

SCS2

Large Bore Size Cylinder

ø125, ø140, ø160,
ø180, ø200, ø250



General Type

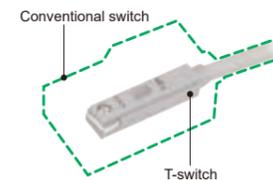
Overview

This is a series of large bore (ø125 to ø250) general-purpose cylinders. It features a wide range of variations and high rigidity. A cylinder with further enhanced reliability.

Features

Significant Weight Reduction!
The use of aluminum for the covers and tube has reduced the product weight by half.

Compact Switches Equipped
Equipped with T-type switches that are more compact than conventional types. This eliminates switch protrusion during installation and contributes to space saving.



Magnet equipped as standard
[SCS2-LN, LH]

Switches can now also be mounted on the ø250 bore size. Additional switches can be mounted on all models (LN, LH).
Ports and Needles on the Same Surface
The supply/exhaust ports and the cushion needles are located on the same surface. This simplifies cylinder mounting and adjustment.



Mounting Dimensional Compatibility [Excluding LH]

There is mounting dimensional compatibility with the conventional product (SCS), providing peace of mind during maintenance.

*The piping port positions have been changed.

Standardized Aluminum Color
The surface color has been standardized to silver (aluminum color, paintless), which easily matches various types of equipment.

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Combination of Mounting Brackets and Accessories

Variation / Option combinability table

General Type

SCP□3

CMK2

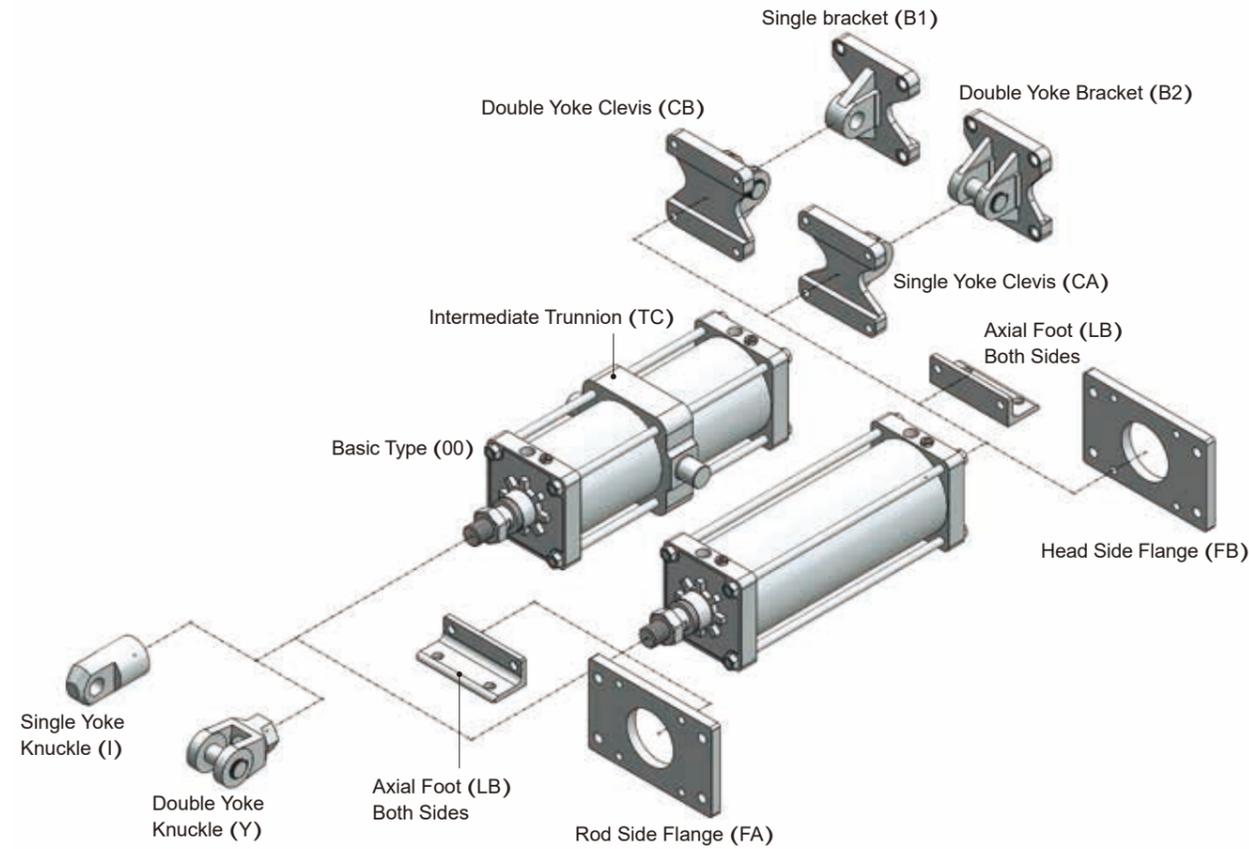
CMA2

SCM

SCG

SCA2

SCS2



Combination Availability Table for Variations and Option Items

- Mark: Standard
- Mark: Option
- Mark: Custom Products
- △ Mark: Manufacturable depending on conditions (Please consult)
- × Mark: Not manufacturable

- *1: Heat resistant type T cannot be lubricated (for non-lube only).
- △1: Support is possible if only on the S2 side.
- △2: Support is possible if the operating temperature is 100°C or less.

Category	Code	Variation										Piping thread		Option						
		None	N	LN	D	B	W	P	H	T	G	N	G	C2	J	L	M	R,S,T		
Variation	Double-acting type, Lubricated type	Blank																		
	Double-acting type, Non-lube type	N									×	*								
	Double-acting type, With switch	LN																		
	Double Acting Double Rod Type	D																		
	Back-to-Back Type	B																		
	Two-stage stroke type	W																		
	Stroke adjustment Push type	P																		
	Low Hydraulic Pressure Type	H																		
	Heat resistant type (120°C)	T																		
	Heavy-Duty Scraper Type	G																		
Piping thread	NPT	N																		
	G	G																		
Option	With check valve in cushion part	C2																		
	With bellows, Neoprene	J																		
	With Bellows, Silicone Rubber	L																		
	Piston Rod Material (Stainless Steel)	M																		
	Cushion needle position specification	R,S,T																		
Accessories	Cylinder Switch	Separately Shown	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Single Knuckle	I	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Double Knuckle	Y	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Single Bracket	B1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Double Yoke Bracket	B2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

General Type

SCP□3

CMK2

CMA2

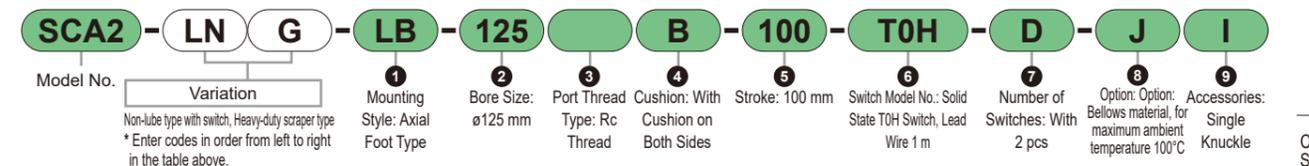
SCM

SCG

SCA2

SCS2

[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 code before the S1 stroke. (Example) SCS2-B-125-H50-75: Only S1 is low hydraulic pressure type.
 - If only S2 has a variation, enter the variation code before the S2 stroke. (Example) SCS2-B-125-50-H75: Only S2 is low hydraulic pressure type.
 - If S1 and S2 have the same variation, enter the variation code before the Bore Size (Example) SCS2-BH-125-50-75: Both S1 and S2 are low hydraulic pressure type.



Large Bore Size Cylinder
Double-acting, Single rod, Lubricated type, Non-lube type

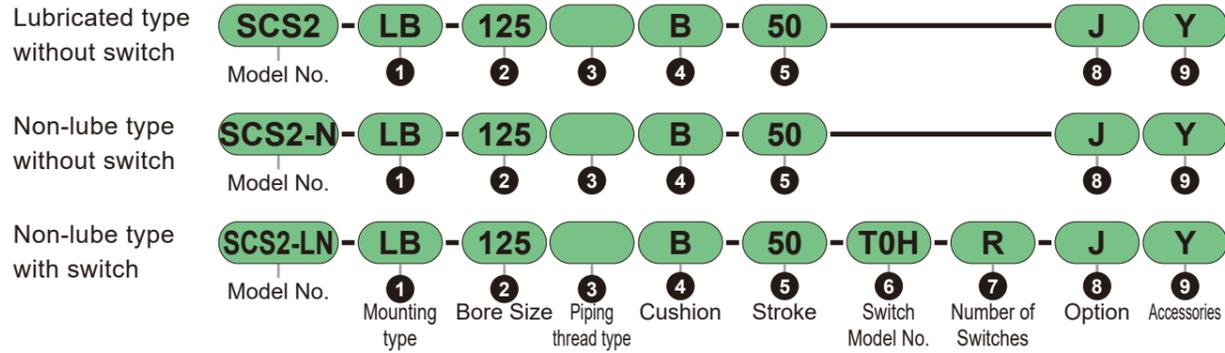
SCS2 Series

● Bore Size: ϕ 125, ϕ 140, ϕ 160, ϕ 180, ϕ 200, ϕ 250

Circuit Diagram Symbol



Model No. Notation Method



1 Mounting type Brackets are attached and shipped.

Code	Content
00	Basic type
LB	Axial Foot Type (Double Side)
FA	Rod Side Flange Type
FB	Head Side Flange Type
CA	Single Clevis Type
CB	Double Clevis Type (Pin and Washer Split Pin Attached)
TC	Intermediate Trunnion Type
TA	Rod Side Trunnion Type
TB	Head Side Trunnion Type

Note: Tapped trunnion is supported as a custom product only for ϕ 125 to ϕ 160. Please consult us each time regarding external dimensions, etc.

2 Bore Size (mm)

Code	Contents
125	ϕ 125
140	ϕ 140
160	ϕ 160
180	ϕ 180
200	ϕ 200
250	ϕ 250

4 Cushion

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

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
ϕ 125 to ϕ 160	1 to 800	Every 1 mm
ϕ 180	1 to 900	
ϕ 200	1 to 1000	
ϕ 250	1 to 1200	

Note: For minimum stroke with switch, refer to P. 875.

6 Switch Model No. For switch details, please refer to P. 971. Switches are assembled into the product before shipment. Also, T2WL switches are attached 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)	—	30 or less	—	100 or less	T3H□	T3V□
			—	—	—	—	T3PH□	T3PV□
		3-wire (PNP)	—	—	—	—	T2WH□	T2WV□
			—	—	—	—	T3WH□	T3WV□
	2-Color	2-wire	—	24 \pm 10%	—	5 to 20	T2WLH□	T2WLV□
			—	—	—	—	T2YD□	—
			—	—	—	—	T2YDT□	—
		3-wire (NPN)	—	30 or less	—	50 or less	T2JH□	T2JV□
			—	—	—	—	T2HR3	T2VR3
			—	—	—	—	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□
		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	
	1-Color	2-wire	—	—	—	—	—	—
			—	—	—	—	—	—
			—	—	—	—	—	—

*1: For □ in the switch model number, 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.

*4: Switches other than the model numbers 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 T0H³
5 m T0H⁵

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
4	With 4 pieces

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

9 Accessories

Code	Content
I	Single Knuckle
Y	Double Knuckle (Pin and retaining ring included)
B1	Single Bracket
B2	Double Yoke Bracket (Pin and retaining ring included)

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

8 Option

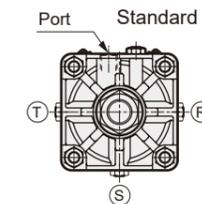
Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature
C2	With check valve in cushion part		
J	Bellows	100°C	200°C
L		250°C	400°C
M	Piston rod, Rod nut material (Stainless steel)		
Blank	Cushion needle position Standard		
R	Cushion needle position R		
S	Cushion needle position S		
T	Cushion needle position T		

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

*2: Please check the cushion needle position in the diagram below.

About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



*For combinations of variations and options, see P. 871.

Specifications of custom products Details Please refer to P. 958 to 967.

Code	Contents	Code	Contents	Code	Contents
-XR□□□□	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluororubber
-XF	Port 1 size down	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XK□	Mounting Bracket Rotational Assembly	-XMX□	Tie rod extension	-A2	With 2 Rod Nuts
-XAQ□□	Trunnion Position Specification	-XM1	Tie rod material SUS	Rod End Shape Modification	Refer to Ending P. 11.
-XP5	Knuckle Pin/Clevis Pin Split Pin	-XJ9	Without Bellows		

Model No. Example) **SCS2-.....-XP5**

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

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

SCS2-.....-FP1

Outdoor series (Catalog No. CC-1276AA)

● Outdoor equipment products that support outdoor facilities in harsh environments

SCS2-.....-W

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

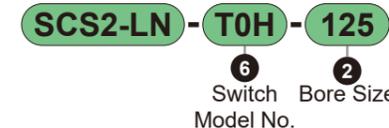
● Design compatible with rechargeable battery manufacturing process

SCS2-.....-P4*

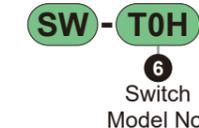
*Please contact us for details.

Switch part single item model No. notation method

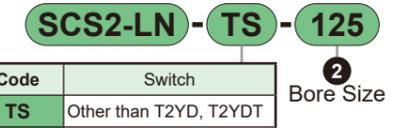
● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

Item		SCS2, SCS2-N, SCS2-LN					
Bore Size	mm	ø125	ø140	ø160	ø180	ø200	ø250
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 60 (However, no freezing)					
Port Size		Rc 1/2			Rc 3/4		Rc1
Stroke tolerance	mm	$^{+1.0}_0$ (Up to 300), $^{+1.4}_0$ (Up to 1000), $^{+1.8}_0$ (Up to 1200)					
Operating Piston Speed	mm/s	20 to 1000 (Please use within the absorbed energy.)					
Cushion		Air Cushion					
Effective air cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (When lubricating, use turbine oil Class 1 ISO VG32), Not required for SCS2-N/LN					
Allowable absorbed energy J	With Cushion	63.5	91.5	116	152	233	362
	Without Cushion	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)	Producibile stroke (mm)	Min. Stroke (mm)	Trunnion type minimum stroke (mm)
ø125	50, 75, 100, 150, 200, 250, 300	800	2,000	1	23
ø140					25
ø160					27
ø180					28
ø200					28
ø250		1,200			28

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

Stroke subject to Type 2 pressure vessel inspection

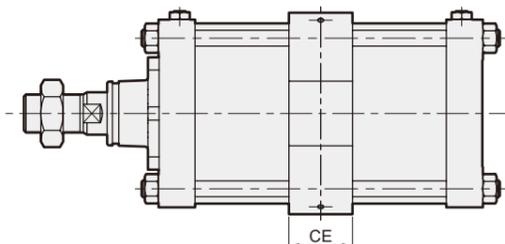
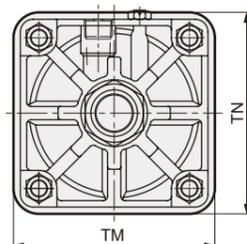
Bore Size	Stroke
ø160	1948 or more
ø180	1526 or more
ø200	946 or more
ø250	752 or more

Intermediate support head

In the case of the strokes in the table below, an intermediate support head is added to the center of the cylinder.

Intermediate support head additional stroke

Bore Size (mm)	Stroke
ø125	1801 to 2000
ø140	



Code	TM	TN	CE
Bore Size (mm)			
ø125	150	150	50
ø140	190	170	55

Min. Stroke with Switch

Item	Stroke when mounting on the same surface	Stroke of intermediate (tapped) trunnion type	Stroke of rod side (tapped) trunnion type	Stroke of head side (tapped) trunnion type
Switch type	Diagram			
	Bore		Position detection at the rod side stroke end is not possible.	
Reed switch (T◇)	ø125	20 or more	120 or more	70 or more
	ø140		125 or more	75 or more
	ø160		130 or more	80 or more
	ø180		135 or more	85 or more
	ø200		140 or more	90 or more
	ø250		150 or more	100 or more

Cylinder Weight

(Unit: kg)

Item/Mounting Style	Product Weight at Stroke (S) = 0 mm						Switch Weight		S=100 mm Per Added Weight
	Basic type (00)	Axial Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)	Switch	Mounting bracket	
ø125	7.22	8.72	10.52	10.22	10.32	10.62	Refer to the weight listed in the switch specifications on p. 971.	0.028	1.54
ø140	9.35	11.35	14.75	13.15	13.35	12.55		0.030	1.78
ø160	12.35	15.45	19.25	17.35	17.65	18.75		0.034	2.22
ø180	16.75	21.25	28.75	24.15	24.65	24.85		0.038	2.96
ø200	22.78	28.48	36.48	32.28	32.48	34.58		0.040	3.54
ø250	40.51	48.91	66.41	64.51	59.01	69.21		0.045	5.38

(Example) Product Weight of SCS2-LN-LB-125B-300-T0H-D

- Product Weight at S=0 mm 8.72 kg
- S=300 mm added weight $1.54 \times \frac{300}{100} = 4.62$ kg
- Weight of 2 switches (T0H-D) ... $0.018 \times 2 = 0.036$ kg
- Product Weight of 2 switch brackets $0.028 \times 2 = 0.056$ kg
- Product Weight $8.72 + 4.62 + 0.036 + 0.056 = 13.432$ kg

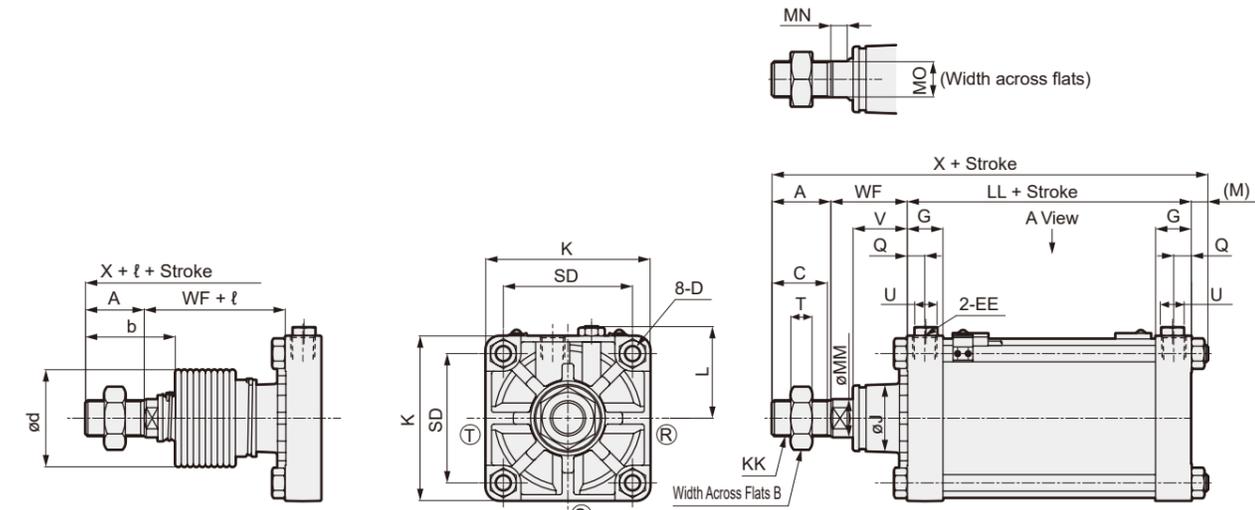
Theoretical Thrust Table

(Unit: N)

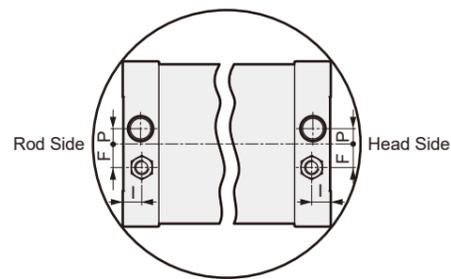
Bore Size (mm)	Operating Direction	Operating Pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø125	Push	6.14×10^2	1.23×10^3	1.84×10^3	2.45×10^3	3.68×10^3	4.91×10^3	6.14×10^3	7.36×10^3	8.59×10^3	9.82×10^3	1.10×10^4	1.23×10^4
	Pull	5.73×10^2	1.15×10^3	1.72×10^3	2.29×10^3	3.44×10^3	4.59×10^3	5.73×10^3	6.88×10^3	8.03×10^3	9.17×10^3	1.03×10^4	1.15×10^4
ø140	Push	7.70×10^2	1.54×10^3	2.31×10^3	3.08×10^3	4.62×10^3	6.16×10^3	7.70×10^3	9.24×10^3	1.08×10^4	1.23×10^4	1.39×10^4	1.54×10^4
	Pull	7.29×10^2	1.46×10^3	2.19×10^3	2.92×10^3	4.38×10^3	5.84×10^3	7.29×10^3	8.75×10^3	1.02×10^4	1.17×10^4	1.31×10^4	1.46×10^4
ø160	Push	1.01×10^3	2.01×10^3	3.02×10^3	4.02×10^3	6.03×10^3	8.04×10^3	1.01×10^4	1.21×10^4	1.41×10^4	1.61×10^4	1.81×10^4	2.01×10^4
	Pull	9.42×10^2	1.88×10^3	2.83×10^3	3.77×10^3	5.65×10^3	7.54×10^3	9.42×10^3	1.13×10^4	1.32×10^4	1.51×10^4	1.70×10^4	1.88×10^4
ø180	Push	1.27×10^3	2.54×10^3	3.82×10^3	5.09×10^3	7.63×10^3	1.02×10^4	1.27×10^4	1.53×10^4	1.78×10^4	2.04×10^4	2.29×10^4	2.54×10^4
	Pull	1.19×10^3	2.39×10^3	3.58×10^3	4.77×10^3	7.16×10^3	9.54×10^3	1.19×10^4	1.43×10^4	1.67×10^4	1.91×10^4	2.15×10^4	2.39×10^4
ø200	Push	1.57×10^3	3.14×10^3	4.71×10^3	6.28×10^3	9.42×10^3	1.26×10^4	1.57×10^4	1.88×10^4	2.20×10^4	2.51×10^4	2.83×10^4	3.14×10^4
	Pull	1.47×10^3	2.95×10^3	4.42×10^3	5.89×10^3	8.84×10^3	1.18×10^4	1.47×10^4	1.77×10^4	2.06×10^4	2.36×10^4	2.65×10^4	2.95×10^4
ø250	Push	2.45×10^3	4.91×10^3	7.36×10^3	9.82×10^3	1.47×10^4	1.96×10^4	2.45×10^4	2.95×10^4	3.44×10^4	3.93×10^4	4.42×10^4	4.91×10^4
	Pull	2.31×10^3	4.63×10^3	6.94×10^3	9.25×10^3	1.39×10^4	1.85×10^4	2.31×10^4	2.78×10^4	3.24×10^4	3.70×10^4	4.16×10^4	4.63×10^4

Outline Dimension Drawing

● Basic type (00)



[With Bellows]



Port position diagram (A View)

Code	Basic Type (00) Basic Dimensions													
Bore Size (mm)	A	B	C	D	EE	F	G	I	J	K	KK	L	LL	M
ø125	50	46	47	M14 × 1.5	Rc1/2	20	30.5	16	57	140	M30 × 1.5	78 to 82	92	13.5
ø140	50	46	47	M14 × 1.5	Rc3/4	20	34.5	20	57	157	M30 × 1.5	86.5 to 91	103	13.5
ø160	56	55	53	M16 × 1.5	Rc3/4	24	34.5	20	62	177	M36 × 1.5	96.5 to 101	106	15.5
ø180	63	60	60	M18 × 1.5	Rc3/4	24	34.5	20	68	200	M40 × 1.5	108 to 112	110	17.5
ø200	72	70	69	M20 × 1.5	Rc3/4	24	37.5	20.5	75	220	M45 × 1.5	120.5 to 129	123	18.5
ø250	88	85	84	M24 × 1.5	Rc1	24	42.5	25.5	93	274	M56 × 2	147.5 to 156	141	21.5

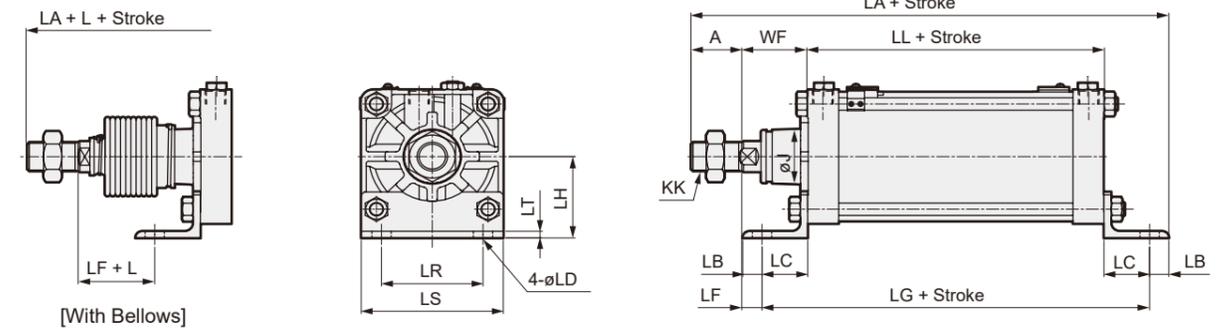
Code	With Bellows													
Bore Size (mm)	MM	MN	MO	P	Q	SD	T	U	V	WF	X	b	d	ℓ
ø125	32	15	27	13	15	110	18	19	45.5	65	220.5	74	75	(Stroke/4.55) + 11
ø140	32	15	27	15	17	124	18	19	45.5	67	233.5	74	75	(Stroke/4.55) + 9
ø160	40	15	36	15	17	142	21	19	48	71	248.5	82	80	(Stroke/5.15) + 9
ø180	45	17	41	15	17	160	24	19	53	78	268.5	91	91	(Stroke/5.15) + 9
ø200	50	20	46	20	18	175	27	24	60	88	301.5	102	95	(Stroke/5.30) + 9
ø250	60	22	55	22	21	216	34	24	64	94	344.5	120	120	(Stroke/6.40) + 9

*1: (R/S/T) indicate the position of the cushion needle.
 *2: The ℓ dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Double-acting, Single rod, Lubricated type, Non-lube type

Outline Dimension Drawing

● Axial foot type (LB)

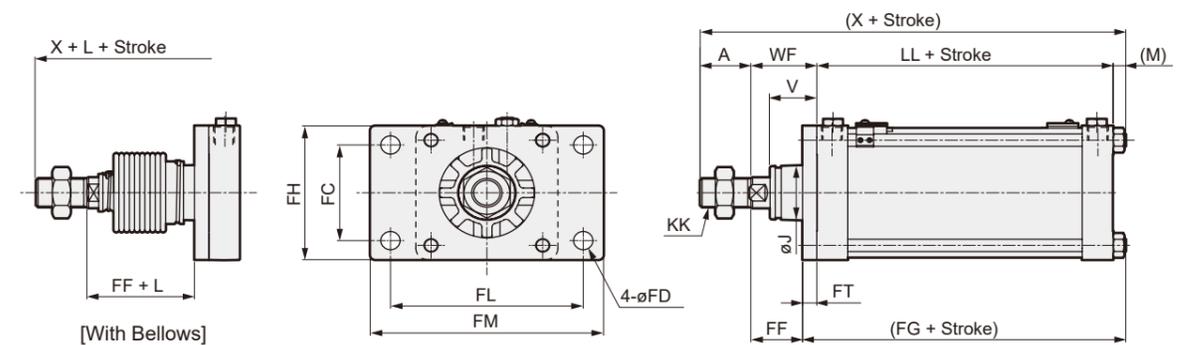


[With Bellows]

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
ø125	50	M30 × 1.5	92	65	271	19	45	19	20	182	85	100	140	7	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	290	20	50	19	17	203	100	112	157	8	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	306	20	53	19	18	212	106	118	177	10	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	338	27	60	24	18	230	125	132	200	10	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	372	27	62	24	26	247	132	150	220	12	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	421	28	70	29	24	281	160	180	274	12	(Stroke/6.40) + 9

*1: (R/S/T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

● Rod Side Flange Type (FA)



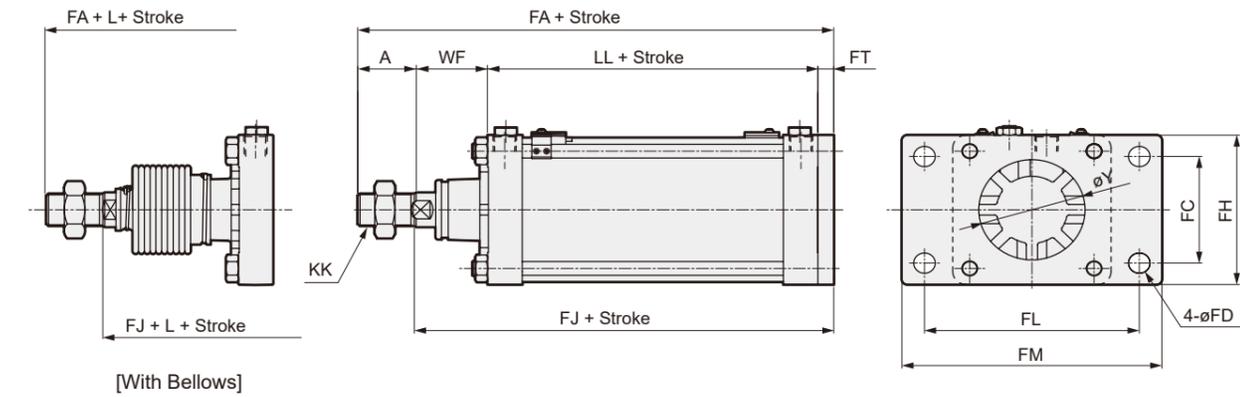
[With Bellows]

Code	Rod Side Flange Type (FA) Mounting Dimensions														With Bellows		
Bore Size (mm)	A	J	KK	LL	M	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	L
ø125	50	57	M30 × 1.5	92	11	45.5	65	218	100	19	51	117	140	190	230	14	(Stroke/4.55) + 11
ø140	50	57	M30 × 1.5	103	11	45.5	67	231	112	19	48	133	157	212	250	19	(Stroke/4.55) + 9
ø160	56	62	M36 × 1.5	106	13	48	71	246	118	19	52	138	177	236	280	19	(Stroke/5.15) + 9
ø180	63	68	M40 × 1.5	110	15	53	78	266	132	24	53	150	200	265	310	25	(Stroke/5.15) + 9
ø200	72	75	M45 × 1.5	123	16	60	88	299	150	24	63	164	220	280	330	25	(Stroke/5.30) + 9
ø250	88	93	M56 × 2	141	19	64	94	342	180	29	64	190	274	355	415	30	(Stroke/6.40) + 9

*1: (R/S/T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

●Head Side Flange Type (FB)



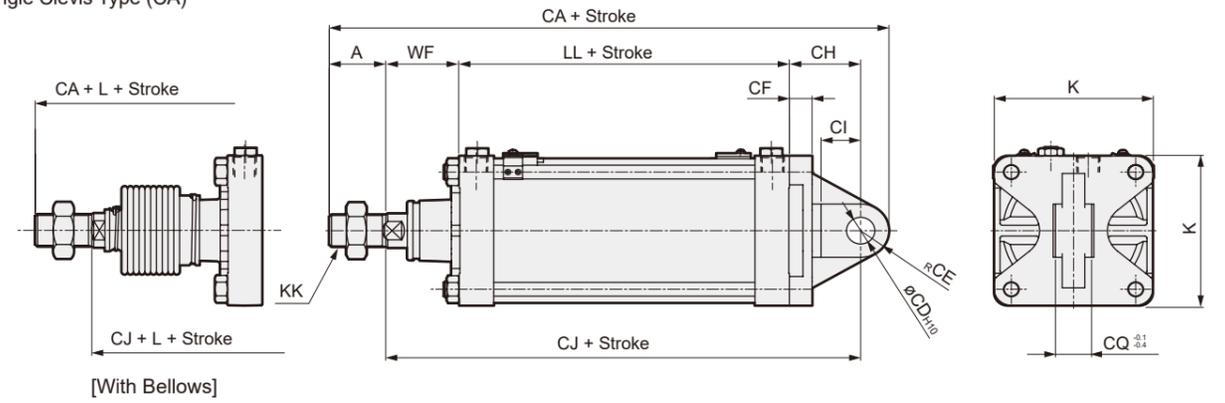
Code	Head Side Flange Type (FB) Mounting Dimensions													With Bellows	
	Bore Size (mm)	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT		Y
SCP□3	ø125	50	M30 × 1.5	92	65	221	100	19	140	171	190	230	14	94	(Stroke/4.55) + 11
CMK2	ø140	50	M30 × 1.5	103	67	239	112	19	157	189	212	250	19	94	(Stroke/4.55) + 9
CMA2	ø160	56	M36 × 1.5	106	71	252	118	19	177	196	236	280	19	107	(Stroke/5.15) + 9
SCM	ø180	63	M40 × 1.5	110	78	276	132	24	200	213	265	310	25	113	(Stroke/5.15) + 9
SCG	ø200	72	M45 × 1.5	123	88	308	150	24	220	236	280	330	25	131	(Stroke/5.30) + 9
SCA2	ø250	88	M56 × 2	141	94	353	180	29	274	265	355	415	30	153	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Double-acting, Single rod, Lubricated type, Non-lube type

Outline Dimension Drawing

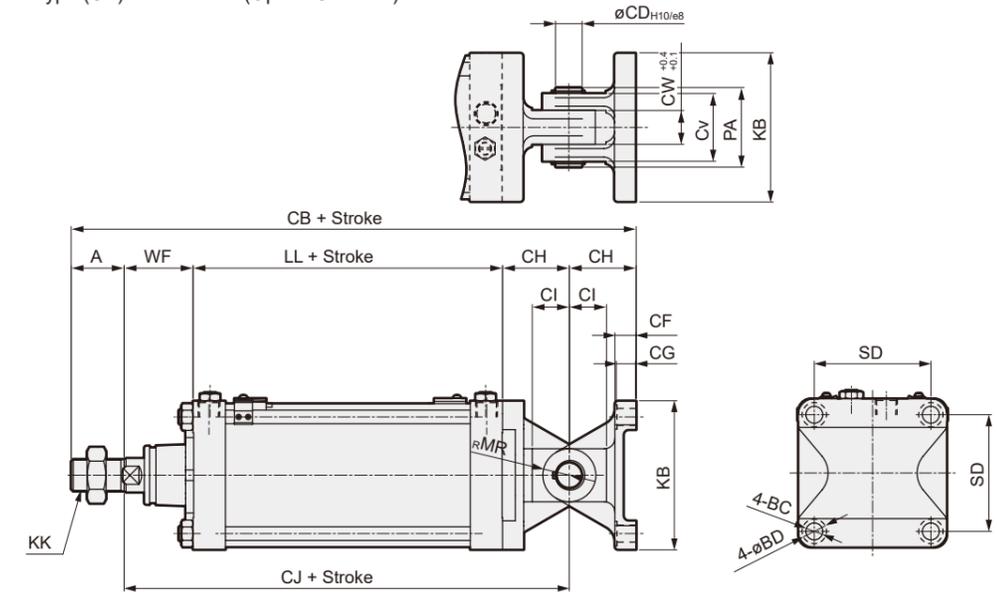
●Single Clevis Type (CA)



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
SCP□3	ø125	50	140	M30 × 1.5	92	65	295	25	25	20	63	35	220	32	(Stroke/4.55) + 11
CMK2	ø140	50	157	M30 × 1.5	103	67	323	28	28	22	75	40	245	36	(Stroke/4.55) + 9
CMA2	ø160	56	177	M36 × 1.5	106	71	340	32	32	24	75	40	252	40	(Stroke/5.15) + 9
SCM	ø180	63	200	M40 × 1.5	110	78	381	40	40	25	90	55	278	50	(Stroke/5.15) + 9
SCG	ø200	72	220	M45 × 1.5	123	88	413	40	40	30	90	55	301	50	(Stroke/5.30) + 9
SCA2	ø250	88	274	M56 × 2	141	94	483	50	50	35	110	65	345	63	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

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

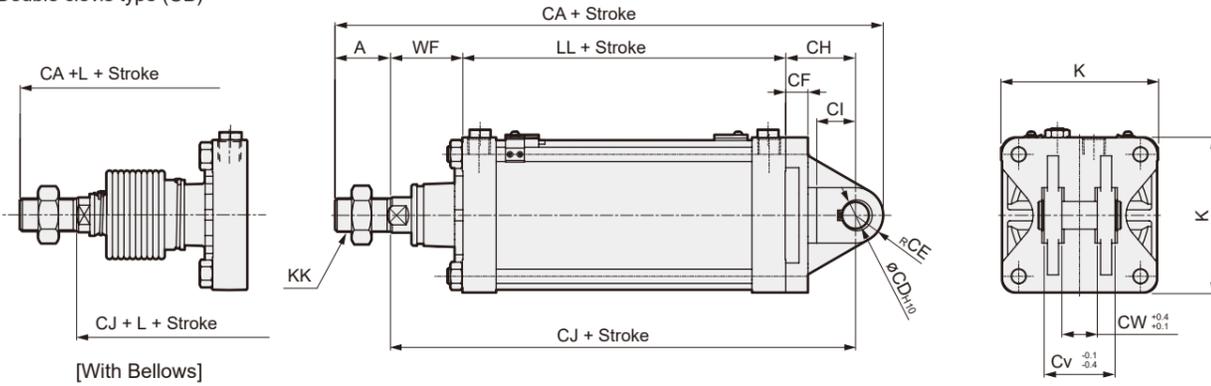


Code	Single Clevis Type (CA) With Bracket (Option Code B2) Mounting Dimensions																			
	Bore Size (mm)	A	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	Cv	CW	BC	BD	KB	MR	PA	SD
SCP□3	ø125	50	M30 × 1.5	92	65	333	25	20	18	63	35	220	64	32	16	23	140	25	75	110
CMK2	ø140	50	M30 × 1.5	103	67	370	28	22	20	75	40	245	72	36	16	23	154	28	84	124
CMA2	ø160	56	M36 × 1.5	106	71	383	32	24	22	75	40	252	80	40	18	26	174	32	92	142
SCM	ø180	63	M40 × 1.5	110	78	431	40	25	23	90	55	278	100	50	20	29	196	40	115	160
SCG	ø200	72	M45 × 1.5	123	88	463	40	30	28	90	55	301	100	50	22	32	220	40	115	175
SCA2	ø250	88	M56 × 2	141	94	543	50	35	33	110	65	345	126	63	26	39	274	50	144	216

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: Pin and retaining ring are attached.
 *4: For dimensions of models with switches, see P. 956.
 *5: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

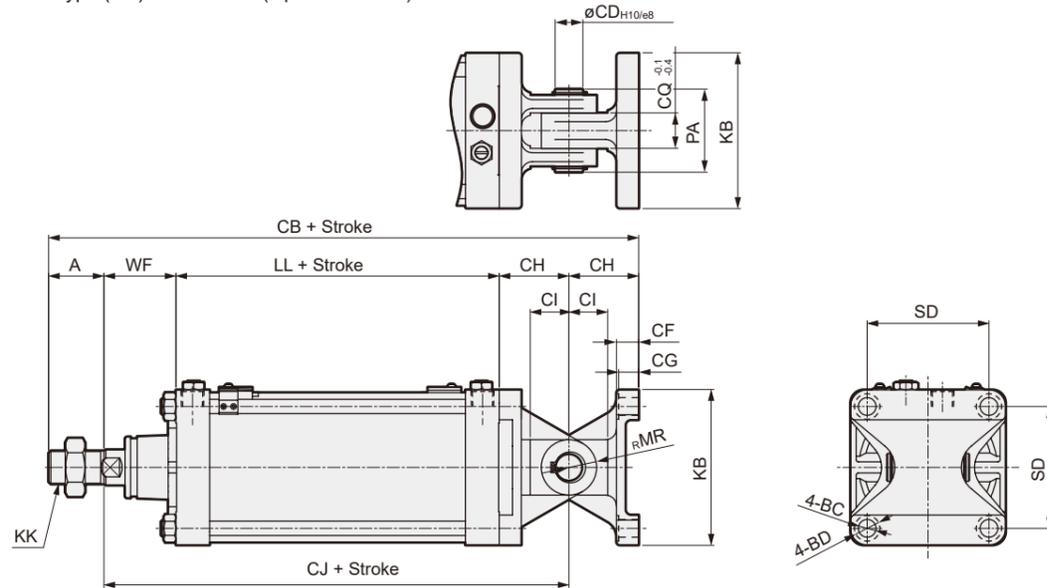
● Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions													With Bellows		
	Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	L
SCP□3	ø125	50	140	M30 × 1.5	92	65	295	25	25	20	63	35	220	64	32	(Stroke/4.55) + 11
	ø140	50	157	M30 × 1.5	103	67	323	28	28	22	75	40	245	72	36	(Stroke/4.55) + 9
CMK2	ø160	56	177	M36 × 1.5	106	71	340	32	32	24	75	40	252	80	40	(Stroke/5.15) + 9
	ø180	63	200	M40 × 1.5	110	78	381	40	40	25	90	55	278	100	50	(Stroke/5.15) + 9
CMA2	ø200	72	220	M45 × 1.5	123	88	413	40	40	30	90	55	301	100	50	(Stroke/5.30) + 9
	ø250	88	274	M56 × 2	141	94	483	50	50	35	110	65	345	126	63	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Pin and retaining ring are attached.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.

