

Mechanically Jointed Rodless Cylinder Slide Bearing Guide Type

Series MY1M

ø16, ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Slide bearing guide type MY1M 20 G - 300 L S - M9BW

Slide bearing guide type

Bore size (mm)

16	16 mm
20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm

Port thread type

Symbol	Type	Bore size
Nil	M thread	ø16, ø20
Rc	Rc	ø25, ø32,
TN	NPT	ø40, ø50,
TF	G	ø63

Piping

Nil	Standard type
G	Centralized piping type

Stroke (mm)

Refer to "Standard Stroke" on page 981.

Stroke adjusting unit

Nil	Without adjusting unit
A	With adjusting bolt
L	With low load shock absorber + Adjusting bolt
H	With high load shock absorber + Adjusting bolt
AL	With one A unit and one L unit
AH	With one A unit and one H unit each
LH	With one L unit and one H unit each

Number of auto switches

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

Made to Order

Refer to page 981 for details.

Suffix for stroke adjusting unit

Nil	Both ends
S	One end

Note) "S" is applicable for stroke adjusting units A, L and H.

Auto switch

Nil	Without auto switch (Built-in magnet)
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Applicable auto switches vary depending on the bore size. Select an applicable one referring to the table below.

Shock Absorbers for L and H Units

Bore size (mm)	16	20	25	32	40	50	63
L unit	RB0806	RB1007	RB1412	RB2015	RB2725		
H unit	—	RB1007	RB1412	RB2015	RB2725		

Note) MY1M16 is not available with H unit.

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)				Pre-wired connector	Applicable load		
					DC	AC	Perpendicular		In-line		0.5 (Nil)	1 (M)	3 (L)	5 (Z)				
							ø16, ø20	ø25 to ø63	ø16, ø20	ø25 to ø63								
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV ** [Y69A]		M9N ** [Y59A]		●	● [—]	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV ** [Y7PV]		M9P ** [Y7P]		●	● [—]	●	○	○		
				2-wire				M9BV ** [Y69B]		M9B ** [Y59B]		●	● [—]	●	○	○	—	
	3-wire (NPN)			5V, 12V				M9NVW ** [Y7NWV]		M9NW ** [Y7NW]		●	● [—]	●	○	○	IC circuit	
	3-wire (PNP)							M9PWV ** [Y7PWV]		M9PW ** [Y7PW]		●	● [—]	●	○	○		
	2-wire							M9BWW ** [Y7BWW]		M9BW ** [Y7BW]		●	● [—]	●	○	○	—	
	Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	A96V	—	A96	Z76	●	—	●	—	—	IC circuit
2-wire					24V	12V	100V	A93V	—	A93	—	●	—	●	—	—	—	Relay, PLC
								—	—	—	Z73	●	—	●	—	—		
			No			100V or less		A90V	—	A90	Z80	●	—	●	—	—	IC circuit	

* 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

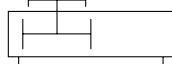
* Solid state auto switches marked with "○" are produced upon receipt of order.
** D-M9□□□ type cannot be mounted on ø25 to ø40.
Select auto switches in brackets.

* There are other applicable auto switches than listed above. For details, refer to page 1053.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
* Auto switches are shipped together (not assembled).

Mechanically Jointed Rodless Cylinder Slide Bearing Guide Type **Series MY1M**



JIS Symbol



Specifications

Bore size (mm)	16	20	25	32	40	50	63
Fluid	Air						
Action	Double acting						
Operating pressure range	0.15 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	1000 or less $+1.8$ ₀ 1001 to 3000 $+2.8$ ₀		2700 or less $+1.8$ ₀ , 2701 to 5000 $+2.8$ ₀				
Piping portsize	Front/Side port	M5 x 0.8		Rc 1/8		Rc 1/4	Rc 3/8
	Bottom port	ø4		ø5	ø6	ø8	ø10 ø11

Stroke Adjusting Unit Specifications

Bore size (mm)	16			20			25			32			40			50			63		
Unit symbol	A	L	H	A	L	H	A	L	H	A	L	H	A	L	H	A	L	H	A	L	H
Configuration Shock absorber model	With adjusting bolt	RB 0806 + with adjusting bolt		With adjusting bolt	RB 0806 + with adjusting bolt	RB 1007 + with adjusting bolt	With adjusting bolt	RB 1007 + with adjusting bolt	RB 1412 + with adjusting bolt	With adjusting bolt	RB 1412 + with adjusting bolt	RB 2015 + with adjusting bolt	With adjusting bolt	RB 1412 + with adjusting bolt	RB 2015 + with adjusting bolt	With adjusting bolt	RB 2015 + with adjusting bolt	RB 2725 + with adjusting bolt	With adjusting bolt	RB 2015 + with adjusting bolt	RB 2725 + with adjusting bolt
Fine stroke adjustment range (mm)	0 to -5			0 to -6			0 to -11.5			0 to -12			0 to -16			0 to -20			0 to -25		
Stroke adjustment range	When exceeding the stroke fine adjustment range: Utilize a made-to-order specifications “-X416” and “-X417”.																				

