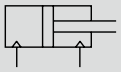
Large bore size cylinder
Double acting/single rod/lubrication/no-lubrication

SCS2 Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

Specifications

Item		SCS2/SCS2-N/SCS2-LN					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)					
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate 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 (use turbine oil class 1 ISO VG32 for lubrication)/Not required for SCS2-N/LN					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)	Trunnion, min. stroke (mm)
ø125	50/75/100/150/200/250/300	800	2000	1	23
ø140					25
ø160					27
ø180		900			28
ø200		1,000			28
ø250		1,200			28

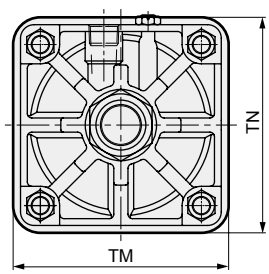
*1: The custom stroke length is available in 1 mm increments.
*2: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

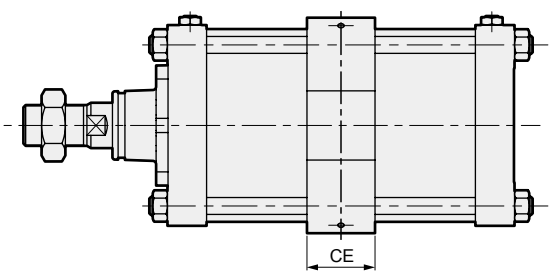
● Non-sag block

A non-sag block will be added to the middle part of the cylinder if the stroke length is in the range given in the table below.

Additional stroke length to the non-sag block

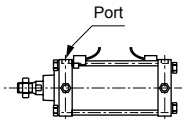
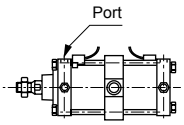
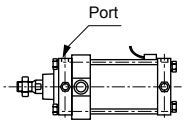
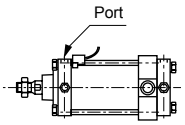
Bore size (mm)	Stroke length
ø125	1801 to 2000
ø140	





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

Min. stroke length with switch

Item / Bore size (mm)	Switch: Sketch / Bore size	Stroke length when mounted on the same surface	Stroke of intermediate supporting hole trunnion	Stroke length of rod side supporting hole trunnion	Stroke of head side supporting hole trunnion
				 Position cannot be detected at the rod side stroke end.	 Position cannot be detected at the head side stroke end.
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	

Switch specifications

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

Item	Proximity 2-wire				Proximity 3-wire				Reed 2-wire							Proximity 2-wire
	T1H/ T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V		T5H/T5V		T8H/T8V			T2YD (*4) T2YDT
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection		For programmable controller, relay			For programmable controller
Output method	-				NPN output	PNP output	NPN output	NPN output	-							
Pwr. supp. V.	-				10 to 28 VDC				-							
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	100/110 VAC	5/12/24 VDC	100/110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	5 to 20 mA
Indicator lamp	LED (Lit when ON)	LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)			Red/green LED (Lit when ON)
Leakage current	≤ 1 mA at 100 VAC, ≤ 2 mA at 200 VAC	1 mA or less			10 μA or less				0 mA							1 mA or less
Weight g	1 m:33	1 m:18	1 m:33	1 m:18	1 m:18		1 m:33	1 m:18	1 m:18 3 m:49 5 m:80				1 m:33			1 m:61
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49		3 m:87	3 m:49					3 m:87			3 m:166
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80		5 m:142	5 m:80					5 m:142			5 m:272

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : Max. load current: 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : Switch for AC magnetic field (T2YD/T2YDT) cannot be used in DC magnetic field.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm: Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA/TB/TC)	Switch weight: Switch	Mounting bracket	Additional weight per S = 100mm
ø125	7.22	8.72	10.52	10.22	10.32	10.62	Refer to the weight in the switch specifications.	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 for S = 0 mm stroke length ····· 8.72 kg
- Additional weight for S = 300 mm stroke length ····· $1.54 \times \frac{300}{100} = 4.62$ kg
- Weight of 2 switches (T0H-D) ····· 0.018 x 2 = 0.036 kg
- Product weight with 2 switch brackets ·· 0.028 x 2 = 0.056 kg
- Product weight ····· 8.72 + 4.62 + 0.036 + 0.056 = 13.432 kg

How to order

Lubrication without switch (without magnet for switch)

SCS2 — LB - 125 ○ B - 50 — J Y

No-lubrication without switch (without magnet for switch)

SCS2-N — LB - 125 ○ B - 50 — J Y

No-lubrication with switch (built-in magnet for switch)

SCS2-LN - LB - 125 ○ B - 50 - T0H - R - J Y

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

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring included)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke *2	Available stroke	Custom stroke
ø125 to ø160	**1 to 800**	**2000**	**In 1 mm increments**
ø180	**1 to 900**	**2000**	
ø200	**1 to 1000**	**2000**	
ø250	**1 to 1200**	**2000**	

Ⓕ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
T0H*	**T0V***	Reed	●	●	1-color display	2-wire
T5H*	**T5V***	Reed	●	●	Without indicator lamp	2-wire
T8H*	**T8V***	Reed	●	●	1-color display	2-wire
T1H*	**T1V***	Proximity	●		1-color display	2-wire
T2H*	**T2V***	Proximity		●	1-color display	2-wire
T3H*	**T3V***	Proximity		●	1-color display	3-wire
T3PH*	**T3PV***	Proximity		●	1-color display (PNP output)	3-wire
T2WH*	**T2WV***	Proximity		●	2-color display	2-wire
T2YH*	**T2YV***	Proximity		●	2-color display	2-wire
T3WH*	**T3WV***	Proximity		●	2-color display	3-wire
T3YH*	**T3YV***	Proximity		●	2-color display	3-wire
T2YD*	**-**	Proximity		●	2-color display	2-wire
T2YDT*	**-**	Proximity		●	AC magnetic field	2-wire
T2JH*	**T2JV***	Proximity		●	1-color display off-delay	2-wire

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

Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4

Ⓗ Option

		Max. ambient temp.	Instantaneous max. temp
C2	With cushion section check valve		
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
M	Piston rod and rod nut material (stainless steel)		

Blank	Cushion needle position (standard)	Standard
R	Cushion needle position R	T ◎ R
S	Cushion needle position S	S
T	Cushion needle position T	
P6	Copper and PTFE free (made to order)	

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring included)

⚠ Precautions for model No. selection

*1 : Refer to page 627 for the min. stroke length with switch.
*2 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*3 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*4 : Check below for the cushion needle position indication.
*5 : "I" and "Y" cannot be selected together.

[Example of model No.]

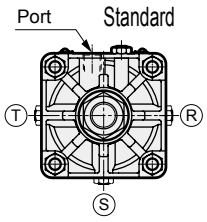
SCS2-LN-LB-125B-50-T0H-R-JY

Model: Large bore size cylinder, double acting/lubrication/no-lubrication

Model No.	: No-lubrication with switch
Ⓐ Mounting	: Axial foot
Ⓑ Bore size	: ø125 mm
Ⓒ Port thread	: Rc thread
Ⓓ Cushion	: Both sides cushioned
Ⓔ Stroke length	: 50 mm
Ⓕ Switch model No.	: Reed T0H switch, lead wire 1m
Ⓖ Switch quantity	: 1 on rod side
Ⓗ Option	: Bellows material for max. ambient temperature of 100°C
Ⓘ Accessory	: Rod clevis

Cushion needle position

(Needle position with the port on the top when viewed from the rod end)



Certified class 2 pressure vessel stroke length

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

How to order switch

● Switch body + mounting bracket set

SCS2-LN - T0H - 125

- T0H: Switch model No. (Item Ⓕ on page 628)
- 125: Bore size (Item Ⓑ on page 628)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ on page 628)

● Mounting bracket set

SCS2-LN - TS - 125

Mounting bracket	
TS	T switch
T	T2YD switch

- 125: Bore size (Item Ⓑ on page 628)

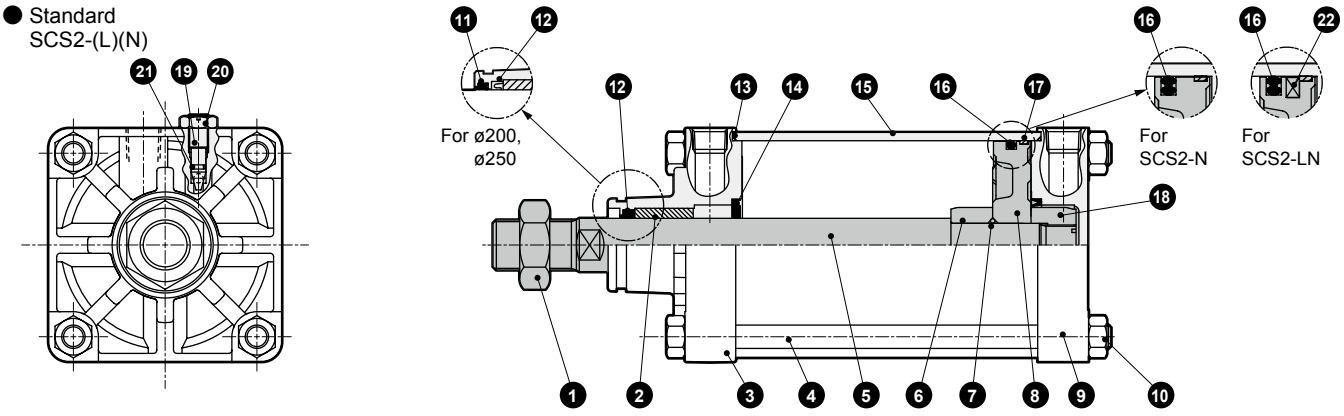
Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working 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

Internal structure and parts list

● Standard
SCS2-(L)(N)



Note: ⑭, ⑲, ⑳ and ㉑ are not required for the type without cushion.

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate	13	Cylinder gasket	Nitrile rubber	
2	Bush	Iron-copper oil-impregnated bearing alloy		14	Cushion packing	Nitrile rubber/steel	
3	Rod cover	Aluminum alloy casting	Chromate	15	Cylinder tube	Aluminum alloy	Hard alumite
4	Tie rod	Steel	Zinc chromate	16	Piston packing	Nitrile rubber	
5	Piston rod	Steel	Industrial chrome plating	17	Wear ring	Polyacetal resin	Fiber-reinforced phenolic resin (ø250)
6	Cushion ring A	Steel	Zinc chromate	18	Cushion ring B	Steel	Zinc chromate
7	Piston gasket	Nitrile rubber		19	Cushion needle	Copper alloy (ø125 to ø180)	
8	Piston	Aluminum alloy casting				Steel (ø200, 250)	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	20	Hexagon nut	Steel	Zinc chromate
10	Hexagon nut	Steel	Zinc chromate	21	Needle gasket	Nitrile rubber	
11	Dust wiper	Nitrile rubber	ø200 and ø250 only	22	Magnet	Rubber	SCS2-LN only
12	Rod packing	Nitrile rubber					

Repair parts list

Bore size (mm)	SCS2 (lubrication) Kit No.	SCS2-(L)N (no-lubrication) Kit No.	Repair parts No.
ø125	SCS2-125K	SCS2-N-125K	⑫ ⑬ ⑭ ⑯ ⑰ ㉑
ø140	SCS2-140K	SCS2-N-140K	
ø160	SCS2-160K	SCS2-N-160K	
ø180	SCS2-180K	SCS2-N-180K	
ø200	SCS2-200K	SCS2-N-200K	⑪ ⑫ ⑬ ⑭ ⑯ ⑰ ㉑
ø250	SCS2-250K	SCS2-N-250K	

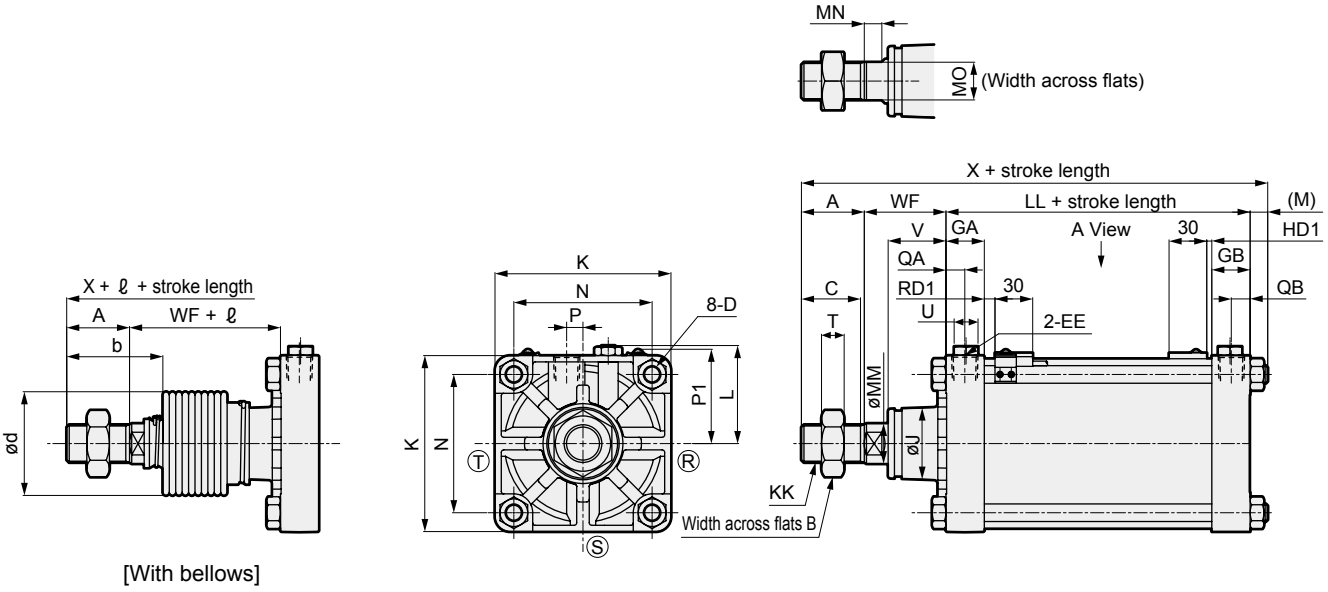
*1: Of the no-lubrication repair parts, the piston packing is different from that of the lubrication.

Mounting bracket material

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

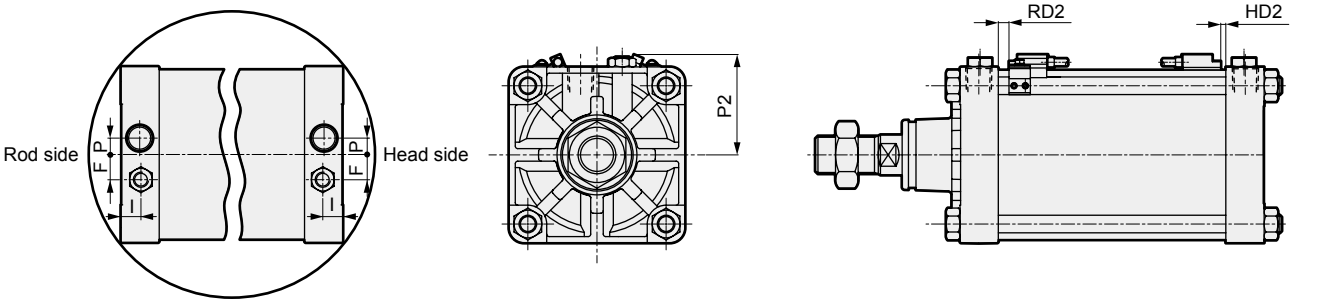
Dimensions

● Basic (00)



[With bellows]

● 2-color display with strong magnetic field proof switch



Port position diagram (A View)

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

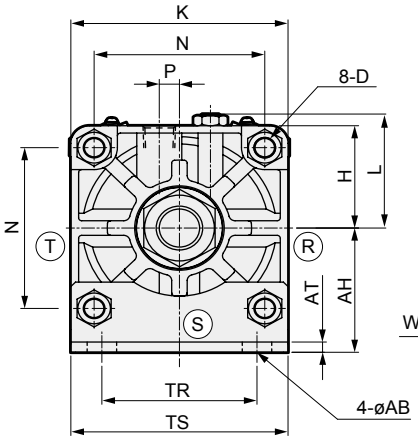
*1 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*2 : ℓ dimensions below decimal point are rounded up.
*3 : For the dimensions of the accessories, refer to page 639.

