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Altair HyperView 2019 Tutorials

HV-5000: Creating Section Cuts

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HV-5000: Creating Section Cuts

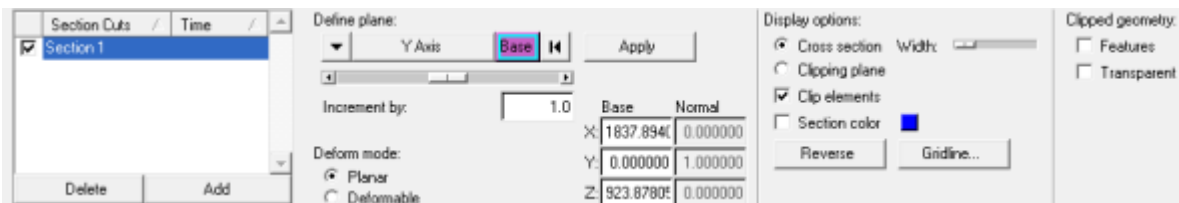
In this tutorial, you will learn how to:

- Create a section cut along a plane
- Create multiple section cuts along different planes
- Create a deformable section cut

Tools

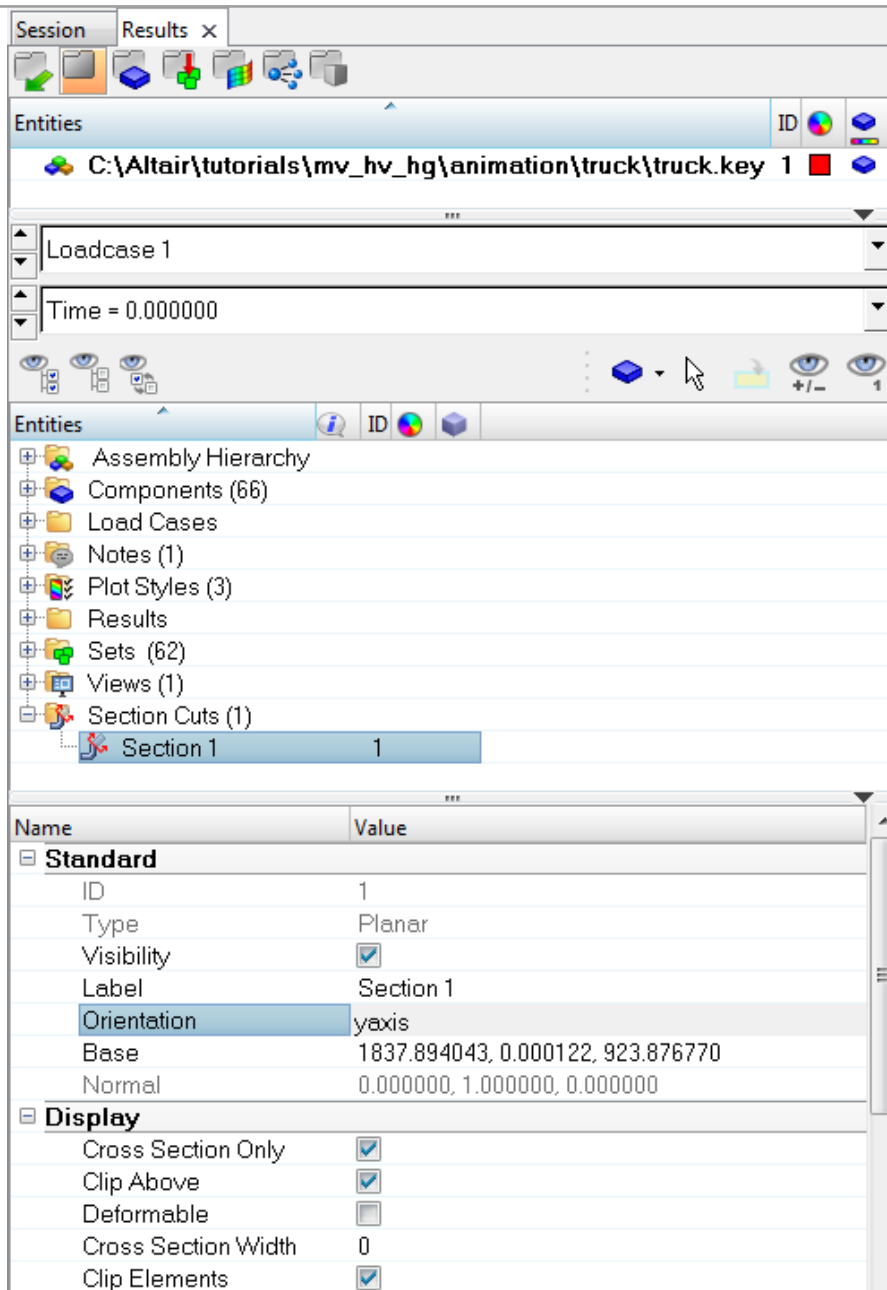
To access the **Section Cut** panel:

- Click the **Section Cut** panel button  on the **Display** toolbar.
- OR
- Right-click in the **Results Browser** and select **Create > Section Cut** from the context menu.



