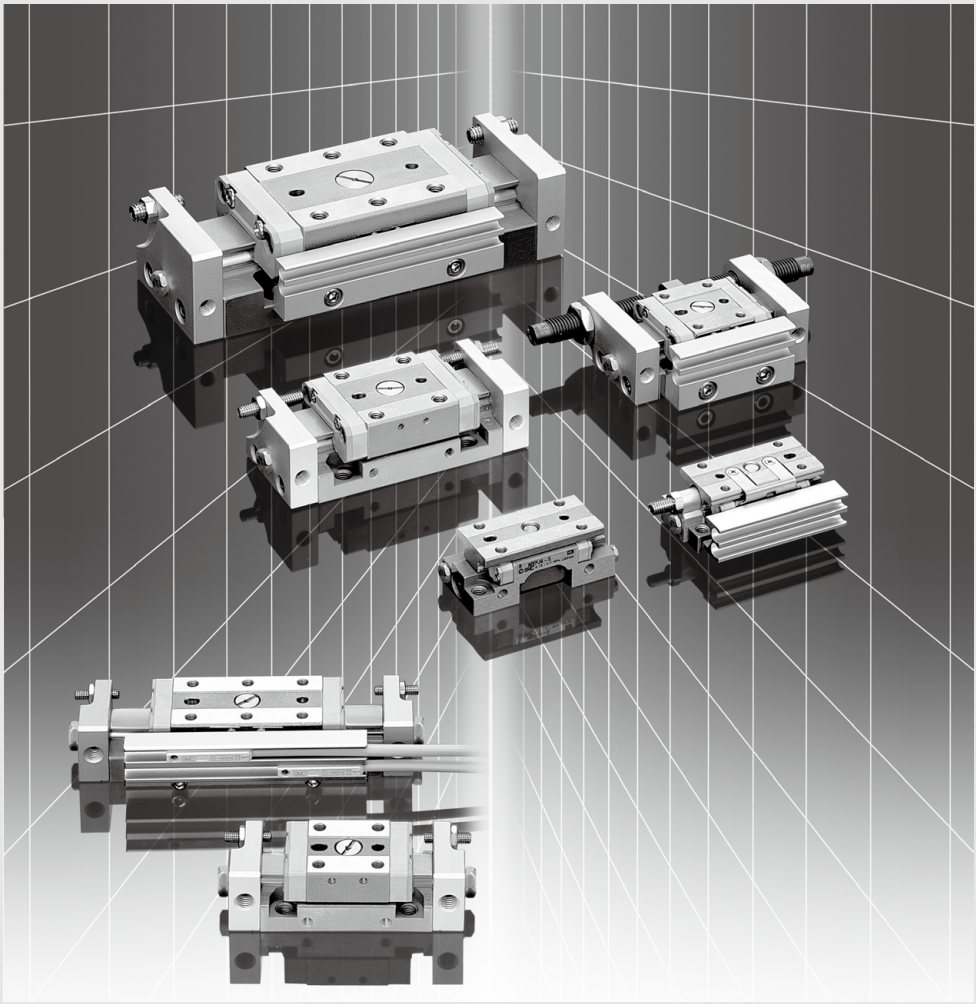
Air Slide Table

MXP Series

ø6, ø8, ø10, ø12, ø16

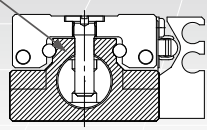
RoHS

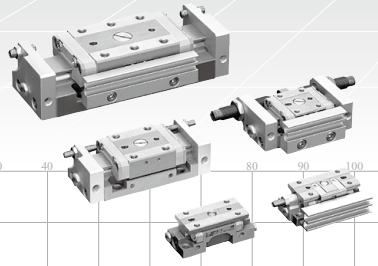


Cylinder: Built-in Linear Guide

High rigidity, High precision

Cylinder is built into the rail of the linear guide.



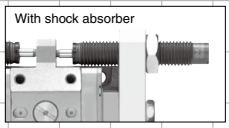


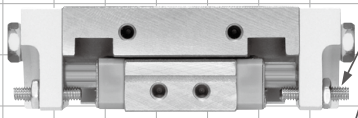
MXP
8,10,
12,16

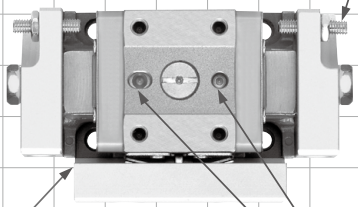
Adjuster

Three types (rubber stopper, metal stopper, shock absorber) are available.

With shock absorber



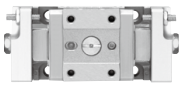


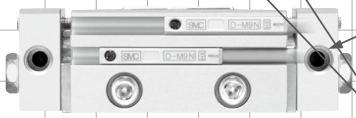


Auto switch attachable

Switch rail and magnet (Standard) Without switch rail and magnet are optional.

Without switch rail and magnet



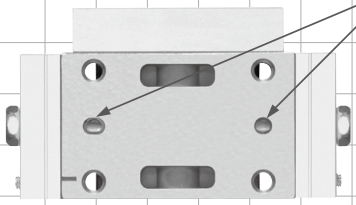


Highly flexible piping methods

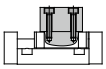
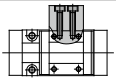
Piping possible in two directions: vertical or lateral.

Positioning pinhole

Job performance is improved during maintenance.

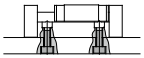
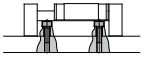
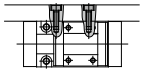


Work mounting tap

❶ Tapped on table top	❷ Tapped on table side
	 Note) Side mounting with shock absorber and MXP6 is not available.

Highly flexible mounting direction

Mounting from 3 directions.

❶ Body tapped	❷ Body through-hole	❸ Tapped on body side
		 Note) Side mounting of MXP6 is not available.

Compact Air Slide Table

Travelling parallelism∗: 0.004 mm
Parallelism: 0.02 mm

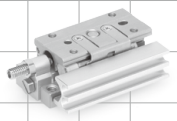
∗ Refer to page 451 for details of the traveling parallelism.

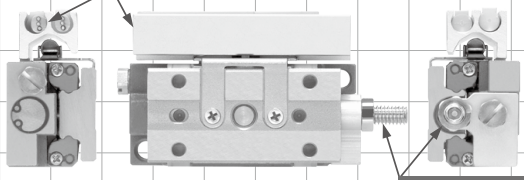
Numerous auto switch variations available

Reed switch, solid state switch, and 2-color indicator solid state auto switch can be mounted.

With auto switches and adjuster

MXP 6



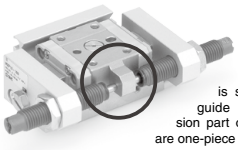


- Stroke adjustment range: 0 to 5 mm
- Available with rubber stopper, metal stopper.

Series	Stroke (mm) 5	10	15	20	25	30	Adjuster: Rubber stopper	Metal stopper	Shock absorber	Auto switch
MXP6	●	●					●	●	●	●
MXP8		●	●	●			●	●	●	●
MXP10		●	●	●			●	●	●	●
MXP12				●	●	●	●	●	●	●
MXP16				●	●	●	●	●	●	●

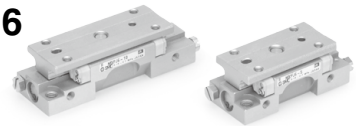
With shock absorber

Twice the allowable kinetic energy of a rubber stopper



Stopping accuracy is stable, because the guide block and the collision part of a shock absorber are one-piece construction.

MXPJ6



Compact: Height 17 x Width 20

Compact shape is realized by the cylinder built into the linear guide block.

Highly flexible piping methods

Piping possible in two directions: vertical or lateral.

MXP Series
Model Selection

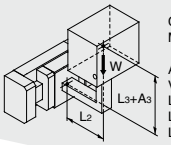
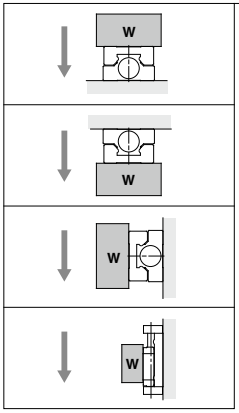
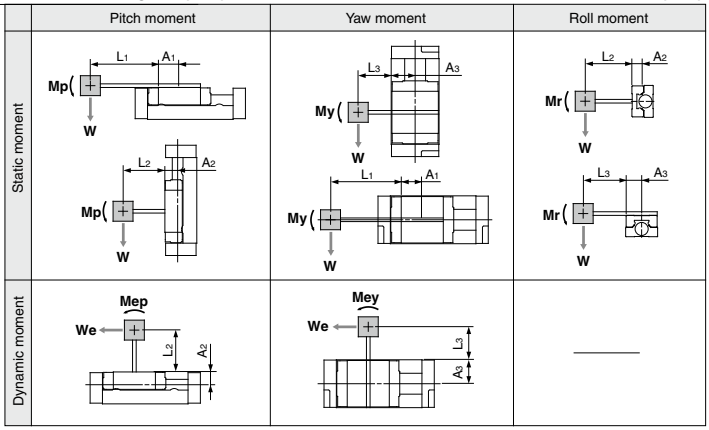
Model Selection Steps	Formula/Data	Selection Example
1 Operating Conditions		
Enumerate the operating conditions considering the mounting position and workpiece configuration. Check that the load mass does not exceed the maximum allowable load mass and that the average operating speed does not exceed the operating speed range.	• Model to be used • Mounting orientation • Average operating speed Va (mm/s) • Load mass W (kg): Fig. (1) · Table (2) • Overhang Ln (mm): Fig. (2)	 Cylinder: MXP10-10 Mounting: Horizontal wall mounting Average operating speed: Va = 300 [mm/s] Load mass: W = 0.2 [kg] L_2 = 20 mm L_3 = 30 mm
2 Kinetic Energy		
Find the kinetic energy E (J) of the load.	$E = \frac{1}{2} \cdot W \left(\frac{V}{1000}\right)^2$ Collision speed $V = \frac{1.4}{*} \cdot Va$ * Correction factor	$E = \frac{1}{2} \cdot 0.2 \left(\frac{420}{1000}\right)^2 = 0.018$ V = 1.4 x 300 = 420
Confirm that the kinetic energy of the load does not exceed the allowable kinetic energy.	Kinetic energy (E) < Allowable kinetic energy (Emax) Allowable kinetic energy Emax: Table (1)	Possible to use by E = 0.018 < Emax = 0.045
3 Load Factor		
3-1 Load Factor of Load mass		
Find the allowable load mass Wa (kg). Note) No need to consider this load factor in the case of using perpendicularly in a vertical position. (Define $\alpha_1 = 0$.)	$Wa = \beta \cdot Wmax$ Allowable load weight coefficient β: Graph (1) Max. allowable load mass Wmax: Table (2)	Wa = 1 x 1.2 = 1.2 β = 1 Wmax = 1.2
Find the load factor of the load mass α_1.	$\alpha_1 = W/Wa$	$\alpha_1 = 0.2/1.2 = 0.17$
3-2 Load Factor of Static Moment		
Find the static moment M (N·m).	M = W x 9.8 (Ln + An)/1000 Moment center position distance compensation amount An: Table (3)	Examine Mr. [As Mp and My does not arise, examination is not needed.] Mr = 0.2 x 9.8 (20 + 6.8)/1000 = 0.053
Find the allowable static moment Ma (N·m).	$Ma = \gamma \cdot Mmax$ Allowable moment coefficient γ: Graph (2) Maximum allowable moment Mmax: Table (4)	A_2 = 6.8 Mar = 1 x 4.2 = 4.2 γ = 1 Mrmax = 4.2
Find the load factor α_2 of the static moment.	$\alpha_2 = M/Ma$	$\alpha_2 = 0.053/4.2 = 0.013$
3-3 Load Factor of Dynamic Moment		
Find the dynamic moment Me (N·m).	$Me = 1/3 \cdot We \times 9.8 \frac{(Ln + An)}{1000}$ Load equivalent to collision $We = \delta \cdot W \cdot V$ δ: Damper coefficient Rubber stopper = 4/100 Shock absorber = 1/100 Metal stopper = 16/100 Corrected value for moment center position distance An: Table (3)	Examine Mep. $Mep = 1/3 \times 3.36 \times 9.8 \times \frac{(20 + 6.8)}{1000} = 0.29$ We = 4/100 x 0.2 x 420 = 3.36 A_2 = 6.8 Meap = 0.7 x 1.7 = 1.19 γ = 0.7 Mp max = 1.7
Find the allowable dynamic moment Mea (N·m).	$Mea = \gamma \cdot Mmax$ Allowable moment coefficient γ: Graph (2) Max. allowable moment Mmax: Table (4)	$\alpha_3 = 0.29/1.19 = 0.24$ Examine Mey. $Mey = 1/3 \times 3.36 \times 9.8 \times \frac{(30 + 10.5)}{1000} = 0.44$
Find the load factor α_3 of the dynamic moment.	$\alpha_3 = Me/Mea$	We = 33.6 A_1 = 10.5 Meay = 1.19 (Same as Meap) $\alpha'_3 = 0.44/1.19 = 0.37$
3-4 Sum of the Load Factors		
Use is possible if the sum of the load factors does not exceed 1.	$\alpha_1 + \alpha_2 + \alpha_3 < 1$	Can be used based on $\alpha_1 + \alpha_2 + \alpha_3 + \alpha'_3 =$ 0.17 + 0.013 + 0.24 + 0.37 = 0.79 < 1

