# KEYCREATOR 3D Direct Modeling Software

KeyCreator Lesson KC8505

Evaluating Parts with Different Draft

In this exercise, we'll compare two parts where the draft angle of the draw surfaces is different. To make the illustrations obvious, we'll maker the draft on one part 5 degrees and the draft on the second part 8 degrees. (In actual applications the draft angles could be much closer and not necessarily obvious during casual observation.
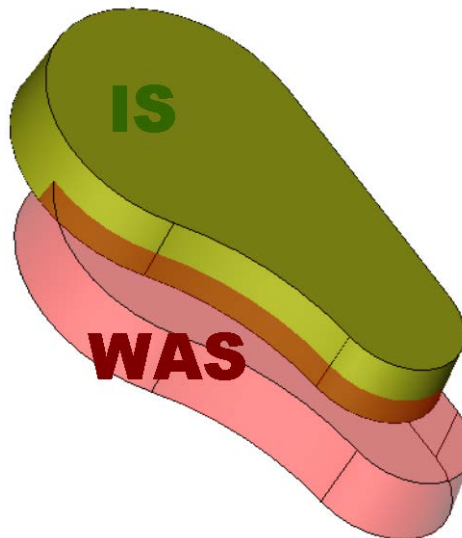
Creating the Sample Parts

Start with a new file in View 1. (The TopView.)
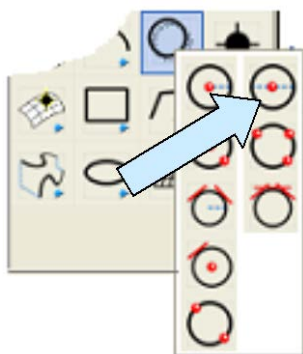
Click on the CREATE CIRCLE BY DIAMETER Icon. Type 3 for the Diameter.

Using the KeyIn Option, hit the ENTER Key three times to place the circle at the origin of the file.

Click on the BACKUP Button. Type 1.5 for the Diameter.

Using the KeyIn Option, type 3 for the X Value and hit the ENTER Key three times.

Next, click on the CREATE LINE TANGENT TO TWO ENTITIES Option. Click on the 3 inch circle at the 1 O'Clock position and the 1.5 inch circle at 1 O'Clock position.
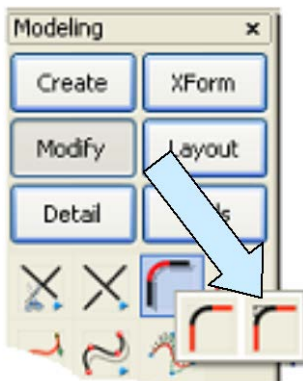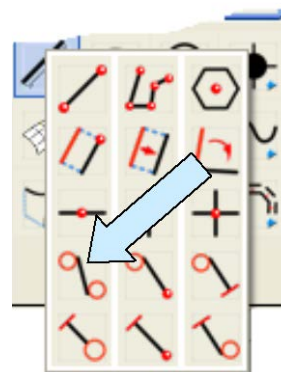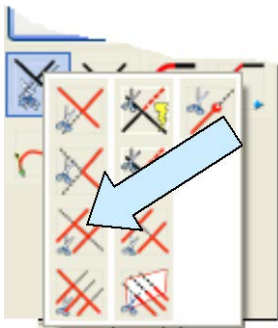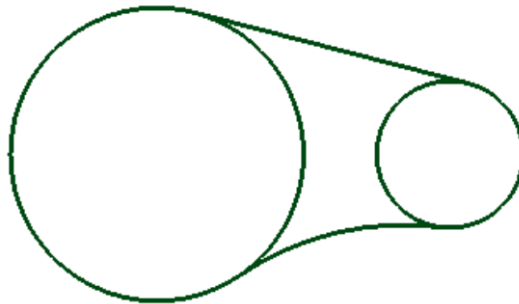
Next, click on the FILLET WITHOUT TRIM Icon. Type 3 for the Radius.

Click on the 3 inch circle at the 5 O'Clock position and the 1.5 inch circle at the 7 O'Clock position.
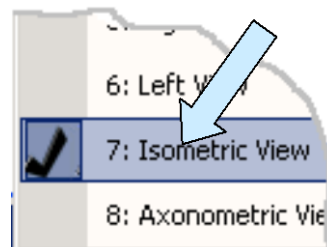
Your screen should look like this:

Click on the TRIM DOUBLE Icon.

Click on the left side of the 3 inch circle and then on the line and the fillet.

