Altair HyperMesh 2019 Tutorials

HM-1020: Working with Panels

HM-1020: Working with Panels

A large portion of HyperMesh functionality is organized into panels. Many panels have common attributes and controls, so once you become familiar with the features of one panel, it is much easier to understand other panels.

In this tutorial, you will learn how to:

- Use the entity selector and the extended entity selection menu to select and unselect nodes and elements from the graphics area.

- Use the orientation selector to define vectors along which to translate nodes and elements.

- Switch between different entities to select and methods to define vectors.

- Toggle between two options.

- Enter, copy and paste, and calculate numbers.

- Use the rapid menu functionality to execute commands with the mouse buttons rather than clicking buttons.

- Interrupt, but not exit, a panel to go to another panel using the keyboard function keys.

Model Files

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


Exercise

Step 1: Open and view the model file, `bumper.hm`.

1. Start HyperMesh Desktop.

2. From the menu bar, click *File* > *Open* > *Model*.

3. In the **Open Model** dialog, navigate to your working directory and open the `bumper.hm` model file. A model appears in the graphics area.


Step 2: In the Translate panel, select nodes from the graphics area.

1. To open the **Translate** panel, click *Mesh* > *Translate* > *Nodes* from the menu bar.

2. Click the entity selector to active it.

    Note: The cyan border around the entity selector indicates that it is active.
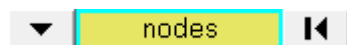
3. Optional: If necessary, click ⬚ on the **Visualization** toolbar to change the element view style to wireframe.

4. In the graphics area, left-click on the corners of the elements to select a few nodes. HyperMesh positions a small, white node at each element corner you select.
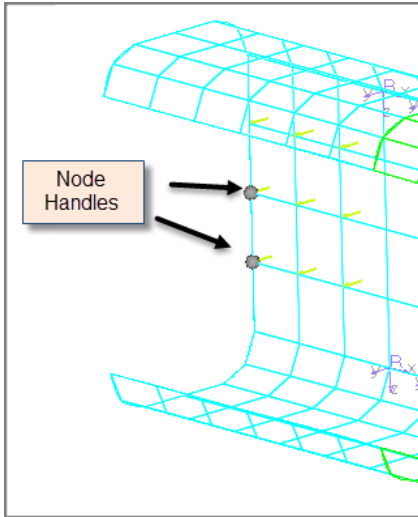

5. To reset the selection of nodes, click ⏮ on the entity selector.

Step 3: Select and unselect elements from the graphics area.

1. Click ▼ on the entity selector, and select *elems* from the list of entities that can be translated. The entity selector is now set to **elems**.
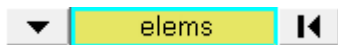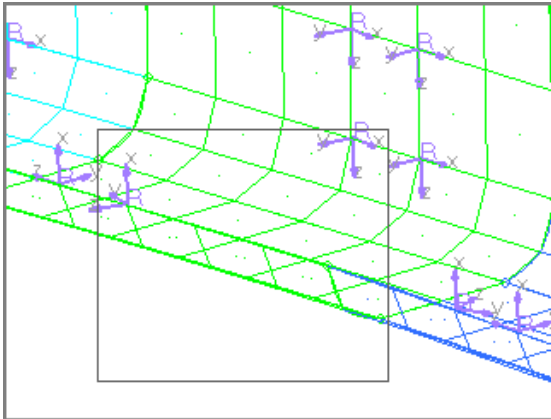

2. In the graphics area, left-click on the element handles (the dot at the element's center) to select several elements. HyperMesh highlights the elements you select in white.
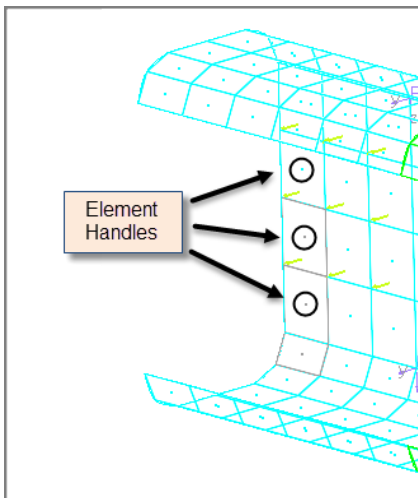
3. To unselect an element, right-click on the element handle in the graphics area.

Step 4: Select and unselect elements using the quick window selection method.

