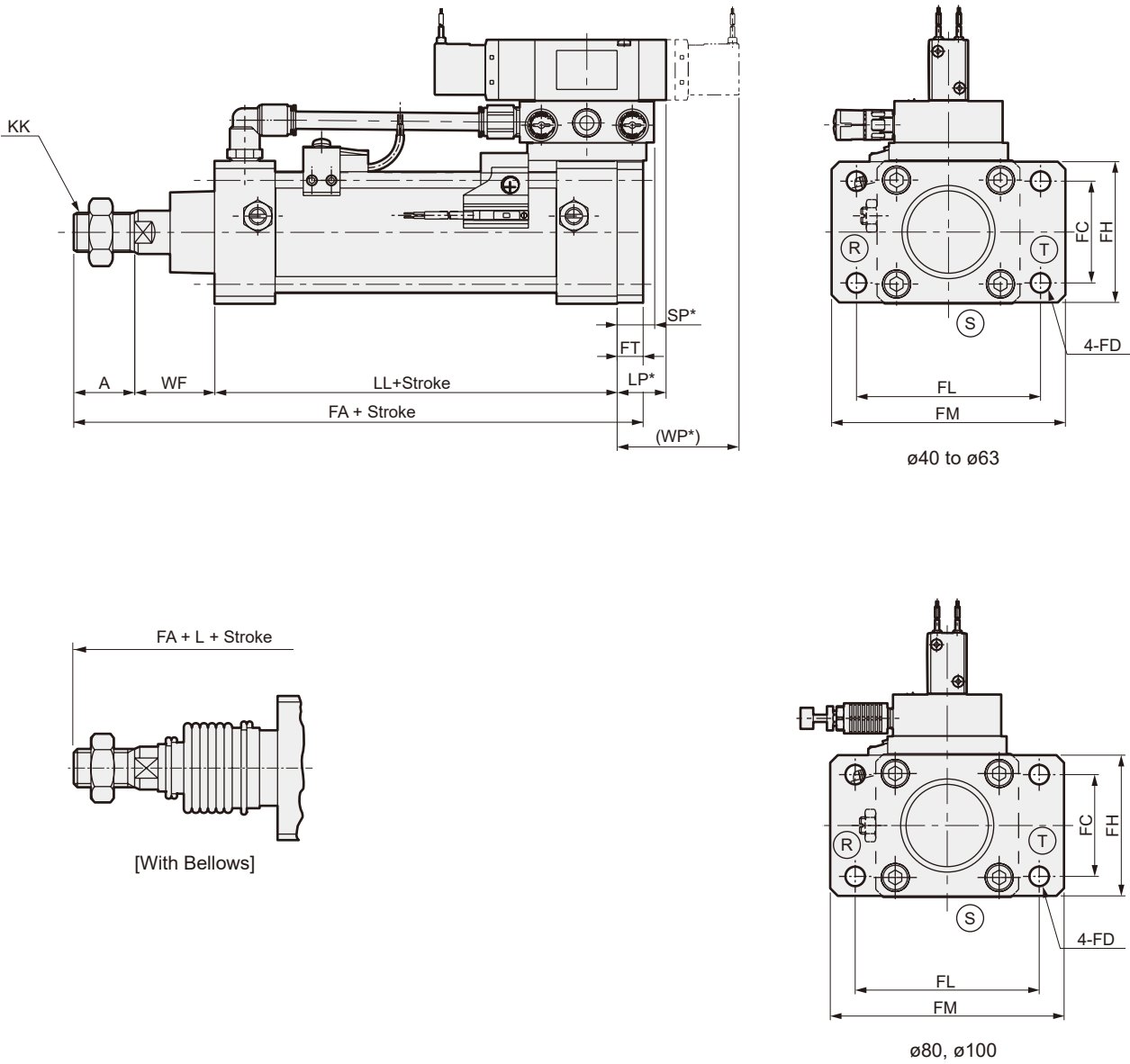
Code	Rod Side Flange Type (FA) Mounting Dimensions															
Bore Size	A	KK	LL	LP	SP	WF	WP	FC	FD	FF	FG	FH	FL	FM	FT	X
ø40	22	M14 × 1.5	93	22	16	33.5	55	40	9	21.5	107	57	80	100	12	150.5
ø50	28	M18 × 1.5	101	20.5	14.5	37	54	47	9	25	115.5	65	85	108	12	168.5
ø63	28	M18 × 1.5	105	20	20	35	62	60	11	19	124	80	106	130	16	171
ø80	36	M22 × 1.5	116	26.5	26.5	48	72.5	74	14	29	138.5	98	125	153	19	203.5
ø100	45	M26 × 1.5	128	25	25	53	71	88	14	34	151	118	144	180	19	230
Code	With Bellows															
	L															
Bore Size	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 When exceeding 500								
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8								
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5								
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9								

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, with Valve

Outline Dimension Drawing

●Head Side Flange Type (FB)

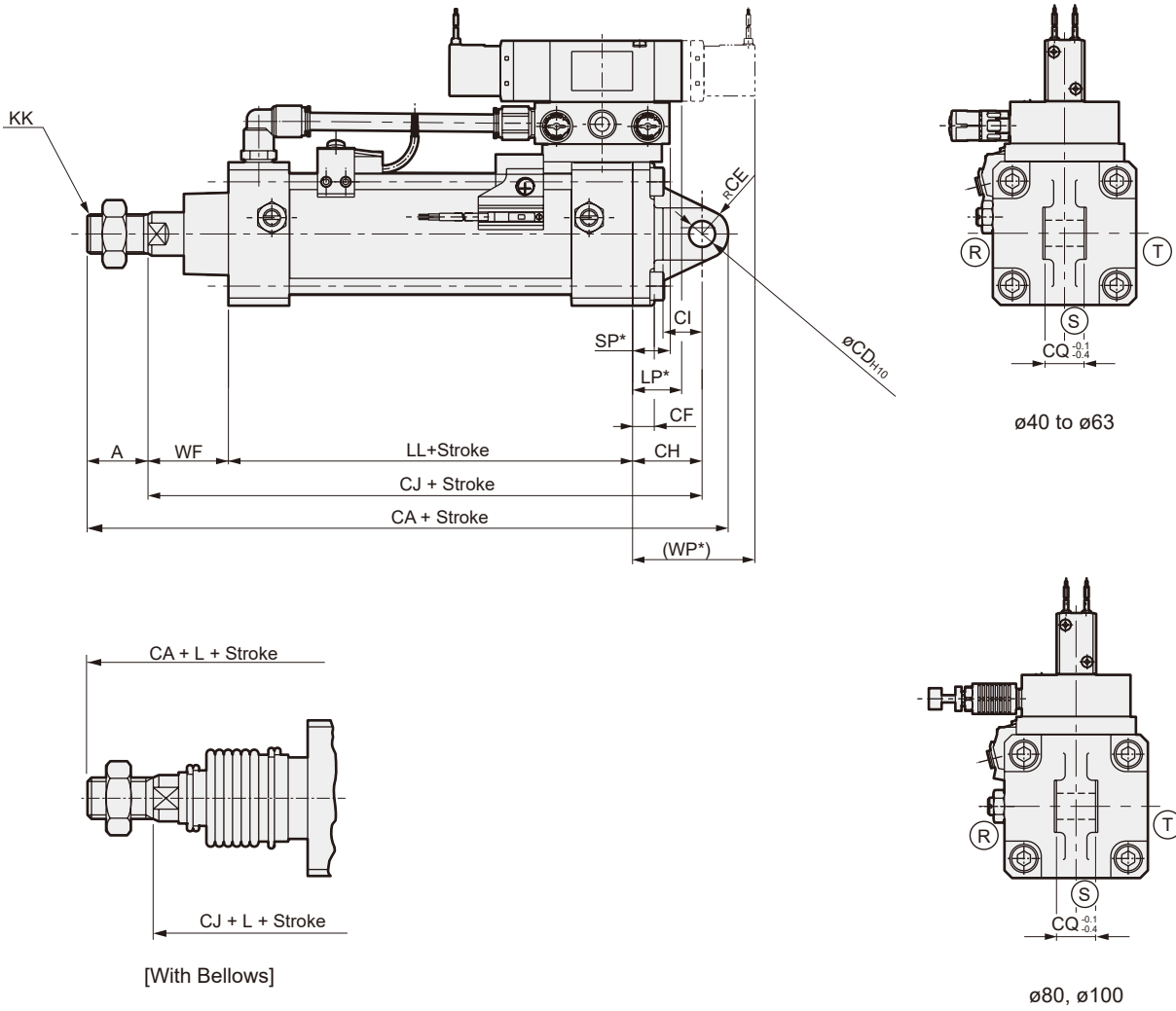


Code	Head Side Flange Type (FB) Mounting Dimensions															
Bore Size	A	KK	LL	LP*	SP*	WF	WP*	FA	FC	FD	FH	FL	FM	FT		
ø40	22	M14 × 1.5	93	24	18	33.5	57	160.5	40	9	57	80	100	12		
ø50	28	M18 × 1.5	101	23	17	37	56.5	178	47	9	65	85	108	12		
ø63	28	M18 × 1.5	105	23	23	35	65	184	60	11	80	106	130	16		
ø80	36	M22 × 1.5	116	28.5	30	48	76	219	74	14	98	125	153	19		
ø100	45	M26 × 1.5	128	34	29	53	75	245	88	14	118	144	180	19		
Code	With Bellows															
	L															
Bore Size	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	When exceeding 500								
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8								
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5								
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9								

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Single Clevis Type (CA)