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

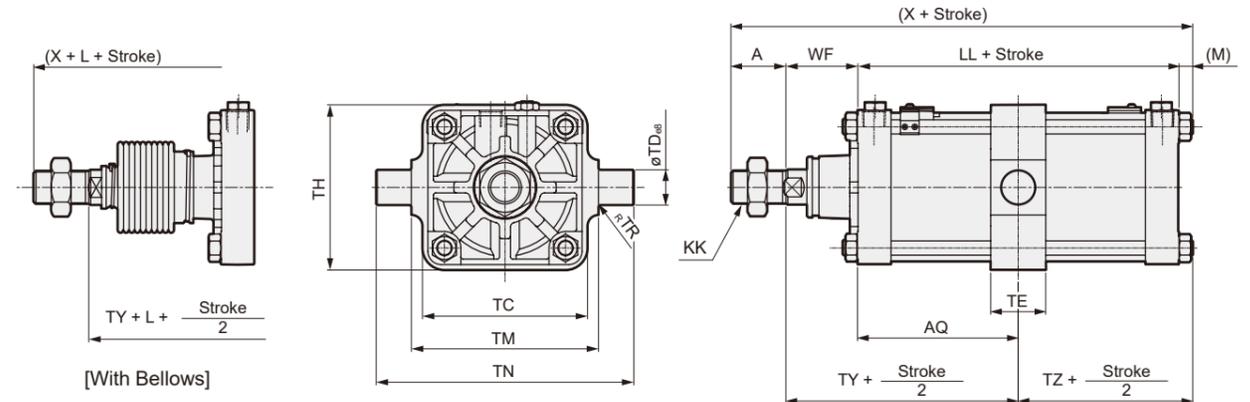


Code	Double Clevis Type (CB) With Bracket (Option Code B1) Mounting Dimensions																		
	Bore Size (mm)	A	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	CQ	BC	BD	KB	MR	PA	SD
SCP□3	ø125	50	M30 × 1.5	92	65	333	25	20	18	63	35	220	32	16	23	140	25	75	110
	ø140	50	M30 × 1.5	103	67	370	28	22	20	75	40	245	36	16	23	154	28	84	124
CMK2	ø160	56	M36 × 1.5	106	71	383	32	24	22	75	40	252	40	18	26	174	32	92	142
	ø180	63	M40 × 1.5	110	78	431	40	25	23	90	55	278	50	20	29	196	40	115	160
CMA2	ø200	72	M45 × 1.5	123	88	463	40	30	28	90	55	301	50	22	32	220	40	115	175
	ø250	88	M56 × 2	141	94	543	50	35	33	110	65	345	63	26	39	274	50	144	216

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Pin and retaining ring are attached.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

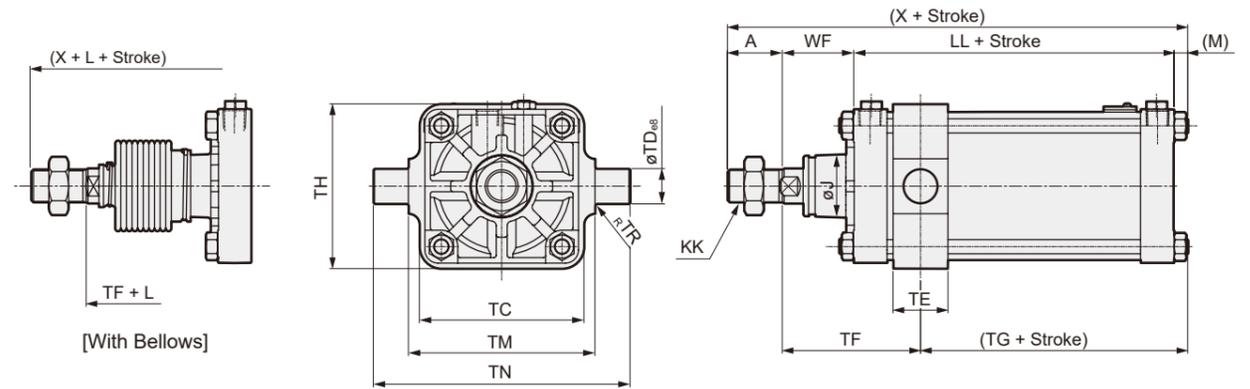
● Intermediate trunnion type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions															With Bellows		
	Bore Size (mm)	A	KK	LL	M	WF	X	AQ	TC	TD	TE	TH	TY	TZ	TM	TN	TR	L
SCP□3	ø125	50	M30 × 1.5	92	11	65	218	46 + Stroke/2	150	32	50	150	111	57	170	234	2	(Stroke/4.55) + 11
	ø140	50	M30 × 1.5	103	11	67	231	51.5 + Stroke/2	154	36	55	170	118.5	62.5	190	262	2	(Stroke/4.55) + 9
CMK2	ø160	56	M36 × 1.5	106	13	71	246	53 + Stroke/2	190	40	60	190	124	66	212	292	2	(Stroke/5.15) + 9
	ø180	63	M40 × 1.5	110	15	78	266	55 + Stroke/2	210	45	65	210	133	70	236	326	2	(Stroke/5.15) + 9
CMA2	ø200	72	M45 × 1.5	123	16	88	299	61.5 + Stroke/2	242	45	70	242	149.5	77.5	265	355	2	(Stroke/5.30) + 9
	ø250	88	M56 × 2	141	19	94	342	70.5 + Stroke/2	300	56	80	300	164.5	89.5	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: For dimensions of models with switches, see P. 956.
- *4: For outer dimensions diagram of accessories, refer to P. 883.
- *5: For the minimum producible stroke, please refer to P. 874.

● Rod side trunnion type (TA)

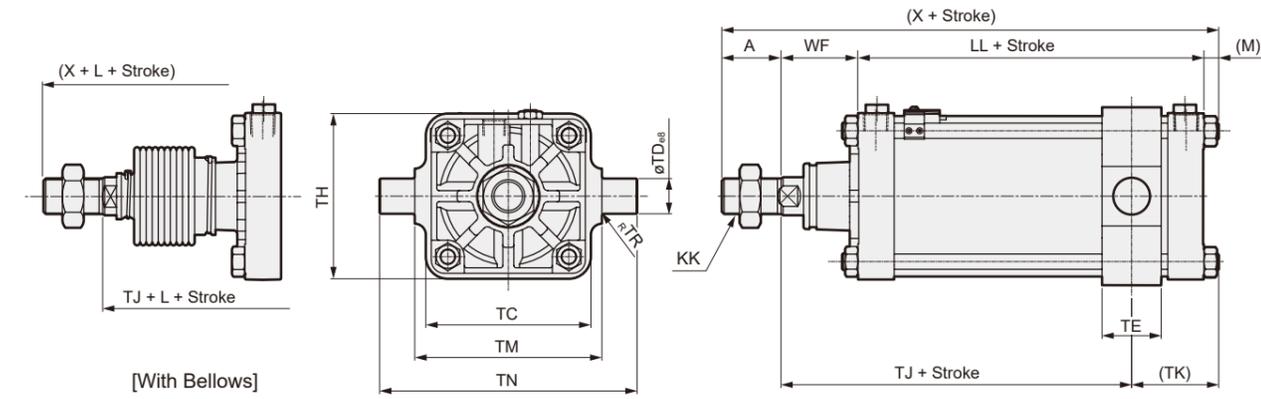


Code	Rod Side Trunnion Type (TA) Mounting Dimensions															With Bellows	
	Bore Size (mm)	A	KK	LL	M	WF	X	TC	TD	TE	TF	TG	TH	TM	TN	TR	L
SCP□3	ø125	50	M30 × 1.5	92	11	65	218	150	32	50	126	42	150	170	234	2	(Stroke/4.55) + 11
	ø140	50	M30 × 1.5	103	11	67	231	154	36	55	134.5	46.5	170	190	262	2	(Stroke/4.55) + 9
CMK2	ø160	56	M36 × 1.5	106	13	71	246	190	40	60	141	49	190	212	292	2	(Stroke/5.15) + 9
	ø180	63	M40 × 1.5	110	15	78	266	210	45	65	150.5	52.5	210	236	326	2	(Stroke/5.15) + 9
CMA2	ø200	72	M45 × 1.5	123	16	88	299	242	45	70	168	59	242	265	355	2	(Stroke/5.30) + 9
	ø250	88	M56 × 2	141	19	94	342	300	56	80	184	70	300	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 874.

Outline Dimension Drawing

●Head Side Trunnion Type (TB)



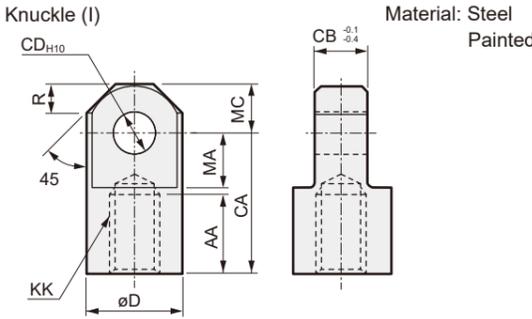
Code	Head Side Trunnion Type (TB) Mounting Dimensions															With Bellows
	Bore Size (mm)	A	KK	LL	M	WF	X	TC	TD	TE	TH	TJ	TK	TM	TN	TR
SCS2-125-I	50	M30 × 1.5	92	11	65	218	150	32	50	150	96	72	170	234	2	(Stroke/4.55) + 11
SCS2-140-I	50	M30 × 1.5	103	11	67	231	154	36	55	170	102.5	78.5	190	262	2	(Stroke/4.55) + 9
SCS2-160-I	60	M36 × 1.5	106	13	71	246	190	40	60	190	107	83	212	292	2	(Stroke/5.15) + 9
SCS2-180-I	65	M40 × 1.5	110	15	78	266	210	45	65	210	115.5	87.5	236	326	2	(Stroke/5.15) + 9
SCS2-200-I	75	M45 × 1.5	123	16	88	299	242	45	70	242	131	96	265	355	2	(Stroke/5.30) + 9
SCS2-250-I	88	M56 × 2	141	19	94	342	300	56	80	300	145	109	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the head side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 874.

Accessories Outline Dimension Drawing

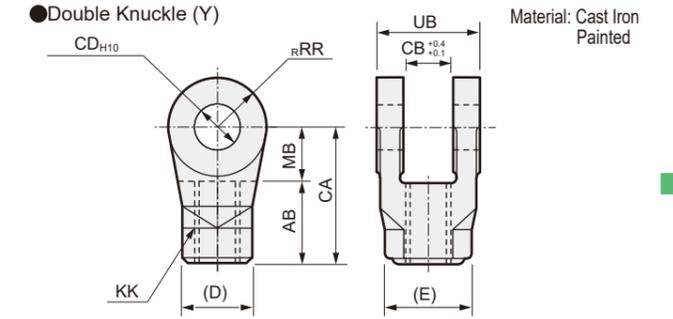
Accessories Outline Dimension Drawing

●Single Knuckle (I)



Code	AA	CA	CB	CD	D	KK	MA	MC	R	Weight (kg)
SCS2-125-I	50	85	32	25	55	M30 × 1.5	32	27.5	15.5	1.25
SCS2-140-I	50	90	36	28	60	M30 × 1.5	35	30	18	1.65
SCS2-160-I	60	105	40	32	70	M36 × 1.5	40	35	21	2.55
SCS2-180-I	65	115	50	40	85	M40 × 1.5	47.5	42.5	29	4.20
SCS2-200-I	75	125	50	40	85	M45 × 1.5	47.5	42.5	29	4.35
SCS2-250-I	88	150	63	50	105	M56 × 2	57.5	52.5	36.5	8.05

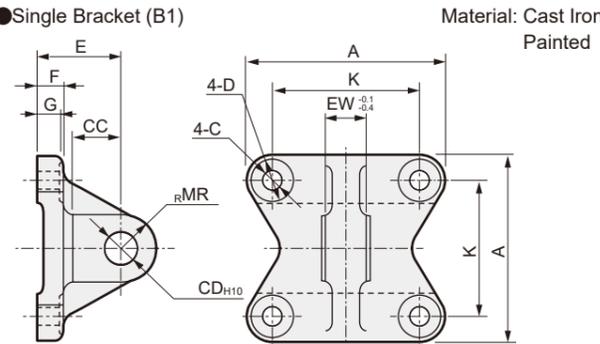
●Double Knuckle (Y)



Code	AB	CA	CB	CD	D	E	KK	MB	RR	UB	Weight (kg)
SCS2-125-Y	50	85	32	25	46	53.1	M30 × 1.5	35	27.5	64	1.30
SCS2-140-Y	50	90	36	28	46	53.1	M30 × 1.5	40	30	72	1.65
SCS2-160-Y	60	105	40	32	55	63.5	M36 × 1.5	45	35	80	2.55
SCS2-180-Y	65	115	50	40	60	69.3	M40 × 1.5	50	42.5	100	4.40
SCS2-200-Y	75	125	50	40	70	80.8	M45 × 1.5	50	42.5	100	4.85
SCS2-250-Y	88	150	63	50	85	98.1	M56 × 2	62	52.5	126	7.05

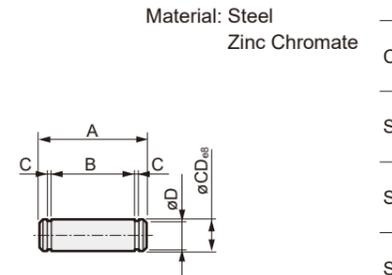
Note: Pin and retaining ring are included.

●Single Bracket (B1)



Code	A	C	CC	CD	D	E	EW	F	G	K	MR	Weight (kg)
SCS2-125-B1	140	16	35	25	23	63	32	20	18	110	25	2.35
SCS2-140-B1	154	16	40	28	23	75	36	22	20	124	28	3.30
SCS2-160-B1	174	18	40	32	26	75	40	24	22	142	32	4.65
SCS2-180-B1	196	20	55	40	29	90	50	25	23	160	40	6.75
SCS2-200-B1	220	22	55	40	32	90	50	30	28	175	40	9.40
SCS2-250-B1	274	26	65	50	39	110	63	35	33	216	50	16.85

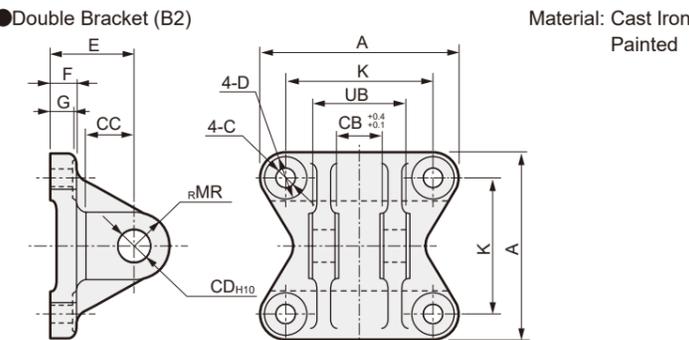
●Pin (P)



Code	A	B	C	CD	D	Retaining Ring to Use	Weight (kg)	Applicable Model
SCS2-125-P	75	66.3	1.35	25	23.9	C-type for shaft 25	0.25	SCS2-125
SCS2-140-P	84	74.7	1.65	28	26.6	C-type for shaft 28	0.40	SCS2-140
SCS2-160-P	92	82.7	1.65	32	30.3	C-type for shaft 32	0.50	SCS2-160
SCS2-180-P	115	103.2	1.9	40	38	C-type for shaft 40	1.15	SCS2-180
SCS2-250-P	144	129.6	2.2	50	47	C-type for shaft 50	2.25	SCS2-250

Note: When double clevis type, double bracket, or double knuckle is selected, pin and retaining ring are included. A retaining ring is included with the pin.

●Double Bracket (B2)



Code	A	C	CB	CC	CD	D	E	F	G	K	MR	UB	Weight (kg)
SCS2-125-B2	140	16	32	35	25	23	63	20	18	110	25	64	2.65
SCS2-140-B2	154	16	36	40	28	23	75	22	20	124	28	72	3.85
SCS2-160-B2	174	18	40	40	32	26	75	24	22	142	32	80	5.45
SCS2-180-B2	196	20	50	55	40	29	90	25	23	160	40	100	8.70
SCS2-200-B2	220	22	50	55	40	32	90	30	28	175	40	100	10.55
SCS2-250-B2	274	26	63	65	50	39	110	35	33	216	50	126	19.55

Note: Pin and retaining ring are included.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

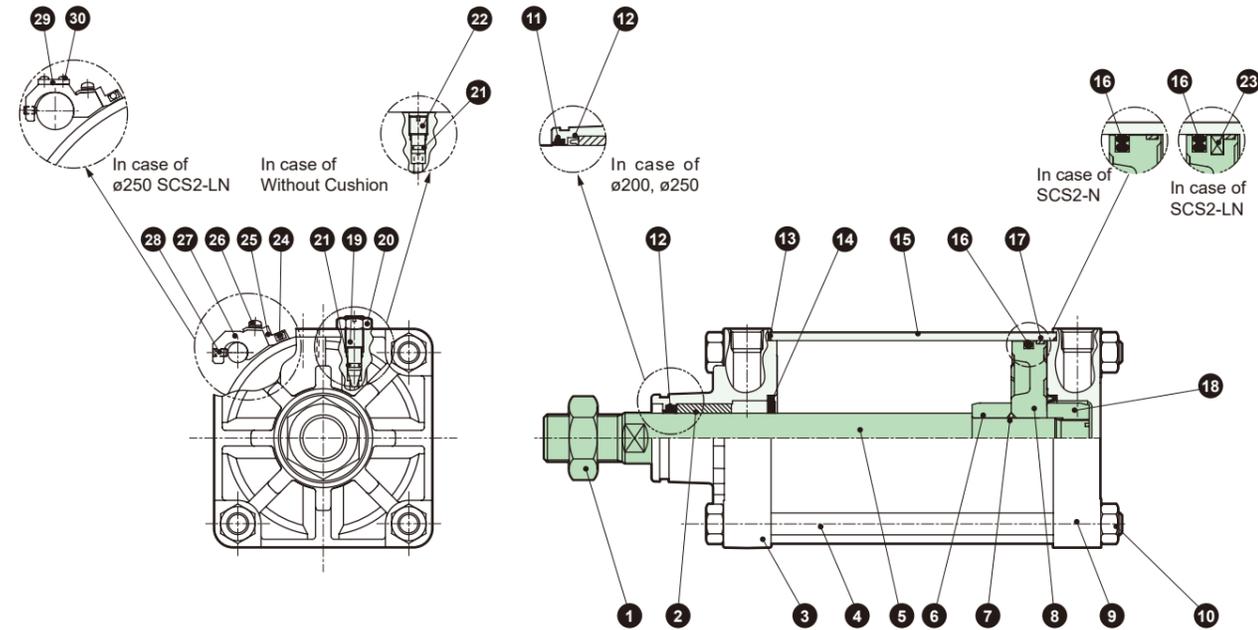
Ending

Cylinder Switch

Ending

Internal Structure Diagram/Material

●SCS2-(L)(N)



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	19	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc chromate
2	Bushing	Oil-Impregnated Bearing Alloy		20	Hexagon Nut	Steel	Zinc Chromate
3	Rod Cover	Aluminum Alloy	Chromate	21	Needle Gasket	Nitrile Rubber	
4	Tie Rod	Steel	Zinc Chromate	22	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	
5	Piston Rod	Steel	Industrial Hard Chrome Plating	23	Magnet	Rubber	With Switch Only
6	Cushion Ring A	Steel	Zinc Chromate	With Switch			
7	Piston Gasket	Nitrile Rubber		24	Switch		
8	Piston	Aluminum Alloy		25	Switch holder	Aluminum Alloy	
9	Head Cover	Aluminum Alloy	Chromate	26	S2R1 set Phillips pan head screw: For switches other than T2YD(T)	Steel	Zinc Chromate
10	Hexagon Nut	Steel	Zinc Chromate		S2R2 set slotted hexagon head bolt: For switch T2YD(T)	Stainless Steel	
11	Scraper	Nitrile Rubber		27	Switch mounting base	Aluminum Alloy	
12	Rod Packing	Nitrile Rubber		28	Hexagon socket set screw H	Steel alloy	Black Oxide
13	Cylinder Gasket	Nitrile Rubber		29	Reinforcing plate	Steel	Zinc Chromate
14	Cushion Packing	Nitrile Rubber, Steel	Only with cushion	30	Phillips Pan Head Screw	Steel	Zinc Chromate
15	Cylinder Tube	Aluminum Alloy	Hard Anodized				
16	Piston Packing	Nitrile Rubber					
17	Wear Ring	ø125 to ø200: Polyacetal ø250: Fabric-reinforced phenolic resin					
18	Cushion Ring B	Steel	Zinc Chromate				

Mounting Bracket Material

Mounting type	Material	Remarks
Foot (LB)	Steel	Painted
Flange (FA, FB)	Steel	Painted
Clevis (CA, CB)	Cast Iron	Painted
Trunnion (TA, TB, TC)	Cast Iron	Painted

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

MEMO

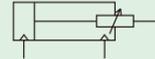


Large Bore Size Cylinder
Double-acting, Push side stroke adjustment type

SCS2-P Series

● Bore Size: $\phi 125$, $\phi 140$, $\phi 160$, $\phi 180$, $\phi 200$, $\phi 250$

Circuit Diagram Symbol



Custom Products



SCS2-P Series

Model No. Notation Method

7 Option

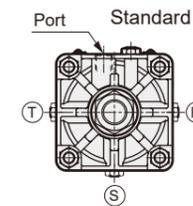
Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	
C2	With check valve in cushion part			
J	Bellows	100°C	200°C	
L		250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
Blank	Cushion needle position Standard			
R	Cushion needle position R			
S	Cushion needle position S			
T	Cushion needle position T			

*2
*2
*2
*2

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.
*2: Please check the cushion needle position in the diagram below.

About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



*For combinations of variations and options, see P. 871.

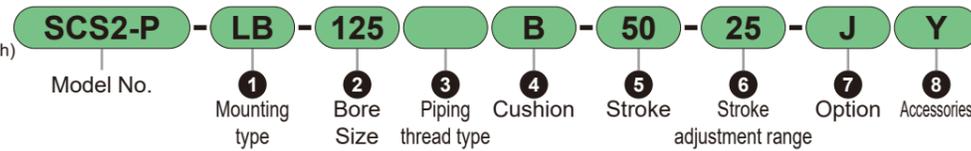
8 Accessories

Code	Content	
I	Single Knuckle	
Y	Double Knuckle (Pin and retaining ring included)	

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

Model No. Notation Method

Without Switch
(Without magnet for switch)



1 Mounting type

Brackets are included and shipped.

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	

Note: Tapped trunnion is supported as a custom product only for $\phi 125$ to $\phi 160$. Please consult us each time regarding external dimensions, etc.

2 Bore Size (mm)

Code	Contents
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$

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
$\phi 125$ to $\phi 160$	25 to 800	Every 1 mm
$\phi 180$	25 to 900	
$\phi 200$	25 to 1000	
$\phi 250$	25 to 1200	

6 Stroke adjustment range (mm)

Code	Content
25	25
50	50
75	75
100	100

Specifications of custom products

Details Please refer to P. 958 to 967.

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
-XF	Port 1 size down	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XK□	Mounting Bracket Rotational Assembly	-XMX◇	Tie rod extension	-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) **SCS2-P - - XP5**

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

Cylinder Switch

Ending

Ending

Specifications

Item		SCS2-P (Stroke adjustment type)					
Bore Size	mm	ø125	ø140	ø160	ø180	ø200	ø250
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	°C	-5 to 60 (However, no freezing)					
Port Size		Rc 1/2	Rc 3/4			Rc1	
Stroke tolerance	mm	+1.0 ₀ (Up to 300), +1.4 ₀ (Up to 1000), +1.8 ₀ (Up to 1200)					
Operating Piston Speed	mm/s	20 to 1000 (Please use within the absorbed energy.)					
Cushion		Air cushion (However, the rod side cushion is not effective during stroke adjustment.)					
Effective air cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Stroke adjustment range	mm	25, 50, 75, 100					
Lubrication		Required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable absorbed energy J	With Cushion	63.5	91.5	116	152	233	362
	Without Cushion	0.371	0.386	0.386	0.958	1.08	2.32
		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)	Trunnion Min. stroke (mm)
ø125	50, 75, 100, 150, 200, 250, 300	800	25	25
ø140				25
ø160		900		27
ø180				28
ø200		1,000		28
ø250		1,200		28

Type 2 pressure vessel inspection
Target stroke

Bore Size	Stroke
ø200	946 or more
ø250	752 or more

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

*2: If the maximum stroke is exceeded, product specifications may not be met depending on the conditions, so please consult us.

Cylinder Weight

(Unit: kg)

Item/Mounting Style	Product Weight when stroke (S) = 0 mm, stroke (S) adjustment = 25 mm							S=100 mm
	Basic type (00)	Axial Foot Type (LB)	Flange type (FA, FB)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion type (TA, TB, TC)	Weight per 25 mm stroke (S) adjustment	Added weight per
ø125	11.42	12.92	14.72	14.42	14.52	14.82	0.51	2.17
ø140	13.35	15.35	18.75	17.15	17.35	16.55	0.51	2.41
ø160	18.45	21.55	25.35	23.45	23.75	24.85	0.72	3.21
ø180	24.65	29.15	36.65	32.05	32.55	32.75	0.93	4.21
ø200	33.98	39.68	47.68	43.48	43.68	45.78	1.09	5.08
ø250	57.81	66.21	83.71	81.81	76.31	86.51	1.53	7.60

(Example) Product Weight of SCS2-P-LB-125B-300-25

- Product Weight at S=0 mm 12.92 kg
- S=300 mm added weight $1.54 \times \frac{300}{100} = 4.62$ kg
- Weight for 25 mm stroke adjustment ... 0.51 kg
- Product Weight $12.92 + 4.62 + 0.51 = 18.05$ kg

Theoretical Thrust Table

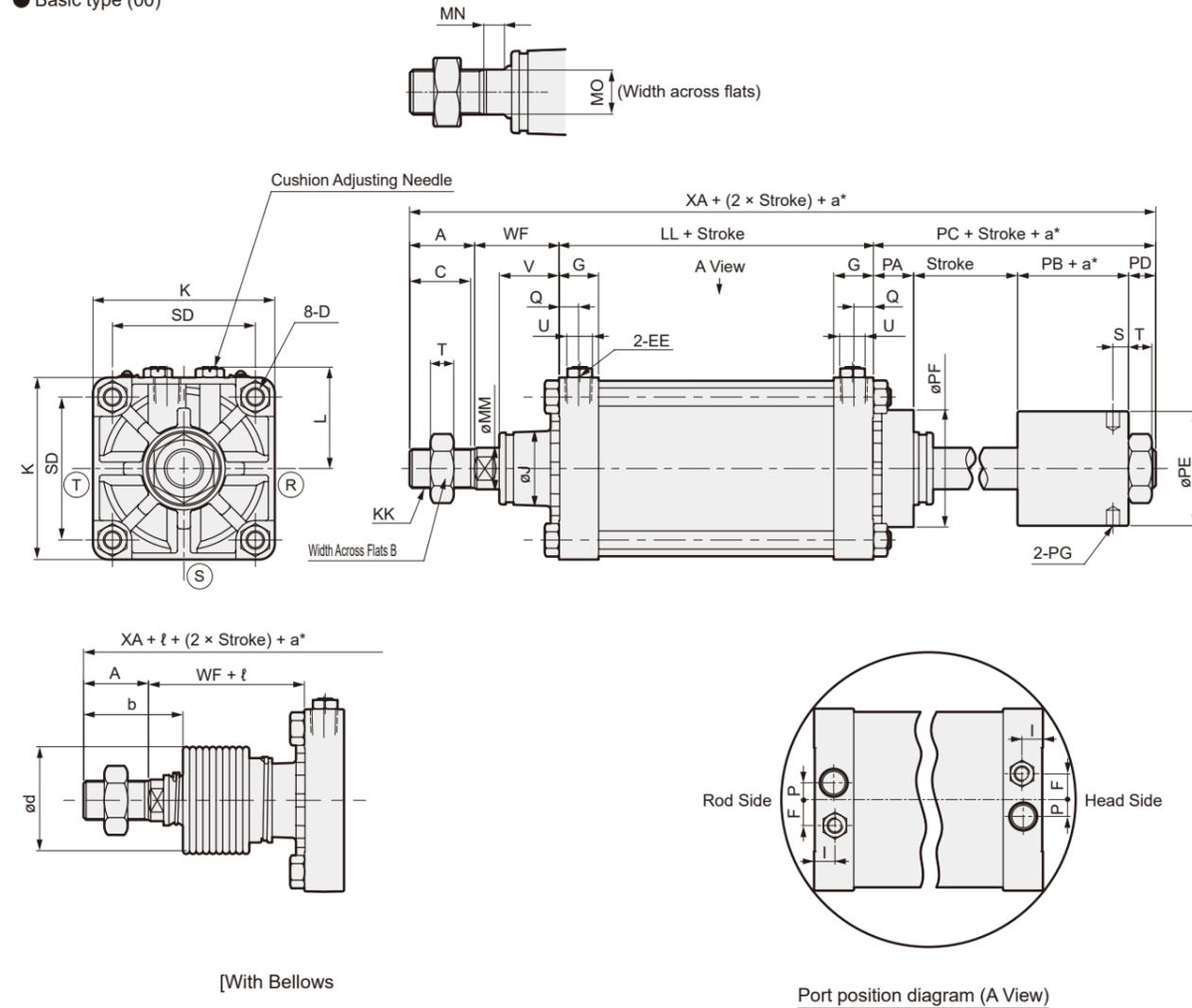
(Unit: N)

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
ø125	Push/Pull	1.15×10^3	1.72×10^3	2.29×10^3	3.44×10^3	4.59×10^3	5.73×10^3	6.88×10^3	8.03×10^3	9.17×10^3	1.03×10^4	1.15×10^4
ø140	Push/Pull	1.46×10^3	2.19×10^3	2.92×10^3	4.38×10^3	5.84×10^3	7.29×10^3	8.75×10^3	1.02×10^4	1.17×10^4	1.31×10^4	1.46×10^4
ø160	Push/Pull	1.88×10^3	2.83×10^3	3.77×10^3	5.65×10^3	7.54×10^3	9.42×10^3	1.13×10^4	1.32×10^4	1.51×10^4	1.70×10^4	1.88×10^4
ø180	Push/Pull	2.39×10^3	3.58×10^3	4.77×10^3	7.16×10^3	9.54×10^3	1.19×10^4	1.43×10^4	1.67×10^4	1.91×10^4	2.15×10^4	2.39×10^4
ø200	Push/Pull	2.95×10^3	4.42×10^3	5.89×10^3	8.84×10^3	1.18×10^4	1.47×10^4	1.77×10^4	2.06×10^4	2.36×10^4	2.65×10^4	2.95×10^4
ø250	Push/Pull	4.63×10^3	6.94×10^3	9.25×10^3	1.39×10^4	1.85×10^4	2.31×10^4	2.78×10^4	3.24×10^4	3.70×10^4	4.16×10^4	4.63×10^4

MEMO

Outline Dimension Drawing

● Basic type (00)



* "a" is the adjustment stroke.

Code	Basic Type (00) Basic Dimensions																	
Bore Size (mm)	A	B	C	D	EE	F	G	I	J	K	KK	L	LL	MM	MN	MO	P	PA
ø125	50	46	47	M14 × 1.5	Rc1/2	20	30.5	16	57	140	M30 × 1.5	78 to 82	92	32	15	27	13	31
ø140	50	46	47	M14 × 1.5	Rc3/4	20	34.5	20	57	157	M30 × 1.5	86.5 to 91	103	32	15	27	15	31
ø160	56	55	53	M16 × 1.5	Rc3/4	24	34.5	20	62	177	M36 × 1.5	96.5 to 101	106	40	15	36	15	34
ø180	63	60	60	M18 × 1.5	Rc3/4	24	34.5	20	68	200	M40 × 1.5	108 to 112	110	45	17	41	15	34
ø200	72	70	69	M20 × 1.5	Rc3/4	24	37.5	20.5	75	220	M45 × 1.5	120.5 to 129	123	50	20	46	20	57
ø250	88	85	84	M24 × 1.5	Rc1	24	42.5	25.5	93	274	M56 × 2	147.5 to 156	141	60	22	55	22	60

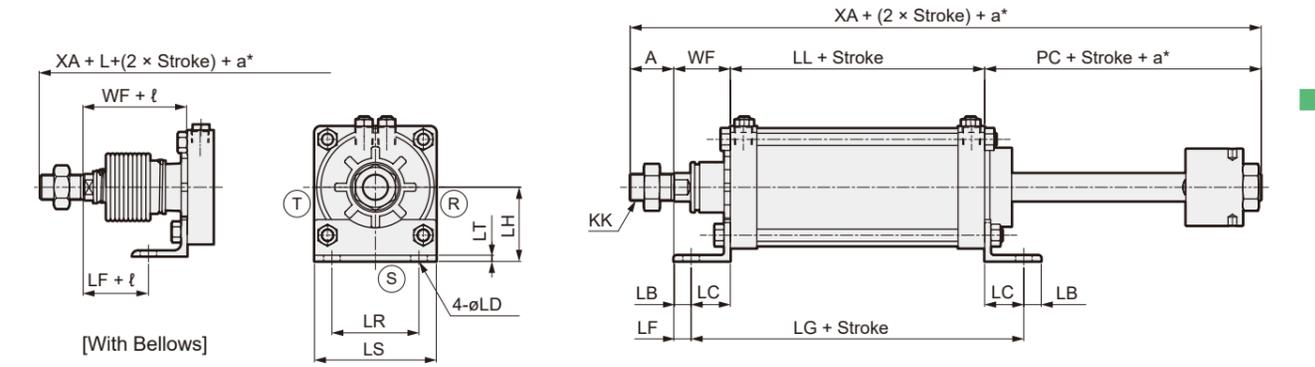
Code	With Bellows																
Bore Size (mm)	PB	PC	PD	PE	PF	PG	Q	S	SD	T	U	V	WF	XA	b	d	l
ø125	40.5	92.5	21	88	90	ø10 depth 10	15	12	110	18	19	45.5	65	299.5	74	75	(Stroke/4.55) + 11
ø140	40.5	92.5	21	88	90	ø10 depth 10	17	12	124	18	19	45.5	67	312.5	74	75	(Stroke/4.55) + 9
ø160	46	106	26	98	104	ø14 depth 15	17	14.5	142	21	19	48	71	339	82	80	(Stroke/5.15) + 9
ø180	52	115	29	108	110	ø14 depth 15	17	16	160	24	19	53	78	366	91	91	(Stroke/5.15) + 9
ø200	48	137	32	120	128	ø14 depth 15	18	18	175	27	24	60	88	420	102	95	(Stroke/5.30) + 9
ø250	58	157	39	141	150	ø14 depth 15	21	22.5	216	34	24	64	94	480	120	120	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The l dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Double-acting, Push side stroke adjustment type

Outline Dimension Drawing

● Axial Foot Type (LB)

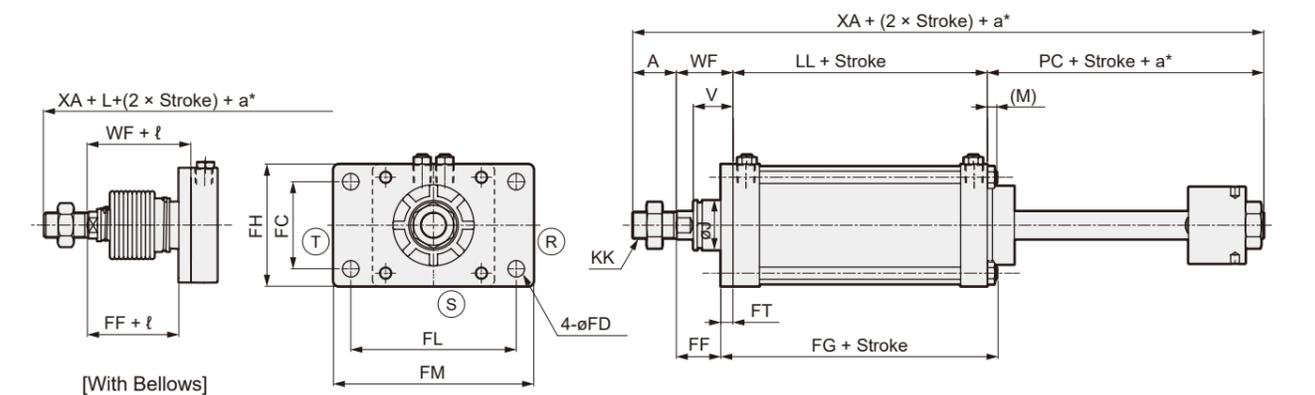


* "a" is the adjustment stroke.

