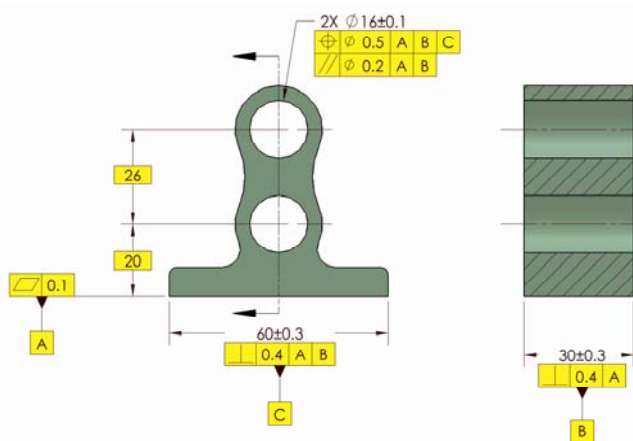


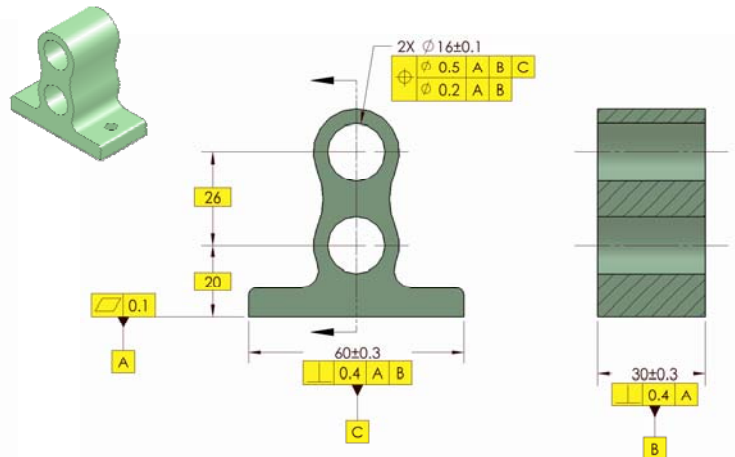
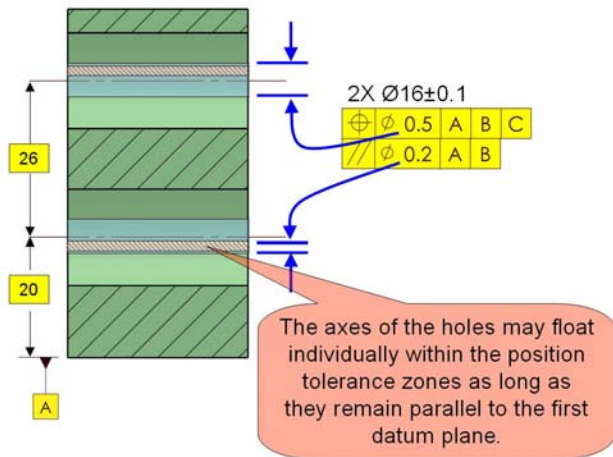
September 2009 Tip-of-the-Month

Use Composite Tolerances to Control the Feature-to-Feature Relationship

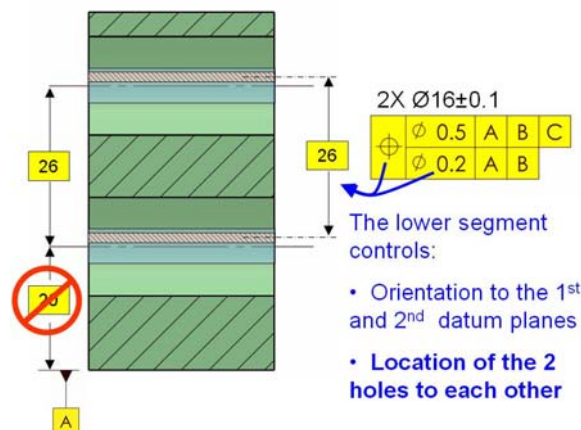
Some folks continue to give the orientation tolerances more power than they deserve. They orient but they do not locate. Therefore, the location of the two holes and their location to each other is specified by the position tolerance. From The GD&T Hierarchy, you know that locating tolerances like position and profile of a surface also control orientation. But, we can refine this orientation by pulling the appropriate orientation controls (parallelism, perpendicularity and angularity) from our toolbox.



On this drawing the orientation of the 2 holes relative to the 1st and 2nd datum planes is refined with parallelism, but they are free to float relative to one another within their position tolerances of 0.5. Parallelism is an orientation tolerance and never locates anything. It does not tighten the location within the pattern.



If you want to tighten the location of the holes within the pattern, as well as the parallelism, you have to use composite position. The datum features referenced in the lower segment of a composite tolerance are there to tighten up the orientation. Since this is a position control, the location of the features within the pattern is also controlled, in this case, to $\varnothing 0.2$.



This is much easier to illustrate in an animation so be sure to go to <http://www.tec-ease.com/tips/Sep-09.htm> to view a video clip of Don Day explaining this Tip.

Please email us any suggestions or topics that you would like to see covered in our Tip-of-the-Month series.

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