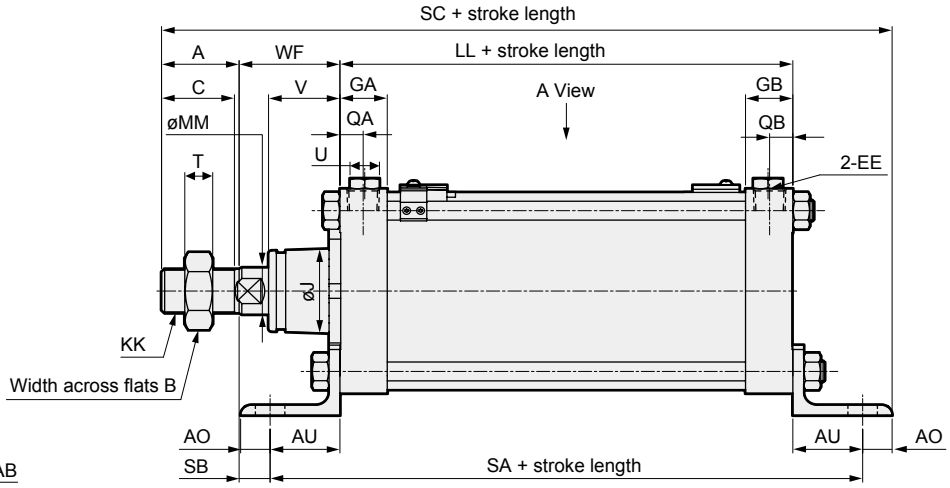
Code	Basic (00) basic dimensions																				
Bore size (mm)	A	B	C	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM	MN	MO	N	P	QA	QB
ø125	50	46	47	M14×1.5	Rc1/2	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	13.5	32	15	27	110	13	15	15
ø140	50	46	47	M14×1.5	Rc3/4	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	13.5	32	15	27	124	15	17	17
ø160	56	55	53	M16×1.5	Rc3/4	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	15.5	40	15	36	142	15	17	17
ø180	63	60	60	M18×1.5	Rc3/4	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	17.5	45	17	41	160	15	17	17
ø200	72	70	69	M20×1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	18.5	50	20	46	175	20	18	18
ø250	88	85	84	M24×1.5	Rc1	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	21.5	60	22	55	216	22	21	21

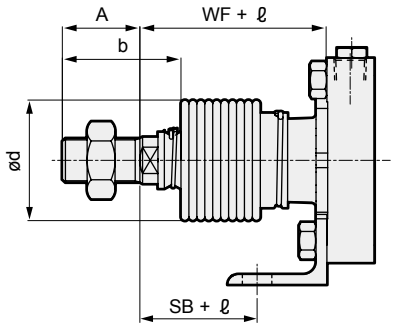
Code						With bellows			With switch		T0, T5, T2, T3		T2W, T3W		T2Y, T3Y, T2YD, T1, T2J		T8	
Bore size (mm)	T	U	V	WF	X	b	d	ℓ	P1	P2	RD1	HD1	RD1	HD1	RD2	HD2	RD2	HD2
ø125	18	19	45.5	65	220.5	74	75	(Stroke length/4.55) + 11	76	80	8.5	4.0	10.5	5.5	7.5	2.5	2.5	0.0
ø140	18	19	45.5	67	233.5	74	75	(Stroke length/4.55) + 9	82	86	8.5	7.0	10.5	8.5	7.5	5.5	2.5	0.5
ø160	21	19	48	71	248.5	82	82	(Stroke length/5.15) + 9	90	95	10.5	8.0	12.5	10.0	9.5	7.0	4.5	1.5
ø180	24	19	53	78	268.5	91	91	(Stroke length/5.15) + 9	98	103	13.0	9.5	14.5	11.5	11.5	8.5	6.5	3.5
ø200	27	24	60	88	301.5	102	95	(Stroke length/5.30) + 9	106	111	17.5	13.0	19.0	15.0	16.0	12.0	11.0	7.0
ø250	34	24	64	94	344.5	120	120	(Stroke length/6.40) + 9	126	130	18.5	19.0	20.5	20.5	17.5	17.5	12.5	12.5

Dimensions

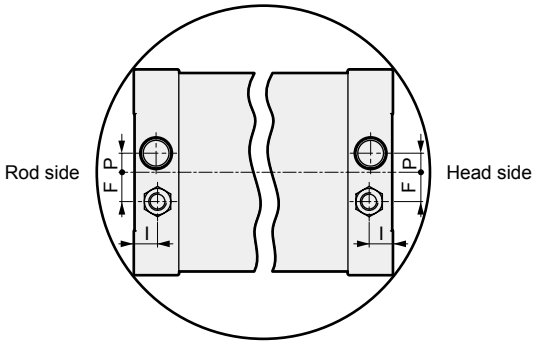
● Axial foot (LB)







[With bellows]



Port position diagram (A View)

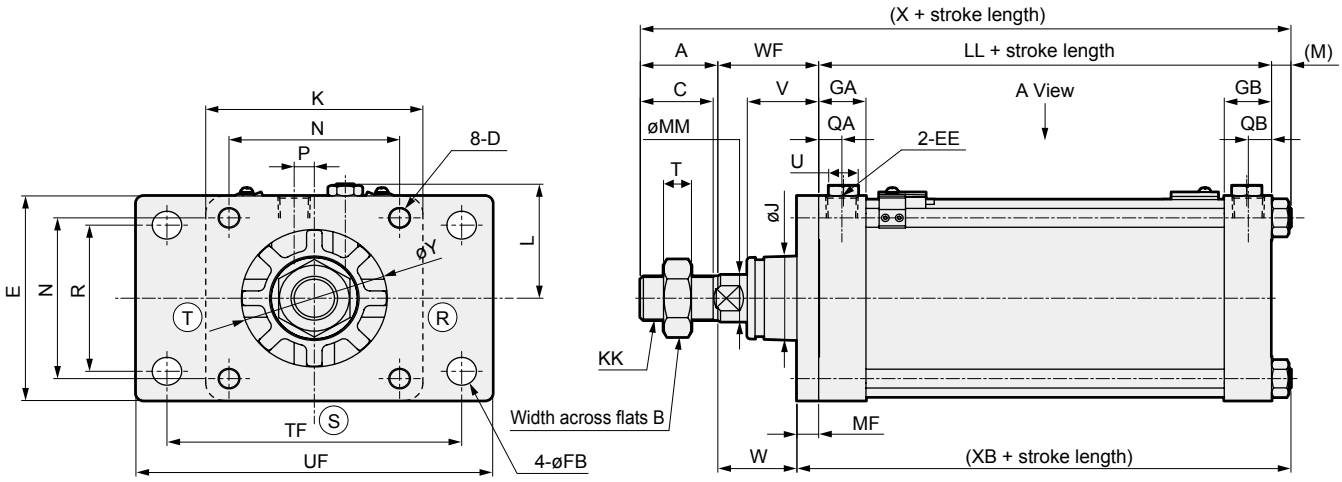
*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.

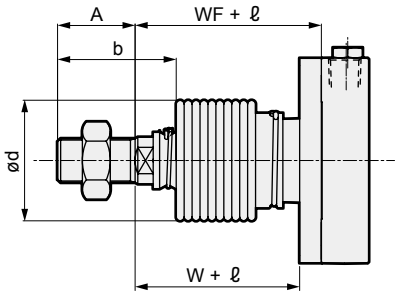
Code	Axial foot (LB) basic dimensions																			
Bore size (mm)	A	AB	AH	AT	AO	AU	B	C	D	EE	GA	GB	F	I	H	J	K	KK	L	LL
ø125	50	19	85	7	19	45	46	47	M14×1.5	Rc1/2	30.5	30.5	20	16	70	57	140	M30×1.5	78 to 82	92
ø140	50	19	100	8	20	50	46	47	M14×1.5	Rc3/4	34.5	34.5	20	20	78.5	57	157	M30×1.5	86.5 to 91	103
ø160	56	19	106	10	20	53	55	53	M16×1.5	Rc3/4	34.5	34.5	24	20	88.5	62	177	M36×1.5	96.5 to 101	106
ø180	63	24	125	10	27	60	60	60	M18×1.5	Rc3/4	34.5	34.5	24	20	100	68	200	M40×1.5	108 to 112	110
ø200	72	24	132	12	27	62	70	69	M20×1.5	Rc3/4	37.5	37.5	24	20.5	110	75	220	M45×1.5	120.5 to 129	123
ø250	88	29	160	12	28	70	85	84	M24×1.5	Rc1	42.5	42.5	24	20.5	137	93	274	M56×2	147.5 to 156	141

Code																	With bellows		
Bore size (mm)	MM	MN	MO	N	P	QA	QB	SA	SB	SC	T	TR	TS	U	V	WF	b	d	ℓ
ø125	32	15	27	110	13	15	15	182	20	271	18	100	140	19	45.5	65	74	75	(Stroke length/4.55) + 11
ø140	32	15	27	124	15	17	17	203	17	290	18	112	157	19	45.5	67	74	75	(Stroke length/4.55) + 9
ø160	40	16	36	142	15	17	17	212	18	306	21	118	177	19	48	71	82	80	(Stroke length/5.15) + 9
ø180	45	18	41	160	15	17	17	230	18	338	24	132	200	19	53	78	91	90	(Stroke length/5.15) + 9
ø200	50	20	46	175	20	18	18	247	26	372	27	150	220	24	60	88	102	95	(Stroke length/5.30) + 9
ø250	60	22	55	216	22	21	21	281	24	421	34	180	274	24	64	94	120	120	(Stroke length/6.40) + 9

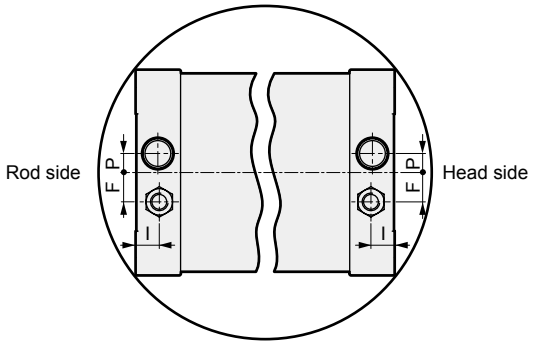
Dimensions

● Rod side flange (FA)





[With bellows]



Port position diagram (A View)

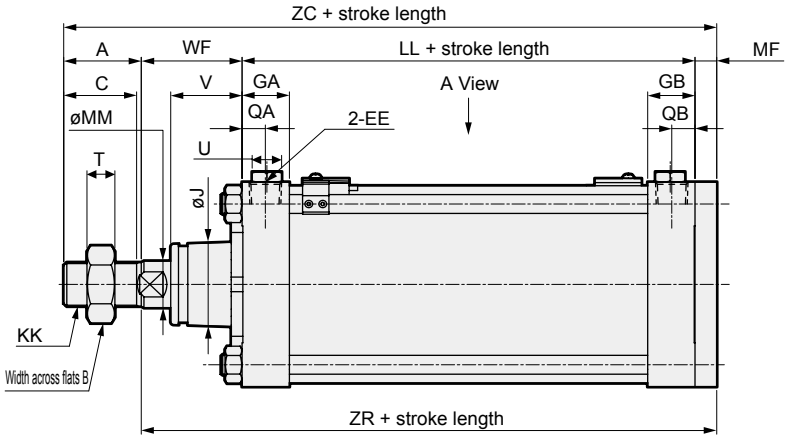
*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.

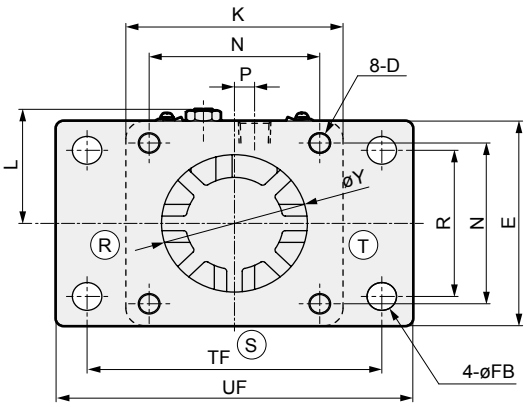
Code	Rod side flange (FA) basic dimensions																		
Bore size (mm)	A	B	C	D	E	EE	FB	GA	GB	F	I	J	K	KK	L	LL	M	MF	MM
ø125	50	46	47	M14×1.5	140	Rc1/2	19	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	11	14	32
ø140	50	46	47	M14×1.5	157	Rc3/4	19	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	11	19	32
ø160	56	55	53	M16×1.5	177	Rc3/4	19	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	13	19	40
ø180	63	60	60	M18×1.5	200	Rc3/4	24	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	15	25	45
ø200	72	70	69	M20×1.5	220	Rc3/4	24	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	16	25	50
ø250	88	85	84	M24×1.5	274	Rc1	29	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	19	30	60

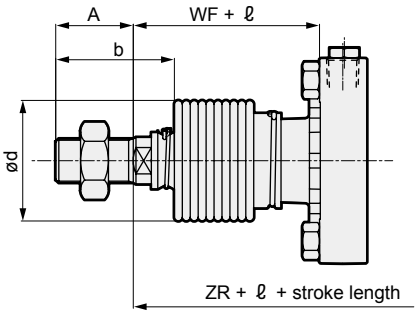
Code																With bellows		
Bore size (mm)	N	QA	QB	P	R	T	TF	UF	U	V	W	WF	X	XB	Y	b	d	ℓ
ø125	110	15	15	13	100	18	190	230	19	45.5	51	65	218	117	94	74	75	(Stroke length/4.55) + 11
ø140	124	17	17	15	112	18	212	250	19	45.5	48	67	231	133	94	74	75	(Stroke length/4.55) + 9
ø160	142	17	17	15	118	21	236	280	19	48	52	71	246	138	107	82	80	(Stroke length/5.15) + 9
ø180	160	17	17	15	132	24	265	310	19	53	53	78	266	150	113	91	90	(Stroke length/5.15) + 9
ø200	175	18	18	20	150	27	280	330	24	60	63	88	299	164	131	102	95	(Stroke length/5.30) + 9
ø250	216	21	21	22	180	34	355	415	24	64	64	94	342	190	153	120	120	(Stroke length/6.40) + 9

Dimensions

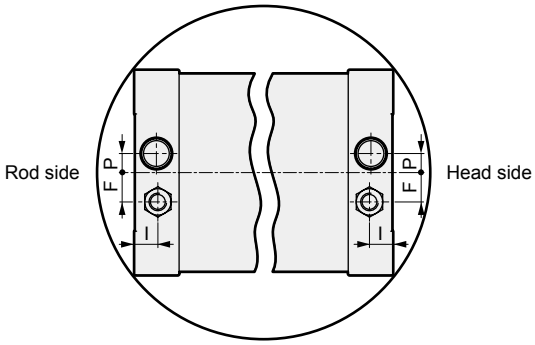
● Head side flange (FB)







[With bellows]



Port position diagram (A View)

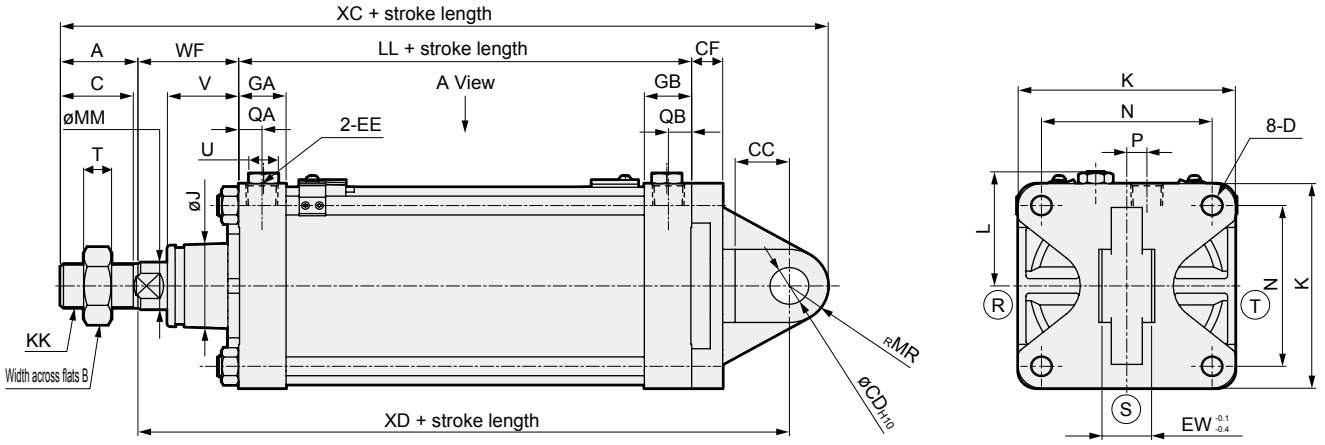
*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.

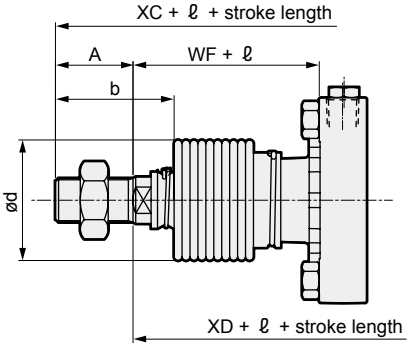
Code	Head side flange (FB) basic dimensions																	
Bore size (mm)	A	B	C	D	E	EE	FB	GA	GB	F	I	J	K	KK	L	LL	MF	MM
ø125	50	46	47	M14×1.5	140	Rc1/2	19	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	14	32
ø140	50	46	47	M14×1.5	157	Rc3/4	19	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	19	32
ø160	56	55	53	M16×1.5	177	Rc3/4	19	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	19	40
ø180	63	60	60	M18×1.5	200	Rc3/4	24	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	25	45
ø200	72	70	69	M20×1.5	220	Rc3/4	24	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	25	50
ø250	88	85	84	M24×1.5	274	Rc1	29	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	30	60

Code															With bellows		
Bore size (mm)	N	QA	QB	P	R	T	TF	U	UF	V	WF	Y	ZC	ZR	b	d	ℓ
ø125	110	15	15	13	100	18	190	19	230	45.5	65	94	221	171	74	75	(Stroke length/4.55) + 11
ø140	124	17	17	15	112	18	212	19	250	45.5	67	94	239	189	74	75	(Stroke length/4.55) + 9
ø160	142	17	17	15	118	21	236	19	280	48	71	107	252	196	82	80	(Stroke length/5.15) + 9
ø180	160	17	17	15	132	24	265	19	310	53	78	113	276	213	91	90	(Stroke length/5.15) + 9
ø200	175	18	18	20	150	27	280	24	330	60	88	131	308	236	102	95	(Stroke length/5.30) + 9
ø250	216	21	21	22	180	34	355	24	415	64	94	153	353	265	120	120	(Stroke length/6.40) + 9

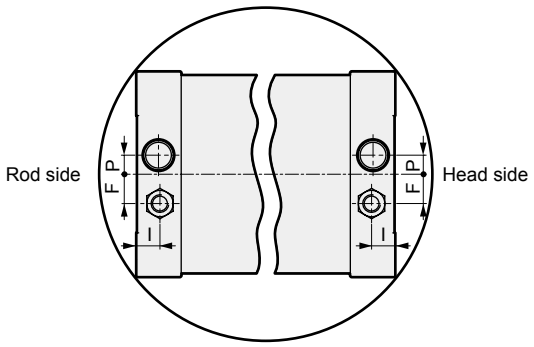
Dimensions

● Eye bracket (CA)





[With bellows]



Port position diagram (A View)

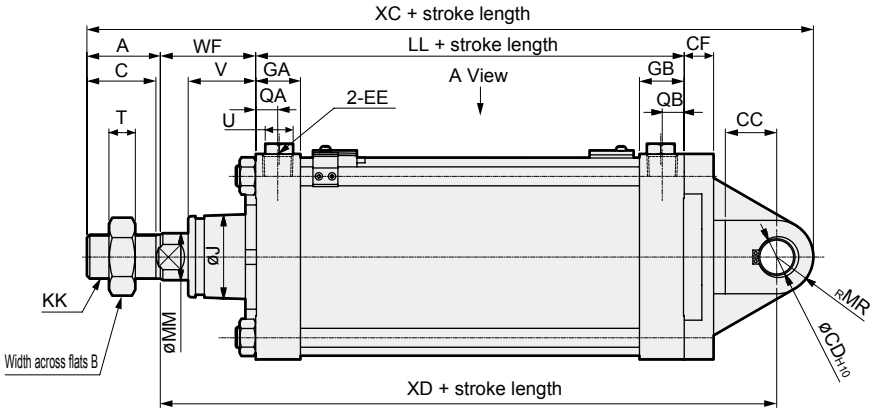
*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.

