SUPER 300 TYPE PILLAR FITTING™

Sleeve Insertion Tools and Insertion Procedures

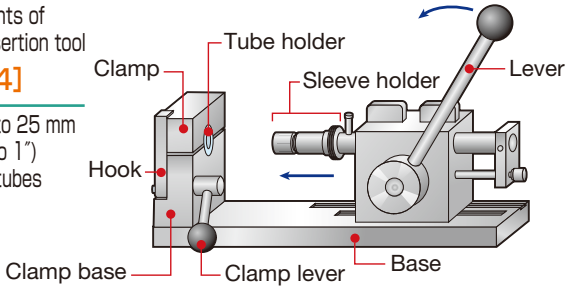
The Super 300 Type PILLAR Fitting is a part that is used in production lines for semiconductors, LCDs, and other products that require a high level of cleanliness. We clean our products in our own factory cleanrooms and ship them using clean packaging practices.

Precautions for work

- Avoid touching fittings and tubes with bare hands. Contact with bare hands causes oil content on the hands to become attached to them.
- Do not handle this product with dirty gloves or on top of a table.
  If a tube is marked with ink, powder may be produced from the ink.
- Before assembly, be sure to wipe off any marks using a solvent or similar cleaning agent.
- When assembling or piping a fitting, be sure to remove dust, grit, dirt, oil, and other foreign objects.

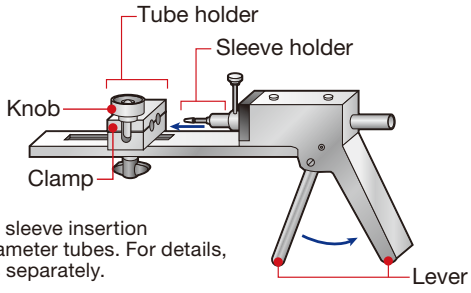
Components of sleeve insertion tool **[JT-A4]**

For φ10 to 25 mm (or 3/8″ to 1″) diameter tubes



Components of sleeve insertion tool **[JT-C3]**

For φ3 to 8 mm (or 1/8″ to 1/4″) diameter tubes



*JT-C3 also allows sleeve insertion for φ10 or 3/8" diameter tubes. For details, please contact us separately.

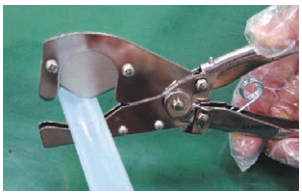
Inserting a sleeve into a tube using insertion tool JT-A4 or JT-C3 through to initially tightening a union nut

Required parts and tools

●Sleeve insertion tool (JT-A4 or JT-C3)* ●Fitting body ●Tube ●Sleeve ●Union nut ●Sleeve holder ●Tube holder ●Tube cutter ●Gap gauge (for φ3, φ4, and 1/ 8" diameter tubes only) ●Spanner for tightening union nuts (for φ6 to φ25 (or 1/4" to 1") diameter tubes)

*A hand held type sleeve insertion tool (for portable use) is also available. Please contact us for more information.

① Cutting a tube

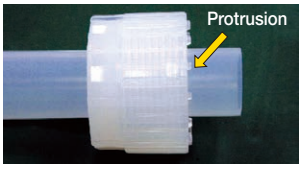


●Cut a tube to the required length at as right an angle to the tube as possible.

●If both ends of the tube are to be secured, to prevent the final tube length from being too short, cut the tube to a length approximately 1% longer than the required length.

●If the tube is to be used in high temperature conditions, cut the tube to a length approximately 2% further longer (3% in total) than the required length.

② Inserting a union nut

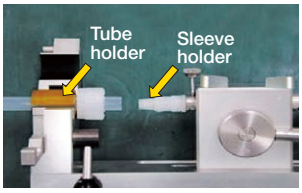


●Slide a union nut onto the cut tube.

●Make sure that the union nut is oriented correctly.

* The edge of a union nut for φ3, φ4, and 1/8″ diameter tubes does not have protrusions such as those shown in the photograph on the left.

③ Mounting on the sleeve insertion tool body

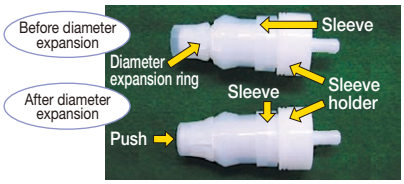


●Mount a tube holder on the tube onto which the union nut was slided, and place it on the clamp base of the insertion tool. Connect a sleeve holder to the sleeve insertion tool.
No tube holder is required for φ25 and 1″ diameter tubes.

