



Operation Manual

Product Name

Panel Mount Adapter

Model / Series / Product Number

AS*0*2F*-*A-3*
PMA-*

SMC Corporation

Contents

1. Safety Instructions	2~3
2. Specific Product Precautions	4~7
3. Installation	8~9
4. Removal	10~11
5. Application	12
6. Specifications	12
7. Troubleshooting	12
8. Construction	12



Panel Mount Adapter/ AS*0*2F*-*A-3*/PMA-* Series Safety Instructions

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

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots
etc.



Danger

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



Warning

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



Caution

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



Warning

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

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

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

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

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

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.



Panel Mount Adapter/ AS*0*2F*-*A-3*/PMA-* Series Safety Instructions

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

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

Read and accept them before using the product.

Limited warranty and Disclaimer

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

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

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

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

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

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

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

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

Compliance Requirements

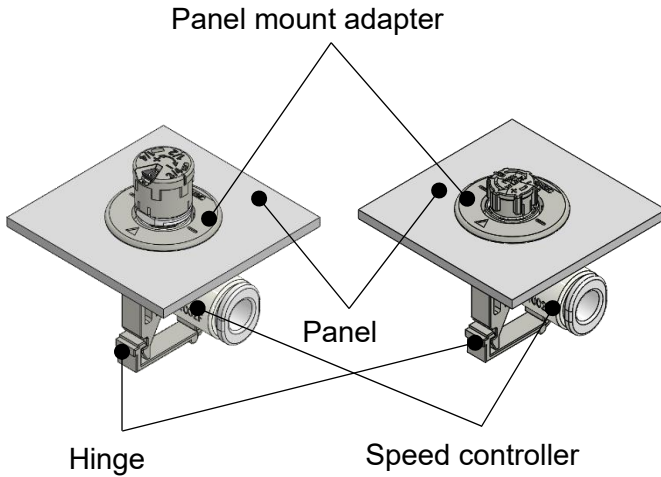
1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

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

2. Specific Product Precautions

*Refer to the catalog and operation manual of each product for specific product precautions of the speed controller.

Parts and Names of Products



Design/ Selection

Warning

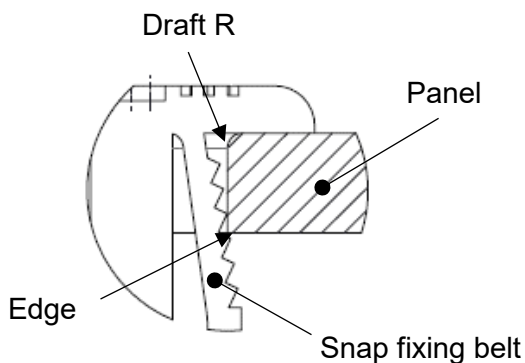
(1) Do not disassemble the product or make any modifications, including additional machining.

It may cause human injury and/or an accident.

(2) Pay attention to the direction of the draft R for the panel hole cut out machining.

When machining the panel, have the draft R to be on the panel surface side which will be visible to the operator. In addition, machine the panel to set the rear surface side with an edge. The recommended dimensional tolerance when cutting the panel is [panel dimension (+0.1/0)].

The panel mount adapter may detach from the panel when the panel is cut with a shape or dimensional tolerance that is not recommended.



Design/ Selection

Caution

(1) Check the applicable series for the panel mount adapter.

Use the series in Table 1 for the panel mount adapter.

Series not listed in Table 1 cannot be used.

Table 1

Series	Model
Speed controller with One-touch Fittings (In-line Type)	AS□0□2F□-□A
Speed controller with compact indicator (In-line Type)	AS□0□2FS□-□A
Speed controller with One-touch Fittings (In-line Type)	AS□0□2FM-□A, AS□0□2FC-□A
Speed controller with compact indicator (In-line Type)	AS□0□2FSM-□A, AS□0□2FSC-□A

* The panel mount adapter is also applicable to the stainless steel series corresponding to the above models.

(2) Avoid applying vibration or impact to the product.

The panel mount adapter may detach from the panel due to vibration or impact.

(3) As the panel material, select a metal material.

If a material other than metal (example: resin) is selected as the panel material, at the time of installation of panel mount adapter, the panel may be broken or the panel mount adapter may not be retained and may come off from the panel.

