

Air Slide Table Series MXQ

ø6, ø8, ø12, ø16, ø20, ø25

Cylinder with built-in guide rail and table
Now with recirculating linear ball bearings
for high rigidity and high precision
Air slide table for precise assembly applications

High precision and compact

MXQ compared with MXS

(mm)

Model	Accuracy		Dimensions		
	Parallelism	Height tolerance	Width	Height	Length
MXQ12-30	0.035	±0.08	46	30	86
MXS12-30	0.2	±0.2	50	32	80

Improved against loads

About 3 times stronger against unexpected excessive external forces compared with MXS series

Standardized symmetric style

Available for all options

Ample options for stroke adjustment

Pin holes for positioning

Improved repeatability of work mounting

Work mounting tap

Improved strength

End plate is made of extra duralumin. (Except the buffer style)

Dual rod

Double the output of previous cylinder

Recirculating linear ball bearing

Widened main body of linear guide block is made of martensitic stainless steel

Wide variety of options

Adjuster option and functional option are available in combination.

Symmetric Style	Adjuster options	Functional options
	<p>With stroke adjuster</p> <p>With shock absorber</p>	<p>With buffer</p> <p>With end lock</p> <p>Axial piping</p>

Through hole for body mounting

Mounting groove for auto switch

Auto switch is mounted in recessed groove for added protection and convenience.

Built-in table and guide rail

Made of martensitic stainless steel

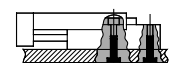
Pin holes for positioning

Improved repeatability of body mounting

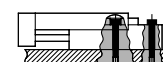
Body mounting tap

Mounting from 3 direction available

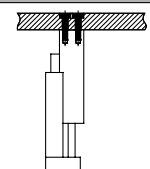
① Lateral mounting (Body tap)



② Lateral mounting (Through hole)

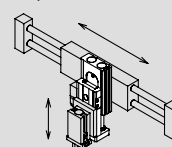


③ Vertical mounting (Body tap)

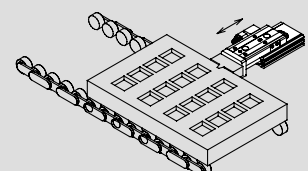


Applications

For Z axis of pick and place



For positioning of pallet on a conveyor

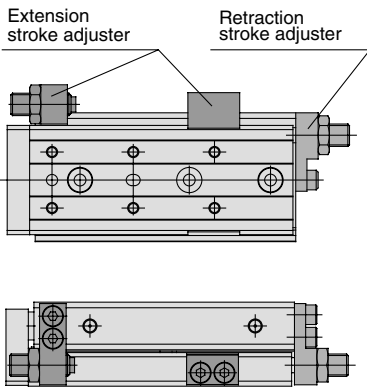


Series MXQ

Variations

Model		Bore (mm)	Standard stroke (mm)									Adjuster options						Functional options			Auto switch		
			10	20	30	40	50	75	100	125	150	Rubber stopper			Shock absorber			Metal stopper				Buffer	End lock
Standard	Symmetric										Front end	Rear end	Both end	Front end	Rear end	Both end	Front end	Rear end	Both end				
MXQ 6	MXQ6L	6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MXQ 8	MXQ8L	8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MXQ12	MXQ12L	12	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MXQ16	MXQ16L	16	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MXQ20	MXQ20L	20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MXQ25	MXQ25L	25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Adjuster Options



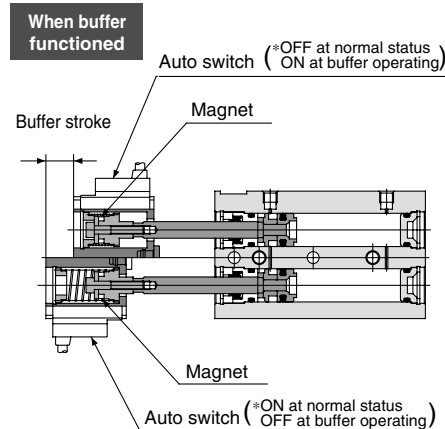
All adjuster bolts are standardized for the extension and retraction end stroke adjuster, and the three different styles of cushion mechanisms.

- Rubber stopper
Standard stroke adjuster
- Shock absorber
For heavy duty and/or high speed use.
Absorbs impact at end of stroke
Provides smooth stops
Improves accuracy when stopping
- Metal stopper
Improves stopping accuracy
For light duty and low speed use only

Functional Options

With buffer

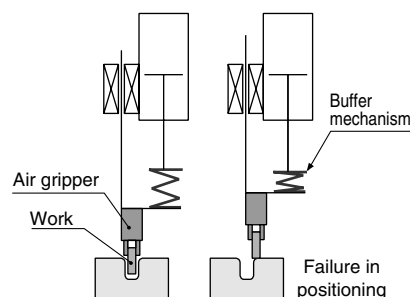
- Eliminates impacts at the extend stroke end to protect the work and tool.
- Auto switch is installable on the buffer section.



Setting ON or OFF at normal status according to the direction of the auto switch

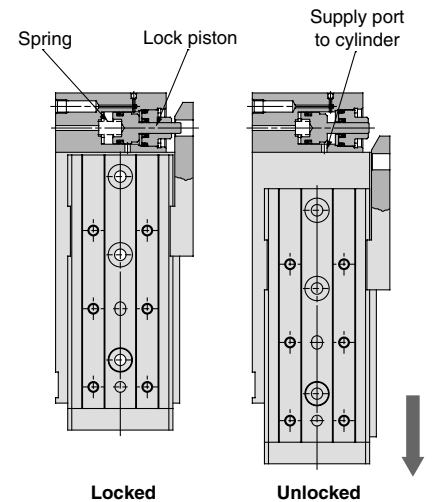
Application example

For insertion application, buffer mechanism absorbs the impact of a shock and protects from damages if the work piece arrives at the wrong location as a result of poor alignment.



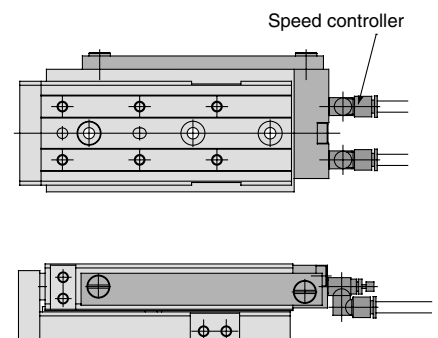
With end lock

- Maintains the original position of the cylinder after air pressure shut off, thus preventing the work from falling.



Axial piping

- Organizes all piping into axial directions and frees up space around the body.





Series MXQ/Precautions ①

Be sure to read before handling.

Selection

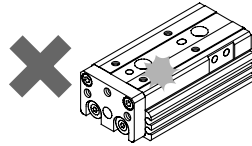
⚠ Caution

- ① **Do not apply a load beyond the range of the operation limits.**
Select the model by using the maximum allowable load and allowable moment. Refer to pages p.2-190 for details. When an actuator is used beyond its operating limits, eccentric loads on the guide section will be in excess which results in shorter life span due to play or inaccuracy of guide section.
- ② **If a table is stopped at an intermediate position by an external stopper, avoid ejection.**
If ejection occurs, it causes damage. If a slide table is stopped at an intermediate position by an external stopper and then forwarded to the front, draw back the intermediate stopper after supplying pressure to allow the slide table to return to the back for an instant, then supply pressure to the opposite port to operate the slide table.
- ③ **Do not use in circumstances that excessive, external forces or impacts would be applied.**
These conditions could lead to malfunctions.

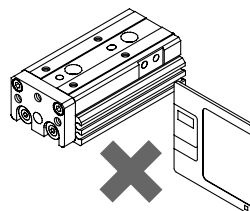
Mounting

⚠ Caution

- ① **Do not scratch or dent the mounting side of the body, table or end plate.**
Decreasing flatness on the mounting surface causes play in the guide section and increases sliding resistance.
- ② **Do not scratch or dent on the forward side of the rail or guide.**
It can generation play in the guide section and increase sliding resistance.

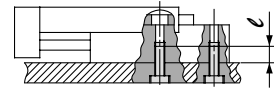


- ③ **Do not apply excessive impacts or moments when a work is mounted.**
If external load beyond the specified allowable moment is applied, it generates play in the guide section and increases sliding resistance.
- ④ **Flatness of mounting surface should be 0.02mm or less.**
Insufficient flatness of work piece of base to which an air slide table is mounted can generates play in the guide section and increase sliding resistance.
- ⑤ **When connecting with loads which has external support or external guide mechanism, select the connection and align properly.**
- ⑥ **Take care to prevent contact with objects such as a hand while an air slide table is in operation.**
A hand can be caught by an adjuster. Install a protection cover if anything could interfere during its operation.
- ⑦ **Do not bring into close contact with objects which would be influenced by magnetic fields.**
As an air slide table has magnets built-in, do not allow close contact with magnetic disks, magnetic cards or magnetic tapes. Data may be erased.



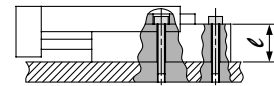
- ⑧ **When mounting an air slide table, screws of appropriate length should be used and tightened properly within the maximum tightening torque.**
If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.

1. Side body tapped



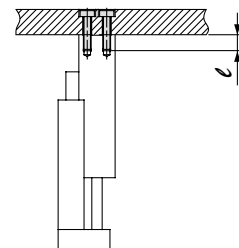
Model	Bolt used	Max.tightening torque Nm	Max.screw-in depth (l mm)
MXQ 6	M4	2.1	8
MXQ 8	M4	2.1	8
MXQ12	M5	4.4	10
MXQ16	M6	7.4	12
MXQ20	M6	7.4	12
MXQ25	M8	18	16

2. Side through hole mounting



Model	Bolt used	Max.tightening torque Nm	l mm
MXQ 6	M3	1.2	10.5
MXQ 8	M3	1.2	12.5
MXQ12	M4	2.8	16
MXQ16	M5	5.7	21
MXQ20	M5	5.7	26
MXQ25	M6	10	32

3. Top body tapped



Model	Bolt used	Max.tightening torque Nm	Max.screw-in depth (l mm)
MXQ 6	M2.5	0.5	4
MXQ 8	M3	0.9	4
MXQ12	M4	2.1	6
MXQ16	M5	4.4	7
MXQ20	M5	4.4	8
MXQ25	M6	7.4	10



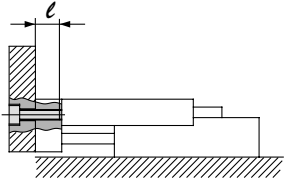
Series MXQ/Precautions ②

Be sure to read before handling.

Mounting

⚠ Caution

1. Front mounting

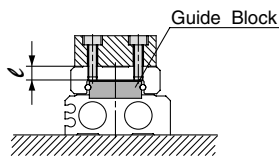


⚠ Caution

Use bolts at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the end plate. If the bolts are too long, they hit the end plate and may cause malfunctions.

Model	Bolts used	Max. tightening torque Nm	Max. screw-in depth (l mm)
MXQ 6	M3M3	0.9	5
MXQ 8	M4M4	2.1	6
MXQ12	M5M5	4.4	8
MXQ16	M6M6	7.4	10
MXQ20	M6M6	7.4	13
MXQ25	M8M8	18	15

2. Top mounting



⚠ Caution

Use bolts at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the guide block. If the bolts are too long, they hit the guide block and cause damage.

Model	Bolts used	Max. tightening torque Nm	Max. screw-in depth (l mm)
MXQ 6	M3M3	1.2	4
MXQ 8	M3M3	1.2	4.8
MXQ12	M4M4	2.8	6
MXQ16	M5M5	5.7	7
MXQ20	M5M5	5.7	9.5
MXQ25	M6M6	10	11.5

Environment

⚠ Caution

- ① **Do not use in an environment exposed directly to liquids such as cutting oil.**
If used in an environment exposed to cutting oil, coolant or oil mist, it generates play, increased sliding resistance or air leakage.
- ② **Do not use in an environment exposed directly to powder, dust or spatter etc.**
It generates play, increases sliding resistance or air leakage. Consult SMC for use in such an environment.
- ③ **Install a shade screen if exposed to the direct sun light.**
- ④ **Install a blocking cover if a heat source is in the area.**
The product temperature may rise above the range of usage limit by radiant heat if a heat source is in the area. Install a cover to block from heat source.
- ⑤ **Do not use in the area where there are vibrations or impacts.**
It results in damage or malfunction. Consult SMC for usage under these environment.

Caution in Handling Adjuster Options

Stroke Adjuster

⚠ Caution

- ① **Do not replace the bolts. Use only bolts included for this use.**
Improper attachment may generate play or damage by force of impacts, etc.
- ② **Follow the table for tightening torque of lock nuts.**
Insufficient tightening will cause deterioration of positioning accuracy.

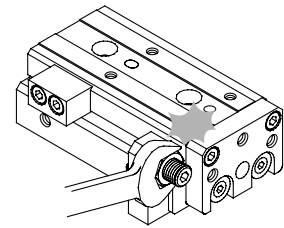
Model	Tightening torque Nm
MXQ 6	3.0
MXQ 8	5.0
MXQ12	12.5
MXQ16	25.0
MXQ20	43.0
MXQ25	69.0

Caution in Handling Adjuster Options

Stroke Adjuster

⚠ Caution

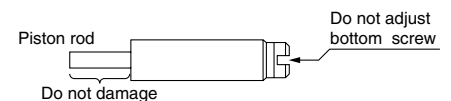
- ③ **Do not apply a tool like a spanner to tables. It will cause a play.**



With Shock Absorber

⚠ Caution

- ① **Never turn or adjust the screws on bottom of the shock absorber body.**
The screws are not for adjusting. It will cause oil leakage.
- ② **Do not scratch the sliding surface of the shock absorber piston rod.**
It causes loss of durability and inadequate return.



- ③ **Shock absorbers are expendable parts. It may be necessary to change them when energy absorbing capacity decreases.**

Applicable size	Shock absorber
MXQ 8	RB0805
MXQ12	RB0806
MXQ16	RB1007
MXQ20	RB1411
MXQ25	RB1412

- ④ **Follow the table for tightening torque of shock absorber lock nuts.**

Model	Tightening torque Nm
MXQ 8 MXQ12	1.67
MXQ16	3.14
MXQ20 MXQ25	10.8



Series MXQ/Precautions ③

Be sure to read before handling.

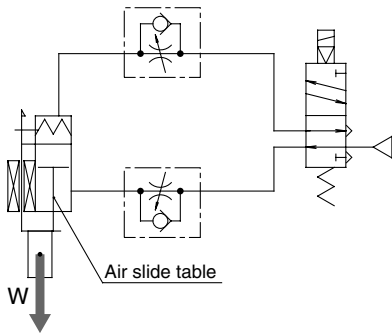
Precautions for Handling Functional Options

With End Lock

⚠ Caution

- ① **Use 2 position, 4/5 port valve for solenoid valve.**
It will causes a malfunction on the control circuit that exhausts at both such as 3 position valve with exhaust center.

Recommended pneumatic circuit

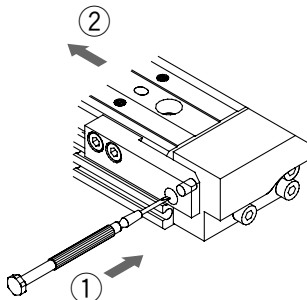


- ② **Make sure to connect the cylinder to speed controller at the meter-out side.**
It causes a malfunction if used as a controller at meter in side or used without a speed controller.
- ③ **Make sure to release pressure when end lock will be released manually.**
If end lock is released while pressure is still remains, it may damage the actuator by unexpected ejection.

How to release end lock manually

Make sure no pressure is applied before operation

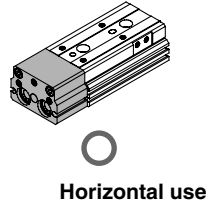
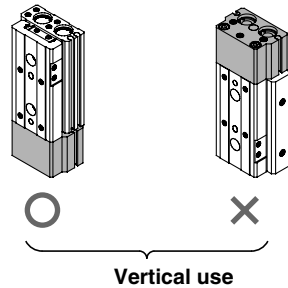
- ① Press down lock piston
- ② Slide the table forward.



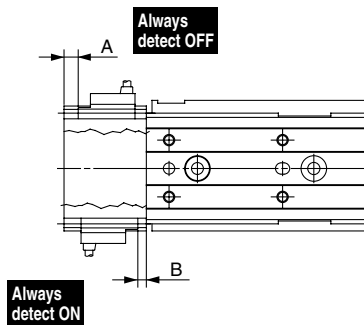
With Buffer Function

⚠ Caution

- ① **Use air slide table with buffer function in the following positions.**
For horizontal use, adjust the speed according to the load while the auto switch may operate by a stroking buffer in operation depending on the load or speed.



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



* Adjust the switch position according to loads or speed

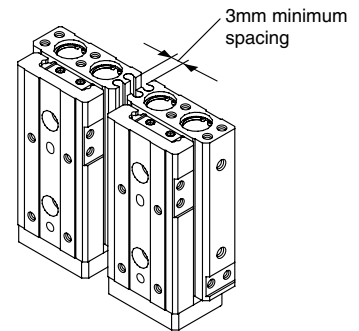
(Unit: mm)

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

Precaution for Symmetric Style

⚠ Caution

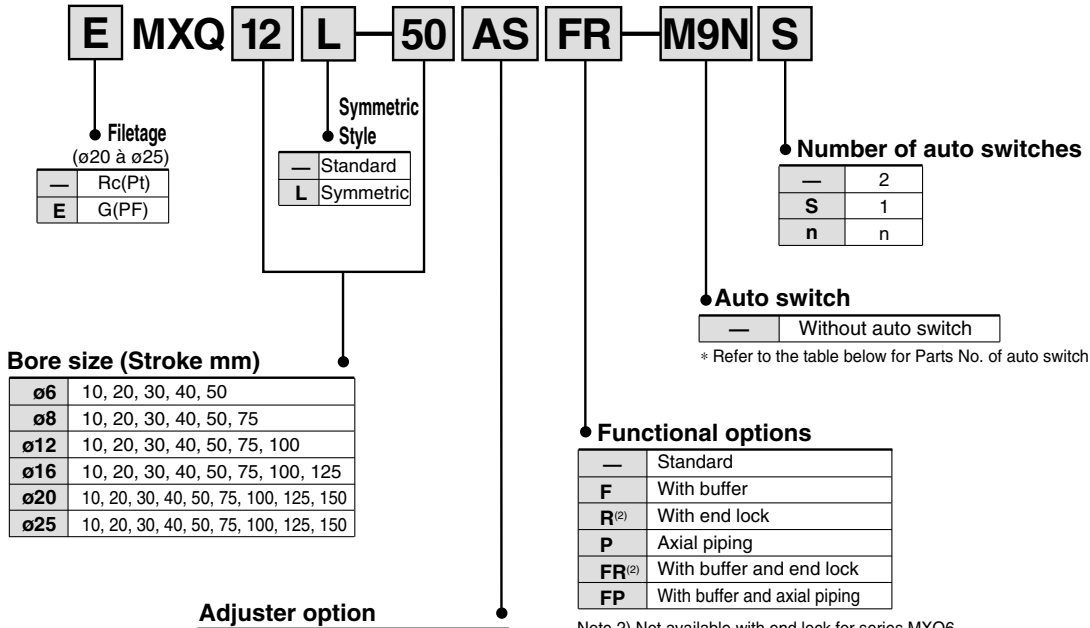
- ① **Maintain a minimum spacing of at least 3mm if standard style and symmetric style are used side by side.**
It malfunctions if standard style and symmetric style are used close together.



