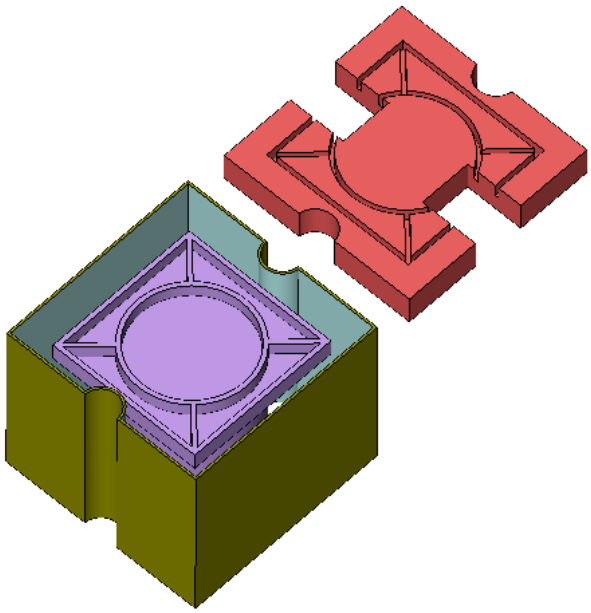
## KeyCreator Lesson KC6506

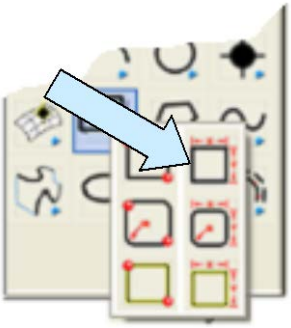
### Creating Shipping Blocks



In this exercise we'll review how to quickly create a simple foam shipping block used to stabilize components of an assembly during shipping.

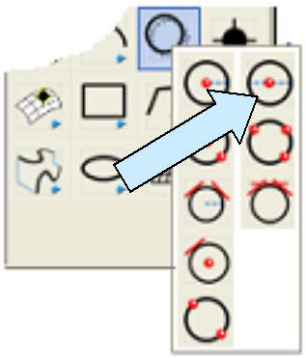
The resulting foam piece is colored light red in the illustration to the right.

We'll start with a new file in View 1. (The Top View.)



Click on the CREATE RECTANGLE BY WIDTH HEIGHT Icon. Use the MidCtr Anchor Option.

Type 24 for the Width and Height and using the KeyIn Option, hit the ENTER Key three times to locate the rectangle at the origin.



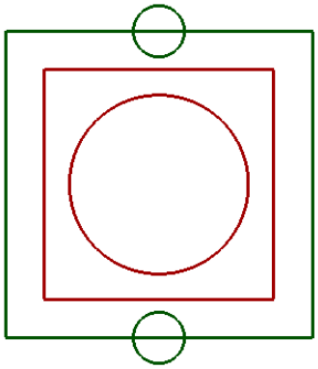
Next, click on the CREATE CIRCLE BY DIAMETER Icon. Type 4 for the Diameter.

Using the CtrMid Option, click on the top and bottom edges of the rectangle.

Now, select a new construction color.

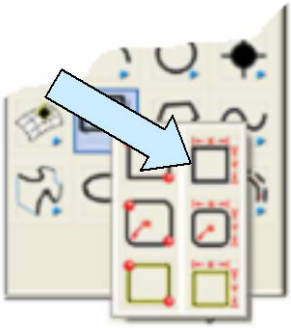
Using the CREATE RECTANGLE BY WIDTH HEIGHT and CREATE CIRCLE BY DIAMETER Tools, create an 18 x18 rectangle and a 14 inch diameter circle both centered on the origin.

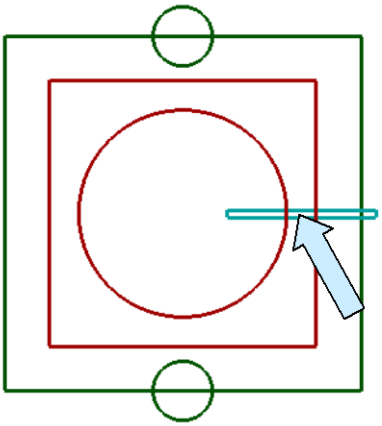
Your screen should now look like this:



Select a new construction color.

Next, using the CREATE RECTANGLE BY WIDTH HEIGHT Icon with the MidCtr Anchor Option, type 10 for the Width and 0.5 for the Height.





