

Specification

| Item Name | RJS60 | RJS70 | RJS90 |
|---|--|---------------|---------------|
| Maximum Radial Load(kgf) | 25 | 30 | 105 |
| Maximum Thrust Load(kgf) | 18 | 24 | 182 |
| Maximum RPM | Less than 200 | Less than 150 | Less than 100 |
| Weight(kgf) | 0.65 | 1.4 | 3.9 |
| Fitting Size | Air Supply Port | PT1/8 | PT1/8 |
| | Air Connection | | |
| Num of Air Ports | 2 | 4 | 6 |
| Minimum Required Torque(kgf·cm) <small>Note 3)</small> | 9 | 18 | 70 |
| Fluid | Clean Air <small>Note 1)</small> | | |
| Pressure Range(kgf/cm ²) | 1.5 ~ 7 (Guaranteed Resist Pressure : 10.2) <small>Note 2)</small> | | |
| Temperature Range(°C) | 5 ~ 60 | | |
| Guide | Both side radial bearing guides | | |
| Lubrication | Not Need (If need, use one sort of turbine oil : SPEC ISOVG 32) | | |

Note 1) lean Air : Fresh air containing solid matters with 0.3% of supersaturated moisture and 99.9% of liquid oil that passed through the 3-10µm degree of filtering.

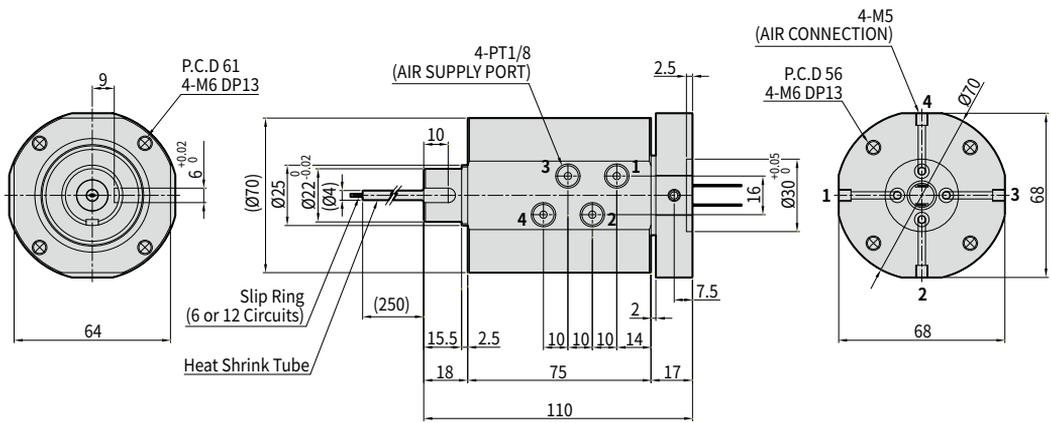
Note 2) Guaranteed Resist Pressure : A pressure that does not cause an abnormality in parts when it is applied for 1 minute without any weight loaded.

Note 3) Listed Minimum required torque is for the status of compressed air not supplied on. When compressed air supplied, required torque higher than normal status so, please select rotary actuator with sufficient torque.

Slip Ring Specification

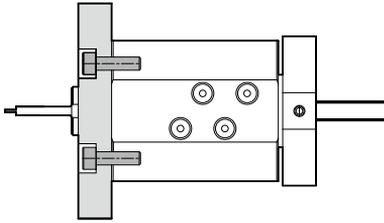
| | Name | Specification |
|-----------------------|-----------------------|----------------------|
| Electrical | Circuits | 6 or 12 |
| | Current | 2A / Circuits |
| | Voltage | 240VAC |
| | Insulation Resistance | 200MΩ@500VDC |
| | Electrical noise | Max.40mΩ |
| | Dielectric strength | 500VAC@50Hz |
| Mechanical | Speed | 250RPM (Max) |
| | Torque | Max. 30g.cm |
| | Life | 10,000,000 Rotation |
| Environmental | Working temperature | -30°C ~ +80°C |
| | IP Class | IP51 |
| | Humidity | 95 ± 3% (30°C + 5°C) |
| Material / Attachment | Contact | GOLD |
| | Housing material | Plastic |
| | Lead wire | 300mm |

RJS70



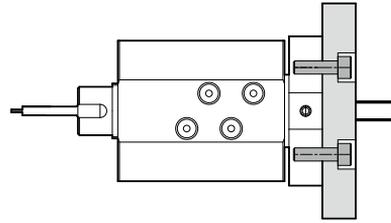
Installation Information

1. Housing tap installation



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| RJS60 | M5×0.8 | 51 | 14 |
| RJS70 | M6×1 | 81 | 13 |
| RJS90 | M6×1 | 81 | 12 |

2. Spindle shaft installation



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| RJS60 | M5×0.8 | 51 | 7 |
| RJS70 | M6×1 | 81 | 13 |
| RJS90 | M6×1 | 81 | 12 |

ROTARY JOINT

PRJ Series

Features

- A rotary type air distributor that supplies air while the spindle shaft rotates with housing fixed status.
- High solidity structure with both side applied bearings.
- Components to prevent twist of air tubes when actuator working rotational motion, it needs extra rotational source separately.



Order Form

PRJ **50**

① ②

① Series Name

② Outer Diameter of Housing

| Order | Outer Diameter of Housing(mm) |
|-------|-------------------------------|
| 50 | 50 |
| 70 | 70 |
| 90 | 90 |

※ Please contact to office for custom-made specifications not listed above.

Specification

| Item Name | | PRJ50 | PRJ70 | PRJ90 |
|---|-----------------|--|---------|---------|
| Maximum Radial Load(kgf) | | 25 | 30 | 105 |
| Maximum Thrust Load(kgf) | | 18 | 24 | 182 |
| Maximum RPM | | Max 200 | Max 150 | Max 100 |
| Weight(kgf) | | 0.55 | 1.6 | 3.9 |
| Fitting Size | Air Supply Port | M5 | PT1/8 | PT1/8 |
| | Air Connection | | M5 | |
| Num of Air Ports | | 2 | 4 | 6 |
| Minimum Required Torque(kgf·cm) <small>Note 3)</small> | | 10 | 20 | 70 |
| Fluid | | Clean Air <small>Note 1)</small> | | |
| Pressure Range(kgf/cm ²) | | 1.5 ~ 7 (Guaranteed Resist Pressure : 10.2) <small>Note 2)</small> | | |
| Temperature Range(°C) | | 5 ~ 60 | | |
| Guide Type | | Radial bearing in both side | | |
| Lubrication | | Not Need (If need, use one sort of turbine oil : SPEC ISOVG 32) | | |

Note 1) lean Air : Fresh air containing solid matters with 0.3% of supersaturated moisture and 99.9% of liquid oil that passed through the 3-10µm degree of filtering.

Note 2) Guaranteed Resist Pressure : A pressure that does not cause an abnormality in parts when it is applied for 1 minute without any weight loaded.

Note 3) Minimum required torque means smallest torque to rotate rotary joint and it needs extra rotary actuator to rotate it.

Listed Minimum required torque is for the status of compressed air not supplied on. When compressed air supplied, required torque higher than normal status so, please select rotary actuator with enough torque.

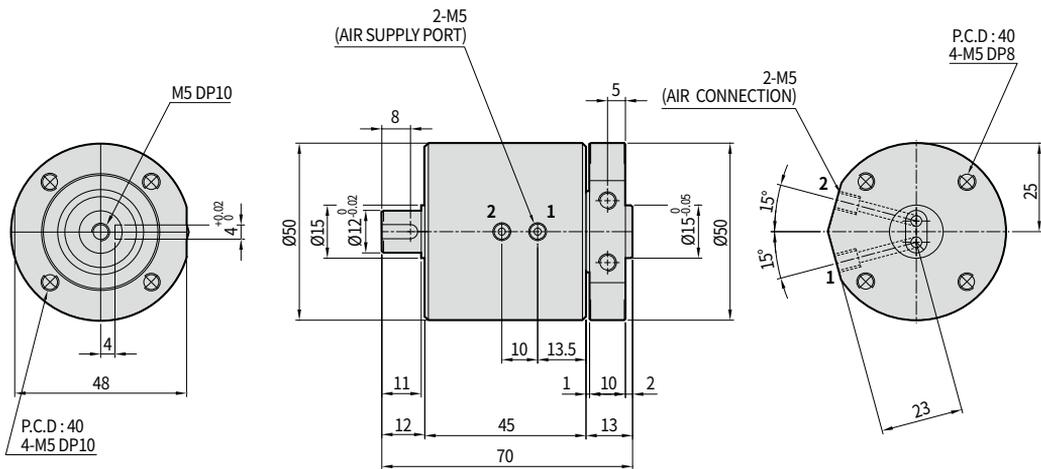
PRJ Series

50

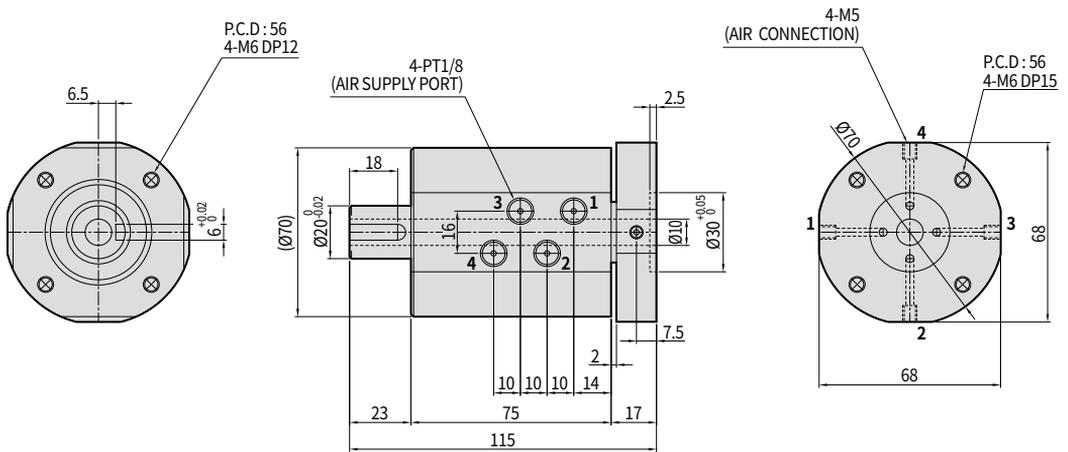
70

90

PRJ50



PRJ70



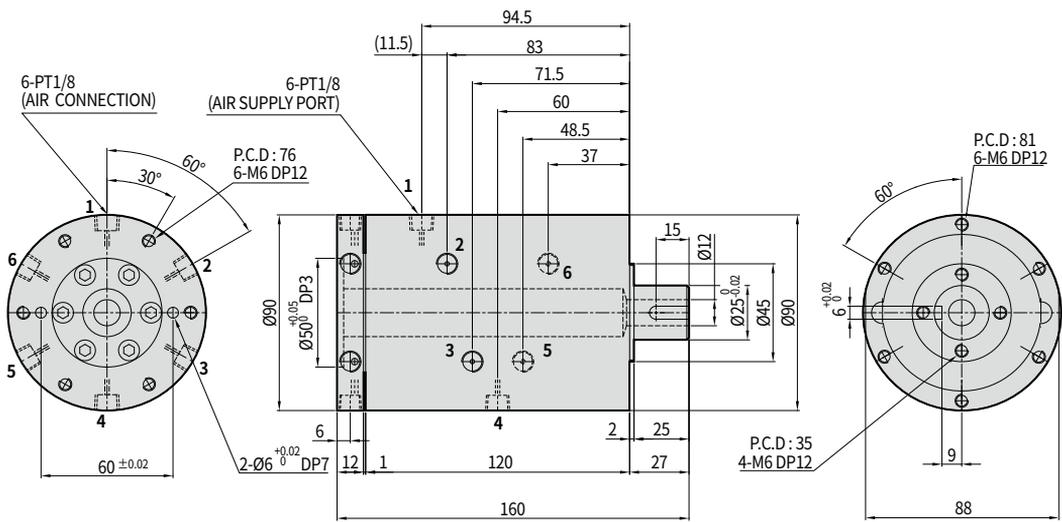
PRJ Series

50

70

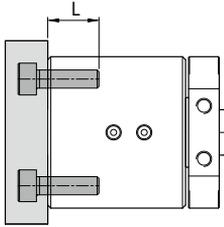
90

PRJ90



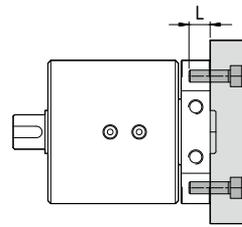
Installation Information

1. Housing tap installation



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| PRJ50 | M5×0.8 | 51 | 10 |
| PRJ70 | M6×1.0 | 81 | 10 |
| PRJ90 | M6×1.0 | 81 | 12 |

2. Spindle shaft installation



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| PRJ50 | M5×0.8 | 51 | 8 |
| PRJ70 | M6×1.0 | 81 | 12 |
| PRJ90 | M6×1.0 | 81 | 12 |

SEPARATOR CYLINDER

SP12

Features

- Separator cylinder by crossing motion of dual cylinders.
- Suitable for separation and alignment of parts in FA line.
- Anti-rotate function by interfere between square shape rod and rod cover.
- Auto Switch installation. (Optional)



Order Form

SP12 - 20 - A2 L S

① ② ③ ④ ⑤

① Series Name

② Stroke(mm) : 20

③ Auto Switch Specification

| Order | Sensing Type | Cable Spec | | Voltage | | Current | | Protect Level | Operation Time |
|-------|----------------------|-------------------------|-----------|---------|--------------|---------|----------------|---------------|----------------|
| | | Wires | Direction | AC | DC | AC | DC | | |
| Blank | | No Auto Switch provided | | | | | | | |
| A2 | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2C | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2V | Magnetic reed switch | 2-Wire | Ver | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| B2 | Magnetic solid state | 3-Wire | Horiz | - | 24V (5~28V) | - | Less than 50mA | IP 67 | 1ms |
| B2B | Magnetic solid state | 2-Wire | Horiz | - | 24V (10~28V) | - | Less than 50mA | IP 67 | 1ms |
| B3B | Magnetic solid state | 2-Wire | Ver | - | 24V (10~28V) | - | Less than 50mA | IP 67 | 1ms |
| B3C | Magnetic solid state | 3-Wire | Ver | - | 24V (5~28V) | - | Less than 50mA | IP 67 | 1ms |

* Be careful of projection for vertical wire exposed type Auto Switch model. (Please refer technical information of Auto Switch)

④ Auto Switch Cable Length

| Order | Cable Length |
|-------|--------------|
| Blank | 1M |
| L | 3M |

⑤ Auto Switch Quantity

| Order | Quantity |
|-------|----------|
| Blank | 2PCS |
| S | 1PCS |

Specification

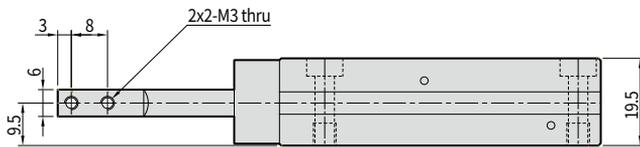
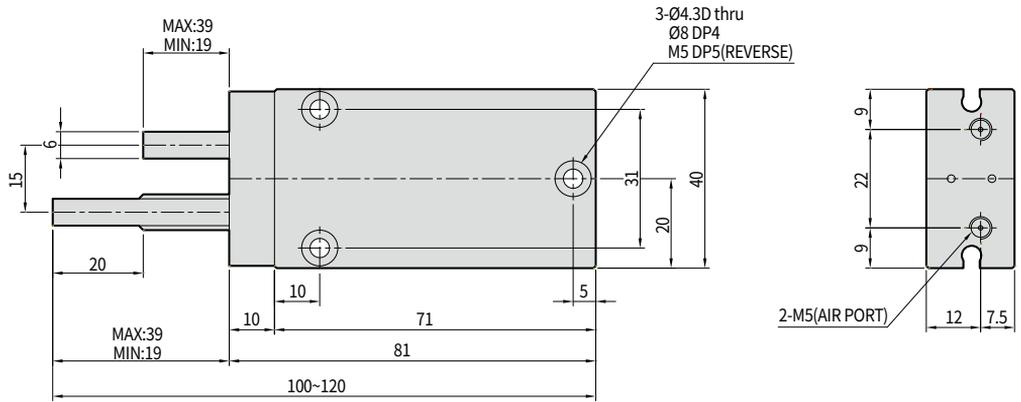
| Item Name | | SP12-20 |
|--------------------------------------|----------|--|
| CYL Bore Size(mm) | | 12 |
| Rod Size(mm) | | 8 |
| Stroke(mm) | | 20 |
| Theoretical Thrust(kgf) | Forward | 5.6 |
| | Backward | 3.14 |
| Air Pressure : 5kgf/cm ² | | |
| Fitting Size | | M5 |
| Weight(kgf) | | 0.21 |
| Max Load Weight(kgf) | | 0.3 |
| Fluid | | Clean Air Note 1) |
| Pressure Range(kgf/cm ²) | | 1.5 ~ 7 (Guaranteed Resist Pressure : 10.5) Note 2) |
| Lubrication | | Not Need (If need, use one sort of turbine oil : SPEC ISOVG 32) |
| Temperature Range(°C) | | 5 ~ 60 |
| Operation Type | | Double Acting (Relative crossing working of forward and backward motion by crossed air ways) |
| Accuracy(mm) | | ± 0.1 |
| Anti-Rotate Degree(°) | | ± 1.5 |

Note 1) Clean Air : Fresh air containing solid matters with 0.3% of supersaturated moisture and 99.9% of liquid oil that passed through the 3-10µm degree of filtering.

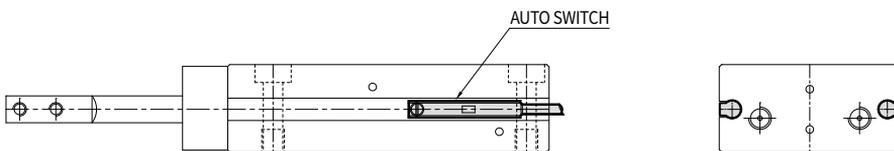
Note 2) Guaranteed Resist Pressure : A pressure that does not cause an abnormality in parts when it is applied for 1 minute without any weight loaded.

SEPARATOR
SP12

SP12-20

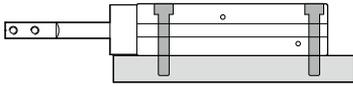


SP12-20 Example of Auto Switch installation



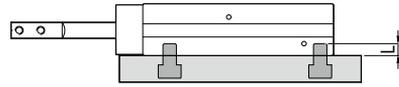
Installation Information

1. Installation by body through holes



| Item | Fastening Bolt | Max Torque (kgf·cm) |
|---------|----------------|---------------------|
| SP12-20 | M4×P0.7 | 25 |

2. Installation by body tap holes



| Item | Fastening Bolt A | Max Torque (kgf·cm) | Max Bolt Length L (mm) |
|---------|------------------|---------------------|------------------------|
| SP12-20 | M5×P0.8 | 51 | 4 |



P&M Catalogue

**PRECISION GUIDE
CYLINDER**

CROSS ROLLER GUIDE DOUBLE POWER

PST-NS Series

High precision and solidity table type
cylinder



Cylinder Bore Size : $\varnothing 6$, $\varnothing 8$, $\varnothing 12$,
 $\varnothing 16$, $\varnothing 20$, $\varnothing 25$

Stroke : 5 ~ 150 mm

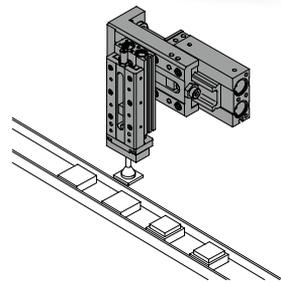
Position Accuracy : ± 0.01 mm

Application

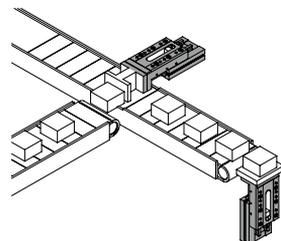
Suitable to use at the semi-conductor, LCD manufacturing and SMT line handling small size workpiece and IC chips, press and position reversing.

- Inventive patent registration: 1
- Utility model registration: 1
- Utility model application: 1

Application 1

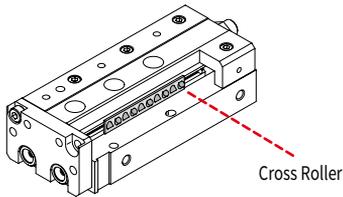


Application 2



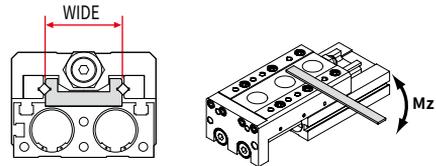
Cross Roller Guide

- Cross roller bearing type linear motion guide applied.
- High precision and solidity structure not required extra guide mounting.



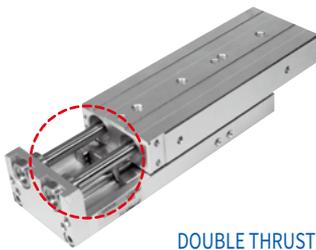
Widen slider guide applied

- High solidity structure by extension of supporting point between slider and roller bearing.
- Reduced swing degree of table by drastic increase of rolling moment.



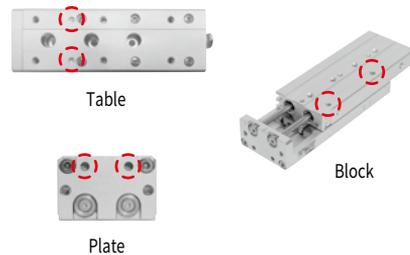
High thrust by twin cylinder inside

- Double thrust performed by parallel aligned twin cylinder.



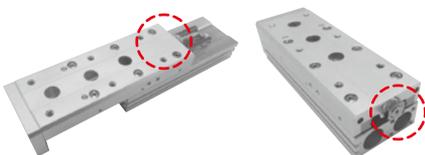
Positioning holes for reproducibility of installation

- Three positioning holes are supplied for reproducibility in install and uninstall.



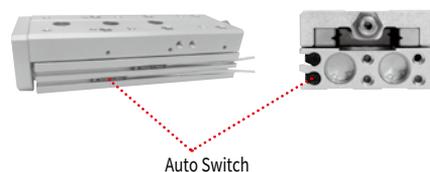
Center Stopper structure

- Improved side space utility by positioning stopper in center.
- Stabilized linear motion by minimized shock moment on the guide part when controlling forward motion.



Auto Switch installation (Optional)

- Minimized interrupt by no projecting when mounting auto switches seated internally.



Please read it before use, with individual notes for each series as well, for your safe use.

Individual notes for PST-NS Series ①

Caution

- Be careful to protect “V” groove from damage which the cross roller is rubbed on slide rail and guide.
- Be careful to avoid any finger or human body jam when cylinder is in operation.
- Be careful not to cause scratch or shock on the mounting surfaces of cylinder body, slide table, and end plate.

Damage in mounting surfaces makes worse the flatness, and cause work failure due to the increased swing of guide unit and/or friction resistance.

Notes in Installation

- Install screw to the cylinder and tighten it to the specified torque.
Otherwise, it may cause defect in working. Also, insufficient screw tightening may cause dislocation or work pieces to drop.

Caution

- Do not exceed the specified load when selecting the product.

Select model based on the specified maximum load factor according to each Bore size. Otherwise, it may result in distorted load of the guide unit, which may cause swing to guide unit, deterioration, and adverse effects on cylinder life.

Notes in Selection

- Avoid excessive external force or shock.

Please read it before use, with individual notes for each series as well, for your safe use.

⚠ Individual notes for PST-NS Series ②

⚠ Caution

Notes in operating Environment and Handling

■ Be careful of using in the place where vibration or shock occurs frequently, it may cause a failure.

■ Be care of corrosion resistance for the stability in cross roller guide unit.

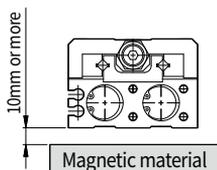
Be care of corrosion resistance in humid environment as water drop can be created in guide unit and it can get rusty in such environment.

■ When used around heat source of high temperature, product can be heated by radiant heat and cause failure. Therefore, install protective covers to block heat source.

■ Do not use in the environment that can be affected by foreign substances such as dust and chip, and cutting oil.

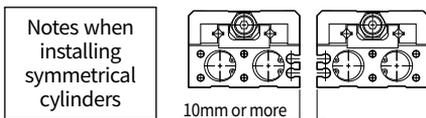
It may cause vibration, increase of frictional resistance, and air leakage. In such environment, please install appropriate protective covers after the consultation with our company.

■ When there are magnetic materials like steel plate near the switch of cylinder, most likely they may cause malfunction in the switch, therefore they need to be designed and installed with sufficient clearance from the surface of cylinder (maintain 10mm or more).



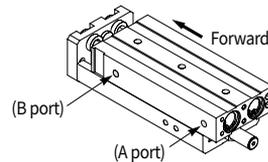
■ Always use stainless bolts when mounting auto switch to cylinder in order to prevent switch malfunction. If unavoidable, use commercial bolts after removing the magnetic properties.

■ When installing symmetrical cylinders, too much close may lead to malfunction in the switch of cylinder. Therefore, keep sufficient clearance (maintain 10mm or more).



■ In the feed of Forward stage at low-speed of 100mm/sec or less of cylinder speed, connecting meter-in speed controller to A port, and meter-out speed controller to B port allow softer control in constant speed.

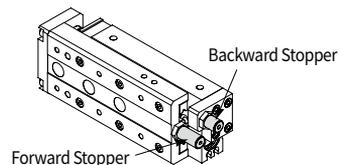
Supplying air to forward stage A port during cylinder operation at low-speed creates stick slip in the beginning and makes cylinder control in constant speed more difficult. Install appropriate speed controller for soft control.



■ Can select various stroke adjustment unit. Check it before model selection.

When controlling the cylinder stroke, three different types of cushions can be used according to the intended use.

1. Urethane Stopper : Generalized stroke adjusting unit. (Allowable speed 50~500mm/sec)
2. Metal Stopper : It may improve the precise control of stroke, but doesn't have cushion function, so it is used only for light load and low-speed. As it is special ordering specification, please contact us. (Allowable speed 50~200mm/sec)
3. Shock Absorber : Soft stop by absorbing the shock at the end of stroke.



PST-NS Series

Features

- Double thrust performed by parallel aligned twin cylinder.
- Improved side space utility and customer convenience by positioning stopper in center.
- Three positioning holes are supplied for reproducibility in install and uninstall.
- Various installation options. (4 ways of installation)
- Optimized for assembling precise components.
- Auto Switch installation. (Optional)



Order Form

PST 06NS - 10 - M - A2 L S - ST

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Series Name

② Cylinder Bore Size

③ Standard Strokes

⑤ Available Auto Switches

| Order | CYL Bore(mm) | Order (=Standard Strokes(mm)) | Order | | | | | | | | |
|-------|--------------|-------------------------------|-------|----|-----|-----|----|----|-----|-----|-----|
| | | | A1 | A2 | A2C | A2V | B1 | B2 | B2B | B3B | B3C |
| 06NS | 6 | 05,10,20,30,40,50 | | ○ | ○ | ○ | | ○ | ○ | ○ | ○ |
| 08NS | 8 | 10,20,30,40,50,75 | | ○ | ○ | | | ○ | ○ | | |
| 12NS | 12 | 10,20,30,40,50,75,100 | | ○ | ○ | | | ○ | ○ | | |
| 16NS | 16 | 10,20,30,40,50,75,100,125 | | ○ | ○ | ○ | | ○ | ○ | ○ | ○ |
| 20NS | 20 | 10,20,30,40,50,75,100,125,150 | ○ | | | | ○ | | | | |
| 25NS | 25 | 10,20,30,40,50,75,100,125,150 | ○ | | | | ○ | | | | |

※ For "Blank", no Auto Switch is provided.

※ Auto Switch Specification

| Order | Sensing Type | Cable Spec | | Voltage | | Current | | Protect Level | Operation Time |
|-------|----------------------|------------|-----------|---------|--------------|---------|----------------|---------------|----------------|
| | | Wires | Direction | AC | DC | AC | DC | | |
| A1 | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2 | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2C | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2V | Magnetic reed switch | 2-Wire | Ver | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| B1 | Magnetic solid state | 3-Wire | Horiz | - | 24V (5~28V) | - | Less than 50mA | IP 67 | 1ms |
| B2 | Magnetic solid state | 3-Wire | Horiz | - | 24V (5~28V) | - | Less than 50mA | IP 67 | 1ms |
| B2B | Magnetic solid state | 2-Wire | Horiz | - | 24V (10~28V) | - | Less than 50mA | IP 67 | 1ms |
| B3B | Magnetic solid state | 2-Wire | Ver | - | 24V (10~28V) | - | Less than 50mA | IP 67 | 1ms |
| B3C | Magnetic solid state | 3-Wire | Ver | - | 24V (5~28V) | - | Less than 50mA | IP 67 | 1ms |

* Be careful of projection for vertical wire exposed type Auto Switch model. (Please refer technical information of Auto Switch)

Specification

| Item Name | PST06NS | PST08NS | PST12NS | PST16NS | PST20NS | PST25NS | |
|---|--|---------|----------|----------|----------|----------|--------|
| CYL Bore Size(mm) | 6 | 8 | 12 | 16 | 20 | 25 | |
| Rod Size(mm) | 3 | 4 | 6 | 8 | 10 | 12 | |
| Standard Strokes(mm) | 5 ~ 50 | 10 ~ 75 | 10 ~ 100 | 10 ~ 125 | 10 ~ 150 | 10 ~ 150 | |
| Theoretical Thrust(kgf) | Forward | 0.57×P | 1×P | 2.26×P | 4.02×P | 6.28×P | 9.82×P |
| | Backward | 0.42×P | 0.75×P | 1.70×P | 3.02×P | 4.71×P | 7.56×P |
| P : Air Pressure(kgf/cm ²) | | | | | | | |
| Fitting Size | M3 | M5 | | | | | |
| Fluid | Clean Air <small>Note 1)</small> | | | | | | |
| Pressure Range(kgf/cm ²) | 1.5 ~ 7 (Guaranteed Resist Pressure : 10.5) <small>Note 2)</small> | | | | | | |
| Lubrication | Not Need (If need, use one sort of turbine oil : SPEC ISOVG 32) | | | | | | |
| Temperature Range(°C) | 5 ~ 60 | | | | | | |
| Moving Speed(mm/sec) | 50 ~ 500 | | | | | | |
| Operation Type | Double Acting | | | | | | |
| Position Accuracy(mm) | ± 0.01 | | | | | | |
| Stroke Tolerance for Forward Position(mm) | 0 ~ +1 | | | | | | |

Note 1) Clean Air : Fresh air containing solid matters with 0.3% of supersaturated moisture and 99.9% of liquid oil that passed through the 3-10 μ m degree of filtering.

Note 2) Guaranteed Resist Pressure : A pressure that does not cause an abnormality in parts when it is applied for 1 minute without any weight loaded.

Weight

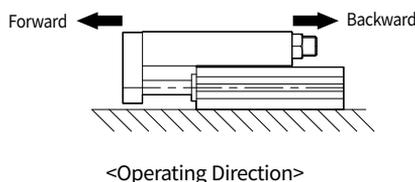
Unit : kgf

| Model | Stroke (mm) | Weight (kgf) | | | | | | | | | |
|---------|-------------|--------------|------|------|------|------|------|------|------|------|------|
| | | 5 | 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |
| PST06NS | | 0.07 | 0.08 | 0.11 | 0.12 | 0.17 | 0.19 | - | - | - | - |
| PST08NS | | - | 0.16 | 0.17 | 0.2 | 0.25 | 0.3 | 0.43 | - | - | - |
| PST12NS | | - | 0.32 | 0.32 | 0.32 | 0.39 | 0.49 | 0.69 | 0.92 | - | - |
| PST16NS | | - | 0.58 | 0.58 | 0.58 | 0.66 | 0.8 | 1.15 | 1.45 | 1.8 | - |
| PST20NS | | - | 0.99 | 0.99 | 0.99 | 1.15 | 1.29 | 1.7 | 2.24 | 2.79 | 3.35 |
| PST25NS | | - | 1.71 | 1.71 | 1.71 | 1.9 | 2.15 | 2.75 | 3.39 | 4.28 | 4.89 |

Theoretical Thrust

Unit : kgf

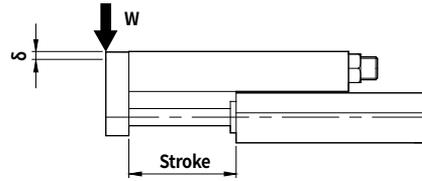
| Model | Operating Direction (Ref. figure) | Pressured Surface (mm ²) | Pressure Range (kgf/cm ²) | | | | | | |
|---------|-----------------------------------|--------------------------------------|---------------------------------------|------|------|------|------|------|--|
| | | | 2 | 3 | 4 | 5 | 6 | 7 | |
| PST06NS | Forward | 57 | 1.14 | 1.71 | 2.28 | 2.85 | 3.42 | 3.99 | |
| | Backward | 42 | 0.84 | 1.26 | 1.68 | 2.1 | 2.52 | 2.94 | |
| PST08NS | Forward | 100 | 2 | 3 | 4 | 5 | 6 | 7 | |
| | Backward | 75 | 1.5 | 2.25 | 3 | 3.75 | 4.5 | 5.25 | |
| PST12NS | Forward | 226 | 4.52 | 6.78 | 9.04 | 11.3 | 13.5 | 15.8 | |
| | Backward | 170 | 3.4 | 5.1 | 6.8 | 8.5 | 10.2 | 11.9 | |
| PST16NS | Forward | 402 | 8.04 | 12 | 16 | 20.1 | 24.1 | 28.1 | |
| | Backward | 302 | 6.04 | 9.06 | 12 | 15.1 | 18.1 | 21.1 | |
| PST20NS | Forward | 628 | 12.5 | 18.8 | 25.1 | 31.4 | 37.6 | 43.9 | |
| | Backward | 471 | 9.42 | 14.1 | 18.8 | 23.5 | 28.2 | 32.9 | |
| PST25NS | Forward | 982 | 19.6 | 29.4 | 39.2 | 49.1 | 58.9 | 68.7 | |
| | Backward | 756 | 15.1 | 22.6 | 30.2 | 37.8 | 45.3 | 52.9 | |



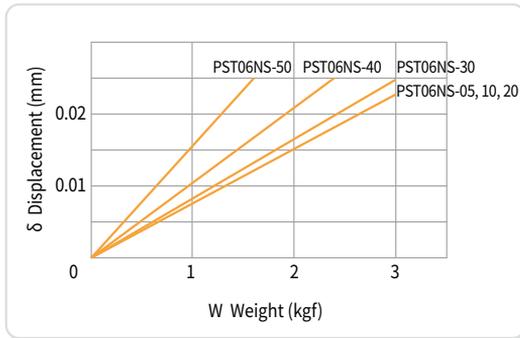
PST-NS Series Model Selection Guide

Table Deflection

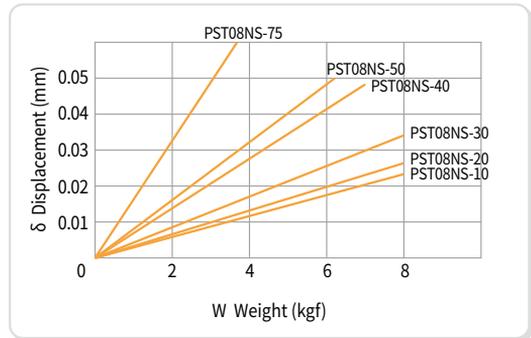
- The graph represents the deflection if any static load is applied at the end of table when moved forward as much as the corresponding stroke.
- The deflections below mentioned are only for a reference. (Please note that they are NOT maximum value)



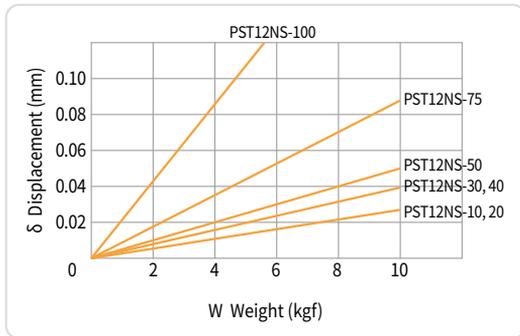
► PST06NS



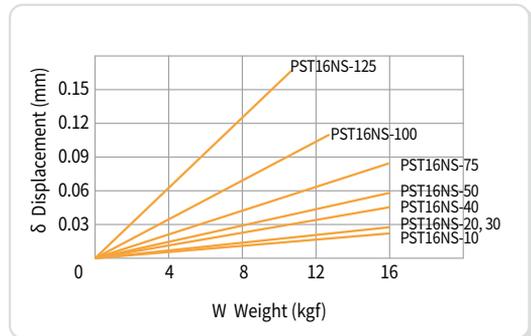
► PST08NS



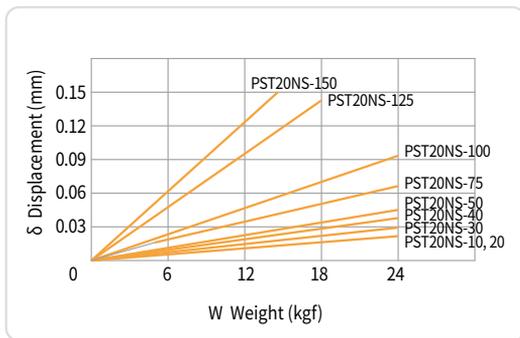
► PST12NS



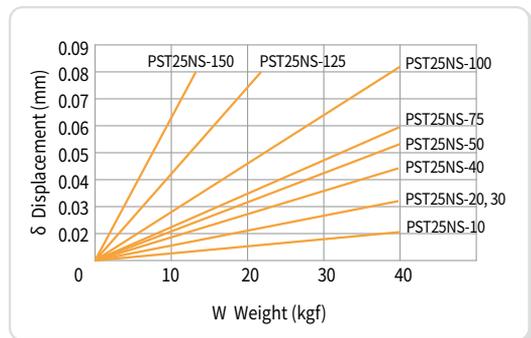
► PST16NS



► PST20NS



► PST25NS



PST-NS Series Model Selection Guide

Technical Data by Model

■ Mp, My, Mr 3-directions moment calculation formula

Figure 1

※ W : Work Weight (kgf), K₂ : Speed factor, K₃ : Shock factor

| | Pitch Moment (Mp) | Yawing Moment (My) | Rolling Moment (Mr) |
|------------------------|---|---|---|
| Moment Direction | | | |
| Static Moment | | | |
| Static Moment Formula | $M_p = W \times (A + \text{STROKE} + L_p)$ $M_p = W \times (B + L_p)$ | $M_y = W \times (A + \text{STROKE} + L_y)$ $M_y = W \times (C + L_y)$ | $M_r = W \times (C + L_r)$ $M_r = W \times (B + L_r)$ |
| Dynamic Moment | | | |
| Dynamic Moment Formula | $M_p = K_2 \times K_3 \times W \times (A + \text{STROKE} + L_p)$ $M_p = K_2 \times K_3 \times W \times (B + L_p)$ | $M_y = K_2 \times K_3 \times W \times (A + \text{STROKE} + L_y)$ $M_y = K_2 \times K_3 \times W \times (C + L_y)$ | $M_r = K_2 \times K_3 \times W \times (C + L_r)$ $M_r = K_2 \times K_3 \times W \times (B + L_r)$ |

■ Corrections from the central distance of moments

Table 1

Unit : mm

| Model | Stroke | Corrections | | | | | | | | | | B | C |
|---------|--------|-------------|----|----|----|----|----|----|----|----|----|------|----|
| | | 5 | 10 | 20 | 30 | 40 | A | | | | | | |
| PST06NS | | 22 | 19 | 19 | 19 | 25 | 28 | - | - | - | - | 6 | 16 |
| PST08NS | | - | 23 | 21 | 21 | 26 | 30 | 42 | - | - | - | 8.5 | 20 |
| PST12NS | | - | 36 | 31 | 26 | 27 | 32 | 42 | 57 | - | - | 9.5 | 23 |
| PST16NS | | - | 39 | 34 | 29 | 29 | 32 | 44 | 56 | 68 | - | 13.5 | 28 |
| PST20NS | | - | 44 | 39 | 34 | 34 | 37 | 44 | 57 | 72 | 86 | 17.5 | 34 |
| PST25NS | | - | 50 | 45 | 40 | 40 | 42 | 50 | 58 | 74 | 82 | 21.5 | 41 |

■ Maximum allowable moment

Table 2

Unit : kgf·cm

| Model | Stroke | 5 | 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |
|---------|--------|---------|--------|------|------|------|-------|------|------|------|-----|
| | | PST06NS | Mp, My | 2.39 | 2.39 | 3.58 | 3.58 | 5.38 | 5.97 | - | - |
| | Mr | 5.04 | 5.04 | 7.06 | 7.06 | 10 | 11.09 | - | - | - | - |
| PST08NS | Mp, My | - | 3.58 | 3.58 | 4.18 | 5.3 | 6.57 | 8.96 | - | - | - |
| | Mr | - | 8.73 | 8.73 | 9.98 | 12.4 | 14.9 | 19.9 | - | - | - |
| PST12NS | Mp, My | - | 10.9 | 10.9 | 10.9 | 12.7 | 16.3 | 23.6 | 32.7 | - | - |
| | Mr | - | 26.3 | 26.3 | 26.3 | 30.1 | 37.6 | 52.7 | 71.5 | - | - |
| PST16NS | Mp, My | - | 14.5 | 14.5 | 14.5 | 14.5 | 16.3 | 23.6 | 32.7 | 40 | - |
| | Mr | - | 42.7 | 42.7 | 42.7 | 42.7 | 47.5 | 66.5 | 90.2 | 109 | - |
| PST20NS | Mp, My | - | 33.2 | 33.2 | 33.2 | 33.2 | 39.8 | 53.1 | 79.7 | 86.4 | 93 |
| | Mr | - | 93.3 | 93.3 | 93.3 | 93.3 | 108.9 | 140 | 202 | 217 | 233 |
| PST25NS | Mp, My | - | 59.6 | 59.6 | 59.6 | 74.5 | 89.4 | 104 | 134 | 178 | 208 |
| | Mr | - | 173 | 173 | 173 | 208 | 242 | 277 | 346 | 450 | 520 |

PST-NS Series Model Selection Guide

PRECISION

PST-NS
PSB
PST
SC
ST
STS-L
SD
PSW

■ **Maximum allowable kinetic energy (Ea)** Table 3 Unit: kgf·cm

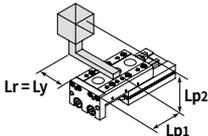
| Model | Stopper Types | |
|---------|---------------|----------------|
| | Urethane | Shock Absorber |
| PST06NS | 0.12 | - |
| PST08NS | 0.19 | 0.5 |
| PST12NS | 0.63 | 0.9 |
| PST16NS | 1.2 | 1.8 |
| PST20NS | 1.8 | 3.4 |
| PST25NS | 2.2 | 4.7 |

■ **Max. Allowable Load (Wa)** Table 4 Unit: kgf

| Model | Max. Allowable Load |
|---------|---------------------|
| PST06NS | 0.6 |
| PST08NS | 1 |
| PST12NS | 2.4 |
| PST16NS | 4.3 |
| PST20NS | 6.7 |
| PST25NS | 10.7 |

※ For vertical installation, maximum allowable load check is not required.
 ※ This table is only for reference value to calculate table load ratio.

