

Combined functions

LCG

Linear slide cylinder

ø6/ø8/ø12/ø16/ø20/ø25



CONTENTS

Product introduction	144
● Double acting/clean room specifications (LCG-P7*)	146
Selection guide	162
Technical data	166
⚠ Safety precautions	170

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R
Precision R
Press gauge Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

Higher precision, higher rigidity, easier to use.

Installation holes on two sides

Wide linear guide

Slide table

Laterally symmetrical stopper

Rear piping ports are available as standard for all bore sizes

Cylinder switch mounting groove

* The picture shows the standard product.

Higher precision

The linear guide table surface serves as a slide table, and thus provides higher precision than conventional models.

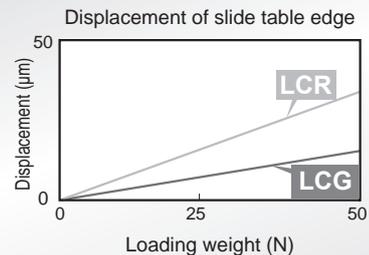
Parallelism of 0.03 mm ($\varnothing 12$ with 30 mm stroke length)
End plate squareness of 0.05 mm

Higher rigidity

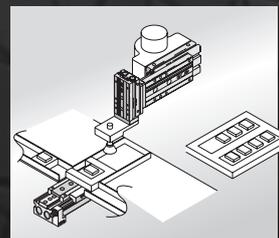
A stainless steel or steel slide table has been adopted instead of the conventional aluminum slide table. It increases rigidity when combined with a wide guide.

Easy to use, too

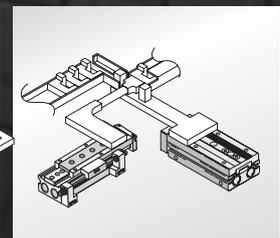
No more complicated work for designing the cylinder and linear slide system individually. Work hours for designing have been reduced. Designing is more flexible and usability is more enhanced with laterally symmetrical installation of stoppers and multi-side piping.



Applications



Conveying small parts to the tray for storage and from the tray for supply



Conveying small parts

LCG Series

Linear slide cylinder

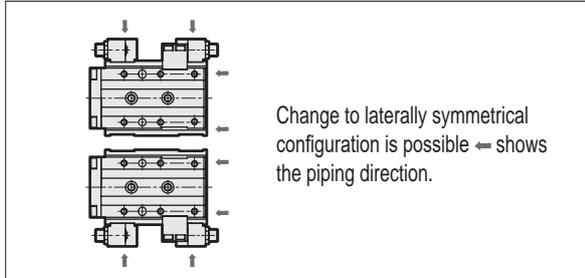
- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- FR (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

A high-precision, high-rigidity wide guide is 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.

■ Modification to the laterally symmetrical configuration is possible.

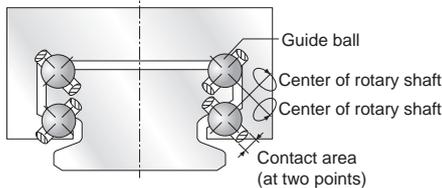


● Guide balls aligned in four rows on the linear guide (ø12 and over)

Guide balls aligned in four rows ensure the 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



● RoHS Directive compliant

Free from environmentally harmful substances such as lead and hexavalent chromium.

■ LCG Series variation

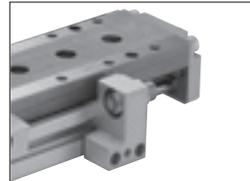
Model variations	Bore size	Stroke (mm)												
		10	20	30	40	50	75	100	125	150				
Double acting/single rod (Clean room specifications) LCG-P7*	ø6													
	ø8													
	ø12													
	ø16													
	ø20/ø25													

● A wide variety of options and variations

The standard, position locking and clean room specifications are available.

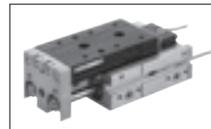
The options include a stroke adjusting stopper, shock absorber stopper and more.

* A shock absorber stopper cannot be used with the clean specifications.



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

● Anti-rust (ø20, ø25)



The table and rail surfaces are anti-rust treated to withstand high humidity in ambient environment, for example near an ionizer.

● 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.

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E
MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R
Precision R
Press gauge
Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

LCG Series

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

JIS symbol 



Structure and material restriction

	Structure	Model No.
P7 Series	Exhaust treatment	P72
	Vacuum treatment	P73

Specifications

Descriptions		LCG-P7*					
		$\phi 6$	$\phi 8$	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$
Bore size	mm	$\phi 6$	$\phi 8$	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	0.7					
Min. working pressure	MPa	0.15 (*2)					
Proof pressure	MPa	1.05					
Ambient temperature	°C	-10 to 60 (no freezing)					
Port size	Main body side	M3	M5			Rc1/8	
	Main body rear	M3			M5	Rc1/8	
Port size (relief port)		M3	M5			Rc1/8	
Stroke tolerance	mm	+2.0 (*1) 0					
Working piston speed	mm/s	50 to 500 (*3)					
Cushion		With rubber cushion					
Lubrication		Not available					
Allowable energy absorption	J	Refer to table 3 on page 162.					

*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.

*3: Keep within 50 to 200 mm/s when using a stroke adjusting stopper.

Stroke length

Bore size (mm)	Standard stroke length (mm)
$\phi 6$	10, 20, 30, 40, 50
$\phi 8$	10, 20, 30, 40, 50, 75
$\phi 12$	10, 20, 30, 40, 50, 75, 100
$\phi 16$	10, 20, 30, 40, 50, 75, 100, 125
$\phi 20$	10, 20, 30, 40, 50, 75, 100, 125, 150
$\phi 25$	10, 20, 30, 40, 50, 75, 100, 125, 150

Note: The stroke length other than above is not available.

Theoretical thrust table

Refer to page 163.

Switch specifications

- 1-color/2-color display

Descriptions	Reed 2-wire				Proximity 2-wire		Proximity 3-wire		
	T0H/T0V		T5H/T5V		T2H/T2V	T2WH/T2WV	T3H/T3V	T3PH/T3PV	T3WH/T3WV
Applications	Programmable controller, relay		Programmable controller, relay IC circuit (without indicator lamp), serial connection		Programmable controller		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 (*2)		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						

Descriptions	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/F2YV	F3H/F3V	F3PH/F3PV (custom order)	F3YH/F3YV
Applications	Programmable controller	Programmable controller, relay	Programmable controller		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 (*2)		100 mA or less	50 mA or less	
Indicator lamp	Red LED (Lit when ON)		LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 µA or less	1 mA or less		10 µA or less		
Weight	g		1 m: 10 3 m: 29				

*1: Refer to page 309 for detailed switch specifications and Dimensions.

*2: Max. load current: 20mA at 25°C. The current is lower than 25 mA if the operating ambient temperature around the switch is higher than 20°C. (60 to 5 mA at 10°C.)

*3: 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

LCG Series

- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

How to order (ø6 to ø16)

Without switch (Magnet for switch incorporated)



With switch (Magnet for switch incorporated)



Model No.

A Bore size

B Stroke length

C Switch model No.
*6

F Clean room specifications

D Switch quantity

E Option

⚠ Precautions for model No. selection

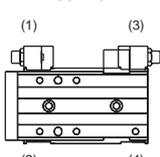
- *1: For the port position, refer to the stopper dimensions on page 161.
- *2: The port positions of the standard without stopper are (1) and (3) in the figure below.
- *3: Can be selected for the type with stopper only.
- *4: When two switches are necessary in the type with S*** of ø6 to ø8 with 30 mm stroke length or less, select the F*H switch.
- *5: The anti-rust is custom 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, another discrete stopper may be required to be purchased depending on the stroke length or the stroke adjustment amount. For details, please consult our sales staff. For some stroke lengths, the adjustment amount of 15 mm or 25 mm is not allowed.

[Example of model No.]

LCG-12-40-F2H-R-S1DTP72

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

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



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

		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				

C Switch model No.		Voltage	Display	Lead wire	Bore size			
Lead wire straight	Lead wire L-shaped				AC	DC	ø6	ø8
F2S*		●	1-color display	2 wires				
F3S*		●		3 wires				
F2H* F2V*	F3H* F3V*	●		2 wires				
F3PH* F3PV*		●	1-color display (custom order)	3 wires	●	●	●	
F2YH* F2YV*	F3YH* F3YV*	●		2-color display	2 wires			
T0H* T0V*	T5H* T5V*	●	1-color display Without indicator lamp	2 wires				
T2H* T2V*	T3H* T3V*	●		1-color display	2 wires			
T3PH* T3PV*		●	1-color display (PNP output)	3 wires			●	
T2WH* T2WV*	T3WH* T3WV*	●		2-color display	2 wires			
		●		3 wires				

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

D Switch quantity		Bore size			
R	1 (on rod end)				●
H	1 (on head end)				●
D	2				●

E Option		Bore size			
Blank	No option				●

S Stroke adjusting stopper		Bore size			
5 mm stroke adjustment on one side		*4			
S1**	Stopper position (1) (can be changed to (4))	Stopper mounting position			●
S2**	Stopper position (2) (can be changed to (3))				●
S3**	Stopper position (3) (can be changed to (2))				●
S4**	Stopper position (4) (can be changed to (1))				●
S5**	Stopper position (1), (3)				●
S6**	Stopper position (2), (4)				●

** Part		Bore size			
Blank	Port on the stopper: No 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		Bore size			
Blank	None				
N	With side piping port plug (not available for ø6)				

F Clean room specifications		Structure			
P72	Exhaust treatment				
P73	Vacuum treatment				

How to order (ø20 and ø25)

Without switch (Magnet for switch incorporated)



With switch (Magnet for switch incorporated)



Model No.

A Bore size

B Stroke length

C Switch model No.

*4

D Switch quantity

E Clean room specifications

F Option

F Anti-rust treatment

⚠ Precautions for model No. selection

- *1: For the port position, refer to the stopper dimensions on page 181.
- *2: The port positions of the standard without stopper are (1) and (3).
- *3: Can be selected for the type with stopper only.
- *4: 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.
- *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, another discrete stopper may be required to be purchased depending on the stroke length or the stroke adjustment amount.
For details, please consult our sales staff.
For some stroke lengths, the adjustment amount of 15 mm or 25 mm is not allowed.

[Example of model No.]