Code	Axial Foot Type (LB) Mounting Dimensions															With Bellows
Bore Size (mm)	A	KK	LL	PC	WF	XA	LB	LC	LD	LF	LG	LH	LR	LS	LT	l
ø125	50	M30 × 1.5	92	92.5	65	299.5	19	45	19	20	182	85	100	140	7	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	92.5	67	312.5	20	50	19	17	203	100	112	157	8	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	106	71	339	20	53	19	18	212	106	118	177	10	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	115	78	366	27	60	24	18	230	125	132	200	10	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	137	88	420	27	62	24	26	247	132	150	220	12	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	157	94	480	28	70	29	24	281	160	180	274	12	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The l dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

● Rod Side Flange Type (FA)



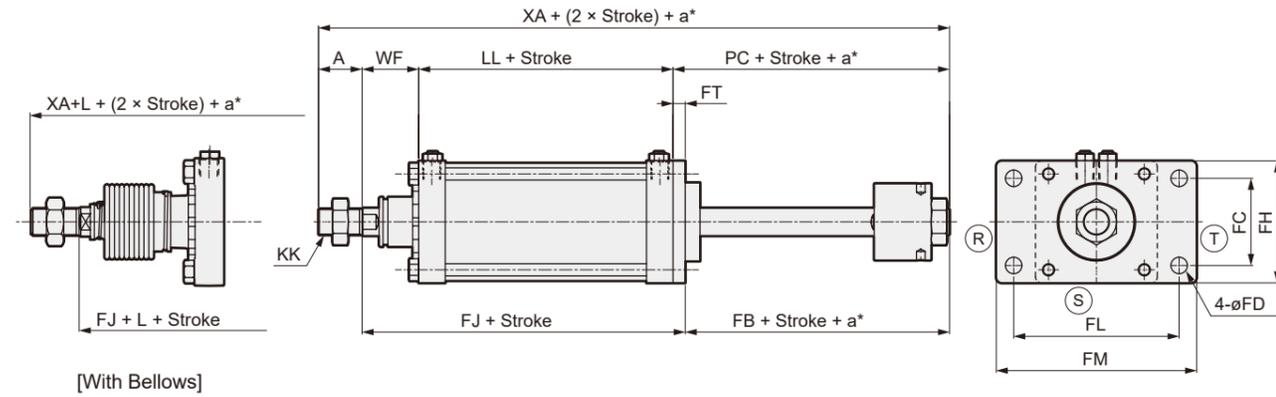
* "a" is the adjustment stroke.

Code	Rod Side Flange Type (FA) Mounting Dimensions																With Bellows	
Bore Size (mm)	A	J	KK	LL	M	PC	V	WF	XA	FC	FD	FF	FG	FH	FL	FM	FT	l
ø125	50	57	M30 × 1.5	92	11	92.5	45.5	65	299.5	100	19	51	117	140	190	230	14	(Stroke/4.55) + 11
ø140	50	57	M30 × 1.5	103	11	92.5	45.5	67	312.5	112	19	48	133	157	212	250	19	(Stroke/4.55) + 9
ø160	56	62	M36 × 1.5	106	13	106	48	71	339	118	19	52	138	177	236	280	19	(Stroke/5.15) + 9
ø180	63	68	M40 × 1.5	110	15	115	53	78	366	132	24	53	150	200	265	310	25	(Stroke/5.15) + 9
ø200	72	75	M45 × 1.5	123	16	137	60	88	420	150	24	63	164	220	280	330	25	(Stroke/5.30) + 9
ø250	88	93	M56 × 2	141	19	157	64	94	480	180	29	64	190	274	355	415	30	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The l dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

● Head Side Flange Type (FB)

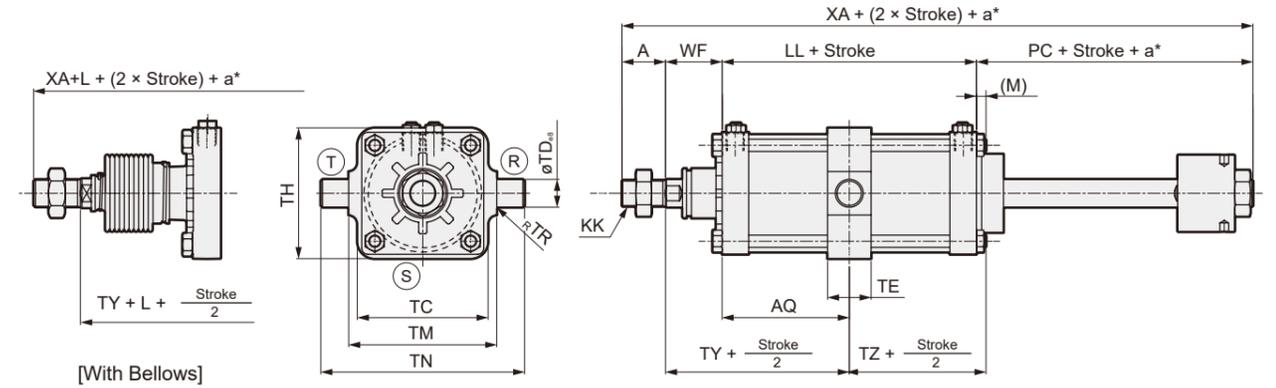


* "a" is the adjustment stroke.

Code	Head Side Flange Type (FB) Mounting Dimensions														With Bellows
Bore Size (mm)	A	KK	LL	PC	WF	XA	FB	FC	FD	FH	FJ	FL	FM	FT	L
ø125	50	M30 × 1.5	92	92.5	65	299.5	78.5	100	19	140	171	190	230	14	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	92.5	67	312.5	73.5	112	19	157	189	212	250	19	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	106	71	339	87	118	19	177	196	236	280	19	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	115	78	366	90	132	24	200	213	265	310	25	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	137	88	420	112	150	24	220	236	280	330	25	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	157	94	480	127	180	29	274	265	355	415	30	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: For dimensions of models with switches, see P. 956.
- *4: For outer dimensions diagram of accessories, refer to P. 883.

● Intermediate trunnion type (TC)



* "a" is the adjustment stroke.

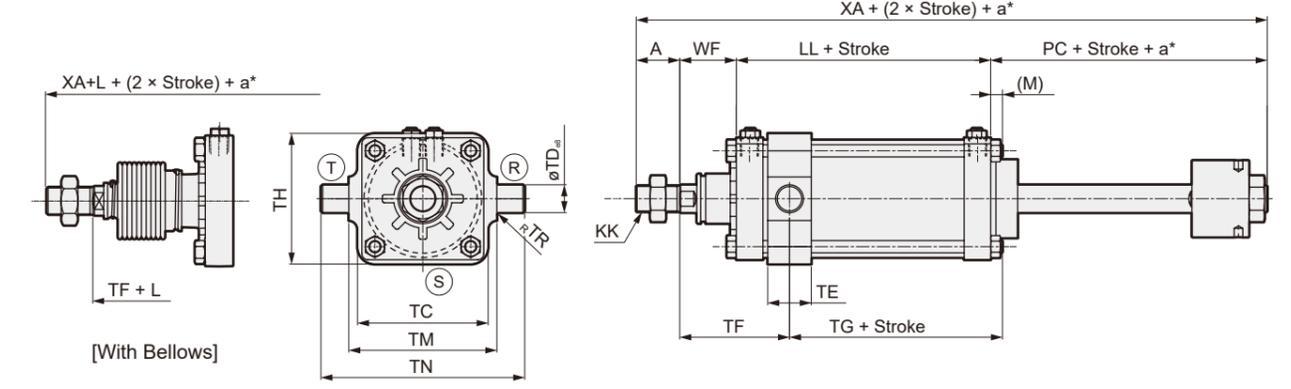
Code	Intermediate Trunnion Type (TC) Mounting Dimensions														With Bellows			
Bore Size (mm)	A	KK	LL	M	PC	WF	XA	AQ	TC	TD	TE	TH	TY	TZ	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	92.5	65	299.5	46 + Stroke/2	150	32	50	150	111	57	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	92.5	67	312.5	51.5 + Stroke/2	154	36	55	170	118.5	62.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	106	71	339	53 + Stroke/2	190	40	60	190	124	66	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	115	78	366	55 + Stroke/2	210	45	65	210	133	70	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	137	88	420	61.5 + Stroke/2	242	45	70	242	149.5	77.5	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	157	94	480	70.5 + Stroke/2	300	56	80	300	164.5	89.5	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: For dimensions of models with switches, see P. 956.
- *4: For outer dimensions diagram of accessories, refer to P. 883.
- *5: For the minimum producible stroke, please refer to P. 888.

Double-acting, Push side stroke adjustment type

Outline Dimension Drawing

● Rod side trunnion type (TA)

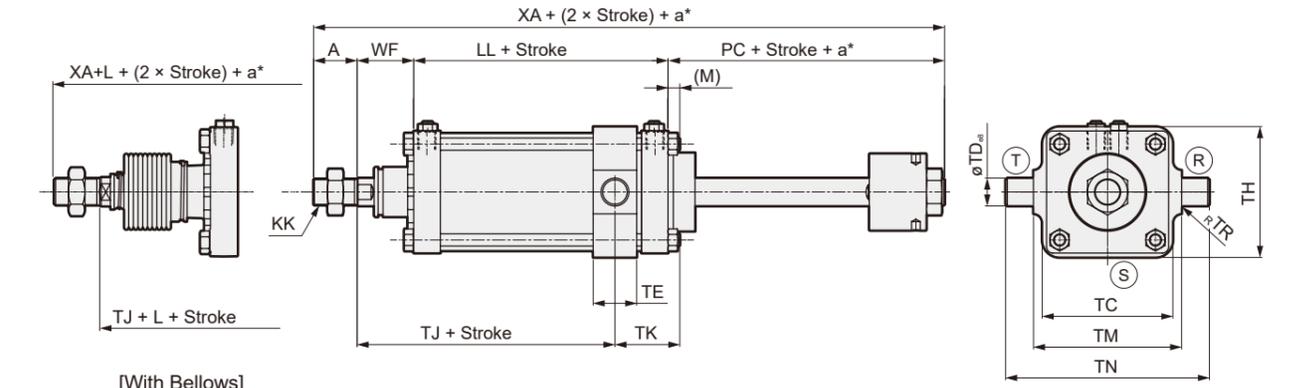


* "a" is the adjustment stroke.

Code	Rod Side Trunnion Type (TA) Mounting Dimensions														With Bellows		
Bore Size (mm)	A	KK	LL	M	PC	WF	XA	TC	TD	TE	TF	TG	TH	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	92.5	65	299.5	150	32	50	126	42	150	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	92.5	67	312.5	154	36	55	134.5	46.5	170	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	106	71	339	190	40	60	141	49	190	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	115	78	366	210	45	65	150.5	52.5	210	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	137	88	420	242	45	70	168	59	242	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	157	94	480	300	56	80	184	70	300	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 888.

● Head Side Trunnion Type (TB)



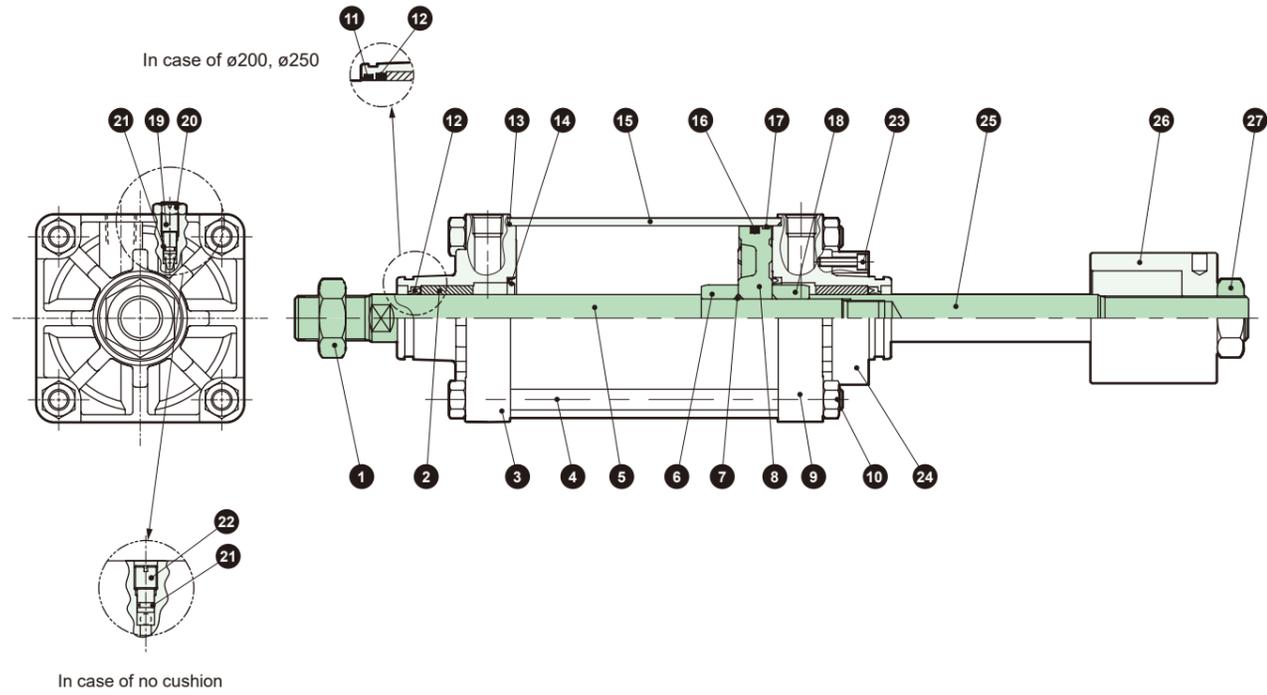
* "a" is the adjustment stroke.

Code	Head Side Trunnion Type (TB) Mounting Dimensions														With Bellows		
Bore Size (mm)	A	KK	LL	M	PC	WF	XA	TC	TD	TE	TH	TJ	TK	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	92.5	65	299.5	150	32	50	150	96	72	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	92.5	67	312.5	154	36	55	170	102.5	78.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	106	71	339	190	40	60	190	107	83	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	115	78	366	210	45	65	210	115.5	87.5	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	137	88	420	242	45	70	242	131	96	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	157	94	480	300	56	80	300	145	109	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the head side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 888.

Internal Structure Diagram/Material

●SCS2-P



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	16	Piston Packing	Nitrile Rubber	
2	Bushing	Oil-impregnated Bearing Alloy		17	Wear Ring	ø125 to ø200: Polyacetal ø250: Fabric-reinforced phenol	
3	Rod Cover	Aluminum Alloy	Chromate	18	Cushion Ring B	Steel	Zinc Chromate
4	Tie Rod	Steel	Zinc Chromate	19	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc Chromate
5	Piston Rod A	Steel	Industrial Hard Chrome Plating	20	Hexagon Nut	Steel	Zinc Chromate
6	Cushion Ring A	Steel	Zinc Chromate	21	Needle Gasket	Nitrile Rubber	
7	Piston Gasket	Nitrile Rubber		22	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	
8	Piston	Aluminum Alloy		23	Hexagon socket bolt	Steel	Black Oxide
9	Head Cover	Aluminum Alloy	Chromate	24	Stopper ring	Steel	Zinc phosphate
10	Hexagon Nut	Steel	Zinc Chromate	25	Piston Rod B	Steel	Industrial Hard Chrome Plating
11	Scraper	Nitrile Rubber		26	Stopper	Steel	Zinc phosphate
12	Rod Packing	Nitrile Rubber		27	Hexagon Nut	Steel	Zinc Chromate
13	Cylinder Gasket	Nitrile Rubber					
14	Cushion Packing	Nitrile Rubber, Steel	Only with cushion				
15	Cylinder Tube	Aluminum Alloy	Hard Anodized				

MEMO

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



Large Bore Size Cylinder
Double Acting/Heat Resistant Type

SCS2-T Series

● Bore Size: $\phi 125$, $\phi 140$, $\phi 160$, $\phi 180$, $\phi 200$, $\phi 250$

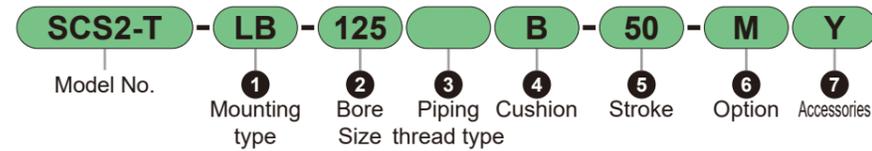
Circuit Diagram Symbol



SCS2-T Series

Model No. Notation Method

Model No. Notation Method



1 Mounting type

Brackets are included and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side 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	

Note: Tapped trunnion is supported as a custom product only for $\phi 125$ to $\phi 160$. Please consult us each time regarding external dimensions, etc.

3 Piping thread type

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

2 Bore Size (mm)

Code	Content
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$

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
$\phi 125$ to $\phi 160$	1 to 800	Every 1 mm
$\phi 180$	1 to 900	
$\phi 200$	1 to 1000	
$\phi 250$	1 to 1200	

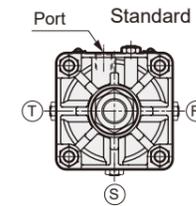
6 Option

Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	
C2	With check valve in cushion part			
L	Bellows	250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
Blank	Cushion needle position Standard			
R	Cushion needle position R			
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: Please check the cushion needle position display in the diagram below.

About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



*For combinations of variations and options, see P. 871.

Specifications of custom products

Details Please refer to P. 958 to 967.

Code	Content	Code	Content	Code	Content
-XR□□□□	Port/Cushion needle position specification	-XP5	Knuckle Pin/Clevis Pin Split Pin	-XM1	Tie rod material SUS
-XF	Port 1 size down	-XP7	Knuckle fixed by pin driving	-XJ9	Without Bellows
-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	-XM◇	Tie rod extension	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) SCS2-T - - XP5

7 Accessories

Code	Content	
I	Single Knuckle	
Y	Double Knuckle (Pin and retaining ring included)	
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	

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

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

Cylinder Switch

Ending

Ending

Specifications

Item		SCS2-T (Heat resistant type)					
Bore Size	mm	ø125	ø140	ø160	ø180	ø200	ø250
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 (*1)					
Port Size		Rc 1/2	Rc 3/4			Rc1	
Stroke tolerance	mm	^{+1.0} / ₀ (Up to 300), ^{+1.4} / ₀ (Up to 1000), ^{+1.8} / ₀ (Up to 1200)					
Operating Piston Speed	mm/s	20 to 1000 (Please use within the absorbed energy.)					
Cushion		Air Cushion					
Effective air cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Not possible (*2)					
Allowable absorbed energy J	With Cushion	63.5	91.5	116	152	233	362
	Without Cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.					

*1: The ambient temperature for the following products is 5 to 100°C.

Bore Size	Stroke
ø200	946 or more
ø250	752 or more

If used at an ambient temperature of 100 to 120°C, please consult us separately.

*2: Please grease up regularly with heat-resistant grease.

*3: If it becomes locally hot, please consult us separately.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Trunnion type minimum stroke (mm)
ø125	50, 75, 100, 150,	800	1	23
ø140				25
ø160				27
ø180	200, 250, 300	900	1	28
ø200				28
ø250				28

Type 2 pressure vessel inspection Target stroke

Bore Size	Stroke
ø160	1948 or more
ø180	1526 or more
ø200	946 or more
ø250	752 or more

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

*2: If the maximum stroke is exceeded, product specifications may not be met depending on the conditions, so please consult us.

Cylinder Weight

(Unit: kg)

Item/Mounting Style	Product Weight at Stroke (S) = 0 mm						Per S=100 mm Added Weight
	Basic type (00)	Axial Foot Type (LB)	Flange type (FA, FB)	Single Clevis Type (CA)	Double clevis type (CB)	Trunnion Type (TA, TB, TC)	
ø125	7.22	8.72	10.52	10.22	10.32	10.62	1.54
ø140	9.35	11.35	14.75	13.15	13.35	12.55	1.78
ø160	12.35	15.45	19.25	17.35	17.65	18.75	2.22
ø180	16.75	21.25	28.75	24.15	24.65	24.85	2.96
ø200	22.78	28.48	36.48	32.28	32.48	34.58	3.54
ø250	40.51	48.91	66.41	64.51	59.01	69.21	5.38

(Example) Product Weight of SCS2-T-LB-125B-300

- Product Weight at S=0 mm 8.72 kg
- S=300 mm added weight $1.54 \times \frac{300}{100} = 4.62$ kg
- Product Weight $8.72 + 4.62 = 13.34$ kg

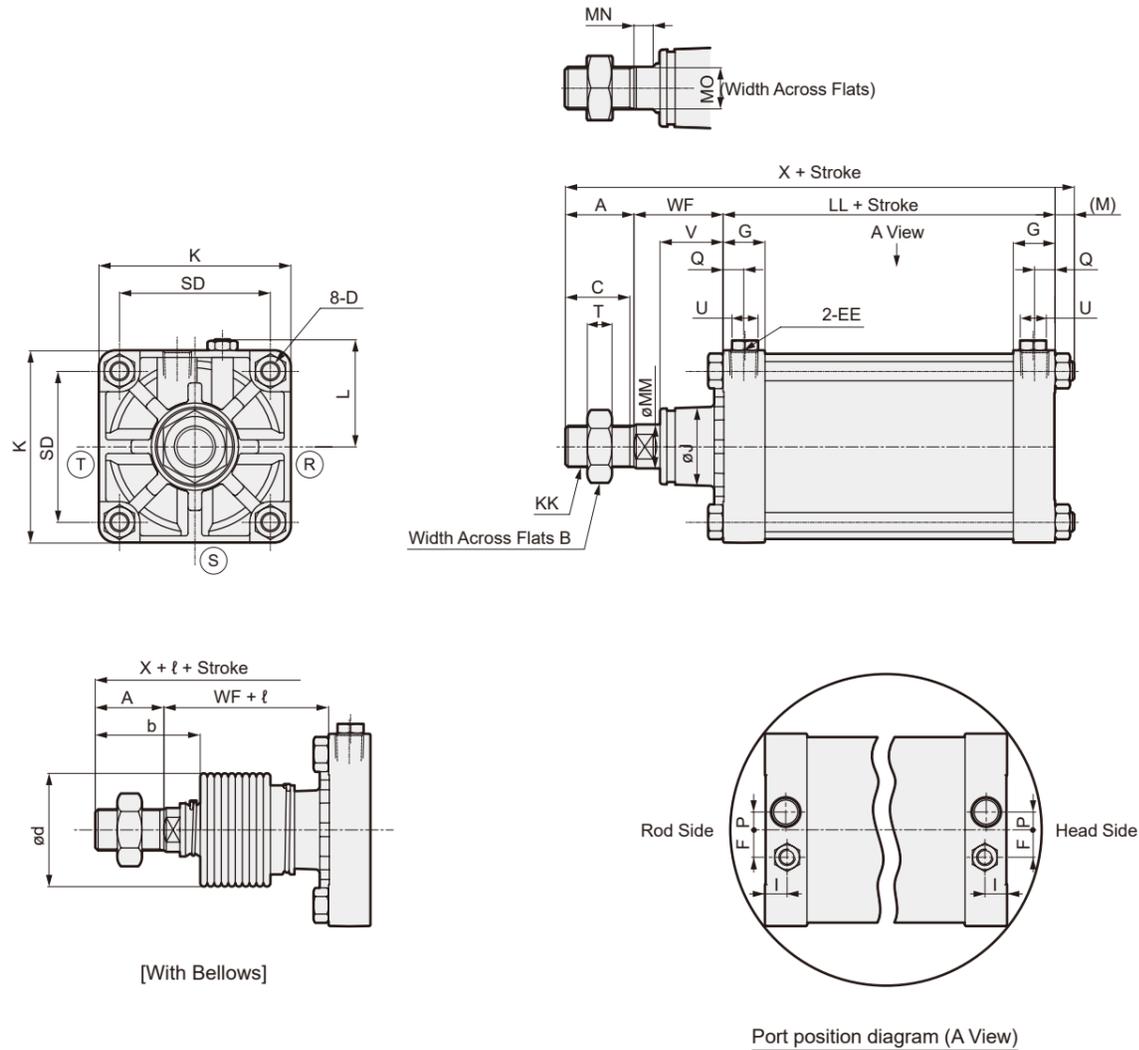
Theoretical Thrust Table

(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
ø125	Push	6.14×10^2	1.23×10^3	1.84×10^3	2.45×10^3	3.68×10^3	4.91×10^3	6.14×10^3	7.36×10^3	8.59×10^3	9.82×10^3	1.10×10^4	1.23×10^4
	Pull	5.73×10^2	1.15×10^3	1.72×10^3	2.29×10^3	3.44×10^3	4.59×10^3	5.73×10^3	6.88×10^3	8.03×10^3	9.17×10^3	1.03×10^4	1.15×10^4
ø140	Push	7.70×10^2	1.54×10^3	2.31×10^3	3.08×10^3	4.62×10^3	6.16×10^3	7.70×10^3	9.24×10^3	1.08×10^4	1.23×10^4	1.39×10^4	1.54×10^4
	Pull	7.29×10^2	1.46×10^3	2.19×10^3	2.92×10^3	4.38×10^3	5.84×10^3	7.29×10^3	8.75×10^3	1.02×10^4	1.17×10^4	1.31×10^4	1.46×10^4
ø160	Push	1.01×10^3	2.01×10^3	3.02×10^3	4.02×10^3	6.03×10^3	8.04×10^3	1.01×10^4	1.21×10^4	1.41×10^4	1.61×10^4	1.81×10^4	2.01×10^4
	Pull	9.42×10^2	1.88×10^3	2.83×10^3	3.77×10^3	5.65×10^3	7.54×10^3	9.42×10^3	1.13×10^4	1.32×10^4	1.51×10^4	1.70×10^4	1.88×10^4
ø180	Push	1.27×10^3	2.54×10^3	3.82×10^3	5.09×10^3	7.63×10^3	1.02×10^4	1.27×10^4	1.53×10^4	1.78×10^4	2.04×10^4	2.29×10^4	2.54×10^4
	Pull	1.19×10^3	2.39×10^3	3.58×10^3	4.77×10^3	7.16×10^3	9.54×10^3	1.19×10^4	1.43×10^4	1.67×10^4	1.91×10^4	2.15×10^4	2.39×10^4
ø200	Push	1.57×10^3	3.14×10^3	4.71×10^3	6.28×10^3	9.42×10^3	1.26×10^4	1.57×10^4	1.88×10^4	2.20×10^4	2.51×10^4	2.83×10^4	3.14×10^4
	Pull	1.47×10^3	2.95×10^3	4.42×10^3	5.89×10^3	8.84×10^3	1.18×10^4	1.47×10^4	1.77×10^4	2.06×10^4	2.36×10^4	2.65×10^4	2.95×10^4
ø250	Push	2.45×10^3	4.91×10^3	7.36×10^3	9.82×10^3	1.47×10^4	1.96×10^4	2.45×10^4	2.95×10^4	3.44×10^4	3.93×10^4	4.42×10^4	4.91×10^4
	Pull	2.31×10^3	4.63×10^3	6.94×10^3	9.25×10^3	1.39×10^4	1.85×10^4	2.31×10^4	2.78×10^4	3.24×10^4	3.70×10^4	4.16×10^4	4.63×10^4

Outline Dimension Drawing

● Basic type (00)



Code	Basic Type (00) Basic Dimensions													
Bore Size (mm)	A	B	C	D	EE	F	G	I	J	K	KK	L	LL	M
ø125	50	46	47	M14 × 1.5	Rc1/2	20	30.5	16	57	140	M30 × 1.5	78 to 82	92	13.5
ø140	50	46	47	M14 × 1.5	Rc3/4	20	34.5	20	57	157	M30 × 1.5	86.5 to 91	103	13.5
ø160	56	55	53	M16 × 1.5	Rc3/4	24	34.5	20	62	177	M36 × 1.5	96.5 to 101	106	15.5
ø180	63	60	60	M18 × 1.5	Rc3/4	24	34.5	20	68	200	M40 × 1.5	108 to 112	110	17.5
ø200	72	70	69	M20 × 1.5	Rc3/4	24	37.5	20.5	75	220	M45 × 1.5	120.5 to 129	123	18.5
ø250	88	85	84	M24 × 1.5	Rc1	24	42.5	25.5	93	274	M56 × 2	147.5 to 156	141	21.5

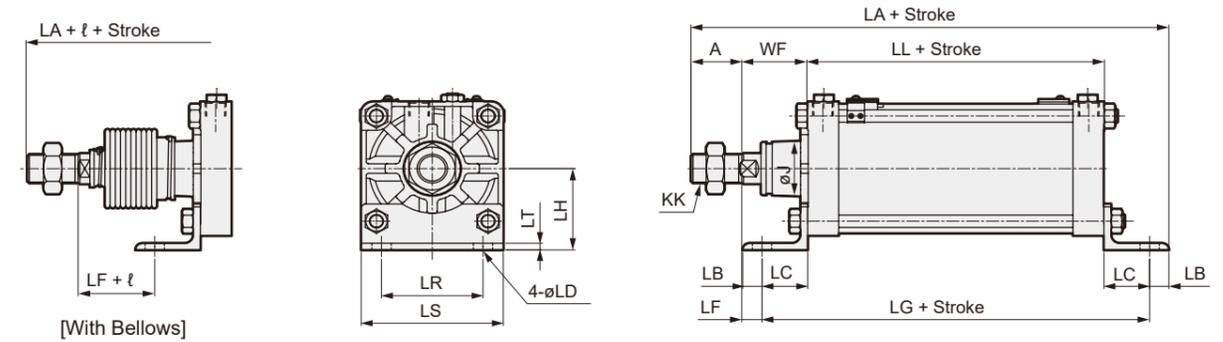
Code	With Bellows													
Bore Size (mm)	MM	MN	MO	P	Q	SD	T	U	V	WF	X	b	d	ℓ
ø125	32	15	27	13	15	110	18	19	45.5	65	220.5	74	75	(Stroke/4.55) + 11
ø140	32	15	27	15	17	124	18	19	45.5	67	233.5	74	75	(Stroke/4.55) + 9
ø160	40	15	36	15	17	142	21	19	48	71	248.5	82	80	(Stroke/5.15) + 9
ø180	45	17	41	15	17	160	24	19	53	78	268.5	91	91	(Stroke/5.15) + 9
ø200	50	20	46	20	18	175	27	24	60	88	301.5	102	95	(Stroke/5.30) + 9
ø250	60	22	55	22	21	216	34	24	64	94	344.5	120	120	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The ℓ dimension is rounded up to the nearest whole number.
 *3: For outer dimensions diagram of accessories, refer to P. 883.

Double Acting/Heat Resistant Type

Outline Dimension Drawing

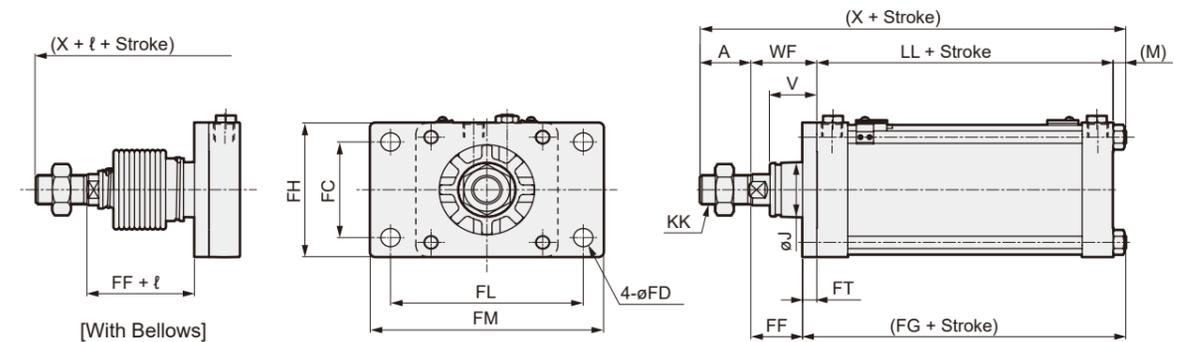
● Axial foot type (LB)



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
ø125	50	M30 × 1.5	92	65	271	19	45	19	20	182	85	100	140	7	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	290	20	50	19	17	203	100	112	157	8	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	306	20	53	19	18	212	106	118	177	10	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	338	27	60	24	18	230	125	132	200	10	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	372	27	62	24	26	247	132	150	220	12	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	421	28	70	29	24	281	160	180	274	12	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The ℓ dimension is rounded up to the nearest whole number.
 *3: For outer dimensions diagram of accessories, refer to P. 883.

● Rod Side Flange Type (FA)

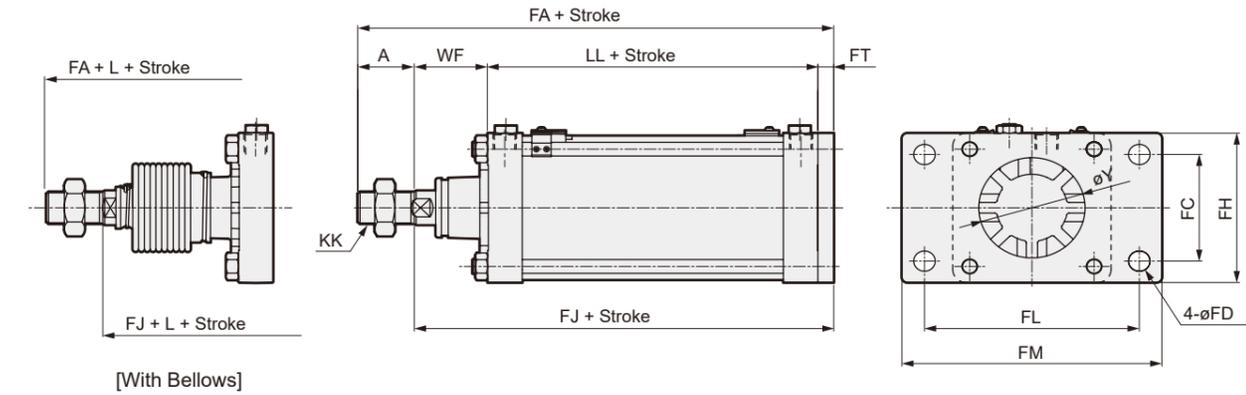


Code	Rod Side Flange Type (FA) Mounting Dimensions														With Bellows		
Bore Size (mm)	A	J	KK	LL	M	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	ℓ
ø125	50	57	M30 × 1.5	92	11	45.5	65	218	100	19	51	117	140	190	230	14	(Stroke/4.55) + 11
ø140	50	57	M30 × 1.5	103	11	45.5	67	231	112	19	48	133	157	212	250	19	(Stroke/4.55) + 9
ø160	56	62	M36 × 1.5	106	13	48	71	246	118	19	52	138	177	236	280	19	(Stroke/5.15) + 9
ø180	63	68	M40 × 1.5	110	15	53	78	266	132	24	53	150	200	265	310	25	(Stroke/5.15) + 9
ø200	72	75	M45 × 1.5	123	16	60	88	299	150	24	63	164	220	280	330	25	(Stroke/5.30) + 9
ø250	88	93	M56 × 2	141	19	64	94	342	180	29	64	190	274	355	415	30	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The ℓ dimension is rounded up to the nearest whole number.
 *3: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

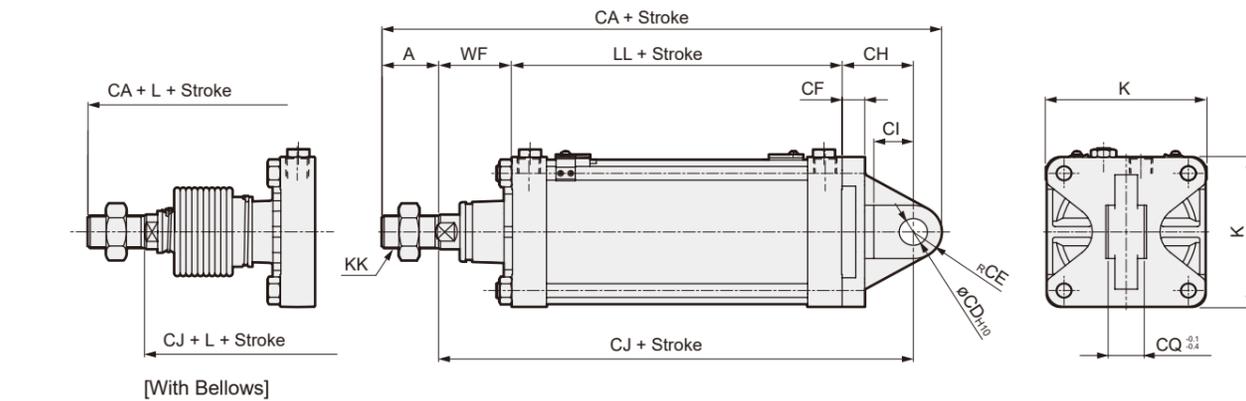
●Head Side Flange Type (FB)



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	Y
ø125	50	M30 × 1.5	92	65	221	100	19	140	171	190	230	14	94	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	239	112	19	157	189	212	250	19	94	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	252	118	19	177	196	236	280	19	107	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	276	132	24	200	213	265	310	25	113	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	308	150	24	220	236	280	330	25	131	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	353	180	29	274	265	355	415	30	153	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For outer dimensions diagram of accessories, refer to P. 883.

