Take-offs (T/O)

Using the attached chart answer the following questions.

1. What size copper tube are you using for the project? ____________________

2. What is the T/O for a 90-degree elbow? ____________________

3. What is the T/O for a tee? ____________________

Figuring End-to-End (E-E) Dimensions

The end-to-end dimension is length to which you will have to cut the pipe to achieve the correct center-to-center (C-C) dimension as shown on the drawing. To figure the E-E, subtract the correct T/O(s) from the C-C dimensions.

Example:

In this example the tube size is 1”. The elbow T/O is ¾”. The tee T/O is ¾”. So we subtract 1 ½” (¾” + ¾”) from 9 ½” for 8”. Therefore, we would cut a piece of 1” tube 8” long t make the example piece.

Figure the E-E cut pieces for your project below:
**Pipe Trades Workshop**

**COPPER SOLDER FITTINGS**

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**DIMENSIONS FOR COMMON CAST COPPER ALLOY SOLDER FITTINGS**

(Given in Inches & Millimeters)

<table>
<thead>
<tr>
<th>Tube Size</th>
<th>Dimensions – Inches</th>
<th>Tube Size</th>
<th>Dimensions – Millimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>1⁄8</td>
<td>0.25</td>
<td>—</td>
<td>0.75</td>
</tr>
<tr>
<td>3⁄32</td>
<td>0.31</td>
<td>0.19</td>
<td>0.88</td>
</tr>
<tr>
<td>1⁄4</td>
<td>0.44</td>
<td>0.19</td>
<td>1.12</td>
</tr>
<tr>
<td>3⁄8</td>
<td>0.56</td>
<td>0.25</td>
<td>1.50</td>
</tr>
<tr>
<td>1⁄2</td>
<td>0.75</td>
<td>0.31</td>
<td>1.84</td>
</tr>
<tr>
<td>5⁄32</td>
<td>0.88</td>
<td>0.44</td>
<td>2.03</td>
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<tr>
<td>1⁄3</td>
<td>1.00</td>
<td>0.50</td>
<td>2.28</td>
</tr>
<tr>
<td>1⁄2</td>
<td>1.25</td>
<td>0.56</td>
<td>2.78</td>
</tr>
</tbody>
</table>

**Note:**
1. Dimensions apply to cast fittings only. Dimensions for wrought fittings have not been standardized.
2. Dimension for table based on fittings manufactured to ANSI standards.
3. Tube size dimensions are nominal sizes.

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**KEY**

A, B, D, E, G, H, I, J see dimensions in the table below.

- C = Female end connection (fits copper tube diameter).
- FTG = Male connection (diameter same as copper tube).
- F = Female thread (National Pipe Thread Internal – NPTI)
- M = Male thread (National Pipe Thread External – NPTE).