Rodless Type

SRG3

Rodless Cylinder with High Precision Guide

ø12, ø16, ø20, ø25 or equiv.

Overview

This is a rodless cylinder with a high-precision guide, where a single-axis high-precision linear guide is integrally included with the inner diameter size equivalent to ø12 to ø25 of the Rodless Cylinder. Ideal for high-precision conveyance of small parts.

Features

Achieves high precision compactly

By attaching and integrating a single-axis high-precision guide to the side of the Rodless Cylinder (SRL3), miniaturization as a guided rodless cylinder is achieved. Realizes miniaturization of equipment.

Low profile design similar to SRL3 is possible

Due to our original flat rodless cylinder structure, the table position is extremely low, enabling thin design of equipment. Also, since it is based on SRL3, the interface dimensions for Stroke are compatible, and design changes can be made easily.

Centralized Port

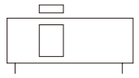
Depending on the installation location of the cylinder, centralized port (one-way piping) and standard port (both sides piping) can be freely selected. Equipment can be made compact.

CONTENTS

System Chart

Rodless Cylinder with High Precision Guide SRG3 Series

●: Standard, ◎: Option, : Not manufacturable

Variation	Model No. Circuit Diagram Code	Bore Size (mm)	Standard Stroke (mm)									Min Stroke (mm)		Max Stroke (mm)	Intermediate Stroke (per mm)	Mounting Type			Cushion				Option						Switch	Page
			200	300	400	500	600	700	800	900	1000					Basic type	Axial Foot Type	Axial Foot Type	Without Cushion	With Cushion on Both Sides	With R Side Cushion	With L Side Cushion	Full Stroke Adjustment with Shock Absorber on Both Sides	With full stroke adjustment R side shock absorber	With full stroke adjustment L side shock absorber	Full Stroke Adjustment Bracket Retrofit Type	Table Mounting Screw Size Up			
																00	LB	LB1	N	B	R	L	A	A1	A2	A3	H			
Double Acting Type	SRG3 	ø12 equivalent	●	●	●							1		450	1	●	●	●	●	●	●	●	◎	◎	◎	◎	◎		◎	116
		ø16 or equiv., ø20 or equiv.	●	●	●	●	●	●	●					800		●	●	●	●	●	●	●	◎	◎	◎	◎	◎			
		ø25 equivalent	●	●	●	●	●	●	●	●	●			1000		●	●	●	●	●	●	●	◎	◎	◎	◎				

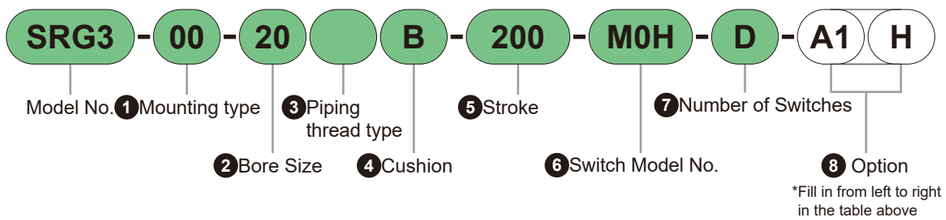
Rodless Type
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
Cylinder Switch
Ending

Variation and Option Item Combination Availability Table

◎ Mark: Option
○ Mark: Custom-made
△ Mark: Manufacturable depending on conditions (please consult)
× Mark: Cannot be manufactured

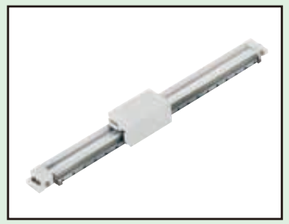
Category		Category	Variation	Piping thread		Option										
			Double Acting Basic Type	NPT	G	Stroke Adjustment Both Sides	Stroke adjustment R side	Stroke Adjustment L Side	For Stroke Adjustment Bracket Retrofit	Table Mounting Screw Size Up	Port/Cushion Needle Position Specification	Port/Cushion Needle 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 Type	Blank		○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Piping thread	NPT	N			×	○	○	○	○	○	○	○	○	○	○
	G	G				○	○	○	○	○	○	○	○	○	○
Option	Stroke Adjustment Both Sides	A					×	×	×	◎	◎	◎	◎	◎	◎
	Stroke adjustment R side	A1						×	×	◎	◎	◎	◎	◎	◎
	Stroke Adjustment L Side	A2							×	◎	◎	◎	◎	◎	◎
	For Stroke Adjustment Bracket Retrofit	A3								◎	◎	◎	◎	◎	◎
	Table Mounting Screw Size Up	H									◎	◎	◎	◎	◎
	Port/Cushion Needle Position Specification	R										×	×	×	×
	Port/Cushion Needle Position Specification	B											×	×	×
	Port/Cushion Needle Position Specification	T												×	×
	Port/Cushion Needle Position Specification	D													×
	Port/Cushion Needle Position Specification	S													
Accessories	Cylinder Switch	Separately Shown	◎	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

[Model No. Example]



Model No.: Rodless Cylinder with High Precision Guide
1 Mounting Style : Basic type
2 Bore Size : ø20 or equivalent
3 Port Thread Type : Rc Thread
4 Cushion : With Cushion on Both Sides
5 Stroke : 200 mm
6 Switch Model No. : Reed MOH switch, lead wire 1 m
7 Number of Switches : With 2 pcs.
8 Option : R side full stroke adjustable, with shock absorber, larger table mounting thread

MEMO



Rodless Cylinder with High-Precision Guide

SRG3 Series

● Bore Size: ø12, ø16, ø20, ø25 or equiv.

Circuit Diagram Code

RoHS

Model No. Notation

Without Switch
(Built-in magnet for switch)

SRG3 - 00 - 25 - B - 200 ——— A

Model No. ❶ ❷ ❸ ❹ ❺ ❽

With Switch
(Built-in magnet for switch)

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

Model No.
❷Bore Size
❹Cushion
❻Switch Model No.
❽ Option
❶Mounting type
❸Piping thread type
❺Stroke
❼Number of Switches

❶Mounting type

Mounting brackets are included with the product and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type	
LB1	Axial Foot Type	

❷Bore Size (mm)

Code	Content
12	ø12 equivalent
16	ø16 equivalent
20	ø20 equivalent
25	ø25 equivalent

❸Piping thread type

Code	Content
Blank	M5 (ø12, ø16 equivalent)
	Rc thread (Equivalent to ø20, ø25)
N	NPT Thread (ø20 equivalent or larger) (Custom-made)
G	G Thread (ø20 equivalent or larger) (Custom-made)

❹Cushion

Code	Content
B	With Cushion on Both Sides
R	With R Side Cushion
L	With L Side Cushion
N	Without Cushion

❺Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø12 equivalent	1 to 450	Every 1 mm
ø16 equivalent	1 to 800	
ø20 equivalent	1 to 800	
ø25 equivalent	1 to 1000	

Note: For the minimum stroke with switch, please refer to P. 118.

❻Switch Model No.

For switch details, please refer to P. 1457. Switches are included with the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 30	M2H□	M2V□	
	2-Color	2-wire	-	10 to 30	-	5 to 30	-	M2WV□	
	1-Color	3-wire (NPN)	-	30 or less	-	100 or less	M3H□	M3V□	
	2-Color	3-wire (NPN)	-	30 or less	-	100 or less	-	M3WV□	
	1-Color (Custom order)	3-wire (PNP)	-	30 or less	-	100 or less	M3PH□	M3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	 *2
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	-	
			-		-		T2YDT□	-	
	1-Color Flexible Lead Wire Type		—	10 to 30	—	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	M0H□	M0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	M5H□	M5V□	

*4

*1: Insert the Code selected in the "Lead wire length, connector specifications" table into "□" of the switch model number.
*2: It does not guarantee the water resistance performance of the cylinder.
*3: Switches other than the above switch model numbers are also available. (Custom Product) For details, see P. 1457.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

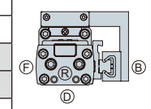
*4: T2WLH and T2WLV only can be selected.

Ex) Lead wire length
1 m M0H
3 m M0H3
5 m M0H5

❼Number of Switches

Code	Content
R	With 1 pc on R side
L	With 1 pc on L side
D	With 2 pcs
T	With 3 pcs
4	With 4 pcs (For 4 or more pieces, enter the number of switches.)