(4) Check the minimum mounting pitch, and set the panel cut positions.

Check the corresponding minimum mounting pitch in Table 2.

When the panel cut position is set at a location that makes an adapter positioned at a distance smaller than the mounting pitch from the neighboring adapter, the panel mount adapter bodies interfere with each other, making it impossible to install them.

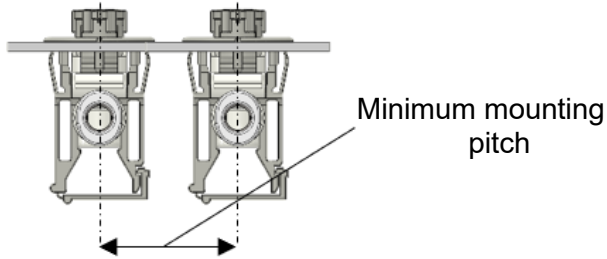
Check the dimension of the speed controller in the piping direction, and secure a space for piping.

Design/ Selection

⚠ Caution

Table 2

Body size	Minimum mounting pitch (mm)
100、M5 standard	27
200、1/8 standard	35
205、1/4 standard	36
300、3/8 standard	44
400、1/2 standard	47



* If the sizes of the neighboring bodies are different from each other, set the sum of 1/2 of respective minimum mounting pitches as the minimum mounting pitch.

Example: If a body with a size of 100 and a body with a size of 200 are placed side by side, the minimum mounting pitch is $27/2 + 35/2 = 31$ mm.

Mounting

⚠ Warning

(1) Operation Manual

Install the products and operate it only after reading the Operation Manual carefully and understanding its contents. Also, keep the Manual where it can be referred to as necessary.

(2) Ensure sufficient space for maintenance activities.

When installing the products, allow access for maintenance.

(3) Use the adapter after checking the panel cut dimensions and the panel with an applicable thickness.

For the panel cut dimensions and panel with applicable thickness, refer to the product catalog or SMC website (URL <http://www.smcworld.com>).

(4) Do not reuse the panel mount adapter.

The snap fit belt may deform when the panel mount adapter is mounted. Do not reuse the panel mount adapter when it is detached from the panel.

Mounting

⚠ Caution

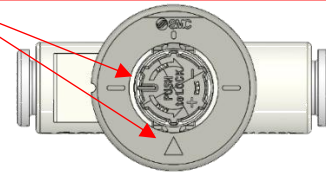
(1) The \triangle mark on the top surface of the panel mount adapter is a reference for the speed controller with compact indicator.

The \triangle mark is a mark to indicate the fully closed position of the needle of the speed controller with compact indicator (hereinafter, scale zero point).

When using a push-lock type speed controller, the \triangle mark and the scale zero point may not align with each other.

Check the scale zero point when using it as a reference mark.

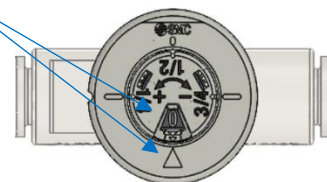
The scale zero point of the speed controller and the \triangle mark of the panel mount adapter are not aligned.



Speed controller (Push-lock type)
AS□F□-□A

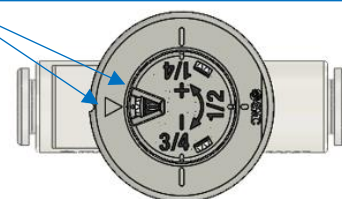
When using the speed controller with compact indicator, check the \triangle mark and scale zero point and align the \triangle mark of the panel mount adapter to the scale zero point.

The scale zero point of the speed controller and the \triangle mark of the panel mount adapter are aligned.



Speed controller with compact indicator
AS1002FS□-□A size

The scale zero point of the speed controller and the \triangle mark of the panel mount adapter are aligned.



Speed controller with compact indicator
AS2002FS□~AS4002FS□-□A size

Mounting

⚠ Caution

- (2) Push the panel mount adapter straight into the panel when mounting it.**

Ensure that the top surface of the panel mount adapter is parallel to the panel and push it uniformly to mount it into the panel. The panel mount adapter may get damaged when it is forcibly mounted at an angle. Ensure the bottom surface is flush against panel.

