DESIGN LAB - 1 PROJECT

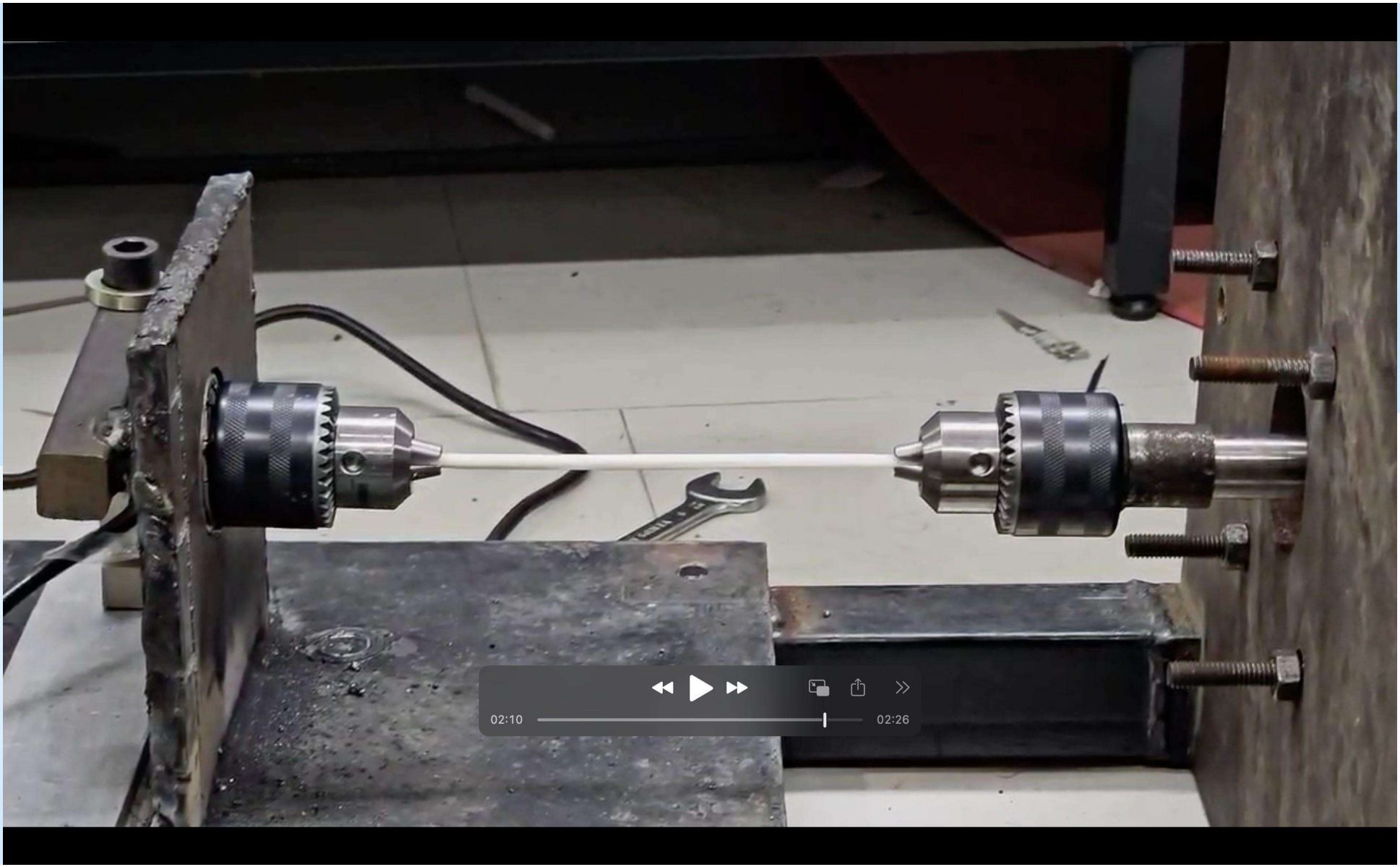
Tortion Testing Machine

Aim of the Project

- To measure the torque
- To calculate relation between torque and angle of twist.

ComponentsUsed

- Sample
- Motordriver
- Arduino
- Loadcell
- Chuck
- Steppermotor
- Bearing
- Setup


02:10
02:26

FBD of Setup

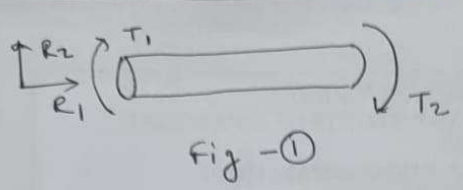


Fig -①

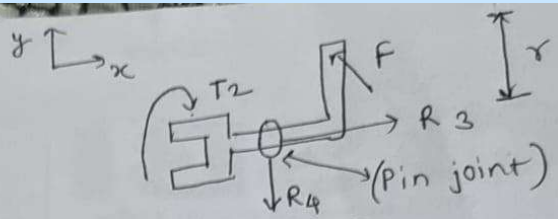


Fig -②

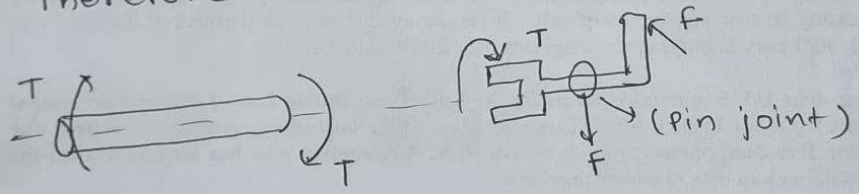
By force Balancing & Moment Bolancing on fig -②

