LCG

Linear slide cylinder

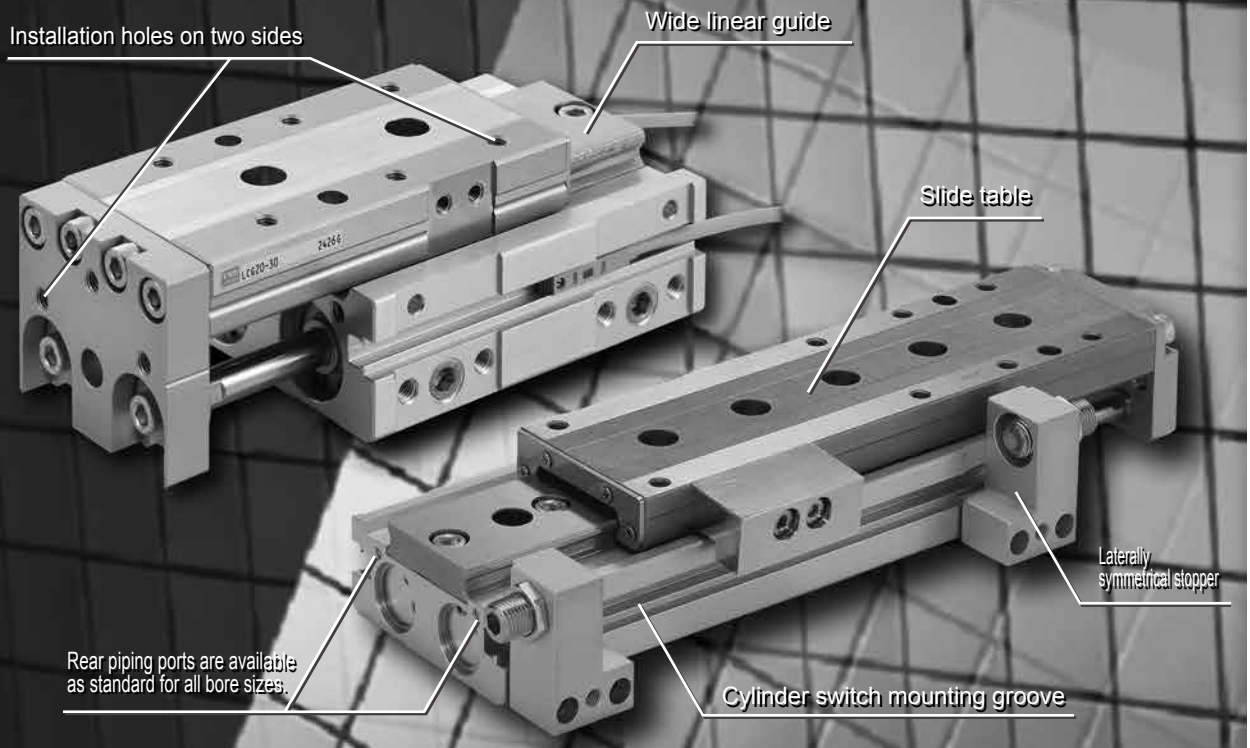
ø6/ø8/ø12/ø16/ø20/ø25

Overview

A high-precision, high-rigidity wide guide has been attached. Symmetrical structure with increased flexibility in design. Cylinder with linear guide with a wide variety of options and variations.

CONTENTS

Higher precision, higher rigidity, easier to use.

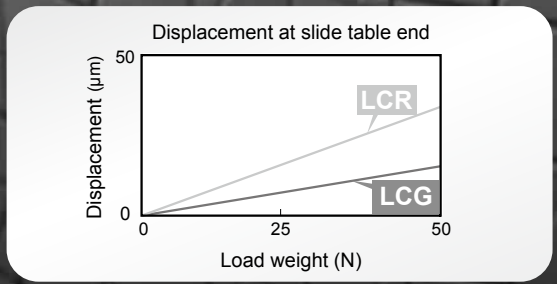


Higher precision

Linear guide table surface is used as the slide table itself. Higher precision than conventional models.
Parallelism of 0.03 mm (ø12 with 30 mm stroke length)
End plate squareness of 0.05 mm

Higher rigidity

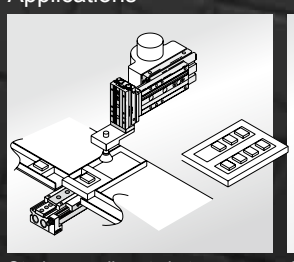
A stainless steel or steel slide table has been adopted instead of the conventional aluminum slide table. It increases rigidity when combined with a wide guide.

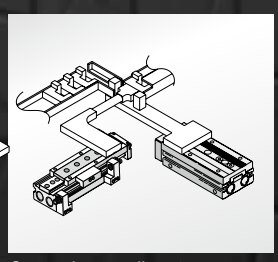


Easy to use, too

No more trouble with designing the cylinder and linear slide system individually. Work hours for designing have been reduced. Designing is more flexible and usability is further enhanced with laterally symmetrical installation of stoppers and multi-side piping.

Applications


Storing small parts in trays or supply from trays


Conveying small parts

LCG Series

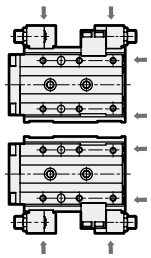
Linear slide cylinder

A high-precision rigid wide guide has been attached to the air cylinder.
The linear guide table surface serves as a slide table.
Greater usability with unprecedented precision and rigidity.
Linear slide cylinder LCG Series (ø6/ø8/ø12/ø16/ø20/ø25)

Increased flexibility in design

Designing is more flexible with the laterally symmetrical stoppers, multi-side piping, two-side installation and positioning hole availability.

■ Change to laterally symmetrical configuration is possible.

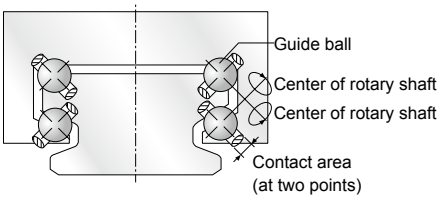


Change to laterally symmetrical configuration is possible
⬅shows the piping direction.

Guide balls aligned in four rows on the linear guide (ø12 or more)

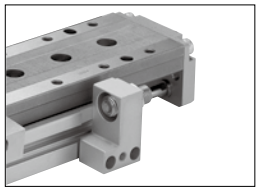
Guide balls aligned in four rows ensure stable operation in all load directions.
The contact area of the guide balls is smaller than that in the two-row configuration with minimum friction resistance and enables smooth precision operation with a rigid body.

■ Aligned in four rows contacting at two points

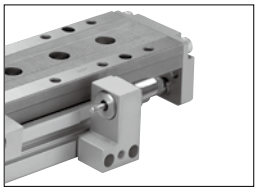


A wide variety of options and variations

Standard, position locking and clean-room specifications are available.
Options include a stroke adjusting stopper, shock absorber stopper and more.
* Shock absorber stopper cannot be used with the clean-room specifications.



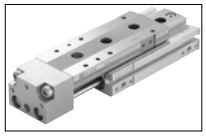
■ Stroke adjusting stopper
(adjusting range on one side: 0 to 5 mm)

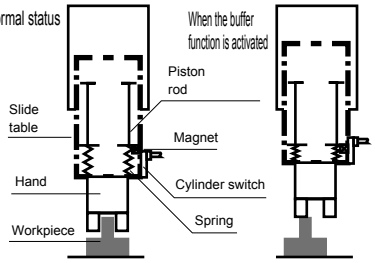


■ Shock absorber stopper reduces the impact at the stroke end.

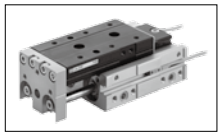
With buffer mechanism

If the driving section strikes against the workpiece when the cylinder is going forward, the buffer function is activated to protect the workpiece and cylinder. Suitable for use at the end of pick & place devices and other applications requiring a buffer function.
A cylinder switch mounted to detect the buffer activation (BL) enables detection of line abnormalities.





Anti-rust (ø20, 25)



The table and rail surface rustproofing reduces rust in high-humidity environments such as near ionizers.

2-color display switch is available

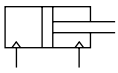
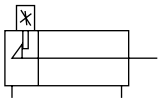
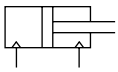
The proximity 2-color display switch can be mounted.
It does not protrude from the body and thus contributes to the plain and simple appearance of the cylinder.

■ LCG Series variation

Model variations	Bore size	Stroke length (mm) 10	20	30	40	50	75	100	125	150	With buffer B*	Anti-rust treatment U
Double acting/single rod **LCG**	ø6	○	○	○	○	○	○	○	○	○	○	○
	ø8	○	○	○	○	○	○	○	○	○	○	○
	ø12	○	○	○	○	○	○	○	○	○	○	○
	ø16	○	○	○	○	○	○	○	○	○	○	○
	ø20/ø25	○	○	○	○	○	○	○	○	○	○	○
Double acting/position locking **LCG-Q**	ø8	○	○	○	○	○	○	○	○	○	○	○
	ø12	○	○	○	○	○	○	○	○	○	○	○
	ø16	○	○	○	○	○	○	○	○	○	○	○
	ø20/ø25	○	○	○	○	○	○	○	○	○	○	○
Double acting/single rod (Clean-room specifications) **LCG-P7***	ø6	○	○	○	○	○	○	○	○	○	○	○
	ø8	○	○	○	○	○	○	○	○	○	○	○
	ø12	○	○	○	○	○	○	○	○	○	○	○
	ø16	○	○	○	○	○	○	○	○	○	○	○
	ø20/ø25	○	○	○	○	○	○	○	○	○	○	○

Series variation

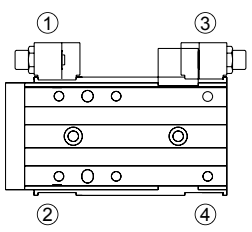
Linear slide cylinder LCG Series

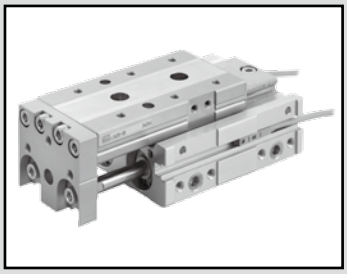
Variation	Model No. JIS symbol	Bore size (mm)	Stroke length (mm)								
			10	20	30	40	50	75	100	125	150
Double acting/ single rod	LCG 	ø6	●	●	●	●	●				
		ø8	●	●	●	●	●	●			
		ø12	●	●	●	●	●	●	●		
		ø16	●	●	●	●	●	●	●	●	
		ø20/ø25	●	●	●	●	●	●	●	●	●
Double acting/ position locking	LCG-Q 	ø8	●	●	●	●	●	●			
		ø12	●	●	●	●	●	●	●		
		ø16	●	●	●	●	●	●	●	●	
		ø20/ø25	●	●	●	●	●	●	●	●	●
Double acting/ single rod clean-room specifications	LCG-P7* 	ø6	●	●	●	●	●				
		ø8	●	●	●	●	●	●			
		ø12	●	●	●	●	●	●	●		
		ø16	●	●	●	●	●	●	●	●	
		ø20/ø25	●	●	●	●	●	●	●	●	●

●: Standard, ◎ : Option, ○: Made to order, : Not available

	Option																Switch	Page
	Stroke adjusting stopper						Shock absorber stopper						With buffer		Anti-rust treated	Plug attached		
	Stopper position ①	Stopper position ②	Stopper position ③	Stopper position ④	Stopper position ①/③	Stopper position ②/④	Stopper position ①	Stopper position ②	Stopper position ③	Stopper position ④	Stopper position ①/③	Stopper position ②/④	Without switch groove	With switch groove	Anti-rust treated product			
	S1	S2	S3	S4	S5	S6	A1	A2	A3	A4	A5	A6	B	BL	U	N		
	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	140
	◎	◎					◎	◎					◎	◎	◎		◎	164
	◎	◎	◎	◎	◎	◎									◎	◎	◎	172

● Stopper position

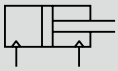




Linear slide cylinder Double acting/single rod

LCG Series

● Bore size: ø6/ø8/ø12/ø16/ø20/ø25

JIS symbol 

RoHS CAD

Specifications

Item		LCG					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		0.7 (≈100 psi, 7 bar)					
Min. working pressure MPa		0.15 (≈22 psi, 1.5 bar) (*1)					
Proof pressure MPa		1.05 (≈150 psi, 10.5 bar)					
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)					
Port size	Main body side	M3	M5			Rc1/8	
	Main body back	M3				M5	Rc1/8
Stroke tolerance mm		$^{+2.0}_{0}$ (*2)					
Working piston speed mm/s		50 to 500 (*3)					
Cushion		With rubber cushion					
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)					
Allowable absorbed energy J		Refer to Table 3 on page 188.					

*1: 0.2 MPa when using ø6 shock absorber stopper.
*2: Note that there will be a slight gap between the end plate and floating bush if no stopper is attached.
*3: Keep within 50 to 200 mm/s when using a stroke adjusting stopper.
*4: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.

Stroke length

Bore size (mm)	Standard stroke length (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: Products with stroke lengths other than the above are not available.

With buffer specifications

Specifications other than the below are same as the above common specifications.

Item		Description					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Buffer stroke length mm		4		9		10	
Buffer part spring load	When set N	3	5	10	13	17	21
	When operated N	7	8	14	20	25	29

*1: In the type with buffer, adjusting the rod side stroke length will shorten the buffer stroke length and increase the spring load when set.
*2: Keep the buffer stroke length less than the stroke length above. Otherwise, malfunctions or damage may result.

Theoretical thrust table

Refer to page 189.

Switch specifications

● 1-color/2-color display

Item	Reed 2-wire				Proximity 2-wire		Proximity 3-wire		
	T0H/T0V		T5H/T5V		T2H/T2V	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3WH/ T3WV
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection		Dedicated for programmable controller		For programmable controller, relay		
Output method	-		-		-		NPN output	PNP output	NPN output
Power supply voltage	-		-		-		10 to 28 VDC		
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 20 mA		100 mA or less		50 mA or less
Indicator lamp	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	0 mA				1 mA or less		10 μA or less		
Weight g	1 m:18 3 m:49 5 m:80								

Item	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/ F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/ F3YV
Applications	Dedicated for programmable controller	For programmable controller, relay	Dedicated for programmable controller		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20 mA	50 mA or less	5 to 20 mA		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Yellow LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 μA or less	1 mA or less		10 μA or less		
Weight g	1 m:10 3 m:29						

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : The F type switch uses a bend-resistant lead wire.

Cylinder weight

● Basic (Unit: g)

Bore size (mm)	Basic Stroke length (mm)								
	10	20	30	40	50	75	100	125	150
ø6	150	150	170	230	250	-	-	-	-
ø8	220	220	250	330	360	450	-	-	-
ø12	480	480	480	530	580	770	910	-	-
ø16	750	740	730	810	890	1,240	1,430	1,630	-
ø20	1,270	1,260	1,250	1,370	1,490	1,930	2,220	2,510	2,800
ø25	2,120	2,100	2,080	2,260	2,440	3,240	3,660	4,080	4,500

● Additional weight of options (Unit: g)

Bore size (mm)	Option/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

How to order (ø6 to ø16)

Without switch (built-in magnet for switch)

LCG - 8 - 40 ——— S5

With switch (built-in magnet for switch)

LCG - 12 - 40 - F2H* - R - A1DT

- LCG: Model No.
- 12: Ⓐ Bore size
- 40: Ⓑ Stroke length
- F2H*: Ⓒ Switch model No. *12
- R: Ⓓ Switch quantity
- A1DT: Ⓔ Option

Precautions for model No. selection

*1 : To change the adjustable stroke length, use the discrete stroke adjusting stopper on page 145.
*2 : For the adjustable stroke range with a shock absorber stopper, refer to the stopper dimensions table on page 162.
*3 : For the port position, refer to the stopper dimensions on page 162.
*4 : The port positions of the standard without stopper are ① and ③ in the figure below.
*5 : Combination of the stroke adjusting stopper and shock absorber stopper is made to order.
*6 : Can be selected for the type with stopper only.
*7 : A switch for buffer should be purchased separately. Refer to how to order a switch on page 144.
*8 : Refer to the selection table below for combinations of options.
*9 : A1**, A2**, A5** and A6** of ø6 to ø8 with 10 mm stroke length or less and ø12/ø16 with 20 mm stroke length or less are made to order since adjustment is not possible with the standard stopper.
*10 : When two switches are necessary for the type with S*** or A***of ø6 to ø8 with 30 mm stroke length or less, select the F □ H type switch.
*11 : The anti-rust is made to order.
*12 : The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.
*13 : When changing the stopper position from the head side to the rod side, the stopper must be purchased separately according to the stroke length and adjustable stroke length. Refer to "Precautions when purchasing discrete stopper" on page 145.
A1, A2 and adjustable stroke length of 15 mm and 25 mm may not be available depending on the stroke length.

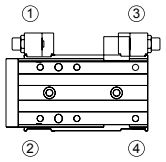
[Example of model No.]

LCG-12-40-F2H-R-A1DT

Model: Linear slide cylinder Double acting/single rod LCG

- Ⓐ Bore size : ø12
- Ⓑ Stroke length : 40 mm
- Ⓒ Switch model No. : Proximity/2-wire Axial lead wire
- Ⓓ Switch quantity : 1 on rod side
- Ⓔ Other options : Shock absorber Stopper position ① With side and bottom ports Material, steel (nitriding)

● Stopper position



Code	Description
Ⓐ Bore size	
6	ø6
8	ø8
12	ø12
16	ø16

Ⓑ Stroke length (mm)

		Bore size (ø)			
		6	8	12	16
10	10	●	●	●	●
20	20	●	●	●	●
30	30	●	●	●	●
40	40	●	●	●	●
50	50	●	●	●	●
75	75		●	●	●
100	100			●	●
125	125				●

Ⓒ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator lamp	Lead Line	Bore size ø6	ø8	ø12	ø16
-	**F2S***	Proximity		●	1-color display	2-wire	●	●	●	
-	**F3S***			●		3-wire				
F2H*	**F2V***			●		2-wire				
F3H*	**F3V***			●		3-wire				
F3PH*	**F3PV***			●	1 color display (PNP output) (made to order)	3-wire				
F2YH*	**F2YV***			●	2-color display	2-wire				
F3YH*	**F3YV***			●		3-wire				
T0H*	**T0V***	Reed	●	●	1-color display	2-wire				●
T5H*	**T5V***		●	●	no indicator lamp					
T2H*	**T2V***	Proximity		●	1-color display	2-wire				
T3H*	**T3V***			●		3-wire				
T3PH*	**T3PV***			●	1 color display (PNP output)	3-wire				
T2WH*	**T2WV***			●	2-color display	2-wire				
T3WH*	**T3WV***			●		3-wire				

*** Lead wire length**

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

Ⓓ Switch quantity

R	1 on rod side
H	1 on head side
D	2

Ⓔ Option

Blank	No option	
S Stroke adjusting stopper		
5 mm stroke adjustment on one side		***1, *5, *8**
S1**	Stopper position ① (can be changed to ④)	Stopper installation position
S2**	Stopper position ② (can be changed to ③)	
S3**	Stopper position ③ (can be changed to ②)	*13
S4**	Stopper position ④ (can be changed to ①)	*13
S5**	Stopper position ①, ③	
S6**	Stopper position ②, ④	
A Shock absorber stopper		***2, *5, *8**
A1**	Stopper position ① (can be changed to ④)	Stopper installation position
A2**	Stopper position ② (can be changed to ③)	
A3**	Stopper position ③ (can be changed to ②)	*13
A4**	Stopper position ④ (can be changed to ①)	*13
A5**	Stopper position ①, ③	
A6**	Stopper position ②, ④	
**** part**		
Blank	Port on the stopper: without port	
D	Port on stopper: side and bottom ports	*3, *6
Blank	Stopper block material: steel	
T	Stopper block material: steel (nitriding)	*6
B With buffer		***7, *8**
B	Without switch groove	
BL	With switch groove	
Plug attached		
Blank	None	
N	With side piping port plug (not available for ø6)	

LCG Double acting/single rod selection table

(Combination with stroke adjusting stopper, shock absorber stopper)

○: Available — : Not available

Model No. code	Option code: Bore size	Option code: Stroke length	Stroke adjusting stopper S1	S2	S3	S4	S5	S6	Shock absorber stopper A1	A2	A3	A4	A5	A6
LCG	ø6, ø8	10	○	○	○	○	○	○	—	—	○	○	—	—
		20 or more	○	○	○	○	○	○	○	○	○	○	○	○
LCG -B, BL	ø12 to ø25	10 to 20	○	○	○	○	○	○	—	—	○	○	—	—
		30 or more	○	○	○	○	○	○	○	○	○	○	○	○

The table above also applies to combinations with option code D (with port on stopper) or T (steel stopper block (nitriding)).

How to order (ø20, ø25)

Without switch (built-in magnet for switch)

LCG - 20 - 40 ——— S5 U

With switch (built-in magnet for switch)

LCG - 20 - 40 - T2H* - R - A1DT U

Model No. LCG

Ⓐ Tube Bore size: 20

Ⓑ Stroke length: 40

Ⓒ Switch model No.: T2H* (*12)

Ⓓ Switch quantity: R

Ⓔ Option: A1DT

Ⓕ Anti-rust treatment: U

⚠ Precautions for model No. selection

*1 : To change the adjustable stroke length, use the discrete stroke adjusting stopper on page 145.
*2 : For the adjustable stroke range with a shock absorber stopper, refer to the stopper dimensions table on page 162.
*3 : For the port position, refer to the stopper dimensions on page 162.
*4 : The port positions of the standard without stopper are ① and ③ in the figure below.
*5 : Combination of the stroke adjusting stopper and shock absorber stopper is made to order.
*6 : Can be selected for the type with stopper only.
*7 : A switch for buffer should be purchased separately. Refer to how to order a switch on page 144.
*8 : Refer to the selection table on page 142 for combinations of options.
*9 : A1**, A2**, A5** and A6** with 20 mm stroke length or less are made to order since adjustment is not possible with the standard stopper.
*10 : The table is alloy steel. To prevent rust, select "U" for an environment where the temperature and humidity is high or condensation may occur on the product surface.
*11 : The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.
*12 : When changing the stopper position from the head side to the rod side, the stopper must be purchased separately according to the stroke length and adjustable stroke length. Refer to "Precautions when purchasing discrete stopper" on page 145. A1, A2 and adjustable stroke length of 15 mm and 25 mm may not be available depending on the stroke length.

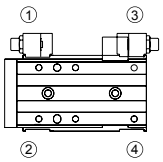
[Example of model No.]

LCG-20-40-T2H-R-A1DT

Model: Linear slide cylinder Double acting/single rod LCG

Ⓐ Bore size : ø20
Ⓑ Stroke length : 40 mm
Ⓒ Switch model No. : Proximity/2-wire Axial lead wire
Ⓓ Switch quantity : 1 on rod side
Ⓔ Other options : Shock absorber Stopper position ① With side and bottom ports Material, steel (nitriding)

● Stopper position



Code	Description
Ⓐ Bore size	
20	ø20
25	ø25
Ⓑ Stroke length (mm)	
10	10
20	20
30	30
40	40
50	50
75	75
100	100
125	125
150	150

Ⓒ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator lamp	Lead wire
T0H*	T0V*	Reed	●	●	1-color display	2-wire
T5H*	T5V*		●	●	Without indicator lamp	
T2H*	T2V*	Proximity		●	1-color display	2-wire
T3H*	T3V*			●		3-wire
T3PH*	T3PV*			●	1-color display (PNP output)	3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T3WH*	T3WV*			●		3-wire

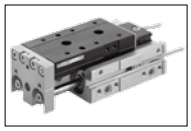
*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Option		
Blank	No option	
S Stroke adjusting stopper		
5 mm stroke adjustment on one side		***1, *5, *8**
S1**	Stopper position ① (can be changed to ④)	Stopper installation position
S2**	Stopper position ② (can be changed to ③)	
S3**	Stopper position ③ (can be changed to ②)	*12
S4**	Stopper position ④ (can be changed to ①)	*12
S5**	Stopper position ①, ③	
S6**	Stopper position ②, ④	
A Shock absorber stopper		***2, *5, *8**
A1**	Stopper position ① (can be changed to ④)	Stopper installation position
A2**	Stopper position ② (can be changed to ③)	
A3**	Stopper position ③ (can be changed to ②)	*12
A4**	Stopper position ④ (can be changed to ①)	*12
A5**	Stopper position ①, ③	
A6**	Stopper position ②, ④	
**** part**		
Blank	Port on the stopper: without port	
D	Port on stopper: side and bottom ports	*3, *6
Blank	Stopper block material: steel	
T	Stopper block material: steel (nitriding)	*6
B With buffer		***7, *8**
B	Without switch groove	
BL	With switch groove	
Plug attached		
Blank	None	
N	With side piping port plug (not available for ø25)	

Ⓕ Anti-rust treatment		
Blank	None	
U	Anti-rust treated product (table/guide)	*10

U: Anti-rust treated product (ø20, ø25)



The table and rail surface rustproofing reduces rust in high-humidity environments and near ionizers.

The table and rail are black.

Specifications for rechargeable battery

(Catalog No. CC-1226A)

● Design compatible with rechargeable battery manufacturing process.

LCG - ... - P4*

How to order switch

For ø6 to ø12

SW - F2H

Switch model No.
(Item Ⓒ on page 142)

For ø16 to ø25

SW - T2H3

Switch model No.
(Item Ⓒ on pages 142, 143)

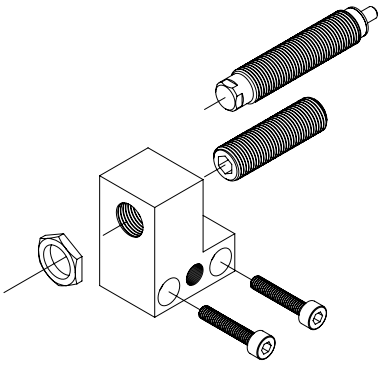
● For buffer

SW - F 2 V 3

Output	
2	DC 2-wire proximity
3	DC 3-wire proximity
Radial lead wire	
Lead wire length	
Blank	1 m (standard)
3	3 m (option)

How to order a stopper set

● Set of a stopper and stroke adjusting stopper or shock absorber stopper
● Use it when changing from the standard to the stroke adjusting stopper or shock absorber stopper.