Example of Model Selection

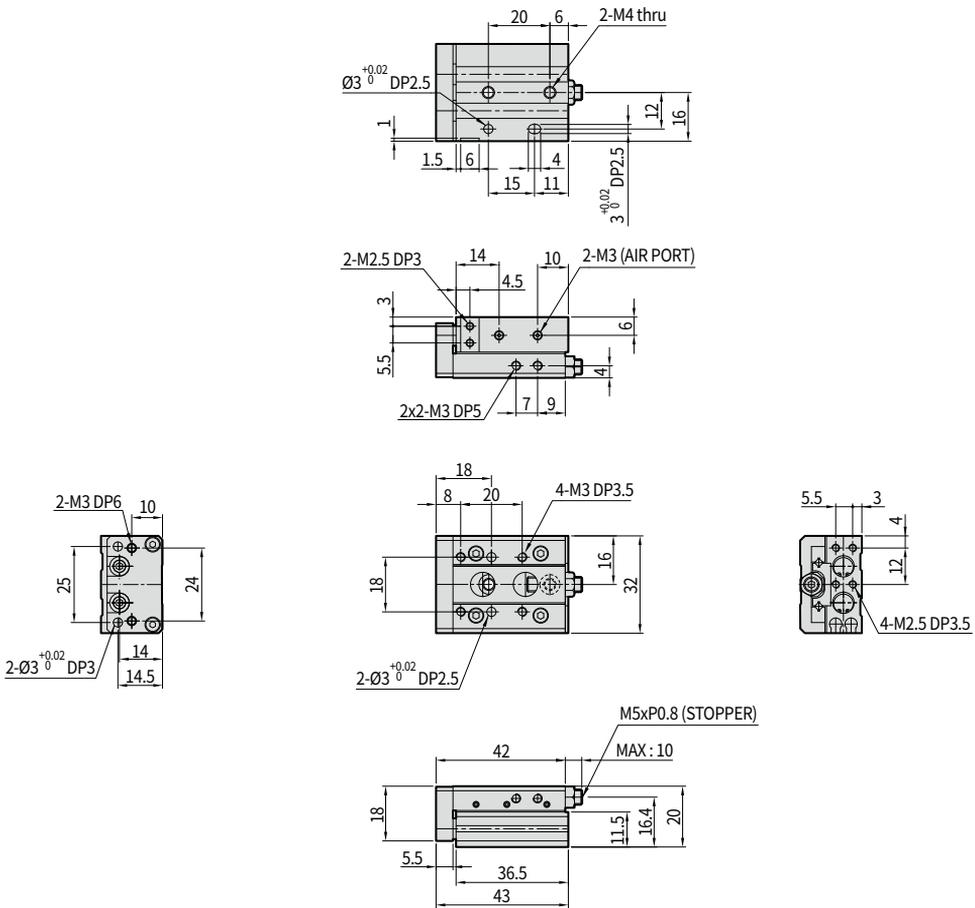
| | | Applicable Formula | Selection Example | | |
|--|--|--|--|--|---|
| Condition Check | | <ul style="list-style-type: none"> ▪ Cylinder model selection ▪ Cushion type(Urethane / Absorber) ▪ Distance to the center of gravity in load ▪ Installation type | <ul style="list-style-type: none"> ▪ Check for : PST12NS-50 ▪ Table installation, horizontal installation ▪ Urethane cushion ▪ Average speed : V = 300mm/sec ▪ Work weight W = 0.5kgf Lp1 = 30mm Lp2 = 40mm Ly, Lr = 20mm  | | |
| | | <table border="1"> <tr> <td>Horizontal installation </td> <td>Vertical installation </td> <td>Plate installation </td> <td>Table installation </td> </tr> </table> | | Horizontal installation  | Vertical installation  |
| Horizontal installation  | Vertical installation  | Plate installation  | Table installation  | | |
| Kinetic Energy Check | <p>The kinetic energy of load should be within the allowable kinetic energy range of cylinder.</p> | <p>Work kinetic energy(kgf·cm) $E = K_1 \times \frac{1}{2} \times \frac{W}{980} \times \left(\frac{1.4V}{10}\right)^2$</p> <p>W : Work weight(kgf) V : Average speed(mm/sec) K1 : Installation Factor(Table installation : 1, Plate installation : 1.6) Ea : Allowable kinetic energy(kgf·cm) Table 3 Applicable only if E < Ea</p> | <p>$E = 1 \times \frac{1}{2} \times \frac{0.5}{980} \times \left(\frac{1.4 \times 300}{10}\right)^2 = 0.45 \text{ kgf}\cdot\text{cm}$</p> <p>Ea = 0.63 kgf·cm Applicable as E(0.45) < Ea(0.63)</p> | | |
| Load Factor Check | Loading Factor | <p>Suitable load weight(kgf) $W_t = K_1 \times K_2 \times W$</p> <p>Loading factor $\theta_1 = \frac{W_t}{W_a}$</p> <p>W : Work weight(kgf) K1 : Installation factor(Table installation : 1, Plate installation : 1.6) K2 : Speed factor(300mm/sec or less : 1, Over 300mm/sec : 1.6) Table 4 Wa : Allowable load weight(kgf)</p> | <p>$W_t = 1 \times 1 \times 0.5 = 0.5 \text{ kgf}$</p> <p>$W_a = 2.4 \text{ kgf}$</p> <p>$\theta_1 = \frac{0.5}{2.4} = 0.21$</p> | | |
| | | Static Moment | <p>Pitching moment(kgf·cm) $M_p = W \times (A + \text{Stroke} + L_{p1}) / 10$</p> <p>Rolling moment(kgf·cm) $M_r = W \times (C + L_r) / 10$</p> <p>Pitching moment factor $\theta_2 = \frac{M_p}{M_{pa}}$</p> <p>Rolling moment factor $\theta_3 = \frac{M_r}{M_{ra}}$</p> <p>W : Work weight(kgf) A, C : Corrections from the center distance of moment(mm) Table 3 Lp, Lr : Distance between end of table to center of load(mm) Figure 1 Mpa : Allowable pitching moment(kgf·cm) Table 2 Mra : Allowable rolling moment(kgf·cm) Table 2</p> | <p>$M_p = \frac{0.5 \times (32 + 50 - 30)}{10} = 2.6 \text{ kgf}\cdot\text{cm}$</p> <p>$\theta_2 = \frac{2.6}{16.3} = 0.16$</p> <p>$M_r = \frac{0.5 \times (23 + 20)}{10} = 2.15 \text{ kgf}\cdot\text{cm}$</p> <p>$\theta_3 = \frac{2.15}{37.6} = 0.06$</p> | |
| | Dynamic Moment | | <p>Pitching moment(kgf·cm) $M_p = K_2 \times K_3 \times W \times (B + L_{p2}) / 10$</p> <p>Yawing moment(kgf·cm) $M_y = K_2 \times K_3 \times W \times (C + L_y) / 10$</p> <p>Pitching moment factor $\theta_4 = \frac{M_p}{M_{pa}}$</p> <p>Yawing moment factor $\theta_5 = \frac{M_y}{M_{ya}}$</p> <p>W : Work weight(kgf) K2 : Speed factor(300mm/sec or less : 1, Over: 300mm/sec : 1.6) K3 : Shock factor(Urethane : 1, shock absorber : 0.25) B, C : Corrections from the center distance of moments(mm) Table 1 Lp, Ly : Distance between end of table to center of load(mm) Figure 1 Mpa : Allowable pitching moment(kgf·cm) Table 2 Mya : Allowable yawing moment(kgf·cm) Table 2</p> | <p>$M_p = \frac{1 \times 1 \times 0.5 \times (9.5 + 40)}{10} = 2.5 \text{ kgf}\cdot\text{cm}$</p> <p>$\theta_4 = \frac{2.5}{16.3} = 0.16$</p> <p>$M_y = \frac{1 \times 1 \times 0.5 \times (23 + 20)}{10} = 2.15 \text{ kgf}\cdot\text{cm}$</p> <p>$\theta_5 = \frac{2.15}{16.3} = 0.13$</p> | |
| | | | Total Load Factor | <p>$\theta_t = \theta_1 + \theta_2 + \theta_3 + \theta_4 + \theta_5 \leq 1$</p> | <p>$\theta_t = 0.21 + 0.16 + 0.06 + 0.16 + 0.13 = 0.72 \leq 1$</p> <p>PST12NS-50 is applicable</p> |

■ PST-NS Series

06NS 08NS 12NS 16NS 20NS 25NS

05 10 20 30 40 50

PST06NS-05



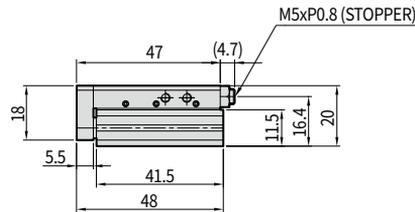
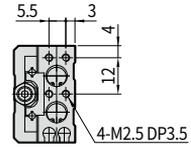
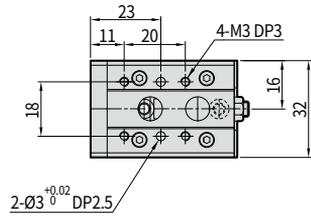
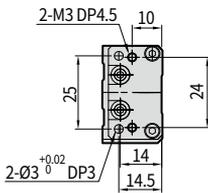
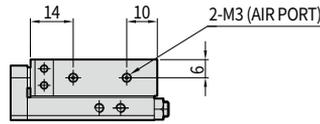
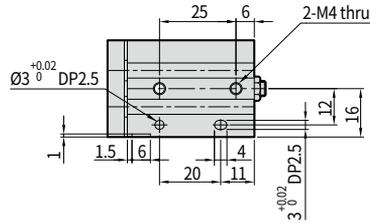
※For body installation, only bottom tap(M4) installation is available.

PST06NS-05 Example of Auto Switch installation



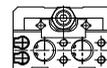
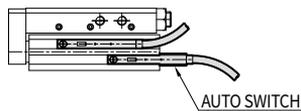
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|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 05 | 10 | 20 | 30 | 40 | 50 |

PST06NS-10



※For body installation, only bottom tap(M4) installation is available.

PST06NS-10 Example of Auto Switch installation



PST-NS Series

06NS

08NS

12NS

16NS

20NS

25NS

05

10

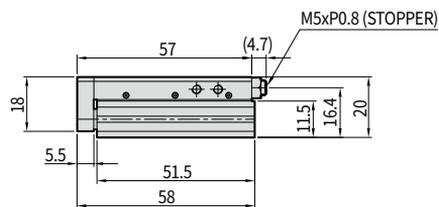
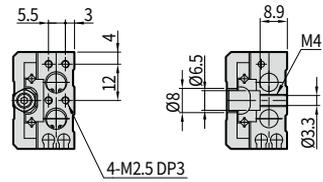
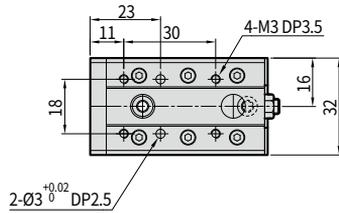
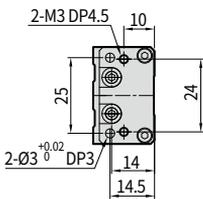
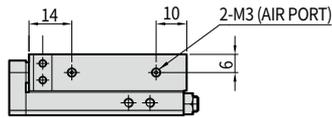
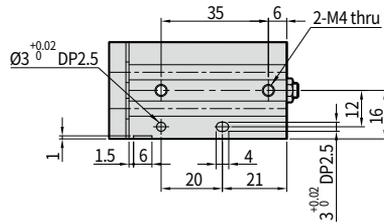
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30

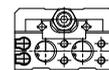
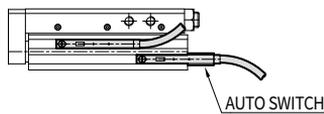
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PST06NS-20



PST06NS-20 Example of Auto Switch installation



06NS

08NS

12NS

16NS

20NS

25NS

05

10

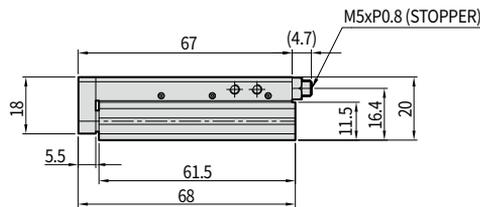
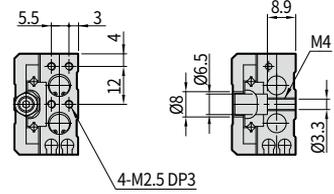
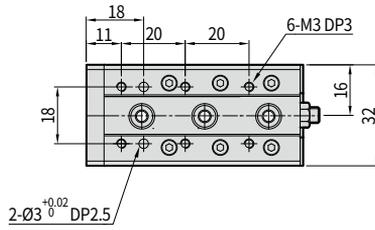
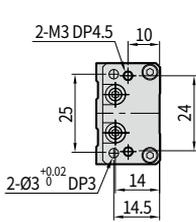
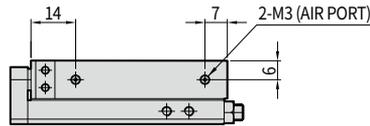
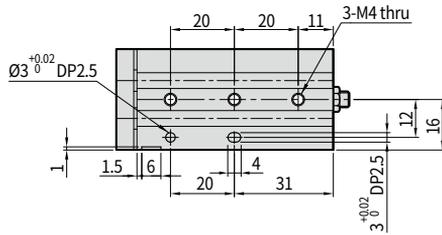
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30

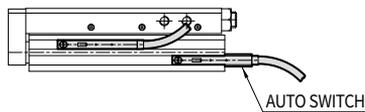
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PST06NS-30



PST06NS-30 Example of Auto Switch installation

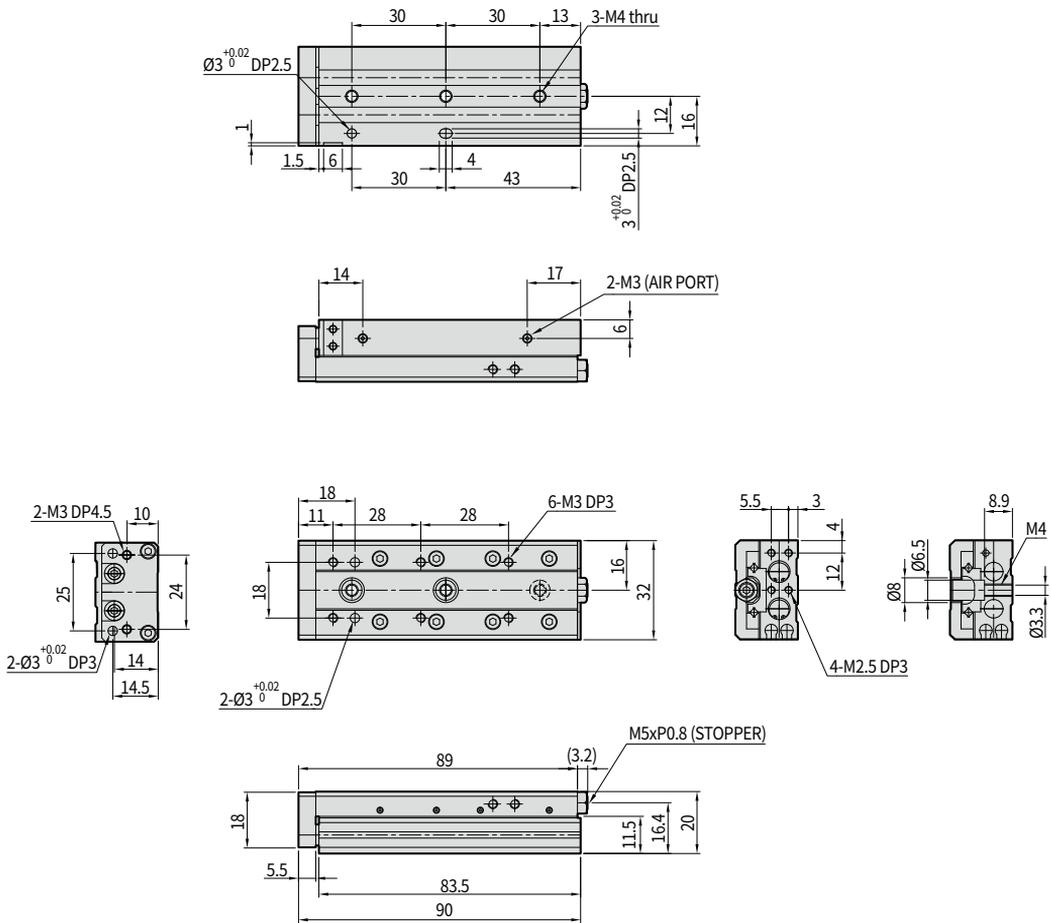


PST-NS Series

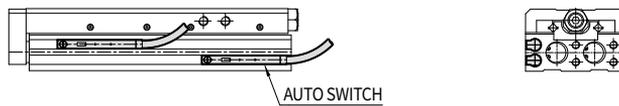
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05 10 20 30 40 50

PST06NS-40

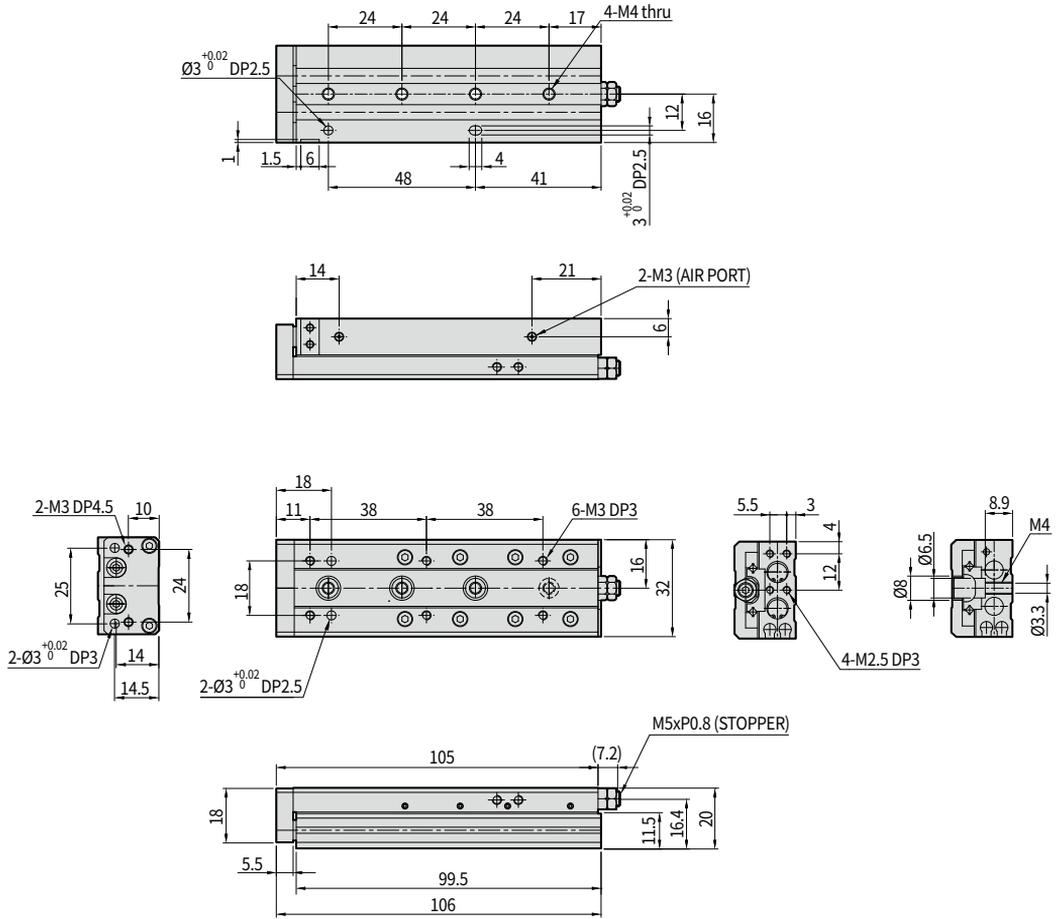


PST06NS-40 Example of Auto Switch installation

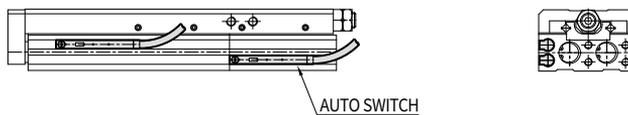


| | | | | | |
|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 05 | 10 | 20 | 30 | 40 | 50 |

PST06NS-50



PST06NS-50 Example of Auto Switch installation

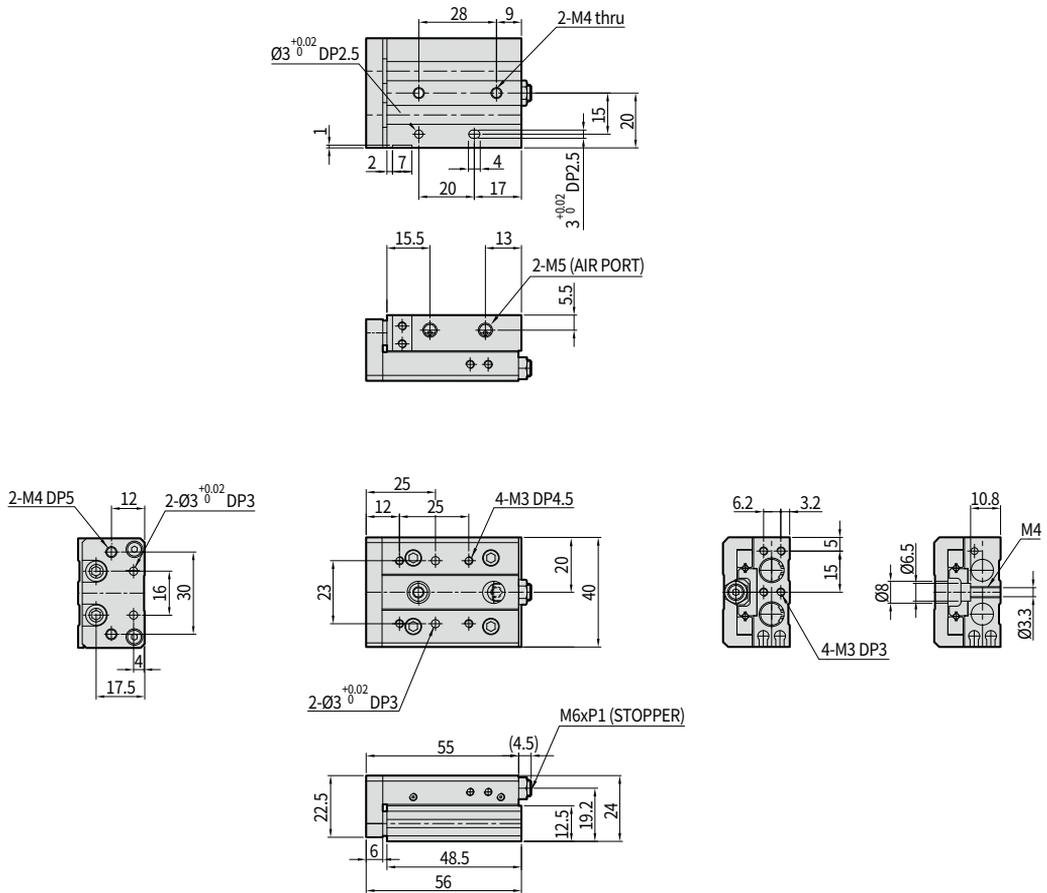


PST-NS Series

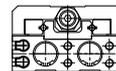
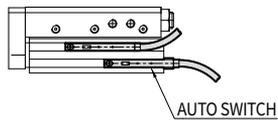
06NS 08NS 12NS 16NS 20NS 25NS

10 20 30 40 50 75

PST08NS-10

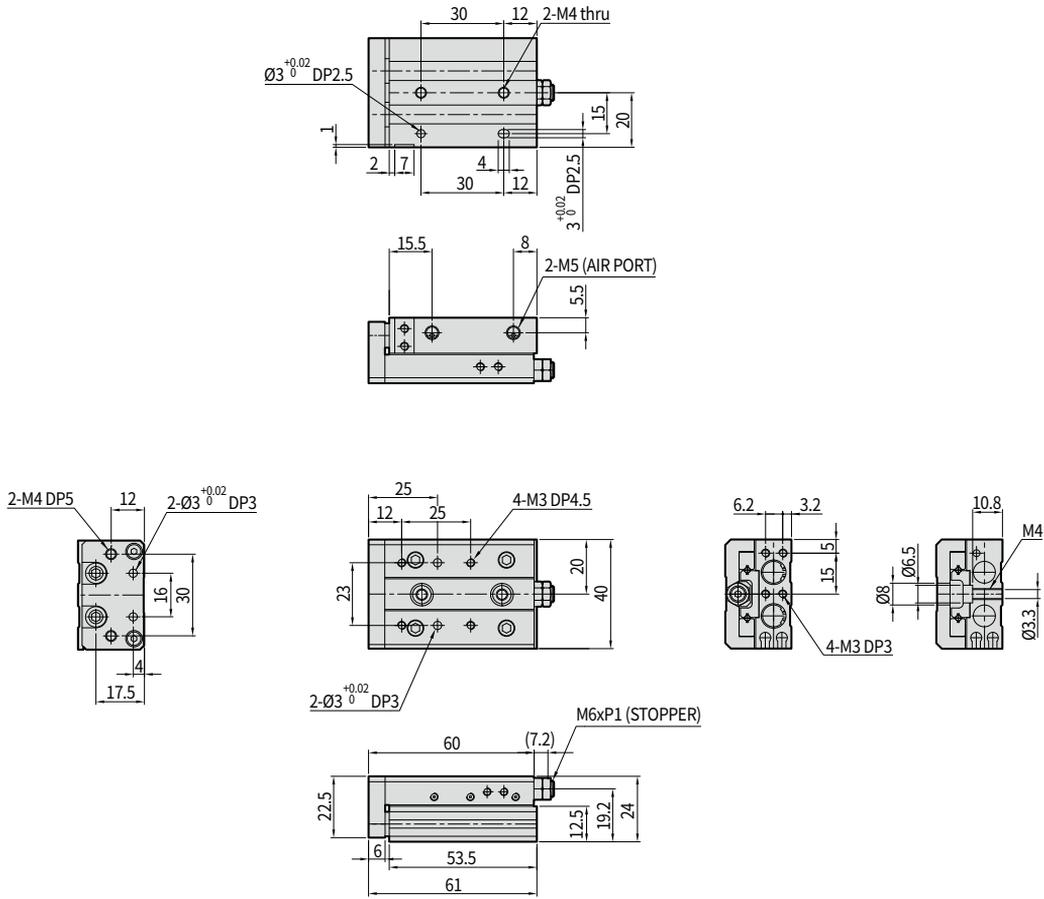


PST08NS-10 Example of Auto Switch installation



| | | | | | |
|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 10 | 20 | 30 | 40 | 50 | 75 |

PST08NS-20



PST08NS-20 Example of Auto Switch installation

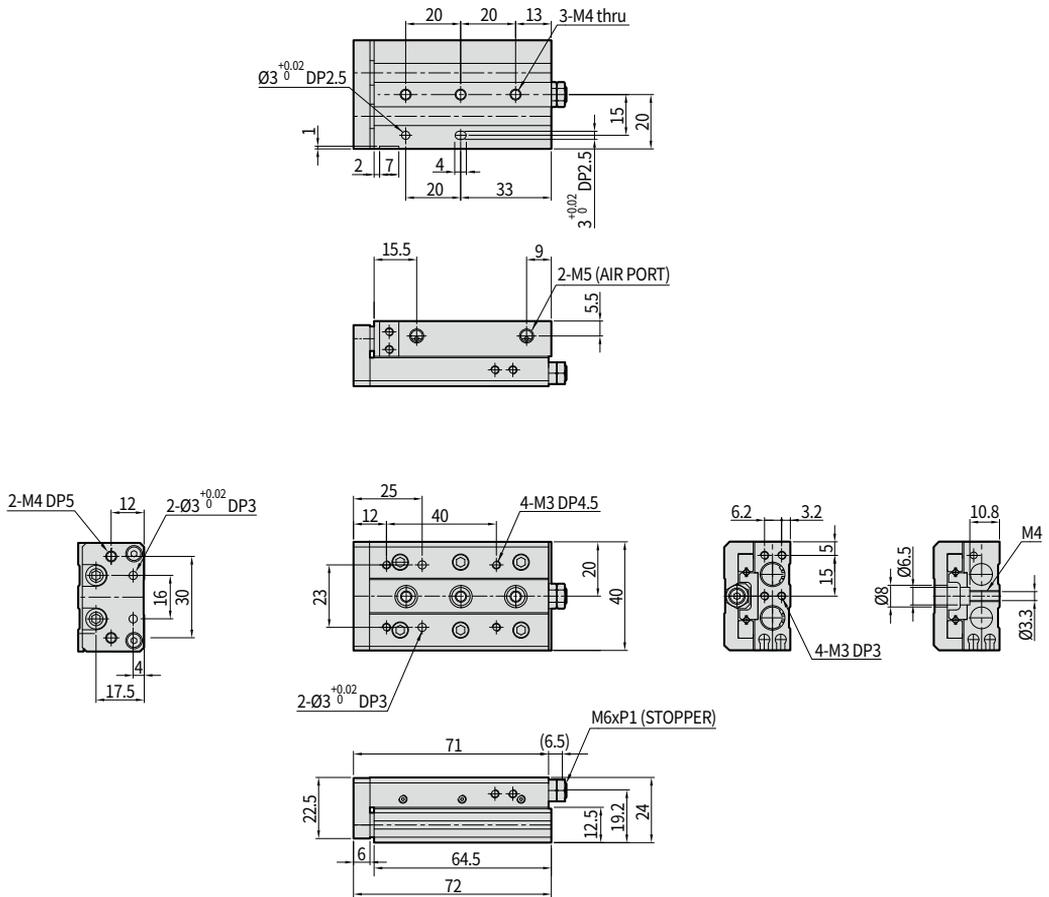


■ PST-NS Series

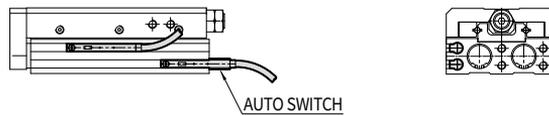
06NS 08NS 12NS 16NS 20NS 25NS

10 20 30 40 50 75

PST08NS-30

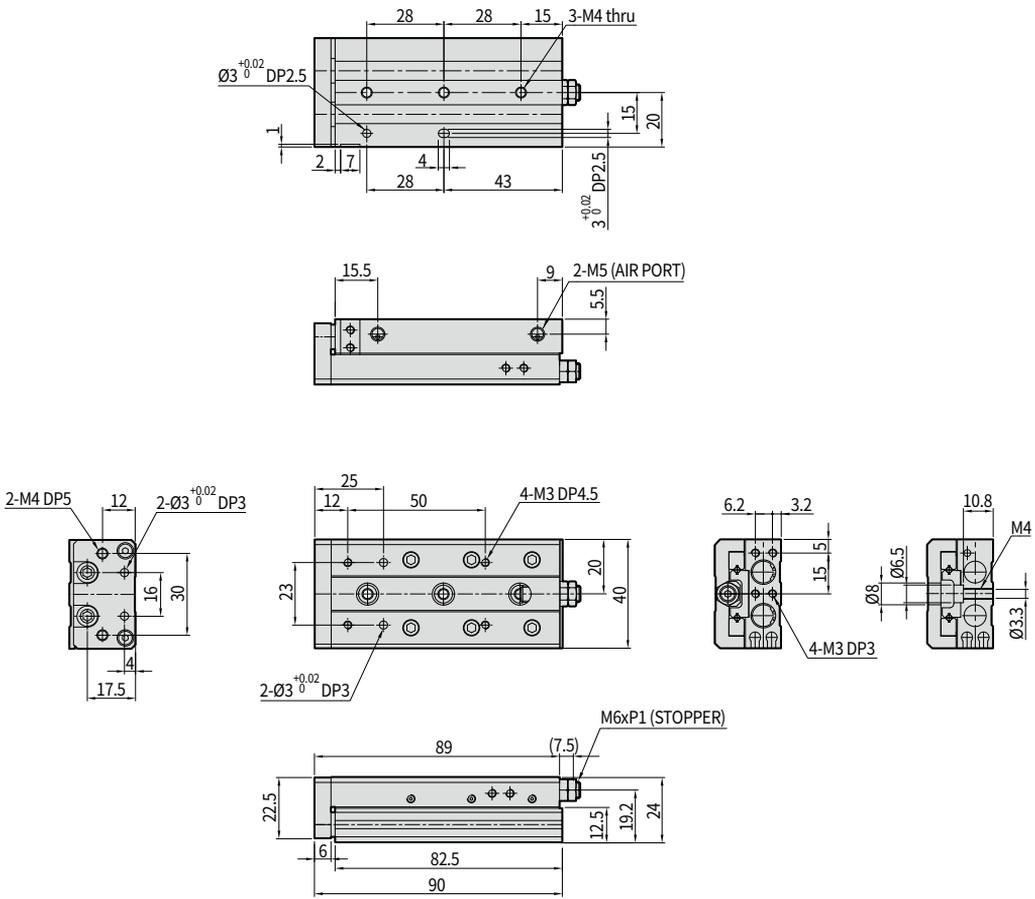


PST08NS-30 Example of Auto Switch installation

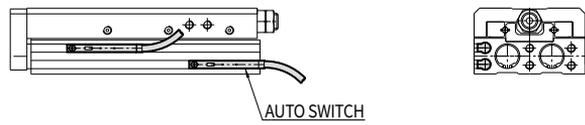


| | | | | | |
|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 10 | 20 | 30 | 40 | 50 | 75 |

PST08NS-40



PST08NS-40 Example of Auto Switch installation

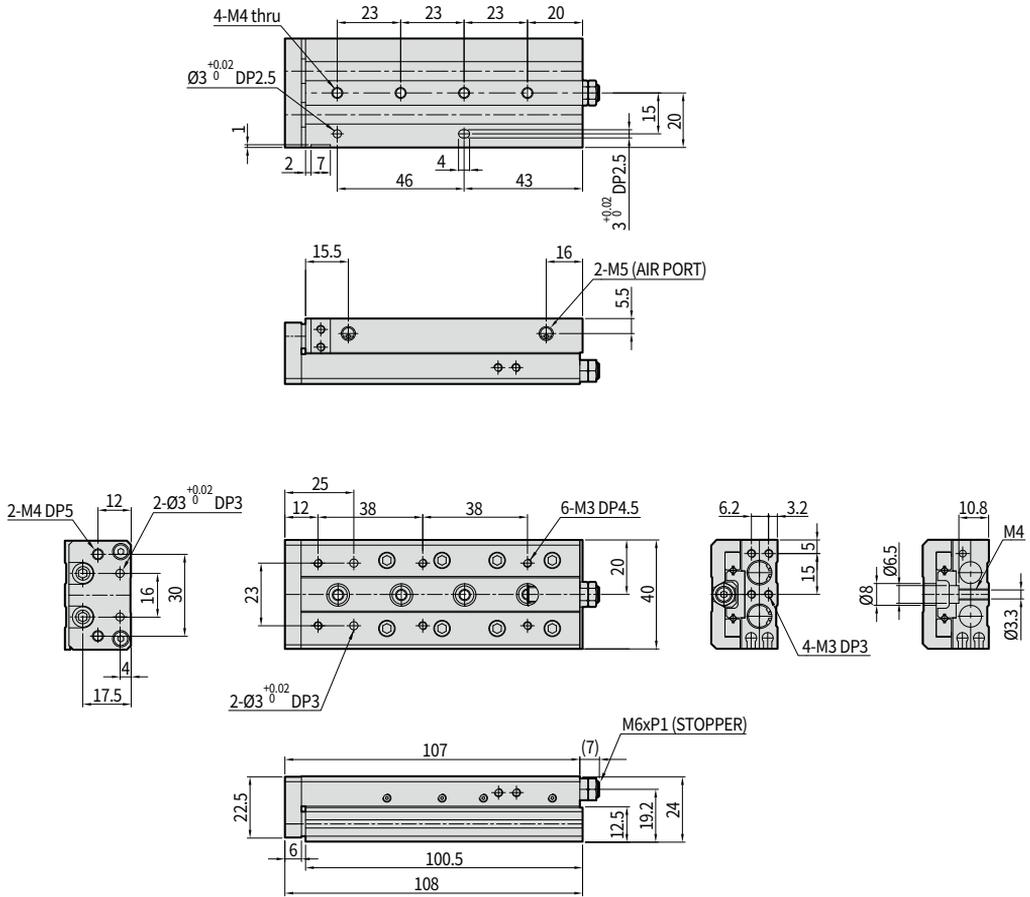


■ PST-NS Series

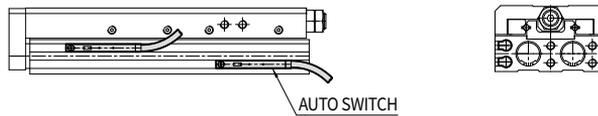
06NS 08NS 12NS 16NS 20NS 25NS

10 20 30 40 50 75

PST08NS-50

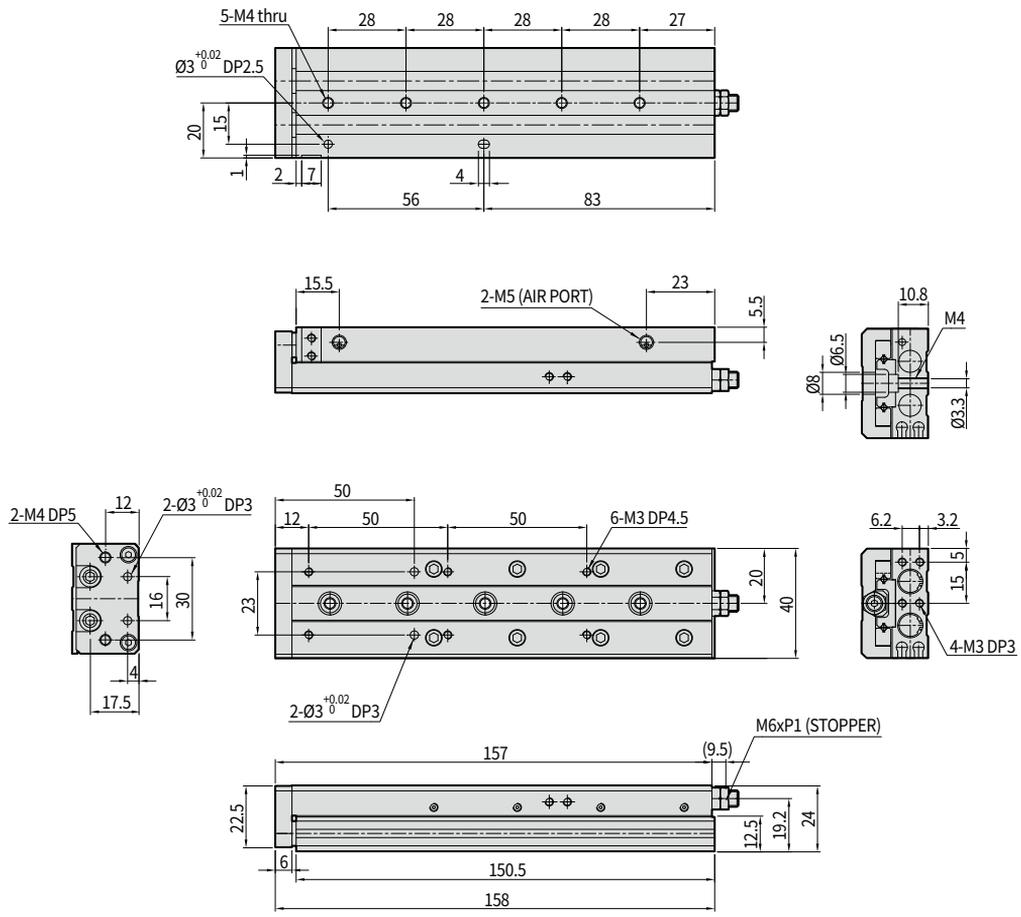


PST08NS-50 Example of Auto Switch installation

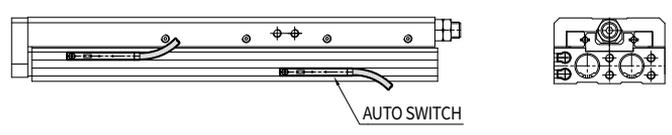


| | | | | | |
|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 10 | 20 | 30 | 40 | 50 | 75 |

PST08NS-75



PST08NS-75 Example of Auto Switch installation



■ PST-NS Series

06NS

08NS

12NS

16NS

20NS

25NS

10

20

30

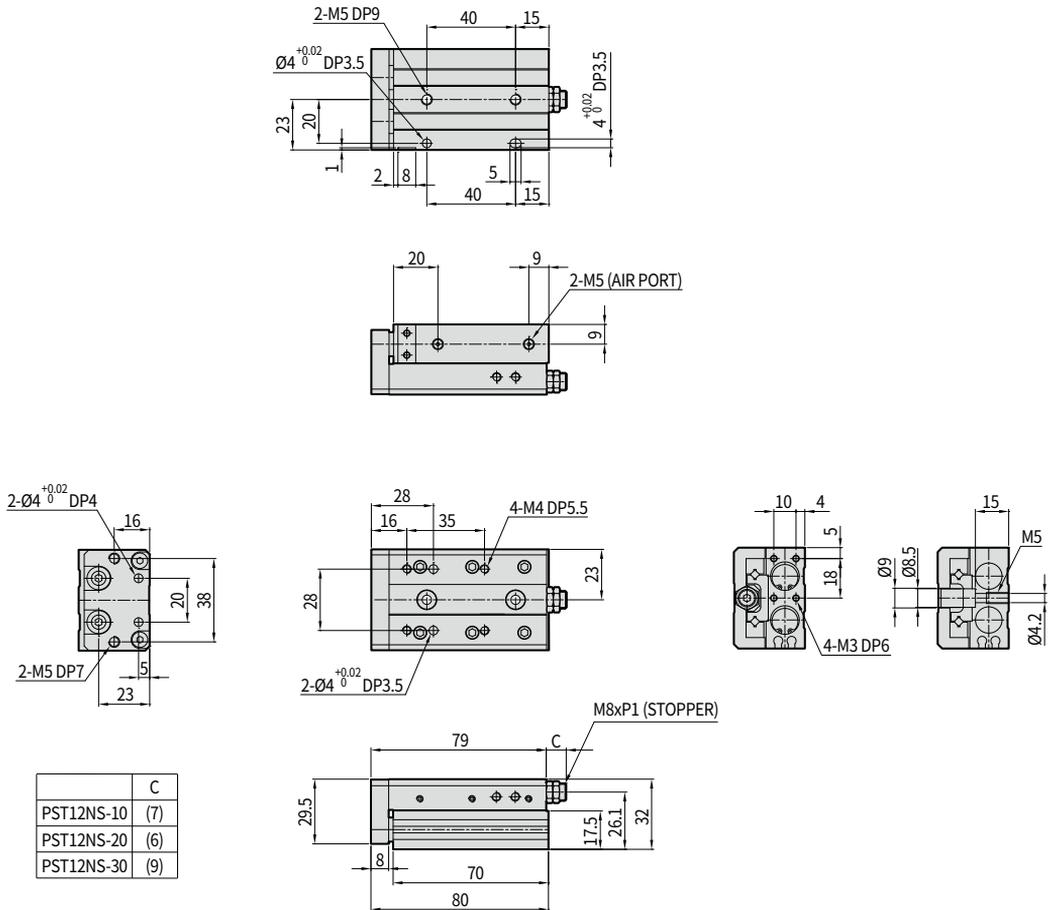
40

50

75

100

PST12NS-10,20,30

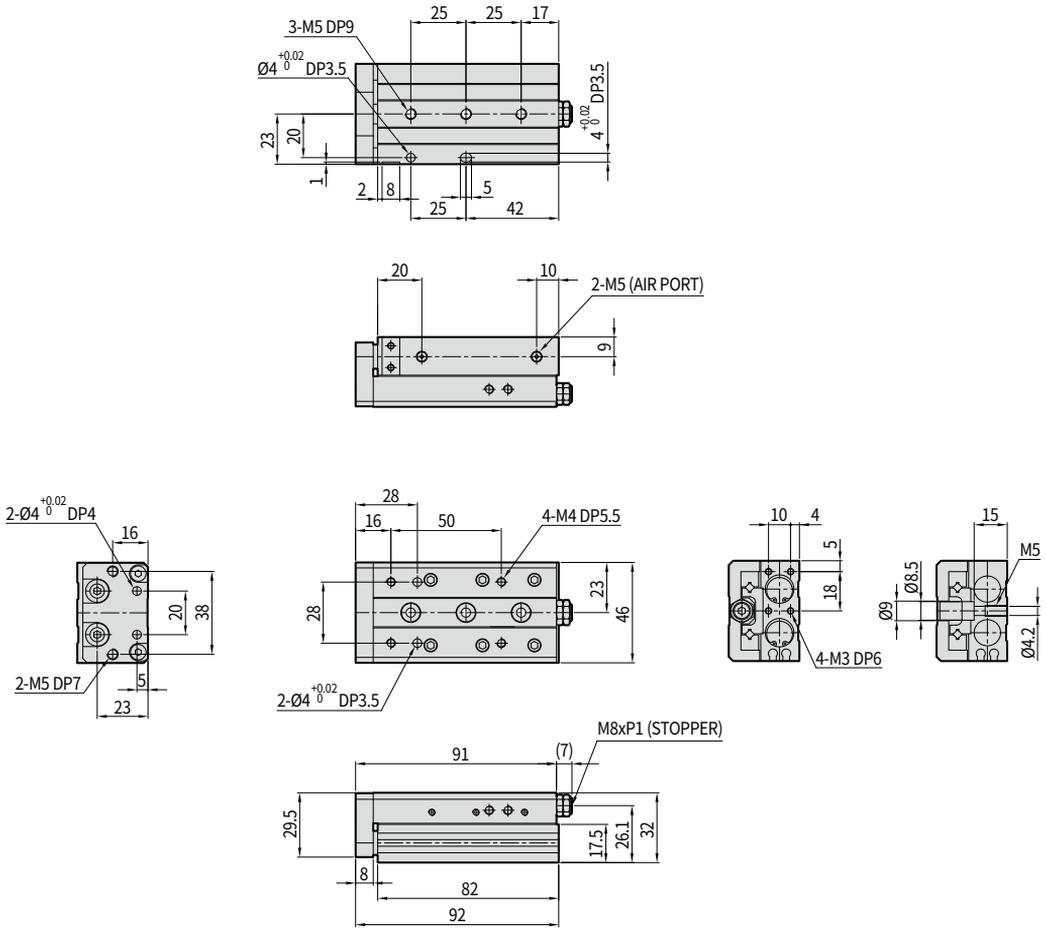


PST12NS-10,20,30 Example of Auto Switch installation

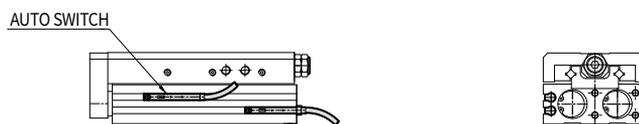


| | | | | | |
|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 10 | 20 | 30 | 40 | 50 | 100 |

