



# Operation Manual

PRODUCT NAME

*AIR SLIDE TABLE*

MODEL / Series / Product Number

MXQ 6 (A, B) — \* \* Z \*  
MXQ 8 (A, B, C) — \* \* Z \*  
MXQ 12 (A, B, C) — \* \* Z \*  
MXQ 16 (A, B) — \* \* Z \*  
MXQ 20 (A, B) — \* \* Z \*  
MXQ 25 (A) — \* \* Z \*

**SMC Corporation**

# Contents

## 1. Product Specifications

### 1-1 Specifications

## 2. How to use

### 2-1 Mounting

### 2-2 Air supply

### 2-3 Piping

### 2-4 Operating environment

### 2-5 Lubricating

### 2-6 Speed adjustment

### 2-7 Handling of optional adjuster

### 2-8 Handling of optional function

### 2-9 Handling of symmetrical type

### 2-10 Mounting of auto switch

## 3. Maintenance

### 3-1 Precautions for maintenance

### 3-2 Replenishment of grease

### 3-3 Construction/Parts list



# Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

\*1) ISO 4414: Pneumatic fluid power -- General rules relating to systems.

ISO 4413: Hydraulic fluid power -- General rules relating to systems.

IEC 60204-1: Safety of machinery -- Electrical equipment of machines .(Part 1: General requirements)

ISO 10218-1992: Manipulating industrial robots -Safety.

etc.



## Caution

**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



## Warning

**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



## Danger

**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

## Warning

### 1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.

The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

### 2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly.

The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

### 3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

### 4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.



# Safety Instructions

## Caution

### **1. The product is provided for use in manufacturing industries.**

The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

## **Limited warranty and Disclaimer/Compliance Requirements**

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

### **Limited warranty and Disclaimer**

#### **1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.\*2)**

Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

#### **2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.**

This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

#### **3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.**

##### **\*2) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

### **Compliance Requirements**

#### **1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction(WMD) or any other weapon is strictly prohibited.**

#### **2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulation of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.**

# 1. Product Specifications

## 1-1 Specifications

Model	MXQ6	MXQ8	MXQ12	MXQ16	MXQ20	MXQ25
Bore size (mm)	Φ6	Φ8	Φ12	Φ16	Φ20	Φ25
Port size	M5×0.8					
Fluid	Air					
Action	Double acting					
Operating pressure	0.15 to 0.7MPa Note 1) Note 2) 0.35 to 0.7MPa (with Endlock)					
Proof pressure	1.05 MPa					
Ambient and fluid temperature	-10 to 60°C(No freezing)					
Operating speed range	50 to 500mm/s Note 3) 50 to 300mm/s (Metal stopper with damper) Note 4)					
Cushion	Without stroke adjuster	Rubber bumper at both ends				
	With stroke adjuster	Metal stopper with bumper / Rubber stopper / Shock absorber				
Lubrication	Lubrication not required.					
Auto switch	Solid state auto switch (2-wire and 3-wire) 2-color display solid state auto switch (2-wire and 3-wire)					
Stroke length tolerance	$\begin{matrix} +2 \\ 0 \end{matrix}$ mm					

Note1) Please refer to the table for the Lowest Operating Pressure for a metal stopper with bumper  
If the operating pressure is lower than this, repeatability becomes worse.

Lowest Operating Pressure for metal stopper with damper:

The lowest required pressure to fully compress the protruding portion of the damper and have metal to metal contact.

Note2) Operating pressure for the cylinder with shock absorber which I.D. is φ20 is 0.15 to 0.6MPa.

Note3) Maximum operating speed range of MXQ25(A)-150, MXQ6B-50 and 75, MXQ8B-75 and 100, MXQ16B-100 and 150, MXQ20B-125, 150 without stroke adjuster is 300mm/s.

Note4) Specification speed range of MXQ\*\*B metal stopper with bumper is 50 to 200mm/s.

Table 1

Lowest Operating pressure for a metal stopper with bumper (MPa)

Model	Minimum operating pressure	Model	Minimum operating pressure
MXQ8(A,C)	0.3	MXQ8B	0.3
MXQ12(A,C)	0.3	MXQ12B	0.3
MXQ16(A)	0.2	MXQ16B	0.2
MXQ20(A)	0.2	MXQ20B	0.2
MXQ25(A)	0.2		

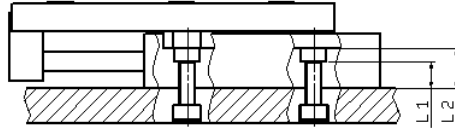
## 2. How to use

### 2-1 Mounting

#### (1) Mounting of body

Three types of installation are available according to the machine or work piece.

#### 1. Side mounting (Body tapped)

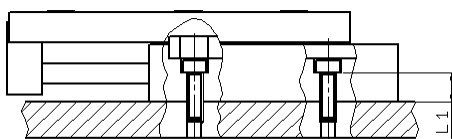


Model	Bolt	Maximum tightening torque	Thread depth: L1(mm)	Max. thread depth: L2(mm)
MXQ6	M4 × 0.7	2.1	5	8
MXQ8	M4 × 0.7	2.1	8	11
MXQ12	M5 × 0.8	4.4	11	15
MXQ16	M6 × 1	7.4	14	19
MXQ20	M6 × 1	7.4	9	
MXQ25	M8 × 1.25	18	12	
MXQ6A	M4 × 0.7	2.1	8	11
MXQ8A	M4 × 0.7	2.1	8	11
MXQ12A	M5 × 0.8	4.4	8	12
MXQ16A	M6 × 1	7.4	12	17
MXQ20A	M6 × 1	7.4	9	
MXQ25A	M8 × 1.25	18	12	
MXQ6B	M4 × 0.7	2.1	5	8
MXQ8B	M5 × 0.8	4.4	4	9
MXQ12B	M6 × 1	7.4	7	12
MXQ16B	M6 × 1	7.4	10	15
MXQ20B	M8 × 1.25	18	14	20
MXQ8C	M4 × 0.7	2.1	6	9
MXQ12C	M5 × 0.8	4.4	8	12

#### Caution

Types other than MXQ20(A) and MXQ25(A) have through tapped hole  
 Use the bolt shorter than max. screw depth (L2) by 0.5mm or more.  
 Longer bolts can hit the moving part, which causes operation failure.

