Mechanically Jointed Rodless Cylinder

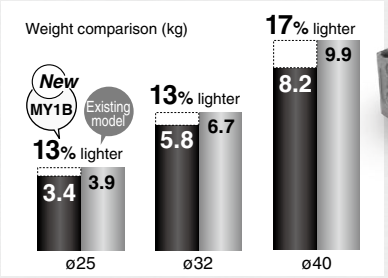
Series MY1B

Basic Type: ø25, ø32, ø40

The mounting and performance are the same as before.

Weight

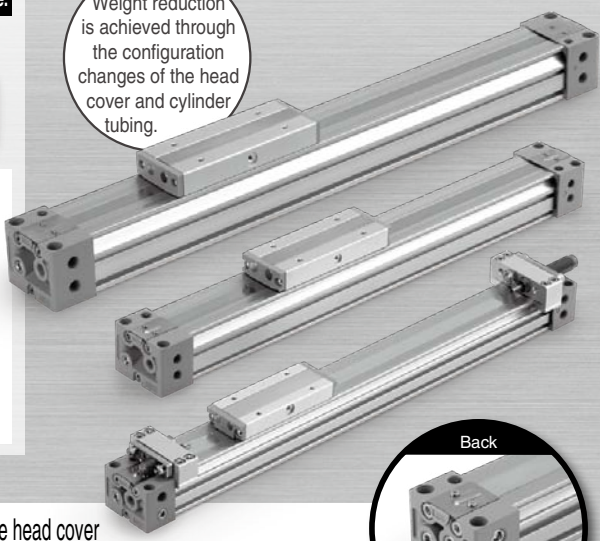
17% Reduced



∗ Compared with L unit at 1000 strokes.

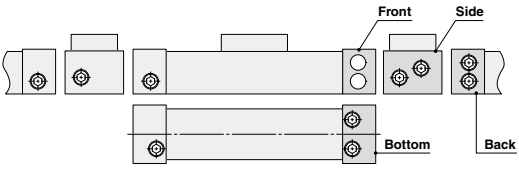
RoHS

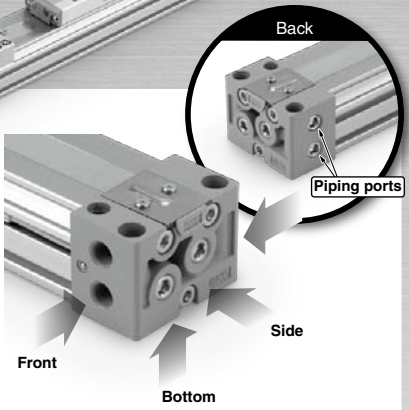
Weight reduction is achieved through the configuration changes of the head cover and cylinder tubing.



Piping can be connected from 4 directions on the head cover

Head cover piping increased from 3 directions to 4 with improved piping flexibility.
Increase in piping direction allows piping to meet the on-site installation conditions.

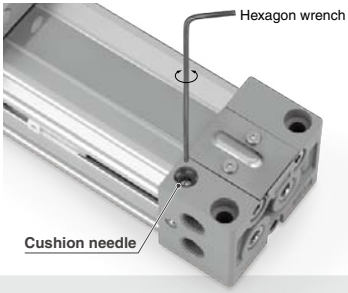




∗ With hexagon socket taper plug except port 1.

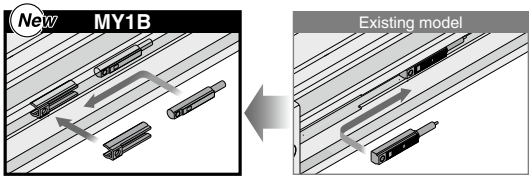
Easy adjustment of cushion needle

Adjustment is easier by changing the cushion needle adjustment from side to top.



Auto switch can be mounted in any desired position.

Auto switches can be mounted from the front at any position on the mounting groove.
Contributes to reduction in mounting time.



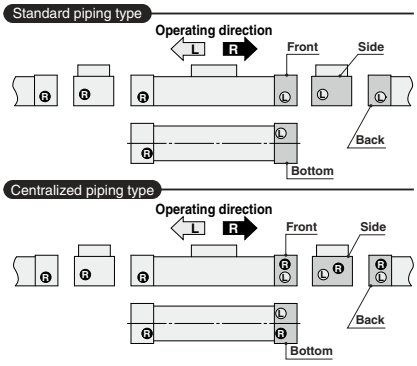
Front mounting

Insert it at the notch and slide it along the mounting groove.

SMC

Improvement of port variations

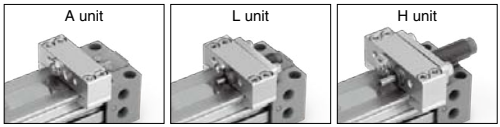
With addition of the back port, piping can be connected to suit the installation conditions.



Stroke adjustment unit

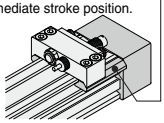
The stroke can be adjusted at one side and both sides.

● With adjustment bolt ● With low/high load shock absorber + adjustment bolt (L/H unit)



Intermediate fixing spacer as standard

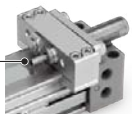
Fixture can be selected to hold the stroke adjustment unit at the intermediate stroke position.



Improved shock-less characteristics when a work piece is stopped.

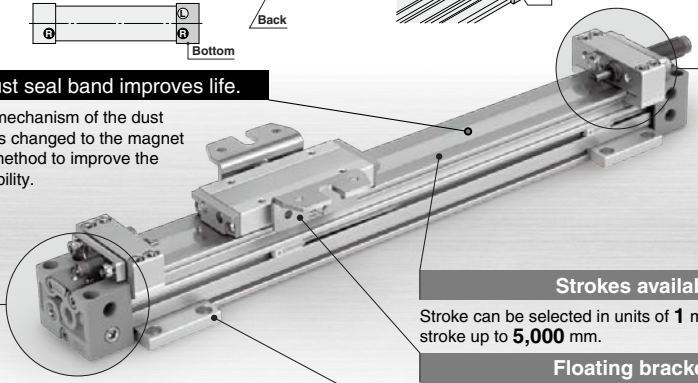
Soft type of shock absorber can be selected for the stroke adjustment unit. (Made to Order: -XB22)

The cross section of the liquid passage is changed in proportion to the stroke by a unique mechanism. This allows a smooth absorption process.



New dust seal band improves life.

Retention mechanism of the dust seal band is changed to the magnet attraction method to improve the retention ability.

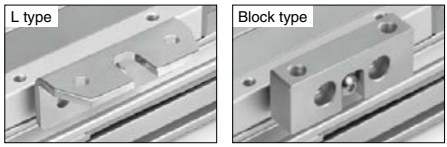


Strokes available

Stroke can be selected in units of **1** mm. Available with a stroke up to **5,000** mm.

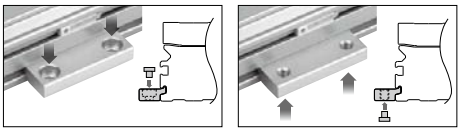
Floating bracket

2 connection types can be selected. Easier to connect to other guide types.



Side support

Prevents deflection of the cylinder tube at a long stroke.



MY1 Series Variations

Series	Bore size (mm) 10	16	20	25	32	40	50	63	80	100	Page
New MY1B	●	●	●	●	●	●					P.1176
MY1B	●	●	●	●	●	●	●	●	●	●	P.1219
MY1M		●	●	●	●	●	●	●			P.1243
MY1C		●	●	●	●	●	●	●			P.1263
MY1H	●	●	●	●	●	●					P.1283
MY1H End lock		●	●	●	●	●					
MY1HT							●	●			P.1307
MY1□W		●	●	●	●	●	●	●			P.1327

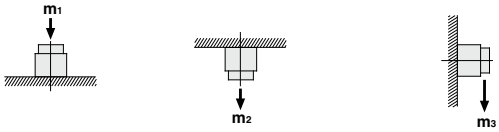
Prior to Use

Maximum Allowable Moment/Maximum Load Mass

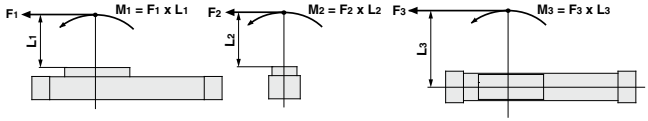
Model	Bore size (mm)	Maximum allowable moment (N·m)			Maximum load mass (kg)		
		M_1	M_2	M_3	m_1	m_2	m_3
MY1B	25	10	1.2	3.0	29	5.8	5.4
	32	20	2.4	6.0	40	8.0	8.8
	40	40	4.8	12	53	10.6	14

The above values are the maximum allowable values for moment and load mass. Refer to each graph regarding the maximum allowable moment and maximum load mass for a particular piston speed.