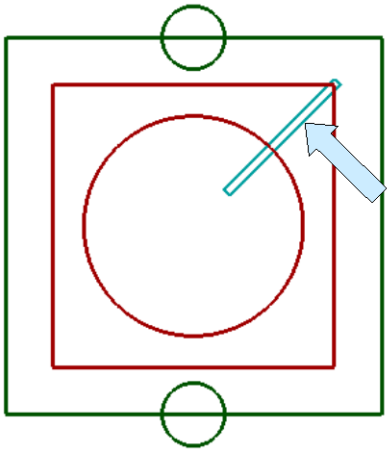
Click on the TwoPos Option and then position the rectangle center between the end of the 14 inch circle and the midpoint of the right side of the 18 inch square. (I've shown this rectangle in Cyan in the illustration to the left.)

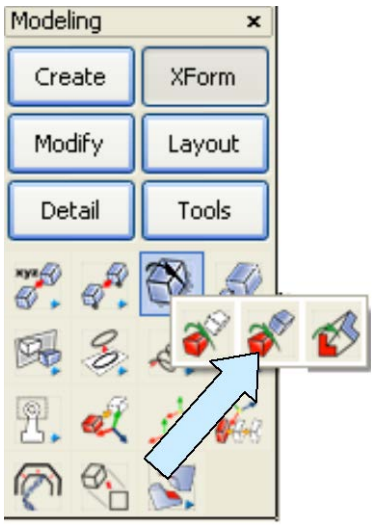
Click on the XFORM ROTATE MOVE Icon.

Select the last rectangle that you created.
Using the CtrMid Option, click on the 14 inch circle.

Hit the ENTER Key.
Type 45 for the Angle and hit the ENTER Key.

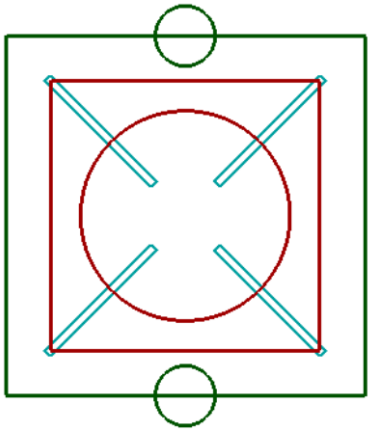
This rotates the small rectangle to this position.



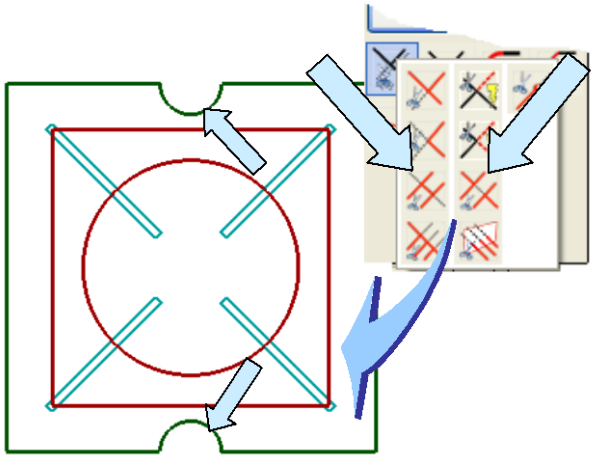



Now, click on the XFORM ROTATE COPY Icon.
Select the rectangle you just moved.
Type 3 for the Number of Copies.

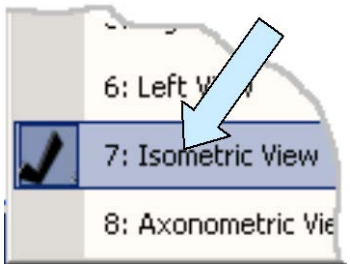
Type 90 for the Angle.



Your screen should now look like this:



Use the TRIM DOUBLE and TRIM DIVIDE Tools to trim the two 4 inch circles and the top and bottom of the 24 inch square so the final profile looks like this:




Now, switch to the Isometric View. (View 7.)

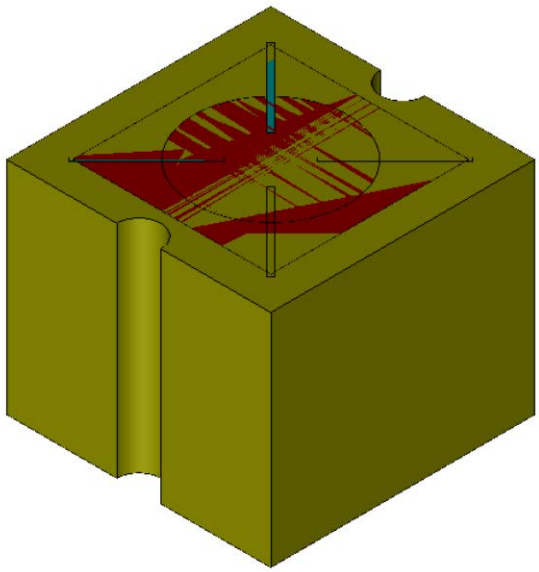

Click on the EXTRUDE Icon. (Note, in the following steps, selecting the various items should be easy since you used different construction colors.)

