



KEYCREATOR[®]

Tips & Tricks



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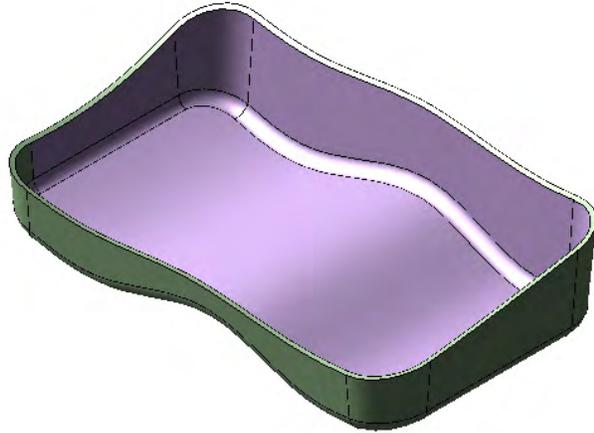
2014 VOL.5

Tips & Tricks #70

Mold Tooling with Non-Planar Parting Line

Slipping a core and cavity block off of a plastic part with a planar parting line is very simple. When you are faced with creating tooling for a part with a complex, non-planar parting line things can get a bit trickier.

The part illustrated to the right is a great example of this. This is available for download as “NonPlanarPL.ckd.”



Level Name	LNum	A...	D...	Count
Model Mode Levels				
Unnamed	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
OriginalPart	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
CopyOfPart	6	<input type="checkbox"/>	<input type="checkbox"/>	1

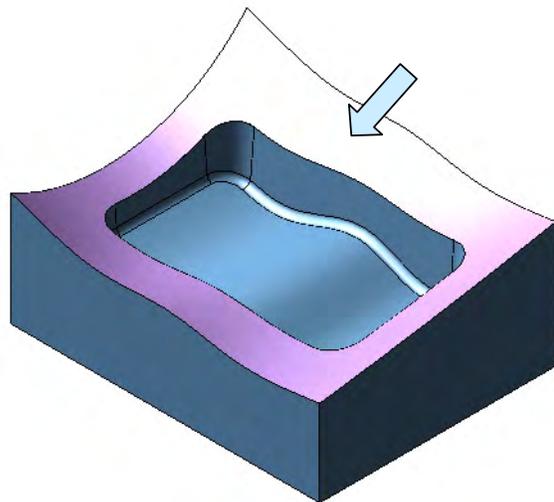
If you look at the file you'll see that there is an original part on Level 5 and a copy of the part on Level 6. There is a CPlane = to 1.

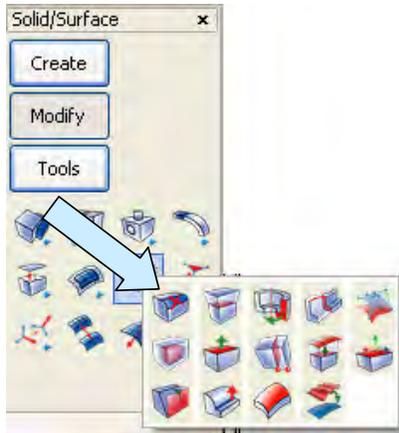
Let's remove the original part from the display and turn on the copy of the part (Level 6.)

Now we typically want our parting surface to extend some distance from the outer edge of the part's silhouette curve. (The parting surface is colored violet in the illustration to the right.)

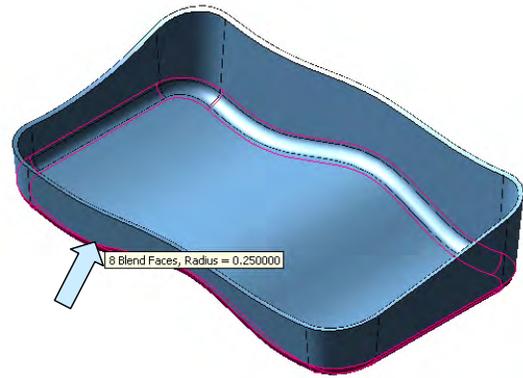
We can do this using surface functions but this requires some modeling skill and there are situations where you might not get exactly what you want.

In this exercise we're going to take a completely different approach that gives us what we want by using a few simple solid modeling and wire tools. I think you'll be pleasantly surprised!

