

# Plate Cylinder: Double Acting, Single Rod

## Series MU

ø25, ø32, ø40, ø50, ø63

### How to Order

**MU B 25 - 30 D M Z**

**With auto switch MDU B 25 - 30 D M Z - M9BW S**

**With auto switch**  
(Built-in magnet)

**Mounting**

B	Basic
L	Foot
F	Rod flange
G	Head flange
C	Single clevis
D	Double clevis

\* Brackets are shipped together, (but not assembled).

**Size**

25	Equiv. ø25 piston area
32	Equiv. ø32 piston area
40	Equiv. ø40 piston area
50	Equiv. ø50 piston area
63	Equiv. ø63 piston area

**Port thread type**

Nil	M thread	ø25
	Rc	
TN	NPT	ø32, ø40
TF	G	ø50, ø63

**Number of auto switches**

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

**Auto switch**

Nil	Without auto switch
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\* Refer to the below table for applicable auto switch models.

**Rod end configuration**

Nil	Rod end female thread
M	Rod end male thread

**Action**

D	Double acting
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**Cylinder stroke (mm)**  
Refer to "Standard Stroke" on page 2.

**Built-in Magnet Cylinder Model**  
If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.  
(Example) MDUL32-30DZ

### Applicable Auto Switches/Refer to Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)				Pre-wired connector	Applicable load		
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)				
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
	3-wire (PNP)			12 V		M9PV		M9P	●	●	●	○	○			
	2-wire					M9BV		M9B	●	●	●	○	○			
	3-wire (NPN)			5 V, 12 V		M9NWV		M9NW	●	●	●	○	○			
	3-wire (PNP)			5 V, 12 V	M9PWV	M9PW		●	●	●	○	○	IC circuit			
	2-wire				12 V	M9BWV		M9BW	●	●	●	○	○	—		
	3-wire (NPN)				12 V	M9NAV**		M9NA**	○	○	●	○	○	IC circuit		
	3-wire (PNP)					M9PAV**		M9PA**	○	○	●	○	○	—		
	2-wire			M9BAV**		M9BA**		○	○	●	○	○				
	2-wire (Non-polar)			—		—		P3DW <sup>Note 2)</sup>	●	—	●	●	○			
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
	None			24 V	12 V	100 V	A93V	A93	●	—	●	—	—	—	—	Relay, PLC
			100 V or less			A90V	A90	●	—	●	—	—	—	IC circuit		

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW  
1 m ..... M (Example) M9NWM  
3 m ..... L (Example) M9NWL  
5 m ..... Z (Example) M9NWZ

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* For details about auto switches with pre-wired connector, refer to Best Pneumatics No. 2.

\* Auto switches are shipped together, (but not assembled).

Note 1) The D-M9□V/M9□WV/M9□AV/A9□V auto switches cannot be mounted on the ported surface with some cylinder strokes and sizes of fittings. This should be checked beforehand.

Note 2) The magnetic field resistant auto switch (D-P3DW□) is available only with ø40 to ø63 of the existing MU series. Refer to page 23 for the how-to-order.

## Specifications



Bore size (mm)	25	32	40	50	63
Action	Double acting, Single rod				
Fluid	Air				
Proof pressure	1.05 MPa				
Maximum operating pressure	0.7 MPa				
Minimum operating pressure	0.05 MPa				
Ambient and fluid temperature	-10 to 60°C				
Lubrication	Not required (Non-lube)				
Piston speed	50 to 500 mm/s				
Stroke length tolerance	+1.4 0				
Cushion	Rubber bumper				
Mounting	Foot, Rod flange, Head flange, Single clevis, Double clevis				
Rod end configuration	Rod end male thread, Rod end female thread				
Allowable rotational torque	0.25 N·m		0.55 N·m	1.25 N·m	2.0 N·m
Rod non-rotating accuracy	±1°	±0.8°	±0.5°		

## Standard Stroke

Size	Standard stroke (mm)	Maximum manufacturable stroke (mm)
25, 32, 40 50, 63	5, 10, 15, 20, 25, 30, 35, 40, 45, 50 75, 100, 125, 150, 175, 200, 250, 300	300

- \* Other intermediate strokes can be manufactured upon receipt of order. Please contact SMC.  
 \*\* Strokes longer than 300 mm are not available.

