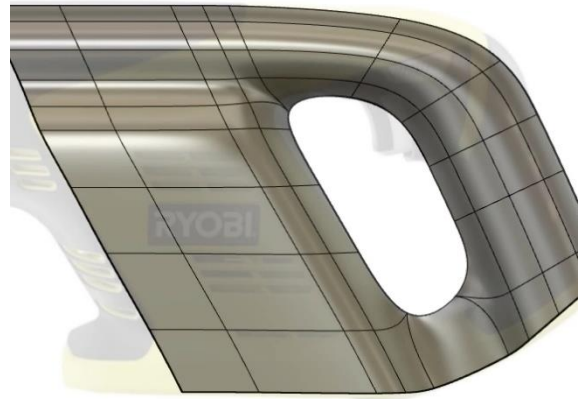**AUTODESK**

Insert edges and bridge form bodies

In this module, you'll use several form tools to create a saw's casing.

Learning objectives:

- Use Insert Edge.
- Use Insert Point.
- Use Bridge.
- Weld Vertices.

The completed exercise

1. Continue with the *trigger with mechanics.f3d* file from the previous module. Make sure the Saw Casing component is active and you are in the Forms environment.

Figure 1. Continue with the file from the previous module

2. Open the Edit Form tool by clicking Modify> Edit Form. Select the plane's three edges shown in the image on the right, hold Alt, and extrude new faces towards the back of the saw casing.
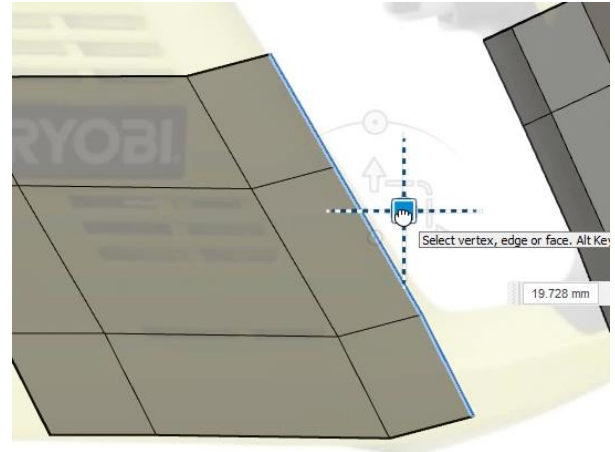

Figure 2. Extrude new faces

3. Rotate the view and use the on-screen manipulator to move the selection back towards the canvas image. Do not hold Alt while you do this so that additional faces are not created.
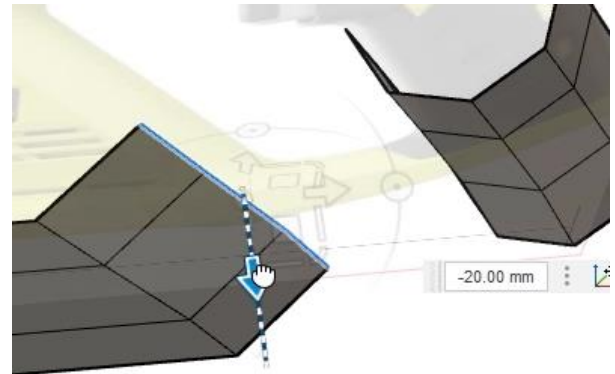

Figure 3. Translate the selection

4. Press Alt+3 to enter Smooth Display mode to check your progress. Return to Box Display mode by pressing Alt+1. OK the Edit Form dialog.
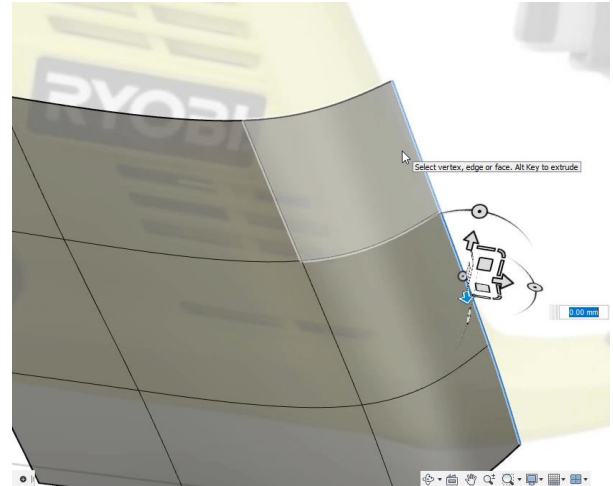

Figure 4. Check your progress in Smooth Display mode
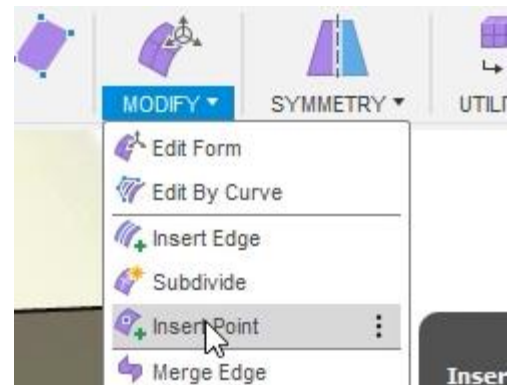
5. Click Modify> Insert Point.

