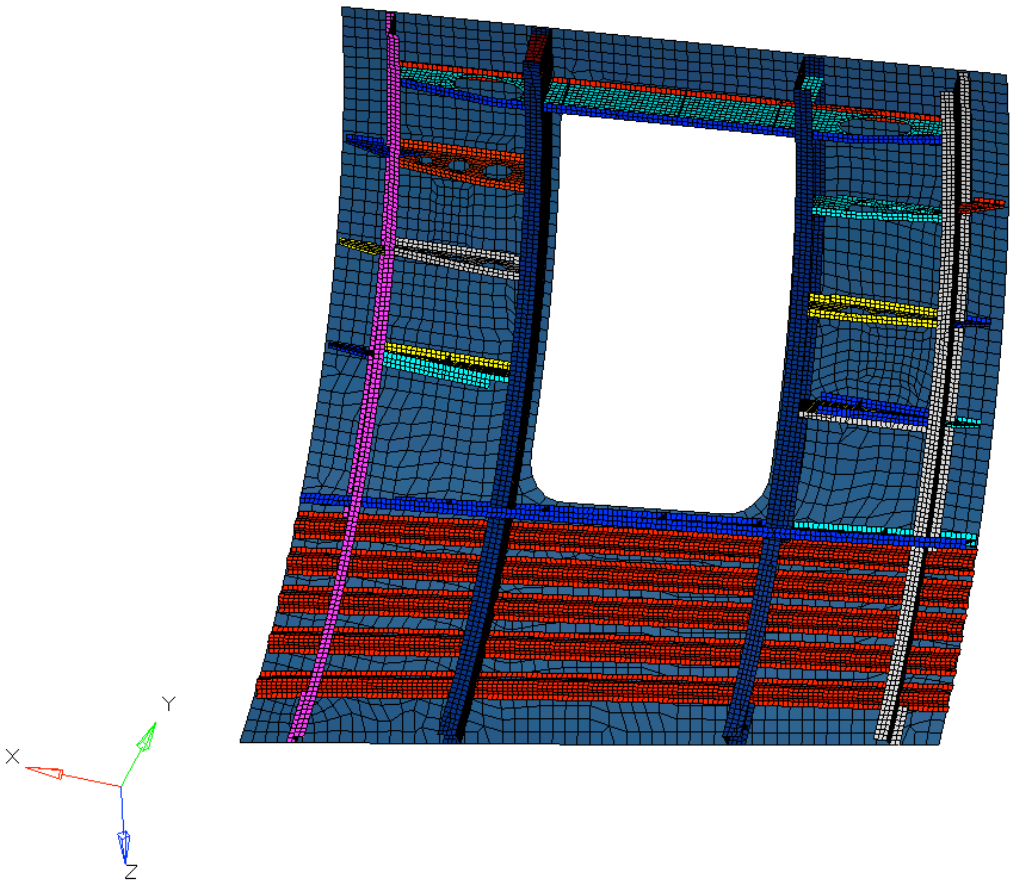
Exercise 5a - Remeshing and Modifying an Orphaned Mesh

In this exercise, you will rework an orphan mesh using the **Automesh** panel, **Imprint** panel, and some of the utilities in the **Geom/Mesh** page of the **Utility** tab.



05a-door.bdf

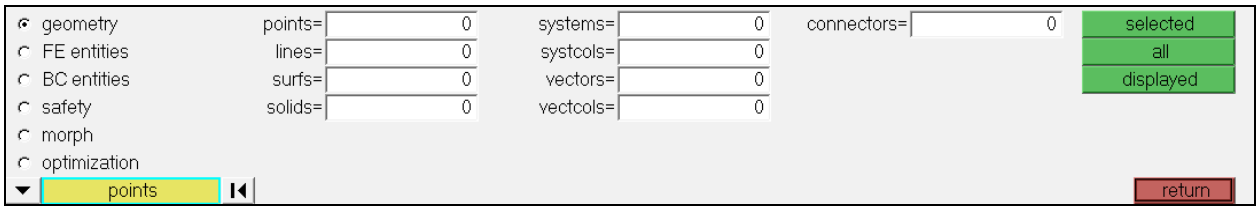
Step 1: Load the Nastran user profile

1. From the menu bar select ***File > New > Model***.
2. From the menu bar, select ***Preferences > User Profiles*** or click the **User Profile** icon.
3. Select ***Nastran*** and then select ***OK***.

Step 2: Import the Door model `5a-door.bdf`

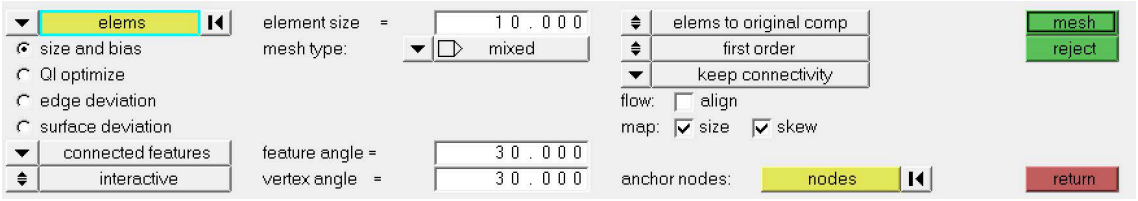
1. Click ***File > Import > Solver Deck***.
2. In the **File**: field, browse to the file `5a-door.bdf`.

