

Air Slide Table

MXQ Series

ø6, ø8, ø12, ø16, ø20, ø25

RoHS

Integration of the guide rail and the table.

Uses a recirculating linear guide for high rigidity and high precision.

Air slide table for precision assembly processes.

MXH

MXS

MXQ

MXQ

MXF

MXW

MXJ

MXP

MXY

MTS

High precision, compact design

Comparison of MXQ and MXS (mm)

Model	Repeatability		Dimensions		
	Parallelism	Height tolerance	Width	Height	Overall length
MXQ12-30	0.035	±0.08	46	30	86
MXS12-30	0.2	±0.2	50	32	80

Improved load resistance

Load resistance against sudden and excessive external forces is nearly three times greater than the MXS series.

Recirculating linear guide

Wide type linear guide block body made of martensitic stainless steel

Improved mounting repeatability of the workpiece and body

Machining of positioning hole

Symmetric type is also standardized.

Available for all options



Improved strength of the end plate

End plate uses extra super duralumin. (Except the one with buffer)

Auto switch mounting grooves designed for safety

An installed auto switch in the groove of the housing body is flush with the surface.



Wide variety of options

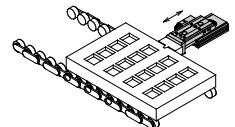
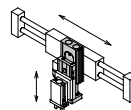
Adjuster option and function option can be combined.

Symmetric type	Adjuster options	Functional options
	With stroke adjuster 	With buffer mechanism
	With shock absorber 	With end lock
		Axial piping type

Application examples

As Z-axis for picking and placing

For positioning pallets on a conveyor



D-□

-X□

Air Slide Table *MXQ Series*

Series Variations

Model		Bore size (mm)	Standard stroke (mm)						Adjuster option			Functional option			Auto switch		
			10	20	30	40	50	75	100	125	150	Rubber stopper	Shock absorber	Metal stopper		With buffer	With end lock
Standard type	Symmetric type																
MXQ 6	MXQ6L	6															
MXQ 8	MXQ8L	8															
MXQ12	MXQ12L	12															
MXQ16	MXQ16L	16															
MXQ20	MXQ20L	20															
MXQ25	MXQ25L	25															

MXH

MXS

MXQ□

MXQ

MXF

MXW

MXJ

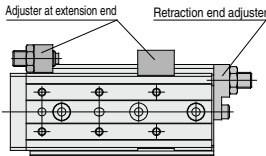
MXP

MXY

MTS

Reed auto switch
 • D-A9□
 • D-A9□V
 Solid state auto switch
 • D-M9□
 • D-M9□V
 2-color indicator
 solid state auto switch
 • D-M9□W
 • D-M9□VW

Adjuster Option



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

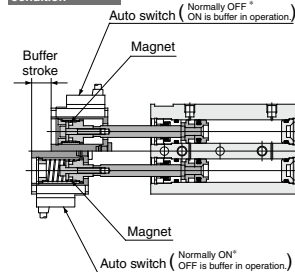
- Rubber stopper
Standard stroke adjuster
- Shock absorber
For use in harsh conditions.
Absorbs the impact at the stroke end for smooth stopping.
Improved stopping accuracy.
- Metal stopper
Improved stopping accuracy.
Without cushioning function for use with light loads and low speeds.

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

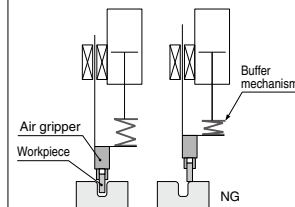


Normal condition

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

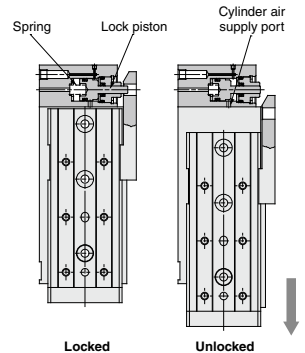
Application Example

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.

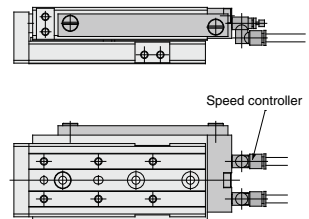


Locked

Unlocked

Axial Piping Type

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



D-□

-X□

MXQ Series

Model Selection

Model Selection Step

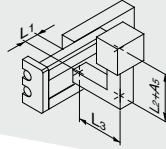
Formula/Data

Selection Example

1 Operating Conditions

Enumerate the operating conditions considering the mounting position and workpiece configuration. Check that the load weight does not exceed the maximum allowable load weight and that the average operating speed does not exceed the operating speed range.

- Model to be used
- Type of cushion
- Workpiece mounting position
- Mounting orientation
- Average operating speed V_a (mm/s)
- Load mass W (kg): Fig. (1), Table (2)
- Overhang L_n (mm) Fig. (2)



Cylinder: MXQ16-50
Cushion: Rubber stopper
Workpiece table mounting
Mounting: Horizontal wall mounting
Average operating speed
: $V_a = 300$ [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.

$$E = \frac{1}{2} \cdot W \cdot \left(\frac{V}{1000} \right)^2$$

Collision speed $V = 1.4 \cdot V_a$ + Correction factor (Reference values)

Find the allowable kinetic energy E_a (J).

$$E_a = K \cdot E \text{ max}$$

Confirm that the kinetic energy of the load does not exceed the allowable kinetic energy.

Workpiece mounting coefficient K : Fig. (3)
Max. allowable kinetic energy E_{max} : Table (1)
Kinetic energy (E) \leq Allowable kinetic energy (E_a)

$$E = \frac{1}{2} \cdot 1 \cdot \left(\frac{420}{1000} \right)^2 = 0.088$$

$$V = 1.4 \times 300 = 420$$

$$E_a = 1 \times 0.11 = 0.11$$

Can be used based on $E = 0.088 \leq E_a = 0.11$

3 Load Factor

3-1 Load Factor of Load Mass

Find the allowable load mass W_a (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 .

$W_a = K \cdot \beta \cdot W_{\text{max}}$
Workpiece mounting coefficient K : Fig. (3)
Allowable load weight coefficient β : Graph (1)
Max. allowable load weight W_{max} : Table (2)
 $\alpha_1 = W/W_a$

$$W_a = 1 \times 1 \times 4 = 4$$

$$K = 1$$

$$\beta = 1$$

$$W_{\text{max}} = 4$$

$$\alpha_1 = 1/4 = 0.25$$

3-2 Load Factor of the Static Moment

Find the static moment M (N-m).
Find the allowable static moment M_a (N-m).
Find the load factor α_2 of the static moment.

$M = W \times 9.8 (L_n + A_n)/1000$
Correction value of moment center position distance A_n : Table (3)
 $M_a = K \cdot \gamma \cdot M_{\text{max}}$
Workpiece mounting coefficient K : Fig. (3)
Allowable moment coefficient γ : Graph (2)
Maximum allowable moment M_{max} : Table (4)
 $\alpha_2 = M/M_a$

Yawing

Examine M_y .

$$M_y = 1 \times 9.8 (10 + 30)/1000$$

$$= 0.39$$

$$A_3 = 30$$

$$M_y = 1 \times 1 \times 18 = 18$$

$$M_{y\text{max}} = 18$$

$$K = 1$$

$$\gamma = 1$$

$$\alpha_2 = 0.39/18 = 0.022$$

Rolling

Examine M_r .

$$M_r = 1 \times 9.8 (30 + 10.5)/1000$$

$$= 0.39$$

$$A_6 = 10.5$$

$$M_r = 1 \times 1 \times 18 = 18$$

$$M_{r\text{max}} = 36$$

$$K = 1$$

$$\gamma = 1$$

$$\alpha_2 = 0.39/36 = 0.011$$

3-3 Load Factor of Dynamic Moment

Find the dynamic moment M_e (N-m).
Find the allowable dynamic moment M_{e_a} (N-m).
Find the load factor α_3 of the dynamic moment.

$M_e = 1/3 \cdot W_e \times 9.8 \cdot \frac{(L_n + A_n)}{1000}$
Collision equivalent to impact $W_e = \delta \cdot W \cdot V$
 δ : Bumper coefficient
Rubber stopper without adjuster = 4/100
Shock absorber = 1/100
Metal stopper = 16/100
Correction value of moment center position distance A_n : Table (3)

$M_{e_a} = K \cdot \gamma \cdot M_{\text{max}}$
Workpiece mounting coefficient K : Fig. (3)
Allowable moment coefficient γ : Graph (2)
Max. allowable moment M_{max} : Table (4)
 $\alpha_3 = M_e/M_{e_a}$

Pitching

Examine M_{ep} .

$$M_{ep} = 1/3 \times 16.8 \times 9.8 \times \frac{(30 + 10.5)}{1000} = 2.2$$

$$W_e = 4/100 \times 1 \times 420 = 16.8$$

$$A_2 = 10.5$$

$$M_{ep} = 1 \times 1 \times 0.7 \times 18 = 12.6$$

$$K = 1$$

$$\gamma = 0.7$$

$$M_{p\text{max}} = 18$$

$$\alpha_3 = 2.2/12.6 = 0.17$$

Yawing

Examine M_y .

$$M_y = 1/3 \times 16.8 \times 9.8 \times \frac{(30 + 24.5)}{1000} = 3.0$$

$$W_e = 16.8$$

$$A_4 = 24.5$$

$$M_{y_a} = 12.6 \text{ (Same value as } M_{ep}\text{)}$$

$$\alpha_3 = 3.0/12.6 = 0.24$$

3-4 Sum of the Load Factors

Use is possible if the sum of the load factors does not exceed 1.

$$\sum \alpha_n = \alpha_1 + \alpha_2 + \dots + \alpha_n \leq 1$$

$$\sum \alpha_n = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_3$$

$$= 0.25 + 0.022 + 0.011 + 0.17 + 0.24 = 0.693 \leq 1$$

And it is possible to use.

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

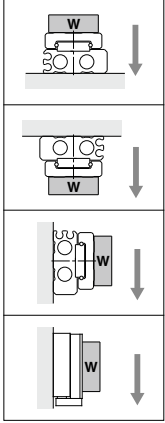
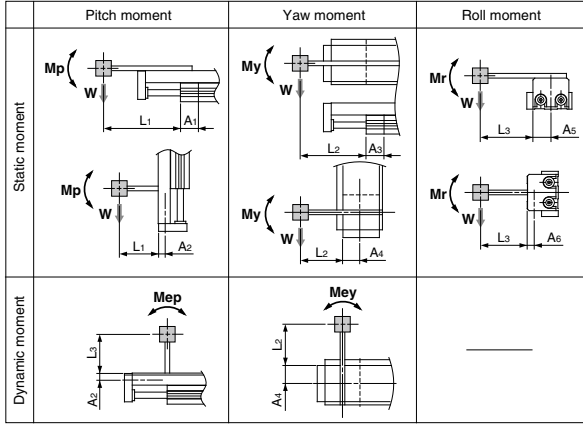


Fig. (2) Overhang: Ln (mm), Correction Value of Moment Center Position Distance: An (mm)



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

Fig. (3) Workpiece Mounting Coefficient: K

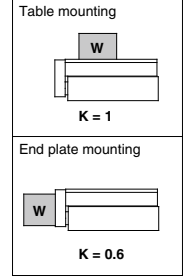


Table (1) Allowable Kinetic Energy: Emax (J)

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 mass
MXQ 6	0.6
MXQ 8	1
MXQ12	2
MXQ16	4
MXQ20	6
MXQ25	9

Graph (1)
Allowable Load Mass Coefficient: β

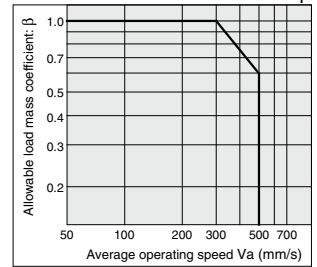
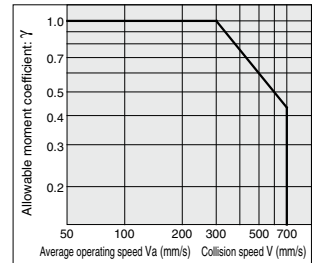


Table (3) Correction Value of Moment Center Position Distance: An (mm)

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	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	43	43	50	64	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 operating 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: Mpmay/Mymax										Roll moment: Mrmay									
	Stroke (mm)										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	15	15	—	—	—	11	11	11	13	13	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	Symbol	Definition	Unit
An (n = 1 to 6)	Correction value of moment center position distance	mm	Va	Average operating speed	mm/s
E	Kinetic energy	J	W	Load mass	kg
Emax	Allowable kinetic energy	J	Wa	Allowable load mass	kg
Ln (n = 1 to 3)	Overhang	mm	We	Weight equivalent to impact	kg
M (Mp, My, Mr)	Static moment (Pitch, Yaw, Roll)	N·m	Wmax	Max. allowable load mass	kg
Ma (Map, May, Mar)	Allowable static moment (Pitch, Yaw, Roll)	N·m	α	Load factor	—
Me (Mep, Mey)	Dynamic moment (Pitch, Yaw)	N·m	β	Allowable load mass coefficient	—
Mea (Meap, Meay)	Allowable dynamic moment (Pitch, Yaw)	N·m	γ	Allowable moment coefficient	—
Mmax (Mpmay, Mymax, Mrmay)	Maximum allowable moment (Pitch, Yaw, Roll)	N·m	K	Workpiece mounting coefficient	—
V	Collision speed	mm/s			

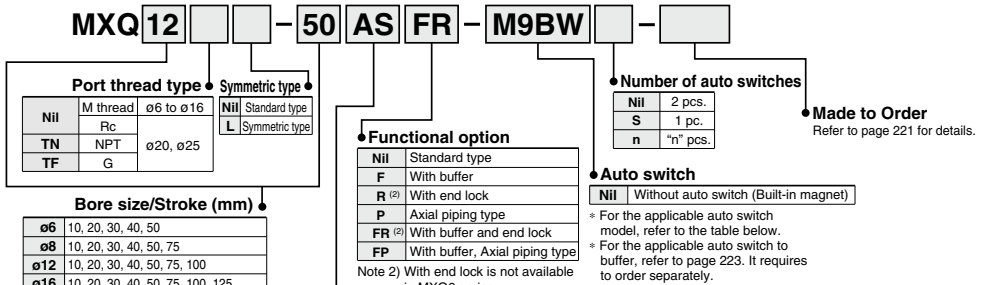
Air Slide Table

MXQ Series

ø6, ø8, ø12, ø16, ø20, ø25



How to Order



Adjuster option

Nil	Without adjuster
AS	Extension end rubber stopper
AT	Retraction end rubber stopper
A	Double end rubber stopper
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 rubber stopper + Retraction end absorber
ASCT	Extension end rubber stopper + Retraction end metal stopper
BSAT ⁽¹⁾	Extension end absorber + Retraction end rubber stopper
BSCT ⁽¹⁾	Extension end absorber + Retraction end metal stopper
CSAT	Extension end metal stopper + Retraction end rubber stopper
CSBT ⁽¹⁾	Extension end metal stopper + Retraction end absorber

Note 1) With shock absorber is not available in MXQ6 series.

Option Combinations

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

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.

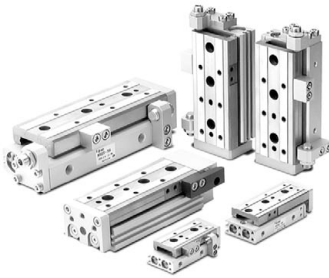
Note 1) With shock absorber is not available in MXQ6 series. ○ : Available, x : Not available

Applicable Auto Switch/Refer to pages 1119 to 1245 for the detailed specifications of auto switches.

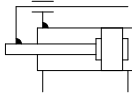
Type	Special function	Electrical entry	Indicates light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)			Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5	1	3			5		
									(Nil)	(M)	(L)			(Z)		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	IC circuit	Relay, PLC		
				3-wire (PNP)			M9PV	M9P	●	●	●	○				
				2-wire	M9BV		M9B	●	●	●	○					
	3-wire (NPN)			5 V, 12 V	M9NVW		M9NW	●	●	●	○					
	3-wire (PNP)				M9PVW		M9PW	●	●	●	○					
	2-wire			M9BWW	M9BW		●	●	●	○						
Water resistant (2-color indicator)	Grommet	No	Yes	3-wire (NPN)	5 V, 12 V	M9NAV ^{*1}	M9NA ^{*1}	○	○	●	○	IC circuit	—			
				3-wire (PNP)		M9PAV ^{*1}	M9PA ^{*1}	○	○	●	○					
				2-wire	M9BAV ^{*1}	M9BA ^{*1}	○	○	●	○						
Reed switch	—			Grommet	No	3-wire (NPN equivalent)	—	5 V	A96V	A96	●	—	●	—	IC circuit	—
						2-wire	24 V	12 V	A93V ^{*2}	A93	●	●	●	●	—	—
							100 V or less		A90V	A90	●	—	●	—	IC circuit	—

*1 Water resistant type auto switches are mountable on the above models, but in such case SMC cannot guarantee water resistance.
 *2 1 m lead wire is only applicable to the D-A93.
 * Lead wire length symbols: 0.5 m Nil (Example) M9NW 3 m L (Example) M9NWL 5 m M (Example) M9NWM 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 256 for details.
 * For details about auto switches with pre-wired connector, refer to pages 1192 and 1193.
 * Auto switches are shipped together (not assembled).





Symbol
Rubber bumper



Made to Order: Individual Specifications
(For details, refer to pages 257 to 259.)

Symbol	Specifications
-X7	PTFE grease
-X9	Grease for food processing equipment
-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 seal
-X42	Anti-corrosive specifications for guide unit
-X45	EPDM seal

For clean room specifications, refer to "Pneumatic Clean Series" catalog (CAT.E02-23).

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					
Operating speed range (Average operating speed) ^(Note)	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 indicator solid state auto switch (2-wire, 3-wire)					
Stroke length tolerance	+1 0 mm					

(Note) Average operating speed: Speed that the stroke is divided by a period of time from starting the operation to reaching the end.

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)	With shock absorber is not available in the MXQ6 series.
		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)		With end lock is not available in the MXQ6 series.
	With end lock (R)		
	Axial piping type (P)		

* For details of adjuster and functional option, refer to "Option Specifications" on pages 222 and 223.

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

Moisture Control Tube IDK Series



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [the IDK series in the Best Pneumatics No.6](#).

MXH

MXS

MXQ

MXQ

MXF

MXW

MXJ

MXP

MXY

MTS

D-

-X

MXQ Series

Theoretical Output



The dual rod ensures an output twice that of current 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 (mm²)

Weight

Model	Standard stroke (mm)					Additional weight of adjuster option						Extra for option						
	10	20	30	40	50	75	100	125	150	Rubber stopper Extension end Retraction end	Shock absorber Extension end Retraction end	Metal stopper Extension end Retraction end	With buffer	With end lock	Axial piping type (S: Stroke (mm))			
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	10	35	40	26 + 0.2 S	
MXQ12	335	340	380	450	480	645	735	—	—	25	23	47	30	35	23	70	100	43 + 0.2 S
MXQ16	595	600	660	725	820	980	1240	1390	—	45	40	75	53	60	40	105	160	55 + 0.2 S
MXQ20	1085	1085	1085	1180	1380	1720	2310	2600	2890	80	65	170	120	115	65	130	310	166 + 0.5 S
MXQ25	1725	1725	1725	1925	2370	2715	3395	4235	4680	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 252.
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 Retraction end
AT	stopper	Retraction end
BS	Shock absorber	Extension end
BT	absorber	Retraction end
CS	Metal stopper	Extension end
CT	stopper	Retraction end

Symmetric type ●

Nil	Standard type
L	Symmetric type

Applicable bore size ●

6	ø6
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

Adjustment range ●

Nil	5 mm	Standard
-X11	15 mm	Semi-standard
-X12	25 mm	

Note 1) -X12 (adjusting range: 25 mm) is not available in the MXQ6 series.