❽ Option

	Code	Description	Bore Size (ø) Equivalent to 12	Equivalent to 16	Equivalent to 20	Equivalent to 25	
	A	Full stroke adjustment both sides, with shock absorber	●	●	●	●	
	A1	Full stroke adjustment R side only, with shock absorber	●	●	●	●	
	A2	Full stroke adjustment L side only, with shock absorber	●	●	●	●	
*3	A3	Full Stroke Adjustment Bracket Retrofit Type	●	●	●	●	
*4	H	Table Mounting Screw Size Up	●	●	●		
	Blank	Port Position: F (Standard) / Cushion Needle Position: F (Standard)	●	●	●	●	
*2	R	Port Position: R (Centralized Port) / Cushion Needle Position: F	●	●	●	●	
	B	Port Position: F / Cushion Needle Position: B	●	●	●		
*2	T	Port Position: R (Centralized Port) / Cushion Needle Position: B	●	●	●		
*5	D	Port Position: D / Cushion Needle Position: F				●	

*1 : For port and cushion needle position indication codes, please refer to the external dimensions diagram.
*2 : In the case of option codes "R" and "T", the ❶mounting type will be "00" or "LB1". (Option Codes "R" and "T" with ❶mounting type "LB" cannot be manufactured because piping is not possible.)
*3 : Option Code "A3" is an option where a mounting plate nut is assembled to allow retrofitting of the full stroke adjustment bracket.
*4: The thread size of option code "H" is M4 for ø12 and ø16 or equivalent, and M5 for ø20 or equivalent.
*5 : If the port position is "D", ❶mounting type "LB1" cannot be used. (ø25 equivalent)

Switch Individual Model No. Notation

(Common with SRL3.)

●Switch body+Mounting bracket set

SRL3 - M0H

❻Switch Model No.

●Switch body only

SW - M0H

❻Switch Model No.

*1: The switch body + mounting bracket set does not include a lead wire holder. If a lead wire holder is required, please order it separately.
*2: The mounting brackets for M-type switches and T-type switches are different.
*3: Lead wire holders are 10 pieces/1 set.

●Mounting bracket complete set (*2)
M-type switch

SRL3 - M

T type switch

SRL3 - T

● Lead wire holder (*3)

SRL3 - MH

Shock absorber single item model number display method

SRL3 - 20 - NCK

❷Bore Size

(1 Shock absorber, 1 Hexagon Nut for fixing shock absorber)

Applicable Shock Absorber Model No.

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

Mounting Bracket Model No. Display Method

SRL3 - LB - 20 (2 Brackets, 4 Mounting Bolts)

❶Mounting type ❷Bore Size

Full stroke adjustment bracket kit model number display method

(Applies to option code A3.)

SRG3 - 20

❷Bore Size

- A (With full stroke adjustment bracket kit on both sides)
- A1 (With full stroke adjustment bracket kit on R side)
- A2 (With full stroke adjustment bracket kit on L side)

(For parts composition, please refer to **P. 127)**

Specifications

Item	SRG3 (Standard/with switch)			
Bore Size	ø12 equivalent	ø16 equivalent	ø20 equivalent	ø25 equivalent
Operation Method	Double Acting Type			
Operating Fluid	Compressed Air			
Max Operating Pressure MPa	0.7			
Min Operating Pressure MPa	0.2			0.1
Proof Pressure MPa	1.05			
Ambient Temperature °C	5 to 60			
Port Size	M5		Rc 1/8	
Stroke tolerance mm	$^{+2.0}_{0}$			
Operating Piston Speed mm/s	50 to 1000 *1			
Repeat stopping accuracy mm	±0.05 (In case of with shock absorber)			
Cushion	Air Cushion			
Lubrication	Not Required	When lubricating, use turbine oil Class 1 ISO VG32. In addition, after starting lubrication, continue to lubricate.		

*1: The operating piston speed for centralized port piping varies depending on the stroke, so please consult us separately.

Allowable Absorption Energy

Bore Size (mm)	With Cushion		Without Cushion	With Shock Absorber (Initial Setting)	
	Allowable Absorption Energy (J)	Cushion Stroke (mm)	Allowable Absorption Energy (J)	Absorption Energy (J)	Effective Stroke (mm)
ø12 equivalent	0.03	14.5	0.003	2.4	5.5
ø16 equivalent	0.22	19.2	0.007	2.4	5.5
ø20 equivalent	0.59	22.2	0.010	5.7	7
ø25 equivalent	1.40	20.9	0.015	10	9

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max Stroke (mm)	Min Stroke (mm)
ø12 equivalent	200, 300, 400	450	1
ø16 equivalent ø20 equivalent	200, 300, 400, 500 600, 700, 800	800	
ø25 equivalent	200, 300, 400 500, 600, 700 800, 900, 1000	1000	

Note: Intermediate strokes can be manufactured in 1 mm increments.

M Type Switch Mounting Quantity and Min Stroke (mm)

Switch Qty.	1		2	
Switch Model No. / Bore Size (mm)	M□V	M□H	M□V	M□H
ø12 equivalent	10	10	30	45 (70)
ø16 equivalent	10	10	30	45 (70)
ø20 equivalent	10	10	30	45 (70)
ø25 equivalent	10	10	30	45 (70)

Note: In the case of full stroke adjustment, the minimum stroke with switch is shown in ( ).

T Type Switch Mounting Quantity and Min Stroke (mm)

Switch Qty.	1				2			
Switch Model No. / Bore Size (mm)	T□V	T2WLV	T□H	T2WLH	T□V	T2WLV	T□H	T2WLH
ø12 equivalent	5	5	5	5 (11)	45	35	50 (70)	56 (82)
ø16 equivalent	5	5	5	5 (11)	45	35	50 (70)	56 (82)
ø20 equivalent	5	5	5	5 (11)	45	35	50 (70)	56 (82)
ø25 equivalent	10	10	10	10 (16)	45	35	50 (70)	56 (82)

Note: In the case of full stroke adjustment, the minimum stroke with switch is shown in ( ).

Cylinder Weight

Unit: kg

Bore Size (mm)	Weight at 0 mm Stroke				Weight of mounting bracket		Added weight per stroke=100 mm
	Basic type (00)	Foot type (LB)	Foot type (LB1)	Switch Weight	T Type	M Type	
ø12 equivalent	0.46	0.47	0.48	P. 1457Refer to the weight in the switch specifications.	0.005	0.001	0.23
ø16 equivalent	0.61	0.62	0.64				0.28
ø20 equivalent	0.96	0.98	1.02				0.33
ø25 equivalent	1.73	1.83	1.83				0.52

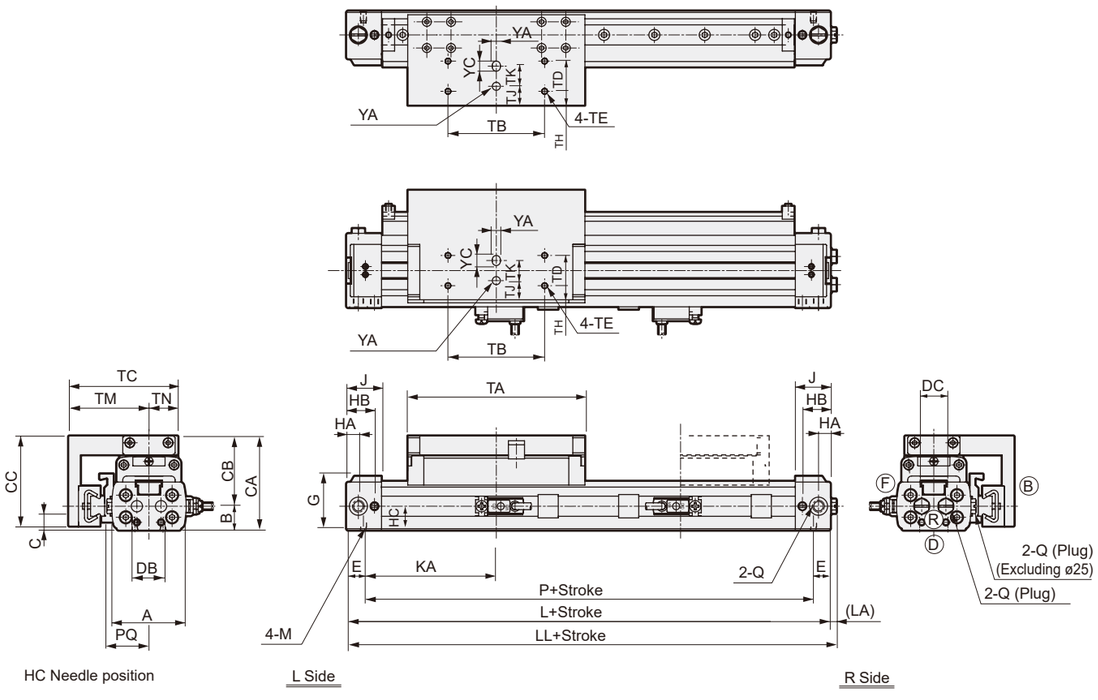
Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa						
		0.1	0.2	0.3	0.4	0.5	0.6	0.7
ø12 equivalent	Push/Pull	-	27.7	41.5	55.3	69.1	83.0	96.8
ø16 equivalent	Push/Pull	-	43.2	64.8	86.4	1.08×10^{2}	1.30×10^{2}	1.51×10^{2}
ø20 equivalent	Push/Pull	-	62.9	94.4	1.26×10^{2}	1.57×10^{2}	1.89×10^{2}	2.20×10^{2}
ø25 equivalent	Push/Pull	54.2	1.08×10^{2}	1.63×10^{2}	2.17×10^{2}	2.71×10^{2}	3.25×10^{2}	3.80×10^{2}

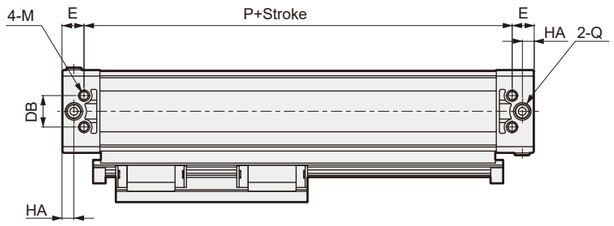
Outline Dimension Drawing

● SRG3



● Bottom piping (option code: D)

Bottom piping is only for equivalent to ø25.