Figure 5. Open the Insert Point tool

6. Click two points on the cylinder's edges to match the image on the right. A green line connects the two points.
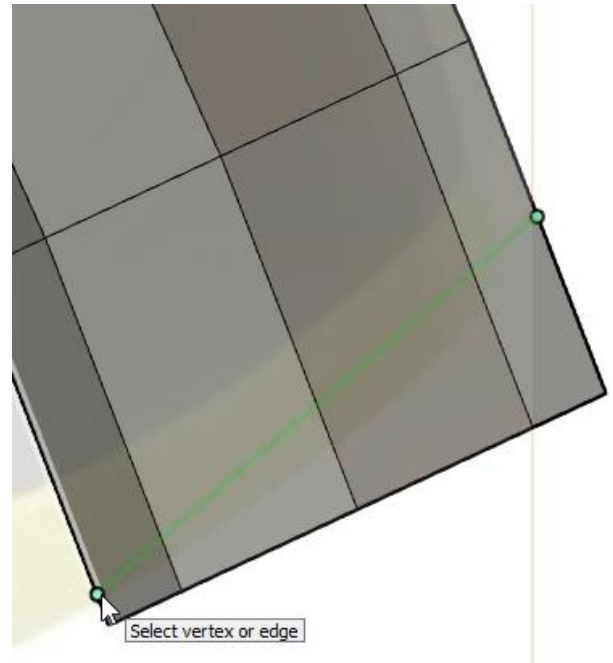

Select vertex or edge

Figure 6. Select two points

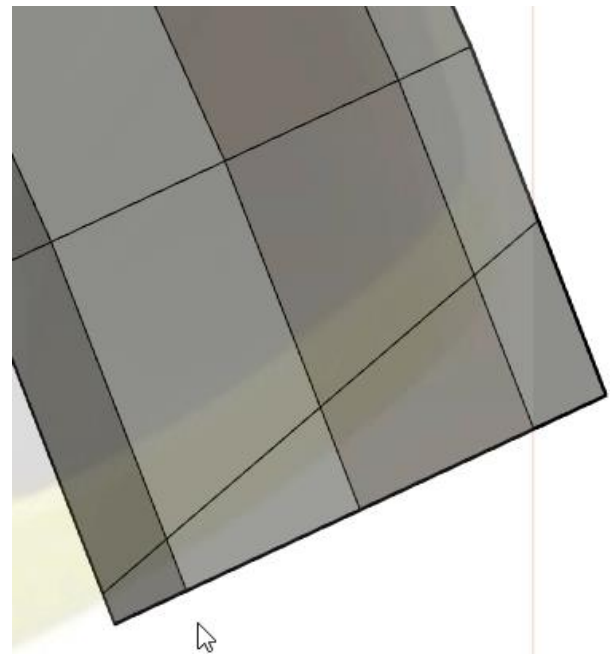**7.** Press Enter to divide the existing faces using the green line.

Figure 7. Divide the faces

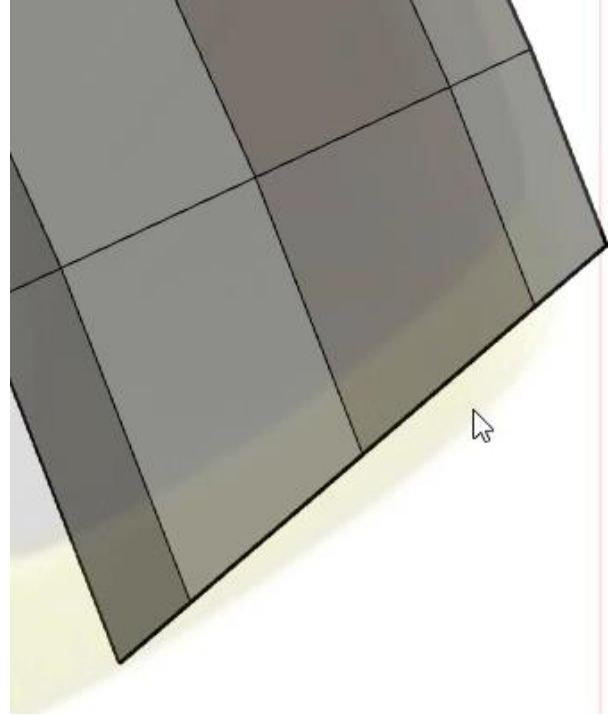**8.** Double-click the cylinder's bottom edge to select the entire edge loop, then press Delete.

Figure 8. Delete the unnecessary faces
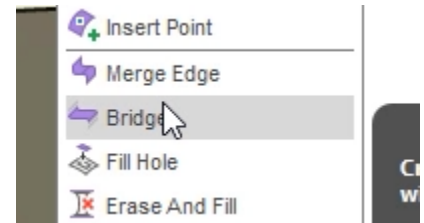
9. Click Modify> Bridge.