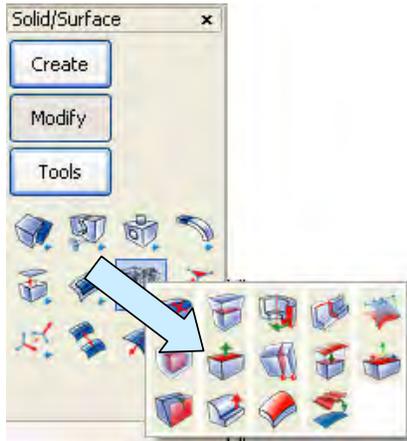




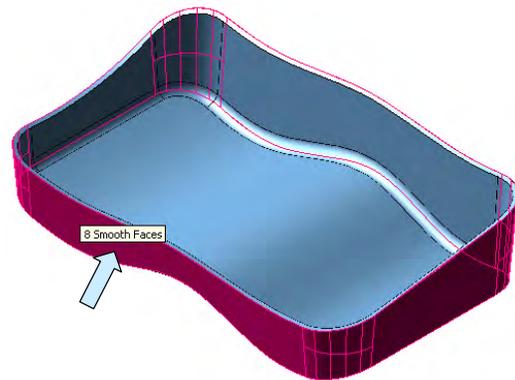
With the copy of the part displayed, we'll start by clicking on the REMOVE FEATURE Icon.



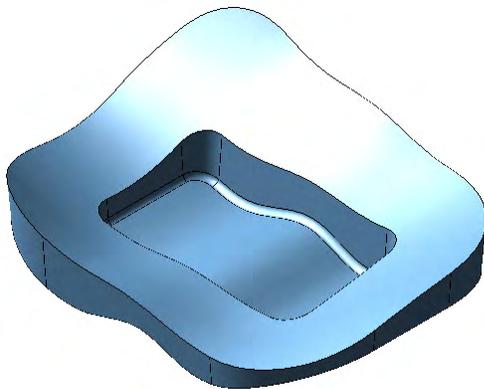
Use Feature, Blend, Branch and select the outer run of blends on the bottom of the part. Hit Accept three times to remove the chain of blends.



Next, click on the OFFSET FACES Icon. Type 2 for the value.



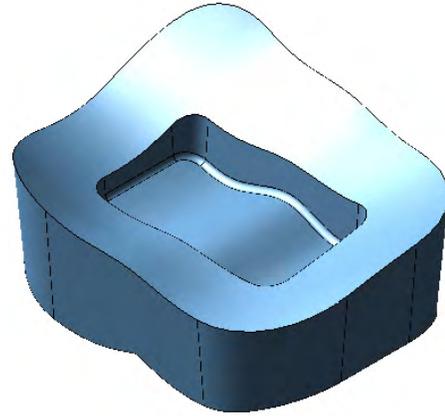
Using Feature, Smooth, select the outer, near-vertical face of the part. Hit Accept three times.



You get a part that looks like this:

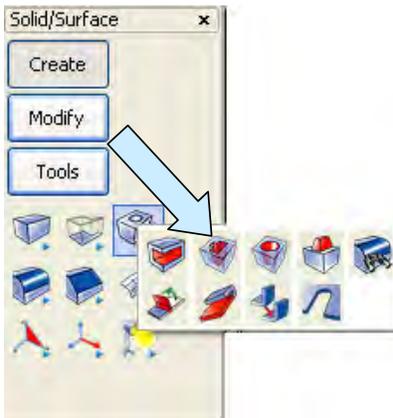
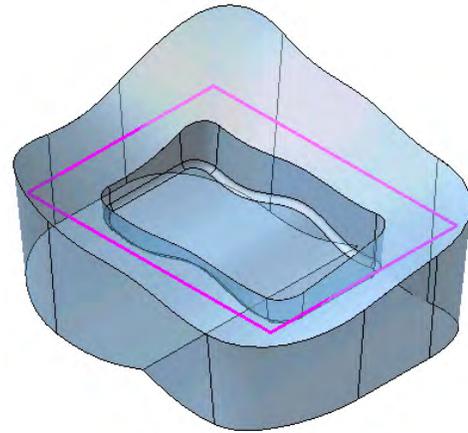
Use the OFFSET FACES Tool again with a value of 2.
This time select the bottom face of the part.

It should now look like this:



Click on CREATE RECTANGLE BY WIDTH HEIGHT.
Use the MidCtr Anchor Option.
Type 8.5 for the X value and 8.5 for the Y value.

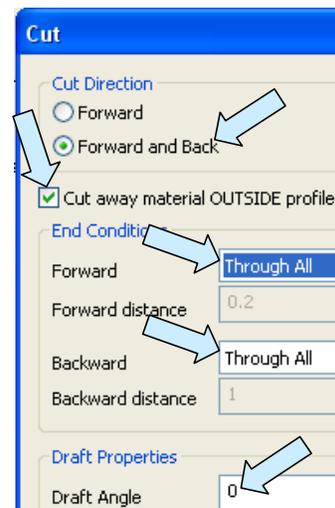
Using the KeyIn Option, hit ENTER three times.
The rectangle is centered on the part.