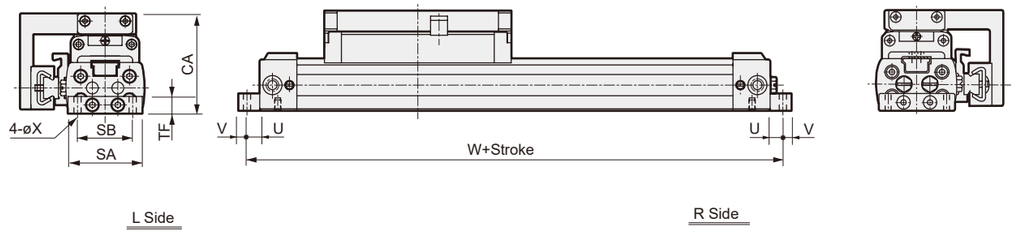
Code / Bore Size (mm)	A	B	CA	CB	CC	DB	DC	E	G	HA	HB	HC	J	KA	L	LL	LA	M
ø12 equivalent	33	10.5	43	32.5	40.5	10	11	8.5	24	6	14	10.5	17.5	59.5	136	139	3	M3 Depth 5
ø16 equivalent	37	12	47	35	45	14	12	8.5	27	6	14	12	17.5	66	149	152	3	M3 Depth 5
ø20 equivalent	44	14	54	40	50	16	16	10.5	31	8.5	18.5	14	22	74	169	171.5	2.5	M4 Depth 6.5
ø25 equivalent	53	17	67	50	63.5	20	26	14	40.5	7.5	20	18.9	24	81	190	192	2	M6 Depth 9

Code / Bore Size (mm)	P	PQ	Q	TA	TB	TC	TD	TE	TH	TJ	TK	TM	TN	YA	YC
ø12 equivalent	119	19	M5	81	42	49	13	M3 Depth 5	6.5	8	10	36	13	$4^{+0.07}_{+0.02}$ Depth 4	5
ø16 equivalent	132	21	M5	88	48	54.5	15	M3 Depth 6	7	9.5	10	40	14.5	$4^{+0.07}_{+0.02}$ Depth 4	5
ø20 equivalent	148	24.5	Rc 1/8	100	60	61.5	18	M4 Depth 6	8.5	10	15	44	17.5	$6^{+0.07}_{+0.02}$ Depth 6	7
ø25 equivalent	162	-	Rc 1/8	122	70	80	20	M5 Depth 8	12	14.5	15	58	22	$6^{+0.07}_{+0.02}$ Depth 6	7

Note: For dimensions with each switch, please refer to P. 126.

Outline Dimension Drawing

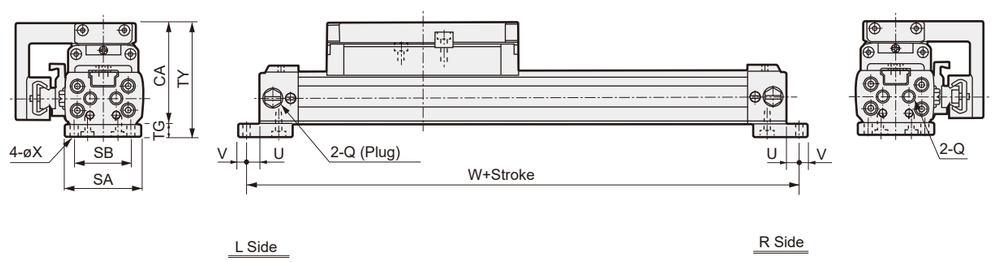
● With Foot Bracket SRG3-LB-□□-□□□



Code / Bore Size (mm)	With Foot Bracket (LB) SA	SB	TF	U	V	W	X
ø12 equivalent	32	24	8	6	4	148	3.4
ø16 equivalent	35	26	8	6	4	161	3.4
ø20 equivalent	43	33	10	6	6	181	4.5
ø25 equivalent	52	20	12	9	11	208	7

Note: For dimensions with each switch, please refer to **P. 126.**

● With Foot Bracket SRG3-LB1-□□-□□□

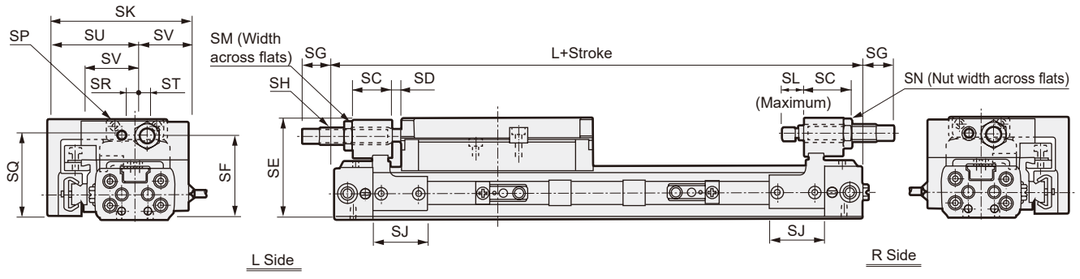


Code / Bore Size (mm)	With Foot Bracket (LB1) Q	SA	SB	TG	TY	CA	U	V	W	X
ø12 equivalent	M5	32	24	6	49	43	6	4	148	3.4
ø16 equivalent	M5	35	26	6	53	47	6	4	161	3.4
ø20 equivalent	Rc 1/8	43	33	8	62	54	6	6	181	4.5
ø25 equivalent	Rc 1/8	50	20	10	77	67	9	11	208	7

Note: For dimensions with each switch, please refer to P. 126.

External Dimensions with Options

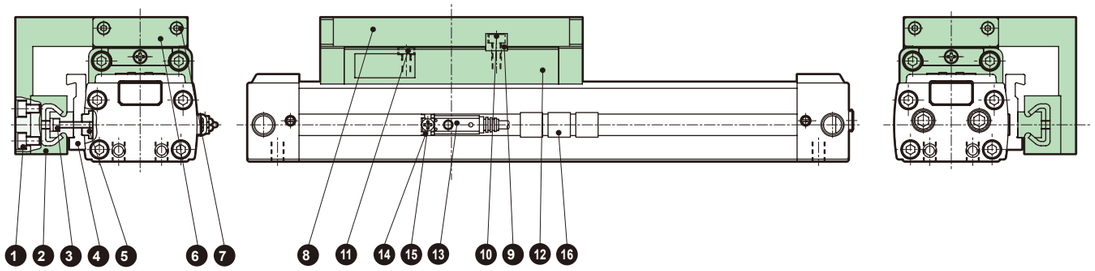
● With full Stroke adjusting Shock Absorbers (SRG3)



Code / Bore Size (mm)	SC	SD	SE	SF	SG			SH		SJ	SK	SL	SM	SN	SP	SQ	SR	ST	SU	SV
					At MAX	At MIN	Adjustment range	Outer diameter thread	Maximum absorption energy (J)											
ø12 equivalent	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 equivalent	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 equivalent	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 equivalent	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

MEMO

Internal Structure / Material

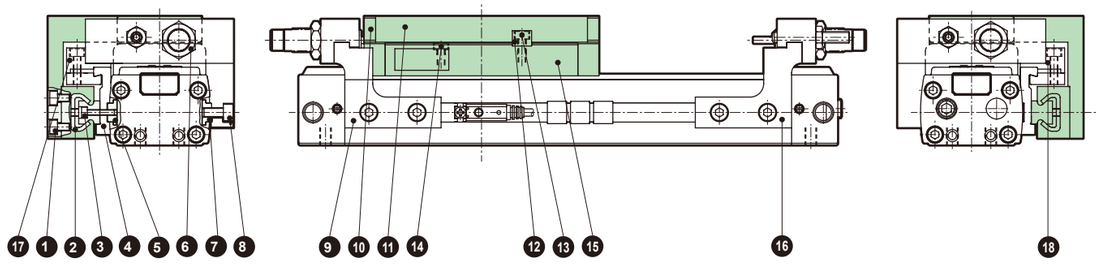


Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide	10	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide
2	High-precision guide	Stainless Steel		11	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
3	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide	12	Table	Aluminum Alloy	Alumite
4	Guide holder	Aluminum Alloy	Alumite	With Switch			
5	Plate nut (B)	Steel	Black Oxide	13	Switch		
6	Stopper plate	Steel	Zinc Chromate	14	Mounting bracket	Stainless Steel	
7	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	15	Cross-Recessed Pan Head Screw	Stainless Steel	
8	Connection plate	Aluminum Alloy	Alumite	16	Lead Wire Holder	Polyacetal	
9	Key	Steel	Black Oxide				

Note: The internal structure of the cylinder part is the same as the Rodless Cylinder SRL3 series.P. 24.