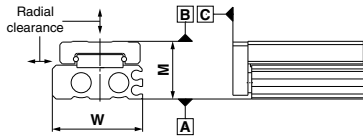
Note 2) -X11 and -X12 are not available with shock absorber.

Note 3) With Shock absorber is not available in the MXQ6 series.

Note 4) For dimensions, refer to pages 250 to 254.

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 ²					
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

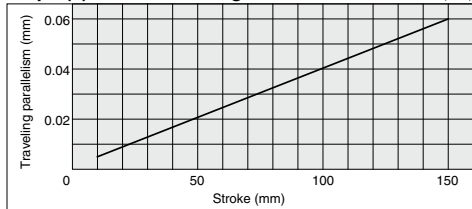
- *1) ±0.1 mm for 75 mm or longer stroke
*2) Perpendicularity range

Model	X
MXQ 6	13
MXQ 8	15
MXQ12	18
MXQ16	21
MXQ20	25
MXQ25	28

Table (1) B Side Parallelism to A Side (mm)

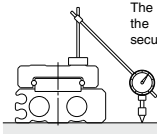
Model	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
MXQ 6	0.025	0.03	0.035	0.04	0.045	—	—	—	—
MXQ 8	0.025	0.03	0.035	0.04	0.055	0.065	—	—	—
MXQ12	0.03	0.03	0.035	0.04	0.045	0.065	0.075	—	—
MXQ16	0.035	0.035	0.04	0.045	0.05	0.065	0.08	0.095	—
MXQ20	0.04	0.04	0.04	0.045	0.055	0.07	0.095	0.105	0.125
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
Weight (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 263.



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 263.

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.

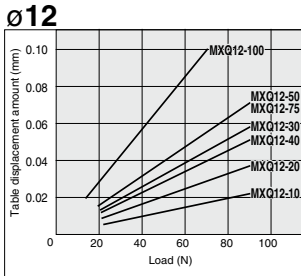
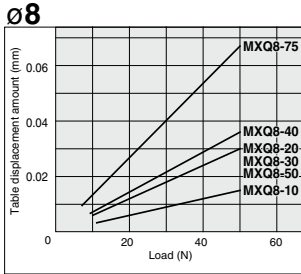
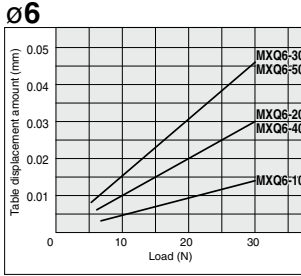


Table displacement due to yaw moment load

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

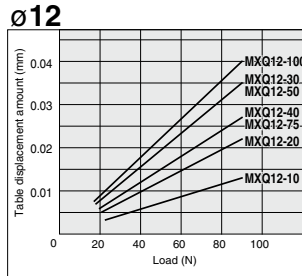
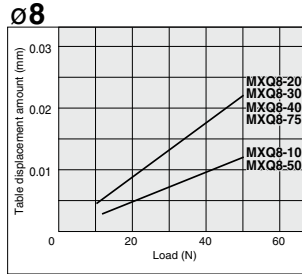
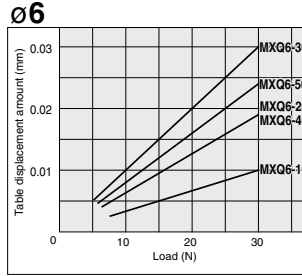
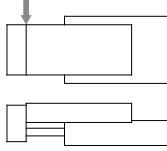
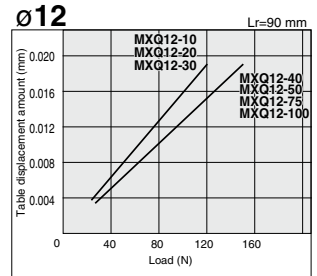
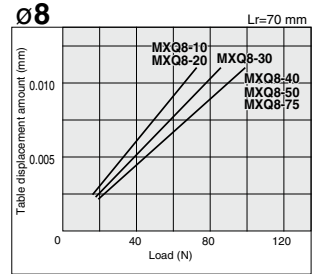
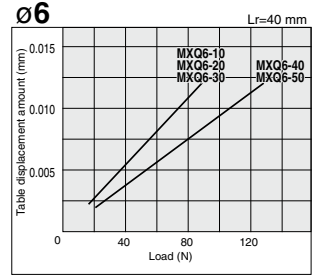
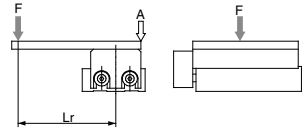


Table displacement due to roll moment load

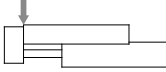
Table displacement of section A when loads are applied to the section F with the slide table retracted.



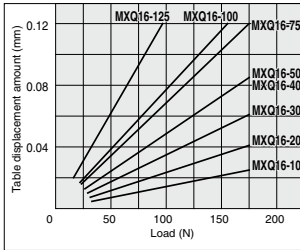
The graphs below show the table displacement when the static moment load is applied to the table. The graphs do not show the loadable mass. Refer to the Model Selection for the loadable mass.

Table displacement due to pitch moment load

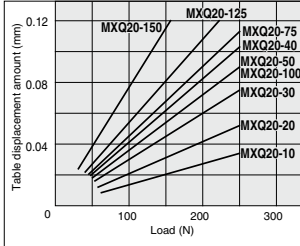
Table displacement when loads are applied to the section marked with the arrow at the full stroke.



Ø16



Ø20



Ø25

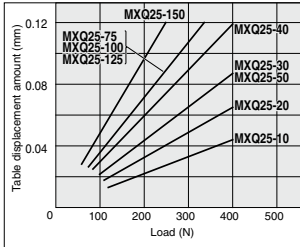
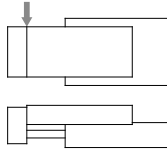
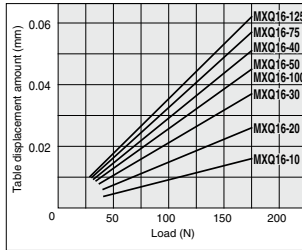


Table displacement due to yaw moment load

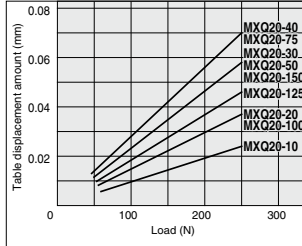
Table displacement when loads are applied to the section marked with the arrow at the full stroke.



Ø16



Ø20



Ø25

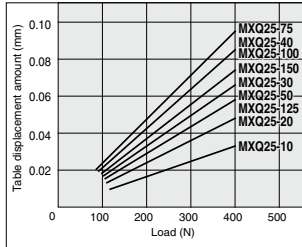
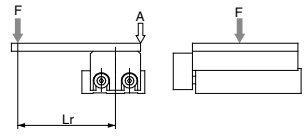
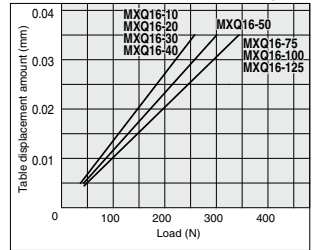


Table displacement due to roll moment load

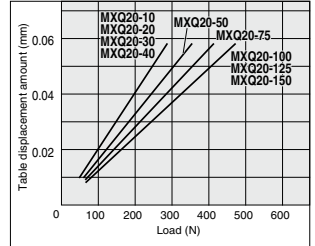
Table displacement of section A when loads are applied to the section F with the slide table retracted.



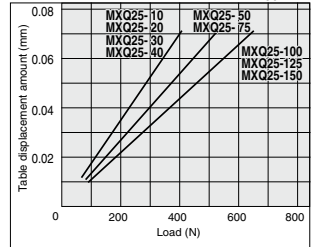
Ø16



Ø20



Ø25



MXH

MXS

MXQ

MXQ

MXF

MXW

MXJ

MXP

MXY

MTS

D-□

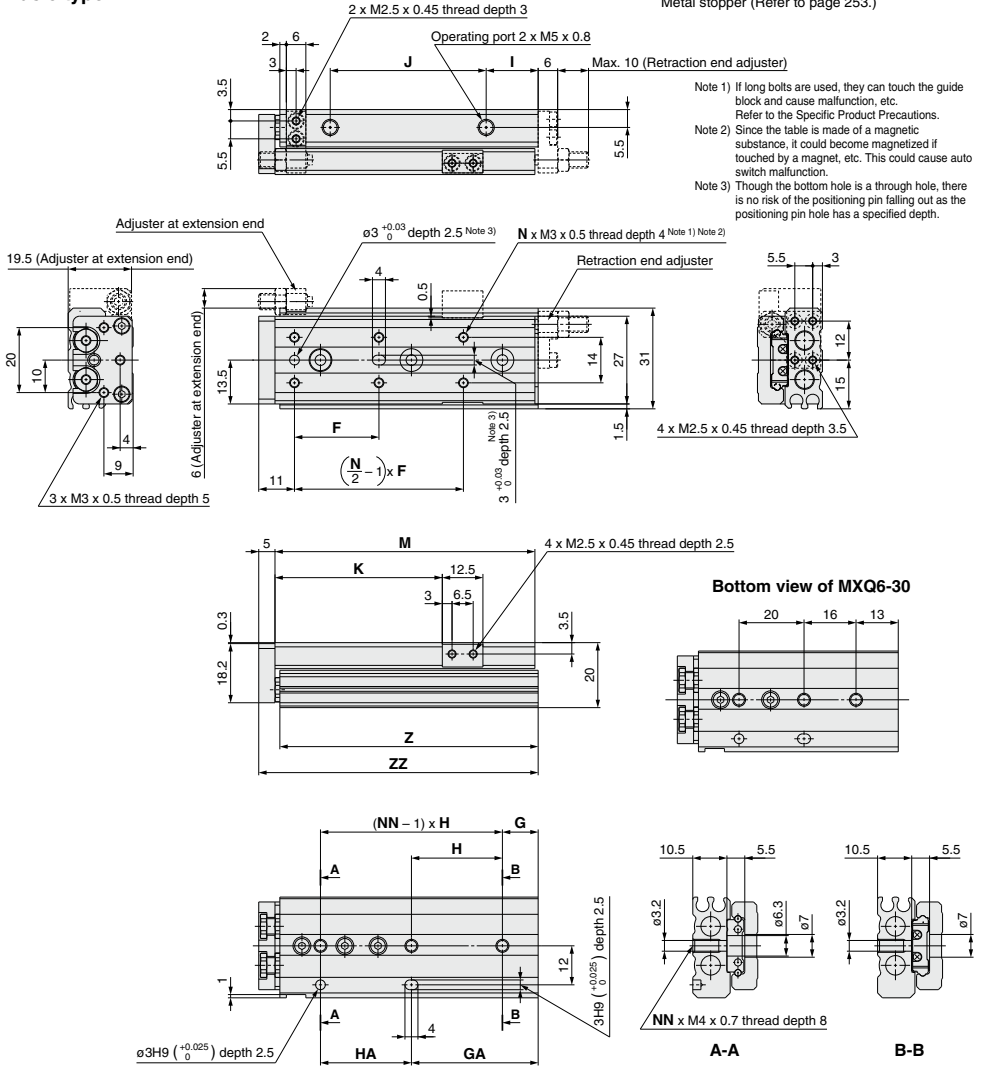
-X□

MXQ Series

Dimensions: MXQ6

Basic type

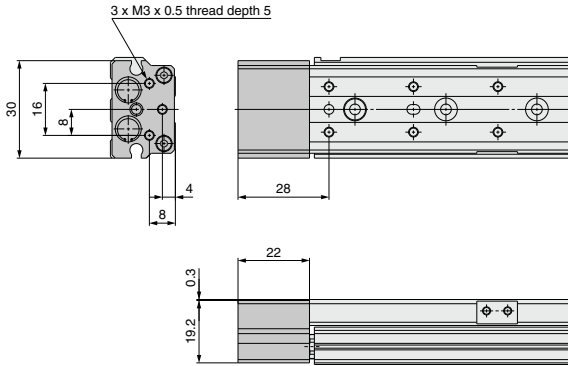
* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
 Rubber stopper (Refer to page 250.)
 Metal stopper (Refer to page 253.)



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

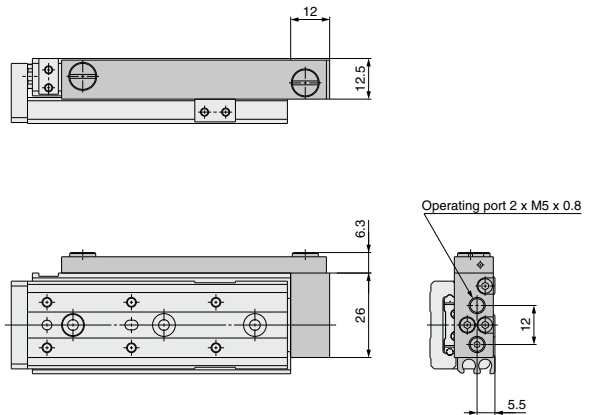
Note) Refer to the bottom view of MXQ6-30.

With buffer (ø6): MXQ6-□□F



* Other dimensions are the same as basic type.

Axial piping type (ø6): MXQ6-□□P



* Other dimensions are the same as basic type.

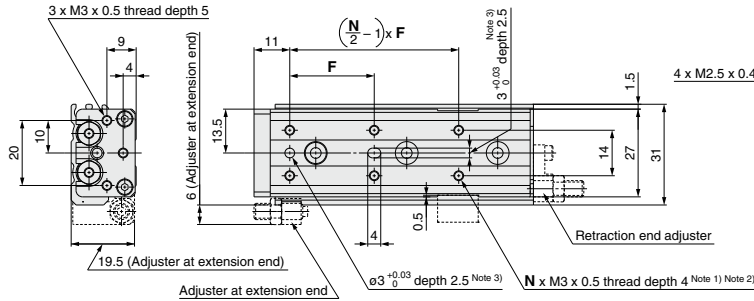
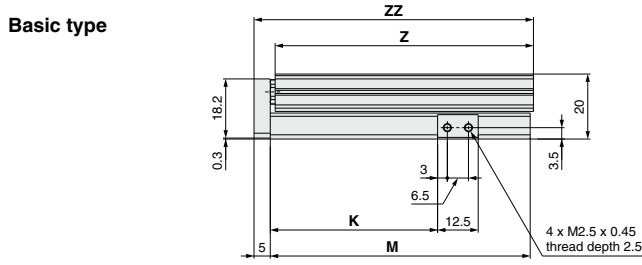
MXH
MXS
MXQ□
MXQ
MXF
MXW
MXJ
MXP
MXY
MTS

D-□
-X□

MXQ Series

Dimensions: MXQ6L/Symmetric Type

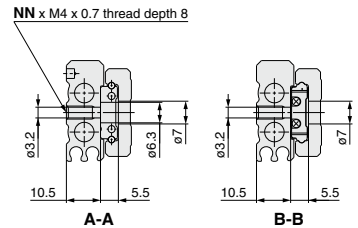
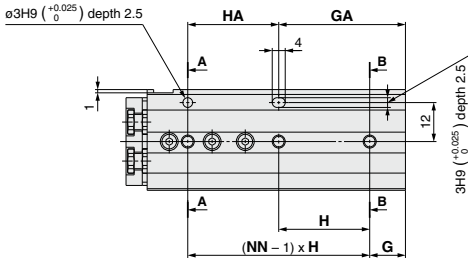
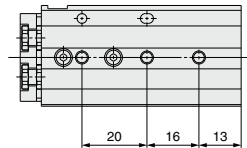
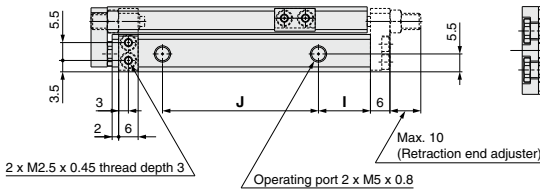
Basic type



* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
 Rubber stopper (Refer to page 250.)
 Metal stopper (Refer to page 253.)

- 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.
- Note 3) Though the bottom hole is a through hole, there is no risk of the positioning pin falling out as the positioning pin hole has a specified depth.

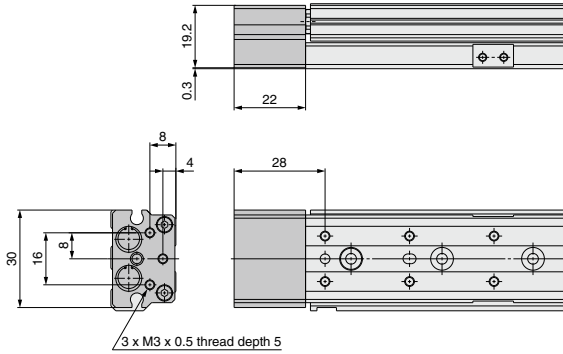
Bottom view of MXQ6L-30



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

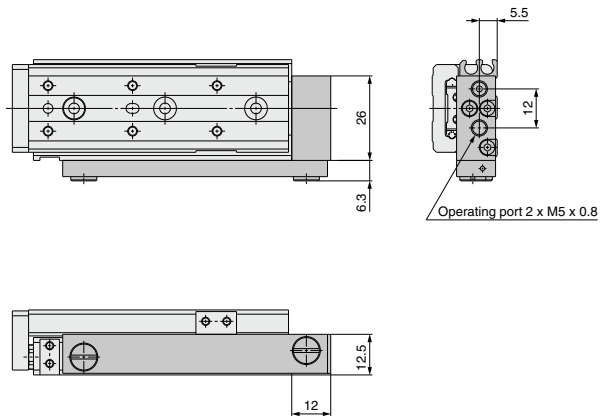
Note) Refer to the bottom view of MXQ6L-30.

With buffer (ø6): **MXQ6L-□□F**



* Other dimensions are the same as basic type.

Axial piping type (ø6): **MXQ6L-□□P**



* Other dimensions are the same as basic type.

