

Plate Cylinder with Lock

Series *MLU*

ø25, ø32, ø40, ø50

How to Order

Without Auto Switch

MLU **B** **25** **30** **D** **F**

With Auto Switch

MDLU **B** **25** **30** **D** **F** **J79W** **S**

Built-in magnet

Mounting

B	Standard
L	Axial foot type
F	Front flange type
G	Rear flange type
C	Single clevis
D	Double clevis

Size

25	Pressure receiving area equivalent to that of ø25 type
32	Pressure receiving area equivalent to that of ø32 type
40	Pressure receiving area equivalent to that of ø40 type
50	Pressure receiving area equivalent to that of ø50 type

Port thread type

Nil	M threads	ø25
	Rc	ø32, ø40, ø50
TN	NPT	

Stroke (mm)

Refer to page 2 for standard strokes and intermediate strokes.

Action

D	Double acting
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Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Auto switch

Nil	Without auto switch (built-in magnet cylinder)
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*Select auto switch, models from the table below.

*The auto switch is packed together when shipped (unmounted).

Locking direction

F	Extension locking
B	Retraction locking

Rod end shape

Nil	Rod end female thread
M	Rod end male thread

Auto switch specifications

Type	Special function	Electrical entry	Indicator/light	Wiring (output)	Load voltage		Rail mount		Lead wire length (m) *				Applicable load						
					DC	AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)	None (N)							
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	—	5V	—	—	A76H	●	●	—	—	IC circuit	—				
										—	200V	A72	A72H			●	●	—	—
												12V 100V	A73			A73H	●	●	●
		Connector	No	2-wire	24V	—	5V, 12V 100V or less	—	A80	A80H	●	●	—	—	—	Relay, PLC			
											—	A73C	—	●			●	●	●
											5V, 12V 24V or less	A80C	—	●			●	●	●
Diagnostic indication (2-color display)	Grommet	Yes	—	—	—	—	A79W	—	●	●	—	—	—	—					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5V, 12V	—	—	—	F79W	●	●	○	—	IC circuit	—				
				3-wire (PNP)						F7NV	F7P	●	●			○	—		
		Connector	—	2-wire	24V	12V	—	—	—	J79	●	●	○	—	—	Relay, PLC			
											J79C	—	●	●			●	●	
		Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	—	—	F79W	●	●	○	—	IC circuit	—			
											3-wire (PNP)	—	F7PW	●			●	○	—
		Water resistant (2-color display)	Grommet	Yes	2-wire	12V	—	—	—	F79W	●	●	○	—	—	Relay, PLC			
											—	F7BA	—	●			○	—	
		With timer	Grommet	Yes	3-wire (NPN)	5V, 12V	—	—	—	F7NT	—	●	○	—	IC circuit	—			
											5V, 1 2V	—	F79F	●			●	○	—
		With diagnostic output (2-color display)	Grommet	Yes	4-wire (NPN)	—	—	—	—	F7LF	●	●	○	—	—	—			
											—	—	P5DW	—			●	●	—
Latch type with diagnostic output (2-color display)	Grommet	Yes	2-wire	—	—	—	—	—	—	—	—	—	—	—					
															—	—	—	—	—
Magnetic field resistant (2-color display)	Grommet	Yes	2-wire	—	—	—	—	—	—	—	—	—	—	—					
															—	—	—	—	—

*Lead wire length symbols 0.5m.....Nil (Example) A73C
 3m.....L (Example) A73CL
 5m.....Z (Example) A73CZ
 None.....N (Example) A73CN

*Solid state switches marked with a "O" symbol are produced upon receipt of order.

*D-P5DWL type can only be mounted on the types for tubing of ø40 and ø50.
 Only D-P5DWL is mounted when shipped.

Cylinder Specifications



Size	25	32	40	50
Action	Double acting single rod			
Fluid	Air			
Proof pressure	1.05MPa			
Maximum operating pressure	0.7MPa			
Minimum operating pressure	0.2MPa <small>Note)</small>			
Ambient and fluid temperature	-10 to 60°C (with no freezing)			
Lubrication	Non-lube			
Cushion	Rubber bumper (standard)			
Rod end thread tolerance	JIS class 2			
Stroke length tolerance	+1.4 0			
Piston speed	50 to 500mm/s			
Cylinder port size	M5 x 0.8	Rc, NPT, 1/8	Rc, NPT, 1/4	

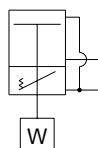
Note) The minimum operating pressure of the cylinder is 0.1MPa when the cylinder and lock are connected to separate ports.

