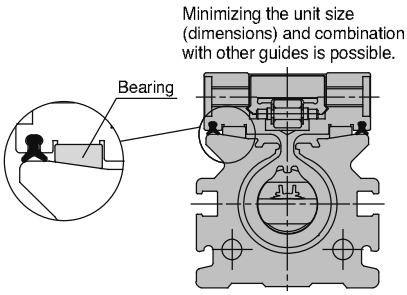
Mechanically Jointed Rodless Cylinder
Basic Type
Series MY1B

ø10, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Features

- Can be combined with a variety of guides to accommodate conditions. Simple design without guide facilitates space savings.



How to Order

E MY1B 25 G – 300

- Port thread type

Symbol	Type	Bore size
–	M thread	ø10, ø16, ø20
E	G	ø25 to ø100

- Basic type
- Bore size [mm]

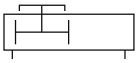
16	16 mm
20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

- Centralised piping (one end)
- Stroke

Bore size [mm]	Standard stroke [mm]*	Max. manufacturable stroke [mm]
10 and 16	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000	3000
20, 25, 32, 40 50, 63, 80, 100		5000

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

Symbol



Product Recommendation

Stocked items for fast delivery

MY1B10G-100	MY1B10G-600	MY1B16G-500	MY1B16G-1200	MY1B20G-500	MY1B20G-1000
MY1B10G-200	MY1B16G-100	MY1B16G-600	MY1B20G-100	MY1B20G-600	MY1B20G-1200
MY1B10G-300	MY1B16G-200	MY1B16G-700	MY1B20G-200	MY1B20G-700	EMY1B50G-600
MY1B10G-400	MY1B16G-300	MY1B16G-800	MY1B20G-300	MY1B20G-800	EMY1B50G-800
MY1B10G-500	MY1B16G-400	MY1B16G-1000	MY1B20G-400	MY1B20G-900	

Auto Switches

- D-M9PWL (PNP 2-colour indication)
- D-M9NWL (NPN 2-colour indication)

Note) For more options see the Auto Switch section, page XXX

Related Products

Series AS - Speed Controllers - page 1238
Series RB - Shock Absorber - page 809
Series SY - Valves - page 65, 101, 417
Series SV - Valves - page 20
Series VQC - Valves - page 193, 211
Series TU - Tubing - page 1223
Series KQ2 - Fittings - page 1184

Technical Specifications

Bore size [mm]		10	16	20	25	32	40	50	63	80	100
Fluid		Air									
Action		Double acting									
Operating pressure range		0.2 to 0.8MPa	0.1 to 0.8MPa								
Proof pressure		1.2MPa									
Ambient and fluid temperature		5 to 60°C									
Cushion		Rubber bumper	Air cushion								
Lubricaton		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 $^{+2.8}_{0}$								
Port size	Front/Side ports	M5			1/8		1/4	3/8		1/2	
	Bottom ports (centralized piping type only)		ø4		ø6	ø6	ø8	ø10	ø10	ø18	ø18

Stroke Adjusting Unit Specifications

Bore size [mm]	10		16
Unit symbol	A	H	A
Configuration and shock absorber	With adjusting bolt	RB 0805 + With adjusting bolt	With adjusting bolt
Stroke fine adjusting range [mm]	0 to -5		0 to -5.6
Stroke adjusting range	When exceeding the stroke fine adjusting range, please consult SMC		

Bore size [mm]	20			25			32			40		
Unit symbol	L			L			L			L		
Configuration and shock absorber	RB0806 + With adjusting bolt			RB1007 + With adjusting bolt			RB1412 + With adjusting bolt			RB1412 + With adjusting bolt		
Unit symbol	A	L	H	A	L	H	A	L	H	A	L	H
Configuration and shock absorber	With adjusting bolt	RB 806 + 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
Stroke fine adjusting range [mm]	0 to -6			0 to -11.5			0 to -12			0 to -16		
Stroke adjusting range	When exceeding the stroke fine adjusting range, please consult SMC											

Shock Absorber Specifications

Model		RB 0805	RB 0806	RB 1007	RB 1412	RB 2015
Max. energy absorption [J]		1.0	2.9	5.9	19.6	58.8
Stroke absorption [mm]		5	6	7	12	15
Max. impact speed [mm/s]		1000	1500	1500	1500	1500
Max. operating frequency (cycles/min)		80	80	70	45	25
Spring force [N]	Extended	1.96	1.96	4.22	6.86	8.34
	Compressed	3.83	4.22	6.86	15.98	20.50
Operating temperature range [°C]		5 to 60				

Piston Speed

Bore size [mm]		10	16 to 100
Without stroke adjusting unit		100 to 500mm/s	100 to 1000mm/s
Stroke adjusting unit	A unit	100 to 200mm/s	100 to 1000mm/s Note 1)
	H unit + L unit	100 to 1000mm/s	100 to 1500mm/s Note 2)

Note 1) Be aware that when the stroke adjusting range is increased by manipulating the adjusting bolt, the air cushion capacity decreases. The piston speed should be 100 to 200mm per second.
Note 2) For centralized piping, the piston speed is 100 to 1000mm per second.
Note 3) Use at a speed within the absorption capacity range.

Options

Stroke Adjusting Unit Numbers.

Bore size [mm] / Unit no.	10	16	20	25	32	40
A unit	MY-A10A	MY-A16A	MY-A20A	MY-A25A	MY-A32A	MY-A40A
L unit	–	–	MY-A20L	MY-A25L	MY-A32L	MY-A40L
H unit	MY-A10H	–	MY-A20H	MY-A25H	MY-A32H	MY-A40H

Shock Absorbers for H unit and L unit.

