

Custom order product

LCT

Linear slide cylinder

φ 8/φ 12/φ 16/φ 20/φ 25

Multifunctioned

Overview

Linear slide cylinder LCT Series is a table type actuator with a wide, high precision guide.

Features

Improved position accuracy

The wide, rigid, precision linear guide with a metal contacting stopper at the stroke end improves the stoppage accuracy.

Increased flexibility in design

Designing is more flexible with the multi-side piping, two-side installation, a standard positioning hole and laterally symmetrical configuration.

A variety of choices

Five bore sizes from φ 8 to φ 25, stroke length from 50 to 175 mm and an additional switch are available.



CONTENTS

Product introduction	2094
Series variation	2094
● Double acting/single rod type (LCT)	2096
Selection guide	2110
⚠ Safety precautions	2114

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2 COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
SMD2
MSD/ MSDG
FC*
STK
STM
STG
STS/STL
LCR
LCG
LCX
LCM
LCT
LCY
STR2
UCA2
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
Shock absorber
FJ
FK
Speed controller
Ending


Series variation



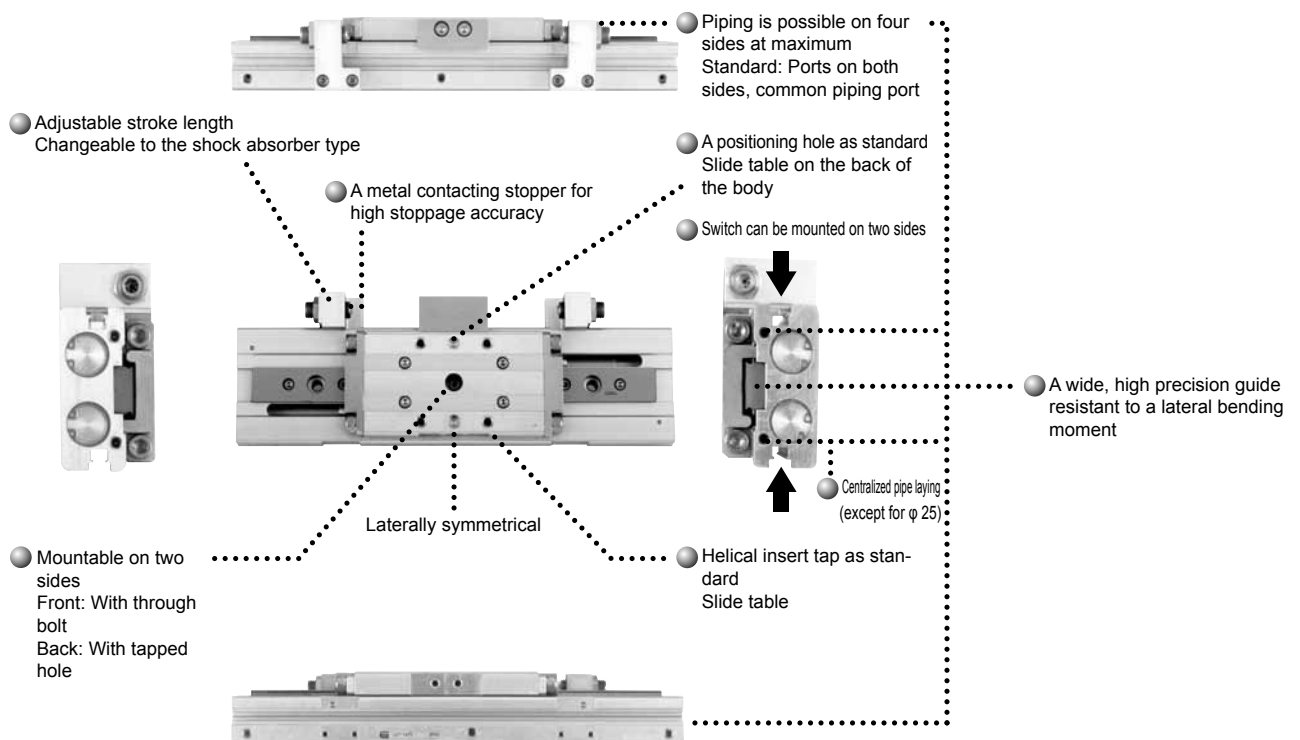
Discontinue

Linear slide cylinder LCT Series

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
COVPIN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
- MSD/
MSDG
- FC*
- STK
- STM
- STG
- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT**
- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
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Variation	Model no. JIS symbol	Bore size (mm)	Standard stroke length (mm)			
			50	75	100	
Double acting/single rod type 	LCT	φ 8	●	●		
		φ 12		●	●	
		φ 16		●	●	
		φ 20		●	●	
		φ 25		●	●	

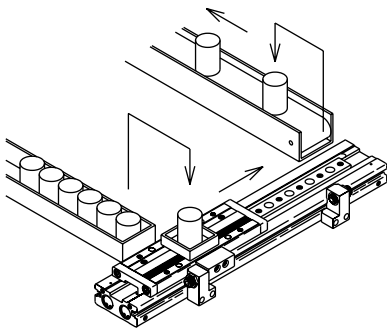
High precision actuator



●: Standard ◎: Option ■: Not available

Stroke length (mm)				Min. stroke length (mm)	Max. stroke length (mm)	Option	Switch	Page
						Shock absorber type stopper		
125	150	175	(mm)	(mm)	A*			
			50	75				2096
			75	100				
●	●	●	75	175	◎	◎		
●	●	●	75	175				
●	●	●	75	175				

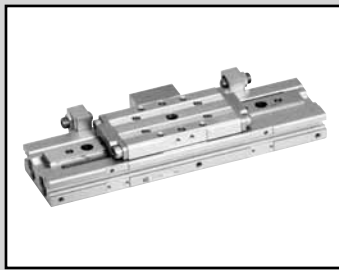

Applications



- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
COVP/N2
- SSD2
- SSG
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Discontinue

Linear slide cylinder

LCT Series● Bore size: \varnothing 8/ \varnothing 12/ \varnothing 16/ \varnothing 20/ \varnothing 25JIS symbol **Specifications**

Descriptions	LCT				
	\varnothing 8	\varnothing 12	\varnothing 16	\varnothing 20	\varnothing 25
Bore size mm	\varnothing 8	\varnothing 12	\varnothing 16	\varnothing 20	\varnothing 25
Actuation	Double acting/single rod type				
Working fluid	Compressed air				
Max. working pressure MPa	0.7				
Min. working pressure MPa	0.15 (Note 1)				
Proof pressure MPa	1.0				
Ambient temperature °C	-10 to 60 (no freezing)				
Port size	Body side port	M5		Rc 1/8	
	Common piping port	M3	M5		-
Working piston speed mm/s	50 to 500 (for \varnothing 8 and \varnothing 12, 75 to 500)				
Cushion	With rubber cushion				
Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary)				

Note 1: 0.3 MPa for \varnothing 8 with shock absorber. (0.2 MPa is acceptable but requires more time for the shock absorber to absorb energy.)
 \varnothing 8 (0.35 MPa), \varnothing 12/ \varnothing 16 (0.45 MPa), \varnothing 20/ \varnothing 25 (0.4 MPa) should be satisfied to push in the rubber cushion to enable contact to the metal part when a stroke adjusting stopper is used.

Stroke length

Bore size (mm)	Standard stroke length (mm)
\varnothing 8	50, 75
\varnothing 12	75, 100
\varnothing 16	75, 100, 125, 150, 175
\varnothing 20	75, 100, 125, 150, 175
\varnothing 25	75, 100, 125, 150, 175

Note: Stroke length other than above is not available.

Theoretical thrust table

LCT Refer to page 2111.

SCP*3
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 CMA2
 SCM
 SCG
 SCA2
 SCS2
 CKV2
 CAV2
 COVPIN2
 SSD2
 SSG
 SSD
 CAT
 MDC2
 MVC
 SMG
 SMD2
 MSD/
 MSDG
 FC*
 STK
 STM
 STG
 STS/STL
 LCR
 LCG
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Switch specifications

● 1 color/2 color display type

Descriptions	Proximity 2 wire	Proximity 3 wire		Reed 2 wire			
	T2H/T2V	T3H/T3V	T3PH/T3PV (custom order)	TOH/TOV		T5H/T5V	
Applications	Programmable controller	Programmable controller, relay		Programmable controller, relay		Programmable controller, relay IC circuit (without indicator light), serial connection	
Output method	-	NPNoutput	PNP output	-			
Power supply voltage	-	10 to 28 VDC		-			
Load voltage	10 to 30 VDC	30 VDC or less		12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 20 mA (Note 1)	100 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Indicator light	LED (ON lighting)	LED (ON lighting)	Yellow LED (ON lighting)	LED (ON lighting)		-	
Leakage current	1 mA or less	10 µA or less		0 mA			

Note 1: Max. load current of 20 mA is applied at 25°C. The current will be lower than 20 mA if ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

Note 2: T0/T5 switch can be used with 220 VAC. Contact CKD about working conditions.

Note 3: Refer to Ending 1 for other switch specifications.

Note 4: Dimensions vary depending on switch model no. Refer to Ending 18 for details.

Cylinder weight

Unit: g

Bore size (mm)	Stroke length mm					
	50	75	100	125	150	175
LCT-8	440	540	-	-	-	-
LCT-12	-	810	970	-	-	-
LCT-16	-	1220	1410	1690	1880	2070
LCT-20	-	2050	2350	2650	3090	3400
LCT-25	-	4360	5010	5650	6680	7330

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LCT Series

How to order

● Without switch

LCT - **8** - **50**

● With switch

LCT - **12** - **75** - **T0H*** - **R** - **AT**

A Model no.

B Bore size

E Switch quantity

F Option

C Stroke length

D Switch model no.
* Indicates lead wire.

⚠ Note on selection guide

Note: To change the adjustable stroke length, use a discrete stroke adjusting stopper on page 2099.

<Example of model no.>

LCT-12-75-T0H*-R-AT

Double acting/single rod type

A Model : Standard type LCT

B Bore size : φ 12

C Stroke length : 75 mm

D Switch model no. : Reed/2 wire

Lead wire straight type

E Switch quantity : 1 on R-side

F Other options : Shock absorber type stopper
Stopper block material, Equivalent to quenched material

A Model no.