Lock Specifications

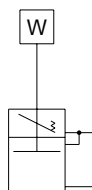
Size	25	32	40	50
Locking action	Spring locking (exhaust locking)			
Unlocking pressure	0.2MPa or more			
Locking pressure	0.05MPa or less			
Locking direction	One direction (extension locking, retraction locking, each type)			
Maximum operating pressure	0.7MPa			
Unlocking port connection size	M5 x 0.8	Rc, NPT, 1/8		
Holding force N (maximum static load)	245	403	629	982

Symbol

Extension locking



Retraction locking



Theoretical Output

Unit: N

Size	Rod size (mm)	Actuation direction	Piston area (mm ²)
25	12	IN-OUT	378
32	14	IN-OUT	650
40	16	IN-OUT	1056
50	20	IN-OUT	1649

Size	Operating pressure (MPa)					
	0.2	0.3	0.4	0.5	0.6	0.7
25	76	113	151	189	227	265
32	130	195	260	325	390	455
40	211	317	422	528	634	739
50	330	495	660	824	989	1154

*Theoretical output (N) = Pressure (MPa) x Piston area (mm²)

Non-rotating Rod Accuracy

Size	25	32	40	50
Non-rotating rod accuracy	±1°	±0.8°	±0.5°	±0.5°

Standard Strokes

Size	Standard stroke (mm)	Max. manufacturable stroke
25, 32, 40, 50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50 75, 100, 125, 150, 175, 200, 250, 300	300

*Strokes other than the above are produced upon receipt of order.

Weights

Unit: kg

	Size	25	32	40	50
Basic weight	Standard	0.34	0.58	0.87	1.52
	Axial foot type	0.41	0.72	1.08	1.86
	Flange type/Front, rear	0.44	0.72	1.10	1.98
	Single clevis	0.40	0.70	1.09	1.92
	Double clevis (with pin)	0.41	0.74	1.13	1.99
Additional weight per 50mm of stroke		0.12	0.16	0.22	0.34
Attached metal weight	Single clevis (Double clevis bracket)	0.06	0.12	0.22	0.40
	Double clevis (Single clevis bracket)	0.07	0.16	0.26	0.47
	Single knuckle joint	0.03	0.04	0.07	0.16
	Double knuckle joint (with pin)	0.05	0.09	0.14	0.29

Note) The weights of the attached metal single clevis and double clevis include the weight of two pieces of mounting bolts.

Calculation method—Example: MDLUL32-100

●Basic weight: 0.72 (axial foot type-size32)

●Additional weight: 0.16/50 stroke

●Stroke: 100 stroke

0.72 + 100/50 x 0.16 = 1.04kg

Mounting Bracket Part No.

Bracket \ Size	25	32	40	50
Foot ^{Note 1)}	MU-L02	MU-L03	MU-L04	MU-L05
Flange	MU-F02	MU-F03	MU-F04	MU-F05
Single clevis	MU-C02	MU-C03	MU-C04	MU-C05
Double clevis ^{Note 3)}	MU-D02	MU-D03	MU-D04	MU-D05



Note 1) When ordering foot brackets, order 2 pieces for each cylinder.

Note 2) The parts included with each bracket are shown below.

Foot, Flange, Single clevis/Body mounting bolt

Double clevis/Pins for clevis, C set ring for axis, Body mounting

Note 3) Clevis pin and snap ring are included with the double clevis type.

Auto Switch Mounting Bracket Part No.

Size	Bracket no.	Note	Applicable switch	
			Reed switch	Solid state switch
25, 32, 40, 50	BMU1-025	Auto switch mounting screw (M3 x 0.5 x 6.5) Auto switch mounting nut	D-A7□, D-A80 D-A7□H, D-A80H D-A73C, D-A80C D-A79W	D-F7□, D-J79 D-F7□V, D-J79C D-F7□W, D-J79W D-F7□WV, D-F7□F D-F7NTL D-F7BAL, F7BAVL
40, 50	BMU2-040	Auto switch mounting bracket Round head Philips screw (M3 x 0.5 x 14) Hexagon socket head cap bolt (M3 x 0.5 x 5) Flat washer, Auto switch mounting nut	—	D-P5DWL