Figure 9. Open the Bridge tool

10. Select the edge shown in the image on the right as the dialog's Side 1 selection.
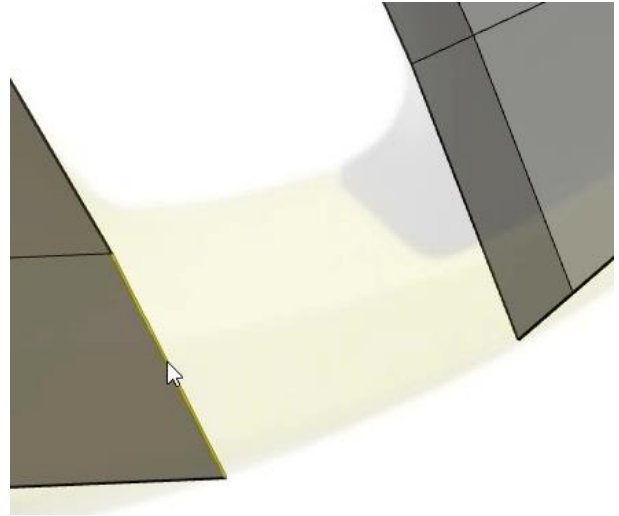
Figure 10. Select the Side 1 edge

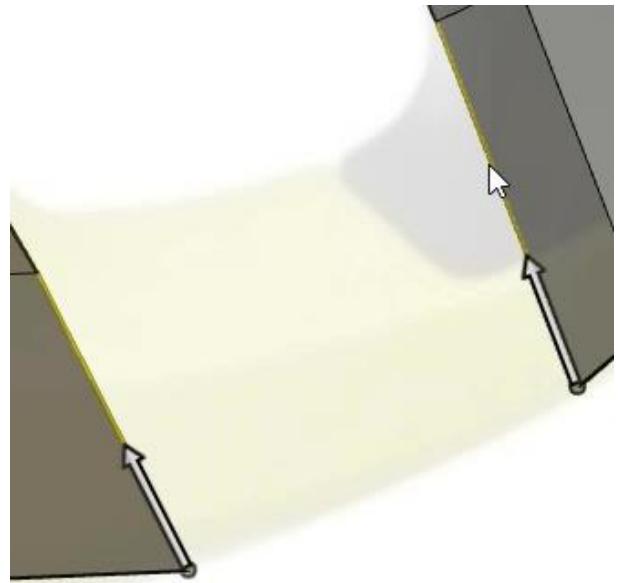**11.** Select the edge shown in the image on the right as the dialog's Side 2 selection.

Figure 11. Select the Side 2 edge

12. Activate the dialog's Preview option to preview the bridge. Reduce the Faces value to **1**, then OK the dialog.
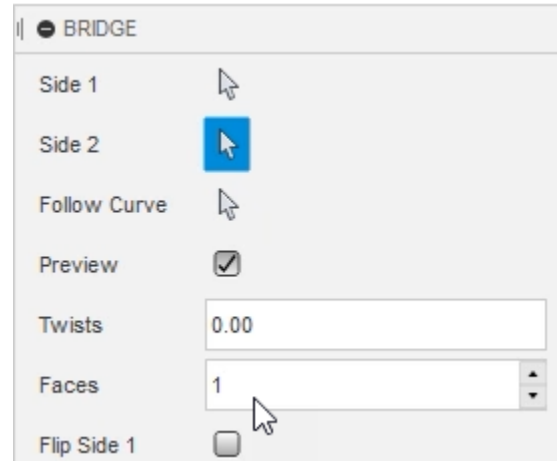

Figure 12. Preview the bridge

13. Rotate the model and inspect the bridge. Toggle between Box Display and Smooth Display modes by pressing Alt+1 and Alt+3.
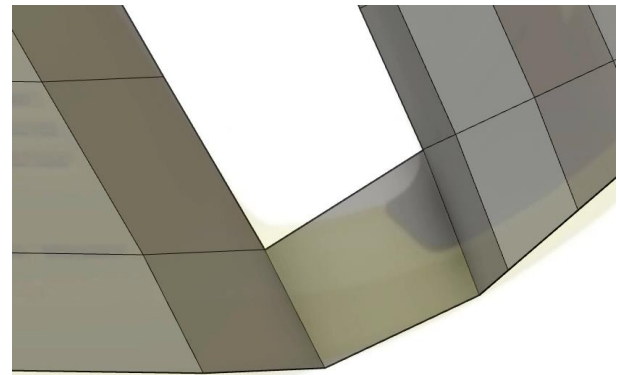

Figure 13. Inspect the bridge

14. Select the cylinder's top four edges and use the on-screen manipulator to extrude new faces towards the top of the saw casing. Use the manipulator's translate, rotate, and scale features to closely match the form geometry to the underlying canvas image. Remember to hold Alt if you want to extrude new faces as you move the selection.
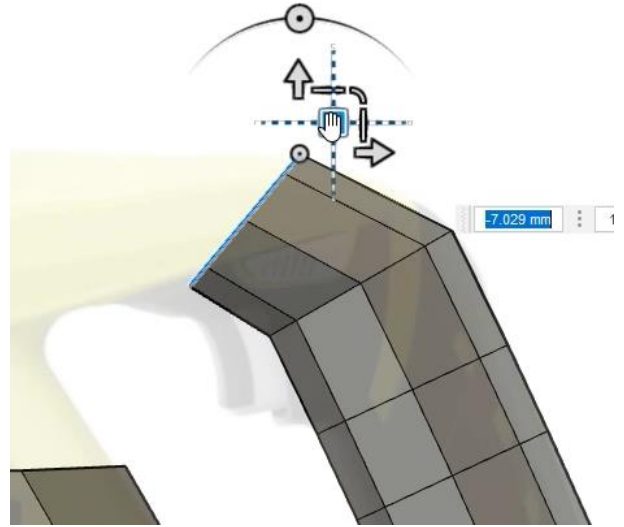