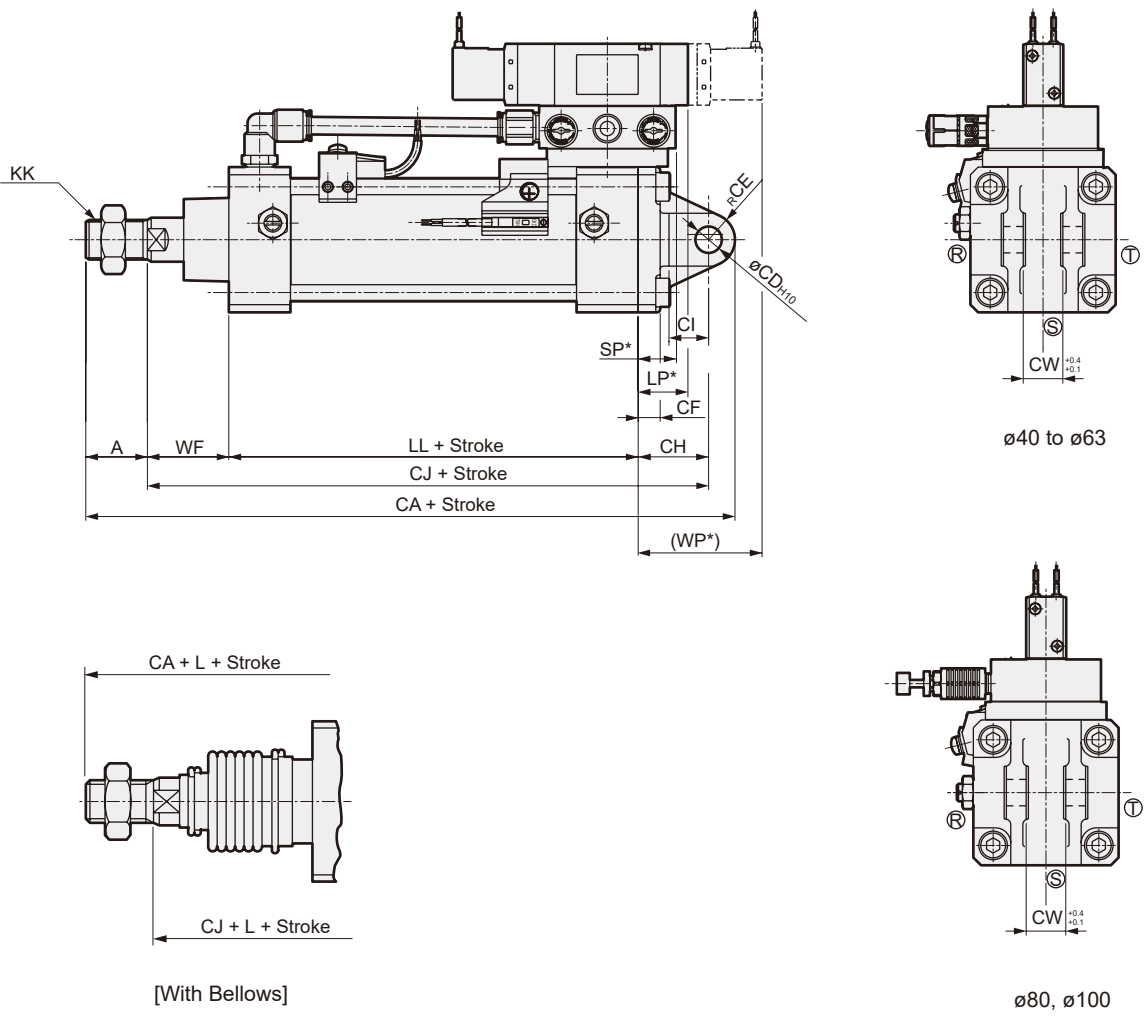
Code	Single Clevis Type (CA) Mounting Dimensions														
Bore Size	A	KK	LL	LP*	SP*	WF	WP*	CA	CD	CE	CF	CH	CI	CJ	CQ
$\phi 40$	22	M14 $\times$ 1.5	93	24	18	33.5	57	192.5	12	12	10	32	18	158.5	18
$\phi 50$	28	M18 $\times$ 1.5	101	23	17	37	56.5	210	12	12	10	32	18	170	18
$\phi 63$	28	M18 $\times$ 1.5	105	23	23	35	65	221	14	16	10	37	24	177	20
$\phi 80$	36	M22 $\times$ 1.5	116	28.5	30	48	76	272	20	20	14	52	30	216	28
$\phi 100$	45	M26 $\times$ 1.5	128	34	29	53	75	298	20	20	16	52	30	233	28
Code	With Bellows														
Bore Size	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							
$\phi 40$	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8							
$\phi 50$	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5							
$\phi 63$	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5							
$\phi 80$	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5							
$\phi 100$	20	32	42	53	76	98	120	(Stroke/4.5) + 9							

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, with Valve

Outline Dimension Drawing

●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions														
Bore Size	A	KK	LL	LP*	SP*	WF	WP*	CA	CD	CE	CF	CH	CI	CJ	CW
$\phi 40$	22	M14 $\times$ 1.5	93	24	18	33.5	57	192.5	12	12	10	32	18	158.5	18
$\phi 50$	28	M18 $\times$ 1.5	101	23	17	37	56.5	210	12	12	10	32	18	170	18
$\phi 63$	28	M18 $\times$ 1.5	105	23	23	35	65	221	14	16	10	37	24	177	20
$\phi 80$	36	M22 $\times$ 1.5	116	28.5	30	48	76	272	20	20	14	52	30	216	28
$\phi 100$	45	M26 $\times$ 1.5	128	34	29	53	75	298	20	20	16	52	30	233	28
Code	With Bellows														
Bore Size	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							
$\phi 40$	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8							
$\phi 50$	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5							
$\phi 63$	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5							
$\phi 80$	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5							
$\phi 100$	20	32	42	53	76	98	120	(Stroke/4.5) + 9							

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

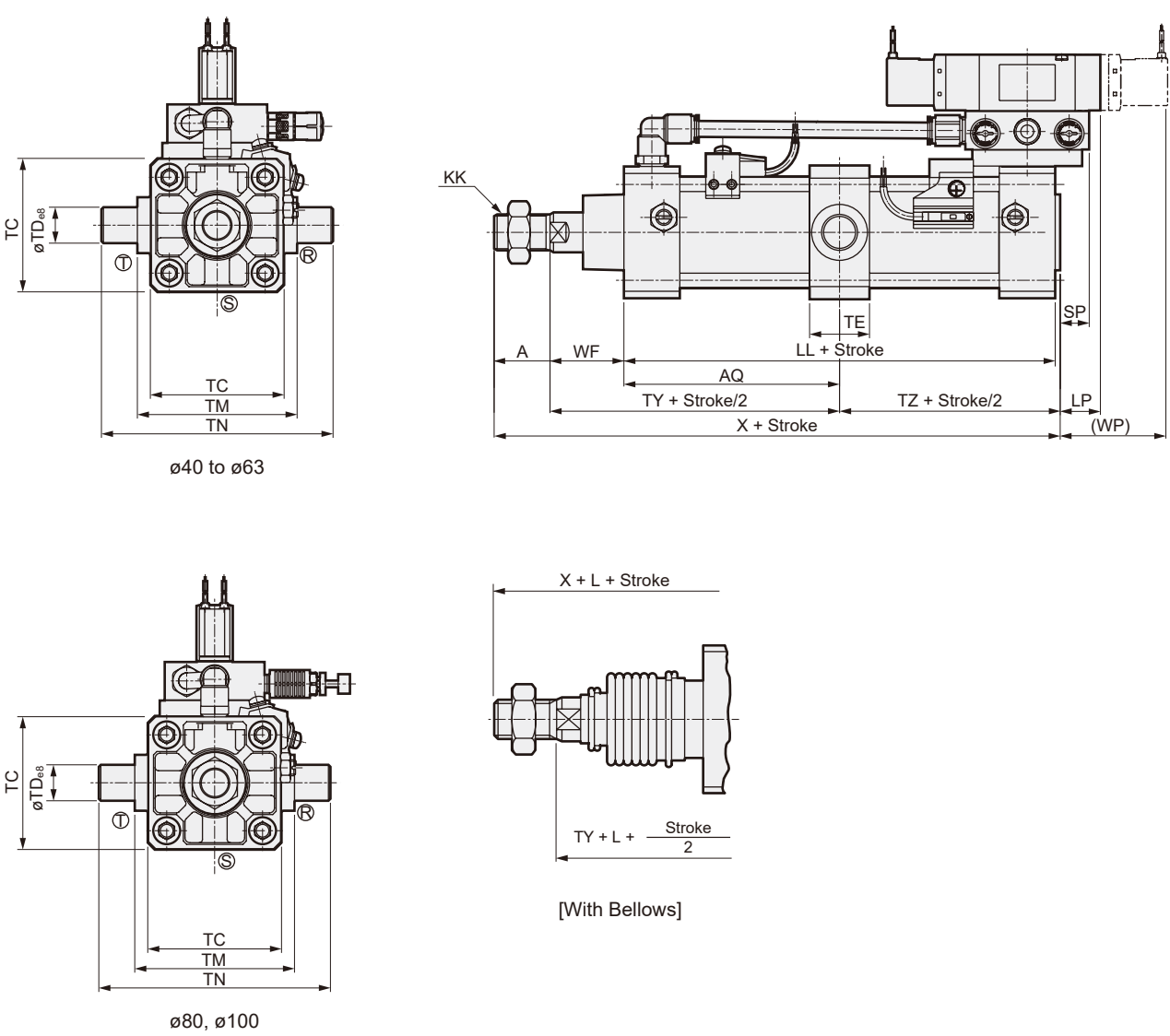
SCS2

Cylinder Switch

Ending

Outline Dimension Drawing

●Intermediate trunnion type (TC)