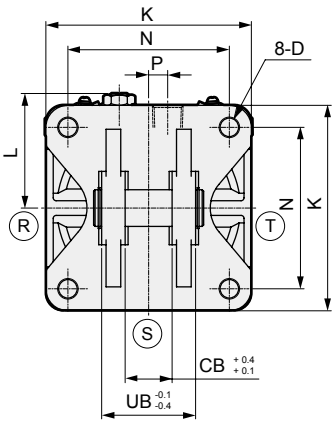
Code	Eye bracket (CA) basic dimensions																
Bore size (mm)	A	B	C	D	CC	CD	CF	EE	EW	GA	GB	F	I	J	K	KK	L
ø125	50	46	47	M14×1.5	35	25	20	Rc1/2	32	30.5	30.5	20	16	57	140	M30×1.5	78 to 82
ø140	50	46	47	M14×1.5	40	28	22	Rc3/4	36	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91
ø160	56	55	53	M16×1.5	40	32	24	Rc3/4	40	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101
ø180	63	60	60	M18×1.5	55	40	25	Rc3/4	50	34.5	34.5	24	20	68	200	M40×1.5	108 to 112
ø200	72	70	69	M20×1.5	55	40	30	Rc3/4	50	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129
ø250	88	85	84	M24×1.5	65	50	35	Rc1	63	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156

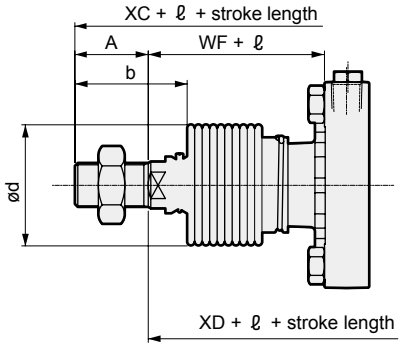
Code														With bellows			
Bore size (mm)	LL	MM	MR	N	P	QA	QB	T	U	V	WF	XC	XD	b	d	ℓ	
ø125	92	32	25	110	13	15	15	18	19	45.5	65	295	220	74	75	(Stroke length/4.55) + 11	
ø140	103	32	28	124	15	17	17	18	19	45.5	67	323	245	74	75	(Stroke length/4.55) + 9	
ø160	106	40	32	142	15	17	17	21	19	48	71	340	252	82	80	(Stroke length/5.15) + 9	
ø180	110	45	40	160	15	17	17	24	19	53	78	381	278	91	90	(Stroke length/5.15) + 9	
ø200	123	50	40	175	20	18	18	27	24	60	88	413	301	102	95	(Stroke length/5.30) + 9	
ø250	141	60	50	216	22	21	21	34	24	64	94	483	345	120	120	(Stroke length/6.40) + 9	

Dimensions

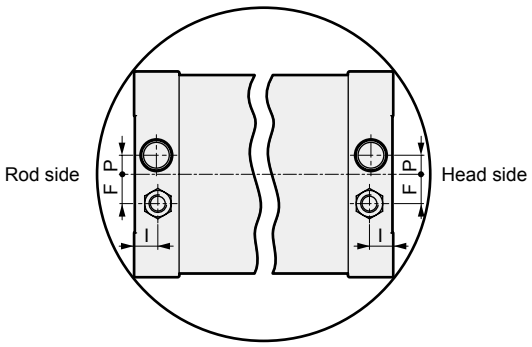
● Clevis bracket (CB)







[With bellows]



Port position diagram (A View)

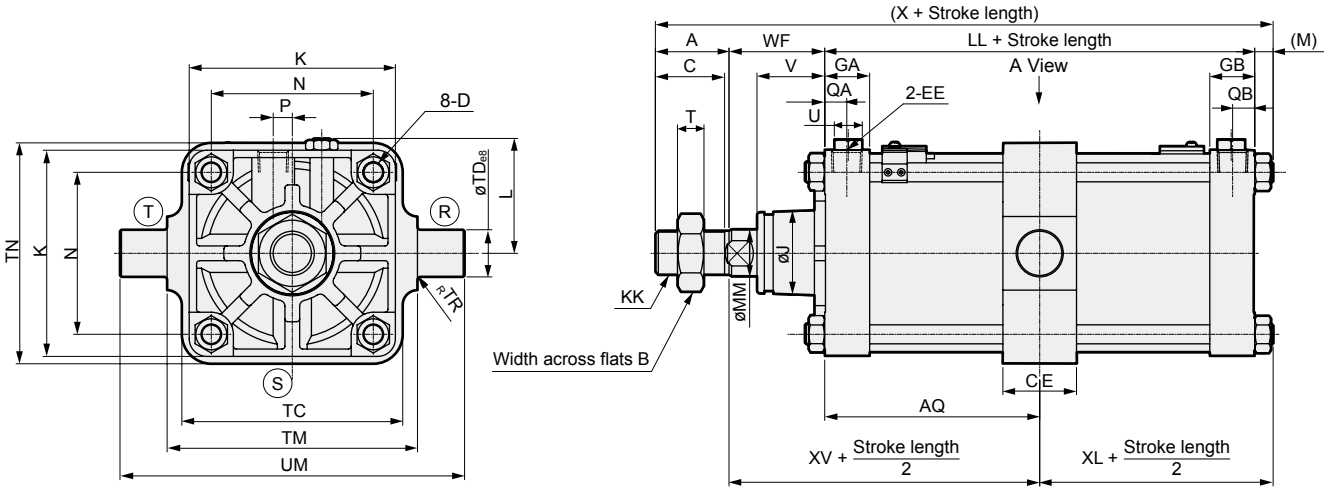
*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.
*5 : A pin and a snap ring are included.

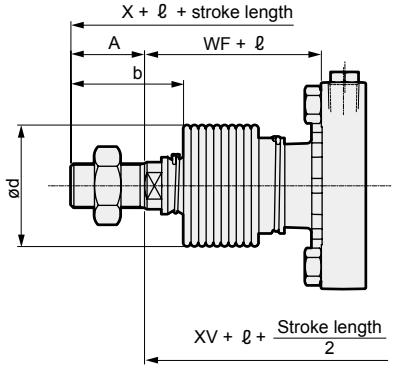
Code	Clevis bracket (CB) basic dimensions																
Bore size (mm)	A	B	C	D	CB	CC	CD	CF	EE	GA	GB	F	I	J	K	KK	L
ø125	50	46	47	M14 × 1.5	32	35	25	20	Rc1/2	30.5	30.5	20	16	57	140	M30 × 1.5	78 to 82
ø140	50	46	47	M14 × 1.5	36	40	28	22	Rc3/4	34.5	34.5	20	20	57	157	M30 × 1.5	86.5 to 91
ø160	56	55	53	M16 × 1.5	40	40	32	24	Rc3/4	34.5	34.5	24	20	62	177	M36 × 1.5	96.5 to 101
ø180	63	60	60	M18 × 1.5	50	55	40	25	Rc3/4	34.5	34.5	24	20	68	200	M40 × 1.5	108 to 112
ø200	72	70	69	M20 × 1.5	50	55	40	30	Rc3/4	37.5	37.5	24	20.5	75	220	M45 × 1.5	120.5 to 129
ø250	88	85	84	M24 × 1.5	63	65	50	35	Rc1	42.5	42.5	24	20.5	93	274	M56 × 2	147.5 to 156

Code															With bellows		
Bore size (mm)	LL	MM	MR	N	P	QA	QB	T	U	UB	V	WF	XC	XD	b	d	ℓ
ø125	92	32	25	110	13	15	15	18	19	64	45.5	65	295	220	74	75	(Stroke length/4.55) + 11
ø140	103	32	28	124	15	17	17	18	19	72	45.5	67	323	245	74	75	(Stroke length/4.55) + 9
ø160	106	40	32	142	15	17	17	21	19	80	48	71	340	252	82	80	(Stroke length/5.15) + 9
ø180	110	45	40	160	15	17	17	24	19	100	53	78	381	278	91	90	(Stroke length/5.15) + 9
ø200	123	50	40	175	20	18	18	27	24	100	60	88	413	301	102	95	(Stroke length/5.30) + 9
ø250	141	60	50	216	22	21	21	34	24	126	64	94	483	345	120	120	(Stroke length/6.40) + 9

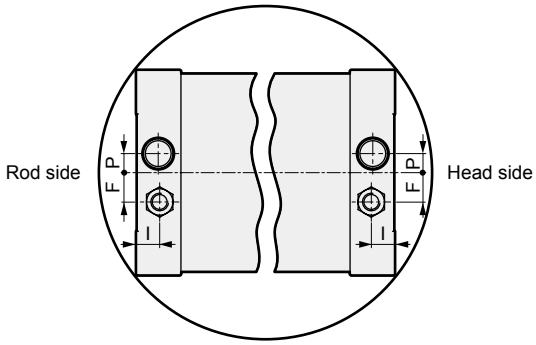
Dimensions

● Intermediate trunnion (TC)





[With bellows]



Port position diagram (A View)

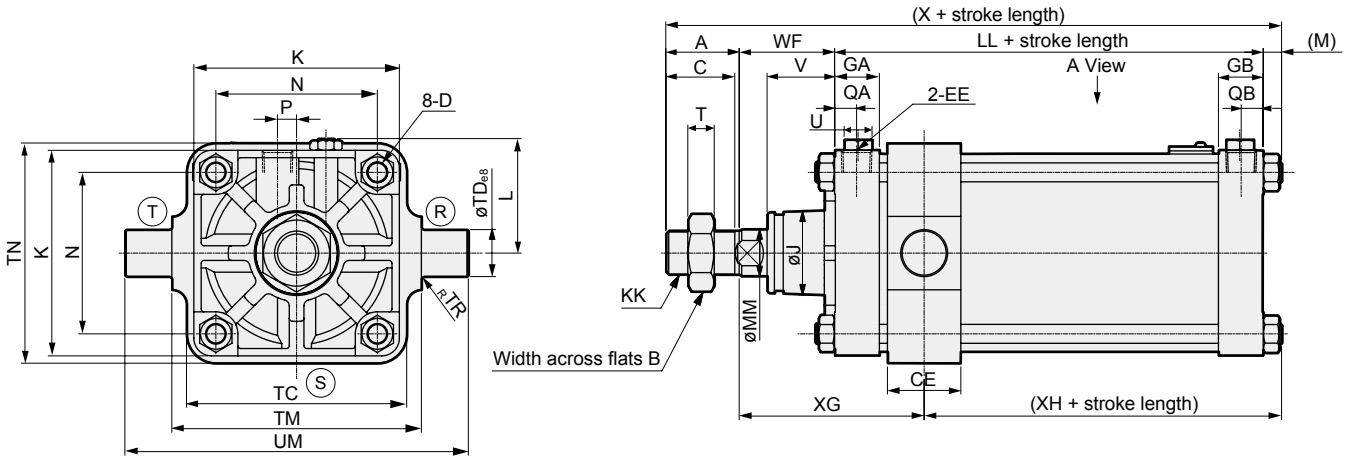
*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.
*5 : Refer to page 626 for the min. stroke length.

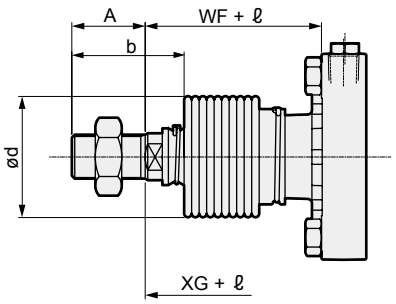
Code	Intermediate trunnion (TC) basic dimensions																	
Bore size (mm)	A	AQ	B	C	CE	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM
ø125	50	46 + St/2	46	47	50	M14×1.5	Rc1/2	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	11	32
ø140	50	51.5 + St/2	46	47	55	M14×1.5	Rc3/4	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	11	32
ø160	56	53 + St/2	55	53	60	M16×1.5	Rc3/4	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	13	40
ø180	63	55 + St/2	60	60	65	M18×1.5	Rc3/4	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	15	45
ø200	72	61.5 + St/2	70	69	70	M20×1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	16	50
ø250	88	70.5 + St/2	85	84	80	M24×1.5	Rc1	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	19	60

Code																	With bellows		
Bore size (mm)	N	P	QA	QB	T	TC	TD	TM	TN	TR	U	UM	V	WF	X	XV	XL	b	d	ℓ
ø125	110	13	15	15	18	150	32	170	150	2	19	234	45.5	65	218	111	57	74	75	(Stroke length/4.55) + 11
ø140	124	15	17	17	18	154	36	190	170	2	19	262	45.5	67	231	118.5	62.5	74	75	(Stroke length/4.55) + 9
ø160	142	15	17	17	21	190	40	212	190	2	19	292	48	71	246	124	66	82	80	(Stroke length/5.15) + 9
ø180	160	15	17	17	24	210	45	236	210	2	19	326	53	78	266	133	70	91	90	(Stroke length/5.15) + 9
ø200	175	20	18	18	27	242	45	265	242	2	24	355	60	88	299	149.5	77.5	102	95	(Stroke length/5.30) + 9
ø250	216	22	21	21	34	300	56	335	300	2	24	447	64	94	342	164.5	89.5	120	120	(Stroke length/6.40) + 9

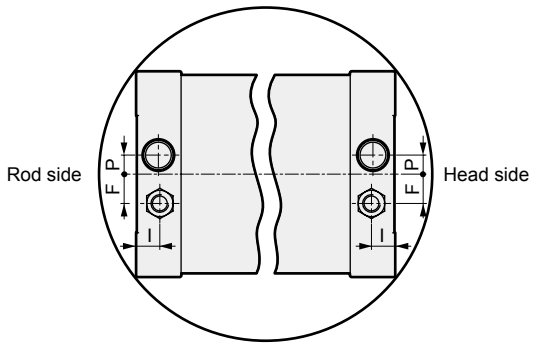
Dimensions

● Rod side trunnion (TA)





[With bellows]



Port position diagram (A View)

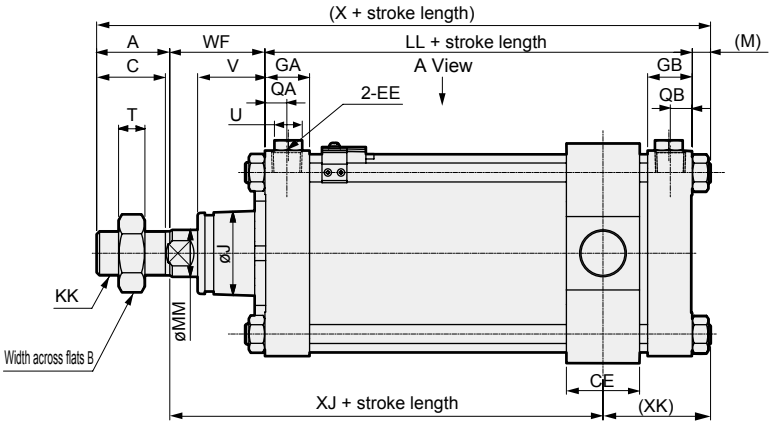
*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.
*5 : Refer to page 626 for the min. stroke length.
*6 : Position cannot be detected at rod side stroke end.

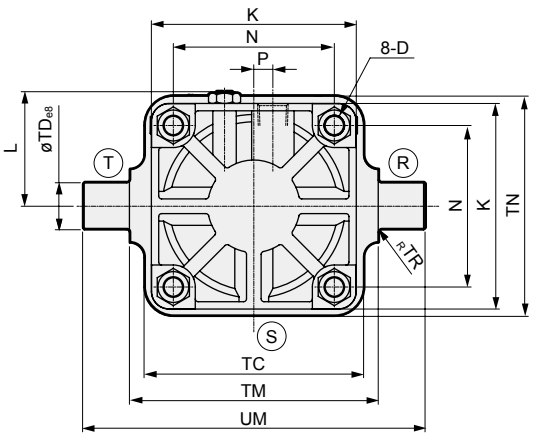
Code	Rod side trunnion (TA) basic dimensions																
Bore size (mm)	A	B	C	CE	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM
ø125	50	46	47	50	M14×1.5	Rc1/2	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	11	32
ø140	50	46	47	55	M14×1.5	Rc3/4	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	11	32
ø160	56	55	53	60	M16×1.5	Rc3/4	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	13	40
ø180	63	60	60	65	M18×1.5	Rc3/4	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	15	45
ø200	72	70	69	70	M20×1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	16	50
ø250	88	85	84	80	M24×1.5	Rc1	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	19	60

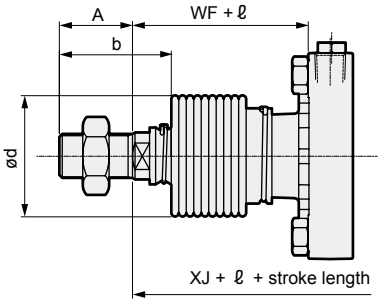
Code																	With bellows		
Bore size (mm)	N	P	QA	QB	T	TC	TD	TM	TN	TR	U	UM	V	WF	X	XG	XH	b	d	ℓ
ø125	110	13	15	15	18	150	32	170	150	2	19	234	45.5	65	218	126	42	74	75	(Stroke length/4.55) + 11
ø140	124	15	17	17	18	154	36	190	170	2	19	262	45.5	67	231	134.5	46.5	74	75	(Stroke length/4.55) + 9
ø160	142	15	17	17	21	190	40	212	190	2	19	292	48	71	246	141	49	82	80	(Stroke length/5.15) + 9
ø180	160	15	17	17	24	210	45	236	210	2	19	326	53	78	266	150.5	52.5	91	90	(Stroke length/5.15) + 9
ø200	175	20	18	18	27	242	45	265	242	2	24	355	60	88	299	168	59	102	95	(Stroke length/5.30) + 9
ø250	216	22	21	21	34	300	56	335	300	2	24	447	64	94	342	184	70	120	120	(Stroke length/6.40) + 9

Dimensions

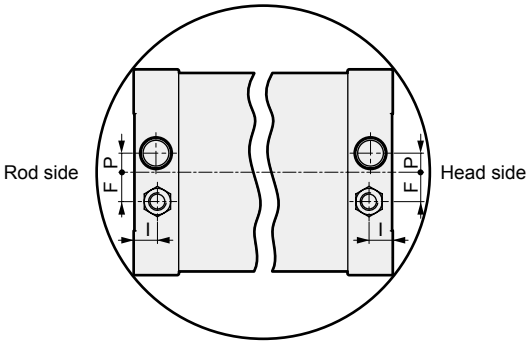
● Head side trunnion (TB)







[With bellows]



Port position diagram (A View)

*1 : Refer to page 630 for switch dimensions with switch.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : ℓ dimensions below decimal point are rounded up.
*4 : For the dimensions of the accessories, refer to page 639.
*5 : Refer to page 626 for the min. stroke length.
*6 : Position cannot be detected at head side stroke end.

