Series Variations

Model		Bore size
Standard type	Symmetric type	(mm)
MXQ 6	**MXQ6L**	6
MXQ 8	**MXQ8L**	8
MXQ12	**MXQ12L**	12
MXQ16	**MXQ16L**	16
MXQ20	**MXQ20L**	20
MXQ25	**MXQ25L**	25

Standard stroke (mm): 10 20 30 40 50 75 100 125 150

Adjuster option: Rubber stopper; Shock absorber; Metal stopper — Extension end, Retraction end, Both ends

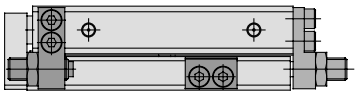
Functional option: With buffer, With end lock, Axial piping type

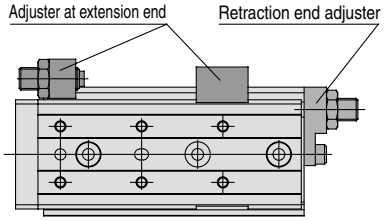
Auto switch:
Reed auto switch
- D-A9□
- D-A9□V

Solid state auto switch
- D-M9□
- D-M9□V

2-color indication solid state auto switch
- D-M9□W
- D-M9□WV

Adjuster Option





Three different types of adjusting bolt have been standardized for front end rear and double end adjusters and cushion mechanisms.

■ Rubber stopper
Standard stroke adjuster

■ Shock absorber
For use in harsh conditions.
Absorbs the impact at the stroke end for smooth stopping.
Improved stopping accuracy.

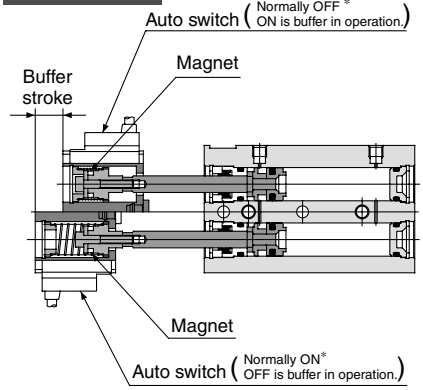
■ Metal stopper
Improved stopping accuracy.
Without cushioning function for use with light loads and low speeds.

Functional Option

With Buffer Mechanism

■ Protects workpieces and tools, etc., by eliminating impact at the end of the extension stroke.
■ Buffer unit is auto switch capable.

Buffer mechanism in operational condition

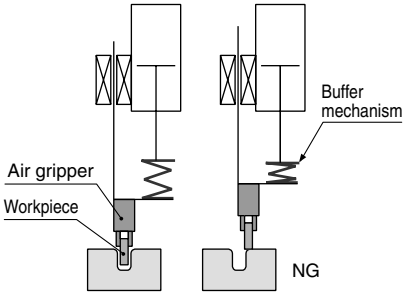


Normal condition

* The normally ON/OFF setting is changed by changing the direction of the auto switch mounting.

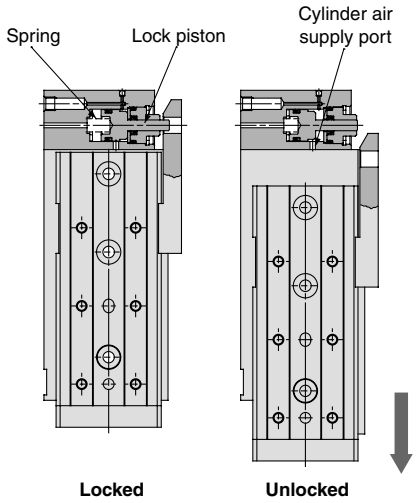
Application Example

In workpiece insertion processes when there is a problem such as faulty positioning, the buffer mechanism absorbs the shock from the workpiece impact to prevent damage.



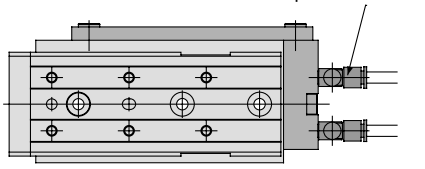
With End Lock

■ Holds the cylinder's home position to prevent dropping of the workpiece even if the air supply is cut off.



Axial Piping Type

■ Centralized piping in axial direction to maintain clear space around the body.



