

# SRT3

## Rodless cylinder with brake

### Rodless type

ø12 · ø16 · ø20 · ø25  
ø32 · ø40 · ø50 · ø63

#### Overview

These are ø12 to ø63 rodless cylinders (SRL3) with compact and reliable brakes.

#### Features

##### Easy brake release

Just return the tilted brake plate to the original position with a slotted screw driver to release brake.

##### Easy piping

No movable piping (cable bearer etc.) required to supply air to the brake section. Just pipe to the edge of the flange.

##### Simple structure

Very few number of brake section components, and simple structure.

##### Space saving



Low compact brake mechanism.

Repeatability  $\pm 1.5\text{mm}$   
(300mm/s loadless)

Durable long service life  
brake



### CONTENTS

Series variation	2138
Product introduction	2138
 Safety precautions	2140
 Double acting (SRT3)	2144
Selection guide	2163

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL3
SRG3
SRM3
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC
Ending

Rodless type  
Rodless cylinder with brake

● : Standard ○ : Option ■ : Not available

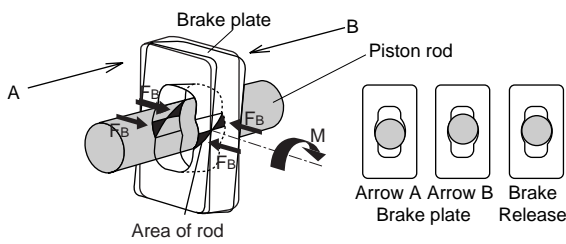
Variation	Model no.	Bore size (mm)	mm stroke (mm)										Min. stroke length (mm)	Max. stroke length (mm)	Custom stroke length (mm)	Mounting style		Cushion				Option		Switch	Page
			200	300	400	500	600	700	800	900	1000	Basic type				Axial foot type	Both sides cushioned	R side cushioned	L side cushioned	No cushion	Floating joint	C mount bracket			
																00	LB	B	R	L	N	Y	C		
Double acting	SRT3	ø12, ø16, ø20	●	●	●	●	●	●	●				●	●						○	Note 1	○	2144		
		ø25, ø32, ø40	●	●	●	●	●	●	●				●	●						○	○	○			
		ø50, ø63	●	●	●	●	●	●	●				●	●						○	○	○			

Note 1: Available for types without switch as an option, not available for types with switch.

Product introduction

● New incorporated brake mechanism

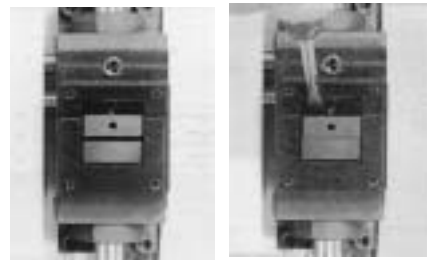
New slant mechanism used for the brake are durable and generates powerful holding force. (Equivalent to cylinder thrust at 0.6MPa)



Applying torque M to the brake plate generates axial force  $F_B$  that hold the piston rod. This secures high durability and powerful holding force.

● Easy brake release

Just return the tilt of brake plate to the original position using a slotted screw.



● Easy piping

No movable piping (cable bearer etc.) required to supply air to the brake section. Just pipe to the edge of the flange.

● Simple structure

Simple structure with only a few parts making up the brake section.

● Switch installation possible

Cylinder switches of all sorts such as reed and proximity can be mounted.



M\*V



M\*H

- Proximity-2 wire M2V/H
- Proximity-3 wire M3V/H
- Reed-2 wire M0V/H, M5V/H
- 2 Color indicator type proximity-2 wire M2WV, T2WV/H, T2YV/H
- 2 Color indicator type proximity-3 wire M3WV, T3WV/H, T3YV/H

● Space saving

Low profile compact brake mechanism

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL3  
SRG3  
SRM3  
SRT3  
MRL2  
MRG2  
SM-25  
CAC4  
UCAC2  
RCC2  
MFC  
SHC  
GLC  
Ending

Rodless type  
Rodless cylinder with brake



# Pneumatic components

## Safety precautions

Always read this section before use.

Refer to Intro 71 for the cylinder, and Intro 78 for the cylinder switch.

### Individual precautions: rodless cylinder SRL3 Series

## Design & Selection

### WARNING

■ Structure so that nothing directly touches the driven object or movable sections of the cylinder with brakes.

Provide a protective cover so that no human-body directly touches the unit. If parts contact is possible, provide safety measures by placing a sensor to stop the cylinder or sound a warning to report danger.

■ Use a balance circuit considering piston rod protrusion.

When activating brakes at the specified position in the stroke, as with braking, or if pneumatic pressure is applied to only 1 side of the cylinder, the piston protrudes at high speed when brakes are released. This involves risk to personnel and equipment. Use a balance circuit, such as the recommended pneumatic pressure circuit, to prevent protrusion.

This brake cylinder has oilless specifications. Do not lubricate this cylinder. Otherwise, braking faults may occur.

■ Holding force refers to performance to hold a static load without vibration or impact when brakes are activated in a no-load state.

Take care when constantly using near the upper limit of the holding force.

■ During braking, kinetic energy is large and the braking distance is long. Thus, avoid using when brakes may be applied at the stroke limit.

Even if a cushion is provided, the back pressure is released and the cushions may not function.

If kinetic energy is large, overrun distance increases and stopping accuracy drops.

■ Do not apply loads with impact, strong vibration, or torque while brakes are activated.

If a load with impact, strong vibration, or torque is applied externally, holding force drops.

■ Put the stoppage accuracy and overrun length in consideration when braking.

A mechanical lock is applied, so the cylinder does not stop instantly when the stop signal is issued, but stops with a time-wise delay. The stroke caused by this delay is the overrun length. The width of the minimum and maximum overrun length is the stoppage accuracy.

● To achieve the required stop position, move the limit switch forward by the overrun distance.

● The limit switch must have a detection length (dog length) equivalent to the overrun distance +  $\alpha$ .

● When using the CKD cylinder switch, the working range is 7 to 16 mm, depending on the switch. If overrun distance exceeds this, provide self-holding of the contact at the switch load.

■ To improve stopping accuracy, minimize the time from stop signal output to brake stoppage.

Use a high-response DC control electricity circuit or solenoid valve, and set the solenoid valve as close to the cylinder as possible.

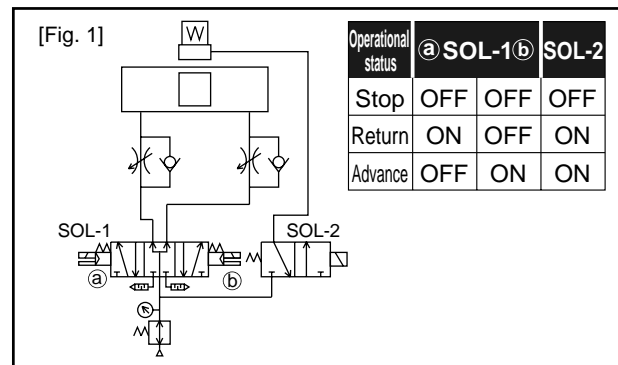
■ Stopping accuracy is influenced by piston speed.

If piston speed changes due to load fluctuation or disturbance during cylinder reciprocation, stop position dispersion increases. Take measures to keep piston speed constant just before the stop position. Speed changes are large during the acceleration range, compared to during the cushion stroke and when starting operation, so dispersion in the stop position increases.

■ Cautions for basic circuit

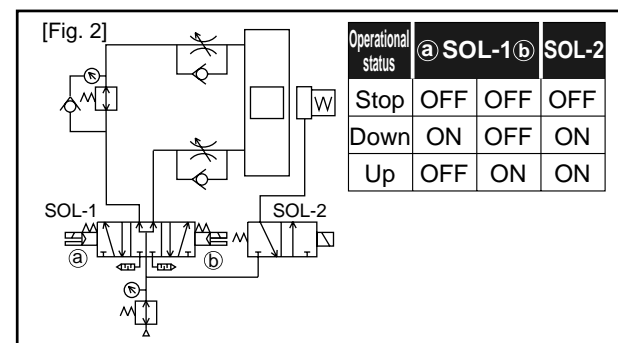
● Parallel load

Pipe like it is shown on figure 1. When using the rodless cylinder, the section area on both sides of the piston is equal, so the regulator for balancing is not required.



● Vertical load

If the load is facing downward as in Fig.2, the table moves in the direction of the load when brakes are released. Install a regulator with a check valve to reduce thrust in the load direction and balance the load.



(Note 1) Place a dedicated regulator to stabilize the movement if there are pressure fluctuations caused by other components.

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL3  
SRG3  
SRM3  
SRT3  
MRL2  
MRG2  
SM-25  
CAC4  
UCAC2  
RCC2  
MFC  
SHC  
GLC  
Ending

- Release brakes before cylinder operation. If the cylinder operation gets faster, brakes may not be released.
- If back pressure is applied to the locking mechanism, the lock may be released. Use a discrete valve, or use a check valve on the side with an individual exhaust type manifold.
- Use a 3-position P/A/B connection (both sides pressurization) valve for the cylinder drive to prevent the piston from protruding when starting.
- Use a regulator with a check valve on the side with large thrust to balance thrust, including load.

### ⚠ CAUTION

- Do not use in an environment where it may contact welding spatters, etc.
- Do not use in a place where coolant, coolant fluid or oil mist, etc., could come in direct contact with the cylinder.  
Always protect the cylinder with a cover if it needs to be installed in such environment.
- Do not use in a place where foreign matter such as swarf, dust, dust or spatter may come in contact or are suspended in the environment.  
If this environment is inevitable, always provide protection with a cover, etc.  
Consult with CKD when using in such environment.
- With the slit rodless cylinder, such as the SRL3, external air leaks at a level that does not affect speed control.

### ■Precautions in stopping accuracy

#### ●Stop pitch and load factor

Stopping accuracy differs with stop pitch and load ratio.

The load factor on the table below is recommended to obtain the specified stoppage accuracy

Stop pitch	Load factor
50mm or less	20% of thrust
50mm to 100mm	40% of thrust
100mm and over	60% of thrust

#### ●Valve selection for brakes

Stoppage accuracy and overrun length is affected by the response time of the valve for brake. Couple the solenoid valve to the brake port to improve stopping accuracy.

#### ●When using a PLC

If a PLC is used as the electric control unit for the valve for brakes, stopping accuracy drops due to scan time (computing time). When using a PLC, do not assemble the valve for the brake into the PLC circuit.

- Do not make major changes in load weight when stopped with brakes, or the stopping position may change.
- When the cable bearer slides, the protective tape may generate friction powder. Consider this when using in an environment containing dust.
- Do not use for applications that require constant pressurization to only one side such as a balancer.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL3
SRG3
SRM3
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC

Ending  
Rodless type  
Rodless cylinder with brake

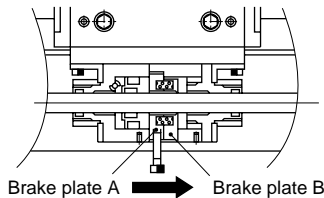
## Installation & Adjustment

### ⚠ WARNING

■ If brakes are released when air is pressurized on only 1 side of the cylinder, the piston may protrude at high speed, causing a hazard. When releasing the brake for maintenance etc, follow the following precautions.

- Check that no one is in the movable range of the load and that no problem arises if the load moves when brakes are released.
- Take the following measures to prevent the load from dropping when brakes are released:
  - Place the load on the lowering end
  - Pressurize both ends
  - Place a support
- Confirm that air is not pressured on only one side of the cylinder when releasing brakes.

### ■ How to release brake manually



- When the cover is removed and a hexagon socket head cap screw, etc., is screwed into brake plate A and tilted in the direction of the arrow, brake plates A and B become parallel and the piston rod is freed. If both brake plates are not tilted over completely, only one side will be released.
- When the workpiece is seated against the vacuum pad, the vacuum suction flow drops and the valve is pressed down by the spring. For safety, take the following measures before manually releasing the lock:
  - Move the load to the lowering end
  - Place a stopper on the load
  - Balance the load by applying air pressure to the rodless cylinder.
- During intermittent operation, when energizing is longer than nonenergizing.