Series MXQ

ø6, ø8, ø12, ø16, ø20, ø25

How to Order



Combination of Options

Adjuster options	Functional options					
	—	F	R	P	FR	FP
—	○	○	○	○	○	○
AS, CS	○	○ ⁽³⁾	○	○	○ ⁽³⁾	○ ⁽³⁾
AT, CT	○	○	X	X	X	X
A, C	○	○ ⁽³⁾	X	X	X	X
BS	○	X	○	○	X	X
BT	○	○	X	X	X	X
B	○	X	X	X	X	X

○ Available X Not available

Note 3) About combination of buffer mechanism style and extention stroke adjuster style, the buffer stroke is shortened by the adjusted length with extention stroke adjuster.

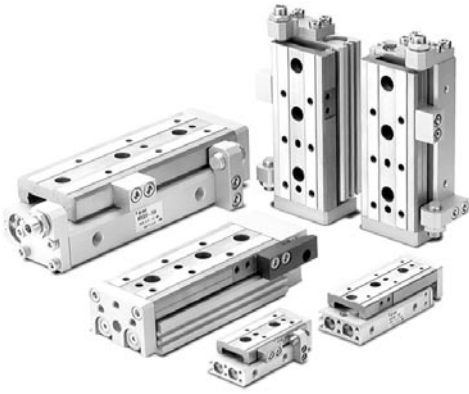
Applicable Auto Switches

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage			Auto switch model		Lead wire (m)*		Applicable load		Detail spec.
					DC	AC		Electrical entry		0.5 (—)	3 (L)	IC	Relay PLC	
						5V, 12V	≤100V	Perpendicular	In-line					
Reed switch	—	Grommet	No	2 wire	24V	5V, 12V	≤100V	A90V	A90	●	●	—	Relay PLC	P.5.3-19 P.5.3-20
			Yes					A93V	A93	●	●			
			—	3 wire (Equiv. to NPN)	—	5V	—	A96V	A96	●	●	IC	—	
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	M9NV	M9N	●	●	—	Relay PLC	P.5.3-39
				3 wire (PNP)				M9PV	M9P	●	●			
				2 wire				M9BV	M9B	●	●			
				3 wire (NPN)				M9NWV	M9NW	●	●			P.5.3-66
				3 wire (PNP)				M9PWV	M9PW	●	●			
				2 wire				M9BWV	M9BW	●	●			

* Lead wire length 0.5m..... — (Example) A93
3m..... L A93L

PLC: Programmable Logic Controller

Air Slide Table *Series MXQ*



Specifications

Bore size (mm)	6	8	12	16	20	25
Piping port	M5				Rc(PT)1/8	
Fluid used	Air					
Action	Double acting					
Operating pressure	0.15 to 0.7MPa					
Proof pressure	1.05MPa					
Ambient and fluid temperature	-10 to 60°C					
Operating speed range	50 to 500mm/s (Adjuster option/Metal stopper: 50 to 200mm/s)					
Cushion	Rubber bumper (Standard, Adjuster option/Rubber stopper) Shock absorber (Adjuster option/Shock absorber) None (Adjuster option/Metal stopper)					
Lubrication	Not required					
Auto switch	Reed switch (2 wire, 3 wire) Solid state switch (2 wire, 3 wire) 2 colour indication solid state switch (2 wire, 3 wire)					
Tolerance of stroke length	+ ₀ ¹ mm					

Options

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



*Refer to p.2-186 and 2-187 for the detailed specifications of adjustment and function options.

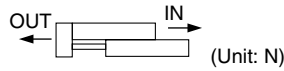
Standard Stroke

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

Series MXQ

Theoretical Force

Introducing dual rods,
double the output of previous cylinder



Bore size (mm)	Rod size (mm)	Action 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 force (N)=Pressure (MPa) X piston area(mm²)

Weight

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

(Unit: g)

Option Specifications

Stroke Adjustable Range by Adjuster Options (Both are the same for front and back ends)

Style	Stroke adjustable range
Rubber stopper	0 to 5mm
With shock absorber	Refer to the dimensions on p.2-217
Metal stopper	0 to 5mm

*Wide range adjusters for rubber stopper and metal stopper are available as optional specification.

How to Order Stroke Adjuster(Accessory Parts)

MXQ — AS 12 L — X11

Adjuster options

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

Symmetric

—	Standard
L	Symmetric

Adjustable range

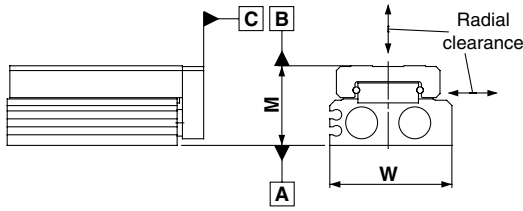
—	5mm	Standard
-X11	15mm	Option
-X12	25mm	

Bore size

6	ø6
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

Note 1) "-X12" (adjustable range : 25mm) is not adjustable for series MXQ6.
 Note 2) "-X11" and "-X12" are not available with shock absorber.
 Note 3) Shock absorber is not available for series MXQ6.
 Note 4) "-X11" and "-X12" are not available as the built-in style.
 Note 5) Refer to p.2-216 and 2-218 for the dimensions.

Table Accuracy



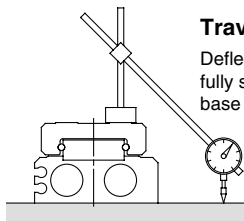
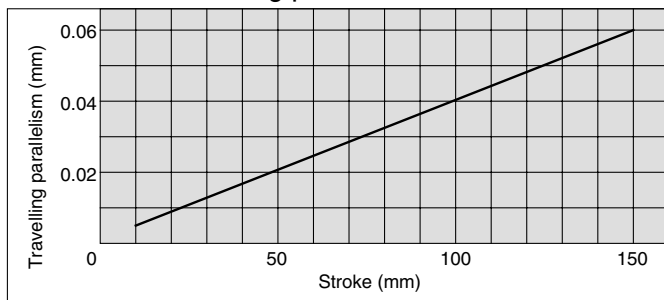
Model	MXQ6	MXQ8	MXQ12	MXQ16	MXQ20	MXQ25
B side parallelism to A side	Refer to Table 1					
B side travelling parallelism to A side	Refer to Fig.1					
C side parallelism to A side	0.05mm					
Dimension tolerance of M	$\pm 0.08\text{mm}$ ($\pm 0.1\text{mm}$)*1					
Dimension tolerance of W	$\pm 0.1\text{mm}$					
Radial clearance (μm)	-4 to 0	-4 to 0	-6 to 0	-10 to 0	-12 to 0	-14 to 0

*1) $\pm 0.1\text{mm}$ for stroke 75mm or more

Table 1 B side parallelism to A side (Unit: 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

Fig. 1 B side travelling parallelism to A side



Travelling Parallelism

Deflection on the dial gauge when the table is fully stroked while its body is fixed to standard base surface.

Shock Absorber Specifications

Shock absorber model	RB0805	RB0806	RB1007	RB1411	RB1412	
Applicable slide table	MXQ8	MXQ12	MXQ16	MXQ20	MXQ25	
Max. absorbing energy (J)	0.98	2.94	5.88	14.7	19.6	
Absorbed stroke (mm)	5	6	7	11	12	
Max. collision speed (mm/s)	50 to 500					
Max. used frequency (cycle/min)	80	80	70	45	45	
Max. thrust tolerance (N)	245	245	422	814	814	
Ambient temperature range	-10 to 60°C					
Spring force (N)	Expanded	1.96	1.96	4.22	6.86	6.86
	Compressed	3.83	4.22	6.86	15.30	15.98
Weight (g)	15	15	25	65	65	

With End Lock Specifications

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

Note) Refer to p.2-183 for cautions when handling end locks.

With Buffer Mechanism Specifications

Model	MXQ6	MXQ8	MXQ12	MXQ16	MXQ20	MXQ25	
Bore size (mm)	6	8	12	16	20	25	
Operating speed range	50 to 500mm/s (50 to 300mm/s for horizontal use)						
Buffer stroke (mm)	5			10			
Buffer stroke load (N)	At 0 stroke	3	5	10	13	17	21
	At max.stroke	6	8	13	17	25	29

Note 1) Refer to p.2-183 for cautions when handling buffer functions.
 Note 2) When adjusting stroke with extension stroke end adjuster, the buffer stroke is shortened by the adjusted length.

Auto Switch Applied for Buffer Section

Style	Model No.	Specifications	Electrical entry
Solid state switch	D-M9BV	2 wire with light	Perpendicular
	D-M9NV	3 wire W/ light, Output style: NPN	
	D-M9PV	3 wire W/ light, Output style: PNP	

Please order separately for auto switch with buffer mechanism from above model.



With buffer mechanism

With end lock

Series MXQ

Table Deflection (for reference)

Table deflection by pitch moment

Table pitch deflection due to static pitch moment applied at arrow for fully extended stroke of side table

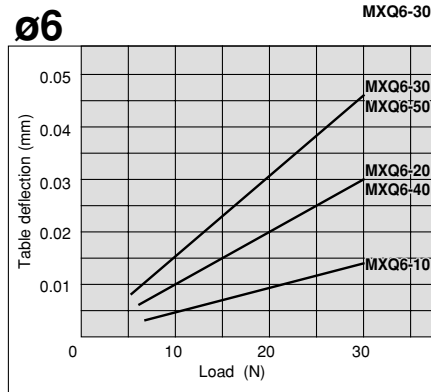
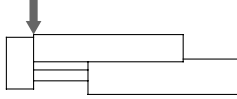


Table deflection by yaw moment

Table yaw deflection due to static yaw moment applied at arrow for fully extended stroke of side table.

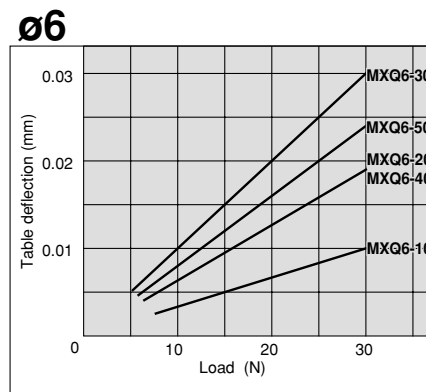
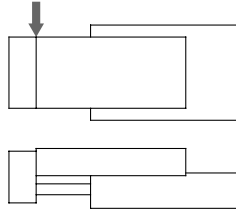


Table deflection by roll moment

Table roll deflection arrow A due to static roll moment applied at arrow F when $L_r =$ (see table) and table is retracted.

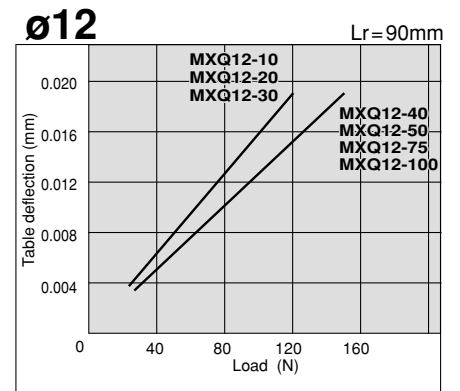
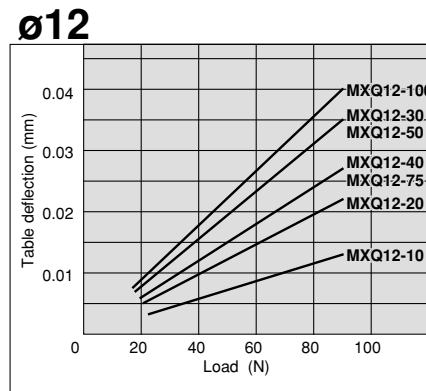
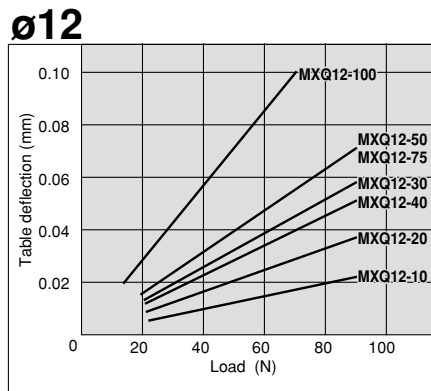
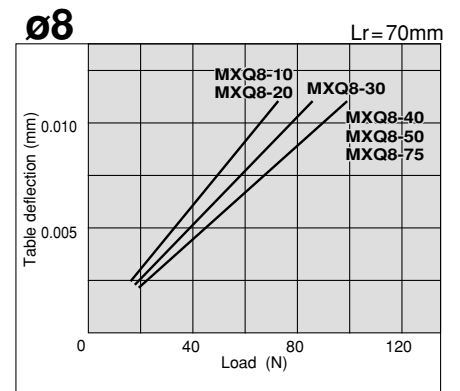
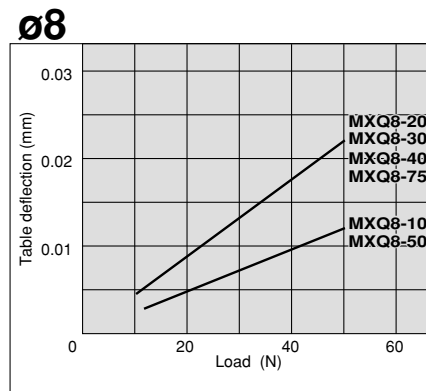
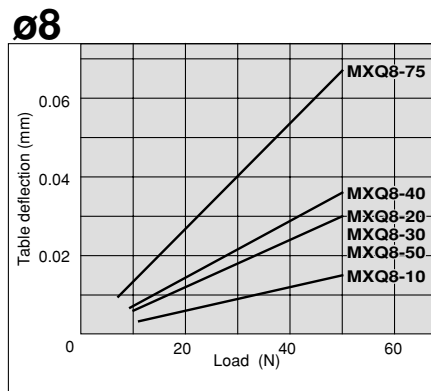
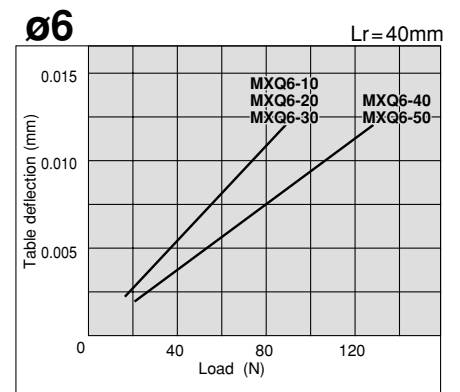
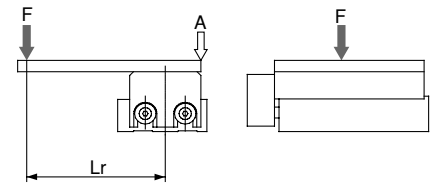
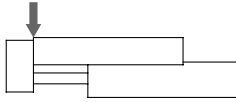
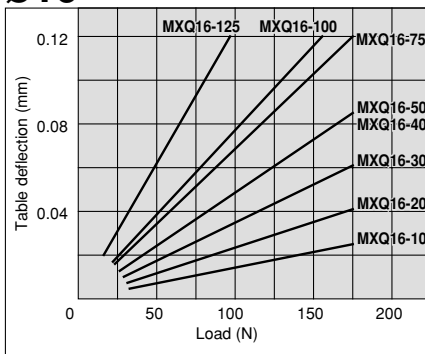


Table deflection by pitch moment

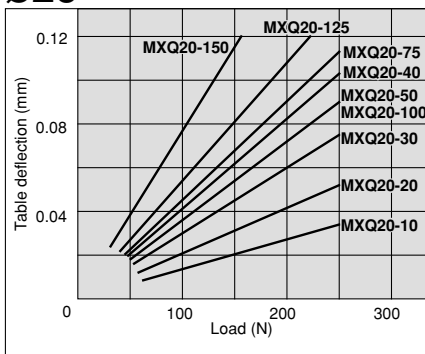
Table pitch deflection due to static pitch moment applied at arrow for fully extended stroke of side table.



ø16



ø20



ø25

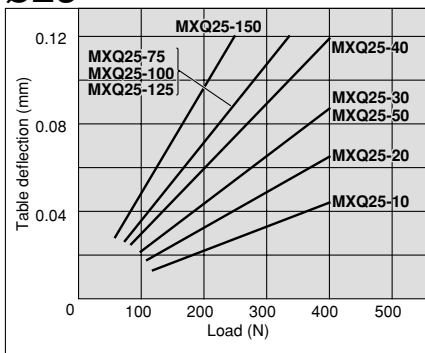
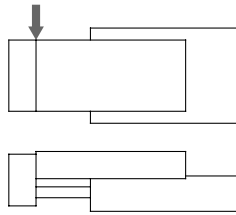
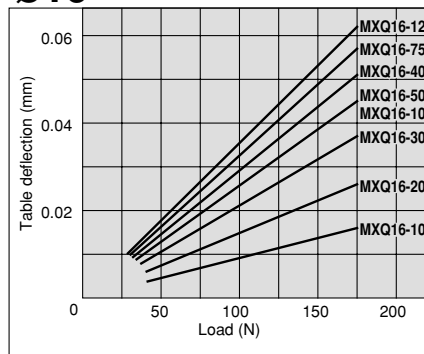


Table deflection by yaw moment

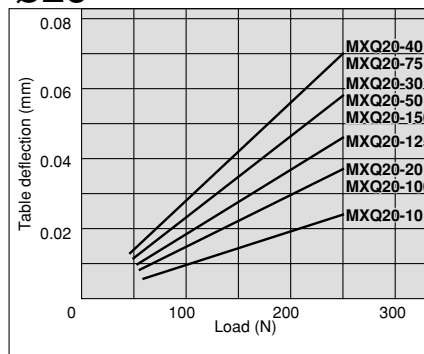
Table yaw deflection due to static yaw moment applied at arrow for fully extended stroke of side table.



ø16



ø20



ø25

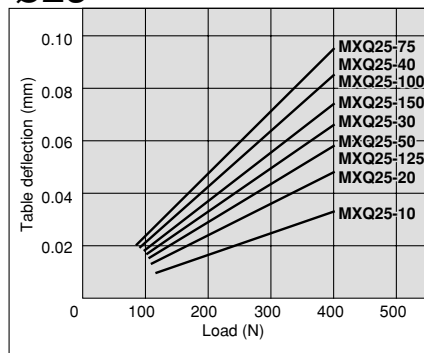
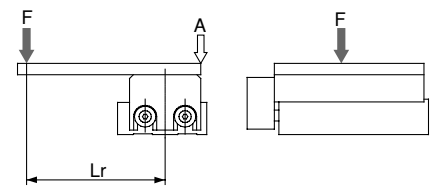
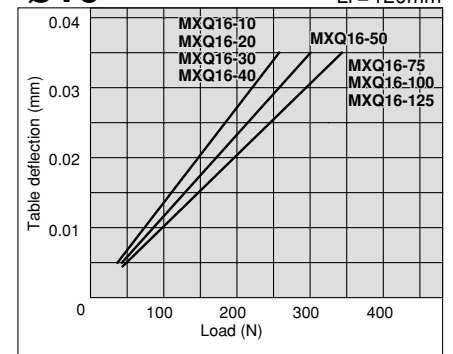


Table deflection by roll moment

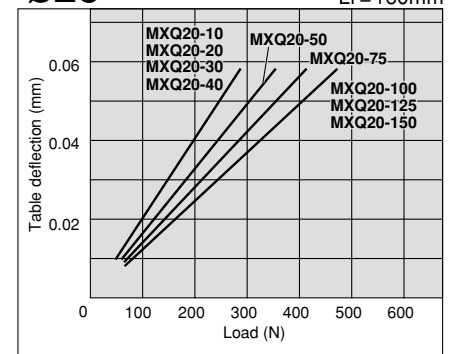
Table roll deflection arrow A due to static roll moment applied at arrow F when Lr=(see table) and table is retracted.