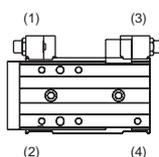
LCG-20-40-T2H-R-S1DTP72

Model No.: Linear slide cylinder Double acting/single rod (clean room specifications) LCG-P7*

- A Bore size : ø20
- B Stroke length : 40 mm
- C Switch model No. : Proximity/2 wires/Lead wire 1 m

- D Switch quantity : 1 (on rod end)
- E Other options : Stroke adjusting stopper
Stopper position (1)
With side and bottom ports
Material, steel (nitriding)
- F Clean room specifications : Exhaust treatment

● Stopper position



Code	Content
A Bore size	
20	ø20
25	ø25

B Stroke length (mm)	
10	10
20	20
30	30
40	40
50	50
75	75
100	100
125	125
150	150

C Switch model No.						
Lead wire straight	Lead wire L-shaped	Contact	Voltage		Display	Lead wire
			AC	DC		
T0H*	T0V*	Reed	●	●	1-color display Without indicator lamp	2 wires
T5H*	T5V*		●	●		
T2H*	T2V*	Proximity		●	1-color display	2 wires 3 wires
T3H*	T3V*			●		
T3PH*	T3PV*			●	1-color display (PNP output) (custom order)	3 wires
T2WH*	T2WV*			●		
T3WH*	T3WV*			●	2-color display	2 wires 3 wires

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

D Switch quantity	
R	1 (on rod end)
H	1 (on head end)
D	2

E Option	
Blank	No option

S Stroke adjusting stopper		
5 mm stroke adjustment on one side		
S1**	Stopper position (1) (can be changed to (4))	Stopper mounting position
S2**	Stopper position (2) (can be changed to (3))	
S3**	Stopper position (3) (can be changed to (2))	
S4**	Stopper position (4) (can be changed to (1))	
S5**	Stopper position (1), (3)	
S6**	Stopper position (2), (4)	

** Part	
Blank	Port on the stopper: No port
D	Port on the stopper: Side and bottom ports *1, *3
Blank	Stopper block material: Steel
T	Stopper block material: Steel (nitriding) *3

F Anti-rust treatment	
Blank	None
U	Anti-rust treatment (guide only) *4

Plug attached	
Blank	None
N	With side piping port plug

G Clean room specifications	
Structure	
P72	Exhaust treatment
P73	Vacuum treatment

U: Anti-rust treatment (ø20, ø25)



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

The table and rail are black.

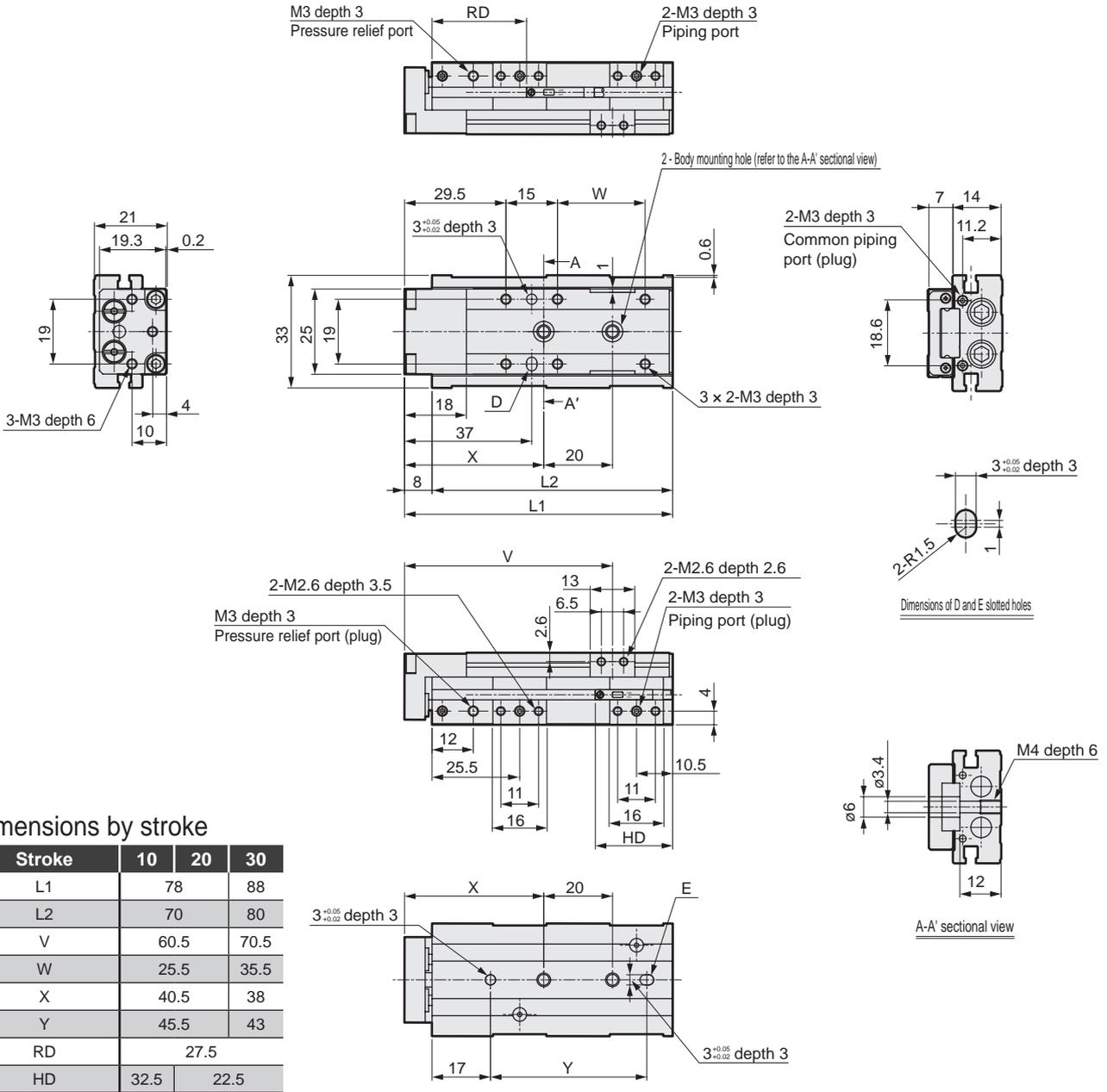
- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder Switch
- MN3E
- MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R. (module unit)
- Clean F.R
- Precision R
- Press gauge
- Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending



Dimensions (bore size: $\phi 6$)

● LCG-6-P7*

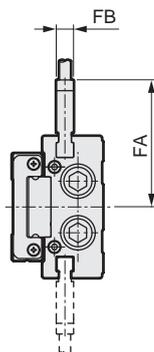
Stroke length: 10, 20, 30
(Mounting holes in the figure indicate when stroke length is 20)



Dimensions by stroke

Stroke	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 projecting section when 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	

Note 1: When using a positioning hole, use a pin of the dimensions that do not require press fitting. The recommended tolerance of a pin is JIS tolerance m6 or less.
Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

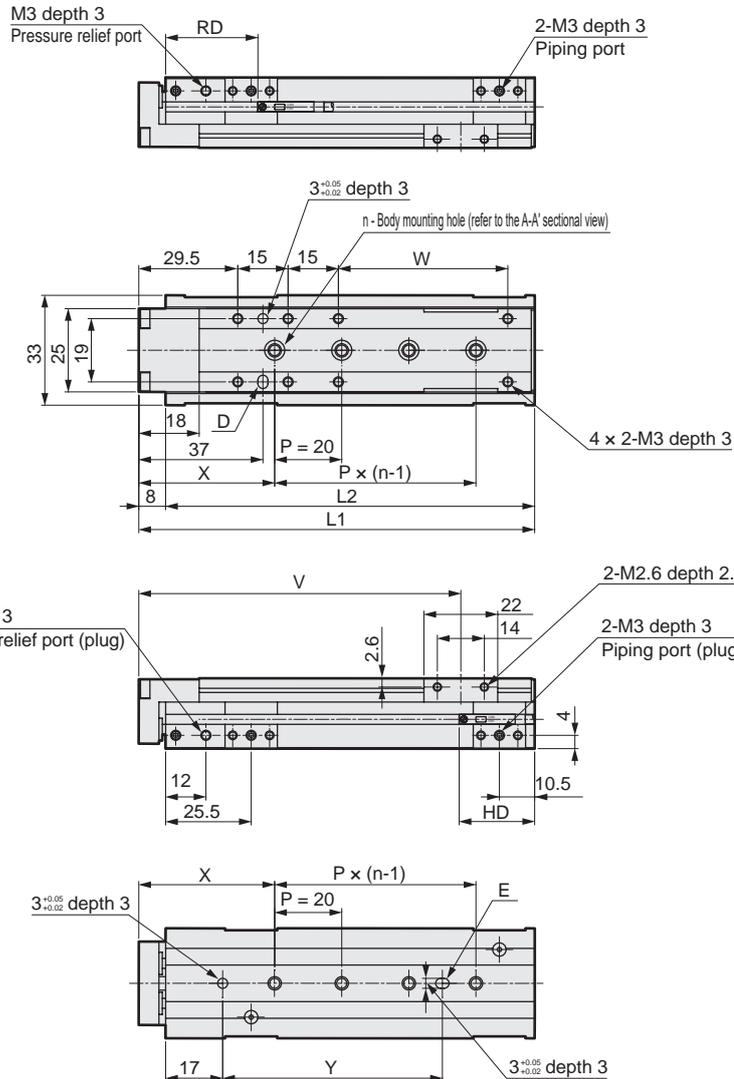
Dimensions (bore size: $\phi 6$)



● LCG-6-P7*

Stroke length: 40, 50

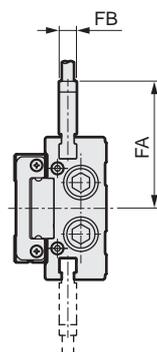
(Mounting holes in the figure indicate when stroke length is 50)



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 projecting section when F2S or F3S cylinder switch is mounted



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

Note 1: When using a positioning hole, use a pin of the dimensions that do not require press fitting.

The recommended tolerance of a pin is JIS tolerance m6 or less.

Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R
Precision R
Press gauge Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

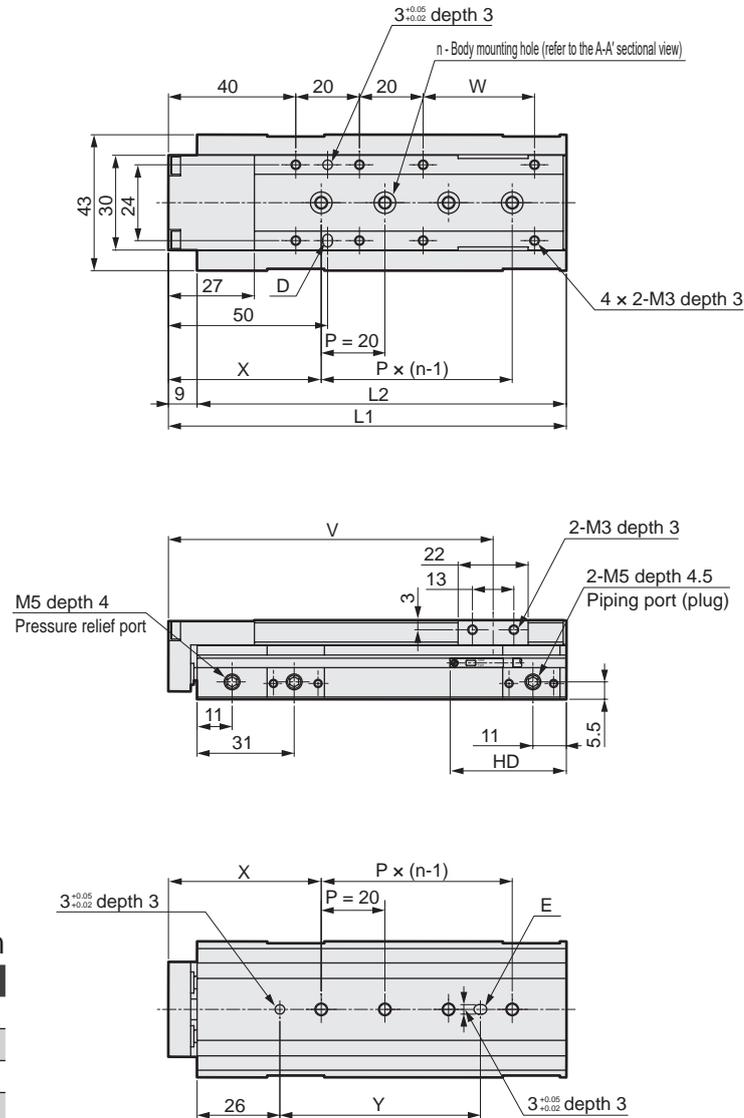
Dimensions (bore size: $\varnothing 8$)



● LCG-8-P7*

Stroke length: 40, 50, 75

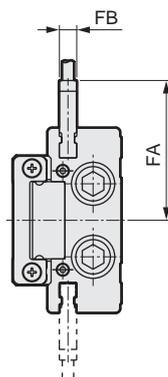
(Mounting holes in the figure indicate when stroke length is 50)



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 projecting section when F2S or F3S cylinder switch is mounted



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

Note 1: When using a positioning hole, use a pin of the dimensions that do not require press fitting.

