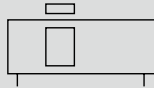


High precision guided rodless cylinder

# SRG3 Series

● Bore size:  $\phi 12/\phi 16/\phi 20/\phi 25$  or equiv.



## Specifications

Item	SRG3 (Standard/with switch)			
Bore size	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$
Actuation	Double acting			
Working fluid	Compressed air			
Max. working pressure MPa	0.7 ( $\approx 100$ psi, 7 bar)			
Min. working pressure MPa	0.2 ( $\approx 29$ psi, 2 bar)			0.1 ( $\approx 15$ psi)
Proof pressure MPa	1.05 ( $\approx 150$ psi, 10.5 bar)			
Ambient temperature $^{\circ}\text{C}$	5 (41 $^{\circ}\text{F}$ ) to 60 (140 $^{\circ}\text{F}$ )			
Port size	M5		Rc1/8	
Stroke tolerance mm	+2.0 0			
Working piston speed mm/s	50 to 1000 (*1)			
Repeat stopping accuracy mm	$\pm 0.05$ (With shock absorber)			
Cushion	Air cushion			
Lubrication	Not required (Use turbine oil class 1 ISO VG32 if necessary for lubrication. Once lubricated, the cylinder will need periodic lubrication.)			

\*1: For common port piping, the working piston speed varies depending on the stroke length. Contact CKD.

## Allowable absorbed energy

Bore size (mm)	Cushioned		Without cushion	With shock absorber (initial set point)	
	Allowable absorbed energy (J)	Cushion stroke (mm)	Allowable absorbed energy (J)	Absorbed energy (J)	Effective stroke length (mm)
$\phi 12$ or equiv.	0.03	14.5	0.003	2.4	5.5
$\phi 16$ or equiv.	0.22	19.2	0.007	2.4	5.5
$\phi 20$ or equiv.	0.59	22.2	0.010	5.7	7
$\phi 25$ or equiv.	1.40	20.9	0.015	10	9

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi 12$ or equiv.	200, 300, 400	450	1
$\phi 16$ or equiv.	200, 300, 400, 500	800	
$\phi 20$ or equiv.	600, 700, 800		
$\phi 25$ or equiv.	200/300/400/ 500/600/700/ 800/900/1000	1000	

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

## Number of installed M type switches and min. stroke length (mm)

Switch quantity	1		2		3		4		5		6	
	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H
Switch model No.												
Bore size (mm)												
$\phi 12$ or equiv.	10	10	30	45(70)	60	90(120)	90	135(170)	120	180(220)	150	225(270)
$\phi 16$ or equiv.	10	10	30	45(70)	60	90(120)	90	135(170)	120	180(220)	150	225(270)
$\phi 20$ or equiv.	10	10	30	45(70)	60	90(120)	90	135(170)	120	180(220)	150	225(270)
$\phi 25$ or equiv.	10	10	30	45(70)	60	90(120)	90	135(170)	120	180(220)	150	225(270)

Note: Values in ( ) are the min. stroke length with switch of the full stroke length adjustable.

## Number of installed T type switches and min. stroke length (mm)

Switch quantity	1		2		3		4		5		6	
	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H
Switch model No.												
Bore size (mm)												
$\phi 12$ or equiv.	5	5	45	50(70)	85	100(120)	125	150(170)	165	200(220)	205	250(270)
$\phi 16$ or equiv.	5	5	45	50(70)	85	100(120)	125	150(170)	165	200(220)	205	250(270)
$\phi 20$ or equiv.	5	5	45	50(70)	85	100(120)	125	150(170)	165	200(220)	205	250(270)
$\phi 25$ or equiv.	10	10	45	50(70)	85	100(120)	125	150(170)	165	200(220)	205	250(270)

Note: Values in ( ) are the min. stroke length with switch of the full stroke length adjustable.

### Switch specifications (M type switch)

- 1-color/2-color display

Item	Proximity 2-wire		Proximity 3-wire		
	M2V, M2H	M2WV (2-color display)	M3H, M3V	M3PH/M3PV (made to order)	M3WV
Applications	Dedicated for programmable controller		For programmable controller, relay, IC circuit, compact solenoid valve		
Output method	-		NPN output	PNP output	NPN output
Power supply voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 20 mA		100 mA or less	100 mA or less	100 mA or less
Indicator lamp	LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 µA or less	0.05 mA or less	10 µA or less
Weight	g		1 m:22 3 m:57 5 m:93		