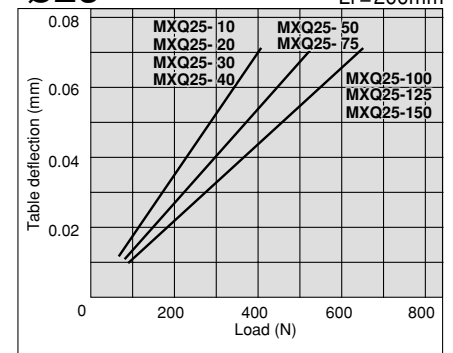
ø16



ø20



ø25



Series MXQ

How to Select

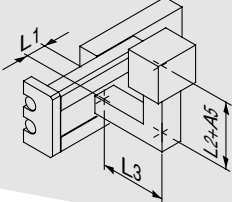
Selection Procedure	Formula and Data	Selection Example				
<p>1 Operating conditions</p> <p>List the operating conditions according to mounting position and work form.</p>	<ul style="list-style-type: none"> Model used Type of cushion Mounting position of work Mounting direction Average speed V_a (mm/s) Applied load W (N): Fig 1 Overhang L_n (mm): Fig 2 	 <p>Cylinder: MXQ16-50 Cushion: Rubber stopper Mounting on work table Mounting: Horizontal well Average speed : $V_a=300$[mm/s] Applied load: $W=10$[N] $L_1=10$mm $L_2=30$mm $L_3=30$mm</p>				
<p>2 Kinetic energy</p> <p>Calculate kinetic energy E(J) of load. Calculate allowable kinetic energy E_a(J). Check that kinetic energy of load does not exceed allowable kinetic energy.</p>	$E = \frac{1}{2} W \left(\frac{V}{1000}\right)^2$ <p>Collision Speed $= 1.4 V_a$ <small>* Correction coefficient</small></p> $E_a = K E_{max}$ <p>Work mounting coefficient K: Fig 3 Max. allowable kinetic energy E_{max}: Table 1 Kinetic energy(E) \leq Allowable kinetic energy(E_a)</p>	$E = \frac{1}{2} 1 \left(\frac{420}{1000}\right)^2 = 0.088$ $V = 1.4 \times 300 = 420$ $E_a = 1 \times 0.11 = 0.11$ <p>Possible to use by $E=0.088 \leq E_a=0.11$</p>				
<p>3 Load rate</p>						
<p>3-1 Load rate of applied load</p> <p>Calculate allowable applied load W_a(N). Calculate load rate of applied load α_1.</p>	$W_a = K \beta W_{max}$ <p>Work mounting coefficient K: Fig 3 Allowable applied load coefficient β: Graph 1 Max. allowable applied load W_{max}: Table 2</p> $\alpha_1 = W/W_a$	$W_a = 1 \times 1 \times 4 = 4$ $K = 1$ $\beta = 1$ $W_{max} = 4$ $\alpha_1 = 1/4 = 0.25$				
<p>3-2 Load rate of static moment</p> <p>Calculate static moment M(Nm). Calculate allowable static moment M_a(Nm). Calculate Load rate of static moment α_2.</p>	$M = W \times (L_n + A_n) / 1000$ <p>Correction value for center position distance of moment A_n: Table 3</p> $M_a = K \gamma M_{max}$ <p>Work mounting coefficient K: Fig 3 Allowable moment coefficient γ: Graph 2 Max. allowable moment M_{max}: Table 4</p> $\alpha_2 = M/M_a$	<table border="1"> <thead> <tr> <th>Yaw</th> <th>Roll</th> </tr> </thead> <tbody> <tr> <td>Examine for M_y $M_y = 1 \times 9.8(10+30)/1000 = 0.39$ $A_3 = 30$ $M_{ay} = 1 \times 1 \times 18 = 18$ $M_{ymax} = 18$ $K = 1$ $\gamma = 1$ $\alpha_2 = 0.39/18 = 0.022$</td> <td>Examine for M_r $M_r = 1 \times 9.8(30+10.5)/1000 = 0.39$ $A_6 = 10.5$ $M_{ar} = 36$ $M_{rmax} = 36$ $K = 1$ $\gamma = 1$ $\alpha_2 = 0.39/36 = 0.011$</td> </tr> </tbody> </table>	Yaw	Roll	Examine for M_y $M_y = 1 \times 9.8(10+30)/1000 = 0.39$ $A_3 = 30$ $M_{ay} = 1 \times 1 \times 18 = 18$ $M_{ymax} = 18$ $K = 1$ $\gamma = 1$ $\alpha_2 = 0.39/18 = 0.022$	Examine for M_r $M_r = 1 \times 9.8(30+10.5)/1000 = 0.39$ $A_6 = 10.5$ $M_{ar} = 36$ $M_{rmax} = 36$ $K = 1$ $\gamma = 1$ $\alpha_2 = 0.39/36 = 0.011$
Yaw	Roll					
Examine for M_y $M_y = 1 \times 9.8(10+30)/1000 = 0.39$ $A_3 = 30$ $M_{ay} = 1 \times 1 \times 18 = 18$ $M_{ymax} = 18$ $K = 1$ $\gamma = 1$ $\alpha_2 = 0.39/18 = 0.022$	Examine for M_r $M_r = 1 \times 9.8(30+10.5)/1000 = 0.39$ $A_6 = 10.5$ $M_{ar} = 36$ $M_{rmax} = 36$ $K = 1$ $\gamma = 1$ $\alpha_2 = 0.39/36 = 0.011$					
<p>3-3 Load rate of dynamic moment</p> <p>Calculate dynamic moment M_e(Nm). Calculate allowable dynamic moment M_{ea}(Nm). Calculate load rate of dynamic moment α_3.</p>	$M_e = 1/3 W_e \times 9.8 \frac{(L_n + A_n)}{1000}$ <p>Load equivalent to collision $W_e = \delta W V$ δ: Damper coefficient Rubber stopper without adjuster=4/100 Shock absorber=1/100 Metal stopper=16/100</p> <p>Correction value for center position distance of moment A_n: Table 3</p> $M_{ea} = K \gamma M_{max}$ <p>Work mounting coefficient K: Fig 3 Allowable moment coefficient γ: Graph 2 Max. allowable moment M_{max}: Table 4</p> $\alpha_3 = M_e/M_{ea}$	<table border="1"> <thead> <tr> <th>Pitch</th> <th>Yaw</th> </tr> </thead> <tbody> <tr> <td>Examine for M_{ep} $M_{ep} = 1/3 \times 16.8 \times 9.8 \times \frac{(30+10.5)}{1000} = 2.2$ $W_e = 4/100 \times 1 \times 420 = 16.8$ $A_2 = 10.5$ $M_{ep} = 1 \times 0.7 \times 18 = 12.6$ $K = 1$ $\gamma = 0.7$ $M_{pmax} = 18$ $\alpha_3 = 2.2/12.6 = 0.17$</td> <td>Examine for M_{ey} $M_{ey} = 1/3 \times 16.8 \times 9.8 \times \frac{(30+24.5)}{1000} = 3.0$ $W_e = 16.8$ $A_4 = 24.5$ $M_{ey} = 12.6$ (Same value as M_{ep}) $\alpha_3 = 3.0/12.6 = 0.24$</td> </tr> </tbody> </table>	Pitch	Yaw	Examine for M_{ep} $M_{ep} = 1/3 \times 16.8 \times 9.8 \times \frac{(30+10.5)}{1000} = 2.2$ $W_e = 4/100 \times 1 \times 420 = 16.8$ $A_2 = 10.5$ $M_{ep} = 1 \times 0.7 \times 18 = 12.6$ $K = 1$ $\gamma = 0.7$ $M_{pmax} = 18$ $\alpha_3 = 2.2/12.6 = 0.17$	Examine for M_{ey} $M_{ey} = 1/3 \times 16.8 \times 9.8 \times \frac{(30+24.5)}{1000} = 3.0$ $W_e = 16.8$ $A_4 = 24.5$ $M_{ey} = 12.6$ (Same value as M_{ep}) $\alpha_3 = 3.0/12.6 = 0.24$
Pitch	Yaw					
Examine for M_{ep} $M_{ep} = 1/3 \times 16.8 \times 9.8 \times \frac{(30+10.5)}{1000} = 2.2$ $W_e = 4/100 \times 1 \times 420 = 16.8$ $A_2 = 10.5$ $M_{ep} = 1 \times 0.7 \times 18 = 12.6$ $K = 1$ $\gamma = 0.7$ $M_{pmax} = 18$ $\alpha_3 = 2.2/12.6 = 0.17$	Examine for M_{ey} $M_{ey} = 1/3 \times 16.8 \times 9.8 \times \frac{(30+24.5)}{1000} = 3.0$ $W_e = 16.8$ $A_4 = 24.5$ $M_{ey} = 12.6$ (Same value as M_{ep}) $\alpha_3 = 3.0/12.6 = 0.24$					
<p>3-4 Sum of load rate</p> <p>It is possible to use when the sum of load rates does not exceed 1.</p>	$\sum \alpha_n = \alpha_1 + \alpha_2 + \dots + \alpha_n \leq 1$	$\sum \alpha_n = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_3$ $= 0.25 + 0.022 + 0.011 + 0.17 + 0.24 = 0.693 \leq 1$ <p>And it is possible to use.</p>				

Fig.1 Applied Load: W(kg)

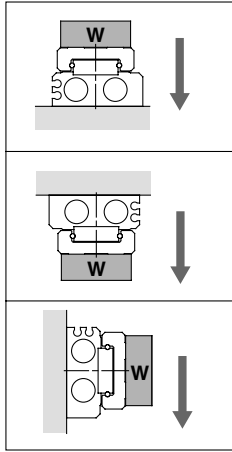
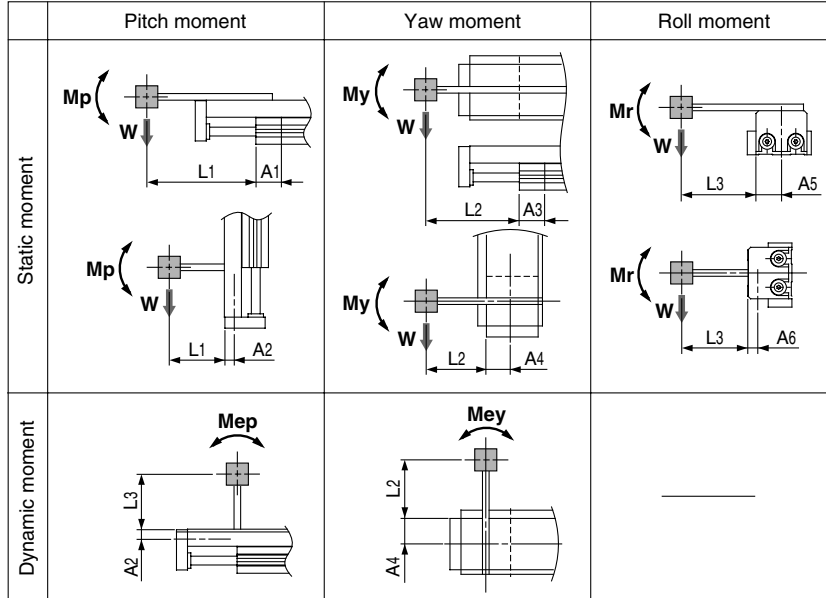


Fig.2 Overhang: Ln(mm), Corrected Value for Centre Distance of Moment: An(mm)



Note) Static moment: Moment by gravity
Dynamic moment: Moment by impact of collision against stopper

Fig.3 Work Mounting Coefficient: K

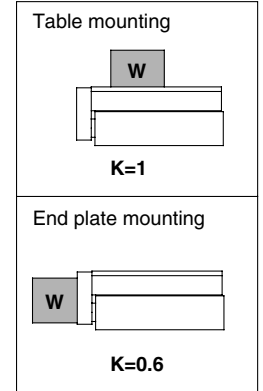


Table 1 Allowable Kinetic Energy: Emax(J)

Model	Allowable kinetic energy			
	Without adjuster	Adjuster options		
		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

Table 2 Maximum Allowable Applied Load: Wmax(kg)

Model	Max. allowable applied load
MXQ 6	0.6
MXQ 8	1
MXQ12	2
MXQ16	4
MXQ20	6
MXQ25	9

⚠ Caution Max. operating speed for metal stopper is 200mm/s.

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

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

Note) No differences of corrected value according to stroke for A2, A4, A5 and A6

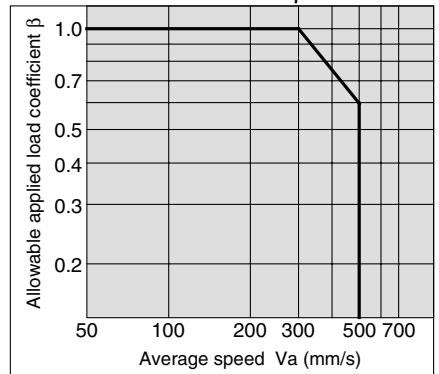
Table 4 Maximum Allowable Moment: Mmax(Nm)

Model	Pitch/Yaw moment: Mpmax/Mymax										Roll moment: Mrmax									
	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	7.2	15	15	—	—	11	11	11	13	13	14	14	—	—	—	
MXQ16	13	13	13	13	18	23	42	42	—	31	31	31	31	36	41	41	41	—	—	
MXQ20	19	19	19	19	27	36	84	84	84	47	47	47	47	57	66	75	75	75	—	
MXQ25	32	32	32	32	52	52	78	140	140	81	81	81	81	81	110	110	130	130	130	

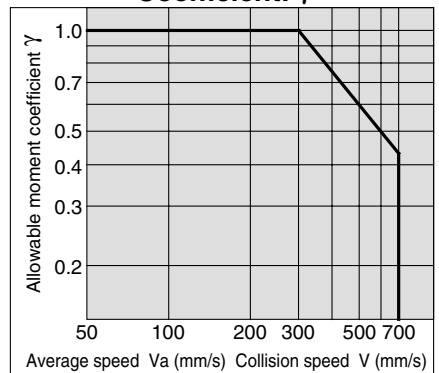
Symbol

Symbol	Definition	Unit	Symbol	Definition	Unit
An (n=1 to 6)	Correction value for center position distance of moment	mm	Va	Average speed	mm/s
E	Kinetic energy	J	W	Applied load	kg
Emax	Allowable kinetic energy	J	Wa	Allowable applied load	kg
Ln (n=1 to 3)	Overhang	mm	We	Load equivalent to collision	kg
M (Mp, My, Mr)	Static moment (Pitch, Yaw, Roll)	Nm	Wmax	Max. allowable applied load	kg
Ma (Map, May, Mar)	Allowable static moment (Pitch, Yaw, Roll)	Nm	α	Load rate	—
Me (Mep, Mey)	Dynamic moment (Pitch, Yaw)	Nm	β	Applied load coefficient	—
Mea (Meap, Meay)	Allowable Dynamic moment (Pitch, Yaw)	Nm	γ	Moment coefficient	—
Mmax (Mpmax, Mymax, Mrmax)	Maximum allowable moment (Pitch, Yaw, Roll)	Nm	K	Mounting work coefficient	—
V	Collision speed	mm/s			

Graph 1 Allowable Applied Load Coefficient: β



Graph 2 Allowable Moment Coefficient: γ



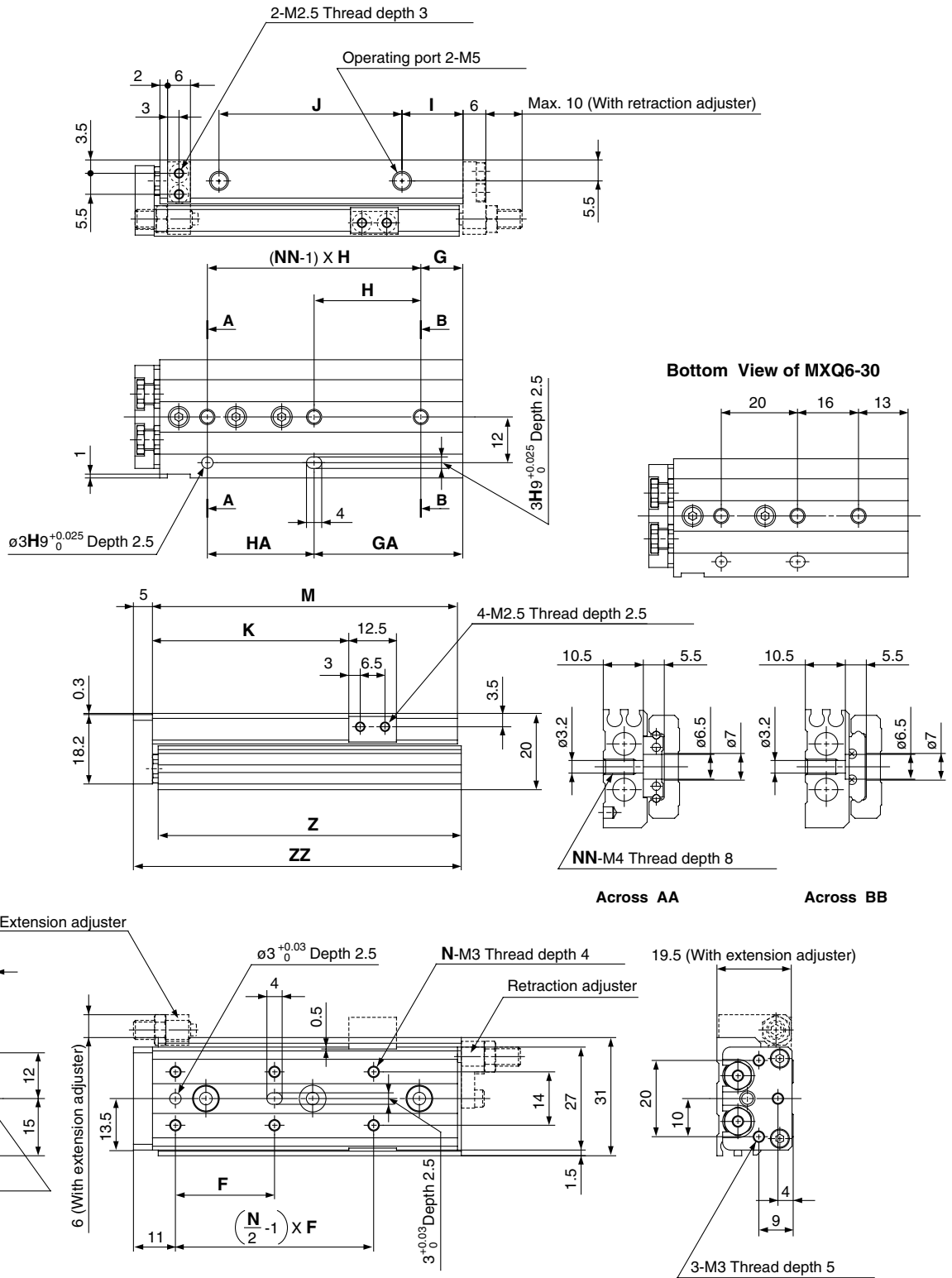
Note) Use average speed when calculating static moment.
Use collision speed when calculating kinetic moment.