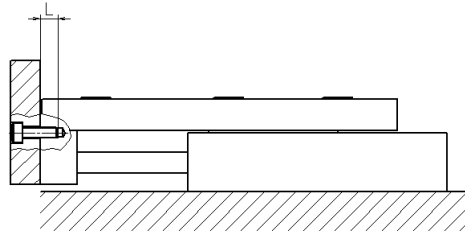
## 2. Side mounting (Body through hole)



Model	Bolt	Maximum tightening torque	Thread depth: L1(mm)
MXQ6	M3 × 0.5	1.1	5.3
MXQ8	M3 × 0.5	1.1	8.3
MXQ12	M4 × 0.7	2.7	11.5
MXQ16	M5 × 0.8	5.4	14.4
MXQ20	M5 × 0.8	5.4	19.3
MXQ25	M6 × 1	9.2	23.5
MXQ6A	M3 × 0.5	1.1	8.3
MXQ8A	M3 × 0.5	1.1	8.3
MXQ12A	M4 × 0.7	2.7	8.5
MXQ16A	M5 × 0.8	5.4	12.4
MXQ20A	M5 × 0.8	5.4	16.3
MXQ25A	M6 × 1	9.2	20.5
MXQ6B	M3 × 0.5	1.1	5.3
MXQ8B	M4 × 0.7	2.7	4.5
MXQ12B	M5 × 0.8	5.4	7.4
MXQ16B	M5 × 0.8	5.4	10.3
MXQ20B	M6 × 1	9.2	14.5
MXQ8C	M3 × 0.5	1.1	6.3
MXQ12C	M4 × 0.7	2.7	8.5

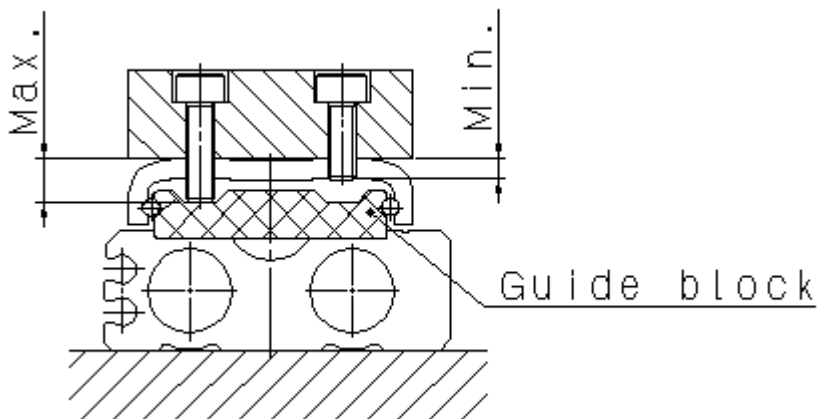
(2) How to mount the workpiece

1. Front mounting



Model		Bolt	Maximum tightening torque	Max. thread depth: L (mm)
MXQ6(A)	-	M3 × 0.5	0.9	5
MXQ8(A,C)	MXQ6B	M3 × 0.5	0.9	5
MXQ12(A,C)	MXQ8B	M3 × 0.5	0.9	5
MXQ16(A)	MXQ12B	M4 × 0.7	2.1	6
MXQ20(A)	MXQ16B	M5 × 0.8	4.4	7
MXQ25(A)	MXQ20B	M6 × 1	7.4	9

2. Top mounting



Model		Bolt	Maximum tightening torque (N · m)	Thread depth(mm)	
				Max	Min
MXQ6(A)	-	M3 × 0.5	1.1	4.1	2.1
MXQ8(A,C)	MXQ6B	M3 × 0.5	1.1	4.1	2.1
MXQ12(A,C)	MXQ8B	M4 × 0.7	2.7	5.7	2.7
MXQ16(A)	MXQ12B	M5 × 0.8	5.4	7.3	3.3
MXQ20(A)	MXQ16B	M5 × 0.8	5.4	7.3	3.3
MXQ25(A)	MXQ20B	M6 × 1	9.2	9	4

 Caution

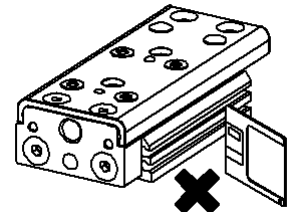
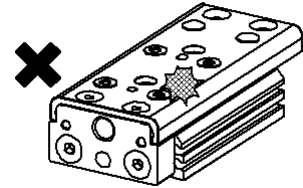
Use bolt which is shorter than max. thread depth (Max.) by 0.5mm so that the holding bolt for the workpiece does not hit the guide block. Longer bolts can hit the guide block, which causes operation failure.



### (3) Precautions for mounting

#### Caution

- ① Do not dent and scratch the mounting surface of the body, table and end plate.  
Damage can cause reduction in flatness, play at the guide and increase in sliding resistance.
- ② Do not dent or scratch the rolling surface of the table.  
Play or increased sliding resistance can result.
- ③ When attaching the work piece, do not apply strong impact or large moment.  
If an external force more than the allowable moment is applied, it may cause play at the guide part and an increase in sliding resistance.
- ④ Keep the flatness of the mounting surface 0.02mm or less.  
Insufficient flatness of a work piece or base mounted on the product, the base and other parts can cause play at the guide unit and an increase in the sliding resistance.
- ⑤ When connecting a load with an external support or guide mechanism, be sure to select a suitable connection method and perform careful alignment.
- ⑥ Do not touch the product while in operation.  
An operator's finger may get caught between the optional adjuster and product.  
Install a cover as a safety measure if an operator can get close to the slide table during operation.
- ⑦ Keep away objects which are affected by magnets.  
A magnet is built in the body or, in case of a type with auto switch, on the side of the guide block. Keep away magnetic discs, cards or tapes. Data may be erased.
- ⑧ When mounting the air slide table, tighten it with the screws of appropriate length at the appropriate torque less than maximum tightening torque.  
Tightening to a torque greater than the specified range may cause malfunction, and insufficient tightening may cause displacement or dropping.