Bore size [mm] / Type	10	20	25	32	40
L unit	–	RB0806	RB1007	RB1412	
H unit	RB0805	RB1007	RB1412	RB2015	

Side Support Part Numbers.

Bore size [mm] / Type	10	16	20	25	32
Side support A	MY-S10A	MY-S16A	MY-S20A	MY-S25A	
Side support B	MY-S10B	MY-S16B	MY-S20B	MY-S25B	

Bore size [mm] / Type	40	50	63	80	100
Side support A	MY-S32A		MY-S50A	MY-S63A	
Side support B	MY-S32B		MY-S50B	MY-S63B	

Floating Joint Numbers.

Bore size [mm]	10	16	20	25	32
Model	MY-J10	MY-J16	MY-J20	MY-J25	MY-J32

Bore size [mm]	40	50	63	80	100
Model	MY-J40	MY-J50	MY-J63	MY-J80	MY-J100

Maximum Allowable Moment/Maximum Load Weight

Model	Bore size [mm]	Max. allowable moment [N·m]			Max. allowable load [kg]		
		M_1	M_2	M_3	m_1	m_2	m_3
MY1B	10	0.8	0.1	0.3	5.0	1.0	0.5
	16	2.5	0.3	0.8	15	3.0	1.7
	20	5.0	0.6	1.5	21	4.2	3.0
	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
	50	78	9.3	23	70	14	20
	63	160	19	48	83	16.6	29
	80	315	37	95	120	24	42
	100	615	73	184	150	30	60

Maximum allowable moment

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

Maximum allowable load

Select the load from within the range of limits shown in the graphs. Note that the maximun 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.

Sizing of MY1 Cylinders

The figures above are given as an indication mainly as a comparison between different models and bore sizes of MY1.

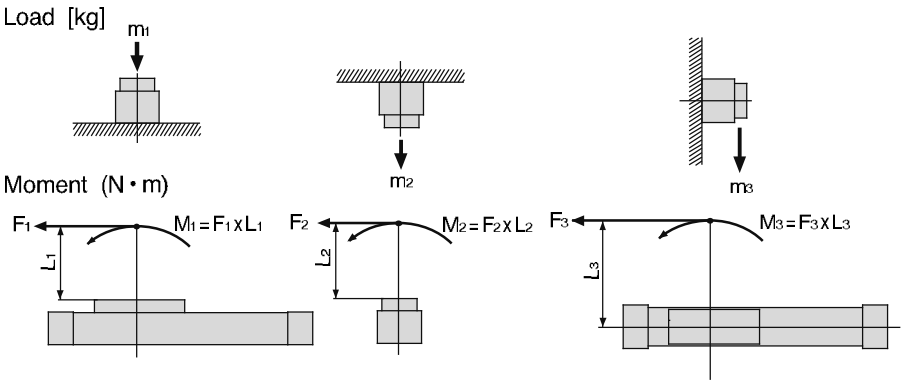
The static moments, dynamic moments and applied loads are combined together as a series of factors, the total of wich must not exceed a defined value.

Formal sizing depends upon the use of graphs and equations wich are not present in this catalogue to calculate these factors. Alternatively a software program, is available to perform the calculation.

If seeling and MY1 cylinder for a new application, please contact SMC for assistance with sizing.

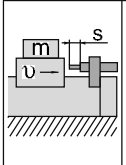
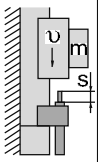
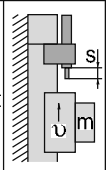
Design precautions

We recommend installing an external shock absorber when the cylinder is combined with another guide (connection with floating bracket, etc.) and the maximum allowable load is exceeded, or when the operating speed is 1000 to 1500mm/s for bore sizes ø16, ø50, ø63, ø80 and ø100.



Calculation of absorbed energy for stroke adjusting unit with built-in shock absorber