- (3) Do not apply excessive torque to the panel mount adapter.**

The panel mount adapter has a rotation stopper. Pay attention not to apply excessive torque since it may damage the rotation stopper and the panel mount adapter.

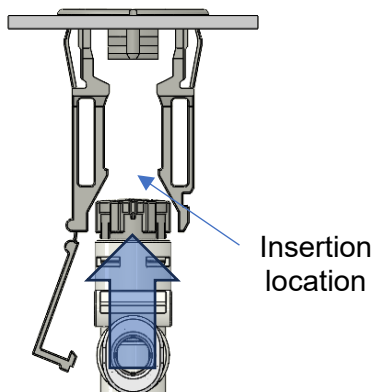
The maximum allowable torque is described in Table 3.

Table 3

Body size	Maximum allowable torque [N · m]
100、 M5 standard	0.05
200、 1/8 standard	0.07
205、 1/4 standard	0.16
300、 3/8 standard	0.2
400、 1/2 standard	0.4

- (4) When mounting the speed controller into the panel mount adapter, insert it from the insertion location and do not apply excessive force.**

The panel mount adapter may break or become detach from the panel when it is inserted forcibly from a location other than the insertion location. Insert it with a force of 37 N or less.

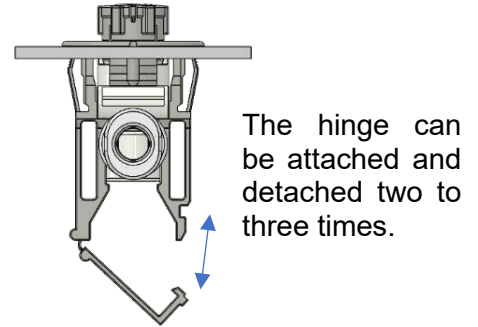


Mounting

⚠ Caution

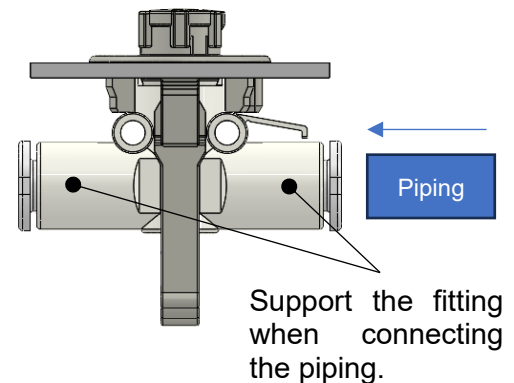
- (5) Operation of the hinge is limited to a maximum of two to three times.**

The hinge may break when attached and detached more than two to three times. Avoid excessive bending as it may cause weakening of the hinge. Do not bend hinge in the opposite direction to the intended operation.



- (6) Support the fitting part of the speed controller when connecting the piping.**

The panel mount adapter may detach from the panel when connecting the piping without supporting the fitting.



- (7) Lifting force for the knob of speed controller**

The panel mount adapter is to be used below the lifting force for the knob of the speed controller.

The panel mount adapter may detach or break when a lifting force exceeding the force described in Table 4 is applied.

Table 4

Body size	Knob lifting force (N)
100、 M5 standard	1~1.5
200、 205、 300、 400 (1/8、 1/4、 3/8、 1/2 standard)	3~4

Mounting

Caution

(8) Knob locking force of speed controller

The panel mount adapter is to be used below the knob locking force of the speed controller. The speed controller may detach from the panel mount adapter, or the panel mount adapter may break when the speed controller is pushed in the knob locking direction with excessive force. The handle knob locking force is 46 N or less.

(9) Prevent the connected tube from being oscillated or rotated.

