

Series MXP

ø6, ø10, ø12, ø16

How to Order

Precision Air Slide Table **MXP 12-15-□-□-F9N S**

Cylinder bore size – Standard stroke (mm)

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

Adjuster option

Symbol	Adjuster option
Nil	Rubber stopper
B	Shock absorber
C	Metal stopper

Number of auto switches

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

* MXP6-5 with two auto switches applies to models D-F9□ and D-F9□V only. In case of other auto switches, only 1 pc. (symbol: S) can be selected.

Type of auto switch

Nil	Without auto switch
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Auto switch

Nil	With magnet and rail
N	Without magnet and rail

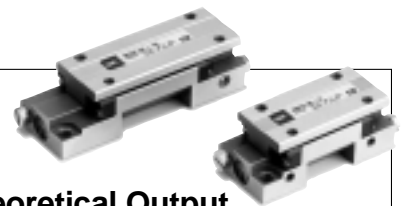
Note 1) Series MXP6 adjuster is on one side only.
Note 2) Series MXP6 is not available with shock absorber.
Note 3) SUS304 is used for the metal stopper stroke adjustment screw.
Refer to order made specifications on page 21 for heat treated specifications.

* Auto switches cannot be mounted on type N without magnet and rail.

Applicable auto switches/Before using auto switches, refer to auto switch mounting precautions on page 20.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch models		Lead wire length* (m)		Applicable loads																
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	IC circuit	Relay, PLC															
							Perpendicular	In-line																			
Reed switch	—	Grommet	No	2 wire	24V	5V, 12V, 100V or less	A90V	A90	●	●	—	Relay, PLC															
			Yes										3 wire (NPN equiv.)	—	5V	—	A93V	A93	●	●	—						
Solid state switch	Diagnostic indication (2 color indicator)	Grommet	Yes	3 wire (NPN)	24V	12V	—	F9NV	F9N	●	●	Relay, PLC															
			3 wire (PNP)	F9PV									F9P	●	●												
			2 wire													F9BV	F9B	●	●								
			3 wire (NPN)																	F9NWV	F9NW	●	●				
			3 wire (PNP)																					F9PWV	F9PW	●	●
			2 wire																								

* Lead wire length symbols: 0.5m Nil (Example) A93
3m L A93L



MXPJ6 Precision Air Slide Table ø6

How to Order

Precision Air Slide Table **MXPJ6-10**

Standard stroke

5	5mm
10	10mm

* MXPJ6 is not available with auto switches.

Specifications

Cylinder bore size (mm)	ø6
Port size	M3 x 0.5
Fluid	Air
Action	Double acting
Operating pressure	0.15 to 0.7MPa
Proof pressure	1.05MPa
Ambient and fluid temperature	-10 to 60°C
Operating speed range	50 to 500mm/s
Cushion	Rubber bumper
Lubrication	Non-lube
Stroke length tolerance	+1 0 mm

Theoretical Output

(N)

Cylinder 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

Standard Strokes

(mm)

Model	Standard strokes
MXPJ6	5, 10

Weights

(g)

Model	Body weight
MXPJ6-5	80
MXPJ6-10	105

MXP6



MXP10



MXP12



MXP16



With shock absorber



* A special body is used when equipped with shock absorbers. Shock absorber specifications cannot be changed by replacing or adding parts.

Specifications

Model	MXP6	MXP10	MXP12	MXP16
Cylinder bore size (mm)	ø6	ø10	ø12	ø16
Port size	M3 x 0.5	M5 x 0.8		
Fluid	Air			
Action	Double acting			
Operating pressure	0.15 to 0.7MPa			
Proof pressure	1.05MPa			
Ambient and fluid temperature	- 10 to 60°C			
Operating speed range	50 to 500mm/s (with metal stopper: 50 to 200mm/s)			
Cushion	Rubber bumper Shock absorber (option, not available on MXP6) None (with metal stopper)			
Lubrication	Non-lube			
Stroke adjuster	Standard equipment (MXP6 adjustable on one side only)			
Stroke adjustment range	Rubber stopper	One side only, 0 to 5mm	Both ends, 0 to 3mm each	
	Shock absorber	—	Both ends, 0 to 5mm each	
	Metal stopper	One side only, 0 to 6mm	Both ends, 0 to 5mm each	Both ends, 0 to 4mm each
Auto switches	Reed switches (2 wire, 3 wire) Solid state switches (2 wire, 3 wire) 2 color indication solid state switches (2 wire, 3 wire)			
Stroke length tolerance	$\begin{matrix} +1 \\ 0 \end{matrix}$ mm			

Theoretical Output

(N)

Cylinder 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
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 Strokes (mm)

Model	Standard strokes
MXP 6	5, 10
MXP10	10, 20
MXP12	15, 25
MXP16	20, 30

Weights

(g)

Model	Body weight	Additional weight of magnet & rail
MXP 6- 5	80	10
MXP 6-10	105	10
MXP10-10	130	13
MXP10-20	210	20
MXP12-15	210	17
MXP12-25	320	23
MXP16-20	640	20
MXP16-30	830	23

Shock Absorber Specifications

Shock absorber model	RB0805	RB0806
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 cycles/min	80	80
Max. allowable thrust N	245	245
Ambient temperature range °C	-10 to 60	
Spring force N	Extended	1.96
	Compressed	3.83
Weight g	15	15

Minimum Strokes for Auto Switch Mounting

(mm)

Number of auto switches mounted	Applicable auto switch models		
	D-A9□, D-A9□V	D-F9□, D-F9□V	D-F9□W, D-F9□WV D-F9BA
1 pc.	5	5	5
2 pcs.	10	5	10

Series MXP

Table Deflection

Table displacement due to pitch moment load
Displacement at "A" when load is applied at "F"

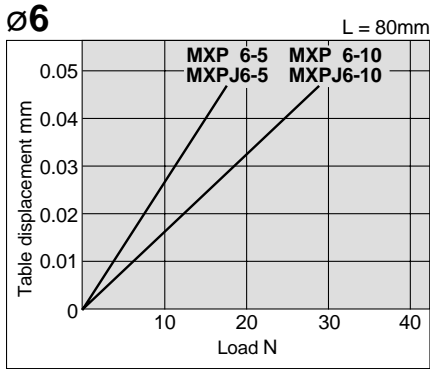
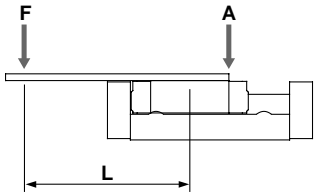


Table displacement due to yaw moment load
Displacement at "A" when load is applied at "F"

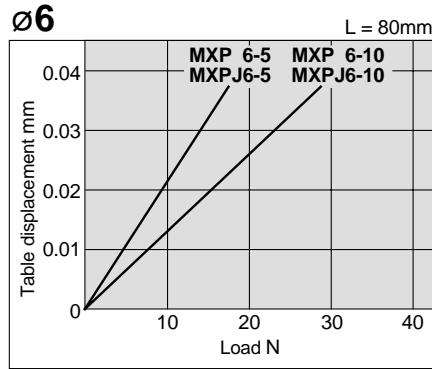
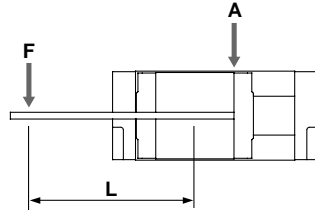


Table displacement due to roll moment load
Displacement at "A" when load is applied at "F"

