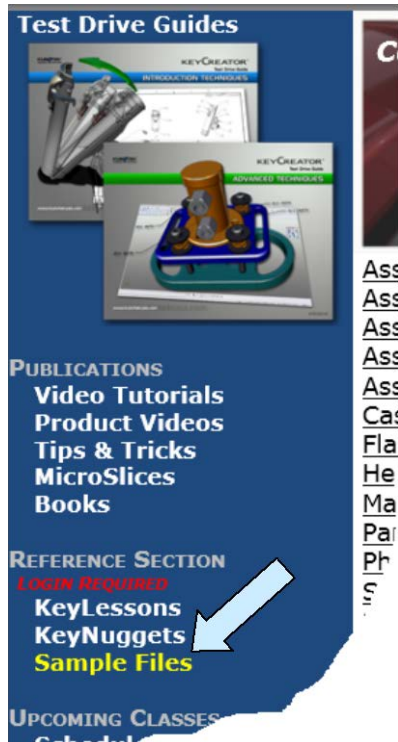
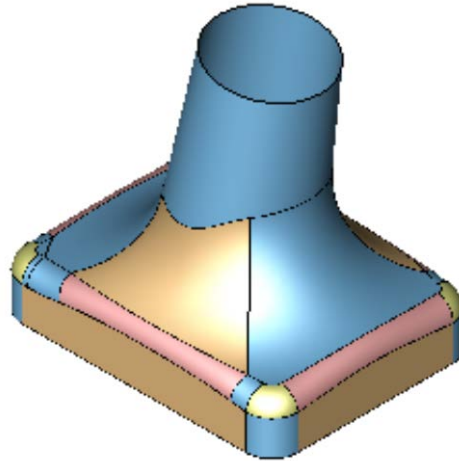


# KEYCREATOR 3D Direct Modeling Software

## KeyCreator Lesson KC8511

### Working with Two Surface Models And Mixed Math

In this exercise we'll analyze two surface models and see how the Mixed Math Option affects the analysis.



Start by clicking on the Sample Files Option on the left side of the main Comparison Suite College Screen.

Then, click on the Transition.zip file in the list of available files.

**Note: Each of these zip files contains a set of two files. One file has "Master" in the name and one file has "Copy" in the name.**

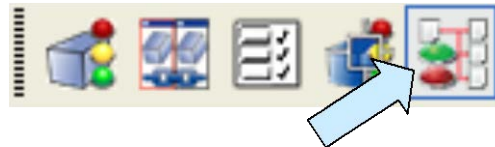
The Transition.zip file will appear in your Downloads folder on your computer.

Right Mouse Click on the zip file and extract the two files within it.

You will have:

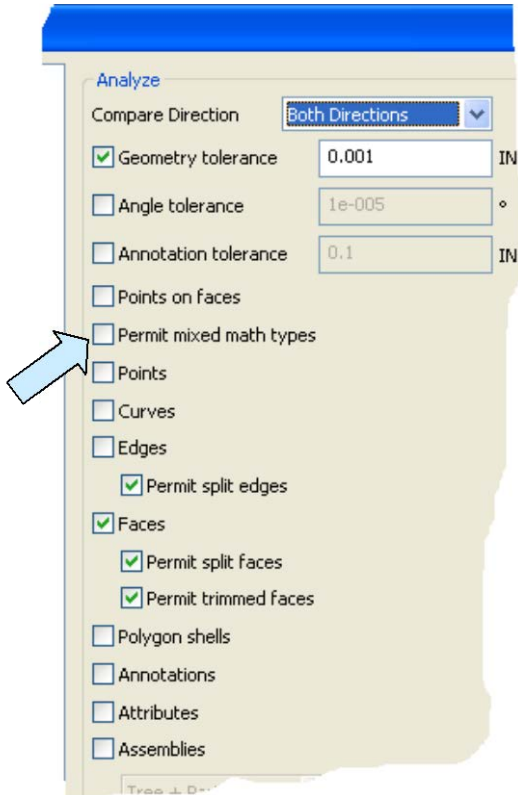
**TransitionMaster.ckd**  
**TransitionCopy.ckd**

Click on the TOGGLE DIFFERENCE RESULTS Icon to display the window if it is not up.



# KEYCREATOR 3D Direct Modeling Software

Click on the SET CONFIGURATION OPTIONS Icon.