LCT

Symbol	Descriptions	
B Bore size (mm)		
8	φ 18	●
12	φ 12	●
16	φ 16	●
20	φ 20	●
25	φ 25	●

C Stroke length (mm)		Bore size (φ)				
		8	12	16	20	25
50	50	●				
75	75	●	●	●	●	●
100	100		●	●	●	●
125	125			●	●	●
150	150				●	●
175	175				●	●

D Switch model no.												
Lead wire straight type	Lead wire L-shaped type	Contact	Voltage		Indicator light	Lead wire	Bore size (φ)					
			AC	DC			8	12	16	20	25	
T0H*	T0V*	Reed	●	●	1 color display type	2			●			
T5H*	T5V*		●	●	Without indicator light	line			●			
T2H*	T2V*	Reed		●	1 color display type	2 line			●			
T3H*	T3V*		●	●	display type	3 line			●			
T3PH*	T3PV*			●	1 color display type (PNP output) (custom order)	3 line			●			

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

E Switch quantity		
R	1 on R side	●
H	1 on H side	●
D	2	●

F Option		
Blank*	Stroke adjusting stopper (Note)	●
A*	Shock absorber type stopper	●
* part		
Blank	Stopper block material: Rolled steel	●
T	Stopper block material: Equivalent to quenched material	●

How to order switch

SW - **T2H3**

Ⓓ

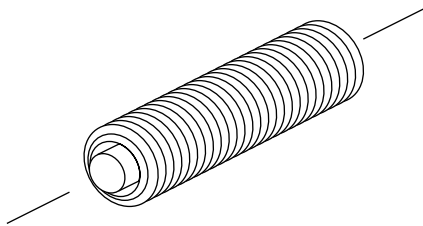
Switch model no.
(Item Ⓓ on the previous page)

How to order discrete stroke adjusting stopper

- Hexagon socket set screw with urethane
- Use it when changing the adjustable stroke range

LCT - **Bore size** - **S02**

Ⓐ



Ⓐ Stopper type	
S01	One side standard dimensions
S02	One side standard dimensions + 10 mm
S03	One side standard dimensions + 20 mm

Select S01, S02 or S03 in Ⓐ.
Note: S03 is not available for φ 8.
For the standard dimensions, refer to the dimensions on pages 2101 to 2109.

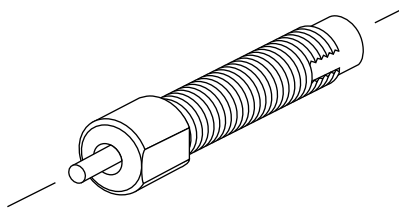
- Discrete stroke adjusting stopper

Bore size	Weight (g)		
	S01	S02	S03
8	8	12	-
12	7	11	14
16	11	16	22
20	22	30	37
25	23	30	37

How to order discrete shock absorber type stopper

- A set of a shock absorber and stopper cap
- Use it when changing from the stroke adjusting stopper or shock absorber type stopper

LCT - **Bore size** - **A01**



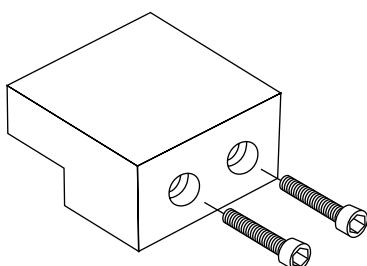
Applicable shock absorber model no.

Model no.	Shock absorber model no.	Weight (g)
LCT- 8	NCK-00-0.3	9
LCT-12	NCK-00-0.3	12
LCT-16	NCK-00-0.7	19
LCT-20	NCK-00-1.2	31
LCT-25	NCK-00-1.2	31

Note: A stopper cap is not included in φ 8.

How to order discrete stopper block

LCT - **Bore size** - **SB** **T**



Ⓐ

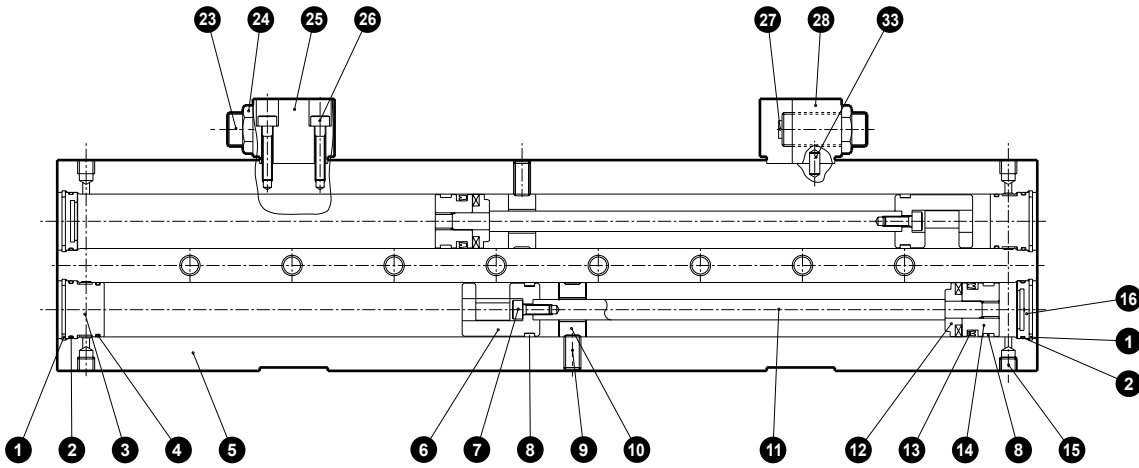
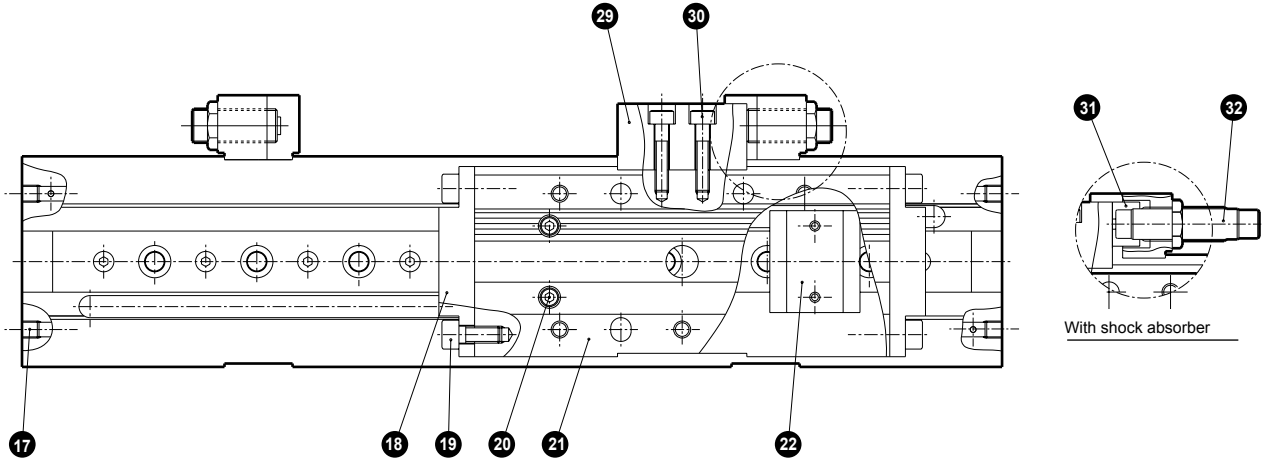
Ⓐ Stopper block material	
Blank	Rolled steel
T	Equivalent to quenched material

Bore size	Weight (g)	
	SB	(T)
8	20	
12	37	
16	76	
20	64	
25	124	

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
- COVP/IN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
- MSD/MSDG
- FC*
- STK
- STM
- STG
- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT
- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- Shock absorber
- FJ
- FK
- Speed controller
- Ending

LCT Series

SCP*3 Internal structure and parts list

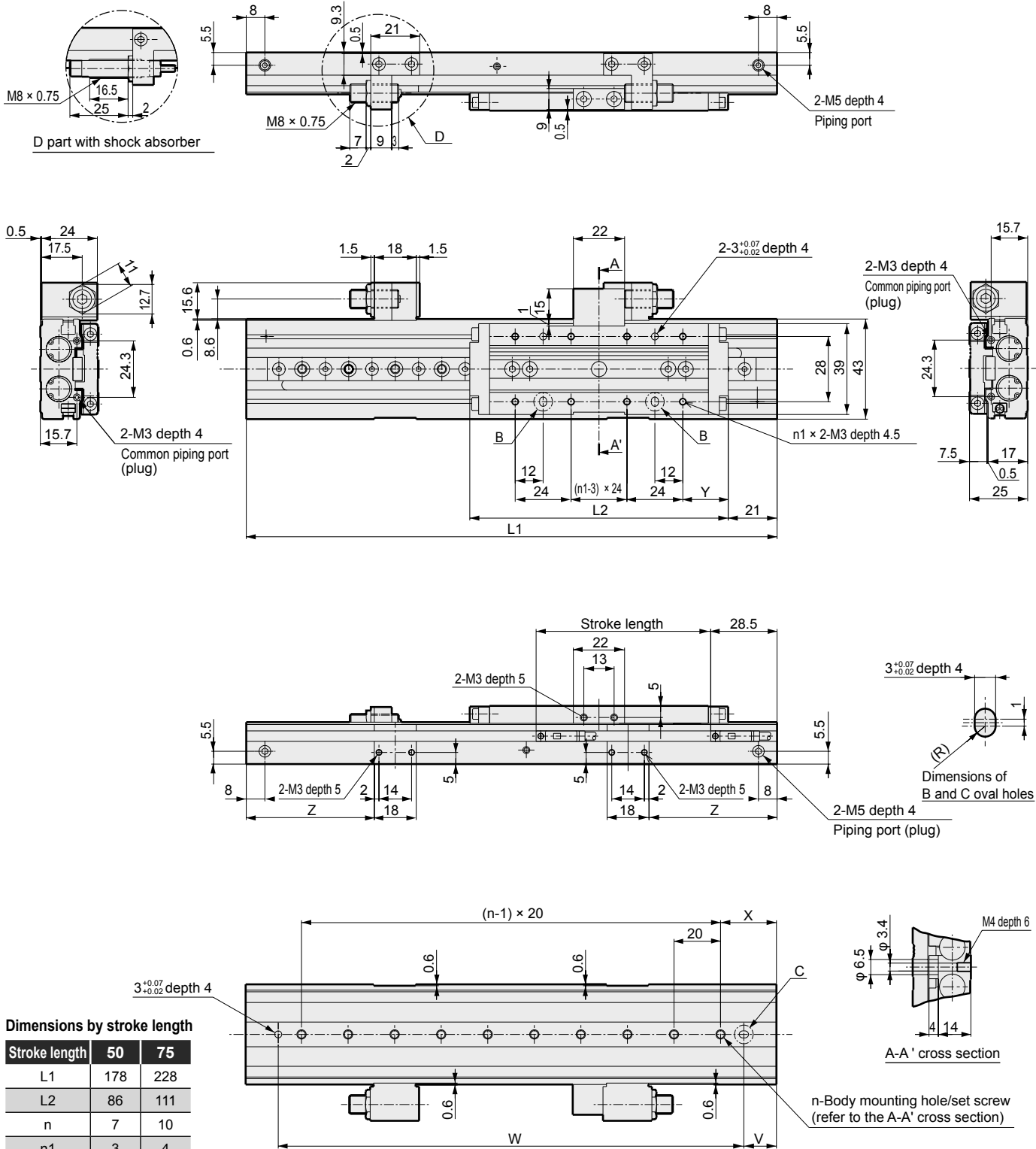


No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	C type snap ring	Stainless steel		19	Hexagon socket head cap screw	Stainless steel	
2	O ring	Nitrile rubber		20	Hexagon socket head cap screw	Stainless steel	
3	Cover A	Aluminum alloy	Chromate	21	Slide table	Aluminum alloy	Alumite
4	O ring	Nitrile rubber		22	Linear guide	Stainless steel	
5	Cylinder body	Aluminum alloy	Hard alumite	23	Stopper bolt	Alloy steel	Nickeling
6	Floating fitting	Stainless steel		24	Hexagon nut	Steel	Nickeling
7	Hexagon socket head cap screw	Stainless steel		25	Stopper A	Aluminum alloy	Alumite
8	Wear ring	Polyacetal		26	Hexagon socket set screw	Stainless steel	
9	Hexagon socket set screw	Stainless steel		27	Cushion rubber	Urethane rubber	
10	Intermediate cover	Aluminum alloy	Chromate	28	Stopper B	Aluminum alloy	Alumite
11	Piston rod	Stainless steel		29	Stopper block	Steel	Nickeling
12	Spacer	Aluminum alloy	Chromate	30	Hexagon socket head cap screw	Stainless steel	
13	Piston packing	Nitrile rubber		31	Stopper cap	Stainless steel	Except for φ8
14	Piston	Aluminum alloy	Chromate	32	Shock absorber		φ 18: NCK-00-0.3 φ 12: NCK-00-0.3 φ 16: NCK-00-0.7 φ 20/25: NCK-00-1.2
15	Plug	Stainless steel					
16	Cover	Aluminum alloy	Chromate				
17	Plug	Stainless steel		33	Parallel pin	Stainless steel	φ 16, φ 20 and φ 25 only
18	End plate	Stainless steel					