●Single Clevis Type (CA)

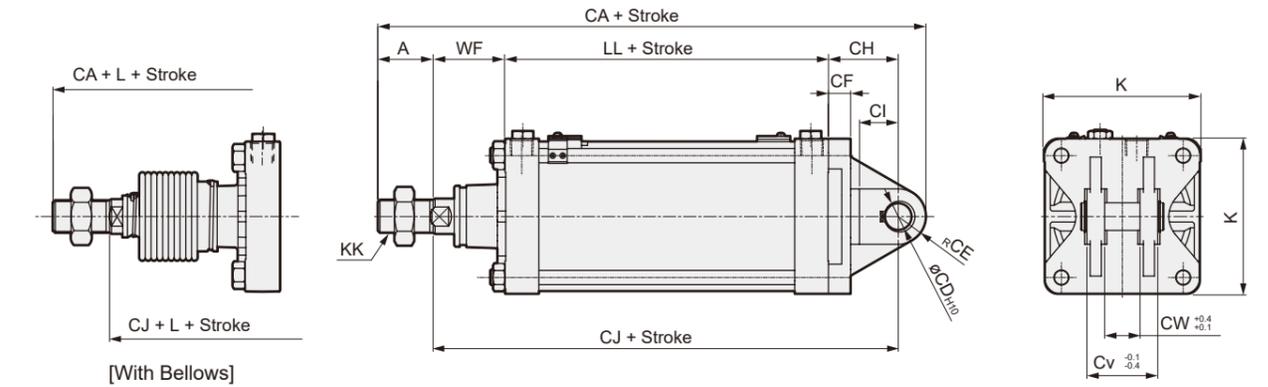


Code	Single Clevis Type (CA) Mounting Dimensions													With Bellows
	Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ
ø125	50	140	M30 × 1.5	92	65	295	25	25	20	63	35	220	32	(Stroke/4.55) + 11
ø140	50	157	M30 × 1.5	103	67	323	28	28	22	75	40	245	36	(Stroke/4.55) + 9
ø160	56	177	M36 × 1.5	106	71	340	32	32	24	75	40	252	40	(Stroke/5.15) + 9
ø180	63	200	M40 × 1.5	110	78	381	40	40	25	90	55	278	50	(Stroke/5.15) + 9
ø200	72	220	M45 × 1.5	123	88	413	40	40	30	90	55	301	50	(Stroke/5.30) + 9
ø250	88	274	M56 × 2	141	94	483	50	50	35	110	65	345	63	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

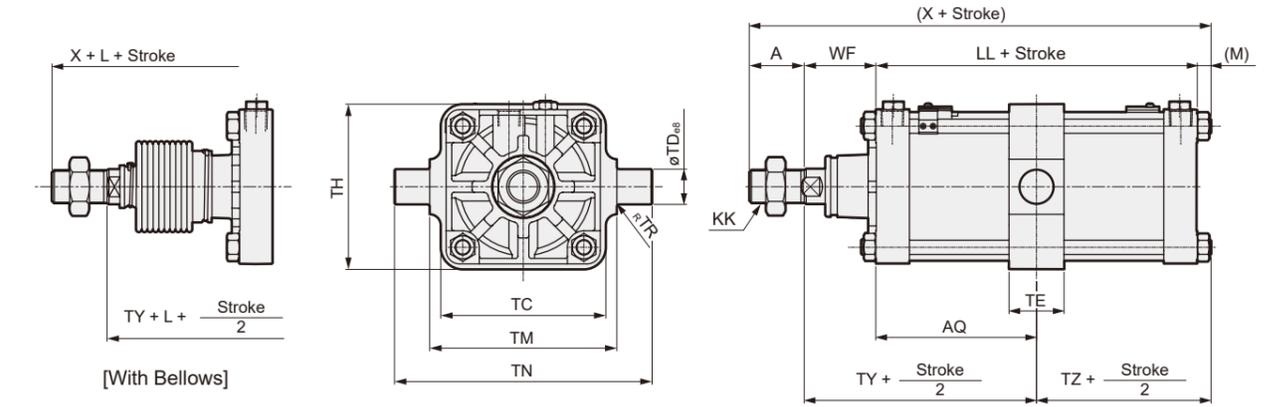
●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions													With Bellows	
	Bore Size (mm)	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW
ø125	50	140	M30 × 1.5	92	65	295	25	25	20	63	35	220	64	32	(Stroke/4.55) + 11
ø140	50	157	M30 × 1.5	103	67	323	28	28	22	75	40	245	72	36	(Stroke/4.55) + 9
ø160	56	177	M36 × 1.5	106	71	340	32	32	24	75	40	252	80	40	(Stroke/5.15) + 9
ø180	63	200	M40 × 1.5	110	78	381	40	40	25	90	55	278	100	50	(Stroke/5.15) + 9
ø200	72	220	M45 × 1.5	123	88	413	40	40	30	90	55	301	100	50	(Stroke/5.30) + 9
ø250	88	274	M56 × 2	141	94	483	50	50	35	110	65	345	126	63	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: Pin and retaining ring are attached.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

●Intermediate trunnion type (TC)

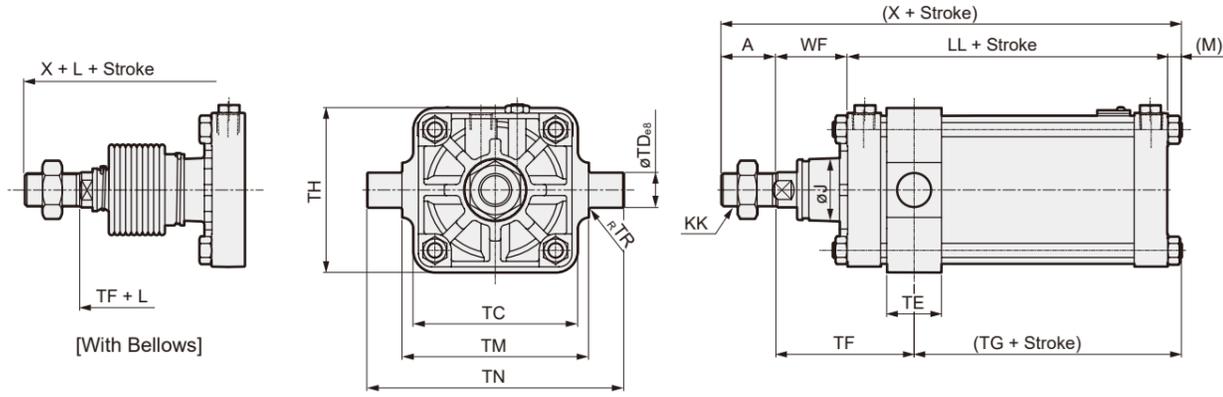


Code	Intermediate Trunnion Type (TC) Mounting Dimensions													With Bellows			
	Bore Size (mm)	A	KK	LL	M	WF	X	AQ	TC	TD	TE	TH	TY	TZ	TM	TN	TR
ø125	50	M30 × 1.5	92	11	65	218	46 + Stroke/2	150	32	50	150	111	57	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	67	231	51.5 + Stroke/2	154	36	55	170	118.5	62.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	71	246	53 + Stroke/2	190	40	60	190	124	66	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	78	266	55 + Stroke/2	210	45	65	210	133	70	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	88	299	61.5 + Stroke/2	242	45	70	242	149.5	77.5	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	94	342	70.5 + Stroke/2	300	56	80	300	164.5	89.5	335	447	2	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For outer dimensions diagram of accessories, refer to P. 883.
 *4: For the minimum producible stroke, please refer to P. 898.

Outline Dimension Drawing

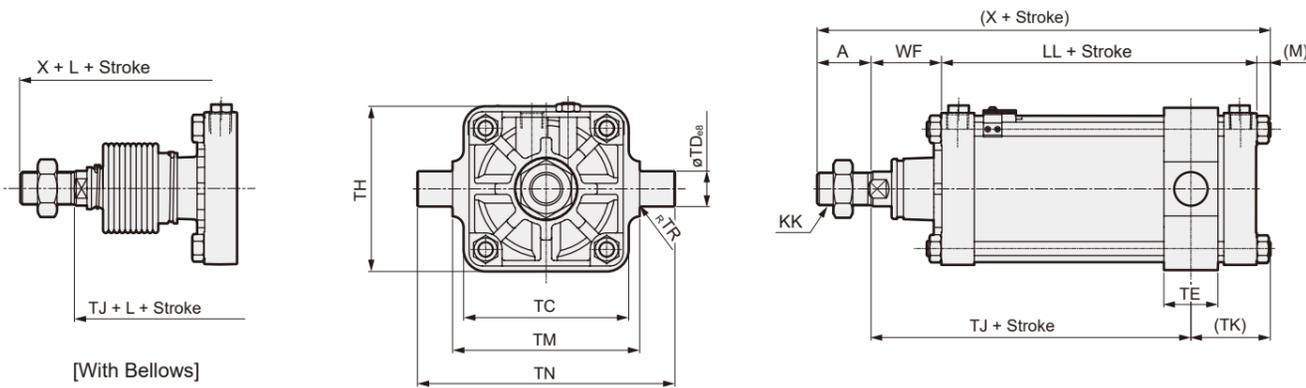
● Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions																With Bellows
Bore Size (mm)	A	KK	LL	M	WF	X	TC	TD	TE	TF	TG	TH	TM	TN	TR	L	
ø125	50	M30 × 1.5	92	11	65	218	150	32	50	126	42	150	170	234	2	(Stroke/4.55) + 11	
ø140	50	M30 × 1.5	103	11	67	231	154	36	55	134.5	46.5	170	190	262	2	(Stroke/4.55) + 9	
ø160	56	M36 × 1.5	106	13	71	246	190	40	60	141	49	190	212	292	2	(Stroke/5.15) + 9	
ø180	63	M40 × 1.5	110	15	78	266	210	45	65	150.5	52.5	210	236	326	2	(Stroke/5.15) + 9	
ø200	72	M45 × 1.5	123	16	88	299	242	45	70	168	59	242	265	355	2	(Stroke/5.30) + 9	
ø250	88	M56 × 2	141	19	94	342	300	56	80	184	70	300	335	447	2	(Stroke/6.40) + 9	

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end is not possible.
- *4: For outer dimensions diagram of accessories, refer to P. 883.
- *5: For the minimum producible stroke, please refer to P. 898.

● Head Side Trunnion Type (TB)

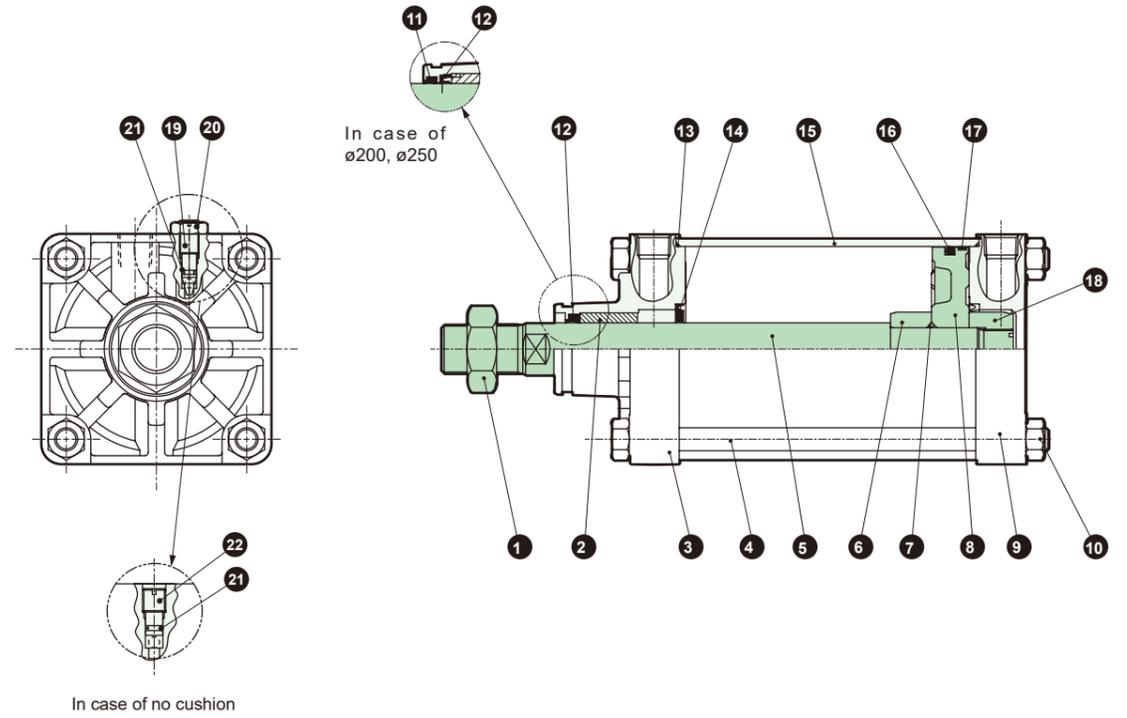


Code	Head Side Trunnion Type (TB) Mounting Dimensions																With Bellows
Bore Size (mm)	A	KK	LL	M	WF	X	TC	TD	TE	TH	TJ	TK	TM	TN	TR	L	
ø125	50	M30 × 1.5	92	11	65	218	150	32	50	150	96	72	170	234	2	(Stroke/4.55) + 11	
ø140	50	M30 × 1.5	103	11	67	231	154	36	55	170	102.5	78.5	190	262	2	(Stroke/4.55) + 9	
ø160	56	M36 × 1.5	106	13	71	246	190	40	60	190	107	83	212	292	2	(Stroke/5.15) + 9	
ø180	63	M40 × 1.5	110	15	78	266	210	45	65	210	115.5	87.5	236	326	2	(Stroke/5.15) + 9	
ø200	72	M45 × 1.5	123	16	88	299	242	45	70	242	131	96	265	355	2	(Stroke/5.30) + 9	
ø250	88	M56 × 2	141	19	94	342	300	56	80	300	145	109	335	447	2	(Stroke/6.40) + 9	

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the head side stroke end is not possible.
- *4: For outer dimensions diagram of accessories, refer to P. 883.
- *5: For the minimum producible stroke, please refer to P. 898.

Internal Structure Diagram/Material

● SCS2-T



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	14	Cushion Packing	Fluororubber, Steel	Only with cushion
2	Bushing	Oil-impregnated Bearing Alloy		15	Cylinder Tube	Aluminum Alloy	Hard Anodized
3	Rod Cover	Aluminum Alloy	Chromate	16	Piston Packing	Fluoro Rubber	
4	Tie Rod	Steel	Zinc Chromate	17	Wear Ring	Fabric-reinforced phenolic resin	
5	Piston Rod	Steel	Industrial Hard Chrome Plating	18	Cushion Ring B	Steel	Zinc Chromate
6	Cushion Ring A	Steel	Zinc Chromate	19	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc Chromate
7	Piston Gasket	Fluoro Rubber		20	Hexagon Nut	Steel	Zinc Chromate
8	Piston	Aluminum Alloy		21	Needle Gasket	Fluoro Rubber	
9	Head Cover	Aluminum Alloy	Chromate	22	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	Only without cushion
10	Hexagon Nut	Steel	Zinc Chromate				
11	Scraper	Fluoro Rubber					
12	Rod Packing	Fluoro Rubber					
13	Cylinder Gasket	Fluoro Rubber					

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



Large Bore Size Cylinder
Double-acting, Double rod, Lubricated type, Non-lube type

SCS2-D Series

● Bore Size: ϕ 125, ϕ 140, ϕ 160, ϕ 180, ϕ 200, ϕ 250

Circuit Diagram Symbol

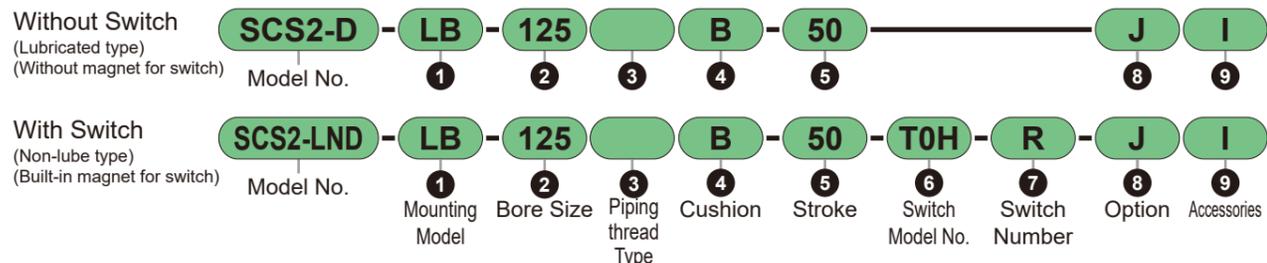


Custom Products



SCS2-D Series Model No. Notation Method

Model No. Notation Method



1 Mounting type Brackets are attached and shipped.

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

Note: Tapped trunnion is supported as a custom product only for ϕ 125 to ϕ 160. Please consult us each time regarding external dimensions, etc.

2 Bore Size (mm)

Code	Content
125	ϕ 125
140	ϕ 140
160	ϕ 160
180	ϕ 180
200	ϕ 200
250	ϕ 250

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
ϕ 125 to ϕ 160	1 to 800	Every 1 mm
ϕ 180	1 to 900	
ϕ 200	1 to 1000	
ϕ 250	1 to 1200	

Note: For minimum stroke with switch, refer to P. 908.

6 Switch Model No.

For switch details, please refer to P. 971. Switches are assembled into the product before shipment. Also, T2WL switches are attached to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		Image
			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)	—	30 or less	—	100 or less	T3H□	T3V□	
			—	—	—	—	T3PH□	T3PV□	
		3-wire (PNP)	—	—	—	—	T2WH□	T2WV□	
			—	—	—	—	T3WH□	T3WV□	
	2-Color	2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
			—	30 or less	—	50 or less	T2YD□	—	
		3-wire (NPN)	—	—	—	—	T2YDT□	—	
			—	—	—	—	T2JH□	T2JV□	
Reed	1-Color	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□	
	No Indicator Lamp	110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□		
		—	—	—	—	—	—		

*1: For □ in the switch model number, 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.

*4: Switches other than the model numbers 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 T0H³
5 m T0H⁵

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
4	With 4 pieces

*1

*1

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

9 Accessories

Code	Content
I	Single Knuckle
Y	Double Knuckle (Pin and retaining ring included)

*1: "I" and "Y" cannot be selected at the same time.
*2: The quantity of accessories "I" and "Y" is 2 pieces.

8 Option

Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	Image
C2	With check valve in cushion part			
J	Bellows	100°C	200°C	
L		250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
Blank	Cushion needle position Standard			
R	Cushion needle position R			
S	Cushion needle position S			
T	Cushion needle position T			

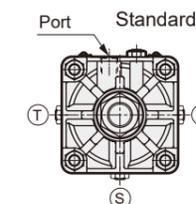
*1: Instantaneous maximum temperature is the temperature when sparks, cutting chips, etc., instantaneously hit the bellows.

*2: If option "J" or "L" is selected, bellows are included to both rods.

*3: Please check the cushion needle position display in the diagram below.

About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



*For combinations of variations and options, see P. 871.

Specifications of custom products Details Please refer to P. 958 to 967.

Code	Content	Code	Content	Code	Content
-XR□□□□	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluoro Rubber
-XF	Port 1 size down	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XK□	Mounting Bracket Rotational Assembly	-XMX◇	Tie rod extension	-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) **SCS2-D** - - **XP5**

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

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

SCS2-D - - **FP1**

Switch part single item model No. notation method

● Switch body + Mounting bracket set
SCS2-LN - **T0H** - **125**
6 Switch Model No. 2 Bore Size

● Switch body only
SW - **T0H**
6 Switch Model No.

● Mounting bracket set
SCS2-LN - **TS** - **125**
6 Switch Model No. 2 Bore Size

Code	Switch
TS	Other than T2YD, T2YDT
T	T2YD, T2YDT

Specifications

Item		SCS2-D, SCS2-LND (Double rod type)					
Bore Size	mm	ø125	ø140	ø160	ø180	ø200	ø250
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	°C	-5 to 60 (However, no freezing)					
Port Size		Rc 1/2	Rc 3/4				Rc1
Stroke tolerance	mm	+1.0 (Up to 300), +1.4 (Up to 1000), +1.8 (Up to 1200)					
Operating Piston Speed	mm/s	20 to 1000 (Please use within the absorbed energy.)					
Cushion		Air Cushion					
Effective air cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		SCS-D: Required (When lubricating, use turbine oil Class 1 ISO VG32), SCS-LND: Not Required					
Allowable absorbed energy J	With Cushion	63.5	91.5	116	152	233	362
	Without Cushion	0.371	0.386	0.386	0.958	1.08	2.32
		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)	Trunnion type minimum stroke (mm)
ø125	50, 75, 100, 150, 200, 250, 300	800	1	23
ø140				25
ø160				27
ø180				28
ø200				28
ø250				28

Type 2 pressure vessel inspection Target stroke

Bore Size	Stroke
ø200	946 or more
ø250	752 or more

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

Min. Stroke with Switch

Item	Stroke when mounting on the same surface	Stroke of intermediate (tapped) trunnion type	Stroke of rod side (tapped) trunnion type	Stroke of head side (tapped) trunnion type
Switch type				
Reed switch (T◇)	20 or more	120 or more	70 or more	
		125 or more	75 or more	
		130 or more	80 or more	
		135 or more	85 or more	
		140 or more	90 or more	
		150 or more	100 or more	

Cylinder Weight

Item/Mounting Style	Product Weight at Stroke (S) = 0 mm						Switch weight		S = Added weight per 100 mm
	Basic type (00)	Axial Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)	Switch	Mounting bracket	
ø125	9.02	10.52	12.32	12.02	12.12	12.42	Refer to the weight listed in the switch specifications on P. 971.	0.028	2.17
ø140	10.95	12.95	16.35	14.75	14.95	14.15		0.030	2.41
ø160	15.05	18.15	21.95	20.05	20.35	21.45		0.034	3.21
ø180	20.15	24.65	32.15	27.55	28.05	28.25		0.038	4.21
ø200	27.68	33.38	41.38	37.18	37.38	39.48		0.040	5.08
ø250	48.51	56.91	74.41	72.51	67.01	77.21		0.045	7.60

(Example) Product Weight of SCS2-LND-LB-125B-300-T0H-D

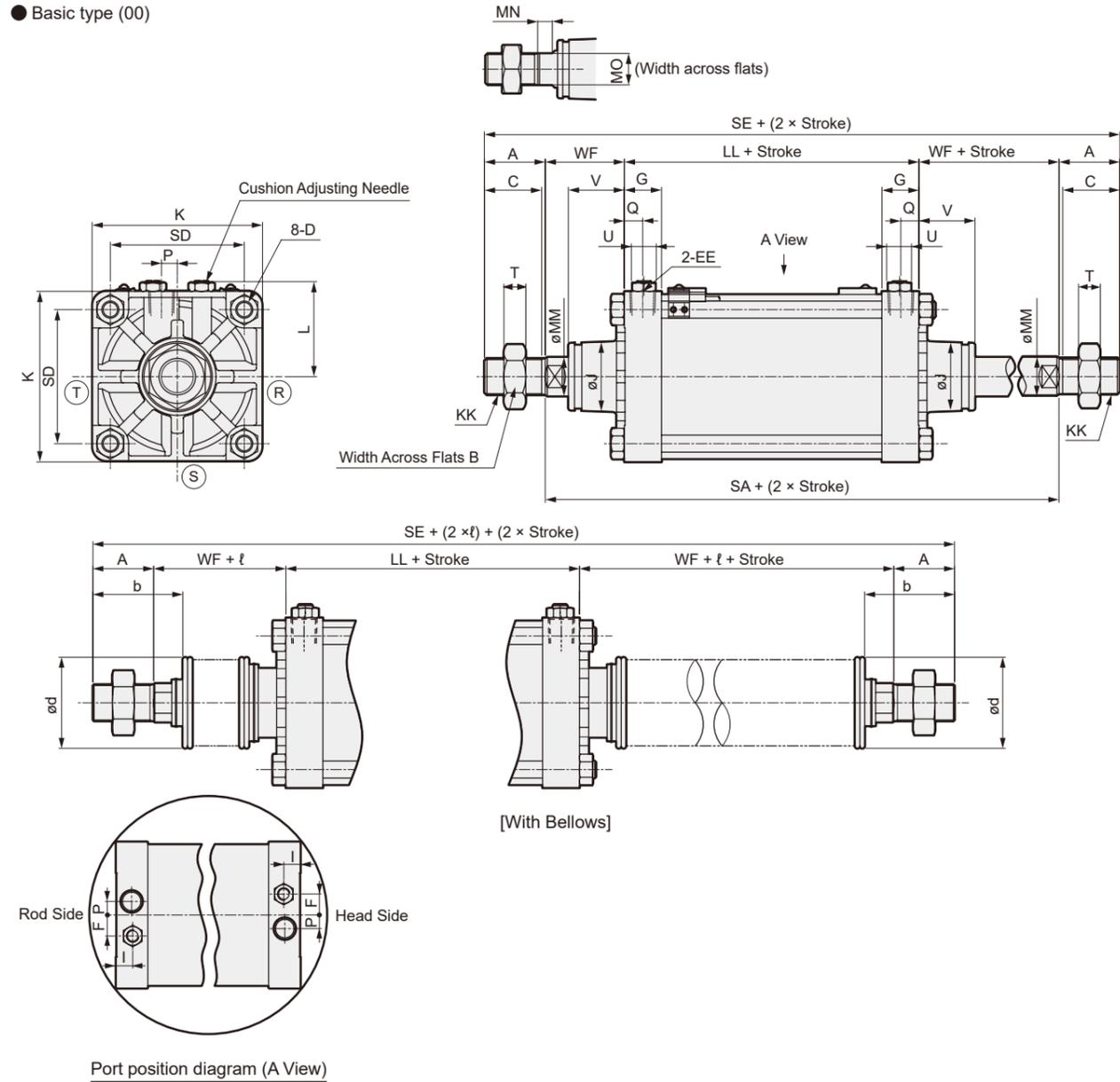
- Product Weight at S=0 mm 10.52 kg
- S=300 mm added weight $2.17 \times \frac{300}{100} = 6.51$ kg
- Weight of 2 switches (T0H-D) ... $0.018 \times 2 = 0.036$ kg
- Product Weight of 2 switch brackets $0.028 \times 2 = 0.056$ kg
- Product Weight $10.52 + 6.51 + 0.036 + 0.056 = 17.122$ kg

Theoretical Thrust Table

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	
ø125	Push/Pull	1.15×10^3	1.72×10^3	2.29×10^3	3.44×10^3	4.59×10^3	5.73×10^3	6.88×10^3	8.03×10^3	9.17×10^3	1.03×10^4	1.15×10^4	
ø140	Push/Pull	1.46×10^3	2.19×10^3	2.92×10^3	4.38×10^3	5.84×10^3	7.29×10^3	8.75×10^3	1.02×10^4	1.17×10^4	1.31×10^4	1.46×10^4	
ø160	Push/Pull	1.88×10^3	2.83×10^3	3.77×10^3	5.65×10^3	7.54×10^3	9.42×10^3	1.13×10^4	1.32×10^4	1.51×10^4	1.70×10^4	1.88×10^4	
ø180	Push/Pull	2.39×10^3	3.58×10^3	4.77×10^3	7.16×10^3	9.54×10^3	1.19×10^4	1.43×10^4	1.67×10^4	1.91×10^4	2.15×10^4	2.39×10^4	
ø200	Push/Pull	2.95×10^3	4.42×10^3	5.89×10^3	8.84×10^3	1.18×10^4	1.47×10^4	1.77×10^4	2.06×10^4	2.36×10^4	2.65×10^4	2.95×10^4	
ø250	Push/Pull	4.63×10^3	6.94×10^3	9.25×10^3	1.39×10^4	1.85×10^4	2.31×10^4	2.78×10^4	3.24×10^4	3.70×10^4	4.16×10^4	4.63×10^4	

Outline Dimension Drawing

● Basic type (00)



Code	Basic Type (00) Basic Dimensions												
Bore Size (mm)	A	B	C	D	EE	F	G	I	J	K	KK	L	LL
ø125	50	46	47	M14 × 1.5	Rc1/2	20	30.5	16	57	140	M30 × 1.5	78 to 82	92
ø140	50	46	47	M14 × 1.5	Rc3/4	20	34.5	20	57	157	M30 × 1.5	86.5 to 91	103
ø160	56	55	53	M16 × 1.5	Rc3/4	24	34.5	20	62	177	M36 × 1.5	96.5 to 101	106
ø180	63	60	60	M18 × 1.5	Rc3/4	24	34.5	20	68	200	M40 × 1.5	108 to 112	110
ø200	72	70	69	M20 × 1.5	Rc3/4	24	37.5	20.5	75	220	M45 × 1.5	120.5 to 129	123
ø250	88	85	84	M24 × 1.5	Rc1	24	42.5	25.5	93	274	M56 × 2	147.5 to 156	141

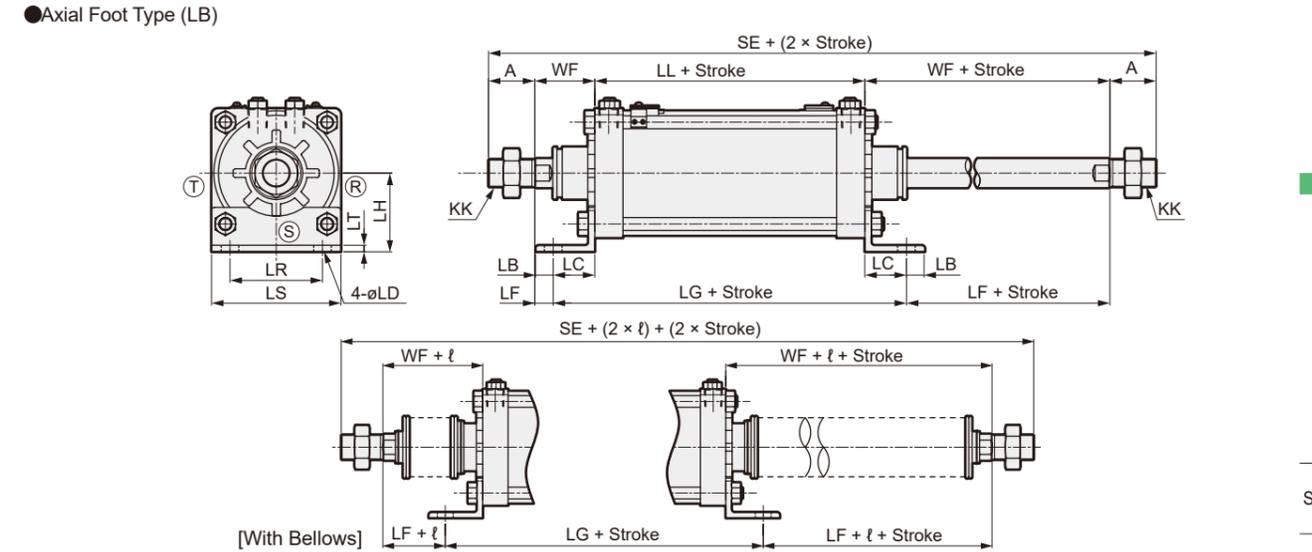
Code	With Bellows													
Bore Size (mm)	MM	MN	MO	P	Q	SD	SE	T	U	V	WF	b	d	ℓ
ø125	32	15	27	13	15	110	322	18	19	45.5	65	74	75	(Stroke/4.55) + 11
ø140	32	15	27	15	17	124	337	18	19	45.5	67	74	75	(Stroke/4.55) + 9
ø160	40	15	36	15	17	142	360	21	19	48	71	82	80	(Stroke/5.15) + 9
ø180	45	17	41	15	17	160	392	24	19	53	78	91	91	(Stroke/5.15) + 9
ø200	50	20	46	20	18	175	443	27	24	60	88	102	95	(Stroke/5.30) + 9
ø250	60	22	55	22	21	216	505	34	24	64	94	120	120	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The ℓ dimension is rounded up to the nearest whole number.
 *3: The position of the width across flats for spanners on the left and right is not fixed.
 *4: For dimensions of models with switches, see P. 956.
 *5: For outer dimensions diagram of accessories, refer to P. 883.

Double-acting, Double rod, Lubricated, Non-lube type

Outline Dimension Drawing

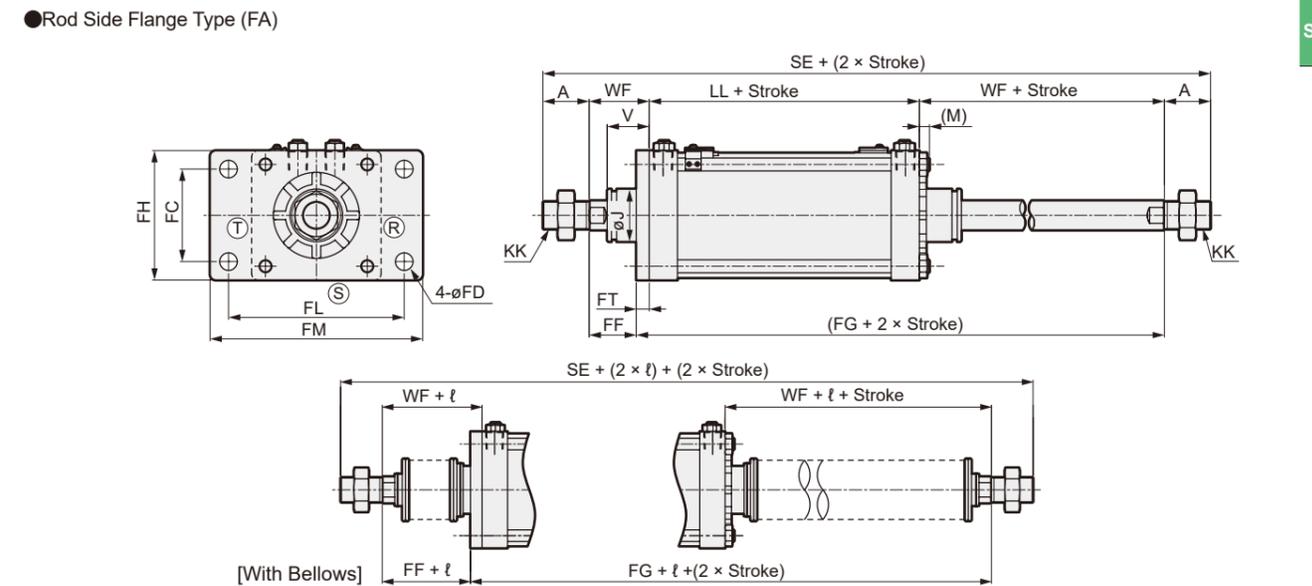
● Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions														With Bellows
Bore Size (mm)	A	KK	LL	SE	WF	LB	LC	LD	LF	LG	LH	LR	LS	LT	ℓ
ø125	50	M30 × 1.5	92	322	65	19	45	19	20	182	85	100	140	7	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	337	67	20	50	19	17	203	100	112	157	8	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	360	71	20	53	19	18	212	106	118	177	10	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	392	78	27	60	24	18	230	125	132	200	10	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	443	88	27	62	24	26	247	132	150	220	12	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	505	94	28	70	29	24	281	160	180	274	12	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle. *3: For dimensions of models with switches, see P. 956.
 *2: The ℓ dimension is rounded up to the nearest whole number. *4: For outer dimensions diagram of accessories, refer to P. 883.

● Rod Side Flange Type (FA)

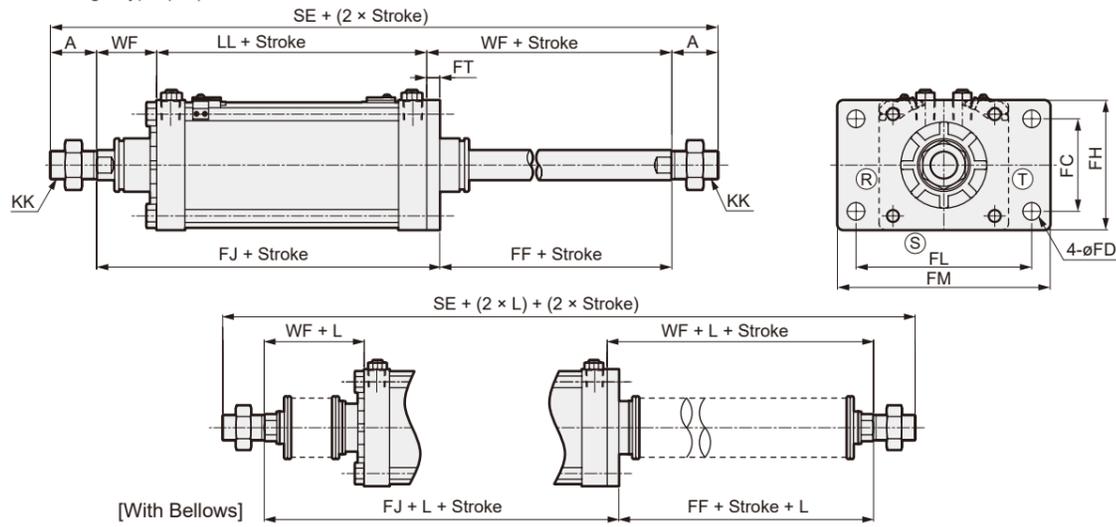


Code	Rod Side Flange Type (FA) Mounting Dimensions															With Bellows	
Bore Size (mm)	A	J	KK	LL	M	SE	V	WF	FC	FD	FF	FG	FH	FL	FM	FT	ℓ
ø125	50	57	M30 × 1.5	92	11	322	45.5	65	100	19	51	221	140	190	230	14	(Stroke/4.55) + 11
ø140	50	57	M30 × 1.5	103	11	337	45.5	67	112	19	48	239	157	212	250	19	(Stroke/4.55) + 9
ø160	56	62	M36 × 1.5	106	13	360	48	71	118	19	52	252	177	236	280	19	(Stroke/5.15) + 9
ø180	63	68	M40 × 1.5	110	15	392	53	78	132	24	53	276	200	265	310	25	(Stroke/5.15) + 9
ø200	72	75	M45 × 1.5	123	16	443	60	88	150	24	63	308	220	280	330	25	(Stroke/5.30) + 9
ø250	88	93	M56 × 2	141	19	505	64	94	180	29	64	353	274	355	415	30	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle. *3: For dimensions of models with switches, see P. 956.
 *2: The ℓ dimension is rounded up to the nearest whole number. *4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

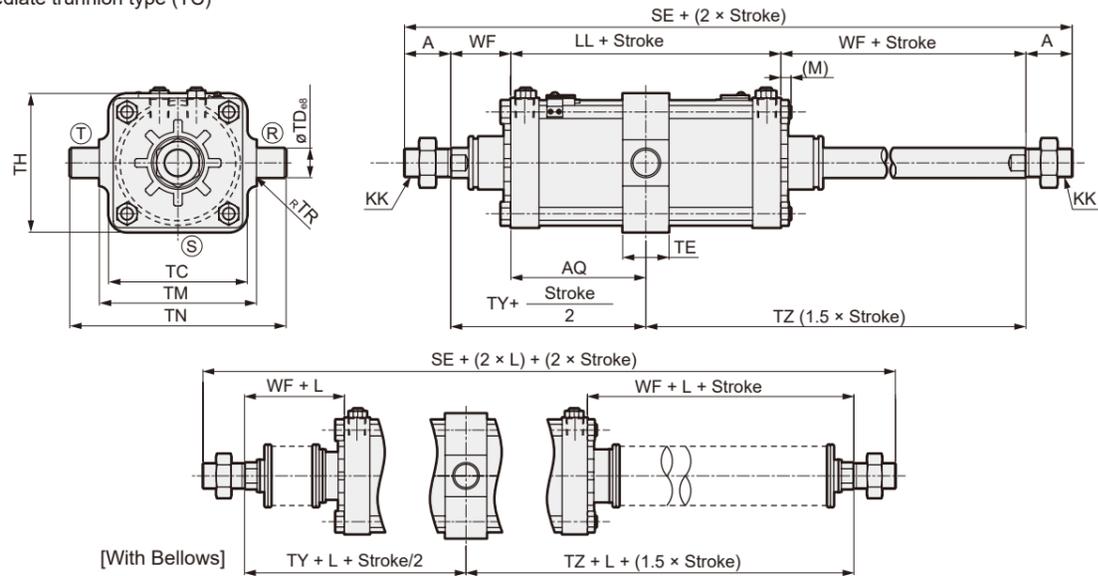
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions													With Bellows
Bore Size (mm)	A	KK	LL	SE	WF	FC	FD	FF	FH	FJ	FL	FM	FT	L
ø125	50	M30 × 1.5	92	322	65	100	19	51	140	171	190	230	14	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	337	67	112	19	48	157	189	212	250	19	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	360	71	118	19	52	177	196	236	280	19	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	392	78	132	24	53	200	213	265	310	25	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	443	88	150	24	63	220	236	280	330	25	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	505	94	180	29	64	274	265	355	415	30	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle. *3: For dimensions of models with switches, see P. 956.
 *2: The L dimension is rounded up to the nearest whole number. *4: For outer dimensions diagram of accessories, refer to P. 883.