A Dialog Box appears.
Type 2 for the Length and hit the ENTER Key.

Select the 18 inch square and hit the ENTER Key.
Click on the downward-facing vector.

Next, extrude the four small 10 x 0.5 rectangles downward 2 inches.

Then, click on the BACKUP Button and the EXTRUDE Dialog Box reappears.
Type 16 for the Length and hit the ENTER Key.

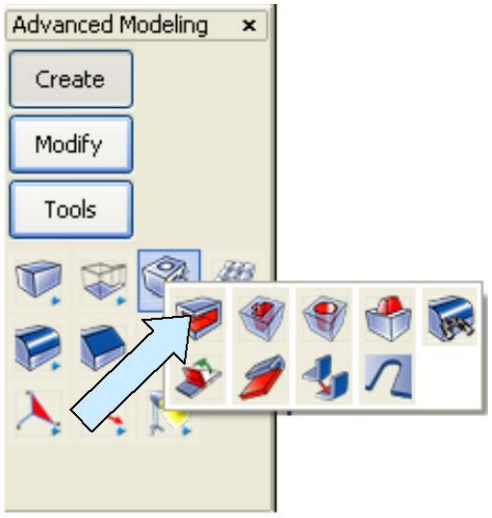


Select the 14 inch diameter circle and hit the ENTER Key.
Click on the downward-facing vector.

Then, click on the BACKUP Button and the EXTRUDE Dialog Box reappears.
Type 20 for the Length and hit the ENTER Key.

Now, select the outermost profile and hit the ENTER Key.
Click on the downward-facing vector.

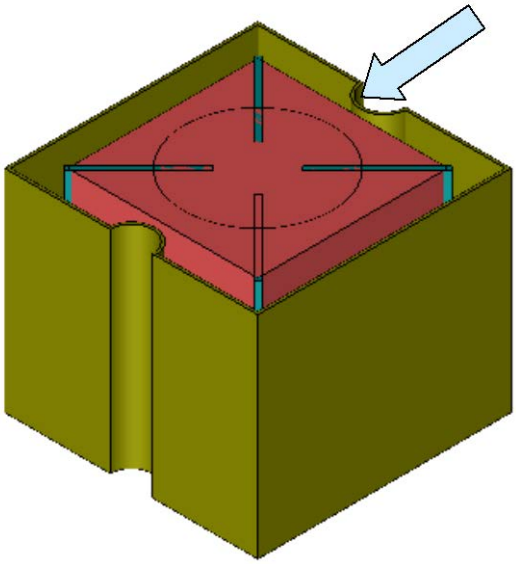
You will now have a collection of solids superimposed on one another in your file.



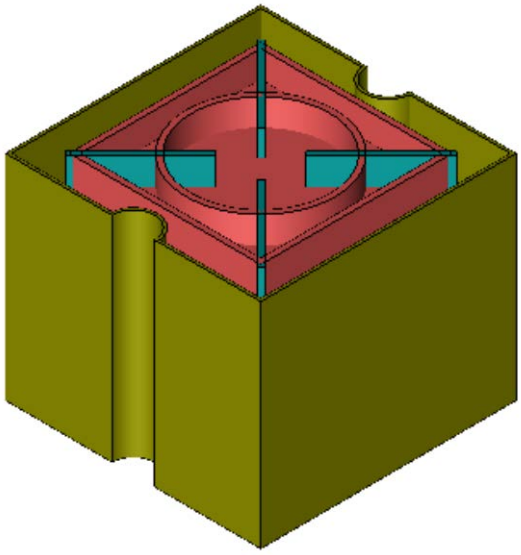

Click on the SHELL Icon.
A Dialog Box appears.

Type 0.25 for the Shell Thickness and hit the ENTER Key.

Click on the top face of the largest outermost) solid and on the hidden bottom face of the same solid. Hit the ENTER Key.



This creates the outer case of our assembly.