## 2-2 Air supply

#### Warning

- ① Use clean air.  
Do not use compressed air which contains chemicals, synthetic oils containing organic solvents, salts or corrosive gases, etc., as this can cause damage or malfunction.

#### Caution

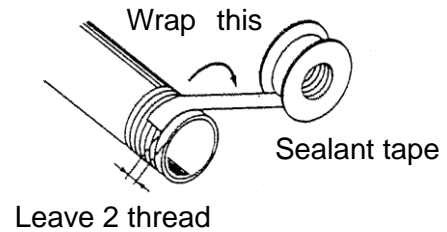
- ① Install an air filter.  
Install an air filter close to the upstream side of the valve. Choose the filter of 5 $\mu$ m of filtration.
- ② Install an aftercooler, air dryer or water droplet separator.  
Do not use compressed air containing a lot of condensate, which can cause the operating failure of the product and other pneumatic equipment. Install an aftercooler, air dryer or water droplet separator.
- ③ Use the product within the specified fluid and ambient temperature range.  
When operating at temperatures below 5°C, water in the circuit may freeze and cause breakage of seals or malfunction. Corrective measures should be taken to prevent freezing.  
For compressed air quality, refer to SMC catalog "Compressed Air Purification System".

## 2-3 Piping



### Caution

- ① Before piping  
Before piping, perform air blow (flushing) or cleaning to remove any cutting chips, cutting oil, dust, etc. from the piping.
- ② Sealant tape  
When installing piping or a fitting into a port, prevent cutting chips and sealant material from getting inside the piping.  
When a pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the pipe.



## 2-4. Operating Environment



### Warning

- ① Do not use in environments where there is a danger of corrosion.  
Refer to the construction drawings regarding cylinder materials.
- ② Install a cover over the rod if it is used in an area that is dusty, or in an environment in which water or oil splashes on the cylinder.
- ③ When using auto switches, do not operate in an environment with strong magnetic fields.  
As this can cause the switch to malfunction.



### Caution

- ① Do not use in an environment where the product is directly exposed to liquid, such as cutting oils. If cutting oil, coolant or oil mist splashes the product, play, increased sliding resistance and air leakage can result.
- ② Do not use the product in an environment directly exposed to foreign matter such as dust, cutting chips and spatter.  
This can result in play, increased operating resistance, air leakage, etc.  
If the product is used in such an environment, contact SMC.
- ③ Shade the sunlight if the product is applied with direct sunshine.
- ④ Shield the product from radiated heat generated by nearby heat sources.  
When there is a heat source surrounding the product, the radiated heat from the heat source may exceed the operating temperature range. Protect it with a cover, etc.
- ⑤ Do not operate in a location subject to vibration or impact.  
Contact SMC when using in this kind of location, as damage and operation failure to the fitting can result.
- ⑥ Do not use the product in applications where excessive external force or impact force is applied to it.  
Malfunction or the damage of the table can result.  
Although the table has adequate strength, if it is damaged, protect your hands with gloves.  
Hurts can result.

## 2-5 Lubricating



### Caution

Lubrication of non-lubricating cylinder

The product has been lubricated for life at manufacturer, and does not require lubrication in service.

If a lubricant is used in the system, use turbine oil Class 1 (with no additive) ISO VG302. Stopping lubrication later may lead to malfunction because the new lubricant will displace the original lubricant. Therefore, lubrication must be continued once it has been started.

## 2-6 Speed adjustment

### Caution

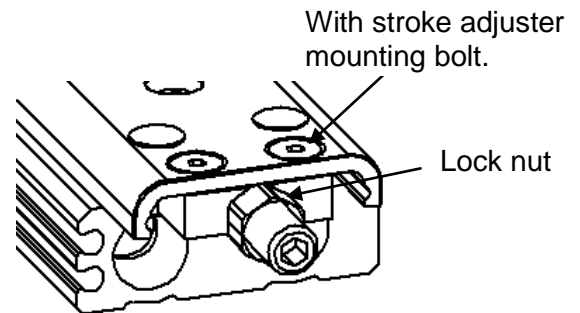
Piston speed should be controlled gradually from low speed to the specified speed with a speed controller.

## 2-7 Handling of optional adjuster

### Caution

- ① When replacing the bolt, do not replace it with a bolt other than the designated adjust bolt. Impact force may cause play, damage, etc.
- ② When mounting the stroke adjuster at extended end, please refer the table below for the tightening torque of the stroke adjuster mounting bolt. Insufficient tightening may reduce the positioning accuracy.

Model		Thread size	Tightening torque N·m
MXQ6(A)	-	M3×6	1.1
MXQ8(A,C)	MXQ6B	M3×6	1.1
MXQ12(A,C)	MXQ8B	M4×8	2.7
MXQ16(A)	MXQ12B	M5×10	5.4
MXQ20(A)	MXQ16B	M6×12	9.2
MXQ25(A)	MXQ20B	M8×16	22

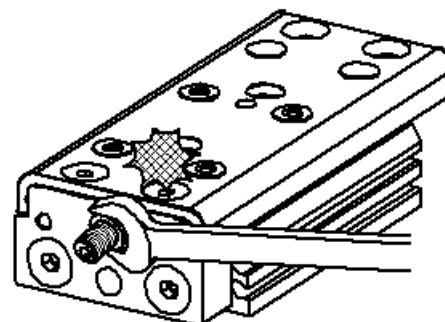


- ③ Tighten the lock nut according to the tightening torque shown in the table on the right. Insufficient tightening may reduce the positioning accuracy.

The shock absorber uses different torques, which are shown on the next page.

Model		Thread size	Tightening torque N·m
MXQ6(A)	-	M6×0.75	5
MXQ8(A,C)	MXQ6B	M6×0.75	5
MXQ12(A,C)	MXQ8B	M8×1	12.5
MXQ16(A)	MXQ12B	M10×1	25
MXQ20(A)	MXQ16B	M12×1	43
MXQ25(A)	MXQ20B	M14×1.5	69

- ④ Be careful not to hit the table with the wrench when adjusting the stroke adjuster. This may cause play.



- Metal stopper with bumper

- ① Please refer to the table for the Lowest Operating Pressure for a metal stopper with damper. If the operating pressure is lower than this, repeatability becomes worse.

