



## Selection table of variation and options

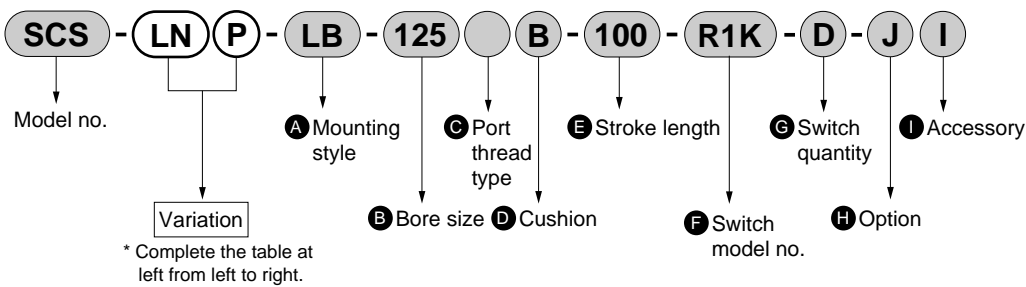
SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

- : Standard
- : Option
- : Available (custom order)
- △ : Available depending on conditions (consult with CKD.)
- X : Not available

Code	Code	Variation											Port thread		Option								
		Double acting lubrication type	Double acting oil-free type	Double acting with switch	Double acting double rod type	Back to back type	Double piston type	Adjustable stroke extend type	Low hydraulic type	Heat resistance type (120°C)	Rubber scraper type	NPT	G			Cushion mechanism with check valve	Nylon tarpaulin with bellows	Neoprene with bellows	Silicone rubber with bellows	Piston rod material stainless steel	Cushion needle relocation	Copper and PTFE free type	Customized piston rod end form
	Symbol	No	N	LN	D	B	W	P	H	T	G	N	G			C2	J	K	L	M	R, S, T	P6	N*
	Blank															○	○	○	○	○	○	○	○
	N				○	○	○	X	Note 1	○	○	○	○			○	○	○	○	○	○	○	○
	LN				○	○	○	X		○	○	○				○	○	○	○	○	○	○	○
	D				X	X	X	○	○	○	○	○				○	○	○	○	○	○	○	○
	B					X	X	○	○	○	○	○				○	○	○	○	○	○	○	○
	W						△1	○	○	○	○	○				○	○	○	○	○	○	○	○
	P							○	○	△	○	○				○	○	○	○	○	○	○	○
	H								X	○	○	○				○	○	○	○	○	○	○	○
	T									X	○	○				○	X	△2	○	○	○	○	○
	G										○	○				○	○	○	○	○	○	○	○
	N											X				○	○	○	○	○	○	○	○
	G															○	○	○	○	○	○	○	○
	C2															○	○	○	○	○	○	○	○
	J																X	X	○	○	○	○	○
	K																	X	○	○	○	○	○
	L																		X	○	○	○	○
	M																			○	○	○	○
	R, S, T																				○	○	○
	P6																					○	○
	N*																					○	○
	Ending 1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	I	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	△
	Y	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	△
	B1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	B2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Note 1: Heat resistance type T must be oil free (oil-free dedicated).  
 △1: Available only for S2 side.  
 △2: Available if working temperature is less than 100 °C.

### <Example of model number>



Model no.: Large bore size cylinder

● Variation: Stroke adjustable type with switch

- A Mounting style : Axial foot type
- B Bore size :  $\phi 125$  mm
- C Port thread type : Rc thread
- D Cushion : Both sides cushioned
- E Stroke length : 100 mm
- F Switch model no. : Proximity R1K switch, lead wire 1 m
- G Switch quantity : 2
- H Option : Bellows material, max. ambient temperature 60°C
- I Accessory : Rod clevis

Note 1: The back-to-back type has two cylinders. Do as follows to indicate variations for each cylinder.

When variations are added only to S1, indicate the variation symbol before the S1 stroke.

(Example) SCS-B-125-H50-75: Only S1 is low hydraulic type.

When variations are added only to S2, indicate the variation symbol before the S2 stroke.

(Example) SCS-B-125-50-H75: Only S2 is low hydraulic type.

When the same variations are added to both S1 and S2, indicate the variation symbol before the bore size.

(Example) SCS-BH-125-50-75: S1, S2 are both low hydraulic type.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
<b>SCS</b>
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Large bore size cylinder  
Standard type



Pneumatic components

# Safety precautions

Always read this section before starting use.

Refer to Intro 71 for general notes of cylinders and Intro 78 for cylinder switches.

SCP\*2  
 CMK2  
 CMA2  
 SCM  
 SCG  
 SCA2  
 SCS  
 CKV2  
 CA/OV2  
 SSD  
 CAT  
 MDC2  
 MVC  
 SMD2  
 MSD\*  
 FC\*  
 STK  
 ULK\*  
 JSK/M2  
 JSG  
 JSC3  
 USSD  
 USC  
 JSB3  
 LMB  
 STG  
 STS/L  
 LCS  
 LCG  
 LCM  
 LCT  
 LCY  
 STR2  
 UCA2  
 HCM  
 HCA  
 SRL2  
 SRG  
 SRM  
 SRT  
 MRL2  
 MRG2  
 SM-25  
 CAC3  
 UCAC  
 RCC2  
 MFC  
 SHC  
 GLC  
 Ending

## Large bore size cylinder SCS Series

### Design & Selection

#### 1. Common

##### ⚠ CAUTION

##### ■ Certification of No. 2 class pressure vessel

Following regulations issued by the Ministry of Health, Labor and Welfare, the following cylinders must be certified by the Japan Boiler Association.

- (1) Cylinders having rated pressure exceeding 0.196 MPa and cylinders content volume exceeding 0.04 m<sup>3</sup>.
- (2) Cylinders having a rated pressure exceeding 0.196 MPa, having an inner cylinder tube diameter exceeding 200 mm, and having a stroke exceeding 1000 mm.

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

V : Cylinder capacity (m<sup>3</sup>)  
 D : Bore size (mm)  
 S : Stroke (mm)

##### ■ Cushion mechanism with check valve (C2)

If the load is large, the cylinder start time delay increases. To reduce start time, use the type with a check valve (C2) at the cushion.

### Installation & Adjustment

#### 1. Adjustable stroke SCS-P

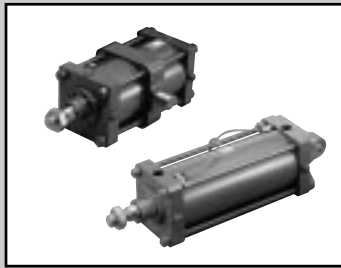
##### ⚠ CAUTION

- The cushion effect is lost if the stroke is adjusted.

#### 2. Heat resistance type SCS-T

##### ⚠ CAUTION

- The magnet is not integrated.



Large bore size cylinder  
Double acting single rod lubrication and oil-free type

# SCS Series

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

JIS symbol



## Specifications

Descriptions		SCS/SCS-N/SCS-LN					
Bore size	mm	$\phi$ 125	$\phi$ 140	$\phi$ 160	$\phi$ 180	$\phi$ 200	$\phi$ 250 Note 2
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.05					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	-5 to 60 (no freezing)					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance (Note 1)	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Working piston speed	mm/s	20 to 1000 (use within allowable energy absorption.)					
Cushion		Air cushion					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (when lubricating, use turbine oil Class 1 ISO VG32.), not required for SCS-N/LN					
Allowable energy absorption J	Cushioned	63.5	91.5	116	152	233	362
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.							

Note 1: With switch $^{+2.0}_0$  (up to 1000) Note 2: SCS-LN (with switch) of  $\phi$ 250 are not available.

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi$ 125	50, 75, 100, 150, 200, 250, 300	800	2000	1	30
$\phi$ 140					32
$\phi$ 160					34
$\phi$ 180					35
$\phi$ 200					37
$\phi$ 250					39

Note 1: Custom stroke length is available per 1 mm increment.

Note 2: If the maximum stroke is exceeded, product specifications may not be met, depending on operating conditions. Refer to Ending 74.

## Min. stroke length with switch

Descriptions		Stroke length when installed on the same plane	Stroke length of intermediate (supporting hole) trunnion type	Stroke length of rod end (supporting hole) trunnion type	Stroke length of head end (supporting hole) trunnion type
Switch type	Rough sketch				
	Bore size			A position can not be detected at rod side stroke end	A position can not be detected at head side stroke end
Reed switch (R*)	$\phi$ 125	20 and over	120 and over	70 and over	
	$\phi$ 140		125 and over	75 and over	
	$\phi$ 160		130 and over	80 and over	
	$\phi$ 180		135 and over	85 and over	
	$\phi$ 200		140 and over	90 and over	

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS**
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

### Switch specifications

Descriptions	Proximity 2-wire			Proximity 3-wire		Proximity 2-wire
	R1K	R2K	R2YK (2 color indicator type)	R3K	R3YK (2 color indicator type)	T2YDP*/T2YDPT* (Strong magnetic field proof)
Applications	Programmable controller, relay, small solenoid valve	Programmable controller		Programmable controller, relay IC circuit, solenoid valve		Programmable controller
Output method	-			NPN output		-
Power voltage	-			4.5 to 28 VDC		-
Load voltage/current	85 to 265 VAC 5 to 100 mA	10 to 30 VDC 5 to 300 mA		30 VDC or less 200 mA or less 150 mA or less		24 VDC ±10%, 5 to 20 mA
Light	LED (ON lighting)		Red/green LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less	1.2 mA or less	10 μA or less		1.0 mA or less

Descriptions	Reed 2-wire			
	R0	R4	R5	R6
Applications	Relay, programmable controller	High capacity relay, solenoid valve	Programmable controller, relay, IC circuit (w/o light), serial connection	Programmable controller (With DC self hold)
Load voltage/current	12/24 VDC, 5 to 50 mA or less 110 VAC, 7 to 20 mA or less 220 VAC, 7 to 10 mA or less	110 VAC, 20 to 200 mA 220 VAC, 10 to 200 mA	5/12/24 VDC, 50 mA or less 110 VAC, 20 mA or less 220 VAC, 10 mA or less	24 VDC, 5 to 50 mA
Light	LED ON lighting	Neon light OFF lighting	None	LED ON lighting
Leakage current	0 mA	1 mA or less	0 mA	0.1 mA or less

Note: Refer to Ending 1 for other switch specifications.

### Cylinder weight

(Unit: kg)

Mounting style	Product weight when stroke length (S) = 0 mm						Weight per switch (Including mounting bracket)				Additional weight per S = 100 mm	
	Bore size (mm)	Basic type (00)	Axial foot type (LB)	Flange type (FA/FB)	Eye bracket type (CA)	Clevis bracket type (CB)	Trunnion type (TA/TB/TC)	R type		T2YD (strong magnetic field proof)		
								Grommet	Terminal box	1 m		3 m
	φ125	14.8	16.3	18.1	17.8	17.9	18.2	0.04	0.03	0.09	0.17	2.60
	φ140	20.2	22.2	25.6	24.0	24.2	23.4					2.96
	φ160	26.3	29.4	33.2	31.3	31.6	32.7					3.57
	φ180	34.8	39.3	46.8	42.2	42.7	42.9					4.94
	φ200	47.6	53.3	61.3	57.1	57.3	59.4					5.73
	φ250	83.7	92.1	109.6	107.7	102.2	112.4					-

(E.g.) Product weight of SCS-LB-125B-300-R0-D

- Product weight when S = 0 mm ..... 16.3 kg
- Additional weight when S = 300 mm ....  $2.60 \times \frac{300}{100} = 7.8$  kg
- Weight of two switches .....  $0.04 \times 2 = 0.08$  kg
- Product weight .....  $16.3 + 7.8 + 0.08 = 24.18$  kg

Large bore size cylinder  
Standard type

## How to order

Lubrication type without switch

SCS — LB - 125 — B - 50 — J Y

Oil-free type without switch

SCS-N — LB - 125 — B - 50 — J Y

Oil-free type with switch

SCS-LN — LB - 125 — B - 50 — R0 — R — J Y

Model no.

**A** Mounting style

**B** Bore size  
Note 1

**C** Port thread type

**D** Cushion

**E** Stroke length  
Note 2

**F** Switch model no.

**G** Switch quantity  
Note 4

**H** Option  
Note 5, Note 6, Note 7

**I** Accessory  
Note 9

### Note on model no. selection

- Note 1:  $\phi$  250 with switch is not available.
- Note 2: Refer to Ending 74 if the maximum stroke is exceeded.
- Note 3: Refer to page 608 for min. stroke length.
- Note 4: When selecting TA or TB for mounting, the number of switches is limited to "H" (one on head side) for TA, and "R" (one on rod side) for TB.
- Note 5: Refer to dimension drawings for cushion needle position indication symbols.
- Note 6: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.
- Note 7: SCS is as copper and PTFE free as standard.
- Note 8: Refer to Ending 89 for custom specifications of rod end form
- Note 9: "I" and "Y" can not be selected at the same time.

<Example of model number>

**SCS-LN-LB-125B-50-R0-R-JY**

Model: Large bore size cylinder double acting lubrication type, oil-free type

Model no. : Oil-free type with switch

- A** Mounting style : Axial foot type
- B** Bore size :  $\phi$  125 mm
- C** Port thread type : Rc thread
- D** Cushion : Both sides cushioned
- E** Stroke length : 50 mm
- F** Switch model no. : Reed R0 switch, lead wire 1 m
- G** Switch quantity : One on rod end
- H** Option : Bellows material, max. ambient temperature 60°C
- I** Accessory : Rod clevis

Symbol	Descriptions
<b>A Mounting style</b>	
00	Basic type
LB	Axial foot type
FA	Rod end flange type
FB	Head end flange type
CA	Eye bracket type
CB	Clevis bracket type (pin and snap ring attached)
TC	Center trunnion type
TA	Rod end trunnion type
TB	Head end trunnion type
TF	Intermediate supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)
TD	Rod end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)
TE	Head end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)

<b>B Bore size (mm)</b>	
125	$\phi$ 125
140	$\phi$ 140
160	$\phi$ 160
180	$\phi$ 180
200	$\phi$ 200
250	$\phi$ 250 (types with switch are not available.)

<b>C Port thread type</b>	
Blank	Rc thread
N	NPT thread (custom order)
G	G thread (custom order)

<b>D Cushion</b>	
B	Both sides cushioned
R	Rod end cushion
H	Head end cushion
N	No cushion

<b>E Stroke length (mm)</b>			
Bore size	Stroke length Note 3	Available stroke length	Custom stroke length
$\phi$ 125 to $\phi$ 160	1 to 800	2000	Per 1 mm increment
$\phi$ 180	1 to 900	2000	
$\phi$ 200	1 to 1000	2000	
$\phi$ 250	1 to 1200	2000	

<b>F Switch model no.</b>					
Grommet type	Terminal box type		Contact	Indicator	Lead wire
	Standard type	Splash-proof			
R1K*	R1KB	R1KA	Proximity	1 color indicator type	2-wire
R2K*	R2KB	R2KA		2 color indicator type	
R2YK*	R2YKB	R2YKA		Strong magnetic field proof switch	
T2YDP*	-	-	Reed	1 color indicator type	3-wire
R3K*	R3KB	R3KA		2 color indicator type	
R3YK*	R3YKB	R3YKA		1 color indicator type	Without indicator light 1 color indicator type
R0*	R0B	R0A	1 color indicator type		
R4*	R4B	R4A	1 color indicator type		
R5*	R5B	R5A	1 color indicator type		
R6*	R6B	R6A	1 color indicator type		

<b>*Lead wire length</b>	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

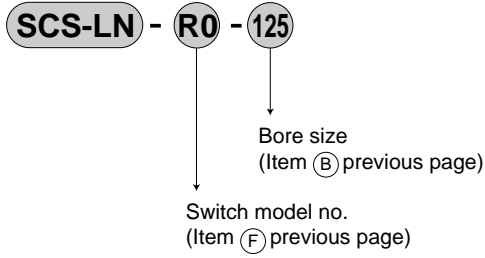
<b>G Switch quantity</b>	
R	One on rod end
H	One on head end
D	Two
T	Three
4	Four

<b>H Option</b>			
C2	Cushion mechanism with check valve	Max. ambient	Max. instantaneous
J	Bellows	60 °C	100 °C
K	Bellows	100 °C	200 °C
L	Bellows	250 °C	400 °C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position R (standard)		
S	Cushion needle position S		
T	Cushion needle position T		
P6	Copper and PTFE free		

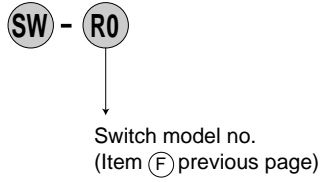
<b>I Accessory</b>	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)

### How to order switch

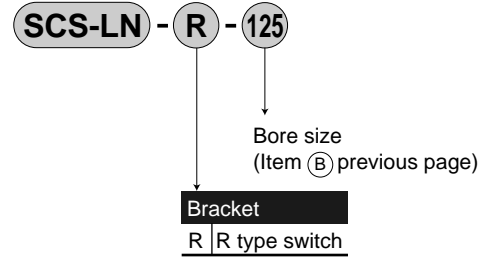
● Switch body + mounting bracket



● Only switch body

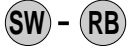


● Mounting bracket

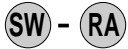


● Only terminal box

· R\*B

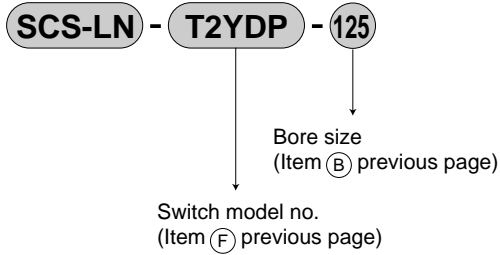


· R\*A

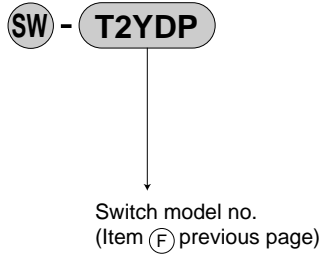


### How to order T2YD switch

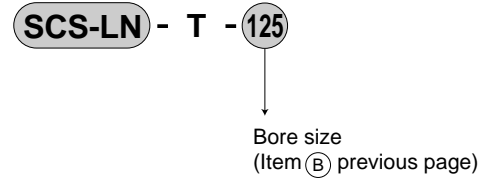
● Switch body + mounting bracket



● Only switch body



● Mounting bracket



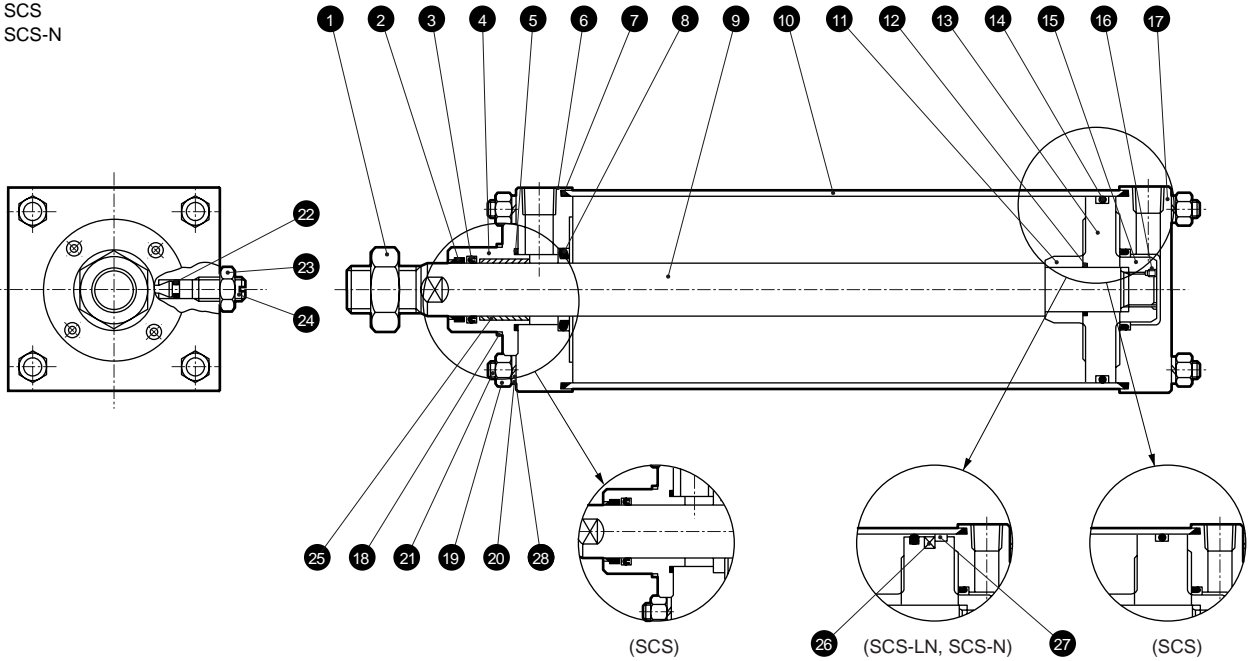
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
<b>SCS</b>
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Large bore size cylinder  
Standard type



## Internal structure and parts list

- Standard
- SCS
- SCS-N



Note: Parts (8), (22), (23) and (24) are not required for no cushion type.

