Air Cylinder

MB1 Series

ø32, ø40, ø50, ø63, ø80, ø100, ø125

RoHS

Weight 10% lighter (ø50-100 stroke)

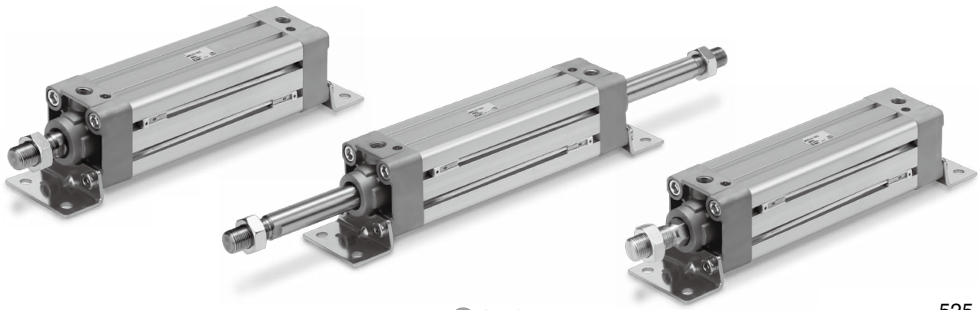
Current model **1.9 kg** → *MB1* Series **1.7 kg**

Reduced weight by changing the shape of the rod cover and head cover.

Can mount small auto switches on 4 surfaces. Page 527

Dustproof

Fastener on auto switch mounting groove for dust-prevention **(Option)** Page 527



Part numbers with rod end bracket and/or pivot bracket available

Not necessary to order a bracket for the applicable cylinder separately

Note) Mounting bracket is shipped together with the product, but not assembled.

Example) **MDB1 D 40-100Z- N V -M9BW**

- Mounting type

Pivot bracket	
Nil	No bracket
N	Pivot bracket is shipped together with the product, but not assembled.

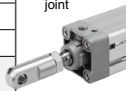
* Applicable to only D (Double clevis) mounting type.

Double clevis

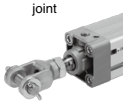
Rod end bracket	
Nil	No bracket
V	Single knuckle joint
W	Double knuckle joint

With rod end bracket

V: Single knuckle joint

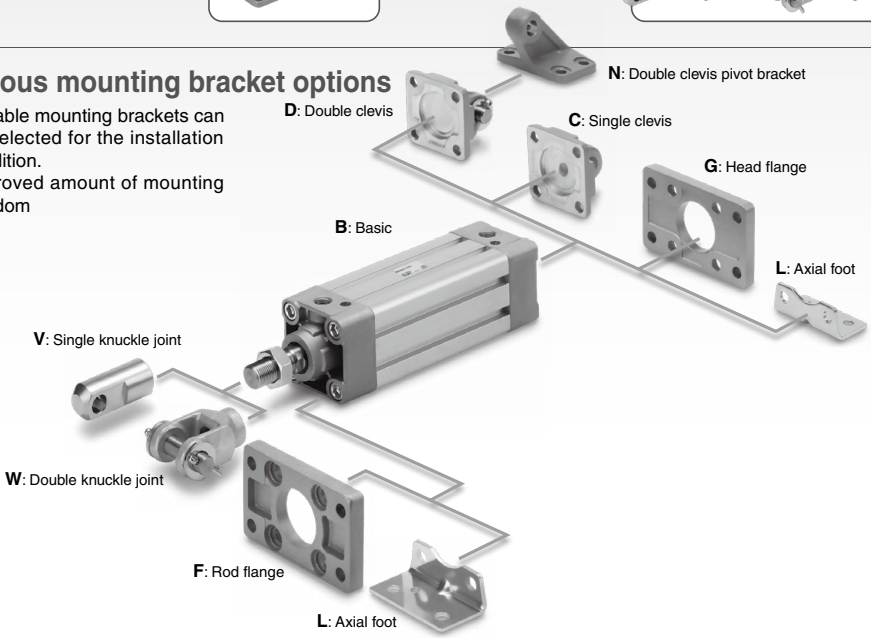


W: Double knuckle joint



Various mounting bracket options

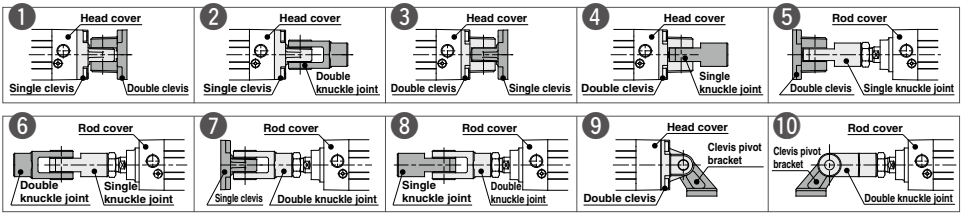
- Suitable mounting brackets can be selected for the installation condition.
- Improved amount of mounting freedom



Bracket Combinations

Bracket combination available ····· Circled numbers are those shown in figures below.

Bracket for cylinder \ Bracket for workpiece	Single clevis	Double clevis	Single knuckle joint	Double knuckle joint	Clevis pivot bracket
Single clevis	—	❶	—	❷	—
Double clevis	❸	—	❹	—	❾
Single knuckle joint	—	❺	—	❻	—
Double knuckle joint	❼	—	❽	—	❿



Features

Lightweight

Reduced weight by changing the shape of the rod cover and head cover.

[kg]

Bore size [mm]	MB1	Reduction rate [%]	Current model
32	0.8	11	0.9
40	1.0	9	1.1
50	1.7	11	1.9
63	2.1	9	2.3
80	3.6	10	4.0
100	4.9	8	5.3
125	7.6	0	7.6

∗ At 100 stroke

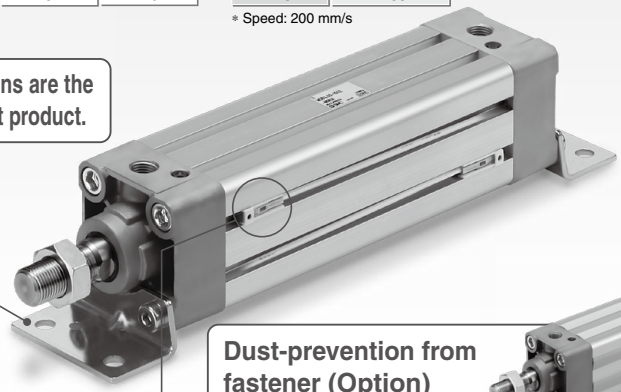
Applicable speed/load

- Piston speed: Max. **1000** mm/s (ø32 to ø125)
- Load yield: See table below.

[kg]

Bore size [mm]	Maximum load mass
32	80
40	140
50	190
63	310
80	500
100	800
125	1250

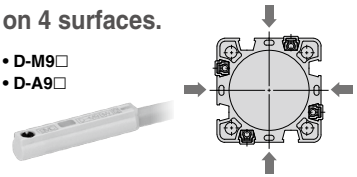
∗ Speed: 200 mm/s



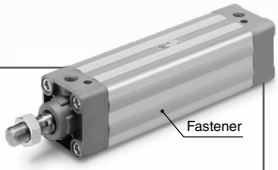
Mounting dimensions are the same as the current product.

Can mount small auto switches on 4 surfaces.

- **D-M9□**
- **D-A9□**

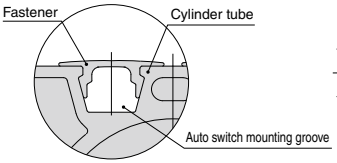


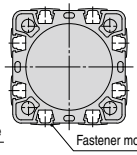
Dust-prevention from fastener (Option)



❶ Fastener avoids dust and foreign matter from entering or accumulating in the auto switch mounting groove.

❷ Flat outer circumference prevents dust and foreign matter from accumulating





Series Variations

Series	Type	Cushion	Bore size [mm] 32	40	50	63	80	100	125	Built-in magnet	With rod boot	Water resistant	Page
Standard Single rod **MB1-Z** 	Double acting, Single rod	Rubber	●	●	●	●	●	●	●	●	●	●	530
		Air	●	●	●	●	●	●	●	●	●	●	
Standard Double rod **MB1W-Z** 	Double acting, Double rod	Rubber	●	●	●	●	●	●	●	●	●	●	540
		Air	●	●	●	●	●	●	●	●	●	●	
Non-rotating rod Single rod **MB1K-Z** 	Double acting, Single rod	Rubber	●	●	●	●	●	●	●	●	●	●	546
		Air	●	●	●	●	●	●	●	●	●	●	

MB1 Series

●: Standard
◎: Made to Order
○: Special product (Please contact SMC for details.)
—: Not available

Series	MB1 (Standard type)				
Action/Type	Double acting				
	Single rod				
Cushion	Air		Rubber		
Page	530				
Symbol	**Specifications**	**Applicable bore size**	ø32 to ø100	ø125	ø32 to ø100	ø125
Standard	**Standard**	ø32 to ø125	●	●	●	●
Long st	**Long stroke**		○	○	○	○
D	**Built-in magnet**		●	●	●	●
MB1□-□J/K	**With rod boot**		●	●	●	●
10- Note 4)	**Clean series**		○	○	○	○
20- Note 4)	**Copper** Note 3) **and Fluorine-free**		●	○	●	○
MB1□R/V	**Water resistant**		●	○	●	○
XA□	**Change of rod end shape**	ø32 to ø125	◎	◎	◎	◎
XB5 Note 4)	**Oversized rod cylinder**		◎	○	○	○
XB6	**Heat resistant cylinder (–10 to 150°C)**		◎	○	○	○
XC3 Note 4)	**Special port location**		◎	○	◎	○
XC4	**With heavy duty scraper**		◎	○	◎	○
XC5	**Heat resistant cylinder (–10 to 110°C)**		◎	○	○	○
XC6	**Piston rod and rod end nut made of stainless steel**		—	◎	—	◎
XC7	**Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel**		◎	○	◎	○
XC8	**Adjustable stroke cylinder/ Adjustable extension type**		◎	○	◎	○
XC9	**Adjustable stroke cylinder/ Adjustable retraction type**		◎	○	◎	○
XC10	**Dual stroke cylinder/Double rod type**		◎	○	◎	○
XC11	**Dual stroke cylinder/Single rod type**		◎	○	◎	○
XC12	**Tandem cylinder**		◎	○	◎	○
XC22	**Fluororubber seal**		◎	○	◎	○
XC26	**With split pins for double clevis pin/double knuckle joint pin and flat washers**	ø125	—	◎	—	◎
XC27	**Double clevis and double knuckle joint pins made of stainless steel**	ø32 to ø125	◎	◎	◎	◎
XC29	**Double knuckle joint with spring pin**		◎	○	◎	○
XC30	**Rod trunnion**		◎ Note 1)	○	◎ Note 1)	○
XC35	**With coil scraper**		◎	○	◎	○
XC65	**Made of stainless steel (Combination of XC7 and XC68)**		◎	○	◎	○
XC68	**Piston rod and rod end nut made of stainless steel (with hard chrome plated piston rod)**		◎	○	◎	○
X846	**Fastener strips mounted on switch mounting grooves**		◎	◎	◎	◎

Note 1) T bracket can be used only when selecting XC30.
Note 2) XC10 specification for the MBK series is the non-rotating type on both sides. For only one side, submit a special order request form.
Note 3) Copper-free for the externally exposed part. For details, refer to the **Web Catalog**.
Note 4) The cover shape is the same as the current product.