LCG - 12 - S 2 D - S02

Bore size
(Item Ⓐ on pages 142,143)

Ⓐ Stopper	
S	Stroke adjusting stopper
A	Shock absorber stopper
Ⓑ Stopper installation position	***1***
1	Stopper position ① or ④
2	Stopper position ② or ③
Ⓒ Port on the stopper	
Blank	Without port
D	With side and bottom ports
Ⓓ Adjustable stroke length	***2/*3***
Blank	Adjustable stroke range 5 mm
S02	Adjustable stroke range 15 mm
S03	Adjustable stroke range 25 mm

*1: When installing in the ① or ② stopper mounting position, the stroke causes changes in the adjustable stroke length; see the table below.
*2: ø6 and ø8 are not available for S03.
*3: Cannot be selected for the shock absorber stopper "A".

Precautions when purchasing the stopper set

When the stopper set is installed in the ① or ② position (refer to pages 142 and 143), add the part shown on the right according to the stroke length and adjustable stroke length.

—: Not applicable

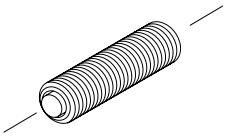
Model No. code	Option code		Discrete stroke adjusting stopper		
			Adjustable stroke length (mm)		
	Bore size	Stroke length	-5	-15	-25
LCG Series	ø6, ø8	10	S02	—	—
		20 or more	N/A	S02	—
	ø12 to ø25	10	S03	—	—
		20	S02	S03	—
		30 or more	N/A	S02	S03

● Stopper set weight (Unit: g)

Stopper port	S1,S2			A1,A2
Port on stopper	Blank, D			
Adjustable stroke length	Blank	S02	S03	Blank
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

How to order discrete stroke adjusting stopper

● Hexagon socket set screw with urethane
● Use when changing the adjustable stroke range or when using a custom stroke length.



LCG - 12 - S02

Bore size
(Item Ⓐ on pages 142, 143)

Ⓐ Adjustable stroke range	
S01	Single side 5 mm (standard)
S02	Single side 15 mm
S03	Single side 25 mm

Specify S01, S02 or S03 in Ⓐ.
Note: S03 is not available for ø6 and ø8.
Some models may not be available and adjustable stroke range may differ from the above depending on the model No.

Precautions when purchasing discrete stopper

When a discrete stroke adjusting stopper or a discrete shock absorber stopper is installed in the ① or ② position (refer to pages 142 and 143), the combination will be as shown on the right according to the stroke length and adjustable stroke length.

— : Not available

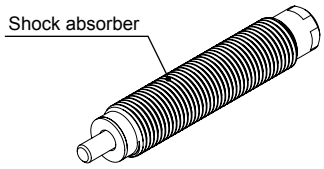
Model No. code	Option code		Discrete stroke adjusting stopper Adjustable stroke length (mm)			Discrete shock absorber stopper
	Bore size	Stroke length	-5	-15	-25	
LCG Series -S1, S2, S5, S6 -A1, A2, A5, A6	ø6, ø8	10	S02	—	—	—
		20 or more	S01	S02	—	A01
	ø12 to ø25	10	S03	—	—	—
		20	S02	S03	—	—
		30 or more	S01	S02	S03	A01

● Discrete stroke adjusting stopper weight (Unit: g)

Adjustable stroke range	S01	S02	S03
ø6	6	9	—
ø8	7	10	—
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

How to order discrete shock absorber stopper

● Shock absorber set
● Use when changing from the stroke adjusting stopper or shock absorber stopper.



LCG - 12 - A01

Bore size
(Item Ⓐ on pages 142, 143)

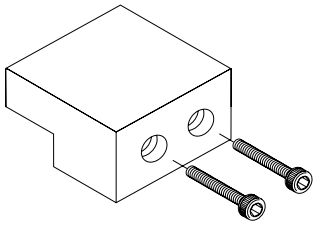
Note: Some models may not be available depending on the specifications. Refer to pages 142 and 143.
For the adjustable stroke range with a shock absorber stopper, refer to page 162.

Applicable shock absorber model No.

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

How to order discrete stopper block

● Use it when changing from the standard to the stroke adjusting stopper or shock absorber stopper.



LCG - 12 - SB1 T

Bore size
(Item Ⓐ on pages 142, 143)

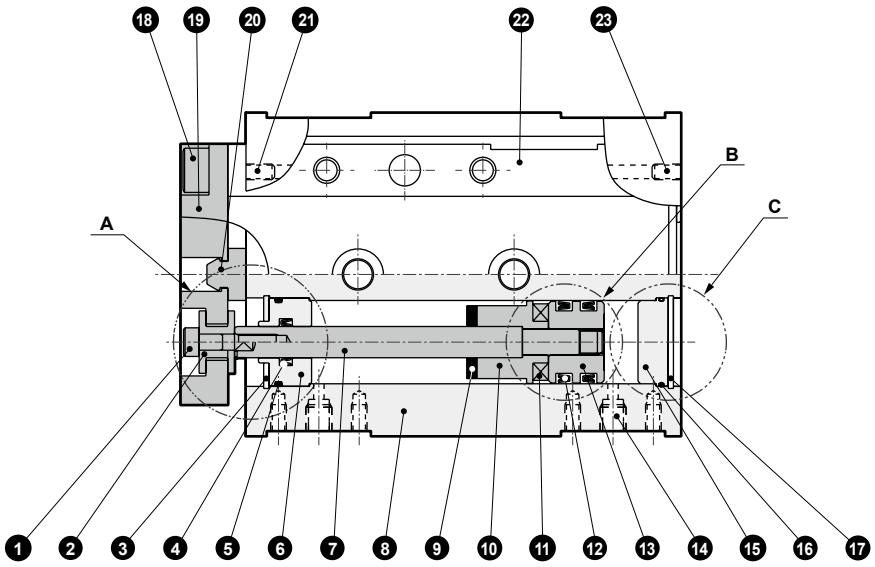
Ⓐ Stopper block	
SB1	ø6/ø8: For 30 mm stroke length or less
	ø12 to ø25: For 50 mm stroke length or less
SB2	ø6/ø8: For 40 mm stroke length or more
	ø12 to ø25: For 75 mm stroke length or more

Ⓑ Material	
Blank	Stopper block material: steel
T	Stopper block material: steel (nitriding)

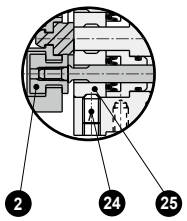
● Discrete stroke adjusting stopper weight (Unit: g)

Adjustable stroke range	SB1(T)	SB2(T)
ø6	11	21
ø8	14	24
ø12	23	37
ø16	38	72
ø20	60	99
ø25	112	206

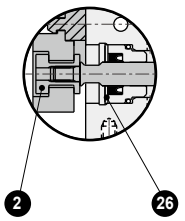
Internal structure and parts list



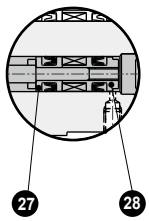
For A part ø6



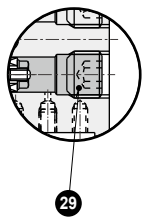
For A part ø8



For B part ø6, ø8, ø12



For C part ø6, ø8



Parts list

No.	Part name	Material	Remarks
1	Hexagon socket head cap screw	Alloy steel	Zinc chromate
2	Floating bush	Stainless steel	
3	C type snap ring	ø8: Steel ø12 to 25: Stainless steel	ø8 to 25 only
4	Rod packing	Nitrile rubber	
5	Metal gasket	Nitrile rubber	
6	Rod metal	Aluminum alloy	Alumite
7	Piston rod	Stainless steel	
8	Cylinder body	Aluminum alloy	Hard alumite
9	Cushion rubber (R)	Urethane rubber	
10	Magnet spacer	Aluminum alloy	Chromate
11	Magnet	Plastic	
12	Piston packing	Nitrile rubber	
13	Piston	Aluminum alloy	Chromate
14	Plug	Stainless steel	ø6 to 16
		Steel	ø20, 25

No.	Part name	Material	Remarks
15	Cover	Aluminum alloy	Chromate
16	Cover gasket	Nitrile rubber	
17	C type snap ring	ø8: Steel ø12 to 25: Stainless steel	ø8 to 25 only
18	Hexagon socket head cap screw	Alloy steel	Zinc chromate
19	End plate	Aluminum alloy	Alumite
20	Cushion rubber (H)	Urethane rubber	
21	Plug	Stainless steel	
22	Table	ø6 to 16: Stainless steel ø20, 25: Steel	
23	Hexagon socket set screw	Stainless steel	
24	Hexagon socket set screw	Stainless steel	ø6 only
25	Rod metal A	Aluminum alloy	
26	Cap	Aluminum alloy	Chromate
27	Piston A	Aluminum alloy	Chromate
28	Piston B	Aluminum alloy	Chromate
29	Hexagon socket set screw	Alloy steel	Zinc chromate

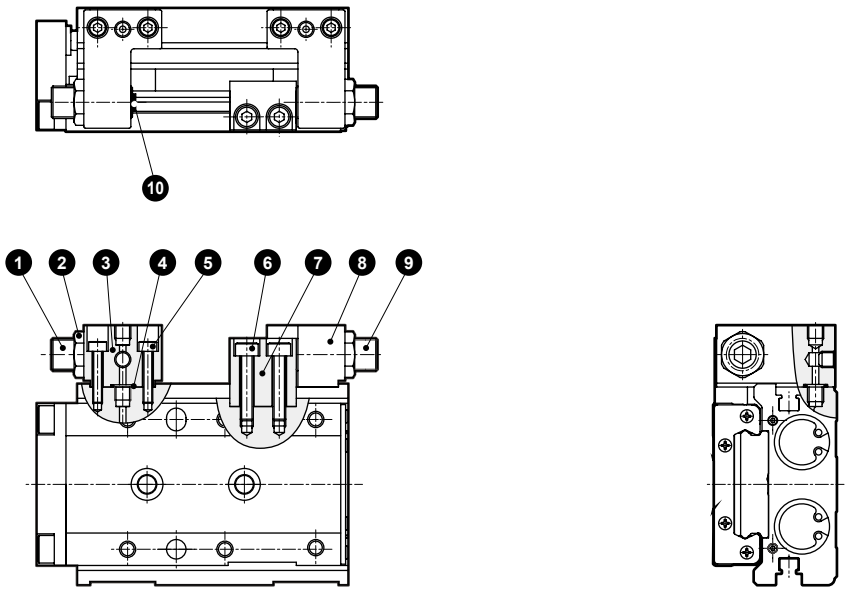
Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
ø6	LCG-6K	
ø8	LCG-8K	
ø12	LCG-12K	4 5 9
ø16	LCG-16K	12 16 20
ø20	LCG-20K	
ø25	LCG-25K	

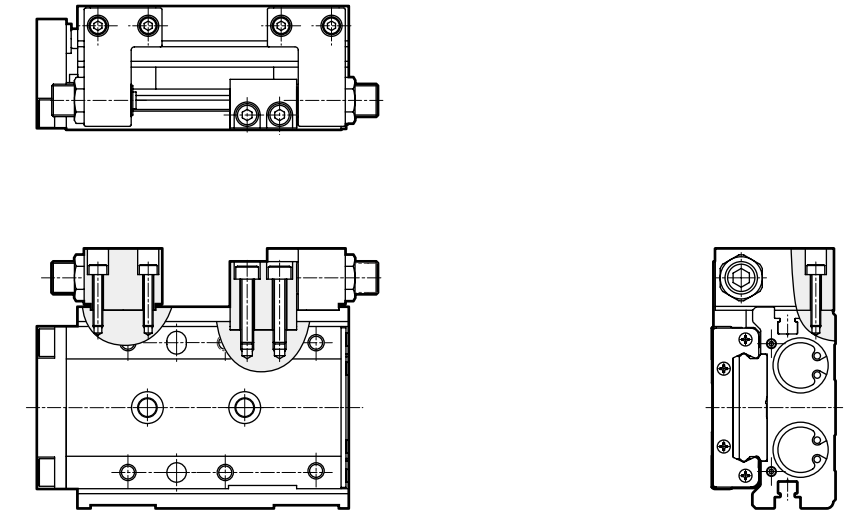
Internal structure and parts list

Structure with stopper

● Type with port on stopper side and bottom (code D)



● Without port on the stopper



Parts list

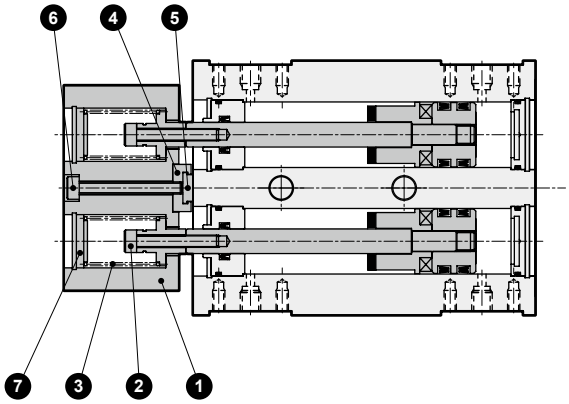
No.	Part name	Material	Remarks
1	Stopper bolt	Alloy steel	Nickeling
2	Hexagon nut	Alloy steel	Nickeling
3	Stopper A	Aluminum alloy	Alumite
4	Gasket	Urethane rubber	
5	Hexagon socket head cap screw	Alloy steel	Zinc chromate
6	Hexagon socket head cap screw	Alloy steel	Zinc chromate

No.	Part name	Material	Remarks
7	Stopper block (Stopper block code: Blank)	Steel	Nickeling
	Stopper block (Stopper block code: T)	Steel	Nitriding
8	Stopper B	Aluminum alloy	Alumite
9	Stopper bolt	Alloy steel	Nickeling
10	Cushion rubber	Urethane rubber	

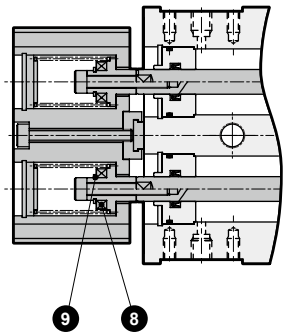
Internal structure and parts list

LCG-*-*-B*

● With buffer, without switch groove



● With buffer, with switch groove



Parts list

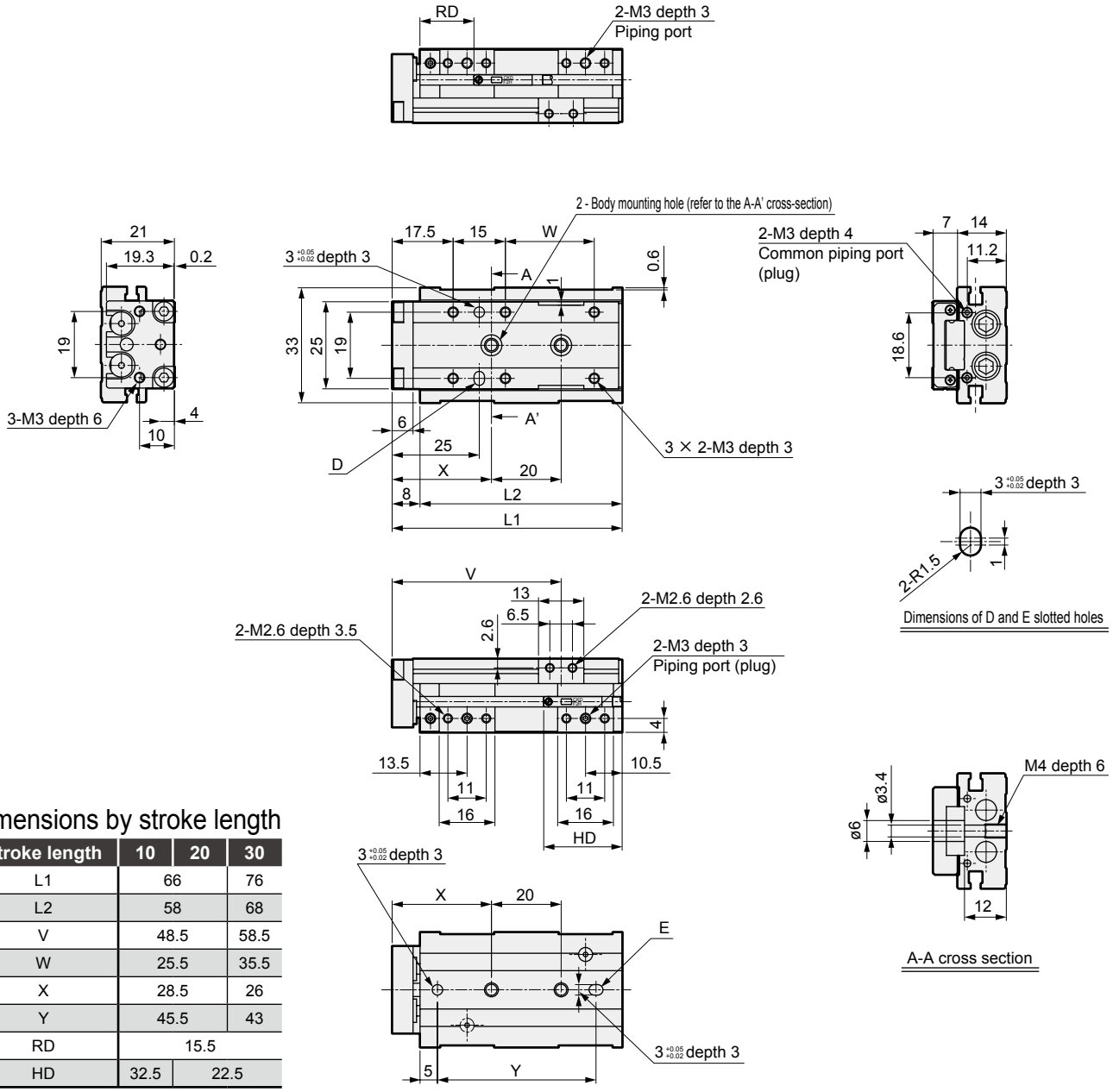
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	End plate	Aluminum alloy	Alumite	6	C type snap ring	ø6, 8: Steel ø12 to 25: Stainless steel	
2	Hexagon socket head cap screw	Alloy steel	Zinc chromate				
3	Coil spring	Steel		7	Cover	Aluminum alloy	Chromate
4	Stopper	ø6: Stainless steel ø8 to 25: Aluminum alloy		8	Magnet	Plastic	
				9	E-ring	ø6 to 12: Stainless steel ø16 to 25: Steel	
5	Cushion rubber	Urethane rubber					

MEMO

Dimensions (bore size: ø6) CAD

● LCG-6

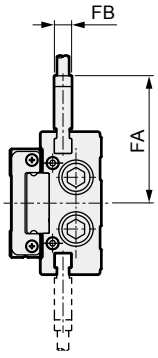
Stroke length: 10, 20, 30
(Body mounting hole in the figure shows 20 mm stroke length)



Dimensions by stroke length

Stroke length	10	20	30
L1	66		76
L2	58		68
V	48.5		58.5
W	25.5		35.5
X	28.5		26
Y	45.5		43
RD	15.5		
HD	32.5	22.5	

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	10	20	30
FA	29.6		
FB	4		
RD	14.5		
HD	33.5	23.5	

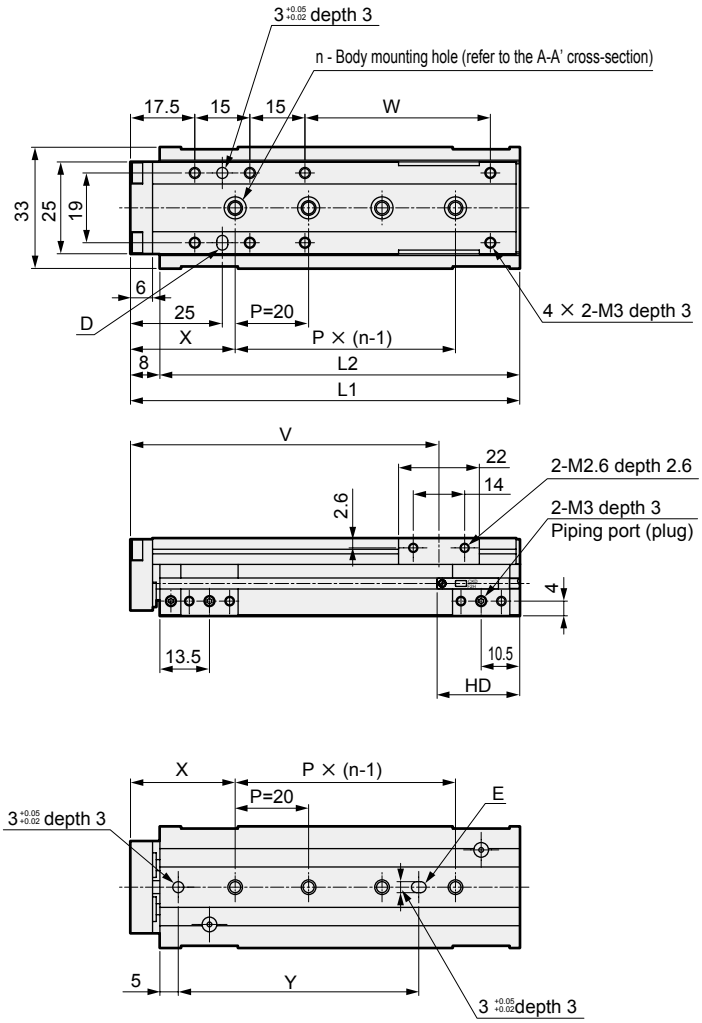
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø6)

● LCG-6

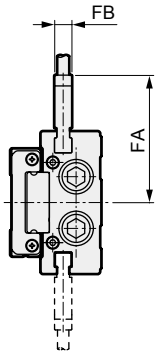
Stroke length: 40, 50
(Body mounting hole in the figure shows 50 mm stroke length)



Dimensions by stroke length

Stroke length	40	50
L1	96	106
L2	88	98
n	3	4
V	74	84
W	40.5	50.5
X	27	28.5
Y	44	65.5
RD	25.5	
HD	22.5	

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	40	50
FA	29.6	
FB	4	
RD	24.5	
HD	23.5	

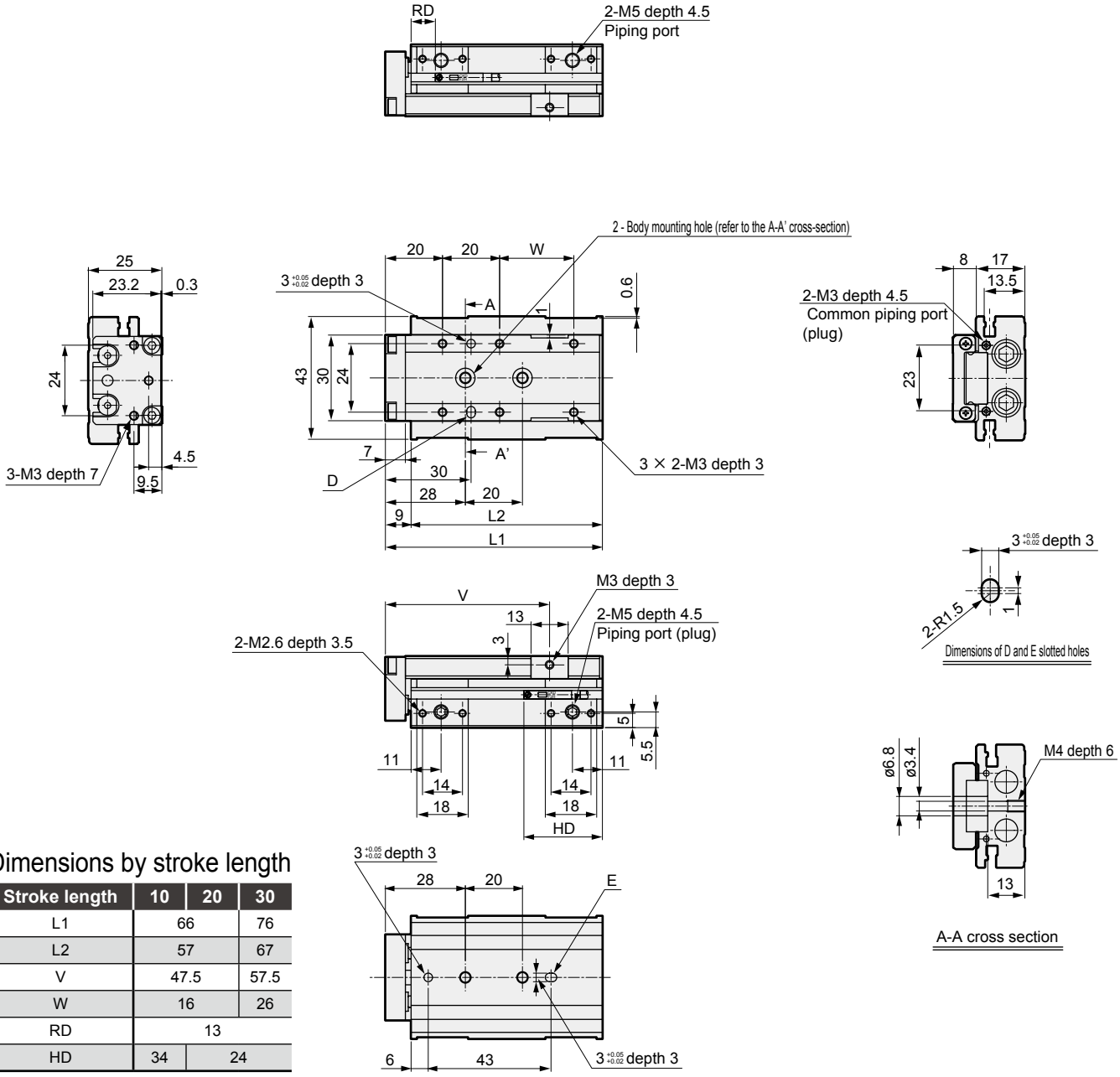
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø8) CAD

● LCG-8

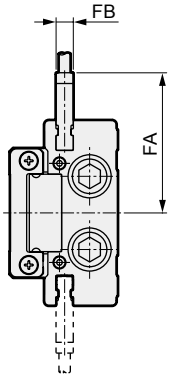
Stroke length: 10, 20, 30
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length	10	20	30
L1	66		76
L2	57		67
V	47.5		57.5
W	16		26
RD	13		
HD	34	24	

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	10	20	30
FA	32.6		
FB	4		
RD	12		
HD	35	25	

