With Linear Guide

LCW

Linear Slide Cylinder

ø12, ø16, ø20

CONTENTS

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

Introducing a basic model for the Linear Slide Cylinder

Standardly equipped with specs frequently used by customers
Model selection is easier

3 points for ease of selection

1 Bore sizes consolidated into three

ø12 ø16 ø20

2 Strokes consolidated into three

30 mm 50 mm 75 mm

Single piston adopted. (Equivalent to LCR ø8, ø12, ø16)

3 Stroke adjustment function equipped as standard

Three types of stoppers are available.

■ Rubber cushion type stopper (Standard)

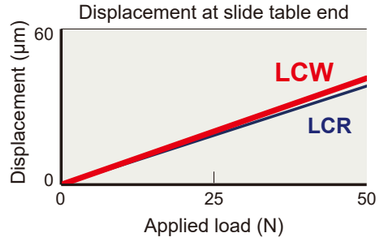
■ Metal type stopper with rubber cushion (M)

■ Shock absorber type stopper (A)

Reliability points

High rigidity

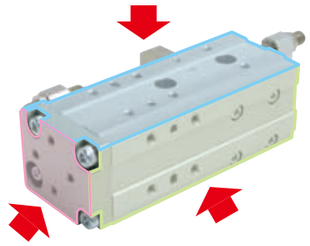
Inherits the DNA of LCR.
Achieved high rigidity and light weight.



3 points for ease of use

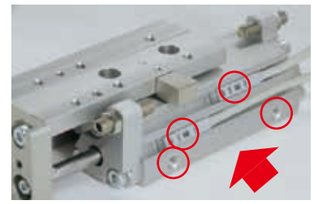
1 3-surface mounting

Industry first!! Adopts an innovative L-shaped table.
Design flexibility has been greatly improved.



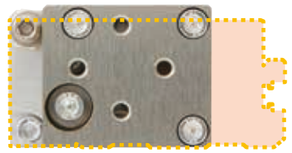
2 Piping and wiring direction on the same surface

Wiring and piping are also neat.
Improved workability and visibility.



3 Compact, Space-saving

27% reduction in width direction, 20% reduction in area ratio. Stopper position has been reviewed.



Footprint 20% Less!

(Compared to LCR)

Safety points

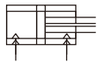
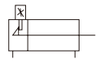
Drop prevention type lineup

Drop prevention mechanism

Head Side

Linear Slide Cylinder
LCW Series

●: Standard, ◎: Option, : Not manufacturable

Variation	Model No. / Circuit Diagram Symbol	Bore size (mm)	Stroke (mm)			Stopper					Switch	Page
						Rubber cushion type stopper	Rubber cushion type long stopper	Metal type stopper with rubber cushion	Metal type long stopper with rubber cushion	Shock absorber type stopper		
			30	50	75	Blank	S	M	MS	A		
Double Acting / Single Rod Type	LCW 	ø12	●	●	●	●	◎	◎	◎	◎	◎	206
		ø16	●	●	●	●	◎	◎	◎	◎	◎	
		ø20	●	●	●	●	◎	◎	◎	◎	◎	
Double Acting / Drop Prevention Type	LCW-Q 	ø12	●	●	●	●	◎	◎	◎	◎	◎	224
		ø16	●	●	●	●	◎	◎	◎	◎	◎	
		ø20	●	●	●	●	◎	◎	◎	◎	◎	

MEMO

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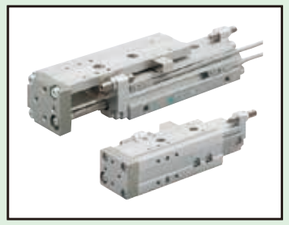
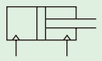


Linear Slide Cylinder Double Acting, Single Rod Type

LCW Series

●Bore size: ø12, ø16, ø20

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCW - 16 - 30 - R ——— A

Model No. ❶ ❷ ❸ ❻

With Switch
(Built-in magnet for switch)

LCW - 16 - 30 - R - T2H - R - A

Model No. ❷ Stroke ❹ Switch Model No. ❻ Stopper

❶ Bore size ❸ Piping direction ❺ Number of Switches

❶ Bore size (mm)

Code	Content
12	ø12
16	ø16
20	ø20

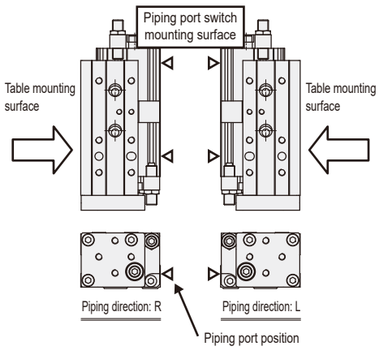
❷ Stroke (mm)

Code	Content
30	30
50	50
75	75

❸ Piping direction

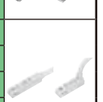
Code	Content
R	Right side when viewed from rod side
L	Left side when viewed from rod side

*1: For piping direction, refer to the diagram below.



❹ Switch Model No.

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

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

* Lead wire length

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

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

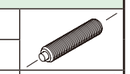
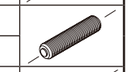
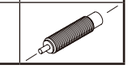
Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: ❶ For Bore size ø12, T-type switch cannot be selected.
*4: ❶ For tube inner diameters ø16 and ø20, F type switch cannot be selected.
*5: Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.

❺ Number of Switches

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

❻ Stopper

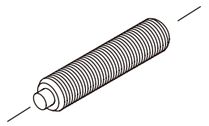
Code	Content	
Blank	Rubber cushion type stopper	
S	Rubber cushion type long stopper	
M	Metal type stopper with rubber cushion	
MS	Metal type long stopper with rubber cushion	
A	Shock absorber type stopper	

Switch Single Unit Model No. Notation Method

SW - F2H

❹ Switch Model No.
(P. 206 ④)

Rubber cushion type stopper single item model No. notation method



LCW - 12 - S01

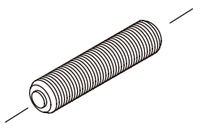
❶ Bore size ⑦ Stroke adjustment range

⑦ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount
S01 (Standard)	ø12	M6x1.0	One side 10 mm
	ø16	M6x1.0	One side 7.5 mm
	ø20	M8x1.0	One side 8 mm
S02 (Long)	ø12	M6x1.0	One side 28 mm
	ø16	M6x1.0	One side 25 mm
	ø20	M8x1.0	One side 25 mm

*1: SO2 can also be included to the head side.
The stroke adjustment amount at that time is the same as above.

Metal type stopper with rubber cushion single item model No. notation method



LCW - 12 - M01

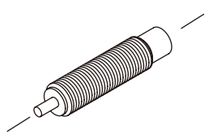
❶ Bore size ⑦ Stroke adjustment range

⑦ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount PUSH side	Stroke adjustment amount PULL side
M01 (Standard)	ø12	M6x1.0	One side 9 mm	One side 11.5 mm
	ø16	M6x1.0	One side 6 mm	One side 8.5 mm
	ø20	M8x1.0	One side 7.5 mm	One side 12 mm
M02 (Long)	ø12	M6x1.0	One side 28 mm	One side 30 mm
	ø16	M6x1.0	One side 25 mm	One side 27 mm
	ø20	M8x1.0	One side 25 mm	One side 30 mm

*1: Cannot be changed from rubber cushion type stopper.
*2: Cannot be changed from Shock absorber type stopper. (ø12, ø16 only)
*3: M**O2** can also be included to the head side.

Shock absorber Type Stopper Single Item Model No. Notation Method



LCW - 12 - A01

❶ Bore size

Bore size	Thread Size
ø12	M6x0.75
ø16	M6x0.75
ø20	M8x1.0

*1: Cannot be changed from rubber cushion type stopper.
*2: Cannot be changed from metal type stopper with rubber cushion. (ø12, ø16 only)

Specifications

Item		LCW		
Bore size	mm	ø12	ø16	ø20
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. Working Pressure	MPa	0.7		
Min. Operating Pressure	MPa	0.15 (*1)		
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*2)		
Port Size		M5		
Operating piston speed	mm/s	50 to 500 (*3)		
Cushion		Rubber Cushion		
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable absorption energy	J	Refer to Table 3 on P. 247.		

*1: When using a metal type stopper with rubber cushion, use a pressure of 0.4MPa or more to make metal contact at the stroke end.
*2: When using a Shock absorber type stopper, use at -5 to 60°C.
*3: When using a metal type stopper with rubber cushion, use at 50 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø12	30 / 50 / 75
ø16	
ø20	

Note: Strokes other than the above cannot be manufactured.

Stroke adjustment range

(Unit: mm)

Bore size (mm)	Standard rubber cushion type				Metal type with rubber cushion				Shock absorber type	
	Standard Stroke		Intermediate stroke compatible (S)		Standard stroke (M)		Intermediate stroke compatible (MS)		Standard stroke (A)	
	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side
ø12	10	10	28	10	9	11.5	28	11.5	4	6.5
ø16	7.5	7.5	25	7.5	6	8.5	25	8.5	1.5	3.5
ø20	8	8	25	8	7.5	12	25	12	12.5	17

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø12	PUSH	17	23	34	45	57	68	79
	PULL	13	17	25	34	42	51	59
ø16	PUSH	30	40	60	80	101	121	141
	PULL	26	35	52	69	86	104	121
ø20	PUSH	47	63	94	126	157	188	220
	PULL	40	53	79	106	132	158	185

Cylinder Weight

●Basic type (Unit: g)

Bore size (mm)	Stroke (mm)		
	30	50	75
ø12	240	370	380
ø16	380	390	600
ø20	690	720	1070

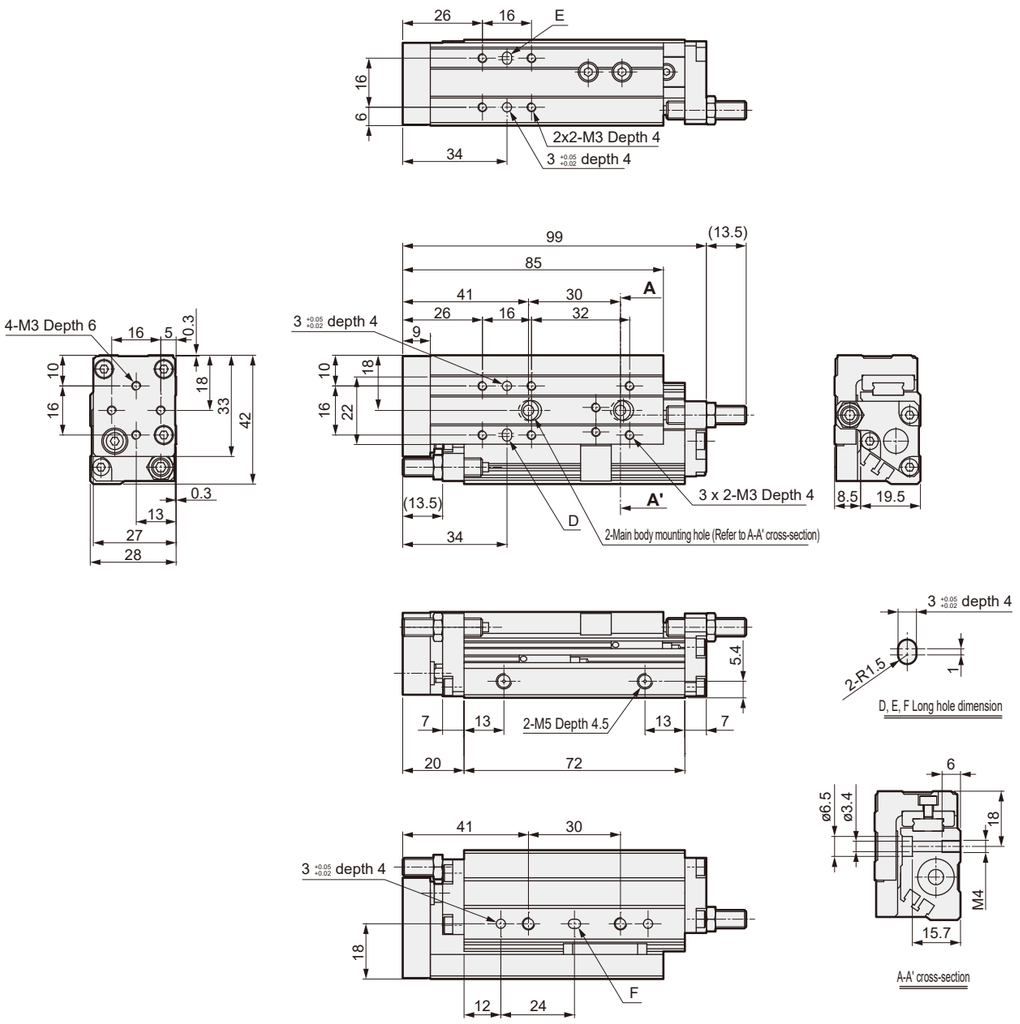
●Stopper additional amount (Unit: g)

Bore size (mm)	Stopper code		
	S	MS	A
ø12	3	3	0
ø16	3	3	0
ø20	5	5	14

For stopper code M, the weight is the same as the basic type.

Outline dimension drawing (Bore size: ø12)

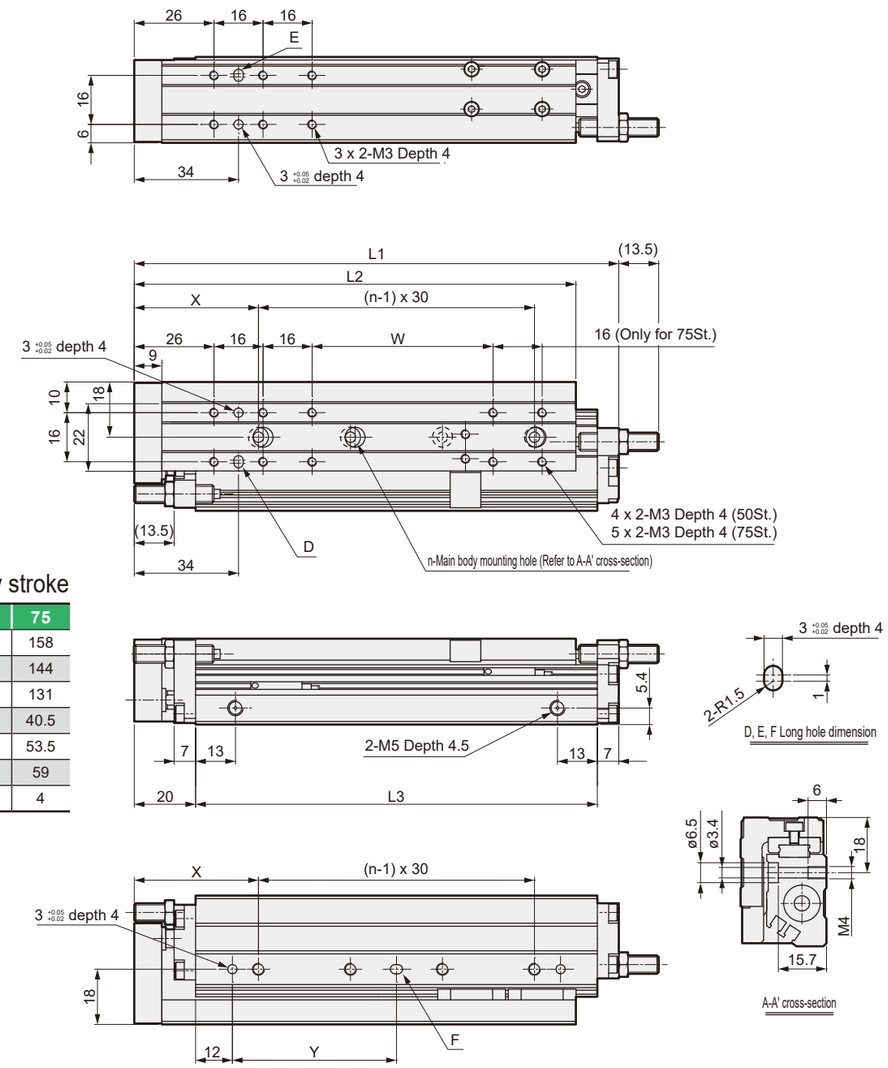
● LCW-12
Stroke: 30 Piping direction: R



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-12
Stroke: 50, 75 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 75)



