SRG3

High precision guided rodless cylinder

ø12/ø16/ø20/ø25

Overview

High precision rodless cylinder (ø12 to ø25) with integrated high precision 1-axis linear guide. Perfect for accurate conveyors for small parts.

Features

Compact and high-precision

The compact guided rodless cylinder has a body of SRL3 with a high precision 1-axis guide integrated on the side. It is small enough to contribute to downsizing of the system.

Thin system as with SRL3

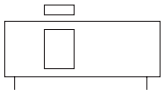
Our original flat rodless cylinder structure has a table in a very low position and thus enables you to design a thin system. The stroke is common between this cylinder and SRL3, the base model. Therefore they are dimensionally interchangeable.

Common port

A common port (one-side piping) or standard port (both sides piping) can be selected according to the installation location.
Equipment can be downsized.

CONTENTS

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

Variation	Model No. JIS symbol	Bore size (mm)	Standard stroke (mm)									Min. stroke (mm)	
			200	300	400	500	600	700	800	900	1000		
Double acting	SRG3 	ø12 or equiv.	●	●	●							1	
		ø16 or equiv./ ø20 or equiv.	●	●	●	●	●	●	●				
		ø25 or equiv.	●	●	●	●	●	●	●	●	●		

●: Standard, ◎: Option, : Not available

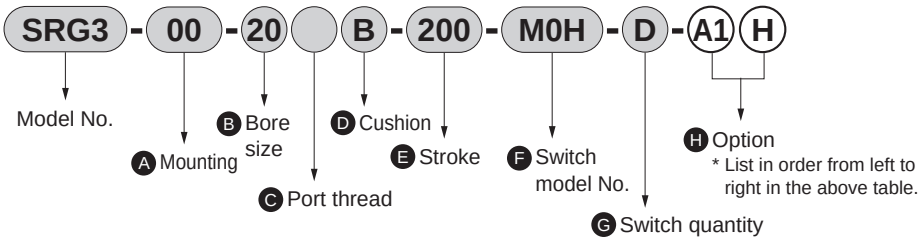
	Max. stroke (mm)	Custom stroke (per mm)	Mounting			Cushion				Option					Switch	Page
			Basic	Axial foot	Axial foot	Without cushion	Both sides cushioned	R side cushioned	L side cushioned	Both-side full stroke adjustable with shock absorber	R side full stroke adjustable with shock absorber	L side full stroke adjustable with shock absorber	Full stroke adjustable with adjusting bracket to be added later	Larger thread for table installation		
			00	LB	LB1	N	B	R	L	A	A1	A2	A3	H		
	450	1	●	●	●	●	●	●	●	◎	◎	◎	◎	◎	◎	1650
	800		●	●	●	●	●	●	●	◎	◎	◎	◎	◎		
	1000		●	●	●	●	●	●	●	◎	◎	◎	◎			

Variation and option combination selection table

◎: Option
○: Available (made-to-order product)
△: Available depending on conditions (Contact CKD.)
x: Not available

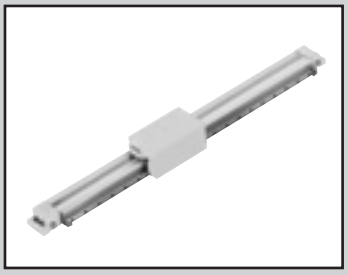
Category		Category	Variation	Port thread		Option									
			Double acting basic	NPT	G	Stroke adjustable Both sides	Stroke adjustable R side	Stroke adjustable L side	Stroke adjustable with retrofitted adjusting bracket	Larger thread for table installation	Port/cushion needle position specification	Port/cushion needle position specification	Port/cushion needle position specification	Port/cushion needle position specification	Port/cushion needle position specification
		Code	None	N	G	A	A1	A2	A3	H	R	B	T	D	S
Variation	Double acting basic	Blank		○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Port thread	NPT	N			x	○	○	○	○	○	○	○	○	○	○
	G	G				○	○	○	○	○	○	○	○	○	○
Option	Stroke adjustable Both sides	A					x	x	x	◎	◎	◎	◎	◎	◎
	Stroke adjustable R side	A1						x	x	◎	◎	◎	◎	◎	◎
	Stroke adjustable L side	A2							x	◎	◎	◎	◎	◎	◎
	Stroke adjustable with retrofitted adjusting bracket	A3								◎	◎	◎	◎	◎	◎
	Larger thread for table installation	H									◎	◎	◎	◎	◎
	Port/cushion needle position specification	R										x	x	x	x
	Port/cushion needle position specification	B											x	x	x
	Port/cushion needle position specification	T												x	x
	Port/cushion needle position specification	D													x
	Port/cushion needle position specification	S													
Accy.	Cylinder switch	Listed separately	◎	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

[Example of model No.]



Model No.: High precision guided rodless cylinder
Ⓐ Mounting : Basic
Ⓑ Bore size : ø20 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke : 200 mm
Ⓕ Switch model No. : Reed MOH switch, lead wire 1m
Ⓖ Switch quantity : 2
Ⓗ Option : R side full stroke adjustable, with shock absorber, larger table mounting thread

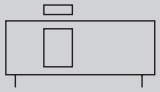
MEMO



High precision guided rodless cylinder

SRG3 Series

● Bore size: ø12/ø16/ø20/ø25 or equiv.



RoHS CAD

Specifications

Item	SRG3 (Standard/with switch)			
Bore size	ø12	ø16	ø20	ø25
Actuation	Double acting			
Working fluid	Compressed air			
Max. working pressure MPa	0.7 (≈100 psi, 7 bar)			
Min. working pressure MPa	0.2 (≈29 psi, 2 bar)			0.1 (≈15 psi)
Proof pressure MPa	1.05 (≈150 psi, 10.5 bar)			
Ambient temperature °C	5 (41°F) to 60 (140°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	±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. 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 (mm)
ø12 or equiv.	0.03	14.5	0.003	2.4	5.5
ø16 or equiv.	0.22	19.2	0.007	2.4	5.5
ø20 or equiv.	0.59	22.2	0.010	5.7	7
ø25 or equiv.	1.40	20.9	0.015	10	9

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Min. stroke (mm)
ø12 or equiv.	200, 300, 400	450	1
ø16 or equiv.	200, 300, 400, 500	800	
ø20 or equiv.	600, 700, 800		
ø25 or equiv.	200/300/400/ 500/600/700/ 800/900/1000	1000	

* The custom stroke is available in 1 mm increments.

Number of installed M-switches and min. stroke (mm)

Switch quantity	1		2		3		4		5		6	
Switch model No. / Bore size (mm)	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H
ø12 or equiv.	10	10	30	45(70)	60	90(120)	90	135(170)	120	180(220)	150	225(270)
ø16 or equiv.	10	10	30	45(70)	60	90(120)	90	135(170)	120	180(220)	150	225(270)
ø20 or equiv.	10	10	30	45(70)	60	90(120)	90	135(170)	120	180(220)	150	225(270)
ø25 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 with switch of the full stroke adjustable.

Number of installed T-switches and min. stroke (mm)

Switch quantity	1		2		3		4		5		6	
Switch model No. / Bore size (mm)	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H
ø12 or equiv.	5	5	45	50(70)	85	100(120)	125	150(170)	165	200(220)	205	250(270)
ø16 or equiv.	5	5	45	50(70)	85	100(120)	125	150(170)	165	200(220)	205	250(270)
ø20 or equiv.	5	5	45	50(70)	85	100(120)	125	150(170)	165	200(220)	205	250(270)
ø25 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 with switch of the full stroke adjustable.

Switch specifications (M-switch)

● 1-color/2-color LED

Item	2-wire proximity		3-wire proximity		
	M2V,M2H	M2WV (2-color LED)	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	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	2-wire reed			
	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	LED (Lit when ON)		No 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-switch)

● 2-color LED

Item	2-wire proximity		3-wire proximity	
	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	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	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80

● For AC magnetic field

Item	2-wire proximity
	T2YD, T2YDT (*4)
Applications	Dedicated for programmable controller
Indicator	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				Mounting bracket weight		Additional weight per 100mm stroke
	Basic (00)	Foot (LB)	Foot (LB1)	Switch weight	T type	M type	
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

How to order

No 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

Ⓐ Mounting *1
Ⓑ Bore size
Ⓒ Port thread
Ⓓ Cushion
Ⓔ Stroke
Ⓕ Switch model No. *3/*4
Ⓖ Switch quantity
Ⓗ Option *5, *6 *7, *8 *9

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
LB1	Axial foot

Ⓑ Bore size (mm)

12	ø12
16	ø16
20	ø20
25	ø25

Ⓒ Port thread

Blank	Rc thread (M5 for ø12 and ø16)
N	NPT thread (ø20 or more) (made-to-order product)
G	G thread (ø20 or more) (made-to-order product)

Ⓓ Cushion

B	Both sides cushioned
R	R side cushioned
L	L side cushioned
N	Without cushion

Ⓔ Stroke (mm)

Bore size	Stroke *2	Custom stroke
ø12	**1 to 450**	**In 1 mm increments**
ø16	**1 to 800**	
ø20	**1 to 800**	
ø25	**1 to 1000**	

Ⓕ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
M0H*	**M0V***	Reed	●	●	1-color LED	2-wire
M5H*	**M5V***		●	●	No indicator lamp	
M2H*	**M2V***	Proximity		●	1-color LED	
-	**M2WV***			●	2-color LED	2-wire
M3H*	**M3V***			●	1-color LED	
-	**M3WV***			●	2-color LED	3-wire
M3PH*	**M3PV***			●	1-color LED (custom)	3-wire
T2WH*	**T2WV***			●	2-color LED	2-wire
T2YH*	**T2YV***			●		
T3WH*	**T3WV***			●		3-wire
T3YH*	**T3YV***			●		
T2YD*	**-**			●	2-color LED	2-wire
T2YDT*	**-**			●	AC magnetic field	

*** Lead wire length**

Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓖ Switch quantity

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.)

Ⓗ Option

			Bore size (ø)	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)	Cushion needle position F (Standard)	●	●	●	●
R		R (Common port)	F	●	●	●	●
B		F	B	●	●	●	
T		R (Common port)	B	●	●	●	
D		D	F				●

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped assembled with the product.
*2 : Refer to page 1650 for the min. stroke 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 Ⓕ 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 adjusting bracket later.
*8 : The thread size of option code "H" is M4 for ø12/ø16 and M5 for ø20.
*9 : LB1 with port position D is not possible.
(ø25)

[Example of model No.]

