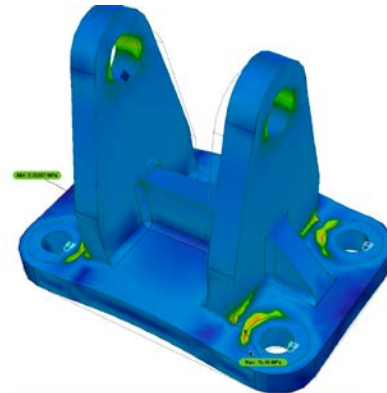


## Lesson: Model simplification for Finite Element Analysis

In this lesson, you will use simplification to change the features and components in the simulation model. You will also use simplification to explore alternative designs and compare the FEA results.

### Learning Objectives:

- Use simplification to explore potential changes to the design.
- Remove components and features from the simulation model.
- Compare results of model variations

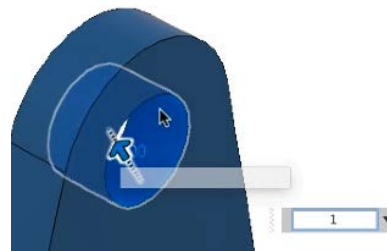


The completed exercise

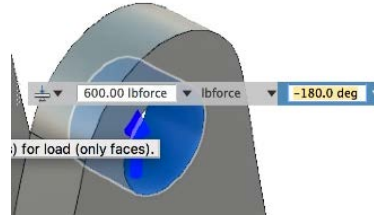
1. Open the file Lift Point – Simplify.f3d and save it to your current project. View the Stress and Safety Factor results to begin looking for ways to optimize the model. Right click Study 1 and choose Clone Study. Rename the cloned model Study 2 – No Collars. Click Simulation>Simplify then expand the Browser and select Collar:1 and Collar:2. Delete these bodies.



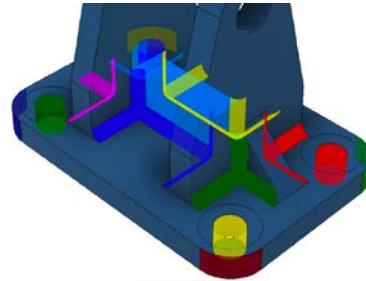
2. Select the inside face of the holes and use Press Pull to constrict the diameter of the holes down by 1. Click OK then Simplify>Finish Simplify. There is now a warning on Study 1 and Study 2.



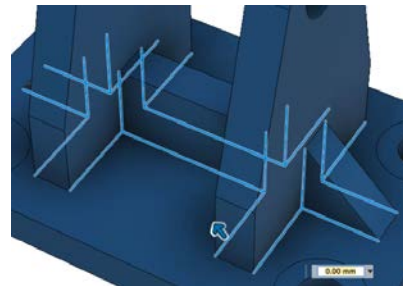
3. In Study 2, select the edit tool for Force and select the new inside faces of the holes. Reorient the load of the force to -180 degrees. Click OK then Solve the new study.



4. Investigate the results and notice they are similar. Activate the results from Study 1 to make the comparison. Clone Study 2 in preparation for trying smaller fillets. Click Simplify>Remove Features. Select the model and note the features available for removal.



5. Notice in the Remove Features control panel that you can filter the results by toggling different types of features. Activate only Fillets and make sure the rest of the options are deactivated. Select the Delete icon to remove all the highlighted fillets. Use the Press Pull tool to reselect the edges. Add a 2.5 mm fillet to these edges. Click OK then Finish Simplify.



6. Note the warning in the Browser again. Solve the model. The new results show a shifted stress concentration.