Figure 14. Add faces to match the canvas image

15. Continue to manipulate the selection so that it creates the casing's top.
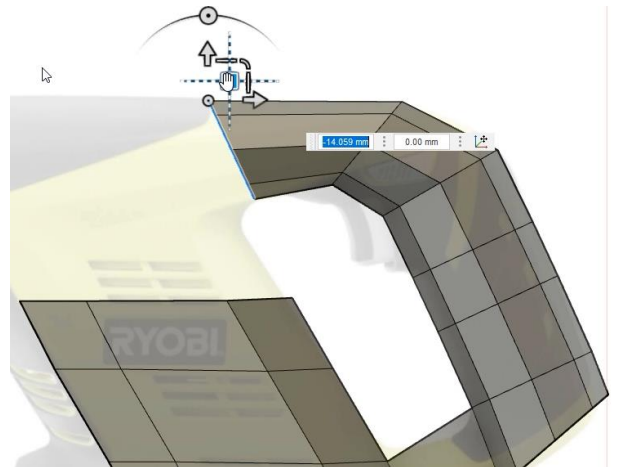

Figure 15. Create the casing's top

16. Remember to check your progress by toggling between Smooth Display and Box Display modes. The keyboard shortcuts are Alt+1 and Alt+3.
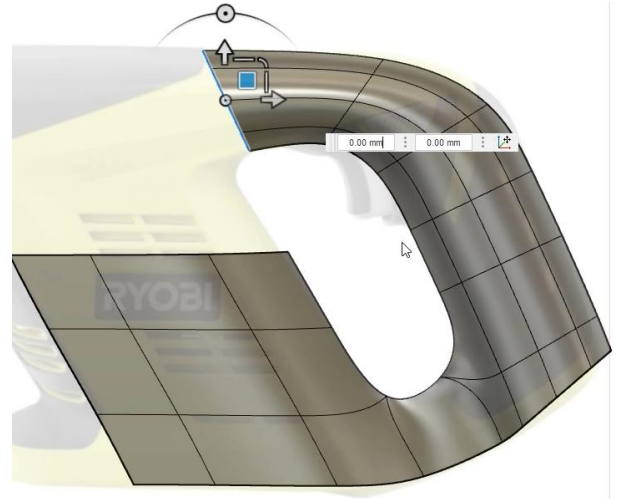

Figure 16. Check your progress in Smooth Display mode

17. After working on the casing's right side, use the same principles to match the casing's left side to the underlying image. OK the Edit Form dialog after you finish.
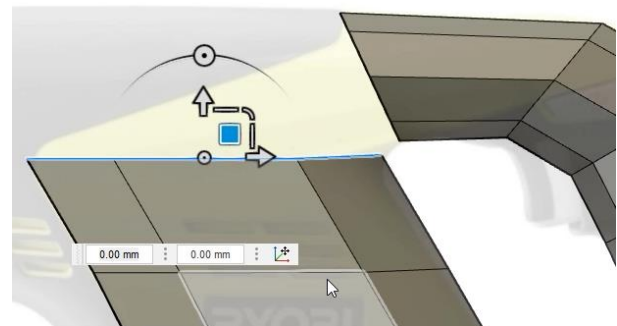

Figure 17. Modify the casing's left side

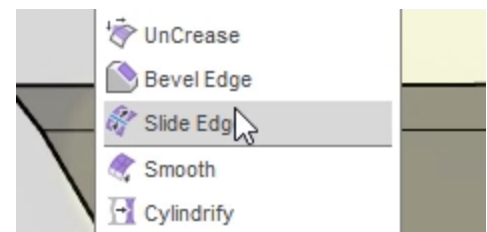**18.** The Slide Edge tool might be useful when adjusting the form body's edges: click Modify> Slide Edge.

Figure 18. Open the Slide Edge tool

19. Double-click an edge that you want to move so that the entire edge loop is selected. Use the on-screen manipulator to slide the edge to a new position. Then OK the dialog after you're satisfied with the new position.
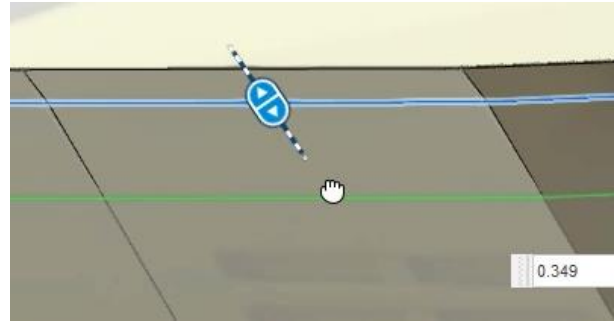