Series MXQ

Dimensions MXQ 6

Refer to adjuster options for dimensions of the stroke adjuster.
 Rubber stopper: p.2-216
 Metal stopper: p.2-218

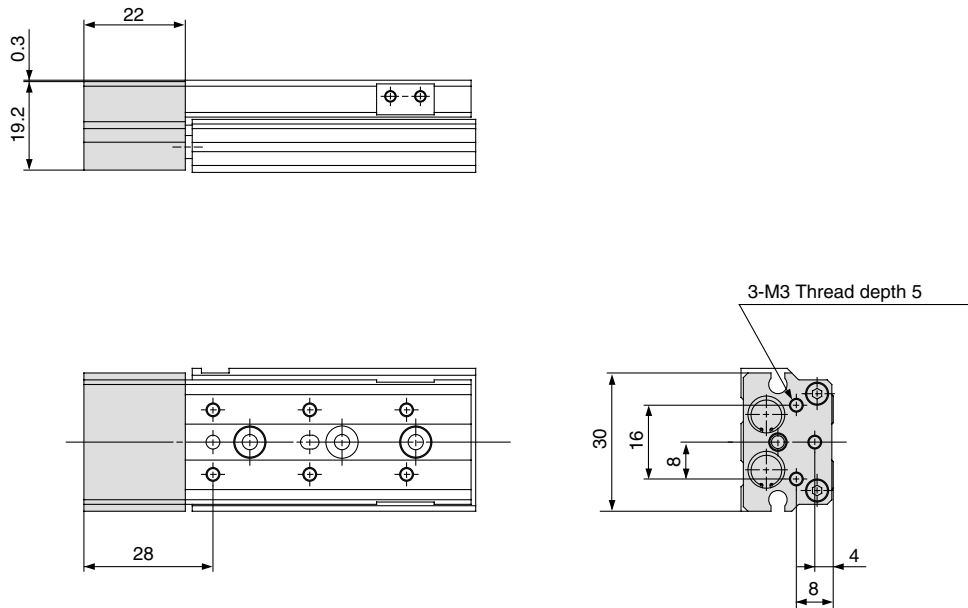
Basic style



(mm)

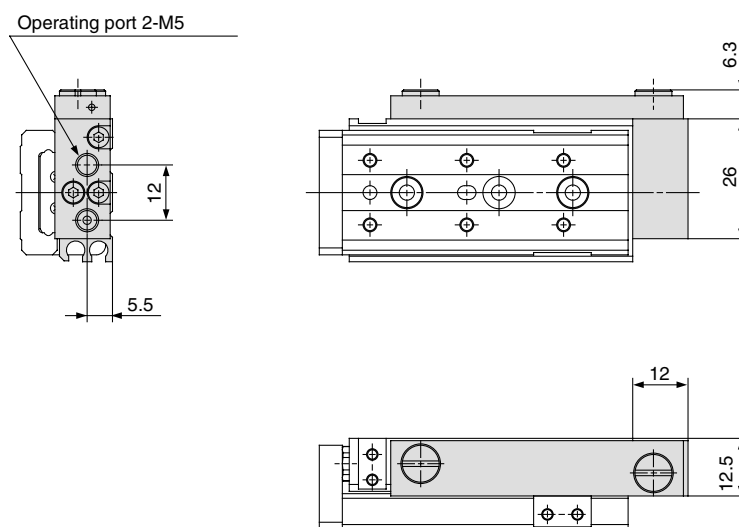
Model	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
MXQ6-10	22	4	6	23	2	13	16	9	17	21.5	42	41.5	48
MXQ6-20	25	4	13	26	2	13	26	9	27	31.5	52	51.5	58
MXQ6-30	21	6	—	—	3	29	20	9	37	41.5	62	61.5	68
MXQ6-40	26	6	11	28	3	39	28	16	48	51.5	80	79.5	86
MXQ6-50	27	6	21	28	3	49	28	9	65	61.5	90	89.5	96

With buffer (ø6) MXQ6-□□F



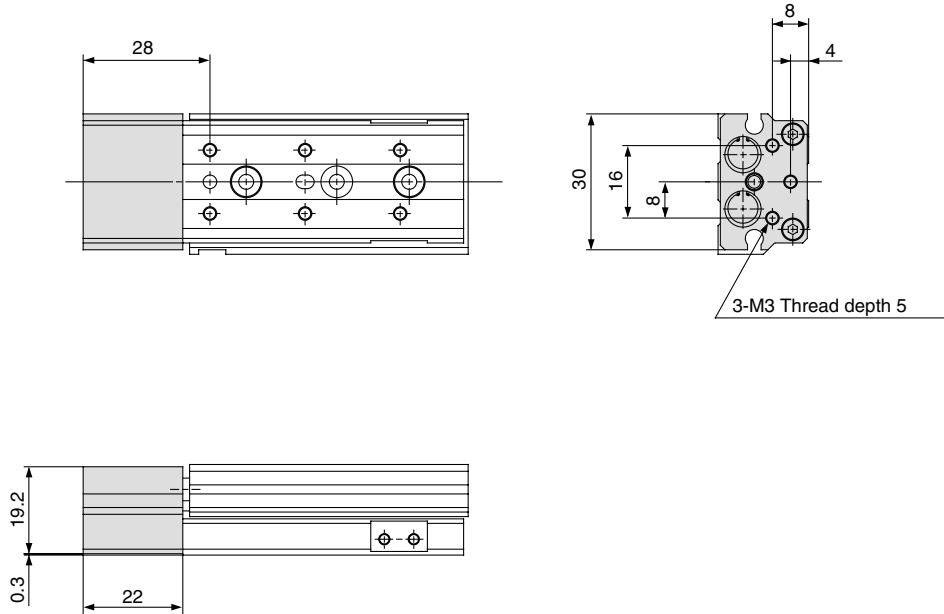
* Dimensions not indicated are the same as basic style.

Axial piping (ø6) MXQ6-□□P



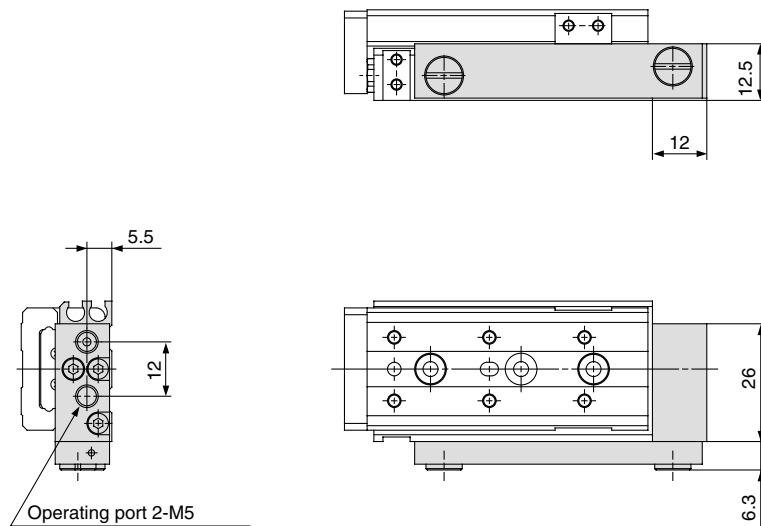
* Dimensions not indicated are the same as basic style.

With buffer (ø6) MXQ6L-□□F



* Dimensions not indicated are the same as basic style.

Axial piping (ø6) MXQ6L-□□P



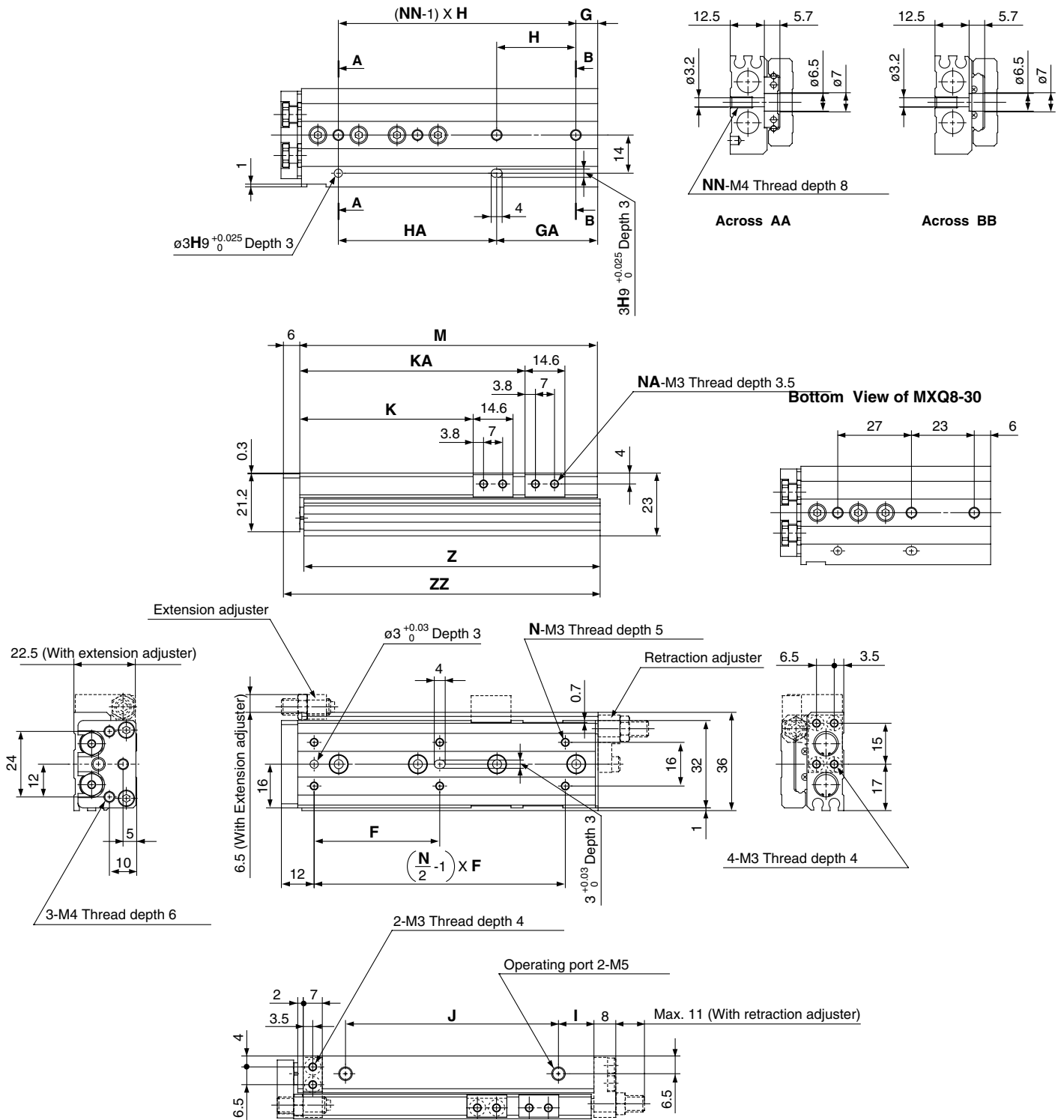
* Dimensions not indicated are the same as basic style.

Series MXQ

Dimensions MXQ 8

Basic style

Refer to adjuster option for the dimensions of the stroke adjuster.
 Rubber stopper: p.2-216
 Metal stopper: p.2-218

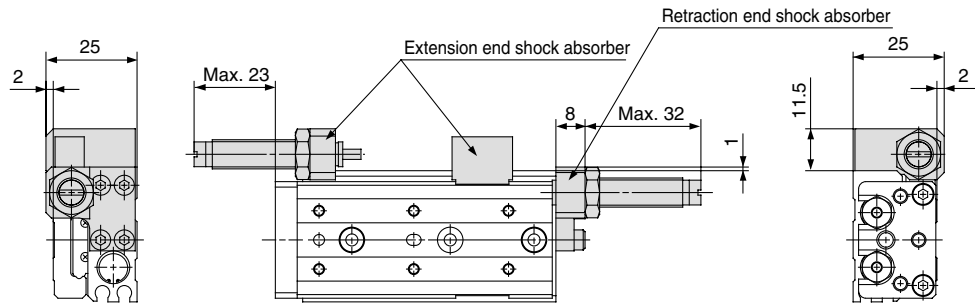


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ8-10	25	4	7	25	2	13	19	11	17	23.5	—	4	46	45.5	53
MXQ8-20	25	4	14	28	2	14	28	10	28	33.5	—	4	56	55.5	63
MXQ8-30	26	6	—	—	3	29	27	12	40	43.5	—	4	70	69.5	77
MXQ8-40	32	6	8	31	3	39	31	14	52	53.5	—	4	84	83.5	91
MXQ8-50	46	6	8	29	4	37	58	13	78	63.5	82.5	8	109	108.5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

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

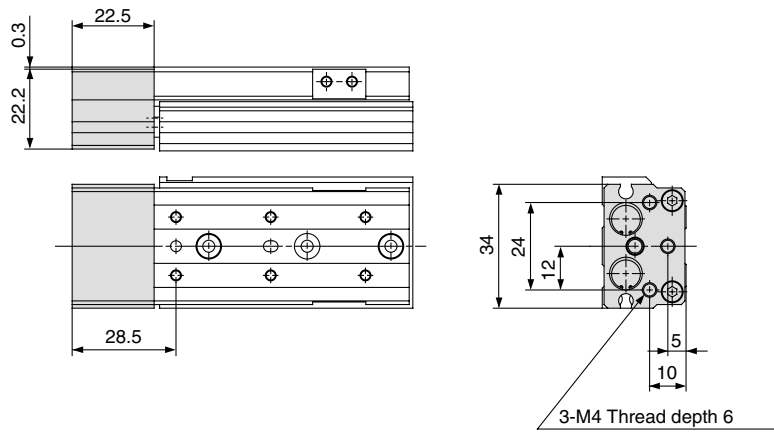
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
20	20



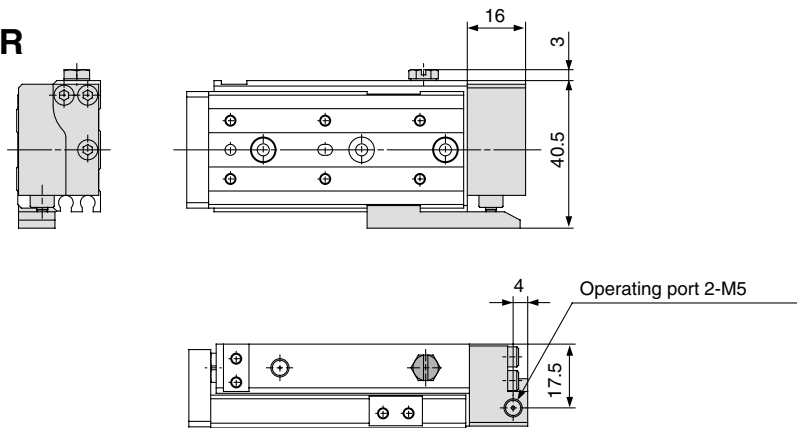
* Dimensions not indicated are the same as basic style.

With buffer (ø8) MXQ8-□□F



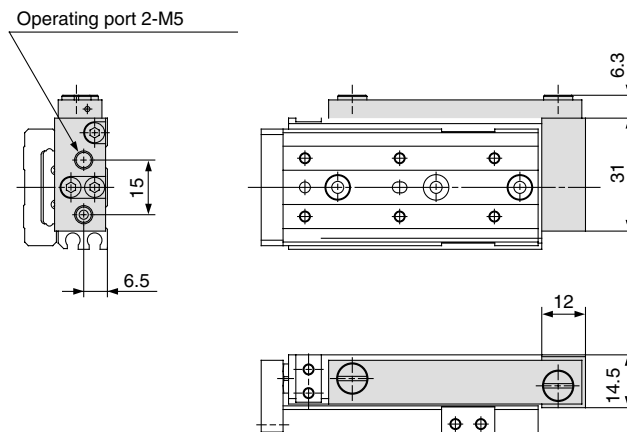
* Dimensions not indicated are the same as basic style.

With end lock (ø8) MXQ8-□□R



* Dimensions not indicated are the same as basic style.

Axial piping (ø8) MXQ8-□□P

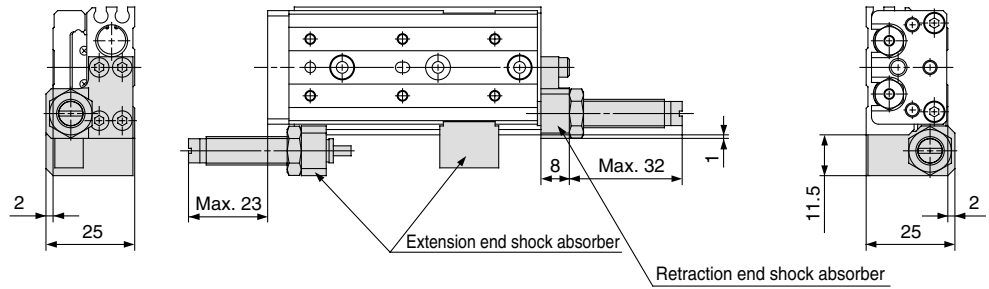


Dimensions not indicated are the same as basic style.

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

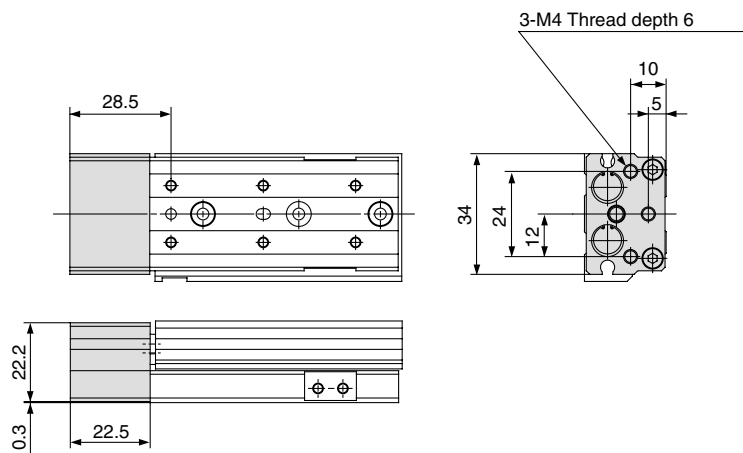
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
20	20



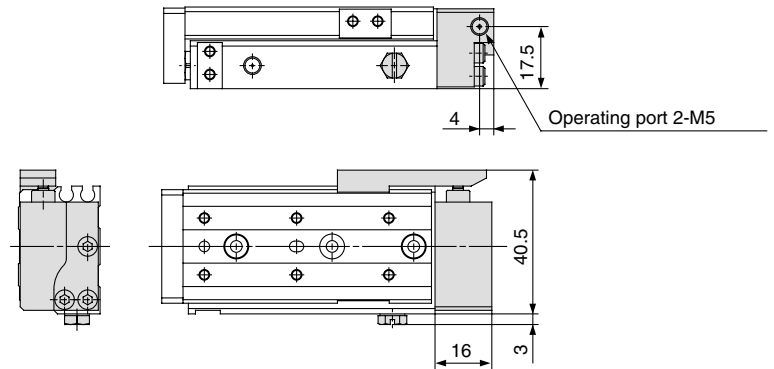
* Dimensions not indicated are the same as basic style.

With buffer (ø8) MXQ8L-□□F



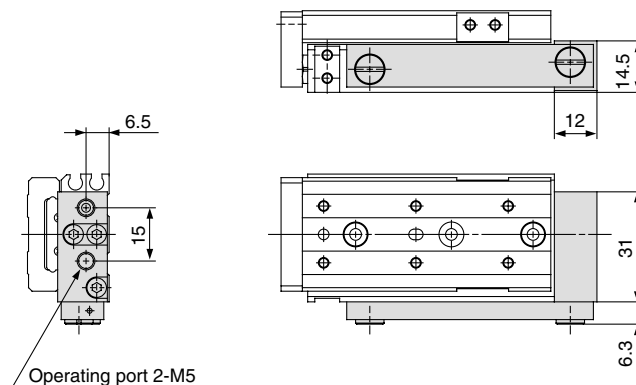
Dimensions not indicated are the same as basic style.

With end lock (ø8) MXQ8L-□□R



* Dimensions not indicated are the same as basic style.