Item	Reed 2-wire			
	M0V, M0H		M5V, M5H	
Applications	Programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection	
Power supply voltage	-		-	
Load voltage	12/24 VDC	110 VAC	24 VDC or less	110 VAC or less
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Indicator lamp	LED (Lit when ON)		Without indicator lamp	
Leakage current	0 mA			
Weight	g		1 m:22 3 m:57 5 m:93	

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

### Switch specifications (T type switch)

- 2-color display

Item	Proximity 2-wire		Proximity 3-wire	
	T2YH/T2YV	T2WH/T2WV	T3YH/T3YV	T3WH/T3WV
Applications	Dedicated for programmable controller		For programmable controller, relay	
Output method	-		NPN output	NPN output
Power supply voltage	-		10 to 28 VDC	
Load voltage	10 to 30 VDC	24 VDC ±10%	30 VDC or less	
Load current	5 to 20 mA (*3)		50 mA or less	
Indicator lamp	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 µA or less	
Weight	g 1 m:33 3 m:87 5 m:142		1 m:18 3 m:49 5 m:80	

- For AC magnetic field

Item	Proximity 2-wire	
	T2YD, T2YDT	(*4)
Applications	Dedicated for programmable controller	
Indicator lamp	Red/green LED (Lit when ON)	
Load voltage	24 VDC ±10%	
Load current	5 to 20 mA	
Internal voltage drop	6V or less	
Leakage current	1.0 mA or less	
Weight	g 1 m:61 3 m:166 5 m:272	

\*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

\*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.

\*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

\*4: AC magnetic field proof switch (T2YD/T2YDT) cannot be used in DC magnetic field.

### Cylinder weight

Unit: kg

Bore size (mm)	Weight for 0 mm stroke length			Switch weight	Mounting bracket weight		Additional weight per 100mm stroke length
	Basic (00)	Foot			T type	M type	
		(LB)	(LB1)				
ø12 or equiv.	0.46	0.47	0.48	Refer to the weight in the switch specifications.	0.005	0.001	0.23
ø16 or equiv.	0.61	0.62	0.64				0.28
ø20 or equiv.	0.96	0.98	1.02				0.33
ø25 or equiv.	1.73	1.83	1.83				0.52

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

# SRG3 Series

## How to order

Without switch (built-in magnet for switch)

**SRG3-00-25-B-200-A**

With switch (built-in magnet for switch)

**SRG3-00-25-B-200-M0H-R-A**

**A** Mounting  
\*1

**B** Bore size

**C** Port thread

**D** Cushion

**E** Stroke length

**F** Switch model No.  
\*3/\*4

**G** Switch quantity

**H** Option  
\*5, \*6  
\*7, \*8  
\*9

## ⚠ Precautions for model No. selection

\*1 : Mounting bracket will be shipped assembled with the product.

\*2 : Refer to page 1650 for the min. stroke length with switch.

\*3 : Avoid environments where the cylinder is exposed to welding spatter.

Be careful with T2YD and T2YDT in use.

\*4 : Switches other than **F** Switch model No. are also available. (Made to order) Refer to Ending Page 1 for details.

\*5 : Refer to the dimensions for the port and cushion needle position codes.

\*6 : For option codes "R" and "T", the mounting will be "00" or "LB1".

(Piping with "LB" is not possible for option codes "R" and "T".)

\*7 : A flat nut is already attached to option code "A3" so that you can add the full stroke length adjusting bracket later.

\*8 : The thread size of option code "H" is M4 for  $\phi 12/\phi 16$  and M5 for  $\phi 20$ .

\*9 : LB1 with port position D is not possible. ( $\phi 25$ )

[Example of model No.]

**SRG3-00-25B-200-M0H-R-A**

Model: High precision guided rodless cylinder

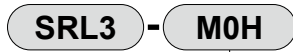
- A** Mounting : Basic
- B** Bore size :  $\phi 25$  mm
- C** Port thread : Rc thread
- D** Cushion : Both sides cushioned
- E** Stroke length : 200 mm
- F** Switch model No. : Reed MOH switch
- G** Switch quantity : 1 on R side
- H** Option : Both-side full stroke length adjustable, with shock absorber