	MB1W (Standard type)				MB1K (Non-rotating rod type)		
	Double acting						
	Double rod				Single rod		
	Air		Rubber		Air	Rubber	
	540				546		
	ø32 to ø100	ø125	ø32 to ø100	ø125	ø32 to ø100		**Symbol**
	●	●	●	●	●	●	**Standard**
	○	○	○	○	○	○	**Long st**
	●	●	●	●	●	●	**D**
	●	●	●	●	●	●	**MB1□-□$^{J}_{K}$**
	○	○	○	○	○	○	**10-**
	●	○	●	○	—	—	**20-**
	●	○	●	○	—	—	**MB1□$^{R}_{V}$**
	◎	◎	◎	◎	◎	◎	**XA□**
	○	○	○	○	○	○	**XB5**
	◎	○	○	○	○	○	**XB6**
	◎	○	◎	○	◎	◎	**XC3**
	◎	○	◎	○	—	—	**XC4**
	◎	○	○	○	○	○	**XC5**
	—	○	—	○	○	○	**XC6**
	◎	○	◎	○	◎	◎	**XC7**
	—	—	—	—	◎	◎	**XC8**
	—	—	—	—	◎	◎	**XC9**
	—	—	—	—	◎ Note 2)	◎ Note 2)	**XC10**
	—	—	—	—	○	○	**XC11**
	○	○	○	○	○	○	**XC12**
	◎	○	◎	○	○	○	**XC22**
	—	—	—	—	—	—	**XC26**
	—	—	—	—	◎	◎	**XC27**
	○	○	○	○	○	○	**XC29**
	◎ Note 1)	○	◎ Note 1)	○	◎ Note 1)	◎ Note 1)	**XC30**
	◎	○	◎	○	—	—	**XC35**
	◎	◎	◎	◎	○	○	**XC65**
	◎	○	◎	○	—	—	**XC68**
	◎	◎	◎	◎	◎	◎	**X846**

Square Tube Type Air Cylinder: Standard Type Double Acting, Single Rod

MB1 Series

RoHS

ø32, ø40, ø50, ø63, ø80, ø100, ø125

How to Order

MB1 B 32 □ – 50 □ □ Z – □ □ – □

With auto switch MDB1 B 32 □ – 50 □ □ Z – □ □ – M9BW □ – □

With auto switch
(Built-in magnet)

Mounting type

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

∗ Mounting bracket is shipped together with the product, but not assembled (except ø125).

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm
125	125 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

∗ **Refer to "Ordering Example of Cylinder Assembly" on page 531.**

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 531.

Suffix (Rod boot)

Nil	None
J	Nylon tarpaulin
K	Heat resistant tarpaulin

Suffix (Cushion)

Nil	Air cushion
N∗	Rubber bumper

∗ Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

Made to Order
For details, refer to page 531.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Auto switch

Nil	Without auto switch

∗ For applicable auto switches, refer to the table below.

Accessories 2

Nil	No bracket
V	Single knuckle joint
W	Double knuckle joint

∗ A knuckle joint pin is not provided with the single knuckle joint.
∗ Rod end bracket is shipped together with the product.

Accessories 1

Nil	No bracket
N	Pivot bracket

∗ Only for D mounting type.
∗ Pivot bracket is shipped together with the product.
∗ For details, refer to page 538.

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) MDB1B40-100Z

Applicable Auto Switches/Refer to pages 1271 to 1365 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length [m] 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire		12V		M9BV	M9B	●	●	●	○	○	—	
	Diagnostic indication (2-color indicator)			3-wire (NPN)		5 V, 12 V		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○		
				2-wire		12 V		M9BWV	M9BW	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)		5 V, 12 V		M9NAV∗1	M9NA∗1	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV∗1	M9PA∗1	○	○	●	○	○		
				2-wire		12 V		M9BAV∗1	M9BA∗1	○	○	●	○	○	—	
Reed auto switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93V∗2	A93	●	●	●	●	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	IC circuit	

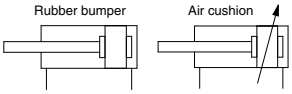
∗1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
A water resistant type cylinder is recommended for use in an environment which requires water resistance.
∗2 1 m type lead wire is only applicable to the D-A93.

∗ 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.

∗ Since there are other applicable auto switches than listed above, refer to page 551 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1340 and 1341.
∗ Auto switches are shipped together, (but not assembled).

Symbol



Made to Order: Individual Specifications
(For details, refer to page 552.)

Symbol	Specifications
-X846	Fastener strips mounted on switch mounting grooves

Made to Order

Click here for details

Symbol	Specifications
-XA□	Change of rod end shape
-XB5	Oversized rod cylinder*1 *2 *3
-XB6	Heat resistant cylinder (–10 to 150°C)*1 *2
-XC3	Special port location*3
-XC4	With heavy duty scraper*2
-XC5	Heat resistant cylinder (–10 to 110°C)*1
-XC6	Piston rod and rod end nut made of stainless steel*4
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel*2
-XC8	Adjustable stroke cylinder/Adjustable extension type*2
-XC9	Adjustable stroke cylinder/Adjustable retraction type*2
-XC10	Dual stroke cylinder/Double rod type*2
-XC11	Dual stroke cylinder/Single rod type*2
-XC12	Tandem cylinder*2
-XC22	Fluororubber seal*2
-XC26	With split pins for double clevis pin/double knuckle joint pin and flat washers*4
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC29	Double knuckle joint with spring pin*2
-XC30	Rod trunnion*2
-XC35	With coil scraper*2
-XC65	Made of stainless steel (Combination of XC7 and XC68)*2
-XC68	Piston rod and rod end nut made of stainless steel*2 (with hard chrome plated piston rod)

*1 Air cushion only
*2 Except ø125
*3 The cover shape is the same as the current product.
*4 ø125 only

For special port location (-XC3), the mounting bracket and port location can be determined using the standard product corresponding to the operating conditions. Also, this is only applicable to -XC3BB, -XC3CC and -XC3DD with trunnion bracket.

Refer to pages 550 and 551 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Specifications

Bore size [mm]	32	40	50	63	80	100	125
Action	Double acting, Single rod						
Fluid	Air						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Minimum operating pressure	0.05 MPa						
Ambient and fluid temperature	Without auto switch: –10 to 70°C With auto switch: –10 to 60°C (No freezing)						
Lubrication	Not required (Non-lube)						
Piston speed	50 to 1000 mm/s						
Stroke length tolerance	Up to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$, 1001 to 1500: $^{+1.8}_{0}$, 1501 to 2000: $^{+2.2}_{0}$, 2001 to 2300: $^{+2.6}_{0}$						
Cushion	Air cushion or Rubber bumper						
Port size (Rc, NPT, G)	1/8	1/4		3/8		1/2	
Mounting	Basic, Axial foot, Rod flange, Head flange Single clevis, Double clevis						

Standard Strokes

[mm]

Bore size	Standard stroke		Max. manufacturable stroke
	Stroke range ①	Stroke range ②	
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	Up to 1800	Up to 1800
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500		
50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600		
63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600		
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800		
100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800		
125	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 1000	Up to 2300	Up to 2300

Note 1) Intermediate strokes are available. (No spacer is used.)
Note 2) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on pages 8 to 19. In addition, the products that exceed the stroke range ① might not be able to fulfill the specifications due to the deflection etc.
Note 3) Please consult with SMC for manufacturability and the part numbers when exceeding the stroke range ②.
Note 4) When using a rod boot, a stroke range of up to 1000 mm is available. Please consult with SMC when exceeding a 1000 mm stroke.
Note 5) Using a stroke of a length which is smaller than the effective cushion length may result in reduced air cushion performance. Refer to "Technical Data 1" on page 1573 for details on the effective cushion length.

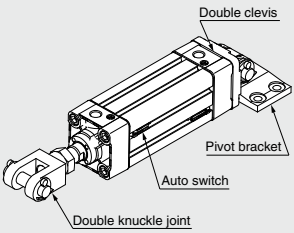
Rod Boot Material

Symbol	Rod boot material	Max. ambient temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*

* Max. ambient temperature for rod boot itself.

Ordering Example of Cylinder Assembly

Cylinder model: MDB1D50-100Z-NW-M9BW



Mounting D: Double clevis
Pivot bracket N: Yes
Rod end bracket W: Double knuckle joint
Auto switch D-M9BW: 2 pcs.

*Pivot bracket, double knuckle joint and auto switch are shipped together with the product, but not assembled.

Accessories

Mounting		Basic	Axial foot	Rod flange	Head flange	Single clevis	Double clevis
Standard	Rod end nut	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●

∗ Refer to page 539 for part numbers and dimensions. (Refer to page 535 for rod boot.)

Mounting Brackets/Part No.

Bore size [mm]	32	40	50	63	80	100	125
Axial foot Note 1)	MB-L03	MB-L04	MB-L05	MB-L06	MB-L08	MB-L10	MB-L12
Rod/Head flange	MB-F03	MB-F04	MB-F05	MB-F06	MB-F08	MB-F10	MB-F12
Single clevis	MB-C03	MB-C04	MB-C05	MB-C06	MB-C08	MB-C10	MB-C12
Double clevis	MB-D03	MB-D04	MB-D05	MB-D06	MB-D08	MB-D10	MB-D12

Note 1) Order two foots per cylinder.
Note 2) Accessories for each mounting bracket are as follows. Axial foot, Rod/Head flange, Single clevis/Body mounting bolt; Double clevis/Body mounting bolt, Clevis pin, Split pins and Flat washers. → Refer to page 539 for details.