Axial piping (ø8) MXQ8L-□□P



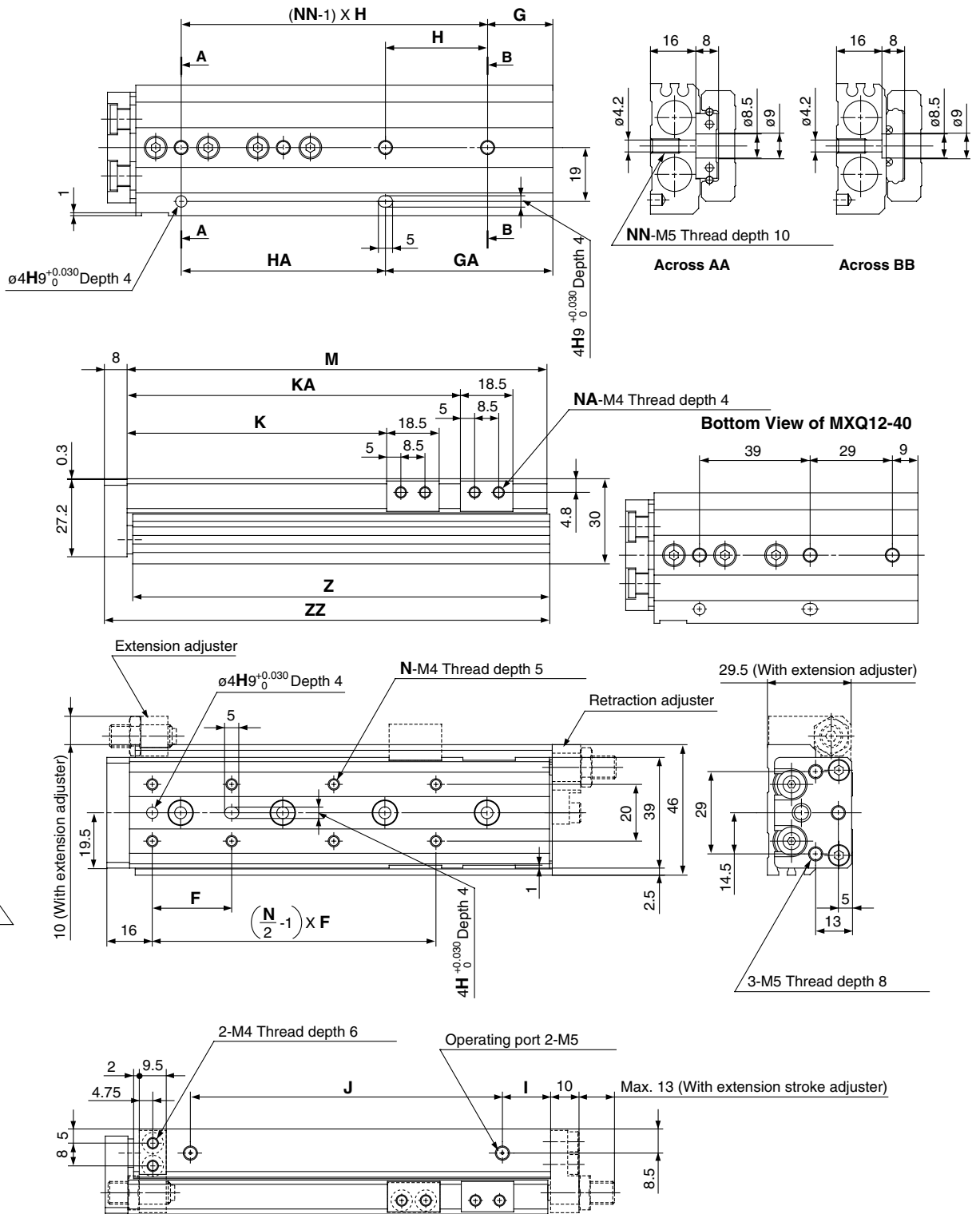
* Dimensions not indicated are the same as basic style.

Series MXQ

Dimensions MXQ12

Refer to adjuster option for the dimensions of the stroke adjuster.
 Rubber stopper: P.2-216
 Metal stopper: P.2-218

Basic style



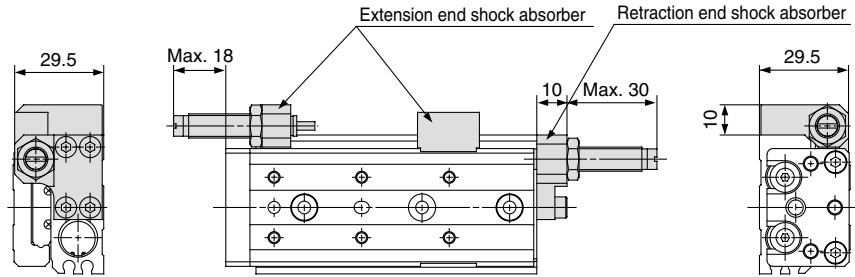
(mm)

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	—	—	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

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

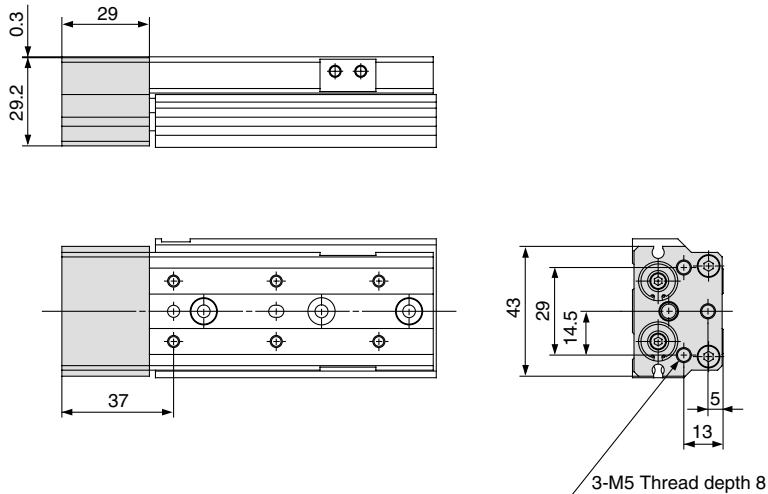
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
18	18



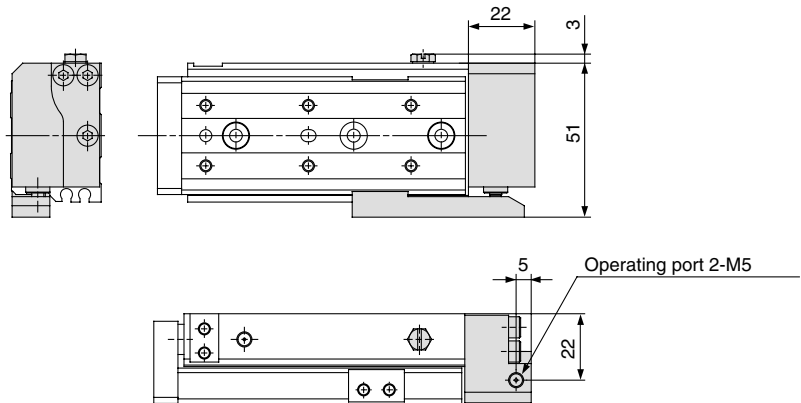
* Dimensions not indicated are the same as basic style.

With buffer(ø12) MXQ12-□□F



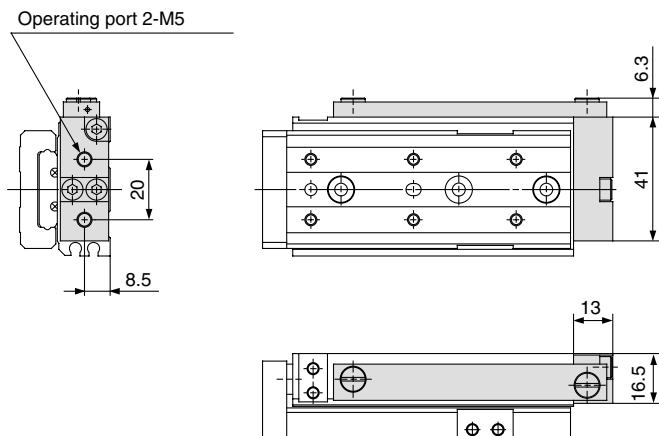
* Dimensions not indicated are the same as basic style.

With end lock(ø12) MXQ12-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø12) MXQ12-□□P



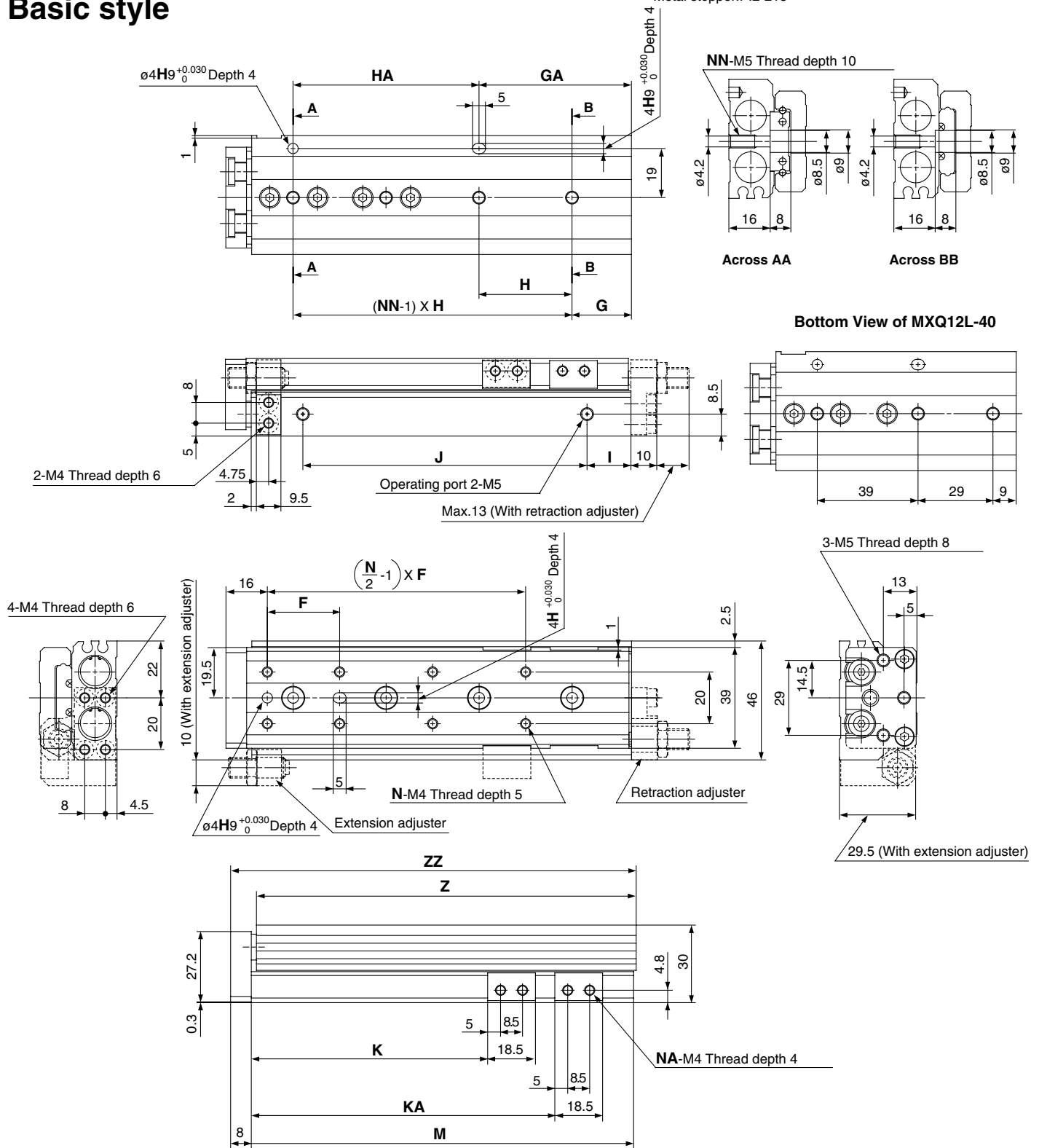
* Dimensions not indicated are the same as basic style.

Series MXQ

Dimensions MXQ 12L/Symmetric Style

Basic style

Refer to adjuster option for the dimension of stroke adjuster.
 Rubber stopper: P.2-216
 Metal stopper: P.2-218

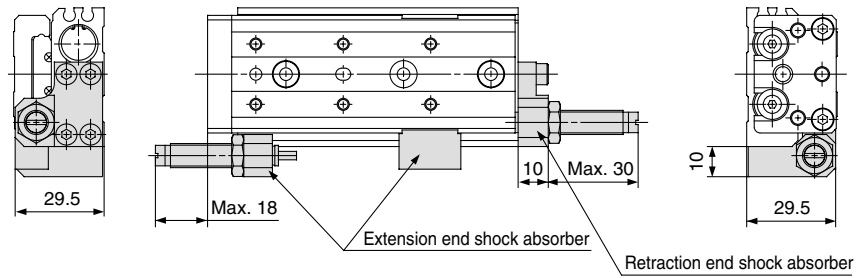


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ12L- 10	28	4	18	32	2	18	32	12	34	26.5	—	4	67	66	76
MXQ12L- 20	28	4	18	32	2	18	32	12	34	36.5	—	4	67	66	76
MXQ12L- 30	38	4	20	40	2	20	40	14	42	46.5	—	4	77	76	86
MXQ12L- 40	34	6	—	—	3	38	39	15	58	56.5	—	4	94	93	103
MXQ12L- 50	34	6	9	39	3	48	39	13	70	66.5	—	4	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

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

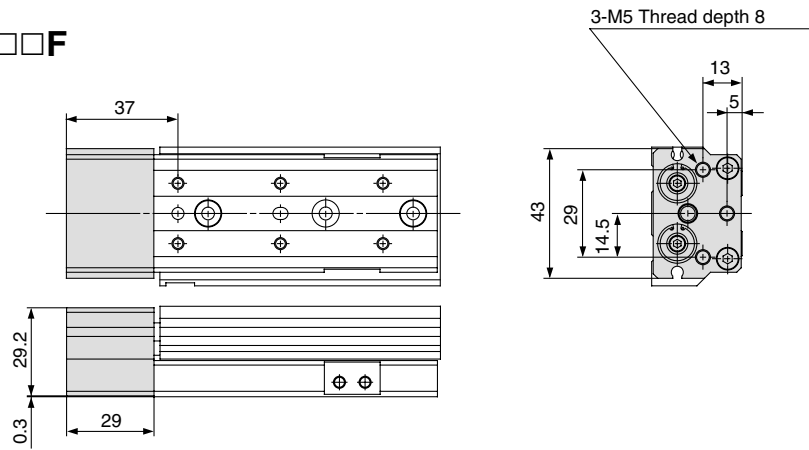
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
18	18



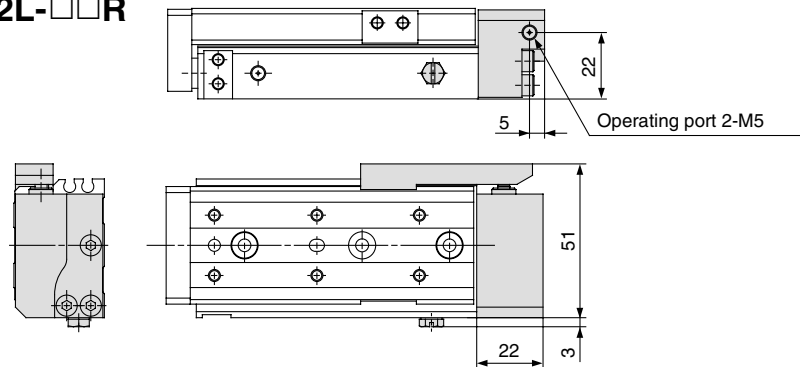
* Dimensions not indicated are the same as basic style.

With buffer(ø12) MXQ12L-□□F



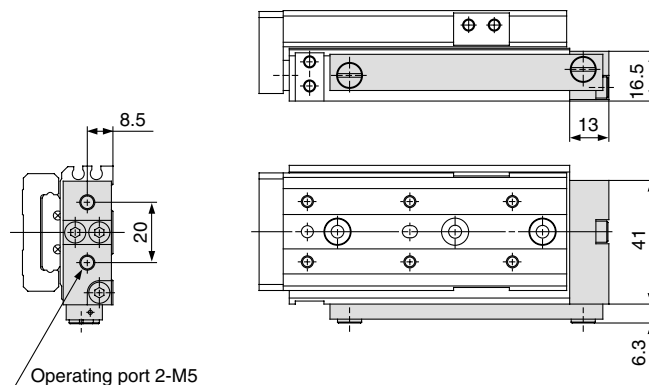
* Dimensions not indicated are the same as basic style.

With end lock(ø12) MXQ12L-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø12) MXQ12L-□□P

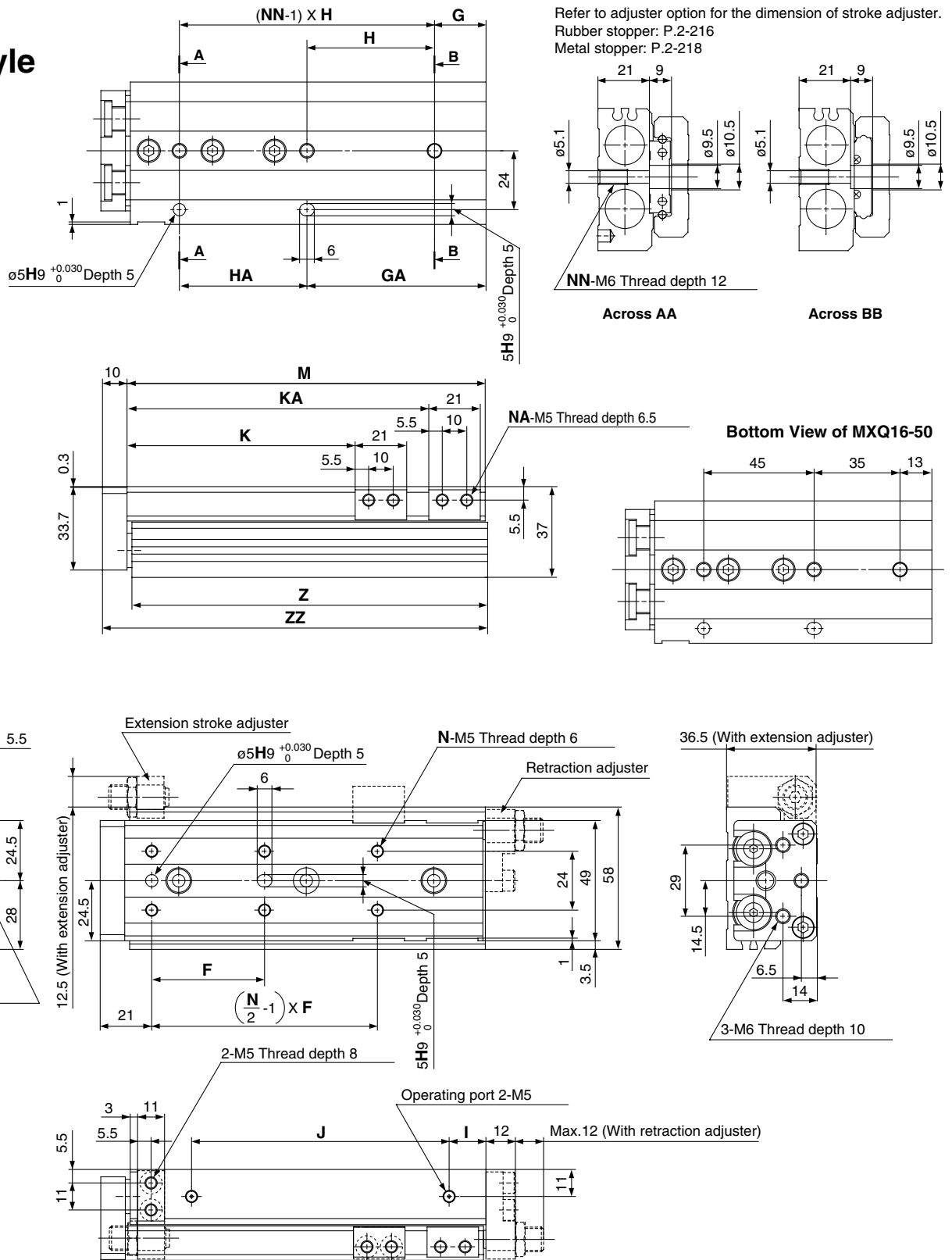


* Dimensions not indicated are the same as basic style.