Load mass (kg)



Moment (N·m)



Caution on Design

1. We recommend an external shock absorber be installed when the cylinder is combined with another guide (connection with floating bracket, etc.) and the maximum load mass is exceeded.

2. Load factor of 0.5 or less

When the load factor is high against the cylinder output, it may adversely affect the cylinder (condensation, etc.) and cause malfunctions. Select a cylinder to make the load factor 0.5 or less. (Mainly when using an external guide)
When using it as a load balancer, please contact SMC sales representatives.

3. Consider uncalculated loads such as piping, cableveyor, etc., when selecting a load moment

Calculation does not include the external acting force of piping, cableveyor, etc. Select load factors taking into account the external acting force of piping, cableveyor, etc.

4. Accuracy

Mechanically jointed rodless cylinders do not guarantee traveling parallelism. When accuracy in traveling parallelism and intermediate stroke position is required, please contact SMC sales representatives.

Calculation of Guide Load Factor

1) Maximum load mass (1), static moment (2), and dynamic moment (3) (at the time of impact with stopper) must be examined for the selection calculations.
* To evaluate, use υa (average speed) for (1) and (2), and υ (collision speed $\upsilon = 1.4\upsilon a$) for (3). Calculate m max for (1) from the maximum load mass graph (m_1, m_2, m_3) and M max for (2) and (3) from the maximum allowable moment graph (M_1, M_2, M_3).

Sum of guide load factors

$$\Sigma\alpha = \frac{\text{Load mass [m]}}{\text{Maximum load mass [m max]}} + \frac{\text{Static moment [M]}^{\text{Note 1)}}}{\text{Allowable static moment [M max]}} + \frac{\text{Dynamic moment [M}_E\text{]}^{\text{Note 2)}}}{\text{Allowable dynamic moment [M}_E\text{ max]}} \leq 1$$

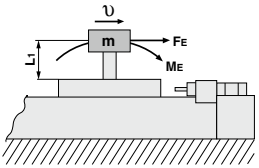
Note 1) Moment caused by the load, etc., with cylinder in resting condition
Note 2) Moment caused by the load equivalent to impact at the stroke end (at the time of impact with stopper)
Note 3) Depending on the shape of a workpiece, multiple moments may occur. When this happens, the sum of the load factors ($\Sigma\alpha$) is the total of all such moments.

2) Reference formula [Dynamic moment at the time of impact]
Use the following formulae to calculate dynamic moment when taking stopper impact into consideration.

m : Load mass (kg)
F : Load (N)
F_E : Load equivalent to impact (at the time of impact with stopper) (N)
υa: Average speed (mm/s)
M : Static moment (N·m)
υ : Collision speed (mm/s)
L_1 : Distance to the load center of gravity (m)
M_E : Dynamic moment (N·m)
δ : Bumper coefficient
With air cushion = 1/100
With shock absorber = 1/100
g : Gravitational acceleration (9.8 m/s²)

$\upsilon = 1.4\upsilon a$ (mm/s) $\quad F_E = 1.4\upsilon a \cdot \delta \cdot m \cdot g$ (Note 4)

$$\therefore M_E = \frac{1}{3} \cdot F_E \cdot L_1 = 4.57\upsilon a \delta m L_1 \text{ (N·m)} \quad \text{(Note 5)}$$



Note 4) $1.4\upsilon a\delta$ is a dimensionless coefficient for calculating impact force.
Note 5) Average load coefficient (= $\frac{1}{3}$): For averaging the maximum load moment at the time of impact with stopper according to service life calculations.

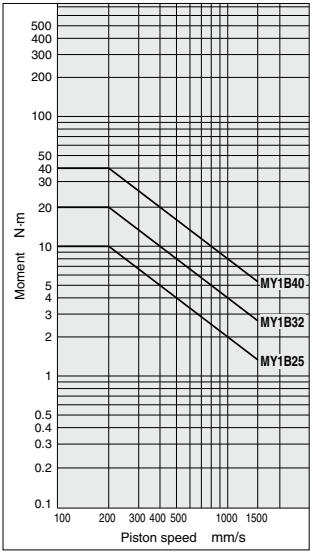
3) For detailed selection procedures, refer to page 1174.

Maximum Allowable Moment/Maximum Load Mass

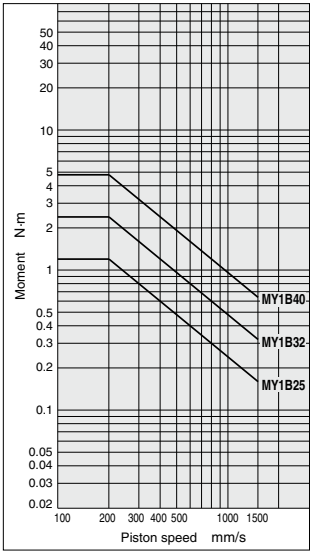
Maximum Allowable Moment

Select the moment from within the range of operating limits shown in the graphs. Note that the maximum load mass value may sometimes be exceeded even within the operating limits shown in the graphs. Therefore, also check the load mass for the selected conditions.

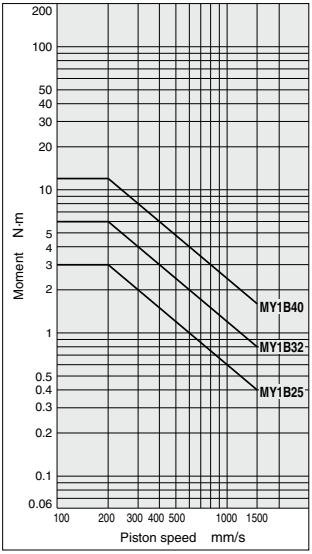
MY1B/M1



MY1B/M2



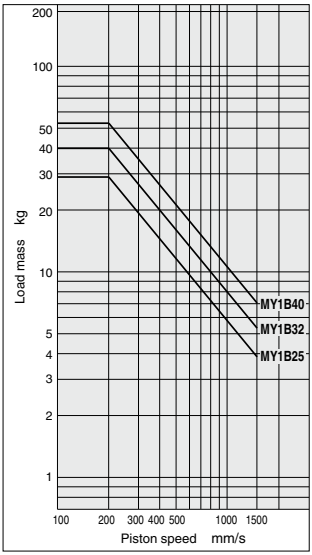
MY1B/M3



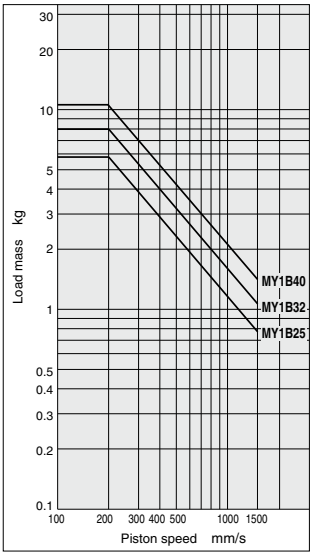
Maximum Load Mass

Select the load mass from within the range of limits shown in the graphs. Note that the maximum allowable moment value may sometimes be exceeded even within the operating limits shown in the graphs. Therefore, also check the allowable moment for the selected conditions.

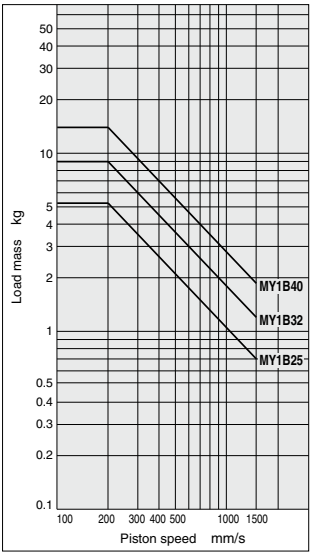
MY1B/m1



MY1B/m2



MY1B/m3



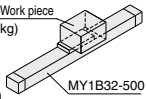
Series ***MY1B***
Model Selection

The following is the steps for selecting the most suitable MY1B series to your application.

