

Standard

SCS2

Large bore size cylinder

ø125/ø140/ø160
ø180/ø200/ø250

Overview

Large bore size among general purpose cylinders (ø125 to ø250) series. Wide range of variations. This cylinder is now even more reliable.

Lighter than ever before!

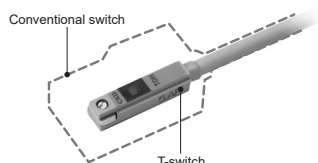
Adopting an aluminum cover and tube has halved the product weight.

Features

Compact switch equipped

The smaller T-switch than the conventional

Saves space by eliminating protrusions when mounted.



Magnet provided as standard [SCS2-LN, LH]

The ø250 also has a switch. Now all models (LN, LH) can handle additionally mounted switches.

Port and needle on the same surface

The air supply/exhaust ports and cushion needle are positioned on the same surface. Easier installation and adjustment of the cylinder.



Dimensional compatibility [except LH]

Dimensional compatibility with the conventional model (SCS) facilitates maintenance.

* The piping port positions are different.

Metallic silver color

The silver surface (metallic silver without paint) matches various devices.



CONTENTS

Series variation	622
Variation and option combination selection table	624
● Double acting/single rod/lubrication (SCS2)	626
● Double acting/single rod/no-lubrication (SCS2-N)	626
● Double acting/stroke adjustable (SCS2-P)	640
● Double acting/heat resistant (SCS2-T)	644
● Double acting/double rod (SCS2-D)	648
● Double acting/double rod/no-lubrication (SCS2-LND)	648
● Double acting/back to back (SCS2-B)	654
● Double acting/2-stage (SCS2-W)	658
● Double acting/low hydraulic (SCS2-H)	662
● Double acting/rubber scraper (SCS2-G)	668
SCS2 Series common accessory dimensions	639
⚠ Safety precautions	671

The cylinder switches T2YH, T2YV, T3YH, and T3YV are scheduled for end of production at the end of December 2023.

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVP/IN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Variation		SCS2 Series													
SCP*3															
CMK2															
CMA2															
SCM															
SCG															
SCA2															
SCS2															
CKV2															
CAV2/ COVPIN2															
SSD2															
SSG															
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CAT															
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MVC															
SMG															
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SRT3															
MRL2															
MRG2															
SM-25															
ShkAbs															
FJ															
FK															
Spd Contr															
Ending															

●: Standard, ◎: Option, ○: Made to order, ■: Not available

Mounting								Cushion				Option							Accessory				Switch	Page
	Clevis bracket	Intermediate trunnion	Rod side trunnion	Head side trunnion	Intermediate supporting hole trunnion	Rod side hole trunnion	Head side trunnion	Without cushion	Both sides cushioned	Rod side cushioned	Head side cushioned	With cushion section check valve	Bellows (100°C)	Bellows (250°C)	Piston rod material change (stainless steel)	Cushion needle position S	Cushion needle position T	Copper and PTFE free	Rod eye	Rod clevis	Eye bracket	Clevis bracket		
	CB	TC	TA	TB	TF	TD	TE	N	B	R	H	C2	J	L	M	S	T	P6	I	Y	B1	B2		
	●	●	●	●	○	○	○	●	●	●	●	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	SCS2-LN◎	626
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SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/IN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

Variation and option combination selection table

●: Standard

◎: Option

○: Available (made-to-order product)

△: Available depending on conditions (Contact CKD.)

x: Not available

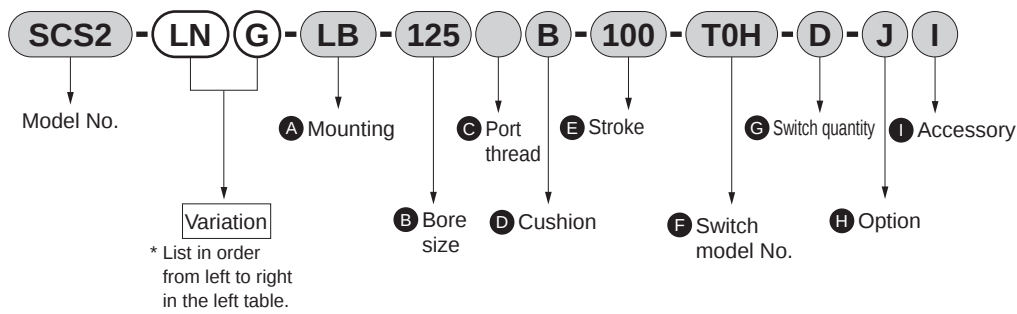
Category		Category	Variation										Port thread		Option							
			Double acting/lubrication	Double acting/no-lubrication	Double acting/with switch	Double acting double rod	Back to back	Double piston	Adjustable stroke push	Low hydraulic	Heat resistance (120°C)	Rubber scraper	NPT	G		With cushion section check valve	Neoprene with bellows	Silicone rubber with bellows	Piston rod material stainless steel	Cushion needle position specification	Copper and PTFE free	Specify piston rod end form
		Code	None	N	LN	D	B	W	P	H	T	G	N	G		C2	J	L	M	R,S,T	P6	N*
Variation	Double acting/lubrication	Blank										○	○		◎	◎	◎	◎	◎	○	○	
	Double acting/no-lubrication	N			○	○	○	○	x	*1	○	○	○		◎	◎	◎	◎	◎	○	○	
	Double acting/with switch	LN			○	○	○	○	○	x	○	○	○		◎	◎	◎	◎	◎	○	○	
	Double acting double rod	D				x	x	x	○	○	○	○	○		◎	◎	◎	◎	◎	○	○	
	Back to back	B					x	x	○	○	○	○	○		◎	◎	◎	◎	◎	○	○	
	Double piston	W						△1	○	○	○	○	○		◎	◎	◎	◎	◎	○	○	
	Adjustable stroke push	P							○	○	△	○	○		◎	◎	◎	◎	◎	○	○	
	Low hydraulic	H								x	○	○	○		◎	◎	◎	◎	◎	○	○	
	Heat resistant (120°C)	T									x	○	○		◎	△2	◎	◎	◎	○	○	
	Rubber scraper	G										○	○		◎	◎	◎	◎	◎	○	○	
Port thread	NPT	N											x		○	○	○	○	○	○	○	
	G	G													○	○	○	○	○	○	○	
Option																						
	With cushion section check valve	C2														◎	◎	◎	◎	○	○	
	Neoprene with bellows	J															x	◎	◎	○	○	
	Silicone rubber with bellows	L																◎	◎	○	○	
	Piston rod material stainless steel	M																	◎	○	○	
	Cushion needle position specification	R.S.T																		○	○	
	Copper and PTFE free	P6																			○	
	Specify piston rod end form	N*																				
Accessory																						
	Cylinder switch	Listed separately	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	
	Rod eye	I	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	△	
	Rod clevis	Y	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	△	
	Eye bracket	B1	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	
	Clevis bracket	B2	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	

*1 : Lubrication is not possible for the heat resistant T (no-lubrication).

△1 : Available on the S2 side only.

△2 : Compatible with working temperature of up to 100°C.

[Example of model No.]



Model No.: Large bore size cylinder

- Variation : No-lubrication with switch/low hydraulic
- A Mounting : Axial foot
- B Bore size : $\phi 125$ mm
- C Port thread : Rc thread
- D Cushion : Both sides cushioned
- E Stroke : 100 mm
- F Switch model No.: Reed T0H switch, lead wire 1m
- G Switch quantity : 2
- H Option : Bellows material, for max. ambient temperature 100°C
- I Accessory : Rod eye

*1: The back to back includes two cylinders. Specify the model No. as below when ordering variation.

For S1 variations only, insert the variation code before the stroke of S1.

(Example) SCS2-B-125-H50-75: Only S1 is the low hydraulic.

For S2 variations only, insert the variation code before the stroke of S2.

(Example) SCS2-B-125-50-H75: Only S2 is the low hydraulic.

When ordering the same variation for S1 and S2, insert the variation code before the bore size.

(Example) SCS2-BH-125-50-75: Both S1 and S2 are the low hydraulic.

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending



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

SCS2 Series

● Bore size: $\varnothing 125/\varnothing 140/\varnothing 160/\varnothing 180/\varnothing 200/\varnothing 250$

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	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

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

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

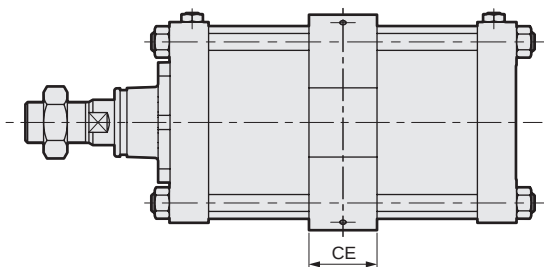
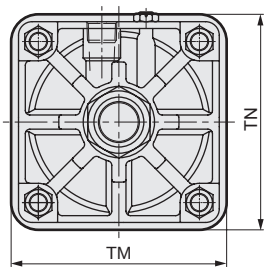
*2: If the max. stroke is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

● Non-sag block

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

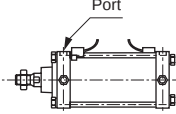
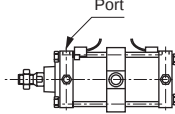
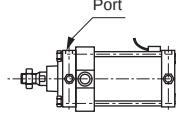
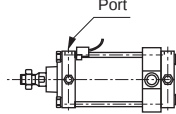
Additional stroke to the non-sag block

Bore size (mm)	Stroke
$\varnothing 125$	1801 to 2000
$\varnothing 140$	



Code	TM	TN	CE
Bore size (mm)			
$\varnothing 125$	150	150	50
$\varnothing 140$	190	170	55

Min. stroke with switch

Item		Stroke when mounted on the same surface	Stroke of intermediate supporting hole trunnion	Stroke of rod side supporting hole trunnion	Stroke of head side supporting hole trunnion
Bore size (mm)					
Switch	Sketch				
	Bore size			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 LED/for AC magnetic field proof

Item	2-wire proximity				3-wire proximity				2-wire reed				2-wire proximity				
	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	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)	No 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	Product weight when stroke (S) = 0 mm						Switch weight		Additional weight per S = 100mm
	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-LN-LB-125B-300-T0H-D

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

A Mounting

B Bore size

C Port thread

D Cushion

E Stroke

F Switch model No.

Precautions for model No. selection

*1: Refer to page 627 for the min. stroke 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: Instantaneous max. temp. is the temperature when sparks or 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: Medium bore size cylinder, double acting/Lubrication/No-lubrication

Model No.: No-lubrication with switch

A Mounting : Axial foot

B Bore size : ø125 mm

C Port thread : Rc thread

D Cushion : Both sides cushioned

E Stroke : 50mm

F Switch model No. : Reed T0H switch, lead wire 1m

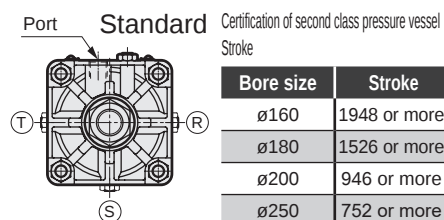
G Switch quantity : 1 on rod side

H Option : Bellows material for max. ambient temperature 100°C

I Accessory : Rod clevis

Cushion needle position

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



Code	Description					
A Mounting						
00	Basic					
LB	Axial foot					
FA	Rod side flange					
FB	Head side flange					
CA	Eye bracket					
CB	Clevis bracket (Pin and snap ring attached)					
TC	Intermediate trunnion					
TA	Rod side trunnion					
TB	Head side trunnion					
B Bore size (mm)						
125	ø125					
140	ø140					
160	ø160					
180	ø180					
200	ø200					
250	ø250					
C Port thread						
Blank	Rc thread					
N	NPT thread (made to order)					
G	G thread (made-to-order product)					
D Cushion						
B	Both sides cushioned					
R	Rod side cushioned					
H	Head side cushioned					
N	Without cushion					
E Stroke (mm)						
Bore size	Stroke Note2	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				
F Switch model No.						
Lead wire	Lead wire	Contact	Voltage	Indicator	Lead wire	
Straight type	L-shaped		AC	DC		
T0H*	T0V*	Reed	●	●	1-color LED	2-wire
T5H*	T5V*		●	●	No indicator lamp	
T8H*	T8V*	●	●	●	1-color LED	2-wire
T1H*	T1V*	●	●	●	1-color LED	
T2H*	T2V*	Proximity	●	●	1-color LED	3-wire
T3H*	T3V*		●	●	1-color LED (PNP output)	
T3PH*	T3PV*		●	●	2-color LED	2-wire
T2WH*	T2WV*		●	●		
T2YH*	T2YV*		●	●		3-wire
T3WH*	T3WV*		●	●		
T3YH*	T3YV*		●	●	2-color LED	2-wire
T2YD*	-		●	●	AC magnetic field	
T2YDT*	-		●	●	1-color LED off-delay	2-wire
T2JH*	T2JV*		●	●		
* Lead wire length						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
G Switch quantity						
R	1 on rod side					
H	1 on head side					
D	2					
T	3					
4	4					
H Option						
C2	With cushion section check valve					
J	Bellows	Max. ambient temp.		Instantaneous max. temp.		
		100°C		200°C		
L	Bellows	250°C		400°C		
M	Piston rod, rod nut material (Stainless steel)					
Blank	Cushion needle position (standard)			Standard		
R	Cushion needle position R					
S	Cushion needle position S					
T	Cushion needle position T					
P6	Copper and PTFE free (made to order)					
I Accessory						
I	Rod eye					
Y	Rod clevis (Pin and snap ring attached)					
B1	Eye bracket					
B2	Clevis bracket (Pin and snap ring attached)					

How to order switch

- Switch body + mounting bracket set

SCS2-LN - T0H - 125

Switch model No.

(Item (F) on
page 628)

Bore size

(Item (B) on
page 628)

- Switch body only

SW - T0H

Switch model No.

(Item (F) on
page 628)

- Mounting bracket set

SCS2-LN - TS - 125

Mounting bracket

TS T-switch
T T2YD switch

Bore size

(Item (B) on
page 628)

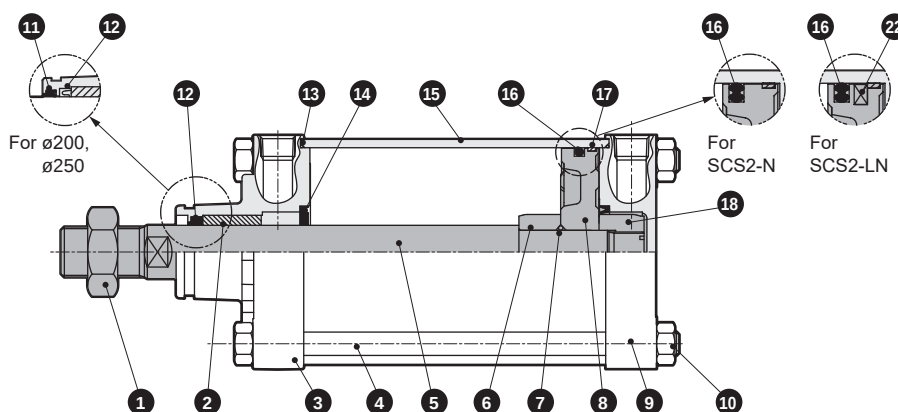
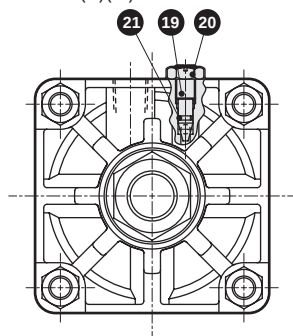
Theoretical thrust table

(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	6.14x10 ²	1.23x10 ³	1.84x10 ³	2.45x10 ³	3.68x10 ³	4.91x10 ³	6.14x10 ³	7.36x10 ³	8.59x10 ³	9.82x10 ³	1.10x10 ⁴	1.23x10 ⁴
	Pull	5.73x10 ²	1.15x10 ³	1.72x10 ³	2.29x10 ³	3.44x10 ³	4.59x10 ³	5.73x10 ³	6.88x10 ³	8.03x10 ³	9.17x10 ³	1.03x10 ⁴	1.15x10 ⁴
ø140	Push	7.70x10 ²	1.54x10 ³	2.31x10 ³	3.08x10 ³	4.62x10 ³	6.16x10 ³	7.70x10 ³	9.24x10 ³	1.08x10 ⁴	1.23x10 ⁴	1.39x10 ⁴	1.54x10 ⁴
	Pull	7.29x10 ²	1.46x10 ³	2.19x10 ³	2.92x10 ³	4.38x10 ³	5.84x10 ³	7.29x10 ³	8.75x10 ³	1.02x10 ⁴	1.17x10 ⁴	1.31x10 ⁴	1.46x10 ⁴
ø160	Push	1.01x10 ³	2.01x10 ³	3.02x10 ³	4.02x10 ³	6.03x10 ³	8.04x10 ³	1.01x10 ⁴	1.21x10 ⁴	1.41x10 ⁴	1.61x10 ⁴	1.81x10 ⁴	2.01x10 ⁴
	Pull	9.42x10 ²	1.88x10 ³	2.83x10 ³	3.77x10 ³	5.65x10 ³	7.54x10 ³	9.42x10 ³	1.13x10 ⁴	1.32x10 ⁴	1.51x10 ⁴	1.70x10 ⁴	1.88x10 ⁴
ø180	Push	1.27x10 ³	2.54x10 ³	3.82x10 ³	5.09x10 ³	7.63x10 ³	1.02x10 ⁴	1.27x10 ⁴	1.53x10 ⁴	1.78x10 ⁴	2.04x10 ⁴	2.29x10 ⁴	2.54x10 ⁴
	Pull	1.19x10 ³	2.39x10 ³	3.58x10 ³	4.77x10 ³	7.16x10 ³	9.54x10 ³	1.19x10 ⁴	1.43x10 ⁴	1.67x10 ⁴	1.91x10 ⁴	2.15x10 ⁴	2.39x10 ⁴
ø200	Push	1.57x10 ³	3.14x10 ³	4.71x10 ³	6.28x10 ³	9.42x10 ³	1.26x10 ⁴	1.57x10 ⁴	1.88x10 ⁴	2.20x10 ⁴	2.51x10 ⁴	2.83x10 ⁴	3.14x10 ⁴
	Pull	1.47x10 ³	2.95x10 ³	4.42x10 ³	5.89x10 ³	8.84x10 ³	1.18x10 ⁴	1.47x10 ⁴	1.77x10 ⁴	2.06x10 ⁴	2.36x10 ⁴	2.65x10 ⁴	2.95x10 ⁴
ø250	Push	2.45x10 ³	4.91x10 ³	7.36x10 ³	9.82x10 ³	1.47x10 ⁴	1.96x10 ⁴	2.45x10 ⁴	2.95x10 ⁴	3.44x10 ⁴	3.93x10 ⁴	4.42x10 ⁴	4.91x10 ⁴
	Pull	2.31x10 ³	4.63x10 ³	6.94x10 ³	9.25x10 ³	1.39x10 ⁴	1.85x10 ⁴	2.31x10 ⁴	2.78x10 ⁴	3.24x10 ⁴	3.70x10 ⁴	4.16x10 ⁴	4.63x10 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) Steel (ø200, 250)	Zinc chromate
8	Piston	Aluminum alloy casting		20	Hexagon nut	Steel	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	21	Needle gasket	Nitrile rubber	
10	Hexagon nut	Steel	Zinc chromate	22	Magnet	Rubber	SCS2-LN only
11	Dust wiper	Nitrile rubber	ø200 and ø250 only				
12	Rod packing	Nitrile rubber					

Repair parts list

Bore size (mm)	SCS2 (lubrication)	SCS2-(L)(N) (no-lubrication)	Repair parts No.
	Kit No.	Kit 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	
ø250	SCS2-250K	SCS2-N-250K	11 12 13 14 16 17 21

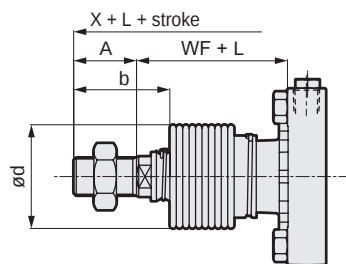
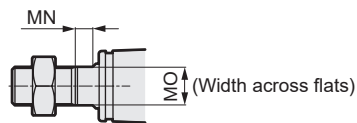
*1: Of the no-lubrication repair parts, the piston packing is different from that of the lubrication.

