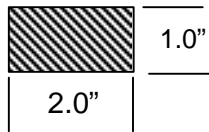


Using a Goodman Diagram

Given the following information, construct a **Goodman Diagram** and determine all relevant factors of safety against fatigue.

The **alternating bending moment** on a machine component is 2500 in-lb, and the **mean bending moment** is 3000 in – lb

The cross-sectional area of the component is rectangular with dimension $b \times h = 2'' \times 1''$ and bending is across the 2'' dimension.



The **theoretical stress concentration factor** is 1.180 and the **notch sensitivity** is 0.898.

The **ultimate tensile strength**, S_{ut} , is 80 ksi and the **yield strength**, S_y , is 60 ksi.

Reliability is 99.9%

The **surface finish** on the part is machined.