*Stainless steel mounting screw kit

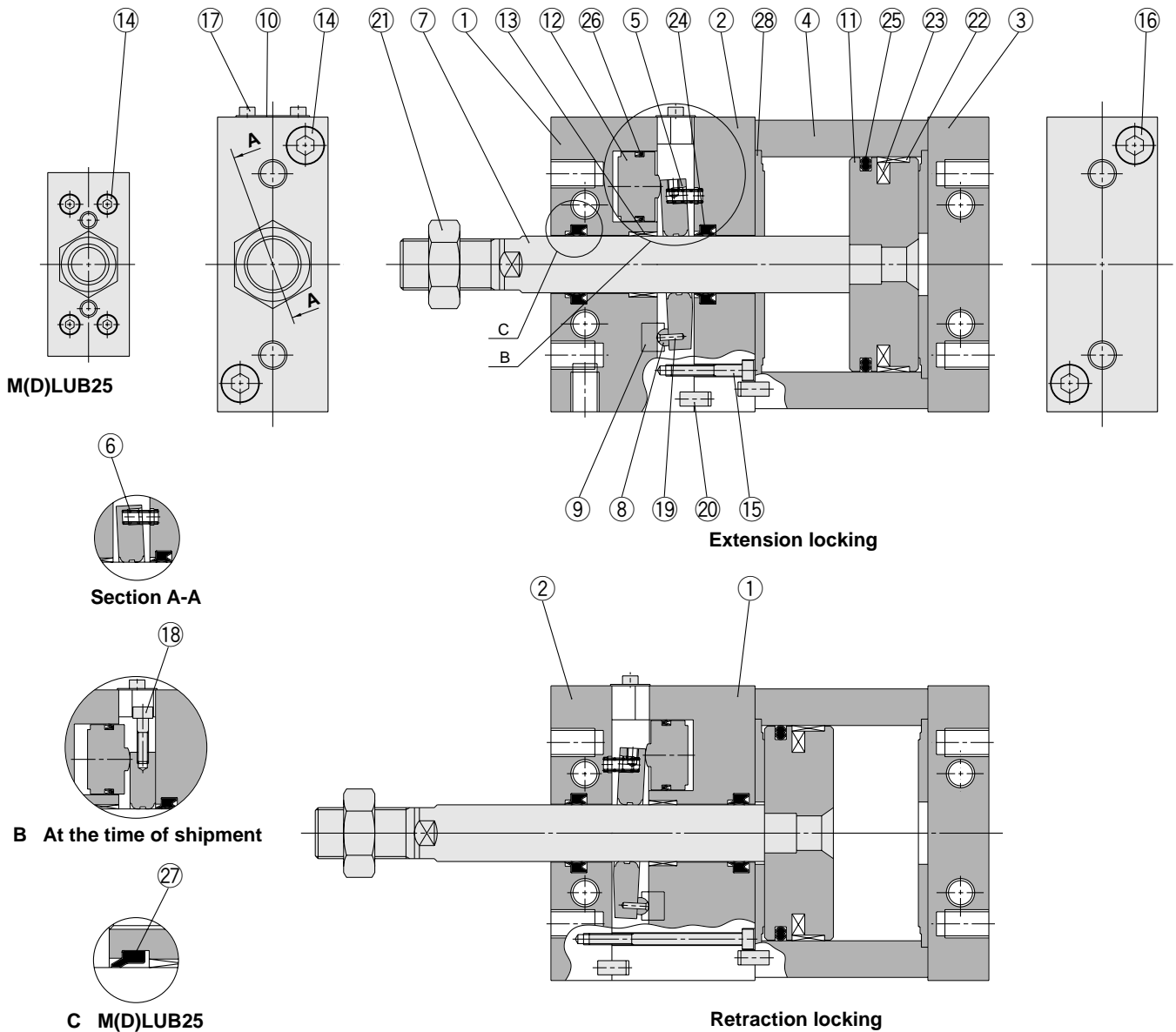
Use the following stainless steel mounting screw kit (includes nut) depending on the operating environment.

BBA2: D-A7/A8/F7/J7

The above stainless steel screw kit is used for auto switch D-F7BAL and D-F7BAVL when it is shipped mounted on a cylinder.

Also, BBA2 is included when a auto switch alone is shipped.

Construction



Parts list

No.	Description	Material	Note
1	Lock body	Aluminium alloy	Hard anodized
2	Cover	Aluminium alloy	Hard anodized
3	Head cover	Aluminium alloy	Hard anodized
4	Cylinder tube	Aluminium alloy	Hard anodized
5	Lock ring	Carbon steel	Heat treatment
6	Brake spring	Steel wire	Zinc chromated
7	Piston rod	Carbon steel	Hard chromium electro plating
8	Pivot	Carbon steel	Heat treatment, zinc chromated
9	Pivot key	Carbon steel	Heat treatment, zinc chromated
10	Dust proof cover	Stainless steel	
11	Piston	Aluminium alloy	Chromate
12	Release piston	Special steel	Heat treatment
13	Bushing	Sintering oil impregnated alloy	M(D)LUB25, 32
		Lead-bronze casting	M(D)LUB40, 50
14	Hexagon socket head cap bolt A	Stainless steel	

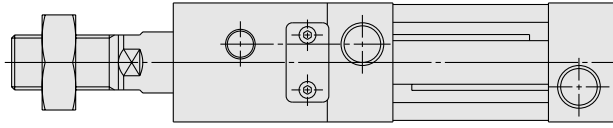
No.	Description	Material	Note
15	Hexagon socket head cap bolt B	Stainless steel	
16	Hexagon socket head cap bolt C	Stainless steel	
17	Hexagon socket head cap bolt D	Chrome molybdenum steel	Nickel plated
18	Hexagon socket head cap bolt E	Chrome molybdenum steel	Nickel plated
19	Spring pin	Carbon steel	JIS B2808
20	Parallel pin	Stainless steel	JIS B1354
21	Rod end nut	Rolling steel	Only for use with nickel plated rod end male thread
22	Wear ring	Resin	
23	Magnet	Magnet	Only for use with built-in magnet type
24	Rod seal	NBR	Use one piece with M(D)LUB25 Use 2 pieces with M(D)LUB32-50
25	Piston seal	NBR	
26	Release piston seal	NBR	Only for use with M(D)LUB25
27	Scraper	NBR	
28	Bumper	Urethane rubber	