Lowest Operating Pressure for metal stopper with damper:

The lowest required pressure to fully compress the protruding portion of the damper and have metal to metal contact.

Model	Minimum operating pressure (MPa)	Model	Minimum operating pressure (MPa)
MXQ8(A,C)	0.3	MXQ8B	0.3
MXQ12(A,C)	0.3	MXQ12B	0.3
MXQ16(A)	0.2	MXQ16B	0.2
MXQ20(A)	0.2	MXQ20B	0.2
MXQ25(A)	0.2		

- ② Metal stopper with bumper is consumable Replace the shock absorber when the energy absorption performance is reduced.

Model	Product number of Metal stopper with damper	Model	Product number of Metal stopper with damper
MXQ8(A,C)	MXQA-A887	MXQ8B	MXQB-A887
MXQ12(A,C)	MXQA-A1287	MXQ12B	MXQB-A1287
MXQ16(A)	MXQA-A1687	MXQ16B	MXQB-A1687
MXQ20(A)	MXQA-A2087	MXQ20B	MXQB-A2087
MXQ25(A)	MXQA-A2587		

- Shock absorber

 **Caution**

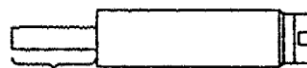
- ① Do not turn the screws at the bottom of the shock absorber body.

Not a screw for adjustment.  
Oil leakage can result.

- ② Do not damage the sliding surface of the piston rod of the shock absorber.

Otherwise, impaired durability and return failure can result.

Piston rod



Do not turn the screws at the bottom.

Damage is not allowed.

- ③ Shock absorber is a consumable. Replace the shock absorber when the energy absorption performance is reduced. Tighten the lock nut according to the tightening torque shown in the table on the right.

Model		Shock absorber model	Tightening torque Nm
MXQ6(A)	-	R J 0 6 0 3	0.85
MXQ8(A,C)	MXQ6B	R J 0 6 0 3	0.85
MXQ12(A,C)	MXQ8B	R J 0 8 0 5	1.67
MXQ16(A)	MXQ12B	R J 1 0 0 6	3.14
MXQ20(A)	MXQ16B	R J 1 0 0 7 H	3.14
MXQ25(A)	MXQ20B	R H 1 4 1 0	10.8

## 2-8 Handling of optional functions

●With end lock

 **Caution**

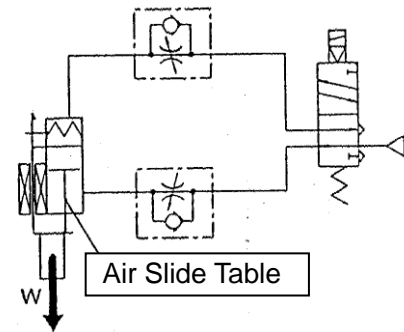
- ① The weight of the workpiece shall be maximum load mass or less.  
Load exceeding the maximum load mass can cause locking failure or the damage of the end lock mechanism.

Maximum load mass (kg)

Model	Without adjuster	Optional adjuster		
	Internal rubber cushion	Rubber stopper	With bumper Metal stopper	Shock absorber RJ
MXQ6(A)	0.6	0.6	-	0.6
MXQ8(A,C)	1	1	1	1
MXQ12(A,C)	2	2	2	1
MXQ16(A)	4	4	4	2.5
MXQ20(A)	6	6	6	5
MXQ25(A)	9	9	9	5.5

- ② Use 2 position 4/5 port solenoid valve.  
Control circuit such as exhaust center 3 position valve in which both ports exhaust, operation failure can result.
- ③ Connect the meter-out speed controller to the cylinder.  
Operation without meter-in control or speed controller can cause operation failure.
- ④ Release the pressure when performing manual release of the end lock. If the pressure remains when manual release is performed, damage to the workpiece may occur due to sudden action.

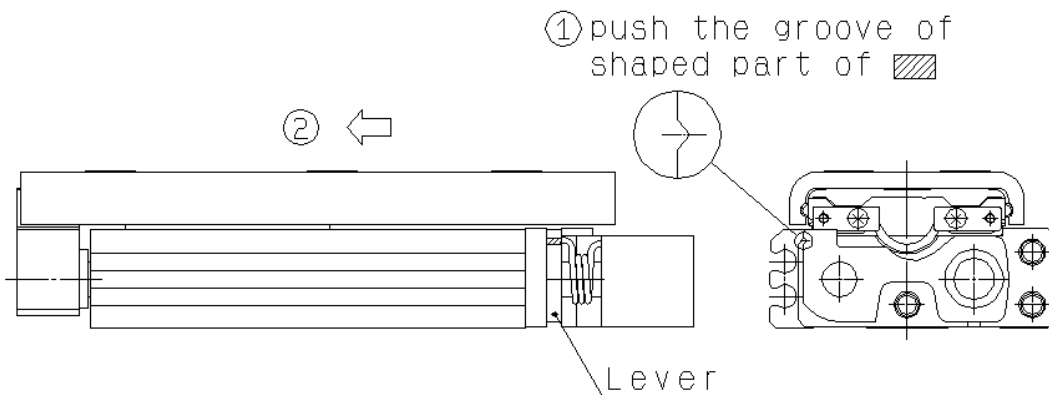
Use Recommended Air Pressure Circuit.



How to release the end lock manual

※ Confirm no pressure is applied before the work.