1. Verify that the entity selector is active and set to ***elems***.

2. In the graphics area, press SHIFT, left-click, and draw a rectangular window around a few elements. HyperMesh selects all of the element handles inside of the rectangular window you drew.

3. To unselect the elements, press SHIFT, right-click, and draw a rectangular window around the selected elements.

4. In the graphics area, press SHIFT and left-click. The Quick window pop-up menu appears, containing eight icons.
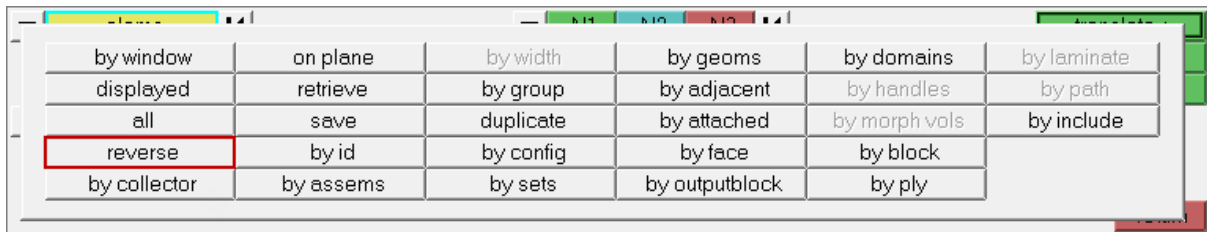

5. Still pressing SHIFT, click , and draw a polygon window around a few unselected elements.
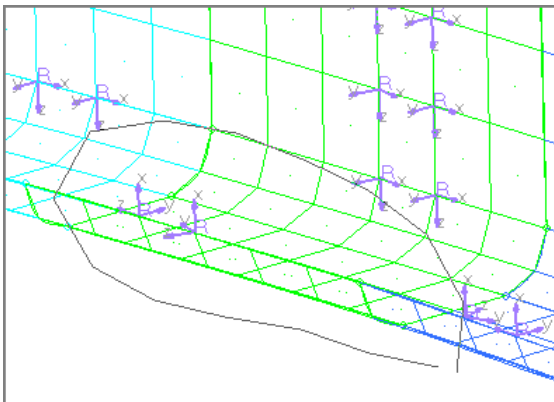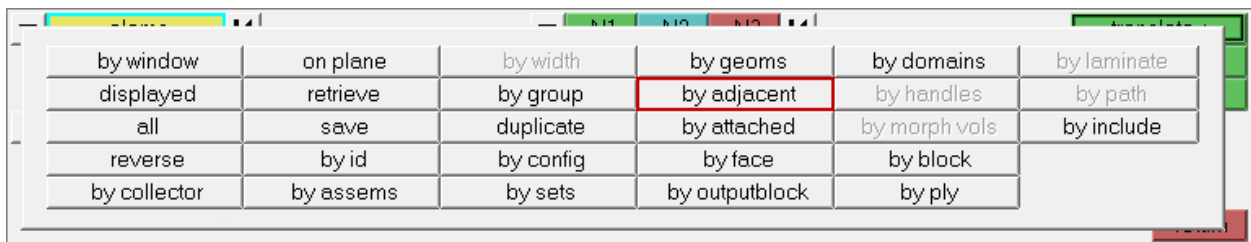
6. Release the SHIFT key and mouse button. HyperMesh selects all of the element handles inside of the polygon window.

Step 5: Select and unselect elements by using the extended entity selection menu.

1. Click *elems* >> *reverse*. HyperMesh unselects the elements that you selected, and selects the elements that were not selected.

by window	on plane	by width	by geoms	by domains	by laminate
displayed	retrieve	by group	by adjacent	by handles	by path
all	save	duplicate	by attached	by morph vols	by include
reverse	by id	by config	by face	by block	
by collector	by assems	by sets	by outputblock	by ply	

2. Click *elems* >> *by adjacent*. HyperMesh selects the elements that are adjacent to the selected elements.

by window	on plane	by width	by geoms	by domains	by laminate
displayed	retrieve	by group	by adjacent	by handles	by path
all	save	duplicate	by attached	by morph vols	by include
reverse	by id	by config	by face	by block	
by collector	by assems	by sets	by outputblock	by ply	

Step 6: Shade the elements, reset the selection, and select a few adjacent elements.