3. Click ***Import***.
4. Close the Import dialog.
5. Notice there are no geometric entities in the model. Check this by doing a count, from the menu bar: ***Tools > Count***.



Step 3: Remesh the Skin

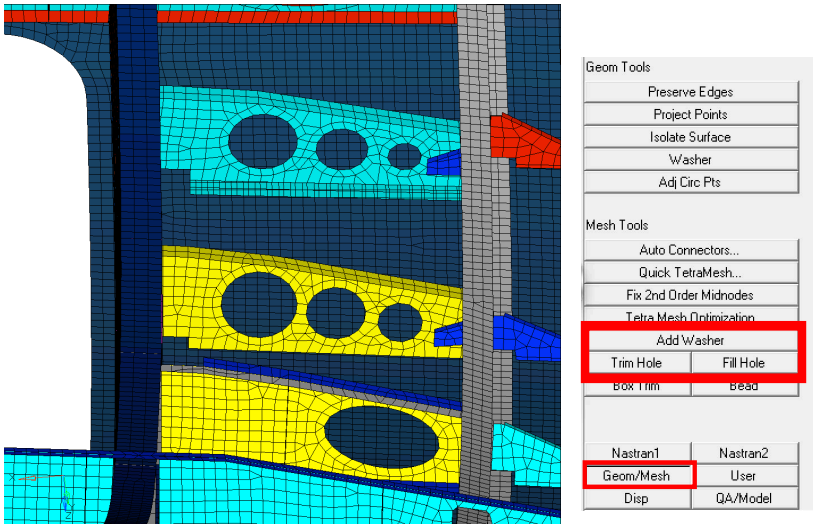
1. Isolate the Skin elements by selecting component ***100*** in the **Model Browser** and then right click and select ***Isolate.***
2. Notice the poor mesh quality
3. Go to the **Automesh** Panel by selecting ***Mesh*** > ***Create*** > ***2D AutoMesh***.
4. Toggle the entity selector to **elems**.



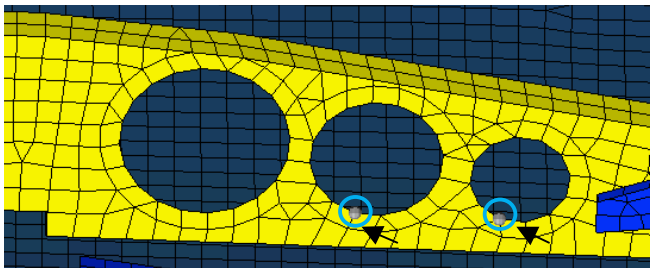
5. Select the elements that make up the skin
6. Specify **element size =** `20.00` and click ***mesh.***
7. Preview the mesh in the mesh interactive mode and adjust meshing options as desired until mesh looks satisfactory.
8. Click ***return*** to exit the **Automesh** panel and create the mesh.

Step 4: Remove Lightening Holes

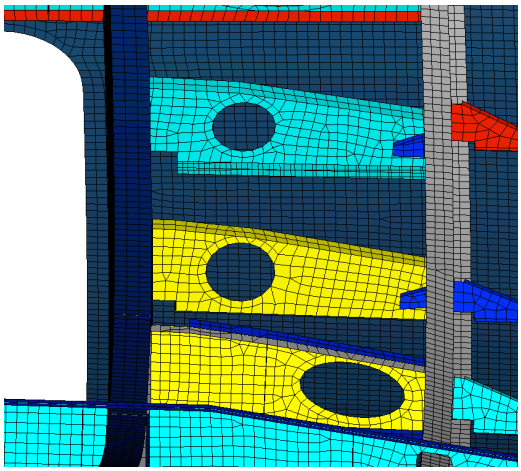
1. Show all of the components by right clicking on the ***Component*** folder in the **Model Browser** and click ***Show***)
2. Locate the forward most intercostals, see image below



3. In the **Utility** Tab (***View*** > ***Browsers*** > ***HyperMesh*** > ***Utility***), select the ***Geom/Mesh*** button to view the Mesh Tools
4. Select the ***Fill Hole*** button to launch the **Fill Hole Utility**.
5. In **Manual** mode, click the yellow ***Select Nodes*** button.
6. Select any node on the edge of the two most forward holes (image below), click ***proceed***.