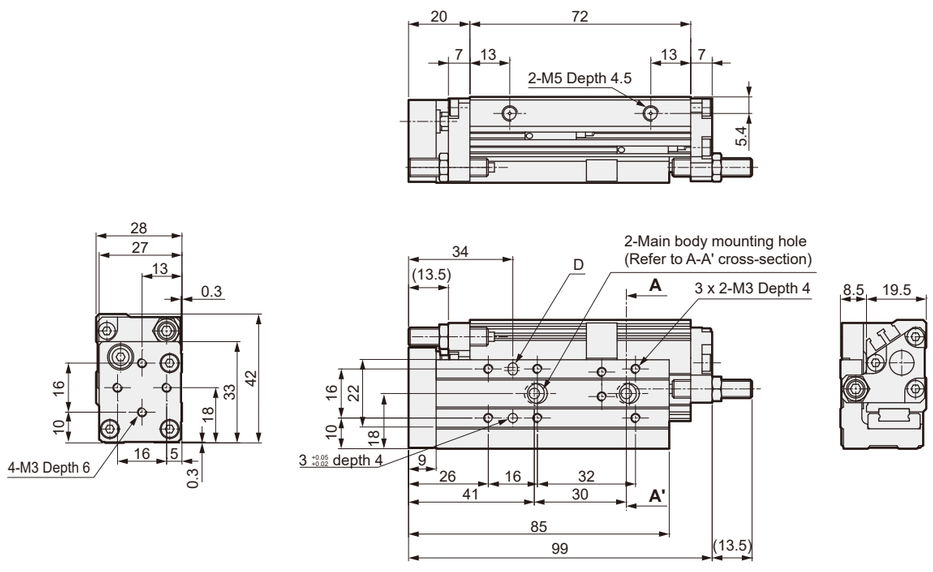
Dimension table by stroke

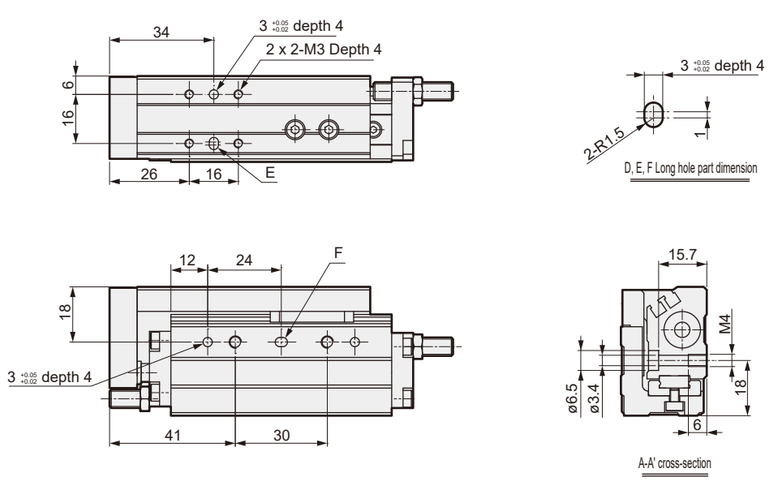
Stroke	50	75
L1	133	158
L2	119	144
L3	106	131
X	43	40.5
Y	50	53.5
W	50	59
n	3	4

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-12
Stroke: 30 Piping direction: L

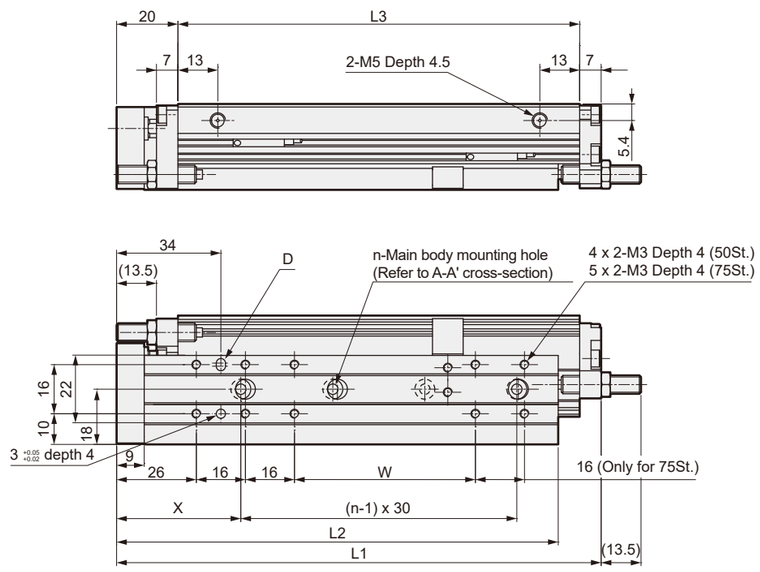




*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

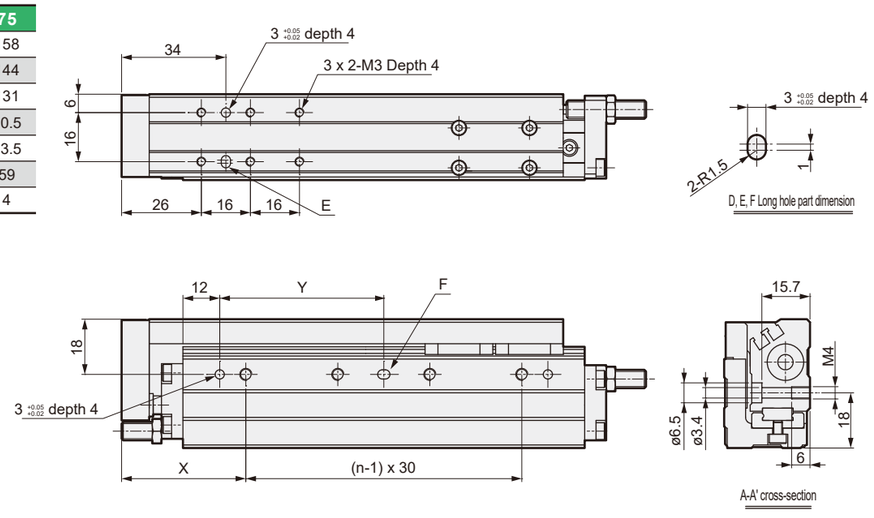
Outline dimension drawing (Bore size: ø12)

● LCW-12
Stroke: 50, 75 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 75)



Dimension table by stroke

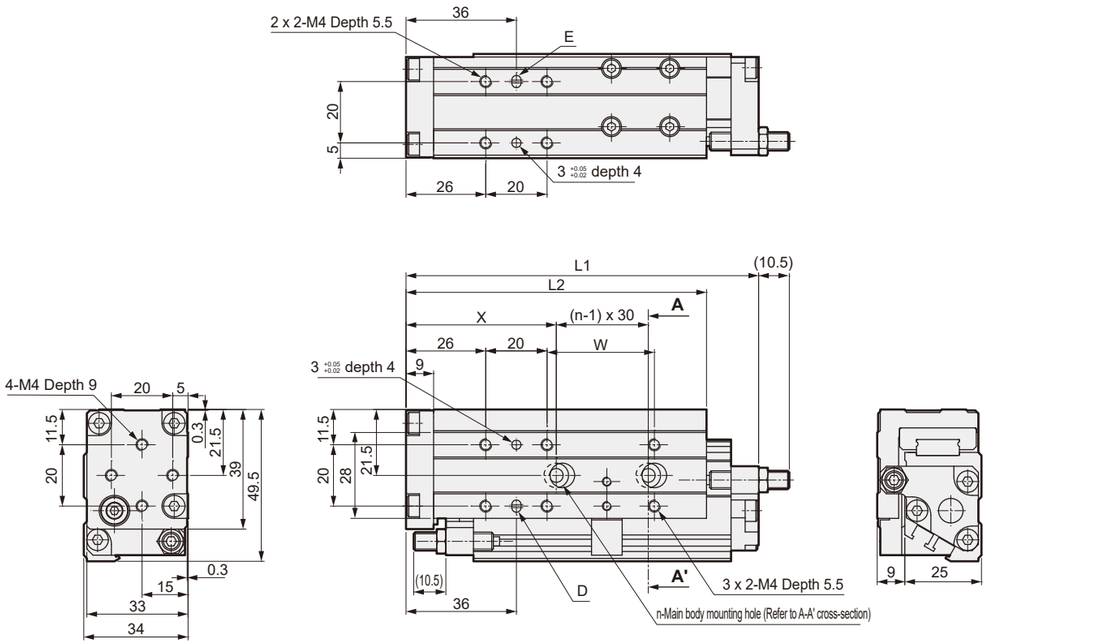
Stroke	50	75
L1	133	158
L2	119	144
L3	106	131
X	43	40.5
Y	50	53.5
W	50	59
n	3	4



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø16)

● LCW-16
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



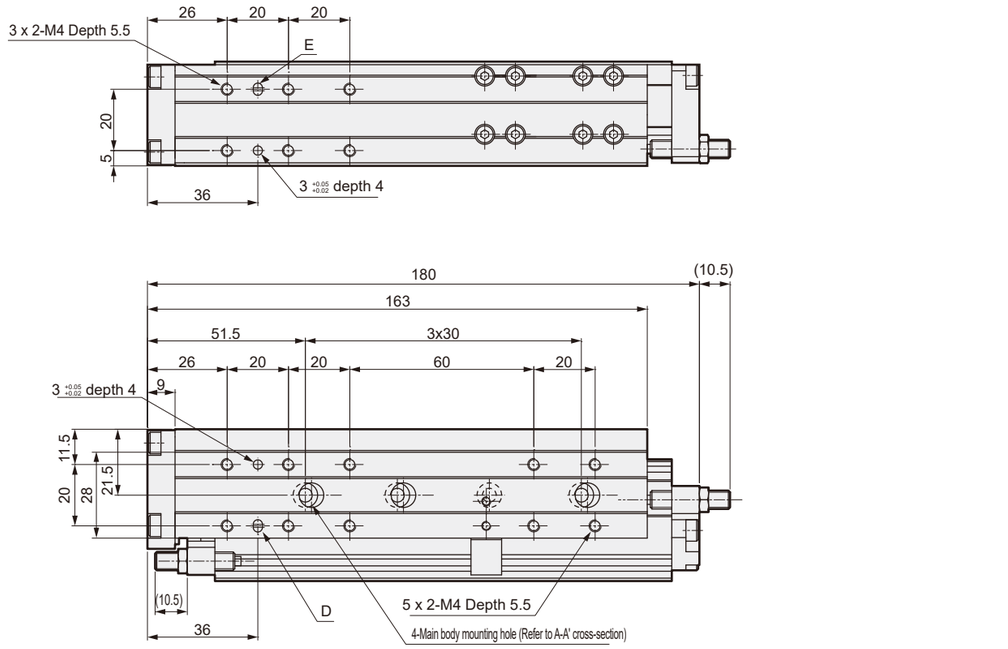
Dimension table by stroke

Stroke	30	50
L1	115	135
L2	98	118
L3	84	104
X	49	44
Y	28	50
W	35	55
n	2	3

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

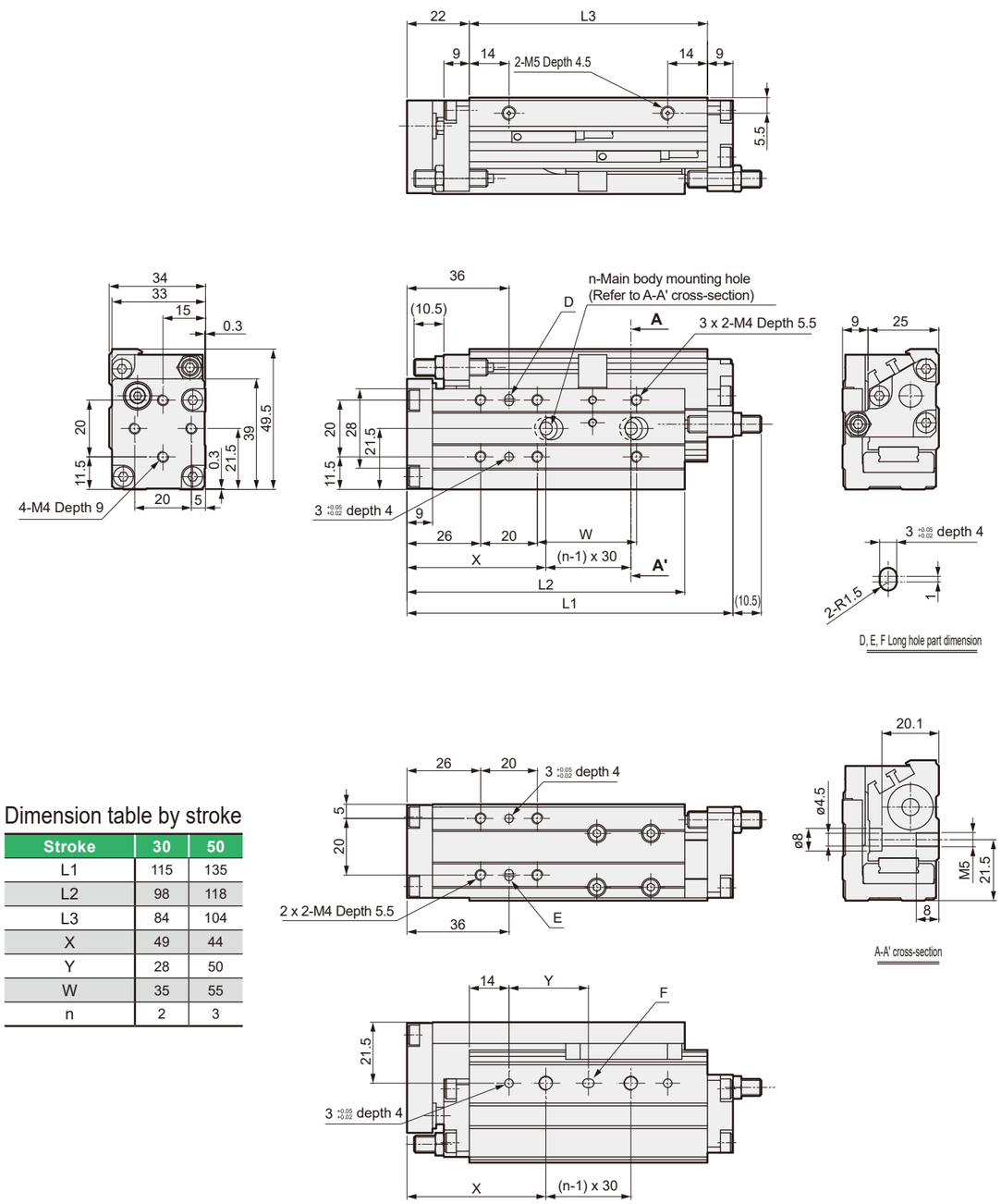
● LCW-16
Stroke: 75 Piping direction: R



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø16)

● LCW-16
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)



