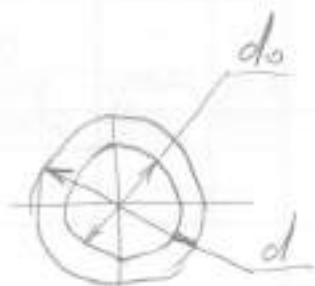


$$d_0 = 40$$

$$d = 53$$



$$96,36 \text{ Вт} = 131 \text{ м/с при } 8000 \text{ об/мин.}$$

$$117 \text{ Н.м при } 6000 \text{ об/мин.}$$

40x	900	750
45	800	550
$\sigma_b$	$\sigma_T$	

МПа

$$W = \frac{\pi d^3}{32} \left[ 1 - \frac{d_0^4}{d^4} \right] \approx 0,1 \frac{d^4 - d_0^4}{d} = 0,1 \frac{53^4 - 40^4}{53} =$$

$$= 0,1 \frac{7890481 - 2560000}{53} = 10057 \text{ мм}^3$$

$$\tau_k = \frac{M_k}{W_k} = \frac{117 \text{ Н.м}}{10057 \text{ мм}^3} = \frac{117 \text{ Н.м}}{0,010057 \text{ м}^3} = 11666 \text{ Н/м}$$

Запас прочности

$$n_T = \frac{\sigma_T}{\tau_k}$$

$$\tau_k = \frac{\sigma_T}{n_T} =$$

ГОСТ 4543  $\tau_k$

40x	- 250 МПа
45	- 183 МПа

$$\tau_k = \frac{16 M_k}{\pi D^3 \left( 1 - \left( \frac{d}{D} \right)^4 \right)} = \frac{16 \cdot 117}{\pi \cdot 0,053^3 \left( 1 - \left( \frac{0,04}{0,053} \right)^4 \right)} =$$

$$= \frac{1872}{314 \cdot 1,48877 \cdot 10^{-4} (1 - 0,32444)} = 5,925 \cdot 10^6 \text{ Па.}$$

$$\tau_k \cdot n_T = 5,9 \cdot 3 = 17,775 \text{ МПа}$$