Calculation of Guide Load Factor

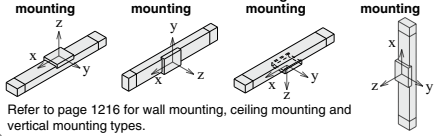
1 Operating Conditions

Cylinder····· **MY1B32-500Z**
Average operating speed $\mathcal{U}$**a**····· **300 mm/s**
Mounting orientation ··· **Horizontal mounting**
Cushion····· **Air cushion (**δ **= 1/100)**



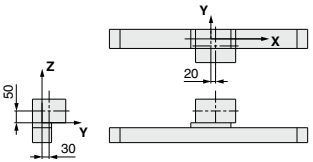
Mounting Orientation

1.Horizontal mounting **2.Wall mounting** **3.Ceiling mounting** **4.Vertical mounting**



Refer to page 1216 for wall mounting, ceiling mounting and vertical mounting types.

2 Load Blocking



Work Piece Mass and Center of Gravity

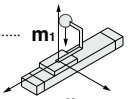
Work piece	Mass m	Center of gravity		
		X-axis	**Y**-axis	**Z**-axis
W	2 kg	20 mm	30 mm	50 mm

3 Calculation of Load Factor for Static Load

● m_1**: Mass**

m_1 **max** (from ① of graph MY1B/m_1) = 27 (kg)·····

Load factor $\alpha_1 = m_1/m_1$ **max** = 2/27 = **0.07**

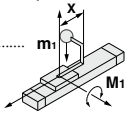


● M_1**: Moment**

M_1 **max** (from ② of graph MY1B/M_1) = 13 (N·m)·····

$M_1 = m_1 \times g \times X = 2 \times 9.8 \times 20 \times 10^{-3} = 0.39$ (N·m)

Load factor $\alpha_2 = M_1/M_1$ **max** = 0.39/13 = **0.03**

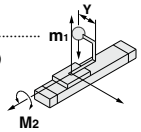


● M_2**: Moment**

M_2 **max** (from ③ of graph MY1B/M_2) = 1.6 (N·m)·····

$M_3 = m_1 \times g \times Y = 2 \times 9.8 \times 30 \times 10^{-3} = 0.59$ (N·m)

Load factor $\alpha_3 = M_2/M_2$ **max** = 0.59/1.6 = **0.37**



4 Calculation of Load Factor for Dynamic Moment

Equivalent load F_E **at impact**

$F_E = 1.4\mathcal{U}a \times \delta \times m \times g = 1.4 \times 300 \times \frac{1}{100} \times 2 \times 9.8 = 82.3$ (N)

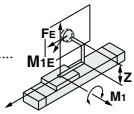
● M_{1E}**: Moment**

M_{1E} **max** (from ① of graph MY1B/M_1 where $1.4\mathcal{U}a$ = 420 mm/s) = 9.5 (N·m)·····

$M_{1E} = \frac{1}{3} \times F_E \times Z = \frac{1}{3} \times 82.3 \times 50 \times 10^{-3}$

$= 1.37$ (N·m)

Load factor $\alpha_4 = M_{1E}/M_{1E}$ **max** = 1.37/9.5 = **0.14**



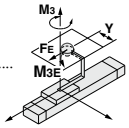
● M_{3E}**: Moment**

M_{3E} **max** (from ⑤ of graph MY1B/M_3 where $1.4\mathcal{U}a$ = 420 mm/s) = 2.9 (N·m)·····

$M_{3E} = \frac{1}{3} \times F_E \times Y = \frac{1}{3} \times 82.3 \times 30 \times 10^{-3}$

$= 0.82$ (N·m)

Load factor $\alpha_5 = M_{3E}/M_{3E}$ **max** = 0.82/2.9 = **0.28**



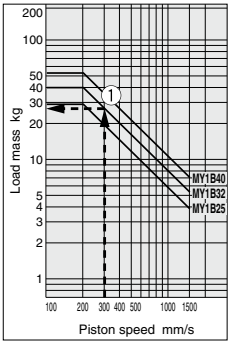
5 Sum and Examination of Guide Load Factors

$\Sigma\alpha = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + \alpha_5 = 0.89 \leqq 1$

The above calculation is within the allowable value, and therefore the selected model can be used. Select a shock absorber separately. In an actual calculation, when the total sum of guide load factors $\Sigma\alpha$ in the formula above is over 1, consider either decreasing the speed, increasing the bore size, or changing the product series. This calculation can be easily made using the "SMC Pneumatics CAD System."

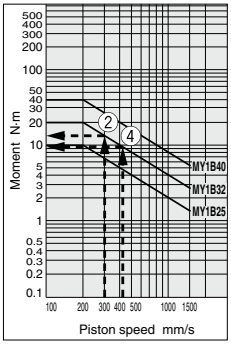
Load Mass

MY1B/m_1

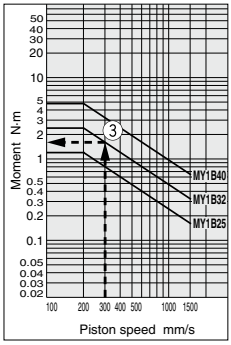


Allowable Moment

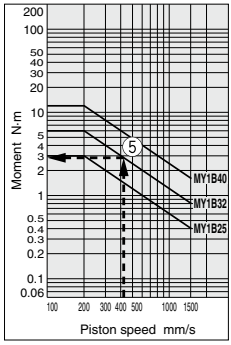
MY1B/M_1



MY1B/M_2



MY1B/M_3



Specific Product Precautions

Be sure to read the below before handling. Refer to front matter 57 for Safety Instructions. For Actuator and Auto Switch Precautions, refer to pages 3 to 12 and the Operation Manual. The Operation Manual can be downloaded from the SMC website, http://www.smcworld.com

Selection

⚠Caution

1. When using a cylinder with long strokes, implement an intermediate support.

When using a cylinder with long strokes, implement an intermediate support to prevent the tube from sagging and being deflected by vibration or an external load.

Refer to the "Guide to Side Support Application" on page 1183.

2. For intermediate stops, use a dual-side pressure control circuit.

Since the mechanically jointed rodless cylinders have a unique seal structure, slight external leakage may occur. Controlling intermediate stops with a 3-position valve cannot hold the stopping position of the slide table (slider). The speed at the restarting state also may not be controllable. Use the dual-side pressure control circuit with a PAB-connected 3-position valve for intermediate stops.

3. Cautions on less frequent operation

When the cylinder is used extremely infrequently, operation may be interrupted in order for anchoring and a change lubrication to be performed or service life may be reduced.

Mounting

⚠Caution

1. Do not apply strong impacts or excessive moment to the slide table (slider).

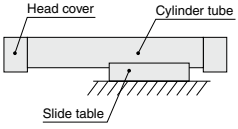
- Do not apply strong impacts or excessive moment, etc., when mounting workpieces.

2. Do not mount cylinders as they are twisted.

When mounting, be sure for a cylinder tube not to be twisted. The flatness of the mounting surface is not appropriate, the cylinder tube is twisted, which may cause air leakage due to the detachment of a seal belt, damage a dust seal band, and cause malfunctions.

3. Do not mount a slide table on the fixed equipment surface.

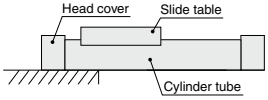
It may cause damage or malfunctions since an excessive load is applied to the bearing.



Mounting with a slide table (slider)

4. Consult SMC when mounting in a cantilevered way.

Since the cylinder body deflects, it may cause malfunctions. When using it this way, please contact SMC sales representatives.

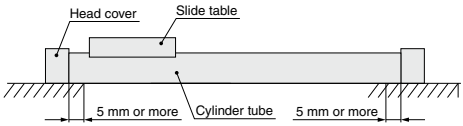


Mounting in a cantilevered way

Mounting

⚠Caution

5. Fixed parts of the cylinder on both ends must have at least 5 mm of contact between where the bottom of the cylinder tube and the equipment surface.



6. Do not generate negative pressure in the cylinder tube.

Take precautions under operating conditions in which negative pressure is generated inside the cylinder by external forces or inertial forces. Air leakage may occur due to separation of the seal belt. Do not generate negative pressure in the cylinder by forcibly moving it with an external force during the trial operation or dropping it with its own weight under the non-pressure state, etc. When the negative pressure is generated, slowly move the cylinder by hand and move the stroke back and forth. After doing so, if air leakage still occurs, please contact SMC sales representatives.