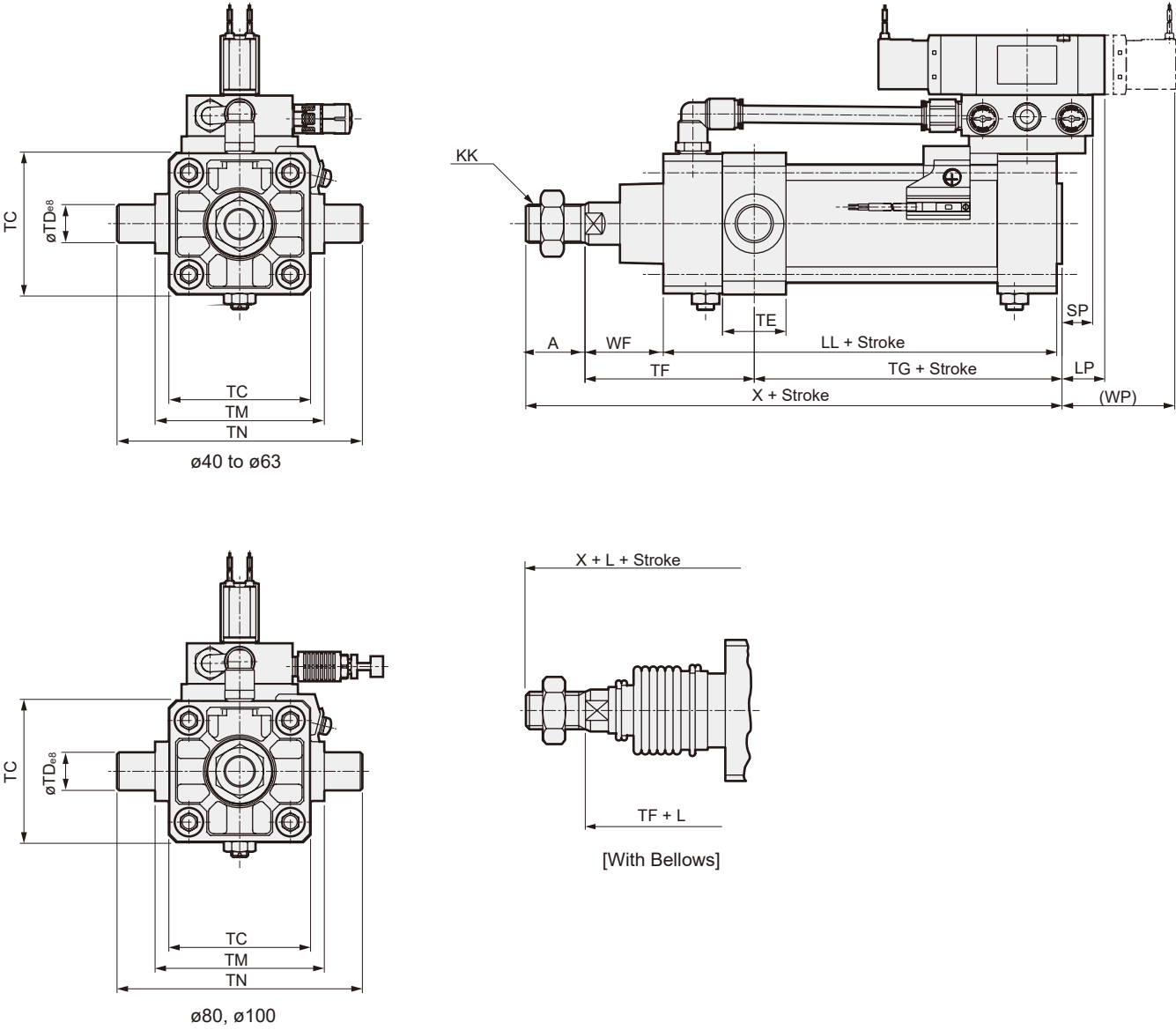
Code	Intermediate Trunnion Type (TC) Mounting Dimensions															
Bore Size	A	KK	LL	LP	SP	WF	WP	X	AQ	TC	TD	TE	TM	TN	TY	TZ
ø40	22	M14 × 1.5	93	22	16	33.5	55	150.5	46.5 + $\frac{\text{Stroke}}{2}$	57	16	30	63	95	80	48.5
ø50	28	M18 × 1.5	101	20.5	14.5	37	54	168.5	50.5 + $\frac{\text{Stroke}}{2}$	67	18	30	80	116	87.5	53
ø63	28	M18 × 1.5	105	20	20	35	62	171	52.5 + $\frac{\text{Stroke}}{2}$	82	20	35	90	130	87.5	55.5
ø80	36	M22 × 1.5	116	26.5	26.5	48	72.5	203.5	58 + $\frac{\text{Stroke}}{2}$	100	25	40	115	165	106	61.5
ø100	45	M26 × 1.5	128	25	25	53	71	230	64 + $\frac{\text{Stroke}}{2}$	121	35	50	135	205	117	68
Code	With Bellows															
Bore Size	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								
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8								
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5								
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9								

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Double Acting, with Valve

Outline Dimension Drawing

●Rod side trunnion type (TA)

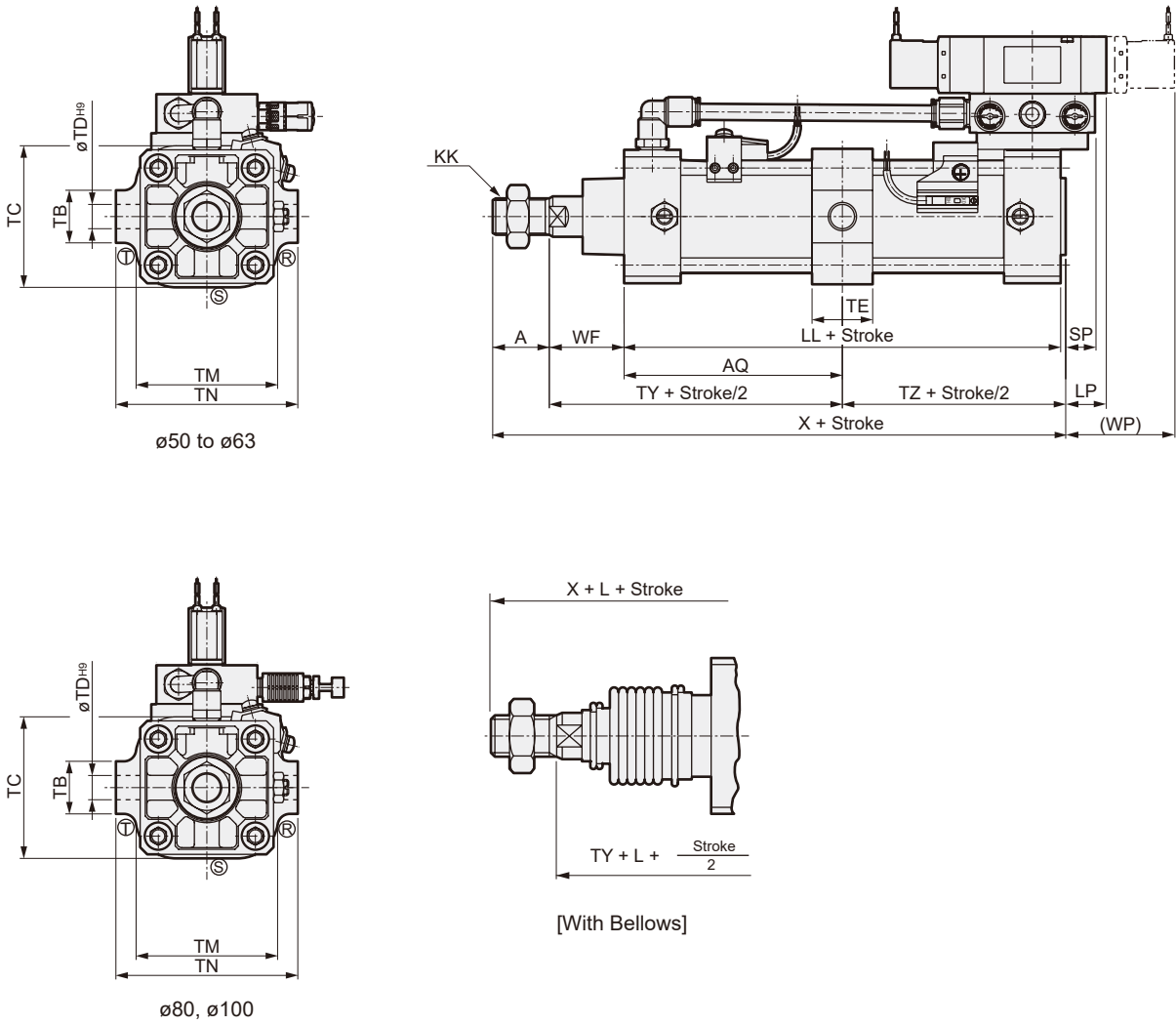


Code	Rod Side Trunnion Type (TA) Mounting Dimensions														
Bore Size	A	KK	LL	LP	SP	WF	WP	X	TC	TD	TE	TF	TG	TM	TN
ø40	22	M14 × 1.5	93	22	16	33.5	55	150.5	57	16	30	74.5	54	63	95
ø50	28	M18 × 1.5	101	20.5	14.5	37	54	168.5	67	18	30	80	60.5	80	116
ø63	28	M18 × 1.5	105	20	20	35	62	171	82	20	35	82.5	60.5	90	130
ø80	36	M22 × 1.5	116	26.5	26.5	48	72.5	203.5	100	25	40	102	65.5	115	165
ø100	45	M26 × 1.5	128	25	25	53	71	230	121	35	50	114	71	135	205
Code	With Bellows														
Bore Size	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 When exceeding 500							
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0) + 8							
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5							
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5							
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5							
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9							

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

●Intermediate tapped trunnion type (TF)