Mounting bracket material

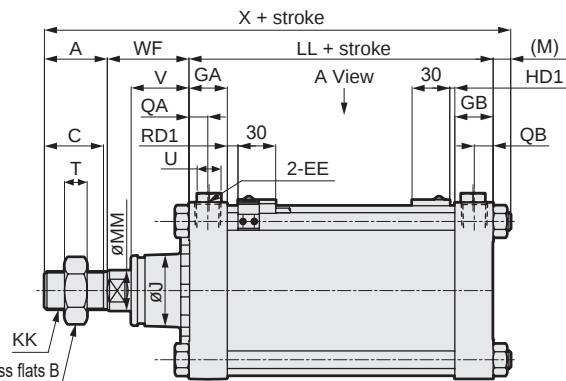
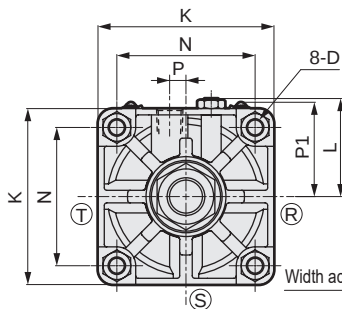
Mounting	Material	Remarks
LB	Steel	Paint
FA,FB	Steel	Paint
CA,CB	Cast iron	Paint
TA,TB,TC	Cast iron	Paint

Dimensions

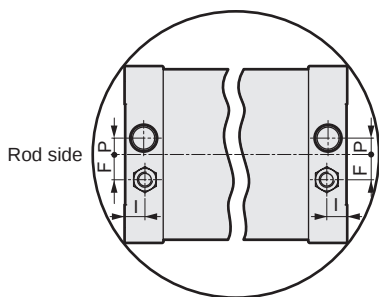
● Basic (00)



[With bellows]

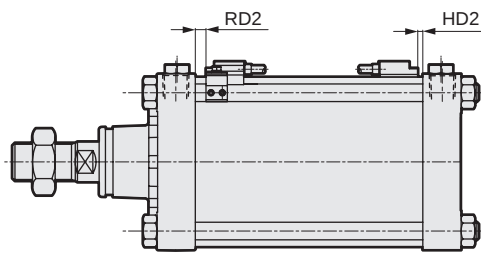
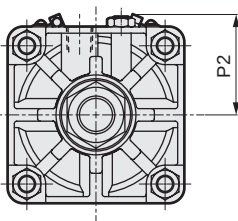


- 2-color LED with strong magnetic field proof switch



Rod side

Head side



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

Port position diagram (A View)

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

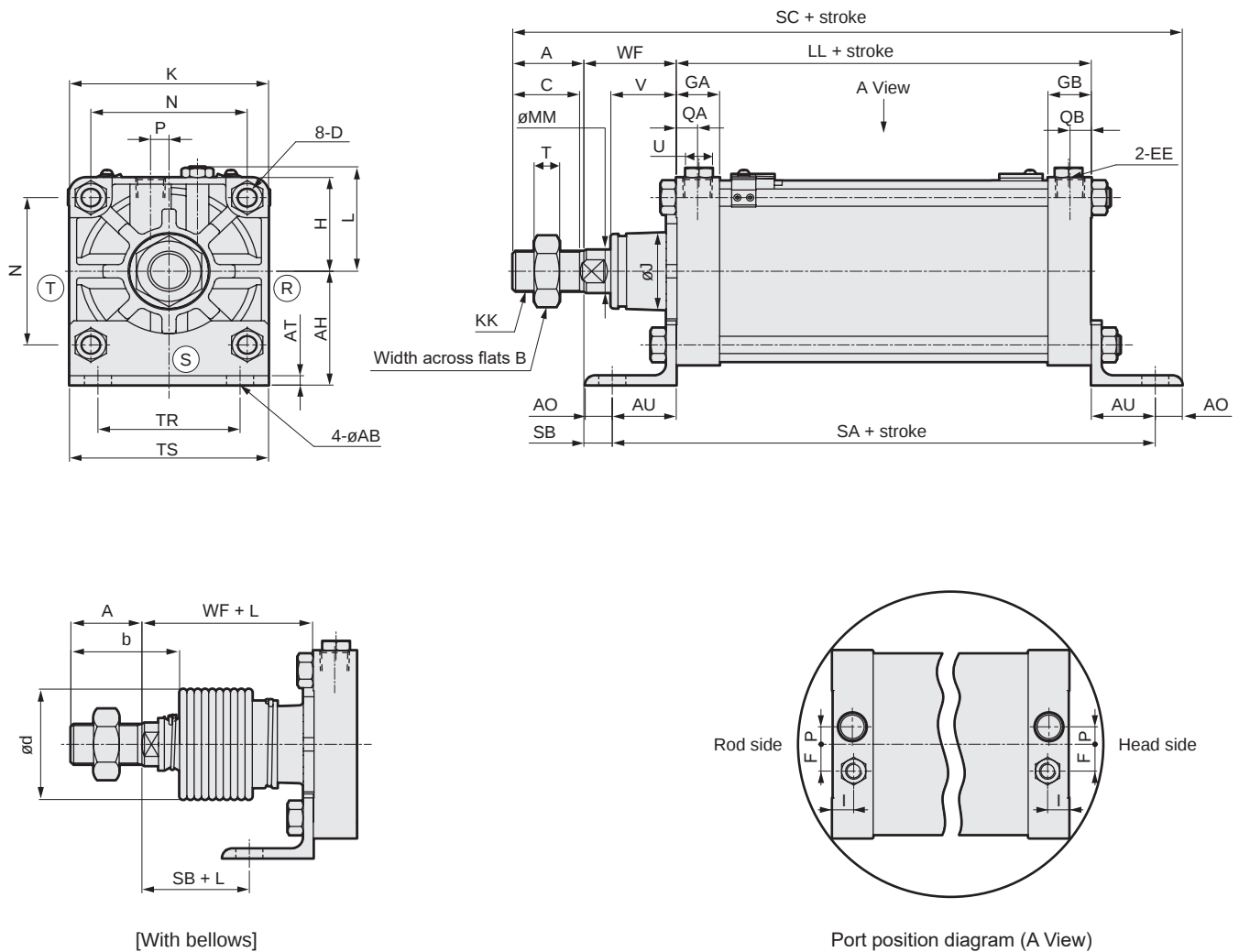
*2 : L dimensions below decimal point are rounded up.

*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	M14x1.5	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	13.5	32	15	27	110	13	15	15
ø140	50	46	47	M14x1.5	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	13.5	32	15	27	124	15	17	17
ø160	56	55	53	M16x1.5	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	15.5	40	15	36	142	15	17	17
ø180	63	60	60	M18x1.5	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	17.5	45	17	41	160	15	17	17
ø200	72	70	69	M20x1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	18.5	50	20	46	175	20	18	18
ø250	88	85	84	M24x1.5	Rc1	42.5	42.5	24	20.5	93	274	M56x2	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/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/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/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/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/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/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)



*1: Refer to page 630 for switch dimensions with switch.

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

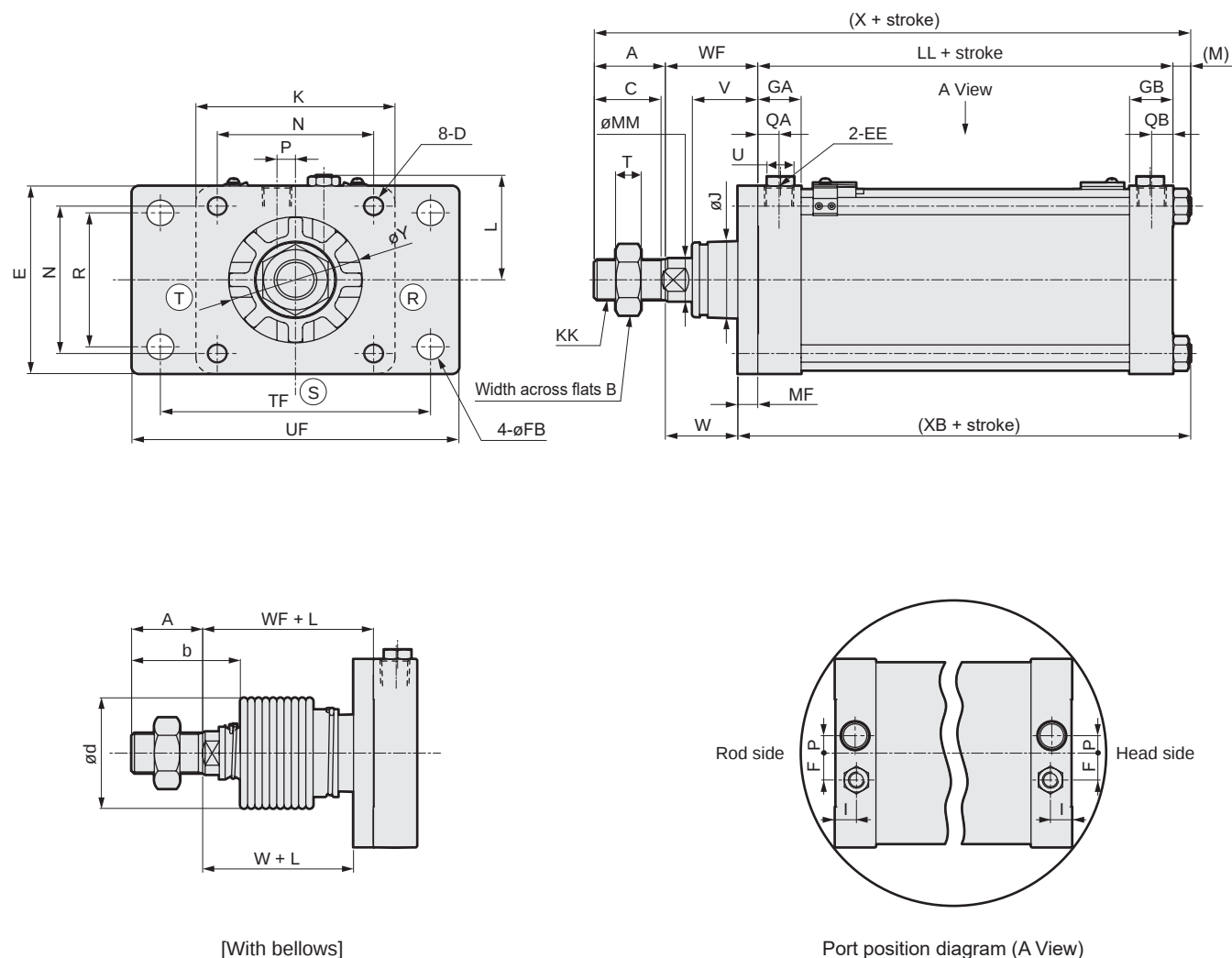
*3: L dimensions below decimal point are rounded up.

*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	M14x1.5	Rc1/2	30.5	30.5	20	16	70	57	140	M30x1.5	78 to 82	92
ø140	50	19	100	8	20	50	46	47	M14x1.5	Rc3/4	34.5	34.5	20	20	78.5	57	157	M30x1.5	86.5 to 91	103
ø160	56	19	106	10	20	53	55	53	M16x1.5	Rc3/4	34.5	34.5	24	20	88.5	62	177	M36x1.5	96.5 to 101	106
ø180	63	24	125	10	27	60	60	60	M18x1.5	Rc3/4	34.5	34.5	24	20	100	68	200	M40x1.5	108 to 112	110
ø200	72	24	132	12	27	62	70	69	M20x1.5	Rc3/4	37.5	37.5	24	20.5	110	75	220	M45x1.5	120.5 to 129	123
ø250	88	29	160	12	28	70	85	84	M24x1.5	Rc1	42.5	42.5	24	20.5	137	93	274	M56x2	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/4.55) + 11	
ø140	32	15	27	124	15	17	17	203	17	290	18	112	157	19	45.5	67	74	75	(Stroke/4.55) + 9	
ø160	40	16	36	142	15	17	17	212	18	306	21	118	177	19	48	71	82	80	(Stroke/5.15) + 9	
ø180	45	18	41	160	15	17	17	230	18	338	24	132	200	19	53	78	91	90	(Stroke/5.15) + 9	
ø200	50	20	46	175	20	18	18	247	26	372	27	150	220	24	60	88	102	95	(Stroke/5.30) + 9	
ø250	60	22	55	216	22	21	21	281	24	421	34	180	274	24	64	94	120	120	(Stroke/6.40) + 9	

Dimensions

● Rod side flange (FA)



*1: Refer to page 630 for switch dimensions with switch.

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

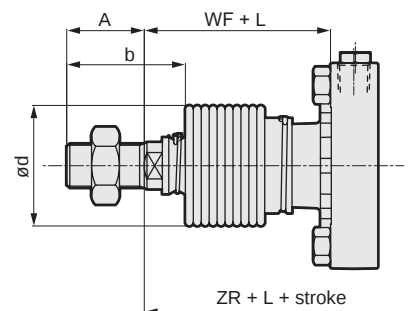
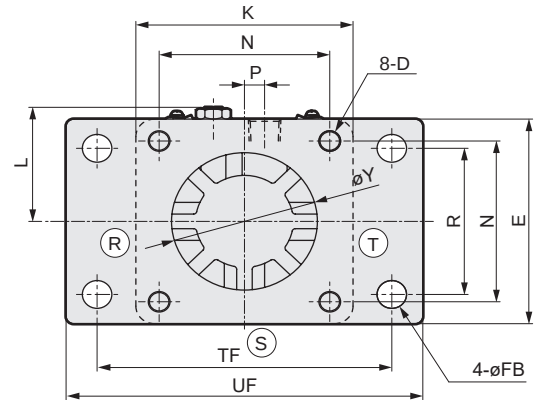
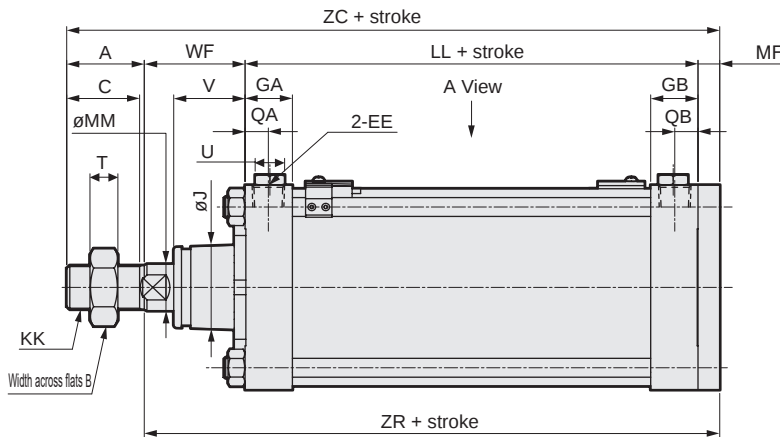
*3: L dimensions below decimal point are rounded up.

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

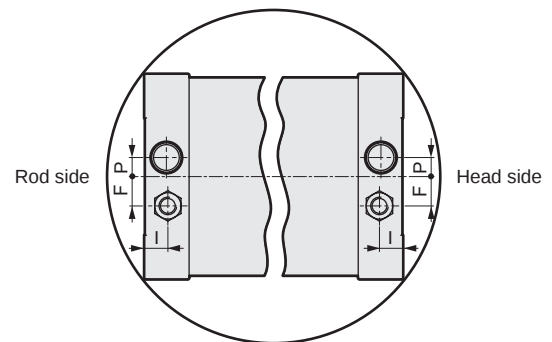
Code	Rod side flange (FA) Basic dimensions																		
Bore size (mm)	A	B	C	D	E	EE	FB	GA	GB	F	I	J	K	KK	L	LL	M	MF	MM
ø125	50	46	47	M14x1.5	140	Rc1/2	19	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	11	14	32
ø140	50	46	47	M14x1.5	157	Rc3/4	19	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	11	19	32
ø160	56	55	53	M16x1.5	177	Rc3/4	19	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	13	19	40
ø180	63	60	60	M18x1.5	200	Rc3/4	24	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	15	25	45
ø200	72	70	69	M20x1.5	220	Rc3/4	24	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	16	25	50
ø250	88	85	84	M24x1.5	274	Rc1	29	42.5	42.5	24	20.5	93	274	M56x2	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/4.55) + 11	
ø140	124	17	17	15	112	18	212	250	19	45.5	48	67	231	133	94	74	75	(Stroke/4.55) + 9	
ø160	142	17	17	15	118	21	236	280	19	48	52	71	246	138	107	82	80	(Stroke/5.15) + 9	
ø180	160	17	17	15	132	24	265	310	19	53	53	78	266	150	113	91	90	(Stroke/5.15) + 9	
ø200	175	18	18	20	150	27	280	330	24	60	63	88	299	164	131	102	95	(Stroke/5.30) + 9	
ø250	216	21	21	22	180	34	355	415	24	64	64	94	342	190	153	120	120	(Stroke/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: (R), (S) and (T) indicate the cushion needle position.