■ Brakes are released manually or by pressurizing the brake release port. When mounting the load, it may drop if brakes are left released with either of these operations. Before attaching the load, check that brakes can be applied from the initial state when using manual release or from when air is not applied to the brake release port.

■ Do not apply brake holding force to the cylinder exceeding the value indicated in the catalog.

■ If there is any play, such as looseness, in the brake signal dog, stopping accuracy is affected. Securely fix to eliminate play, etc.

■ If cylinder speed is fast, the detection dog must be long enough to match relay response time. If the dog is short, the stop signal is not output and operation does not stop.

### ⚠ CAUTION

- Do not apply shock or excessive moment on the table.
- Align before connecting to an load with an external guide mechanism.
  - Carefully consider connection (floating) so deviation is absorbed. The longer the stroke, the greater the shaft center may deviate.

■ Adjust the air balance of the cylinder.

With brakes released, place a load on the cylinder and balance the load by adjusting air pressure applied to the cylinder rod and head. Faults such as cylinder protrusion during brake release or improper brake release are prevented by accurately balancing the load.

■ Adjust the position of the detecting section, such as the cylinder switch.

When using braking, consider overrun distance for the required stopping position, and adjust the position of detectors such as the cylinder switch.

■ Load fluctuation during the cylinder reciprocation stroke leads to changes in the piston speed, which in turn increases dispersion in the stop position. Make an adjustment so that there is no load fluctuation immediately before stopping.

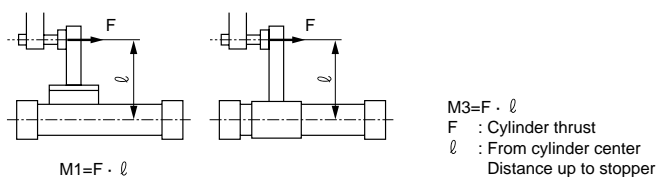
■ Speed changes are large during the acceleration range compared to during the cushion stroke and when starting operation, so dispersion in the stop position increases. Accuracy in specifications may therefore not be attained in step operation with a short stroke from the starting position to the next position.

■ When the cable bearer slides, the protective tape may generate friction powder. Consider this when using in an environment containing dust.

■ Check that moment, including inertia generated when moving or stopping the load, does not exceed the allowable load. Exceeding this value will result in damage.

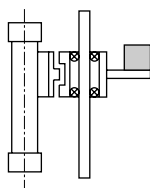
- If overhang is large and the cylinder is stopped at both ends with the piston, the bending moment functions due to load inertia even within internal cushion energy absorption. If kinetic energy is large and an external cushion, etc., is used, try contact with the work-piece center of gravity when possible.
- When selecting an external stopper, consider the bending moment generated by cylinder thrust.

●Moment that functions when stopping with external stopper



●When mounting a guide externally, the actuation will not be smooth and the friction caused by twisting will act as moment if the center is not projected. Make sure the connecting section can absorb the central misalignment.

●Example of guide use



■Avoid electrical welding after installing the rodless cylinder. If the current flows into the cylinder and generates sparks between the dust-proof belt and cylinder tube, the dust-proof belt may be damaged.

■If a unit with excessive inertia, etc., is moved, the cylinder may be damaged or faulty operation occur. Use within the allowable range.

■Do not scratch or dent the cylinder, or these may cause operation faults. Otherwise, malfunctioning may occur.

■If negative pressure is generated in the cylinder due to external force or inertia force, etc., the seal belt may disengage and caused air to leak externally or operation faults to occur.

■The CKD shock absorber is treated as a consumable. Replace if the energy absorption performance starts to drop, or if the movement is not smooth.

## During Use & Maintenance

### ⚠ WARNING

- For safety purposes, prevent the load from dropping under its own weight during maintenance.
- Never disassemble and inspect the brake section as it may be hazardous when reusing the brakes.
- Avoid applying extra grease and do not wipe grease off. Do not wipe off greases on the brake shaft, neither.
- The braking mechanism cannot be replaced.
- To prevent faults, use a dust cover during operation except when manually releasing brakes.

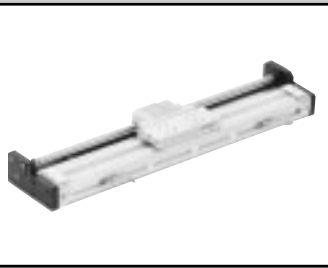
### ⚠ CAUTION

- If the air supply pipe is thin or long, stopping accuracy drops.
- Frictional resistance increases and causes the piston speed to change when the cylinder has been stopped for a long time, such as when using first thing in the morning or afternoon. This may impair stoppage accuracy. A break-in is required to obtain stable stoppage accuracy.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL3
SRG3
SRM3
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC
Ending

Rodless type  
Rodless cylinder with brake





# Rodless cylinder with brake

## SRT3 Series

● Tube inner diameter :  $\varnothing 12, \varnothing 16, \varnothing 20,$   
 $\varnothing 25, \varnothing 32, \varnothing 40, \varnothing 50, \varnothing 63$



### Specifications

Descriptions		SRT3							
Bore size	mm	$\varnothing 12$	$\varnothing 16$	$\varnothing 20$	$\varnothing 25$	$\varnothing 32$	$\varnothing 40$	$\varnothing 50$	$\varnothing 63$
Actuation		Double acting							
Working fluid		Compressed air							
Max. working pressure	MPa	0.7							
Min. working pressure	Cylinder section	0.2			0.15			0.1	
	Brake section	0.3 (note)							
Withstanding pressure	MPa	1.05							
Ambient temperature	°C	5 to 60							
Port size	Cylinder section	M5		Rc1/8		Rc1/4		Rc3/8	
	Brake section	M5		Rc1/8					
Stroke tolerance	mm	$+ \begin{smallmatrix} 2.0 \\ 0 \end{smallmatrix}$ (to 1000),				$+ \begin{smallmatrix} 2.5 \\ 0 \end{smallmatrix}$ (to 2000)			
Working piston speed	mm/s	50 to 1000							
Cushion		Air cushion							
Lubrication		Not required (when lubricating, use turbine oil Class 1 ISOVG32.)							
Stoppage accuracy	mm	$\pm 1.5$ (300mm/s loadless)							
Holding force	N	66	118	184	288	483	754	1178	1870

Note: Minimum working pressure of brake section is measured using a well balanced load.

### Allowable energy absorption

Bore size (mm)	Cushioned		No cushion
	Allowable energy absorption (J)	Cushion mm stroke (mm)	Allowable energy absorption (J)
$\varnothing 12$	0.03	14.5	0.003
$\varnothing 16$	0.22	19.2	0.007
$\varnothing 20$	0.59	22.2	0.010
$\varnothing 25$	1.40	20.9	0.015
$\varnothing 32$	2.57	23.5	0.030
$\varnothing 40$	4.27	23.9	0.050
$\varnothing 50$	9.13	24.9	0.072
$\varnothing 63$	17.4	29.6	0.138

### Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\varnothing 12$	200,300	1000	1
$\varnothing 16$			
$\varnothing 20$			
$\varnothing 25$	400,500	1500	
$\varnothing 32$			
$\varnothing 40$			
$\varnothing 50$	600,700	2000	
$\varnothing 63$			

\*Custom stroke length is available in 1mm increments.

### M type switch quantity and min. stroke length (mm)

Switch quantity	1		2		3		4		5		6		7		8		9	
Switch model no.	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H	M*V	M*H
Bore size (mm)																		
$\varnothing 12$	10	10	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360
$\varnothing 16$	10	10	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360
$\varnothing 20$	10	10	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360
$\varnothing 25$	10	10	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360
$\varnothing 32$	10	10	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360
$\varnothing 40$	10	10	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360
$\varnothing 50$	15	15	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360
$\varnothing 63$	15	15	30	45	60	90	90	135	120	180	150	225	180	270	210	315	240	360

### T type switch quantity and min. stroke length (mm)

Switch quantity	1		2		3		4		5		6		7		8		9	
Switch model no.	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H	T*V	T*H
Bore size (mm)																		
$\varnothing 12$	5	5	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400
$\varnothing 16$	5	5	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400
$\varnothing 20$	5	5	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400
$\varnothing 25$	10	10	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400
$\varnothing 32$	10	10	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400
$\varnothing 40$	10	10	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400
$\varnothing 50$	10	10	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400
$\varnothing 63$	10	10	45	50	90	100	135	150	180	200	225	250	270	300	315	350	360	400

### Switch specifications

- 1 color/2 color indicator/strong magnetic field proof

Descriptions	Proximity 2 wire		Proximity 3 wire			Proximity 2 wire
	M2V and M2H	M2WV (2 color indicator type)	M3H/M3V	M3PH/M3PV (custom order)	M3WV	T2YD/T2YDT
Applications	PLC only		PLC, relay, IC circuit or small solenoid valve			PLC
Output method	-		NPN output	PNP output	NPN output	-
Power voltage	-		4.5 to 28 VDC		10 to 28 VDC	-
Load voltage	10 to 30 VDC		30 VDC or less			24 VDC ±10%
Load current	5 to 30mA		200mA or less	100mA or less	150mA or less	5 to 20mA
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Yellow LED (ON lighting)	Red/green LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1mA or less		10µA or less	0.05mA or less	10µA or less	1.0mA or less

Descriptions	Reed 2 wire			
	MOV and MOH		M5V and M5H	
Applications	PCL, relay			
Power voltage	-		-	
Light	12/24 VDC	110 VAC	5/12/24 VDC or less	110 VAC or less
Load voltage	5 to 50mA	7 to 20mA	50mA or less	20mA or less
Load current	LED (ON lighting)		Without indicator light	
Leakage current	0mA			

Note 1: When load current range is within 7 to 20mA, M0\* switch can be used with 24 VAC , and 48 VAC .

Note 2: Refer to Ending 1 for other switch specifications.

- With preventive maintenance output

Descriptions	Proximity 2 wire		Proximity 3 wire	
	T2YH/T2YV	T2WH/T2WV	T3YH/T3YV	T3WH/T3WV
Applications	PLC		PLC, relay	
Output method	-		NPN output	NPN output
Power voltage	-		10 to 28 VDC	
Load voltage	10 to 30 VDC	24 VDC ±10%	30 VDC or less	
Load current	5 to 20mA (Note 1)		50mA or less	
Light	Red/green LED (ON lighting)	Red/green LED (ON lighting)	Red/green LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1mA		10µA or less	

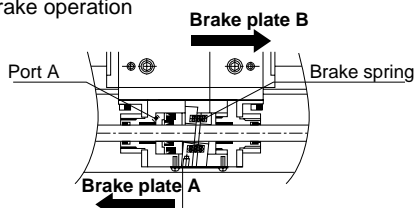
### Cylinder weight

Unit: kg

Bore size (mm)	Weight when stroke length is 0mm			Additional weight for 100mm of stroke
	Basic type (00)	Foot type (LB)	Weight per switch (Including bracket)	
ø12	0.83	0.84	0.02	0.18
ø16	0.95	0.96		0.21
ø20	1.17	1.19		0.26
ø25	2.24	2.34		0.43
ø32	3.8	3.9		0.54
ø40	5.0	5.1		0.71
ø50	7.4	7.5		0.96
ø63	12.4	12.7		14.6

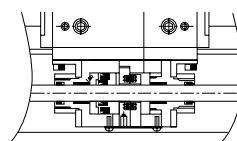
### Operational principle

#### Brake operation



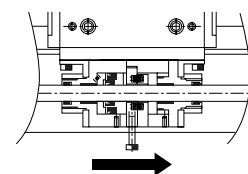
When air is exhausted from port (A), the brake plate (A),(B) is pushed by the spring force, then the brake plate (A),(B) tilts to the arrow direction with using each fulcrum. This boosts the brake force by cylinder thrust, then the position of piston rod is held.