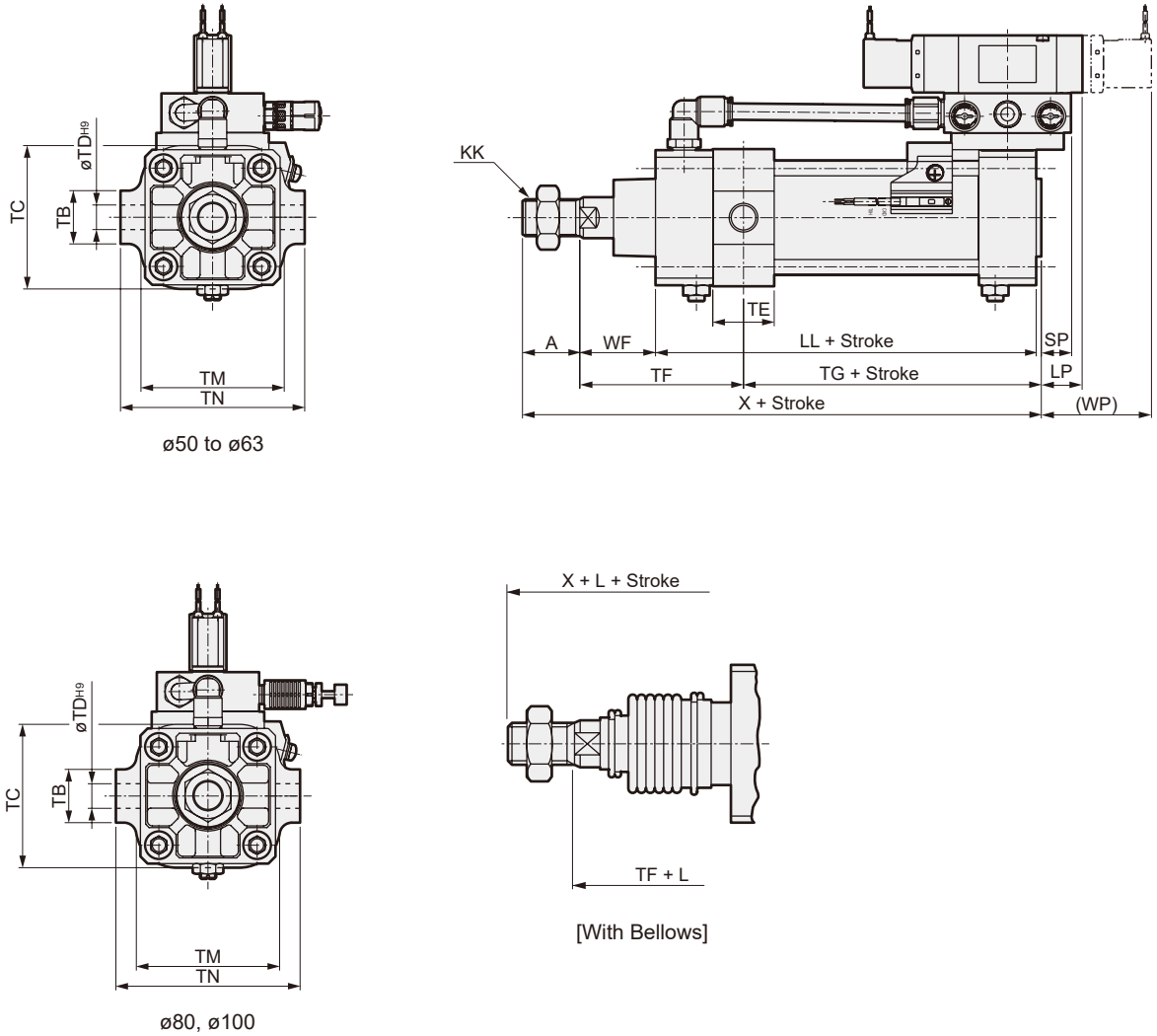
Code	Intermediate tapped trunnion type (TF) Mounting dimensions																
Bore Size	A	KK	LL	LP	SP	WF	WP	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ
ø50	28	M18 × 1.5	101	20.5	14.5	37	54	168.5	$50.5 + \frac{\text{Stroke}}{2}$	26	70	12	30	70	90	87.5	53
ø63	28	M18 × 1.5	105	20	20	35	62	171	$52.5 + \frac{\text{Stroke}}{2}$	30	86	14	35	86	104	87.5	55.5
ø80	36	M22 × 1.5	116	26.5	26.5	48	72.5	203.5	$58 + \frac{\text{Stroke}}{2}$	35	105	20	40	105	134	106	61.5
ø100	45	M26 × 1.5	128	25	25	53	71	230	$64 + \frac{\text{Stroke}}{2}$	40	123	20	40	127	150	117	68
Code	With Bellows																
Bore Size	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	When exceeding 500									
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5									
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5									
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5									
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9									

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

Outline Dimension Drawing

Outline Dimension Drawing

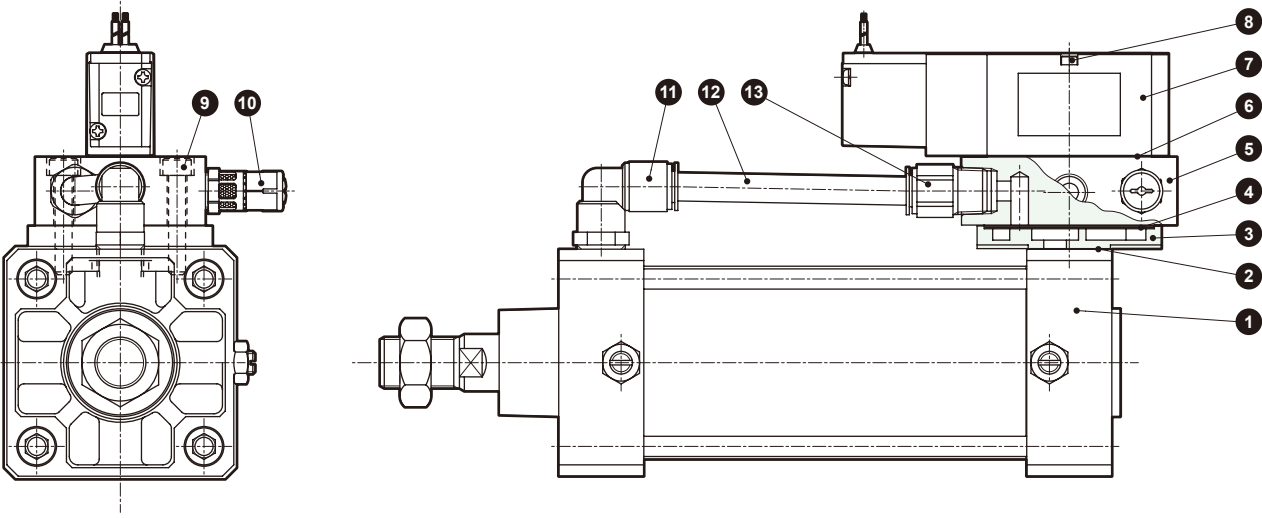
●Rod side tapped trunnion type (TD)



Code	Rod side tapped trunnion type (TD) Mounting dimensions															
Bore Size	A	KK	LL	LP	SP	WF	WP	X	TB	TC	TD	TE	TF	TG	TM	TN
ø50	28	M18 × 1.5	101	20.5	14.5	37	54	168.5	26	70	12	30	80	60.5	70	90
ø63	28	M18 × 1.5	105	20	20	35	62	171	30	86	14	35	82.5	60.5	86	104
ø80	36	M22 × 1.5	116	26.5	26.5	48	72.5	203.5	35	105	20	40	102	65.5	105	134
ø100	45	M26 × 1.5	128	25	25	53	71	230	40	123	20	40	109	76	127	150
Code	With Bellows															
Bore Size	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 When exceeding 500								
ø50	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø63	22	36	49	63	90	119	146	(Stroke/3.6) + 7.5								
ø80	14	26	38	49	72	96	119	(Stroke/4.3) + 2.5								
ø100	20	32	42	53	76	98	120	(Stroke/4.5) + 9								

*1: Round up the L dimension to the nearest whole number.
*2: For dimensions with each switch, please refer to P. 850 to P. 853.
*3: For outer dimensions diagram of accessories, refer to P. 644.

General Type



SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Medium Bore Size Cylinder		SCA2 (CKD)	8	Hexagon socket bolt	Alloy Steel	Black Oxide
2	Gasket for head cover	Nitrile Rubber		9	Hexagon socket bolt	Alloy Steel	Black Oxide
3	Base plate	Aluminum Alloy		10	Metering Valve with Silencer		SMW (CKD)
4	Gasket for sub-base	Nitrile Rubber		11	New joint, Single-ended elbow		GWL (CKD)
5	Sub-base	Aluminum Alloy		12	Soft nylon tube		
6	Gasket for valve	Nitrile Rubber		13	New joint, Single-ended straight		GWS (CKD)
7	Selex valve		4KB (CKD)				

Mounting Bracket Material

Mounting type	Material	Remarks
Foot (LB)	Steel	Painting
Flange (FA, FB, FC)	Steel	Painting
Single clevis (CA), Double clevis (CB)	Cast Iron	Painting
Trunnion (TC, TA, TB)	Cast Iron	Painting

For maintenance parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

General Type

SCP□3

CMK2

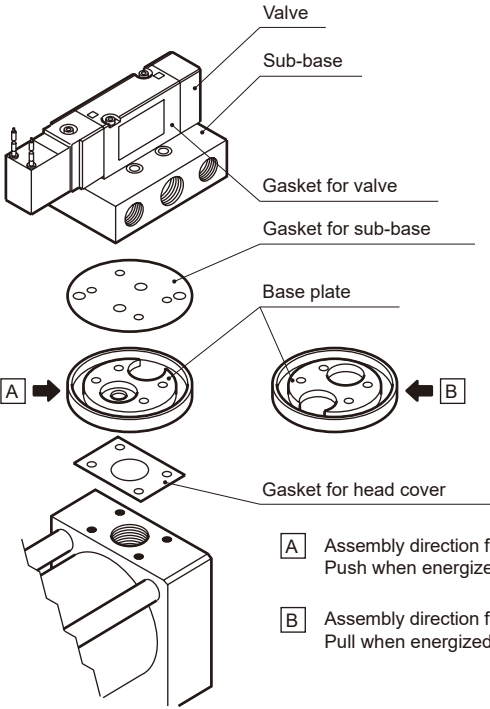
CMA2

SCM

SCG

SCA2

SCS2



Cylinder Switch

Ending

Cylinder Switch

Ending

About intermediate support head

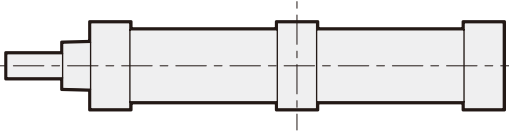
An intermediate support head is added to the center of the cylinder depending on the stroke.

The quantity of intermediate support heads varies depending on the Bore size and stroke as shown in the table below.