Series MXQ

Dimensions MXQ 16

Basic style



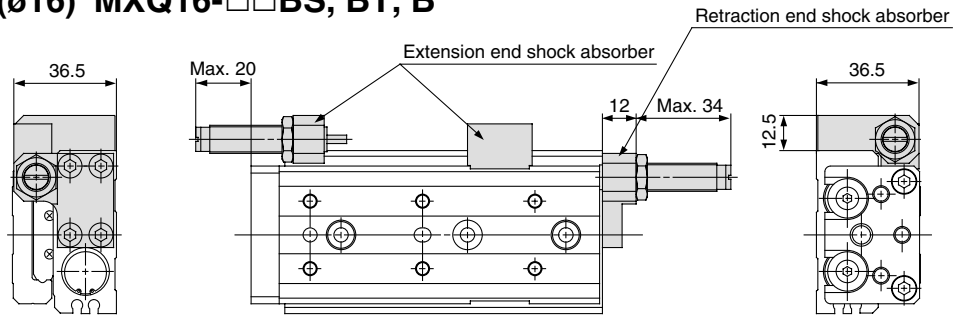
(mm)

Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ16- 10	38	4	18	39	2	18	39	12	40	28	—	4	78	77	89
MXQ16- 20	38	4	18	39	2	18	39	12	40	38	—	4	78	77	89
MXQ16- 30	48	4	19	48	2	19	48	12	50	48	—	4	88	87	99
MXQ16- 40	58	4	19	58	2	19	58	12	60	58	—	4	98	97	109
MXQ16- 50	40	6	—	—	3	48	45	20	68	68	91	8	114	113	125
MXQ16- 75	46	6	21	52	3	73	52	15	105	93	123	8	146	145	157
MXQ16-100	44	8	36	44	4	80	88	18	145	118	166	8	189	188	200
MXQ16-125	44	10	17	44	5	105	88	23	165	143	191	8	214	213	225

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

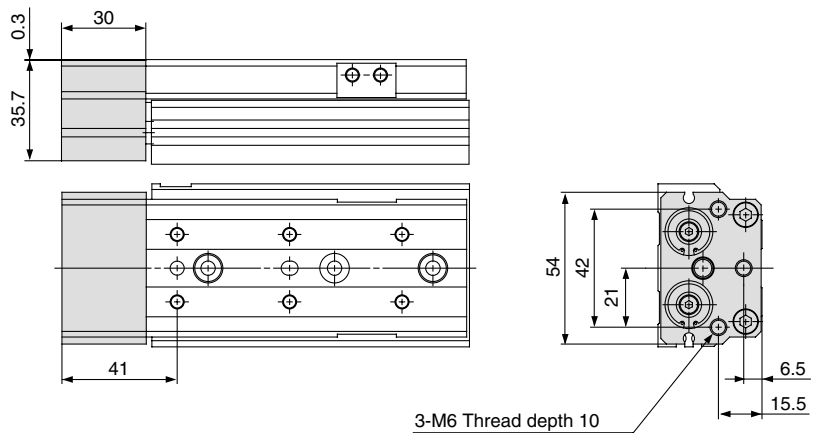
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
22	22



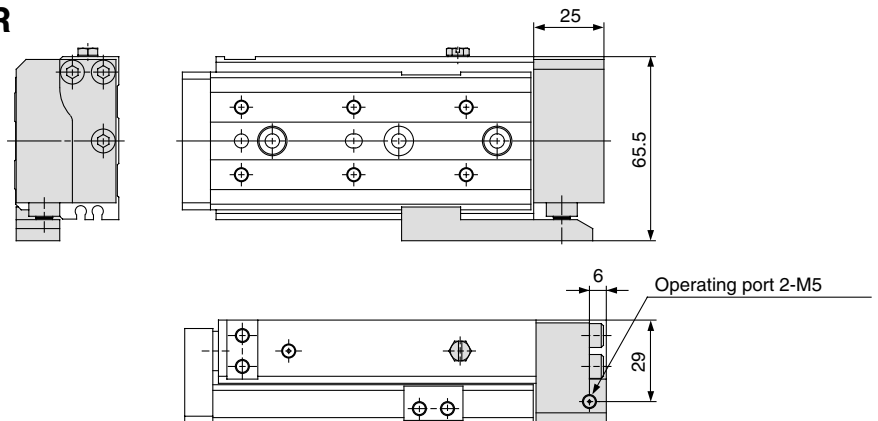
* Dimensions not indicated are the same as basic style.

With buffer(ø16) MXQ16-□□F



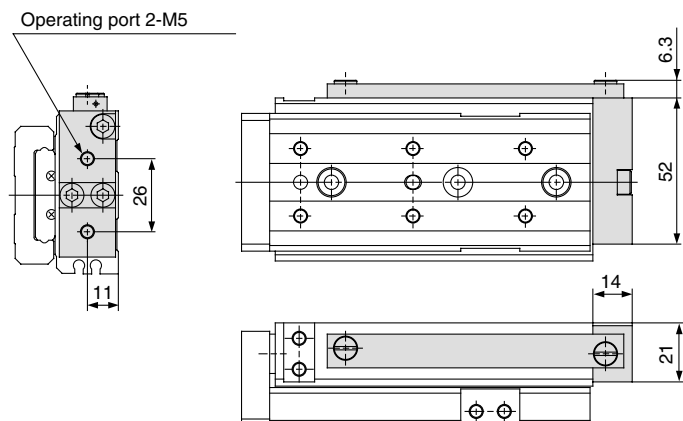
* Dimensions not indicated are the same as basic style.

With end lock(ø16) MXQ16-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø16) MXQ16-□□P



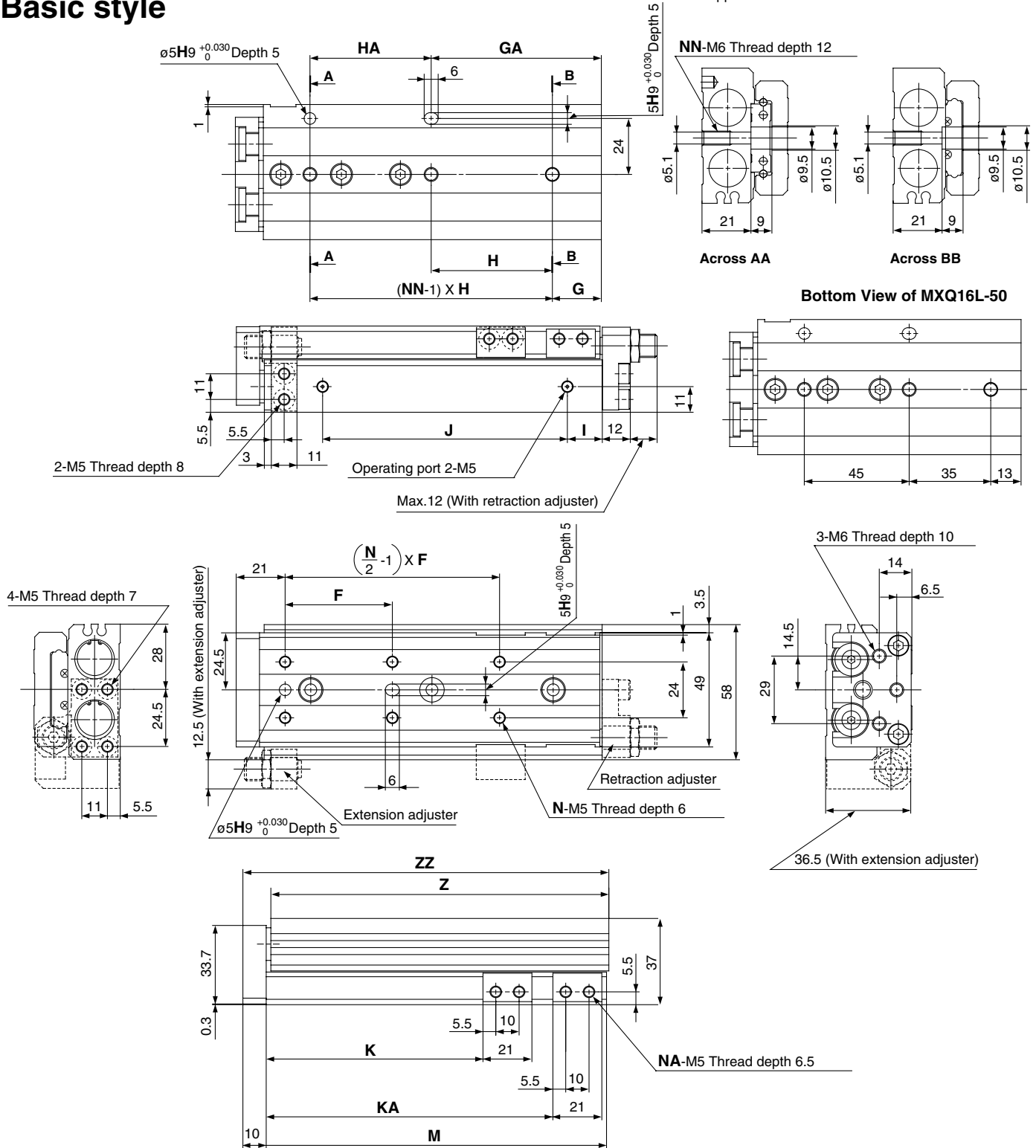
* Dimensions not indicated are the same as basic style.

Series MXQ

Dimensions MXQ 16L/Symmetric Style

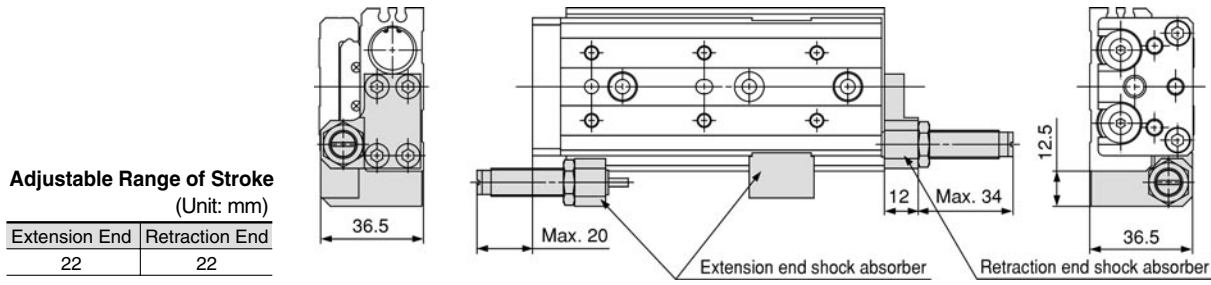
Basic style

Refer to adjuster option for the dimension of stroke adjuster.
 Rubber stopper: P.2-216
 Metal stopper: P.2-218



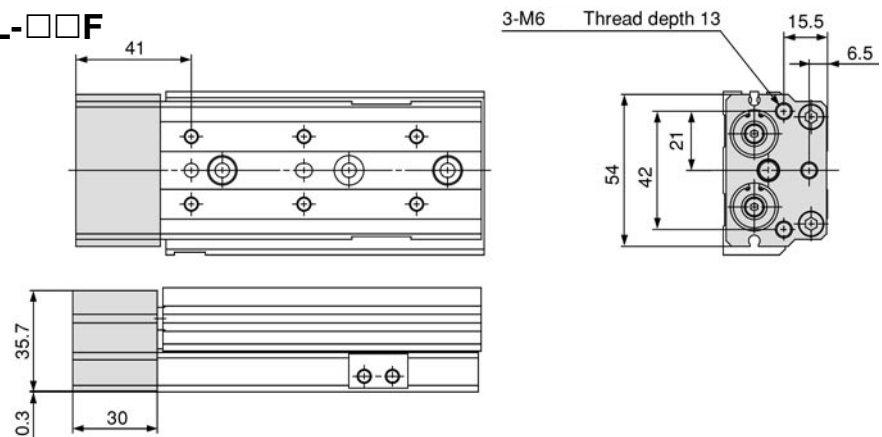
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ16L- 10	38	4	18	39	2	18	39	12	40	28	—	4	78	77	89
MXQ16L- 20	38	4	18	39	2	18	39	12	40	38	—	4	78	77	89
MXQ16L- 30	48	4	19	48	2	19	48	12	50	48	—	4	88	87	99
MXQ16L- 40	58	4	19	58	2	19	58	12	60	58	—	4	98	97	109
MXQ16L- 50	40	6	—	—	3	48	45	20	68	68	91	8	114	113	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

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



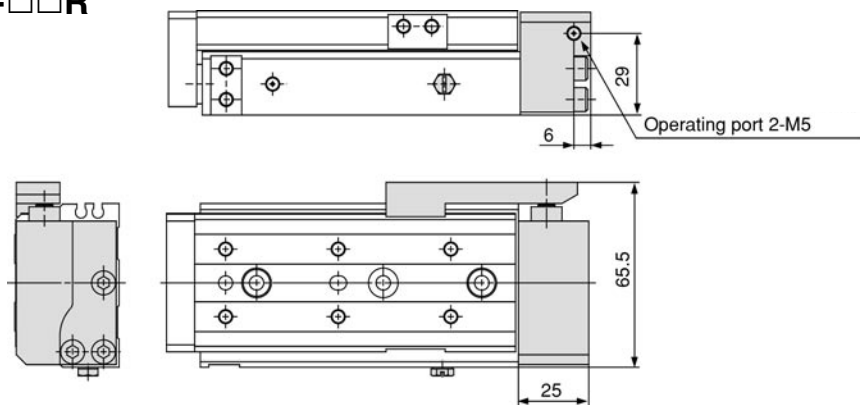
* Dimensions not indicated are the same as basic style.

With buffer(ø16) MXQ16L-□□F



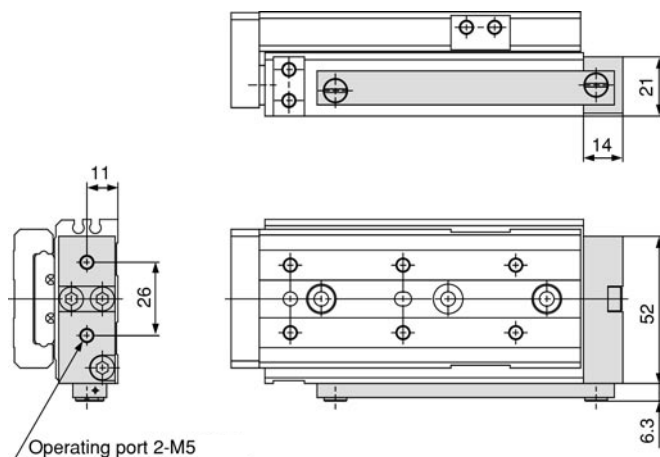
* Dimensions not indicated are the same as basic style.

With end lock(ø16) MXQ16L-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø16) MXQ16L-□□P

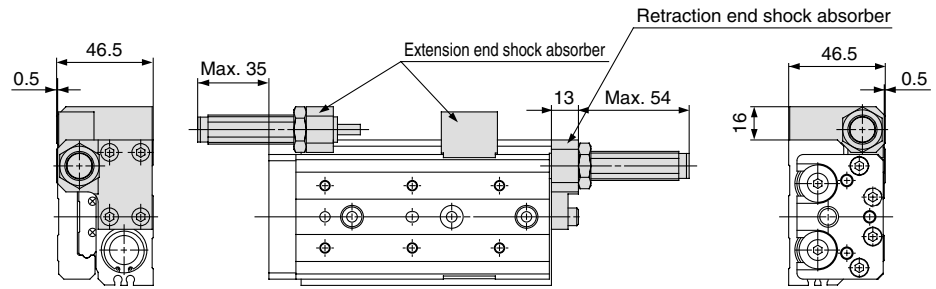


* Dimensions not indicated are the same as basic style.

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

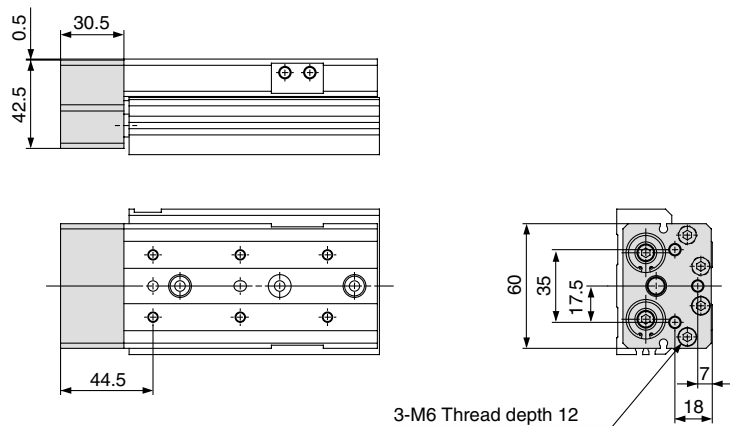
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
35	35



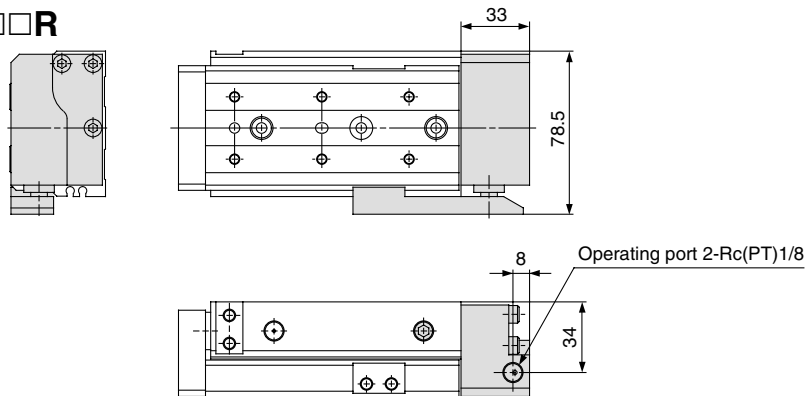
* Dimensions not indicated are the same as basic style.

With buffer(ø20) MXQ20-□□F



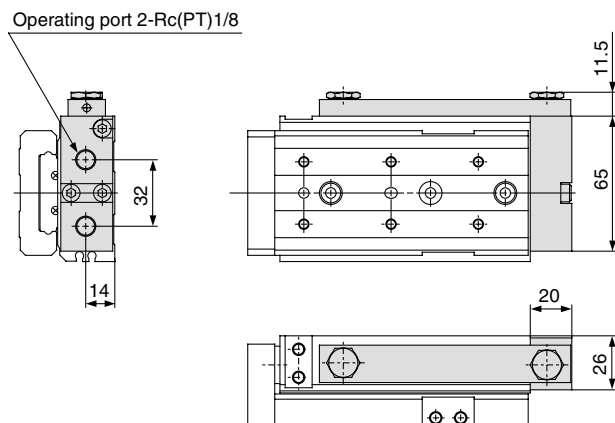
* Dimensions not indicated are the same as basic style.