We'll use the basic default settings we've been using for most of our comparison lessons with the following exception:

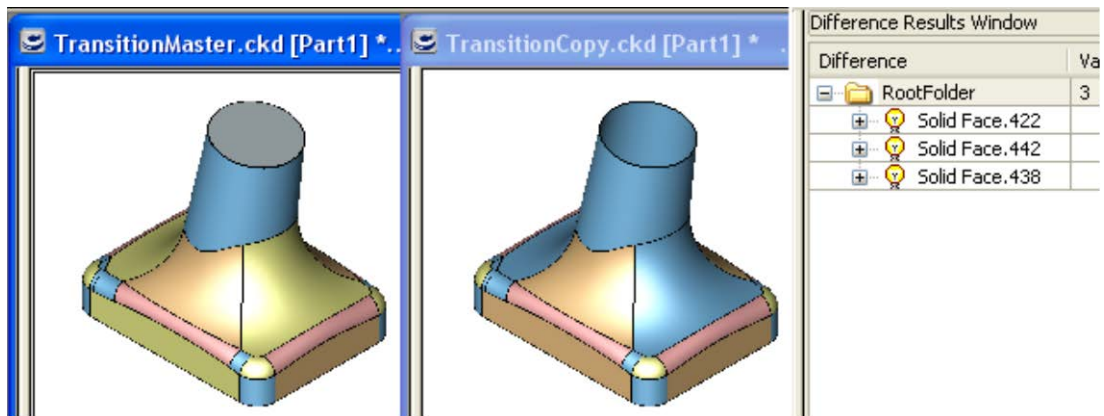
Remove the check from the Permit Mixed Math Types and then click on the OK Button.

Next, click on the VALIDATE PARTS Icon.



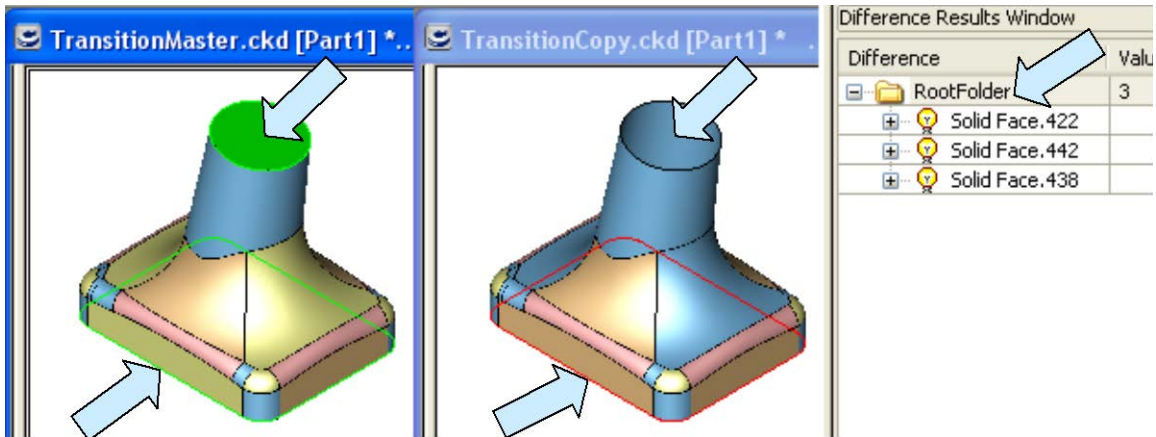
Open the TransitionMaster file as the IS file and the TransitionCopy file as the WAS File.

Your screen should look like this:



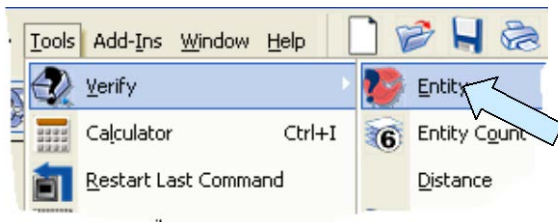
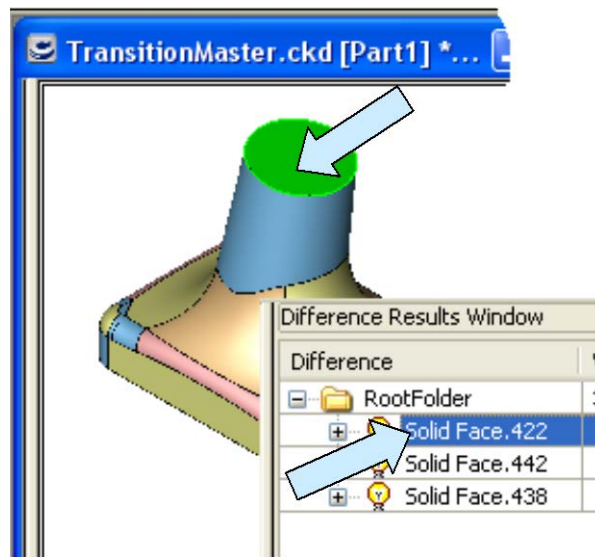
# KEYCREATOR 3D Direct Modeling Software

Click on the RootFolder Row in the Difference Results Window and you will see faces highlight in the IS and WAS windows.