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



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

Fig. (2) Overhang: Ln (mm), Correction Values for Moment Center Distance: An (mm)



Note) Static moment: Moment by gravity Dynamic moment: Moment by stopper collision

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

Model	Allowable kinetic energy		
	Rubber stopper	Shock absorber	Metal stopper
MXPJ6	0.010	——	——
MXP 6	0.010	——	0.005
MXP 8	0.033	——	0.017
MXP10	0.045	0.090	0.023
MXP12	0.076	0.152	0.038
MXP16	0.135	0.270	0.068

Table (2) Max. Allowable Load Mass: Wmax (kg)

Model	Maximum allowable load weight
MXPJ6	0.32
MXP 6	
MXP 8	0.75
MXP10	1.2
MXP12	1.7
MXP16	3

Graph (1) Allowable Load Mass Coefficient: β

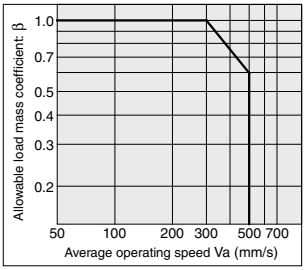
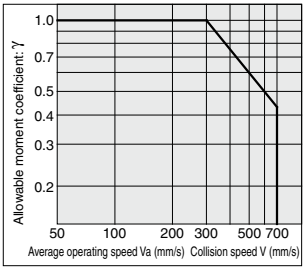


Table (3) Moment Center Position Distance Compensation Amount: An (mm)

Model	Stroke	Moment center position distance compensation amount (Refer to Fig. (2).)		
		A1	A2	A3
MXPJ6 **MXP 6**	5	18.5	5.3	9
	10	23.5		
MXP 8	10	10.5	7.4	11
	20	20.5		
MXP10	10	10.5	6.8	13.5
	20	19.5		
MXP12	15	14.5	8	16
	25	24.5		
MXP16	20	20	12.5	23
	30	28		

Graph (2) Allowable Moment Coefficient: γ



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

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

Model	Pitch/Yaw moment: Mpmax/Mymax						Roll moment: Mrmax					
	Stroke (mm)						Stroke (mm)					
	5	10	15	20	25	30	5	10	15	20	25	30
MXPJ6 **MXP 6**	1.4	2.3	—	—	—	—	2.6	3.5	—	—	—	—
MXP 8	—	1.4	—	5.7	—	—	—	2.6	—	5.6	—	—
MXP10	—	1.7	—	6.3	—	—	—	4.2	—	8.5	—	—
MXP12	—	—	4.5	—	13	—	—	—	9.8	—	17	—
MXP16	—	—	—	12	—	28	—	—	—	26	—	41

Symbol

Symbol	Definition	Unit	Symbol	Definition	Unit
An (n = 1 to 3)	Correction values of moment center position distance	mm	**V**	Collision speed	mm/s
E	Kinetic energy	J	**Va**	Average operating speed	mm/s
Emax	Allowable kinetic energy	J	**W**	Load mass	kg
Ln (n = 1 to 3)	Overhang	mm	**Wa**	Allowable load mass	kg
M (Mp, My, Mr)	Static moment (pitch, yaw, roll)	N·m	**We**	Mass equivalent to impact	kg
Ma (Map, May, Mar)	Allowable static moment (pitch, yaw, roll)	N·m	**Wmax**	Max. allowable load mass	kg
Me (Mep, Mey)	Dynamic moment (pitch, yaw)	N·m	α	Load factor	—
Mea (Meap, Meay)	Allowable dynamic moment (pitch, yaw)	N·m	β	Allowable load mass coefficient	—
Mmax (Mpmax, Mymax, Mrmax)	Maximum allowable moment (pitch, yaw, roll)	N·m	γ	Allowable moment coefficient	—

Air Slide Table
MXP Series
ø6, ø8, ø10, ø12, ø16

RoHS

How to Order

MXP 12 – 15 [ ] [ ] – M9BW [ ] – [ ]

Bore size/ Standard stroke (mm)

6	5, 10
8	10, 20
10	10, 20
12	15, 25
16	20, 30

Adjuster option

Nil	Rubber stopper
B	Shock absorber
C	Metal stopper

Magnet/Switch rail

Nil	With magnet and rail
N	Without magnet and rail

∗ Auto switch cannot be mounted on type N (without magnet and rail).

Auto switch

Nil	Without auto switch

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

∗ In the case of MXP6-5, with 2 auto switches are available for D-M9□ type and D-M9□V type only. For other switches, no other choice is affordable but with 1 piece attached (symbol: S).

Made to Order
For details, refer to page 449.

Note 1) Adjuster for MXP6 series is available for one side only.
Note 2) Shock absorber is not available in MXP6 and MXP8 series.
Note 3) Adjusting bolt of metal stopper uses stainless steel 304.
For heat treated specifications, refer to "Made to Order Specifications".

Applicable Auto Switches/Refer to pages 1289 to 1383 for further information on auto switches.

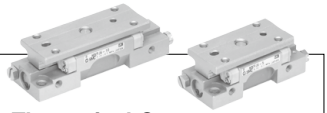
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Perpendicular	Auto switch model: In-line	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	**M9NV**	**M9N**	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)			**M9PV**	**M9P**	●	●	●	○	○		
				2-wire	12 V		**M9BV**	**M9B**	●	●	●	○	○	—	
	Diagnostic indication (2-color indicator)			3-wire (NPN)	5 V, 12 V		**M9NWV**	**M9NW**	●	●	●	○	○	IC circuit	
				3-wire (PNP)			**M9PWV**	**M9PW**	●	●	●	○	○		
				2-wire	12 V		**M9BWV**	**M9BW**	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)	5 V, 12 V		**M9NAV**∗1	**M9NA**∗1	○	○	●	○	○	IC circuit	
				3-wire (PNP)			**M9PAV**∗1	**M9PA**∗1	○	○	●	○	○		
				2-wire	12 V		**M9BAV**∗1	**M9BA**∗1	○	○	●	○	○	—	
Reed auto switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96V**	**A96**	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	**A93V**∗2	**A93**	●	●	●	●	—	—	Relay, PLC
							100 V or less	**A90V**	**A90**	●	—	●	—	—	IC circuit	

∗1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
∗2 1 m type lead wire is only applicable to D-A93.

∗ Lead wire length symbols: 0.5 m····· Nil (Example) M9NW
1 m····· M (Example) M9NWM
3 m····· L (Example) M9NWL
5 m····· Z (Example) M9NWZ

∗ Solid state auto switches marked with "○" are produced upon receipt of order.

∗ Since there are other applicable auto switches than listed, refer to page 463 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1358 and 1359.
∗ Auto switches are shipped together (not assembled).



MXPJ6/Air Slide Table ø6

How to Order

MXPJ6 – 10

Standard stroke

5	5 mm
10	10 mm

∗ **MXPJ6 with auto switch is not available.**

Specifications

Bore size (mm)	6
Piping port size	M3 x 0.5
Fluid	Air
Action	Double acting
Operating pressure	0.15 to 0.7 MPa
Proof pressure	1.05 MPa
Ambient and fluid temperature	–10 to 60°C
Operating speed range (Average operating speed)	50 to 500 mm/s
Cushion	Rubber bumper
Lubrication	Non-lube
Stroke length tolerance	$^{+1}_{0}$ mm

Theoretical Output

(N)

Bore size (mm)	Piston area (mm^2)	Operating pressure (MPa) 0.2	0.3	0.4	0.5	0.6	0.7
6	28	6	8	11	14	17	20

Stroke

(mm)

Model	Standard stroke
MXPJ6	5, 10

Weight

(g)

Model	Body weight
MXPJ6-5	80
MXPJ6-10	105

MXP6

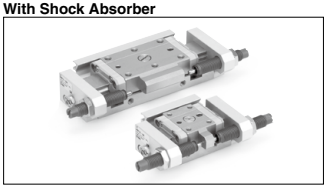
MXP8

MXP10

MXP12

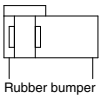
MXP16

With Shock Absorber



∗Exclusive body is to be used for the one with shock absorber. Changing specifications, such as replacing component parts and retrofitting shock absorber is not possible.

Symbol



Made to Order

Made to Order: Individual Specifications
(For details, refer to pages 464 to 466.)

Symbol	Specifications
–X7	PTFE grease
–X9	Grease for food processing machines
–X16	Heat treated metal stopper bolt specification
–X23	Axial piping port set screw specification
–X39	Fluororubber seal
–X42	Anti-rust guide specification
–X51	Long adjustment nut specification

For clean room specifications, refer to the Web Catalog.

Moisture Control Tube IDK Series

When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.
Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to the **Web Catalog**.