Next, click on the right side of the 1.5 inch circle and then on the line and the fillet.
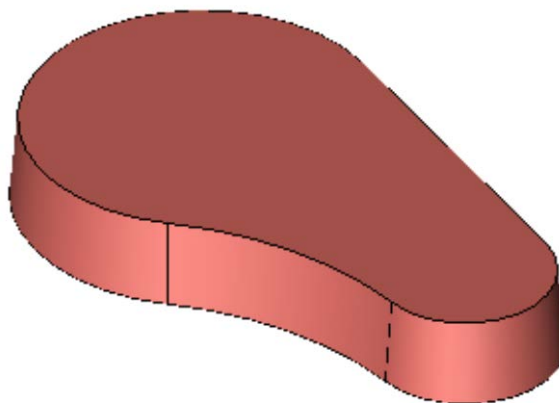
Switch to the Isometric View. (View 7.)

Click on the EXTRUDE Icon. A Dialog Box appears.

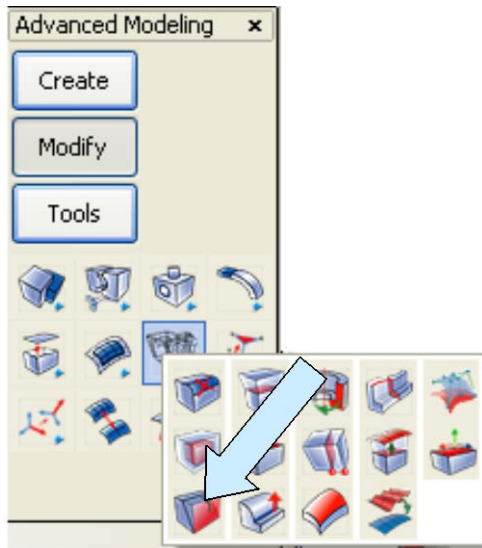Type 0.75 for the Length. Type 5 for the Draft Angle and select the Outward Option. Hit the ENTER Key.

Select the profile on the screen and hit the ENTER Key.

Click on the downward-facing vector.

Your part should look like this:
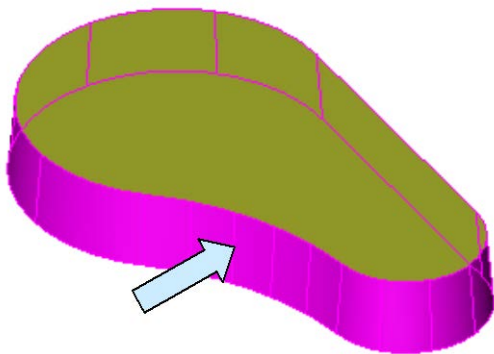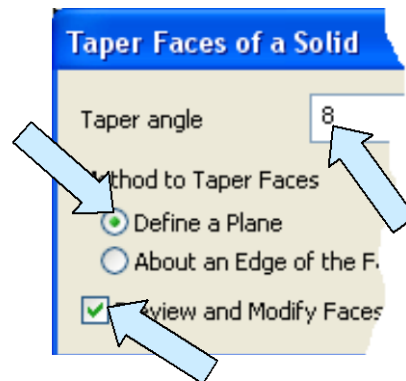Save this file as "SampleTwoWas."

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Now, click on the TAPER FACES Icon.

A small Dialog Box appears.
Type 8 for the Taper Angle.

Click on the Define a Plane Option and click on the Preview Option. Hit the ENTER Key.

Click on the Feature Option on the Conversation Bar and then on the Smooth Option.

Move the cursor over a side face of the part and all of the side faces highlight.

Click while all of the faces are highlighted. Then, hit the ENTER Key three times.

Next, click on the top face of the part.

Notice that a ghost part with eight degrees draft appears. Click on the DONE Button.
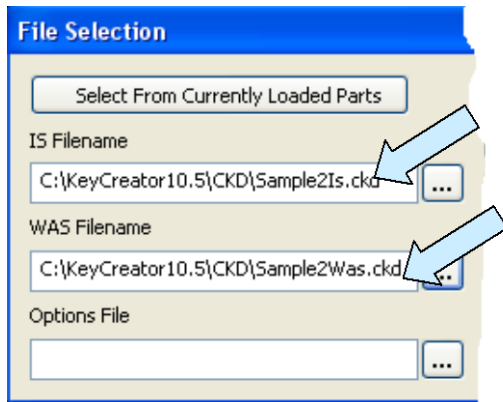
Now, click on the SAVEAS Icon and call this part "SampleTwoIs."
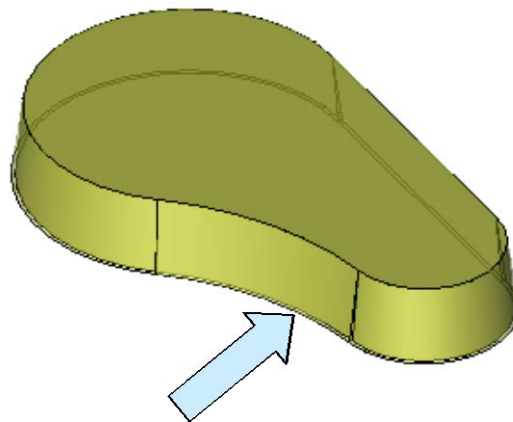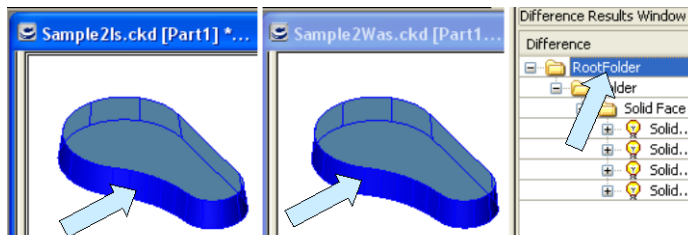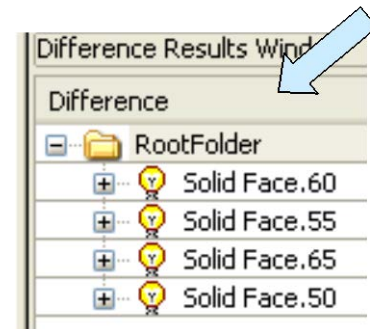
Comparing the Parts