Figure 19. Use the Slide Edge tool

20. Click Modify> Weld Vertices.

Figure 20. Open the Weld Vertices tool

21. Select the two vertices you want to weld together. The first vertex you select will move to meet the second vertex you select. OK the Weld Vertices dialog.
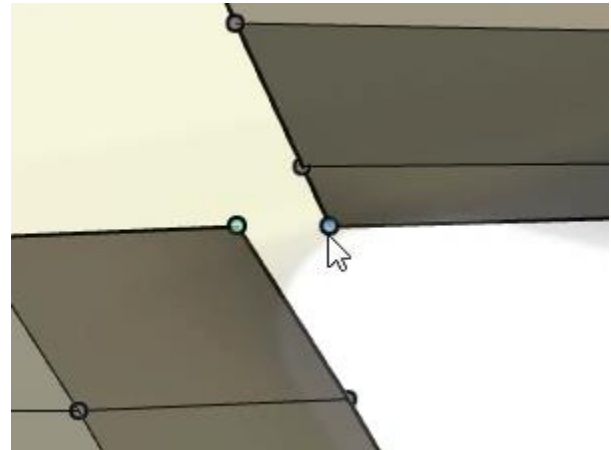

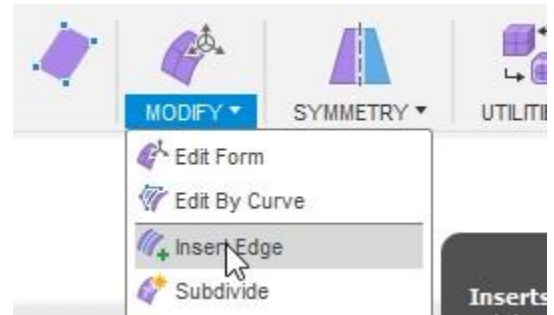*Figure 21. Select two vertices*

22. Click Modify> Insert Edge.

Figure 22. Open the Insert Edge tool

23. Double-click an edge to select the entire edge loop, then drag the manipulator to position the new edge loop. OK the dialog.
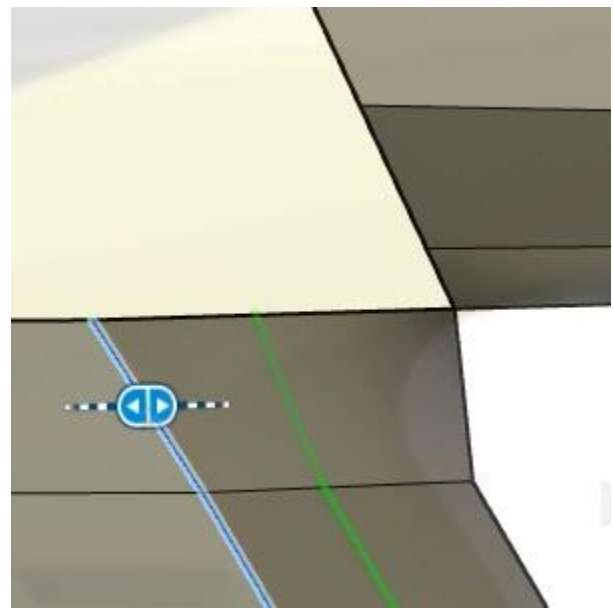

Figure 23. Position the new edge loop

24. Open the Edit Form tool and use the on-screen manipulator to move the new edge to a position that creates a more rounded casing.
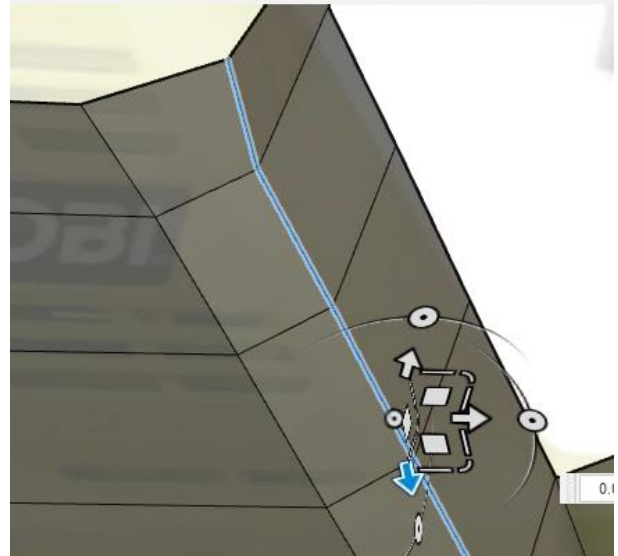