1. On the **Visualization** toolbar, click 🔲. HyperMesh displays the elements in shaded mode, rather than wireframe mode.
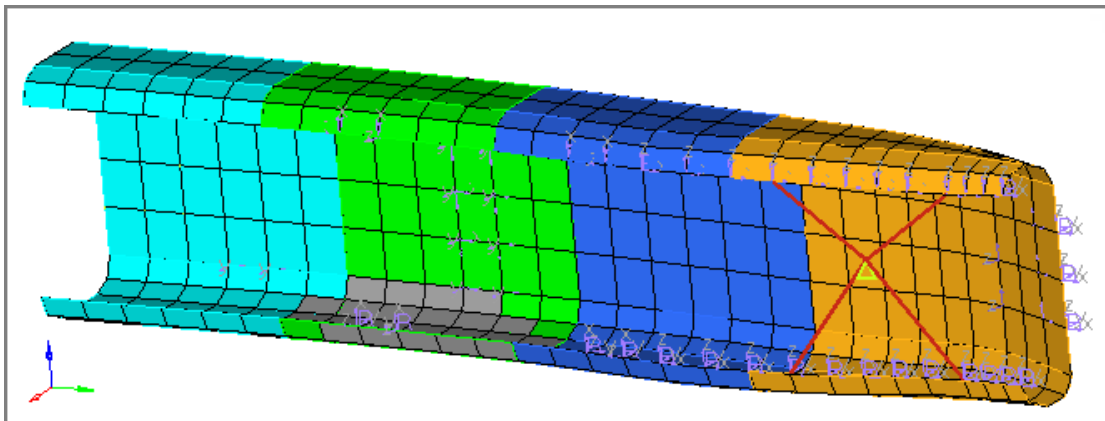

2. To clear the selection of elems, click ⏮ on the entity selector.

△ Altair

3. Using the entity selector, select a few elements that are adjacent to each other in the graphics area.

Step 7: Specify a direction vector (N1 and N2 only) along which to translate the selected elements.

1. On the orientation selector, click ⬇️ and select *N1, N2, N3* from the list of vector and plane options, which define the direction in which to translate the selected elements.

    ⬇️ | N1 | N2 | N3 | I◀
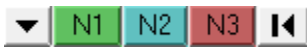
2. To activate the **N1** selector, click N1 .

    Note: The cyan border around the **N1** selector indicates that it is active. Since the entity selector is no longer active, HyperMesh changes the color of the selected elements in the graphics area to gray.
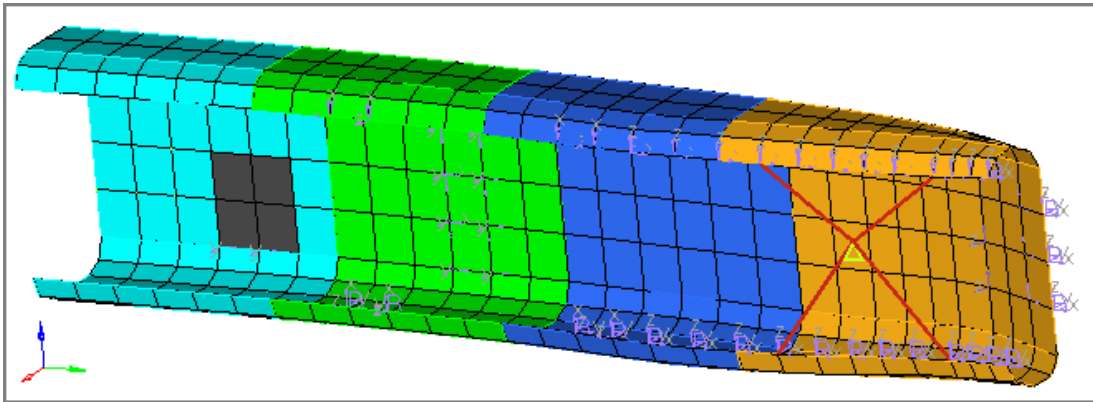

3. In the graphics area, select any node for **N1**. HyperMesh highlights the selected node in green, and the active selector advances to **N2** in the **Translate** panel.