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

Model: High precision guided rodless cylinder

Ⓐ Mounting : Basic
Ⓑ Bore size : ø25 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke : 200 mm
Ⓕ Switch model No. : Reed MOH switch
Ⓖ Switch quantity : 1 on R side
Ⓗ Option : Both-side full stroke adjustable, with shock absorber

How to order switch

(Common with SRL3.)

● Switch body + mounting bracket set

SRL3 - M0H

Switch model No.
(Item Ⓕ on page 1652)

● Switch body only

SW - M0H

Switch model No.
(Item Ⓕ on page 1652)

● Mounting bracket set (*2)

M-switch

SRL3 - M

T-switch

SRL3 - T

● Lead wire holder (*3)

SRL3 - MH

(*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-switch and T-switch.
(*3) The quantity of lead wire holders per set is 10.

How to order discrete shock absorber

SRL3 - 20 - NCK

Bore size
(Item Ⓑ 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

SRL3 - 20 K - 200

Bore size
(Item Ⓑ on page 1652)

Stroke
(Item Ⓔ on page 1652)

How to order mounting bracket

SRL3 - LB - 20

Mounting
(Item Ⓐ on page 1652)

Bore size
(Item Ⓑ on page 1652)

(Bracket x 2, mounting bolt x 4)

How to order full stroke adjusting bracket kit

(Applies to option code A3.)

SRG3 - 20 - A (Both-side full stroke adjusting bracket kit)
SRG3 - 20 - A1 (R side full stroke adjusting bracket kit)
SRG3 - 20 - A2 (L side full stroke adjusting bracket kit)

Bore size
(Item Ⓑ on page 1652)

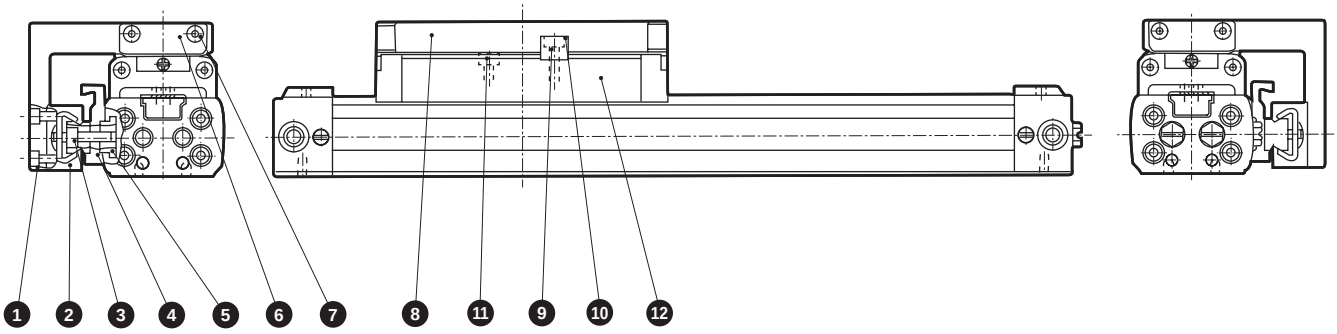
(For configurations, refer to page 1659)

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	$1.08x10^2$	$1.30x10^2$	$1.51x10^2$
ø20	Push/Pull	-	62.9	94.4	$1.26x10^2$	$1.57x10^2$	$1.89x10^2$	$2.20x10^2$
ø25	Push/Pull	54.2	$1.08x10^2$	$1.63x10^2$	$2.17x10^2$	$2.71x10^2$	$3.25x10^2$	$3.80x10^2$

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.

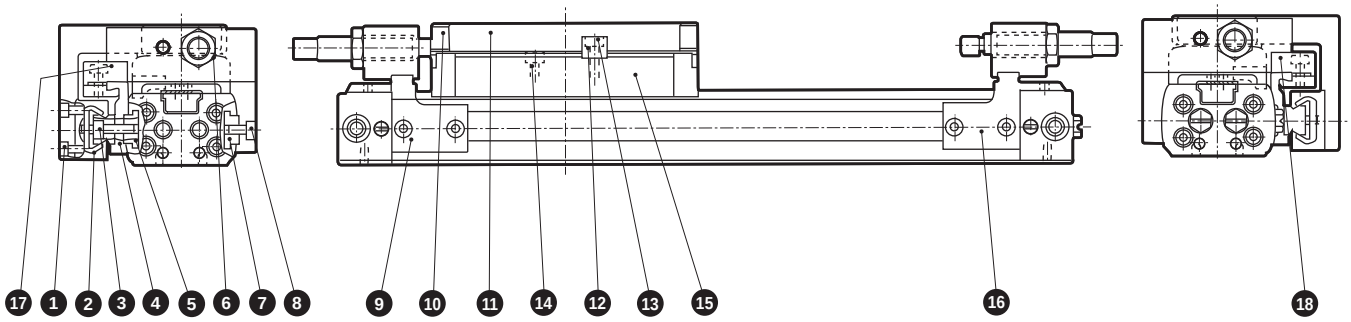
Repair parts list

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 for *.

Internal structure and parts list

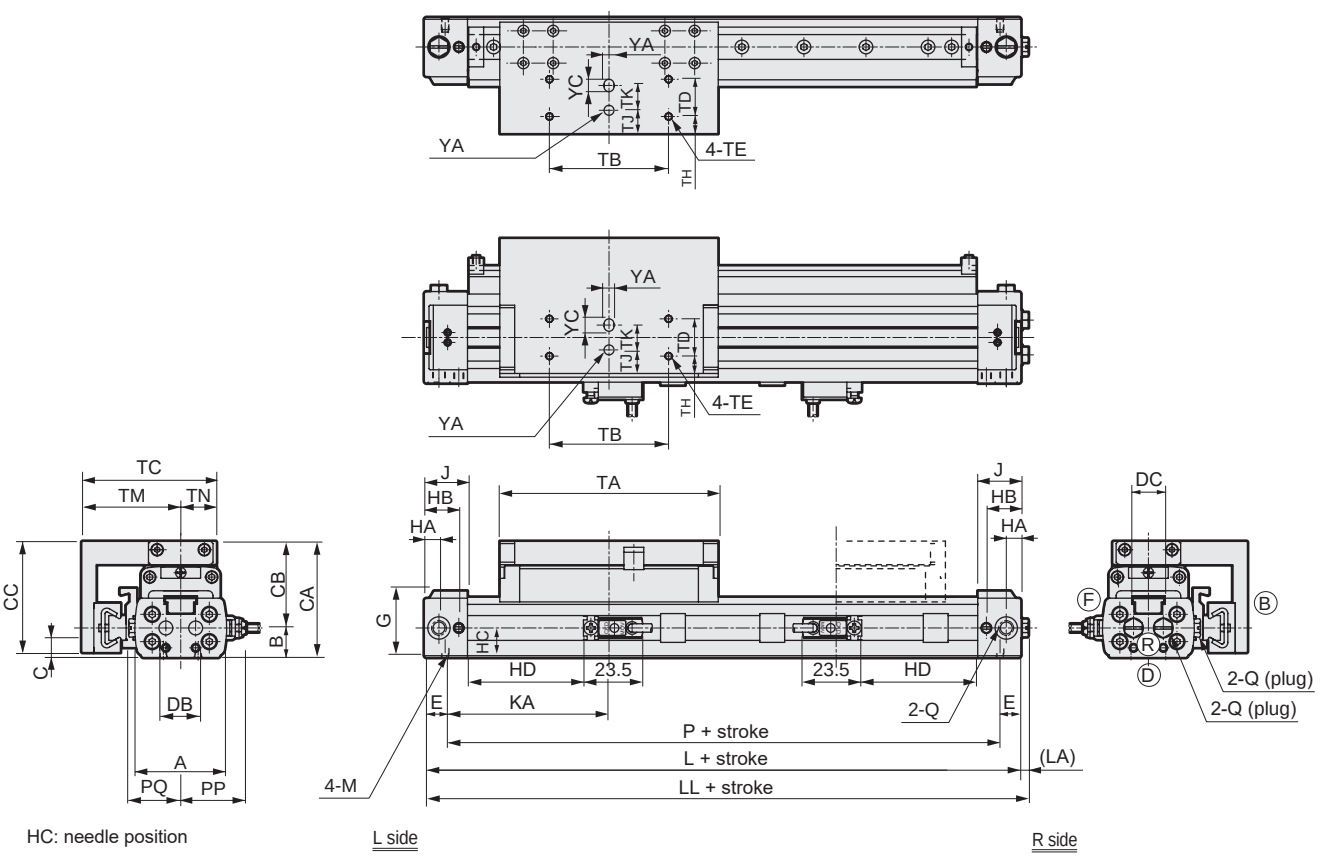
● Full stroke adjustable with shock absorber



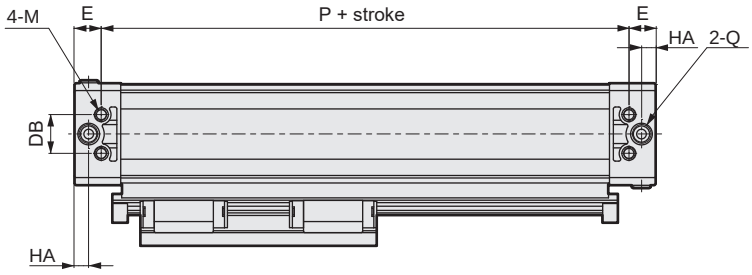
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon socket head cap screw	Alloy steel	Black finish	10	Stopper plate	Steel	Zinc chromate
2	High precision guide	Stainless steel		11	Connection plate	Aluminum alloy	Alumite
3	Hexagon socket head cap screw	Alloy steel	Black finish	12	Key	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

Dimensions

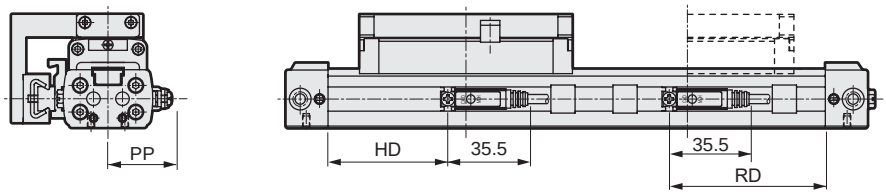
● With cylinder switch SRG3-**-**-***-M*V*
(L-shaped lead wire)