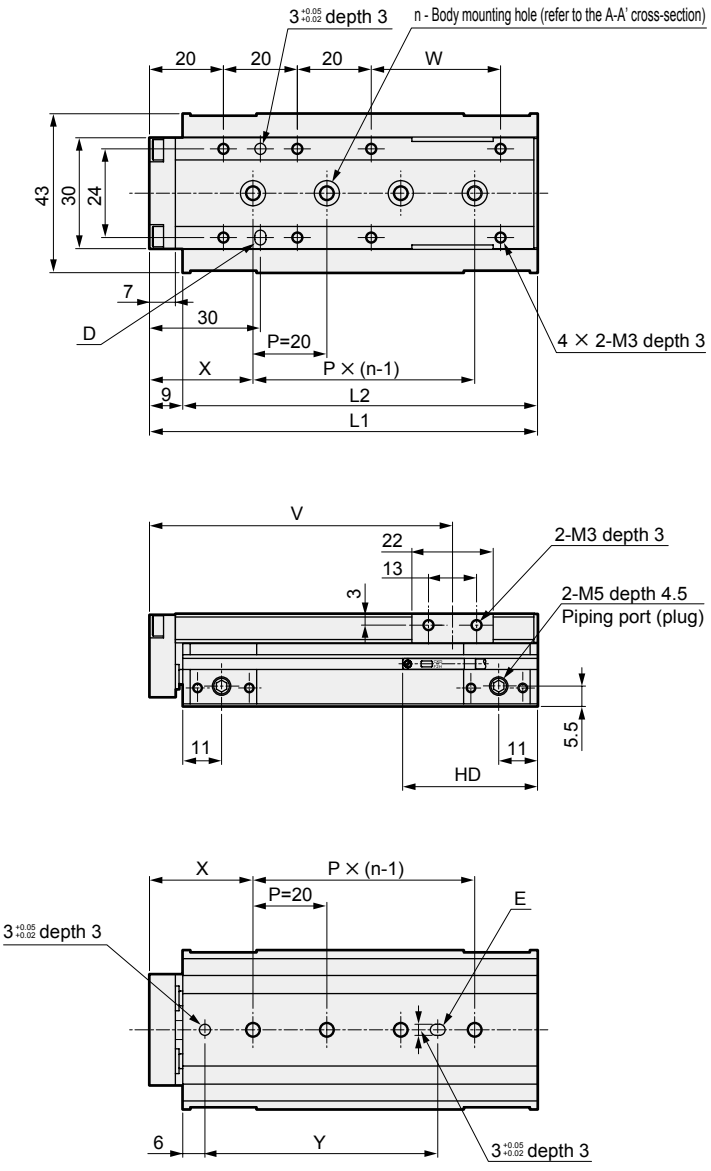
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø8)

● LCG-8

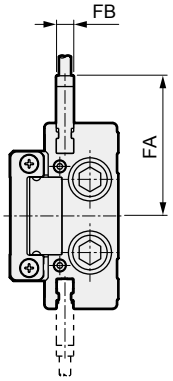
Stroke length: 40, 50, 75
(Body mounting hole in the figure shows 50 mm stroke length)



Dimensions by stroke length

Stroke length	40	50	75
L1	95	105	130
L2	86	96	121
n	3	4	5
V	72	82	107
W	25	35	60
X	26.5	28	25
Y	41.5	63	80
RD	13		
HD	33		

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	40	50	75
FA	32.6		
FB	4		
RD	12		
HD	34		

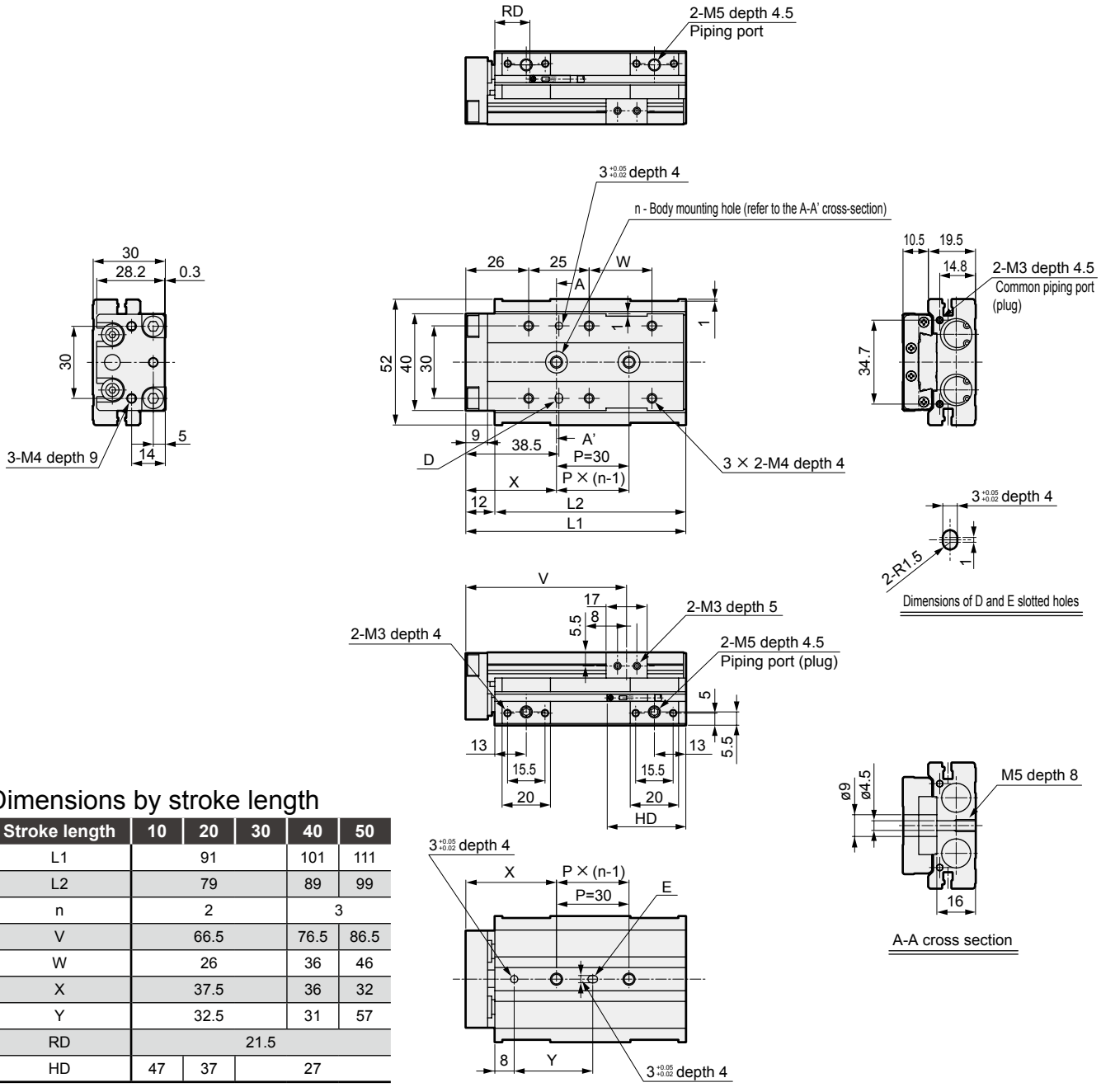
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø12)

● LCG-12

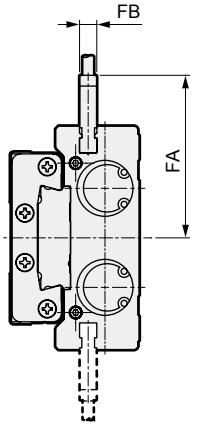
Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length	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
RD	21.5				
HD	47	37	27		

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	10	20	30	40	50
FA	37.8				
FB	4				
RD	20.5				
HD	48	38	28		

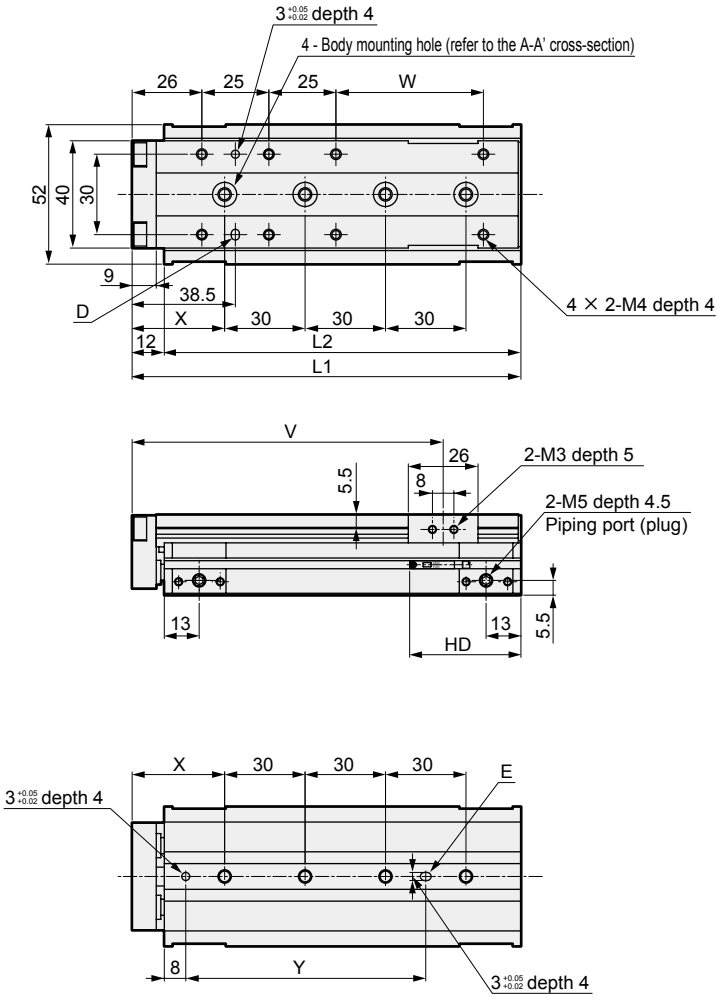
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø12) CAD

● LCG-12

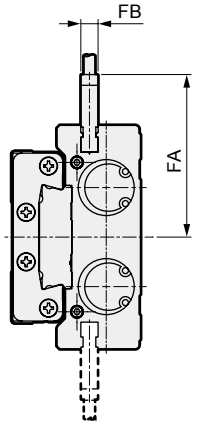
Stroke length: 75, 100
(Body mounting hole in the figure shows 100 mm stroke length)



Dimensions by stroke length

Stroke length	75	100
L1	145	170
L2	133	158
V	116	141
W	55	80
X	34.5	47
Y	89.5	102
RD	21.5	
HD	36	

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	75	100
FA	37.8	
FB	4	
RD	20.5	
HD	37	

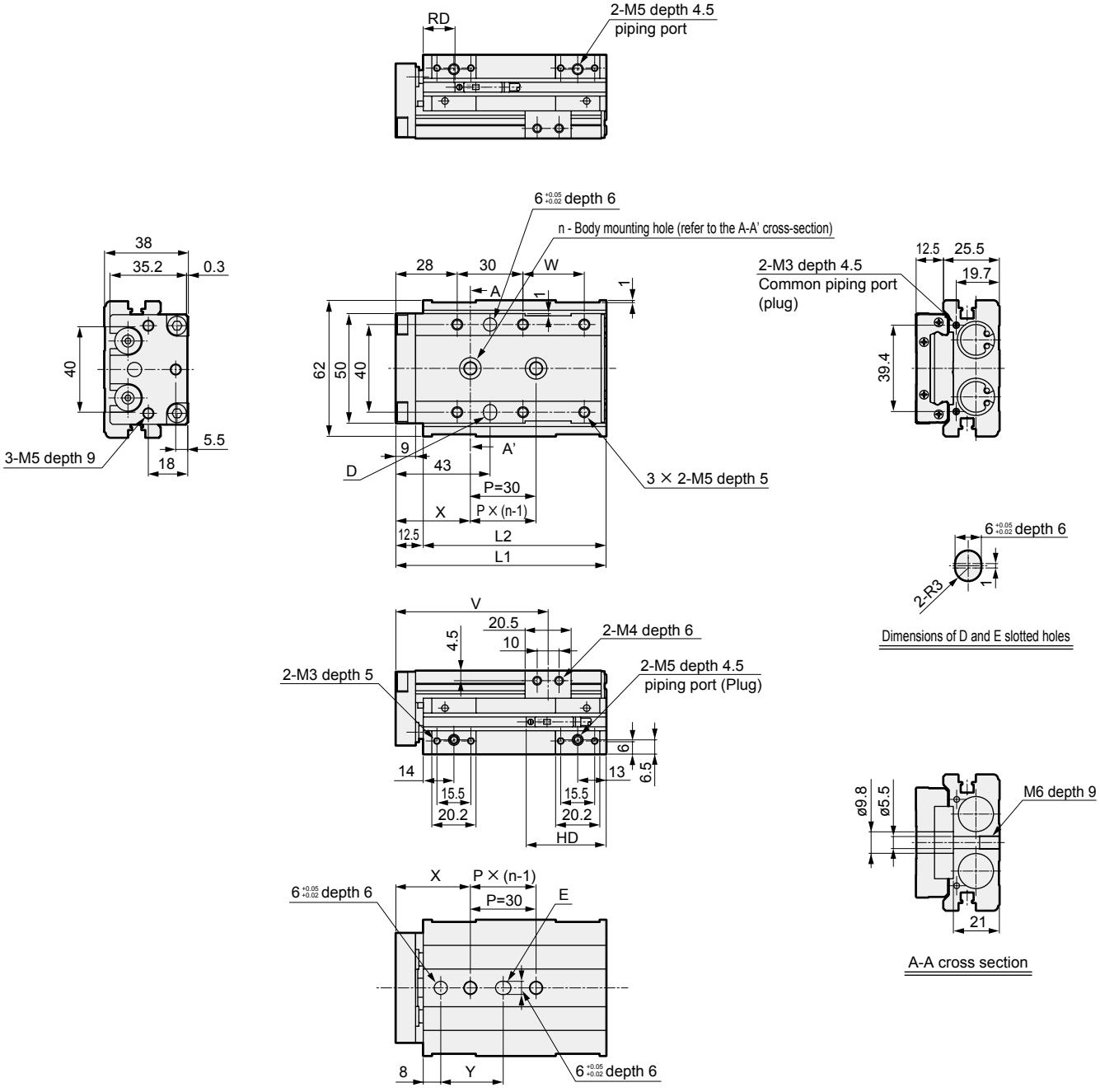
*1: When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø16)

● LCG-16

Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length		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
T0/5*	RD	17				
T2/3*	HD	56.5	46.5	36.5		
T2/3W*	RD	19.5				
	HD	54	44	34		

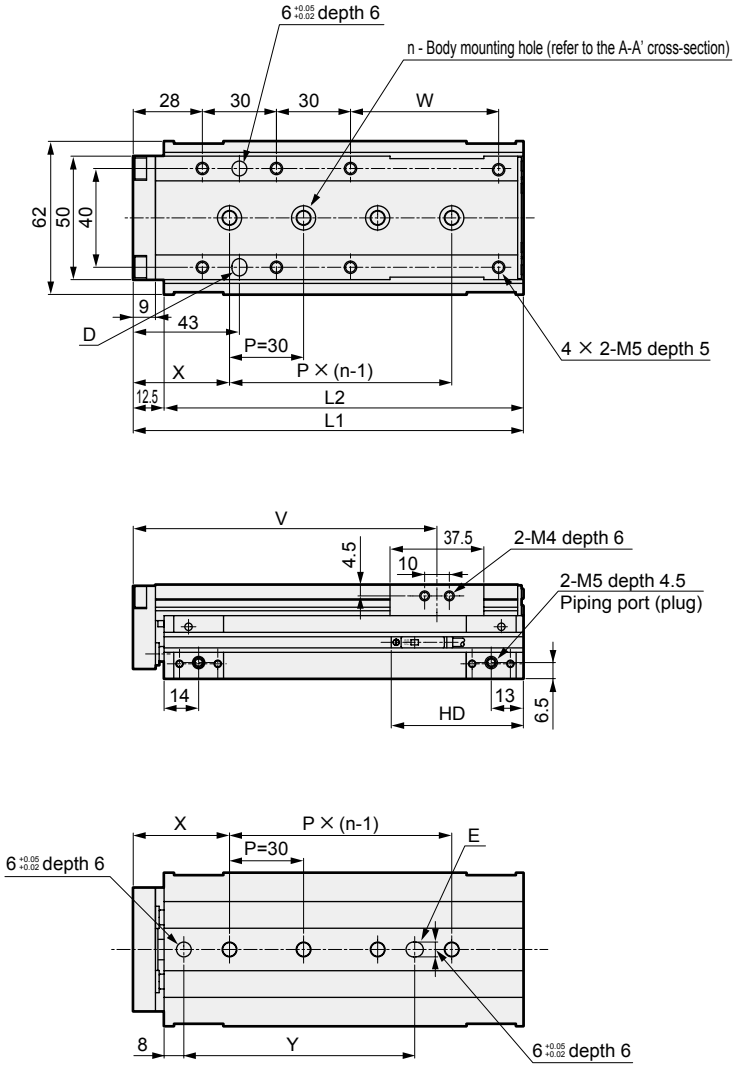
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø16)

● LCG-16

Stroke length: 75, 100, 125
(Body mounting hole in the figure shows 75 mm stroke length)



Dimensions by stroke length

Stroke length		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
T0/5*	RD	17		
T2/3*	HD	53.5		
T2/3W*	RD	19.5		
	HD	51		

*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

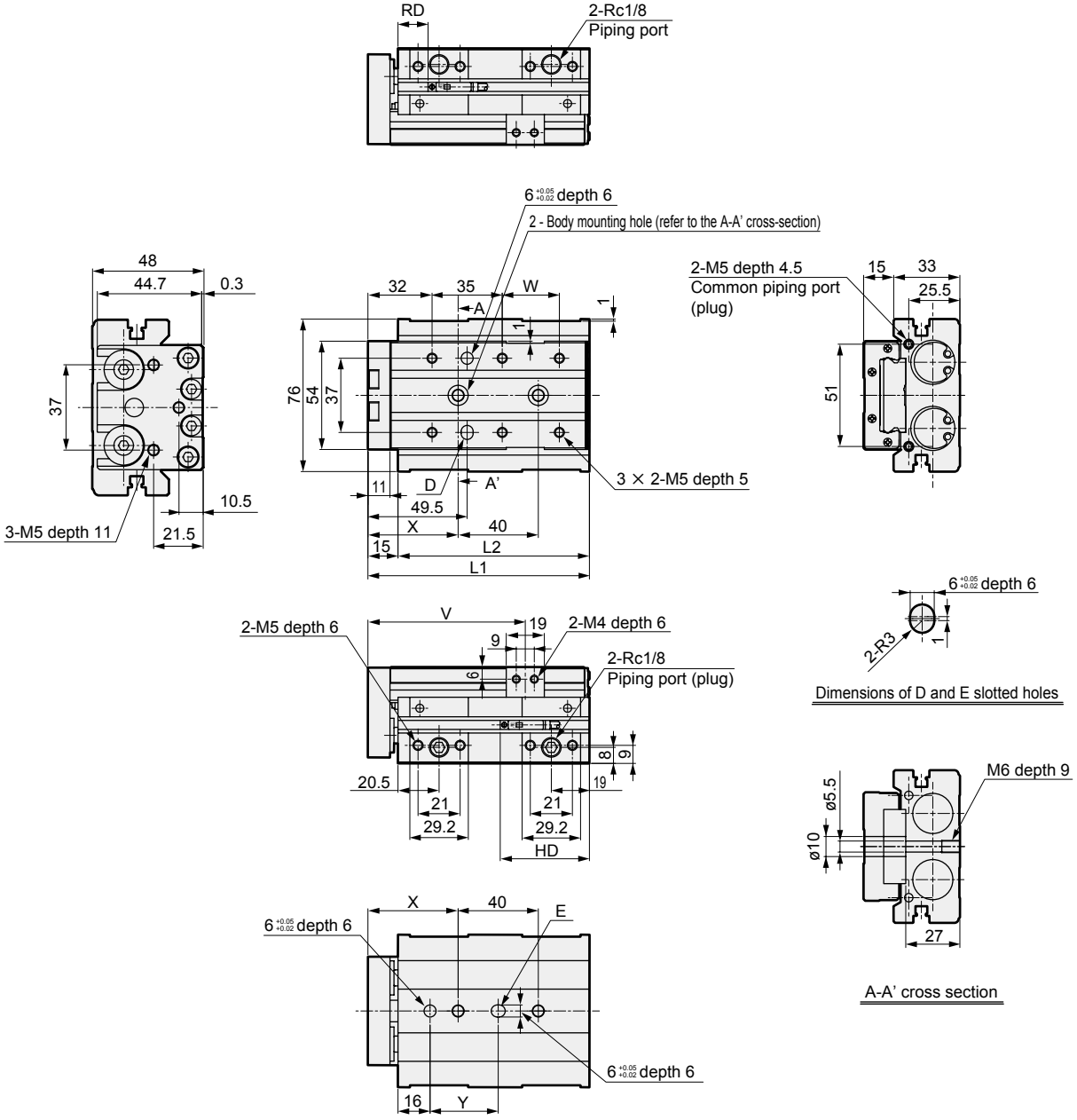
*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø20)

CAD

● LCG-20

Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length		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
T0/5*	RD	16				
T2/3*	HD	69.5	59.5	49.5		
T2/3W*	RD	18.5				
	HD	67	57	47		

* The same dimensions apply to the anti-rust (U).

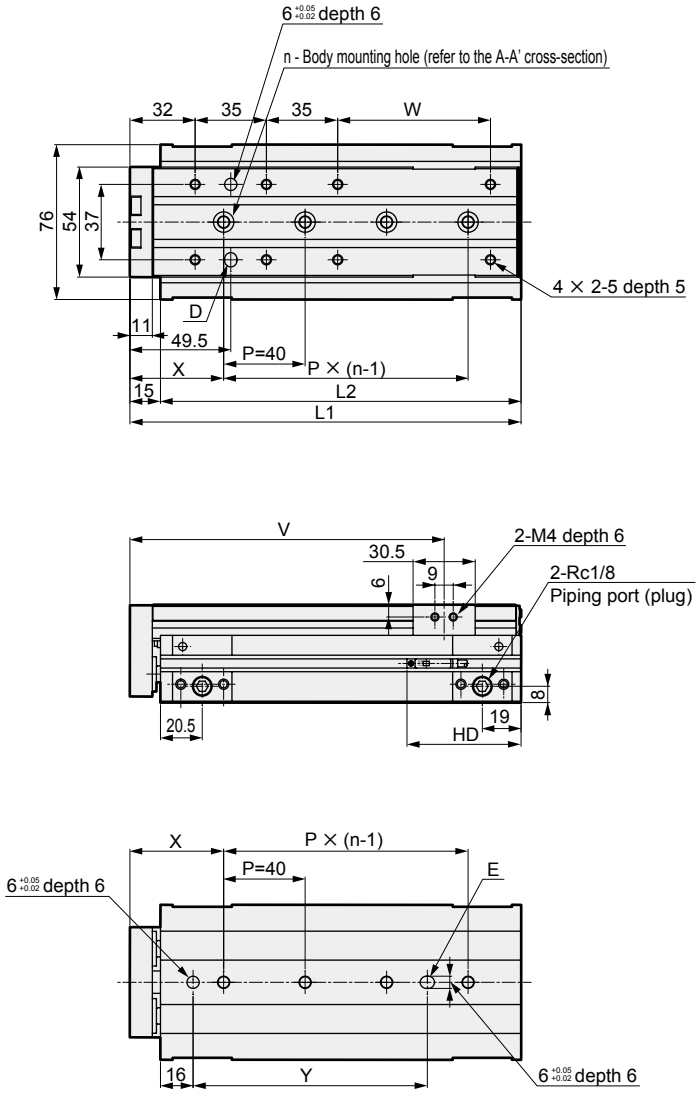
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø20)

● LCG-20

Stroke length: 75, 100, 125, 150
(Body mounting hole in the figure shows 100 mm stroke length)



Dimensions by stroke length

Stroke length		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
T0/5*	RD	16			
T2/3*	HD	61			
T2/3W*	RD	18.5			
	HD	58.5			

* The same dimensions apply to the anti-rust (U).

*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

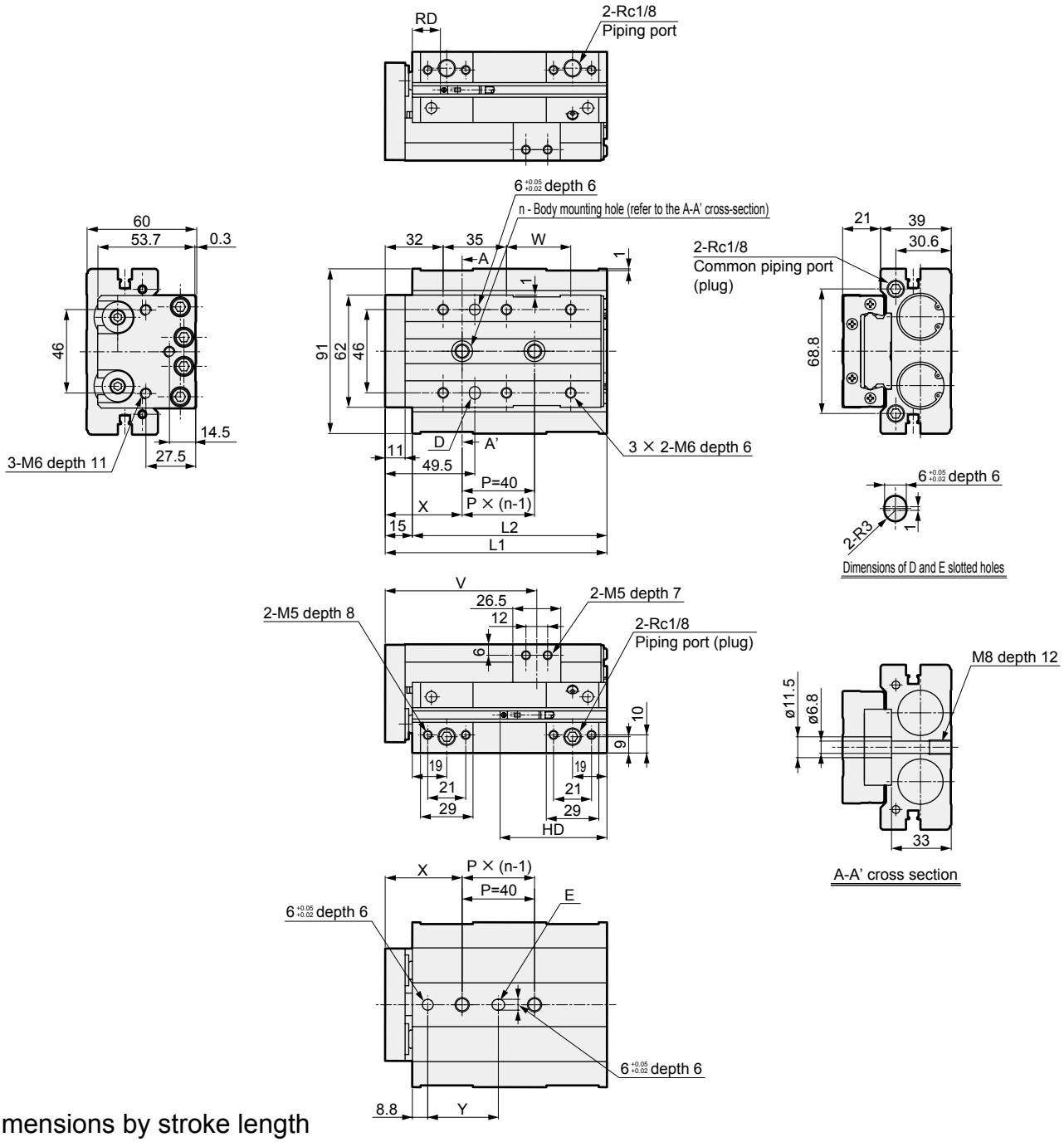
*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø25)

CAD

● LCG-25

Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length		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
T0/5*	RD	18.5				
T2/3*	HD	79	69	59		
T2/3W*	RD	21				
	HD	76.5	66.5	56.5		

* The same dimensions apply to the anti-rust (U).