Internal structure diagram/materials (Option)

● Full stroke adjustable with shock absorber

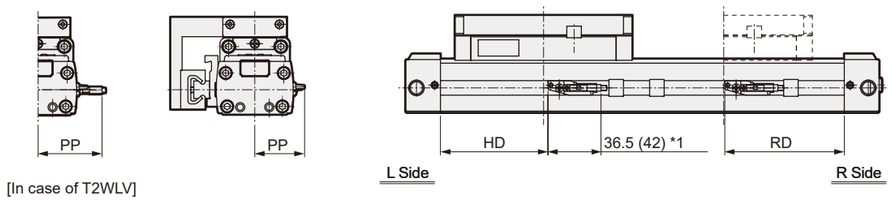


Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide	10	Stopper plate	Steel	Zinc Chromate
2	High-precision guide	Stainless Steel		11	Connection plate	Aluminum Alloy	Alumite
3	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide	12	Key	Steel	Black Oxide
4	Guide holder	Aluminum Alloy	Alumite	13	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide
5	Plate nut (B)	Steel	Black Oxide	14	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
6	Hexagon Nut	Steel	Zinc Chromate	15	Table	Aluminum Alloy	Alumite
7	Plate Nut	Alloy Steel	Black Oxide	16	Adapter (L)	Steel	Zinc Chromate
8	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	17	Adapter (LG)	Steel	Zinc Chromate
9	Adapter (R)	Steel	Zinc Chromate	18	Adapter (RG)	Steel	Zinc Chromate

For maintenance parts, please visit the CKD Equipment Product Site
(https: //www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts.

SRG3 Series Switch External Dimensions Diagram

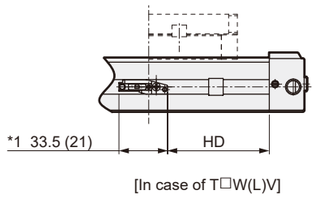
●T2WH/V, T3WH/V, T2WLH/V



[In case of T2WLV]

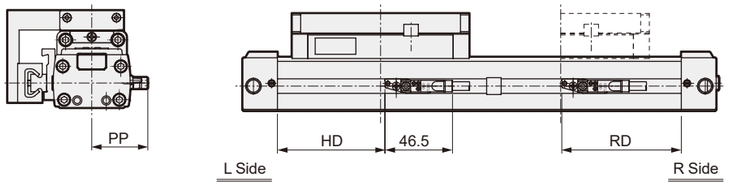
SRG3				
Code	PP		HD	RD
Bore Size (mm)	T□W, T2WLH	T2WLV		
ø12 equivalent	24.3	34	32	69
ø16 equivalent	26.3	36	38	76
ø20 equivalent	29.3	39	44	81
ø25 equivalent	34.3	44	52	90

Note: In the case of T2WLH/V, it will be the dimension in ( ).



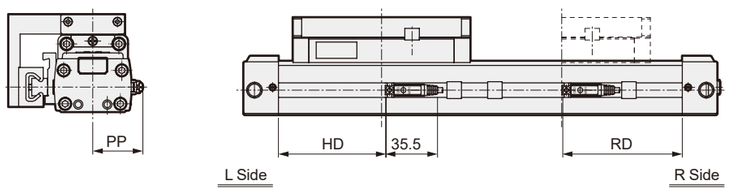
[In case of T□W(L)V]

●T2YD, T2YDT

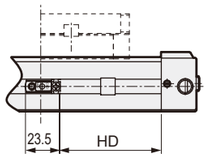


SRG3			
Code	PP	HD	RD
Bore Size (mm)			
ø12 equivalent	28.4	36	65
ø16 equivalent	30.4	42	72
ø20 equivalent	33.4	48	77
ø25 equivalent	38.4	56	86

●M0H/V, M5H/V, M2H/V, M2WV, M3H/V, M3WV, M3PH/V



SRG3			
Code	PP	HD	RD
Bore Size (mm)			
ø12 equivalent	24.5	40.5	60.5
ø16 equivalent	26.5	47	67
ø20 equivalent	29.5	52.5	72.5
ø25 equivalent	34.5	60	82



[In case of M*V]

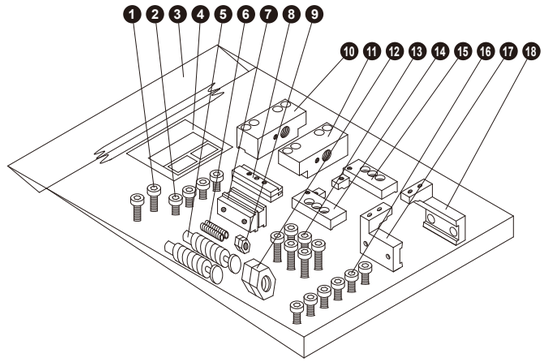
Full Stroke Adjustment Bracket Kit

●(With full stroke adjustment bracket kit on both sides)

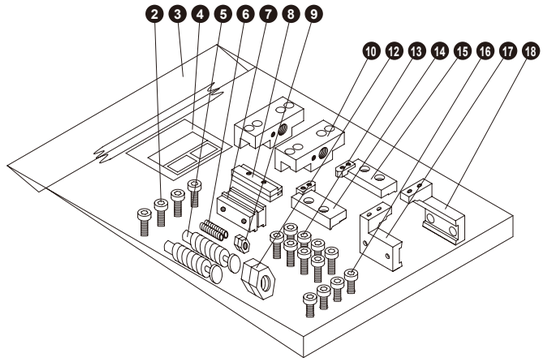
SRG3 - 25 - A

❷Bore Size

[Equivalent to ø12 to ø20]



[ø25 equivalent]



Part No.	Part Name	Quantity
1	Hexagon Socket Head Cap Screw	Equivalent to ø12 to ø20: 2 ø25 or equiv.: -
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	Plate Nut	2
8	Adapter Nut	2
9	Hexagon Nut	2
10	Equivalent to ø12 to ø20 Plate (R) ø25 equivalent Plate	ø12 to ø20 or equiv.: 1 ø25 or equiv.: 2
11	Plate (L)	ø12 to ø20 or equiv.: 1 ø25 or equiv.: -
12	Hexagon Nut	2
13	Hexagon Socket Head Cap Screw	ø12 to ø20 or equiv.: 6 ø25 or equiv.: 8
14	Adapter (RG)	1
15	Adapter (LG)	1
16	Hexagon Socket Head Cap Screw	ø12 to ø20 or equiv.: 6 ø25 or equiv.: 4
17	Adapter (R)	1
18	Adapter (L)	1

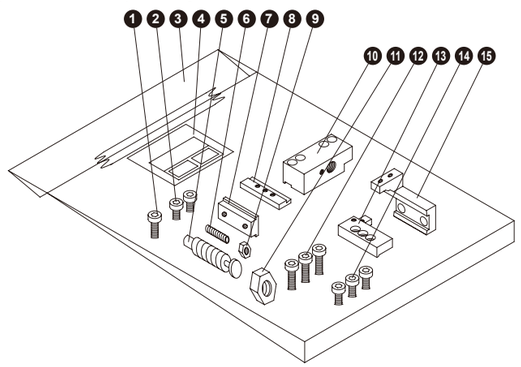
Full Stroke Adjustment Bracket Kit

●With full stroke adjustment bracket kit on R side

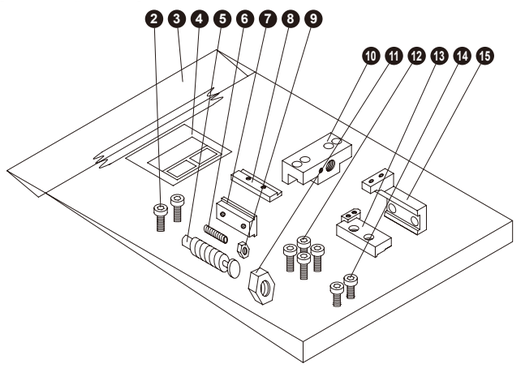
SRG3 - 25 - A1

② Bore Size

[ø12 to ø20 or equivalent]