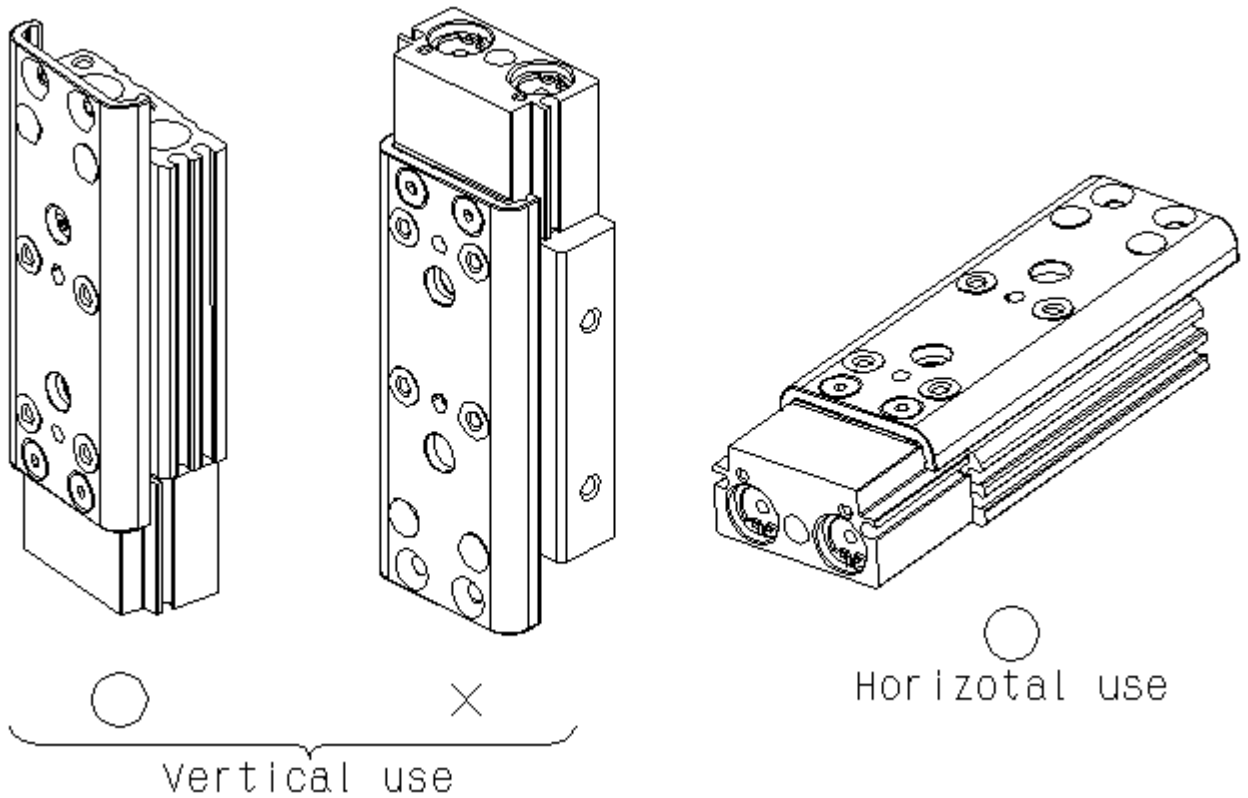
- ① Push down the lever
- ② Slide the table in the direction of the arrow.



- With buffer mechanism

 **Caution**

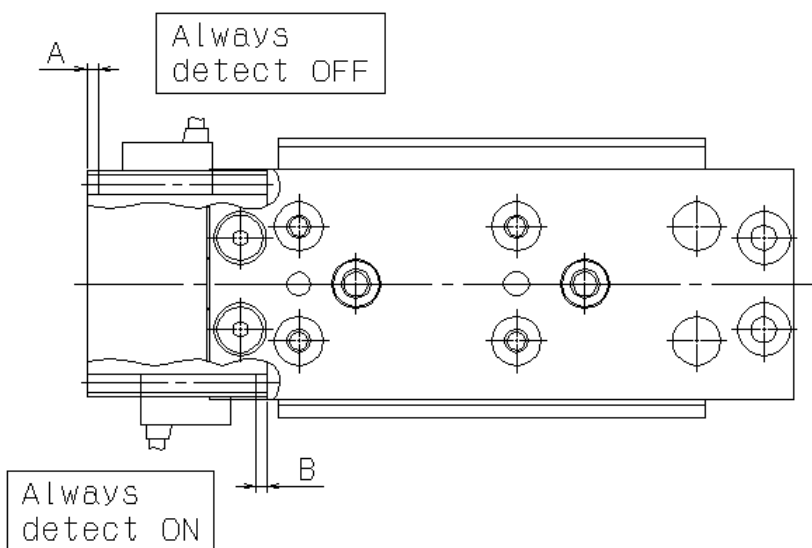
- ① Use air slide table with buffer in positions below.  
In horizontal operation, the buffer moves when operation starts depending on the load and the speed, starting the auto switch. Adjust the speed per load.



Buffer auto switch: Please refer the table below for proper stroke end detecting position.

※Adjust the switch position depending on the load and the speed.

(Unit : mm)

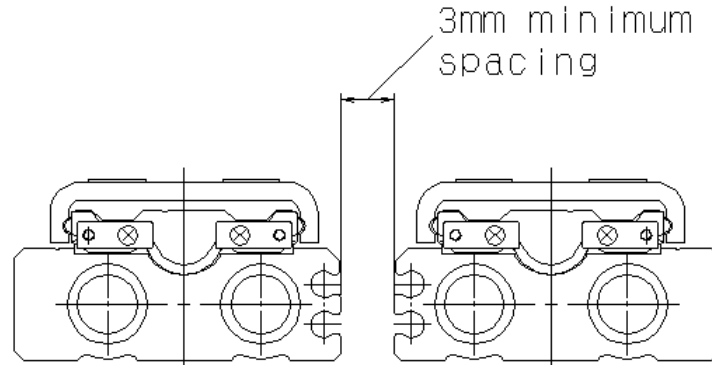


Model	A	B
MXQ6(A)	2.85	5.65
MXQ8(A,C)	2.4	5.6
MXQ12(A,C)	4	5.5
MXQ16(A)	5	5.5
MXQ20(A)	5.5	5
MXQ25(A)	10	8.5

## 2-9 Handling of symmetrical type

### Caution

Space 3mm or more when placing standard type and symmetrical type side by side.  
If there is not sufficient space between the adjusters, the auto switch may malfunction.