Unit: N·m

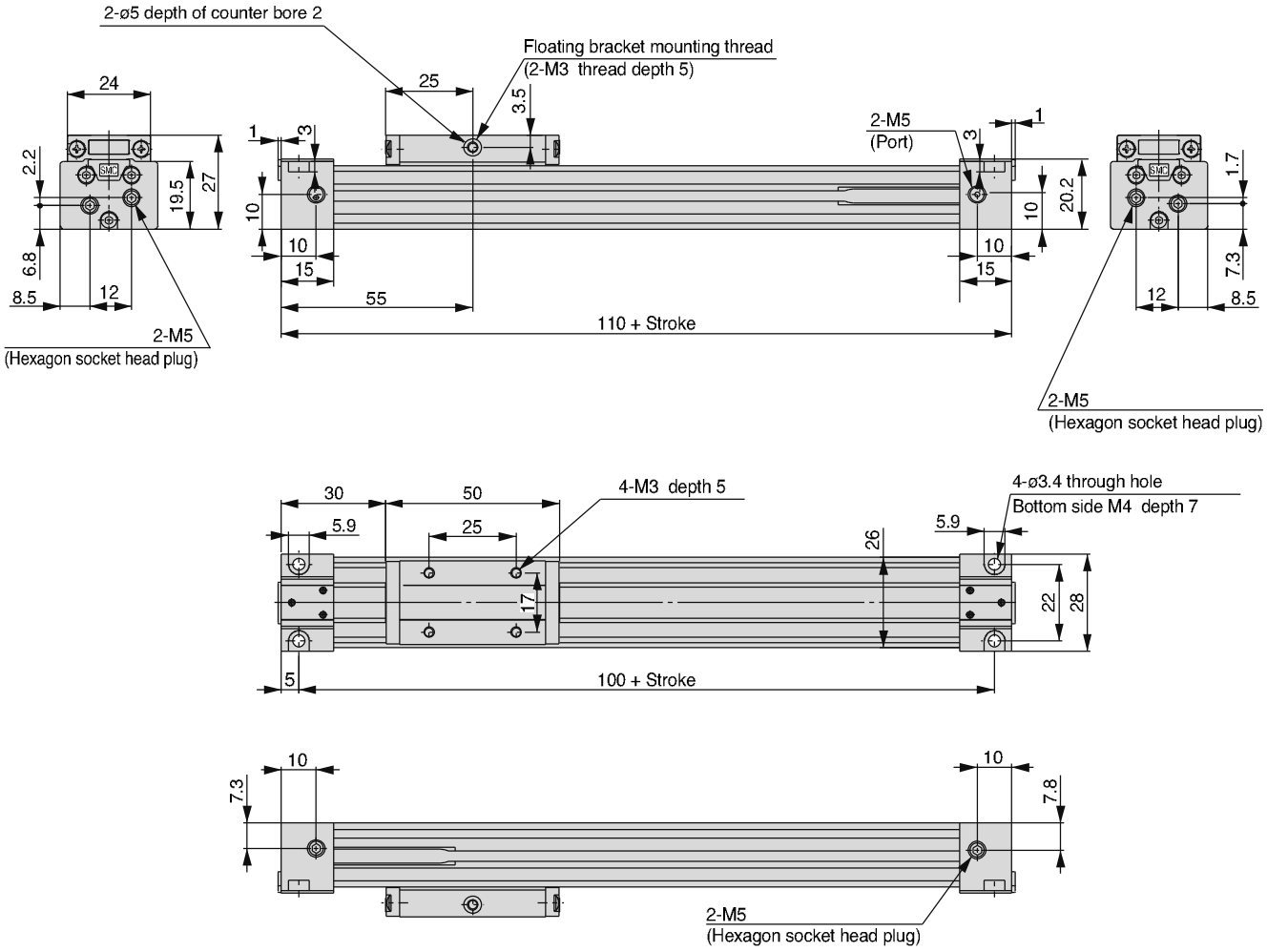
Type of impact	Horizontal	Vertical (downward)	Vertical (upward)
			
Kinetic energy E_1	$\frac{1}{2}m \cdot \upsilon^2$		
Kinetic energy E_2	$F \cdot s$	$F \cdot s + m \cdot g \cdot s$	$F \cdot s - m \cdot g \cdot s$
Absorbed energy E	$E_1 + E_2$		

Symbols
- υ: Speed of impacting object [m/s]
- m: Weight of impacting object [kg]
- F: Cylinder thrust [N]
- g: Gravitational acceleration [9.8m/s²]
- s: Shock absorber stroke [m]

Note) The speed of the impacting object is measured at the time of impact with the shock absorber.