The recommended tolerance of a pin is JIS tolerance m6 or less.

Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R
Precision R
Press gauge Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

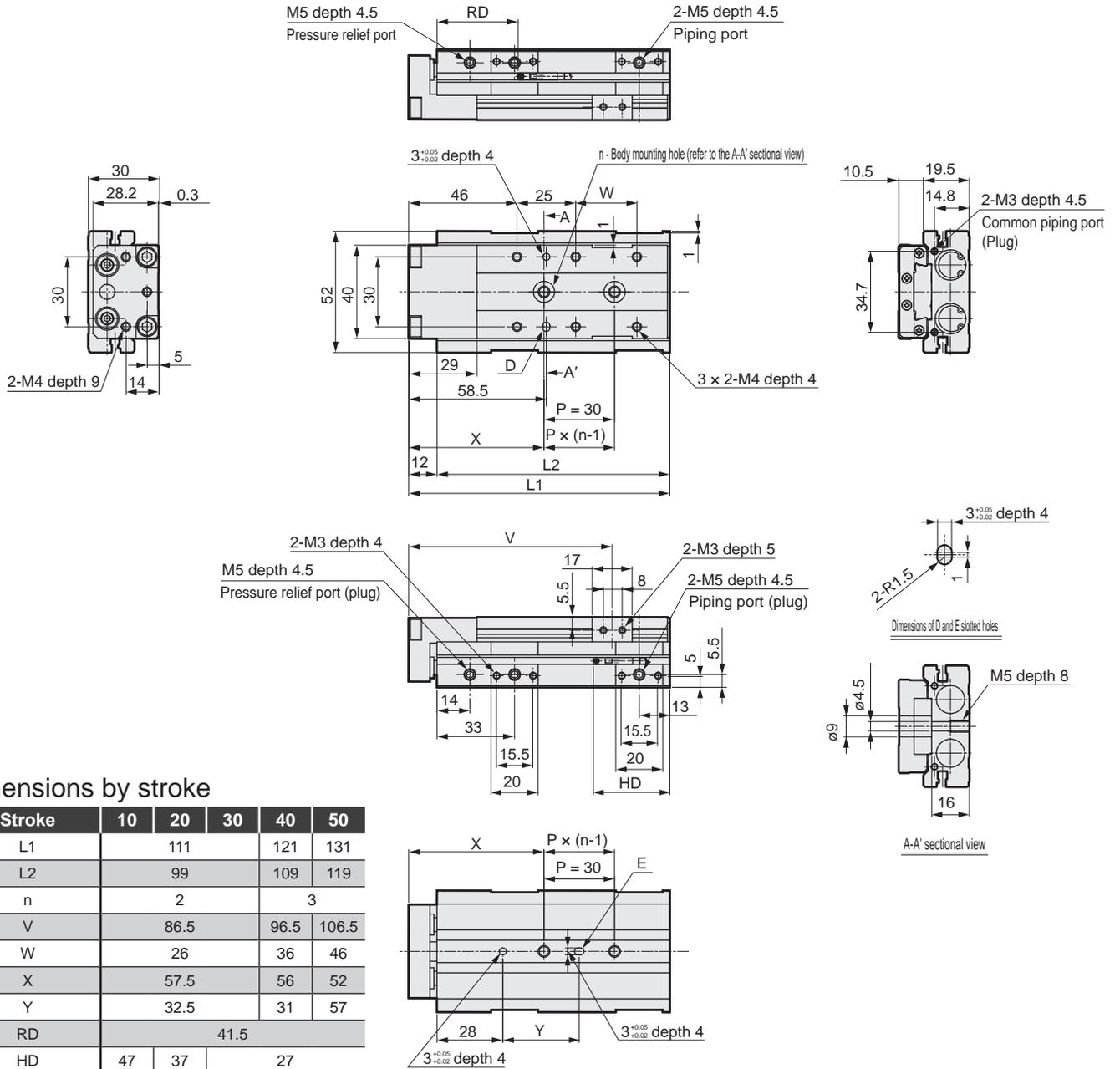


Dimensions (bore size: $\varnothing 12$)

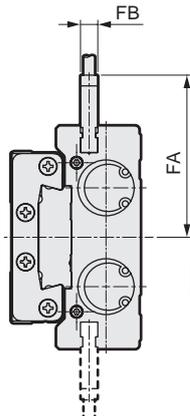
● LCG-12-P7*

Stroke length: 10, 20, 30, 40, 50

(Mounting holes in the figure indicate when stroke length is 30)



● Dimensions of projecting section when 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	

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

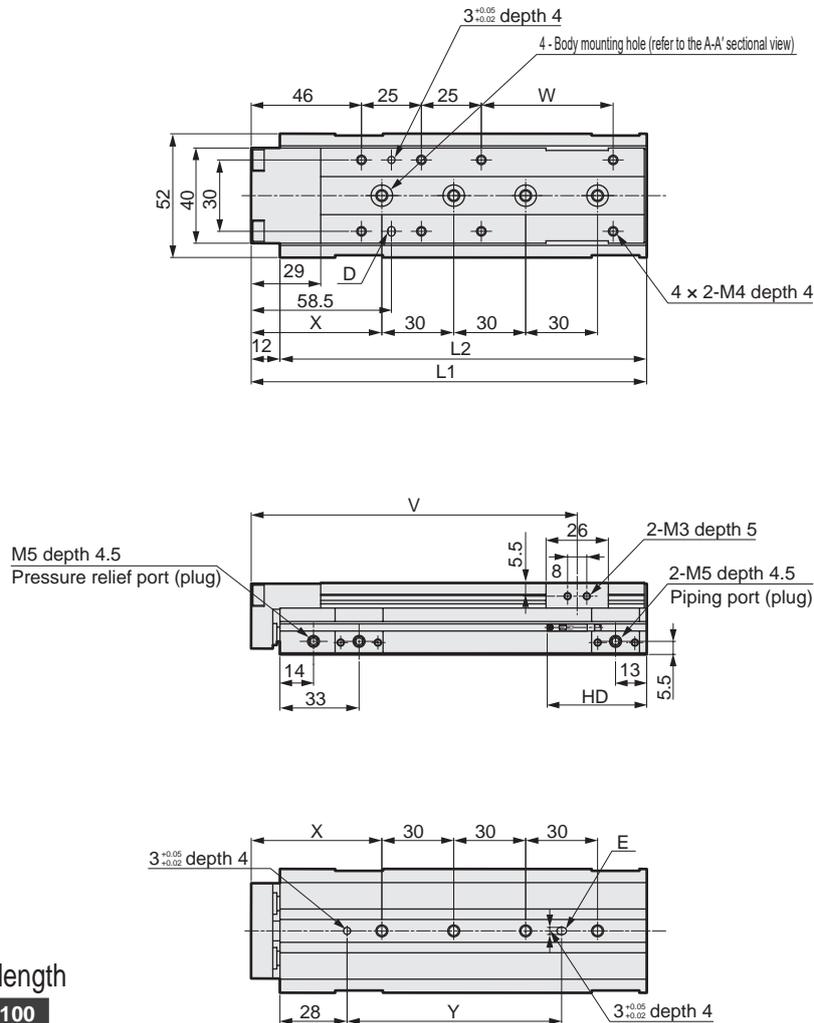
Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

Dimensions (bore size: $\phi 12$)



● LCG-12-P7*

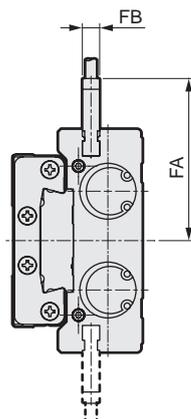
Stroke length: 75, 100
(Mounting holes in the figure indicate when stroke length is 100)



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 projecting section when F2S or F3S cylinder switch is mounted



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

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

Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder Switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R. (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

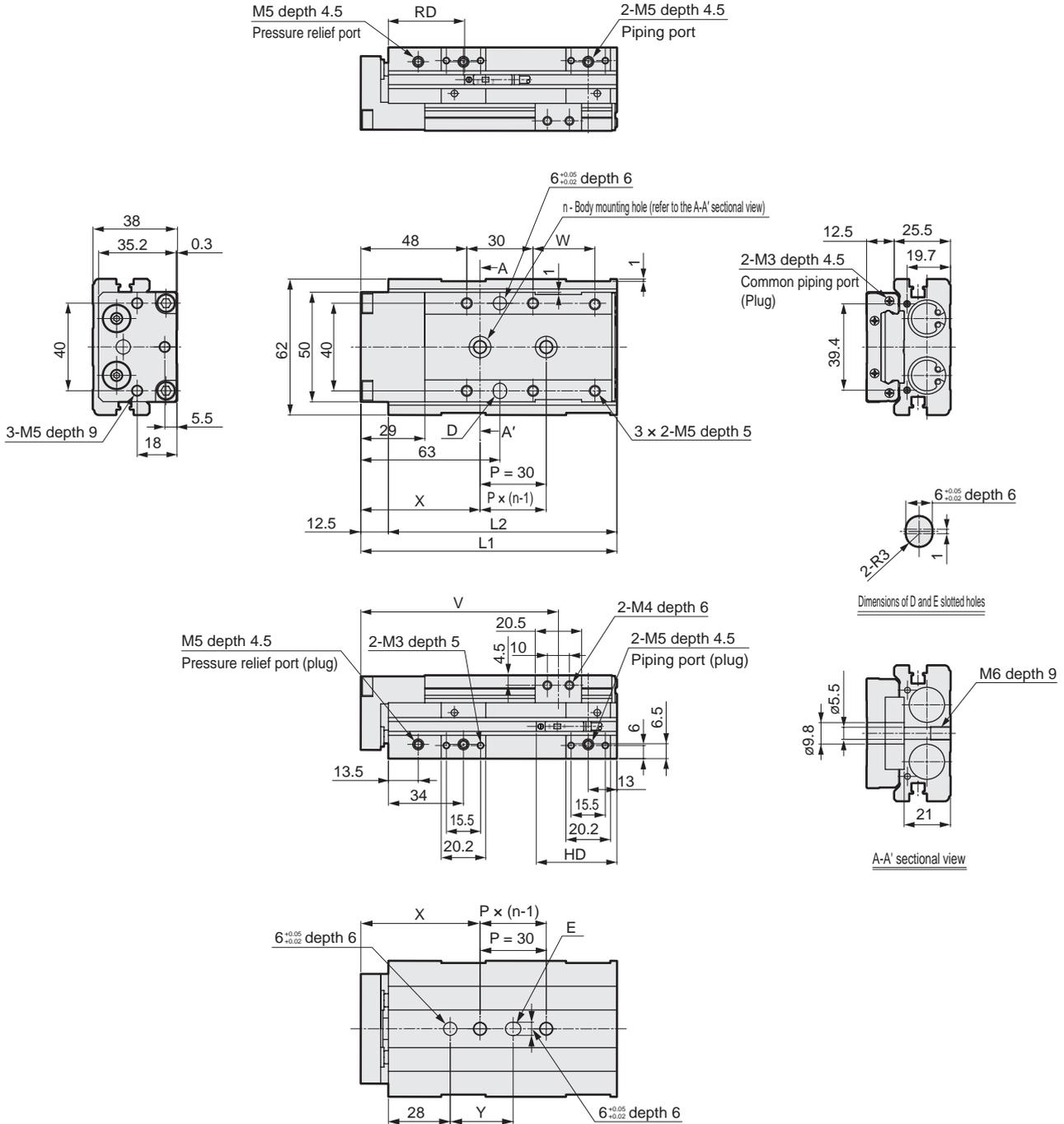


Dimensions (bore size: $\varnothing 16$)