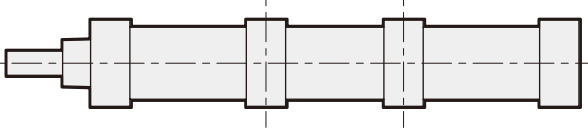
Please also refer to Technical Document 8 (Intro 30).

Quantity of intermediate support heads by stroke

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

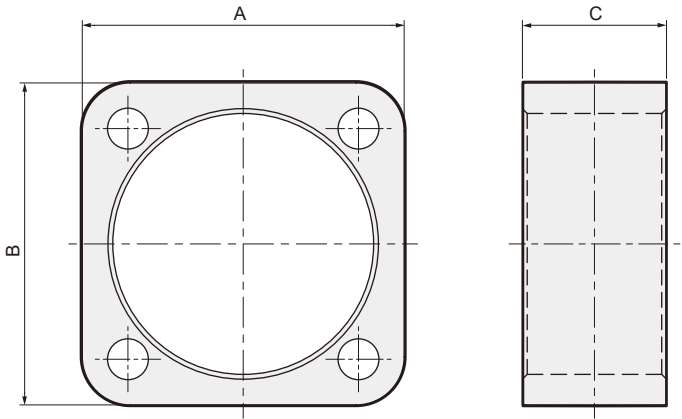


One non-sag block: Assembled in the center between the covers



Two non-sag blocks: Assembled to divide the space between covers into three equal parts

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



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

MEMO

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

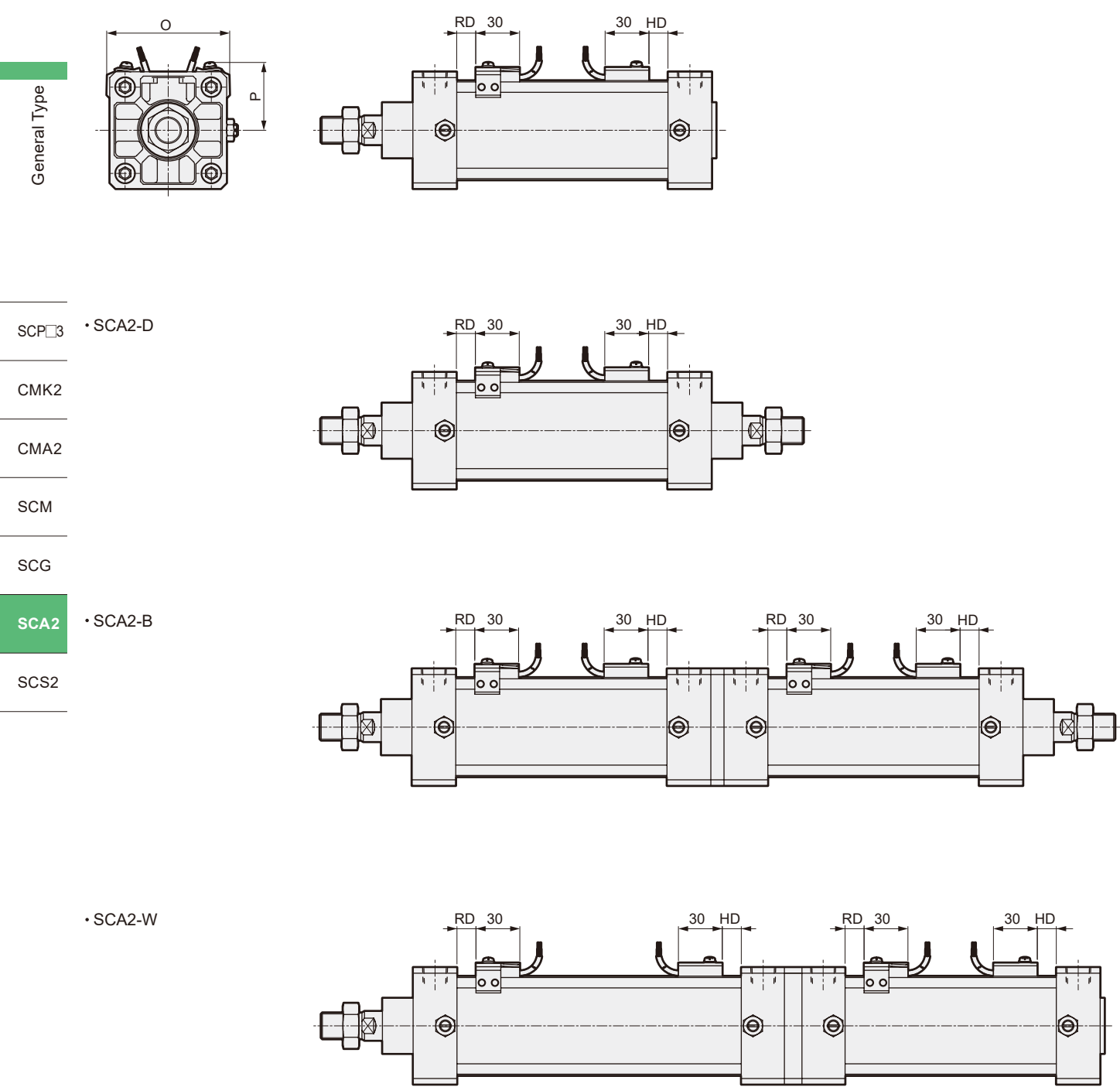
SCS2

Cylinder Switch

Ending

SCA2 Series Switch-equipped External Dimension Diagram

- T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2[H/V]R3, T2WH/V, T3WH/V, T2WLH/V, T8H/V, T2JH/V
- SCA2, SCA2-P, SCA2-R, SCA2-O, SCA2-U, SCA2-H, SCA2-G, SCA2-V



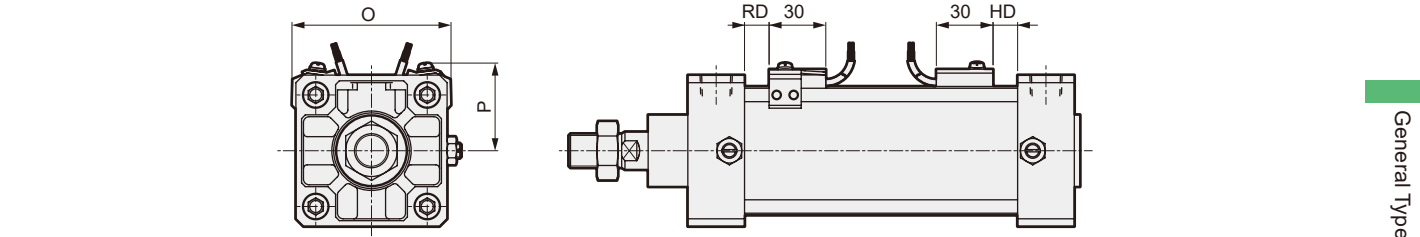
Code	SCA2, SCA2-P, SCA2-R, SCA2-O, SCA2-U, SCA2-H, SCA2-G, SCA2-V, SCA2-D, SCA2-B, SCA2-W									
	O	P	T0, T5, T2, T3, T3P, T2[R]R3		T2W, T3W, T2WL		T8		T2J	
			RD	HD	RD	HD	RD	HD	RD	HD
ø40	66	41.5	11	11	13	13	5	5	10	10
ø50	73	43	13	13	15	15	7	7	12	12
ø63	85	47	13	13	15	15	7	7	12	12
ø80	105	57	14.5	14.5	16.5	16.5	8.5	8.5	13.5	13.5
ø100	121	63	18.5	18.5	20.5	20.5	12.5	12.5	17.5	17.5

Note: For switch mountability, refer to the model No. notation method for each variation.

External Dimensions Diagram with Switch

SCA2 Series Switch-equipped External Dimension Diagram

- T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2[H/V]R3, T2WH/V, T3WH/V, T2WLH/V, T8H/V, T2JH/V
- SCA2-Q2



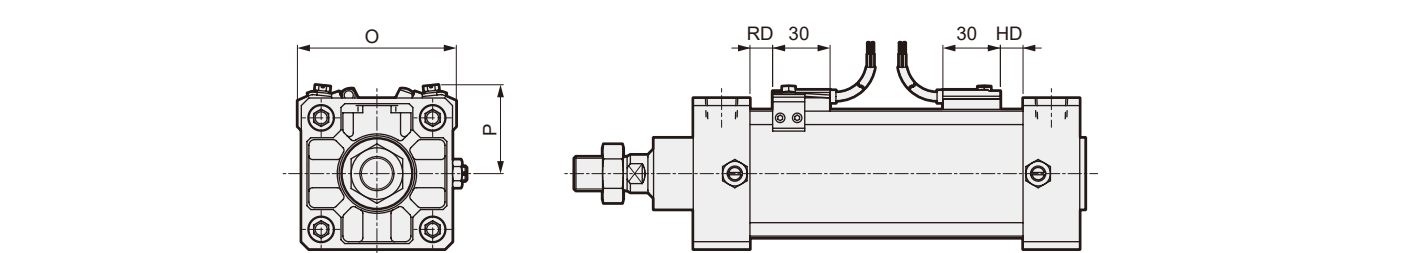
Code	SCA2-Q2-H									
	O	P	T0, T5, T2, T3, T3P, T2[R]R3		T2W, T3W, T2WL		T8		T2J	
			RD	HD	RD	HD	RD	HD	RD	HD
ø40	66	41.5	11	15.5	13	17.5	5	9.5	10	14.5
ø50	73	43	13	18	15	20	7	12	12	17
ø63	85	47	13	19	15	21	7	13	12	18
ø80	105	57	14.5	23.5	16.5	25.5	8.5	17.5	13.5	22.5
ø100	121	63	18.5	23.5	20.5	31.5	12.5	23.5	17.5	28.5

Note: For switch mountability, refer to the model No. notation method for each variation.

Code	SCA2-Q2-R									
	O	P	T0, T5, T2, T3, T3P, T2[R]R3		T2W, T3W, T2WL		T8		T2J	
			RD	HD	RD	HD	RD	HD	RD	HD
ø40	66	41.5	15.5	11	17.5	13	9.5	5	14.5	10
ø50	73	43	18	13	20	15	12	7	17	12
ø63	85	47	19	13	21	15	13	7	18	12
ø80	105	57	23.5	14.5	25.5	16.5	17.5	8.5	22.5	13.5
ø100	121	63	23.5	18.5	31.5	20.5	23.5	12.5	28.5	17.5

Note: For switch mountability, refer to the model No. notation method for each variation.