●Intermediate trunnion type (TC)



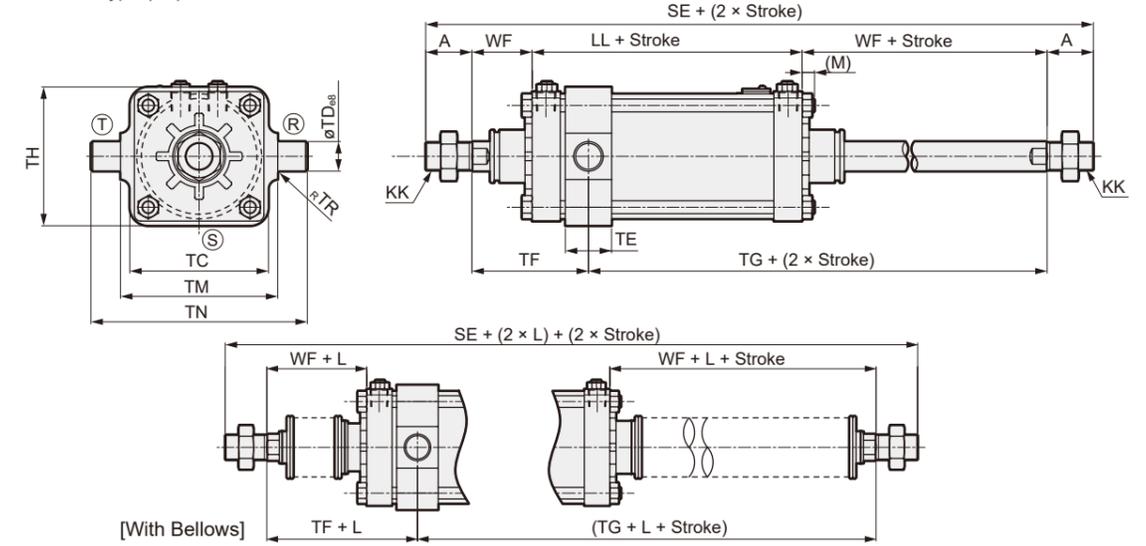
Code	Intermediate Trunnion Type (TC) Mounting Dimensions															With Bellows	
Bore Size (mm)	A	KK	LL	M	SE	WF	AQ	TC	TD	TE	TH	TY	TZ	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	322	65	46 + Stroke/2	150	32	50	150	111	111	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	337	67	51.5 + Stroke/2	154	36	55	170	118.5	118.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	360	71	53 + Stroke/2	190	40	60	190	124	124	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	392	78	55 + Stroke/2	210	45	65	210	133	133	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	443	88	61.5 + Stroke/2	242	45	70	242	149.5	149.5	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	505	94	70.5 + Stroke/2	300	56	80	300	164.5	164.5	335	447	2	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle. *4: For outer dimensions diagram of accessories, refer to P. 883.
 *2: The L dimension is rounded up to the nearest whole number. *5: For the minimum producible stroke, please refer to P. 908.
 *3: For dimensions of models with switches, see P. 956.

Double-acting, Double rod, Lubricated, Non-lube type

Outline Dimension Drawing

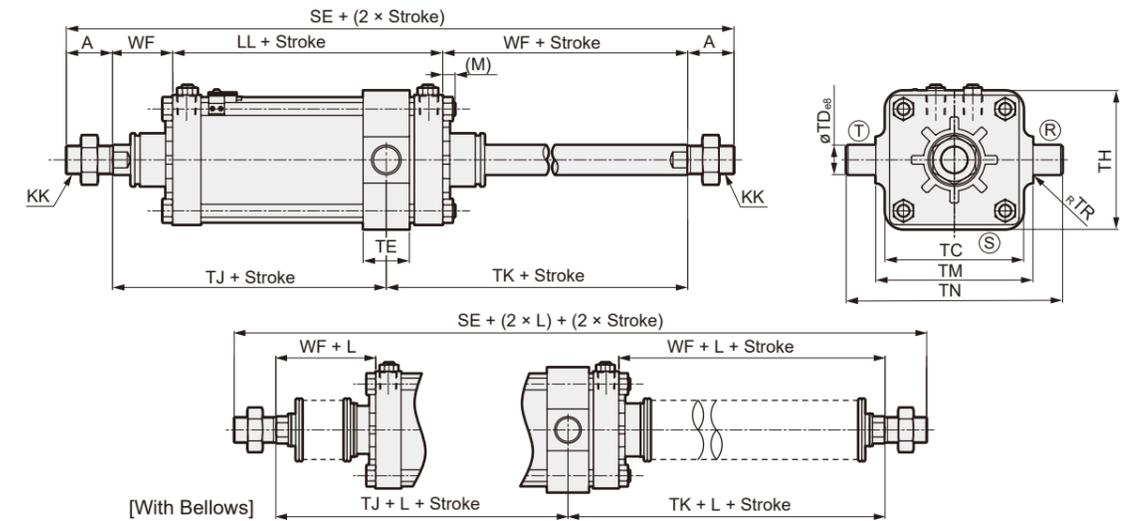
●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions															With Bellows
Bore Size (mm)	A	KK	LL	M	SE	WF	TC	TD	TE	TF	TG	TH	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	322	65	150	32	50	126	96	150	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	337	67	154	36	55	134.5	102.5	170	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	360	71	190	40	60	141	107	190	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	392	78	210	45	65	150.5	115.5	210	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	443	88	242	45	70	168	131	242	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	505	94	300	56	80	184	145	300	335	447	2	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle. *4: For dimensions of models with switches, see P. 956.
 *2: The L dimension is rounded up to the nearest whole number. *5: For outer dimensions diagram of accessories, refer to P. 883.
 *3: Position detection at the rod side stroke end is not possible. *6: For the minimum producible stroke, please refer to P. 908.

●Head Side Trunnion Type (TB)

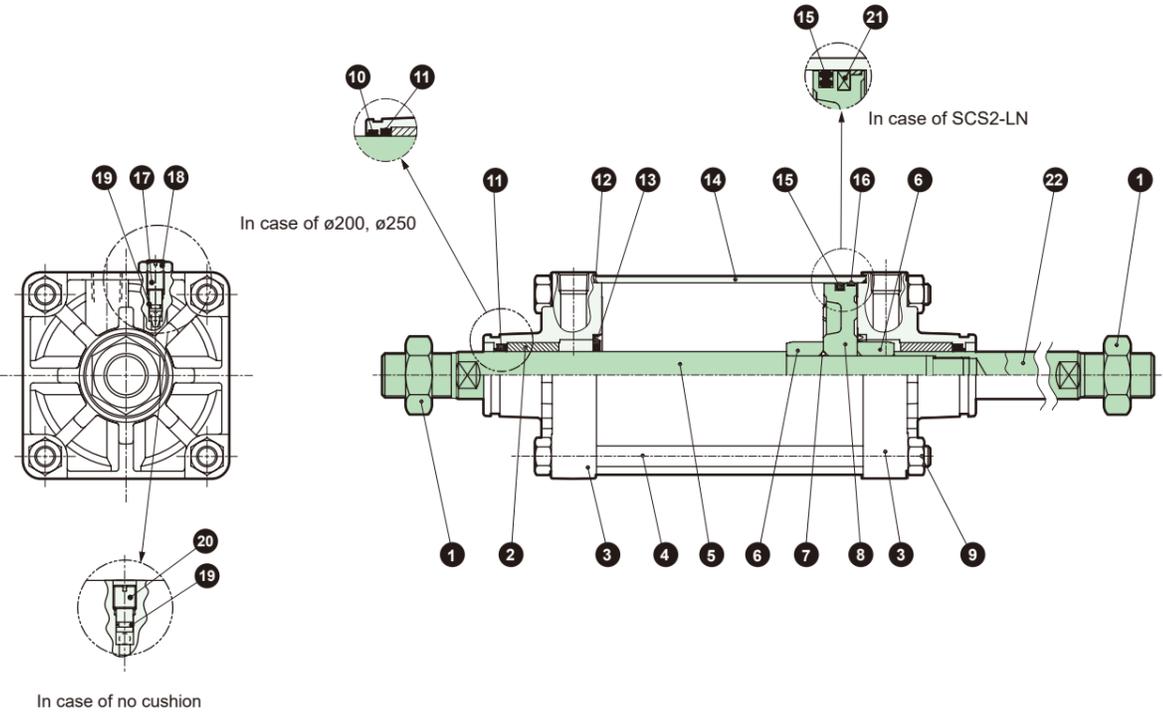


Code	Head Side Trunnion Type (TB) Mounting Dimensions															With Bellows
Bore Size (mm)	A	KK	LL	M	SE	WF	TC	TD	TE	TH	TJ	TK	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	322	65	150	32	50	150	96	126	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	337	67	154	36	55	170	102.5	134.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	360	71	190	40	60	190	107	141	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	392	78	210	45	65	210	115.5	150.5	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	443	88	242	45	70	242	131	168	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	505	94	300	56	80	300	145	184	335	447	2	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle. *4: For dimensions of models with switches, see P. 956.
 *2: The L dimension is rounded up to the nearest whole number. *5: For outer dimensions diagram of accessories, refer to P. 883.
 *3: Position detection at the head side stroke end is not possible. *6: For the minimum producible stroke, please refer to P. 908.

Internal Structure Diagram/Material

●SCS2-(LN)D



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	14	Cylinder Tube	Aluminum Alloy	Hard Anodized
2	Bushing	Oil-impregnated Bearing Alloy		15	Piston Packing	Nitrile Rubber	
3	Rod Cover	Aluminum Alloy	Chromate	16	Wear Ring	ø125 to ø200: Polyacetal ø250: Fabric-reinforced phenol	
4	Tie Rod	Steel	Zinc Chromate	17	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc Chromate
5	Piston Rod A	Steel	Industrial Hard Chrome Plating	18	Hexagon Nut	Steel	Zinc Chromate
6	Cushion Ring A	Steel	Zinc Chromate	19	Needle Gasket	Nitrile Rubber	
7	Piston Gasket	Nitrile Rubber		20	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	
8	Piston	Aluminum Alloy		21	Magnet	Rubber	
9	Hexagon Nut	Steel	Zinc Chromate	22	Piston Rod B	Steel	Industrial Hard Chrome Plating
10	Scraper	Nitrile Rubber					
11	Rod Packing	Nitrile Rubber					
12	Cylinder Gasket	Nitrile Rubber					
13	Cushion Packing	Nitrile Rubber, Steel	Only with cushion				

MEMO

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

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

Cylinder Switch

Ending

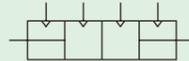


Large Bore Size Cylinder
Double Acting, Back-to-Back Type

SCS2-B Series

● Bore Size: $\phi 125$, $\phi 140$, $\phi 160$, $\phi 180$, $\phi 200$, $\phi 250$

Circuit Diagram Symbol



Custom Products **RoHS**

SCS2-B Series

Model No. Notation Method

7 Accessories

Code	Content	
I	Single Knuckle	
Y	Double Knuckle (Pin and retaining ring included)	

Note: The quantity of accessories "I" and "Y" is 2 pieces.

6 Option

Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	
C2	With check valve in cushion part			
J	Bellows	100°C	200°C	
L		250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
Blank	Cushion needle position Standard			
R	Cushion needle position R			
S	Cushion needle position S			
T	Cushion needle position T			

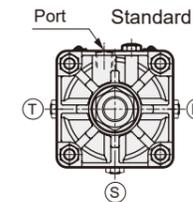
*1: Instantaneous maximum temperature is the temperature when sparks, cutting chips, etc., instantaneously hit the bellows.

*2: If option "J" or "L" is selected, bellows are included to both rods.

*3: Please check the cushion needle position display in the diagram below.

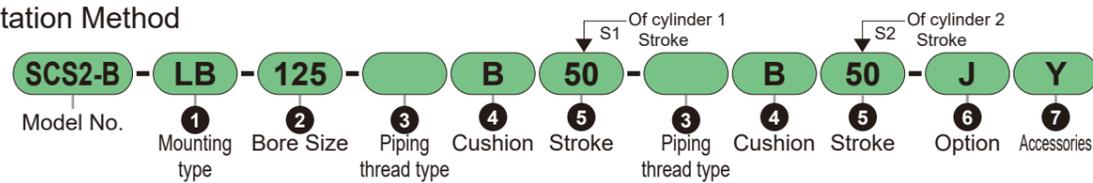
About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



Model No. Notation Method

Without Switch
(Without magnet for switch)



1 Mounting type

Brackets are attached and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
TA	Rod Side Trunnion Type	
TB	Head Side Trunnion Type	

Note: Tapped trunnion is supported as a custom product only for $\phi 125$ to $\phi 160$. Please consult us each time regarding external dimensions, etc.

2 Bore Size (mm)

Code	Content
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$

3 Piping thread type

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

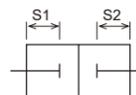
4 Cushion

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
$\phi 125$ to $\phi 160$	1 to 800	Every 1 mm
$\phi 180$	1 to 900	
$\phi 200$	1 to 1000	
$\phi 250$	1 to 1200	

Stroke of cylinder 1: 50 mm Indicated by S1
+ Stroke of cylinder 2: 50 mm Indicated by S2
Total stroke: 100 mm S1 + S2



*For combinations of variations and options, see P. 871.

Specifications of custom products

Details Please refer to P. 958 to 967.

Code	Content	Code	Content	Code	Content
-XR□□□□	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluoro Rubber
-XF	Port 1 size down	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XK□	Mounting Bracket Rotational Assembly	-MX◇	Tie rod extension	-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) SCS2-B-.....-XP5

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

Specifications

Item		SCS2-B (Back-to-back type)					
Bore Size	mm	ø125	ø140	ø160	ø180	ø200	ø250
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 60 (However, no freezing)					
Port Size		Rc 1/2	Rc 3/4			Rc1	
Stroke tolerance	mm	^{+1.0} ₀ (Up to 300), ^{+1.4} ₀ (Up to 1000), ^{+1.8} ₀ (Up to 1200)					
Operating Piston Speed	mm/s	20 to 1000 (Please use within the absorbed energy.)					
Cushion		Air Cushion					
Effective air cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable absorbed energy J	With Cushion	63.5	91.5	116	152	233	362
	Without Cushion	0.371	0.386	0.386	0.958	1.08	2.32
Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.							

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
ø125	Push	6.14 × 10 ²	1.23 × 10 ³	1.84 × 10 ³	2.45 × 10 ³	3.68 × 10 ³	4.91 × 10 ³	6.14 × 10 ³	7.36 × 10 ³	8.59 × 10 ³	9.82 × 10 ³	1.10 × 10 ⁴	1.23 × 10 ⁴
	Pull	5.73 × 10 ²	1.15 × 10 ³	1.72 × 10 ³	2.29 × 10 ³	3.44 × 10 ³	4.59 × 10 ³	5.73 × 10 ³	6.88 × 10 ³	8.03 × 10 ³	9.17 × 10 ³	1.03 × 10 ⁴	1.15 × 10 ⁴
ø140	Push	7.70 × 10 ²	1.54 × 10 ³	2.31 × 10 ³	3.08 × 10 ³	4.62 × 10 ³	6.16 × 10 ³	7.70 × 10 ³	9.24 × 10 ³	1.08 × 10 ⁴	1.23 × 10 ⁴	1.39 × 10 ⁴	1.54 × 10 ⁴
	Pull	7.29 × 10 ²	1.46 × 10 ³	2.19 × 10 ³	2.92 × 10 ³	4.38 × 10 ³	5.84 × 10 ³	7.29 × 10 ³	8.75 × 10 ³	1.02 × 10 ⁴	1.17 × 10 ⁴	1.31 × 10 ⁴	1.46 × 10 ⁴
ø160	Push	1.01 × 10 ³	2.01 × 10 ³	3.02 × 10 ³	4.02 × 10 ³	6.03 × 10 ³	8.04 × 10 ³	1.01 × 10 ⁴	1.21 × 10 ⁴	1.41 × 10 ⁴	1.61 × 10 ⁴	1.81 × 10 ⁴	2.01 × 10 ⁴
	Pull	9.42 × 10 ²	1.88 × 10 ³	2.83 × 10 ³	3.77 × 10 ³	5.65 × 10 ³	7.54 × 10 ³	9.42 × 10 ³	1.13 × 10 ⁴	1.32 × 10 ⁴	1.51 × 10 ⁴	1.70 × 10 ⁴	1.88 × 10 ⁴
ø180	Push	1.27 × 10 ³	2.54 × 10 ³	3.82 × 10 ³	5.09 × 10 ³	7.63 × 10 ³	1.02 × 10 ⁴	1.27 × 10 ⁴	1.53 × 10 ⁴	1.78 × 10 ⁴	2.04 × 10 ⁴	2.29 × 10 ⁴	2.54 × 10 ⁴
	Pull	1.19 × 10 ³	2.39 × 10 ³	3.58 × 10 ³	4.77 × 10 ³	7.16 × 10 ³	9.54 × 10 ³	1.19 × 10 ⁴	1.43 × 10 ⁴	1.67 × 10 ⁴	1.91 × 10 ⁴	2.15 × 10 ⁴	2.39 × 10 ⁴
ø200	Push	1.57 × 10 ³	3.14 × 10 ³	4.71 × 10 ³	6.28 × 10 ³	9.42 × 10 ³	1.26 × 10 ⁴	1.57 × 10 ⁴	1.88 × 10 ⁴	2.20 × 10 ⁴	2.51 × 10 ⁴	2.83 × 10 ⁴	3.14 × 10 ⁴
	Pull	1.47 × 10 ³	2.95 × 10 ³	4.42 × 10 ³	5.89 × 10 ³	8.84 × 10 ³	1.18 × 10 ⁴	1.47 × 10 ⁴	1.77 × 10 ⁴	2.06 × 10 ⁴	2.36 × 10 ⁴	2.65 × 10 ⁴	2.95 × 10 ⁴
ø250	Push	2.45 × 10 ³	4.91 × 10 ³	7.36 × 10 ³	9.82 × 10 ³	1.47 × 10 ⁴	1.96 × 10 ⁴	2.45 × 10 ⁴	2.95 × 10 ⁴	3.44 × 10 ⁴	3.93 × 10 ⁴	4.42 × 10 ⁴	4.91 × 10 ⁴
	Pull	2.31 × 10 ³	4.63 × 10 ³	6.94 × 10 ³	9.25 × 10 ³	1.39 × 10 ⁴	1.85 × 10 ⁴	2.31 × 10 ⁴	2.78 × 10 ⁴	3.24 × 10 ⁴	3.70 × 10 ⁴	4.16 × 10 ⁴	4.63 × 10 ⁴

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Trunnion type minimum stroke (mm)
ø125	50, 75, 100, 150, 200, 250, 300	800	1	23
ø140				25
ø160				27
ø180		28		
ø200		28		
ø250		28		

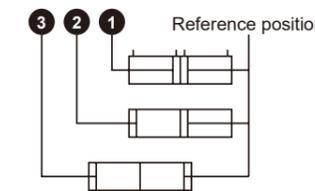
Type 2 pressure vessel inspection
Target stroke

Bore Size	S1 + S2 stroke
ø180	1481 or more
ø200	892 or more
ø250	690 or more

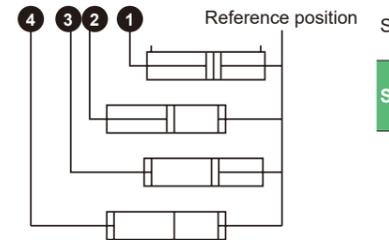
Note: Intermediate strokes can be produced in 1 mm increments.

Usage Example

When combined with the same stroke. 3 positions can be taken.



When combining different strokes. 4 positions can be taken.



Cylinder Weight

(Unit: kg)

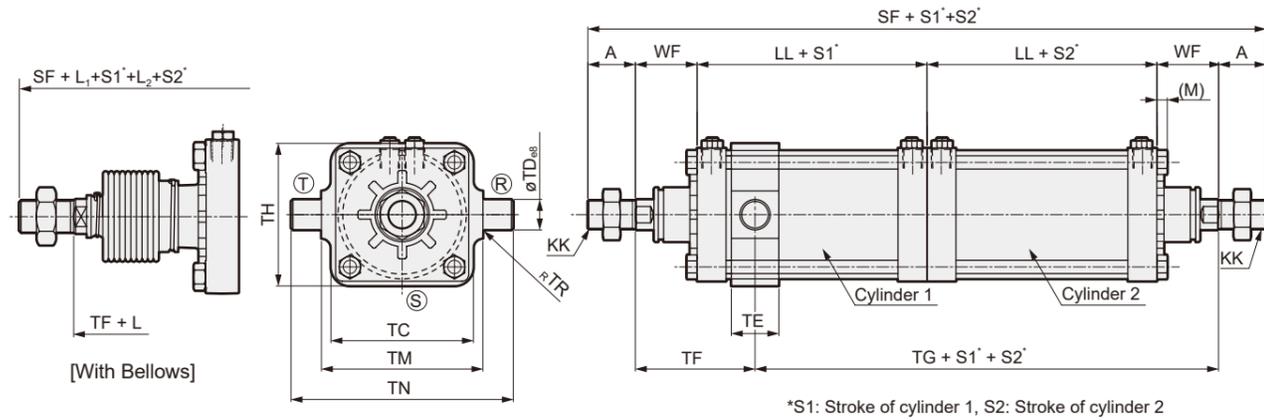
Item/Mounting Style	Product Weight at Stroke (S) = 0 mm						S=100 mm Per Added Weight
	Basic type (00)	Axial Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)	
ø125	14.44	15.94	17.74	17.44	17.54	17.84	1.54
ø140	18.70	20.70	24.10	22.50	22.70	21.90	1.78
ø160	24.70	27.80	31.60	29.70	30.00	31.10	2.22
ø180	33.50	38.00	45.50	40.90	41.40	41.60	2.96
ø200	45.56	51.26	59.26	55.06	55.26	57.36	3.54
ø250	81.02	89.42	106.92	105.02	99.52	109.72	5.38

(Example) Product Weight of SCS2-B-LB-125B-300 ————

- Product Weight at S=0 mm 15.94 kg
- S=300 mm added weight $2 \times 1.54 \times \frac{300}{100} = 9.24$ kg
- Product Weight $15.94 + 9.24 = 25.18$ kg

Outline Dimension Drawing

●Rod side trunnion type (TA)

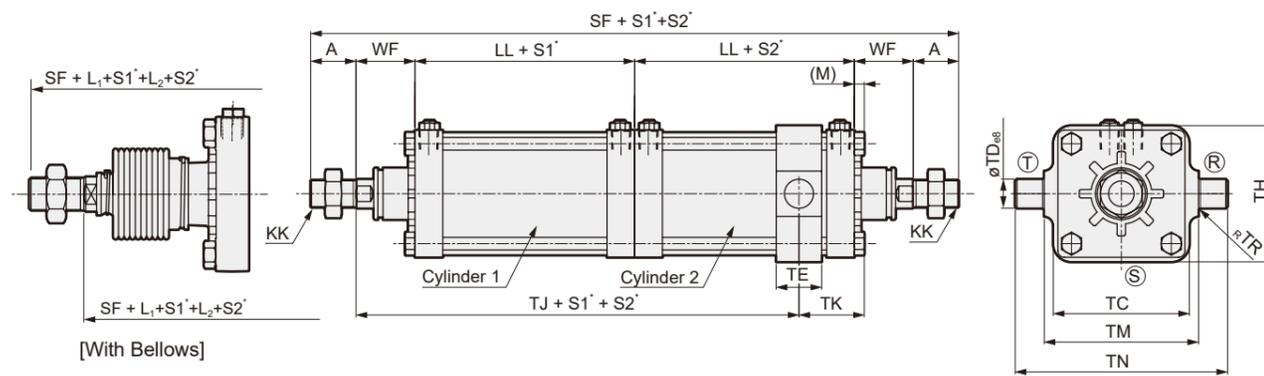


*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Rod Side Trunnion Type (TA) Mounting Dimensions														With Bellows	
	A	KK	LL	M	SF	WF	TC	TD	TE	TF	TG	TH	TM	TN	TR	L ₁ , L ₂
CMK2	50	M30 × 1.5	92	11	414	65	150	32	50	126	188	150	170	234	2	(Stroke/4.55) + 11
CMK2	50	M30 × 1.5	103	11	440	67	154	36	55	134.5	205.5	170	190	262	2	(Stroke/4.55) + 9
CMK2	56	M36 × 1.5	106	13	466	71	190	40	60	141	213	190	212	292	2	(Stroke/5.15) + 9
CMA2	63	M40 × 1.5	110	15	502	78	210	45	65	150.5	225.5	210	236	326	2	(Stroke/5.15) + 9
CMA2	72	M45 × 1.5	123	16	566	88	242	45	70	168	254	242	265	355	2	(Stroke/5.30) + 9
SCM	88	M56 × 2	141	19	646	94	300	56	80	184	286	300	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end of cylinder 1 is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 918.

●Head Side Trunnion Type (TB)



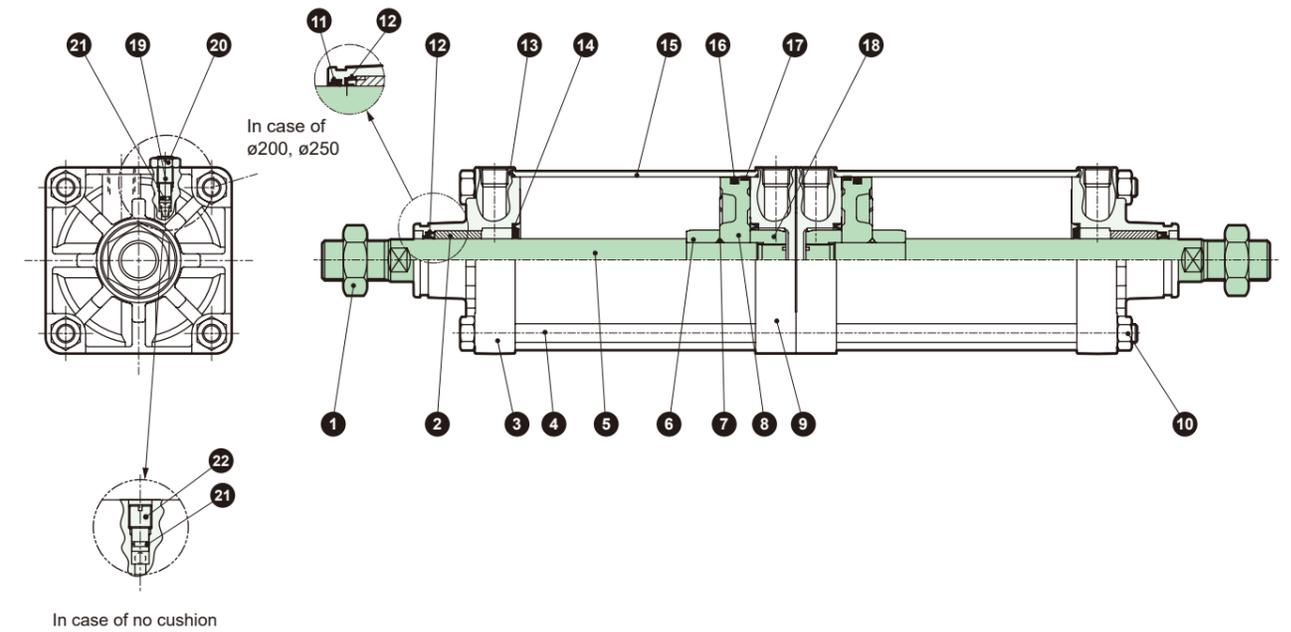
*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Head Side Trunnion Type (TB) Mounting Dimensions														With Bellows	
	A	KK	LL	M	SF	WF	TC	TD	TE	TH	TJ	TK	TM	TN	TR	L ₁ , L ₂
CMK2	50	M30 × 1.5	92	11	414	65	150	32	50	150	96	72	170	234	2	(Stroke/4.55) + 11
CMK2	50	M30 × 1.5	103	11	440	67	154	36	55	170	102.5	78.5	190	262	2	(Stroke/4.55) + 9
CMK2	56	M36 × 1.5	106	13	466	71	190	40	60	190	107	83	212	292	2	(Stroke/5.15) + 9
CMA2	63	M40 × 1.5	110	15	502	78	210	45	65	210	115.5	87.5	236	326	2	(Stroke/5.15) + 9
CMA2	72	M45 × 1.5	123	16	566	88	242	45	70	242	131	96	265	355	2	(Stroke/5.30) + 9
SCM	88	M56 × 2	141	19	646	94	300	56	80	300	145	109	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end of cylinder 2 is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 918.

Internal Structure Diagram/Material

●SCS2-B



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	14	Cushion Packing	Nitrile Rubber, Steel	Only with cushion
2	Bushing	Oil-Impregnated Bearing Alloy		15	Cylinder Tube	Aluminum Alloy	Hard Anodized
3	Rod Cover	Aluminum Alloy	Chromate	16	Piston Packing	Nitrile Rubber	
4	Tie Rod	Steel	Zinc Chromate	17	Wear Ring	ø125 to ø200: Polyacetal ø250: Fabric-reinforced phenol	
5	Piston Rod	Steel	Industrial Hard Chrome Plating	18	Cushion Ring B	Steel	Zinc Chromate
6	Cushion Ring A	Steel	Zinc Chromate	19	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc chromate
7	Piston Gasket	Nitrile Rubber		20	Hexagon Nut	Steel	Zinc Chromate
8	Piston	Aluminum Alloy		21	Needle Gasket	Nitrile Rubber	
9	Head Cover	Aluminum Alloy	Chromate	22	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	
10	Hexagon Nut	Steel	Zinc Chromate				
11	Scraper	Nitrile Rubber					
12	Rod Packing	Nitrile Rubber					
13	Cylinder Gasket	Nitrile Rubber					

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



Large Bore Size Cylinder
Double Acting, Two-Stage Type

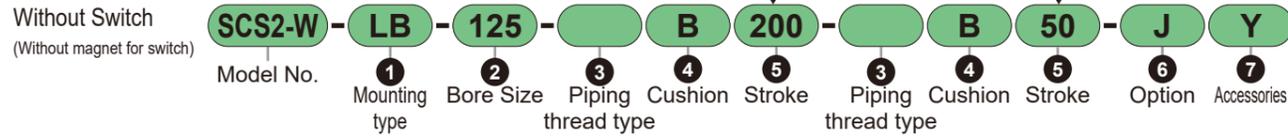
SCS2-W Series

● Bore Size: $\phi 125$, $\phi 140$, $\phi 160$, $\phi 180$, $\phi 200$, $\phi 250$

Custom Products **RoHS**

SCS2-W Series Model No. Notation Method

Model No. Notation Method



1 Mounting type Brackets are attached and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side 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	

Note: Tapped trunnion is supported as a custom product only for $\phi 125$ to $\phi 160$. Please consult us each time regarding external dimensions, etc.

2 Bore Size (mm)

Code	Content
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$

3 Piping thread type

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

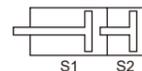
4 Cushion

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	Total stroke S1	1st stage stroke S2	Intermediate Stroke
$\phi 125$ to $\phi 160$	2 to 800	1 to 200	Every 1 mm
$\phi 180$	2 to 900		
$\phi 200$	2 to 1000		
$\phi 250$	2 to 1200		

1st Stage Stroke 50 mm Indicated by S2
+ 2nd stage stroke 150 mm
Total stroke 200 mm Indicated by S1



Note: Please make S1 longer than S2.

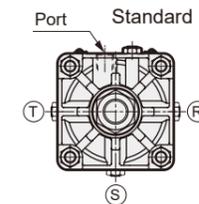
6 Option

Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	
C2	With check valve in cushion part			
J	Bellows	100°C	200°C	
L		250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
Blank	Cushion needle position Standard			
R	Cushion needle position R			
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: Please check the cushion needle position display in the diagram below.

About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



*For combinations of variations and options, see P. 871.

Specifications of custom products Details Please refer to P. 958 to 967.

Code	Content	Code	Content	Code	Content
-XR□□□□	Port/Cushion needle position specification	-XP7	Knuckle fixed by pin driving	-XT9	Scraper/Rod packing only Fluoro Rubber
-XF	Port 1 size down	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-T2	Fluorine Packing Type
-XK□	Mounting Bracket Rotational Assembly	-XMX◇	Tie rod extension	-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) **SCS2-W** - - **XP5**

7 Accessories

Code	Content	
I	Single Knuckle	
Y	Double Knuckle (Pin and retaining ring included)	
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

Cylinder Switch

Ending

Ending

Specifications

Item		SCS2-W (Two-stage type)					
Bore Size	mm	ø125	ø140	ø160	ø180	ø200	ø250
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	-5 to 60 (However, no freezing)					
Port Size		Rc 1/2	Rc 3/4			Rc1	
Stroke tolerance	mm	$^{+1.0}_0$ (Up to 300), $^{+1.4}_0$ (Up to 1000), $^{+1.8}_0$ (Up to 1200)					
Operating Piston Speed	mm/s	20 to 1000 (Please use within the absorbed energy.)					
Cushion		Air Cushion					
Effective air cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable absorbed energy J	With Cushion	63.5	91.5	116	152	233	362
	Without Cushion	0.371	0.386	0.386	0.958	1.08	2.32
Without cushion, large energy generated by external load cannot be absorbed. 00 It is recommended to use an external shock absorber together.							

*1: If S1 and S2 are the same, the maximum operating pressure is 0.5 MPa.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Trunnion type minimum stroke (mm)
ø125	50, 75, 100, 150, 200, 250, 300	800	2 (Total stroke)	23
ø140				25
ø160				27
ø180				28
ø200				28
ø250				28

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

Subject to Type 2 pressure vessel inspection
Stroke

Bore Size	S1 + S2 stroke
ø200	892 or more
ø250	690 or more

Cylinder Weight

(Unit: kg)

Item/Mounting Style	Product Weight at Stroke (S) = 0 mm						S=100 mm Per Added Weight
	Basic type (00)	Axial Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion type (TA, TB, TC)	
ø125	18.62	20.12	21.92	21.62	21.72	22.02	1.54
ø140	23.99	25.99	29.39	27.79	27.99	27.19	1.78
ø160	31.38	34.48	38.28	36.38	36.68	37.78	2.22
ø180	43.50	48.00	55.50	50.90	51.40	51.60	2.96
ø200	58.38	64.08	72.08	67.88	68.08	70.18	3.54
ø250	103.53	111.93	129.43	127.53	122.03	132.23	5.38

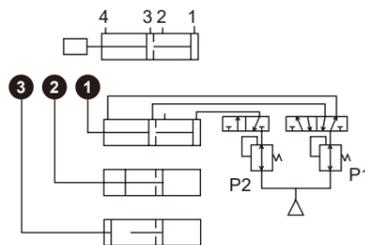
(Example) Product Weight of SCS2-W-LB-125B-300-300

- Product mass at S=0 mm 20.12 kg
- Added mass at S=300 mm $2 \times 1.54 \times \frac{300}{100} = 9.24$ kg
- Product Weight $20.12 + 9.24 = 29.36$ kg

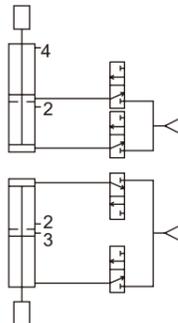
Usage Example

Set pressure $P2 > P1$.

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



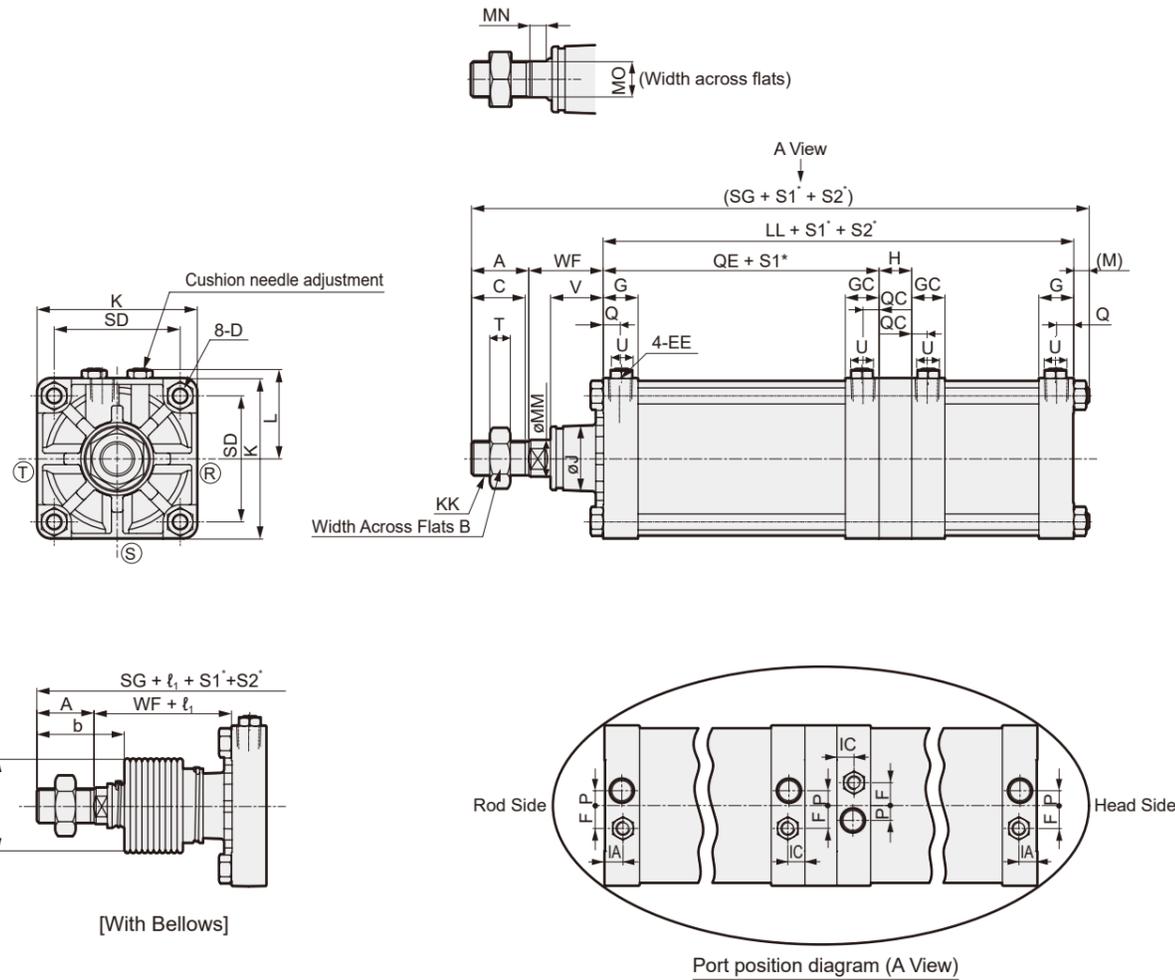
Depending on the load direction, $P2 = P1$ may be acceptable. In case of single acting use due to natural drop of load, ports 2 and 4 in the upper diagram, and ports 2 and 3 in the lower diagram become breather ports. Basically, piping to the port that does not require piping (port 2) will also improve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



MEMO

Outline Dimension Drawing

● Basic type (00)



*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2
*L1: Value obtained by calculating l dimension with stroke of cylinder 1

Code	Basic Type (00) Basic Dimensions														
Bore Size (mm)	A	B	C	D	EE	F	G	GC	H	IA	IC	J	K	KK	L
ø125	50	46	47	M14 × 1.5	Rc1/2	20	30.5	29.5	28	16	15	57	140	M30 × 1.5	78 to 82
ø140	50	46	47	M14 × 1.5	Rc3/4	20	34.5	33.5	28	20	19	57	157	M30 × 1.5	86.5 to 91
ø160	56	55	53	M16 × 1.5	Rc3/4	24	34.5	33.5	28	20	19	62	177	M36 × 1.5	96.5 to 101
ø180	63	60	60	M18 × 1.5	Rc3/4	24	34.5	33.5	33	20	19	68	200	M40 × 1.5	108 to 112
ø200	72	70	69	M20 × 1.5	Rc3/4	24	37.5	36.5	35	20.5	19.5	75	220	M45 × 1.5	120.5 to 129
ø250	88	85	84	M24 × 1.5	Rc1	24	42.5	41.5	39	25.5	24.5	93	274	M56 × 2	147.5 to 156

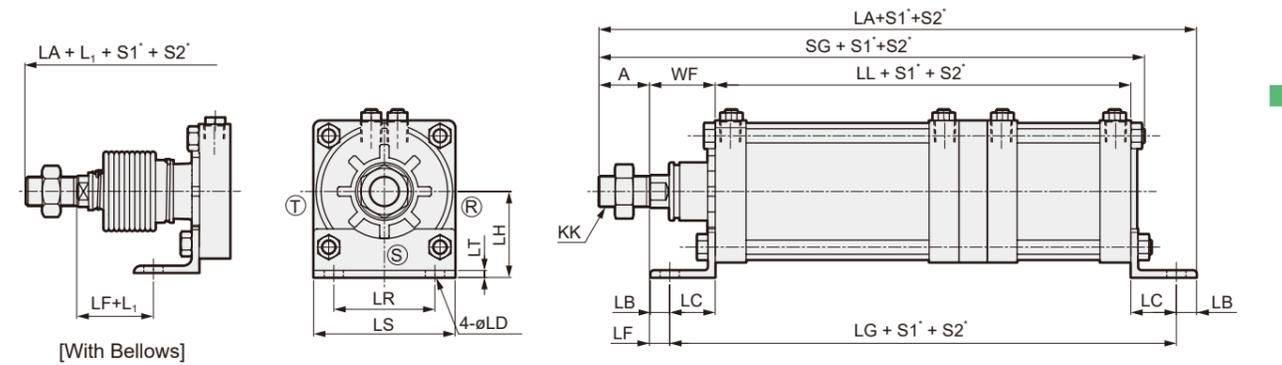
Code	With Bellows																	
Bore Size (mm)	QE	LL	M	MM	MN	MO	P	Q	QC	SD	SG	T	U	V	WF	b	d	l_1
ø125	91	211	13.5	32	15	27	13	15	14	110	339.5	18	19	45.5	65	74	75	(Stroke/4.55) + 11
ø140	102	233	13.5	32	15	27	15	17	16	124	363.5	18	19	45.5	67	74	75	(Stroke/4.55) + 9
ø160	105	239	15.5	40	15	36	15	17	16	142	381.5	21	19	48	71	82	80	(Stroke/5.15) + 9
ø180	109	252	17.5	45	17	41	15	17	16	160	410.5	24	19	53	78	91	91	(Stroke/5.15) + 9
ø200	122	280	18.5	50	20	46	20	18	17	175	458.5	27	24	60	88	102	95	(Stroke/5.30) + 9
ø250	140	320	21.5	60	22	55	22	21	20	216	523.5	34	24	64	94	120	120	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
*2: The l_1 dimension is rounded up to the nearest whole number.
*3: For outer dimensions diagram of accessories, refer to P. 883.