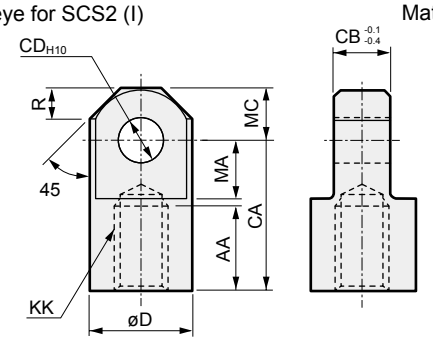
Code	Head side trunnion (TB) basic dimensions															
Bore size (mm)	A	B	C	CE	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM
ø125	50	46	47	50	M14×1.5	Rc1/2	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	11	32
ø140	50	46	47	55	M14×1.5	Rc3/4	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	11	32
ø160	56	55	53	60	M16×1.5	Rc3/4	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	13	40
ø180	63	60	60	65	M18×1.5	Rc3/4	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	15	45
ø200	72	70	69	70	M20×1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	16	50
ø250	88	85	84	80	M24×1.5	Rc1	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	19	60

Code																	With bellows		
Bore size (mm)	N	P	QA	QB	T	TC	TD	TM	TN	TR	U	UM	V	WF	X	XJ	XK	b	d	ℓ
ø125	110	13	15	15	18	150	32	170	150	2	19	234	45.5	65	218	96	72	74	75	(Stroke length/4.55) + 11
ø140	124	15	17	17	18	154	36	190	170	2	19	262	45.5	67	231	102.5	78.5	74	75	(Stroke length/4.55) + 9
ø160	142	15	17	17	21	190	40	212	190	2	19	292	48	71	246	107	83	82	80	(Stroke length/5.15) + 9
ø180	160	15	17	17	24	210	45	236	210	2	19	326	53	78	266	115.5	87.5	91	90	(Stroke length/5.15) + 9
ø200	175	20	18	18	27	242	45	265	242	2	24	355	60	88	299	131	96	102	95	(Stroke length/5.30) + 9
ø250	216	22	21	21	34	300	56	335	300	2	24	447	64	94	342	145	109	120	120	(Stroke length/6.40) + 9

SCS2 Series common accessory dimensions

● Rod eye for SCS2 (I)

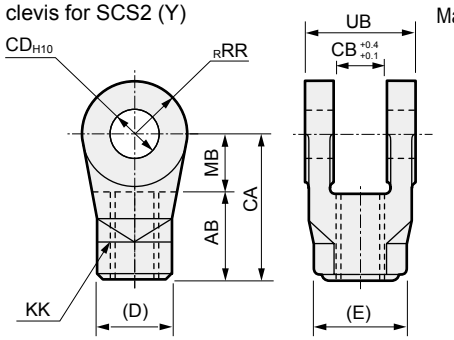
Material: Steel
Painting



Code / Model No.	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

● Rod clevis for SCS2 (Y)

Material: Cast iron
Painting

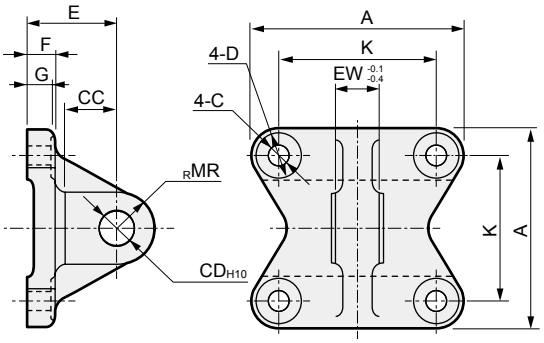


Code / Model No.	AB	CA	CB	CD	D	E	KK	MB	RR	UB	Wt (kg)
SCS2-125-Y	50	85	32	25	46	53.1	M30×1.5	35	27.5	64	1.30
SCS2-140-Y	50	90	36	28	46	53.1	M30×1.5	40	30	72	1.65
SCS2-160-Y	60	105	40	32	55	63.5	M36×1.5	45	35	80	2.55
SCS2-180-Y	65	115	50	40	60	69.3	M40×1.5	50	42.5	100	4.40
SCS2-200-Y	75	125	50	40	70	80.8	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: A pin and a snap ring are included.

● Eye bracket for SCS2 (B1)

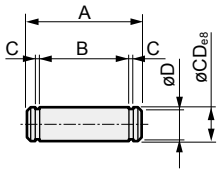
Material: Cast iron
Painting



Code / Model No.	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)

Material: Steel
Zinc chromate treatment

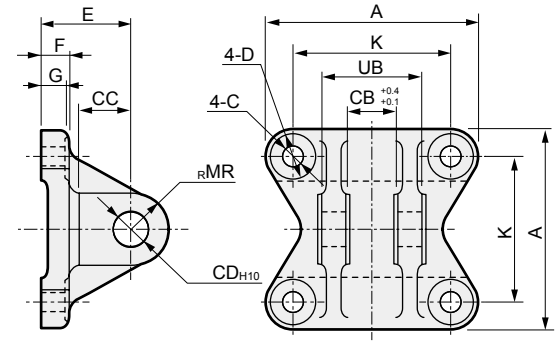


Code / Model No.	A	B	C	CD	D	Applicable snap ring	Wt (kg)	Compatible model
SCS2-125-P	75	66.3	1.35	25	23.9	C type for shaft 25	0.25	SCS2-125
SCS2-140-P	84	74.7	1.65	28	26.6	C type for shaft 28	0.40	SCS2-140
SCS2-160-P	92	82.7	1.65	32	30.3	C type for shaft 32	0.50	SCS2-160
SCS2-180-P	115	103.2	1.9	40	38	C type for shaft 40	1.15	SCS2-180/200
SCS2-250-P	144	129.6	2.2	50	47	C type for shaft 50	2.25	SCS2-250

Note: A pin and a snap ring are included with the clevis, clevis bracket and rod clevis.
The pin includes a snap ring.

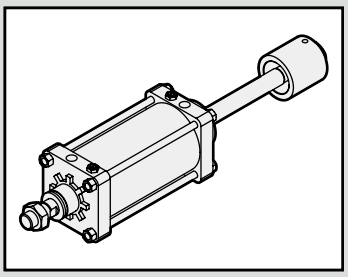
● Clevis bracket for SCS2 (B2)

Material: Cast iron
Painting



Code / Model No.	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: A pin and a snap ring are included.

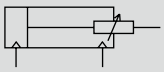


Large bore size cylinder
Double acting/push side stroke adjustable

SCS2-P Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

* Made-to-order product.

Specifications

Item		SCS2-P (Stroke adjustable)					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)					
Min. working pressure MPa		0.1 (≈15 psi, 1 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate within the absorbed energy.)					
Cushion		Air cushion (The rod side cushion does not function when adjusting the stroke direction.)					
Effective air cushion length mm		21.6	21.6	21.6	21.6	26.6	26.6
Adjustable stroke range mm		25,50,75,100					
Lubrication		Required (use turbine oil class 1 ISO VG32 for lubrication)					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion min. stroke (mm)
ø125	50/75/100/150/ 200/250/300	800	25	25
ø140				25
ø160				27
ø180		900		28
ø200		1,000		28
ø250		1,200		28

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

*2: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm and stroke length (S) adjustment = 25 mm							Additional weight per S = 100 mm
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA/TB/TC)	Weight/25 mm stroke (S) adjustment	
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 for S = 0 mm stroke length··· 12.92 kg
- Additional weight for S = 300 mm stroke length··· $1.54 \times \frac{300}{100} = 4.62$ kg
- Weight for 25 mm stroke length 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	Working pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
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

How to order

Without switch (without magnet for switch)

SCS2-P - LB - 125 ( ) B - 50 - 25 - J Y

Ⓐ Mounting *1
Ⓑ Bore size
Ⓒ Port thread
Ⓓ Cushion
Ⓔ Stroke length
Ⓕ Adjustable stroke range
Ⓖ Option *2
Ⓗ Accessory *4

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion
Ⓔ Stroke length (mm)	

Bore size	Stroke length	Custom stroke length
ø125 to ø160	**25 to 800**	**In 1 mm increments**
ø180	**25 to 900**	
ø200	**25 to 1000**	
ø250	**25 to 1200**	

Ⓕ Adjustable stroke range (mm)			
25	25		
50	50		
75	75		
100	100		
Ⓖ Option			
C2	With cushion section check valve		
		Max. ambient temp.	Instantaneous ambient temp
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position (standard)		Standard
R	Cushion needle position R		T ◎ R
S	Cushion needle position S		
T	Cushion needle position T		S
P6	Copper and PTFE free (made-to-order product)		
Ⓗ Accessory			
I	Rod eye		
Y	Rod clevis (pin and snap ring included)		

⚠ Precautions for model No. selection

*1: Supporting hole is available custom made for ø125 to 160 only. Contact CKD for details about dimensions.
*2: The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*3: Check the figures below for the cushion needle position indication.
*4: "I" and "Y" cannot be selected together.

[Example of model No.]

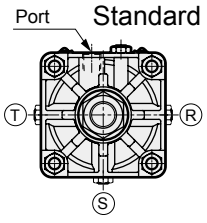
SCS2-P-LB-125B-50-25-JY

Model: Large bore size cylinder stroke adjustable

Ⓐ Mounting : Axial foot
Ⓑ Bore size : ø125 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : With two-sided air cushion
Ⓔ Stroke length : 50 mm
Ⓕ Adjustable stroke range : 25 mm
Ⓖ Option : Bellows material for max. ambient temperature 100°C
Ⓗ Accessory : Rod clevis

Cushion needle position

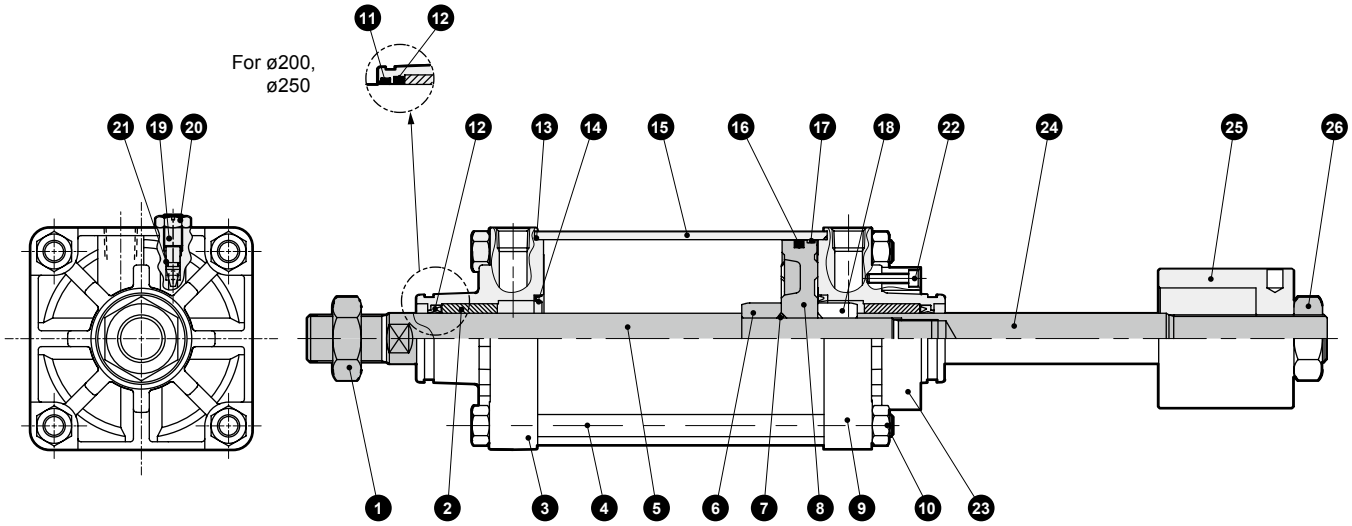
(Needle position with the port on the top when viewed from the rod end)



Certified class 2 pressure vessel stroke length

Bore size	Stroke length
ø200	946 or more
ø250	752 or more

Internal structure and parts list



Note: 14, 19, 20 and 21 are not required for the type without cushion.

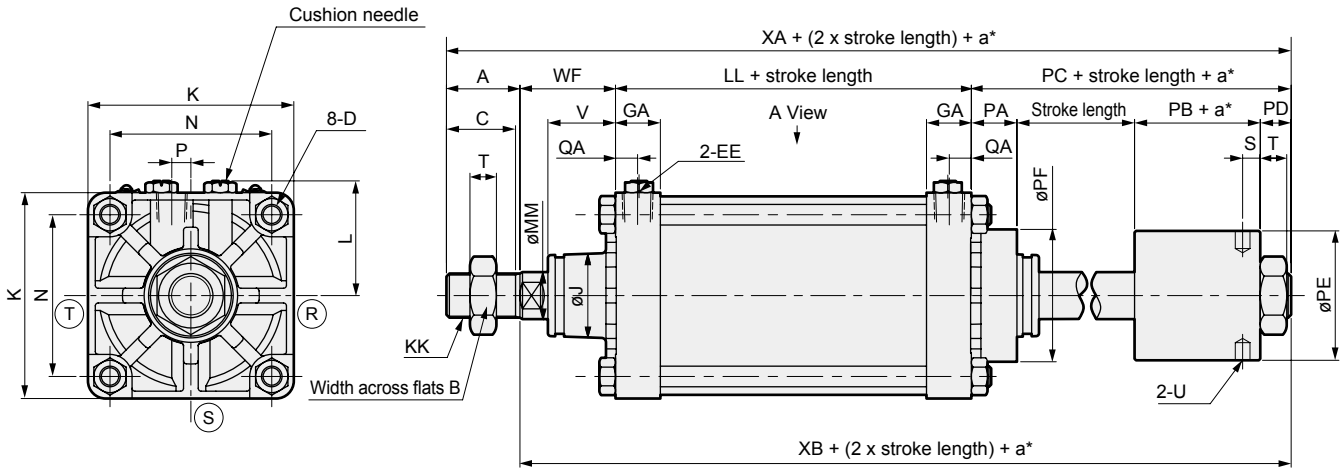
No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate
2	Bush	Iron-copper oil-impregnated bearing alloy	
3	Rod cover	Aluminum alloy casting	Chromate
4	Tie rod	Steel	Zinc chromate
5	Piston rod A	Steel	Industrial chrome plating
6	Cushion ring A	Steel	Zinc chromate
7	Piston gasket	Nitrile rubber	
8	Piston	Aluminum alloy casting	
9	Head cover	Aluminum alloy casting	Chromate
10	Hexagon nut	Steel	Zinc chromate
11	Dust wiper	Nitrile rubber	ø200 and ø250 only
12	Rod packing	Nitrile rubber	
13	Cylinder gasket	Nitrile rubber	
14	Cushion packing	Nitrile rubber/steel	
15	Cylinder tube	Aluminum alloy	Hard alumite
16	Piston packing	Nitrile rubber	
17	Wear ring	Polyacetal resin	
18	Cushion ring B	Steel	Zinc chromate
19	Cushion needle	Copper alloy (ø125 to ø180)	
		Steel (ø200, 250)	Zinc chromate
20	Hexagon nut	Steel	Zinc chromate
21	Needle gasket	Nitrile rubber	
22	Hexagon socket head cap screw	Steel	Black finish
23	Stopper ring	Steel	Zinc phosphate treatment
24	Piston rod B	Steel	Industrial chrome plating
25	Stopper	Steel	Zinc phosphate treatment
26	Hexagon nut	Steel	Zinc chromate

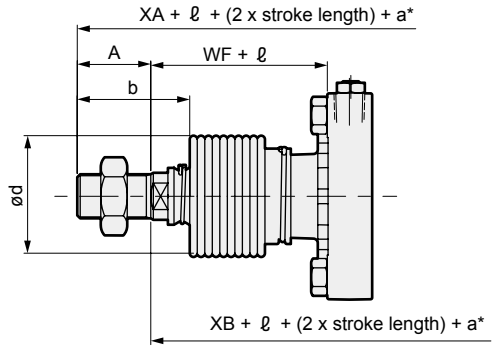
Repair parts list

Same as SCS2-D Series. Refer to page 652.

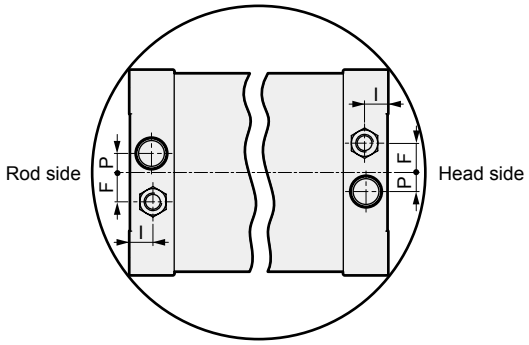
Dimensions

● Basic (00)





[With bellows]



Port position diagram (A View)

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

*: a: Adjustable stroke length

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

Code / Bore size (mm)	PB	PC	PD	PE	PF	QA	S	T	U	V	WF	XA	XB	With bellows b	With bellows d	With bellows ℓ
ø125	40.5	92.5	21	88	90	15	12	18	ø10 depth 10	45.5	65	299.5	249.5	74	75	(Stroke length/4.55) + 11
ø140	40.5	92.5	21	88	90	17	12	18	ø10 depth 10	45.5	67	312.5	262.5	74	75	(Stroke length/4.55) + 9
ø160	46	106	26	98	104	17	14.5	21	ø14 depth 15	48	71	339	283	82	80	(Stroke length/5.15) + 9
ø180	52	115	29	108	110	17	16	24	ø14 depth 15	53	78	366	303	91	90	(Stroke length/5.15) + 9
ø200	48	137	32	120	128	18	18	27	ø14 depth 15	60	88	420	348	102	95	(Stroke length/5.30) + 9
ø250	58	157	39	141	150	21	22.5	34	ø14 depth 15	64	94	480	392	120	120	(Stroke length/6.40) + 9

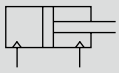
* Dimensions of other mounting are the same as those of the double acting SCS2 Series.Refer to pages 631 to 638.
* For the dimensions of the accessories, refer to page 639.

Large bore size cylinder
Double acting/heat resistant

SCS2-T Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

Specifications

Item		SCS2-T (heat resistant)					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)					
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		5 (41°F) to 120 (248°F) (*1)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate 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		Unavailable (*2)					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

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

Bore size	Stroke length
ø200	946 or more
ø250	752 or more

Consult CKD for use at ambient temperature 5 to 120°C.

*2: Periodically apply additional heat-resistant grease.

*3: Consult with CKD if localized heating is occurring.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion, min. stroke (mm)
ø125	50/75/100/150/200/250/300	800	1	23
ø140				25
ø160				27
ø180		900		28
ø200		1000		28
ø250		1200		28

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

*4: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm						Additional weight per S = 100 mm
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (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 for S = 0 mm stroke length ··· 8.72 kg
- Additional weight for S = 300 mm stroke length ··· 1.54 x $\frac{300}{100}$ = 4.62 kg
- Product weight ····· 8.72 + 4.62 = 13.34 kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working 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}

How to order

SCS2-T - LB - 125 ○ B - 50 - M Y

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

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring included)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion
Ⓔ Stroke length (mm)	

Bore size	Stroke length	Custom stroke length
ø125 to ø160	**1 to 800**	**In 1 mm increments**
ø180	**1 to 900**	
ø200	**1 to 1000**	
ø250	**1 to 1200**	

Ⓕ Option		
C2	With cushion section check valve	
L	Bellows	Max. ambient temp. 250°C / Instantaneous max. temp 400°C
M	Piston rod material (stainless steel)	
Blank	Cushion needle position (standard)	Standard
R	Cushion needle position R	
S	Cushion needle position S	
T	Cushion needle position T	

Ⓖ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring included)

⚠ Precautions for model No. selection

*1: Supporting hole is available custom made for ø125 to 160 only. Contact CKD for details about dimensions.
*2: The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*3: Check the figures below for the cushion needle position indication.
*4: "I" and "Y" cannot be selected together.