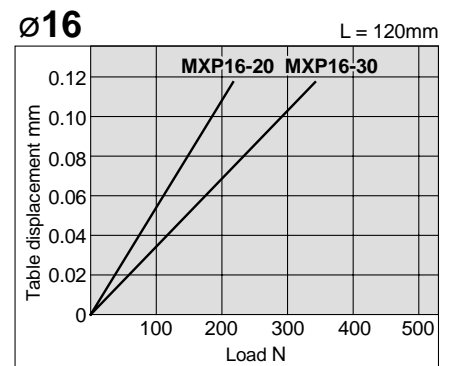
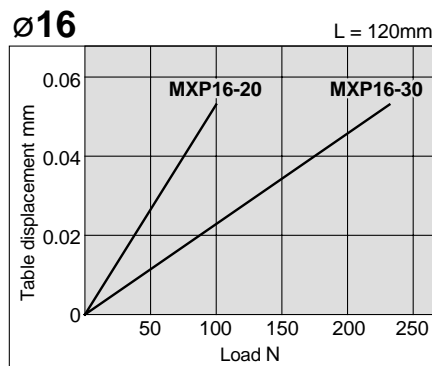
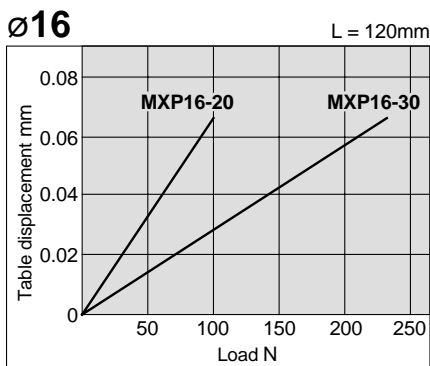
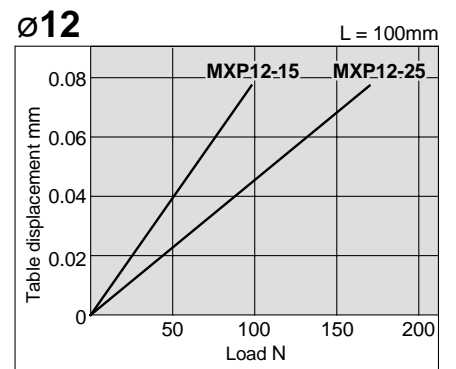
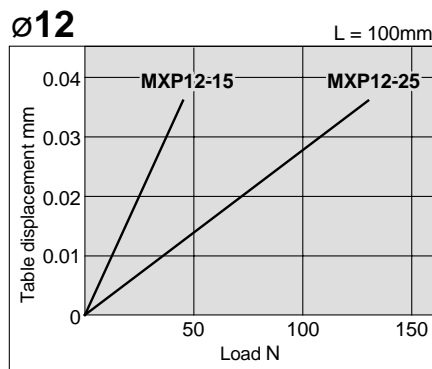
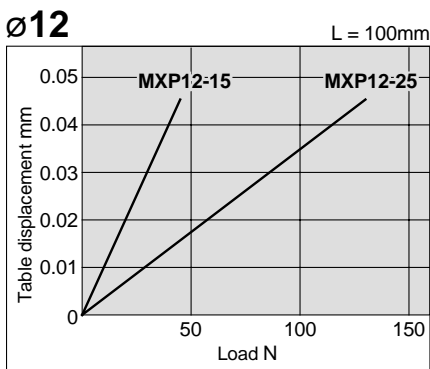
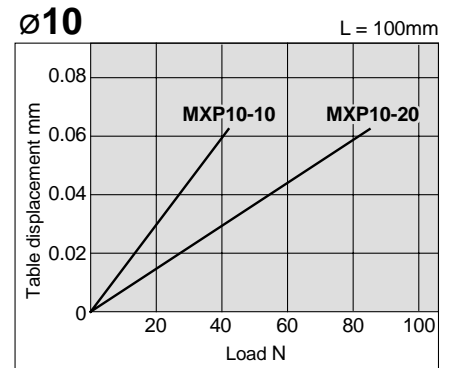
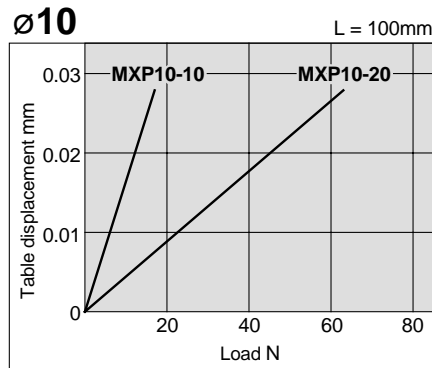
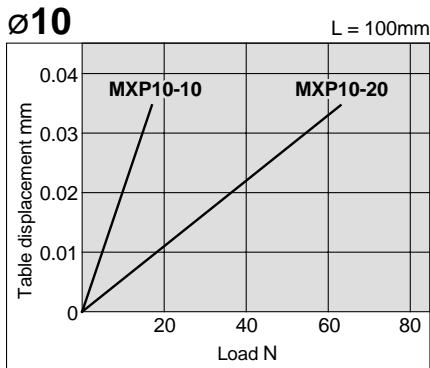
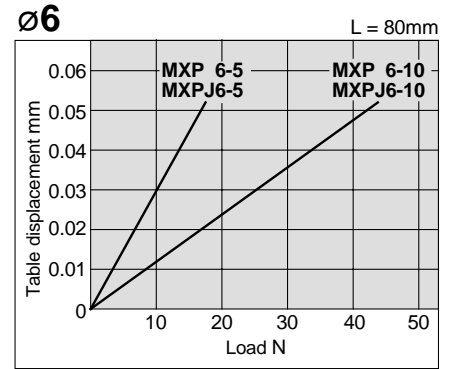
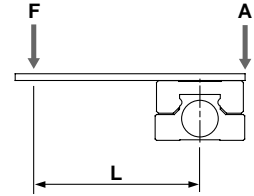
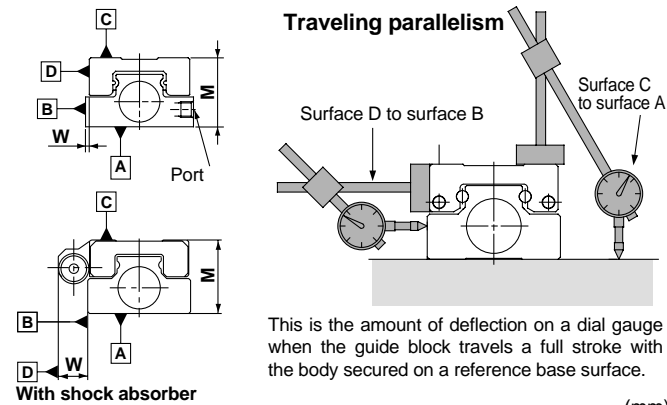
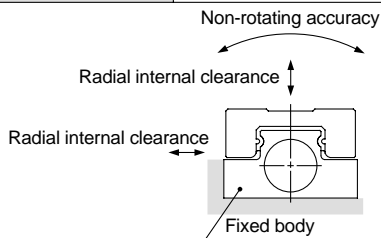


Table Accuracy



Model		MXPJ6	MXP6	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		



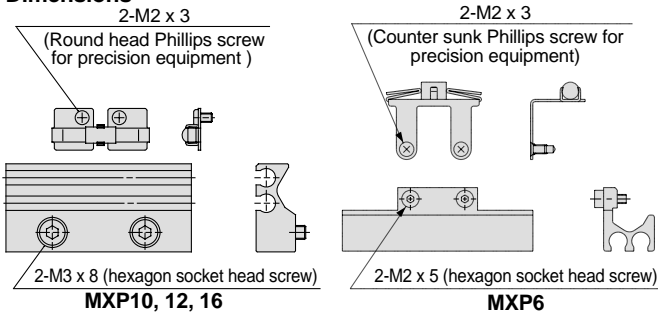
Model	MXPJ6	MXP6	MXP10	MXP12	MXP16
Radial internal clearance (μm)	±2	±2	±3	±5	±7
Table non-rotating accuracy (deg)	±0.03	±0.03	±0.03	±0.04	±0.04

Option Specifications

Auto switch mounting rail assembly

Used to mount auto switches on a precision air slide table (MXP□-□N) which is not already equipped with switch mounting rails.

Dimensions



Applicable size	Switch rail model	Note
MXP 6- 5	MXP-AD 6- 5	With magnet and mounting screws
MXP 6-10		
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 is the same as MXP10-20.
MXP16-30 is the same as MXP12-25.

Clean Series: Precision Air Slide Table

11-MXP **Cylinder bore-** **Stroke** **Adjuster option**

• Clean series Vacuum type

11-MXPJ6- **Stroke**

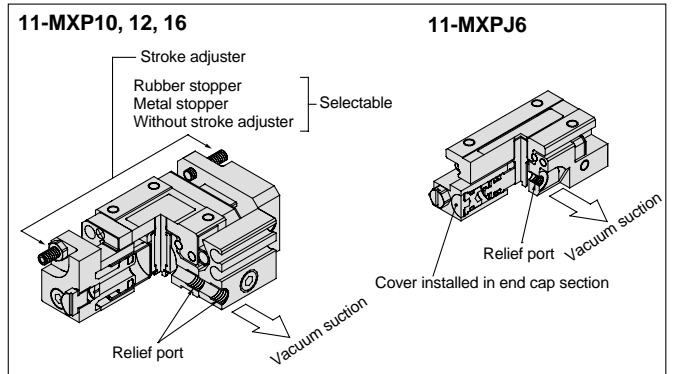
• Clean series Vacuum type

This type has a relief port provided in the side of the body, and the spread of particulates into a clean room is prevented by vacuum suction of the linear guide section and the piston section.

Specifications

Model	11-MXPJ6	11-MXP10	11-MXP12	11-MXP16
Cylinder bore size (mm)	ø6	ø10	ø12	ø16
Port size	M3 x 0.5	M5 x 0.8		
Fluid	Air			
Action	Double acting			
Operating pressure	0.15 to 0.7MPa			
Ambient and fluid temperature	-10 to 60°C			
Operating speed range	30 to 200mm/s			
Cushion	Rubber bumper	Rubber bumper (rubber stopper)		
		Rubber bumper (without adjuster)		
		None (metal stopper)		
Lubrication	Non-lube			
Stroke length tolerance	+1 0 mm			

Note) Not available with shock absorber.