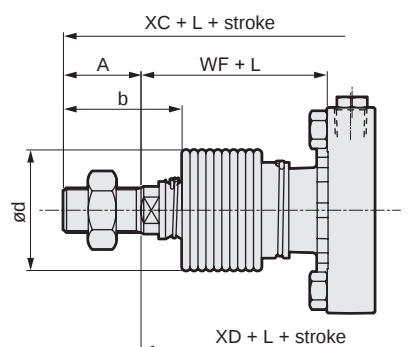
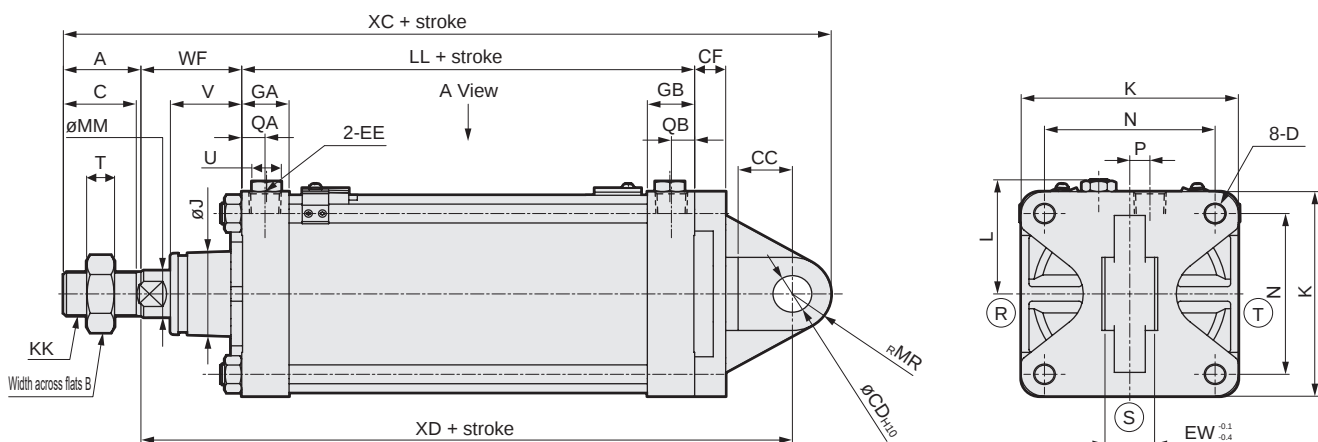
*3: L dimensions below decimal point are rounded up.

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

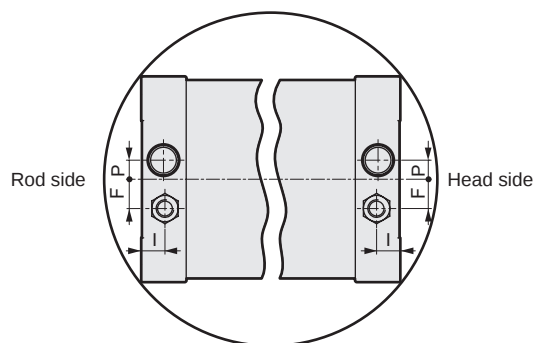
Code	Head side flange (FB) Basic dimensions																	
Bore size (mm)	A	B	C	D	E	EE	FB	GA	GB	F	I	J	K	KK	L	LL	MF	MM
ø125	50	46	47	M14x1.5	140	Rc1/2	19	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	14	32
ø140	50	46	47	M14x1.5	157	Rc3/4	19	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	19	32
ø160	56	55	53	M16x1.5	177	Rc3/4	19	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	19	40
ø180	63	60	60	M18x1.5	200	Rc3/4	24	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	25	45
ø200	72	70	69	M20x1.5	220	Rc3/4	24	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	25	50
ø250	88	85	84	M24x1.5	274	Rc1	29	42.5	42.5	24	20.5	93	274	M56x2	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/4.55) + 11	
ø140	124	17	17	15	112	18	212	19	250	45.5	67	94	239	189	74	75	(Stroke/4.55) + 9	
ø160	142	17	17	15	118	21	236	19	280	48	71	107	252	196	82	80	(Stroke/5.15) + 9	
ø180	160	17	17	15	132	24	265	19	310	53	78	113	276	213	91	90	(Stroke/5.15) + 9	
ø200	175	18	18	20	150	27	280	24	330	60	88	131	308	236	102	95	(Stroke/5.30) + 9	
ø250	216	21	21	22	180	34	355	24	415	64	94	153	353	265	120	120	(Stroke/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: (R), (S) and (T) indicate the cushion needle position.

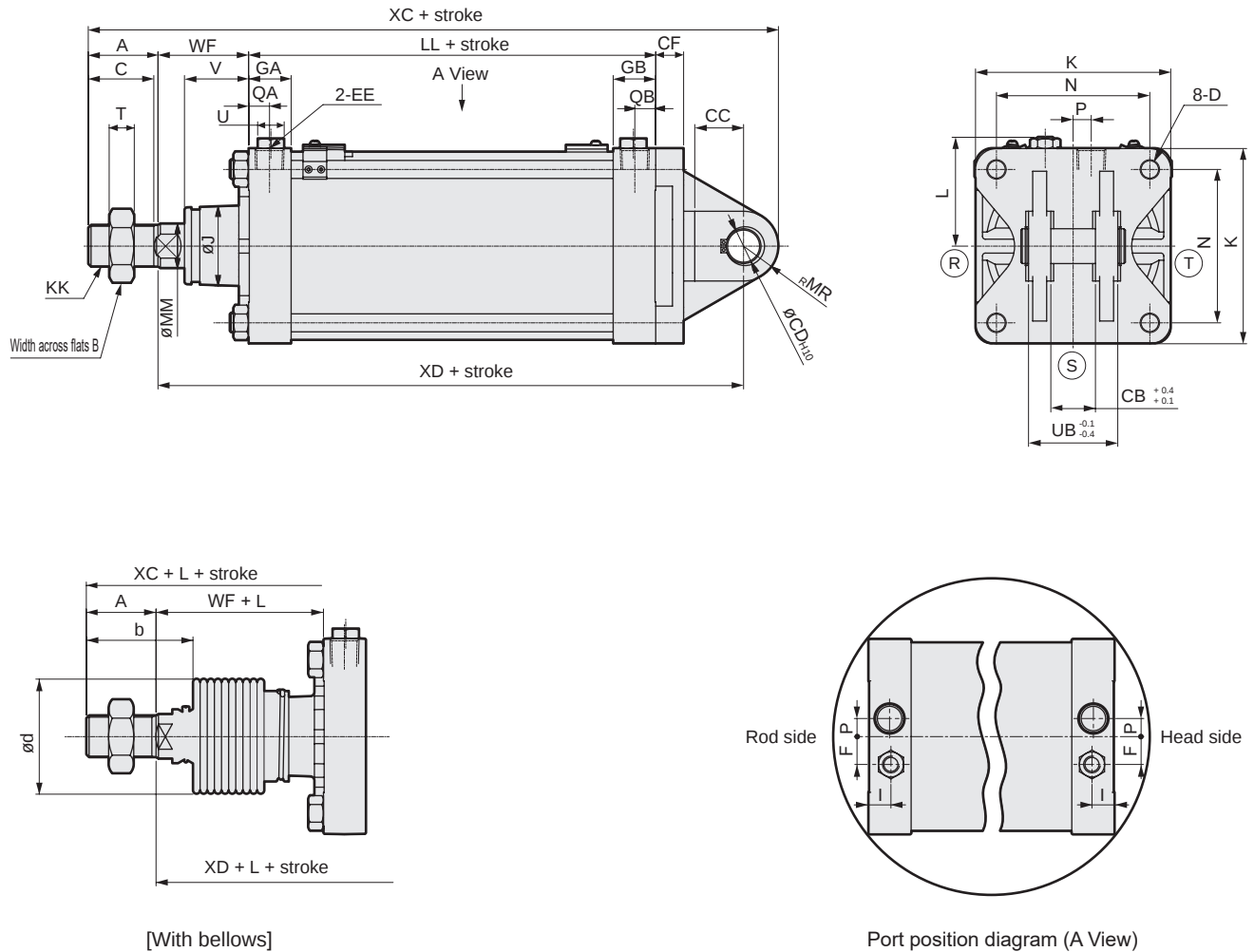
*3: L dimensions below decimal point are rounded up.

*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	M14x1.5	35	25	20	Rc1/2	32	30.5	30.5	20	16	57	140	M30x1.5	78 to 82
ø140	50	46	47	M14x1.5	40	28	22	Rc3/4	36	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91
ø160	56	55	53	M16x1.5	40	32	24	Rc3/4	40	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101
ø180	63	60	60	M18x1.5	55	40	25	Rc3/4	50	34.5	34.5	24	20	68	200	M40x1.5	108 to 112
ø200	72	70	69	M20x1.5	55	40	30	Rc3/4	50	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129
ø250	88	85	84	M24x1.5	65	50	35	Rc1	63	42.5	42.5	24	20.5	93	274	M56x2	147.5 to 156
Code	Basic dimensions													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/4.55) + 11	
ø140	103	32	28	124	15	17	17	18	19	45.5	67	323	245	74	75	(Stroke/4.55) + 9	
ø160	106	40	32	142	15	17	17	21	19	48	71	340	252	82	80	(Stroke/5.15) + 9	
ø180	110	45	40	160	15	17	17	24	19	53	78	381	278	91	90	(Stroke/5.15) + 9	
ø200	123	50	40	175	20	18	18	27	24	60	88	413	301	102	95	(Stroke/5.30) + 9	
ø250	141	60	50	216	22	21	21	34	24	64	94	483	345	120	120	(Stroke/6.40) + 9	

Dimensions

● Clevis bracket (CB)



*1: Refer to page 630 for switch dimensions with switch.

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

*3: L dimensions below decimal point are rounded up.

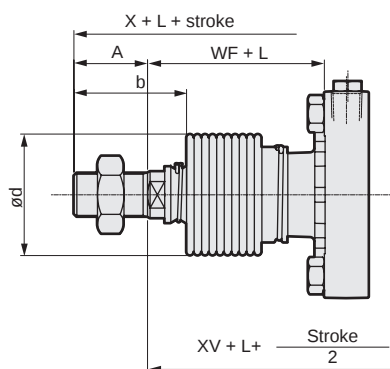
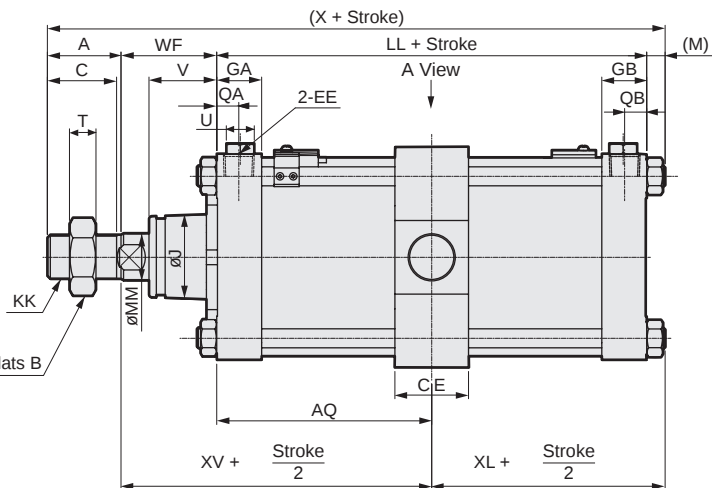
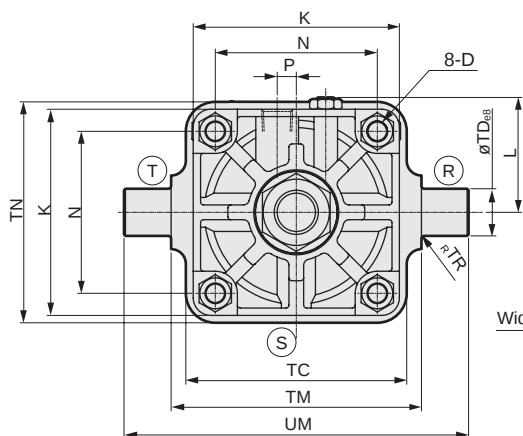
*4: For the dimensions of the accessories, refer to page 639.

*5: A pin and a snap ring are included.

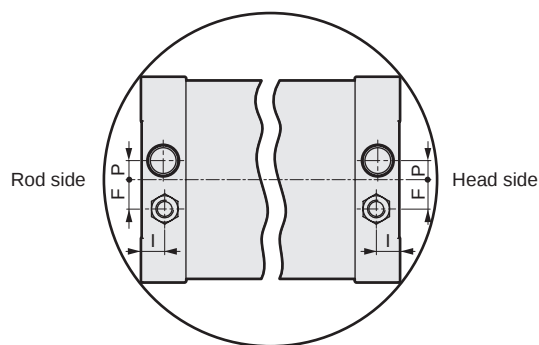
Code	Clevis bracket (CB) Basic dimensions																
Bore size (mm)	A	B	C	D	CB	CC	CD	CF	EE	GA	GB	F	I	J	K	KK	L
ø125	50	46	47	M14x1.5	32	35	25	20	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82
ø140	50	46	47	M14x1.5	36	40	28	22	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91
ø160	56	55	53	M16x1.5	40	40	32	24	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101
ø180	63	60	60	M18x1.5	50	55	40	25	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112
ø200	72	70	69	M20x1.5	50	55	40	30	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129
ø250	88	85	84	M24x1.5	63	65	50	35	Rc1	42.5	42.5	24	20.5	93	274	M56x2	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/4.55) + 11
ø140	103	32	28	124	15	17	17	18	19	72	45.5	67	323	245	74	75	(Stroke/4.55) + 9
ø160	106	40	32	142	15	17	17	21	19	80	48	71	340	252	82	80	(Stroke/5.15) + 9
ø180	110	45	40	160	15	17	17	24	19	100	53	78	381	278	91	90	(Stroke/5.15) + 9
ø200	123	50	40	175	20	18	18	27	24	100	60	88	413	301	102	95	(Stroke/5.30) + 9
ø250	141	60	50	216	22	21	21	34	24	126	64	94	483	345	120	120	(Stroke/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: (R), (S) and (T) indicate the cushion needle position.

*3: L dimensions below decimal point are rounded up.

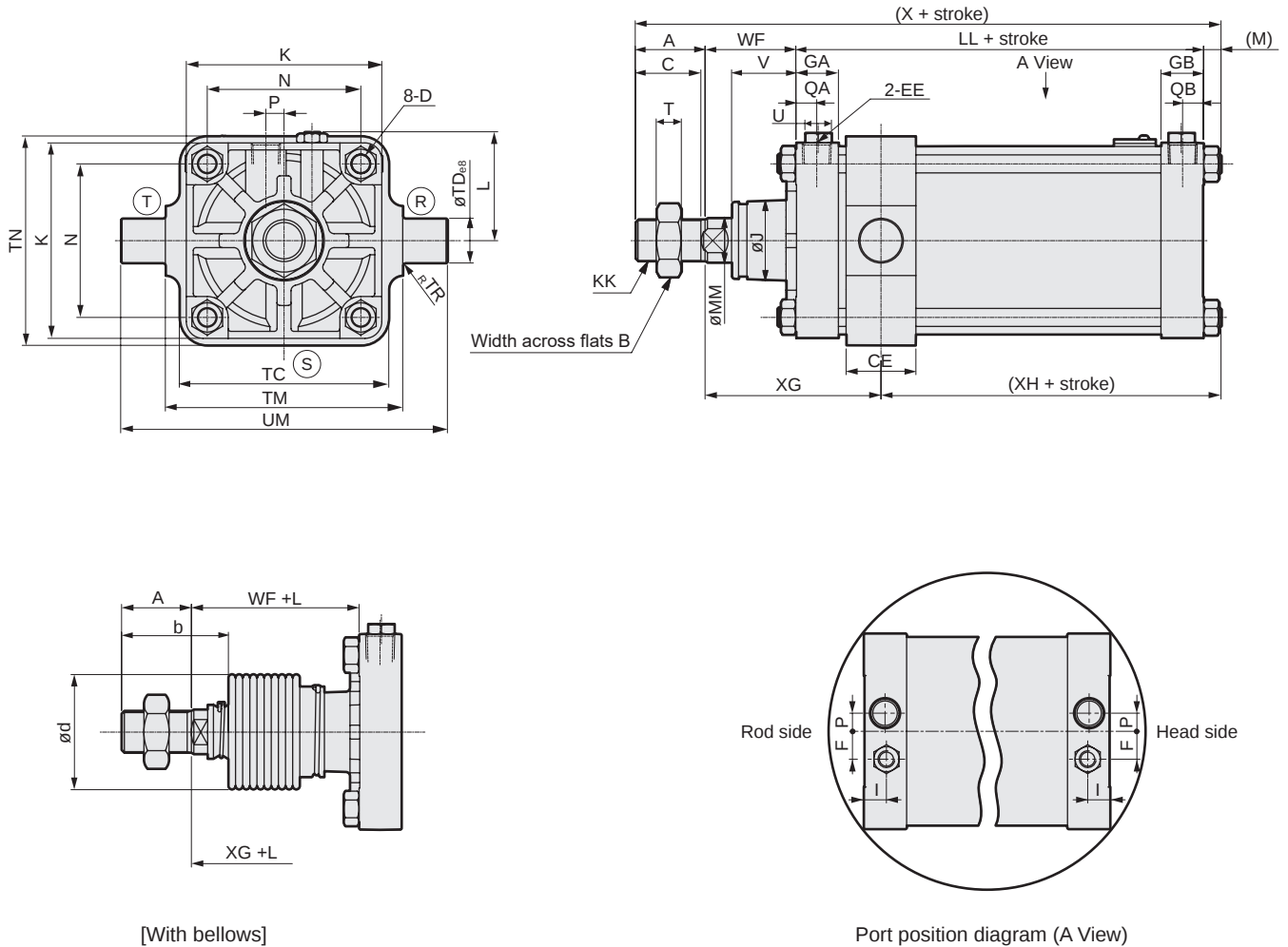
*4: For the dimensions of the accessories, refer to page 639.

