Creating a T-Spline using a Reference Image

Goals

Learn how to create a T-Spline using a Reference Image.

1. Insert an image into the workspace using Attach Canvas.
2. Use Calibrate to set the proper scale for the reference image.
3. Invoke symmetry when modeling a T-Spline box.
4. Use Insert Point to draw edges on a T-Spline face(s)
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Instructions

Step 1: Attach a canvas

1. Select Insert > Attached Canvas.
2. Select the YZ Plane (between the green and blue axis) to indicate which plane the image should be attached to.
3. In the dialog window, click the Select Image button and navigate to the 03_UtilityKnife.jpg file.
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Instructions (continued)

Step 2: Adjust canvas settings

1. If necessary, rotate the canvas 90 degrees to orient it properly.
2. Lower the opacity to 85.
3. Check the box for Display Through to ensure that the canvas can be seen through your T-Spline form.
4. Click OK.

Note: You don’t need to be concerned about the size and scale of the image at this point. We will adjust the scale using the Calibrate tool. Calibrating the image ensures that you are modeling in the correct scale in the workspace.
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Instructions (continued)

Step 3: Calibrate the image

1. In the Browser, click the drop-down arrow next to the Canvases folder.

2. Right-click on UtilityKnife and select Calibrate.
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Instructions (continued)

3. Click Right on the ViewCube to view the utility knife from the side.

4. Click once at the front of the utility knife.

5. Click once at the back of the utility knife.

6. Enter 180 mm in the length field and hit enter.

7. The canvas will scale up accordingly.
Instructions (continued)

Step 4: Create a box primitive

1. Click the Create > Create Form icon to enter the Sculpt workspace.
2. Click Create > Box.
3. Select the same side plane (YZ) as the canvas to specify the plane that the Box is placed on.
4. Click once at the origin to specify the Box’s center point.
5. Move the mouse and click again at the outer edge of the reference image to draw its 2D profile.
Step 5: Set box dimensions and add symmetry

1. Set the Box’s Length, Width, and Height equal to 175, 35, and 25 mm, respectively.

2. Set the number of Length Face equal to 5, and the width and height faces equal to 2.

3. In the dialog window, change the Symmetry from None to Mirror.

4. Check the box for Height Symmetry.

5. Select OK.
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Instructions (continued)

Step 6: Move faces to the top of the knife image

1. If you are not in the right side view still, click on the Right side of the View Cube.

2. Select Modify > Edit Form.

3. Select the middle set of faces by holding the left mouse button and dragging to the lower right over top of the faces you want to select.

4. Using the Planar Translation manipulator, move the selected faces to align the top of the T-spline body with the top of the utility knife image.
Instructions (continued)

Step 7: Move faces to the top of the knife image

1. To align the bottom in this section, select the bottom face and use the planar translation and rotate manipulators.

2. Repeat the previous 2 steps for the rest of the T-spline form. It will also be helpful to use the single-direction scale manipulator in some cases.

3. For more controlled editing, try modifying individual edges.
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Instructions (continued)

Step 8: Insert edges to get closer to the knife shape

Our T-Spline form is starting to resemble our reference image but there aren’t enough edges in the T-Spline to capture all the detail of the Knife.

1. Hold Shift then select the edges shown at the front of the knife.
2. Click Modify > Insert Edge.
Instructions (continued)

3. Drag the direct manipulator to the right to position the new edges at an Insert Location around -0.5.

4. Click OK.

**Note:** With Symmetry enabled you only need to select the edges on one side of the symmetry plane, the matching ones on the other side will be automatically selected also and will be displayed in yellow.
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Instructions (continued)

Step 9: Insert additional edges with Insert Edge

1. Holding Shift then select the edges shown at the back of the knife.
2. Select Modify > Insert Edge.
3. Drag the direct manipulator to the right to position the new edges at an Insert Location around -0.5.
4. Click OK.
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Instructions (continued)

Step 10: Move the inserted edges with Edit Form

1. Use the Edit Form command to manipulate the recently inserted edges to achieve the result shown in the image.

Note: The planar translation manipulator will be extremely useful.
Instructions (continued)

Step 11: Use Insert Point to draw edges on a face

To insert the final two edges we need, we’ll use the Insert Point command. Slightly different from Insert Edge, the Insert Point command will easily insert an edge by connecting two points together.

1. Click Modify > Insert Point.
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Instructions (continued)

2. Hover over the middle of the top edge shown until a red circle appears - this indicates the midpoint.

3. Click and repeat for the edge directly beneath, located along the line of symmetry.

4. Ensure the Insert Mode set to Simple.

5. Click OK.
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Instructions (continued)

Step 12: Use Edit Form to move faces and edges

Use Edit Form to move faces and edges until you have matched the T-Spline body to the profile of the Knife image.

1. Use the Edit Form command to manipulate the recently inserted edges (as well as the surrounding geometry) to get the T-Spline primitive to match as closely as possible.

2. When you are satisfied with the shape of the T-Spline body select Finish Form from the Sculpt Menu bar.
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Wrap up

Congratulations! You’ve learned how to create a T-Spline Form using a reference image in Fusion 360! In this exercise, you accomplished the following:

- Inserted and image in to the workspace using Attach Canvas.
- Used Calibrate to set the proper scale for the reference image.
- Invoked symmetry when modeling a T-Spline box.
- Used Insert Point to draw edges on a T-Spline face(s).