Operating Environment

⚠Warning

1. Do not use in an environment where the cylinder is exposed to coolant, cutting oil, water drops, adhesive foreign matter, dust, etc. and avoid use with compressed air containing drainage and foreign matter.

- Foreign matter or liquids on the cylinder's interior or exterior can wash out the lubricating grease, which can lead to deterioration and damage of dust seal band and seal materials, causing a danger of malfunction.

  When operating in locations with exposure to water and oil, or in dusty locations, provide protection such as a cover to prevent direct contact with the cylinder, or mount so that the dust seal band surface faces downward, and operate with clean compressed air.

2. Carry out cleaning and grease application suitable for the operating environment.

Carry out cleaning regularly when using in an operating environment in which the product is likely to get dirty.

After cleaning, be sure to apply grease to the top side of the cylinder tube and the rotating part of the dust seal band. Apply grease to these parts regularly even if not after cleaning. For cleaning of the slide table (slider) interior and grease application, please contact SMC sales representatives.

3. This product is not designed to be used in a clean room.

If you are considering using it in a clean room, please contact SMC sales representatives.

Mechanically Jointed Rodless Cylinder
Basic Type
Series MY1B
ø25, ø32, ø40

RoHS

How to Order

Basic type **MY1B 25 □ □ – 300 □ Z – M9BW □ – □**

Basic type

Bore size

25	25 mm
32	32 mm
40	40 mm

Port thread type

Symbol	Type
Nil	Rc
TN	NPT
TF	G

Piping

Nil	Standard
G	Centralized piping type

Cylinder stroke (mm)

Bore size (mm)	Standard stroke (mm)*	Maximum manufacturable stroke (mm)
25, 32, 40	100,200,300,400,500,600 700,800,900,1000,1200 1400,1600,1800,2000	5000

Stroke adjustment unit symbol
For stroke adjustment unit, refer to page 1177.

Auto switch

Nil	Without auto switch (Built-in magnet)

Number of auto switches

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

Made to Order
Refer to page 1177 for details.

* Strokes are manufacturable in 1 mm increments, up to the maximum stroke. However, please be advised that with stroke 49 or less, there are cases where auto switch mounting is not possible and the performance of the air cushion may decline. Also when exceeding a 2000 mm stroke, specify "-XB11" at the end of the part number. For details, refer to the Made-to-Order specifications.

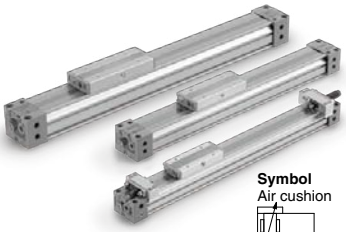
Applicable Auto Switches
/Refer to pages 1559 to 1673 for further information on auto switches.

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 indication)			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 indication)			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. Consult with SMC regarding water resistant types with the above model numbers.
*2 1 m type lead wire is only applicable to 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.

* There are other applicable auto switches other than the listed above. For details, refer to page 1185.
* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.
* Auto switches are shipped together, (but not assembled).



Symbol
Air cushion

Made to Order

Made to Order: Individual Specifications
(For details, refer to page 1186.)

Symbol	Specifications
-X168	Helical insert thread

Made to Order
(For details, refer to pages 1699 and 1818.)

Symbol	Specifications
-XB11	Long stroke
-XB22	Shock absorber/ soft type RJ series mounted

∗For details about Copper/Fluorine-free Specifications, refer to the SMC website.

Specifications

Bore size (mm)		25	32	40
Fluid		Air		
Action		Double acting		
Operating pressure range		0.1 to 0.8 MPa		
Proof pressure		1.2 MPa		
Ambient and fluid temperature		5 to 60°C		
Cushion		Air cushion		
Lubrication		Non-lube		
Stroke length tolerance		2700 or less $^{+1.8}_{0}$, 2701 to 5000 $^{+2.8}_{0}$		
Piping port size	**Front/Side port**	Rc1/8		Rc1/4
	Bottom port	ø6		ø8

Piston Speed

Bore size (mm)		25 to 40
Without stroke adjustment unit		100 to 1000 mm/s
Stroke adjustment unit	A unit	100 to 1000 mm/s Note 1)
	L unit, H unit	100 to 1500 mm/s Note 2)

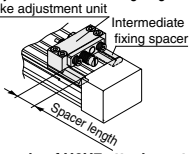
Note 1) Be aware that when the stroke adjustment range is increased with the adjustment bolt, the air cushion capacity decreases. Also, when exceeding the air cushion stroke ranges on page 1179, **the piston speed should be 100 to 200 mm/s.**
Note 2) The piston speed is 100 to 1000 mm/s for centralized piping.
Note 3) Use at a speed within the absorption capacity range. Refer to page 1179.
Note 4) Due to the construction of this product, it may have more fluctuation in operating speed compared to a rod type air cylinder. For applications that require constant speed, select the equipment corresponding to the required level.

Stroke Adjustment Unit Specifications

Bore size (mm)		25			32			40		
Unit symbol		A	L	H	A	L	H	A	L	H
Configuration Shock absorber model		With adjustment bolt	RB1007 + with adjustment bolt	RB1412 + with adjustment bolt	With adjustment bolt	RB1412 + with adjustment bolt	RB2015 + with adjustment bolt	With adjustment bolt	RB1412 + with adjustment bolt	RB2015 + with adjustment bolt
Stroke adjustment range by Intermediate fixing spacer (mm)	**Without Spacer**	0 to –11.5			0 to –12			0 to –16		
	With short spacer	–11.5 to –23			–12 to –24			–16 to –32		
	With long spacer	–23 to –34.5			–24 to –36			–32 to –48		

∗ Stroke adjustment range is applicable for one side when mounted on a cylinder.

Stroke adjustment unit mounting diagram

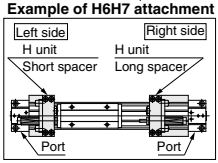


Stroke Adjustment Unit Symbol

			Right side stroke adjustment unit									
			Without unit	A:With adjustment bolt			L:With low load shock absorber + Adjustment bolt			H:With high load shock absorber + Adjustment bolt		
					With short spacer	With long spacer		With short spacer	With long spacer		With short spacer	With long spacer
Left side stroke adjustment unit	**Without unit**		**Nil**	**SA**	**SA6**	**SA7**	**SL**	**SL6**	**SL7**	**SH**	**SH6**	**SH7**
	A:With adjustment bolt		**AS**	**A**	**AA6**	**AA7**	**AL**	**AL6**	**AL7**	**AH**	**AH6**	**AH7**
		With short spacer	**A6S**	**A6A**	**A6**	**A6A7**	**A6L**	**A6L6**	**A6L7**	**A6H**	**A6H6**	**A6H7**
		With long spacer	**A7S**	**A7A**	**A7A6**	**A7**	**A7L**	**A7L6**	**A7L7**	**A7H**	**A7H6**	**A7H7**
	L:With low load shock absorber + Adjustment bolt		**LS**	**LA**	**LA6**	**LA7**	**L**	**LL6**	**LL7**	**LH**	**LH6**	**LH7**
		With short spacer	**L6S**	**L6A**	**L6A6**	**L6A7**	**L6L**	**L6**	**L6L7**	**L6H**	**L6H6**	**L6H7**
		With long spacer	**L7S**	**L7A**	**L7A6**	**L7A7**	**L7L**	**L7L6**	**L7**	**L7H**	**L7H6**	**L7H7**
	H:With high load shock absorber + Adjustment bolt		**HS**	**HA**	**HA6**	**HA7**	**HL**	**HL6**	**HL7**	**H**	**HH6**	**HH7**
		With short spacer	**H6S**	**H6A**	**H6A6**	**H6A7**	**H6L**	**H6L6**	**H6L7**	**H6H**	**H6**	**H6H7**
		With long spacer	**H7S**	**H7A**	**H7A6**	**H7A7**	**H7L**	**H7L6**	**H7L7**	**H7H**	**H7H6**	**H7**

∗ Spacers are used to fix the stroke adjustment unit an intermediate stroke position

Example of H6H7 attachment



Shock Absorber Model for L and H Units

Type	Stroke adjustment unit	Bore size (mm)		
		25	**32**	**40**
Standard	L	RB1007	RB1412	
	H	RB1412	RB2015	
Shock absorber/ soft type (-XB22)	L	RJ1007H	RJ1412H	
	H	RJ1412H	—	—

Shock Absorber Specifications

Model		RB1007	RB1412	RB2015
Max. energy absorption (J)		5.9	19.6	58.8
Stroke absorption (mm)		7	12	15
Max. collision speed (mm/s)		1500	1500	1500
Max. operating frequency (cycle/min)		70	45	25
Spring force (N)	**Extended**	4.22	6.86	8.34
	Retracted	6.86	15.98	20.50
Operating temperature range (°C)		5 to 60		

Note) The shock absorber service life is different from that of the MY1B cylinder depending on the operating conditions. Allowable operating cycles under the specifications prescribed in our catalog are shown below.