*5: Refer to page 626 for the min. stroke.

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	M14x1.5	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	11	32		
ø140	50	51.5 + St/2	46	47	55	M14x1.5	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	11	32		
ø160	56	53 + St/2	55	53	60	M16x1.5	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	13	40		
ø180	63	55 + St/2	60	60	65	M18x1.5	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	15	45		
ø200	72	61.5 + St/2	70	69	70	M20x1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	16	50		
ø250	88	70.5 + St/2	85	84	80	M24x1.5	Rc1	42.5	42.5	24	20.5	93	274	M56x2	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/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/4.55) + 9
ø160	142	15	17	17	21	190	40	212	190	2	19	292	48	71	246	124	66	82	80	(Stroke/5.15) + 9
ø180	160	15	17	17	24	210	45	236	210	2	19	326	53	78	266	133	70	91	90	(Stroke/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/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/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: (R), (S) and (T) 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.

*6: Position cannot be detected at rod side stroke end.

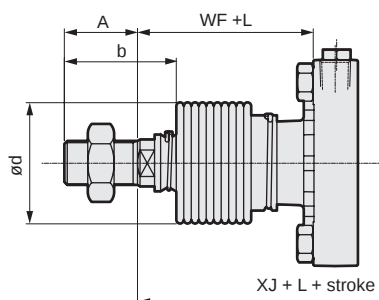
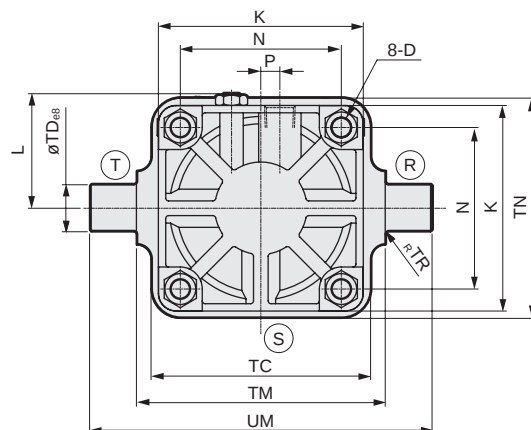
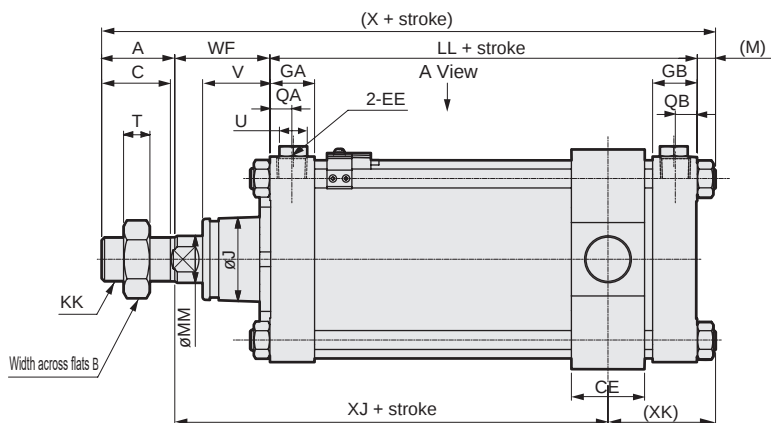
Code	Rod side trunnion (TA) Basic dimensions																
Bore size (mm)	A	B	C	CE	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM
ø125	50	46	47	50	M14x1.5	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	11	32
ø140	50	46	47	55	M14x1.5	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	11	32
ø160	56	55	53	60	M16x1.5	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	13	40
ø180	63	60	60	65	M18x1.5	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	15	45
ø200	72	70	69	70	M20x1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	16	50
ø250	88	85	84	80	M24x1.5	Rc1	42.5	42.5	24	20.5	93	274	M56x2	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
ø125	110	13	15	15	18	150	32	170	150	2	19	234	45.5	65	218	126	42
ø140	124	15	17	17	18	154	36	190	170	2	19	262	45.5	67	231	134.5	46.5
ø160	142	15	17	17	21	190	40	212	190	2	19	292	48	71	246	141	49
ø180	160	15	17	17	24	210	45	236	210	2	19	326	53	78	266	150.5	52.5
ø200	175	20	18	18	27	242	45	265	242	2	24	355	60	88	299	168	59
ø250	216	22	21	21	34	300	56	335	300	2	24	447	64	94	342	184	70

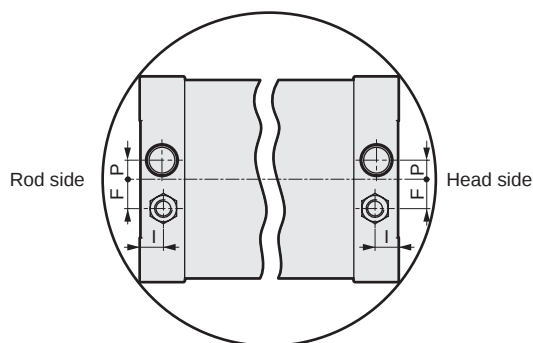
With bellows		
b	d	L
74	75	(Stroke/4.55) + 11
74	75	(Stroke/4.55) + 9
82	80	(Stroke/5.15) + 9
91	90	(Stroke/5.15) + 9
102	95	(Stroke/5.30) + 9
120	120	(Stroke/6.40) + 9

Dimensions

● Head side trunnion (TB)



[With bellows]



Port position diagram (A View)

*1: Refer to page 630 for switch dimensions with switch.

*2: (R), (S) and (T) 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.

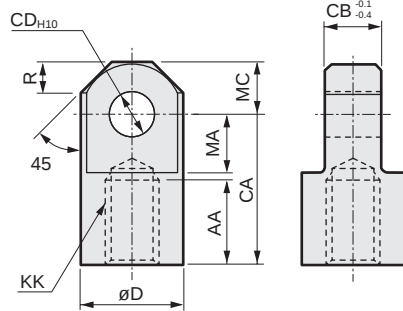
*6: Position cannot be detected at head side stroke end.

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	M14x1.5	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	11	32
ø140	50	46	47	55	M14x1.5	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	11	32
ø160	56	55	53	60	M16x1.5	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	13	40
ø180	63	60	60	65	M18x1.5	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	15	45
ø200	72	70	69	70	M20x1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	16	50
ø250	88	85	84	80	M24x1.5	Rc1	42.5	42.5	24	20.5	93	274	M56x2	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/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/4.55) + 9
ø160	142	15	17	17	21	190	40	212	190	2	19	292	48	71	246	107	83	82	80	(Stroke/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/5.15) + 9
ø200	175	20	18	18	27	242	45	265	242	2	24	355	60	88	299	131	96	102	95	(Stroke/5.30) + 9
ø250	216	22	21	21	34	300	56	335	300	2	24	447	64	94	342	145	109	120	120	(Stroke/6.40) + 9

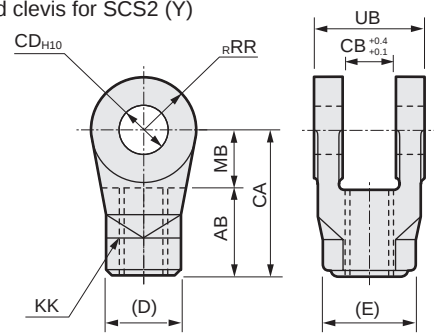
SCS2 Series common accessory dimensions

● Rod eye for SCS2 (I)

Material: Steel
Painted

Code Model No.	AA	CA	CB	CD	D	KK	MA	MC	R	Weight (kg)
SCS2-125-I	50	85	32	25	55	M30x1.5	32	27.5	15.5	1.25
SCS2-140-I	50	90	36	28	60	M30x1.5	35	30	18	1.65
SCS2-160-I	60	105	40	32	70	M36x1.5	40	35	21	2.55
SCS2-180-I	65	115	50	40	85	M40x1.5	47.5	42.5	29	4.20
SCS2-200-I	75	125	50	40	85	M45x1.5	47.5	42.5	29	4.35
SCS2-250-I	88	150	63	50	105	M56x2	57.5	52.5	36.5	8.05

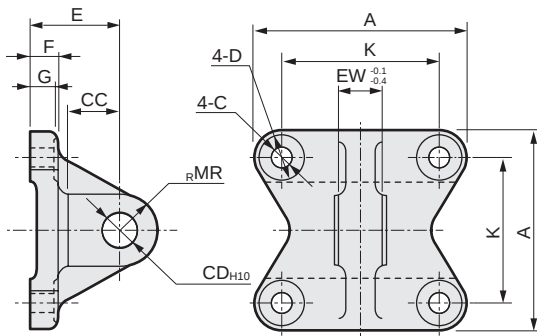
● Rod clevis for SCS2 (Y)

Material: Cast iron
Painted

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	M30x1.5	35	27.5	64	1.30
SCS2-140-Y	50	90	36	28	46	53.1	M30x1.5	40	30	72	1.65
SCS2-160-Y	60	105	40	32	55	63.5	M36x1.5	45	35	80	2.55
SCS2-180-Y	65	115	50	40	60	69.3	M40x1.5	50	42.5	100	4.40
SCS2-200-Y	75	125	50	40	70	80.8	M45x1.5	50	42.5	100	4.85
SCS2-250-Y	88	150	63	50	85	98.1	M56x2	62	52.5	126	7.05

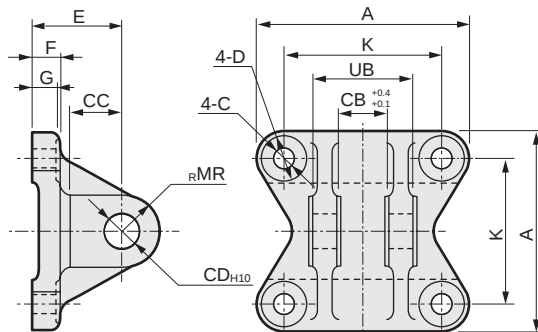
Note: A pin and a snap ring are included.

● Eye bracket for SCS2 (B1)

Material: Cast iron
Painted

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

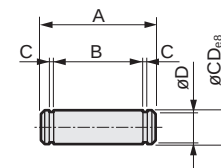
● Clevis bracket for SCS2 (B2)

Material: Cast iron
Painted

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.

● 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
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.

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

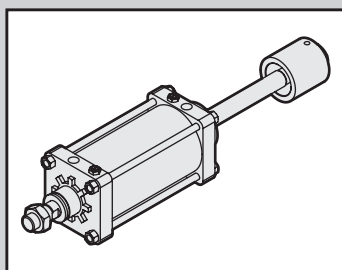
ShkAbs

FJ

FK

Spd
Contr

Ending



Large bore size cylinder
Double acting/push side stroke adjustable

SCS2-P Series

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

JIS symbol



* 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		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance		$^{+1.0}_0$ (to 300), $^{+1.4}_0$ (to 1000), $^{+1.8}_0$ (to 1200)					
Working piston speed		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		25,50,75,100					
Lubrication		Required (use turbine oil class 1 ISO VG32 for lubrication)					
Allowable absorbed energy	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

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

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

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

Cylinder weight

(Unit: kg)

Item/mounting	Product weight when stroke (S) = 0 mm and stroke (S) adjustment = 25 mm							Additional weight per S = 100 mm
Bore size (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 12.92 kg
- Additional weight for S = 300 mm stroke $1.54 \times \frac{300}{100} = 4.62$ kg
- Weight for 25 mm stroke adjustment 0.51 kg
- Product weight $12.92 + 4.62 + 0.51 = 18.05$ kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	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

No switch (without magnet for switch)

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

A Mounting
*1

B Bore size

C Port thread

D Cushion

E Stroke

F Adjustable stroke range

G Option
*2

*3

H Accessory
*4

⚠ 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.]

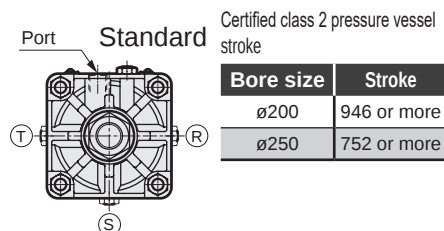
SCS2-P-LB-125B-50-25-JY

Model: Large bore size cylinder stroke adjustable

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

Cushion needle position

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



Code	Description		
A 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		
B Bore size (mm)			
125	ø125		
140	ø140		
160	ø160		
180	ø180		
200	ø200		
250	ø250		
C Port thread			
Blank	Rc thread		
N	NPT thread (made-to-order product)		
G	G thread (made-to-order product)		
D Cushion			
B	Both sides cushioned		
R	Rod side cushioned		
H	Head side cushioned		
N	Without cushion		
E Stroke (mm)			
Bore size	Stroke	Custom stroke	
ø125 to ø160	25 to 800	In 1 mm increments	
ø180	25 to 900		
ø200	25 to 1000		
ø250	25 to 1200		
F Adjustable stroke range (mm)			
25	25		
50	50		
75	75		
100	100		
G Option			
C2	With cushion section check valve		
J	Bellows	Max. ambient temp.	Instantaneous ambient temp.
L	Bellows	100°C	200°C
		250°C	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		
P6	Copper and PTFE free (made-to-order product)		
H Accessory			
I	Rod eye		
Y	Rod clevis (pin and snap ring included)		

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/

COVP/IN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/

MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

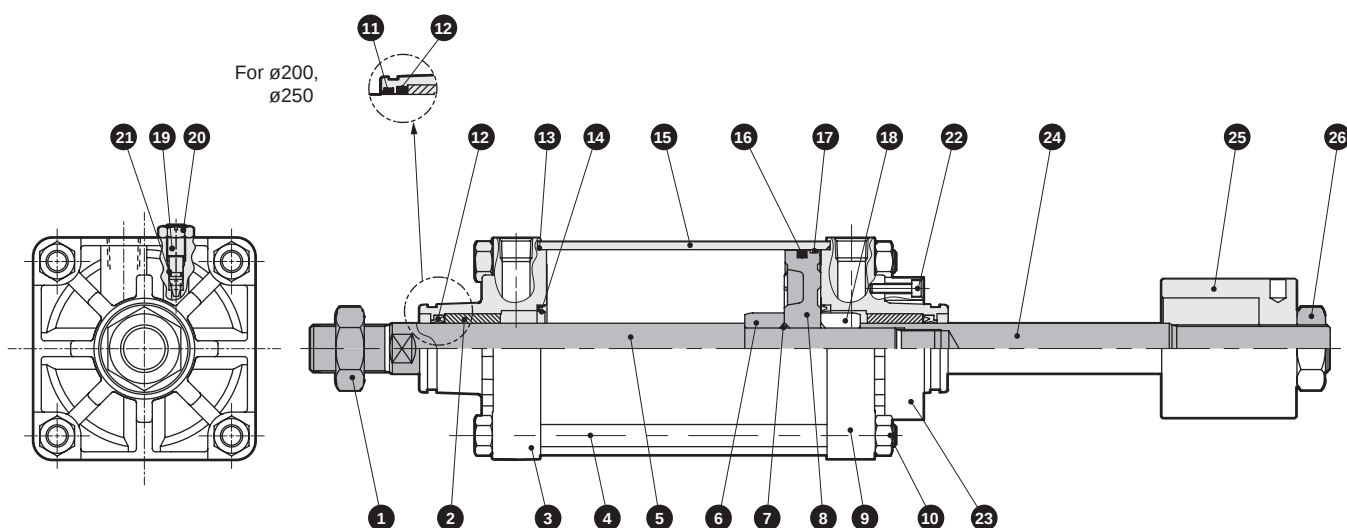
Spd

Contr

Ending

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/
COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/
MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd
Contr
Ending

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) Steel (ø200, 250)	Zinc chromate
7	Piston gasket	Nitrile rubber		20	Hexagon nut	Steel	Zinc chromate
8	Piston	Aluminum alloy casting		21	Needle gasket	Nitrile rubber	
9	Head cover	Aluminum alloy casting	Chromate	22	Hexagon socket head cap screw	Steel	Black finish
10	Hexagon nut	Steel	Zinc chromate	23	Stopper ring	Steel	Zinc phosphate treatment
11	Dust wiper	Nitrile rubber	ø200 and ø250 only	24	Piston rod B	Steel	Industrial chrome plating
12	Rod packing	Nitrile rubber		25	Stopper	Steel	Zinc phosphate treatment
13	Cylinder gasket	Nitrile rubber		26	Hexagon nut	Steel	Zinc chromate

Repair parts list

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

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

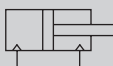


Large bore size cylinder
Double acting/heat resistant

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		5 (41°F) to 120 (248°F) (*1)					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance		^{+1.0} ₀ (to 300), ^{+1.4} ₀ (to 1000), ^{+1.8} ₀ (to 1200)					
Working piston speed		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	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
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

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

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

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

Cylinder weight

(Unit: kg)

Item/mounting	Product weight when stroke (S) = 0 mm						Additional weight per S = 100 mm
	Bore size (mm)	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA/TB/TC)
SRL3	ø125	7.22	8.72	10.52	10.22	10.32	10.62
	ø140	9.35	11.35	14.75	13.15	13.35	12.55
SRG3	ø160	12.35	15.45	19.25	17.35	17.65	18.75
	ø180	16.75	21.25	28.75	24.15	24.65	24.85
SRM3	ø200	22.78	28.48	36.48	32.28	32.48	34.58
	ø250	40.51	48.91	66.41	64.51	59.01	69.21

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

- Product weight for S = 0 mm stroke 8.72 kg
- Additional weight for S = 300 mm stroke $1.54 \times \frac{300}{100} = 4.62$ kg
- Product weight $8.72 + 4.62 = 13.34$ kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	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

A Mounting
*1

B Bore size

C Port thread

D Cushion

E Stroke

F Option
*2

G Accessory
*4

⚠ 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-T-LB-125 B-50-M-Y

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

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

Code	Description
A 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

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

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

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

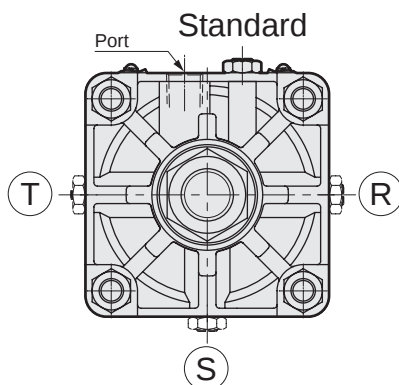
E Stroke (mm)		
Bore size	Stroke	Custom stroke
ø125 to ø160	1 to 800	In 1 mm increments
ø180	1 to 900	
ø200	1 to 1000	
ø250	1 to 1200	