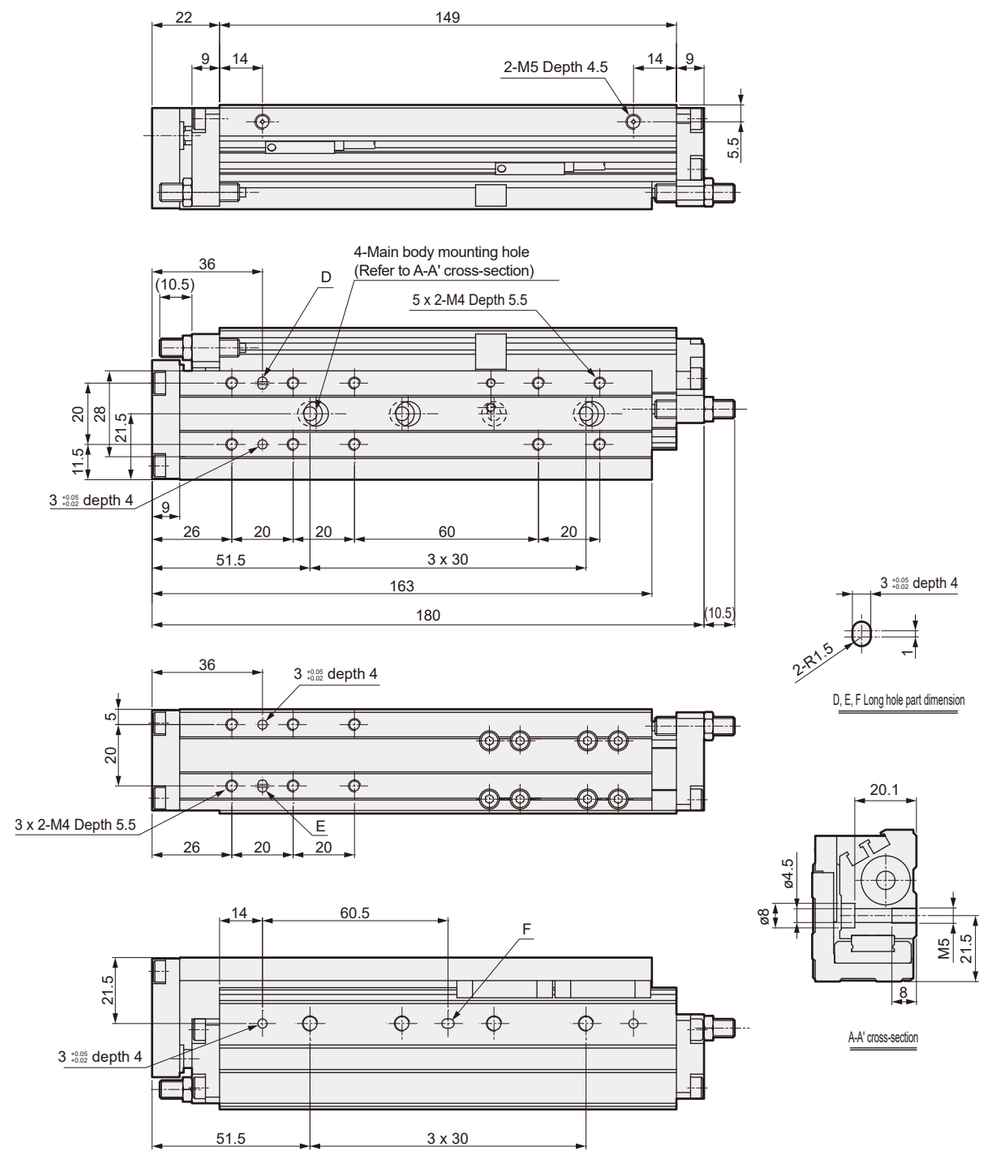
Dimension table by stroke

Stroke	30	50
L1	115	135
L2	98	118
L3	84	104
X	49	44
Y	28	50
W	35	55
n	2	3

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

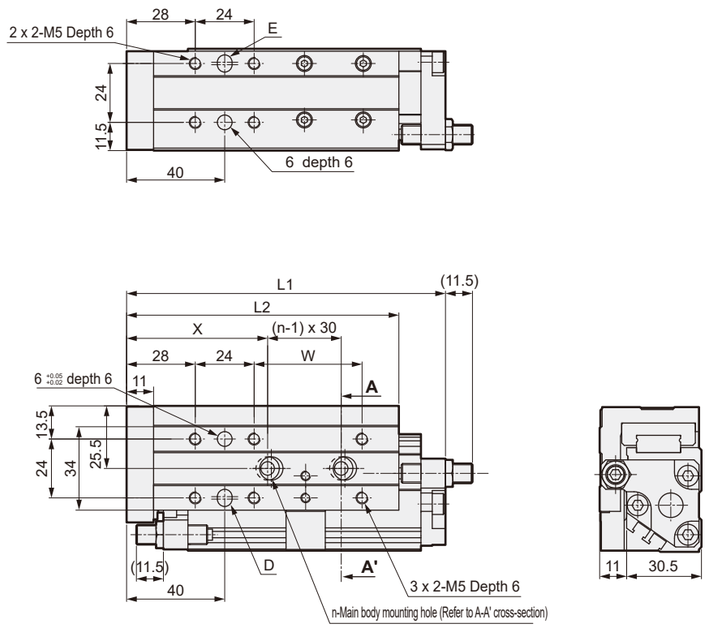
● LCW-16
Stroke: 75 Piping direction: L



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

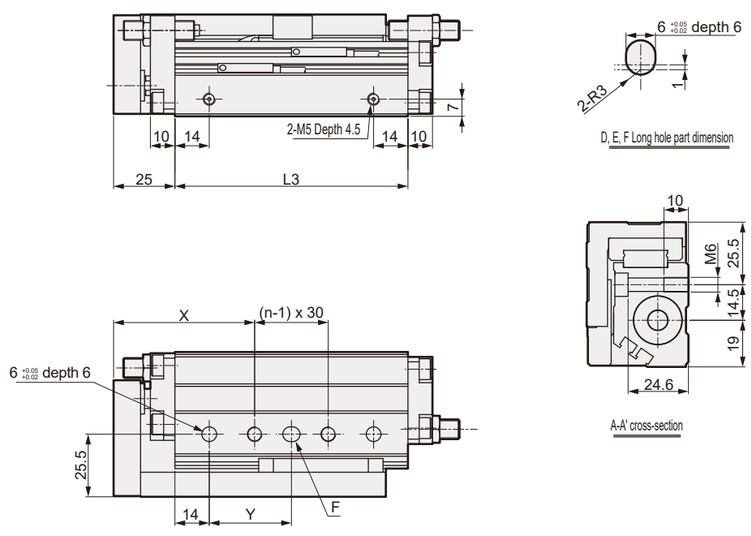
External dimensions diagram (Bore size: ø20)

● LCW-20
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

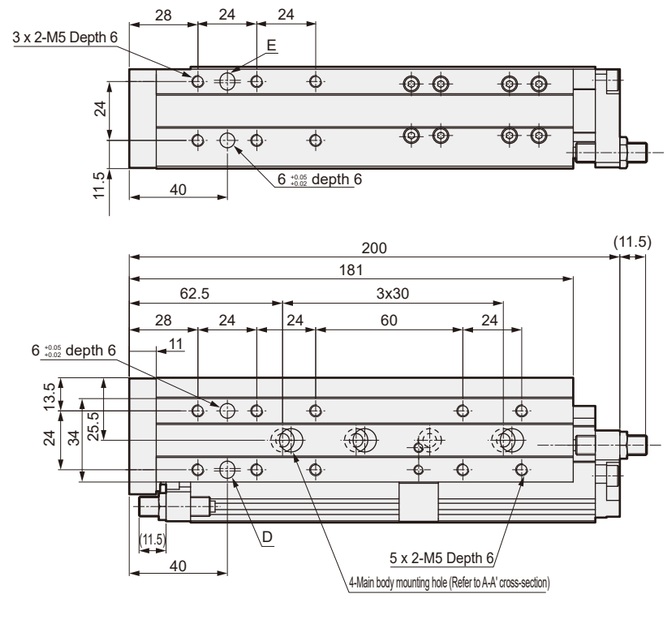
Stroke	30	50
L1	130	150
L2	111	131
L3	95	115
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

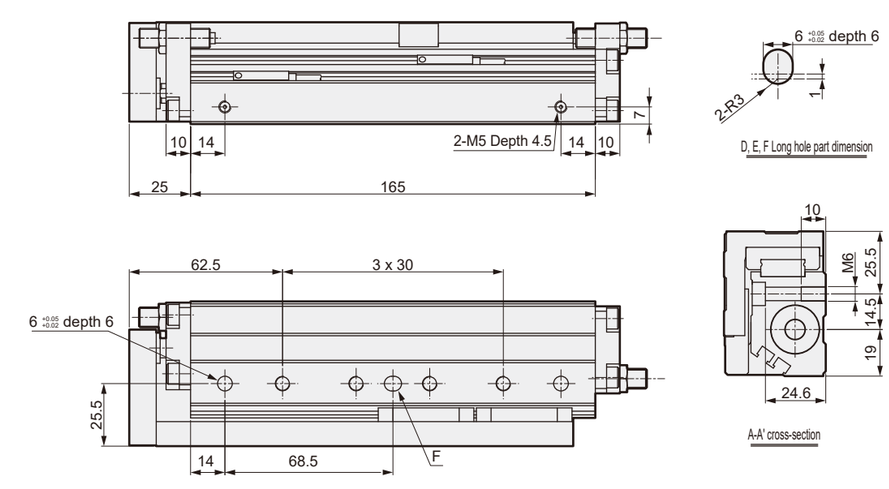


*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

● LCW-20
Stroke: 75 Piping direction: R

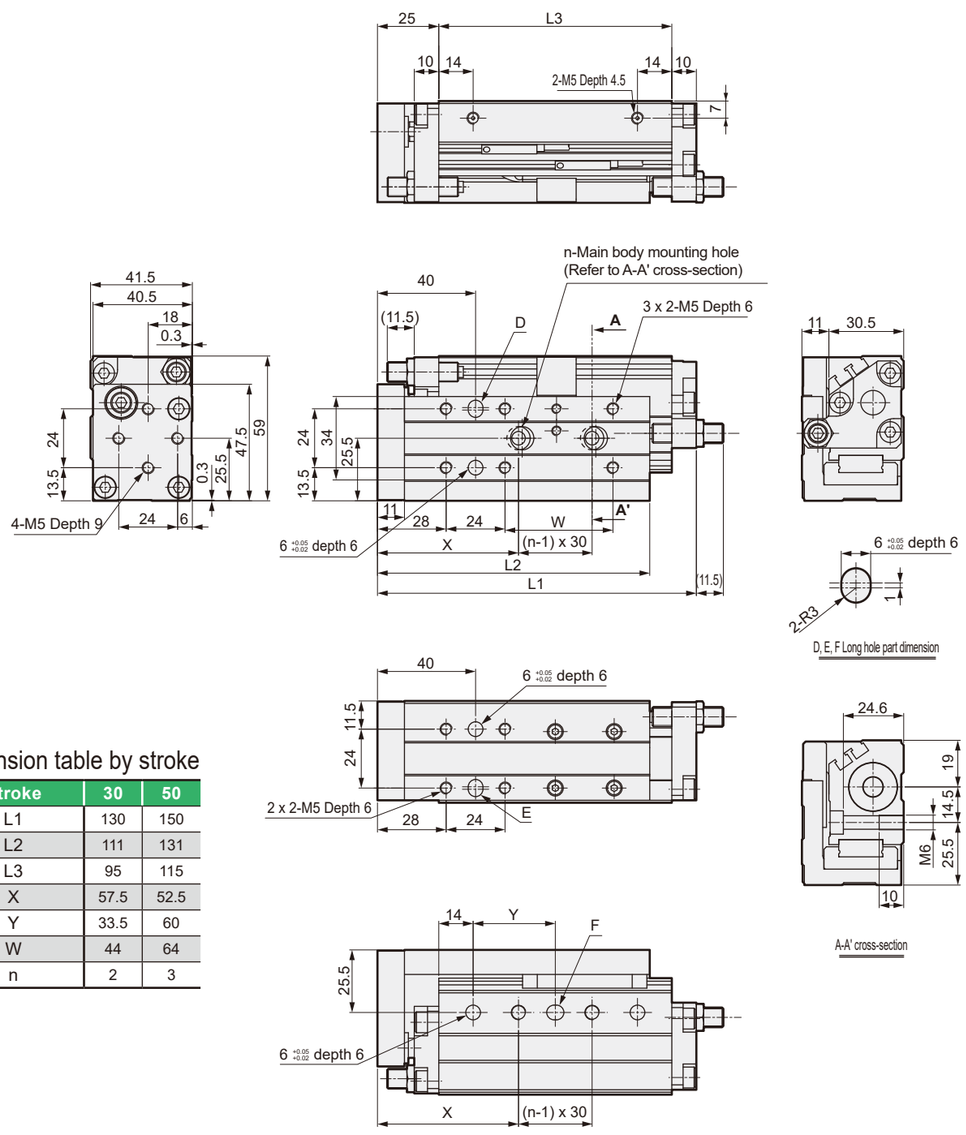




*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

● LCW-20
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)



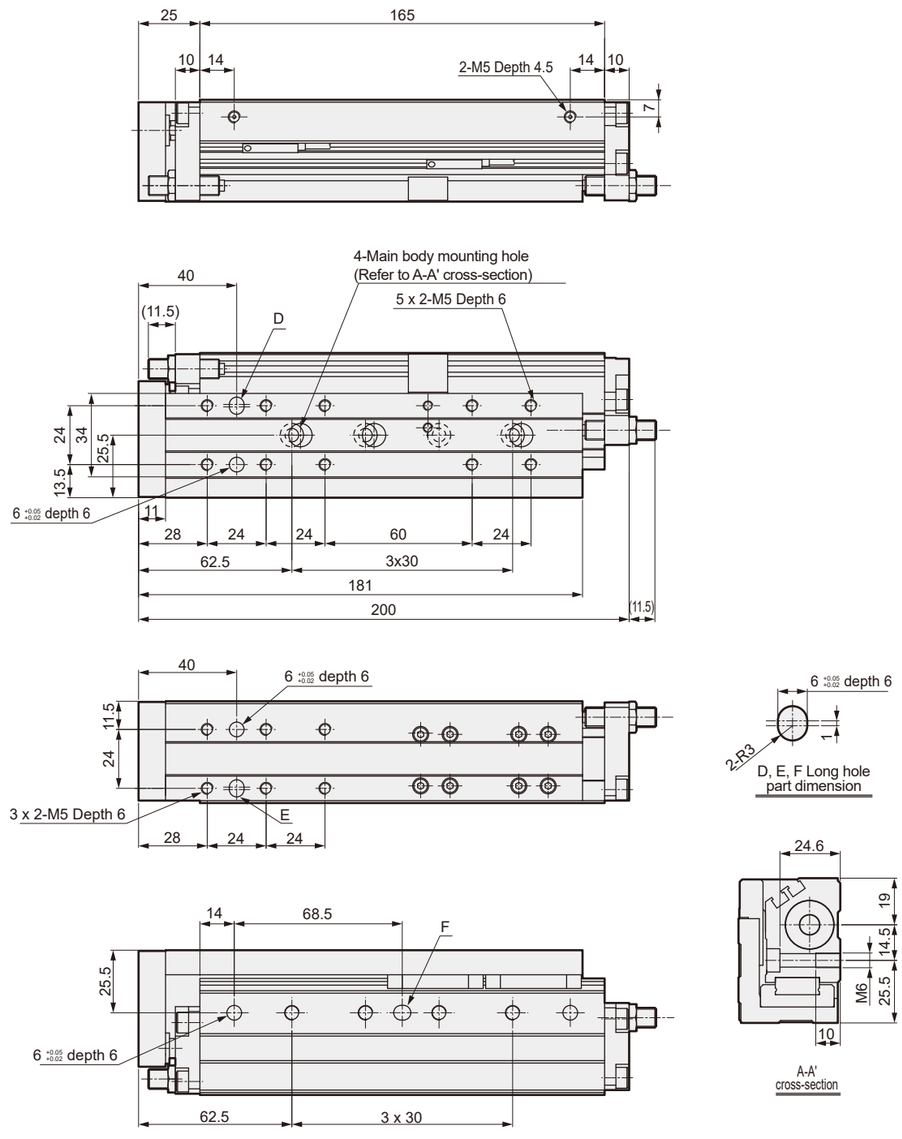
Dimension table by stroke

Stroke	30	50
L1	130	150
L2	111	131
L3	95	115
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