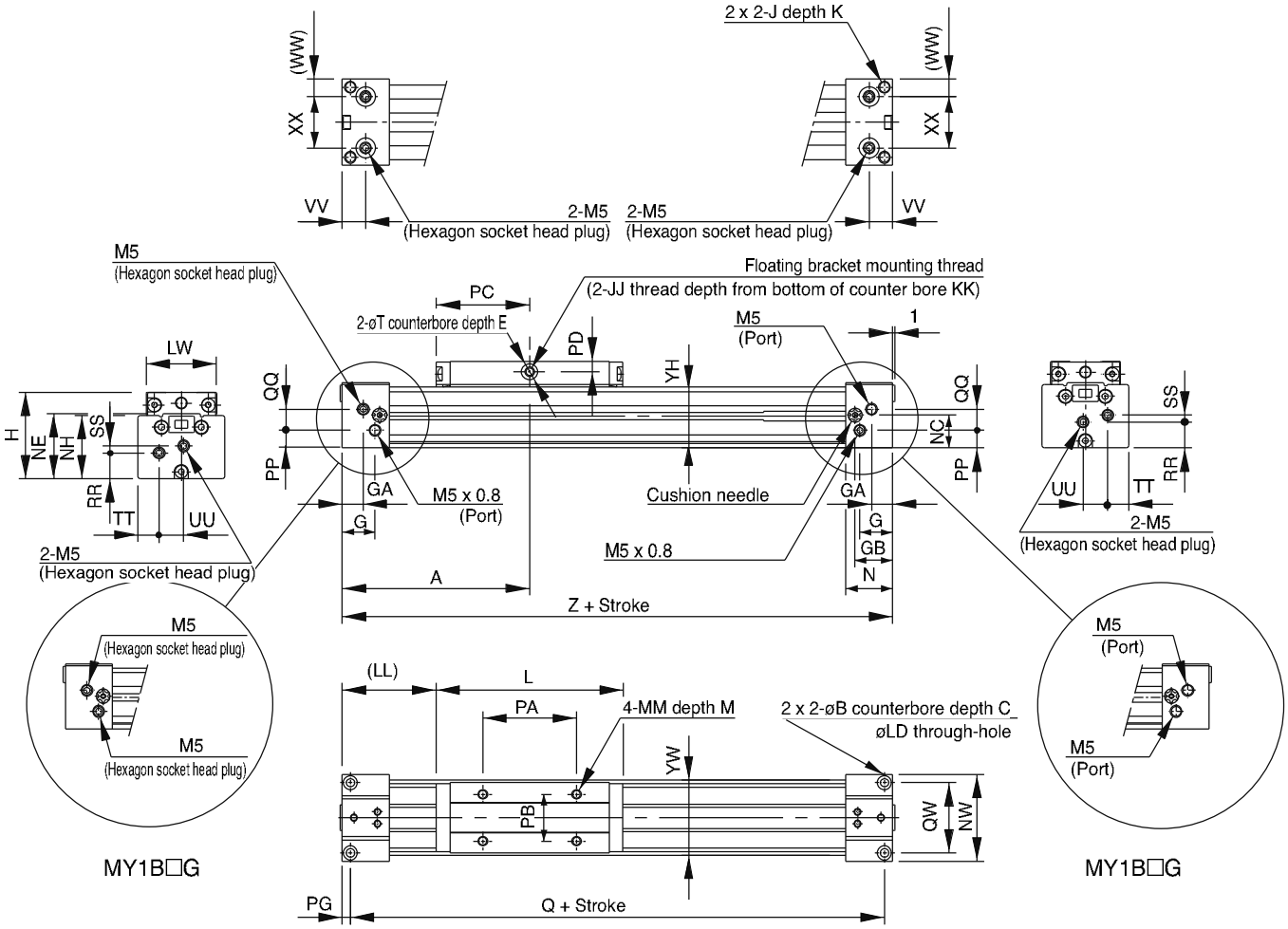
Dimensions Centralized Piping Type ø10

MY1B10G — Stroke



Dimensions Centralized Piping Type ø16, ø20

MY1B16G/20G — Stroke

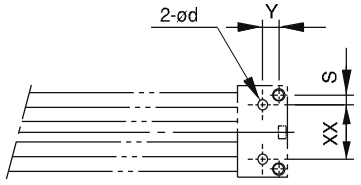


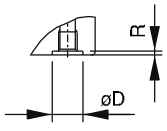
[mm]

Model	A	B	C	E	G	GA	GB	H	J	JJ	K	L	LL	LW	M	MM	N	NC	NE
MY1B16G	80	6	3.5	2	14	9	16	37	M5	M4	10	6.5	80	3.5	40	30	6	M4	20	14	27.8
MY1B20G	100	7.5	4.5	2	12.5	12.5	17.5	46	M6	M4	12	10	100	4.5	50	37	8	M5	25	17.5	34

[mm]

Model	NH	NW	PA	PB	PC	PD	PG	PP	QQ	RR	SS	T	TT	UU	VV	WW	XX	YH	YW	Z
MY1B16G	27	37	40	20	40	4.5	3.5	7.5	9	11	3	7	9	10.5	10	7.5	22	26	32	160
MY1B20G	33.5	45	50	25	50	5	4.5	11.5	11	14.5	5	8	10.5	12	12.5	10.5	24	32.5	40	200





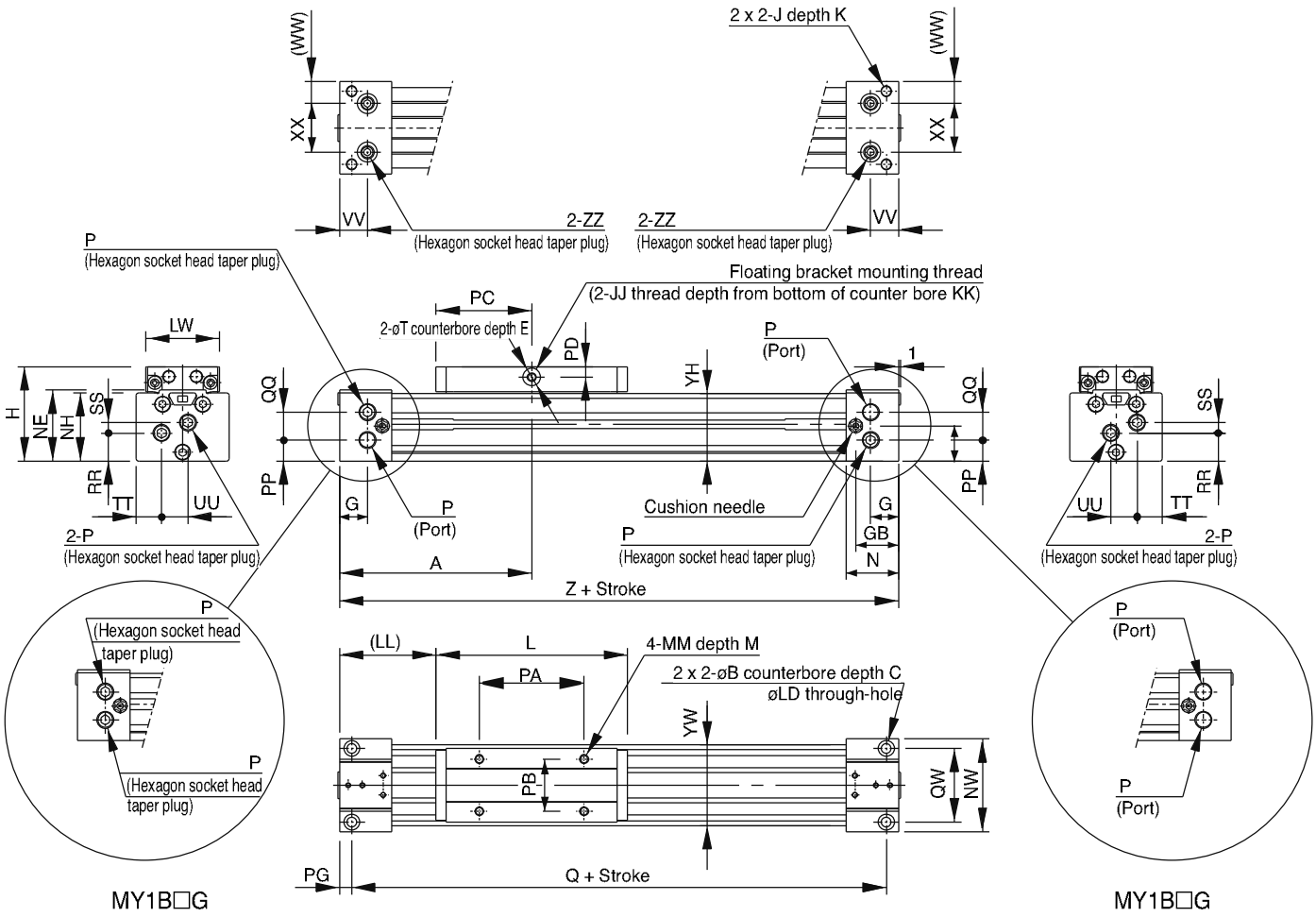
Bottom ported
(Applicable O-ring)