## Mounting Bracket/Part No.

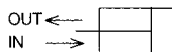
Mounting bracket \ Size	25	32	40	50	63
Foot <sup>Note 1)</sup>	MU-L02	MU-L03	MU-L04	MU-L05	MU-L06
Flange	MU-F02	MU-F03	MU-F04	MU-F05	MU-F06
Single clevis	MU-C02	MU-C03	MU-C04	MU-C05	MU-C06
Double clevis <sup>Note 3)</sup>	MU-D02	MU-D03	MU-D04	MU-D05	MU-D06

- Note 1) When ordering foot bracket, order 2 pieces per cylinder.  
 Note 2) Accessories for each mounting bracket are as follows.  
 Foot/Flange/Single clevis: Body mounting bolt  
 Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt  
 Note 3) Clevis pin and retaining ring are shipped together with double clevis.  
 Note 4) The tightening torque for body mounting bolts is shown in the below table.  
 Note 5) The application of a locking agent (Example: Loctite® 242) to body mounting bolts is recommended.

## Recommended Tightening Torque for Mounting Bracket on Body

Bore size	Thread size	Tightening torque (N·m)
MU25	M5 x 0.8	4.9 to 5.9
MU32	M6 x 1	8.28 to 10.12
MU40	M8 x 1.25	19.8 to 24.2
MU50	M10 x 1.5	39.6 to 48.4
MU63	M12 x 1.75	68.4 to 83.6

## Theoretical Output



(N)

Size	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)					
				0.2	0.3	0.4	0.5	0.6	0.7
25	12	OUT	491	98	147	196	246	295	344
		IN	378	76	113	151	189	227	265
32	14	OUT	804	161	241	322	402	482	563
		IN	650	130	195	260	325	390	455
40	16	OUT	1257	251	377	503	629	754	880
		IN	1056	211	317	422	528	634	739
50	20	OUT	1963	393	589	785	982	1178	1374
		IN	1649	330	495	660	824	989	1154
63	20	OUT	3117	623	935	1247	1559	1870	2182
		IN	2803	561	841	1121	1402	1682	1962

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## Weight

(kg)

Size		25	32	40	50	63
Basic weight	Basic	0.17	0.27	0.39	0.75	1.16
	Foot	0.24	0.41	0.60	1.09	1.79
	Flange/Rod end, Head end	0.27	0.41	0.62	1.21	1.99
	Single clevis	0.23	0.39	0.61	1.15	1.84
	Double clevis (With pin)	0.24	0.43	0.65	1.22	1.92
Additional weight per each 50 mm of stroke		0.09	0.14	0.19	0.28	0.38
Mounting bracket weight	Single clevis (Double clevis pivot bracket)	0.06	0.12	0.22	0.40	0.68
	Double clevis (With pin) (Single clevis pivot bracket)	0.07	0.16	0.26	0.47	0.76
	Single knuckle joint	0.03	0.04	0.07	0.16	0.16
	Double knuckle joint (With pin)	0.05	0.09	0.14	0.29	0.29

## Additional Weight

(g)

Bore size (mm)		25	32	40	50	63
Rod end male thread	Male thread	12	23	27	53	53
	Nut	8	10	17	32	32

Note) Weight of single clevis and double clevis includes 2 bolts for mounting bracket.