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	15	Cushion ring B	Steel	Zinc chromate
2	Dust wiper	Nitrile rubber		16	Hexagon socket head set screw	Alloy steel	Blackening
3	Rod packing seal	Nitrile rubber		17	Head cover	Steel	Zinc chromate
4	Rod bushing	Cast iron	Zinc chromate	18	Hexagon socket head cap bolt	Alloy steel	Blackening
5	Metal gasket	Nitrile rubber		19	Hexagon nut	Steel	Zinc chromate
6	Rod cover	Steel	Zinc chromate	20	Spring washer	Steel	Zinc chromate
7	Cylinder gasket	Nitrile rubber		21	Tie rod	Steel	Zinc chromate
8	Cushion packing seal	Nitrile rubber and steel		22	Needle gasket	Nitrile rubber	
9	Piston rod	Steel	Industrial chrome plating	23	Needle nut	Steel	Zinc chromate
10	Cylinder tube	Steel Note 1	Paint and industrial chrome plating	24	Cushion needle	Steel	Zinc chromate
11	Cushion ring A	Steel	Zinc chromate	25	Bush	Oil impregnated bearing alloy Note 3	SCS-N, LN only
12	Piston gasket	Nitrile rubber		26	Magnet	Rubber	SCS-LN only
13	Piston	Cast iron Note 2	Phosphoric acid zinc treatment	27	Wear ring	Polyacetal	SCS-LN only
14	Piston packing seal	Nitrile rubber		28	Plain washer	Steel	Zinc chromate

Note 1: The SCS-LN type has aluminum alloy.

Note 2: The SCS-N type has  $\phi 125$  to  $\phi 160$  : aluminum alloy die-casting  
 $\phi 180$  to  $\phi 250$  : cast iron

The SCS-LN type has  $\phi 125$  to  $\phi 160$  : aluminum alloy die-casting.  
 $\phi 180$  to  $\phi 200$  : aluminum alloy

Note 3: Copper and PTFE free is oil impregnated cast iron.

### Repair parts list

- SCS (lubrication type)

Bore size (mm)	Kit No.	Repair parts number
$\phi 125$	SCS-125K	
$\phi 140$	SCS-140K	
$\phi 160$	SCS-160K	2 3 5 7 8
$\phi 180$	SCS-180K	14 22
$\phi 200$	SCS-200K	
$\phi 250$	SCS-250K	

- SCS-N (pre-lubricated)

Bore size (mm)	Kit No.	Repair parts number
$\phi 125$	SCS-N-125K	
$\phi 140$	SCS-N-140K	
$\phi 160$	SCS-N-160K	2 3 5 7 8
$\phi 180$	SCS-N-180K	14 22 27
$\phi 200$	SCS-N-200K	
$\phi 250$	SCS-N-250K	

Note 1: In repair parts, the piston packing seal of SCS-N (pre-lubricated) is different from SCS (lubrication type).

Note 2: For  $\phi 180$  to  $\phi 250$  cylinder, (27) wear ring is not included.

### Mounting bracket material

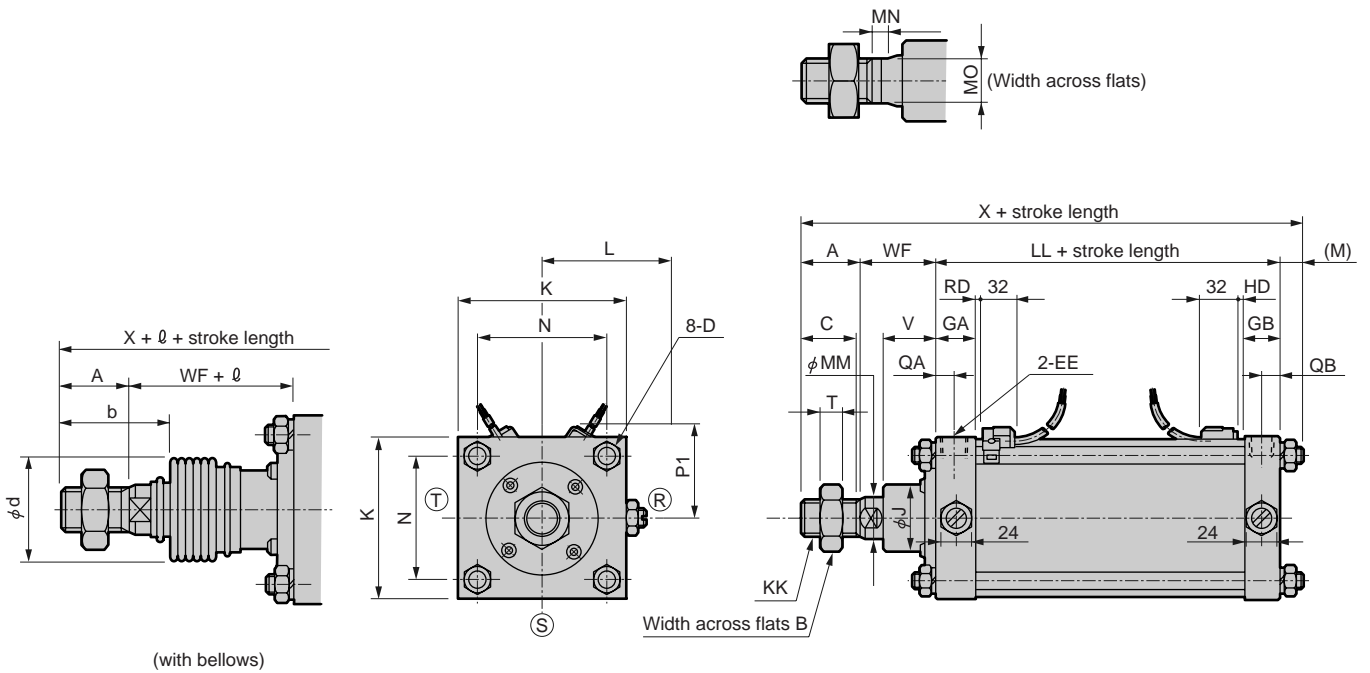
Mounting style	Material	Remarks
LB	Steel	Zinc chromate
FA, FB	Steel	Zinc chromate
CA, CB	Cast iron	Paint
TA, TB, TC	Cast iron	Paint

- SCS-LN (oil-free with switch)

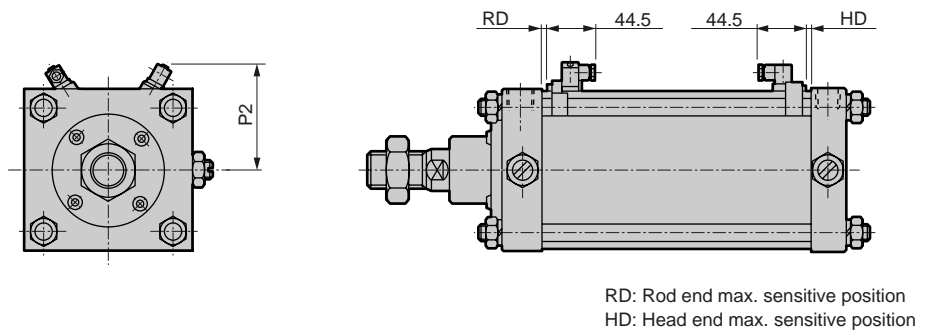
Bore size (mm)	Kit No.	Repair parts number
$\phi 125$	SCS-LN-125K	
$\phi 140$	SCS-LN-140K	
$\phi 160$	SCS-LN-160K	2 3 5 7 8
$\phi 180$	SCS-LN-180K	14 22 27
$\phi 200$	SCS-LN-200K	

### Dimensions

● Basic type with R type switch (00)



● R type switch terminal box



RD: Rod end max. sensitive position  
HD: Head end max. sensitive position

Note 1: (R), (S) and (T) show the positions of cushion needle.

Note 2:  $l$  dimensions below decimal point are rounded up.

Note 3: Refer to page 651 for accessory dimensions.

Symbol	Basic type (00) basic dimensions																		
Bore size (mm)	A	B	C	D	EE	GA	GB	J	K	KK	L	LL	M	MM	MN	MO	N	QA	QB
$\phi 125$	50	46	47	M14 x 1.5	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	14	30	110	14.5	15
$\phi 140$	50	46	47	M14 x 1.5	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	14	30	124	16.5	17
$\phi 160$	56	55	53	M16 x 1.5	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	16	36	142	16.5	17
$\phi 180$	63	60	60	M18 x 1.5	Rc3/4	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5	26	45	18	41	160	16.5	17
$\phi 200$	72	70	69	M20 x 1.5	Rc3/4	44.5	45	75	220	M45 x 1.5	123 to 131	122.5	27	50	20	46	175	17.5	18
$\phi 250$	88	85	84	M24 x 1.5	Rc1	49.5	50	93	274	M56 x 2	150 to 158	140.5	32	60	22	55	216	20	20.5
Symbol	With bellows						With switch												
Bore size (mm)	T	V	WF	X	b	d	$l$	P1	P2		RD	HD							
									R-A	R-B									
$\phi 125$	18	46	65	226.5	74	75	(stroke length/4.55) + 11	78.5	107.5	103	0	0							
$\phi 140$	18	46	67	239.5	74	75	(stroke length/4.55) + 9	85	114	109.5	0	0							
$\phi 160$	21	48.5	71	255.5	82	80	(stroke length/5.15) + 9	93.5	122	117.5	0	0							
$\phi 180$	24	53.5	78	276.5	91	90	(stroke length/5.15) + 9	101.5	130	125.5	0	0							
$\phi 200$	27	60.5	88	309.5	102	95	(stroke length/5.30) + 9	109.5	138	133.5	2	1							
$\phi 250$	34	64.5	94	354.5	120	120	(stroke length/6.40) + 9	-	-	-	-	-							

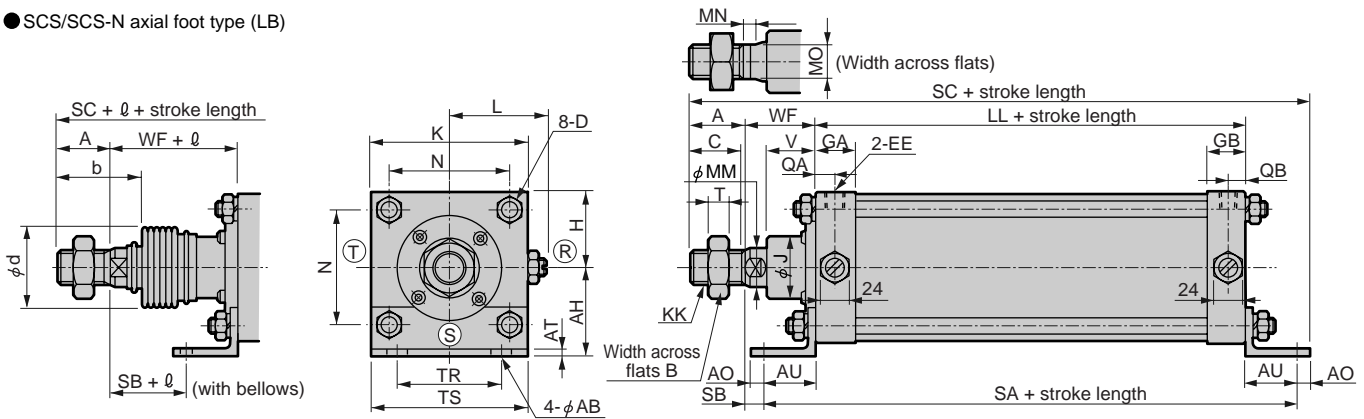
SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
**SCS**  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC

Ending  
Large bore size cylinder  
Standard type



## Dimensions

### ● SCS/SCS-N axial foot type (LB)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.

Note 2: (R), (S) and (T) show the positions of cushion needle.

Note 3:  $\ell$  dimensions below decimal point are rounded up.

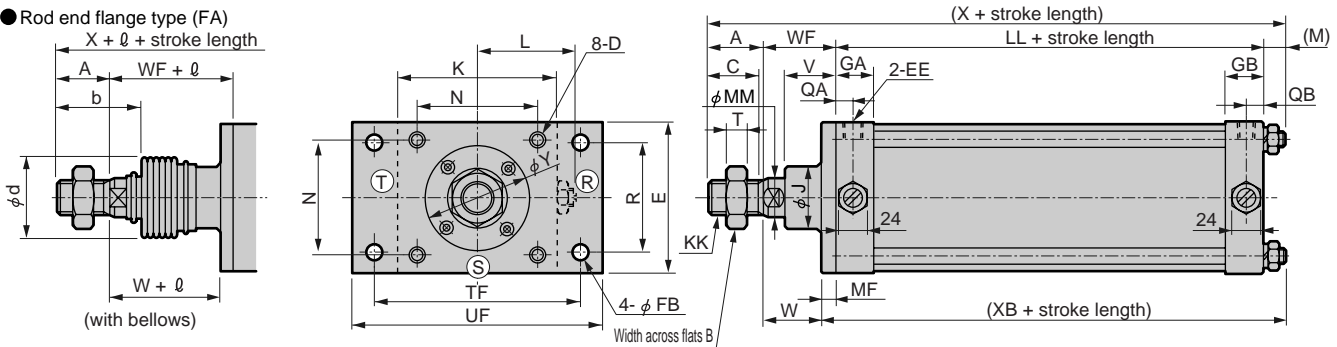
Note 4: Refer to page 651 for accessory dimensions.

Symbol	Basic dimensions for axial foot type (LB)																	
Bore size (mm)	A	AB	AH	AO	AT	AU	B	C	D	EE	GA	GB	H	J	K	KK	L	LL
$\phi 125$	50	19	85	20	7	45	46	47	M14 x 1.5	Rc1/2	32	29	70	57	140	M30 x 1.5	83 to 91	91.5
$\phi 140$	50	19	100	20	8	50	46	47	M14 x 1.5	Rc3/4	36	36	78.5	57	157	M30 x 1.5	91.5 to 99.5	102.5
$\phi 160$	56	19	106	20	10	53	55	53	M16 x 1.5	Rc3/4	38.5	36	88.5	62	177	M36 x 1.5	101.5 to 109.5	105.5
$\phi 180$	63	24	125	27	10	60	60	60	M18 x 1.5	Rc3/4	39.5	38.5	100	68	200	M40 x 1.5	113 to 121	109.5
$\phi 200$	72	24	132	27	12	62	70	69	M20 x 1.5	Rc3/4	44.5	45	110	75	220	M45 x 1.5	123 to 131	122.5
$\phi 250$	88	29	160	29	12	70	85	84	M24 x 1.5	Rc1	49.5	50	137	93	274	M56 x 2	150 to 158	140.5

Symbol											With bellows						
Bore size (mm)	MM	MN	MO	N	QA	QB	SA	SB	SC	T	TR	TS	V	WF	b	d	$\ell$
$\phi 125$	35	14	30	110	14.5	15	181.5	20	271.5	18	100	140	46	65	74	75	(stroke length/4.55) + 11
$\phi 140$	35	14	30	124	16.5	17	202.5	17	289.5	18	112	157	46	67	74	75	(stroke length/4.55) + 9
$\phi 160$	40	16	36	142	16.5	17	211.5	18	305.5	21	118	177	48.5	71	82	80	(stroke length/5.15) + 9
$\phi 180$	45	18	41	160	16.5	17	229.5	18	337.5	24	132	200	53.5	78	91	90	(stroke length/5.15) + 9
$\phi 200$	50	20	46	175	17.5	18	246.5	26	371.5	27	150	220	60.5	88	102	95	(stroke length/5.30) + 9
$\phi 250$	60	22	55	216	20	20.5	280.5	24	421.5	34	180	274	64.5	94	120	120	(stroke length/6.40) + 9

### ● Rod end flange type (FA)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.

Note 2: (R), (S) and (T) show the positions of cushion needle.

Note 3:  $\ell$  dimensions below decimal point are rounded up.

Note 4: Refer to page 651 for accessory dimensions.

Symbol	Basic dimensions for rod end flange type (FA)																	
Bore size (mm)	A	B	C	D	E	EE	FB	GA	GB	J	K	KK	L	LL	M	MF	MM	N
$\phi 125$	50	46	47	M14 x 1.5	140	Rc1/2	19	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	14	35	110
$\phi 140$	50	46	47	M14 x 1.5	157	Rc3/4	19	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	19	35	124
$\phi 160$	56	55	53	M16 x 1.5	177	Rc3/4	19	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	19	40	142
$\phi 180$	63	60	60	M18 x 1.5	200	Rc3/4	24	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5	26	25	45	160
$\phi 200$	72	70	69	M20 x 1.5	220	Rc3/4	24	44.5	45	75	220	M45 x 1.5	123 to 131	122.5	27	25	50	175
$\phi 250$	88	85	84	M24 x 1.5	274	Rc1	29	49.5	50	93	274	M56 x 2	150 to 158	140.5	32	30	60	216

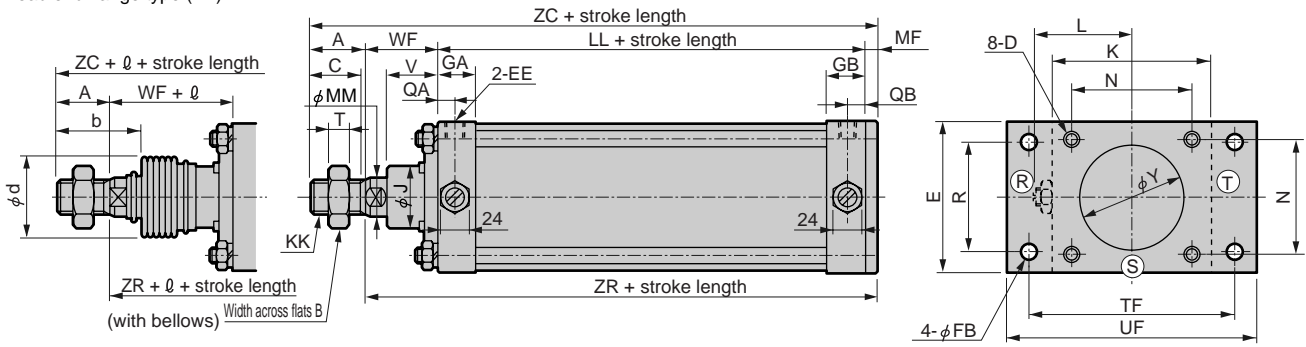
  

Symbol											With bellows				
Bore size (mm)	QA	QB	R	T	TF	UF	V	W	WF	X	XB	Y	b	d	$\ell$
$\phi 125$	14.5	15	100	18	190	230	46	51	65	226.5	125.5	94	74	75	(stroke length/4.55) + 11
$\phi 140$	16.5	17	112	18	212	250	46	48	67	239.5	141.5	94	74	75	(stroke length/4.55) + 9
$\phi 160$	16.5	17	118	21	236	280	48.5	52	71	255.5	147.5	107	82	80	(stroke length/5.15) + 9
$\phi 180$	16.5	17	132	24	265	310	53.5	53	78	276.5	160.5	113	91	90	(stroke length/5.15) + 9
$\phi 200$	17.5	18	150	27	280	330	60.5	63	88	309.5	174.5	131	102	95	(stroke length/5.30) + 9
$\phi 250$	20	20.5	180	34	355	415	64.5	64	94	354.5	202.5	153	120	120	(stroke length/6.40) + 9

### Dimensions



#### ● Head end flange type (FB)



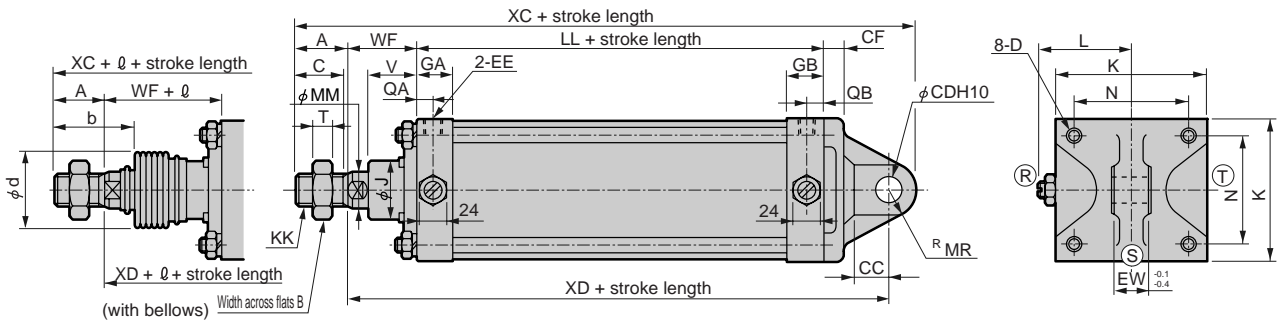
Note 1: Refer to page 613 for the switch section dimension of the type with a switch. Note 2: (R), (S) and (T) show the positions of cushion needle. Note 3:  $\ell$  dimensions below decimal point are rounded up. Note 4: Refer to page 651 for accessory dimensions.