11-MXP



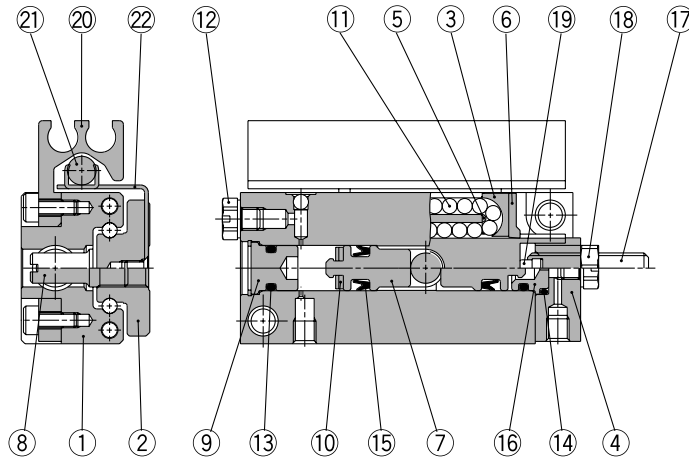
11-MXPJ6



Series MXP

Construction

MXP6



Parts list

No.	Description	Material	Note
1	Body	Stainless steel	Heat treated
2	Table	Stainless steel	Heat treated
3	Cover	Resin	
4	End plate	Aluminum alloy	Hard anodized
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 chromium bearing steel	
12	Plug	Brass	Electroless nickel plated

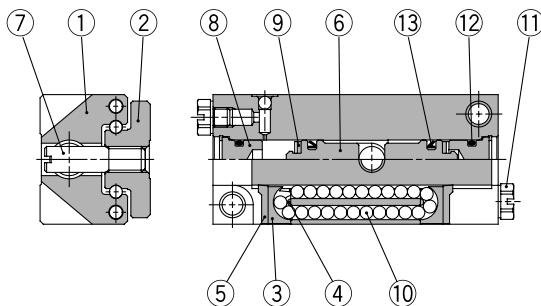
Parts list

No.	Description	Material	Note
13	O-ring	NBR	
14	O-ring	NBR	
15	Piston seal	NBR	
16	End cap	Brass	Electroless nickel plated
17	Adjustment bolt	Carbon steel (rubber stopper) SUS304 (metal stopper)	Nickel plated
18	Adjustment nut	Carbon steel	Nickel plated
19	Adjustment bumper	Polyurethane	
20	Switch rail	Aluminum alloy	Hard anodized
21	Magnet	Rare earth	
22	Magnet holder	Steel	Nickel plated

Replacement parts: Seal kit

Cylinder bore size (mm)	Kit no.	Content
6	MXP6-PS	Above nos. 13 & 15 (2 pcs. ea.), 14 (1 set)

MXPJ6



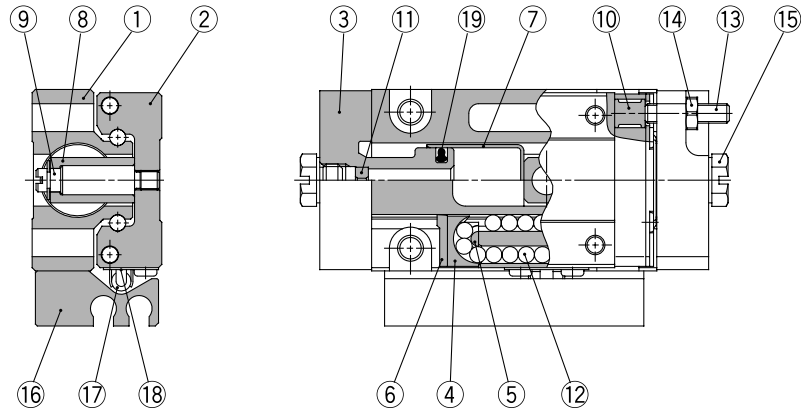
Parts list

No.	Description	Material	Note
1	Body	Stainless steel	Heat treated
2	Table	Stainless 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 chromium bearing steel	
11	Plug	Brass	Electroless nickel plated
12	O-ring	NBR	
13	Piston seal	NBR	

Replacement parts: Seal kit

Cylinder bore size (mm)	Kit no.	Content
6	MXPJ6-PS	Above nos. 12 & 13 (2 sets) ea.

MXP10, 12, 16



Parts list

No.	Description	Material	Note
1	Body	Stainless steel	Heat treated
2	Guide block	Stainless steel	Heat treated
3	End plate	Aluminum alloy	Hard anodized
4	Cover	Resin	
5	Return guide	Resin	
6	Scraper	Stainless steel, NBR	
7	Tube	Brass	Electroless nickel plated
8	Joint pipe	Stainless steel	
9	Joint shaft	Stainless steel	
10	Adjustment bumper	Polyurethane	

Parts list

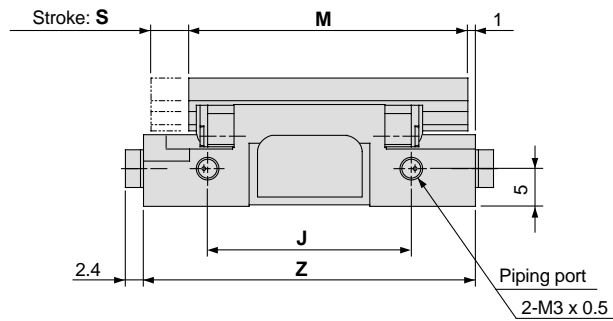
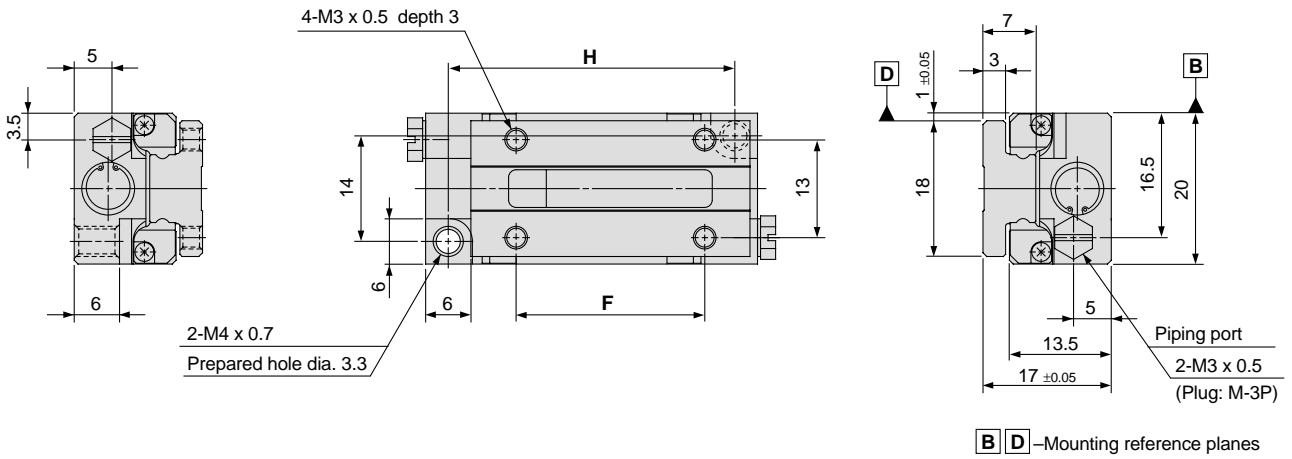
No.	Description	Material	Note
11	Orifice	Brass	Electroless nickel plated
12	Steel ball	High carbon chromium bearing steel	
13	Adjustment bolt	Carbon steel (rubber stopper)	Nickel plated
		SUS304 (metal stopper)	
14	Adjustment nut	Carbon steel	Nickel plated
15	Plug	Brass	Electroless nickel plated
16	Switch rail	Aluminum alloy	Hard anodized
17	Magnet	Rare earth	
18	Magnet holder	Steel	Electroless nickel plated
19	Piston seal	NBR	

Replacement parts: Seal kits

Cylinder bore size (mm)	Kit no.	Content
10	MXP10-PS	No. 19 above (2 sets)
12	MXP12-PS	
16	MXP16-PS	