[ø25 or equivalent]



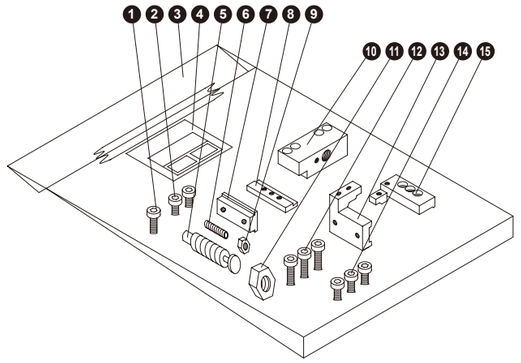
Part No.	Part Name	Quantity	Part No.	Part Name	Quantity
1	Hexagon Socket Head Cap Screw	Equivalent to ø12 to ø20: 1 ø25 equivalent: -	9	Hexagon Nut	1
2	Hexagon Socket Head Cap Screw	2	10	ø12 to ø20 or equivalent: Plate (R) ø25 or equivalent: Plate	1
3	Plastic Bag	1	11	Hexagon Nut	1
4	Package label	1	12	Hexagon Socket Head Cap Screw	ø12 to ø20 or equivalent: 3 ø25 or equiv.: 4
5	Shock absorber	1	13	Adapter (RG)	1
6	Hexagon Socket Set Screw	1	14	Hexagon Socket Head Cap Screw	ø12 to ø20 or equivalent: 3 ø25 or equiv.: 2
7	Plate Nut	1	15	Adapter (L)	1
8	Adapter Nut	1			

● With full stroke adjustment bracket kit on L side

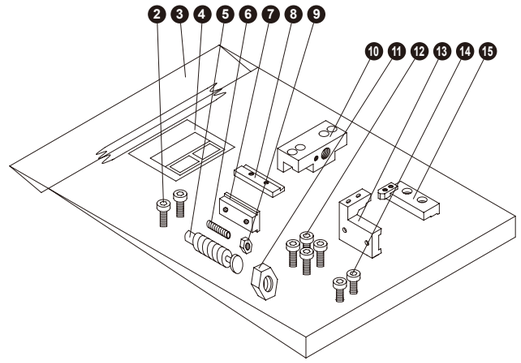
SRG3 - 25 - A2

② Bore Size

[ø12 to ø20 or equivalent]



[ø25 or equivalent]



Part No.	Part Name	Quantity	Part No.	Part Name	Quantity
1	Hexagon Socket Head Cap Screw	ø12 to ø20 or equiv.: 1 ø25 or equivalent: -	9	Hexagon Nut	1
2	Hexagon Socket Head Cap Screw	2	10	ø12 to ø20 or equiv.: Plate (L) ø25 or equivalent: Plate	1
3	Plastic Bag	1	11	Hexagon Nut	1
4	Package label	1	12	Hexagon Socket Head Cap Screw	Equivalent to ø12 to ø20 3 ø25 or equiv.: 4
5	Shock absorber	1	13	Adapter (LG)	1
6	Hexagon Socket Set Screw	1	14	Hexagon Socket Head Cap Screw	Equivalent to ø12 to ø20 3 ø25 or equiv.: 2
7	Plate Nut	1	15	Adapter (R)	1
8	Adapter Nut	1			

Parts kit weight table

Full Stroke Adjustment Kit

●With full stroke adjustment bracket kit on both sides

Kit Number	Kit weight (g)
SRG3-12-A	244
SRG3-16-A	261
SRG3-20-A	405
SRG3-25-A	813

●With full stroke adjustment bracket kit on R side

Kit Number	Kit weight (g)
SRG3-12-A1	122
SRG3-16-A1	131
SRG3-20-A1	202
SRG3-25-A1	406

●With full stroke adjustment bracket kit on L side

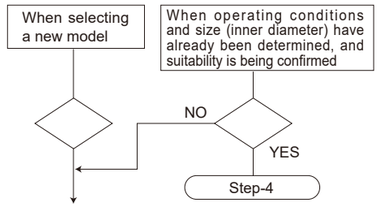
Kit Number	Kit weight (g)
SRG3-12-A2	122
SRG3-16-A2	130
SRG3-20-A2	403
SRG3-25-A2	407

Other parts kits are common with the SRL3 Series. Please refer to SRL3 Series P. 92 and 93.

SRG3 Series Model Selection Guide

Since the selection conditions are different from general air cylinders, please check the suitability using the selection guide.

1 Step 1:



2 Step 2: Confirmation of operating conditions

1. Operating Pressure (P) (MPa)
2. Load weight (M) (kg)
3. Applied load (F_L) (N)
4. Mounting direction
5. stroke (L) (mm)
6. Travel time: t (s)
7. Operation speed (V) (m/s)

Calculation formula for average operating speed V of cylinder

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

[Payload]

This is the value of (transported substance weight+jig weight).

[Mounting direction]

Operating direction: Horizontal, Vertical

Mounting direction Table upward, Table downward

3 Step 3: Selection of approximate cylinder size

●Cylinder size (I.D.) calculation formula

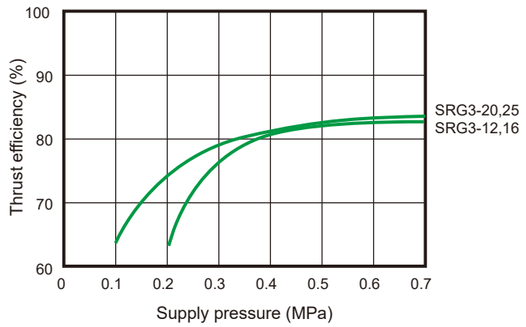
$$F=\frac{\pi}{4}\times D^2\times P\times\frac{a}{100}\ (N)$$

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

D: Cylinder inner diameter (mm)
P: Operating Pressure (MPa)
(a) Thrust efficiency (%) (refer to Fig. 1.)
F: Cylinder theoretical thrust (N)

D= ø

Figure 1 Trend of SRG3 thrust efficiency



● When calculating from the theoretical thrust value in Table 1, indicate the approximate required thrust ≥ applied load ×2 (x2 of Load x 2 is when the load factor is about 50% as a safety factor)

(Example) Operating Pressure 0.5 MPa
Load 5N
*Required thrust is 5 Nx2=10 N

From Table 1, if you select a Bore Size with a theoretical thrust of 10 N or more at an Operating Pressure of 0.5 MPa, it will be ø12.

D= ø12

[Cylinder theoretical thrust]

Table 1 Cylinder theoretical thrust values Unit: N

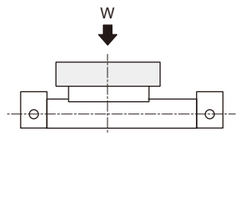
Bore Size (mm)	Pressure receiving area (mm²)	Operating Pressure MPa						
		0.1	0.2	0.3	0.4	0.5	0.6	0.7
ø12 or equivalent	138	-	28	41	55	69	83	97
ø16 equivalent	216	-	43	65	86	108	130	151
ø20 equivalent	315	-	63	94	126	157	189	220
ø25 equivalent	542	54	108	163	217	271	325	380

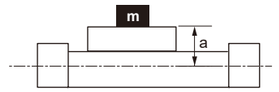
Note: Values in Table 1 do not include thrust efficiency.

4 Step 4: Calculation of load (W) and each moment value

Vertical load and static moment act depending on the cylinder mounting direction and the load's center of gravity position.