#### Brake release



When air supplied from port (A), the brake plate (A),(B) is pushed by the release piston, then the brake plate (A),(B) tilts at right angle to the piston rod. A clearance is created between them, and the rod can be moved freely.

#### Brake release caused by manual



Remove the cover, screw a hexagon socket head cap screw etc. into the brake plate (A), then tilt the plate to the arrow direction. This makes brake plate (A) and (B) in parallel, then releases the piston rod as freely moved. (The brake can be release by tilting the brake back to the original position using a slotted driver)

SCP\*2  
 CMK2  
 CMA2  
 SCM  
 SCG  
 SCA2  
 SCS  
 CKV2  
 CA/OV2  
 SSD  
 CAT  
 MDC2  
 MVC  
 SMD2  
 MSD\*  
 FC\*  
 STK  
 ULK\*  
 JSK/M2  
 JSG  
 JSC3  
 USSD  
 USC  
 JSB3  
 LMB  
 STG  
 STS L  
 LCS  
 LCG  
 LCM  
 LCT  
 LCY  
 STR2  
 UCA2  
 HCM  
 HCA  
 SRL3  
 SRG3  
 SRM3  
 SRT3  
 MRL2  
 MRG2  
 SM-25  
 CAC4  
 UCAC2  
 RCC2  
 MFC  
 SHC  
 GLC

Ending

Rodless type  
 Rodless cylinder with brake



## How to order

Without switch

**SRT3** - **00** - **32** **B** - **200** ————— **Y**

With switch

**SRT3** - **00** - **32** **B** - **200** - **M0H** - **R** - **Y**

**A** Mounting style

**B** Bore size

**C** Cushion

**D** Stroke length

**E** Switch model no.  
Note 2, Note 3

**F** Switch quantity

**G** Option  
Note 4, Note 5

Symbol	Descriptions			
<b>A Mounting style</b>				
<b>00</b>	Basic type			
<b>LB</b>	Axial foot type			
<b>B Bore size (mm)</b>				
<b>12</b>	ø12			
<b>16</b>	ø16			
<b>20</b>	ø20			
<b>25</b>	ø25			
<b>32</b>	ø32			
<b>40</b>	ø40			
<b>50</b>	ø50			
<b>63</b>	ø63			
<b>C Cushion</b>				
<b>B</b>	Both sides cushioned			
<b>R</b>	R side cushioned			
<b>L</b>	L side cushioned			
<b>N</b>	No cushion			
<b>D Stroke length (mm)</b>				
<b>Bore size</b>	<b>Stroke length Note 1</b>	<b>Custom stroke length</b>		
ø12 to ø20	<b>1 to 1000</b>	<b>By 1 mm increment</b>		
ø25 to ø40	<b>1 to 1500</b>			
ø50, ø63	<b>1 to 2000</b>			
<b>E Switch model no.</b>				
<b>Lead wire Axial</b>	<b>Lead wire Radial</b>	<b>Contact Reed</b>	<b>Indicator</b>	<b>Lead Line</b>
<b>M0H*</b>	<b>M0V*</b>	Reed	1 color indicator type	2-wire
<b>M5H*</b>	<b>M5V*</b>		Without indicator light	
<b>M2H*</b>	<b>M2V*</b>	Proximity	1 color indicator type	2-wire
—	<b>M2WV*</b>		2 color indicator type	
<b>M3H*</b>	<b>M3V*</b>		1 color indicator type	3-wire
—	<b>M3WV*</b>		2 color indicator type	
<b>M3PH*</b>	<b>M3PV*</b>	Proximity	1 color indicator type (custom order)	3-wire
<b>T2WH*</b>	<b>T2WV*</b>		2 color indicator type	
<b>T2YH*</b>	<b>T2YV*</b>			
<b>T3WH*</b>	<b>T3WV*</b>			3-wire
<b>T3YH*</b>	<b>T3YV*</b>			
<b>T2YD*</b>	—	Strong magnetic field proof (AC magnetic field dedicated)	2-wire	
<b>T2YDT*</b>	—			
<b>*Lead wire length</b>				
<b>Blank</b>	1m (standard)			
<b>3</b>	3m (option)			
<b>5</b>	5m (option)			
<b>F Switch quantity</b>				
<b>R</b>	One on R side			
<b>L</b>	One on L side			
<b>D</b>	2			
<b>T</b>	3			
<b>4</b>	4 (fill in switch quantity for 4 or more)			
<b>G Option</b>				
<b>Y</b>	Floating joint			
<b>C</b>	C mount bracket			

### ⚠ Note on model no. selection

- Note 1: Refer to page 2144 for minimal stroke with switch.  
 Note 2: Switches other than switch model no. **E** are also available. (Custom order) Refer to page Ending 1 for details.  
 Note 3: Do not use in environment where cylinder contacts welding spatter. Take extra care when using T2YD or T2YDT.  
 Note 4: Radial M switch lead wire, T types switch for "C" An use can not be made.  
 Note 5: When "C", M type switch with radial lead wire and T type switches are not available.

<Example of model number>

**SRT3-00-32B-200-M0H-R-Y**

Model: Rodless cylinder with brake

- A** Mounting style : Basic type
- B** Bore size : ø32mm
- C** Cushion : Both sides cushioned
- D** Stroke length : 200mm
- E** Switch model no. : Reed switch M0H
- F** Switch quantity : One on R side
- G** Option : Floating joint

### How to order switch

Switch body + mounting bracket (Note 1)

**SRL3 - M0H**

Switch model no.  
(Previous page section(E))

Only switch body

**SW - M0H**

Switch model no.  
(Previous page section(E))

Mounting bracket (Note 2)

· M type switch

**SRL3 - M**

· T type switch

**SRL3 - T**

Lead wire holder (Note 3)

**SRL3 - MH**

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

(Note 1) Switch main body + mounting bracket does not include any lead wire holder.

When lead wire holder is necessary, place an order separately.

(Note 2) Brackets are different for M and T type switches.

(Note 3) Lead wire holder comes in a set of 10 pieces.

### How to order discrete C mount bracket

**SRL3 - 40 - C**

Bore size  
(Previous page section(B))

(C mount bracket and mounting bolt 4 pc.)

### Floating joint set model no. display

**SRL3 - 40 - Y**

Bore size  
(Previous page section(B))

(Mount, mount base, pin, plain washer, pan head machine screw with spring washer, 4 mounting bolts)

### Repair parts model no. display

**SRL3 - 40 K - 200**

Bore size (Previous page section(B))      Stroke length (Previous page section(D))

### Mounting bracket model no. display

**SRT3 - Mounting style (LB) - 40**

(Bracket 2 piece and mounting bolt 4 pc.)

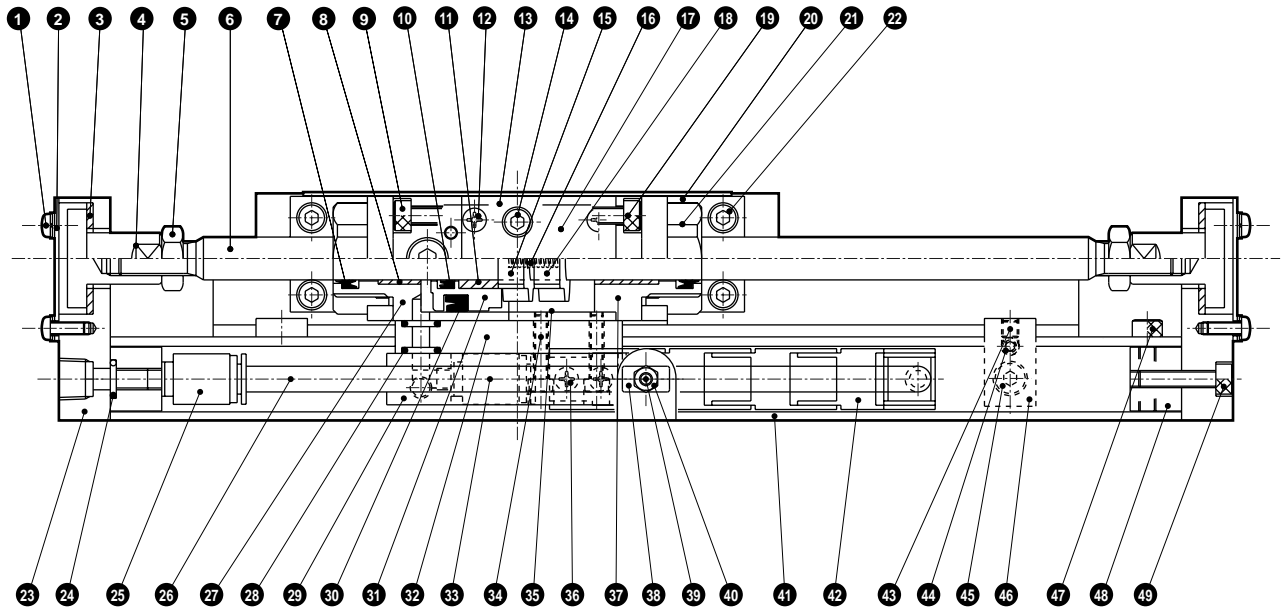
Bore size  
(Previous page section(B))

Note: Switch bracket, C mount bracket, floating joint is common with SRL3.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
<b>SRL3</b>
<b>SRG3</b>
<b>SRM3</b>
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC
Ending