Figure 24. Move the new edge

25. Select the three edges shown in the image on the right, hold Alt, then drag them forward to create new faces.
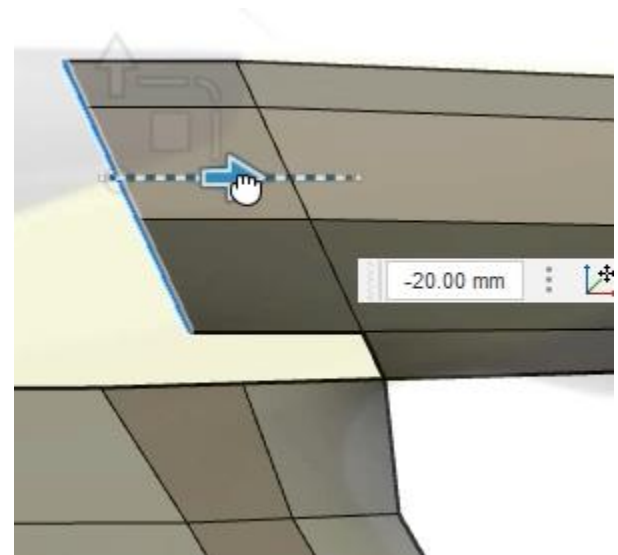

Figure 25. Extrude new faces

26. Repeat Step 25 to create an equal number of faces between the casing's top and bottom sections. It is important to keep the same number faces so that the two separate sections connect together smoothly.
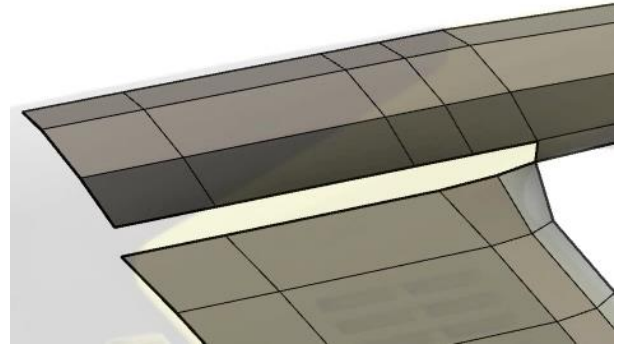

Figure 26. Extrude new faces
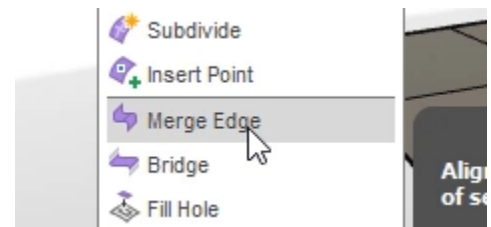
27. Click Modify> Merge Edge.

Figure 27. Open the Merge Edge tool

28. For the dialog's Edge Group One selection, choose the bottom section's two edges shown in the image on the right.
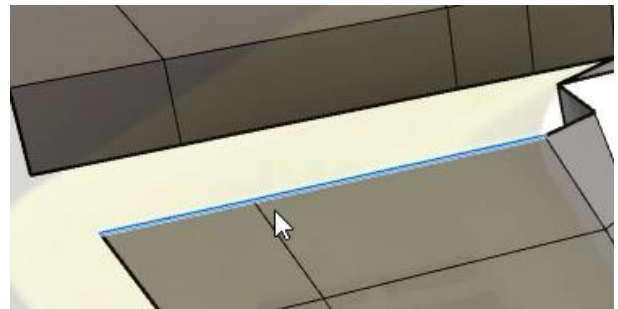

Figure 28. Choose the Edge Group One selection

29. For the Edge Group Two selection, choose the top section's two edges shown in the image on the right. Then OK the dialog to merge the edges together.
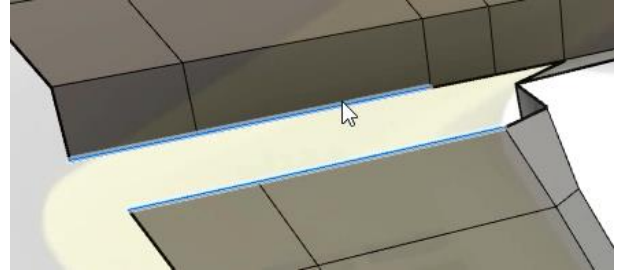
Figure 29. Choose the Edge Group Two selection

30. Inspect the result. Ideally, each face will have four sides, but the opening that looks like a three-sided face might need to be created. Three-sided faces should be avoided whenever possible.
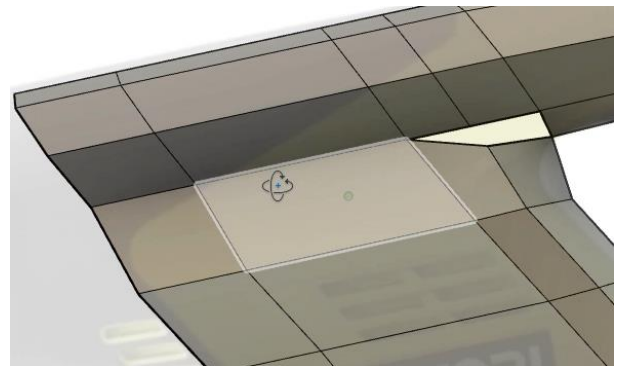
Figure 30. Inspect the result