*3

[Example of model No.]

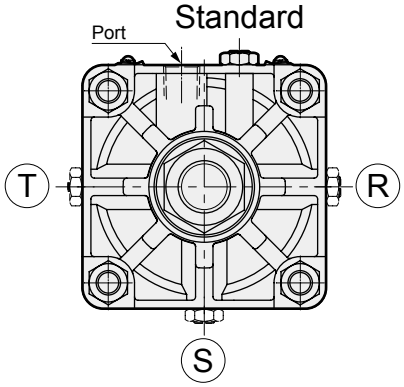
SCS2-T-LB-125 B-50-MY

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

Ⓐ Mounting : Axial foot
Ⓑ Bore size : ø125 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke length : 50 mm
Ⓕ Option : Piston rod material change (stainless steel)
Ⓖ Accessory : Rod clevis

Cushion needle position

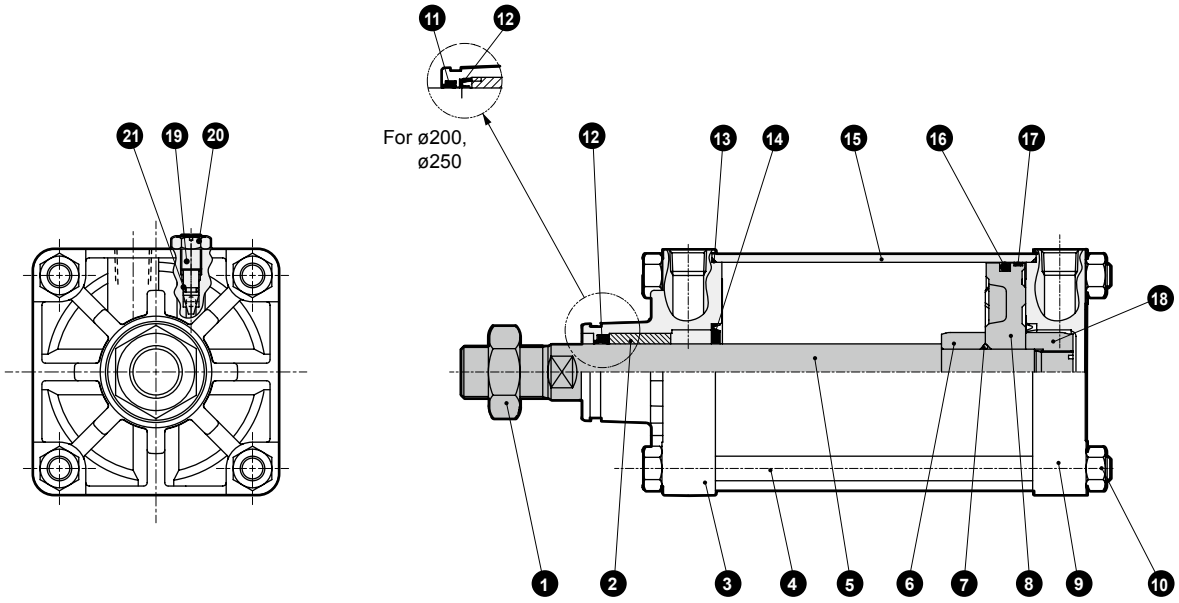
(Needle position with the port on the top when viewed from the rod end)



Certified class 2 pressure vessel stroke length

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

Internal structure and parts list



● Note: 14, 19, 20 and 21 are not required for the type without cushion.

No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate
2	Bush	Iron/copper oil-impreg bearing	
3	Rod cover	Aluminum alloy casting	Chromate
4	Tie rod	Steel	Zinc chromate
5	Piston rod	Steel	Industrial chrome plating
6	Cushion ring A	Steel	Zinc chromate
7	Piston gasket	Fluoro rubber	
8	Piston	Aluminum alloy casting	
9	Head cover	Aluminum alloy casting	Chromate
10	Hexagon nut	Steel	Zinc chromate
11	Dust wiper	Fluoro rubber	ø200 and ø250 only
12	Rod packing	Fluoro rubber	

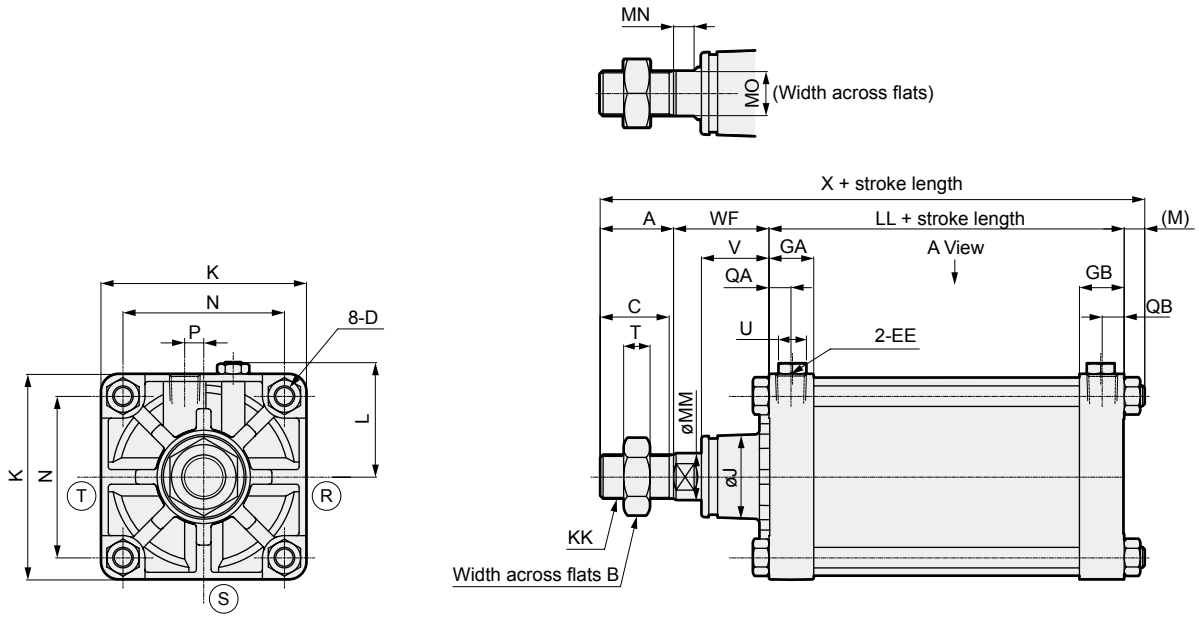
No.	Part name	Material	Remarks
13	Cylinder gasket	Fluoro rubber	
14	Cushion packing	Fluoro rubber/steel	
15	Cylinder tube	Aluminum alloy	Hard alumite
16	Piston packing	Fluoro rubber	
17	Wear ring	Fiber-reinforced phenolic resin	
18	Cushion ring B	Steel	Zinc chromate
19	Cushion needle	Copper alloy (ø125 to ø180)	
		Steel (ø200, 250)	Zinc chromate
20	Hexagon nut	Steel	Zinc chromate
21	Needle gasket	Fluoro rubber	

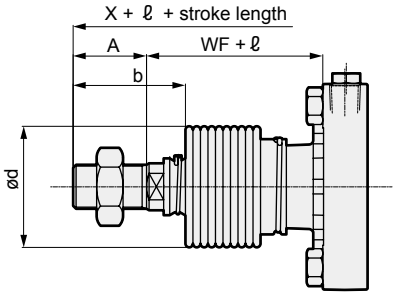
Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
ø125	SCS2-T-125K	12 13 14 16 17 21
ø140	SCS2-T-140K	
ø160	SCS2-T-160K	
ø180	SCS2-T-180K	
ø200	SCS2-T-200K	11 12 13 14 16 17 21
ø250	SCS2-T-250K	

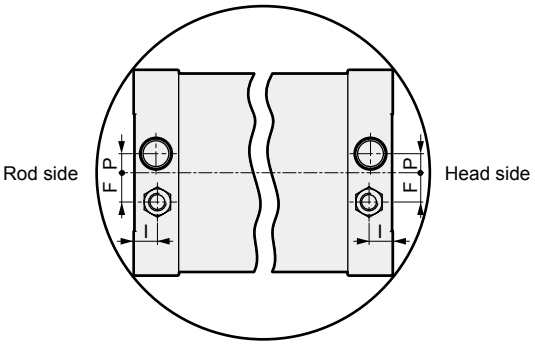
Dimensions

● Basic (00)





[With bellows]



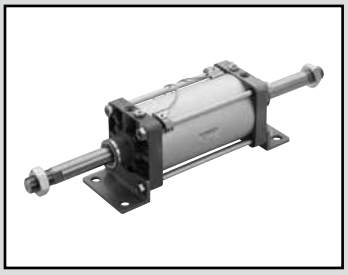
Port position diagram (A View)

*1: Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*2: ℓ dimensions below decimal point are rounded up.

Code	Basic (00) basic dimensions																
Bore size (mm)	A	B	C	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM	MN
ø125	50	46	47	M14×1.5	Rc1/2	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	13.5	32	15
ø140	50	46	47	M14×1.5	Rc3/4	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	13.5	32	15
ø160	56	55	53	M16×1.5	Rc3/4	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	15.5	40	15
ø180	63	60	60	M18×1.5	Rc3/4	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	17.5	45	17
ø200	72	70	69	M20×1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	18.5	50	20
ø250	88	85	84	M24×1.5	Rc1	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	21.5	60	22

Code											With bellows			
Bore size (mm)	MO	N	P	QA	QB	T	U	V	WF	X	b	d	ℓ	
ø125	27	110	13	15	15	18	19	45.5	65	220.5	74	75	(Stroke length/4.55) + 11	
ø140	27	124	15	17	17	18	19	45.5	67	233.5	74	75	(Stroke length/4.55) + 9	
ø160	36	142	15	17	17	21	19	48	71	248.5	82	80	(Stroke length/5.15) + 9	
ø180	41	160	15	17	17	24	19	53	78	268.5	91	90	(Stroke length/5.15) + 9	
ø200	46	175	20	18	18	27	24	60	88	301.5	102	95	(Stroke length/5.30) + 9	
ø250	55	216	22	21	21	34	24	64	94	344.5	120	120	(Stroke length/6.40) + 9	

* Dimensions of other mounting are the same as those of the double acting SCS2 Series. Refer to pages 631 to 638.
* For the dimensions of the accessories, refer to page 639.

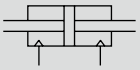


Large bore size cylinder
Double acting/double rod/lubrication/no-lubrication

SCS2-D Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

* Made-to-order product.

Specifications

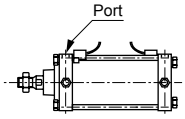
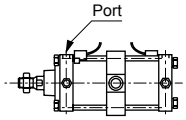
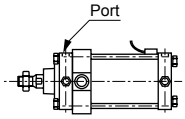
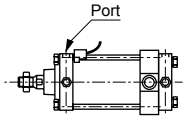
Item		SCS2-D/SCS2-LND (double rod)					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)					
Min. working pressure MPa		0.1 (≈15 psi, 1 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate 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 (use turbine oil class 1 ISO VG32 for lubrication)/Not required for SCS-LND					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion min. stroke (mm)
ø125	50/75/100/150/200/250/300	800	1	23
ø140				25
ø160				27
ø180		900		28
ø200		1,000		28
ø250		1,200		28

*1: The custom stroke length is available in 1 mm increments.
*2: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

Min. stroke length with switch

Item / Bore size (mm)		Stroke length when mounted on the same surface	Stroke of intermediate supporting hole trunnion	Stroke length of rod side supporting hole trunnion	Stroke of head side supporting hole trunnion
Switch	Sketch			 Position cannot be detected at the rod side stroke end.	 Position cannot be detected at the head side stroke end.
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	

Switch specifications

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

Item	Proximity 2-wire				Proximity 3-wire				Reed 2-wire								Proximity 2-wire
	T1H/ T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V		T5H/T5V		T8H/T8V				T2YD (*4) T2YDT
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection		For programmable controller, relay				For programmable controller
Output method	-				NPN output	PNP output	NPN output	NPN output	-								
Pwr. supp. V.	-				10 to 28 VDC				-								
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC		24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA		5 to 20 mA
Indicator lamp	LED (Lit when ON)	LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)				Red/green LED (Lit when ON)
Leakage current	≤ 1 mA at 100 VAC, ≤ 2 mA at 200 VAC	1 mA or less			10 μA or less				0 mA								1 mA or less
Weight g	1 m:33	1 m:18	1 m:33	1 m:18	1 m:18		1 m:33	1 m:18	1 m:18 3 m:49 5 m:80				1 m:33				1 m:61
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49		3 m:87	3 m:49					3 m:87				3 m:166
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80		5 m:142	5 m:80					5 m:142				5 m:272

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : Max. load current: 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : Switch for AC magnetic field (T2YD/T2YDT) cannot be used in DC magnetic field.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm						Switch weight		Additional weight per S = 100 mm
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA/TB/TC)	Switch	Mounting bracket	
ø125	9.02	10.52	12.32	12.02	12.12	12.42	Refer to the weight in the switch specifications.	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-TOH-D
- ● Product weight for S = 0 mm stroke length ··· 10.52 kg
- ● Additional weight for S = 300 mm stroke length ··· $2.17 \times \frac{300}{100} = 6.51$ kg
- ● Weight of 2 switches (T0H-D) ····· 0.018 x 2 = 0.036 kg
- ● Product weight with 2 switch brackets ··· 0.028 x 2 = 0.056 kg
- ● Product weight ····· 10.52 + 6.51 + 0.036 + 0.056 = 17.122 kg

Theoretical thrust table

(Unit: N)

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

How to order

Without switch (lubrication) (without magnet for switch)

SCS2-D — LB - 125 ○ B - 50 —— J I

With switch (no-lubrication) (built-in magnet for switch)

SCS2-LND - LB - 125 ○ B - 50 - T0H - R - J I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2

Ⓕ Switch model No.

Ⓖ Switch quantity *3

Ⓗ Option *4

Ⓘ Accessory

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250

Ⓒ Port thread	
Blank	RC thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke length *2	Custom stroke length
ø125 to ø160	**1 to 800**	**In 1 mm increments**
ø180	**1 to 900**	
ø200	**1 to 1000**	
ø250	**1 to 1200**	

Ⓕ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead Line
T0H*	**T0V***	Reed	●	●	1-color display	2-wire
T5H*	**T5V***	Reed	●	●	Without indicator lamp	2-wire
T8H*	**T8V***	Reed	●	●	1-color display	2-wire
T1H*	**T1V***	Proximity	●		1-color display	2-wire
T2H*	**T2V***	Proximity		●	1-color display	2-wire
T3H*	**T3V***	Proximity		●	1-color display	3-wire
T3PH*	**T3PV***	Proximity		●	1-color display (PNP output)	3-wire
T2WH*	**T2WV***	Proximity		●	2-color display	2-wire
T2YH*	**T2YV***	Proximity		●	2-color display	2-wire
T3WH*	**T3WV***	Proximity		●	2-color display	3-wire
T3YH*	**T3YV***	Proximity		●	2-color display	3-wire
T2YD*	**-**	Proximity		●	2-color display	2-wire
T2YDT*	**-**	Proximity		●	AC magnetic field	2-wire
T2JH*	**T2JV***	Proximity		●	1-color display off-delay	2-wire

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

Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4

Ⓗ Option

		Max. ambient temp.	Instantaneous ambient temp
C2	With cushion section check valve		
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
M	Piston rod material (stainless steel)		

*5

Blank	Cushion needle position (standard)	Standard
R	Cushion needle position R	T ◎ R
S	Cushion needle position S	S
T	Cushion needle position T	
P6	Copper and PTFE free (made to order)	

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)

Precautions for model No. selection

*1 : Supporting hole is available custom made for ø125 to 160 only. Contact CKD for details about dimensions.

*2 : Refer to page 648 for the min. stroke length with switch.

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

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

*5 : Refer to page 651 for the cushion needle position indication.

[Example of model No.]

SCS2-LND-LB-125B-50-T0H-R-JY

Model: Large bore size cylinder double acting/double rod, with switch

Ⓐ Mounting : Axial foot
Ⓑ Bore size : ø125 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke length : 50 mm
Ⓕ Switch model No. : Reed T0H switch, lead wire 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Bellows material for max. ambient temperature 100°C
Ⓘ Accessory : Rod clevis

How to order switch

● Switch body + mounting bracket set

SCS2-LN - **T0H** - **125**

- T0H: Switch model No. (Item Ⓕ on page 650)
- 125: Bore size (Item Ⓑ on page 650)

● Switch body only

SW - **T0H**

- T0H: Switch model No. (Item Ⓕ on page 650)

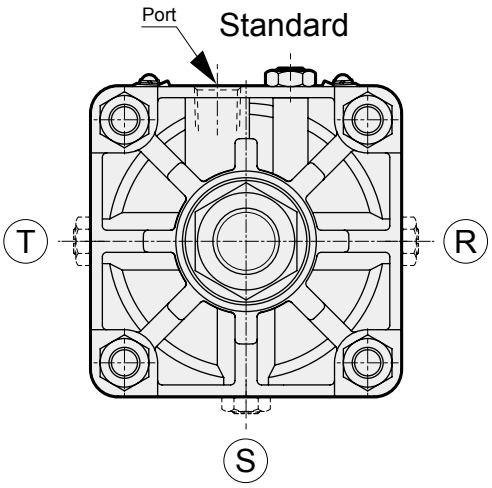
● Mounting bracket set

SCS2-LN - **TS** - **125**

- TS: Mounting bracket
- 125: Bore size (Item Ⓑ on page 650)

Mounting bracket	
TS	T switch
T	T2YD switch

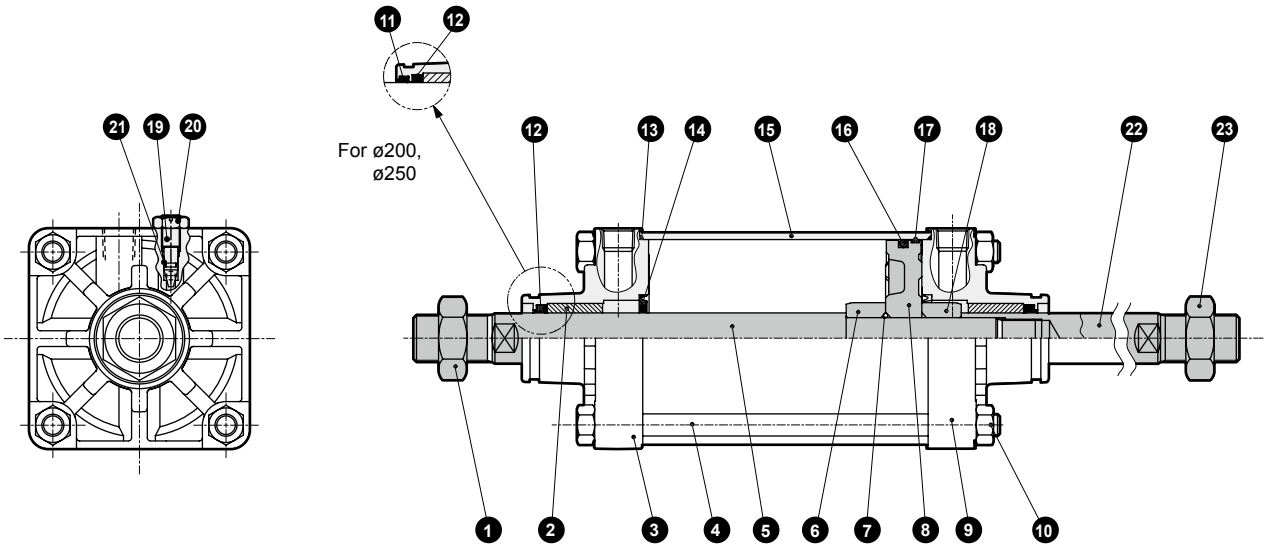
Cushion needle position (needle position from rod direction with the port on the top side)



Certified class 2 pressure vessel stroke length

Bore size	Stroke length
ø200	946 or more
ø250	752 or more

Internal structure and parts list



● Note: ⑭, ⑲, ⑳ and ㉑ are not required for the type without cushion.

