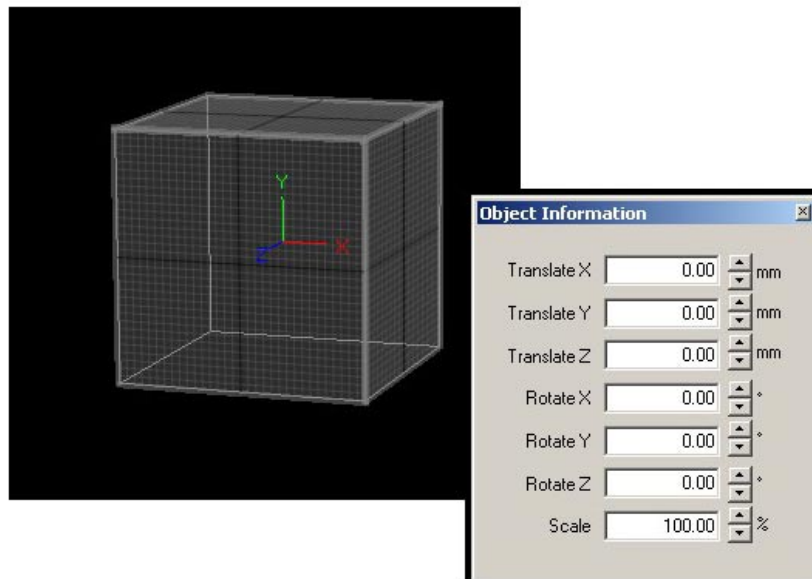




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FreeForm Modeling System

Setting Up a Numerically Centered Workspace



Modeler: Jay Kushwara

Description: A quick tutorial outlining how to accurately align workspaces in the modeling environment.

Time: Not applicable.


Software Version: FreeForm™ modeling system, Version 4.

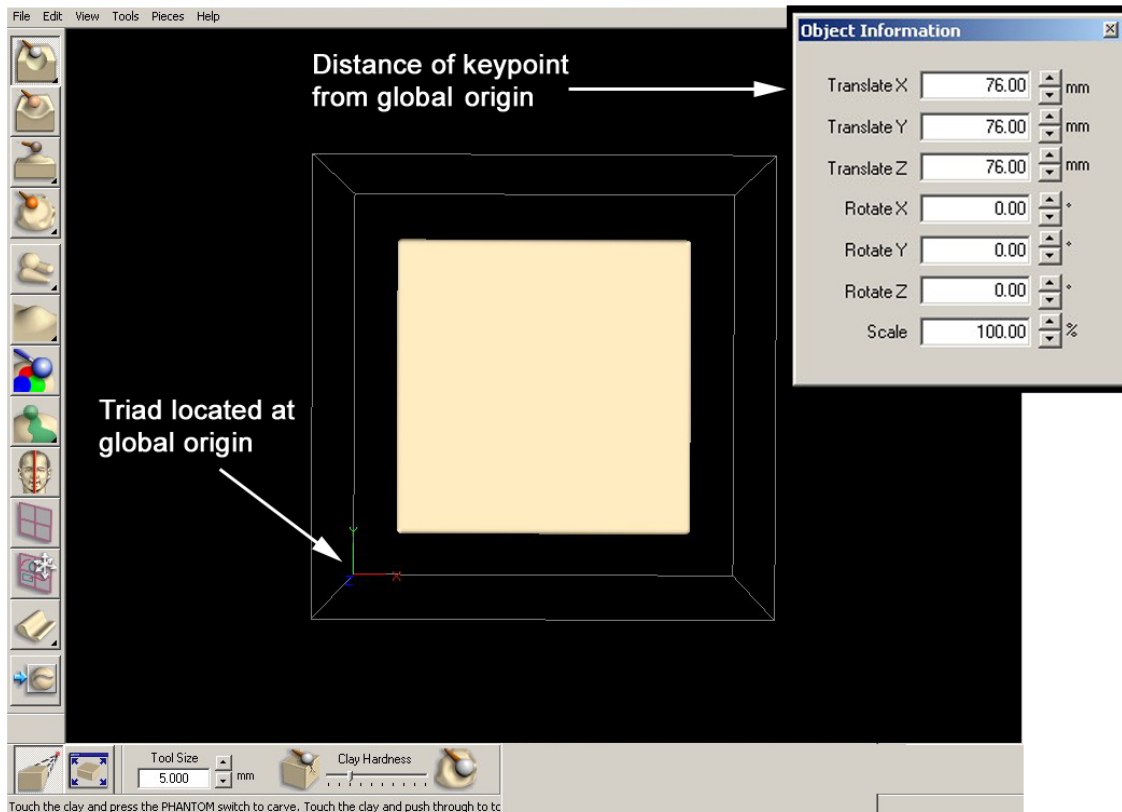
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An introduction-

When creating a model in the FreeForm modeling system it's often necessary to use specific measurements during the process, especially in cases where you need to maintain engineering tolerances. Even if it's not a concern at the modeling stage, digital models are frequently taken downstream where spatial orientation is a concern. In these cases, there is a way to set up your initial workspace that makes working "by the numbers" much easier.

A brief explanation

When starting a new model in the FreeForm modeling system there are a few key points to keep in mind. Whether you begin with an empty model or a starter shape, the workspace created by the FreeForm modeling system is positioned so that the global origin is located at the rear lower left corner. To view the global origin, open the View menu and make sure that Triad is checked off. Also open the Tools menu and check that *Triad Location* is set to *At Global Origin*. For those unfamiliar with the term global center, it represents the exact center of the FreeForm (virtual) "world" you are creating the model "in". If you open the *Advanced Settings* dialog (Open the Object List (o hotkey, or View→Object List), and right-click on "Piece 1." Choose Reposition, and then open the *Advanced Settings* dialog via the  on the Dynabar. You will observe that the x, y, and z coordinates will not be at (0,0,0). The coordinates (in this case- 76mm, 76mm, 76mm) show the distance the object's Keypoint is from the global center.