Hole Size for Centralized Piping on the Bottom

Model	WX	Y	S	d	D	R	Applicable O-ring
MY1B16G	22	6.5	4	4	8.4	1.1	C6
MY1B20G	24	8	6	4	8.4	1.1	

(Machine the mounting side to the dimensions below.)

Dimensions Centralized Piping Type ø25, ø32, ø40 MY1B25G/32G/40G —Stroke



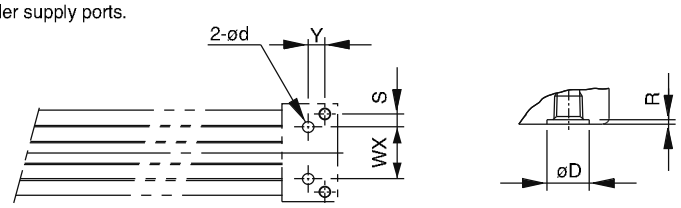
[mm]

Model	A	B	C	E	G	GB	H	J	JJ	KK	L	LL	LW	M	MM	N	NC	NE	NH	NW
MY1B25G	110	9	5.5	2	16	24.5	54	M6	M5	9	110	55	42	9	M5	30	20	40.5	39	53
MY1B32G	140	11	6.6	2	19	30	68	M8	M5	10	140	70	52	12	M6	37	25	50	49	64
MY1B40G	170	14	8.5	2	23	36.5	84	M10	M6	13	170	85	64	12	M6	45	30.5	63	61.5	75

[mm]

Model	P	PA	PB	PC	PD	PG	PP	QQ	RR	SS	T	TT	UU	VV	WW	XX	YH	YW	Z	ZZ
MY1B25G	1/8	60	30	55	6	7	12	16	16	6	10	14.5	15	16	12.5	28	38.5	46	220	Rc 1/16
MY1B32G	1/8	80	35	70	10	8	17	16	23	4	10	16	16	19	16	32	48	55	280	Rc 1/16
MY1B40G	1/4	100	40	85	12	9	18.5	24	27	10.5	14	20	22	23		36	60.5	67	340	Rc 1/8

"P" indicates cylinder supply ports.



Bottom ported (ZZ)
(Applicable O-ring)