Symbol	Head end flange type (FB) basic dimensions																
Bore size (mm)	A	B	C	D	E	EE	FB	GA	GB	J	K	KK	L	LL	MF	MM	N
φ125	50	46	47	M14 x 1.5	140	Rc1/2	19	32	29	57	140	M30 x 1.5	83 to 91	91.5	14	35	110
φ140	50	46	47	M14 x 1.5	157	Rc3/4	19	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	19	35	124
φ160	56	55	53	M16 x 1.5	177	Rc3/4	19	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	19	40	142
φ180	63	60	60	M18 x 1.5	200	Rc3/4	24	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5	25	45	160
φ200	72	70	69	M20 x 1.5	220	Rc3/4	24	44.5	45	75	220	M45 x 1.5	123 to 131	122.5	25	50	175
φ250	88	85	84	M24 x 1.5	274	Rc1	29	49.5	50	93	274	M56 x 2	150 to 158	140.5	30	60	216

Symbol	With bellows													
Bore size (mm)	QA	QB	R	T	TF	UF	V	WF	Y	ZC	ZR	b	d	$\ell$
φ125	14.5	15	100	18	190	230	46	65	94	220.5	170.5	74	75	(stroke length/4.55) + 11
φ140	16.5	17	112	18	212	250	46	67	94	238.5	188.5	74	75	(stroke length/4.55) + 9
φ160	16.5	17	118	21	236	280	48.5	71	107	251.5	195.5	82	80	(stroke length/5.15) + 9
φ180	16.5	17	132	24	265	310	53.5	78	113	275.5	212.5	91	90	(stroke length/5.15) + 9
φ200	17.5	18	150	27	280	330	60.5	88	131	307.5	235.5	102	95	(stroke length/5.30) + 9
φ250	20	20.5	180	34	355	415	64.5	94	153	352.5	264.5	120	120	(stroke length/6.40) + 9

#### ● Eye bracket type (CA)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch. Note 2: (R), (S) and (T) show the positions of cushion needle. Note 3:  $\ell$  dimensions below decimal point are rounded up. Note 4: Refer to page 651 for accessory dimensions.

Symbol	Basic dimensions for eye bracket type (CA)															
Bore size (mm)	A	B	C	D	CC	CD	CF	EE	EW	GA	GB	J	K	KK	L	
φ125	50	46	47	M14 x 1.5	35	25 <sup>+0.084/0</sup>	20	Rc1/2	32	32	29	57	140	M30 x 1.5	83 to 91	
φ140	50	46	47	M14 x 1.5	40	28 <sup>+0.084/0</sup>	22	Rc3/4	36	36	36	57	157	M30 x 1.5	91.5 to 99.5	
φ160	56	55	53	M16 x 1.5	40	32 <sup>+0.100/0</sup>	24	Rc3/4	40	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	
φ180	63	60	60	M18 x 1.5	55	40 <sup>+0.100/0</sup>	25	Rc3/4	50	39.5	38.5	68	200	M40 x 1.5	113 to 121	
φ200	72	70	69	M20 x 1.5	55	40 <sup>+0.100/0</sup>	30	Rc3/4	50	44.5	45	75	220	M45 x 1.5	123 to 131	
φ250	88	85	84	M24 x 1.5	65	50 <sup>+0.100/0</sup>	35	Rc1	63	49.5	50	93	274	M56 x 2	150 to 158	

Symbol	With bellows													
Bore size (mm)	LL	MM	N	MR	QA	QB	T	V	WF	XC	XD	b	d	$\ell$
φ125	91.5	35	110	25	14.5	15	18	46	65	294.5	219.5	74	75	(stroke length/4.55) + 11
φ140	102.5	35	124	28	16.5	17	18	46	67	322.5	244.5	74	75	(stroke length/4.55) + 9
φ160	105.5	40	142	32	16.5	17	21	48.5	71	339.5	251.5	82	80	(stroke length/5.15) + 9
φ180	109.5	45	160	40	16.5	17	24	53.5	78	380.5	277.5	91	90	(stroke length/5.15) + 9
φ200	122.5	50	175	40	17.5	18	27	60.5	88	412.5	300.5	102	95	(stroke length/5.30) + 9
φ250	140.5	60	216	50	20	20.5	34	64.5	94	482.5	344.5	120	120	(stroke length/6.40) + 9

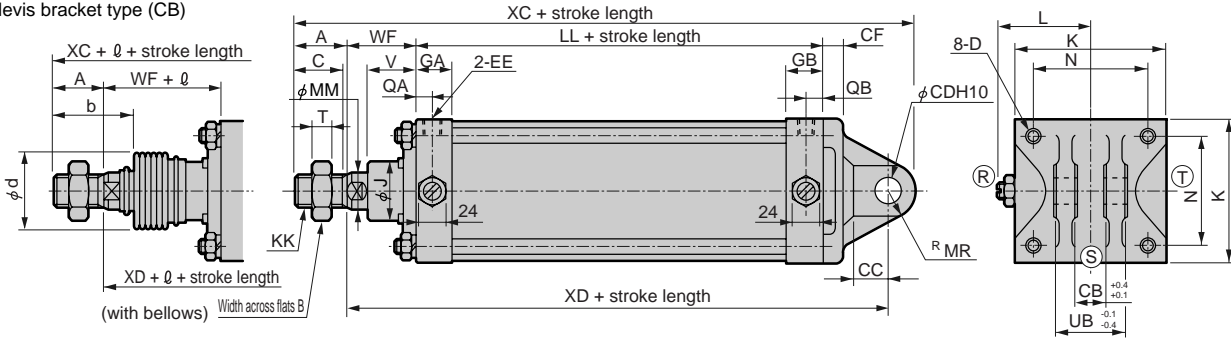
- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Large bore size cylinder  
Standard type

## Dimensions



### ● Clevis bracket type (CB)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.

Note 2: Pin and snap ring are attached.

Note 3: (R), (S) and (T) show the positions of cushion needle.

Note 4:  $\ell$  dimensions below decimal point are rounded up.

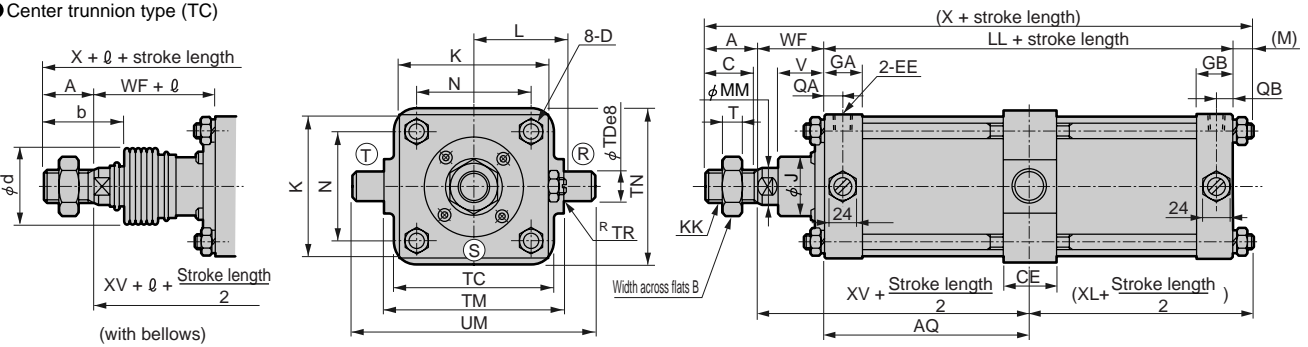
Note 5: Refer to page 651 for dimensions of an accessory.

Symbol	Basic dimensions for clevis bracket type (CB)															
Bore size (mm)	A	B	C	D	CB	CC	CD	CF	EE	GA	GB	J	K	KK	L	LL
$\phi 125$	50	46	47	M14 x 1.5	32	35	25 <sup>+0.084</sup> <sub>0</sub>	20	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5
$\phi 140$	50	46	47	M14 x 1.5	36	40	28 <sup>+0.084</sup> <sub>0</sub>	22	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5
$\phi 160$	56	55	53	M16 x 1.5	40	40	32 <sup>+0.100</sup> <sub>0</sub>	24	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5
$\phi 180$	63	60	60	M18 x 1.5	50	55	40 <sup>+0.100</sup> <sub>0</sub>	25	Rc3/4	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5
$\phi 200$	72	70	69	M20 x 1.5	50	55	40 <sup>+0.100</sup> <sub>0</sub>	30	Rc3/4	44.5	45	75	220	M45 x 1.5	123 to 131	122.5
$\phi 250$	88	85	84	M24 x 1.5	63	65	50 <sup>+0.100</sup> <sub>0</sub>	35	Rc1	49.5	50	93	274	M56 x 2	150 to 158	140.5

Symbol											With bellows					
Bore size (mm)	MM	MR	N	QA	QB	T	UB	V	WF	XC	XD	b	d	$\ell$		
$\phi 125$	35	25	110	14.5	15	18	64	46	65	294.5	219.5	74	75	(stroke length/4.55) + 11		
$\phi 140$	35	28	124	16.5	17	18	72	46	67	322.5	244.5	74	75	(stroke length/4.55) + 9		
$\phi 160$	40	32	142	16.5	17	21	80	48.5	71	339.5	251.5	82	80	(stroke length/5.15) + 9		
$\phi 180$	45	40	160	16.5	17	24	100	53.5	78	380.5	277.5	91	90	(stroke length/5.15) + 9		
$\phi 200$	50	40	175	17.5	18	27	100	60.5	88	412.5	300.5	102	95	(stroke length/5.30) + 9		
$\phi 250$	60	50	216	20	20.5	34	126	64.5	94	482.5	344.5	120	120	(stroke length/6.40) + 9		

### ● Center trunnion type (TC)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.

Note 2: (R), (S) and (T) show the positions of cushion needle.

Note 3: Refer to page 608 for the min. stroke length.

Note 4:  $\ell$  dimensions below decimal point are rounded up.

Note 5: Refer to page 651 for dimensions of an accessory.

Symbol	Basic dimensions for center trunnion type (TC)																	
Bore size (mm)	A	AQ	B	C	D	CE	EE	GA	GB	J	K	KK	L	LL	M	MM	N	QA
$\phi 125$	50	45.5 + $\frac{\text{Stroke length}}{2}$	46	47	M14 x 1.5	50	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	110	14.5
$\phi 140$	50	51 + $\frac{\text{Stroke length}}{2}$	46	47	M14 x 1.5	55	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	124	16.5
$\phi 160$	56	52.5 + $\frac{\text{Stroke length}}{2}$	55	53	M16 x 1.5	60	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	142	16.5
$\phi 180$	63	54.5 + $\frac{\text{Stroke length}}{2}$	60	60	M18 x 1.5	65	Rc3/4	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5	26	45	160	16.5
$\phi 200$	72	61 + $\frac{\text{Stroke length}}{2}$	70	69	M20 x 1.5	70	Rc3/4	44.5	45	75	220	M45 x 1.5	123 to 131	122.5	27	50	175	17.5
$\phi 250$	88	70 + $\frac{\text{Stroke length}}{2}$	80	84	M24 x 1.5	80	Rc1	49.5	50	93	274	M56 x 2	150 to 158	140.5	32	60	216	20

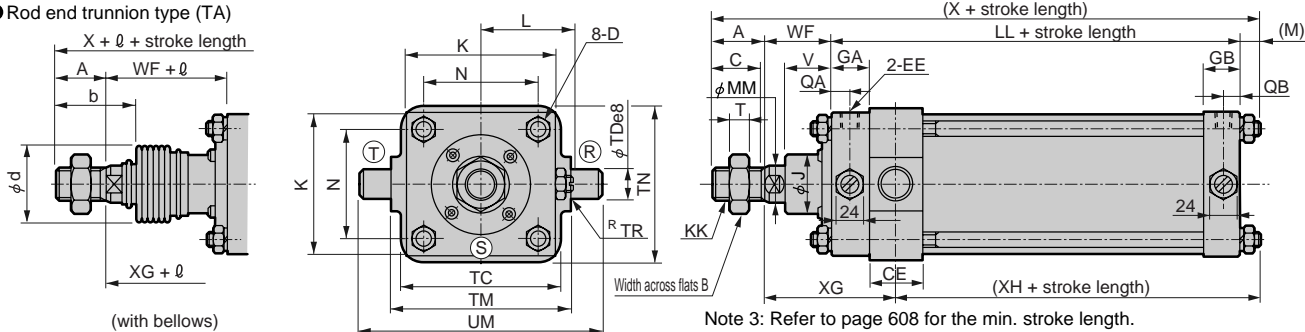
  

Symbol											With bellows						
Bore size (mm)	QB	T	TC	TD	TM	TN	TR	UM	V	WF	X	XL	XV	b	d	$\ell$	
$\phi 125$	15	18	150	32 <sup>-0.050</sup> <sub>-0.089</sub>	170	150	2	234	46	65	226.5	66	110.5	74	75	(stroke length/4.55) + 11	
$\phi 140$	17	18	154	36 <sup>-0.050</sup> <sub>-0.089</sub>	190	170	2	262	46	67	239.5	71.5	118	74	75	(stroke length/4.55) + 9	
$\phi 160$	17	21	190	40 <sup>-0.050</sup> <sub>-0.089</sub>	212	190	2	292	48.5	71	255.5	76	123.5	82	80	(stroke length/5.15) + 9	
$\phi 180$	17	24	210	45 <sup>-0.050</sup> <sub>-0.089</sub>	236	210	2	326	53.5	78	276.5	81	132.5	91	90	(stroke length/5.15) + 9	
$\phi 200$	18	27	242	45 <sup>-0.050</sup> <sub>-0.089</sub>	265	242	2	355	60.5	88	309.5	88.5	149	102	95	(stroke length/5.30) + 9	
$\phi 250$	20.5	34	300	56 <sup>-0.060</sup> <sub>-0.106</sub>	335	300	2	447	64.5	94	354.5	102.5	164	120	120	(stroke length/6.40) + 9	

### Dimensions



#### ● Rod end trunnion type (TA)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.  
 Note 2: (R), (S) and (T) show the positions of cushion needle.

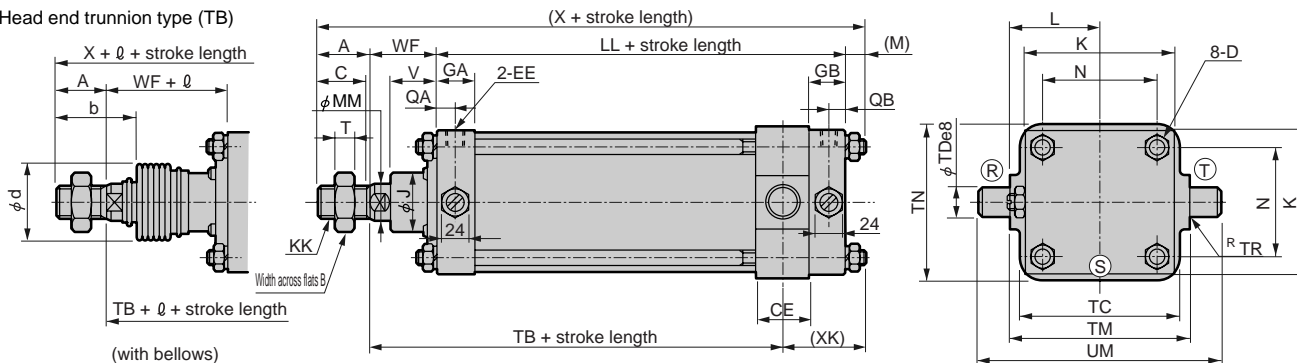
Note 3: Refer to page 608 for the min. stroke length.  
 Note 4:  $l$  dimensions below decimal point are rounded up.  
 Note 5: A position can not be detected at rod side stroke end.  
 Note 6: Refer to page 651 for accessory dimensions.

Symbol	Basic dimensions for rod end trunnion type (TA)																			
Bore size (mm)	A	B	C	D	CE	EE	GA	GB	J	K	KK	L	LL	M	MM	N	QA	QB	T	TC
$\phi 125$	50	46	47	M14 x 1.5	50	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	110	14.5	15	18	150
$\phi 140$	50	46	47	M14 x 1.5	55	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	124	16.5	17	18	154
$\phi 160$	56	55	53	M16 x 1.5	60	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	142	16.5	17	21	190
$\phi 180$	63	60	60	M18 x 1.5	65	Rc3/4	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5	26	45	160	16.5	17	24	210
$\phi 200$	72	70	69	M20 x 1.5	70	Rc3/4	44.5	45	75	220	M45 x 1.5	123 to 131	122.5	27	50	175	17.5	18	27	242
$\phi 250$	88	80	84	M24 x 1.5	80	Rc1	49.5	50	93	274	M56 x 2	150 to 158	140.5	32	60	216	20	20.5	34	300

Symbol	With bellows												
Bore size (mm)	TD	TM	TN	TR	UM	V	WF	X	XG	XH	b	d	$l$
$\phi 125$	32 <sup>+0.050</sup> <sub>-0.089</sub>	170	150	2	234	46	65	226.5	125.5	51	74	75	(stroke length/4.55) + 11
$\phi 140$	36 <sup>+0.050</sup> <sub>-0.089</sub>	190	170	2	262	46	67	239.5	134	55.5	74	75	(stroke length/4.55) + 9
$\phi 160$	40 <sup>+0.050</sup> <sub>-0.089</sub>	212	190	2	292	48.5	71	255.5	140.5	59	82	80	(stroke length/5.15) + 9
$\phi 180$	45 <sup>+0.050</sup> <sub>-0.089</sub>	236	210	2	326	53.5	78	276.5	150	63.5	91	90	(stroke length/5.15) + 9
$\phi 200$	45 <sup>+0.050</sup> <sub>-0.089</sub>	265	242	2	355	60.5	88	309.5	167.5	70	102	95	(stroke length/5.30) + 9
$\phi 250$	56 <sup>+0.060</sup> <sub>-0.106</sub>	335	300	2	447	64.5	94	354.5	183.5	103	120	120	(stroke length/6.40) + 9

#### ● Head end trunnion type (TB)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.  
 Note 2: (R), (S) and (T) show the positions of cushion needle.

Note 3: Refer to page 608 for the min. stroke length.  
 Note 4:  $l$  dimensions below decimal point are rounded up.  
 Note 5: A position can not be detected at head side stroke end.  
 Note 6: Refer to page 651 for accessory dimensions.

Symbol	Basic dimensions for head end trunnion type (TB)																			
Bore size (mm)	A	B	C	D	CE	EE	GA	GB	J	K	KK	L	LL	M	MM	N	QA	QB	T	TB
$\phi 125$	50	46	47	M14 x 1.5	50	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	110	14.5	15	18	95.5
$\phi 140$	50	46	47	M14 x 1.5	55	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	124	16.5	17	18	102
$\phi 160$	56	55	53	M16 x 1.5	60	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	142	16.5	17	21	106.5
$\phi 180$	63	60	60	M18 x 1.5	65	Rc3/4	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5	26	45	160	16.5	17	24	115
$\phi 200$	72	70	69	M20 x 1.5	70	Rc3/4	44.5	45	75	220	M45 x 1.5	123 to 131	122.5	27	50	175	17.5	18	27	130.5
$\phi 250$	88	85	84	M24 x 1.5	80	Rc1	49.5	50	93	274	M56 x 2	150 to 158	140.5	32	60	216	20	20.5	34	144.5

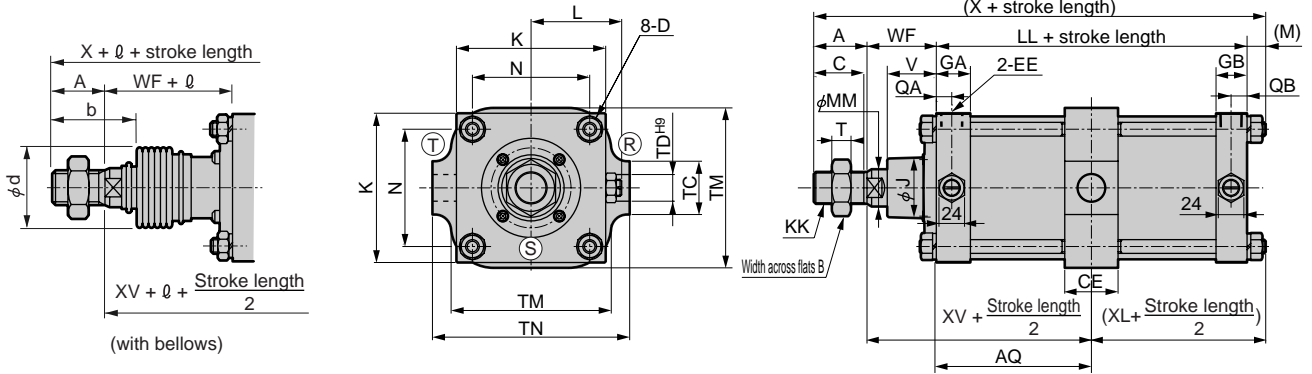
Symbol	With bellows												
Bore size (mm)	TC	TD	TM	TN	TR	UM	V	WF	X	XK	b	d	$l$
$\phi 125$	150	32 <sup>+0.050</sup> <sub>-0.089</sub>	170	150	2	234	46	65	226.5	81	74	75	(stroke length/4.55) + 11
$\phi 140$	154	36 <sup>+0.050</sup> <sub>-0.089</sub>	190	170	2	262	46	67	239.5	87.5	74	75	(stroke length/4.55) + 9
$\phi 160$	190	40 <sup>+0.050</sup> <sub>-0.089</sub>	212	190	2	292	48.5	71	255.5	93	82	80	(stroke length/5.15) + 9
$\phi 180$	210	45 <sup>+0.050</sup> <sub>-0.089</sub>	236	210	2	326	53.5	78	276.5	98.5	91	90	(stroke length/5.15) + 9
$\phi 200$	242	45 <sup>+0.050</sup> <sub>-0.089</sub>	265	242	2	355	60.5	88	309.5	107	102	95	(stroke length/5.30) + 9
$\phi 250$	300	56 <sup>+0.060</sup> <sub>-0.106</sub>	335	300	2	447	64.5	94	354.5	122	120	120	(stroke length/6.40) + 9

SCP\*2  
 CMK2  
 CMA2  
 SCM  
 SCG  
 SCA2  
**SCS**  
 CKV2  
 CA/OV2  
 SSD  
 CAT  
 MDC2  
 MVC  
 SMD2  
 MSD\*  
 FC\*  
 STK  
 ULK\*  
 JSK/M2  
 JSG  
 JSC3  
 USSD  
 USC  
 JSB3  
 LMB  
 STG  
 STS/L  
 LCS  
 LCG  
 LCM  
 LCT  
 LCY  
 STR2  
 UCA2  
 HCM  
 HCA  
 SRL2  
 SRG  
 SRM  
 SRT  
 MRL2  
 MRG2  
 SM-25  
 CAC3  
 UCAC  
 RCC2  
 MFC  
 SHC  
 GLC  
 Ending

Large bore size cylinder  
 Standard type

## Dimensions

### ● Intermediate supporting hole (TF)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.  
 Note 2: (R), (S) and (T) show the positions of cushion needle.