Specifications

Model		MXP6	MXP8	MXP10	MXP12	MXP16
Bore size (mm)		6	8	10	12	16
Piping port size		M3 x 0.5	M5 x 0.8			
Fluid		Air				
Action		Double acting				
Operating pressure		0.15 to 0.7 MPa				
Proof pressure		1.05 MPa				
Ambient and fluid temperature		–10 to 60°C				
Operating speed range (Average operating speed)		50 to 500 mm/s (Adjuster option/Metal stopper: 50 to 200 mm/s)				
Cushion		Rubber bumper Shock absorber (Option is not available for MXP6 and MXP8 series) None (Adjuster option/Metal stopper)				
Lubrication		Non-lube				
Adjuster		Standard equipment (Adjustable on one side only, for the MXP6)				
Stroke adjustment range	**Rubber stopper**	0 to 5 mm on one side only	Each 0 to 3 mm on both ends			
	Shock absorber	—	Each 0 to 5 mm on both ends			
	Metal stopper	0 to 6 mm on one side only	Each 0 to 5 mm on both ends		Each 0 to 4 mm on both ends	
Auto switch		Reed auto switch (2-wire, 3-wire) Solid state auto switch (2-wire, 3-wire) 2-color indicator solid state auto switch (2-wire, 3-wire)				
Stroke length tolerance		$^{+1}_{0}$ mm				

None) Average operating speed: Speed that the stroke is divided by a period of time from starting the operation to reaching the end.

Theoretical Output

(N)

Bore size (mm)	Piston area (mm^2)	Operating pressure (MPa)					
		0.2	0.3	0.4	0.5	0.6	0.7
6	28	6	8	11	14	17	20
8	50	10	15	20	25	30	35
10	79	16	24	32	40	47	55
12	113	23	34	45	57	68	79
16	201	40	60	80	101	121	141

Standard Stroke

(mm)

Model	Standard stroke
MXP6	5, 10
MXP8	10, 20
MXP10	10, 20
MXP12	15, 25
MXP16	20, 30

Weight

(g)

Model	Body mass		Additional weight of magnet and switch rail
	Rubber bumper Metal stopper	Shock absorber	
MXP6-5	80	—	10
MXP6-10	105	—	10
MXP8-10	100	—	8
MXP8-20	160	—	12
MXP10-10	130	170	13
MXP10-20	210	255	20
MXP12-15	210	250	17
MXP12-25	320	375	23
MXP16-20	640	700	20
MXP16-30	830	905	23

Shock Absorber Specifications

Shock absorber model		RB0805N	RB0806N
Applicable slide table		MXP10/12	MXP16
Max. energy absorption (J)		0.98	2.94
Stroke absorption (mm)		5	6
Max. collision speed (mm/s)		50 to 500	
Max. operating frequency (cycle/min)		80	80
Max. allowable thrust (N)		245	245
Ambient temperature range (°C)		–10 to 60	
Spring force (N)	**Extended**	1.96	1.96
	Retracted	3.83	4.22
Weight (g)		15	15

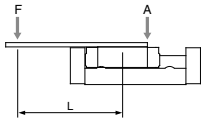
∗The shock absorber service life is different from that of the MXP cylinder depending on the operating conditions. Refer to the RB series Specific Product Precautions for the replacement period.

Table Deflection (Reference Values)

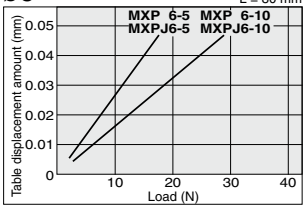
The graphs below show the table displacement when the static moment load is applied to the table. The graphs do not show the loadable weight. Refer to the Model Selection for the loadable weight.

Table displacement due to pitch moment load

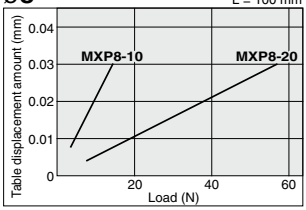
Displacement on A when load is applied on F.



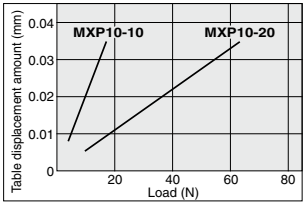
ø6 L = 80 mm



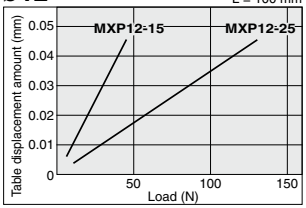
ø8 L = 100 mm



ø10 L = 100 mm



ø12 L = 100 mm



ø16 L = 120 mm

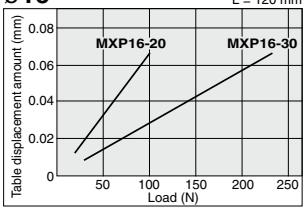
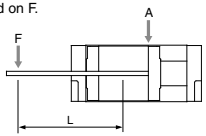
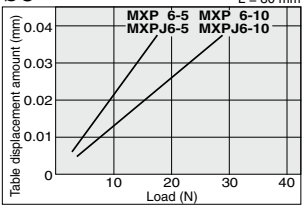


Table displacement due to yaw moment load

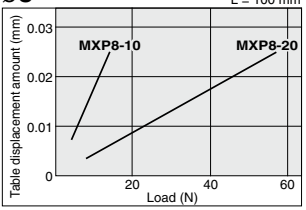
Displacement on A when load is applied on F.



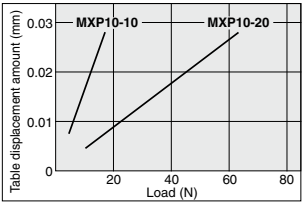
ø6 L = 80 mm



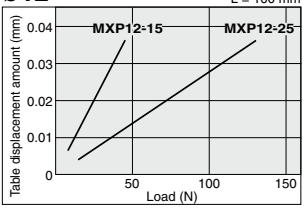
ø8 L = 100 mm



ø10 L = 100 mm



ø12 L = 100 mm



ø16 L = 120 mm

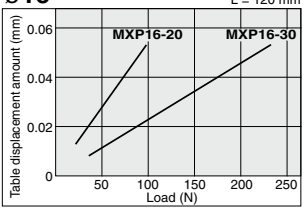
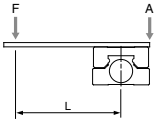
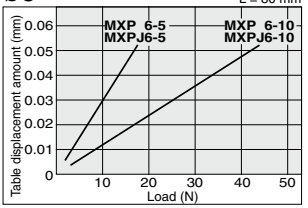


Table displacement due to roll moment load

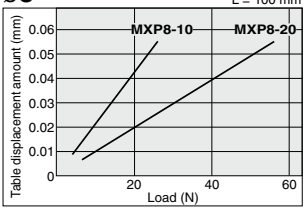
Displacement on A when load is applied on F.



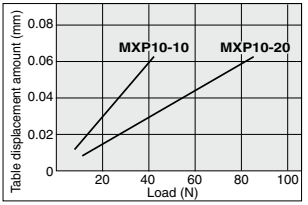
ø6 L = 80 mm



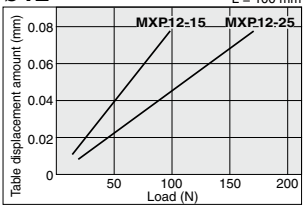
ø8 L = 100 mm



ø10 L = 100 mm



ø12 L = 100 mm



ø16 L = 120 mm

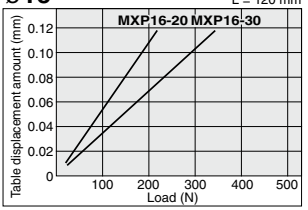
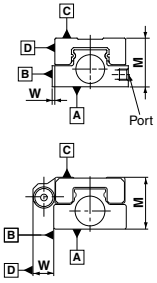
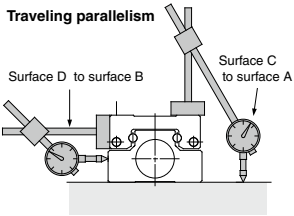


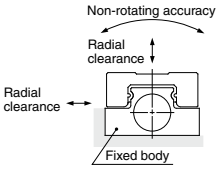
Table Accuracy



Traveling parallelism



The amount of deflection on a dial gauge when the guide block travels a full stroke with the body secured on a reference base surface.



Model	MXPJ6	MXP6	MXP8	MXP10	MXP12	MXP16
Radial clearance (μm)	0 to –2	0 to –2	0 to –3	0 to –3	0 to –5	0 to –7
Table non-rotating accuracy (deg)	0 Note)					

Note) In theory, non-rotating table accuracy is zero by the preloaded specification. However, in some actual cases, a moment can be applied and can cause deflection in an individual part. Therefore, refer to the table displacement amount on page 334.

With shock absorber

(mm)

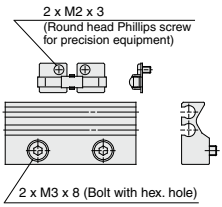
Model		MXPJ6	MXP6	MXP8	MXP10	MXP12	MXP16
Parallelism	Surface **C** to surface **A**	0.02					
	Surface **D** to surface **B**	0.02					
Traveling parallelism	Surface **C** to surface **A**	0.004					
	Surface **D** to surface **B**	0.004					
M dimension tolerance		±0.05					
W dimension tolerance		±0.05					

Option Specifications

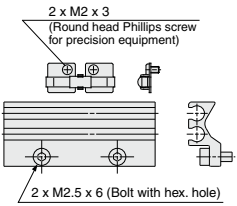
Rail assembly for mounting auto switch

When auto switch is mounted on air slide table without rail (MXP□-□N), this assembly is used.

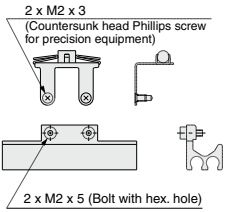
Dimensions



MXP10, 12, 16



MXP8



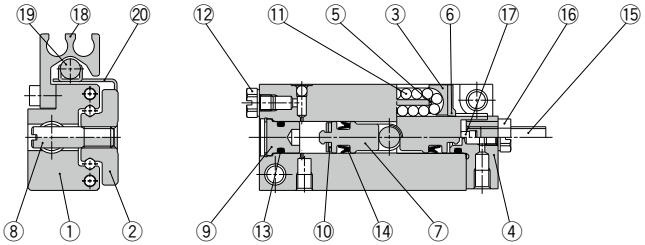
MXP6

Applicable size	Switch rail part no.	Note
MXP6-5	MXP-AD6-5	With magnet and mounting screw
MXP6-10		
MXP8-10	MXP-AD8-10	
MXP8-20	MXP-AD8-20	
MXP10-10	MXP-AD10-10	
MXP10-20	MXP-AD10-20	
MXP12-15	MXP-AD12-15	
MXP12-25	MXP-AD12-25	
MXP16-20	MXP-AD10-20	
MXP16-30	MXP-AD12-25	

Note) MXP16-20 and MXP10-20 are common.
MXP16-30 and MXP12-25 are common.