PST12NS-40



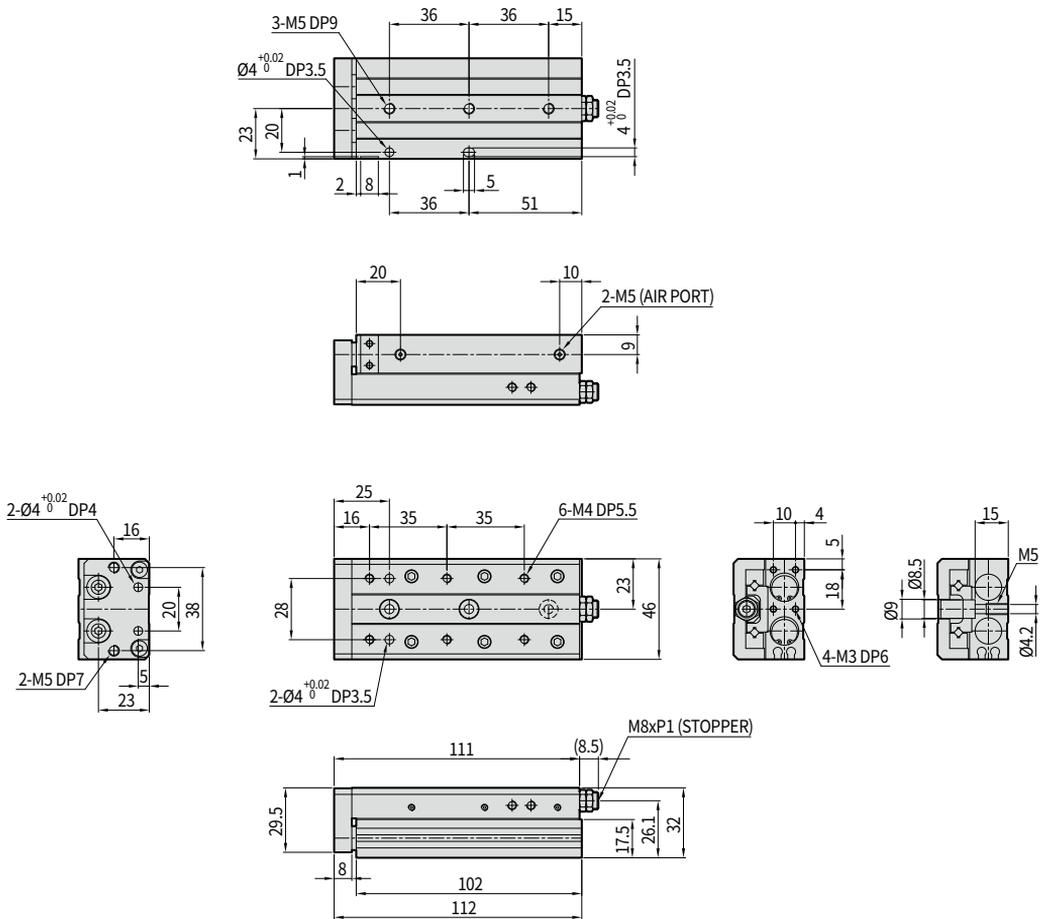
PST12NS-40 Example of Auto Switch installation



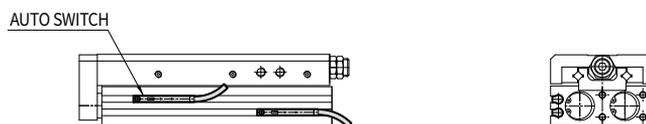
PST-NS Series

| | | | | | |
|------|------|-------------|------|-----------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 10 | 20 | 30 | 40 | 50 | 75 |

PST12NS-50



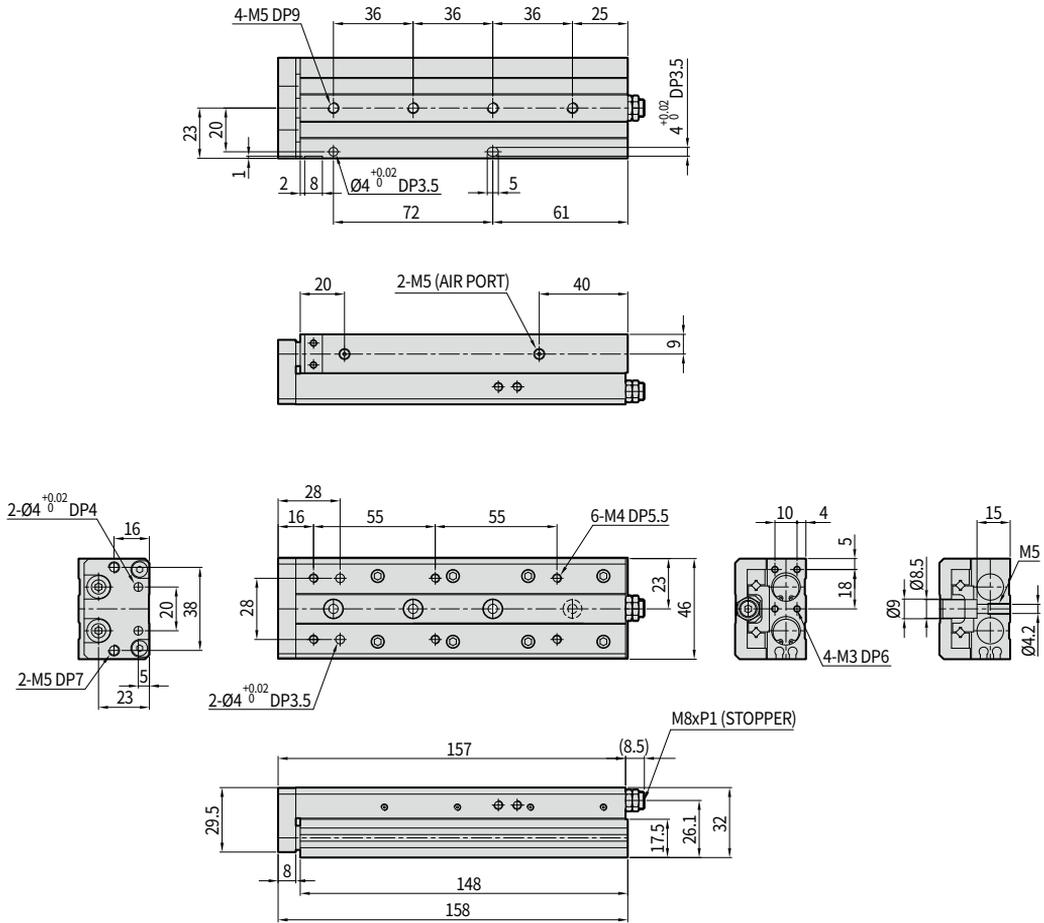
PST12NS-50 Example of Auto Switch installation



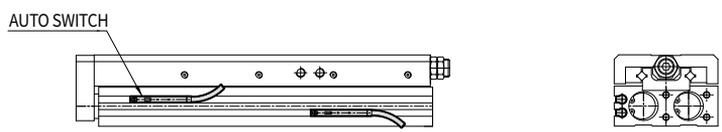
| | | | | | | |
|------|------|------|------|------|------|-----|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS | |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 |

PST12NS-75

| |
|--------|
| PST-NS |
| PSB |
| PST |
| SC |
| ST |
| STS-L |
| SD |
| PSW |



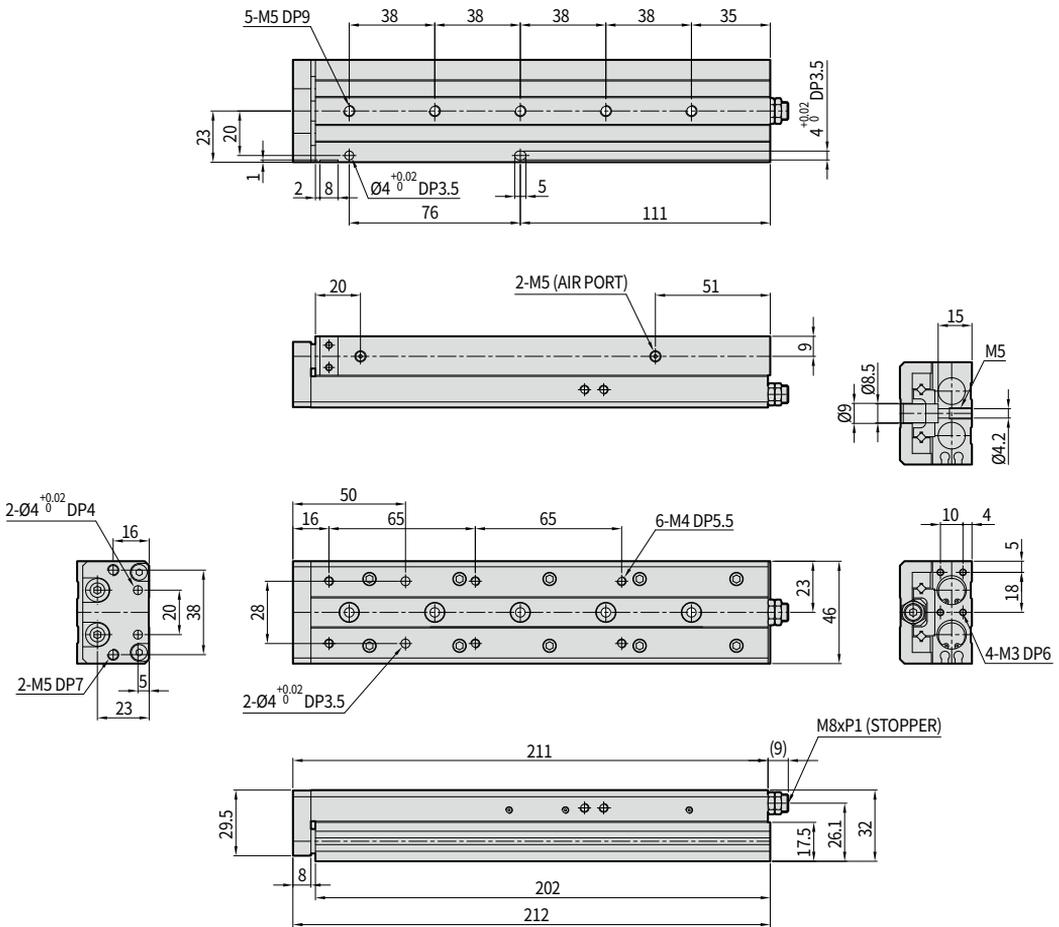
PST12NS-75 Example of Auto Switch installation



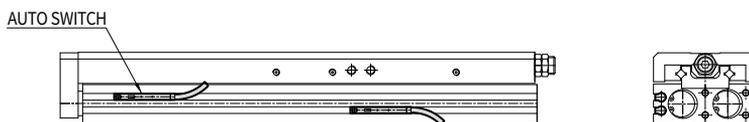
■ PST-NS Series

| | | | | | |
|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 10 | 20 | 30 | 40 | 50 | 75 |
| | | | | | 100 |

PST12NS-100



PST12NS-100 Example of Auto Switch installation



06NS

08NS

12NS

16NS

20NS

25NS

10

20

30

40

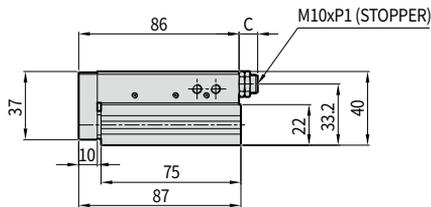
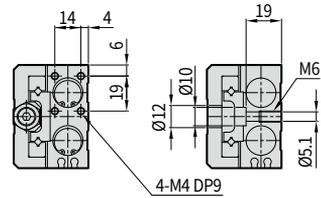
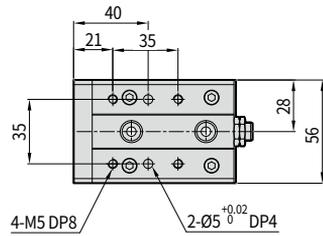
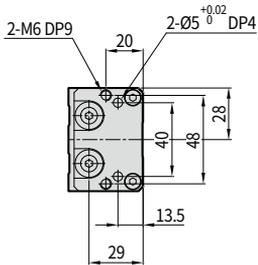
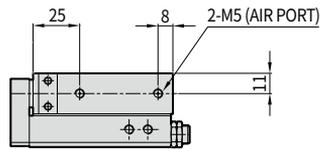
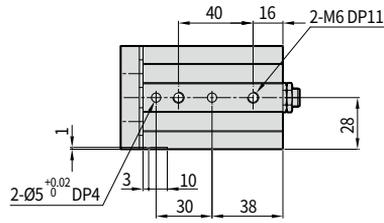
50

75

100

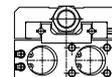
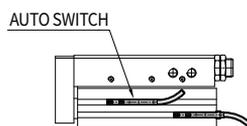
125

PST16NS-10,20,30



| | C |
|------------|------|
| PST16NS-10 | (7) |
| PST16NS-20 | (9) |
| PST16NS-30 | (10) |

PST16NS-10,20,30 Example of Auto Switch installation

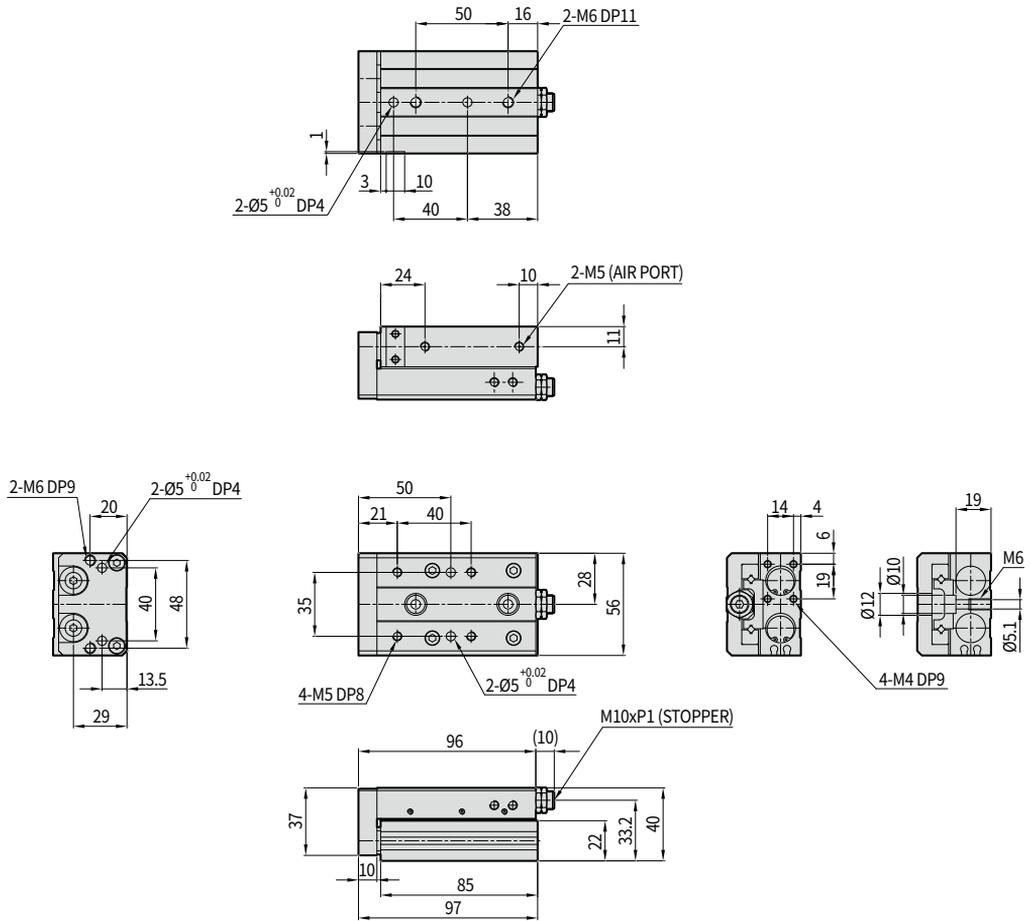


■ PST-NS Series

06NS 08NS 12NS **16NS** 20NS 25NS

10 20 30 **40** 50 75 100 125

PST16NS-40

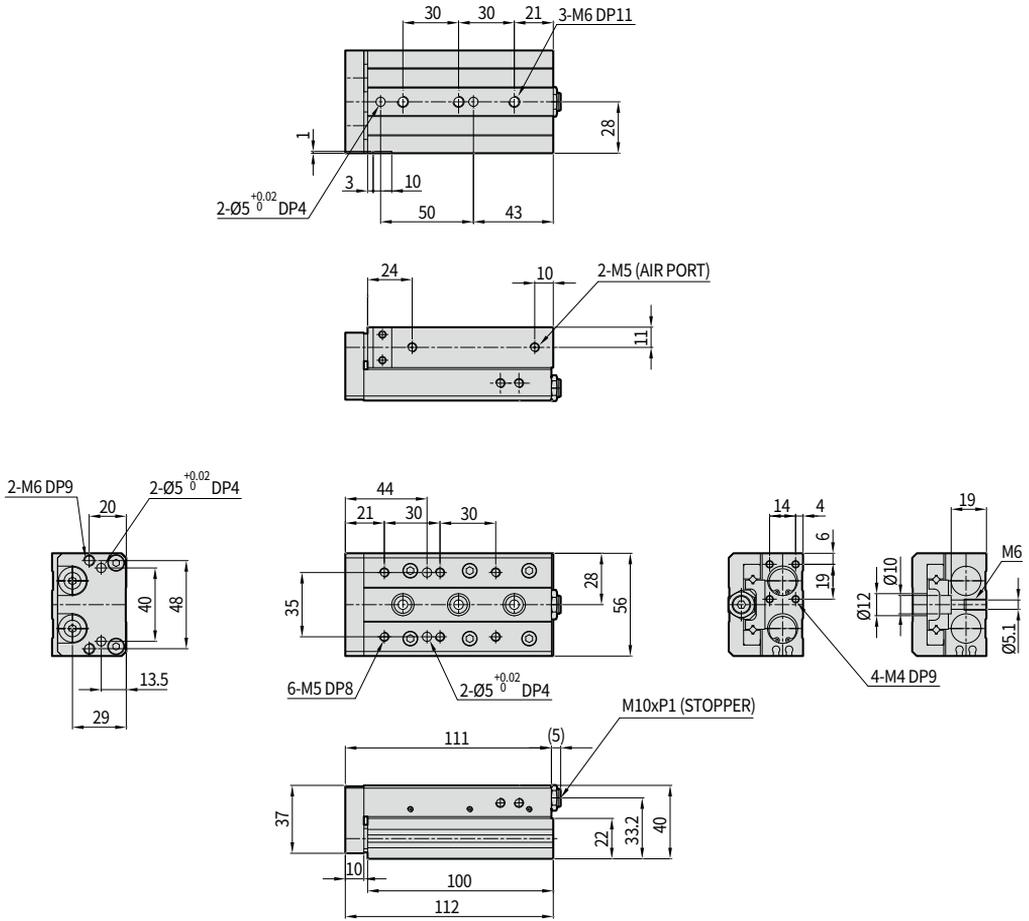


PST16NS-40 Example of Auto Switch installation



| | | | | | | | |
|----|------|------|------|------|------|------|-----|
| | 06NS | 08NS | 12NS | 16NS | 20NS | 25NS | |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 |

PST16NS-50



PST16NS-50 Example of Auto Switch installation

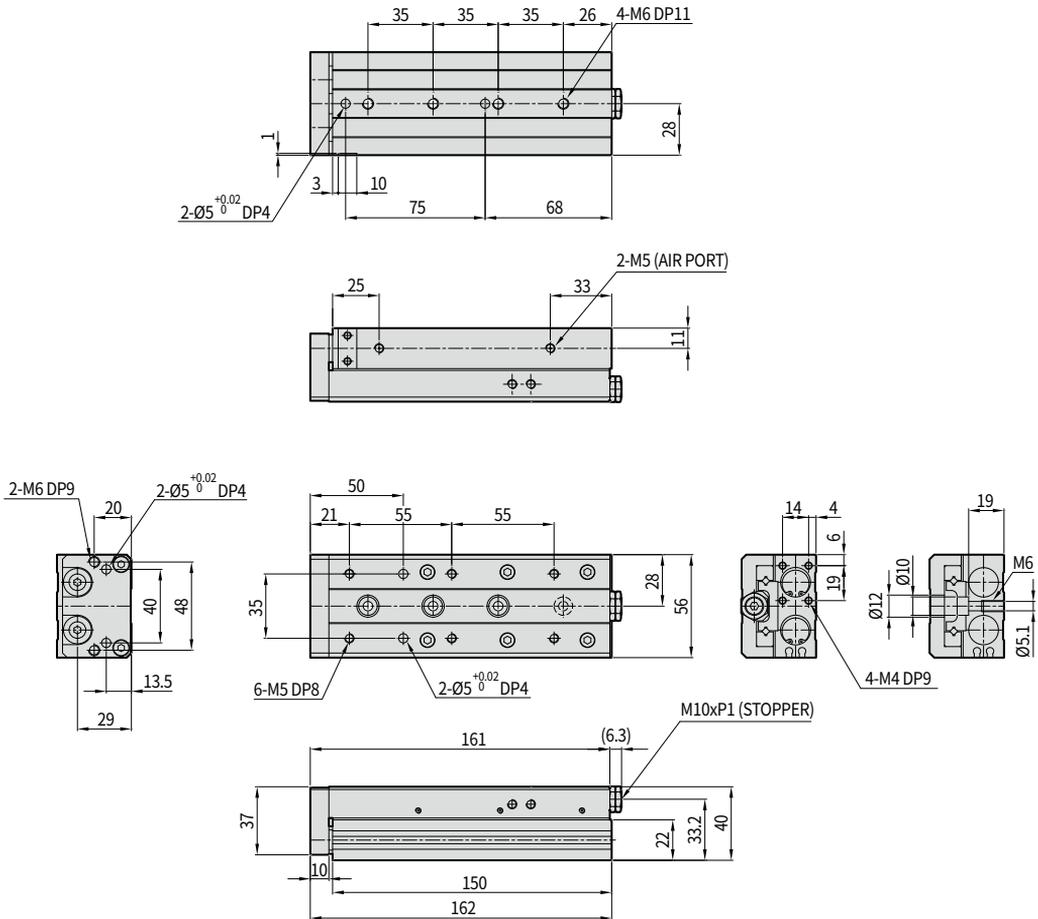


■ PST-NS Series

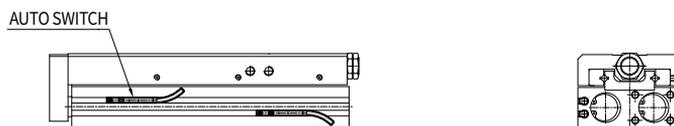
06NS 08NS 12NS **16NS** 20NS 25NS

10 20 30 40 50 **75** 100 125

PST16NS-75

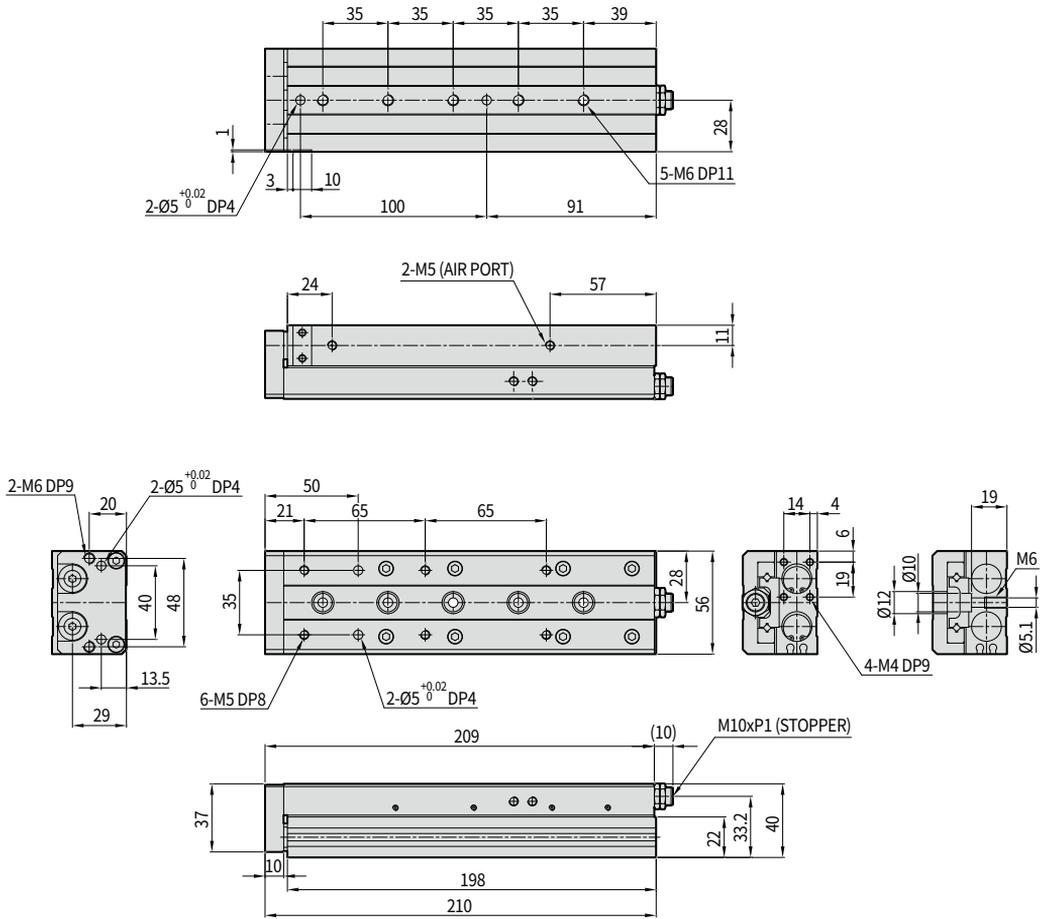


PST16NS-75 Example of Auto Switch installation

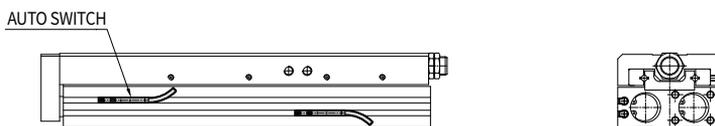


| | | | | | | | |
|----|------|------|------|------|------|------|-----|
| | 06NS | 08NS | 12NS | 16NS | 20NS | 25NS | |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 |

PST16NS-100



PST16NS-100 Example of Auto Switch installation

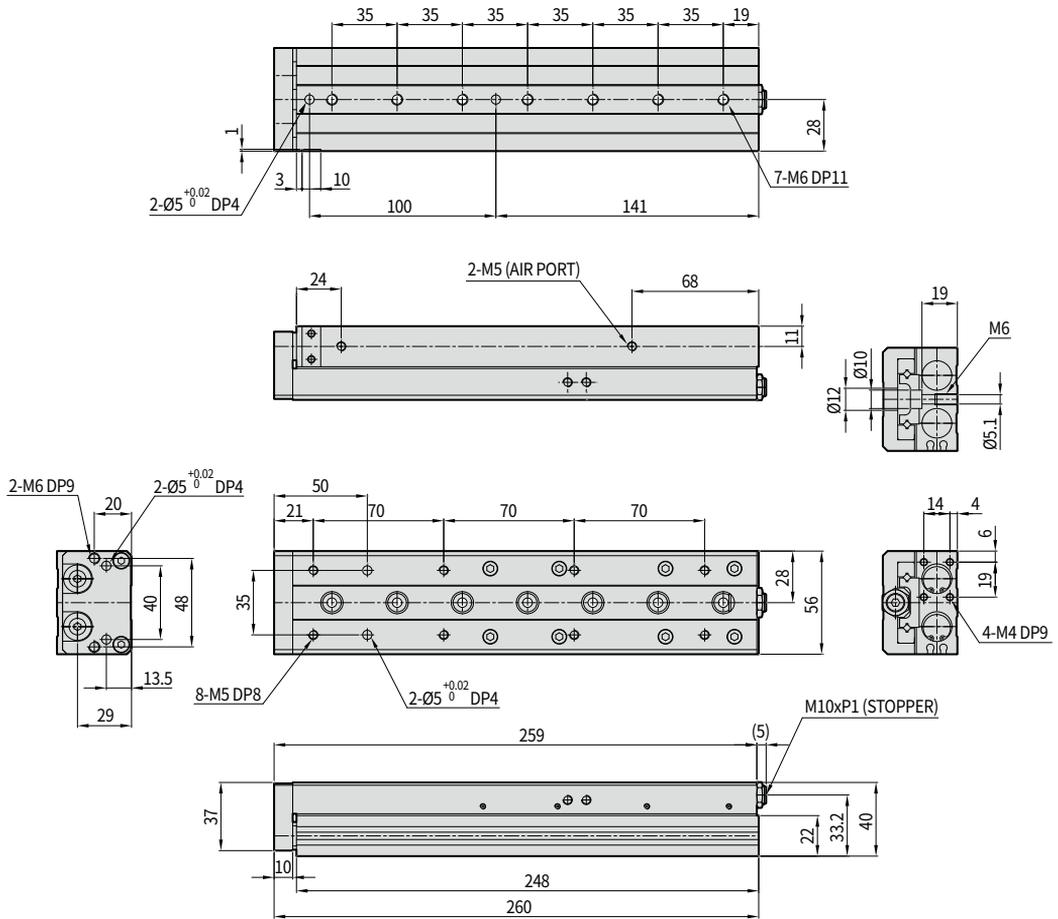


■ PST-NS Series

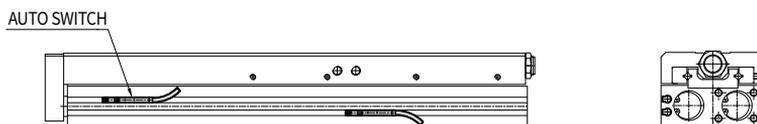
06NS 08NS 12NS **16NS** 20NS 25NS

10 20 30 40 50 75 100 **125**

PST16NS-125



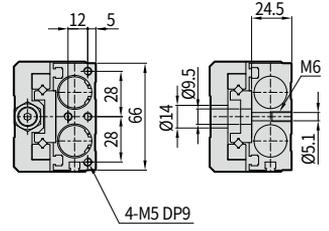
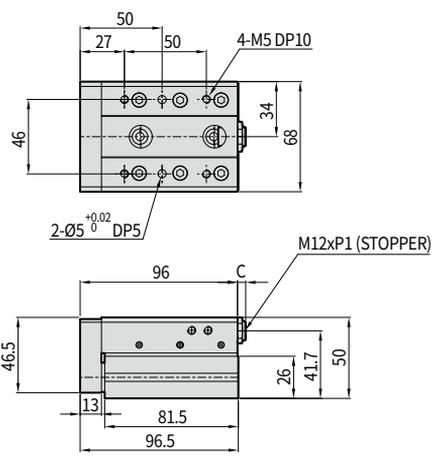
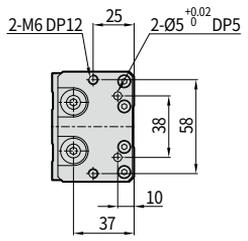
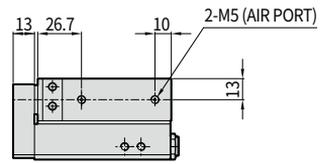
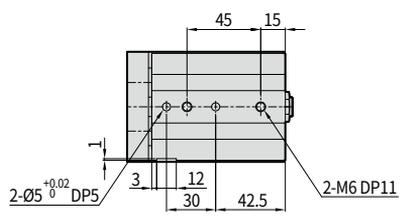
PST16NS-125 Example of Auto Switch installation



06NS 08NS 12NS 16NS **20NS** 25NS

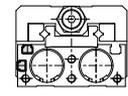
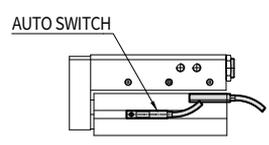
10 20 30 40 50 75 100 125 150

PST20NS-10,20,30



| | C |
|------------|-------|
| PST20NS-10 | (8.5) |
| PST20NS-20 | (9.5) |
| PST20NS-30 | (4.5) |

PST20NS-10,20,30 Example of Auto Switch installation

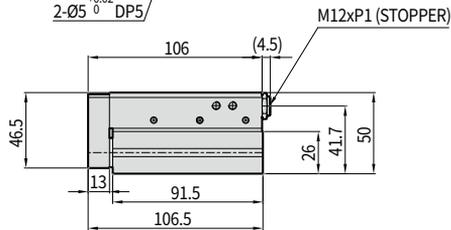
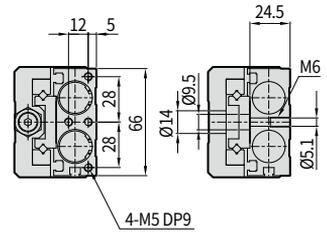
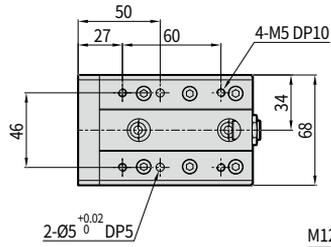
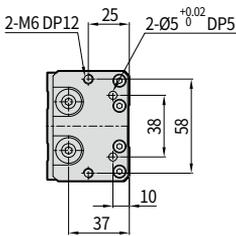
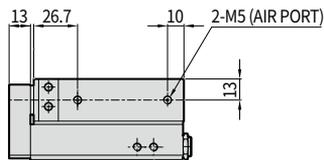
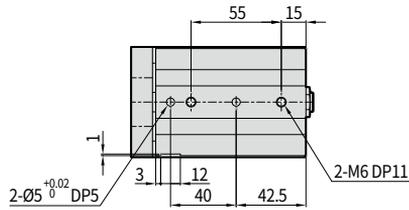


■ PST-NS Series

06NS 08NS 12NS 16NS **20NS** 25NS

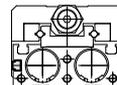
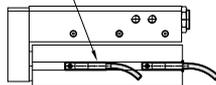
10 20 30 **40** 50 75 100 125 150

PST20NS-40



PST20NS-40

AUTO SWITCH



06NS

08NS

12NS

16NS

20NS

25NS

10

20

30

40

50

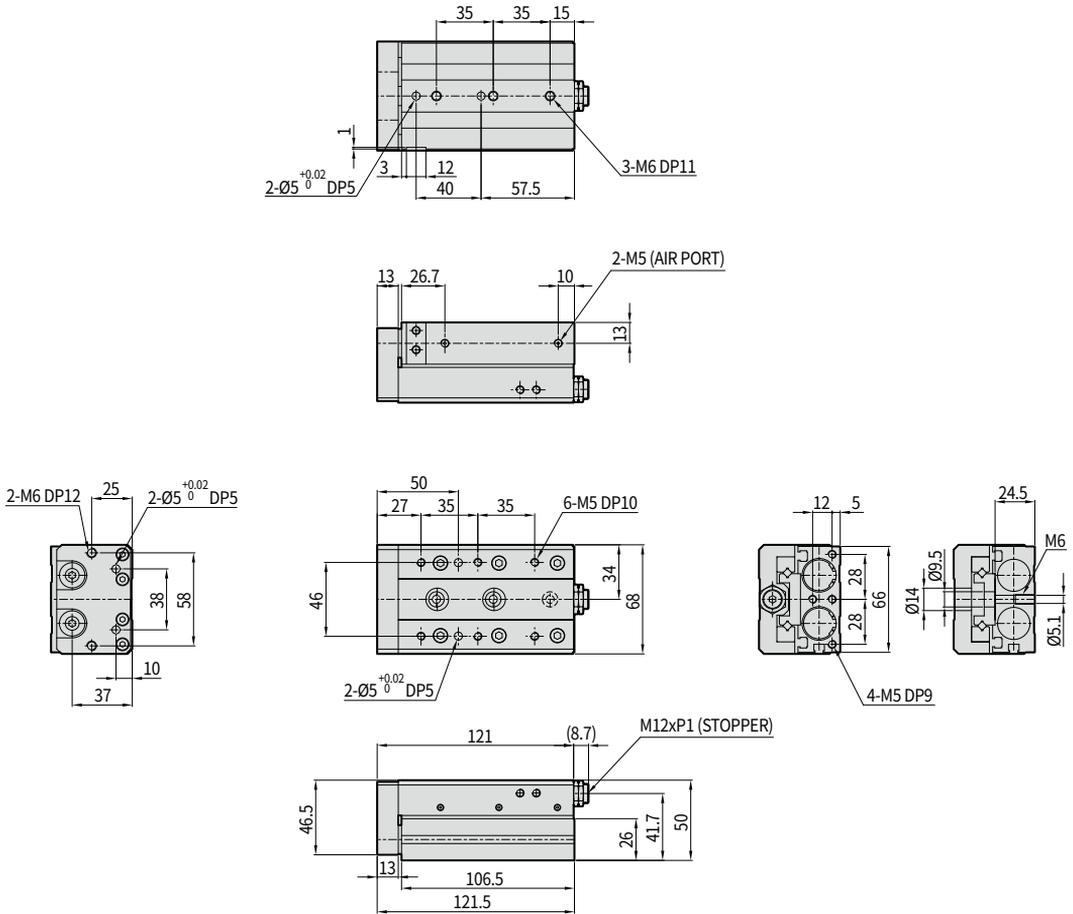
75

100

125

150

PST20NS-50



PST20NS-50

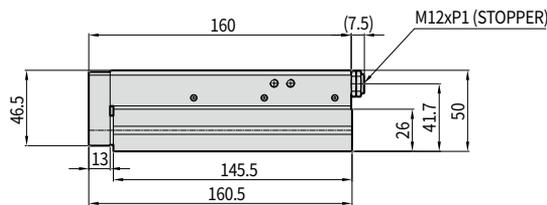
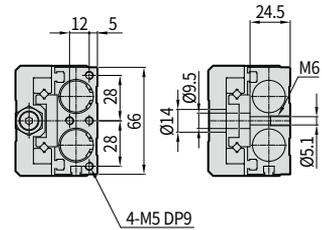
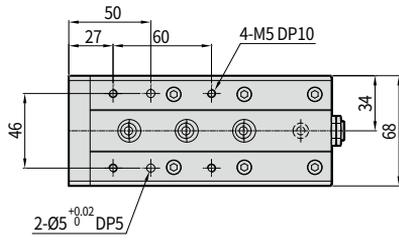
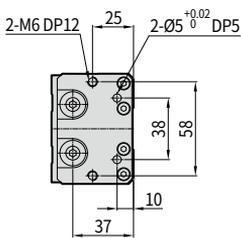
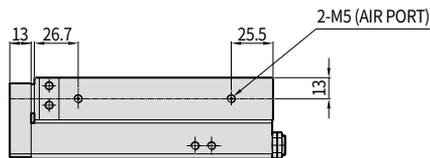
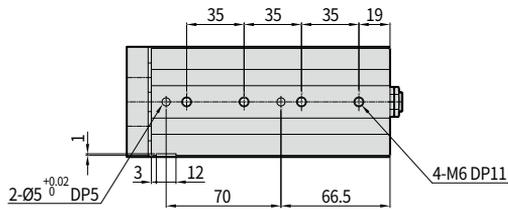


■ PST-NS Series

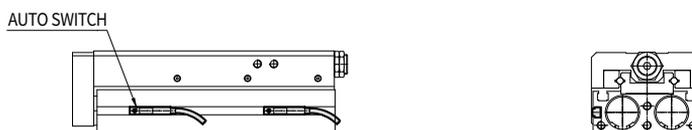
06NS 08NS 12NS 16NS **20NS** 25NS

10 20 30 40 50 **75** 100 125 150

PST20NS-75



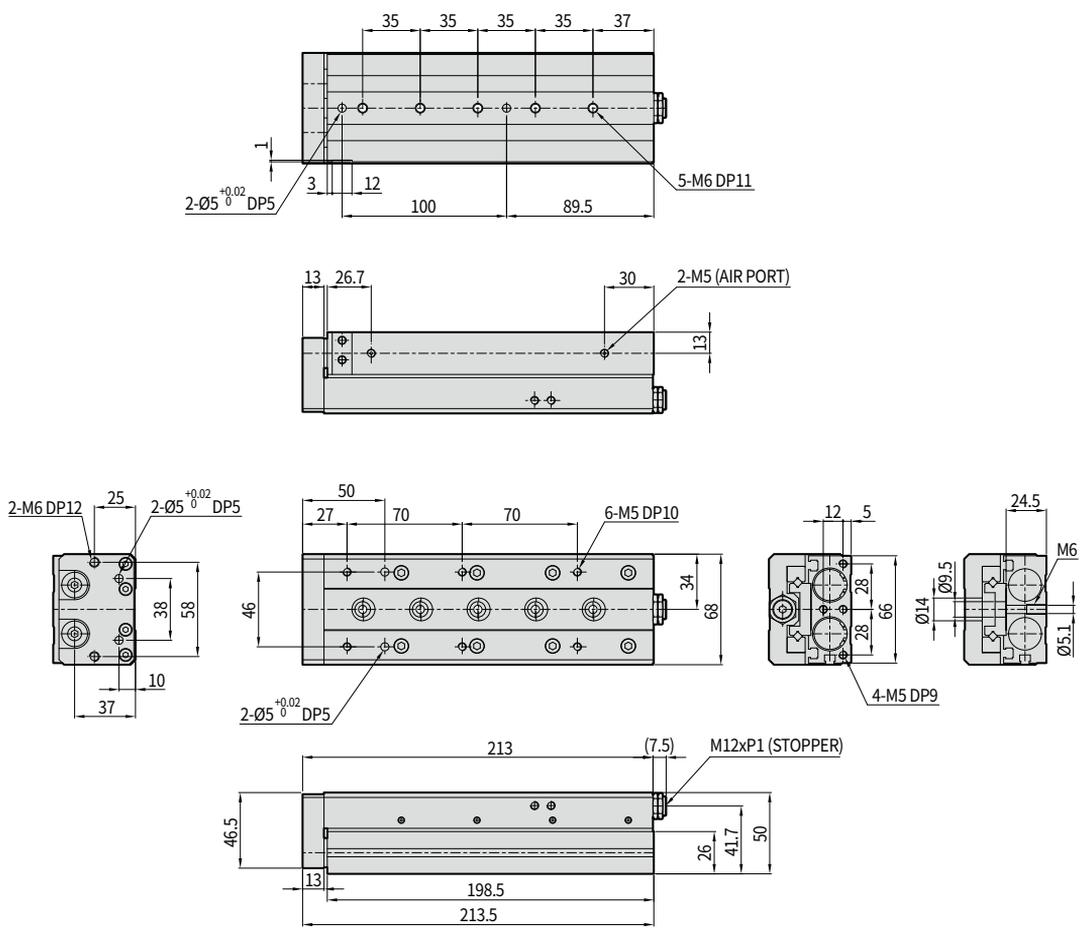
PST20NS-75 Example of Auto Switch installation



