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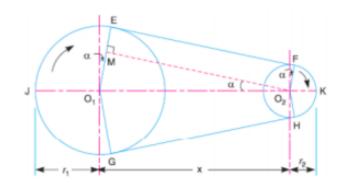
Formulae to calculate the length of open belt drive and length of Cross belt drive

## **Question:**

State the formulae to calculate the length of open belt drive and cross belt drive. State the meaning of each term by drawing suitable diagrams in both cases.

## **Answer:**

Formulae to calculate the length of open belt drive:



$$L = \pi(r_1 + r_2) + 2x + \frac{(r_1 - r_2)^2}{x}$$
 Where,

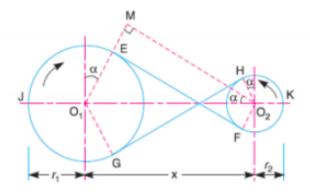
 $r_1$  and  $r_2$  = Radii of the larger and smaller pulleys,

 $x = \text{Distance between the centres of two pulleys } (i.e. O_1 O_2),$ 

L = Total length of the belt.

 $\alpha = angle of lap$ 

## Formulae to calculate the length of Cross belt drive



$$L = \pi(r_1 + r_2) + 2x + \frac{(r_1 + r_2)^2}{x}$$

Where,

 $r_1$  and  $r_2$  = Radii of the larger and smaller pulleys,

 $x = \text{Distance between the centres of two pulleys (i.e. } O_1 O_2),$ 

L = Total length of the belt.

 $\alpha = angle \ of \ lap$