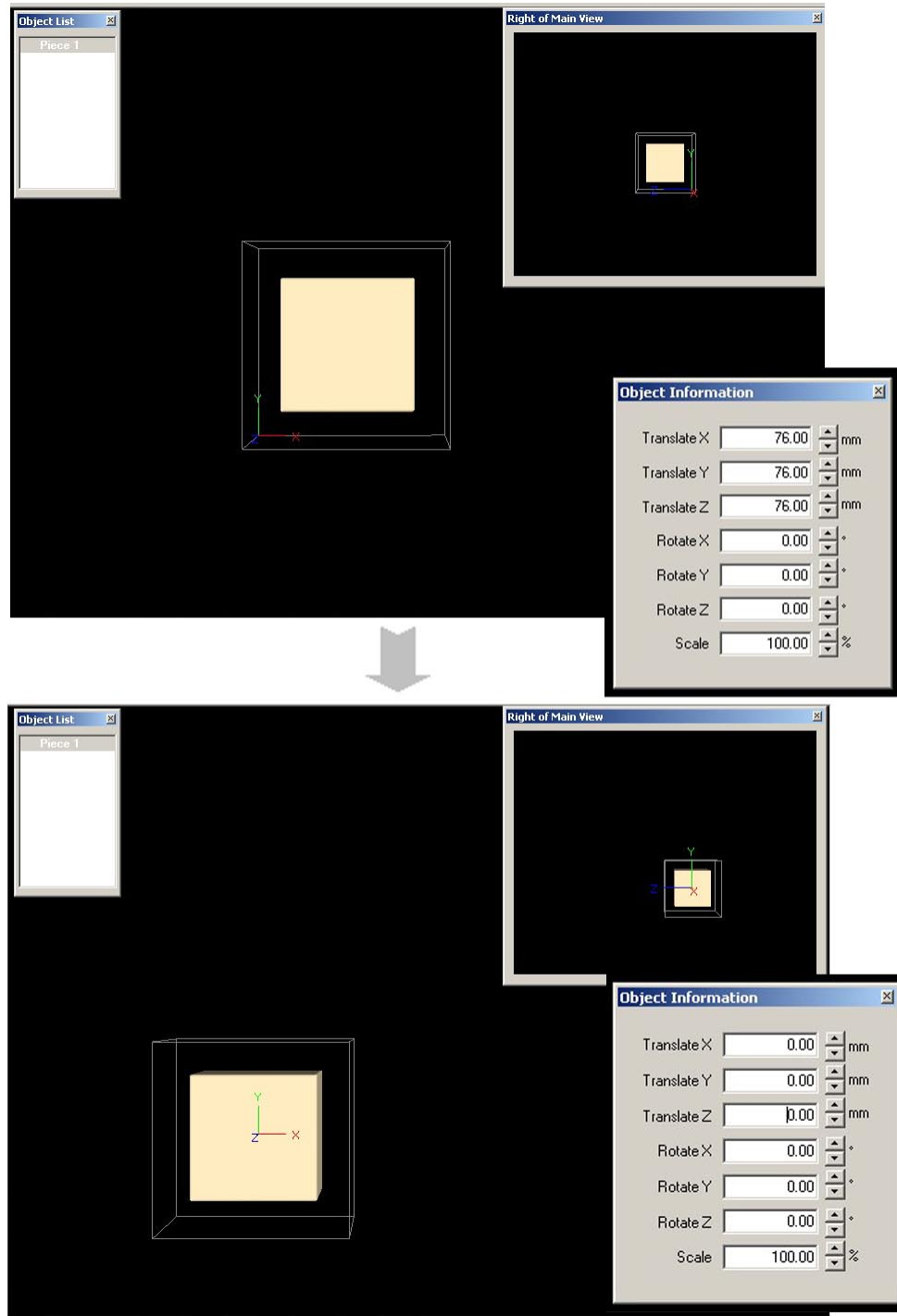


‘What is a Key point- and what does it do ?

The Keypoint is important in that it is what FreeForm modeling sees as a specific pieces’ center and is used in the functions that require calculations based on that piece’s center (plane through center, the centerlines on planes, rotation and translation axis, etc.). It can be confusing though, because the Keypoint isn’t calculated based on the size or volume of the piece you are creating. It is calculated using the exact center of the first workspace you create for each separate piece in the model! Even if you change the size of the workspace for a piece at a later point, the original Keypoint stays the same for that piece no matter what changes you make to the workspace or piece later on. To make the Keypoint (pieces’ workspace center) positions vs. global center position easier to manage, it’s best to reposition the pieces’ workspace centers (key points) at the same location as the global center immediately upon starting. This places the center of the piece you are about to create at the center of the FreeForm system “world” it will be created in.

How to position the piece center so that it coincides with the global center

- Step 1 – Make sure that triad is located at Global center (via FreeForm Options)
- Step 2 - Open the advanced settings dialog and change the x, y, z, values to 0,0,0.



That's it! Notice in the main view that the workspace has shifted position so that the triad is at its center. From this point on, all future functions that use the Keypoint for reference (translation, rotation, plane creation – any function that concerns numerical coordinates) will be based at the center of the FreeForm system's world.