1.2 million cycles RB0806
2 million cycles RB1007 to RB2015

Note) Specified service life (suitable replacement period) is the value at room temperature (20 to 25°C). The period may vary depending on the temperature and other conditions. In some cases the absorber may need to be replaced before the allowable operating cycles above.

Theoretical Output

Unit: N

Bore size (mm)	Piston area (mm^2)	Operating pressure (MPa)						
		0.2	0.3	0.4	0.5	0.6	0.7	0.8
25	490	98	147	196	245	294	343	392
32	804	161	241	322	402	483	563	643
40	1256	251	377	502	628	754	879	1005

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm^2)

Weight

Unit: kg

Bore size (mm)	Basic weight	Additional weight per 50 mm of stroke	Side support weight (per set)	Stroke adjustment unit weight (per unit)		
			A/B type weight	A unit weight	L unit weight	H unit weight
25	1.14	0.11	0.02	0.06	0.10	0.18
32	2.28	0.17	0.02	0.12	0.21	0.40
40	3.11	0.25	0.04	0.23	0.32	0.49

Calculation: (Example) **MY1B25-300AZ**

Basic weight ····· 1.14 kg
Cylinder stroke ····· 300 mm stroke
Additional weight ····· 0.11 kg/50 mm stroke
A unit weight ····· 0.06 kg

1.14 + 0.11 x 300 ÷ 50 + 0.06 x 2 ≈ 1.92 kg

Options

Stroke Adjustment Unit/Part No.

MY − A 25 L2 − 6N

Stroke adjustment unit

Bore size

25	25 mm
32	32 mm
40	40 mm

Unit no.

Symbol	Stroke adjustment unit	Mounting position
A1	A unit	Left
A2		Right
L1	L unit	Left
L2		Right
H1	H unit	Left
H2		Right

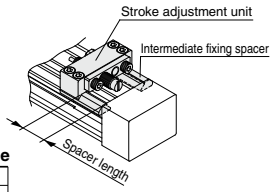
Note) For details about adjustment range, refer to page 1177.

Intermediate fixing spacer

Nil	Without Spacer
6	Short spacer
7	Long spacer

Spacer delivery style

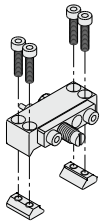
Nil	Unit installed
N	Spacer only



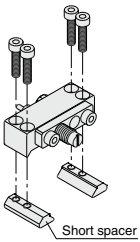
∗Spacers are used to fix the stroke adjustment unit at an intermediate stroke position.
∗Spacers are shipped for a set of two.

Component Parts

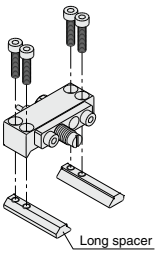
MY-A25L2
Without Spacer



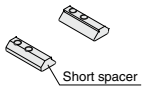
MY-A25L2-6
With short spacer



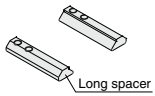
MY-A25L2-7
With long spacer



MY-A25L2-6N
Short spacer only



MY-A25L2-7N
Long spacer only



Side Support/Part No.

Type \ Bore size (mm)	25	32	40
Side support A	MY-S25A		MY-S32A
Side support B	MY-S25B		MY-S32B

For details about the dimensions, etc., refer to page 1183.
Side supports consist of a set of right and left supports.

Cushion Capacity

Cushion Selection

<Air cushion>
Air cushions are a standard feature on mechanically jointed rodless cylinders.
The air cushion mechanism is incorporated to prevent excessive impact of the piston with high kinetic energy at the stroke end. The purpose of air cushion, thus, is not to decelerate the piston near the stroke end.
The ranges of load and speed that air cushions can absorb are within the air cushion limit lines shown in the graphs.

<Stroke adjustment unit with shock absorber>
Use this unit when operating with a load and speed exceeding the air cushion limit line, or when cushioning is required outside of the effective air cushion stroke range due to stroke adjustment.

L unit
Use this unit when cushioning is necessary outside of the effective air cushion range even if the load and speed are within the air cushion limit line, or when the cylinder is operated in a load and speed range above the air cushion limit line and below the L unit limit line.

H unit
Use this unit when the cylinder is operated in a load and speed range above the L unit limit line and below the H unit limit line.

<Fastening of unit>
The unit can be secured by evenly tightening the four unit holding bolts.

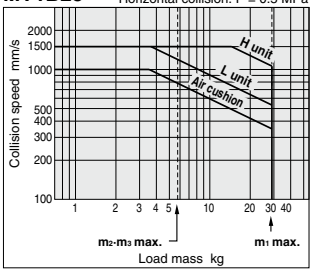
<Stroke adjustment with adjustment bolt>
Loosen the adjustment bolt lock nut, and adjust the stroke from the lock plate side using a hexagon wrench. Retighten the lock nut.

<Stroke adjustment with shock absorber>
Loosen the two lock plate holding bolts, turn the shock absorber and adjust the stroke. Then, uniformly tighten the lock plate holding bolts to secure the shock absorber.
Take care not to over-tighten the holding bolts. (Refer to the "Tightening Torque for Stroke Adjustment Unit Lock Plate Holding Bolts.")

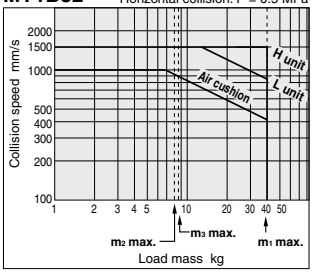
(Note)
Although the lock plate may slightly bend due to tightening of the lock plate holding bolt, this does not a affect the shock absorber and locking function.

Absorption Capacity of Air Cushion and Stroke Adjustment Units

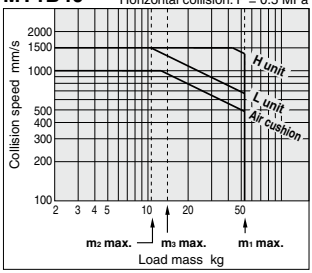
MY1B25 Horizontal collision: P = 0.5 MPa



MY1B32 Horizontal collision: P = 0.5 MPa



MY1B40 Horizontal collision: P = 0.5 MPa



Air Cushion Stroke

Unit: mm

Bore size (mm)	Cushion stroke
25	15
32	19
40	24

Tightening Torque for Stroke Adjustment Unit Holding Bolts

Unit: N·m

Bore size (mm)	Unit	Tightening torque
25	A	3.5
	L	
	H	
32	A	5.8
	L	
	H	
40	A	13.8
	L	
	H	

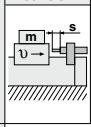
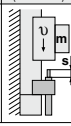
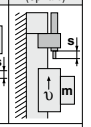
Tightening Torque for Stroke Adjustment Unit Lock Plate Holding Bolts

Unit: N·m

Bore size (mm)	Unit	Tightening torque
25	L	1.2
	H	3.3
32	L	3.3
	H	10
40	L	3.3
	H	10

Calculation of Absorbed Energy for Stroke Adjustment Unit with Shock Absorber

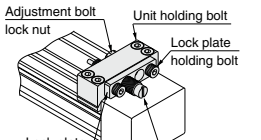
Unit: N·m

	Horizontal collision	Vertical collision (Downward)	Vertical collision (Upward)
Type of impact			
Kinetic energy **E₁**	$\frac{1}{2}m \cdot \upsilon^2$		
Thrust energy **E₂**	**F**·**s**	**F**·**s** + **m**·**g**·**s**	**F**·**s** – **m**·**g**·**s**
Absorbed energy **E**	**E₁** + **E₂**		

Symbols
υ: Speed of impact object (m/s)
F: Cylinder thrust (N)
s: Shock absorber stroke (m)
m: Mass of impact object (kg)
g: Gravitational acceleration (9.8 m/s²)
Note) The speed of the impact object is measured at the time of impact with the shock absorber.