Code	Description				
<b>A Mounting</b>					
00	Basic				
LB	Axial foot				
LB1	Axial foot				
<b>B Bore size (mm)</b>					
12	$\phi 12$				
16	$\phi 16$				
20	$\phi 20$				
25	$\phi 25$				
<b>C Port thread</b>					
Blank	Rc thread (M5 for $\phi 12$ and $\phi 16$ )				
N	NPT thread ( $\phi 20$ or more) (made-to-order product)				
G	G thread ( $\phi 20$ or more) (made-to-order product)				
<b>D Cushion</b>					
B	Both sides cushioned				
R	R side cushioned				
L	L side cushioned				
N	Without cushion				
<b>E Stroke length (mm)</b>					
Bore size	Stroke length *2	Custom stroke length			
$\phi 12$	1 to 450	In 1 mm increments			
$\phi 16$	1 to 800				
$\phi 20$	1 to 800				
$\phi 25$	1 to 1000				
<b>F Switch model No.</b>					
Axial lead wire	Radial lead wire	Contact	Voltage AC DC	Indicator lamp	Lead wire
M0H*	M0V*	Reed	● ●	1-color display	2-wire
M5H*	M5V*		● ●	Without indicator lamp	
M2H*	M2V*	Proximity	● ●	1-color display	2-wire
-	M2WV*		● ●	2-color display	
M3H*	M3V*		● ●	1-color display	3-wire
-	M3WV*		● ●	2-color display	
M3PH*	M3PV*		● ●	1-color display (custom)	3-wire
T2WH*	T2WV*		● ●	2-color display	
T2YH*	T2YV*	● ●	2-color display		3-wire
T3WH*	T3WV*	● ●		2-color display	
T3YH*	T3YV*	● ●	2-color display		2-wire
T2YD*	-	● ●		AC magnetic field	
T2YDT*	-	● ●	AC magnetic field		
<b>* Lead wire length</b>					
Blank	1 m (standard)				
3	3 m (option)				
5	5 m (option)				
<b>G Switch quantity</b>					
R	1 on R side				
L	1 on L side				
D	2				
T	3				
4	4 (when there are more than 4 switches, indicate switch quantity.)				
<b>H Option</b>					
	Bore size ( $\phi$ )	12	16	20	25
A	Both-sides full stroke adjustable, shock absorber	●	●	●	●
A1	R side full stroke adjustable, shock absorber	●	●	●	●
A2	L side full stroke, adjustable, shock absorber	●	●	●	●
A3	Full stroke adjustable, adjusting bracket to be added	●	●	●	●
H	Larger thread for table installation	●	●	●	●
Blank	Port position : F (Standard)	●	●	●	●
R	Port position : R (Common port)	●	●	●	●
B	Port position : F	●	●	●	●
T	Port position : R (Common port)	●	●	●	●
D	Port position : D				●
	Cushion needle position : F (Standard)	●	●	●	●
	Cushion needle position : F	●	●	●	●
	Cushion needle position : B	●	●	●	●
	Cushion needle position : B	●	●	●	●

## How to order switch

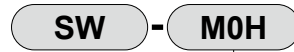
(Common with SRL3.)

- Switch body + mounting bracket set



Switch model No.  
(Item **F** on page 1652)

- Switch body only



Switch model No.  
(Item **F** on page 1652)

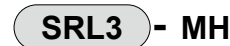
- Mounting bracket set (\*2)  
M type switch



T type switch



- Lead wire holder (\*3)



(\*1) "Switch body + mounting bracket set" does not include lead wire holders. Order lead wire holders separately if necessary.

(\*2) The mounting bracket is different between the M type switch and T type switch.

(\*3) The quantity of lead wire holders per set is 10.

## How to order discrete shock absorber



Bore size  
(Item **B** on page 1652)

(One shock absorber, one shock absorber fixing hexagon nut)

## Applicable shock absorber model No.

Model No.	Compatible model
NCK-00-0.3-C	SRG3-12/16
NCK-00-0.7-C	SRG3-20
NCK-00-1.2	SRG3-25

## How to order repair parts



Bore size  
(Item **B** on page 1652)

Stroke length  
(Item **E** on page 1652)

## How to order mounting bracket



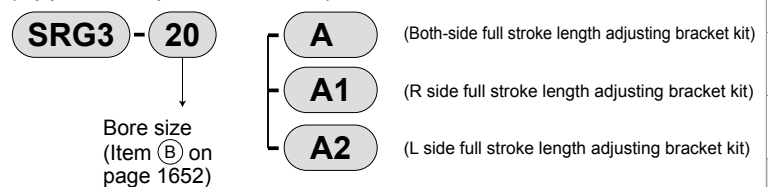
Mounting  
(Item **A** on page 1652)

Bore size  
(Item **B** on page 1652)

(Bracket x 2, mounting bolt x 4)

## How to order full stroke length adjusting bracket kit

(Applies to option code A3.)



