



Altair

HyperWorks

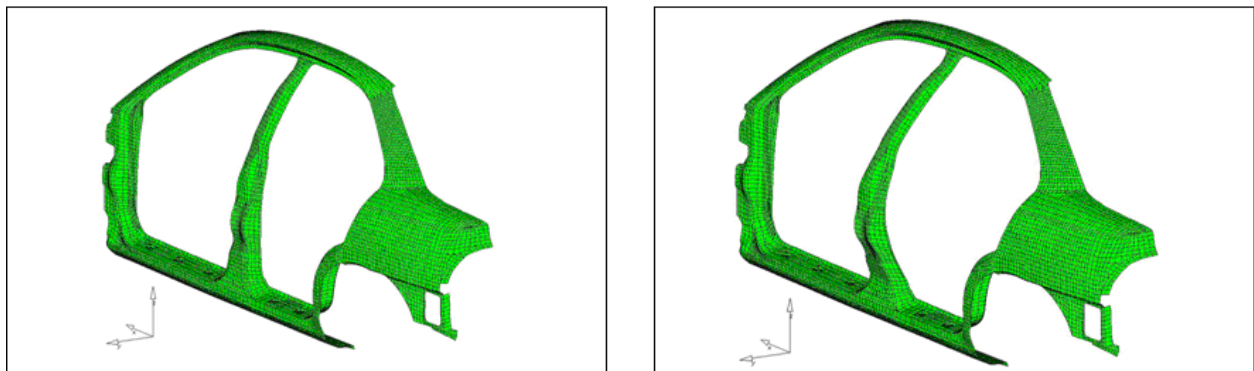
HM-3550: Morph Volume

Model Files

This exercise uses the `body_side.hm` file, which can be found in the `hm.zip` file. Copy the file(s) from this directory to your working directory.


Exercise: Changing the Shape of the B-pillar with the Help of Morph Volume

This exercise shows how to smoothly change the shape of a B-pillar via morph volumes.



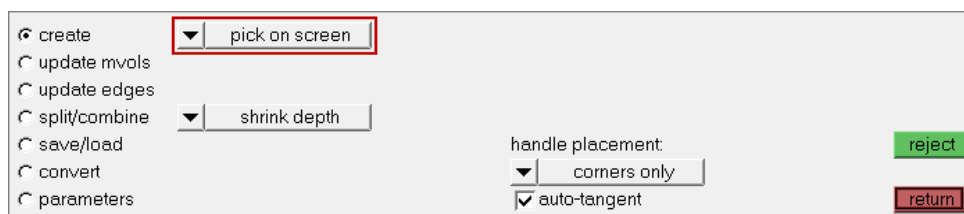
B-Pillar before and after morphing


Step 1: Load and review the model.

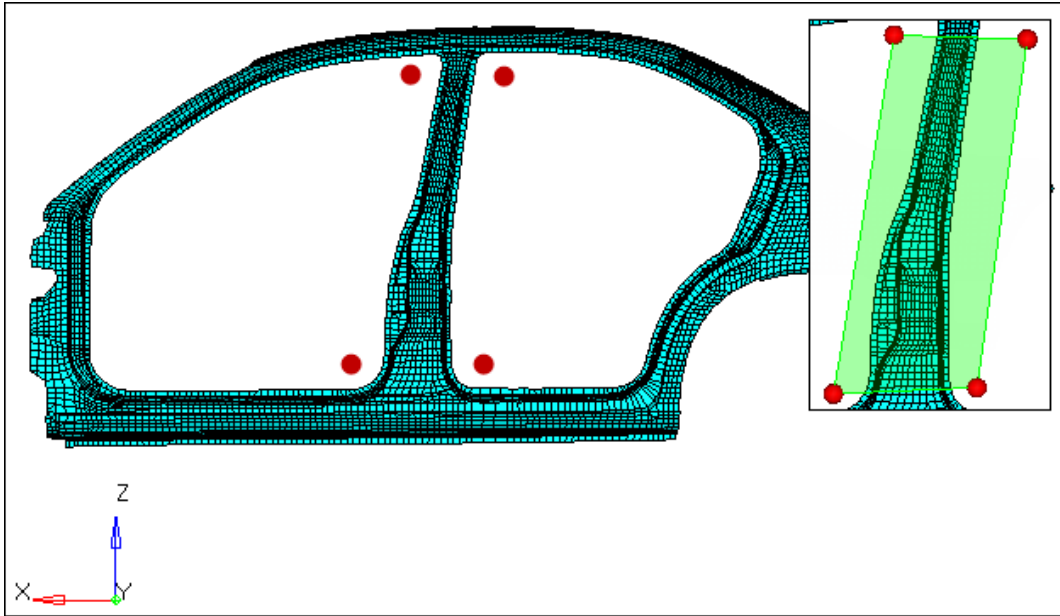
1. Start HyperMesh Desktop.
2. To open a model file, click **File > Open > Model** from the menu bar, or click  on the **Standard** toolbar.
3. In the **Open Model** dialog, open the `body_side.hm` file. A model appears in the graphics area.