Series MXQ
Model Selection

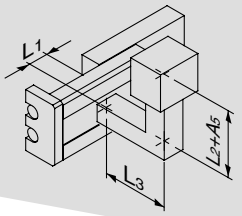
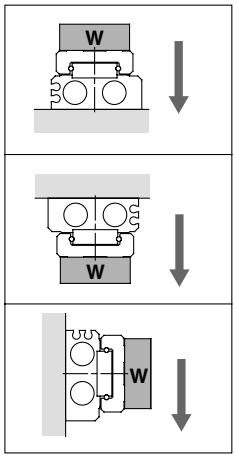
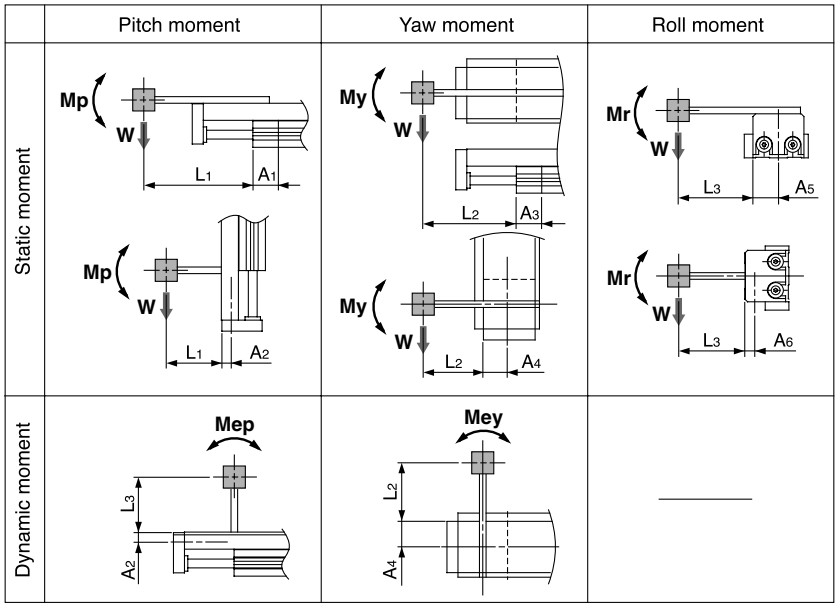
Model Selection Step	Formula/Data	Selection Example
1 Operating Conditions Enumerate the operating conditions considering the mounting position and workpiece configuration.	• Model to be used • Type of cushion • Workpiece mounting position • Mounting orientation • Average speed Va (mm/s) • Load mass W (kg): Fig. (1) • Overhang Ln (mm) Fig. (2)	 Cylinder: MXQ16-50 Cushion: Rubber stopper Workpiece table mounting Mounting: Horizontal wall mounting Average speed: Va = 300 [mm/s] Load mass: W = 1 [kg] L_1 = 10 mm L_2 = 30 mm L_3 = 30 mm
2 Kinetic Energy Find the kinetic energy E (J) of the load. Find the allowable kinetic energy Ea (J). Confirm that the kinetic energy of the load does not exceed the allowable kinetic energy.	$E = \frac{1}{2} \cdot W \left(\frac{V}{1000}\right)^2$ Collision speed $V = \underset{*}{\underline{1.4}} \cdot Va$ *) Correction factor (Reference values) $Ea = K \cdot E\,max$ Workpiece mounting coefficient K: Fig. (3) Max. allowable kinetic energy Emax: Table (1) Kinetic energy (E) ≤ Allowable kinetic energy (Ea)	$E = \frac{1}{2} \times 1 \left(\frac{420}{1000}\right)^2 = 0.088$ $V = 1.4 \times 300 = 420$ $Ea = 1 \times 0.11 = 0.11$ Can be used based on E = 0.088 ≤ Ea = 0.11
3 Load Factor		
3-1 Load Factor of Load Mass Find the allowable load mass Wa (kg). Note) No need to consider this load factor in the case of using perpendicularly in a vertical position. (Define $\alpha_1 = 0$.) Find the load factor of the load weight α_1.	$Wa = K \cdot \beta \cdot Wmax$ Workpiece mounting coefficient K: Fig. (3) Allowable load weight coefficient β: Graph (1) Max. allowable load mass Wmax: Table (2) $\alpha_1 = W/Wa$	$Wa = 1 \times 1 \times 4 = 4$ K = 1 $\beta = 1$ Wmax = 4 $\alpha_1 = 1/4 = 0.25$
3-2 Load Factor of the Static Moment Find the static moment M (N·m). Find the allowable static moment Ma (N·m). Find the load factor α_2 of the static moment.	$M = W \times 9.8\,(Ln + An)/1000$ Correction value of moment center position distance An: Table (3) $Ma = K \cdot \gamma \cdot Mmax$ Workpiece mounting coefficient K: Fig. (3) Allowable moment coefficient γ: Graph (2) Maximum allowable moment Mmax: Table (4) $\alpha_2 = M/Ma$	Yawing Examine My. $My = 1 \times 9.8\,(10 + 30)/1000 = 0.39$ $A_3 = 30$ $May = 1 \times 1 \times 18 = 18$ Mymax = 18 K = 1 $\gamma = 1$ $\alpha_2 = 0.39/18 = 0.022$ Rolling Examine Mr. $Mr = 1 \times 9.8\,(30 + 10.5)/1000 = 0.39$ $A_6 = 10.5$ Mar = 36 Mrmax = 36 K = 1 $\gamma = 1$ $\alpha'_2 = 0.39/36 = 0.011$
3-3 Load Factor of Dynamic Moment Find the dynamic moment Me (N·m). Find the allowable dynamic moment Mea (N·m). Find the load factor α_3 of the dynamic moment.	$Me = 1/3 \cdot We \times 9.8 \frac{(Ln + An)}{1000}$ Collision equivalent to impact $We = \delta \cdot W \cdot V$ δ: Bumper coefficient Rubber stopper without adjuster = 4/100 Shock absorber = 1/100 Metal stopper= 16/100 Correction value of moment center position distance An: Table (3) $Mea = K \cdot \gamma \cdot Mmax$ Workpiece mounting coefficient K: Fig. (3) Allowable moment coefficient γ: Graph (2) Max. allowable moment Mmax: Graph (4) $\alpha_3 = Me/Mea$	Pitching Examine Mep. $Mep = 1/3 \times 16.8 \times 9.8 \times \frac{(30 + 10.5)}{1000} = 2.2$ $We = 4/100 \times 1 \times 420 = 16.8$ $A_2 = 10.5$ $Meap = 1 \times 0.7 \times 18 = 12.6$ K = 1 $\gamma = 0.7$ Mpmax = 18 $\alpha_3 = 2.2/12.6 = 0.17$ Yawing Examine Mey. $Mey = 1/3 \times 16.8 \times 9.8 \times \frac{(30 + 24.5)}{1000} = 3.0$ We=168 $A_4 = 24.5$ Meay = 12.6 (Same value as Meap) $\alpha'_3 = 3.0/12.6 = 0.24$
3-4 Sum of the Load Factors Use is possible if the sum of the load factors does not exceed 1.	$\Sigma\alpha n = \alpha_1 + \alpha_2 + \cdots\cdots\cdots + \alpha_n \leq 1$	$\Sigma\alpha n = \alpha_1 + \alpha_2 + \alpha'_2 + \alpha_3 + \alpha'_3$ $= 0.25 + 0.022 + 0.011 + 0.17 + 0.24 = 0.693 \leq 1$ And it is possible to use.

Fig. (1) Load Mass: W (kg)



Note) No need to consider this load factor in the case of using perpendicularly in a vertical position.

Fig. (2) Overhang: Ln (mm), Correction Value of Moment Center Position Distance: An (mm)



Note) Static moment: Moment generated by gravity
Dynamic moment: Moment generated by impact when colliding with stopper

Fig. (3) Workpiece Mounting Coefficient: K

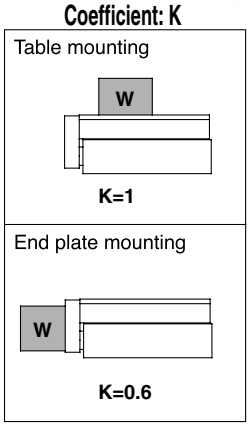


Table (1) Allowable Kinetic Energy: Emax (J)

Model	Allowable kinetic energy			
	Without adjuster	Adjuster option		
		Rubber stopper	Shock absorber	Metal stopper
MXQ 6	0.018	0.018	—	0.009
MXQ 8	0.027	0.027	0.054	0.013
MXQ12	0.055	0.055	0.11	0.027
MXQ16	0.11	0.11	0.22	0.055
MXQ20	0.16	0.16	0.32	0.080
MXQ25	0.24	0.24	0.48	0.12

⚠ **Caution** The maximum operating speed for metal stopper is 200 mm/s.

Table (2) Maximum Allowable Load Mass: Wmax (kg)

Model	Maximum allowable load weight
MXQ 6	0.6
MXQ 8	1
MXQ12	2
MXQ16	4
MXQ20	6
MXQ25	9

Graph (1) Allowable Load Mass Coefficient: β

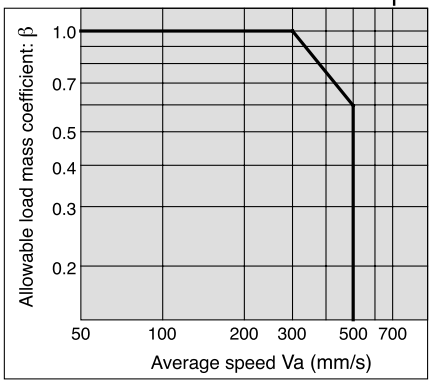
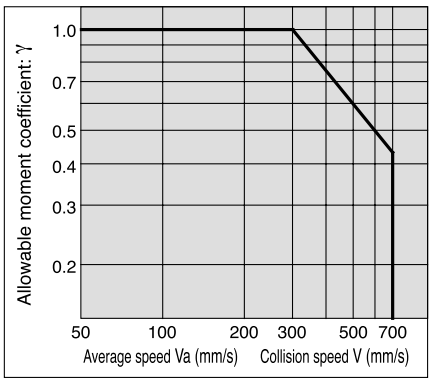


Table (3) Correction Value of Moment Center Position Distance: An (mm)

Model	Correction value of moment center position distance (Refer to Figure (2).)												
	A1, A3 Stroke (mm)									A2	A4	A5	A6
	10	20	30	40	50	75	100	125	150				
MXQ 6	14.5	14.5	14.5	18.5	18.5	—	—	—	—	6	13.5	13.5	6
MXQ 8	16.5	16.5	18.5	20.5	28	28.5	—	—	—	7	16	16	7
MXQ12	21	21	21	25	25	34	34	—	—	9	19.5	19.5	9
MXQ16	27	27	27	27	30	33	42.5	42.5	—	10.5	24.5	24.5	10.5
MXQ20	29.5	29.5	29.5	29.5	33.5	37.5	53.5	55	56.5	14	30	30	14
MXQ25	35.5	35.5	35.5	35.5	43	43	50	64	64	16.5	37	37	16.5

Note) For A2, A4, A5 and A6, there is no difference in the corrected values due to the stroke.