Series MLU

Dimensions

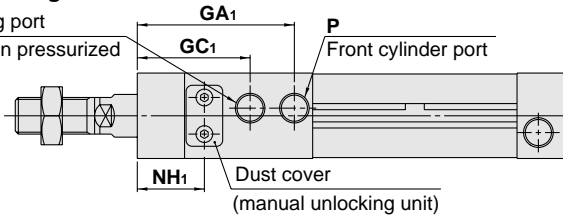
Standard type

M(D)LUB40, 50

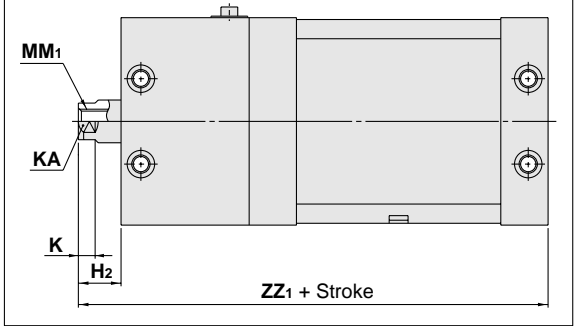


Retraction locking

BP unlocking port
Unlocks when pressurized

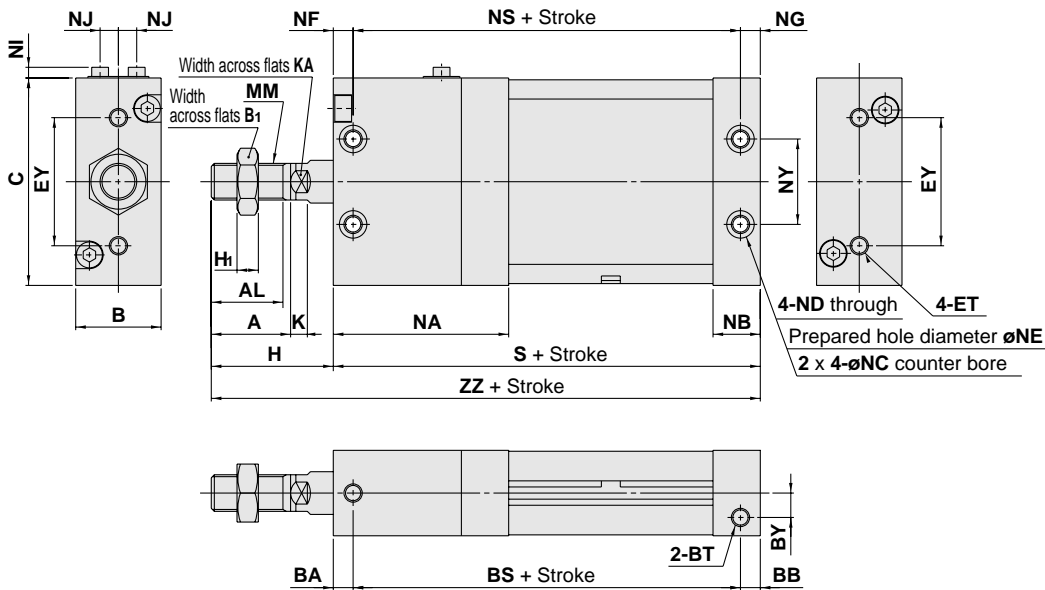
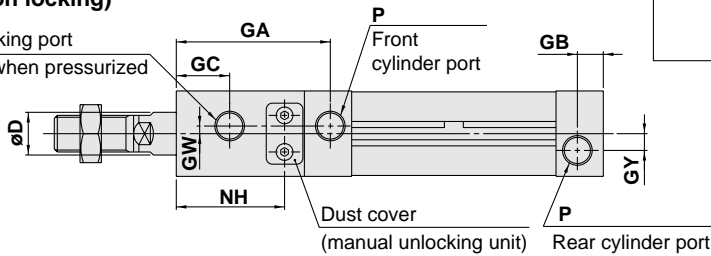


Rod end female thread



M(D)LUB25,32 (Extension locking)

BP unlocking port
Unlocks when pressurized



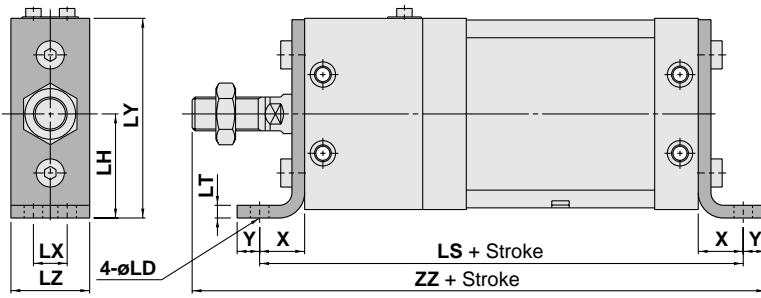
(mm)