● LCG-16-P7*

Stroke length: 10, 20, 30, 40, 50

(Mounting holes in the figure indicate when stroke length is 30)



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	

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

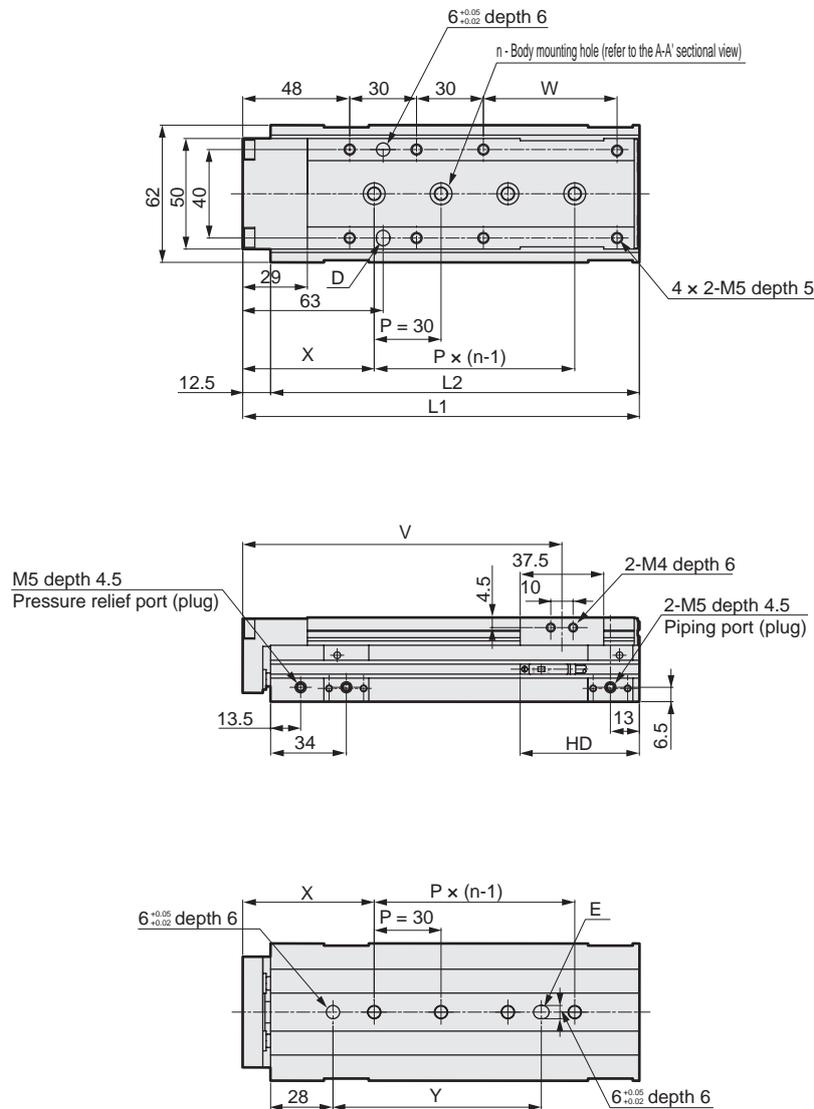
Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

Dimensions (bore size: $\varnothing 16$)



● LCG-16-P7*

Stroke length: 75, 100, 125
(Mounting holes in the figure indicate when stroke length is 75)



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	

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

Note 2: When installing rear side piping, check the safety precautions described in [1. Common; piping](#) on page 170.

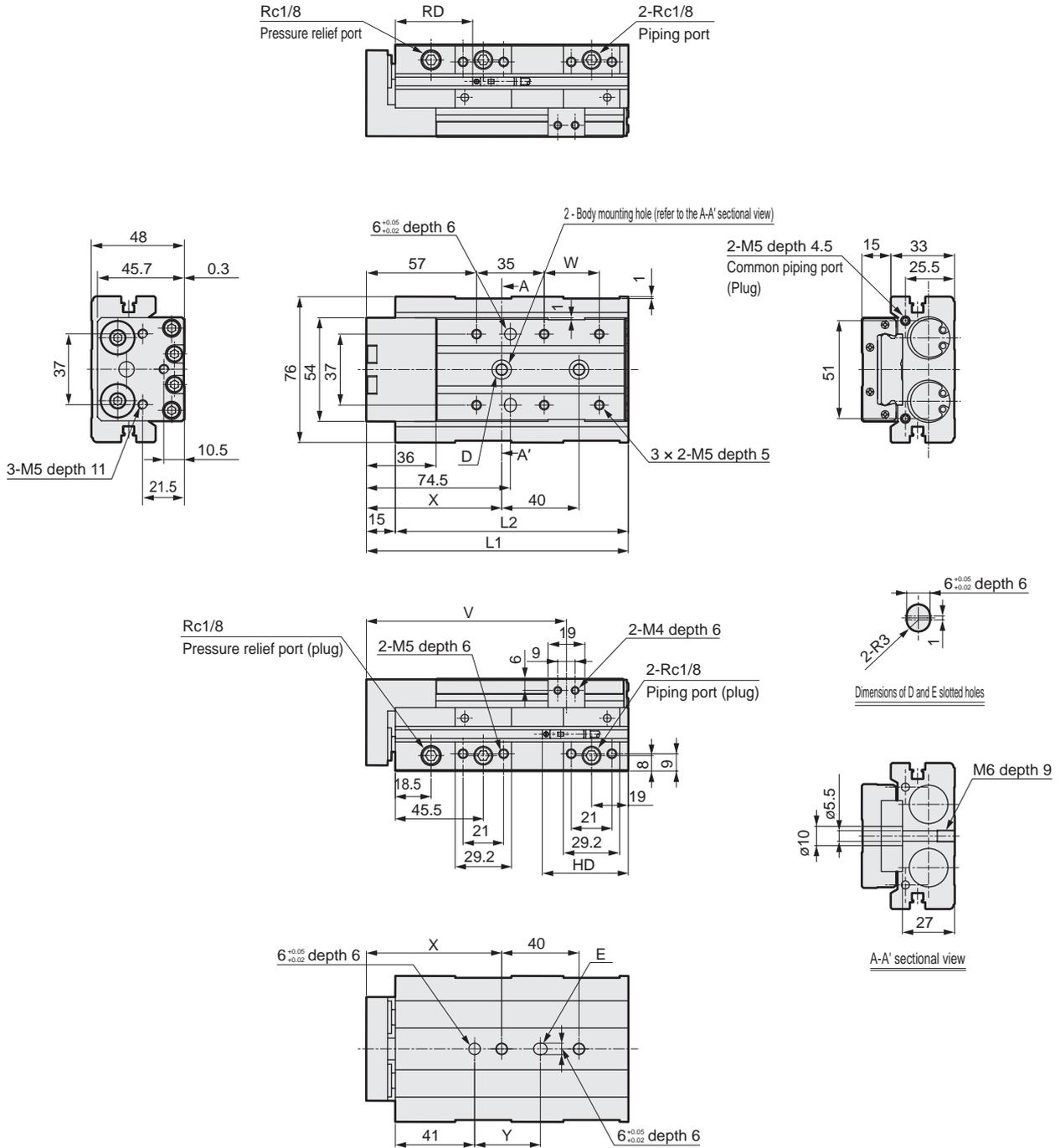
SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R
Precision R
Press gauge Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending



Dimensions (bore size: $\varnothing 20$)

● LCG-20-P7*

Stroke length: 10, 20, 30, 40, 50
(Mounting holes in the figure indicate when stroke length is 30)



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).

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

Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

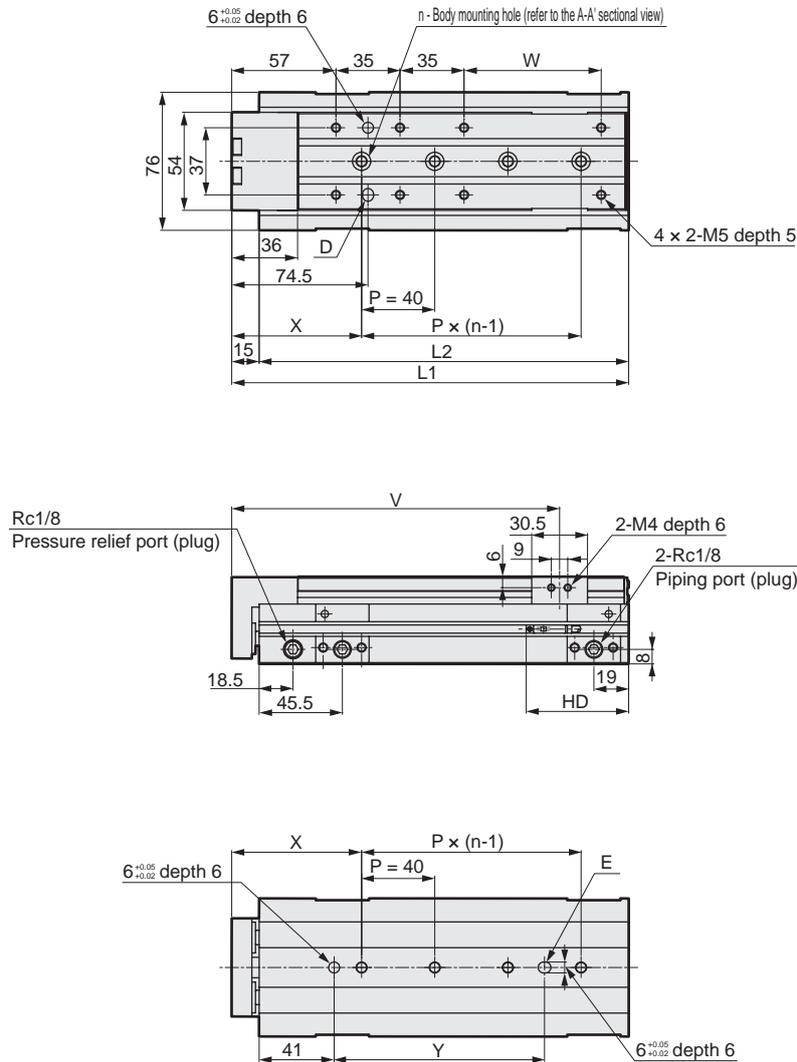
Dimensions (bore size: $\varnothing 20$)



● LCG-20-P7*

Stroke length: 75, 100, 125, 150

(Mounting holes in the figure indicate when stroke length is 100)



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).

