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Tips & Tricks

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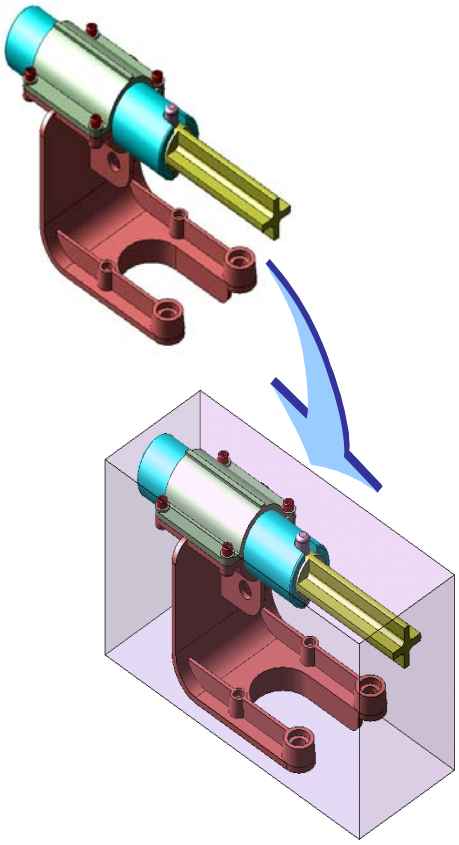
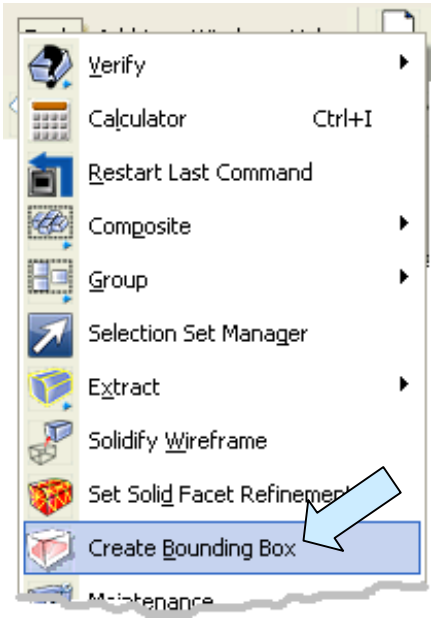
Tips & Tricks #76
Using a Bounding Box for Packaging

Many users are not aware of the powerful Bounding Box Function available in KeyCreator.

In this exercise, we'll use this versatile tool to quickly develop a box size and packaging for shipping the assmbly illustrated to the right.

This assembly is available for download as file "ArborAssy8.'



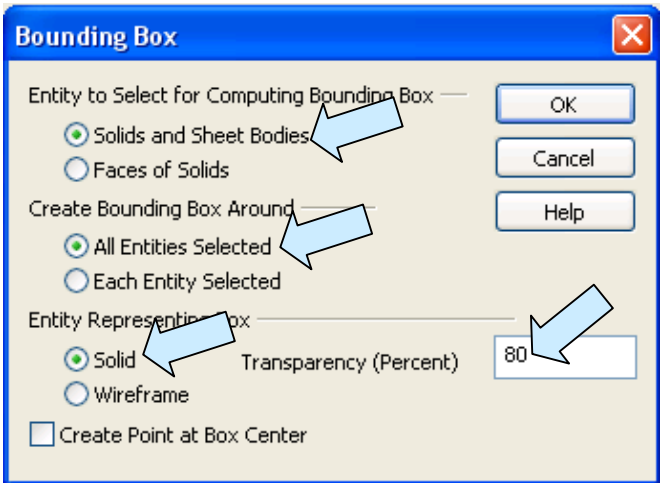


With the assembly displayed on the screen, we'll click on the CREATE BOUNDING BOX Icon.

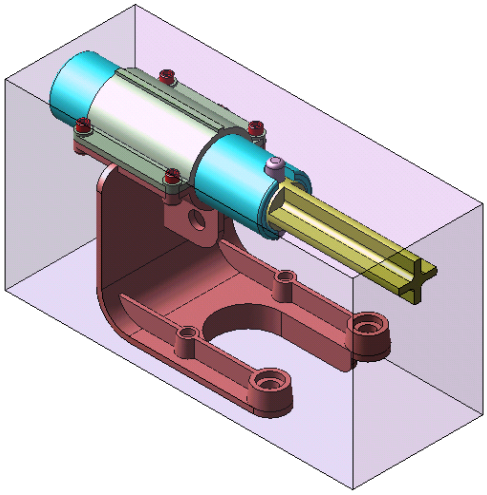
We'll select Solids and Sheet Bodies, All Entities Selected, and Solid for the Entity representing the box.

