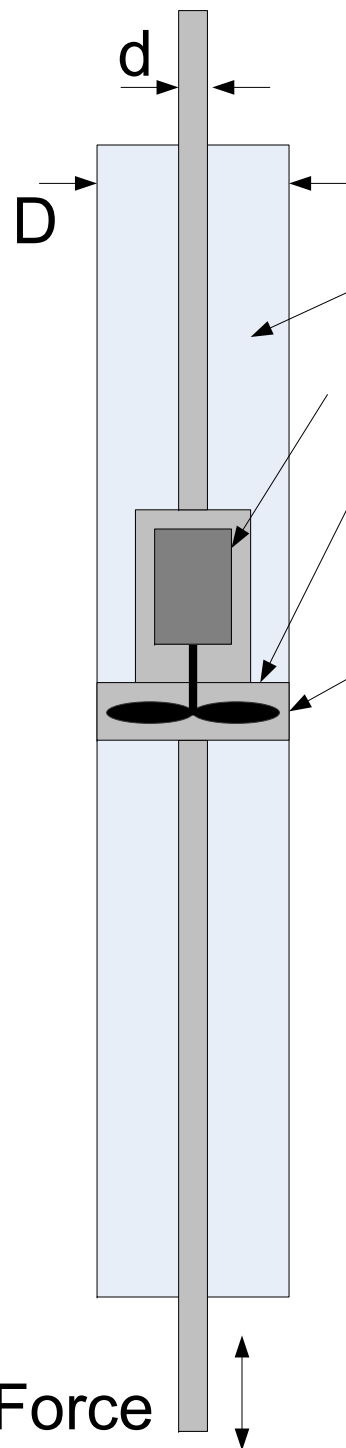




Hydraulic Oil
(flows through motor as
piston moves up and down)

Electrical Generator

$$A_p = \pi(D^2 - d^2)/4 = \text{Piston Area}$$

Hydraulic Motor

$$\text{Flow Rate: } Q = A_p V$$

$$\text{Pressure across motor: } \Delta P = F/A_p$$

Ratio $Q:\Delta P$ is a critical parameter for motor efficiency

$$Q:\Delta P \propto D^4$$

Levant scaling up didn't appreciate the very strong influence the larger diameter would have on system efficiency.

F = Force
 V = Velocity