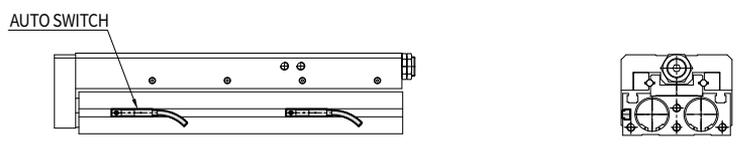
06NS 08NS 12NS 16NS **20NS** 25NS

10 20 30 40 50 75 **100** 125 150

PST20NS-100



PST20NS-100 Example of Auto Switch installation

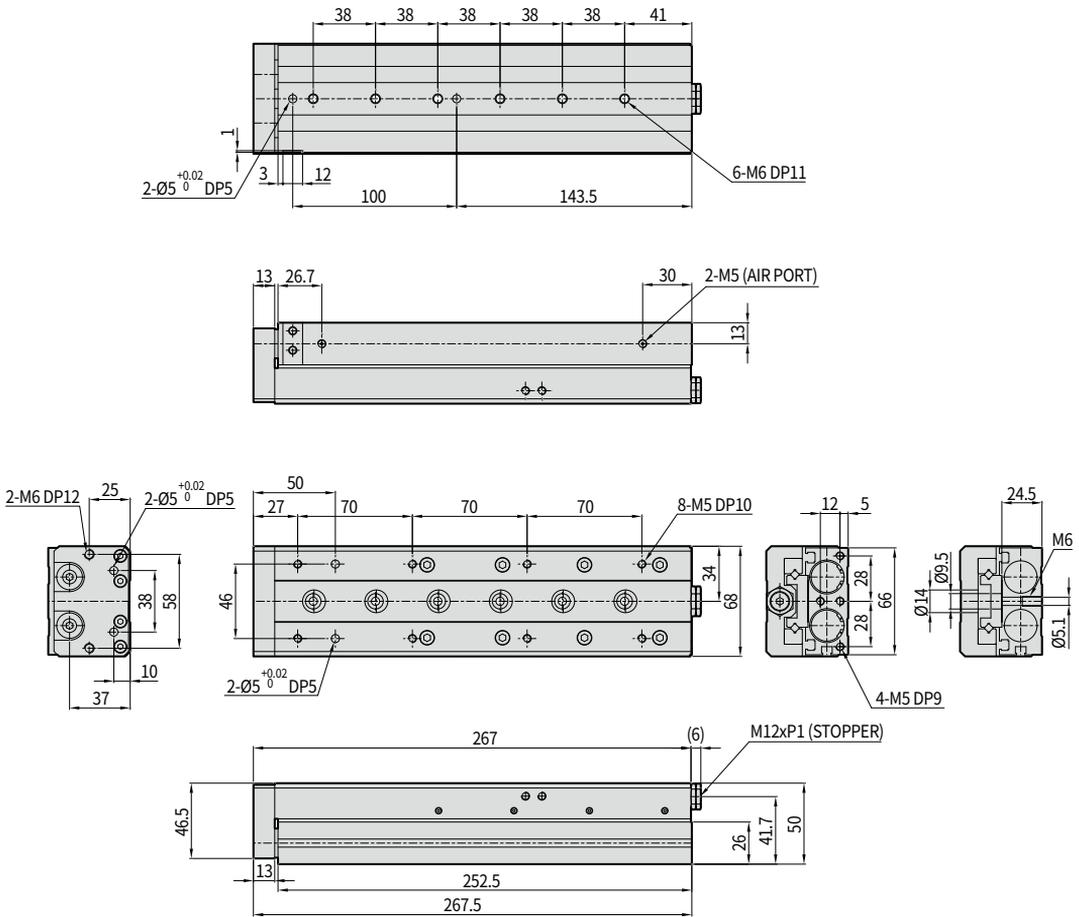


■ PST-NS Series

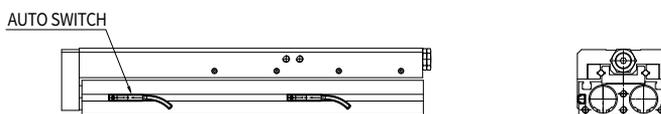
06NS 08NS 12NS 16NS **20NS** 25NS

10 20 30 40 50 75 100 **125** 150

PST20NS-125



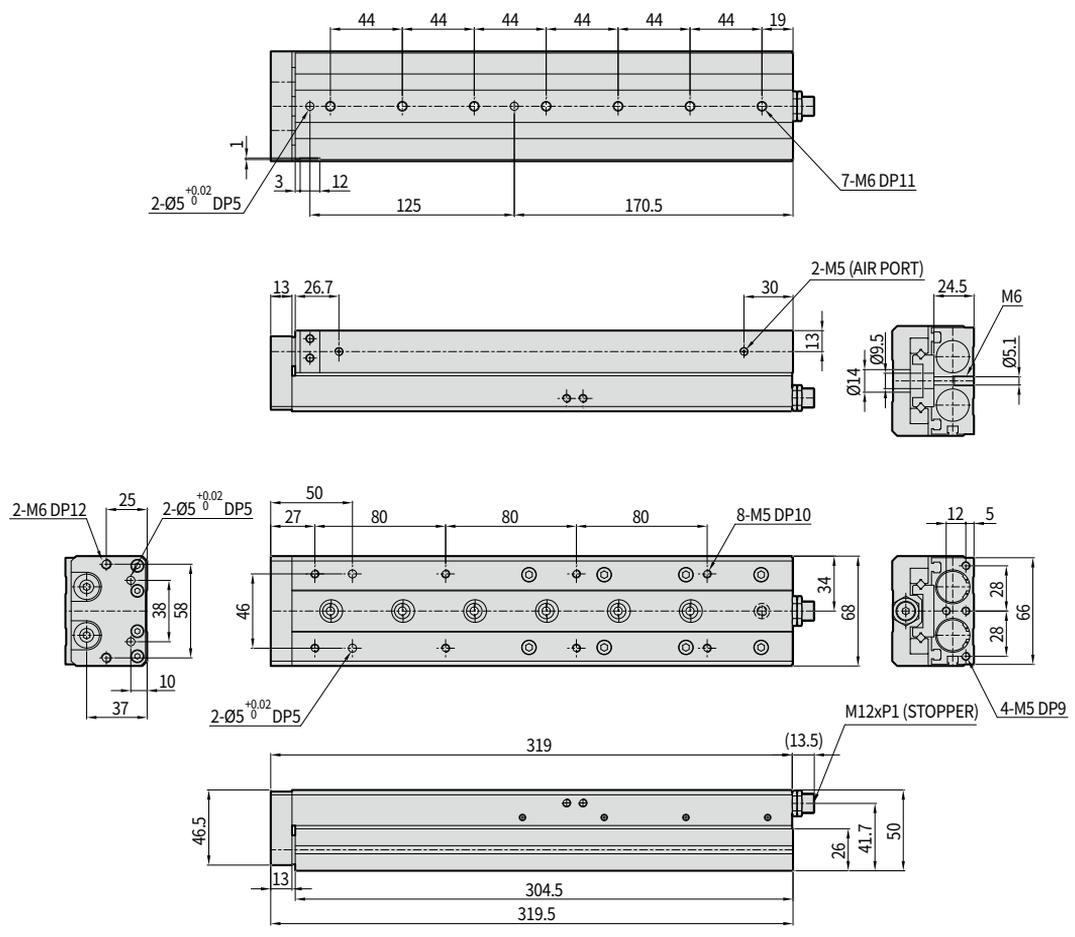
PST20NS-125 Example of Auto Switch installation



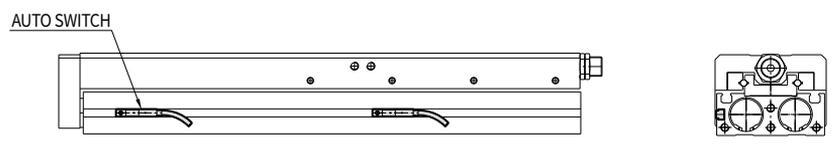
06NS 08NS 12NS 16NS **20NS** 25NS

10 20 30 40 50 75 100 125 **150**

PST20NS-150



PST20NS-150 Example of Auto Switch installation

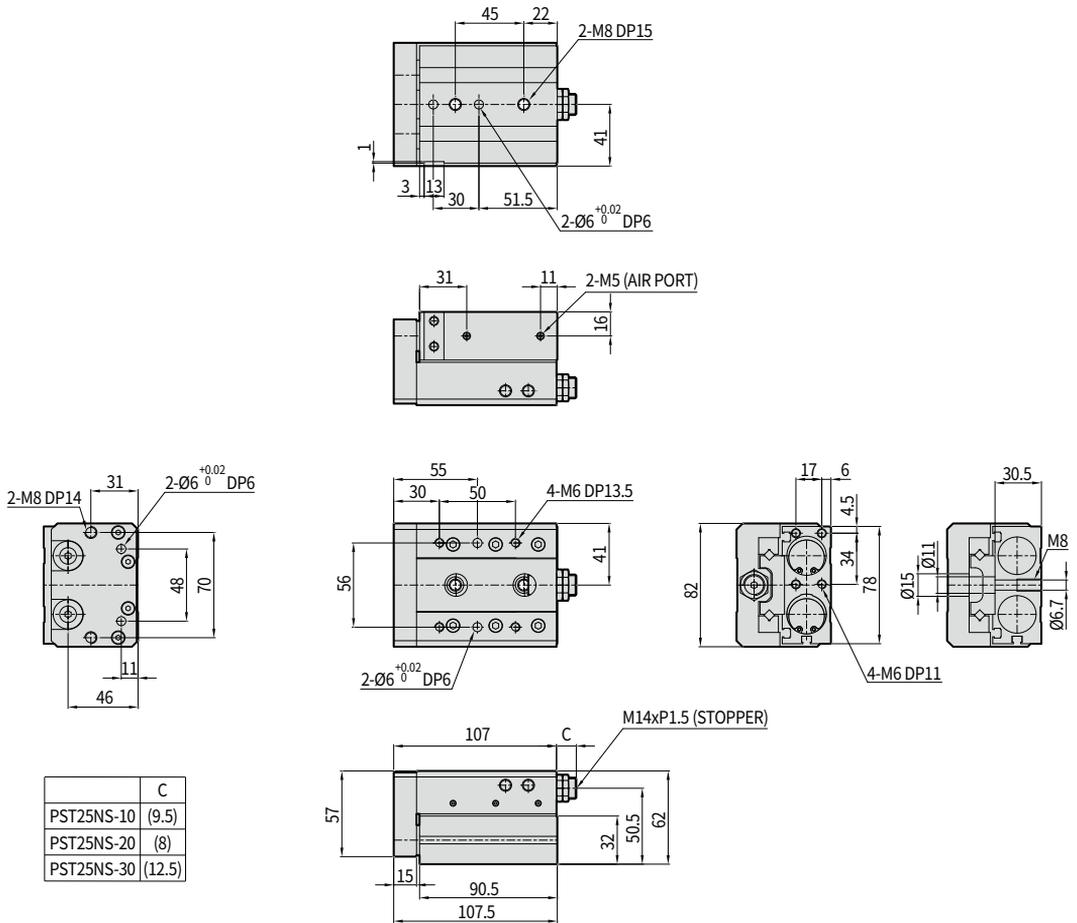


■ PST-NS Series

06NS 08NS 12NS 16NS 20NS 25NS

10 20 30 40 50 75 100 125 150

PST25NS-10,20,30

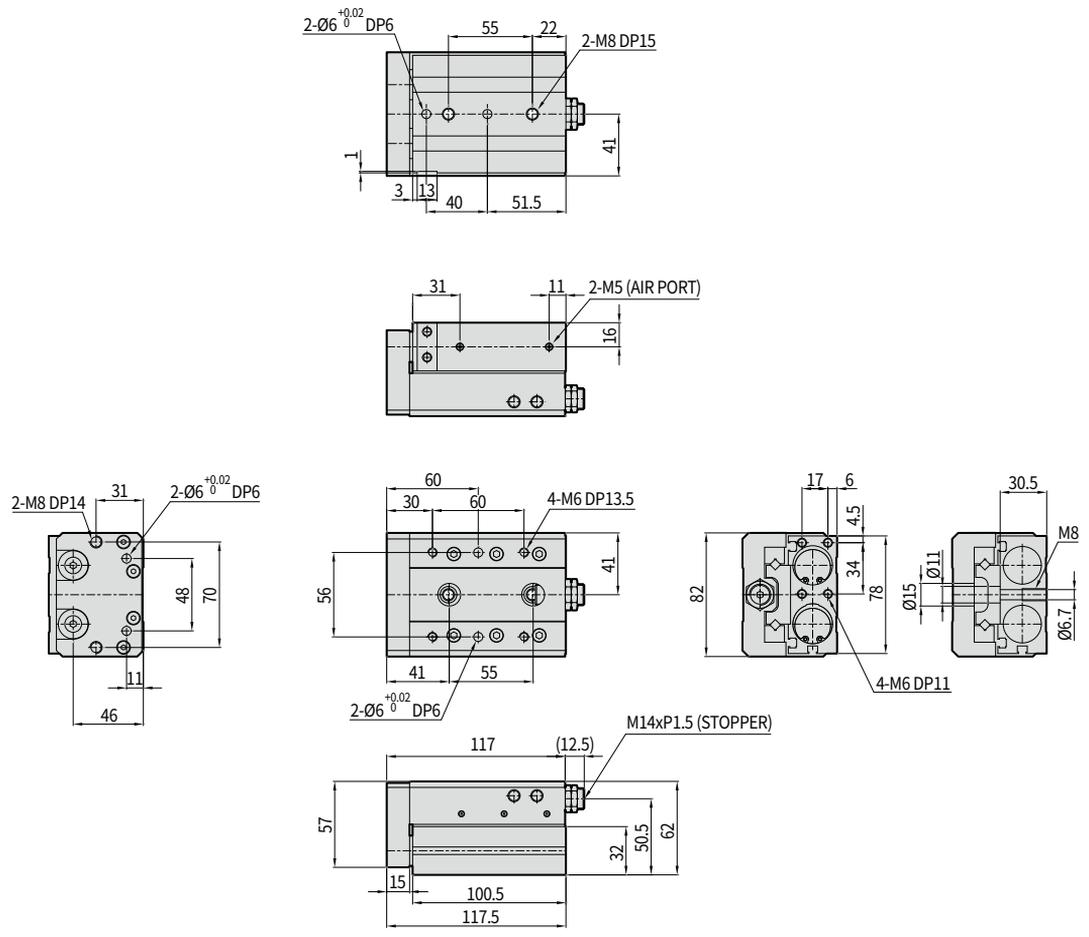


PST25NS-10,20,30 Example of Auto Switch installation



| | | | | | |
|------|------|------|------|------|------|
| 06NS | 08NS | 12NS | 16NS | 20NS | 25NS |
| 10 | 20 | 30 | 40 | 50 | 75 |
| | | | | 100 | 125 |
| | | | | | 150 |

PST25NS-40



PST25NS-40 Example of Auto Switch installation

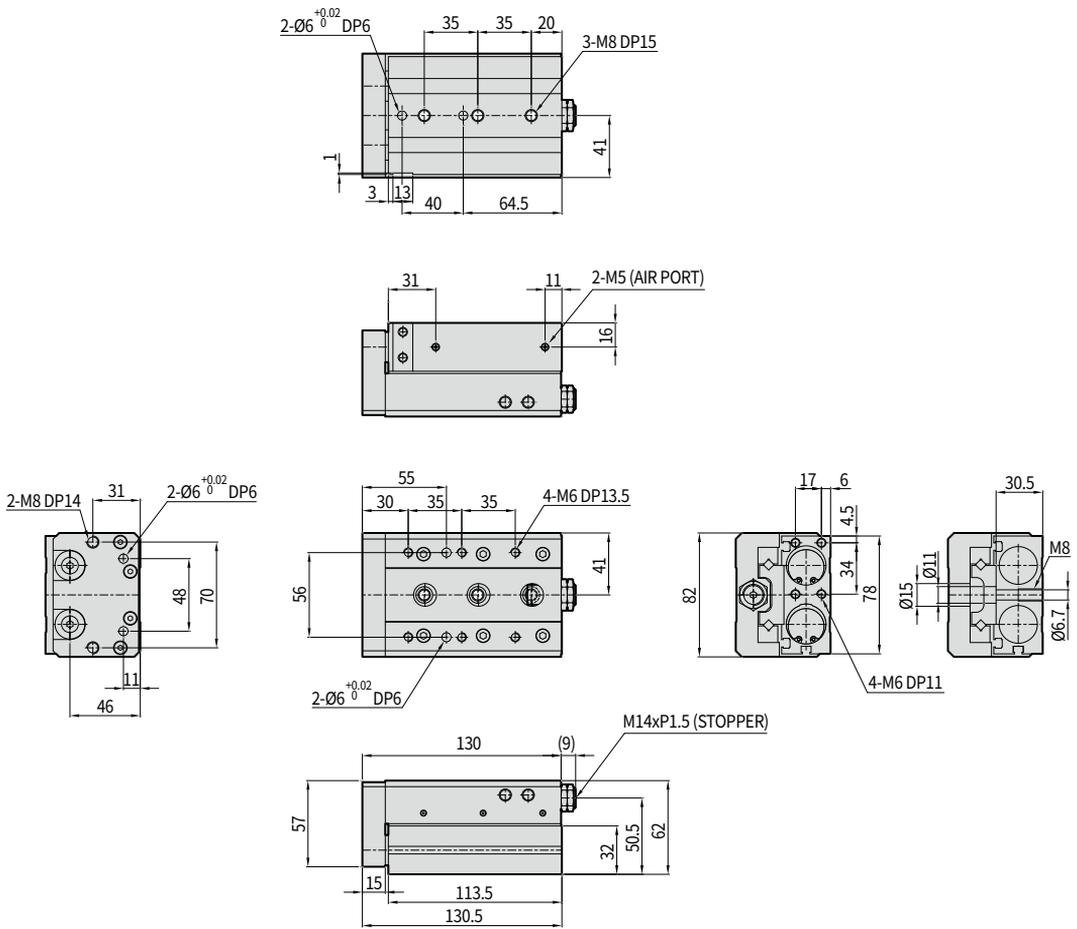


■ PST-NS Series

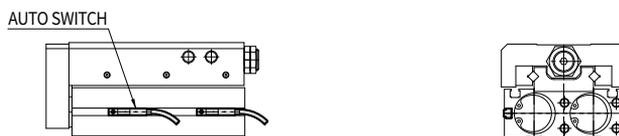
06NS 08NS 12NS 16NS 20NS **25NS**

10 20 30 40 **50** 75 100 125 150

PST25NS-50



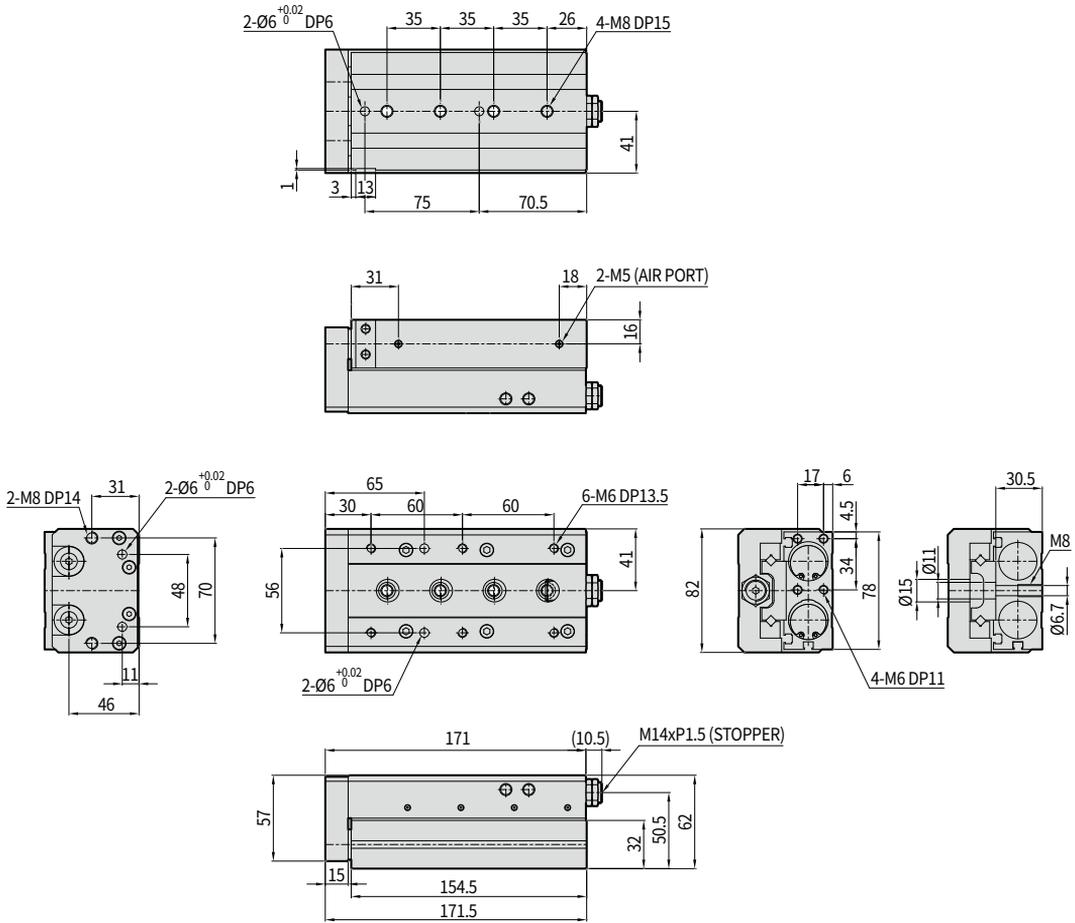
PST25NS-50 Example of Auto Switch installation



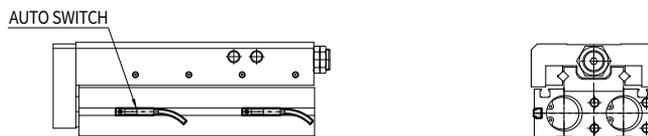
06NS 08NS 12NS 16NS 20NS 25NS

10 20 30 40 50 75 100 125 150

PST25NS-75



PST25NS-75 Example of Auto Switch installation

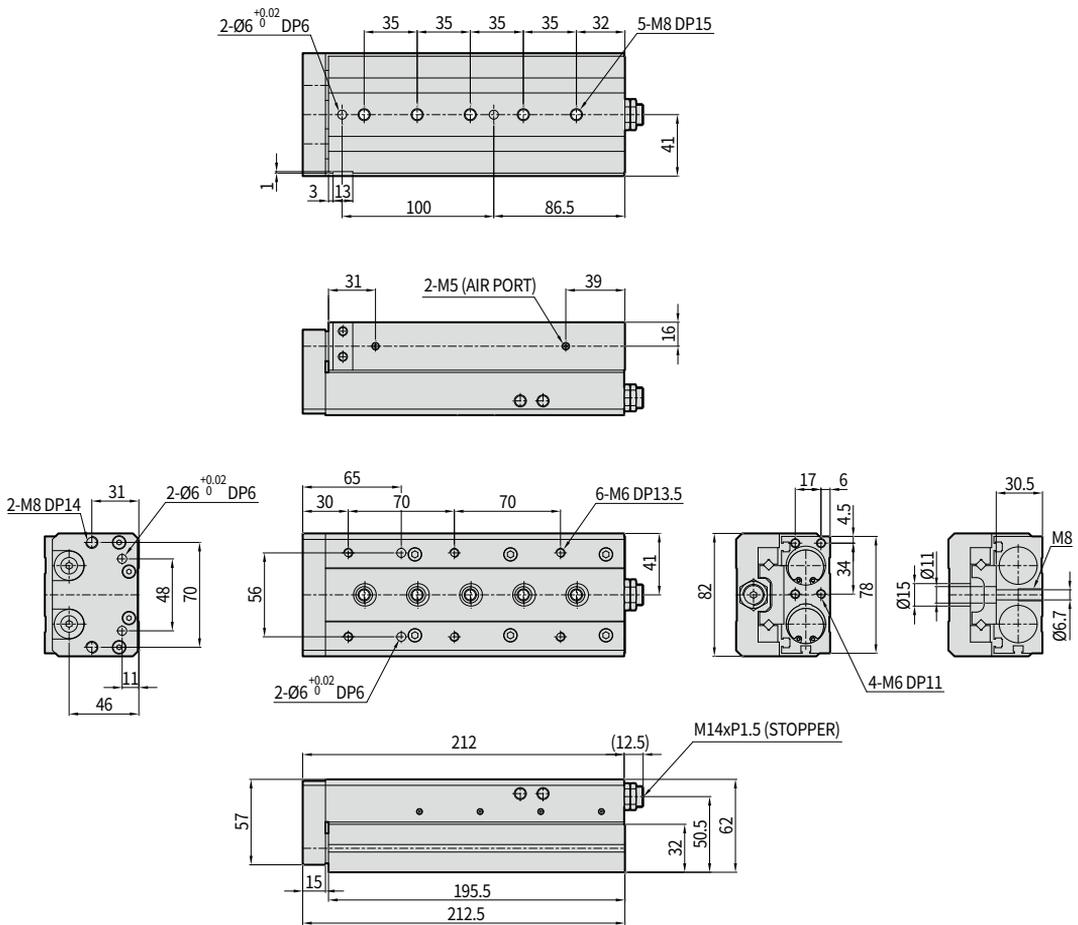


■ PST-NS Series

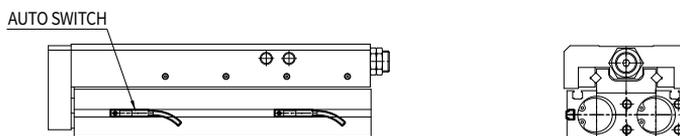
06NS 08NS 12NS 16NS 20NS **25NS**

10 20 30 40 50 75 **100** 125 150

PST25NS-100



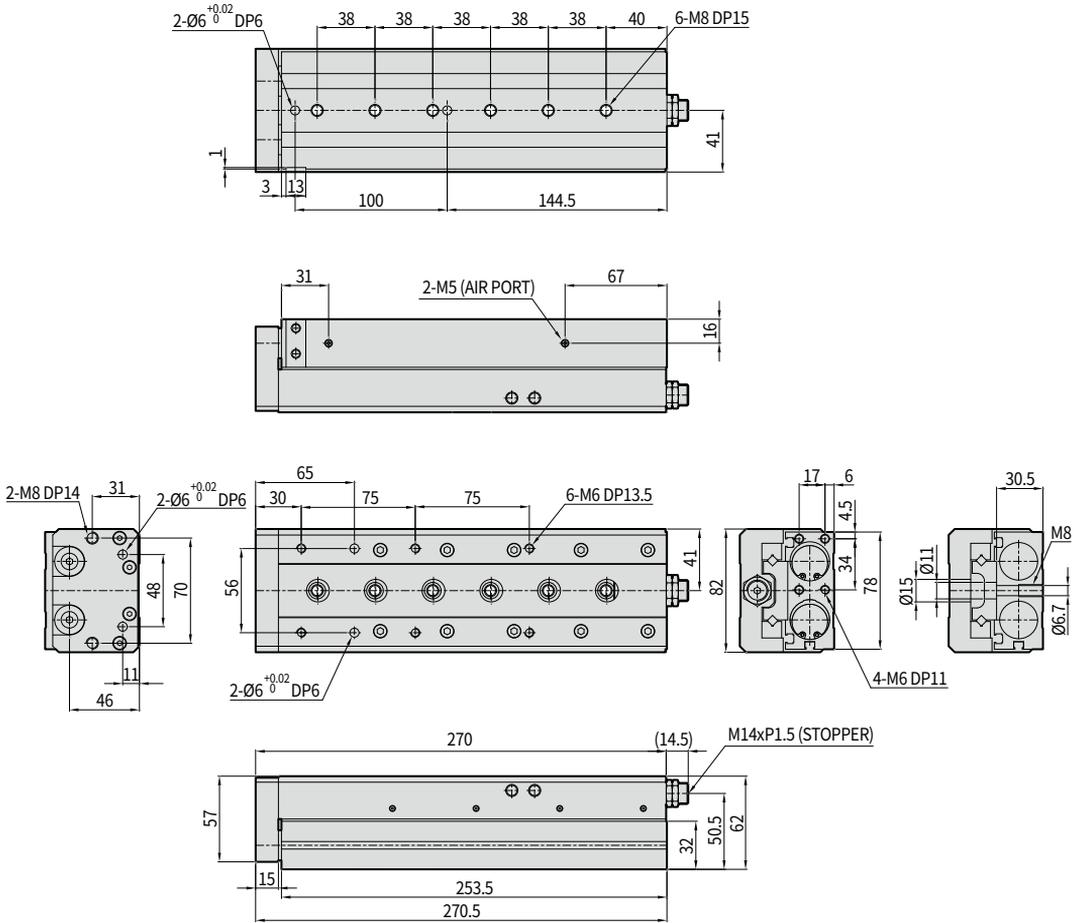
PST25NS-100 Example of Auto Switch installation



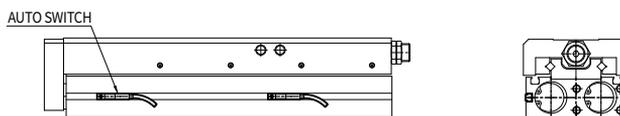
06NS 08NS 12NS 16NS 20NS 25NS

10 20 30 40 50 75 100 125 150

PST25NS-125



PST25NS-125 Example of Auto Switch installation

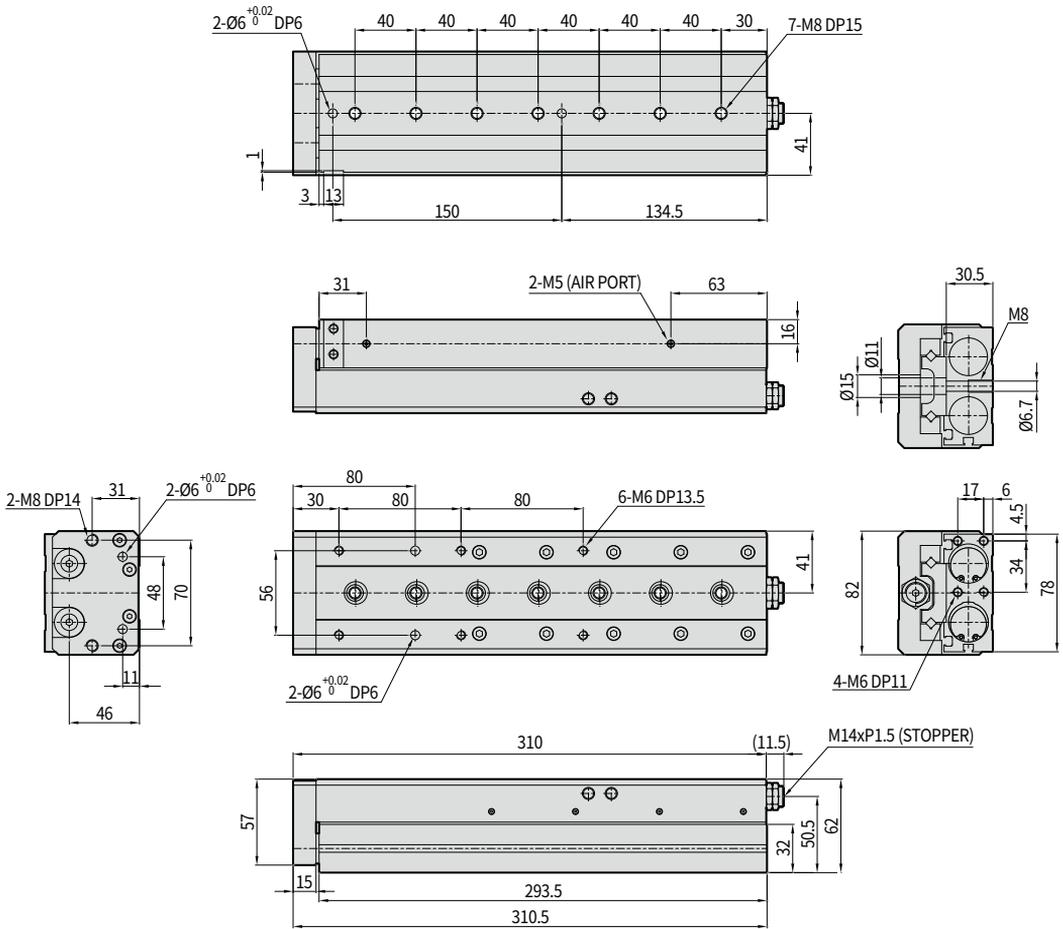


■ PST-NS Series

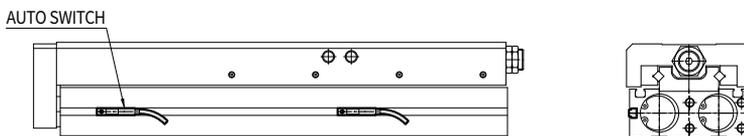
06NS 08NS 12NS 16NS 20NS 25NS

10 20 30 40 50 75 100 125 150

PST25NS-150

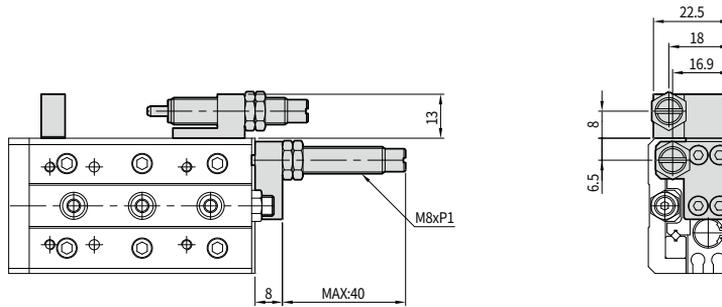


PST25NS-150 Example of Auto Switch installation

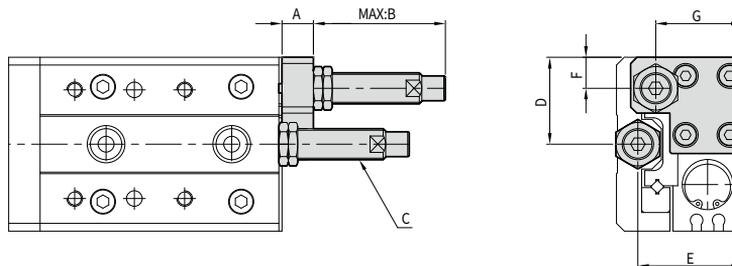


SHOCK ABSORBER Installation

• PST08NS



• PST12NS, 16NS, 20NS, 25NS

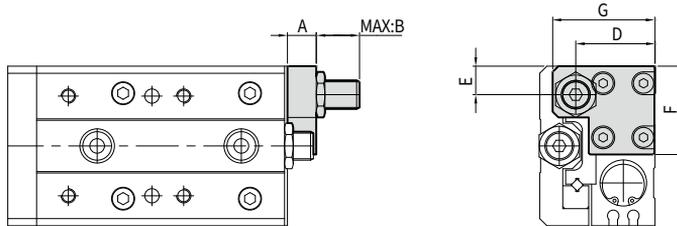


| | A | B | C | D | E | F | G |
|---------|----|----|----------|----|------|------|------|
| PST12NS | 8 | 40 | M8×P1 | 23 | 26.1 | 7.5 | 23 |
| PST16NS | 10 | 45 | M10×P1 | 28 | 33.2 | 10 | 27.5 |
| PST20NS | 12 | 55 | M12×P1 | 34 | 41.7 | 12 | 35.7 |
| PST25NS | 15 | 75 | M14×P1.5 | 41 | 50.5 | 13.5 | 41.3 |

※ For PST06NS series, shock absorber is not available.

Backward Stopper Installation

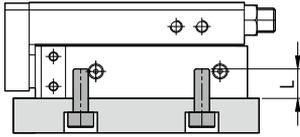
- PST06NS, 08NS, 12NS, 16NS, 20NS, 25NS



| | A | B | C | D | E | F | G |
|---------|----|----|----------|------|------|------|------|
| PST06NS | 5 | 15 | M5×P0.8 | 14.5 | 5 | 19.5 | 19 |
| PST08NS | 8 | 15 | M8×P1 | 16.9 | 6.5 | 24 | 22.4 |
| PST12NS | 8 | 20 | M8×P1 | 23 | 7.5 | 27 | 29.5 |
| PST16NS | 10 | 20 | M10×P1 | 27.5 | 10 | 31 | 35.5 |
| PST20NS | 12 | 25 | M12×P1 | 35.7 | 12 | 41 | 48.7 |
| PST25NS | 15 | 25 | M14×P1.5 | 41.3 | 13.5 | 48 | 60.3 |

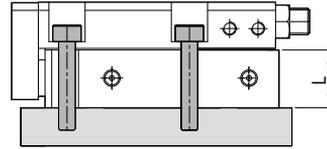
Installation Information

1. Installation by body tap holes



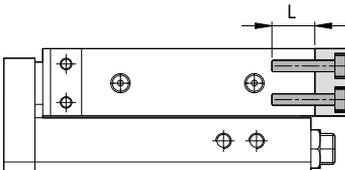
| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|---------|----------------|---------------------|------------------------|
| PST06NS | M4×P0.7 | 25 | 8 |
| PST08NS | M4×P0.7 | 25 | 10 |
| PST12NS | M5×P0.8 | 51 | 9 |
| PST16NS | M6×P1 | 81 | 11 |
| PST20NS | M6×P1 | 81 | 11 |
| PST25NS | M8×P1.25 | 157 | 15 |

2. Installation by body through holes



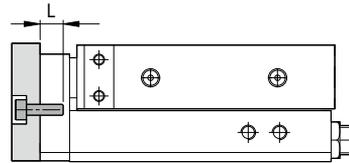
| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|---------|----------------|---------------------|------------------------|
| PST06NS | M3×P0.5 | 11 | 9 |
| PST08NS | M3×P0.5 | 11 | 11 |
| PST12NS | M4×P0.7 | 25 | 15 |
| PST16NS | M5×P0.8 | 51 | 19 |
| PST20NS | M5×P0.8 | 51 | 24.5 |
| PST25NS | M6×P1 | 81 | 30.5 |

3. Installation by body tap holes



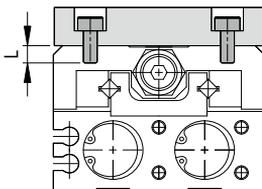
| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|---------|----------------|---------------------|------------------------|
| PST06NS | M2.5×P0.45 | 4.9 | 3 |
| PST08NS | M3×P0.5 | 11 | 3 |
| PST12NS | M3×P0.5 | 11 | 6 |
| PST16NS | M4×P0.7 | 25 | 9 |
| PST20NS | M5×P0.8 | 51 | 9 |
| PST25NS | M6×P1 | 81 | 10 |

4. Installation by plate tap holes



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|---------|----------------|---------------------|------------------------|
| PST06NS | M3×P0.5 | 11 | 4.5 |
| PST08NS | M4×P0.7 | 25 | 5 |
| PST12NS | M5×P0.8 | 51 | 7 |
| PST16NS | M6×P1 | 81 | 9 |
| PST20NS | M6×P1 | 81 | 12 |
| PST25NS | M8×P1.25 | 157 | 14 |

5. Installation by table tap holes



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|---------|----------------|---------------------|------------------------|
| PST06NS | M3×P0.5 | 11 | 3 |
| PST08NS | M3×P0.5 | 11 | 4.5 |
| PST12NS | M4×P0.7 | 25 | 5.5 |
| PST16NS | M5×P0.8 | 51 | 8 |
| PST20NS | M5×P0.8 | 51 | 10 |
| PST25NS | M6×P1 | 81 | 13.5 |

CROSS ROLLER GUIDE,
DOUBLE POWER

PSB Series

Ultra Slim, high thrust table type
cylinder

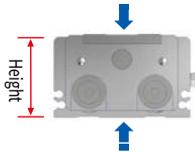


Compact and Stable Structure

- Enhanced resistance for external force by stable structure of guide built in cylinder body.
- Compact and innovative design of reduced table height.

| CYL Bore | Height (mm) | | Remark |
|----------|-------------|-----|--|
| | PST-NS | PSB | |
| Ø12 | 32 | 27 | Average -15% reduced than PST-NS Series. |
| Ø16 | 40 | 35 | |
| Ø20 | 50 | 43 | |
| Ø25 | 62 | 52 | |

* PSB06, PSB08 is exception.



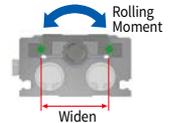
Distinguished Design

- Enhance allowable rolling moment by distinguished widen guide design.
- Superior moment resistance by application of Cross Roller Guide.

| CYL Bore | Rolling Moment (kgf-cm) | | Remark |
|----------|-------------------------|------|--|
| | PST-NS | PSB | |
| Ø6 | 11 | 11.3 | Average 19% enhanced than PST-NS Series. |
| Ø8 | 14.9 | 15.4 | |
| Ø12 | 37.6 | 46 | |
| Ø16 | 47.5 | 62 | |
| Ø20 | 108 | 126 | |
| Ø25 | 242 | 350 | |

* Written data based on stroke 50mm.

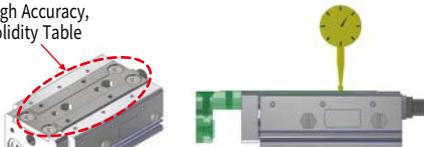
* It could be different by each stroke.



High Accuracy and Solidity

- Whole surface of table produced by high precise grind for superior parallelism.
- As table working as slider, performed superior moving parallelism and high solidity.

High Accuracy,
Solidity Table

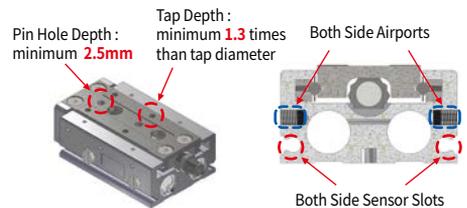


- Reference : PSB16-30
Table height accuracy (Backward) : 0.03mm
Moving parallelism : 0.02mm

* It is not guarantee specification, reference only.

Customer Friendly Options

- Enough depth of mount hall and location pin for stable installation.
- Not need mirror option by both side supplied airports and sensor slots.



Pin Hole Depth :
minimum 2.5mm

Tap Depth :
minimum 1.3 times
than tap diameter

Both Side Airports

Both Side Sensor Slots

※ Plug mounted only one side.
For using opposite side, remove
it and mount in opposite side
before use.

Various Stopper Options

- Forward stopper basically mounted for all series.
- Selectable shock absorber and metal stopper.
- Direct able to mount backward stopper on plate without table length change.
- All kinds of stopper located on the center line to improve position accuracy.



Urethane Stopper /
Metal Stopper

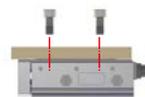


Shock Absorber



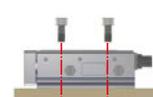
Various Installation Options

Work Mount



By Table Tap

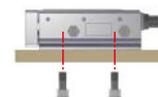
Body Penetration



Body Penetration



By Plate Tap



Body Tap

⚠ Individual notes for PSB Series ①

⚠ Caution

- Be careful to protect “V” groove from damage which the cross roller is rubbed on slide rail and guide.
- Be careful to avoid any finger or human body jam when cylinder is in operation.
- Be careful not to cause scratch or shock on the mounting surfaces of cylinder body, slide table, and end plate.

Damage in mounting surfaces makes worse the flatness, and cause work failure due to the increased swing of guide unit and/or friction resistance.

Notes in Installation

- Install screw to the cylinder and tighten it to the specified torque.

Otherwise, it may cause defect in working. Also, insufficient screw tightening may cause dislocation or work pieces to drop.

⚠ Caution

- Do not exceed the specified load when selecting the product.

Select model based on the specified maximum load factor according to each Bore size. Otherwise, it may result in distorted load of the guide unit, which may cause swing to guide unit, deterioration, and adverse effects on cylinder life.

- Avoid excessive external force or shock.

Notes in Selection

⚠ Caution

- Be careful of using in the place where vibration or shock occurs frequently, it may cause a failure.

- Be care of corrosion resistance for the stability in cross roller guide unit.

Be care of corrosion resistance in humid environment as water drop can be created in guide unit and it can get rusty in such environment.

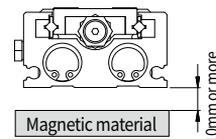
- When used around heat source of high temperature, product can be heated by radiant heat and cause failure. Therefore, install protective covers to block heat source.

- Do not use in the environment that can be affected by foreign substances such as dust and chip, and cutting oil.

It may cause vibration, increase of frictional resistance, and air leakage. In such environment, please install appropriate protective covers after the consultation with our company.

Notes in operating Environment and Handling

- When there are magnetic materials like steel plate near the switch of cylinder, most likely they may cause malfunction in the switch, therefore they need to be designed and installed with sufficient clearance from the surface of cylinder (maintain 10mm or more).



- Always use stainless bolts when mounting auto switch to cylinder in order to prevent switch malfunction. If unavoidable, use commercial bolts after removing the magnetic properties.

Please read it before use, with individual notes for each series as well, for your safe use.

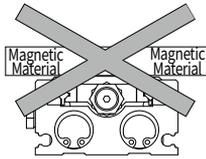
⚠ Individual notes for PSB Series ②

⚠ Caution

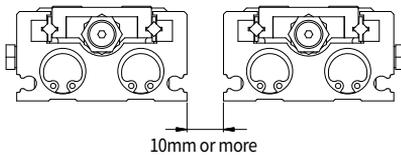
Notes in operating Environment and Handling

- Do NOT mount magnetic or magnetic material on the table.

The table made by magnetic material so, if magnetic mounted on the table, it will become magnetized and it could be the reason of auto switch sensing failure.

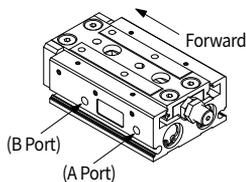


- When installing two cylinders as symmetrical ways, too much close may lead to malfunction in the switch of cylinder. Therefore, keep sufficient clearance (maintain 10mm or more).



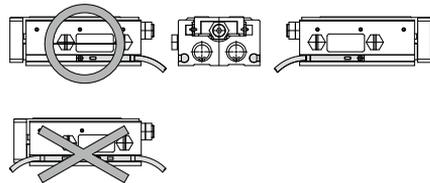
- In the feed of Forward stage at low-speed of 100mm/sec or less of cylinder speed, connecting meter-in speed controller to A port, and meter-out speed controller to B port allow softer control in constant speed.

Supplying air to forward stage A port during cylinder operation at low-speed creates stick slip in the beginning and makes cylinder control in constant speed more difficult. Install appropriate speed controller for soft control.



- For PSB06 Model, double sensing could be occurred when using DSC type auto switch application. PLC type auto switch is highly recommended.

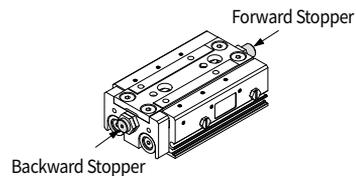
- For the case of 2 PCS auto switch mount on the PSB06 and PSB08 model, please mount both side each sensor NOT for one side 2 PCS mounting.



- Can select various stroke adjustment unit. Check it before model selection.

When controlling the cylinder stroke, three different types of cushions can be used according to the intended use.

1. Urethane Stopper : Generalized stroke adjusting unit. (Allowable speed 50~500mm/sec)
2. Metal Stopper : It may improve the precise control of stroke, but doesn't have cushion function, so it is used only for light load and low-speed. As it is special ordering specification, please contact us. (Allowable speed 50~200mm/sec)
3. Shock Absorber : Soft stop by absorbing the shock at the end of stroke.



PRECISION GUIDE CYLINDER / CROSS ROLLER GUIDE

PSB Series

Features

NEW

- Double thrust performed by parallel aligned twin cylinder.
- Improved external moment by stable structure of built-in guide in the main body.
- Superior parallelism and high solidity from table working as slider.
- High moment by cross roller guide application.
- Both side supplied air ports and auto switch slots for customer convenience.
- Basically mounted forward stopper. (Urethane)



Order Form

PSB 06 - 10 - E - ST - A2 L S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Series Name

② Cylinder Bore Size

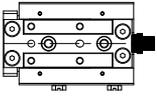
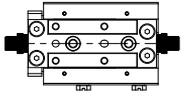
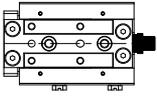
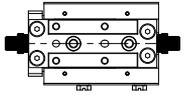
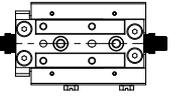
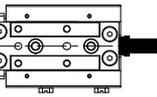
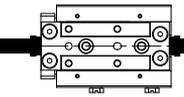
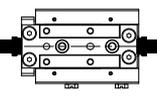
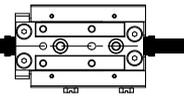
| Order | CYL Bore(mm) | Order (=Standard Strokes(mm)) |
|-------|--------------|---------------------------------------|
| 06 | 6 | 10, 20, 30, 40, 50 |
| 08 | 8 | 10, 20, 30, 40, 50, 75 |
| 12 | 12 | 10, 20, 30, 40, 50, 75, 100 |
| 16 | 16 | 10, 20, 30, 40, 50, 75, 100, 125 |
| 20 | 20 | 10, 20, 30, 40, 50, 75, 100, 125, 150 |
| 25 | 25 | 10, 20, 30, 40, 50, 75, 100, 125, 150 |

③ Standard Strokes

④ Special Option

| Order | Special Option |
|-------|-------------------------|
| Blank | Standard |
| E | Secondary battery field |

⑤ Stopper Specifications for Adjusting Stroke

| Blank | ST | MTF | MTB | MT |
|---|---|---|---|---|
| Forward urethane | Forward urethane Backward urethane | Forward metal | Forward urethane Backward metal | Forward metal Backward metal |
|  |  |  |  |  |
| SHF | SHB | SH2 | SHT | |
| Forward shock absorber | Forward urethane Backward shock absorber | Forward shock absorber Backward shock absorber | Forward shock absorber Backward urethane | |
|  |  |  |  | |

※ For other options not listed in table, please contact to office.