Graph (2) Allowable Moment Coefficient: γ



Note) Use the average speed when calculating static moment.
Use the collision speed when calculating dynamic moment.

Table (4) Maximum Allowable Moment: Mmax (N·m)

Model	Pitch/Yaw moment: Mpmax/Mymax Stroke (mm)									Roll moment: Mrmax Stroke (mm)								
	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150
MXQ 6	1.4	1.4	1.4	2.8	2.8	—	—	—	—	3.5	3.5	3.5	5.1	5.1	—	—	—	—
MXQ 8	2.0	2.0	2.8	3.7	7.9	7.9	—	—	—	5.1	5.1	6.0	6.9	7.4	7.4	—	—	—
MXQ12	4.7	4.7	4.7	7.2	7.2	15	15	—	—	11	11	11	13	13	14	14	—	—
MXQ16	13	13	13	13	18	23	42	42	—	31	31	31	31	36	41	41	41	—
MXQ20	19	19	19	19	27	36	84	84	84	47	47	47	47	57	66	75	75	75
MXQ25	32	32	32	32	52	52	78	140	140	81	81	81	81	110	110	130	130	130

Symbol

Symbol	Definition	Unit
An (n = 1 to 6)	Correction value of moment center position distance	mm
E	Kinetic energy	J
Emax	Allowable kinetic energy	J
Ln (n = 1 to 3)	Overhang	mm
M (Mp, My, Mr)	Static moment (Pitch, Yaw, Roll)	N·m
Ma (Map, May, Mar)	Allowable static moment (Pitch, Yaw, Roll)	N·m
Me (Mep, Mey)	Dynamic moment (Pitch, Yaw)	N·m
Mea (Meap, Meay)	Allowable dynamic moment (Pitch, Yaw)	N·m
Mmax (Mpmax, Mymax, Mrmax)	Maximum allowable moment (Pitch, Yaw, Roll)	N·m
V	Collision speed	mm/s

Symbol	Definition	Unit
Va	Average speed	mm/s
W	Load mass	kg
Wa	Allowable load mass	kg
We	Weight equivalent to impact	kg
Wmax	Max. allowable load mass	kg
α	Load factor	—
β	Allowable load mass coefficient	—
γ	Allowable moment coefficient	—
K	Workpiece mounting coefficient	—

Air Slide Table

Series MXQ

ø6, ø8, ø12, ø16, ø20, ø25

How to Order

MXQ | **12** | | | – | **50** | **AS** | **FR** – | **M9BW** | | – | |

Port thread type

Nil	M thread	ø6 to ø16
	Rc	ø20, ø25
TN	NPT	
TF	G	

Symmetric type

Nil	Standard type
L	Symmetric type

Bore size/Stroke (mm)

ø6	10, 20, 30, 40, 50
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

Adjuster option

Nil	Without adjuster
AS	Extension end adjuster
AT	Retraction end adjuster
A	Double end adjuster
BS (1)	Extension end absorber
BT (1)	Retraction end absorber
B (1)	Double absorber
CS	Extension end metal stopper
CT	Retraction end metal stopper
C	Double metal stopper
ASBT (1)	Extension end adjustor + Retraction end absorber
ASCT	Extension end adjustor + Retraction end metal stopper
BSAT (1)	Extension end absorber + Retraction end adjuster
BSCT (1)	Extension end absorber + Retraction end metal stopper
CSAT	Extension end metal stopper + Retraction end adjuster
CSBT (1)	Extension end metal stopper + Retraction end absorber

Note 1) W/ shock absorber is not available in Series MXQ6.

Functional option

Nil	Standard type
F	With buffer
R (2)	With end lock
P	Axial piping type
FR (2)	With buffer and end lock
FP	With buffer, Axial piping type

Note 2) W/ end lock is not available in Series MXQ6.

Number of auto switches

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

Auto switch

Nil	Without auto switch (Built-in magnet)

* For the applicable auto switch model, refer to the table below.
* For the applicable auto switch to buffer, refer to page 95. It requires to order separately.

Made to Order

Refer to page 93 for details.

Option Combinations

Adjuster option \ Functional option	Nil	F	R	P	FR	FP
Nil	○	○	○	○	○	○
AS	○	○(3)	○	○	○(3)	○(3)
AT	○	○	x	x	x	x
A	○	○(3)	x	x	x	x
BS	○	x	○	○	x	x
BT	○	○	x	x	x	x
B	○	x	x	x	x	x
CS	○	○(3)	○	○	○(3)	○(3)
CT	○	○	x	x	x	x
C	○	○(3)	x	x	x	x
ASBT	○	○(3)	x	x	x	x
ASCT	○	○(3)	x	x	x	x
BSAT	○	x	x	x	x	x
BSCT	○	x	x	x	x	x
CSAT	○	○(3)	x	x	x	x
CSBT	○	○(3)	x	x	x	x

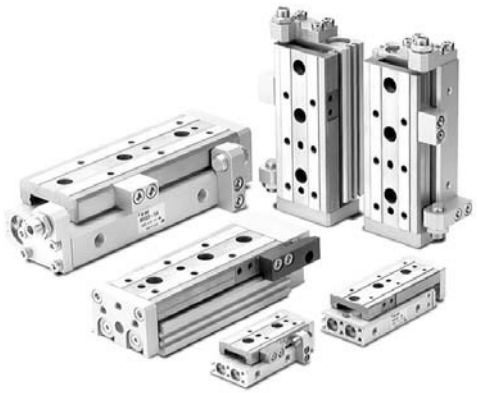
○ : Available, x : Not available

Note 3) With the combination of buffer mechanism and extension end stroke adjuster, the buffer stroke decreases by the amount of stroke adjusted with the extension end stroke adjuster.

Applicable Auto Switch/Refer to pages 1719 to 1827 for the detailed specifications of 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 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**	●	●	●	○	○	—	
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96V**	**A96**	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	**A93V**	**A93**	●	—	●	—	—	—	Relay, PLC
							100 V or less	**A90V**	**A90**	●	—	●	—	—	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.
* Since there are other applicable auto switches than listed, refer to page 128 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
* Auto switches are shipped together (not assembled).



Specifications

Bore size (mm)	6	8	12	16	20	25
Piping port size	M5 x 0.8				Rc 1/8, NPT 1/8, G 1/8	
Fluid	Air					
Action	Double acting					
Operating pressure	0.15 to 0.7 MPa					
Proof pressure	1.05 MPa					
Ambient and fluid temperature	–10 to 60°C					
Piston speed	50 to 500 mm/s (Adjuster option/Metal stopper: 50 to 200 mm/s)					
Cushion	Rubber bumper (Standard, Adjuster option/Rubber stopper) Shock absorber (Adjuster option/Shock absorber) None (Adjuster option/Metal stopper)					
Lubrication	Non-lube					
Auto switch	Reed auto switch (2-wire, 3-wire) Solid state auto switch (2-wire, 3-wire) 2-color indication solid state auto switch (2-wire, 3-wire)					
Stroke length tolerance	$^{+1}_{0}$ mm					

Option

Adjuster option	Rubber stopper	Extension end (AS)	Stroke adjustment range 0 to 5 mm
		Retraction end (AT)	
		Both ends (A)	
	Shock absorber	Extension end (BS)	W/ shock absorber is not available in Series MXQ6.
		Retraction end (BT)	
		Both ends (B)	
	Metal stopper	Extension end (CS)	Stroke adjustment range 0 to 5 mm
		Retraction end (CT)	
		Both ends (C)	
Functional option	With buffer (F)		W/ end lock is not available in Series MXQ6.
	With end lock (R)		
	Axial piping type (P)		

∗ For details of adjuster and functional option, refer to pages 94 and 95 in “Option Specifications”.