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

Shock Absorber Specifications

Model	RB 0806	RB 1007	RB 1412	RB 2015	RB 2725
Max. energy absorption (J)	2.9	5.9	19.6	58.8	147
Stroke absorption (mm)	6	7	12	15	25
Max. collision speed (mm/s)	1500				
Max. operating frequency (cycle/min)	80	70	45	25	10
Spring force (N)	Extended	1.96	4.22	6.86	8.34
	Retracted	4.22	6.86	15.98	20.50
Operating temperature range (°C)	5 to 60				

* The shock absorber service life is different from that of the MY1M cylinder depending on operating conditions. Refer to the RB Series Specific Product Precautions for the replacement period.



Made to Order Specifications (For details, refer to pages 1395 to 1565.)

Symbol	Specifications
—XB11	Long stroke
—XC67	NBR rubber lining in dust seal band
—X168	Helical insert thread specifications
—X416	Holder mounting bracket I
—X417	Holder mounting bracket II

Standard Stroke

Bore size (mm)	Standard stroke (mm) *	Maximum manufacturable stroke (mm)
16	100, 200, 300, 400, 500, 600, 700	3000
20, 25, 32, 40, 50, 63	800, 900, 1000, 1200, 1400, 1600, 1800, 2000	5000

* Strokes are manufacturable in 1 mm increments, up to the maximum stroke. However, when exceeding a 2000 mm stroke, specify "-XB11" at the end of the model number.

Piston Speed

Bore size (mm)	16 to 63
Without stroke adjusting unit	100 to 1000 mm/s
Stroke adjusting unit	A unit
	L unit and H unit

Note 1) Be aware that when the stroke adjusting range is increased by manipulating the adjusting bolt, the air cushion capacity decreases. Also, when exceeding the air cushion stroke ranges on page 984, the piston speed should be 100 to 200 mm per second.

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 984.

MY1B

MY1M

MY1C

MY1H

MY1HT

MY1□W

MY2C

MY2H□

MY3A

MY3B

MY3M

D-□

-X□

Individual

-X□

Technical data

Series MY1M

Theoretical Output

(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
16	200	40	60	80	100	120	140	160
20	314	62	94	125	157	188	219	251
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
50	1962	392	588	784	981	1177	1373	1569
63	3115	623	934	1246	1557	1869	2180	2492

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

Mass

(kg)

Bore size (mm)	Basic mass	Additional mass per each 50mm of stroke	Side support mass (per set)	Stroke adjusting unit mass (per unit)		
			Type A and B	A unit mass	L unit mass	H unit mass
16	0.67	0.12	0.01	0.03	0.04	—
20	1.11	0.16	0.02	0.04	0.05	0.08
25	1.64	0.24	0.02	0.07	0.11	0.18
32	3.27	0.38	0.04	0.14	0.23	0.39
40	5.88	0.56	0.08	0.25	0.34	0.48
50	10.06	0.77	0.08	0.36	0.51	0.81
63	16.57	1.11	0.17	0.68	0.83	1.08

Calculation: (Example) MY1M25-300A

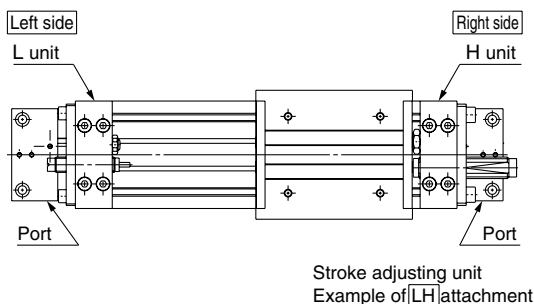
- Basic mass1.64 kg
 - Additional mass0.24/50 st
 - Mass of A unit0.07 kg
 - Cylinder stroke.....300 st
- $$1.64 + 0.24 \times 300 \div 50 + 0.07 \times 2 \approx 3.22 \text{ kg}$$

Option

Stroke Adjusting Unit Part No.