- T2YLH/V, T3YLH/V
- SCA2-G2/G3



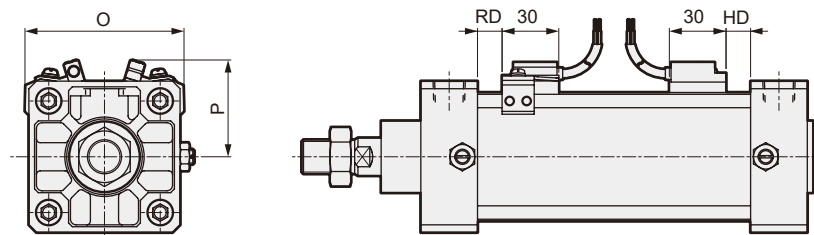
Code	SCA2-G2/G3			
	O	P	T2YL, T3YL	
			RD	HD
ø40	66	42	10	10
ø50	73	44	12	12
ø63	85	47	12	12
ø80	105	58	13.5	13.5
ø100	121	64	17.5	17.5

Note: For switch mountability, refer to the model No. notation method for each variation.

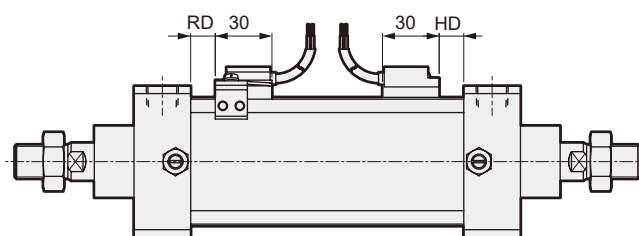
SCA2 Series Switch-equipped External Dimension Diagram

- T1H/V, T2YD, T2YDT

- SCA2, SCA2-P, SCA2-R, SCA2-Q2, SCA2-O, SCA2-U, SCA2-H, SCA2-G, SCA2-V



General Type



SCP 3

- SCA2-D

CMK2

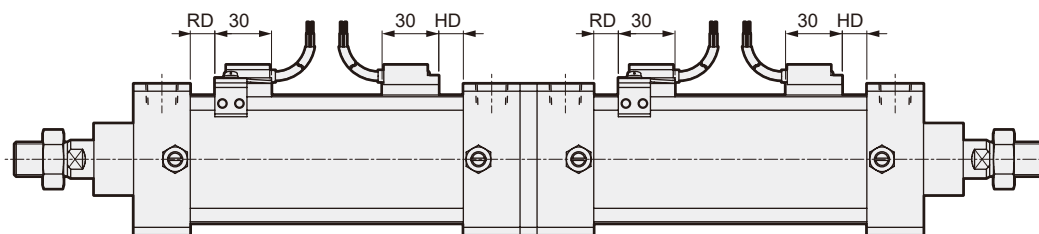
CMA2

SCM

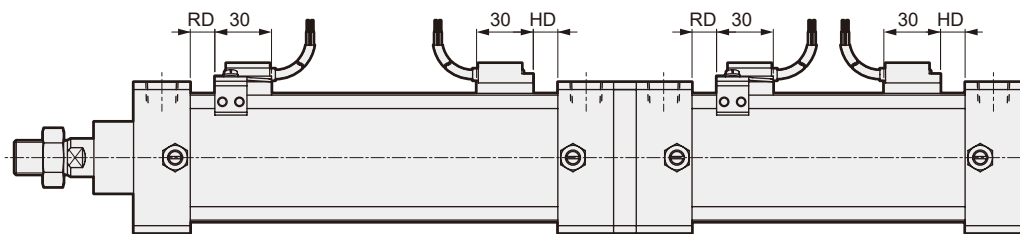
SCG

SCA2

SCS2



- SCA2-W



Code	SCA2, SCA2-P, SCA2-R, SCA2-Q2, SCA2-O, SCA2-U, SCA2-H, SCA2-G, SCA2-G1/G4, SCA2-V, SCA2-D, SCA2-B, SCA2-W			
	O	P	T1, T2YD, T2YDT	
			RD	HD
ø40	66	40	10	10
ø50	73	44.5	12	12
ø63	85	50	12	12
ø80	105	60	13.5	13.5
ø100	121	68	17.5	17.5

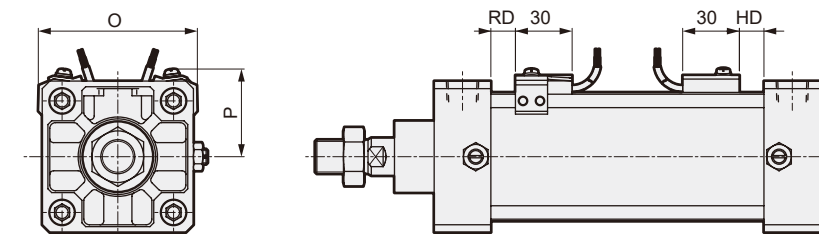
Note: For switch mountability, refer to the model No. notation method for each variation.

External Dimensions Diagram with Switch

SCA2 Series Switch-equipped External Dimension Diagram

- T1H/V, T2YD, T2YDT

- SCA2-Q2

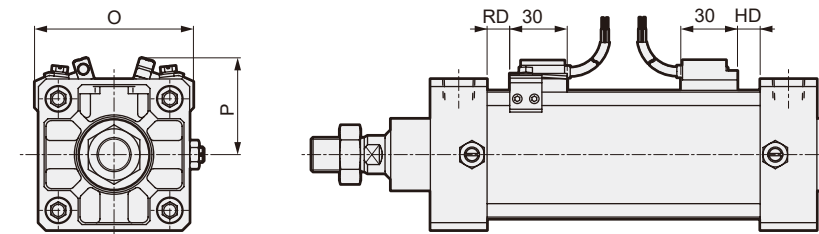


General type

Code	SCA2-Q2-H			
	O	P	T1, T2YD, T2YDT	
			RD	HD
ø40	66	40	10	14.5
ø50	73	44.5	12	17
ø63	85	50	12	18
ø80	105	60	13.5	22.5
ø100	121	68	17.5	28.5

Note: For switch mountability, refer to the model No. notation method for each variation.

- SCA2-G1/G4

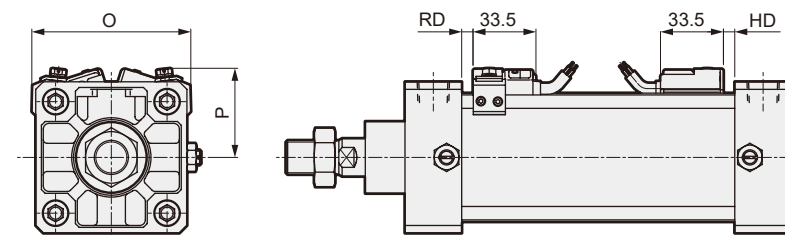


Code	SCA2, SCA2-P, SCA2-R, SCA2-Q2, SCA2-O, SCA2-U, SCA2-H, SCA2-G, SCA2-G1/G4, SCA2-V, SCA2-D, SCA2-B, SCA2-W			
	O	P	T1, T2YD, T2YDT	
			RD	HD
ø40	66	40	10	10
ø50	73	44.5	12	12
ø63	85	50	12	12
ø80	105	60	13.5	13.5
ø100	121	68	17.5	17.5

Note: For switch mountability, refer to the model No. notation method for each variation.

- H0, H0Y

- SCA2-L2, SCA2-G1L2/G4L2



Code	SCA2-L2, G1L2/G4L2			
Bore Size (mm)	O	P	RD	HD
ø40	66	42	4	4
ø50	73	44	6	6
ø63	84	47	6	6
ø80	104	58	7.5	7.5
ø100	120	64	11.5	11.5

Note: For switch mountability, refer to the model No. notation method for each variation.

Cylinder
Switch

Ending

■ Port/Cushion needle position specification (-XR◇◇◇◇)

Content: Specify the port and cushion needle positions.

Model No. Notation Method

SCA2-00-40B-100-XR1334

Model No.

1 Port/Cushion needle position

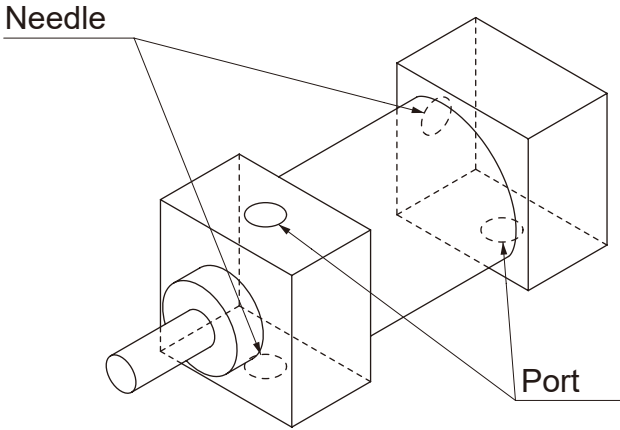
Please see the SCA2 model No. notation method.

1 Port/Cushion needle position

Code	Content
1	
2	
3	
4	

*1: The numbers indicate, in order, the port position on rod side, the needle position on rod side, the port position on head side and the needle position on head side. The numbers are as viewed from the piston rod side.
*2: Combination in which port and needle position are on the same surface is not available for SCA2.

Outline Dimension Drawing



■ Mounting bracket rotation assembly (-XK◇)

Content: Specifies the mounting position of the mounting bracket.

Model No. Notation Method

SCA2-00-40B-100-XK1

Model No.

1 Mounting bracket mounting position

Please see the SCA2 model No. notation method.

1 Mounting bracket mounting position

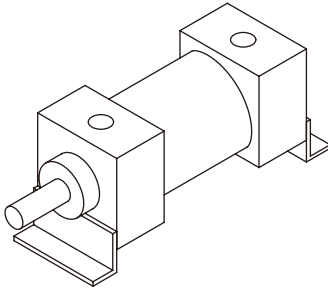
Code	Content
XK1	Rotate mounting bracket 90° clockwise
XK2	Rotate mounting bracket 180° clockwise
XK3	Rotate mounting bracket 270° clockwise

*1: For flanges and trunnions, only XK1 (90° rotation) is applicable.