Standard Stroke

Model	Standard stroke (mm)
MXQ 6	10, 20, 30, 40, 50
MXQ 8	10, 20, 30, 40, 50, 75
MXQ12	10, 20, 30, 40, 50, 75, 100
MXQ16	10, 20, 30, 40, 50, 75, 100, 125
MXQ20	10, 20, 30, 40, 50, 75, 100, 125, 150
MXQ25	10, 20, 30, 40, 50, 75, 100, 125, 150

Made to Order

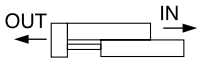
Made to Order Specifications

(For details, refer to pages 1955 to 2021.)

Symbol	Specifications
-X7	PTFE grease
-X9	Grease for food
-X11	Adjusting bolt, long specification (Adjustment range: 15 mm)
-X12	Adjusting bolt, long specification (Adjustment range: 25 mm)
-X16	Heat treated metal stopper bolt (Adjustment range: 5 mm)
-X17	Heat treated metal stopper bolt (Adjustment range: 15 mm)
-X18	Heat treated metal stopper bolt (Adjustment range: 25 mm)
-X33	Without built-in auto switch magnet
-X39	Fluororubber seals
-X42	Anti-corrosive specifications for guide section
-X45	EPDM seals

For clean room specifications, refer to “Pneumatic Clean Series” catalog.

Theoretical Output



The dual rod ensures an output twice that of existing cylinders. (N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm^2)	Operating pressure (MPa)					
				0.2	0.3	0.4	0.5	0.6	0.7
6	3	OUT	57	11	17	23	29	34	40
		IN	42	8	13	17	21	25	29
8	4	OUT	101	20	30	40	51	61	71
		IN	75	15	23	30	38	45	53
12	6	OUT	226	45	68	90	113	136	158
		IN	170	34	51	68	85	102	119
16	8	OUT	402	80	121	161	201	241	281
		IN	302	60	91	121	151	181	211
20	10	OUT	628	126	188	251	314	377	440
		IN	471	94	141	188	236	283	330
25	12	OUT	982	196	295	393	491	589	687
		IN	756	151	227	302	378	454	529

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

Mass

(g)

Model	Standard stroke (mm)									Additional weight of adjuster option						Extra for option		
	10	20	30	40	50	75	100	125	150	Rubber stopper		Shock absorber		Metal stopper		With buffer	With end lock	Axial piping type (S: Stroke (mm))
										Extension end	Retraction end	Extension end	Retraction end	Extension end	Retraction end			
MXQ 6	100	120	140	180	200	—	—	—	—	6	5	—	—	10	5	25	—	13 + 0.2 S
MXQ 8	140	170	210	250	315	385	—	—	—	10	10	30	23	23	10	35	40	26 + 0.2 S
MXQ12	335	340	380	450	490	655	745	—	—	25	23	47	30	35	23	70	100	43 + 0.2 S
MXQ16	605	610	670	735	835	1000	1250	1400	—	45	40	75	53	60	40	105	160	55 + 0.2 S
MXQ20	1100	1100	1100	1200	1400	1750	2350	2650	2900	80	65	170	120	115	65	130	310	166 + 0.5 S
MXQ25	1750	1750	1750	1950	2400	2750	3450	4300	4700	130	110	220	140	180	110	200	560	240 + 0.5 S

Option Specifications

Stroke Adjustment Range of Adjuster Option (Identical for extension and retraction ends)

Type	Stroke adjustment range
Rubber stopper	0 to 5 mm
With shock absorber	Refer to the dimensions on page 124.
Metal stopper	0 to 5 mm

∗ Optional wide adjustment range adjuster are available with rubber stopper and metal stopper.

How to Order Stroke Adjuster (Accessory)

MXQ — AS 12 L — X11

Adjuster option

AS	Rubber stopper	Extension end
AT		Retraction end
BS	Shock absorber	Extension end
BT		Retraction end
CS	Metal stopper	Extension end
CT		Retraction end

Applicable bore size

6	ø6
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

Symmetric type

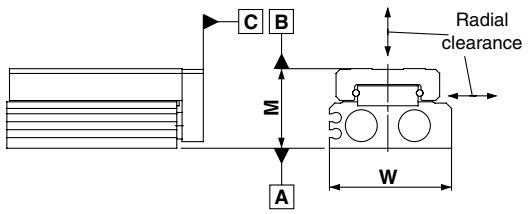
Nil	Standard type
L	Symmetric type

Adjustment range

Nil	5 mm	Standard
-X11	15 mm	Option
-X12	25 mm	

Note 1) -X12 (adjusting range: 25 mm) is not available in Series MXQ6.
Note 2) -X11 and -X12 are not available with shock absorber.
Note 3) W/ Shock absorber is not available in Series MXQ6.
Note 4) For dimensions, refer to pages 122 to 126.
For the symmetric type, refer to the external dimensions symmetrically. (Symmetric type is what the direction of the adjusting bolt is reversed.)

Table Accuracy



Model	MXQ6	MXQ8	MXQ12	MXQ16	MXQ20	MXQ25
B side parallelism to **A** side	Refer to Table (1).					
B side traveling parallelism to **A** side	Refer to Graph (1).					
C side perpendicularity to **A** side	0.05 mm					
M dimension tolerance	±0.08 mm (±0.1 mm) *1					
W dimension tolerance	±0.1 mm					
Radial internal clearance (μm)	–4 to 0	–4 to 0	–6 to 0	–10 to 0	–12 to 0	–14 to 0

*1) ±0.1 mm for 75 mm or longer stroke

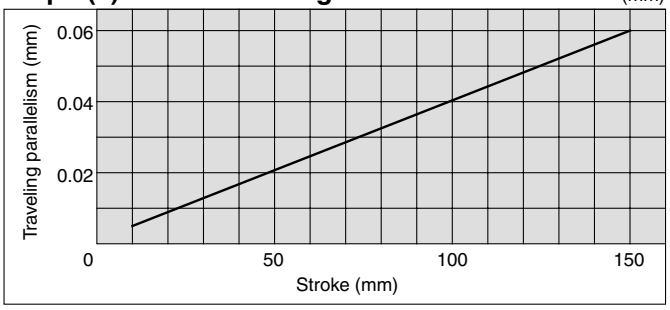
Table (1) B Side Parallelism to A Side

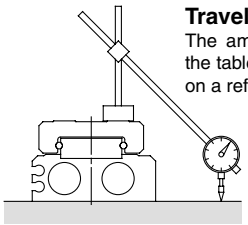
(mm)

Model	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
MXQ 6	0.025	0.03	0.035	0.04	0.045	—	—	—	—
MXQ 8	0.025	0.03	0.035	0.04	0.055	0.065	—	—	—
MXQ12	0.03	0.03	0.035	0.04	0.045	0.065	0.075	—	—
MXQ16	0.035	0.035	0.04	0.045	0.05	0.065	0.08	0.095	—
MXQ20	0.04	0.04	0.04	0.045	0.055	0.07	0.095	0.105	0.125
MXQ25	0.045	0.045	0.045	0.05	0.06	0.07	0.09	0.115	0.125

Graph (1) B Side Traveling Parallelism to A Side

(mm)





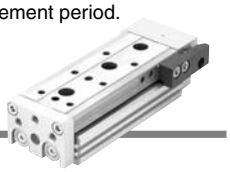
Traveling parallelism:
The amount of deflection on a dial gauge when the table travels a full stroke with the body secured on a reference base surface.