Double Acting, Two-Stage Type

Outline Dimension Drawing

● Axial Foot Type (LB)

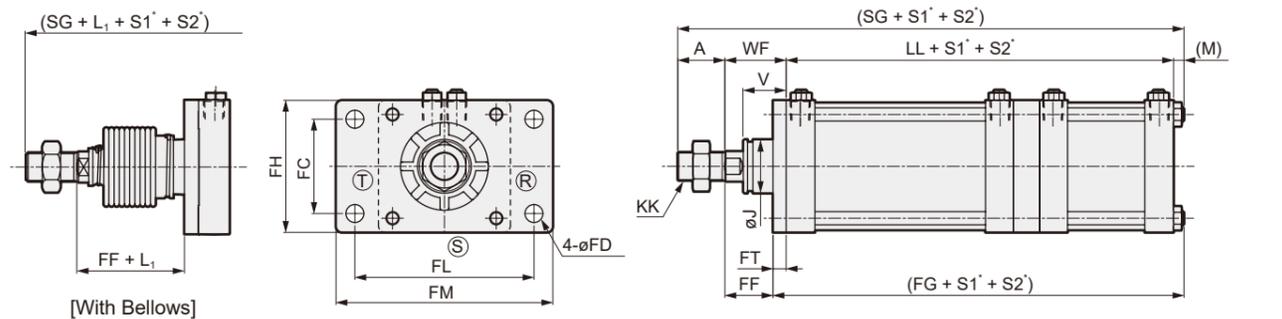


*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

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
ø125	50	M30 × 1.5	211	339.5	65	390	19	45	19	20	301	85	100	140	7	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	233	363.5	67	420	20	50	19	17	333	100	112	157	8	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	239	381.5	71	439	20	53	19	18	345	106	118	177	10	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	252	410.5	78	480	27	60	24	18	372	125	132	200	10	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	280	458.5	88	529	27	62	24	26	404	132	150	220	12	(Stroke/5.30) + 9
ø250	88	M56 × 2	320	523.5	94	600	28	70	29	24	460	160	180	274	12	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
*2: The L_1 dimension is rounded up to the nearest whole number.
*3: For dimensions of models with switches, see P. 956.
*4: For outer dimensions diagram of accessories, refer to P. 883.

● Rod Side Flange Type (FA)



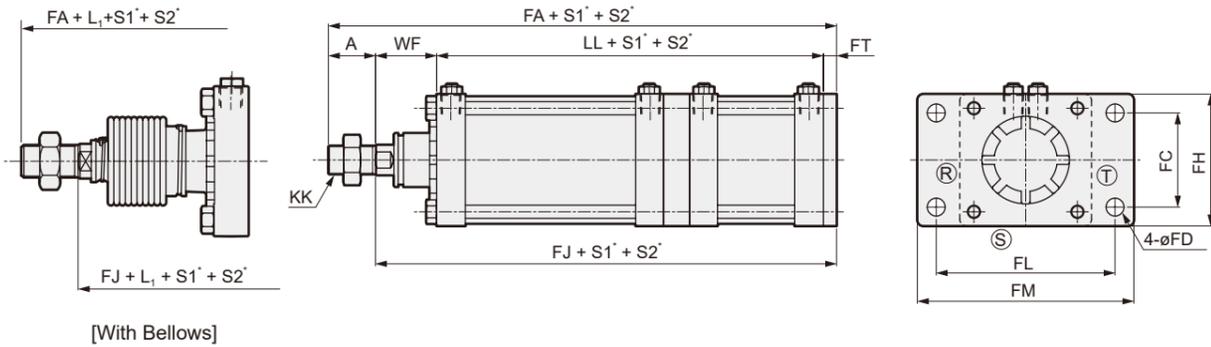
*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Rod Side Flange Type (FA) Mounting Dimensions														With Bellows		
	A	J	KK	LL	M	SG	V	WF	FC	FD	FF	FG	FH	FL	FM	FT	L_1
ø125	50	57	M30 × 1.5	211	11	337	45.5	65	100	19	51	236	140	190	230	14	(Stroke/4.55) + 11
ø140	50	57	M30 × 1.5	233	11	361	45.5	67	112	19	48	263	157	212	250	19	(Stroke/4.55) + 9
ø160	56	62	M36 × 1.5	239	13	379	48	71	118	19	52	271	177	236	280	19	(Stroke/5.15) + 9
ø180	63	68	M40 × 1.5	252	15	408	53	78	132	24	53	292	200	265	310	25	(Stroke/5.15) + 9
ø200	72	75	M45 × 1.5	280	16	456	60	88	150	24	63	321	220	280	330	25	(Stroke/5.30) + 9
ø250	88	93	M56 × 2	320	19	521	64	94	180	29	64	369	274	355	415	30	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
*2: The L_1 dimension is rounded up to the nearest whole number.
*3: For dimensions of models with switches, see P. 956.
*4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

● Head side flange type (FB)

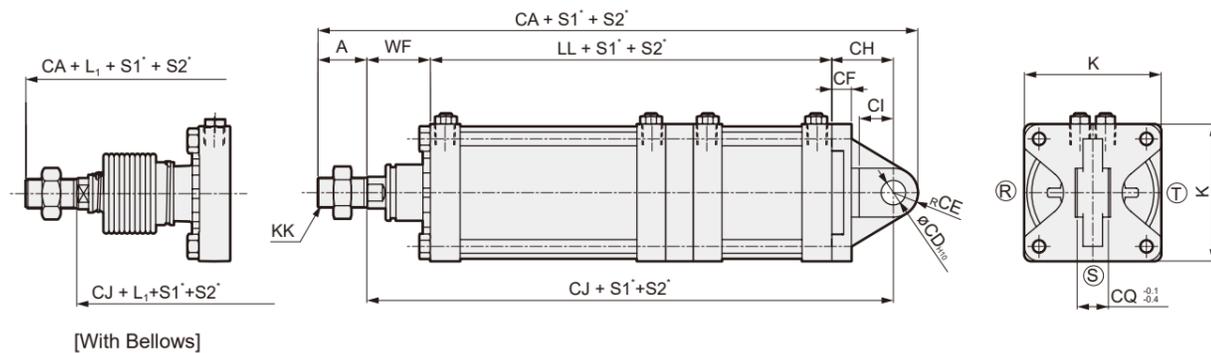


*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Head side flange type (FB) Mounting dimensions												With Bellows
	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT	L ₁
ø125	50	M30 × 1.5	211	65	340	100	19	140	290	190	230	14	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	233	67	369	112	19	157	319	212	250	19	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	239	71	385	118	19	177	329	236	280	19	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	252	78	418	132	24	200	355	265	310	25	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	280	88	465	150	24	220	393	280	330	25	(Stroke/5.30) + 9
ø250	88	M56 × 2	320	94	532	180	29	274	444	355	415	30	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L₁ dimension is rounded up to the nearest whole number.
- *3: For dimensions of models with switches, see P. 956.
- *4: For outer dimensions diagram of accessories, refer to P. 883.

● Single Clevis Type (CA)



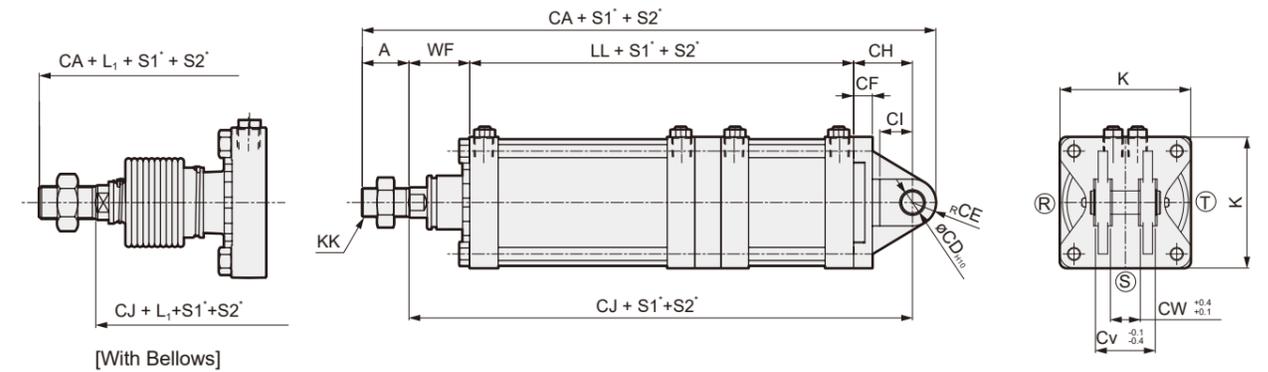
*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Single Clevis Type (CA) Mounting Dimensions														With Bellows
	A	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	L ₁		
ø125	50	M30 × 1.5	211	65	414	25	25	20	63	35	339	32	(Stroke/4.55) + 11		
ø140	50	M30 × 1.5	233	67	453	28	28	22	75	40	375	36	(Stroke/4.55) + 9		
ø160	56	M36 × 1.5	239	71	473	32	32	24	75	40	385	40	(Stroke/5.15) + 9		
ø180	63	M40 × 1.5	252	78	523	40	40	25	90	55	420	50	(Stroke/5.15) + 9		
ø200	72	M45 × 1.5	280	88	570	40	40	30	90	55	458	50	(Stroke/5.30) + 9		
ø250	88	M56 × 2	320	94	662	50	50	35	110	65	524	63	(Stroke/6.40) + 9		

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L₁ dimension is rounded up to the nearest whole number.
- *3: For dimensions of models with switches, see P. 956.
- *4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

● Double clevis type (CB)

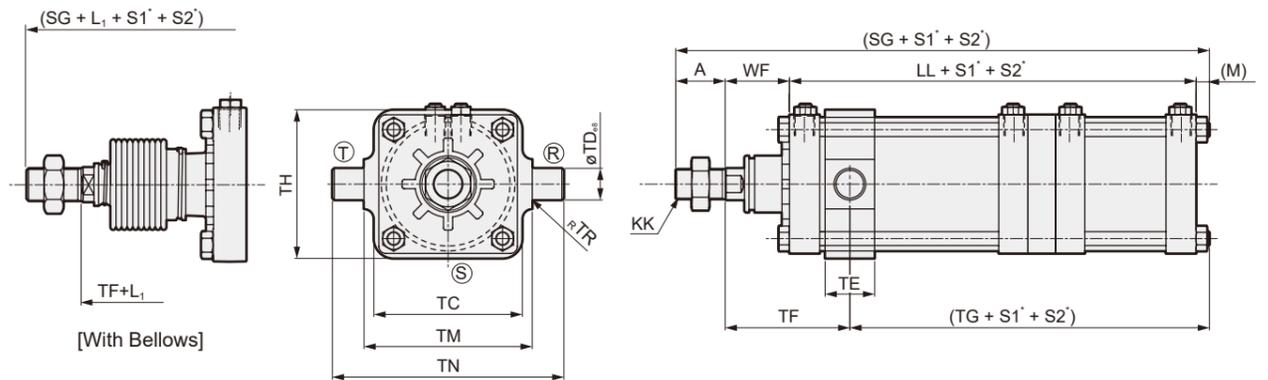


*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Double Clevis Type (CB) Mounting Dimensions														With Bellows
	A	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	L ₁	
ø125	50	M30 × 1.5	211	65	414	25	25	20	63	35	339	64	32	(Stroke/4.55) + 11	
ø140	50	M30 × 1.5	233	67	453	28	28	22	75	40	375	72	36	(Stroke/4.55) + 9	
ø160	56	M36 × 1.5	239	71	473	32	32	24	75	40	385	80	40	(Stroke/5.15) + 9	
ø180	63	M40 × 1.5	252	78	523	40	40	25	90	55	420	100	50	(Stroke/5.15) + 9	
ø200	72	M45 × 1.5	280	88	570	40	40	30	90	55	458	100	50	(Stroke/5.30) + 9	
ø250	88	M56 × 2	320	94	662	50	50	35	110	65	524	126	63	(Stroke/6.40) + 9	

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L₁ dimension is rounded up to the nearest whole number.
- *3: Pin and retaining ring are attached.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.

● Rod side trunnion type (TA)



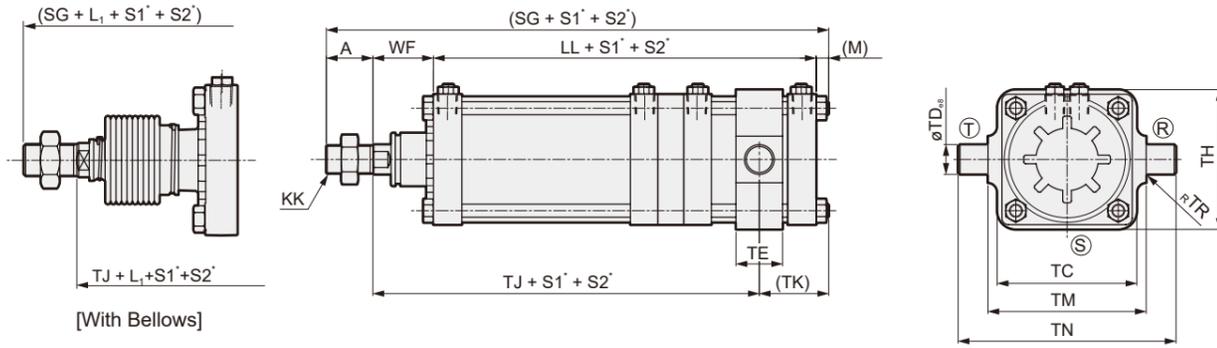
*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Rod Side Trunnion Type (TA) Mounting Dimensions															With Bellows
	A	KK	LL	M	SG	WF	TC	TD	TE	TF	TG	TH	TM	TN	TR	L ₁
ø125	50	M30 × 1.5	211	11	337	65	150	32	50	126	161	150	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	233	11	361	67	154	36	55	134.5	176.5	170	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	239	13	379	71	190	40	60	141	182	190	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	252	15	408	78	210	45	65	150.5	194.5	210	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	280	16	456	88	242	45	70	168	216	242	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	320	19	521	94	300	56	80	184	249	300	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L₁ dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 926.

Outline Dimension Drawing

●Head Side Trunnion Type (TB)



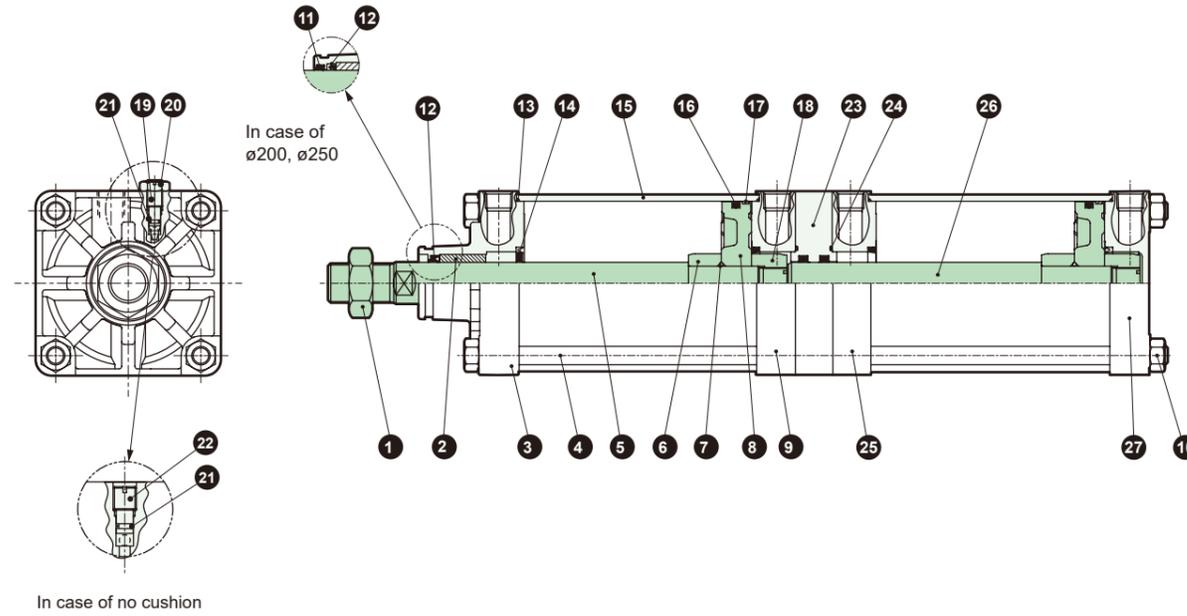
*S1: Stroke of cylinder 1, S2: Stroke of cylinder 2

Code	Head Side Trunnion Type (TB) Mounting Dimensions													With Bellows		
	A	KK	LL	M	SG	WF	TC	TD	TE	TH	TJ	TK	TM	TN	TR	L ₁
ø125	50	M30 × 1.5	211	11	337	65	150	32	50	150	215	72	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	233	11	361	67	154	36	55	170	232.5	78.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	239	13	379	71	190	40	60	190	240	83	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	252	15	408	78	210	45	65	210	257.5	87.5	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	280	16	456	88	242	45	70	242	288	96	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	320	19	521	94	300	56	80	300	324	109	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L₁ dimension is rounded up to the nearest whole number.
- *3: Position detection at the head side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 926.

Internal Structure Diagram/Material

●SCS2-W



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	16	Piston Packing	Nitrile Rubber	
2	Bushing	Oil-Impregnated Bearing Alloy		17	Wear Ring	ø125 to ø200: Polyacetal ø250: Fabric-reinforced phenol	
3	Rod Cover	Aluminum Alloy	Chromate	18	Cushion Ring B	Steel	Zinc Chromate
4	Tie Rod	Steel	Zinc Chromate	19	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc Chromate
5	Piston Rod A	Steel	Industrial Hard Chrome Plating	20	Hexagon Nut	Steel	Zinc Chromate
6	Cushion Ring A	Steel	Zinc Chromate	21	Needle Gasket	Nitrile Rubber	
7	Piston Gasket	Nitrile Rubber		22	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	
8	Piston	Aluminum Alloy		23	Intermediate plate	Cast Iron	Painting
9	Intermediate cover (1)	Aluminum Alloy	Chromate	24	Metal gasket	Nitrile Rubber	
10	Hexagon Nut	Steel	Zinc Chromate	25	Intermediate cover (2)	Aluminum Alloy	Chromate
11	Scraper	Nitrile Rubber		26	Piston Rod B	Steel	Industrial Hard Chrome Plating
12	Rod Packing	Nitrile Rubber		27	Head Cover	Aluminum Alloy	Chromate
13	Cylinder Gasket	Nitrile Rubber					
14	Cushion Packing	Nitrile Rubber, Steel	Only with cushion				
15	Cylinder Tube	Aluminum Alloy	Hard Anodized				

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



Large Bore Size Cylinder
Double Acting, Low Hydraulic Pressure Type

SCS2-H Series

● Bore Size: $\phi 125$, $\phi 140$, $\phi 160$, $\phi 180$, $\phi 200$, $\phi 250$

Circuit Diagram
Symbol



Custom Products **RoHS**

SCS2-H Series Specifications

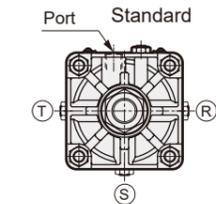
8 Option

Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	
C2	With check valve in cushion part			
J	Bellows	100°C	200°C	
L		250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
Blank	Cushion needle position Standard			
R	Cushion needle position R			
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: Please check the cushion needle position display in the diagram below.

About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



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
4	With 4 pieces

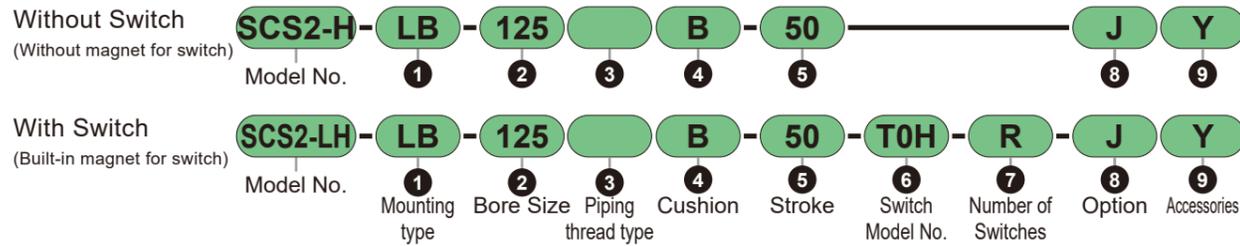
*1: When "TA" or "TB" is selected as the 1 mounting method, the number of switches is limited to "H" (1 on the head side) for "TA" and "R" (1 on the rod side) for "TB".

9 Accessories

Code	Content	
I	Single Knuckle	
Y	Double Knuckle (Pin and retaining ring included)	
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	

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

Model No. Notation Method



1 Mounting type Brackets are attached and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side 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	

Note: Tapped trunnion is supported as a custom product only for $\phi 125$ to $\phi 160$. Please consult us each time regarding external dimensions, etc.

2 Bore Size (mm)

Code	Content
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$

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
$\phi 125$ to $\phi 160$	20 to 800	Every 1 mm
$\phi 180$	20 to 900	
$\phi 200$	20 to 1000	
$\phi 250$	20 to 1200	

Note: For minimum stroke with switch, refer to P. 936.

6 Switch Model No. For switch details, please refer to P. 971. Switches are assembled into the product before shipment. Also, T2WL switches are attached 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	T2JH		
			—	10 to 30	—	5 to 20 *2	T2H	T2V		
		3-wire (NPN)	—	30 or less	—	100 or less	T3H	T3V		
			3-wire (PNP)	—	—	—	—	T3PH		T3PV
		2-Color	2-wire	—	24 \pm 10%	—	5 to 20	T2WH		T2WV
			3-wire (NPN)	—	30 or less	—	50 or less	T3WH		T3WV
	Reed	1-Color	2-wire	—	24 \pm 10%	—	5 to 20	T2WLH	T2WLV	
				—	—	—	5 to 20	T2YD	—	
				—	24 \pm 10%	—	5 to 20	T2YDT	—	
				—	10 to 30	—	5 to 20 *2	T2JH	T2JV	
1-Color Flexible Lead Wire Type	—	—	—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3		
			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		
			110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H	T8V		

*1: For \square in the switch model number, 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.

*4: Switches other than the model numbers 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.

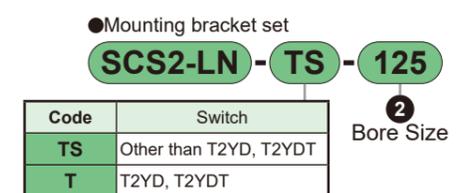
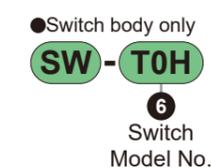
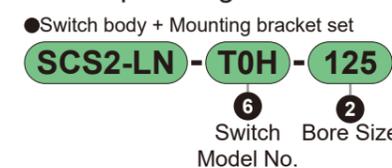
Example) Lead wire length
1 m T0H
3 m T0H³
5 m T0H⁵

Specifications of custom products Details Please refer to P. 958 to 967.

Code	Content	Code	Content	Code	Content
-XR $\square\square\square\square$	Port/Cushion needle position specification	-XP5	Knuckle Pin/Clevis Pin Split Pin	-XM1	Tie rod material SUS
-XF	Port 1 size down	-XP7	Knuckle fixed by pin driving	-XJ9	Without Bellows
-XK \square	Mounting Bracket Rotational Assembly	-XP8	Knuckle pin/clevis pin split pin specification, knuckle fixed by pin driving	-A2	With 2 Rod Nuts
-XAQ $\square\square$	Trunnion Position Specification	-MX \square	Tie rod extension	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) **SCS2-H-.....-XP5**

Switch part single item model No. notation method



Specifications

Item		SCS2-H, SCS2-LH (Low hydraulic pressure type)					
Bore Size	mm	ø125	ø140	ø160	ø180	ø200	ø250
Actuation method		Double Acting Type					
Operating Fluid		Hydraulic Operating Fluid					
Max. Working Pressure	MPa	1.0					
Min. Operating Pressure	MPa	0.1					
Proof Pressure	MPa	1.6					
Ambient Temperature	°C	5 to 50					
Port Size		Rc 1/2		Rc 3/4		Rc1	
Stroke tolerance	mm	^{+1.0} ₀ (Up to 300), ^{+1.4} ₀ (Up to 1000), ^{+1.8} ₀ (Up to 1200)					
Cushion		Cushion					
Effective air cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
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	0.371	0.386	0.386	0.958	1.08	2.32
		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)	Trunnion type Min. stroke (mm)
ø125	50, 75, 100, 150, 200, 250, 300	800	20	23
ø140				25
ø160				27
ø180				28
ø200				28
ø250				28

Type 2 pressure vessel inspection Target stroke

Bore Size	Stroke
ø200	946 or more
ø250	752 or more

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

Min. Stroke with Switch

Item	Stroke when mounting on the same surface	Stroke of intermediate (tapped) trunnion type	Stroke of rod side (tapped) trunnion type	Stroke of head side (tapped) trunnion type
Switch type				
Reed switch (T□)	20 or more	ø125	120 or more	70 or more
		ø140	125 or more	75 or more
		ø160	130 or more	80 or more
		ø180	135 or more	85 or more
		ø200	140 or more	90 or more
		ø250	150 or more	100 or more

Cylinder Weight

(Unit: kg)

Item/Mounting Style	Product Weight at Stroke (S) = 0 mm						Switch Weight		S=Per 100 mm Added Weight
	Basic type (00)	Axial Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)	Switch	Mounting bracket	
ø125	7.22	8.72	10.52	10.22	10.32	10.62	Refer to the weight listed in the switch specifications on P. 971.	0.028	1.54
ø140	9.35	11.35	14.75	13.15	13.35	12.55		0.030	1.78
ø160	12.35	15.45	19.25	17.35	17.65	18.75		0.034	2.22
ø180	16.75	21.25	28.75	24.15	24.65	24.85		0.038	2.96
ø200	22.78	28.48	36.48	32.28	32.48	34.58		0.040	3.54
ø250	40.51	48.91	66.41	64.51	59.01	69.21		0.045	5.38

(Example) Product mass of SCS2-LH-LB-125B-300-T0H-D

- Product mass at S=0 mm 8.72 kg
- Added mass at S=300 mm $1.54 \times \frac{300}{100} = 4.62$ kg
- Weight of 2 switches (TOH-D) ... $0.018 \times 2 = 0.036$ kg
- Product Weight of 2 switch brackets $0.028 \times 2 = 0.056$ kg
- Product Weight $8.72 + 4.62 + 0.036 + 0.056 = 13.432$ kg

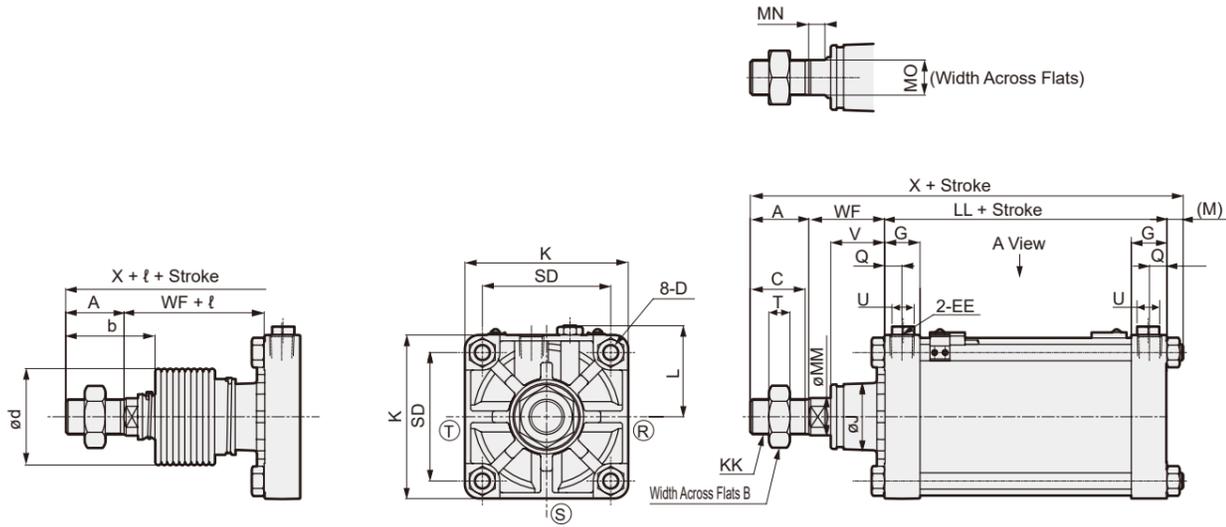
Theoretical Thrust Table

(Unit: N)

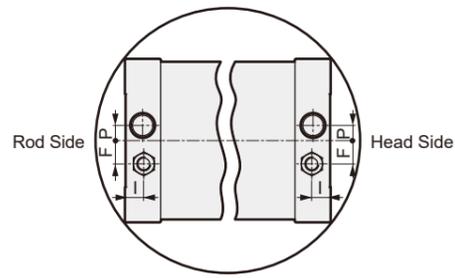
Bore Size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø125	Push	1.23×10^3	1.84×10^3	2.45×10^3	3.68×10^3	4.91×10^3	6.14×10^3	7.36×10^3	8.59×10^3	9.82×10^3	1.10×10^4	1.23×10^4
	Pull	1.15×10^3	1.72×10^3	2.29×10^3	3.44×10^3	4.59×10^3	5.73×10^3	6.88×10^3	8.03×10^3	9.17×10^3	1.03×10^4	1.15×10^4
ø140	Push	1.54×10^3	2.31×10^3	3.08×10^3	4.62×10^3	6.16×10^3	7.70×10^3	9.24×10^3	1.08×10^4	1.23×10^4	1.39×10^4	1.54×10^4
	Pull	1.46×10^3	2.19×10^3	2.92×10^3	4.38×10^3	5.84×10^3	7.29×10^3	8.75×10^3	1.02×10^4	1.17×10^4	1.31×10^4	1.46×10^4
ø160	Push	2.01×10^3	3.02×10^3	4.02×10^3	6.03×10^3	8.04×10^3	1.01×10^4	1.21×10^4	1.41×10^4	1.61×10^4	1.81×10^4	2.01×10^4
	Pull	1.88×10^3	2.83×10^3	3.77×10^3	5.65×10^3	7.54×10^3	9.42×10^3	1.13×10^4	1.32×10^4	1.51×10^4	1.70×10^4	1.88×10^4
ø180	Push	2.54×10^3	3.82×10^3	5.09×10^3	7.63×10^3	1.02×10^4	1.27×10^4	1.53×10^4	1.78×10^4	2.04×10^4	2.29×10^4	2.54×10^4
	Pull	2.39×10^3	3.58×10^3	4.77×10^3	7.16×10^3	9.54×10^3	1.19×10^4	1.43×10^4	1.67×10^4	1.91×10^4	2.15×10^4	2.39×10^4
ø200	Push	3.14×10^3	4.71×10^3	6.28×10^3	9.42×10^3	1.26×10^4	1.57×10^4	1.88×10^4	2.20×10^4	2.51×10^4	2.83×10^4	3.14×10^4
	Pull	2.95×10^3	4.42×10^3	5.89×10^3	8.84×10^3	1.18×10^4	1.47×10^4	1.77×10^4	2.06×10^4	2.36×10^4	2.65×10^4	2.95×10^4
ø250	Push	4.91×10^3	7.36×10^3	9.82×10^3	1.47×10^4	1.96×10^4	2.45×10^4	2.95×10^4	3.44×10^4	3.93×10^4	4.42×10^4	4.91×10^4
	Pull	4.63×10^3	6.94×10^3	9.25×10^3	1.39×10^4	1.85×10^4	2.31×10^4	2.78×10^4	3.24×10^4	3.70×10^4	4.16×10^4	4.63×10^4

Outline Dimension Drawing

● Basic type (00)



[With Bellows]



Port position diagram (A View)

Code	Basic Type (00) Basic Dimensions													
	A	B	C	D	EE	F	G	I	J	K	KK	L	LL	M
ø125	50	46	47	M14 × 1.5	Rc1/2	20	30.5	16	57	140	M30 × 1.5	78 to 82	92	13.5
ø140	50	46	47	M14 × 1.5	Rc3/4	20	34.5	20	57	157	M30 × 1.5	86.5 to 91	103	13.5
ø160	56	55	53	M16 × 1.5	Rc3/4	24	34.5	20	62	177	M36 × 1.5	96.5 to 101	106	15.5
ø180	63	60	60	M18 × 1.5	Rc3/4	24	34.5	20	68	200	M40 × 1.5	108 to 112	110	17.5
ø200	72	70	69	M20 × 1.5	Rc3/4	24	37.5	20.5	75	220	M45 × 1.5	120.5 to 129	123	18.5
ø250	88	85	84	M24 × 1.5	Rc1	24	42.5	25.5	93	274	M56 × 2	147.5 to 156	141	21.5

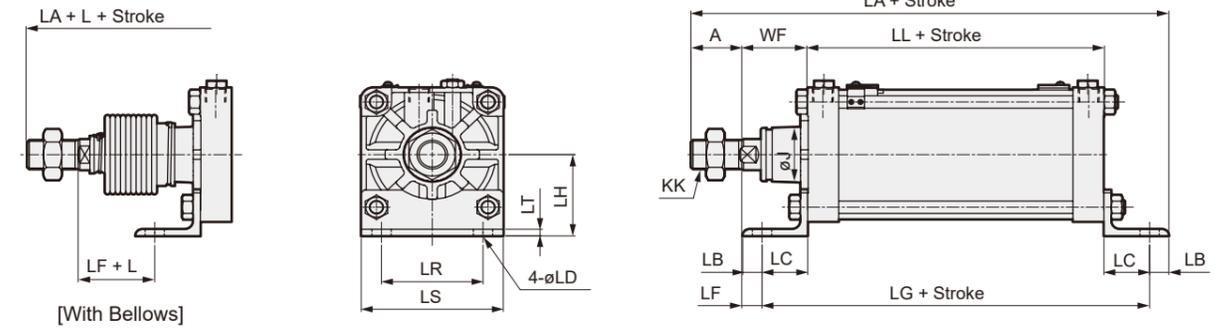
Code	Basic Dimensions											With Bellows		
	MM	MN	MO	P	Q	SD	T	U	V	WF	X	b	d	ℓ
ø125	32	15	27	13	15	110	18	19	45.5	65	220.5	74	75	(Stroke/4.55) + 11
ø140	32	15	27	15	17	124	18	19	45.5	67	233.5	74	75	(Stroke/4.55) + 9
ø160	40	15	36	15	17	142	21	19	48	71	248.5	82	80	(Stroke/5.15) + 9
ø180	45	17	41	15	17	160	24	19	53	78	268.5	91	91	(Stroke/5.15) + 9
ø200	50	20	46	20	18	175	27	24	60	88	301.5	102	95	(Stroke/5.30) + 9
ø250	60	22	55	22	21	216	34	24	67	94	344.5	120	120	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The ℓ dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Double Acting, Low Hydraulic Pressure Type

Outline Dimension Drawing

● Axial foot type (LB)

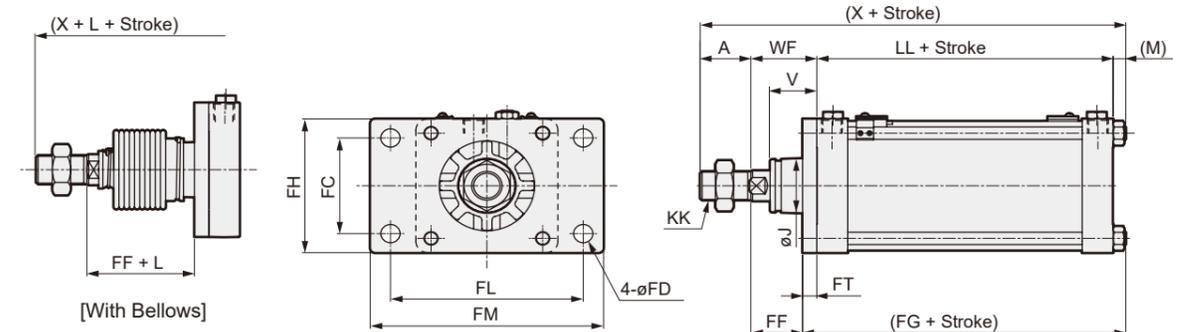


[With Bellows]

