Solution Verified

Answered 1 year ago

Step 1 1 of 2

Result

$$(\%)_1 = \frac{T^2 L}{2GJ}$$

$$(U)_1 = \frac{(PR)^2 L}{2G\left(\frac{\pi d^4}{32}\right)}$$

$$(U)_1 = \frac{(PR)^2 L}{\left(\frac{\pi d^4 G}{16}\right)}$$

$$(U)_1 = \frac{(16)(PR)^2 L}{\pi d^4 G}$$

Let's $L = n(2\pi R)$

Substitute L Into U_1

$$(U)_1 = \frac{(16)(PR)^2 (2\pi n R)}{\pi d^4 G}$$

$$(U)_1 = \frac{(32\pi n) P^2 R^3}{d^4 G}$$