High Purity Fluoropolymer Fittings
Hyper Fitting / Flare Type
LQ3 Series Fitting Procedure

Fitting size For 2 to 6 (P.1 to P.3)

Insertion Tool

Fitting size For 1, 2 (P.4, P.5)

Parts case
Contents:
Insert pins
Insert pin jig

Preparation

Caution: Tubing
1. Wipe the tubing with alcohol to prevent slippage.
2. Cut the tubing perpendicularly with a commercially available dedicated tool.

Note) An obliquely cut surface may cause insert bushing breakage, etc.
Position an insert pin in the insert pin jig.

Heat up the end of the tubing with a commercially available tool such as a heat gun.

As a guide, the area to be heated on the tubing is the length to the insert pin base.

Heat it up for 15 to 20 seconds at about 400 °C.

Be careful not to burn yourself!

Do not touch heated areas (tubing, heat gun). Also, be careful not to touch the other side of the heated area since the temperature also increases there due to hot air.

Check that the tubing has been expanded into a flared shape.

The tubing must be held for about one minute while it sets in a flared shape. This time can be reduced by blowing cooling air onto the tube. After cooling for the required time, remove the tubing from the insert pin.

Note) Be sure to check the size of the insert pin.

Fitting size: For 2 to 6

Heat gun procedure

Be sure to work at a table when using the insert pin jig. This will stabilize the insert pin and make work easier.

The tubing must be held for about one minute while it sets in a flared shape. This time can be reduced by blowing cooling air onto the tube. After cooling for the required time, remove the tubing from the insert pin.

Note) Tubing cooling time can be reduced by removing the insert pin from the simple jig and immersing tubing and insert pin in deionized water or similar.

Fitting size: For 2 to 6
1  Position an insert pin in the insert pin jig.

2  Heat up the end of the tubing with a commercially available tool such as a heat gun. 
   - As a guide, the area to be heated on the tubing is the length to the insert pin base.
   - Be careful not to burn yourself!
   - Do not touch heated areas (tubing, heat gun). Also, be careful not to touch the other side of the heated area since the temperature also increases there due to hot air.

3  After heating up the end of the tubing, immediately slide it over the insert pin up to the base of the insert, thereby expanding the tubing into a flared shape.

4  The tubing must be held for about one minute while it sets in a flared shape. This time can be reduced by blowing cooling air onto the tube.
   After cooling for the required time, remove the tubing from the insert pin.

5  Check that the tubing has been expanded into a flared shape.

   Note) Be sure to check the side of the insert pin.

   Note) Tubing cooling time can be reduced by removing the insert pin from the simple jig and immersing tubing and insert pin in deionized water or similar.

Fitting size  For 2 to 6
After flaring is complete, promptly attach the LQ3 fitting to the tubing.

Position an insert pin and tubing holder suitable for the tubing size.

Place the tubing in the tubing holder, inserting it to the position where it makes contact with the insert pin, and clamp the holder with the hook.

Operate the lever, thereby expanding the tubing into a flared shape.

Check that the tubing has been expanded into a flared shape.

Fasten the fitting nut to the body and tighten to the end surface using the dedicated nut spanner.

As a guide, tighten the nut by a further 1/8 turn in order to make sure that the nut is screwed on far enough to make contact with the body end surface. Refer to the proper tightening torque shown at right.

- **Fitting size** For 2 to 6
  - Heat gun procedure
  - Expanded tubing
  - LQ3 fitting
  - Tubing holder
  - Insert pin
  - Tubing
  - Hook

- **Fitting size** For 1
  - Lever type tool procedure
  - Tool
  - LQ3 fitting
  - Tubing
  - Dedicated nut spanner

**Caution**
As a guide, tighten the nut by a further 1/8 turn in order to make sure that the nut is screwed on far enough to make contact with the body end surface. Refer to the proper tightening torque shown at right.

<table>
<thead>
<tr>
<th>Body size</th>
<th>Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1.6 to 1.8</td>
</tr>
<tr>
<td>3</td>
<td>3.2 to 3.5</td>
</tr>
<tr>
<td>4</td>
<td>5.0 to 5.3</td>
</tr>
<tr>
<td>5</td>
<td>10.0 to 10.5</td>
</tr>
<tr>
<td>6</td>
<td>22.5 to 23.0</td>
</tr>
</tbody>
</table>
**Lever type tool procedure**

1. **Position an insert pin and tubing holder suitable for the tubing size.**

2. **Place the tubing in the tubing holder, inserting it to the position where it makes contact with the insert pin, and clamp the holder with the hook.**

3. **Operate the lever, thereby expanding the tubing into a flared shape.**

   - Repeat this operation 3 times.

4. **Check that the tubing has been expanded into a flared shape.**
After flaring is finished, promptly attach the LQ3 fitting to the tubing.

Fasten the fitting nut to the body and tighten to the end surface using the dedicated nut spanner.

Caution
As a guide, tighten the nut by a further 1/8 turn in order to make sure that the nut is screwed on far enough to make contact with the body end surface. Refer to the proper tightening torque shown at right.

<table>
<thead>
<tr>
<th>Body size</th>
<th>Torque (N-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.7 to 0.9</td>
</tr>
<tr>
<td>2</td>
<td>1.6 to 1.8</td>
</tr>
</tbody>
</table>
How to Order Insertion Tools

**LQ3 – GPS –**

- Pin type
  - Nil
  - Metric
  - N
  - Inch

**LQ3 – GB –**

- Pin type
  - Nil
  - Metric
  - N
  - Inch

**LQ3 – GS –**

- Nut size
  - Symbol
    - Nil
    - Set of 1 to 6
  - Size
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6

**Dedicated Nut Spanner**

- Nut size
  - Symbol
    - Nil
  - Size
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6

**Replacement Parts**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
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</thead>
<tbody>
<tr>
<td>• GPS insert pin (single)</td>
<td>LQ3 – GP –</td>
</tr>
<tr>
<td>• GPS insert pin jig (single)</td>
<td>AXT1075-30-2</td>
</tr>
<tr>
<td>• GB insert pin</td>
<td>LQ3 – GPB –</td>
</tr>
<tr>
<td>• Holder assembly</td>
<td>LQ3 – GPB –</td>
</tr>
<tr>
<td>• GB insert pin (single)</td>
<td>LQ3 – GB –</td>
</tr>
<tr>
<td>• GB holder (single)</td>
<td>LQ3 – GB –</td>
</tr>
</tbody>
</table>

**Table 1 Tubing Size Symbol**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Ø3</th>
<th>Ø4</th>
<th>Ø5</th>
<th>Ø6</th>
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<th>Ø12</th>
<th>Ø14</th>
<th>Ø16</th>
<th>Ø18</th>
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<th>3/8&quot;</th>
<th>1/2&quot;</th>
<th>3/4&quot;</th>
<th>1&quot;</th>
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<tbody>
<tr>
<td>03</td>
<td>04</td>
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</table>

**Note 1)** Sizes with the same symbol number and Ø6 and Ø7 are common sizes.