Dimensions



● LCT-8
Stroke length 50, 75



Dimensions by stroke length

Stroke length	50	75
L1	178	228
L2	86	111
n	7	10
n1	3	4
V	19	14
W	140	200
X	29	24
Y	19	19.5
Z	42.5	55

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- SSG
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- MVC
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- SMD2
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- FC*
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- STM
- STG
- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT**
- LCY
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- UCA2
- SRL3
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- SRM3
- SRT3
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- MRG2
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- FK
- Speed controller
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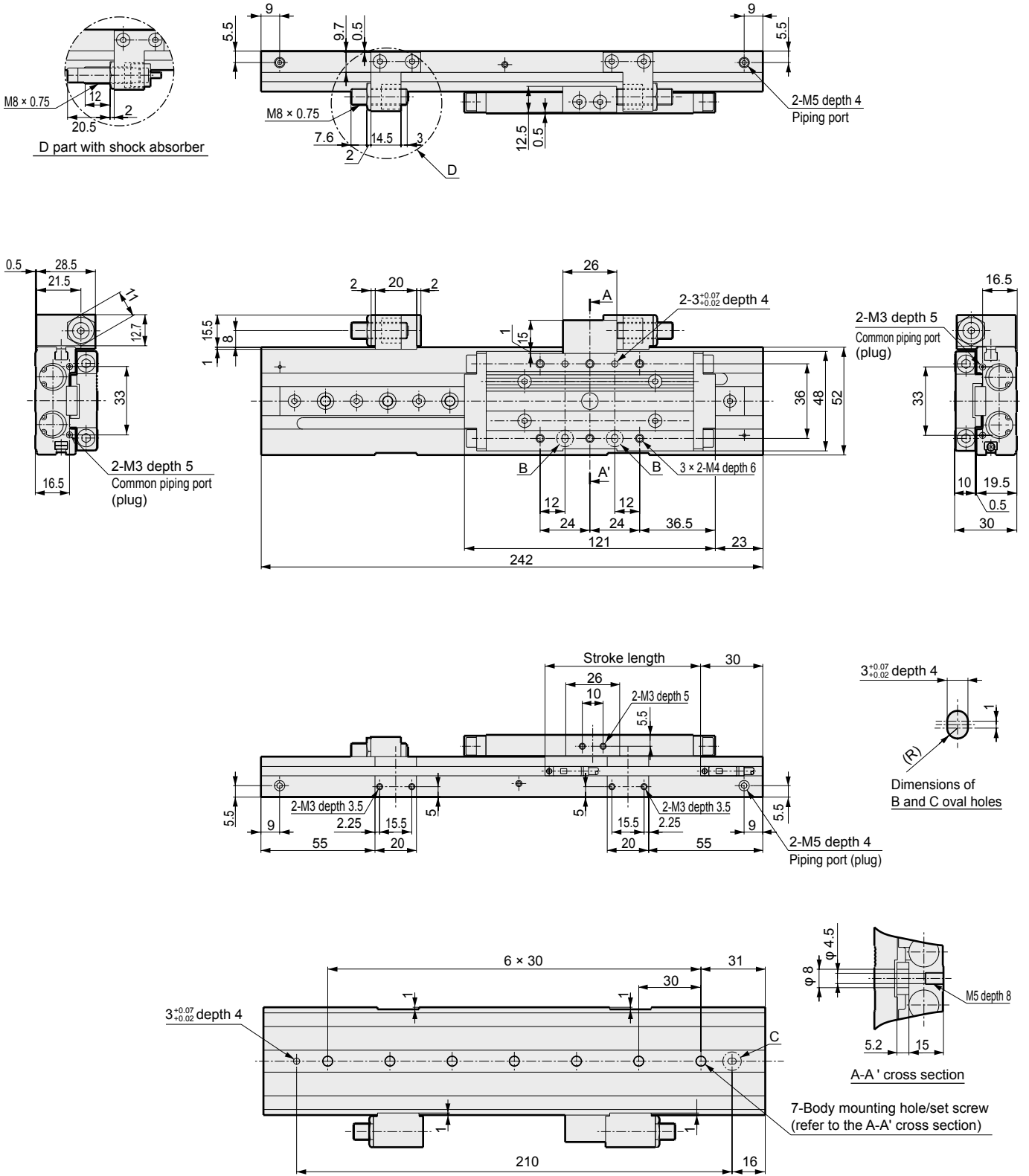
LCT Series

Dimensions



- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
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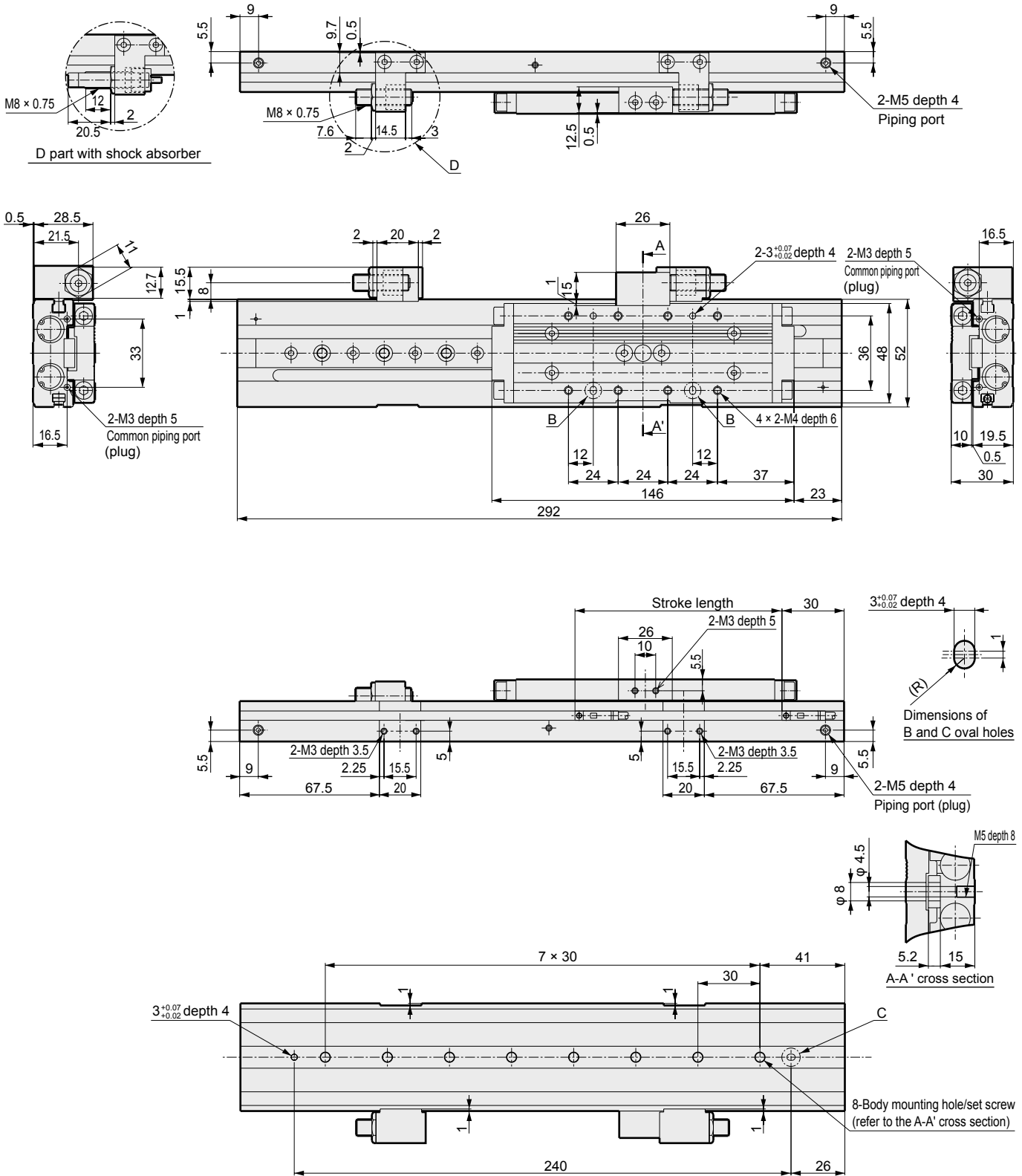
● LCT-12
75 mm stroke length