Construction

MXP6



Component Parts

No.	Description	Material	Note
1	**Body**	Hardening steel	Heat treated
2	**Table**	Hardening steel	Heat treated
3	**Cover**	Resin	
4	**End plate**	Stainless steel	
5	**Return guide**	Resin	
6	**Scraper**	Stainless steel, NBR	
7	**Piston**	Brass	Electroless nickel plated
8	**Joint shaft**	Carbon steel	Electroless nickel plated
9	**End cap**	Brass	Electroless nickel plated
10	**Rod bumper**	Polyurethane	
11	**Steel ball**	High carbon chrome bearing steel	
12	**Plug**	Brass, Stainless steel, NBR	Electroless nickel plated

Replacement Parts/ Seal Kit

Bore size (mm)	Kit no.	Contents
6	MXP6-PS	2 pieces of no. ⑬, ⑭ and Gasket for ⑫

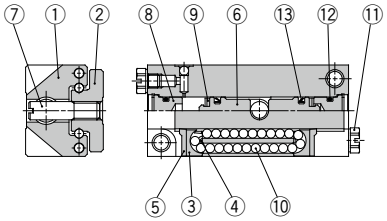
Component Parts

No.	Description	Material	Note
13	**O-ring**	NBR	
14	**Piston seal**	NBR	
15	**Adjustment bolt**	Carbon steel (Rubber stopper)	Zinc chromated
		Stainless steel (Metal stopper)	
16	**Adjustment nut**	Carbon steel	Nickel plated
17	**Adjustment bumper**	Polyurethane	None for the metal stopper
18	**Switch rail**	Aluminum alloy	Hard anodized
19	**Magnet**	—	
20	**Magnet holder**	Steel	Electroless nickel plated

Replacement Parts/ Grease Pack

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

MXPJ6



Component Parts

No.	Description	Material	Note
1	**Body**	Hardening steel	Heat treated
2	**Table**	Hardening steel	Heat treated
3	**Cover**	Resin	
4	**Return guide**	Resin	
5	**Scraper**	Stainless steel, NBR	
6	**Piston**	Brass	Electroless nickel plated
7	**Joint shaft**	Carbon steel	Electroless nickel plated
8	**End cap**	Brass	Electroless nickel plated
9	**Rod bumper**	Polyurethane	
10	**Steel ball**	High carbon chrome bearing steel	
11	**Plug**	Brass, Stainless steel, NBR	Electroless nickel plated
12	**O-ring**	NBR	
13	**Piston seal**	NBR	

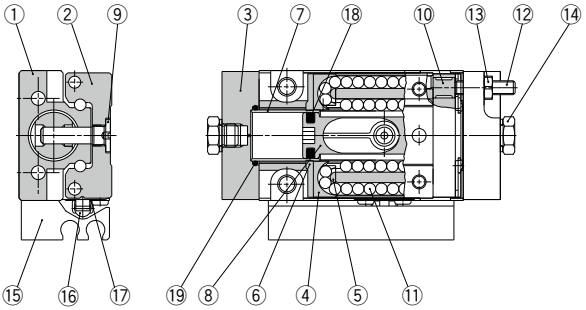
Replacement Parts/ Grease Pack

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

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
6	MXPJ6-PS	2 pieces of no. ⑫ and ⑬ and Gasket for ⑪

MXP8,10,12,16



Component Parts

No.	Description	Material	Note
1	**Body**	Hardening steel	Heat treated
2	**Guide block**	Hardening steel	Heat treated
3	**End plate**	Aluminum alloy	Hard anodized
4	**Cover**	Resin	
5	**Return guide**	Resin	
6	**Scraper**	Stainless steel, NBR	
7	**Tube**	Stainless steel	(Except ø8)
8	**Piston**	Resin	
9	**Joint shaft**	Carbon steel	Electroless nickel plated
10	**Adjustment bumper**	Polyurethane	None for the metal stopper

Component Parts

No.	Description	Material	Note
11	**Steel ball**	High carbon chrome bearing steel	
12	**Adjustment bolt**	Carbon steel (Rubber stopper)	Zinc chromated
		Stainless steel (Metal stopper)	
13	**Adjust nut**	Carbon steel	ø8 to ø12: Zinc chromated ø16: Nickel plated ∗ Nickle plated for the type with a shock absorber
14	**Plug**	Carbon steel, Stainless steel, NBR	Nickel plated
15	**Switch rail**	Aluminum alloy	Hard anodized
16	**Magnet**	—	
17	**Magnet holder**	Steel	Electroless nickel plated
18	**Piston seal**	NBR	
19	**O-ring**	NBR	

Replacement Parts/ Seal Kit

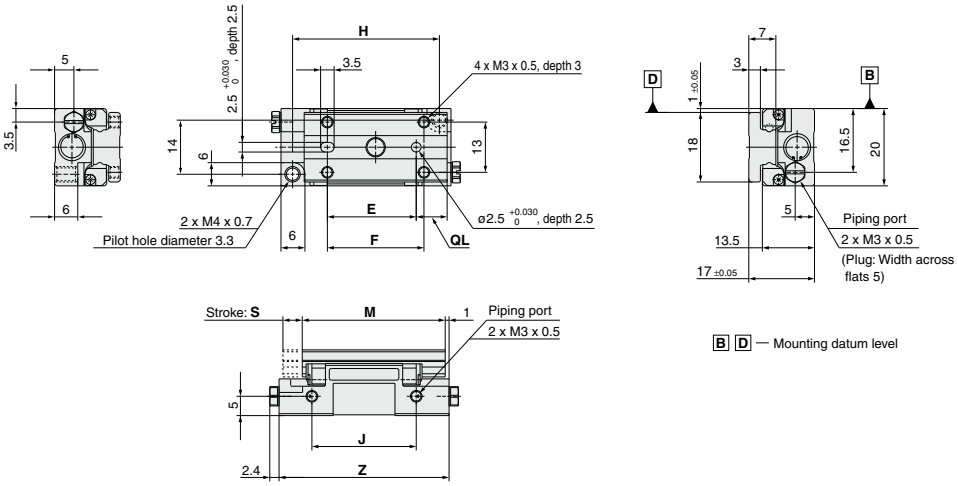
Bore size (mm)	Kit no.	Contents
8	MXP8-PS	2 pieces of no.⑱, ⑲ and Gasket for ⑭
10	MXP10-PS	
12	MXP12-PS	
16	MXP16-PS	

Replacement Parts/ Grease Pack

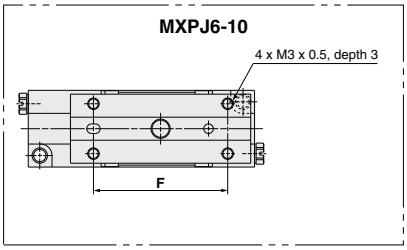
Applied unit	Grease pack part no.
Guide unit	GR-S-010 (10g)
	GR-S-020 (20g)
Cylinder unit	GR-L-005 (5g)
	GR-L-010 (10g)

Dimensions: MXPJ6

MXPJ6-5

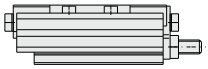


MXPJ6-10



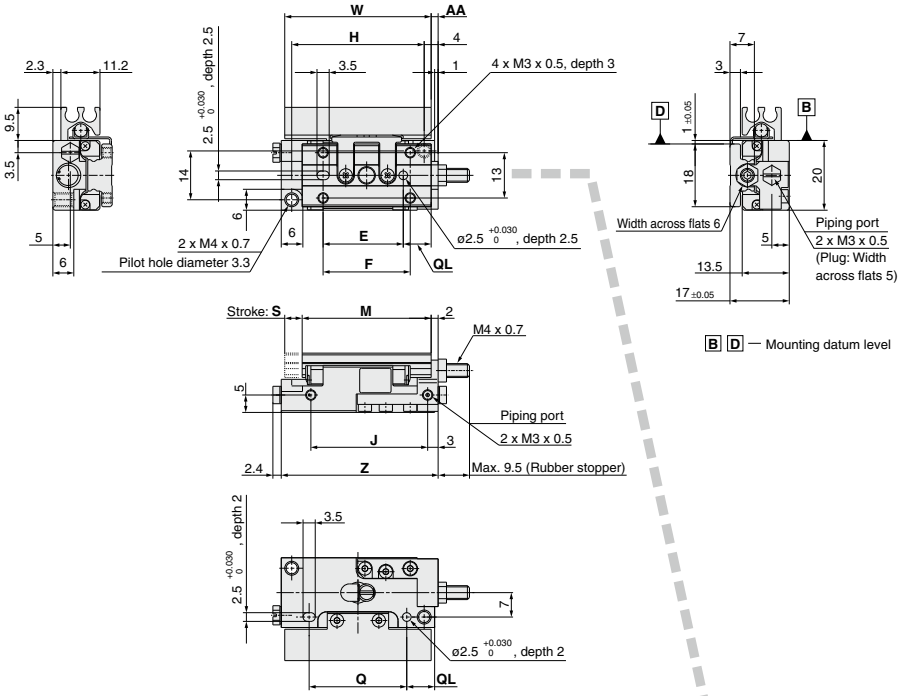
(mm)

Model	E	F	H	J	M	Q	QL	S	Z
MXPJ6-5	23	25	38	27	37	28	8	5	44
MXPJ6-10	30	35	53	42	47	37	11	10	59

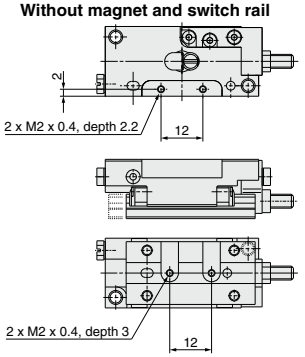


Note) Since the body and table are made of a magnetic substance, it could become magnetized if touched by a magnet, etc. This could cause auto switch malfunction.

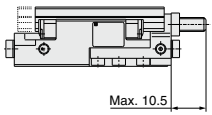
MXP6-5



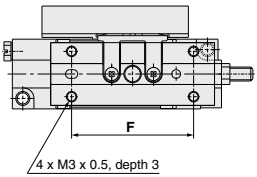
Without magnet and switch rail



Metal stopper



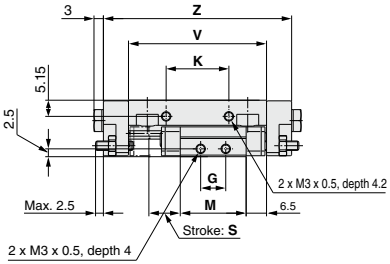
MXP6-10

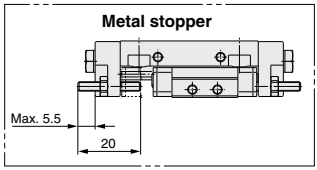


(mm)

Model	E	F	H	J	M	Q	QL	S	W	Z	AA
MXP6-5	23	25	38	33.5	37	28	8	5	42	45	2
MXP6-10	30	35	53	48.5	47	37	11	10	42	60	9.5

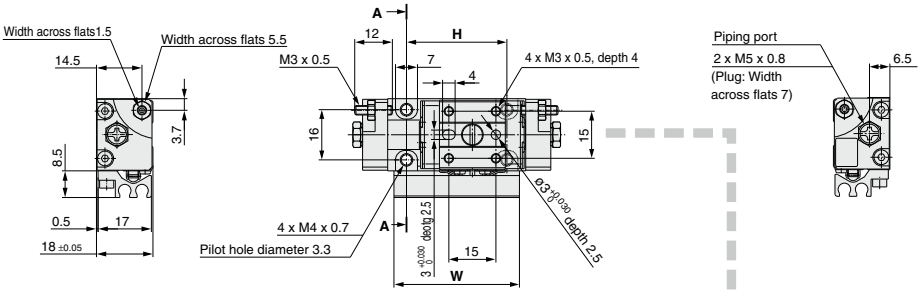
Dimensions: MXP8

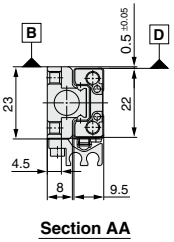




Note) Since the body and table are made of a magnetic substance, it could become magnetized if touched by a magnet, etc. This could cause auto switch malfunction.