Specification

| Item Name | | PSB06 | PSB08 | PSB12 | PSB16 | PSB20 | PSB25 |
|---|------------------------|--|---------|----------|----------|----------|----------|
| CYL Bore Size(mm) | | 6 | 8 | 12 | 16 | 20 | 25 |
| Rod Size(mm) | | 3 | 4 | 6 | 8 | 10 | 12 |
| Standard Strokes(mm) | | 10 ~ 50 | 10 ~ 75 | 10 ~ 100 | 10 ~ 125 | 10 ~ 150 | 10 ~ 150 |
| Theoretical Thrust(kgf) | Forward | 0.57×P | 1×P | 2.26×P | 4.02×P | 6.28×P | 9.81×P |
| | Backward | 0.42×P | 0.75×P | 1.7×P | 3.02×P | 4.71×P | 7.56×P |
| P : Air Pressure(kgf/cm ²) | | | | | | | |
| Fitting Size | | M3 | | | M5 | | |
| Fluid | | Clean Air <small>Note 1)</small> | | | | | |
| Pressure Range(kgf/cm ²) | | 3 ~ 7 (Guaranteed Resist Pressure : 10.5) <small>Note 2)</small> | | | | | |
| Lubrication | | Not Need (If need, use one sort of turbine oil : SPEC ISOVG 32) | | | | | |
| Temperature Range(°C) | | 5 ~ 60 | | | | | |
| Moving Speed(mm/sec) | <small>Note 3)</small> | 50 ~ 300 (Metal Stopper : 50 ~ 150) | | | | | |
| Operation Type | | Double Acting | | | | | |
| Repeatability(mm) | | ± 0.01 | | | | | |
| Stroke Tolerance for Forward Position(mm) | | 0 ~ +1 | | | | | |

Note 1) Clean Air : Fresh air containing solid matters with 0.3% of supersaturated moisture and 99.9% of liquid oil that passed through the 3-10µm degree of filtering.

Note 2) Guaranteed Resist Pressure : A pressure that does not cause an abnormality in parts when it is applied for 1 minute without any weight loaded.

Note 3) Moving speed could be used within above listed ranged calculated by the selection guide with size and gravity center of workpiece and installation ways.

Make sure to observe the operating speed for Metal Stopper option.

Usage of exceeding specified moving speed could be a critical reason of bad durability.

Weight

Unit : kgf

| Model | Stroke (mm) | Weight (kgf) | | | | | | | | |
|-------|-------------|--------------|------|------|------|------|------|------|------|------|
| | | 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |
| PSB06 | | 0.15 | 0.15 | 0.17 | 0.2 | 0.22 | - | - | - | - |
| PSB08 | | 0.17 | 0.2 | 0.22 | 0.27 | 0.33 | 0.34 | - | - | - |
| PSB12 | | 0.32 | 0.33 | 0.36 | 0.43 | 0.47 | 0.63 | 0.71 | - | - |
| PSB16 | | 0.59 | 0.62 | 0.67 | 0.77 | 0.82 | 1.01 | 1.27 | 1.41 | - |
| PSB20 | | 1.03 | 1.04 | 1.12 | 1.21 | 1.36 | 1.63 | 2.08 | 2.26 | 2.39 |
| PSB25 | | 1.66 | 1.68 | 1.8 | 1.92 | 2.21 | 2.5 | 2.88 | 3.45 | 3.76 |

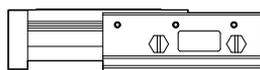
※ Weight for standard item (Forward stopper mounted).

Theoretical Thrust

Unit : kgf

| Model | Operating Direction (Ref. figure) | Pressured Surface (mm ²) | Pressure Range (kgf/cm ²) | | | | | |
|-------|-----------------------------------|--------------------------------------|---------------------------------------|------|------|------|------|------|
| | | | 2 | 3 | 4 | 5 | 6 | 7 |
| PSB06 | Forward | 57 | 1.14 | 1.71 | 2.28 | 2.85 | 3.42 | 3.99 |
| | Backward | 42 | 0.84 | 1.26 | 1.68 | 2.1 | 2.52 | 2.94 |
| PSB08 | Forward | 101 | 2.01 | 3.01 | 4.02 | 5.02 | 6.02 | 7.03 |
| | Backward | 75 | 1.5 | 2.25 | 3 | 3.75 | 4.5 | 5.25 |
| PSB12 | Forward | 226 | 4.52 | 6.78 | 9.04 | 11.3 | 13.6 | 15.8 |
| | Backward | 170 | 3.4 | 5.1 | 6.8 | 8.5 | 10.2 | 11.9 |
| PSB16 | Forward | 402 | 8.04 | 12.1 | 16.1 | 20.1 | 24.1 | 28.1 |
| | Backward | 302 | 6.04 | 9.06 | 12.1 | 15.1 | 18.1 | 21.1 |
| PSB20 | Forward | 628 | 12.6 | 18.8 | 25.1 | 31.4 | 37.7 | 44.0 |
| | Backward | 471 | 9.4 | 14.1 | 18.8 | 23.6 | 28.3 | 33.0 |
| PSB25 | Forward | 981 | 19.6 | 29.4 | 39.2 | 49.1 | 58.9 | 68.7 |
| | Backward | 756 | 15.1 | 22.7 | 30.2 | 37.8 | 45.4 | 52.9 |

Forward ← → Backward



<Operating Direction>

PSB Series Model Selection Guide

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Technical Data by Model

■ Mp, My, Mr 3-directions moment calculation formula

Figure 1

※ W : Work Weight (kgf), K₂ : Speed factor, K₃ : Shock factor

| | Pitch Moment (Mp) | Yawing Moment (My) | Rolling Moment (Mr) |
|------------------------|---|---|---|
| Moment Direction | | | |
| Static Moment | | | |
| Static Moment Formula | $M_p = W \times (A + \text{STROKE} + L_p)$ $M_p = W \times (B + L_p)$ | $M_y = W \times (A + \text{STROKE} + L_y)$ $M_y = W \times (C + L_y)$ | $M_r = W \times (C + L_r)$ $M_r = W \times (B + L_r)$ |
| Dynamic Moment | | | |
| Dynamic Moment Formula | $M_p = K_2 \times K_3 \times W \times (A + \text{STROKE} + L_p)$ $M_p = K_2 \times K_3 \times W \times (B + L_p)$ | $M_y = K_2 \times K_3 \times W \times (A + \text{STROKE} + L_y)$ $M_y = K_2 \times K_3 \times W \times (C + L_y)$ | $M_r = K_2 \times K_3 \times W \times (C + L_r)$ $M_r = K_2 \times K_3 \times W \times (B + L_r)$ |

■ Corrections from the central distance of moments

Table 1

Unit : mm

| Model | Stroke | Corrections | | | | | | | | | B | C |
|-------|--------|-------------|----|----|----|----|----|-----|-----|-----|------|------|
| | | 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 | | |
| PSB06 | | 23 | 23 | 23 | 25 | 25 | - | - | - | - | 6 | 9.5 |
| PSB08 | | 25 | 25 | 25 | 27 | 29 | 29 | - | - | - | 6 | 11.5 |
| PSB12 | | 30 | 30 | 30 | 35 | 35 | 46 | 46 | - | - | 6.5 | 14 |
| PSB16 | | 40 | 40 | 40 | 42 | 42 | 47 | 57 | 57 | - | 8.5 | 17 |
| PSB20 | | 47 | 47 | 47 | 47 | 50 | 54 | 68 | 68 | 68 | 10.5 | 20 |
| PSB25 | | 57 | 57 | 57 | 57 | 64 | 64 | 67 | 76 | 76 | 12 | 24.5 |

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■ Maximum allowable moment Table 2

Unit : kgf·cm

| Model | Stroke | 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |
|-------|--------|--------|------|------|------|------|------|------|------|------|
| | PSB06 | Mp, My | 3.58 | 3.58 | 3.58 | 4.17 | 4.17 | - | - | - |
| Mr | | 9.91 | 9.91 | 9.91 | 11.3 | 11.3 | - | - | - | - |
| PSB08 | Mp, My | 3.58 | 3.58 | 3.58 | 4.17 | 4.77 | 4.77 | - | - | - |
| | Mr | 11.9 | 11.9 | 11.9 | 13.7 | 15.4 | 15.4 | - | - | - |
| PSB12 | Mp, My | 10.9 | 10.9 | 10.9 | 14.5 | 14.5 | 21.8 | 21.8 | - | - |
| | Mr | 35.8 | 35.8 | 35.8 | 46 | 46 | 66.4 | 66.4 | - | - |
| PSB16 | Mp, My | 14.5 | 14.5 | 14.5 | 16.3 | 16.3 | 20 | 27.3 | 27.3 | - |
| | Mr | 55.8 | 55.8 | 55.8 | 62 | 62 | 74.4 | 99.3 | 99.3 | - |
| PSB20 | Mp, My | 34.2 | 34.2 | 34.2 | 34.2 | 39.1 | 43.9 | 63.5 | 63.5 | 63.5 |
| | Mr | 111 | 111 | 111 | 111 | 125 | 139 | 195 | 195 | 195 |
| PSB25 | Mp, My | 106 | 106 | 106 | 106 | 124 | 124 | 142 | 177 | 177 |
| | Mr | 306 | 306 | 306 | 306 | 350 | 350 | 393 | 481 | 481 |

■ Maximum allowable kinetic energy (Ea) Table 3

Unit : kgf·cm

| Model | Allowable Kinetic Energy | Stopper Types | | |
|-------|--------------------------|---------------|------------------|----------------|
| | | Metal Stopper | Urethane Stopper | Shock Absorber |
| PSB06 | | 0.02 | 0.13 | 0.4 |
| PSB08 | | 0.02 | 0.13 | 0.4 |
| PSB12 | | 0.08 | 0.5 | 0.8 |
| PSB16 | | 0.14 | 0.8 | 1.8 |
| PSB20 | | 0.21 | 1.2 | 3.4 |
| PSB25 | | 0.25 | 1.5 | 4.7 |

■ Max. Allowable Load (Wa) Table 4

Unit : kgf

| Model | Max. Allowable Load |
|-------|---------------------|
| PSB06 | 0.6 |
| PSB08 | 1 |
| PSB12 | 2.4 |
| PSB16 | 4.3 |
| PSB20 | 6.7 |
| PSB25 | 10.7 |

※ For vertical installation, maximum allowable load check is not required.

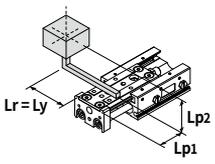
※ This table is only for reference value to calculate table load ratio.

PSB Series Model Selection Guide

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Example of Model Selection

| | | Applicable Formula | Selection Example | | |
|--|--|---|--|--|--|
| Condition Check | | <ul style="list-style-type: none"> Cylinder model selection Cushion type (Metal / Urethane / Absorber) Distance to the center of gravity in load Installation type | <ul style="list-style-type: none"> Check for : PSB12-50 Table installation, horizontal installation Urethane cushion Average speed : $V = 300\text{mm/sec}$ Work weight $W = 0.5\text{kgf}$ $Lp1 = 20\text{mm}$ $Lp2 = 30\text{mm}$ $Ly(Lr) = 30\text{mm}$  | | |
| | | <table border="1"> <tr> <td>Horizontal installation </td> <td>Vertical installation </td> <td>Plate installation </td> <td>Table installation </td> </tr> </table> | | Horizontal installation  | Vertical installation  |
| Horizontal installation  | Vertical installation  | Plate installation  | Table installation  | | |
| Kinetic Energy Check | | <p>Work kinetic energy(kgf·cm) $E = K_1 \times \frac{1}{2} \times \frac{W}{980} \times (\frac{1.4V}{10})^2$</p> <p>$E = 1 \times \frac{1}{2} \times \frac{0.5}{980} \times (\frac{1.4 \times 300}{10})^2 = 0.45 \text{ kgf·cm}$</p> <p>$E_a = 0.5 \text{ kgf·cm}$</p> <p>Applicable as $E(0.45) < E_a(0.5)$</p> | | | |
| | - The kinetic energy of load should be within the allowable kinetic energy range of cylinder. | <p>W : Work weight(kgf)</p> <p>V : Average speed(mm/sec)</p> <p>K_1 : Installation factor(Table installation : 1, Plate installation : 1.6)</p> <p>E_a : Allowable kinetic energy(kgf·cm) Table 3</p> <p>Applicable only if $E < E_a$</p> | | | |
| Load Factor Check | Loading Factor | <p>Suitable load weight(kgf) $W_t = K_1 \times K_2 \times W$</p> <p>Loading factor $\theta_1 = \frac{W_t}{W_a}$</p> <p>W : Work weight(kgf)</p> <p>K_1 : Installation factor(Table installation : 1, Plate installation : 1.6)</p> <p>K_2 : Speed factor(300mm/sec or less : 1, Over 300mm/sec : 1.6)</p> <p>W_a : Allowable load weight(kgf) Table 4</p> | <p>$W_t = 1 \times 1 \times 0.5 = 0.5 \text{ kgf}$</p> <p>$W_a = 2.4 \text{ kgf}$</p> <p>$\theta_1 = \frac{0.5}{2.4} = 0.21$</p> | | |
| | Static Moment | <p>Pitching moment(kgf·cm) $M_p = W \times (A + \text{Stroke} + Lp_1) / 10$</p> <p>Rolling moment(kgf·cm) $M_r = W \times (C + Lr) / 10$</p> <p>Pitching moment factor $\theta_2 = \frac{M_p}{M_{pa}}$</p> <p>Rolling moment factor $\theta_3 = \frac{M_r}{M_{ra}}$</p> <p>W : Work weight(kgf)</p> <p>A, C : Corrections from the center distance of moment(mm) Table 3</p> <p>Lp, Lr : Distance between end of table to center of load(mm) Figure 1</p> <p>M_{pa} : Allowable pitching moment(kgf·cm) Table 2</p> <p>M_{ra} : Allowable rolling moment(kgf·cm) Table 2</p> | <p>$M_p = \frac{0.5 \times (35 + 50 - 20)}{10} = 3.25 \text{ kgf·cm}$</p> <p>$\theta_2 = \frac{3.25}{14.5} = 0.22$</p> <p>$M_r = \frac{0.5 \times (14 + 30)}{10} = 2.2 \text{ kgf·cm}$</p> <p>$\theta_3 = \frac{2.2}{46} = 0.05$</p> | | |
| Dynamic Moment | | <p>Pitching moment(kgf·cm) $M_p = K_2 \times K_3 \times W \times (B + Lp_2) / 10$</p> <p>Yawing moment(kgf·cm) $M_y = K_2 \times K_3 \times W \times (C + Ly) / 10$</p> <p>Pitching moment factor $\theta_4 = \frac{M_p}{M_{pa}}$</p> <p>Yawing moment factor $\theta_5 = \frac{M_y}{M_{ya}}$</p> <p>W : Work weight(kgf)</p> <p>K_2 : Speed factor(300mm/sec or less : 1, Over: 300mm/sec : 1.6)</p> <p>K_3 : Shock factor(Urethane : 1, shock absorber : 0.25)</p> <p>B, C : Corrections from the center distance of moments(mm) Table 1</p> <p>Lp, Ly : Distance between end of table to center of load(mm) Figure 1</p> <p>M_{pa} : Allowable pitching moment(kgf·cm) Table 2</p> <p>M_{ya} : Allowable Yawing moment(kgf·cm) Table 2</p> | <p>$M_p = \frac{1 \times 1 \times 0.5 \times (6.5 + 30)}{10} = 1.83 \text{ kgf·cm}$</p> <p>$\theta_4 = \frac{1.83}{14.5} = 0.13$</p> <p>$M_y = \frac{1 \times 1 \times 0.5 \times (14 + 30)}{10} = 2.2 \text{ kgf·cm}$</p> <p>$\theta_5 = \frac{2.2}{14.5} = 0.15$</p> | | |
| | | <p>- Loading factor.</p> <p>- Static moment load factor.</p> <p>- Dynamic moment load factor.</p> <p>- Total sum of load factors should not exceed.</p> | | | |
| Total Load Factor | | <p>$\theta_t = \theta_1 + \theta_2 + \theta_3 + \theta_4 + \theta_5 \leq 1$</p> | <p>$\theta_t = 0.21 + 0.22 + 0.05 + 0.13 + 0.15 = 0.76 \leq 1$</p> <p>PSB12-50 is applicable</p> | | |

PSB Series

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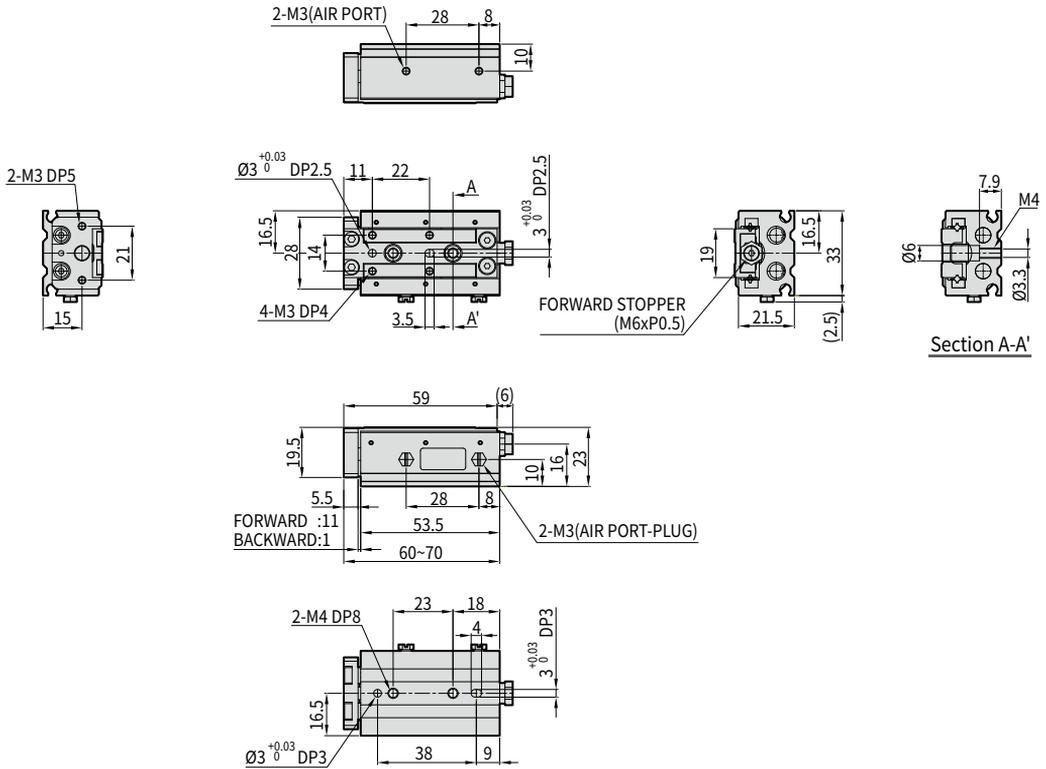
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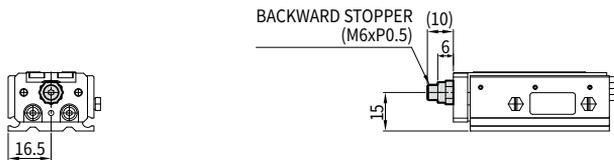
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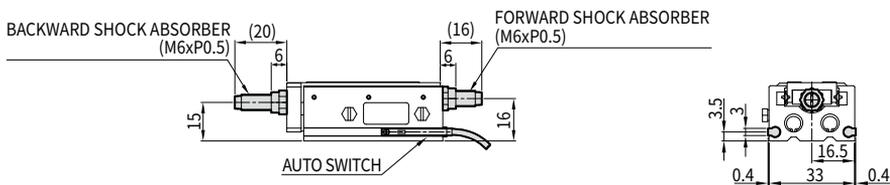
PSB06-10



PSB06-10 Urethane (Metal) Stopper for Forward and Backward

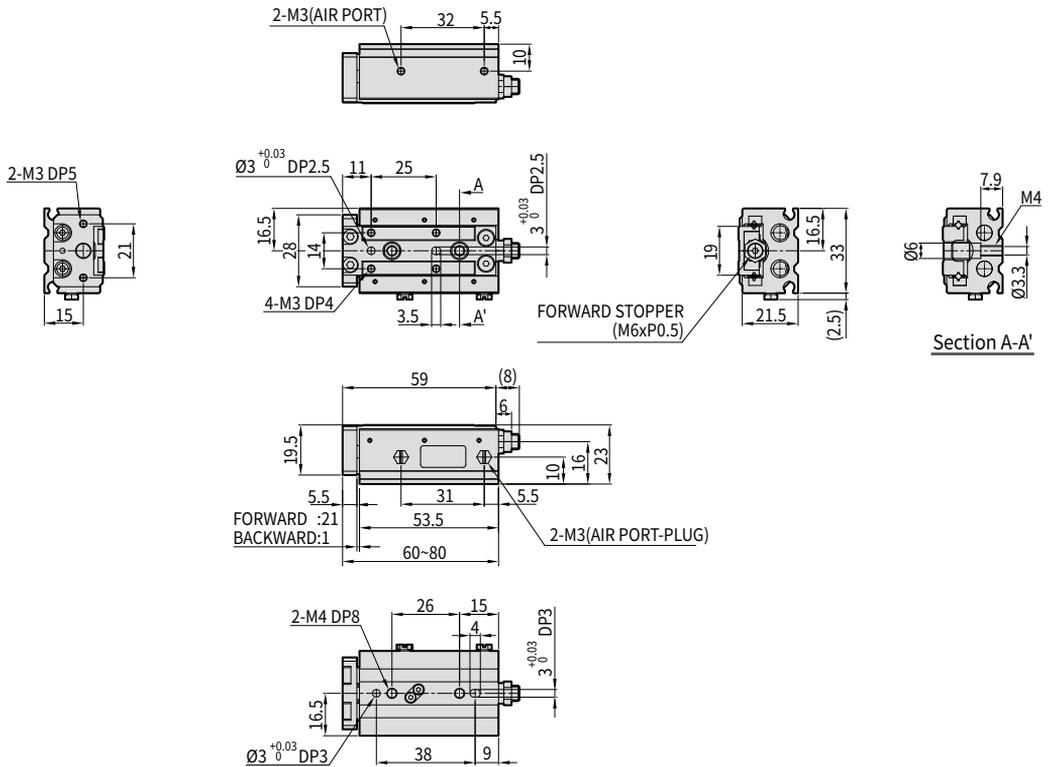


PSB06-10 Example of Auto Switch & Shock Absorber installation

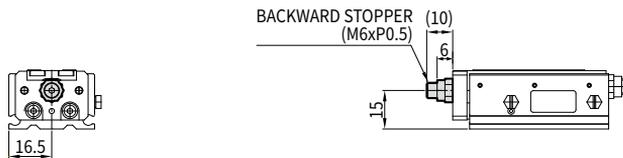


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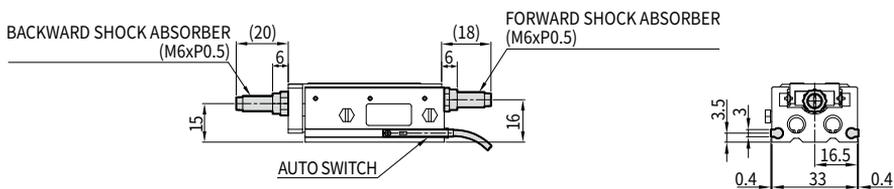
PSB06-20



PSB06-20 Urethane (Metal) Stopper for Forward and Backward



PSB06-20 Example of Auto Switch & Shock Absorber installation



PSB Series

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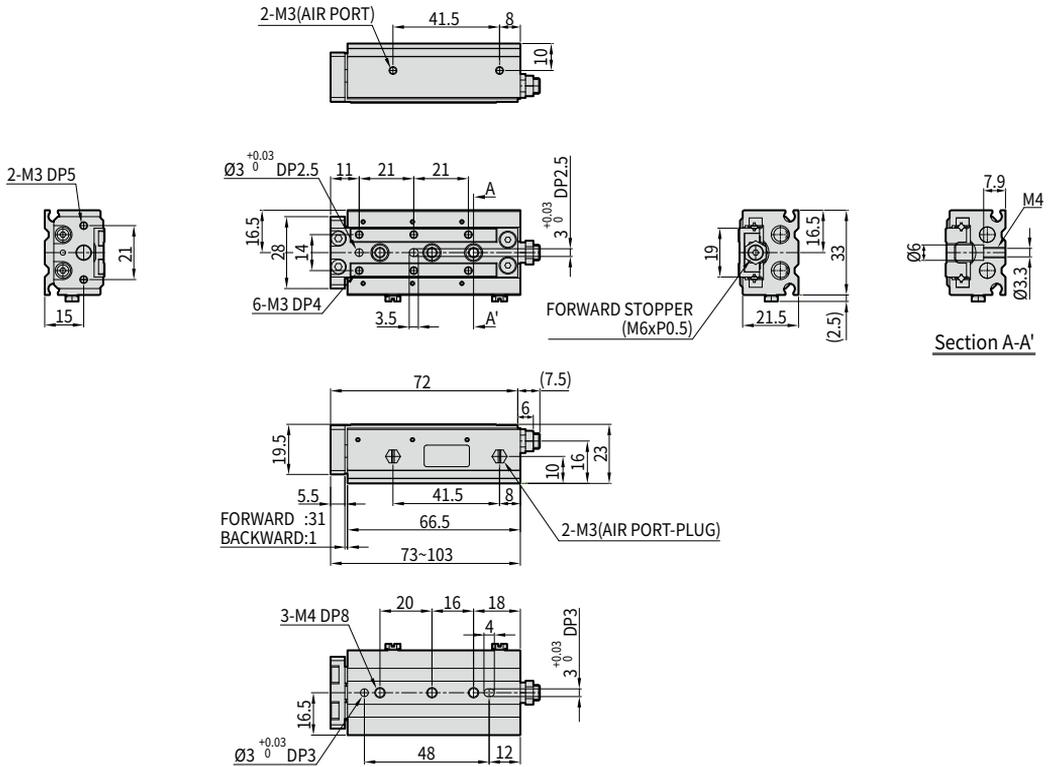
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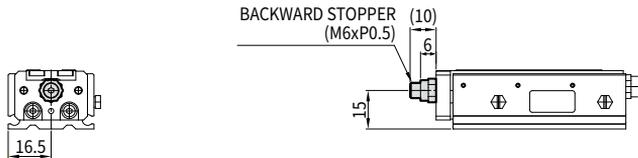
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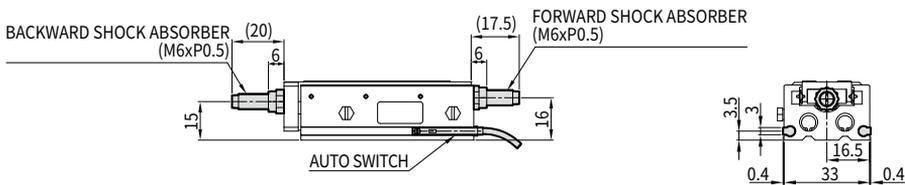
PSB06-30



PSB06-30 Urethane (Metal) Stopper for Forward and Backward

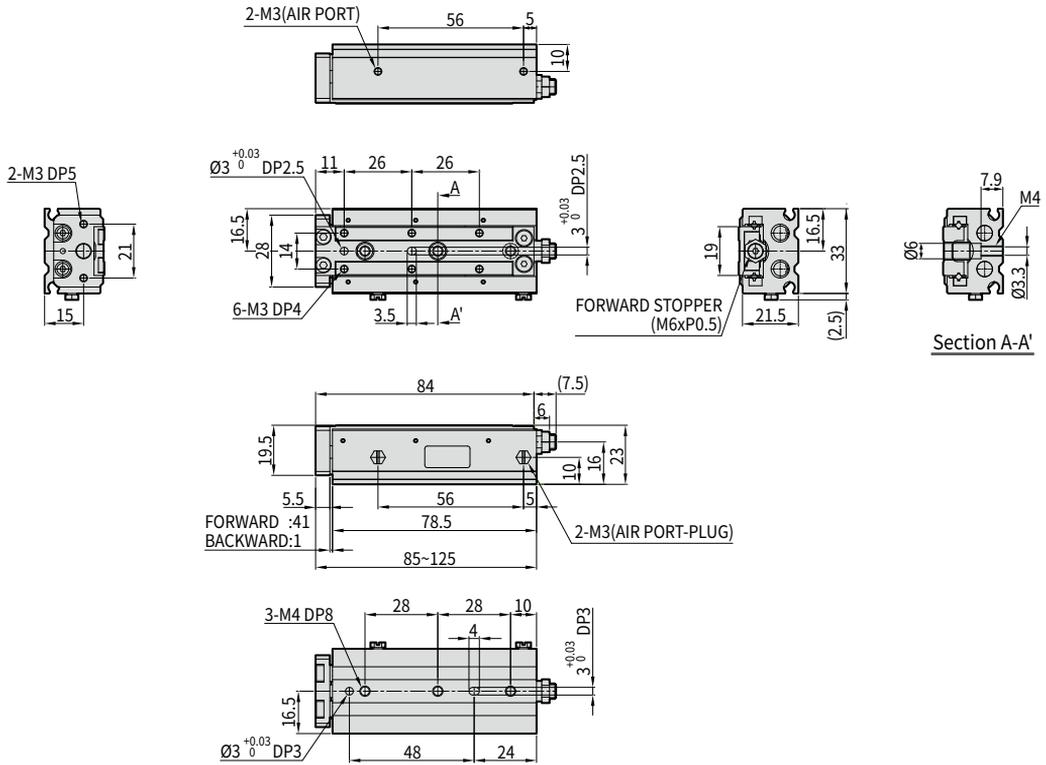


PSB06-30 Example of Auto Switch & Shock Absorber installation

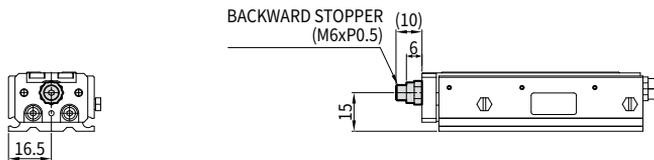


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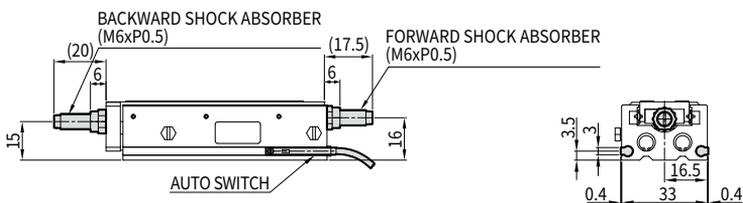
PSB06-40



PSB06-40 Urethane (Metal) Stopper for Forward and Backward



PSB06-40 Example of Auto Switch & Shock Absorber installation



PSB Series

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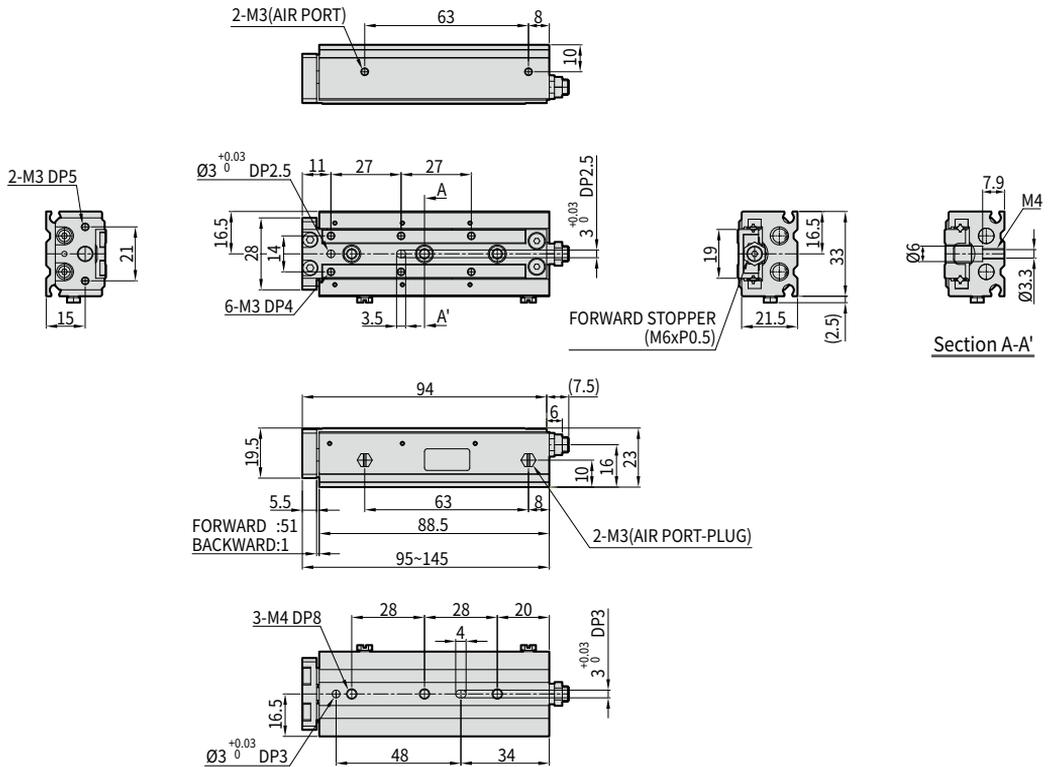
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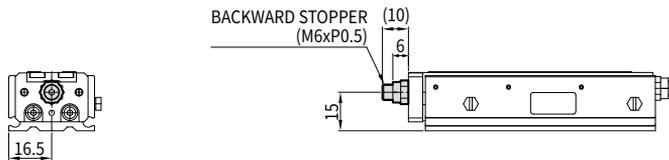
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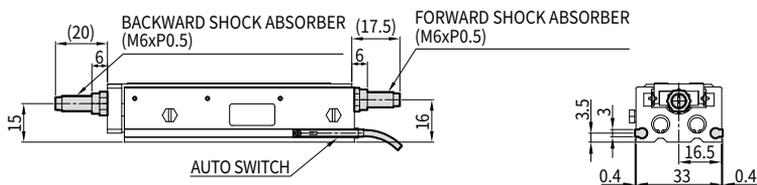
PSB06-50



PSB06-50 Urethane (Metal) Stopper for Forward and Backward



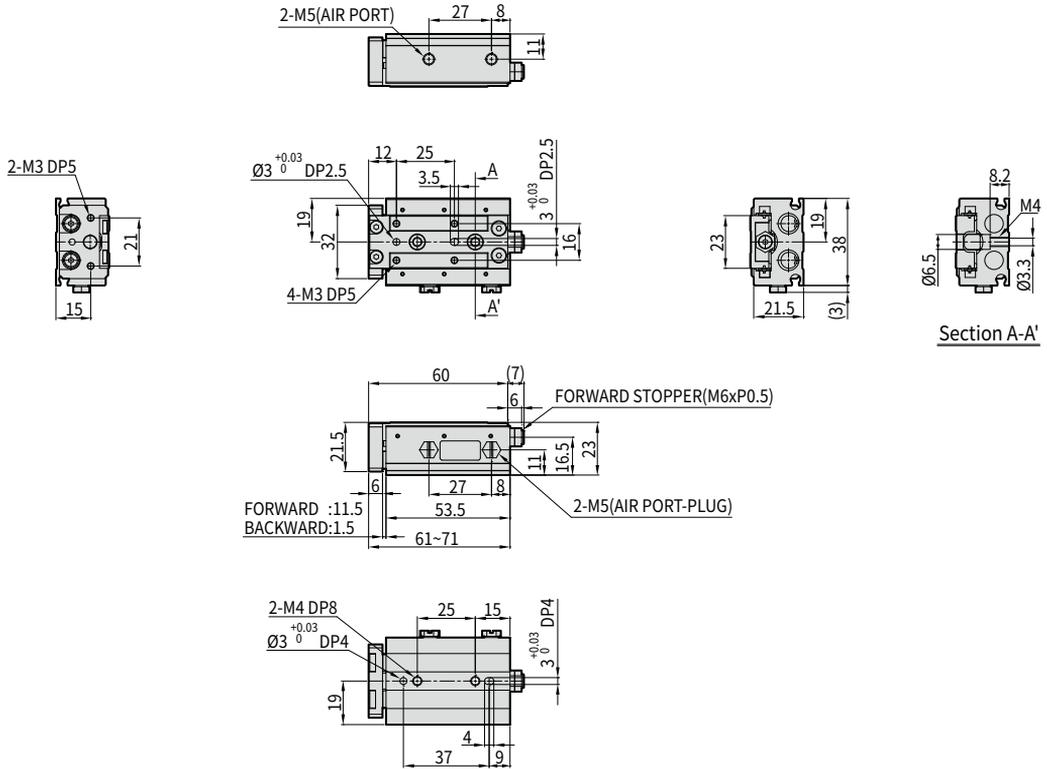
PSB06-50 Example of Auto Switch & Shock Absorber installation



- PST-NS
- PSB
- PST
- SC
- ST
- STS-L
- SD
- PSW

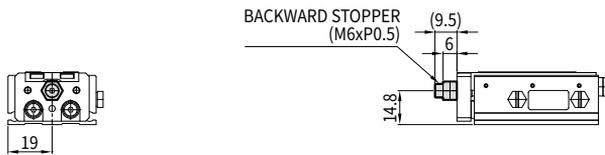
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| 10 | 20 | 30 | 40 | 50 | 75 |

PSB08-10

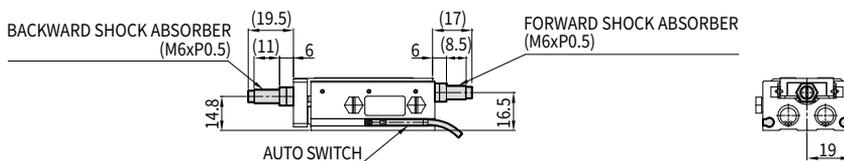


Section A-A'

PSB08-10 Urethane (Metal) Stopper for Forward and Backward

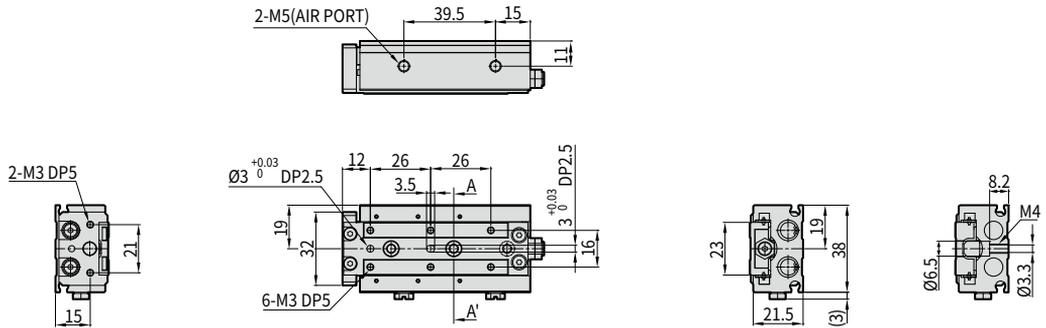


PSB08-10 Example of Auto Switch & Shock Absorber installation

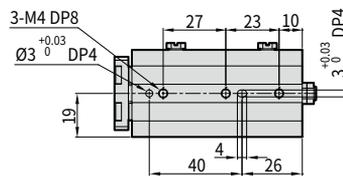
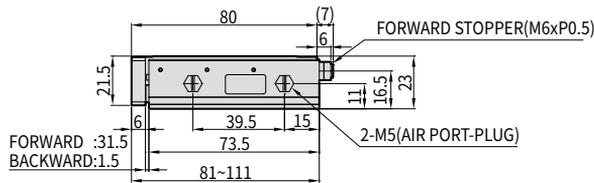


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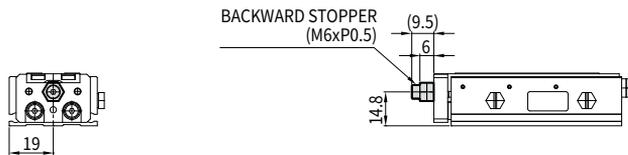
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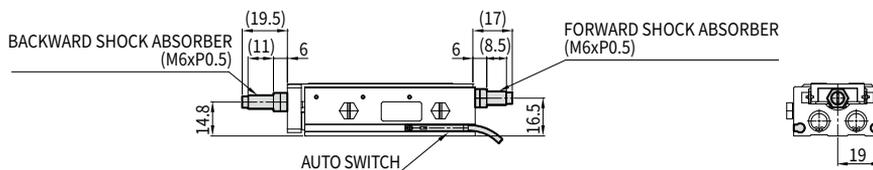
Section A-A'



PSB08-30 Urethane (Metal) Stopper for Forward and Backward



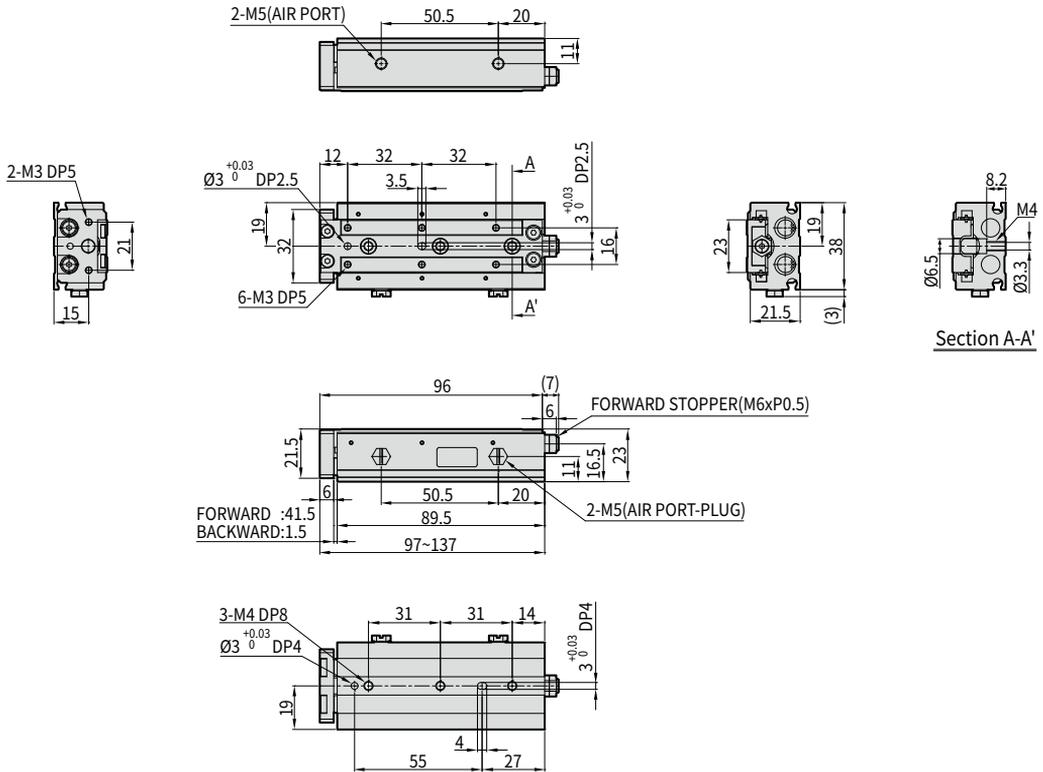
PSB08-30 Example of Auto Switch & Shock Absorber installation



PSB Series

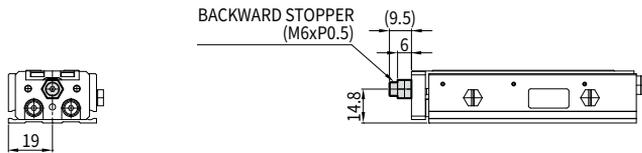
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PSB08-40

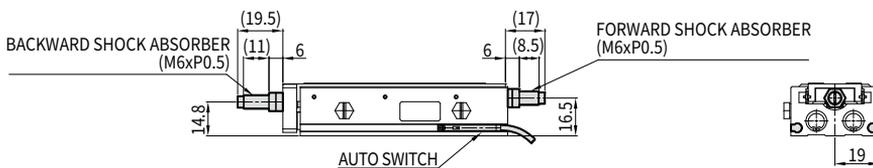


Section A-A'