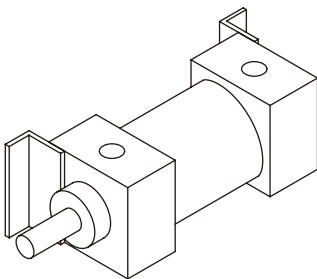
External dimension diagram

*Port and cushion needle positions do not change.

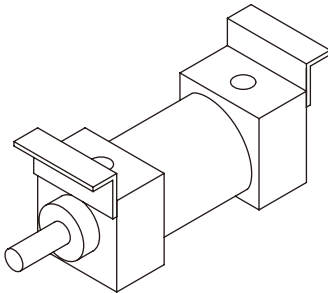
● Basic



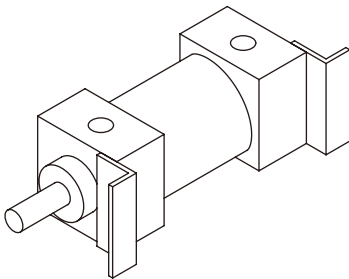
● K1



● K2



● K3



■ Trunnion position specification (-XAQ□□)

Content: Specify the dimension from the rod cover end face to the center of the trunnion axis.

Model No. Notation Method



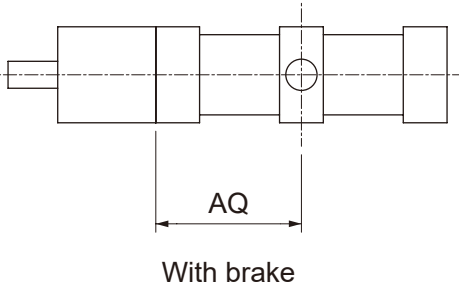
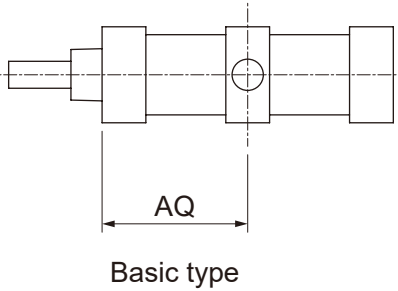
Model No.

Custom-made dimension

Please see the SCA2 model No. notation method. Refer to the external dimensions list.

Note: For two-stage type and back-to-back type, please consult us separately.

Outline Dimension Drawing



■ Knuckle Pin/Clevis Pin Split Pin (-XP5)

Content: The retaining rings for knuckle pins and clevis pins will be split pins.

Model No. Notation Method

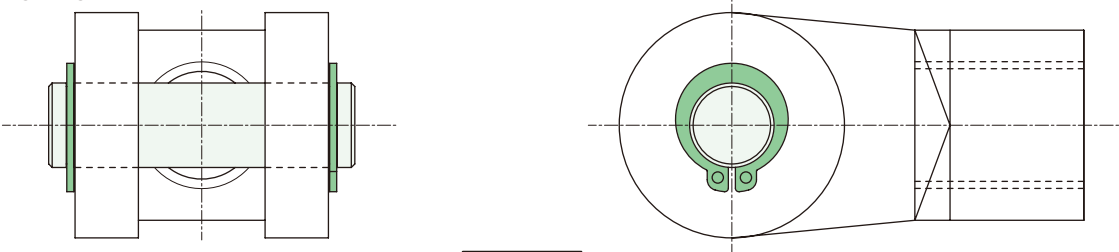


Model No.

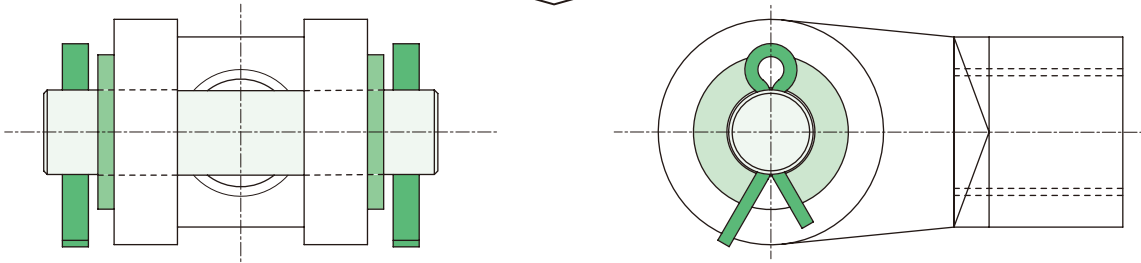
Please see the SCA2 model No. notation method.

Outline Dimension Drawing

●Retaining ring



●Split pin



Pin Diameter	Split Pin Size
12	ø4 × 20
14	ø4 × 20
20	ø4 × 25
25	ø4 × 30
28	ø5 × 35
32	ø5 × 40
40	ø5 × 50
50	ø5 × 60

Knuckle Fixed by Pinning (-XP7)

Content: Also, drive a spring pin into the knuckle to prevent loosening.

Model No. Notation Method

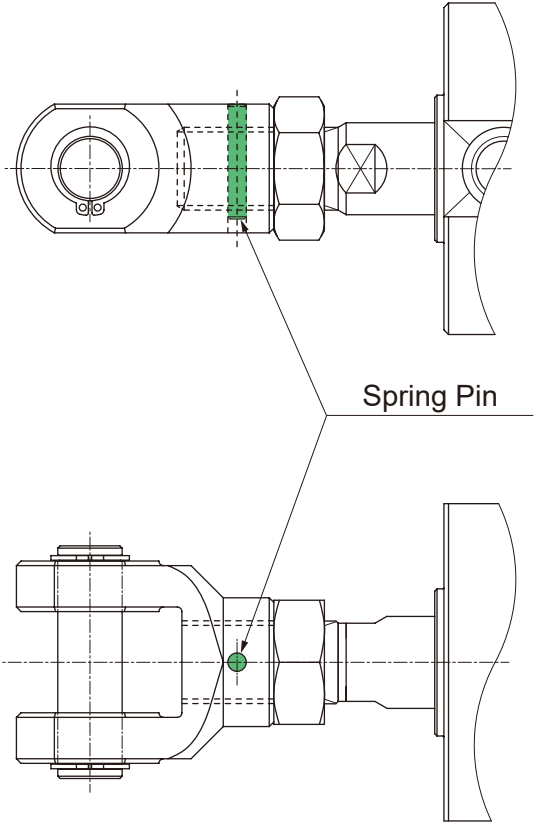
SCA2 - TC - 40 B - 100 - Y - XP7

Model No.

Please see the SCA2 model No. notation method.

Outline Dimension Drawing

Same as with Knuckle specification.
(Spring pin driving direction varies depending on the model.)



Knuckle Pin/Clevis Pin Split Pin Specification, Knuckle Fixed by Pinning (-XP8)

Content: The retaining rings for knuckle pins and clevis pins will be split pins. Also, drive a spring pin into the knuckle to prevent loosening. (XP5 + XP7)

Model No. Notation Method

SCA2 - 00 - 40 B - 100 - Y - XP8

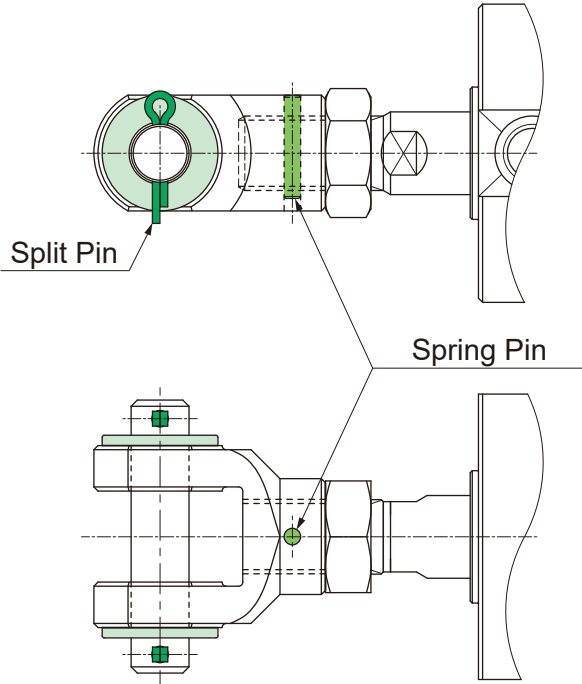
Model No.

Please see the SCA2 model No. notation method.

Outline Dimension Drawing

Mounting dimensions are the same as with Knuckle specification.

It is a combination of XP5 (P. 857) and XP7 (P. 858).



■ Tie rod material SUS (-XM1)

Content: Change the tie rod material to stainless steel. (Washers and nuts are not changed)

Model No. Notation Method

SCA2-00-40B-100-XM1

Model No.

Please see the SCA2 model No. notation method.

Outline Dimension Drawing

Same as standard type.

■ Without Bellows (-XJ9)

Content: Piston rod with dimensions for bellows, but bellows not assembled

Model No. Notation Method

SCA2-00-40B-100-XJ9

Model No.

Please see the SCA2 model No. notation method.

Outline Dimension Drawing

Same dimensions as with bellows, but bellows are not included.

■ Scraper/Rod packing only Fluororubber (-XT9)

Content: Change only the rod side packing (rod packing, scraper) to FKM.

Model No. Notation Method

SCA2-00-40B-100-XT9

Model No.

Please see the SCA2 model No. notation method.

Outline Dimension Drawing

Same as standard type.

■ Fluorine Packing Type (-T2)

Content: Change the rod packing, piston packing and O-rings to FKM. (Cushion packing is not changed)

Model No. Notation Method

SCA2-T2-00-40B-100

Model No.

Please see the SCA2 model No. notation method.

Outline Dimension Drawing

Same as standard type.

■ With 2 Rod Nuts (-A2)

Content: Shipped with 2 rod nuts, same as standard.