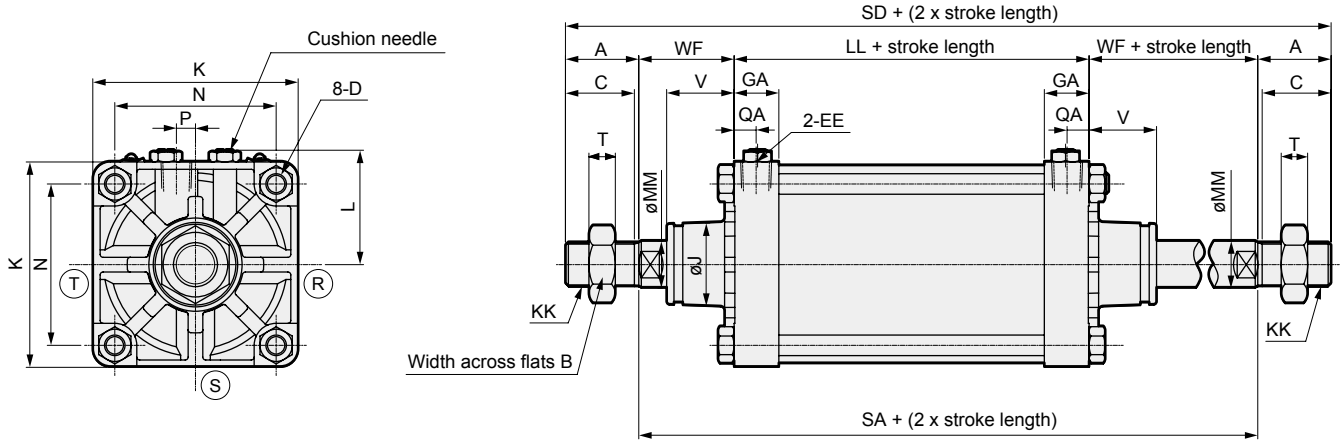
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate	13	Cylinder gasket	Nitrile rubber	
2	Bush	Iron-copper oil-impregnated bearing alloy		14	Cushion packing	Nitrile rubber/steel	
3	Rod cover	Aluminum alloy casting	Chromate	15	Cylinder tube	Aluminum alloy	Hard alumite
4	Tie rod	Steel	Zinc chromate	16	Piston packing	Nitrile rubber	
5	Piston rod A	Steel	Industrial chrome plating	17	Wear ring	Polyacetal resin	
6	Cushion ring A	Steel	Zinc chromate	18	Cushion ring B	Steel	Zinc chromate
7	Piston gasket	Nitrile rubber		19	Cushion needle	Copper alloy (ø125 to ø180)	
8	Piston	Aluminum alloy casting				Steel (ø200, 250)	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	20	Hexagon nut	Steel	Zinc chromate
10	Hexagon nut	Steel	Zinc chromate	21	Needle gasket	Nitrile rubber	
11	Dust wiper	Nitrile rubber	ø200 and ø250 only	22	Piston rod B	Steel	Industrial chrome plating
12	Rod packing	Nitrile rubber		23	Hexagon nut	Steel	Zinc chromate

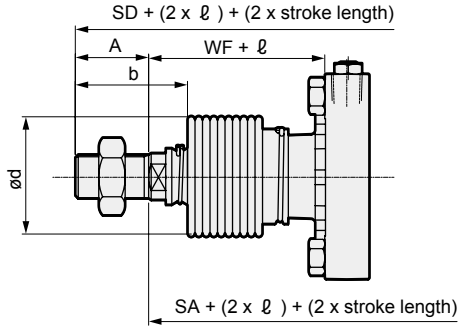
Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
ø125	SCS2-D-125K	⑫ ⑬ ⑭ ⑯ ⑰ ㉑
ø140	SCS2-D-140K	
ø160	SCS2-D-160K	
ø180	SCS2-D-180K	
ø200	SCS2-D-200K	⑪ ⑫ ⑬ ⑭ ⑯ ⑰ ㉑
ø250	SCS2-D-250K	

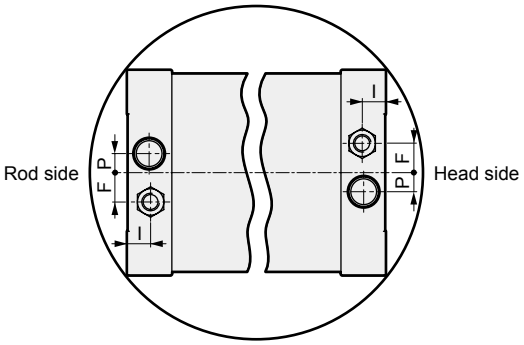
Dimensions

● Basic (00)





[With bellows]



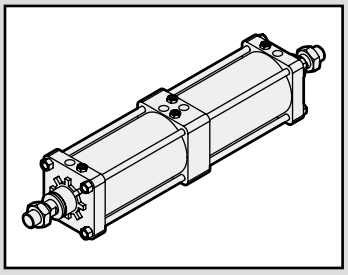
Port position diagram (A View)

*1: Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*2: The positions for the left and right widths across flats are unspecified.

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

Code										With bellows		
Bore size (mm)	MM	N	P	QA	SA	SD	T	V	WF	b	d	ℓ
ø125	32	110	13	15	222	322	18	45.5	65	74	75	(Stroke length/4.55) + 11
ø140	32	124	15	17	237	337	18	45.5	67	74	75	(Stroke length/4.55) + 9
ø160	40	142	15	17	248	360	21	48	71	82	80	(Stroke length/5.15) + 9
ø180	45	160	15	17	266	392	24	53	78	91	90	(Stroke length/5.15) + 9
ø200	50	175	20	18	299	443	27	60	88	102	95	(Stroke length/5.30) + 9
ø250	60	216	22	21	329	505	34	64	94	120	120	(Stroke length/6.40) + 9

* Dimensions of other mounting are the same as those of the double acting SCS2 Series. Refer to pages 631 to 638.
* For the dimensions of the accessories, refer to page 639.

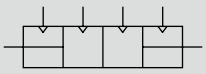


Large bore size cylinder
Double acting/back to back

SCS2-B Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

* Made-to-order product.

Specifications

Item		SCS2-B (back to back)					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)					
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate 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 (use turbine oil class 1 ISO VG32 for lubrication)					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion, min. stroke (mm)
ø125	50/75/100/150/200/250/300	800	1	23
ø140				25
ø160				27
ø180		900		28
ø200		1,000		28
ø250		1,200		28

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

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm						Additional weight per S = 100 mm
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (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-300-300

- Product weight for S = 0 mm stroke length ····· 15.94 kg
- Additional weight for S = 300 mm stroke length ··· 2 x 1.54 x $\frac{300}{100}$ = 9.24 kg
- Product weight ····· 15.94 + 9.24 = 25.18 kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working 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}

How to order

Without switch (without magnet for switch)

Cylinder 1 stroke length S1 — Cylinder 2 stroke length S2

SCS2-B - LB - 125 - ○ B 50 - ○ B 50 - J Y

Ⓐ Mounting — Ⓑ Bore size — Ⓒ Port thread — Ⓒ Port thread — Ⓓ Cushion =S1 — Ⓓ Cushion =S2 — Ⓔ Stroke length = S1 — Ⓔ Stroke length = S2 — Ⓕ Option *2 — *3 — Ⓖ Accessory

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
TA	Rod side trunnion
TB	Head side trunnion
Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread(made-to-order product)
G	G thread (made-to-order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length	Custom stroke length
ø125 to ø160	**1 to 800**	**In 1 mm increments**
ø180	**1 to 900**	
ø200	**1 to 1000**	
ø250	**1 to 1200**	

Code	Description	Max. ambient temp.	Instantaneous ambient temp
Ⓕ Option			
C2	With cushion section check valve		
J	Bellows	100°C	200°C
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		
P6	Copper and PTFE free (made to order)		

Standard: T, R, S

Code	Description
Ⓖ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)

⚠ Precautions for model No. selection

*1: Supporting hole is available custom made for ø125 to 160 only. Contact CKD for details about dimensions.
*2: The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*3: Check the figures below for the cushion needle position indication.

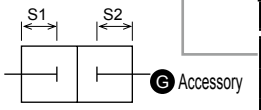
[Example of model No.]

SCS2-B-LB-125-B50-B50-JY

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

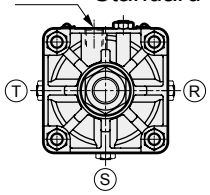
- Ⓐ Mounting : Axial foot
- Ⓑ Bore size : ø125 mm
- Ⓒ Port thread : Rc thread
- Ⓓ Cushion : With two-sided air cushion — Cylinder 1
- Ⓔ Stroke length S1 : 50 mm
- Ⓒ Port thread : Rc thread
- Ⓓ Cushion : With two-sided air cushion — Cylinder 2
- Ⓔ Stroke length S2 : 50 mm
- Ⓕ Option : Bellows material for max. ambient temperature 100°C
- Ⓖ Accessory : Rod clevis

Cylinder 1 stroke length	50 mm	(S1)
+ Cylinder 2 stroke length	50 mm	(S2)
Total stroke length	100 mm	(S1 + S2)



Cushion needle position

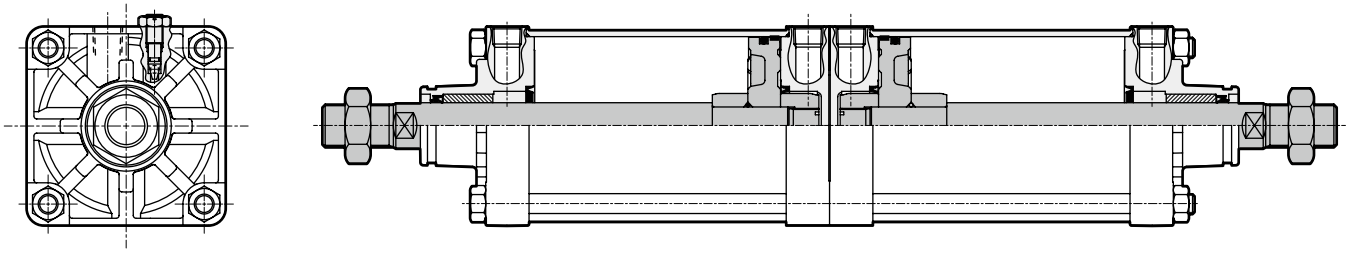
(Needle position with the port on the top when viewed from the rod end)



Certified class 2 pressure vessel stroke length

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

Internal structure



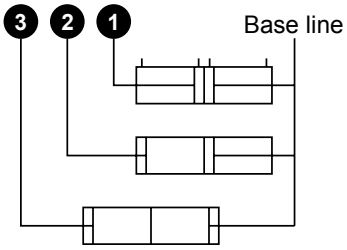
Note: The parts list is common with double acting SCS2 Series. Two sets of the parts are required. Refer to page 629.

Repair parts list

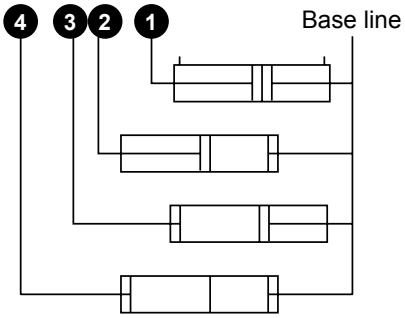
The parts are common with SCS2 Series and two sets of them are required. Refer to page 629.

Applications

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

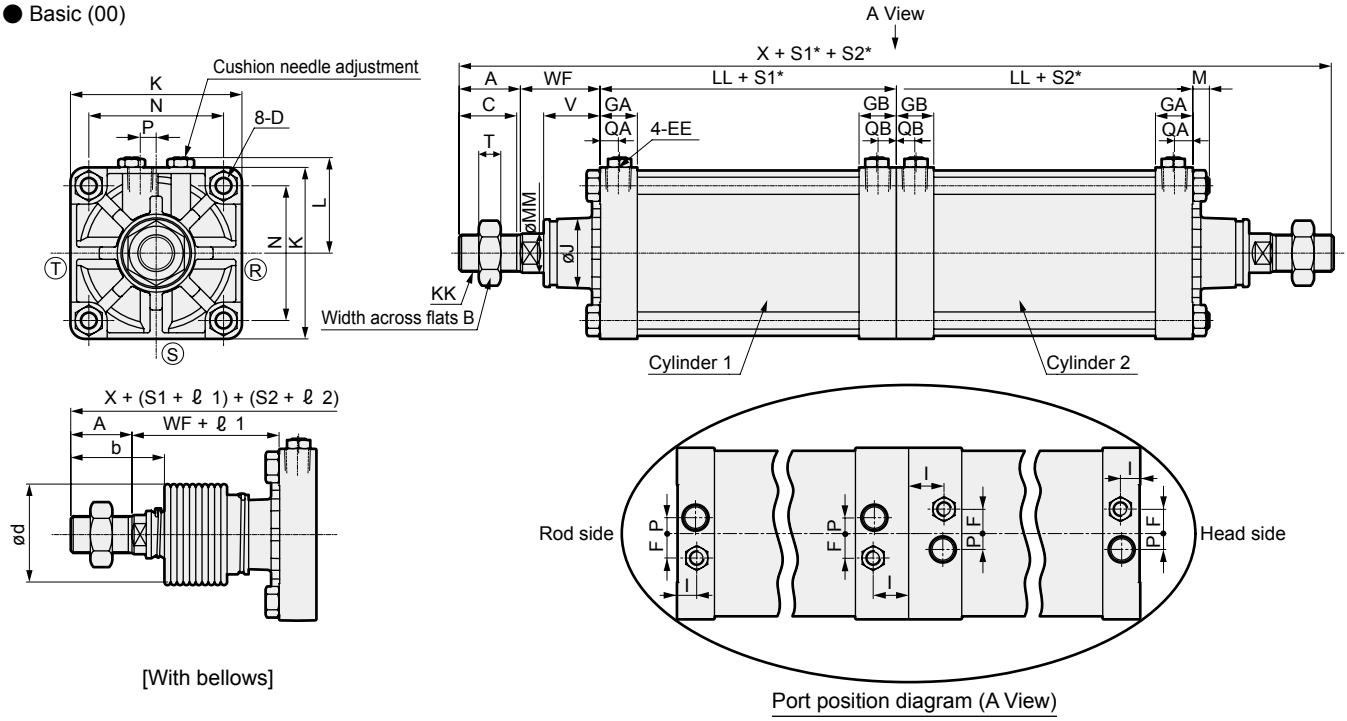


When different stroke lengths are combined, 4 positions are available.



Dimensions

● Basic (00)



[With bellows]

Port position diagram (A View)

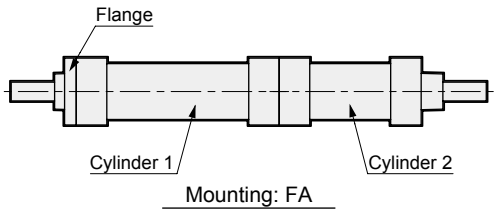
*1: Ⓡ , Ⓢ and Ⓣ indicate the cushion needle position.

*: S1 = Cylinder 1 stroke length, S2 = Cylinder 2 stroke length

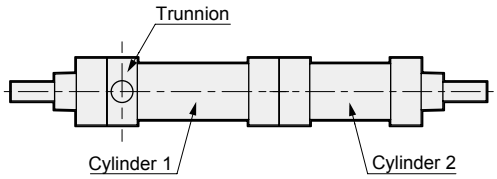
Code / Bore size (mm)	A	B	C	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM
ø125	50	46	47	M14×1.5	Rc1/2	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	13.5	32
ø140	50	46	47	M14×1.5	Rc3/4	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	13.5	32
ø160	56	55	53	M16×1.5	Rc3/4	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	15.5	40
ø180	63	60	60	M18×1.5	Rc3/4	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	17.5	45
ø200	72	70	69	M20×1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	18.5	50
ø250	88	85	84	M24×1.5	Rc1	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	21.5	60

Code / Bore size (mm)	N	T	P	QA	QB	V	WF	X	With bellows		
									b	d	ℓ
ø125	110	18	13	15	15	45.5	65	414	74	75	(Stroke length/4.55) + 11
ø140	124	18	15	17	17	45.5	67	440	74	75	(Stroke length/4.55) + 9
ø160	142	21	15	17	17	48	71	466	82	80	(Stroke length/5.15) + 9
ø180	160	24	15	17	17	53	78	502	91	90	(Stroke length/5.15) + 9
ø200	175	27	20	18	18	60	88	566	102	95	(Stroke length/5.30) + 9
ø250	216	34	22	21	21	64	94	646	120	120	(Stroke length/6.40) + 9

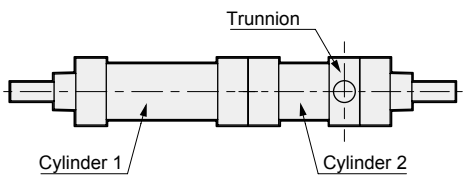
Note: Dimensions of other mounting are the same as those of double acting SCS2 Series. Refer to pages 631 to 638. Installation positions of the flange (mounting: FA) and trunnion (mounting: TA/TB/TD/TE) are as below.



Mounting: FA

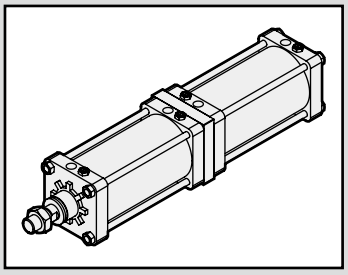


Mounting: TA, TD



Mounting: TB, TE

* For the dimensions of the accessories, refer to page 639.