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



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

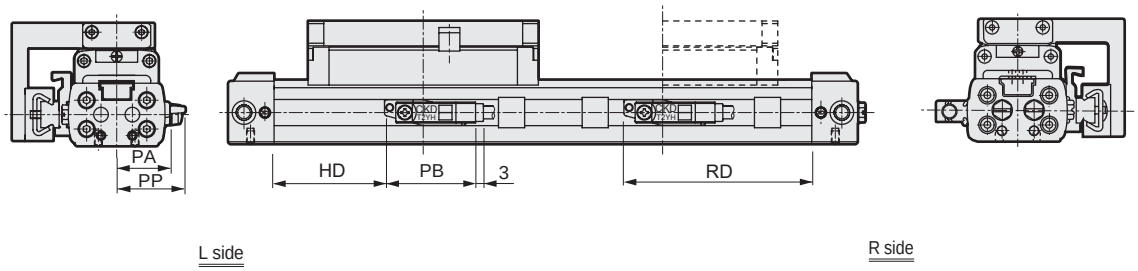


Code / Bore size (mm)	A	B	CA	CB	CC	DB	DC	E	G	HA	HB	HC	J	KA	L	LL	LA	M	P	PQ	Q	TA	TB	TC
ø12 or equiv.	33	10.5	43	32.5	40.5	10	11	8.5	24	6	14	10.5	17.5	59.5	136	139	3	M3 depth 5	119	19	M5	81	42	49
ø16 or equiv.	37	12	47	35	45	14	12	8.5	27	6	14	12	17.5	66	149	152	3	M3 depth 5	132	21	M5	88	48	54.5
ø20 or equiv.	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

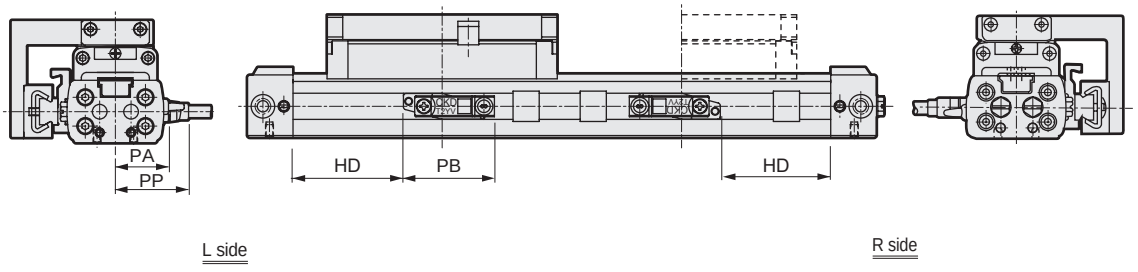
Note: Refer to the table on the right as well.

Dimensions

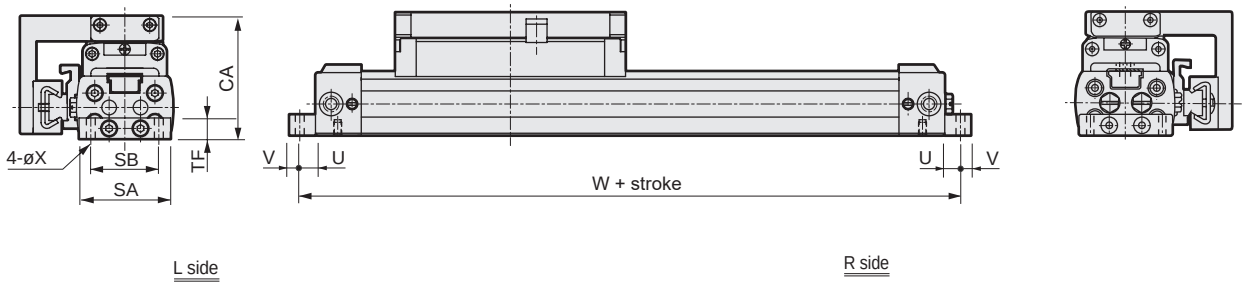
● With cylinder switch SRG3-**-**-***-T*H (T*W, T*Y, T2YD)



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



● With foot bracket SRG3-LB-**-***



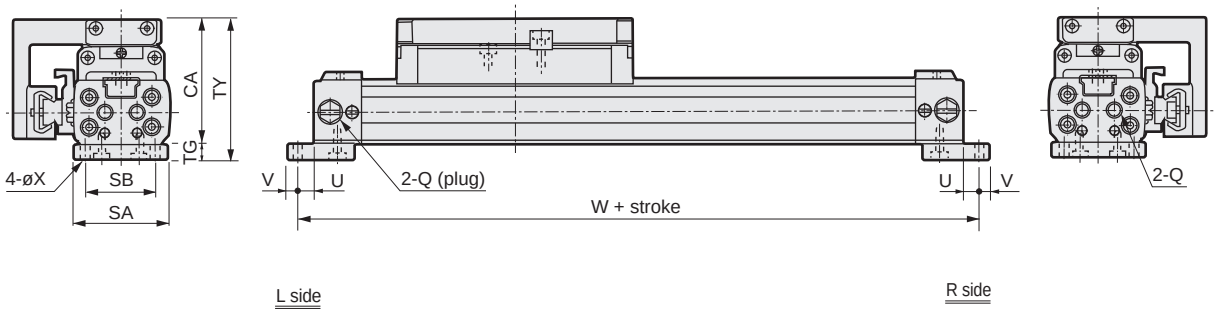
Code / Bore size (mm)	TD	TE	TH	TJ	TK	TM	TN	YA	YC	With foot bracket (LB)						
										SA	SB	TF	U	V	W	X
ø12 or equiv.	13	M3 depth 5	6.5	8	10	36	13	4 $^{+0.07}_{+0.02}$ depth 4	5	32	24	8	6	4	148	3.4
ø16 or equiv.	15	M3 depth 6	7	9.5	10	40	14.5	4 $^{+0.07}_{+0.02}$ depth 4	5	35	26	8	6	4	161	3.4
ø20 or equiv.	18	M4 depth 6	8.5	10	15	44	17.5	6 $^{+0.07}_{+0.02}$ 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 $^{+0.07}_{+0.02}$ depth 6	7	52	20	12	9	11	208	7

Code / Bore size (mm)	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.

Dimensions

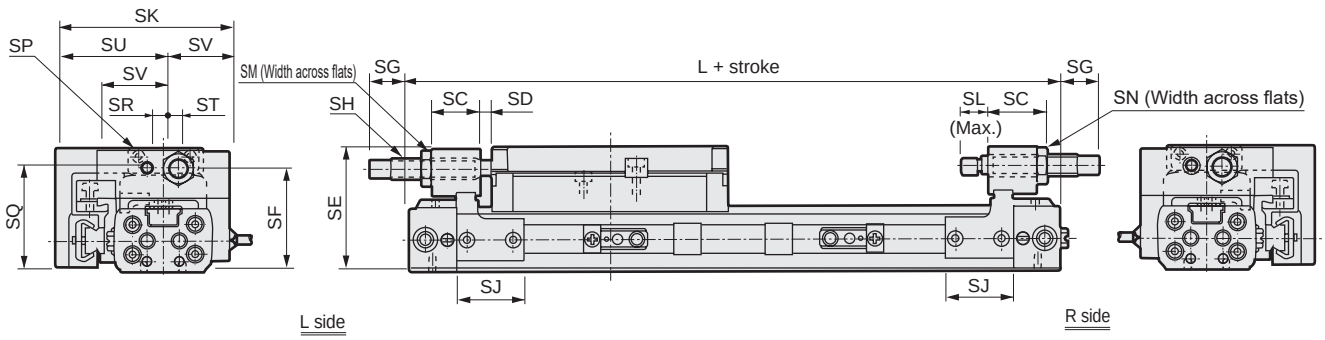
● With foot bracket SRG3-LB1-**-***



Code	With foot bracket (LB1)									
Bore size (mm)	Q	SA	SB	TG	TY	CA	U	V	W	X
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 adjustable with shock absorber (SRG3)



Code	SC	SD	SE	SF	SG			SH		SJ	SK	SL	SM	SN	SP	SQ	SR	ST	SU	SV
Bore size (mm)					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	M8x0.75	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	M8x0.75	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	M10x1.0	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	M12x1.0	12	50	96.5	11.5	17	10	M6	56	12	10	58	38.5

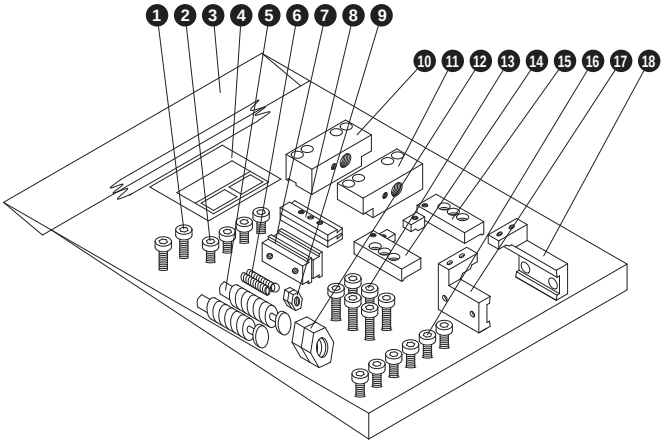
Full stroke adjusting bracket kit

● Both-side full stroke adjusting bracket kit

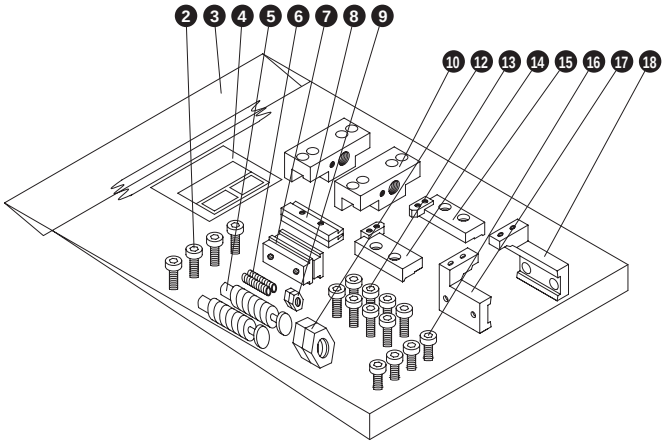
SRG3 - 25 - A

Bore size
(Item Ⓑ on page 1652)