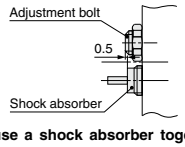
⚠ Caution

1. Use caution not to get your hands caught in the unit.
- When using a product with stroke adjustment unit, the space between the slide table (slider) and the stroke adjustment unit becomes narrow at the stroke end, causing a danger of hands getting caught. Install a protective cover to prevent direct contact with the human body.



2. Do not operate with the stroke adjustment unit fixed in an intermediate position.
When the stroke adjustment unit is fixed in an intermediate position, slippage can occur depending on the amount of energy released at the time of an impact. In such cases, the use of the holder mounting brackets for adjustment, available per made-to-order "-X416" and "-X417", is recommended.
For other lengths, please consult with SMC. (Refer to the "Tightening Torque for Stroke Adjustment Unit Holding Bolts.")

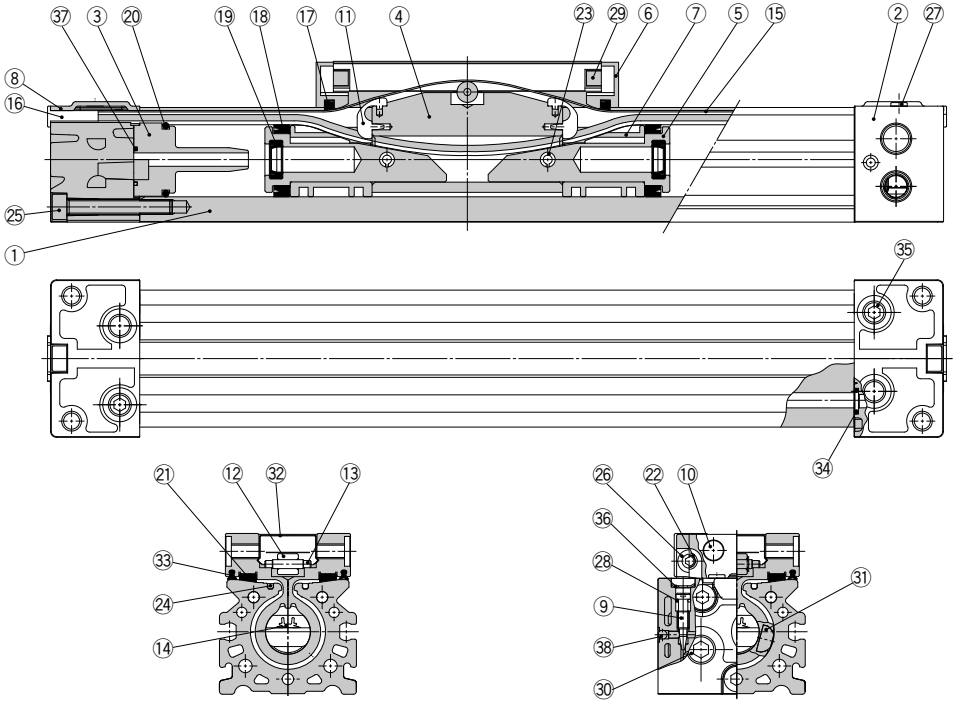
3. Refer to the below figure when using the adjustment bolt to perform stroke adjustment.
When the effective stroke of the shock absorber decreases as a result of stroke adjustment, the absorption capacity decreases dramatically. Secure the adjustment bolt at the position where it protrudes approximately 0.5 mm from the shock absorber.



4. Do not use a shock absorber together with air cushion.

Construction ø25, ø32, ø40

MY1B25 to 40



Component Parts

No.	Description	Material	Qty.	Note
1	**Cylinder tube**	Aluminum alloy	1	Hard anodized
2	**Head cover**	Aluminum alloy	2	Painted
3	**Cushion boss**	Polyacetal	2	
4	**Piston yoke**	Aluminum alloy	1	Anodized
5	**Piston**	Aluminum alloy	2	Chromated
6	**End cover**	Polyacetal	2	
7	**Wear ring**	Polyacetal	2	
8	**Head plate**	Stainless steel	2	
9	**Cushion needle**	Rolled steel	2	Nickel plated
10	**Stopper**	Carbon steel	4	Nickel plated
11	**Belt separator**	Polyacetal	2	
12	**Guide roller**	Polyacetal	1	
13	**Parallel pin**	Carbon steel	1	
16	**Belt clamp**	Polybutylene terephthalate	2	
21	**Bearing**	Polyacetal	2	

No.	Description	Material	Qty.	Note
22	**Spacer**	Stainless steel	4	
23	**Spring pin**	Carbon tool steel	2	
24	**Seal magnet**	Rubber magnet	2	
25	**Hexagon socket head cap screw**	Chromium molybdenum steel	6	Chromated
26	**Hexagon socket button head screw**	Chromium molybdenum steel	4	Chromated
27	**Thin head screw**	Chromium molybdenum steel	4	Chromated
29	**Double round parallel key**	Carbon steel	2	
30	**Hexagon socket head taper plug**	Carbon steel	4	Chromated (Centralized piping: 7pcs.)
31	**Magnet**	Rare earth magnet	2	
32	**Top cover**	Stainless steel	1	
35	**Hexagon socket head taper plug**	Carbon steel	2	Chromated (Centralized piping: 3 pcs.)
36	**Type CR retaining ring**	Spring steel	2	
38	**Steel ball**	Spring steel	2	

Seal List

No.	Description	Material	Qty.	MY1B25	MY1B32	MY1B40
14	**Seal belt**	Urethane/Polyamide	1	MY25-16C-Stroke	MY32-16C-Stroke	MY40-16A-Stroke
15	**Dust seal band**	Stainless steel	1	MY1B25-16B-Stroke	MY1B32-16B-Stroke	MY1B40-16B-Stroke
33	**Side scraper**	Polyamide	2	MYB25-15BA5900B	MYB32-15BA5901B	MYB40-15BA5902B
28	**O-ring**	NBR	2	KA00311 (ø5.1 × ø3 × ø1.05)	KA00320 (ø7.15 × ø3.75× ø1.7)	KA00320 (ø7.15 × ø3.75 × ø1.7)
37	**Cushion boss gasket**	NBR	2	MYB25-16GA5900	MYB32-16GA5901	MYB40-16GA5902
17	**Scraper**	NBR	2	MY1B25-PS	MY1B32-PS	MY1B40-PS
18	**Piston seal**	NBR	2			
19	**Cushion seal**	NBR	2			
20	**Tube gasket**	NBR	2			
34	**O-ring**	NBR	2			

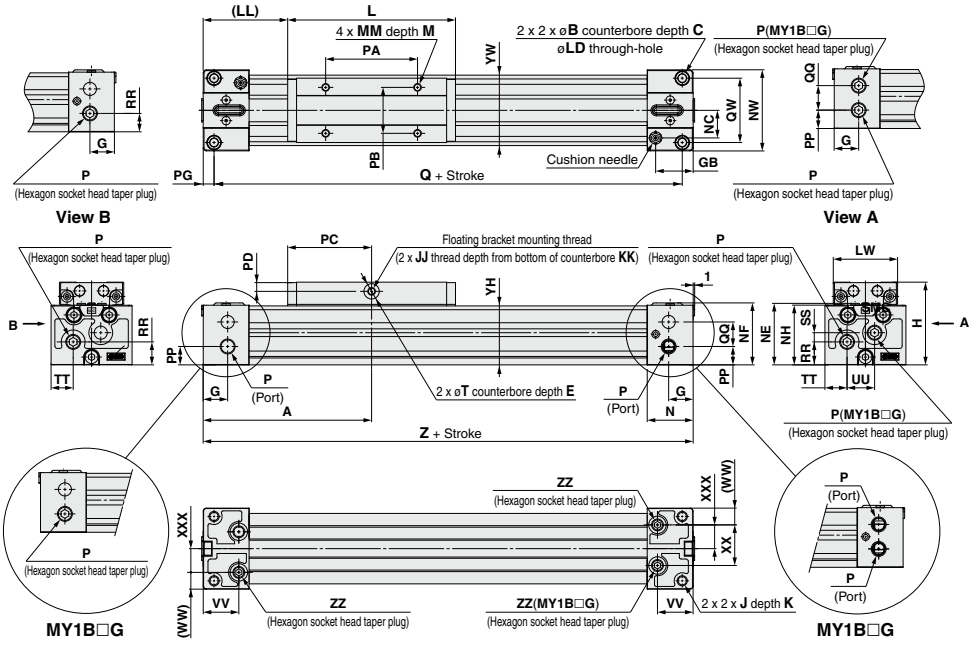
∗ Seal kit includes ⑰, ⑱, ⑲, ⑳ and ㉞. Order the seal kit based on each bore size.