●The photograph on the left shows a "JT-A4" type for φ10 to φ25 (or 3/8″ to 1″) diameter tubes. For φ3 to φ8, 1/8″, and 1/4″ diameter tubes, use a "JT-C3" type.

④ Mounting a sleeve

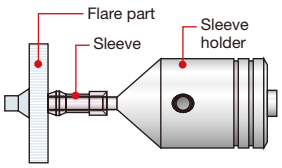
For φ6 to φ25 (or 1/4" to 1") diameter tubes



After mounting a sleeve on the sleeve holder as shown on the left, push a diameter expansion ring toward the sleeve until you hear or feel a click.

For φ3, φ4, and 1/8" diameter tubes

After mounting a sleeve on the sleeve holder as shown on the right, secure a flare part on the tip of the sleeve holder.



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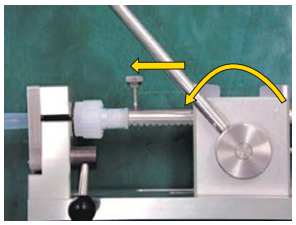
⑤ Inserting the sleeve

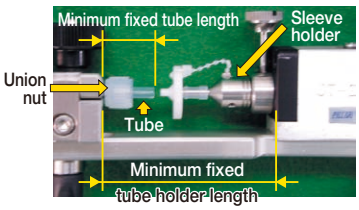
For ϕ6 to ϕ25 (or 1/4" to 1") diameter tubes

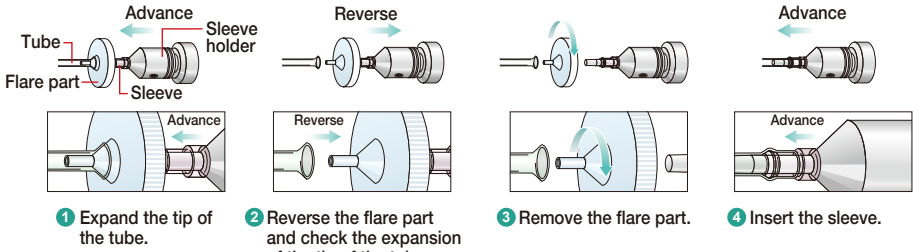


- With the tube placed on the clamp base, secure the tube at a position where the tip of the diameter expansion ring enters the inner section of the tube by 1 to 3 mm.
- Rotating the lever counterclockwise as shown on the left moves the sleeve holder forward, allowing the sleeve to be inserted into the tube.
- This operation is completed when the stepped section of the sleeve reaches the tube.
- The photograph on the left shows a "JT-A4" insertion tool for ϕ10 to ϕ25 (or 3/8″ to 1″) diameter tubes.
- For ϕ6, ϕ8, and 1/4″ diameter tubes, use a "JT-C3" insertion tool.

For ϕ3, ϕ4, and 1/8" diameter tubes

- Mount the tube on the clamp of the "JT-C3" insertion tool by referring to the lengths shown in Table 1 below.





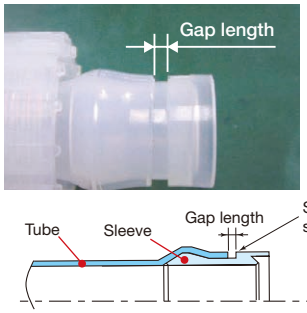
① Expand the tip of the tube. ② Reverse the flare part and check the expansion of the tip of the tube. ③ Remove the flare part. ④ Insert the sleeve.

Table 1

Tube size (Tube outside diameter)	ϕ3	ϕ4	1/8"
Minimum fixed tube length	11 mm	12 mm	11 mm
Minimum fixed tube holder length	58 mm	58 mm	58 mm

- Before inserting the sleeve, temporarily position the tip of the tube on the flare part as shown in the figure above and grip the lever to expand the tip of the tube.
- Remove the flare part from the tip of the sleeve holder and grip the lever to insert the sleeve into the tube.

⑥ Checking the correct insertion



- Check whether the stepped section of the sleeve has reached the tube.
- After the sleeve is inserted, there may be a gap between the stepped section of the sleeve and the tip of the tube. In this case, there is no functional problem if the gap length is no more than that shown in Table 2 below.

Table 2

Tube size (Tube outside diameter)	ϕ3 1/8"	ϕ4	ϕ6 1/4"	ϕ8	ϕ10 3/8"	ϕ12 1/2"	ϕ19 3/4"	ϕ25 1"
Gap length	1 mm or less	1 mm or less	1.2 mm or less	1.3 mm or less	1.5 mm or less	2.5 mm or less	2.8 mm or less	3.5 mm or less

⑦ Mounting into the fitting body

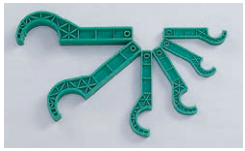
- Mount the sleeve-inserted tube into the fitting body.