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

Note 2: When installing rear side piping, check the safety precautions described in **(1. Common; piping)** on page 170.

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R
Precision R
Press gauge Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

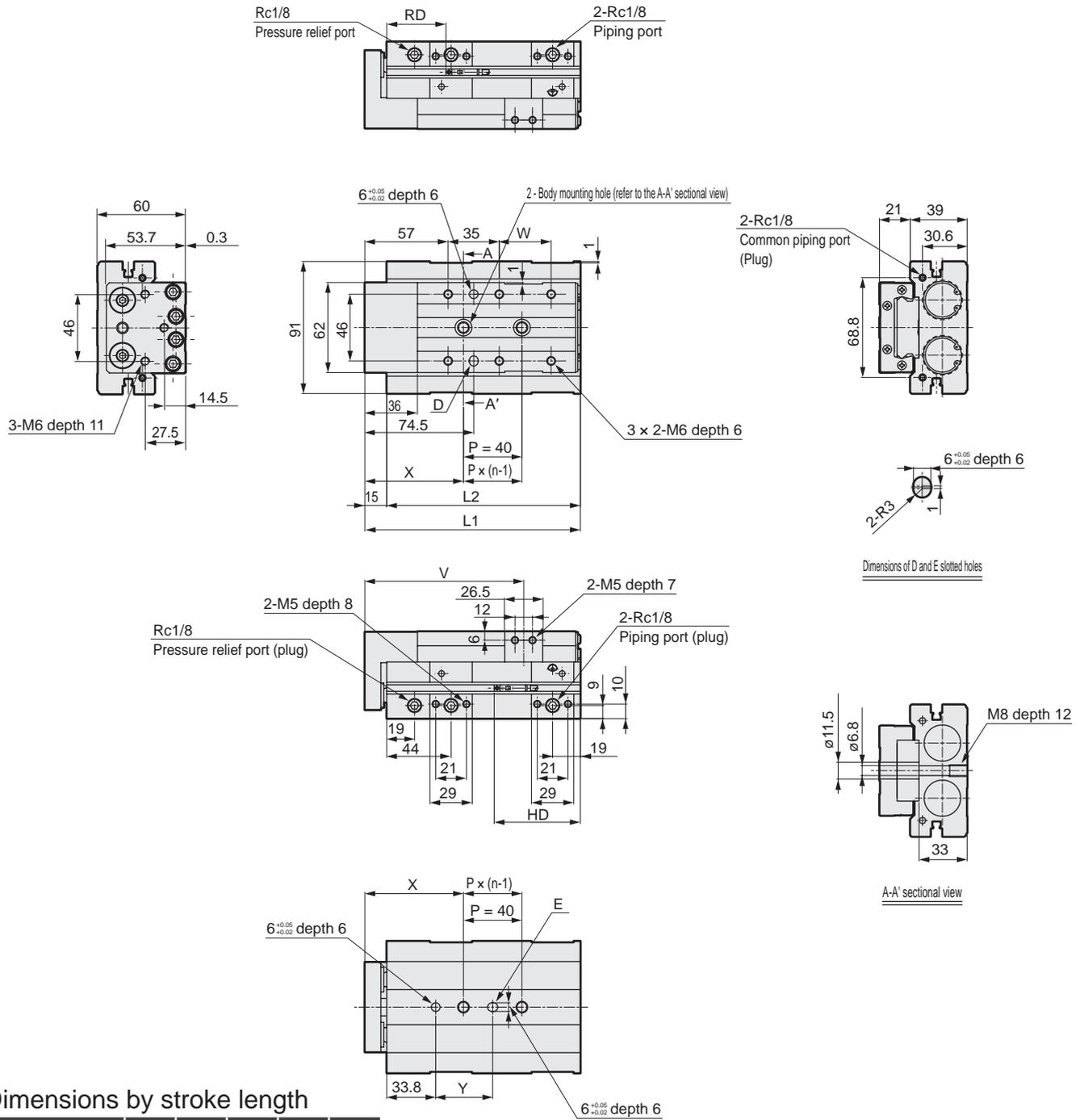


Dimensions (bore size: $\varnothing 25$)

● LCG-25-P7*

Stroke length: 10, 20, 30, 40, 50

(Mounting holes in the figure indicate when stroke length is 30)



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).

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

Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

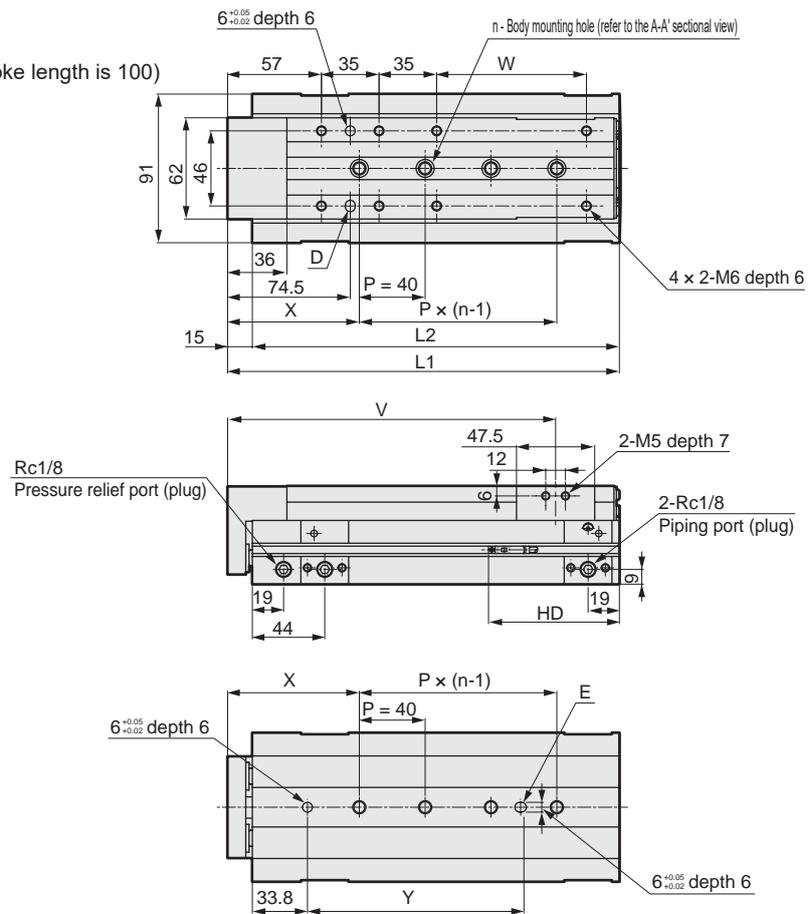
Dimensions (bore size: $\varnothing 25$)



● LCG-25-P7*

Stroke length: 75, 100, 125, 150

Mounting holes in the figure indicate when stroke length is 100)



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).

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

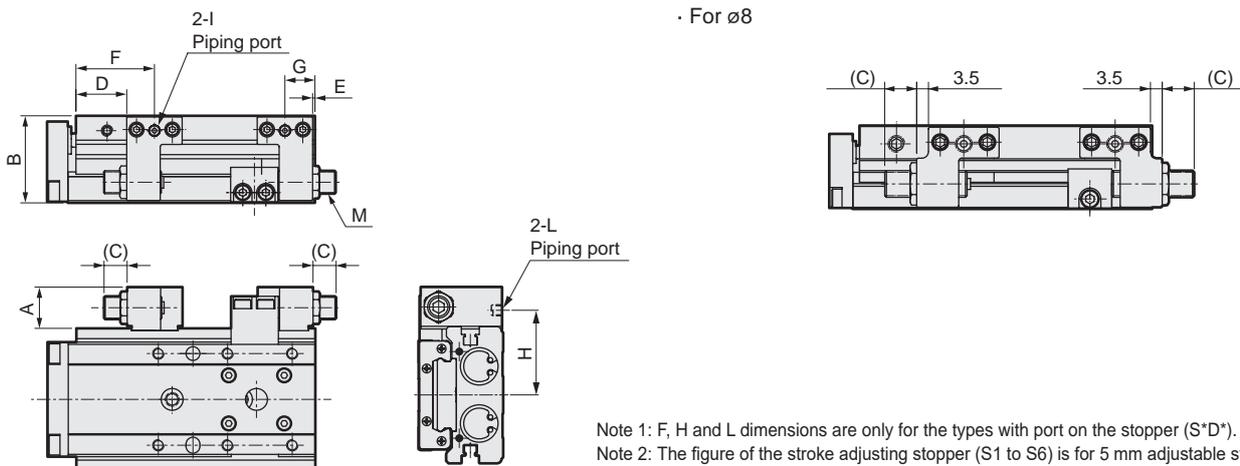
Note 2: When installing rear side piping, check the safety precautions described in (1. Common; piping) on page 170.

Dimensions: Option



● Stroke adjusting stopper (S1 to S6)

· For $\varnothing 8$



Note 1: F, H and L dimensions are only for the types with port on the stopper (S*D*).

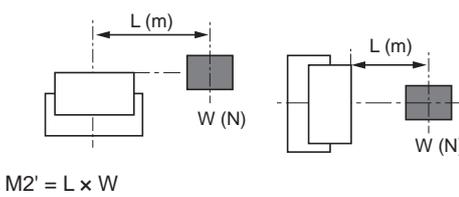
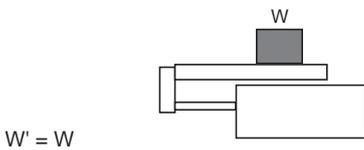
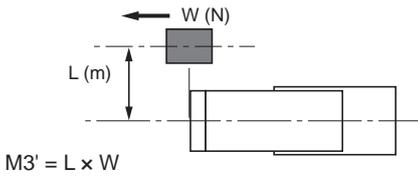
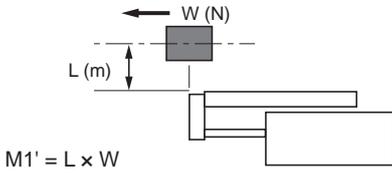
Note 2: The figure of the stroke adjusting stopper (S1 to S6) is for 5 mm adjustable stroke range. If the adjustable stroke range is increased, the C dimension increases accordingly.