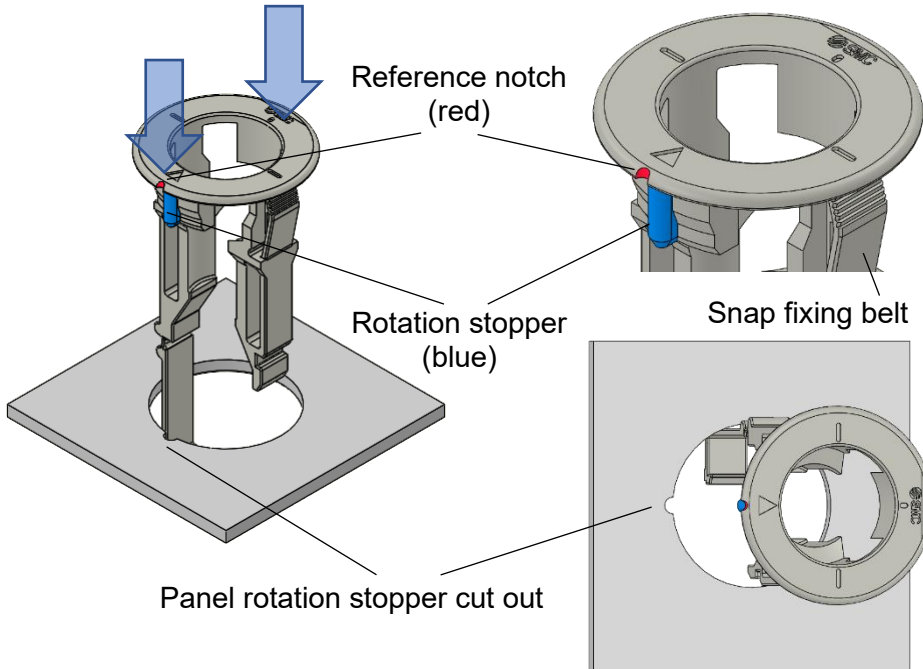
The speed controller, fitting, or panel mount adapter may break. Secure the tube when using the product when there is any possibility of oscillation or rotation of the body.

(10) Clean the panel after insertion of the panel mount adapter.

Shavings may be generated by the panel mount adapter at the panel hole cut out from the snap fit belt when inserting the panel mount adapter.

3. Installation

Procedure 1. Mount the panel mount adapter to the panel

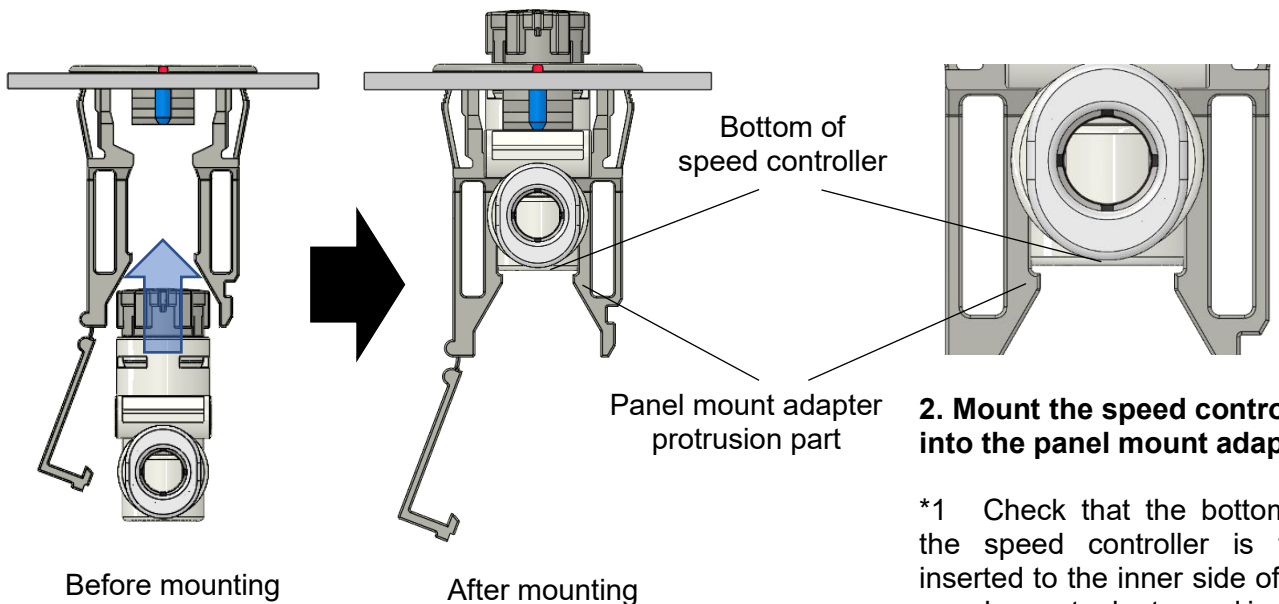


1. Mount the panel mount adapter to the panel.

When mounting, align the reference notch (red) with the rotation stopper cut out in the panel and the rotation stopper (blue) of the panel mount adapter.