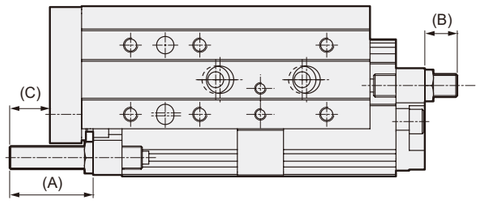
● LCW-20
Stroke: 75 Piping direction: L



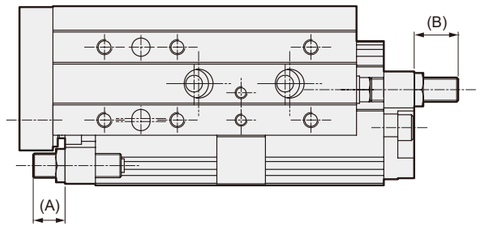
*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outer Dimensions Diagram with Option

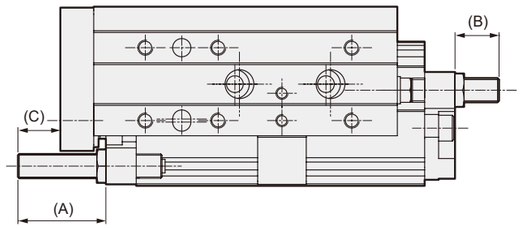
● Rubber cushion type long stopper (S)



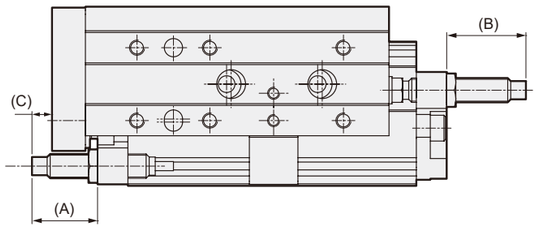
● Metal type stopper with rubber cushion (M)



● Metal type long stopper with rubber cushion (MS)



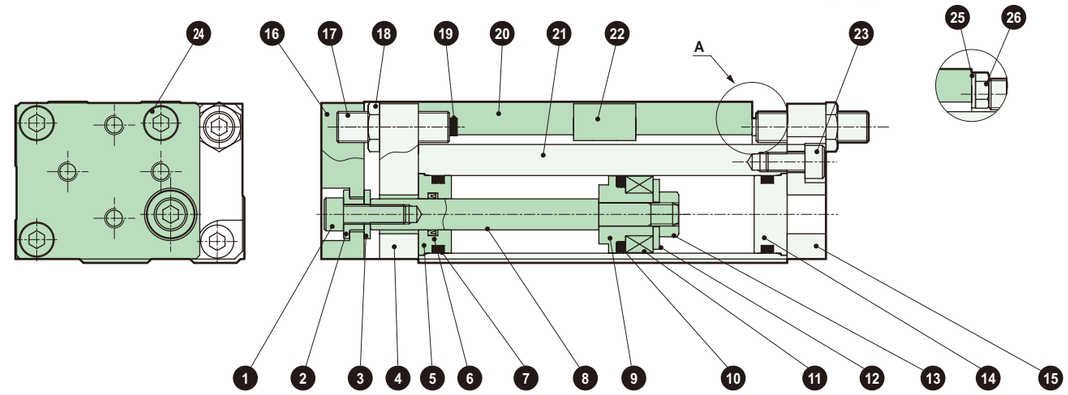
● Shock absorber type stopper (A)

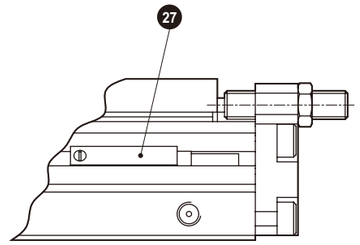


Bore size	Rubber cushion type long stopper (S)			Metal type stopper with rubber cushion (M)			Metal type long stopper with rubber cushion (MS)			Shock absorber type stopper (A)		
	A	B	C	A	B	C	A	B	C	A	B	C
ø12	31.5	13.5	18.5	12	14.5	-	31	14.5	18	11	13.5	-
ø16	28.5	10.5	15.5	9.5	11.5	-	28.5	11.5	15.5	8.5	10.5	-
ø20	28.5	11.5	13.5	10.5	15	-	28.5	15	13.5	21.5	26	6.5

Internal Structure Diagram / Material

Part A
In case of metal type stopper with rubber cushion (M, MS), Shock absorber type stopper (A)



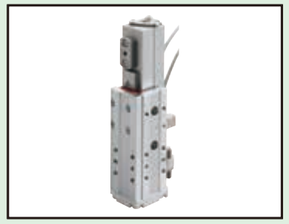


Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
2	Floating bush A	Stainless Steel	
3	Floating bush B	Stainless Steel	
4	Cover retainer	Aluminum Alloy	Alumite
5	Rod Cover	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	O-ring	Nitrile Rubber	
8	Piston Rod	Stainless Steel	
9	Piston	Aluminum Alloy	Chromate
10	Piston Packing	Nitrile Rubber	
11	Magnet		
12	Plain Washer	Stainless Steel	
13	Hexagon Nut	Stainless Steel	
14	Head Cover	Aluminum Alloy	Chromate
15	Cover retainer	Aluminum Alloy	Alumite

Part No.	Part Name	Material	Remarks
16	End plate	Aluminum Alloy	Hard Anodized
17	Stopper bolt	Steel	Nickel Plating
18	Hexagon Nut	Steel	Nickel Plating
19	Cushion Rubber	Urethane Rubber	
20	Table	Aluminum Alloy	Alumite
21	Body	Aluminum Alloy	Hard Anodized
22	Stopper block	Steel	Nickel Plating
23	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
24	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
25	Plain Washer	Stainless Steel	
26	Hexagon bolt	Stainless Steel	
With Switch			
27	Switch		

Consumable Parts List

Bore Size (mm)	Kit No.	Consumable Part No.
ø12	LCW-12K	❻❼❿⓳
ø16	LCW-16K	
ø20	LCW-20K	

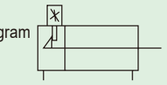


Linear Slide Cylinder Double Acting, Drop Prevention Type

LCW-Q Series

● Bore size: ø12, ø16, ø20

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCW-Q - 16 - 30 - H R ——— S

❶ Model No. ❷ ❸ ❻

With Switch
(Built-in magnet for switch)

LCW-Q - 16 - 30 - H R - T2H - R - S

Model No. ❶ Bore size ❷ Stroke ❸ Piping direction Head side fall prevention mechanism ❹ Switch Model No. ❺ Number of Switches ❻ Stopper

❶ Bore size (mm)

Code	Content
12	ø12
16	ø16
20	ø20

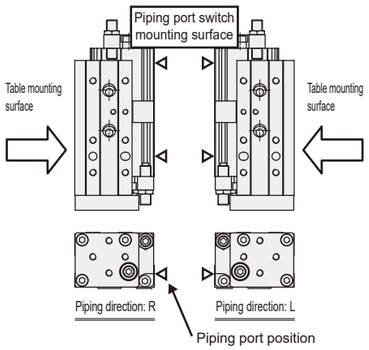
❷ Stroke (mm)

Code	Content
30	30
50	50
75	75

❸ Piping direction

Code	Content
R	Right side when viewed from rod side
L	Left side when viewed from rod side

*1: For piping direction, refer to the diagram below.



❹ Switch Model No.

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

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

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: ❶ For Bore size ø12, T-type switch cannot be selected.
*4: ❶ For tube inner diameters ø16 and ø20, F type switch cannot be selected.
*5: Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
*6 5	5 m (Option)

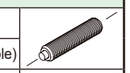
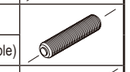
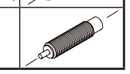
*6: F type switch, 5 m lead wire cannot be selected.

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

❺ Number of Switches

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

❻ Stopper

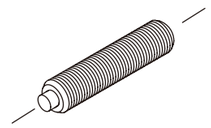
Code	Content	
Blank	Rubber cushion type stopper	
S	Rubber cushion type long stopper (Intermediate stroke compatible)	
M	Metal type stopper with rubber cushion	
MS	Metal type long stopper with rubber cushion (Intermediate stroke compatible)	
A	Shock absorber type stopper	

Switch Single Unit Model No. Notation Method

SW - F2H

❹ Switch Model No.

Rubber cushion type stopper single item model No. notation method



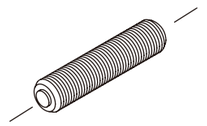
LCW - 12 - S01

❶ Bore size ❼ Stroke adjustment range

❼ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount
S01 (Standard)	ø12	M6x1.0	One side 10 mm
	ø16	M6x1.0	One side 7.5 mm
	ø20	M8x1.0	One side 8 mm
S02 (Long)	ø12	M6x1.0	One side 28 mm
	ø16	M6x1.0	One side 25 mm
	ø20	M8x1.0	One side 25 mm

Metal type stopper with rubber cushion single item model No. notation method



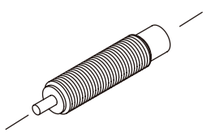
LCW - 12 - M01

❶ Bore size ❼ Stroke adjustment range

❼ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount PUSH side
M01 (Standard)	ø12	M6x1.0	One side 9 mm
	ø16	M6x1.0	One side 6 mm
	ø20	M8x1.0	One side 7.5 mm
M02 (Long)	ø12	M6x1.0	One side 28 mm
	ø16	M6x1.0	One side 25 mm
	ø20	M8x1.0	One side 25 mm

Shock absorber Type Stopper Single Item Model No. Notation Method



LCW - 12 - A01

❶ Bore size

Bore size	Thread Size
ø12	M6x0.75
ø16	M6x0.75
ø20	M8x1.0

Specifications

Item		LCW-Q		
Bore size	mm	ø12	ø16	ø20
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. Working Pressure	MPa	0.7		
Min. Operating Pressure	MPa	0.15 (*1:		
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*2:		
Port Size		M5		
Operating piston speed	mm/s	50 to 500 (*3)		
Cushion		Rubber Cushion		
Holding Force	N	15.5	27.6	47.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable absorption energy	J	Refer to Table 3 on P. 247.		

*1: When using a metal type stopper with rubber cushion, use a pressure of 0.4 MPa or more to make metal contact at the stroke end.
*2: When using a Shock absorber type stopper, use at -5 to 60°C.
*3: When using a metal type stopper with rubber cushion, use at 50 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø12	30 / 50 / 75
ø16	
ø20	

Note: Strokes other than the above cannot be manufactured.

Stroke adjustment range

(Unit: mm)

Bore Size (mm)	Standard rubber cushion type		Metal type with rubber cushion		Shock absorber type
	Standard Stroke	Intermediate stroke compatible (S)	Standard stroke (M)	Intermediate stroke compatible (MS)	Standard stroke (A)
	PUSH side	PUSH side	PUSH side	PUSH side	PUSH side
ø12	10	28	9	28	4
ø16	7.5	25	6	25	1.5
ø20	8	25	7.5	25	12.5

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø12	PUSH	17	23	34	45	57	68	79
	PULL	13	17	25	34	42	51	59
ø16	PUSH	30	40	60	80	101	121	141
	PULL	26	35	52	69	86	104	121
ø20	PUSH	47	63	94	126	157	188	220
	PULL	40	53	79	106	132	158	185

Cylinder Weight

● Drop prevention type (Unit: g)

Bore Size (mm)	Stroke (mm)		
	30	50	75
ø12	300	440	450
ø16	450	460	690
ø20	770	800	1.160

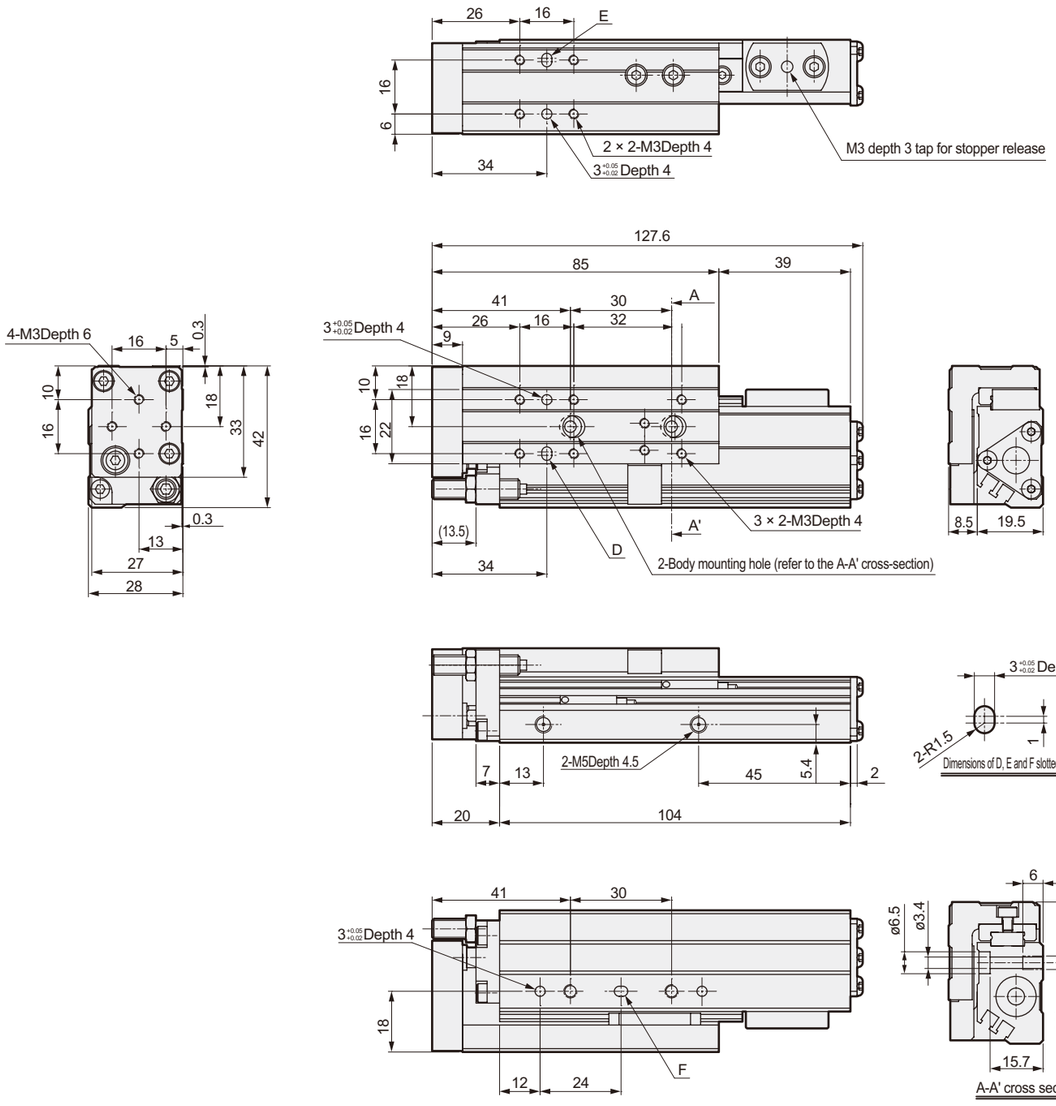
● Stopper additional amount (Unit: g)

Bore Size (mm)	Stopper code		
	S	MS	A
ø12	3	3	0
ø16	3	3	0
ø20	5	5	14

For stopper code M, the weight is the same as the fall prevention type.