Series MXP

Dimensions MXPJ6

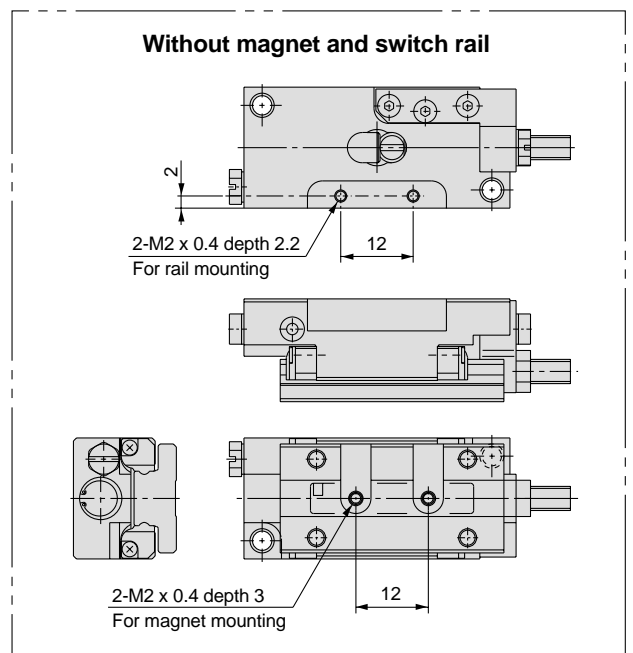
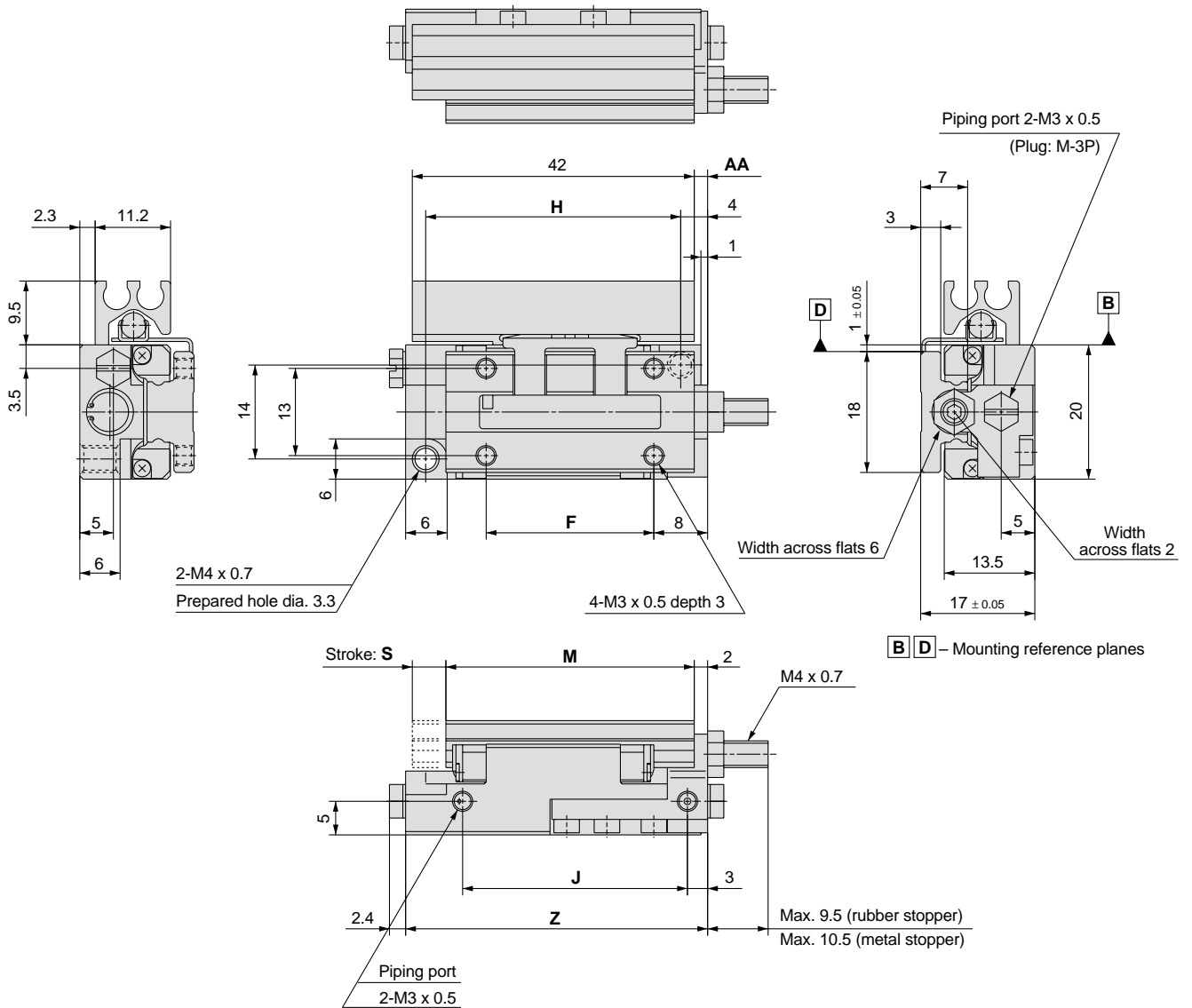


(mm)

Model	F	H	J	M	S	Z
MXPJ6- 5	25	38	27	37	5	44
MXPJ6-10	35	53	42	47	10	59



MXPJ6- 5 SMXPJ6, #1
MXPJ6-10 SMXPJ6, #2

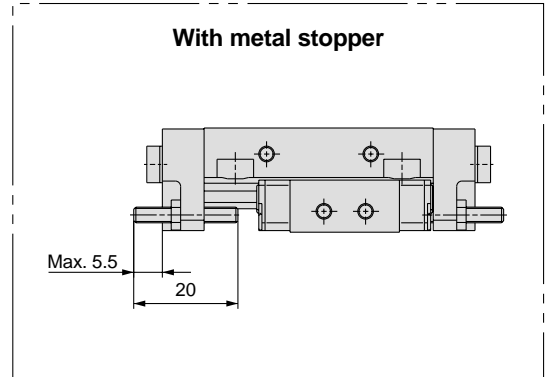
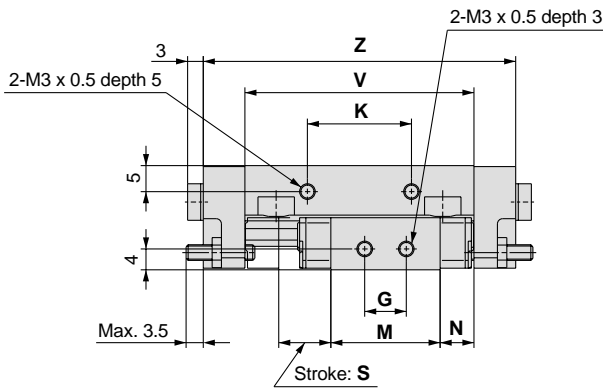


Model	F	H	J	M	S	Z	AA
MXP6- 5	25	38	33.5	37	5	45	2
MXP6-10	35	53	48.5	47	10	60	9.5

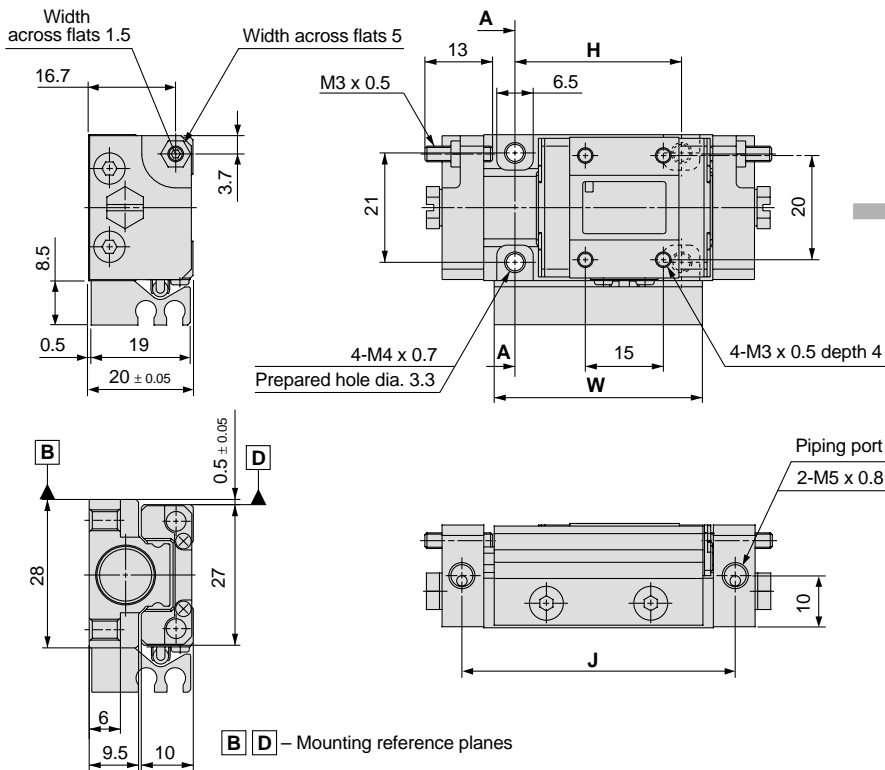
(mm)