∗ Seal kit includes a grease pack (10 g). When ⑭ and ⑮ are shipped independently, a grease pack is included. (10 g/1000 mm stroke) 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)

Note) For the replacement procedure of replacement parts/seals, refer to the Operation Manual.

Standard/Centralized Piping Type ø25, ø32, ø40

MY1B25□/32□/40□ – Stroke Z



Standard piping/Centralized piping

(mm)

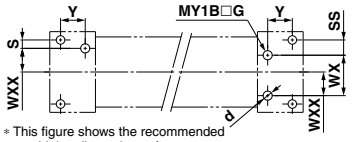
Model	A	B	C	E	G	GB	H	J	JJ	K	KK	L	LD	LL	LW	M	MM	N	NC	NE	NF	NH	NW
MY1B25□	110	9	5.5	2	16	24.5	54	M6 x 1	M5 x 0.8	9.5	9	110	5.6	55	42	9	M5 x 0.8	30	18	40.2	40.5	39	53
MY1B32□	140	11	6.6	2	19	28.5	68	M8 x 1.25	M5 x 0.8	16	10	140	6.8	70	52	12	M6 x 1	37	22	50.2	50	49	64
MY1B40□	170	14	8.5	2	23	35	84	M10 x 1.5	M6 x 1	15	13	170	8.6	85	64	12	M6 x 1	45	26.5	62.7	62	61.5	75

Model	P	PA	PB	PC	PD	PP	PG	Q	QW	RR	T	TT	VV	WW	XXX	YH	YW	Z	ZZ
MY1B25□	Rc1/8	60	30	55	6	12	7	206	42	15	10	14.5	23.3	11	15.5	38.5	46	220	Rc1/16
MY1B32□	Rc1/8	80	35	70	10	16	8	264	51	16	10	16	28.5	12	20	48	55	280	Rc1/16
MY1B40□	Rc1/4	100	40	85	12	18.5	9	322	59	23.5	14	20	35	14	23.5	60.5	67	340	Rc1/8

Centralized piping

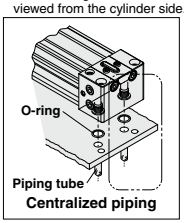
Model	QQ	SS	UU	XX
MY1B25□	16	6	18	26.5
MY1B32□	16	11	32	40
MY1B40□	24	12	35	47

Bottom Ported



Bottom ported (ZZ)
(Applicable O-ring)

∗ This figure shows the recommended machining dimensions of the mounting surface when viewed from the cylinder side.



Hole Size for Centralized Piping on the Bottom (Machine the mounting side to the dimensions above.)

Standard piping/Centralized piping (mm)

Model	WXX	Y	S	d	D	R	Applicable O-ring
MY1B25□	15.5	16.2	5.5	6	11.4	1.1	C9
MY1B32□	20	20.4	5.5	6	11.4	1.1	
MY1B40□	23.5	25.9	6	8	13.4	1.1	C11.2

Centralized piping (mm)

Model	WX	SS
MY1B25□	26.5	10
MY1B32□	40	5.5
MY1B40□	47	6

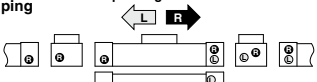
Port Variations

Head cover piping connection can be freely selected to best suit different piping conditions.

Port variations

Standard piping — Operating direction: L / R

Centralized piping — Operating direction: L / R

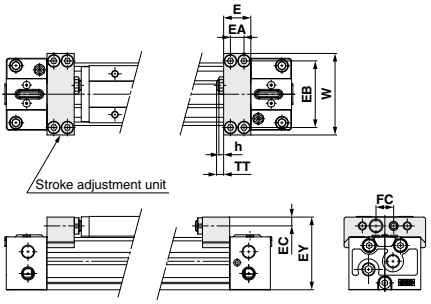


Note) Refer to the "Bottom Ported" on the left.

Stroke Adjustment Units

With adjustment bolt

MY1B Bore size □ – Stroke AZ

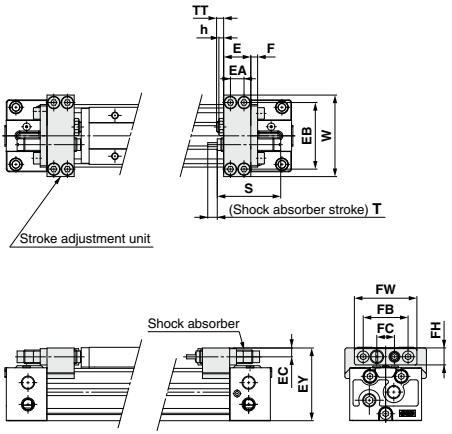


(mm)

Applicable cylinder	E	EA	EB	EC	EY	FC	h	TT	W
MY1B25□	20	10	49	6.5	53.5	13	3.5	5 (Max. 16.5)	60
MY1B32□	25	12	61	8.5	67	17	4.5	8 (Max. 20)	74
MY1B40□	31	15	76	9.5	81.5	17	4.5	9 (Max. 25)	94

With low load shock absorber + adjustment bolt

MY1B Bore size □ – Stroke LZ



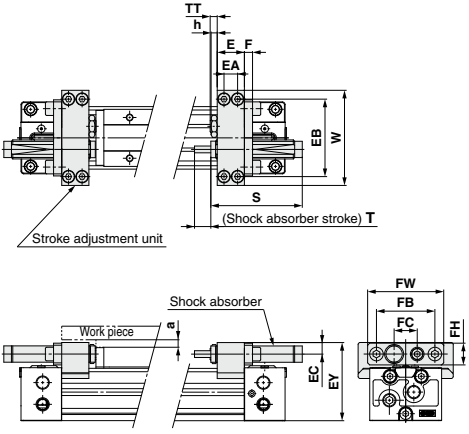
(mm)

Applicable cylinder	E	EA	EB	EC	EY	F	FB	FC	FH	FW
MY1B25□	20	10	49	6.5	53.5	6	33	13	12	46
MY1B32□	25	12	61	8.5	67	6	43	17	16	56
MY1B40□	31	15	76	9.5	81.5	6	43	17	16	56

Applicable cylinder	h	S	T	TT	W	Shock absorber model
MY1B25□	3.5	46.7	7	5 (Max. 16.5)	60	RB1007
MY1B32□	4.5	67.3	12	8 (Max. 20)	74	RB1412
MY1B40□	4.5	67.3	12	9 (Max. 25)	94	RB1412

With high load shock absorber + adjustment bolt

MY1B Bore size □ – Stroke HZ



∗ Since the EY dimension of H unit is greater than the table top height (H dimension), when a work piece exceeding the full length (L dimension) of the slide table is mounted, allow a clearance of size “a” or larger at the work piece side.

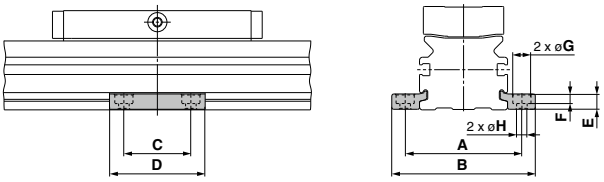
(mm)

Applicable cylinder	E	EA	EB	EC	EY	F	FB	FC	FH	FW
MY1B25□	20	10	57	8.5	57.5	6	43	17	16	56
MY1B32□	25	12	74	11.5	73	8	57	22	22	74
MY1B40□	31	15	82	12	87	8	57	22	22	74

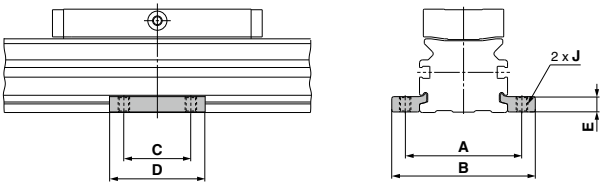
Applicable cylinder	h	S	T	TT	W	Shock absorber model	a
MY1B25□	4.5	67.3	12	5 (Max. 16.5)	70	RB1412	4.5
MY1B32□	5.5	73.2	15	8 (Max. 20)	90	RB2015	6
MY1B40□	5.5	73.2	15	9 (Max. 25)	100	RB2015	4