With end lock(ø20) MXQ20-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø20) MXQ20-□□P



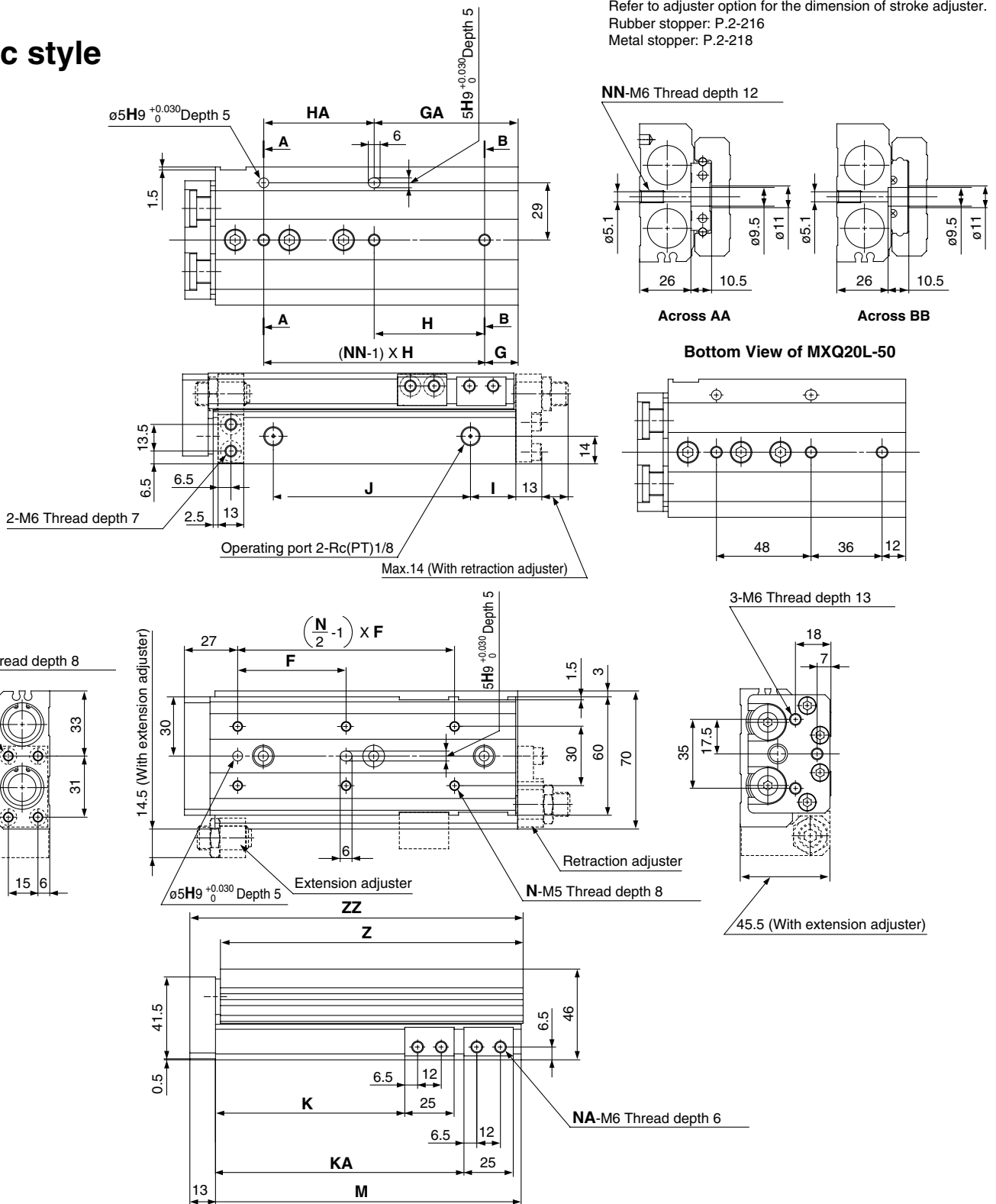
* Dimensions not indicated are the same as basic style.

Series MXQ

Dimensions MXQ 20L/Symmetric Style

Basic style

Refer to adjuster option for the dimension of stroke adjuster.
 Rubber stopper: P.2-216
 Metal stopper: P.2-218



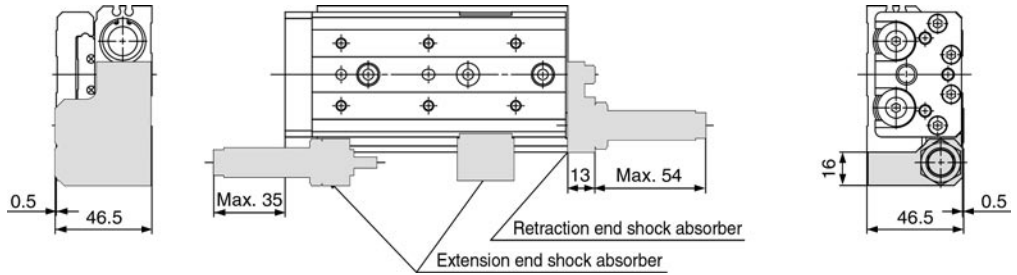
(mm)

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	—	—	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

With shock absorber(ø20) MXQ20L-□□BS, BT, B

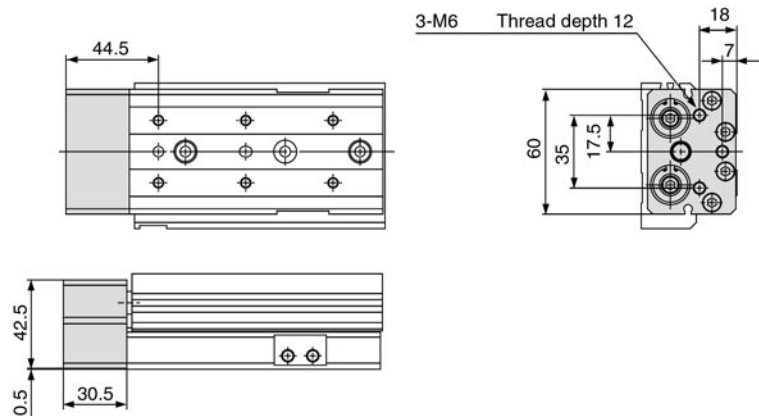
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
35	35



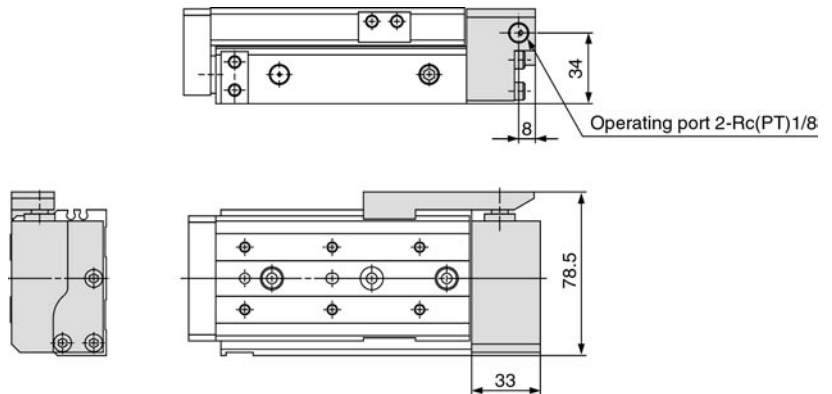
* Dimensions not indicated are the same as basic style.

With buffer(ø20) MXQ20L-□□F



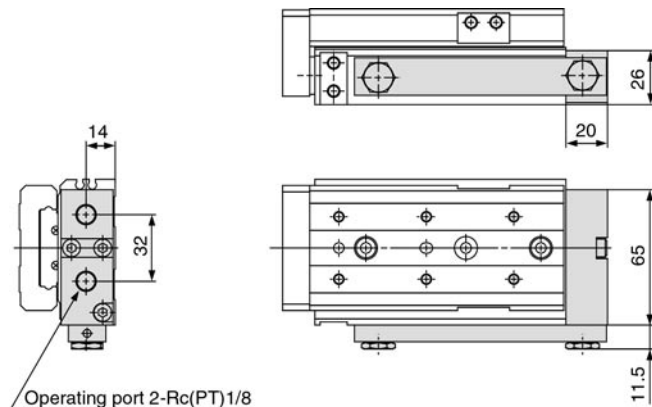
* Dimensions not indicated are the same as basic style.

With end lock(ø20) MXQ20L-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø20) MXQ20L-□□P



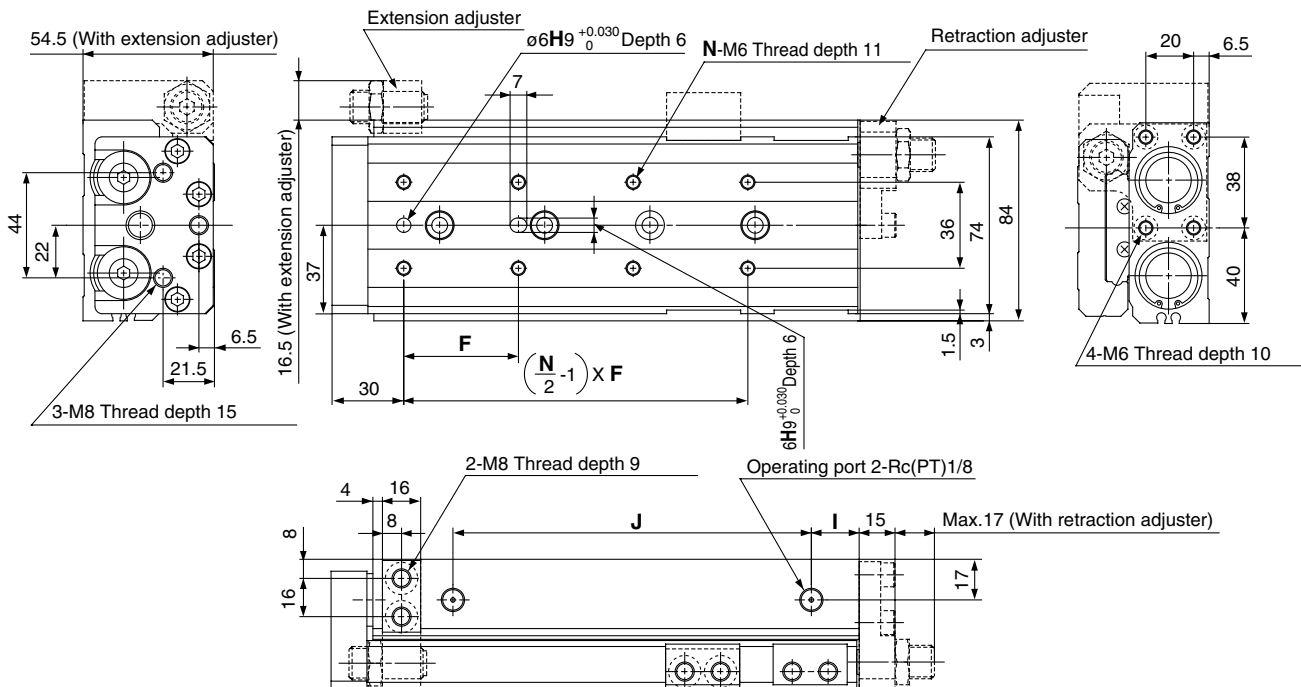
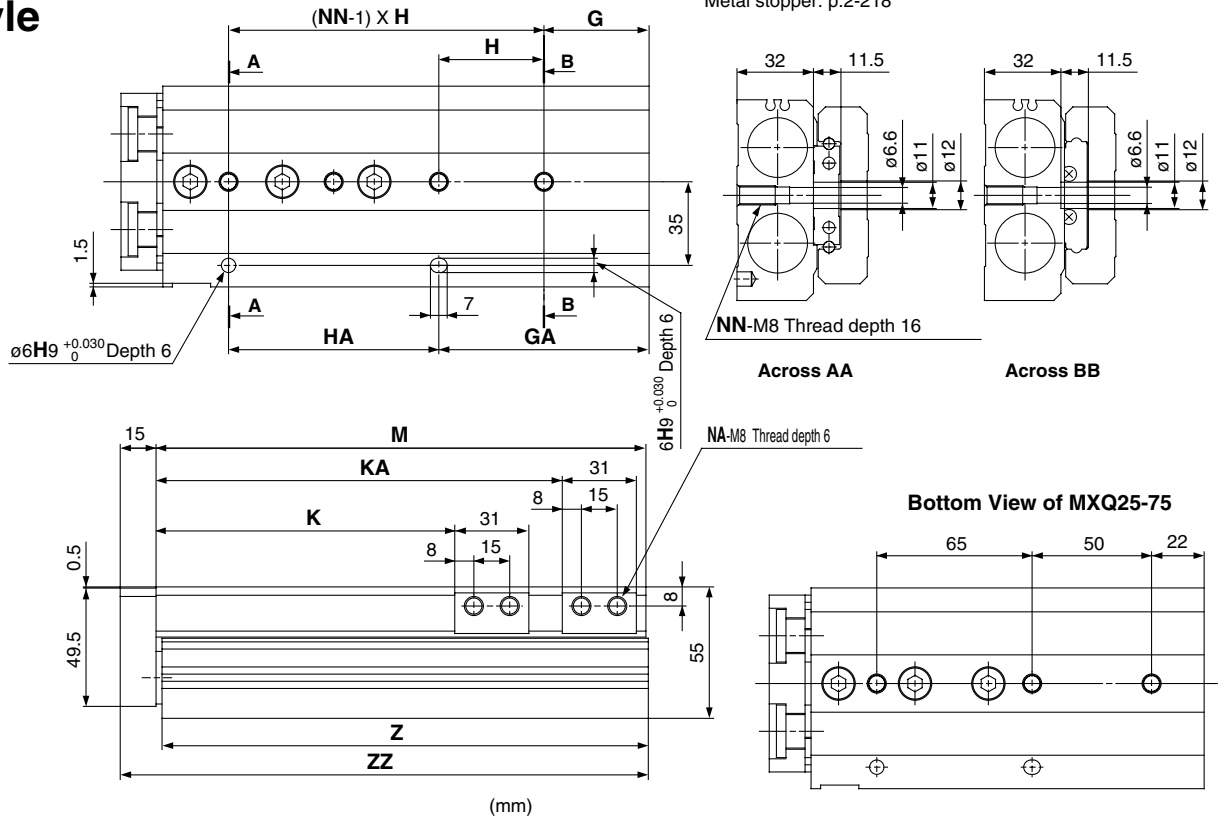
* Dimensions not indicated are the same as basic style.

Series MXQ

Dimensions MXQ 25

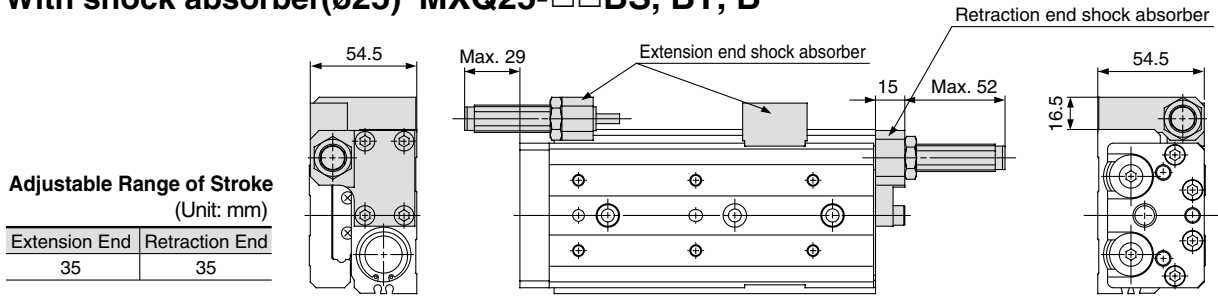
Basic style

Refer to adjuster option for the dimension of stroke adjuster.
 Rubber stopper: p.2-216
 Metal stopper: p.2-218



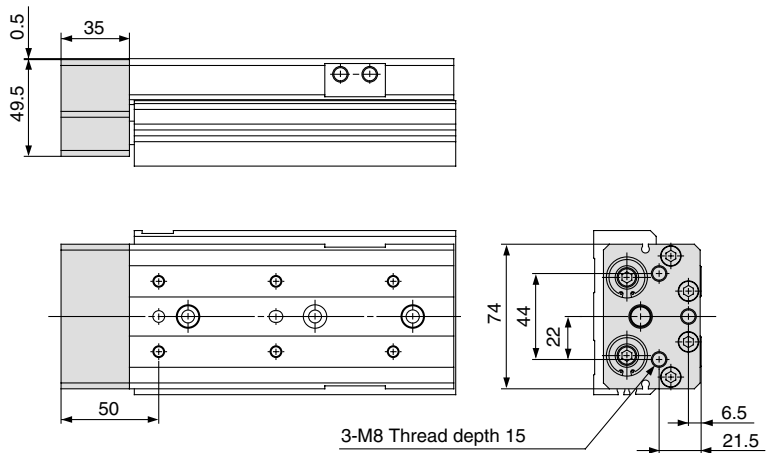
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXQ25- 10	55	4	23	55	2	23	55	16	56	35	—	4	107	105.5	123
MXQ25- 20	46	4	23	55	2	23	55	16	56	45	—	4	107	105.5	123
MXQ25- 30	55	4	23	55	2	23	55	16	56	55	—	4	107	105.5	123
MXQ25- 40	65	4	23	65	2	23	65	16	66	65	—	4	117	115.5	133
MXQ25- 50	75	4	32	80	2	32	80	16	90	75	—	4	141	139.5	157
MXQ25- 75	60	6	—	—	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

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



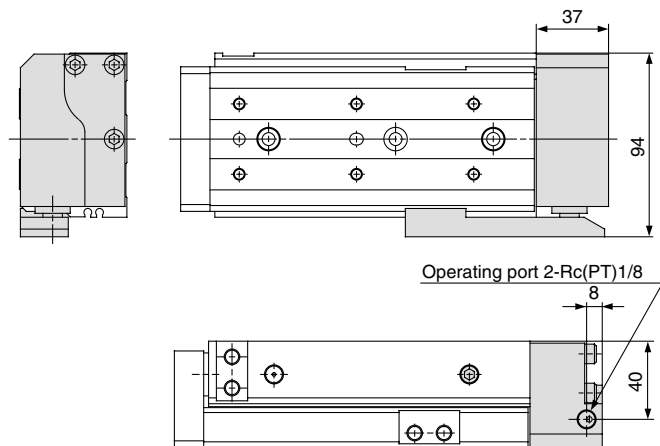
* Dimensions not indicated are the same as basic style.

With buffer(ø25) MXQ25-□□F



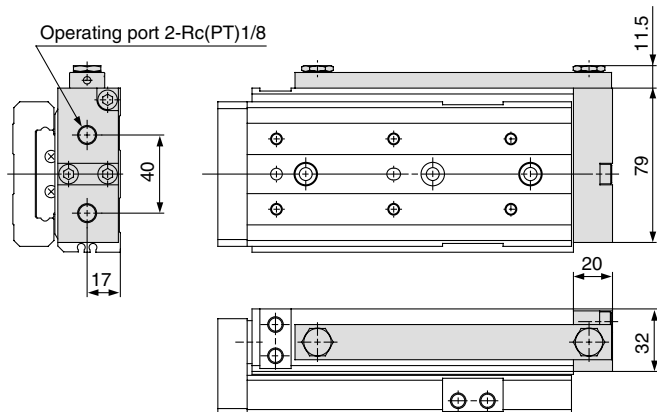
* Dimensions not indicated are the same as basic style.

