

LCR

Linear Slide Cylinder

ø6, ø8, ø12, ø16, ø20, ø25

With Linear Guide



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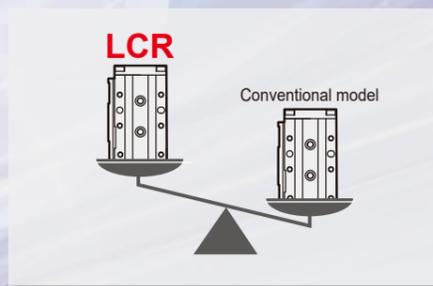
Ultimate lightness and higher rigidity

High-precision, high-rigidity linear guide mounted on double piston cylinder
 Thorough weight reduction and symmetrical structure with high design freedom
 Linear slide cylinder LCR series (ø6 to ø25) with abundant option variations

Thorough weight reduction has resulted in up to **10% less weight compared to conventional.**

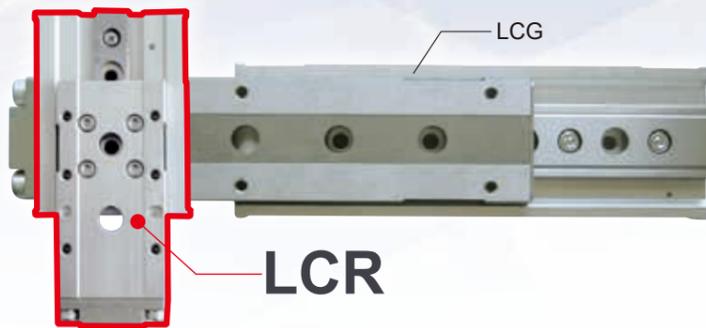
Compared to conventional

Up to **10% lighter!!**



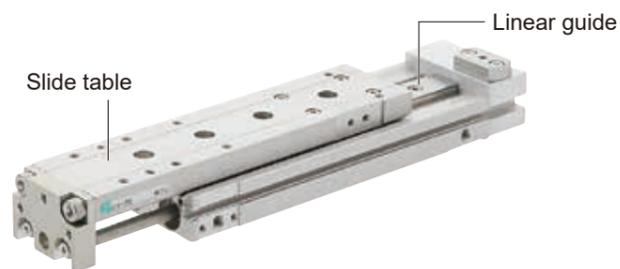
Usage Example

Ideal for Z-axis use.

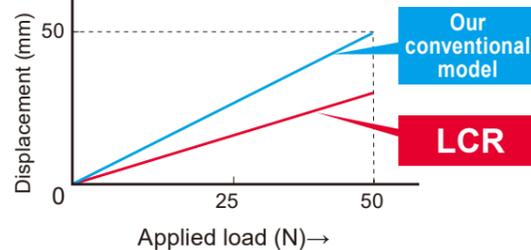


Lightening of moving parts is possible, contributing to equipment tact time improvement, miniaturization, and energy saving.

Rigidity has been improved from conventional models by increasing the rigidity of the linear guide and slide table!



Displacement at slide table end

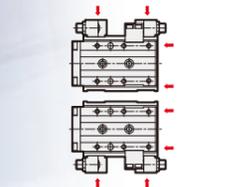


Symmetrical structure. Can be used in various situations.

High degree of design freedom

This product offers extremely high design freedom, including symmetrical stoppers, multi-surface piping, 2-surface mounting, and positioning holes.

- Change to laterally symmetrical configuration is possible.
- Standard rear piping port (except ø 6)



Abundant options and variations

Standard, drop prevention, and ultra-slow speed types are available. A wide range of options are available, including stroke adjustment stoppers and Shock absorber type stoppers.



- Stroke adjustment stopper: One-side adjustment range 0 to 5 mm
- Shock absorber type stopper: Shock absorption at stroke end

Double piston structure adopted

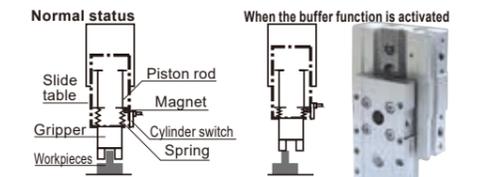
Double thrust due to double piston structure. Compact yet high output.

2-color switch selectable

Solid-state 2-color indicator switch is selectable. The switch does not protrude from the main body, resulting in a neat appearance.

With buffer mechanism

This type protects the workpiece and cylinder by activating the shock absorbing mechanism even if the drive unit and workpiece collide when the cylinder advances. Used when a shock absorbing mechanism is required at the tip, such as in pick & place applications. Furthermore, a cylinder switch that detects abnormalities in lines, etc.



Mounting holes on two sides



LCR Series Product Lineup

Model variations	Bore size	Stroke (mm)								Options					
		10	20	30	40	50	75	100	125	150	Stroke adjusting stopper	Shock absorber stopper	With buffer	Switch	
Double acting / single rod LCR	ø6														
	ø8														
	ø12														
	ø16														
	ø20/ø25														
Double acting/position locking LCR-Q	ø8														
	ø12														
	ø16														
	ø20/ø25														
Double acting / low speed LCR-F	ø12														
	ø16														
	ø20/ø25														

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG

Cylinder Switch
Ending

Cylinder Switch
Ending



Linear Slide Cylinder Double Acting, Single Rod Type

LCR Series

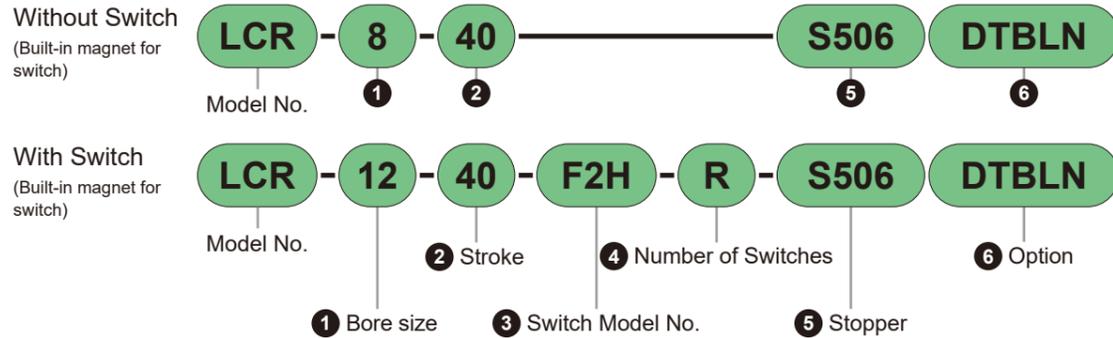
● Bore size: $\phi 6$, $\phi 8$, $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$



LCR Series

Model No. Notation Method

Model No. Notation Method



1 Bore Size (mm)

Code	Content
6	$\phi 6$
8	$\phi 8$
12	$\phi 12$
16	$\phi 16$
20	$\phi 20$
25	$\phi 25$

2 Stroke (mm)

Stroke (mm)	Applicable Bore size					
	$\phi 6$	$\phi 8$	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$
10	●	●	●	●	●	●
20	●	●	●	●	●	●
30	●	●	●	●	●	●
40	●	●	●	●	●	●
50	●	●	●	●	●	●
75		●	●	●	●	●
100			●	●	●	●
125				●	●	●
150					●	●

3 Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
		2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
	2-Color	3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
		2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		1-Color	3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□
			3-wire (PNP)	-	30 or less	-	100 or less	T3PH□	T3PV□
			2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□		
	3-wire (NPN)	-	30 or less	-	50 or less	T3WLH□	T3WLV□		
Read	1-Color No Indicator Lamp	2-wire	-	24 ± 10%	-	5 to 20	T2HR3	T2VR3	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.
 *2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
 *3: This does not guarantee the water resistance of the cylinder.
 *4: Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.
 *5: 1 For Bore size $\phi 16$ to $\phi 25$, F type switch cannot be selected.
 *6: 1 For Bore size $\phi 6$ to $\phi 12$, T type switch cannot be selected.

4 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

*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

*7: For F type switch, 5 m cannot be selected.
 *8: Only T2WLH and T2WLV can be selected.
 Example) Lead wire length
 1 m TOH
 3 m TOH [3]
 5 m TOH [5]

5 Stopper For details, see P. 58.

Code	Content
Blank	No stopper
S Stroke adjustment stopper *3, *4, *5	
S1□□	Stopper position ① (④ Changeable to)
S2□□	Stopper position ② (③ Changeable to)
S3□□	Stopper position ③ (② Changeable to)
S4□□	Stopper position ④ (① Changeable to)
S5□□	Stopper position ①, ③
S6□□	Stopper position ②, ④
A Shock absorber type stopper *3, *4, *6, *7	
A1	Stopper position ① (④ Changeable to)
A2	Stopper position ② (③ Changeable to)
A3	Stopper position ③ (② Changeable to)
A4	Stopper position ④ (① Changeable to)
A5	Stopper position ①, ③
A6	Stopper position ②, ④
W Double-sided combination double stopper (Shock absorber type stopper, Metal stopper) *6, *8, *9	
W1	A1 + Metal stopper
W2	A2 + Metal stopper
W3	A3 + Metal stopper
W4	A4 + Metal stopper
W5	A5 + Metal stopper
W6	A6 + Metal stopper
C Single-sided mixed stopper mix (Shock absorber type stopper, Stroke adjustment stopper) *6	
C1□□	A1 + S3
C2□□	A2 + S4
C2□□	A3 + S1
C4□□	A4 + S2
□□ part Stroke adjustment range ● Applicable to all. ▲ Applicable to some parts. *10:	
	Extension end side Retraction end side Stopper model No.
Blank	5 mm or none 5 mm or none ●
02	15 mm or none 15 mm or none ●
03	25 mm or none 25 mm or none ●
04	15 mm 5 mm ▲
05	25 mm 5 mm ▲
06	5 mm 15 mm ▲
07	5 mm 25 mm ▲

*1: For stopper positions ① to ④, refer to the diagram on the right.
 *2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
 *3: For combinations of stroke adjustment stoppers, metal stoppers, and Shock absorber type stoppers, refer to 5 Stopper "C□", "W□".
 *4: For $\phi 6$ to $\phi 8$ with a stroke of 30 or less and S□□□ or A□□□, if using 2 switches, select the F□H type switch.
 *5: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
 *6: For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.
 *7: A1, A2, A5, and A6 for $\phi 6$ to $\phi 8$ with a stroke of 10 or less, and $\phi 12$ to $\phi 25$ with a stroke of 20 or less cannot be adjusted with standard stoppers, so they are custom-ordered products.
 *8: For $\phi 6$ (all strokes), $\phi 8$ (20 to 30 strokes), $\phi 12$ (30 to 50 strokes), $\phi 16$ (30 to 50 strokes), when W3 to W6 (double-sided combination stopper) is selected, and if 2 switches are included or used on the head side, please use the straight lead wire type.
 *9: When the double-sided combination type (W) is selected, the stroke adjustment range will be $\phi 6$: 9 mm, $\phi 8$: 13.5 mm, $\phi 12$: 14.5 mm, $\phi 16$: 15 mm, $\phi 20$: 13 mm, $\phi 25$: 10 mm.
 *10: Selectable only when using stroke adjustment stopper (S) and single-sided mixed type (C).
 *11: When changing the stopper position from the head side to the rod side, a separate stopper must be purchased, depending on the stroke and stroke adjustment amount. Please refer to "Precautions for Purchasing Stopper Separately" on P. 61, P. 62. Depending on the stroke, A1, A2, and adjustment amounts of 15 mm and 25 mm may not be possible.
 *12: For stopper combinations, refer to the combination availability table on P. 60.

Clean Specification

(Catalog No. CB-033SA)

● Dust prevention structure usable in cleanrooms

LCR - - P7□

Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)

● Structure usable in rechargeable battery manufacturing processes

LCR - - P4□

*Please contact us for details.

High Durability Components HP Series

(Catalog No. CC-1421AA)

● Long-life actuator that contributes to productivity improvement with stable operation

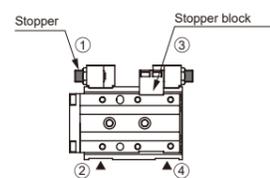
LCR - - HP□

6 Option

Code	Content
Stopper part port *2, *5	
Blank	No port
D	Side and bottom ports available
Stopper block material *2	
Blank	Steel
T	Steel (nitriding treatment)
With buffer *3	
B	Without switch groove
BL	With switch groove
Plug included	
Blank	None
N	Plug for side piping port included ($\phi 8$ to $\phi 20$)

*1: For port positions, refer to the stopper outline drawing P. 78.
 *2: Selectable only when stopper type is selected.
 *3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 61.
 *4: Select when using with rear piping.
 *5: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

● Stopper position



With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

Cylinder Switch

Ending

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. - [① Stopper type] [② Stopper position] [③] Example) LCR-8-40- [S] [5] 06

		Stopper type [①]			
		Stroke adjustment type (single side) [S]	Shock absorber type (single side) [A]	Double-sided combination double stopper [W]	Single-sided mixed stopper mix [C]
Stopper position [②]	[1]	[S1]	[A1]	[W1]	[C1]
	[2]	[S2]	[A2]	[W2]	[C2]
	[3]	[S3]	[A3]	[W3]	[C3]
	[4]	[S4]	[A4]	[W4]	[C4]
	[5]	[S5]	[A5]	[W5]	
	[6]	[S6]	[A6]	[W6]	

▲ indicates the piping direction.
 If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲ (piping direction) will have a plug.

■ : Shock absorber type stopper
■ : Stroke adjustment stopper (adjustment range 5 mm)
■ : Metal stopper (adjustment range 15 mm)

Stopper Model No. Selection Method

2 Stopper Combination Table

Model No. - [① Stopper type] [② Stopper position] [③ Stroke adjustment range]

Example) LCR-8-40-S5 [06]

In case of stroke adjustment stopper -S

■ : Stroke adjustment stopper (adjustment range 5 mm)
■ : Stroke adjustment stopper (adjustment range 15 mm)
■ : Stroke adjustment stopper (adjustment range 25 mm)

		Stopper adjustment range		Stopper type, Stopper position [①②]					
		Extension end side	Retraction end side	[S1]	[S2]	[S3]	[S4]	[S5]	[S6]
Stroke adjustment range [③]	Blank	5 mm or none	5 mm or none	[S1]	[S2]	[S3]	[S4]	[S5]	[S6]
	[02]	15 mm or none	15 mm or none	[S102]	[S202]	[S302]	[S402]	[S502]	[S602]
	[03]	25 mm or none	25 mm or none	[S103]	[S203]	[S303]	[S403]	[S503]	[S603]
	[04]	15 mm	5 mm					[S504]	[S604]
	[05]	25 mm	5 mm					[S505]	[S605]
	[06]	5 mm	15 mm					[S506]	[S606]
	[07]	5 mm	25 mm					[S507]	[S607]

▲ indicates the piping direction.
 Cannot be selected for Shock absorber type [A] or double-sided combination type [W].

In case of single-sided mixed stopper mix -C

■ : Shock absorber type stopper
■ : Stroke adjustment stopper (adjustment range 5 mm)
■ : Stroke adjustment stopper (adjustment range 15 mm)
■ : Stroke adjustment stopper (adjustment range 25 mm)

		Stopper adjustment range		Stopper type, Stopper position [①②]			
		Extension end side	Retraction end side	[C1]	[C2]	[C3]	[C4]
Stroke adjustment range [③]	Blank	5 mm or Shock absorber	5 mm or Shock absorber	[C1]	[C2]	[C3]	[C4]
	[02]	15 mm or Shock absorber	15 mm or Shock absorber	[C102]	[C202]	[C302]	[C402]
	[03]	25 mm or Shock absorber	25 mm or Shock absorber	[C103]	[C203]	[C303]	[C403]

▲ indicates the piping direction.
 For the stroke adjustment range of the Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.

LCR Double Acting, Single Rod Type Combination Availability Table
(Combination with stroke adjustment stopper, Shock absorber type stopper)

● : Not combinable - : Not combinable

Model No.	Stopper type		Stroke adjustment type																										
	Stopper code		S1			S2			S3			S4							S5					S6					
	Bore size	Stroke	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	04	05	06	07	Blank	02	03	04	05	06	07	
LCR	ø6, ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
		20 or more	●	●	-	●	●	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
		20	●	●	-	●	●	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
LCR-B, BL	ø6, ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
		20 or more	●	-	-	●	-	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
		20	●	●	-	●	●	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-
		30 or more	●	●	-	●	●	-	●	●	-	●	●	-	●	●	-	●	●	●	●	●	-	●	●	-	●	●	-

Model No.	Stopper type		Shock absorber type						Double-sided combination double stopper						Single-sided mixed stopper mix															
	Stopper code		A1	A2	A3	A4	A5	A6	W1	W2	W3	W4	W5	W6	C1				C2				C3				C4			
	Bore size	Stroke	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03				
LCR	ø6, ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	-	-	-				
		20 or more	-	●	●	●	●	●	●	●	●	●	●	●	●	-	-	-	-	-	-	●	●	-	-	-	-			
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	-	-	-				
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	-	-	-				
LCR-B, BL	ø6, ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	-	-	-				
		20 or more	-	●	●	●	●	●	●	●	●	●	●	●	-	-	-	-	-	-	●	●	-	-	-	-				
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	-	-	-				
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	-	-	-				
		30 or more	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	-	-	-				

Option code D: Stopper part port Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (● : Selectable - : Not selectable)

Switch Single Unit Model No. Notation Method

● For buffer

SW - F2H SW - F 2 V 3

③ Switch model No. (P. 56 Section ③) ⑦ Output format ⑧ Lead wire length

L-shaped lead wire type

⑦ Output format		⑧ Lead wire length	
Code	Content	Code	Content
2	DC 2-wire solid-state	Blank	1 m (Standard)
3	DC 3-wire solid-state	3	3 m (Option)

Stopper Set Model No. Notation Method

- Set of stopper part and stroke adjustment stopper or Shock absorber type stopper
- Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper

LCR - 12 - S 2 D - S02

① Bore size ⑩ Stopper mounting position ⑫ Stroke adjustment amount

⑨ Stopper type ⑪ Stopper part port

⑨ Stopper type		⑩ Stopper mounting position	
Code	Content	Code	Content
S	Stroke adjustment stopper	1	Stopper position ① or For ④
A	Shock absorber type stopper	2	Stopper position ② or For ③

*1: When mounting at stopper mounting positions ① and ②, the relationship of the stroke adjustment amount changes depending on the stroke, so refer to the table below.

⑪ Stopper part port		⑫ Stroke adjustment amount	
Code	Content	Code	Content
Blank	No port	Blank	Stroke adjustment range 5 mm
D	Side/bottom ports available	S02	Stroke adjustment range 15 mm
		S03	Stroke adjustment range 25 mm

Note) The bottom port is sealed with a plug. When using the bottom port with ø20 or ø25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

*1: "S03" cannot be selected for ø6 and ø8.
*2: ⑨ Cannot be selected in the case of Shock absorber type stopper "A".

Precautions when purchasing a stopper set

Only when mounting at mounting positions ① and ② (see P. 57), please note that the stroke adjustment amount will be as shown on the right depending on the stroke.

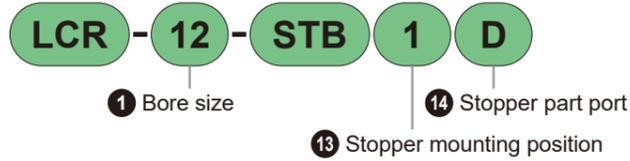
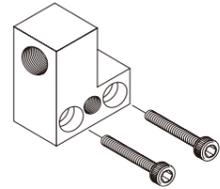
Model No. code	Option code		Stroke adjustment stopper		
	Bore size	Stroke	Stroke adjustment amount (mm)		
LCR Series	ø6, ø8	10	S02	-	-
		20 or more	Blank	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	Blank	S02	S03

● Stopper set weight (Unit : g)

Stopper type	S1, S2			A1, A2
	No code, D			
Stroke adjustment amount	Blank	S02	S03	Blank
Bore size				
ø6	15	18	-	18
ø8	21	25	-	27
ø12	28	31	34	33
ø16	42	47	52	49
ø20	77	85	92	86
ø25	87	94	101	95

Stopper Bracket Single Item Model No. Notation Method

- Used when changing stopper mounting position from (1 or 4) to (2 or 3), or when changing to a stopper with port.



- Stopper bracket weight (Unit : g)

Stopper mounting position	1,2
Stopper part port	Blank, D
Bore size	
ø6	8
ø8	14
ø12	20
ø16	29
ø20	53
ø25	62

13 Stopper mounting position

Code	Content
1	Stopper position ① or ④ for
2	Stopper position ② or ③ for

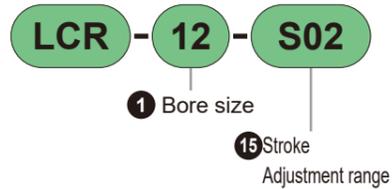
14 Stopper part port

Code	Content
Blank	No port
D	Side/Bottom ports available

Note) The bottom port is sealed with a plug. When using the bottom port with ø20 or 25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

Stroke Adjustment Stopper Single Item Model No. Notation Method

- Hexagon socket set screw with urethane
- Used when changing stroke adjustment range or setting intermediate stroke



15 Stroke adjustment range

Code	Content
S01	One side 5 mm (Standard)
S02	One side 15 mm
S03	One side 25 mm

Note) "S03" cannot be selected for ø6 and ø8. Some model Nos. may not be compatible or the stroke adjustment range may differ from the above.

Precautions when purchasing stopper single items

Only when mounting at mounting positions ① and ② (see P. 57), please note that the combination will be as shown on the right depending on the stroke and stroke adjustment amount.

- : Not combinable

Model No. code	Option code		Stopper for Stroke Adjustment, Single Unit Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCR Series -S1, S2, S5, S6	ø6, ø8	10	S02	-	-
		20 or more	S01	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	S01	S02	S03

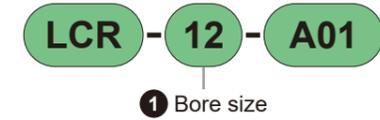
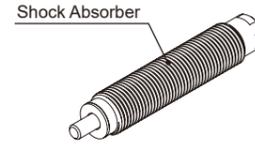
- Stopper for Stroke Adjustment, Single Unit Weight (Unit : g)

Stroke adjustment range	S01	S02	S03
Bore size			
ø6	6	9	-
ø8	7	10	-
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

Model No. Notation Method

Shock absorber Type Stopper Single Item Model No. Notation Method

- Shock absorber set
- Used when changing from stroke adjustment stopper to Shock absorber type stopper



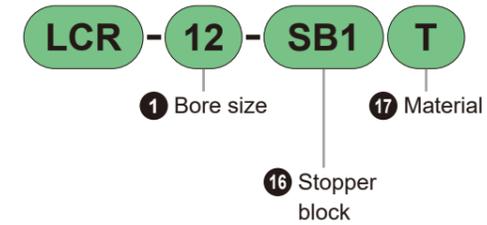
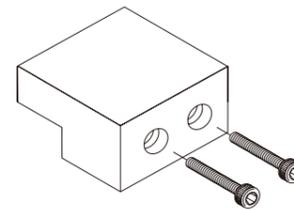
Note) Some model Nos. may not be compatible, see P. 56. For the stroke adjustment range of the Shock absorber type stopper, see P. 78.