△ Altair
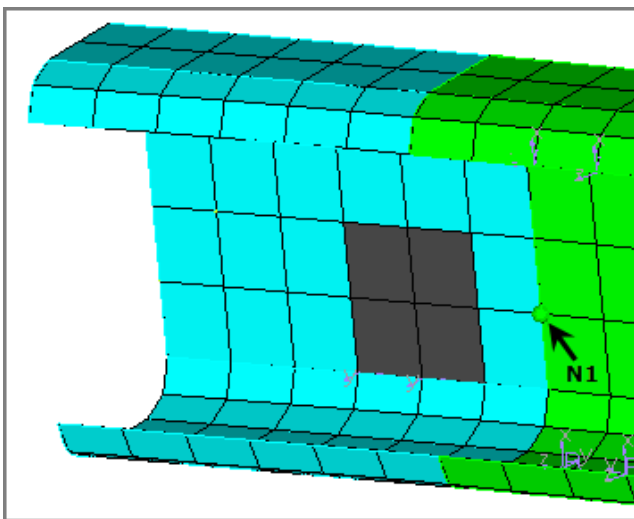
4. In the graphics area, select a node near **N1** for **N2**. HyperMesh highlights the selected node in blue, and the active selector advances to **N3** in the **Translate** panel.

   Note: For this tutorial, you do not need to select a node for **N3**. Selecting **N1** and **N2** defines a vector for the direction of translation. This vector goes from **N1** towards **N2**. Selecting **N3** defines a plane. The direction of translation is the positive direction of the vector normal to the plane. The positive direction is determined by the right-hand rule.
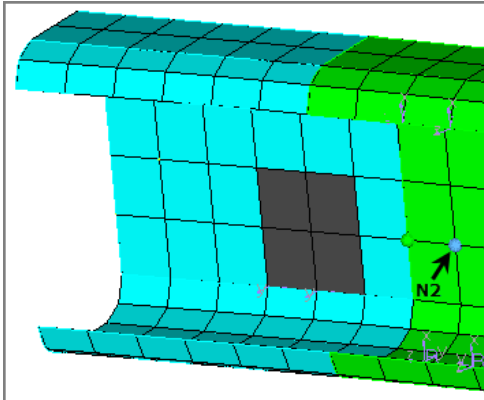

Step 8: Specify a distance to translate the selected elements and then translate them.

1. Click the second toggle and select **magnitude = N2-N1**.
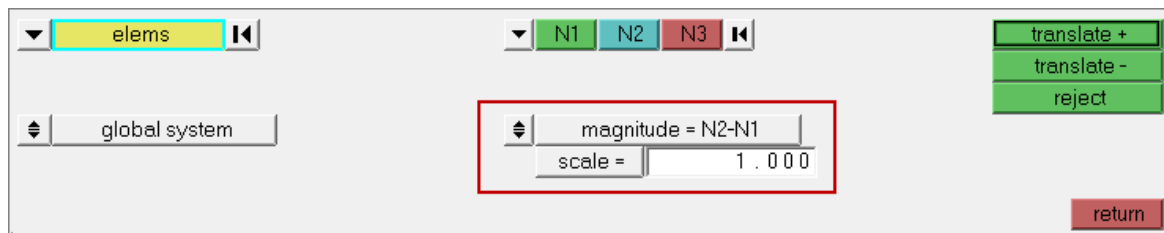
2. Click **translate+**. HyperMesh translates the selected elements in the N1 to N2 direction by N2-N1 units in the graphics area.

   Note: HyperMesh places a thick black border around **translate+**, which indicates that it is a rapid menu button.
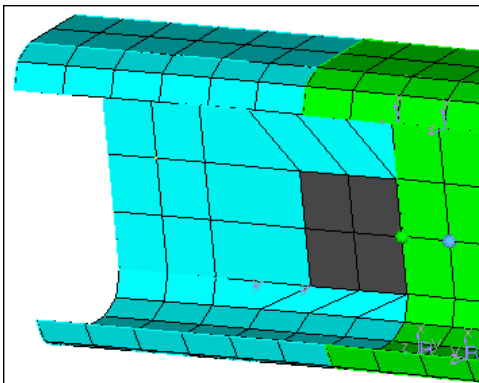
3. Instead of clicking **translate+**, middle-mouse click. HyperMesh translates the selected elements again by **N2-N1** units.

4. Click **translate-** twice. HyperMesh translates the selected elements in the negative **N1-N2** vector direction, and restores them to their initial position.

Step 9: Measure the distance between two nodes.

1. To interrupt, but not exit the **Translate** panel and go to the **Distance** panel on the **Geom** page, press **F4**.

   Note: The graphics area is currently not displaying the elements and nodes that you selected in the **Translate** panel, however, they are still selected. When you return to the **Translate** panel, they will reappear.