(For configurations, refer to page 1659)

## Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa						
		0.1	0.2	0.3	0.4	0.5	0.6	0.7
ø12	Push/Pull	-	27.7	41.5	55.3	69.1	83.0	96.8
ø16	Push/Pull	-	43.2	64.8	86.4	1.08 × 10 <sup>2</sup>	1.30 × 10 <sup>2</sup>	1.51 × 10 <sup>2</sup>
ø20	Push/Pull	-	62.9	94.4	1.26 × 10 <sup>2</sup>	1.57 × 10 <sup>2</sup>	1.89 × 10 <sup>2</sup>	2.20 × 10 <sup>2</sup>
ø25	Push/Pull	54.2	1.08 × 10 <sup>2</sup>	1.63 × 10 <sup>2</sup>	2.17 × 10 <sup>2</sup>	2.71 × 10 <sup>2</sup>	3.25 × 10 <sup>2</sup>	3.80 × 10 <sup>2</sup>

SCP\*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/MSDG

FC\*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

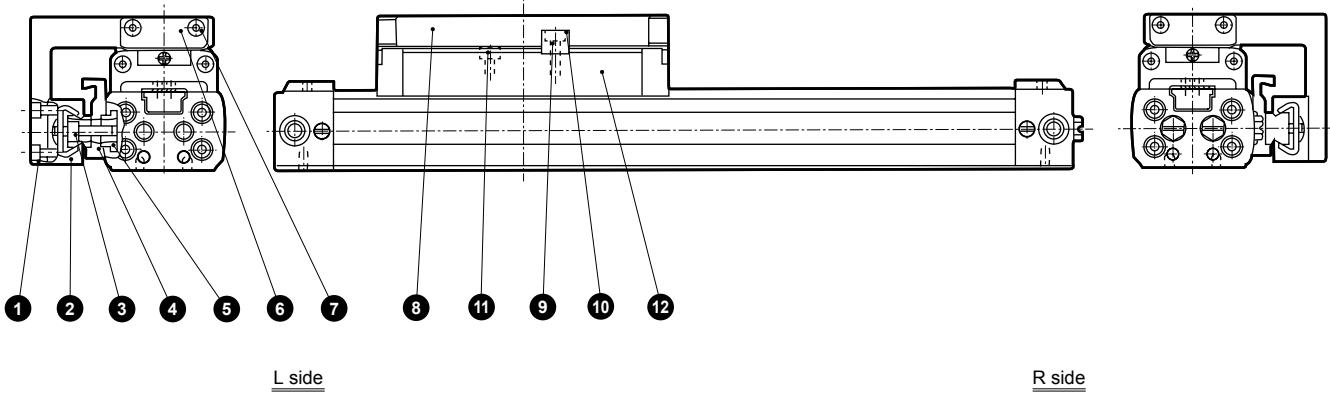
FJ

FK

Spd Contr

Ending

## Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon socket head cap screw	Alloy steel	Black finish	7	Hexagon socket head cap screw	Alloy steel	Zinc chromate
2	High precision guide	Stainless steel		8	Connection plate	Aluminum alloy	Alumite
3	Hexagon socket head cap screw	Alloy steel	Black finish	9	Key	Steel	Black finish
4	Guide holder	Aluminum alloy	Alumite	10	Hexagon socket head cap screw	Alloy steel	Black finish
5	Flat nut (B)	Steel	Black finish	11	Hexagon socket head cap screw	Alloy steel	Zinc chromate
6	Stopper plate	Steel	Zinc chromate	12	Table	Aluminum alloy	Alumite

Note: The cylinder part internal structure is the same as the rodless cylinder SRL3 Series.  
Refer to page 1579.

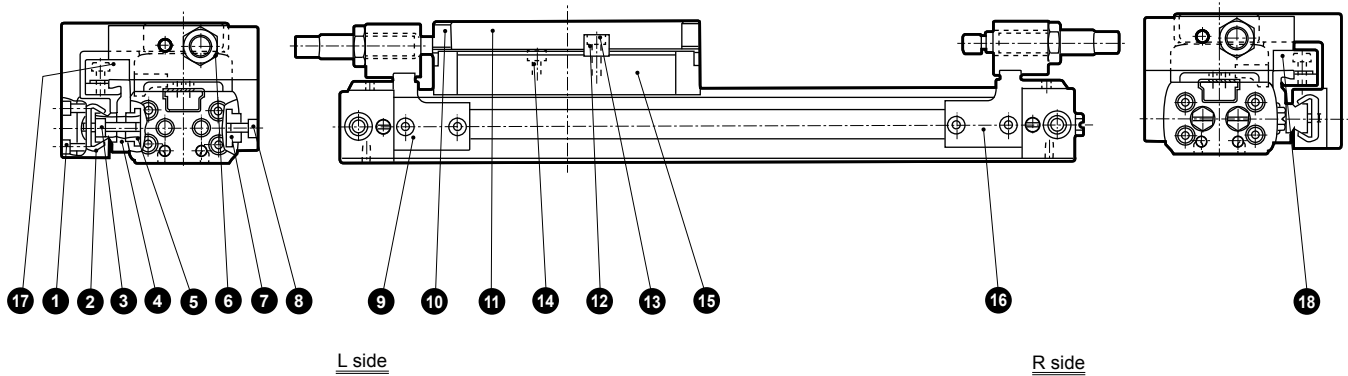
## Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
ø12 or equiv.	SRL3-12K-*	The repair parts are the same as those of the rodless cylinder SRL3 Series. Refer to page 1579.
ø16 or equiv.	SRL3-16K-*	
ø20 or equiv.	SRL3-20K-*	
ø25 or equiv.	SRL3-25K-*	