*When inserting the panel mount adapter into the panel, it is recommended to press on the position of the blue arrows in the illustration, 90° offset from the snap fixing belt. Pressing directly above the snap fixing belt may make it difficult to insert.

Procedure 2. Mount the speed controller to the panel mount adapter

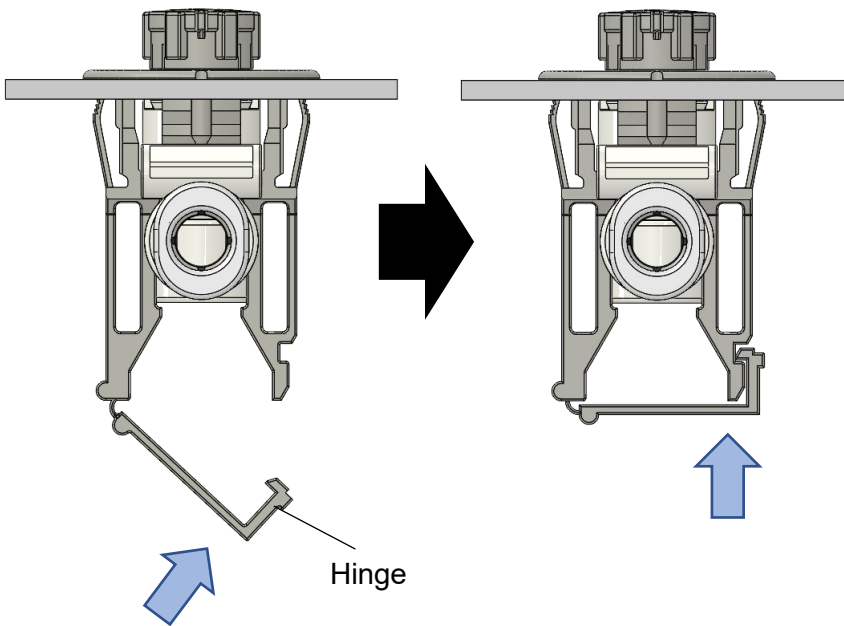


2. Mount the speed controller into the panel mount adapter.

*1 Check that the bottom of the speed controller is fully inserted to the inner side of the panel mount adapter and is past the inner protrusion part.

*2 The speed controller with piping attached can also be mounted.

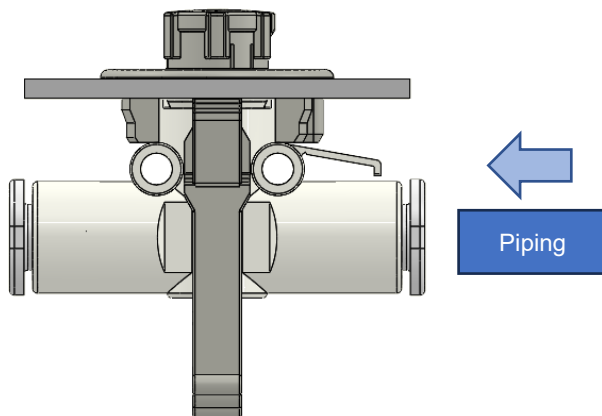
Procedure 3. Lock the hinge



3. Lock the hinge.

*When the product is used without locking the hinge, the speed controller may detach from the panel mount adapter when locking the handle of the speed controller.

Procedure 4. Piping



4. Connect the piping.

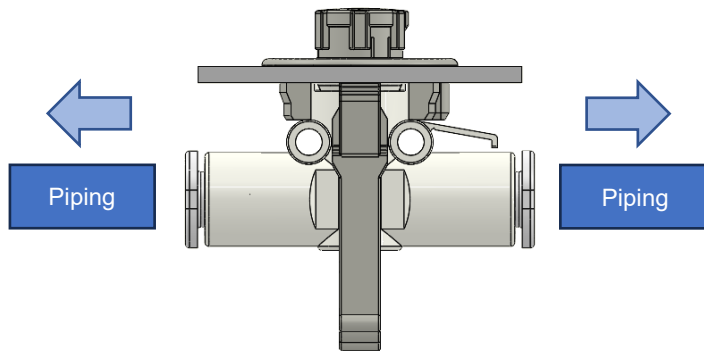
*1 For piping, refer to the catalog and operation manual of each product for specific product precautions of the speed controller.