Hole Size for Centralized Piping on the Bottom

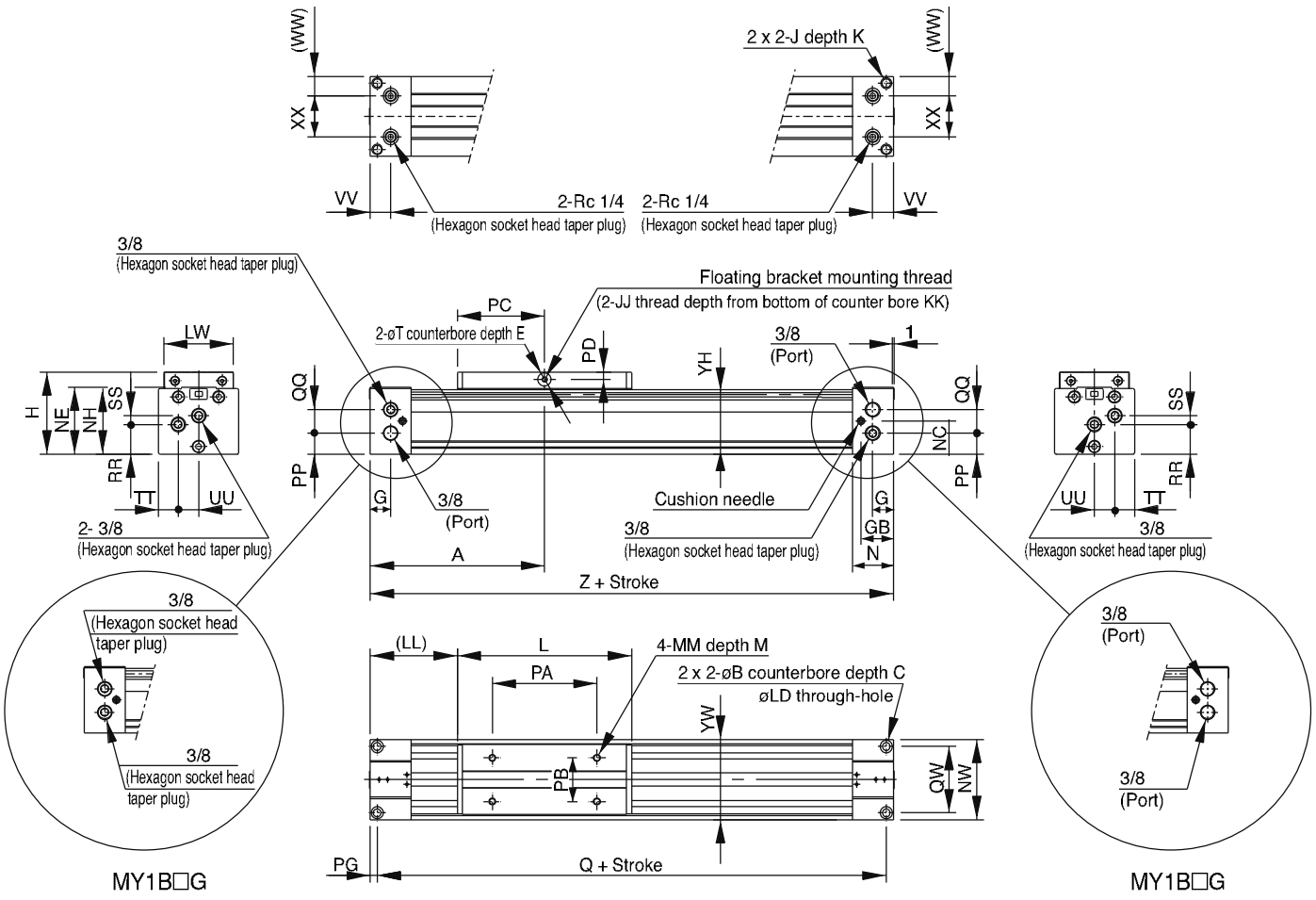
Model	WX	Y	S	d	D	R	Applicable O-ring
MY1B25G	28	9	7	6	11.4	1.1	C9
MY1B32G	32	11	9.5	6	11.4	1.1	
MY1B40G	36	14	11.5	8	13.4	1.1	C11.2

(Machine the mounting side to the dimensions below.)

Actuators

Dimensions Centralized Piping Type ø50, ø63

MY1B50G/63G — Stroke

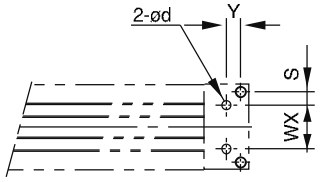


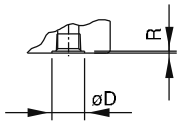
[mm]

Model	A	B	C	E	G	GB	H	J	JJ	K	L	LL	LW	M	MM	N	NC	NE
MY1B50G	200	14	8.5	3	23.5	37	94	M12	M6	25	17	200	100	80	14	M8	47	38	76.5
MY1B63G	230	17	10.5	3	25	39	116	M14	M8	28	24	230	115	96	16	M8	50	51	100

[mm]

Model	NH	NW	PA	PB	PC	PD	PG	PP	QQ	RR	SS	T	TT	UU	VV	WW	XX	YH	YW	Z
MY1B50G	75	92	120	50	100	8.5	8	24	27	34	10	15	22.5	23.5	23.5	22.5	47	74	92	400
MY1B63G	95	112	140	60	115	9.5	10	37.5	29.5	45.5	13.5	16	27	29	25	28	56	94	112	460





Bottom ported
(Applicable O-ring)