\*1: Specify the kit No. when placing an order. Specify the stroke length for \*.

### Internal structure and parts list

- Full stroke length adjustable with shock absorber



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon socket head cap screw	Alloy steel	Black finish	10	Stopper plate	Steel	Zinc chromate
2	High precision guide	Stainless steel		11	Connection plate	Aluminum alloy	Alumite
3	Hexagon socket head cap screw	Alloy steel	Black finish	12	Key	Steel	Black finish
4	Guide holder	Aluminum alloy	Alumite	13	Hexagon socket head cap screw	Alloy steel	Black finish
5	Flat nut (B)	Steel	Black finish	14	Hexagon socket head cap screw	Alloy steel	Zinc chromate
6	Hexagon nut	Steel	Zinc chromate	15	Table	Aluminum alloy	Alumite
7	Flat nut	Alloy steel	Black finish	16	Adaptor (L)	Steel	Zinc chromate
8	Hexagon socket head cap screw	Alloy steel	Zinc chromate	17	Adaptor (LG)	Steel	Zinc chromate
9	Adaptor (R)	Steel	Zinc chromate	18	Adaptor (RG)	Steel	Zinc chromate

SCP\*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/  
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/  
MSDG

FC\*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

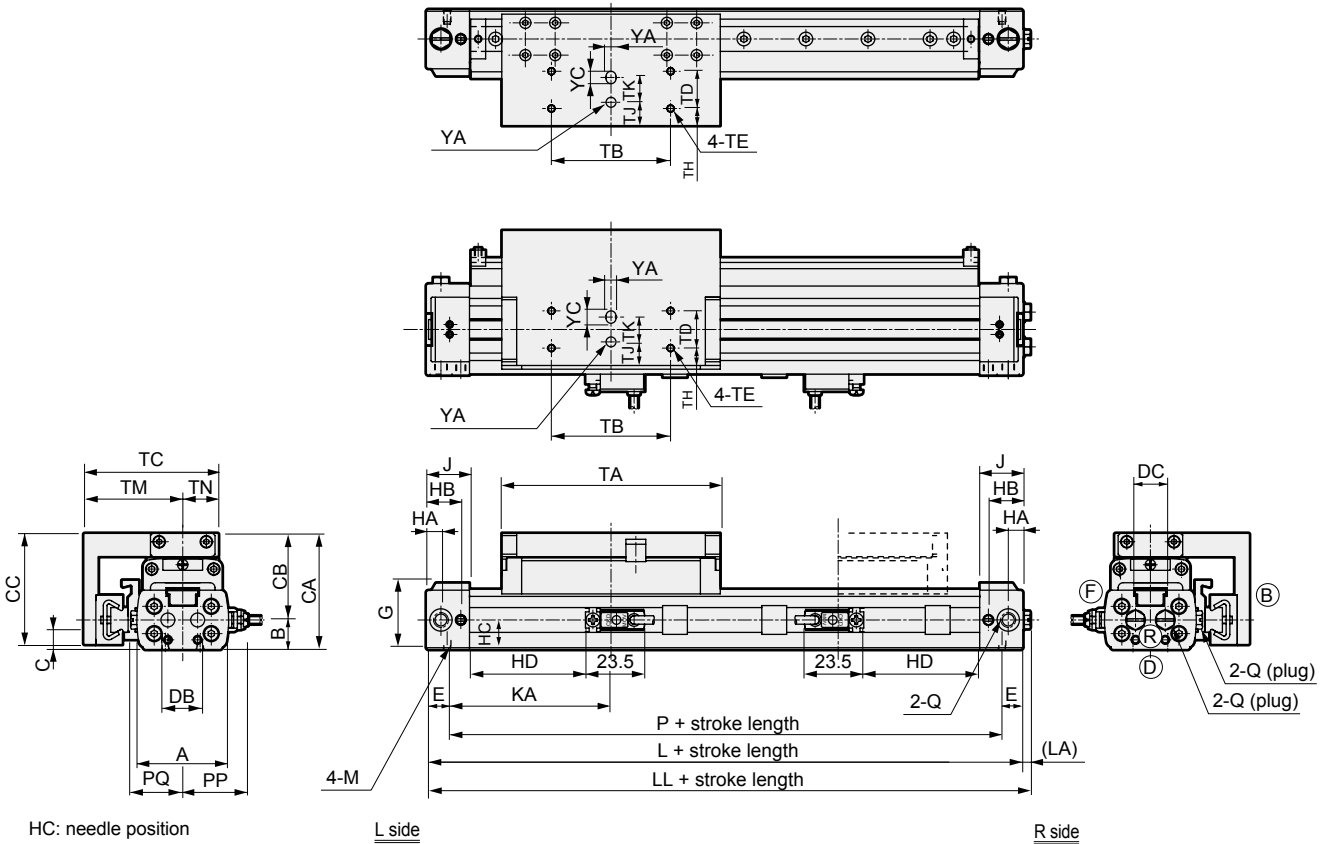
FK

Spd  
Contr

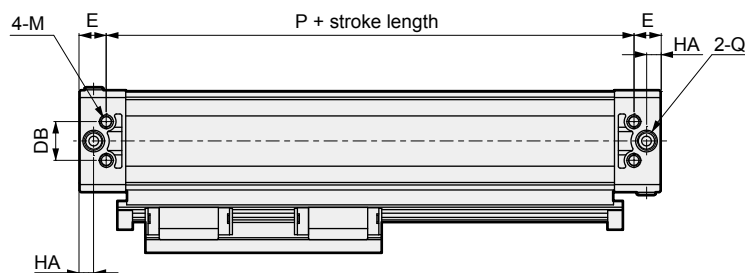
Ending

## Dimensions

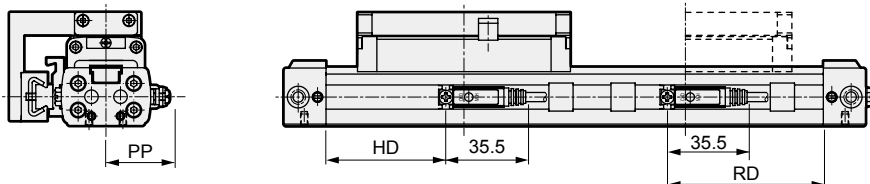
- With cylinder switch SRG3-\*\*-\*\*\*-\*\*\*-M\*V\*  
(lead wire L-shaped)



- Bottom piping (option code: D)  
Bottom piping is only for ø25 or equiv.



- With cylinder switch SRG3-\*\*-\*\*\*-\*\*\*-M\*H\*  
(lead wire straight)

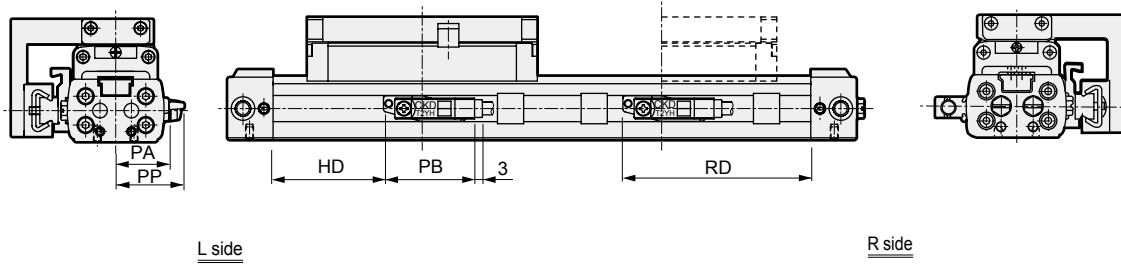


Code	A	B	CA	CB	CC	DB	DC	E	G	HA	HB	HC	J	KA	L	LL	LA	M	P	PQ	Q	TA	TB	TC
ø12 or equiv.	33	10.5	43	32.5	40.5	10	11	8.5	24	6	14	10.5	17.5	59.5	136	139	3	M3 depth 5	119	19	M5	81	42	49
ø16 or equiv.	37	12	47	35	45	14	12	8.5	27	6	14	12	17.5	66	149	152	3	M3 depth 5	132	21	M5	88	48	54.5
ø20 or equiv.	44	14	54	40	50	16	16	10.5	31	8.5	18.5	14	22	74	169	171.5	2.5	M4 depth 6.5	148	24.5	Rc1/8	100	60	61.5
ø25 or equiv.	53	17	67	50	63.5	20	26	14	40.5	7.5	20	18.9	24	81	190	192	2	M6 depth 9	162	—	Rc1/8	122	70	80

