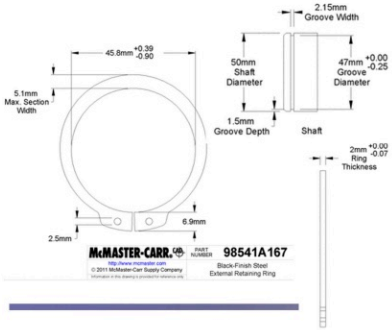
Ex 6) Retaining Ring Loads

- **For 6810 in Ex 2), evaluate the snap ring shown.**
  - **Assume static load ($N_s = 4$)**
  - **Assume $n/d \gg 3$**
  - **Use $S_s = 200 N/mm^2$ for the ring and $G_y = 550\ N/mm^2$ for the shaft.**



$D = 50$ mm

$T = 2$ mm

$d = 1.5$ mm

$S_s = 200\ N/mm^2$

$\frac{n}{d} \gg 3$

$G_y = 550\ N/mm^2$

① Allowable thrust load of retaining ring, $A = 1$

$$R_s = A \frac{D\pi T S_s}{N_s} = 1 \cdot \frac{50 \cdot \pi \cdot 2 \cdot 200}{4} = 15708\ N$$

② Groove $\eta \approx 1$, $d = 1.5$ mm, $G_y = 550\ N/mm^2$, $B = 1$

$$G = B \frac{D\pi d G_y}{N_s \eta} = 1 \cdot \frac{50 \cdot \pi \cdot 1.5 \cdot 550}{4 \times 1} = 32398\ N$$

$B = 1$, $G_y = 550\ N/mm^2$

$N_s = 12$, $\eta = 4$ (assuming worst case)

$n/d = 1$