*2 When connecting the piping after "Procedure 3. Lock the hinge," support the fitting part of the speed controller to prevent the application of force to the panel mount adapter.

4. Removal

*When detaching the panel mount, refer to the procedures below and carry out the work under the responsibility of the customer.

Procedure 1. Detach piping

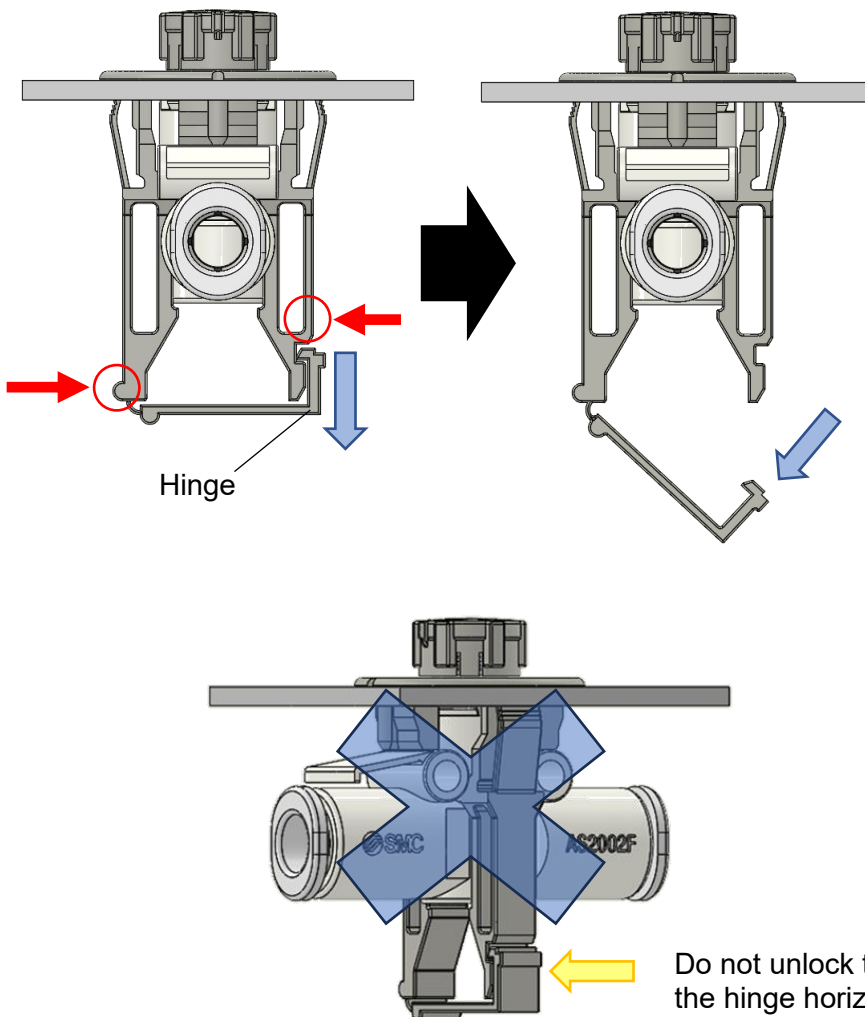


1. Detach the piping.

*1. For piping, refer to the catalog and operation manual of each product for specific product precautions of the speed controller unit.

*2. The piping can also be detached after "Procedure 3. Detach the speed controller."

