Static Loading Stress Analysis

Materials are assumed to be homogeneous and isotropic.

Find all applied forces, moments, torques, etc. and draw the free-body diagrams to show them applied to the part's geometry.

Based on the load distributions over the part's geometry, determine what cross sections of the part are most heavily loaded.

Determine the stress distributions within the cross sections of interest and identify locations of the highest applied and combined stresses.

Draw a 3-D stress element for each of the selected points of interest within the section and identify the stresses acting on it.

Calculate the applied stresses acting on each face of every element and then calculate the principal stresses and maximum shear stress resulting therefrom.

Calculate critical deflections of the parts.

Figure 4-60
Flow Chart for Static Stress Analysis