Rodless type  
Rodless cylinder with brake

## Internal structure drawing and parts list (ø12 to ø63)



### Parts list

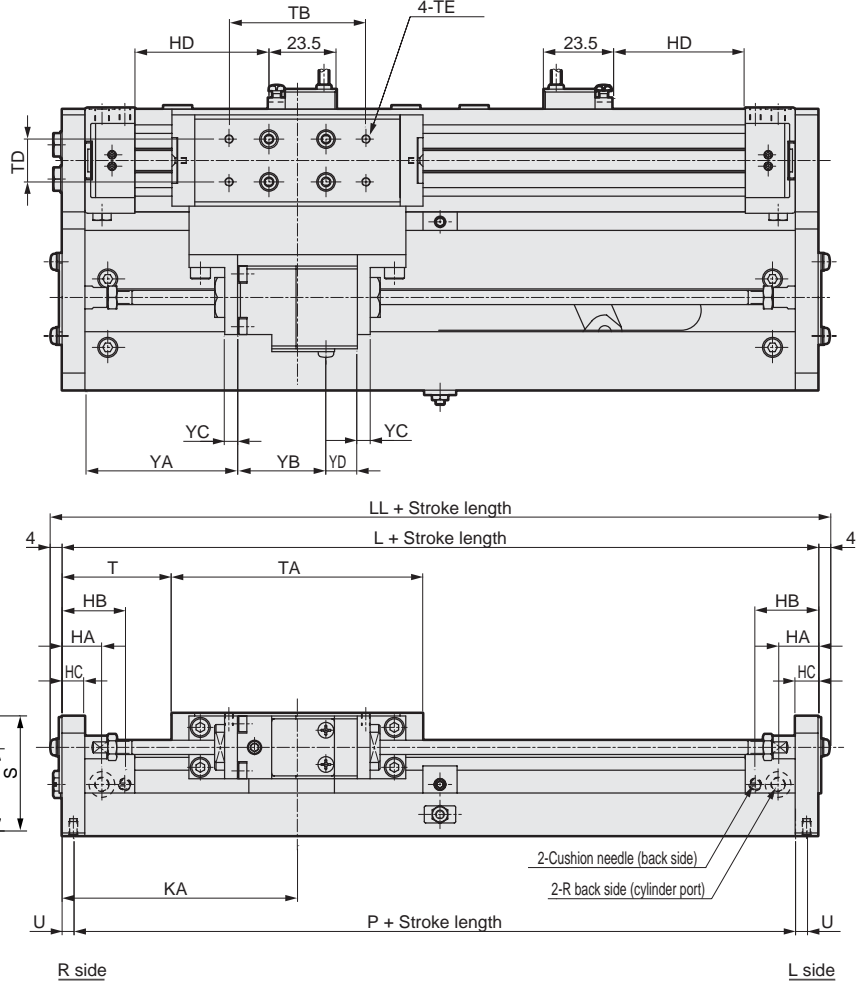
No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Pan head machine screw	Carbon steel	Galvanizing	27	Body A	Aluminum alloy	Alumite
2	Joint section guard	Aluminum alloy	Black alumite	28	Gasket	O ring	
3	Slide plate	Dry bearing		29	Adaptor	Aluminum alloy	Alumite
4	Floating joint	Steel	Phosphoric acid mangan treatment	30	Piston packing seal	Nitrile rubber	
5	Square nut: 3 types	Carbon steel	Galvanizing	31	Release piston	Aluminum alloy	Alumite
6	Brake shaft	Steel	Rigid plating	32	Spacer	Aluminum alloy	Alumite
7	Rod packing seal	Nitrile rubber		33	Push-in joint		
8	Bearing bush	Dry bearing		34	Hexagon socket head cap bolt	Steel	Blackening
9	Hexagon socket head cap bolt	Steel	Blackening	35	Body B	Aluminum alloy	Alumite
10	Rod packing seal	Nitrile rubber		36	Pan head machine screw	Carbon steel	Galvanizing
11	Bearing bush	Copper-infiltrated nikkaloy		37	Brake end guard	Aluminum alloy	Alumite
12	Pan head machine screw	Carbon steel	Galvanizing	38	Square nut	Carbon steel	Galvanizing
13	Brake mounting base	Aluminum alloy	Alumite	39	Pan head machine screw	Carbon steel	Galvanizing
14	Hexagon socket head cap bolt	Steel	Blackening	40	Square nut: 3 types	Carbon steel	Galvanizing
15	Brake plate A	Special steel	Galvanizing	41	Cable holder	Aluminum alloy	Alumite
16	Brake spring	Steel	Blackening	42	Cable bearer	Special plastic	
17	Guard	Aluminum alloy	Alumite	43	ø12 to ø40: hexagon socket head set screw ø50, ø63: -	Steel -	Blackening -
18	Brake plate B	Special steel	Galvanizing	44	ø12 to ø40: hexagon socket head set screw ø50, ø63: hexagon socket head button bolt	Steel	Blackening
19	Hexagon socket head cap bolt	Steel	Blackening	45	Hexagon socket head button bolt	Steel	Blackening
20	Brake foot bracket	Steel	Galvanizing	46	Rail stop plate	Steel	Galvanizing
21	Square nut	Steel	Galvanizing	47	Hexagon socket head cap bolt	Steel	Blackening
22	Hexagon socket head cap bolt	Steel	Blackening	48	Cable holder stopper	Aluminum alloy	Alumite
23	Edge flange	Aluminum alloy	Black alumite	49	Hexagon socket head cap bolt	Steel	Blackening
24	Gasket	O ring					
25	Push-in joint						
26	Tube	Polyamide					





## Dimensions (bore size $\varnothing 12$ , $\varnothing 16$ , mounting style: 00)

● SRT3-00-\*\*-\*\*\*-M\*V\* with cylinder switch (radial lead wire)



RD: Max. sensitive position HD: Max. sensitive position

Symbol	A	B	C	D	DC	DD	F	G	H	HA	HB	HC	I	J	KA	L	LL	M	N	O	P	Q	R	S
Bore size (mm)																		M3 depth 5	M3 depth 5	7.5	144	M5	M5	38.5
$\varnothing 12$	94.5	16.5	39	16	11	16.5	16.5	70	46	14	22	8	27	27.5	76	152	160	M3 depth 5	M3 depth 5	7.5	144	M5	M5	38.5
$\varnothing 16$	98.5	18	43	20	12	18	18.5	72	48	14	22	8	30	31	82.5	165	173	M3 depth 5	M3 depth 5	7.5	157	M5	M5	42

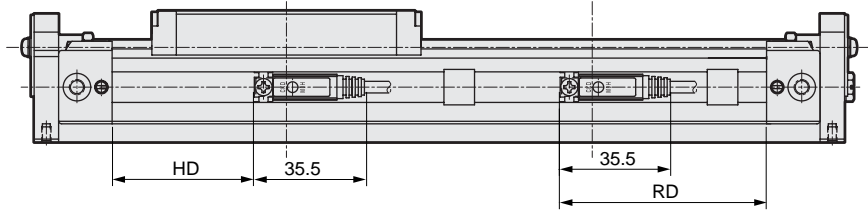
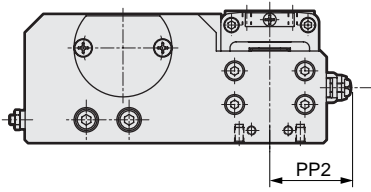
Symbol	T	TA	TB	TC	TD	TE	TG	U	W	XF	YA	YB	YC	YD
Bore size (mm)														
$\varnothing 12$	35.5	81	42	29	13	M3 depth 5	8	4	5	99.5	47	34	4.5	8
$\varnothing 16$	38.5	88	48	32	15	M3 depth 5	12	4	5	99.5	53.5	34	4.5	8

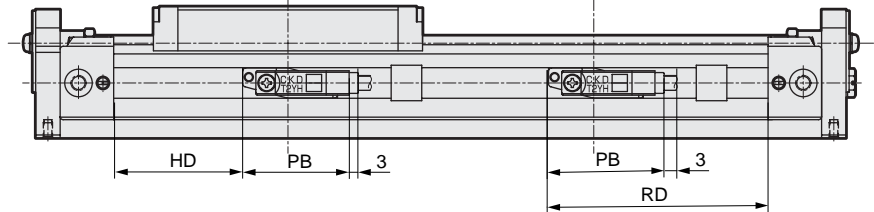
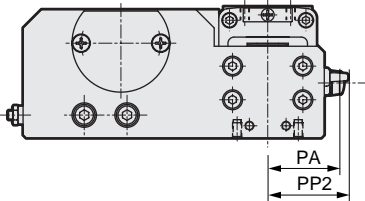
Symbol	With switch																
	HD			RD			PA	PB			PP2						
	M*	T*Y*	T*W	M*	T*Y*	T*W		T*Y*	T2YD	T*W*	M*V	M*H	T*YV	T*YH	T2YD	T*WV	T*WH
$\varnothing 12$	40.5	36	32	60.5	65	69	24.3	35	34	33.5	24.5	24.5	26	23	28.4	20.7	17.2
$\varnothing 16$	47	42	38	67	72	76	26.3	35	34	33.5	26.5	26.5	28	25	30.4	22.7	19.2

## Dimensions (bore size $\varnothing 12$ , $\varnothing 16$ , mounting style: 00)

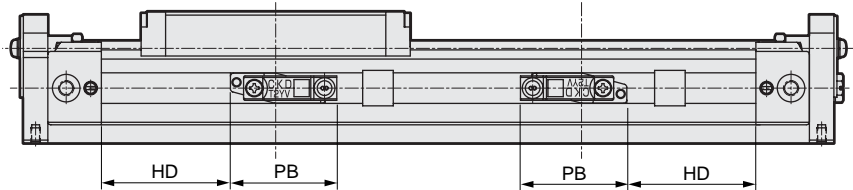
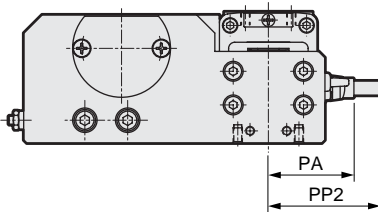
- SRT3-00-\*\*-\*\*\*-M\*H\* with cylinder switch (axial lead wire)



- SRT3-00-\*\*-\*\*\*-T\*H with cylinder switch (T\*W, T\*Y or T2YD)



- SRT3-00-\*\*-\*\*\*-T\*V with cylinder switch (T\*W and T\*Y)



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL3
SRG3
SRM3
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC
Ending

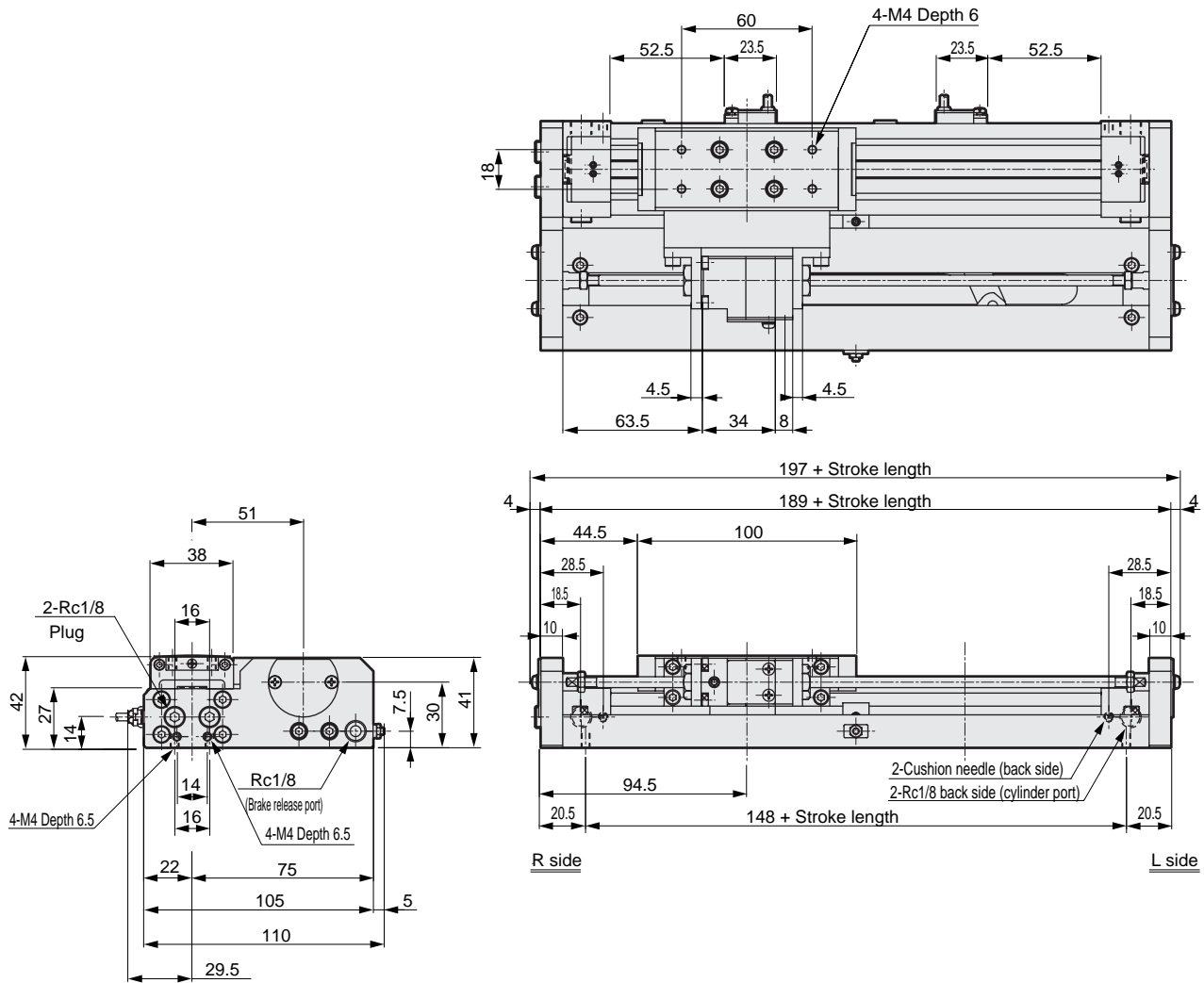
Rodless type  
Rodless cylinder with brake