Procedure 2. Unlock the hinge



2. Unlock the hinge.

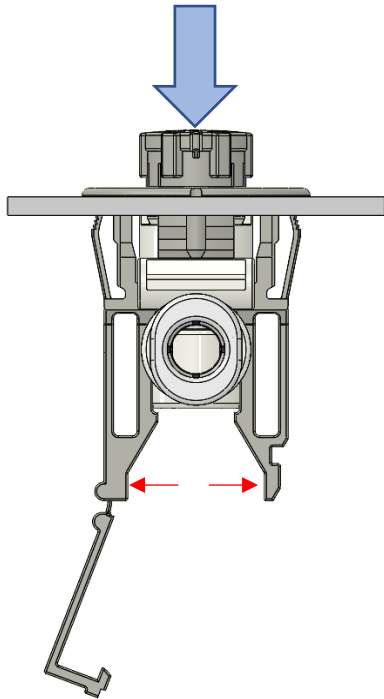
When unlocking, push the red circle area with a finger, compress the panel mount adapter towards the inside direction, and apply force on the hinge from the direction of the blue arrow.

The maximum bending of the panel mount adapter is between 0.5 to 1 mm from the initial position.

* When unlocking the lock of the hinge, apply a force in the direction of the blue arrow.

If you unlock the lock by applying a force in the direction of the yellow arrow, the hinge may be deformed and it may become difficult to lock the hinge again.

Procedure 3. Detach the speed controller

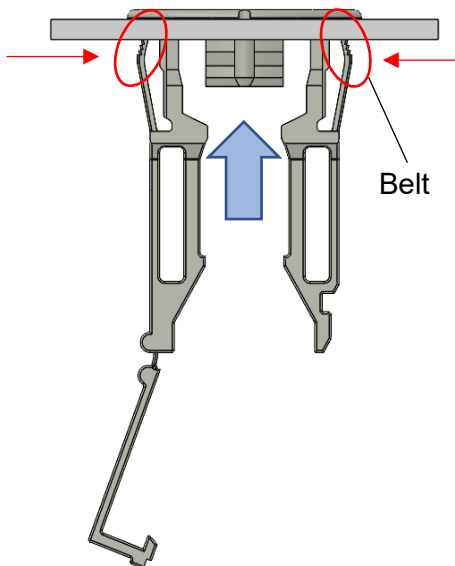


3. Detach the speed controller.

When detaching the speed controller, expand the panel mount adapter towards the outside in the direction of the red arrows and push the speed controller in the direction of the blue arrow.

The maximum deflection of the panel mount adapter is between 2 to 3 mm.

Procedure 4. Detach the panel mount adapter



4. Detach the panel mount adapter.

*1. When detaching the panel mount adapter, press the (release tab/belt etc.) in the direction of the red arrows and push the panel mount adapter in the direction of the blue arrow.

*2. Do not reuse the detached panel mount adapter.

5. Application

This product is for mounting the speed controller for the pneumatic actuator on a panel.

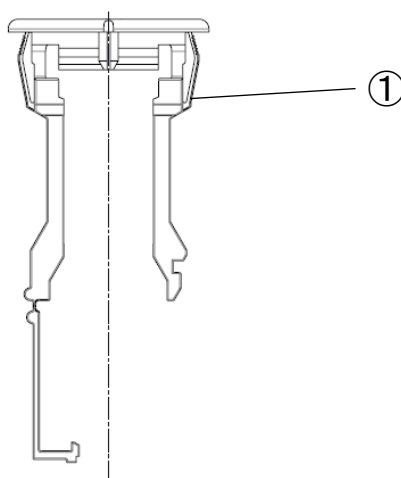
6. Specifications

Fluid	Air
Ambient and fluid temperature	-5 to 60°C (No freezing)

7. Troubleshooting

Trouble	Possible causes	Countermeasure
Cannot insert the panel mount adapter to the end surface of the panel.	The position of the rotation stopper of the panel mount adapter and the hole cut out position for the rotation stopper in the panel are not aligned.	Align the insertion position referring to the notch position of the panel mount adapter.
	The panel mount adapter is inserted at an angle.	Ensure the top surface of the panel mount adapter is parallel to the panel and insert the panel mount adapter.
	There is some debris or shavings between panel mount adapter and panel.	Ensure to visually check for any shavings between the bottom surface and panel.
The speed controller detaches from the panel mount adapter when locking the handle of the speed controller.	The hinge is not locked.	Check that the hinge is locked after mounting the speed controller to the panel mount adapter.

8. Construction



Component Parts

No.	Description	Material
1	Panel Mount Adapter	PA66

Revision history
1 Version : updated edition (P4~5,P8,P10)

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