

Hydraulic Systems and Troubleshooting

Course Description

This course introduces basic principles, components, and concepts of industrial hydraulic systems. Topics include standard symbols, actuators, control valves and other hydraulic components. Upon completion, the student should be able to demonstrate an understanding of the principles, concepts, and operation of an industrial hydraulic system.

Topics Covered

Introduction to hydraulics

- What is Hydraulics ?
- Where hydraulics are used ?
- Why use hydraulics ?

Pressure and flow

- Pressure concept
- A discussion of hydraulic fluids.
- Selecting a pump
- Fluid viscosity

Hydraulic pumps

- Operating principles of variable displacement pumps
- Principles of variable displacement pump controls
- Pilot operated pressure compensators
- Constant horsepower controls
- Load sensing controls

Hydraulic cylinders

- Construction and operating principles
- Maintenance and troubleshooting
- Common causes of cylinder failures

Accumulators: their applications and uses

- Piston and bag types
- Pre-charge calculations and limits
- Application and design

Pressure Control Valves and their Characteristics

- Establishing a pressure setting sequence
- Main system relief valves
- Port vs. cross port relief valves
- Pressure reducing valves
- Direct vs. pilot operated valves
- Vending pilot operated valves
- Remote and multiple pressure setting
- Field converting pilot and drain line connections

Directional Control Valves

- Basic operation, characteristics and control
- The importance of selecting the proper spool type
- Maintenance and repair of stuck spools and burned out solenoids
- Piloting consideration for pilot operated valves

Check Valves

- Pilot operated check valves
- Pre-fill valves, operating principles
- Logic cartridge systems, introduction, maintenance
- Operations, repair, set-up and precautions

Maintenance and troubleshooting

- Troubleshooting with Hydraulic Circuit Drawings
- Hydraulic Leakage
- Pump and Motor Troubleshooting
- Accumulator Safety Considerations

Course Objectives

After completion of the course, participants are expected to:

- Gain an understanding of basic hydraulics.
- Learn about how hydraulics work - hydraulic training on how common hydraulic components operate and interact with each other.
- Learn more about reading and understanding hydraulic schematics.
- Review preventative maintenance procedures.
- Discuss troubleshooting of hydraulic systems.

Who Should Attend

Maintenance Personnel, Equipment Operators, Purchasing Personnel, Plant Supervisors, Anyone involved with the adjustment, maintenance, specification, or operation of hydraulic systems.

For any further information please contact us at:

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