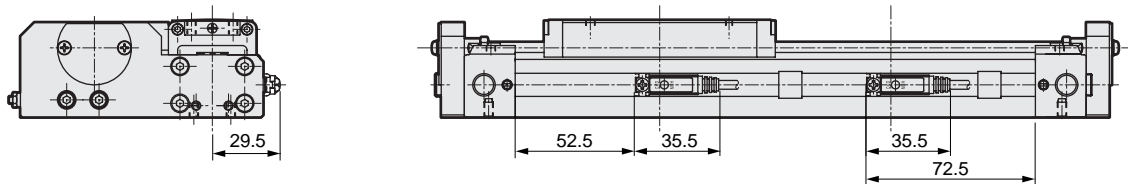
## Dimensions (bore size $\varnothing 20$ , mounting style: 00)

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL3
- SRG3
- SRM3
- SRT3**
- MRL2
- MRG2
- SM-25
- CAC4
- UCAC2
- RCC2
- MFC
- SHC
- GLC
- Ending

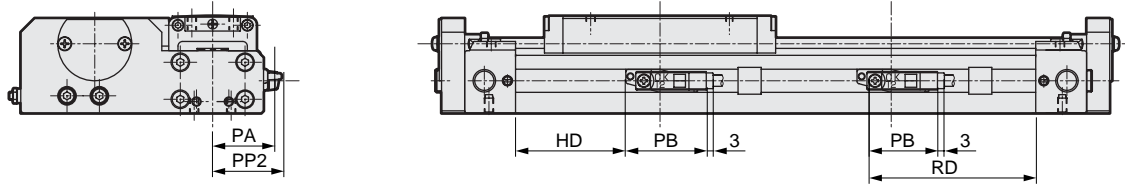
● SRT3-00-20-\*\*\*-M\*V\* with cylinder switch (radial lead wire)



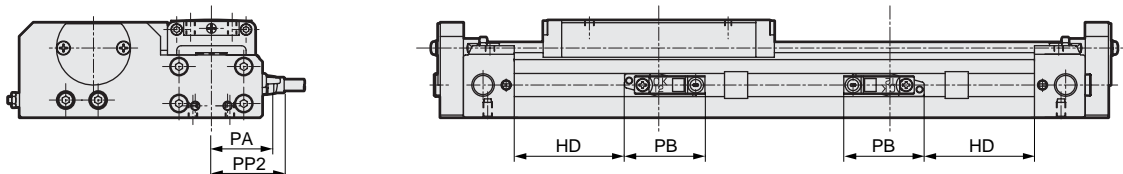
● SRT3-00-20-\*\*\*-M\*H\* with cylinder switch (axial lead wire)



● SRT3-00-20-\*\*\*-T\*H\* with cylinder switch (T\*W, T\*Y or T2YD)

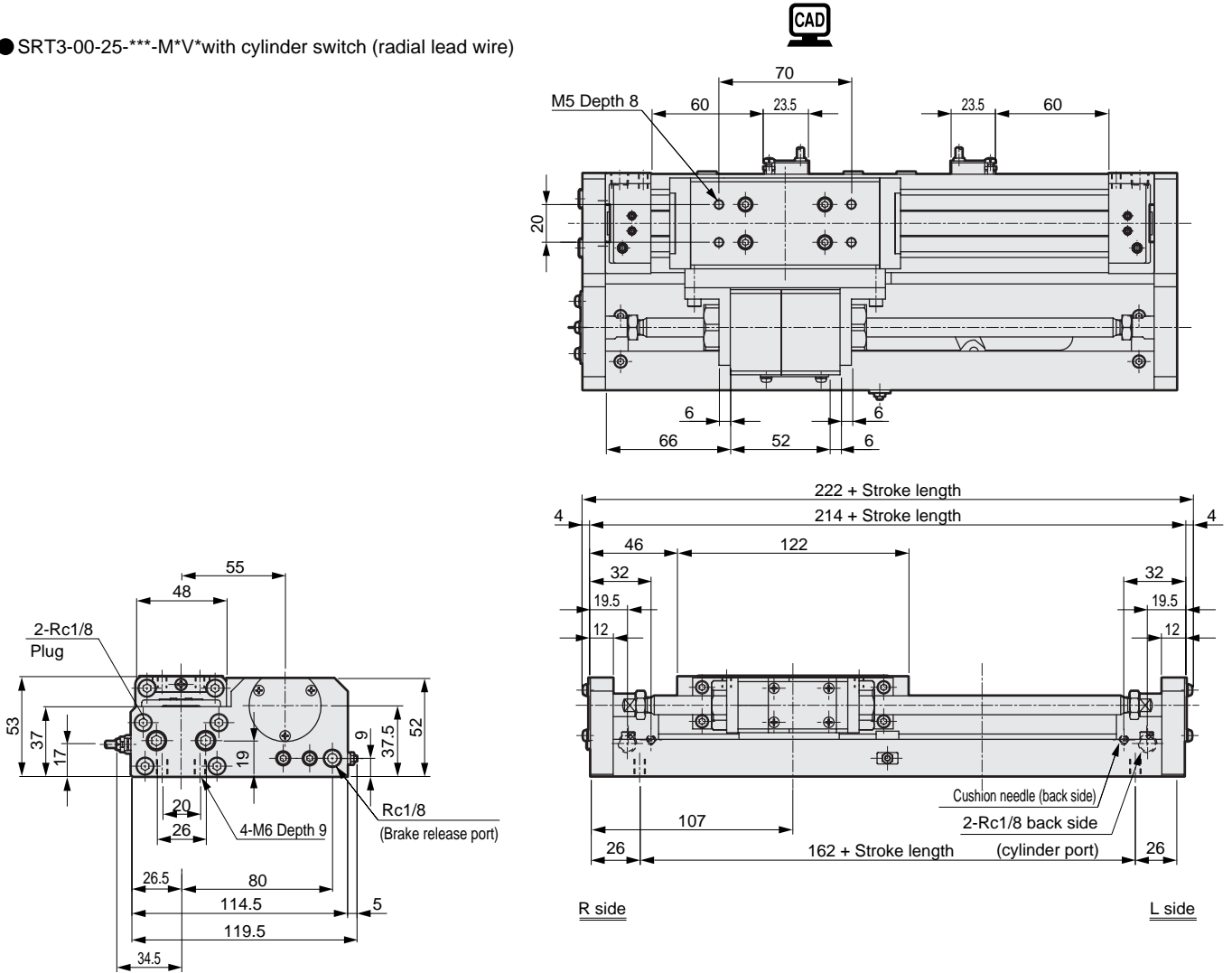


● SRT3-00-20-\*\*\*-T\*V\* with cylinder switch (T\*W and T\*Y)

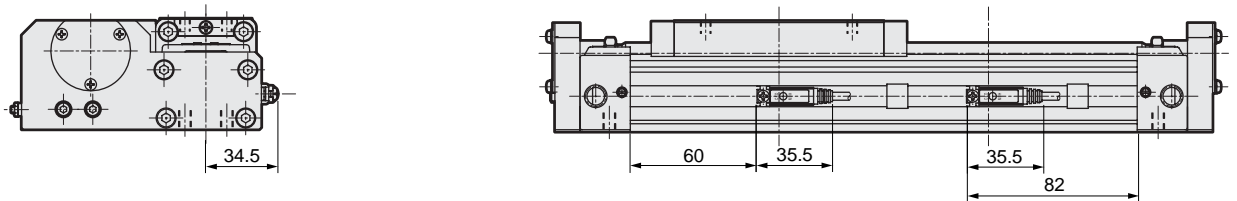


## Dimensions (bore size: $\varnothing 25$ , mounting style: 00)

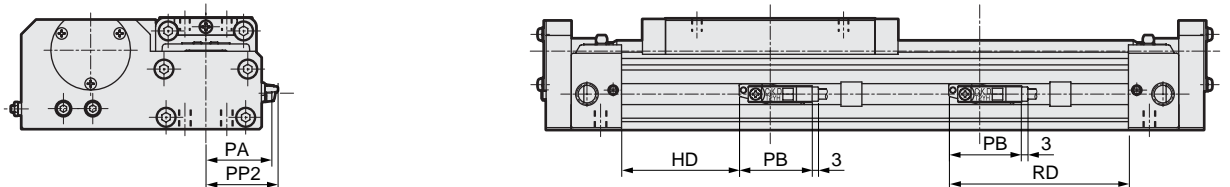
- SRT3-00-25-\*\*\*-M\*V\* with cylinder switch (radial lead wire)



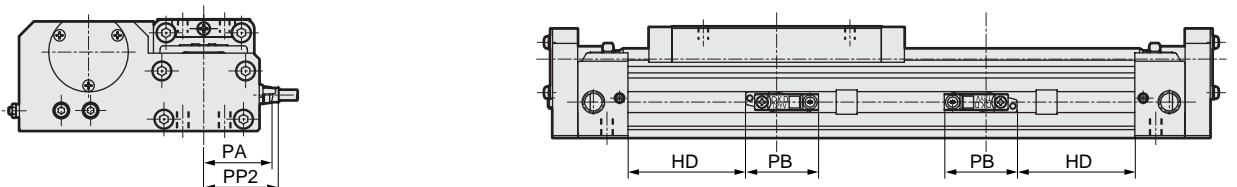
- SRT3-00-25-\*\*\*-M\*H\* with cylinder switch (axial lead wire)



- SRT3-00-25-\*\*\*-T\*H with cylinder switch (T\*W, T\*Y or T2YD)



- SRT3-00-25-\*\*\*-T\*V with cylinder switch (T\*W and T\*Y)



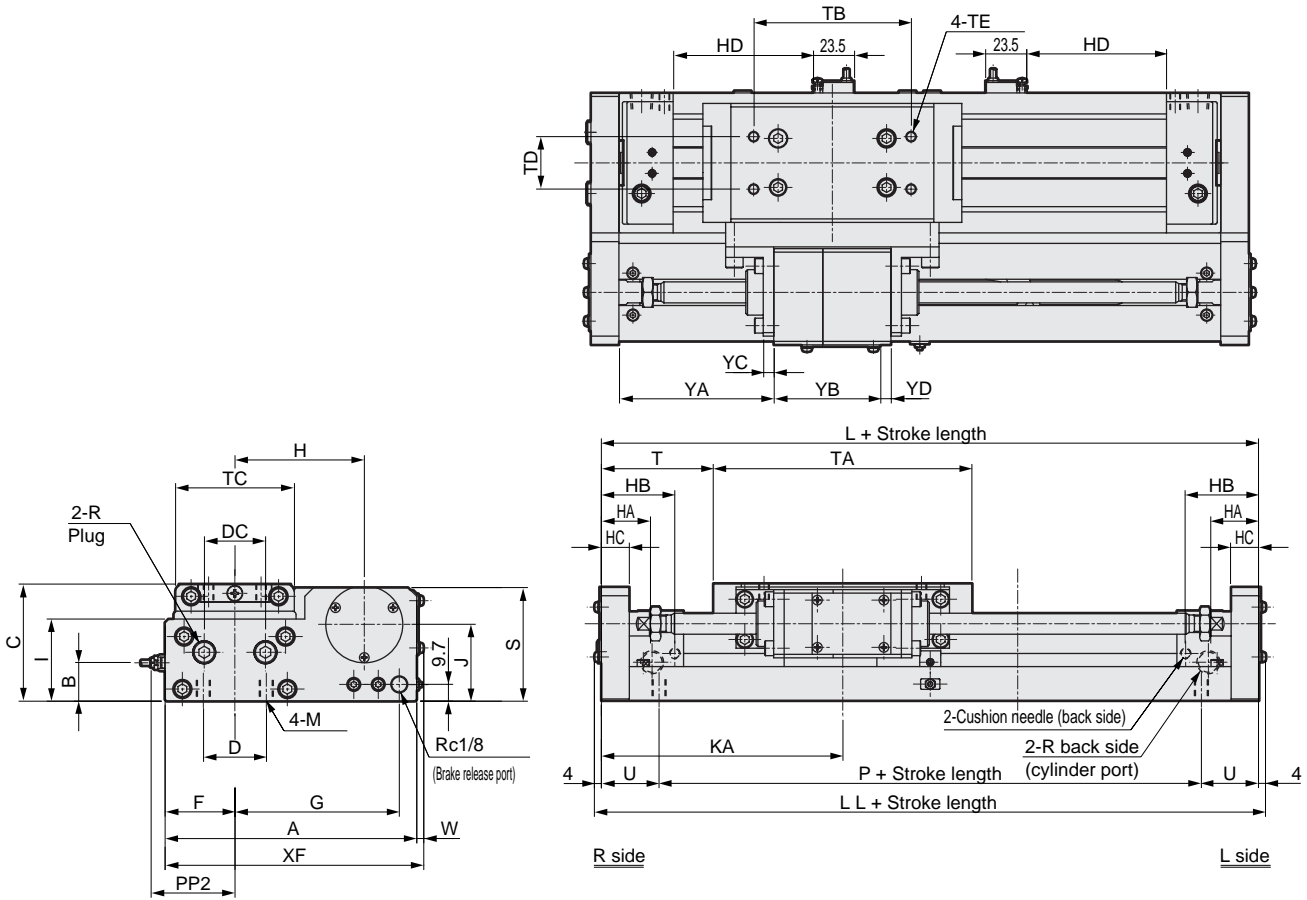
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL3
SRG3
SRM3
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC
Ending