With end lock(ø25) MXQ25-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø25) MXQ25-□□P

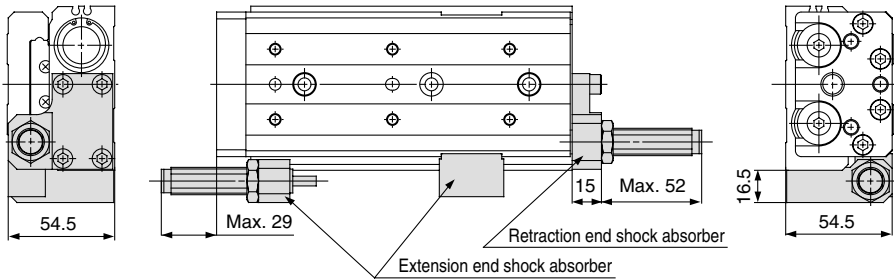


* Dimensions not indicated are the same as basic style.

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

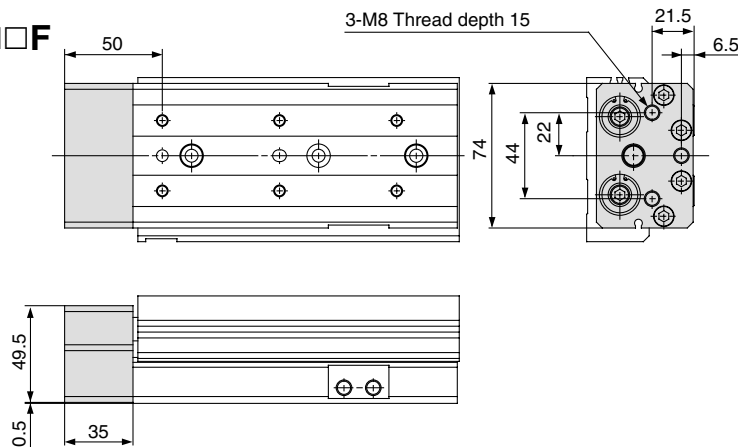
Adjustable Range of Stroke
(Unit: mm)

Extension End	Retraction End
35	35



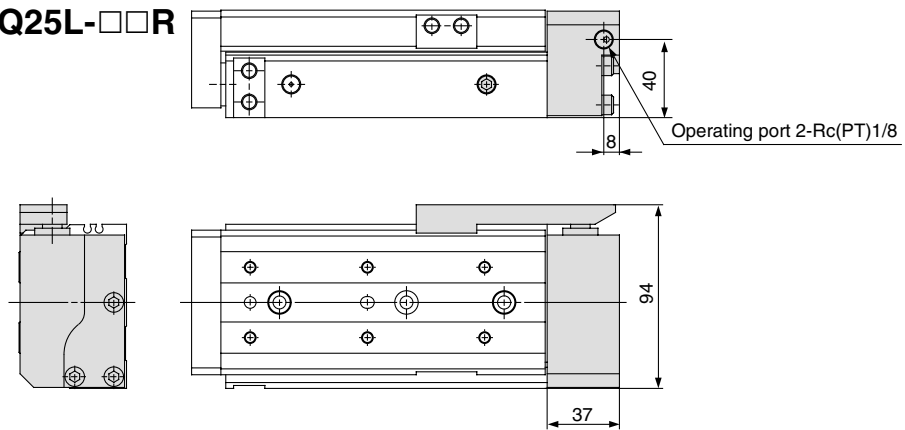
* Dimensions not indicated are the same as basic style.

With buffer(ø25) MXQ25L-□□F



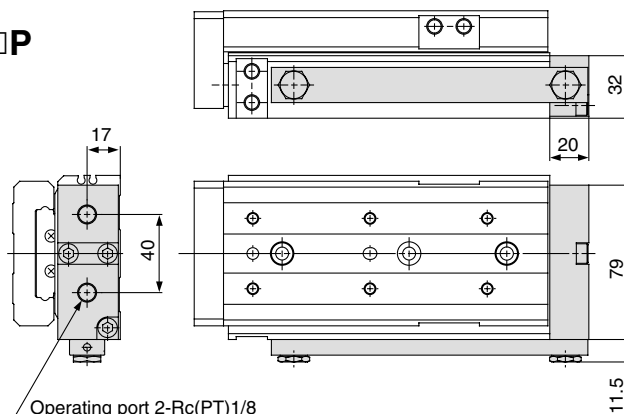
* Dimensions not indicated are the same as basic style.

With end lock(ø25) MXQ25L-□□R



* Dimensions not indicated are the same as basic style.

Axial piping(ø25) MXQ25L-□□P



* Dimensions not indicated are the same as basic style.

Series MXQ

Adjuster Dimensions

Rubber stopper(AS, AT)

Extension End

Body mounting

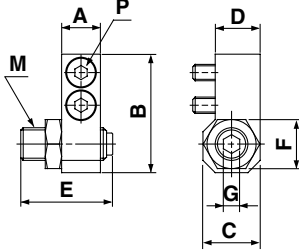
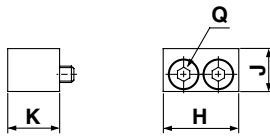


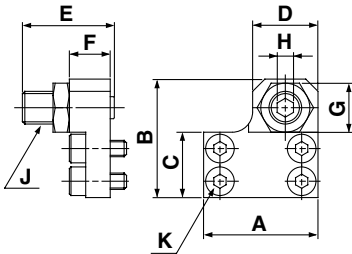
Table mounting



Size	Model	Adjusting stroke range (mm)	Body mounting										Table mounting			
			A	B	C	D	E	F	G	M	P ⁽¹⁾	H	J	K	Q ⁽¹⁾	
MXQ 6	MXQ-AS 6	5	6	19	8	7	16.5	7	2.5	M5	M2.5 X 6	12.5	6	8.3	M2.5 X 8	
	MXQ-AS 6-X11	15					26.5									
MXQ 8	MXQ-AS 8	5	7	22	9	7.5	19.5	8	3	M6	M3 X 8	14.6	7	9.8	M3 X 10	
	MXQ-AS 8-X11	15					29.5									
	MXQ-AS 8-X12	25					39.5									
MXQ12	MXQ-AS12	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-X11	15					33.5									
	MXQ-AS12-X12	25					43.5									
MXQ16	MXQ-AS16	5	11	36	17	13.5	24.5	14	5	M10 X 1	M5 X 16	21	13	15	M5 X 16	
	MXQ-AS16-X11	15					34.5									
	MXQ-AS16-X12	25					44.5									
MXQ20	MXQ-AS20	5	13	45	20	16	27.5	17	6	M12 X 1.25	M6 X 16	25	16	18	M6 X 16	
	MXQ-AS20-X11	15					37.5									
	MXQ-AS20-X12	25					47.5									
MXQ25	MXQ-AS25	5	16	54	22	18	32.5	19	6	M14 X 1.5	M8 X 18	31	17	20	M8 X 18	
	MXQ-AS25-X11	15					42.5									
	MXQ-AS25-X12	25					52.5									

Note 1) Size of hexagon head cap screw

Retraction End



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

Note 1) Size of hexagon head cap screw

With Shock Adsorber(BS, BT)

Extension End

Body mounting

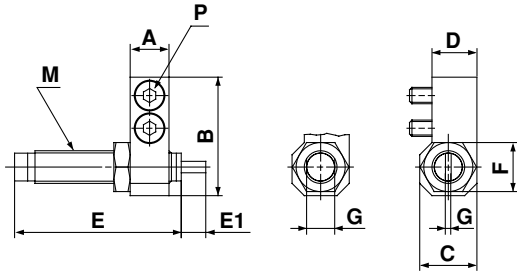
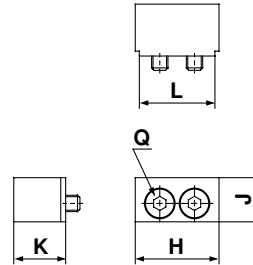


Table mounting

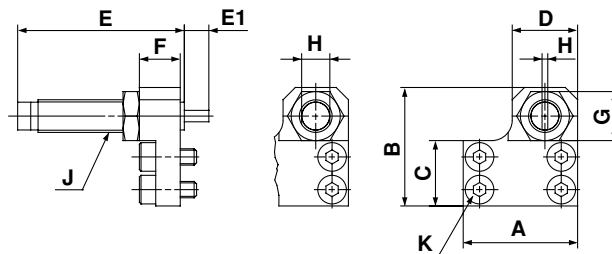


MXQ-BS20 MXQ-BS 8
MXQ-BS25 MXQ-BS12
MXQ-BS16

Size	Model	Adjusting stroke range (mm)	Body Mounting										Table Mounting				
			A	B	C	D	E	E1	F	G	M	P ⁽¹⁾	H	J	K	L	Q ⁽¹⁾
MXQ 8	MXQ-BS 8	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	MXQ-BS12	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	MXQ-BS16	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	MXQ-BS20	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	MXQ-BS25	35	16	54	22	18	67.3	12	19	12	M14 X 1.5	M8 X 18	33	19	22	31	M8 X 20

Note 1) Size of hexagon socket head cap screws

Retraction End



MXQ-BT20
MXQ-BT25

MXQ-BT 8
MXQ-BT12
MXQ-BT16

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

Note 1) Size of hexagon socket head cap screws

Series MXQ

Adjuster Dimensions

Metal Stopper(CS, CT)

Extension End

Body mounting

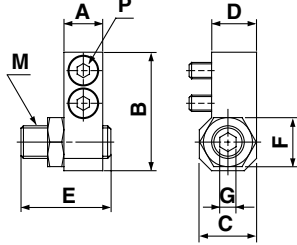
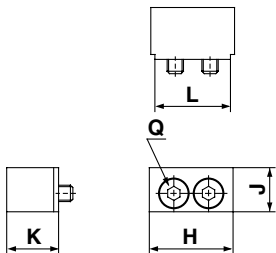


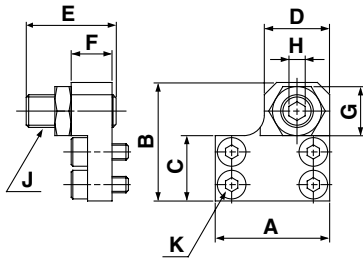
Table mounting



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

Note 1) Size of hexagon socket head cap screws

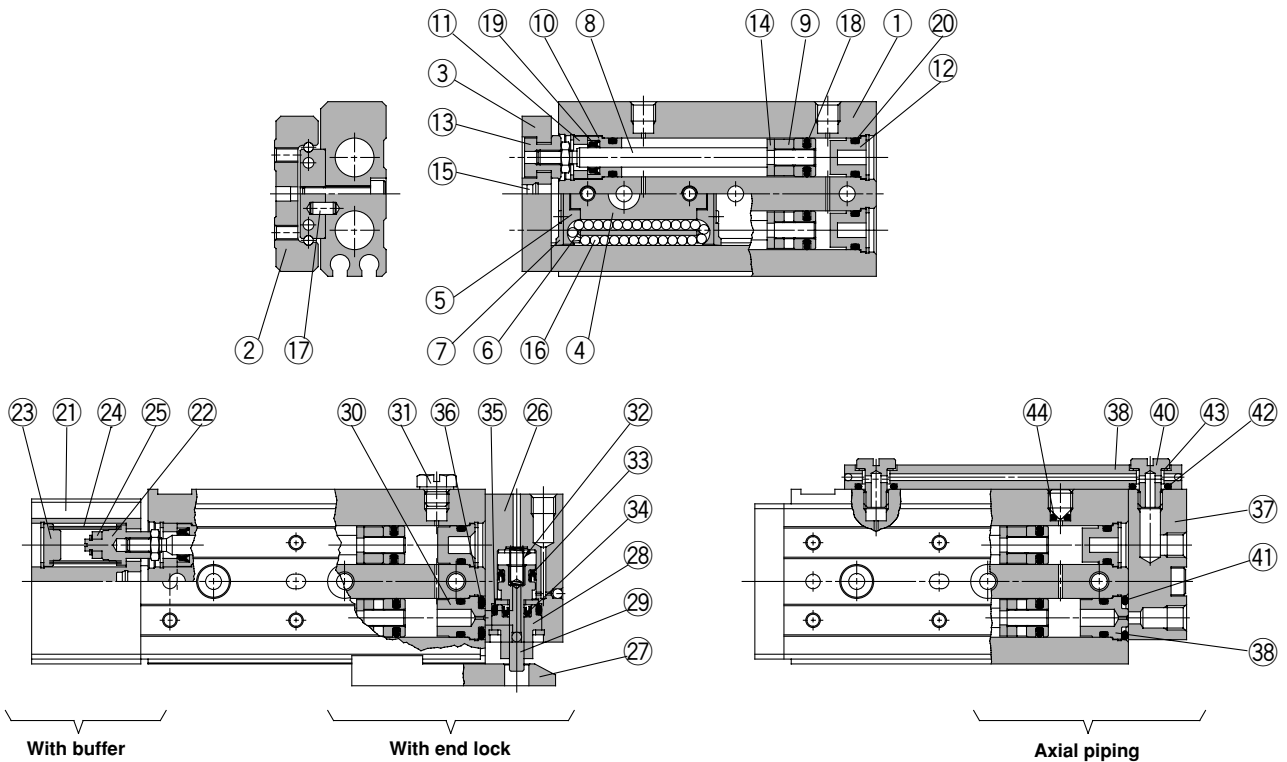
Retraction End



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

Note 1) Size of hexagon socket head cap screws

Construction



Component Parts

No.	Description	Material	Note
①	Body	Aluminum alloy	Hard anodized
②	Table	Stainless steel	Heat treatment
③	End plate	Aluminum alloy	Hard anodized
④	Guide block	Stainless steel	Heat treatment
⑤	Cover	Synthetic resin	
⑥	Return guide	Synthetic resin	
⑦	Scraper	Stainless steel, NBR	
⑧	Rod	Stainless steel	
⑨	Piston assembly		With one side magnet
⑩	Rod cover	Aluminum alloy	Anodized
⑪	Packing support	Brass	Electroless nickel plated
⑫	Head cap	Synthetic resin	
⑬	Floating bush	Stainless steel	
⑭	Rod damper	Polyurethane	
⑮	End damper	Polyurethane	
⑯	Steel ball	Chromium bearing steel	
⑰	Parallel pin	Stainless steel	
⑱	Piston seal	NBR	
⑲	Rod seal	NBR	
⑳	O ring	NBR	

Component Parts/With buffer

No.	Description	Material	Note
㉑	End plate	Aluminum alloy	Hard alumite treatment
㉒	Spring collar	Stainless steel	
㉓	Head cap	Stainless steel	
㉔	Spring	Stainless steel	
㉕	Magnet	Rare earth	

Replacement Parts: Seal Kits

Bore size (mm)	Kit No.	Contents
6	MXQ 6-PS	Parts ⑱ to ㉒ from above
8	MXQ 8-PS	
12	MXQ12-PS	
16	MXQ16-PS	
20	MXQ20-PS	
25	MXQ25-PS	

Replacement Parts (Seal kits with end lock)

Bore size (mm)	Kit No.	Contents
8	MXQ 8R-PS	Parts ⑱ to ㉒ and ㉓ to ㉕ from above
12	MXQ12R-PS	
16	MXQ16R-PS	
20	MXQ20R-PS	
25	MXQ25R-PS	

Replacement Parts (Seal kits for axial piping)

Bore size (mm)	Kit No.	Contents
6	MXQ 6P-PS	Parts ⑱ to ㉒ and ㉓ to ㉕ from above
8	MXQ 8P-PS	
12	MXQ12P-PS	
16	MXQ16P-PS	Parts ⑱ to ㉒ and ㉓ to ㉕ from above
20	MXQ20P-PS	
25	MXQ25P-PS	

Component Parts/With end lock

No.	Description	Material	Note
㉖	Body for lock	Aluminum alloy	Hard anodized
㉗	Table support	Carbon steel	Anticorrosive treatment
㉘	Rod cover	Aluminum alloy	
㉙	Piston rod	Stainless steel	
㉚	Bush	Aluminum alloy	Chromate treatment
㉛	Blanking plug	Brass	Electroless nickel plated
㉜	Return spring	Stainless steel	
㉝	Piston seal	NBR	
㉞	Rod seal	NBR	
㉟	O ring	NBR	
㊱	O ring	NBR	

Component Parts/Axial piping

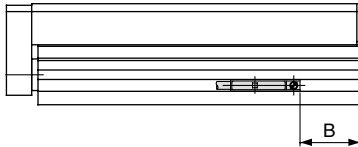
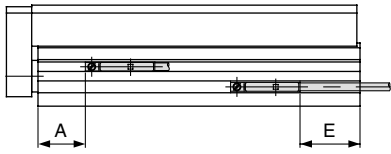
No.	Description	Material	Note
㊲	Plate for axial piping	Aluminum alloy	Hard anodized
㊳	Pipe	Aluminum alloy	Hard anodized
㊴	Bush	Aluminum alloy	Chromate treatment
㊵	Stud	Brass	Electroless nickel plated
㊶	O ring	NBR	
㊷	O ring	NBR	
㊸	Gasket	NBR, Stainless steel	
㊹	O ring	NBR	



* Seal kits consist of items in the list below, and can be ordered using the kit number for each respective cylinder bore size.

Series MXQ

Auto Switch/Proper Mounting Position at Detection of Stroke End



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

Model	A	B										E										Operating range of switch
		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	13.5	13.5	—	—	—	—	3.5 (1)	3.5 (1)	3.5 (1)	11.5 (9)	11.5 (7.5)	—	—	—	—	4.5		
MXQ8	7.5	8	8	12	16	31	32	—	—	—	6 (3.5)	6 (3.5)	10 (7.5)	14 (11.5)	29 (26.5)	30 (27.5)	—	—	—	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)	—	—	6		
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)	18.5 (16)	24.5 (22)	31.5 (29)	49.5 (47)	49.5 (47)	—	7		
MXQ20	19	43.5	33.5	23.5	33.5	31.5	39.5	71.5	74.5	77.5	41.5 (39)	31.5 (29)	21.5 (19)	18.5 (16)	29.5 (27)	37.5 (35)	69.5 (67)	72.5 (70)	77.5 (75)	8		
MXQ25	22	52.5	42.5	32.5	32.5	46.5	46.5	60.5	88.5	88.5	50.5 (48)	40.5 (38)	30.5 (28)	30.5 (28)	44.5 (42)	44.5 (42)	58.5 (56)	86.5 (84)	77.5 (75)	9		

(): D-A93

Solid State Switch: D-M9B, D-M9N, D-M9P, D-M9BW, D-M9NW, D-M9PW

Model	A	B										E										Operating range of switch
		Stroke										Stroke										
		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		
MXQ8	11.5	12	12	16	20	35	36	—	—	—	2	2	6	10	25	26	—	—	—	2.5		
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	—	—	3		
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	—	4		
MXQ20	23	47.5	37.5	27.5	37.5	35.5	43.5	75.5	78.5	81.5	37.5	27.5	17.5	27.5	25.5	33.5	65.5	68.5	73.5	6		
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	73.5	6		

Solid State Switch: D-M9BV, D-M9NV, D-M9PV, D-M9BWV, D-M9NWV, D-M9PWV

Model	A	B										E										Operating range of switch
		Stroke										Stroke										
		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	—	—	—	—	2		
MXQ8	11.5	12	12	16	20	35	36	—	—	—	4	4	8	12	27	28	—	—	—	2.5		
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	—	—	3		
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	—	4		
MXQ20	23	47.5	37.5	27.5	37.5	35.5	43.5	75.5	78.5	81.5	39.5	29.5	19.5	29.5	27.5	35.5	67.5	70.5	75.5	6		
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	75.5	6		

How to Mount Auto Switch

⚠ Caution Tool for Mounting Auto Switch

- Use a clock screw driver with approximately 5 to 6 mm handle diameter for tightening set screws shipped with auto switch.

Tightening torque

- Use the tightening torque value approximately 0.05 to 0.1 Nm. When you begin to feel that the screw is tightening, turn it 90° further.

