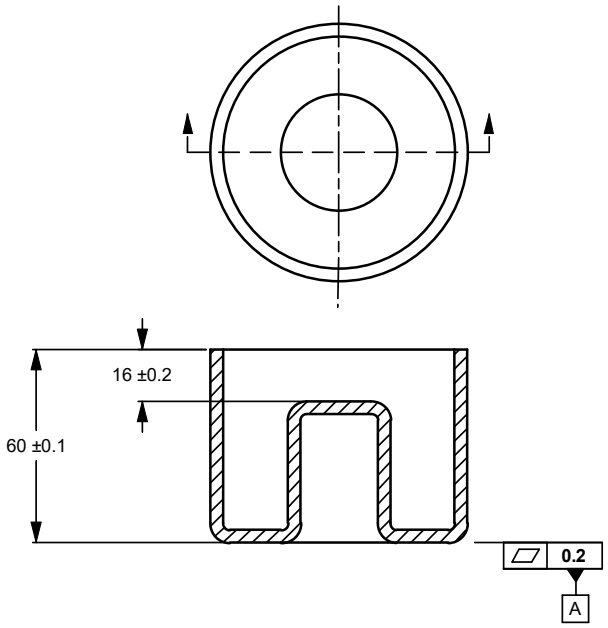
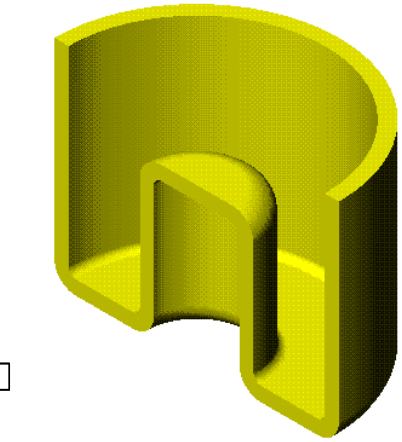
April 2001
Tip-of-the-Month

Being Clear is as Easy as Being Cloudy.

A faithful reader of these Tips called with a question that had caused controversy at his company. The question dealt with the most appropriate way to measure the 16±0.2 dimension. Some thought that the measurement should be oriented relative to Datum A as is shown in Figure 1. Others thought that since the dimension is shown from the top of the part, the measurement should be made oriented relative to the top as shown in Figure 2. The approach taken would make the difference between acceptance or rejection of the parts. The real answer depends on whether you are buying or selling. The drawing is not clear. In other words, it contains a loophole. Toleranced dimensions do not have a clear origin of measurement unless there is a note on the drawing relating the toleranced dimensions to datums or a dimension origin symbol has been used as in Figure 3. Figure 1 is not appropriate since there isn't anything to relate the dimensions to datum A. Figure 2 is another possible interpretation. The variation of the measurement can change depending on which feature is used to establish the orientation of measurement.





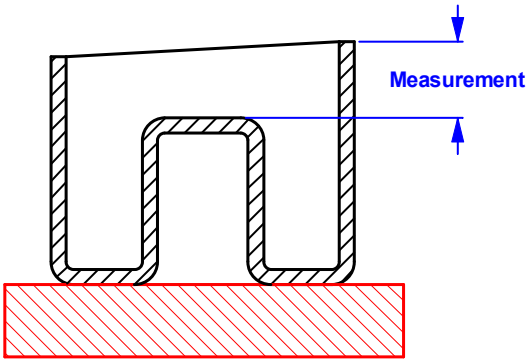


Figure 1

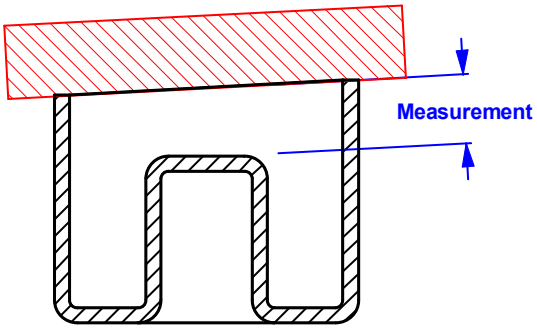


Figure 2

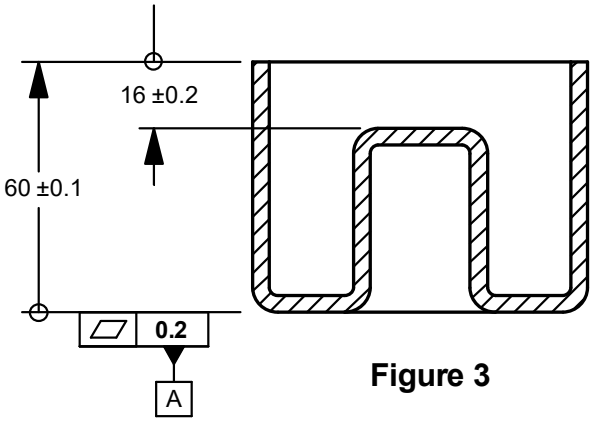


Figure 3

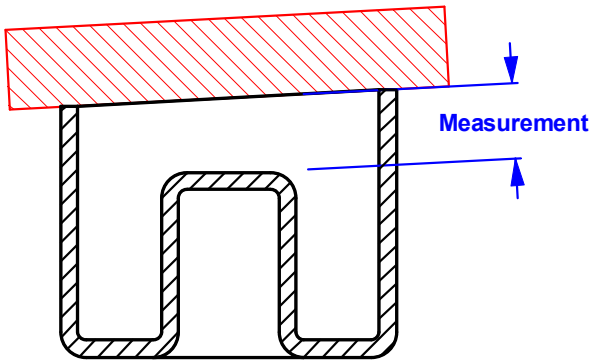


Figure 4

By using the dimension origin symbol, shown above, or a profile of a surface control referencing a datum, shown below, the drawing's meaning becomes clear.

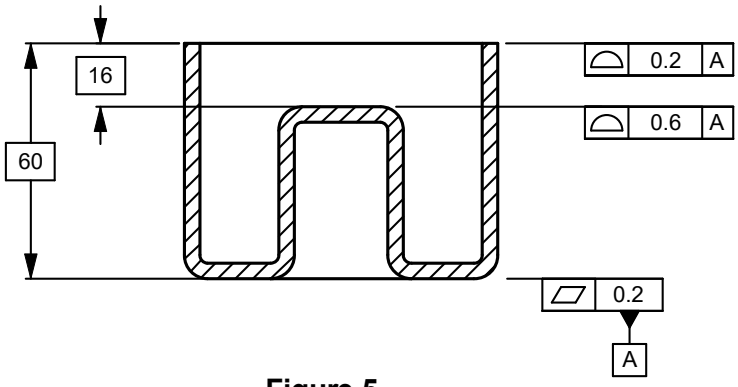


Figure 5

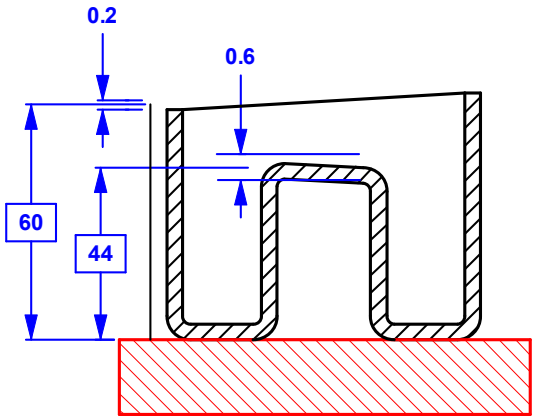


Figure 6