Shock absorber model No. used

Model	Shock absorber model No.	Weight (g)
LCR-6	SKL-0804	9
LCR-8	SKL-0805	12
LCR-12	SKL-0805	12
LCR-16	SKL-1006	19
LCR-20	SKL-1208	31
LCR-25	SKL-1208	31

Stopper Block Single Item Model No. Indication

- Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



16 Stopper block

Code	Content
SB1	ø6, ø8 : For 30 strokes or less ø12 to ø25 : For 50 strokes or less
SB2	ø6, ø8 : For 40 strokes or more ø12 to ø25 : For 75 strokes or more

17 Material

Code	Content
Blank	Steel
T	Steel (nitriding treatment)

- Stopper block single item weight (Unit : g)

Block type	SB1 (T)		SB2 (T)	
	Bore size		Bore size	
ø6	11		21	
ø8	14		24	
ø12	23		37	
ø16	38		72	
ø20	60		99	
ø25	112		206	

Side Piping Port Plug Kit Model No. Indication



- Plug kit weight for side piping port

Bore size	Weight (g)
ø8	1
ø12	1
ø16	1
ø20	5

Specifications

Item	LCR					
Bore size mm	ø6	ø8	ø12	ø16	ø20	ø25
Actuation method	Double Acting Type					
Operating Fluid	Compressed Air					
Max. Working Pressure MPa	0.7					
Min. Operating Pressure MPa	0.15 (*1)					
Proof Pressure MPa	1.05					
Ambient Temperature °C	-10 to 60 (however, no freezing)					
Port Size	Main body side	M3	M5	Rc1/8		
	Main body rear	-	M3	M5	Rc1/8	
Stroke tolerance mm	+2.0 (*2) 0					
Operating Piston Speed mm/s	50 to 500 (*3)					
Cushion	With Rubber Cushion					
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy J	Refer to Table 3 on P. 114.					

*1: When using ø6 Shock absorber type stopper, it will be 0.2MPa.
 *2: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
 *3: When using a stroke adjustment stopper, use at 50 to 200 mm/s.
 *4 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø6	10, 20, 30, 40, 50
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

Note : Strokes other than the above cannot be manufactured.

With buffer specification Specifications other than the following are the same as the common specifications below.

Item	Content						
Bore size mm	ø6	ø8	ø12	ø16	ø20	ø25	
Buffer Stroke mm	4		9		10		
Buffer part	At SET N	3	5	10	13	17	21
Spring Load	During operation N	7	8	14	20	25	29

*1: If rod side stroke adjustment is performed with a buffer, the buffer stroke will be shortened by the stroke adjustment amount, and the spring load at set will also increase.
 *2: Use a buffer stroke less than the stroke above. This will cause malfunction or damage.

Theoretical Thrust Table

See P. 115.

Cylinder Weight

● Basic type (Unit : g)

Bore size (mm)	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
ø6	110	110	130	160	180	-	-	-	-
ø8	160	160	180	230	260	320	-	-	-
ø12	310	320	320	360	390	520	610	-	-
ø16	490	500	500	550	610	840	970	1,110	-
ø20	900	910	920	1,000	1,090	1,390	1,600	1,810	2,020
ø25	1,620	1,640	1,650	1,760	1,860	2,350	2,620	2,890	3,160

● Option increase (Unit : g)

Bore size (mm)	Stopper code				With buffer
	S1 to S4	S5, S6	A1 to A4	A5, A6	B, BL
ø6	30	40	40	50	40
ø8	40	60	50	70	40
ø12	70	100	80	110	70
ø16	110	150	120	160	80
ø20	170	250	180	270	150
ø25	290	380	300	400	320

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

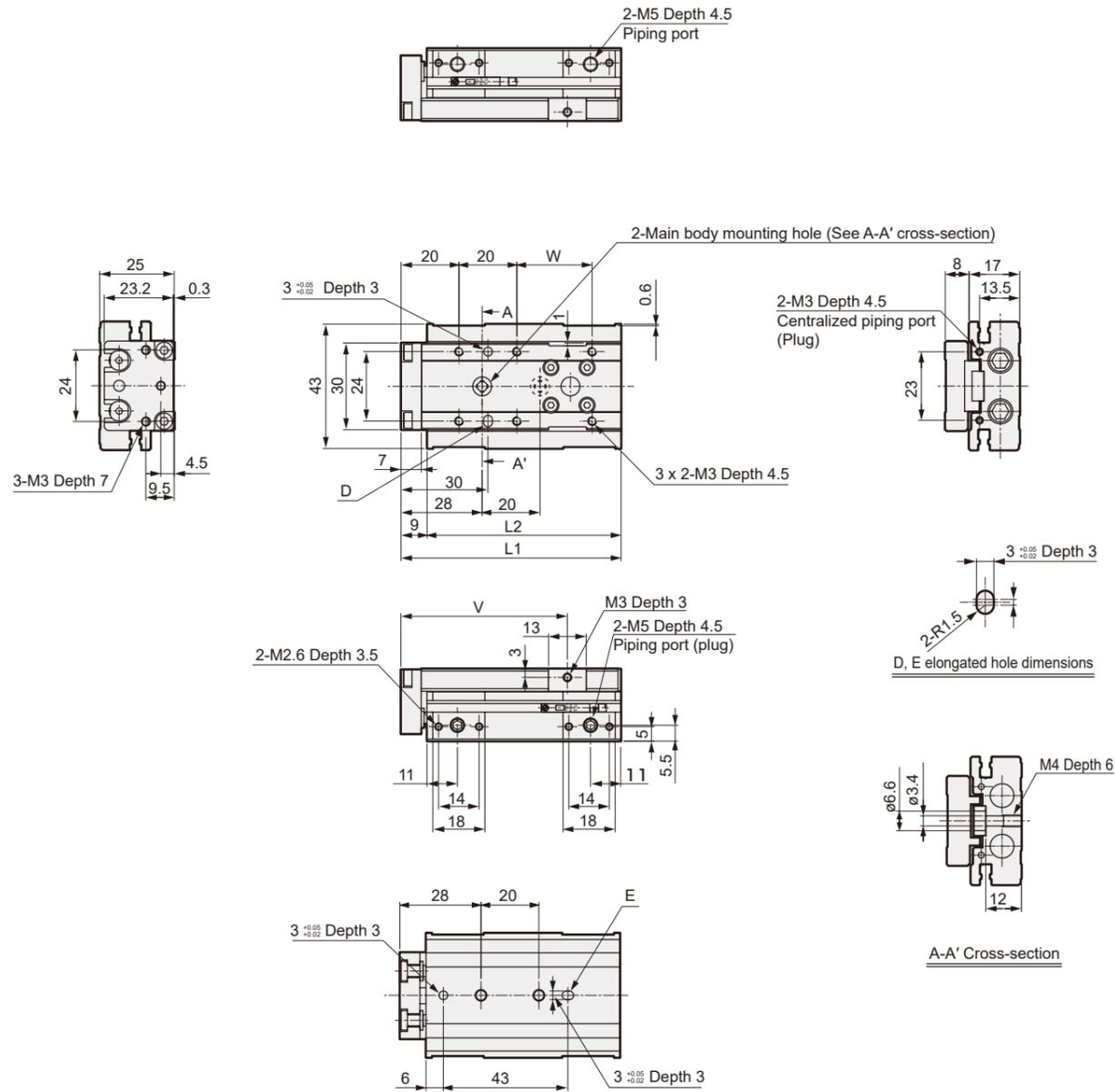
Ending

Cylinder Switch

Ending

Outline dimension drawing (Bore size: $\varnothing 8$)

- LCR-8
- Stroke: 10, 20, 30
- (The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

Code	Stroke		
	10	20	30
L1	66	76	76
L2	57	67	67
V	47.5	57.5	57.5
W	16	26	26

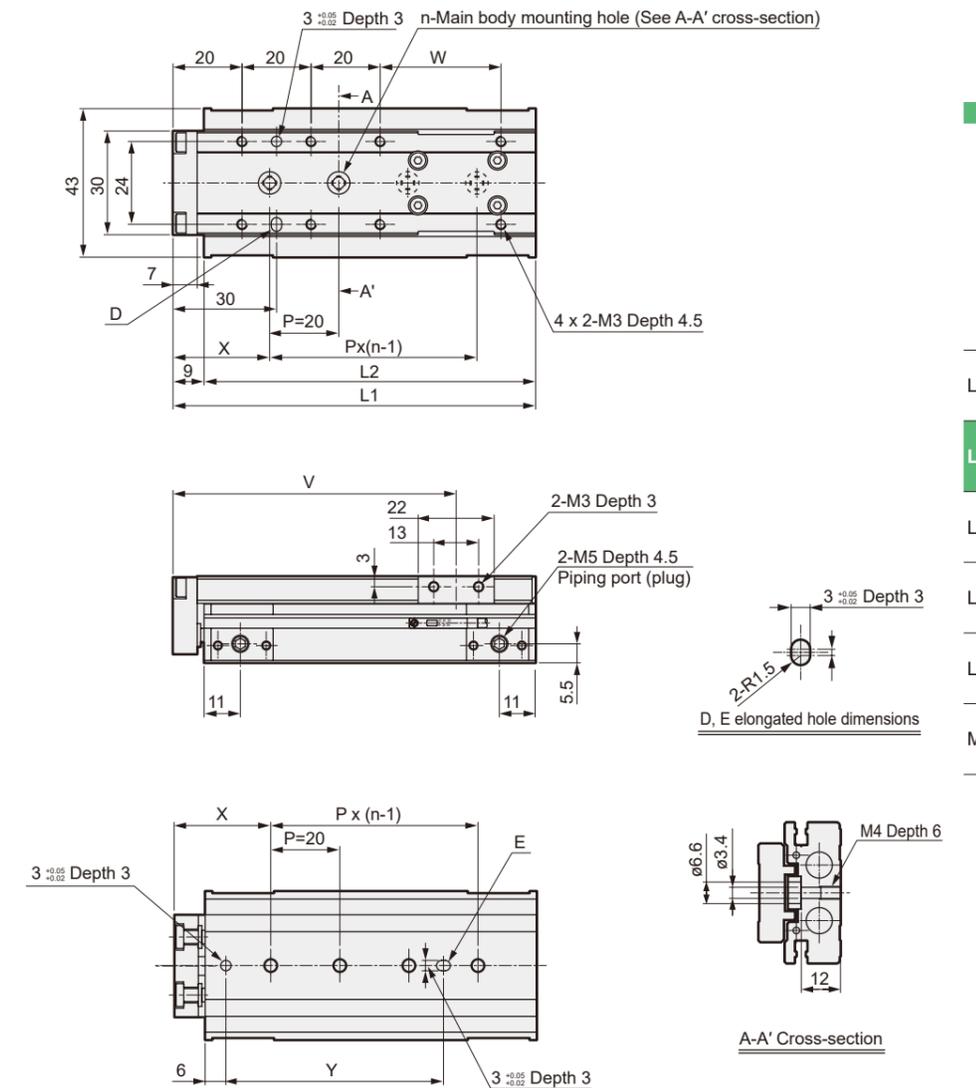
*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing

Outline dimension drawing (Bore size: $\varnothing 8$)

- LCR-8
- Stroke: 40, 50, 75
- (The main body mounting holes in this figure show the case of stroke 50)



Dimension table by stroke

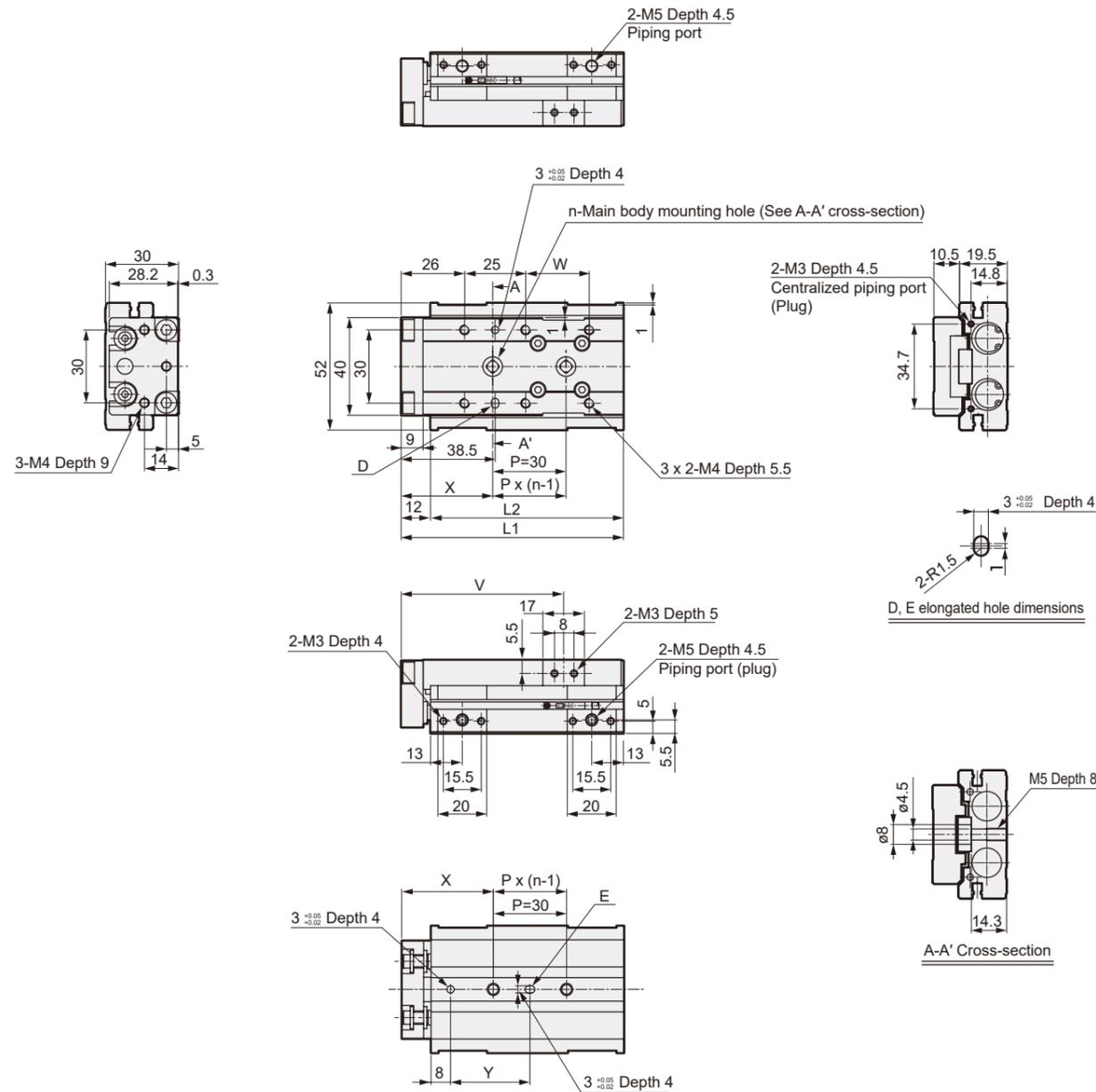
Code	Stroke		
	40	50	75
L1	95	105	130
L2	86	96	121
n	3	4	5
V	72	82	107
X	26.5	28	25
Y	41.5	63	80

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: $\phi 12$)

- LCR-12
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1		91	101	111	
L2		79	89	99	
n		2	3		
V		66.5	76.5	86.5	
W		26	36	46	
X		37.5	36	32	
Y		32.5	31	57	

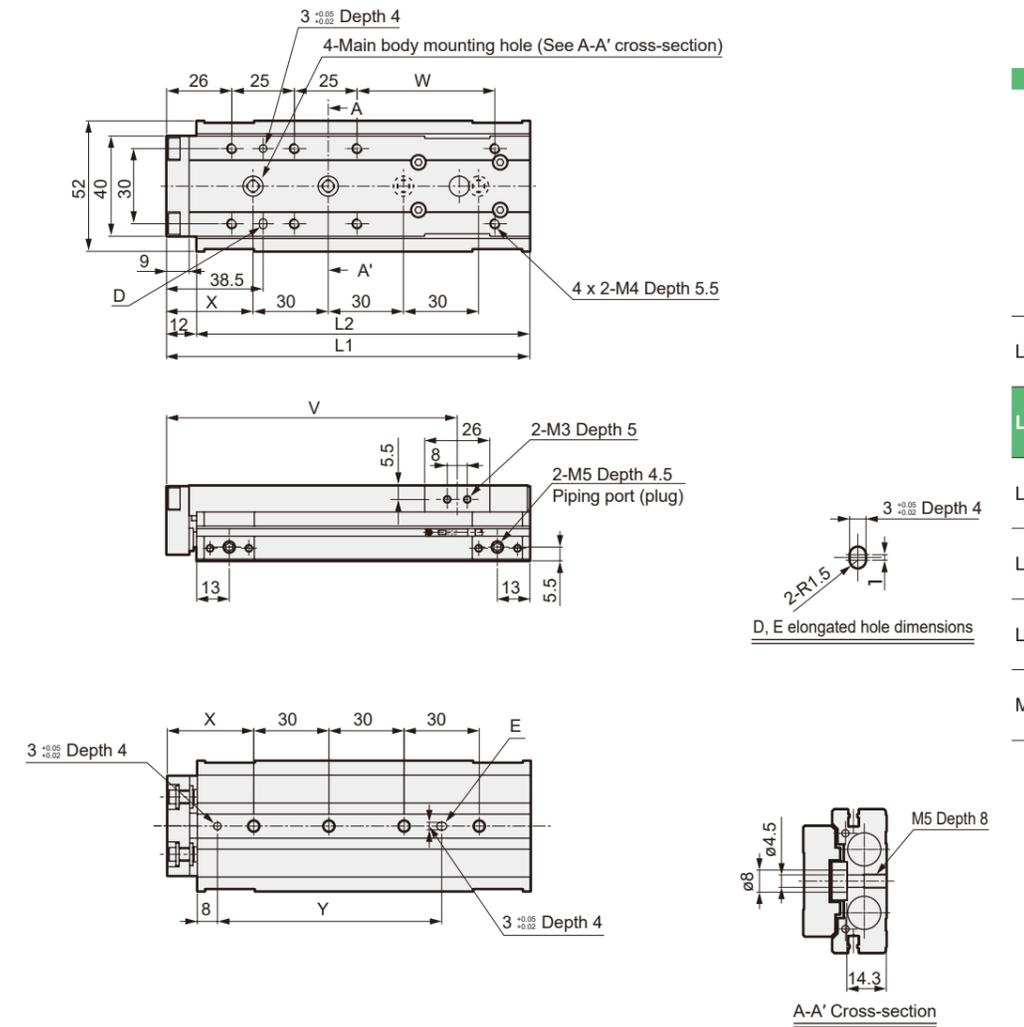
*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing

Outline dimension drawing (Bore size: $\phi 12$)

- LCR-12
Stroke: 75, 100
(The main body mounting holes in this figure show the case of stroke 75)



Dimension table by stroke

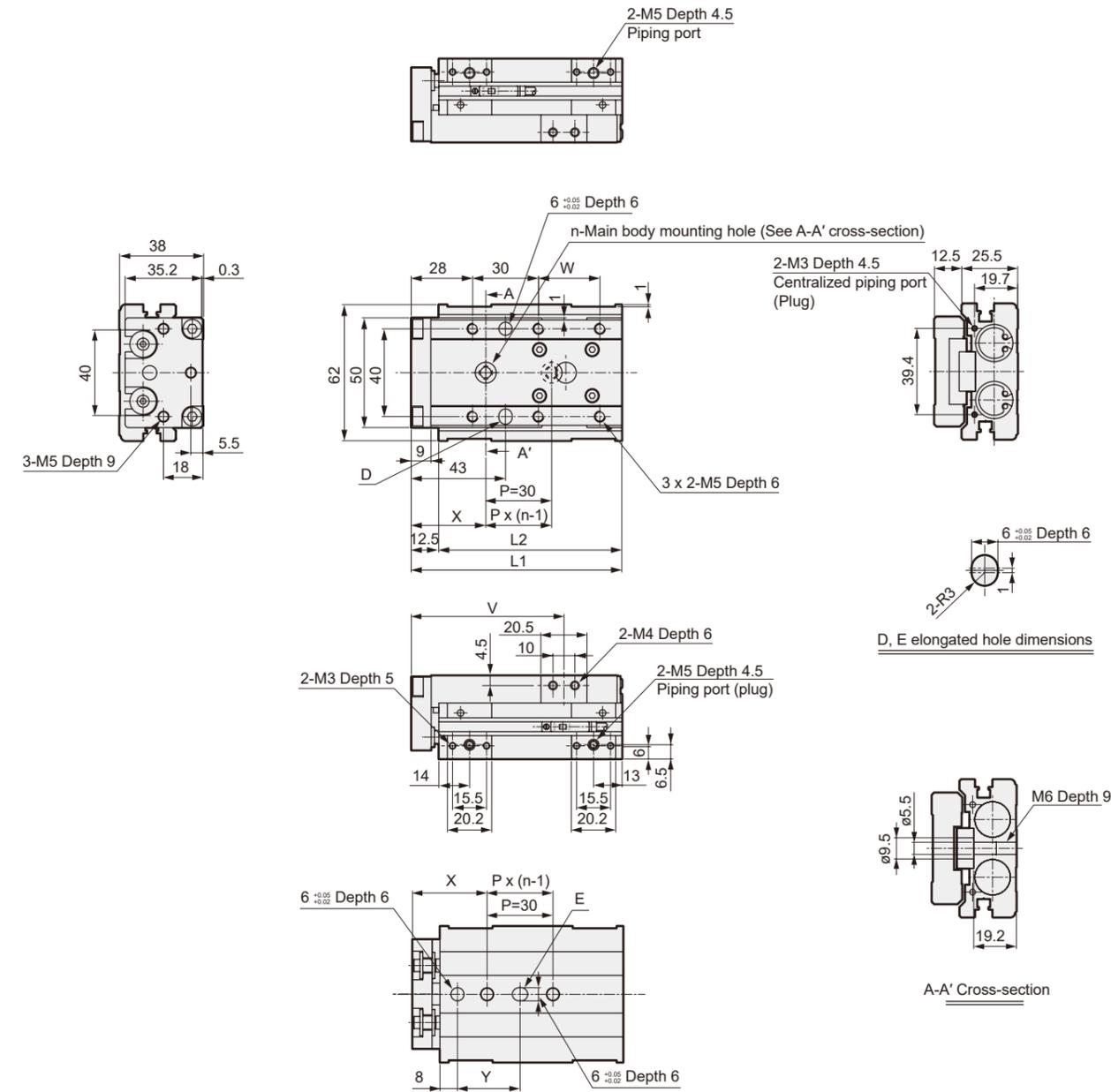
Code	Stroke	
	75	100
L1	145	170
L2	133	158
V	116	141
W	55	80
X	34.5	47
Y	89.5	102

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: $\phi 16$)

- LCR-16
- Stroke: 10, 20, 30, 40, 50
- (The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

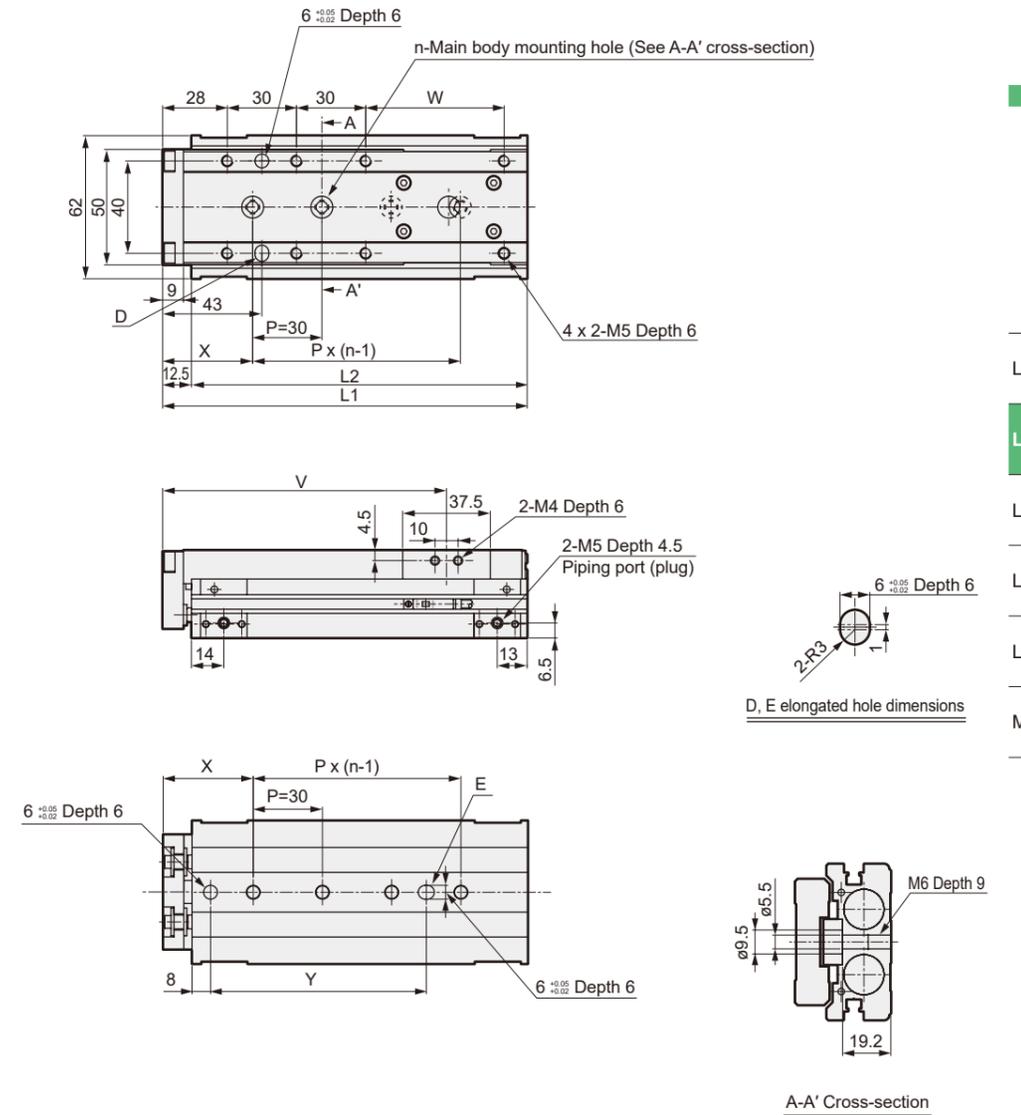
Code	Stroke				
	10	20	30	40	50
L1	96		106	116	
L2	83.5		93.5	103.5	
n	2		3		
V	69.8		79.8	89.8	
W	28		38	48	
X	34		45.5	35.5	
Y	28.5		40	60	