MXH
MXS
MXQ□
MXQ
MXF
MXW
MXJ
MXP
MXY
MTS

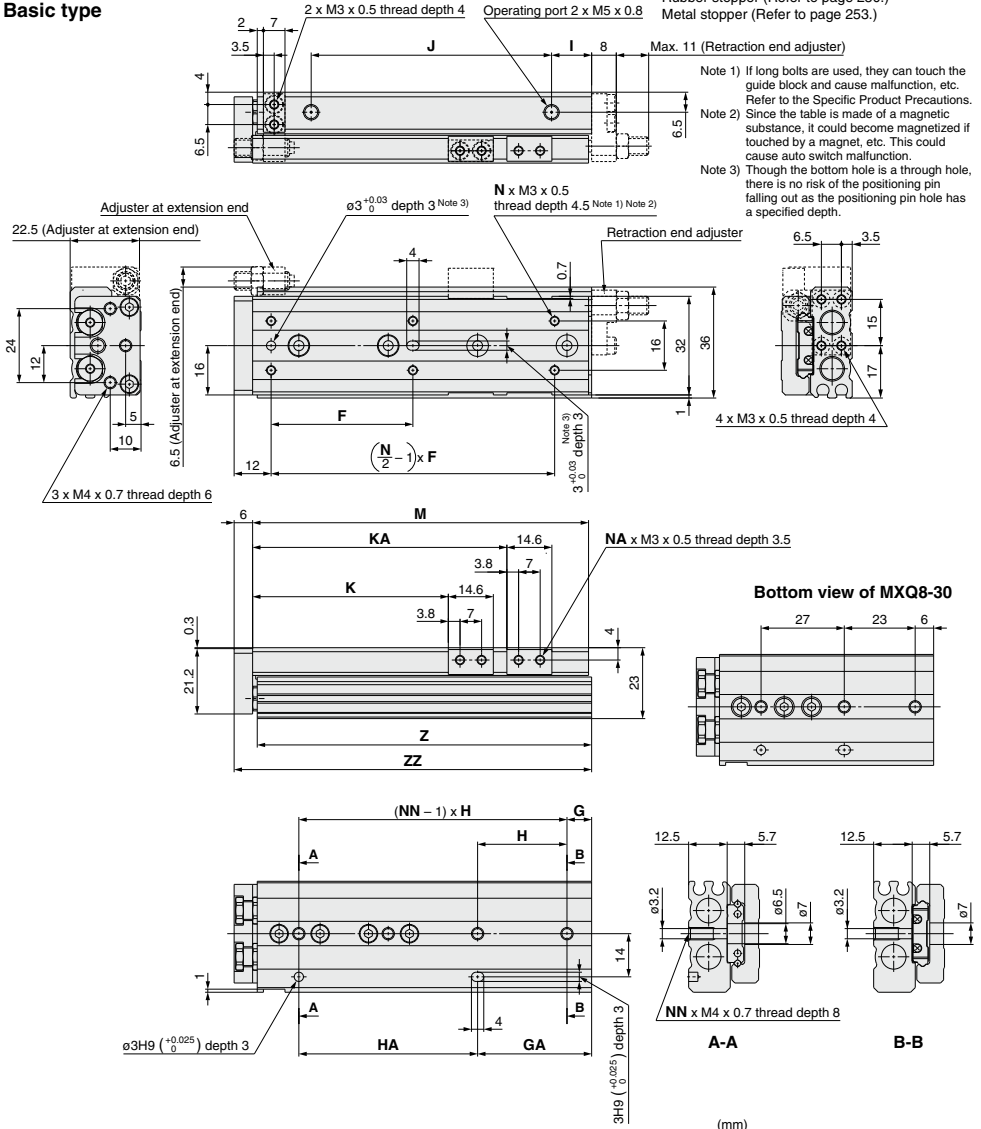
D-□
-X□

MXQ Series

Dimensions: MXQ8

* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
 Rubber stopper (Refer to page 250.)
 Metal stopper (Refer to page 253.)

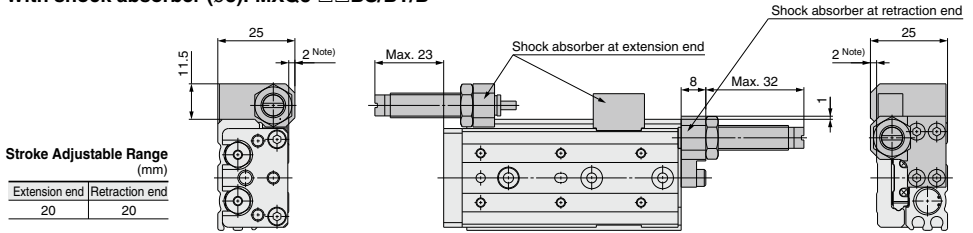
Basic type



Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ8-10	25	4	7	25	2	13	19	11	17	23.5	—	4	46	45.5	53
MXQ8-20	25	4	14	28	2	14	28	10	28	33.5	—	4	56	55.5	63
MXQ8-30	26	6	<small>Note1</small>	<small>Note1</small>	3	29	27	12	40	43.5	—	4	70	69.5	77
MXQ8-40	32	6	8	31	3	39	31	14	52	53.5	—	4	84	83.5	91
MXQ8-50	46	6	8	29	4	37	58	13	78	63.5	82.5	8	109	108.5	116
MXQ8-75	50	6	31	30	4	61	60	12	105	88.5	112.5	8	135	134.5	142

Note) Refer to the bottom view of MXQ8-30.

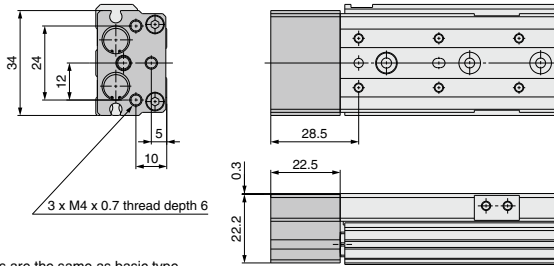
With shock absorber (ø8): MXQ8-□□BS/BT/B



* Other dimensions are the same as basic type.

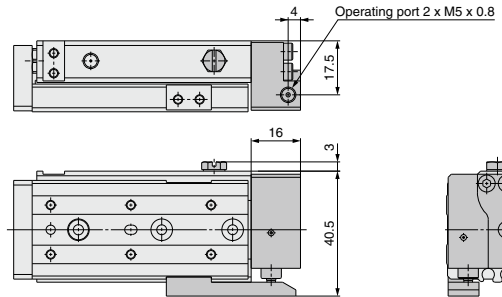
Note) Note that the top of the shock absorber unit will be higher than that of the table.

With buffer (ø8): MXQ8-□□F



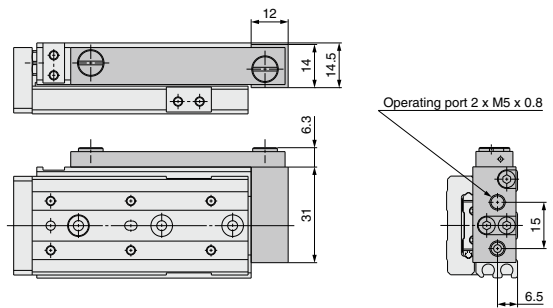
* Other dimensions are the same as basic type.

With end lock (ø8): MXQ8-□□R



* Other dimensions are the same as basic type.

Axial piping type (ø8): MXQ8-□□P



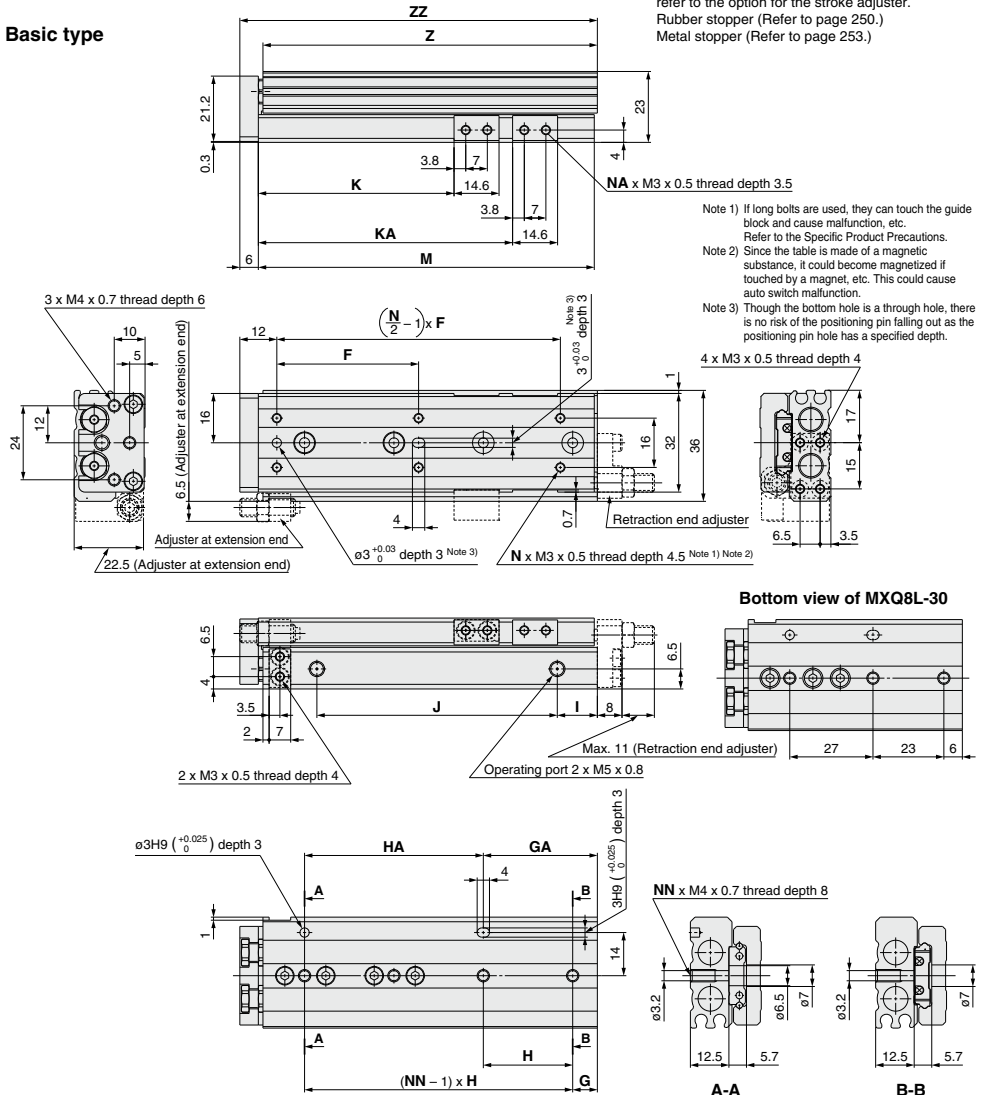
* Other dimensions are the same as basic type.

- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

- D-□
- X□

Dimensions: MXQ8L/Symmetric Type

Basic type



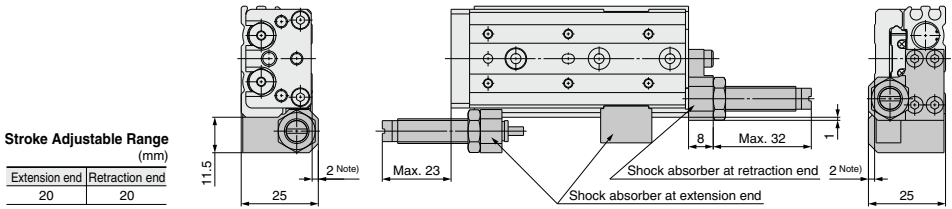
* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster. Rubber stopper (Refer to page 250.) Metal stopper (Refer to page 253.)

- 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.
- Note 3) Though the bottom hole is a through hole, there is no risk of the positioning pin falling out as the positioning pin hole has a specified depth.

Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ8L-10	25	4	7	25	2	13	19	11	17	23.5	—	4	46	45.5	53
MXQ8L-20	25	4	14	28	2	14	28	10	28	33.5	—	4	56	55.5	63
MXQ8L-30	26	6	_{Note)}	3	29	27	12	40	43.5	—	4	70	69.5	77	
MXQ8L-40	32	6	8	31	3	39	31	14	52	53.5	—	4	84	83.5	91
MXQ8L-50	46	6	8	29	4	37	58	13	78	63.5	82.5	8	109	108.5	116
MXQ8L-75	50	6	31	30	4	61	60	12	105	88.5	112.5	8	135	134.5	142

Note) Refer to the bottom view of MXQ8L-30.

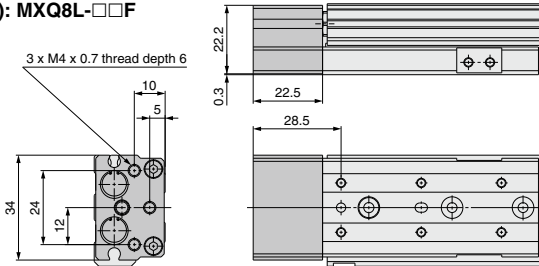
With shock absorber (ø8): MXQ8L-□□BS/BT/B



* Other dimensions are the same as basic type.

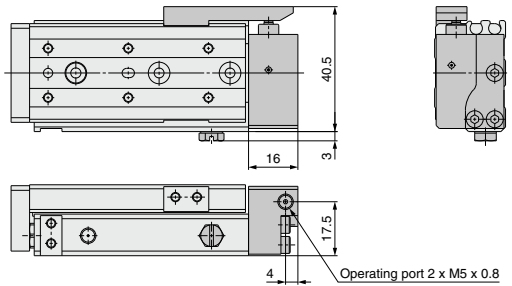
Note) Note that the top of the shock absorber unit will be higher than that of the table.

With buffer (ø8): MXQ8L-□□F



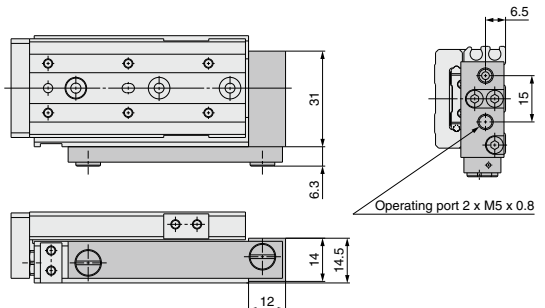
* Other dimensions are the same as basic type.

With end lock (ø8): MXQ8L-□□R



* Other dimensions are the same as basic type.

Axial piping type (ø8): MXQ8L-□□P



* Other dimensions are the same as basic type.

- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

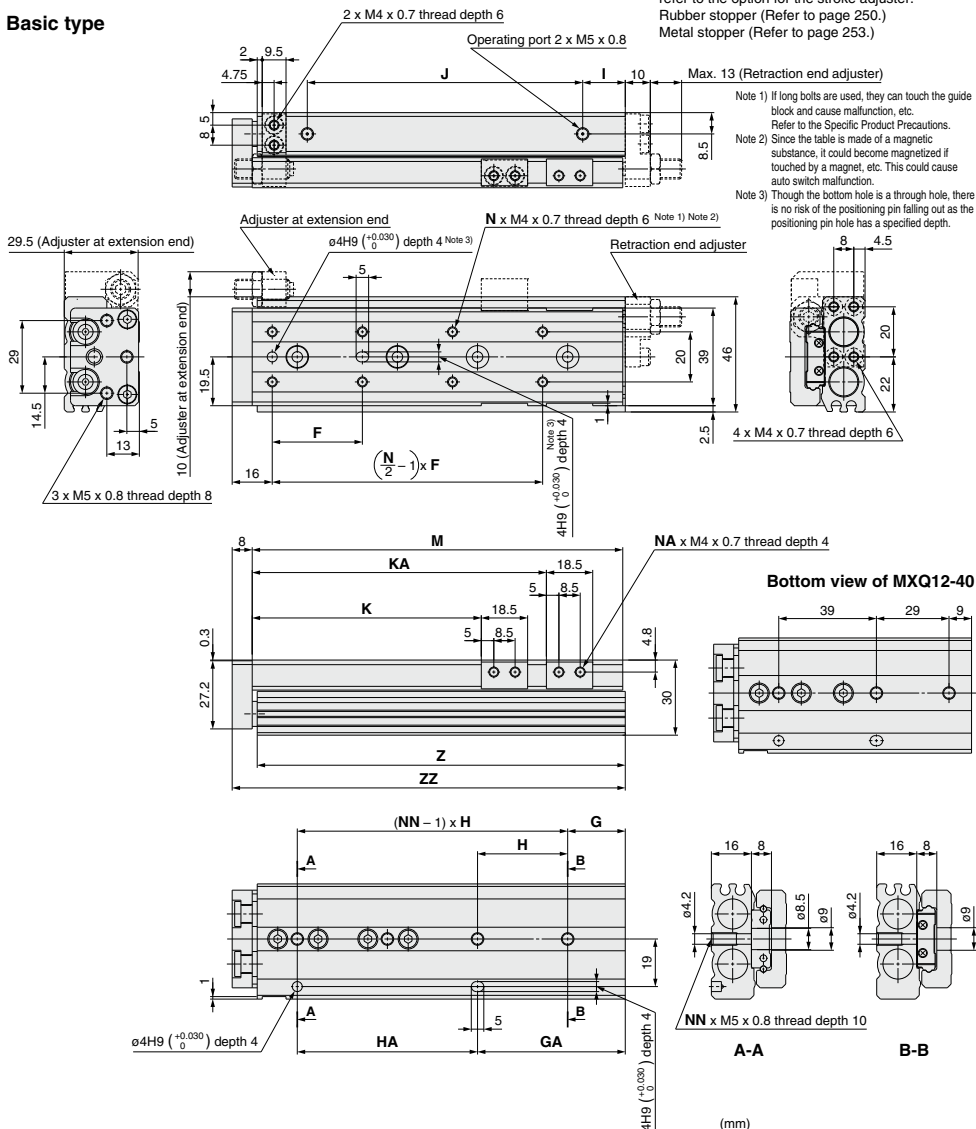
- D-□
- X□

MXQ Series

Dimensions: MXQ12

Basic type

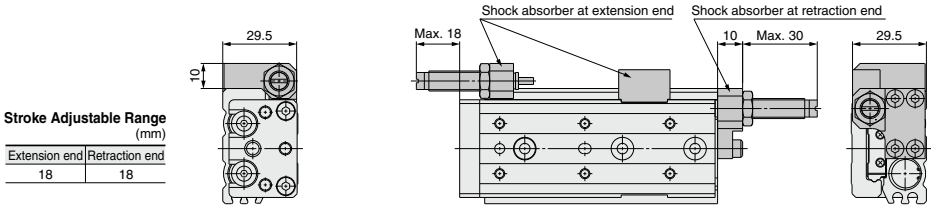
* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
 Rubber stopper (Refer to page 250).
 Metal stopper (Refer to page 253.)



Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ12- 10	28	4	18	32	2	18	32	12	34	26.5	—	4	67	66	76
MXQ12- 20	28	4	18	32	2	18	32	12	34	36.5	—	4	67	66	76
MXQ12- 30	38	4	20	40	2	20	40	14	42	46.5	—	4	77	76	86
MXQ12- 40	34	6	(Note)	(Note)	3	38	39	15	58	56.5	—	4	94	93	103
MXQ12- 50	34	6	9	39	3	48	39	13	70	66.5	—	4	104	103	113
MXQ12- 75	36	8	23	36	4	59	72	17	110	91.5	117.5	8	148	147	157
MXQ12-100	36	10	12	36	5	84	72	17	135	116.5	142.5	8	173	172	182

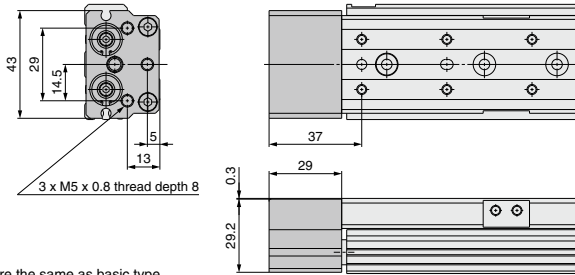
Note) Refer to the bottom view of MXQ12-40.

With shock absorber (ø12): MXQ12-□□BS/BT/B



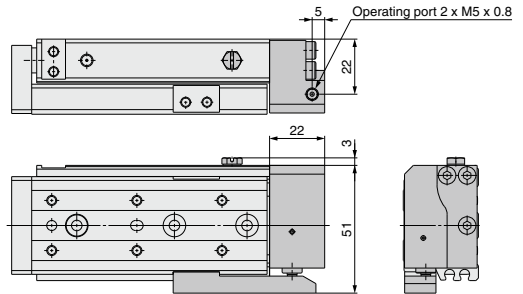
* Other dimensions are the same as basic type.

With buffer (ø12): MXQ12-□□F



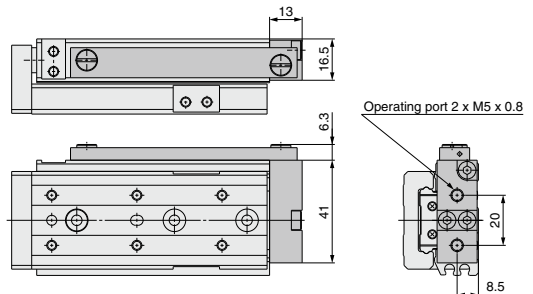
* Other dimensions are the same as basic type.

With end lock (ø12): MXQ12-□□R



* Other dimensions are the same as basic type.