Obviously, the top capping face is missing from the WAS model. (You can see the face in the IS model illustrated to the right with the single entry in the Difference Results Window.)

If we wanted to correct the WAS model, we could create a capping face on the top of the part.

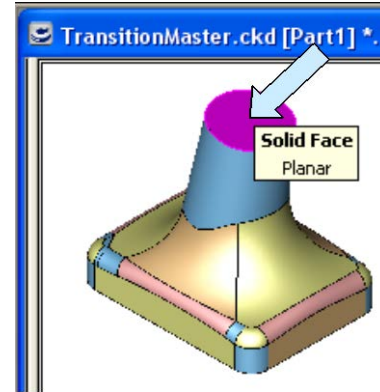


It would be a good idea to first verify the existing face in the IS model.

Click on TOOLS/ VERIFY/ ENTITY and move the cursor over the capping face.

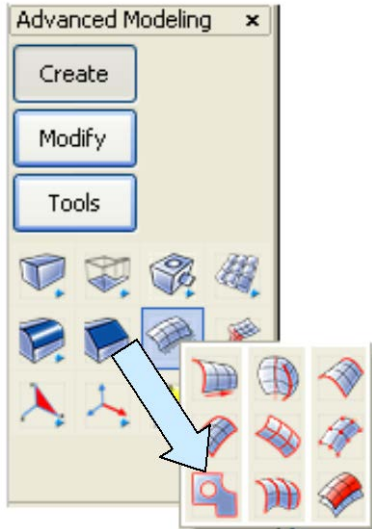
# KEYCREATOR 3D Direct Modeling Software

The tool tip indicates that the capping face is a planar surface.

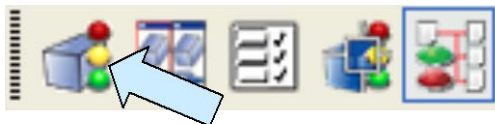
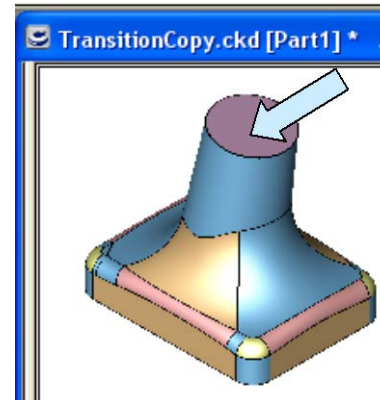


Click in the WAS Model window to activate it.

Click on the PLANAR BOUNDARY SURFACE Icon. Select the top, circular edge in the WAS model and hit the ENTER Key.



Your WAS model will now have a top capping surface.



Now, click on the VALIDATE PARTS Icon. You are asked if you wish to continue with the current parts. Click on the YES Button.

Notice that the Difference Results Window updates and there are now only two entries.

Difference Results Window

Difference	Value
RootFolder	3
Solid Face.422	
Solid Face.442	
Solid Face.438	

**BEFORE**

Difference Results Window

Difference	Value
RootFolder	2
Solid Face.442	
Solid Face.438	

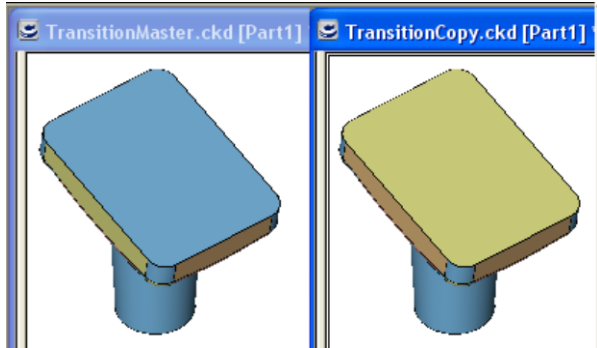
**AFTER**

# KEYCREATOR 3D Direct Modeling Software



Dynamically Rotate the part in the IS window so the bottom capping surface is visible.

Then, click on the SYNCHRONIZE VIEWS Icon so both the IS and WAS files match.

