Miniature Tubing & Miniature Fittings

Series TU/M

O.D. Ø2 x I.D. Ø1.2

Minimum bending radius: 4 mm

Tubing Color Variations:
- Black
- White
- Red
- Blue
- Yellow
- Green
- Clear

Four types of fittings are available:

- Barb fitting
- Barb elbow
- Barb one-touch
- Reducer

<table>
<thead>
<tr>
<th>Port size</th>
<th>Port size</th>
<th>Tubing size</th>
<th>Fitting size</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3 x 0.5</td>
<td>M3 x 0.5</td>
<td>ø3.2</td>
<td>ø3.2</td>
</tr>
<tr>
<td>M5 x 0.8</td>
<td>M5 x 0.8</td>
<td>ø4</td>
<td>ø4</td>
</tr>
</tbody>
</table>
Piping for compact actuator

Piping for compact pressure sensor

Easy size reduction

Reduction of the tubing size from standard equipment is possible in a single step.

Barb one-touch

Reducer
Miniture Polyurethane Tubing

Series TU

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>TU0212</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.D. x I.D. (mm)</td>
<td>2 x 1.2</td>
</tr>
<tr>
<td>Fluid</td>
<td>Air, Water</td>
</tr>
<tr>
<td>Max. operating pressure (at 20°C)</td>
<td>0.8MPa</td>
</tr>
<tr>
<td>Burst pressure</td>
<td>Refer to pressure characteristics curve.</td>
</tr>
<tr>
<td>Min. bending radius (mm) (Note)</td>
<td>4</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>–20 to +60°C (Water: 0 to 40°C) (No freezing)</td>
</tr>
<tr>
<td>Material</td>
<td>Polyurethane</td>
</tr>
<tr>
<td>Color</td>
<td>Black(B), White(W), Red(R), Blue(BU), Yellow(Y), Green(G), Clear(C)</td>
</tr>
</tbody>
</table>

Note) At a temperature of 20°C bend the tubing into a U shape. Then with one side fixed, gradually close the other side and measure 2R at the point where the tubing folds or flattens, etc.

**Effective sectional area**

<table>
<thead>
<tr>
<th>Effective area (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
</tr>
<tr>
<td>0.4</td>
</tr>
<tr>
<td>0.3</td>
</tr>
<tr>
<td>0.2</td>
</tr>
<tr>
<td>0.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tubing length</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

**Precautions**

Be sure to read before handling. Refer to page 4 through 6 for Safety Instructions and common precautions on the products mentioned in this catalog.

**Caution**

1. Applicable for general industry water. Consult SMC if using for other kinds of fluids. Surge pressure must be under the max. operating pressure. If exceeding that value, fitting may damaged and tubing may burst.

2. The value of the max. operating pressure is at a temperature of 20°C. Refer to the burst pressure characteristics curve for other temperatures. Avoid abnormal temperature rises which may burst the tubing.

3. The values of the min. bending radius is at a temperature of 20°C. Higher temperatures allows the tubing to bend more.

**How to Order**

**Indication of tubing model**

Symbol | Color  |
--------|--------|
B       | Black  |
W       | White  |
R       | Red    |
BU      | Blue   |
Y       | Yellow |
G       | Green  |
C       | Clear  |

**Length per roll**

Symbol | Roll size |
--------|-----------|
20      | 20m roll  |

**Burst Pressure Characteristic Curve and Operating Pressure**
Miniature Fittings
(For exclusive Miniature tubing)

Series M

Tubing connection and removal

Installing tubing
1. Cut the tubing perpendicularly allowing additional length.
2. Insert the tubing into the sleeve.
3. Insert the tubing slowly into the fittings. Make sure to secure a gap of approx. 0.5mm between the tubing end and the barb end.
4. Insert the sleeve slowly. Make sure not to allow any gap between the sleeve end side and the body end side. (Please refer to the illustration below.)

If you feel any strong resistance and cannot push the sleeve completely to the end side, this may be caused due to jamming. Remove and repeat again by starting from step 1 making sure to secure a gap in the step 3.

Note) When installing the tubing, the sleeve must be attached. Operation without attaching the sleeve may cause tubing disconnection.

Removing tubing
Withdraw the sleeve straight along the tubing. Use a tool such as long-nose pliers if it is difficult to pull out by hand.
1. Withdraw the tubing straight.
2. When reusing the tubing, cut off the previously installed portion of the tubing to avoid possible leakage and/or disconnection of the tubing.