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
 *2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing

Outline dimension drawing (Bore size: $\phi 16$)

- LCR-16
- Stroke: 75, 100, 125
- (The main body mounting holes in this figure show the case of stroke 75)



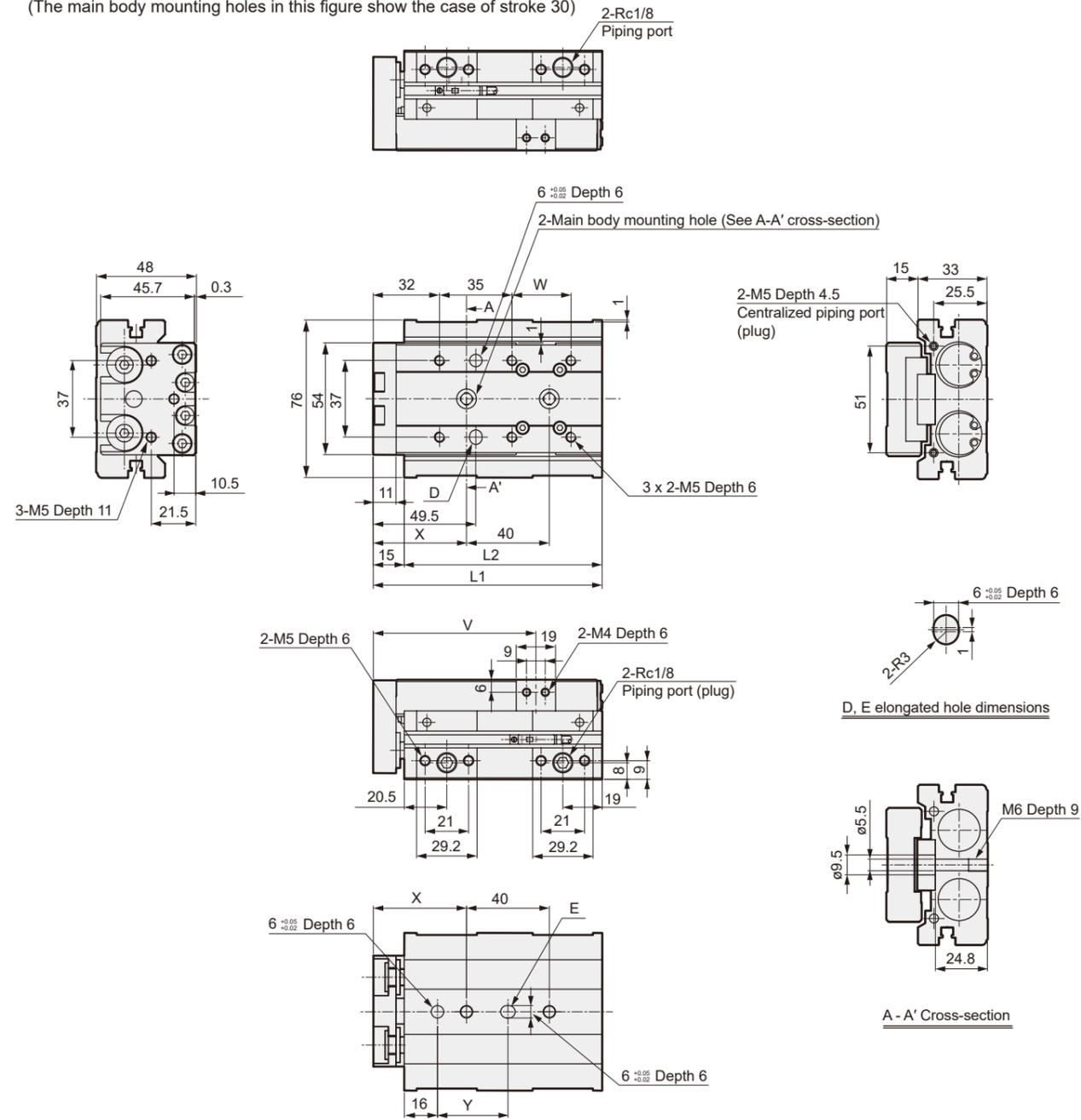
Dimension table by stroke

Code	Stroke		
	75	100	125
L1	158	183	208
L2	145.5	170.5	195.5
n	4	5	
V	123.3	148.3	173.3
W	60	85	110
X	39	37	49
Y	93.5	121.5	133.5

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
 *2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: $\varnothing 20$)

- LCR-20
- Stroke: 10, 20, 30, 40, 50
- (The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

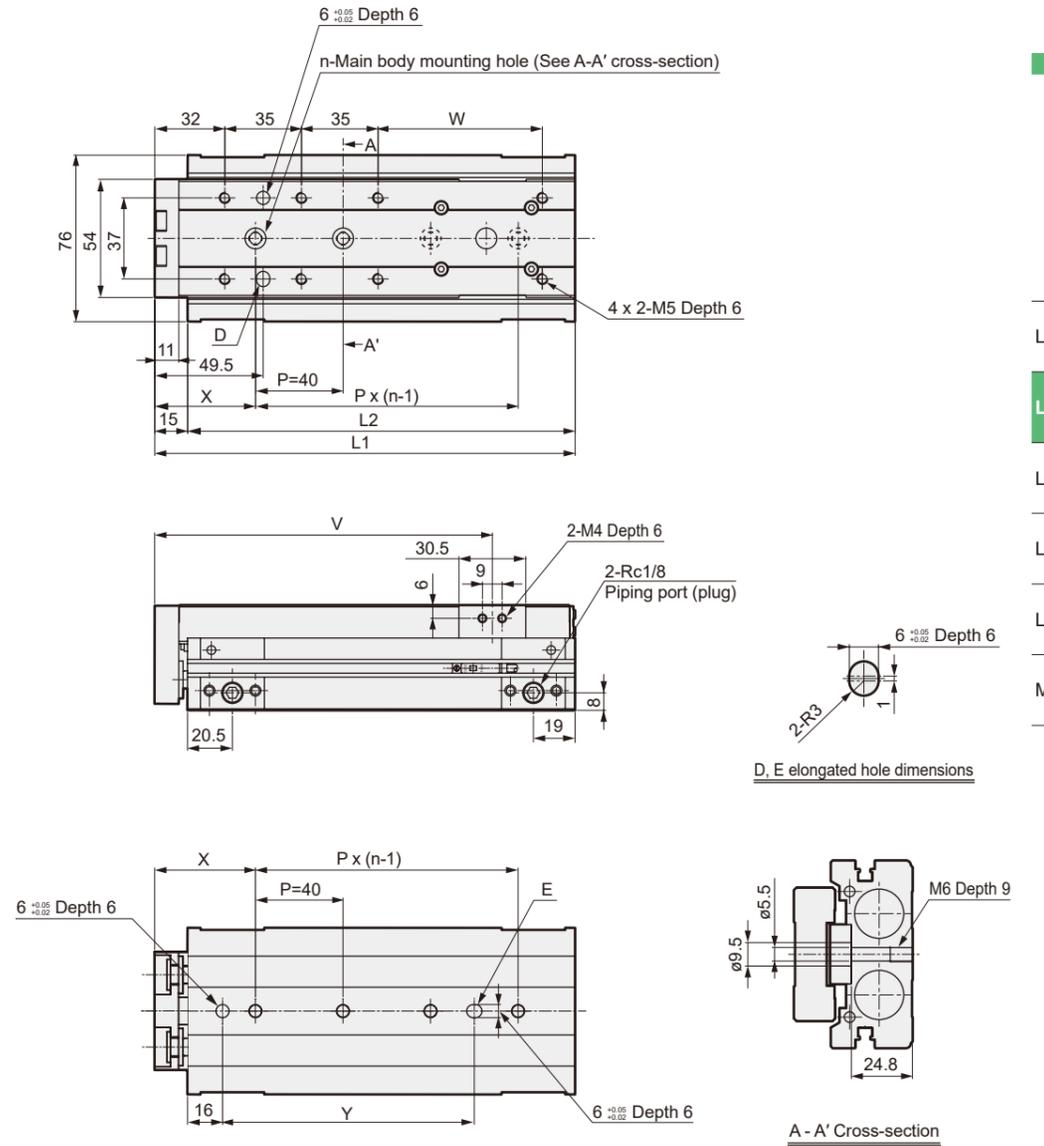
Code	Stroke				
	10	20	30	40	50
L1	110.5	120.5	130.5		
L2	95.5	105.5	115.5		
V	78.5	88.5	98.5		
W	28.5	38.5	48.5		
X	45	51	49		
Y	34	40	38		

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
 *2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing

Outline dimension drawing (Bore size: $\varnothing 20$)

- LCR-20
- Stroke: 75, 100, 125, 150
- (The main body mounting holes in this figure show the case of stroke 100)



Dimension table by stroke

Code	Stroke			
	75	100	125	150
L1	167	192	217	242
L2	152	177	202	227
n	3	4	5	
V	129.3	154.3	179.3	204.3
W	50	75	100	125
X	46	53	51	
Y	75	115	122	160

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
 *2: For dimensions of models with switches, see P. 112, 113.

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

With Linear Guide

LCM

LCR

LCG

LCW

LCX

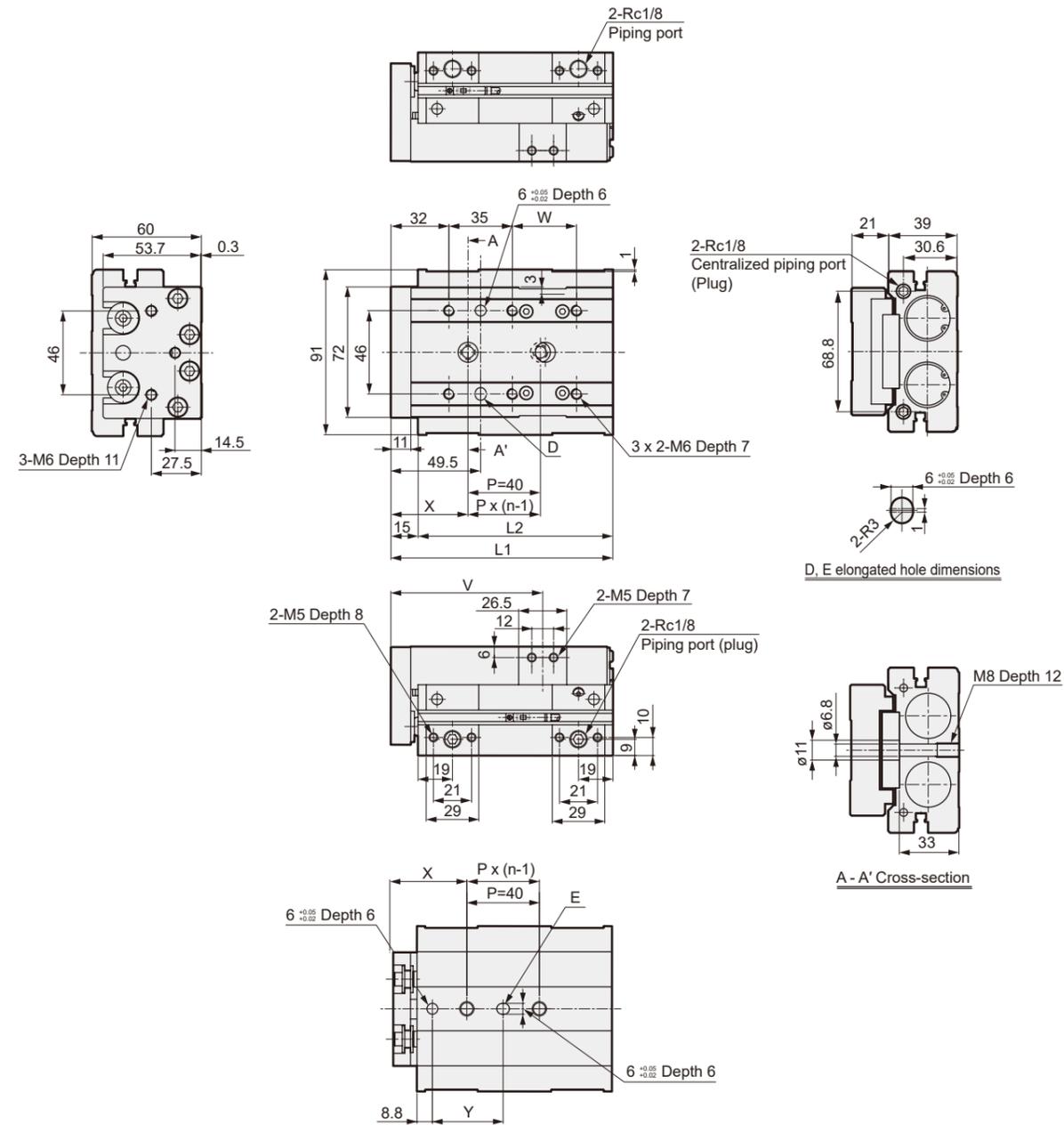
MSDG

Cylinder Switch

Ending

Outline Dimension Drawing (Bore size : $\phi 25$)

- LCR-25
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

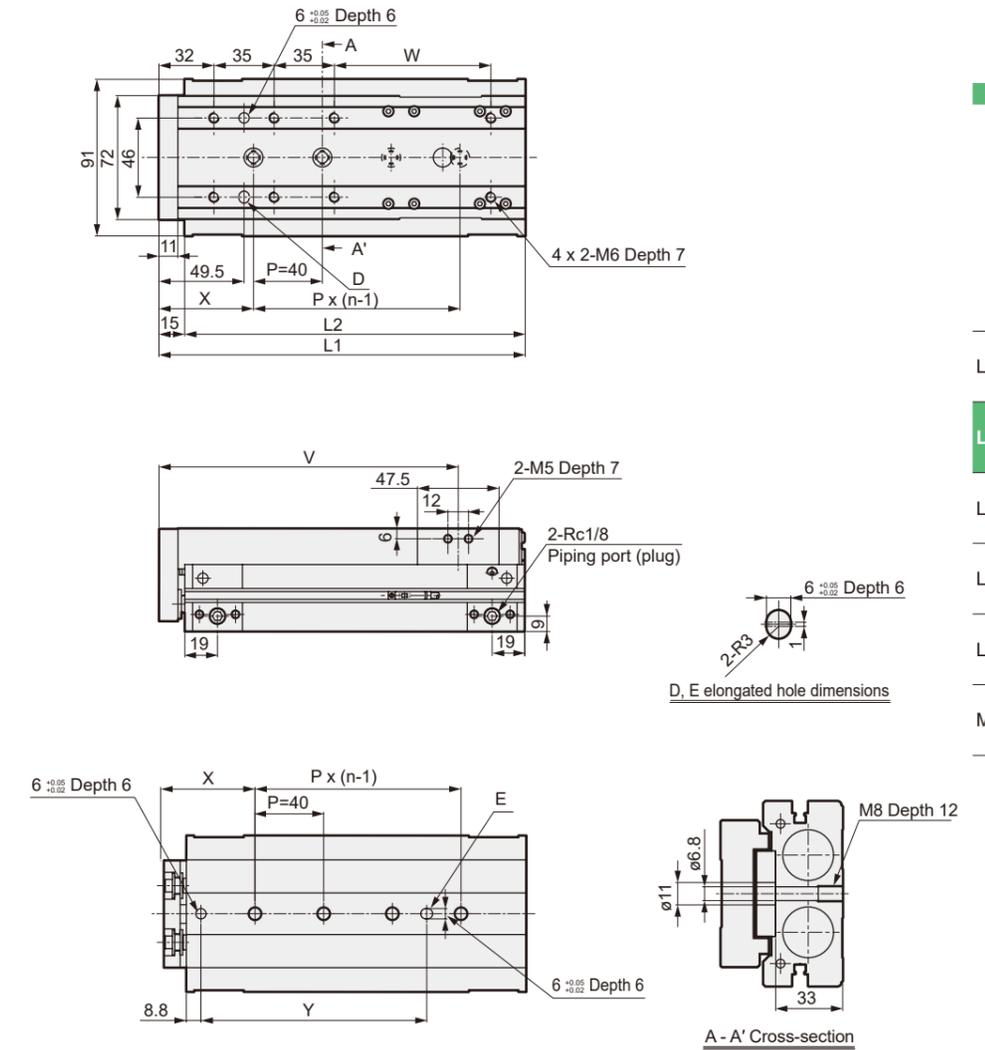
Code	Stroke				
	10	20	30	40	50
L1		122.5	132.5	142.5	
L2		107.5	117.5	127.5	
n		2	3	2	
V		83.8	93.8	103.8	
W		35.5	45.5	55.5	
X		42.5	45.5	60.5	
Y		39	42	57	

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing

Outline Dimension Drawing (Bore size : $\phi 25$)

- LCR-25
Stroke: 75, 100, 125, 150
(The main body mounting holes in this figure show the case of stroke 100)



Dimension table by stroke

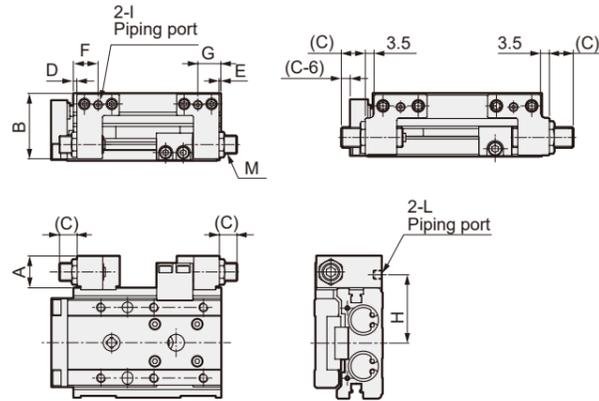
Code	Stroke			
	75	100	125	150
L1	188	213	238	263
L2	173	198	223	248
n	3	4	5	
V	138.8	163.8	188.8	213.8
W	66	91	116	141
X	60	55	45	60
Y	96.5	131.5	161.5	176.5

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outer Dimensions Diagram with Option

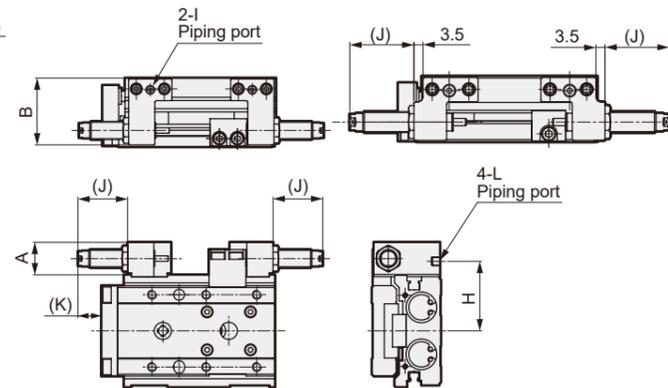
● Stroke adjustment stopper (S1 to S6)

For $\phi 8$



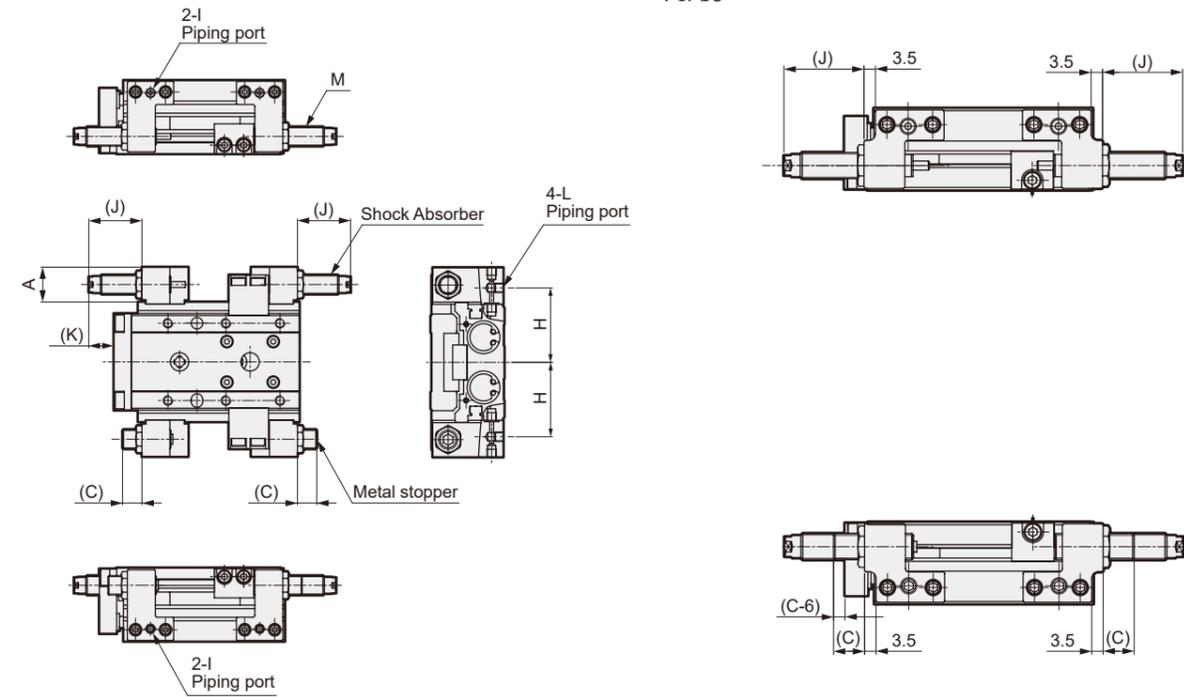
● Shock absorber type stopper (A1 to A6)

For $\phi 8$



● Double-sided combination double stopper (W1 to W6)

For $\phi 8$



Code Bore size (mm)	A	B	C			D	E	F	G	H	I	J	K	L	Shock absorber type stopper stroke adjustment range (one side)	M
			Stroke adjustment range													
			5 mm	15 mm	25 mm											
$\phi 6$	14	19.9	11	21	-	4	1	13.5	10.5	24	M3 Depth 3	20.5	9	M3 Depth 3	9	M8x0.75
$\phi 8$	15.6	24.5	9.5	19.5	-	0.5	0.5	11	11	27.3	M5 Depth 4	24.5	15.5	M5 Depth 4	13.5	M8x0.75
$\phi 12$	15.5	29	12	22	32	1	1	13	13	31	M5 Depth 4	24.5	12	M5 Depth 4	14.5	M8x0.75
$\phi 16$	18	37	10	20	30	2	1	14	13	38.5	M5 Depth 4	27.5	14	M5 Depth 4	15	M10x1
$\phi 20$	20.5	45.5	14.5	24.5	34.5	4	2.5	20.5	19	47	Rc1/8	27.5	9.5	M5 Depth 4	13	M12x1
$\phi 25$	20.5	57	11.5	21.5	31.5	2.5	2.5	19	19	54.5	Rc1/8	24.5	8	M5 Depth 4	10	M12x1

*1: F, G, H, I, and L dimensions are only for cases with stopper part port (S□□□, A□□, W□, C□□□).