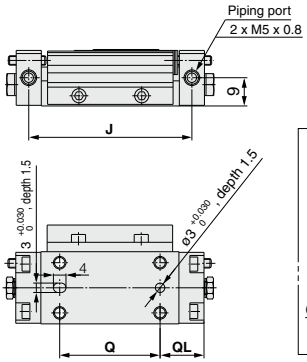
MXP8-10

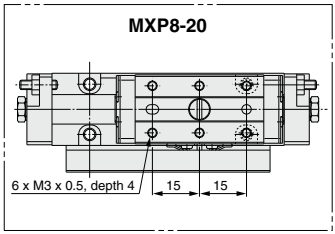


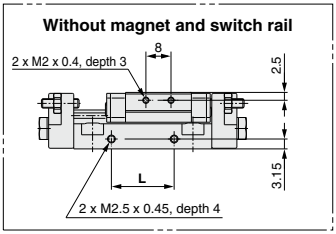


Section AA

B D — Mounting datum level



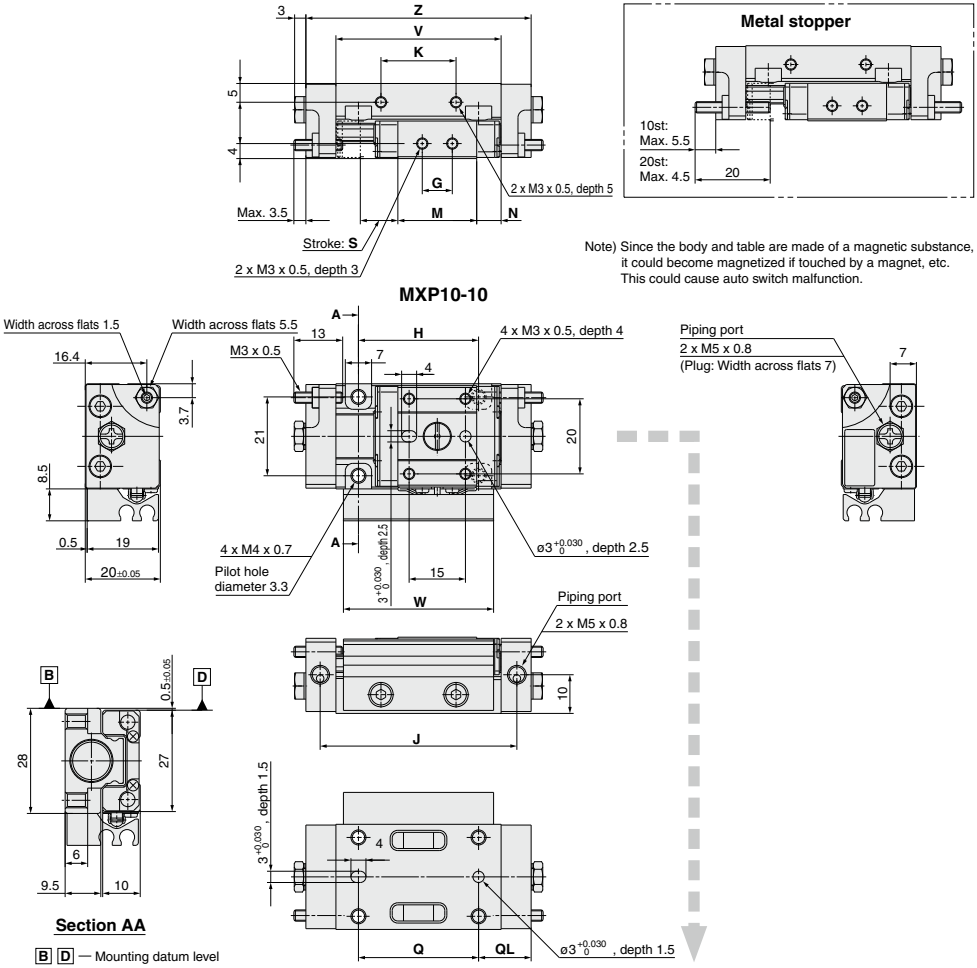




(mm)

Model	G	H	J	K	L	M	Q	QL	S	V	W	Z
MXP8-10	8	32	52	20	20	21	32	14	10	44	40	60
MXP8-20	20	50	82	36	36	41	50	20	20	74	65	90

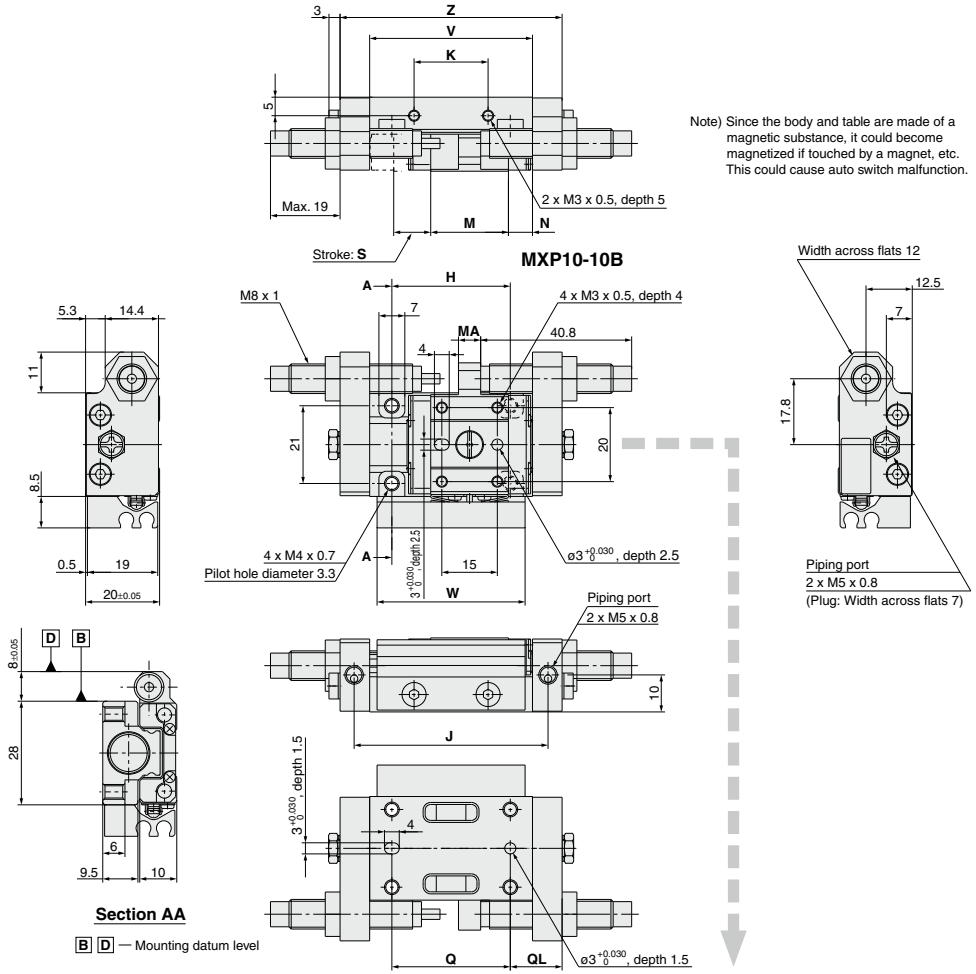
Dimensions: MXP10



(mm)

Model	G	H	J	K	L	M	N	Q	QL	S	V	W	Z
MXP10-10	8	32	52.4	20	20	21	6.5	32	14	10	44	40	60
MXP10-20	20	50	82.4	36	36	39	7.5	50	20	20	74	65	90

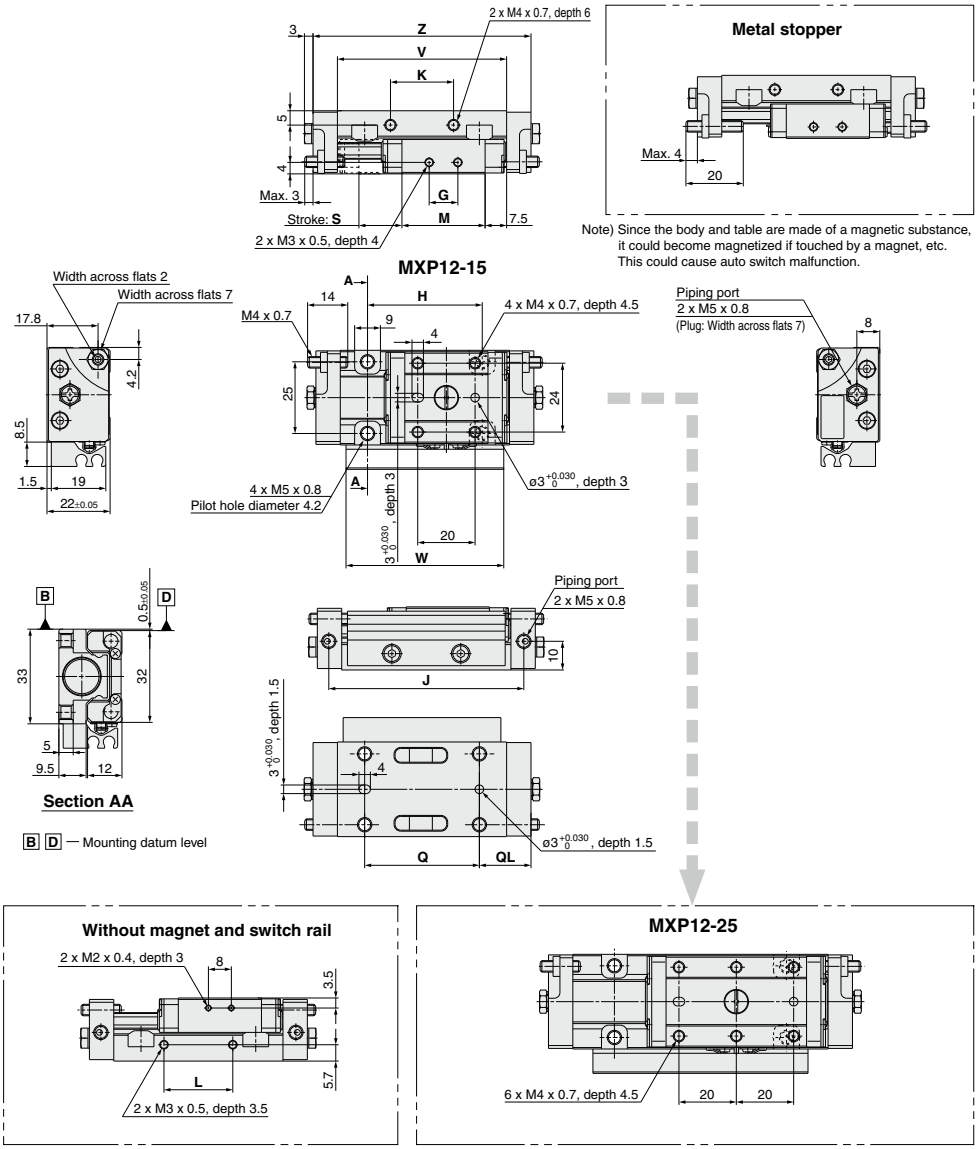
Dimensions: MXP10 with Shock Absorber



(mm)

Model	H	J	K	L	M	MA	N	Q	QL	S	V	W	Z
MXP10-10B	32	52.4	20	20	21	6	6.5	32	14	10	44	40	60
MXP10-20B	50	82.4	36	36	39	18	7.5	50	20	20	74	65	90