Axial piping type (ø12): MXQ12-□□P



* Other dimensions are the same as basic type.

- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MPX
- MYX
- MTS

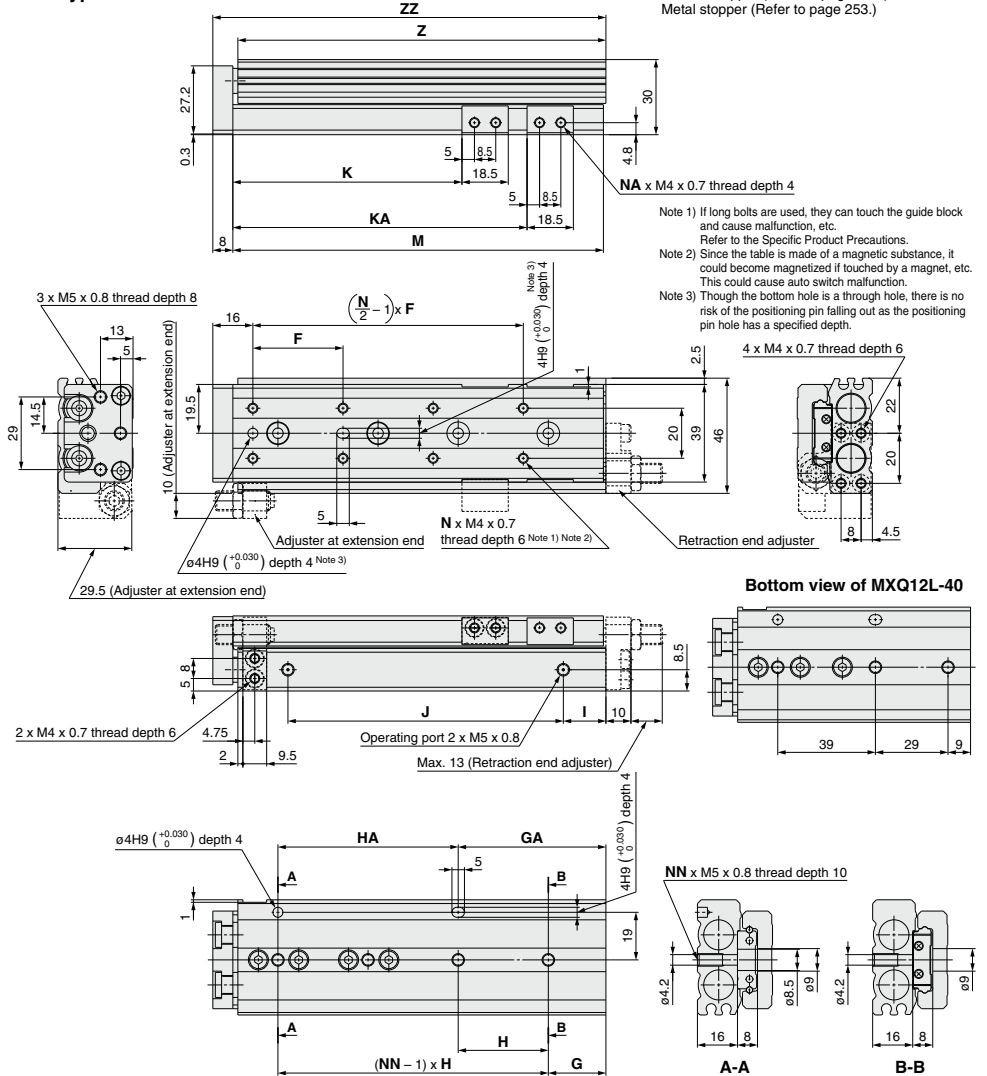
- D-□
- X□

MXQ Series

Dimensions: MXQ12L/Symmetric Type

Basic type

* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
 Rubber stopper (Refer to page 250.)
 Metal stopper (Refer to page 253.)



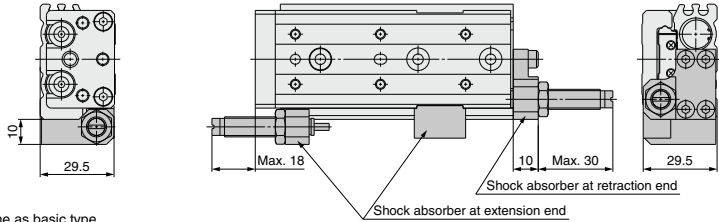
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ12L- 10	28	4	18	32	2	18	32	12	34	26.5	—	4	67	66	76
MXQ12L- 20	28	4	18	32	2	18	32	12	34	36.5	—	4	67	66	76
MXQ12L- 30	38	4	20	40	2	20	40	14	42	46.5	—	4	77	76	86
MXQ12L- 40	34	6	<small>(Note)</small>	<small>(Note)</small>	3	38	39	15	58	56.5	—	4	94	93	103
MXQ12L- 50	34	6	9	39	3	48	39	13	70	66.5	—	4	104	103	113
MXQ12L- 75	36	8	23	36	4	59	72	17	110	91.5	117.5	8	148	147	157
MXQ12L-100	36	10	12	36	5	84	72	17	135	116.5	142.5	8	173	172	182

Note) Refer to the bottom view of MXQ12L-40.

With shock absorber (ø12): MXQ12L-□□BS/BT/B

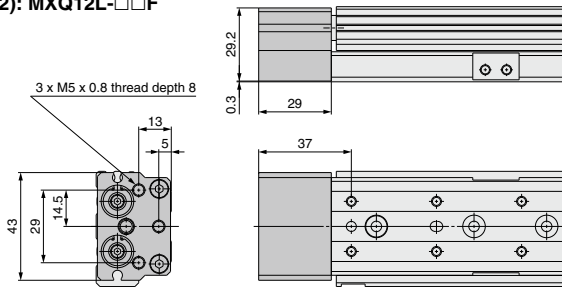
Stroke Adjustable Range (mm)

Extension end	Retraction end
18	18



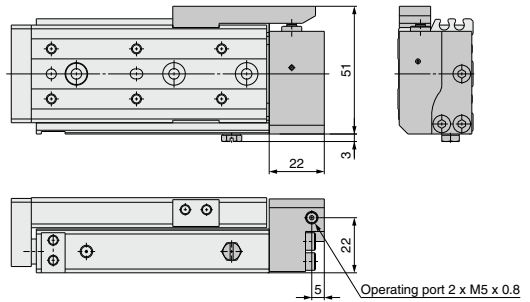
* Other dimensions are the same as basic type.

With buffer (ø12): MXQ12L-□□F



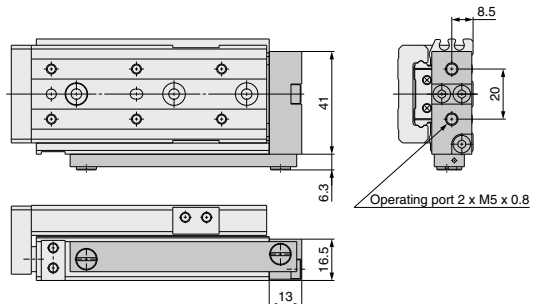
* Other dimensions are the same as basic type.

With end lock (ø12): MXQ12L-□□R



* Other dimensions are the same as basic type.

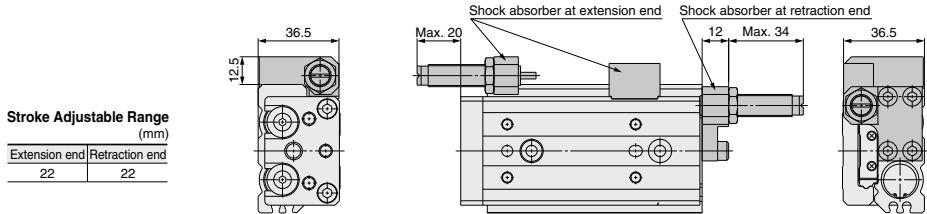
Axial piping type (ø12): MXQ12L-□□P



* Other dimensions are the same as basic type.

- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

With shock absorber (ø16): MXQ16-□□BS/BT/B

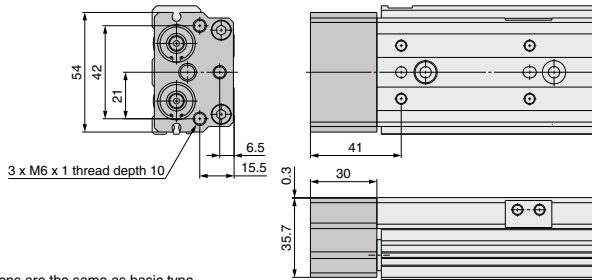


Stroke Adjustable Range (mm)

Extension end	Retraction end
22	22

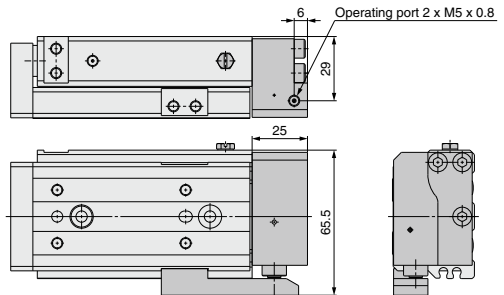
* Other dimensions are the same as basic type.

With buffer (ø16): MXQ16-□□F



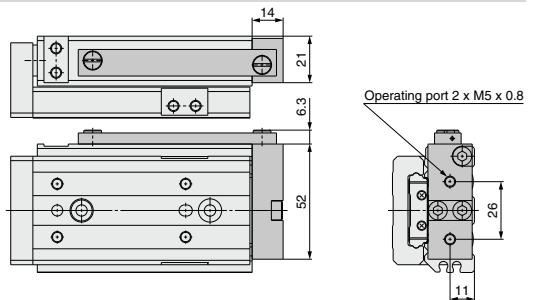
* Other dimensions are the same as basic type.

With end lock (ø16): MXQ16-□□R



* Other dimensions are the same as basic type.

Axial piping type (ø16): MXQ16-□□P



* Other dimensions are the same as basic type.

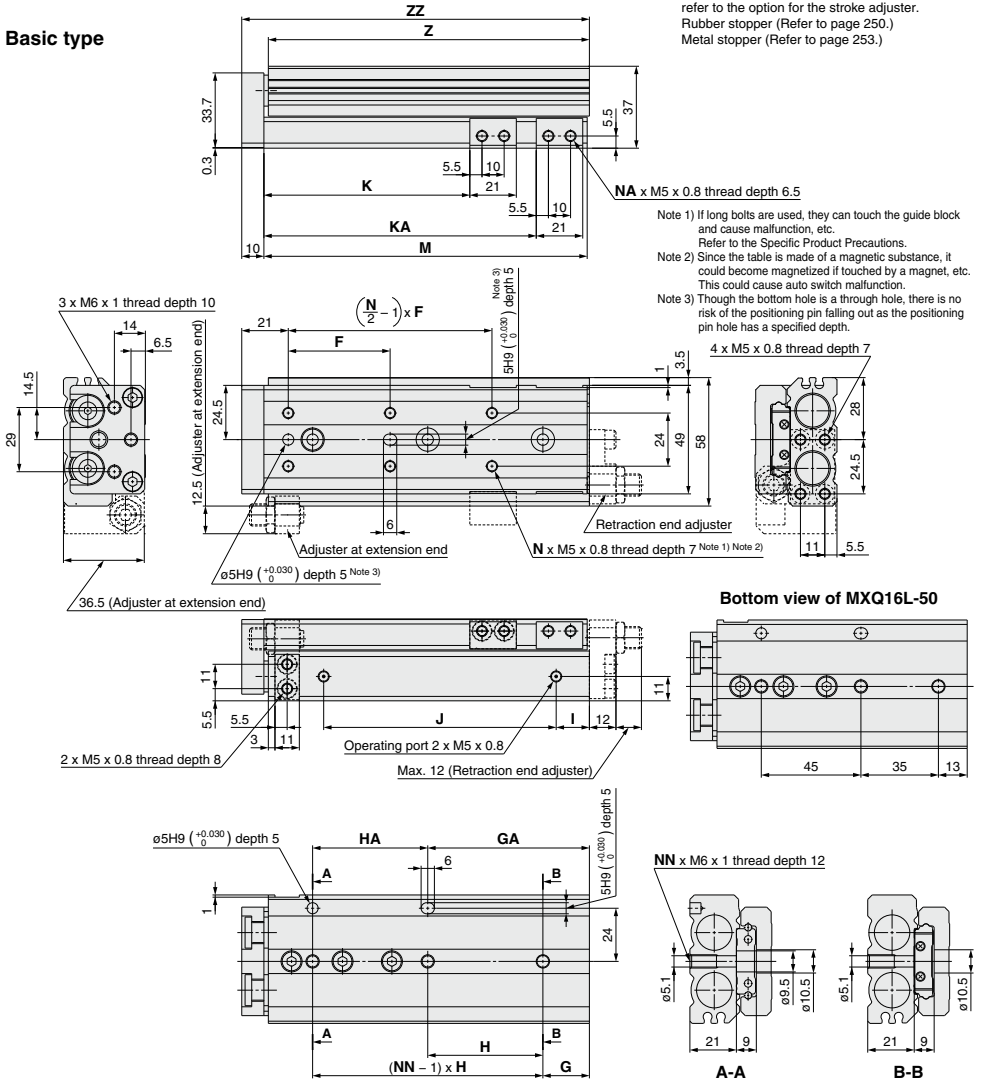
- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

- D-□
- X□

MXQ Series

Dimensions: MXQ16L/Symmetric Type

Basic type



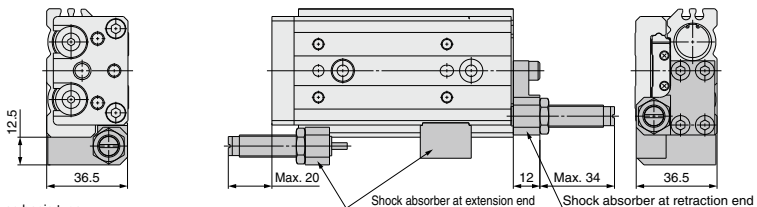
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ16L- 10	38	4	18	39	2	18	39	12	40	28	—	4	78	77	89
MXQ16L- 20	38	4	18	39	2	18	39	12	40	38	—	4	78	77	89
MXQ16L- 30	48	4	19	48	2	19	48	12	50	48	—	4	88	87	99
MXQ16L- 40	58	4	19	58	2	19	58	12	60	58	—	4	98	97	109
MXQ16L- 50	40	6	—	—	3	48	45	20	68	68	91	8	114	113	125
MXQ16L- 75	46	6	21	52	3	73	52	15	105	93	123	8	146	145	157
MXQ16L-100	44	8	36	44	4	80	88	18	145	118	166	8	189	188	200
MXQ16L-125	44	10	17	44	5	105	88	23	165	143	191	8	214	213	225

Note) Refer to the bottom view of MXQ16L-50.

With shock absorber (ø16): MXQ16L-□□BS/BT/B

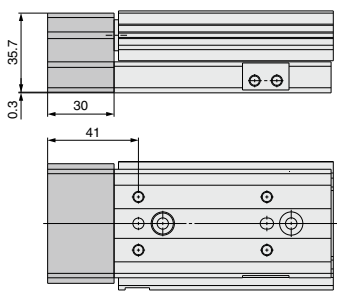
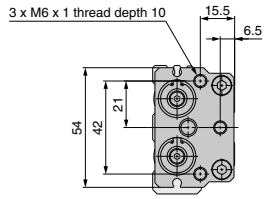
Stroke Adjustable Range (mm)

Extension end	Retraction end
22	22



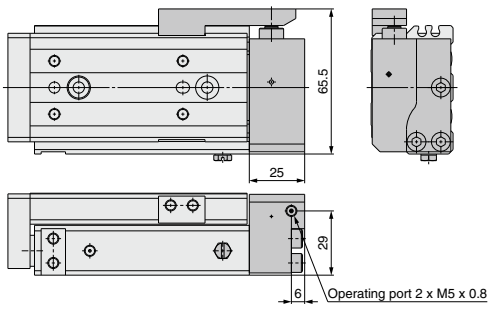
* Other dimensions are the same as basic type.

With buffer (ø16): MXQ16L-□□F



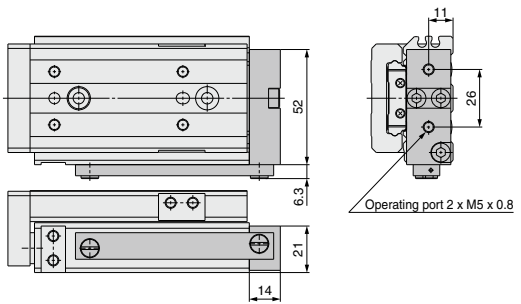
* Other dimensions are the same as basic type.

With end lock (ø16): MXQ16L-□□R



* Other dimensions are the same as basic type.

Axial piping type (ø16): MXQ16L-□□P



* Other dimensions are the same as basic type.

- MXH
- MXS
- MXQ□
- MXQ
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

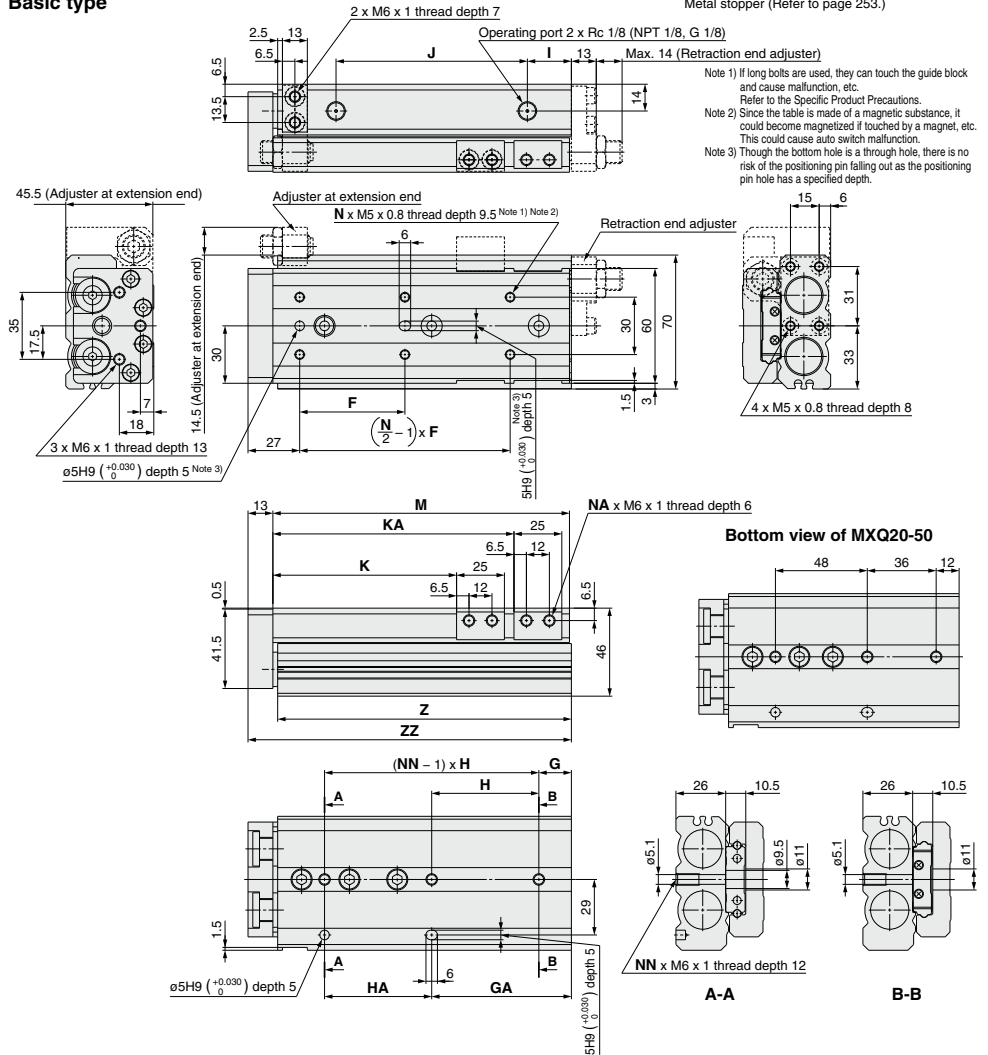
- D-□
- X□

MXQ Series

Dimensions: MXQ20

* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
 Rubber stopper (Refer to page 250.)
 Metal stopper (Refer to page 253.)

