Building Assembly Parts

SOFTWARE / PRODUCT / FINISHING

Below are useful tips that can be utilized on parts that will fit together in an assembly. Since the parts will be assembled, the orientation and offsetting techniques outlined below will ensure proper fit.

Process

Orientation (figure 1)

STEP 1: Orient the mating surfaces in the X/Y Plane. When orienting the parts in the build envelope consider which surfaces are to be mated together. This will eliminate stair stepping, producing smooth surfaces that will mate together more precisely. Also, the Z stage is often approximated during the slice function, which can degrade the accuracy of features in the Z plane. The X/Y plane is the most accurate plane and is thus the plane to orient critical mating surfaces.

STEP 2: Remember to use the STL rotate menu (located at STL>Rotate, figure #1) or the Orient by selected facet feature (located at STL>Orient by Selected Facet) to orient your part in the X/Y plane.

Offsetting (figure 2)

If the assembly parts contain features that fit into one another the EDIT/OFFSET function in Insight can be used to offset the geometry to allow enough clearance for the mating parts to fit together easily. If tolerances were designed into the parts and were part of the STL file, offsetting may not be necessary. Check with the original designer to be sure.

STEP 1: After slicing the STL file, select the geometry that should be offset. Go to Edit>Offset and the Offset menu will appear on the right side of the geometry window (figure 2).
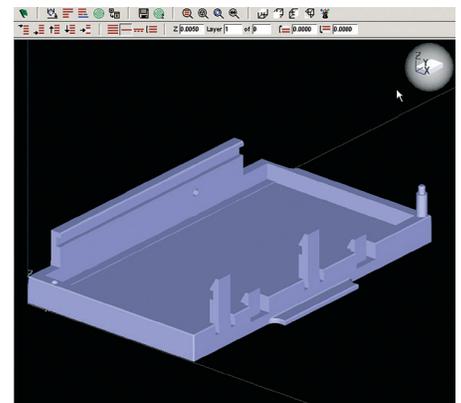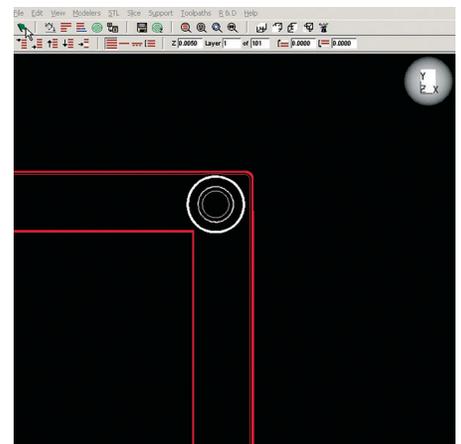

Figure 1: Part Orientation

Figure 2: Offsetting

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STEP 2: Set the direction of offset for the selected curves; inside or outside the curve (Inside will shrink the curve, outside will enlarge the curves).

STEP 3: Set the offset distance or clearance you want to achieve. Typically, 0.002" to 0.004" will work for mating features.

STEP 4: Set the Destination Group to "Same as Selected". Change the Keep Original flag to No (if set to Yes, the original curves would appear also). Hit the OK icon and the selected curves will be offset by the amount you chose. Hit the undo arrow to undo the offsetting action.

CONTACT

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