[Vertical load]



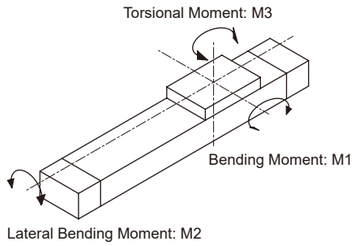


Value of a

Bore Size	a (m)
ø25 equivalent	0.033
ø32 or equivalent	0.035
ø40 equivalent	0.040
ø63 or equivalent	0.050

[Static moment]

● Types of moment caused by load

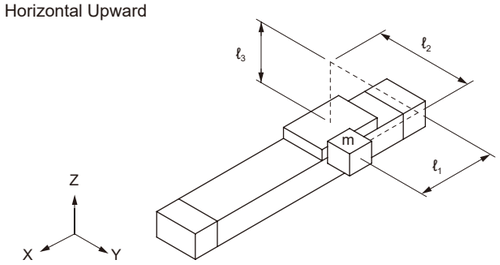


Unit: N·m

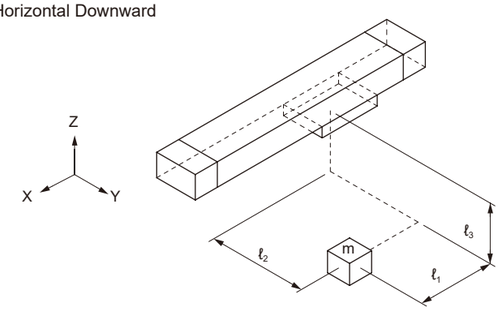
Mounting Direction		Horizontal Upward	Horizontal Downward	Horizontal Lateral	Vertical
Vertical load W		m × 9.8			-
Static Moment	M1	W×ℓ_1	W×ℓ_1	-	W x (ℓ_3 +a)
	M2	W×ℓ_2	W×ℓ_2	W x (ℓ_3+a)	-
	M3	-	-	W×ℓ_1	W×ℓ_2

m : Load weight (kg)
ℓ_1 : Stroke distance from the center of table to the center of gravity of load [m]
ℓ_2 : Length in the width direction from the center of table to the center of gravity of load [m]
ℓ_3 : Length in the vertical direction from the center of table to the center of gravity of load [m]

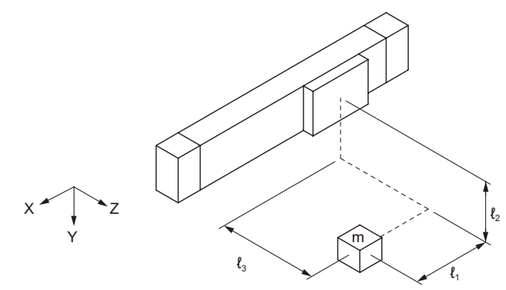
Horizontal Upward



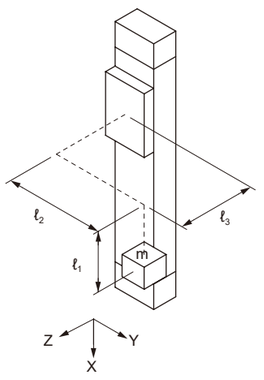
Horizontal Downward



Horizontal Lateral



Vertical



5 Step 5: Confirmation of Combined Load and Moment Values

● 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.

●Calculation formula

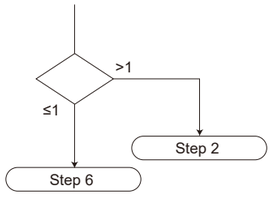
$$\frac{W}{Wmax}+\frac{M1}{M1\ max}+\frac{M2}{M2\ max}+\frac{M3}{M3\ max}\leq 1.0$$

Table 2 Allowable values for load and moment

Item / Bore Size (mm)	Vertical load W (N)	Bending moment M1 (N·m)	Lateral bending moment M2 (N·m)	Torsional moment M3 (N·m)
ø12 or equivalent	20	1	0.5	3
ø16 equivalent	40	2.5	1	5.5
ø20 equivalent	40	2.5	1	5.5
ø25 equivalent	90	6.5	2.5	17

●If the total value is greater than 1.0

1. Reconsider load
2. Implement reviews such as increasing the cylinder's inner diameter.



6 Step 6: Calculation of Required Thrust

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

1. During horizontal operation

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

F_W = W×0.2 (N)

F_{M1} = M1×C1 (N)

F_{M2} = M2×C2 (N)

F_{M3} = M3×C3 (N)

F_L : Applied load (N)

C1: Friction force coefficient due to moment M1 (Table 3)

C2: Friction force coefficient due to moment M2 (Table 3)

C3: Friction force coefficient due to moment M3 (Table 3)

2. During vertical operation

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

$F_N=$ ☐ (N)

[Friction force coefficient due to each moment]

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

Table 3 Friction force coefficient due to each moment 1/m

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

7 Step 7: Confirmation 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)

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

$$F=\frac{\pi}{4}xD^2xPx\frac{\mu}{100}\ (N)$$

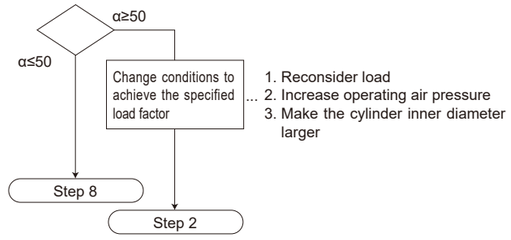
D: Cylinder Bore Size (mm)

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

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

P : Operating 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)

Operating 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] Cylinder size to be used: Equivalent to ø12

Required thrust 1.78 (N)

In case of Operating Pressure 0.5 (MPa)

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

= 3.1%

Since α≤50%, it is OK.

8 Step 8: Confirmation of Cushioning Capacity

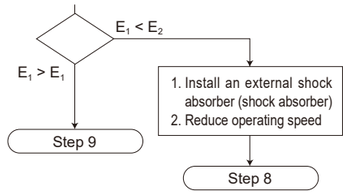
Check if the kinetic energy due to the movement of the actual load can be absorbed by the cushion capacity of the cylinder itself.

[Cylinder's Allowable Absorbed Energy] E_1]

●The value of kinetic energy absorption capacity by the cylinder cushion mechanism varies depending on the cylinder inner diameter. SRG3 is the value in Table 5.

Table 5 SRG3 Allowable absorption energy (E_1)

Bore Size (mm)	Allowable Absorption Energy (J)
ø12 or equivalent	0.03
ø16 equivalent	0.22
ø20 equivalent	0.59
ø25 equivalent	1.40



[Piston Kinetic Energy: E_2]

● Formula for calculating the piston kinetic energy

$$E_2=\frac{1}{2}xMxVa^2\ (J)$$

M: Applied load weight (kg)

Va: Piston impact speed into cushion (m/s)

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

L : Stroke (m)

t : Operating Time (s)

α : Load factor (%)

9 Step 9: Confirmation of Inertial Load

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

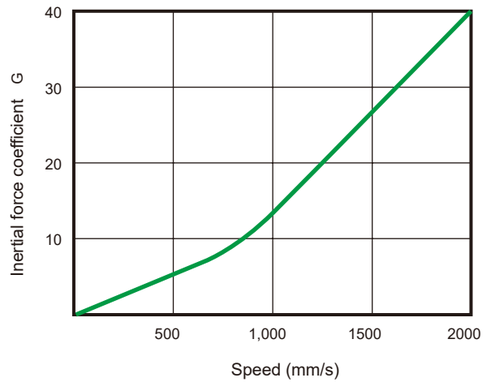
(1) Determine the G coefficient from the impact speed into the cushion part (Va) and the trend of the SRG3 inertial force coefficient in Fig. 2. The entry speed into the cushion part (Va) is the value calculated in Step 8.

Va: Piston impact speed into 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 (%)

Figure 2 Trend of SRG3 inertial force coefficient



(2) Determine the bending moment (M1i) and torsional moment (M3i) due to inertial force.

Unit: N·m

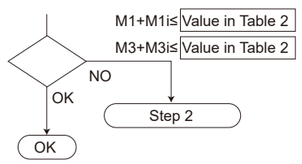
Mounting Direction		Horizontal Upward	Horizontal Downward	Vertical	Horizontal Lateral
Dynamic Moment	M1i	W x (ℓ_3 +a) xG			
	M2i	Dynamic moment M2i does not occur			
	M3i	W x ℓ_2 xG			

The moment due to inertial force is calculated as above regardless of the mounting direction.

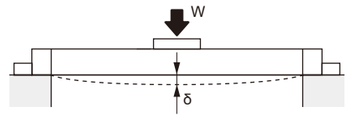
Add moments of static load (M1 and M3) and moments of inertia force (M1i and M3i) and check that the resulting values are within the values in Table 2.