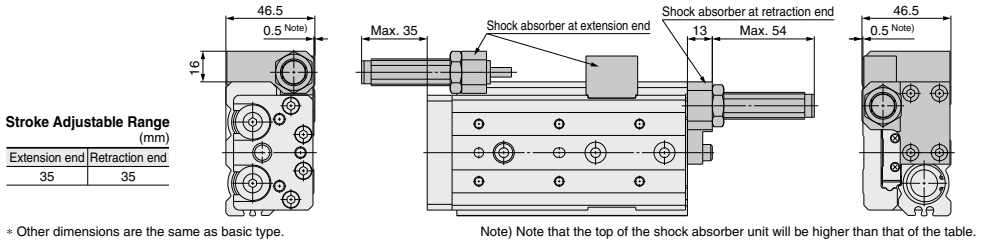
Basic type



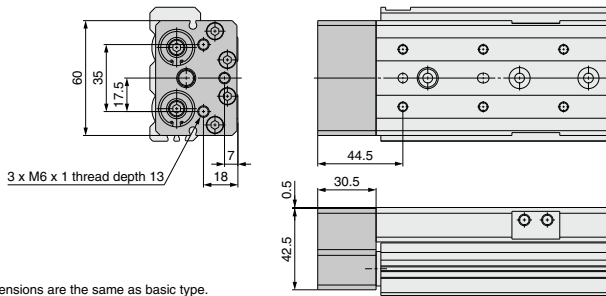
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ20- 10	45	4	22	46	2	18	50	16	46	31	—	4	94	92.5	108
MXQ20- 20	40	4	22	46	2	18	50	16	46	41	—	4	94	92.5	108
MXQ20- 30	48	4	22	46	2	18	50	16	46	51	—	4	94	92.5	108
MXQ20- 40	58	4	22	56	2	22	56	16	56	61	—	4	104	102.5	118
MXQ20- 50	42	6	N_{note}	N_{note}	3	48	48	18	72	71	—	4	122	120.5	136
MXQ20- 75	55	6	17	56	3	73	56	23	100	96	126	8	155	153.5	169
MXQ20-100	50	8	18	56	4	74	112	25	155	121	183	8	212	210.5	226
MXQ20-125	55	8	37	59	4	96	118	18	190	146	211	8	240	238.5	254
MXQ20-150	62	8	56	62	4	118	124	21	215	171	239	8	268	266.5	282

Note) Refer to the bottom view of MXQ20-50.

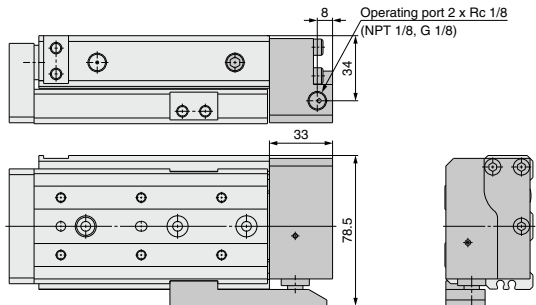
With shock absorber (ø20): MXQ20-□□BS/BT/B



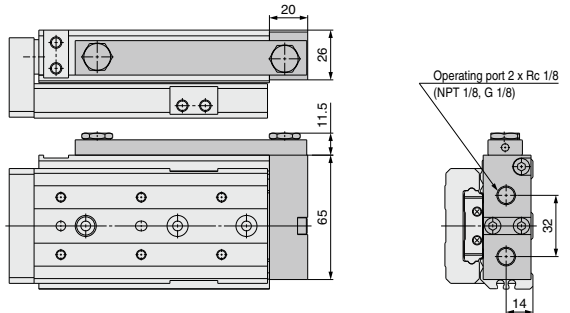
With buffer (ø20): MXQ20-□□F



With end lock (ø20): MXQ20-□□R



Axial piping type (ø20): MXQ20-□□P

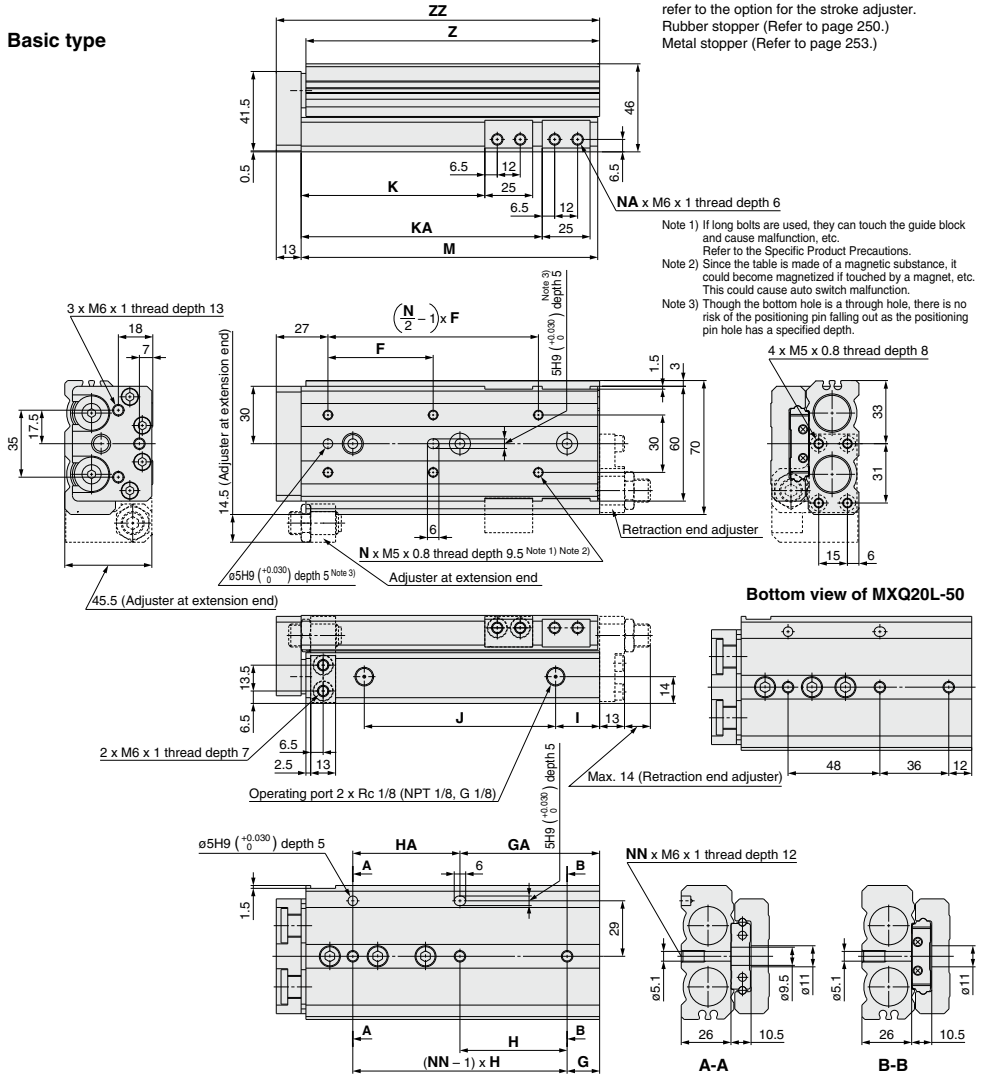


- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MPX
- MPY
- MTS

- D-□
- X□

Dimensions: MXQ20L/Symmetric Type

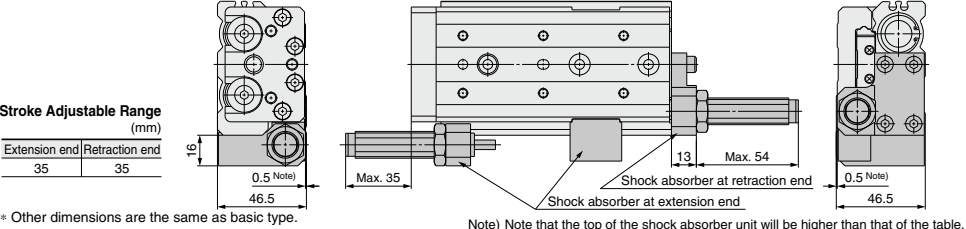
Basic type



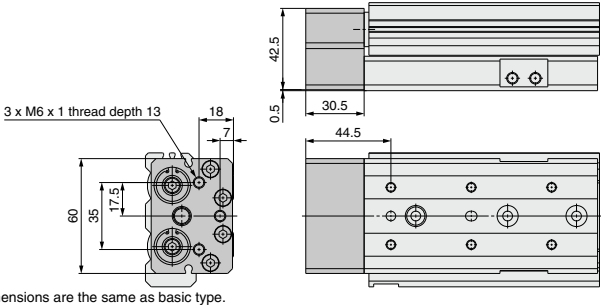
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ20L- 10	45	4	22	46	2	18	50	16	46	31	—	4	94	92.5	108
MXQ20L- 20	40	4	22	46	2	18	50	16	46	41	—	4	94	92.5	108
MXQ20L- 30	48	4	22	46	2	18	50	16	46	51	—	4	94	92.5	108
MXQ20L- 40	58	4	22	56	2	22	56	16	56	61	—	4	104	102.5	118
MXQ20L- 50	42	6	$\frac{N_2(60)}{N_2(60)}$	$\frac{N_2(60)}{N_2(60)}$	3	48	48	18	72	71	—	4	122	120.5	136
MXQ20L- 75	55	6	17	56	3	73	56	23	100	96	126	8	155	153.5	169
MXQ20L-100	50	8	18	56	4	74	112	25	155	121	183	8	212	210.5	226
MXQ20L-125	55	8	37	59	4	96	118	18	190	146	211	8	240	238.5	254
MXQ20L-150	62	8	56	62	4	118	124	21	215	171	239	8	268	266.5	282

Note) Refer to the bottom view of MXQ20L-50.

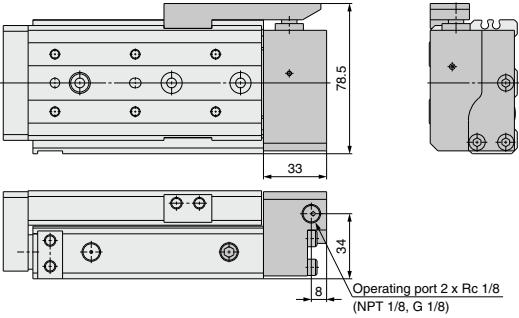
With shock absorber (φ20): MXQ20L-□□BS/BT/B



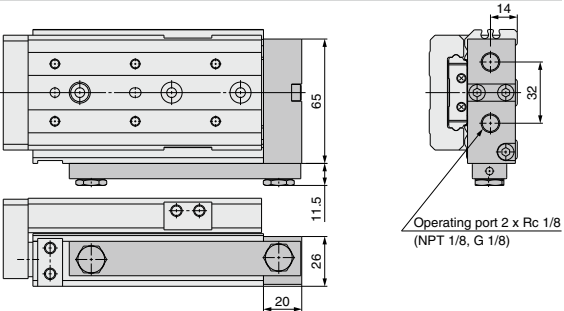
With buffer (φ20): MXQ20L-□□F



With end lock (φ20): MXQ20L-□□R



Axial piping type (φ20): MXQ20L-□□P



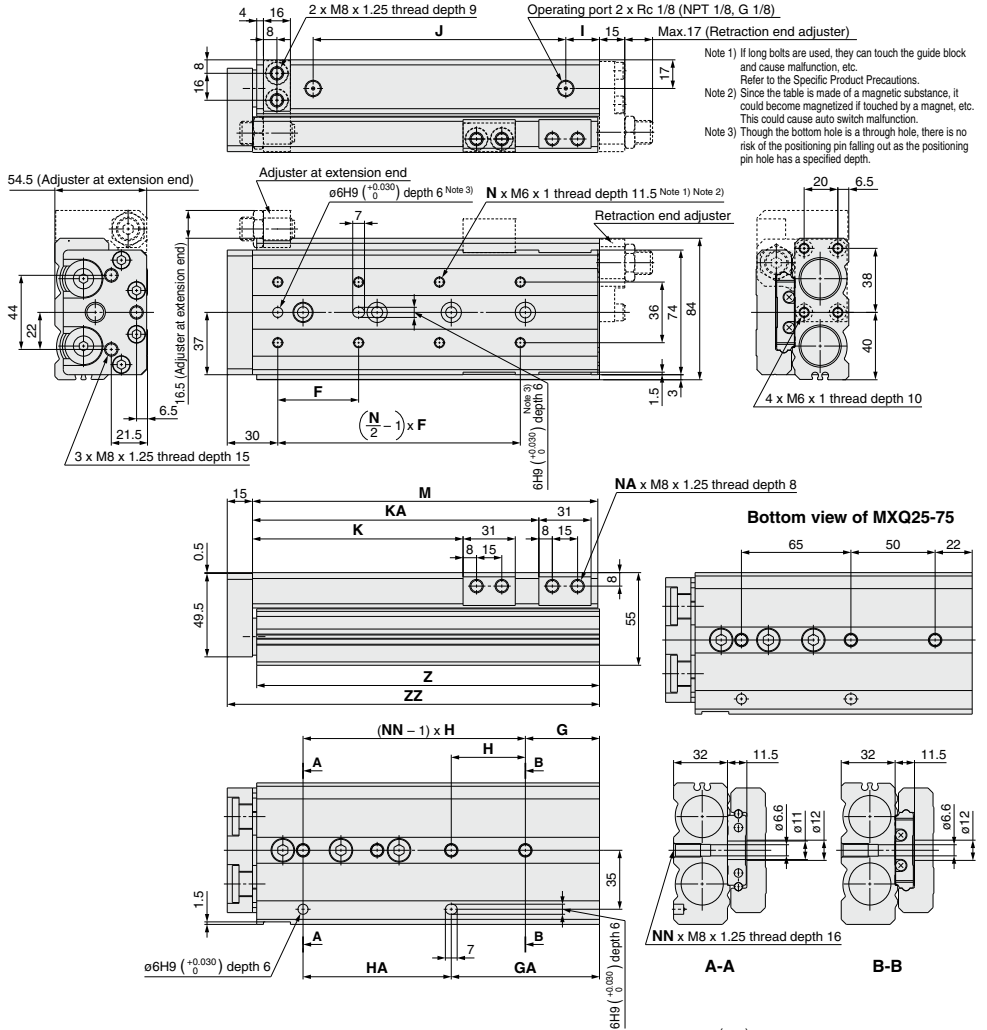
- MXH
- MXS
- MXQ
- MXQ
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

MXQ Series

Dimensions: MXQ25

Basic type

* For detailed dimensions about the stroke adjuster, refer to the option for the stroke adjuster.
 Rubber stopper (Refer to page 250.)
 Metal stopper (Refer to page 253.)



Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ25- 10	55	4	23	55	2	23	55	16	56	35	—	4	107	105.5	123
MXQ25- 20	46	4	23	55	2	23	55	16	56	45	—	4	107	105.5	123
MXQ25- 30	55	4	23	55	2	23	55	16	56	55	—	4	107	105.5	123
MXQ25- 40	65	4	23	65	2	23	65	16	66	65	—	4	117	115.5	133
MXQ25- 50	75	4	32	80	2	32	80	16	90	75	—	4	141	139.5	157
MXQ25- 75	60	6	Note1)	Note2)	3	72	65	31	100	100	—	4	166	164.5	182
MXQ25-100	48	8	44	44	4	88	88	20	150	125	170	8	205	203.5	221
MXQ25-125	60	8	31	66	4	97	132	18	205	150	223	8	258	256.5	274
MXQ25-150	65	8	56	66	4	122	132	18	230	175	248	8	283	281.5	299

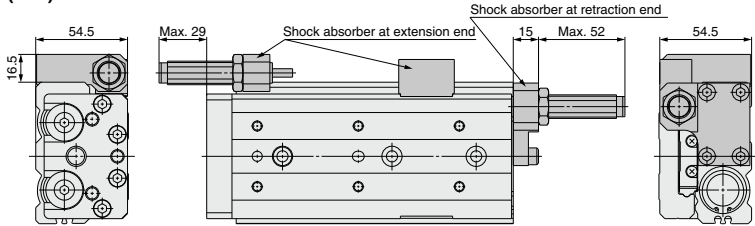
Note) Refer to the bottom view of MXQ25-75.

With shock absorber (ø25): MXQ25-□□BS/BT/B

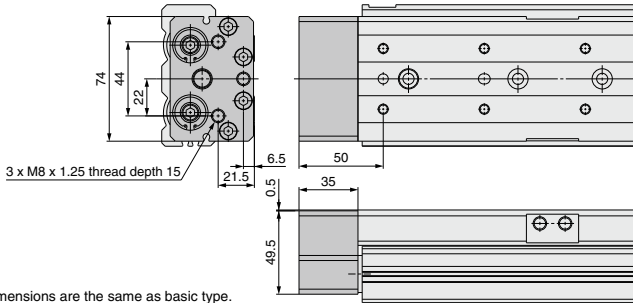
Stroke Adjustable Range (mm)

Extension end	Retraction end
35	35

* Other dimensions are the same as basic type.

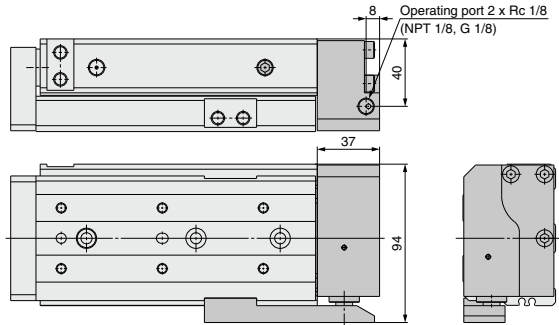


With buffer (ø25): MXQ25-□□F



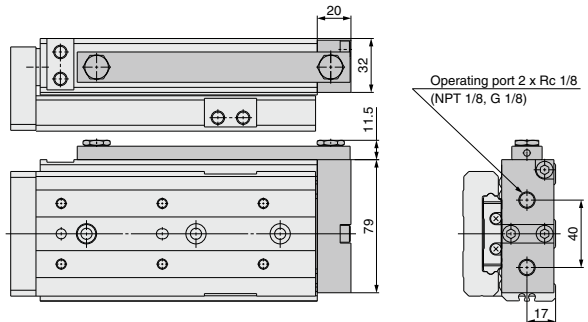
* Other dimensions are the same as basic type.

With end lock (ø25): MXQ25-□□R



* Other dimensions are the same as basic type.

