Creo: Counterbore and Countersink Tutorial

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This tutorial is designed to show how to create a Counterbore hole in two different ways.

1. Creating 2 Extrudes
2. Using the Hole Tool

Types of Holes
Counterbore Holes

Option 1: Extrudes

When creating a Counterbore hole it does not matter which hole you cut first when using CADD software. When cutting a real Counterbore hole in a piece of metal or wood then the user should always cut the large hole first then the smaller hole.

A. Hole One
   1. Select extrude select your surface to work on
   2. Draw a circle that represents the large hole or small hole
   3. Change the diameter of the circle and locators to correct size
   4. Green Check
   5. Set depth of hole and cut in the correct direction (Note Small Hole typically goes all the way through and large hole has a depth)
   6. Green Check to accept

B. Hole 2
   1. Select Extrude second time
   2. Select surface to work on
   3. Use the reference tool to select the preexisting circle (this will allow you to snap to the center of the circle to make it concentric to the original). You should only have to adjust the diameter of the hole.
   4. Green Check
   5. Set the depth and cut
   6. Green Check
Option 2: Hole Tool

1. Select Model Tab > Hole Tool

2. Place locators on the edges, datums or points to be measured from

3. Press this icon to switch from simple hole to Counterbore or countersink
4. Select the Counterbore icon on the toolbar
5. Select the Shape Tab in the Info Bar: This will show you your measurements in graphical form (NOTE You can also change the values on the part)

Shape Menu Looks as follows

6. Green Check (If you are unable to green check out then you did not set the locator dimensions)
Countersink Hole

1. Select Hole Tool (NOTE this is the only way to properly build a countersink hole) > Select the surface that the hole will be placed on.

Press this icon to switch from simple hole to Counterbore or countersink
2. Select Countersink Icon

3. Select the Shape Tab on the toolbar > Set Values of your hole

4. Green Check to accept the settings for the hole
Dimensioning Counterbore Hole

1. Place view showing the concentric holes
2. Place centerlines. NOTE: Be sure to have the centerlines extend beyond the larger hole

3. Counterbore Dimensioning
   a. Select Dimension Tool in the Annotate Tab > Double Click on the outer circle of the counterbore (NOTE Leader Arrows should always point to the larger hole) This will place the diameter of the large hole
4. Deselect the dimension tool > Left click on the diameter of the larger hole > Select Dimension Tab > Select the Dimension Text Icon > Notice in the display area the @D this represents the diameter of the large hole (it is a variable, we will not right down the diameter of the large hole since the @D represents it).

5. Add the notations as shown. Use the Text Symbol for Diameter and Depth. (NOTE: Dimension for a counter bore is as follows)
6. Finished Dimension

**Countersink Hole Dimension**

1. Process is the same. The Dimension Scheme for a counter is as follows.
2. Set outer hole dimension (Large Hole) > Double Click on the Value > Select Display Tab > Input the following size for the hole. (NOTE @D still represents the diameter of the large hole)

3. Finished Hole Dimension