[ø12 to ø20]



[ø25]



No.	Part name	Quantity
1	Hexagon socket head cap screw	ø12 to ø20:2 ø25:-
2	Hexagon socket head cap screw	4
3	Plastic bag	1
4	Package label	1
5	Shock absorber	2
6	Hexagon socket set screw	2
7	Flat nut	2
8	Adaptor nut	2
9	Hexagon nut	2
10	ø12 to ø20: Plate (R) ø25: Plate	ø12 to ø20:1 ø25:2
11	Plate (L)	ø12 to ø20:1 ø25:-
12	Hexagon nut	2
13	Hexagon socket head cap screw	ø12 to ø20:6 ø25:8
14	Adaptor (RG)	1
15	Adaptor (LG)	1
16	Hexagon socket head cap screw	ø12 to ø20:6 ø25:4
17	Adaptor (R)	1
18	Adaptor (L)	1

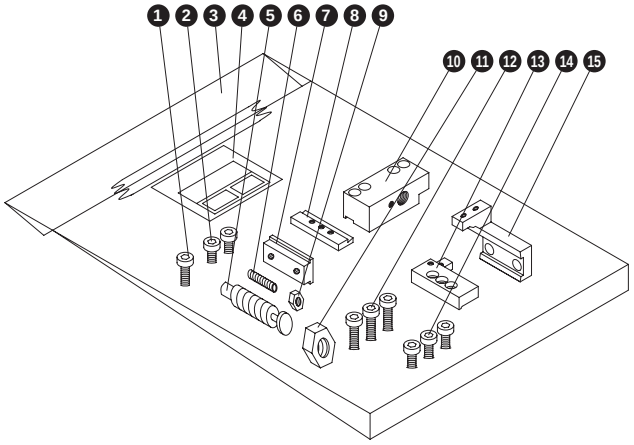
Full stroke adjusting bracket kit

● R side full stroke adjusting bracket kit

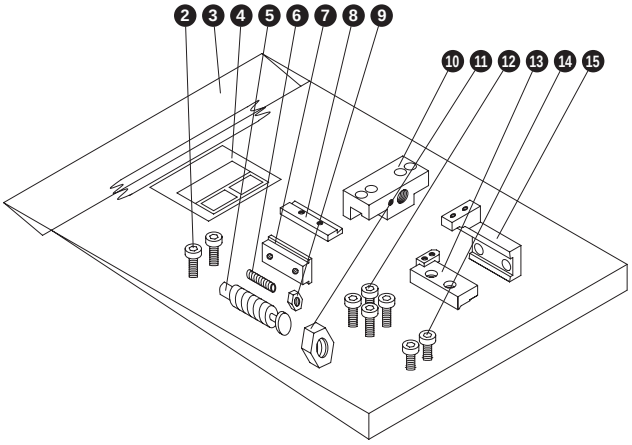
SRG3 - 25 - A1

Bore size
(Item Ⓑ on page 1652)

[ø12 to ø20]



[ø25]



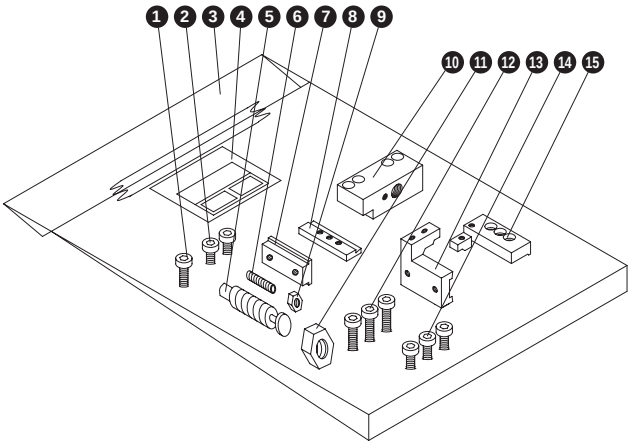
No.	Part name	Quantity	No.	Part name	Quantity
1	Hexagon socket head cap screw	ø12 to ø20:1 ø25:-	9	Hexagon nut	1
2	Hexagon socket head cap screw	2	10	ø12 to ø20: Plate (R) ø25: Plate	1
3	Plastic bag	1	11	Hexagon nut	1
4	Package label	1	12	Hexagon socket head cap screw	ø12 to ø20:3 ø25:4
5	Shock absorber	1	13	Adaptor (RG)	1
6	Hexagon socket set screw	1	14	Hexagon socket head cap screw	ø12 to ø20:3 ø25:2
7	Flat nut	1	15	Adaptor (L)	1
8	Adaptor nut	1			

● L side full stroke adjusting bracket kit

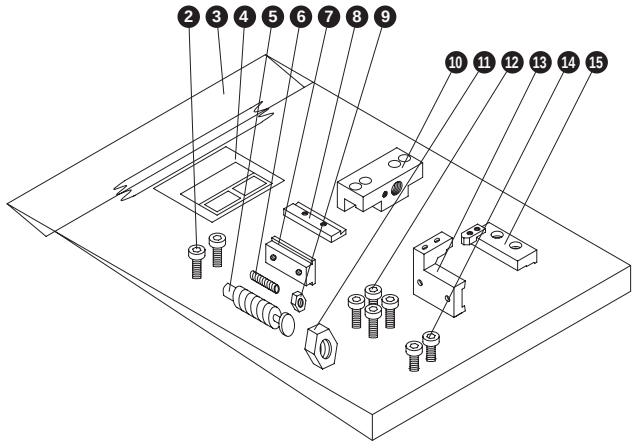
SRG3 - 25 - A2

Bore size
(Item Ⓑ on page 1652)

[ø12 to ø20]



[ø25]



No.	Part name	Quantity	No.	Part name	Quantity
1	Hexagon socket head cap screw	ø12 to ø20:1 ø25:-	9	Hexagon nut	1
2	Hexagon socket head cap screw	2	10	ø12 to ø20: Plate (L) ø25: Plate	1
3	Plastic bag	1	11	Hexagon nut	1
4	Package label	1	12	Hexagon socket head cap screw	ø12 to ø20:3 ø25:4
5	Shock absorber	1	13	Adaptor (LG)	1
6	Hexagon socket set screw	1	14	Hexagon socket head cap screw	ø12 to ø20:3 ø25:2
7	Flat nut	1	15	Adaptor (R)	1
8	Adaptor nut	1			

Parts kit weight list

Full stroke adjusting kit

● Both side full stroke adjusting bracket kit

Kit No.	Kit weight (g)
SRG3-12-A	244
SRG3-16-A	261
SRG3-20-A	405
SRG3-25-A	813

● R side full stroke adjusting bracket kit

Kit No.	Kit weight (g)
SRG3-12-A1	122
SRG3-16-A1	131
SRG3-20-A1	202
SRG3-25-A1	406

● L side full stroke adjusting bracket kit

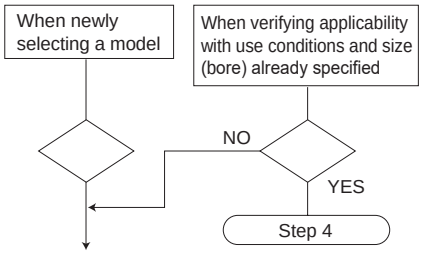
Kit No.	Kit weight (g)
SRG3-12-A2	122
SRG3-16-A2	130
SRG3-20-A2	403
SRG3-25-A2	407

The other parts kits are the same as those of SRL3 Series.
Refer to SRL3 Series on pages 1627 and 1628.

SRG3 Series selection guide

As the selection conditions are different from those of general air cylinders, confirm whether the model is adequate or not according to the selection guide.

1 Step 1



2 Step 2 Confirming working conditions

1. Working pressure (P) (MPa)
2. Load weight (M) (kg)
3. Applied load (F_L) (N)
4. Mounting orientation
5. Stroke (L) (mm)
6. Travel time (t) (s)
7. Operation speed (V) (m/s)

Formula of the cylinder's average operation speed V

$$V = \frac{L}{t} \times \frac{1}{1000} \text{ (m/s)}$$

[Load weight]

Value of (weight of transported object + jig weight)

[Mounting orientation]

Operating direction: Horizontal + vertical

Mounting direction: With table upward, with table downward

3 Step 3 Selection of approximate size of cylinder

● Formula for calculating cylinder size (bore size)

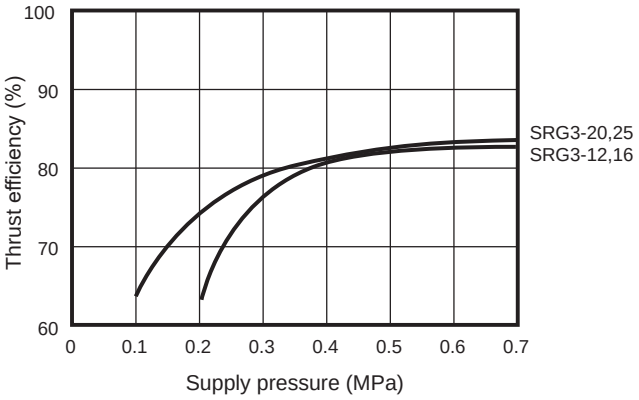
$$F = \frac{\pi}{4} \times D^2 \times P \times \frac{a}{100} \text{ (N)}$$

$$\therefore D = \sqrt{\frac{4F}{\pi \cdot P \cdot a}} \text{ (mm)}$$

D: Cylinder bore size (mm)
P: Working pressure (MPa)
a: Thrust efficiency (%) (Refer to Fig. 1)
F: Cylinder theoretical thrust (N)

D= ø

Figure 1 Trends of thrust efficiency of SRG3



● When calculating from the theoretical thrust value in Table 1

Approximate required thrust ≥ Applied load x 2

("x 2" in "Applied load x 2" is for when the load factor is approx. 50% as a safety coefficient)

(Example) Working pressure 0.5 MPa

Applied load 5 N

* Required thrust is 5 (N) x 2 = 10 N

The bore size selected from Table 1 with theoretical thrust of 10 N and over at working pressure of 0.5 MPa will be ø12.