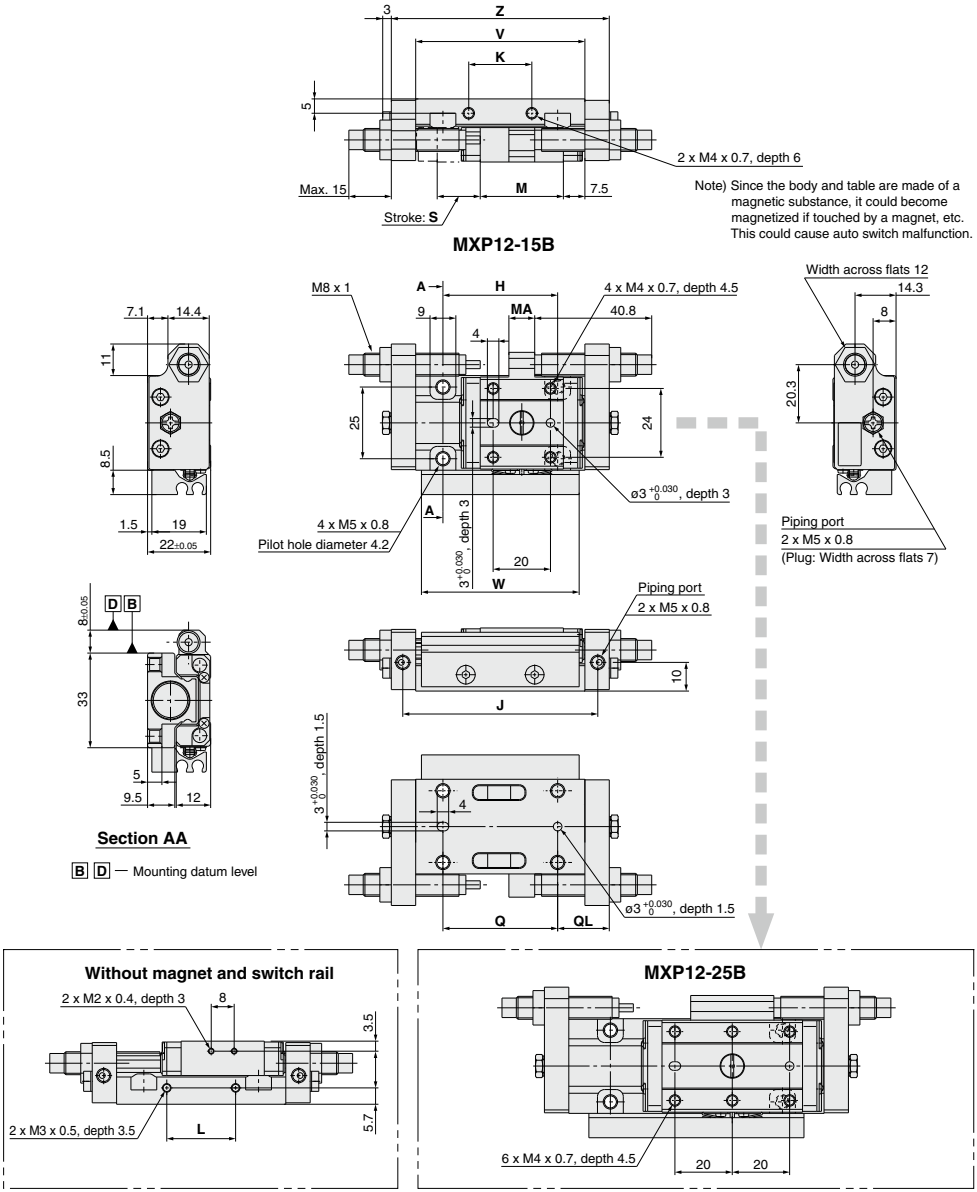
Dimensions: MXP12



(mm)

Model	G	H	J	K	L	M	Q	QL	S	V	W	Z
MXP12-15	10	40	68	22	24	29	40	18	15	59	55	76
MXP12-25	30	60	98	40	42	49	60	23	25	89	75	106

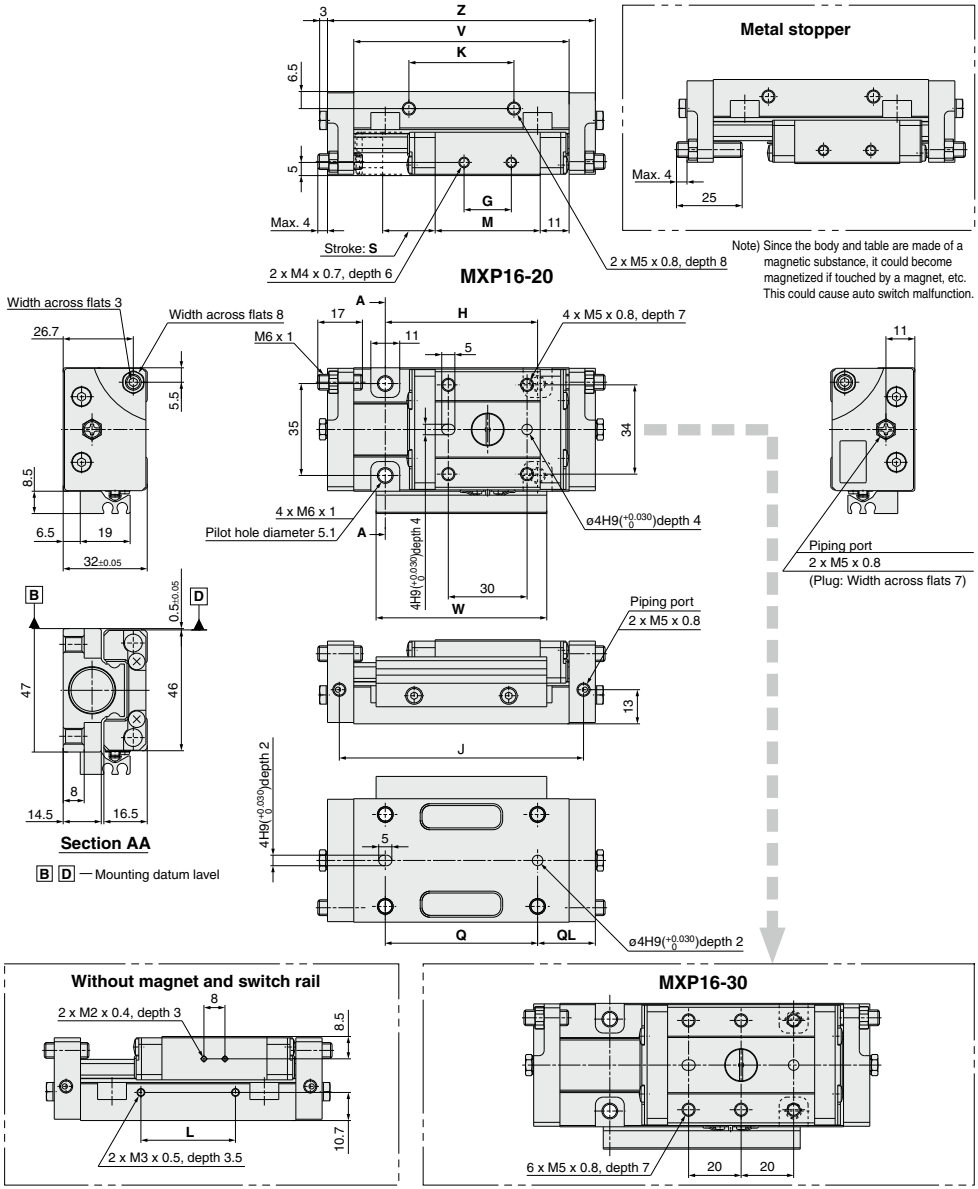
Dimensions: MXP12 with Shock Absorber



(mm)

Model	H	J	K	L	M	MA	Q	QL	S	V	W	Z
MXP12-15B	40	68	22	24	29	9	40	18	15	59	55	76
MXP12-25B	60	98	40	42	49	29	60	23	25	89	75	106

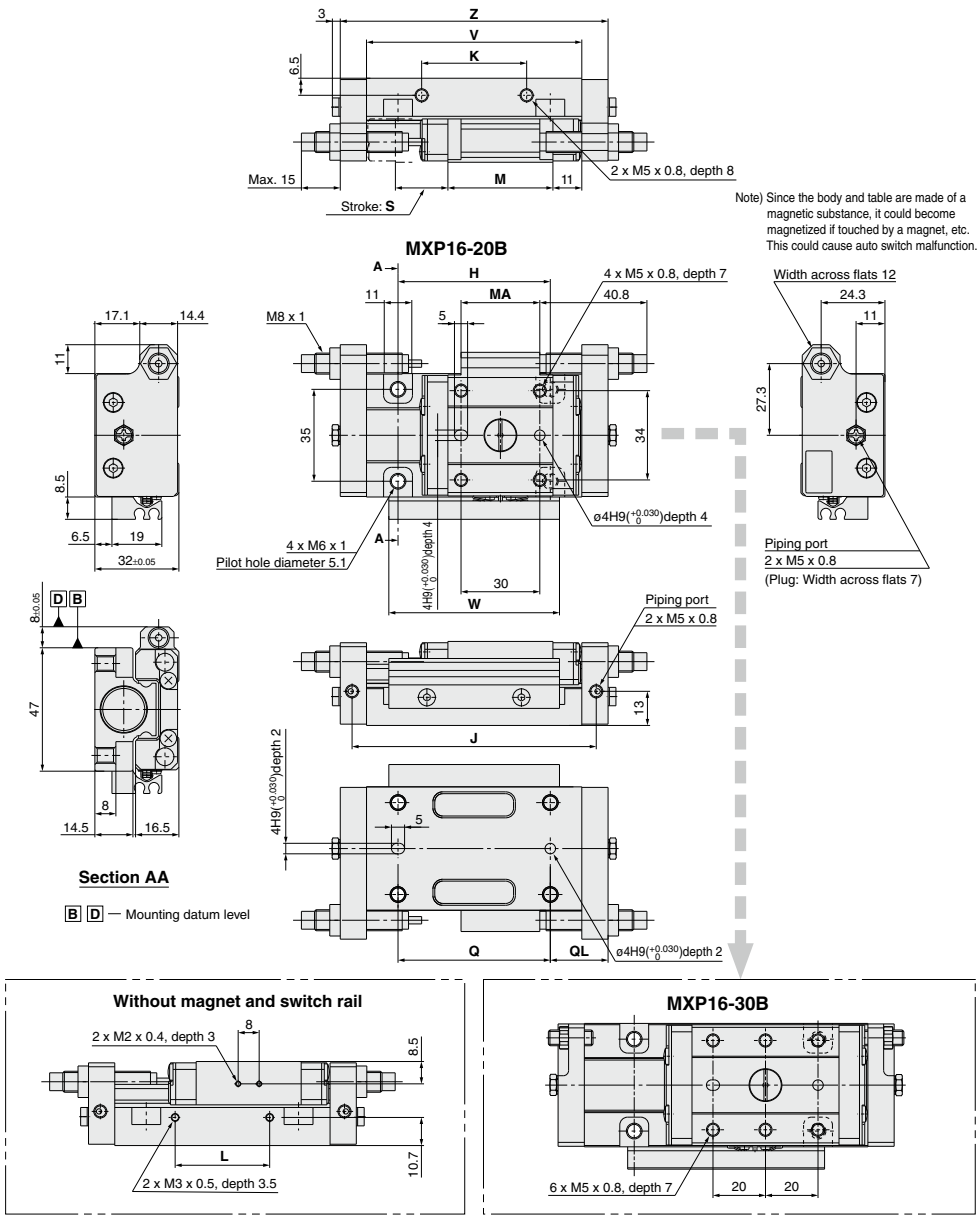
Dimensions: MXP16



(mm)