Dimensions



● LCT-12
100 mm stroke length



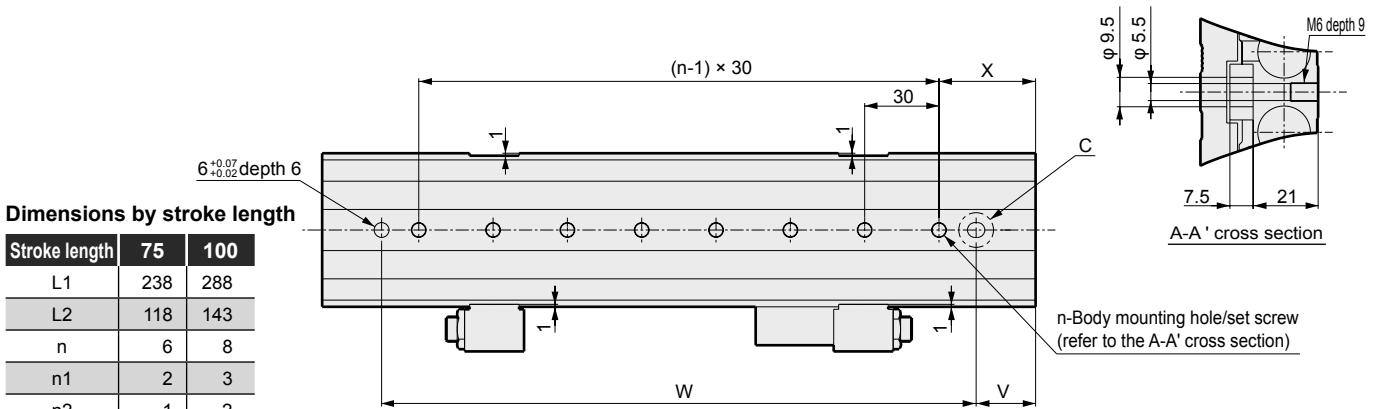
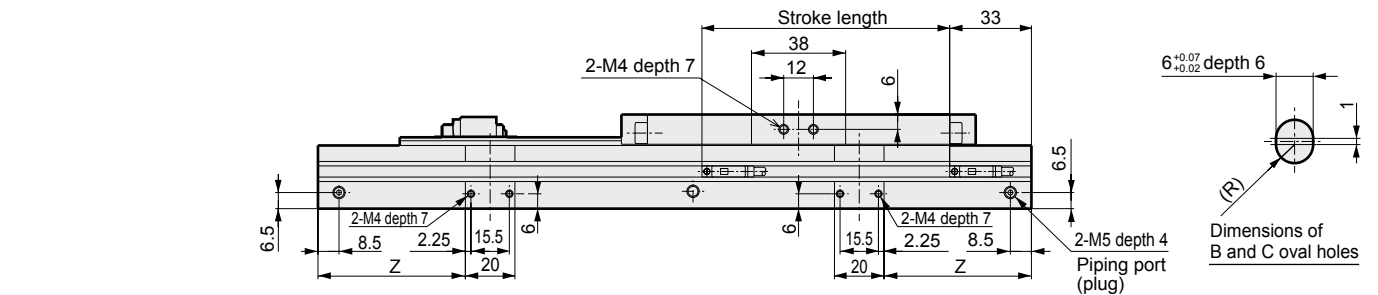
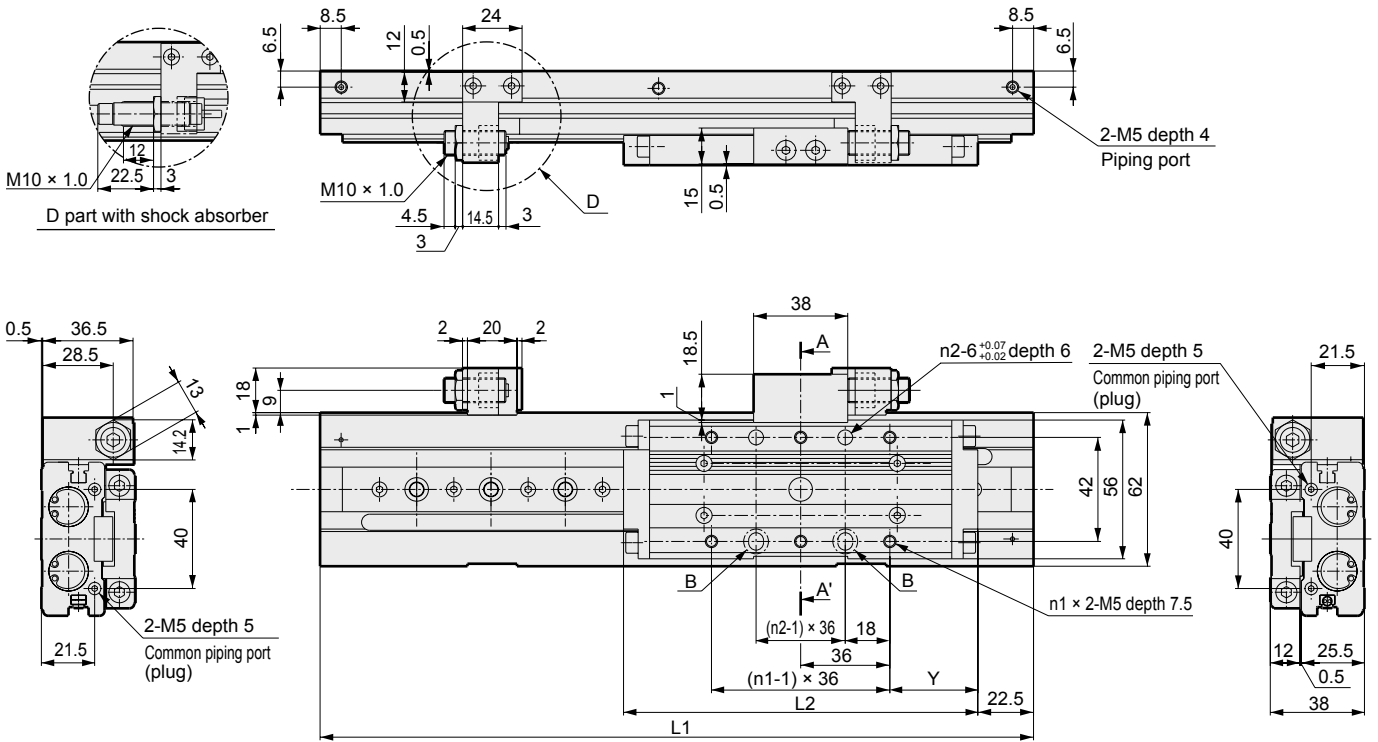
- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
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- CKV2
- CAV2
COVP/IN2
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LCT Series

Dimensions



● LCT-16
75 or 100 mm stroke length



Dimensions by stroke length

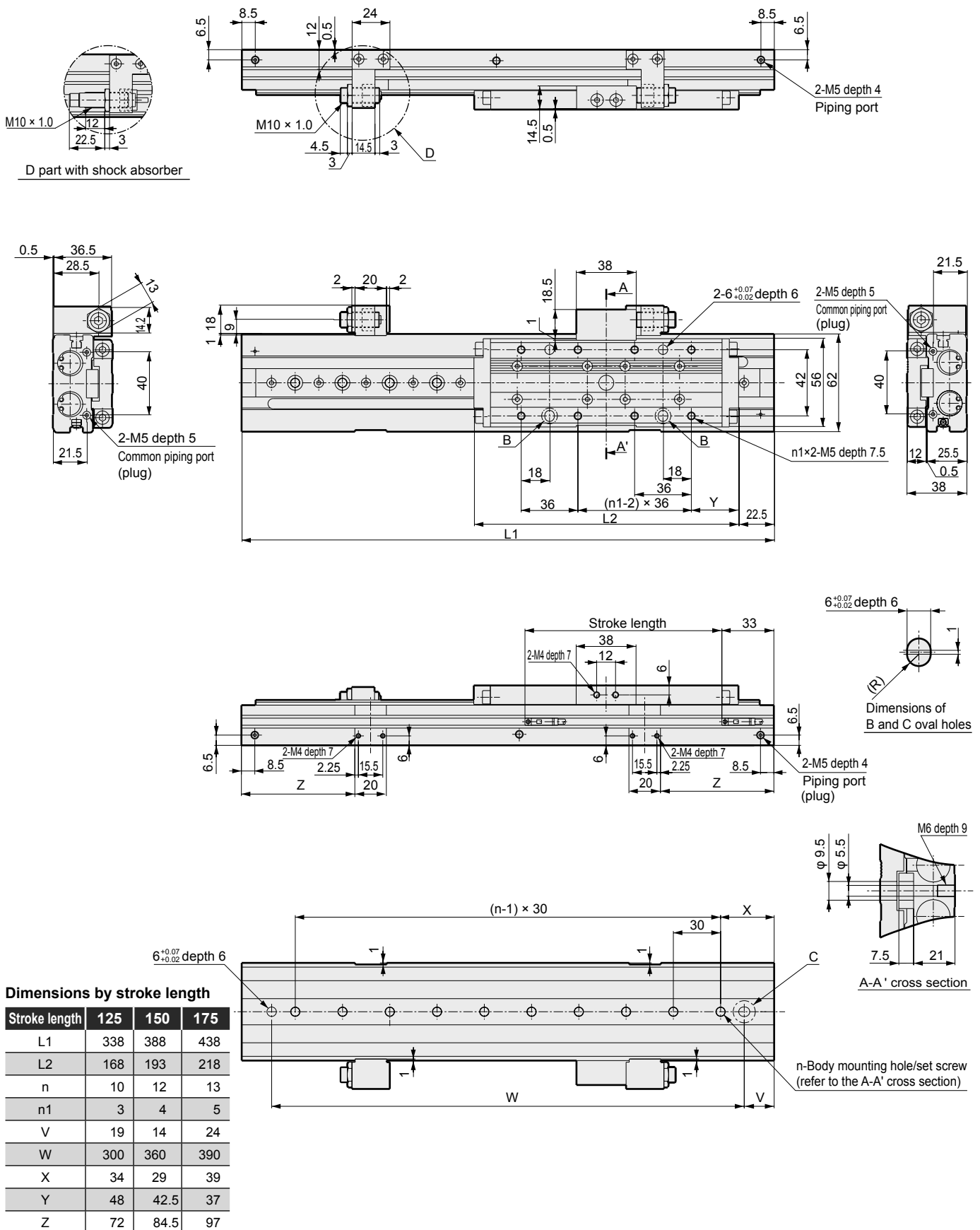
Stroke length	75	100
L1	238	288
L2	118	143
n	6	8
n1	2	3
n2	1	2
Shock absorber	V	29
W	180	240
X	44	39
Y	41	35.5
Z	47	59.5