PSB08-40 Urethane (Metal) Stopper for Forward and Backward



PSB08-40 Example of Auto Switch & Shock Absorber installation

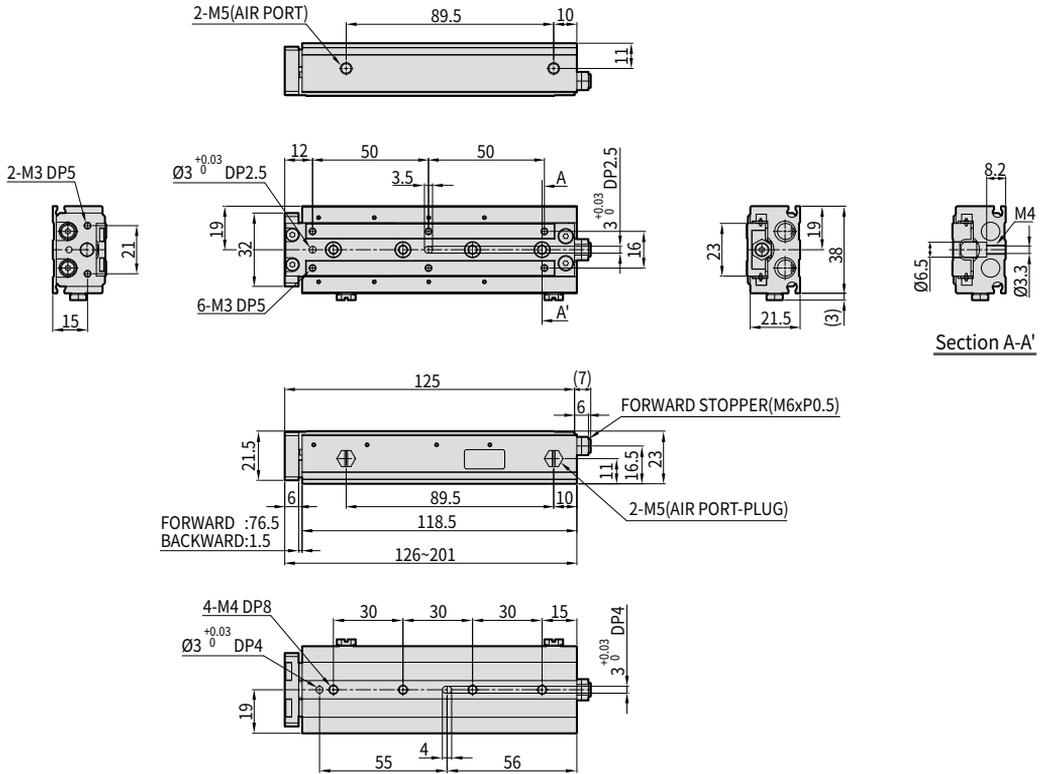


PSB Series

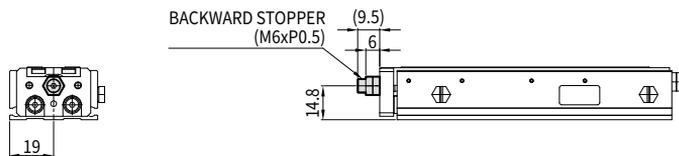
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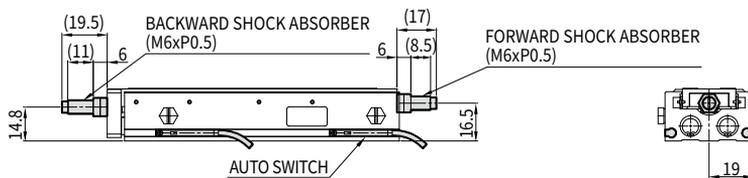
PSB08-75



PSB08-75 Urethane (Metal) Stopper for Forward and Backward

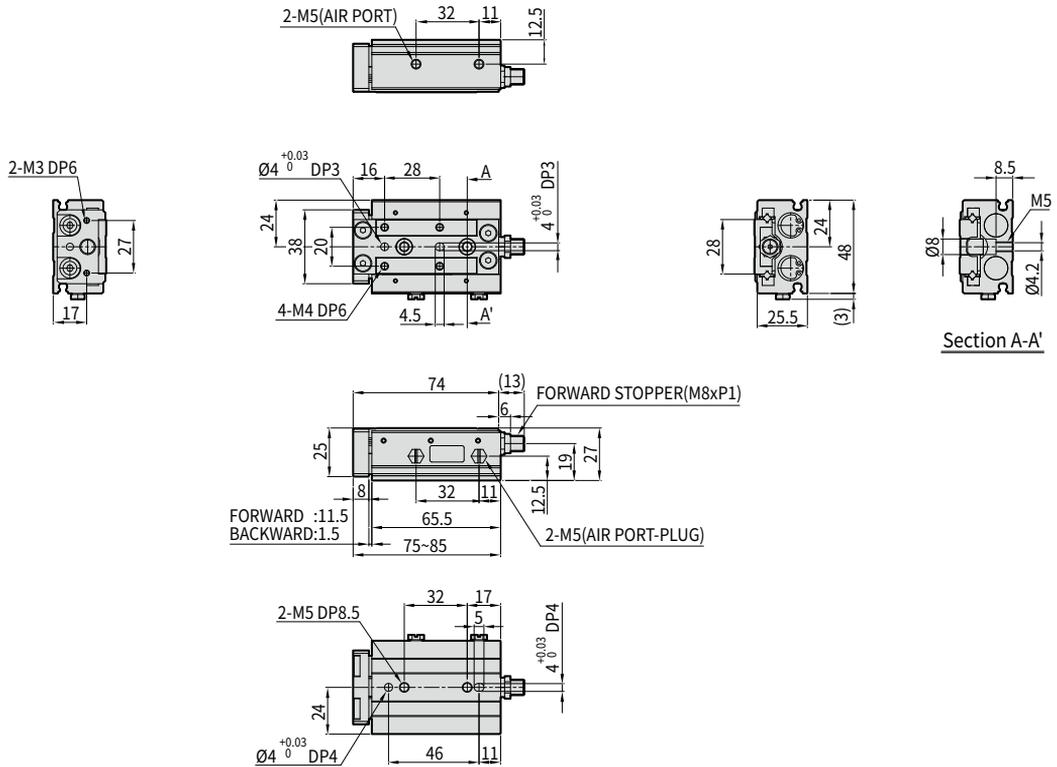


PSB08-75 Example of Auto Switch & Shock Absorber installation



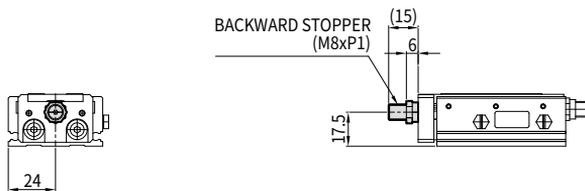
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| 10 | 20 | 30 | 40 | 50 | 75 | 100 |
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PSB12-10

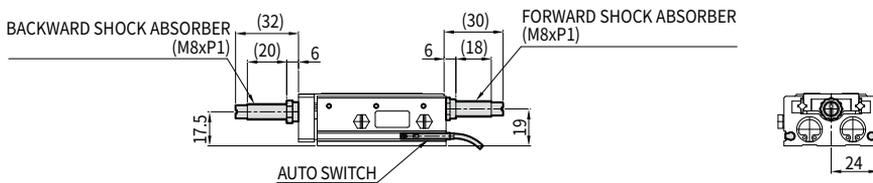


Section A-A'

PSB12-10 Urethane (Metal) Stopper for Forward and Backward

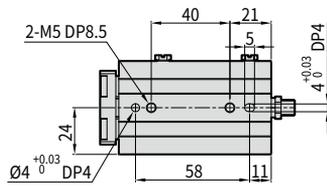
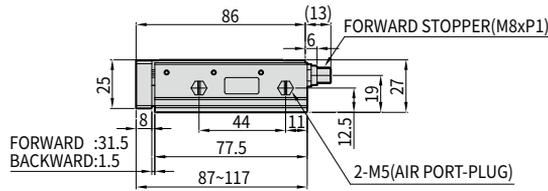
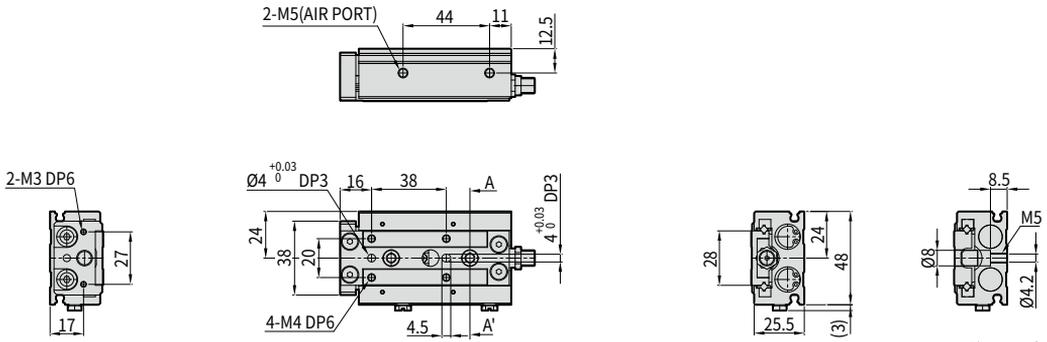


PSB12-10 Example of Auto Switch & Shock Absorber installation

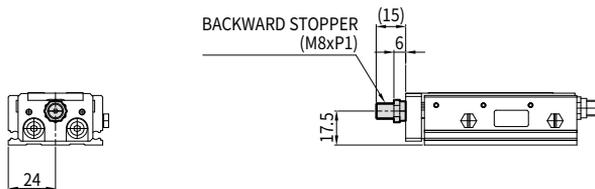


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- 50
- 75
- 100

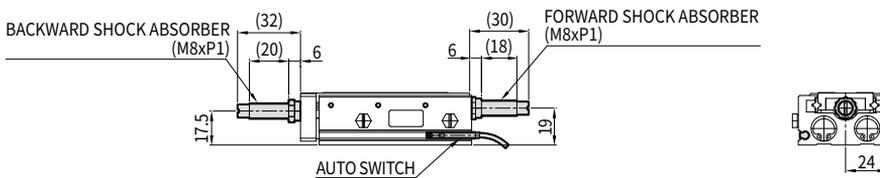
PSB12-30



PSB12-30 Urethane (Metal) Stopper for Forward and Backward



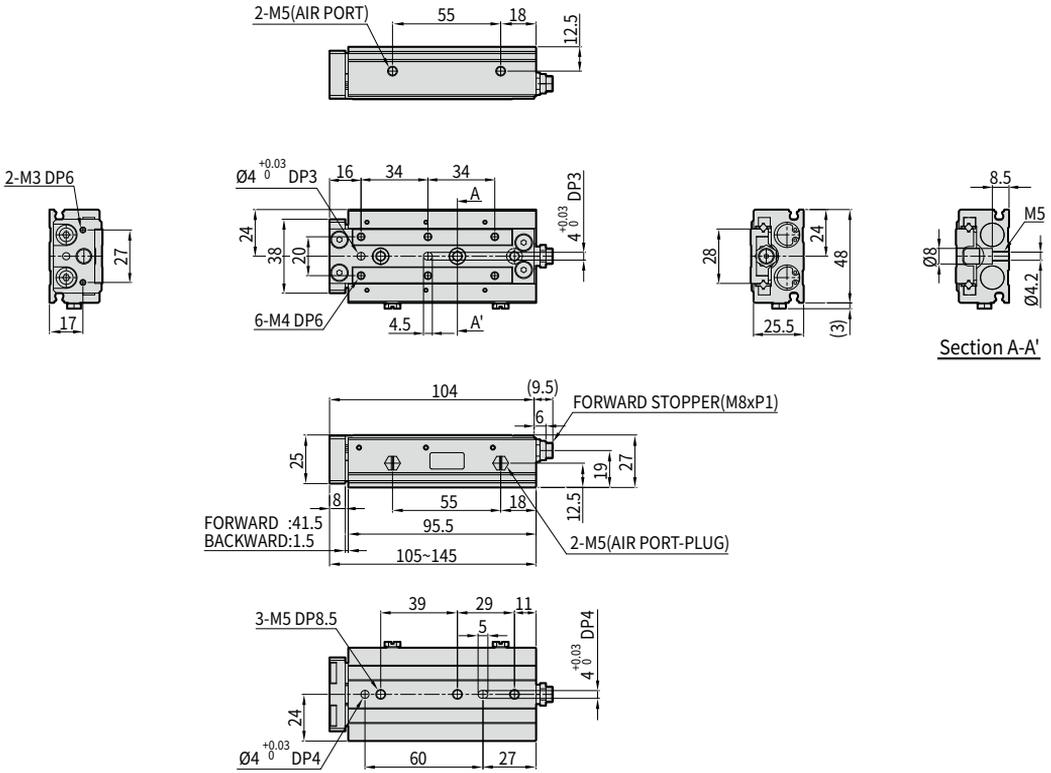
PSB12-30 Example of Auto Switch & Shock Absorber installation



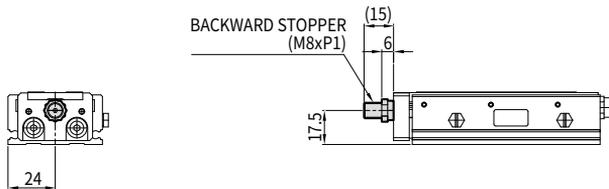
PSB Series

| | | | | | | |
|----|----|----|----|----|----|-----|
| | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 |

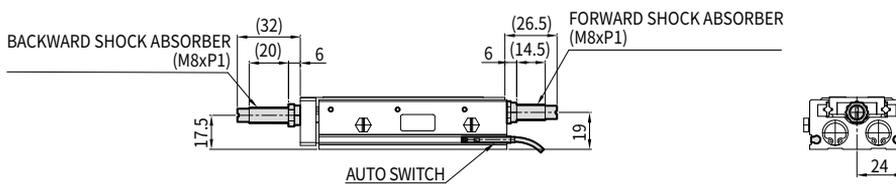
PSB12-40



PSB12-40 Urethane (Metal) Stopper for Forward and Backward

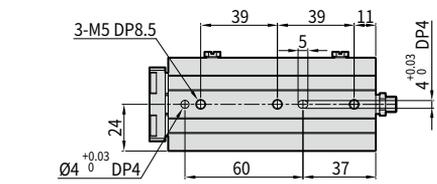
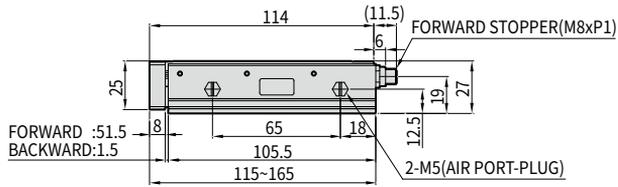
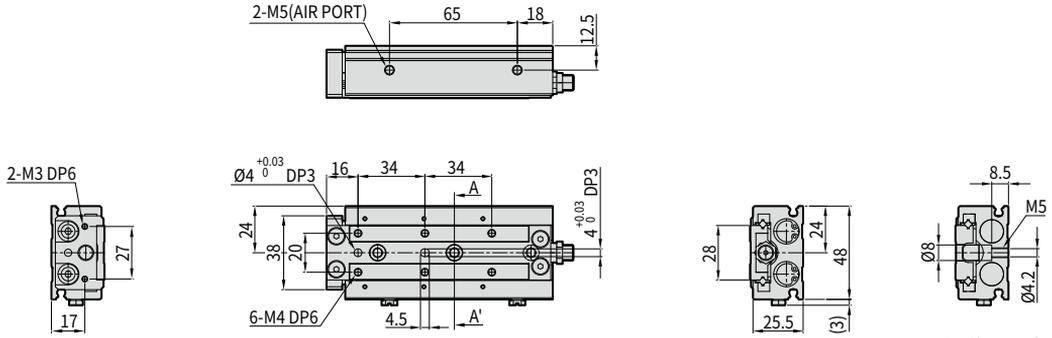


PSB12-40 Example of Auto Switch & Shock Absorber installation

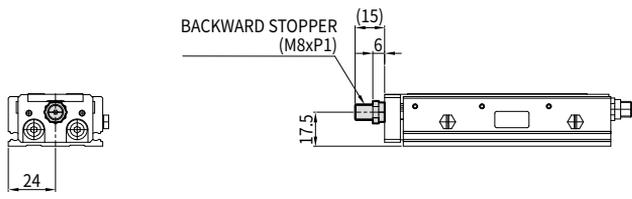


| | | | | | |
|----|----|----|----|----|-----|
| 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 100 |

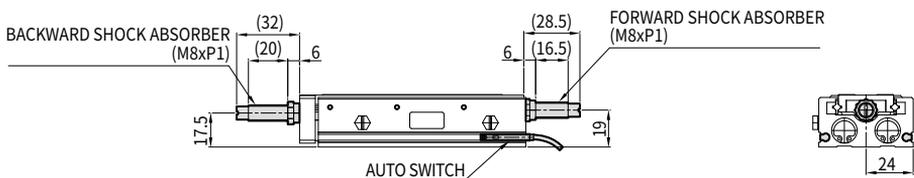
PSB12-50



PSB12-50 Urethane (Metal) Stopper for Forward and Backward



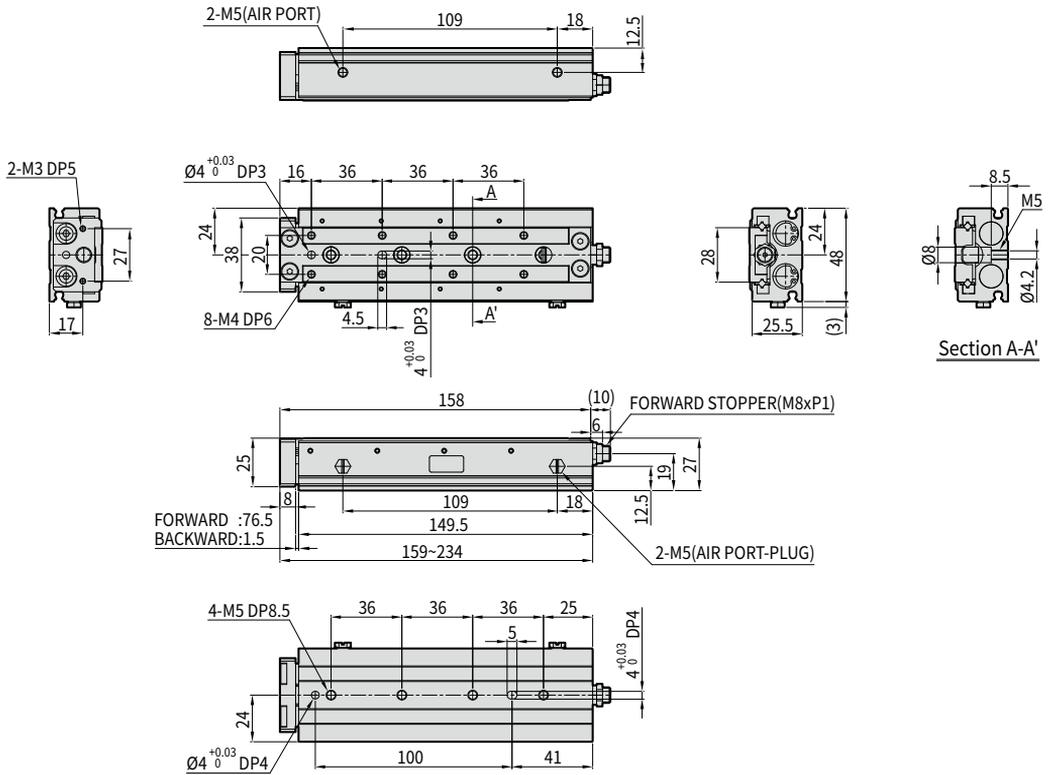
PSB12-50 Example of Auto Switch & Shock Absorber installation



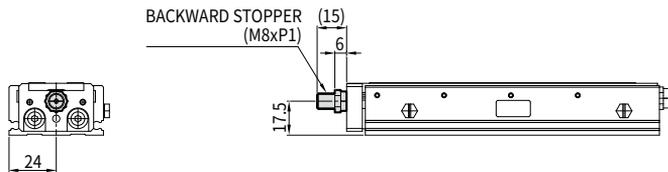
PSB Series

| | | | | | | |
|----|----|----|----|----|----|-----|
| | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 |

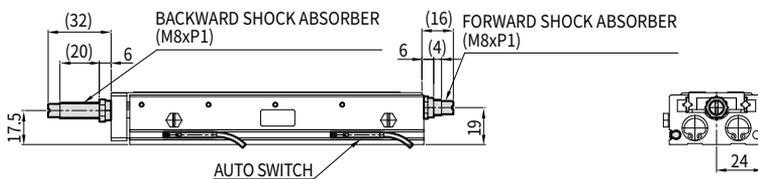
PSB12-75



PSB12-75 Urethane (Metal) Stopper for Forward and Backward

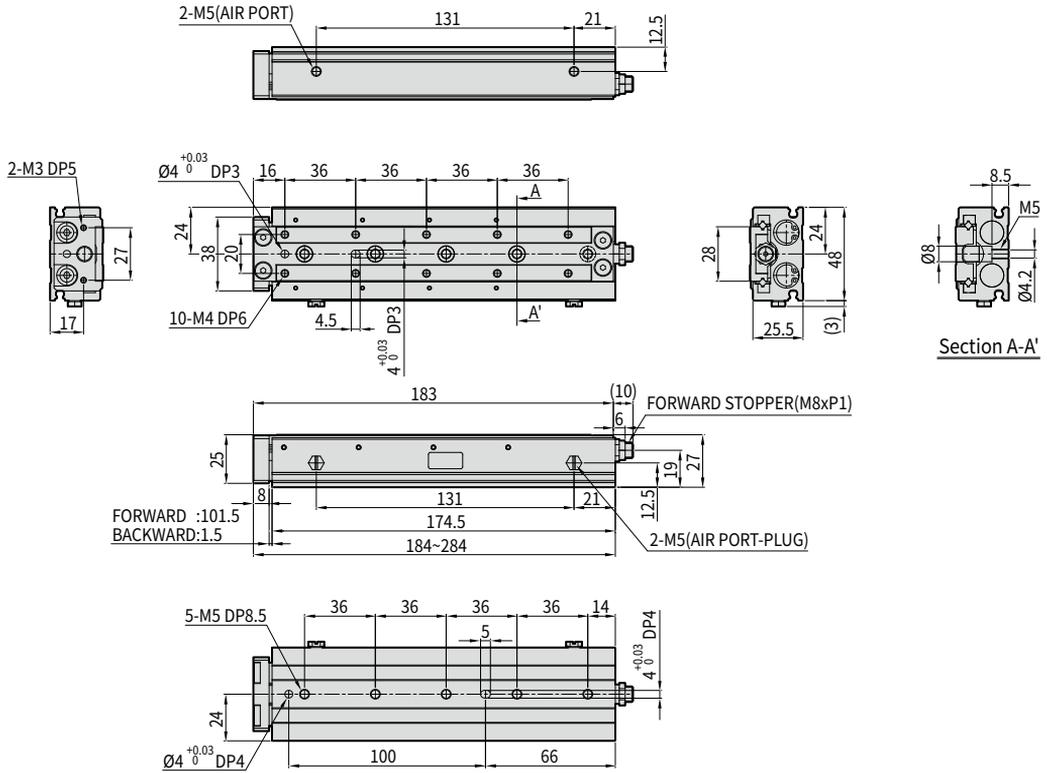


PSB12-75 Example of Auto Switch & Shock Absorber installation

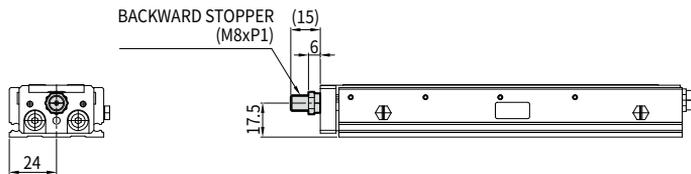


- 06
- 08
- 12
- 16
- 20
- 25
- 10
- 20
- 30
- 40
- 50
- 75
- 100

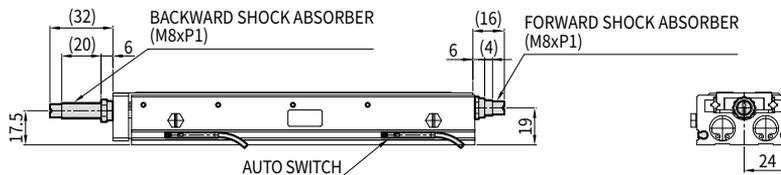
PSB12-100



PSB12-100 Urethane (Metal) Stopper for Forward and Backward



PSB12-100 Example of Auto Switch & Shock Absorber installation



PSB Series

06

08

12

16

20

25

10

20

30

40

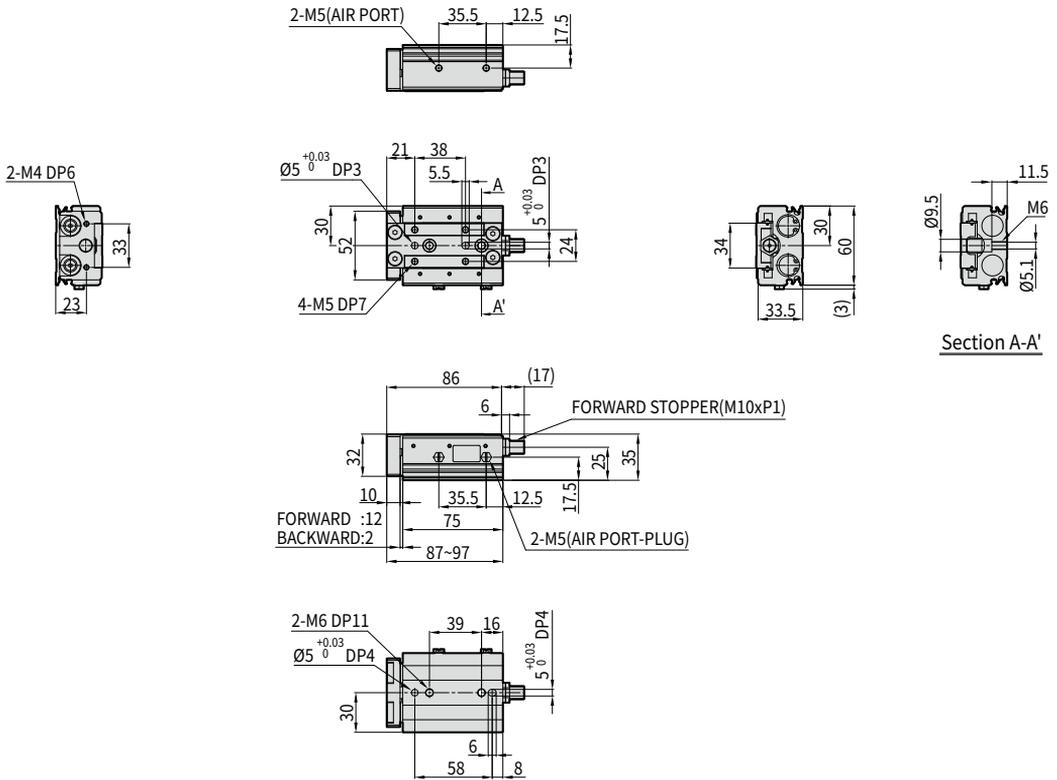
50

75

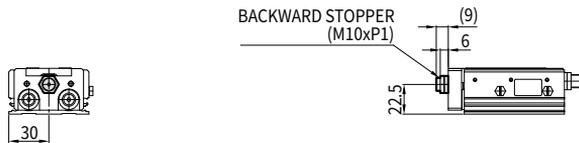
100

125

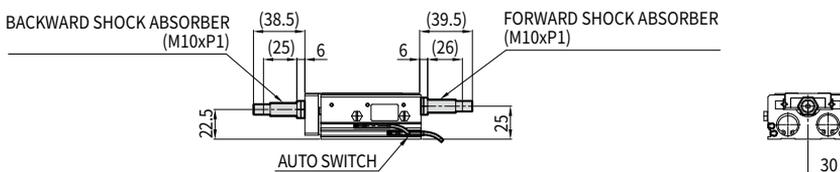
PSB16-10



PSB16-10 Urethane (Metal) Stopper for Forward and Backward



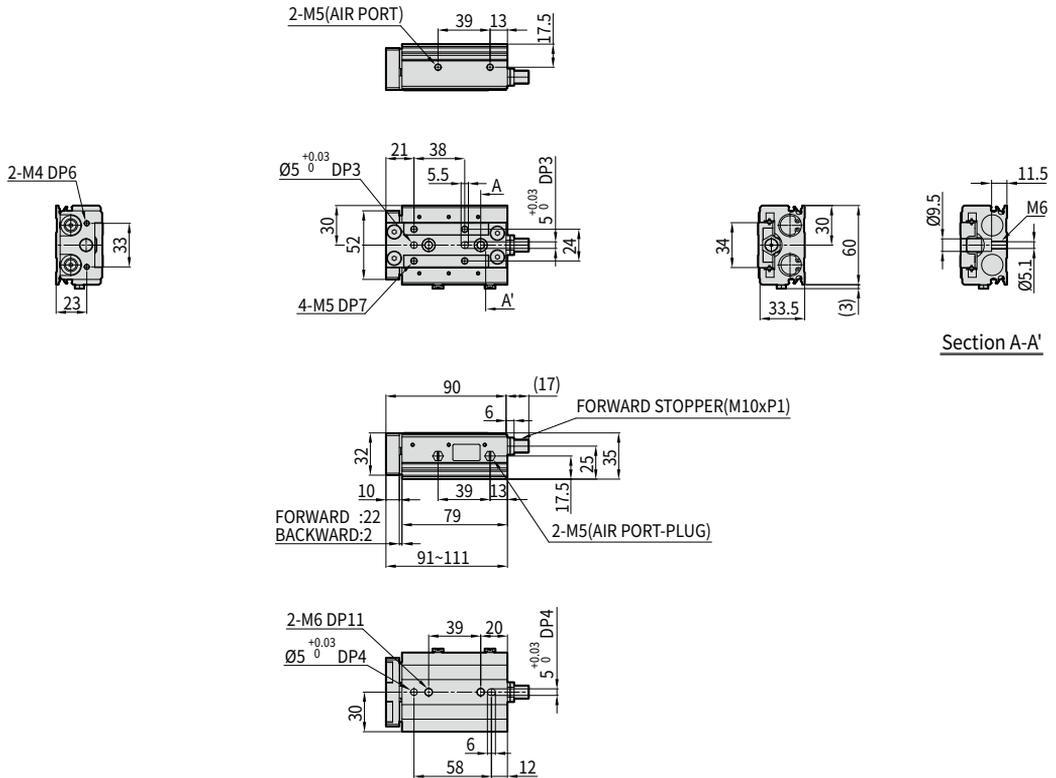
PSB16-10 Example of Auto Switch & Shock Absorber installation



- PST-NS
- PSB
- PST
- SC
- ST
- STS-L
- SD
- PSW

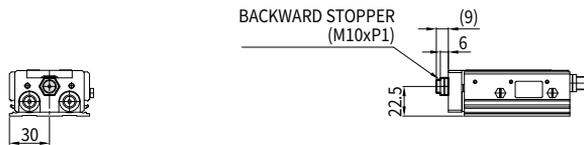
| | | | | | | | |
|----|----|----|----|----|----|-----|-----|
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 |
|----|----|----|----|----|----|-----|-----|

PSB16-20

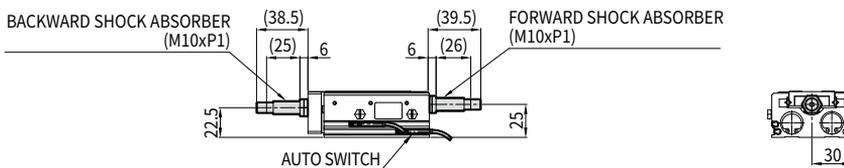


Section A-A'

PSB16-20 Urethane (Metal) Stopper for Forward and Backward



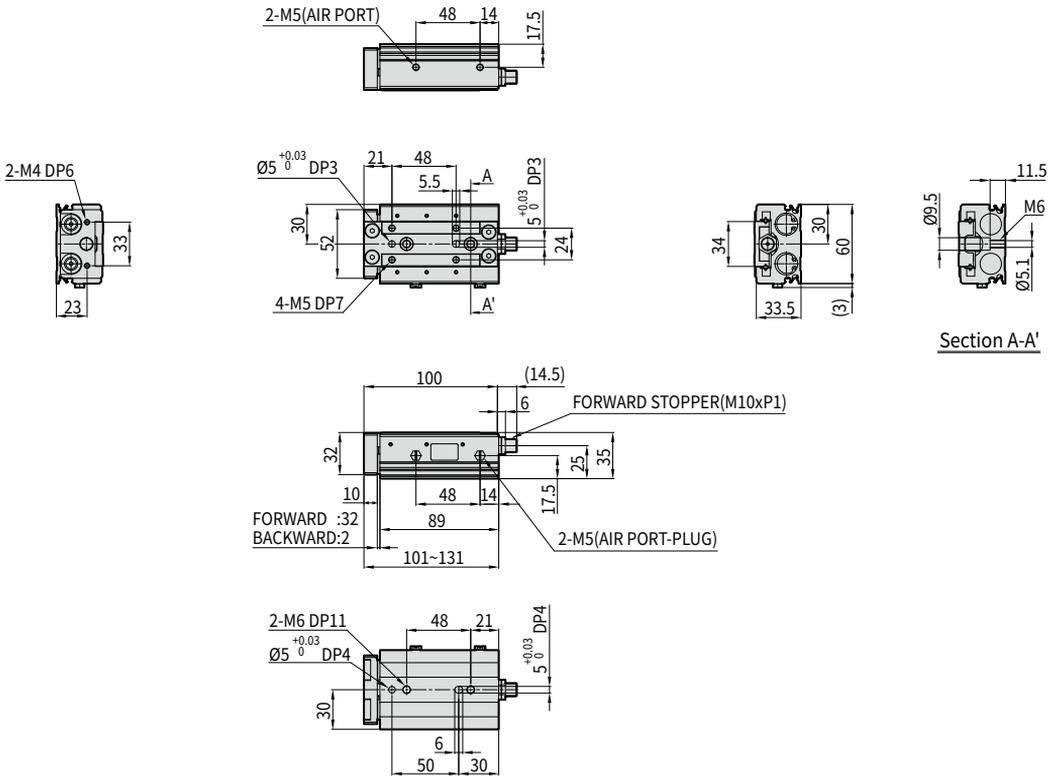
PSB16-20 Example of Auto Switch & Shock Absorber installation



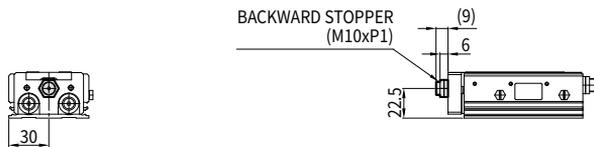
PSB Series

| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|----|
| | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | |

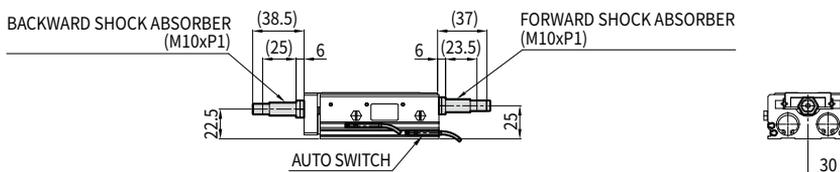
PSB16-30



PSB16-30 Urethane (Metal) Stopper for Forward and Backward



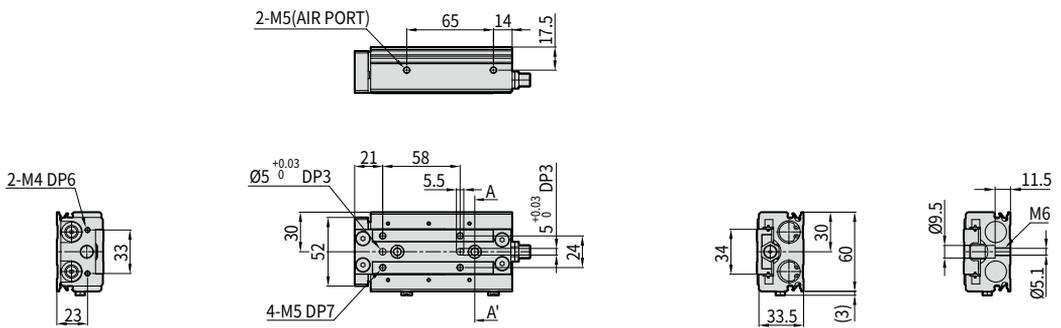
PSB16-30 Example of Auto Switch & Shock Absorber installation



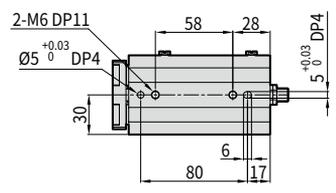
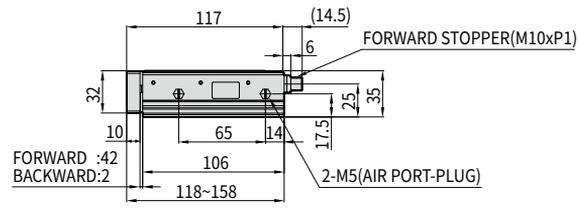
- PST-NS
- PSB
- PST
- SC
- ST
- STS-L
- SD
- PSW

| | | | | | |
|----|----|----|----|-----|-----|
| 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 |
| | | | | 100 | 125 |

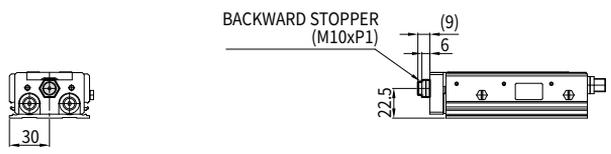
PSB16-40



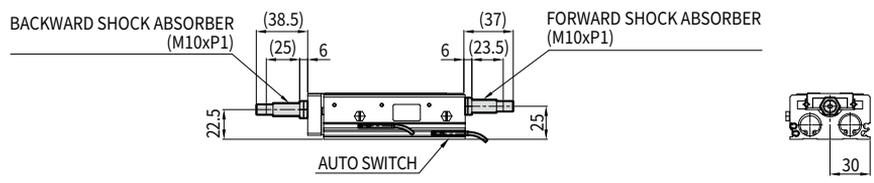
Section A-A'



PSB16-40 Urethane (Metal) Stopper for Forward and Backward



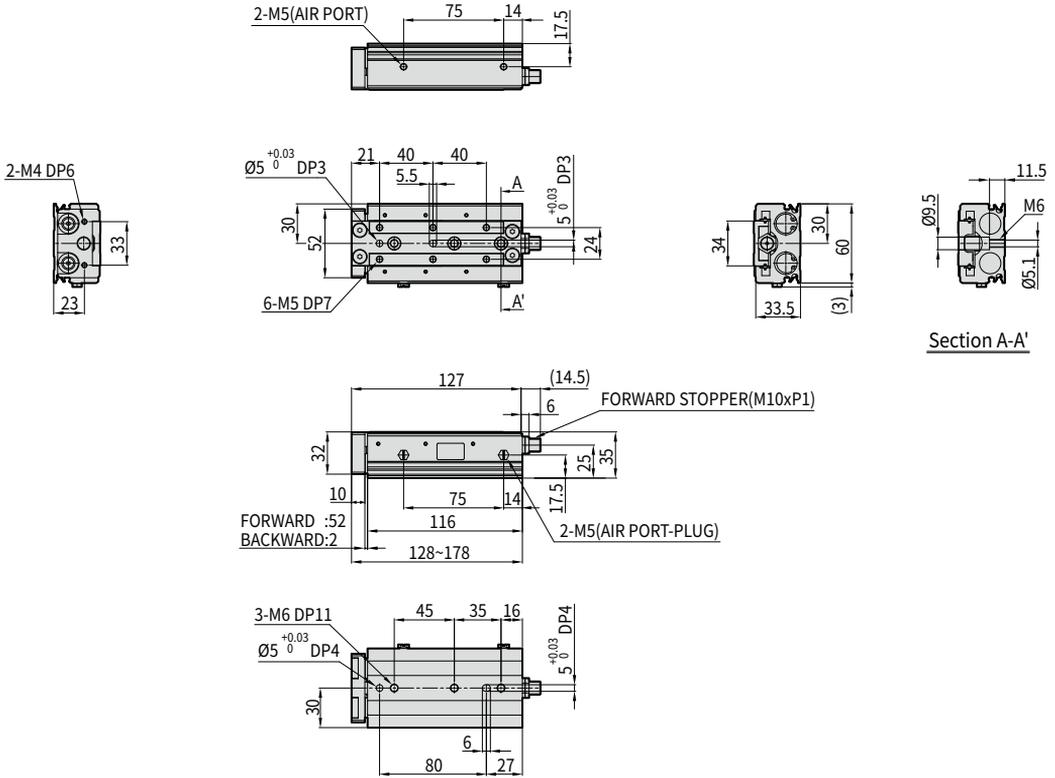
PSB16-40 Example of Auto Switch & Shock Absorber installation



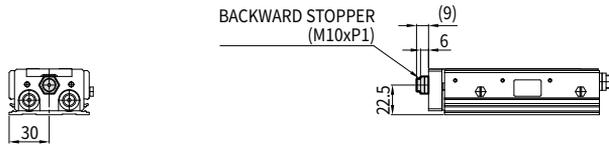
PSB Series

| | | | | | | | | | |
|----|----|----|----|----|----|-----|-----|----|----|
| | | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | | |

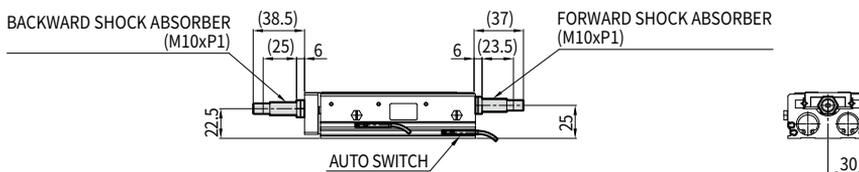
PSB16-50



PSB16-50 Urethane (Metal) Stopper for Forward and Backward

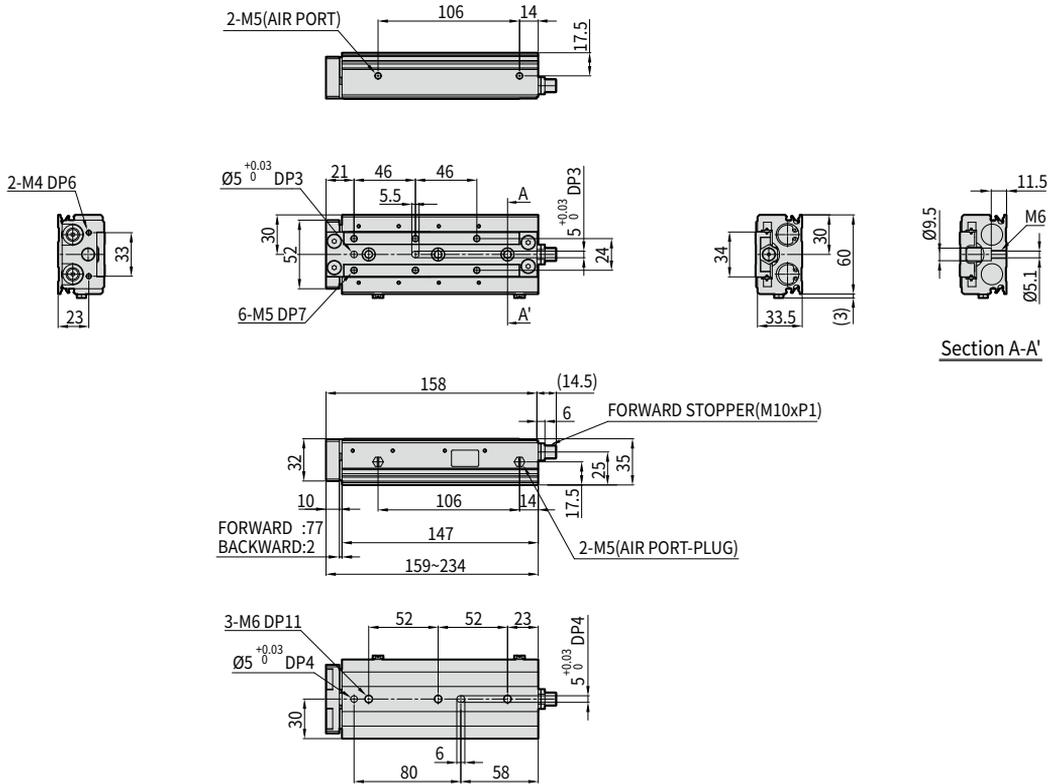


PSB16-50 Example of Auto Switch & Shock Absorber installation



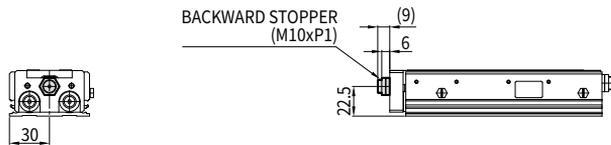
| | | | | | | | |
|----|----|----|----|----|----|-----|-----|
| | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 |

PSB16-75

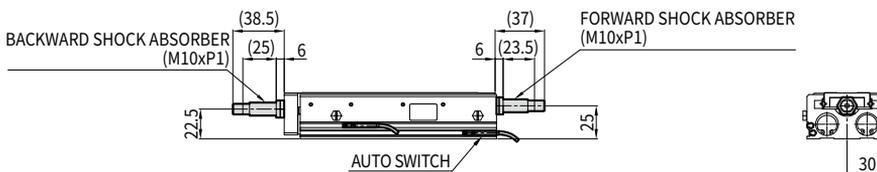


Section A-A'