Step 2: Create morph volumes.

1. To open the **Morph Volumes** panel, click **Morphing > Create > Morph Volumes** from the menu bar.
2. Set the creation method to **pick on screen**.



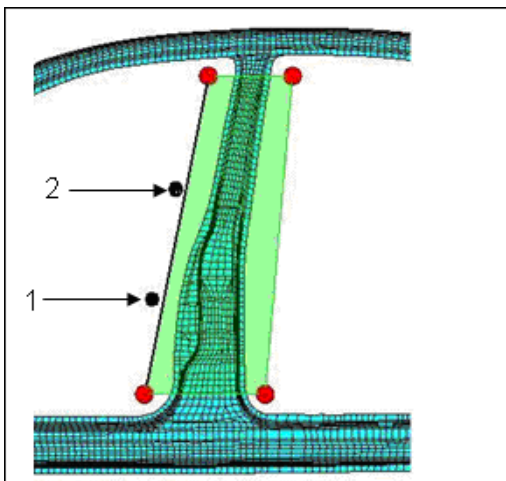
3. Set **handle placement** to **corners only**.
4. Select the **auto-tangent** check box.
5. On the **Standard Views** toolbar, click .
6. Click the four red circles indicated in the image below to draw a window. HyperMesh creates a morph volume, which encloses the area.



Points for creating the morph volume

Step 3: Split the morph volumes.

1. Go to the **split/combine** subpanel.
2. Set the **by nodes/by edge** toggle to **by edges**
3. Select an edge of the morph volume close to location 1 as indicated in the following image. A green colored cross moves to the location of the black dot.



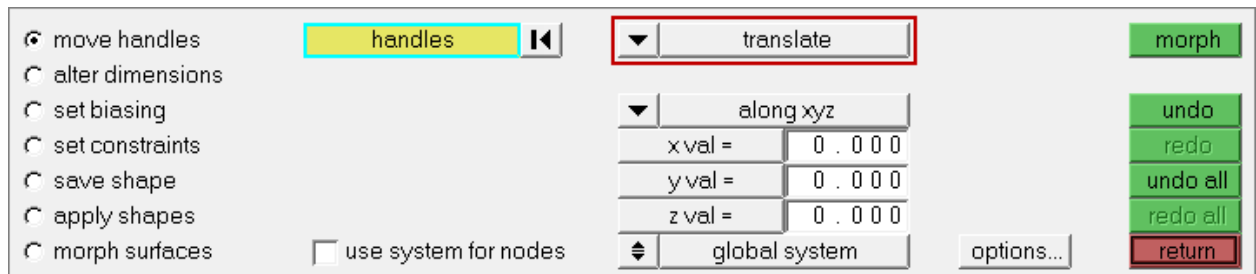
Locations to split the morph volume

4. Click **split**. HyperMesh splits the morph volume into two.
5. Repeat steps 3.3 and 3.4, except select an edge of the morph volume close to location 2 as indicated in the previous image.