Axial piping type (ø25): MXQ25-□□P



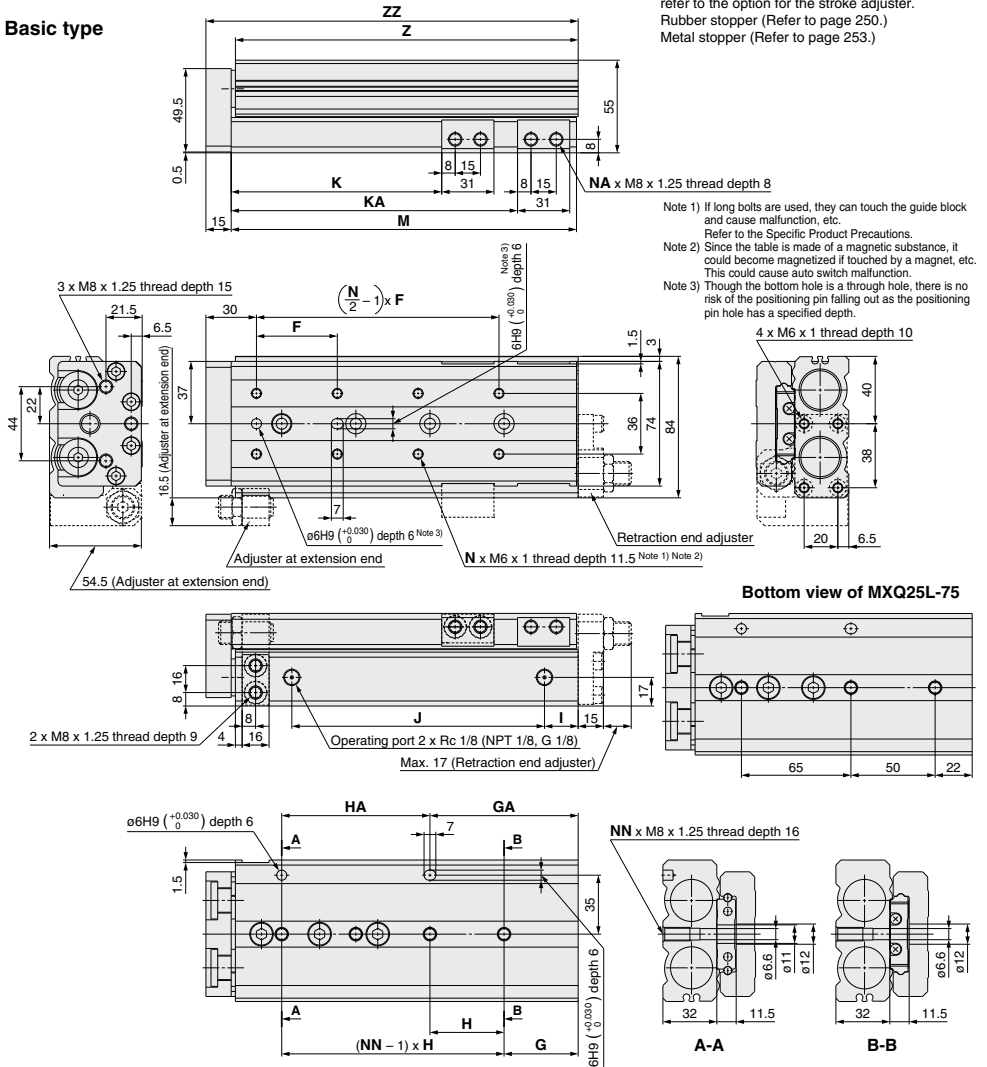
* Other dimensions are the same as basic type.

- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MPX
- MXY
- MTS

MXQ Series

Dimensions: MXQ25L/Symmetric Type

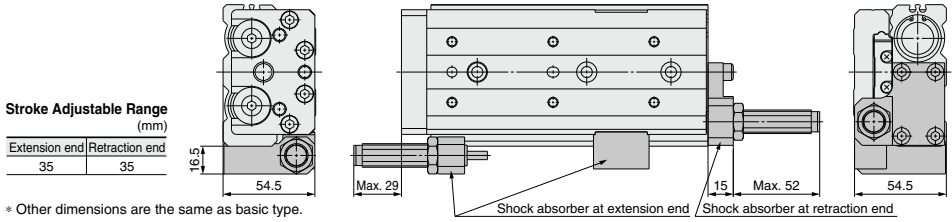
Basic type



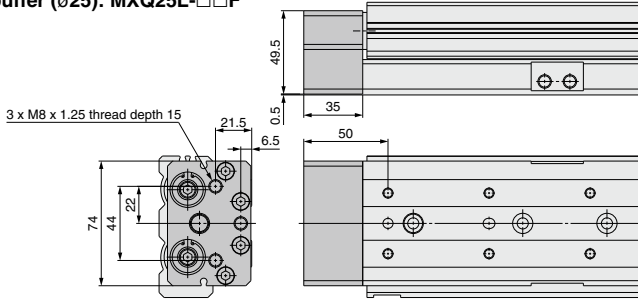
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ25L- 10	55	4	23	55	2	23	55	16	56	35	—	4	107	105.5	123
MXQ25L- 20	46	4	23	55	2	23	55	16	56	45	—	4	107	105.5	123
MXQ25L- 30	55	4	23	55	2	23	55	16	56	55	—	4	107	105.5	123
MXQ25L- 40	65	4	23	65	2	23	65	16	66	65	—	4	117	115.5	133
MXQ25L- 50	75	4	32	80	2	32	80	16	90	75	—	4	141	139.5	157
MXQ25L- 75	60	6	<small>(Note)</small>	<small>(Note)</small>	3	72	65	31	100	100	—	4	166	164.5	182
MXQ25L-100	48	8	44	44	4	88	88	20	150	125	170	8	205	203.5	221
MXQ25L-125	60	8	31	66	4	97	132	18	205	150	223	8	258	256.5	274
MXQ25L-150	65	8	56	66	4	122	132	18	230	175	248	8	283	281.5	299

Note) Refer to the bottom view of MXQ25L-75.

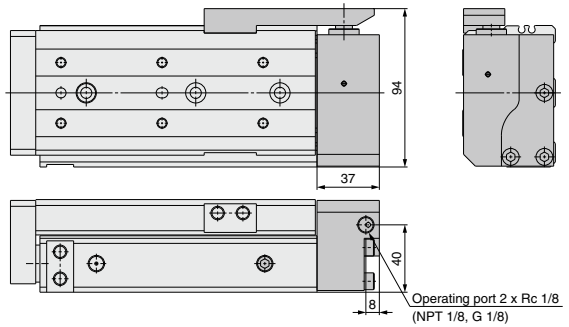
With shock absorber (ø25): MXQ25L-□□BS/BT/B



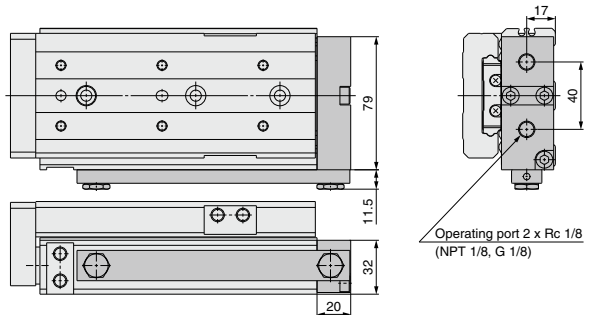
With buffer (ø25): MXQ25L-□□F



With end lock (ø25): MXQ25L-□□R



Axial piping type (ø25): MXQ25L-□□P



- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MPX
- MXY
- MTS

- D-□
- X□

MXQ Series

External Dimensions of Adjuster

Rubber Stopper (AS/AT)

Extension End

Body mounting section

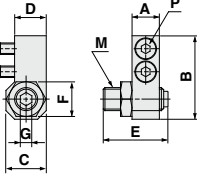
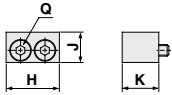


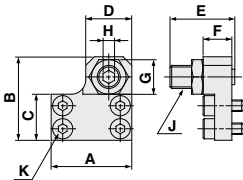
Table mounting section



Applicable size	Model	Stroke adjustment range (mm)	Body mounting section								Table mounting section					
			A	B	C	D	E	F	G	M	P ^{*1)}	H	J	K	Q ^{*1)}	
MXQ 6 (L)	MXQ-AS 6 (L)	5	6	19	8	7	16.5	7	2.5	M5 x 0.8	M2.5 x 6	12.5	6	8.3	M2.5 x 8	
	MXQ-AS 6 (L)-X11	15														26.5
MXQ 8 (L)	MXQ-AS 8 (L)	5	7	22	9	7.5	19.5	8	3	M6 x 1	M3 x 8	14.6	7	9.8	M3 x 10	
	MXQ-AS 8 (L)-X11	15														29.5
	MXQ-AS 8 (L)-X12	25														39.5
MXQ12 (L)	MXQ-AS12 (L)	5	9.5	29	14	11	23.5	12	4	M8 x 1	M4 x 12	18.5	10.5	12.7	M4 x 12	
	MXQ-AS12 (L)-X11	15														33.5
	MXQ-AS12 (L)-X12	25														43.5
MXQ16 (L)	MXQ-AS16 (L)	5	11	36	17	13.5	24.5	14	5	M10 x 1	M5 x 16	21	13	15	M5 x 16	
	MXQ-AS16 (L)-X11	15														34.5
	MXQ-AS16 (L)-X12	25														44.5
MXQ20 (L)	MXQ-AS20 (L)	5	13	45	20	16	27.5	17	6	M12 x 1.25	M6 x 16	25	16	18	M6 x 16	
	MXQ-AS20 (L)-X11	15														37.5
	MXQ-AS20 (L)-X12	25														47.5
MXQ25 (L)	MXQ-AS25 (L)	5	16	54	22	18	32.5	19	6	M14 x 1.5	M8 x 18	31	17	20	M8 x 18	
	MXQ-AS25 (L)-X11	15														42.5
	MXQ-AS25 (L)-X12	25														52.5

*1) Size of hexagon socket head cap screw
 *2) It is also available in the symmetric type.
 For "How to Order", refer to page 222.
 Dimensions are the same as standard type.

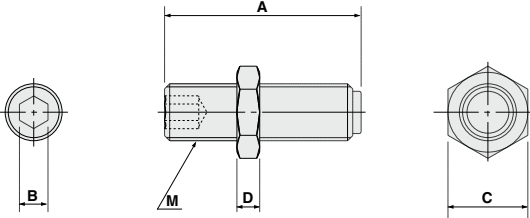
Retraction End



Applicable size	Model	Stroke adjustment range (mm)	A	B	C	D	E	F	G	H	J	K ^{*1)}	
MXQ 6 (L)	MXQ-AT 6 (L)	5	17.5	19	10.5	8	16.5	6	7	2.5	M5 x 0.8	M2.5 x 6	
	MXQ-AT 6 (L)-X11	15											26.5
MXQ 8 (L)	MXQ-AT 8 (L)	5	21	22	12.5	10	19.5	8	8	3	M6 x 1	M3 x 8	
	MXQ-AT 8 (L)-X11	15											29.5
	MXQ-AT 8 (L)-X12	25											39.5
MXQ12 (L)	MXQ-AT12 (L)	5	28	29	16	16	23.5	10	12	4	M8 x 1	M4 x 10	
	MXQ-AT12 (L)-X11	15											33.5
	MXQ-AT12 (L)-X12	25											43.5
MXQ16 (L)	MXQ-AT16 (L)	5	33.5	35.5	20	17	24.5	12	14	5	M10 x 1	M5 x 12	
	MXQ-AT16 (L)-X11	15											34.5
	MXQ-AT16 (L)-X12	25											44.5
MXQ20 (L)	MXQ-AT20 (L)	5	41	44.5	25	23	27.5	13	17	6	M12 x 1.25	M5 x 14	
	MXQ-AT20 (L)-X11	15											37.5
	MXQ-AT20 (L)-X12	25											47.5
MXQ25 (L)	MXQ-AT25 (L)	5	49	53.5	31	28	32.5	15	19	6	M14 x 1.5	M6 x 18	
	MXQ-AT25 (L)-X11	15											42.5
	MXQ-AT25 (L)-X12	25											52.5

*1) Size of hexagon socket head cap screw
 *2) It is also available in the symmetric type.
 For "How to Order", refer to page 222.
 Dimensions are the same as standard type.

Dimensions of Adjusting Bolt/Rubber Stopper



Applicable size	Model	Stroke adjustment range (mm)	A	B	C	D	M
MXQ 6 (L)	MXQ-A627	5	16.5	2.5	7	3.5	M5 x 0.8
	MXQ-A627-X11	15	26.5				
MXQ 8 (L)	MXQ-A827	5	19.5	3	8	4	M6 x 1
	MXQ-A827-X11	15	29.5				
	MXQ-A827-X12	25	39.5				
MXQ12 (L)	MXQ-A1227	5	23.5	4	12	4	M8 x 1
	MXQ-A1227-X11	15	33.5				
	MXQ-A1227-X12	25	43.5				
MXQ16 (L)	MXQ-A1627	5	24.5	5	14	4	M10 x 1
	MXQ-A1627-X11	15	34.5				
	MXQ-A1627-X12	25	44.5				
MXQ20 (L)	MXQ-A2027	5	27.5	6	17	5	M12 x 1.25
	MXQ-A2027-X11	15	37.5				
	MXQ-A2027-X12	25	47.5				
MXQ25 (L)	MXQ-A2527	5	32.5	6	19	6	M14 x 1.5
	MXQ-A2527-X11	15	42.5				
	MXQ-A2527-X12	25	52.5				

- MXH
- MXS
- MXQ □
- MXQ
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

How to Order Adjusting Bolt/Rubber Stopper

MXQ — A 12 27 — X11

● Applicable bore size

6	ø6
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

● Adjustment range

Nil	5 mm
-X11	15 mm
-X12	25 mm

* -X12 (adjusting range: 25 mm) is not available in the MXQ6 series.
 * For dimensions, refer to the figure above.
 * Symmetric type is also the same.

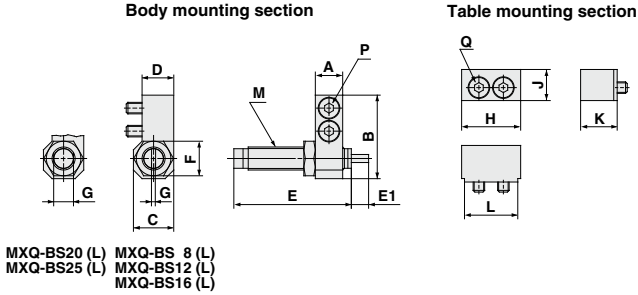
- D-□
- X□

MXQ Series

External Dimensions of Adjuster

With Shock Absorber (BS/BT)

Extension End



Applicable size	Model	Stroke adjustment range (mm)	Body mounting section										Table mounting section				
			A	B	C	D	E	E1	F	G	M	P ^{*1)}	H	J	K	L	Q ^{*1)}
MXQ 8 (L)	MXQ-BS 8 (L)	20	7	24.5	14	12.5	40.8	5	12	1.4	M8 x 1	M3 x 12	16.6	8	12	14.6	M3 x 12
MXQ12 (L)	MXQ-BS12 (L)	18	9.5	29	14	11	40.8	6	12	1.4	M8 x 1	M4 x 12	20.5	11	13	18.5	M4 x 12
MXQ16 (L)	MXQ-BS16 (L)	22	11	36	17	13.5	46.7	7	14	1.4	M10 x 1	M5 x 16	23	13.5	16	21	M5 x 16
MXQ20 (L)	MXQ-BS20 (L)	35	13	46	22	17.5	67.3	11	19	12	M14 x 1.5	M6 x 18	27	17	22	25	M6 x 20
MXQ25 (L)	MXQ-BS25 (L)	35	16	54	22	18	67.3	12	19	12	M14 x 1.5	M8 x 18	33	19	22	31	M8 x 20

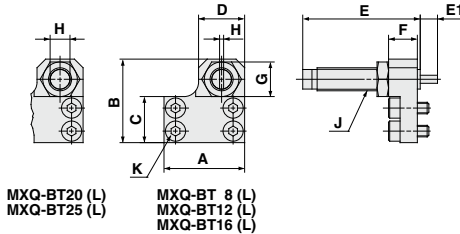
*1) Size of hexagon socket head cap screw

*2) It is also available in the symmetric type.

For "How to Order", refer to page 222.

Dimensions are the same as standard type.

Retraction End



Applicable size	Model	Stroke adjustment range (mm)	A	B	C	D	E	E1	F	G	H	J	K ^{*1)}
MXQ 8 (L)	MXQ-BT 8 (L)	20	23	24.5	12.5	14	40.8	5	8	12	1.4	M8 x 1	M3 x 8
MXQ12 (L)	MXQ-BT12 (L)	18	28	29	16	16	40.8	6	10	12	1.4	M8 x 1	M4 x 10
MXQ16 (L)	MXQ-BT16 (L)	22	33.5	35.5	20	17	46.7	7	12	14	1.4	M10 x 1	M5 x 12
MXQ20 (L)	MXQ-BT20 (L)	35	43	46	26	25	67.3	11	13	19	12	M14 x 1.5	M5 x 14
MXQ25 (L)	MXQ-BT25 (L)	35	49	53.5	31	28	67.3	12	15	19	12	M14 x 1.5	M6 x 18

*1) Size of hexagon socket head cap screw

*2) It is also available in the symmetric type.

For "How to Order", refer to page 222.

Dimensions are the same as standard type.

External Dimensions of Adjuster

Metal Stopper (CS/CT)

Extension End

Body mounting section

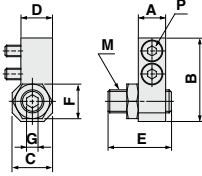
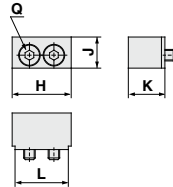


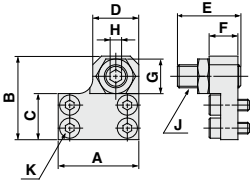
Table mounting section



Applicable size	Model	Stroke adjustment range (mm)	Body mounting section										Table mounting section				
			A	B	C	D	E	F	G	M	P ^{*1)}	H	J	K	L	Q ^{*1)}	
MXQ 6 (L)	MXQ-CS 6 (L)	5	6	19	8	7	15.5	7	2.5	M5 x 0.8	M2.5 x 6	14.5	7	8.3	12.5	M2.5 x 8	
	MXQ-CS 6 (L)-X11	15					25.5										
MXQ 8 (L)	MXQ-CS 8 (L)	5	7	22	9	7.5	18	8	3	M6 x 1	M3 x 8	16.6	8	9.8	14.6	M3 x 10	
	MXQ-CS 8 (L)-X11	15					28										
	MXQ-CS 8 (L)-X12	25					38										
MXQ12 (L)	MXQ-CS12 (L)	5	9.5	29	14	11	22	12	4	M8 x 1	M4 x 12	20.5	11	13	18.5	M4 x 12	
	MXQ-CS12 (L)-X11	15					32										
	MXQ-CS12 (L)-X12	25					42										
MXQ16 (L)	MXQ-CS16 (L)	5	11	36	17	13.5	23	14	5	M10 x 1	M5 x 16	23	13.5	16	21	M5 x 16	
	MXQ-CS16 (L)-X11	15					33										
	MXQ-CS16 (L)-X12	25					43										
MXQ20 (L)	MXQ-CS20 (L)	5	13	45	20	16	27	17	6	M12 x 1.25	M6 x 16	27	17	22	25	M6 x 20	
	MXQ-CS20 (L)-X11	15					37										
	MXQ-CS20 (L)-X12	25					47										
MXQ25 (L)	MXQ-CS25 (L)	5	16	54	22	18	30	19	6	M14 x 1.5	M8 x 18	33	19	22	31	M8 x 20	
	MXQ-CS25 (L)-X11	15					40										
	MXQ-CS25 (L)-X12	25					50										

*1) Size of hexagon socket head cap screw
 *2) It is also available in the symmetric type.
 For "How to Order", refer to page 222.
 Dimensions are the same as standard type.