Specifications

<table>
<thead>
<tr>
<th>Applicable tube material</th>
<th>Polyurethane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable tube dia.</td>
<td>ø2/ø1.2</td>
</tr>
<tr>
<td>Max. operating pressure (at 20°C)</td>
<td>1MPa</td>
</tr>
<tr>
<td>Port size</td>
<td>M3, M5, ø3.2, ø4</td>
</tr>
<tr>
<td>Thread</td>
<td>JIS B0209 Class 2 (Metric coarse thread)</td>
</tr>
</tbody>
</table>

How to order

Miniature fitting M - 5 AU - 2 Application tubing (O.D. / I.D.) 2 ø2/ø1.2

Model

- AU Barb fitting M3, M5
- ALU Barb elbow M3
- ALHU Barb one-touch M5
- F Reducer ø3.2, ø4

Port size

- 3 M3 x 0.5
- 5 M5 x 0.8
- 32 ø3.2
- 04 ø4
### Barb fitting: M-3AU-2, M-5AU-2

<table>
<thead>
<tr>
<th>Applicable tubing (O.D. x I.D. (mm))</th>
<th>Thread</th>
<th>Model</th>
<th>H</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Weight g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø2 x Ø1.2</td>
<td>M3 x 0.5</td>
<td>M-3AU-2</td>
<td>4.5</td>
<td>9</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>0.9</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>M5 x 0.8</td>
<td>M-5AU-2</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>7.7</td>
<td>4</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

#### Parts list

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sleeve</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>2</td>
<td>Barb fitting</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>3</td>
<td>Gasket</td>
<td>NBR, Stainless steel</td>
<td>–</td>
</tr>
</tbody>
</table>

### Barb elbow: M-3ALU-2, M-5ALHU-2

<table>
<thead>
<tr>
<th>Applicable tubing (O.D. x I.D. (mm))</th>
<th>Thread</th>
<th>Model</th>
<th>H</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>I</th>
<th>J</th>
<th>Weight g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø2 x Ø1.2</td>
<td>M3 x 0.5</td>
<td>M-3ALU-2</td>
<td>5</td>
<td>9</td>
<td>6.5</td>
<td>4</td>
<td>4</td>
<td>0.9</td>
<td>2.5</td>
<td>2.5</td>
<td>9.4</td>
<td>5</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>M5 x 0.8</td>
<td>M-5ALHU-2</td>
<td>7</td>
<td>11</td>
<td>7.5</td>
<td>4</td>
<td>4</td>
<td>0.9</td>
<td>3</td>
<td>3.5</td>
<td>13.5</td>
<td>7</td>
<td>3.5</td>
</tr>
</tbody>
</table>

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<tr>
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<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sleeve</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>2</td>
<td>Stud</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>3</td>
<td>Barb elbow</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>4</td>
<td>Gasket</td>
<td>NBR, Stainless steel</td>
<td>–</td>
</tr>
</tbody>
</table>

### Barb one-touch: M-32F-2, M-04F-2

<table>
<thead>
<tr>
<th>Applicable tubing (mm)</th>
<th>(O.D. x I.D.)</th>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>M</th>
<th>Weight g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø2 x Ø1.2</td>
<td>Ø3.2</td>
<td>Ø4</td>
<td>M32F-2</td>
<td>17.7</td>
<td>13.7</td>
<td>7.5</td>
<td>4</td>
<td>12.7</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>Ø4</td>
<td></td>
<td>M-04F-2</td>
<td>18</td>
<td>14</td>
<td>8.5</td>
<td>4</td>
<td>12.7</td>
<td>2.9</td>
</tr>
</tbody>
</table>

#### Parts list

<table>
<thead>
<tr>
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<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sleeve</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>2</td>
<td>Body</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>3</td>
<td>Seal</td>
<td>NBR</td>
<td>–</td>
</tr>
<tr>
<td>4</td>
<td>Cassette</td>
<td>POM, Stainless steel</td>
<td>–</td>
</tr>
</tbody>
</table>

### Reducer: M-32R-2, M-04R-2

<table>
<thead>
<tr>
<th>Applicable tubing (O.D. x I.D. (mm))</th>
<th>Fitting size øD</th>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>Weight g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø2 x Ø1.2</td>
<td>Ø3.2</td>
<td>M-32R-2</td>
<td>36</td>
<td>20.5</td>
<td>31.5</td>
<td>0.9</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Ø4</td>
<td>M-04R-2</td>
<td>36.5</td>
<td>32</td>
<td>0.9</td>
<td>4</td>
<td>0.8</td>
<td></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sleeve</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>2</td>
<td>Studded body</td>
<td>Brass</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>3</td>
<td>Stem</td>
<td>PP</td>
<td>–</td>
</tr>
</tbody>
</table>
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