



Directions for Accurately Measuring Vessel Heads

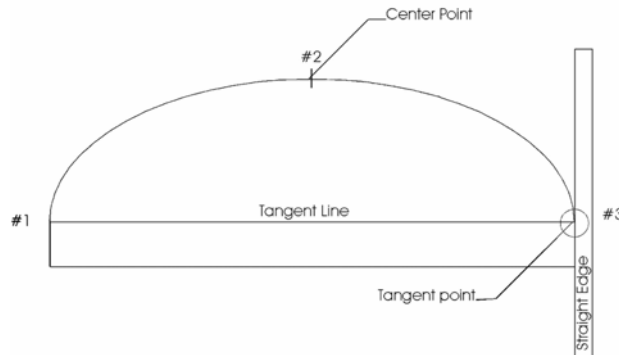
Filling out the Head Order Form:

First step is to obtain the correct Extol of Ohio Inc. Order Form per Head type. Example: Flanged & Dished Head Form, Elliptical Head Form, Hemispherical head Form, etc. Each form contains a description of the head type. It identifies all dimensional data required per type.

If the head is anything other than a 2:1 Elliptical or an ASME Flanged and Dished Head, in addition to providing the information on the Head Order Form, it is imperative to provide a template of the vessel head shape. Use the "Template Master" tool to help facilitate this requirement.

Using the "Template Master" Tool:

1. Use a long, steel tape measure. Obtain the circumference of the vessel. Indicate the circumference on the finished template and on the proper Head Order Form.
2. Use a straight edge to determine where the head ends and the cylinder starts. This is known as the tangent line. Use a piece of tape and mark this point on both sides of the vessel head. (See Fig. 1)
3. It is not always necessary; however, it is helpful to determine the center point of the Head. Again, place a piece of tape to identify this point on the vessel head. (See Fig. 1)
4. Using the ATemplate Master≡ tool, place one end of tool at one of the tangent points, then follow it around the curvature of the head, over the center point, to the other tangent line; tightening the tool as you go.
 - A) Measure from 1 to 3 or from 3 to 1 (See Fig. 1)
 - B) For directions on tightening the tool, see attached form for the "Template Master" tool.



5. When you reach the mark at the tangent line, use a piece of tape to identify the center point of the head on the tool, and, another piece of tape to mark the tool at the point where the tool touches the mark identifying the tangent line.
6. Remove the tool from the head, being careful not to bump it, as this may cause it to move, thus changing the radius.
7. Lay a piece of cardboard on a flat surface. Lay the tool onto this piece of cardboard. Trace the curvature onto the cardboard, then cut the cardboard template out.
8. Identify and mark the center point and both tangent lines onto the template. Remember to identify the circumference in inches.
9. Return to the head with the cardboard template. Use the head to check the fit of the template. Make any necessary adjustments needed.
10. Carefully fold template up and send to Extol of Ohio. It will take us approximately 2 days to determine if additional dimensional information is required for us to produce the head.