$R_4 = F$, $R_3 = 0$, $T_2 = fr$

Similarly with fig -①

$\therefore$ $T_1 = T_2$, $R_1 = 0$, $R_2 = 0$

Therefore finial FBD will be

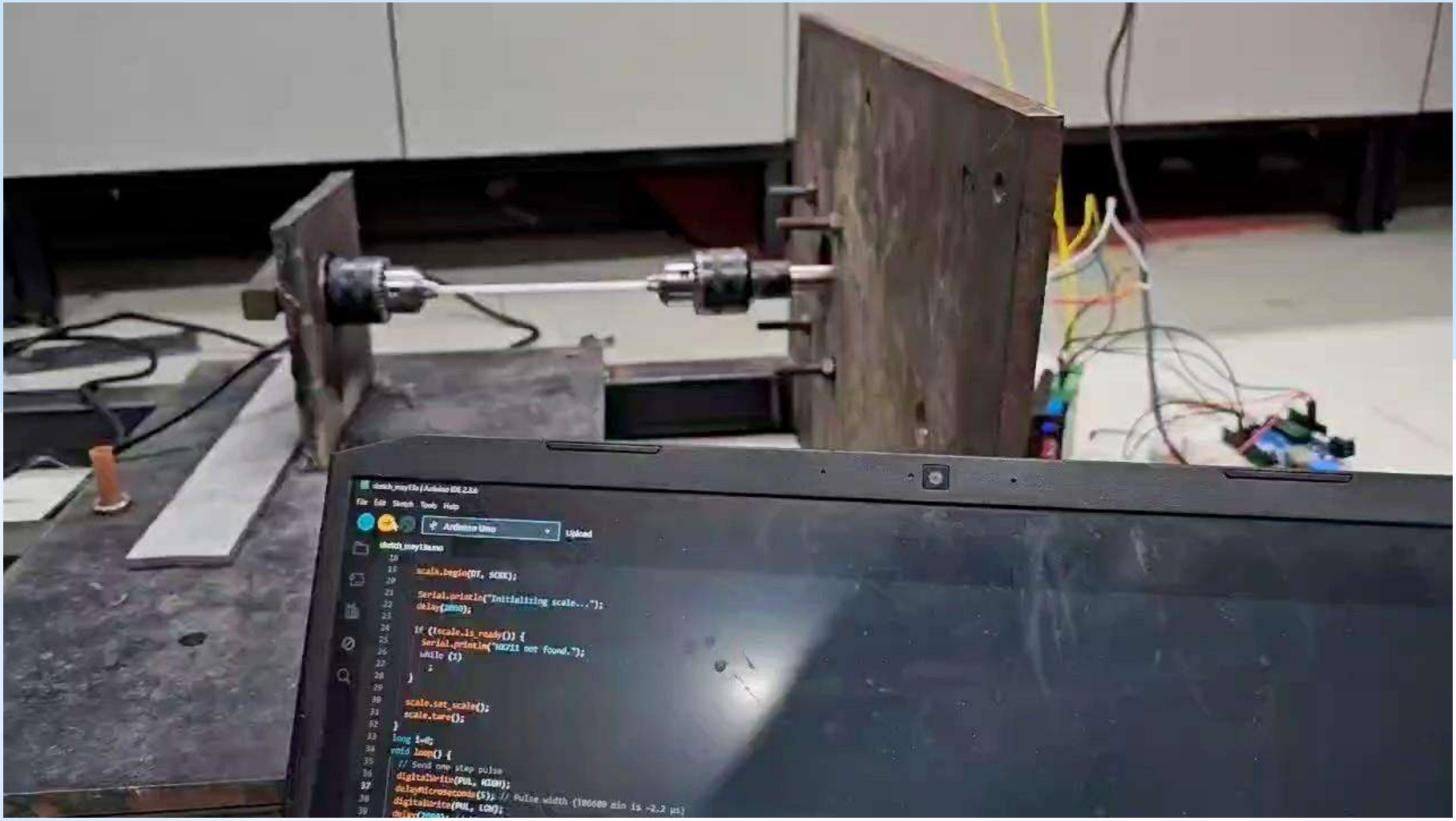


where $T = fr$

as our $r = 12\,cm = 0.12\,m$

$\therefore$ $\boxed{T = 0.12 \times F}$ → reading from load cell

Project in working



- We know this relation between T, θ, l, J and G.
- We can calculate the value of G by this relation