Rodless type  
Rodless cylinder with brake



## Dimensions (bore size: ø32 to ø63, mounting style: 00)

● SRT3-00-\*\*-\*\*\*-M\*V\*with cylinder switch (radial lead wire)



RD: Max. sensitive position HD: Max. sensitive position

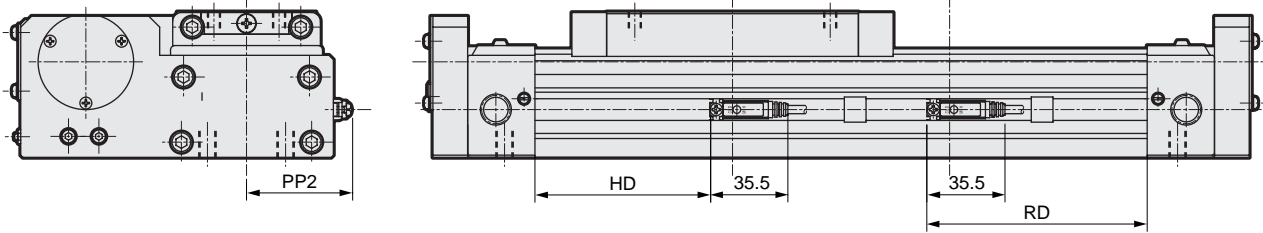
Symbol	A	B	C	D	DC	DD	F	G	H	HA	HB	HC	I	J	KA	L	LL	M	P	R	S	T
<b>Bore size (mm)</b>																						
ø32	129	18.5	57	32	27	21	33	86	66	24	37.5	14	39	39	127	254	262	M6 depth 9	196	Rc <sup>1</sup> / <sub>4</sub>	56	60
ø40	144	22	67	36	35	28	40	93	74	29	42	16	47	44	138	276	284	M8 depth 12	210	Rc <sup>1</sup> / <sub>4</sub>	65	64
ø50	177	28	82	45	35	35	48	101	89	33	51	18	57	52	147	294	302	M8 depth 12	212	Rc <sup>3</sup> / <sub>8</sub>	77	71
ø63	209	35	95	50	39	42	59	112	105	35	52	20	68	58	168	336	344	M10 depth 15	258	Rc <sup>3</sup> / <sub>8</sub>	93	84

Symbol	TA	TB	TC	TD	TE	U	W	XF	YA	YB	YC	YD
<b>Bore size (mm)</b>												
ø32	134	80	56	20	M6 depth 9	29	4	133	78.5	61	6	8
ø40	148	90	68	30	M6 depth 11	33	4	148	88.5	61	6	6
ø50	152	100	80	30	M8 depth 13	41	4	181	92.5	65	8	8
ø63	168	110	102	40	M8 depth 13	39	1	210	98.5	89	9	10

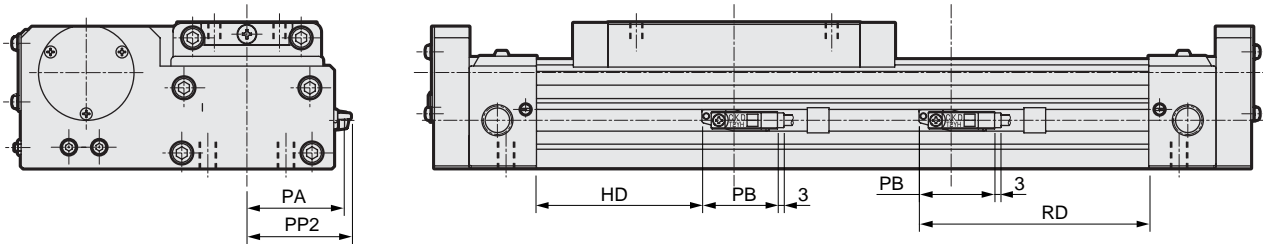
Symbol	With switch																
	HD			RD			PA	PB			PP2						
	M*	T*Y*	T*W	M*	T*Y*	T*W		T*Y*	T2YD	T*W*	M*V	M*H	T*YV	T*YH	T2YD	T*WV	T*WH
ø32	74	70	66	96	100	104	41.3	35	34	33.5	41.5	41.5	43	40	45.4	37.7	34.2
ø40	80	76	72	102	106	110	48.3	35	34	33.5	48.5	48.5	50	47	52.4	44.7	41.2
ø50	79	75	71	101	105	109	56.3	35	34	33.5	56.5	56.5	58	55	60.4	52.7	49.2
ø63	98	94	90	120	124	128	67.3	35	34	33.5	67.5	67.5	69	66	71.4	63.7	60.2

## Dimensions (bore size $\varnothing 32$ to $\varnothing 63$ , mounting style: 00)

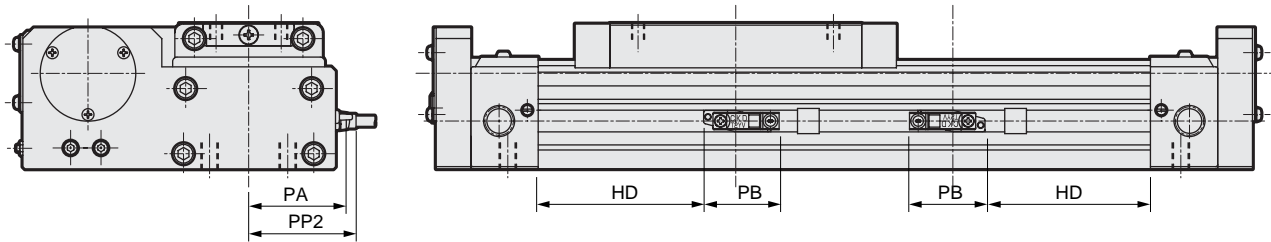
- SRT3-00-\*\*-\*\*\*-M\*H\* with cylinder switch (axial lead wire)



- SRT3-00-\*\*-\*\*\*-T\*H with cylinder switch (T\*W, T\*Y or T2YD)



- SRT3-00-\*\*-\*\*\*-T\*V with cylinder switch (T\*W and T\*Y)



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL3
SRG3
SRM3
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC
Ending

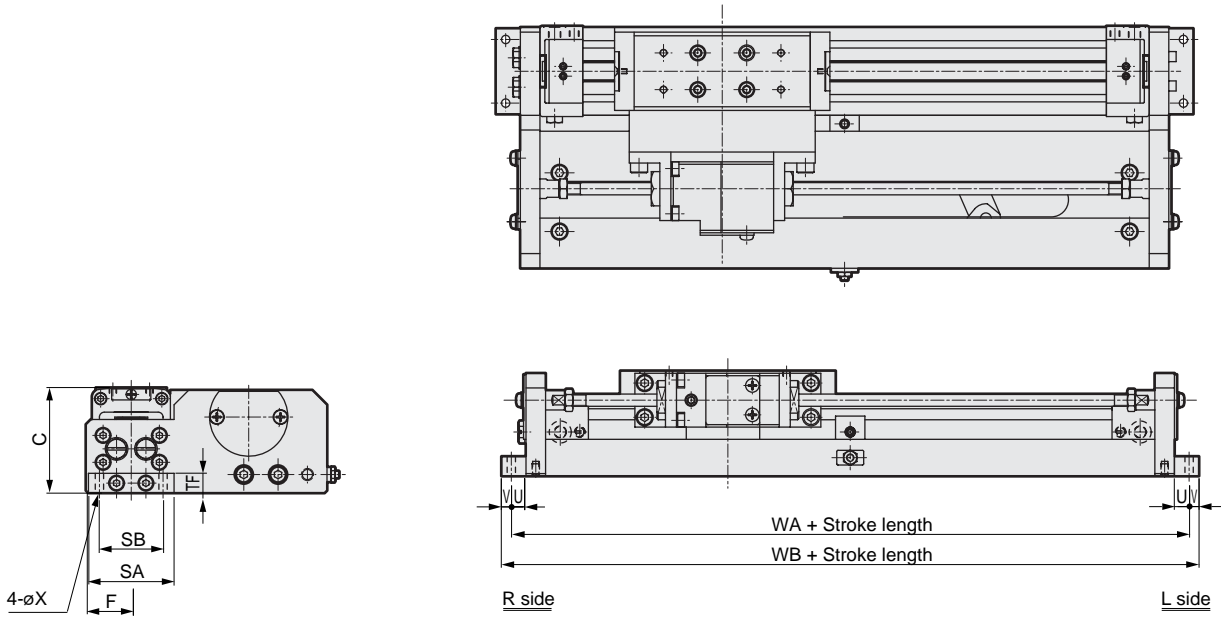
Rodless type  
Rodless cylinder with brake



Dimensions (bore size:  $\varnothing 12$ ,  $\varnothing 16$ , mounting style: LB)

● SRT3-LB-\*\*-\*\*\*with foot bracket

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL3**
- SRG3
- SRM3
- SRT3**
- MRL2
- MRG2
- SM-25
- CAC4
- UCAC2
- RCC2
- MFC
- SHC
- GLC
- Ending



Symbol Bore size (mm)	C	F	How to install the product							
			SA	SB	TF	U	V	X	WA	WB
$\varnothing 12$	39	16.5	32	24	8	6	4	3.4	164	172
$\varnothing 16$	43	18.5	35	26	8	6	4	3.4	177	185



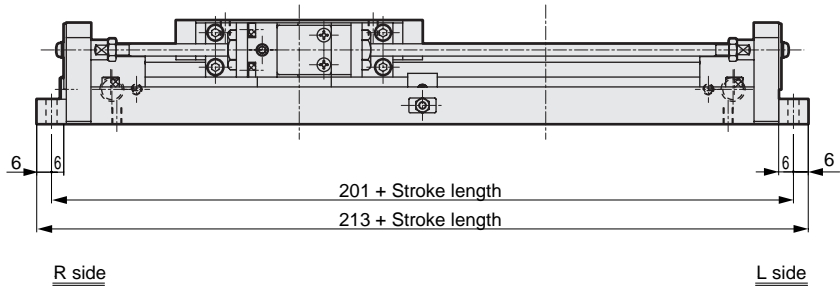
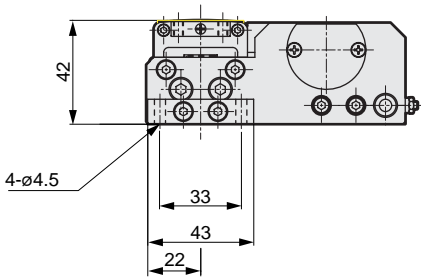
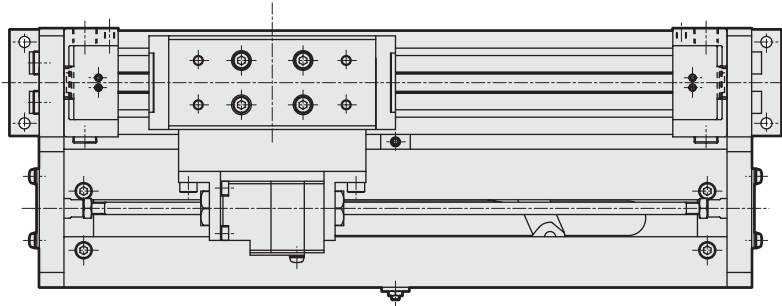