Series MXP

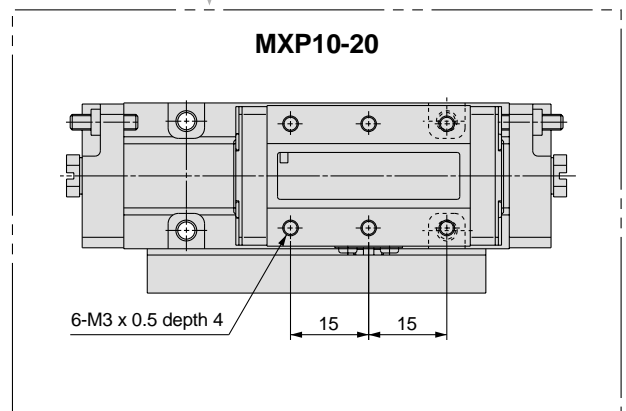
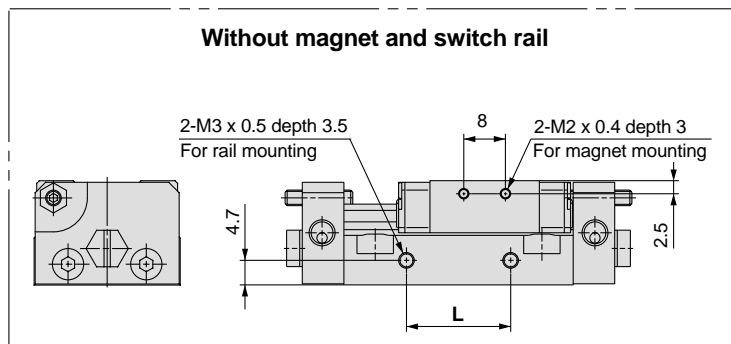
Dimensions MXP10



MXP10-10



Section AA



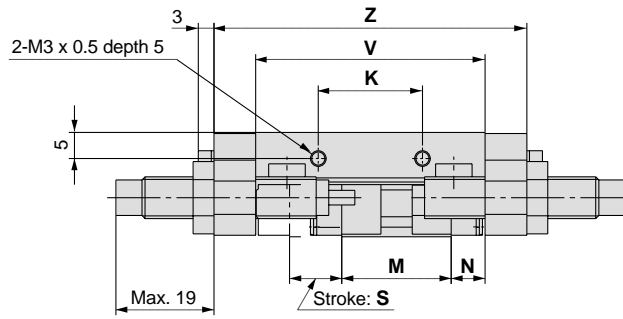
(mm)

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

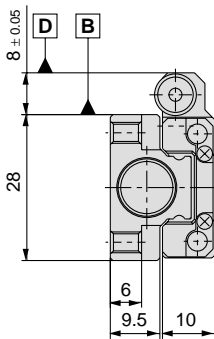
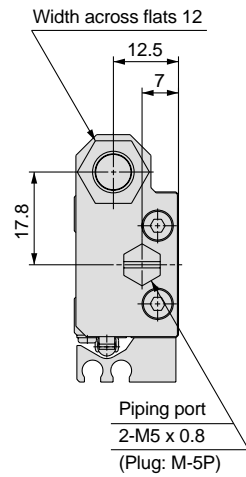
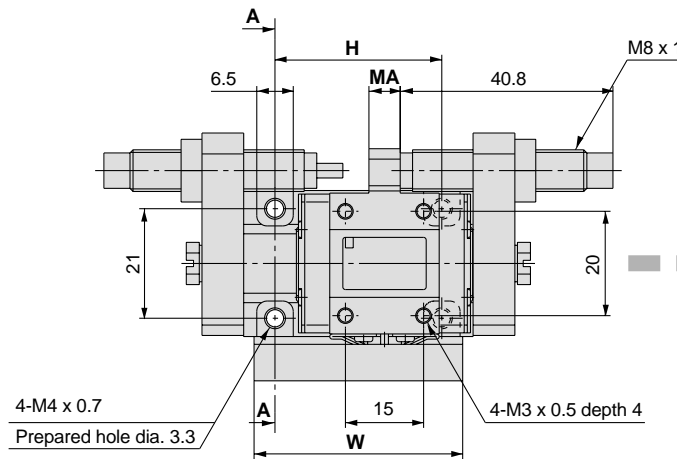
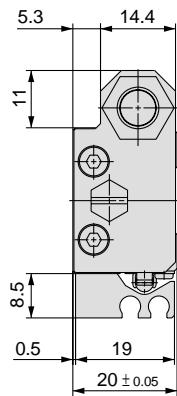


MXP10-10 --- SMXP10#1 (#1 + #3)
MXP10-20 --- SMXP10#2 (#2 + #4)

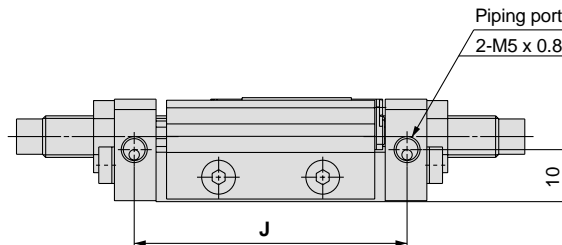
Dimensions **MXP10** With Shock Absorber



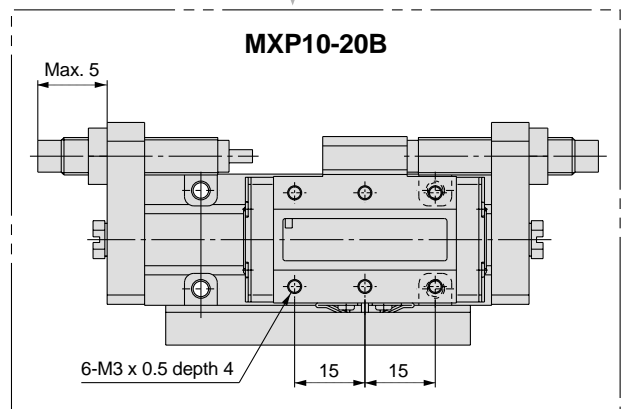
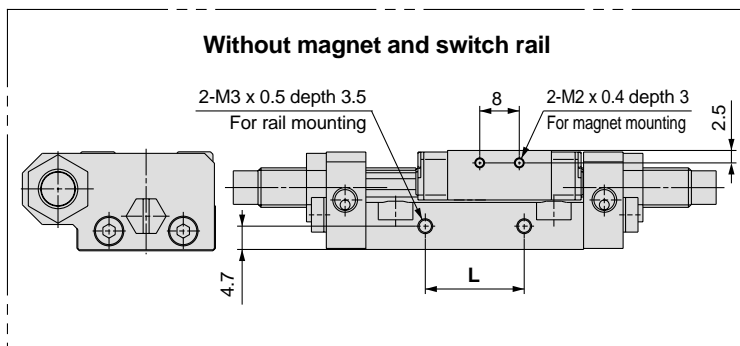
MXP10-10B



Section AA B D – Mounting reference planes



MXP10-20B

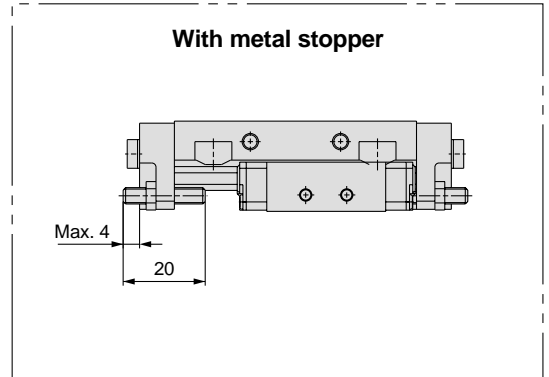
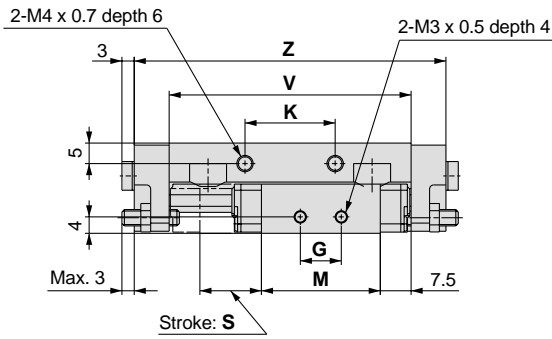


(mm)