Bore size (mm)		16	20	25	32	40	50	63
Unit no.	Left	MYM-A16A1	MYM-A20A1	MYM-A25A1	MYM-A32A1	MYM-A40A1	MYM-A50A1	MYM-A63A1
	Right	MYM-A16A2	MYM-A20A2	MYM-A25A2	MYM-A32A2	MYM-A40A2	MYM-A50A2	MYM-A63A2
L unit	Left	MYM-A16L1	MYM-A20L1	MYM-A25L1	MYM-A32L1	MYM-A40L1	MYM-A50L1	MYM-A63L1
	Right	MYM-A16L2	MYM-A20L2	MYM-A25L2	MYM-A32L2	MYM-A40L2	MYM-A50L2	MYM-A63L2
H unit	Left	—	MYM-A20H1	MYM-A25H1	MYM-A32H1	MYM-A40H1	MYM-A50H1	MYM-A63H1
	Right	—	MYM-A20H2	MYM-A25H2	MYM-A32H2	MYM-A40H2	MYM-A50H2	MYM-A63H2

Stroke adjusting unit form and mounting direction



Side Support Part No.

Type	Bore size (mm)	16	20	25	32	40	50	63
Side support A		MY-S16A	MY-S20A	MY-S25A	MY-S32A	MY-S40A		MY-S63A
Side support B		MY-S16B	MY-S20B	MY-S25B	MY-S32B	MY-S40B		MY-S63B

For details about dimensions, etc., refer to page 993.

A set of side supports consists of a left support and a right support.

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 at the stroke end during high speed operation. 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 adjusting unit with shock absorber>

Use this unit when operating with a load or 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 the cylinder stroke is 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 or below the L unit limit line.

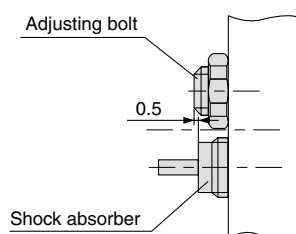
<H unit>

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.

⚠ Caution

1. Refer to the figure below when using the adjusting 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 adjusting bolt at the position where it protrudes approximately 0.5 mm from the shock absorber.



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

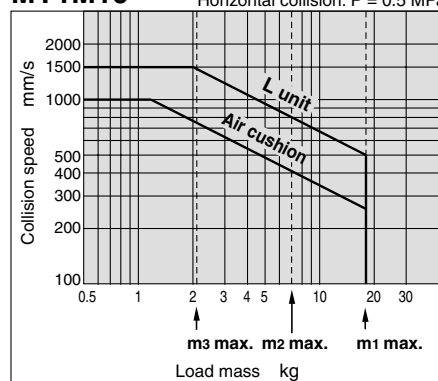
Air Cushion Stroke

(mm)

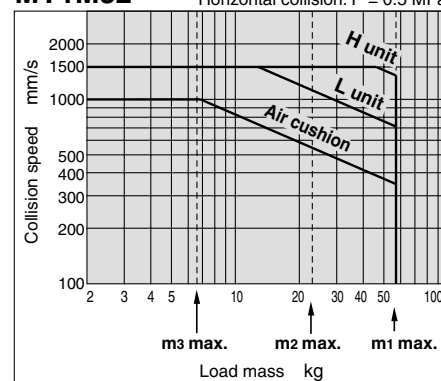
Bore size (mm)	Cushion stroke
16	12
20	15
25	15
32	19
40	24
50	30
63	37

Absorption Capacity of Air Cushion and Stroke Adjusting Units

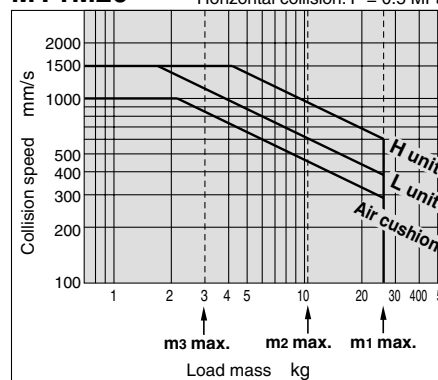
MY1M16 Horizontal collision: P = 0.5 MPa



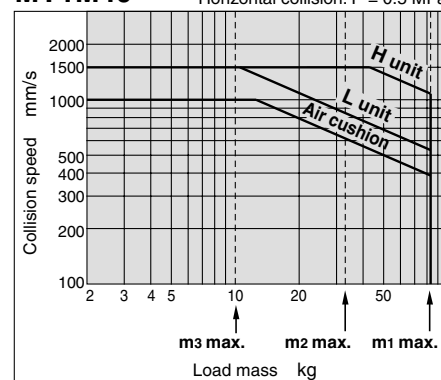
MY1M32 Horizontal collision: P = 0.5 MPa