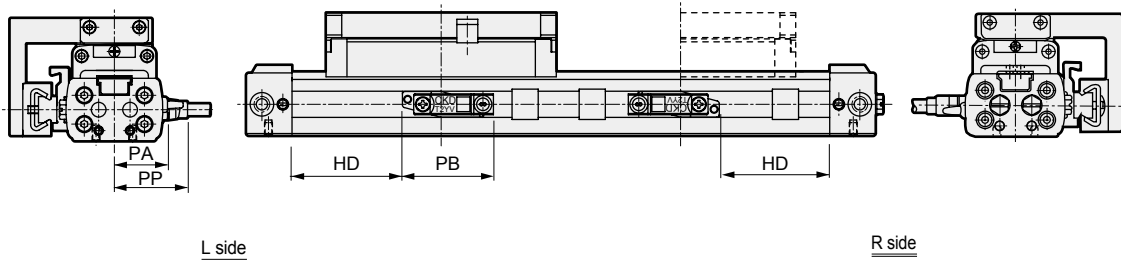
Note: Refer to the table on the right as well.

## Dimensions

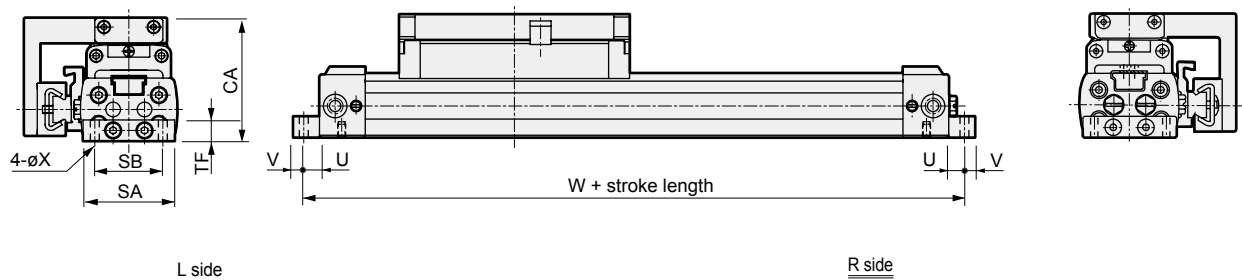
- With cylinder switch SRG3-\*\*-\*\*-\*\*\*-T\*H (T\*W, T\*Y, T2YD)



- With cylinder switch SRG3-\*\*-\*\*-\*\*\*-T\*V (T\*W, T\*Y)



- With foot bracket SRG3-LB-\*\*-\*\*\*



Code	TD	TE	TH	TJ	TK	TM	TN	YA	YC	With foot bracket (LB)						
										SA	SB	TF	U	V	W	X
ø12 or equiv.	13	M3 depth 5	6.5	8	10	36	13	4 <sup>+0.07</sup> / <sub>-0.02</sub> depth 4	5	32	24	8	6	4	148	3.4
ø16 or equiv.	15	M3 depth 6	7	9.5	10	40	14.5	4 <sup>+0.07</sup> / <sub>-0.02</sub> depth 4	5	35	26	8	6	4	161	3.4
ø20 or equiv.	18	M4 depth 6	8.5	10	15	44	17.5	6 <sup>+0.07</sup> / <sub>-0.02</sub> depth 6	7	43	33	10	6	6	181	4.5
ø25 or equiv.	20	M5 depth 8	12	14.5	15	58	22	6 <sup>+0.07</sup> / <sub>-0.02</sub> depth 6	7	52	20	12	9	11	208	7

Code	With switch																
	HD			RD			PA	PB			PP						
	M*	T*Y*	T*W	M*	T*Y*	T*W		T*Y*	T2YD	T*W*	M*V	M*H	T*YV	T*YH	T2YD	T*WV	T*WH
ø12 or equiv.	40.5	36	32	60.5	65	69	24.3	35	34	33.5	23	24.5	26	23	28.4	20.7	17.2
ø16 or equiv.	47	42	38	67	72	76	26.3	35	34	33.5	25	26.5	28	25	30.4	22.7	19.2
ø20 or equiv.	52.5	48	44	72.5	77	81	29.3	35	34	33.5	28	29.5	31	28	33.4	25.7	22.2
ø25 or equiv.	60	56	52	82	86	90	34.3	35	34	33.5	33	34.5	36	33	38.4	30.7	27.2

Note: Refer to the table on the left as well.

