

power = 250 w
 RPM = 4000
 Torque = 1.79

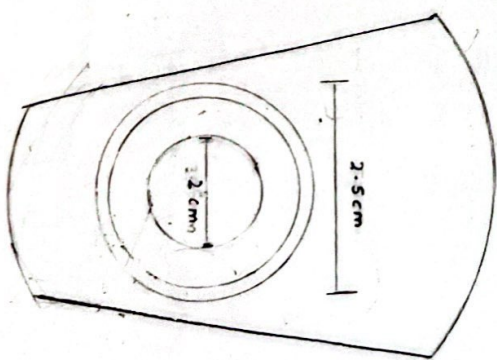
* force from crankshaft
 $1.79 = F \times 2 \times 10^{-2}$ $F = 89.5 \text{ N}$

Bearing from crank on connecting rod
 $F = 22.4 \text{ N}$

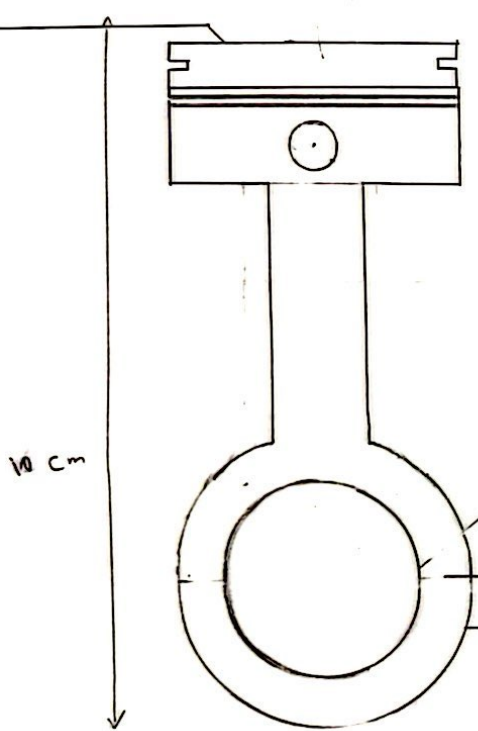
* Bearing calculated
 $\frac{22.4}{2 \times 10^{-2} \times 4 \times 10^8} = 281 \text{ kPa}$

* Bearing allowed 2 → 544 Pa

Bearing calculated < Bearing allowed



Radius of the piston 3 cm



10 cm

- Normal stress from the crankshaft on the inside of the connecting rod
At $R = 2$ cm and $r = 3$ cm

normal allowed = 1-10 MPa

$$\frac{22.4}{\frac{1}{2} \pi ((3 \times 10^{-2})^2 - (2 \times 10^{-2})^2)} = 28.52 \text{ kPa}$$

- Normal stress calculated < Normal stress allowed

2 cm radius

Normal stress due to crankshaft

3 cm radius

6 cm