



Level 3 Mobile Hydraulics

Course Number 80

Course Description

This course covers designs, sizing and selection of components, installation, and startup problems for Mobile Hydraulic systems. The course will also cover many of the common mistakes and oversights made by system design engineers. Class work is reinforced with several hands-on labs. This is an excellent course for those responsible for starting up new systems, new designers and engineers, as well as those responsible for troubleshooting and fixing hydraulic system problems.

Prerequisites: Level 1 and 2 Mobile Hydraulic Fundamentals

Course Length: 3 or 5 day

Text Books: 3 ring binder, Lightning Reference, Eaton/Vickers and/or Rexroth/Parker

Course Outline

Safety

- Safety Equipment

Hydraulic Fundamentals Review

Actuators

- Bent Rod causes and prevention

Flow Controls

- Meter-in vs. Meter-out

Flow Dividers

- Various Types

Directional Controls

- Pilot Operated check valve ratio problems

Proportional valves

- Directional, flow and pressure types

Learning Objectives

- Review PSI and GPM formulas and charts
- Explain how to control shock problems caused by pressure controls
- Explain how to remotely control pressure valves.
- Discuss why spool type directional valves leak and how to use this phenomena to improve the system design
- Explain the causes of heat generation in systems and how to reduce its effects.
- Discuss the use of non-compensated and pressure compensated flow controls.
- Explain the formula that allows the use of smaller electric motors.
- Design and select Pilot Operated check valves.
- Select filters and locate them for the best results.
- Explain how logic valves function.
- Explain basic proportional and servo valve functions and the electrical signals needed to control.
- Explain how to control de-compression problems that cause system shock.
- Use the load sense and torque limiting pump controls to reduce heat and conserve energy.



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