Click on the VALIDATE PARTS Icon.

A Dialog Box appears.

Select the Was and Is parts that you just created and saved and click on the OK Button.

The Difference Results Window should look like this:

If you click on the Root Folder Row, the set of draw surfaces on both parts highlight.

Using the VERIFY FACE DRAFT ANGLE Function

When you are checking draft on parts like this, you can augment the versatility of the Comparison tools by using the powerful Verify Face Draft Angle Tool to double check all of the draw surfaces.

In this particular angle, all of the pull surfaces on the SampleTwoWas part should have a draft angle of five degrees and the equivalent surfaces on the SampleTwoIs part should have a draft angle of eight degrees.

Let's double check with a quick visual to see if this is true. We'll start in the WAS File.

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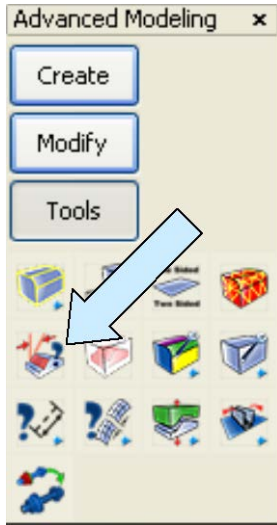
Click on the VERIFY FACE DRAFT ANGLE Icon.

Click on the Feature Option on the Conversation Bar and then on the Smooth Option.

Move the cursor over a side surface of the part and click when all of the side surfaces highlight.

Hit the ENTER Key three times.

Click on the 2 Points Option. Using the CtrMid Option, click on the bottom circular edge at the left end of the part and then on the top circular edge at the left side of the part. This indicates the draw direction.

A Dialog Box appears.

Type 5 for the Draft Angle and hit the ENTER Key.
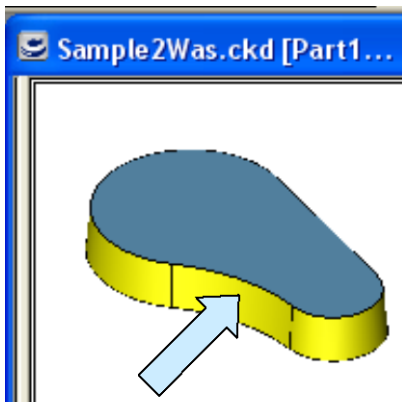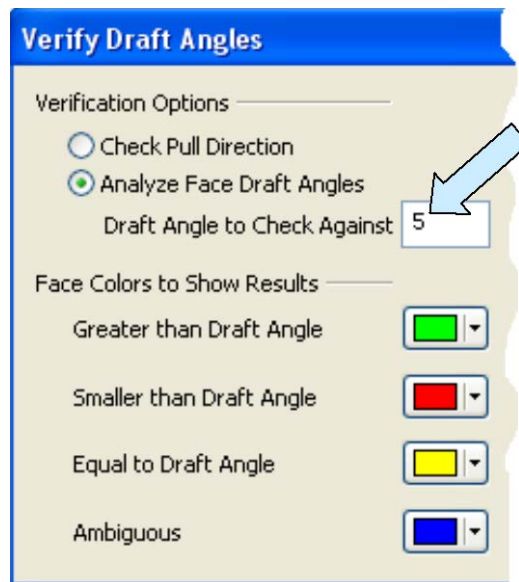
Notice that all of the draft surfaces change to Yellow, indicating that they all have a draft angle of five degrees.

You can run a similar test on the IS file, testing for eight degrees.