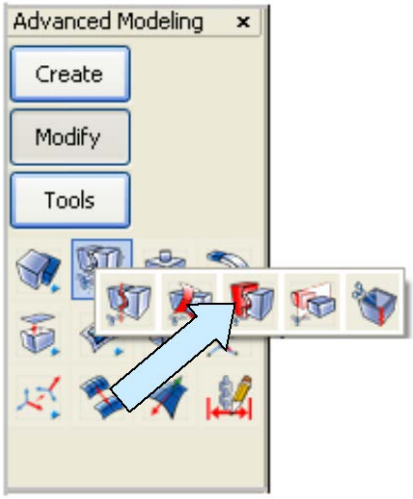


Use the SHELL Function again, this time with a 0.5 shell thickness.

Touch on the top face of the 18 x 18 x 2 rectangular solid and hit the ENTER Key.

Next, click on the top face and hidden, bottom face of the 14 inch diameter cylindrical solid and hit the ENTER Key.

Your screen should now look like this:



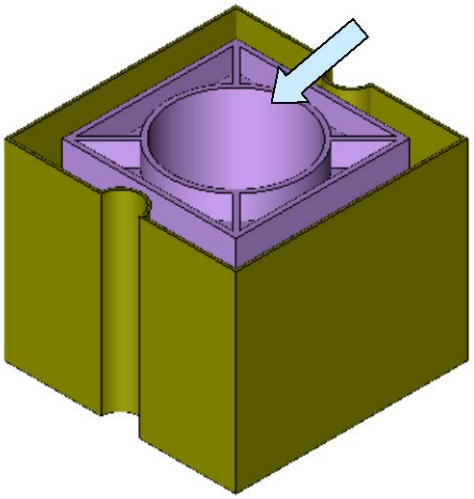

Now, click on the TRIM SOLID TO SOLID Icon. A Dialog Box appears.

Click on the First Body Only and the Selected Portion Only Options. Check the UNITE The Bodies Option and hit the ENTER Key.

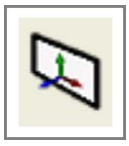
Click on the midpoint of one of the four ribs and then on the outer wall of the center, rectangular solid. Repeat, clicking on the midpoint of the rib and the inner, cylindrical solid. Notice that the center, cylindrical solid, the rectangular solid, and the trimmed rib are all part of one solid now.

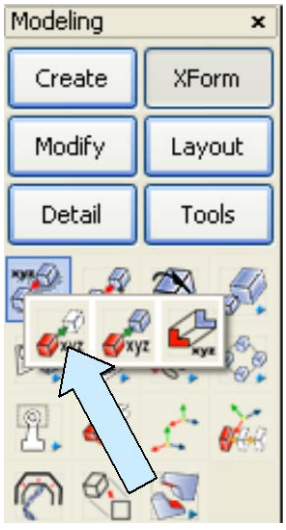
Next click on the midpoint of another rib and then on the center solid. This time, both rib ends trim at the same time and it becomes part of the complex solid.

Repeat with the third and fourth ribs.
Your screen should now look like this:



Click on the CONSTRUCTION PLANE Icon and type “1” for the Construction Plane.






Next, click on the XFORM DELTA MOVE Icon.

Click on the center solid and hit the ENTER Key.
Hit the ENTER Key twice, type 2, and hit the ENTER Key.

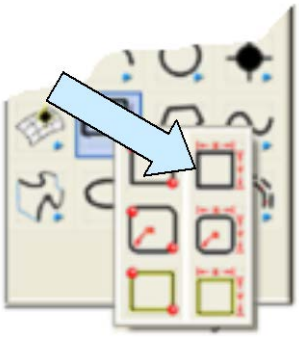
This moves the center solid downward two inches.
We’re now done with our modeling of two components that we want to immobilize with foam shipping blocks.

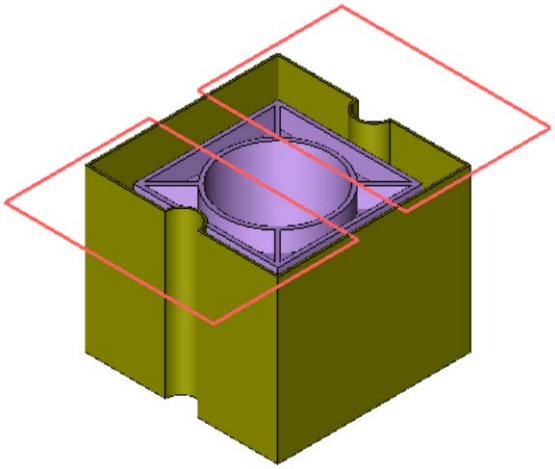
Select a new construction color.