Large bore size cylinder
Double acting/two-stage

SCS2-W Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

RoHS

* Made-to-order product.

Specifications

Item		SCS2-W (two-stage)					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar) *1					
Min. working pressure MPa		0.1 (≈15 psi, 1 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate 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 (use turbine oil class 1 ISO VG32 for lubrication)					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

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

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion min. stroke (mm)
ø125	50/75/100/150/200/250/300	800	2 (Total stroke)	23
ø140				25
ø160				27
ø180		900		28
ø200		1,000		28
ø250		1,200		28

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

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm						Additional weight per S = 100 mm
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (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 weight for S = 0 mm stroke length ··· 20.12 kg
- ● Additional weight for S = 300 mm stroke length ···· $2 \times 1.54 \times \frac{300}{100} = 9.24$ kg
- ● Product weight ····· 20.12 + 9.24 = 29.36 kg

How to order

Without switch (without magnet for switch)

Total stroke S1 / 1st stage stroke length S2

SCS2-W - LB - 125 - ○ B 200 - ○ B 50 - J Y

- Ⓐ Mounting *1
- Ⓑ Bore size
- Ⓒ Port thread
- Ⓒ Port thread
- Ⓓ Cushion =S1
- Ⓓ Cushion =S2
- Ⓔ Stroke length = S1
- Ⓔ Stroke length = S2 *2
- Ⓕ Option *3
- *4
- Ⓖ Accessory

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring included)
TA	Rod side trunnion
TB	Head side trunnion
Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length	Custom stroke length
ø125 to ø160	**2 to 800**	**In 1 mm increments**
ø180	**2 to 900**	
ø200	**2 to 1000**	
ø250	**2 to 1200**	

Ⓕ Option

		Max. ambient temp.	Instantaneous ambient temp
C2	With cushion section check valve		
J	Bellows	100°C	200°C
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		
P6	Copper and PTFE free (made to order)		

Standard: T / R / S

Ⓖ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring included)

Precautions for model No. selection

*1: Supporting hole is available custom made for ø125 to 160 only. Contact CKD for details about dimensions.
*2: The max. stroke length of S2 (1st stage) is 200 mm.
*3: The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*4: Check the figures below for the cushion needle position indication.

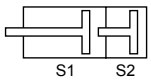
[Example of model No.]

SCS2-W-LB-125-B200-B50-JY

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

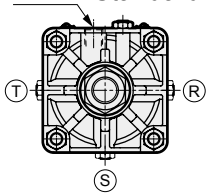
- Ⓐ Mounting : Axial foot
- Ⓑ Bore size : ø125 mm
- Ⓒ Port thread : Rc thread
- Ⓓ Cushion : Both sides cushioned
- Ⓔ Stroke length S1 : Total stroke length 200 mm — Cylinder 1
- Ⓒ Port thread : Rc thread
- Ⓓ Cushion : Both sides cushioned
- Ⓔ Stroke length S2 : 1st stage stroke length 50 mm — Cylinder 2
- Ⓕ Option : Bellows material for max. ambient temperature 100°C
- Ⓖ Accessory : Rod clevis

1st stage stroke length	50 mm (S2)
+ 2nd stage stroke length	150 mm
Total stroke length	200 mm (S1)



Cushion needle position

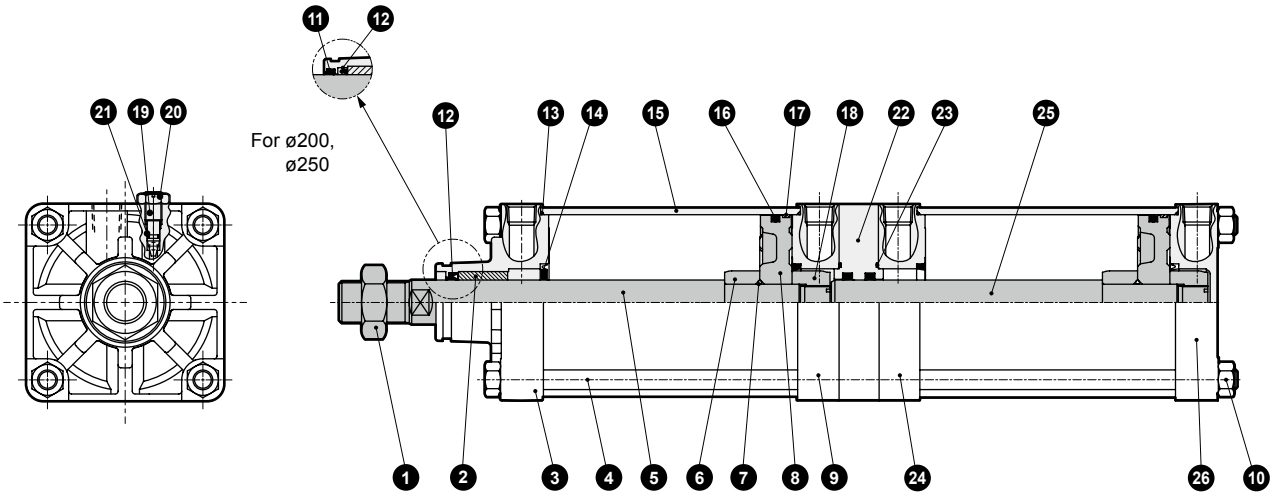
(Needle position with the port on the top when viewed from the rod end)



Certified class 2 pressure vessel stroke length

Bore size	S1 + S2 stroke length
ø200	892 or more
ø250	690 or more

Internal structure and parts list



● Note: ⑭, ⑲, ⑳ and ㉑ are not required for the type without cushion.

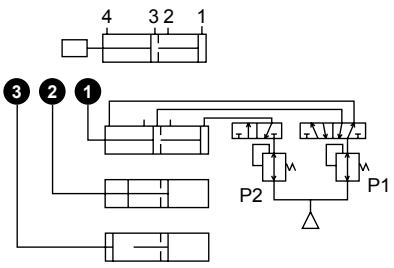
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate	14	Cushion packing	Nitrile rubber/steel	
2	Bush	Iron-copper oil-impregnated bearing alloy		15	Cylinder tube	Aluminum alloy	Hard alumite
3	Rod cover	Aluminum alloy casting	Chromate	16	Piston packing	Nitrile rubber	
4	Tie rod	Steel	Zinc chromate	17	Wear ring	Polyacetal resin	
5	Piston rod A	Steel	Industrial chrome plating	18	Cushion ring B	Steel	Zinc chromate
6	Cushion ring A	Steel	Zinc chromate	19	Cushion needle	Copper alloy (ø125 to ø180)	
7	Piston gasket	Nitrile rubber				Steel (ø200, 250)	Zinc chromate
8	Piston	Aluminum alloy casting		20	Hexagon nut	Steel	Zinc chromate
9	Intermediate cover (1)	Aluminum alloy casting	Chromate	21	Needle gasket	Nitrile rubber	
10	Hexagon nut	Steel	Zinc chromate	22	Intermediate plate	Cast iron	Paint
11	Dust wiper	Nitrile rubber	ø200 and ø250 only	23	Metal gasket	Nitrile rubber	
12	Rod packing	Nitrile rubber		24	Intermediate cover (2)	Aluminum alloy casting	Chromate
13	Cylinder gasket	Nitrile rubber		25	Piston rod B	Steel	Industrial chrome plating
				26	Head cover	Aluminum alloy casting	Chromate

Repair parts list

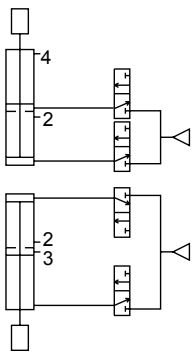
Bore size (mm)	Kit No.	Repair parts No.
ø125	SCS2-W-125K	⑫ ⑬ ⑭ ⑯ ⑰ ㉑ ㉓
ø140	SCS2-W-140K	
ø160	SCS2-W-160K	
ø180	SCS2-W-180K	
ø200	SCS2-W-200K	⑪ ⑫ ⑬ ⑭ ⑯ ⑰ ㉑ ㉓
ø250	SCS2-W-250K	

Applications

Pressure setting: P2 > P1
- 1st stage push
  Keeping port 4 pressurized, pressurize port 1.
- 2nd stage push
  Keeping port 1 pressurized, pressurize port 3.

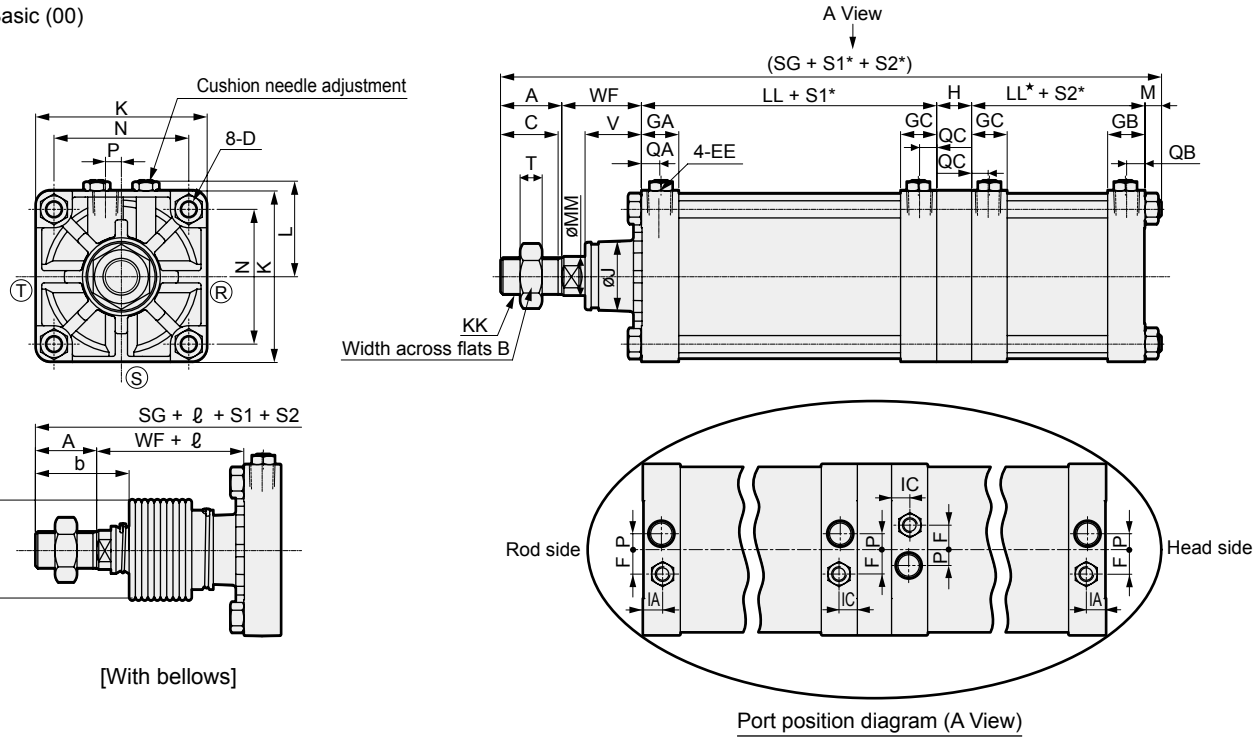


P2 = P1 is allowed depending on the load direction.
When using a single acting cylinder with free fall load, ports 2 and 4 in the upper figure and ports 2 and 3 in the lower figure are breathing holes.
Cushion performance will be better when all ports are piped even if piping them is not necessary (port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



Dimensions

● Basic (00)



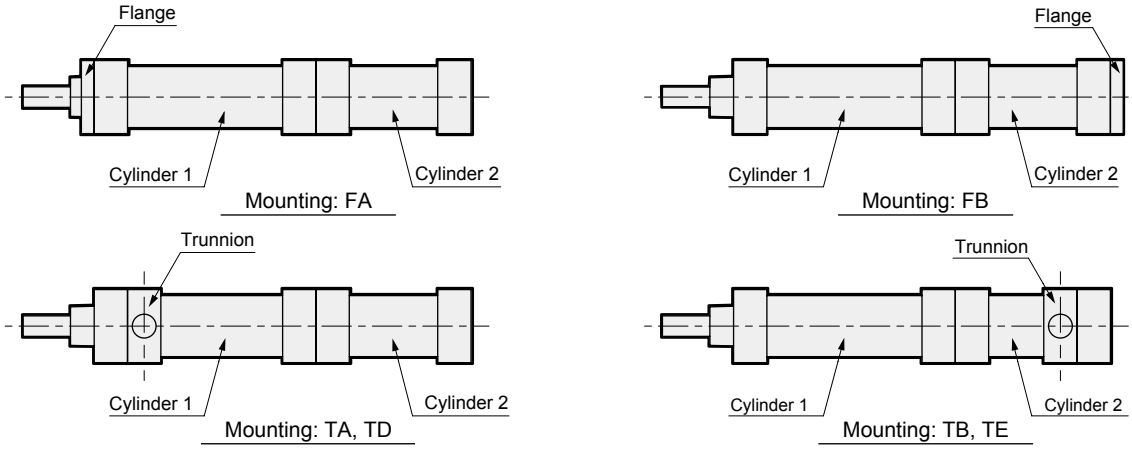
*1: Ⓡ , Ⓢ and Ⓣ indicate the cushion needle position.

*: S1 = Cylinder 1 stroke length, S2 = Cylinder 2 stroke length

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

Code														With bellows		
Bore size (mm)	LL	LL*	MM	M	P	QA	QB	QC	N	SG	T	V	WF	b	d	ℓ
ø125	91	92	32	13.5	13	15	15	14	110	339.5	18	45.5	65	74	75	(Stroke length/4.55) + 11
ø140	102	103	32	13.5	15	17	17	16	124	363.5	18	45.5	67	74	75	(Stroke length/4.55) + 9
ø160	105	106	40	15.5	15	17	17	16	142	381.5	21	48	71	82	80	(Stroke length/5.15) + 9
ø180	109	110	45	17.5	15	17	17	16	160	410.5	24	53	78	91	90	(Stroke length/5.15) + 9
ø200	122	123	50	18.5	20	18	18	17	175	458.5	27	60	88	102	95	(Stroke length/5.30) + 9
ø250	140	141	60	21.5	22	21	21	20	216	523.5	34	64	94	120	120	(Stroke length/6.40) + 9

Note: Dimensions of other mounting are the same as those of double acting SCS2 Series. Refer to pages 631 to 638. Installation positions of the flange (mounting: FA/FB) and trunnion (mounting: TA/TB/TD/TE) are as below.



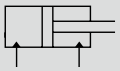
* For the dimensions of the accessories, refer to page 639.

Large bore size cylinder
Double acting/low hydraulic

SCS2-H Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

* Made-to-order product.

Specifications

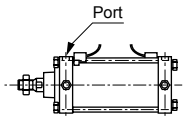
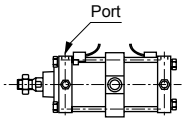
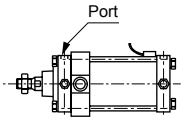
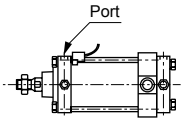
Item		SCS2-H/SCS2-LH (low hydraulic)					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Hydraulic fluid					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)					
Min. working pressure MPa		0.1 (≈15 psi, 1 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		5 (41°F) to 50 (122°F)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (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	Cushioned	The cushioning of the low hydraulic cylinder cannot absorb large energy. We recommend using an external shock absorber.					
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion min. stroke (mm)
ø125	50/75/100/150/200/250/300	800	20	23
ø140				25
ø160				27
ø180		900		28
ø200		1,000		28
ø250		1,200		28

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

Min. stroke length with switch

Item / Bore size (mm)		Stroke length when mounted on the same surface	Stroke of intermediate supporting hole trunnion	Stroke length of rod side supporting hole trunnion	Stroke of head side supporting hole trunnion
Switch	Sketch			 Position cannot be detected at the rod side stroke end.	 Position cannot be detected at the head side stroke end.
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	

Switch specifications

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

Item	Proximity 2-wire				Proximity 3-wire				Reed 2-wire								Proximity 2-wire
	T1H/ T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V		T5H/T5V		T8H/T8V				T2YD (*4) T2YDT
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection		For programmable controller, relay				For programmable controller
Output method	-				NPN output	PNP output	NPN output	NPN output	-								
Pwr. supp. V.	-				10 to 28 VDC				-								
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC		24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA		5 to 20 mA
Indicator lamp	LED (Lit when ON)	LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)				Red/green LED (Lit when ON)
Leakage current	≤ 1 mA at 100 VAC, ≤ 2 mA at 200 VAC	1 mA or less			10 μA or less				0 mA								1 mA or less
Weight g	1 m:33	1 m:18	1 m:33	1 m:18	1 m:18		1 m:33	1 m:18	1 m:18 3 m:49 5 m:80				1 m:33				1 m:61
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49		3 m:87	3 m:49					3 m:87				3 m:166
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80		5 m:142	5 m:80					5 m:142				5 m:272

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : Max. load current: 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : Switch for AC magnetic field (T2YD/T2YDT) cannot be used in DC magnetic field.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm						Switch weight		Additional weight per S = 100 mm
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA/TB/TC)	Switch	Mounting bracket	
ø125	7.22	8.72	10.52	10.22	10.32	10.62	Refer to the weight in the switch specifications.	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-LH-LB-125B-300-TOH-D
- ● Product weight for S = 0 mm stroke length ··· 8.72 kg
- ● Additional weight for S = 300 mm stroke length ··· $1.54 \times \frac{300}{100} = 4.62$ kg
- ● Weight of 2 switches (T0H-D) ····· 0.018 x 2 = 0.036 kg
- ● Product weight with 2 switch brackets ··· 0.028 x 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	Working pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
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

How to order

Without switch (without magnet for switch)

SCS2-H - LB - 125 ( ) B - 50 ——— J Y

With switch (built-in magnet for switch)

SCS2-LH - LB - 125 ( ) B - 50 - T0H - R - J Y

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length

Ⓕ Switch model No.

Ⓖ Switch quantity *3

Ⓗ Option *4

*5

Ⓘ Accessory *6

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring included)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke length *2	Custom stroke length
ø125 to ø160	**20 to 800**	**In 1 mm increments**
ø180	**20 to 900**	
ø200	**20 to 1000**	
ø250	**20 to 1200**	

Ⓕ Switch model No.