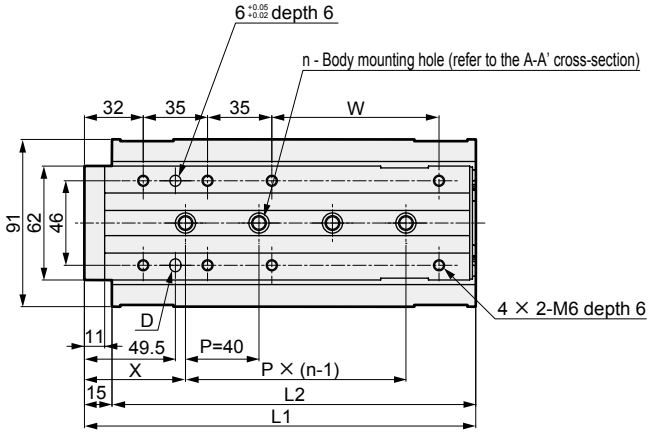
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

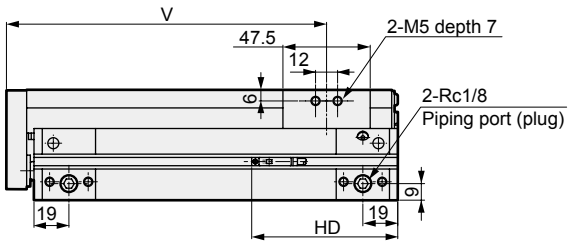
*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

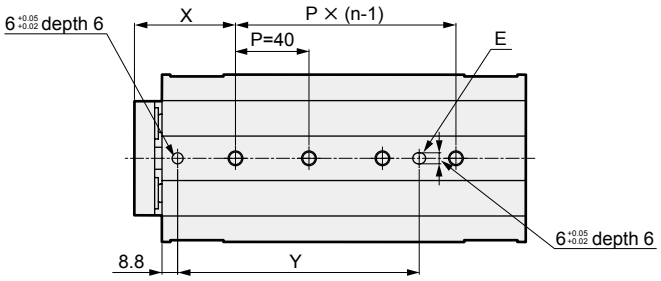
Dimensions (bore size: ø25)

● LCG-25

Stroke length: 75, 100, 125, 150
(Body mounting hole in the figure shows 100 mm stroke length)







Dimensions by stroke length

Stroke length		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
T0/5*	RD	18.5			
T2/3*	HD	79.5			
T2/3W*	RD	21			
	HD	77			

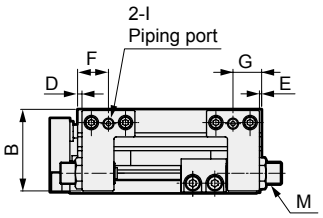
* The same dimensions apply to the anti-rust (U).

*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

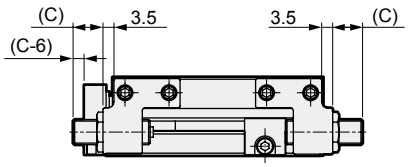
*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

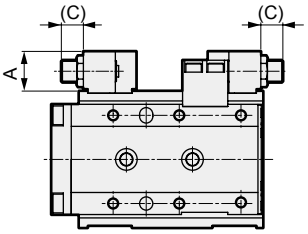
Dimensions: Option CAD

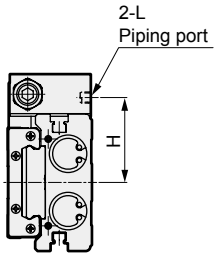
● Stroke adjusting stopper (S1 to S6)



· For ø8

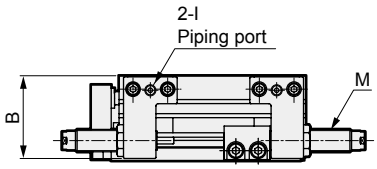


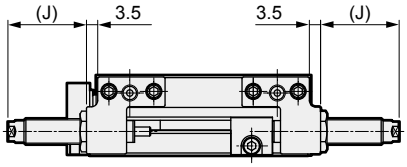


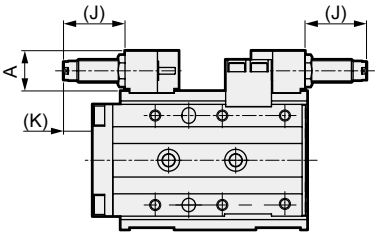


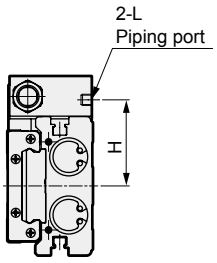
● Shock absorber stopper (A1 to A6)

· For ø8







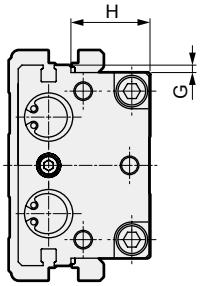


*1: F, H and L dimensions are only for the types with port on the stopper (S*D* and A*D*).
*2: The figure of the stroke adjusting stopper (S1 to S6) is for 5 mm adjustable stroke range. If the adjustable stroke range is increased, the C dimension increases accordingly.
*3: S3** to S6** and A3** to A6** are not available for the position locking.

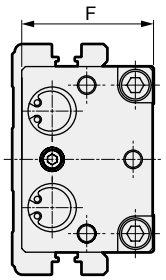
Code / Bore size (mm)	A	B	C Adjustable stroke range 5 mm	C 15 mm	C 25 mm	D	E	F	G	H	I	J	K	L	M	Shock absorber stopper adjustable stroke range (one side)
ø6	14	19.9	11	21	-	4	1	13.5	10.5	24	M3 depth 3	21	9	M3 depth 3	M8×0.75	9
ø8	15.6	24.5	9.5	19.5	-	0.5	0.5	11	11	27.3	M5 depth 4	25	15.5	M5 depth 4	M8×0.75	13.5
ø12	15.5	29	12	22	32	1	1	13	13	31	M5 depth 4	25	12	M5 depth 4	M8×0.75	14.5
ø16	18	37	10	20	30	2	1	14	13	39	M5 depth 4	28.5	14	M5 depth 4	M10×1	15
ø20	20.5	45.5	14.5	24.5	34.5	4	2.5	20.5	19	47	Rc1/8	28.5	9.5	M5 depth 4	M12×1	13
ø25	20.5	57	11.5	21.5	31.5	2.5	2.5	19	19	54.5	Rc1/8	25.5	8	M5 depth 4	M12×1	10

Dimensions: Option

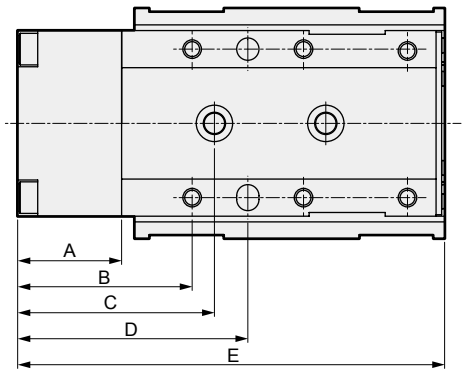
● With buffer (B, BL)



Option code: BL



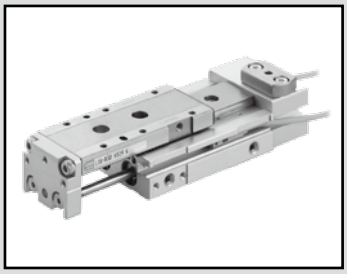
Option code: B



Code / Bore size (mm)	A	B	C: Stroke length (mm) 10	20	30	40	50	75	100	125	150	D
ø6	22.5	34	45	45	42.5	43.5	45	-	-	-	-	41.5
ø8	21.5	34.5	42.5	42.5	42.5	41	42.5	39.5	-	-	-	44.5
ø12	27	44	55.5	55.5	55.5	54	50	52.5	65	-	-	56.5
ø16	28	47	53	53	53	64.5	54.5	58	56	68	-	62
ø20	31	52	65	65	65	71	69	66	66	73	71	69.5
ø25	34	55	65.5	65.5	65.5	68.5	83.5	83	78	68	83	72.5

Code / Bore size (mm)	E: Stroke length (mm) 10	20	30	40	50	75	100	125	150	F	G	H
ø6	82.5	82.5	92.5	112.5	122.5	-	-	-	-	20	3.5	11.2
ø8	80.5	80.5	90.5	109.5	119.5	144.5	-	-	-	23.5	3.2	13.5
ø12	109	109	109	119	129	163	188	-	-	29	3.2	16
ø16	115	115	115	125	135	177	202	227	-	35.5	1	21.3
ø20	130.5	130.5	130.5	140.5	150.5	187	212	237	262	45.5	4	24.5
ø25	145.5	145.5	145.5	155.5	165.5	211	236	261	286	56	4.5	31

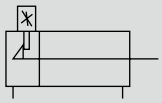
Note: The dimensions not listed are the same as those of the standard.



Linear slide cylinder Double acting/position locking

LCG-Q Series

● Bore size: ø8/ø12/ø16/ø20/ø25

JIS symbol 

RoHS CAD

Specifications

Item		LCG-Q				
Bore size mm		ø8	ø12	ø16	ø20	ø25
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		0.7 (≈100 psi, 7 bar)				
Min. working pressure MPa		0.15 (≈22 psi, 1.5 bar)				
Proof pressure MPa		1.05 (≈150 psi, 10.5 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size	Main body side	M5			Rc1/8	
	Main body back	None				
Stroke tolerance mm		$^{+2.0}_{0}$ (*1)				
Working piston speed mm/s		50 to 500				
Cushion		With rubber cushion				
Position locking mechanism		Head side				
Holding force N		At PULL, theoretical thrust x 0.7 (at 0.7 MPa (≈100 psi, 7 bar))				
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Allowable absorbed energy J		Refer to Table 3 on page 188.				

*1: Note that there will be a slight gap between the end plate and floating bush if no stopper is attached.
*2: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.

Stroke length

Bore size (mm)	Standard stroke length (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

Note: Products with stroke lengths other than the above are not available.

With buffer specifications

Specifications other than the below are same as the above common specifications.

Item		Description				
Bore size mm		ø8	ø12	ø16	ø20	ø25
Buffer stroke length mm		4	9		10	
Buffer part spring load	Set N	5	10	13	17	21
	Operating N	8	14	20	25	29

*1: In the type with buffer, adjusting the rod side stroke length will shorten the buffer stroke length and increase the spring load when set.
*2: Keep the buffer stroke length less than the stroke length above. Otherwise, malfunctions or damage may result.

Theoretical thrust table

Refer to page 189.

Switch specifications

● 1-color/2-color display

Item	Reed 2-wire				Proximity 2-wire		Proximity 3-wire		
	T0H/T0V		T5H/T5V		T2H/T2V	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3WH/ T3WV
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection		Dedicated for programmable controller		For programmable controller, relay		
Output method	-		-		-		NPN output	PNP output	NPN output
Power supply voltage	-		-		-		10 to 28 VDC		
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 20 mA		100 mA or less		50 mA or less
Indicator lamp	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	0 mA				1 mA or less		10 μA or less		
Weight g	1 m:18 3 m:49 5 m:80								

Item	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/ F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/ F3YV
Applications	Dedicated for programmable controller	For programmable controller, relay	Dedicated for programmable controller		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20 mA	50 mA or less	5 to 20 mA		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Yellow LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 μA or less	1 mA or less		10 μA or less		
Weight g	1 m:10 3 m:29						

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : The F type switch uses a bend-resistant lead wire.

Cylinder weight

● Position locking (Unit: g)

Bore size (mm)	Basic Stroke length (mm)								
	10	20	30	40	50	75	100	125	150
ø8	280	280	310	390	420	510	-	-	-
ø12	570	570	570	620	670	860	1,000	-	-
ø16	880	870	860	940	1,020	1,370	1,560	1,760	-
ø20	1,450	1,440	1,430	1,550	1,670	2,110	2,400	2,690	2,980
ø25	2,360	2,340	2,320	2,500	2,680	3,480	3,900	4,320	4,740

● Additional weight of options (Unit: g)

Bore size (mm)	Option/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

How to order (ø8 to ø16)

Without switch (built-in magnet for switch)

LCG-Q - 8 - 40 ——— S2

With switch (built-in magnet for switch)

LCG-Q - 12 - 40 - F2H* - R - A1DT

Model No.
Ⓐ Bore size
Ⓑ Stroke length
Ⓓ Switch quantity
Ⓒ Switch model No. *11
Ⓔ Option

Precautions for model No. selection

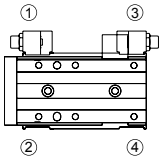
*1 : To change the adjustable stroke length, use the discrete stroke adjusting stopper on page 169.
*2 : For the adjustable stroke range with a shock absorber stopper, refer to the stopper dimensions table on page 162.
*3 : For the port position, refer to the stopper dimensions on page 162.
*4 : The port positions of the standard without stopper are ① and ③ in the figure below.
*5 : Combination of the stroke adjusting stopper and shock absorber stopper is made to order.
*6 : Can be selected for the type with stopper only.
*7 : A switch for buffer should be purchased separately. Refer to how to order a switch on page 168.
*8 : Refer to the selection table below for combinations of options.
*9 : A1** and A2** of ø8 with 10 mm stroke length or less and ø12/ø16 with 20 mm stroke length or less are made to order since adjustment is not possible with the standard stopper.
*10 : The rust proof is made to order.
*11 : The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.

[Example of model No.]

LCG-Q-12-40-F2H-R-A1DT

Model: Linear slide cylinder Double acting/position locking LCG-Q
Ⓐ Bore size : ø12
Ⓑ Stroke length : 40 mm
Ⓒ Switch model No. : Proximity/2-wire Axial lead wire
Ⓓ Switch quantity : 1 on rod side
Ⓔ Other options : Shock absorber Stopper position ① With side and bottom ports Material, steel (nitriding)

● Stopper position



Code	Description
Ⓐ Bore size	
8	ø8
12	ø12
16	ø16

Ⓑ Stroke length (mm)

		Bore size (ø)		
		8	12	16
10	10	●	●	●
20	20	●	●	●
30	30	●	●	●
40	40	●	●	●
50	50	●	●	●
75	75	●	●	●
100	100		●	●
125	125			●
150	150			

Ⓒ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator lamp	Lead wire	Bore size ø8	Bore size ø12	Bore size ø16
-	**F2S***	Proximity		●	1-color display	2-wire	●	●	
-	**F3S***			●		3-wire			
F2H*	**F2V***			●		2-wire			
F3H*	**F3V***			●		3-wire			
F3PH*	**F3PV***			●	1 color display (PNP output) (made to order)	3-wire			
F2YH*	**F2YV***			●	2-color display	2-wire			
F3YH*	**F3YV***			●		3-wire			
T0H*	**T0V***	Reed	●	●	1-color display no indicator lamp	2-wire			●
T5H*	**T5V***		●	●					
T2H*	**T2V***	Proximity		●	1-color display	2-wire			
T3H*	**T3V***			●		3-wire			
T3PH*	**T3PV***			●	1-color display (PNP output)	3-wire			
T2WH*	**T2WV***			●	2-color display	2-wire			
T3WH*	**T3WV***			●		3-wire			

*** Lead wire length**

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

Ⓓ Switch quantity

R	1 on rod side
H	1 on head side
D	2

Ⓔ Option

Blank	No option	
S Stroke adjusting stopper		
5 mm stroke adjustment on one side		***1, *5, *8**
S1**	Stopper position ①	Stopper mount position
S2**	Stopper position ②	
A Shock absorber stopper		***2, *5, *8**
A1**	Stopper position ①	Stopper mount position
A2**	Stopper position ②	
**** part**		
Blank	Port on the stopper: without port	
D	Port on the stopper: Side and bottom ports	*3, *6
Blank	Stopper block material: steel	
T	Stopper block material: steel (nitriding)	*6
B With buffer		***7, *8**
B	Without switch groove	
BL	With switch groove	

LCG-Q position locking selection table

(Combination with stroke adjusting stopper, shock absorber stopper)

○: Available — : Not available

Model No. code	Option code		Stroke adjusting stopper						Shock absorber stopper					
	Bore size	Stroke length	S1	S2	S3	S4	S5	S6	A1	A2	A3	A4	A5	A6
LCG-Q	ø8	10	○	○	—	—	—	—	—	—	—	—	—	—
		20 or more	○	○	—	—	—	—	○	○	—	—	—	—
LCG-Q -B, BL	ø12 to ø25	10 to 20	○	○	—	—	—	—	—	—	—	—	—	—
		30 or more	○	○	—	—	—	—	○	○	—	—	—	—

The table above also applies to a combination with option code D (with port on the stopper) or T (alloy steel stopper block (nitriding)).

How to order (ø20, ø25)

Without switch (built-in magnet for switch)

LCG-Q - 20 - 40 ——— S2 U

With switch (built-in magnet for switch)

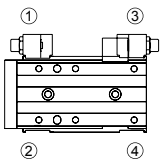
LCG-Q - 20 - 40 - T2H* - R - A1DT U

- Model No.
- Ⓐ Bore size
- Ⓑ Stroke length
- Ⓒ Switch model No. *11
- Ⓓ Switch quantity
- Ⓔ Option
- Ⓕ Anti-rust treatment

⚠ Precautions for model No. selection

*1 : To change the adjustable stroke length, use the discrete stroke adjusting stopper on page 169.
*2 : For the adjustable stroke range with a shock absorber stopper, refer to the stopper dimensions table on page 162.
*3 : For the port position, refer to the stopper dimensions on page 162.
*4 : The port positions of the standard without stopper are ① and ③ in the figure below.
*5 : Combination of the stroke adjusting stopper and shock absorber stopper is made to order.
*6 : Can be selected for the type with stopper only.
*7 : A switch for buffer should be purchased separately. Refer to how to order a switch on page 168.
*8 : Refer to the selection table below for combinations of options.
*9 : A1** and A2** with 20 mm stroke length or less are made to order since adjustment is not possible with the standard stopper.
*10: The table is steel.
To prevent rust, select "U" for an environment where the temperature and humidity is high or condensation may occur on the product surface.
*11: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.

● Stopper position



[Example of model No.]

LCG-Q-20-40-F2H-R-A1DT

Model: Linear slide cylinder Double acting/position locking LCG-Q

- Ⓐ Bore size : ø20
- Ⓑ Stroke length : 40 mm
- Ⓒ Switch model No. : Proximity/2-wire Axial lead wire
- Ⓓ Switch quantity : 1 on rod side
- Ⓔ Other options : Shock absorber Stopper position ① With side and bottom ports Material, steel (nitriding)

Specifications for rechargeable battery (Catalog No. CC-1226A)

● Design compatible with rechargeable battery manufacturing process.

LCG-Q - ... - P4*

Code	Description
Ⓐ Bore size	
20	ø20
25	ø25
Ⓑ Stroke length (mm)	
10	10
20	20
30	30
40	40
50	50
75	75
100	100
125	125
150	150

Ⓒ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator lamp	Lead wire
T0H*	**T0V***	Reed	●	●	1-color display	2-wire
T5H*	**T5V***	Reed	●	●	Without indicator lamp	2-wire
T2H*	**T2V***	Proximity		●	1-color display	2-wire
T3H*	**T3V***	Proximity		●	1-color display	3-wire
T3PH*	**T3PV***	Proximity		●	1-color display (PNP output)	3-wire
T2WH*	**T2WV***	Proximity		●	2-color display	2-wire
T3WH*	**T3WV***	Proximity		●	2-color display	3-wire

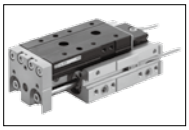
*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Option		
Blank	No option	
S Stroke adjusting stopper		
5 mm stroke adjustment on one side		***1, *5, *8**
S1**	Stopper position ①	Stopper mount position
S2**	Stopper position ②	Stopper mount position
A Shock absorber stopper		***2, *5, *8**
A1**	Stopper position ①	Stopper mount position
A2**	Stopper position ②	Stopper mount position
**** part**		
Blank	Port on the stopper: without port	
D	Port on the stopper: side and bottom ports	*3, *6
Blank	Stopper block material: steel	
T	Stopper block material: steel (nitriding)	*6
B With buffer		***7, *8**
B	Without switch groove	
BL	With switch groove	

Ⓕ Anti-rust treatment		
Blank	None	
U	Anti-rust treated product (table/guide)	*10

U: Anti-rust treated product (ø20, ø25)



The table and rail surface rustproofing reduces rust in high-humidity environments and near ionizers.

The table and rail are black.

How to order switch

For ø8 to ø12

SW - F2H

Switch model No.
(Item Ⓒ on page 166)

For ø16 to ø25

SW - T2H3

Switch model No.
(Item Ⓒ on pages 166, 167)

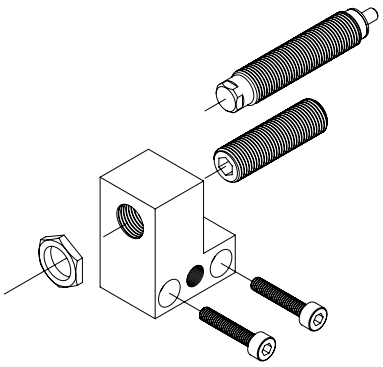
● Buffer part

SW - F 2 V 3

Output	
2	DC 2-wire proximity
3	DC 3-wire proximity
Radial lead wire	
Lead wire length	
Blank	1 m (standard)
3	3 m (option)

How to order a stopper set

● Set of a stopper and stroke adjusting stopper or shock absorber stopper
● Use it when changing from the standard to the stroke adjusting stopper or shock absorber stopper.



LCG - 12 - S 2 D - S02

Bore size
(Item Ⓐ on pages 166, 167)

Ⓐ Stopper	
S	Stroke adjusting stopper
A	Shock absorber stopper
Ⓑ Stopper installation position	***1**
1	Stopper position ①
2	Stopper position ②
Ⓒ Port on the stopper	
Blank	Without port
D	With side and bottom ports
Ⓓ Adjustable stroke length	***2/*3**
Blank	Adjustable stroke range 5 mm
S02	Adjustable stroke range 15 mm
S03	Adjustable stroke range 25 mm

*1: The adjustable stroke length changes depending on the stroke; see the table below.
*2: ø8 is not available for S03.
*3: Cannot be selected for the shock absorber stopper "A".

Precautions when purchasing the stopper set

Discrete stroke adjusting stopper S01 is built into the stroke adjusting stopper set. Add the part shown on the right according to the stroke length and adjustable stroke length.

—: Not applicable

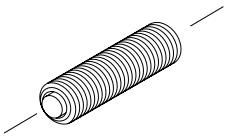
Model No. code	Option code		Discrete stroke adjusting stopper		
			Adjustable stroke length (mm)		
	Bore size	Stroke length	-5	-15	-25
LCG-Q Series	ø8	10	S02	—	—
		20 or more	N/A	S02	—
	ø12 to ø25	10	S03	—	—
		20	S02	S03	—
		30 or more	N/A	S02	S03

● Stopper set weight (Unit: g)

Stopper	S1,S2			A1,A2
Port on the stopper	Blank, D			
Adjustable stroke length	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

How to order discrete stroke adjusting stopper

- Hexagon socket set screw with urethane
- Use when changing the adjustable stroke range or when using a custom stroke length.



LCG - 12 - S02

Bore size
(Item Ⓐ on pages 166, 167)

Ⓐ Adjustable stroke range	
S01	Single side 5 mm (standard)
S02	Single side 15 mm
S03	Single side 25 mm

Specify S01, S02 or S03 in Ⓐ.
Note: S03 is not available for ø8.
Some models may not be available and adjustable stroke range may differ from the above depending on the Model No.

Precautions when purchasing discrete stopper

Note that the combination will be as shown on the right according to the stroke length and adjustable stroke length.

— : Not available

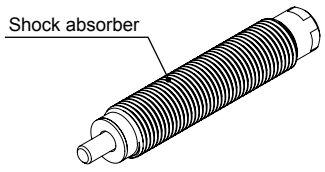
Model No. code	Option code		Discrete stroke adjusting stopper Adjustable stroke length (mm)			Discrete shock absorber stopper
	Bore size	Stroke length	-5	-15	-25	
LCG Series -S1, S2 -A1, A2	ø8	10	S02	—	—	—
		20 or more	S01	S02	—	A01
	ø12 to ø25	10	S03	—	—	—
		20	S02	S03	—	—
		30 or more	S01	S02	S03	A01

● Discrete stroke adjusting stopper weight (Unit: g)

Adjustable stroke range	S01	S02	S03
ø8	7	10	—
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

How to order discrete shock absorber stopper

- Shock absorber set
- Use when changing from the stroke adjusting stopper or shock absorber stopper.



LCG - 12 - A01

Bore size
(Item Ⓐ on pages 166, 167)

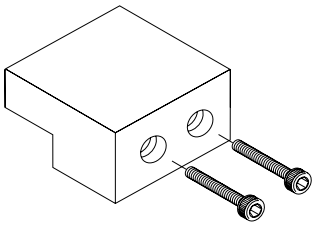
Note: Some models may not be available depending on the specifications. Refer to pages 166 and 167.
Note: For the adjustable stroke range with a shock absorber stopper, refer to page 162.