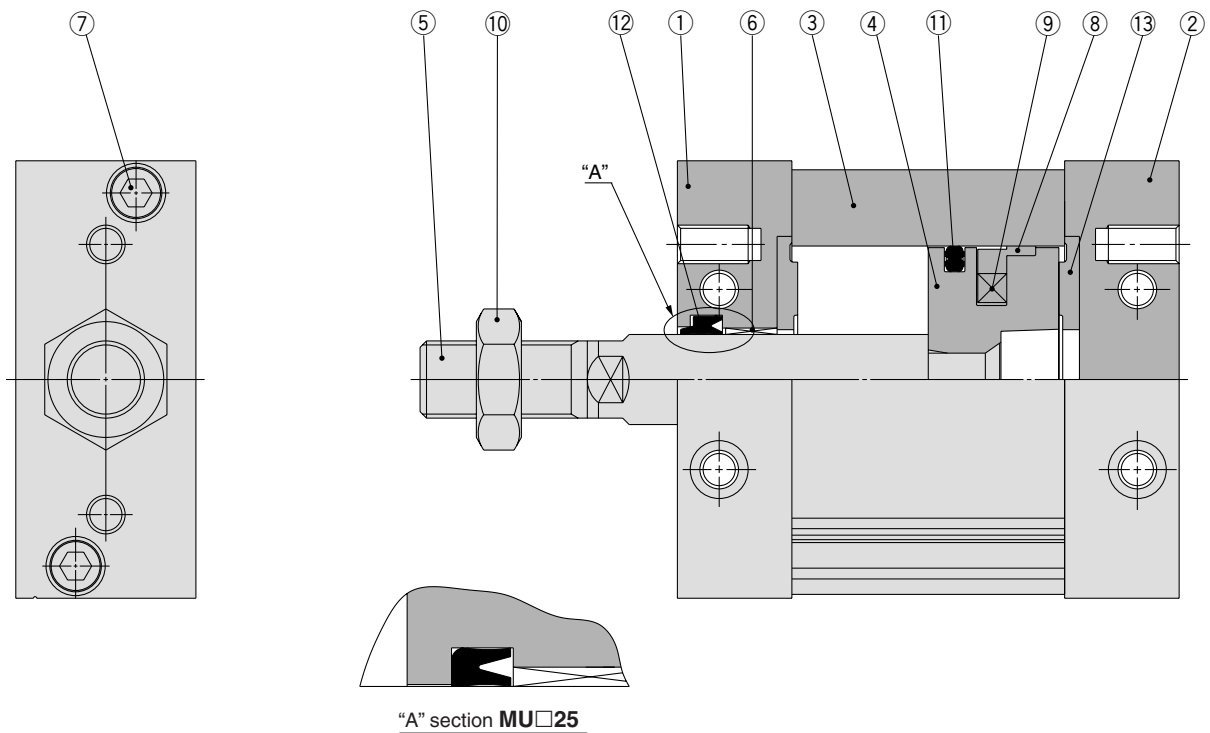
Calculation:

(Example) **MUL32-100DZ**

- Basic weight ..... 0.41 (Foot, Equivalent to ø32)
- Additional weight ..... 0.14/50 stroke
- Stroke ..... 100 stroke

$$0.41 + 100/50 \times 0.14 = 0.69 \text{ kg}$$

## Construction



### Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Anodized
2	Head cover	Aluminum alloy	Anodized
3	Cylinder tube	Aluminum alloy	Hard anodized
4	Piston	Aluminum die-casted	Chromated
5	Piston rod	Carbon steel	Hard chrome plated
6	Bushing	Oil-impregnated sintered alloy	
7	Hexagon socket head bolt	Stainless steel	
8	Wear ring	Resin	
9	Magnet	—	Only built-in magnet type
10	Rod end nut	Rolled steel	Only attached to rod end male thread
11	Piston seal	NBR	
12	Rod seal	NBR	
13	Bumper	Urethane	

### Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
25	MUB25-PS	Set of nos. above ⑪, ⑫, ⑬
32	MUB32-PS	
40	MUB40-PS	
50	MUB50-PS	
63	MUB63-PS	

\* Seal kit includes ⑪ to ⑬. Order the seal kit, based on each bore size.

\* Since the seal kit does not include a grease pack, order it separately.

**Grease pack part no.: GR-S-010 (10 g)**