

(Hydraulic) Schematic Reading & Interpretation (H)SRI New for 2018!

Note: Reading a schematic is, to tell yourself a story about how the hydraulic circuit works and what the hydraulic powered and controlled machine does – no more, no less.

- Understanding the function, operation and **schematic symbol** for all major hydraulic pumps and valves
- Drawing orientation of the cylinder and its connected load or a hydraulic motor and its connected load – actuator/load orientation defines the requirements of the control circuit
- Defining the pump/pumps – type, size, operating pressure (if controlled by the pump)
- Defining the size (power) of the pump's drive motor – Is the motor right sized over or under sized? Compare electric motor horsepower to hydraulic system horsepower requirements
- Is the pump variable displacement/variable flow? Yes – what type of pump control? How does the pump control work?
- Is the pump a fixed displacement pump? How is system pressure controlled?
- What type of system relief is used? Direct, P.O., venting?
- What is the capacity of the tank/reservoir? From actual measurement, what is tank temperature?
- Fluid filtration type/s - Is there a history of valve and pump failures?
- Direct operated DCV, PO DCV, Proportional DCV?
- What type of directional control valve is being used for each circuit, spool type? How does the directional control valve control the movement and start and stop of the actuator?
- Is a pressure reducing valve used? Where are they located within the hydraulic circuit/s?
- What is the purpose of the reducing valves.
- Counterbalance and/or PO check valves
- Other types of load control valves.
- Actuator protective valves/circuits
- Are fixed orifices used? What is their primary purpose – pressure drop, flow limitation or both?
- Understand stack valve circuits and how they are presented on a schematic – traditional or functionally and assembly order
- Understanding logic cartridge valves and their associated control circuit
- Describe the type of speed control that is used. What is the relationship between speed control type and the actuator and its load?
- Schematic review exercises – Students will be provided with 6 hydraulic schematics and they will be tasked with providing circuit function descriptions – schematics will vary in circuit type and complexity.