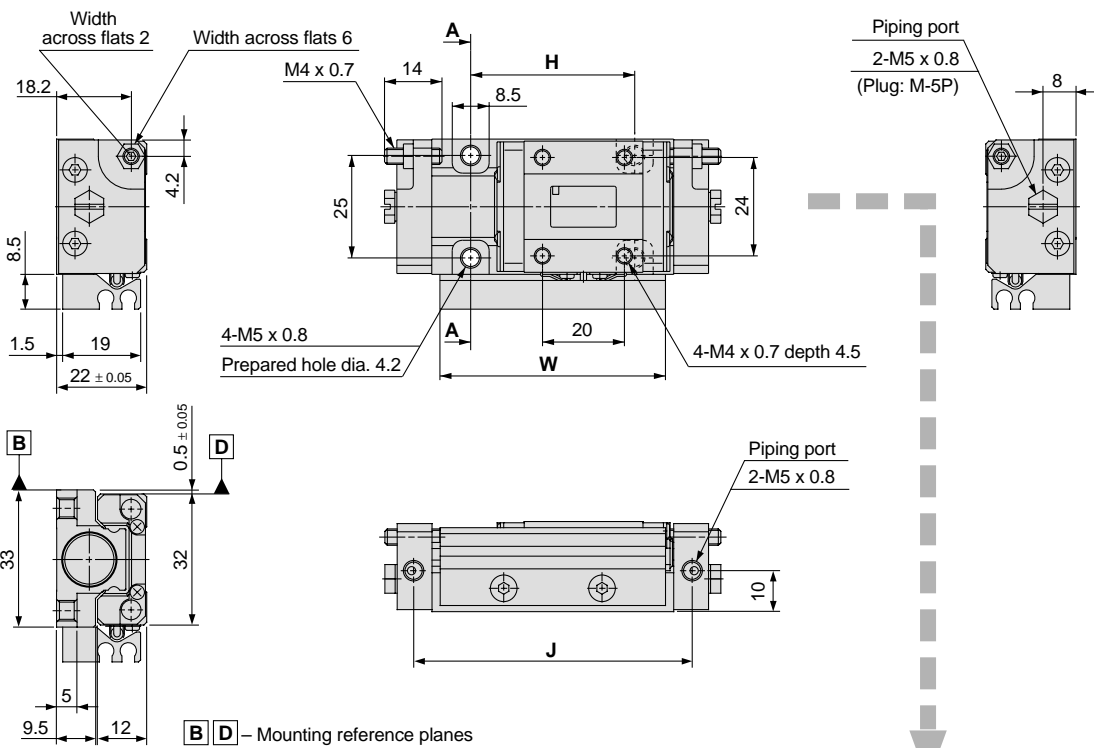
Model	H	J	K	L	M	MA	N	S	V	W	Z
MXP10-10B	32	52.4	20	20	21	6	6.5	10	44	40	60
MXP10-20B	50	82.4	36	36	39	18	7.5	20	74	65	90

Series MXP

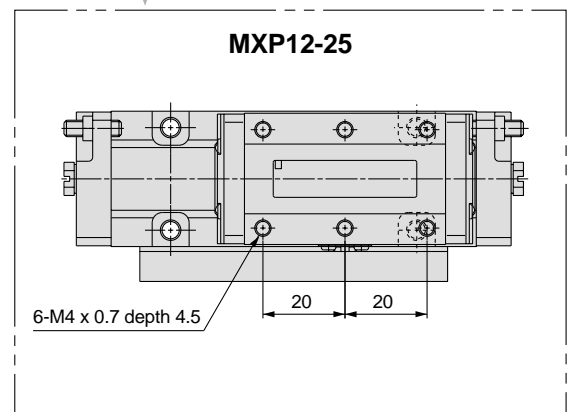
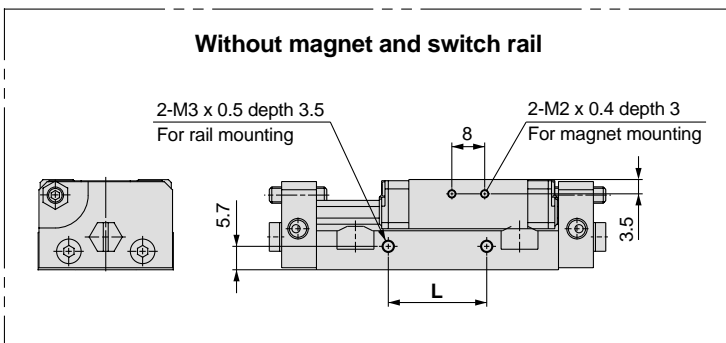
Dimensions MXP12



MXP12-15





Section AA

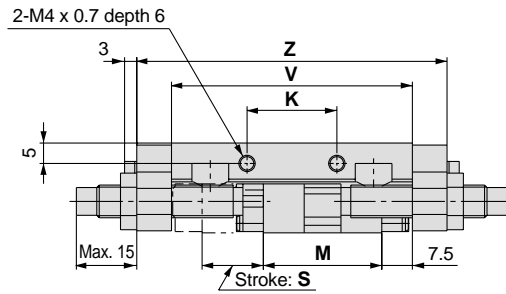


Model	G	H	J	K	L	M	S	V	W	Z
MXP12-15	10	40	68	22	24	29	15	59	55	76
MXP12-25	30	60	98	40	42	49	25	89	75	106

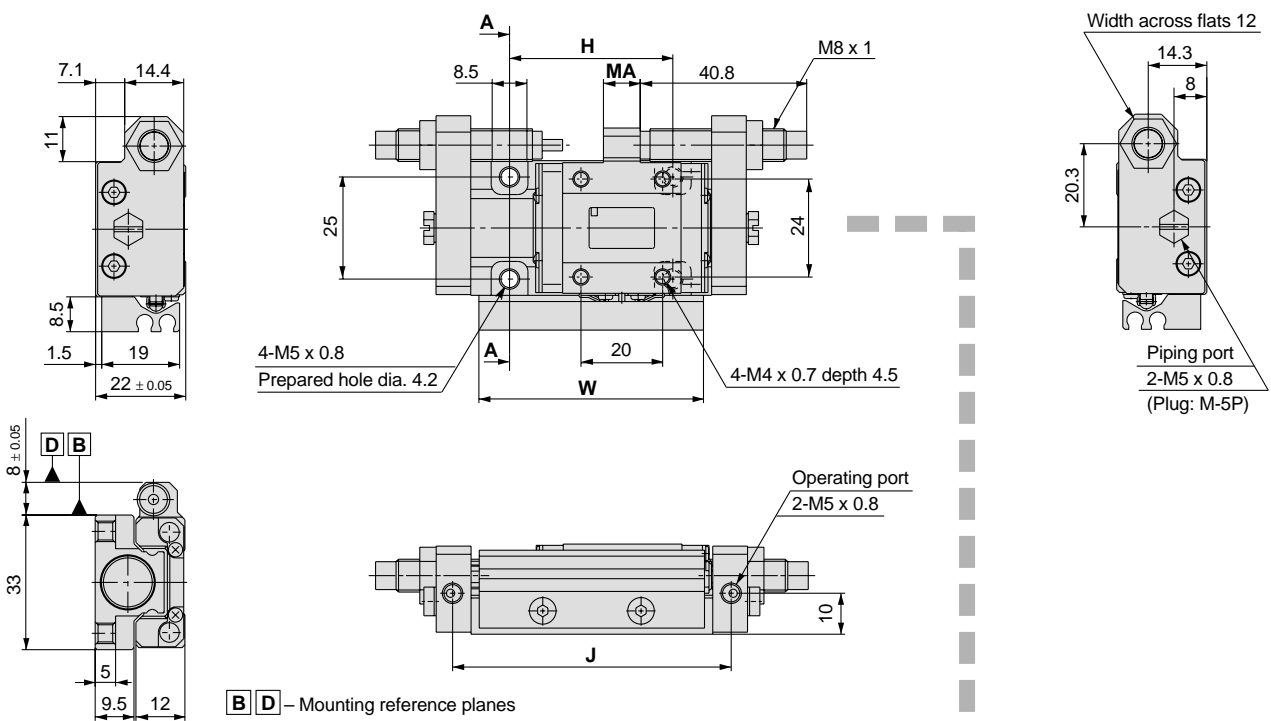
(mm)

 MXP12-15 --- SMXP12, #1 (#1 + #3)
 MXP12-25 --- SMXP12, #2 (#2 + #4)

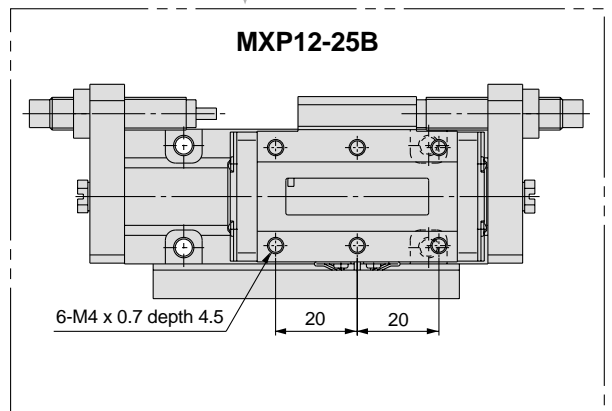
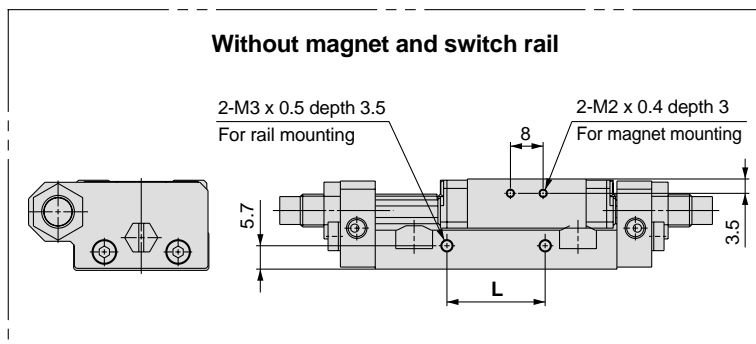
Dimensions **MXP12** With Shock Absorber