## Dimensions (bore size: $\varnothing 20$ , mounting style: LB)

● SRT3-LB-20-\*\*\*with foot bracket

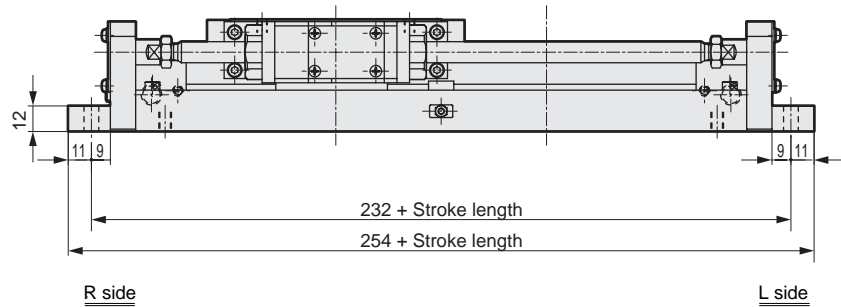
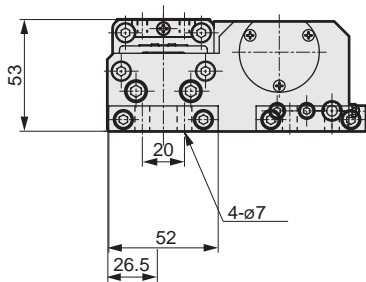
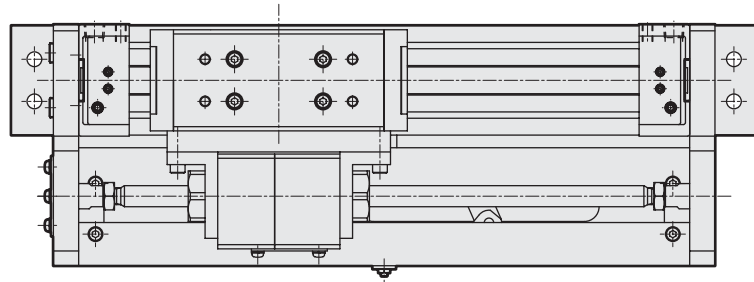


- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL3**
- SRG3**
- SRM3**
- SRT3**
- MRL2
- MRG2
- SM-25
- CAC4
- UCAC2
- RCC2
- MFC
- SHC
- GLC
- Ending



## Dimensions (bore size: $\varnothing 25$ , mounting style: LB)

● SRT3-LB-25-\*\*\*with foot bracket



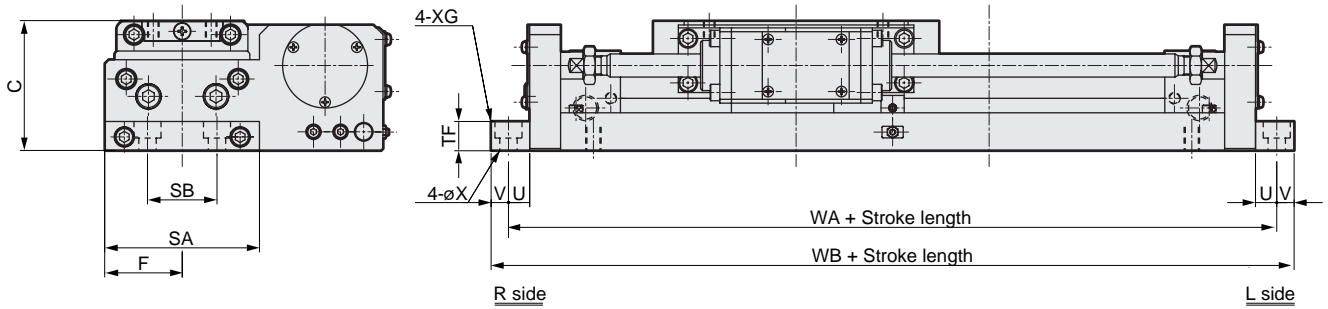
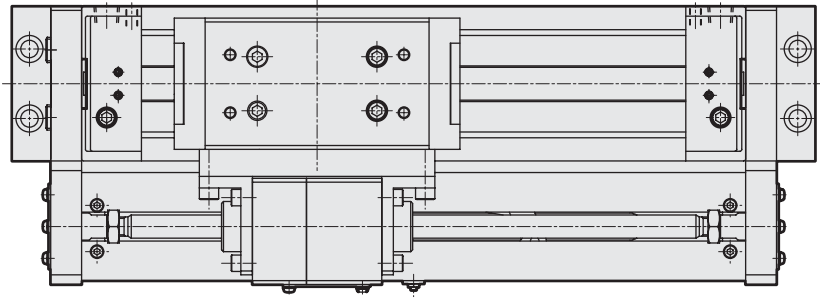
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
<b>SRL3</b>
<b>SRG3</b>
<b>SRM3</b>
<b>SRT3</b>
<b>MRL2</b>
<b>MRG2</b>
<b>SM-25</b>
CAC4
UCAC2
RCC2
MFC
SHC
GLC
Ending

Rodless type  
Rodless cylinder with brake



## Dimensions (bore size $\varnothing 32$ to $\varnothing 63$ , mounting style: LB)

● SRT3-LB-\*\*-\*\*\*with foot bracket



- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL3**
- SRG3**
- SRM3**
- SRT3**
- MRL2
- MRG2
- SM-25
- CAC4
- UCAC2
- RCC2
- MFC
- SHC
- GLC
- Ending

RD: Max. sensitive position HD: Max. sensitive position

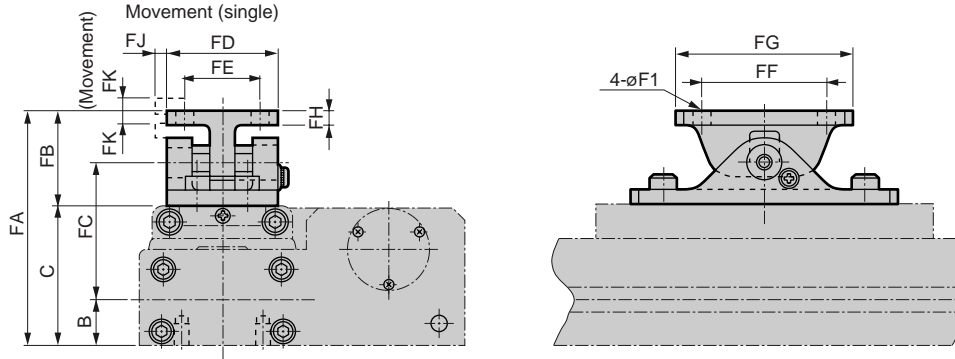
Symbol Bore size (mm)	C	F	How to install the product								
			SA	SB	TF	U	V	WA	WB	X	XG
$\varnothing 32$	57	33	64	32	12	9	11	272	294	7	—
$\varnothing 40$	67	40	80	36	15	11	9	298	316	9	14 spot face depth 8.6
$\varnothing 50$	82	48	94	45	20	11	9	316	334	9	14 spot face depth 8.6
$\varnothing 63$	95	59	116	50	25	13	12	362	386	11	17.5 spot face depth 10.8



## Dimensions: Option

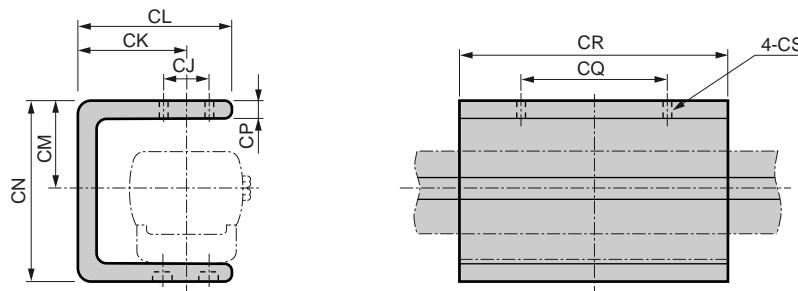


### ● Floating joint



Symbol	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	B	C
<b>Bore size (mm)</b>													
ø12	54	21	31.5	24	16	30	40	3	3.4	3	3	10.5	33
ø16	58	21	34	24	16	30	40	3	3.4	3	3	12	37
ø20	67	25	39	30	20	40	56	4	4.5	3	3	14	42
ø25	78	25	47	30	20	40	56	4	6	3	3	17	53
ø32	95	38	55.5	45	30	50	70	6	7	5	5	18.5	57
ø40	105	38	62	45	30	50	70	6	7	5	5	22	67
ø50	126	44	73	60	40	70	90	8	9	5	5	28	82
ø63	139	44	79	60	40	70	90	8	9	5	5	35	95

### ● C mount bracket



Symbol	CJ	CK	CL	CM	CN	CP	CQ	CR	CS
<b>Bore size (mm)</b>									
ø12 <small>Note 1</small>	13	27	40	22.5	50	5	42	81	M3
ø16 <small>Note 1</small>	15	35.5	50	29	60	6	48	88	M3
ø20 <small>Note 1</small>	18	32.5	50	26	60	6	60	100	M4
ø25	20	45	69	28	71	5	70	116	M5
ø32	20	54	81.5	33.5	80	7	80	128	M6
ø40	30	63	95.5	38	91.5	8	90	138	M6
ø50	30	74	113	48	112.5	10	100	142	M8
ø63	40	88	138	58	131	13	110	158	M8

Note 1: Can not be used with switch.

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL3
- SRG3
- SRM3
- SRT3**
- MRL2
- MRG2
- SM-25
- CAC4
- UCAC2
- RCC2
- MFC
- SHC
- GLC
- Ending

## Rodless cylinder with brake (SRT3) selection guide

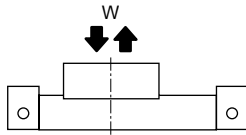
### <Step 1>

#### 1 Find the static moment.

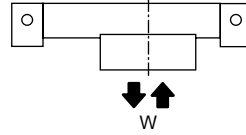
● How to find moment

(vertical load)  $W = \square$  (N)

Downward

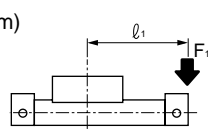
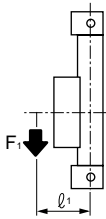


Upward



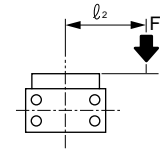
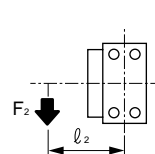
<Bend moment>  $M1 = F_1 \times l_1$

$= \square$  (N · m)



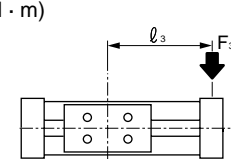
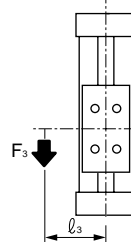
(Radial moment)  $M2 = F_2 \times l_2$

$= \square$  (N · m)



<Twist moment>  $M3 = F_3 \times l_3$

$= \square$  (N · m)



#### 2 Find a rough value of coefficient G according to Table 1.

<Table 1>

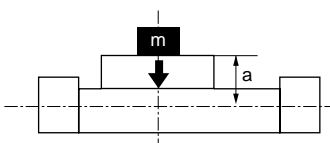
$V_a$  (average speed) =  $\frac{\text{Moving distance}}{\text{Moving time}}$  (m/s)

$V_a$ (average speed) (m/s)	$V_m$ (speed at stroke limit) (m/s)	G coefficient
0.3	To 0.65	9
0.6	To 1.00	15
0.9	To 1.30	23
1.2	To 2.00	40

G coefficient =  $\square$

(Table 3) a value

Bore size	a (m)
ø12	0.023
ø16	0.025
ø20	0.028
ø25	0.036
ø32	0.039
ø40	0.045
ø50	0.054
ø63	0.060



(Table 2) Allowable value

Value inside ( ) are for models with C mount bracket.