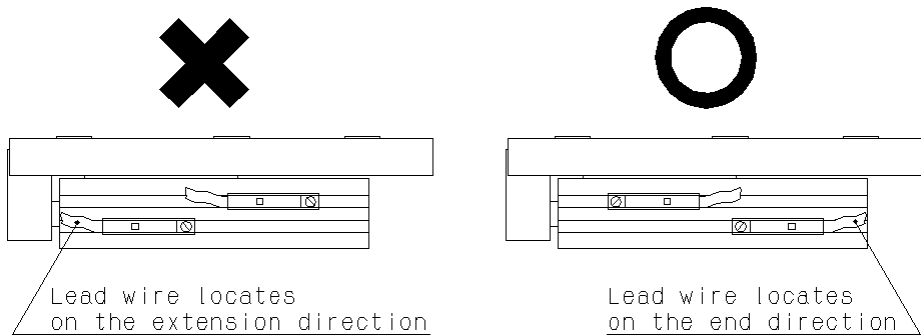


## 2-10 Mounting of auto switch

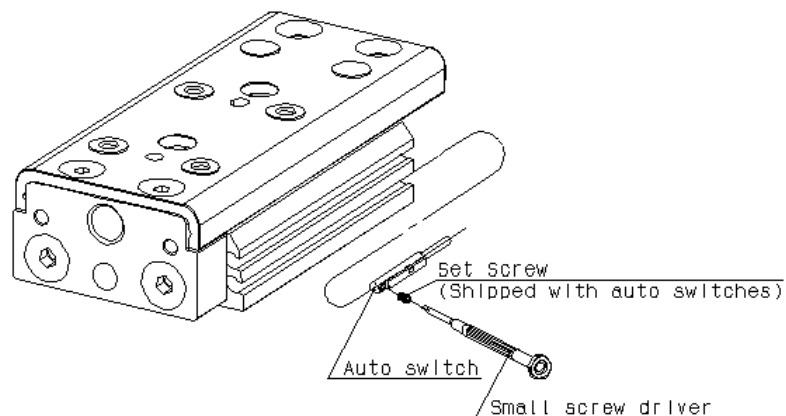
Precautions for mounting

### Caution

- ① Auto switch mounting tool  
For the tightening of the mounting screws (attached to the auto switch), use a watchmaker's screwdriver with a handle diameter of about 5 to 6 mm.
- ② Mounting method of auto switch  
If the lead wire is positioned like the drawing on the left, the auto switch may malfunction.  
Mount the lead wire like the drawing on the right.



- ③ Tightening torque  
0.05 to 0.15N·m  
As a guide, turn an additional 90 degrees from the position where it feels tight.



- ④ Please refer the table below for proper mounting position of the auto switch (when the stroke end is detected).  
For the setting of the auto switch, make adjustment checking the actual operating condition.



Solid state switch

Model	A										E							
	Stroke										Stroke							
	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150
MXQ6(A)	18	7.4	7.4	7.4	7.4	-	-	-	-	0	0.6	3.6	5.6	5.6	-	-	-	-
MXQ8(A,C)	13.9	13.9	13.9	13.9	13.9	13.9	-	-	-	5.1	5.1	5.1	11.1	28.1	5.1	-	-	-
MXQ12(A,C)	16.5	16.5	16.5	16.5	16.5	16.5	16.5	-	-	14.1	6.1	6.1	14.1	14.1	33.1	33.1	-	-
MXQ16(A)	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	-	20	14	14	21	21	27	46	46	-
MXQ20(A)	32.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	20.9	21.9	21.9	21.9	27.9	36.9	61.9	61.9	61.9
MXQ25(A)	34.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	28.7	27.7	27.7	27.7	40.7	40.7	42.7	65.4	65.7

Model	A										E							
	Stroke										Stroke							
	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150
MXQ6B	18	7.4	7.4	7.4	7.4	7.4	-	-	-	1	11.6	11.6	17.6	34.6	11.6	-	-	-
MXQ8B	29	13.9	13.9	13.9	13.9	13.9	13.9	-	-	2	9.1	9.1	17.1	17.1	36.1	36.1	-	-
MXQ12B	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	-	24.1	18.1	18.1	25.1	25.1	31.1	50.1	50.1	-
MXQ16B	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	33	23	23	23	29	38	63	63	63
MXQ20B	32.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	30.9	31.9	31.9	31.9	44.9	44.9	46.9	69.9	69.9

Solid state auto switch: D-M9□V / M9□WV

Model	A										E							
	Stroke										Stroke							
	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150
MXQ6(A)	18	7.4	7.4	7.4	7.4	-	-	-	-	2	2.6	5.6	7.6	7.6	-	-	-	-
MXQ8(A,C)	13.9	13.9	13.9	13.9	13.9	13.9	-	-	-	7.1	7.1	7.1	13.1	30.1	7.1	-	-	-
MXQ12(A,C)	16.5	16.5	16.5	16.5	16.5	16.5	16.5	-	-	16.1	8.1	8.1	16.1	16.1	35.1	35.1	-	-
MXQ16(A)	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	-	22	16	16	23	23	29	48	48	-
MXQ20(A)	32.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	22.9	23.9	23.9	23.9	29.9	38.9	63.9	63.9	63.9
MXQ25(A)	34.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	30.7	29.7	29.7	29.7	42.7	42.7	28.7	67.7	67.7

Model	A										E							
	Stroke										Stroke							
	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150
MXQ6B	18	7.4	7.4	7.4	7.4	7.4	-	-	-	3	13.6	13.6	19.6	36.6	13.6	-	-	-
MXQ8B	29	13.9	13.9	13.9	13.9	13.9	13.9	-	-	4	11.1	11.1	19.1	19.1	38.1	38.1	-	-
MXQ12B	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	-	26.1	20.1	20.1	27.1	27.1	33.1	52.1	52.1	-
MXQ16B	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	35	25	25	25	31	39	65	65	65
MXQ20B	32.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	32.9	33.9	33.9	33.9	46.9	46.9	32.9	71.9	71.9



Solid state switch

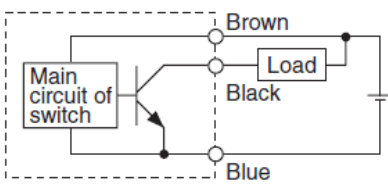
Model	A										E								
	Stroke										Stroke								
	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150	
MXQ6(A)	16	5.4	5.4	5.4	5.4	-	-	-	-	14	14.6	17.6	19.6	19.6	-	-	-	-	
MXQ8(A,C)	11.9	11.9	11.9	11.9	11.9	11.9	-	-	-	19.1	19.1	19.1	25.1	42.1	19.1	-	-	-	
MXQ12(A,C)	14.5	14.5	14.5	14.5	14.5	14.5	14.5	-	-	28.1	20.1	20.1	28.1	28.1	47.1	47.1	-	-	
MXQ16(A,C)	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	-	34	28	28	35	35	41	60	60	-	
MXQ20(A,C)	30.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	34.9	35.9	35.9	35.9	41.9	50.9	75.9	75.9	75.9	
MXQ25(A,C)	32.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	42.7	41.7	41.7	41.7	54.7	54.7	40.7	79.7	77.7	