PSB16-75 Urethane (Metal) Stopper for Forward and Backward

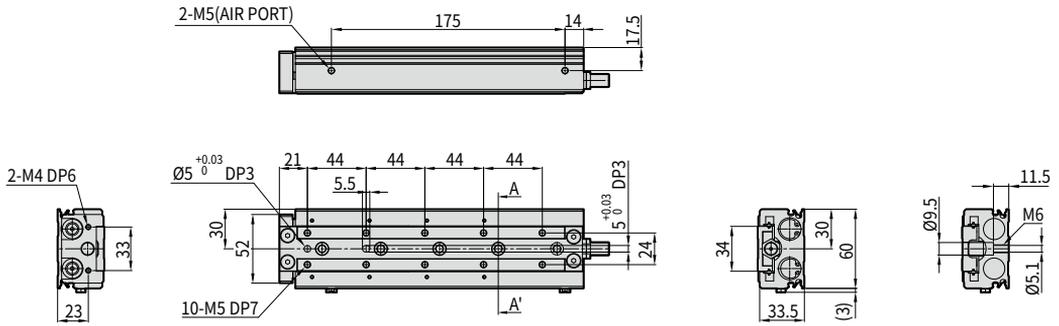


PSB16-75 Example of Auto Switch & Shock Absorber installation

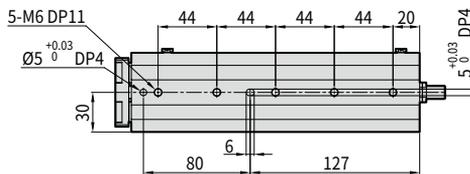
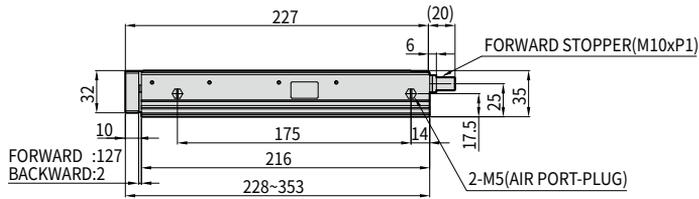


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- 10
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- 30
- 40
- 50
- 75
- 100
- 125

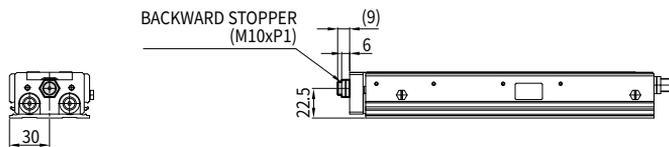
PSB16-125



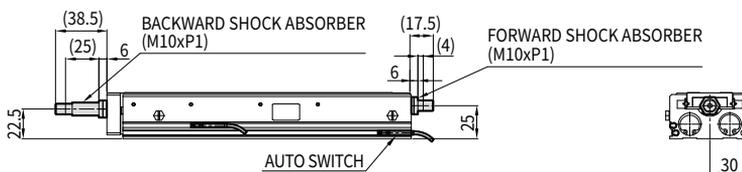
Section A-A'



PSB16-125 Urethane (Metal) Stopper for Forward and Backward

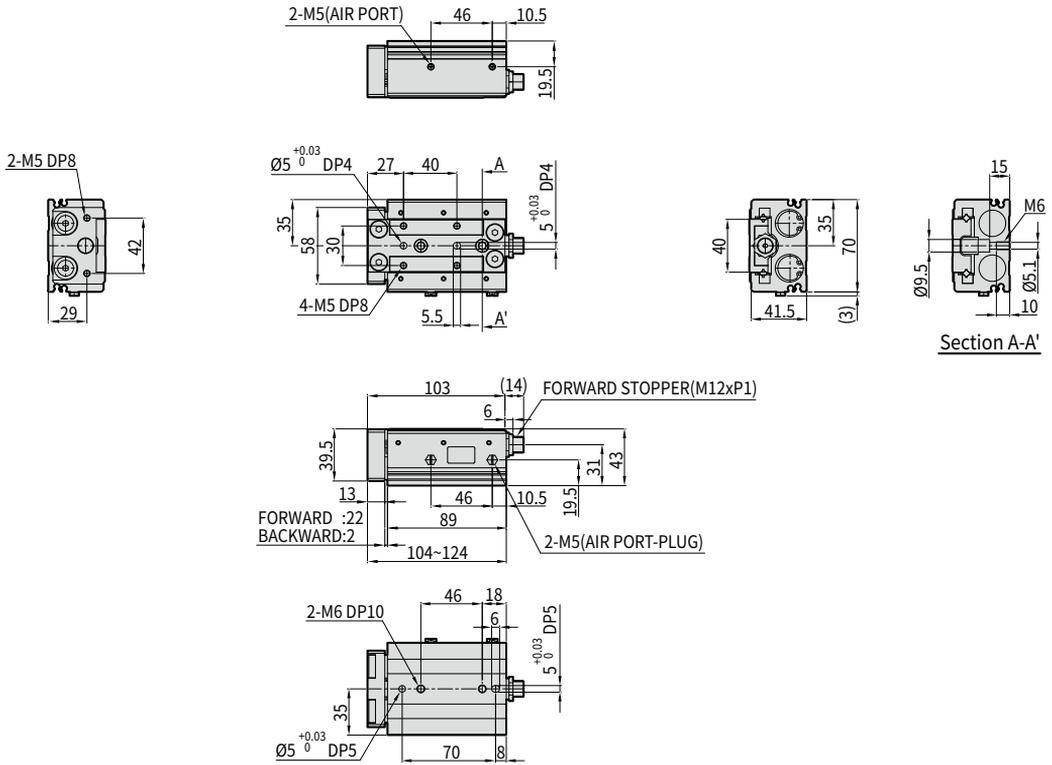


PSB16-125 Example of Auto Switch & Shock Absorber installation

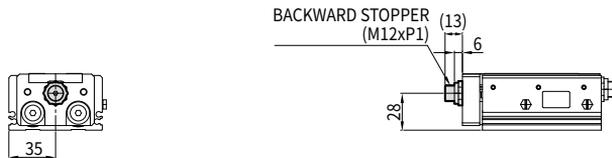


| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|
| | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |

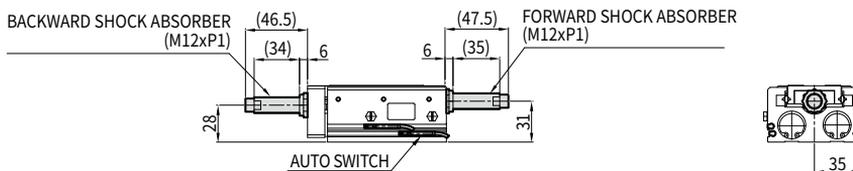
PSB20-20



PSB20-20 Urethane (Metal) Stopper for Forward and Backward



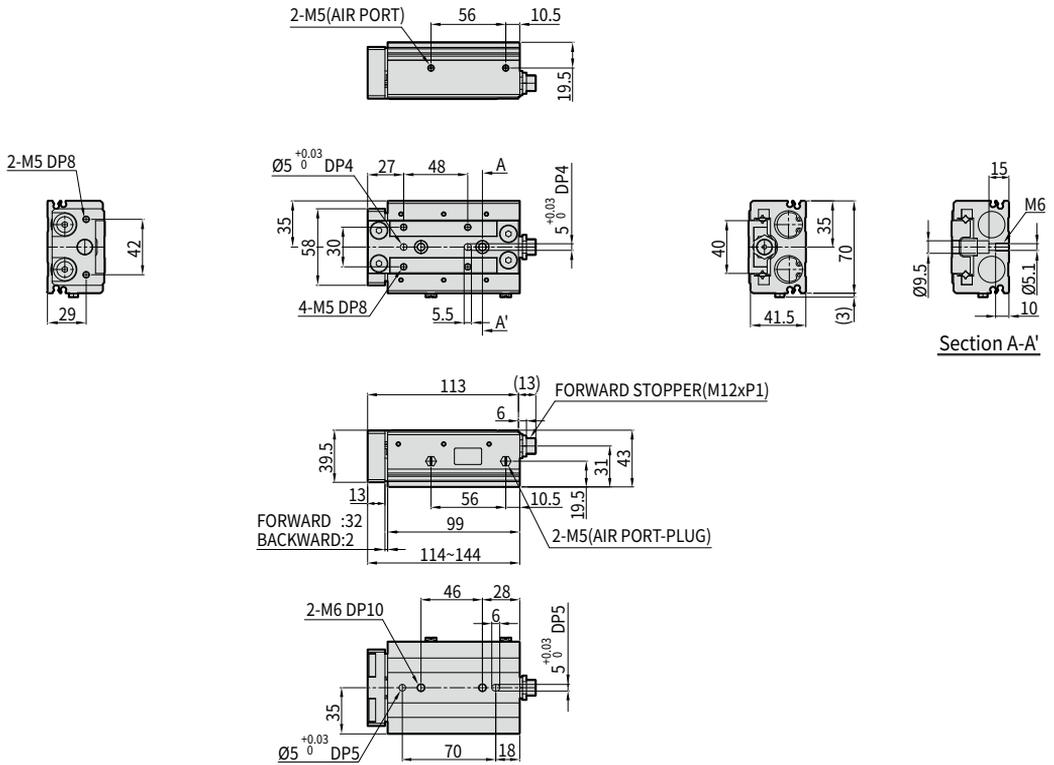
PSB20-20 Example of Auto Switch & Shock Absorber installation



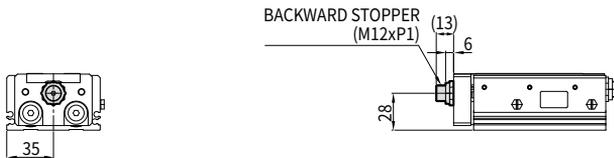
PSB Series

| | | | | | | | | | | | | | | |
|----|----|-----------|----|----|----|-----|-----|-----|----|----|----|----|-----------|----|
| | | | | | | | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 | | | | | | |

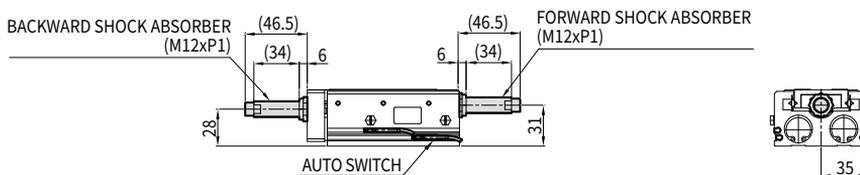
PSB20-30



PSB20-30 Urethane (Metal) Stopper for Forward and Backward

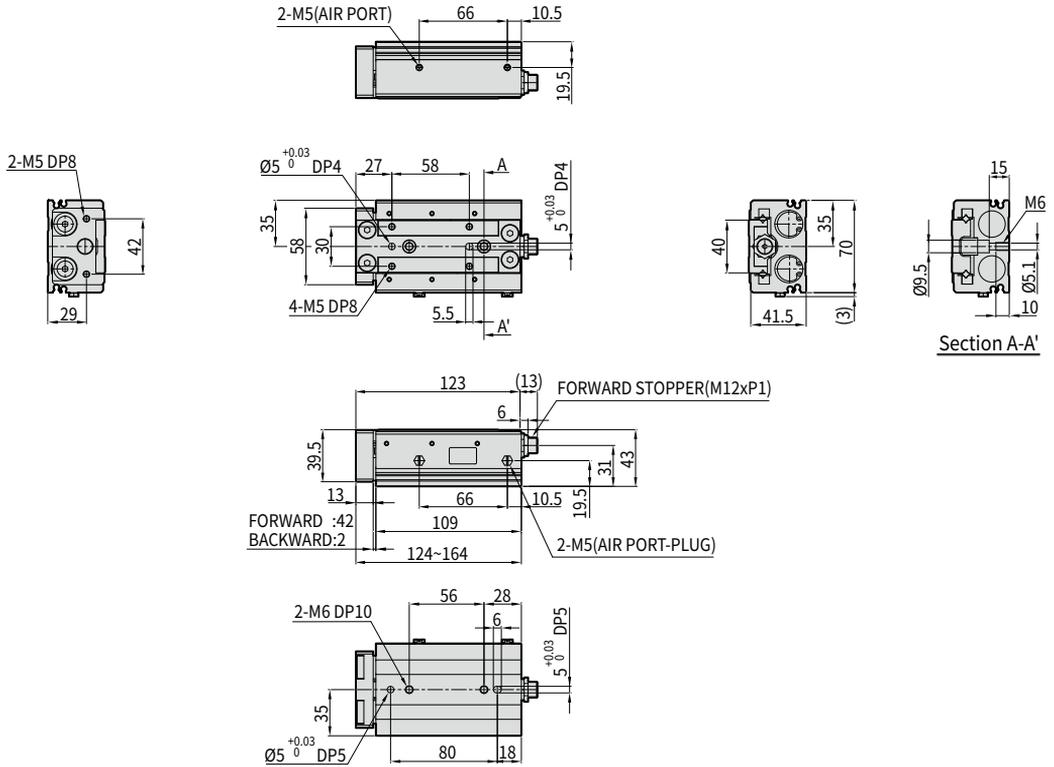


PSB20-30 Example of Auto Switch & Shock Absorber installation

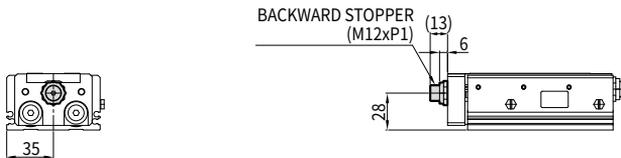


| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |
|----|----|----|----|----|----|-----|-----|-----|

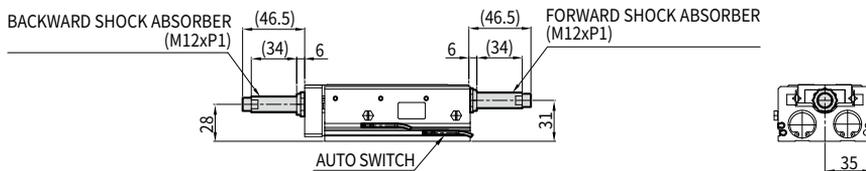
PSB20-40



PSB20-40 Urethane (Metal) Stopper for Forward and Backward



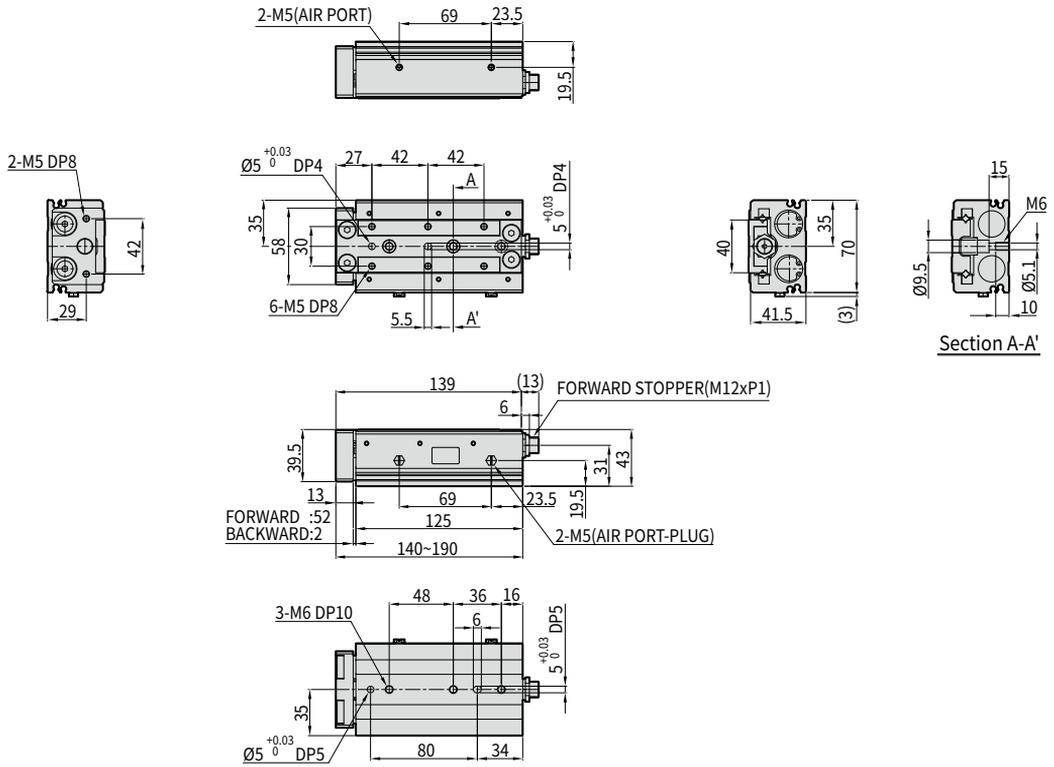
PSB20-40 Example of Auto Switch & Shock Absorber installation



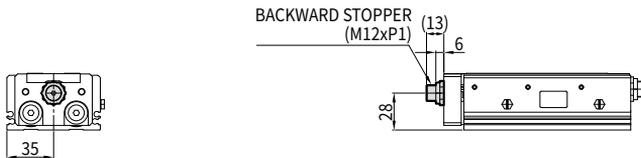
PSB Series

| | | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|----|
| | | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 | |

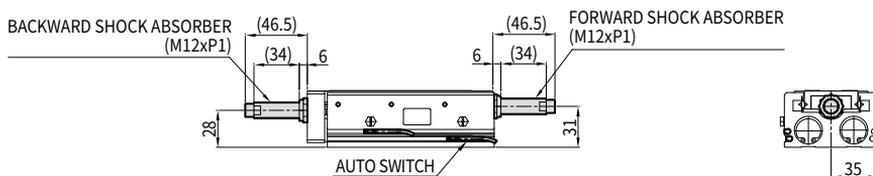
PSB20-50



PSB20-50 Urethane (Metal) Stopper for Forward and Backward

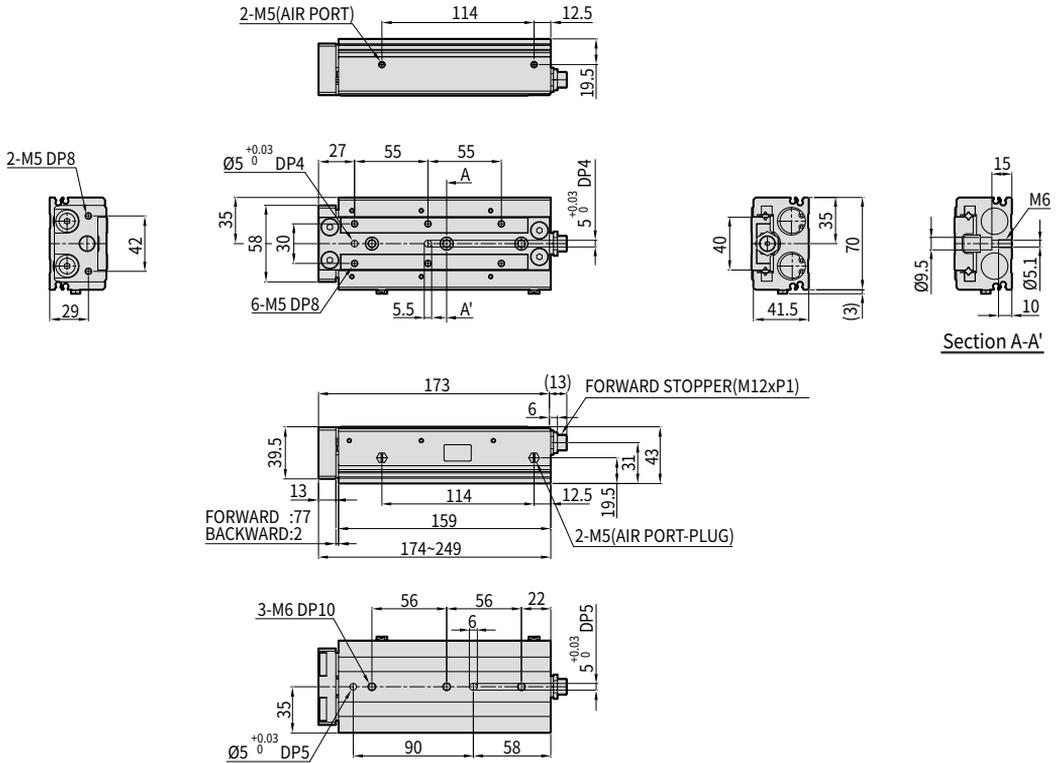


PSB20-50 Example of Auto Switch & Shock Absorber installation

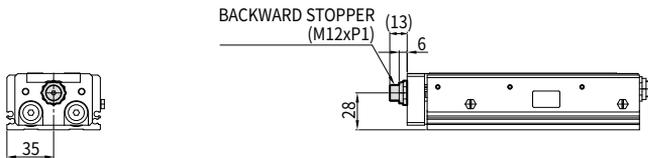


| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|
| | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |

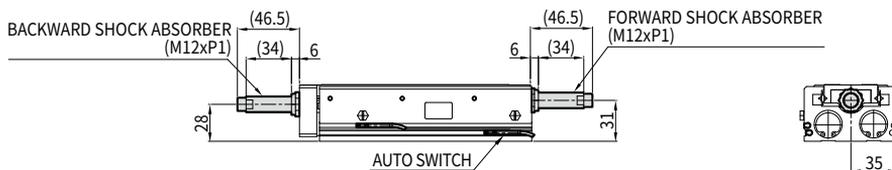
PSB20-75



PSB20-75 Urethane (Metal) Stopper for Forward and Backward



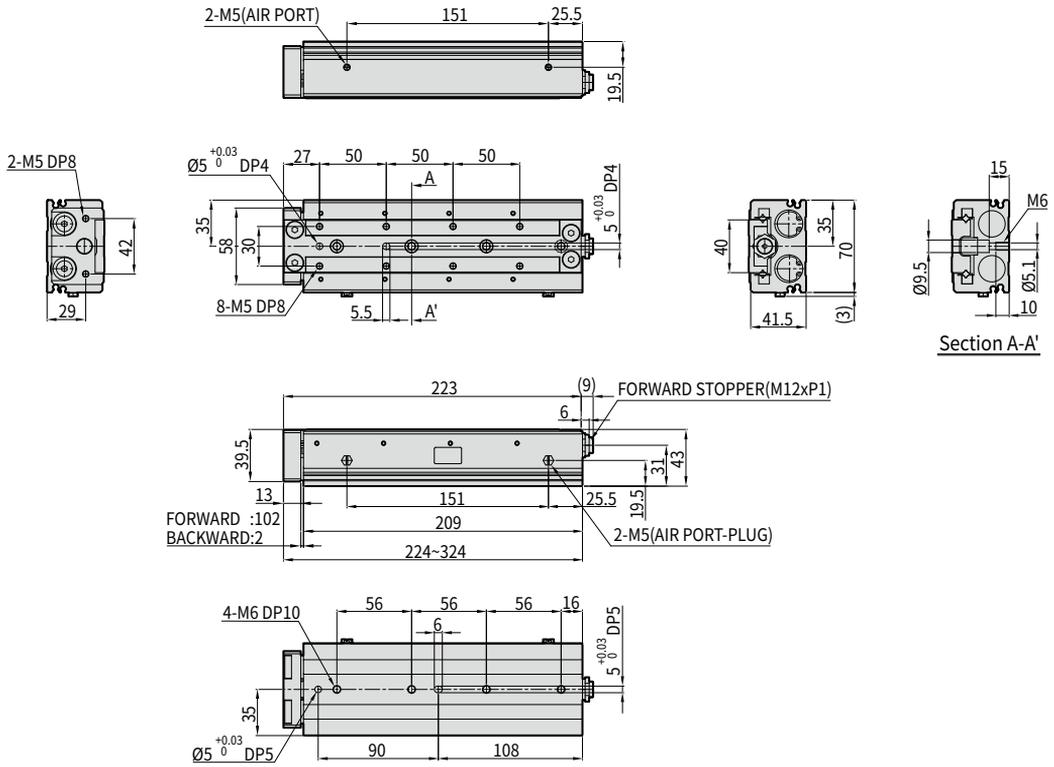
PSB20-75 Example of Auto Switch & Shock Absorber installation



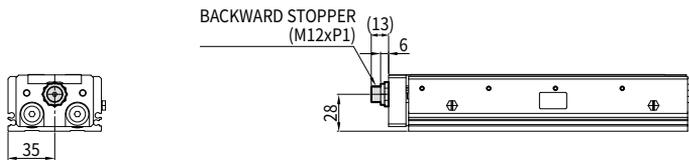
PSB Series

| | | | | | | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|
| | | | | | | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 | | | | | |

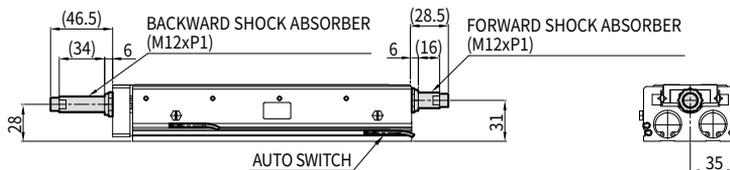
PSB20-100



PSB20-100 Urethane (Metal) Stopper for Forward and Backward

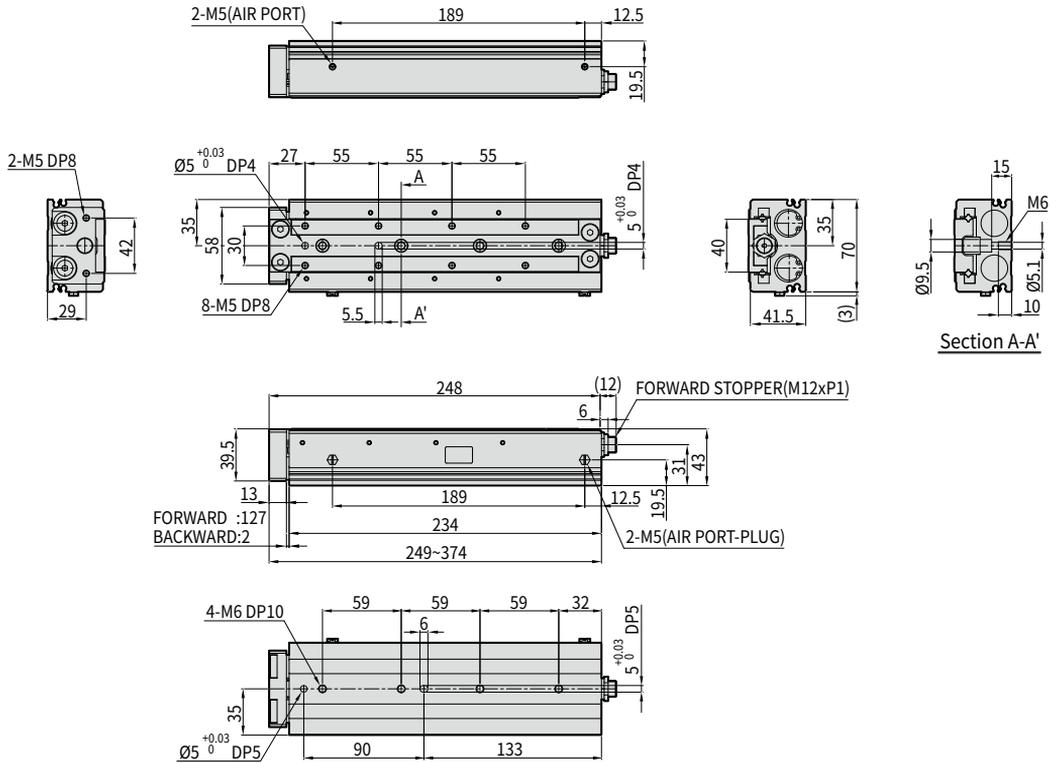


PSB20-100 Example of Auto Switch & Shock Absorber installation

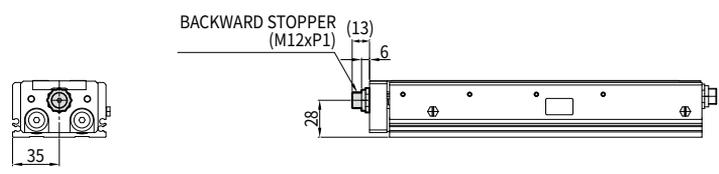


| | | | | | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 | | | | |
| | | | | | | | 06 | 08 | 12 | 16 | 20 | 25 |

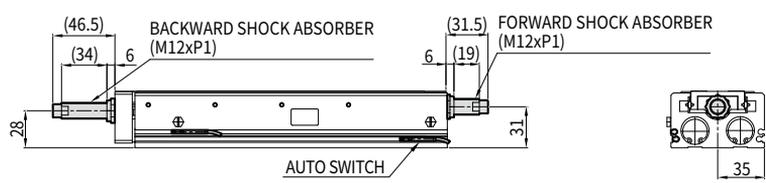
PSB20-125



PSB20-125 Urethane (Metal) Stopper for Forward and Backward



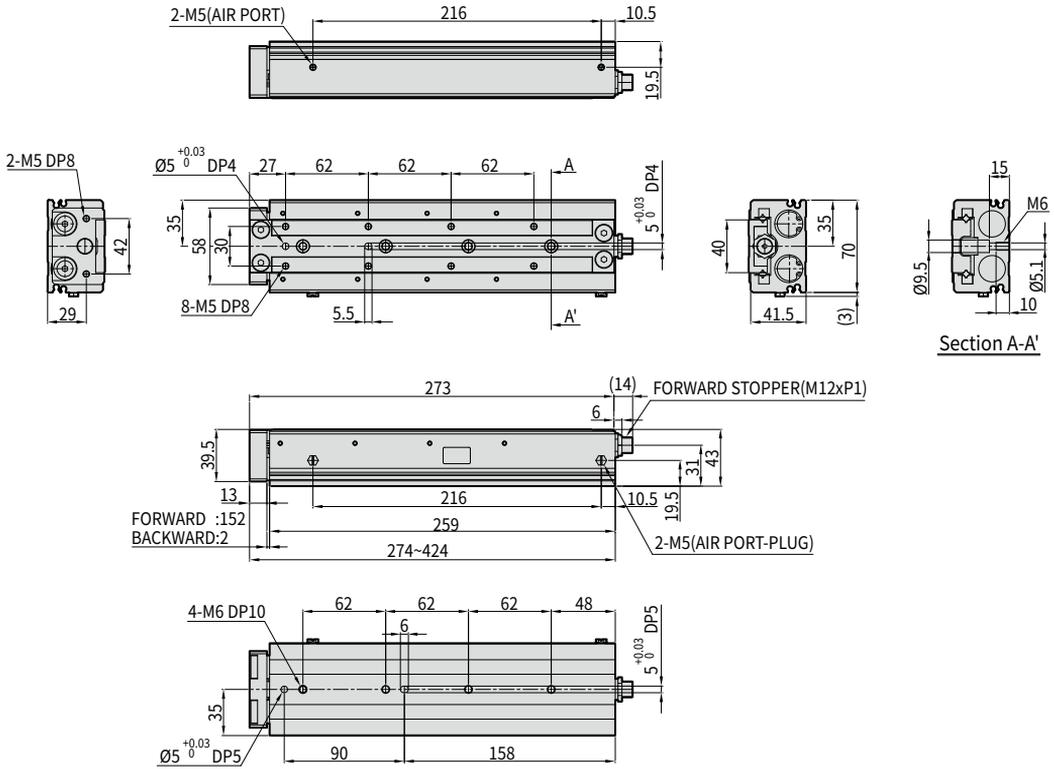
PSB20-125 Example of Auto Switch & Shock Absorber installation



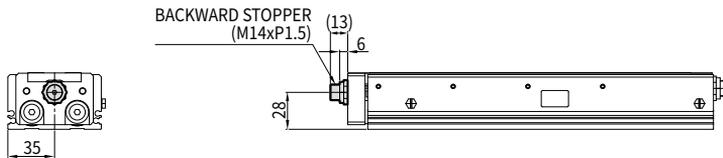
PSB Series

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|----|
| | | | | | | | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 | | | | | | |

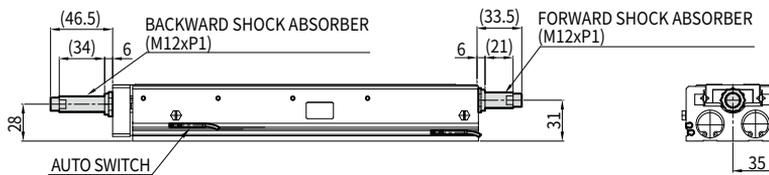
PSB20-150



PSB20-150 Urethane (Metal) Stopper for Forward and Backward



PSB20-150 Example of Auto Switch & Shock Absorber installation



| |
|--------|
| PST-NS |
| PSB |
| PST |
| SC |
| ST |
| STS-L |
| SD |
| PSW |

06

08

12

16

20

25

10

20

30

40

50

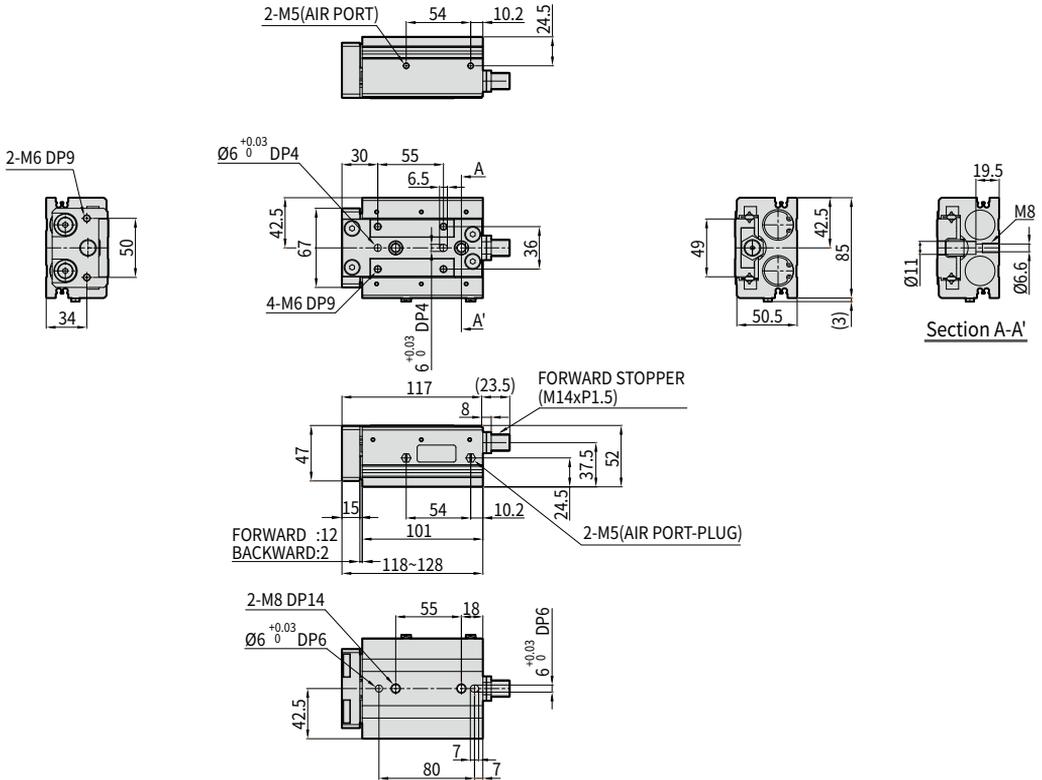
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100

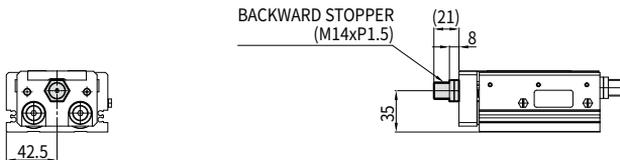
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150

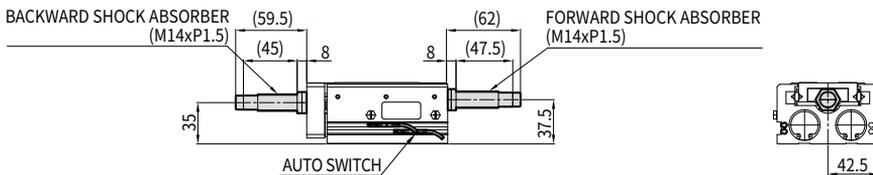
PSB25-10



PSB25-10 Urethane (Metal) Stopper for Forward and Backward



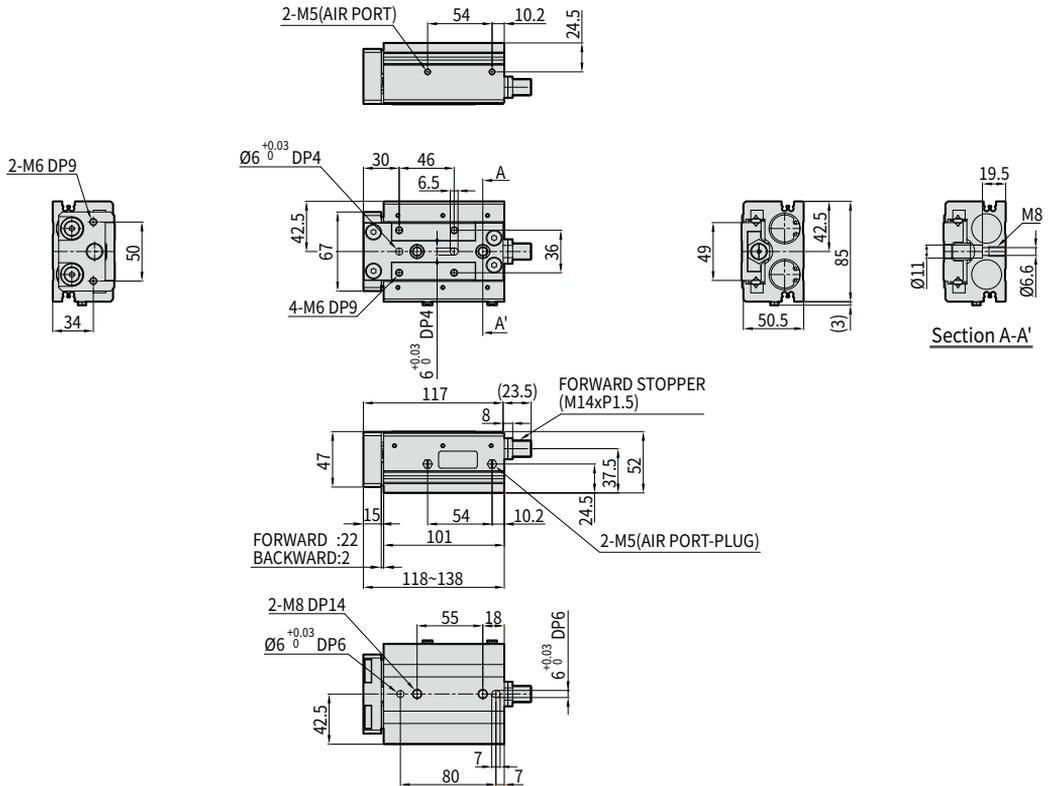
PSB25-10 Example of Auto Switch & Shock Absorber installation



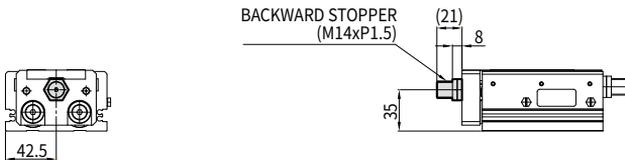
PSB Series

| | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|----|----|----|----|----|----|-----|-----|-----|
| | | | | | | | | | | 06 | 08 | 12 | 16 | 20 | 25 | | | |
| | | | | | | | | | | 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |

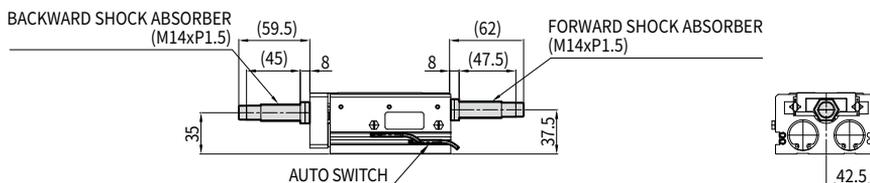
PSB25-20



PSB25-20 Urethane (Metal) Stopper for Forward and Backward



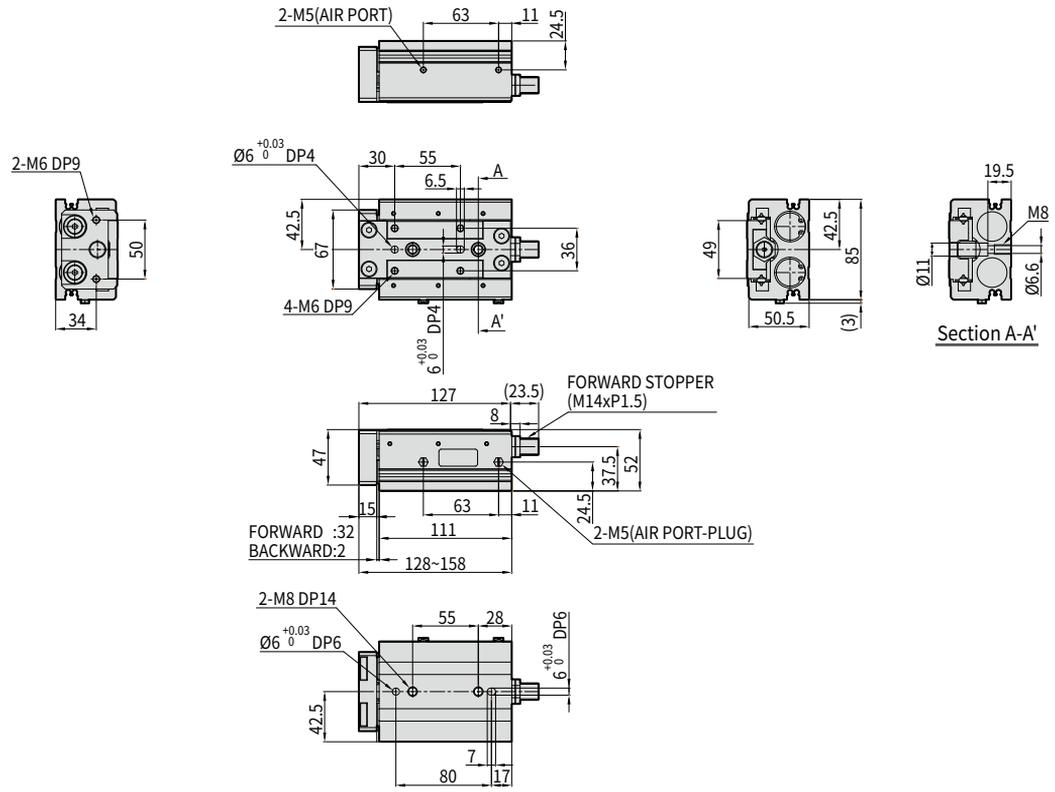
PSB25-20 Example of Auto Switch & Shock Absorber installation



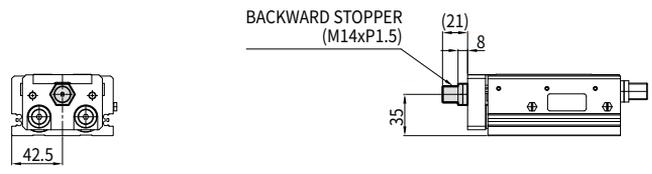
- PST-NS
- PSB**
- PST
- SC
- ST
- STS-L
- SD
- PSW

| | | | | | | | | |
|----|----|-----------|----|----|----|-----|-----|-----|
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |
|----|----|-----------|----|----|----|-----|-----|-----|

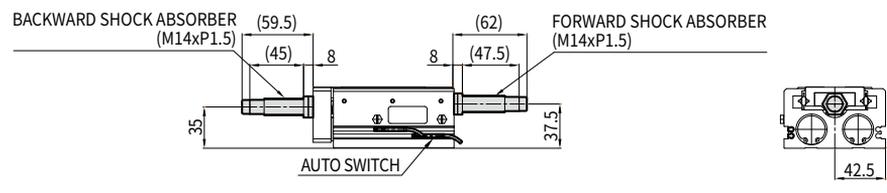
PSB25-30



PSB25-30 Urethane (Metal) Stopper for Forward and Backward



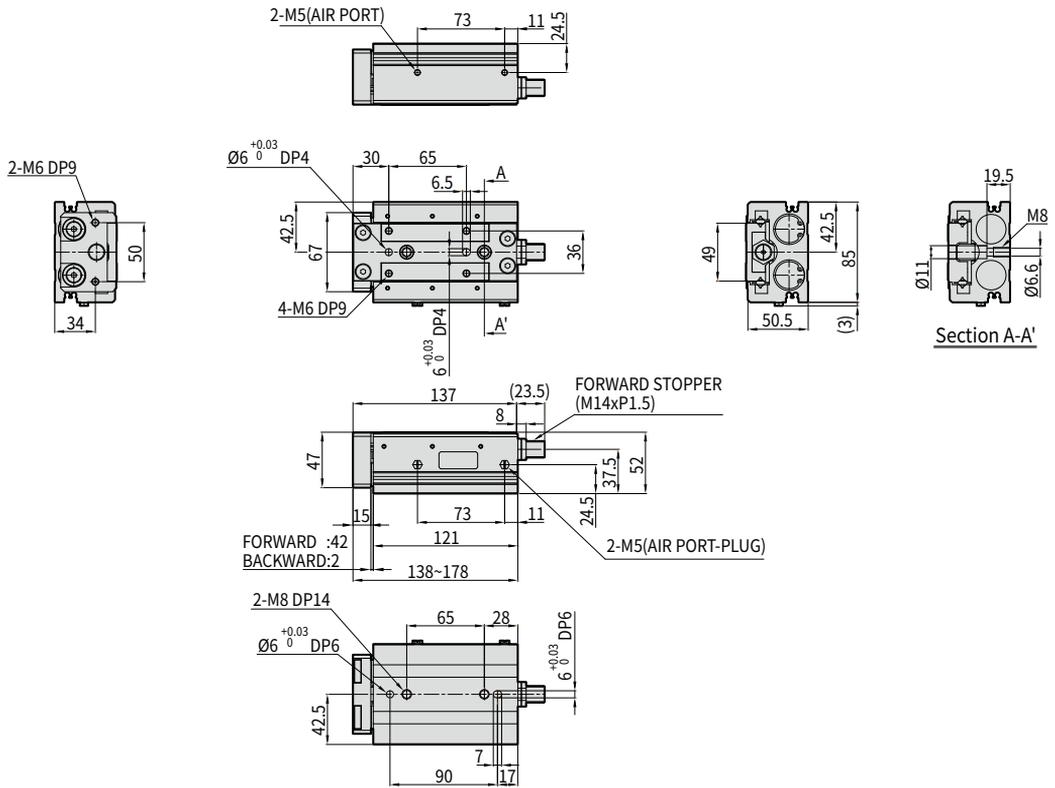
PSB25-30 Example of Auto Switch & Shock Absorber installation