Shock Absorber Specifications

Shock absorber model		RB0805	RB0806	RB1007	RB1411	RB1412
Applicable slide table		MXQ8	MXQ12	MXQ16	MXQ20	MXQ25
Max. energy absorption (J)		0.98	2.94	5.88	14.7	19.6
Stroke absorption (mm)		5	6	7	11	12
Max. collision speed (mm/s)		50 to 500				
Max. operating frequency (cycle/min)		80	80	70	45	45
Max. allowable thrust (N)		245	245	422	814	814
Ambient temperature range (°C)		–10 to 60				
Spring force (N)	**Extended**	1.96	1.96	4.22	6.86	6.86
	Retracted	3.83	4.22	6.86	15.30	15.98
Mass (g)		15	15	25	65	65

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

With End Lock Specifications



Model	MXQ8	MXQ12	MXQ16	MXQ20	MXQ25
Bore size (mm)	8	12	16	20	25
Piston speed	50 to 500 mm/s				
Holding force (N)	25	60	110	160	250

Note) For caution on end lock, refer to page 132.

Buffer Mechanism Specifications

Model		MXQ6	MXQ8	MXQ12	MXQ16	MXQ20	MXQ25
Bore size (mm)		6	8	12	16	20	25
Piston speed		50 to 500 mm/s (Horizontal mounting 50 to 300 mm/s)					
Buffer stroke (mm)		5		10			
Buffer stroke load (N)	**Stroke at 0 (mm)**	3	5	10	13	17	21
	Maximum stroke	6	8	13	17	25	29

Note 1) For caution on handling the one with buffer mechanism,refer to page 132.
Note 2) The buffer stroke decreases by the amount of stroke adjusted with the extension end stroke adjuster.

Applicable Auto Switch to Buffer

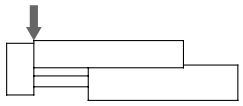
Type	model	Specifications	Electrical entry direction
Solid state switch	**D-M9BV**	With light, 2-wire	Vertical
	D-M9NV	With light, 3-wire, Output: NPN	
	D-M9PV	With light, 3-wire, Output: PNP	

* The auto switch for buffer must be ordered separately.

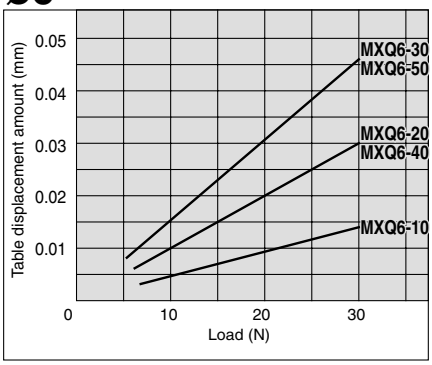
Table Deflection (Reference Values)

Table displacement due to pitch moment load

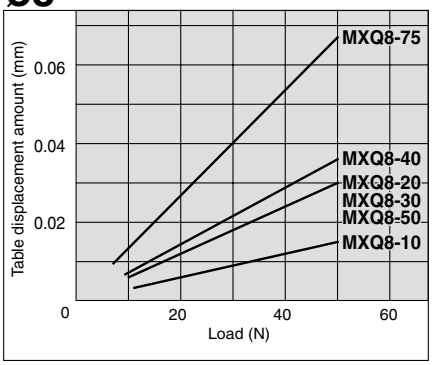
Table displacement when loads are applied to the section marked with the arrow at the full stroke.



ø6



ø8



ø12

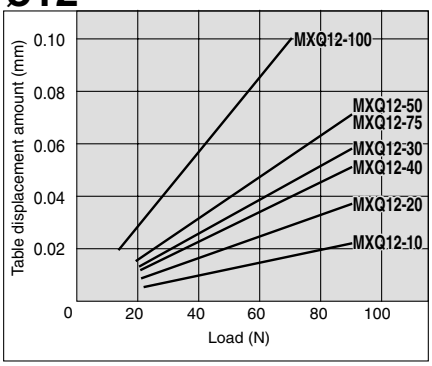
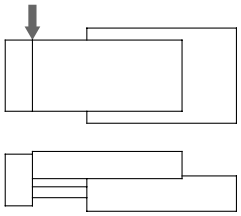
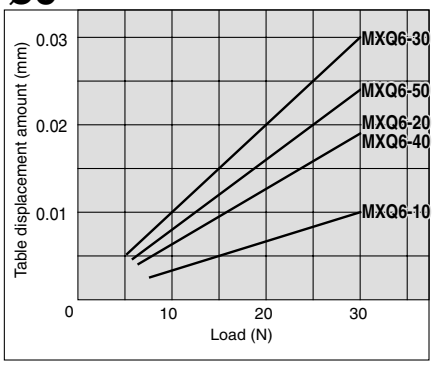


Table displacement due to yaw moment load

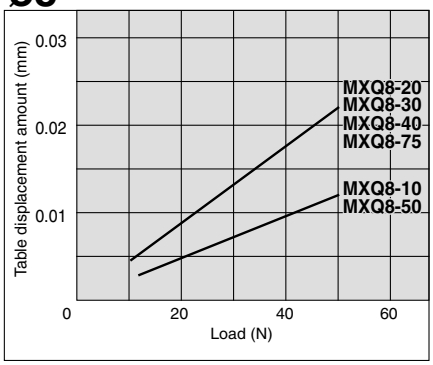
Table displacement when loads are applied to the section marked with the arrow at the full stroke.



ø6



ø8



ø12

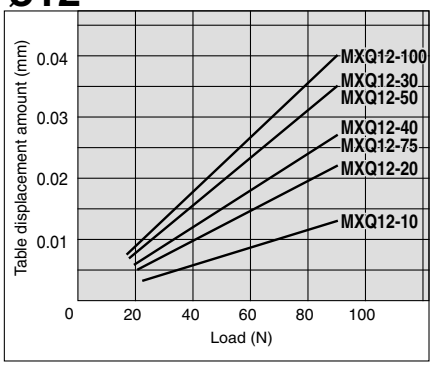
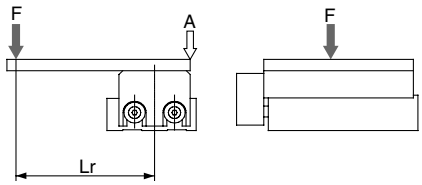
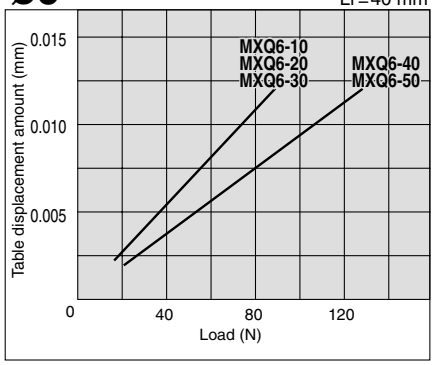


Table displacement due to roll moment load

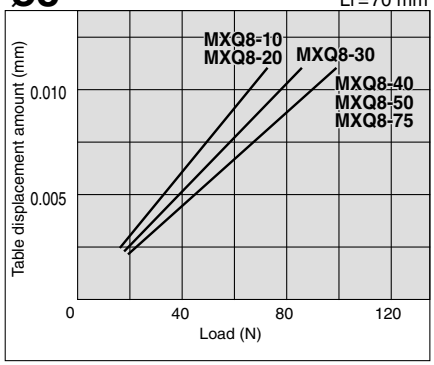
Table displacement of section A when loads are applied to the section F with the slide table retracted.