Theoretical Force

(Unit: N) OUT IN

Bore size [mm]	Rod diameter [mm]	Operating direction	Piston area [mm²]	Operating pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
32	12	OUT	804	161	241	322	402	482	563	643	724	804
		IN	691	138	207	276	346	415	484	553	622	691
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	989	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147
125	32	OUT	12272	2454	3682	4909	6136	7363	8590	9818	11045	12272
		IN	11468	2294	3440	4588	5734	6881	8028	9174	10321	11468

Note) Theoretical force [N] = Pressure [MPa] x Piston area [mm²]

Weights

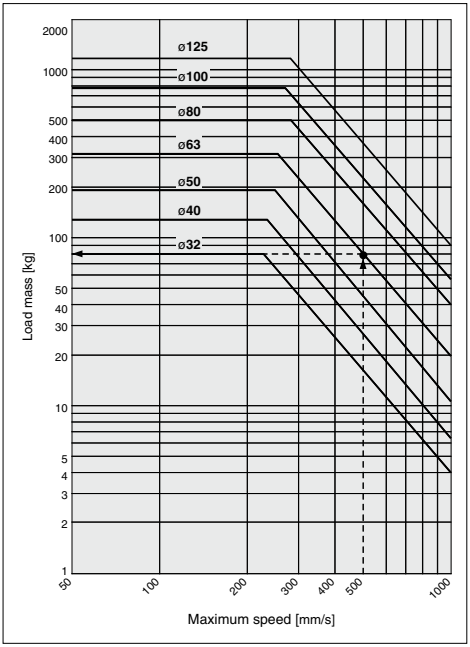
[kg]

Bore size [mm]		32	40	50	63	80	100	125
Basic weight	Basic	0.47	0.62	1.1	1.36	2.54	3.51	5.68
	Axial foot	0.59	0.76	1.32	1.64	3.04	4.17	7.76
	Rod/Head flange	0.76	0.99	1.55	2.15	3.99	5.34	9.84
	Single clevis	0.72	0.85	1.44	1.99	3.65	5.09	8.25
	Double clevis	0.73	0.89	1.53	2.15	3.94	5.36	8.45
Additional weight per 50 mm of stroke	All mounting brackets	0.16	0.21	0.33	0.37	0.57	0.72	0.94
Accessories	Single knuckle joint	0.15	0.23	0.26	0.26	0.6	0.83	1.08
	Double knuckle joint (with pin)	0.22	0.37	0.43	0.43	0.87	1.27	1.58

Calculation
Example) **MB1B32-100Z** (Basic, ø32, 100 stroke)
- Basic weight ····· 0.47 (Basic, ø32)
- Additional weight ····· 0.16/50 stroke
- Cylinder stroke ····· 100 stroke

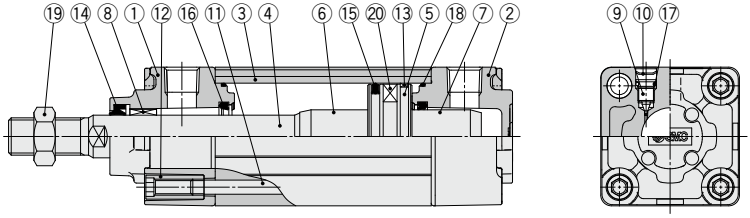
0.47 + 0.16 x 100/50 = **0.79 kg**

Allowable Kinetic Energy



Example) Load limit at rod end when the air cylinder ø63 is actuated at 500 mm/s. Extend upward from 500 mm/s on the horizontal axis of the graph to the intersection point with the line for a tube bore size of 63 mm, and then extend leftward from this point to find the load of 80 kg.

Construction



Component Parts

No.	Description	Material	Q'ty	Note
1	**Rod cover**	Aluminum die-cast	1	Trivalent chromated
2	**Head cover**	Aluminum die-cast	1	Trivalent chromated
3	**Cylinder tube**	Aluminum alloy	1	Hard anodized
4	**Piston rod**	Carbon steel	1	Hard chrome plating
5	**Piston**	Aluminum alloy	1	
6	**Cushion ring**	Aluminum alloy	1	Anodized
7	**Cushion ring B**	Aluminum alloy	1	Anodized
8	**Bushing**	Bearing alloy	1	
9	**Cushion valve**	Steel wire	2	Trivalent zinc chromated
10	**Retaining ring**	Steel for spring	2	ø40 to ø125

No.	Description	Material	Q'ty	Note
11	**Tie-rod**	Carbon steel	4	Trivalent zinc chromated
12	**Tie-rod nut**	Carbon steel	8	Trivalent zinc chromated
13	**Wear ring**	Resin	1	
14*	**Rod seal**	NBR	1	
15*	**Piston seal**	NBR	1	
16*	**Cushion seal**	Urethane	2	
17	**Cushion valve seal**	NBR	2	
18*	**Cylinder tube gasket**	NBR	2	
19	**Rod end nut**	Rolled steel	1	Trivalent zinc chromated
20	**Magnet**	—	(1)	

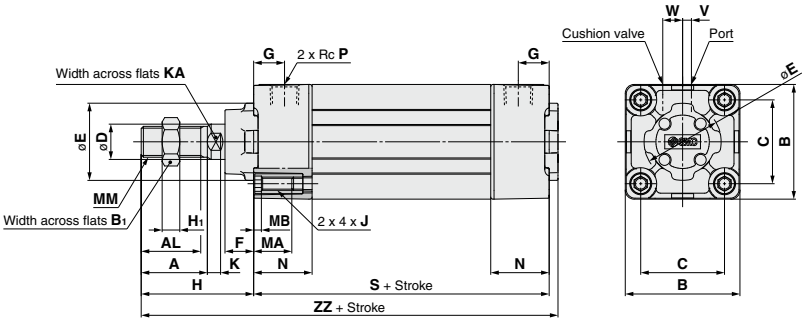
Replacement Parts/Seal Kit

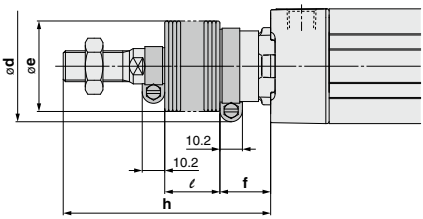
Bore size [mm]	Kit no.	Contents
32	MB32Z-PS	Set of the nos. ⑭, ⑮, ⑯, ⑱
40	MB1-40Z-PS	
50	MB1-50Z-PS	
63	MB1-63Z-PS	
80	MB1-80Z-PS	
100	MB1-100Z-PS	
125	MB125-PS	

* Seal kits consist of items ⑭, ⑮, ⑯, ⑱, and can be ordered by using the seal kit number corresponding to each bore size.
* The seal kit includes a grease pack (10 g for ø32 to ø50, 20 g for ø63 and ø80, 30 g for ø100).
Order with the following part number when only the grease pack is needed.
Grease pack part number: GR-S-010 (10 g), **GR-S-020** (20 g)

Standard

Basic: (B)





Rubber Bumper

[mm]

Bore size [mm]	S	ZZ	Bore size [mm]	S	ZZ
32	90	141	**63**	102	164
40	90	145	**80**	124	200
50	102	164	**100**	124	200
			125	132	235

* Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

[mm]

Bore size [mm]	A	AL	B	B_1	C	D	E	F	G	H	H_1	J	K	KA	MA	MB	MM	N	P	S*	V	W	ZZ*
32	22	19.5	46	17	32.5	12	30	13	13	47	6	M6 x 1	6	10	16	4	M10 x 1.25	26	1/8	84	4	6.5	135
40	30	27	52	22	38	16	35	13	14	51	8	M6 x 1	6	14	16	4	M14 x 1.5	26	1/4	84	4	9	139
50	35	32	65	27	46.5	20	40	14	15.5	58	11	M8 x 1.25	7	18	16	5	M18 x 1.5	30.5	1/4	94	5	10.5	156
63	35	32	75	27	56.5	20	45	14	16.5	58	11	M8 x 1.25	7	18	16	5	M18 x 1.5	30.5	3/8	94	9	12	156
80	40	37	95	32	72	25	45	20	19	72	13	M10 x 1.5	10	22	16	5	M22 x 1.5	37	3/8	114	11.5	14	190
100	40	37	114	41	89	30	55	20	19	72	16	M10 x 1.5	10	26	16	5	M26 x 1.5	37	1/2	114	17	15	190
125	54	50	136	41	110	32	60	27	19	97	16	M12 x 1.75	13	27	20	6	M27 x 2	38	1/2	120	17	15	223

With Rod Boot (Up to 1000 mm stroke)

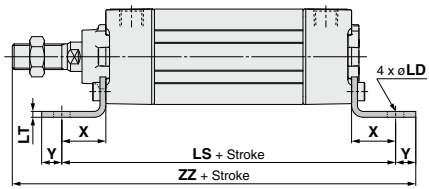
[mm]

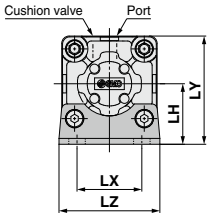
Bore size [mm]	d	e	f	ℓ											h											
				1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	501 to 600	601 to 700	701 to 800	801 to 900	901 to 1000	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	501 to 600	601 to 700	701 to 800	801 to 900	901 to 1000
32	54	36	23	12.5	25	37.5	50	75	100	125	150	175	200	225	250	73	86	98	111	136	161	186	211	236	261	286	311
40	56	41	23	12.5	25	37.5	50	75	100	125	150	175	200	225	250	81	94	106	119	144	169	194	219	244	269	294	319
50	64	51	25	12.5	25	37.5	50	75	100	125	150	175	200	225	250	89	102	114	127	152	177	202	227	252	277	302	327
63	64	51	25	12.5	25	37.5	50	75	100	125	150	175	200	225	250	89	102	114	127	152	177	202	227	252	277	302	327
80	68	56	29	12.5	25	37.5	50	75	100	125	150	175	200	225	250	101	114	126	139	164	189	214	239	264	289	314	339
100	76	61	29	12.5	25	37.5	50	75	100	125	150	175	200	225	250	101	114	126	139	164	189	214	239	264	289	314	339
125	82	75	27	10	20	30	40	60	80	100	120	140	160	180	200	120	130	140	150	170	190	210	230	250	270	290	310

Standard/With Mounting Bracket

∗ Refer to Basic (page 535) for other dimensions and with rod boot.

Axial foot: (L)





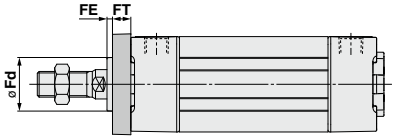
Axial Foot [mm]

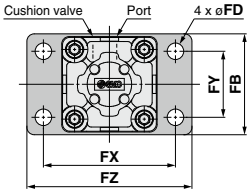
Bore size [mm]	X	Y	LD	LH	LS∗	LT	LX	LY	LZ	ZZ∗
32	22	9	7	30	128	3.2	32	53	50	162
40	24	11	9	33	132	3.2	38	59	55	170
50	27	11	9	40	148	3.2	46	72.5	70	190
63	27	14	12	45	148	3.6	56	82.5	80	193
80	30	14	12	55	174	4.5	72	102.5	100	230
100	32	16	14	65	178	4.5	89	122	120	234
125	45	20	14	81	210	8	90	149	136	282

Rubber Bumper

Bore size [mm]	LS	ZZ
32	134	168
40	138	176
50	156	198
63	156	201
80	184	240
100	188	244
125	222	294

Rod flange: (F)

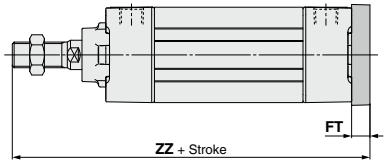


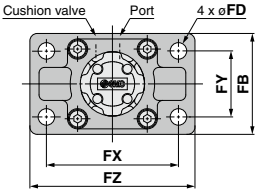


Rod Flange [mm]

Bore size [mm]	FB	FD	FE	FT	FX	FY	FZ	Fd
32	50	7	3	10	64	32	79	24.5
40	55	9	3	10	72	36	90	29.5
50	70	9	2	12	90	45	110	35.5
63	80	9	2	12	100	50	120	38.5
80	100	12	4	16	126	63	153	41
100	120	14	4	16	150	75	178	46
125	138	14	7	20	180	102	216	57

Head flange: (G)





Head Flange [mm]

Bore size [mm]	FB	FD	FT	FX	FY	FZ	ZZ∗
32	50	7	10	64	32	79	141
40	55	9	10	72	36	90	145
50	70	9	12	90	45	110	164
63	80	9	12	100	50	120	164
80	100	12	16	126	63	153	202
100	120	14	16	150	75	178	202
125	138	14	20	180	102	216	237

Rubber Bumper

Bore size [mm]	ZZ
32	147
40	151
50, 63	172
80, 100	212
125	249

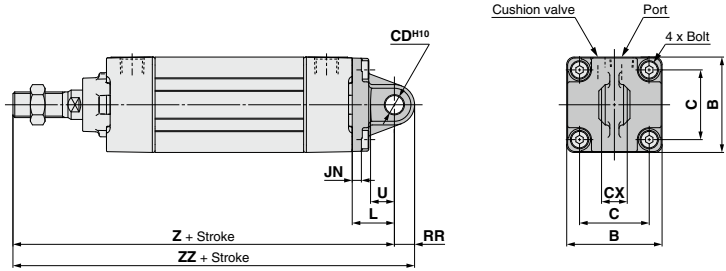
Axial foot, Rod/Head flange

∗ Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

Standard/With Mounting Bracket

∗ Refer to Basic (page 535) for other dimensions and with rod boot.

Single clevis: (C)



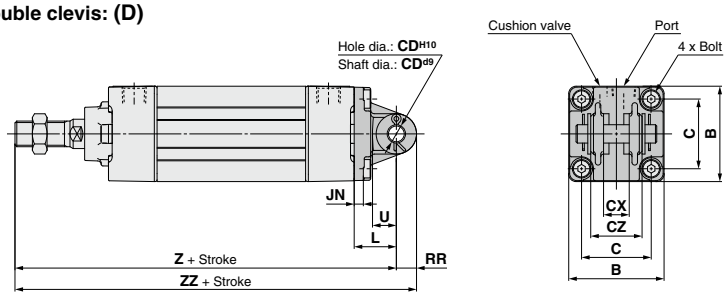
Single Clevis [mm]

Bore size [mm]	B	C	JN	L	RR	U	CD^{H10}	CX$^{0.1}_{-0.3}$	Z∗	ZZ∗	Bolt
32	46	32.5	5	23	10.5	13	10	14	154	164.5	MB-32-48-C1247 (M6 x 1 x 16L, Low head)
40	52	38	5	23	11	13	10	14	158	169	
50	65	46.5	6	30	15	17	14	20	182	197	MB-50-48-C1249 (M8 x 1.25 x 18L, Low head)
63	75	56.5	6	30	15	17	14	20	182	197	
80	95	72	8	42	23	26	22	30	228	251	MB-80-48BC1251 (M10 x 1.5 x 22L, Low head)
100	114	89	8	42	23	26	22	30	228	251	
125	136	110	10	50	28	30	25	32	267	295	M12 x 1.75 x 28L, Low head

Rubber Bumper

Bore size [mm]	Z	ZZ
32	160	170.5
40	164	175
50, 63	190	205
80, 100	238	261
125	279	307

Double clevis: (D)



Double Clevis [mm]

Bore size [mm]	B	C	JN	L	RR	U	CD^{H10}	CX$^{+0.3}_{+0.1}$	CZ	Z∗	ZZ∗	Bolt
32	46	32.5	5	23	10.5	13	10	14	28	154	164.5	MB-32-48-C1247 (M6 x 1 x 16L, Low head)
40	52	38	5	23	11	13	10	14	28	158	169	
50	65	46.5	6	30	15	17	14	20	40	182	197	MB-50-48-C1249 (M8 x 1.25 x 18L, Low head)
63	75	56.5	6	30	15	17	14	20	40	182	197	
80	95	72	8	42	23	26	22	30	60	228	251	MB-80-48BC1251 (M10 x 1.5 x 22L, Low head)
100	114	89	8	42	23	26	22	30	60	228	251	
125	136	110	10	50	28	30	25	32	64	267	295	M12 x 1.75 x 28L, Low head

Rubber Bumper

Bore size [mm]	Z	ZZ
32	160	170.5
40	164	175
50, 63	190	205
80, 100	238	261
125	279	307

Single/Double clevis

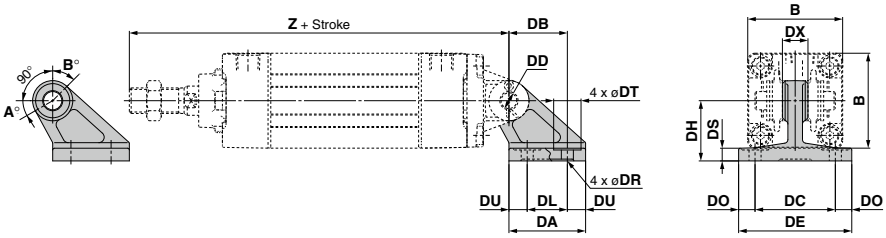
∗ Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

Pivot Bracket/Double Clevis Pivot Bracket

Part No.

Description \ Bore size	MB□32	MB□40	MB□50	MB□63	MB□80	MB□100	MB□125
Double clevis pivot bracket	MB-B03		MB-B05		MB-B08		MB-B12

Double clevis pivot bracket



[mm]

Part no.	Bore size [mm]	B	DA	DB	DL	DU	DC	DX	DE	DO	DR	DT	DS	DH	Z*	DD_{H10}
MB-B03	32	46	42	32	22	10	44	14	62	9	6.6	15	7	33	154	$10^{+0.058}_{0}$
	40	52	42	32	22	10	44	14	62	9	6.6	15	7	33	158	$10^{+0.058}_{0}$
MB-B05	50	65	53	43	30	11.5	60	20	81	10.5	9	18	8	45	182	$14^{+0.070}_{0}$
	63	75	53	43	30	11.5	60	20	81	10.5	9	18	8	45	182	$14^{+0.070}_{0}$
MB-B08	80	95	73	64	45	14	86	30	111	12.5	11	22	10	65	228	$22^{+0.084}_{0}$
	100	114	73	64	45	14	86	30	111	12.5	11	22	10	65	228	$22^{+0.084}_{0}$
MB-B12	125	136	90	78	60	15	110	32	136	13	13.5	24	14	75	267	$25^{+0.084}_{0}$

Rubber Bumper

Bore size [mm]	Z
32	160
40	164
50	190
63	190
80	238
100	238
125	279

Rotating Angle

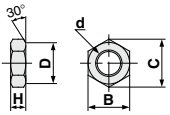
Bore size [mm]	A°	B°	A°+ B°+ 90°
32, 40	25°	45°	160°
50, 63	40°	60°	190°
80, 100	30°	55°	175°
125	30°	50°	170°

Clevis pivot bracket

* Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

Dimensions of Accessories

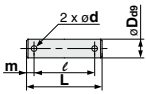
Rod end nut
(Standard)



[mm]

Part no.	Bore size [mm]	d	H	B	C	D
NT-03	**32**	M10 x 1.25	6	17	19.6	16.5
NT-04	**40**	M14 x 1.5	8	22	25.4	21
NT-05	**50, 63**	M18 x 1.5	11	27	31.2	26
NT-08	**80**	M22 x 1.5	13	32	37.0	31
NT-10	**100**	M26 x 1.5	16	41	47.3	39
NT-12M	**125**	M27 x 2	16	41	47.3	39

Knuckle joint pin
Clevis pin

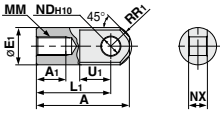


[mm]

Part no.	Bore size [mm] Clevis	Bore size [mm] Knuckle	D_{d9}	L	ℓ	m	d (Drill through)	Split pin
CD-M03(Note)	**32, 40**		$10^{-0.040}_{-0.076}$	44	36	4	3	ø3 x 18ℓ
CD-M05(Note)	**50, 63**		$14^{-0.050}_{-0.093}$	60	51	4.5	4	ø4 x 25ℓ
CD-M08(Note)	**80, 100**		$22^{-0.065}_{-0.117}$	82	72	5	4	ø4 x 35ℓ
IY-12	**125**		$25^{-0.065}_{-0.117}$	79.5	69.5	5	4	ø4 x 40ℓ

Note) Split pins and flat washers are included.

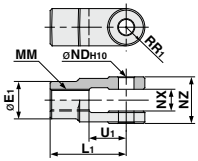
I type
Single knuckle joint



[mm]

Part no.	Bore size [mm]	A	A_1	E_1	L_1	MM	R_1	U_1	ND_{H10}	NX
I-03M	**32**	40	14	20	30	M10 x 1.25	12	16	$10^{+0.058}_{0}$	$14^{-0.10}_{-0.30}$
I-04M	**40**	50	19	22	40	M14 x 1.5	12.5	19	$10^{+0.058}_{0}$	$14^{-0.10}_{-0.30}$
I-05M	**50, 63**	64	24	28	50	M18 x 1.5	16.5	24	$14^{+0.070}_{0}$	$20^{-0.10}_{-0.30}$
I-08M	**80**	80	26	40	60	M22 x 1.5	23.5	34	$22^{+0.084}_{0}$	$30^{-0.10}_{-0.30}$
I-10M	**100**	80	26	40	60	M26 x 1.5	23.5	34	$22^{+0.084}_{0}$	$30^{-0.10}_{-0.30}$
I-12M	**125**	119	36	46	92	M27 x 2	28.5	34	$25^{+0.084}_{0}$	$32^{-0.10}_{-0.30}$

Y type
Double knuckle joint



[mm]

Part no.	Bore size [mm]	E_1	L_1	MM	R_1	U_1	ND_{H10}	NX	NZ
Y-03M	**32**	20	30	M10 x 1.25	10	16	$10^{+0.058}_{0}$	$14^{+0.30}_{+0.10}$	$28^{-0.10}_{-0.30}$
Y-04M	**40**	22	40	M14 x 1.5	11	19	$10^{+0.058}_{0}$	$14^{+0.30}_{+0.10}$	$28^{-0.10}_{-0.30}$
Y-05M	**50, 63**	28	50	M18 x 1.5	14	24	$14^{+0.070}_{0}$	$20^{+0.30}_{+0.10}$	$40^{-0.10}_{-0.30}$
Y-08M	**80**	40	65	M22 x 1.5	20	34	$22^{+0.084}_{0}$	$30^{+0.30}_{+0.10}$	$60^{-0.10}_{-0.30}$
Y-10M	**100**	40	65	M26 x 1.5	20	34	$22^{+0.084}_{0}$	$30^{+0.30}_{+0.10}$	$60^{-0.10}_{-0.30}$
Y-12M	**125**	46	100	M27 x 2	27	42	$25^{+0.084}_{0}$	$32^{+0.30}_{+0.10}$	$64^{-0.10}_{-0.30}$

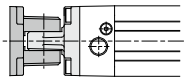
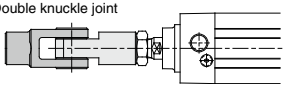
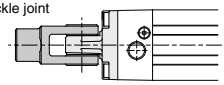
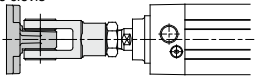
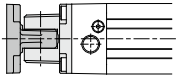
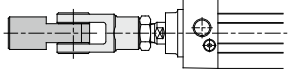
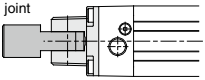
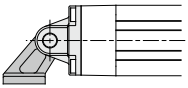
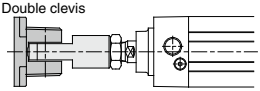
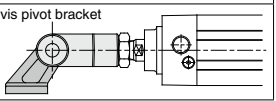
Note) A pin, split pins, and flat washers are included.

Bracket Combinations

Bracket combination available

▶Refer to the figure below.

Bracket for cylinder \ Bracket for workpiece	Single clevis	Double clevis	Single knuckle joint	Double knuckle joint	Clevis pivot bracket
Single clevis	—	①	—	②	—
Double clevis	③	—	④	—	⑨
Single knuckle joint	—	⑤	—	⑥	—
Double knuckle joint	⑦	—	⑧	—	⑩

No.	Appearance	No.	Appearance
①	Single clevis + Double clevis 	⑥	Single knuckle joint + Double knuckle joint 
②	Single clevis + Double knuckle joint 	⑦	Double knuckle joint + Single clevis 
③	Double clevis + Single clevis 	⑧	Double knuckle joint + Single knuckle joint 
④	Double clevis + Single knuckle joint 	⑨	Double clevis + Clevis pivot bracket 
⑤	Single knuckle joint + Double clevis 	⑩	Double knuckle joint + Clevis pivot bracket 

Square Tube Type Air Cylinder: Standard Type Double Acting, Double Rod

MB1W Series

RoHS

ø32, ø40, ø50, ø63, ø80, ø100, ø125

How to Order

MB1W L 32 □ – 150 □ □ Z – □

With auto switch: MDB1W L 32 □ – 150 □ □ Z – M9BW □ – □

With auto switch
(Built-in magnet)

Mounting type

B	Basic
L	Axial foot
F	Rod flange

∗ Mounting bracket is shipped together with the product, but not assembled (except ø125).

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm
125	125 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 541.

Made to Order
For details, refer to page 541.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Auto switch

Nil	Without auto switch

∗ For applicable auto switches, refer to the table below.

Suffix (Cushion)

Nil	Air cushion
N∗	Rubber bumper

∗ Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

Suffix (Rod boot)

Nil	None
J	Nylon tarpaulin (One end)
JJ	Nylon tarpaulin (Both ends)
K	Heat resistant tarpaulin (One end)
KK	Heat resistant tarpaulin (Both ends)

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) MDB1WB40-100Z

Applicable Auto Switches/Refer to pages 1271 to 1365 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length [m] 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire		12 V		M9BV	M9B	●	●	●	○	○	—	
	Diagnostic indication (2-color indicator)			3-wire (NPN)		5 V, 12 V		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○		
				2-wire		12 V		M9BWV	M9BW	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)		5 V, 12 V		M9NAV∗1	M9NA∗1	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV∗1	M9PA∗1	○	○	●	○	○		
				2-wire		12 V		M9BAV∗1	M9BA∗1	○	○	●	○	○	—	
Reed auto switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93V∗2	A93	●	●	●	●	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	IC circuit	

∗1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
Please contact SMC regarding water resistant types with the above model numbers.
∗2 1 m type lead wire is only applicable to the D-A93.

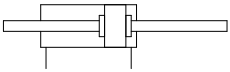
∗ Lead wire length symbols: 0.5 m ·····Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

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

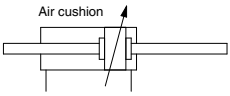
∗ Since there are other applicable auto switches than listed above, refer to page 551 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1340 and 1341.
∗ Auto switches are shipped together, (but not assembled).

Symbol

Rubber bumper



Air cushion



Specifications

Bore size [mm]	32	40	50	63	80	100	125
Action	Double acting, Double rod						
Fluid	Air						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Minimum operating pressure	0.05 MPa						
Ambient and fluid temperature	Without auto switch: –10 to 70°C With auto switch: –10 to 60°C (No freezing)						
Lubrication	Not required (Non-lube)						
Piston speed	50 to 1000 mm/s						50 to 700 mm/s
Stroke length tolerance	Up to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$						
Cushion Note)	Air cushion or Rubber bumper						
Port size (Rc, NPT, G)	1/8	1/4		3/8		1/2	
Mounting	Basic, Axial foot, Rod flange						

Note) Kinetic energy absorbable by the cushion mechanism is identical to double acting, single rod.

Made to Order

Made to Order: Individual Specifications
(For details, refer to page 552.)

Symbol	Specifications
-X846	Fastener strips mounted on switch mounting grooves

Made to Order

Click here for details

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (–10 to 150°C)*1 *2
-XC3	Special port location*3
-XC4	With heavy duty scraper*2
-XC5	Heat resistant cylinder (–10 to 110°C)*1
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel*2
-XC22	Fluororubber seal*2
-XC26	With split pins for double clevis pin/double knuckle joint pin and flat washers*4
-XC30	Rod trunnion*2
-XC35	With coil scraper*2
-XC65	Made of stainless steel (Combination of XC7 and XC68)*2
-XC68	Piston rod and rod end nut made of stainless steel*2 (with hard chrome plated piston rod)

*1 Air cushion only
*2 Except ø125
*3 The cover shape is the same as the current product.
*4 ø125 only

For special port location (-XC3), the mounting bracket and port location can be determined using the standard product corresponding to the operating conditions. Also, this is only applicable to -XC3BB, -XC3CC and -XC3DD with trunnion bracket.

Refer to pages 550 and 551 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Standard Strokes

[mm]

Bore size	Standard stroke: Stroke range ①	Standard stroke: Stroke range ②	Max. manufacturable stroke
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	Up to 1000	Up to 1800
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500		
50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600		
63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600		
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800		
100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800		
125	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 1000		Up to 2000

Note 1) Intermediate strokes are available. (No spacer is used.)
Note 2) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on pages 8 yo 19. In addition, the products that exceed the stroke range ① might not be able to fulfill the specifications due to the deflection etc.
Note 3) Please consult with SMC for manufacturability and the part numbers when exceeding the stroke range ②.
Note 4) Using a stroke of a length which is smaller than the effective cushion length may result in reduced air cushion performance. Refer to "Technical Data 1" on page 1573 for details on the effective cushion length.

Accessories

Mounting		Basic	Axial foot	Rod flange
Standard	Rod end nut	●	●	●
Option	Single knuckle joint	●	●	●
	Double knuckle joint (with pin)	●	●	●
	Rod boot	●	●	●

* Refer to page 539 for part numbers and dimensions. (Refer to page 544 for rod boot.)

Mounting Brackets/Part No.

Bore size [mm]	32	40	50	63	80	100	125
Axial foot	MB-L03	MB-L04	MB-L05	MB-L06	MB-L08	MB-L10	MB-L12
Rod flange	MB-F03	MB-F04	MB-F05	MB-F06	MB-F08	MB-F10	MB-F12

Note) Order two foots per cylinder.

Rod Boot Material

Symbol	Rod boot material	Max. ambient temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*

* Max. ambient temperature for rod boot itself.

Theoretical Force

(Unit: N) OUT ← IN →

Bore size [mm]	Rod diameter [mm]	Operating direction	Piston area [mm²]	Operating pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
32	12	IN, OUT	691	138	207	276	346	415	484	553	622	691
40	16	IN, OUT	1056	211	317	422	528	634	739	845	950	1056
50	20	IN, OUT	1649	330	495	660	825	989	1154	1319	1484	1649
63	20	IN, OUT	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	IN, OUT	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	IN, OUT	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147
125	32	IN, OUT	11468	2294	3440	4588	5734	6881	8028	9174	10321	11468

Note) Theoretical force [N] = Pressure [MPa] x Piston area [mm²]

Weights

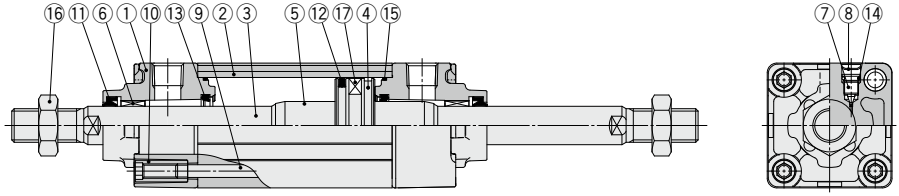
[kg]

Bore size [mm]		**32**	**40**	**50**	**63**	**80**	**100**	**125**
Basic weight	Basic	0.59	0.81	1.43	1.71	3.18	4.38	6.68
	Axial foot	0.71	0.95	1.65	1.99	3.68	5.04	8.76
	Rod flange	0.88	1.18	1.88	2.50	4.63	6.21	10.86
Additional weight per 50 mm of stroke	All mounting brackets	0.21	0.3	0.46	0.51	0.77	1.1	1.25

Calculation
Example) **MB1WB32-100Z** (Basic, ø32, 100 stroke)
- Basic weight ..... 0.59 kg
- Additional weight ..... 0.21/50 stroke
- Cylinder stroke ..... 100 stroke

0.59 + 0.21 x 100/50 = **1.01 kg**

Construction



Component Parts

No.	Description	Material	Q'ty	Note
1	**Rod cover**	Aluminum die-cast	2	Trivalent chromated
2	**Cylinder tube**	Aluminum alloy	1	Hard anodized
3	**Piston rod**	Carbon steel	1	Hard chrome plating
4	**Piston**	Aluminum alloy	1	
5	**Cushion ring**	Aluminum alloy	2	Anodized
6	**Bushing**	Bearing alloy	2	
7	**Cushion valve**	Steel wire	2	Trivalent zinc chromated
8	**Retaining ring**	Steel for spring	2	ø40 to ø125
9	**Tie-rod**	Carbon steel	4	Trivalent zinc chromated

No.	Description	Material	Q'ty	Note
10	**Tie-rod nut**	Carbon steel	8	Trivalent zinc chromated
11*	**Rod seal**	NBR	2	
12*	**Piston seal**	NBR	1	
13*	**Cushion seal**	Urethane	2	
14	**Cushion valve seal**	NBR	2	
15*	**Cylinder tube gasket**	NBR	2	
16	**Rod end nut**	Rolled steel	2	Trivalent zinc chromated
17	**Magnet**	—	(1)	

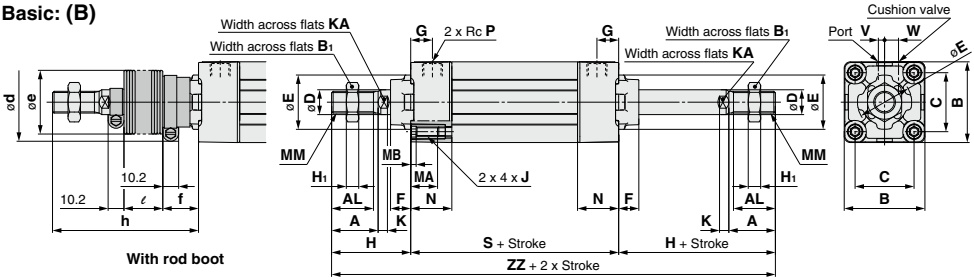
Replacement Parts/Seal Kit

Bore size [mm]	Kit no.	Contents
32	MBW32Z–PS	Set of the nos. ⑪, ⑫, ⑬, ⑮
40	MB1W40Z–PS	
50	MB1W50Z–PS	
63	MB1W63Z–PS	
80	MB1W80Z–PS	
100	MB1W100Z–PS	
125	MBW125–PS	

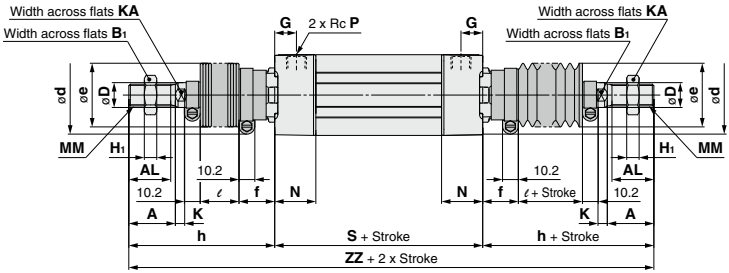
* Seal kits consist of items ⑪, ⑫, ⑬, ⑮, and can be ordered by using the seal kit number corresponding to each bore size.
* The seal kit includes a grease pack (10 g for ø32 to ø50, 20 g for ø63 and ø80, 30 g for ø100).
Order with the following part number when only the grease pack is needed.
Grease pack part number: GR-S-010 (10 g), **GR-S-020** (20 g)

Standard

Basic: (B)



With rod boot



[mm]

Bore size [mm]	A	AL	B	B_1	C	D	E	F	G	H	H_1	J	K	KA	MA	MB	MM	N	P	S*	V	W	ZZ*	Rubber Bumper S	Rubber Bumper ZZ
32	22	19.5	46	17	32.5	12	30	13	13	47	6	M6 x 1	6	10	16	4	M10 x 1.25	26	1/8	84	4	6.5	178	90	184
40	30	27	52	22	38	16	35	13	14	51	8	M6 x 1	6	14	16	4	M14 x 1.5	26	1/4	84	4	9	186	90	192
50	35	32	65	27	46.5	20	40	14	15.5	58	11	M8 x 1.25	7	18	16	5	M18 x 1.5	30.5	1/4	94	5	10.5	210	102	218
63	35	32	75	27	56.5	20	45	14	16.5	58	11	M8 x 1.25	7	18	16	5	M18 x 1.5	30.5	3/8	94	9	12	210	102	218
80	40	37	95	32	72	25	45	20	19	72	13	M10 x 1.5	10	22	16	5	M22 x 1.5	37	3/8	114	11.5	14	258	124	268
100	40	37	114	41	89	30	55	20	19	72	16	M10 x 1.5	10	26	16	5	M26 x 1.5	37	1/2	114	17	15	258	124	268
125	54	50	136	41	110	32	60	27	19	97	16	M12 x 1.75	13	27	20	6	M27 x 2	38	1/2	120	17	15	314	132	316

With Rod Boot (Up to 1000 mm stroke)

[mm]

Bore size [mm]	d	e	f	ℓ 1 to 50	ℓ 51 to 100	ℓ 101 to 150	ℓ 151 to 200	ℓ 201 to 300	ℓ 301 to 400	ℓ 401 to 500	ℓ 501 to 600	ℓ 601 to 700	ℓ 701 to 800	ℓ 801 to 900	ℓ 901 to 1000	h 1 to 50	h 51 to 100	h 101 to 150	h 151 to 200	h 201 to 300	h 301 to 400	h 401 to 500	h 501 to 600	h 601 to 700	h 701 to 800	h 801 to 900	h 901 to 1000
32	54	36	23	12.5	25	37.5	50	75	100	125	150	175	200	225	250	73	86	98	111	136	161	186	211	236	261	286	311
40	56	41	23	12.5	25	37.5	50	75	100	125	150	175	200	225	250	81	94	106	119	144	169	194	219	244	269	294	319
50	64	51	25	12.5	25	37.5	50	75	100	125	150	175	200	225	250	89	102	114	127	152	177	202	227	252	277	302	327
63	64	51	25	12.5	25	37.5	50	75	100	125	150	175	200	225	250	89	102	114	127	152	177	202	227	252	277	302	327
80	68	56	29	12.5	25	37.5	50	75	100	125	150	175	200	225	250	101	114	126	139	164	189	214	239	264	289	314	339
100	76	61	29	12.5	25	37.5	50	75	100	125	150	175	200	225	250	101	114	126	139	164	189	214	239	264	289	314	339
125	82	75	27	10	20	30	40	60	80	100	120	140	160	180	200	120	130	140	150	170	190	210	230	250	270	290	310

[mm]

Bore size [mm]	ZZ Note) 1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	501 to 600	601 to 700	701 to 800	801 to 900	901 to 1000
32	230	256	280	306	356	406	456	506	556	606	656	706
40	246	272	296	322	372	422	472	522	572	622	672	722
50	272	298	322	348	398	448	498	548	598	648	698	748
63	272	298	322	348	398	448	498	548	598	648	698	748
80	316	342	366	392	442	492	542	592	642	692	742	792
100	316	342	366	392	442	492	542	592	642	692	742	792
125	360	380	400	420	460	500	540	580	620	660	700	740

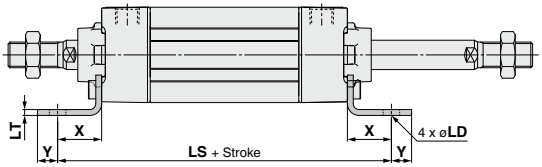
Note) ZZ indicates dimensions for double side rod boot.

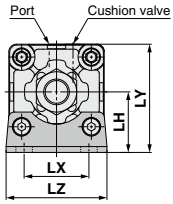
* Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

Standard/With Mounting Bracket

∗ Dimensions not indicated are the same as the basic type, double acting, single rod (page 535).

Axial foot: (L)





Axial Foot [mm]

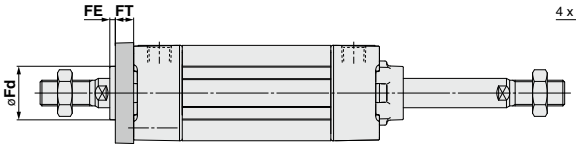
Bore size [mm]	X	Y	LD	LH	LS∗	LT	LX	LY	LZ
32	22	9	7	30	128	3.2	32	53	50
40	24	11	9	33	132	3.2	38	59	55
50	27	11	9	40	148	3.2	46	72.5	70
63	27	14	12	45	148	3.6	56	82.5	80
80	30	14	12	55	174	4.5	72	102.5	100
100	32	16	14	65	178	4.5	89	122	120
125	45	20	14	81	210	8	90	149	136

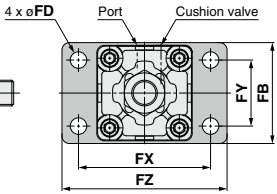
Rubber Bumper

LS
134
138
156
156
184
188
222

∗ Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm, ø125: +12 mm.

Rod flange: (F)





Rod Flange [mm]

Bore size [mm]	FB	FD	FT	FX	FY	FZ	Fd
32	50	7	10	64	32	79	25
40	55	9	10	72	36	90	31
50	70	9	12	90	45	110	38.5
63	80	9	12	100	50	120	39.5
80	100	12	16	126	63	153	45.5
100	120	14	16	150	75	178	54
125	138	14	20	180	102	216	57.5

Square Tube Type Air Cylinder: Non-rotating Rod Type
Double Acting, Single Rod

MB1K Series

RoHS

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

MB1K B 32 □ – 50 □ □ Z – □ □ – □

With auto switch: MDB1K B 32 □ – 50 □ □ Z – □ □ – M9BW □ – □

With auto switch
(Built-in magnet)

Mounting type

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

∗ Mounting bracket is shipped together with the product, but not assembled.

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

∗ **Refer to "Ordering Example of Cylinder Assembly" on page 531.**

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 547.

Suffix (Rod boot)

Nil	None
J	Nylon tarpaulin
K	Heat resistant tarpaulin

Suffix (Cushion)

Nil	Air cushion
N∗	Rubber bumper

∗ Since the bumpers are attached to the both sides of the piston for rubber bumper type, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm.

Accessories 1

Nil	No bracket
N	Pivot bracket

∗ Only for D mounting type.
∗ Pivot bracket is shipped together with the product.
∗ Refer to page 538 for pivot bracket.

Made to Order
For details, refer to page 547.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Auto switch

Nil	Without auto switch

∗ For applicable auto switches, refer to the table below.

Accessories 2

Nil	No bracket
V	Single knuckle joint
W	Double knuckle joint

∗ A knuckle joint pin is not provided with the single knuckle joint.
∗ Rod end bracket is shipped together with the product.
∗ The screw-in amount of the piston rod end cannot be adjusted when a clevis bracket, trunnion bracket and knuckle joint are used together.

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) MDB1B40-100Z

Applicable Auto Switches/Refer to pages 1271 to 1365 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model Perpendicular	Auto switch model In-line	Lead wire length [m] 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire		12 V		M9BV	M9B	●	●	●	○	○	—	
	Diagnostic indication (2-color indicator)			3-wire (NPN)		5 V, 12 V		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○		
				2-wire		12 V		M9BWV	M9BW	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)		5 V, 12 V		M9NAV∗1	M9NA∗1	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV∗1	M9PA∗1	○	○	●	○	○		
				2-wire		12 V		M9BAV∗1	M9BA∗1	○	○	●	○	○	—	
Reed auto switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93V∗2	A93	●	●	●	●	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	IC circuit	

∗1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
Please contact SMC regarding water resistant types with the above model numbers.
∗2 1 m type lead wire is only applicable to the D-A93.

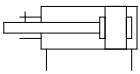
∗ Lead wire length symbols: 0.5 m ·····Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

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

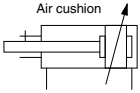
∗ Since there are other applicable auto switches than listed above, refer to page 551 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1340 and 1341.
∗ Auto switches are shipped together, (but not assembled).

Symbol

Rubber bumper



Air cushion



Made to Order

Made to Order: Individual Specifications
(For details, refer to page 552.)

Symbol	Specifications
-X846	Fastener strips mounted on switch mounting grooves

Made to Order

Click here for details

Symbol	Specifications
-XA□	Change of rod end shape
-XC3	Special port location*
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC30	Rod trunnion

* The cover shape is the same as the current product.

For special port location (-XC3), the mounting bracket and port location can be determined using the standard product corresponding to the operating conditions. Also, this is only applicable to -XC3BB, -XC3CC and -XC3DD with trunnion bracket.

Mounting Brackets/Part No.

Bore size [mm]	32	40	50
Axial foot Note 1)	MB-L03	MB-L04	MB-L05
Rod/Head flange	MB-F03	MB-F04	MB-F05
Single clevis	MB-C03	MB-C04	MB-C05
Double clevis	MB-D03	MB-D04	MB-D05

Bore size [mm]	63	80	100
Axial foot Note 1)	MB-L06	MB-L08	MB-L10
Rod/Head flange	MB-F06	MB-F08	MB-F10
Single clevis	MB-C06	MB-C08	MB-C10
Double clevis	MB-D06	MB-D08	MB-D10

Note 1) Order two foots per cylinder.
Note 2) Accessories for each mounting bracket are as follows.
Axial foot, Rod/Head flange, Single clevis/Body mounting bolt; Double clevis/Body mounting bolt, Clevis pin, Split pins and Flat washers. → Refer to page 539 for details.

Refer to pages 550 and 551 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Specifications

Bore size [mm]	32	40	50	63	80	100
Action	Double acting, Single rod					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.05 MPa					
Ambient and fluid temperature	Without auto switch: −10 to 70°C With auto switch: −10 to 60°C (No freezing)					
Lubricant	Non-lube					
Piston speed	50 to 1000 mm/s					
Stroke length tolerance Note)	Up to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$, 1001 to 1500: $^{+1.8}_{0}$					
Cushion	Air cushion or Rubber bumper					
Port size (Rc, NPT, G)	1/8	1/4		3/8		1/2
Mounting	Basic, Axial foot, Rod flange, Head flange, Single clevis, Double clevis					
Non-rotating accuracy	±0.5°				±0.3°	
Allowable rotating torque N·m or less	0.25	0.45	0.64		0.79	0.93

Note) Kinetic energy absorbable by the cushion mechanism is identical to double acting, single rod.

Accessories

Mounting		Basic	Axial foot	Rod flange	Head flange	Single clevis	Double clevis
Standard	Rod end nut	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●

* Refer to page 539 for part numbers and dimensions. (Refer to page 544 for rod boot.)

Standard Strokes

[mm]

Bore size	Standard stroke
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500
50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600
63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800
100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800

Note 1) Manufacture of intermediate strokes is possible.
(Spacers are not used.)
Note 2) Using a stroke of a length which is smaller than the effective cushion length may result in reduced air cushion performance. Refer to "Technical Data 1" on page 1573 for details on the effective cushion length.

Rod Boot Material

Symbol	Material	Max. ambient temp.
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*

* Max. ambient temperature for rod boot itself.

Theoretical Force

OUT side is identical to double acting, single rod.
Refer to the table below for IN side.

Bore size [mm]	Piston area [mm²]	Bore size [mm]	Piston area [mm²]
32	675	**63**	2804
40	1082	**80**	4568
50	1651	**100**	7223

Theoretical force [N] = Pressure [MPa] x Piston area [mm²]

Weights

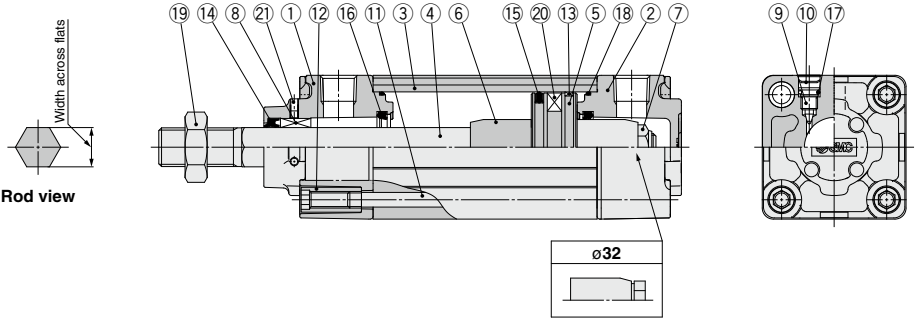
[kg]

Bore size [mm]		32	40	50	63	80	100
Basic weight	Basic	0.50	0.67	1.16	1.42	2.67	3.67
	Axial foot	0.62	0.81	1.38	1.70	3.17	4.33
	Rod/Head flange	0.79	1.04	1.61	2.21	4.12	5.50
	Single clevis	0.75	0.90	1.50	2.05	3.78	5.25
	Double clevis	0.76	0.94	1.59	2.21	4.07	5.52
Additional weight per 50 mm of stroke	All mounting brackets	0.16	0.20	0.34	0.39	0.57	0.72
Accessories	Single knuckle joint	0.15	0.23	0.26	0.26	0.60	0.83
	Double knuckle joint (with pin)	0.22	0.37	0.43	0.43	0.87	1.27

Calculation
Example) **MB1K32-100** (Basic, ø32, 100 stroke)
- Basic weight ·····0.53 kg
- Additional weight ·····0.16/50 stroke
- Cylinder stroke ·····100 stroke

0.53 + 0.16 x 100/50 = **0.85 kg**

Construction



Component Parts

No.	Description	Material	Q'ty	Note
1	**Rod cover**	Aluminum die-casted	1	Trivalent chromated
2	**Head cover**	Aluminum die-casted	1	Trivalent chromated
3	**Cylinder tube**	Aluminum alloy	1	Hard anodized
4	**Piston rod**	Stainless steel	1	
5	**Piston**	Aluminum alloy	1	
6	**Cushion ring**	Rolled steel	2	Zinc chromated
7	**Piston nut**	Rolled steel	1	Zinc chromated
8	**Non-rotating guide**	Bearing alloy	1	
9	**Cushion valve**	Steel wire	2	Trivalent zinc chromated
10	**Retaining ring**	Spring steel	2	ø40 to ø100
11	**Tie-rod**	Carbon steel	4	Trivalent zinc chromated

No.	Description	Material	Q'ty	Note
12	**Tie-rod nut**	Carbon steel	8	Trivalent zinc chromated
13	**Wear ring**	Resin	1	
14	**Rod seal**	NBR	1	
15	**Piston seal**	NBR	1	
16	**Cushion seal**	Urethane	2	
17	**Cushion valve seal**	NBR	2	
18	**Cylinder tube gasket**	NBR	2	
19	**Rod end nut**	Rolled steel	1	Trivalent zinc chromated
20	**Magnet**	—	(1)	
21	**Hexagon socket head set screw**	Steel wire	2	Trivalent black zinc chromated

Replacement Parts/Seal Kit

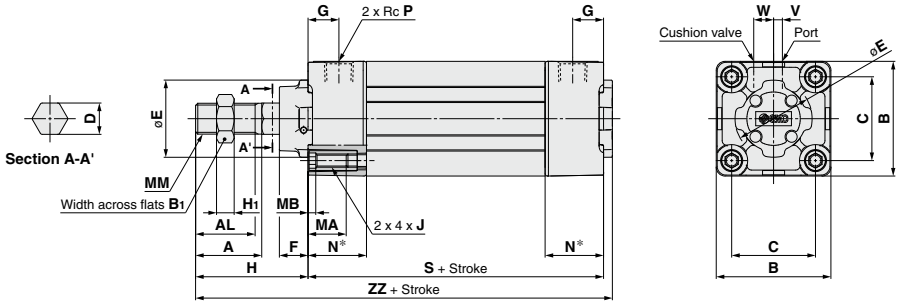
Bore size [mm]	Kit no.	Contents
32	MBK32Z-PS	Set of the nos. ⑭, ⑮, ⑯, ⑱
40	MB1K40Z-PS	
50	MB1K50Z-PS	
63	MB1K63Z-PS	
80	MB1K80Z-PS	
100	MB1K100Z-PS	

∗ Seal kits consist of items ⑭, ⑮, ⑯, ⑱, and can be ordered by using the seal kit number corresponding to each bore size.
∗ The seal kit includes a grease pack (10 g for ø32 to ø50, 20 g for ø63 and ø80, 30 g for ø100).
Order with the following part number when only the grease pack is needed.
Grease pack part number: GR-S-010 (10 g), **GR-S-020** (20 g)

∗ Model without air cushion is designed to include rubber bumpers. Since the bumpers are attached to the both sides of the piston, the overall length is longer than the cylinder with air cushion as follows: ø32, ø40: +6 mm, ø50, ø63: +8 mm, ø80, ø100: +10 mm

Standard

Basic: (B)



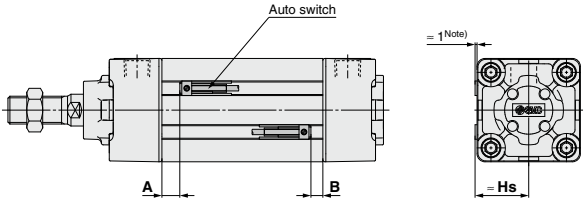
[mm]

Bore size [mm]	Stroke range	A	AL	B	B_1	C	D	E	F	G	H	H_1	J	MA	MB	MM	N*	P	S	V	W	ZZ
32	Up to 500	22	19.5	46	17	32.5	12.2	30	13	13	47	6	M6 x 1	16	4	M10 x 1.25	26	1/8	84	4	6.5	135
40	Up to 500	30	27	52	22	38	14.2	35	13	14	51	8	M6 x 1	16	4	M14 x 1.5	26	1/4	84	4	9	139
50	Up to 600	35	32	65	27	46.5	19	40	14	15.5	58	11	M8 x 1.25	16	5	M18 x 1.5	30.5	1/4	94	5	10.5	156
63	Up to 600	35	32	75	27	56.5	19	45	14	16.5	58	11	M8 x 1.25	16	5	M18 x 1.5	30.5	3/8	94	9	12	156
80	Up to 800	40	37	95	32	72	23	45	20	19	72	13	M10 x 1.5	16	5	M22 x 1.5	37	3/8	114	11.5	14	190
100	Up to 800	40	37	114	41	89	27	55	20	19	72	16	M10 x 1.5	16	5	M26 x 1.5	37	1/2	114	17	15	190

The dimensions for each mounting type are the same as those for standard model (single rod). Refer to pages 536 to 538.

Auto Switch Mounting

Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height



Auto Switch Proper Mounting Position

[mm]

Auto switch model / Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV D-Y7BA D-Z7□/Z80	
	A	B	A	B	A	B
32	9.5	7.5	5.5	3.5	4.5	2.5
40	8.5	8	4.5	4	3.5	3
50	9	8.5	5	4.5	4	3.5
63	9	8.5	5	4.5	4	3.5
80	14	10.5	10	6.5	9	5.5
100	13.5	11	9.5	7	8.5	6
125	14.5	14.5	10.5	10.5	9.5	9.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Proper Mounting Height

[mm]

Auto switch model / Bore size	D-Y69□ D-Y7PV D-Y7□WV D-A9□V	D-M9□V D-M9□WV D-M9□AV
	Hs	Hs
32	27	30
40	30	33
50	36	39
63	41	44
80	51	54
100	60.5	63.5
125	71.5	74.5

Note) The above figures are for when the electrical entry perpendicular types D-A9□V/M9□V/ M9□WV/M9□AV/ Y69□/Y7PV/Y7□WV are mounted.

Minimum Stroke for Auto Switch Mounting

[mm]

Auto switch model	Number of auto switches	Bore size						
		32	40	50	63	80	100	125
D-M9□ D-M9□V	With 2 pcs. (Different surfaces, Same surface)	10						
	With 1 pc.	10						
	With n pcs.	10 + 5 (n – 2)				10 + 10 (n – 2)		
D-M9□W D-M9□WV D-M9□A D-M9□AV	With 2 pcs. (Different surfaces, Same surface)	15				10		
	With 1 pc.	15				10		
	With n pcs.	15 + 10 (n – 2)				10 + 10 (n – 2)		10 + 15 (n – 2)
D-A9□ D-A9□V	With 2 pcs. (Different surfaces, Same surface)	10						15
	With 1 pc.	10						
	With n pcs.	10 + 10 (n – 2)		10 + 15 (n – 2)				15 + 20 (n – 2)
D-Y59□/Y69□ D-Y7P/Y7PV	With 2 pcs. (Different surfaces, Same surface)	15				10		15
	With 1 pc.	15				10		15
	With n pcs.	15 + 10 (n – 2)				10 + 10 (n – 2)	10 + 15 (n – 2)	15 + 15 (n – 2)
D-Y7□W D-Y7□WV	With 2 pcs. (Different surfaces, Same surface)	15				10		20
	With 1 pc.	15				10		20
	With n pcs.	15 + 10 (n – 2)				10 + 10 (n – 2)	10 + 15 (n – 2)	20 + 15 (n – 2)
D-Y7BA	With 2 pcs. (Different surfaces, Same surface)	20					15	20
	With 1 pc.	20					15	20
	With n pcs.	20 + 10 (n – 2)					15 + 15 (n – 2)	20 + 15 (n – 2)
D-Z7□ D-Z80	With 2 pcs. (Different surfaces, Same surface)	15						
	With 1 pc.	15						
	With n pcs.	15 + 15 (n – 2)					15 + 20 (n – 2)	

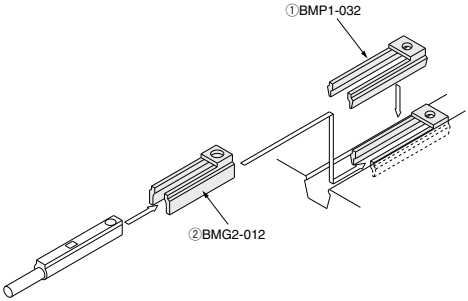
Note 1) n = 3, 4, 5 ···
Note 2) Center trunnion type is not included.

Auto Switch Mounting Brackets/Part No.

Auto switch model	Bore size [mm]
	32 to 125
D-M9□/M9□V **D-M9□W/M9□WV** **D-M9□A/M9□AV** **D-A9□/A9□V**	Note) ① BMP1-032 ② BMG2-012
D-Y5□/Y7P **D-Y7□W** **D-Y6□/Y7PV** **D-Y7□WV** **D-Y7BA** **D-Z7□/Z80**	① BMP1-032

Note) Two kinds of auto switch mounting brackets are used as a set.

D-M9□(V)/M9□W(V)/M9□A(V)/A9□(V)



Operating Range

[mm]

Auto switch model	Bore size						
	32	**40**	**50**	**63**	**80**	**100**	**125**
D-M9□/M9□V **D-M9□W/M9□WV** **D-M9□A/M9□AV**	4	4.5	5	6	6	6	7
D-A9□/A9□V	7	7.5	8	9	9.5	10.5	12.5
D-Y59□/Y69□ **D-Y7P/Y7PV** **D-Y7□W/Y7□WV** **D-Y7BA**	5	4.5	5	5	6.5	7	7
D-Z7□/Z80	10	10	10	11	11	12	14

∗ Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Other than the applicable auto switches listed in "How to Order", the following auto switches are mountable.

Refer to pages 1271 to 1365 for the detailed specifications.

Type	Model	Electrical entry	Features
Solid state	D-Y69A, Y69B, Y7PV	Grommet (Perpendicular)	—
	D-Y7NWV, Y7PWV, Y7BWV		Diagnostic indication (2-color indicator)
	D-Y59A, Y59B, Y7P	Grommet (In-line)	—
	D-Y7NW, Y7PW, Y7BW		Diagnostic indication (2-color indicator)
	D-Y7BA		Water resistant (2-color indicator)
Reed	D-Z73, Z76	Grommet (In-line)	—
	D-Z80		Without indicator light

∗ With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1340 and 1341.
∗ Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)/Y7G/Y7H) are also available. For details, refer to pages 1290 and 1292.

Made to Order: Individual Specifications

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

Symbol

1 Fastener Strips Mounted on Switch Mounting Grooves -X846

It prevents splashing water or windblown dust to the cylinder body from making an ingress into the auto switch mounting groove and accumulating.

Applicable Series

Description	Model	Action	Note
Standard type	MB1	Double acting, Single rod	
	MB1W	Double acting, Double rod	
Non-rotating rod type	MB1K	Double acting, Single rod	

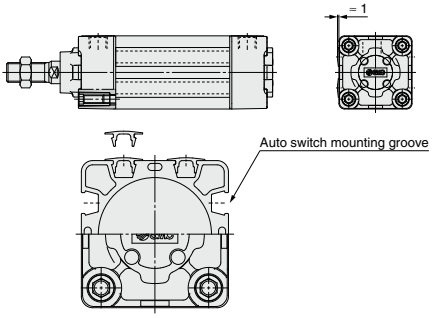
How to Order

Standard model no. – **X846**

Fastener strips mounted on switch mounting grooves

Specifications: Same as standard type

Dimensions (Dimensions other than below are the same as standard type.)



Sectional view

Fastener Specifications

Quantity	8 pcs. (6 pcs. when auto switches are mounted) Note)
Material	Vinyl chloride

Note) These cannot be installed on switch mounting grooves where auto switches have been mounted.

Specific Product Precautions

Be sure to read this before handling the products.Refer to page 20 for safety instructions and pages 21 to 30 for actuator and auto switch precautions.

Adjustment

⚠Warning

1. Do not open the cushion valve beyond the stopper.

Crimping (ø32) or a retaining ring (ø40 to ø125) is provided to prevent the accidental removal of the cushion valve. Do not open the valve beyond the mechanism. If air is supplied, the cushion valve may shoot out from the cover.

Bore size [mm]	Cushion valve width across flats [mm]	Hexagon wrench
32, 40	2.5	JIS 4648 Hexagonal wrench key 2.5
50, 63	3	JIS 4648 Hexagonal wrench key 3
80, 100, 125	4	JIS 4648 Hexagonal wrench key 4

2. Use the air cushion at the end of cylinder stroke.

Select the cylinder with bumper if the cushion valve is to be fully opened. Otherwise, tie-rods or piston assembly may be damaged.

3. When replacing mounting brackets, use a hexagon wrench.

Bore size [mm]		Bolt	Width across flats [mm]	Tightening torque [N·m]
32, 40		MB-32-48-C1247	4	5.1
50, 63		MB-50-48-C1249	5	11
80, 100	Foot	MB-80-48AC1251	6	25
	Others	MB-80-48BC1251		
125	Foot	CE00008	8	30.1
	Others	CE00032		

4. When replacing mounting brackets, tie-rod nuts on the cylinder body become loosened.

After retightening the tie-rod nuts with the proper tightening torque (Refer to Adjustment 3.), mount a mounting bracket.

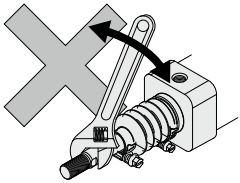
With Rod Boot

Handling

⚠Caution

1. Do not turn the piston rod with the rod boot kept locked.

When turning the piston rod, loosen the band once and do not twist the rod boot.



2. Set the breathing hole in the rod boot downward or in the direction that prevents entry of dust or water content.