F 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)
R	Cushion needle position R
S	Cushion needle position S
T	Cushion needle position T

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

Cushion needle position

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

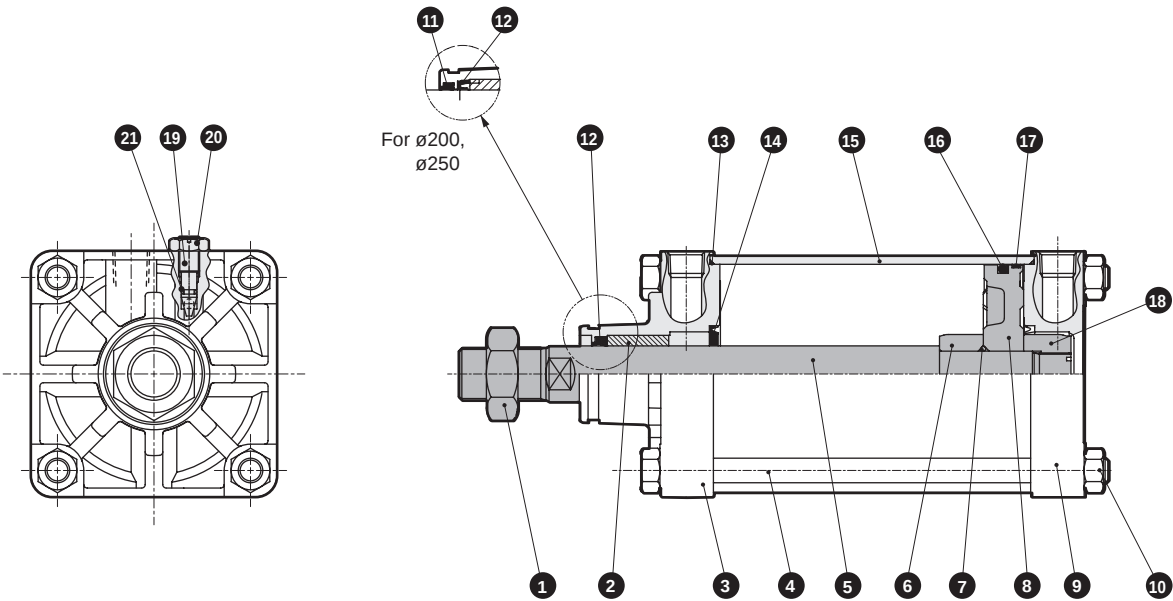


Certified class 2 pressure vessel stroke

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

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/
COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/
MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd
Contr
Ending

Internal structure and parts list



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

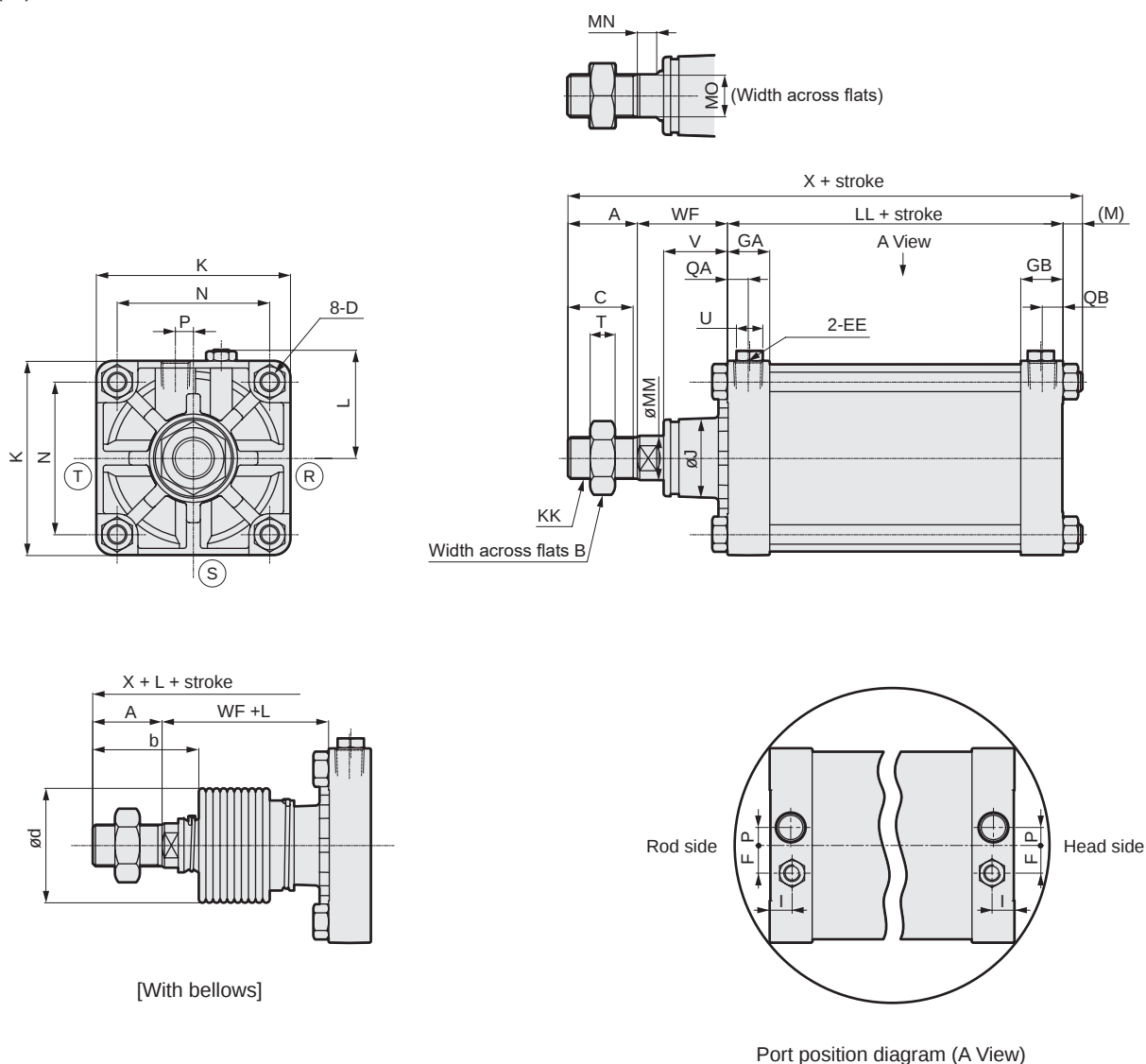
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate	13	Cylinder gasket	Fluoro rubber	
2	Bush	Iron/copper oil-impreg bearing		14	Cushion packing	Fluoro rubber/steel	
3	Rod cover	Aluminum alloy casting	Chromate	15	Cylinder tube	Aluminum alloy	Hard alumite
4	Tie rod	Steel	Zinc chromate	16	Piston packing	Fluoro rubber	
5	Piston rod	Steel	Industrial chrome plating	17	Wear ring	Fiber-reinforced phenolic resin	
6	Cushion ring A	Steel	Zinc chromate	18	Cushion ring B	Steel	Zinc chromate
7	Piston gasket	Fluoro rubber		19	Cushion needle	Copper alloy (ø125 to ø180) Steel (ø200, 250)	Zinc chromate
8	Piston	Aluminum alloy casting		20	Hexagon nut	Steel	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	21	Needle gasket	Fluoro rubber	
10	Hexagon nut	Steel	Zinc chromate				
11	Dust wiper	Fluoro rubber	ø200 and ø250 only				
12	Rod packing	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: (R), (S) and (T) 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	M14x1.5	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	13.5	32	15
ø140	50	46	47	M14x1.5	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	13.5	32	15
ø160	56	55	53	M16x1.5	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	15.5	40	15
ø180	63	60	60	M18x1.5	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	17.5	45	17
ø200	72	70	69	M20x1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	18.5	50	20
ø250	88	85	84	M24x1.5	Rc1	42.5	42.5	24	20.5	93	274	M56x2	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/4.55) + 11				
ø140	27	124	15	17	17	18	19	45.5	67	233.5	74	75	(Stroke/4.55) + 9				
ø160	36	142	15	17	17	21	19	48	71	248.5	82	80	(Stroke/5.15) + 9				
ø180	41	160	15	17	17	24	19	53	78	268.5	91	90	(Stroke/5.15) + 9				
ø200	46	175	20	18	18	27	24	60	88	301.5	102	95	(Stroke/5.30) + 9				
ø250	55	216	22	21	21	34	24	64	94	344.5	120	120	(Stroke/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.

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

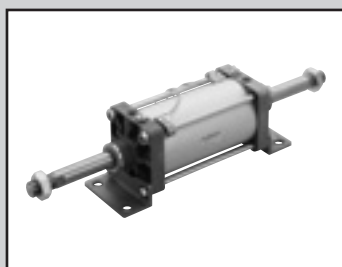
ShkAbs

FJ

FK

Spd
Contr

Ending



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

SCS2-D Series

● Bore size: $\varnothing 125/\varnothing 140/\varnothing 160/\varnothing 180/\varnothing 200/\varnothing 250$

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		-5 (23°F) to 60 (140°F) (no freezing)						
Port size		Rc1/2	Rc3/4				Rc1	
Stroke tolerance		^{+1.0} ₀ (to 300), ^{+1.4} ₀ (to 1000), ^{+1.8} ₀ (to 1200)						
Working piston speed		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	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

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

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

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

Min. stroke with switch

Item		Stroke when mounted on the same surface	Stroke of intermediate supporting hole trunnion	Stroke of rod side supporting hole trunnion	Stroke of head side supporting hole trunnion
Switch	Sketch				
	Bore size			Position cannot be detected at the rod side stroke end.	Position cannot be detected at the head side stroke end.
Reed switch (T*)	$\varnothing 125$	20 or more	120 or more	70 or more	
	$\varnothing 140$		125 or more	75 or more	
	$\varnothing 160$		130 or more	80 or more	
	$\varnothing 180$		135 or more	85 or more	
	$\varnothing 200$		140 or more	90 or more	
	$\varnothing 250$		150 or more	100 or more	

Switch specifications

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

Item	2-wire proximity				3-wire proximity				2-wire reed						2-wire proximity	
	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	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)		No 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	Product weight when stroke (S) = 0 mm						Switch weight		Additional weight per S = 100 mm
Bore size (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 10.52 kg ● Additional weight for S = 300 mm stroke $2.17 \times \frac{300}{100} = 6.51$ kg ● Weight of 2 switches (TOH-D) $0.018 \times 2 = 0.036$ kg ● Product weight with 2 switch brackets $0.028 \times 2 = 0.056$ kg ● Product weight $10.52 + 6.51 + 0.036 + 0.056 = 17.122$ kg									

Theoretical thrust table

(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	1.15x10 ³	1.72x10 ³	2.29x10 ³	3.44x10 ³	4.59x10 ³	5.73x10 ³	6.88x10 ³	8.03x10 ³	9.17x10 ³	1.03x10 ⁴	1.15x10 ⁴
ø140	Push/Pull	1.46x10 ³	2.19x10 ³	2.92x10 ³	4.38x10 ³	5.84x10 ³	7.29x10 ³	8.75x10 ³	1.02x10 ⁴	1.17x10 ⁴	1.31x10 ⁴	1.46x10 ⁴
ø160	Push/Pull	1.88x10 ³	2.83x10 ³	3.77x10 ³	5.65x10 ³	7.54x10 ³	9.42x10 ³	1.13x10 ⁴	1.32x10 ⁴	1.51x10 ⁴	1.70x10 ⁴	1.88x10 ⁴
ø180	Push/Pull	2.39x10 ³	3.58x10 ³	4.77x10 ³	7.16x10 ³	9.54x10 ³	1.19x10 ⁴	1.43x10 ⁴	1.67x10 ⁴	1.91x10 ⁴	2.15x10 ⁴	2.39x10 ⁴
ø200	Push/Pull	2.95x10 ³	4.42x10 ³	5.89x10 ³	8.84x10 ³	1.18x10 ⁴	1.47x10 ⁴	1.77x10 ⁴	2.06x10 ⁴	2.36x10 ⁴	2.65x10 ⁴	2.95x10 ⁴
ø250	Push/Pull	4.63x10 ³	6.94x10 ³	9.25x10 ³	1.39x10 ⁴	1.85x10 ⁴	2.31x10 ⁴	2.78x10 ⁴	3.24x10 ⁴	3.70x10 ⁴	4.16x10 ⁴	4.63x10 ⁴

SCS2-D Series

How to order

No 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

A Mounting
*1

B Bore size

C Port thread

D Cushion

E Stroke *2

F Switch model No.

G Switch quantity
*3

H Option
*4

I Accessory
*5

⚠ 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 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

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

Code	Description
A 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

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

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

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

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

F Switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC DC	Indicator	Lead Line	
T0H*	T0V*	Reed	● ●	1-color LED	2-wire	
T5H*	T5V*		● ●	No indicator lamp		
T8H*	T8V*		● ●	1-color LED		
T1H*	T1V*	Proximity	●	1-color LED	2-wire	
T2H*	T2V*		●			
T3H*	T3V*		●	1-color LED (PNP output)	3-wire	
T3PH*	T3PV*		●			
T2WH*	T2WV*		●	2-color LED	2-wire	
T2YH*	T2YV*		●			
T3WH*	T3WV*		●		3-wire	
T3YH*	T3YV*		●	2-color LED	2-wire	
T2YD*	-		●			
T2YDT*	-		●	AC magnetic field		
T2JH*	T2JV*		●	1-color LED off-delay	2-wire	

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

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

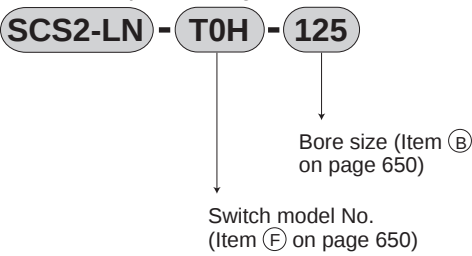
H Option	
C2	With cushion section check valve
J	Bellows : Max. ambient temp. : 100°C Instantaneous ambient temp. : 200°C
L	Bellows : 250°C : 400°C
M	Piston rod material (stainless steel)

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

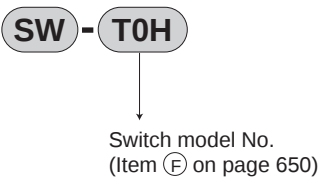
I Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring included)

How to order switch

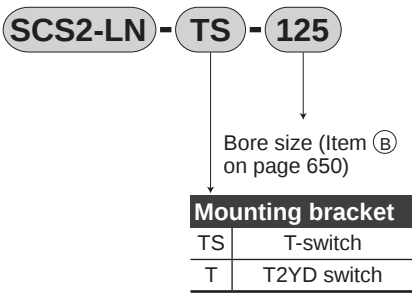
● Switch body + mounting bracket set



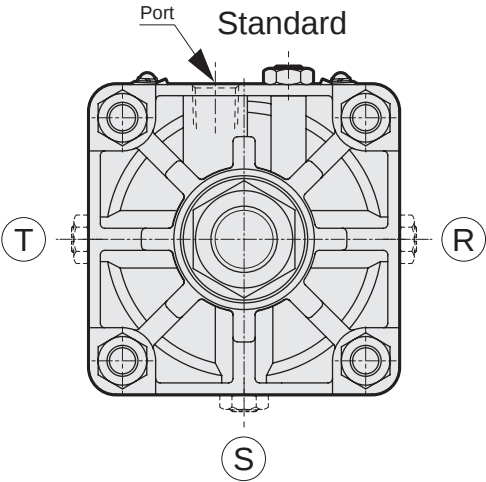
● Switch body only



● Mounting bracket set



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

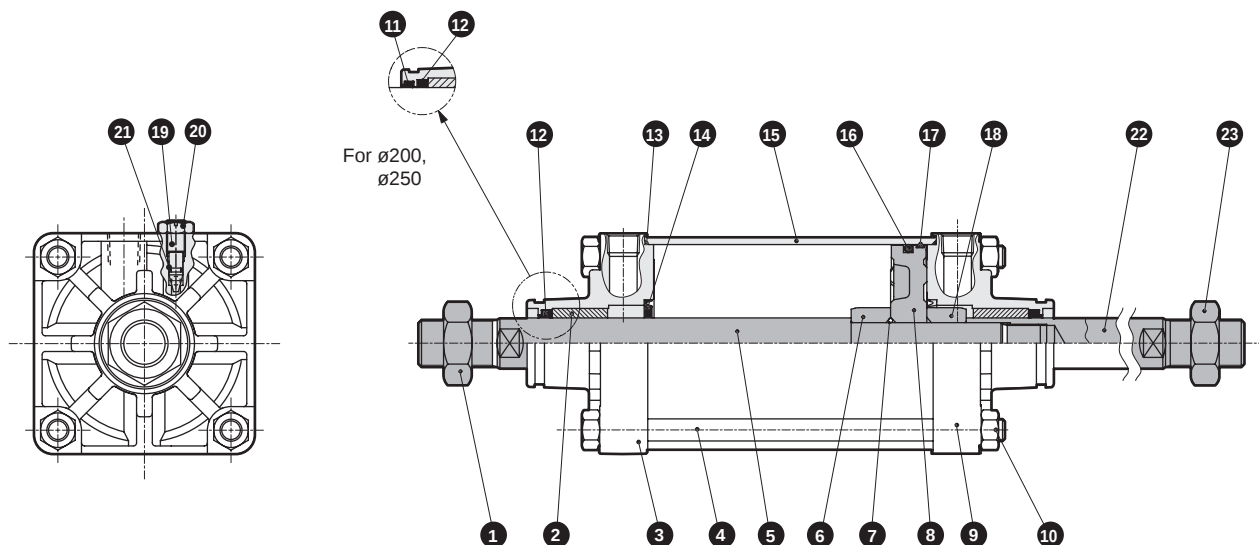


Certified class 2 pressure vessel stroke

Bore size	Stroke
ø200	946 or more
ø250	752 or more

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVP/IN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Internal structure and parts list