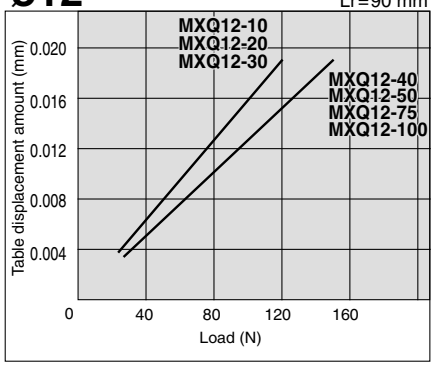
ø6



ø8



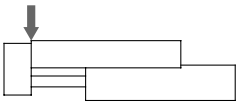
ø12



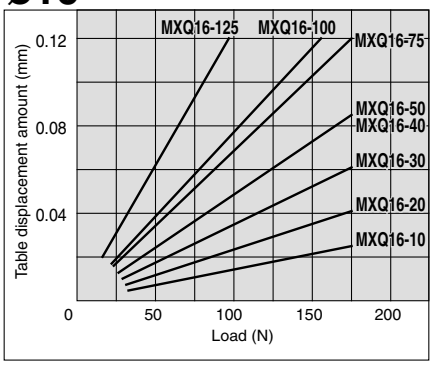
The graphs below show the table displacement when the static moment load is applied to the table. The graphs do not show the loadable mass. Refer to the Model Selection for the loadable mass.

Table displacement due to pitch moment load

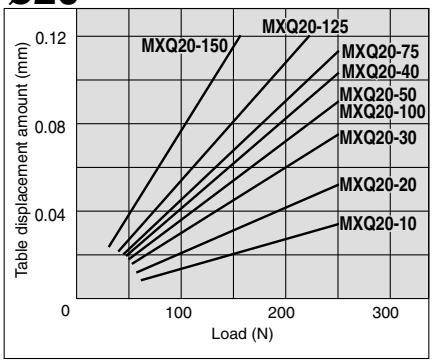
Table displacement when loads are applied to the section marked with the arrow at the full stroke.



ø16



ø20



ø25

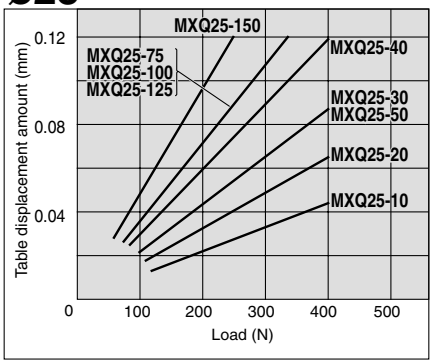
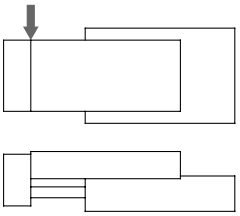
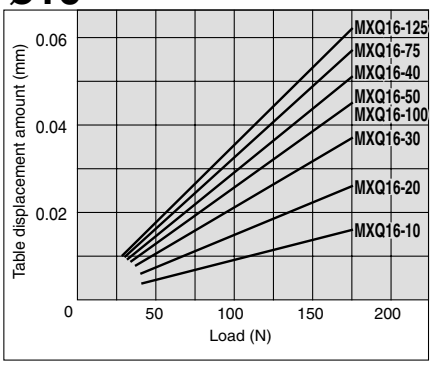


Table displacement due to yaw moment load

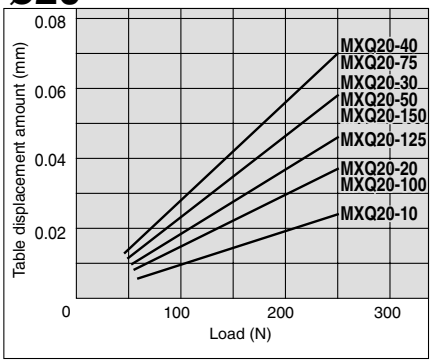
Table displacement when loads are applied to the section marked with the arrow at the full stroke.



ø16



ø20



ø25

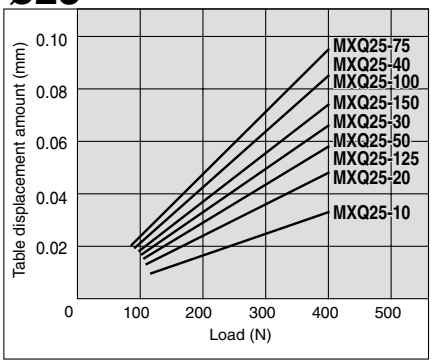
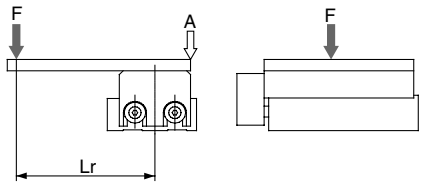
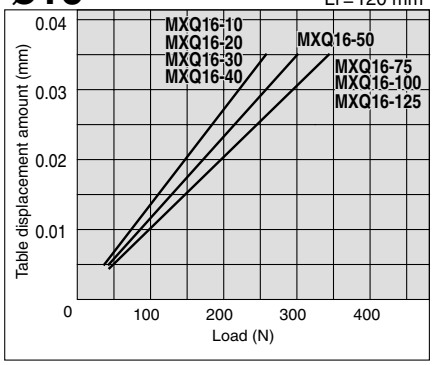


Table displacement due to roll moment load

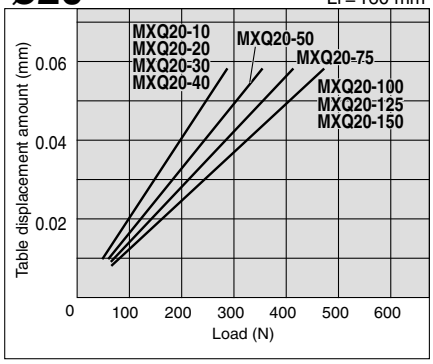
Table displacement of section A when loads are applied to the section F with the slide table retracted.