*2: In the case of single-sided mixed stopper mix (C□), refer to stroke adjustment type stopper (S□) and Shock absorber type stopper (A□).

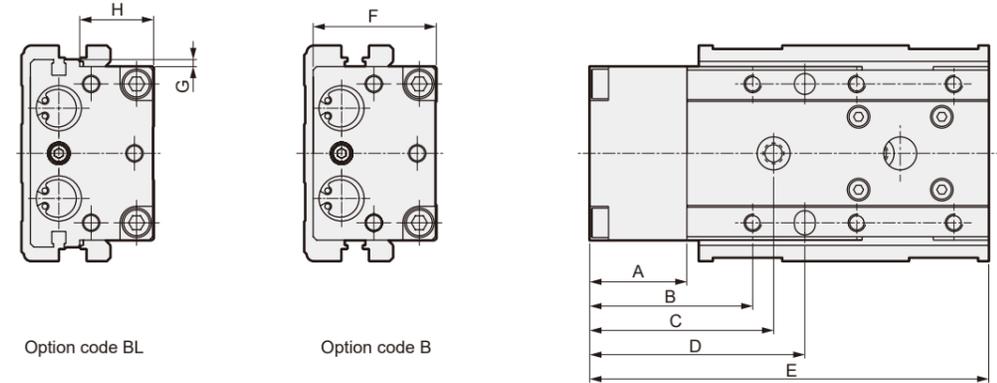
*3: S3□□ to S6□□, A3□□ to A6□□W□, W3□□ to W6□□, C□□ are not available for the drop prevention function type.

*4: In the case of double-sided combination double stopper (W□), the C dimension is for a stroke adjustment range of 15 mm.

Outer Dimensions Diagram with Option

Outer Dimensions Diagram with Option

● With buffer (B, BL)



Code Bore Size (mm)	A	B	C Stroke (mm)									D
			10	20	30	40	50	75	100	125	150	
			$\phi 6$	22.5	34	45	45	42.5	43.5	45	-	
$\phi 8$	21.5	34.5	42.5	42.5	42.5	41	42.5	39.5	-	-	-	44.5
$\phi 12$	27	44	55.5	55.5	55.5	54	50	52.5	65	-	-	56.5
$\phi 16$	28	47	53	53	53	64.5	54.5	58	56	68	-	62
$\phi 20$	31	52	65	65	65	71	69	66	66	73	71	69.5
$\phi 25$	34	55	65.5	65.5	65.5	68.5	83.5	83	78	68	83	72.5

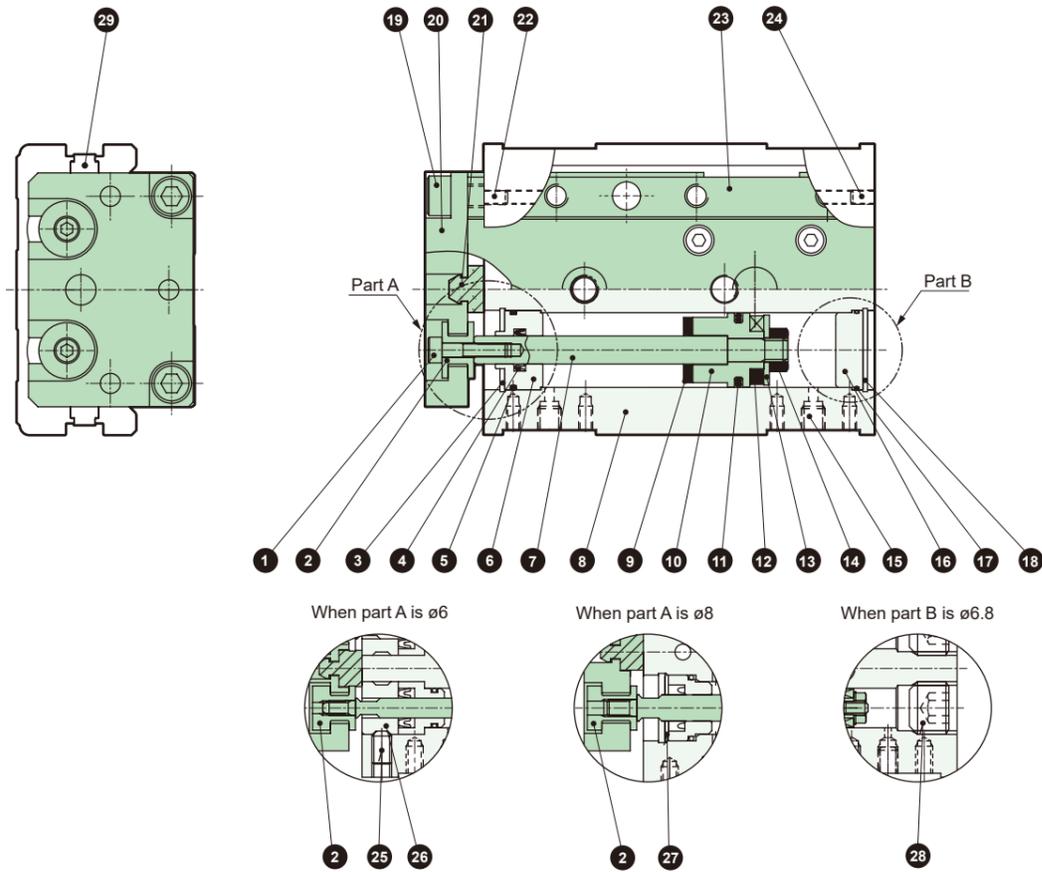
Code Bore Size (mm)	E Stroke (mm)									F	G	H
	10	20	30	40	50	75	100	125	150			
$\phi 6$	82.5	82.5	92.5	112.5	122.5	-	-	-	-	20	3.5	11.2
$\phi 8$	80.5	80.5	90.5	109.5	119.5	144.5	-	-	-	23.5	3.2	13.5
$\phi 12$	109	109	109	119	129	163	188	-	-	29	3.2	16
$\phi 16$	115	115	115	125	135	177	202	227	-	35.5	1	21.3
$\phi 20$	130.5	130.5	130.5	140.5	150.5	187	212	237	262	45.5	4	24.5
$\phi 25$	145.5	145.5	145.5	155.5	165.5	211	236	261	286	56	-	-

*Dimensions not indicated conform to the basic type.

Internal Structure Diagram / Material

Internal Structure Diagram/Material

● LCR



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Centering
1	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	16	Cover	Aluminum Alloy	Chromate
2	Floating bush	Stainless Steel		17	Cover gasket	Nitrile Rubber	
3	C-type retaining ring	Steel	ø8 to 25 only	18	C-type retaining ring	Steel	ø12 to 25 only
4	Rod Packing	Nitrile Rubber		19	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
5	Metal gasket	Nitrile Rubber		20	End plate	Aluminum Alloy	Alumite
6	Rod Metal	Aluminum Alloy	Alumite	21	Cushion rubber (H)	Urethane Rubber	
7	Piston Rod	Stainless Steel		22	Hexagon socket head set screw	Stainless Steel	
8	Cylinder Body	Aluminum Alloy	Hard Anodized	23	Table	Aluminum Alloy	Alumite
9	Cushion rubber (R)	Urethane Rubber		24	Plug	ø6 to ø20: Stainless steel ø25: Steel	
10	Piston	Aluminum Alloy	Chromate	25	Hexagon socket head set screw	Stainless Steel	
11	Piston Packing	Nitrile Rubber		26	Rod metal A	Aluminum Alloy	
12	Magnet	Plastic		27	Cap	Stainless Steel	
13	Plain Washer	Stainless Steel		28	Hexagon socket head set screw	Alloy Steel	Zinc Chromate
14	Hexagon Nut	Stainless Steel		With Switch			
15	Plug	ø6 to ø16: Stainless steel ø20 to ø25: Steel		29	Switch		

Consumable Parts List

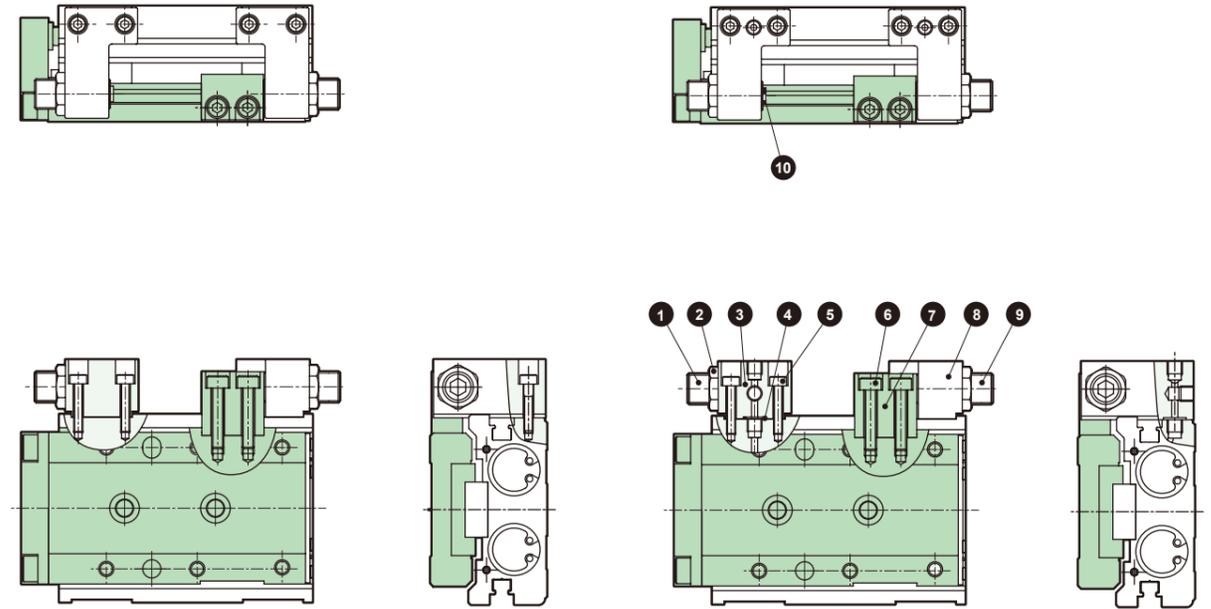
Bore Size (mm)	Kit Number	Consumable Part No.
ø6	LCR-6K	
ø8	LCR-8K	4 5 9
ø12	LCR-12K	11 17 21
ø16	LCR-16K	
ø20	LCR-20K	
ø25	LCR-25K	

Internal structure diagram / materials (Option)

With stopper

● When stopper part has no port (Blank)

● Stopper part port side, bottom available type (D)



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Stopper bolt	Alloy Steel	Nickel Plating	7	Stopper block (Stopper block code: Blank)	Steel	Nickel Plating
2	Hexagon Nut	Alloy Steel	Nickel Plating		Stopper block (Stopper block code: T)	Steel	Nitriding Treatment
3	Stopper A	Aluminum Alloy	Alumite				
4	Gasket	Urethane Rubber		8	Stopper B	Aluminum Alloy	Alumite
5	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	9	Stopper bolt	Alloy Steel	Nickel Plating
6	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	10	Cushion Rubber	Urethane Rubber	

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

Cylinder Switch

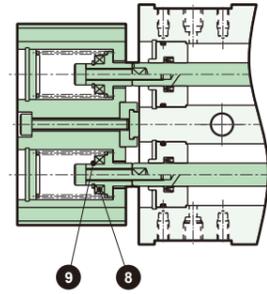
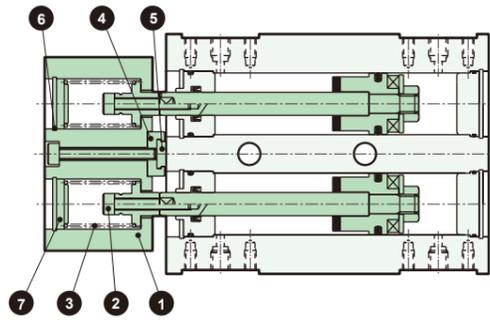
Ending

Internal structure diagram with buffer / materials (Option)

With buffer

● With buffer, without switch groove (B)

● With buffer, with switch groove (BL)



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Aluminum Alloy	Alumite	6	C-type retaining ring	Steel	
2	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	7	Cover	Aluminum Alloy	Chromate
3	Coil Spring	Steel		8	Magnet	Plastic	
4	Stopper	ø6: Stainless steel ø8 to ø25: Aluminum alloy		9	E-ring	ø6 to 12: Stainless steel ø16 to 25: Steel	
5	Cushion Rubber	Urethane Rubber					

MEMO

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

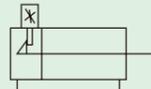


Linear Slide Cylinder Double Acting, Drop Prevention Type

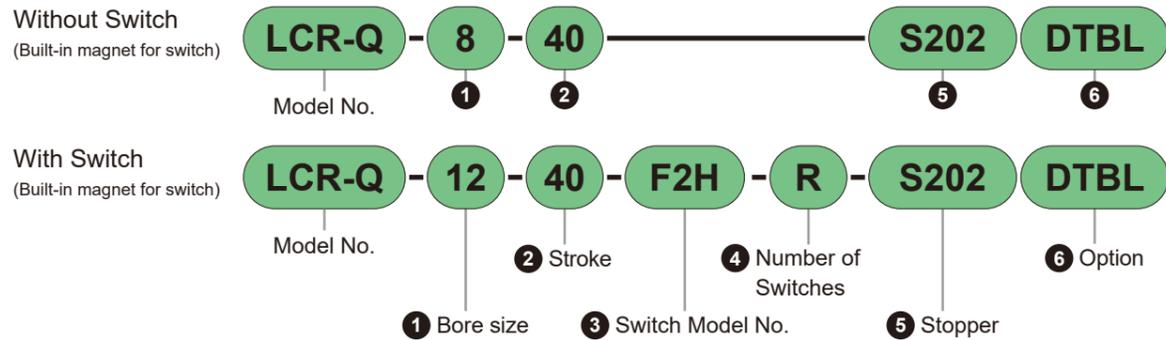
LCR-Q Series

● Bore size: ø8, ø12, ø16, ø20, ø25

Circuit Diagram Symbol



Model No. Notation Method



1 Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

2 Stroke (mm)

Stroke (mm)	Applicable Bore size				
	ø8	ø12	ø16	ø20	ø25
10	●	●	●	●	●
20	●	●	●	●	●
30	●	●	●	●	●
40	●	●	●	●	●
50	●	●	●	●	●
75	●	●	●	●	●
100		●	●	●	●
125			●	●	●
150				●	●

3 Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
		2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
	2-Color	3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
		2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-	30 or less	-	100 or less	T3PH□	T3PV□	
		2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
Reed	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
	No Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length" table.
 *2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
 *3: Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.
 *4: For Bore size ø16 to ø25, F type switch cannot be selected.
 *5: For Bore size ø8, ø12, T type switch cannot be selected.

4 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

*6: For F type switch, 5 m cannot be selected.

Example) Lead wire length
 1 m TOH
 3 m TOH³
 5 m TOH⁵

5 Stopper

For details, see P. 86.

Code	Content	Stopper mounting position
Blank	No stopper	
S Stroke adjustment stopper *3, 4, 5		
S1□□	Stopper position ① (④ Changeable to)	Stopper mounting position
S2□□	Stopper position ② (③ Changeable to)	
A Shock absorber type stopper *3, 4, 6, 7		
A1	Stopper position ① (④ Changeable to)	Stopper mounting position
A2	Stopper position ② (③ Changeable to)	
W Double-sided combination double stopper (Shock absorber type stopper, Metal stopper)		
W1	A1 + Metal stopper	Stopper mounting position
W2	A2 + Metal stopper	
□□ part Stroke adjustment range ● Applicable to all. *9		
	Extension end side	Stopper model No.
		S A W
Blank	5 mm	●
02	15 mm	●
03	25 mm	●

*1: For stopper positions ① to ④, refer to the diagram on the right.
 *2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
 *3: For combinations of metal stoppers and Shock absorber type stoppers, refer to 5 Stopper "W□".
 *4: For ø8 with a stroke of 30 or less and S□□□ or A□, if using 2 switches, select the F□H type switch.
 *5: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
 *6: For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.
 *7: A1, A2, and A5 for ø8 with a stroke of 10 or less, and ø12 to ø25 with a stroke of 20 or less cannot be adjusted with standard stoppers, so they are custom-ordered products.
 *8: If the double-sided combination type (W) is selected, the stroke adjustment range will be ø8: 13.5 mm, ø12: 14.5 mm, ø16: 15 mm, ø20: 13 mm, ø25: 10 mm.
 *9: Selectable only when using stroke adjustment stopper (S).
 *10: Since the lock mechanism engages at the stroke end, do not install stoppers at positions ③④.
 *11: For stopper combinations, refer to the combination availability table on P. 86.

Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

LCR-Q - - P4□

*Please contact us for details.

LCR-Q Series

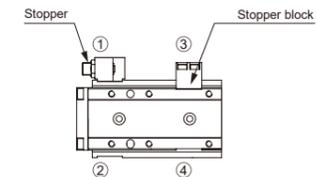
Model No. Notation Method

6 Option

Code	Content
Stopper part port *2, 5	
Blank	No port
D	Side and bottom ports available
Stopper block material *2	
Blank	Steel
T	Steel (nitriding treatment)
With buffer *3	
B	Without switch groove
BL	With switch groove

*1: For port positions, refer to the stopper outline drawing P. 78.
 *2: Selectable only when stopper type is selected.
 *3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 87.
 *4: Select when using with rear piping.
 *5: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

● Stopper position (*10)



With Linear Guide

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LCR

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LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

Cylinder Switch

Ending

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③] Example) LCR-Q-8-40- [S] [2] 06

		Stopper type [①]		
		Stroke adjustment type (single side)	Shock absorber type (single side)	Double-sided combination double stopper
		[S]	[A]	[W]
Stopper position [②]	[1]	[S1]	[A1]	[W1]
	[2]	[S2]	[A2]	[W2]

▲ indicates the piping direction.
 If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲ (piping direction) will have a plug.

● : Shock absorber type stopper
 ■ : Stroke adjustment stopper (adjustment range 5 mm)
 ■ : Stroke adjustment stopper (adjustment range 15 mm)
 ■ : Metal stopper (adjustment range 15 mm)

2 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③Stroke adjustment range]

Example) LCR-Q-8-40-S1 [02]
 In case of stroke adjustment stopper -S

		Stopper adjustment range	Stopper type, Stopper position [①②]	
			Extension end side	[S1]
Stroke adjustment range [③]	Blank	5 mm		
	[02]	15 mm		
	[03]	25 mm		

■ : Stroke adjustment stopper (adjustment range 5 mm)
 ■ : Stroke adjustment stopper (adjustment range 15 mm)
 ■ : Stroke adjustment stopper (adjustment range 25 mm)

▲ indicates the piping direction.
 Cannot be selected for Shock absorber type [A] or double-sided combination type [W].

LCR-Q Drop Prevention Type Combination Availability Table

(Combination with stroke adjustment stopper, Shock absorber type stopper)

● : Not combinable - : Not combinable

Option Code		Stroke adjustment stopper						Shock absorber type stopper		Double-sided combination double stopper	
Bore size	Stroke	S1			S2			A1	A2	W1	W2
		Adjustment range symbol									
		Blank	02	03	Blank	02	03				
ø8	10	●	-	-	●	-	-	-	-	-	-
	20 or more	●	●	-	●	●	-	●	●	●	●
ø12 to ø25	10	●	-	-	●	-	-	-	-	-	-
	20	●	●	-	●	●	-	-	-	-	-
	30 or more	●	●	●	●	●	●	●	●	●	●

Option Code D: Stopper part with port, T: Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (● : Selectable - : Not selectable)

Switch Single Unit Model No. Notation Method

● For buffer

SW - F2H SW - F 2 V 3

③ Switch Model No. (P. 84, Section ③)

⑦ Output format ⑧ Lead wire length

L-shaped lead wire type

⑦ Output format		⑧ Lead wire length	
Code	Content	Code	Content
2	DC 2-wire solid-state	Blank	1 m (Standard)
3	DC 3-wire solid-state	3	3 m (Option)

Stopper Set Model No. Notation Method

(Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.)

- Set of stopper part and stroke adjustment stopper or Shock absorber type stopper
- Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper

LCR - 12 - S 2 D - S02

① Bore size ⑩ Stopper mounting position ⑫ Stroke adjustment amount

⑨ Stopper type ⑪ Stopper part port

⑨ Stopper type	
Code	Content
S	Stroke adjustment stopper
A	Shock absorber type stopper

⑩ Stopper mounting position	
Code	Content
1	Stopper position ①
2	Stopper position ②

⑪ Stopper part port	
Code	Content
Blank	No port
D	Side/bottom ports available

⑫ Stroke adjustment amount	
Code	Content
Blank	Stroke adjustment range 5 mm
S02	Stroke adjustment range 15 mm
S03	Stroke adjustment range 25 mm

*1: The bottom port is sealed with a plug. When using the bottom port with ø20 or 25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

*1: The relationship of the stroke adjustment amount changes depending on the stroke, so refer to the table below.
 *2: Cannot be selected in the case of ● Shock absorber type stopper "A".

Precautions when purchasing a stopper set

Please note that the stroke adjustment amount will be as shown on the right depending on the stroke.

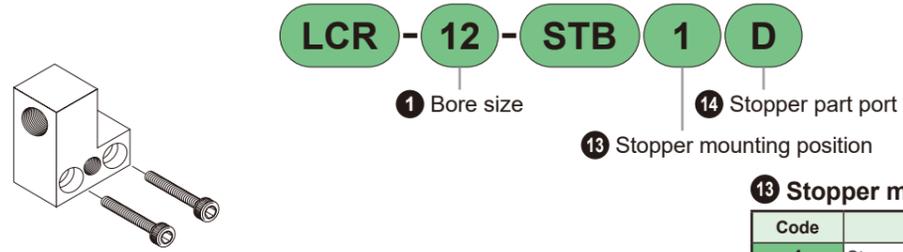
Model No. code	Option Code		Stroke adjustment stopper single item		
	Bore size	Stroke	Stroke adjustment amount (mm)		
			-5	-15	-25
LCR-Q Series	ø8	10	S02	-	-
		20 or more	Blank	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	Blank	S02	S03

● Stopper set weight (Unit : g)

Stopper type	S1, S2		A1, A2	
	Blank, D			
Stroke adjustment amount	Blank			
	Blank	S02	S03	Blank
ø8	21	25	-	27
ø12	28	31	34	33
ø16	42	47	52	49
ø20	77	85	92	86
ø25	87	94	101	95

Stopper Bracket Single Item Model No. Notation Method

(Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.
 ● Used when changing stopper mounting position ① ↔ ②, or when changing to a stopper with port.



● Stopper bracket weight (Unit: g)

Stopper mounting position	1, 2
Stopper part port	Blank, D
Bore size	
ø8	14
ø12	20
ø16	29
ø20	53
ø25	62

13 Stopper mounting position

Code	Content
1	Stopper position ①
2	Stopper position ②

14 Stopper part port

Code	Content
Blank	No port
D	Side/Bottom ports available

*The bottom port is sealed with a plug. When using the bottom port with ø20 or 25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

Shock absorber Type Stopper Single Item Model No. Notation Method

● Shock absorber set
 ● Used when changing from stroke adjustment stopper to Shock absorber type stopper



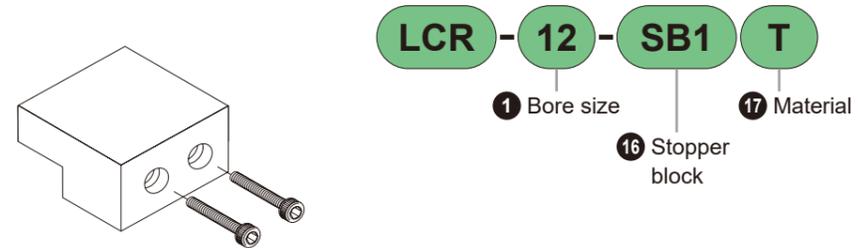
Shock absorber model No. used

Model	Shock absorber model No.	Weight (g)
LCR-8	SKL-0805	12
LCR-12	SKL-0805	12
LCR-16	SKL-1006	19
LCR-20	SKL-1208	31
LCR-25	SKL-1208	31

Note) Some model Nos. may not be compatible. See P. 84. For the stroke adjustment range of the Shock absorber type stopper, see P. 78.