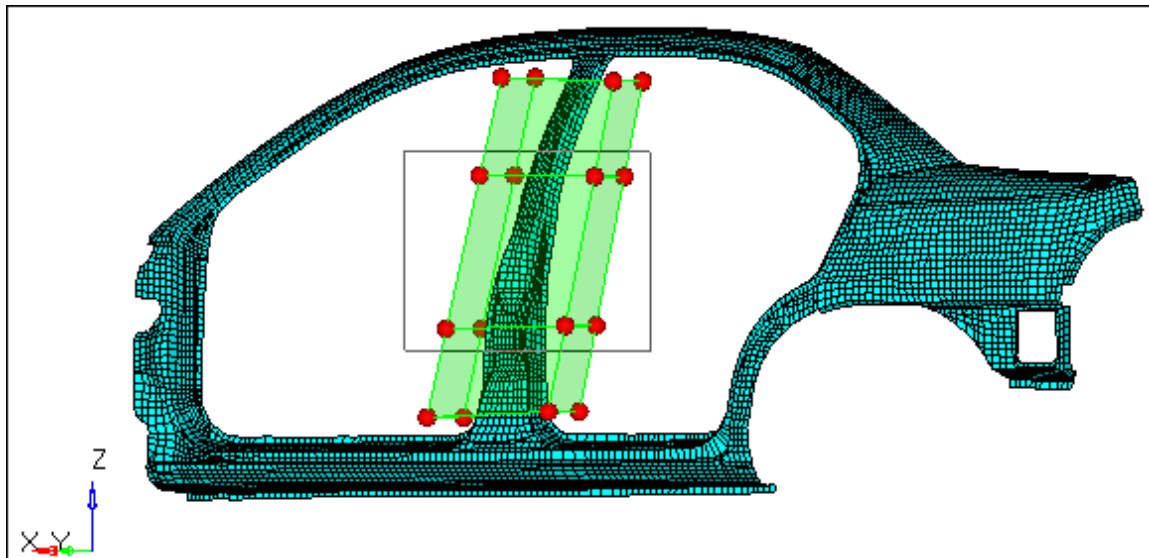
Step 4: Change the profile of the b-pillar.

Method 1: Fixed value based

1. To open the **Morph** panel, click **Morphing > Morph** from the menu bar.
2. Go to the **move handles** subpanel.
3. Set the morphing method to **translate**.



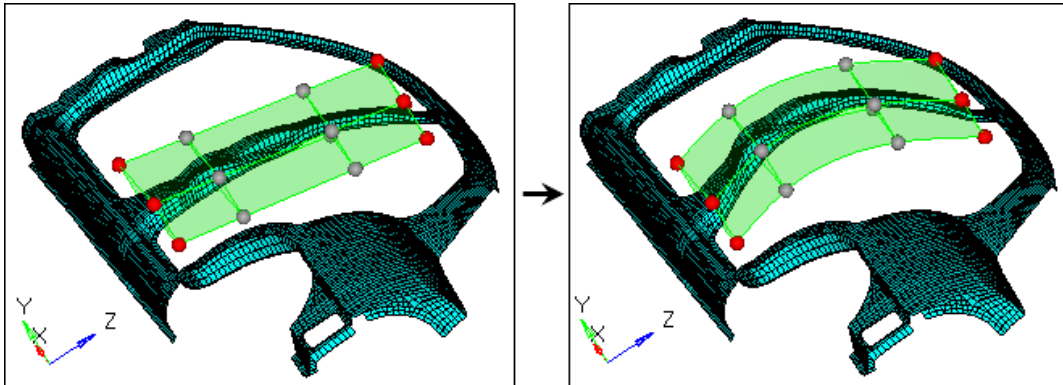
4. Set the orientation selector to **along xyz**.
5. In the **y val=** field, enter 100.
6. Leave the **x val=** and **z val=** fields set to 0.
7. Press and hold **SHIFT**, then drag your mouse around the the eight handles indicated in the image below.