Model	A										E								
	Stroke										Stroke								
	10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150	
MXQ6B	16	5.4	5.4	5.4	5.4	5.4	-	-	-	15	25.6	25.6	31.6	48.6	25.6	-	-	-	
MXQ8B	27	11.9	11.9	11.9	11.9	11.9	11.9	-	-	16	23.1	23.1	31.1	31.1	50.1	50.1	-	-	
MXQ12B	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	-	38.1	32.1	32.1	39.1	39.1	45.1	64.1	64.1	-	
MXQ16B	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	47	37	37	37	43	52	77	77	77	
MXQ20B	30.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	44.9	45.9	45.9	45.9	58.9	58.9	44.9	83.9	83.9	

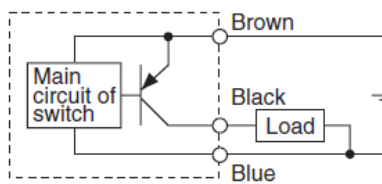
⑤ Please refer to the figure below of the wiring and connection of the auto switch.

## Basic Wiring

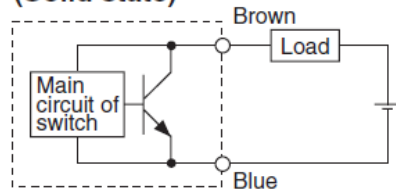
Solid state 3-wire, NPN



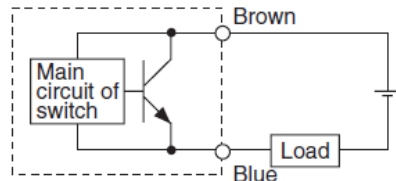
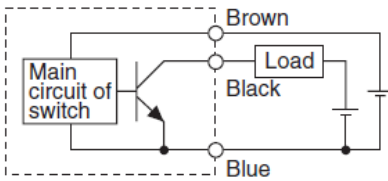
Solid state 3-wire, PNP



2-wire (Solid state)

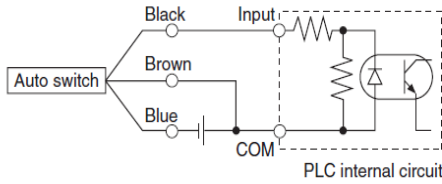


(Power supply for switch and load are separate.)

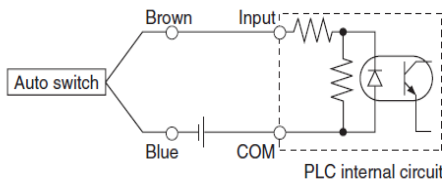


## Example of Connection with PLC (Programmable Logic Controller)

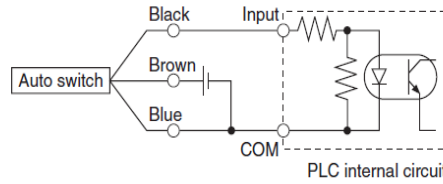
### • Sink input specifications 3-wire, NPN



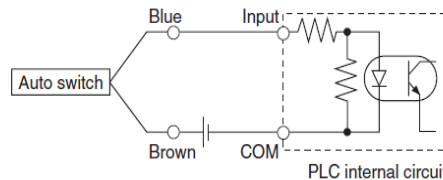
### 2-wire



### • Source input specifications 3-wire, PNP



### 2-wire

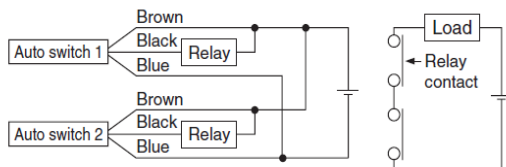


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

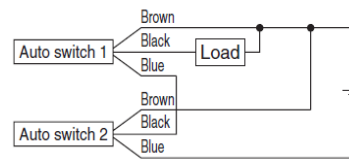
## Example of AND (Series) and OR (Parallel) Connection

### • 3-wire

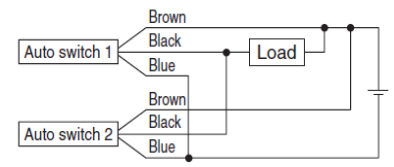
#### AND connection for NPN output (Using relays)



#### AND connection for NPN output (Performed with auto switches only)



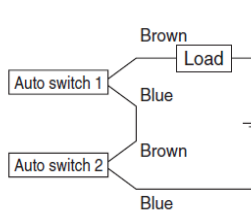
#### OR connection for NPN output



The indicator lights will light up when both of the auto switches are in the ON state.

### • 2-wire

#### 2-wire with 2-switch AND connection

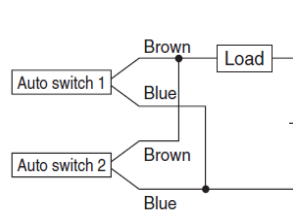


When two auto switches are connected in series, malfunction may occur because the load voltage will decrease in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \text{Residual voltage} \times 2 \text{ pcs.} \\ &= 24 \text{ V} - 4 \text{ V} \times 2 \text{ pcs.} \\ &= 16 \text{ V} \end{aligned}$$

Example: Power supply voltage 24 VDC  
Auto switch internal voltage drop 4 V

#### 2-wire with 2-switch OR connection



(Solid state)

When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase in the OFF state.

$$\begin{aligned} \text{Load voltage at OFF} &= \text{Leakage current} \times 2 \text{ pcs.} \times \text{Load impedance} \\ &= 1 \text{ mA} \times 2 \text{ pcs.} \times 3 \text{ k}\Omega \\ &= 6 \text{ V} \end{aligned}$$

Example: Load impedance 3 kΩ  
Auto switch leakage current 1 mA

(Reed)

Because there is no leakage current, the load voltage will not increase in the OFF state. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

## 3. Maintenance

### 3-1 Precautions for maintenance

#### ⚠ Warning

(1) Maintenance should be performed according to the procedure indicated in the Operation Manual. Improper handling can cause damage and malfunction of equipment and machinery.