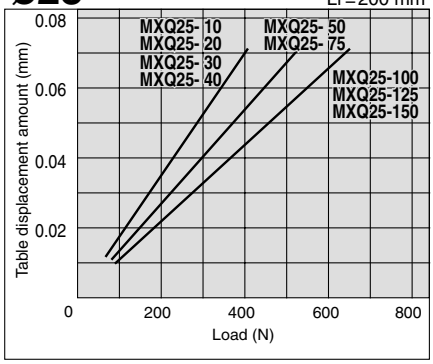
ø16 Lr=120 mm



ø20 Lr=160 mm



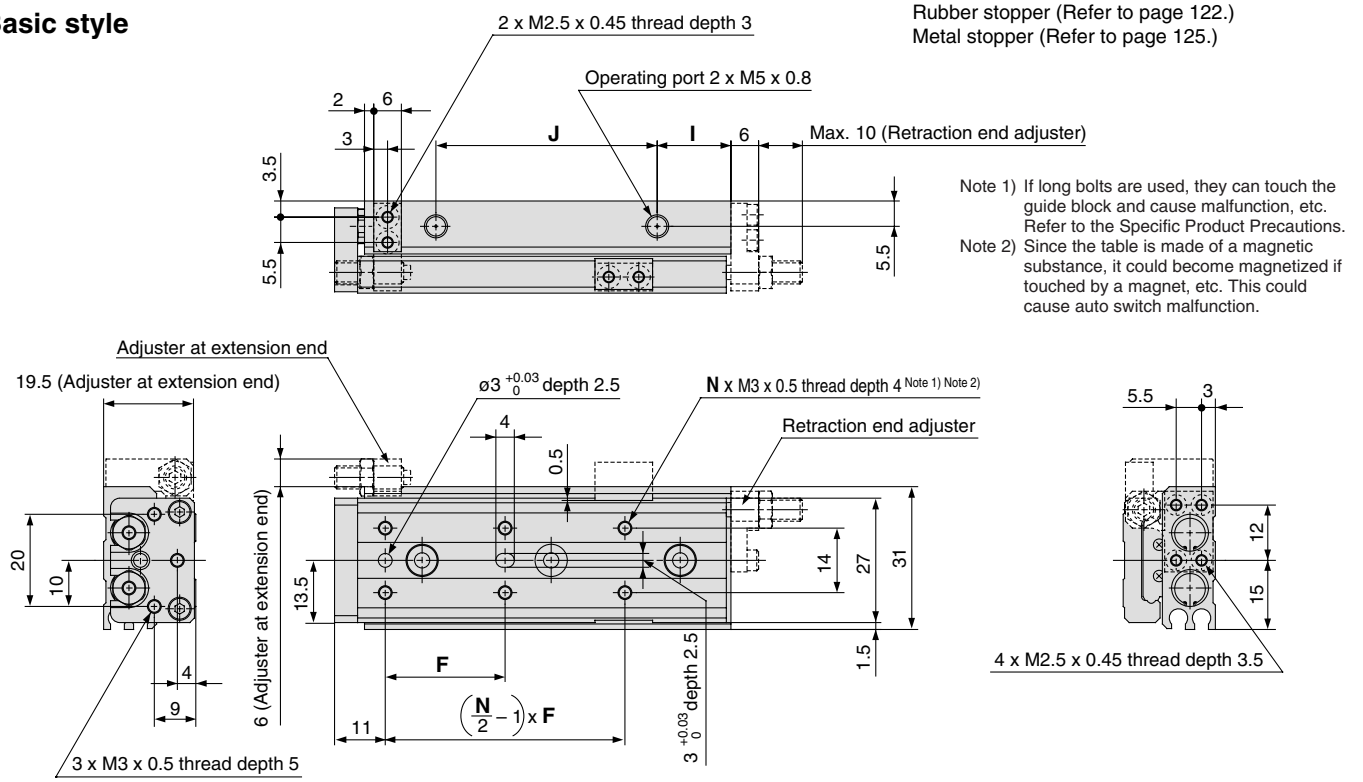
ø25 Lr=200 mm



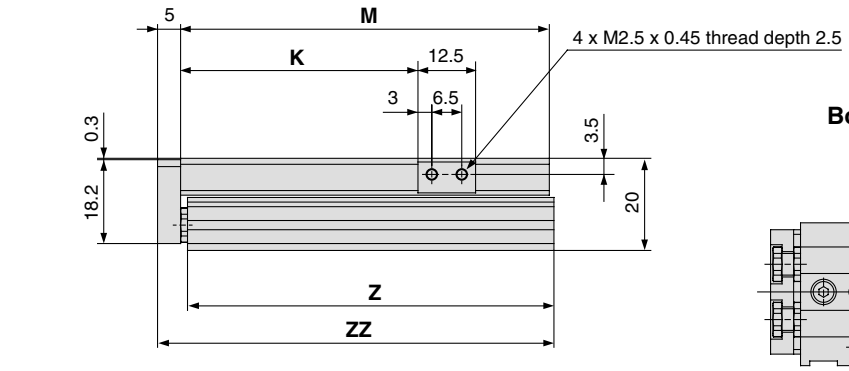
Dimensions: MXQ6

∗ For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
Rubber stopper (Refer to page 122.)
Metal stopper (Refer to page 125.)

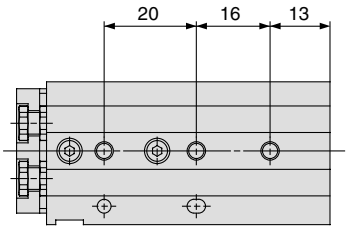
Basic style

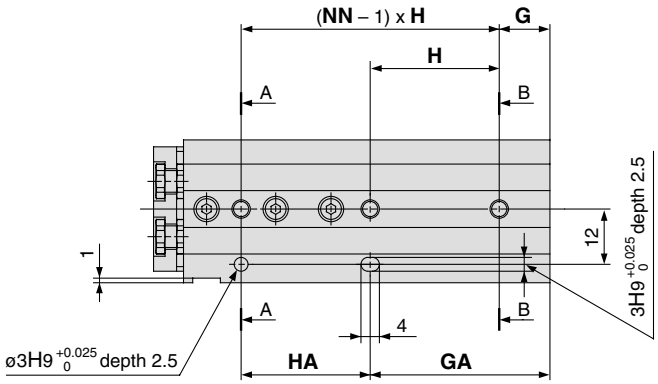


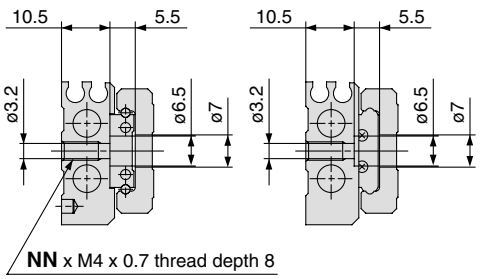
Note 1) If long bolts are used, they can touch the guide block and cause malfunction, etc. Refer to the Specific Product Precautions.
Note 2) Since the table is made of a magnetic substance, it could become magnetized if touched by a magnet, etc. This could cause auto switch malfunction.



Bottom view of MXQ6-30







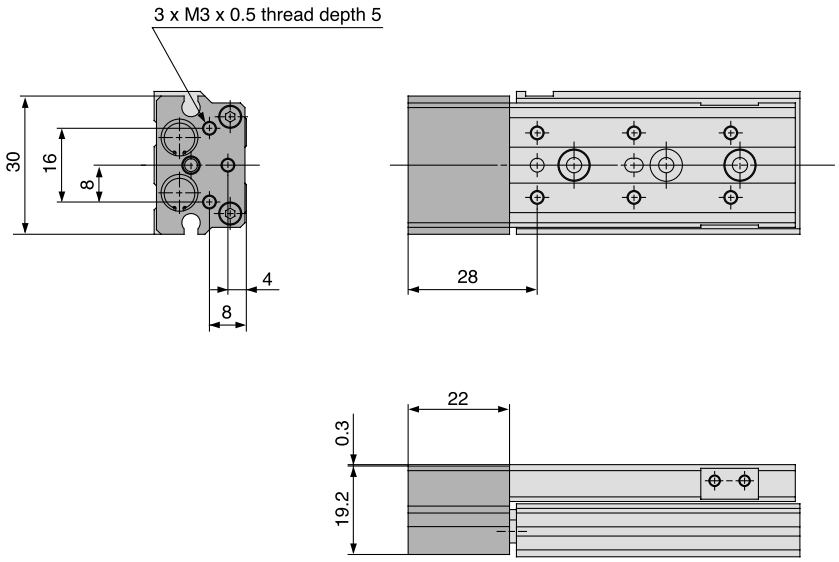
Section AA **Section BB**

(mm)