Model	G	H	J	K	L	M	Q	QL	S	V	W	Z
MXP16-20	18	58	93	40	36	40	58	22	20	82	65	102
MXP16-30	28	70	119	50	42	56	70	29	30	108	75	128

Dimensions: MXP16 with Shock Absorber



(mm)

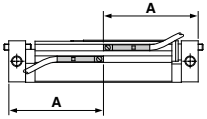
Model	H	J	K	L	M	MA	Q	QL	S	V	W	Z
MXP16-20B	58	93	40	36	40	30	58	22	20	82	65	102
MXP16-30B	70	119	50	42	56	46	70	29	30	108	75	128

Auto Switch Mounting

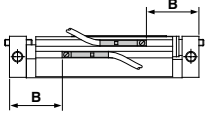
Auto Switch Proper Mounting Position (Detection at Stroke End)

MXP8,10,12,16

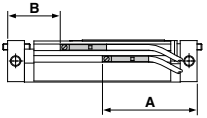
• Electrical entry from outside



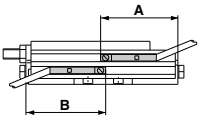
• Electrical entry from inside

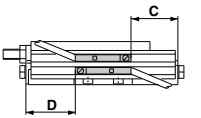


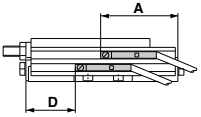
• Parallel electrical entry



MXP6







Reed Auto Switch
D-A90(V), D-A93(V), D-A96(V) (mm)

Model		Stroke (mm)				
		10	15	20	25	30
MXP8	A	35	—	45	—	—
	B	15	—	25	—	—
MXP10	A	35	—	45	—	—
	B	15	—	25	—	—
MXP12	A	—	40.5	—	50.5	—
	B	—	20.5	—	30.5	—
MXP16	A	—	—	51	—	59
	B	—	—	31	—	39

Solid State Auto Switch
D-M9B(V), D-M9N(V), D-M9P(V) (mm)

Model		Stroke (mm)				
		10	15	20	25	30
MXP8	A	31	—	41	—	—
	B	19	—	29	—	—
MXP10	A	31	—	41	—	—
	B	19	—	29	—	—
MXP12	A	—	36.5	—	46.5	—
	B	—	24.5	—	34.5	—
MXP16	A	—	—	47	—	55
	B	—	—	35	—	43

2-Color Indicator, Solid State Auto Switch
D-M9BW(V), D-M9NW(V), D-M9PW(V), D-M9□A(V) (mm)

Model		Stroke (mm)				
		10	15	20	25	30
MXP8	A	31	—	41	—	—
	B	19	—	29	—	—
MXP10	A	31	—	41	—	—
	B	19	—	29	—	—
MXP12	A	—	36.5	—	46.5	—
	B	—	24.5	—	34.5	—
MXP16	A	—	—	47	—	55
	B	—	—	35	—	43

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

Reed Auto Switch
D-A90(V), D-A93(V), D-A96(V)

Model		Stroke (mm)
		10
MXP6	A	34.5
	B	35.5
	C	14.5
	D	15.5

Solid State Auto Switch
D-M9B(V), D-M9N(V), D-M9P(V)

Model		Stroke (mm)	
		5	10
MXP6	A	25.5	30.5
	B	26.5	31.5
	C	13.5	18.5
	D	14.5	19.5

2-Color Indicator, Solid State Auto Switch
D-M9BW(V), D-M9NW(V), D-M9PW(V), D-M9□A(V)

Model		Stroke (mm)	
		5	10
MXP6	A	25.5	30.5
	B	26.5	31.5
	C	13.5	18.5
	D	14.5	19.5

Operating Range

(mm)

Auto switch model	Applicable bore size				
	6	8	10	12	16
D-A9□/A9□V	5	5	5	5	5
D-M9□/M9□V **D-M9□W/M9□WV** **D-M9□A/M9□AV**	3	3	3.5	3	3

Minimum Auto Switch Mounting Stroke

(mm)

No. of auto switches mounted	Applicable auto switch model		
	D-A9□ **D-A9□V**	**D-M9□** **D-M9□V**	**D-M9□W** **D-M9□WV** **D-M9□AV**
1 pc.	5	5	5
2 pcs.	10	5	10

Auto Switch Mounting

⚠ Caution

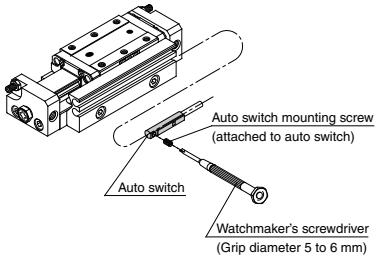
Auto Switch Mounting Tool

- Use the watchmaker's screwdriver with a handle diameter 5 to 6 mm when tightening the auto switch mounting screw (attached to auto switch).

Tightening Torque

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

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



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

* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) and a solid state auto switch (D-F8) are also available. Refer to pages 1307 and 1308 for details.

Made to Order: Individual Specifications 1

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

Made to Order

Made-to-Order Application Chart		MXPJ6	MXP6	MXP8	MXP10	MXP12	MXP16	Note
PTFE grease	**X7**	●	●	●	●	●	●	
Grease for food	**X9**	●	●	●	●	●	●	
Heat treated metal stopper bolt	**X16**		●	●	●	●	●	Metal stopper only
Axial piping port set screw	**X23**	●	●	●	●	●	●	
Fluororubber seal	**X39**	●	●	●	●	●	●	
Anti-corrosive Specifications for Guide Unit	**X42**	●	●	●	●	●	●	
Long adjustment nut	**X51**			●	●	●	●	Except with shock absorber

1 PTFE Grease

Symbol **-X7**

MXP [Standard part no.] — **X7**

MXPJ [Standard part no.] — **X7**

●**PTFE grease**

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

∗ For the type with a shock absorber, standard grease is used on the shock absorber part.

Specifications

Type	PTFE grease
Bore size (mm)	6, 8, 10, 12, 16

∗ Dimensions other than the above is the same as the standard type.

⚠ Warning

Precautions

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

2 Grease for Food Processing Machines

Symbol **-X9**

MXP [Standard part no.] — **X9**

MXPJ [Standard part no.] — **X9**

●**Grease for food processing machines**

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

∗ For the type with a shock absorber, standard grease is used on the shock absorber part.

Specifications

Type	Grease for Food Processing Machines (NSF-H1 certified)/ Aluminum Complex Soap Base Grease
Bore size (mm)	6, 8, 10, 12, 16

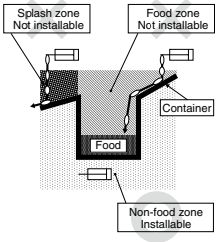
∗ Dimensions other than the above is the same as the standard type.

⚠ Caution

1. Do not use in a food contact environment.

2. Do not use in a liquid splash environment, e.g. water, detergent, liquid chemicals.

<Not installable>
Food zone·····An environment where food which will be sold as merchandise directly touches the cylinder's components
Splash zone·····An environment where food which will not be sold as merchandise directly touches the cylinder's components
<Installable>
Non-food zone·····An environment where there is no contact with food



Made to Order: Individual Specifications 2

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

Order Made

3 Heat Treated Metal Stopper Bolt

Symbol **-X16**

MXP Standard part no. — **X16**

X16: Heat treated metal stopper bolt

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

Specifications

Type	Heat treated metal stopper bolt		
Bore size (mm)	6	8, 10	12, 16
Speed range	50 to 200 mm/s		
Cushion	None		
Stroke adjustment	Singe end: 0 to 6 mm	Double ends: 0 to 5 mm each	Double ends: 0 to 4 mm each

∗ Dimensions other than the above is the same as the standard type.

4 Fluororubber Seal

Symbol **-X39**

MXP Standard part no. — **X39**

MXPJ Standard part no. — **X39**

X39: Fluororubber seal

Change the materials for the piston seal, O-rings and scrapers (rubber lined parts) to fluororubber.
For the type with a shock absorber, standard model is used on the shock absorber part.

Specifications

Type	Fluororubber seal
Bore size (mm)	6, 8, 10, 12, 16
Seal material	Fluororubber

∗ Dimensions other than the above is the same as the standard type.

5 Anti-corrosive Specifications for Guide Unit

Symbol **-X42**

MXP Standard part no. — **X42**

MXPJ Standard part no. — **X42**

X42: Anti-corrosive specifications for guide unit

Anti-corrosive treatment is applied to the table, body and guide block.

Specifications

Type	Anti-corrosive guide unit
Bore size (mm)	6, 8, 10, 12, 16
Surface treatment	Special anti-corrosive treatment (2)

∗ 1 Dimensions other than the above is the same as the standard type.
∗ 2 The special anti-corrosive treatment turns the table, body and guide block black.

Made to Order: Individual Specifications 3

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

Made to Order

6 Axial Piping Port Set Screw Specification

Symbol: **-X23**

MXP | Standard part no. | — X23

MXPJ6 | Standard part no. | — X23

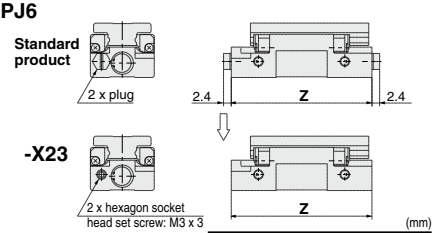
Axial piping port set screw specification

The axial piping port plug is changed to a hexagon socket head set screw, and the overall length is shortened.

Note: The hexagon socket head screw is secured with an anaerobic adhesive and cannot be removed.

Dimensions

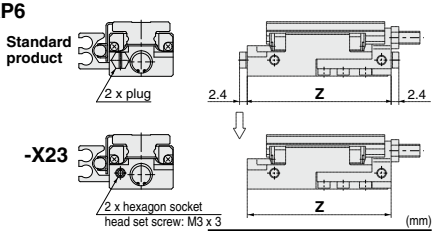
MXPJ6



(mm)

Model	Z
MXPJ6-5-X23	44
MXPJ6-10-X23	59

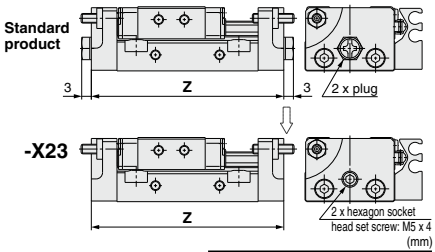
MXP6



(mm)

Model	Z
MXP6-5-X23	45
MXP6-10-X23	60

MXP8,10,12,16



(mm)

Model	Z
MXP8-10-X23	60
MXP8-20-X23	90
MXP10-10-X23	60
MXP10-20-X23	90
MXP12-15-X23	76
MXP12-25-X23	106
MXP16-20-X23	102
MXP16-30-X23	128

7 Long Adjustment Nut Specification

Symbol: **-X51**

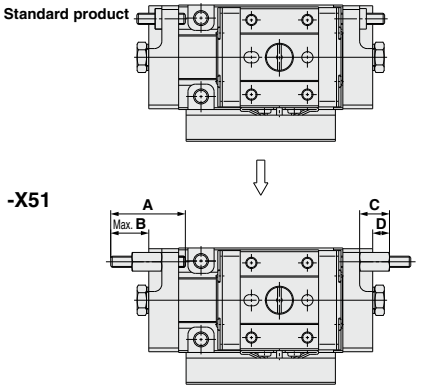
MXP | Standard part no. | — X51

Long adjustment nut specification

The overall length of the adjustment nut is increased to allow stroke adjustment work from any direction.