(2) Removal of equipment, and supply/exhaust of compressed air

When components are removed, first confirm that measures are in place to prevent workpieces from dropping and/or equipment running away, etc. Cut the supply pressure and electric power and exhaust all compressed air from the system. Before restarting the equipment, confirm that measures are taken to prevent sudden movement.

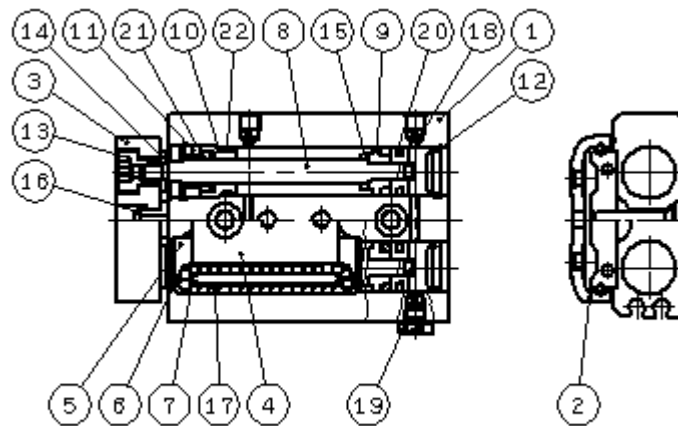
### 3-2 Replenishment of grease

#### ⚠ Caution

(1) Applying additional grease on the guide

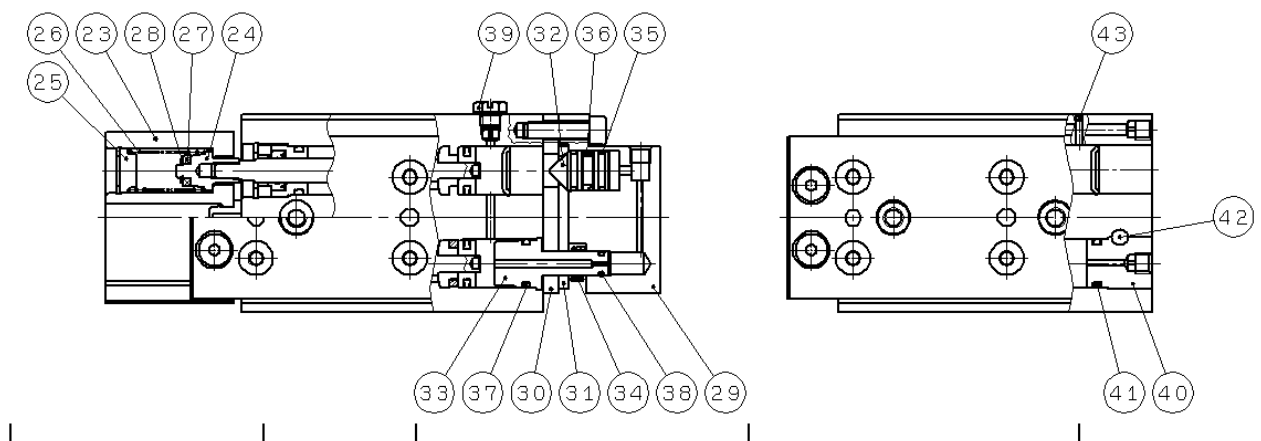
This product has been lubricated for life by the manufacturer, and it is not necessary to apply further grease. If grease is replenished, use lithium grease.

### 3-3 Construction/Parts list



#### 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	Cover support	Stainless steel	
7	Return guide	Synthetic resin	
8	Rod	Stainless steel	
9	Piston assembly		MXQ6(B),8(B,C),12(B,C) had a magnet on one side. MXQ6A,8A,12A, MXQ16(A,B),20(A,B),25(A) has magnets on both sides.
10	Rod cover	Aluminum alloy	Anodized
11	Seal support	Stainless steel (MXQ6(A,B)) Brass (MXQ8(A,B,C),12(A,B,C)) Aluminum alloy (MXQ16(A,B),20(A,B),25(A))	Electroless nickel plating (MXQ8(A,B,C),12(A,B,C)) Chromate treatment(MXQ16(A,B),20(A,B),25(A))
12	Head cap	Aluminum alloy	Anodized
13	Floating bushing	Stainless steel	
14	Floating bushing	Stainless steel	
15	Rod bumper	Polyurethane	
16	End bumper	Polyurethane	
17	Steel ball	Stainless steel	
18	Orifice	Polyacetal	
19	plug	Brass	Electroless nickel plating (Plug is used for MXQ6A,8A,12A, MXQ16(A,B),20(A,B),25(A))
20	Piston seal	NBR	
21	Rod seal	NBR	
22	O-ring	NBR	



With buffer

With end lock

Axial piping type

Buffer type / Component

No.	Description	Material	Note
23	End plate	Aluminum alloy	Hard anodized
24	Collar spring	Stainless steel	
25	Head cap	Stainless steel	
26	Spring	Stainless steel	
27	Magnet	Rare earth	
28	Washer	Stainless steel	

End lock type/ Component

No.	Description	Material	Note
29	ロック用ボディ	Aluminum alloy	Hard anodized
30	Spacer	Aluminum alloy	Hard anodized
31	Lever	Carbon steel	Rust proof treatment
32	Piston	Stainless steel	
33	Bushing	Stainless steel	
34	Return spring	Stainless steel	
35	Wear ring	Polvurethane	
36	Piston seal	NBR	
37	O-ring	NBR	
38	O-ring	NBR	
39	plug	Brass	Electroless nickel plating (Plug is used for MXQ6,8(C),12(C))

Axial piping type / Component

No.	Description	Material	Note
40	Bushing	Aluminum alloy	Chromate treatment (MXQ6,MXQ8(C),MXQ12(C) only)
41	O-ring	NBR	(MXQ6,MXQ8(C),MXQ12(C) only)
42	Parallel pin	Stainless steel	(MXQ6,MXQ8(C),MXQ12(C) only)
43	Steel ball	High carbon chromium	

Revision history
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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.  
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