2. In the **Distance** panel, click **two nodes**. The **N1** selector is active.

3. In the graphics area, select any node for **N1**. HyperMesh highlights the selected node in green, and the active selector advances to **N2**.
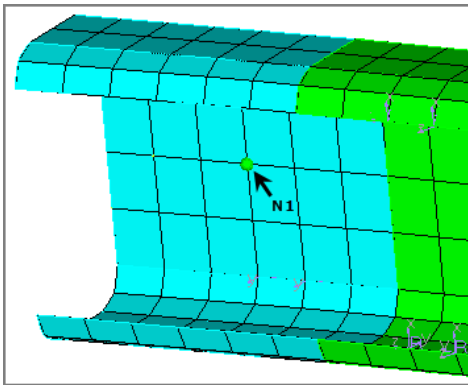
4. In the graphics area, select a node near **N1** for **N2**. The distance between **N1** and **N2** appears in the **distance =** field.
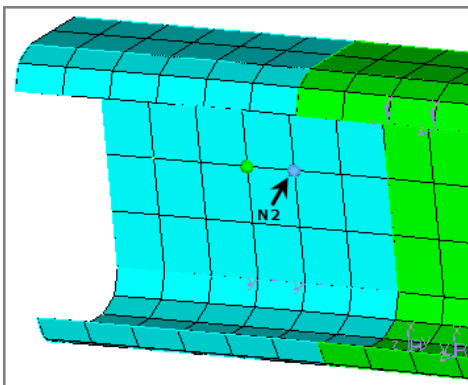
5. In the **distance =** field, highlight the value.

6. To copy the value, press **CTRL** + **C**.

7. To return to the **Translate** panel, click **return**. The graphics area displays the elements and nodes you selected earlier in the **Translate** panel.

Step 10: Specify a distance to translate the selected elements and then translate them.

1. Click the second toggle and select **magnitude =**.

2. In the **magnitude =** field, highlight the value.

3. To paste the **distance=** value that you copied from the **Distance** panel, press **CTRL** + **V**.

4. Click **translate+**. HyperMesh translates the selected elements in the direction from **N1** to **N2** by the number of units specified in the **magnitude =** field.

5. Click **translate-** once. HyperMesh translates the selected elements in the negative N1-N2 vector direction, and restores them to their initial position.

### Step 11: Calculate 5.5 * 10.5 and specify the resulting value for *magnitude =*.

1. In the **magnitude=** field, right-click. The HyperMesh calculator appears.

2. Click **5 . 5** (in that order).

3. Click *enter*.

4. Click **10 . 5** (in that order).

5. Click *X*. The calculator displays a calculated value of 57.75.

6. Click *exit*. The calculator closes and 57.75 appears in the **magnitude =** field.

7. Optional: To enter a value in the **magnitude =** field, left-click in the field to highlight the current value, then enter a new value.

Step 12: Specify a new vector and translate the elements again.

1. To reset the direction of the translated elements, click ⏮ on the direction selector. **N1** becomes the active selector.

2. In the graphics area, select three nodes for **N1**, **N2**, **N3** to define a plane.
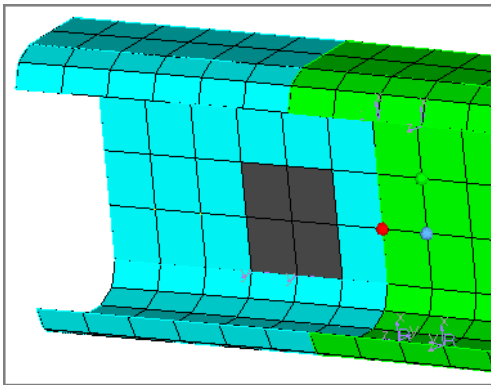
3. Click *translate+* or middle-mouse click. HyperMesh translates the elements 57.75 units in the positive direction normal to the defined plane.
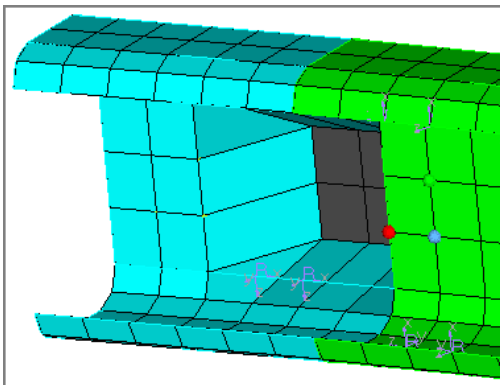
4. To exit the panel, click *return*.

Step 13 (Optional): Save your work.

1. When you have completed all of the exercises in this tutorial, click *File* > *Save* > *Model* from the menu bar.

△ Altair