A transparency setting of about 80 percent is a good value.

We'll click on OK.

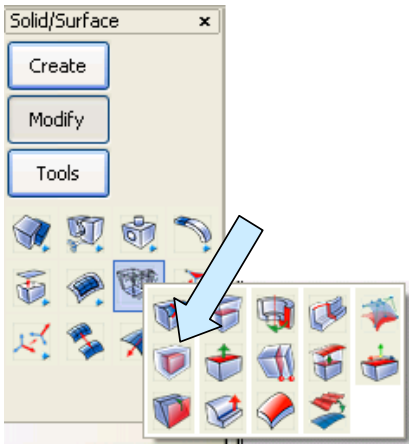


We'll select ALL DSP and ALL and click on Accept.
Then, we'll select the CPlane/Depth Option on the Conversation Bar.
When we are prompted with "CPlane = 1" we'll accept that.



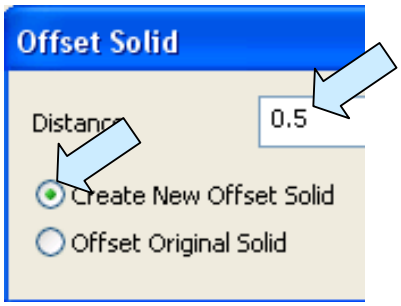
Then we'll click on Accept two more times to accept the default Depth equal to 0.

You will now have a Bounding box surrounding the assembly. The bounding box is a solid, just like any other solid that you would make yourself. So we can use some additional tools and this bounding box to help design our packaging.

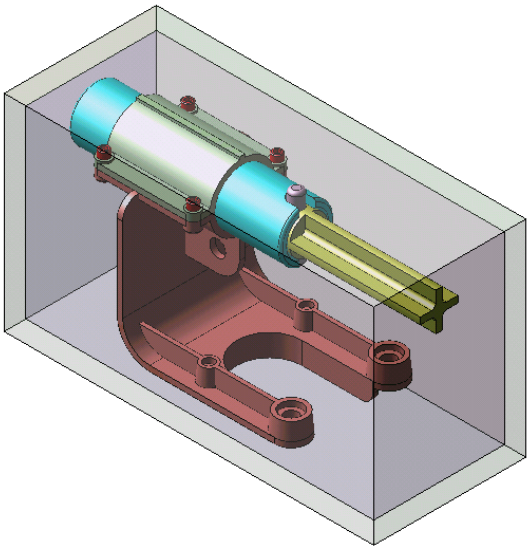


Let's assume that we want to specify a shipping box where the inside walls have 0.5 inch clearance on every side of this bounding box. (We might use white foam plates to protect the mechanism from damage during shipping.)

Select a new construction color and then click on the OFFSET SOLID Icon.



Type 0.5 for the Distance and select the Create a New Offset Solid Option.

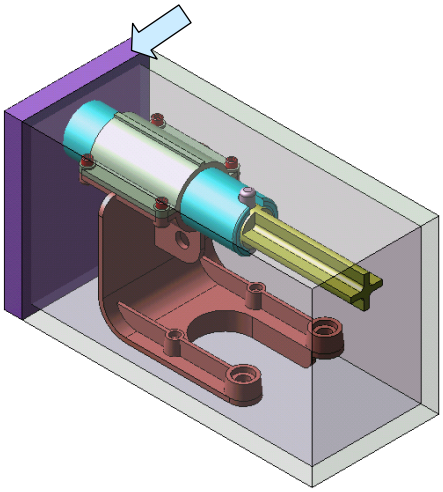


Click on the bounding box and a new, larger box is created. (I've shown mine with transparency here so you can see everything inside.)

This new solid has the inside dimensions of the shipping box that you will specify for this product.