Code	Axial Foot Type (LB) Mounting Dimensions														With Bellows
	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	L
ø125	50	M30 × 1.5	92	65	271	19	45	19	20	182	85	100	140	7	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	290	20	50	19	17	203	100	112	157	8	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	306	20	53	19	18	212	106	118	177	10	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	338	27	60	24	18	230	125	132	200	10	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	372	27	62	24	26	247	132	150	220	12	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	421	28	70	29	24	281	160	180	274	12	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

● Rod Side Flange Type (FA)



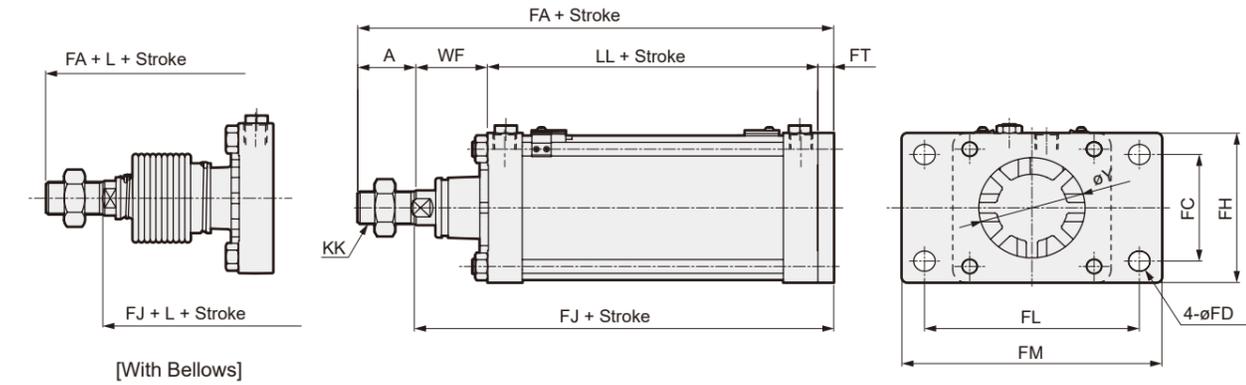
[With Bellows]

Code	Rod Side Flange Type (FA) Mounting Dimensions														With Bellows		
	A	J	KK	LL	M	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	L
ø125	50	57	M30 × 1.5	92	11	45.5	65	218	100	19	51	117	140	190	230	14	(Stroke/4.55) + 11
ø140	50	57	M30 × 1.5	103	11	45.5	67	231	112	19	48	133	157	212	250	19	(Stroke/4.55) + 9
ø160	56	62	M36 × 1.5	106	13	48	71	246	118	19	52	138	177	236	280	19	(Stroke/5.15) + 9
ø180	63	68	M40 × 1.5	110	15	53	78	266	132	24	53	150	200	265	310	25	(Stroke/5.15) + 9
ø200	72	75	M45 × 1.5	123	16	60	88	299	150	24	63	164	220	280	330	25	(Stroke/5.30) + 9
ø250	88	93	M56 × 2	141	19	67	94	342	180	29	64	190	274	355	415	30	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

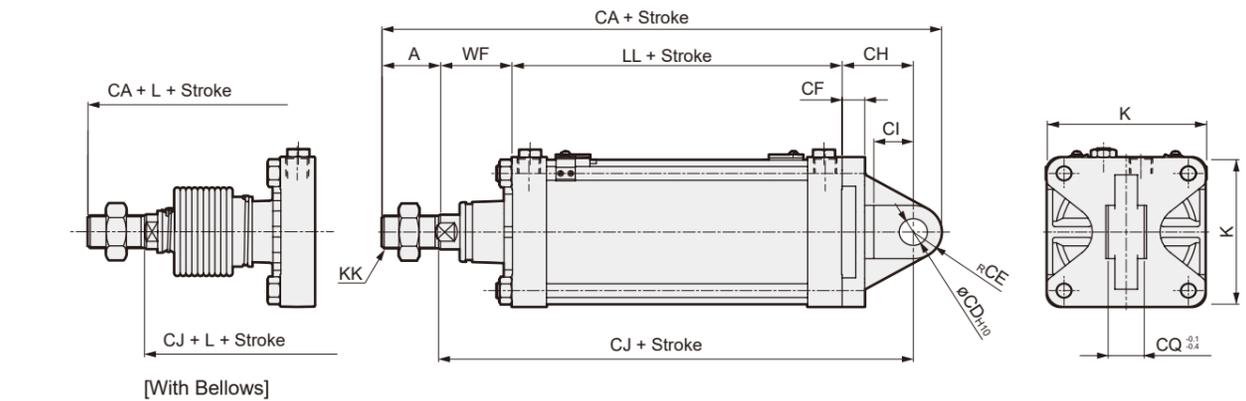
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions												With Bellows
	A	KK	LL	WF	FC	FD	FH	FJ	FL	FM	FT	Y	L
ø125	50	M30 × 1.5	92	65	100	19	140	171	190	230	14	94	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	112	19	157	189	212	250	19	94	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	118	19	177	196	236	280	19	107	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	132	24	200	213	265	310	25	113	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	150	24	220	236	280	330	25	131	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	180	29	274	265	355	415	30	153	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

●Single Clevis Type (CA)

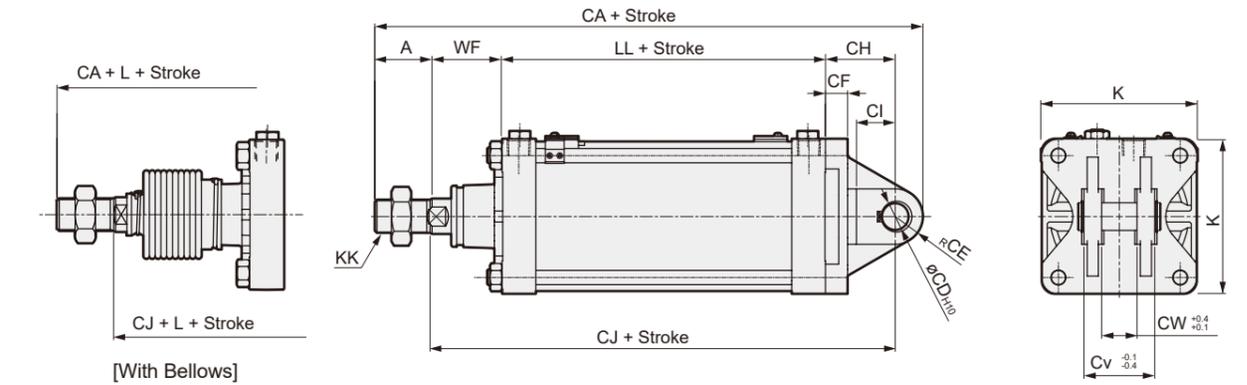


Code	Single Clevis Type (CA) Mounting Dimensions													With Bellows
	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	L
ø125	50	140	M30 × 1.5	92	65	295	25	25	20	63	35	220	32	(Stroke/4.55) + 11
ø140	50	157	M30 × 1.5	103	67	323	28	28	22	75	40	245	36	(Stroke/4.55) + 9
ø160	56	177	M36 × 1.5	106	71	340	32	32	24	75	40	252	40	(Stroke/5.15) + 9
ø180	63	200	M40 × 1.5	110	78	381	40	40	25	90	55	278	50	(Stroke/5.15) + 9
ø200	72	220	M45 × 1.5	123	88	413	40	40	30	90	55	301	50	(Stroke/5.30) + 9
ø250	88	274	M56 × 2	141	94	483	50	50	35	110	65	345	63	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

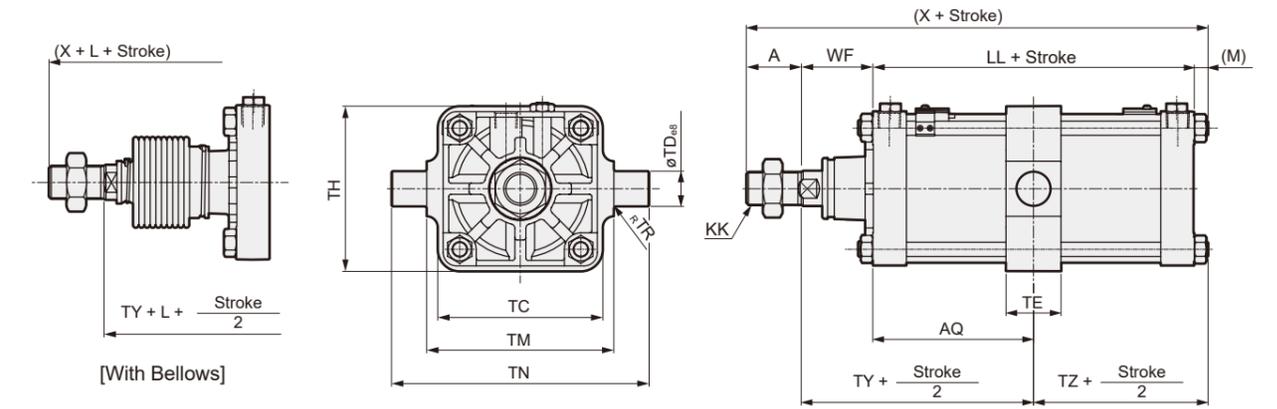
●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions														With Bellows
	A	K	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	L
ø125	50	140	M30 × 1.5	92	65	295	25	25	20	63	35	220	64	32	(Stroke/4.55) + 11
ø140	50	157	M30 × 1.5	103	67	323	28	28	22	75	40	245	72	36	(Stroke/4.55) + 9
ø160	56	177	M36 × 1.5	106	71	340	32	32	24	75	40	252	80	40	(Stroke/5.15) + 9
ø180	63	200	M40 × 1.5	110	78	381	40	40	25	90	55	278	100	50	(Stroke/5.15) + 9
ø200	72	220	M45 × 1.5	123	88	413	40	40	30	90	55	301	100	50	(Stroke/5.30) + 9
ø250	88	274	M56 × 2	141	94	483	50	50	35	110	65	345	126	63	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: Pin and retaining ring are attached.
 *4: For dimensions of models with switches, see P. 956.
 *5: For outer dimensions diagram of accessories, refer to P. 883.

●Intermediate trunnion type (TC)

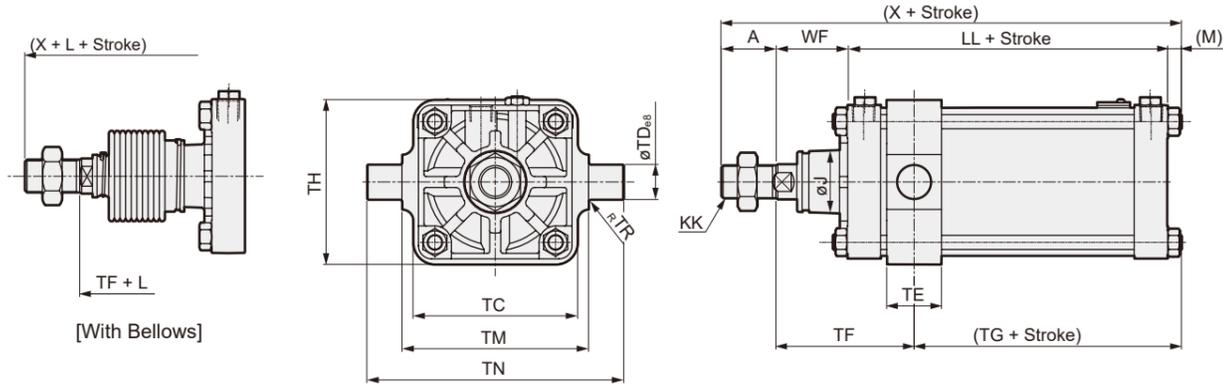


Code	Intermediate Trunnion Type (TC) Mounting Dimensions																With Bellows
	A	KK	LL	M	WF	X	AQ	TC	TD	TE	TH	TY	TZ	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	65	218	46 + Stroke/2	150	32	50	150	111	57	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	67	231	51.5 + Stroke/2	154	36	55	170	118.5	62.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	71	246	53 + Stroke/2	190	40	60	190	124	66	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	78	266	55 + Stroke/2	210	45	65	210	133	70	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	88	299	61.5 + Stroke/2	242	45	70	242	149.5	77.5	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	94	342	70.5 + Stroke/2	300	56	80	300	164.5	89.5	335	447	2	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.
 *5: For the minimum producible stroke, please refer to P. 936.

Outline Dimension Drawing

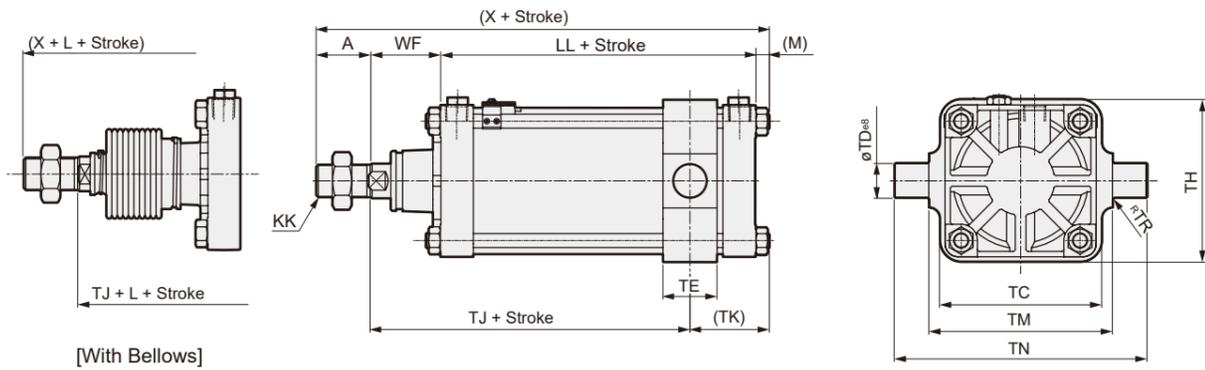
●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions																With Bellows
	A	KK	LL	M	WF	X	TC	TD	TE	TF	TG	TH	TM	TN	TR	L	
CMK2	ø125	50	M30 × 1.5	92	11	65	218	150	32	50	126	42	150	170	234	2	(Stroke/4.55) + 11
	ø140	50	M30 × 1.5	103	11	67	231	154	36	55	134.5	46.5	170	190	262	2	(Stroke/4.55) + 9
CMA2	ø160	56	M36 × 1.5	106	13	71	246	190	40	60	141	49	190	212	292	2	(Stroke/5.15) + 9
	ø180	63	M40 × 1.5	110	15	78	266	210	45	65	150.5	52.5	210	236	326	2	(Stroke/5.15) + 9
SCM	ø200	72	M45 × 1.5	123	16	88	299	242	45	70	168	59	242	265	355	2	(Stroke/5.30) + 9
	ø250	88	M56 × 2	141	19	94	342	300	56	80	184	70	300	335	447	2	(Stroke/6.40) + 9

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 936.

●Head Side Trunnion Type (TB)



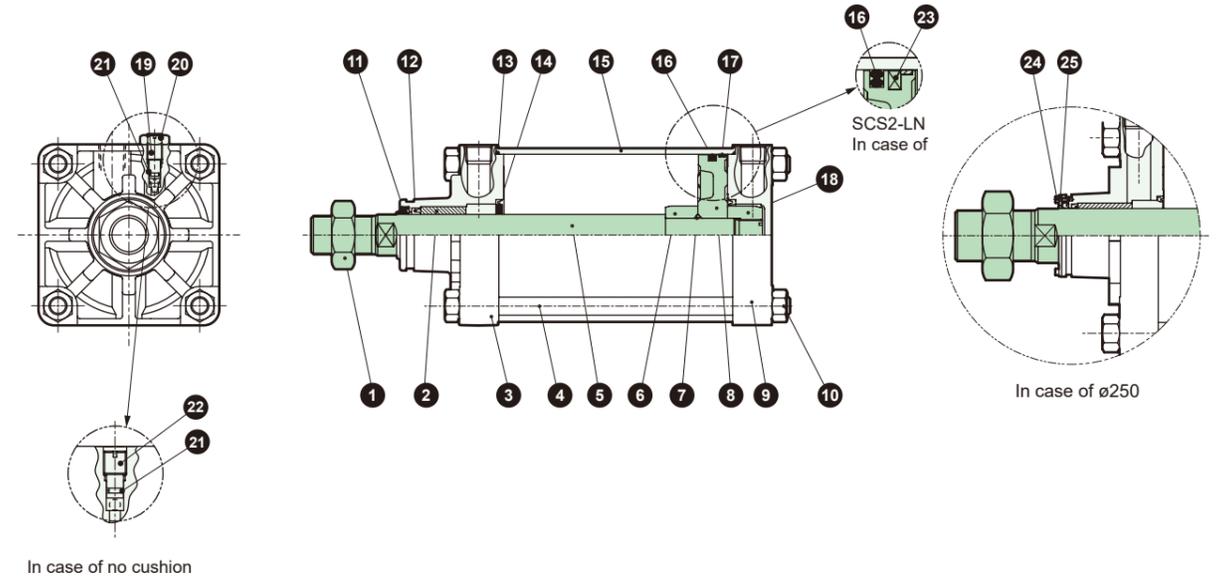
Code	Head Side Trunnion Type (TB) Mounting Dimensions																With Bellows
	A	KK	LL	M	WF	X	TC	TD	TE	TH	TJ	TK	TM	TN	TR	L	
CMK2	ø125	50	M30 × 1.5	92	11	65	218	150	32	50	150	96	170	234	2	(Stroke/4.55) + 11	
	ø140	50	M30 × 1.5	103	11	67	231	154	36	55	170	102.5	190	262	2	(Stroke/4.55) + 9	
CMA2	ø160	56	M36 × 1.5	106	13	71	246	190	40	60	190	107	212	292	2	(Stroke/5.15) + 9	
	ø180	63	M40 × 1.5	110	15	78	266	210	45	65	210	115.5	236	326	2	(Stroke/5.15) + 9	
SCM	ø200	72	M45 × 1.5	123	16	88	299	242	45	70	242	131	265	355	2	(Stroke/5.30) + 9	
	ø250	88	M56 × 2	141	19	94	342	300	56	80	300	145	335	447	2	(Stroke/6.40) + 9	

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the head side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 936.

Internal Structure Diagram/Material

Internal Structure Diagram/Material

●SCS2-(L)H



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	15	Cylinder Tube	Aluminum Alloy	Hard Anodized
2	Bushing	Oil-Impregnated Bearing Alloy		16	Piston Packing	Nitrile Rubber	
3	Rod Cover	Aluminum Alloy	Chromate	17	Wear Ring	ø125 to ø200: Polyacetal ø250: Fabric-reinforced phenol	
4	Tie Rod	Steel	Zinc Chromate	18	Cushion Ring B	Steel	Zinc Chromate
5	Piston Rod	Steel	Industrial Hard Chrome Plating	19	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc chromate
6	Cushion Ring A	Steel	Zinc Chromate	20	Hexagon Nut	Steel	Zinc Chromate
7	Piston Gasket	Nitrile Rubber		21	Needle Gasket	Nitrile Rubber	
8	Piston	Aluminum Alloy		22	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	
9	Head Cover	Aluminum Alloy	Chromate	23	Magnet	Rubber	With switch only
10	Hexagon Nut	Steel	Zinc Chromate	24	Scraper retaining plate	Steel	Manganese phosphate
11	Scraper	Nitrile Rubber		25	Hexagon Socket Head Cap Screw	Steel	Black Oxide
12	Rod Packing	Nitrile Rubber					
13	Cylinder Gasket	Nitrile Rubber					
14	Cushion Packing	Nitrile Rubber, Steel	Only with cushion				

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

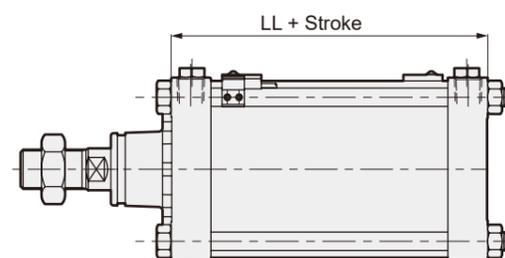
Introduction of custom-made products

■ SCS-LH Mounting dimension compatible type

Model No. Notation Method

Please add "-SO92" to the end of the model number when ordering.

Outline Dimension Drawing



Code	Dimension table
Bore Size (mm)	LL
ø125	111.5
ø140	122.5
ø160	122.5
ø180	124.5
ø200	143.5
ø250	

*1: In the case of intermediate trunnion mounting, the mounting position is the center between the covers.

*2: The LL dimension described in the dimension table above is as shown on the right.

MEMO



Large Bore Size Cylinder
Double Acting, Heavy Duty Scraper Type

SCS2-G Series

● Bore Size: $\phi 125$, $\phi 140$, $\phi 160$, $\phi 180$, $\phi 200$, $\phi 250$

Circuit Diagram Symbol



Custom Products



SCS2-G Series

Model No. Notation Method

7 Accessories

Code	Content	
I	Single Knuckle	
Y	Double Knuckle (Pin and retaining ring included)	
B1	Single Bracket	
B2	Double Yoke Bracket (Pin and retaining ring included)	

6 Option

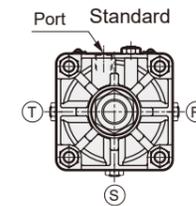
Code	Content	Max. Ambient Temperature	Instantaneous Max. Temperature	
C2	With check valve in cushion part			
J	Bellows	100°C	200°C	
L		250°C	400°C	
M	Piston Rod Material (Stainless Steel)			
*2 Blank	Cushion needle position Standard			
*2 R	Cushion needle position R			
*2 S	Cushion needle position S			
*2 T	Cushion needle position T			

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

*2: Please refer to the diagram below for the cushion needle position.

About cushion needle position (*2)

(Needle position with port facing upward from rod direction)



*For combinations of variations and options, see P. 871.

Specifications of custom products

Details Please refer to P. 958 to 967.

Code	Content	Code	Content	Code	Content
-XR□□□□	Port/Cushion needle position specification	-XP5	Knuckle Pin/Clevis Pin Split Pin	-XM1	Tie rod material SUS
-XF	Port 1 size down	-XP7	Knuckle fixed by pin driving	-XJ9	Without Bellows
-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	-XMX◇	Tie rod extension	Rod end Shape change	Refer to Ending P. 11.

Model No. Example) **SCS2-G** - - **XP5**

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

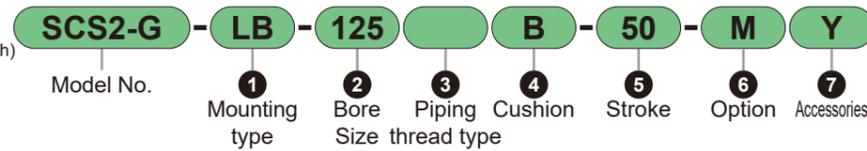
● Uses food grade grease that can be used in food manufacturing processes

SCS2-G - - **FP1**

Model No. Notation Method

Without Switch

(Without magnet for switch)



1 Mounting type

Brackets are attached and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type	
FA	Rod Side Flange Type	
FB	Head Side 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	

Note: Tapped trunnion is supported as a custom product only for $\phi 125$ to $\phi 160$. Please consult us each time regarding external dimensions, etc.

2 Bore Size (mm)

Code	Content
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$

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
$\phi 125$ to $\phi 160$	1 to 800	Every 1 mm
$\phi 180$	1 to 900	
$\phi 200$	1 to 1000	
$\phi 250$	1 to 1200	

Specifications

Item		SCS2-G (Heavy-duty scraper type)						
Bore Size		mm	ø125	ø140	ø160	ø180	ø200	ø250
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 60 (However, no freezing)					
Port Size			Rc 1/2	Rc 3/4			Rc1	
Stroke tolerance		mm	$^{+1.0}_0$ (Up to 300), $^{+1.4}_0$ (Up to 1000), $^{+1.8}_0$ (Up to 1200)					
Operating Piston Speed		mm/s	20 to 1000 (Please use within the absorbed energy.)					
Cushion		Air Cushion						
Effective air cushion length		mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable absorbed energy J	With Cushion		63.5	91.5	116	152	233	362
	Without Cushion		0.371	0.386	0.386	0.958	1.08	2.32
Without cushion, large energy generated by external load cannot be absorbed. It is recommended to use an external shock absorber together.								

MEMO

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Trunnion type Min. stroke (mm)	Type 2 pressure vessel inspection Target stroke	
					Bore Size	Stroke
ø125	50, 75, 100, 150,	800	1	23	ø200	946 or more
ø140				25	ø250	752 or more
ø160				27		
ø180	200, 250, 300	900	1	28		
ø200				28		
ø250				28		

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

*2: If the maximum stroke is exceeded, product specifications may not be met depending on the conditions, so please consult us.

Cylinder Weight

(Unit: kg)

Item/Mounting Style	Product Weight at Stroke (S) = 0 mm						S=100 mm Per Added Weight
	Basic type (00)	Axial Foot Type (LB)	Flange Type (FA, FB)	Single Clevis Type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)	
ø125	7.22	8.72	10.52	10.22	10.32	10.62	1.54
ø140	9.35	11.35	14.75	13.15	13.35	12.55	1.78
ø160	12.35	15.45	19.25	17.35	17.65	18.75	2.22
ø180	16.75	21.25	28.75	24.15	24.65	24.85	2.96
ø200	22.78	28.48	36.48	32.28	32.48	34.58	3.54
ø250	40.51	48.91	66.41	64.51	59.01	69.21	5.38

(Example) Product Weight of SCS2-G-LB-125B-300

- Product Weight at S=0 mm 8.72 kg
- S=300 mm added weight $1.54 \times \frac{300}{100} = 4.62$ kg
- Product Weight $8.72 + 4.62 = 13.34$ kg

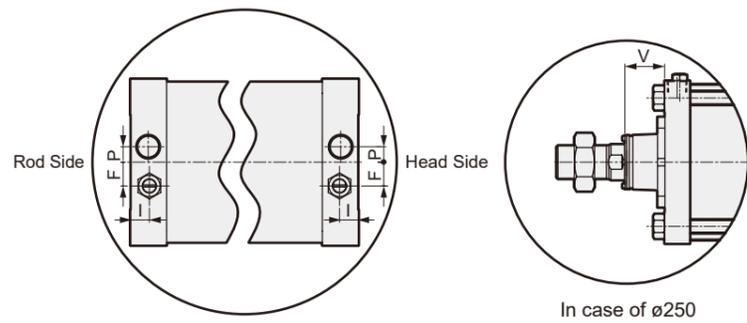
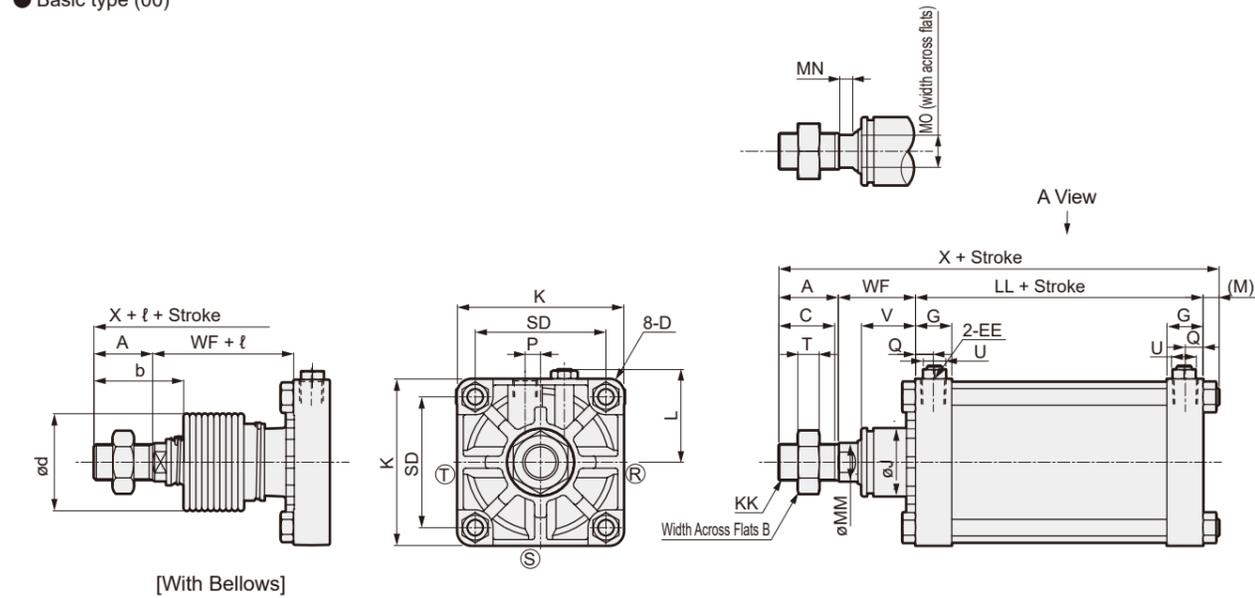
Theoretical Thrust Table

(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
ø125	Push	6.14×10^2	1.23×10^3	1.84×10^3	2.45×10^3	3.68×10^3	4.91×10^3	6.14×10^3	7.36×10^3	8.59×10^3	9.82×10^3	1.10×10^4	1.23×10^4
	Pull	5.73×10^2	1.15×10^3	1.72×10^3	2.29×10^3	3.44×10^3	4.59×10^3	5.73×10^3	6.88×10^3	8.03×10^3	9.17×10^3	1.03×10^4	1.15×10^4
ø140	Push	7.70×10^2	1.54×10^3	2.31×10^3	3.08×10^3	4.62×10^3	6.16×10^3	7.70×10^3	9.24×10^3	1.08×10^4	1.23×10^4	1.39×10^4	1.54×10^4
	Pull	7.29×10^2	1.46×10^3	2.19×10^3	2.92×10^3	4.38×10^3	5.84×10^3	7.29×10^3	8.75×10^3	1.02×10^4	1.17×10^4	1.31×10^4	1.46×10^4
ø160	Push	1.01×10^3	2.01×10^3	3.02×10^3	4.02×10^3	6.03×10^3	8.04×10^3	1.01×10^4	1.21×10^4	1.41×10^4	1.61×10^4	1.81×10^4	2.01×10^4
	Pull	9.42×10^2	1.88×10^3	2.83×10^3	3.77×10^3	5.65×10^3	7.54×10^3	9.42×10^3	1.13×10^4	1.32×10^4	1.51×10^4	1.70×10^4	1.88×10^4
ø180	Push	1.27×10^3	2.54×10^3	3.82×10^3	5.09×10^3	7.63×10^3	1.02×10^4	1.27×10^4	1.53×10^4	1.78×10^4	2.04×10^4	2.29×10^4	2.54×10^4
	Pull	1.19×10^3	2.39×10^3	3.58×10^3	4.77×10^3	7.16×10^3	9.54×10^3	1.19×10^4	1.43×10^4	1.67×10^4	1.91×10^4	2.15×10^4	2.39×10^4
ø200	Push	1.57×10^3	3.14×10^3	4.71×10^3	6.28×10^3	9.42×10^3	1.26×10^4	1.57×10^4	1.88×10^4	2.20×10^4	2.51×10^4	2.83×10^4	3.14×10^4
	Pull	1.47×10^3	2.95×10^3	4.42×10^3	5.89×10^3	8.84×10^3	1.18×10^4	1.47×10^4	1.77×10^4	2.06×10^4	2.36×10^4	2.65×10^4	2.95×10^4
ø250	Push	2.45×10^3	4.91×10^3	7.36×10^3	9.82×10^3	1.47×10^4	1.96×10^4	2.45×10^4	2.95×10^4	3.44×10^4	3.93×10^4	4.42×10^4	4.91×10^4
	Pull	2.31×10^3	4.63×10^3	6.94×10^3	9.25×10^3	1.39×10^4	1.85×10^4	2.31×10^4	2.78×10^4	3.24×10^4	3.70×10^4	4.16×10^4	4.63×10^4

Outline Dimension Drawing

● Basic type (00)



Code	Basic Type (00) Basic Dimensions													
	A	B	C	D	EE	F	G	I	J	K	KK	L	LL	M
ø125	50	46	47	M14 × 1.5	Rc1/2	20	30.5	16	57	140	M30 × 1.5	78 to 82	92	13.5
ø140	50	46	47	M14 × 1.5	Rc3/4	20	34.5	20	57	157	M30 × 1.5	86.5 to 91	103	13.5
ø160	56	55	53	M16 × 1.5	Rc3/4	24	34.5	20	62	177	M36 × 1.5	96.5 to 101	106	15.5
ø180	63	60	60	M18 × 1.5	Rc3/4	24	34.5	20	68	200	M40 × 1.5	108 to 112	110	17.5
ø200	72	70	69	M20 × 1.5	Rc3/4	24	37.5	20.5	75	220	M45 × 1.5	120.5 to 129	123	18.5
ø250	88	85	84	M24 × 1.5	Rc1	24	42.5	25.5	93	274	M56 × 2	147.5 to 156	141	21.5

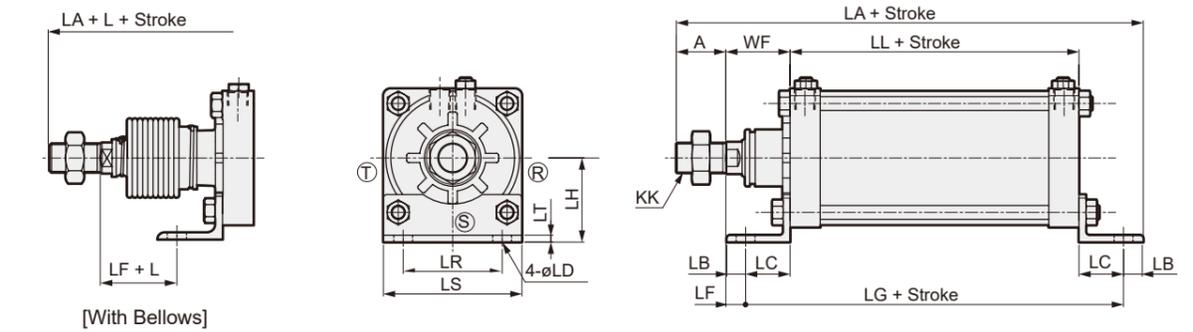
Code	With Bellows											With Bellows		
	MM	MN	MO	P	Q	SD	T	U	V	WF	X	b	d	ℓ
ø125	32	13	27	13	15	110	18	19	45.5	65	220.5	74	75	(Stroke/4.55) + 11
ø140	32	13	27	15	17	124	18	19	45.5	67	233.5	74	75	(Stroke/4.55) + 9
ø160	40	15	36	15	17	142	21	19	48	71	248.5	82	80	(Stroke/5.15) + 9
ø180	45	17	41	15	17	160	24	19	53	78	268.5	91	91	(Stroke/5.15) + 9
ø200	50	20	46	20	18	175	27	24	60	88	301.5	102	95	(Stroke/5.30) + 9
ø250	60	22	55	22	21	216	34	24	67	94	344.5	120	120	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The ℓ dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Double-acting, Single rod, Lubricated, Non-lube type

Outline Dimension Drawing

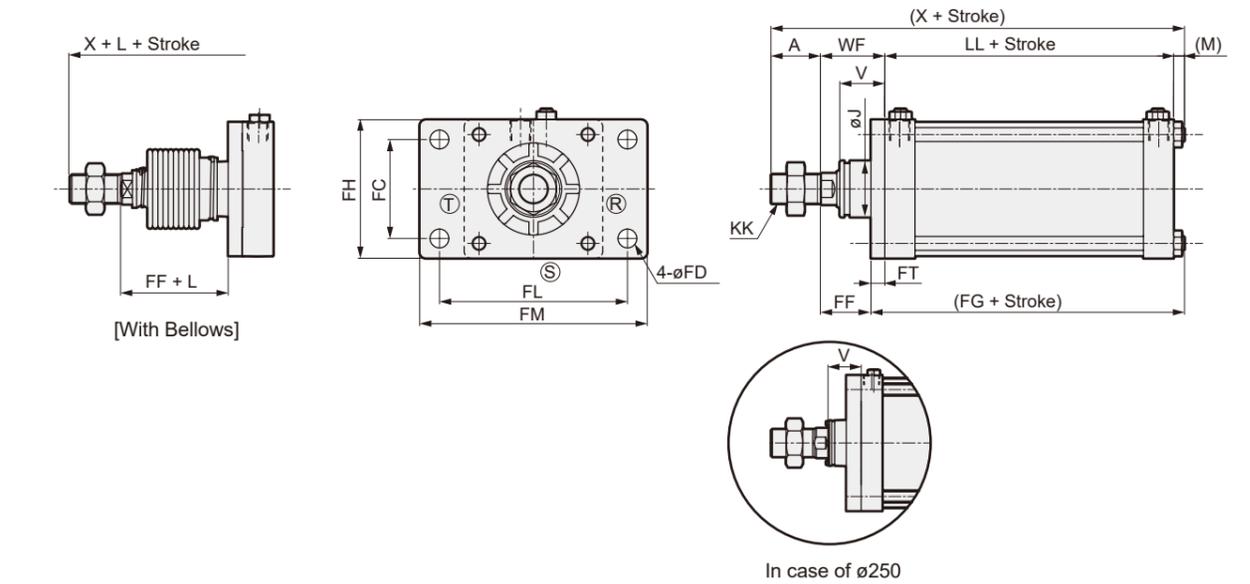
● Axial foot type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions														With Bellows
	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	L
ø125	50	M30 × 1.5	92	65	271	19	45	19	20	182	85	100	140	7	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	290	20	50	19	17	203	100	112	157	8	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	306	20	53	19	18	212	106	118	177	10	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	338	27	60	24	18	230	125	132	200	10	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	372	27	62	24	26	247	132	150	220	12	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	421	28	70	29	24	281	160	180	274	12	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

● Rod Side Flange Type (FA)

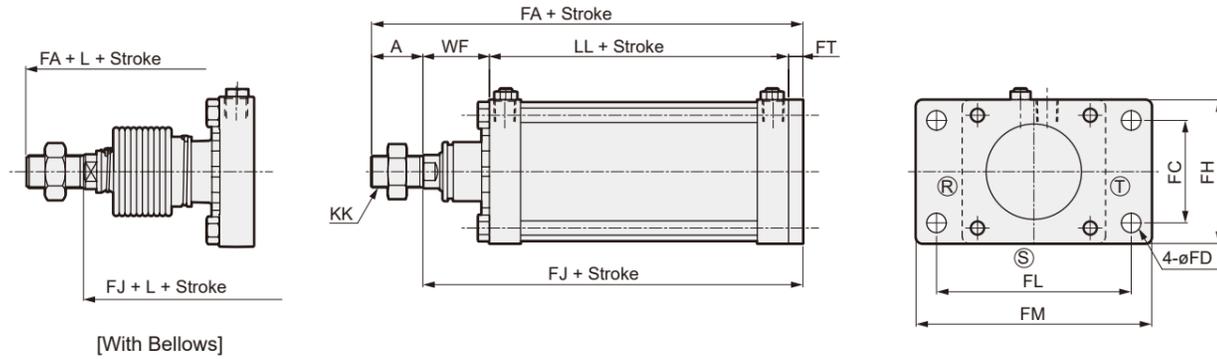


Code	Rod Side Flange Type (FA) Mounting Dimensions																	With Bellows
	A	J	KK	LL	M	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	L	
ø125	50	57	M30 × 1.5	92	11	45.5	65	218	100	19	51	117	140	190	230	14	(Stroke/4.55) + 11	
ø140	50	57	M30 × 1.5	103	11	45.5	67	231	112	19	48	133	157	212	250	19	(Stroke/4.55) + 9	
ø160	56	62	M36 × 1.5	106	13	48	71	246	118	19	52	138	177	236	280	19	(Stroke/5.15) + 9	
ø180	63	68	M40 × 1.5	110	15	53	78	266	132	24	53	150	200	265	310	25	(Stroke/5.15) + 9	
ø200	72	75	M45 × 1.5	123	16	60	88	299	150	24	63	164	220	280	330	25	(Stroke/5.30) + 9	
ø250	88	93	M56 × 2	141	19	67	94	342	180	29	64	190	274	355	415	30	(Stroke/6.40) + 9	

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Outline Dimension Drawing

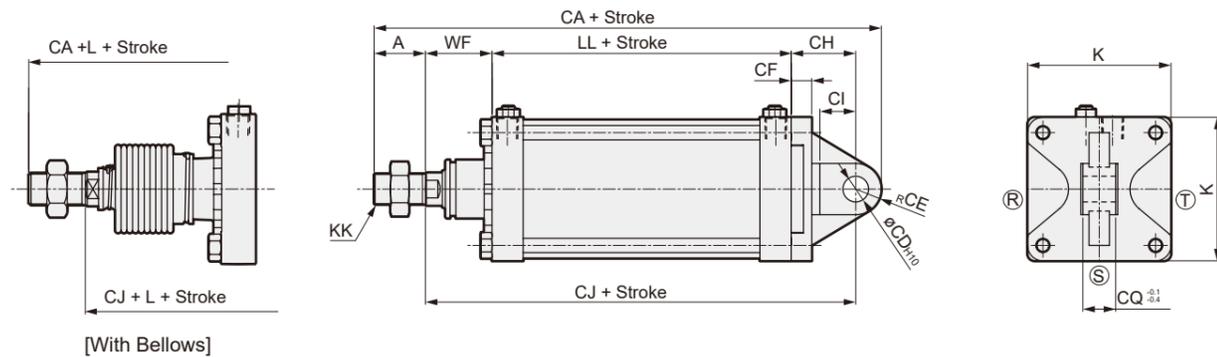
●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions												With Bellows
	A	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT	L
ø125	50	M30 × 1.5	92	65	221	100	19	140	171	190	230	14	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	239	112	19	157	189	212	250	19	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	252	118	19	177	196	236	280	19	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	276	132	24	200	213	265	310	25	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	308	150	24	220	236	280	330	25	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	353	180	29	274	265	355	415	30	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

●Single Clevis Type (CA)



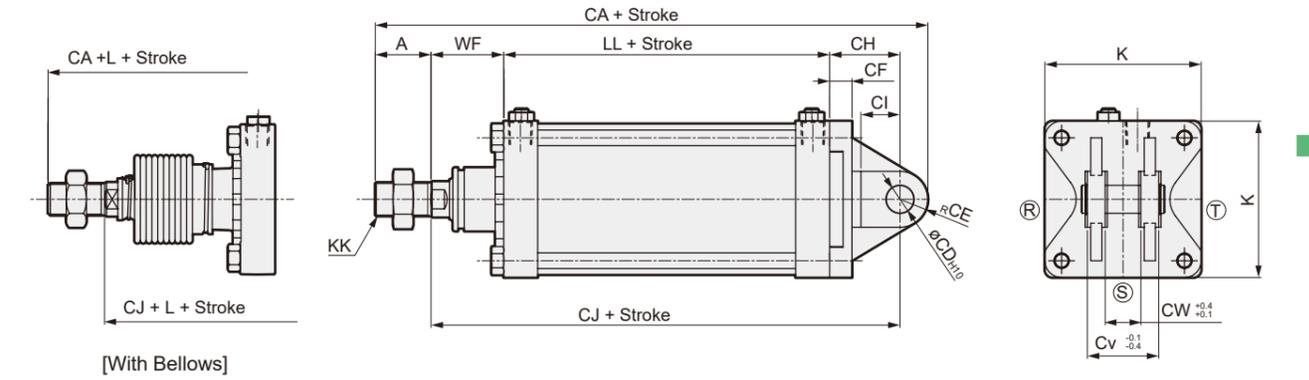
Code	Single Clevis Type (CA) Mounting Dimensions												With Bellows
	A	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	L
ø125	50	M30 × 1.5	92	65	295	25	25	20	63	35	220	32	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	67	323	28	28	22	75	40	245	36	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	71	340	32	32	24	75	40	252	40	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	78	381	40	40	25	90	55	278	50	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	88	413	40	40	30	90	55	301	50	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	94	483	50	50	35	110	65	345	63	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.