The **Section Cut** panel allows you to cut planar or deformable sections through a model, so you can view the details inside a model.

Section cuts can also be created and edited using the **Entity Editor** in the **Results Browser**.



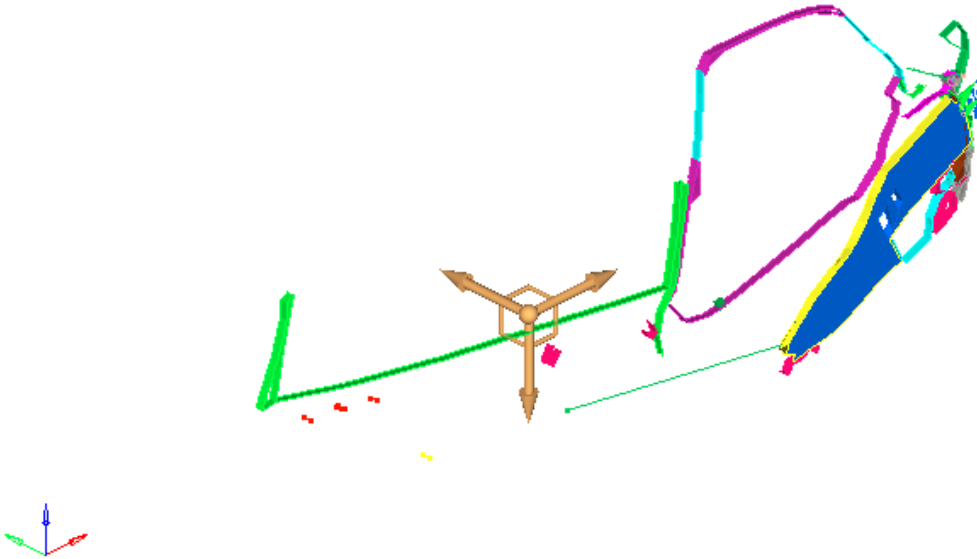
Exercise: Using the Section Cut Panel

This exercise uses the model file, `truck.key` and the corresponding `d3plot` file as the results file.

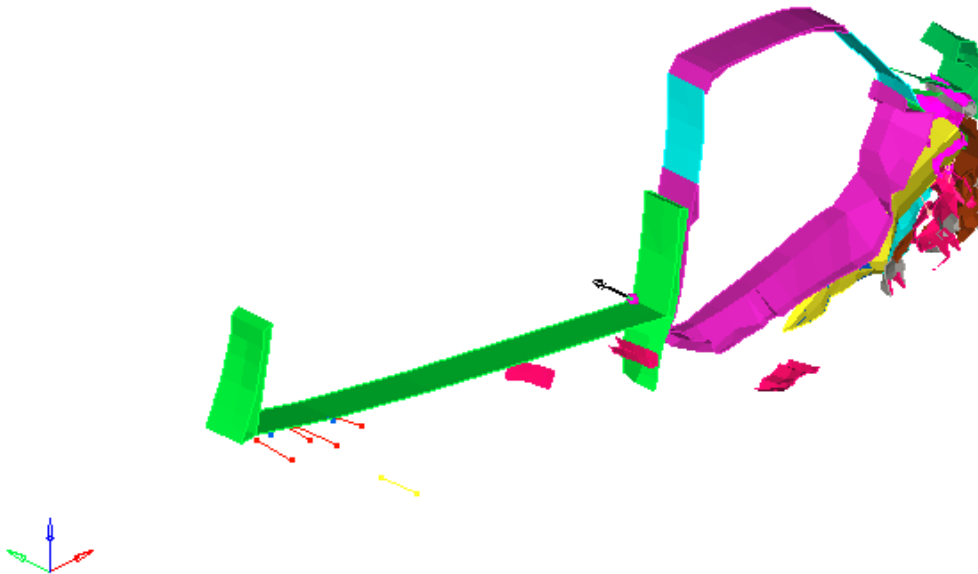
Step 1: Create a section cut along a plane.

1. Load the model file `truck.key` and the `d3plot` results file, located in the `animation\truck` folder.
2. Right-click in the **Results Browser** and select **Create > Section Cut > Planar** from the context menu.