Stopper Block Single Item Model No. Notation

● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



16 Stopper block

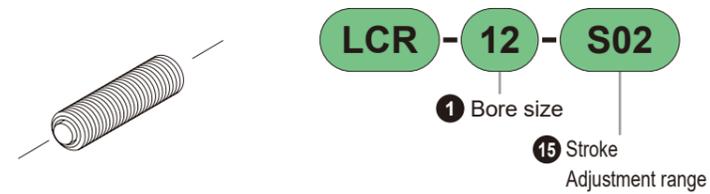
Code	Content
SB1	ø8 : For 30 strokes or less ø12 to ø25: For 50 strokes or less
SB2	ø8 : For 40 strokes or more ø12 to ø25: For 75 strokes or more

17 Material

Code	Content
Blank	Stopper block material Steel
T	Stopper block material Steel (nitriding treatment)

Stroke Adjustment Stopper Single Item Model No. Notation Method

● Hexagon socket set screw with urethane
 ● Used when changing stroke adjustment range or setting intermediate stroke



15 Stroke adjustment range

Code	Content
S01	One side 5 mm (Standard)
S02	One side 15 mm
S03	One side 25 mm

**"S03" cannot be selected for ø8. Some model Nos. may not be compatible or the stroke adjustment range may differ from the above.

Precautions when purchasing stopper single items

Please note that the combination will be as shown on the right depending on the stroke and stroke adjustment amount.

- : Not combinable

Model No. code	Option Code		Stroke adjustment stopper single item Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCR Series -S1, S2	ø8	10	S02	-	-
		20 or more	S01	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	S01	S02	S03
			S01	S02	S03

● Stopper for Stroke Adjustment, Single Unit Weight (Unit : g)

Stroke adjustment range	S01	S02	S03
Bore size			
ø8	7	10	-
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

Specifications

Item	LCR-Q				
Bore size mm	ø8	ø12	ø16	ø20	ø25
Actuation method	Double Acting Type				
Operating Fluid	Compressed Air				
Max. Working Pressure MPa	0.7				
Min. Operating Pressure MPa	0.15				
Proof Pressure MPa	1.05				
Ambient Temperature °C	-10 to 60 (however, no freezing)				
Port Size	Main body side	M5			Rc1/8
	Main body rear	None			
Stroke tolerance mm	+2.0 0 ^(*)				
Operating Piston Speed mm/s	50 to 500				
Cushion	With Rubber Cushion				
Fall prevention mechanism	Head Side				
Holding Force N	During PULL, maximum thrust (at 0.7 MPa) x 0.7				
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorption energy J	Refer to Table 3 on P. 114.				

*1: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
*2: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

*Strokes other than the above cannot be manufactured.

With buffer specification Specifications other than the following are the same as the common specifications above.

Item	Content					
Bore size mm	ø8	ø12	ø16	ø20	ø25	
Buffer Stroke mm	4	9		10		
Buffer part	At SET N	5	10	13	17	21
spring load	During operation N	8	14	20	25	29

*1: If rod side stroke adjustment is performed with a buffer, the buffer stroke will be shortened by the stroke adjustment amount, and the spring load at set will also increase.
*2: Use a buffer stroke less than the stroke above. This will cause malfunction or damage.

Theoretical Thrust Table

See P. 115.

Cylinder Weight

● Drop prevention type (Unit : g)

Bore size (mm)	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
ø8	260	260	280	330	360	420	-	-	-
ø12	415	425	425	465	495	625	715	-	-
ø16	670	680	680	730	790	1,20	1,150	1,290	-
ø20	1,150	1,160	1,170	1,250	1,340	1,640	1,850	2,60	2,270
ø25	2,0	2,20	2,30	2,140	2,240	2,730	3,0	3,270	3,540

● Option increase (Unit : g)

Bore size (mm)	Stopper code		With buffer
	S1, S2	A1, A2	B, BL
ø8	40	50	40
ø12	70	80	70
ø16	110	120	80
ø20	170	180	150
ø25	290	300	320

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

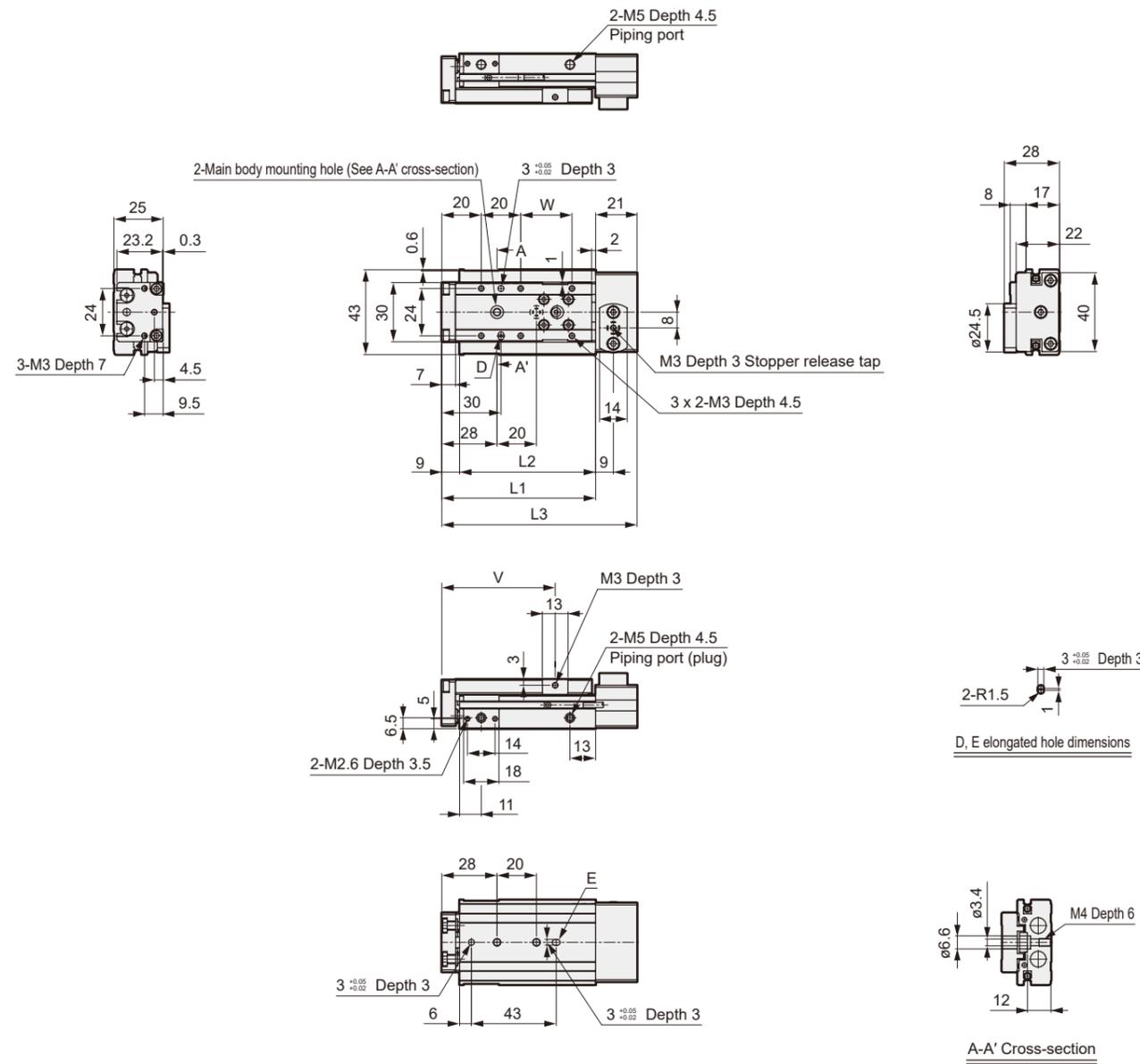
Ending

Cylinder Switch

Ending

Outline dimension drawing (Bore size: $\varnothing 8$)

● LCR-Q-8
Stroke: 10, 20, 30



Dimension table by stroke

Code	Stroke		
	10	20	30
L1	68	78	78
L2	59	69	69
L3	89	99	99
V	47.5	57.5	57.5
W	16	26	26

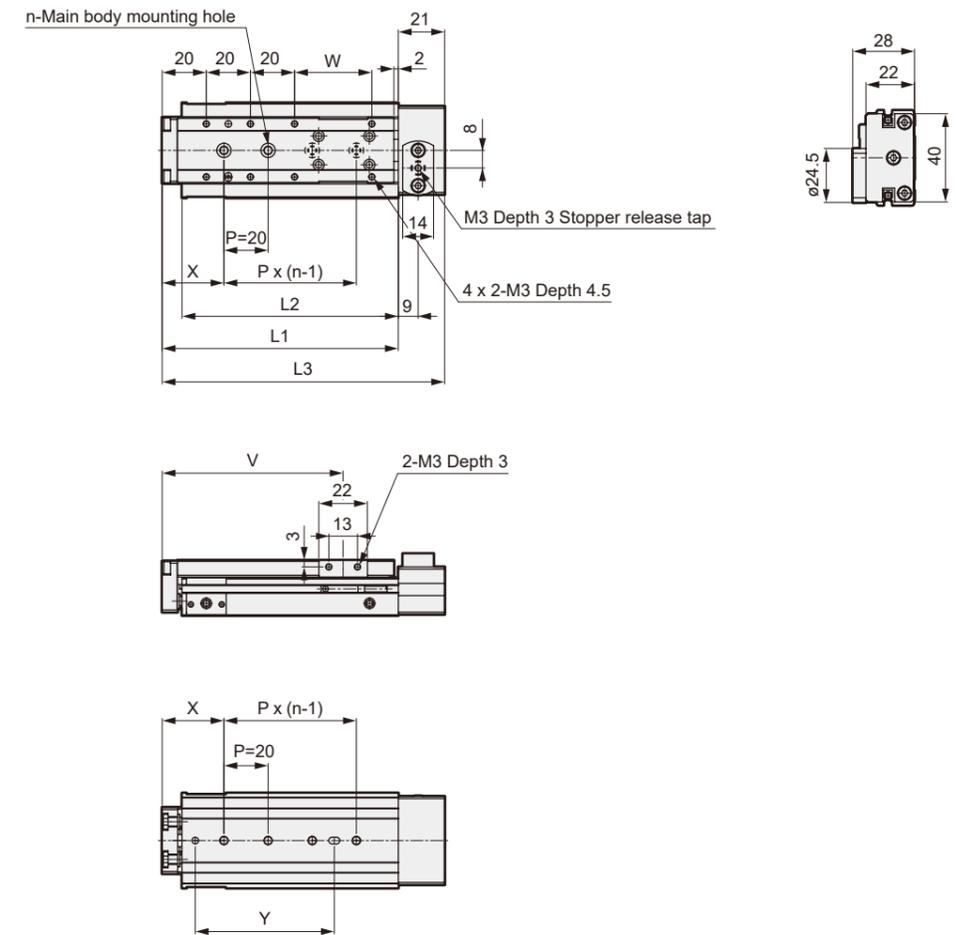
*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing

Outline dimension drawing (Bore size: $\varnothing 8$)

● LCR-Q-8
Stroke: 40, 50, 75



Dimension table by stroke

Code	Stroke		
	40	50	75
L1	97	107	132
L2	88	98	123
L3	118	128	153
n	3	4	5
V	72	82	107
W	25	35	60
X	26.5	28	25
Y	41.5	63	80

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

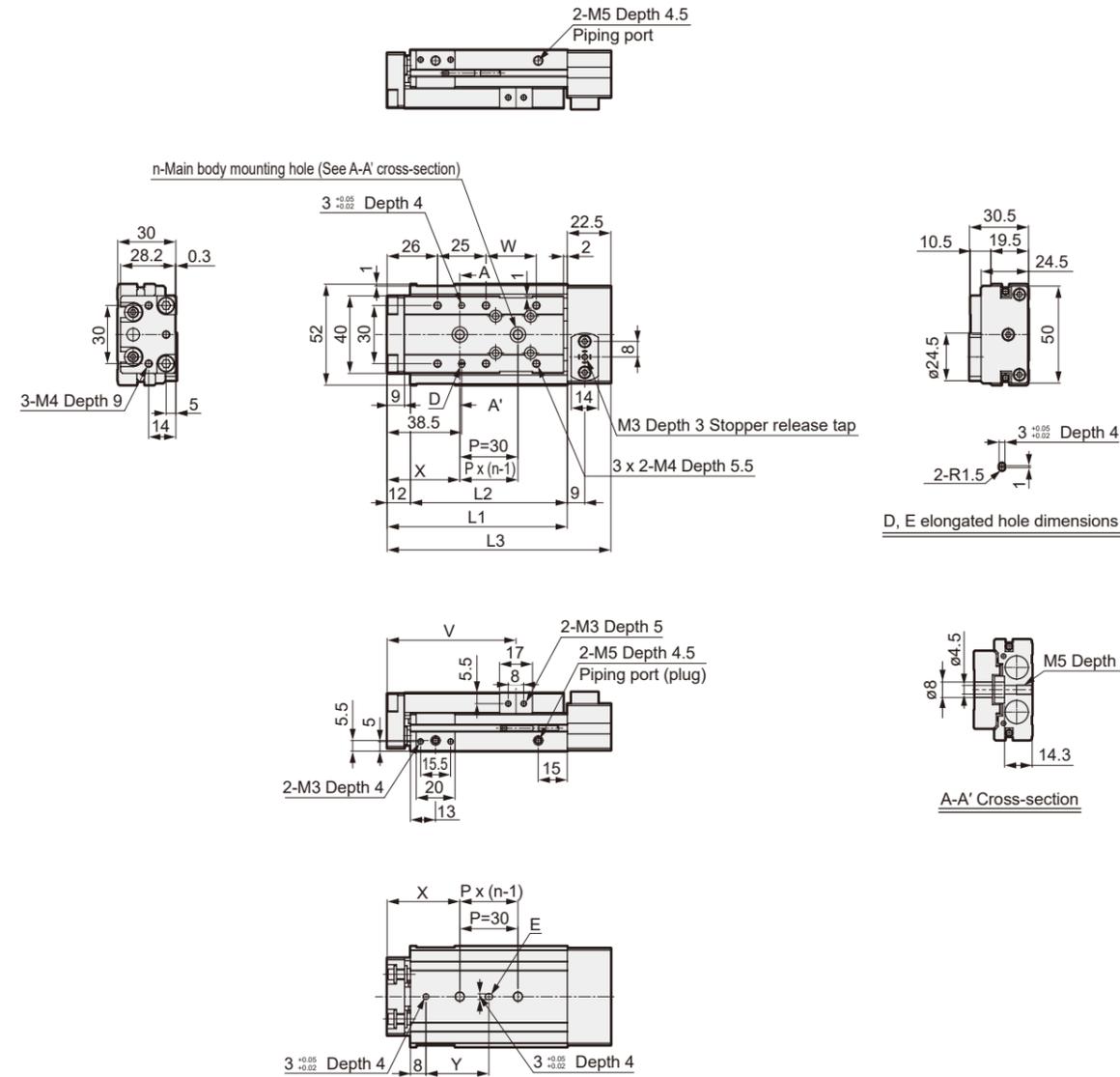
*2: For dimensions of models with switches, see P. 112, 113.

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

With Linear Guide
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LCX
MSDG
Cylinder Switch
Ending

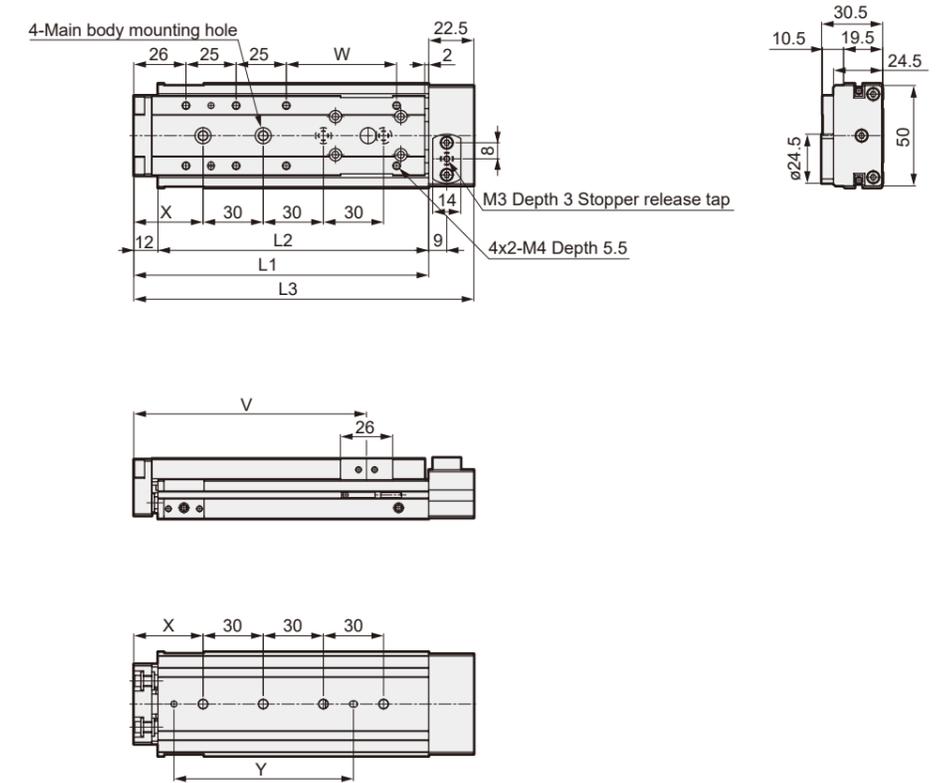
Outline dimension drawing (Bore size: $\phi 12$)

- LCR-Q-12
Stroke: 10, 20, 30, 40, 50



Outline dimension drawing (Bore size: $\phi 12$)

- LCR-Q-12
Stroke: 75, 100



Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	93		103	113	
L2	81		91	101	
L3	115.5		125.5	135.5	
n	2		3		
V	66.5		76.5	86.5	
W	26		36	46	
X	37.5		36	32	
Y	32.5		31	57	

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Dimension table by stroke

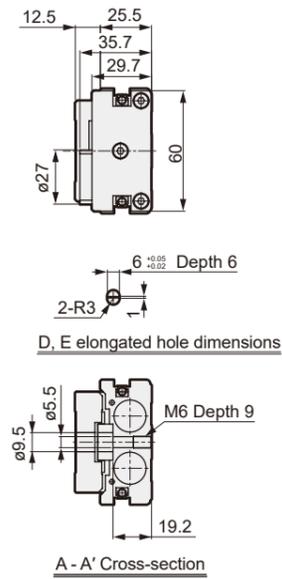
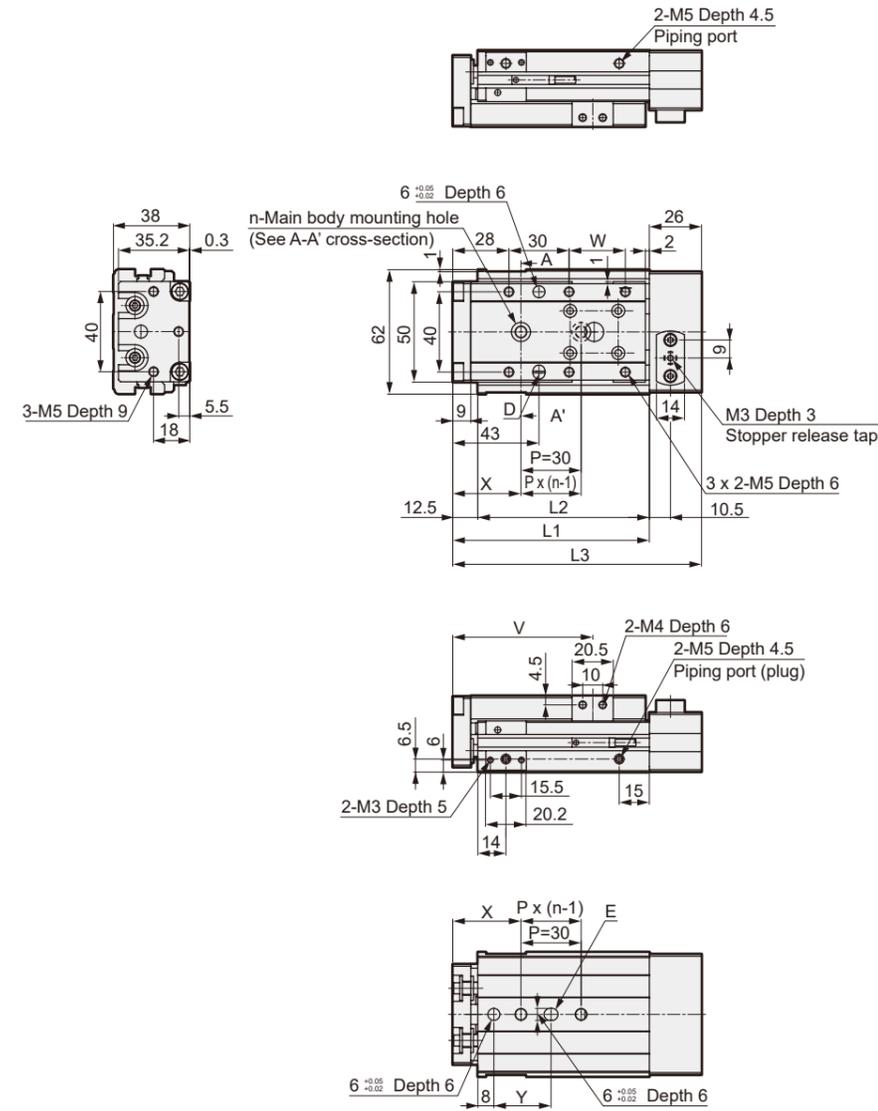
Code	Stroke	
	75	100
L1	147	172
L2	135	160
L3	169.5	194.5
V	116	141
W	55	80
X	34.5	47
Y	89.5	102

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

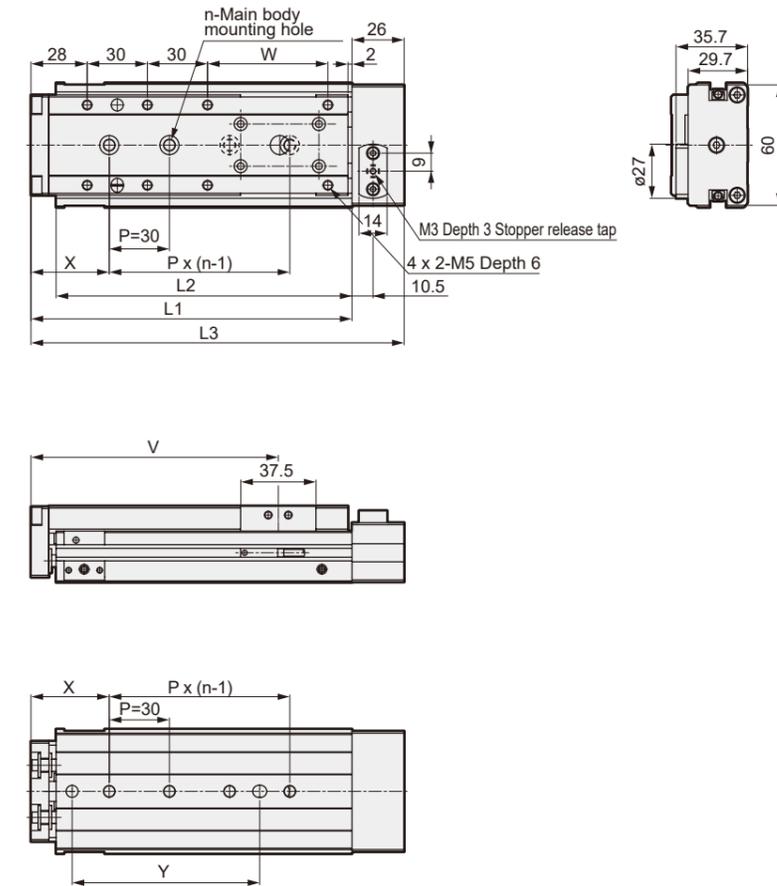
Outline dimension drawing (Bore size: $\phi 16$)