- SCP*3
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Dimensions



- LCT-16
- 125, 150 or 175 mm stroke length



SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2 COV/PIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
SMD2
MSD/ MSDG
FC*
STK
STM
STG
STS/STL
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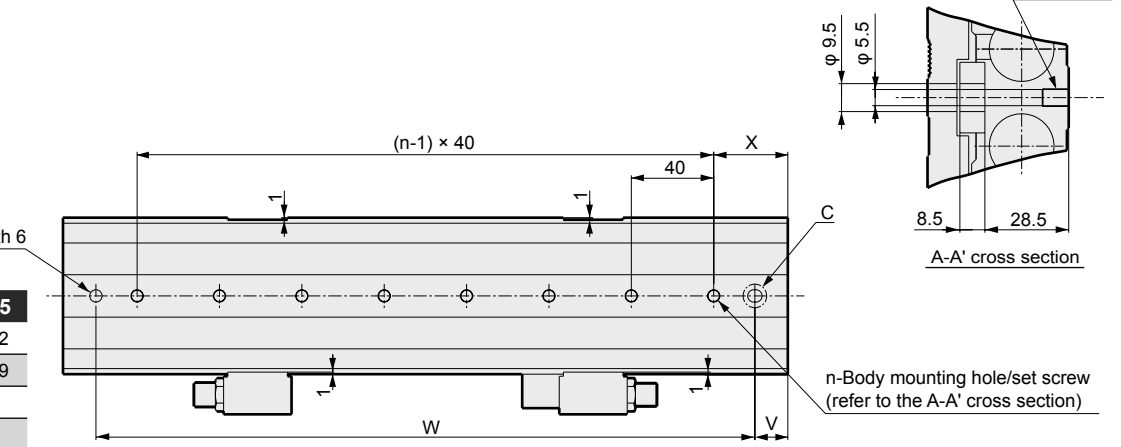
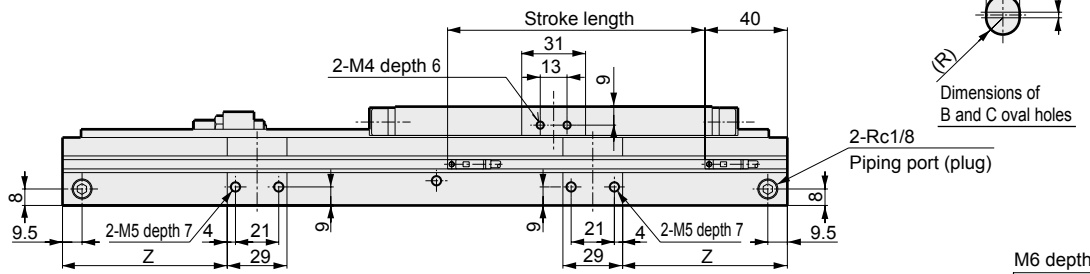
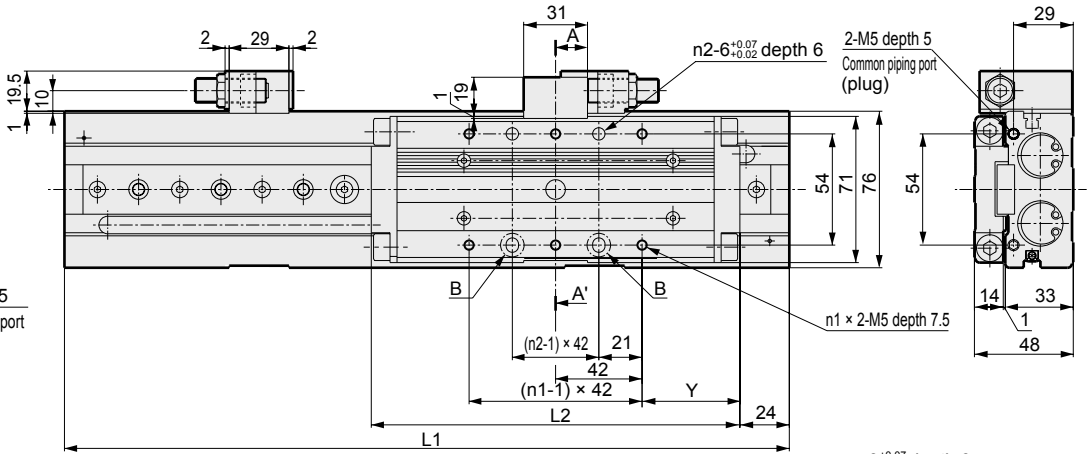
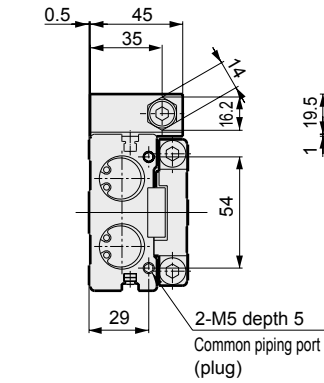
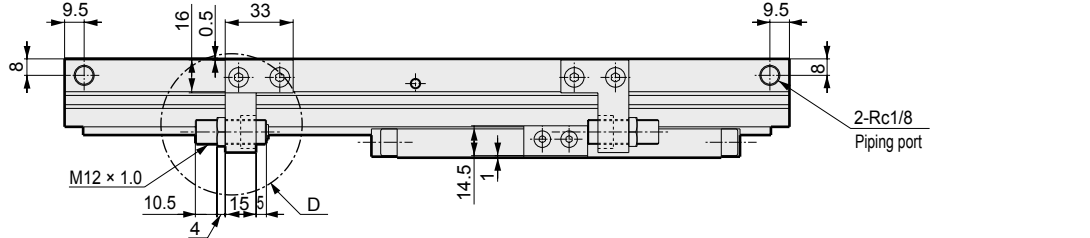
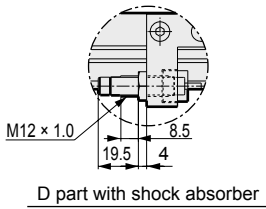
LCT Series

Dimensions



- SCP*3
- CMK2
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- CAV2
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- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
- MSD/
MSDG
- FC*
- STK
- STM
- STG
- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT**
- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- Shock absorber
- FJ
- FK
- Speed controller
- Ending

● LCT-20
75, 100 or 125 mm stroke length



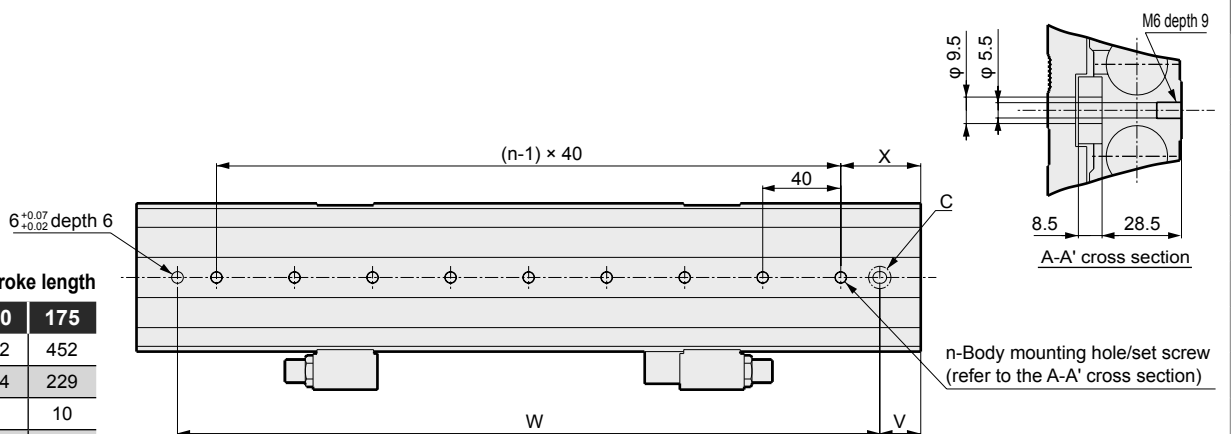
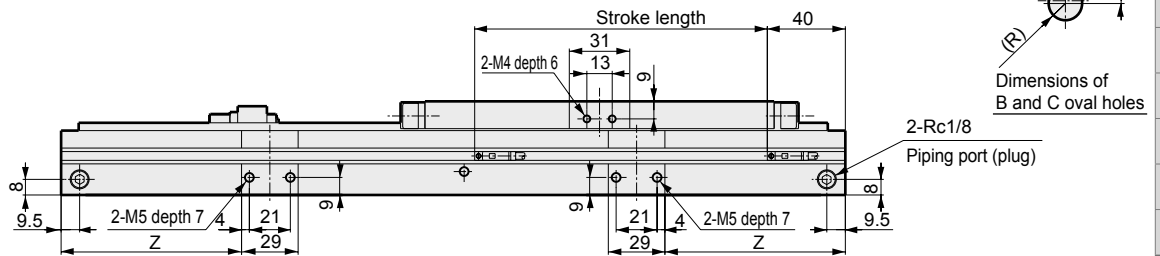
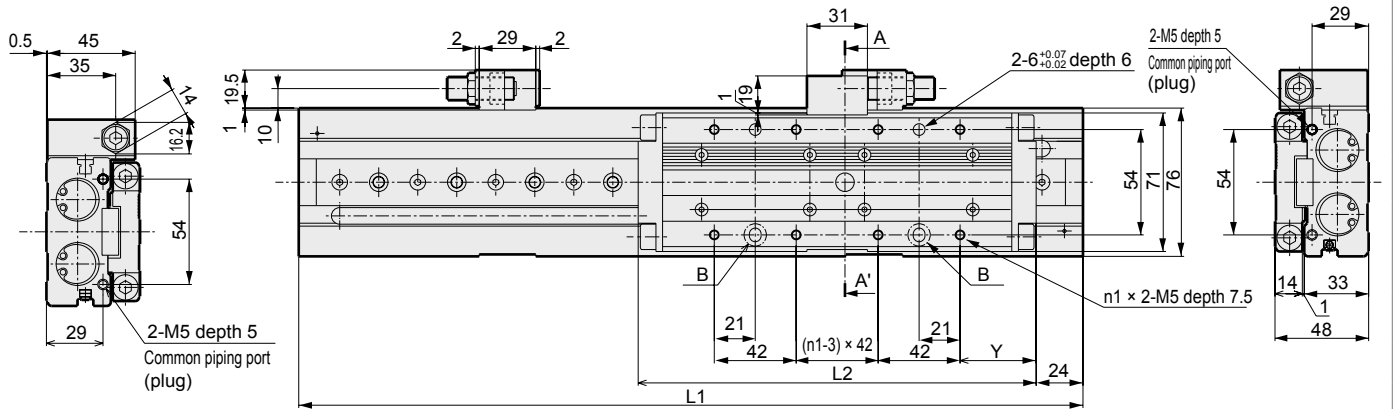
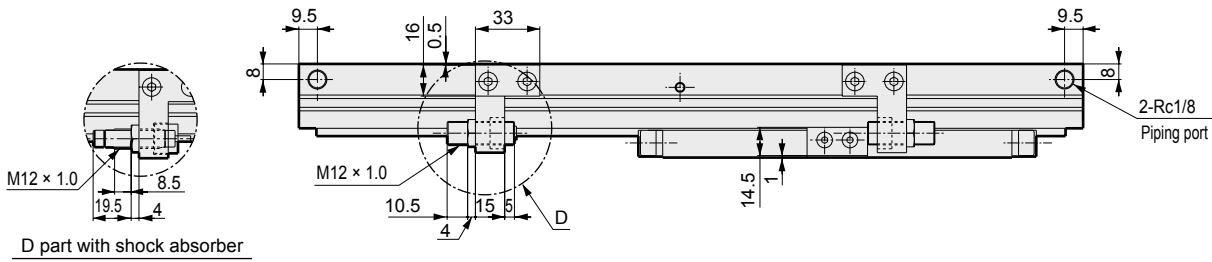
Dimensions by stroke length

Stroke length	75	100	125
L1	252	302	352
L2	129	154	179
n	5	6	8
n1	2	3	3
n2	1	2	2
V	26	31	16
W	200	240	320
X	46	51	36
Y	43.5	35	47.5
Z	55	67.5	80

Dimensions



- LCT-20
150 or 175 mm stroke length



Dimensions by stroke length

Stroke length	150	175
L1	402	452
L2	204	229
n	9	10
n1	4	4
n2	-	-
V	21	26
W	360	400
X	41	46
Y	39	51.5
Z	92.5	105

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2 COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
SMD2
MSD/ MSDG
FC*
STK
STM
STG
STS/STL
LCR
LCG
LCX
LCM
LCT
LCY
STR2
UCA2
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
Shock absorber
FJ
FK
Speed controller
Ending

