



## Worksheet HI04 & Training Record Hydraulic Component Basics

## Explore Hydraulics

Email:

Course:

Provider:

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

1. Appreciate how hydraulic fluid is used to transmit power.
2. Appreciate hydraulic pumps supply the flow, valves control the operation, and actuators drive the loads.
3. Recognize how Pressure Relief Valves are used to protect against failures.
4. Start to recognize how symbols are used to represent the hydraulic components.
5. Start to recognize how components are arranged to complete a circuit.

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.

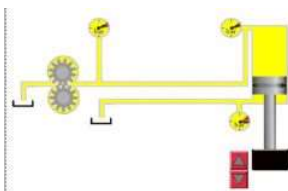
Terminology:

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

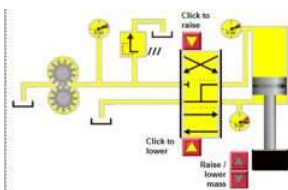


Study the 'Basic hydraulic component' section at [www.e4training.com/hyd\\_newbie/basic\\_comp1.php](http://www.e4training.com/hyd_newbie/basic_comp1.php) and 2.php

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

Complete

### Virtual test rig experiments



Experiment with the 'basic component circuit' simulation at [www.e4training.com/hyd\\_newbie/basic\\_comp3.php](http://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:

Tick when posted



## Interactive tutorial

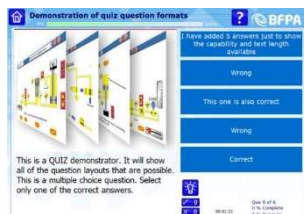


Complete the 'Introduction to hydraulics' tutorial at [www.e4training.com/hydraulic\\_courses/intro\\_to\\_hyd1.php](http://www.e4training.com/hydraulic_courses/intro_to_hyd1.php)  
Complete quick quiz at end and post results.

Date, score & time:

Tick when posted

## Interactive quiz to check and reinforce learning



Complete the 'Introduction to hydraulics' questions at [www.e4training.com/hydraulic\\_test2.php?Quiz - Hydraulics Free](http://www.e4training.com/hydraulic_test2.php?Quiz - Hydraulics Free)  
Post result via LRS,LMS when complete.

Quiz name, date, score

Tick when posted

## Key questions / Plenary

- What function do hydraulic pumps perform?
- What component would you use lift a mass using fluid power?
- 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](http://www.e4training.com/hydraulic_courses/worksheets1.php)