Outline dimension drawing (Bore size: ø12)

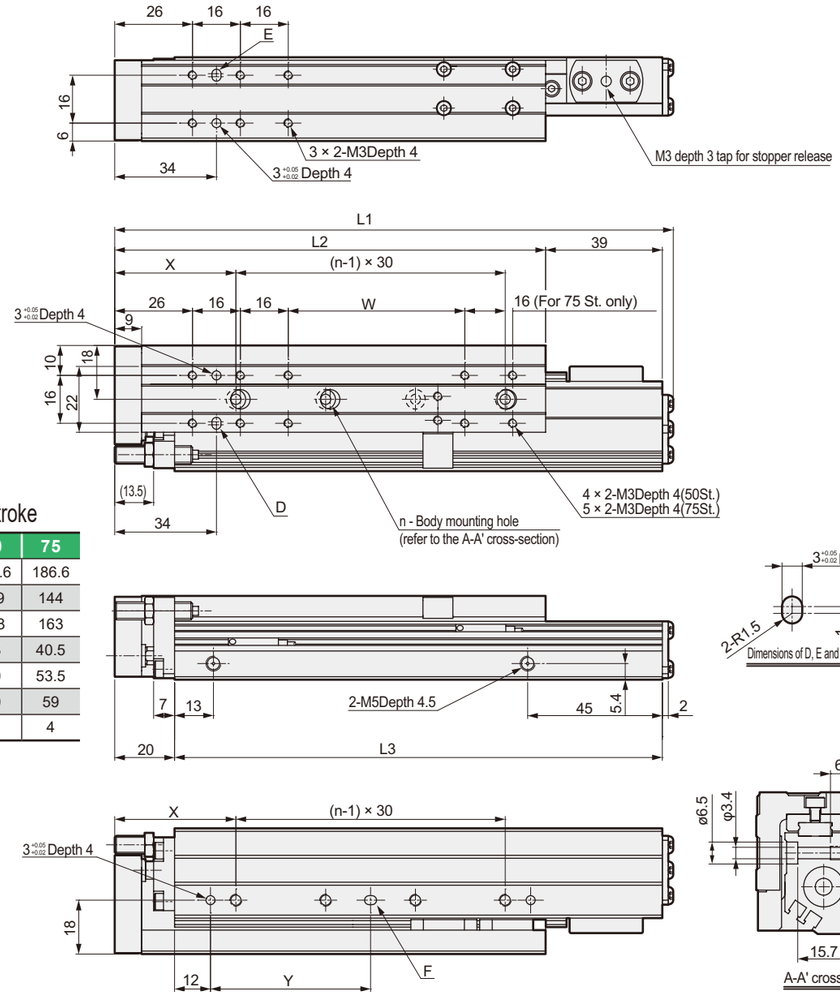
● LCW-Q-12
Stroke: 30 Piping direction: R



*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-Q-12
Stroke: 50, 75 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 75)



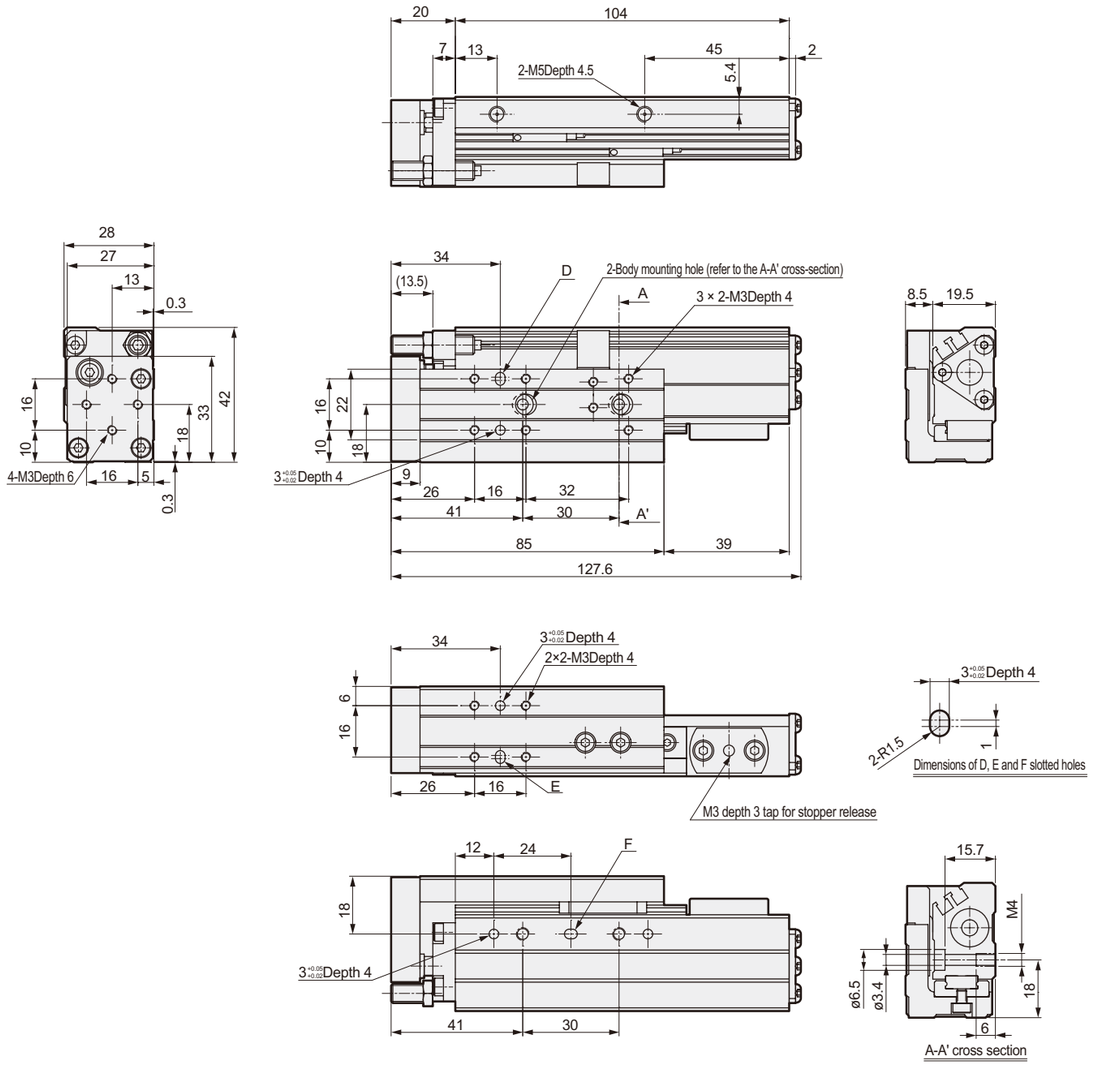
Dimension table by stroke

Stroke	50	75
L1	161.6	186.6
L2	119	144
L3	138	163
X	43	40.5
Y	50	53.5
W	50	59
n	3	4

*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

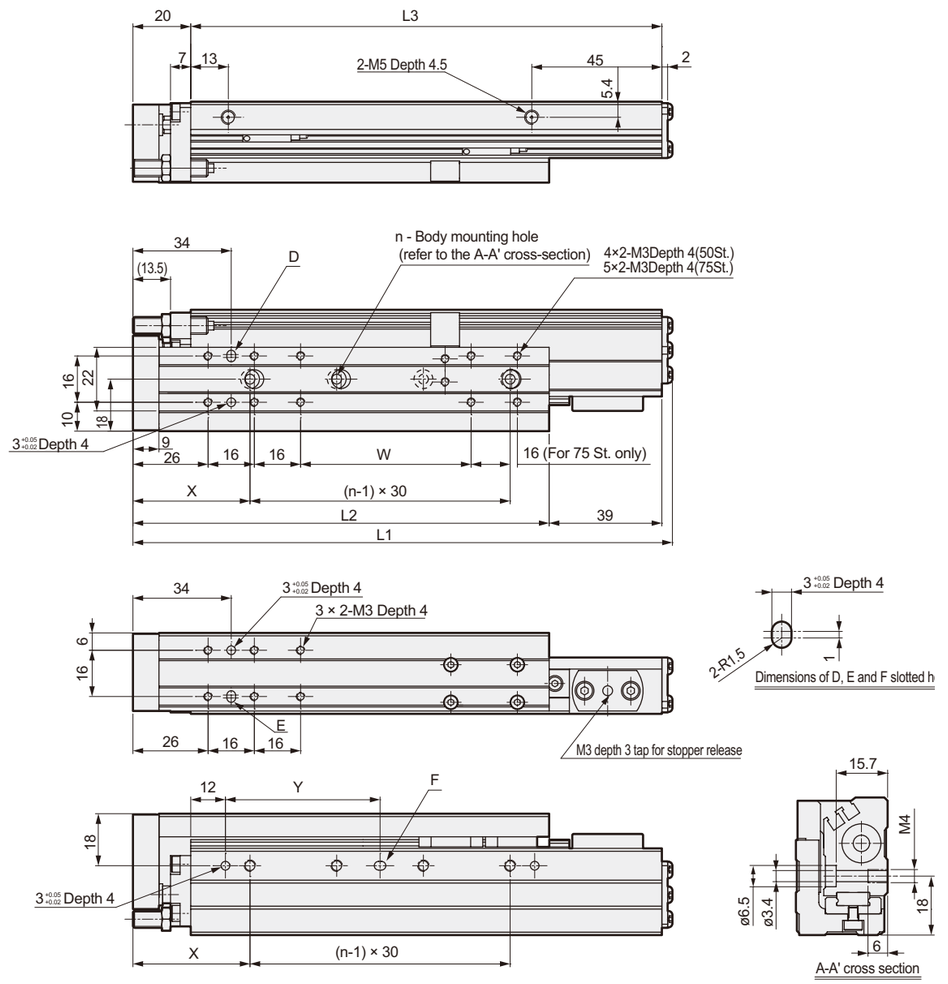
● LCW-Q-12
Stroke: 30 Piping direction: L



*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-Q-12
Stroke: 50, 75 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 75)



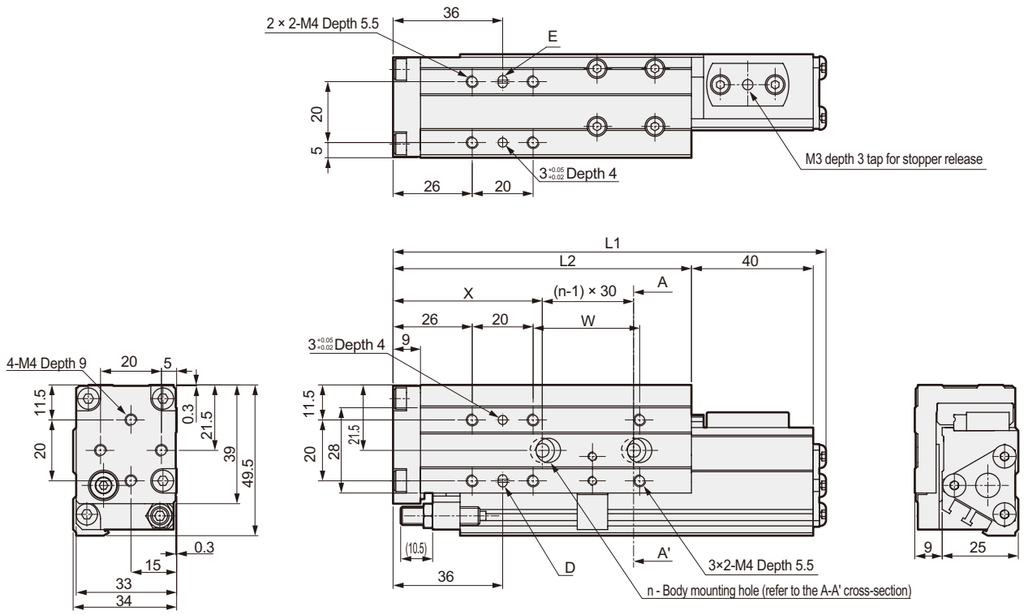
Dimension table by stroke

Stroke	50	75
L1	161.6	186.6
L2	119	144
L3	138	163
X	43	40.5
Y	50	53.5
W	50	59
n	3	4

*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

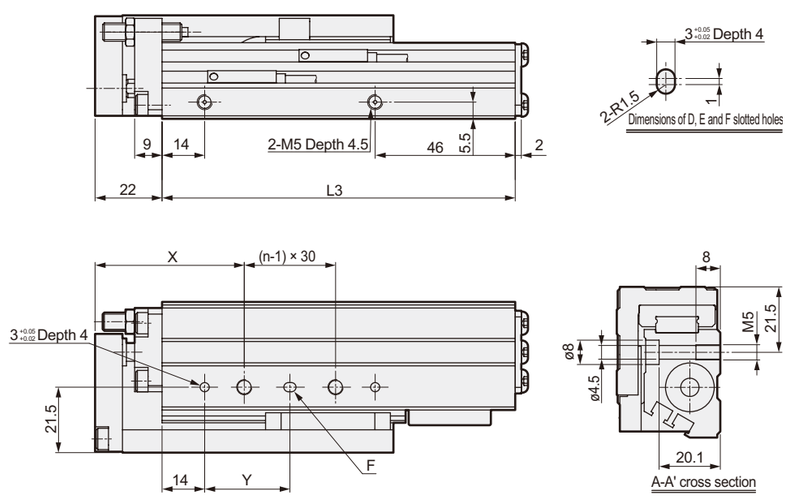
Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

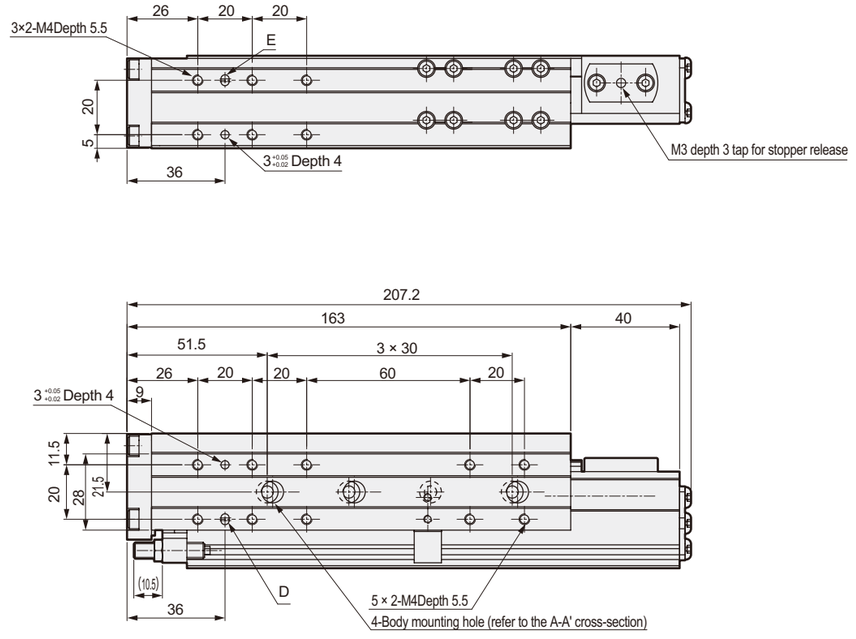
Stroke	30	50
L1	142.2	162.2
L2	98	118
L3	116	136
X	49	44
Y	28	50
W	35	55
n	2	3