M1+M1i≤M1 max
M3+M3i≤M3 max

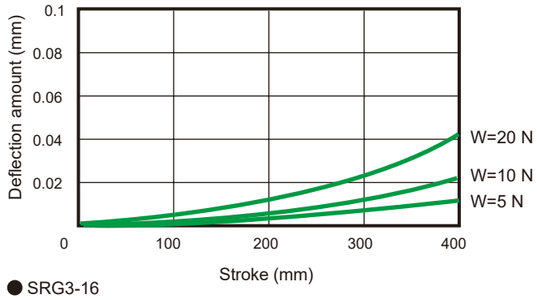
M1 max and M3 max are the values in Table 2



1 Deflection amount of cylinder tube δ



● SRG3-12



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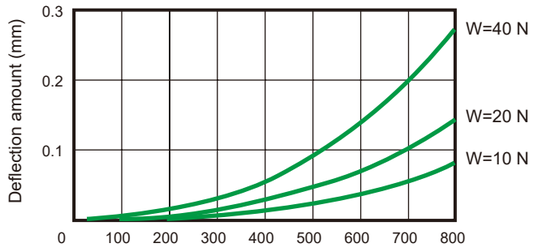
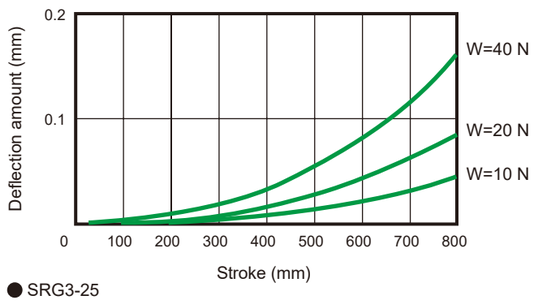
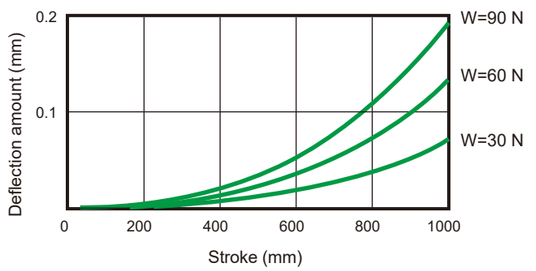


● SRG3-20



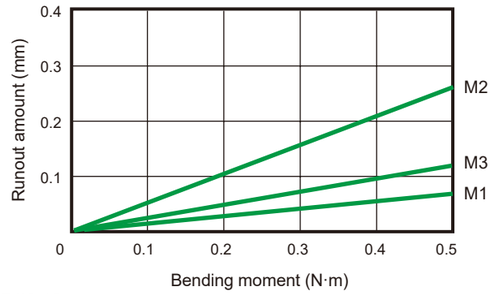
● SRG3-25



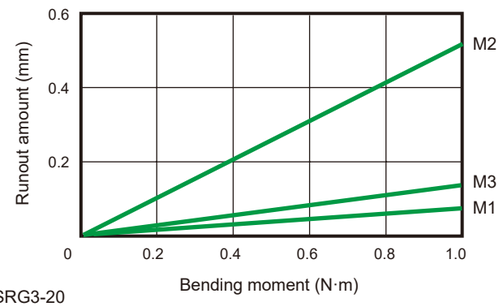
2 Table runout

(Runout at a position 70 mm from the cylinder center)

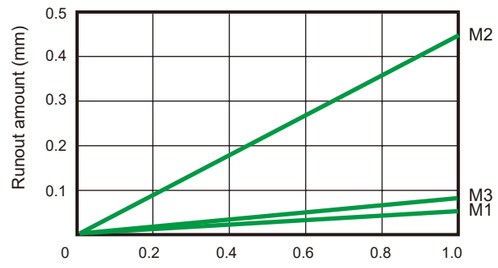
● SRG3-12



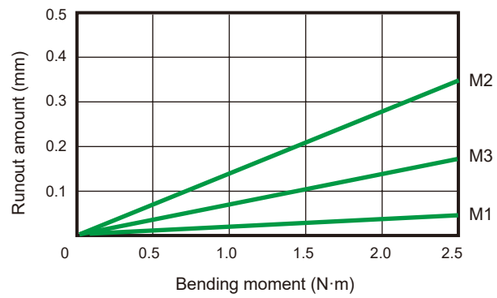
● SRG3-16



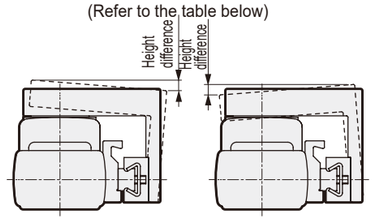
● SRG3-20



● SRG3-25



Note: This product has a height difference tilt in the table in a no-load state, separately from the table displacement mentioned above. (Refer to the table below)



Height difference (Reference value)

Tube I.D.	Height difference (MAX)
ø12 or equivalent	0.9 mm
ø16 equivalent	1.0 mm
ø20 equivalent	1.1 mm
ø25 equivalent	1.5 mm

3 Confirmation method for full stroke adjustment unit

(1) Confirmation of allowable collision energy of shock absorber

Calculate the equivalent collision weight Me and collision energy E using the formulas in the table below, and confirm that Me and E are less than or equal to the allowable values in Figure 3. Also, confirm that specifications such as repetition frequency and collision speed are less than or equal to the allowable values according to Table 6. Note that the allowable values for equivalent weight of impact object Me and impact energy E vary depending on the magnitude of the impact speed.

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

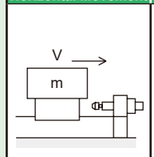
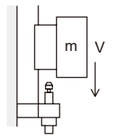
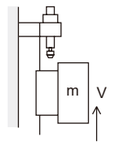
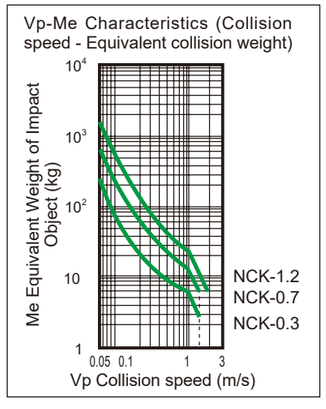
	Horizontal Movement	Vertical Descent	Vertical Ascent
Usage Example			
Equivalent Weight of Impact Object Me (kg)	$Me=m+\frac{2F\cdot St}{V^2}$	$Me=m+\frac{2\cdot St\,(F+mg)}{V^2}$	$Me=m+\frac{2\cdot St\,(F-mg)}{V^2}$
Energy E (J)	$E=\frac{mV^2}{2}+F\cdot St$	$E=\frac{mV^2}{2}+(F+mg)\cdot St$	$E=\frac{mV^2}{2}+(F-mg)\cdot St$

Figure 3 Allowable value of equivalent collision weight



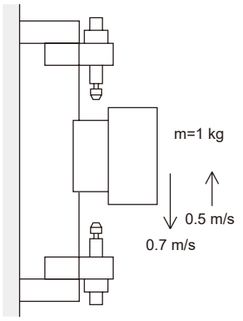
(2) Shock absorber

Table 6 Specifications

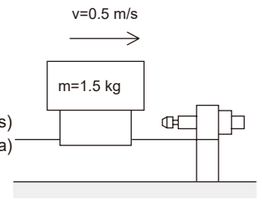
Model		For SRG3-12 / 16	For SRG3-20	For SRG3-25
Shock Absorber Model No. / Item		NCK-00-0.3-C	NCK-00-0.7-C	NCK-00-1.2
Model / Classification		Without adjuster Spring return type		
Maximum Absorption Energy	J	3	7	12
Stroke	mm	6	8	10
Per hour Max Absorption Energy	kJ/hour	6.3	12.6	21.6
Max Impact Speed	m/s	1.5		2.0
Max Repetition Frequency	times/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	At Extension N	2.9	2.0	2.9
	At Compression N	4.5	4.3	5.9

(3) Calculation example (In case of SRG3-20)

● Example of calculation (1)
Rising and lowering
Operating Conditions
● Applied load M 1 (kg)
● Collision speed
Ascending 0.5 (m/s)
Descending 0.7 (m/s)
● Operating Pressure 0.5 (MPa)
(157 N)



● Example of calculation (2)
Horizontal
Operating Conditions
Payload M 1.5 (kg)
Collision speed
Horizontal direction 0.5 (m/s)
Operating Pressure 0.3 (MPa)
(94 N)



①Kinetic energy during ascent (E_1)

$E_1=\frac{1\times0.5^2}{2}+(157-1x9.8)x0.008$

=1.30 (J)

Less than 1/2 of the maximum absorption energy in Table 6, and kinetic energy (E_1) can be absorbed

$Me=1+\frac{2x0.008\ (157-1x9.8)}{0.5^2}$

=10.42 (kg)

The Me of the shock absorber used for SRG3-20 is 18 (kg) when V=0.5 (m/s) from Figure 3, and can be absorbed

②Kinetic energy during descent (E_1)

$E_1=\frac{1\times0.7^2}{2}+(157+1\times9.8)\times0.008$

=1.58 (J)

Less than 1/2 of the maximum absorption energy in Table 6, and kinetic energy (E_1) can be absorbed

$Me=1+\frac{2x0.008\ (157+1x9.8)}{0.7^2}$

=6.45 (kg)

The Me of the shock absorber used for SRG3-20 is 16 kg when V=0.7 m/s from Figure 3, and can be absorbed

Kinetic energy in horizontal direction (E_1)

$E_1=\frac{1.5\times0.5^2}{2}+94\times0.008$

=0.94 (J)

Less than 1/2 of the maximum absorption energy in Table 6, and kinetic energy (E_1) can be absorbed

$Me=1.5+\frac{2x94x0.008}{0.5^2}$

=7.52 (kg)

From Figure 3, the Me value of the shock absorber for SRG3-20 when V=0.5 (m/s) is 18 kg, and since 7.52<18, it can be absorbed

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

Pneumatic Component

To Use This Product Safely

Be sure to read this before use.
For general cylinder information, see Intro 41, and for cylinder switches, see P. 1512.

