Worksheet HI04 & Training Record

Hydraulic Component Basics

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Learning Objectives/Expected Outcomes: (60-120mins)

1. To understand how hydraulic pumps supply the flow.
2. To understand how hydraulic actuators drive the loads.
3. To understand how directional control the operation.
4. To understand how pressure relief valves improve safety.

Previous Knowledge Required:
Students should have completed worksheet HI03 ‘Comparing hydraulic, pneumatic and electrical drives’ or have a good working knowledge of where hydraulics is used. Students already working with hydraulic equipment including hydraulic pumps, actuators and control valves etc. may not require this worksheet.

Terminology:
Hydraulic pump, directional valve, actuator, cylinder pressure relief valve, fluid, flow, pressure.

Record of Achievement:
Record progress, times, scores etc. on this training record sheet and keep together with any additional written work or sample calculations.

Coursework investigation and instructional video

Study the ‘Basic hydraulic component’ section at www.e4training.com/hyd_newbie/basic_comp1.php and 2.php

- To understand how hydraulic pumps supply the flow.
- To understand how hydraulic actuators drive the loads.
- To understand how directional control the operation.
- To understand how pressure relief valves improve safety.

Virtual test rig experiments

Experiment with the ‘basic component circuit’ simulation at www.e4training.com/hyd_newbie/basic_comp3.php

- Follow the suggested exercises and observations list below the simulation.
- Run the experiments, answer the questions, and click the buttons to see the answers.

Date, score & time:
Interactive tutorial

Complete the ‘Introduction to hydraulics’ tutorial at www.e4training.com/hydraulic_courses/hydraulic_courses/intro_to_hyd1.php
Complete quick quiz at end and post results.

Date, score & time:

Interactive quiz to check and reinforce learning

Complete the ‘Introduction to hydraulics’ questions at www.e4training.com/hydraulic_test2.php? Quiz - Hydraulics part 1
Post result when complete.

Quiz name, date, score

Key questions / Plenary

What function do hydraulic pumps perform?
How would you lift a mass with hydraulics?
What valve would you use to drive a cylinder up and down?
Why does a relief valve make hydraulic circuits safer?

Repeat above if the answer is no

And Finally:

Complete this worksheet and keep for your records. Submit any written coursework etc. to your training course provider.

Follow-on Course Worksheets:
Recommended follow-on worksheet:
HI05 – Hydraulic circuit basics

For more specialist course worksheets visit www.e4training.com/hydraulic_courses/worksheets1.php