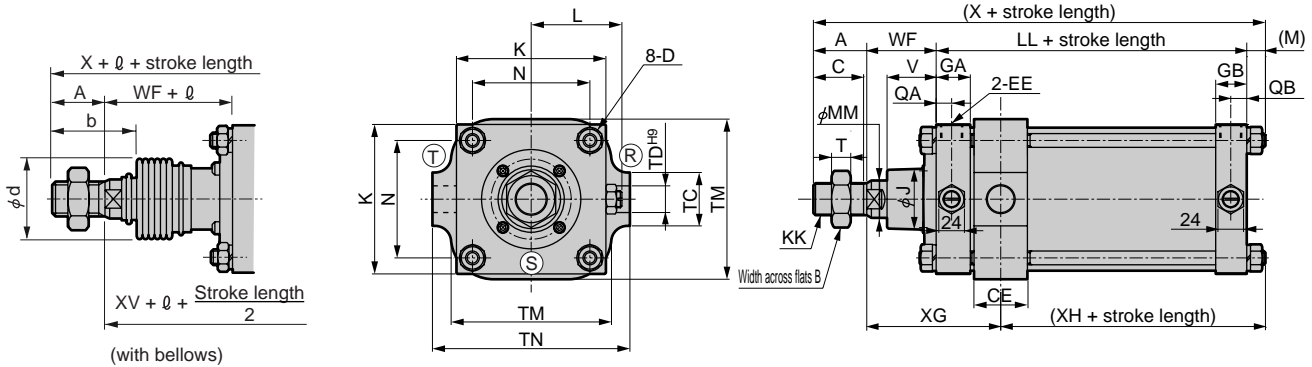
Note 3: Refer to page 608 for the min. stroke length.  
 Note 4:  $\ell$  dimensions below decimal point are rounded up.  
 Note 5: Refer to page 651 for dimensions of an accessory.

Symbol	Basic dimensions for intermediate supporting hole (TF)																	
Bore size (mm)	A	AQ	B	C	D	CE	EE	GA	GB	J	K	KK	L	LL	M	MM	N	QA
$\phi 125$	50	$45.5 + \frac{\text{Stroke length}}{2}$	46	47	M14 x 1.5	50	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	110	14.5
$\phi 140$	50	$51 + \frac{\text{Stroke length}}{2}$	46	47	M14 x 1.5	55	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	124	16.5
$\phi 160$	56	$52.5 + \frac{\text{Stroke length}}{2}$	55	53	M16 x 1.5	60	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	142	16.5

Symbol	With bellows													
Bore size (mm)	QB	T	TC	TD	TM	TN	V	WF	X	XL	XV	b	d	$\ell$
$\phi 125$	15	18	50	25	150	185	46	65	226.5	66	110.5	74	75	$(\text{stroke length}/4.55) + 11$
$\phi 140$	17	18	55	28	170	210	46	67	239.5	71.5	118	74	75	$(\text{stroke length}/4.55) + 9$
$\phi 160$	17	21	60	30	190	230	48.5	71	255.5	76	123.5	82	80	$(\text{stroke length}/5.15) + 9$

### ● Rod end supporting hole (TD)



Note 1: Refer to page 613 for the switch section dimension of the type with a switch.  
 Note 2: (R), (S) and (T) show the positions of cushion needle.

Note 3: Refer to page 608 for the min. stroke length.  
 Note 4:  $\ell$  dimensions below decimal point are rounded up.  
 Note 5: A position can not be detected at rod side stroke end.  
 Note 6: Refer to page 651 for accessory dimensions.

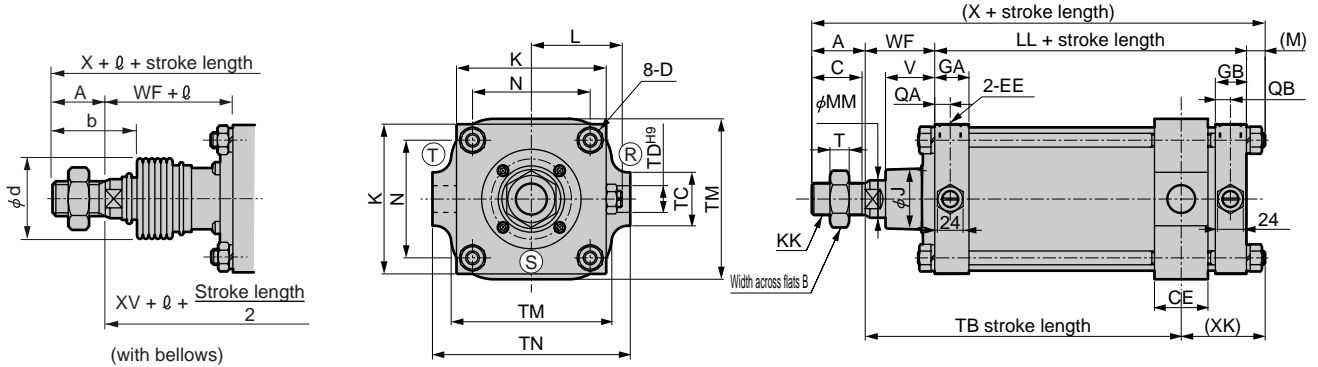
Symbol	Basic dimensions for rod end supporting hole (TD)																			
Bore size (mm)	A	B	C	D	CE	EE	GA	GB	J	K	KK	L	LL	M	MM	N	QA	QB	T	TC
$\phi 125$	50	46	47	M14 x 1.5	50	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	110	14.5	15	18	50
$\phi 140$	50	46	47	M14 x 1.5	55	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	124	16.5	17	18	55
$\phi 160$	56	55	53	M16 x 1.5	60	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	142	16.5	17	21	60

Symbol	With bellows											
Bore size (mm)	TD	TM	TN	V	WF	X	XG	XH	b	d	$\ell$	
$\phi 125$	25	150	185	46	65	226.5	125.5	51	74	75	$(\text{stroke length}/4.55) + 11$	
$\phi 140$	28	170	210	46	67	239.5	134	55.5	74	75	$(\text{stroke length}/4.55) + 9$	
$\phi 160$	30	190	230	48.5	71	255.5	140.5	59	82	80	$(\text{stroke length}/5.15) + 9$	

### Dimensions

● Head end supporting hole (TE)



Note 3: Refer to page 608 for the min. stroke length.

Note 4:  $\varnothing$  dimensions below decimal point are rounded up.

Note 5: A position can not be detected at head side stroke end.

Note 6: Refer to page 651 for accessory dimensions.

Note 1: Refer to page 613 for the switch section dimension of the type with a switch.

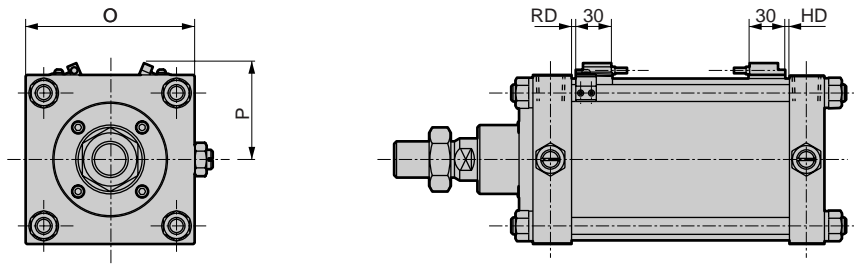
Note 2: (R), (S) and (T) show the positions of cushion needle.

Symbol	Basic dimensions for head end supporting hole (TE)																			
Bore size (mm)	A	B	C	D	CE	EE	GA	GB	J	K	KK	L	LL	M	MM	N	QA	QB	T	TB
$\phi 125$	50	46	47	M14 x 1.5	50	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	110	14.5	15	18	95.5
$\phi 140$	50	46	47	M14 x 1.5	55	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	124	16.5	17	18	102
$\phi 160$	56	55	53	M16 x 1.5	60	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	142	16.5	17	21	106.5

Symbol	With bellows										
Bore size (mm)	TC	TD	TM	TN	V	WF	X	XK	b	d	$\varnothing$
$\phi 125$	50	25	150	185	46	65	226.5	81	74	75	(stroke length/4.55) + 11
$\phi 140$	55	28	170	210	46	67	239.5	87.5	74	75	(stroke length/4.55) + 9
$\phi 160$	60	30	190	230	48.5	71	255.5	93	82	80	(stroke length/5.15) + 9

● T2YD\*P with switch (00)

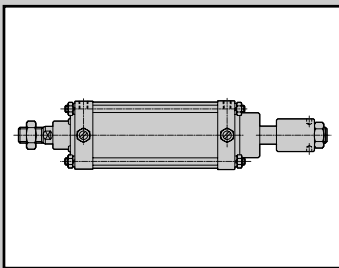


Symbol	O	P	RD	HD
Bore size (mm)				
$\phi 125$	142	80	3.5	3.5
$\phi 140$	156	86.5	3	3
$\phi 160$	176	95	4	4
$\phi 180$	196	103	5	5
$\phi 200$	213	111	7	5

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
**SCS**  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

Large bore size cylinder  
Standard type



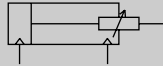


Large bore size cylinder  
Double acting stroke adjustable type

# SCS-P Series

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

JIS symbol



## Specifications

Descriptions		SCS-P (stroke adjustable type)					
Bore size	mm	$\phi 125$	$\phi 140$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 250$
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.1					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	-5 to 60 (no freezing)					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Working piston speed	mm/s	20 to 1000 (use within allowable energy absorption.)					
Cushion		Air cushion: Note that the rod cushion has no effect when the stroke is adjusted. )					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Adjustable stroke range	mm	25, 50, 75, 100					
Lubrication		Required (when lubricating, use turbine oil Class 1 ISO VG32.)					
Allowable energy absorption	Cushioned	63.5	91.5	116	152	233	362
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
		The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.					

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi 125$	50, 75, 100, 150, 200, 250, 300	800	25	30
$\phi 140$				32
$\phi 160$				34
$\phi 180$				35
$\phi 200$				37
$\phi 250$				39

Note 1: Custom stroke length is available per 1 mm increment.

## Cylinder weight

(Unit: kg)

Descriptions, mounting style	Product weight when stroke length (S) = 0 mm stroke length (S) adjustment = 25 mm					Additional weight per S = 100 mm
	Basic type (00)	Axial foot type (LB)	Flange type (FA/FB)	Trunnion type (TA/TB/TC)	Stroke length (S) adjustment weight per 25 mm	
$\phi 125$	19.0	20.5	22.3	22.4	0.51	3.35
$\phi 140$	24.2	26.5	29.9	27.7	0.51	3.71
$\phi 160$	32.4	35.5	39.3	38.8	0.72	4.55
$\phi 180$	42.7	47.2	54.7	50.8	0.93	6.18
$\phi 200$	58.8	64.5	72.5	70.6	1.09	7.26
$\phi 250$	101.0	109.4	126.9	129.7	1.53	11.27

(E.g.) Product weight of SCS-P-LB-125B-300-25 ————

- Product weight when S = 0 mm ..... 20.5 kg
- Additional weight when S = 300 mm .....  $3.35 \times \frac{300}{100} = 10.05$  kg
- Weight of adjustable stroke 25 mm ..... 0.51 kg
- Product weight .....  $20.5 + 10.05 + 0.51 = 31.06$  kg

### How to order

Without switch

**SCS-P** - **LB** - **125** - **B** - **50** - **25** - **J** **Y**

**A** Mounting style

**B** Bore size

**C** Port thread type

**D** Cushion

**E** Stroke length  
Note 1

**F** Adjustable stroke range

**G** Option  
Note 2, Note 3

**H** Accessory  
Note 5

Symbol	Descriptions	
<b>A Mounting style</b>		
<b>00</b>	Basic type	
<b>LB</b>	Axial foot type	
<b>FA</b>	Rod end flange type	
<b>FB</b>	Head end flange type	
<b>TC</b>	Center trunnion type	
<b>TA</b>	Rod end trunnion type	
<b>TB</b>	Head end trunnion type	
<b>TF</b>	Intermediate supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)	
<b>TD</b>	Rod end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)	
<b>TE</b>	Head end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)	
<b>B Bore size (mm)</b>		
<b>125</b>	$\phi 125$	
<b>140</b>	$\phi 140$	
<b>160</b>	$\phi 160$	
<b>180</b>	$\phi 180$	
<b>200</b>	$\phi 200$	
<b>250</b>	$\phi 250$	
<b>C Port thread type</b>		
<b>Blank</b>	Rc thread	
<b>N</b>	NPT thread (custom order)	
<b>G</b>	G thread (custom order)	
<b>D Cushion</b>		
<b>B</b>	Both sides cushioned	
<b>R</b>	Rod end cushion	
<b>H</b>	Head end cushion	
<b>N</b>	No cushion	
<b>E Stroke length (mm)</b>		
Bore size	Stroke length	Custom stroke length
$\phi 125$ to $\phi 160$	<b>25 to 800</b>	Per 1 mm increment
$\phi 180$	<b>25 to 900</b>	
$\phi 200$	<b>25 to 1000</b>	
$\phi 250$	<b>25 to 1200</b>	
<b>F Adjustable stroke range (mm)</b>		
<b>25</b>	25	
<b>50</b>	50	
<b>75</b>	75	
<b>100</b>	100	
<b>G Option</b>		
<b>C2</b>	Cushion mechanism with check valve	
		Max. ambient   Max. instantaneous
<b>J</b>	Bellows	60 °C   100 °C
<b>K</b>	Bellows	100 °C   200 °C
<b>L</b>	Bellows	250 °C   400 °C
<b>M</b>	Piston rod material (stainless steel)	
<b>Blank</b>	Cushion needle position R (standard)	
<b>S</b>	Cushion needle position S	
<b>T</b>	Cushion needle position T	
<b>P6</b>	Copper and PTFE free	
<b>H Accessory</b>		
<b>I</b>	Rod eye	
<b>Y</b>	Rod clevis (pin and snap ring attached)	
<b>B1</b>	Eye bracket	
<b>B2</b>	Clevis bracket (pin and snap ring attached)	

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
**SCS**  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

Large bore size cylinder  
Standard type

### ⚠ Note on model no. selection

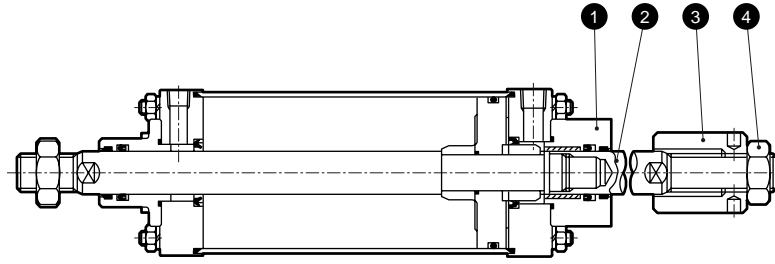
- Note 1: Refer to Ending 74 if the maximum stroke is exceeded.
- Note 2: Refer to dimension drawings for cushion needle position indication symbols.
- Note 3: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.
- Note 4: Refer to Ending 89 for custom specifications of rod end form.
- Note 5: "I" and "Y" can not be selected at the same time.

### <Example of model number> **SCS-P-LB-125B-50-25-JY**

Model: Large bore size cylinder stroke adjustment type

- A** Mounting style : Axial foot type
- B** Bore size :  $\phi 125$  mm
- C** Port thread type : Rc thread
- D** Cushion : Both sides air cushioned
- E** Stroke length : 50 mm
- F** Adjustable stroke range : 25 mm
- G** Option : Bellows material, max. ambient temperature 60 °C
- H** Accessory : Rod clevis

## Internal structure and parts list



● Note: Materials other than table below are the same as the double acting SCS. Refer to page 612.

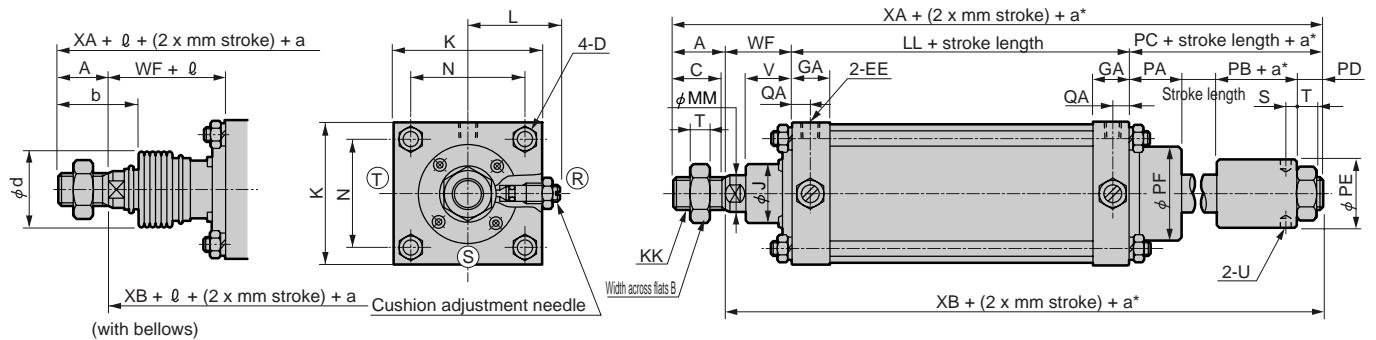
No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Rod bushing	Steel	Phosphoric acid zinc treatment	3	Adjustable stopper	Steel	Phosphoric acid zinc treatment
2	Piston rod	Steel	Industrial chrome plating	4	Lock nut	Steel	

## Repair parts list

Same as the SCS-D Series. Refer to page 632.

## Dimensions

● Stroke adjustable type



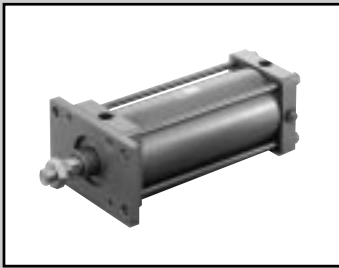
Note 1: (R), (S) and (T) show the positions of cushion needle.  
 Note 2: Refer to page 651 for accessory dimensions.

\* a is adjustable stroke length.

Symbol	A	B	C	D	EE	GA	J	K	KK	L	LL	MM	PA	PB	PC	PD	PE	PF	QA
φ125	50	46	47	M14 x 1.5	Rc1/2	32	57	140	M30 x 1.5	83 to 91	91	35	46	35.5	102.5	21	70	93	14.5
φ140	50	46	47	M14 x 1.5	Rc3/4	36	57	157	M30 x 1.5	91.5 to 99.5	102	35	46	35.5	103	21	70	93	16.5
φ160	56	55	53	M16 x 1.5	Rc3/4	38.5	62	177	M36 x 1.5	101.5 to 109.5	105	40	48.5	40	114.5	26	80	106	16.5
φ180	63	60	60	M18 x 1.5	Rc3/4	39.5	68	200	M40 x 1.5	113 to 121	109	45	53.5	44	126.5	29	90	112	16.5
φ200	72	70	69	M20 x 1.5	Rc3/4	44.5	75	220	M45 x 1.5	121 to 131	122	50	60.5	48	140.5	32	100	130	17.5
φ250	88	85	84	M24 x 1.5	Rc1	49.5	93	274	M56 x 2	150 to 158	140	60	64.5	58	161.5	39	115	152	20

Symbol	S	T	U	V	WF	XA	XB	With bellows		
								b	d	l
φ125	12	18	φ10 depth 10	46	65	308.5	258.5	74	75	(stroke length/4.55) + 11
φ140	12	18	φ10 depth 10	46	67	322	272	74	75	(stroke length/4.55) + 9
φ160	14.5	21	φ14 depth 15	48.5	71	346.5	290.5	82	80	(stroke length/5.15) + 9
φ180	16	24	φ14 depth 15	53.5	78	376.5	313.5	91	90	(stroke length/5.15) + 9
φ200	18	27	φ14 depth 15	60.5	88	422.5	350.5	102	95	(stroke length/5.30) + 9
φ250	22.5	34	φ14 depth 15	64.5	94	483.5	395.5	120	120	(stroke length/6.40) + 9

● Note: Each mounting style installation dimension is same as SCS (standard). Refer to pages 613 to 619.