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

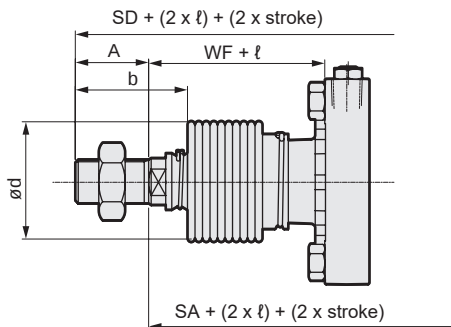
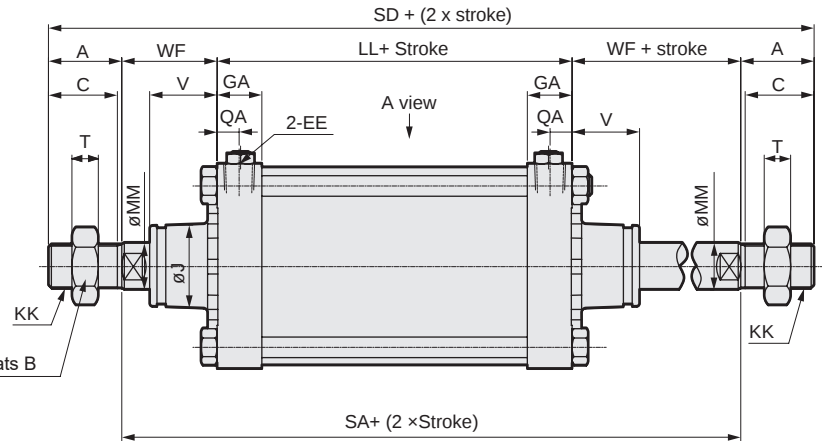
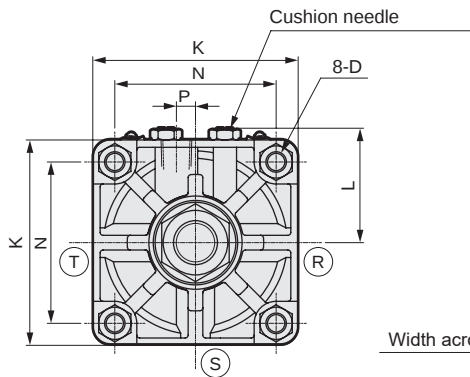
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon nut	Steel	Zinc chromate	13	Cylinder gasket	Nitrile rubber	
2	Bush	Iron-copper oil-impregnated bearing alloy		14	Cushion packing	Nitrile rubber/steel	
3	Rod cover	Aluminum alloy casting	Chromate	15	Cylinder tube	Aluminum alloy	Hard 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) Steel (ø200, 250)	Zinc chromate
8	Piston	Aluminum alloy casting		20	Hexagon nut	Steel	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	21	Needle gasket	Nitrile rubber	
10	Hexagon nut	Steel	Zinc chromate	22	Piston rod B	Steel	Industrial chrome plating
11	Dust wiper	Nitrile rubber	ø200 and ø250 only	23	Hexagon nut	Steel	Zinc chromate
12	Rod packing	Nitrile rubber					

Repair parts list

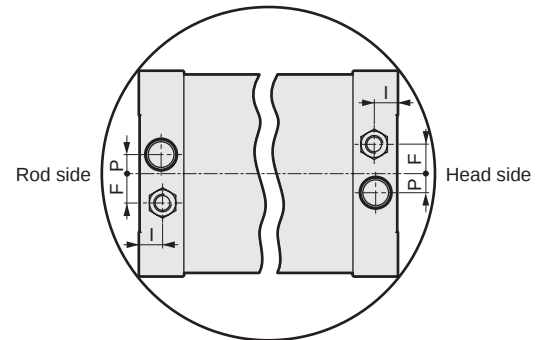
Bore size (mm)	Kit No.	Repair parts No.
ø125	SCS2-D-125K	12 13 14 16 17 21
ø140	SCS2-D-140K	
ø160	SCS2-D-160K	
ø180	SCS2-D-180K	
ø200	SCS2-D-200K	11 12 13 14 16 17 21
ø250	SCS2-D-250K	

Dimensions

● Basic (00)



[With bellows]



Port position diagram (A view)

*1: ⑧, ⑤ and ① 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	M 14 x 1.5	Rc1/2	30.5	20	16	57	140	M 30 x 1.5	78 to 82	92
ø140	50	46	47	M 14 x 1.5	Rc3/4	34.5	20	20	57	157	M 30 x 1.5	86.5 to 91	103
ø160	56	55	53	M 16 x 1.5	Rc3/4	34.5	24	20	62	177	M 36 x 1.5	96.5 to 101	106
ø180	63	60	60	M 18 x 1.5	Rc3/4	34.5	24	20	68	200	M 40 x 1.5	108 to 112	110
ø200	72	70	69	M 20 x 1.5	Rc3/4	37.5	24	20.5	75	220	M 45 x 1.5	120.5 to 129	123
ø250	88	85	84	M 24 x 1.5	Rc1	42.5	24	20.5	93	274	M 56 x 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/4.55) + 11
ø140	32	124	15	17	237	337	18	45.5	67		74	75	(stroke/4.55) + 9
ø160	40	142	15	17	248	360	21	48	71		82	80	(stroke/5.15) + 9
ø180	45	160	15	17	266	392	24	53	78		91	90	(stroke/5.15) + 9
ø200	50	175	20	18	299	443	27	60	88		102	95	(stroke/5.30) + 9
ø250	60	216	22	21	329	505	34	64	94		120	120	(stroke/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.

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

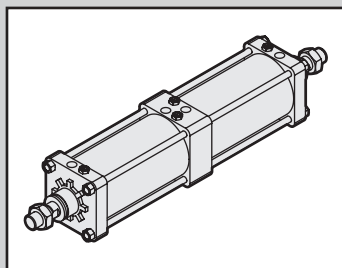
ShkAbs

FJ

FK

Spd
Contr

Ending



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	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

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

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

Cylinder weight

(Unit: kg)

Item/mounting	Product weight when stroke (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)	
Bore size (mm)							
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 15.94 kg
- Additional weight for S = 300 mm stroke..... $2 \times 1.54 \times \frac{300}{100} = 9.24$ kg
- Product weight 15.94 + 9.24 = 25.18 kg

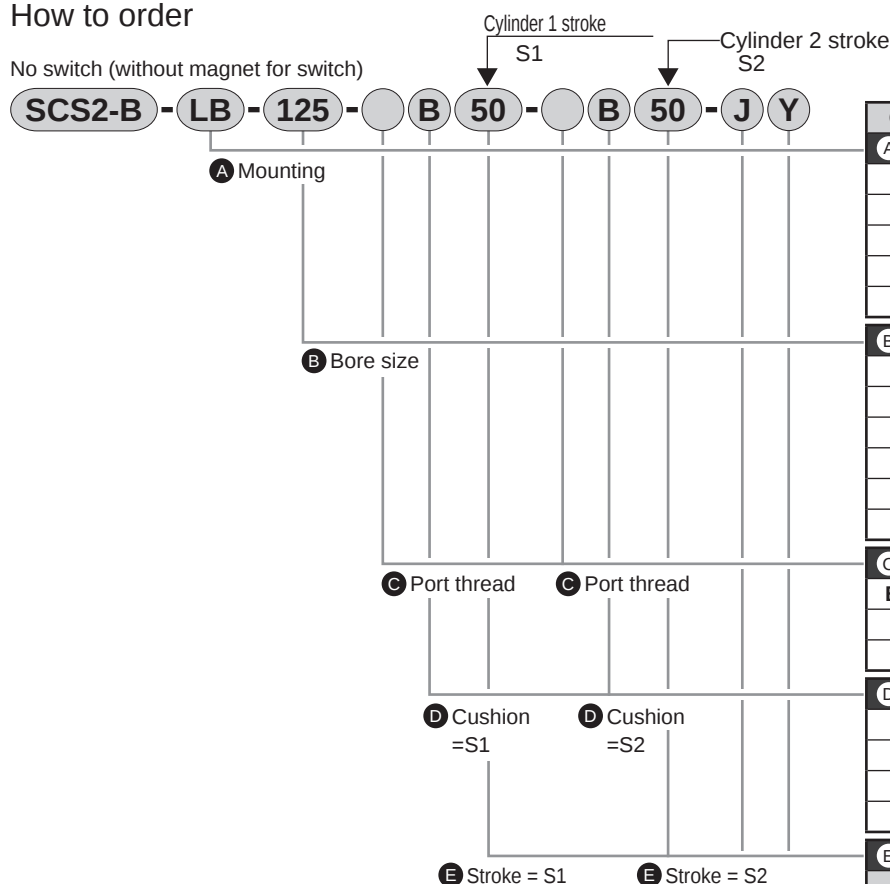
Theoretical thrust table

(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	6.14x10 ²	1.23x10 ³	1.84x10 ³	2.45x10 ³	3.68x10 ³	4.91x10 ³	6.14x10 ³	7.36x10 ³	8.59x10 ³	9.82x10 ³	1.10x10 ⁴	1.23x10 ⁴
	Pull	5.73x10 ²	1.15x10 ³	1.72x10 ³	2.29x10 ³	3.44x10 ³	4.59x10 ³	5.73x10 ³	6.88x10 ³	8.03x10 ³	9.17x10 ³	1.03x10 ⁴	1.15x10 ⁴
ø140	Push	7.70x10 ²	1.54x10 ³	2.31x10 ³	3.08x10 ³	4.62x10 ³	6.16x10 ³	7.70x10 ³	9.24x10 ³	1.08x10 ⁴	1.23x10 ⁴	1.39x10 ⁴	1.54x10 ⁴
	Pull	7.29x10 ²	1.46x10 ³	2.19x10 ³	2.92x10 ³	4.38x10 ³	5.84x10 ³	7.29x10 ³	8.75x10 ³	1.02x10 ⁴	1.17x10 ⁴	1.31x10 ⁴	1.46x10 ⁴
ø160	Push	1.01x10 ³	2.01x10 ³	3.02x10 ³	4.02x10 ³	6.03x10 ³	8.04x10 ³	1.01x10 ⁴	1.21x10 ⁴	1.41x10 ⁴	1.61x10 ⁴	1.81x10 ⁴	2.01x10 ⁴
	Pull	9.42x10 ²	1.88x10 ³	2.83x10 ³	3.77x10 ³	5.65x10 ³	7.54x10 ³	9.42x10 ³	1.13x10 ⁴	1.32x10 ⁴	1.51x10 ⁴	1.70x10 ⁴	1.88x10 ⁴
ø180	Push	1.27x10 ³	2.54x10 ³	3.82x10 ³	5.09x10 ³	7.63x10 ³	1.02x10 ⁴	1.27x10 ⁴	1.53x10 ⁴	1.78x10 ⁴	2.04x10 ⁴	2.29x10 ⁴	2.54x10 ⁴
	Pull	1.19x10 ³	2.39x10 ³	3.58x10 ³	4.77x10 ³	7.16x10 ³	9.54x10 ³	1.19x10 ⁴	1.43x10 ⁴	1.67x10 ⁴	1.91x10 ⁴	2.15x10 ⁴	2.39x10 ⁴
ø200	Push	1.57x10 ³	3.14x10 ³	4.71x10 ³	6.28x10 ³	9.42x10 ³	1.26x10 ⁴	1.57x10 ⁴	1.88x10 ⁴	2.20x10 ⁴	2.51x10 ⁴	2.83x10 ⁴	3.14x10 ⁴
	Pull	1.47x10 ³	2.95x10 ³	4.42x10 ³	5.89x10 ³	8.84x10 ³	1.18x10 ⁴	1.47x10 ⁴	1.77x10 ⁴	2.06x10 ⁴	2.36x10 ⁴	2.65x10 ⁴	2.95x10 ⁴
ø250	Push	2.45x10 ³	4.91x10 ³	7.36x10 ³	9.82x10 ³	1.47x10 ⁴	1.96x10 ⁴	2.45x10 ⁴	2.95x10 ⁴	3.44x10 ⁴	3.93x10 ⁴	4.42x10 ⁴	4.91x10 ⁴
	Pull	2.31x10 ³	4.63x10 ³	6.94x10 ³	9.25x10 ³	1.39x10 ⁴	1.85x10 ⁴	2.31x10 ⁴	2.78x10 ⁴	3.24x10 ⁴	3.70x10 ⁴	4.16x10 ⁴	4.63x10 ⁴

How to order

No switch (without magnet for switch)



⚠ 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.

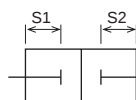
[Example of model No.]

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

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

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

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



F Option
 *2

*3

Code	Description	
A Mounting		
00	Basic	
LB	Axial foot	
FA	Rod side flange	
TA	Rod side trunnion	
TB	Head side trunnion	
B Bore size (mm)		
125	ø125	
140	ø140	
160	ø160	
180	ø180	
200	ø200	
250	ø250	
C Port thread		
Blank	Rc thread	
N	NPT thread(made-to-order product)	
G	G thread (made-to-order product)	
D Cushion		
B	Both sides cushioned	
R	Rod side cushioned	
H	Head side cushioned	
N	Without cushion	
E Stroke (mm)		
Bore size	Stroke	Custom stroke
ø125 to ø160	1 to 800	In 1 mm increments
ø180	1 to 900	
ø200	1 to 1000	
ø250	1 to 1200	
F Option		
C2	With cushion section check valve	
J	Bellows	Max. ambient temp. : 100°C Instantaneous ambient temp. : 200°C
L	Bellows	250°C 400°C
M	Piston rod material (stainless steel)	
Blank	Cushion needle position (standard)	Standard TR S
R	Cushion needle position R	
S	Cushion needle position S	
T	Cushion needle position T	
P6	Copper and PTFE free (made to order)	
G Accessory		
I	Rod eye	
Y	Rod clevis (pin and snap ring included)	

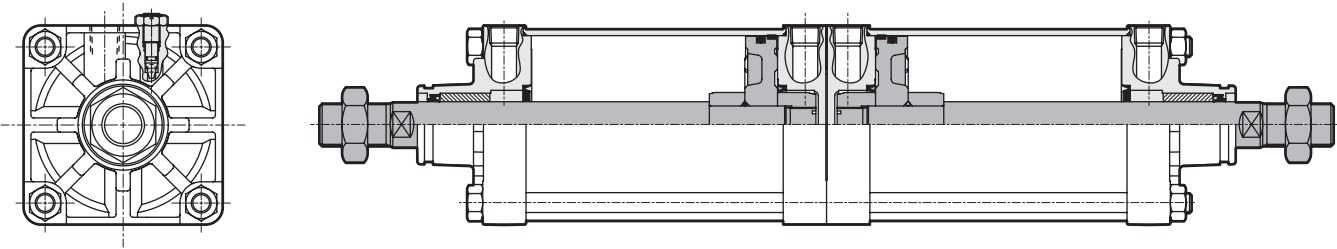
Cushion needle position

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

		Certified class 2 pressure vessel stroke	
Bore size	S1 + S2 stroke		
ø180	1481 or more		
ø200	892 or more		
ø250	690 or more		

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Internal structure



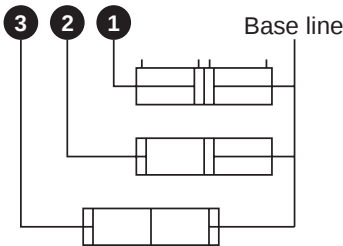
Note: The parts list is common with double acting SCS2 Series. Two sets of the parts are required. Refer to page 629.

Repair parts list

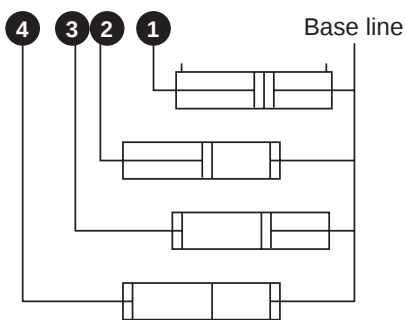
The parts are common with SCS2 Series and two sets of them are required. Refer to page 629.

Applications

When the same strokes are combined,
3 positions are available.

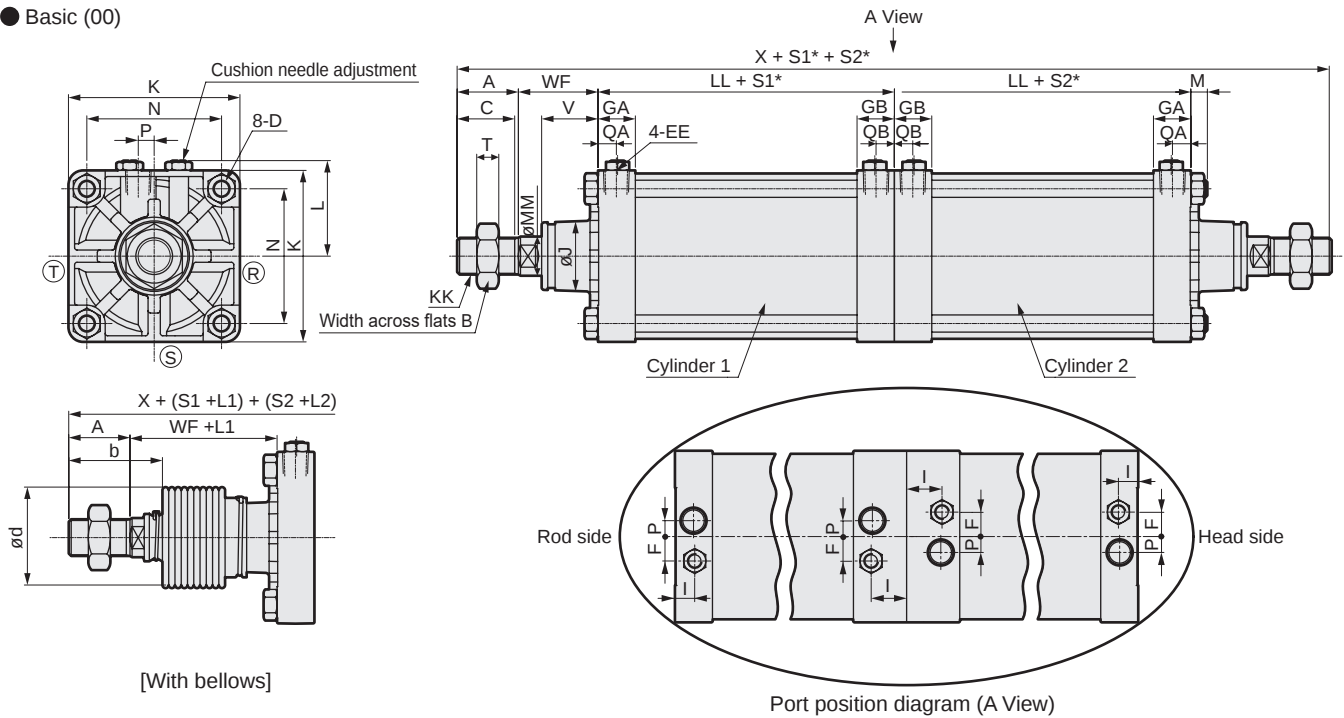


When different strokes are combined, 4
positions are available.