Side Supports

Side support A
MY-S□A



Side support B
MY-S□B



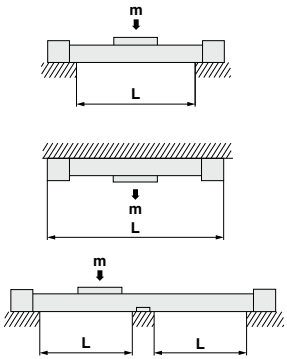
(mm)

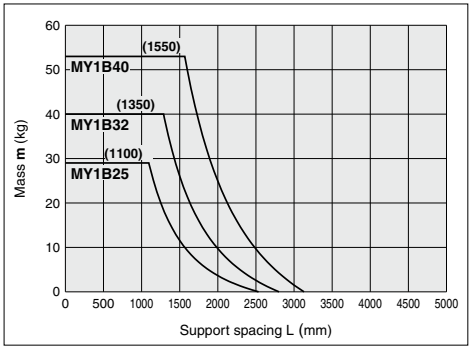
Part no.	Applicable cylinder	A	B	C	D	E	F	G	H	J
MY-S25A/B	MY1B25	61	75	35	50	8	5	9.5	5.5	M6 x 1
	MY1B32	70	84							
MY-S32A/B	MY1B40	87	105	45	64	11.7	6	11	6.6	M8 x 1.25

* Side supports consist of a set of right and left supports.

Guide to Side Support Application

For long stroke operation, the cylinder tube may be deflected depending on its own weight and the load. In such a case, use a side support in the middle section. The spacing (L) of the support must be no more than the values shown in the below graph.





⚠Caution

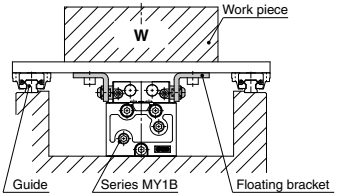
1. If the cylinder mounting surfaces are not measured accurately, using a side support may cause poor operation. Therefore, be sure to level the cylinder tube when mounting it. Also, for long stroke operation involving vibration and impact, use of a side support is recommended.
2. Support brackets are not for mounting; use them solely for providing support.

Floating Brackets MY□-J25/MY□-J32/MY□-J40

Facilitates connection to other guide systems.

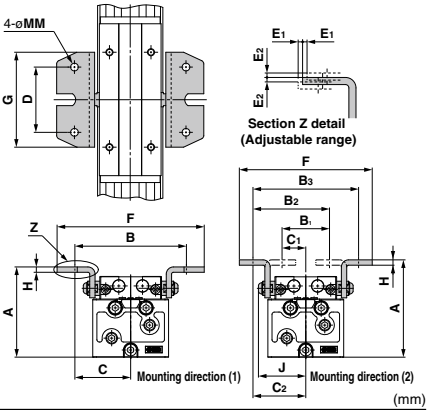
L Type

Application Example



Mounting dimension

One set of brackets can be mounted in two directions for compact combinations.



(mm)

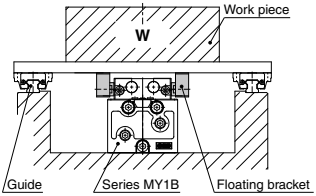
Part no.	Applicable cylinder	Common					Mounting direction (1)			
		D	G	H	J	MM	A	B	C	F
MY-J25	MY1B25□	40	60	3.2	35	5.5	63	78	39	100
MY-J32	MY1B32□	55	80	4.5	40	6.5	76	94	47	124
MY-J40	MY1B40□	74	100	4.5	47	6.5	92	112	56	144

Part no.	Applicable cylinder	Mounting direction (2)						Adjustable range	
		A	B_1	B_2	B_3	C_1	C_2	F	E_1	E_2
MY-J25	MY1B25□	65	28	53	78	14	39	96	1	1
MY-J32	MY1B32□	82	40	64	88	20	44	111	1	1
MY-J40	MY1B40□	98	44	76	108	22	54	131	1	1

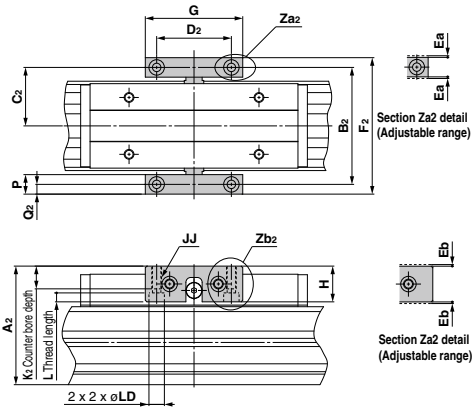
Note) Floating brackets consist of a set of right and left bracket.

Block Type

Application Example



Mounting dimension

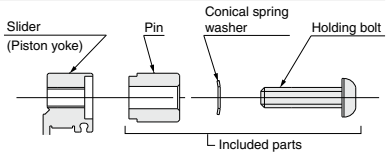


(mm)

Part no.	Applicable cylinder	G	H	JJ	L	P	LD	Adjustable range	
								Ea	Eb
MYAJ25	MY1B25□	55	22	M6 x 1	5.5	12	9.5	1	1
MYAJ32	MY1B32□	60	22	M6 x 1	5.5	12	9.5	1	1
MYAJ40	MY1B40□	72	32	M8 x 1.25	6.5	16	11	1	1

Part no.	Applicable cylinder	A_2	B_2	C_2	D_2	F_2	K_2	Q_2
MYAJ25	MY1B25□	63	61	30.5	40	73	14	6
MYAJ32	MY1B32□	73	72	36	46	84	14	6
MYAJ40	MY1B40□	93.5	88	44	55	104	19	8

Installation of Holding Bolts



Tightening Torque for Holding Bolts

Part no.	Tightening torque (N·m)
MY-J25	3
MY-J32	5
MY-J40	5

MY□-J25 to 40 (1 set) Component Parts

Description	Material	Qty.	Note
Bracket	Rolled steel	2	Nickel plated
Pin	Carbon steel	2	Nickel plated
Conical spring washer	Carbon steel	2	Nickel plated
Holding bolt	Chromium molybdenum steel	2	Nickel plated

Floating Bracket Operating Precautions

⚠ Caution

When connecting to a load which has an external guide mechanism, use a discrepancy absorption mechanism.

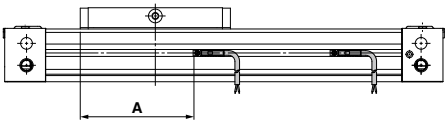
Mount the external guide mounting brackets and floating brackets in a place where the required degree of freedom for the floating Y and Z axes can be secured. The thrust transmission area of the floating bracket must be fixed so that it does not partially contact with the body.

∗ Confirm the "Coordinates and Moments" in Model Selection on page 1215 for details of floating Y and Z axes.

Series MY1B
Auto Switch Mounting

Auto Switch Proper Mounting Position (Detection at Stroke End)

MY1B (Basic type)
ø25 to ø40



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
	A	A
25	83	79
32	116.5	112.5
40	137.5	133.5

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

Operating Range

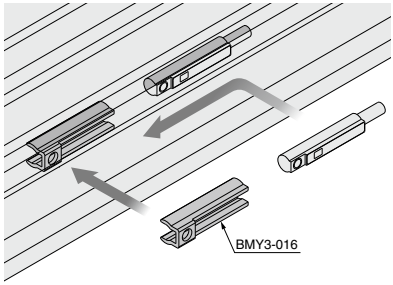
MY1B (Basic type) (mm)

Auto switch model	Bore size		
	25	32	40
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	5.0	5.5	5.5
D-A9□/A9□V	7.0	10.0	9.0

Note) 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.

Auto Switch Mounting Bracket/Part No.

Auto switch model	Bore size (mm)
	ø25 to ø40
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V	BMY3-016



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

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to page 1577.
* With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1626 and 1627.

Made to Order: Individual Specifications

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

Made to Order

Symbol

1 Helical Insert Thread -X168

Helical insert thread is used for the slide table mounting thread, the thread size is the same as the standard model.

MY1B [Bore size] – [Stroke] [ ] **Z** – [Auto switch] [Suffix] – **X168**

- [ ] : Stroke adjustment unit
- Bore size: 25, 32, 40
- Type/Bore size: B — Basic type

Example) MY1B40G-300LZ-M9BW-X168