Model	Stroke range	A	AL	B	B ₁	BA	BB	BP	BS	BT	BY	C	D	ET	EY	GA	GA ₁	GB	GC	GC ₁	GW	GY	H	H ₁
MLUB25	5 to 300	22	19.5	24	17	8	9	M5 x 0.8	73	M5 x 0.8 depth 7.5	7	54	12	M5 x 0.8 depth 11	26	45	45	10	15.5	32.5	2.5	5	36	6
MLUB32	5 to 300	26	23.5	28	19	6.5	6.5	Rc, NPT, 1/8	87	M6 x 1 depth 12	8	68	14	M6 x 1 depth 11	42	50.5	51.5	8.5	17.5	37	0	5.5	40	7
MLUB40	5 to 300	30	27	32	22	9	8	Rc, NPT, 1/8	87	M8 x 1.25 depth 13	9	86	16	M8 x 1.25 depth 11	54	53	53	9	18.5	38.5	0	7	45	8
MLUB50	5 to 300	35	32	39	27	12	10	Rc, NPT, 1/8	102.5	M10 x 1.5 depth 14.5	9	104	20	M10 x 1.5 depth 15	64	62	62	11.5	23	43	6	8	53	11

Model	H ₂	K	KA	MM	MM ₁	NA	NB	NC	ND	NE	NF	NG	NH	NH ₁	NI	NJ	NS	NY	P	S	ZZ	ZZ ₁
MLUB25	14	5.5	10	M10 x 1.25	M6 x 1 depth 12	49	14	7.5 depth 4.5	M5 x 0.8	4.3	8	6	30	19	3.5	6	76	26	M5 x 0.8	90	126	104
MLUB32	14	5.5	12	M12 x 1.25	M8 x 1.25 depth 13	57.5	15.5	9 depth 5.5	M6 x 1	5.1	6.5	6.5	35.5	22	3.5	6	87	28	Rc, NPT, 1/8	100	140	114
MLUB40	15	6	14	M14 x 1.5	M8 x 1.25 depth 13	60	16	10.5 depth 6.5	M8 x 1.25	6.9	9	8	37.5	22.5	3.5	9	87	36	Rc, NPT, 1/8	104	149	119
MLUB50	18	7	18	M18 x 1.5	M10 x 1.5 depth 15	72	21.5	13.5 depth 8.5	M10 x 1.5	8.7	12	10	44	28	3.5	9	102.5	42	Rc, NPT, 1/4	124.5	177.5	142.5

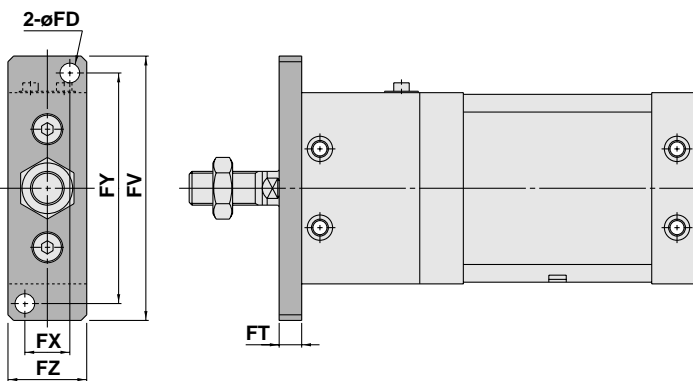
Dimensions

Axial foot type



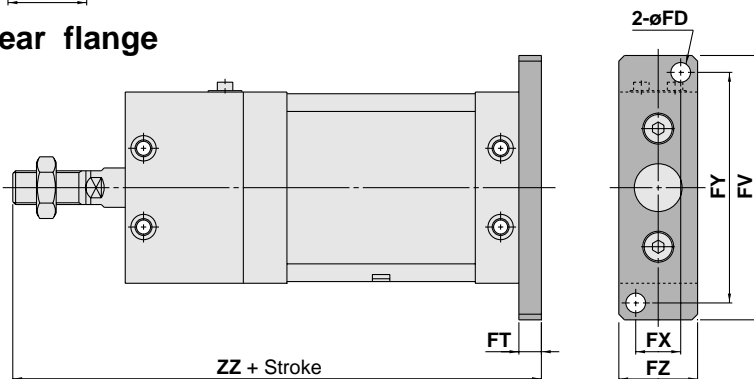
Model	LD	LH	LS	LT	LX	LY	LZ	X	Y	ZZ
MLUL25	5.5	29	114	3.2	11	56	23	12	6	144
MLUL32	6.6	37	132	4.5	12	71	27	16	8	164
MLUL40	9	46	140	4.5	15	89	31	18	10	177
MLUL50	11	57	166.5	5	18	109	37	21	11	209.5