Descriptions Bore size (mm)	Wmax. (N)	M1max. (N · m)	M2max. (N · m)	M3max. (N · m)
ø12	30 (15)	1.5 (1)	0.6 (0.3)	0.6 (0.6)
ø16	140 (70)	5 (3.5)	1 (0.5)	1 (1)
ø20	200 (100)	10 (7)	1.5 (0.7)	3 (3)
ø25	360 (180)	17 (12)	5 (2.5)	10 (10)
ø32	620 (310)	36 (25)	10 (5)	21 (21)
ø40	970 (485)	77 (54)	23 (11.5)	26 (26)
ø50	1470 (735)	154 (108)	32 (16)	42 (42)
ø63	2320 (1160)	275 (193)	52 (26)	76 (76)

Note) C mount can make installation on the brake free.  
(Can not be mounted on brake side)

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL3
- SRG3
- SRM3
- SRT3**
- MRL2
- MRG2
- SM-25
- CAC4
- UCAC2
- RCC2
- MFC
- SHC
- GLC
- Ending

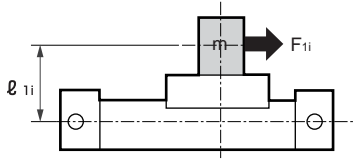
Rodless type  
Rodless cylinder with brake



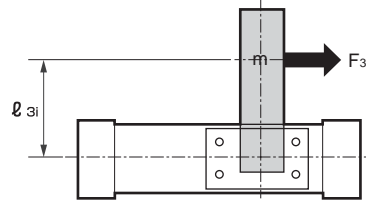
SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL3  
SRG3  
SRM3  
SRT3  
MRL2  
MRG2  
SM-25  
CAC4  
UCAC2  
RCC2  
MFC  
SHC  
GLC  
Ending

**3** Obtain the dynamic moment generated by the inertia of the load at the stroke end.

(Bending moment)  $M1_i = F_{1i} \times \ell_{1i}$  ( $F_{1i} = m \times 9.8$ )  
 $=$   (N · m)



(Twist moment)  $M3_i = F_{3i} \times \ell_{3i}$  ( $F_{3i} = m \times 9.8$ )  
 $=$   (N · m)



**4** Select bore size roughly.

Select bore size roughly.

$M1 + M1_i \times G =$   (N · m)  $\rightarrow$  ( $\varnothing$  )  
 $M2 =$   (N · m)  $\rightarrow$  ( $\varnothing$  )  
 $M3 + M3_i \times G =$   (N · m)  $\rightarrow$  ( $\varnothing$  )  
 $W =$   (N)  $\rightarrow$  ( $\varnothing$  )  
 $E_0 = \frac{1}{2} \times m \times Vm^2 =$   (J)  $\rightarrow$  ( $\varnothing$  )  
( $m = \frac{W}{9.8}$ )

Select the maximum bore size temporarily.

(Table 4) Allowable energy absorption ( $E_0$ )

Bore size (mm)	Integrated air cushion (J)	Shock absorber (J)	Shock absorber Model no.
ø12	0.03	2.4	NCK-00-0.3-C
ø16	0.22	2.4	NCK-00-0.3-C
ø20	0.59	5.7	NCK-00-0.7-C
ø25	1.40	10.0	NCK-00-1.2
ø32	2.57	18.0	NCK-00-2.6
ø40	4.27	50.0	NCK-00-7
ø50	9.13	86.0	NCK-00-12
ø63	17.4	86.0	NCK-00-12

Note) Shock absorber can not be mounted on SRT.  
 Use the shock absorber above as an external damper.

**5** Obtain the composite of the moment at stroke end.

(**4** Confirm if the bore size temporarily selected at 4 meets the following formula.)

$$M_T = \frac{M1 + M1_i \times G}{M1_{max.}} + \frac{M2}{M2_{max.}} + \frac{M3 + M3_i \times G}{M3_{max.}} + \frac{W}{W_{max.}} < 1$$

- M : Composite moment (must be less than 1)
- G : G coefficient
- Wmax. : Max. allowable of W (from table 2)
- M1max. : M1 max. allowable (from table 2)
- M2max. : M2 max. allowable (from table 2)
- M3max. : M3 max. allowable (from table 2)

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL3
SRG3
SRM3
<b>SRT3</b>
MRL2
MRG2
SM-25
CAC4
UCAC2
RCC2
MFC
SHC
GLC

### <Step 2>

Then, increase the accuracy of load factor, effective thrust, speed at stroke end, and composite moment value.

#### ● Find load factor.

$$\alpha = \frac{F_0}{F} \times 100 (\%)$$

$\alpha$ : load factor  
 $F_0$ : A necessary force to of movement a  $F_0$ : workpiece is caused. (N)  
 $F$ : Cylinder effective thrust (N)(Fig. 1 to 3)

During horizontal operation	During vertical operation
$F_0 = F_w + F_1 + F_2 + F_3 + F_L$	$F_0 = W + F_1 + F_2 + F_3 + F_L$
$F_w$ : $W \times 0.2$ (N)	$F_1$ : $M_1 \times C1$ note (N)
$F_2$ : $M_2 \times C2$ note (N)	$F_3$ : $M_3 \times C3$ note (N)
$F_L$ : Other resistance (guide resistance etc.)(N)	$W$ : load (N)

Note: The coefficient which compensates the increase of the frictional force which during moment was applied.

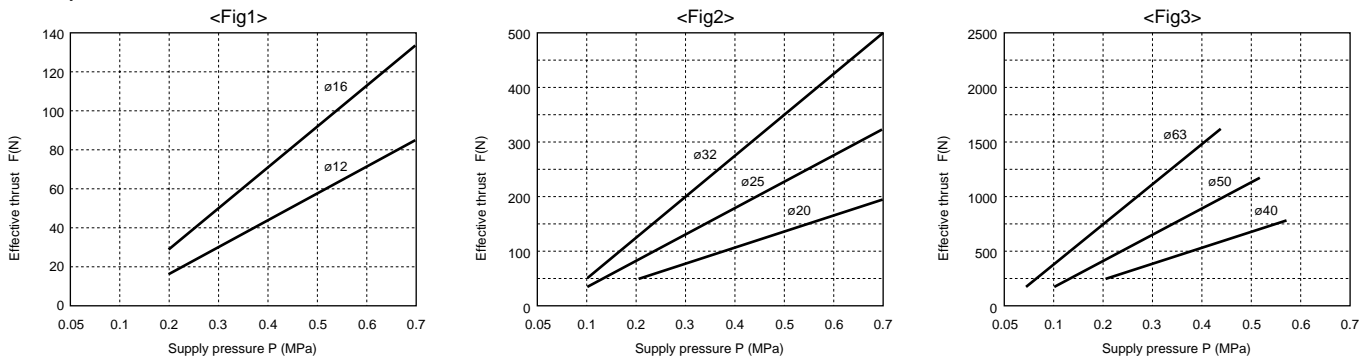
(Table 5) Friction force coefficient per moment 1/m

Bore size (mm)	C1	C2	C3
ø12	8	27	8
ø16	7	24	7
ø20	6	21	6
ø25	5	16	5
ø32	4	13	4
ø40	4	11	4
ø50	4	9	4
ø63	3	8	3

(Table 6) Reference load factor

Working pressure (MPa)	Load factor (%)
0.2 to 0.3	$\alpha \leq 40$
0.3 to 0.6	$\alpha \leq 50$
0.6 to 0.7	$\alpha \leq 60$

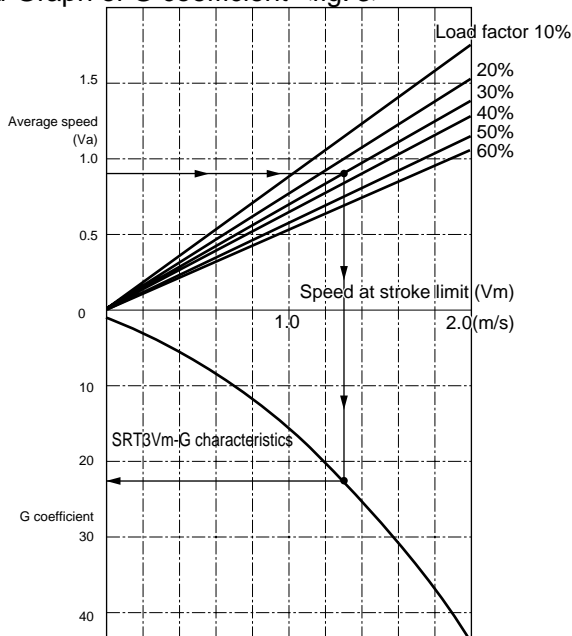
#### ● Graph of effective thrust



### <Step 3>

Obtain the stroke end speed ( $V_m$ ) from<Fig. 3> and G coefficient from the average speed ( $V_a$ ) and load rate obtained in STEP-2.

#### ● Speed-Graph of G coefficient <fig. 3>



Arrow ( ) in figure shows

- Average speed :0.9m/s
- Load factor :30%
- Speed at stroke end:1.3m/s
- G coefficient :22.5

is shown.

Rodless type  
Rodless cylinder with brake

- SCP\*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD\*
- FC\*
- STK
- ULK\*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL3
- SRG3
- SRM3
- SRT3**
- MRL2
- MRG2
- SM-25
- CAC4
- UCAC2
- RCC2
- MFC
- SHC
- GLC
- Ending

### <Step 4>

●Confirm the composite moment (MT) with coefficient G found at STEP-3.

$$\begin{aligned}
 M1 + M1i \times G &= \boxed{\phantom{000}} \text{ (N} \cdot \text{m)} \\
 M2 &= \boxed{\phantom{000}} \text{ (N} \cdot \text{m)} \\
 M3 + M3i \times G &= \boxed{\phantom{000}} \text{ (N} \cdot \text{m)} \\
 W &= \boxed{\phantom{000}} \text{ (N)} \\
 M_T = \frac{M1 + M1i \times G}{M1_{max}} + \frac{M2}{M2_{max}} + \frac{M3 + M3i \times G}{M3_{max}} + \frac{W}{W_{max}}
 \end{aligned}$$

$$M_T \leq 1$$



**Determining bore size** (\*Refer to the (table 2) of the STEP1.)



**Cushion performance confirmation**

### <Step 5>

●Confirmation of cushion performance

$$E = \frac{1}{2} \times m \times Vm^2$$

E : Kinetic energy at stroke final end (J)

m : Load weight (kg)

Vm : Piston entry speed into cushion (m/s)

Bore size (mm)	Integrated air cushion (J)	Shock absorber (J)	Shock absorber Model no.
ø12	0.03	2.4	NCK-00-0.3-C
ø16	0.22	2.4	NCK-00-0.3-C
ø20	0.59	5.7	NCK-00-0.7-C
ø25	1.40	10.0	NCK-00-1.2
ø32	2.57	18.0	NCK-00-2.6
ø40	4.27	50.0	NCK-00-7
ø50	9.13	86.0	NCK-00-12
ø63	17.4	86.0	NCK-00-12

Note) Shock absorbers can not be mounted on SRT3.  
Use the shock absorbers above as an external damper.

### <Step 6>

●Bore size determined by cushion performance:  $\boxed{\varnothing A}$  (Bore size determined on step 5)

●Bore size determined according to load conditions:  $\boxed{\varnothing B}$  (Bore size determined on step 4)