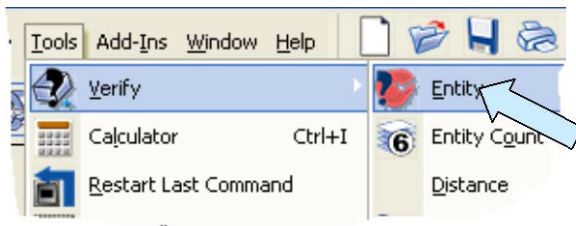


Difference Results Window	
Difference	Value
RootFolder	2
Solid Face.442	
Solid Face.438	

Your screen should look like this:

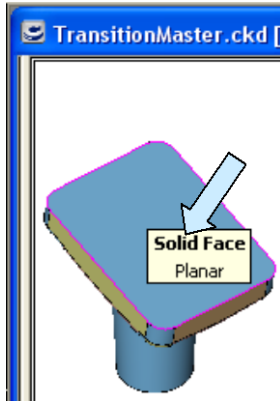
If you widen the Difference Results Window and click on the “+” on each of the Solid Face Entries to expand them, you’ll see that there is a Difference Message “Ents not the Same”

Difference Results Window	
Difference	Value
RootFolder	2
<ul style="list-style-type: none"> <li>Solid Face.442                             <ul style="list-style-type: none"> <li>IS ID(s) 442</li> <li>WAS ID(s)</li> <li>Difference ... Ents not the Same</li> <li>IS Position ( 0, ...</li> <li>WAS Position ( 0, ...</li> <li>Difference -1</li> </ul> </li> <li>Solid Face.438                             <ul style="list-style-type: none"> <li>IS ID(s)</li> <li>WAS ID(s) 438</li> <li>Difference ... Ents not the Same</li> <li>IS Position ( 0, ...</li> <li>WAS Position ( 0, ...</li> <li>Difference -1</li> </ul> </li> </ul>	



Click on TOOLS/ VERIFY/ ENTITY and move the cursor over the capping face in the IS file.

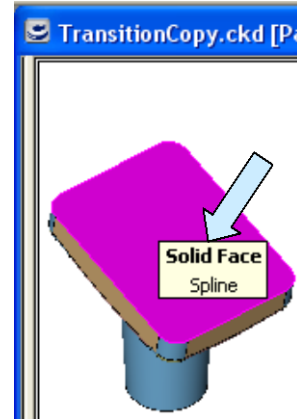
# KEYCREATOR 3D Direct Modeling Software



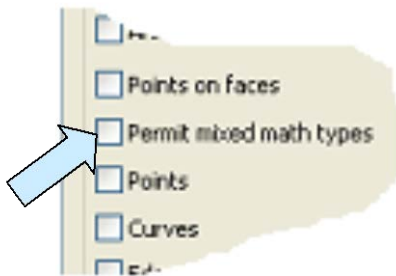
Notice that the tool tip says this is a Planar Face.

Now, click in the WAS file window to activate it.

Then, move the cursor over the capping face on the WAS part.



Notice that the face on the WAS model is a spline face.



The compare function is flagging these faces because we removed the check from the Permit mixed math types in the configuration Dialog Box.

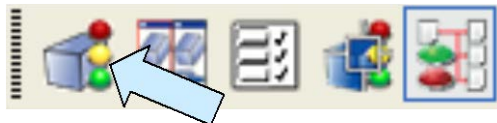
## Verifying the Surface Discrepancy

You can verify this for yourself by trying the following:

First, click on the CONFIGURATION OPTIONS Icon.

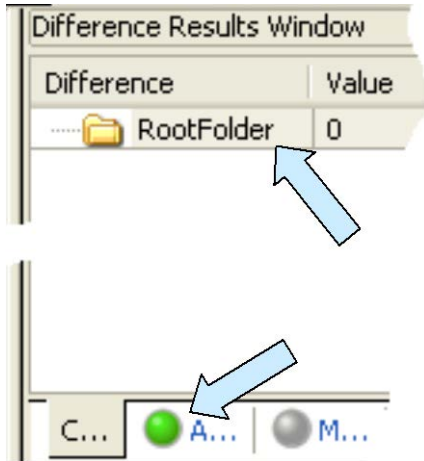


When the Dialog Box appears, click to place a check on the Permit mixed math types and then on the OK Button.



Now, click on the VALIDATE PARTS Icon. Answer YES to using the same parts again.

## KEYCREATOR 3D Direct Modeling Software



Note that no discrepant faces appear in the Difference Results Window and the Status Sphere at the bottom is now Green.

At this point, you might want to delete the spline capping face on the WAS part and create a new face using the PLANAR BOUNDARY SURFACE Icon.

This would make both models absolutely identical.

**Note:** Understanding the Permit Mixed Math Types Switch is very important since you will often find capping surfaces that appear planar but in fact are spline type surfaces. If the person creating the original model uses the Planar Boundary Surface Function, the capping surface will be planar. Conversely, if the capping surface is created using the Edge Curve, Curve Mesh, or one of the other non-planar surface generation tools, it will be a spline surface.