31. Click Modify> Weld Vertices and select the two vertices shown in the image on the right as the dialog's T-Spline Vertices selection. OK the dialog.
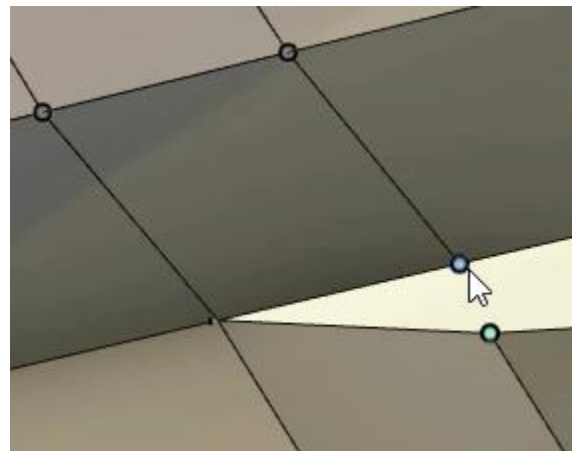
Figure 31. Weld two vertices together

32. Click Modify> Insert Edge, then select the two edges shown in the image on the right and use the on-screen manipulator to drag the new edges up. OK the dialog.
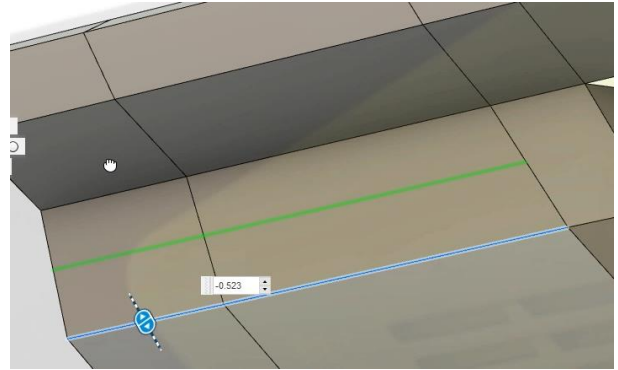

Figure 32. Insert two new edges

33. Click Modify> Insert Point and select the two vertices shown in the image on the right. OK the dialog to split the faces along the green line.
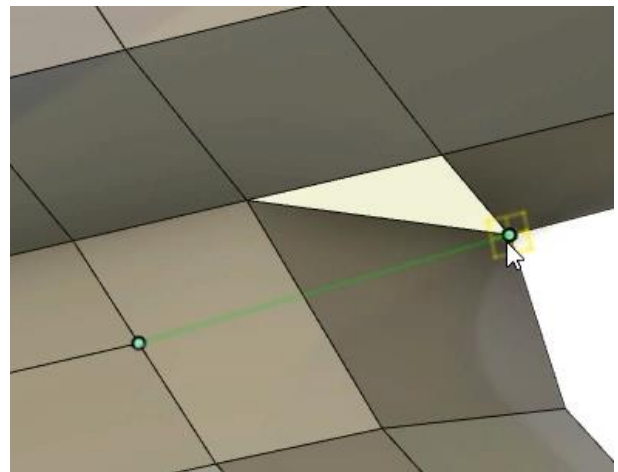

Figure 33. Use the Insert Point tool

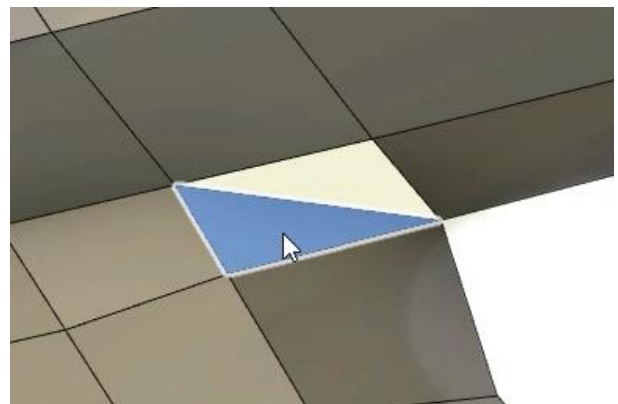**34.** Select the three-sided face and press Delete.

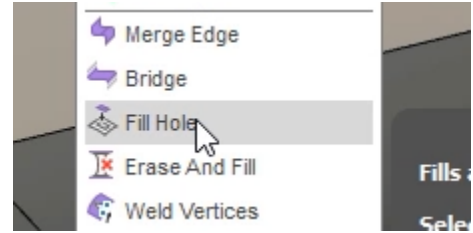*Figure 34. Delete the three-sided face*

35. Click Modify> Fill Hole.

Figure 35. Open the Fill Hole tool

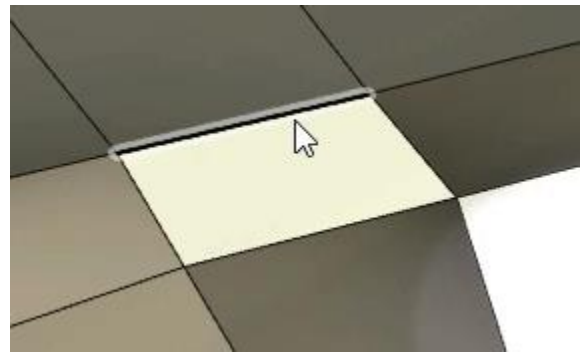**36.** Choose one of the opening's edges as the dialog's T-Spline Edge selection.