D= ø12

[Cylinder theoretical thrust]

Table 1 Cylinder theoretical thrust value

Unit: N

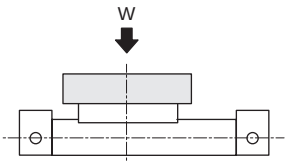
Bore size (mm)	Pressurized area (mm²)	Working pressure MPa						
		0.1	0.2	0.3	0.4	0.5	0.6	0.7
ø12 or equiv.	138	-	28	41	55	69	83	97
ø16 or equiv.	216	-	43	65	86	108	130	151
ø20 or equiv.	315	-	63	94	126	157	189	220
ø25 or equiv.	542	54	108	163	217	271	325	380

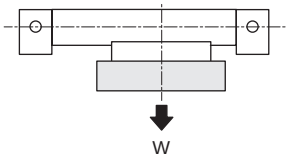
Note: Values in Table 1 do not include thrust efficiency.

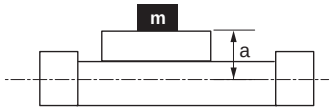
4 Step 4 Calculation of load (W) and moments

Vertical load and static moment work according to the cylinder mounting direction and the position of center of gravity of load.

[Vertical load]





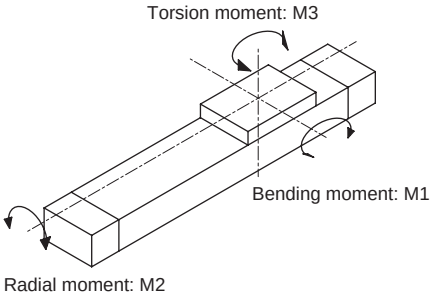


Value of a

Bore size	a(m)
ø25 or equiv.	0.033
ø32 or equiv.	0.035
ø40 or equiv.	0.040
ø63 or equiv.	0.050

[Static moment]

● Types of moment caused by load

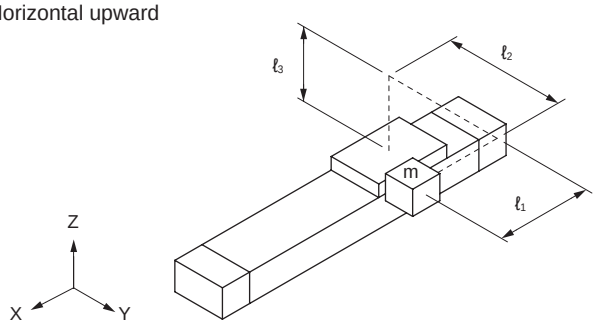


Unit: N·m

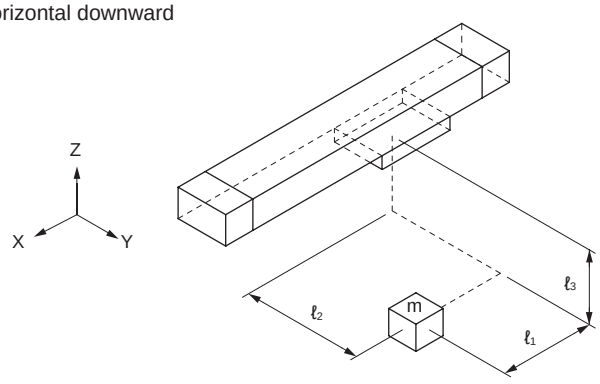
Mounting orientation		Horizontal upward	Horizontal downward	Horizontal lateral	Vertical
Vertical load W		mx9.8			-
Static moment	M1	W×ℓ1	W×ℓ1	-	W×(ℓ3+a)
	M2	W×ℓ2	W×ℓ2	W×(ℓ3+a)	-
	M3	-	-	W×ℓ1	W×ℓ2

m : Load weight [kg]
ℓ1 : Length along the stroke direction from the center of table to the center of gravity of load [m]
ℓ2 : Length in the width direction from the center of table to the center of gravity of load [m]
ℓ3 : Length in the vertical direction from the center of table to the center of gravity of load [m]

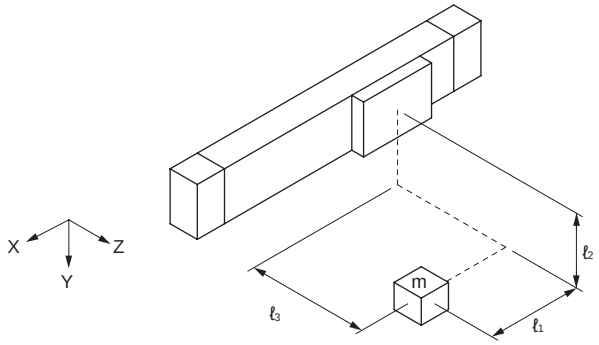
Horizontal upward



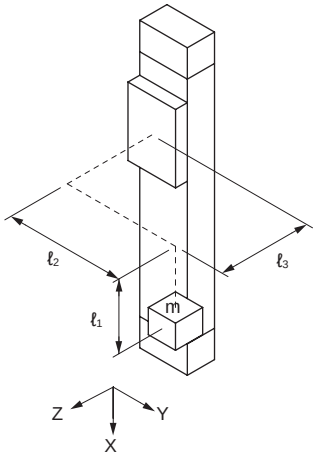
Horizontal downward



Horizontal lateral



Vertical



5 Step 5 Calculation of load and resultant moment

● Divide each load by the value shown in Table 2 to find load/ moment ratio, and confirm that the total value is 1.0 or less.

● Formula

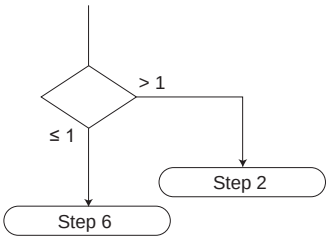
$$\frac{W}{Wmax} + \frac{M1}{M1max} + \frac{M2}{M2max} + \frac{M3}{M3max} \leq 1.0$$

Table 2 Applied loads/allowable moments

Item / Bore size (mm)	Vertical load W(N)	Bending moment M1 (N·m)	Radial moment M2 (N·m)	Torsion moment M3 (N·m)
ø12 or equiv.	20	1	0.5	3
ø16 or equiv.	40	2.5	1	5.5
ø20 or equiv.	40	2.5	1	5.5
ø25 or equiv.	90	6.5	2.5	17

● If the total value is more than 1.0,

1. Review the load
2. Use a cylinder with wider bore size, etc., for revision.



6 Step 6 Calculation of required thrust

● Calculate the required cylinder thrust (F_N) that satisfies the conditions of the moments.

1. For horizontal operation

$F_N = F_W + F_{M1} + F_{M2} + F_{M3} + F_L$ (N)

$F_W = Wx0.2$ (N)

$F_{M1} = M1xC1$ (N)

$F_{M2} = M2xC2$ (N)

$F_{M3} = M3xC3$ (N)

F_L: Applied load (N)

C1: Coefficient of friction of moment M1 (Table 3)

C2: Coefficient of friction of moment M2 (Table 3)

C3: Coefficient of friction of moment M3 (Table 3)

2. For vertical operation

$F_N = W + F_{M1} + F_{M3} + F_L$ (N)

$F_N =$ ☐ (N)

[Moment friction coefficients]

● The friction differs depending on the moment. Calculate the friction of each moment from Table 3.

Table 3 Coefficients of friction of moments

1/m

Bore size (mm)	C1	C2	C3
ø12 or equiv.	8	27	8
ø16 or equiv.	7	24	7
ø20 or equiv.	6	21	6
ø25 or equiv.	5	16	5

7 Step 7 Calculation of load factor

● Determine the load factor by taking into account the status of utilization such as stability, margin and service life of the cylinder.

● Formula of load factor (α)

$$\alpha = \frac{\text{Required thrust } (F_N)}{\text{Thrust of cylinder } (F)} \times 100\%$$

$$F = \frac{\pi}{4} \times D^2 \times P \times \frac{\mu}{100} \text{ (N)}$$

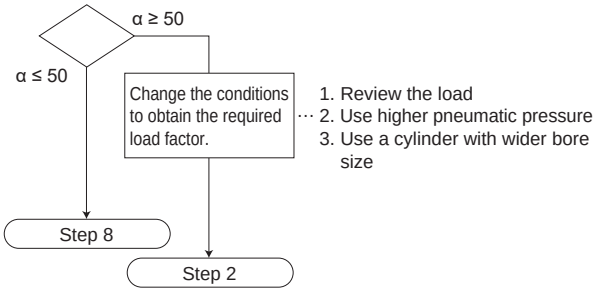
D: Cylinder bore size (mm)

$\frac{\pi}{4} \times D^2$ = Pressurized area (mm^2)

● The cylinder theoretical thrust value in Table 1 can be used as the $\frac{\pi}{4} \times D^2 \times P$ value.

P : Working pressure MPa

μ : Thrust efficiency (Use the values in Figure 1.)



[Appropriate range of load factor]

● The piston speed differs depending on the load factor. In normal use, the values in Table 4 are recommended.

Table 4 (Appropriate range of load factor - reference value)

Working pressure MPa	Load factor (%)
0.2 to 0.3	α ≤ 40
0.3 to 0.6	α ≤ 50
0.6 to 0.7	α ≤ 60

[Example] Size of the cylinder used: ø12 or equiv.

Required thrust 1.78(N)

Working pressure 0.5 (MPa)

$$\alpha = \frac{1.78}{138x0.5x\frac{82}{100}} x100$$

= 3.1%

Appropriate since the result is α ≤ 50%.

8 Step 8 Confirming cushion capacity

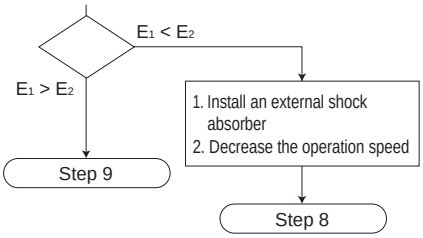
Check if the kinetic energy generated by an actual load can be absorbed by the cylinder cushion.

[Allowable absorbed energy of cylinder: E_1]

● The kinetic energy absorption performance of the cylinder's cushion depends on the cylinder bore size. The values of SRG3 are shown in Table 5.