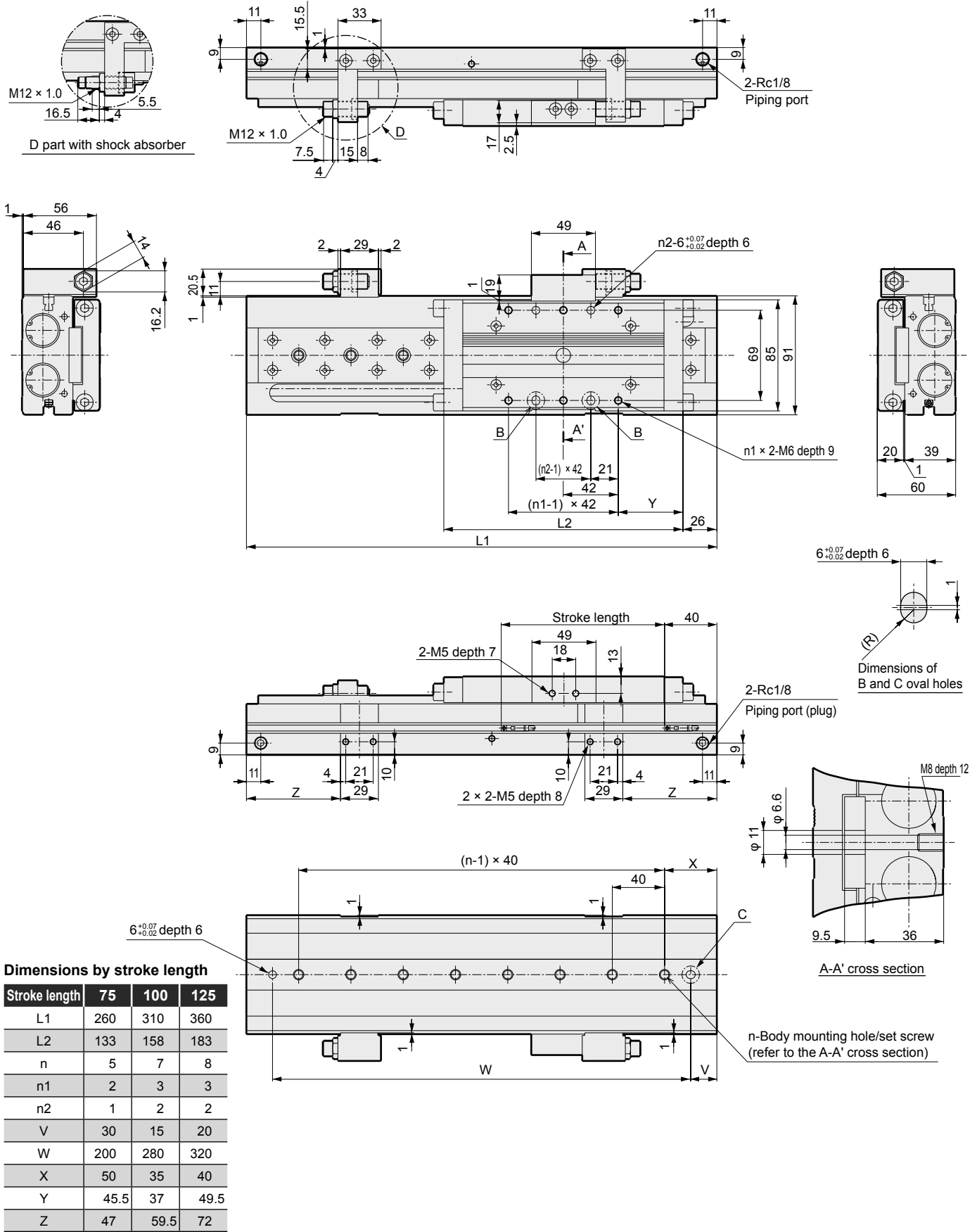
LCT Series

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
COVPIN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
- MSD/
MSDG
- FC*
- STK
- STM
- STG
- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT**
- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- Shock absorber
- FJ
- FK
- Speed controller
- Ending

Dimensions



● LCT-25
75, 100 or 125 mm stroke length

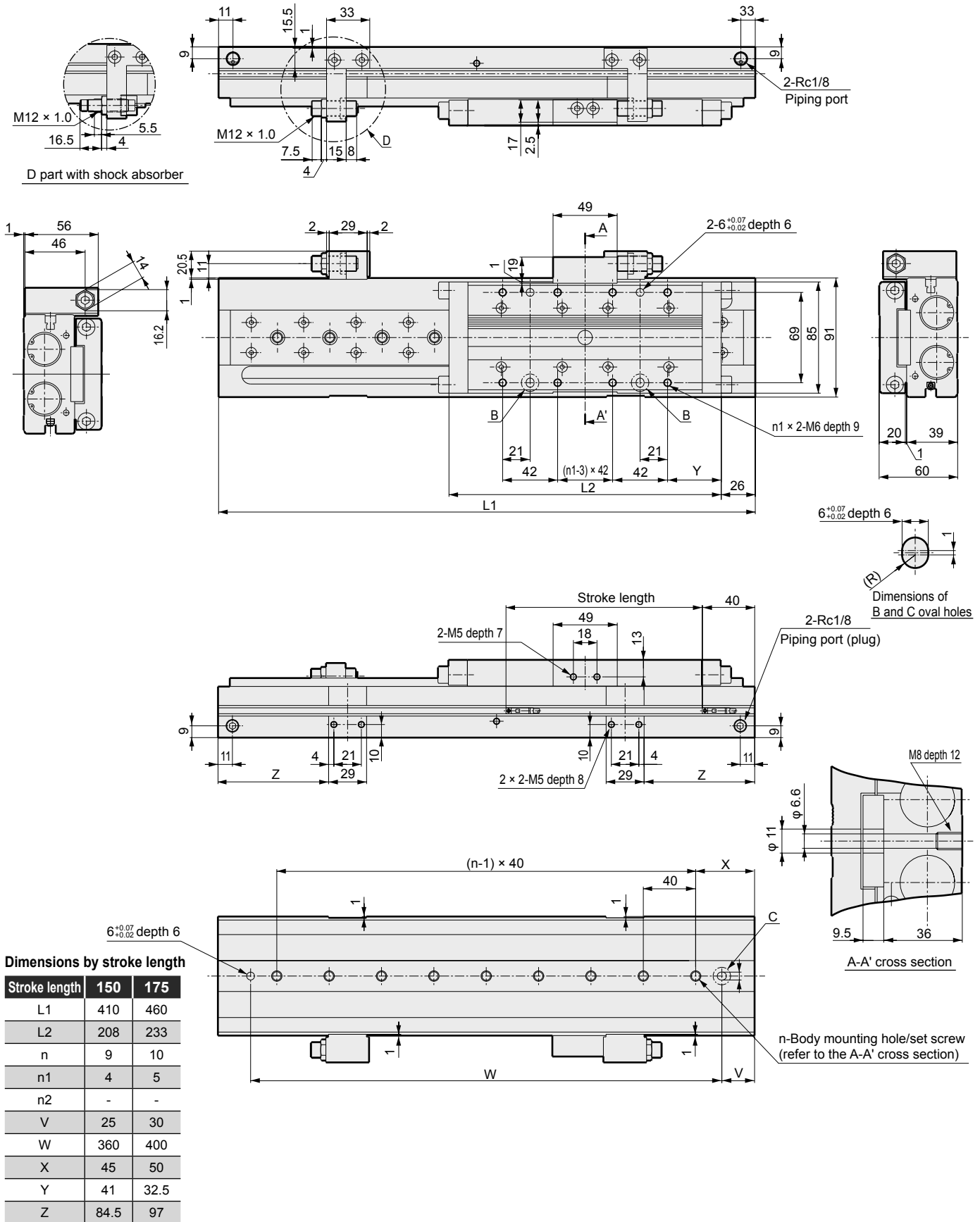


Dimensions by stroke length

Stroke length	75	100	125
L1	260	310	360
L2	133	158	183
n	5	7	8
n1	2	3	3
n2	1	2	2
V	30	15	20
W	200	280	320
X	50	35	40
Y	45.5	37	49.5
Z	47	59.5	72

Dimensions

● LCT-25
150 or 175 mm stroke length



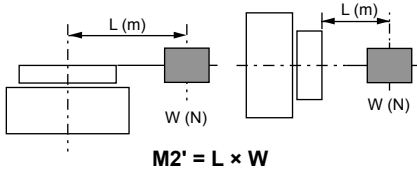
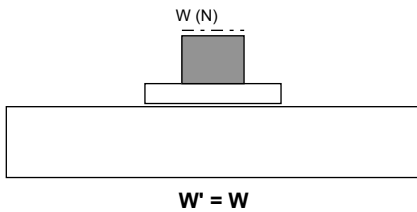
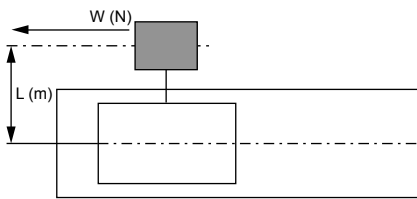
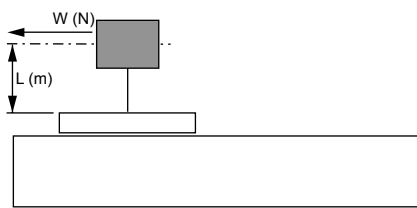
SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2
COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
SMD2
MSD/MSDG
FC*
STK
STM
STG
STS/STL
LCR
LCG
LCX
LCM
LCT
LCY
STR2
UCA2
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
Shock absorber
FJ
FK
Speed controller
Ending

LCT Series

Technical data: Selection guide

STEP-1

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



Obtain an approximate G coefficient in (Table 1).

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

(Table 1)

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

G coefficient =

$M1' \times G$ = (N·m)

$M2'$ = (N·m)

$M3' \times G$ = (N·m)

W' = (N)

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

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

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

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

$E' < E_{max}$

M'_T : Resultant moment (must be smaller than 1)

G : G coefficient

W'_{max} : Max. allowable value of W' (from Table 2)

$M1'_{max}$: Max. allowable value of $M1'$ (from Table 2)

$M2'_{max}$: Max. allowable value of $M2'$ (from Table 2)

$M3'_{max}$: Max. allowable value of $M3'$ (from Table 2)

E_{max} : Max. allowable value of E_o (from Table 3)

(Table 2) Allowable static load

Vertical load: W'_{max} (N)

Stroke length	50	75	100	125	150	175
φ 8	194		-	-	-	-
φ 12	-	292	619	-	-	-
φ 16	-	400		950		
φ 20	-	580			1370	
φ 25	-	1020			2350	

Bending moment $M1'_{max}$ (N·m), oscillating moment $M3'_{max}$ (N·m)

Stroke length	50	75	100	125	150	175
φ 8	11.6	23.8	-	-	-	-
φ 12	-	37.1	55.3	-	-	-
φ 16	-	39.0	64.0	89.0	114.0	139.0
φ 20	-	92.1	128.3	164.6	200.8	237.1
φ 25	-	135.2	198.9	262.7	326.4	390.2

Lateral bending moment $M2'_{max}$ (N·m)

Stroke length	50	75	100	125	150	175
φ 8	4.9		-	-	-	-
φ 12	-	10.4	22.1	-	-	-
φ 16	-	16.3		38.6		
φ 20	-	32.3			76.1	
φ 25	-	102.0			235.0	

(Table 3) LCT allowable absorbed energy value (E_o)

Bore size (mm)	Standard (J)	With shock absorber type stopper (J)
φ 8	0.0032	0.6
φ 12	0.014	2.1
φ 16	0.043	5.4
φ 20	0.055	9.7
φ 25	0.14	9.7

STEP-2

Obtain a more accurate load factor, effectiveness thrust, stroke end speed and resultant moment.