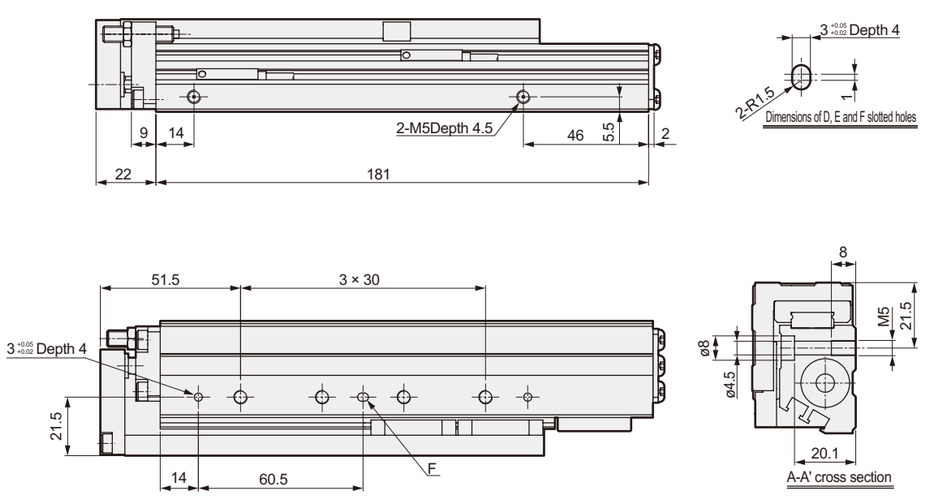


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 75 Piping direction: R

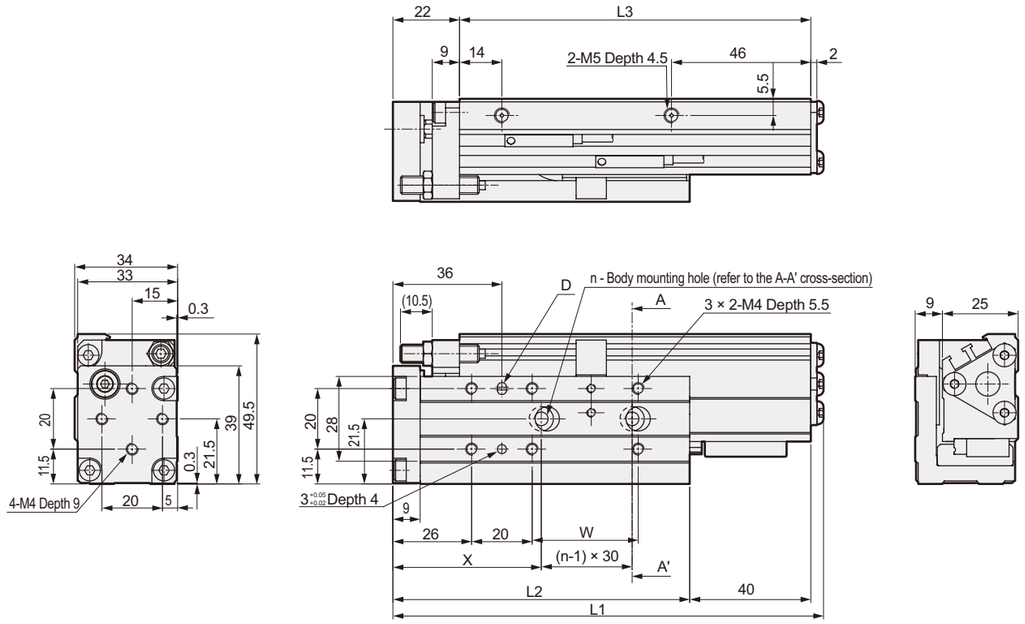




*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

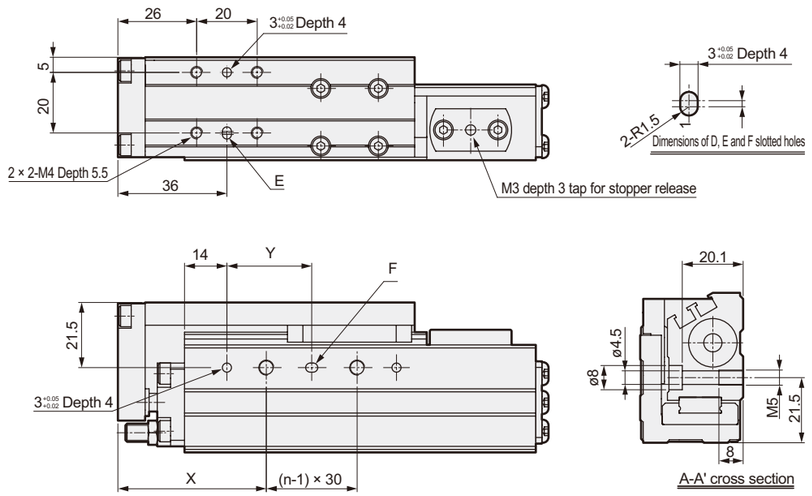
Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

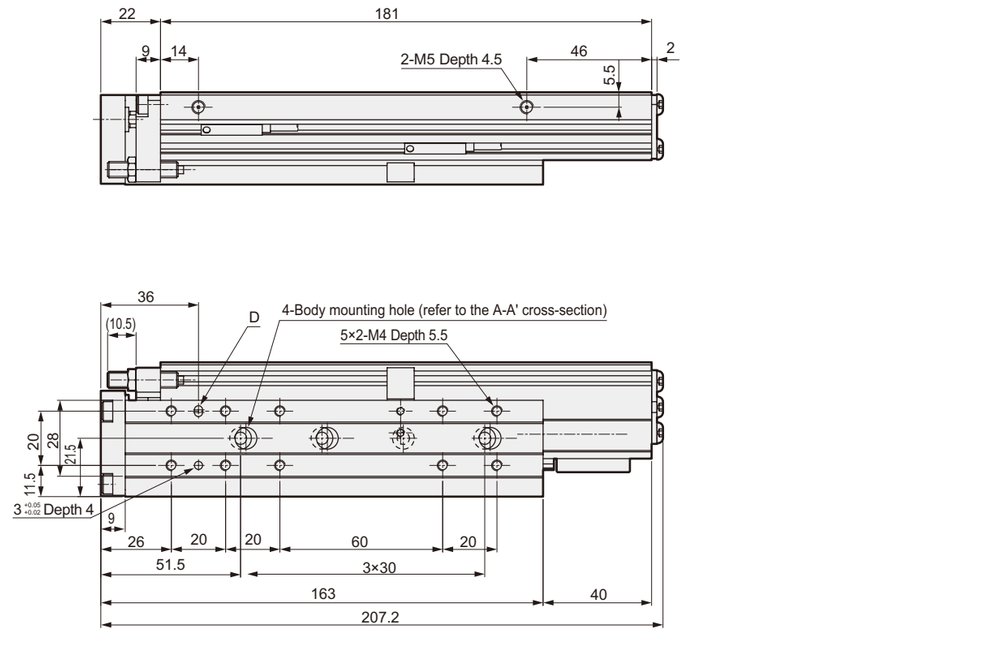
Stroke	30	50
L1	142.2	162.2
L2	98	118
L3	116	136
X	49	44
Y	28	50
W	35	55
n	2	3

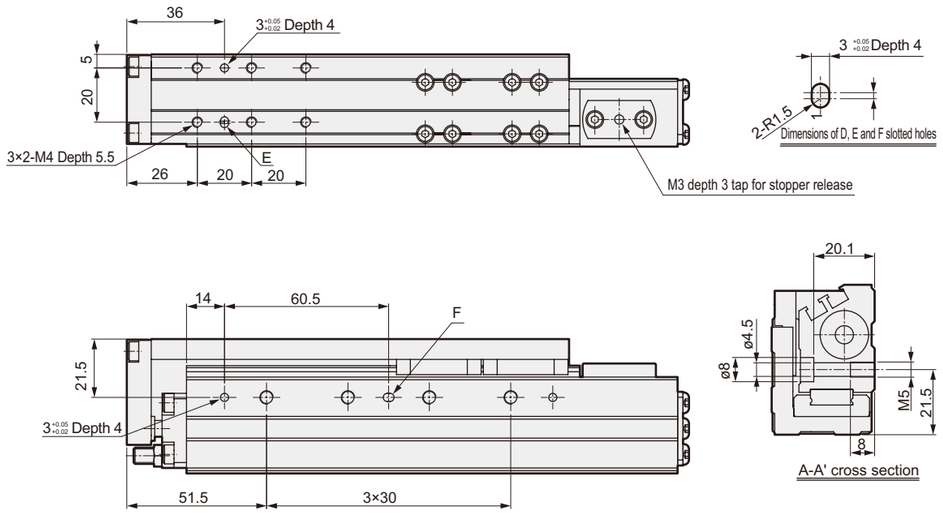


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 75 Piping direction: L

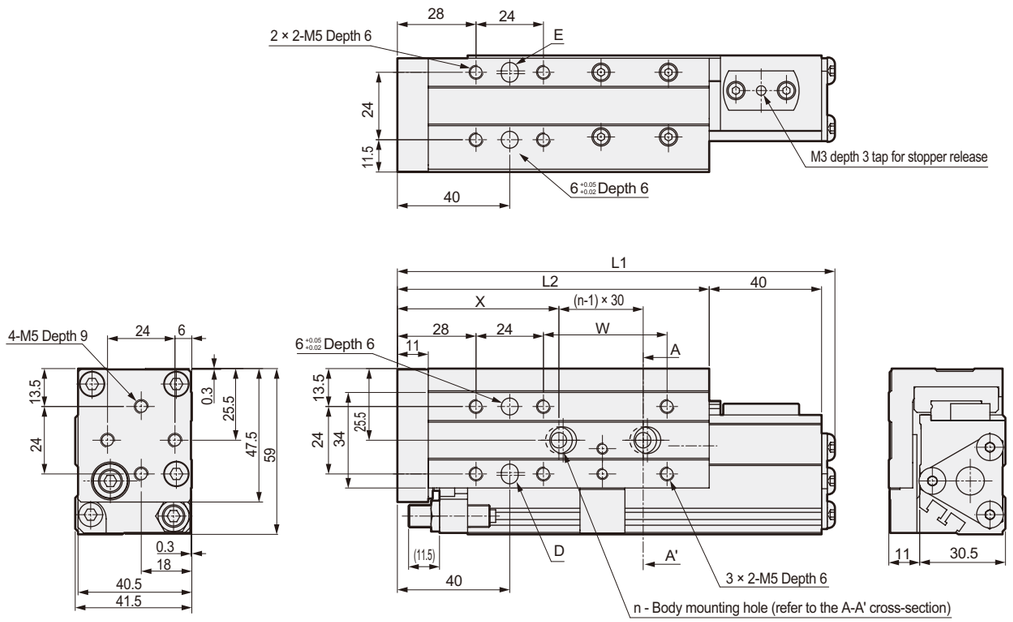




*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

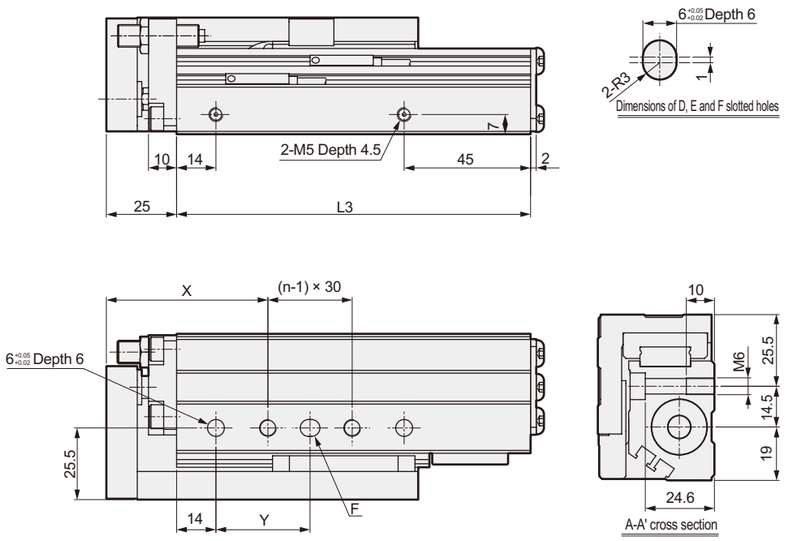
External dimensions diagram (Bore size: ø20)

● LCW-Q-20
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

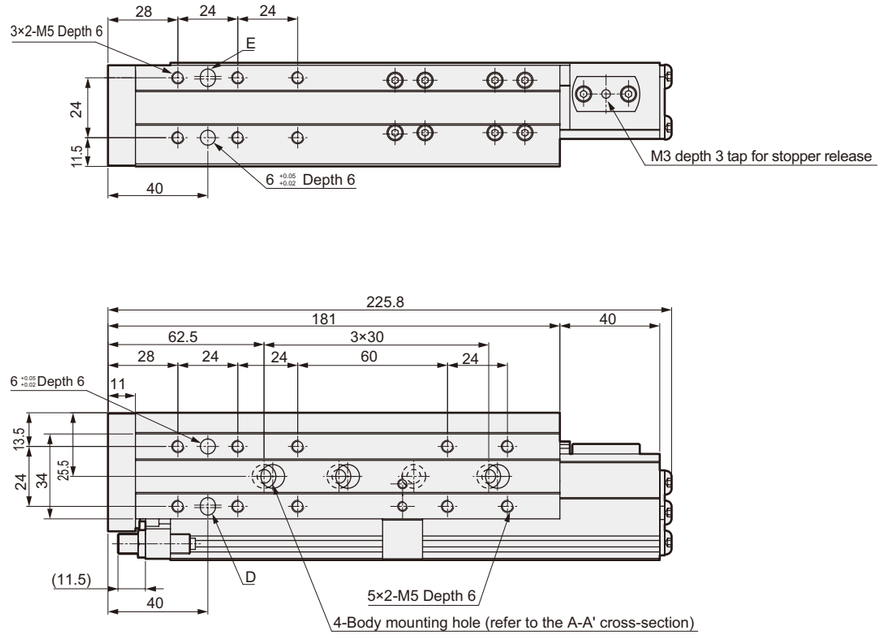
Stroke	30	50
L1	155.8	175.8
L2	111	131
L3	126	146
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

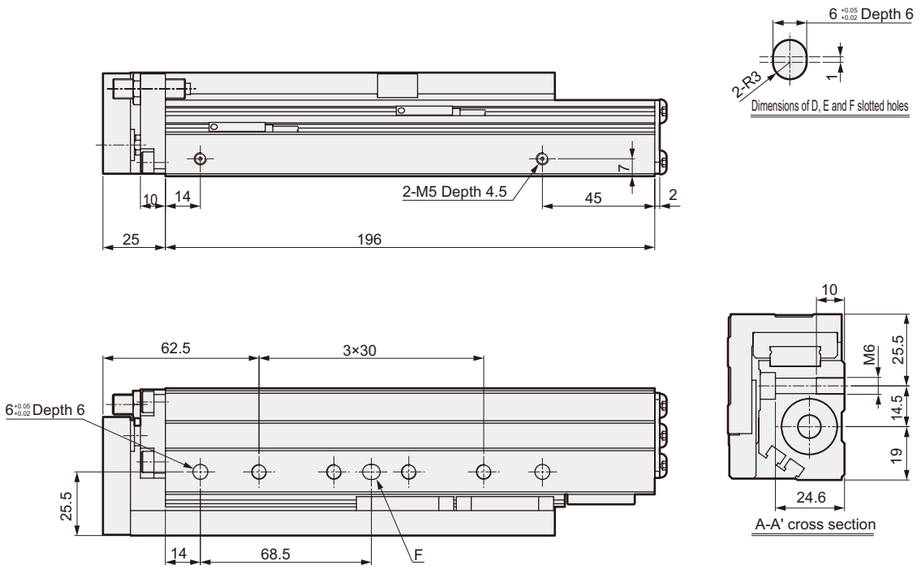


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

● LCW-Q-20
Stroke: 75 Piping direction: R

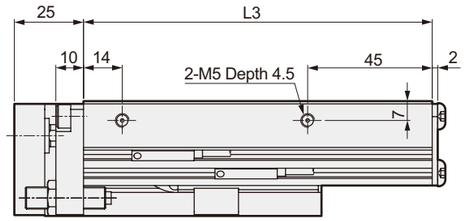


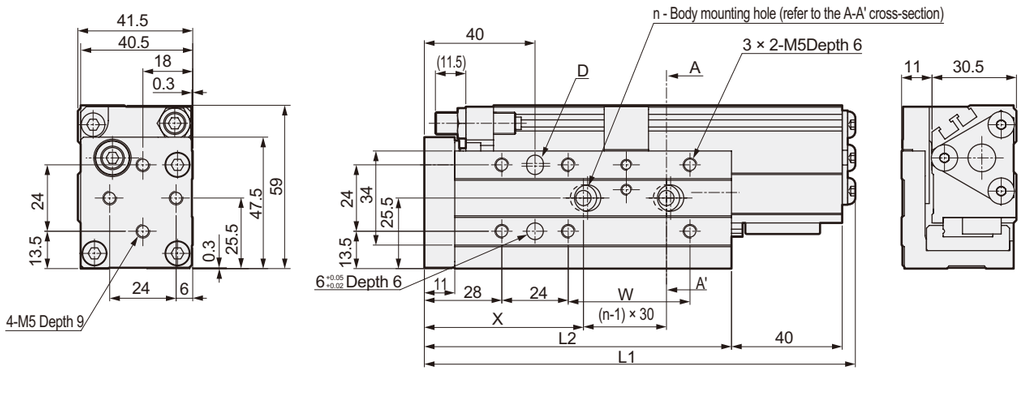


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

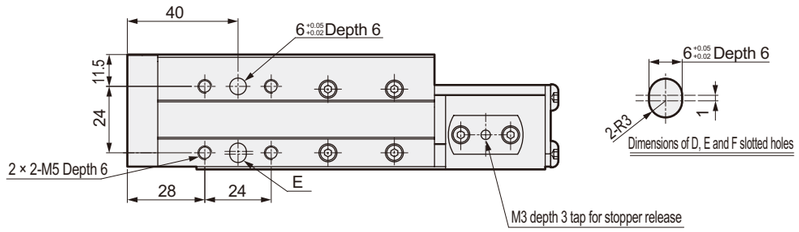
● LCW-Q-20
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)