MXP12-15B



Section AA

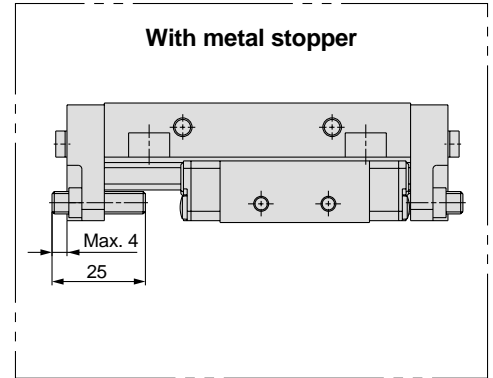
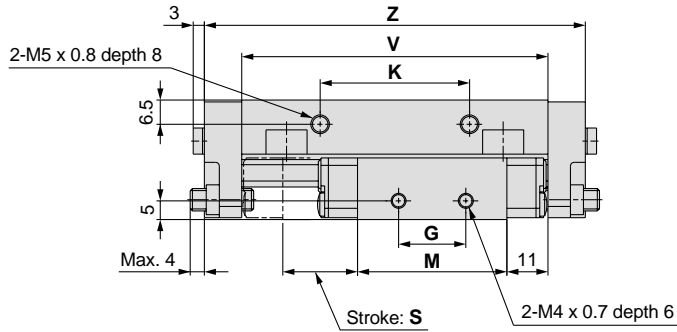


(mm)

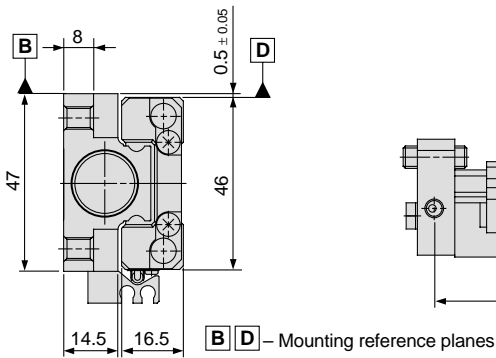
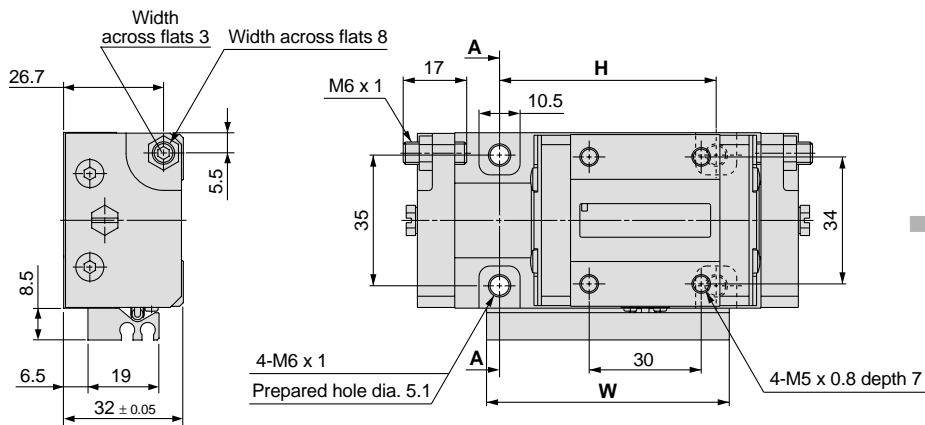
Model	H	J	K	L	M	MA	S	V	W	Z
MXP12-15B	40	68	22	24	29	9	15	59	55	76
MXP12-25B	60	98	40	42	49	29	25	89	75	106

Series MXP

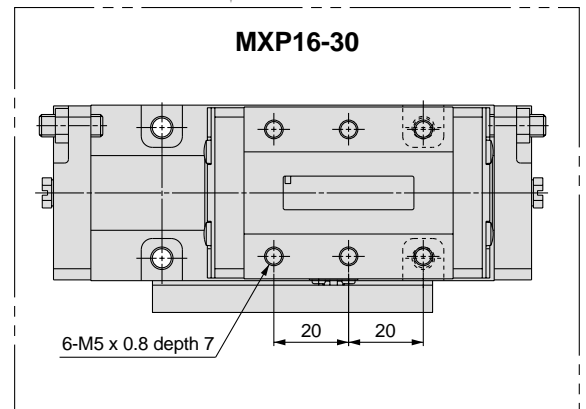
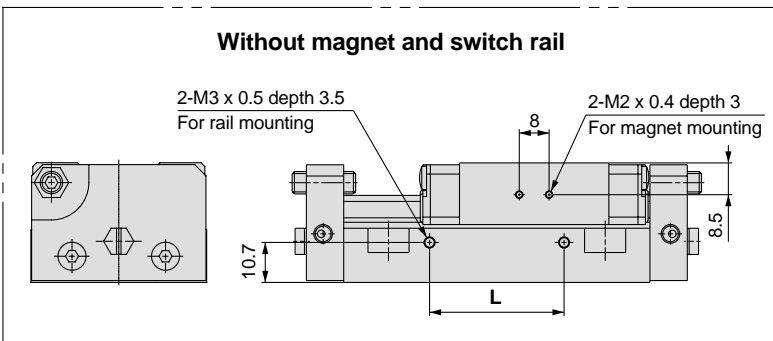
Dimensions MXP16



MXP16-20



Section AA



MXP16-30

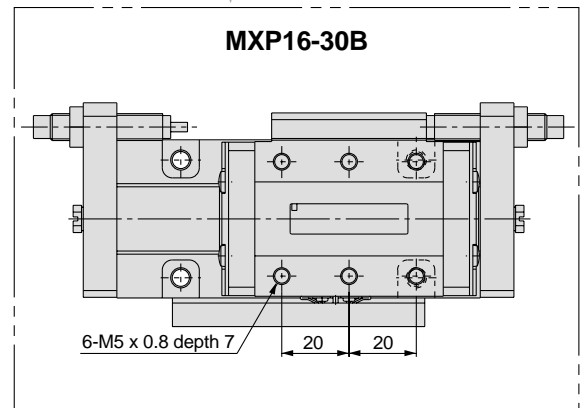
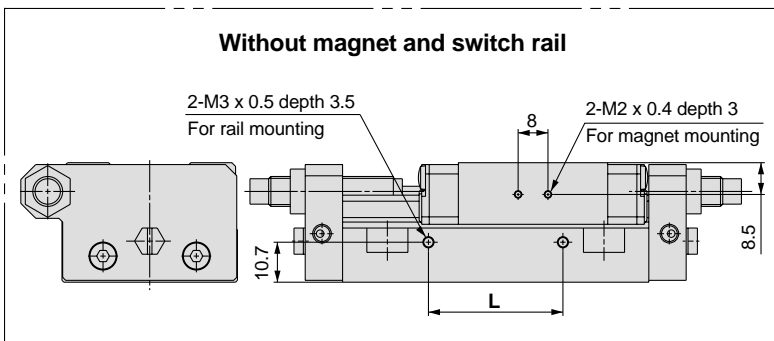
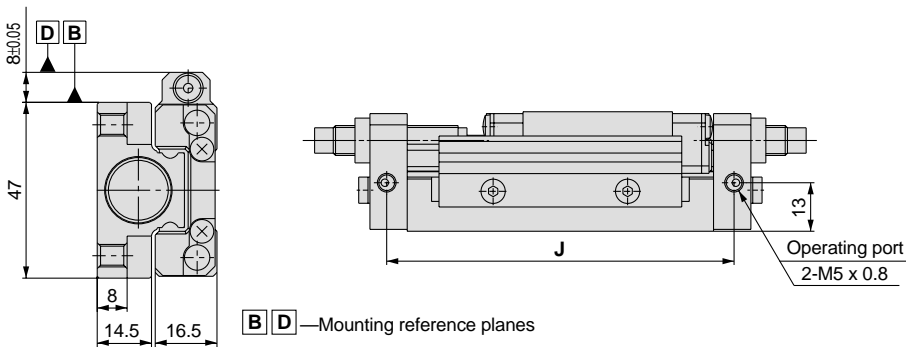
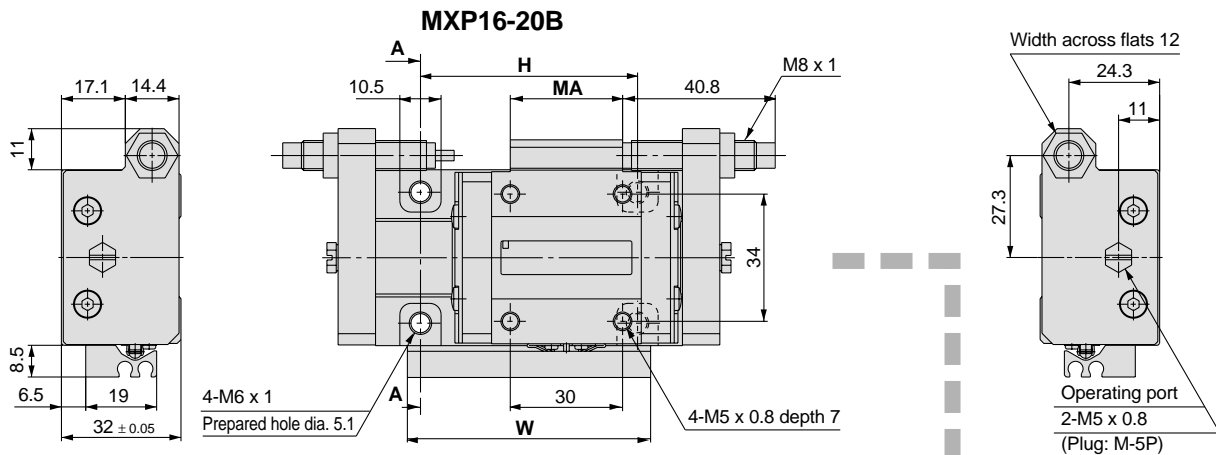
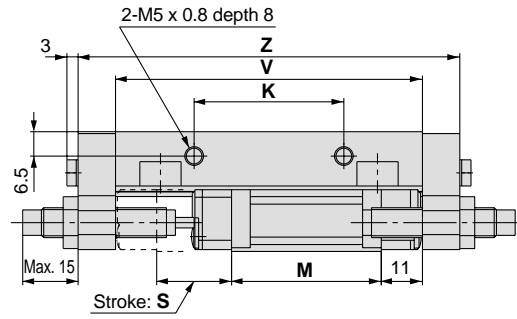
(mm)

