

# MECHVISION ACADEMY

$$T = \frac{\pi}{16} \tau d^3$$

$$\text{Power, } P = T\omega$$

$$\theta = \frac{Tl}{CJ}$$

$T \rightarrow$  Torque [Nm]

$J \rightarrow$  Polar moment of Inertia

$\tau \rightarrow$  Shear stress  $\left[ \frac{N}{m^2} \text{ or Pa} \right]$

$$\omega = \frac{2\pi N}{60} \text{ rad/s} \quad \text{where } N \xrightarrow{\text{in}} \text{rpm}$$

$$J = \frac{\pi}{32} d^4$$

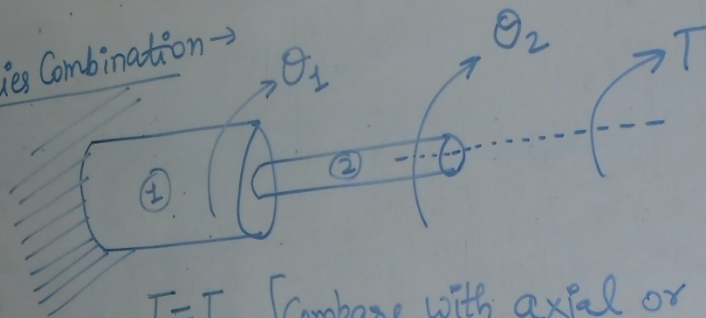
$$\frac{T}{J} = \frac{\tau}{r} = \frac{C\theta}{l}$$

$\omega \rightarrow$  angular velocity [rad/s]  
 $N \rightarrow$  velocity [in rpm]

$d \rightarrow$  diameter

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Series Combination →

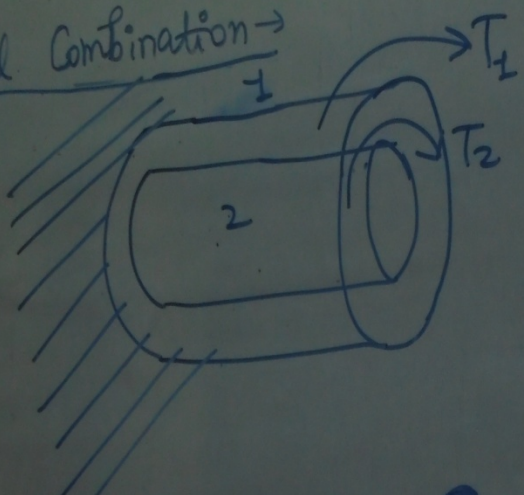


$$T_1 = T_2 \quad \left[ \begin{array}{l} \text{Compare with axial or} \\ \text{Draw FBD} \end{array} \right]$$

$$\text{Net } \theta = \theta_1 + \theta_2$$

MECHVISION ACADEMY

Parallel Combination →



$$T = T_1 + T_2$$
$$\theta_1 = \theta_2$$

CODE → REMEMBER →

- ① In Parallel → Angle same ( $\theta_1 = \theta_2$ )
- ② In Series → Torque same ( $T_1 = T_2$ )

PA ST [ PAPA is ST ]  
Haha 