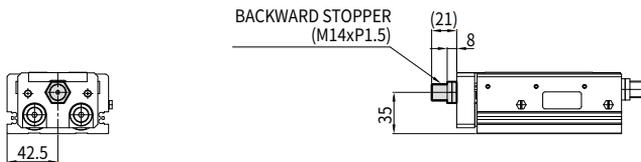
PSB Series

| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|
| | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |

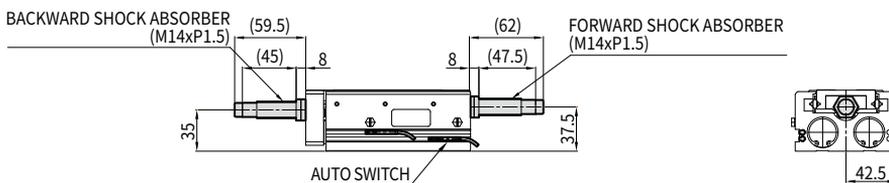
PSB25-40



PSB25-40 Urethane (Metal) Stopper for Forward and Backward

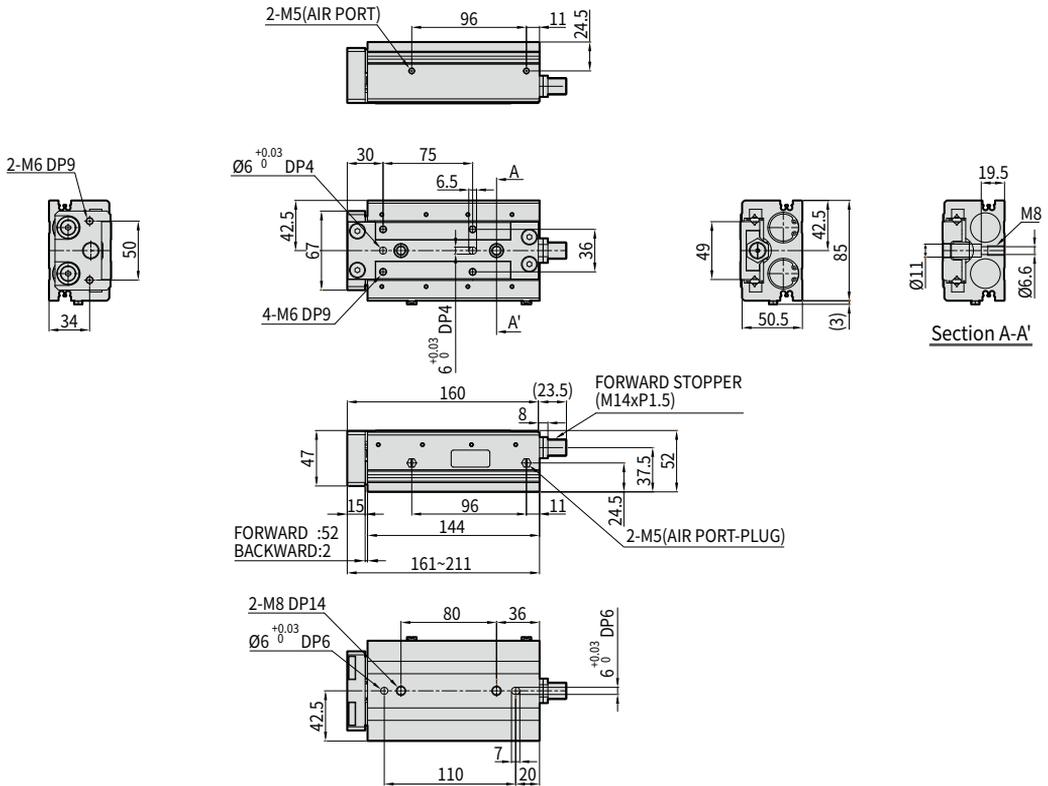


PSB25-40 Example of Auto Switch & Shock Absorber installation

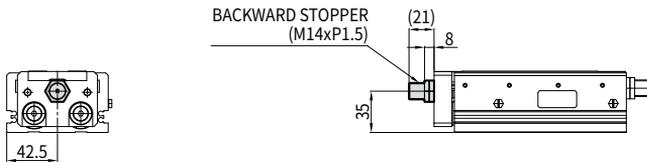


| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|
| | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |

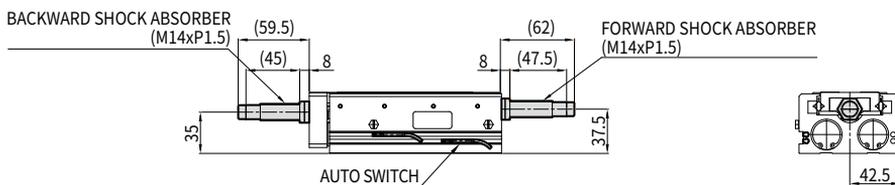
PSB25-50



PSB25-50 Urethane (Metal) Stopper for Forward and Backward



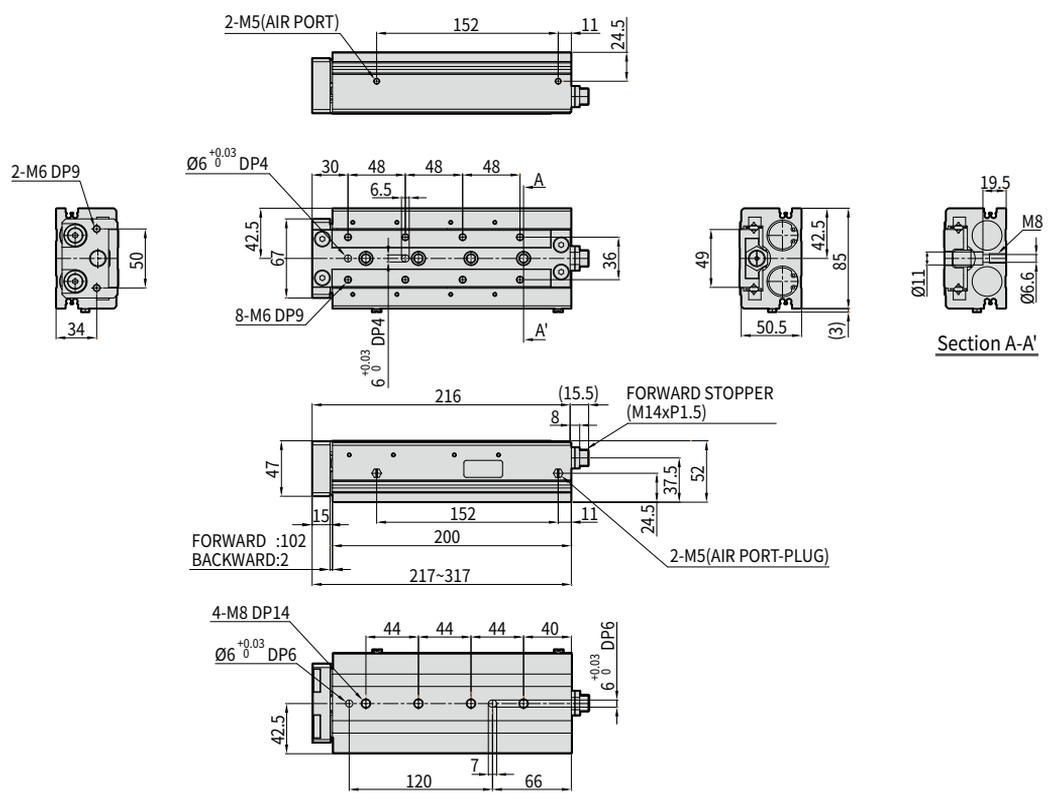
PSB25-50 Example of Auto Switch & Shock Absorber installation



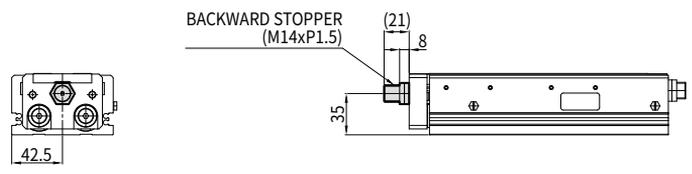
- PST-NS
- PSB
- PST
- SC
- ST
- STS-L
- SD
- PSW

| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|
| | | | 06 | 08 | 12 | 16 | 20 | 25 |
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |

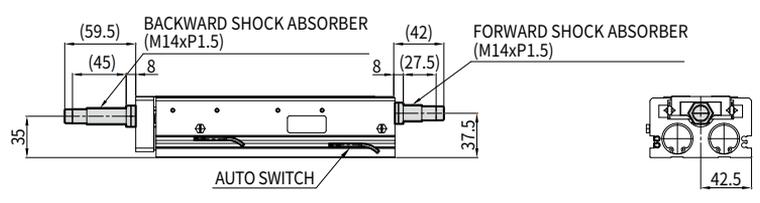
PSB25-100



PSB25-100 Urethane (Metal) Stopper for Forward and Backward

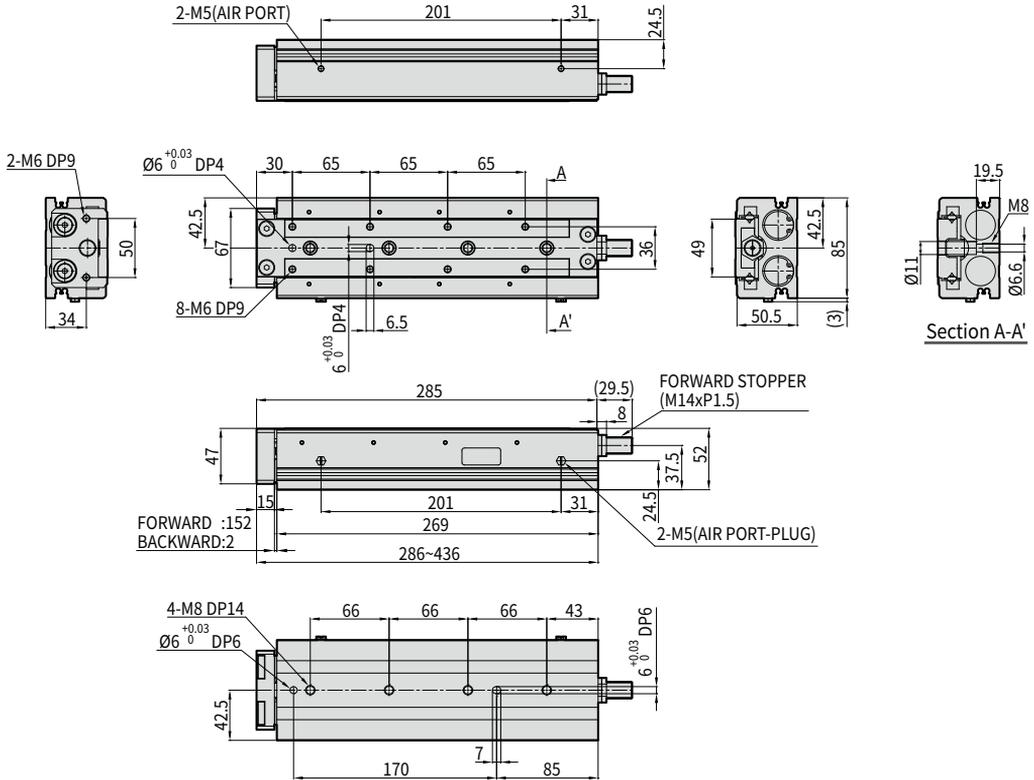


PSB25-100 Example of Auto Switch & Shock Absorber installation

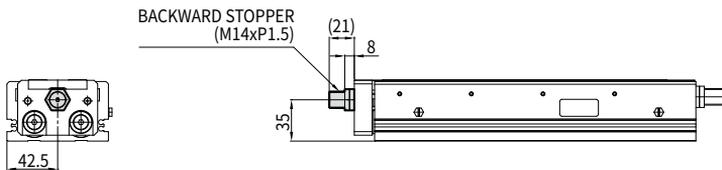


| | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|
| 10 | 20 | 30 | 40 | 50 | 75 | 100 | 125 | 150 |
| | | | | | | | | |

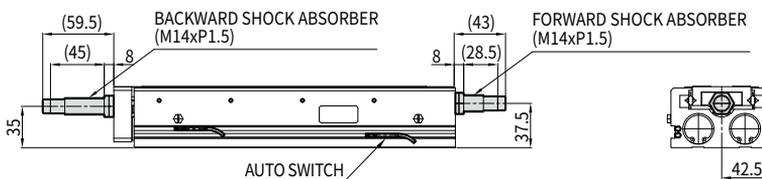
PSB25-150



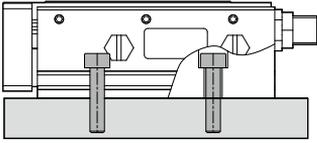
PSB25-150 Urethane (Metal) Stopper for Forward and Backward



PSB25-150 Example of Auto Switch & Shock Absorber installation

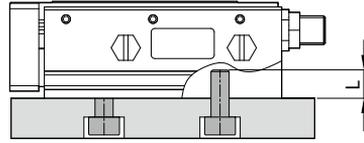


1. Installation by body through holes



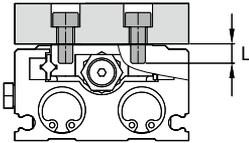
| Item | Fastening Bolt | Max Torque (kgf-cm) |
|-------|----------------|---------------------|
| PSB06 | M3×P0.5 | 11 |
| PSB08 | M3×P0.5 | 11 |
| PSB12 | M4×P0.7 | 25 |
| PSB16 | M5×P0.8 | 51 |
| PSB20 | M5×P0.8 | 51 |
| PSB25 | M6×P1 | 81 |

2. Installation by body tap holes



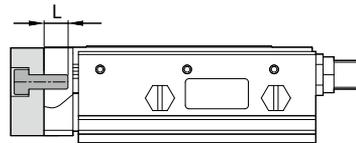
| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| PSB06 | M4×P0.7 | 25 | 8 |
| PSB08 | M4×P0.7 | 25 | 8 |
| PSB12 | M5×P0.8 | 51 | 8.5 |
| PSB16 | M6×P1 | 81 | 11 |
| PSB20 | M6×P1 | 81 | 10 |
| PSB25 | M8×P1.25 | 157 | 14 |

3. Installation by table tap holes



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| PSB06 | M3×P0.5 | 11 | 4 |
| PSB08 | M3×P0.5 | 11 | 5 |
| PSB12 | M4×P0.7 | 25 | 6 |
| PSB16 | M5×P0.8 | 51 | 7 |
| PSB20 | M5×P0.8 | 51 | 8 |
| PSB25 | M6×P1 | 81 | 9 |

4. Installation by plate tap holes



| Item | Fastening Bolt | Max Torque (kgf-cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| PSB06 | M3×P0.5 | 11 | 5 |
| PSB08 | M3×P0.5 | 11 | 5 |
| PSB12 | M3×P0.5 | 11 | 6 |
| PSB16 | M4×P0.7 | 25 | 6 |
| PSB20 | M5×P0.8 | 51 | 8 |
| PSB25 | M6×P1 | 81 | 9 |

**HIGH PRECISION GUIDE,
DOUBLE POWER**

PST Series

Long stroke type table cylinder



**Cylinder Bore Size : Ø12, Ø16, Ø20, Ø25
Stroke : 50 ~ 250 mm
Position Accuracy : ± 0.01 mm**

Powerful thrust by double piston

- Performed **double** thrust by twin cylinder inside!

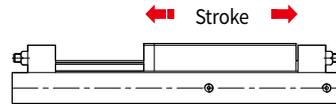


DOUBLE THRUST

Long stroke structure of moving table

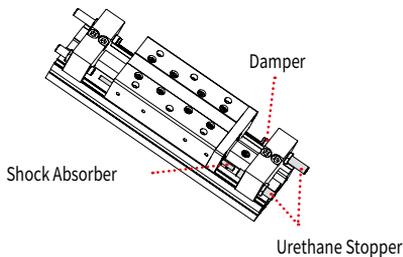
- Table moving structure following bottom guide, zero table bending even though long stroke.

| CYL Bore(mm) | Strokes(mm) |
|--------------|-------------|
| 12 | 50 ~ 150 |
| 16 | 75 ~ 200 |
| 20 | 100 ~ 250 |
| 25 | 100 ~ 250 |



High shock absorber performance and easy controlling position

- Precise location adjustment and enhanced shock absorbing by double stopper structure combination of stopper and shock absorber. (For shock absorber option)



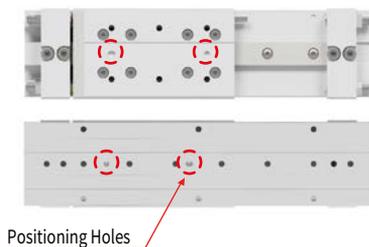
High precise guide applied

- Superior driving performance by application of high precise linear guide.



Positioning holes for reproducibility of installation

- Positioning holes are supplied for reproducibility in install and uninstall.



Auto Switch installation (Optional)

- Minimized interrupt by no projecting when mounting auto switches seated internally.



⚠ Individual notes for PST Series ①

⚠ Caution

- Be careful to protect “V” groove from damage which the cross roller is rubbed on slide rail and guide.

Any damage on the “V” groove of rail would cause of vibration and/or increase of friction of table.

- Keep away from any object that could be affected by a magnetic field.

The piston of cylinder has a magnet, so keep it away from magnetic tape, magnetic disc, and etc., which could be affected by a magnetic field.

- Be careful not to cause scratch or shock on the mounting surfaces of cylinder body, slide table, and end plate.

Damage in mounting surfaces makes worse the flatness, and cause work failure due to the increased swing of guide unit and/or friction resistance.

- For stable usage, always use this product with external stroke adjusting unit equipped (urethane stopper, shock absorber).

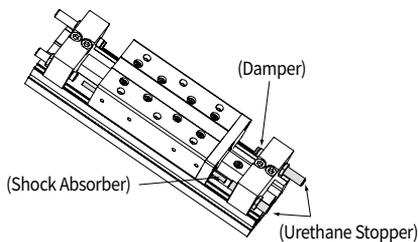
- Install screw to the cylinder and tighten it to the specified torque.

Otherwise, it may cause defect in working. Also, insufficient screw tightening may cause dislocation or work pieces to drop.

- Can select various stroke adjustment unit. Check it before model selection.

When controlling the cylinder stroke, three different types of cushions can be used according to the intended use.

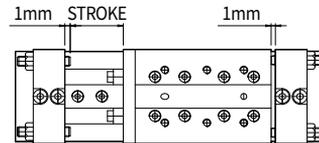
1. Urethane Stopper : Generalized stroke adjusting unit.
(Allowable speed 50~500mm/sec)
2. Shock Absorber : Soft stop by absorbing the shock at the end of stroke.



Notes in Installation

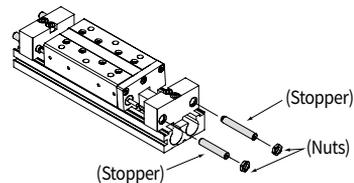
- Do not use cylinder stroke adjusting unit less than 1mm.

Too short stroke may cause improper operation of urethane damper and shock absorber, and have an adverse effect on the life.



- To adjust cylinder stroke arbitrarily, refer as follows.

Loosen the nut for urethane stopper (shock absorber, stopper), adjust it as needed stroke and then tighten it using fixing nut.



Please read it before use, with individual notes for each series as well, for your safe use.

⚠ Individual notes for PST Series ②

⚠ Caution

- Do not exceed the specified load when selecting the product.

Select model based on the specified maximum load factor according to each Bore size. Otherwise, it may result in distorted load of the guide unit, which may cause swing to guide unit, deterioration, and adverse effects on cylinder life.

- Avoid excessive external force or shock.

Notes in Selection

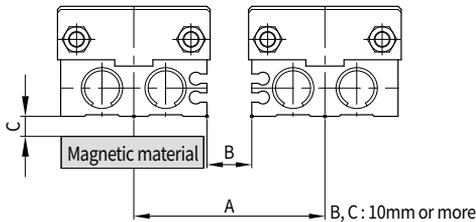
- For the selection of each series, refer to the specification in this catalogue.

For the selection of each series, refer to the specification in this catalogue. Correct use for cylinder within the specified temperature and pressure range may result in reduction in malfunction and failure.

⚠ Caution

Notes in operating Environment and Handling

- When there are magnetic materials like steel plate near the switch of cylinder, most likely they may cause malfunction in the switch, therefore they need to be designed and installed with sufficient clearance from the surface of cylinder (maintain 10mm or more).



- Always use stainless bolts when mounting auto switch to cylinder in order to prevent switch malfunction. If unavoidable, use commercial bolts after removing the magnetic properties.

- Be careful of using in the place where vibration or shock occurs frequently, it may cause a failure.

- When used around heat source of high temperature, product can be heated by radiant heat and cause failure. Therefore, install protective covers to block heat source.

- Do not use in the environment that can be affected by foreign substances such as dust and chip, and cutting oil.

It may cause vibration, increase of frictional resistance, and air leakage. In such environment, please install appropriate protective covers after the consultation with our company.

- To maintain the quality of supply air, exhaust the drain of filter periodically.

- Be care of corrosion resistance for the stability in cross roller guide unit.

Be care of corrosion resistance in humid environment as water drop can be created in guide unit and it can get rusty in such environment.

- Add up lubricant at the frictional surface of cylinder regularly.

Add up lubricant at the frictional surface of cylinder periodically. It may result in expanded life of cylinder.

- Do not put your hand or finger in between cylinder body and the plates.

During it operating, there is some possibility to cause of the accident such as finger or hand jam.

- Be careful not to crash or create damage on the inside of cylinder & piston rod.

Cylinder inner diameter is managed with precision allowance, and any small scratches or distortion may cause malfunction. In addition, any scratches of motion units such as piston rod may lead damage to packing and malfunction due to air leakage.

- Make sure to connect fixing or connection unit of cylinder firmly.

Make sure that the cylinder is connected firmly, in particular, if used in the place where vibration and shock occur frequently.

PRECISION GUIDE CYLINDER / LINEAR GUIDE

PST Series

Features

- Double thrust performed by parallel aligned twin cylinder.
- High precision and moment by LM Guide application on the main body block.
- Enhanced heavy load shock absorbing performance by shock absorber mounting. (Optional)
- Selectable option for Long Stroke.
- Auto Switch installation. (Optional)



Order Form

PST 16 - 125 - A2 L S - SH2

① ② ③ ④ ⑤ ⑥ ⑦

① Series Name

② Cylinder Bore Size

③ Standard Strokes

④ Available Auto Switches

| Order | CYL Bore(mm) | Order (=Standard Strokes(mm)) | Order | | | | | | |
|-------|--------------|-------------------------------|-------|----|-----|-----|----|----|-----|
| | | | A1 | A2 | A2C | A2V | B1 | B2 | B2B |
| 12 | 12 | 50, 75, 100, 125, 150 | | ○ | ○ | | | ○ | ○ |
| 16 | 16 | 75, 100, 125, 150, 175, 200 | | ○ | ○ | ○ | | ○ | ○ |
| 20 | 20 | 100, 125, 150, 175, 200, 250 | ○ | | | | ○ | | |
| 25 | 25 | 100, 125, 150, 175, 200, 250 | ○ | | | | ○ | | |

※ For "Blank", no Auto Switch is provided.

⑤ Auto Switch Cable Length

| Order | Cable Length |
|-------|--------------|
| Blank | 1M |
| L | 3M |

⑦ Stopper Options

| Order | Stopper Options |
|-------|------------------|
| Blank | Urethane Stopper |
| SH2 | Shock Absorber |

* For SH2 option, both side shock absorber would be mounted.

⑥ Auto Switch Quantity

| Order | Quantity |
|-------|----------|
| Blank | 2PCS |
| S | 1PCS |

※ Stopper specifications

| Item Name | Shock Absorber | Urethane Stopper |
|-----------|----------------|------------------|
| PST12 | M8×P1 | M5×P0.8 |
| PST16 | M10×P1 | M8×P1 |
| PST20 | M12×P1 | M8×P1 |
| PST25 | M14×P1.5 | M10×P1 |

※ Auto Switch Specification

| Order | Sensing Type | Cable Spec | | Voltage | | Current | | Protect Level | Operation Time |
|-------|----------------------|------------|-----------|---------|--------------|---------|----------------|---------------|----------------|
| | | Wires | Direction | AC | DC | AC | DC | | |
| A1 | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2 | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2C | Magnetic reed switch | 2-Wire | Horiz | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| A2V | Magnetic reed switch | 2-Wire | Ver | 100V | 24V | 5~20mA | 5~40mA | IP 67 | 1ms |
| B1 | Magnetic solid state | 3-Wire | Horiz | - | 24V (5~28V) | - | Less than 50mA | IP 67 | 1ms |
| B2 | Magnetic solid state | 3-Wire | Horiz | - | 24V (5~28V) | - | Less than 50mA | IP 67 | 1ms |
| B2B | Magnetic solid state | 2-Wire | Horiz | - | 24V (10~28V) | - | Less than 50mA | IP 67 | 1ms |

* Be careful of projection for vertical wire exposed type Auto Switch model. (Please refer technical information of Auto Switch)

PST Series Model Selection Guide

Technical Data by Model

■ Mp, My, Mr 3-directions moment calculation formula

Figure 1

※ W : Work Weight (kgf), K₂ : Speed factor, K₃ : Shock factor

| | Pitch Moment (Mp) | Yawing Moment (My) | Rolling Moment (Mr) |
|------------------------|--|--|--|
| Moment Direction | | | |
| Static Moment | | | |
| Static Moment Formula | $M_p = W \times (A + \text{STROKE} + L_p)$ $M_p = W \times (B + L_p)$ | $M_y = W \times (A + \text{STROKE} + L_y)$ $M_y = W \times (C + L_y)$ | $M_r = W \times (C + L_r)$ $M_r = W \times (B + L_r)$ |
| Dynamic Moment | | | |
| Dynamic Moment Formula | $M_p = K_1 \times K_2 \times W \times (A + \text{STROKE} + L_p)$ $M_p = K_1 \times K_2 \times W \times (B + L_p)$ | $M_y = K_1 \times K_2 \times W \times (A + \text{STROKE} + L_y)$ $M_y = K_1 \times K_2 \times W \times (C + L_y)$ | $M_r = K_1 \times K_2 \times W \times (C + L_r)$ $M_r = K_1 \times K_2 \times W \times (B + L_r)$ |

■ Corrections from the central distance of moments

Table 1

Unit: mm

| Model | Corrections | A | B | C |
|-------|-------------|----|------|----|
| PST12 | | 41 | 13.5 | 24 |
| PST16 | | 45 | 17 | 29 |
| PST20 | | 59 | 29 | 34 |
| PST25 | | 84 | 32 | 44 |

■ Maximum allowable moment

Table 2

Unit: kgf·cm

| Model | Allowable Moment | Pitching Moment Mp | Yawing Moment My | Rolling Moment Mr |
|-------|------------------|--------------------|------------------|-------------------|
| PST12 | | 30 | 30 | 50 |
| PST16 | | 63 | 63 | 102 |
| PST20 | | 236 | 236 | 330 |
| PST25 | | 519 | 519 | 732 |

■ Maximum allowable kinetic energy (Ea)

Table 3

Unit: kgf·cm

| Model | Allowable Kinetic Energy | Stopper Types | |
|-------|--------------------------|------------------|----------------|
| | | Urethane Stopper | Shock Absorber |
| PST12 | | 0.13 | 0.9 |
| PST16 | | 0.5 | 1.8 |
| PST20 | | 0.5 | 3.4 |
| PST25 | | 0.84 | 4.7 |

■ Max. Allowable Load (Wa)

Table 4

Unit: kgf

| Model | Max. Allowable Load |
|-------|---------------------|
| PST12 | 4 |
| PST16 | 7.1 |
| PST20 | 11.1 |
| PST25 | 17.9 |

※ For vertical installation, maximum allowable load check is not required.
 ※ This table is only for reference value to calculate table load ratio.

■ Example of Model Selection

1. Kinetic energy check $\frac{1}{2} \times \frac{W (\text{Work weight})}{g (\text{Gravity acceleration})} \times [1.4V (\text{Avg. velocity})]^2 < \text{Allowable kinetic energy}$

2. Load factor check $\frac{\text{Load weight}}{\text{Max. Allowable Load}} + \frac{\text{Static moment}}{\text{Max. Allowable Moment}} + \frac{\text{Dynamic moment}}{\text{Max. Allowable Moment}} < 1$

※ For more detailed model selection example, please refer <PST-NS Series MODEL SELECTION GUIDE>.

PST Series

12

16

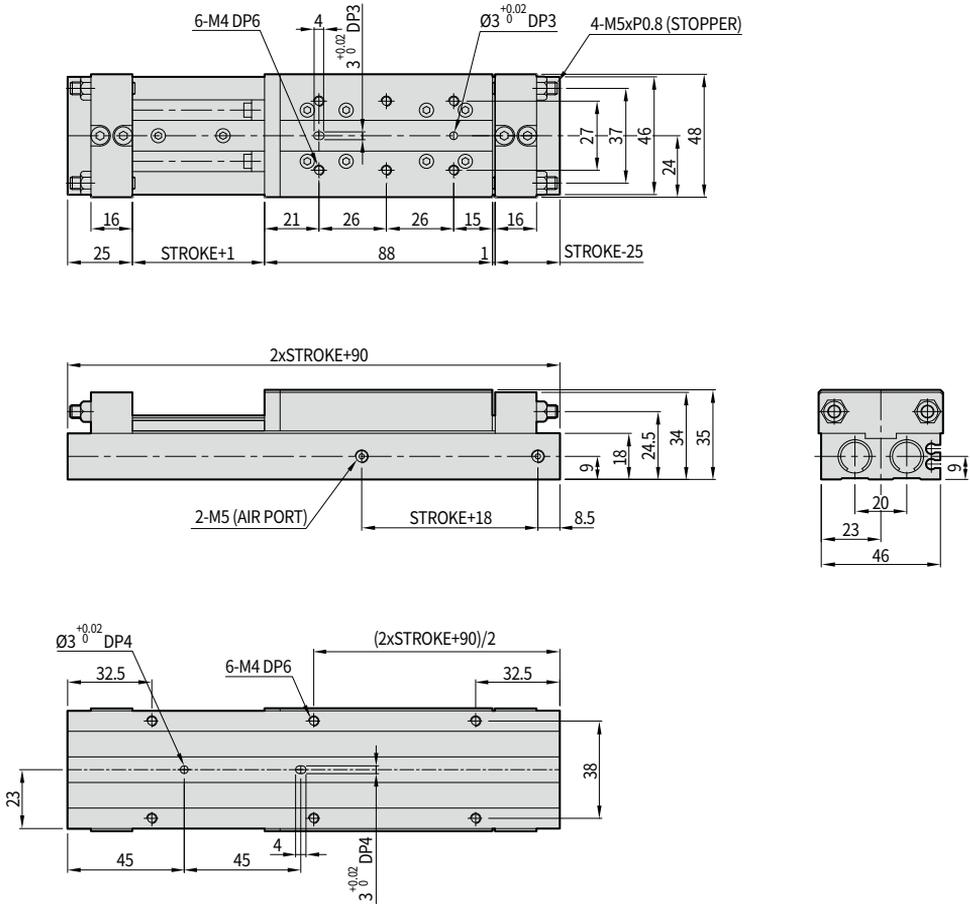
20

25

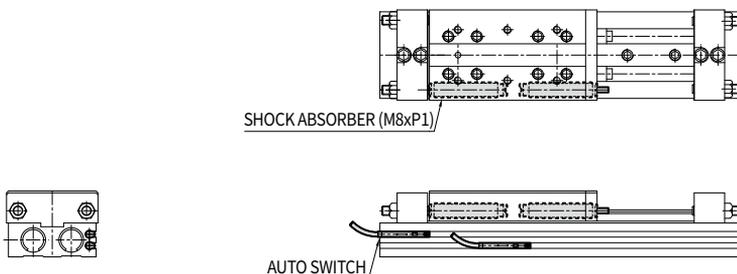
PRECISION

- PST-NS
- PSB
- PST**
- SC
- ST
- STS-L
- SD
- PSW

PST12



PST12 Example of Auto Switch & Shock Absorber installation



■ PST Series

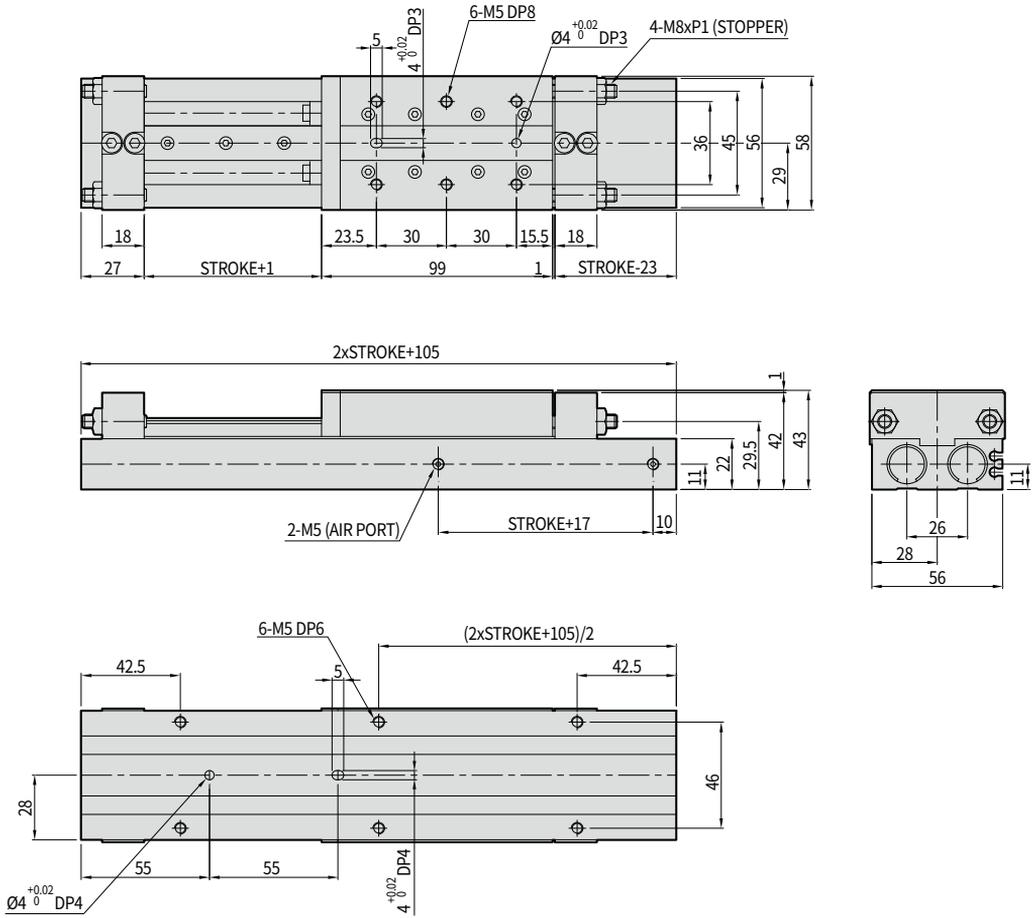
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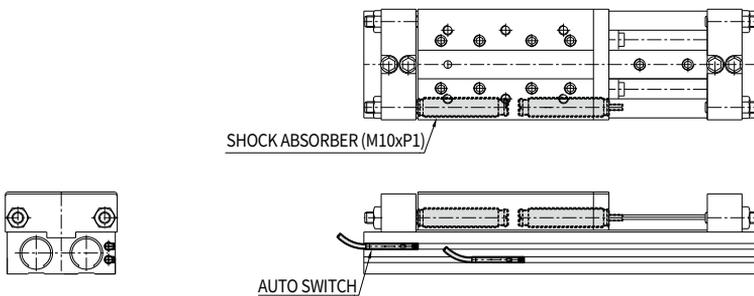
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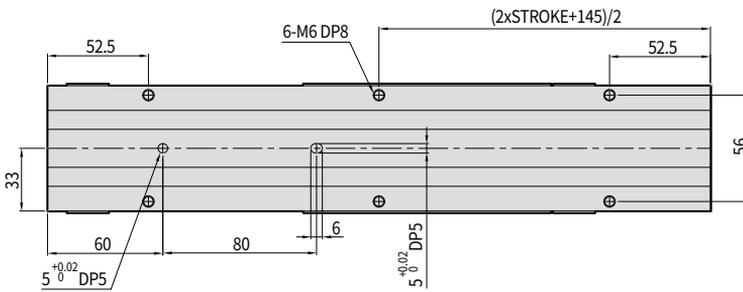
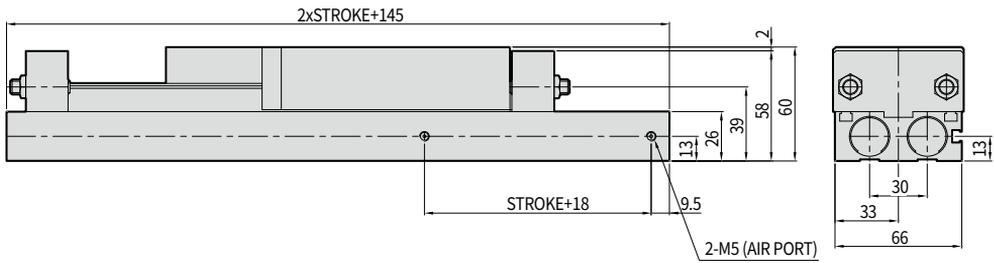
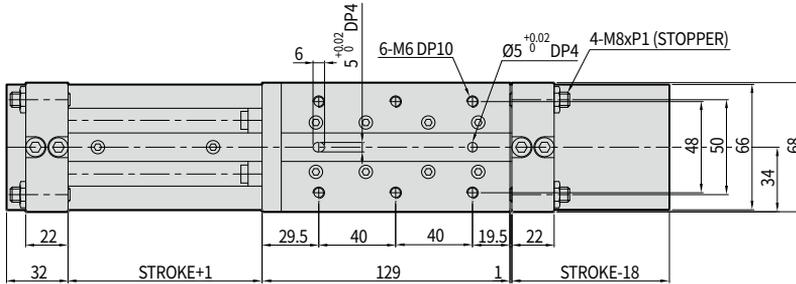
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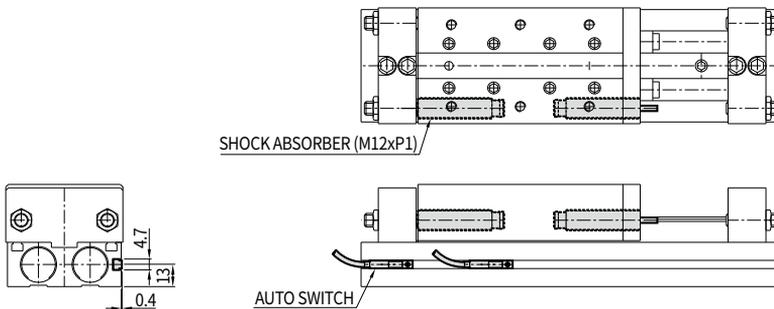
PST16 Example of Auto Switch & Shock Absorber installation



PST20



PST20 Example of Auto Switch & Shock Absorber installation



PST Series

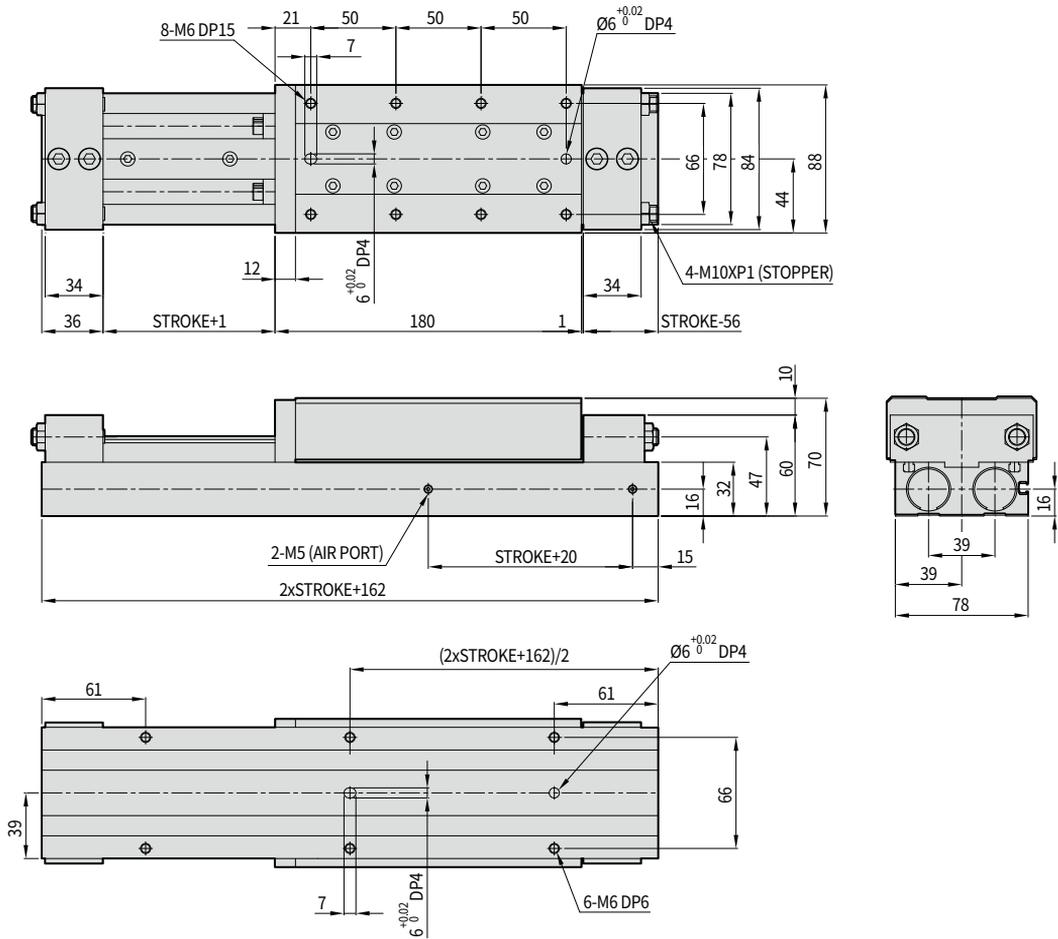
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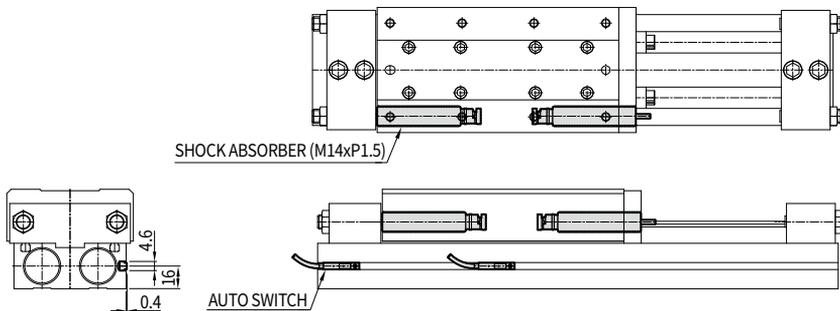
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PST25

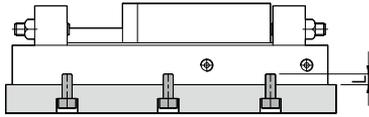


PST25 Example of Auto Switch & Shock Absorber installation



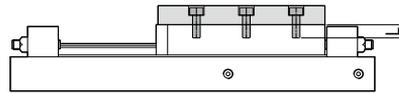
Installation Information

1. Installation by body tap holes



| Item | Fastening Bolt | Max Torque (kgf·cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| PST12 | M4×P0.7 | 25 | 6 |
| PST16 | M5×P0.8 | 51 | 6 |
| PST20 | M6×P1 | 81 | 8 |
| PST25 | M6×P1 | 81 | 10 |

2. Installation by table tap holes



| Item | Fastening Bolt | Max Torque (kgf·cm) | Max Bolt Length L (mm) |
|-------|----------------|---------------------|------------------------|
| PST12 | M4×P0.7 | 25 | 6 |
| PST16 | M5×P0.8 | 51 | 8 |
| PST20 | M6×P1 | 81 | 10 |
| PST25 | M6×P1 | 81 | 13 |