Then, click on the CREATE RECTANGLE BY WIDTH HEIGHT Icon.

Use the MidCtr Anchor Option.
Type 26 for the Width and 18 for the Height.

Using the CtrMid Option, click on one of the circular edges at the top, back portion of the outer solid and then on one of the circular edges at the top, front portion of the outer solid.





Your screen should look like this:

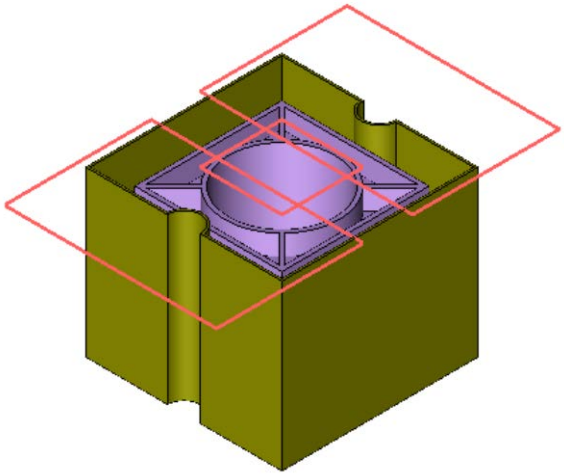
Click on the BACKUP Button.

Type 10 for the Width and 10 for the Height.

Click on the TwoPos Option.

Then, using the CtrMid Option, click on the bottom edge of the first rectangle that you just made and the top edge of the second rectangle that you just made.

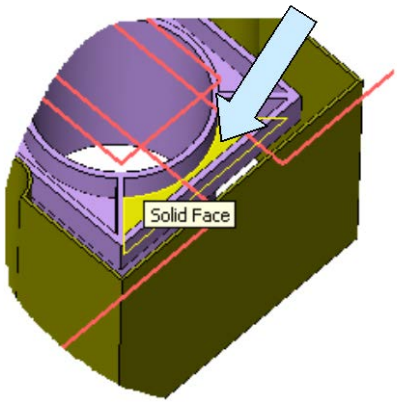
Your screen should now look like this:



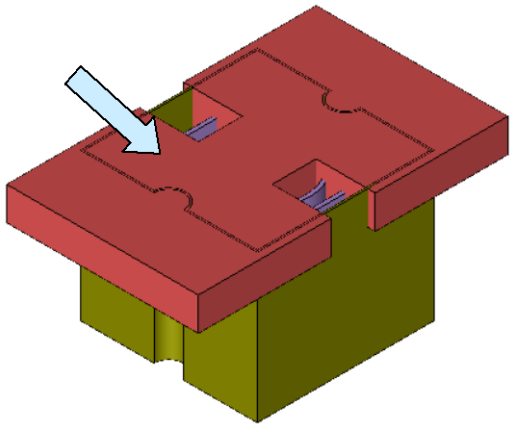

Now, click on the EXTRUDE Icon.

A Dialog Box appears.
Click on the To Face Option and hit the ENTER Key.

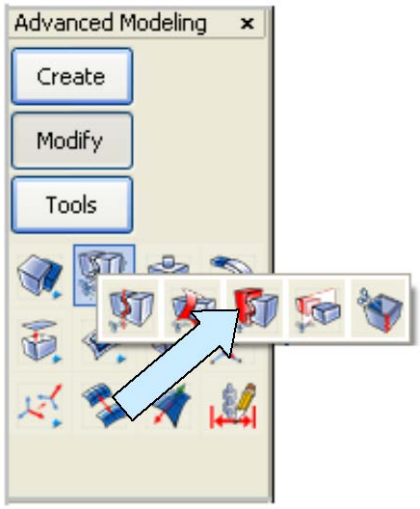
Select the three rectangles that you just made and hit the ENTER Key.




Click on the downward-facing vector and then select one of the top broad faces within the shelled perimeter of the center solid.



You will get a solid that looks like the light red one in the illustration to the left.




Now, click on the TRIM SOLID TO SOLID Icon. A Dialog Box appears. Select the First Body Only and Selected Portion Only Options.

Do NOT check the Unite Option.

Click on the center of the new solid and then on the outer case solid. (This trims the new solid back to the inside surfaces of the outer case.)

Next, click on an outer corner of the new solid and then on the inner solid part. (This trims the new solid to the second part.)

If you move the new solid away from the other two parts and look at the underside, you will see that it has geometry that will next snugly against the features of the inner part while fitting snugly within the inner wall of the outer part.