⑧ Initially tightening the union nut

For ϕ6 to ϕ25 (or 1/4" to 1") diameter tubes

- Tighten the union nut until a protrusion on the edge of the union nut comes into contact with the blade section of the gauge ring.
- For details, refer to "① For ϕ6 to ϕ25 (or 1/4" to 1") diameter tubes" in "Union nut tightening and control."
- The green spanner in the left photograph is for S300 union nuts.

Spanner for tightening union nuts



Type: J-SN-SET

For ϕ3, ϕ4, and 1/8" diameter tubes

- For details, refer to "② For ϕ3, ϕ4, and 1/8" diameter tubes" in "Union nut tightening and control."

You can also make short tubes. For details on how to make short tubes, refer to the latest edition of the Instruction Manual (No. 203-1).
On the outer circumference of the sleeve holder for Super 300 Type P-series, double V-shaped grooves are engraved for identification purposes.

Sleeves can also be inserted by heating

* Take due care during flare work, as each part becomes hot. There is also a danger of toxic gases being generated. Provide sufficient ventilation.

For ϕ6 to ϕ25 (or 1/4" to 1") diameter tubes

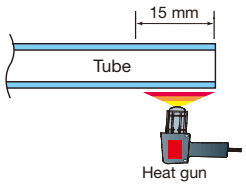
Heat gun
Type: JH-H

Flaring tool
Type: P-FH

Sleeve holder
Type: P-SH-H

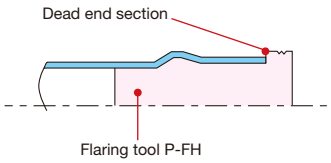
① Heating the tube

With a heat gun, heat the tube evenly while rotating the heat gun within a range approximately 15 mm away from the tip of the tube. As a guide, the tube should be heated at a heat gun outlet temperature of 450°C for 10 to 15 seconds.



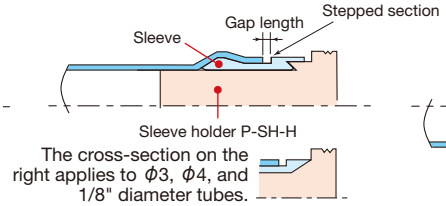
② Subjecting the tube to a flare

Quickly insert the heated tube onto the dead end section of the P-FH flaring tool and leave it there for approximately 10 seconds.



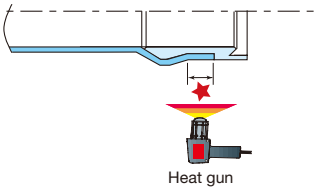
③ Inserting the sleeve into the tube

After approximately 10 seconds, pull out the tube and insert the sleeve mounted on the P-SH-H sleeve holder into the tube until the stepped section reaches the tube. If there is a gap between the stepped section and the tube, note that the gap length is no more than that shown in Table 2 on the previous page.



④ Heating the tube again

After inserting the sleeve into the tube, pull out the P-SH-H sleeve holder, and heat the portion indicated by ★ again with the heat gun to make the tube adhere to the sleeve.



For ϕ3, ϕ4, and 1/8" diameter tubes

●Tubes are not heated. For details, refer to the latest edition of the Instruction Manual (No. 203-1).

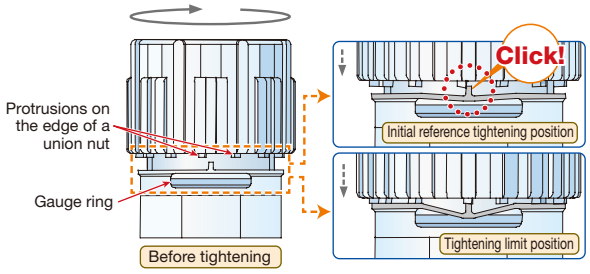
On the outer circumferences of the sleeve holder and the flaring tool for Super 300 Type P-series, double V-shaped grooves are engraved for identification purposes.

Union nut tightening and control

① For ϕ6 to ϕ25 (or 1/4" to 1") diameter tubes

●Initial tightening
When a protrusion on the edge of the union nut comes into contact with the blade section of the gauge ring, completion of initial tightening can be sensed tactilely and auditorily.

●Tightening limit
When a protrusion on the edge of the union nut comes into contact with the base part of the gauge ring, the union nut no longer rotates, indicating the limit of tightening to prevent overtightening.