Individual Precautions: Rodless Cylinder with High Precision Guide SRG3 Series

During Use

1. Common

CAUTION

■Pay attention when designing the brake control circuit.
Slit type rodless cylinders represented by SRL3 have slight external air leakage structurally, so intermediate stop control by an all-port block 3-position valve will cause a failure to maintain the table stop position. Therefore, please use a both-side pressurization control circuit using a PAB connection 3-position valve. However, please note that if air is pressurized in a de-energized state when restarting after a pressure drop, the table may move and deviate from the origin.

■Basic Circuit Diagram
● Horizontal load
Piping as shown in Figure 1 will apply equal pressure to both sides of the piston when stopped, preventing the table from flying out during restart.

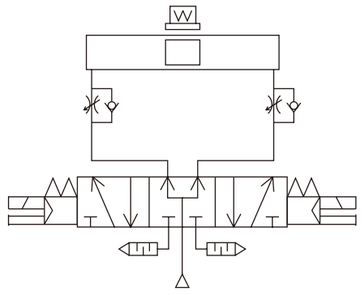


Fig. 1

● In case of vertical load
● If a vertical load is applied as shown in Fig. 2, the table will move in the Load Direction. Therefore, install a pressure reducing valve with check valve on the upper side, reduce the thrust in the Load Direction, and balance the load.

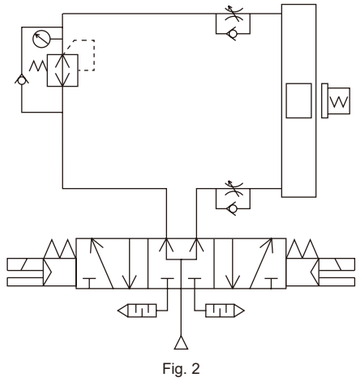


Fig. 2

■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. If used as an air balancer or in an all-port blocked state, if the table is driven by external force, inertia force, etc., negative pressure may be generated in the cylinder, causing the seal belt to detach and air leakage to occur. Be careful not to create negative pressure in the cylinder by driving it with external force, inertial force, etc.

Warning

■Shock Absorber Adjustment
Since the gap between the shock absorber and the stopper bolt is narrow, it is recommended to remove the stroke adjustment plate for adjustment.

■Precautions for use of stroke adjustment unit
Be sure to adjust so that the table stops at the stopper bolt. Settings where cylinder thrust continues to be applied to the shock absorber even at the cylinder stroke end may cause the shock absorber to break.

Table 1 Full stroke adjustment shock absorber specifications (Initial setting value)

Model	Absorption Energy (J)	Effective Stroke (mm)
For SRG3-12/16	2.4	5.5
For SRG3-20	5.7	7
For SRG3-25	10	8

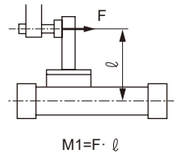
■Do not perform electric welding after installing the rodless cylinder.
Current flows through the cylinder and a spark occurs between the dustproof belt and the cylinder tube, damaging the dustproof belt.

■The Cylinder Body may be damaged or may malfunction if a unit with excessive inertia, etc., is actuated. 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. Carefully decide the connection method (floating) so that the displacement can be absorbed.

■Keep the moment, including inertia force caused by load transfer or stop, within the allowable load. Exceeding this value will cause damage.
(When overhang 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, try to hit the center of gravity of the workpiece as much as possible.
(When using external stopper)
● When using an external stopper, make a selection considering bending moment due to the cylinder thrust.



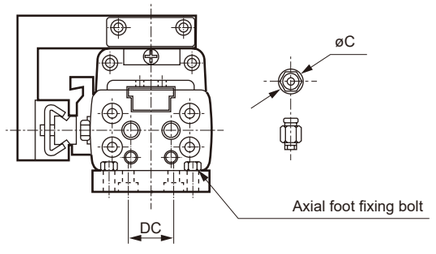
M1=F· ℓ

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

■Using common port piping
● Piping used for the common ports (option codes R and T) are limited. Select an appropriate one from Table 2.

Table 2

Mounting Type / Bore Size (mm)	Usable fitting outer diameter øC		
	00	LB	LB1
ø12 or equivalent	11 or less	Centralized port piping not usable	11 or less
ø16 equivalent	12 or less		12 or less
ø20 equivalent	16 or less		16 or less
ø25 equivalent	26 or less		26 or less

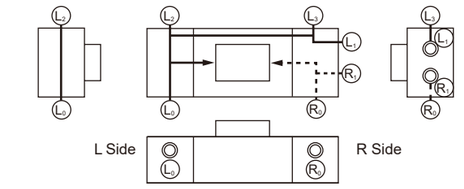


● In the case of the axial foot (LB1) mounting style with option code R or T, the piping tube and the axial foot fixing bolt will interfere with each other. Fix the Cylinder Body (by tightening the axial foot fixing bolt) before attaching the piping tube. (If the piping fitting is assembled first, it will interfere, making it impossible to tighten the axial foot fixing bolt.)

■Piping port position and operating direction

Equivalent to Bore Size ø12 to ø20

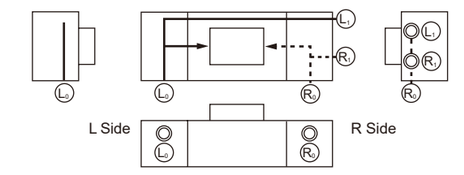
● Option code (blank, R, B, T)



Ⓡ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 Ⓛ₀ are sealed with plugs. Piping to other ports is possible by removing the plug. Optional code (D) cannot be manufactured.

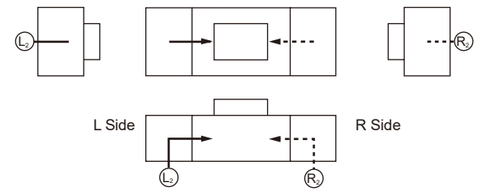
Bore Size ø25

● 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 Ⓛ₀ are sealed with plugs. Piping to other ports is possible by removing the plug. However, bottom piping is not possible. If bottom piping is required, select option (D).

● Option (D) (bottom piping)



Ⓡ indicates the pressurized ports on R side, Ⓛ indicates the pressurized port on L side. Except Ⓡ₂ Ⓛ₂, there are no ports for piping.

■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.

Slit type rodless cylinders represented by SRL3 have slight external air leakage structurally, so intermediate stop control by an all-port block 3-position valve will cause a failure to maintain the table stop position. Therefore, please use a both-side pressurization control circuit using a PAB connection 3-position valve. However, please note that if air is pressurized in a de-energized state when restarting after a pressure drop, the table may move and deviate from the origin.

■Basic Circuit Diagram

● Horizontal load

If piped as shown in Fig. 1, equal pressure is applied to both sides of the piston when stopped, preventing the table from jumping out during restart.

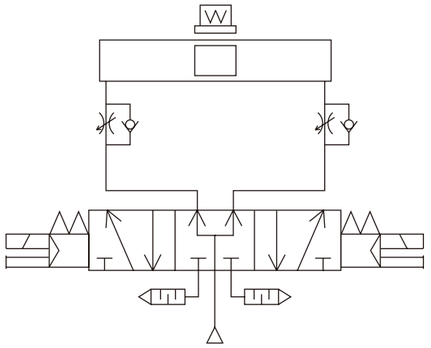


Fig. 1

● In case of vertical load

If a vertical load is applied as shown in Fig. 2, the table will move in the Load Direction. Therefore, install a pressure reducing valve with check valve on the upper side, reduce the thrust in the Load Direction, and balance the load.

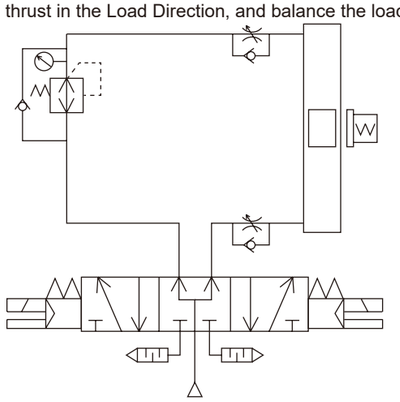


Fig. 2

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

If unavoidable due to cylinder installation, be sure to protect the cylinder with a cover, etc.

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

If unavoidable due to cylinder installation, provide a cover, etc., for protection. Also, if used in such an environment, please be sure to consult us.

■Treat our shock absorbers as consumable parts.

Replace them if a decrease in energy absorption capacity is observed or if operation is no longer smooth.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) -> "Model No." -> Instruction Manual.

MEMO