Applicable shock absorber model No.

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

How to order discrete stopper block

- Use it when changing from the standard to the stroke adjusting stopper or shock absorber stopper.



LCG - 12 - SB1 T

Bore size
(Item Ⓐ on pages 166, 167)

Ⓐ Stopper block	
SB1	ø8: For 30 mm stroke length or less
	ø12 to ø25: For 50 mm stroke length or less
SB2	ø8: For 40 mm stroke length or more
	ø12 to ø25: For 75 mm stroke length or more

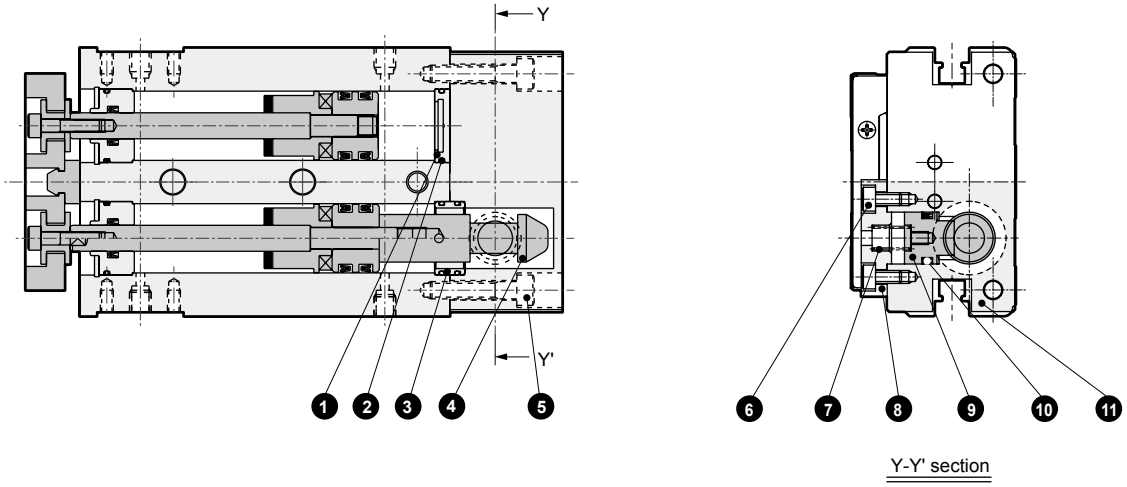
Ⓑ Material	
Blank	Stopper block material: steel
T	Stopper block material: steel (nitriding)

● Discrete stopper block weight (Unit: g)

Block	SB1(T)	SB2(T)
ø8	14	24
ø12	23	37
ø16	38	72
ø20	60	99
ø25	112	206

Internal structure and parts list

● LCG-Q



Y-Y' section

Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Cover	Aluminum alloy		6	Hexagon socket head cap screw	Alloy steel	Zinc chromate
2	Gasket	Nitrile rubber		7	Coil spring	Steel	
3	Joint ring	ø8: Stainless steel ø12 to 25: Aluminum alloy	ø12 to ø25: Chromate	8	Stopper cover	Aluminum alloy	Alumite
				9	Stopper piston	Carbon steel	Nitriding
4	Sleeve	Carbon steel	Nitriding	10	Stopper packing	Nitrile rubber	
5	Hexagon socket head cap screw	Alloy steel	Zinc chromate	11	Head cover	Aluminum alloy	Alumite

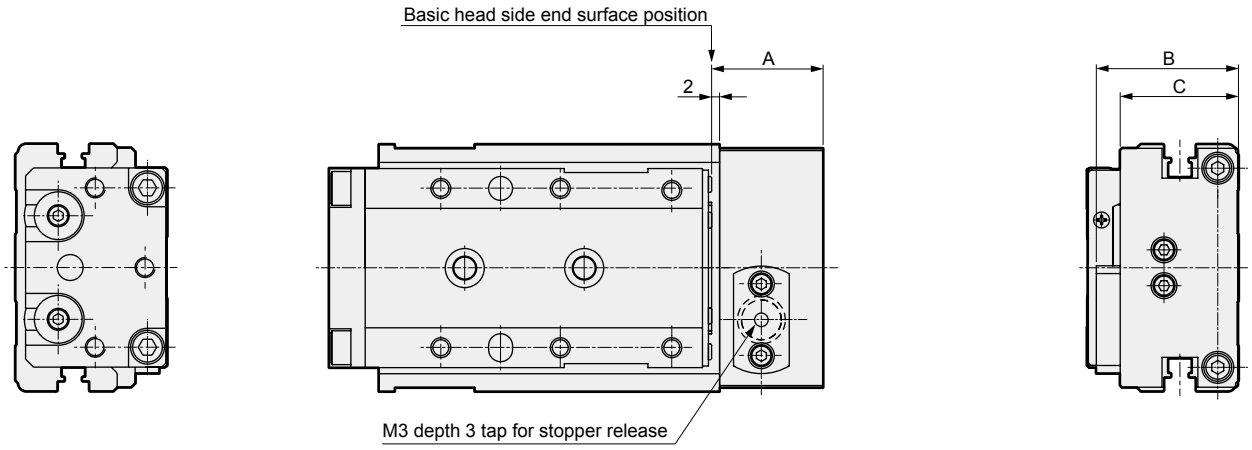
Repair parts list

Bore size (mm)	Kit No.	Repair parts No.	
		Repair parts for position locking	Basic parts are repair parts
ø8	LCG-Q-8K	⑩	④ ⑤ ⑨ ⑫ ⑯ ⑳
ø12	LCG-Q-12K		
ø16	LCG-Q-16K		
ø20	LCG-Q-20K		
ø25	LCG-Q-25K		

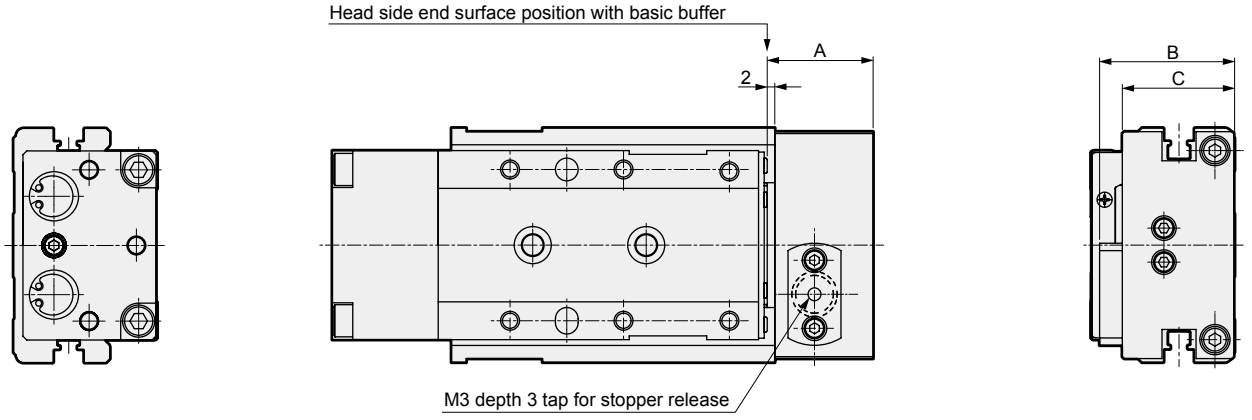
Note: The repair part numbers for the base section correspond to those in the double acting/single rod parts list on page 146.

Dimensions CAD

● LCG-Q

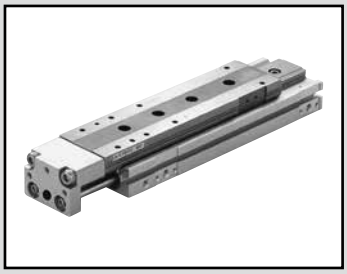


● LCG-Q-*-*-B (with buffer)



Code / Bore size (mm)	A	B	C
ø8	23	28	22
ø12	24.5	30.5	24.5
ø16	28	35.7	29.7
ø20	30	39	33
ø25	30	48	42

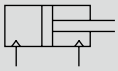
Note: Dimensions other than those listed above are the same as those of double acting/single rod.



Linear slide cylinder Double acting/single rod clean-room specifications

LCG-P7* Series

● Bore size: ø6/ø8/ø12/ø16/ø20/ø25

JIS symbol 

RoHS CAD

Specifications

Item		LCG-P7*					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		0.7 (≈100 psi, 7 bar)					
Min. working pressure MPa		0.15 (≈22 psi, 1.5 bar)					
Proof pressure MPa		1.05 (≈150 psi, 10.5 bar)					
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)					
Port size	Main body side	M3	M5			Rc1/8	
	Main body back	M3				M5	Rc1/8
Pressure relief port size		M3	M5			Rc1/8	
Stroke tolerance mm		+2.0 0 (*1)					
Working piston speed mm/s		50 to 500					
Cushion		With rubber cushion					
Lubrication		Not available					
Allowable absorbed energy J		Refer to Table 3 on page 188.					

*1: Note that there will be a slight gap between the end plate and floating bush if no stopper is attached.
*2: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.

Stroke length

Bore size (mm)	Standard stroke length (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: Products with stroke lengths other than the above are not available.

Theoretical thrust table

Refer to page 189.

Switch specifications

● 1-color/2-color display

Item	Reed 2-wire				Proximity 2-wire		Proximity 3-wire		
	T0H/T0V		T5H/T5V		T2H/T2V	T2WH/T2WV	T3H/T3V	T3PH/T3PV	T3WH/T3WV
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection		Dedicated for programmable controller		For programmable controller, relay		
Output method	-		-		-		NPN output	PNP output	NPN output
Power supply voltage	-		-		-		10 to 28 VDC		
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 20 mA		100 mA or less		50 mA or less
Indicator lamp	LED (Lit when ON)		Without indicator lamp		LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	0 mA				1 mA or less		10 μA or less		
Weight g	1 m:18 3 m:49 5 m:80								

Item	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/F3YV
Applications	Dedicated for programmable controller	For programmable controller, relay	Dedicated for programmable controller		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20 mA	50 mA or less	5 to 20 mA		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Yellow LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 μA or less	1 mA or less		10 μA or less		
Weight g	1 m:10 3 m:29						

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : The F type switch uses a bend-resistant lead wire.

Cylinder weight

● Clean-room specifications (Unit: g)

Bore size (mm)	Basic Stroke length (mm)								
	10	20	30	40	50	75	100	125	150
ø6	170	170	190	250	270	-	-	-	-
ø8	270	270	300	380	410	500	-	-	-
ø12	550	550	550	600	650	840	980	-	-
ø16	890	880	870	950	1,030	1,380	1,570	1,770	-
ø20	1,470	1,460	1,450	1,570	1,690	2,130	2,420	2,710	3,000
ø25	2,410	2,390	2,370	2,550	2,730	3,530	3,950	4,370	4,790

● Weight of variation/option (stopper) (Unit: g)

Bore size (mm)	Option/stopper code	
	S1 to S4	S5/S6
ø6	30	40
ø8	40	60
ø12	70	100
ø16	110	150
ø20	170	250
ø25	290	380

How to order (ø6 to ø16)

Without switch (built-in magnet for switch)

LCG - 8 - 40 ——— S5 P72

With switch (built-in magnet for switch)

LCG - 12 - 40 - F2H* - R - S1DT P72

- LCG: Model No.
- 12: Ⓐ Bore size
- 40: Ⓑ Stroke length
- F2H*: Ⓒ Switch model No. *6
- R: Ⓓ Switch quantity
- S1DT: Ⓔ Option
- P72: Ⓕ Clean-room specifications

Precautions for model No. selection

*1 : For the port position, refer to the stopper dimensions on page 162.
*2 : The port positions of the standard without stopper are ① and ③ in the figure below.
*3 : Can be selected for the type with stopper only.
*4 : When two switches are necessary for the type with S*** of ø6 to ø8 with 30 mm stroke length or less, select the F□H type switch.
*5 : The anti-rust is made to order.
*6 : The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.
*7 : When changing the stopper position from the head side to the rod side, the stopper must be purchased separately according to the stroke length and adjustable stroke length. Refer to "Precautions when purchasing discrete stopper" on page 145. Adjustable stroke lengths of 15 mm and 25 mm may not be possible depending on the stroke length.

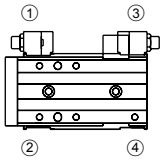
[Example of model No.]

LCG-12-40-F2H*-R-S1DT-P72

Model: Linear slide cylinder Double acting/single rod (clean-room specifications) LCG-P7*

- Ⓐ Bore size : ø12
- Ⓑ Stroke length : 40 mm
- Ⓒ Switch model No. : Proximity/2-wire Axial lead wire
- Ⓓ Switch quantity : 1 on rod side
- Ⓔ Other options : Stroke adjusting stopper Stopper position ① With side and bottom ports Material, steel (nitriding)
- Ⓕ Clean-room specifications : Exhaust port

● Stopper position



Code	Description
Ⓐ Bore size	
6	ø6
8	ø8
12	ø12
16	ø16

Ⓑ Stroke length (mm)

		Bore size (ø)			
		6	8	12	16
10	10	●	●	●	●
20	20	●	●	●	●
30	30	●	●	●	●
40	40	●	●	●	●
50	50	●	●	●	●
75	75		●	●	●
100	100			●	●
125	125				●
150	150				

Ⓒ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator lamp	Lead wire	Bore size ø6	ø8	ø12	ø16
-	**F2S***	Proximity		●	1-color display	2-wire	●	●	●	
-	**F3S***			●		3-wire				
F2H*	**F2V***			●		2-wire				
F3H*	**F3V***			●		3-wire				
F3PH*	**F3PV***			●	1 color display (PNP output) (made to order)	3-wire				
F2YH*	**F2YV***			●	2-color display	2-wire				
F3YH*	**F3YV***			●		3-wire				
T0H*	**T0V***	Reed	●	●	1-color display	2-wire				
T5H*	**T5V***		●	●	no indicator lamp					
T2H*	**T2V***	Proximity		●	1-color display	2-wire				●
T3H*	**T3V***			●		3-wire				
T3PH*	**T3PV***			●	1-color display (PNP output)	3-wire				
T2WH*	**T2WV***			●	2-color display	2-wire				
T3WH*	**T3WV***			●		3-wire				

Lead wire length

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

Ⓓ Switch quantity

R	1 on rod side	●
H	1 on head side	●
D	2	●

Ⓔ Option

Blank	No option		●
S Stroke adjusting stopper 5 mm stroke adjustment on one side			*4
S1**	Stopper position ① (can be changed to ④)	Stopper installation position	●
S2**	Stopper position ② (can be changed to ③)		●
S3**	Stopper position ③ (can be changed to ②) *7		●
S4**	Stopper position ④ (can be changed to ①) *7		●
S5**	Stopper position ①, ③		●
S6**	Stopper position ②, ④		●
**** part**			
Blank	Port on the stopper: without port		●
D	Port on the stopper: side and bottom ports		● *1, *3
Blank	Stopper block material: steel		●
T	Stopper block material: steel (nitriding)		● *3
Plug attached			
Blank	None		
N	With side piping port plug (not available for ø6)		

Ⓕ Clean-room specifications

	Structure
P72	Exhaust port
P73	Vacuum treatment

How to order (ø20, ø25)

Without switch (built-in magnet for switch)

LCG - 20 - 40 ——— S5 U P72

With switch (built-in magnet for switch)

LCG - 20 - 40 - T2H* - R - S1DT U P72

Model No.
Ⓐ Bore size
Ⓑ Stroke length
Ⓒ Switch model No. *4
Ⓓ Switch quantity
Ⓔ Option
Ⓕ Anti-rust treatment
Ⓖ Clean-room specifications

Code	Description
Ⓐ Bore size	
20	ø20
25	ø25
Ⓑ Stroke length (mm)	
10	10
20	20
30	30
40	40
50	50
75	75
100	100
125	125
150	150

Ⓒ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator lamp	Lead wire
T0H*	**T0V***	Reed	●	●	1-color display	2-wire
T5H*	**T5V***		●	●	Without indicator lamp	
T2H*	**T2V***	Proximity		●	1-color	2-wire
T3H*	**T3V***			●	display	3-wire
T3PH*	**T3PV***			●	1-color display (PNP output)	3-wire
T2WH*	**T2WV***			●	2-color	2-wire
T3WH*	**T3WV***			●	display	3-wire

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

Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Option		
Blank	No option	
S Stroke adjusting stopper		
5 mm stroke adjustment on one side		***4**
S1**	Stopper position ① (can be changed to ④)	Stopper installation position
S2**	Stopper position ② (can be changed to ③)	
S3**	Stopper position ③ (can be changed to ②)	*6
S4**	Stopper position ④ (can be changed to ①)	*6
S5**	Stopper position ①,③	
S6**	Stopper position ②,④	
**** part**		
Blank	Port on the stopper: without port	
D	Port on the stopper: side and bottom ports	
Blank	Stopper block material: steel	
T	Stopper block material: steel (nitriding)	

Ⓕ Anti-rust treatment		
Blank	None	
U	Anti-rust treated product (table/guide)	*4
Plug attached		
Blank	None	
N	With side piping port plug (ø25 cannot be selected.)	

Ⓖ Clean-room specifications	
	Structure
P72	Exhaust port
P73	Vacuum treatment

⚠ Precautions for model No. selection

*1 : For the port position, refer to the stopper dimensions on page 162.
*2 : The port positions of the standard without stopper are ① and ③ in the figure below.
*3 : Can be selected for the type with stopper only.
*4 : The table is steel.
To prevent rust, select "U" for an environment where the temperature and humidity is high or condensation may occur on the product surface.
*5 : The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing.
*6 : When changing the stopper position from the head side to the rod side, the stopper must be purchased separately according to the stroke length and adjustable stroke length. Refer to "Precautions when purchasing discrete stopper" on page 145. Adjustable stroke lengths of 15 mm and 25 mm may not be possible depending on the stroke length.

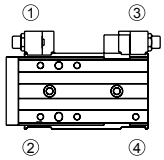
[Example of model No.]

LCG-12-40-F2H*-R-S1DT-P72

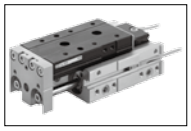
Model: Linear slide cylinder Double acting/single rod (clean-room specifications) LCG-P7*

Ⓐ Bore size : ø12
Ⓑ Stroke length : 40 mm
Ⓒ Switch model No. : Proximity/2-wire
Axial lead wire
Ⓓ Switch quantity : 1 on rod side
Ⓔ Other options : Stroke adjusting stopper
Stopper position ①
With side and bottom ports
Material, steel (nitriding)
Ⓕ Clean-room specifications : Exhaust port

● Stopper position



U: Anti-rust treated product (ø20, ø25)



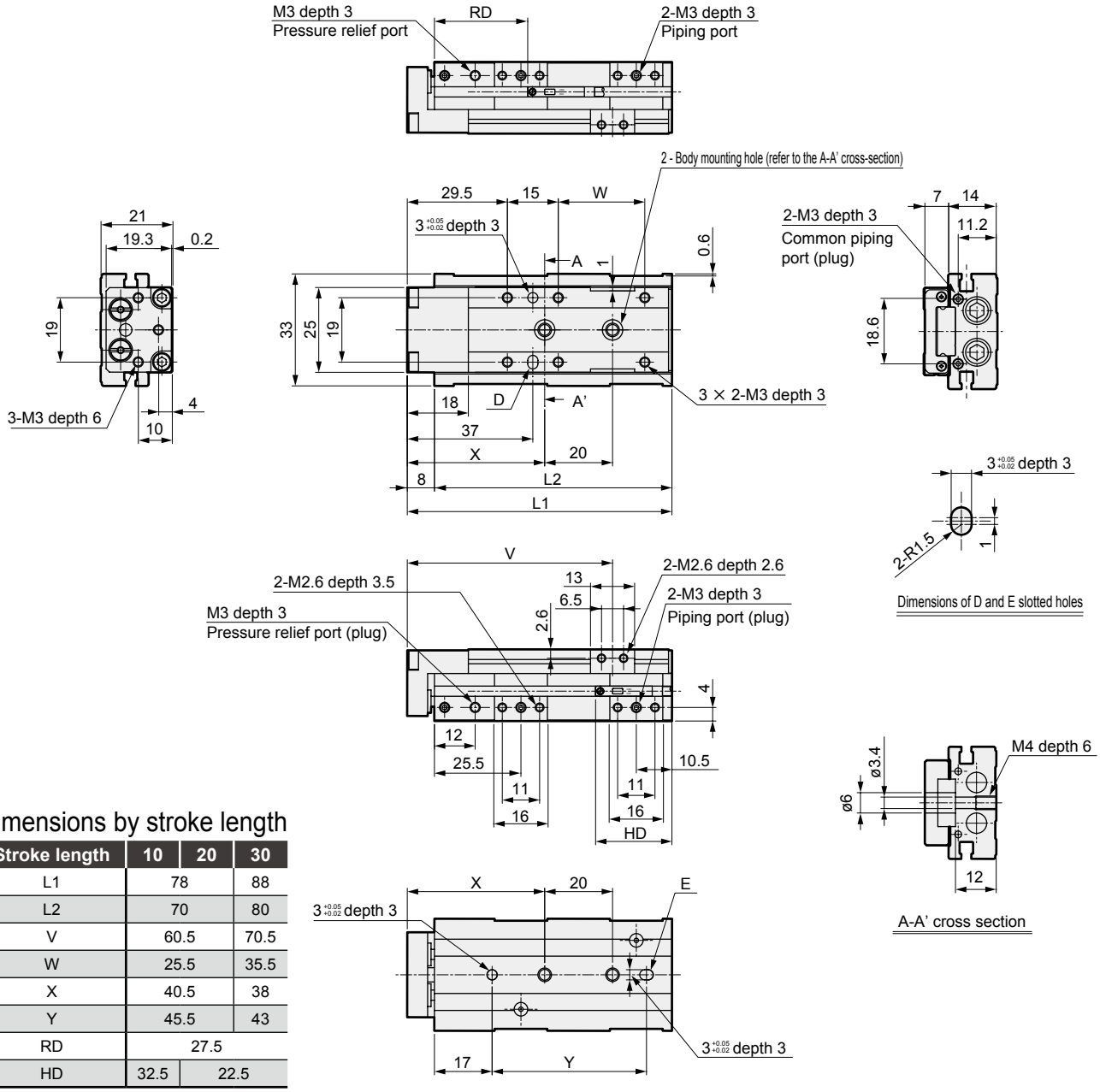
The table and rail surface rustproofing reduces rust in high-humidity environments and near ionizers.

The table and rail are black.