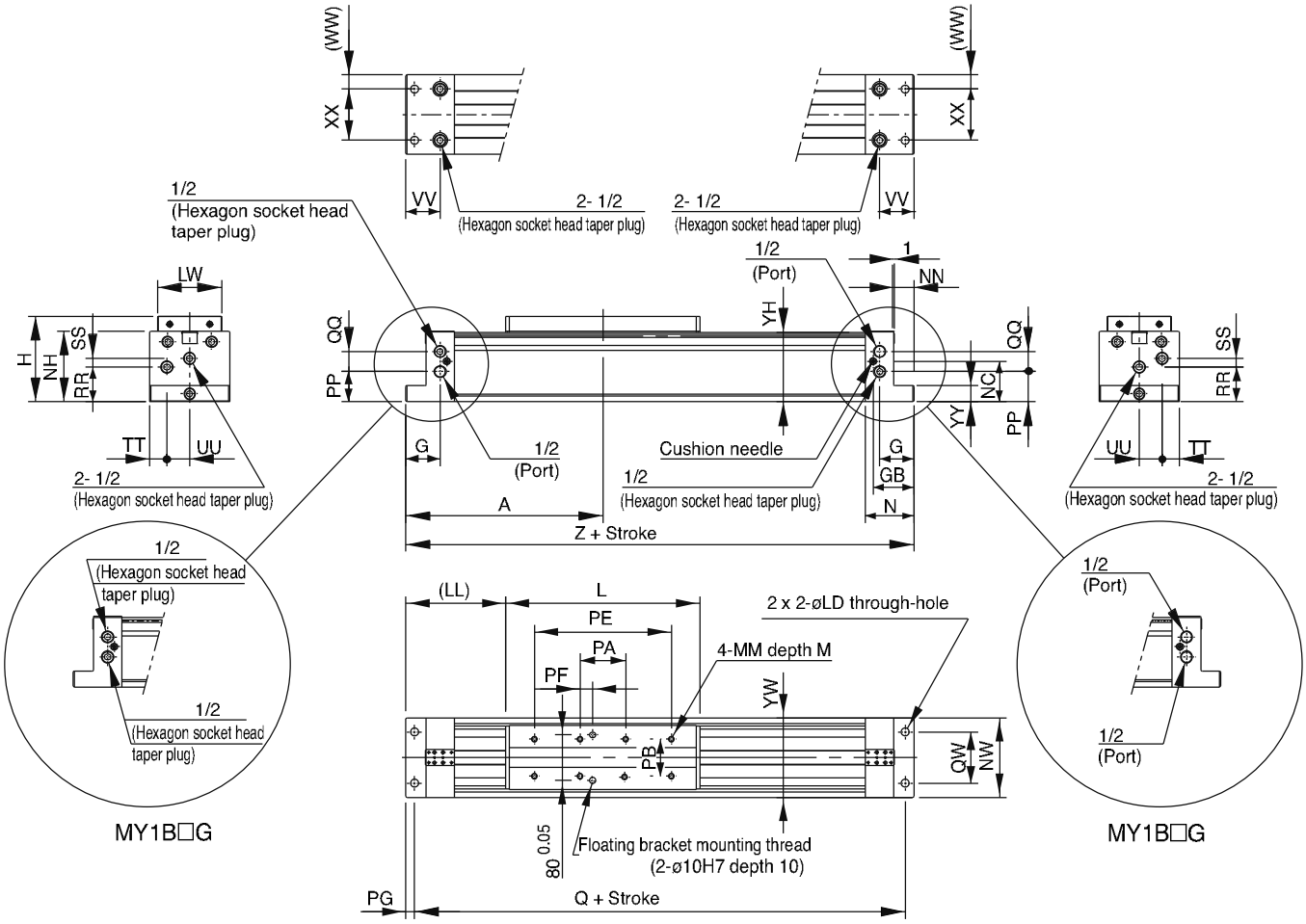
Hole Size for Centralized Piping on the Bottom

Model	WX	Y	S	d	D	R	Applicable O-ring
MY1B50G	47	15.5	14.5	10	17.5	1.1	C15
MY1B63G	56	15	18	10	17.5	1.1	

(Machine the mounting side to the dimensions below.)

Dimensions Centralized Piping Type ø80, ø100

MY1B80G/100G — Stroke

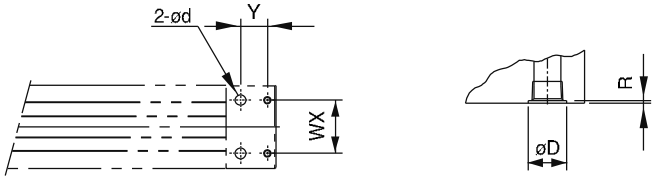


[mm]

Model	A	G	GB	H	L	LD	LL	LW	M	MM	N	NC	NH	NN	NW	PA	PB	PE
MY1B80G	345	60	71.5	150	340	14	175	112	20	M10	85	71	124	35	140	80	65	240
MY1B100G	400	70	79.5	190	400	18	200	140	25	M12	95	85	157	45	176	120	85	280

[mm]

Model	PF	PG	PP	Q	QQ	QW	RR	SS	TT	UU	WW	XX	YW	YY	Z
MY1B80G	22	15	53	660	35	90	61	15	30	40	25	90	140	28	690
MY1B100G	42	20	69	760	38	120	75	20	40	48	28	120	176	35	800



Bottom ported
(Applicable O-ring)

Hole Size for Centralized Piping on the Bottom

Model	WX	Y	d	D	R	Applicable O-ring
MY1B80G	90	45	18	26	1.8	P22
MY1B100G	120	50	18	26	1.8	

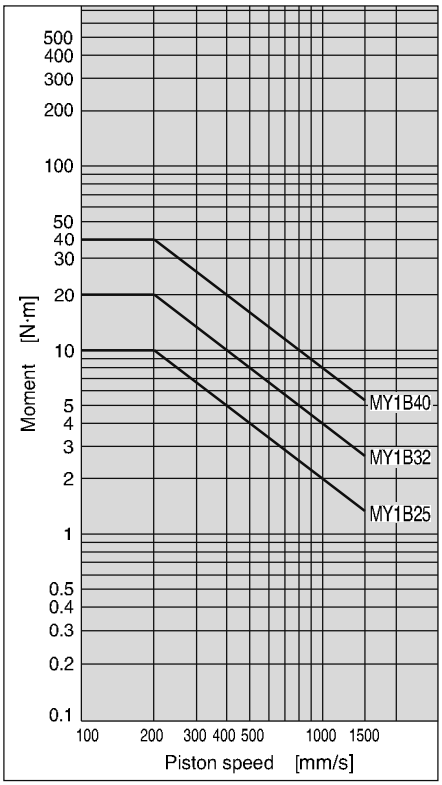
(Machine the mounting side to the dimensions below.)