Code Bore size (mm)	A	B	C			D	E	F	G	H	I	L	M
			Adjustable stroke range										
			5 mm	15 mm	25 mm								
$\varnothing 6$	14	19.9	11	21	-	16	1	25.5	10.5	24	M3 depth 3	M3 depth 3	M8 x 0.75
$\varnothing 8$	15.6	24.5	9.5	19.5	-	20.5	0.5	30.5	11	27.3	M5 depth 4	M5 depth 4	M8 x 0.75
$\varnothing 12$	15.5	29	12	22	32	21	1	33	13	31	M5 depth 4	M5 depth 4	M8 x 0.75
$\varnothing 16$	18	37	10	20	30	22	1	34	13	39	M5 depth 4	M5 depth 4	M10 x 1
$\varnothing 20$	20.5	45.5	14.5	24.5	34.5	29	2.5	45.5	19	47	Rc1/8	M5 depth 4	M12 x 1
$\varnothing 25$	20.5	57	11.5	21.5	31.5	27.5	2.5	44	19	54.5	Rc1/8	M5 depth 4	M12 x 1

- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder Switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R. (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

STEP-1

① Calculate the load and the moment of impact occurring at the stroke end in different directions.



Obtain an approximate G coefficient in Table 1.

(Table 1) V_a (average speed) = $\frac{\text{Distance traveled}}{\text{Time traveled}}$ (m/s)

V_a average speed (m/s)	V_m Stroke length End speed (m/s)	G coefficient
Up to 0.07	Up to 0.1	5
Up to 0.2	Up to 0.3	14
Up to 0.27	Up to 0.4	19
Up to 0.35	Up to 0.5	24

G coefficient =

$M1' \times G$ = (N·m)

$M2'$ = (N·m)

$M3' \times G$ = (N·m)

W' = (N)

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

= (J)

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

② Select a temporary bore size that satisfies the following formula.

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

$E' < E \text{ max}$

$M' T$: Resultant moment (must be smaller than 1)

G : G coefficient

$W' \text{ max}$: Maximum allowable value of W' (from Table 2)

$M1' \text{ max}$: Maximum allowable value of $M1'$ (from Table 2)

$M2' \text{ max}$: Maximum allowable value of $M2'$ (from Table 2)

$M3' \text{ max}$: Maximum allowable value of $M3'$ (from Table 2)

$E \text{ max}$: Maximum 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 $W' \text{ max}$ (N)	Bending moment $M1' \text{ max}$ (N·m)	Radial moment $M2' \text{ max}$ (N·m)	Twist moment $M3' \text{ max}$ (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 value (E_0)

Bore size	Standard (J)	With Stroke adjusting stopper (J)
	ø6	0.025
ø8	0.058	0.0032
ø12	0.112	0.014
ø16	0.176	0.043
ø20	0.314	0.055
ø25	0.314	0.14

(Table 4) Table weight

(Unit: kg)

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

STEP-2

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 : Theoretical cylinder thrust (N)
(Table 5)

(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

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

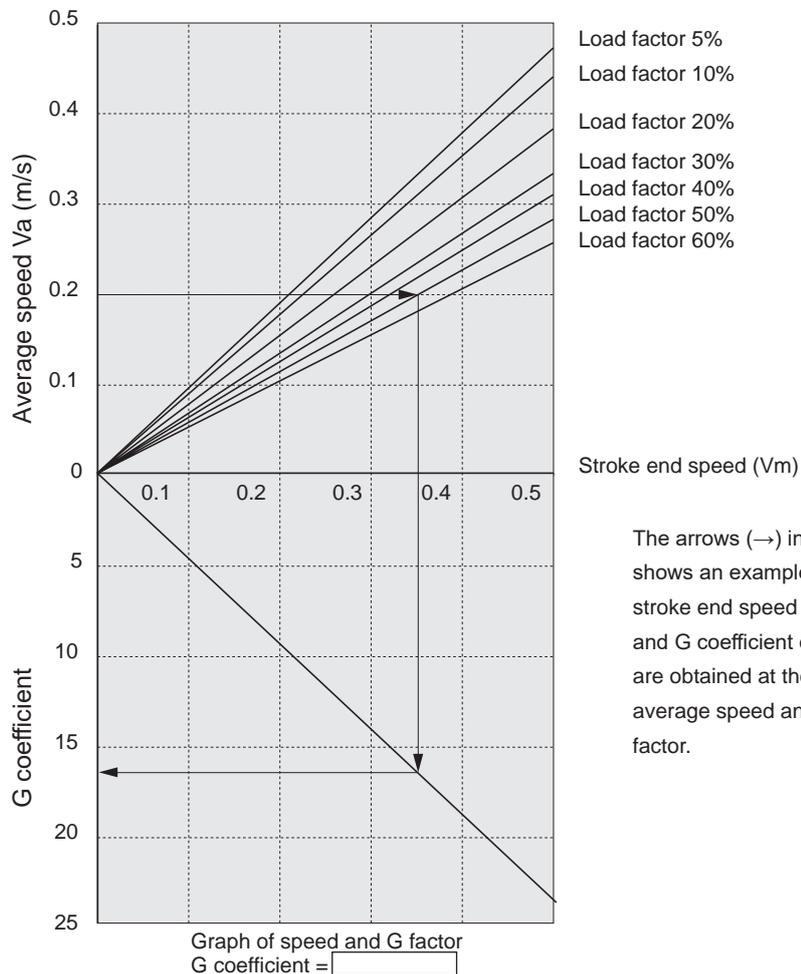
Note: Coefficient of friction

(Table 6) Load factor guidelines

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

STEP-3

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



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

- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder Switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R. (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

STEP-4

Calculate the resultant moment (M_T) from the G factor and stroke end speed (V_m) obtained in STEP-3.

$$M1' \times G = \text{[] (N}\cdot\text{m)}$$

$$M2' = \text{[] (N}\cdot\text{m)}$$

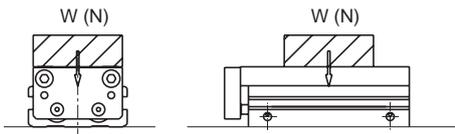
$$M3' \times G = \text{[] (N}\cdot\text{m)}$$

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

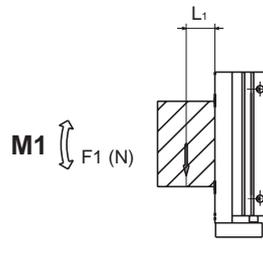
$$M_T = \frac{M1' \times G}{M1' \text{ max}} + \frac{M2'}{M2' \text{ max}} + \frac{M3' \times G}{M3' \text{ max}} + \frac{W'}{W' \text{ max}} = \text{[]}$$

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

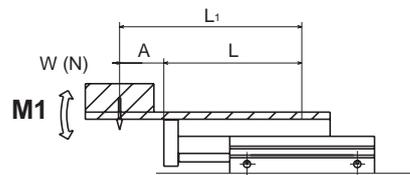
● Vertical load: W (N)



● Bending moment: $M1$ (N·m)



$$M1 = F1 \times L1$$

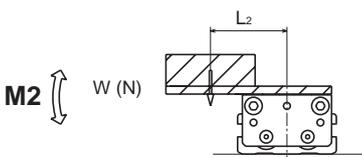


$$M1 = W \times L1$$

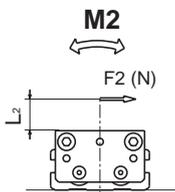
$$L1 = A + L$$

L is a value in the table below.

● Radial moment: $M2$ (N·m)

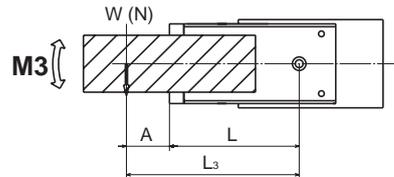


$$M2 = W \times L2$$



$$M2 = F2 \times L2$$

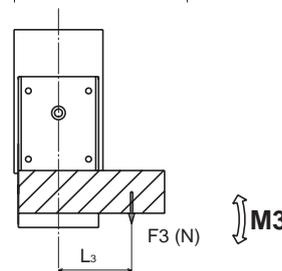
● Twist moment: $M3$ (N·m)



$$M3 = W \times L3$$

$$L3 = A + L$$

L is a value in the table below.



$$M3 = F3 \times L3$$

L value

Unit (m)

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

$$M1 = M1 = \boxed{} \text{ (N}\cdot\text{m)}$$

$$M2 = M2 = \boxed{} \text{ (N}\cdot\text{m)}$$

$$M3 = M3 = \boxed{} \text{ (N}\cdot\text{m)}$$

$$W = W = \boxed{} \text{ (N)}$$

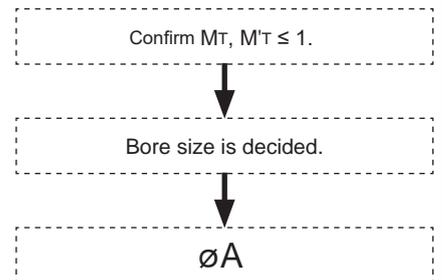
$$M_T = \frac{M1}{M1 \text{ max}} + \frac{M2}{M2 \text{ max}} + \frac{M3}{M3 \text{ max}} + \frac{W}{W \text{ max}} = \boxed{}$$

M_T : Synthesis of moment
 $W \text{ max}$: Maximum allowable value of W (from Table 7)
 $M1 \text{ max}$: Maximum allowable value of $M1$ (from Table 7)
 $M2 \text{ max}$: Maximum allowable value of $M2$ (from Table 7)
 $M3 \text{ max}$: Maximum allowable value of $M3$ (from Table 7)
 $E \text{ max}$: Maximum allowable value of E_0 (from Table 3)

(Table 7) Allowable moving load

Bore size	Stroke length (mm)	Vertical load W_{max} (N)	Bending moment $M1_{\text{max}}$ (N·m)	Radial moment $M2_{\text{max}}$ (N·m)	Twist moment $M3_{\text{max}}$ (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).