Table 5 SRG3 allowable absorbed energy (E_1)

Bore size (mm)	Allowable absorbed energy (J)
ø12 or equiv.	0.03
ø16 or equiv.	0.22
ø20 or equiv.	0.59
ø25 or equiv.	1.40



[Piston kinetic energy: E_2]

● Formula for calculating the piston kinetic energy

$$E_2 = \frac{1}{2} \times M \times Va^2 \ (J)$$

M: Applied load weight (kg)

Va: Speed of the piston entering the cushion (m/s)

$$Va = \frac{L}{t} \times \left(1 + 1.5 \times \frac{\alpha}{100}\right)$$

L : Stroke (m)

t : Operating time (s)

α : Load factor (%)

9 Step 9 Confirmation of inertia load

● Check whether the inertia force of the load caused by the piston operation is within the allowable range of the cylinder.

(1) Obtain the G coefficient from the speed of entering the cushion (Va) and Figure 2 (Trends of inertia force coefficient for SRG3). Use the speed of entering the cushion (Va) calculated in Step 8.

Va: Speed of the piston entering the cushion (m/s)

$$Va = \frac{L}{t} \times \left(1 + 1.5 \times \frac{\alpha}{100}\right)$$

L : Stroke (mm)
t : Operating time (S)
α : Load factor (%)

(2) Obtain the bending moment (M1i) and torsion moment (M3i) of the inertia force.

Unit: N·m

Mounting orientation		Horizontal upward	Horizontal downward	Vertical	Horizontal lateral
Dynamic moment	M1i	Wx(ℓ_3 + a)xG			
	M2i	M2i dynamic moment is not generated.			
	M3i	Wxℓ_2xG			

Moment of inertia force can be calculated with the formulas above regardless of the mounting direction.

(3) Add moments of static load (M1 and M3) and moments of inertia force (M1i and M3i) and check that the resulting values are within the values in Table 2.

$$M1 + M1i \leq M1max$$
$$M3 + M3i \leq M3max$$

M1max and M3max are the values in Table 2.

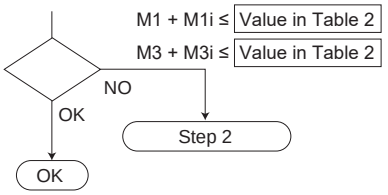
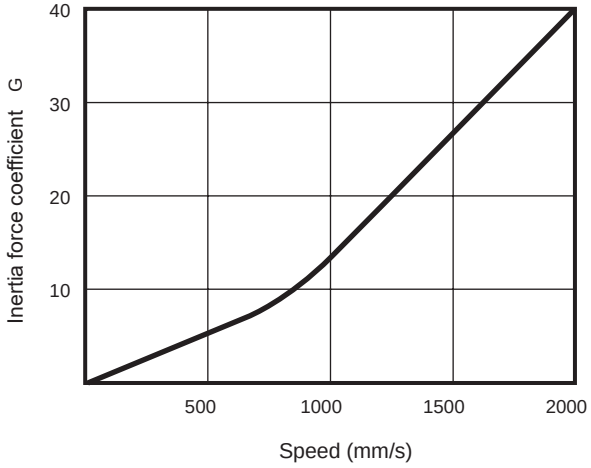
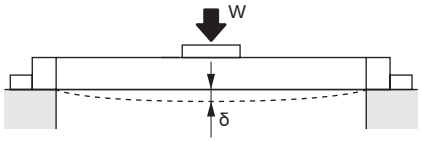


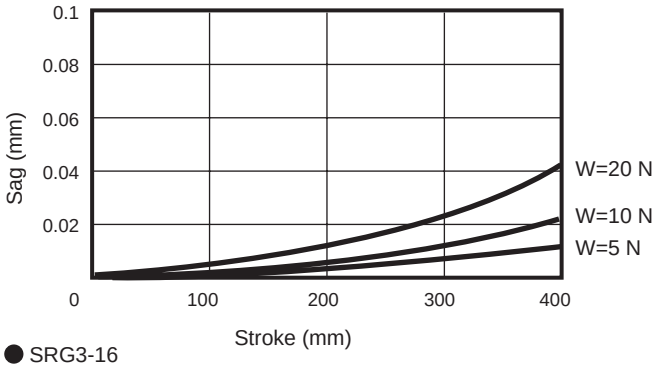
Figure 2 Trends of inertia force coefficient for SRG3



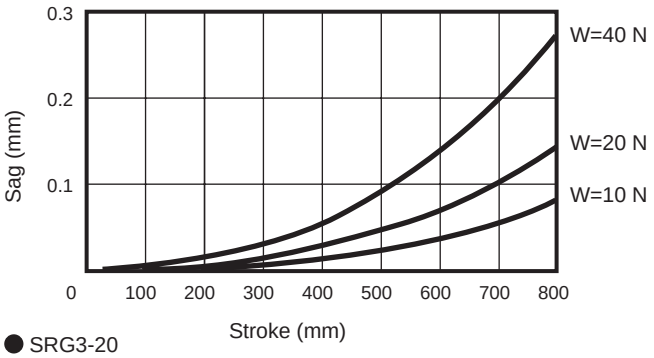
1 Sag of cylinder tube δ



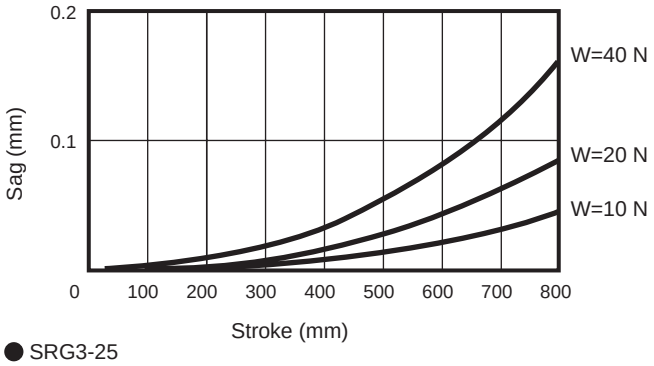
● SRG3-12



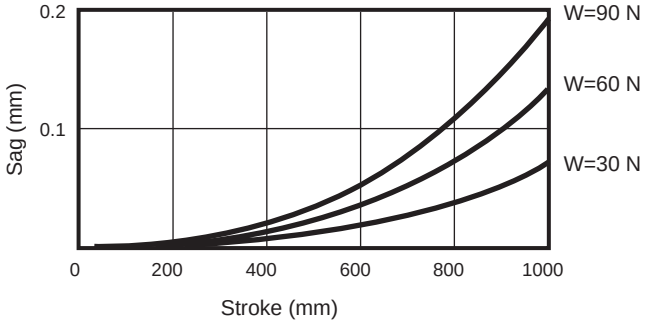
● SRG3-16



● SRG3-20

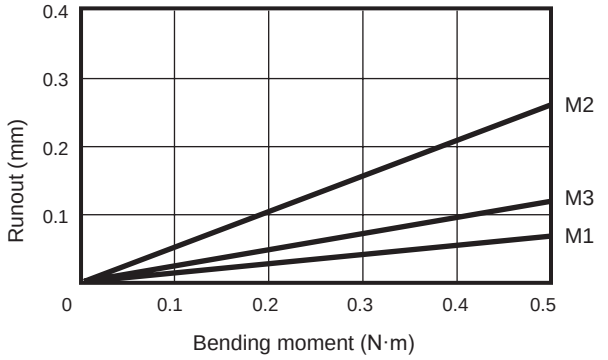


● SRG3-25

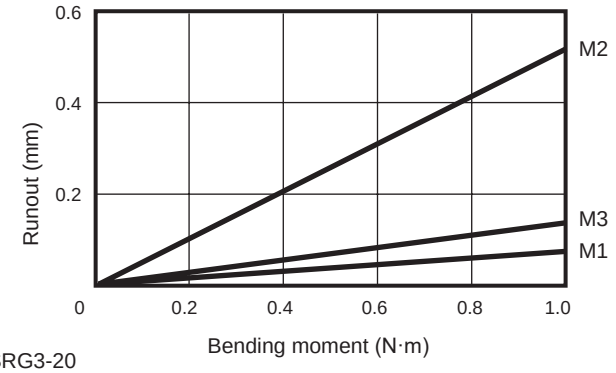


2 Runout of table (Runout at 70 mm from the center of the cylinder)

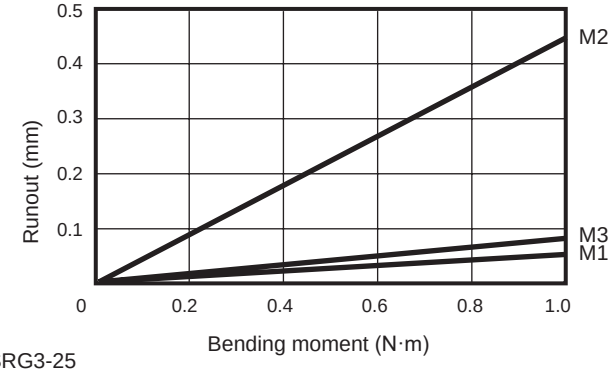
● SRG3-12



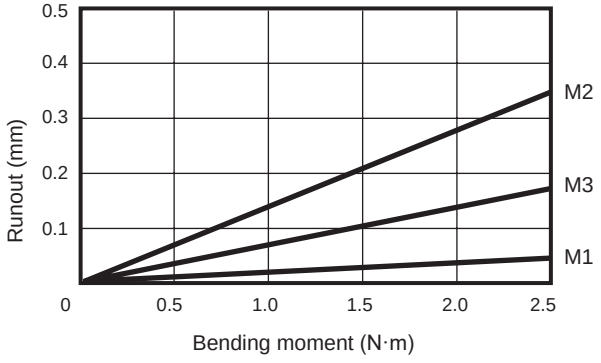
● SRG3-16



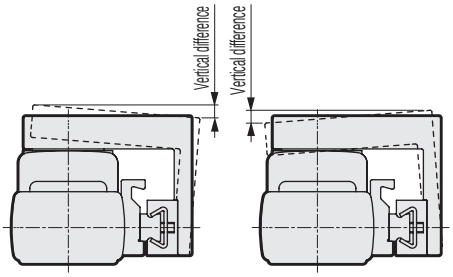
● SRG3-20



● SRG3-25



Note: This table has a vertical tilt when without load, separate from the table displacement noted above. (Refer to table below)



Vertical difference (reference value)

Bore size	Vertical difference (MAX)
ø12	0.9mm
ø16	1.0mm
ø20	1.1mm
ø25	1.5mm

3 How to check the full stroke adjusting unit

(1)Checking the allowable colliding energy of shock absorber

Calculate the colliding object equivalent weight Me and the colliding energy E from the formula in the table below. Confirm that Me and E are within the allowable values shown in Figure 3. Also, confirm that the operating frequency, colliding speed and other specifications are within the allowable values in Table 11. Note that the allowable colliding object equivalent weight Me and allowable colliding energy E change depending on the colliding speed.