SCP\*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/  
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/  
MSDG

FC\*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd  
Contr

Ending



# SRG3 Series

SCP\*3

## Dimensions



CMK2

● With foot bracket SRG3-LB1-\*\*-\*\*\*

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/  
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

## Dimensions: With option



MSD/  
MSDG

● Full stroke length adjustable with shock absorber (SRG3)

FC\*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

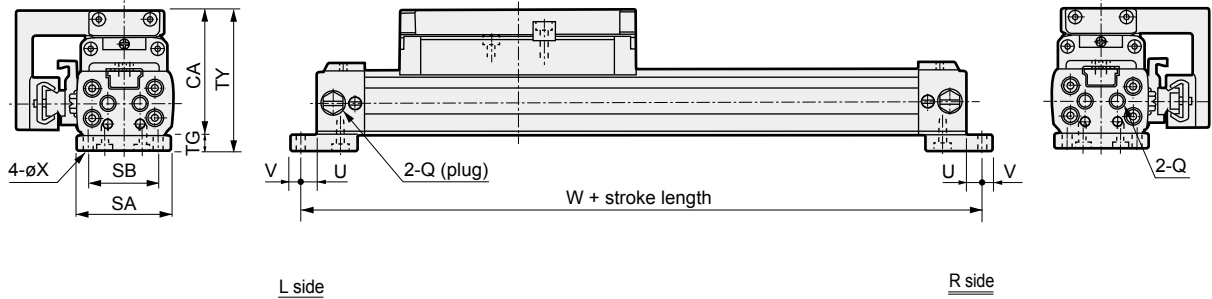
ShkAbs

FJ

FK

Spd  
Contr

Ending

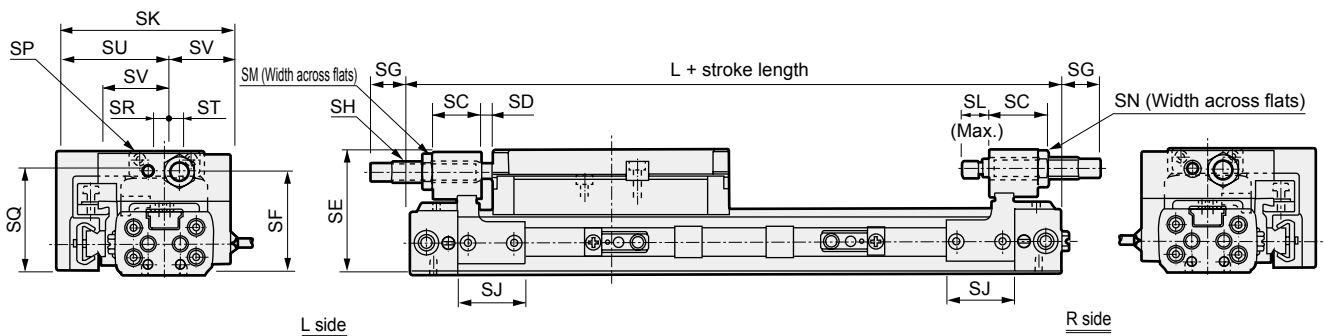


Code	With foot bracket (LB1)									
	Bore size (mm)	Q	SA	SB	TG	TY	CA	U	V	W
ø12 or equiv.	M5	32	24	6	49	43	6	4	148	3.4
ø16 or equiv.	M5	35	26	6	53	47	6	4	161	3.4
ø20 or equiv.	Rc1/8	43	33	8	62	54	6	6	181	4.5
ø25 or equiv.	Rc1/8	50	20	10	77	67	9	11	208	7

## Dimensions: With option



● Full stroke length adjustable with shock absorber (SRG3)



Code	SC	SD	SE	SF	SG			SH		SJ	SK	SL	SM	SN	SP	SQ	SR	ST	SU	SV
					At max.	At min.	Adjusting range	O.D. thread	Max. absorbed energy(J)											
ø12 or equiv.	19.5	2.5	42	35	17.5	7.5	10	M8 × 0.75	3	25	58.5	8.5	12	7	M4	35.5	6	3	36	22.5
ø16 or equiv.	18	4	46	39	14.5	4.5	10	M8 × 0.75	3	25	64.5	10	12	7	M4	40	6	4	40	24.5
ø20 or equiv.	22.5	3.5	53	45	14.5	4.5	10	M10 × 1.0	7	39	72.5	11.5	14	8	M5	48	8	5	44	28.5
ø25 or equiv.	20	2.5	65.5	54.5	14.5	4.5	10	M12 × 1.0	12	50	96.5	11.5	17	10	M6	56	12	10	58	38.5