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



MXP16-20 ----- SMXP16, #1(#1 + #3)
MXP16-30 ----- SMXP16, #2(#2 + #4)

Dimensions **MXP 16** With Shock Absorber



(mm)

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

Solid-state Auto Switches for Direct Mounting Series D-M9N(V)/D-M9P(V)/D-M9B(V)



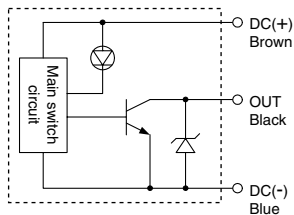
Grommet

- Reduced load currents for two-wire model (2.5 to 40 mA)
- Compliance with lead-free requirements
- Use of UL-approved lead wires (style 2844)

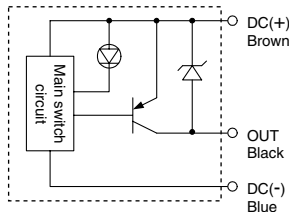


Internal circuits

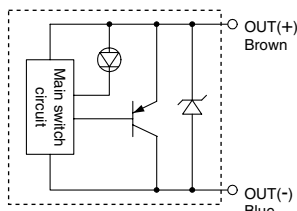
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□/D-M9□V (with Indicator light)						
Model number	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring	Three-wire			Two-wire		
Output	NPN		PNP		—	
Applicable load	Integrated circuit, relay and PLC				24 V DC relay and PLC	
Power voltage	5, 12, or 24 V DC (4.5 to 28 V DC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 V DC or less		—		24 V DC (10 to 28 V DC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less				4 V or less	
Leakage current	100 μA max. at 24 V DC				0.8 mA or less	
Indicator light	Red LED lights when ON.					

- Lead wire: oil-proof heavy-duty vinyl cable
2.7 x 3.2 with elliptic cross-section, 0.15 mm², two cores (D-M9B),
or three cores (D-M9N and D-M9P)

Solid state switch specifications

Leakage current	3-wire: 100 μA or less; 2-wire: 0.8 mA max.
Operating time	1 ms or less
Impact resistance	1000 m/s ²
Insulation resistance	50 MΩ or more at 500 V DC (between lead wire and case)
Withstand voltage	1000 V AC for 1 min. (between lead wire and case)
Ambient temperature	-10°C to 60°C
Enclosure	IEC529 standard IP67, JIS C 0920 watertight construction

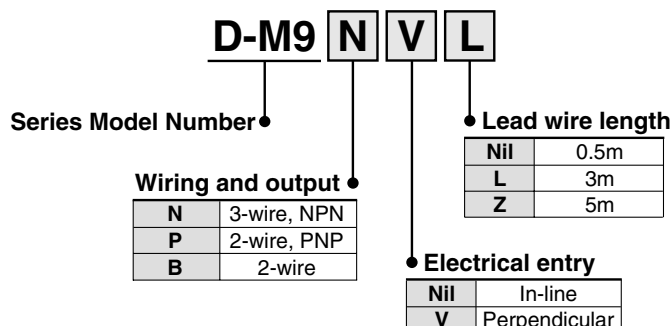
Weight

Unit: g

Model	D-M9N(V)	D-M9P(V)	D-M9B(V)	
Lead wire length (m)	0.5	8	8	7
	3	41	41	38
	5	68	68	63

How to Order

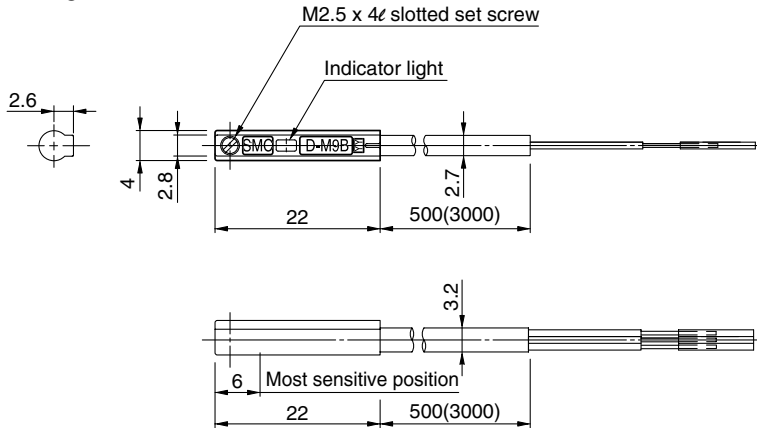
Standard Model Number



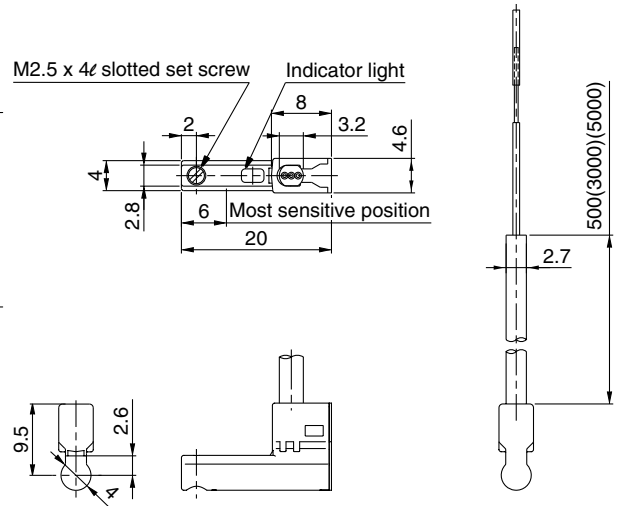
Series D-M9

Auto Switch Dimensions

D-M9□



D-M9□V



⚠ Specific Product Precautions

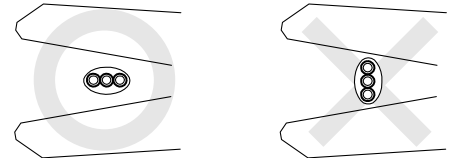
Be sure to read before handling. Contact SMC when the required specification is out of range.

Handling

⚠ Caution

Observe the following precautions when handling the product.

- The D-M9 series of auto switches is not overcurrent-protected. Faulty wiring or short circuit may result in breakage or burning-out of the switch.
- When stripping the cable clad, be careful about the orientation of the cable being stripped. The insulator may be accidentally torn or damaged depending on the orientation, as shown on the right.



- We recommend the following tools

Manufacturer	Product name	Product number
VESSEL	Wire stripper	No 3000G
Tokyo Ideal	Strip master	45-089

* The stripper for the round shape cords (ø2.0) is for a 2-wire style.

- Please do not attach the switch with any other screws than those already attached to the auto switch body.

The operation range is shorter than that of the conventional models.

If the auto switch replaces the conventional model, it may not function depending on its application because the operation range is shorter. Refer to the examples below.

- In an application where at the end, the stopping position shifting range is larger than the operation range.**
For example, pushing a work against something, or pressing a work into a hole, or clamping a work.
- In an application where the auto switch is used to detect an intermediate stopping position. (Detecting time is shortened.)**

Note) Please contact SMC for the operation range details for each actuator.

The switch is damaged instantly when a load is shortened since short circuit protection is not built-in. Pay special attention to avoid reversing the connection of the brown lead of the power supply line and the black output line connection.