● Calculate the load factor.

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

α : Load factor

F_o : Force required to move the workpiece (N)

F : Cylinder theoretical thrust (N) (Table 4)

(Table 4) Theoretical thrust table

(Unit: N)

Bore size (mm)	Working pressure MPa						
	0.15	0.2	0.3	0.4	0.5	0.6	0.7
φ 8	8	10	15	20	25	30	35
φ 12	17	23	34	45	57	68	79
φ 16	30	40	60	80	101	121	141
φ 20	47	63	94	126	157	188	220
φ 25	74	98	147	196	245	295	344

(Table 5) Rough indication of load factor

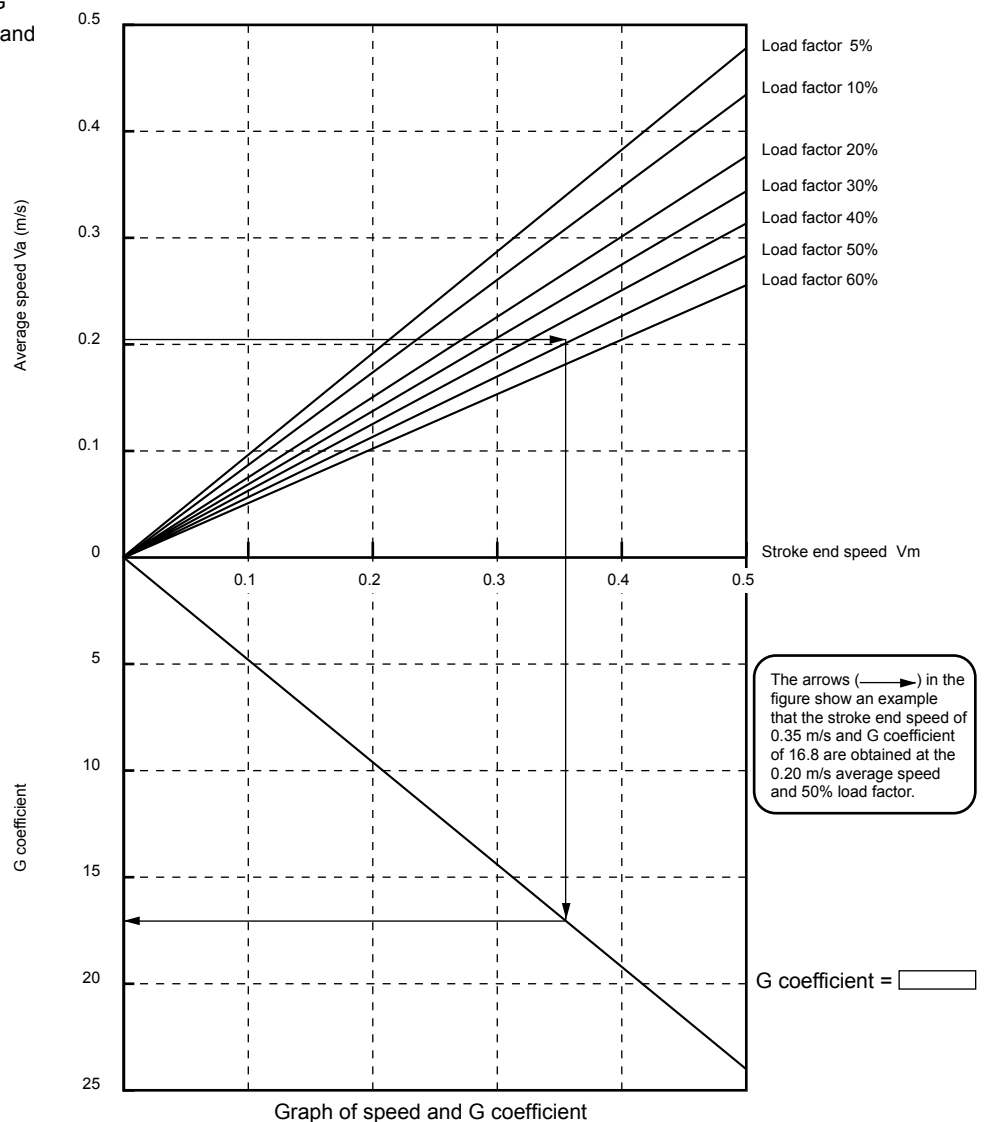
For horizontal operation	For vertical operation
$F_o = F_w$	$F_o = W + F_w$
$F_w: W \times 0.2$ Note (N)	
$W: \text{Load (N)}$	

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	$\alpha \leq 60$

Note: Coefficient of friction

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.



- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
- COVP/N2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
- MSD/MSDG
- FC*
- STK
- STM
- STG
- STS/STL
- LCR
- LCG
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- LCM
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- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
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- FJ
- FK
- Speed controller
- Ending

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
COVPIN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
- MSD/
MSDG
- FC*
- STK
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- STG
- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT**
- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- Shock absorber
- FJ
- FK
- Speed controller
- Ending

STEP-4

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

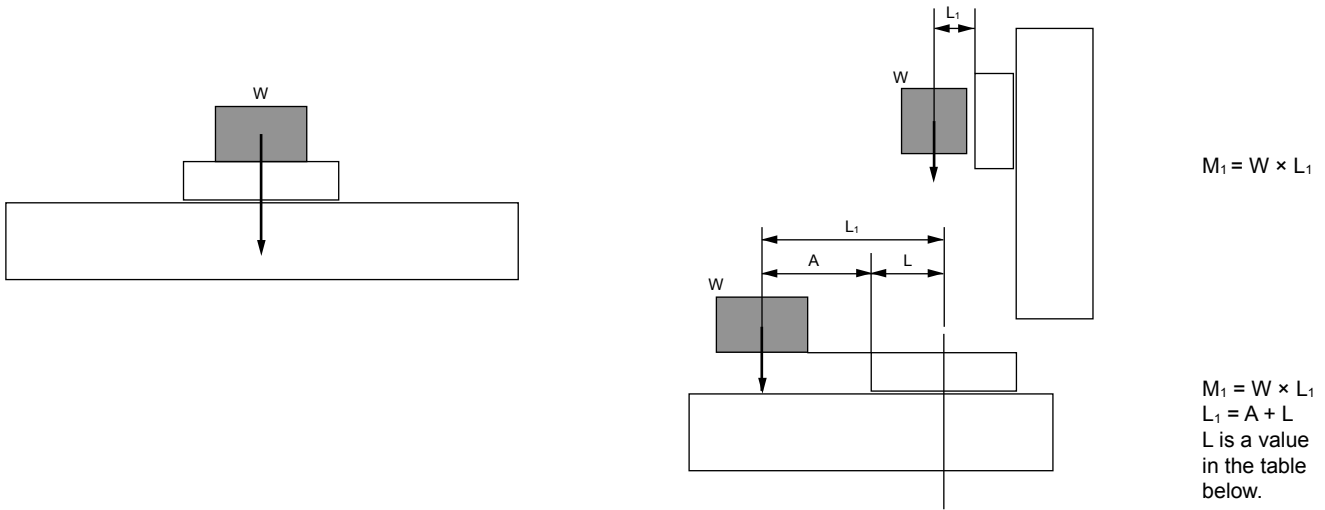
$$\begin{aligned}
 M1' \times G &= \boxed{} \text{ (N}\cdot\text{m)} \\
 M2' &= \boxed{} \text{ (N}\cdot\text{m)} \\
 M1' \times G &= \boxed{} \text{ (N}\cdot\text{m)} \\
 W' &= \boxed{} \text{ (N)} \\
 &= \boxed{} \text{ (J)}
 \end{aligned}$$

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

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

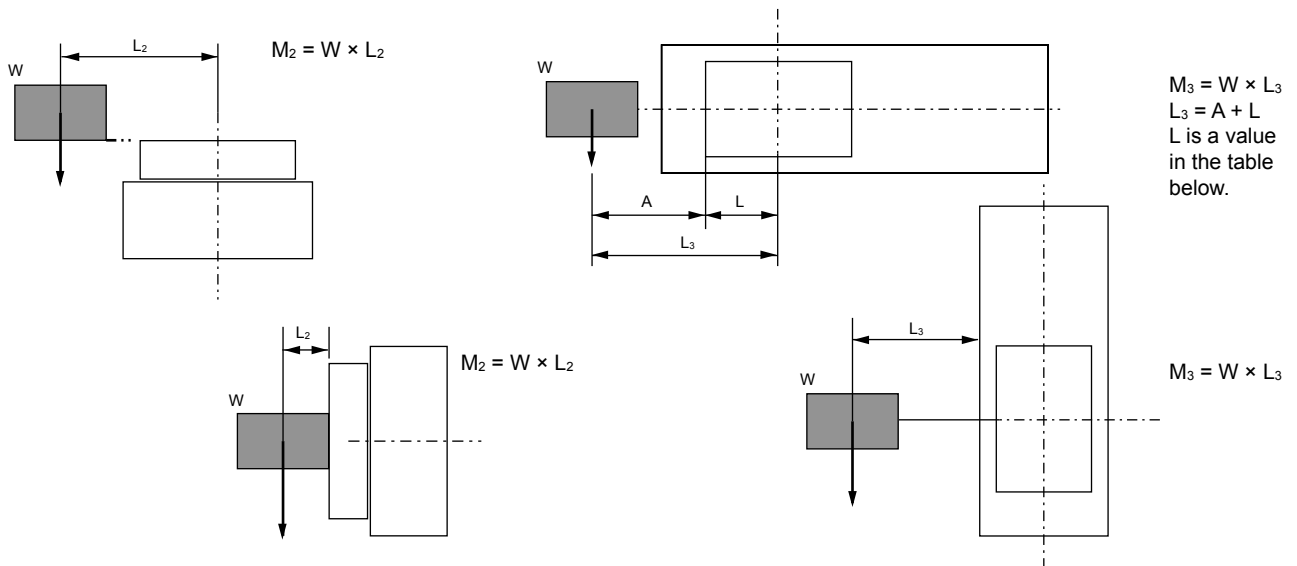
● Vertical load: W (N)

● Bending moment: M1 (N·m)



● Lateral bending moment: M2 (N·m)

● Twisting moment: M3 (N·m)



L value

Stroke length	50	75	100	125	150	175
φ 8	43	55.5	-	-	-	-
φ 12	-	60.5	73	-	-	-
φ 16	-	59	71.5	84	96.5	109
φ 20	-	64.5	77	89.5	102	114.5
φ 25	-	66.5	79	91.5	104	116.5

$$\begin{aligned}
 M1 = M1 &= \boxed{} \text{ (N·m)} \\
 M2 = M2 &= \boxed{} \text{ (N·m)} \\
 M3 = M3 &= \boxed{} \text{ (N·m)} \\
 W = W &= \boxed{} \text{ (N)} \\
 &= \boxed{} \text{ (J)}
 \end{aligned}$$

M_T : Resultant moment
 W_{max} : Max. allowable value of W (from Table 6)
 $W1_{max}$: Max. allowable value of M1 (from Table 6)
 $W2_{max}$: Max. allowable value of M2 (from Table 6)
 $W3_{max}$: Max. allowable value of M3 (from Table 6)
 E_{max} : Max. allowable value of Eo (from Table 3)

$$M_T = \frac{M1}{M1_{max}} + \frac{M2}{M2_{max}} + \frac{M3}{M3_{max}} + \frac{W}{W_{max}} = \boxed{}$$