Axial lead wire	Radial lead wire	Contact	AC	DC	Display	Lead wire
T0H*	**T0V***	Reed	●	●	1-color display	2-wire
T5H*	**T5V***	Reed	●	●	Without indicator lamp	2-wire
T8H*	**T8V***	Reed	●	●	1-color display	2-wire
T1H*	**T1V***	Proximity	●		1-color display	2-wire
T2H*	**T2V***	Proximity		●	1-color display	2-wire
T3H*	**T3V***	Proximity		●	1-color display	3-wire
T3PH*	**T3PV***	Proximity		●	1-color display (PNP output)	3-wire
T2WH*	**T2WV***	Proximity		●	2-color display	2-wire
T2YH*	**T2YV***	Proximity		●	2-color display	2-wire
T3WH*	**T3WV***	Proximity		●	2-color display	3-wire
T3YH*	**T3YV***	Proximity		●	2-color display	3-wire
T2YD*	**-**	Proximity		●	2-color display	2-wire
T2YDT*	**-**	Proximity		●	AC magnetic field	2-wire
T2JH*	**T2JV***	Proximity		●	1-color display off-delay	2-wire

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

Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4

Ⓗ Option

		Max. ambient temp.	Instantaneous ambient temp
C2	With cushion section check valve		
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position (standard)	Standard	
R	Cushion needle position R	T R	
S	Cushion needle position S	S	
T	Cushion needle position T		
P6	Copper and PTFE free (made to order)		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring included)

Made-to-order product code *7	
-SO92	SCS-LH compatible mounting dimensions

⚠ Precautions for model No. selection

*1 : Supporting hole is available custom made for ø125 to 160 only. Contact CKD for details about dimensions.
*2 : Refer to page 662 for the min. stroke length with switch.
*3 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*4 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*5 : Check the figures below for the cushion needle position indication.
*6 : "I" and "Y" cannot be selected together.
*7 : Refer to page 667 for details.

[Example of model No.]

SCS2-LH-LB-125B-50-T0H-R-JY

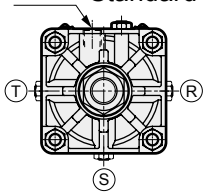
Model: Large bore size cylinder, double acting/low hydraulic with switch

Ⓐ Mounting : Axial foot
Ⓑ Bore size : ø125 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : With two-sided air cushion
Ⓔ Stroke length : 50 mm
Ⓕ Switch model No. : Proximity T0H switch, lead wire 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Bellows material for max. ambient temperature 100°C
Ⓘ Accessory : Rod clevis

Cushion needle position

(Needle position with the port on the top when viewed from the rod end)

Port Standard



Certified class 2 pressure vessel stroke length

Bore size	Stroke length
ø200	946 or more
ø250	752 or more

How to order switch

● Switch body + mounting bracket set

SCS2-LN - T0H - 125

- T0H: Switch model No. (Item Ⓕ on page 664)
- 125: Bore size (Item Ⓑ on page 664)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ on page 664)

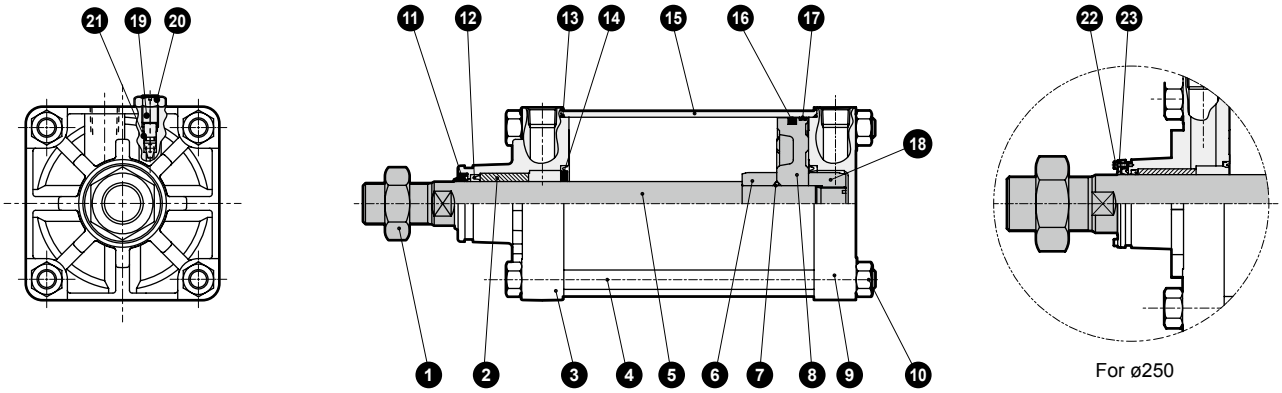
● Mounting bracket set

SCS2-LN - TS - 125

- TS: Mounting bracket
- 125: Bore size (Item Ⓑ on page 664)

Mounting bracket	
TS	T switch
T	T2YD switch

Internal structure and parts list



For ø250

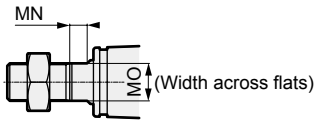
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate	13	Cylinder gasket	Nitrile rubber	
2	Bush	Iron-copper oil-impregnated bearing alloy		14	Cushion packing	Nitrile rubber/steel	
3	Rod cover	Aluminum alloy casting	Chromate	15	Cylinder tube	Aluminum alloy	Hard alumite
4	Tie rod	Steel	Zinc chromate	16	Piston packing	Nitrile rubber	
5	Piston rod	Steel	Industrial chrome plating	17	Wear ring	Polyacetal resin	
6	Cushion ring A	Steel	Zinc chromate	18	Cushion ring B	Steel	Zinc chromate
7	Piston gasket	Nitrile rubber		19	Cushion needle	Copper alloy (ø125 to ø180)	
8	Piston	Aluminum alloy casting				Steel (ø200, 250)	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	20	Hexagon nut	Steel	Zinc chromate
10	Hexagon nut	Steel	Zinc chromate	21	Needle gasket	Nitrile rubber	
11	Dust wiper	Nitrile rubber		22	Scraper retainer plate	Steel	Manganese phosphate
12	Rod packing	Nitrile rubber		23	Hexagon socket head cap screw	Steel	Black finish

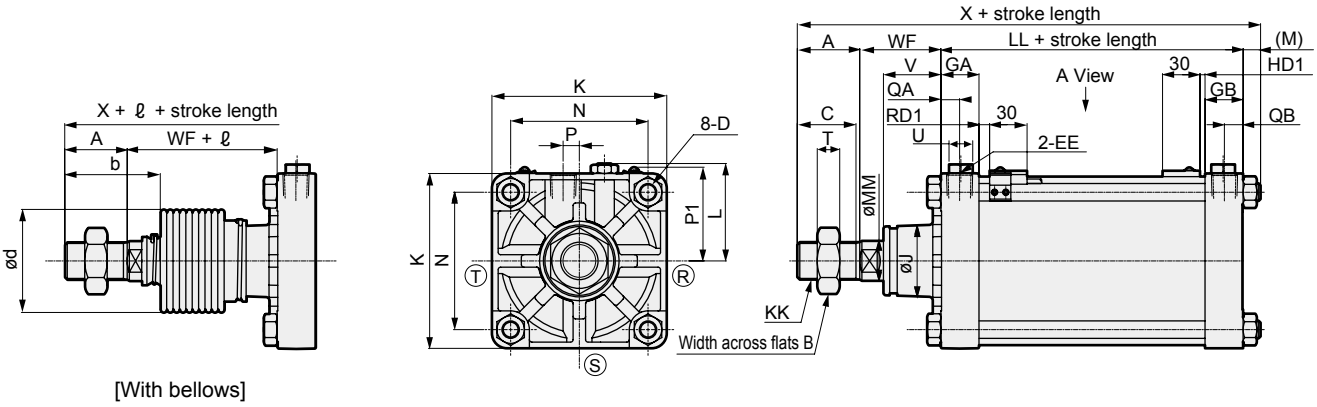
Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
ø125	SCS2-H-125K	⓫ ⓬ ⓭ ⓮ ⓰ ⓱ ㉑
ø140	SCS2-H-140K	
ø160	SCS2-H-160K	
ø180	SCS2-H-180K	
ø200	SCS2-H-200K	
ø250	SCS2-H-250K	

Dimensions

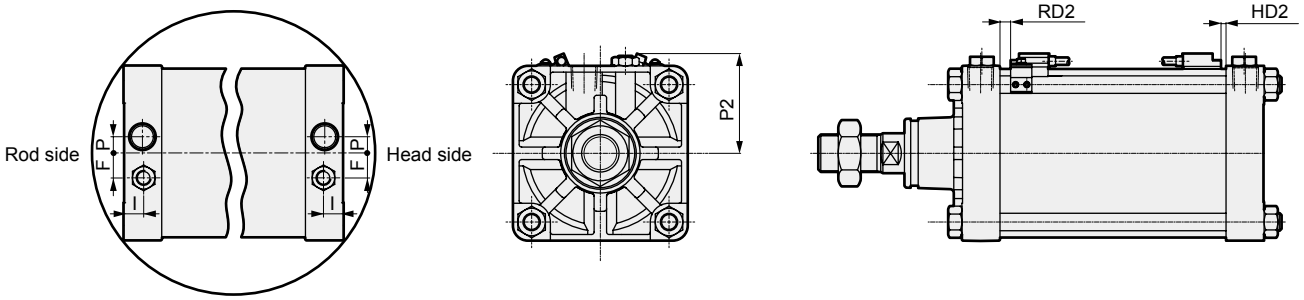
● Basic (00)





[With bellows]

● 2-color display with strong magnetic field proof switch



Port position diagram (A View)

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

*1: Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*2: ℓ dimensions below decimal point are rounded up.

Code	Basic (00) basic dimensions																				
Bore size (mm)	A	B	C	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM	MN	MO	N	P	QA	QB
ø125	50	46	47	M14×1.5	Rc1/2	30.5	30.5	20	16	57	140	M30×1.5	78 to 82	92	13.5	32	15	27	110	13	15	15
ø140	50	46	47	M14×1.5	Rc3/4	34.5	34.5	20	20	57	157	M30×1.5	86.5 to 91	103	13.5	32	15	27	124	15	17	17
ø160	56	55	53	M16×1.5	Rc3/4	34.5	34.5	24	20	62	177	M36×1.5	96.5 to 101	106	15.5	40	15	36	142	15	17	17
ø180	63	60	60	M18×1.5	Rc3/4	34.5	34.5	24	20	68	200	M40×1.5	108 to 112	110	17.5	45	17	41	160	15	17	17
ø200	72	70	69	M20×1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45×1.5	120.5 to 129	123	18.5	50	20	46	175	20	18	18
ø250	88	85	84	M24×1.5	Rc1	42.5	42.5	24	20.5	93	274	M56×2	147.5 to 156	141	21.5	60	22	55	216	22	21	21

Code						With bellows			With switch		T0,T5,T2,T3		T2W,T3W		T2Y,T3Y,T2YD,T1,T2J		T8	
Bore size (mm)	T	U	V	WF	X	b	d	ℓ	P1	P2	RD1	HD1	RD1	HD1	RD2	HD2	RD2	HD2
ø125	18	19	45.5	65	220.5	74	75	(Stroke length/4.55) + 11	76	80	8.5	4.0	10.5	5.5	7.5	2.5	2.5	0.0
ø140	18	19	45.5	67	233.5	74	75	(Stroke length/4.55) + 9	82	86	8.5	7.0	10.5	8.5	7.5	5.5	2.5	0.5
ø160	21	19	48	71	248.5	82	80	(Stroke length/5.15) + 9	90	95	10.5	8.0	12.5	10.0	9.5	7.0	4.5	1.5
ø180	24	19	53	78	268.5	91	90	(Stroke length/5.15) + 9	98	103	13.0	9.5	14.5	11.5	11.5	8.5	6.5	3.5
ø200	27	24	60	88	301.5	102	95	(Stroke length/5.30) + 9	106	111	17.5	13.0	19.0	15.0	16.0	12.0	11.0	7.0
ø250	34	24	64	94	344.5	120	120	(Stroke length/6.40) + 9	126	130	18.5	19.0	20.5	20.5	17.5	17.5	12.5	12.5

Note: Dimensions of other mounting are the same as those of double acting SCS2 Series. Refer to pages 631 to 638. SCS2-LH (with switch) is not dimensionally compatible with SCS-LH (with switch). (All lengths shorter) If you need the same dimensions, use the dimensionally compatible mounting on the next page.

* For the dimensions of the accessories, refer to page 639.

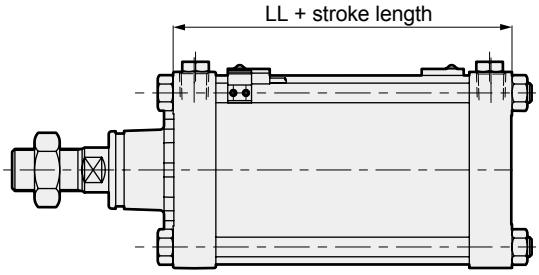
Introduction of custom order products

■ SCS-LH compatible mounting dimensions

How to order

When placing an order, add "-SO92" at the end of the model No.

Dimensions



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

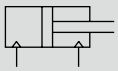
*1: The center trunnion should be installed at the middle point between the covers.
*2: Refer to the right table for LL mentioned in the dimensions above.

Large bore size cylinder
Double acting/rubber scraper

SCS2-G Series

● Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

* Made-to-order product.

Specifications

Item		SCS2-G (rubber scraper)					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)					
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)					
Proof pressure MPa		1.6 (≈230 psi, 16 bar)					
Ambient temperature °C		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate 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 (use turbine oil class 1 ISO VG32 for lubrication)					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion min. stroke (mm)
ø125	50/75/100/150/200/250/300	800	1	23
ø140				25
ø160				27
ø180		900		28
ø200		1000		28
ø250		1200		28

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

*2: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke length (S) = 0 mm						Additional weight per S = 100mm
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (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 for S = 0 mm stroke length ····8.72 kg
- Additional weight for S = 300 mm stroke length ····1.54 x $\frac{300}{100}$ = 4.62 kg
- Product weight ····8.72 + 4.62 = 13.34 kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working 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}

How to order

Without switch (without magnet for switch)

SCS2-G - LB - 125 ○ B - 50 - M Y

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

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring included)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion
Ⓔ Stroke length (mm)	

Bore size	Stroke length	Custom stroke length
ø125 to ø160	**1 to 800**	**In 1 mm increments**
ø180	**1 to 900**	
ø200	**1 to 1000**	
ø250	**1 to 1200**	

Ⓕ Option			
C2	With cushion section check valve		
		Max. ambient temp.	Instantaneous ambient temp
J	Bellows	100°C	200°C
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		
P6	Copper and PTFE free (made to order)		

*3

Standard: T / R / S

Ⓖ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring included)

⚠ Precautions for model No. selection

*1: Supporting hole is available custom made for ø125 to 160 only. Contact CKD for details about dimensions.
*2: The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*3: Check the figures below for the cushion needle position indication.

[Example of model No.]

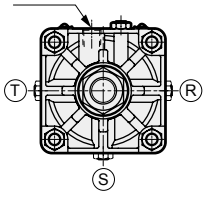
SCS2-G-LB-125B-50-JY

Model: Large bore size cylinder, rubber scraper

- Ⓐ Mounting : Axial foot
- Ⓑ Bore size : ø125 mm
- Ⓒ Port thread : Rc thread
- Ⓓ Cushion : Both sides cushioned
- Ⓔ Stroke length : 50 mm
- Ⓕ Option : Bellows material for max. ambient temperature 100°C
- Ⓖ Accessory : Rod clevis

Cushion needle position

(Needle position with the port on the top when viewed from the rod end)



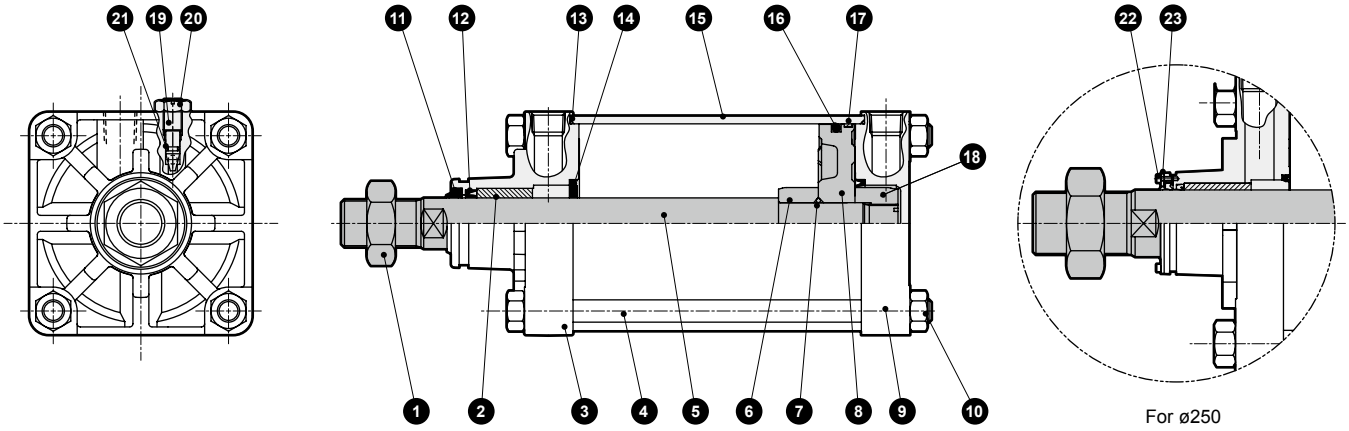
Standard

Certified class 2 pressure vessel stroke length

Bore size	Stroke length
ø200	946 or more
ø250	752 or more

Internal structure and parts list

● Standard
SCS2-G



Note: 14, 19, 20 and 21 are not required for the type without cushion.

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate	13	Cylinder gasket	Nitrile rubber	
2	Bush	Iron-copper oil-impregnated bearing alloy		14	Cushion packing	Nitrile rubber/steel	
3	Rod cover	Aluminum alloy casting	Chromate	15	Cylinder tube	Aluminum alloy	Hard alumite
4	Tie rod	Steel	Zinc chromate	16	Piston packing	Nitrile rubber	
5	Piston rod	Steel	Industrial chrome plating	17	Wear ring	Polyacetal resin	
6	Cushion ring A	Steel	Zinc chromate	18	Cushion ring B	Steel	Zinc chromate
7	Piston gasket	Nitrile rubber		19	Cushion needle	Copper alloy (ø125 to ø180)	
8	Piston	Aluminum alloy casting				Steel (ø200, 250)	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	20	Hexagon nut	Steel	Zinc chromate
10	Hexagon nut	Steel	Zinc chromate	21	Needle gasket	Nitrile rubber	
11	Dust wiper	Nitrile rubber/steel		22	Hexagon socket head cap screw	Steel (black finish)	ø250 only
12	Rod packing	Nitrile rubber		23	Retainer plate	Steel (Manganese phosphate)	ø250 only

Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
ø125	SCS2-G-125K	11 12 13 14 16 17 21
ø140	SCS2-G-140K	
ø160	SCS2-G-160K	
ø180	SCS2-G-180K	
ø200	SCS2-G-200K	
ø250	SCS2-G-250K	

Dimensions

Same as double acting/standard single rod SCS2. Refer to pages 630 to 638.
However, because the dust wiper protrudes, the MN dimension of ø125 and ø140 is 2 mm shorter.