Dimensions

● Basic (00)



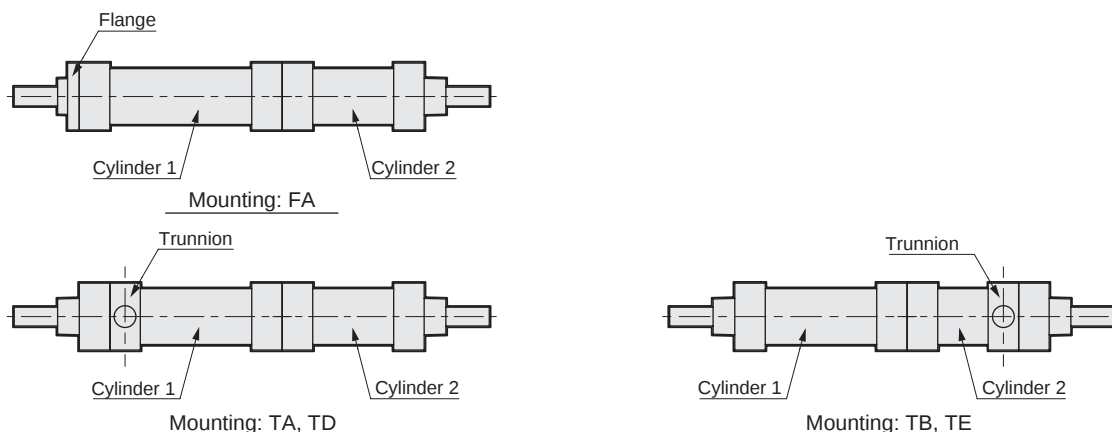
*1: (R), (S) and (T) indicate the cushion needle position.

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

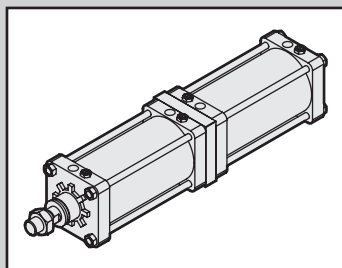
Code	A	B	C	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM
Bore size (mm)																
ø125	50	46	47	M14x1.5	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	13.5	32
ø140	50	46	47	M14x1.5	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	13.5	32
ø160	56	55	53	M16x1.5	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	15.5	40
ø180	63	60	60	M18x1.5	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	17.5	45
ø200	72	70	69	M20x1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	18.5	50
ø250	88	85	84	M24x1.5	Rc1	42.5	42.5	24	20.5	93	274	M56x2	147.5 to 156	141	21.5	60

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



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



Large bore size cylinder
Double acting/2-stage

SCS2-W Series

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

RoHS

* Made-to-order product.

Specifications

Item		SCS2-W (2-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		-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	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

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

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

Cylinder weight

(Unit: kg)

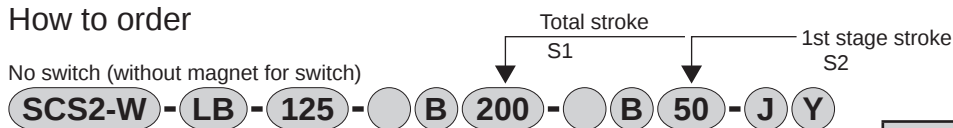
Item/mounting	Product weight when stroke (S) = 0 mm						Additional weight per S = 100 mm
Bore size (mm)	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA/TB/TC)	
ø125	18.62	20.12	21.92	21.62	21.72	22.02	1.54
ø140	23.99	25.99	29.39	27.79	27.99	27.19	1.78
ø160	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 20.12 kg
- Additional weight for S = 300 mm stroke $2 \times 1.54 \times \frac{300}{100} = 9.24$ kg
- Product weight $20.12 + 9.24 = 29.36$ kg

How to order

No switch (without magnet for switch)

A Mounting
*1

B Bore size

C Port thread

C Port thread

D Cushion
=S1D Cushion
=S2

E Stroke = S1

E Stroke = S2
*2F Option
*3

G Accessory

! 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 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

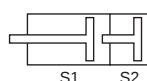
Model: Large bore size cylinder, double acting/2-stage

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

Cylinder 1

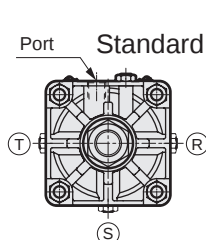
Cylinder 2

1st stage stroke □ · □ · □ · □ 50 mm (S2)
 + 2nd stage stroke □ · □ · □ 150 mm
 Total stroke 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

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

Code	Description
A 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

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

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

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

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

F 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 T  R
R	Cushion needle position R		
S	Cushion needle position S		
T	Cushion needle position T		
P6	Copper and PTFE free (made to order)		

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

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/

COVP/IN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/

MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

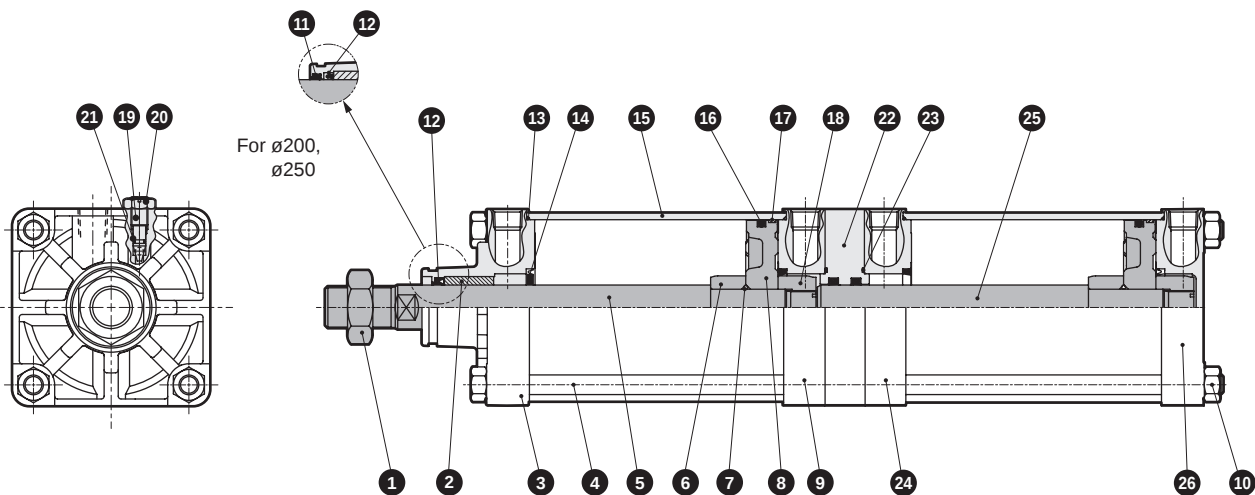
FK

Spd

Contr

Ending

SCP*3 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) Steel (ø200, 250)	Zinc chromate
7	Piston gasket	Nitrile rubber		20	Hexagon nut	Steel	Zinc chromate
8	Piston	Aluminum alloy casting		21	Needle gasket	Nitrile rubber	
9	Intermediate cover (1)	Aluminum alloy casting	Chromate	22	Intermediate plate	Cast iron	Paint
10	Hexagon nut	Steel	Zinc chromate	23	Metal gasket	Nitrile rubber	
11	Dust wiper	Nitrile rubber	ø200 and ø250 only	24	Intermediate cover (2)	Aluminum alloy casting	Chromate
12	Rod packing	Nitrile rubber		25	Piston rod B	Steel	Industrial chrome plating
13	Cylinder gasket	Nitrile rubber		26	Head cover	Aluminum alloy casting	Chromate

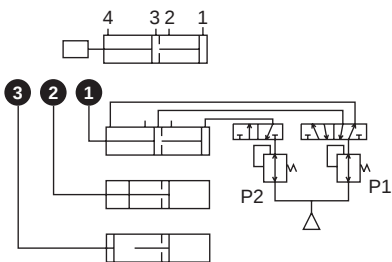
Repair parts list

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

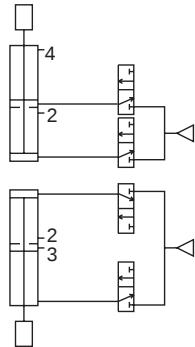
Applications

Pressure setting: P2 > P1

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

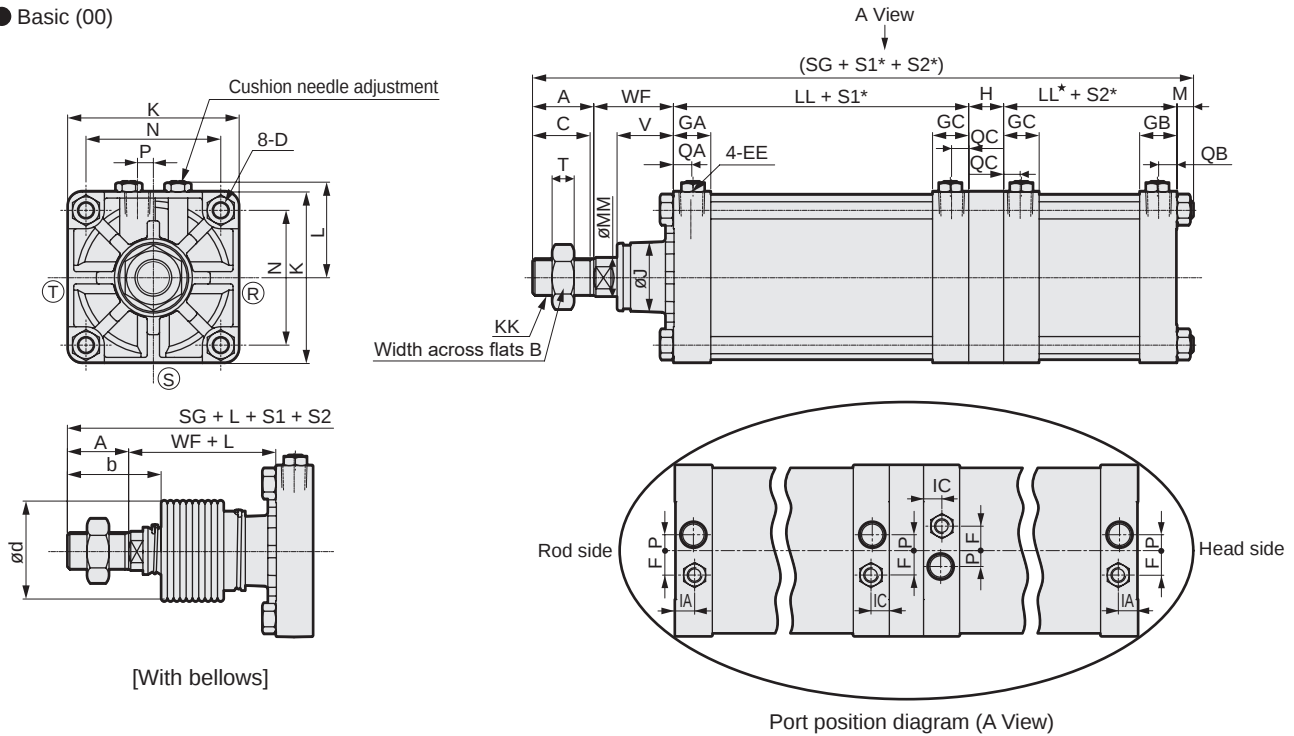


P2 = P1 is allowed depending on the load direction. When using a single acting cylinder with free fall load, ports 2 and 4 in the upper figure and ports 2 and 3 in the lower figure are breathing holes. Cushion performance will be better when all ports are piped even if piping them is not necessary (port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



Dimensions

● Basic (00)

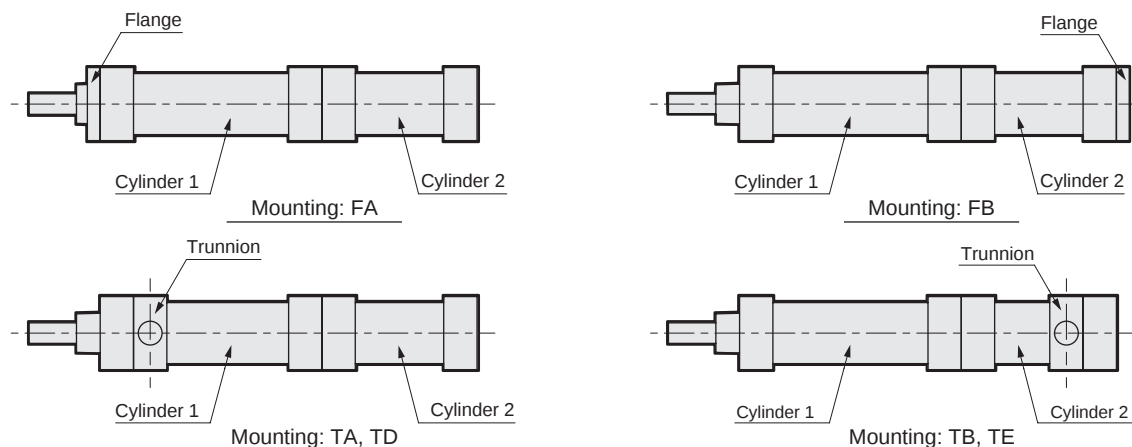


*1: (R), (S) and (T) indicate the cushion needle position.

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

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	M14x1.5	Rc1/2	30.5	30.5	29.5	20	16	15	28	57	140	M30x1.5	78 to 82
ø140	50	46	47	M14x1.5	Rc3/4	34.5	34.5	33.5	20	20	19	28	57	157	M30x1.5	86.5 to 91
ø160	56	55	53	M16x1.5	Rc3/4	34.5	34.5	33.5	24	20	19	28	62	177	M36x1.5	96.5 to 101
ø180	63	60	60	M18x1.5	Rc3/4	34.5	34.5	33.5	24	20	19	33	68	200	M40x1.5	108 to 112
ø200	72	70	69	M20x1.5	Rc3/4	37.5	37.5	36.5	24	20.5	19.5	35	75	220	M45x1.5	120.5 to 129
ø250	88	85	84	M24x1.5	Rc1	42.5	42.5	41.5	24	20.5	24.5	39	93	274	M56x2	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/4.55) + 11
ø140	102	103	32	13.5	15	17	17	16	124	363.5	18	45.5	67	74	75	(Stroke/4.55) + 9
ø160	105	106	40	15.5	15	17	17	16	142	381.5	21	48	71	82	80	(Stroke/5.15) + 9
ø180	109	110	45	17.5	15	17	17	16	160	410.5	24	53	78	91	90	(Stroke/5.15) + 9
ø200	122	123	50	18.5	20	18	18	17	175	458.5	27	60	88	102	95	(Stroke/5.30) + 9
ø250	140	141	60	21.5	22	21	21	20	216	523.5	34	64	94	120	120	(Stroke/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/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		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

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

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

Min. stroke with switch

Item	Stroke when mounted on the same surface	Stroke of intermediate supporting hole trunnion	Stroke of rod side supporting hole trunnion	Stroke of head side supporting hole trunnion
Bore size (mm)				
Switch	Sketch	Port	Port	Port
	Bore size	Port	Port	Port
Reed switch (T*)	ø125	20 or more	120 or more	70 or more
	ø140	20 or more	125 or more	75 or more
	ø160	20 or more	130 or more	80 or more
	ø180	20 or more	135 or more	85 or more
	ø200	20 or more	140 or more	90 or more
	ø250	20 or more	150 or more	100 or more

Switch specifications

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

Item	2-wire proximity				3-wire proximity				2-wire reed						2-wire proximity	
	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	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)		No 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 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272	
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49		3 m:87	3 m:49								
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80		5 m:142	5 m:80								

*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	Product weight when stroke (S) = 0 mm						Switch weight		Additional weight per S = 100 mm
Bore size (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 8.72 kg ● Additional weight for S = 300 mm stroke $1.54 \times \frac{300}{100} = 4.62$ kg ● Weight of 2 switches (TOH-D) $0.018 \times 2 = 0.036$ kg ● Product weight with 2 switch brackets ... $0.028 \times 2 = 0.056$ kg ● Product weight $8.72 + 4.62 + 0.036 + 0.056 = 13.432$ kg
---	--	--

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	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	1.23x10 ³	1.84x10 ³	2.45x10 ³	3.68x10 ³	4.91x10 ³	6.14x10 ³	7.36x10 ³	8.59x10 ³	9.82x10 ³	1.10x10 ⁴	1.23x10 ⁴
	Pull	1.15x10 ³	1.72x10 ³	2.29x10 ³	3.44x10 ³	4.59x10 ³	5.73x10 ³	6.88x10 ³	8.03x10 ³	9.17x10 ³	1.03x10 ⁴	1.15x10 ⁴
ø140	Push	1.54x10 ³	2.31x10 ³	3.08x10 ³	4.62x10 ³	6.16x10 ³	7.70x10 ³	9.24x10 ³	1.08x10 ⁴	1.23x10 ⁴	1.39x10 ⁴	1.54x10 ⁴
	Pull	1.46x10 ³	2.19x10 ³	2.92x10 ³	4.38x10 ³	5.84x10 ³	7.29x10 ³	8.75x10 ³	1.02x10 ⁴	1.17x10 ⁴	1.31x10 ⁴	1.46x10 ⁴
ø160	Push	2.01x10 ³	3.02x10 ³	4.02x10 ³	6.03x10 ³	8.04x10 ³	1.01x10 ⁴	1.21x10 ⁴	1.41x10 ⁴	1.61x10 ⁴	1.81x10 ⁴	2.01x10 ⁴
	Pull	1.88x10 ³	2.83x10 ³	3.77x10 ³	5.65x10 ³	7.54x10 ³	9.42x10 ³	1.13x10 ⁴	1.32x10 ⁴	1.51x10 ⁴	1.70x10 ⁴	1.88x10 ⁴
ø180	Push	2.54x10 ³	3.82x10 ³	5.09x10 ³	7.63x10 ³	1.02x10 ⁴	1.27x10 ⁴	1.53x10 ⁴	1.78x10 ⁴	2.04x10 ⁴	2.29x10 ⁴	2.54x10 ⁴
	Pull	2.39x10 ³	3.58x10 ³	4.77x10 ³	7.16x10 ³	9.54x10 ³	1.19x10 ⁴	1.43x10 ⁴	1.67x10 ⁴	1.91x10 ⁴	2.15x10 ⁴	2.39x10 ⁴
ø200	Push	3.14x10 ³	4.71x10 ³	6.28x10 ³	9.42x10 ³	1.26x10 ⁴	1.57x10 ⁴	1.88x10 ⁴	2.20x10 ⁴	2.51x10 ⁴	2.83x10 ⁴	3.14x10 ⁴
	Pull	2.95x10 ³	4.42x10 ³	5.89x10 ³	8.84x10 ³	1.18x10 ⁴	1.47x10 ⁴	1.77x10 ⁴	2.06x10 ⁴	2.36x10 ⁴	2.65x10 ⁴	2.95x10 ⁴
ø250	Push	4.91x10 ³	7.36x10 ³	9.82x10 ³	1.47x10 ⁴	1.96x10 ⁴	2.45x10 ⁴	2.95x10 ⁴	3.44x10 ⁴	3.93x10 ⁴	4.42x10 ⁴	4.91x10 ⁴
	Pull	4.63x10 ³	6.94x10 ³	9.25x10 ³	1.39x10 ⁴	1.85x10 ⁴	2.31x10 ⁴	2.78x10 ⁴	3.24x10 ⁴	3.70x10 ⁴	4.16x10 ⁴	4.63x10 ⁴

SCS2-H Series

How to order

No 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

A Mounting

*1

B Bore size

C Port thread

D Cushion

E Stroke

F Switch model No.