▶For cap sleeves, manually tighten the union nut until it cannot be rotated and then rotate it half a turn to finish tightening. No protrusion on the edge of the union nut is in contact with the blade section of the gauge ring.

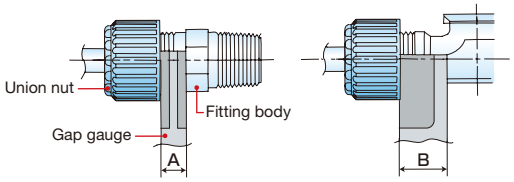
▶For details on how to tighten panel mount union fittings, refer to the latest edition of the Instruction Manual (No. 203-1).

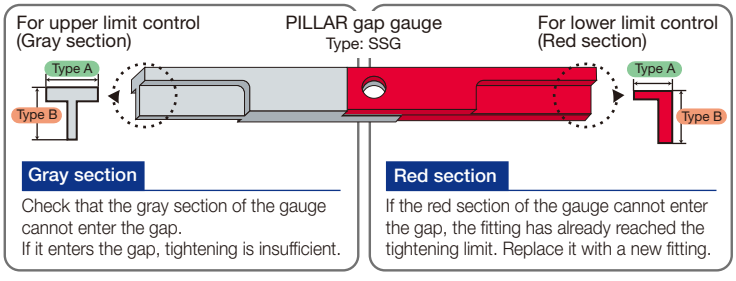
② For ϕ3, ϕ4, and 1/8" diameter tubes

●Because of the small size, for structural reasons, no gauge ring is provided.
For tightening control, position a PILLAR gap gauge between the union nut and the fitting body as shown in the figure below and tighten the union nut so that the gap falls between the upper limit and lower limit of the gauge.

Type A
- Straight injection molded product
- Machined product

Type B
- Elbow injection molded product
- Tee injection molded product





▶For cap sleeves, manually tighten the union nut until it cannot be rotated to finish tightening.

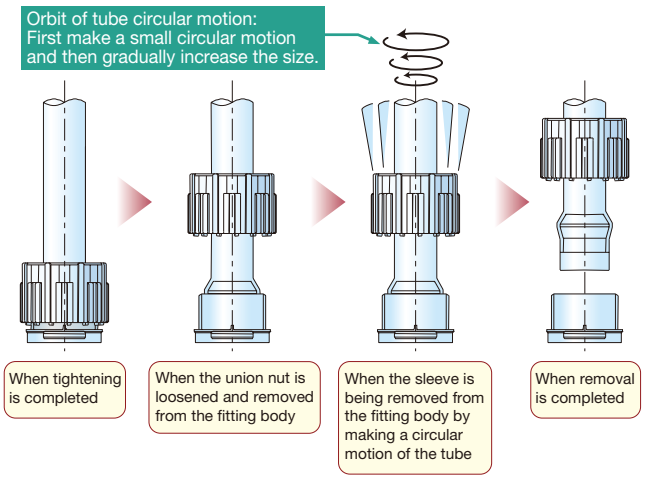
▶For details on how to tighten panel mount union fittings, refer to the latest edition of the Instruction Manual (No. 203-1).

Removal and retightening

Removal

For φ6 to φ25 (or 1/4" to 1") diameter tubes

To remove a fitting that has been tightened once, first loosen the union nut and then remove it from the fitting body. Next, hold the tube and the fitting body separately with your hands and make a circular motion with the tube until the sleeve attached to the tube is removed from the fitting body. (See the figure on the right.)



For φ3, φ4, and 1/8" diameter tubes

Refer to the latest edition of the Instruction Manual (No. 203-1).

Retightening

For φ6 to φ25 (or 1/4" to 1") diameter tubes

For retightening, tighten the union nut until it reaches the previous tightening position.
In this state, however, if the union nut can still be tightened by hand, tighten it to its maximum limit.

For φ3, φ4, and 1/8" diameter tubes

Refer to the latest edition of the Instruction Manual (No. 203-1).

Fitting replacement interval

When the fitting has been retightened more than 10 times, replace it with a new fitting.
However, when the fitting has reached its tightening limit, replace it with a new fitting, regardless of the number of times it has been retightened.

Retightening

Should retightening be required due to leakage or for any other reason, return the fluid temperature to 30°C or lower, retighten the fitting by rotating the union nut a quarter turn with the pressure in the tube maintained at 0 MPaG, and then observe progress.

This installation procedure is a simplified procedure extracted from the instruction manual. For details, refer to the latest edition of the Instruction Manual (No. 203-1).

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Safety precaution

● When using this product, please use correctly and pay sufficient attention to safety.

* Please understand that this catalog may change without prior notice.
* The values shown on this catalog are reference values, not guaranteed values.

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