Model No. Notation Method

SCA2-00-40B-100-A2

Model No.

Please see the SCA2 model No. notation method.

Outline Dimension Drawing

Same as standard type except that 2 rod nuts are included.



To Use This Product Safely

Be sure to read this before use.

For general cylinder information, see Intro 41, and for cylinder switches, see P. 1026.

Individual Precautions: Medium Bore Size Cylinder SCA2 Series

During Design / Selection

1. Common

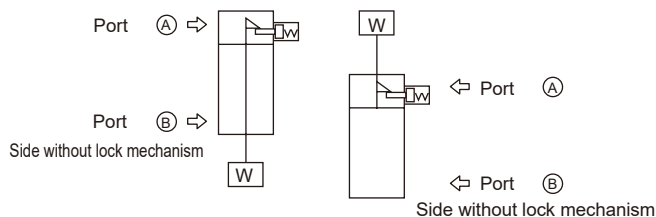
Caution

- Install a speed controller on the cylinder.
Install a speed controller on the cylinder. Please use within the operating piston speed range of each series.

2. Drop prevention type SCA2-Q2

Warning

- In a locked state, if pressure is supplied to port A from a state where both ports are unpressurized, the lock may not release, or the lock may suddenly release and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port B and release it from a state where no load is applied to the lock mechanism.



- When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

- Do not use 3-position valves.
Do not use in combination with 3-position valves (especially closed-center metal seal type). If pressure is sealed in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

Caution

- Keep the cylinder load factor at 50% or less.
If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.
- If back pressure is applied to the lock mechanism side, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

- Do not use multiple cylinders synchronized.

Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

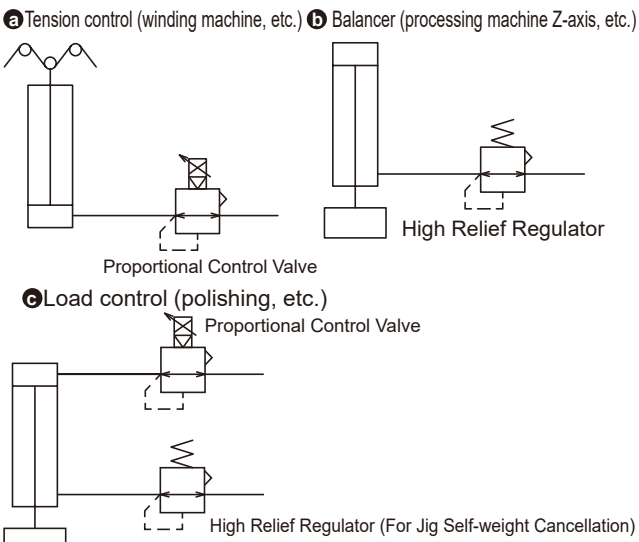
3. Low-friction type SCA2-U

Warning

- Durability varies depending on usage conditions and model characteristics.
This cylinder is a cylinder with internal leakage.
For leakage volume, check the specifications (P. 714).

Caution

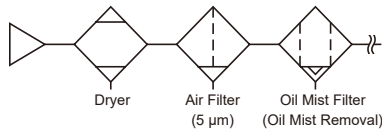
- When used with a balancer, etc., it may be better not to install a speed controller to improve supply/exhaust efficiency. The following circuits ① to ③ are recommended depending on the application.



*To improve supply/exhaust characteristics, maximize piping volume as much as possible.

- Do not lubricate. It will cause characteristics to fluctuate.

- Poor quality air will adversely affect characteristics and durability, so please use clean air with the piping below.



- Install the speed controller near the cylinder.
If installed far from the cylinder, the speed will become unstable.
- Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
Use with a load factor of 50% or less.

4. Low hydraulic pressure type SCA2-H

Caution

- This product can use hydraulic operating oil as the operating fluid.
It is a pneumatic cylinder.
It does not comply with JIS standards for hydraulic cylinders regarding operation and leakage tests.
- Select the low hydraulic pressure cylinder in combination with a converter unit.
Good operation can be obtained with the low hydraulic pressure cylinder in combination with a converter unit, so please select and use an appropriate converter unit.
- Keep the load on the low hydraulic pressure cylinder at 50% or less of the theoretical output.
In order for a low hydraulic pressure cylinder to obtain performance close to that of a hydraulic cylinder, such as constant speed operation and stopping accuracy, it is necessary to keep the load at 50% or less.

- For hydraulic oil, use petroleum-based hydraulic turbine oil. Using non-flammable hydraulic fluid may cause trouble.
The appropriate viscosity is up to about 40 to 100 mm²/S at the operating temperature. With ISO VG32, the temperature range is 15 to 35°C. If used in a range exceeding ISO VG32, please use ISO VG46 (25 to 45°C).

ISO VG32 turbine oil
(Example) [Additive-free]

Output: Turbine Oil P32
Nippon Oil Corporation: Turbine Oil 32
Maruzen: Turbine Oil 32
Mitsubishi: Mitsubishi Turbine Oil 32
[With additives]
Output: Daphne Turbine Oil 32
Nippon Oil Corporation: FBK Turbine 32
Maruzen: Turbine Super 32
Mitsubishi: Diamond Turbine Oil 32

5. Cutting oil resistant type SCA2-G2/G3

Caution

- Do not apply an eccentric load to the piston rod.
This may reduce the life of scrapers and bearings.
- Please note that if there is no scattering of cutting oil or water with G2 and G3 series, the lubrication of the piston rod will be cut off and the service life will be reduced. In such cases, please use the G or G1 series.

6. Spatter adhesion prevention type SCA2-G4

Warning

- This cylinder series has improved durability in a spatter scattering atmosphere compared to general-purpose cylinders. However, please note that durability may be inferior to general type cylinders when used in other atmospheres.

During Use

1. Common

⚠ Caution

■ Assemble the included mounting brackets with the following torque.

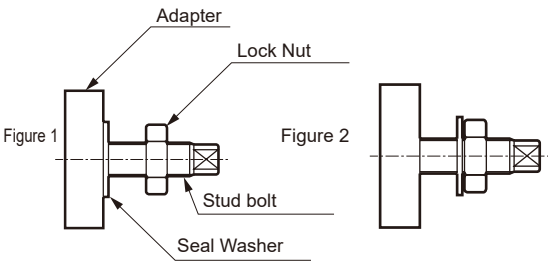
Bore Size	Tightening torque
ø40, ø50, ø63	9.8 N·m
ø80, ø100	34.8 N·m

2. Stroke adjustment type SCA2-R

⚠ Caution

■ Securely lock the stud bolt with a lock nut.

■ When adjusting the stroke, please do so after releasing the air. Do not tighten the stud bolt in the state shown in Figure 1. When tightening the stud bolt, please do so in the state shown in Figure 2. Do not tighten the lock nut in the state shown in Figure 2. When tightening the lock nut, please do so in the state shown in Figure 1. If the above adjustment method is not followed, the seal washer will break after 1 or 2 uses.



■ The stud bolt seal uses a seal washer, so it cannot withstand frequent adjustments.

■ If stroke adjustment is performed, the cushion will no longer be effective.

3. Heat resistant type SCA2-T

⚠ Caution

■ Magnets are not incorporated.

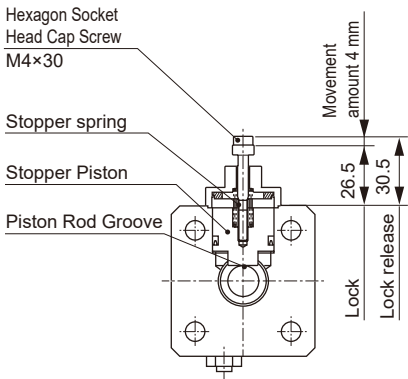
4. Drop prevention type SCA2-Q2

⚠ Caution

■ Since the lock mechanism works at the stroke end, if an external stopper is applied mid-stroke, the lock mechanism will not work, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

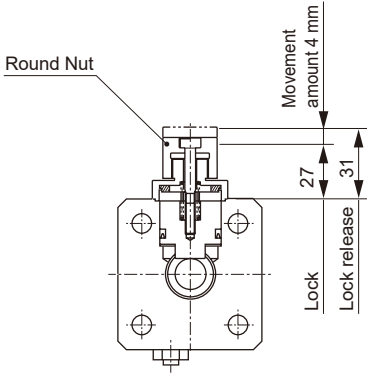
■ If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful.

■ Manual operation non-locking type release method
Screw the hexagon socket head cap bolt into the stopper piston, and if you pull the bolt with a force of 20N or more for 4 mm, the stopper piston will move and the lock will be released. (When mounted horizontally with no load or when the opposite port is pressurized) Also, when you release your hand, the built-in spring returns the stopper piston to its original position, and if it enters the piston rod groove, the piston will be locked.



■ Manual operation locking type release method

Turning the round nut to the left (counterclockwise) moves the stopper piston and releases the lock. Also, if you turn it to the right (clockwise) to the lock position, the stopper piston will return, and if it enters the piston rod groove, the piston will be locked.



5. Low-friction type SCA2-U

⚠ Caution

■ Do not apply lateral load to the cylinder. Also, install the sliding guide so that it does not get twisted.

- Operation will become unstable if there are fluctuations in load or resistance.
- In the case of a long stroke, the speed becomes unstable due to the self-weight of the piston rod. Please install and use a guide.
- Guides with a large difference between static friction and dynamic friction will result in unstable operation.

■ Avoid use in places with vibration.

- Operation becomes unstable due to the influence of vibration.

■ Avoid use in steam, humid environments, or alkaline atmospheres.

6. Low hydraulic pressure type SCA2-H

⚠ Caution

■ Do not use one-touch fittings for piping of low hydraulic pressure cylinders.

Using one-touch fittings for piping of low hydraulic pressure cylinders will cause oil leakage, so do not use them.

■ For piping of low hydraulic pressure cylinders, please use steel pipes or copper pipes, etc.

For piping of low hydraulic pressure cylinders, as with hydraulic circuits, surge pressure higher than the operating pressure may occur, so please use safer piping materials.

■ Avoid use with air on one side and hydraulic pressure on the other.

Air may mix with oil and cause malfunction.

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