- LCR-Q-16
Stroke: 10, 20, 30, 40, 50



Outline dimension drawing (Bore size: $\phi 16$)

- LCR-Q-16
Stroke: 75, 100, 125



Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	98			108	118
L2	85.5			95.5	105.5
L3	124			134	144
n	2				3
V	69.8		79.8	89.8	
W	28		38	48	
X	34		45.5	35.5	
Y	28.5		40	60	

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Dimension table by stroke

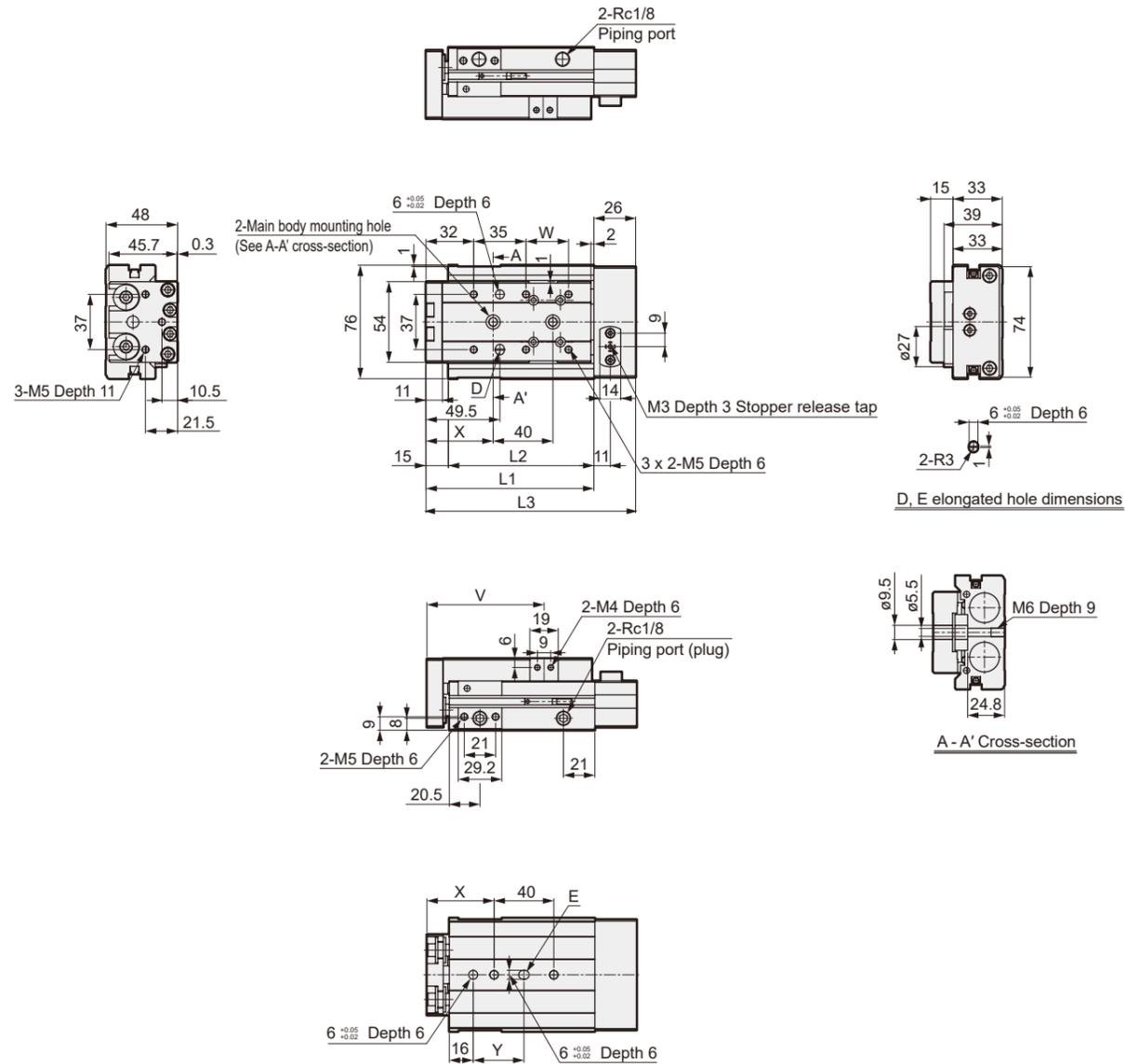
Code	Stroke		
	75	100	125
L1	160	185	210
L2	147.5	172.5	197.5
L3	186	211	236
n	4		5
V	123.3	148.3	173.3
W	60	85	110
X	39	37	49
Y	93.5	121.5	133.5

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: $\phi 20$)

- LCR-Q-20
- Stroke: 10, 20, 30, 40, 50



Dimension table by stroke

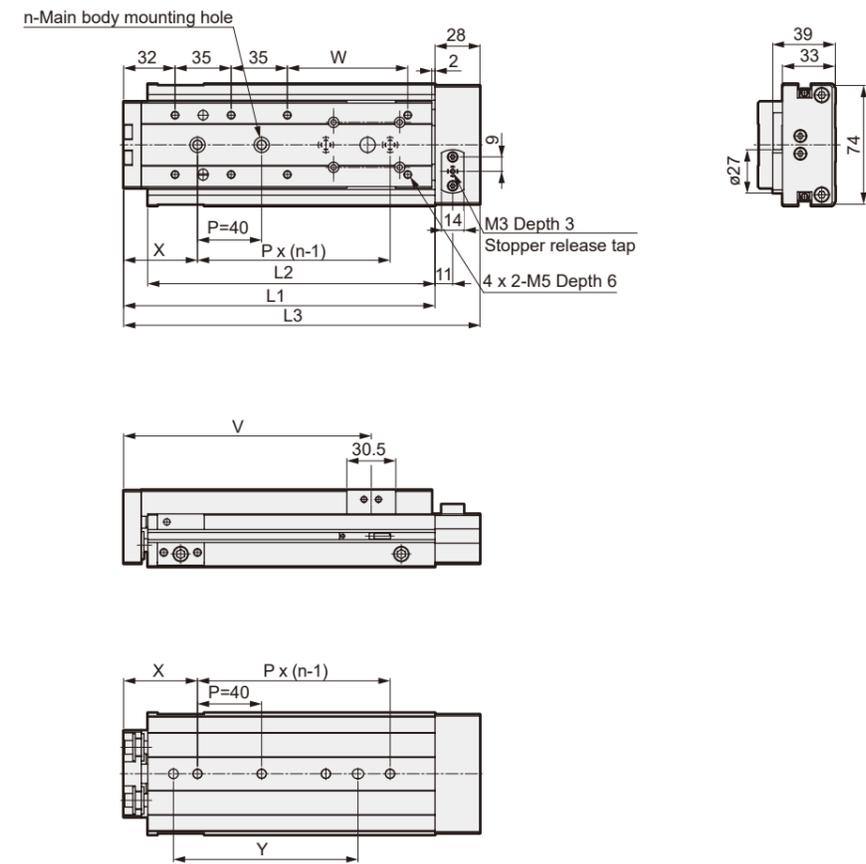
Code	Stroke				
	10	20	30	40	50
L1		112.5		122.5	132.5
L2		97.5		107.5	117.5
L3		140.5		150.5	160.5
V		78.5		88.5	98.5
W		28.5		38.5	48.5
X		45		51	49
Y		34		40	38

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112 and P. 13.

Outline dimension drawing (Bore size: $\phi 20$)

- LCR-Q-20
- Stroke: 75, 100, 125, 150



Dimension table by stroke

Code	Stroke			
	75	100	125	150
L1	169	194	219	244
L2	154	179	204	229
L3	197	222	247	272
n	3	4		5
V	129.3	154.3	179.3	204.3
W	50	75	100	125
X	46		53	51
Y	75	115	122	160

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.



Linear Slide Cylinder Double Acting, Ultra Low Speed Type

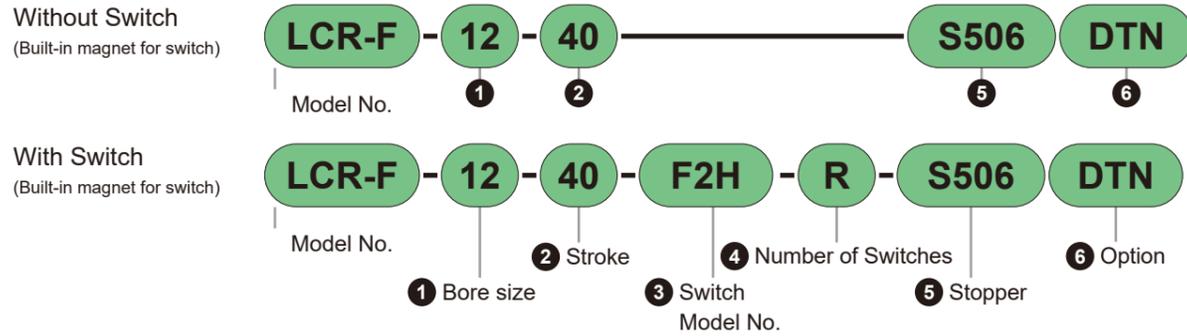
LCR-F Series

● Bore size: $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$



LCR-F Series Model No. Notation Method

Model No. Notation Method



① Bore Size (mm)

Code	Content
12	$\phi 12$
16	$\phi 16$
20	$\phi 20$
25	$\phi 25$

② Stroke (mm)

Stroke (mm)	Applicable Bore size			
	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$
10	●	●	●	●
20	●	●	●	●
30	●	●	●	●
40	●	●	●	●
50	●	●	●	●
75	●	●	●	●
100	●	●	●	●
125		●	●	●
150			●	●

③ Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead Wire *1		Image
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
		2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
1-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□		
	3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□		
	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□		
	3-wire (NPN)	-	30 or less	-	50 or less	T3WLH□	T3WLV□		
2-Color	Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	-	-	
Reed	1-Color No Indicator LED	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	

* 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

*7 : For F type switch, 5 m cannot be selected.

*8 : Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH [3]
5 m TOH [5]

*1: For "□" in the switch model No., enter the code selected from the "Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder.
*4 : Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.
*5 : For ① Bore size $\phi 16$ to $\phi 25$, F type switch cannot be selected.
*6 : For ① Bore size $\phi 12$, T-type switch cannot be selected.

④ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

⑤ Stopper For details, see P. 106.

Code	Content	Mounting position	
Blank	No stopper		
'S' Stroke adjustment stopper *3, *4, *6			
S1□□	Stopper position ① (④ Changeable to)	Stopper mounting position	
S2□□	Stopper position ② (③ Changeable to)		
S3□□	Stopper position ③ (② Changeable to)		
S4□□	Stopper position ④ (① Changeable to)		
S5□□	Stopper position ①, ③		
S6□□	Stopper position ②, ④		
'A' Shock absorber type stopper *3, *5, *6			
A1	Stopper position ① (④ Changeable to)	Stopper mounting position	
A2	Stopper position ② (③ Changeable to)		
A3	Stopper position ③ (② Changeable to)		
A4	Stopper position ④ (① Changeable to)		
A5	Stopper position ①, ③		
A6	Stopper position ②, ④		
'W' Double-sided combination double stopper (Shock absorber type stopper, Metal stopper) *5, *7, *8			
W1	A1 + Metal stopper	Stopper mounting position	
W2	A2 + Metal stopper		
W3	A3 + Metal stopper		
W4	A4 + Metal stopper		
W5	A5 + Metal stopper		
W6	A6 + Metal stopper		
'C' Single-sided mixed stopper mix (Shock absorber type stopper, Stroke adjustment stopper) *5			
C1□□	A1 + S3	Stopper mounting position	
C2□□	A2 + S4		
C3□□	A3 + S1		
C4□□	A4 + S2		
□□ part Stroke adjustment range ●Applicable to all. ▲Applicable to some. *9:			
	Extension end side	Retraction end side	Stopper model No.
			S A W C
Blank	5 mm or none	5 mm or none	●
02	15 mm or none	15 mm or none	●
03	25 mm or none	25 mm or none	●
04	15 mm	5 mm	▲ - -
05	25 mm	5 mm	▲ - -
06	5 mm	15 mm	▲ - -
07	5 mm	25 mm	▲ - -

*1: For stopper positions ① to ④, refer to the diagram on the right.

*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.

*3: For combinations of stroke adjustment stoppers, metal stoppers, and Shock absorber type stoppers, refer to ⑤ Stopper "C□", "W□".

*4 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

*5 : For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.

*6 : A1, A2, A5, and A6 for $\phi 12$ to $\phi 25$ with a stroke of 20 or less cannot be adjusted with standard stoppers, so they are custom-ordered products.

*7 : For $\phi 12$ with 30 to 50 strokes, $\phi 16$ with 30 to 50 strokes, when W3 to W6 (double-sided combination stopper) is selected, and if 2 switches are included or used on the head side, please use the straight lead wire type.

*8 : If the double-sided combination type (W) is selected, the stroke adjustment range will be $\phi 12$: 14.5 mm, $\phi 16$: 15 mm, $\phi 20$: 13 mm, $\phi 25$: 10 mm.

*9 : Selectable only when using stroke adjustment stopper (S) and single-sided mixed type (C).

*10 : When changing the stopper position from the head side to the rod side, a separate stopper must be purchased, depending on the stroke and stroke adjustment amount. Please check "Precautions when purchasing stopper single items" on P. 62. Depending on the stroke, A1, A2, and adjustment amounts of 15 mm and 25 mm may not be possible.

*11 : For stopper combinations, refer to the combination availability table on P. 108.

Clean Specification (Catalog No. CB-033SAA)

● Dust prevention structure usable in cleanrooms

LCR-F - - - - P7□

⑥ Option

Code	Content	Image
Stopper part port *2, *4		
Blank	No port	
D	Side and bottom ports available	
Stopper block material *2		
Blank	Steel	
T	Steel (nitriding treatment)	
Plug included		
Blank	None	
N	Plug for side piping port included ($\phi 12$ to $\phi 20$)	

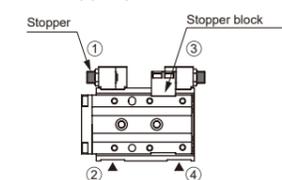
*1: For port positions, refer to the stopper outline drawing P. 78.

*2: Selectable only when stopper type is selected.

*3: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

*4 : Select when using with rear piping.

● Stopper position



With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

Cylinder Switch

Ending

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. - [1 Stopper type] [2 Stopper position] [3] Example) LCR-F-12-40- [S] [5] 06

		Stopper type [1]			
		Stroke adjustment type (single side) [S]	Shock absorber type (single side) [A]	Double-sided combination double stopper [W]	Single-sided mixed stopper mix [C]
Stopper position [2]	[1]	[S1]	[A1]	[W1]	[C1]
	[2]	[S2]	[A2]	[W2]	[C2]
	[3]	[S3]	[A3]	[W3]	[C3]
	[4]	[S4]	[A4]	[W4]	[C4]
	[5]	[S5]	[A5]	[W5]	
	[6]	[S6]	[A6]	[W6]	

▲ indicates the piping direction.
 If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲ (piping direction) will have a plug.

: Shock absorber type stopper
 : Stroke adjustment stopper (adjustment range 5 mm)
 : Metal stopper (adjustment range 15 mm)

Stopper Model No. Selection Method

Stopper Model No. Selection Method

2 Stopper Combination Table

Model No. - [1 Stopper type] [2 Stopper position] [3 Stroke adjustment range]

Example) LCR-F-12-40-S5 [06]

In case of stroke adjustment stopper -S

: Stroke adjustment stopper (adjustment range 5 mm)
 : Stroke adjustment stopper (adjustment range 15 mm)
 : Stroke adjustment stopper (adjustment range 25 mm)

		Stopper adjustment range		Stopper type, Stopper position [1 2]					
		Extension end side	Retraction end side	[S1]	[S2]	[S3]	[S4]	[S5]	[S6]
Stroke adjustment range [3]	Blank	5 mm or none	5 mm or none						
	[02]	15 mm or none	15 mm or none						
	[03]	25 mm or none	25 mm or none						
	[04]	15 mm	5 mm						
	[05]	25 mm	5 mm						
	[06]	5 mm	15 mm						
	[07]	5 mm	25 mm						

▲ indicates the piping direction.
 Cannot be selected for Shock absorber type [A] or double-sided combination type [W].

In case of single-sided mixed stopper mix -C

: Shock absorber type stopper
 : Stroke adjustment stopper (adjustment range 5 mm)
 : Stroke adjustment stopper (adjustment range 15 mm)
 : Stroke adjustment stopper (adjustment range 25 mm)

		Stopper adjustment range		Stopper type, Stopper position [1 2]			
		Extension end side	Retraction end side	[C1]	[C2]	[C3]	[C4]
Stroke adjustment range [3]	Blank	5 mm or Shock absorber	5 mm or Shock absorber				
	[02]	15 mm or shock suppressor	15 mm or shock suppressor				
	[03]	25 mm or shock suppressor	25 mm or shock suppressor				

▲ indicates the piping direction.
 For the stroke adjustment range of the Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

Cylinder Switch

Ending

LCR-F Ultra Low Speed Type Combination Availability Table

(Combination with stroke adjustment stopper, Shock absorber type stopper) ● : Not combinable - : Not combinable

Model No.	Stopper type		Stroke adjustment type																																			
	Stopper code		S1						S2						S3						S4						S5						S6					
	Bore size	Stroke	Adjustment range code																																			
			Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	04	05	05	07	Blank	02	03	04	05	06	07							
LCR	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	-	-	●	-	●	-	-	-	-	-	-	●	-						
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	-	●	-	●	●	●	●	●	●	-	●	-	●	●							
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						

Model No.	Stopper type		Shock absorber type						Double-sided combination double stopper						Single-sided mixed stopper mix											
	Stopper code		A1 A2 A3 A4 A5 A6						W1 W2 W3 W4 W5 W6						C1 C2 C3 C4											
	Bore size	Stroke	Adjustment range code																							
			Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03						
LCR	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	-	-	-	-	-	●	-	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Option Code D : Stopper part with port, T : Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (● : Selectable - : Not selectable)

MEMO

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

Specifications

Item		LCR-F			
Bore size	mm	ø12	ø16	ø20	ø25
Actuation method		Double Acting Type			
Operating Fluid		Compressed Air			
Max. Working Pressure	MPa	0.7			
Min. Operating Pressure	MPa	0.15			
Proof Pressure	MPa	1.05			
Ambient Temperature	°C	5 to 60			
Port Size	Main body side	M5		Rc1/8	
	Main body rear	M3		Rc1/8	
Stroke tolerance	mm	+2.0 0 ^(*)			
Operating Piston Speed	mm/s	5 to 200 (No load, 0.5 mPa)			
Cushion		With Rubber Cushion			
Lubrication		Not Available			
Allowable Absorbed Energy	J	Refer to Table 3 on P. 114.			

*1: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
*2: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

*Strokes other than the above cannot be manufactured.

Theoretical Thrust Table

See P. 115.

Cylinder Weight

● Ultra Low Speed Type (Unit : g)

Bore size (mm)	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
ø12	310	320	320	360	390	520	610	-	-
ø16	490	500	500	550	610	840	970	1,110	-
ø20	900	910	920	1,000	1,090	1,390	1,600	1,810	2,020
ø25	1,620	1,640	1,650	1,760	1,860	2,350	2,620	2,890	3,160

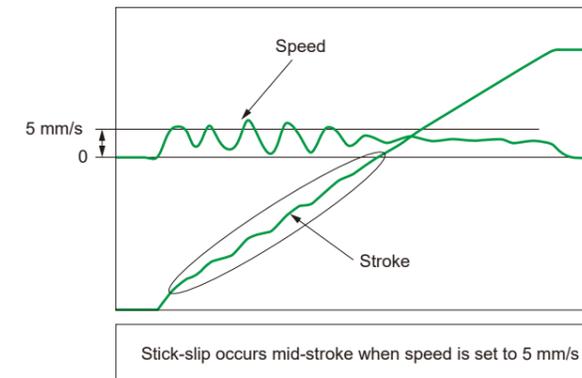
● Option increase (Unit : g)

Bore size (mm)	Stopper code			
	S1 to S4	S5, S6	A1 to A4	A5, A6
ø12	70	100	80	110
ø16	110	150	120	160
ø20	170	250	180	270
ø25	290	380	300	400

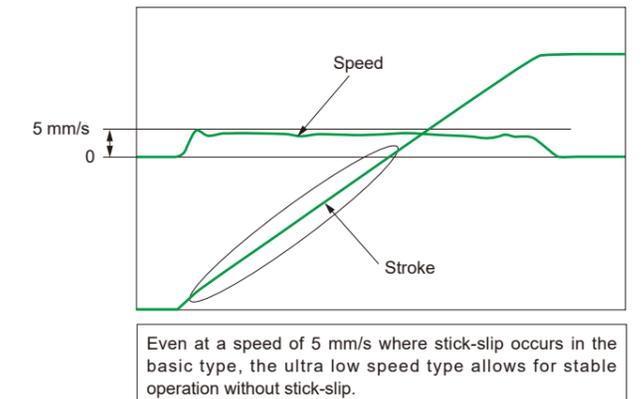
Low-speed performance

The following data is for no load and a supply pressure of 0.5 MPa. Note that these are not guaranteed values as they vary depending on measurement conditions, etc.

● LCR-12-30



● LCR-F-12-30



Outline Dimension Drawing

Same as double acting/single rod type. See P. 70 to 78.