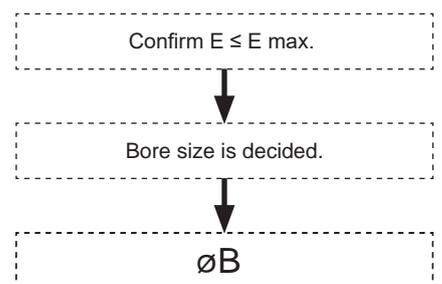


STEP-5

Confirming the allowable absorbed energy

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

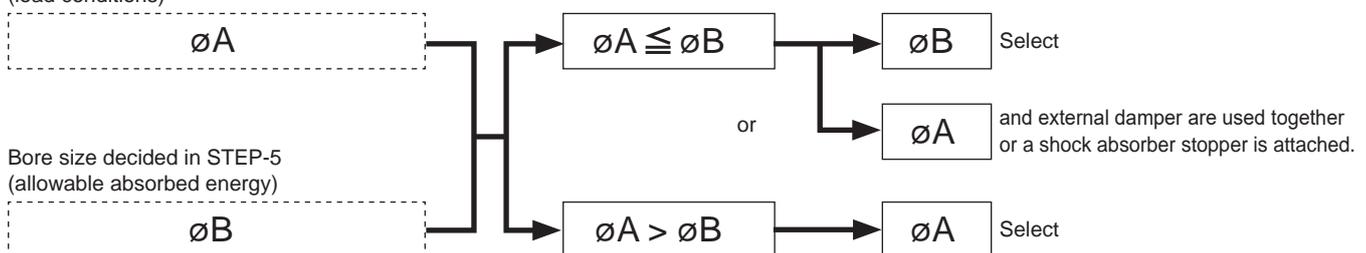
E : Kinetic energy at workpiece end (J)
 m : Load weight (kg) ($m \doteq \frac{W \text{ (N)}}{9.8}$)
 m_α : Table weight (from Table 4)
 Vm : Stroke end speed (m/s)
 $E \text{ max}$: Maximum allowable value of E_0 (from Table 3)



STEP-6

Bore size decided in STEP-4 (load conditions)

Bore size decided in STEP-5 (allowable absorbed energy)

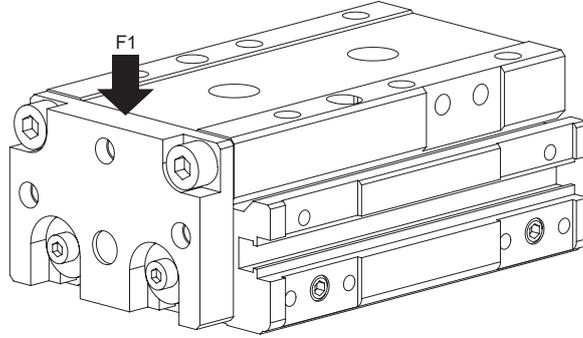


- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder Switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R. (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

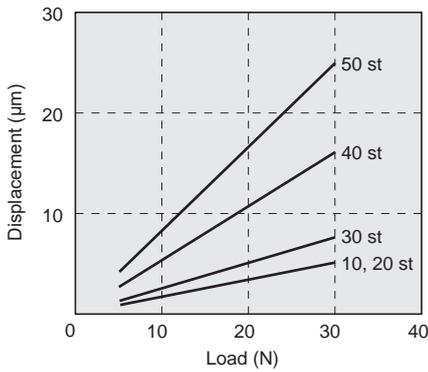
Displacement at point A

[Displacement of the table due to M1 moment]

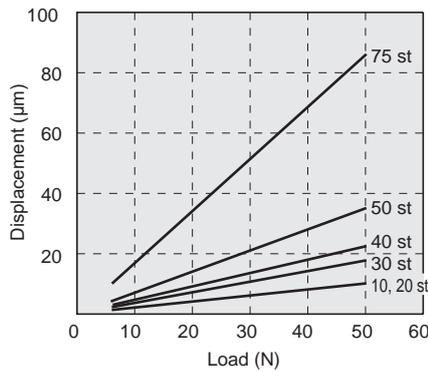
Displacement at the table end when the load (F1) is applied to the table end



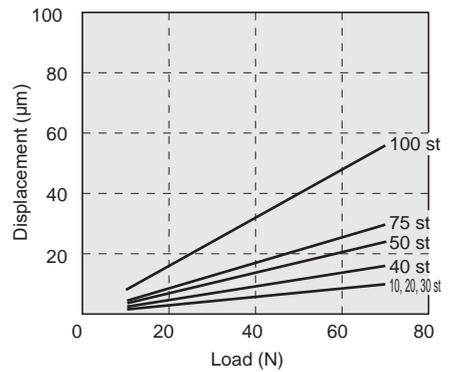
LCG-6 (M1)



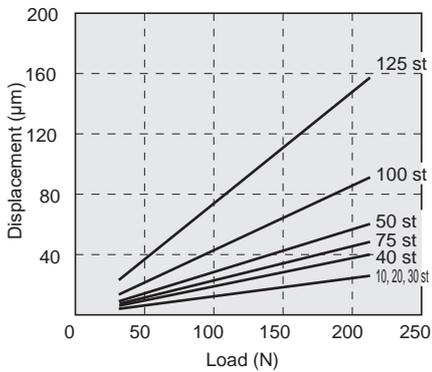
LCG-8 (M1)



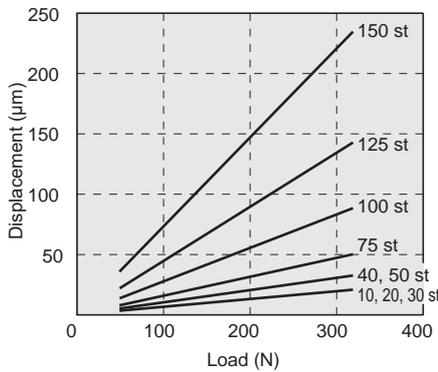
LCG-12 (M1)



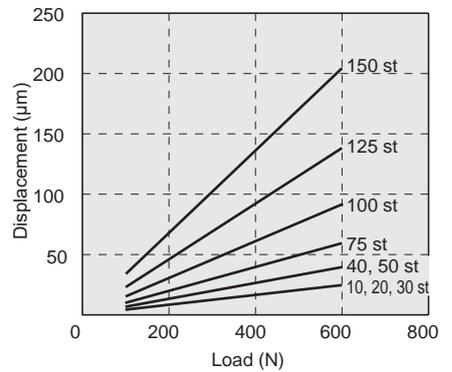
LCG-16 (M1)



LCG-20 (M1)



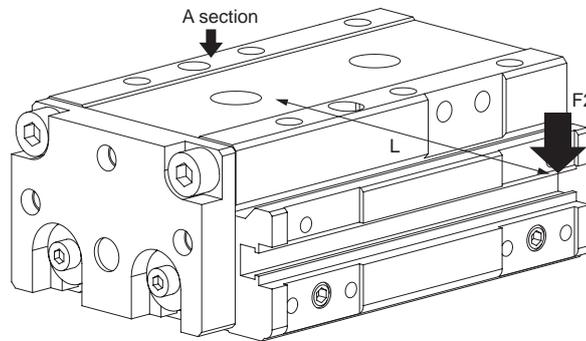
LCG-25 (M1)



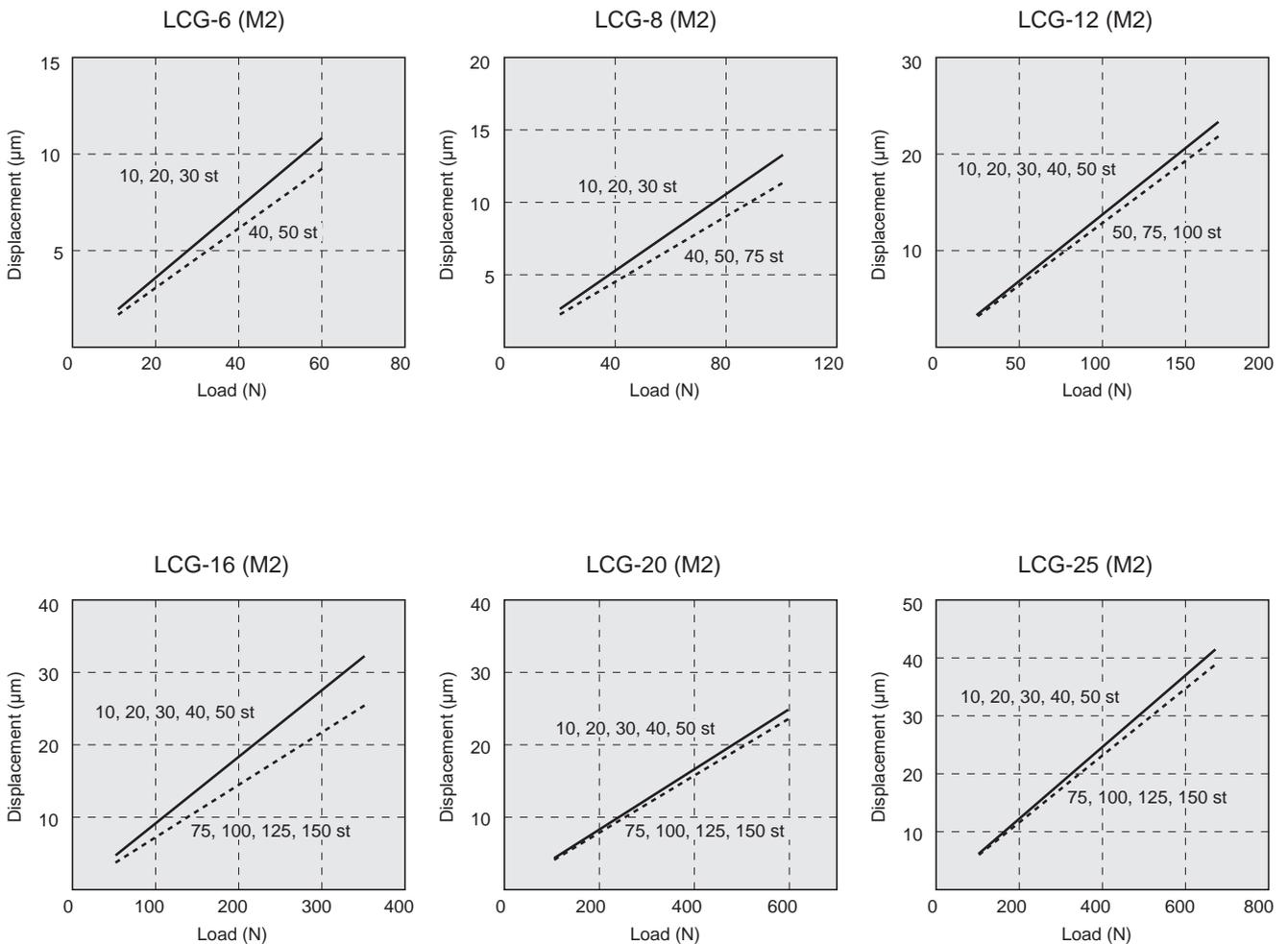
Displacement at point A

[Displacement of the table due to M2 moment]

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



L value
 $\varnothing 6 : L = 70, \varnothing 8 : L = 70$
 $\varnothing 12 : L = 90, \varnothing 16 : L = 100$
 $\varnothing 20 : L = 100, \varnothing 25 : L = 200$



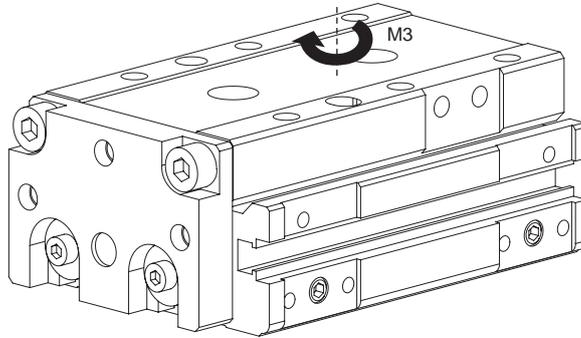
- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder Switch
- MN3E
- MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R. (module unit)
- Clean F.R
- Precision R
- Press gauge
- Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/ tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

- SCPD3
- SCM
- SSD2
- MDC2
- SMG
- LCM
- LCR
- LCG**
- LCX
- STM
- STG
- STR2
- MRL2
- GRC
- Cylinder switch
- MN3E
MN4E
- 4GA/B
- M4GA/B
- MN4GA/B
- F.R (module unit)
- Clean F.R
- Precision R
- Press gauge
Diff. press gauge
- Electro-pneumatic R
- Speed controller
- Auxiliary valve
- Fitting/
tube
- Clean air unit
- Pressure sensor
- Flow rate sensor
- Valve for air blow
- Ending