Model	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
MXQ6-10	22	4	6	23	2	13	16	9	17	21.5	42	41.5	48
MXQ6-20	25	4	13	26	2	13	26	9	27	31.5	52	51.5	58
MXQ6-30	21	6	Note)	Note)	3	29	20	9	37	41.5	62	61.5	68
MXQ6-40	26	6	11	28	3	39	28	16	48	51.5	80	79.5	86
MXQ6-50	27	6	21	28	3	49	28	9	65	61.5	90	89.5	96

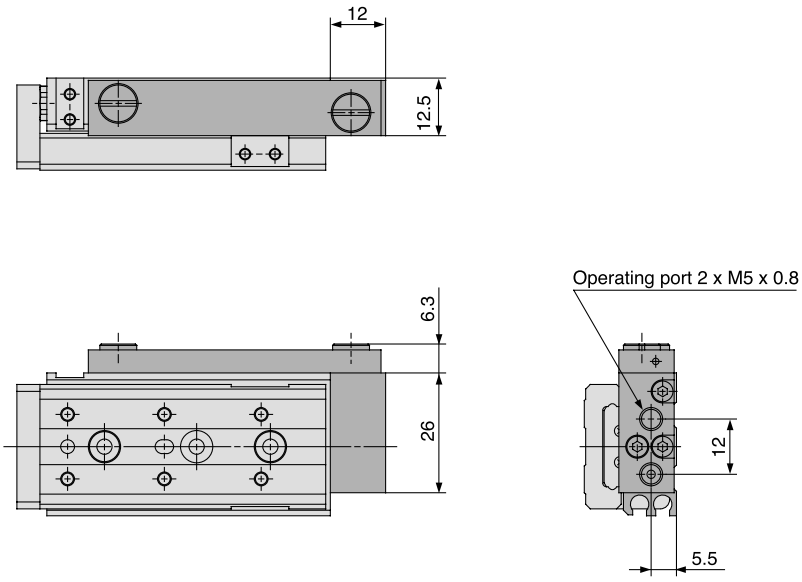
Note) Refer to the bottom view of MXQ6-30.

With buffer (ø6): MXQ6-□□F



∗ Other dimensions are the same as basic style.

Axial piping type (ø6): MXQ6-□□P

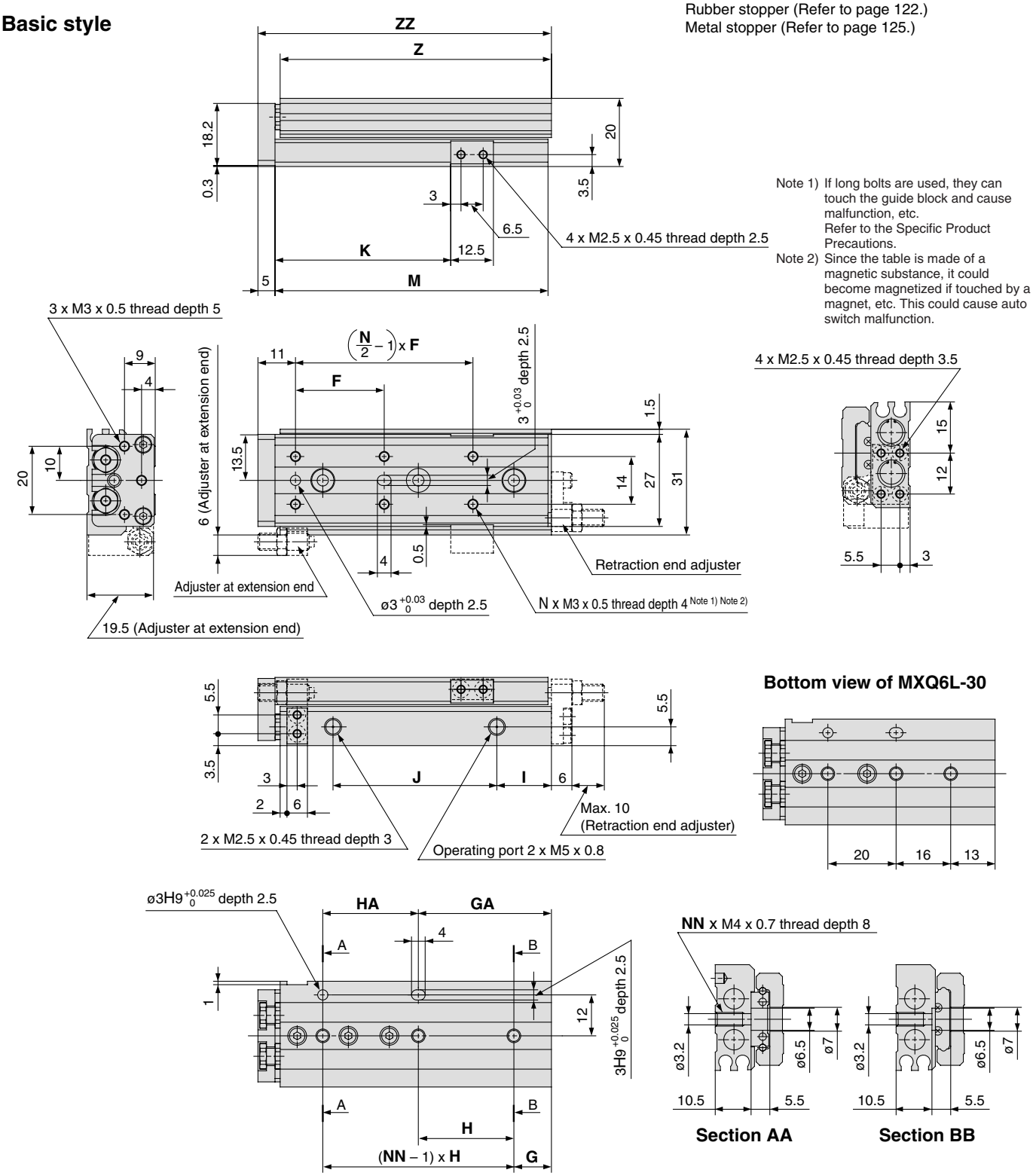


∗ Other dimensions are the same as basic style.

Dimensions: MXQ6L/Symmetric Type

* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
Rubber stopper (Refer to page 122.)
Metal stopper (Refer to page 125.)

Basic style



Note 1) If long bolts are used, they can touch the guide block and cause malfunction, etc.
Refer to the Specific Product Precautions.
Note 2) Since the table is made of a magnetic substance, it could become magnetized if touched by a magnet, etc. This could cause auto switch malfunction.

(mm)

Model	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
MXQ6L-10	22	4	6	23	2	13	16	9	17	21.5	42	41.5	48
MXQ6L-20	25	4	13	26	2	13	26	9	27	31.5	52	51.5	58
MXQ6L-30	21	6	—Note)	—Note)	3	29	20	9	37	41.5	62	61.5	68
MXQ6L-40	26	6	11	28	3	39	28	16	48	51.5	80	79.5	86
MXQ6L-50	27	6	21	28	3	49	28	9	65	61.5	90	89.5	96

Note) Refer to the bottom view of MXQ6L-30.