Double-acting, Single rod, Lubricated, Non-lube type

Outline Dimension Drawing

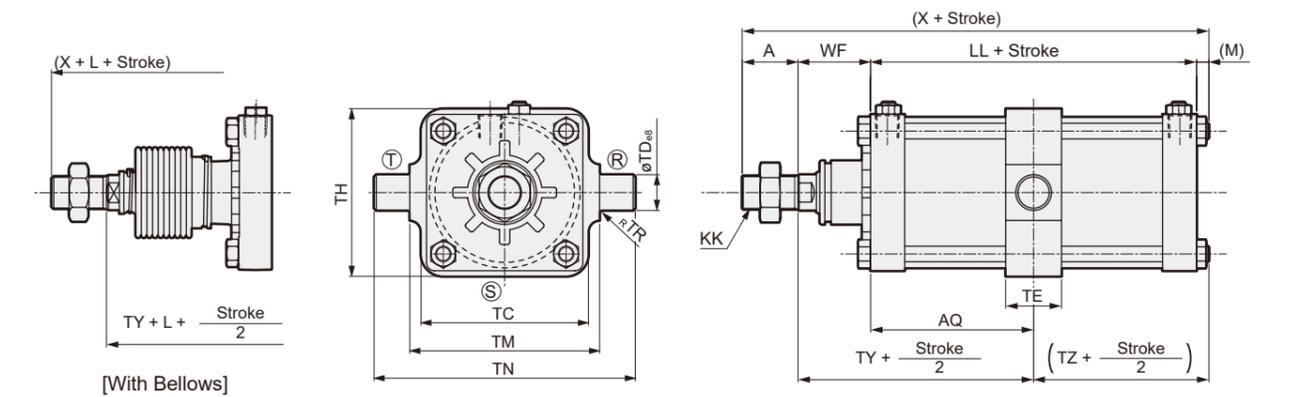
●Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions														With Bellows
	A	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	L	
ø125	50	M30 × 1.5	92	65	295	25	25	20	63	35	220	64	32	(Stroke/4.55) + 11	
ø140	50	M30 × 1.5	103	67	323	28	28	22	75	40	245	72	36	(Stroke/4.55) + 9	
ø160	56	M36 × 1.5	106	71	340	32	32	24	75	40	252	80	40	(Stroke/5.15) + 9	
ø180	63	M40 × 1.5	110	78	381	40	40	25	90	55	278	100	50	(Stroke/5.15) + 9	
ø200	72	M45 × 1.5	123	88	413	40	40	30	90	55	301	100	50	(Stroke/5.30) + 9	
ø250	88	M56 × 2	141	94	483	50	50	35	110	65	345	126	63	(Stroke/6.40) + 9	

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: Pin and retaining ring are attached.
 *4: For dimensions of models with switches, see P. 956.
 *5: For outer dimensions diagram of accessories, refer to P. 883.

●Intermediate trunnion type (TC)

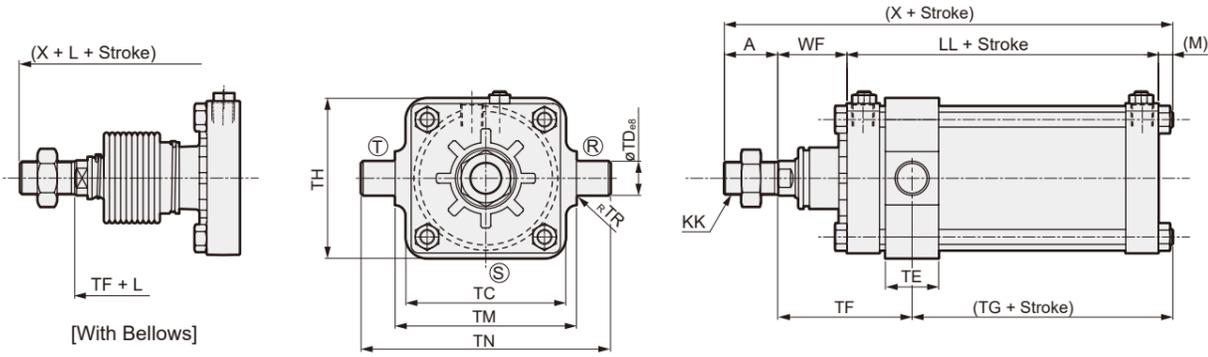


Code	Intermediate Trunnion Type (TC) Mounting Dimensions														With Bellows		
	A	KK	LL	M	WF	X	AQ	TC	TD	TE	TH	TY	TZ	TM	TN	TR	L
ø125	50	M30 × 1.5	92	11	65	218	46 + Stroke/2	150	32	50	150	111	57	170	234	2	(Stroke/4.55) + 11
ø140	50	M30 × 1.5	103	11	67	231	51.5 + Stroke/2	154	36	55	170	118.5	62.5	190	262	2	(Stroke/4.55) + 9
ø160	56	M36 × 1.5	106	13	71	246	53 + Stroke/2	190	40	60	190	124	66	212	292	2	(Stroke/5.15) + 9
ø180	63	M40 × 1.5	110	15	78	266	55 + Stroke/2	210	45	65	210	133	70	236	326	2	(Stroke/5.15) + 9
ø200	72	M45 × 1.5	123	16	88	299	61.5 + Stroke/2	242	45	70	242	149.5	77.5	265	355	2	(Stroke/5.30) + 9
ø250	88	M56 × 2	141	19	94	342	70.5 + Stroke/2	300	56	80	300	164.5	89.5	335	447	2	(Stroke/6.40) + 9

*1: (R)(S)(T) indicate the position of the cushion needle.
 *2: The L dimension is rounded up to the nearest whole number.
 *3: For dimensions of models with switches, see P. 956.
 *4: For outer dimensions diagram of accessories, refer to P. 883.
 *5: For the minimum producible stroke, please refer to P. 948.

Outline Dimension Drawing

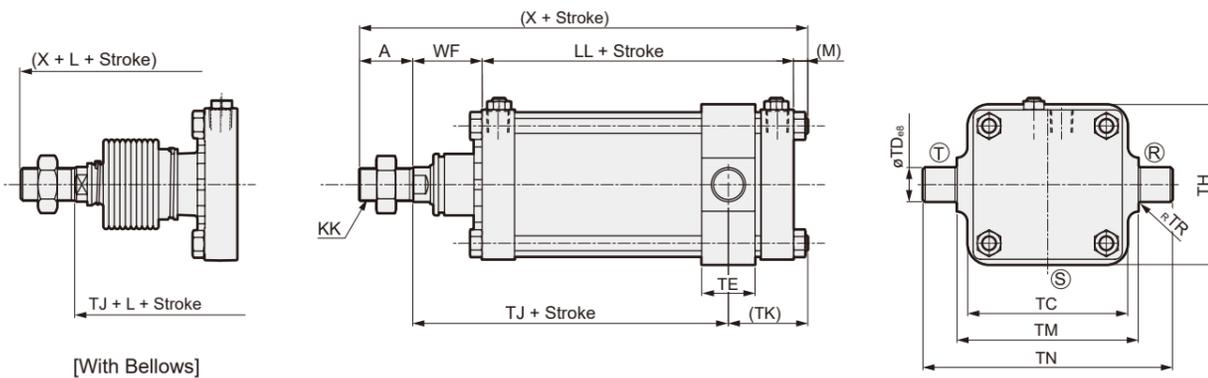
●Rod side trunnion type (TA)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions																With Bellows
	A	KK	LL	M	WF	X	TC	TD	TE	TF	TG	TH	TM	TN	TR	L	
125	50	M30 × 1.5	92	11	65	218	150	32	50	126	42	150	170	234	2	(Stroke/4.55) + 11	
140	50	M30 × 1.5	103	11	67	231	154	36	55	134.5	46.5	170	190	262	2	(Stroke/4.55) + 9	
160	56	M36 × 1.5	106	13	71	246	190	40	60	141	49	190	212	292	2	(Stroke/5.15) + 9	
180	63	M40 × 1.5	110	15	78	266	210	45	65	150.5	52.5	210	236	326	2	(Stroke/5.15) + 9	
200	72	M45 × 1.5	123	16	88	299	242	45	70	168	59	242	265	355	2	(Stroke/5.30) + 9	
250	88	M56 × 2	141	19	94	342	300	56	80	184	70	300	335	447	2	(Stroke/6.40) + 9	

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the rod side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 948.

●Head Side Trunnion Type (TB)

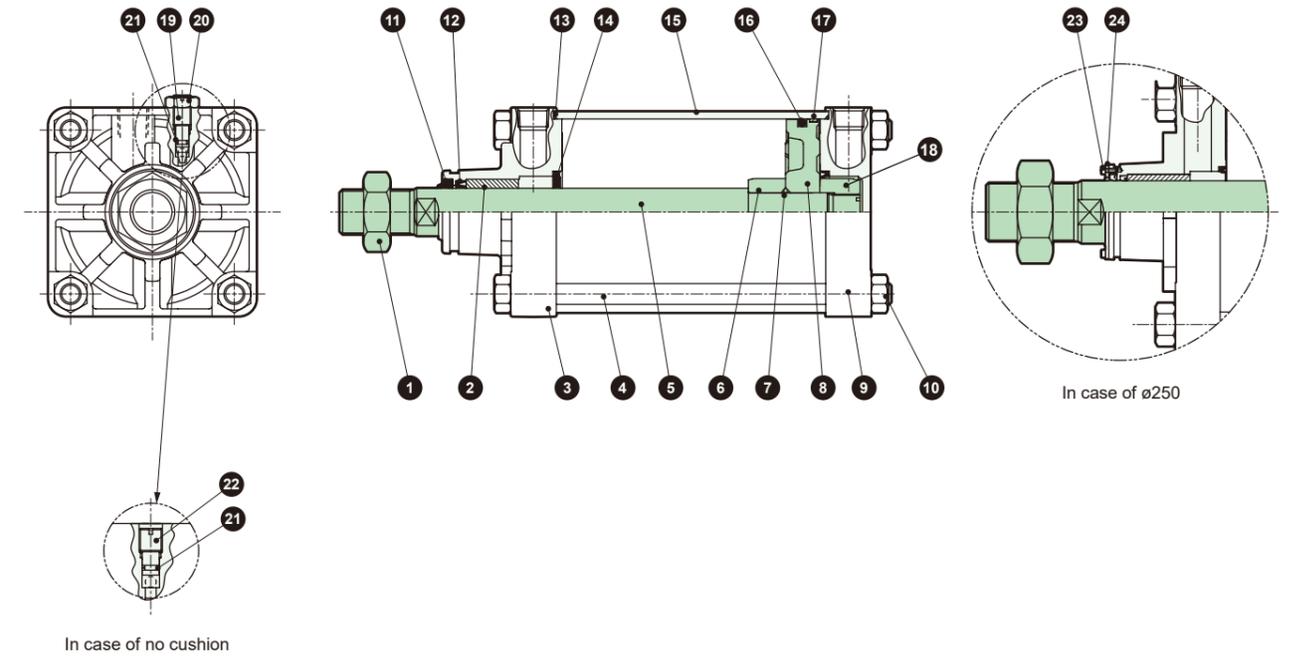


Code	Head Side Trunnion Type (TB) Mounting Dimensions																With Bellows
	A	KK	LL	M	WF	X	TC	TD	TE	TH	TJ	TK	TM	TN	TR	L	
125	50	M30 × 1.5	92	11	65	218	150	32	50	150	96	72	170	234	2	(Stroke/4.55) + 11	
140	50	M30 × 1.5	103	11	67	231	154	36	55	170	102.5	78.5	190	262	2	(Stroke/4.55) + 9	
160	56	M36 × 1.5	106	13	71	246	190	40	60	190	107	83	212	292	2	(Stroke/5.15) + 9	
180	63	M40 × 1.5	110	15	78	266	210	45	65	210	115.5	87.5	236	326	2	(Stroke/5.15) + 9	
200	72	M45 × 1.5	123	16	88	299	242	45	70	242	131	96	265	355	2	(Stroke/5.30) + 9	
250	88	M56 × 2	141	19	94	342	300	56	80	300	145	109	335	447	2	(Stroke/6.40) + 9	

- *1: (R)(S)(T) indicate the position of the cushion needle.
- *2: The L dimension is rounded up to the nearest whole number.
- *3: Position detection at the head side stroke end is not possible.
- *4: For dimensions of models with switches, see P. 956.
- *5: For outer dimensions diagram of accessories, refer to P. 883.
- *6: For the minimum producible stroke, please refer to P. 948.

Internal Structure Diagram/Material

●SCS2-G

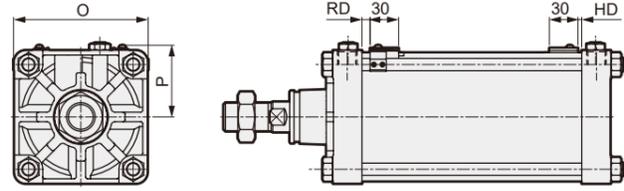


Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Nut	Steel	Zinc Chromate	15	Cylinder Tube	Aluminum Alloy	Hard Anodized
2	Bushing	Oil-impregnated Bearing Alloy		16	Piston Packing	Nitrile Rubber	Only with cushion
3	Rod Cover	Aluminum Alloy	Chromate	17	Wear Ring	ø125 to ø200: Polyacetal ø250: Fabric-reinforced phenol	
4	Tie Rod	Steel	Zinc Chromate	18	Cushion Ring B	Steel	Zinc Chromate
5	Piston Rod	Steel	Industrial Hard Chrome Plating	19	Cushion Needle	ø125 to ø180: Copper alloy ø200, ø250: Steel	ø200, ø250: Zinc Chromate
6	Cushion Ring A	Steel	Zinc Chromate	20	Hexagon Nut	Steel	Zinc Chromate
7	Piston Gasket	Nitrile Rubber		21	Needle Gasket	Nitrile Rubber	
8	Piston	Aluminum Alloy		22	Cushion needle stop plug	ø125 to ø180: Copper alloy ø200, ø250: Steel	
9	Head Cover	Aluminum Alloy	Chromate	23	Hexagon socket bolt	Steel	Black Oxide
10	Hexagon Nut	Steel	Zinc Chromate	24	Retaining plate	Steel	Manganese phosphate
11	Scraper	Nitrile Rubber, Steel					
12	Rod Packing	Nitrile Rubber					
13	Cylinder Gasket	Nitrile Rubber					
14	Cushion Packing	Nitrile Rubber, Steel					

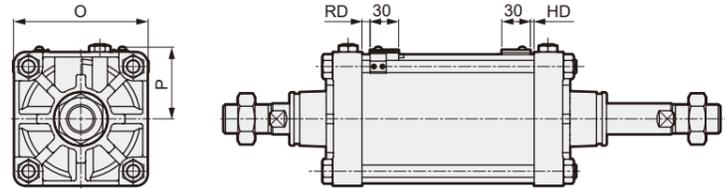
For Maintenance Parts, please visit the CKD Equipment Product Site
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts

SCS2 Series Switch-equipped External Dimension Diagram

- T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2[H/M]R3, T2WH/V, T3WH/V, T2WLH/V, T8H/V, T2JH/V
- SCS2-LN, SCS2-LH

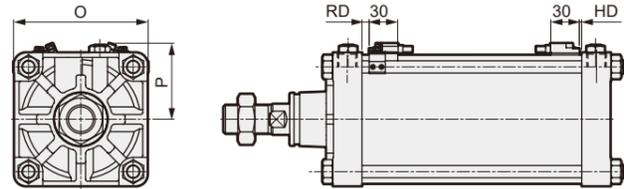


• SCS2-LND

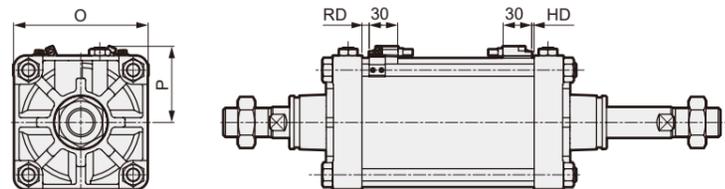


Code	SCS2-LN, SCS2-LND, SCS2-LH									
Bore Size (mm)	O	P	T0, T5, T2, T3, T3P		T2W, T3W		T2J		T8	
			RD	HD	RD	HD	RD	HD	RD	HD
ø125	142	76	8.5	4	10.5	5.5	7.5	2.5	2.5	0
ø140	156	82	8.5	7	10.5	8.5	7.5	5.5	2.5	0.5
ø160	175	90	10.5	8	12.5	10	9.5	7	4.5	1.5
ø180	196	98	13	9.5	14.5	11.5	11.5	8.5	6.5	3.5
ø200	213	106	17.5	13	19	15	16	12	11	7
ø250	252	126	18.5	19	20.5	20.5	17.5	17.5	12.5	12.5

- T1H/V, T2YD, T2YDT
- SCS2-LN, SCS2-LH



• SCS2-LND



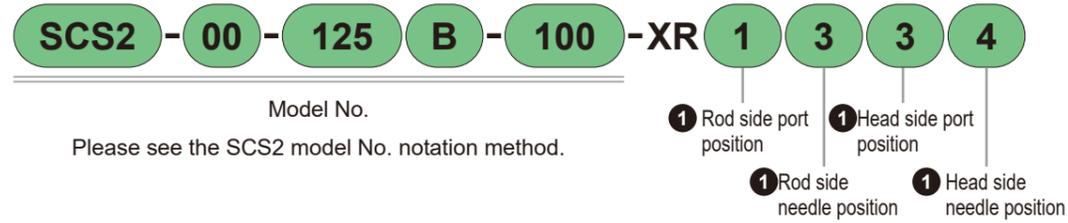
Code	SCS2-LN, SCS2-LND, SCS2-LH			
Bore Size (mm)	O	P	T2YD, T1	
			RD	HD
ø125	142	80	7.5	2.5
ø140	156	86	7.5	5.5
ø160	175	95	9.5	7
ø180	196	103	11.5	8.5
ø200	213	111	16	12
ø250	252	130	17.5	17.5

MEMO

Port/Cushion needle position specification (-XR◇◇◇◇)

Content: Specify the port and cushion needle positions.

Model No. Notation Method

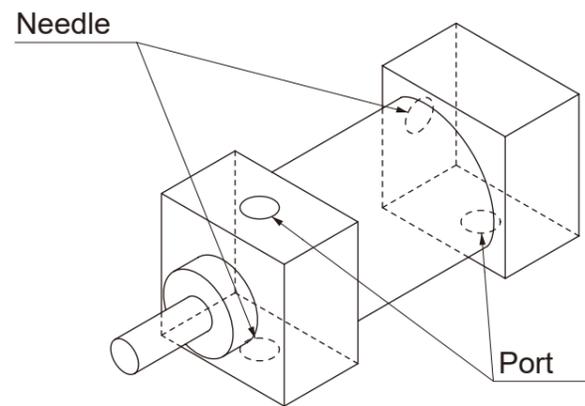


1 Port/Cushion needle position

Code	Content
1	
2	
3	
4	

Note: Combinations where the port position and needle position are on the same surface can also be selected.

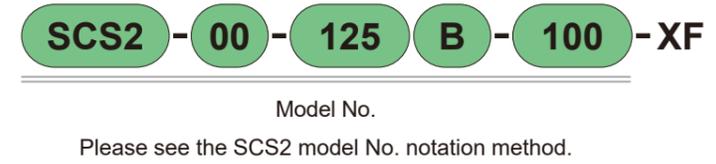
Outer Dimensions Diagram



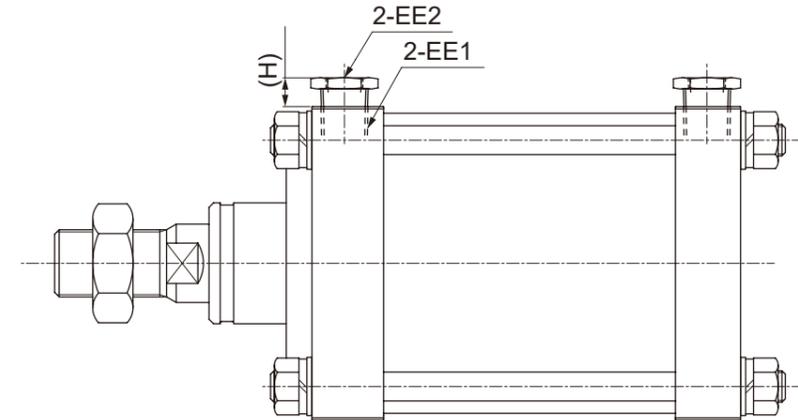
Port 1 size down (-XF)

Content: Reduce the port size by one size from the standard. (Using bushing)

Model No. Notation Method



Outline Dimension Drawing



Bore Size	EE1	EE2	H
ø125	Rc1/2	Rc3/8	13
ø140	Rc3/4	Rc1/2	15
ø160			
ø180			
ø200	Rc1	Rc3/4	14
ø250			

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

■ **Mounting bracket rotation assembly (-XK□)**

Content: Specifies the mounting position of the mounting bracket.

Model No. Notation Method



Model No.

① Mounting bracket mounting position

Please see the SCS2 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

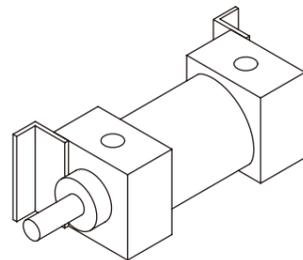
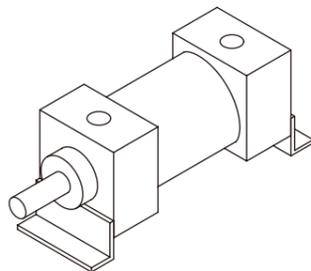
*1: For flanges and trunnions, only XK1 (90° rotation) is applicable.

External view

*Port and cushion needle positions do not change.

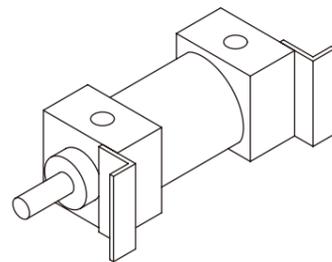
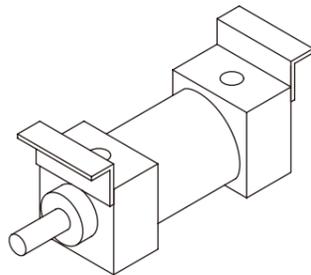
● Basic

● 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.

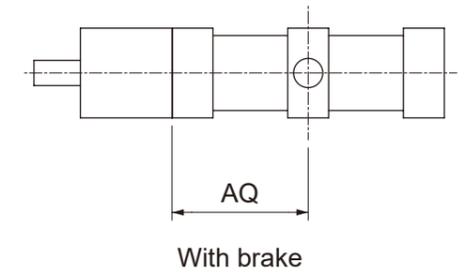
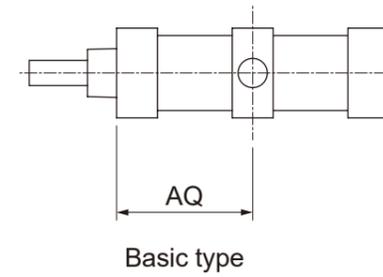
Custom dimension

Please see the SCS2 model No. notation method.

Refer to the external dimensions list.

Note: For two-stage type and back-to-back type, please consult us separately.

Outer Dimensions Diagram



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

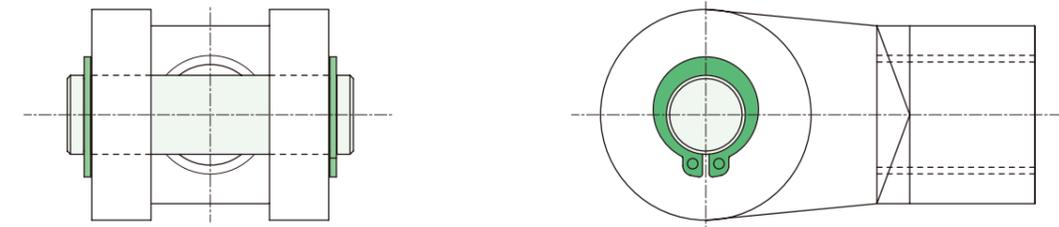
SCS2 - 00 - 125 B - 100 - Y - XP5

Model No.

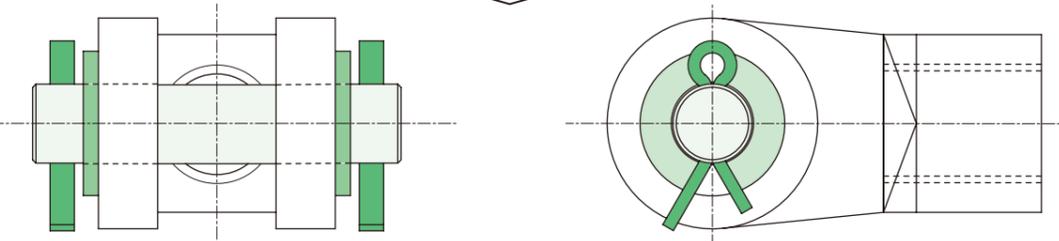
Please see the SCS2 model No. notation method.

Outer Dimensions Diagram

● 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

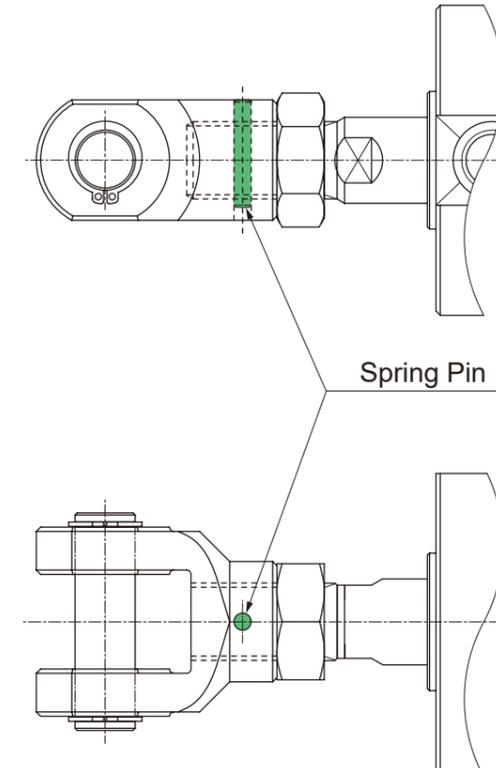
SCS2 - TC - 125 B - 100 - Y - XP7

Model No.

Please see the SCS2 model No. notation method.

Outer Dimensions Diagram

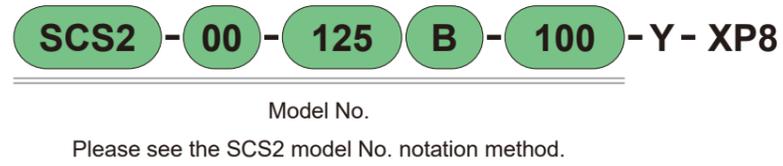
Same as with Knuckle specification.
(Spring pin driving direction varies depending on the model.)



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)

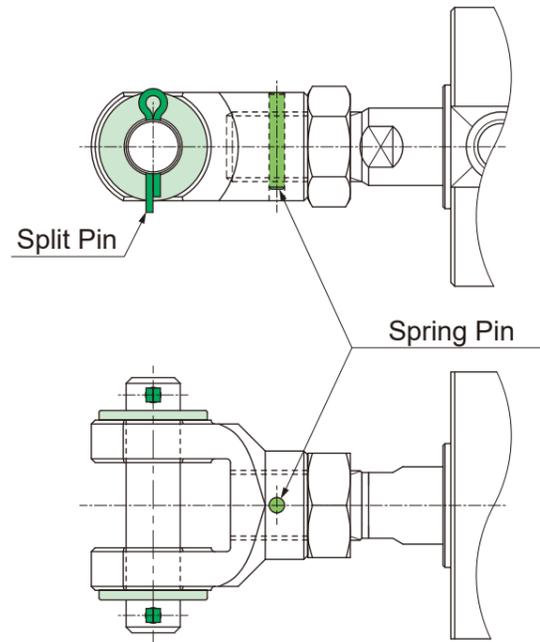
Model No. Notation Method



Outer Dimensions Diagram

Mounting dimensions are the same as with Knuckle specification.

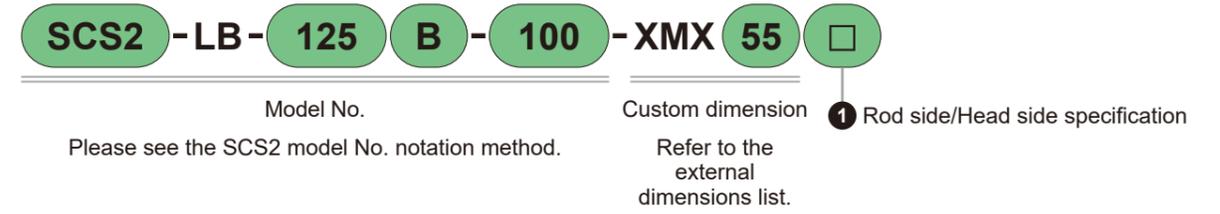
It is a combination of XP5 (P. 962) and XP7 (P. 963).



Tie rod extension (-XMX◇)

Content: Specify the protrusion dimension of the tie rod threaded part.

Model No. Notation Method



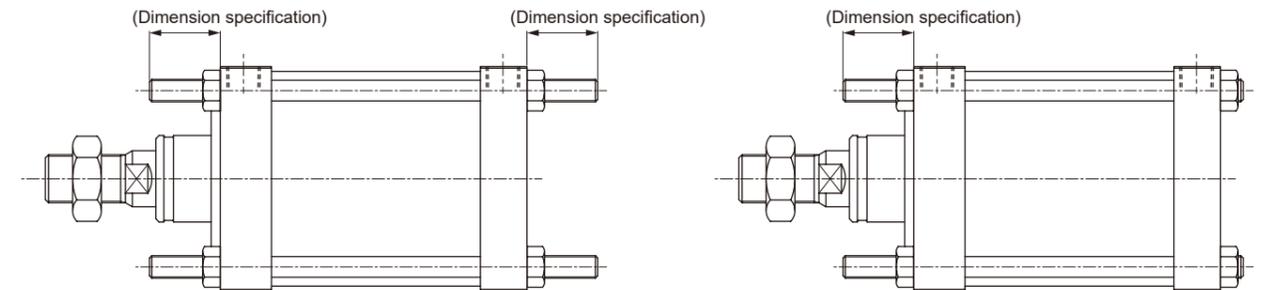
1 Rod side/Head side specification

Code	Content
Blank	Rod side/Head side 8 tie rod extension
R	Rod side 4 tie rod extension
H	Head side 4 tie rod extension

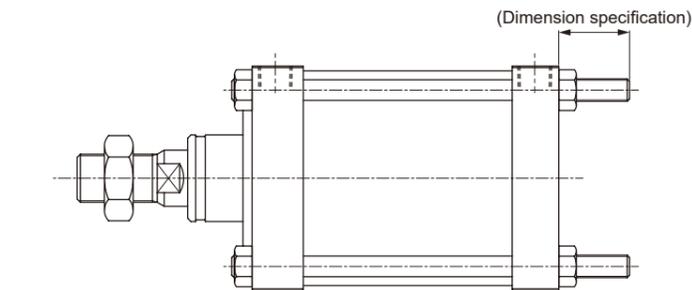
Outer Dimensions Diagram

● Rod side/Head side 8 tie rod extension (XMXX)

● Rod side 4 tie rod extension (XMXXR)



● Head side 4 tie rod extension (XMXXH)



■ Tie rod material SUS (-XM1)

Content: Change the tie rod material to stainless steel. (Washers and nuts are not changed)

Model No. Notation Method

SCS2 - 00 - 125 B - 100 - XM1

Model No.

Please see the SCS2 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

SCS2 - 00 - 125 B - 100 - XJ9

Model No.

Please see the SCS2 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

SCS2 - 00 - 125 B - 100 - XT9

Model No.

Please see the SCS2 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.

Model No. Notation Method

SCS2 - T2 - 00 - 125 B - 100

Model No.

Please see the SCS2 model No. notation method.

Outer Dimensions Diagram

Same as standard type.

■ With 2 Rod Nuts (-A2)

Content: Shipped with 2 rod nuts, same as standard.

Model No. Notation Method

SCS2 - 00 - 125 B - 100 - A2

Model No.

Please see the SCS2 model No. notation method.

Outer Dimensions Diagram

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 P. 41, and for cylinder switches, see P. 1026.

Individual Precautions: Large Bore Size Cylinder SCS2 Series

During Design / Selection

1. Common

Caution

■ Inspection of Type 2 pressure vessels

Based on the Ordinance of the Ministry of Health, Labour and Welfare, cylinders falling under the following categories must undergo inspection by the Japan Boiler Association.

- ① Cylinders with a rated pressure exceeding 0.2 MPa and an internal volume exceeding 0.04 m³
- ② Cylinders with a rated pressure exceeding 0.2 MPa, a cylinder Bore Size of 200 mm or more, and a body length (cylinder tube length) of 1000 mm or more

$$V = \frac{D^2 \times S \times 3.14}{4 \times 10^9}$$

V: Cylinder capacity (m³)
D: Bore size (mm)
S: Body length (cylinder tube length) (mm)

Stroke subject to Type 2 pressure vessel inspection

Bore Size	Stroke
ø160	1948 or more
ø180	1526 or more
ø200	946 or more
ø250	752 or more

■ With check valve in cushion part (C2)

If the load is large, the delay in cylinder starting time will increase. If you want to reduce the starting time, please use the model with a check valve in the cushion part (C2).

■ Heat resistant type (SCS2-T)

Please consult us if the ambient temperature differs extremely depending on the part, such as when only the piston rod enters a high-temperature furnace.

2. Stroke adjustment type SCS2-P

- If stroke adjustment is performed, the cushion will no longer be effective.

3. Heat resistant type SCS2-T

- Magnets are not incorporated.

4. Low hydraulic pressure type SCS2-H

- This product is a pneumatic cylinder that can use hydraulic operating oil as the operating fluid. It does not comply with JIS standards for hydraulic cylinders regarding operation and leakage tests.

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