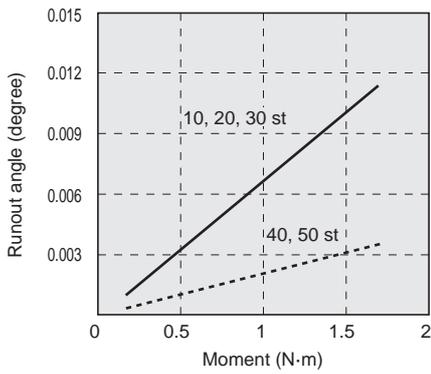
Displacement at point A

[Angular table deflection due to M3 moment]

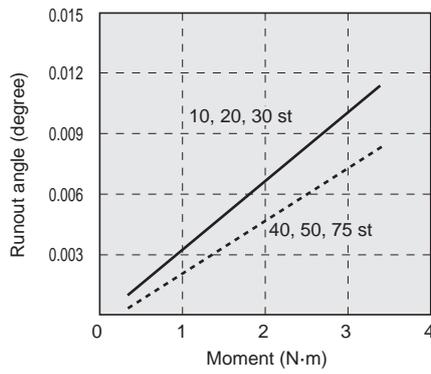
Displacement angle of the table when the rotation moment (M3) is applied to the cylinder



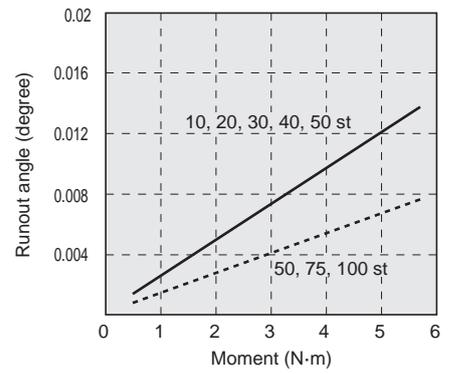
LCG-6 (M3)



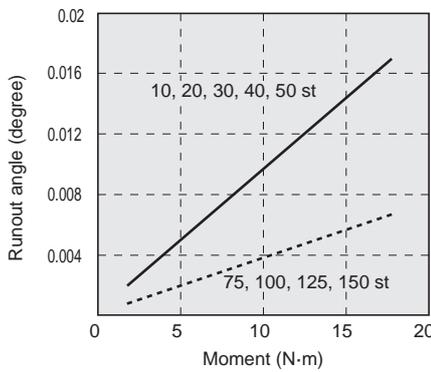
LCG-8 (M3)



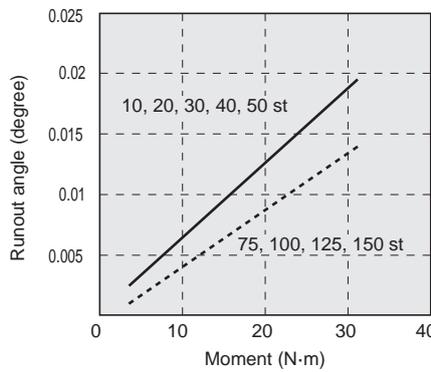
LCG-12 (M3)



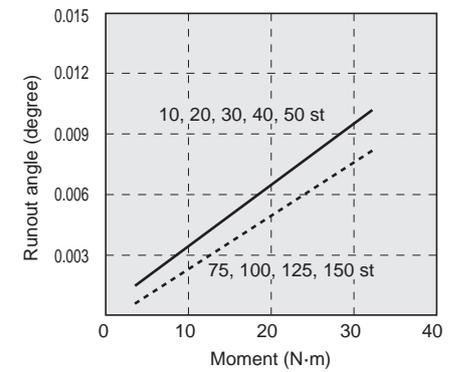
LCG-16 (M3)



LCG-20 (M3)



LCG-25 (M3)



SCPD3

SCM

SSD2

MDC2

SMG

LCM

LCR

LCG

LCX

STM

STG

STR2

MRL2

GRC

Cylinder
Switch

MN3E
MN4E

4GA/B

M4GA/B

MN4GA/B

F.R. (module
unit)

Clean
F.R

Precision
R

Press gauge
Diff. press gauge

Electro-
pneumatic R

Speed
controller

Auxiliary
valve

Fitting/
tube

Clean
air unit

Pressure
sensor

Flow rate
sensor

Valve for
air blow

Ending



Safety Precautions

Be sure to read this section before use.

Refer to page 2 for general information of the cylinder, and to page 320 for general information of the cylinder switch.

Linear slide cylinder LCG Series

Design & selection

1. Common

CAUTION

- When selecting the cylinder, follow the "LCG selection guide" on pages 162 to 165.
- Protect the cylinder with a cover to prevent damage and malfunction in a place where it is exposed to water or oil drops, or corrosive conditions.

Precautions for mounting the 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 end 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 an accidental operation of the switch.

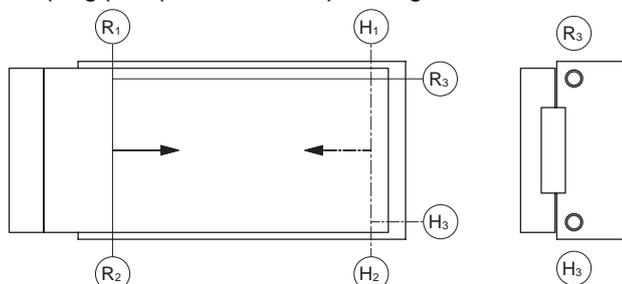
Mounting installation & adjustment

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 Three Bond 1344 is recommended)

Piping port position and operating direction



Ⓡ shows the rod end pressurizing port and Ⓜ the head end 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

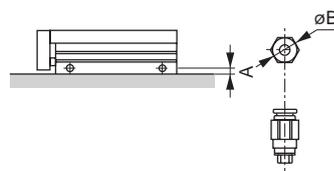
Rear piping (Ⓡ and Ⓜ ports in the figure above) is possible except for the position locking. Remove the plugs sealing the Ⓡ and Ⓜ ports and seal the Ⓡ and Ⓜ ports with the plugs shown in the table on the right.

Descriptions	Plug
LCG-6	Seal the Ⓡ and Ⓜ ports with the plugs removed from the Ⓡ and Ⓜ ports.
LCG-8	M5 × 5 (hexagon socket set screw)
LCG-12	
LCG-16	
LCG-20	R1/8 (hexagon socket head tapered screw plug)
LCG-25	Seal the Ⓡ and Ⓜ ports with the plugs removed from the Ⓡ and Ⓜ ports.

You should prepare two plugs specified in the table above for those of ø8 to 20.

Precautions for piping

Be sure to install a speed controller during piping. The available fittings are as below.



Descriptions Bore size (mm)	Port diameter	Port location dimensions A	Applicable fitting	Fitting O.D. B
ø6	M3	4	SC3W-M3-4-P7*	ø8 or less
			SC3W-M3-3.2-P7*	
			GWS3-M3-S-P7*	
ø8		5.5	SC3W-M5-4-P7*	ø11 or less
			SC3W-M5-6-P7*	
			GWS4-M5-S-P7*	
ø12		5.5	GWS4-M5-P7*	
ø16	M5	6.5	SC3W-M5-4-P7*	ø13 or less
			SC3W-M5-6-P7*	
			GWS4-M5-S-P7*	
			GWS4-M5-P7*	
			GWL4-M5-P7*	
ø20	Rc1/8	8	SC3W-6-4,6,8-P7*	ø15 or less
			GWS4-6-P7*	
			GWS8-6-P7*	
ø25		9	GWL6-6-P7*	
			GWS6-6-P7*	
			GWL4-6-P7*	

2. Common; when installing

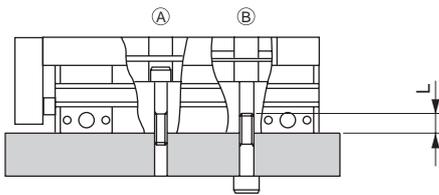
⚠ CAUTION

■ 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.

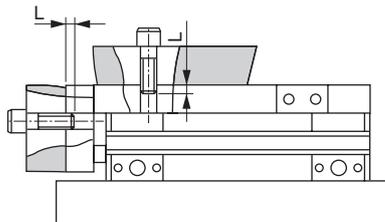
[Fig. 1]



Descriptions	A		B		Max. insertion length L (mm)
	Applicable bolts	Tightening torque (N·m)	Applicable bolts	Tightening torque (N·m)	
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.

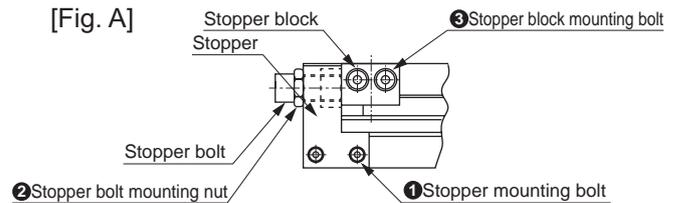
[Fig. 2]



Descriptions	Table			End plate		
	Applicable bolts	Tightening torque (N·m)	Max. insertion length L (mm)	Applicable bolts	Tightening torque (N·m)	Insertion length L (mm)
LCG-6	M3 × 0.5	0.6	3	M3 × 0.5	0.6	4.5 to 6
LCG-8	M3 × 0.5	0.6	3	M3 × 0.5	0.6	4.5 to 7
LCG-12	M4 × 0.7	1.4	4	M4 × 0.7	1.4	6 to 9
LCG-16	M5 × 0.8	2.9	5	M5 × 0.8	2.9	7.5 to 9
LCG-20	M5 × 0.8	2.9	5	M5 × 0.8	2.9	7.5 to 11
LCG-25	M6 × 1.0	4.8	6	M6 × 1.0	4.8	9 to 11

■ Observe the following tightening torque of bolts and nuts of the stopper.

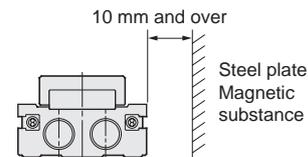
[Fig. A]



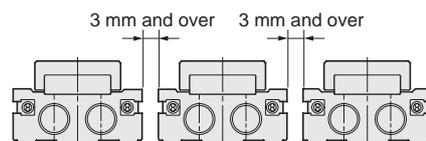
Cushion rubber stopper with hexagon socket set screw

Model No.	① Stopper mounting bolt (N·m)	② Stopper bolt mounting nut (N·m)	③ Stopper 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)



■ When using a positioning hole, use a pin of the dimensions which does 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.

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder Switch
MN3E
MN4E
4GA/B
M4GA/B
MN4GA/B
F.R. (module unit)
Clean F.R
Precision R
Press gauge
Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

During use & maintenance

SCPD3
SCM
SSD2
MDC2
SMG
LCM
LCR
LCG
LCX
STM
STG
STR2
MRL2
GRC
Cylinder switch
MN3E MN4E
4GA/B
M4GA/B
MN4GA/B
F.R (module unit)
Clean F.R
Precision R
Press gauge Diff. press gauge
Electro-pneumatic R
Speed controller
Auxiliary valve
Fitting/tube
Clean air unit
Pressure sensor
Flow rate sensor
Valve for air blow
Ending

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.

- Note that the table is not fully corrosion-proof.

The table is made of martensite 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.