● Code
E: Colliding energy (J)
Me: Colliding object equivalent weight (kg)
m: Workpiece weight (kg)
F: Cylinder thrust (N)
V: Colliding speed (m/s)
St: Shock absorber stroke (m)
g: Gravity acceleration 9.8 $(m/s)^2$)

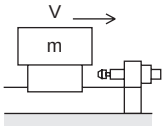
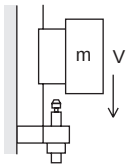
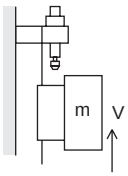
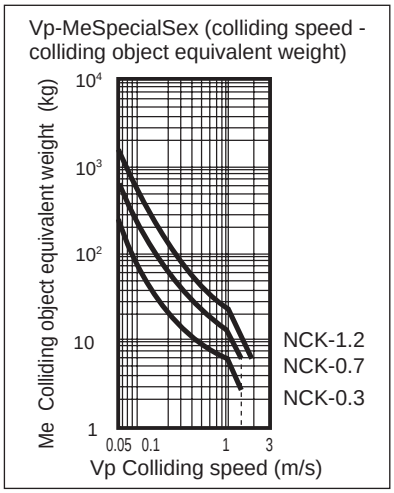
	Horizontal travel	Vertical down	Vertical up
Applications			
Colliding object equivalent weight Me (kg)	$Me = m + \frac{2F \cdot St}{V^2}$	$Me = m + \frac{2 \cdot St\,(F+mg)}{V^2}$	$Me = m + \frac{2 \cdot St(F-mg)}{V^2}$
Energy E (J)	$E = \frac{mV^2}{2} + F \cdot St$	$E = \frac{mV^2}{2} + (F+mg) \cdot St$	$E = \frac{mV^2}{2} + (F-mg) \cdot St$

Fig. 3 Allowable colliding object equivalent weight



(2) Shock absorber

Table 6 Specifications

Type		For SRG3-12/16	For SRG3-20	For SRG3-25
Shock absorber model No. / Descriptions		NCK-00-0.3-C	NCK-00-0.7-C	NCK-00-1.2
Type/Classification		Spring return without adjuster		
Max. absorbed energy J		3	7	12
Stroke mm		6	8	10
Hourly Max. energy absorption kJ/hour		6.3	12.6	21.6
Max. colliding speed m/s		1.5		2.0
Max. operating frequency cycles/min.		35	30	
Ambient temperature °C		−10 to 80		
Required mounting strength N		3540	6150	8400
Return time S		0.3 or less		
Product weight kg		0.012	0.02	0.04
Return Spring force	When extended N	2.9	2.0	2.9
	When compressed N	4.5	4.3	5.9

(3) Example of calculation (SRG3-20)

● Example of calculation

Rising and lowering

Working conditions

● Applied load M 1 (kg)

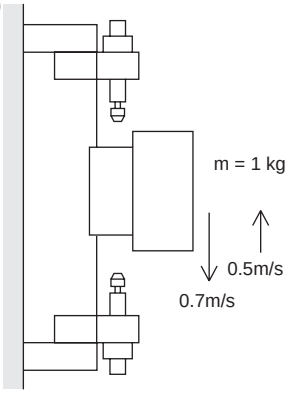
● Colliding speed

Rising 0.5 (m/s)

Lowering 0.7 (m/s)

● Working pressure 0.5 (MPa)

(157 N)



①Kinetic energy when rising (E_1)

$$E_1 = \frac{1 \times 0.5^2}{2} + (157 - 1 \times 9.8) \times 0.008$$

$= 1.30$ (J)

The kinetic energy (E_1) is less than 1/2 of the max. energy absorption in Table 12 and can be absorbed.

$$Me = 1 + \frac{2 \times 0.008 (157 - 1 \times 9.8)}{0.5^2}$$

$= 10.42$ (kg)

From Figure 4, Me at V=0.5 (m/s) of the shock absorber for SRG3-20 is 18 kg.,Absorbable

②Kinetic energy when falling (E_1)

$$E_1 = \frac{1 \times 0.7^2}{2} + (157 + 1 \times 9.8) \times 0.008$$

$= 1.58$ (J)

The kinetic energy (E) is less than 1/2 of the max. energy absorption in Table 6 and$_1$)is allowable

$$Me = 1 + \frac{2 \times 0.008 (157 + 1 \times 9.8)}{0.7^2}$$

$= 6.45$ (kg)

From Figure 4, Me at V = 0.7 (m/s) of the shock absorber for SRG3-20 is 16 kg. Therefore, the result is allowable.

● Example calculation (2)

Horizontal

Working conditions

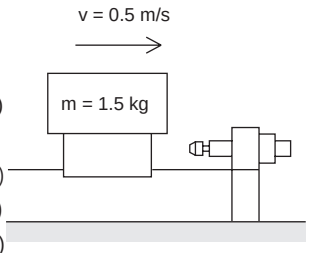
Load weight M 1.5 (kg)

Colliding speed

Horizontal direction 0.5 (m/s)

Working pressure 0.3 (MPa)

(94 N)



Horizontal kinetic energy (E_1)

$$E_1 = \frac{1.5 \times 0.5^2}{2} + 94 \times 0.08$$

$= 0.94$ (J)

The kinetic energy (E_1) is less than 1/2 of the max. energy absorption in Table 12 and can be absorbed.

$$Me = 1.5 + \frac{2 \times 94 \times 0.008}{0.5^2}$$

$= 1.53$ (kg)

V=0.5 from Fig. 4 (m/s)The Me value of the shock absorber for SRG3-20 at is 18kg. Therefore, 1.53 < 18 is allowable.

(Note) Refer to 9 Step 9 (Confirmation of inertia load) and keep the inertia load within the allowable value.

Safety Precautions

Be sure to read this section before use.
Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: High precision guided rodless cylinder SRG3 Series

Mounting, installation and adjustment

1. Common

⚠ CAUTION

■ Pay attention when designing the brake control circuit.

A slight amount of external leakage is inherent to the structure of SRL3 and other slit rodless cylinders. Therefore, brake control using a 3-position valve with all ports closed may fail to keep the stop position of the table. Use the control circuit with both sides pressurized with 3-position P/A/B connection valve. However, note that the table may deviate from origin if air pressure is applied in the de-energized state when starting after a pressure drop.

■ Basic circuit diagram

● Horizontal load

When piping is as shown in Fig. 1, equal pressure is applied to both ends of the piston when stopped to prevent the table from popping out when operation is restarted.

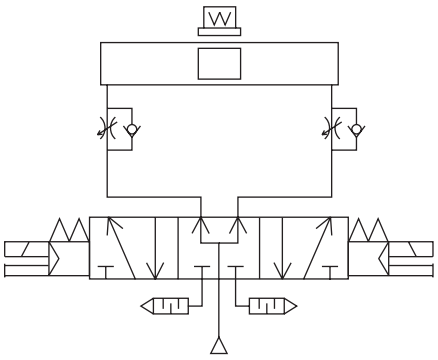


Fig. 1

● Vertical load

● If vertical load works as shown in Figure 2, the table moves in the load direction. Install a regulator with check valve on the top to reduce thrust in the load direction to balance the load.

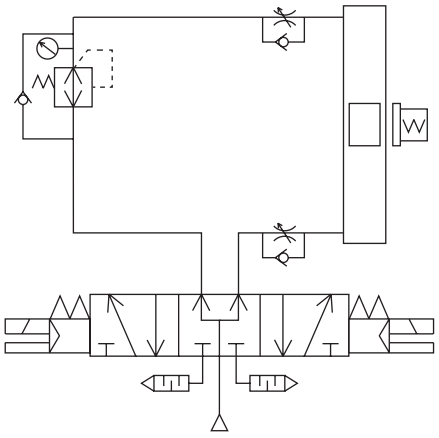


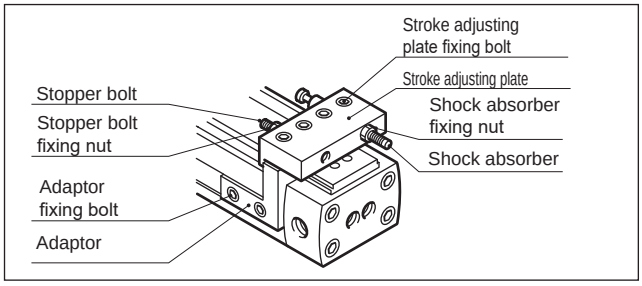
Fig. 2

■ Although the structure of SRL3 and other slit rodless cylinders has a slight amount of external air leakage, it does not affect the speed control performance.

■ Prevent negative pressure from occurring inside the cylinder tube. Using the cylinder as an air balancer or operating the table with external force or inertia force with all ports closed may cause negative pressure inside the cylinder, resulting in air leakage if the sealing belt comes off. Do not use external force or inertia force, otherwise negative pressure will occur inside the cylinder.

⚠ WARNING

■ How to adjust the stroke adjusting unit



(1) Moving the stroke adjusting unit

● Loosen the adaptor fixing bolt and the stroke adjusting plate fixing bolt to move the stroke adjusting unit.

(2) Fixing the stroke adjusting unit

● After moving the stroke adjusting unit to the desired position, tighten the adaptor fixing bolt and the stroke adjusting plate fixing bolt with the value in Table 1 to fix the unit. Note that if tightened with a value less than that in the table below, the stroke adjusting unit may be displaced.

Table 1 Tightening torque of adaptor fixing bolt and stroke adjusting plate fixing bolt

Tightening torque / Model	Adaptor fixing bolt (N·m)	Stroke adjusting plate fixing bolt (N·m)
SRG3-12/16	1.0 to 1.2	0.5 to 0.7
SRG3-20	2.5 to 2.7	
SRG3-25	5.2 to 5.6	2.5 to 2.7

(3) Adjusting the stroke with a stopper bolt

● In the case of ø12 to ø20, adjust the stroke normally by moving the stroke adjusting unit, since there is a danger that fingers may be caught in a narrow space between the table and the stroke adjusting plate. To adjust the stroke, loosen the stopper bolt fixing nut and turn the stopper bolt. After adjustment, tighten the stopper bolt fixing nut with the value in Table 2 to fix the stopper bolt.