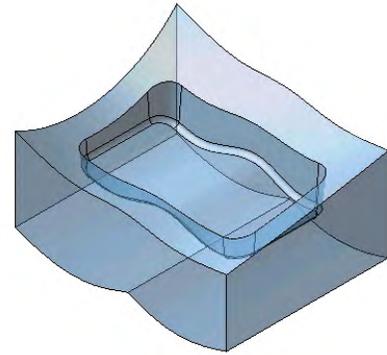
Click on the CUT Icon.

When the Dialog Box appears we'll use Forward and Back, Cut Away Material Outside, and Through All with a Draft Angle of 0.

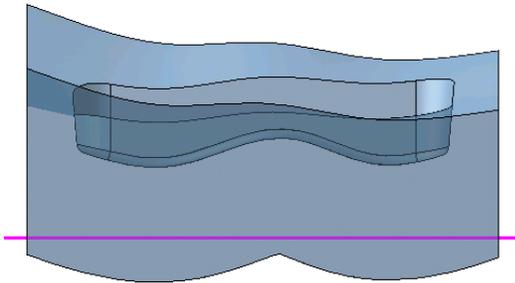
Select the solid and then the rectangle.



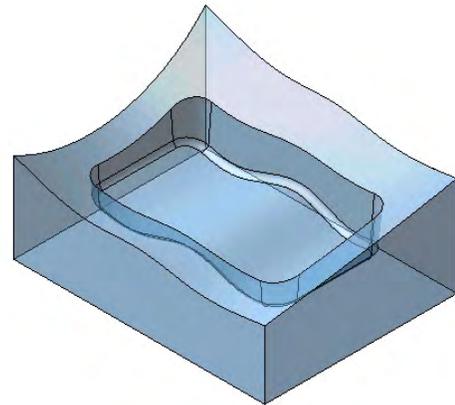
This gives you vertical, planar walls for your tooling block.



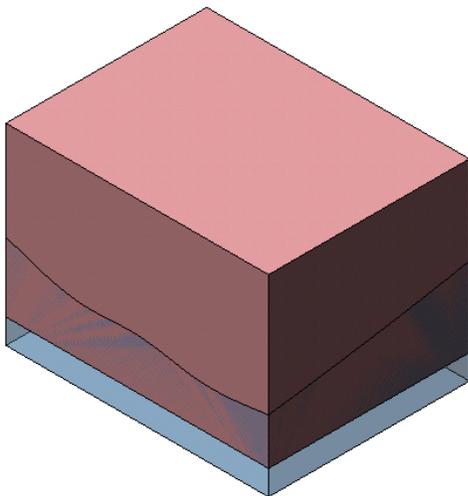
You can now switch to View 2. (The Front View.) and set CPlane equal to the Drawing View. (CP=DV.)



Create a Horizontal line across the block and use the TRIM FIRST Function, selecting the top of the solid and then the line. This creates a planar face on the bottom of the tooling block.

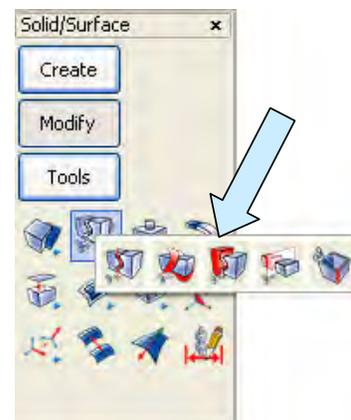


If you switch back to View 7. (The Isometric View.), your tooling block should look like this:

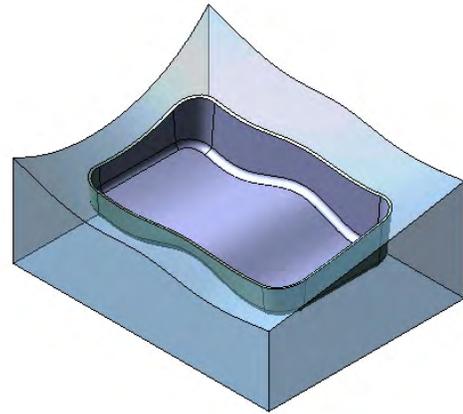


We can now create a block for the core that overlaps this block. (I've shown this in light red to the left.)

Use the TRIM SOLID TO SOLID Tool to subtract the blue tooling block from the light red tooling block. (Use First Body, Selected Portion Only.) This gives you your core block. You can move this to a unique level and then remove that level from the display.



Finally, turn back on level 5 so the original part is visible.



We need to use the TRIM SOLID TO SOLID Tool once more. . (Use First Body, Selected Portion Only.) Click on the tooling block and then on the original part.

This creates your cavity block which you can also move to a unique level.

You can see that this technique is extremely easy to use and it works for many complex parting line situations.

There will still be times when you need to resort to more complex modeling strategies. However, it is great to have a simple approach like this for many common mold tooling situations!