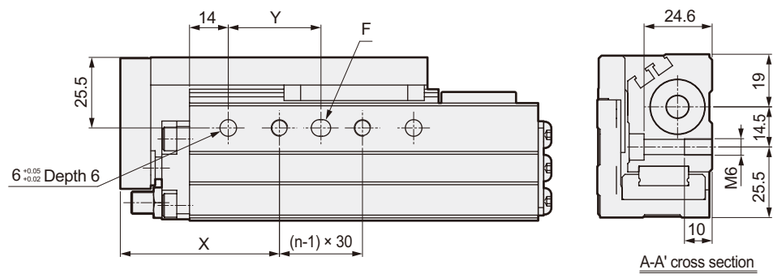




Dimension table by stroke

Stroke	30	50
L1	155.8	175.8
L2	111	131
L3	126	146
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

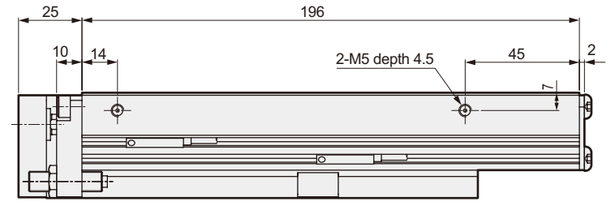


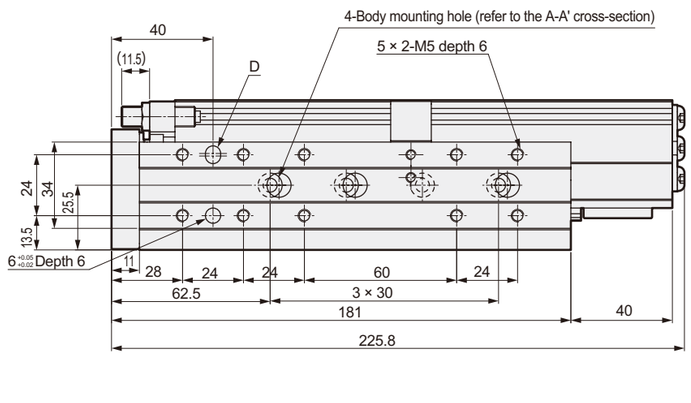


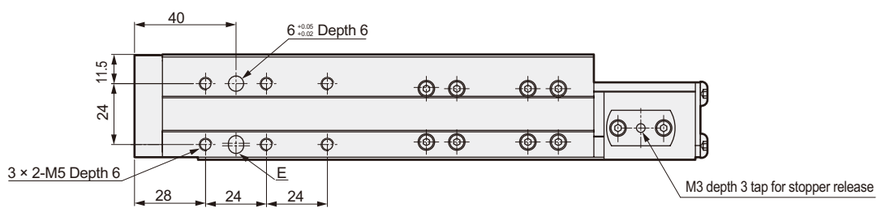
*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

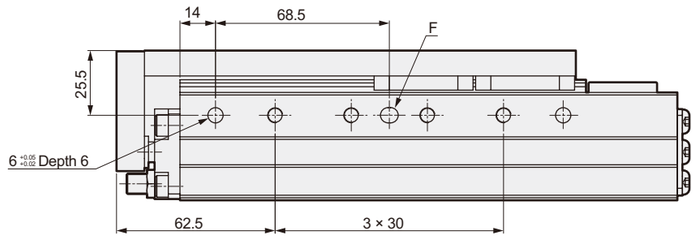
External dimensions diagram (Bore size: ø20)

● LCW-Q-20
Stroke: 75 Piping direction: L





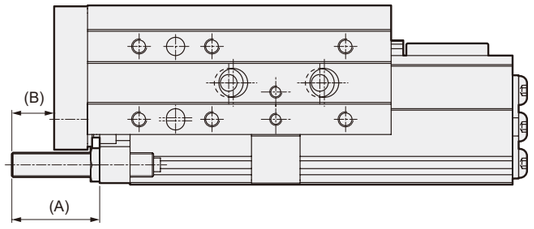




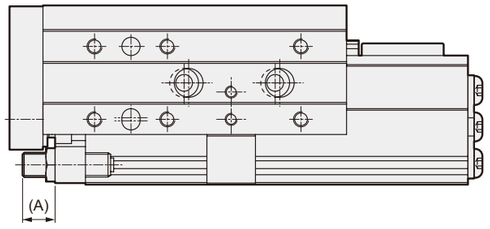
*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outer Dimensions Diagram with Option

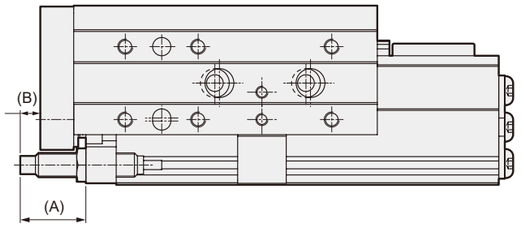
● Rubber cushion type long stopper (S)
Metal type long stopper with rubber cushion (MS)



● Metal type stopper with rubber cushion (M)

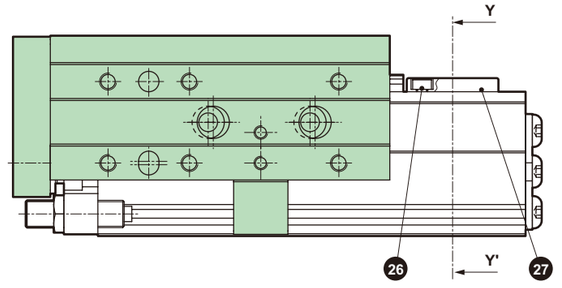


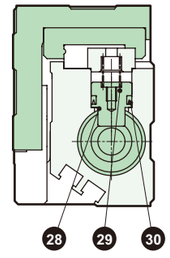
● Shock absorber type stopper (A)



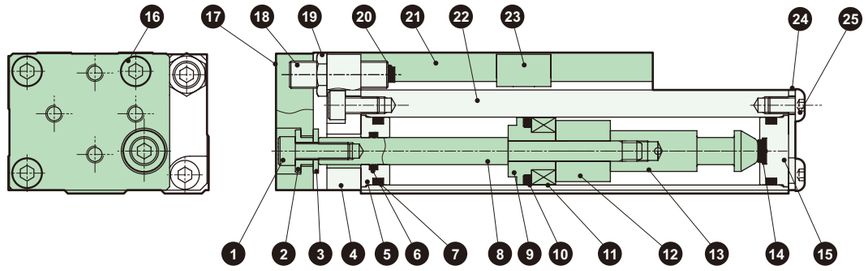
Bore size	Rubber cushion type long stopper (S)		Metal type stopper with rubber cushion (M)		Metal type long stopper with rubber cushion (MS)		Shock absorber type stopper (A)	
	A	B	A	B	A	B	A	B
ø12	31.5	18.5	12	-	31	18	11	-
ø16	28.5	15.5	9.5	-	28.5	15.5	8.5	-
ø20	28.5	13.5	10.5	-	28.5	13.5	21.5	6.5

Internal Structure Diagram / Material





Y-Y' cross-section



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate	16	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
2	Floating bush A	Stainless Steel		17	End plate	Aluminum Alloy	Hard Anodized
3	Floating bush B	Stainless Steel		18	Stopper bolt	Steel	Nickel Plating
4	Cover retainer	Aluminum Alloy	Alumite	19	Hexagon Nut	Steel	Nickel Plating
5	Rod Cover	Aluminum Alloy	Hard Anodized	20	Cushion Rubber	Urethane Rubber	
6	Rod Packing	Nitrile Rubber		21	Table	Aluminum Alloy	Alumite
7	O-ring	Nitrile Rubber		22	Body	Aluminum Alloy	Hard Anodized
8	Piston Rod	Stainless Steel		23	Stopper block	Steel	Nickel Plating
9	Piston	Aluminum Alloy	Chromate	24	Cover retainer	Stainless Steel	
10	Piston Packing	Nitrile Rubber		25	Hex Socket Button Head Bolt	Steel	Zinc Chromate
11	Magnet	-		26	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
12	Collar	Aluminum Alloy	Chromate	27	Stopper Cover	Stainless Steel	
13	Sleeve	Steel	Nitriding Treatment	28	Stopper Piston	Steel	Nitriding Treatment
14	Cushion Rubber	Urethane Rubber		29	Coil Spring	Steel	
15	Head Cover	Aluminum Alloy	Chromate	30	Stopper packing	Nitrile Rubber	

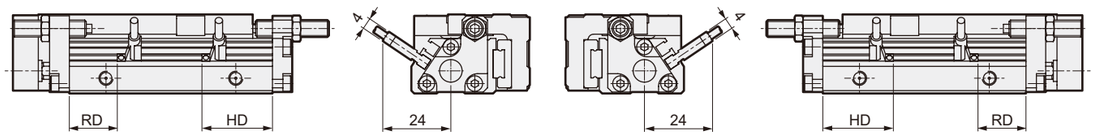
Consumable Parts List

Bore Size (mm)	Kit No.	Consumable Part No.
ø12	LCW-Q-12HK	⑥⑦⑩⑫㉔
ø16	LCW-Q-16HK	
ø20	LCW-Q-20HK	

LCW Series Switch External Dimensions Diagram

● F2S, F3S

LCW

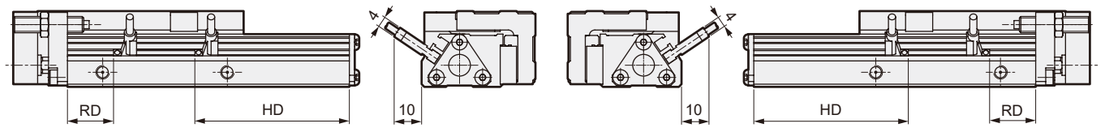


Piping direction R　　Piping direction L

Code / Bore Size (mm)	Stroke	F2S, F3S	
		RD	HD
ø12	30	17	25
	50	17	38
	75	17	38

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW-Q



Piping direction R　　Piping direction L

Code / Bore Size (mm)	Stroke	F2S, F3S	
		RD	HD
ø12	30	17	57
	50	17	70
	75	17	70

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW Series Switch External Dimensions Diagram

● F2H/V, F3H/V, F2YH/V, F3YH/V, F3PH/V

LCW

Piping direction R　　Piping direction L

Code / Bore Size (mm)	Stroke	F2, F3, F2Y, F3Y, F3P	
		RD	HD
ø12	30	18	24
	50	18	37
	75	18	37

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW-Q

Piping direction R　　Piping direction L

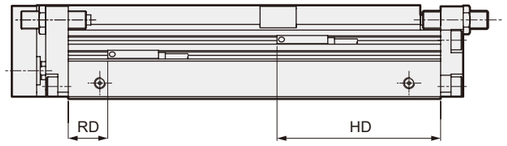
Code / Bore Size (mm)	Stroke	F2, F3, F2Y, F3Y, F3P	
		RD	HD
ø12	30	18	56
	50	18	69
	75	18	69

Note: For switch mountability, refer to the model No. notation method for each variation.

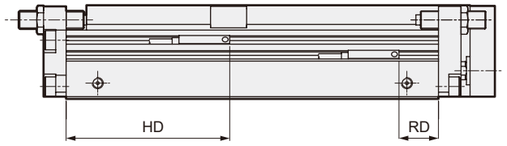
LCW Series Switch External Dimensions Diagram

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2□R3, T2WH/V, T3WH/V

LCW



Piping direction R

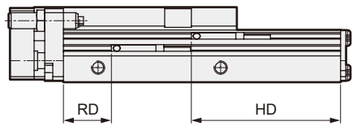


Piping direction L

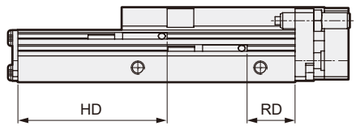
Code / Bore Size (mm)	Stroke	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W	
		RD	HD	RD	HD
ø16	30	15	39	17	37
	50	15	39	17	37
	75	15	59	17	57
ø20	30	17.5	47.5	19.5	45.5
	50	17.5	47.5	19.5	45.5
	75	17.5	72.5	19.5	70.5

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW-Q



Piping direction R



Piping direction L

Code / Bore Size (mm)	Stroke	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W	
		RD	HD	RD	HD
ø16	30	15	71	17	69
	50	15	71	17	69
	75	15	91	17	89
ø20	30	17.5	78.5	19.5	76.5
	50	17.5	78.5	19.5	76.5
	75	17.5	103.5	19.5	101.5

Note: For switch mountability, refer to the model No. notation method for each variation.

MEMO

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

STEP-1

Confirm the load factor and determine the tube inner diameter.

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

α : Load factor

Fo : Force required to move the workpiece (N)

F : Cylinder theoretical thrust (N) [Table 1]

During horizontal operation	During vertical operation
Fo = Fw	Fo = W + Fw
FW: Wx0.2 *(N) W: Load (N)	

* Friction Coefficient

[Table 1] Theoretical thrust table (Unit: N)

Bore size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø12	PUSH	17	23	34	45	57	68	79
	PULL	13	17	25	34	42	51	59
ø16	PUSH	30	40	60	80	101	121	141
	PULL	26	35	52	69	86	104	121
ø20	PUSH	47	63	94	126	157	188	220
	PULL	40	53	79	106	132	158	185

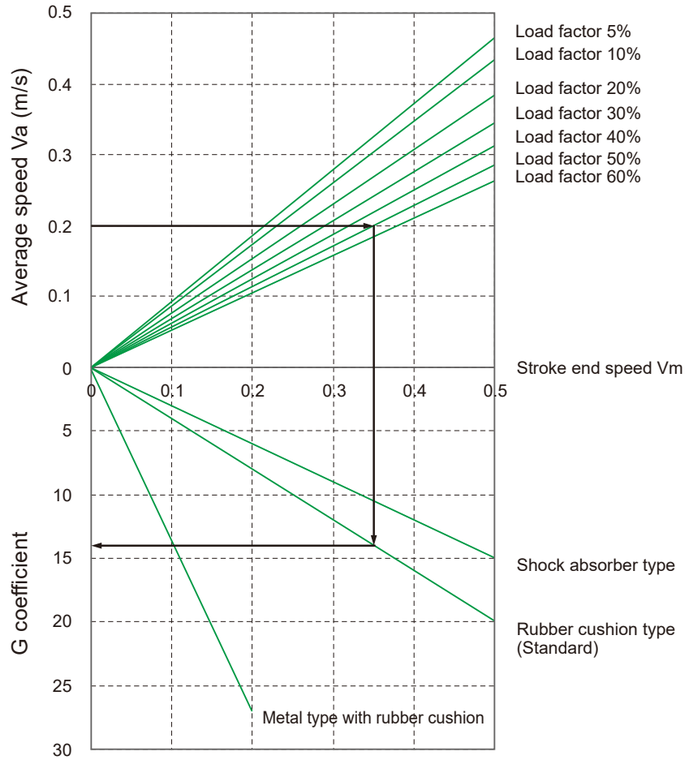
[Table 2] Load factor guide

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

STEP-2

Determine the stroke end speed (Vm) and G coefficient.

Determine the stroke end speed (Vm) and G coefficient from the average speed (Va) and the load factor obtained in STEP-1.