Dimensions (bore size: ø6) CAD

● LCG-6-P7*

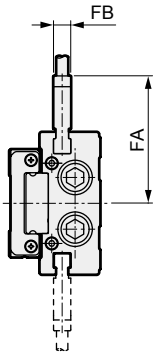
Stroke length: 10, 20, 30
(Body mounting hole in the figure shows 20 mm stroke length)



Dimensions by stroke length

Stroke length	10	20	30
L1	78		88
L2	70		80
V	60.5		70.5
W	25.5		35.5
X	40.5		38
Y	45.5		43
RD	27.5		
HD	32.5	22.5	

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	10	20	30
FA	29.6		
FB	4		
RD	26.5		
HD	33.5	23.5	

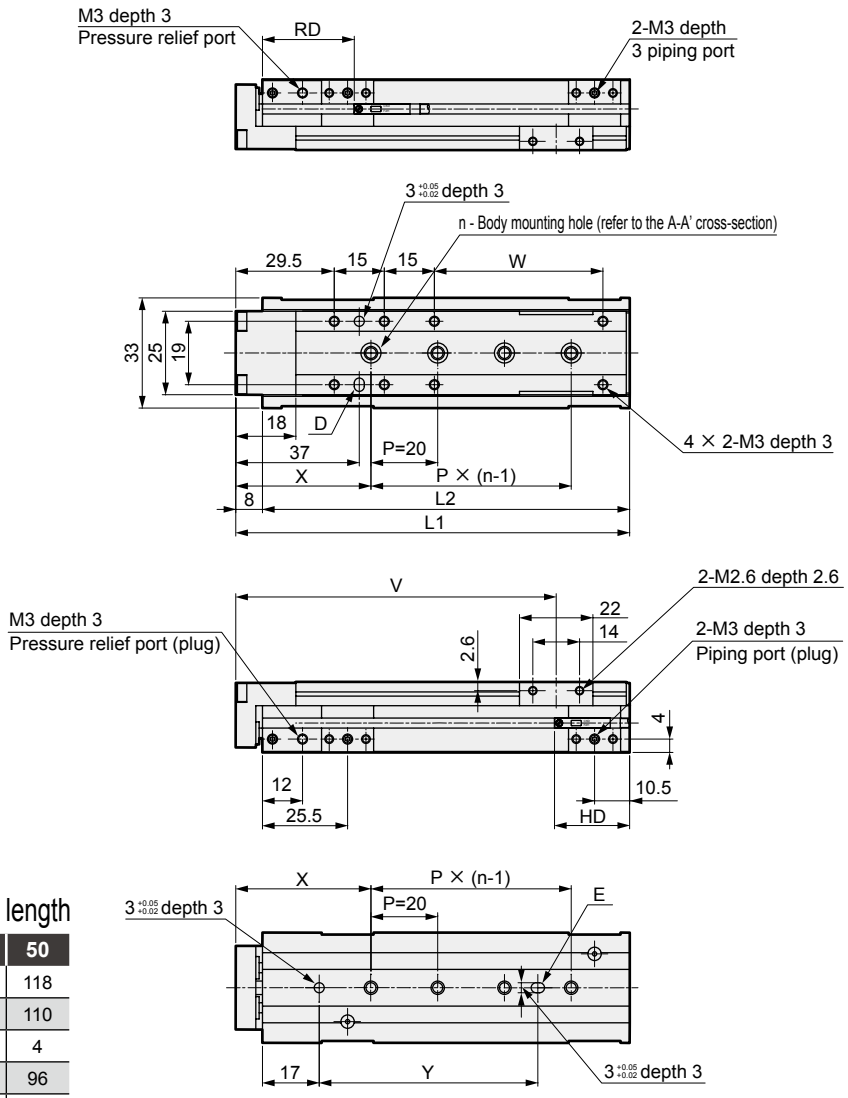
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø6)

● LCG-6-P7*

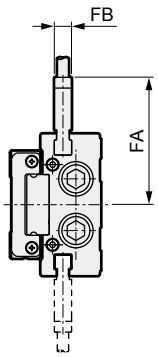
Stroke length: 40, 50
(Body mounting hole in the figure shows 50 mm stroke length)



Dimensions by stroke length

Stroke length	40	50
L1	108	118
L2	100	110
n	3	4
V	86	96
W	40.5	50.5
X	39	40.5
Y	44	65.5
RD	37.5	
HD	22.5	

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	40	50
FA	29.6	
FB	4	
RD	36.5	
HD	23.5	

*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

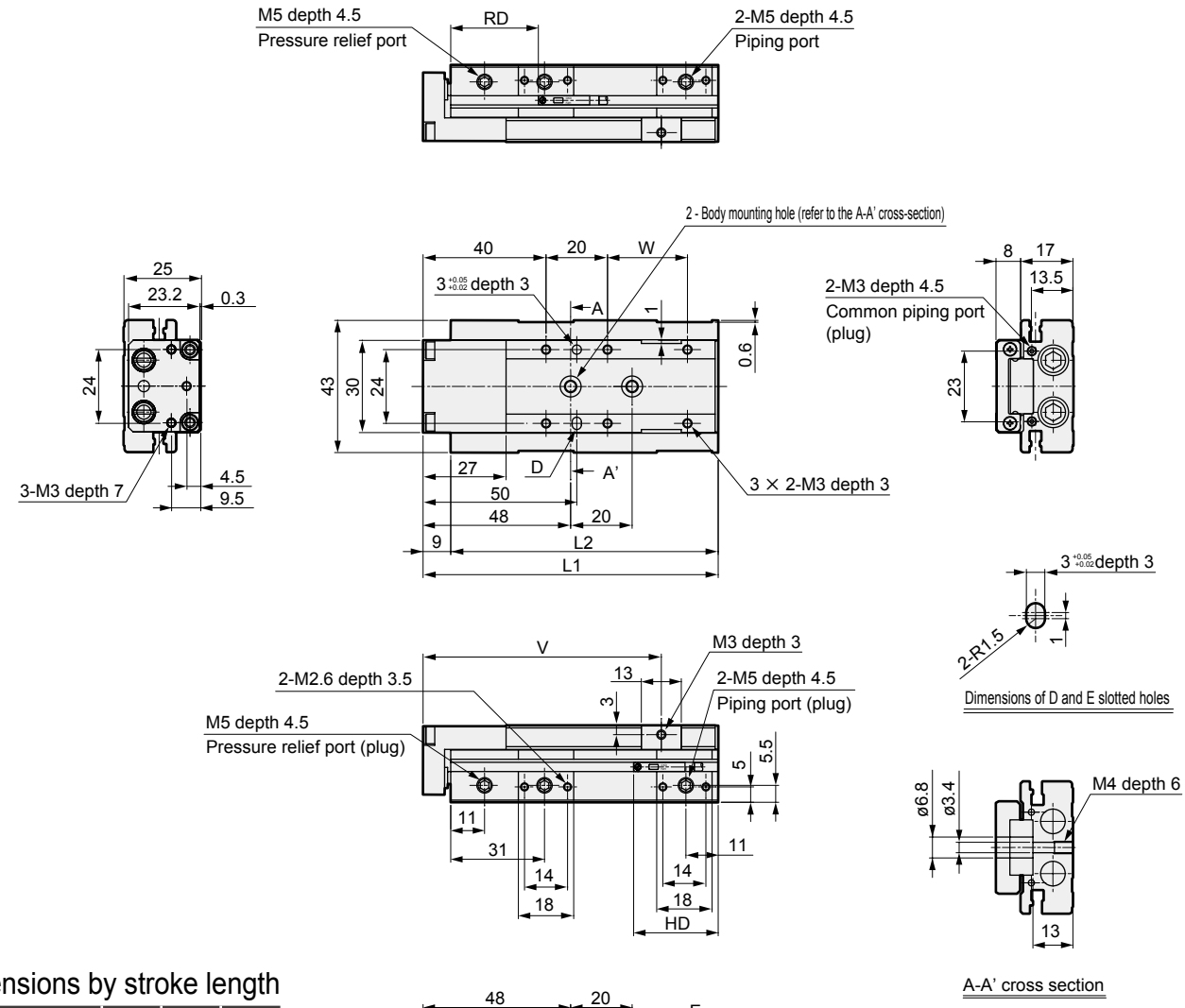
*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø8) CAD

● LCG-8-P7*

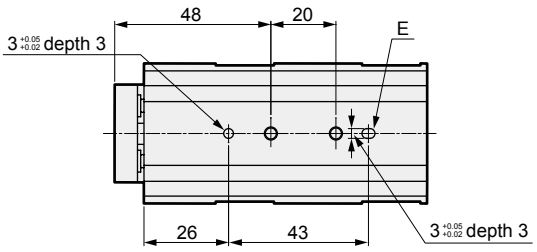
Stroke length: 10, 20, 30

(Body mounting hole in the figure shows 30 mm stroke length)

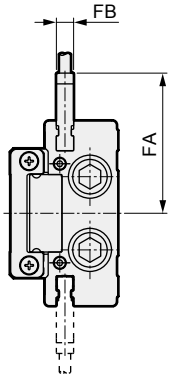


Dimensions by stroke length

Stroke length	10	20	30
L1	86		96
L2	77		87
V	67.5		77.5
W	16		26
RD	33		
HD	34	24	



● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	10	20	30
FA	32.6		
FB	4		
RD	32		
HD	35	25	

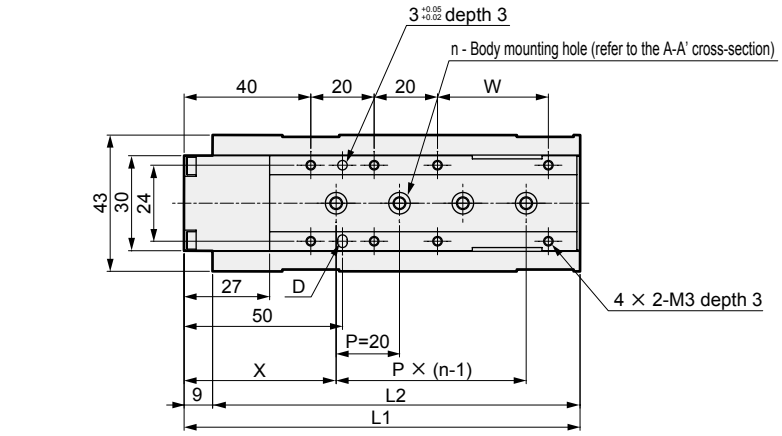
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

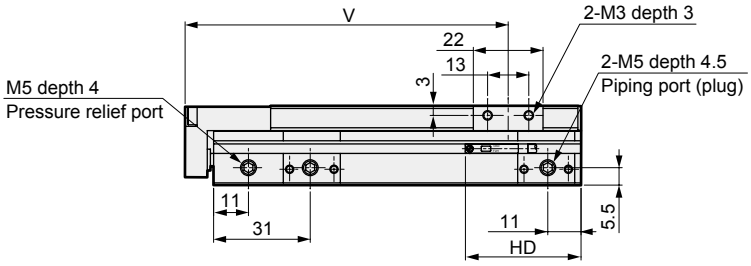
*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

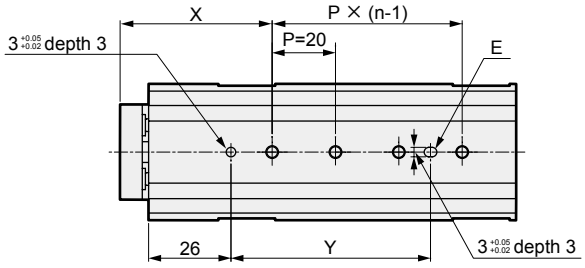
Dimensions (bore size: ø8)

● LCG-8-P7*

Stroke length: 40, 50, 75
(Body mounting hole in the figure shows 50 mm stroke length)



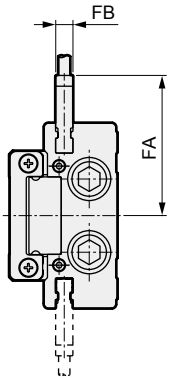




Dimensions by stroke length

Stroke length	40	50	75
L1	115	125	150
L2	106	116	141
n	3	4	5
V	92	102	127
W	25	35	60
X	46.5	48	45
Y	41.5	63	80
RD	34		
HD	32		

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	40	50	75
FA	32.6		
FB	4		
RD	33		
HD	33		

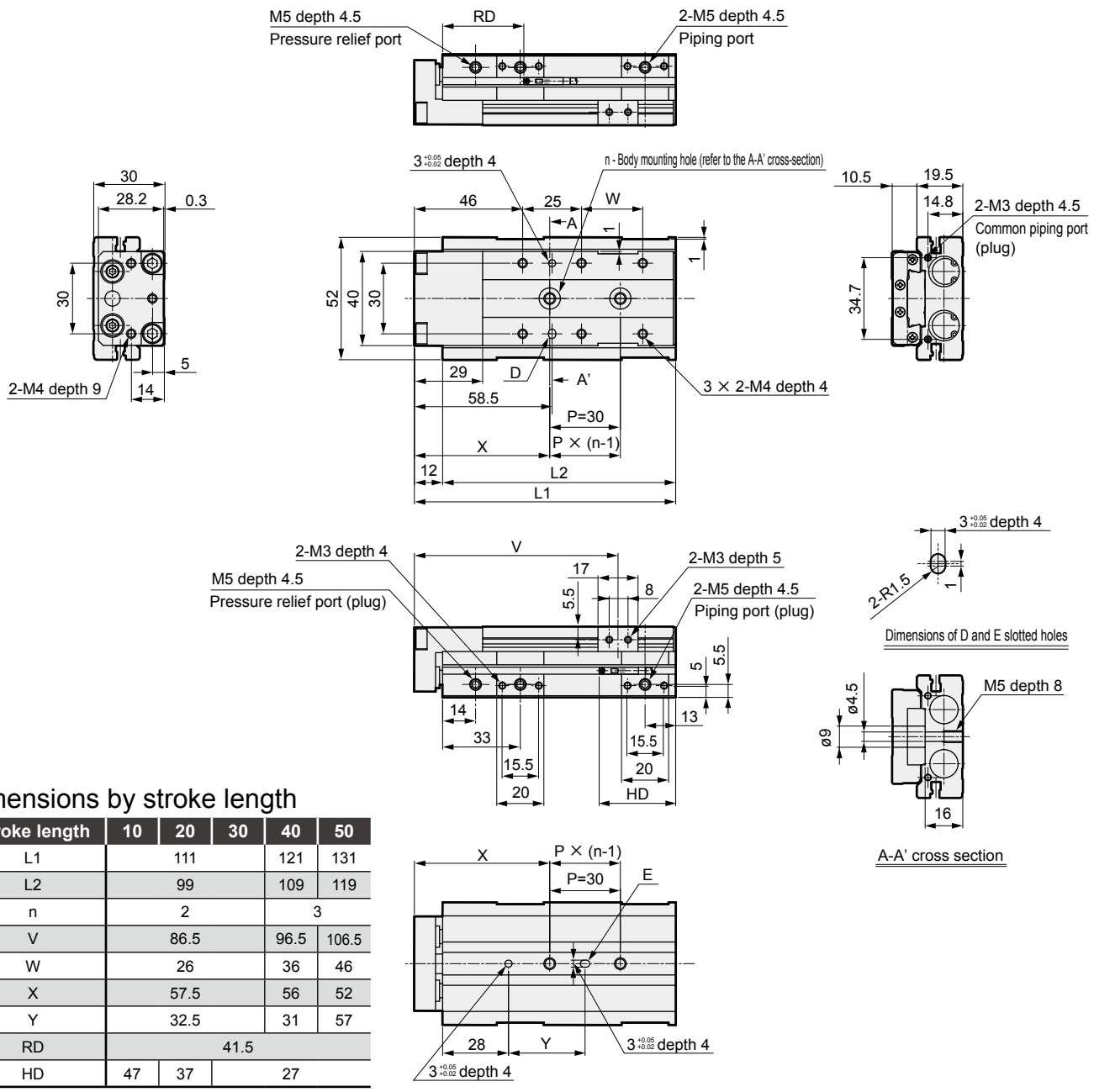
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø12)

● LCG-12-P7*

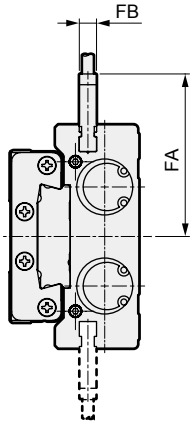
Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length	10	20	30	40	50
L1	111			121	131
L2	99			109	119
n	2			3	
V	86.5			96.5	106.5
W	26			36	46
X	57.5			56	52
Y	32.5			31	57
RD	41.5				
HD	47	37	27		

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	10	20	30	40	50
FA	37.8				
FB	4				
RD	40.5				
HD	48	38	28		

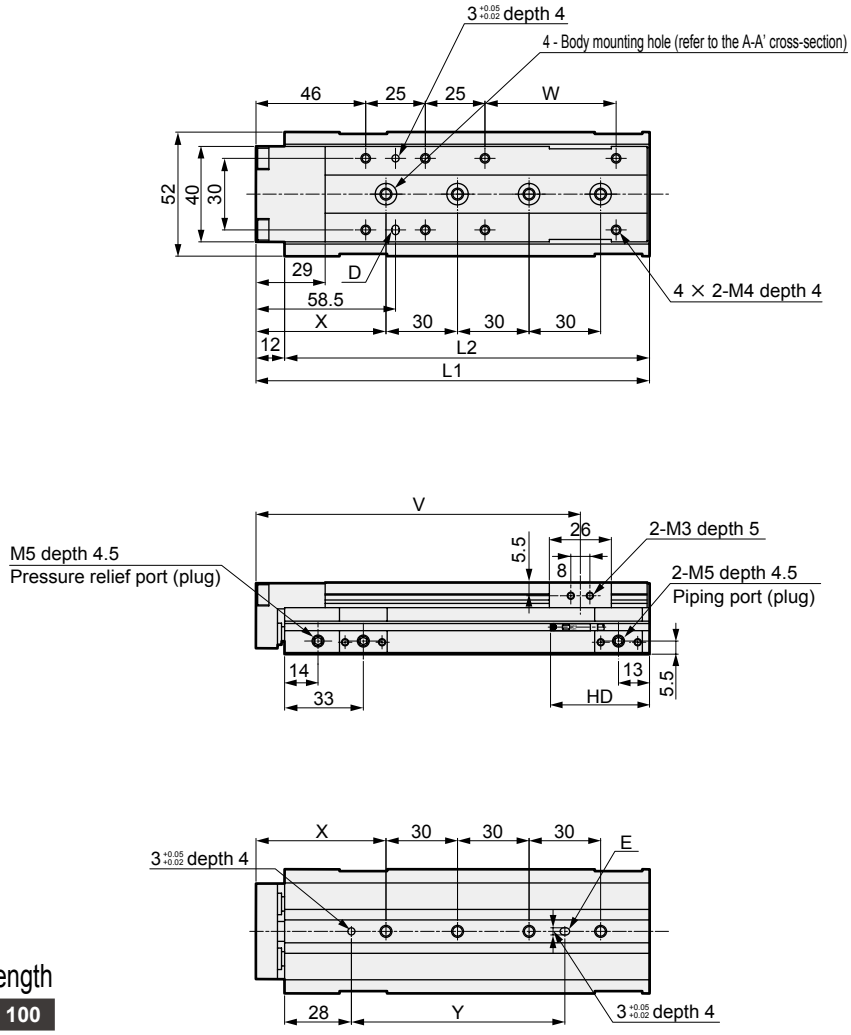
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø12) CAD

● LCG-12-P7*

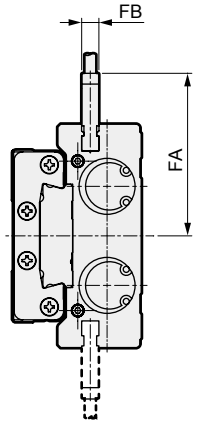
Stroke length: 75, 100
(Body mounting hole in the figure shows 100 mm stroke length)



Dimensions by stroke length

Stroke length	75	100
L1	165	190
L2	153	178
V	136	161
W	55	80
X	54.5	67
Y	89.5	102
RD	41.5	
HD	36	

● Dimensions of protruding section when the F2S or F3S cylinder switch is mounted



Stroke length	75	100
FA	37.8	
FB	4	
RD	40.5	
HD	37	

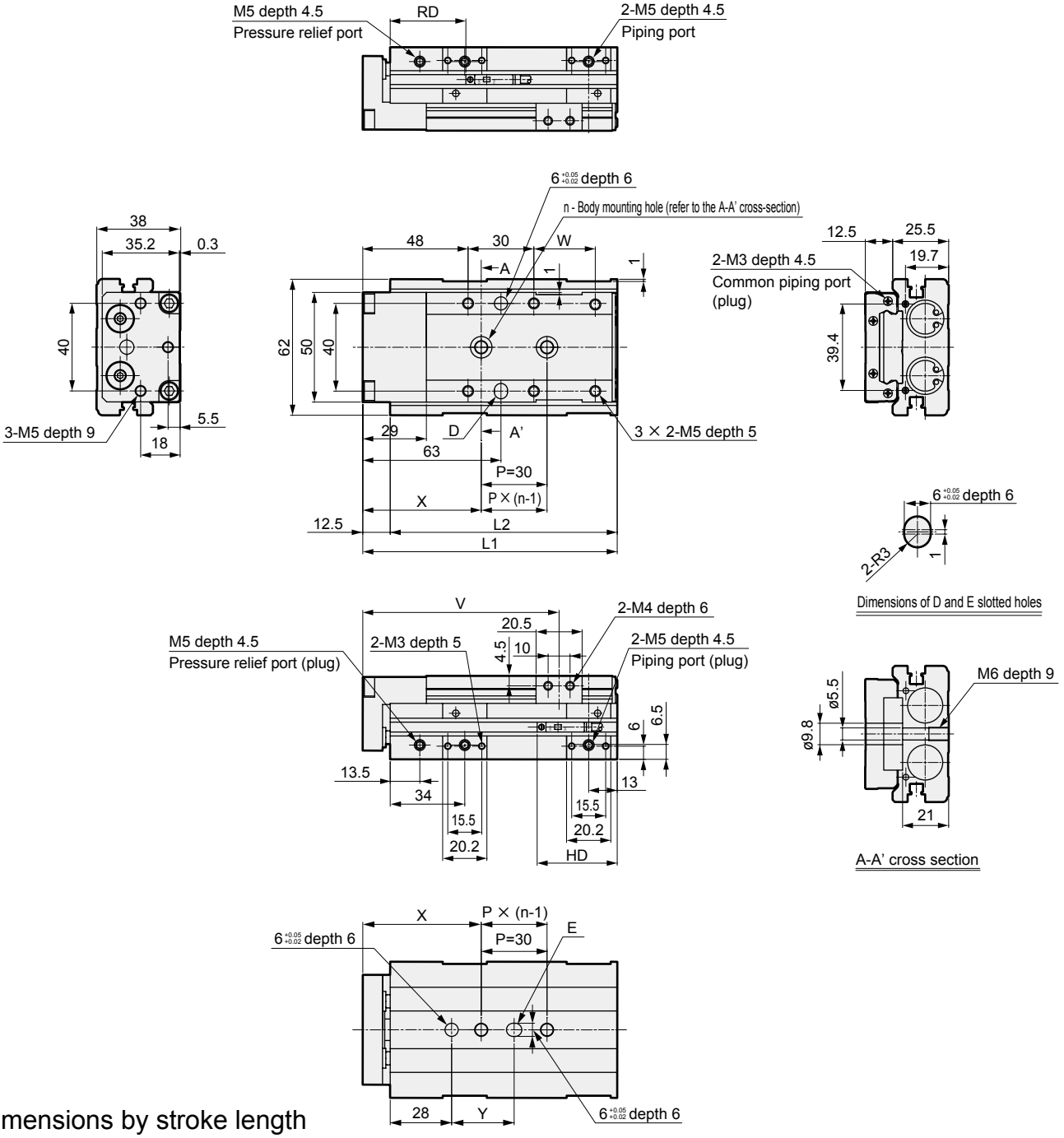
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø16)

● LCG-16-P7*

Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length		10	20	30	40	50
L1		116			126	136
L2		103.5			113.5	123.5
n		2				3
V		89.8			99.8	109.8
W		28			38	48
X		54			65.5	55.5
Y		28.5			40	60
T0*/T5*	RD	37				
T2*/T3*	HD	56.5	46.5	36.5		
T2W*/T3W*	RD	39.5				
	HD	54	44	34		

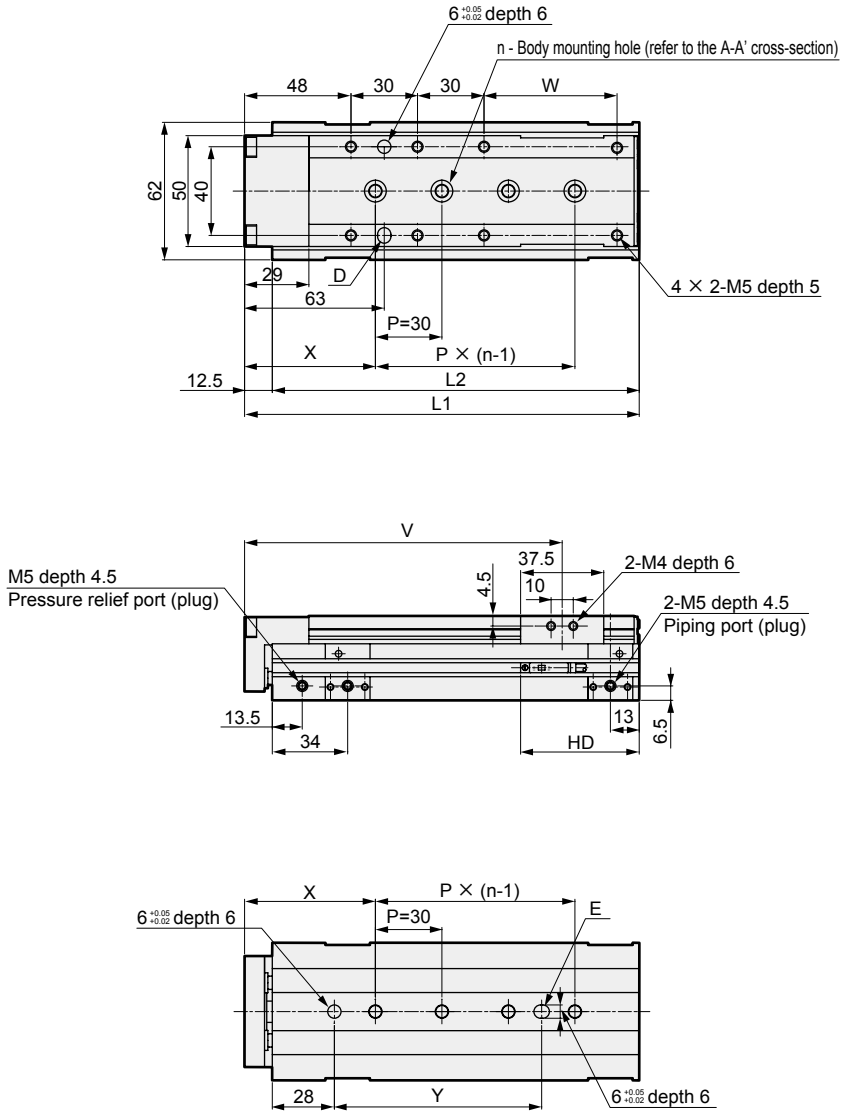
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø16)

● LCG-16-P7*

Stroke length: 75, 100, 125,
(Body mounting hole in the figure shows 75 mm stroke length)



Dimensions by stroke length

Stroke length		75	100	125
L1		178	203	228
L2		165.5	190.5	215.5
n		4	5	
V		143.3	168.3	193.3
W		60	85	110
X		59	57	69
Y		93.5	121.5	133.5
T0*/T5*	RD	37		
T2*/T3*	HD	53.5		
T2W*/T3W*	RD	39.5		
	HD	51		

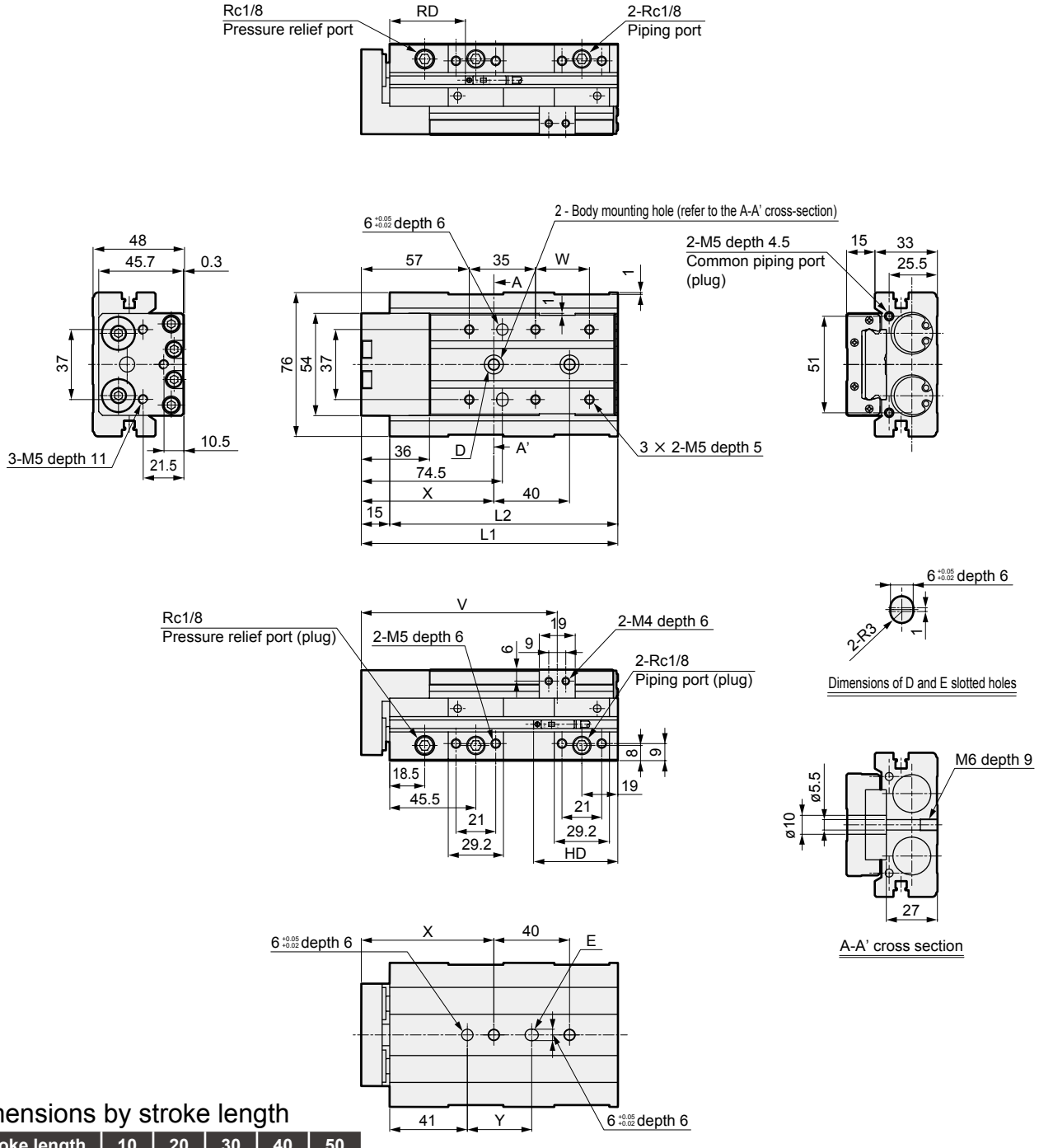
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø20) CAD

● LCG-20-P7*

Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length		10	20	30	40	50
L1		135.5			145.5	155.5
L2		120.5			130.5	140.5
V		103.5			113.5	123.5
W		28.5			38.5	48.5
X		70			76	74
Y		34			40	38
T0*/T5*	RD	41				
T2*/T3*	HD	69.5	59.5	49.5		
T2W*/T3W*	RD	43.5				
	HD	67	57	47		

* The same dimensions apply to the anti-rust (U).