Maximum Allowable Moment/Maximum Load Weight

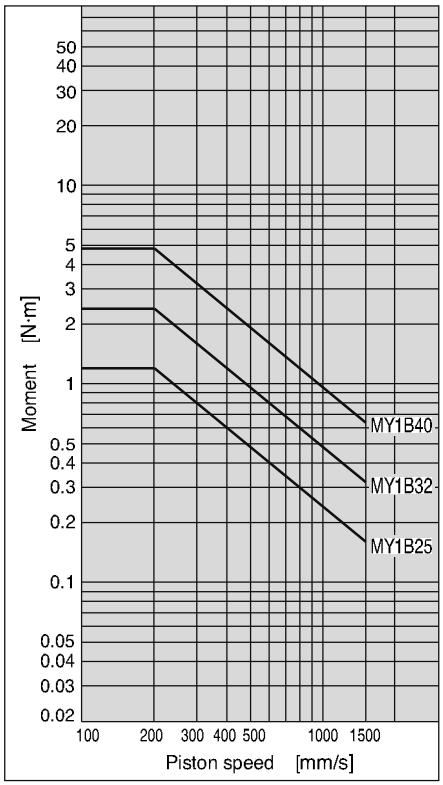
Maximum Allowable Moment

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

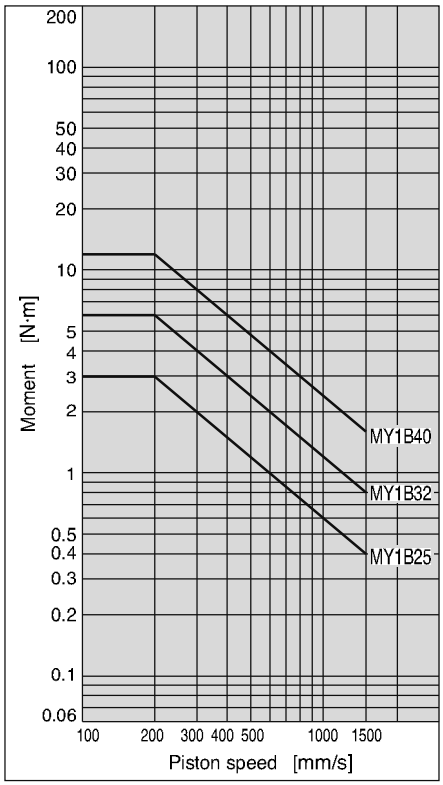
MY1B/M1



MY1B/M2



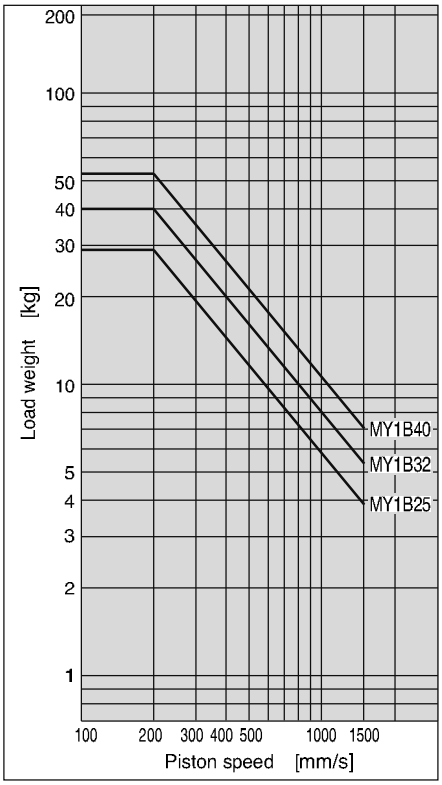
MY1B/M3



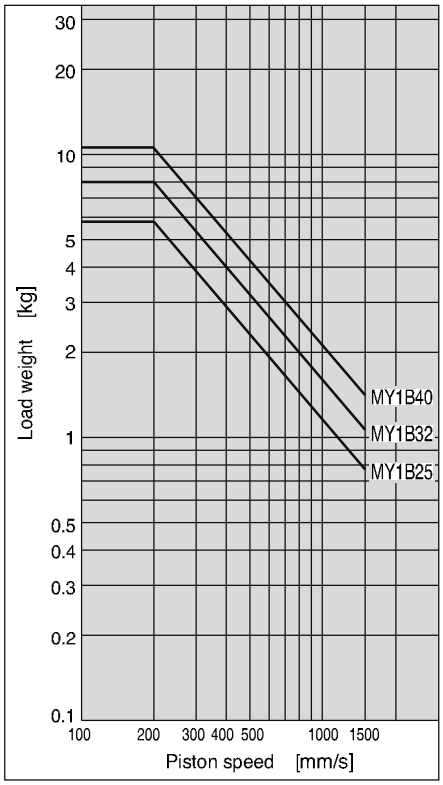
Maximum Load Weight

Select the load weight 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.

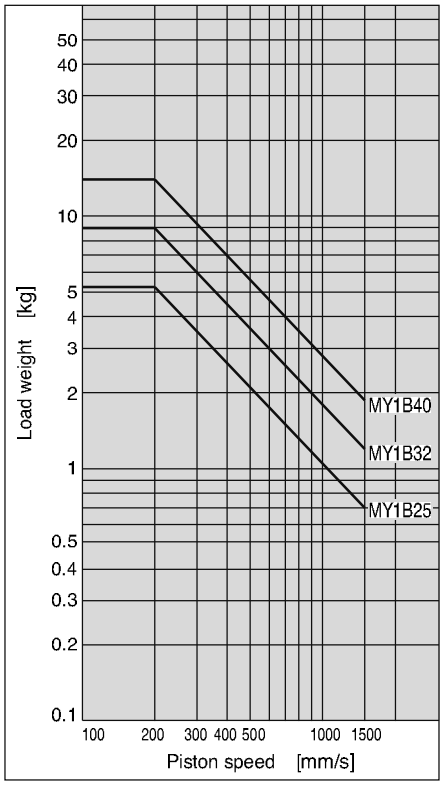
MY1B/m1



MY1B/m2



MY1B/m3



Actuators