The arrow (→) in the figure indicates
Average speed: 0.20 m/s
Load factor: 50%
at
Stroke end speed: 0.35 m/s
G coefficient: 14
shows an example of how to find.

STEP-3

Confirm the allowable absorption 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 4] Table Weight

Vm : Stroke end speed (m/s)

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

Confirm that E ≤ E max.

[Table 3] LCW Allowable absorption energy

Bore size (mm)	Rubber cushion type (Standard) (J)	Metal type with rubber cushion (J)	Shock absorber type (J)
ø12	0.027	0.0053	0.054
ø16	0.055	0.0053	0.11
ø20	0.11	0.043	0.22

[Table 4] Table Weight (Unit: kg)

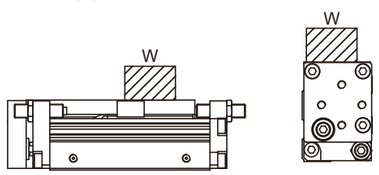
Bore size (mm)	Stroke (mm)		
	30	50	75
ø12	0.059	0.089	0.111
ø16	0.089	0.112	0.164
ø20	0.141	0.176	0.264

STEP-4

Confirm the combined moment M'T at rest.

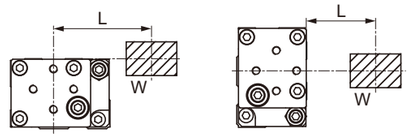
Determine the static load (moment) and impact moment generated at the stroke end, and confirm the combined moment M'T at rest.

● Vertical load: W' (N)



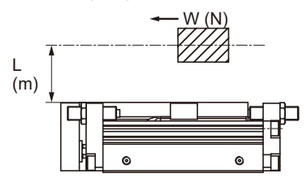
W'=W

● Lateral bending moment: M2' (N·m)



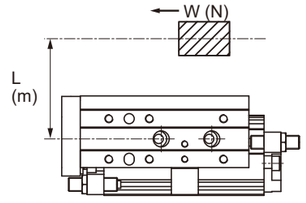
M2'=LxW

● Bending moment: M1' (N·m)



M1'=LxW

● Swinging moment: M3' (N·m)



M3'=LxW

W' = ☐ (N)

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

M3' x G = ☐ (N·m)

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

M'T : Combination of moments

G : G coefficient

W' max : Max. allowable value of W' (from Table 5)

M1' max : Max. allowable value of M1' (from Table 5)

M2' max : Max. allowable value of M2' (from Table 5)

M3' max : Max. allowable value of M3' (from Table 5)

[Table 5] Allowable static load value

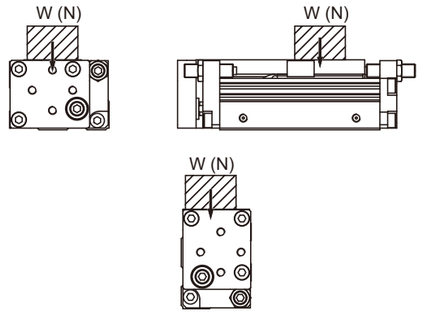
Bore size (mm)	Stroke (mm)	Vertical load W'max (N)	Bending moment M1'max (N·m)	Lateral bending moment M2'max (N·m)	Swinging moment M3'max (N·m)
ø12	30	140	0.7	3.5	0.7
	50, 75	186	10.7	5.6	10.7
ø16	30, 50	221	5.7	9.8	5.7
	75		22.2		22.2
ø20	30, 50	381	17.8	19.2	17.8
	75		37.3		37.3

Confirm that M'T ≤ 1.

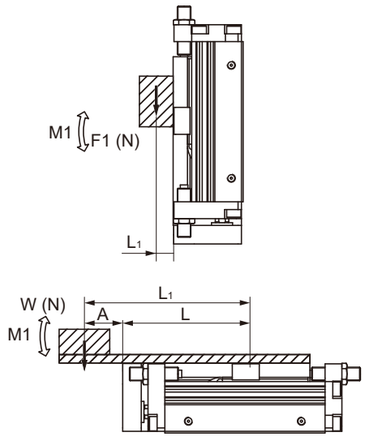
STEP-5

Confirm the combined moment MT during operation. (Note that this is different from what was obtained in STEP-4.)

● Vertical load: W (N)



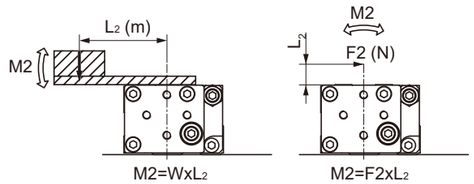
● Bending moment: M1 (N·m)



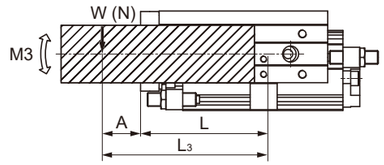
M1=F1xL1

M1 = W x L1
L1 = A + L
L is the value in the table below

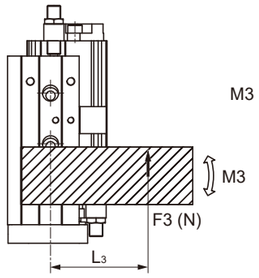
● Lateral bending moment: M2 (N·m)



● Swinging moment: M3 (N·m)



M3 = W x L3
L3 = A + L
L is the value in the table below



M3 = F3 x L

[Table 6] L value (Unit: m)

Bore size (mm)	Stroke (mm)		
	30	50	75
ø12	0.066	0.097	0.122
ø16	0.077	0.097	0.131
ø20	0.085	0.105	0.141

W=W = ☐ (N)

M1=M1 = ☐ (N·m)

M2=M2 = ☐ (N·m)

M3=M3 = ☐ (N·m)

M'T : Combination of moments

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

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

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

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

[Table 7] Allowable running load value

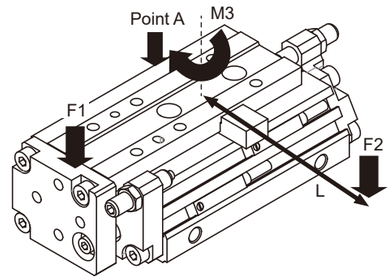
Bore size (mm)	Stroke (mm)	Vertical load Wmax (N)	Bending moment M1 max (N·m)	Lateral bending moment M2 max (N·m)	Swinging moment M3 max (N·m)
ø12	30	14	0.17	0.35	0.17
	50, 75	16	0.89	0.47	0.89
ø16	30, 50	28	0.71	1.2	0.71
	75		2.2		2.2
ø20	30, 50	48	1.9	2.4	1.9
	75		4.6		4.6

Can be used if MT ≤ 1.

Technical Data

[Table displacement due to M1, M2, M3 moments] (Reference value)

M1 moment Displacement at the table tip when a load (F1) is applied to the table tip
M2 moment M2 moment: Displacement at the table end (point A) when a load (F2) is applied at a position Lmm away from the cylinder center
M3 moment: Displacement angle of the table when a rotational moment (M3) is applied to the cylinder



Value of L
ø12: L = 70
ø16: L = 90
ø20: L = 100

Table displacement due to M1 moment

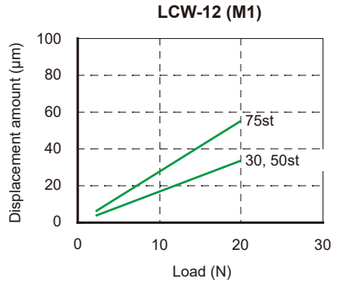


Table displacement due to M2 moment

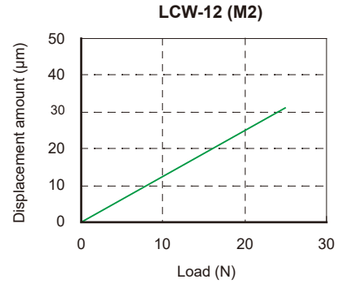
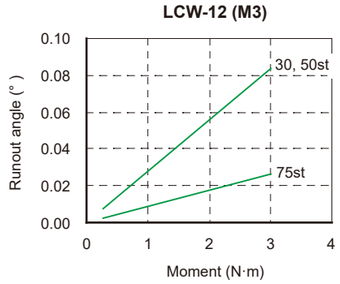
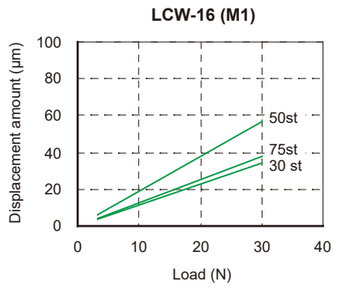
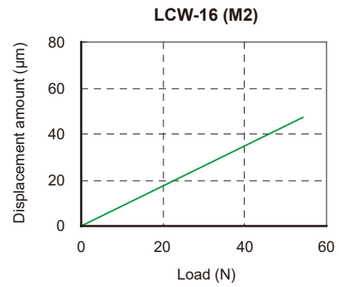
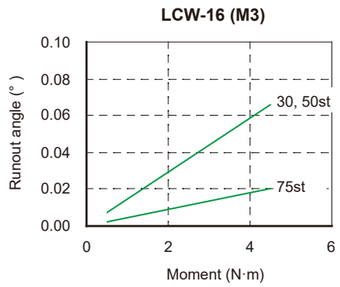


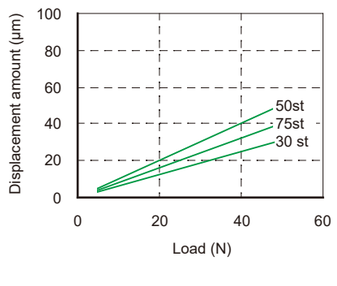
Table displacement angle due to M3 moment

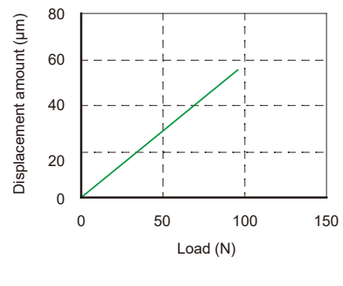


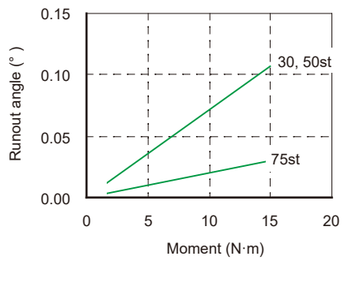












To Use This Product Safely

Be sure to read this before use.
For general cylinder information, see Intro 41, and for cylinder switches, see P. 808.

Individual Precautions : Linear Slide Cylinder LCW Series

During Design / Selection

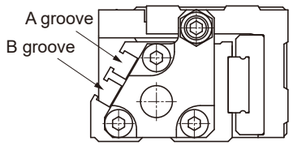
1. Common

Caution

■ For cylinder selection, follow the "LCW Selection Guide" on P. 246 to 248.

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

■ Precautions for products with switches
- For switches with a stroke of 30, install one switch per groove on the main body.
- When using L-shaped lead wires (T□V, F□V), install the rod-side switch in groove B as shown in the diagram below.

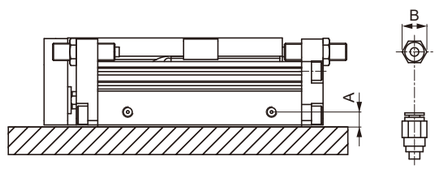


■ Avoid use in places with vibration.
Operation becomes unstable due to the influence of vibration.

2. Common : During piping

Caution

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



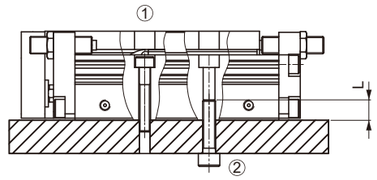
Item: Bore Size (mm)	Port Size	Port position dimension A	Usable fittings	Fitting outer diameter B
ø12	M5	5.5	SC3W-M5-4 SC3W-M5-6	ø11 or less
ø16		5.5	GWS4-M5-S GWS4-M5	ø11 or less
ø20		7	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL6-M5 GWS6-M5	ø13 or less

3. Common : During installation

Caution

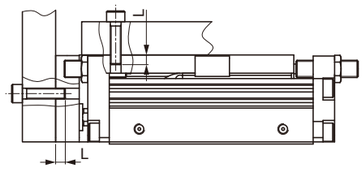
■ Please do not make dents or scratches on the mounting surface of the main body (tube) and the table surface that may impair flatness. Also, the flatness of the mating side to be included to the main body and table should be 0.02 mm or less.

■ Observe the following values for the bolt screw-in length and tightening torque when mounting the main body.



Item	1		2		
	Bolt used	Tightening torque (N·m)	Bolt used	Tightening torque (N·m)	Maximum screw-in depth L (mm)
LCW-12	M3x0.5	0.6 to 1.1	M4x0.7	1.4 to 2.4	6
LCW-16	M4x0.7	1.4 to 2.4	M5x0.8	2.9 to 5.1	8
LCW-20	M5x0.8	2.9 to 5.1	M6x1.0	4.8 to 8.6	10

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

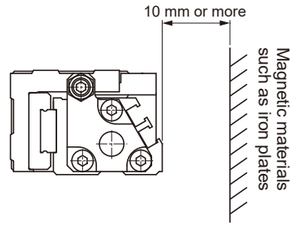


Item	Table			End plate		
	Bolt used	Tightening torque (N·m)	Screw-in length L (mm)	Bolt used	Tightening torque (N·m)	Screw-in depth L (mm)
LCW-12	M3x0.5	0.6	3 to 4	M3x0.5	0.6	4.5 to 6
LCW-16	M4x0.7	1.4	4 to 5.5	M4x0.7	1.4	6 to 9
LCW-20	M5x0.8	2.9	5 to 6	M5x0.8	2.9	7.5 to 9

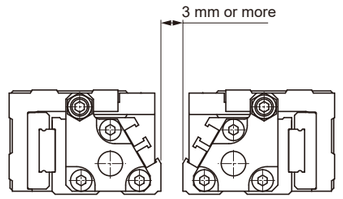
■ While the main body is operating, there is a risk of being caught by the stopper bolt, so keep hands, etc. away.

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

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



■ If cylinders are adjacent as shown in the diagram below, the cylinder switch may malfunction. Maintain the following distance from the cylinder surface. (Common to all bore sizes)



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

4. Drop prevention type LCW-Q

Caution

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

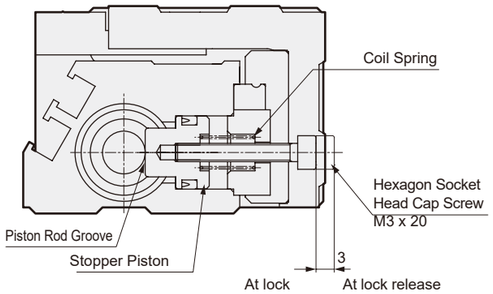
■ Release the lock when installing or adjusting the cylinder. If installation work, etc. is performed while the lock is engaged, the lock part may be damaged.

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

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

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

■ Release method
Screw a hexagon socket head cap screw (M3x20) into the stopper piston and pull the bolt with a force of 20 N or more for 3 mm, the stopper piston will move and the lock will be released. (No-load horizontal mounting, rod port pressurization) Also, when you release your hand, the built-in spring returns the stopper piston, and if it enters the piston rod groove, the cylinder will be locked.



During Use

1. Common

Caution

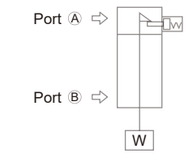
■ For the guide part, apply grease to the guide rail raceway surface every 6 months or 1 million operations, whichever comes first.
(For recommended grease, please inquire separately.)

■ When disassembling the end plate during packing replacement, be sure to hold the slide table itself while working.

2. Drop prevention type LCW-Q

Warning

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



Side without lock mechanism

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

Caution

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

■ Supply pressure equal to or higher than the minimum operating pressure for each model to the port on the side with the lock mechanism.

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

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

■ After manually operating the lock mechanism, return the lock mechanism to its original state. Also, do not perform manual operations other than during adjustment, as it is dangerous.

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

MEMO