

# Balancing of Rotating Forces in I.C. engines

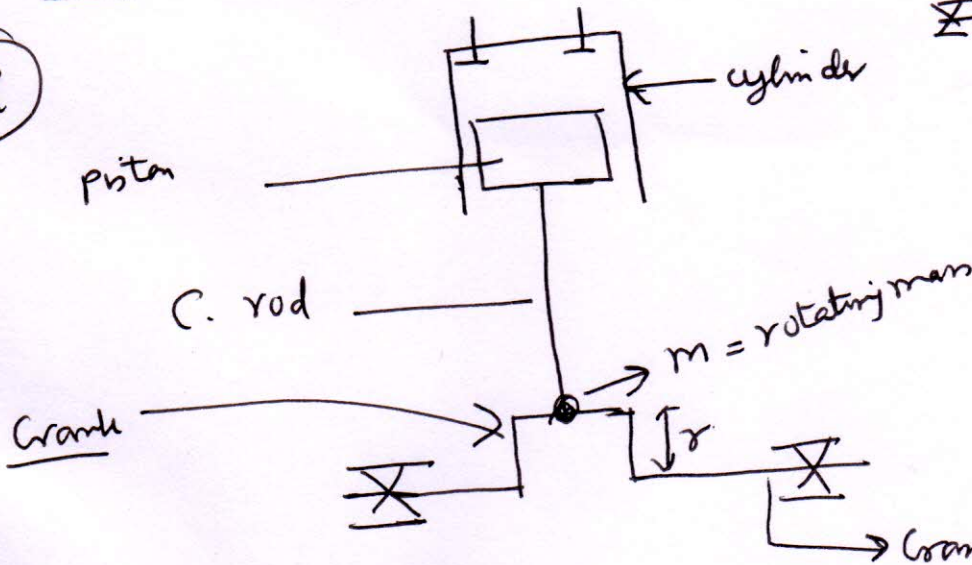
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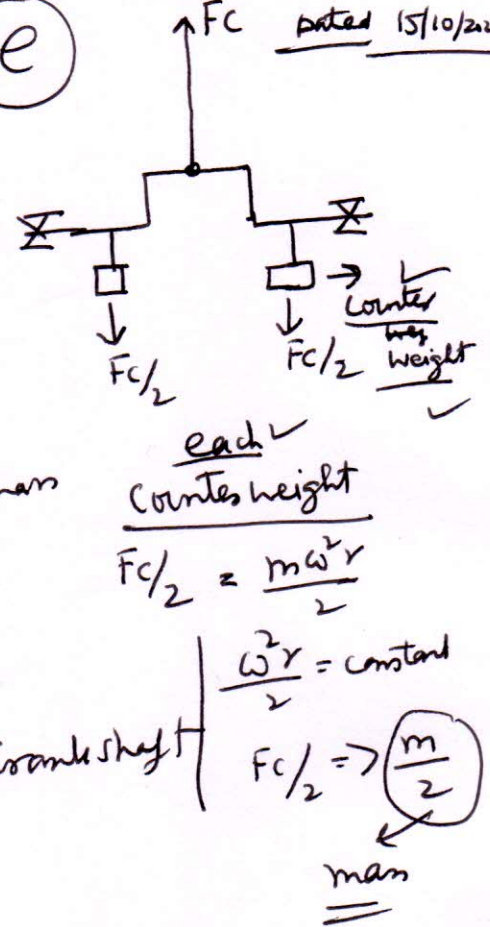
①

## ① Single cylinder engine design

① a

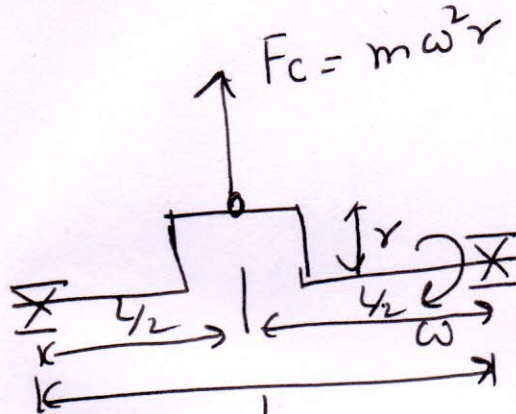


① e



## ① A Force analysis of crankshaft

① b



1 cycle = 720°  
Firing = once in 720° / -30° BTDC

$$\omega = 2\pi N$$

## Consequences/Conclusions

①

$F_c$  = Contributes towards bearing load

Each main bearing load =  $F_c/2$  as shown.

②

$F_c$  contributes towards the deflection of the crankshaft as shown.

① d