Retraction End



Applicable size	Model	Stroke adjustment range (mm)	A	B	C	D	E	F	G	H	J	K ^{*1)}
MXQ 6 (L)	MXQ-CT 6 (L)	5	17.5	19	10.5	8	15.5	6	7	2.5	M5 x 0.8	M2.5 x 6
	MXQ-CT 6 (L)-X11	15					25.5					
MXQ 8 (L)	MXQ-CT 8 (L)	5	21	22	12.5	10	18	8	8	3	M6 x 1	M3 x 8
	MXQ-CT 8 (L)-X11	15					28					
	MXQ-CT 8 (L)-X12	25					38					
MXQ12 (L)	MXQ-CT12 (L)	5	28	29	16	16	22	10	12	4	M8 x 1	M4 x 10
	MXQ-CT12 (L)-X11	15					32					
	MXQ-CT12 (L)-X12	25					42					
MXQ16 (L)	MXQ-CT16 (L)	5	33.5	35.5	20	17	23	12	14	5	M10 x 1	M5 x 12
	MXQ-CT16 (L)-X11	15					33					
	MXQ-CT16 (L)-X12	25					43					
MXQ20 (L)	MXQ-CT20 (L)	5	41	44.5	25	23	27	13	17	6	M12 x 1.25	M5 x 14
	MXQ-CT20 (L)-X11	15					37					
	MXQ-CT20 (L)-X12	25					47					
MXQ25 (L)	MXQ-CT25 (L)	5	49	53.5	31	28	30	15	19	6	M14 x 1.5	M6 x 18
	MXQ-CT25 (L)-X11	15					40					
	MXQ-CT25 (L)-X12	25					50					

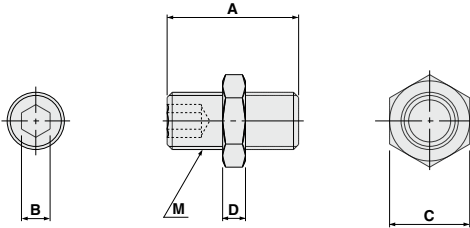
*1) Size of hexagon socket head cap screw
 *2) It is also available in the symmetric type.
 For "How to Order", refer to page 222.
 Dimensions are the same as standard type.

- MXH
- MXS
- MXQ
- MXQ
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

- D-
- X

MXQ Series

Dimensions of Adjusting Bolt/Metal Stopper



Applicable size	Model	Stroke adjustment range (mm)	A	B	C	D	M
MXQ 6 (L)	MXQ-A638	5	15.5	2.5	7	3.5	M5 x 0.8
	MXQ-A638-X11	15	25.5				
MXQ 8 (L)	MXQ-A838	5	18	3	8	4	M6 x 1
	MXQ-A838-X11	15	28				
	MXQ-A838-X12	25	38				
MXQ12 (L)	MXQ-A1238	5	22	4	12	4	M8 x 1
	MXQ-A1238-X11	15	32				
	MXQ-A1238-X12	25	42				
MXQ16 (L)	MXQ-A1638	5	23	5	14	4	M10 x 1
	MXQ-A1638-X11	15	33				
	MXQ-A1638-X12	25	43				
MXQ20 (L)	MXQ-A2038	5	27	6	17	5	M12 x 1.25
	MXQ-A2038-X11	15	37				
	MXQ-A2038-X12	25	47				
MXQ25 (L)	MXQ-A2538	5	30	6	19	6	M14 x 1.5
	MXQ-A2538-X11	15	40				
	MXQ-A2538-X12	25	50				

How to Order Adjusting Bolt/Metal Stopper

MXQ — A 12 38 — X11

● Applicable bore size

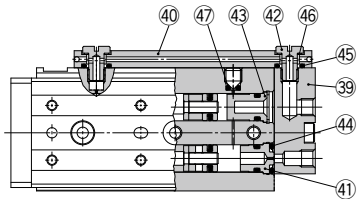
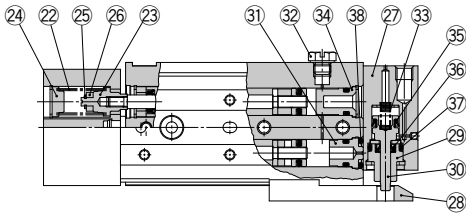
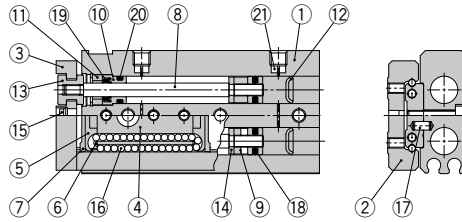
6	ø6
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

● Adjustment range

Nil	5 mm
-X11	15 mm
-X12	25 mm

- * -X12 (adjusting range: 25 mm) is not available in the MXQ6 series.
- * For dimensions, refer to the figure above.
- * Symmetric type is also the same.

Construction



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Table	Stainless steel	Heat treated, Electroless nickel plated
3	End plate	Aluminum alloy	Hard anodized
4	Guide block	Stainless steel	Heat treated
5	Cover	Synthetic resin	
6	Return guide	Synthetic resin	
7	Scraper	Stainless steel, NBR	
8	Rod	Stainless steel	
9	Piston assembly	—	With magnet on one side
10	Rod cover	Aluminum alloy	Anodized
11	Seal support	Brass	Electroless nickel plated
12	Head cap	Aluminum alloy	Hard anodized
13	Floating bushing	Stainless steel	
14	Rod bumper	Polyurethane	
15	End bumper	Polyurethane	
16	Steel balls	High carbon chrome bearing steel	
17	Parallel pin	Stainless steel	
18	Piston seal	NBR	
19	Rod seal	NBR	
20	O-ring	NBR	
21	Orifice	Synthetic resin	φ12, φ16 (Basic type) only

Component Parts: With Buffer

No.	Description	Material	Note
22	End plate	Aluminum alloy	Hard anodized
23	Spring collar	Stainless steel	
24	Head cap	Stainless steel	
25	Spring	Stainless steel	
26	Magnet	—	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
6	MXQ 6-PS	Set of nos. above (1 set)
8	MXQ 8-PS	
12	MXQ12-PS	
16	MXQ16-PS	
20	MXQ20-PS	
25	MXQ25-PS	

Replacement Parts: Seal Kit for with End Lock

Bore size (mm)	Kit no.	Contents
8	MXQ 8R-PS	Set of nos. above
12	MXQ12R-PS	
16	MXQ16R-PS	
20	MXQ20R-PS	
25	MXQ25R-PS	

Component Parts: With End Lock

No.	Description	Material	Note
27	Locking body	Aluminum alloy	Hard anodized
28	Table support	Carbon steel	Anti-corrosive treated
29	Rod cover	Aluminum alloy	
30	Piston rod	Stainless steel	
31	Bushing	Aluminum alloy	Chromated
32	Blanking plug	Carbon steel	Nickel plated
33	Return spring	Stainless steel	
34	Head cap	Synthetic resin	
35	Piston seal	NBR	
36	Rod seal	NBR	
37	O-ring	NBR	
38	O-ring	NBR	

Component Parts: Axial Piping Type

No.	Description	Material	Note
39	Axial piping plate	Aluminum alloy	Hard anodized
40	Pipe	Aluminum alloy	Hard anodized
41	Bushing	Aluminum alloy	Chromated
42	Stud	Brass	Electroless nickel plated
43	Head cap	Synthetic resin	
44	O-ring	NBR	
45	O-ring	NBR	
46	Gasket	NBR, Stainless steel	
47	O-ring	NBR	

* Seal kit includes these seals to provide as a set. Order the seal kit, based on each bore size.

Replacement Parts: Seal Kit for Axial Piping Type

Bore size (mm)	Kit no.	Contents
6	MXQ 6P-PS	Set of nos. above
8	MXQ 8P-PS	
12	MXQ12P-PS	
16	MXQ16P-PS	
20	MXQ20P-PS	
25	MXQ25P-PS	

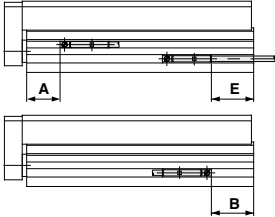
Replacement Parts: Grease Pack

Applied section	Grease pack part no.
Guide	GR-S-010 (10g) GR-S-020 (20g)
Cylinder	GR-L-005 (5g) GR-L-010 (10g)

- MXH
- MXS
- MXQ
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

- D-□
- X□

Auto Switch Proper Mounting Position (Detection at Stroke End)



Reed Auto Switch: D-A90, D-A93, D-A96, D-A90V, D-A93V, D-A96V

Model	A	B															E														
		Stroke															Stroke														
		10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150												
MXQ6	6	5.5	5.5	5.5	5.5	13.5	13.5	—	—	—	—	—	—	—	3.5 (1)	3.5 (1)	3.5 (1)	11.5 (9)	11.5 (9)	—	—	—	—								
MXQ8	7.5	8	8	12	16	31	32	—	—	—	—	—	—	—	22.5 (36)	6 (3.5)	10 (7.5)	14 (11.5)	29 (26.5)	30 (27.5)	—	—	—								
MXQ12	11.5	24.5	14.5	14.5	21.5	21.5	40.5	40.5	—	—	—	—	—	—	22.5 (20)	12.5 (10)	12.5 (10)	19.5 (17)	19.5 (17)	38.5 (36)	38.5 (36)	—	—								
MXQ16	16.5	30.5	20.5	20.5	20.5	26.5	33.5	51.5	51.5	—	—	—	—	—	28.5 (26)	18.5 (16)	18.5 (16)	24.5 (22)	31.5 (29)	49.5 (47)	49.5 (47)	—	—								
MXQ20	19	43.5	33.5	23.5	23.5	31.5	39.5	71.5	74.5	77.5	—	—	—	—	41.5 (39)	31.5 (29)	31.5 (29)	45.5 (43)	45.5 (43)	59.5 (57)	59.5 (57)	75.5 (73)	75.5 (73)								
MXQ25	22	53.5	43.5	33.5	33.5	47.5	47.5	61.5	89.5	89.5	—	—	—	—	51.5 (49)	41.5 (39)	31.5 (29)	31.5 (29)	45.5 (43)	45.5 (43)	59.5 (57)	87.5 (85)	87.5 (85)								

* (): Denotes D-A93.

Solid State Auto Switch: D-M9B, D-M9N, D-M9P, D-M9BW, D-M9NW, D-M9PW, D-M9□A

Model	A	B															E															E (D-M9□A)														
		Stroke															Stroke															Stroke														
		10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150																		
MXQ6	10	9.5	9.5	9.5	17.5	17.5	—	—	—	—	—	—	—	—	-0.5	-0.5	-0.5	7.5	7.5	—	—	—	—	-2.5	-2.5	-2.5	5.5	5.5	—	—	—	—														
MXQ8	11.5	12	12	16	20	35	36	—	—	—	—	—	—	—	2	2	6	10	25	26	—	—	—	—	0	0	4	8	23	24	—	—	—													
MXQ12	15.5	28.5	18.5	18.5	25.5	25.5	44.5	44.5	—	—	18.5	8.5	8.5	15.5	15.5	34.5	34.5	—	—	—	—	—	—	16.5	6.5	6.5	13.5	13.5	32.5	32.5	—	—														
MXQ16	20.5	34.5	24.5	24.5	24.5	30.5	37.5	55.5	55.5	—	24.5	14.5	14.5	14.5	20.5	27.5	45.5	45.5	—	—	—	—	22.5	12.5	12.5	12.5	18.5	25.5	43.5	43.5	—	—														
MXQ20	23	47.5	37.5	27.5	27.5	35.5	43.5	75.5	78.5	81.5	37.5	27.5	17.5	17.5	25.5	33.5	65.5	68.5	71.5	35.5	25.5	15.5	15.5	23.5	31.5	63.5	66.5	69.5	—	—																
MXQ25	27	56.5	46.5	36.5	36.5	50.5	50.5	64.5	92.5	92.5	46.5	36.5	26.5	26.5	40.5	40.5	54.5	82.5	82.5	44.5	34.5	24.5	24.5	38.5	38.5	52.5	80.5	80.5	80.5	—	—															

Solid State Auto Switch: D-M9B, D-M9NV, D-M9PV, D-M9BWV, D-M9NWV, D-M9PWV, D-M9□AV

Model	A	B															E															E (D-M9□AV)														
		Stroke															Stroke															Stroke														
		10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150																		
MXQ6	10	9.5	9.5	9.5	17.5	17.5	—	—	—	—	1.5	1.5	1.5	9.5	9.5	—	—	—	—	—	—	—	—	-0.5	-0.5	-0.5	7.5	7.5	—	—	—	—														
MXQ8	11.5	12	12	16	20	35	36	—	—	—	4	4	8	12	27	28	—	—	—	—	—	—	2	2	6	10	25	26	—	—	—	—														
MXQ12	15.5	28.5	18.5	18.5	25.5	25.5	44.5	44.5	—	—	20.5	10.5	10.5	17.5	17.5	36.5	36.5	—	—	—	—	—	18.5	8.5	8.5	15.5	15.5	34.5	34.5	—	—															
MXQ16	20.5	34.5	24.5	24.5	24.5	30.5	37.5	55.5	55.5	—	26.5	16.5	16.5	16.5	22.5	29.5	47.5	47.5	—	—	—	—	24.5	14.5	14.5	14.5	20.5	27.5	45.5	45.5	—	—														
MXQ20	23	47.5	37.5	27.5	27.5	35.5	43.5	75.5	78.5	81.5	39.5	29.5	19.5	19.5	27.5	35.5	67.5	70.5	73.5	37.5	27.5	17.5	17.5	25.5	33.5	65.5	68.5	71.5	—	—																
MXQ25	27	56.5	46.5	36.5	36.5	50.5	50.5	64.5	92.5	92.5	48.5	38.5	28.5	28.5	42.5	42.5	56.5	84.5	84.5	46.5	36.5	26.5	26.5	40.5	40.5	54.5	82.5	82.5	82.5	—	—															

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

Auto Switch Mounting

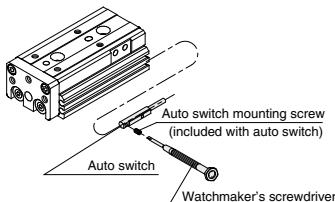
⚠ Caution Auto Switch Mounting Tool

• When tightening the auto switch mounting screw (included with auto switch), use a watchmaker's screwdriver with a handle about 5 to 6 mm in diameter.

Tightening Torque

Tightening Torque of Auto Switch Mounting Screw (N·m)

Auto switch model	Tightening torque
D-A9□(V)	0.10 to 0.20
D-M9□(V)	0.05 to 0.15
D-M9□W(V)	0.05 to 0.10
D-M9□A(V)	0.05 to 0.10



Operating Range

Operating range

(mm)

Auto switch model	Applicable bore size					
	6	8	12	16	20	25
D-A9, A9□V	4.5	5	6	7	8	9
D-M9□, M9□V						
D-M9□W, M9□WV	2.5	2.5	3	4	4.5	5
D-M9□A, M9□AV						

* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion). It may vary substantially depending on an ambient environment.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.

* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V) types) and solid state auto switch D-F8 are also available. Refer to pages 1136 and 1192-1 for details.

MXQ Series

Made to Order: Individual Specifications

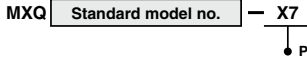


Please contact SMC for detailed dimensions, specifications and lead times.

1 PTFE Grease

Symbol

-X7



PTFE grease is used for all parts that grease is applied.

Specifications

Type	PTFE grease
Bore size (mm)	6, 8, 12, 16, 20, 25

* Specifications and dimensions other than the above are the same as the standard type.

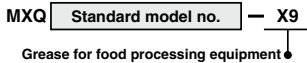
Warning Precautions

Be aware that smoking cigarettes, etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

2 Grease for Food Processing Equipment

Symbol

-X9



Grease for food processing equipment is used for all parts that grease is applied.

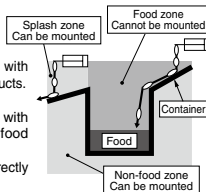
Specifications

Type	Grease for food processing equipment (NSF-H1 certified)/Aluminum complex soap base grease
Bore size (mm)	6, 8, 12, 16, 20, 25

* Specifications and dimensions other than the above are the same as the standard type.

Caution Do not use this cylinder in a food-related environment.

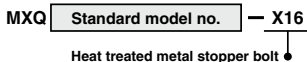
<Cannot be mounted>
Food zone--Food may directly contact with this cylinder, and is treated as food products.
<Can be mounted>
Splash zone--Food may directly contact with this cylinder, but is not treated as food products.
Non-food zone--This cylinder does not directly contact food.



3 Heat Treated Metal Stopper Bolt (Adjustment range: 5 mm)

Symbol

-X16



To reduce wear on the metal stopper, heat treated chrome molybdenum steel (SCM435) is used for the stroke adjustment screw.

Specifications

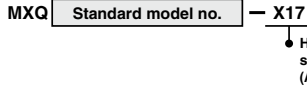
Type	Heat treated metal stopper bolt
Bore size (mm)	6, 8, 12, 16, 20, 25
Speed range	50 to 200 mm/s
Cushion	None
Stroke adjustment	0 to 5 mm

* Specifications and dimensions other than the above are the same as the standard type.

4 Heat Treated Metal Stopper Bolt (Adjustment range: 15 mm)

Symbol

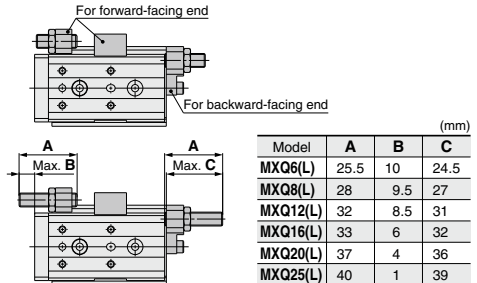
-X17



To reduce wear on the metal stopper, heat treated chrome molybdenum steel (SCM435) is used for the stroke adjustment screw.

The average adjusting stroke range was extended from 5 mm to 15 mm with a long adjusting bolt.

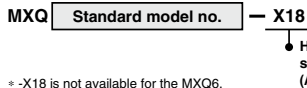
Dimensions



5 Heat Treated Metal Stopper Bolt (Adjustment range: 25 mm)

Symbol

-X18

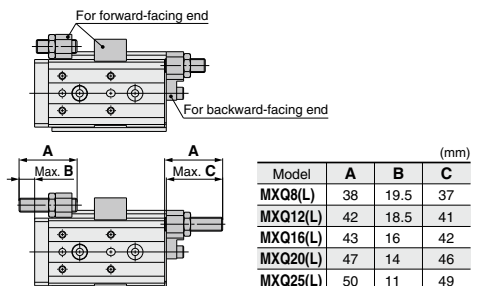


* -X18 is not available for the MXQ6.

To reduce wear on the metal stopper, heat treated chrome molybdenum steel (SCM435) is used for the stroke adjustment screw.

The average adjusting stroke range was extended from 5 mm to 25 mm with a long adjusting bolt.

Dimensions

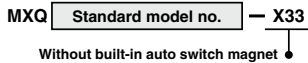


MXH
MXS
MXQ
MXF
MXW
MXJ
MXP
MXY
MTS

D-□
-X□

MXQ Series

6 Without Built-in Auto Switch Magnet Symbol -X33



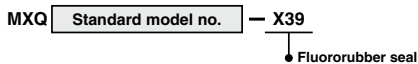
Auto switch magnet is not built in.

Specifications

Type	Without built-in auto switch magnet
Bore size (mm)	6, 8, 12, 16, 20, 25
Auto switch	Not mountable

* Specifications and dimensions other than the above are the same as the standard type.

7 Fluororubber Seal Symbol -X39



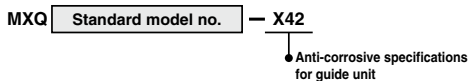
Change the materials for the piston seal, rod seal, O-rings and scrapers (rubber lined parts) to fluororubber.

Specifications

Type	Fluororubber seal
Bore size (mm)	6, 8, 12, 16, 20, 25
Seal material	Fluororubber

* Specifications and dimensions other than the above are the same as the standard type.