Dimensions

MXP8, 10, 12, 16



(mm)

Model	A	B	C	D
MXP8-□-X51	20	10.5	8	4.5
MXP8-□C-X51	25	10.5		
MXP10-□-X51	20	10.5	8	4.5
MXP10-□C-X51	25	10.5		
MXP12-□-X51	20	9	9	5
MXP12-□C-X51	25	9		
MXP16-□-X51	25	12	10	6
MXP16-□C-X51	35	14		

MXP Series
Specific Product Precautions 1

Be sure to read this before handling the products.
Refer to page 8 for safety instructions and pages 9 to 18 for actuator and auto switch precautions.

Selection

⚠Caution

1. Use a load within a range that does not exceed the operating limit.

Select models based on the maximum load mass and the allowable moment. Refer to model selection on pages 446 and 447 for detailed methods. If operated beyond the operating limit, the eccentric load applied to the guide section will be excessive. This can have an adverse effect on service life due to vibration in the guide unit and loss of accuracy, etc.

2. When performing intermediate stops with an external stopper, employ measures to prevent lurching.

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

3. Do not operate in such a way that excessive external forces or impact forces are applied to the product.

This can cause damage.

Mounting

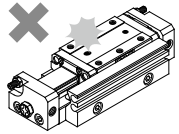
⚠Caution

1. Do not scratch or gouge the mounting surfaces of the body and table (guide block).

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

2. Do not scratch or gouge the transfer surfaces of the body and table (guide block).

This can cause vibration and increased operating resistance, etc.



3. Do not apply strong impacts or excessive moment when mounting work pieces.

Application of external forces greater than the allowable moment can cause vibration of the guide unit and increased operating resistance, etc.

4. Ensure that the parallelism of the mounting surface is 0.02 mm or less.

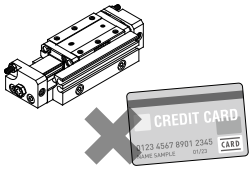
Poor parallelism of the workpiece mounted on the body, the base, and other parts can cause vibration of the guide unit and increased operating resistance, etc.

5. For connection to a load that has an external support or guide mechanism, select an appropriate connection method and perform careful alignment.

Mounting

6. Do not allow objects affected by magnets in close proximity to the air slide table

Since magnets are built into the side of the guide block when equipped with auto switches, do not allow items such as magnetic disks, magnetic cards or magnetic tape close to the air slide table. Data may be erased.



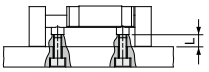
7. Do not attach magnets to the table (guide block) section.

Since the table (guide block) is constructed with a magnetic substance, it becomes magnetized when magnets, etc. are attached to it, and this may cause malfunction of auto switches, etc.

8. When mounting a body, use screws of an appropriate length and tighten them properly at no more than the maximum tightening torque.

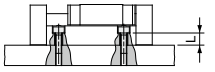
Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping, etc.

1. Body Tapped



Model	Bolt	Max. tightening torque N•m	Max. screw-in depth L (mm)
MXPJ6	M4 x 0.7	2.1	6
MXP6	M4 x 0.7	2.1	6
MXP8	M4 x 0.7	2.1	4.5
MXP10	M4 x 0.7	2.1	6
MXP12	M5 x 0.8	4.4	5
MXP16	M6 x 1	7.4	8

2. Body Through-hole



Model	Bolt	Max. tightening torque N•m	Body thickness L (mm)
MXPJ6	M3 x 0.5	1.2	6
MXP6	M3 x 0.5	1.2	6
MXP8	M3 x 0.5	1.2	4.5
MXP10	M3 x 0.5	1.2	6
MXP12	M4 x 0.7	2.1	5
MXP16	M5 x 0.8	4.4	8

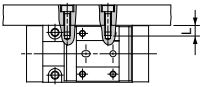
Specific Product Precautions 2

Be sure to read this before handling the products.
Refer to page 8 for safety instructions and pages 9 to 18 for actuator and auto switch precautions.

Mounting

⚠Caution

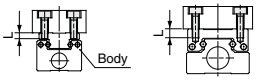
3. Tapped on Body Side



Model	Bolt	Max. tightening torque N•m	Max. screw-in depth L (mm)
MXP8	M3 x 0.5	1.2	4
MXP10	M3 x 0.5	1.2	5
MXP12	M4 x 0.7	2.1	6
MXP16	M5 x 0.8	4.4	8

1. Top Mounting

MXPJ6, MXP6 **MXP10, 12, 16**

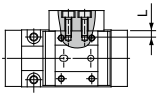


Model	Bolt	Max. tightening torque N•m	Max. screw-in depth L (mm)
MXPJ6	M3 x 0.5	1.2	3
MXP6	M3 x 0.5	1.2	3
MXP8	M3 x 0.5	1.2	4
MXP10	M3 x 0.5	1.2	4
MXP12	M4 x 0.7	2.1	4.5
MXP16	M5 x 0.8	4.4	7

⚠Caution

Since the bolts pass through in the case of MXPJ6 and MXP6, use bolts shorter than the maximum screw-in depth. If long bolts are used, they can touch the body and cause trouble.

2. Side Mounting



Model	Bolt	Max. tightening torque N•m	Max. screw-in depth L (mm)
MXP8	M3 x 0.5	1.2	4
MXP10	M3 x 0.5	1.2	3
MXP12	M3 x 0.5	1.2	4
MXP16	M4 x 0.7	2.1	6

⚠Caution

Side mounting is not possible when equipped with shock absorber.

Mounting

9. When the positioning pinhole is used for mounting a body, select a positioning pin with an appropriate length.

MXP6, MXPJ6 **MXP8, 10, 12, 16**

Model	Pinhole diameter	Pinhole depth	
	øD	H1mm	H2mm
MXPJ6	2.5 $^{+0.030}_{0}$	2.5	2
MXP6	2.5 $^{+0.030}_{0}$		
MXP8	3 $^{+0.030}_{0}$	2.5	1.5
MXP10	3 $^{+0.030}_{0}$	2.5	1.5
MXP12	3 $^{+0.030}_{0}$	3	1.5
MXP16	4H9 $^{+0.030}_{0}$	4	2

Operating Environment

⚠Caution

1. Do not use in environments where there is direct exposure to liquids such as cutting oil.
Operation in environments where the body is exposed to cutting oil, coolant or oil mist can cause vibration, increased operating resistance and air leakage, etc.

2. Do not use in environments where there is direct exposure to foreign matter such as dust, dirt, chips and spatter.
This can cause vibration, increased operating resistance and air leakage, etc.

3. Do not use in direct sunlight.

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

5. Do not subject it to excessive vibration and/or impact.
This can cause damage or a malfunction.

6. Use caution for the anti-corrosiveness of linear guide section.
Especially, rust may be generated in an environment where waterdrops are likely to adhere due to condensation, etc.

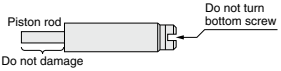
Adjuster Option Handling Precautions

With Shock Absorber

⚠Caution

1. Never turn the screw on the bottom of the shock absorber body.
This is not an adjustment screw. Turning it can cause oil leakage.

2. Do not scratch the sliding surface of the shock absorber's piston rod.
This can cause a loss of durability and return malfunction.



MXP Series
Specific Product Precautions 3

Be sure to read this before handling the products.
Refer to page 8 for safety instructions and pages 9 to 18 for actuator and auto switch precautions.

Adjuster Option Handling Precautions

⚠Caution

3. Use the tightening torque in the table below for the shock absorber's lock nut.

Bolt	Tightening torque N•m
MXP10 **MXP12** **MXP16**	1.67

4. Provide shade in locations exposed to direct sunlight.

5. Block off sources of heat located near by.

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

6. Do not use in locations where vibration or impact occur.

This can cause damage or a malfunction.

Service Life and Replacement Period of Shock Absorber

⚠Caution

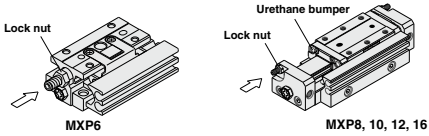
1. Allowable operating cycle under the specifications set in this catalog is shown below.

1.2 million cycles RB08□□

Note) Specified service life (suitable replacement period) is the value at room temperature (20 to 25°C). The period may vary depending on the temperature and other conditions. In some cases the absorber may need to be replaced before the allowable operating cycle above.

Applicable size	Shock absorber model
MXP10	RB0805N
MXP12	RB0805N
MXP16	RB0806N

Stroke Adjustment



Loosen the lock nut, adjust the stroke with a hexagon wrench from the side marked with an arrow and secure with the lock nut.

Stroke Adjustment

⚠Caution

Rubber Stopper

If not adjusted for effective operation of the urethane bumper, impact will increase and have an adverse effect on service life.
As a guide, adjust so that dimension L_1 is less than the value shown in "Table 1".

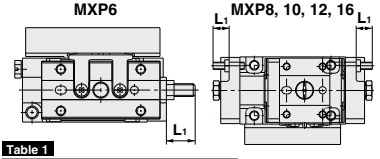


Table 1

Model	L_1 (mm)
MXP6-5	9 (one side only)
MXP6-10	9 (one side only)
MXP8-10	6
MXP8-20	6
MXP10-10	7
MXP10-20	6
MXP12-15	7
MXP12-25	7
MXP16-20	8
MXP16-30	8

Metal Stopper

In the case of a metal stopper, adjust so that the adjuster hits the end face of the guide block.
As a guide, adjust so that dimension L_2 is less than the value shown in "Table 2".

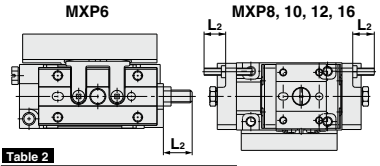


Table 2

Model	L_2 (mm)
MXP6-5C	10 (one side only)
MXP6-10C	10 (one side only)
MXP8-10C	9
MXP8-20C	9
MXP10-10C	9
MXP10-20C	8
MXP12-15C	8
MXP12-25C	8
MXP16-20C	8
MXP16-30C	8

Shock Absorber

When equipped with shock absorber, adjust so that the end face of the shock absorber hits the guide block. If the shock absorber does not operate effectively, impact will increase and have an adverse effedct on service life. As a guide, adjust so that dimension L_3 is less than the value shown in "Table 3".

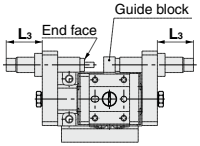


Table 3

Model	L_3 (mm)
MXP10-10B	19
MXP10-20B	15
MXP12-15B	15
MXP12-25B	15
MXP16-20B	15
MXP16-30B	15

MXP Series
Specific Product Precautions 4

Be sure to read this before handling the products.
Refer to page 8 for safety instructions and pages 9 to 18 for actuator and auto switch precautions.

Other

⚠ Warning

1. Do not put hands or fingers between the end plate and guide block.

Never put hands or fingers in the gap between the end plate and guide block when retracted. Doing so will result in injury to the hands, or fingers.

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

⚠ Caution

1. Do not disassemble or modify the product.

2. Performance stability

The piston speed in the specification table shows the average speed. The actual speed of this product may vary slightly during the stroke depending on the operating conditions, such as the change of load resistance and pressure.