Front flange type

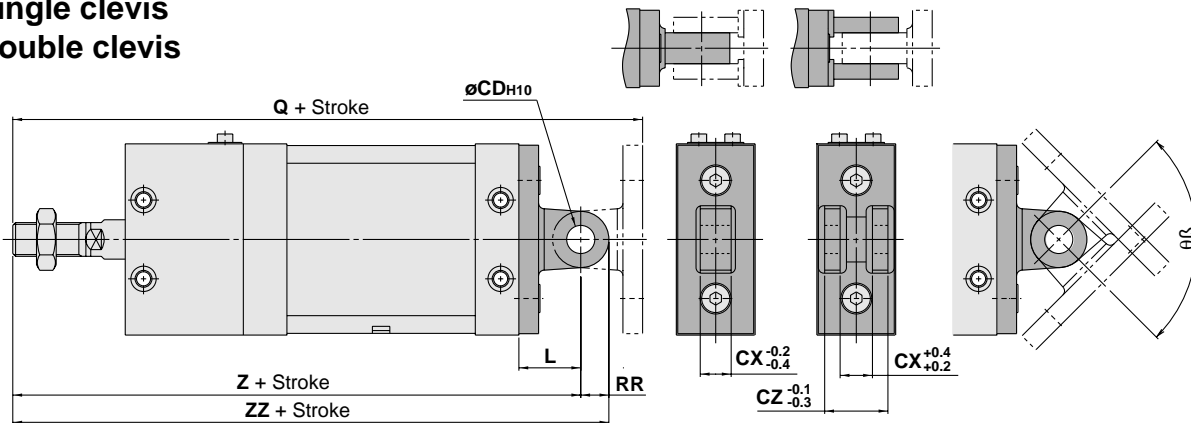


Model	FD	FT	FV	FX	FY	FZ	ZZ
MLUF25, MLUG25	5.5	8	76	14	66	24	134
MLUF32, MLUG32	7	8	94	16	82	28	148
MLUF40, MLUG40	9	9	118	18	102	32	158
MLUF50, MLUG50	11	12	144	22	126	39	189.5

Rear flange



Single clevis Double clevis

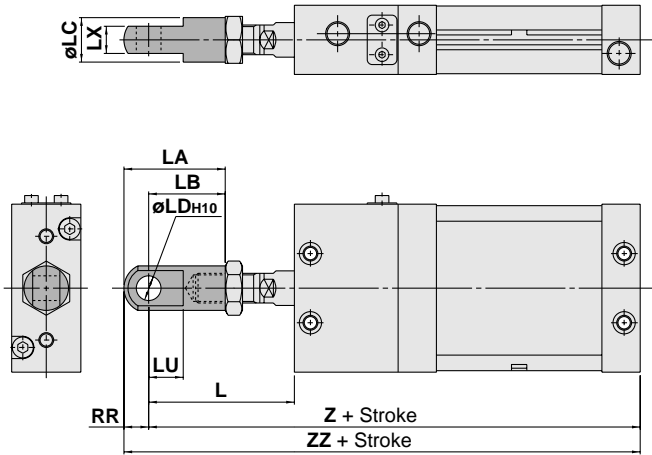


Model	CDH10	CX	CZ	L	Q	RR	Z	ZZ	Rotation angle
MLUC25, MLUD25	8 ^{+0.058} ₀	9	18	17	160	8	143	151	100
MLUC32, MLUD32	10 ^{+0.058} ₀	11	22	22	184	10	162	172	90
MLUC40, MLUD40	10 ^{+0.058} ₀	13	26	27	203	10	176	186	80
MLUC50, MLUD50	14 ^{+0.070} ₀	16	32	32	241.5	14	209.5	223.5	80

Series MLU

Accessories

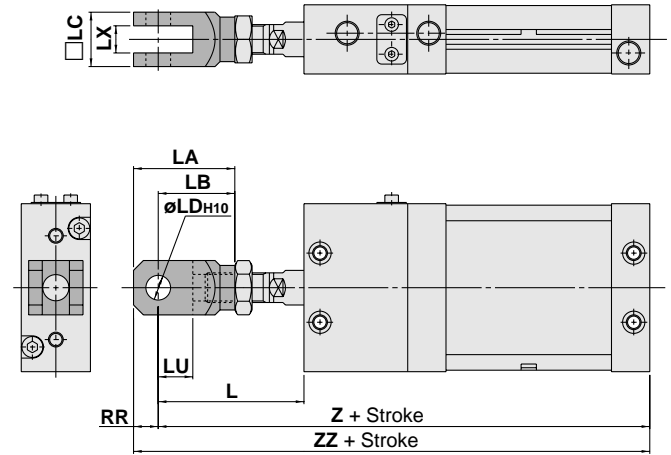
Single knuckle joint



Model	L	LA	LB	LC	LD	LU	LX	RR	Z	ZZ
MLU□25	52.5	35.5	27	16	$8^{+0.058}_0$	11	$9^{-0.2}_{-0.4}$	8.5	142.5	151
MLU□32	59	41	31	18	$10^{+0.058}_0$	14	$11^{-0.2}_{-0.4}$	10	159	169
MLU□40	67	47	36	20	$10^{+0.058}_0$	15	$13^{-0.2}_{-0.4}$	11	171	182
MLU□50	81	62	46	28	$14^{+0.070}_0$	20	$16^{-0.2}_{-0.4}$	16	205.5	221.5