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

Cylinder Switch

Ending

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

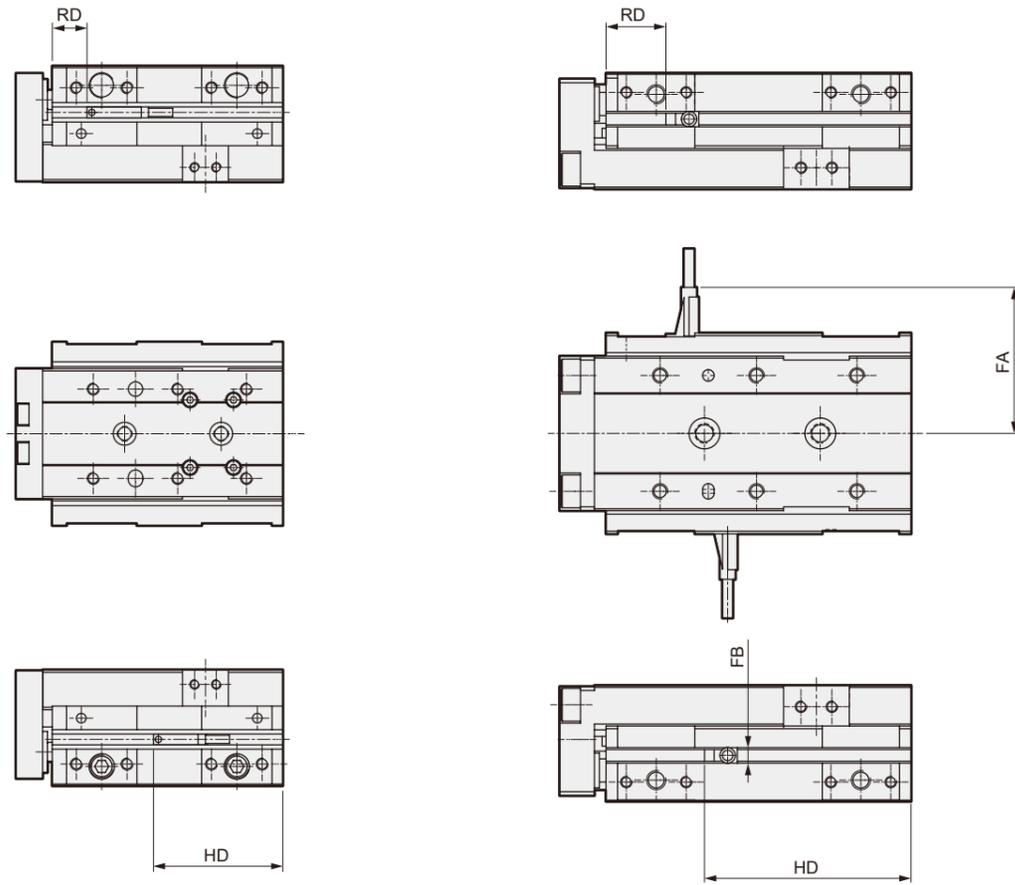
Cylinder Switch

Ending

LCR Series Outline Dimension Drawing with Switch

● F2H/V, F3H/V, F2YH/V, F3YH/V, F3PH/V, LCR, LCR-Q, LCR-F

● F2S, F3S
LCR, LCR-Q, LCR-F



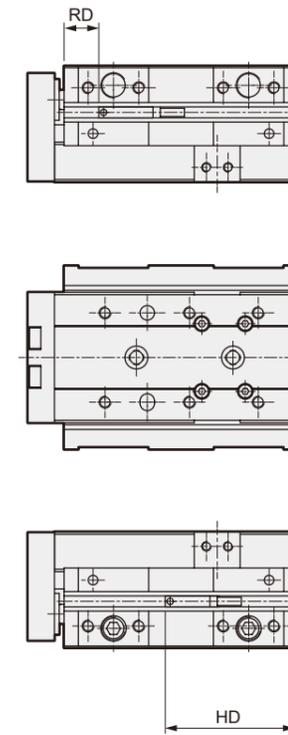
LCR, LCR-Q, LCR-F							
Code Bore Size (mm)	Stroke	F2, F3, F2Y, F3Y, F3P		F2S, F3S			
		RD	HD	FA	FB	RD	HD
ø6	10	15	33	29.1	4	14	34
	20, 30		23				24
	40, 50		33				34
ø8	10	13	34	32.6	4	12	35
	20, 30		24				25
	40, 50, 75		33				34
ø12	10	16.5	52.5	37.8	4	15.5	53.5
	20		42.5				43.5
	30, 40, 50		32.5				33.5
	75, 100		41.5				42.5

Note) For switch mountability, refer to the model No. display method for each variation.

External Dimensions Diagram with Switch

LCR Series Outline Dimension Drawing with Switch

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2*R3, T2WH/V, T3WH/V, T2WLH/V
LCR, LCR-Q, LCR-F



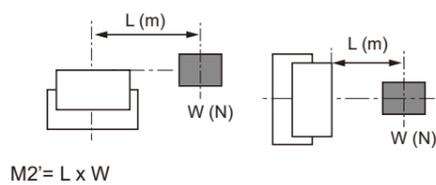
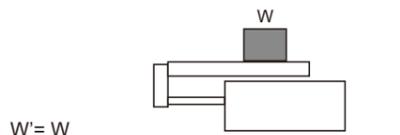
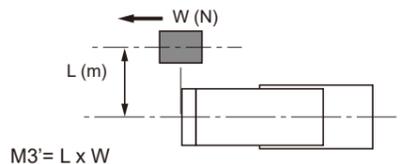
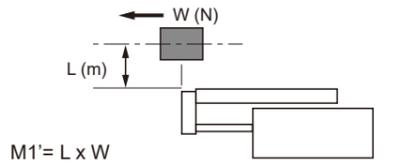
LCR, LCR-Q, LCR-F					
Code Bore Size (mm)	Stroke	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W, T2WL	
		RD	HD	RD	HD
ø16	10	17	56.5	19.5	54
	20		46.5		44
	30, 40, 50		36.5		34
	75, 100, 125		53.5		51
ø20	10	20.5	65	22	63
	20		55		53
	30, 40, 50		45		43
	75, 100, 125, 150		57.5		55.5
ø25	10	19	78.5	21	76.5
	20		68.5		66.5
	30, 40, 50		58.5		56.5
	75, 100, 125, 150		79		77

Note) For switch mountability, refer to the model No. display method for each variation.

Model selection guide

STEP-1

● Determine the load and impact moment in each direction that occurs at the stroke end.



From [Table 1], determine the approximate value of the G coefficient.
[Table 1] V_a (Average speed) = $\frac{\text{Travel distance}}{\text{Travel time}}$ (m/s)

Va average speed (m/s)	Vm Stroke end speed (m/s)	G coefficient
Up to 0.07	Up to 0.1	5
Up to 0.2	Up to 0.3	14
Up to 0.27	Up to 0.4	19
Up to 0.35	Up to 0.5	24

G coefficient =

$M1' \times G =$ (N·m)
 $M2' =$ (N·m)
 $M3' \times G =$ (N·m)
 $W' =$ (N)

$E' = \frac{1}{2} \times (m + m_c) \times Vm^2$

$=$ (J)

$(m \approx \frac{W}{9.8})$

● Temporarily select a Bore size that satisfies the following conditional expression.

$M1'T = \frac{M1' \times G}{M1' \max} + \frac{M2'}{M2' \max} + \frac{M3' \times G}{M3' \max} + \frac{W'}{W' \max} < 1$

$E' < E \max$

$M1'T$: Combined Moment (Must be less than 1)

G : G coefficient

$W' \max$: Max. allowable value of W' (from Table 2)

$M1' \max$: Max. allowable value of $M1'$ (from Table 2)

$M2' \max$: Max. allowable value of $M2'$ (from Table 2)

$M3' \max$: Max. allowable value of $M3'$ (from Table 2)

$E \max$: Max. allowable value of E_o (from Table 2)

m_c : Table Weight (from Table 4)

[Table 2] Allowable Static Load Values

Bore size	Stroke (mm)	Vertical load $W' \max$ (N)	Bending moment $M1' \max$ (N·m)	Lateral bending moment $M2' \max$ (N·m)	Torsional Moment $M3' \max$ (N·m)
ø6	10 to 30	140	1.7	3.5	1.7
	40 to 50	186	10.7	5.6	10.7
ø8	10 to 30	140	1.7	3.5	1.7
	40 to 75	186	10.7	5.6	10.7
ø12	10 to 50	220.8	5.7	9.8	5.7
	75 to 100	22.2	22.2	22.2	22.2
ø16	10 to 50	380.8	17.8	19.2	17.8
	75 to 125	37.3	37.3	37.3	37.3
ø20	10 to 50	548.8	31.1	37.6	31.1
	75 to 150	56.2	56.2	56.2	56.2
ø25	10 to 50	961.5	65.1	116.3	65.1
	75 to 150	127.5	127.5	127.5	127.5

Note) When installing the load on the end plate, even if a long stroke (ø6, 8...40 or more, ø12 or more...75 or more) is selected, calculate the allowable value using the short stroke (ø6, 8...30 or less, ø12 or more...50 or less) value.

[Table 3] LCR Allowable Absorbed Energy (E_o)

Bore size	Standard (J)	With stroke adjustment stopper (J)	With Shock absorber type stopper (J)
ø6	0.025	0.0032	0.14
ø8	0.058	0.0032	0.25
ø12	0.112	0.014	0.25
ø16	0.176	0.043	0.65
ø20	0.314	0.055	1.3
ø25	0.314	0.14	1.3

[Table 4] Table Weight (Unit : kg)

Bore size	Stroke (mm)									P72, P73 Increase	B, BL Increase
	10	20	30	40	50	75	100	125	150		
ø6	0.035	0.035	0.04	0.05	0.055	-	-	-	-	0.005	0.030
ø8	0.055	0.055	0.06	0.075	0.08	0.095	-	-	-	0.015	0.030
ø12	0.13	0.13	0.13	0.14	0.155	0.195	0.225	-	-	0.025	0.060
ø16	0.185	0.185	0.185	0.2	0.215	0.285	0.325	0.365	-	0.035	0.070
ø20	0.29	0.29	0.29	0.315	0.335	0.415	0.47	0.525	0.585	0.045	0.140
ø25	0.505	0.505	0.505	0.54	0.58	0.745	0.835	0.925	1.015	0.075	0.310

STEP-2

Next, load factor, effective thrust, stroke end speed and improve the accuracy of the combined moment value.

● Determine the load factor.

$\alpha = \frac{F_o}{F} \times 100$ [%]

α : Load factor

F_o : Force required to move the workpiece (N)

F : Cylinder theoretical thrust (N)
[Table 5]

During horizontal operation	During vertical operation
$F_o = Fw$	$F_o = W + Fw$
FW: $W \times 0.2$ (N) W: Load (N)	

Note) Friction Coefficient

[Table 5] Theoretical Thrust Table (Unit : N)

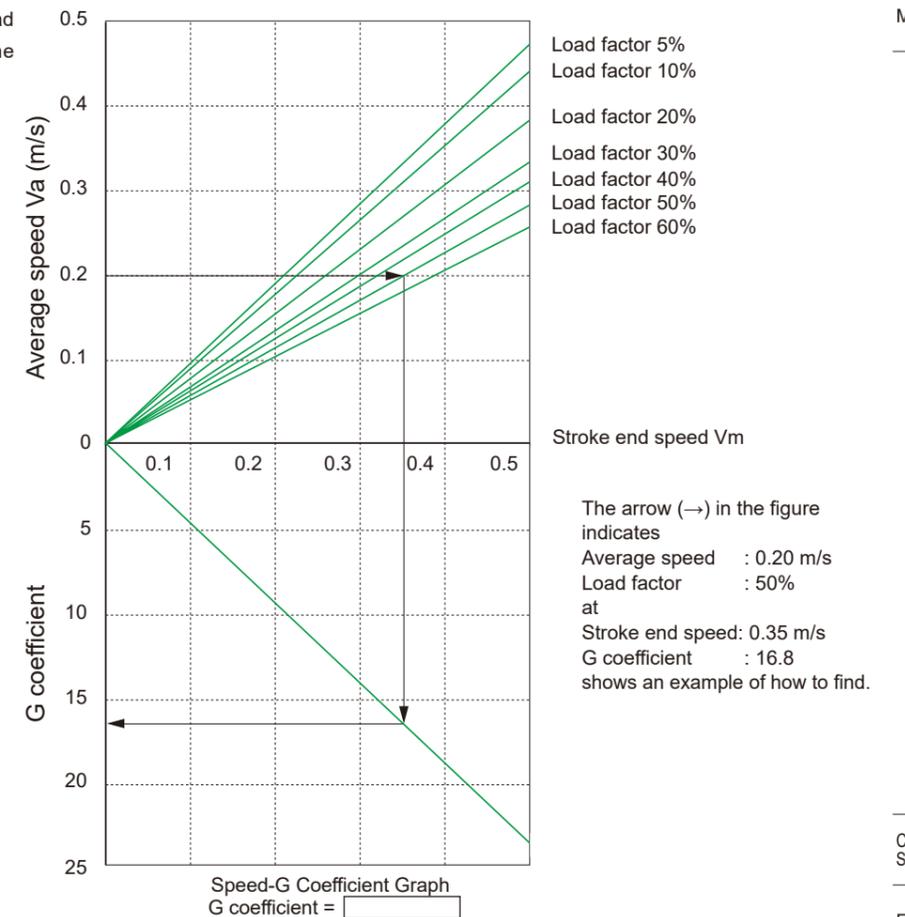
Bore size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	PUSH	8	11	17	23	28	34	40
	PULL	6	8	13	17	21	25	30
ø8	PUSH	15	20	30	40	50	60	70
	PULL	11	15	23	30	38	45	53
ø12	PUSH	34	45	68	90	113	136	158
	PULL	25	34	51	68	85	102	119
ø16	PUSH	60	80	121	161	201	241	281
	PULL	52	69	104	138	173	207	242
ø20	PUSH	94	126	188	251	314	377	440
	PULL	79	106	158	211	264	317	369
ø25	PUSH	147	196	295	393	491	589	687
	PULL	124	165	247	330	412	495	577

[Table 6] Load Factor Guideline

Operating 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	$\alpha \leq 60$

STEP-3

From the average speed (V_a) and the load factor obtained in STEP-2, determine the stroke end speed (V_m) and G coefficient.



Speed-G Coefficient Graph
G coefficient =

STEP-4

Obtained from STEP-3
From G coefficient stroke end speed (Vm)
Confirm the combined moment (M_T).

$$M1' \times G = \text{[] (N·m)}$$

$$M2' = \text{[] (N·m)}$$

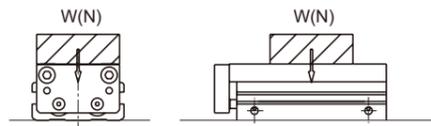
$$M3' \times G = \text{[] (N·m)}$$

$$W' = \text{[] (N)}$$

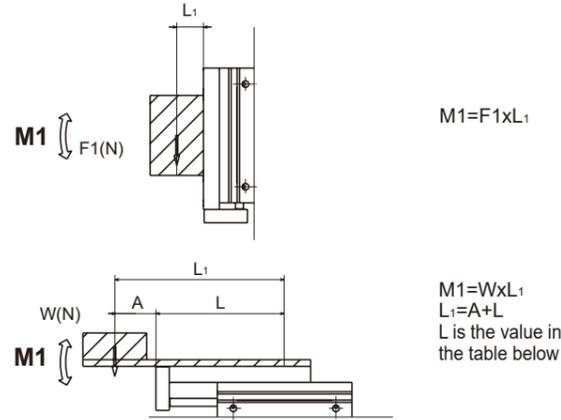
$$M'T = \frac{M1' \times G}{M1' \text{ max}} + \frac{M2'}{M2' \text{ max}} + \frac{M3' \times G}{M3' \text{ max}} + \frac{W'}{W' \text{ max}} = \text{[]}$$

Confirm the combined moment M_T during travel. (Please note that this is different from what was obtained in STEP-1.)

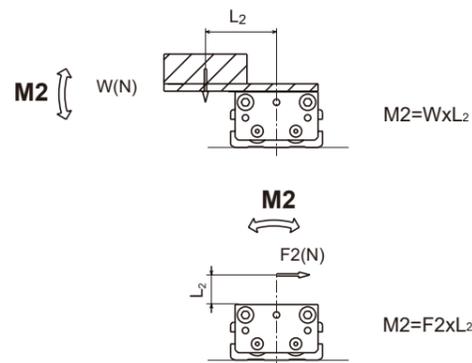
● Vertical load: W (N)



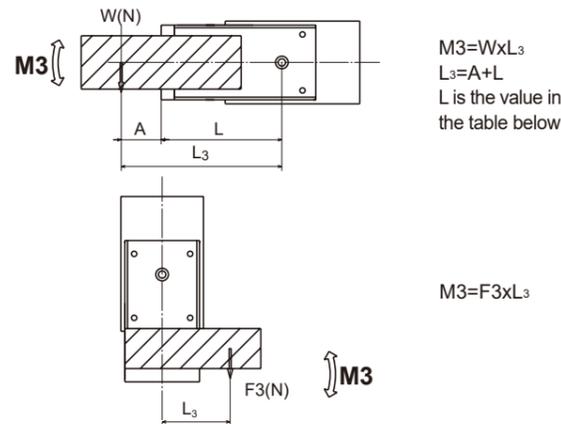
● Bending moment: M1 (N·m)



● Lateral bending moment: M2 (N·m)



● Torsional Moment : M3 (N·m)



Bore size	Stroke									P72, P73 Increase	Unit : (m)
	10	20	30	40	50	75	100	125	150		
ø6	0.048	0.048	0.058	0.073	0.083	-	-	-	-	0.012	0.0165
ø8	0.048	0.048	0.058	0.072	0.082	0.107	-	-	-	0.020	0.0145
ø12	0.067	0.067	0.067	0.077	0.087	0.117	0.142	-	-	0.020	0.018
ø16	0.071	0.071	0.071	0.081	0.091	0.124	0.149	0.174	-	0.020	0.019
ø20	0.081	0.081	0.081	0.091	0.101	0.126	0.151	0.176	0.201	0.025	0.020
ø25	0.085	0.085	0.085	0.095	0.105	0.14	0.165	0.19	0.215	0.025	0.023

$$M1=M1 = \text{[] (N·m)}$$

$$M2=M2 = \text{[] (N·m)}$$

$$M3=M3 = \text{[] (N·m)}$$

$$W=W = \text{[] (N)}$$

$$M'T = \frac{M1}{M1 \text{ max}} + \frac{M2}{M2 \text{ max}} + \frac{M3}{M3 \text{ max}} + \frac{W}{W \text{ max}} = \text{[]}$$

[Table 7] Allowable Traveling Load Values

Bore size	Stroke (mm)	Vertical load Wmax (N)	Bending moment M1 max (N·m)	Lateral bending moment M2 max (N·m)	Torsional Moment M3 max (N·m)
ø6	10 to 30	14	0.17	0.35	0.17
	40 to 50	15.5	0.89	0.47	0.89
ø8	10 to 30	14	0.17	0.35	0.17
	40 to 75	15.5	0.89	0.47	0.89
ø12	10 to 50	27.6	0.71	1.2	0.71
	75 to 100		2.2		
ø16	10 to 50	47.6	1.9	2.4	1.9
	75 to 125		4.6		
ø20	10 to 50	68.6	3.4	4.7	3.4
	75 to 150		7.0		
ø25	10 to 50	128.2	7.6	15.5	7.6
	75 to 150		17.0		

Note) When installing the load on the end plate, even if a long stroke (ø6, 8...40 or more, ø12 or more...75 or more) is selected, calculate the allowable value using the short stroke (ø6, 8...30 or less, ø12 or more...50 or less) value.

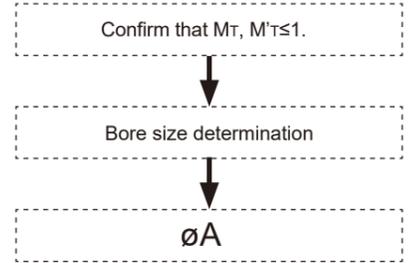
STEP-5

Confirmation of allowable absorbed energy

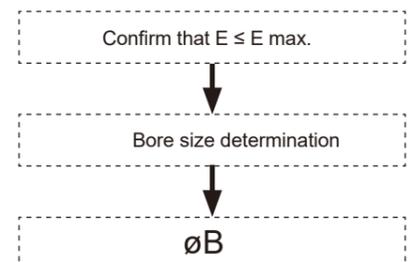
$$E = \frac{1}{2} \times (m+m_a) \times Vm^2$$

- E : Kinetic energy at workpiece end (J)
- m : Load weight (kg) ($m \approx \frac{W(N)}{9.8}$)
- m_a : [Table 4] Table Weight
- Vm : Stroke end speed (m/s)
- E max : Max. allowable value of Eo (from Table 2)

- M'T : Combination of moments:
- Wmax : Max. allowable value of W (from Table 7)
- M1 max : Max. allowable value of M1 (from Table 7)
- M2 max : Max. allowable value of M2 (from Table 7)
- M3 max : Max. allowable value of M3 (from Table 7)
- E max : Max. allowable value of Eo (from Table 2)

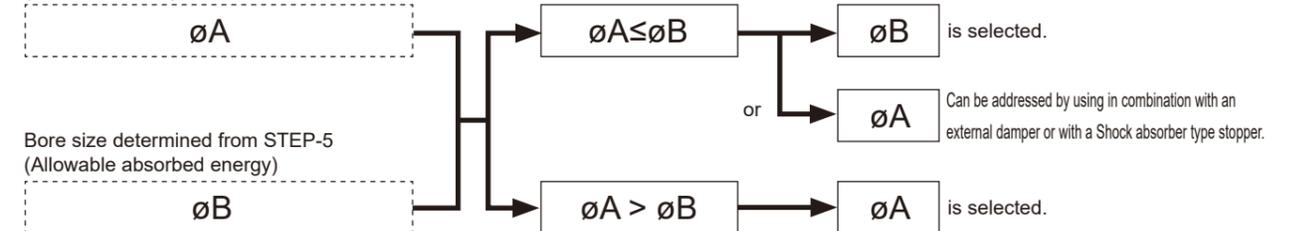


Confirmation of allowable absorbed energy



STEP-6

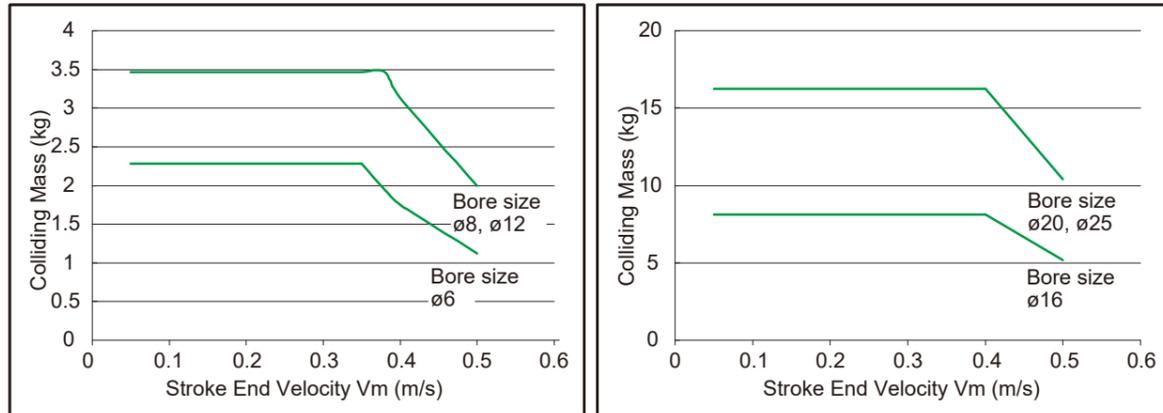
Bore size determined from STEP-4 (Load conditions)



Bore size determined from STEP-5 (Allowable absorbed energy)

Shock absorber Type Stopper Selection Confirmation Graph

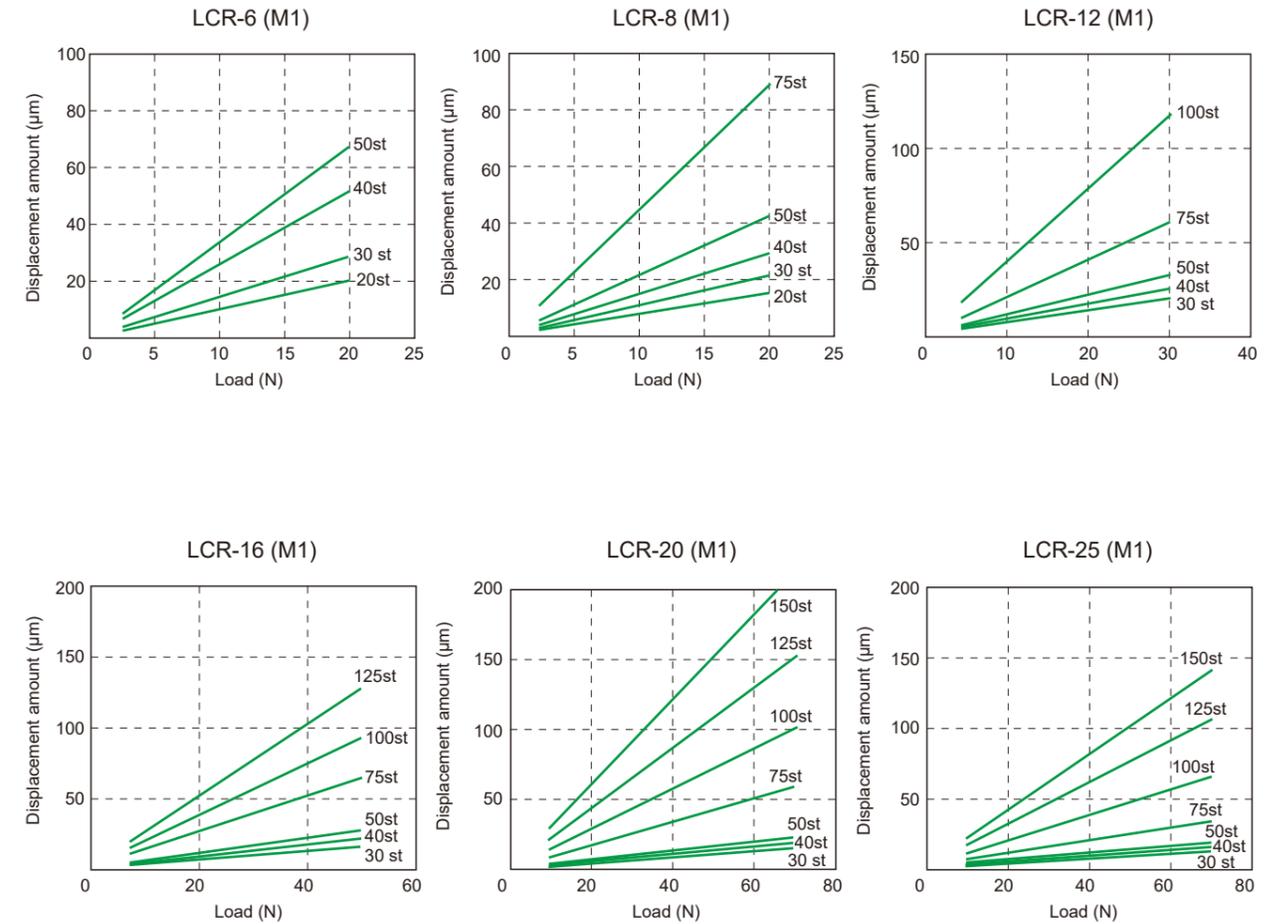
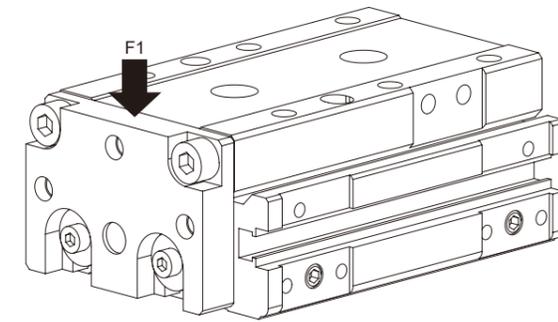
1. This is a simple confirmation graph for Shock absorber type stoppers. The area inside the graph is the usable range. Select a Bore size that can accommodate a Shock absorber within the usable range.
2. The simple selection graph shows values when the air pressure used for the cylinder is 0.5 MPa.
3. The absorbed energy of the Shock absorber changes with temperature. The simple confirmation graph shows values at room temperature.
4. The colliding weight is the sum of the load weight m and the table weight m_a .