8 Anti-corrosive Specifications for Guide Unit Symbol -X42



Martensitic stainless steel is used for the table and guide block. Use this treatment if more effective anti-corrosive measures are necessary. Anti-corrosive treatment is applied to the table and guide block.

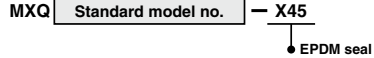
Specifications

Type	Anti-corrosive guide unit
Bore size (mm)	6, 8, 12, 16, 20, 25
Surface treatment	Special anti-corrosive treatment #2

#1 Specifications and dimensions other than the above are the same as the standard type.

#2 Special anti-corrosive treatment makes the table and the guide block black.

9 EPDM Seal Symbol -X45



Change the materials for the piston seal, rod seal, O-rings and scrapers (rubber lined parts) to EPDM.

Specifications

Type	EPDM seal
Bore size (mm)	6, 8, 12, 16, 20, 25
Seal material	EPDM
Grease	PTFE grease

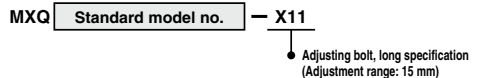
* Specifications and dimensions other than the above are the same as the standard type.

Warning

Precautions

Be aware that smoking cigarettes, etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

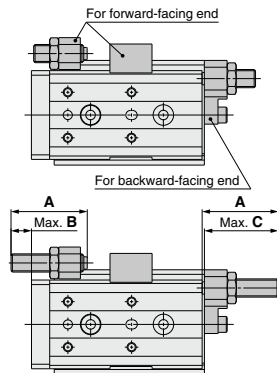
10 Adjusting Bolt, Long Specification (Adjustment range: 15 mm) Symbol -X11



* -X11 is not available for those with a shock absorber (BS, BT, B).

The average adjusting stroke range was extended from 5 mm to 15 mm with a long adjusting bolt.

Dimensions



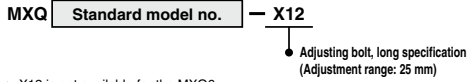
Rubber Stopper (AS, AT, A) (mm)

Model	A	B	C
MXQ6(L)	26.5	10	25.5
MXQ8(L)	29.5	10	28.5
MXQ12(L)	33.5	9	32.5
MXQ16(L)	34.5	6.5	33.5
MXQ20(L)	37.5	3.5	36.5
MXQ25(L)	42.5	2.5	41.5

Metal Stopper (CS, CT, C) (mm)

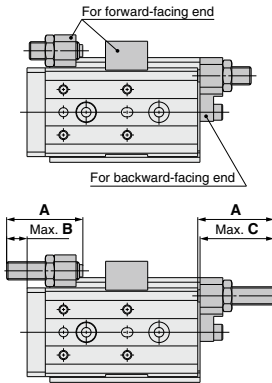
Model	A	B	C
MXQ6(L)	25.5	10	24.5
MXQ8(L)	28	9.5	27
MXQ12(L)	32	8.5	31
MXQ16(L)	33	6	32
MXQ20(L)	37	4	36
MXQ25(L)	40	1	39

11 Adjusting Bolt, Long Specification (Adjustment range: 25 mm) **-X12** Symbol



* -X12 is not available for the MXQ6.
 * -X12 is not available for those with a shock absorber (BS, BT, B).
 The average adjusting stroke range was extended from 5 mm to 25 mm with a long adjusting bolt.

Dimensions



Rubber Stopper (AS, AT, A) (mm)

Model	A	B	C
MXQ8(L)	39.5	20	38.5
MXQ12(L)	43.5	19	42.5
MXQ16(L)	44.5	16.5	43.5
MXQ20(L)	47.5	13.5	46.5
MXQ25(L)	52.5	12.5	51.5

Metal Stopper (CS, CT, C) (mm)

Model	A	B	C
MXQ8(L)	38	19.5	37
MXQ12(L)	42	18.5	41
MXQ16(L)	43	16	42
MXQ20(L)	47	14	46
MXQ25(L)	50	11	49

- MXH
- MXS
- MXQ□
- MXQ**
- MXF
- MXW
- MXJ
- MXP
- MXY
- MTS

- D-□
- X□



MXQ Series

Specific Product Precautions 1

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Selection

⚠ Caution

1. Operate loads within the range of the operating limits.

Select the model considering maximum allowable load and allowable moment. Refer to pages 218 and 219 for the details. When actuator is used outside of operating limits, eccentric loads on guide will be in excess of this causing vibration on guide, inaccuracy, and shortened life.

2. If intermediate stops by external stopper is done, avoid ejection.

If lurching occurs damage can result. When making a stop with an external stopper to be followed by continued forward movement, first supply pressure to momentarily reverse the table, then retract the intermediate stopper, and finally apply pressure to the opposite port to operate the table again.

3. Do not use it in such a way that excessive external force or impact force could work on it.

This could result in damage.

Mounting

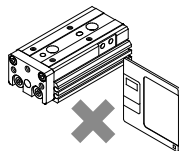
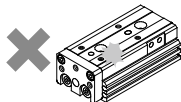
⚠ Caution

1. Do not scratch or dent the mounting side of the body, table or end plate.

This can cause loss of parallelism in the mounting surfaces, vibration in the guide unit and increased operating resistance, etc.

2. Do not scratch or dent on the forward side of the table or guide block.

This could result in looseness and increased operating resistance, etc.



8. Do not touch a magnet to the table section.

Since the table is made from the magnetic substance, it could turn to be magnetized if it stuck by a magnet, etc. That could cause auto switches, etc. to malfunction.

Mounting

3. Do not apply excessive power and load when work is mounted.

If the external force more than the allowable moment were applied, looseness of the guide unit or increased operating resistance could take place.

4. Flatness of mounting surface should be less than 0.02 mm.

Poor parallelism of the workpiece mounted on the body, the base, and other parts can cause vibration in the guide unit and increased operating resistance, etc.

5. Select the proper connection with the load which has external support and/or guide mechanism on the outside, and align it properly.

6. Avoid contact with the body during operation.

Hands, etc., may get caught in the stroke adjuster. Install a cover as a safety measure if there are instances to be near the slide table during operation.

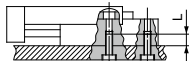
7. Keep away from objects which are influenced by magnets.

As the body magnets are built-in, do not allow close contact with magnetic disks, magnetic cards or magnetic tapes. Data may be erased.

9. When mounting the body, use screws with appropriate length and do not exceed the maximum tightening torque.

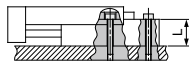
Tightening with a torque above the limit could malfunction. Whereas tightening insufficiently could result in misalignment or come to a drop.

1. Lateral Mounting (Body tapped)



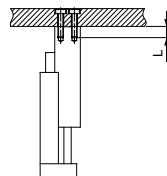
Model	Bolt	Maximum tightening torque (N·m)	Maximum screw-in depth (L, mm)
MXQ 6 (L)	M4 x 0.7	2.1	8
MXQ 8 (L)	M4 x 0.7	2.1	8
MXQ12 (L)	M5 x 0.8	4.4	10
MXQ16 (L)	M6 x 1	7.4	12
MXQ20 (L)	M6 x 1	7.4	12
MXQ25 (L)	M8 x 1.25	18.0	16

2. Lateral Mounting (Body through-hole)



Model	Bolt	Maximum tightening torque (N·m)	L mm
MXQ 6 (L)	M3 x 0.5	1.2	10.5
MXQ 8 (L)	M3 x 0.5	1.2	12.5
MXQ12 (L)	M4 x 0.7	2.8	16
MXQ16 (L)	M5 x 0.8	5.7	21
MXQ20 (L)	M5 x 0.8	5.7	26
MXQ25 (L)	M6 x 1	10.0	32

3. Vertical Mounting (Body tapped)



Model	Bolt	Maximum tightening torque (N·m)	Maximum screw-in depth (L, mm)
MXQ 6 (L)	M2.5 x 0.45	0.5	4
MXQ 8 (L)	M3 x 0.5	0.9	4
MXQ12 (L)	M4 x 0.7	2.1	6
MXQ16 (L)	M5 x 0.8	4.4	7
MXQ20 (L)	M5 x 0.8	4.4	8
MXQ25 (L)	M6 x 1	7.4	10



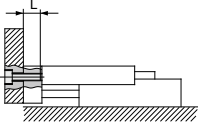
MXQ Series Specific Product Precautions 2

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Mounting

⚠ Caution

1. Front Mounting

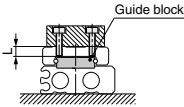


⚠ Caution

If long bolts are used, they can touch the table and cause malfunction, etc.

Model	Bolt	Maximum tightening torque (N·m)	Maximum screw-in depth (L, mm)
MXQ 6 (L)	M3 x 0.5	0.9	4.5
MXQ 8 (L)	M4 x 0.7	2.1	5.5
MXQ12 (L)	M5 x 0.8	4.4	7.5
MXQ16 (L)	M6 x 1	7.4	9.5
MXQ20 (L)	M6 x 1	7.4	12.5
MXQ25 (L)	M8 x 1.25	18.0	14.5

2. Top Mounting



⚠ Caution

If long bolts are used, they can touch the guide block and cause malfunction, etc.

Model	Bolt	Maximum tightening torque (N·m)	Maximum screw-in depth (L, mm)
MXQ 6 (L)	M3 x 0.5	1.2	3.5
MXQ 8 (L)	M3 x 0.5	1.2	4.3
MXQ12 (L)	M4 x 0.7	2.8	5.5
MXQ16 (L)	M5 x 0.8	5.7	6.5
MXQ20 (L)	M5 x 0.8	5.7	9
MXQ25 (L)	M6 x 1	10.0	11

10. The positioning hole on the table and the positioning hole at the bottom of the body do not have the same center. Use these holes during reinstallation after the table has been removed for the maintenance of an identical product.

Operating Environment

⚠ Caution

1. Do not use in the environment, where the product could be exposed to the liquid such as cutting oil, etc.

Using in the environment where the product could be exposed to cutting oil, coolant or oil, etc. could result in looseness, increased operating resistance, or air leakage, etc.

2. Do not use in the environment, where the product could be exposed directly to the foreign matters such as powder dust, blown dust, cutting chip, spatter etc.

This could result in looseness and increased operating resistance, and air leakage, etc.

Please consult with SMC regarding use in this kind of environment.

3. Do not use in direct sunlight.

4. When there are heat sources in the surrounding area, block them off.

When there are heat sources in the surrounding area, radiated heat may cause the product's temperature to rise and exceed the operating temperature range. Block off the heat with a cover, etc.

5. Do not subject it to excessive vibration and/or impact.

Please consult with SMC regarding use in this kind of environment, as this can cause damage and malfunction.

6. Use caution for the anti-corrosiveness of linear guide section. Martensitic stainless steel is used for the table and guide block. But, use caution that anti-corrosiveness is inferior to the austenitic stainless steel. Especially, rust may be generated in an environment where waterdrops are likely to adhere due to condensation, etc.

Caution for Adjuster Option

Stroke Adjuster

⚠ Caution

1. Do not replace with the bolt other than the original adjusting bolt.

This could result in looseness and damage due to impact forces, etc.

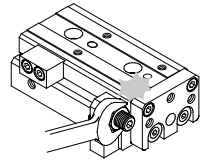
2. Follow the table for tightening torque of lock nuts.

Insufficient torque will cause a decrease in the positioning accuracy.

Model	Tightening torque (N·m)
MXQ 6 (L)	3.0
MXQ 8 (L)	5.0
MXQ12 (L)	12.5
MXQ16 (L)	25.0
MXQ20 (L)	43.0
MXQ25 (L)	69.0

3. When stroke adjuster is adjusted, do not hit the table with the wrench.

This could result in looseness.



MXH

MXS

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MXQ Series Specific Product Precautions 3

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Caution on Adjuster Option

With Shock Absorber

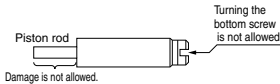
⚠ Caution

1. Do not rotate the screw set on bottom of shock absorber.

This is not an adjusting screw. Turning it could cause oil leakage.

2. Do not scratch the exposed portion of the piston rod.

Durability could be degraded and lead to return defect.



3. Shock absorber is considered a consumable component. When energy absorption is decreased, replace it.

Applicable size	Tightening torque (N·m)
MXQ 8 (L) MXQ12 (L)	1.67
MXQ16 (L)	3.14
MXQ20 (L) MXQ25 (L)	10.8

Service Life and Replacement Period of Shock Absorber

⚠ Caution

1. Allowable operating cycle under the specifications set in this catalog is shown below.

1.2 million cycles RB08□□

2 million cycles RB10□□ to RB14□□

(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 cycle above.

Applicable size	Shock absorber model
MXQ 8 (L)	RB0805
MXQ12 (L)	RB0806
MXQ16 (L)	RB1007
MXQ20 (L)	RB1411
MXQ25 (L)	RB1412

Caution on Mounting Adjuster Option

Rubber Stopper

⚠ Caution

1. Use caution that the length of the bolts for mounting on the body and the bolts for the table is different from each other in some models.

Stroke adjuster at extension end (AS) of MXQ6 and 8 has the different length of a hexagon socket head cap screw for mounting on the body and on the table. Use sufficient care for mounting. If assembled by making an error in length, it could cause looseness or lead to malfunction.

2. Follow the table below for tightening torque of mounting bolts.

Insufficient torque will cause a decrease in the positioning accuracy and lead to malfunction.

Model	Stroke adjuster at extension end (AS)				Stroke adjuster at retraction end (AT)	
	Body mounting section		Table mounting section		Thread size	Tightening torque (N·m)
	Thread size	Tightening torque (N·m)	Thread size	Tightening torque (N·m)		
MXQ 6 (L)	M2.5 x 6	0.5	M2.5 x 8	0.5	M2.5 x 6	0.5
MXQ 8 (L)	M3 x 8	0.9	M3 x 10	0.9	M3 x 8	0.9
MXQ12 (L)	M4 x 12	2.1	M4 x 12	2.1	M4 x 10	2.1
MXQ16 (L)	M5 x 16	4.4	M5 x 16	4.4	M5 x 12	4.4
MXQ20 (L)	M6 x 16	7.0	M6 x 16	7.0	M5 x 14	4.4
MXQ25 (L)	M8 x 18	18.0	M8 x 18	18.0	M6 x 18	7.0

Shock Absorber

⚠ Caution

1. Use caution that the length of the bolts for mounting on the body and the bolts for the table is different from each other in some models.

Shock absorber at extension end (BS) for MXQ20 and 25 has the different length of a hexagon socket head cap screw for mounting on the body and on the table. Use sufficient care for mounting.

If assembled by making an error in length, it could cause looseness or lead to malfunction.

2. Follow the table below for tightening torque of mounting bolts.

Insufficient torque will cause a decrease in the positioning accuracy and lead to malfunction.

Model	Shock absorber at extension end (BS)				Shock absorber at retraction end (BT)	
	Body mounting section		Table mounting section		Thread size	Tightening torque (N·m)
	Thread size	Tightening torque (N·m)	Thread size	Tightening torque (N·m)		
MXQ 8 (L)	M3 x 12	0.9	M3 x 12	0.9	M3 x 8	0.9
MXQ12 (L)	M4 x 12	2.1	M4 x 12	2.1	M4 x 10	2.1
MXQ16 (L)	M5 x 16	4.4	M5 x 16	4.4	M5 x 12	4.4
MXQ20 (L)	M6 x 18	7.0	M6 x 20	7.0	M5 x 14	4.4
MXQ25 (L)	M8 x 18	18.0	M8 x 20	18.0	M6 x 18	7.0

Metal Stopper

⚠ Caution

1. Use caution that the length of the bolts for mounting on the body and the bolts for the table is different from each other in some models.

Stroke adjuster at extension end (CS) of MXQ6, 8, 20 and 25 has the different length of a hexagon socket head cap screw for mounting on the body and on the table. Use sufficient care for mounting.

If assembled by making an error in length, it could cause looseness or lead to malfunction.

2. Follow the table below for tightening torque of mounting bolts.

Insufficient torque will cause a decrease in the positioning accuracy and lead to malfunction.

Model	Stroke adjuster at extension end (CS)				Stroke adjuster at retraction end (CT)	
	Body mounting section		Table mounting section		Thread size	Tightening torque (N·m)
	Thread size	Tightening torque (N·m)	Thread size	Tightening torque (N·m)		
MXQ 6 (L)	M2.5 x 6	0.5	M2.5 x 8	0.5	M2.5 x 6	0.5
MXQ 8 (L)	M3 x 8	0.9	M3 x 10	0.9	M3 x 8	0.9
MXQ12 (L)	M4 x 12	2.1	M4 x 12	2.1	M4 x 10	2.1
MXQ16 (L)	M5 x 16	4.4	M5 x 16	4.4	M5 x 12	4.4
MXQ20 (L)	M6 x 16	7.0	M6 x 20	7.0	M5 x 14	4.4
MXQ25 (L)	M8 x 18	18.0	M8 x 20	18.0	M6 x 18	7.0



MXQ Series Specific Product Precautions 4

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

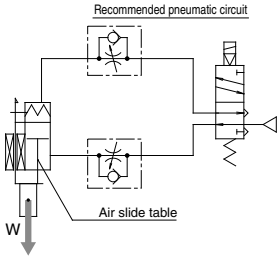
Caution on Handling Functional Option

With End Lock

⚠ Caution

1. Use 2 position, 4 or 5 port solenoid valves.

A malfunction may occur with a control circuit that exhausts from both ports, such as exhaust center 3 position valves.



2. Be sure to use meter-out speed control valves.

If it is used in meter-in speed control or without a speed controller, it may result in malfunction.

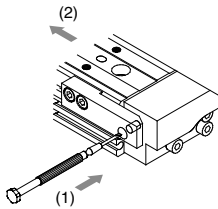
3. When releasing the end lock manually, be sure that air pressure is released.

If the end lock is unlocked while the air pressure still remains, it will lead to damage a workpiece, etc. due to unexpected lurching.

How to Unlock the End Lock

• Before proceeding, make sure that there is no residual air pressure.

- (1) Push down the lock piston pin.
- (2) Slide the table forward.

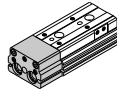
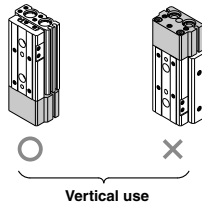


With Buffer Mechanism

⚠ Caution

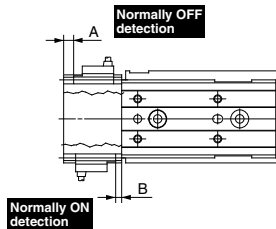
1. It must be oriented as shown below.

In horizontal operation, the buffer may travel the stroke length and activate the auto switch depending on the load and the speed. Therefore, adjust the speed according to the load.



Horizontal use

2. Auto switch with buffer function: Refer to the following table for the proper mounting positions for detection at stroke end.



• Adjust the auto switch position according to the load and the speed.

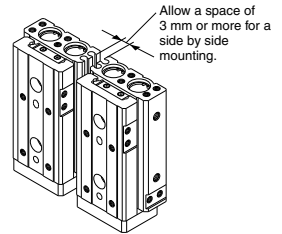
Model	(mm)	
	A	B
MXQ 6 (L)	2	3
MXQ 8 (L)	2.5	
MXQ12 (L)	4	
MXQ16 (L)	5	
MXQ20 (L)	5.5	
MXQ25 (L)	10	

Caution on Handling Symmetric Type

⚠ Caution

1. Maintain a minimum spacing of at least 3 mm if standard type and symmetric type are used side by side.

It malfunctions if standard type and symmetric type are used close side by side.



MXH

MXS

MXQ

MXQ

MXF

MXW

MXJ

MXP

MXY

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D-□

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