Select handles for morphing

8. Click **morph**.

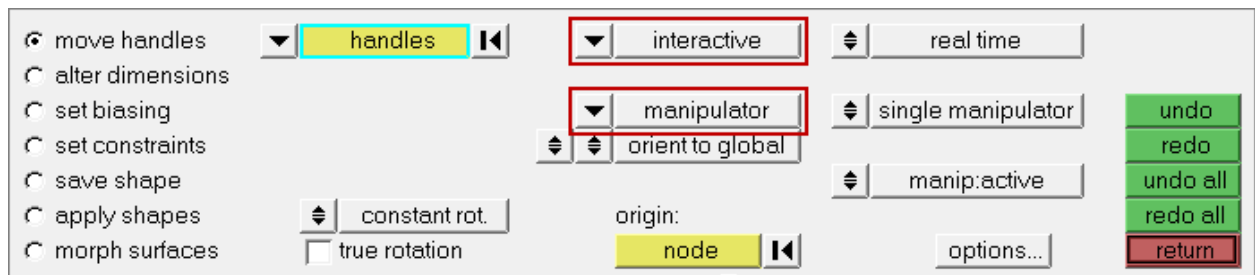
9. To verify that the b-pillar is morphed, rotate the model.




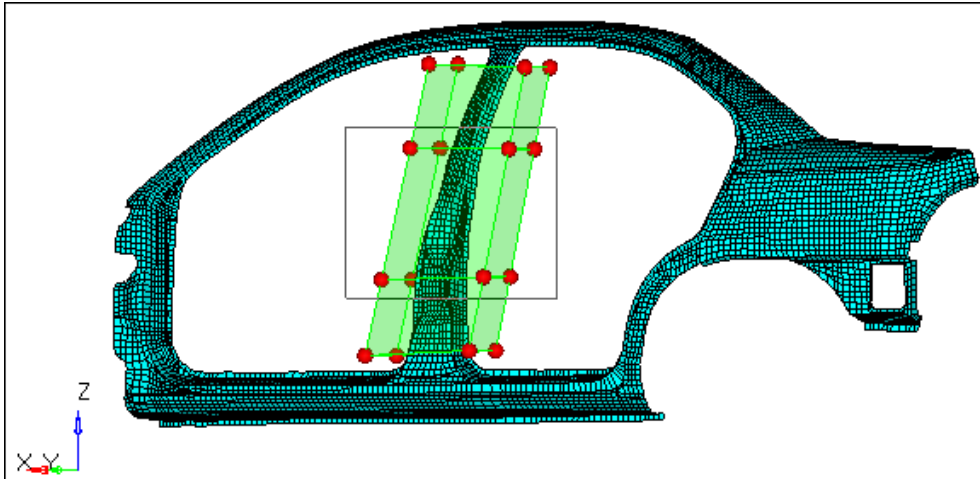
10. To restore the model's original shape, click **undo**.

Method 2: Interactive graphic manipulator base

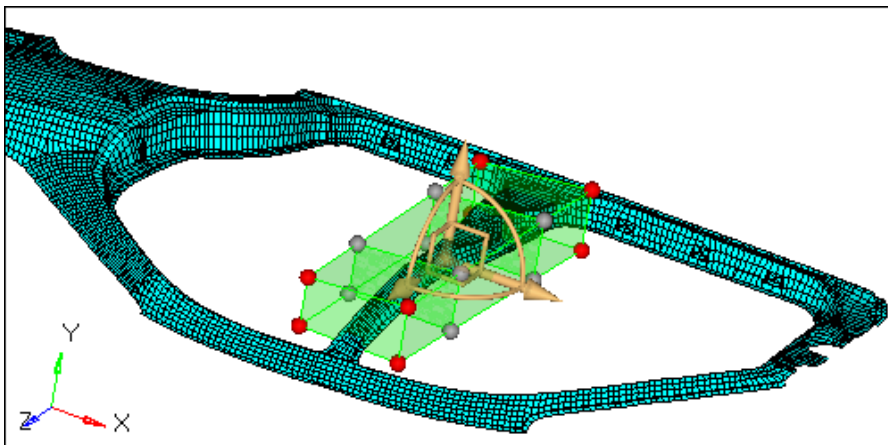
11. In the **move nodes** subpanel, set the morphing method to **interactive** and **manipulators**.