(Table 6) Allowable static load

Vertical load: W'_{max} (N)

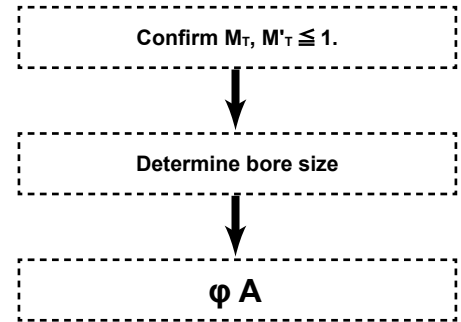
Stroke length	50	75	100	125	150	175
φ 8	19.2		-	-	-	-
φ 12	-	34.3	72.6	-	-	-
φ 16	-	58.9		117.9		
φ 20	-	84.7			171.3	
φ 25	-	158.4			313.1	

Bending moment $M1'$, oscillating moment $M3'_{max}$ (N·m)

Stroke length	50	75	100	125	150	175
φ 8	1.15	2.35	-	-	-	-
φ 12	2.21	4.35	6.49	-	-	-
φ 16	-	5.75	9.43	13.12	16.80	20.48
φ 20	-	13.45	18.75	24.04	29.34	34.63
φ 25	-	20.99	30.89	40.79	50.69	60.59

Lateral bending moment $M2'_{max}$ (N·m)

Stroke length	50	75	100	125	150	175
φ 8	0.48		-	-	-	-
φ 12	-	1.22	2.59	-	-	-
φ 16	-	2.40		4.79		
φ 20	-	4.71			9.52	
φ 25	-	15.84			31.31	

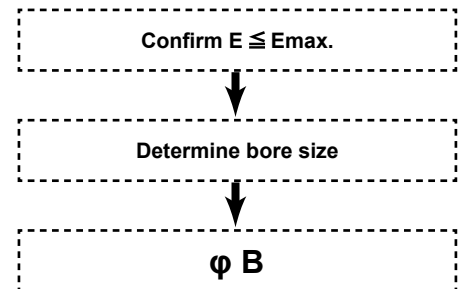


STEP-5

Check of the allowable absorbed energy

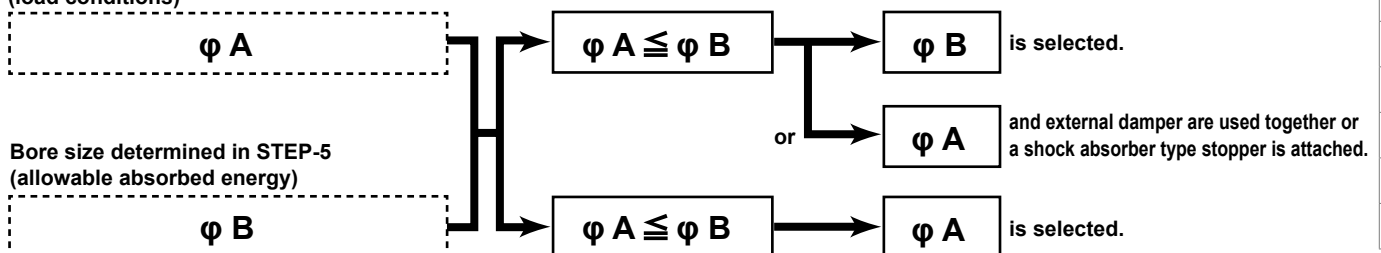
$$E' = \frac{1}{2} \times m \times Vm^2$$

E : Kinetic energy at workpiece end (J)
 m : Load weight (kg) ($m \doteq \frac{W(N)}{9.8}$)
 Vm : Stroke end speed (m/s)
 E_{max} : Max. allowable value of Eo (from Table 3)



STEP-6

Bore size determined in STEP-4
(load conditions)



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

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
COVP/N2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
- MSD/
MSDG
- FC*
- STK
- STM
- STG
- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT
- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- Shock absorber
- FJ
- FK
- Speed controller
- Ending

Pneumatic components

Safety Precautions



Always read this section before use.

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

Linear slide cylinder LCT Series

Design & selection

⚠ WARNING

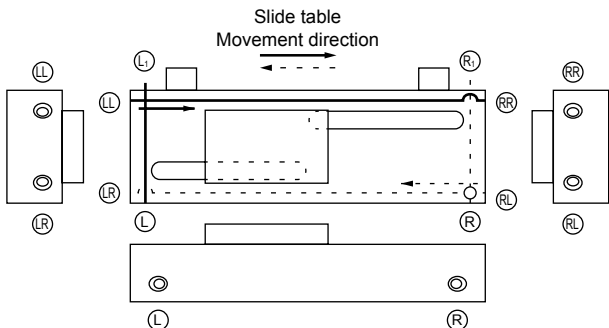
When selecting a cylinder, follow the "LCT selection guide" on pages 2110 to 2113.

Installation & adjustment

⚠ WARNING

Piping

■ Piping port position and operating direction



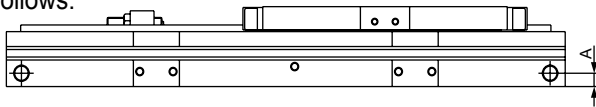
(L), (LL), (LL) and (RR) are connected internally. Applying pressure to the ports will move the slide table in the → direction.

(R), (R), (RL) and (LR) are connected internally. Applying pressure to the ports will move the slide table in the ← - - - direction.

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

■ Precautions for piping fittings

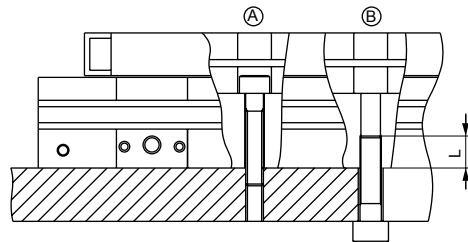
Be sure to use the product upon attaching a speed controller during piping. The available fittings are as follows:



Descriptions	Port size	Port dimension A	Applicable fittings	Fitting O.D. A
φ 8	M5 × 0.8	5.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5	φ 11 or less
		5.5		
φ 12	M5 × 0.8	5.5		φ 13 or less
		6.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWS6-M5 GWL6-M5	
φ 16	M5 × 0.8	6.5		φ 13 or less
		6.5		
φ 20	Rc1/8	8	SC3W-6-4, 6, 8 GWS4-6 GWS8-6 GWL6-6	φ 15 or less
		9	GWS6-6 GWL4-6	
φ 25	Rc1/8	9	GWS6-6 GWL4-6	φ 15 or less

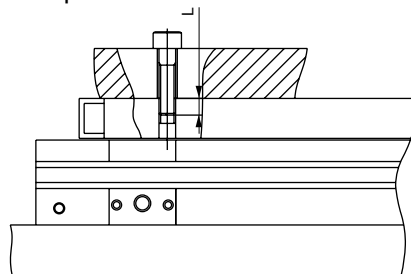
Installation

- Prevent the body (tube) mounting surface and the slide table surface from having indentations or scratches that inhibit the flatness of the surface. Make sure that the flatness on the opposite end on which the slide table will be attached is 0.05 mm or less.
- Observe the following bolt insertion lengths and tightening torque when installing the body. Use three mounting bolts and over.



Descriptions	A		B		
	Applicable bolts	Tightening torque (N·m)	Applicable bolts	Tightening torque (N·m)	Insertion length L (mm)
LCT-8	M3 × 0.5	0.6 to 1.1	M4 × 0.7	1.4 to 2.4	4 to 6
LCT-12	M4 × 0.7	1.4 to 2.4	M5 × 0.8	2.9 to 5.1	5 to 8
LCT-16	M4 × 0.7	1.4 to 2.4	M6 × 1.0	4.8 to 8.6	6 to 9
LCT-20	M5 × 0.8	2.9 to 5.1	M6 × 1.0	4.8 to 8.6	6 to 9
LCT-25	M6 × 1.0	4.8 to 8.6	M8 × 1.25	12.0 to 21.6	8 to 12

- Observe the following bolt insertion lengths and tightening torque when installing the jig on the slide table or end plate.

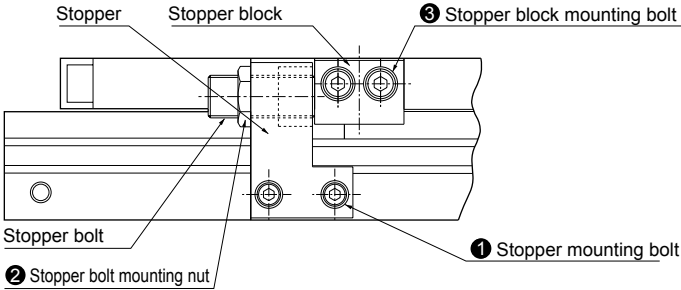


Descriptions	Slide table/end plate		
	Applicable bolts	Tightening torque (N·m)	Insertion length L (mm)
LCT-8	M3 × 0.5	0.6 to 1.1	3 to 4.5
LCT-12	M4 × 0.7	1.4 to 2.4	4 to 6
LCT-16	M4 × 0.7	1.4 to 2.4	5 to 7.5
LCT-20	M5 × 0.8	2.9 to 5.1	5 to 7.5
LCT-25	M6 × 1.0	4.8 to 8.6	6 to 9

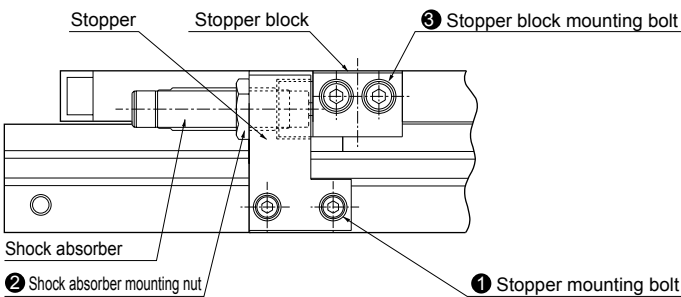
Installation & adjustment

⚠ WARNING

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



Stroke adjusting stopper



Shock absorber type stopper

Model no.	① Stopper mounting bolt (N·m)	② Stopper bolt mounting nut ② Shock absorber mounting nut (N·m)	③ Stopper block mounting bolt (N·m)
LCT-8	0.4 to 0.5	1.2 to 2.0	0.6 to 0.8
LCT-12	0.6 to 0.8	1.2 to 2.0	0.6 to 0.8
LCT-16	0.6 to 0.8	3.0 to 4.0	1.4 to 1.8
LCT-20	2.9 to 3.5	4.5 to 6.0	1.4 to 1.8
LCT-25	2.9 to 3.5	4.5 to 6.0	2.9 to 3.5

- Apply AFB grease (THK) to the guide rail in six months or when the number of operation times reaches one million, whichever is earlier.

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2
COV/PIN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- SMD2
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MSDG
- FC*
- STK
- STM
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- STS/STL
- LCR
- LCG
- LCX
- LCM
- LCT
- LCY
- STR2
- UCA2
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
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- FJ
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- Ending

Discontinue