Large bore size cylinder  
Double acting heat resistance type

# SCS-T Series

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

JIS symbol



## Specifications

Descriptions		SCS-T (heat resistance type)					
Bore size	mm	$\phi$ 125	$\phi$ 140	$\phi$ 160	$\phi$ 180	$\phi$ 200	$\phi$ 250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.05					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	5 to 120					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Working piston speed	mm/s	20 to 1000 (use within allowable energy absorption.)					
Cushion		Air cushion					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Not available Note 1					
Allowable energy absorption	Cushioned	63.5	91.5	116	152	233	362
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
		The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.					

Note 1: Apply heat proof grease periodically.

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi$ 125	50, 75, 100, 150, 200, 250, 300	800	1	30
$\phi$ 140				32
$\phi$ 160				34
$\phi$ 180				35
$\phi$ 200				37
$\phi$ 250				39

Note 1: Custom stroke length is available per 1 mm increment.

## Cylinder weight

(Unit: kg)

Mounting style	Product weight when stroke length (S) = 0 mm						Additional weight per S = 100 mm
	Basic type (00)	Axial foot type (LB)	Flange type (FA/FB)	Eye bracket type (CA)	Clevis bracket type (CB)	Trunnion type (TA/TB/TC)	
$\phi$ 125	14.8	16.3	18.1	17.8	17.9	18.2	2.60
$\phi$ 140	20.2	22.2	25.6	24.0	24.2	23.4	2.96
$\phi$ 160	26.3	29.4	33.2	31.3	31.6	32.7	3.57
$\phi$ 180	34.8	39.3	46.8	42.2	42.7	42.9	4.94
$\phi$ 200	47.6	53.3	61.3	57.1	57.3	59.4	5.73
$\phi$ 250	83.7	92.1	109.6	107.7	102.2	112.4	9.06

(E.g.) Product weight of SCS-T-LB-125B-300 ————— {

- Product weight when S = 0 mm ..... 16.3 kg
- Additional weight when S = 300 mm .....  $2.60 \times \frac{300}{100} = 7.8$  kg
- Product weight .....  $16.3 + 7.8 = 24.1$  kg

### How to order

SCS-T - LB - 125 - B - 50 - M Y

**A** Mounting style

**B** Bore size

**C** Port thread type

**D** Cushion

**E** Stroke length

**F** Option

Note 2, Note 3

**G** Accessory

Note 5

### ⚠ Note on model no. selection

Note 1: Refer to Ending 74 if the maximum stroke is exceeded.

Note 2: Refer to dimension drawings for cushion needle position indication symbols.

Note 3: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.

Note 4: Refer to Ending 89 for custom specifications of rod end form.

Note 5: "I" and "Y" can not be selected at the same time.

### <Example of model number>

#### SCS-T-LB-125 B-50-MY

Model: Large bore size cylinder double acting heat resistance type

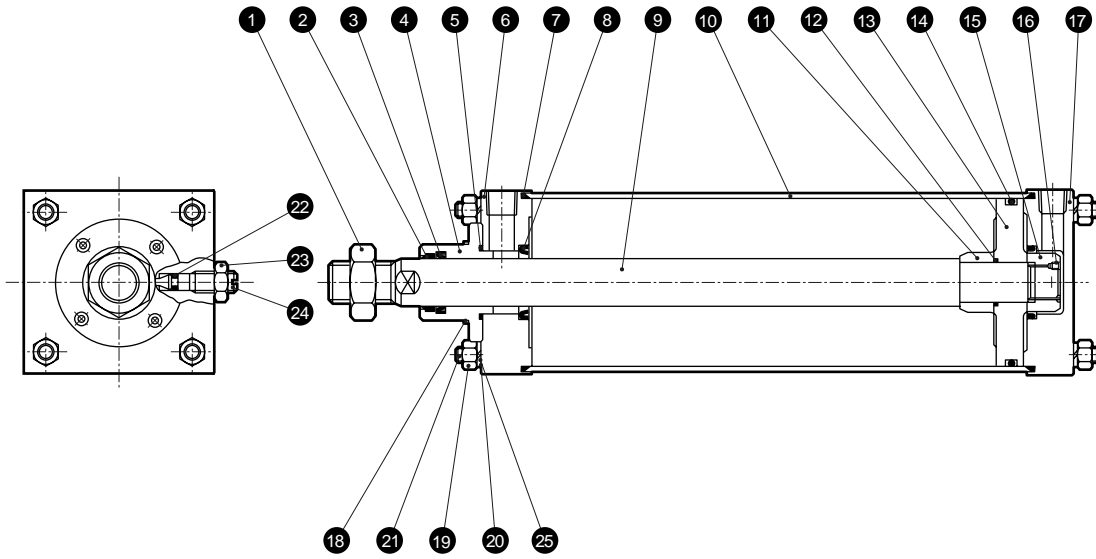
- A** Mounting style : Axial foot type
- B** Bore size :  $\phi$ 125 mm
- C** Port thread type : Rc thread
- D** Cushion : Both sides cushioned
- E** Stroke length : 50 mm
- F** Option : Piston rod material change (stainless steel)
- G** Accessory : Rod clevis

Symbol	Descriptions		
<b>A Mounting style</b>			
00	Basic type		
LB	Axial foot type		
FA	Rod end flange type		
FB	Head end flange type		
CA	Eye bracket type		
CB	Clevis bracket type (pin and snap ring attached)		
TC	Center trunnion type		
TA	Rod end trunnion type		
TB	Head end trunnion type		
TF	Intermediate supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)		
TD	Rod end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)		
TE	Head end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)		
<b>B Bore size (mm)</b>			
125	$\phi$ 125		
140	$\phi$ 140		
160	$\phi$ 160		
180	$\phi$ 180		
200	$\phi$ 200		
250	$\phi$ 250		
<b>C Port thread type</b>			
Blank	Rc thread		
N	NPT thread (custom order)		
G	G thread (custom order)		
<b>D Cushion</b>			
B	Both sides cushioned		
R	Rod end cushion		
H	Head end cushion		
N	No cushion		
<b>E Stroke length (mm)</b>			
	Bore size	Stroke length	Custom stroke length
	$\phi$ 125 to $\phi$ 160	1 to 800	Per 1 mm increment
	$\phi$ 180	1 to 900	
	$\phi$ 200	1 to 1000	
	$\phi$ 250	1 to 1200	
<b>F Option</b>			
C2	Cushion mechanism with check valve		
L	Bellows	Max. ambient 250°C	Max. instantaneous 400°C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position R (standard)		
S	Cushion needle position S		
T	Cushion needle position T		
<b>G Accessory</b>			
I	Rod eye		
Y	Rod clevis (pin and snap ring attached)		
B1	Eye bracket		
B2	Clevis bracket (pin and snap ring attached)		

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

Large bore size cylinder  
Standard type

## Internal structure and parts list



● Note: Parts (8), (22), (23) and (24) are not required for no cushion type.

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	13	Piston	Cast iron	Phosphoric acid zinc treatment
2	Dust wiper	Fluoro rubber		14	Piston packing seal	Fluoro rubber	
3	Rod packing seal	Fluoro rubber		15	Cushion ring B	Steel	Zinc chromate
4	Rod bushing	Cast iron	Zinc chromate	16	Hexagon socket head set screw	Alloy steel	Blackening
5	Metal gasket	Fluoro rubber		17	Head cover	Steel	Zinc chromate
6	Rod cover	Steel	Zinc chromate	18	Hexagon socket head cap bolt	Alloy steel	Blackening
7	Cylinder gasket	Fluoro rubber		19	Hexagon nut	Steel	Zinc chromate
8	Cushion packing seal	Fluoro rubber		20	Spring washer	Steel	Zinc chromate
9	Piston rod	Steel	Industrial chrome plating	21	Tie rod	Steel	Zinc chromate
10	Cylinder tube	Steel	Paint and industrial chrome plating	22	Needle gasket	Fluoro rubber	
11	Cushion ring A	Steel	Zinc chromate	23	Needle nut	Steel	Zinc chromate
12	Piston gasket	Fluoro rubber		24	Cushion needle	Steel	Zinc chromate
				25	Plain washer	Steel	Zinc chromate

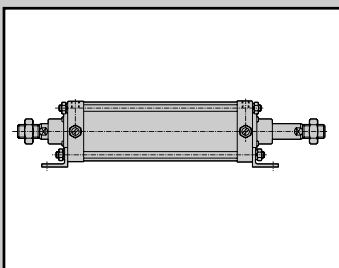
## Repair parts list

Bore size (mm)	Kit No.	Repair parts number
φ125	SCS-T-125K	
φ140	SCS-T-140K	
φ160	SCS-T-160K	2 3 5 7 8
φ180	SCS-T-180K	14 22
φ200	SCS-T-200K	
φ250	SCS-T-250K	

## Dimensions

It is the same dimensions as the double acting single rod type SCS. Refer to pages 613 to 619.





Large bore size cylinder  
Double acting double rod lubrication and oil-free type

# SCS-D Series

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

JIS symbol



## Specifications

Descriptions		SCS-D/SCS-LND (double rod type)					
Bore size	mm	$\phi 125$	$\phi 140$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 250$ <small>Note 2</small>
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.1					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	-5 to 60 (no freezing)					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance (Note 1)	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Working piston speed	mm/s	20 to 1000 (use within allowable energy absorption.)					
Cushion		Air cushion					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		SCS-D: Required (when lubricating, use turbine oil Class 1 ISO VG32.), SCS-LND: Not required					
Allowable energy absorption J	Cushioned	63.5	91.5	116	152	233	362
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
		The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.					

Note 1: With switch  $^{+2.0}_0$  (up to 1000)

Note 2:  $\phi 250$  with switch is not available.

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi 125$	50, 75, 100, 150, 200, 250, 300	800	1	30
$\phi 140$				32
$\phi 160$				34
$\phi 180$				35
$\phi 200$				37
$\phi 250$				39

Note 1: Custom stroke length is available per 1 mm increment.

## Min. stroke length with switch

Descriptions		Stroke length when installed on the same plane	Stroke length of intermediate (supporting hole) trunnion type	Stroke length of rod end (supporting hole) trunnion type	Stroke length of head end (supporting hole) trunnion type
Switch type	Rough sketch				
	Bore size			A position can not be detected at rod side stroke end	A position can not be detected at head side stroke end
Reed switch (R*)	$\phi 125$	20 and over	120 and over	70 and over	
	$\phi 140$		125 and over	75 and over	
	$\phi 160$		130 and over	80 and over	
	$\phi 180$		135 and over	85 and over	
	$\phi 200$		140 and over	90 and over	



- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS**
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

### Switch specifications

Descriptions	Proximity 2-wire			Proximity 3-wire		Proximity 2-wire
	R1K	R2K	R2YK (2 color indicator type)	R3K	R3YK (2 color indicator type)	T2YDP*/T2YDPT* (Strong magnetic field proof)
Applications	Programmable controller, relay, small solenoid valve	Programmable controller		Programmable controller, relay, IC circuit, solenoid valve		Programmable controller
Output method	-			NPN output		-
Power voltage	-			4.5 to 28 VDC		-
Load voltage/current	85 to 265 VAC 5 to 100 mA	10 to 30 VDC 5 to 300 mA		30 VDC or less 200 mA or less 150 mA or less		24 VDC ±10%, 5 to 20 mA
Light	LED (ON lighting)		Red/green LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less	1.2 mA or less	10 μA or less		1.0 mA or less

Descriptions	Reed 2-wire			
	R0	R4	R5	R6
Applications	Relay, programmable controller	High capacity relay, solenoid valve	Programmable controller, relay, IC circuit (w/o light), serial connection	Programmable controller (With DC self hold)
Load voltage/current	12/24 VDC, 5 to 50 mA or less 110 VAC, 7 to 20 mA or less 220 VAC, 7 to 10 mA or less	110 VAC, 20 to 200 mA 220 VAC, 10 to 200 mA	5/12/24 VDC, 50 mA or less 110 VAC, 20 mA or less 220 VAC, 10 mA or less	24 VDC, 5 to 50 mA
Light	LED ON lighting	Neon light OFF lighting	None	LED ON lighting
Leakage current	0 mA	1 mA or less	0 mA	0.1 mA or less

Note: Refer to an Ending 1 for other switch specifications.

### Cylinder weight

(Unit: kg)

Descriptions, mounting style	Product weight when stroke length (S) = 0 mm				Additional weight per S = 100 mm
	Basic type (00)	Axial foot type (LB)	Flange type (FA/FB)	Trunnion type (TA/TB/TC)	
φ 125	16.6	18.1	19.9	20.0	3.36
φ 140	21.8	24.0	27.4	25.2	3.71
φ 160	29.0	32.1	35.9	35.4	4.56
φ 180	38.2	42.7	50.2	46.3	6.19
φ 200	52.5	58.2	66.2	64.3	7.27
φ 250	91.7	100.1	117.6	120.4	11.28

(E.g.) Product weight of SCS-D-LB-125B-300 ————— { ● Product weight when S = 0 mm ..... 18.1 kg  
 ● Additional weight when S = 300 mm .....  $3.36 \times \frac{300}{100} = 10.08$  kg  
 ● Product weight .....  $18.1 + 10.08 = 28.18$  kg

Large bore size cylinder  
Standard type

## How to order

Without switch



With switch



**A** Mounting style

**B** Bore size  
Note 2

**C** Port thread type

**D** Cushion

**E** Stroke length  
Note 2

**F** Switch model no.

**G** Switch quantity  
Note 4

**H** Option  
Note 5, Note 6, Note 7

**I** Accessory

### Note on model no. selection

- Note 1:  $\phi$ 250 with switch is not available.
- Note 2: Refer to Ending 74 if the maximum stroke is exceeded.
- Note 3: Refer to page 628 for min. stroke length.
- Note 4: When selecting TA or TB for mounting, the number of switches is limited to "H" (one on head side) for TA, and "R" (one on rod side) for TB.
- Note 5: Refer to dimension drawings for cushion needle position indication symbols.
- Note 6: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.
- Note 7: SCS-D is as copper and PTFE free as standard.
- Note 8: Refer to Ending 89 for custom specifications of rod end form.

<Example of model number>

**SCS-LND-LB-125B-50-R0-R-JY**

Model: Large bore size cylinder double acting double rod type with switch

- A** Mounting style : Axial foot type
- B** Bore size :  $\phi$ 125 mm
- C** Port thread type : Rc thread
- D** Cushion : Both sides cushioned
- E** Stroke length : 50 mm
- F** Switch model no. : Reed R0 switch, lead wire 1 m
- G** Switch quantity : One on rod end
- H** Option : Bellows material, max. ambient temperature 60 °C
- I** Accessory : Rod clevis

Symbol	Descriptions
<b>A Mounting style</b>	
00	Basic type
LB	Axial foot type
FA	Rod end flange type
FB	Head end flange type
TC	Center trunnion type
TA	Rod end trunnion type
TB	Head end trunnion type
TF	Intermediate supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)
TD	Rod end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)
TE	Head end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)

<b>B Bore size (mm)</b>	
125	$\phi$ 125
140	$\phi$ 140
160	$\phi$ 160
180	$\phi$ 180
200	$\phi$ 200
250	$\phi$ 250 (types with switch are not available.)

<b>C Port thread type</b>	
Blank	Rc thread
N	NPT thread (custom order)
G	G thread (custom order)

<b>D Cushion</b>	
B	Both sides cushioned
R	Rod end cushion
H	Head end cushion
N	No cushion

<b>E Stroke length (mm)</b>			
Bore size	Stroke length Note 3	Custom stroke length	
$\phi$ 125 to $\phi$ 160	1 to 800	Per 1 mm increment	
$\phi$ 180	1 to 900		
$\phi$ 200	1 to 1000		
$\phi$ 250	1 to 1200		

<b>F Switch model no.</b>					
Grommet type	Terminal box type		Contact	Indicator	Lead wire
	Standard type	Splash-proof			
R1K*	R1KB	R1KA	Proximity	1 color indicator type	2-wire
R2K*	R2KB	R2KA			
R2YK*	R2YKB	R2YKA			
T2YDP*	-	-	Proximity	Strong magnetic field proof switch	3-wire
T2YDPT*	-	-			
R3K*	R3KB	R3KA	Reed	1 color indicator type	2-wire
R3YK*	R3YKB	R3YKA			
R0*	R0B	R0A	Reed	1 color indicator type	2-wire
R4*	R4B	R4A			
R5*	R5B	R5A			
R6*	R6B	R6A			

<b>*Lead wire length</b>	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

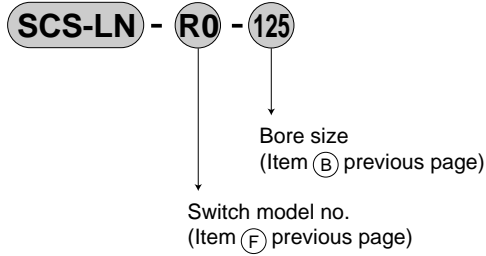
<b>G Switch quantity</b>	
R	One on rod end
H	One on head end
D	Two
T	Three
4	Four

<b>H Option</b>			
C2	Cushion mechanism with check valve		
	Max. ambient	Max. instantaneous	
J	Bellows	60 °C	100 °C
K	Bellows	100 °C	200 °C
L	Bellows	250 °C	400 °C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position R (standard)		
S	Cushion needle position S		
T	Cushion needle position T		
P6	Copper and PTFE free		

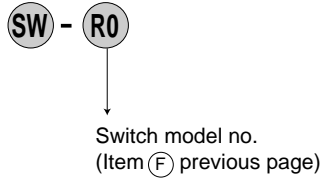
<b>I Accessory</b>	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)

### How to order switch

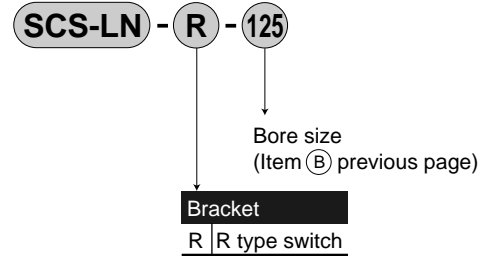
● Switch body + mounting bracket



● Only switch body



● Mounting bracket

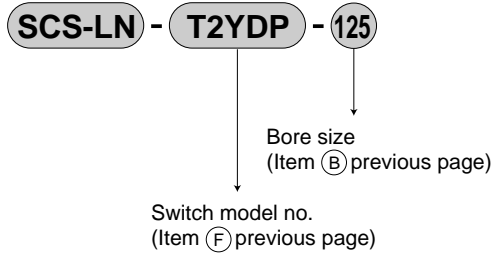


● Only terminal box

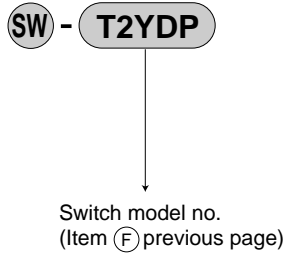


### How to order T2YD switch

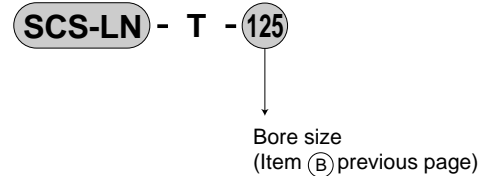
● Switch body + mounting bracket



● Only switch body



● Mounting bracket

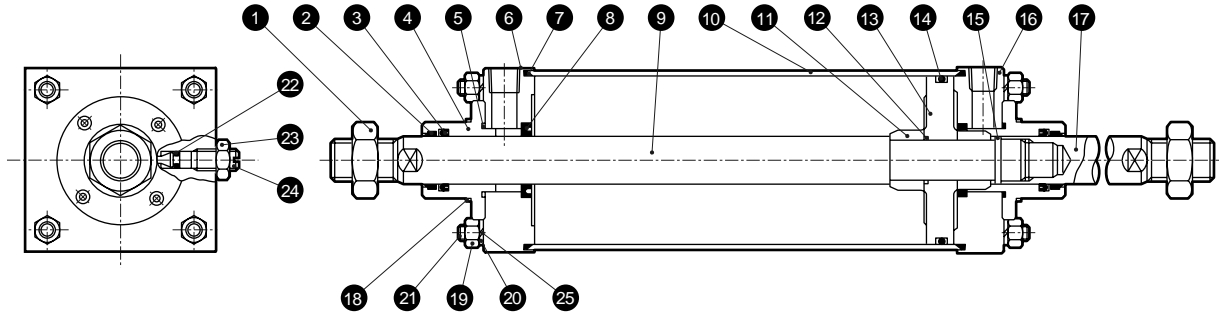


SCP*2
CMK2
CMA2
SCM
SCG
SCA2
<b>SCS</b>
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Large bore size cylinder  
Standard type

## Internal structure and parts list

● SCS-D (double rod type)



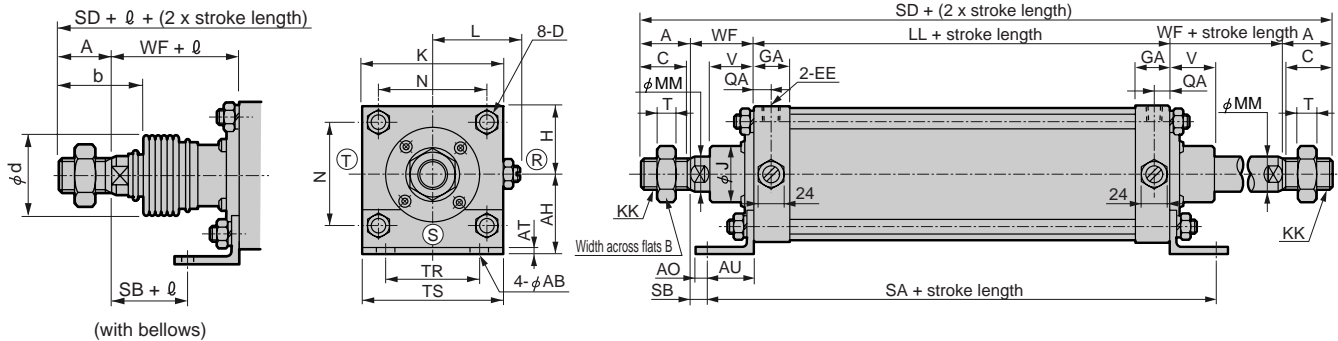
● Note: Parts (8), (22), (23) and (24) are not required for no cushion type.