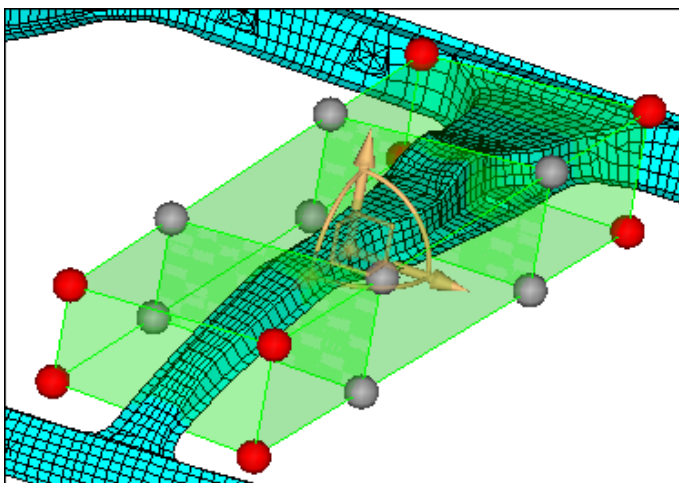
12. Leave the other parameters and options set to their default values.
13. On the **Standard Views** toolbar, click .
14. Press and hold **SHIFT**, then drag your mouse around the the eight handles indicated in the image below. A manipulator appears.



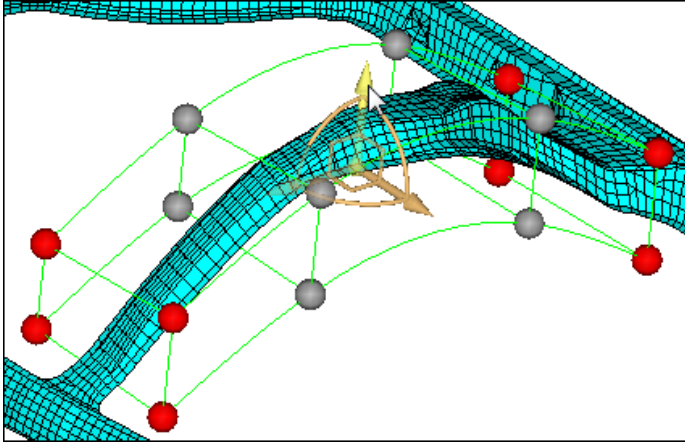
15. Optional: You can select another node as the **origin** to set the manipulator in a different position.



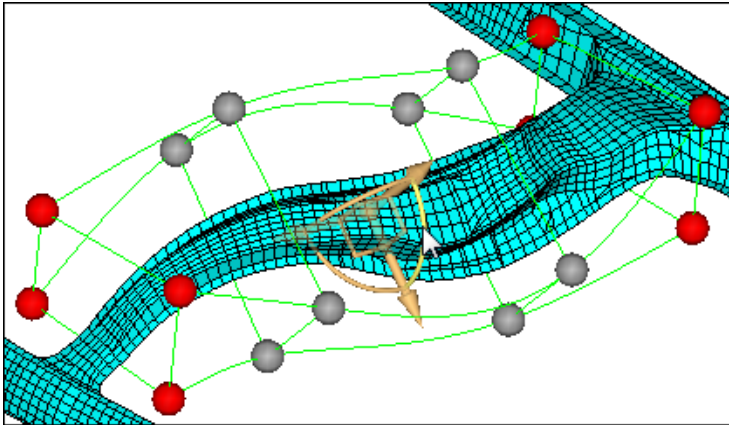
16. Zoom in and rotate close to the manipulator area.