The L, Z and ZZ dimensions are reference dimensions when mounting a single knuckle joint. Please use them as guidelines.

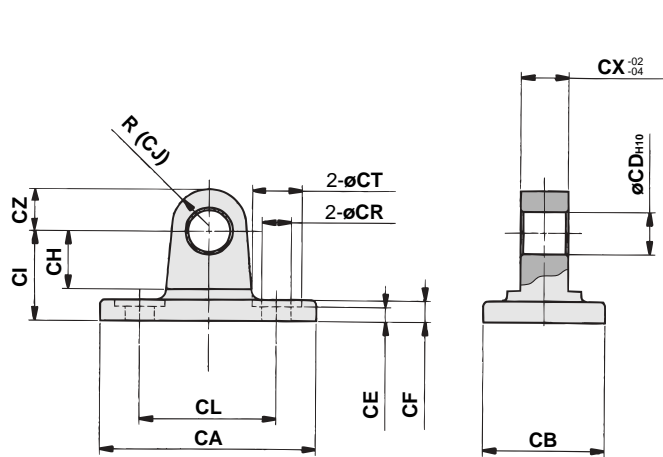
Double knuckle joint



Model	L	LA	LB	LC	LD	LU	LX	RR	Z	ZZ	Applicable pin no.
MLU□25	52.5	35	27	18	$8^{+0.058}_0$	13	$9^{+0.4}_{+0.2}$	8	142.5	150.5	CD-MU02
MLU□32	59	41	31	22	$10^{+0.058}_0$	14	$11^{+0.4}_{+0.2}$	10	159	169	CD-MU03
MLU□40	67	46	36	26	$10^{+0.058}_0$	17	$13^{+0.4}_{+0.2}$	10	171	181	CD-MU04
MLU□50	81	62	46	32	$14^{+0.070}_0$	23	$16^{+0.4}_{+0.2}$	16	205.5	221.5	CD-MU05

The L, Z and ZZ dimensions are reference dimensions when mounting a double knuckle joint. Please use them as guidelines.

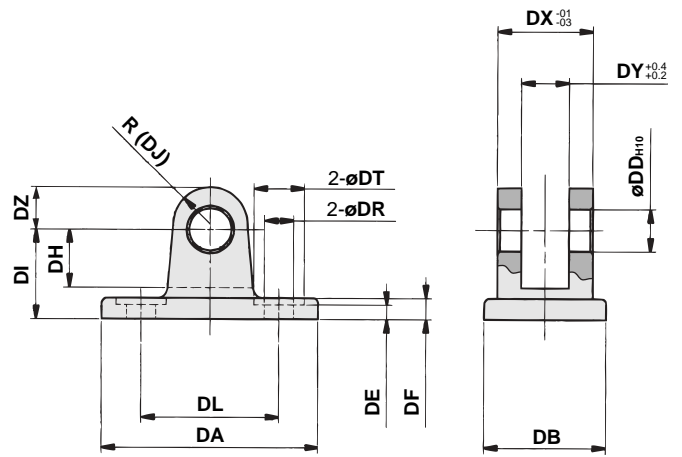
Single clevis (Double clevis bracket)



Part no.	Size	CA	CB	CD _{H10}	CE	CF	CH	CI	CJ
MU-C02	25	53	23	$8^{+0.058}_0$	3.5	4	11	17	7
MU-C03	32	67	27	$10^{+0.058}_0$	3.5	7	13	22	10
MU-C04	40	85	31	$10^{+0.058}_0$	3.5	10	13	27	10
MU-C05	50	103	37	$14^{+0.058}_0$	5.5	12	17	32	14

Part no.	CL	CR	CT	CX	CZ
MU-C02	26	5.3	9.5	9	8
MU-C03	42	6.4	11	11	10
MU-C04	54	8.4	14	13	10
MU-C05	64	10.5	17	16	14

Double clevis (Single clevis bracket)