G Switch quantity

*3

H Option

*4

I Accessory

*6

Code	Description
A 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

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

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

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

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

F Switch model No.					
Axial lead wire	Radial lead wire	Contact	Voltage AC DC	Indicator	Lead wire
T0H*	T0V*	Reed	● ●	1-color LED	2-wire
T5H*	T5V*		● ●	No indicator lamp	
T8H*	T8V*		● ●	1-color LED	
T1H*	T1V*		● ●	1-color LED	
T2H*	T2V*	Proximity	● ●	1-color LED (PNP output)	3-wire
T3H*	T3V*		● ●	2-color LED	
T3PH*	T3PV*		● ●	2-color LED	2-wire
T2WH*	T2WV*		● ●	2-color LED	
T2YH*	T2YV*		● ●	2-color LED	2-wire
T3WH*	T3WV*		● ●	AC magnetic field	
T3YH*	T3YV*		● ●	1-color LED off-delay	2-wire
T2YD*	-		● ●	1-color LED off-delay	
T2YDT*	-				
T2JH*	T2JV*				

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

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

H Option	
C2	With cushion section check valve
J	Bellows
L	Bellows
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)

I 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	
-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 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.]

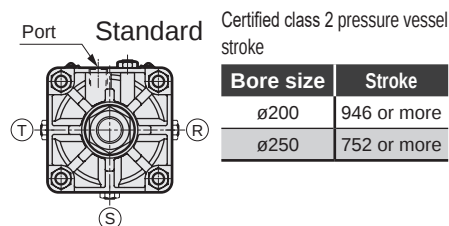
SCS2-LH-LB-125B-50-T0H-R-JY

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

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

Cushion needle position

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



How to order switch

● Switch body + mounting bracket set

SCS2-LN - T0H - 125

Bore size (Item ③ on page 664)
Switch model No.
(Item ⑤ on page 664)

● Switch body only

SW - T0H

Switch model No.
(Item ⑤ on page 664)

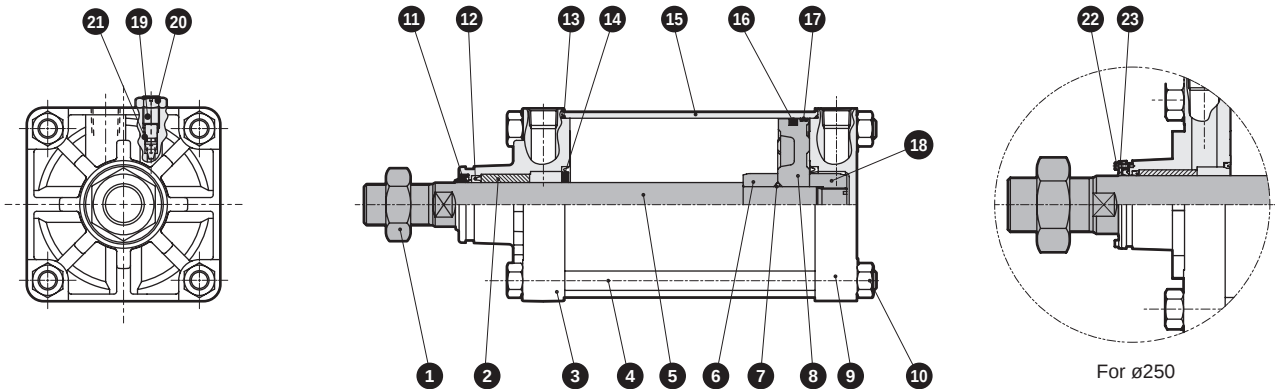
● Mounting bracket set

SCS2-LN - TS - 125

Bore size (Item ③ on page 664)

Mounting bracket	
TS	T-switch
T	T2YD switch

Internal structure and parts list



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) Steel (ø200, 250)	Zinc chromate
8	Piston	Aluminum alloy casting		20	Hexagon nut	Steel	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	21	Needle gasket	Nitrile rubber	
10	Hexagon nut	Steel	Zinc chromate	22	Scraper retainer plate	Steel	Manganese phosphate
11	Dust wiper	Nitrile rubber		23	Hexagon socket head cap screw	Steel	Black finish
12	Rod packing	Nitrile rubber					

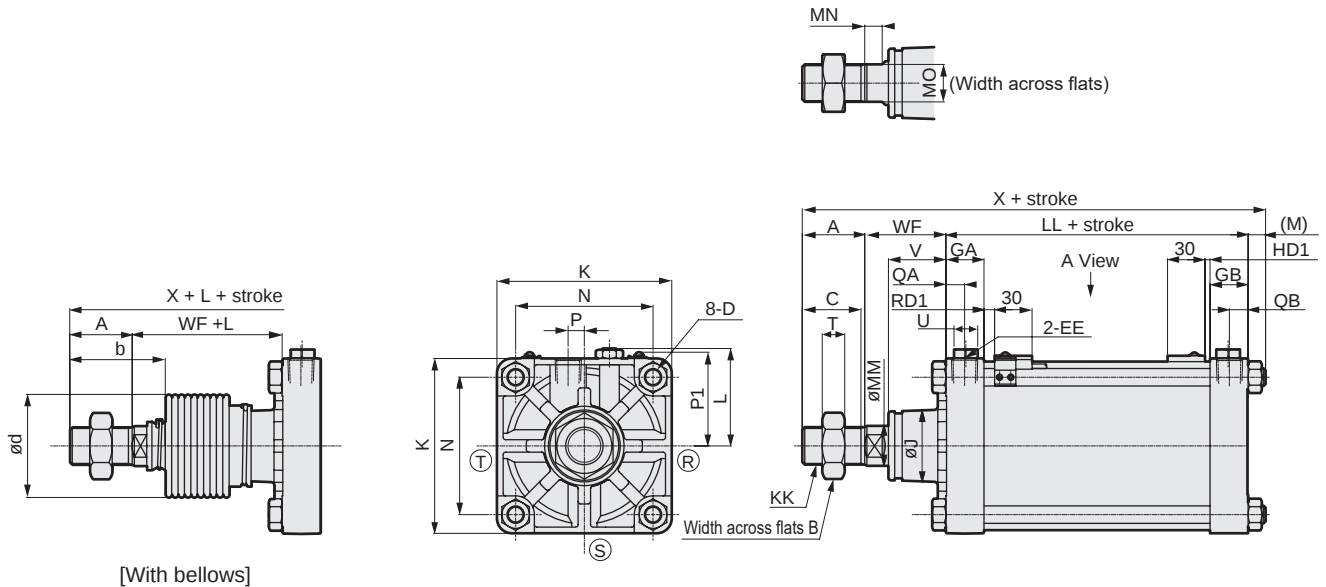
Repair parts list

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

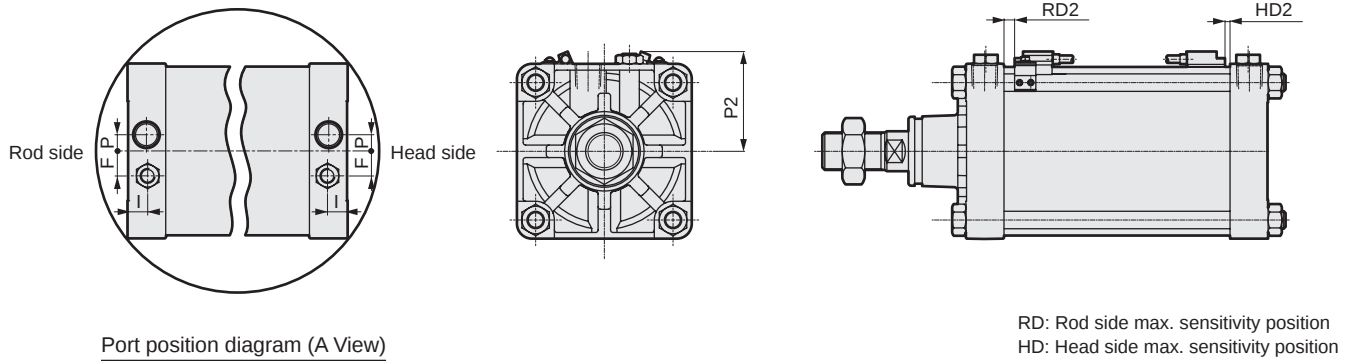
SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVP/IN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Dimensions

● Basic (00)



● 2-color LED with strong magnetic field proof switch



*1: (R), (S) and (T) 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	M14x1.5	Rc1/2	30.5	30.5	20	16	57	140	M30x1.5	78 to 82	92	13.5	32	15	27	110	13	15	15
ø140	50	46	47	M14x1.5	Rc3/4	34.5	34.5	20	20	57	157	M30x1.5	86.5 to 91	103	13.5	32	15	27	124	15	17	17
ø160	56	55	53	M16x1.5	Rc3/4	34.5	34.5	24	20	62	177	M36x1.5	96.5 to 101	106	15.5	40	15	36	142	15	17	17
ø180	63	60	60	M18x1.5	Rc3/4	34.5	34.5	24	20	68	200	M40x1.5	108 to 112	110	17.5	45	17	41	160	15	17	17
ø200	72	70	69	M20x1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M45x1.5	120.5 to 129	123	18.5	50	20	46	175	20	18	18
ø250	88	85	84	M24x1.5	Rc1	42.5	42.5	24	20.5	93	274	M56x2	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/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/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/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/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/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/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 SCS2-LH (without 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.

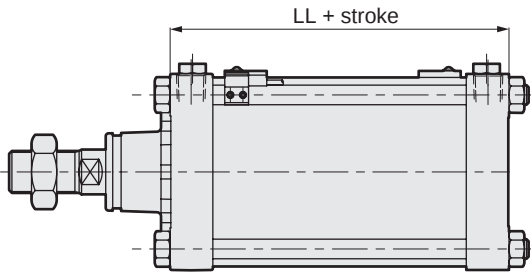
Introduction of custom order products

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.

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending



Large bore size cylinder
Double acting/rubber scraper

SCS2-G Series

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

JIS symbol



* 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		-5 (23°F) to 60 (140°F) (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance		^{+1.0} ₀ (to 300), ^{+1.4} ₀ (to 1000), ^{+1.8} ₀ (to 1200)					
Working piston speed		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	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

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

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

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

Cylinder weight

(Unit: kg)

Item/mounting	Product weight when stroke (S) = 0 mm						Additional weight per S = 100mm
	Bore size (mm)	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	
STK	ø125	7.22	8.72	10.52	10.22	10.32	1.54
	ø140	9.35	11.35	14.75	13.15	13.35	1.78
SRL3	ø160	12.35	15.45	19.25	17.35	17.65	2.22
	ø180	16.75	21.25	28.75	24.15	24.65	2.96
SRG3	ø200	22.78	28.48	36.48	32.28	32.48	3.54
	ø250	40.51	48.91	66.41	64.51	59.01	5.38

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

- Product weight for S = 0 mm stroke 8.72 kg
- Additional weight for S = 300 mm stroke $1.54 \times \frac{300}{100} = 4.62$ kg
- Product weight $8.72 + 4.62 = 13.34$ kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	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

No switch (without magnet for switch)

SCS2-G - LB - 125 - B - 50 - M - Y

A Mounting
*1

B Bore size

C Port thread

D Cushion

E Stroke

F Option
*2

G Accessory

⚠ 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

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

Code	Description
A 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

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

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

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

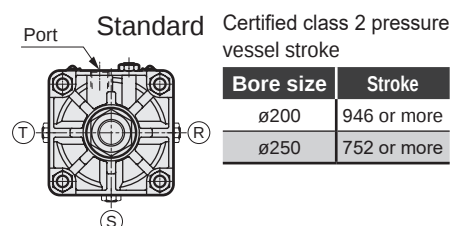
E Stroke (mm)		
Bore size	Stroke	Custom stroke
ø125 to ø160	1 to 800	In 1 mm increments
ø180	1 to 900	
ø200	1 to 1000	
ø250	1 to 1200	

F 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)		

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

Cushion needle position

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



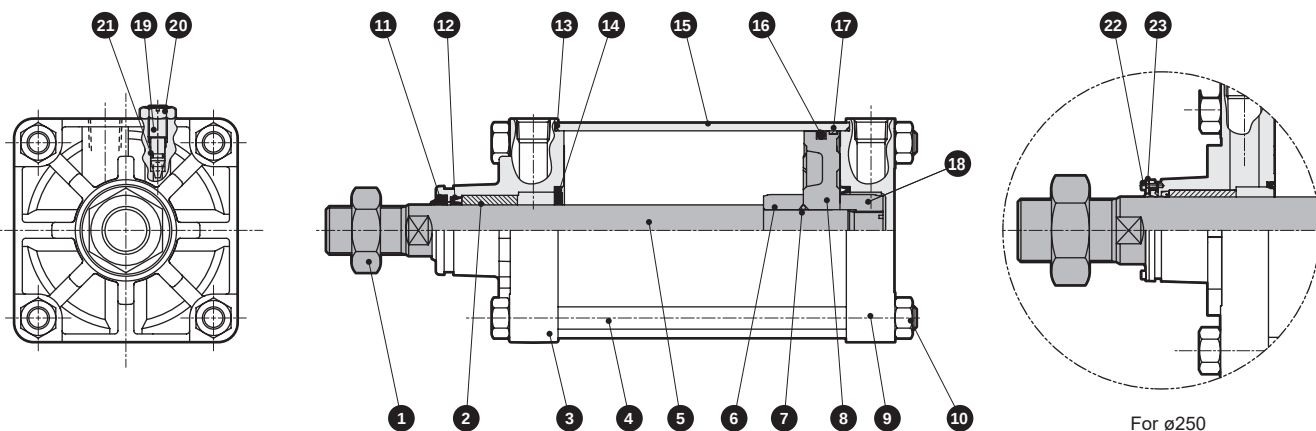
SCP*3
 CMK2
 CMA2
 SCM
 SCG
 SCA2
 SCS2
 CKV2
 CAV2/
 COVP/IN2
 SSD2
 SSG
 SSD
 CAT
 MDC2
 MVC
 SMG
 MSD/
 MSDG
 FC*
 STK
 SRL3
 SRG3
 SRM3
 SRT3
 MRL2
 MRG2
 SM-25
 ShkAbs
 FJ
 FK
 Spd
 Contr
 Ending

SCS2-G Series

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/
COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/
MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
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FJ
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Spd
Contr
Ending

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) Steel (ø200, 250)	Zinc chromate
8	Piston	Aluminum alloy casting		20	Hexagon nut	Steel	Zinc chromate
9	Head cover	Aluminum alloy casting	Chromate	21	Needle gasket	Nitrile rubber	
10	Hexagon nut	Steel	Zinc chromate	22	Hexagon socket head cap screw	Steel (black finish)	ø250 only
11	Dust wiper	Nitrile rubber/steel		23	Retainer plate	Steel (Manganese phosphate)	ø250 only
12	Rod packing	Nitrile rubber					

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.



Safety Precautions

Be sure to read this section before use.

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

Product-specific cautions: Large bore size cylinder: SCS2 Series

Design/selection

1. Common

CAUTION

■ Certification of class 2 pressure vessel

According to regulations of the Ministry of Health, Labour and Welfare, the following cylinders should be certified by the Japan Boilers Association.

- (1) Cylinders with a rated pressure exceeding 0.2 MPa and cylinder capacity exceeding 0.04 m³.
- (2) Cylinders with a rated pressure exceeding 0.2 MPa, bore size exceeding 200 mm and stroke exceeding 1000 mm.

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

V: Cylinder capacity (m³)

D: Bore size (mm)

S: Body length (cylinder tube length) (mm)

■ With cushion section check valve (C2)

The larger the load, the greater the delay in the starting time of the cylinder will be. To shorten the starting time, use the cushion section check valve (C2).

■ Heat resistant (SCS2-T)

Consult CKD if the ambient temperatures of different components vary drastically, such as when only the piston rod is inserted into a high temperature furnace.

Mounting, installation and adjustment

1. Stroke adjustable SCS2-P

CAUTION

- If the stroke is adjusted, the cushion cannot function.

2. Heat resistant SCS2-T

CAUTION

- Magnet is not built in.

3. Low hydraulic SCS2-H

CAUTION

- This product is a pneumatic cylinder which enables the use of hydraulic fluid as its working fluid. Not compliant with JIS standards on activation and leak inspection for hydraulic cylinders.

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/IN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending