Square Tube Type
Air Cylinder/Non-Rotating Rod (Double Acting: Single Rod)

Series MB1K

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Non-rotating type MB1K [L] [32] — [50] [ ]

With auto switch MDB1K [L] [32] — [50] [ ] — [Z73] [ ]

Built-in magnet

Mounting bracket

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

Bore size

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

Stroke (mm)
Refer to the standard stroke table on page 16.

Number of auto switches

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

Type of auto switch

Nil	Without auto switch

∗ Select an applicable auto switch model from the table below.

Rod boot/Air cushion

Rod boot	Nil	Without rod boot
	J	Nylon tarpaulin
	K	Heat resistant tarpaulin
Air cushion	Nil	Air cushion at both ends
	N Note)	Without air cushion

Note) When there is no air cushion, the unit is equipped with rubber bumpers.
Moreover, due to the fact that bumpers are installed at each end of the piston, overall length is increased by 6mm for ø32 and ø40, 8mm for ø50 and ø63, and by 10mm for ø80 and ø100.

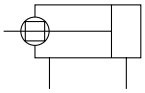
Applicable auto switches/direct mounting type

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage DC		Load voltage AC	Auto switch model: Electrical entry direction Vertical	Auto switch model: Electrical entry direction Lateral	Lead wire length (m) Note) 0.5 (Nil)	3 (L)	5 (Z)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	—
				2 wire	24V	—	100V	—	Z73	●	●	●	—	Relay PLC
			No			5V, 12V	100V or less	—	Z80	●	●	—	IC circuit	
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay PLC
				3 wire (PNP)				Y7PV	Y7P	●	●	○		
				2 wire		12V		Y69B	Y59B	●	●	○	—	
	Diagnostic indication (2 color indicator)			3 wire (NPN)		5V, 12V		Y7NWV	Y7NW	●	●	○	IC circuit	
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○		
				2 wire		12V		Y7BWV	Y7BW	●	●	○	—	
	Water resistant (2 color indicator)							—	Y7BA	—	●	—		

Note) Lead wire length symbol 0.5m ..... Nil (Example) Y69B
3m ..... L (Example) Y69BL
5m ..... Z (Example) Y69BZ

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

JIS symbol



Specifications

1MPa: Approx. 10.2kgf/cm²

Bore size (mm)	32	40	50	63	80	100
Type	Non-lube type air cylinder					
Action	Double acting single rod					
Fluid	Air					
Proof pressure	1.5MPa {15.3kgf/cm²}					
Maximum operating pressure	1.0MPa {10.2kgf/cm²}					
Minimum operating pressure	0.05MPa {0.5kgf/cm²}					
Ambient and fluid temperature	Without auto switch –10 to 70°C (without freezing)					
	With auto switch –10 to 60°C (without freezing)					
Lubrication	Non-lube					
Piston speed	50 to 1000mm/s					
Stroke length tolerance	to 250 : $^{+1.0}_{0}$, 251 to 1000 : $^{+1.4}_{0}$, 1001 to 1500 : $^{+1.8}_{0}$					
Cushion Note)	Both ends (air cushion) Note)					
Thread tolerance	JIS class 2					
Port size	Rc(PT)1/8	Rc(PT)1/4	Rc(PT)1/4	Rc(PT)3/8	Rc(PT)3/8	Rc(PT)1/2
Mounting bracket	Basic type, Foot type, Front flange type, Rear flange type Single clevis type, Double clevis type					

Rod non-rotating accuracy	ø32, ø40	±0.5°
	ø50, ø63	±0.5°
	ø80, ø100	±0.3°

Allowable rotational torque N·m or less	ø32	0.25	ø80	0.79
	ø40	0.45	ø100	0.93
	ø50, ø63	0.64	—	—

Note) When there is no air cushion, the unit is equipped with rubber bumpers.
The kinetic energy which can be absorbed by the cushion mechanism is the same as for the double acting single rod type.

Switch spacers

Applicable bore size (mm)	32, 40	50, 63	80, 100
Switch spacer	BMP1-032		

Accessories

Mounting bracket		Basic type	Foot type	Front flange type	Rear flange type	Single clevis type	Double clevis type
Standard equipment	Rod end nut	●	●	●	●	●	●
	Clevis pin	–	–	–	–	–	●
Options	Single knuckle joint	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●

Mounting brackets/Part nos.

Bore size (mm)	32	40	50
Foot Note)	MB-L03	MB-L04	MB-L05
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
Foot Note)	MB-L06	MB-L08	MB-L10
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) When ordering foot type brackets, 2pcs. should be arranged for each cylinder.
Note 2) The parts included with each mounting bracket are as follows.
Foot, Flange, Single clevis: Body mounting bolts
Double clevis: Clevis pin & Cotter pin
Refer to page 8.

Standard stroke table

Bore size (mm)	Standard stroke (mm)
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

Intermediate strokes are also available.

Minimum strokes for mounting of auto switches

Refer to page 9 regarding the minimum stroke for the mounting of auto switches.

Rod boot material

Symbol	Rod boot material	Max. ambient temp.
J	Nylon tarpaulin	60°C
K	Heat resistant tarpaulin	110°C Note)

Note) Maximum ambient temperature for the rod boot itself.

Theoretical output table

The value at the OUT side is the same as the double acting single rod type, but the value at the IN side is different. Refer to the table below.

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 output (N) =Pressure (MPa) x Piston area (mm²).
1N: approx. 0.102kgf 1MPa: approx. 10.2kgf/cm²

Weight table

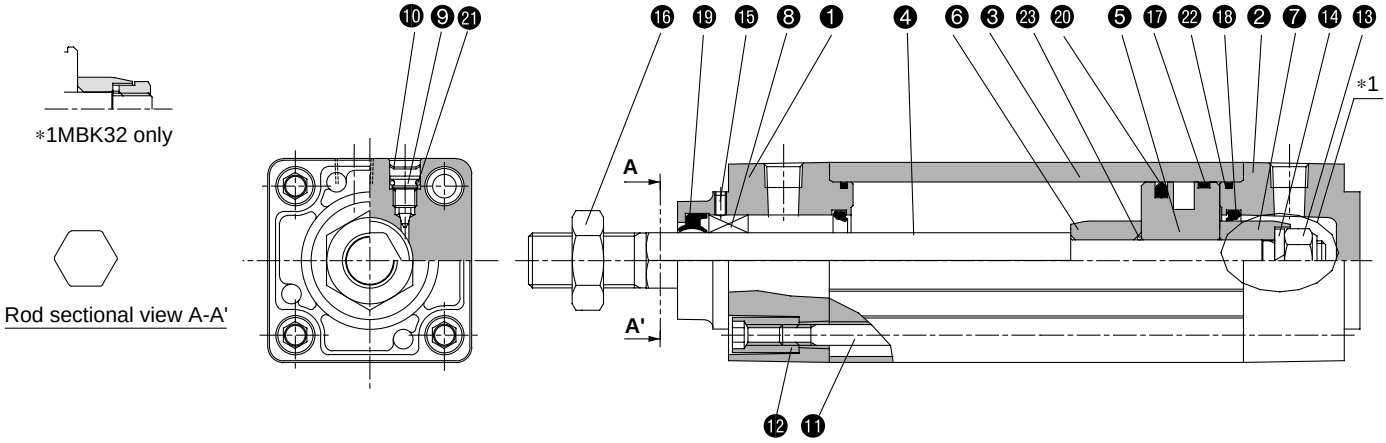
(kg)

Bore size (mm)		32	40	50	63	80	100
Basic weight	Basic type	0.53	0.69	1.26	1.58	2.69	3.86
	Foot type	0.65	0.83	1.48	1.86	3.19	4.52
	Flange type	0.82	1.06	1.69	2.37	4.14	7.17
	Single clevis type	0.78	0.92	1.60	2.21	3.8	7.03
	Double clevis type	0.79	0.96	1.69	2.37	4.09	7.55
Additional weight per 50mm stroke	All mounting brackets	0.16	0.21	0.33	0.37	0.56	0.72
Accessories	Single knuckle	0.15	0.23	0.26	0.26	0.60	0.83
	Double knuckle (with pin)	0.22	0.37	0.43	0.43	0.87	1.27

Calculation method
Example) **MB1K32-100** (basic type/ø32,100st)
- Basic weight 0.53kg
- Additional weight ..... 0.16/50mm stroke
- Cylinder stroke ..... 100mm stroke

0.53 + 0.16 x 100/50 = 0.85kg

Construction



Parts list

No.	Description	Material	Note
❶	**Rod cover**	Die-cast aluminum	Metallic coated
❷	**Head cover**	Die-cast aluminum	Metallic coated
❸	**Cylinder tube**	Aluminum alloy	Hard anodized
❹	**Piston rod**	Stainless steel	
❺	**Piston**	Aluminum alloy	Chromated
❻	**Cushion ring A**	Rolled steel	
❼	**Cushion ring B**	Rolled steel	
❽	**Detent guide**	Oil-impregnated sintered alloy	
❾	**Cushion valve**	Steel wire	Nickel plated
❿	**Snap ring**	Spring steel	ø40 to ø100
⓫	**Tie-rod**	Carbon steel	Chromated
⓬	**Tie-rod nut**	Carbon steel	Nickel plated

No.	Description	Material	Note
⓭	**Piston nut**	Rolled steel	
⓮	**Spring washer**	Steel wire	
⓯	**Set screw**	Steel wire	
⓰	**Rod end nut**	Carbon steel	Nickel plated
⓱	**Wear ring**	Resin	
∗⓲	**Cushion seal**	Urethane	
∗⓳	**Rod seal**	NBR	
∗⓴	**Piston seal**	NBR	
㉑	**Cushion valve seal**	NBR	
∗㉒	**Cylinder tube gasket**	NBR	
㉓	**Piston gasket**	NBR	

Replaceable parts: Seal kits

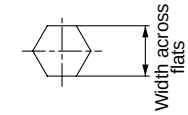
Bore size (mm)	Order No.	Order No.
32	MBK32-PS	Kits include items 18 (2pcs.), 19, 20 & 22 from the table above.
40	MBK40-PS	
50	MBK50-PS	
63	MBK63-PS	
80	MBK80-PS	
100	MBK100-PS	

∗ Seal kits consist of items 18, 19, 20 and 22 contained in one kit, and can be ordered using the order number for each respective tube bore size.

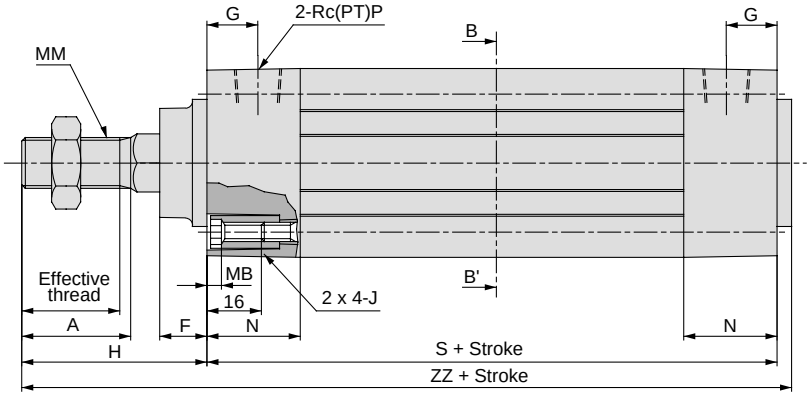
∗ When there is no air cushion, the unit is equipped with rubber bumpers.
Moreover, due to the fact that bumpers are installed at each end of the piston, overall length is increased by 6mm for ø32 and ø40, 8mm for ø50 and ø63, and by 10mm for ø80 and ø100.

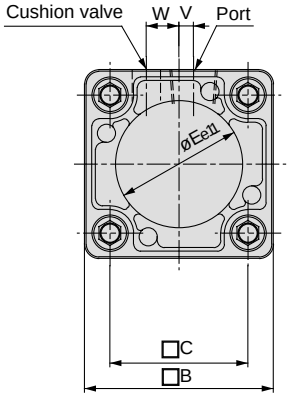
Standard Type

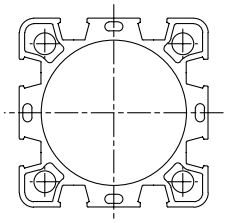
Basic type/ (B)



Rod sectional view







Cylinder tube sectional view B-B'

Bore size (mm)	Stroke range	Effective thread length	Width across flats	A	□B	□C	E	F	G	MB	J	MM	N	P	S	V	W	H	ZZ
32	to 500	19.5	12.2	22	46	32.5	30	13	13	4	M6 x 1.0	M10 x 1.25	26.5	1/8	84	4	6.5	47	135
40	to 500	27	14.2	30	52	38	35	13	14	4	M6 x 1.0	M14 x 1.5	26.5	1/4	84	4	9	51	139
50	to 600	32	19	35	65	46.5	40	14	15.5	5	M8 x 1.25	M18 x 1.5	31	1/4	94	5	10.5	58	156
63	to 600	32	19	35	75	56.5	45	14	16.5	5	M8 x 1.25	M18 x 1.5	31	3/8	94	9	12	58	156
80	to 750	37	23	40	95	72	45	20	19	5	M10 x 1.5	M22 x 1.5	37.5	3/8	114	11.5	14	72	190
100	to 750	37	27	40	114	89	55	20	19	5	M10 x 1.5	M26 x 1.5	37.5	1/2	114	17	15	72	190