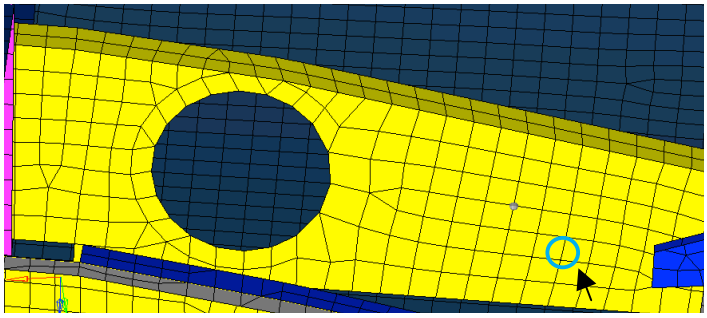


7. The **Select Node** button is now green, indicating nodes have been specified. Click ***Fill***. Lightening holes are now removed.
8. Repeat steps 4-7 for the upper intercostal.

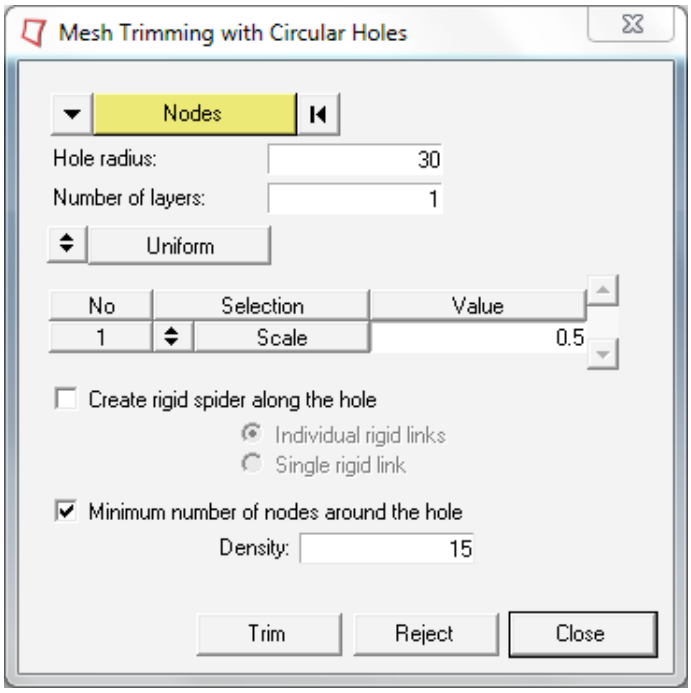


Step 5: Add a Lightening Hole

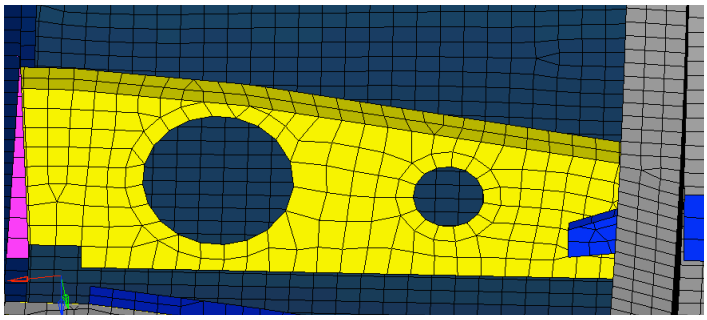
1. Select the ***Trim Hole*** button in the **Utility** Menu to launch the **Trim Hole Utility**.
2. Select any node on the lower intercostal at the approximate location shown below (this will be the center of the hole); and click ***proceed***.



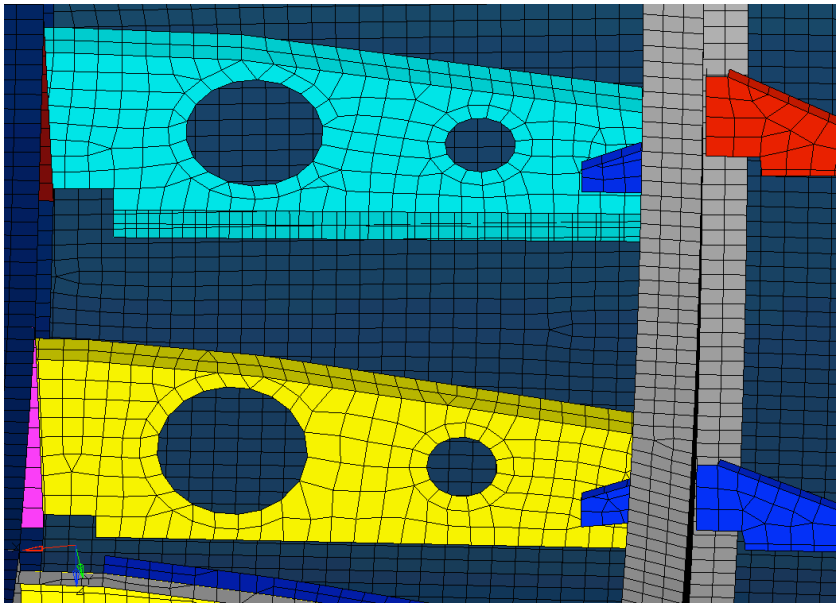
3. Specify the following values in the **Trim Hole** dialog.



4. Click ***Trim.***
5. Click ***Close.***



6. Repeat steps 1-5 for the upper Intercosal. Model should look similar to below:



Step 6 (Optional): Save your work.