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	13	Piston	Cast iron	Phosphoric acid zinc treatment
2	Dust wiper	Nitrile rubber		14	Piston packing seal	Nitrile rubber	
3	Rod packing seal	Nitrile rubber		15	Spring pin	Steel	
4	Rod bushing	Cast iron	Zinc chromate	16	Rod cover B	Steel	Zinc chromate
5	Metal gasket	Nitrile rubber		17	Piston rod B	Steel	Industrial chrome plating
6	Rod cover A	Steel	Zinc chromate	18	Hexagon socket head cap bolt	Alloy steel	
7	Cylinder gasket	Nitrile rubber		19	Hexagon nut	Steel	Zinc chromate
8	Cushion packing seal	Nitrile rubber and steel		20	Spring washer	Steel	Zinc chromate
9	Piston rod A	Steel	Industrial chrome plating	21	Tie rod	Steel	Zinc chromate
10	Cylinder tube	Steel	Paint and industrial chrome plating	22	Needle gasket	Nitrile rubber	
11	Cushion ring A	Steel	Zinc chromate	23	Needle nut	Steel	Zinc chromate
12	Piston gasket	Nitrile rubber		24	Cushion needle	Steel	Zinc chromate
				25	Plain washer	Steel	Zinc chromate

## Repair parts list (refer to page 612 for oil-free type)

Bore size (mm)	Kit No.	Repair parts number
φ 125	SCS-D-125K	
φ 140	SCS-D-140K	
φ 160	SCS-D-160K	2 3 5 7 8
φ 180	SCS-D-180K	14 22
φ 200	SCS-D-200K	
φ 250	SCS-D-250K	

### Dimensions



Note 2: Refer to page 613 for the switch section dimension of the type with a switch.  
 Note 3: The position of the width across flat for catching the wrench on the left and right is not specified.  
 Note 4: Refer to page 651 for accessory dimensions.

Note 1: (R), (S) and (T) show the positions of cushion needle.

Symbol	Basic dimensions for axial foot type (LB)													
Bore size (mm)	A	AB	AH	AO	AT	AU	B	C	D	EE	GA	H	J	K
φ125	50	19	85	19	7	45	46	47	M14 x 1.5	Rc1/2	32	70	57	140
φ140	50	19	100	20	8	50	46	47	M14 x 1.5	Rc3/4	36	78.5	57	157
φ160	56	19	106	20	10	53	55	53	M16 x 1.5	Rc3/4	38.5	88.5	62	177
φ180	63	24	125	27	10	60	60	60	M18 x 1.5	Rc3/4	39.5	100	68	200
φ200	72	24	132	27	12	62	70	69	M20 x 1.5	Rc3/4	44.5	110	75	220
φ250	88	29	160	29	12	70	85	84	M24 x 1.5	Rc1	49.5	137	93	274

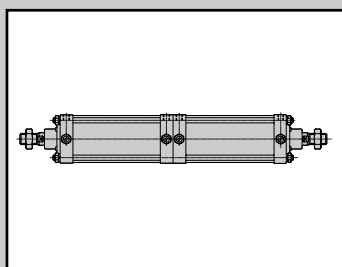
  

Symbol	Basic dimensions for axial foot type (LB)														With bellows		
Bore size (mm)	KK	L	LL	MM	N	QA	SA	SB	SD	T	TR	TS	V	WF	b	d	l
φ125	M30 x 1.5	83 to 91	91	35	110	14.5	181	20	321	18	100	140	46	65	74	75	(stroke length/4.55) + 11
φ140	M30 x 1.5	91.5 to 99.5	102	35	124	16.5	202	17	336	18	112	157	46	67	74	75	(stroke length/4.55) + 9
φ160	M36 x 1.5	101.5 to 109.5	105	40	142	16.5	211	18	359	21	118	177	48.5	71	82	80	(stroke length/5.15) + 9
φ180	M40 x 1.5	113 to 121	109	45	160	16.5	229	18	391	24	132	200	53.5	78	91	90	(stroke length/5.15) + 9
φ200	M45 x 1.5	123 to 131	122	50	175	17.5	246	26	442	27	150	220	60.5	88	102	95	(stroke length/5.30) + 9
φ250	M56 x 2.0	150 to 158	140	60	216	20	280	24	504	34	180	274	64.5	94	120	120	(stroke length/6.40) + 9

Note: Each mounting style installation dimension is same as SCS. Refer to pages 613 to 619.

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS**
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Large bore size cylinder  
Standard type



Large bore size cylinder  
Double acting back to back type

# SCS-B Series

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

JIS symbol



## Specifications

Descriptions		SCS-B (back to back type)					
Bore size	mm	$\phi$ 125	$\phi$ 140	$\phi$ 160	$\phi$ 180	$\phi$ 200	$\phi$ 250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.05					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	-5 to 60 (no freezing)					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Working piston speed	mm/s	20 to 1000 (use within allowable energy absorption.)					
Cushion		Air cushion					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (when lubricating, use turbine oil Class 1 ISO VG32.)					
Allowable energy absorption	Cushioned	63.5	91.5	116	152	233	362
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
		The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.					

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi$ 125	50, 75, 100, 150, 200, 250, 300	800	1	30
$\phi$ 140				32
$\phi$ 160				34
$\phi$ 180		900		35
$\phi$ 200		1000		37
$\phi$ 250		1200		39

Note 1: Custom stroke length is available per 1 mm increment.

## Cylinder weight

(Unit: kg)

Mounting style	Product weight when stroke length (S) = 0 mm				Additional weight per S = 100 mm
	Basic type (00)	Axial foot type (LB)	Flange type (FA/FB)	Trunnion type (TA/TB)	
$\phi$ 125	31.1	32.6	36.2	36.4	2.60
$\phi$ 140	42.2	44.4	51.2	46.8	2.96
$\phi$ 160	55.7	58.8	66.4	65.4	3.57
$\phi$ 180	74.1	78.6	93.6	85.8	4.94
$\phi$ 200	100.9	106.6	122.6	118.8	5.73
$\phi$ 250	175.8	184.2	219.2	224.8	9.06

### How to order

Without switch

SCS-B - LB - 125 - B - 50 - B - 50 - J Y

A Mounting style

B Bore size

C Port thread type C Port thread type

D Cushion = S1 D Cushion = S2

E Stroke length = S1 Note 1 E Stroke length = S2 Note 1

F Option Note 2, Note 3

G Accessory

Stroke length of cylinder 1 S1  
Stroke length of cylinder 2 S2

Symbol	Descriptions
<b>A Mounting style</b>	
00	Basic type
LB	Axial foot type
FA	Rod end flange type
TA	Rod end trunnion type
TB	Head end trunnion type
TD	Rod end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)
TE	Head end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)

B Bore size (mm)	
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$

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

D Cushion	
B	Both sides cushioned
R	Rod end cushion
H	Head end cushion
N	No cushion

E Stroke length (mm)		
Bore size	Stroke length	Custom stroke length
$\phi 125$ to $\phi 160$	1 to 800	Per 1 mm increment
$\phi 180$	1 to 900	
$\phi 200$	1 to 1000	
$\phi 250$	1 to 1200	

F Option		Max. ambient	Max. instantaneous
C2	Cushion mechanism with check valve		
J	Bellows	60 °C	100 °C
K	Bellows	100 °C	200 °C
L	Bellows	250 °C	400 °C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position R (standard)		
S	Cushion needle position S		
T	Cushion needle position T		

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

### ⚠ Note on model no. selection

- Note 1: Refer to Ending 74 if the maximum stroke is exceeded.  
 Note 2: Refer to dimension drawings for cushion needle position indication symbols.  
 Note 3: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.  
 Note 4: Refer to Ending 89 for custom specifications of rod end form.

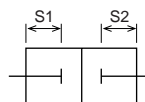
<Example of model number>

**SCS-B-LB-125-B50-B50-JY**

Model: Large bore size cylinder double acting back to back type

- A Mounting style : Axial foot type
- B Bore size :  $\phi 125$  mm
- C Port thread type : Rc thread
- D Cushion : Both sides air cushioned } Cylinder 1
- E Stroke length S1 : 50 mm
- C Port thread type : Rc thread
- D Cushion : Both sides air cushioned } Cylinder 2
- E Stroke length S2 : 50 mm
- F Option : Bellows material, max. ambient temperature 60 °C
- G Accessory : Rod clevis

Stroke length of cylinder1 50 mm S1 displayed by S1  
 + Stroke length of cylinder2 50 mm S2 displayed by S2  
 Total stroke length 100 mm S1 + S2

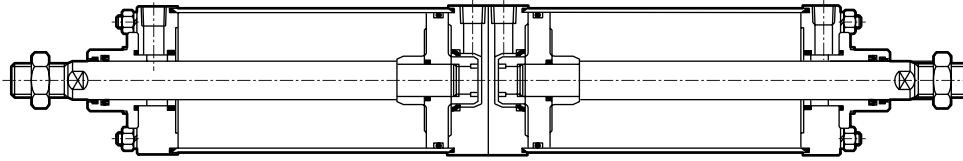


- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Large bore size cylinder  
Standard type

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS**
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

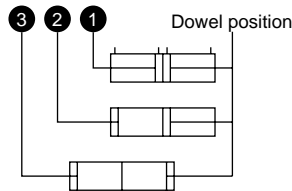
## Internal structure



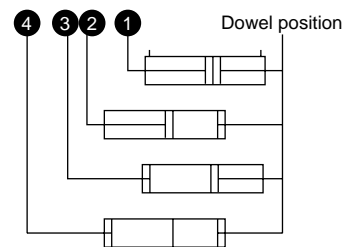
Note: Parts list is the same as double acting SCS. Refer to page 612.

## Applications

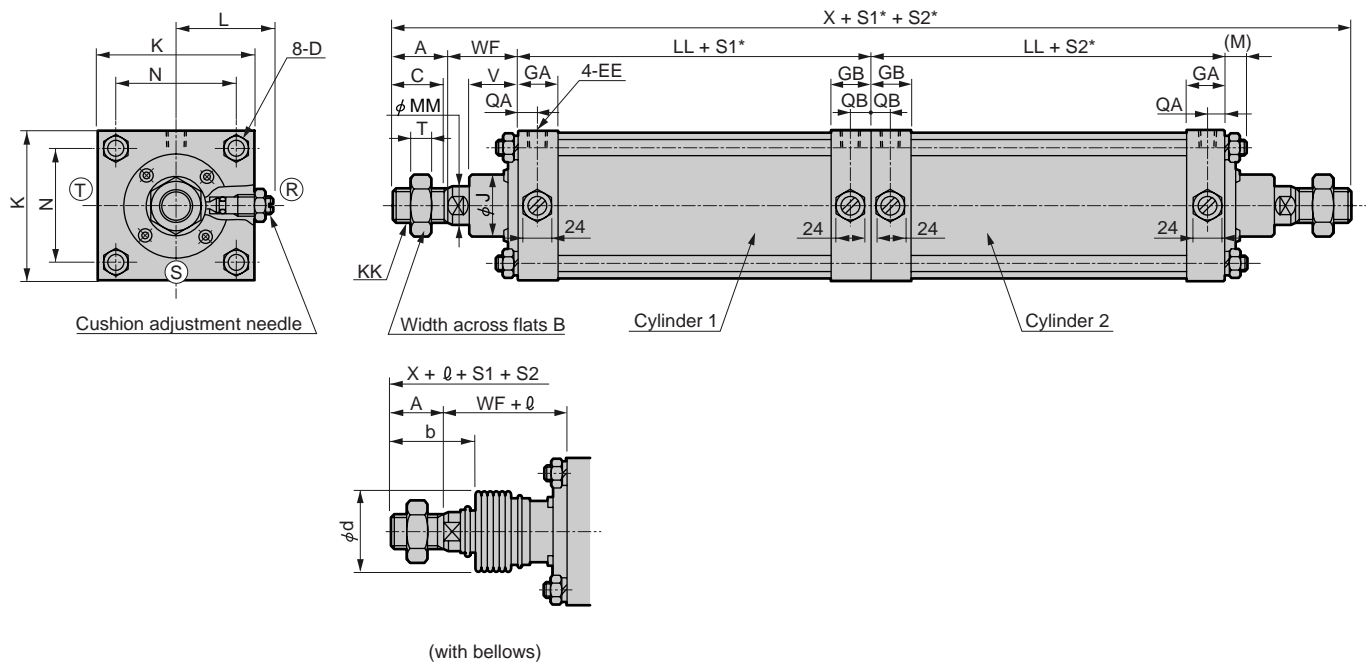
Three positions are available when the same stroke is combined.



Four positions are available when different strokes are combined.



## Dimensions

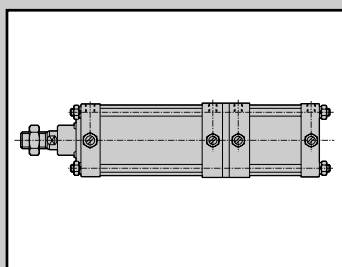


Note 1: (R), (S) and (T) show the positions of cushion needle. \*S1: Stroke length of cylinder 1 S2: Stroke length of cylinder 2  
 Note 2: Refer to page 651 for accessory dimensions.

Symbol Bore size (mm)	A	B	C	D	EE	GA	GB	J	K	KK	L	LL	M	MM	N	T	QA	QB	V	WF	X	With bellows		
																						b	d	l
φ 125	50	46	47	M14 x 1.5	Rc1/2	32	29	57	140	M30 x 1.5	83 to 91	91.5	20	35	110	18	14.5	15	46	65	413	74	75	(stroke length/4.55) + 11
φ 140	50	46	47	M14 x 1.5	Rc3/4	36	36	57	157	M30 x 1.5	91.5 to 99.5	102.5	20	35	124	18	16.5	17	46	67	439	74	75	(stroke length/4.55) + 9
φ 160	56	55	53	M16 x 1.5	Rc3/4	38.5	36	62	177	M36 x 1.5	101.5 to 109.5	105.5	23	40	142	21	16.5	17	48.5	71	465	82	80	(stroke length/5.15) + 9
φ 180	63	60	60	M18 x 1.5	Rc3/4	39.5	38.5	68	200	M40 x 1.5	113 to 121	109.5	26	45	160	24	16.5	17	53.5	78	501	91	90	(stroke length/5.15) + 9
φ 200	72	70	69	M20 x 1.5	Rc3/4	44.5	45	75	220	M45 x 1.5	123 to 131	122.5	27	50	175	27	17.5	18	60.5	88	565	102	95	(stroke length/5.30) + 9
φ 250	88	85	84	M24 x 1.5	Rc1	49.5	50	93	274	M56 x 2	150 to 158	140.5	32	60	216	34	20	20.5	64.5	94	645	120	120	(stroke length/6.40) + 9

Note: Each mounting style installation dimension is same as SCS. Refer to pages 614 to 619.





Large bore size cylinder  
Double acting two stage type

# SCS-W Series

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

RoHS

## Specifications

Descriptions		SCS-W (two stage type)					
Bore size	mm	$\phi$ 125	$\phi$ 140	$\phi$ 160	$\phi$ 180	$\phi$ 200	$\phi$ 250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.1					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	-5 to 60 (no freezing)					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Working piston speed	mm/s	20 to 1000 (use within allowable energy absorption.)					
Cushion		Air cushion					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (when lubricating, use turbine oil Class 1 ISO VG32.)					
Allowable energy absorption	Cushioned	63.5	91.5	116	152	233	362
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
		The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.					

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi$ 125	50, 75, 100, 150, 200, 250, 300	800	2 (Total mm stroke)	30
$\phi$ 140				32
$\phi$ 160				34
$\phi$ 180		900		35
$\phi$ 200		1000		37
$\phi$ 250		1200		39

Note 1: Custom stroke length is available per 1 mm increment.

## Cylinder weight

(Unit: kg)

Mounting style	Product weight when stroke length (S) = 0 mm							Additional weight per S = 100 mm	
	Basic type (00)		Axial foot type (LB)	Flange type (FA/FB)	Eye bracket type (CA)	Clevis bracket type (CB)	Trunnion type (TA/TB)	First stage	Second stage
Bore size (mm)	First stage	Second stage	(LB)	(FA/FB)	(CA)	(CB)	(TA/TB)	First stage	Second stage
$\phi$ 125	14.8	17.2	33.5	35.3	35.0	35.1	35.4	2.60	2.60
$\phi$ 140	20.0	23.5	45.7	49.1	47.5	47.7	46.9	2.96	2.96
$\phi$ 160	26.3	30.3	59.7	63.5	61.6	61.9	63.0	3.57	3.57
$\phi$ 180	34.8	41.0	80.3	87.8	83.2	83.7	83.9	4.94	4.94
$\phi$ 200	47.6	55.0	108.3	116.3	112.1	112.3	114.4	5.73	5.73
$\phi$ 250	83.7	96.4	188.5	206.0	204.1	198.6	208.8	9.06	9.06

### How to order

Without switch

SCS-W - LB - 125 - B - 200 - B - 50 - J - Y

A Mounting style

B Bore size

C Port thread type

C Port thread type

D Cushion = S1

D Cushion = S2

E Stroke length = S1  
Note 1

E Stroke length = S2  
Note 2

F Option  
Note 3, Note 4

G Accessory

Total stroke length

S1

First stage stroke length

S2

### Note on model no. selection

Note 1: Refer to Ending 74 if the maximum stroke is exceeded.

Note 2: Max. stroke length of S2 (first stage) is 200.

Note 3: Refer to dimension drawings for cushion needle position indication symbols.

Note 4: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.

Note 5: Refer to Ending 89 for custom specifications of rod end form.

