

Corporate Office

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Hydrostatic Closed Loop Systems

Course Description: This course covers the fundamentals and principles of hydrostatic closed loop systems with emphasis on hands-on exercises. Safety followed by basic fluid power principles first set a foundation. Conductors, fluids, and contamination are addressed. The operation and use of individual hydraulic components and how they impact closed loop systems then becomes the focus of the class. Specific components covered in this portion are actuators, pressure controls, flow controls and directional controls, pumps and reservoirs. The remaining portion of the class is then dedicated to hydrostatic transmissions, hydrostatic steering, proportional valves, and servo valves.

Print reading is stressed throughout the course and the use of actual prints from the customer is strongly encouraged.

Prerequisites: Some working knowledge of basic hydraulics.

Textbook: Eaton/Vickers, Parker, Bosch/Rexroth or other industrial hydraulics manual plus Womack Fluid Power Handbook and CFC-Solar handbook.

Learning Objectives:

- Explain the fundamental operation and impact of actuators, pressure controls, flow controls, directional controls, pumps, reservoirs, heat exchangers, and filtration units on closed loop systems.
- Explain the fundamental operation of hydrostatic transmissions.
- Demonstrate troubleshooting logic with a closed loop system.
- Demonstrate knowledge of hydraulic schematics to aid in diagnostics of machine malfunctions.
- Identify and distinguish different fluids used in hydraulic systems.
- Explain the fundamental operation of hydrostatic steering units.
- Explain the fundamental operation of proportional and servo valves.
- Identify the different types of hydraulic pumps.
- Relate hydraulic pressure and flow.
- Relate area ratios for speed and force output.
- Identify and work with connecting lines and fittings used to carry hydraulic fluid.
- Describe filter ratings and distinguish between the different filter types.
- Outline hydraulic safety including lockout tag-out procedures.