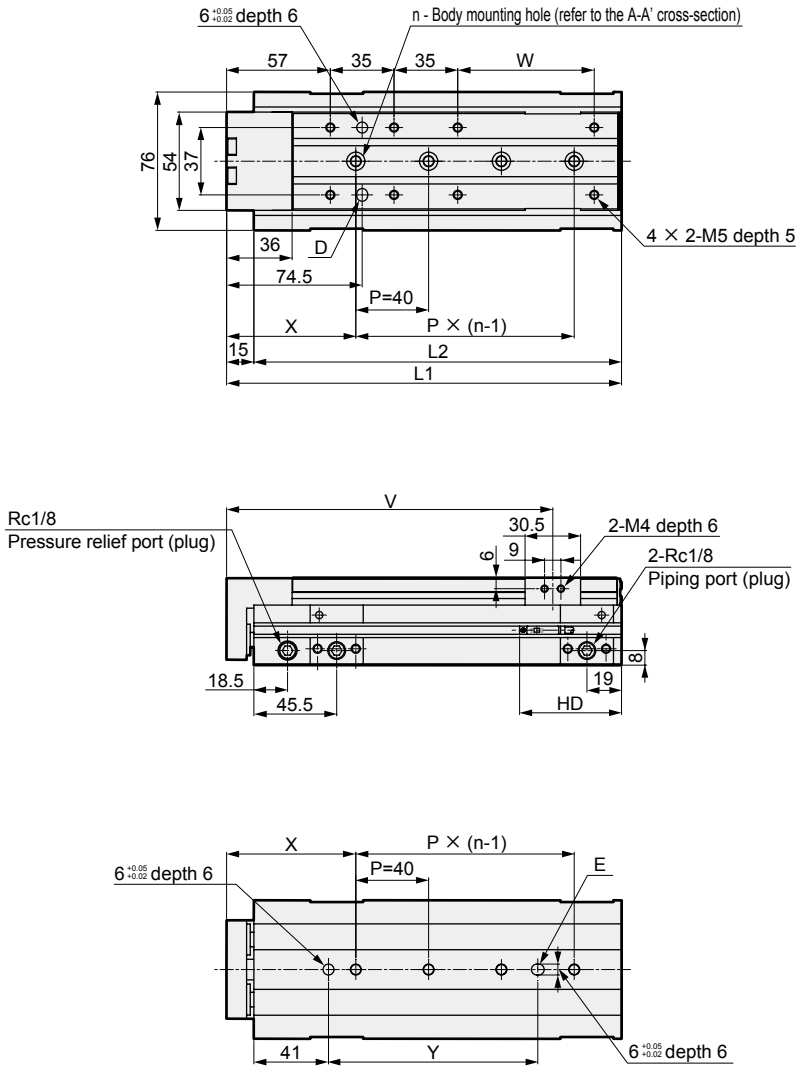
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø20) CAD

● LCG-20-P7*

Stroke length: 75, 100, 125, 150
(Body mounting hole in the figure shows 100 mm stroke length)



Dimensions by stroke length

Stroke length		75	100	125	150
L1		192	217	242	267
L2		177	202	227	252
n		3	4		5
V		154.3	179.3	204.3	229.3
W		50	75	100	125
X		71		78	76
Y		75	115	122	160
T0*/T5*	RD	41			
T2*/T3*	HD	61			
T2W*/T3W*	RD	43.5			
	HD	58.5			

* The same dimensions apply to the anti-rust (U).

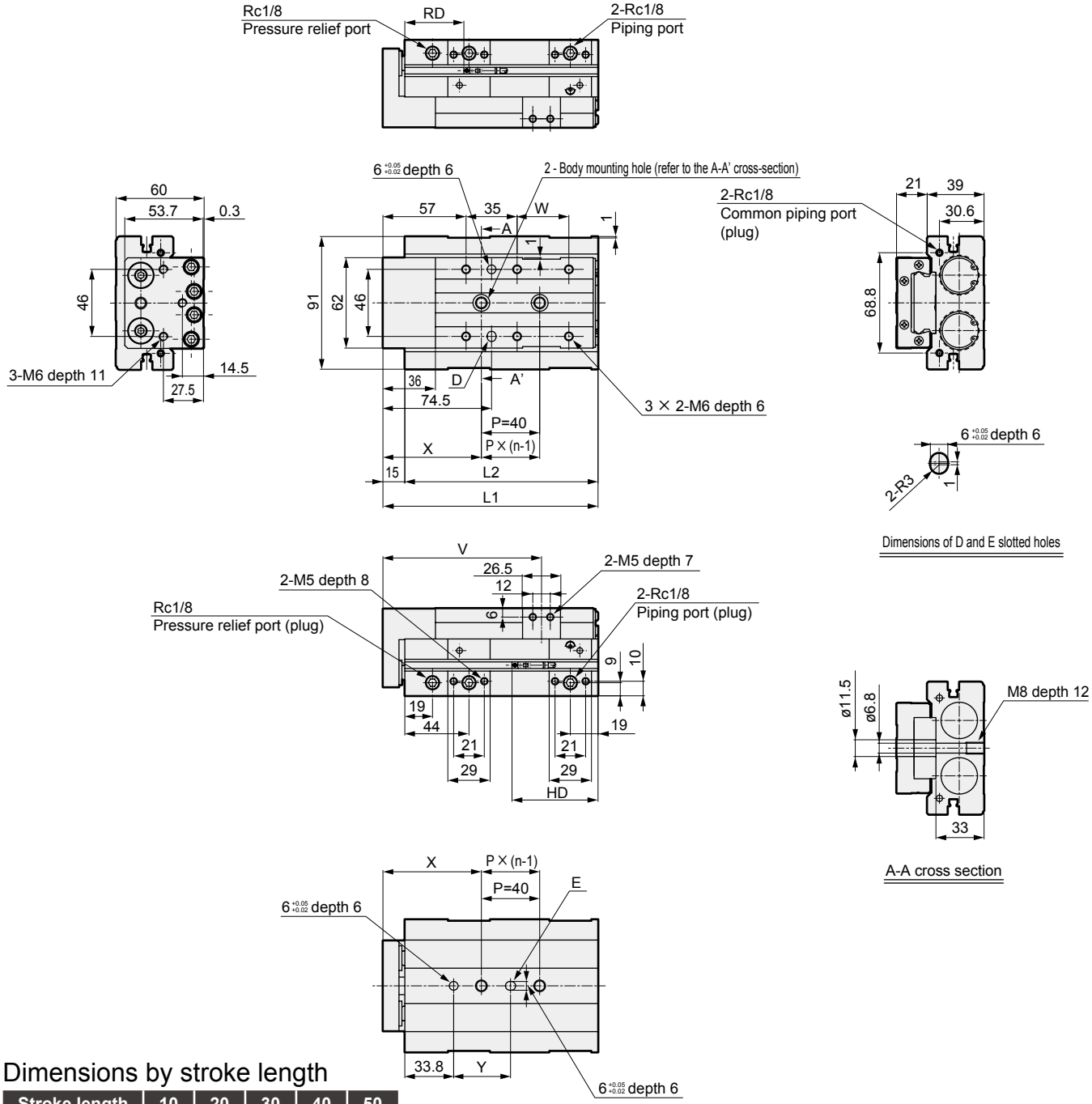
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø25) CAD

● LCG-25-P7*

Stroke: 10, 20, 30, 40, 50
(Body mounting hole in the figure shows 30 mm stroke length)



Dimensions by stroke length

Stroke length		10	20	30	40	50
L1		147.5			157.5	167.5
L2		132.5			142.5	152.5
n		2			3	2
V		108.8			118.8	128.8
W		35.5			45.5	55.5
X		67.5			70.5	85.5
Y		39			42	57
T0*/T5*	RD	43.5				
T2*/T3*	HD	79	69	59		
T2W*/T3W*	RD	46				
	HD	76.5	66.5	56.5		

* The same dimensions apply to the anti-rust (U).

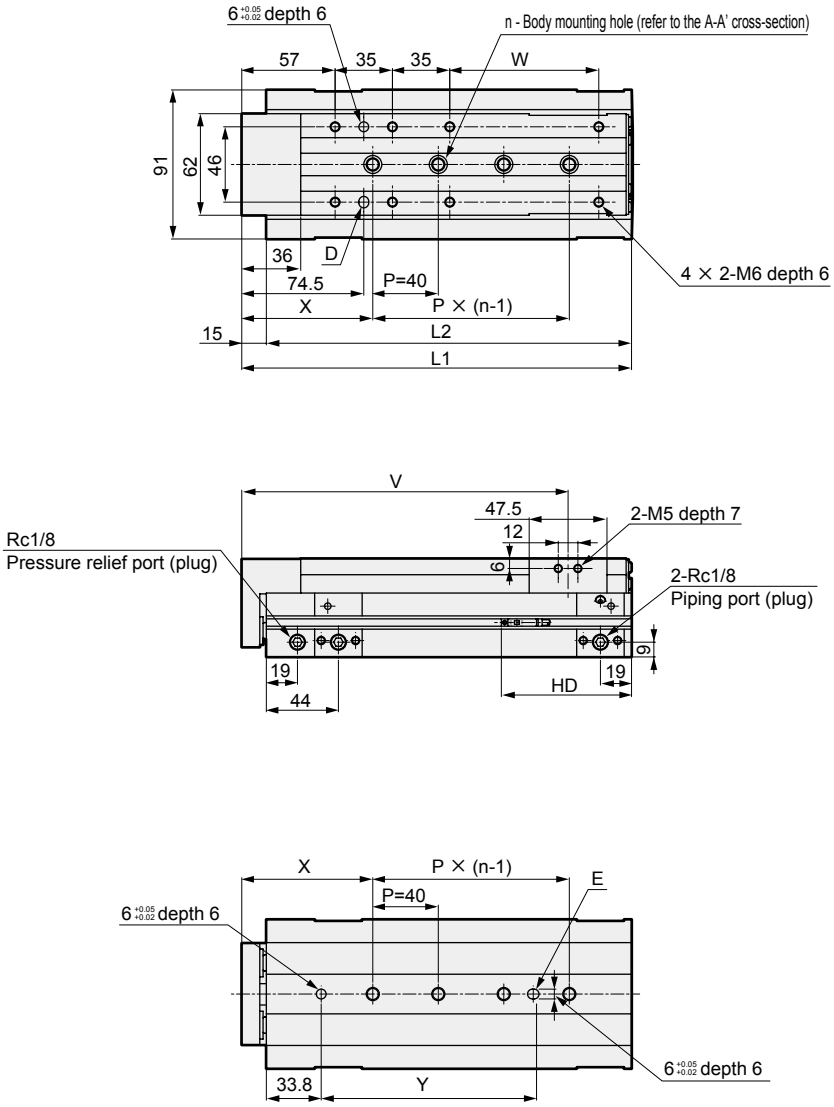
*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

Dimensions (bore size: ø25)

● LCG-25-P7*

Stroke length: 75, 100, 125, 150
(Body mounting hole in the figure shows 100 mm stroke length)



Dimensions by stroke length

Stroke length		75	100	125	150
L1		213	238	263	288
L2		198	223	248	273
n		3	4	5	
V		163.8	188.8	213.8	238.8
W		66	91	116	141
X		85	80	70	85
Y		96.5	131.5	161.5	176.5
T0*/T5*	RD	43.5			
T2*/T3*	HD	79.5			
T2W*/T3W*	RD	46			
	HD	77			

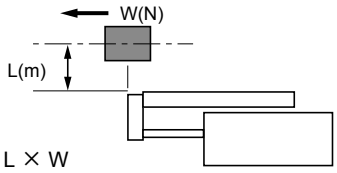
* The same dimensions apply to the anti-rust (U).

*1 : When using a positioning hole, use a pin of dimensions that do not require press fitting.
The recommended tolerance of a pin is JIS tolerance m6 or less.

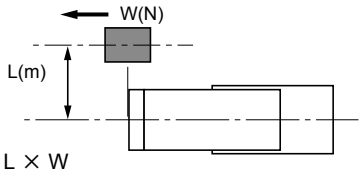
*2 : When using rear piping, refer to the cautions of 1. Common; when piping on page 196.

STEP 1

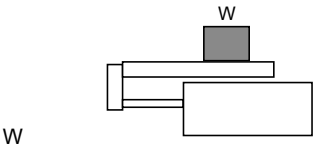
❶ Calculate the load and the moment of impact occurring at the stroke end in different directions.



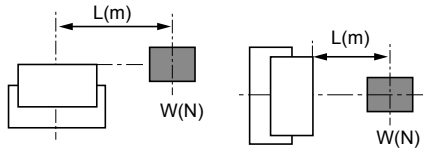
M1' = L × W



M3' = L × W



W' = W



M2' = L × W

Obtain an approximate G coefficient in [Table 1].

[Table 1] Va (average speed) = $\frac{\text{Travel distance}}{\text{Travel time}}$ (m/s)

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

G Coefficient = ☐

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

M3' x G = ☐ (N·m)

W' = ☐ (N)

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

= ☐ (J)

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

❷ Select a temporary bore size that satisfies the following formula.

$$M'_T = \frac{M1' \times G}{M1'max} + \frac{M2'}{M2'max} + \frac{M3' \times G}{M3'max} + \frac{W'}{W'max} < 1$$

$E' < E\ max$

M'_T : Resultant moment (must be smaller 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_0 (from Table 3)

m_α : Table weight (from Table 4)

[Table 2] Allowable static load

Bore size	Stroke length (mm)	Vertical load W'max (N)	Bending moment M1'max (N·m)	Radial moment M2'max (N·m)	Torsion moment M3'max (N·m)
ø6	10 to 30	140	1.7	4.0	1.7
	40 to 50	186	10.7	6.0	10.7
ø8	10 to 30	152	3.4	6.8	3.4
	40 to 75	230	13.8	10.3	13.8
ø12	10 to 50	220.8	5.7	15.2	5.7
	75 to 100		22.2	21.0	22.2
ø16	10 to 50	380.8	17.8	36.0	17.8
	75 to 125		37.3	40.0	37.3
ø20	10 to 50	548.8	31.1	60.3	31.1
	75 to 150		56.2	61.6	56.2
ø25	10 to 50	961.5	65.1	131.8	65.1
	75 to 150		127.5	132.0	127.5

Note: When attaching a load to the end plate, even if selecting long stroke length (ø6, 8: 40 or more, ø12 or more: 75 or more), calculate the allowable values with short stroke length (ø6, 8: 30 or less, ø12 or more: 50 or less).

[Table 3] LCG allowable absorbed energy (E_0)

Bore size	Standard (J)	With stroke adjusting stopper (J)	With shock absorber 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 length (mm)									P72/P73 added	B/BL added
	10	20	30	40	50	75	100	125	150		
ø6	0.060	0.060	0.070	0.085	0.095	-	-	-	-	0.005	0.030
ø8	0.080	0.080	0.090	0.110	0.125	0.150	-	-	-	0.015	0.030
ø12	0.210	0.210	0.210	0.235	0.260	0.335	0.400	-	-	0.025	0.060
ø16	0.315	0.315	0.315	0.350	0.380	0.515	0.595	0.680	-	0.035	0.070
ø20	0.475	0.475	0.475	0.520	0.565	0.715	0.820	0.930	1.035	0.045	0.140
ø25	0.785	0.785	0.785	0.845	0.915	1.200	1.360	1.515	1.680	0.075	0.310

STEP 2

Next, obtain a more accurate load factor, effective thrust, stroke end speed and resultant moment.

● Calculate the load factor.

$$\alpha = \frac{F_0}{F} \times 100\ [\%]$$

α : Load factor

F_0 : Force (N) required to move the workpiece

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

For horizontal operation	For vertical operation
$F_0 = F_W$	$F_0 = W+FW$
FW: W x 0.2 Note (N)	
W: Load (N)	

Note: Coefficient of friction

[Table 5] Theoretical thrust table (Unit: N)

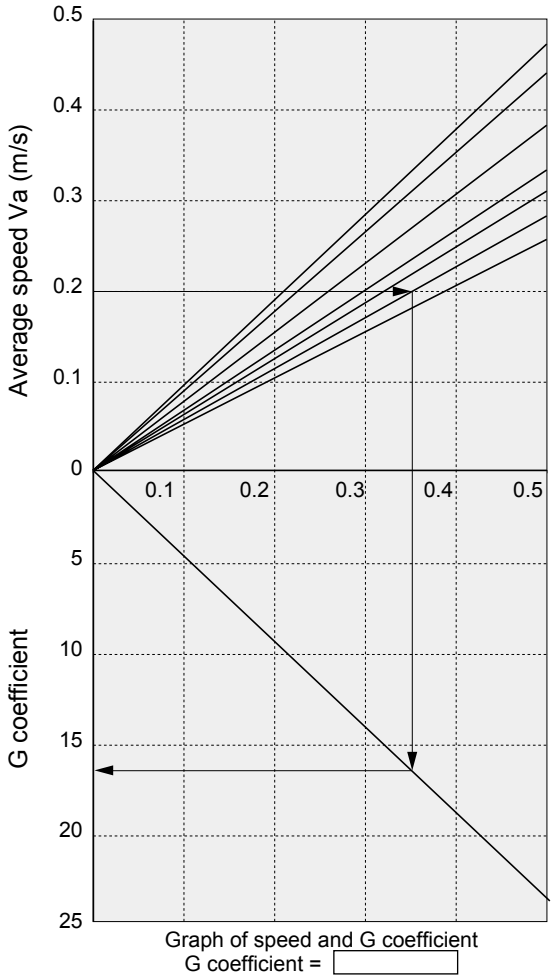
Bore size (mm)	Operating direction	Working pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	PUSH	8	11	17	23	28	34	40
	PULL	6	8	13	17	21	25	30
ø8	PUSH	15	20	30	40	50	60	70
	PULL	11	15	23	30	38	45	53
ø12	PUSH	34	45	68	90	113	136	158
	PULL	25	34	51	68	85	102	119
ø16	PUSH	60	80	121	161	201	241	281
	PULL	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 guidelines

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

STEP 3

Obtain the stroke end speed (Vm) and G coefficient from the average speed (Va) and load factor obtained in STEP 2.



Graph of speed and G coefficient

G coefficient = ☐

The arrows (→) in the figure show an example in which stroke end speed of 0.35 m/s and G coefficient of 16.8 are obtained at a 0.20 m/s average speed and 50% load factor.

STEP 4

Calculate the resultant moment (M_T) from the G coefficient and stroke end speed (Vm) obtained in STEP 3.

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

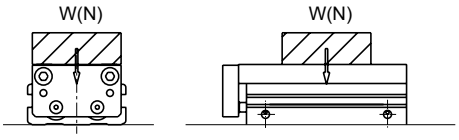
M3' x G = ☐ (N·m)

W' = ☐ (N)

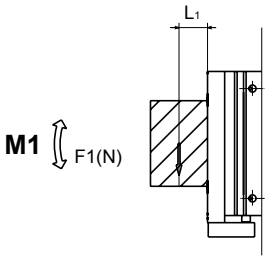
$$M'_T = \frac{M1' \times G}{M1'max} + \frac{M2'}{M2'max} + \frac{M3' \times G}{M3'max} + \frac{W'}{W'max} = \square$$

Obtain M_T (resultant moment during movement). (Note that it differs from that obtained in STEP 1.)

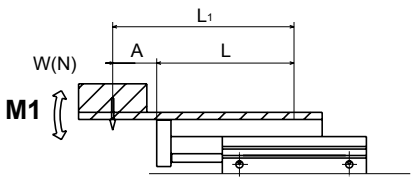
● Vertical load: W (N)



● Bending moment: M1 (N·m)

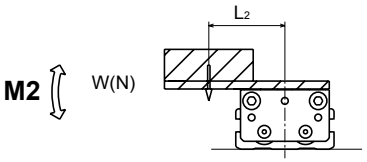


M1=F1 × L_1

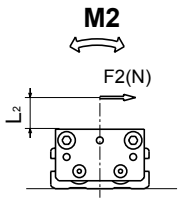


M1=W × L_1
L_1=A+L
L is value in table below

● Radial moment: M2 (N·m)

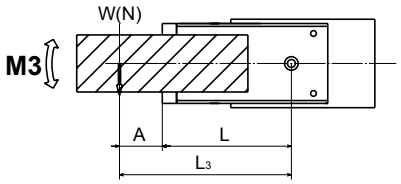


M2=W × L_2

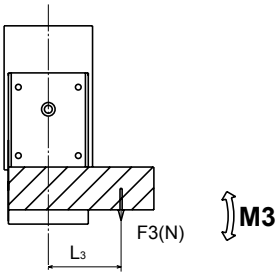


M2=F2 × L_2

● Torsion moment: M3 (N·m)



M3=W × L_3
L_3=A+L
L is value in table below



M3=F3 × L_3

L value

Unit (m)

Bore size	Stroke length									P72/P73 added	B/BL added
	10	20	30	40	50	75	100	125	150		
ø6	0.039	0.0415	0.049	0.0615	0.069	-	-	-	-	0.012	0.0165
ø8	0.0395	0.042	0.0495	0.0615	0.069	0.088	-	-	-	0.020	0.0145
ø12	0.053	0.0555	0.058	0.0655	0.073	0.096	0.115	-	-	0.020	0.018
ø16	0.0555	0.058	0.0605	0.068	0.0755	0.1025	0.1215	0.140	-	0.020	0.019
ø20	0.0635	0.066	0.0685	0.076	0.0835	0.108	0.127	0.1455	0.1645	0.025	0.020
ø25	0.0695	0.072	0.0745	0.082	0.0895	0.1185	0.1375	0.156	0.175	0.025	0.023

M1=M1 = ☐ (N·m)

M2=M2 = ☐ (N·m)

M3=M3 = ☐ (N·m)

W=W = ☐ (N)

$$M_T = \frac{M1}{M1max} + \frac{M2}{M2max} + \frac{M3}{M3max} + \frac{W}{Wmax} = \square$$

M_T : Synthesis of moment

Wmax : Max. allowable value of W (from Table 7)

M1max : Max. allowable value of M1 (from Table 7)

M2max : Max. allowable value of M2 (from Table 7)

M3max : Max. allowable value of M3 (from Table 7)

E max : Max. allowable value of E_0 (from Table 3)

[Table 7] Allowable running load

Bore size	Stroke length (mm)	Vertical load Wmax (N)	Bending moment M1max (N·m)	Radial moment M2max (N·m)	Torsion moment M3max (N·m)
ø6	10 to 30	14	0.17	0.40	0.17
	40 to 50	15.5	0.89	0.50	0.89
ø8	10 to 30	15.2	0.34	0.68	0.34
	40 to 75	19.2	1.1	0.86	1.1
ø12	10 to 50	27.6	0.71	1.9	0.71
	75 to 100		2.2	2.1	2.2
ø16	10 to 50	47.6	1.9	4.0	1.9
	75 to 125		4.6	5.0	4.6
ø20	10 to 50	68.6	3.4	6.7	3.4
	75 to 150		7.0	7.7	7.0
ø25	10 to 50	128.2	7.6	15.5	7.6
	75 to 150		17.0	17.6	17.0

Note: When attaching a load to the end plate, even if selecting long stroke length (ø6, 8: 40 or more, ø12 or more: 75 or more), calculate the allowable values with short stroke length (ø6, 8: 30 or less, ø12 or more: 50 or less).

Confirm M_T, $M'_T \leq 1$.

↓

Bore size is decided.

↓

øA

STEP 5

Confirming allowable absorbed energy

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

E : Kinetic energy at workpiece end (J)

m : Load weight (kg) ($m \approx \frac{W(N)}{9.8}$)

m_α : Table weight (from Table 4)

Vm : Stroke end speed (m/s)

E max : Max. allowable value of E_0 (from Table 3)

Confirm E ≤ E max.

↓

Bore size is decided.

↓

øB

STEP 6

Bore size decided in STEP 4
(load conditions)

øA

Bore size decided in STEP 5
(allowable absorbed energy)

øB

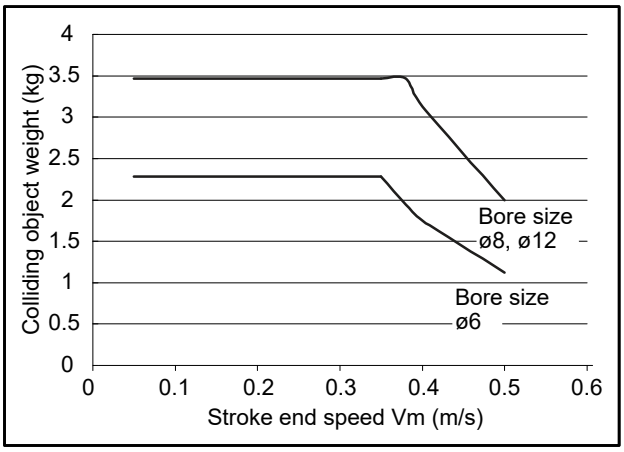
øA < øB → øB Select.

