
SECTION HEADING

MECH 1110: Fluid Power Calculations

Description

Fluid Power Calculations applies math concepts used to calculate basic system parameters such as lifting force, pressures, horsepower, time, velocities, and conductor sizes. Students will calculate efficiencies, flow, pressure, horsepower, speed, torque and displacement for basic fluid power systems.

Credits

2

Prerequisite

None

Corequisite

None

Topics to be Covered

1. Cylinders/rod area/diameters.
2. Force/pressure/area.
3. Cylinder extend/retract time and flow/adjusted GPM.
4. Hydraulic HP/watts.
5. Cylinder extend/retract speed (velocity).
6. Fluid conductor sizes.
7. 2-pump system HP.
8. Standardized components.
9. Pump efficiency and displacement.
10. Actual motor torque/rpm/hp
11. Circuit Input HP.
12. Hydraulic motor displacement, flow, and efficiency.

Learning Outcomes

1. Calculate parameters for hydraulic pumps and motors.
2. Calculate parameters for hydraulic pumps and motors.
3. Calculate force/pressure/area.
4. Calculate actuator cycle time and speeds.
5. Calculate extend/retract flow/adjusted GPM.
6. Calculate HP in various circuits.
7. Calculate fluid conductor sizes from circuit.
8. Calculate pump and motor displacement, volume efficiency, mechanical efficiency, and overall efficiency.

Credit Details

Lecture: 2

Lab: 0

OJT: 0

MnTC Goal Area(s): None