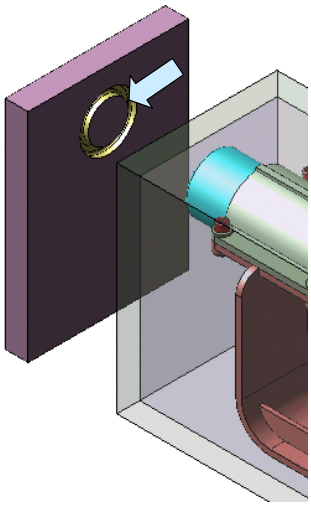
We can quickly create two end shipping plates and a base shipping plate in the following manner:

Using the EXTRUDE Function with a Distance of 1 inch, select the four edges on the left face of the last offset solid and then the vector facing toward the right.

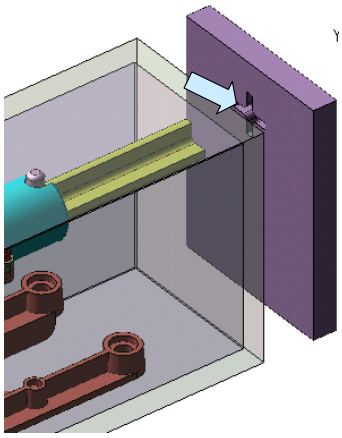


This creates a foam plate that overlaps the left end of the main arbor on the assembly.

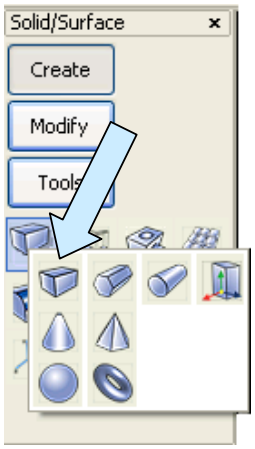
We can then use the TRIM SOLID TO SOLID Tool, First Body Only, Selected Portion Only, to subtract the projection of the arbor tube into the plate.



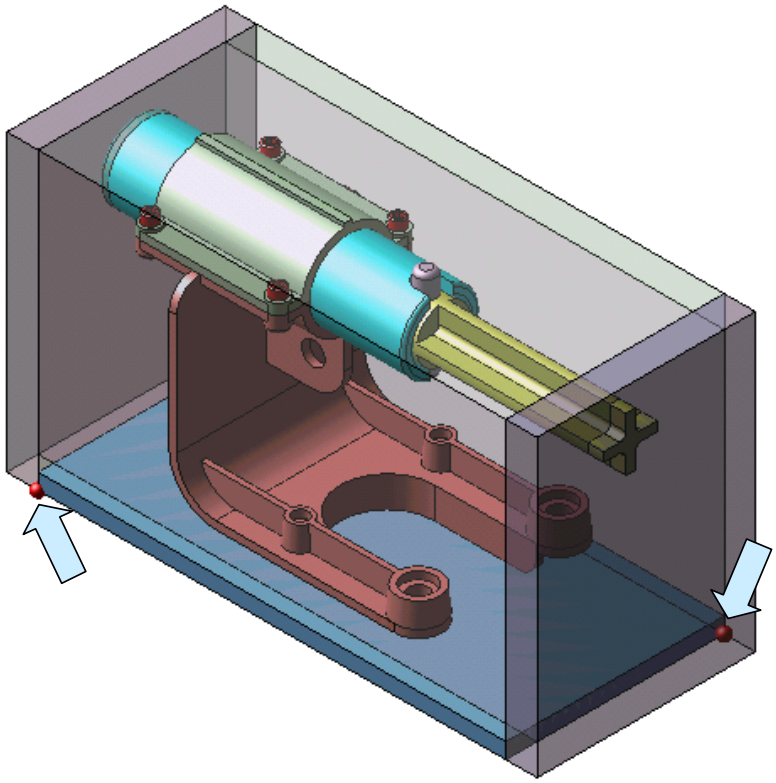
This will create a positioning pocket in the plate that keeps the assembly stationary at this end. (I've exploded the plate so it is visible in this illustration.)



Next, we'll create a plate on the right end using the same 1 inch extrusion distance and again use the TRIM SOLID TO SOLID Tool to create a positioning recess in the plate that holds the right end of the arbor spindle.



Finally, we can create a base plate using the PRIMITIVE BLOCK Tool and Sketch Mode, selecting the two opposite inside corners of the end positioning plates.



If the base plate is 0.5 inches high, the assembly will sit flush on top of it.

Or, we can make it slightly thicker and use the TRIM SOLID TO SOLID Tool again to create a positioning pocket for the base of the assembly.