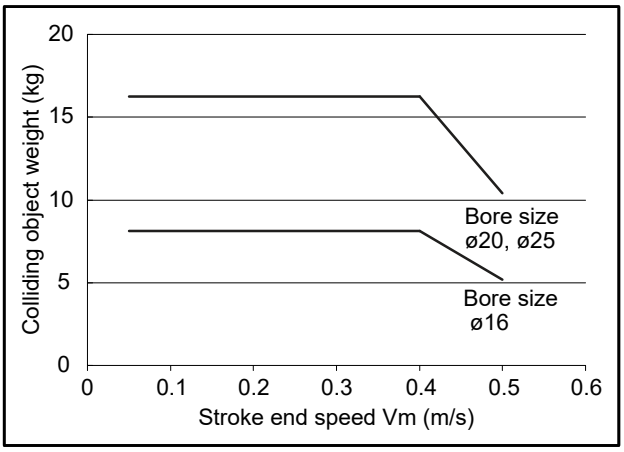
or → øA and external damper are used together or a shock absorber stopper is attached.

øA>øB → øA Select.

Selection confirmation graph of shock absorber stopper

1. This is a simplified confirmation graph for shock absorber stoppers. The area inside the graph is the usable range. Select a bore size for shock absorber mounting within the usable range.
2. Simplified selection graph lists the pneumatic pressure value used for the cylinder at 0.5 MPa.
3. The absorbed energy of the shock absorber varies depending on the temperature. The simplified confirmation graph lists the value at room temperature.
4. Colliding object weight is the sum of load weight m and table weight ma.

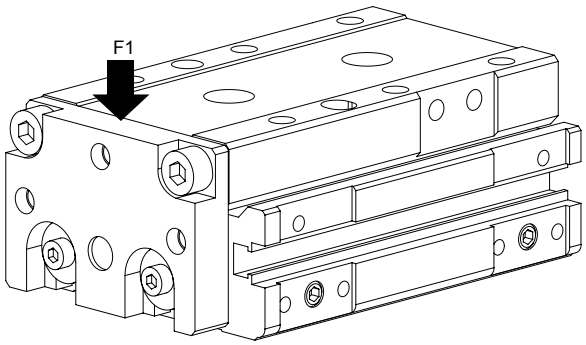




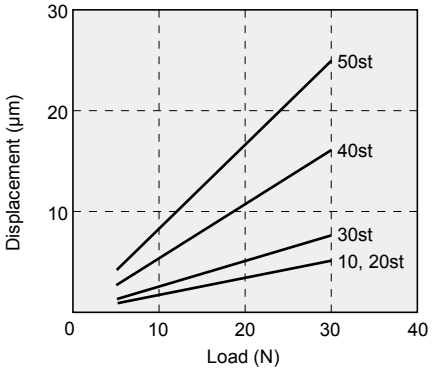
Displacement at point A

[Displacement of table due to M1 moment]

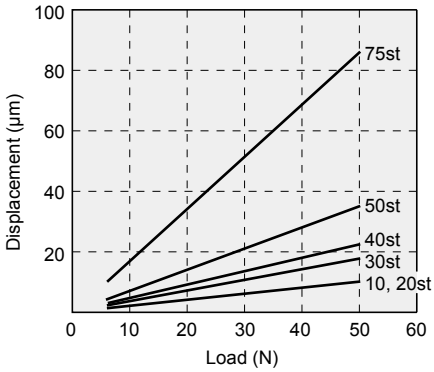
Displacement at the table end when load (F1) is applied to the table end



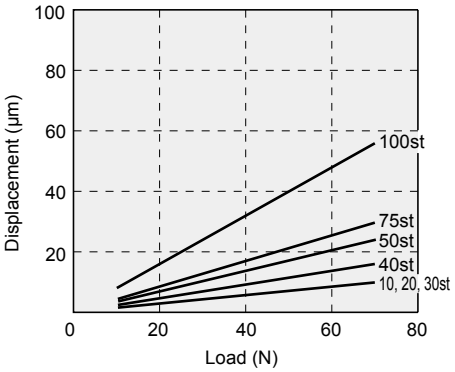
LCG-6(M1)



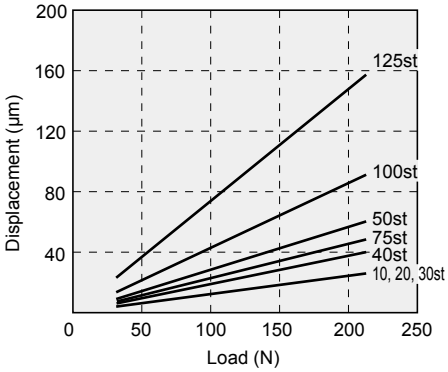
LCG-8(M1)



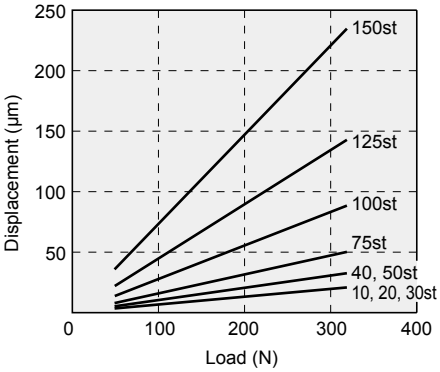
LCG-12(M1)



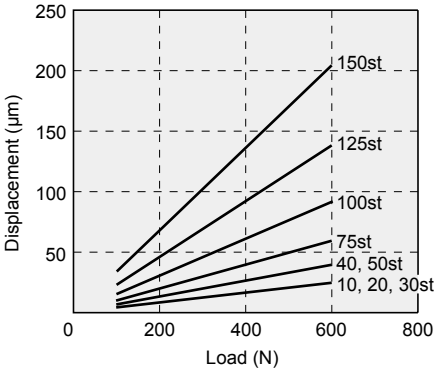
LCG-16(M1)



LCG-20(M1)



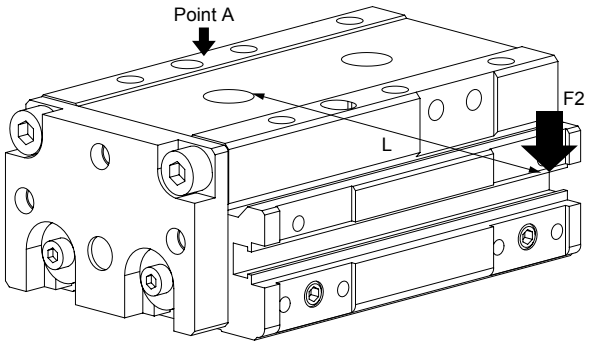
LCG-25(M1)



Displacement at point A

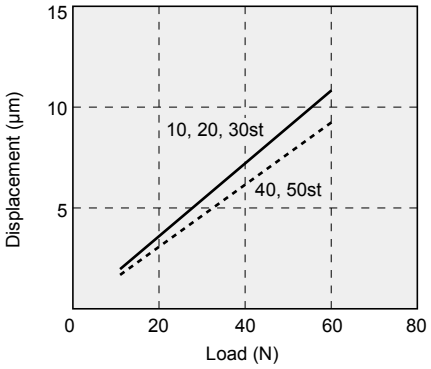
[Displacement of table due to M2 moment]

Displacement at the table end (point A) when load (F2) is applied to a point L mm away from the center of the cylinder

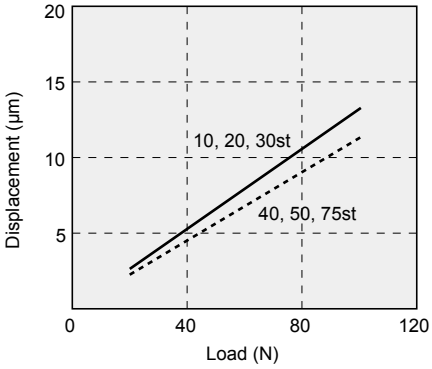


L value
ø 6: L= 70, ø 8: L= 70
ø12: L= 90, ø16: L=100
ø20: L=100, ø25: L=200

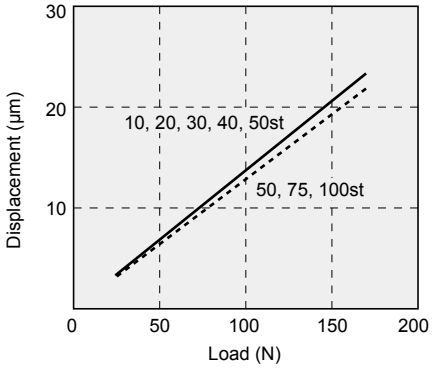
LCG-6(M2)



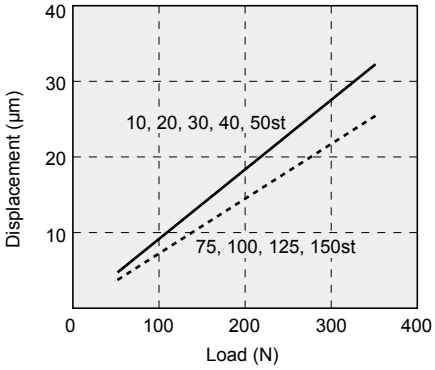
LCG-8(M2)



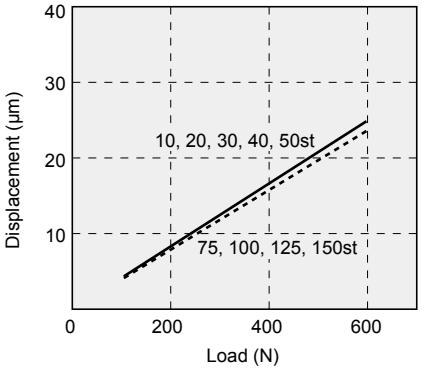
LCG-12(M2)



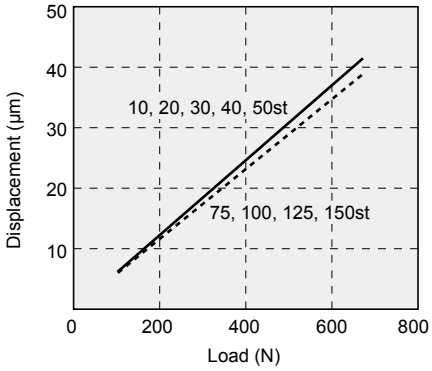
LCG-16(M2)



LCG-20(M2)



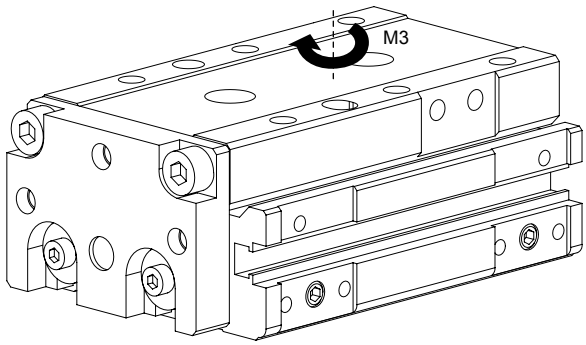
LCG-25(M2)



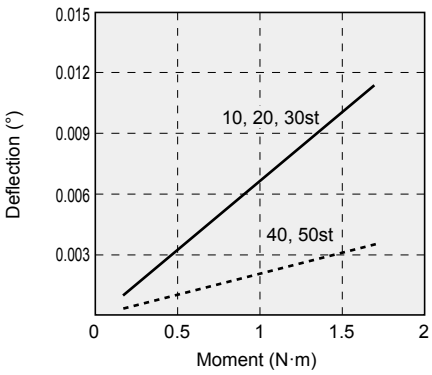
Displacement at point A

[Displacement of table due to M3 moment]

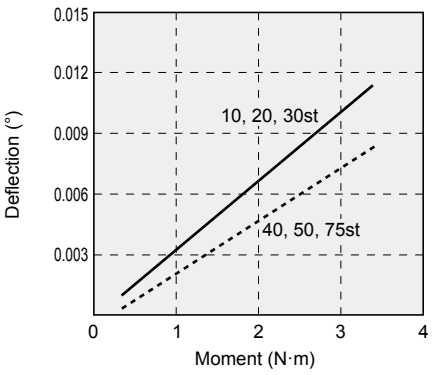
Displacement angle of the table when rotation moment (M3) is applied to the cylinder



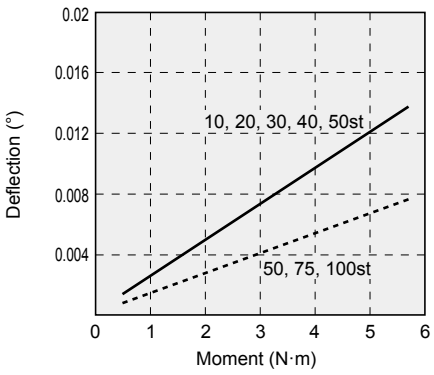
LCG-6(M3)



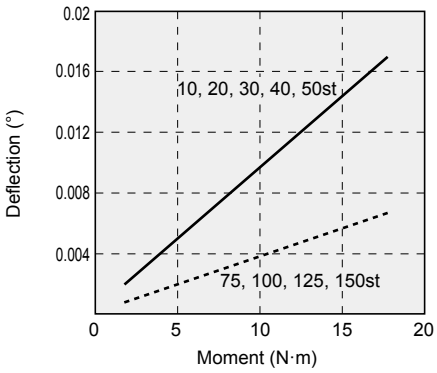
LCG-8(M3)



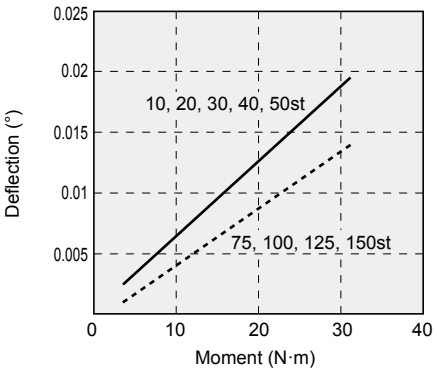
LCG-12(M3)



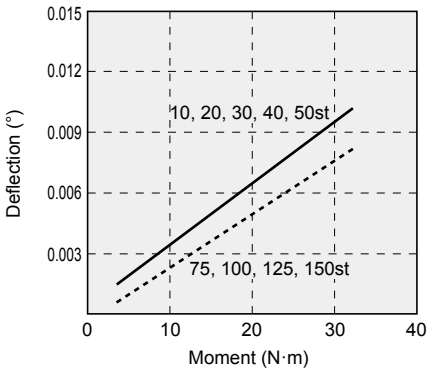
LCG-16(M3)



LCG-20(M3)



LCG-25(M3)



Pneumatic components

Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Linear slide cylinder LCG Series

Design/selection

1. Common

⚠CAUTION

■ When selecting the cylinder, follow the “LCG Selection guide” on pages 188 to 192.

■ Protect the cylinder with a cover to prevent damage and malfunction in a place where it is exposed to dripping water or oil, corrosive conditions or much dust.

■ Precautions for type with switch

- When using the T□V switch with a stroke adjusting stopper (S3**/S4**/S5**/S6**) or shock absorber stopper (A3**/A4**/A5**/A6**), install the switch on the opposite side to the stopper. Otherwise the switch on the head side will make contact with the stopper.
- Be careful of the lead wire direction when designing the 30 mm or less stroke length, since a switch is installed in each groove of the body.

■ Putting a strong magnet close to the product may cause magnetization of the table, which may result in accidental operation of the switch.

2. Position locking LCG-Q

⚠CAUTION

■ Do not use 3-position valves.

Avoid using the cylinder in combination with 3-position (especially closed center metal seal) valves. If the port at the side where the lock mechanism is provided is pressurized, the lock cannot be engaged. Even if it is locked once, the air leaked from the valve enters the cylinder, and the lock may be released after a certain period of time.

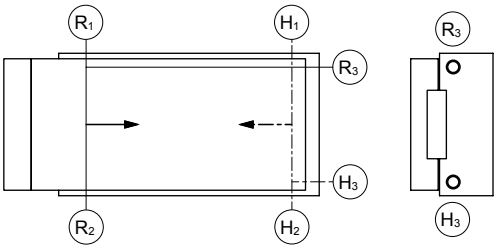
Mounting, installation and adjustment

1. Common; when piping

⚠CAUTION

■ Apply adhesive to the M3 and M5 plugs (hexagon socket set screws) when changing the piping port position. (Low strength adhesives such as LOCTITE 222/221 or ThreeBond 1344 are recommended)

■ Piping port position and operating direction



Ⓡ shows the rod side pressurizing port and Ⓗ the head side pressurizing port. When the product is shipped from the factory, ports other than Ⓡ and Ⓗ (Ⓡ and Ⓗ depending on the stopper position when a stopper is attached) are sealed with plugs.

■ Rear piping

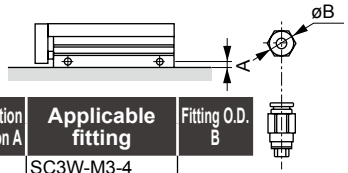
Rear piping (ports Ⓡ and Ⓗ in the figure above) is possible except for the position locking. Remove the plugs sealing ports Ⓡ and Ⓗ and seal ports Ⓡ and Ⓗ with the plugs shown in the table on the right.

Item	Plug
LCG-6	Seal the Ⓡ and Ⓗ ports with the plugs removed from the Ⓡ, Ⓗ ports.
LCG-8	M5 x 5 (Hexagon socket set screw)
LCG-12	
LCG-16	
LCG-20	R 1/8 (Hexagon socket head cap taper thread plug)
LCG-25	Seal the Ⓡ and Ⓗ ports with the plugs removed from the Ⓡ, Ⓗ ports.

Prepare two separate plugs shown in the table above for ø8 to 20.

■ Precautions for piping fittings

Be sure to attach a speed controller during piping before use. The available fittings are as below.



Item / Bore size (mm)	Port size	Port position dimension A	Applicable fitting	Fitting O.D. 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		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		

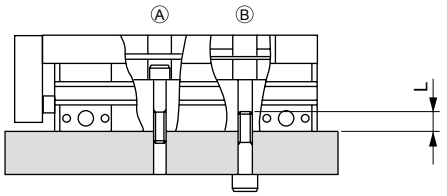
Mounting, installation and adjustment

2. Common; when installing

⚠CAUTION

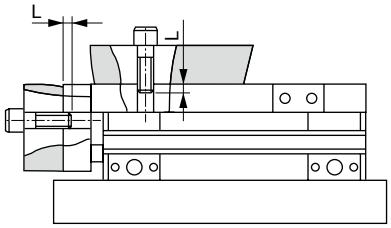
■ Do not damage the surface flatness by denting or scratching the body (tube) mounting surface or the table surface.
In addition, make sure that the flatness of the mating surface for body and table mounting is 0.02 mm or less.

■ Observe the following bolt insertion lengths and tightening torque when mounting the body.
[Fig. 1]



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

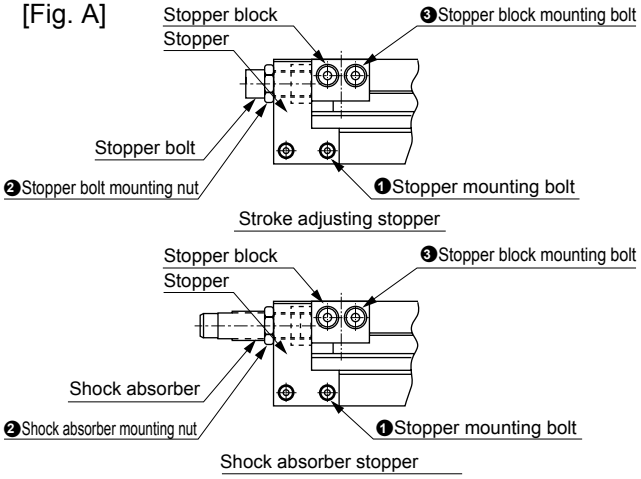
■ Observe the following bolt insertion lengths and tightening torque when installing the jig on the slide table or end plate.
[Fig. 2]



Item	Table		
	Bolt used	Tightening torque (N·m)	Max. insertion L (mm)
LCG-6	M3×0.5	0.6	3
LCG-8	M3×0.5	0.6	3
LCG-12	M4×0.7	1.4	4
LCG-16	M5×0.8	2.9	5
LCG-20	M5×0.8	2.9	5
LCG-25	M6×1.0	4.8	6

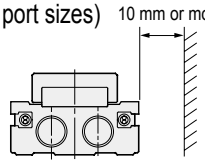
Item	End plate		
	Bolt used	Tightening torque (N·m)	Screw insertion L (mm)
LCG-6	M3×0.5	0.6	4.5 to 6
LCG-8	M3×0.5	0.6	4.5 to 7
LCG-12	M4×0.7	1.4	6 to 9
LCG-16	M5×0.8	2.9	7.5 to 9
LCG-20	M5×0.8	2.9	7.5 to 11
LCG-25	M6×1.0	4.8	9 to 11

■ Observe the following tightening torque of bolts and nuts of the stopper.
[Fig. A]

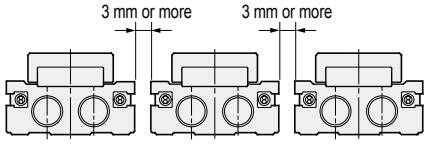


Model	❶Stopper mounting bolt (N·m)	❷Stopper bolt mounting nut ❷Shock absorber mounting nut (N·m)	❸Stopper block mounting bolt (N·m)
LCG-6	0.4 to 0.5	1.2 to 2.0	0.6 to 0.8
LCG-8	0.4 to 0.5	1.2 to 2.0	0.6 to 0.8
LCG-12	0.6 to 0.8	1.2 to 2.0	0.6 to 0.8
LCG-16	0.6 to 0.8	3.0 to 4.0	1.4 to 1.8
LCG-20	2.9 to 3.5	4.5 to 6.0	1.4 to 1.8
LCG-25	2.9 to 3.5	4.5 to 6.0	2.9 to 3.5

■ The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. To ensure safe operation, keep it 10 mm and over away from the cylinder surface or change the installation surface of the cylinder switch.
(Common for all port sizes)



■ The cylinder switches may accidentally function if the cylinders are close to each other. Keep the distance below between the surfaces of the cylinders. (Common for all port sizes)



■ CKD's shock absorber is a repair part.
Replace it when the energy absorption performance has degraded or the operation is not smooth.

■ When using a positioning hole, use a pin of dimensions that do not require press fitting. If a pin is press fitted, the load of press fitting may damage or distort the linear guide, lowering the accuracy.
The recommended tolerance of a pin is JIS tolerance m6 or less.

3. Position locking LCG-Q

⚠CAUTION

■ The locking mechanism works at the stroke end. If the stopper is engaged on the way of the stroke by the external stopper, the locking mechanism may not work and the piston could fall. When setting a load, make sure to check that the lock mechanism functions before installing the product.

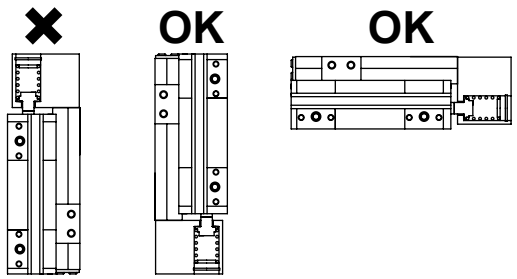
■ Supply pressure equal to or higher than the min. working pressure to the port on the lock mechanism side.

■ When the piping at the side where the lock mechanism is provided is long and thin, or when the speed controller is far away from the cylinder port, note that it takes time to engage the lock. Clogging in the silencer mounted on the EXH. port of the solenoid valve may also cause the same result.

4. With buffer LCG-B

■ Depending on the speed and load, the buffer may function when operation is started, resulting in accidental operation of the switch. Adjust to an appropriate speed for the load before use.

■ The type with buffer cannot be used vertically upward.



■ Use a buffer of less than the buffer stroke length. Otherwise, malfunctions or damage may result.

Use/maintenance

1. Common

⚠CAUTION

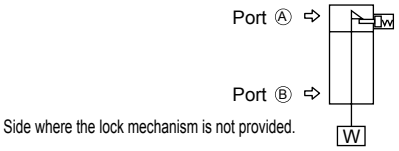
■ Apply AFF grease (THK) to the guide rail surface after six months or when the number of operation cycles reaches one million, whichever comes first.

■ Observe corrosion resistance of the table.
The table is martensitic stainless steel (ø6 to ø16) or alloy steel (ø20 and ø25). It may rust in an environment where the temperature and humidity is high or condensation may occur on the product surface.

2. Position locking LCG-Q

⚠WARNING

■ If pressure is supplied to port Ⓐ when both ports are not pressurized and the piston is locked, the lock may not be released or the piston rod may suddenly pop out just after the lock is released. This can be extremely hazardous. To release the lock mechanism, make sure to supply pressure to port Ⓑ. Check that load is not applied to the lock mechanism.



■ For usage where the drop rate is increased using the quick exhaust valve, the lock may not release normally because the cylinder body starts operating before the lock pin. For the position locking cylinder, do not use the quick exhaust valve.

⚠CAUTION

■ If back pressure is applied to the locking mechanism, the lock may be released. Use a single solenoid valve, or an individual exhaust manifold.

■ After the locking mechanism is manually operated, make sure to return the locking mechanism to the original state before use. Do not perform manual operation except for adjustment, as it is dangerous.

■ When mounting or adjusting the cylinder, release the lock. If mounting work, etc., is done while the lock is engaged, the lock part may be damaged.

■ Do not use multiple synchronized cylinders.
Do not arrange so that 1 workpiece is moved by synchronizing 2 or more position locking cylinders. Lock release may fail for one of the cylinders.

■ Use the speed controller with meter-out.
If the meter-in control is used, the lock may not be able to be released.

■ At the side where the lock mechanism is attached, be sure to use the cylinder from the stroke end.
If the cylinder piston does not reach the stroke end, the lock may not be engaged or the lock may not be able to be released.

■ How to unlock
By screwing the hexagon socket head cap screw (M3 x 20) into the stopper piston and pulling the bolt 3 mm with force of 20 N or more, the stopper piston moves and the lock is released. (when horizontally installed with no load and with the rod port pressurized). When the screw is released, the internal spring returns the stopper piston. When the stopper piston fits in the piston rod groove, the cylinder is locked.