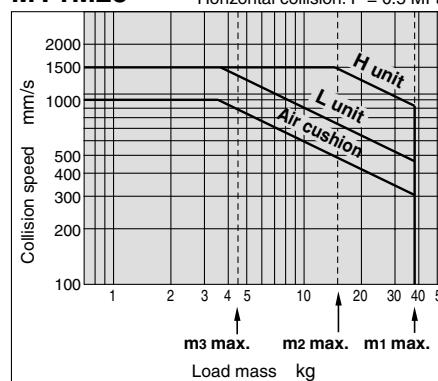
MY1M20 Horizontal collision: P = 0.5 MPa



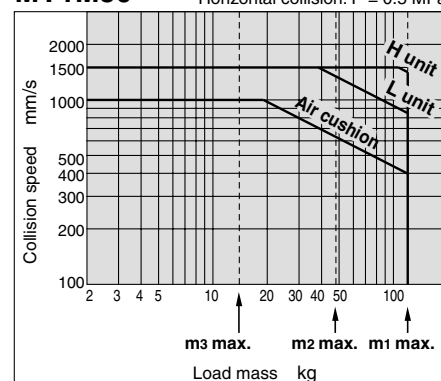
MY1M40 Horizontal collision: P = 0.5 MPa



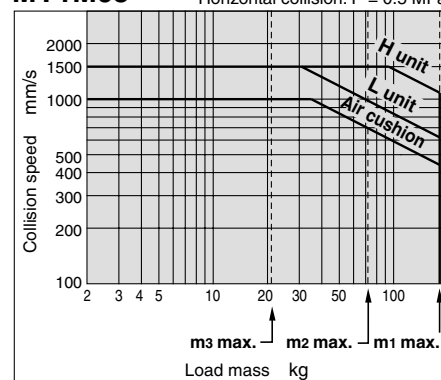
MY1M25 Horizontal collision: P = 0.5 MPa



MY1M50 Horizontal collision: P = 0.5 MPa



MY1M63 Horizontal collision: P = 0.5 MPa



Tightening Torque for Stroke Adjusting Unit Holding Bolts (N·m)

Bore size (mm)	Unit	Tightening torque
16	A	0.7
	L	
20	A	1.8
	L	
25	A	3.5
	L	
32	A	5.8
	L	
40	A	13.8
	L	
50	A	13.8
	L	
63	A	27.5
	L	

Tightening Torque for Stroke Adjusting Unit Lock Plate Holding Bolts (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 Adjusting Unit with Shock Absorber (N·m)

Type of impact	Horizontal collision	Vertical (Downward)	Vertical (Upward)
Kinetic energy E_1	$\frac{1}{2} m \cdot v^2$		
Thrust energy E_2	$F \cdot s$	$F \cdot s + m \cdot g \cdot s$	$F \cdot s - m \cdot g \cdot s$
Absorbed energy E	$E_1 + E_2$		

Symbol

v : 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.

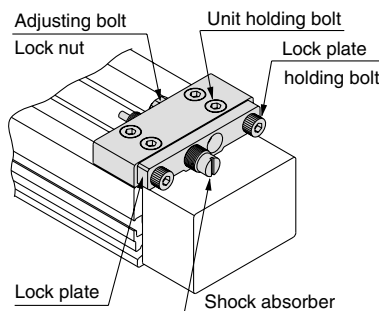
⚠ Precautions

Be sure to read before handling. Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

⚠ Caution

Use caution not to get your hands caught in the unit.

- When using a product with stroke adjusting unit, the space between the slide table (slider) and the stroke adjusting 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.



<Fastening of unit>

The unit can be secured by evenly tightening the four unit holding bolts.

⚠ Caution

Do not operate with the stroke adjusting unit fixed in an intermediate position.

When the stroke adjusting 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 adjusting bolt mounting brackets, available per made-to-order specifications -X416 and -X417, is recommended.

For other lengths, please consult with SMC (Refer to "Tightening Torque for Stroke Adjusting Unit Holding Bolts".)

<Stroke adjustment with adjusting bolt>

Loosen the adjusting 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. (Except $\phi 16$, $\phi 20$, $\phi 50$, $\phi 63$) (Refer to "Tightening Torque for Stroke Adjusting 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 affect the shock absorber and locking function.

MY1B

MY1M

MY1C

MY1H

MY1HT

MY1□W

MY2C

MY2H□

MY3A

MY3B

MY3M

D-□

-X□

Individual

-X□

Technical data

Series MY1M

Construction: $\varnothing 16$ to $\varnothing 63$

MY1M16 to 63