Table 2 Tightening torque of stopper bolt fixing nut and shock absorber fixing nut

Tightening torque / Model	Stopper bolt fixing nut (N·m)	Shock absorber fixing nut (N·m)
SRG3-12/16	1.1 to 1.2	1.3 to 1.8
SRG3-20	2.5 to 2.7	2.9 to 3.9
SRG3-25	8.8 to 9.5	4.5 to 6.0

(4) Adjusting the shock absorber

● With standard shock absorber

Change the operational stroke of the shock absorber to adjust its absorbed energy.

To adjust the operational stroke of the shock absorber, loosen the shock absorber fixing nut and turn the shock absorber. After adjustment, tighten the shock absorber fixing nut with the value in Table 2 to fix the shock absorber.

Because the gap between the shock absorber and the stopper bolt is narrow, it is recommended to remove the stroke adjusting plate for adjustment.

(5) Precautions for use

● A shock absorber can absorb the rated energy at the rated stroke. However, the initial shock absorber installation position is adjusted to have a stroke allowance at the cylinder's stroke end. Therefore, the absorbed energy will be less than the allowable absorbed energy of a discrete shock absorber. If the rated absorbed energy is required, adjust the shock absorber so that the full stroke can be used. At the time, adjust so that the table stops with the stopper bolt. Even at the cylinder stroke end, if the cylinder's thrust is continuously applied, the shock absorber may be damaged.

Fig. 1

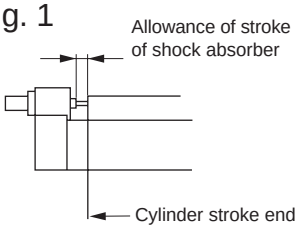
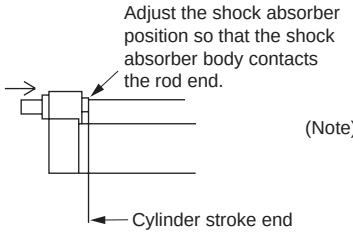


Fig. 2



(Note) This explanation applies to the shock absorber supplied with the full stroke adjustable.

● The absorbed energy changes depending on the colliding speed. Keep it within 1/2 of the max. energy absorption in Table 3 at 1000 mm/s colliding speed.

Table 3 Specifications of full stroke adjustable with shock absorber (initial set point)

Type	Absorbed energy (J)	Effective stroke (mm)
For SRG3-12/16	2.4	5.5
For SRG3-20	5.7	7
For SRG3-25	10	8

■ Do not perform electric welding after installing the rodless cylinder.

Otherwise electric current passes into the cylinder and causes sparks between the dust-proof belt and cylinder tube, which will damage the dust-proof belt.

■ The cylinder body may be damaged or may malfunction if a unit with excessive inertia, etc., is moved. Use within the allowable range.

■ Do not apply strong impact or excessive moment to the table.

■ Carefully match the centers when connecting a load with an external guide mechanism.

● Displacement of the shaft center increases as the stroke becomes longer. Consider the connection method (floating) so that the displacement can be absorbed.

■ Keep moment, including inertia force caused by load transfer or stop, within the allowable load. Damage will occur if this value is exceeded.

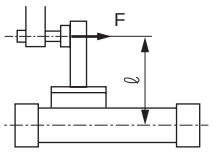
(When the overhang load is large)

● When the overhang load is large and the cylinder is stopped at both ends by the piston, load inertia causes bending moment even if the energy is within the allowable absorbed energy of the internal cushion.

If the kinetic energy is large and an external cushion is used, adjust so that the cylinder contacts with the center of gravity of workpiece or the closest point to it.

(When an external stopper is used)

● When using an external stopper, make a selection considering bending moment due to the cylinder thrust.



$M1 = F \cdot \ell$

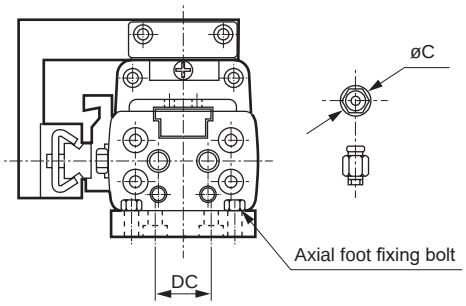
F: Cylinder thrust
ℓ: Length from the center of the cylinder to the stopper

■ Using common port piping

● Piping fittings compatible with the common ports (options R and T) are limited. Select an appropriate one from Table 4.

Table 4

Mounting	Applicable fitting O.D. øC		
Bore size (mm)	00	LB	LB1
ø12 or equiv.	11 or less	Common port piping is not available	11 or less
ø16 or equiv.	12 or less		12 or less
ø20 or equiv.	16 or less		16 or less
ø25 or equiv.	26 or less		26 or less

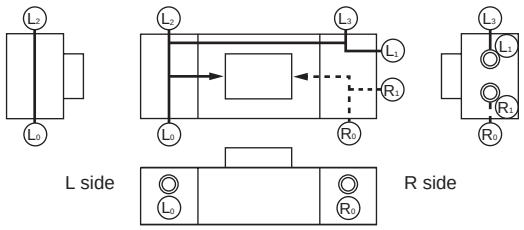


● In the case of the axial foot (LB1) mounting with option R or T, the piping fitting interferes with the axial foot fixing bolt. Fix the cylinder body (by tightening the axial foot fixing bolt) before attaching the piping fitting. (Attaching the piping fitting first will cause interference and prevent tightening of the axial foot fixing bolt.)

■ Piping port position and operating direction

Bore size ø12 to ø20 or equiv.

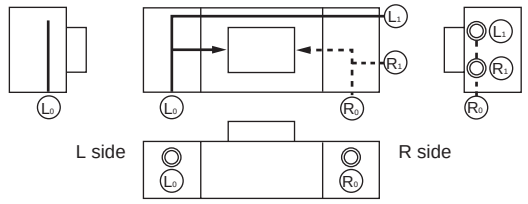
● Option code (blank, R, B, T)



Ⓡ indicates the pressurized ports on R side and Ⓛ indicates the pressurized ports on L side. When the product is shipped from the factory, ports other than one each of Ⓡ0 and Ⓛ0 are sealed with plugs. Remove the plugs when piping to the plugged ports.
Option (D) is not available.

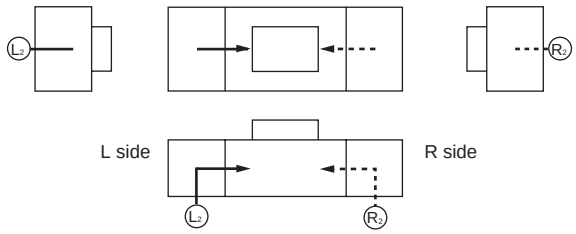
Bore size ø25

● Option code (blank, R, B, T)



Ⓡ indicates the pressurized ports on R side and Ⓛ indicates the pressurized ports on L side. When the product is shipped from the factory, ports other than one each of Ⓡ0 and Ⓛ0 are sealed with plugs. Remove the plugs when piping to the plugged ports. Bottom piping is not possible. If bottom piping is necessary, select the option (D).

● Option (D) (bottom piping)



Ⓡ indicates the pressurized ports on R side and Ⓛ indicates the pressurized ports on L side. There are no ports for piping other than Ⓡ2 and Ⓛ2.

■ Do not damage surface flatness by denting or scratching the body (tube) mounting surface or the end plate surface.

⚠ CAUTION

■ Pay attention when designing the brake control circuit.

A slight amount of external leakage is inherent to the structure of SRL3 and other slit rodless cylinders. Therefore, brake control using a 3-position valve with all ports closed may fail to keep the stop position of the table. Use the control circuit with both sides pressurized with 3-position P/A/B connection valve.
However, note that the table may deviate from origin if air pressure is applied in the de-energized state when starting after a pressure drop.

■ Basic circuit diagram

● Horizontal load

When piping is as shown in Fig. 1, equal pressure is applied to both ends of the piston when stopped to prevent the table from popping out when operation is started.

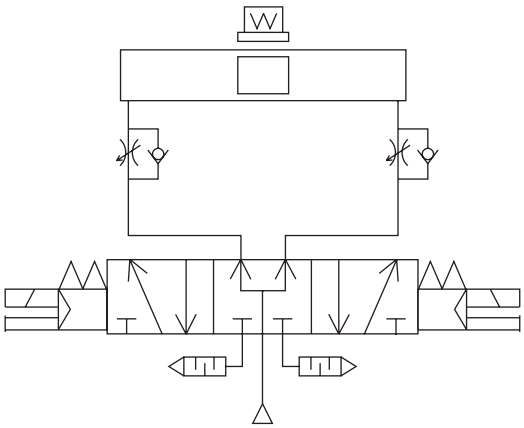


Fig. 1

● Vertical load

When vertical load works as shown in Figure 2, the table moves in the load direction. Install a regulator with check valve on the top to reduce thrust in the load direction to balance the load.

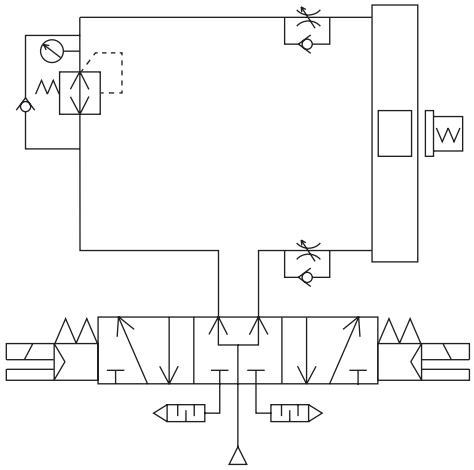


Fig. 2

■ Do not use the cylinder in places where it is directly exposed to coolant, oil mist, etc.

Be sure to provide a protective cover, etc., if the cylinder must be installed in such a place.

■ Do not use this product where foreign matter such as cutting chips, dust, or spatter, etc., will contact or enter the cylinders.

Provide a protective cover, etc., if the cylinder must be installed in such a place. Be sure to consult with CKD for use in these environments.

■ CKD's shock absorber is a repair part.

Replace when the energy absorption performance has degraded or the operation is not smooth.