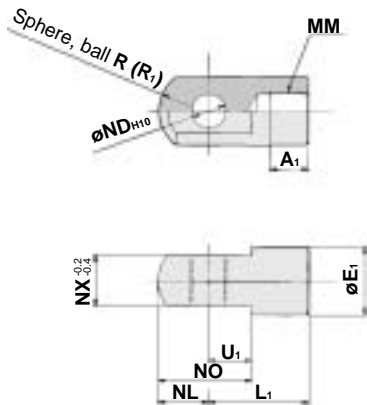


Part no.	Size	DA	DB	DD _{H10}	DE	DF	DH	DI	DJ
MU-D02	25	53	23	$8^{+0.058}_0$	3.5	4	11	17	7
MU-D03	32	67	27	$10^{+0.058}_0$	3.5	7	13	22	10
MU-D04	40	85	31	$10^{+0.058}_0$	3.5	10	13	27	10
MU-D05	50	103	37	$14^{+0.070}_0$	5.5	12	17	32	14

Part no.	DL	DR	DT	DX	DY	DZ	Applicable pin no.
MU-D02	26	5.3	9.5	18	9	8	CD-MU02
MU-D03	42	6.4	11	22	11	10	CD-MU03
MU-D04	54	8.4	14	26	13	10	CD-MU04
MU-D05	64	10.5	17	32	16	14	CD-MU05

Clevis pins and snap rings are included with the double clevis type.

Single knuckle joint

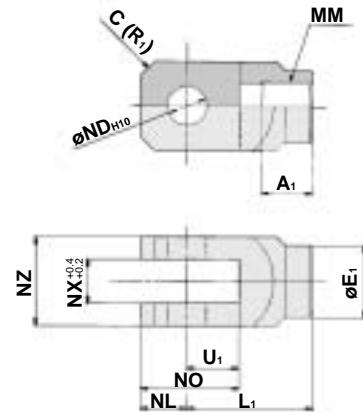


(mm)

Part no.	Size	A ₁	E ₁	L ₁	MM
I-MU02	25	10.5	16	27	M10 x 1.25
I-MU03	32	12	18	31	M12 x 1.25
I-MU04	40	14	20	36	M14 x 1.5
I-MU05	50	18	28	46	M18 x 1.5

Part no.	ND _{H10}	NL	NO	NX	R ₁	U ₁
I-MU02	8 ^{+0.058} ₀	8.5	19.5	9	8.5	11
I-MU03	10 ^{+0.058} ₀	10	24	11	10	14
I-MU04	10 ^{+0.058} ₀	11	26	13	11	15
I-MU05	14 ^{+0.070} ₀	16	36	16	16	20

Double knuckle joint



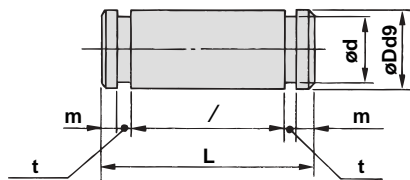
(mm)

Part no.	Size	A ₁	E ₁	L ₁	MM	ND _{H10}
Y-MU02	25	10.5	14	27	M10 x 1.25	8 ^{+0.058} ₀
Y-MU03	32	12	18	31	M12 x 1.25	10 ^{+0.058} ₀
Y-MU04	40	14	20	36	M14 x 1.5	10 ^{+0.058} ₀
Y-MU05	50	18	28	46	M18 x 1.5	14 ^{+0.070} ₀

Part no.	NL	NO	NX	NZ	R ₁	U ₁	Applicable pin no.
Y-MU02	8	21	9	18	3	13	CD-MU02
Y-MU03	10	24	11	22	4	14	CD-MU03
Y-MU04	10	27	13	26	5	17	CD-MU04
Y-MU05	16	39	16	32	6	23	CD-MU05

*Knuckle pin and snap ring are included.

Clevis pin and knuckle pin



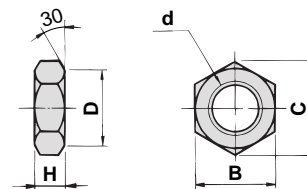
(mm)

Part no.	Size	Dd9	L	d	/
CD-MU02	25	8 ^{-0.040} _{-0.076}	23	7.6	18.2
CD-MU03	32	10 ^{-0.040} _{-0.076}	27	9.6	22.2
CD-MU04	40	10 ^{-0.040} _{-0.076}	31	9.6	26.2
CD-MU05	50	14 ^{-0.050} _{-0.093}	38	13.4	32.2

Part no.	m	t	Snap ring
CD-MU02	1.5	0.9	C8 type for pivot
CD-MU03	1.25	1.15	C10 type for pivot
CD-MU04	1.25	1.15	C10 type for pivot
CD-MU05	1.75	1.15	C14 type for pivot

*Included with the double clevis and double knuckle joint as standard.

Rod end nut



(mm)

Part no.	Size	d	H	B	C	D
NT-03	25	M10 x 1.25	6	17	19.6	16.5
NT-MU03	32	M12 x 1.25	7	19	21.9	18
NT-04	40	M14 x 1.5	8	22	25.4	21
NT-05	50	M18 x 1.5	11	27	31.2	26

*One piece is included with the rod end male thread as standard.