Technical Data

[Table Displacement due to M1 Moment] (Reference Value)

Displacement at the table tip when a load (F1) is applied to the table tip



With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG

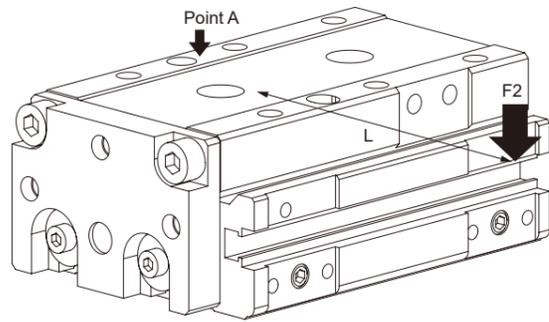
With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG

Cylinder Switch
Ending

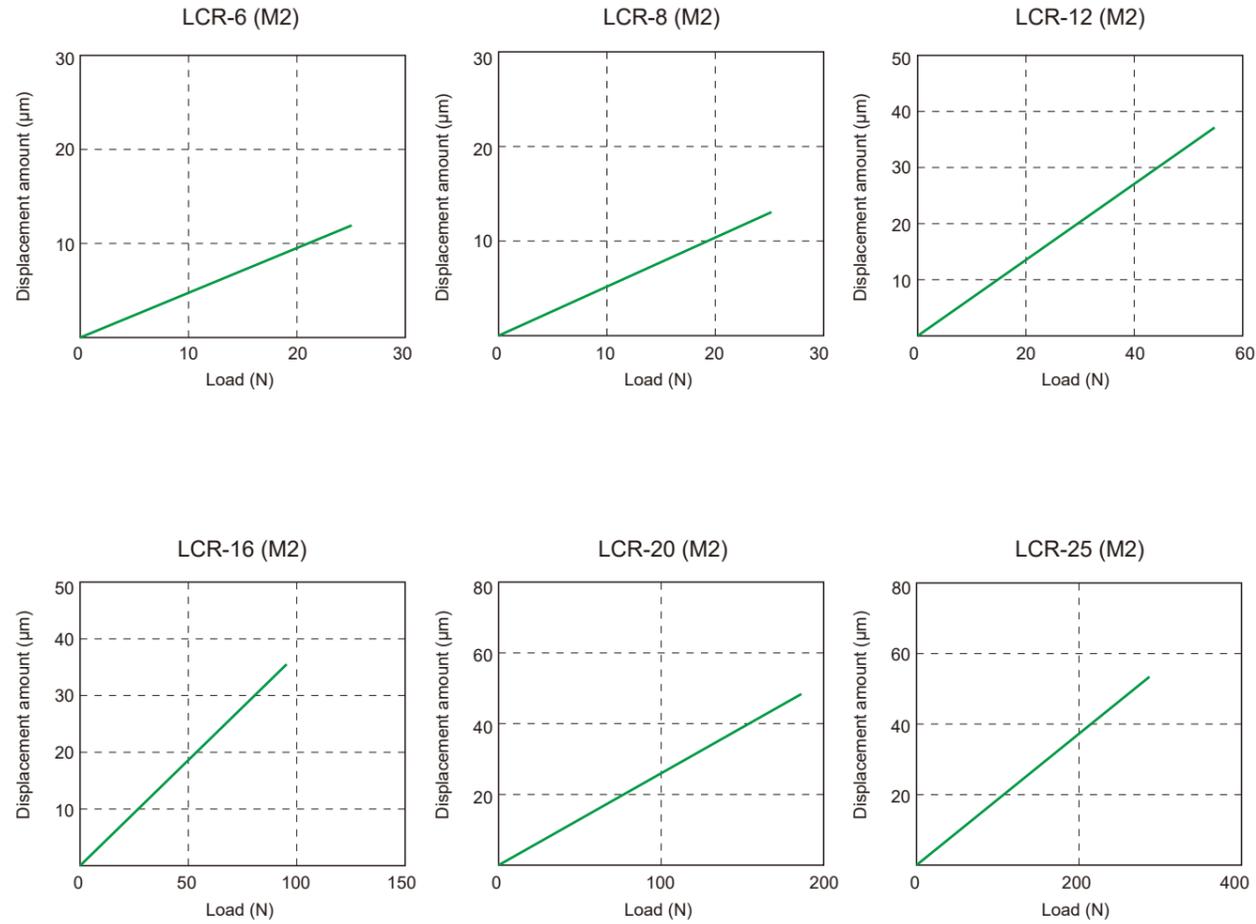
Cylinder Switch
Ending

[Table Displacement due to M2 Moment] (Reference Value)

Displacement at the table end (Point A) when a load (F2) is applied at a position Lmm away from the cylinder center

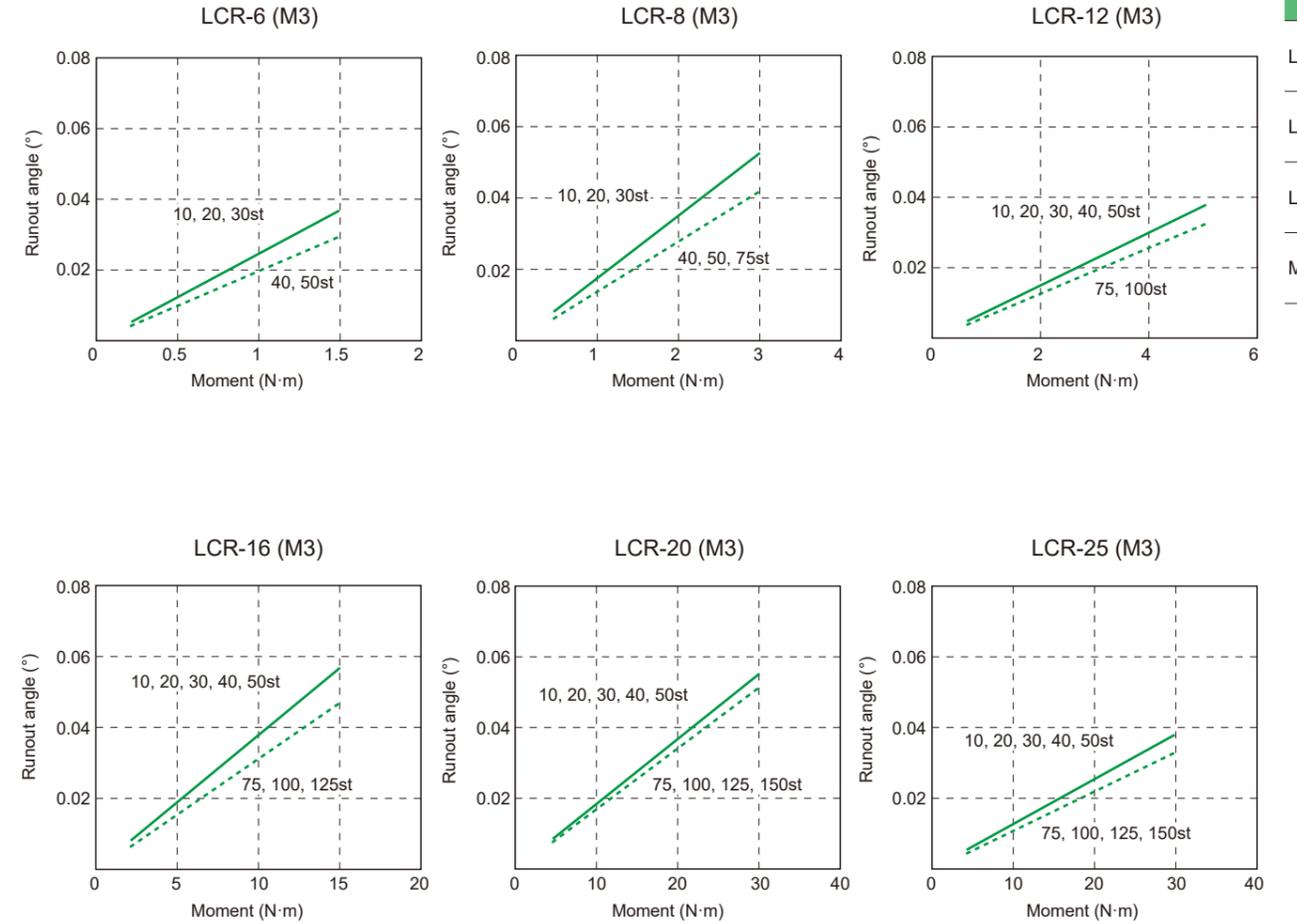
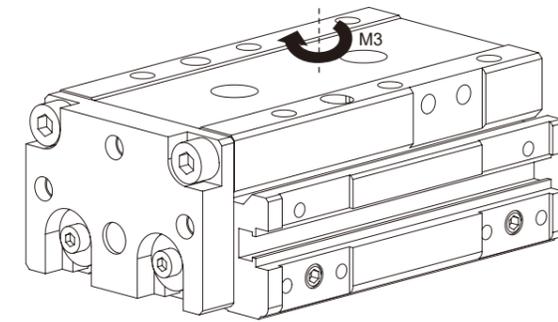


Value of L
 ø 6 : L = 70, ø 8 : L = 70
 ø12 : L = 90, ø16 : L = 100
 ø20 : L = 100, ø25 : L = 200



[Table Displacement Angle due to M3 Moment] (Reference Value)

Displacement angle of the table when a rotational moment (M3) is applied to the cylinder





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. 808.

Individual Precautions: Linear Slide Cylinder LCR Series

During Design / Selection

1. Common

Caution

Select the cylinder according to the "LCR Selection Guide" on P. 114 to 117.

If the cylinder is used in a place exposed to water droplets or oil droplets, a place where there is a risk of corrosion, or a place with a lot of dust, it may cause damage or malfunction, so protect the product with a cover, etc.

Precautions for products with switches

- When using a T□V type switch with a stroke adjustment stopper (S3□□, S4□□, S5□□, S6□□) or Shock absorber type stopper (A3□□, A4□□, A5□□, A6□□), the switch on the head side will interfere with the stopper, so mount the switch on the side opposite the stopper.
- For switches with a stroke of 30 or less, one switch is included to each of the two grooves on the main body, so pay attention to the lead wire extraction direction during design.

2. Drop prevention type LCR-Q

Caution

Do not use 3-position valves.

Avoid using in combination with 3-position valves (especially closed center metal seal type). If pressure is trapped in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

3. Low speed type LCR-F

Caution

Use without lubrication.

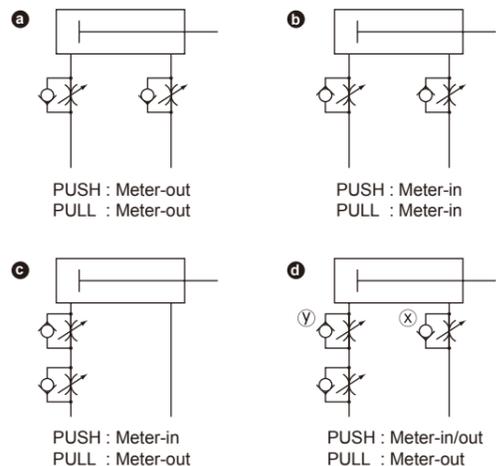
Lubrication may change characteristics.

Install the speed controller near the cylinder.

If installed far from the cylinder, the speed will become unstable. Use SC-M3/M5-F, SC3W, SCD-M3/M5, or SC3U series speed controllers.

Generally, the higher the air pressure and the lower the load factor, the more stable the speed. Use with a load factor of 50% or less.

Speed control with a meter-out circuit provides stability.

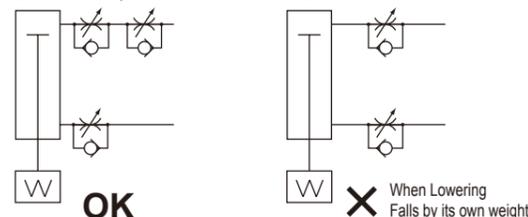


When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As a countermeasure, use circuits **b**, **c**, **d**. Note that circuit **d** is the most stable.

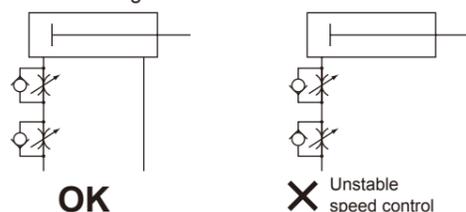
- d** Speed adjustment method for PUSH operation of circuit :
- Setting speed with the x-axis speed controller
 - Throttle down the y-axis speed controller until lurching is eliminated.
 - Reconfirmation of speed

Note1) **b**, **c**, **d**, the operation of circuit **d** is the most stable.

Note2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



Note3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)
Lurching occurs in the following cases:

- Thrust > Resistance

*Resistance: Thrust due to residual pressure on the exhaust side + [For horizontal use: Frictional force due to load (For fine speed type, supply pressure = residual pressure)] + [For vertical use: Dead weight of the load

Do not apply lateral load to the cylinder.
Operation becomes unstable when lateral load is applied.

Avoid use in places with vibration.
Operation becomes unstable due to the influence of vibration.

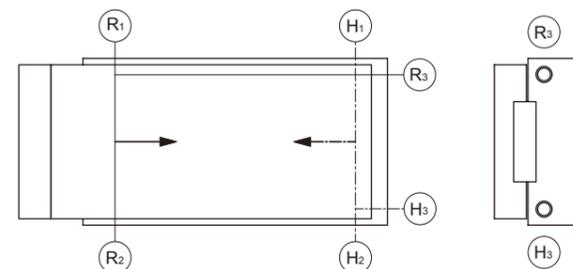
During Use

1. Common; During piping

Caution

When changing the piping port position, use adhesive for M3 and M5 plugs (hexagon socket head set screws). (Recommended adhesive: Loctite 222/221, ThreeBond 1344, or other low-strength adhesives)

Piping port position and operating direction



Ⓡ indicates the rod side pressure port, and Ⓜ indicates the head side pressure port. At the time of factory shipment, ports other than Ⓡ, Ⓜ (depending on stopper selection and stopper position Ⓡ, Ⓜ) are sealed with plugs.

Rear piping

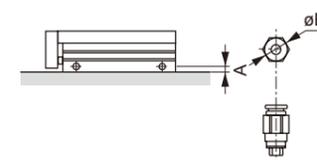
This product, excluding ø6 and drop prevention types, can be used with rear piping (Ⓜ ports and in the diagram above Ⓡ). When using Ⓡ, Ⓜ remove the plug sealing the port and seal the port with the plug from the table below Ⓡ, Ⓜ.

Item	Plug
LCR-6	Ⓡ, Ⓜ No port.
LCR-8	
LCR-12	M5x5 (Hexagon socket head set screw)
LCR-16	
LCR-20	R1/8 (Hexagon socket head taper thread plug)
LCR-25	Seal the Ⓡ, Ⓜ ports with the plug that was sealing the Ⓡ, Ⓜ ports.

For ø8 to ø20, it is necessary to prepare two plugs from the table above separately. Plug attachment option (see P. 57) and plug single item model No. (see P. 63) are also available, so please utilize them.

Precautions for piping fittings

Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



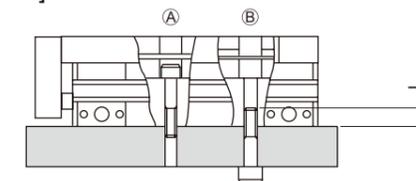
Item Bore Size (mm)	Port Size	Port position dimension A	Usable fittings	Fitting outer diameter B
ø6	M3	4	SC3W-M3-4 SC3U-M3-4 SC3W-M3-3.2 SC3U-M3-3.2 GWS3-M3-S GWS4-M3-S	ø8 or less
ø8	M5	5.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5	ø11 or less
ø12		5.5		
ø16	M5	6.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWL6-M5 GWS6-M5	ø13 or less
ø20	Rc1/8	8	SC3W-6-4,6,8 GWS4-6 GWS8-6 GWL6-6 GWS6-6 GWL4-6	ø15 or less
ø25		9		

2. Common; During installation

Caution

Please do not make dents or scratches on the mounting surface of the main body (tube) and the table surface that may impair flatness. Also, the flatness of the mating side to be included to the main body and table should be 0.02 mm or less.

Observe the following values for the bolt screw-in length and tightening torque when mounting the main body. [Figure 1]



Item	A		B		Max. screw-in depth L (mm)
	Bolt used	Tightening torque (N·m)	Bolt used	Tightening torque (N·m)	
LCR-6	M3 x 0.5	0.6 to 1.1	M4 x 0.7	1.4 to 2.4	6
LCR-8	M3 x 0.5	0.6 to 1.1	M4 x 0.7	1.4 to 2.4	6
LCR-12	M4 x 0.7	1.4 to 2.4	M5 x 0.8	2.9 to 5.1	8
LCR-16	M5 x 0.8	2.9 to 5.1	M6 x 1.0	4.8 to 8.6	9
LCR-20	M5 x 0.8	2.9 to 5.1	M6 x 1.0	4.8 to 8.6	9
LCR-25	M6 x 1.0	4.8 to 8.6	M8 x 1.25	12.0 to 21.6	12

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

With Linear Guide

LCM

LCR

LCG

LCW

LCX

MSDG

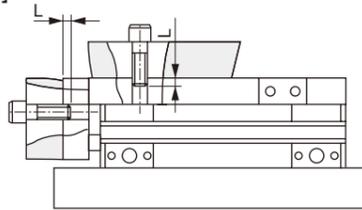
Cylinder Switch

Ending

Cylinder Switch

Ending

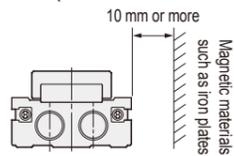
- Observe the following values for the bolt screw-in length and tightening torque when mounting a jig to the slide table and end plate. [Figure 2]



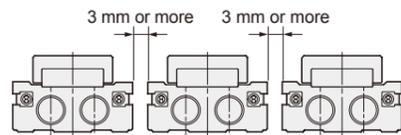
Item	Table		
	Bolt used	Tightening torque (N·m)	Screw-in length L (mm)
LCR-6	M3 x 0.5	0.6	3
LCR-8	M3 x 0.5	0.6	3 to 4.5
LCR-12	M4 x 0.7	1.4	4 to 5.5
LCR-16	M5 x 0.8	2.9	5 to 6
LCR-20	M5 x 0.8	2.9	5 to 6
LCR-25	M6 x 1.0	4.8	6 to 7

Item	End plate		
	Bolt used	Tightening torque (N·m)	Screw-in length L (mm)
LCR-6	M3 x 0.5	0.6	4.5 to 6
LCR-8	M3 x 0.5	0.6	4.5 to 7
LCR-12	M4 x 0.7	1.4	6 to 9
LCR-16	M5 x 0.8	2.9	7.5 to 9
LCR-20	M5 x 0.8	2.9	7.5 to 11
LCR-25	M6 x 1.0	4.8	9 to 11

- If there is a magnetic material such as an iron plate near the cylinder switch, it may malfunction. It can be used safely by keeping it 10 mm or more away from the cylinder surface or by changing the mounting surface of the cylinder switch. (Common to all bore sizes)



- If cylinders are adjacent, the cylinder switch may malfunction. Maintain the following distance from the cylinder surface. (Common to all bore sizes)



- Treat our Shock absorbers as consumable parts. Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

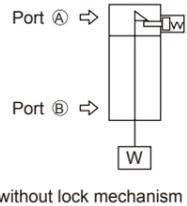
- When using locating holes, use pins with dimensions that do not result in a press fit. Using press-fit dimension pins may cause damage to the linear guide part due to press-fitting load or accuracy deterioration due to distortion. The recommended tolerance for pins is JIS tolerance m6 or less.

- Apply $\phi 6, 8$: CGL grease (manufactured by IKO Co., Ltd.) or $\phi 12$ to 25 : AFF grease (manufactured by THK Co., Ltd.) to the guide rail raceway surface every 6 months or 1 million operating cycles, whichever comes first.

3. Drop prevention type LCR-Q

Warning

- In the locked state, if pressure is supplied to port (A) from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port (B) and release it from a state where no load is applied to the lock mechanism.



- When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

Caution

- The lock mechanism works at the stroke end. If an external stopper is applied mid-stroke, the lock mechanism may not engage, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

- If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the solenoid valve will lead to similar results.

- If back pressure is applied to the lock mechanism side, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

- Do not use multiple cylinders synchronized. Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

- Use the speed controller with meter-out control. Lock may not be released with meter-in control.

- On the side with the lock, be sure to use the cylinder to the stroke end. If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

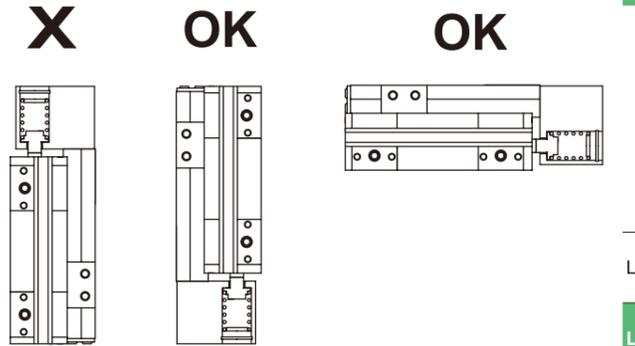
4. Low speed type LCR-F

Caution

- Adjust alignment etc. so that no lateral load is applied to the cylinder. Also, adjust and install so that there is no twisting with respect to the sliding guide.
 - Operation will become unstable if there are fluctuations in load or resistance.
 - Guides with a large difference between static friction and dynamic friction will result in unstable operation.

5. With buffer LCR-B

- Depending on the speed and load, the buffer may activate during operation, causing the switch to malfunction. Adjust the speed according to the load before use.
- Please note that models with buffers cannot be used in a vertically upward orientation.



- Use the buffer with a stroke less than the buffer stroke. This will cause malfunction or damage.

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."