### <Example of model number>

### SCS-W-LB-125-B200-B50-JY

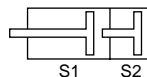
Model: Large bore size cylinder double acting two stage type

- A Mounting style : Axial foot type
- B Bore size :  $\phi 125$  mm
- C H Port thread type: Rc thread
- D Cushion : Both sides cushioned
- E Stroke length S1 : Total stroke 200 mm
- C Port thread type : Rc thread
- D Cushion : Both sides cushioned
- E Stroke length S2 : First stage stroke length 50 mm
- F Option : Bellows material, max. ambient temperature 60 °C
- G Accessory : Rod clevis

Cylinder 1

Cylinder 2

First stage stroke length 50 mm displayed by S2  
+ Second stage stroke length 150 mm  
Total stroke length 200 mm displayed by S1

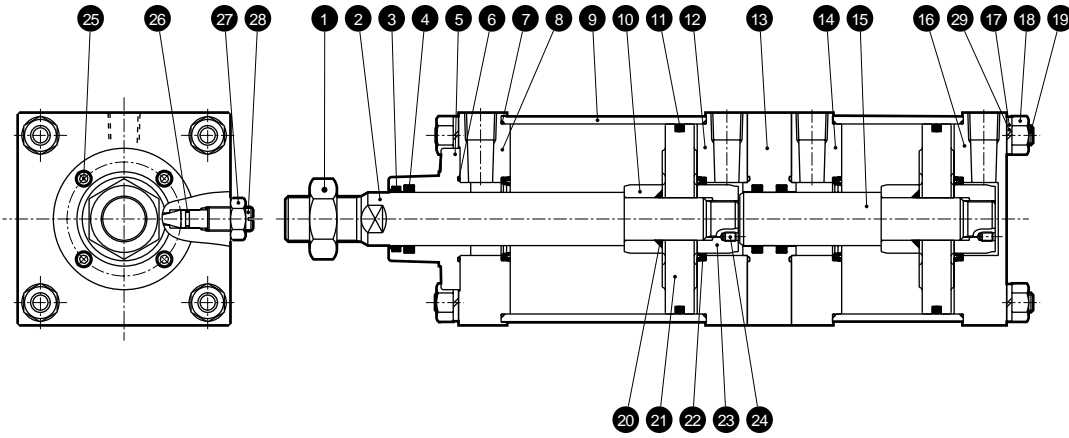


Symbol	Descriptions	
<b>A Mounting style</b>		
00	Basic type	
LB	Axial foot type	
FA	Rod end flange type	
FB	Head end flange type	
CA	Eye bracket type	
CB	Clevis bracket type (pin and snap ring attached)	
TA	Rod end trunnion type	
TB	Head end trunnion type	
TD	Rod end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)	
TE	Head end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)	
<b>B Bore size (mm)</b>		
125	$\phi 125$	
140	$\phi 140$	
160	$\phi 160$	
180	$\phi 180$	
200	$\phi 200$	
250	$\phi 250$	
<b>C Port thread type</b>		
Blank	Rc thread	
N	NPT thread (custom order)	
G	G thread (custom order)	
<b>D Cushion</b>		
B	Both sides cushioned	
R	Rod end cushion	
H	Head end cushion	
N	No cushion	
<b>E Stroke length (mm)</b>		
Bore size	Stroke length	Custom stroke length
$\phi 125$ to $\phi 160$	2 to 800	Per 1 mm increment
$\phi 180$	2 to 900	
$\phi 200$	2 to 1000	
$\phi 250$	2 to 1200	
<b>F Option</b>		
C2	Cushion mechanism with check valve	
	Max. ambient	Max. instantaneous
J	60 °C	100 °C
K	100 °C	200 °C
L	250 °C	400 °C
M	Piston rod material (stainless steel)	
Blank	Cushion needle position R (standard)	
S	Cushion needle position S	
T	Cushion needle position T	
<b>G Accessory</b>		
I	Rod eye	
Y	Rod clevis (pin and snap ring attached)	
B1	Eye bracket	
B2	Clevis bracket (pin and snap ring attached)	

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

Large bore size cylinder  
Standard type

## Internal structure



● Note: Parts (10), (22), (23), (26), (27) and (28) are not required for no cushion type.

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	15	Piston rod (2)	Steel	Industrial chrome plating
2	Piston rod	Steel	Industrial chrome plating	16	Head cover	Steel	Zinc chromate
3	Dust wiper	Nitrile rubber		17	Spring washer	Steel	Zinc chromate
4	Rod packing seal	Nitrile rubber		18	Hexagon nut	Steel	Zinc chromate
5	Rod bushing	Cast iron	Zinc chromate	19	Tie rod	Steel	Zinc chromate
6	Metal gasket	Nitrile rubber		20	Piston gasket	Nitrile rubber	
7	Cylinder gasket	Nitrile rubber		21	Piston	Cast iron	
8	Rod cover	Steel	Zinc chromate	22	Cushion packing seal	Nitrile rubber, steel	
9	Cylinder tube	Steel	Paint and industrial chrome plating	23	Cushion ring B	Steel	Zinc chromate
10	Cushion ring A	Steel	Zinc chromate	24	Hexagon socket head set screw	Alloy steel	Blackening
11	Piston packing seal	Nitrile rubber		25	Hexagon socket head cap bolt	Alloy steel	Blackening
12	Intermediate guard (1)	Steel	Zinc chromate	26	Needle gasket	Nitrile rubber	
13	Intermediate plate	Cast iron	Zinc chromate	27	Needle nut	Steel	Zinc chromate
14	Intermediate guard (2)	Steel	Zinc chromate	28	Cushion needle	Steel	Zinc chromate
				29	Plain washer	Steel	Zinc chromate

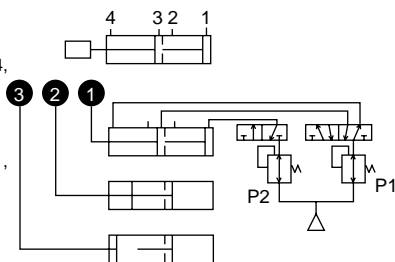
## Repair parts list

Bore size (mm)	Kit No.	Repair parts number
φ 125	SCS-W-125K	
φ 140	SCS-W-140K	
φ 160	SCS-W-160K	3 4 6 7 11
φ 180	SCS-W-180K	22 26
φ 200	SCS-W-200K	
φ 250	SCS-W-250K	

## Applications

Pressure setting is  $P2 > P1$ .

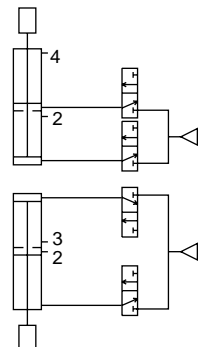
- First stage: push-out  
With supplying pressure to port 4, supply pressure to port 1.
- Second stage: push-out  
With supplying pressure to port 1, supply pressure to port 3.



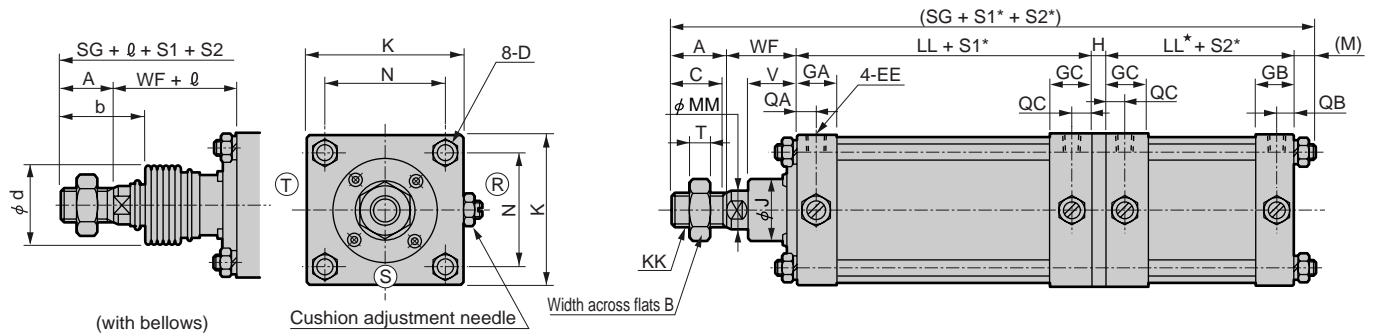
$P2 = P1$  is acceptable depended on a load direction.

When using a single acting cylinder with a load which drops by its own weight, for the drawing above, port 2 and 4 are used as bleed holes, while for the drawing below, port 2 and 3 are used as bleed holes.

Basically, piping ports (2) not requiring piping improve the cushion effect.



### Dimensions



Note 1: (R), (S) and (T) show the positions of cushion needle. Note 2: Refer to page 651 for accessory dimensions.

Symbol	Basic dimensions												
Bore size (mm)	A	B	C	D	EE	GA	GB	GC	H	J	K	KK	L
φ125	50	46	47	M14 x 1.5	Rc1/2	32	29	27.6	29	57	140	M30 x 1.5	83 to 91
φ140	50	46	47	M14 x 1.5	Rc3/4	36	36	34.5	29	57	157	M30 x 1.5	91.5 to 99.5
φ160	56	55	53	M16 x 1.5	Rc3/4	38.5	36	34.5	29	62	177	M36 x 1.5	101.5 to 109.5
φ180	63	60	60	M18 x 1.5	Rc3/4	39.5	38.5	37	34	68	200	M40 x 1.5	113 to 121
φ200	72	70	69	M20 x 1.5	Rc3/4	44.5	45	43.5	36	75	220	M45 x 1.5	123 to 131
φ250	88	85	84	M24 x 1.5	Rc1	49.5	50	48.5	40	93	274	M56 x 2	150 to 158

Symbol													With bellows		
Bore size (mm)	LL	LL*	MM	M	QA	QB	QC	N	SG	T	V	WF	b	d	l
φ125	90	91.5	35	20	14.5	15	13.5	110	345.5	18	46	65	74	75	(stroke length(4.55) + 11
φ140	101	102.5	35	20	16.5	17	15.5	124	369.5	18	46	67	74	75	(stroke length(4.55) + 9
φ160	104	105.5	40	23	16.5	17	15.5	142	388.5	21	48.5	71	82	80	(stroke length(5.15) + 9
φ180	108	109.5	45	26	16.5	17	15.5	160	418.5	24	53.5	78	91	90	(stroke length(5.15) + 9
φ200	121	122.5	50	27	17.5	18	16.5	175	466.5	27	60.5	88	102	95	(stroke length(5.30) + 9
φ250	139	140.5	60	32	20	20.5	19	216	533.5	34	64.5	94	120	120	(stroke length(6.40) + 9

Note: Each mounting style installation dimension is same as SCS (double acting). Refer to pages 614 to 619.

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

Large bore size cylinder  
Standard type



Large bore size cylinder  
Double acting low hydraulic type

# SCS-H Series

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

JIS symbol



## Specifications

Descriptions		SCS-H/SCS-LH (low hydraulic type)					
Bore size	mm	$\phi 125$	$\phi 140$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 250$
Actuation		Double acting					
Working fluid		Hydraulic fluid					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.1					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	5 to 50					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance (Note 1)	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Cushion		Air cushion					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Allowable energy absorption J	Cushioned	Low hydraulic cylinder cushion cannot absorb a large energy. So an external shock absorber should be used.					
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
		The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.					

Note 1: With switch  $^{+2.0}_0$  (up to 1000)

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi 125$	50, 75, 100, 150, 200, 250, 300	800	20	30
$\phi 140$				32
$\phi 160$				34
$\phi 180$				35
$\phi 200$				37
$\phi 250$				39

Note 1: Custom stroke length is available per 1 mm increment.

## Min. stroke length with switch

Descriptions		Stroke length when installed on the same plane	Stroke length of intermediate (supporting hole) trunnion type	Stroke length of rod end (supporting hole) trunnion type	Stroke length of head end (supporting hole) trunnion type
Switch type	Rough sketch				
	Bore size			A position can not be detected at rod side stroke end	A position can not be detected at head side stroke end
Reed switch (R*)	$\phi 125$	20 and over	120 and over	70 and over	
	$\phi 140$		125 and over	75 and over	
	$\phi 160$		130 and over	80 and over	
	$\phi 180$		135 and over	85 and over	
	$\phi 200$		140 and over	90 and over	

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
**SCS**  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS**
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

### Switch specifications

Descriptions	Proximity 2-wire			Proximity 3-wire		Proximity 2-wire
	R1K	R2K	R2YK (2 color indicator type)	R3K	R3YK (2 color indicator type)	T2YDP*/T2YDPT* (Strong magnetic field proof)
Applications	Programmable controller, relay, small solenoid valve		Programmable controller	Programmable controller, relay, IC circuit, solenoid valve		Programmable controller
Output method	-			NPN output		-
Power voltage	-			4.5V to 28 VDC		-
Load voltage/current	85V to 265 VAC 5 to 100 mA	10 to 30 VDC 5 to 300 mA		30 VDC or less 200 mA or less   150 mA or less		24 VDC ±10%, 5 to 20 mA
Light	LED (ON lighting)		Red/green LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less	1.2 mA or less	10 μA or less		1.0 mA or less

Descriptions	Reed 2-wire			
	R0	R4	R5	R6
Applications	Relay, programmable controller	High capacity relay, solenoid valve	Programmable controller, relay, IC circuit (w/o light), serial connection	Programmable controller (With DC self hold)
Load voltage/current	12/24 VDC, 5 to 50 mA or less 110 VAC, 7 to 20 mA or less 220 VAC, 7 to 10 mA or less	110 VAC, 20 to 200 mA 220 VAC, 10 to 200 mA	5/12/24 VDC, 50 mA or less 110 VAC, 20 mA or less 220 VAC, 10 mA or less	24 VDC, 5 to 50 mA
Light	LED ON lighting	Neon light OFF lighting	None	LED ON lighting
Leakage current	0 mA	1 mA or less	0 mA	0.1 mA or less

Note: Refer to Ending 1 for other switch specifications.

### Cylinder weight

(Unit: kg)

Mounting style	Product weight when stroke length (S) = 0 mm						Weight per switch (Including mounting bracket)				Additional weight per S = 100 mm	
	Bore size (mm)	Basic type (00)	Axial foot type (LB)	Flange type (FA/FB)	Eye bracket type (CA)	Clevis bracket type (CB)	Trunnion type (TA/TB/TC)	R type		T2YD*		
								Grommet	Terminal box	1 m		3 m
	φ125	14.8	16.3	18.1	17.8	17.9	18.2	0.04	0.03	0.09	0.17	2.60
	φ140	20.2	22.2	25.6	24.0	24.2	23.4					2.96
	φ160	26.3	29.4	33.2	31.3	31.6	32.7					3.57
	φ180	34.8	39.3	46.8	42.2	42.7	42.9					4.94
	φ200	47.6	53.3	61.3	57.1	57.3	59.4					5.73
	φ250	83.7	92.1	109.6	107.7	102.2	112.4					-

(E.g.) Product weight of SCS-H-LB-125B-300-R0-D

- Product weight when S = 0 mm ..... 16.3 kg
- Additional weight when S = 300 mm .....  $2.60 \times \frac{300}{100} = 7.8$  kg
- Weight of two switches .....  $0.04 \times 2 = 0.08$  kg
- Product weight .....  $16.3 + 7.8 + 0.08 = 24.18$  kg

\*(strong magnetic field proof)

Large bore size cylinder  
Standard type

## How to order

\*Type with switch is custom order. Dimensions are different.

Without switch

SCS-H - LB - 125 - B - 50 - J - Y

With switch

SCS-LH - LB - 125 - B - 50 - R0 - R - J - Y

A Mounting style

B Bore size  
Note 1

C Port thread type

D Cushion

E Stroke length  
Note 2

F Switch model no.

G Switch quantity  
Note 4

H Option  
Note 5, Note 6

I Accessory  
Note 8

Symbol	Descriptions
<b>A Mounting style</b>	
00	Basic type
LB	Axial foot type
FA	Rod end flange type
FB	Head end flange type
CA	Eye bracket type
CB	Clevis bracket type (pin and snap ring attached)
TC	Center trunnion type
TA	Rod end trunnion type
TB	Head end trunnion type
TF	Intermediate supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)
TD	Rod end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)
TE	Head end supporting hole ( $\phi 180$ to $\phi 250$ cannot be selected.)

<b>B Bore size (mm)</b>	
125	$\phi 125$
140	$\phi 140$
160	$\phi 160$
180	$\phi 180$
200	$\phi 200$
250	$\phi 250$ (types with switch are not available.)

<b>C Port thread type</b>	
Blank	Rc thread
N	NPT thread (custom order)
G	G thread (custom order)

<b>D Cushion</b>	
B	Both sides cushioned
R	Rod end cushion
H	Head end cushion
N	No cushion

<b>E Stroke length (mm)</b>		
Bore size	Stroke length Note 3	Custom stroke length
$\phi 125$ to $\phi 160$	20 to 800	Per 1 mm increment
$\phi 180$	20 to 900	
$\phi 200$	20 to 1000	
$\phi 250$	20 to 1200	

<b>F Switch model no.</b>					
Grommet type	Terminal box type		Contact	Indicator	Lead wire
	Standard type	Splash-proof			
R1K*	R1KB	R1KA	Proximity	1 color indicator type	2-wire
R2K*	R2KB	R2KA		2 color indicator type	
R2YK*	R2YKB	R2YKA		Strong magnetic field proof switch	
T2YDPT*	-	-	Reed	field proof switch	3-wire
R3K*	R3KB	R3KA		1 color indicator type	
R3YK*	R3YKB	R3YKA		2 color indicator type	
R0*	R0B	R0A	Reed	1 color indicator type	2-wire
R4*	R4B	R4A		Without indicator light	
R5*	R5B	R5A		1 color indicator type	
R6*	R6B	R6A		1 color indicator type	

<b>*Lead wire length</b>	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

<b>G Switch quantity</b>	
R	One on rod end
H	One on head end
D	Two
T	Three
4	Four

<b>H Option</b>			
C2	Cushion mechanism with check valve		
J	Bellows	Max. ambient	Max. instantaneous
K	Bellows	60 °C	100 °C
L	Bellows	100 °C	200 °C
M	Bellows	250 °C	400 °C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position R (standard)		
S	Cushion needle position S		
T	Cushion needle position T		

<b>I Accessory</b>	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)

### Note on model no. selection

- Note 1:  $\phi 250$  with switch is not available.  
 Note 2: Refer to Ending 74 if the maximum stroke is exceeded.  
 Note 3: Refer to page 642 for min. stroke length with switch.  
 Note 4: When selecting TA or TB for mounting, the number of switches is limited to "H" (one on head side) for TA, and "R" (one on rod side) for TB.  
 Note 5: Refer to dimension drawings for cushion needle position indication symbols.  
 Note 6: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.  
 Note 7: Refer to Ending 89 for custom specifications of rod end form.  
 Note 8: "I" and "Y" can not be selected at the same time.

<Example of model number>

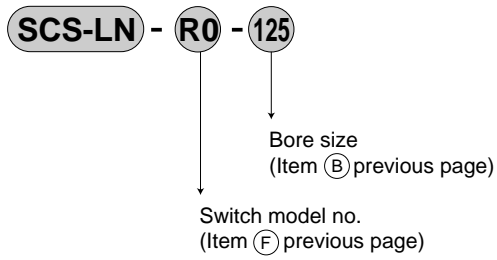
**SCS-LH-LB-125B-50-R0-R-JY**

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

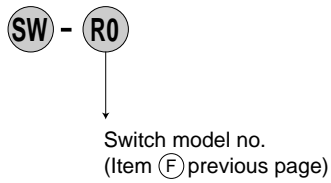
- A Mounting style : Axial foot type
- B Bore size :  $\phi 125$  mm
- C Port thread type : Rc thread
- D Cushion : Both sides air cushioned
- E Stroke length : 50 mm
- F Switch model no. : Proximity R0 switch, lead wire 1 m
- G Switch quantity : One on rod end
- H Option : Bellows material, max. ambient temperature 60 °C
- I Accessory : Rod clevis

### How to order switch

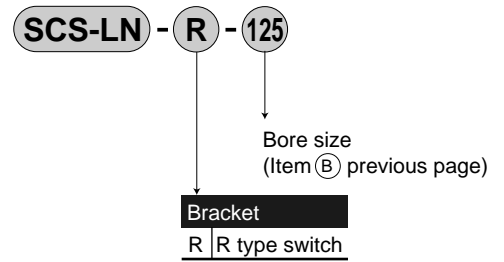
- Switch body + mounting bracket



- Only switch body

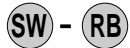


- Mounting bracket



- Only terminal box

· R\*B

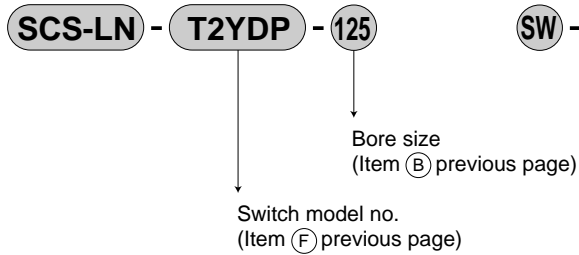


· R\*A

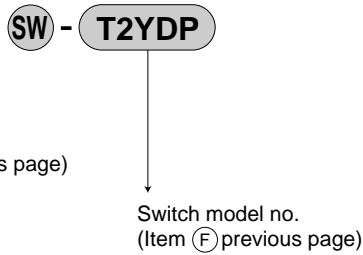


### How to order T2YD switch

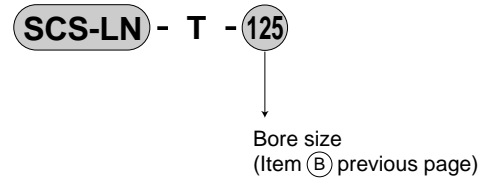
- Switch body + mounting bracket



- Only switch body



- Mounting bracket

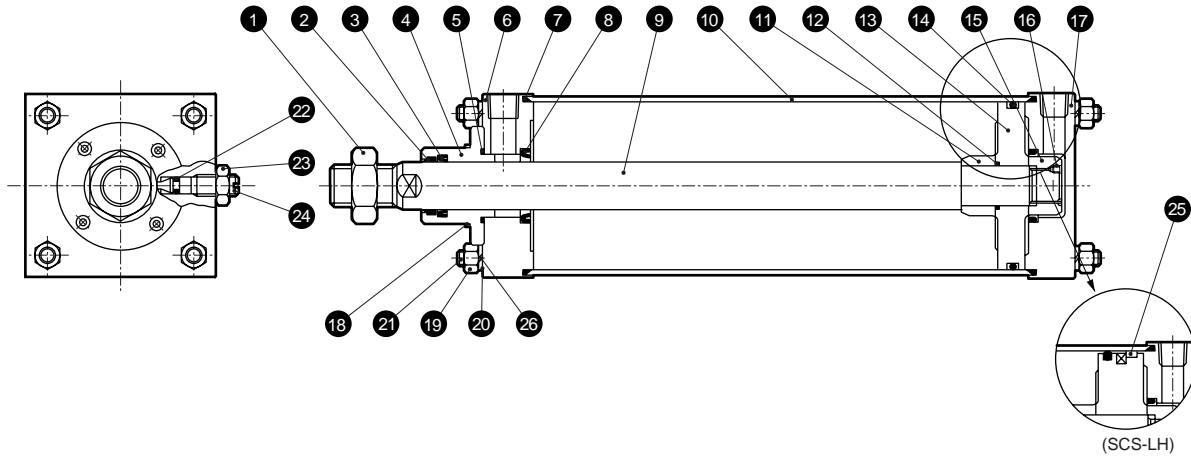


SCP*2
CMK2
CMA2
SCM
SCG
SCA2
<b>SCS</b>
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Large bore size cylinder  
Standard type



## Internal structure and parts list



● Note: Parts (8), (22), (23) and (24) are not required for no cushion type. For types with switch (custom order), different piston and piston packing seal are used.