3. Use the **Entity Editor** to define the section.
 - Under the **Standard** section, verify that **Type** is set to **axis**.
 - Under the **Display** section, verify that the **Cross section Only** option is selected.A cross section band is displayed in the graphics area.




- Under the **Standard** section, click in the **Position** field and then use the graphical manipulator to drag the cross section to different locations on the model.
- Under the **Display** section, click in the **Cross Section Width** field to access a slider bar. Use the slider bar to adjust the width of the cross section.

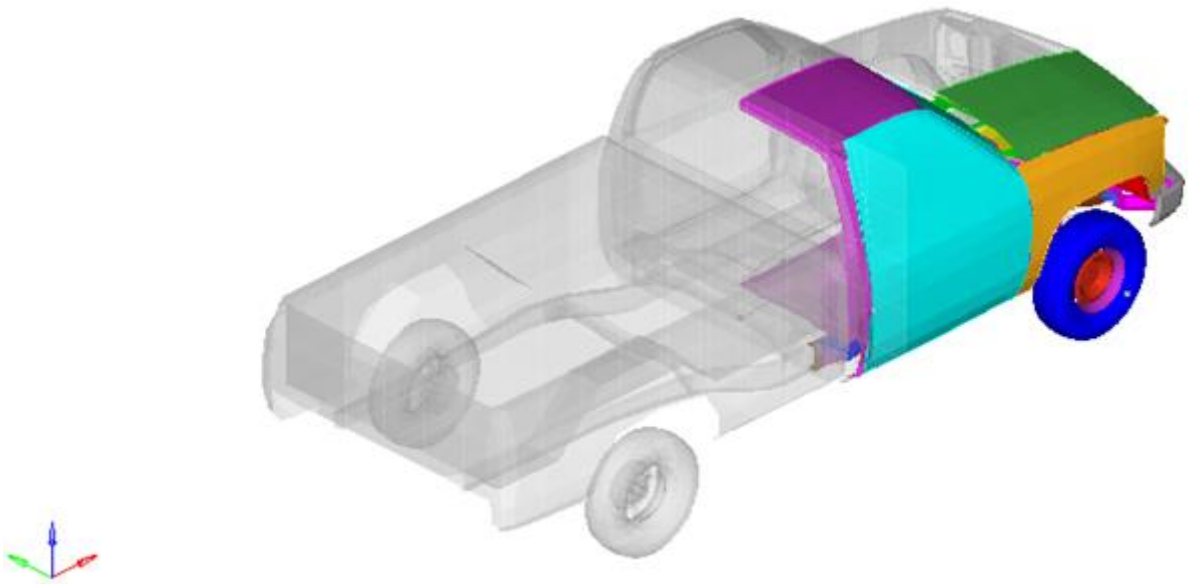


- Under the **Display** section, uncheck the **Cross Section Only** option.

4. Click in the graphics area and press '**T**' on the keyboard, to view the model in transparent mode.
5. Press '**L**' to view the feature lines.
6. Press '**T**' and '**L**' again to turn off transparent and feature line views.




Step 2: Create and view multiple section cuts.

1. Add another section cut by right-clicking in the **Results Browser** and selecting **Create > Section Cut**.
2. This time we will use the **Section Cut** panel to edit the section. Click the **Section Cut** panel button  on the **Display** toolbar to enter the panel.
3. Select **X Axis** for the plane.
4. Verify that the **Clipping plane** option is turned on.
5. Click **Apply**, to create a section cut in the X direction, with respect to the previously made section in the Y direction.
6. **Reverse** the clipping plane to view the other side of the section cut.
7. Turn on transparency.



8. Use the slider bar under **Define plane** to increase or decrease the clipped section.

Step 3: Create a deformable section cut.

1. Animate the model .
2. Select the **Animation Controls** panel from the toolbar .
3. Slow down the speed of the animation.
4. Return to the **Section Cut** panel , and observe the animation of the model.

The model appears to be passing through a plane that has been defined at the point where the section was created. This is due to the fact that this is a **Planar** section cut, therefore the plane of the model does not move with the model.

5. Stop the animation.
6. From the **Results Browser**, use the **Change load case** toolbar to select the first time step.

Note The **Change load case** toolbar visibility can be toggled on/off using the **Configure Browser** option (located in the **Results Browser** context menu).

7. With **Section 2** highlighted in the list of section cuts, turn on the **Deformable** option (under **Deform mode**).
8. Click **Apply**, to view a deformable section cut.

HyperView remembers the location of your reference cut. The section cut is deformed relative to the time listed in the **Time** column. At the time you create the deformable section cut, the cut remains planar. When you animate the model, the section cut starts deforming.

9. Animate the model and observe the section cut.

Note that in this case, the sectional plane moves with the model.