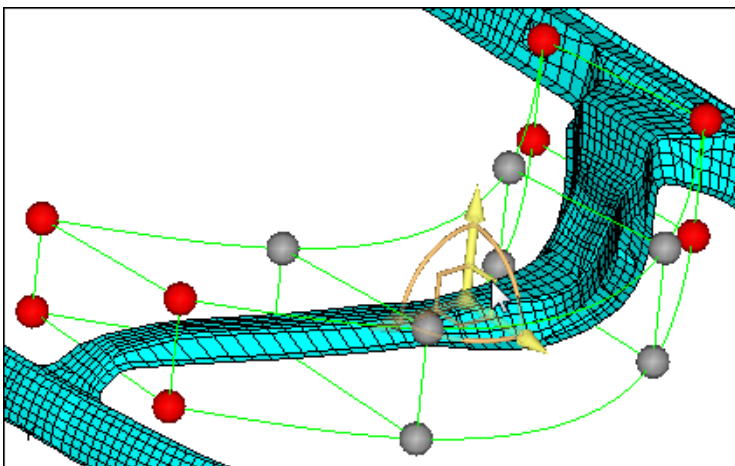
17. To translate the nodes, click and drag, graphically, one of the three yellow arrows of the manipulator.



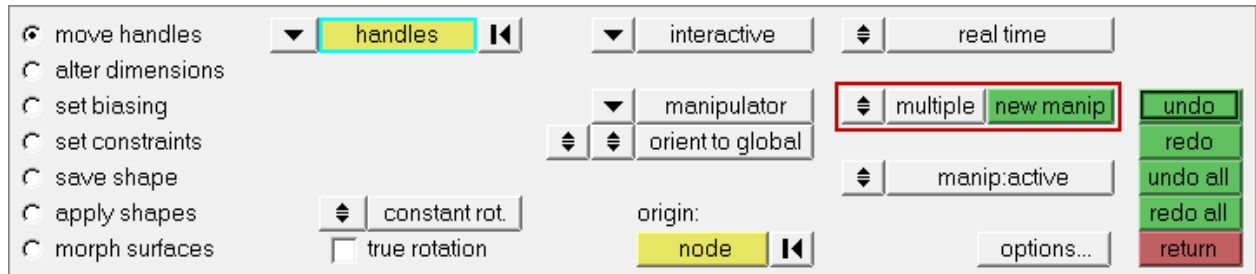
18. Click **undo**.
19. To rotate the nodes about the center of the manipulator, click and drag, graphically, one of the three yellow arcs of the manipulator.



20. Click **undo**.
21. To move the nodes in a plane, click and drag, graphically, one of the three yellow right angles of the manipulator.



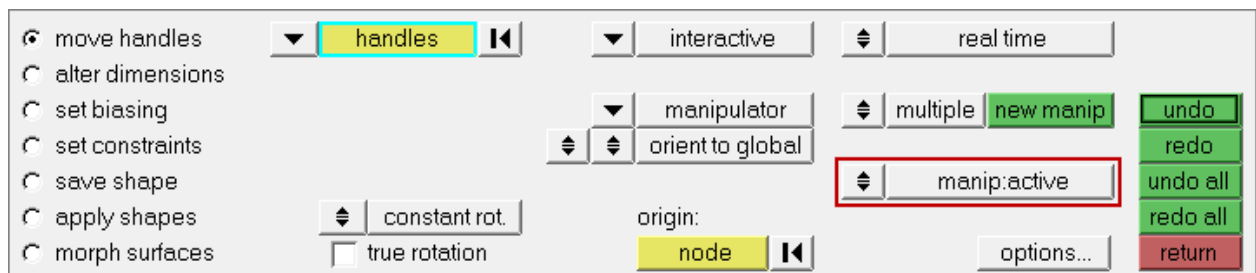
22. Click **undo**.
23. To create more than one manipulator at a time, set the **single manipulator/multiple** toggle to **multiple**.



24. To create a new manipulator, click **new manip** and then graphically select one or more moving nodes.

Note: The different manipulators may have different selected entities and different parameters, and can be moved independently of one another.

25. To move a manipulator, click a manipulator or simply move your mouse over a manipulator. HyperMesh updates the panel to the parameters associated to that manipulator. You can change the parameters or the entities associated with them if you desire.
26. To make manipulators active or inactive, switch the **manip:active/manip:inactive** toggle. When active, the manipulators morph the model when you move them. When inactive, the manipulators will only change their own position and orientation when you move them.



Summary

In both methods, you morphed the b-pillar in a smooth fashion with minimum distortion to the elements.