Figure 36. Select an edge

37. Choose the Fill Star option from the dialog's Fill Hole Mode menu. OK the dialog.
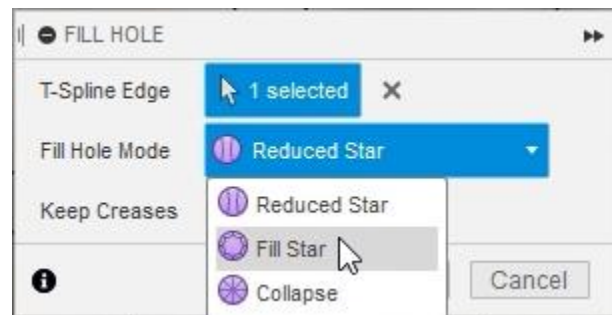
Figure 37. Choose the fill mode

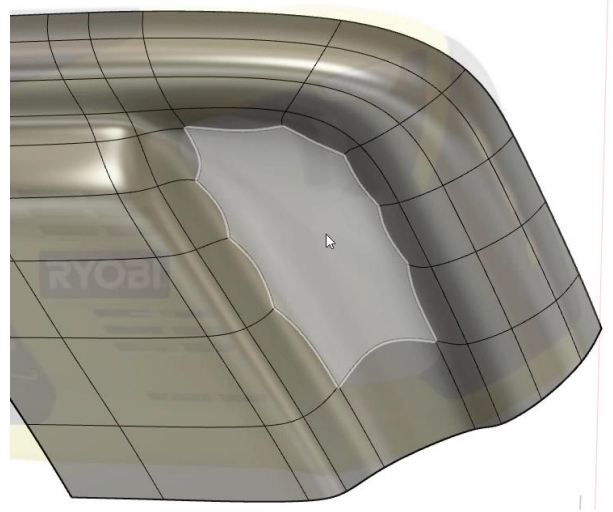**38.** Notice the handle opening area was filled by the Fill Hole tool.

Figure 38. Inspect the result

39. Click Undo Fill Hole or press Ctrl + Z to undo the feature.

Figure 39. Undo the Fill feature

40. Click Modify> Bridge and choose the two edges shown in the image on the right as the Side 1 and Side 2 selections.
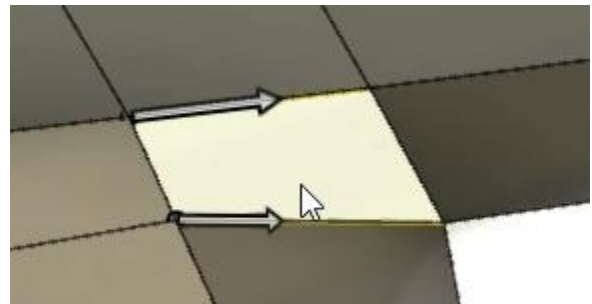

Figure 40. Open the Bridge tool

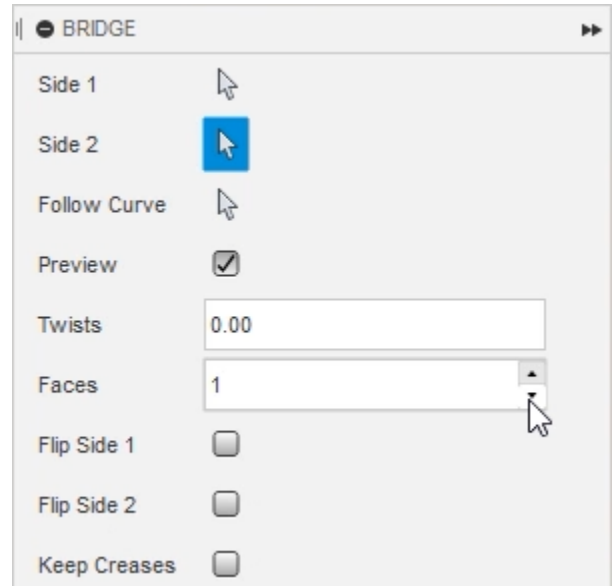**41.** Reduce the Faces value to **1**, then OK the dialog.

Figure 41. Create the bridge

42. Inspect the result.

Figure 42. Inspect the result

43. Toggle between Box Display and Smooth Display modes to check your progress. Save the file and continue to the next module.
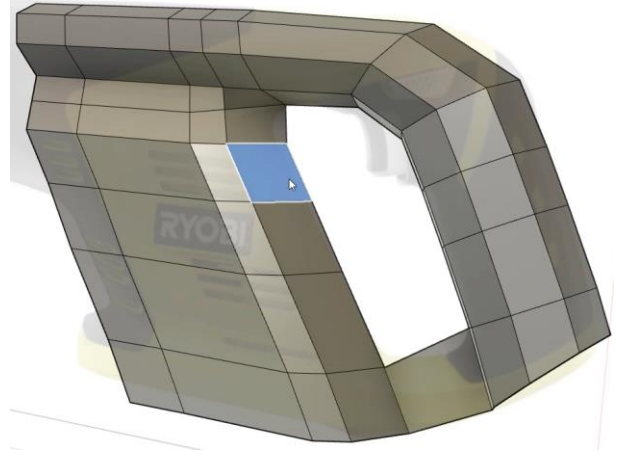

Figure 43. Toggle between Box Display and Smooth Display modes