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	13	Piston	Cast iron	Phosphoric acid zinc treatment
2	Dust wiper	Nitrile rubber		14	Piston packing seal	Nitrile rubber	
3	Rod packing seal	Nitrile rubber		15	Cushion ring B	Steel	Zinc chromate
4	Rod bushing	Cast iron	Zinc chromate	16	Hexagon socket head set screw	Alloy steel	Blackening
5	Metal gasket	Nitrile rubber		17	Head cover	Steel	Zinc chromate
6	Rod cover	Steel	Zinc chromate	18	Hexagon socket head cap bolt	Alloy steel	Blackening
7	Cylinder gasket	Nitrile rubber		19	Hexagon nut	Steel	Zinc chromate
8	Cushion packing seal	Nitrile rubber and steel		20	Spring washer	Steel	Zinc chromate
9	Piston rod	Steel	Industrial chrome plating	21	Tie rod	Steel	Zinc chromate
10	Cylinder tube	Steel	Paint and industrial chrome plating	22	Needle gasket	Nitrile rubber	
11	Cushion ring A	Steel	Zinc chromate	23	Needle nut	Steel	Zinc chromate
12	Piston gasket	Nitrile rubber		24	Cushion needle	Steel	Zinc chromate
				25	Wear ring	Polyacetal resin	
				26	Plain washer	Steel	Zinc chromate

## SCS-H repair parts list

Bore size (mm)	Kit No.	Repair parts number
φ 125	SCS-H-125K	
φ 140	SCS-H-140K	
φ 160	SCS-H-160K	2 3 5 7 8
φ 180	SCS-H-180K	14 22
φ 200	SCS-H-200K	
φ 250	SCS-H-250K	

## SCS-LH repair parts list

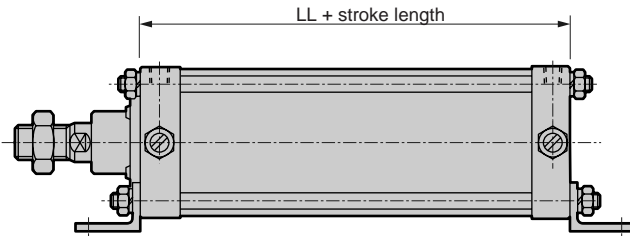
Bore size (mm)	Kit No.	Repair parts number
φ 125	SCS-LH-125K	
φ 140	SCS-LH-140K	
φ 160	SCS-LH-160K	2 3 5 7 8
φ 180	SCS-LH-180K	14 22 25
φ 200	SCS-LH-200K	

Note 1: Repair parts of SCS-LH contain the specifications changed piston packing seal and the additional wear ring in addition to repair parts of SCS-H.

### Dimensions

It's same as double acting SCS. Refer to pages 613 to 619.

### Dimensions of SCS-LH (with switch) (custom order)



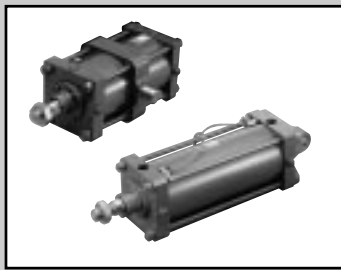
Note 1: For center trunnion type, the installation position is on the center between covers.

Note 2: LL dimensions on page 613 to 619 are as followings.

Model no.	φ125	φ140	φ160	φ180	φ200	φ250
SCS-H	91.5	102.5	105.5	109.5	122.5	140.5
SCS-LH	111.5	122.5	122.5	124.5	143.5	

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
<b>SCS</b>
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Large bore size cylinder  
Standard type



Large bore size cylinder  
Double acting rubber scraper type

# SCS-G Series

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

JIS symbol



## Specifications

Descriptions		SCS-G (rubber scraper type)					
Bore size	mm	$\phi 125$	$\phi 140$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 250$
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.05					
Withstanding pressure	MPa	1.6					
Ambient temperature	°C	-5 to 60 (no freezing)					
Port size		Rc1/2	Rc3/4			Rc1	
Stroke tolerance	mm	$^{+1.0}_0$ (up to 300), $^{+1.4}_0$ (up to 1000), $^{+1.8}_0$ (up to 1200)					
Working piston speed	mm/s	20 to 1000 (use within allowable energy absorption.)					
Cushion		Air cushion					
Effective cushion length	mm	21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Required (when lubricating, use turbine oil Class 1 ISO VG32.)					
Allowable energy absorption J	Cushioned	63.5	91.5	116	152	233	362
	No cushion	0.371	0.386	0.386	0.958	1.08	2.32
The type without cushioning cannot absorb a large energy generated by an external load. So an external shock absorber should be used.							

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Trunnion type min. stroke length (mm)
$\phi 125$	50, 75, 100, 150, 200, 250, 300	800	1	30
$\phi 140$				32
$\phi 160$				34
$\phi 180$				35
$\phi 200$				37
$\phi 250$				39

Note 1: Custom stroke length is available per 1 mm increment.

## Cylinder weight

(Unit: kg)

Mounting style	Product weight when stroke length (S) = 0 mm						Additional weight per S = 100 mm
	Basic type (00)	Axial foot type (LB)	Flange type (FA/FB)	Eye bracket type (CA)	Clevis bracket type (CB)	Trunnion type (TA/TB/TC)	
$\phi 125$	14.8	16.3	18.1	17.8	17.9	18.2	2.60
$\phi 140$	20.0	22.2	25.6	24.0	24.2	23.4	2.96
$\phi 160$	26.3	29.4	33.2	31.3	31.6	32.7	3.57
$\phi 180$	34.8	39.3	46.8	42.2	42.7	42.9	4.94
$\phi 200$	47.6	53.3	61.3	57.1	57.3	59.4	5.73
$\phi 250$	83.7	92.1	109.6	107.7	102.2	112.4	9.06

(E.g.) Product weight of SCS-G-LB-125B-300 ———— { ● Product weight when S = 0 mm ..... 16.3 kg  
● Additional weight when S = 300 mm .....  $2.60 \times \frac{300}{100} = 7.8$  kg  
● Product weight .....  $16.3 + 7.8 = 24.1$  kg

## Dimensions

It's same as double acting standard single rod type SCS. Refer to pages 613 to 619.

### How to order

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

**A** Mounting style

**B** Bore size

**C** Port thread type

**D** Cushion

**E** Stroke length

**F** Option  
Note 2, Note 3

**G** Accessory

#### ⚠ Note on model no. selection

- Note 1: Refer to Ending 74 if the maximum stroke is exceeded.
- Note 2: Refer to dimensions on page 613 to 617 about cushion needle position indications.
- Note 3: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.
- Note 4: Refer to Ending 89 for custom specifications of rod end form.

<Example of model number>

**SCS-G-LB-125B-50-JY**

Model: Large bore size cylinder rubber scraper type

- A** Mounting style : Axial foot type
- B** Bore size :  $\phi$  125 mm
- C** Port thread type : Rc thread
- D** Cushion : Both sides cushioned
- E** Stroke length : 50 mm
- F** Option : Bellows material, max. ambient temperature 60 °C
- G** Accessory : Rod clevis

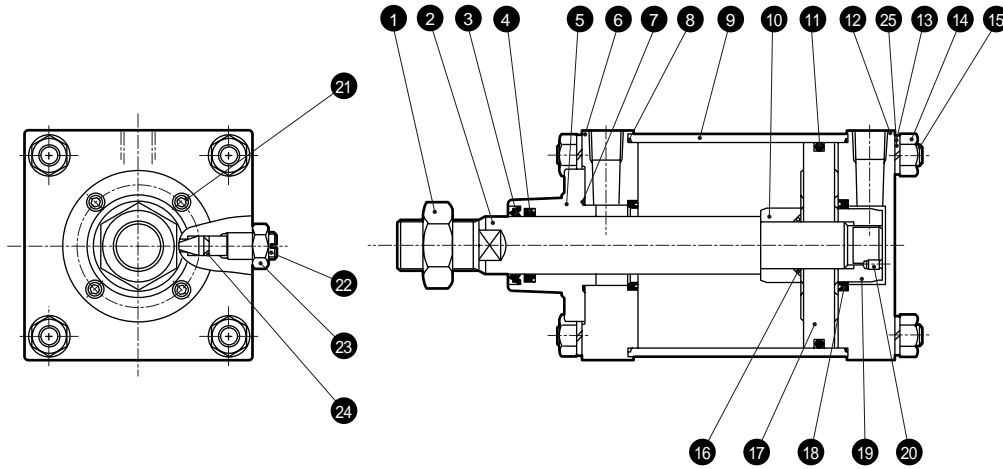
Symbol	Descriptions		
<b>A Mounting style</b>			
00	Basic type		
LB	Axial foot type		
FA	Rod end flange type		
FB	Head end flange type		
CA	Eye bracket type		
CB	Clevis bracket type (pin and snap ring attached)		
TC	Center trunnion type		
TA	Rod end trunnion type		
TB	Head end trunnion type		
TF	Intermediate supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)		
TD	Rod end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)		
TE	Head end supporting hole ( $\phi$ 180 to $\phi$ 250 cannot be selected.)		
<b>B Bore size (mm)</b>			
125	$\phi$ 125		
140	$\phi$ 140		
160	$\phi$ 160		
180	$\phi$ 180		
200	$\phi$ 200		
250	$\phi$ 250		
<b>C Port thread type</b>			
Blank	Rc thread		
N	NPT thread (custom order)		
G	G thread (custom order)		
<b>D Cushion</b>			
B	Both sides cushioned		
R	Rod end cushion		
H	Head end cushion		
N	No cushion		
<b>E Stroke length (mm)</b>			
Bore size	Stroke length	Custom stroke length	
$\phi$ 125 to $\phi$ 160	1 to 800	Per 1 mm increment	
$\phi$ 180	1 to 900		
$\phi$ 200	1 to 1000		
$\phi$ 250	1 to 1200		
<b>F Option</b>			
C2	Cushion mechanism with check valve		
J	Bellows	Max. ambient	Max. instantaneous
		60 °C	100 °C
K	Bellows	100 °C	200 °C
L	Bellows	250 °C	400 °C
M	Piston rod material (stainless steel)		
Blank	Cushion needle position R (standard)		
S	Cushion needle position S		
T	Cushion needle position T		
<b>G Accessory</b>			
I	Rod eye		
Y	Rod clevis (pin and snap ring attached)		
B1	Eye bracket		
B2	Clevis bracket (pin and snap ring attached)		

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
**SCS**  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending

Large bore size cylinder  
Standard type

## Internal structure and parts list

● SCS-G



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	13	Spring washer	Steel	Zinc chromate
2	Piston rod	Steel	Industrial chrome plating	14	Hexagon nut	Steel	Zinc chromate
3	Dust wiper	Nitrile rubber and steel		15	Tie rod	Steel	Zinc chromate
4	Rod packing seal	Nitrile rubber		16	Piston gasket	Nitrile rubber	
5	Rod bushing	Cast iron	Zinc chromate	17	Piston	Cast iron	Phosphoric acid zinc treatment
6	Rod cover	Steel	Zinc chromate	18	Cushion packing seal	Nitrile rubber and steel	
7	Metal gasket	Nitrile rubber		19	Cushion ring B	Steel	Zinc chromate
8	Cylinder gasket	Nitrile rubber		20	Hexagon socket head set screw	Alloy steel	Blackening
9	Cylinder tube	Steel	Paint: Industrial chrome plating	21	Hexagon socket head cap bolt	Alloy steel	Blackening
10	Cushion ring A	Steel	Zinc chromate	22	Cushion needle	Steel	Zinc chromate
11	Piston packing seal	Nitrile rubber		23	Needle nut	Steel	Zinc chromate
12	Head cover	Steel	Zinc chromate	24	Needle gasket	Nitrile rubber	
				25	Plain washer	Steel	Zinc chromate

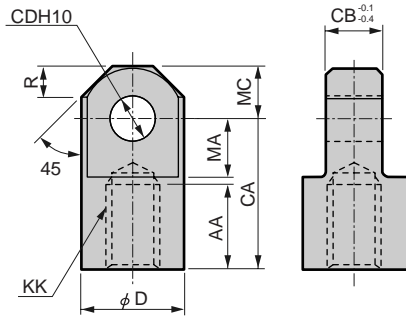
## Repair parts list

Bore size (mm)	Kit No.	Repair parts number
φ 125	SCS-G-125K	
φ 140	SCS-G-140K	
φ 160	SCS-G-160K	3 4 7 8 11
φ 180	SCS-G-180K	18 24
φ 200	SCS-G-200K	
φ 250	SCS-G-250K	

### Dimensions for SCS Series common accessory

#### ● Rod eye for SCS (I)

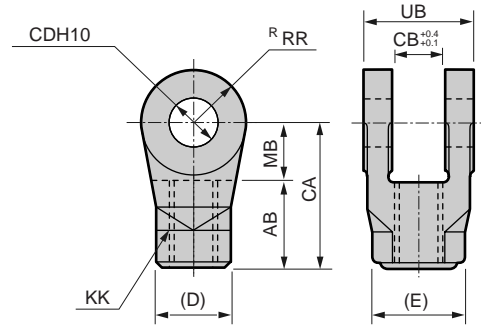
Material: Steel



#### ● Rod clevis for SCS (Y)

Material: Cast iron

● Note: Pin and snap ring are attached.



Model no.	Bore size (mm)	AA	CA	CB	CD	D	KK	MA	MC	R	Weight (kg)
SCS-125-I	125	50	85	32	25 <sup>+0.084</sup> <sub>0</sub>	55	M30 x 1.5	32	27.5	15.5	1.25
SCS-140-I	140	50	90	36	28 <sup>+0.084</sup> <sub>0</sub>	60	M30 x 1.5	35	30	18	1.65
SCS-160-I	160	60	105	40	32 <sup>+0.100</sup> <sub>0</sub>	70	M36 x 1.5	40	35	21	2.55
SCS-180-I	180	65	115	50	40 <sup>+0.100</sup> <sub>0</sub>	85	M40 x 1.5	47.5	42.5	29	4.20
SCS-200-I	200	75	125	50	40 <sup>+0.100</sup> <sub>0</sub>	85	M45 x 1.5	47.5	42.5	29	4.35
SCS-250-I	250	88	150	63	50 <sup>+0.100</sup> <sub>0</sub>	105	M56 x 2	57.5	52.5	36.5	8.05

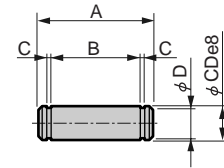
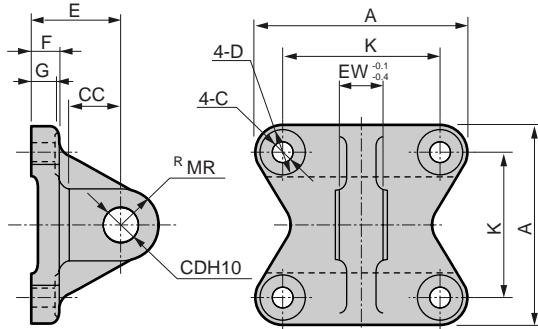
Model no.	Bore size (mm)	AB	CA	CB	CD	D	E	KK	MB	RR	UB	Weight (kg)
SCS-125-Y	125	50	85	32	25 <sup>+0.084</sup> <sub>0</sub>	46	53.1	M30 x 1.5	35	27.5	64	1.30
SCS-140-Y	140	50	90	36	28 <sup>+0.084</sup> <sub>0</sub>	46	53.1	M30 x 1.5	40	30	72	1.65
SCS-160-Y	160	60	105	40	32 <sup>+0.100</sup> <sub>0</sub>	55	63.5	M36 x 1.5	45	35	80	2.55
SCS-180-Y	180	65	115	50	40 <sup>+0.100</sup> <sub>0</sub>	60	69.3	M40 x 1.5	50	42.5	100	4.40
SCS-200-Y	200	75	125	50	40 <sup>+0.100</sup> <sub>0</sub>	70	80.8	M45 x 1.5	50	42.5	100	4.85
SCS-250-Y	250	88	150	63	50 <sup>+0.100</sup> <sub>0</sub>	85	98.1	M56 x 2	62	52.5	126	7.05

#### ● Eye bracket for SCS (B1)

Material: Cast iron

#### ● Pin (P)

Material: Steel



Symbol Model no.	A	C	CC	CD	D	E	EW	F	G	K	MR	Weight (kg)
SCS-125-B1	140	16	35	25 <sup>+0.084</sup> <sub>0</sub>	23	63	32	20	18	110	25	2.35
SCS-140-B1	154	16	40	28 <sup>+0.084</sup> <sub>0</sub>	23	75	36	22	20	124	28	3.30
SCS-160-B1	174	18	40	32 <sup>+0.100</sup> <sub>0</sub>	26	75	40	24	22	142	32	4.65
SCS-180-B1	196	20	55	40 <sup>+0.100</sup> <sub>0</sub>	29	90	50	25	23	160	40	6.75
SCS-200-B1	220	22	55	40 <sup>+0.100</sup> <sub>0</sub>	32	90	50	30	28	175	40	9.40
SCS-250-B1	274	26	65	50 <sup>+0.100</sup> <sub>0</sub>	39	110	63	35	33	216	50	16.85

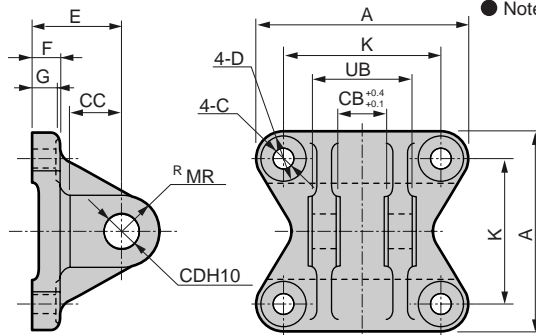
Symbol Model no.	A	B	C	CD	D	Used snap ring	Weight (kg)	Applicable model
SCS-125-P	75	66.3	1.35	25 <sup>-0.040</sup> <sub>-0.073</sub>	23.9	Axis C type 25	0.25	SCS-125
SCS-140-P	84	74.7	1.65	28 <sup>-0.048</sup> <sub>-0.073</sub>	26.6	Axis C type 28	0.40	SCS-140
SCS-160-P	92	82.7	1.65	32 <sup>-0.050</sup> <sub>-0.089</sub>	30.3	Axis C type 32	0.50	SCS-160
SCS-180-P	115	103.2	1.9	40 <sup>-0.050</sup> <sub>-0.089</sub>	38	Axis C type 40	1.15	SCS-180
SCS-250-P	144	129.6	2.2	50 <sup>-0.050</sup> <sub>-0.089</sub>	47	Axis C type 50	2.25	SCS-250

Note: For clevis bracket type and rod clevis types, pin and snap ring are attached.

#### ● Clevis bracket for SCS (B2)

Material: Cast iron

● Note: Pin and snap ring are attached.



Symbol Model no.	A	C	CB	CC	CD	D	E	F	G	K	MR	UB	Weight (kg)
SCS-125-B2	140	16	32	35	25 <sup>+0.084</sup> <sub>0</sub>	23	63	20	18	110	25	64	2.65
SCS-140-B2	154	16	36	40	28 <sup>+0.084</sup> <sub>0</sub>	23	75	22	20	124	28	72	3.85
SCS-160-B2	174	18	40	40	32 <sup>+0.100</sup> <sub>0</sub>	26	75	24	22	142	32	80	5.45
SCS-180-B2	196	20	50	55	40 <sup>+0.100</sup> <sub>0</sub>	29	90	25	23	160	40	100	8.70
SCS-200-B2	220	22	50	55	40 <sup>+0.100</sup> <sub>0</sub>	32	90	30	28	175	40	100	10.55
SCS-250-B2	274	26	63	65	50 <sup>+0.100</sup> <sub>0</sub>	39	110	35	33	216	50	126	19.55

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Large bore size cylinder  
Standard type