engineering adventures

Worksheet IH & Training Record Introduction to Hydraulics		Explore Hydraulics
Email:	Course:	Provider:

Expected Outcomes: (30-60mins)

To know examples of how where and why fluid power, hydraulic equipment is used.
To understand the basic hydraulic components and how they are combined in circuits.

Previous Knowledge Required:

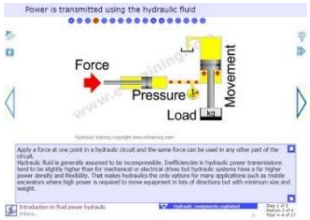
No previous knowledge is required. Students already working with hydraulic equipment including hydraulic pumps, actuators and control valves etc. may not require this worksheet.

Background investigations

Think about as many different uses of hydraulic equipment as you can and why other solutions, such as electric or pneumatic drives were not used.
See also https://www.e4training.com/hyd01/ & /hyd02/

List examples of hydraulic systems you've seen:	

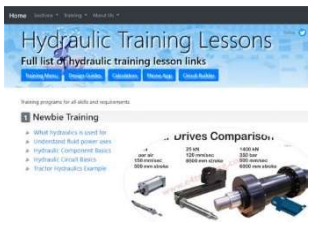
Self-driven micro-learning tutor (SDLT)



Complete the 'Introduction to hydraulics' SDLT app via the website, phone app, or CD/download.
On completion, email the results to yourself or to your course provider.
We recommend you also record the time below and notes of all observations and exercise findings.

Date, score & time:	

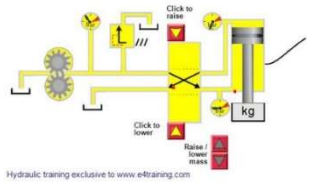
Detailed explanations and instructional videos



Visit the 'Introduction to hydraulics' section on the website, phone app or CD/download. Read the additional explanations and watch the instructional videos.
Keep a record of the time you spend studying in each section.

Dates & durations	

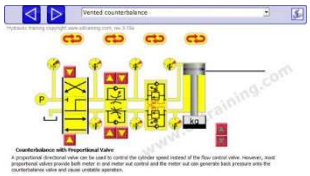
Interactive experiments



Experiment with the 'basic circuit component' simulation :

- Click the valve solenoids to drive the cylinder up and down.
- Observe how changing the cylinder load affects the pressure.
- Discuss when and why the safety relief valve opens.

Date, score & time:



Experiment with the 'directional valve circuit' simulation :

- Observe how the cylinder falls with only one directional valve.
- Select drop down box 2 (ddb2). Observe how cylinder can fall dangerously with nothing to control it.
- Select ddb3. Observe how the flow control valves control the speeds of the cylinder. What happens if you change the size of the orifice restriction.
- Select ddb4. Observe how the pilot operated check valve protects the cylinder from gradually falling.
- Experiment with different loads on the cylinder and valve combinations.
- Discuss the implications of not controlling the load properly.

Quiz date & score

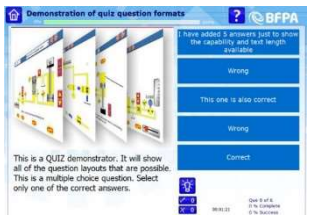
Coursework

Suggested coursework

- Write a list of applications that use fluid power.
- Write a list of components you might find in a hydraulic circuit and explain what they do.

Number of sheets attached

Interactive quiz



Complete the 'Introduction to hydraulics' section of the 'Quiz - Basic Hydraulics'.
Click email button to send results and record below.

Quiz name, date, score

Qualification requirements:

Students need to complete and return all worksheets and course notes to their registered training provider. Methods of testing and qualification may vary between course providers, however, we recommend that students record as much information about their observations, simulation experiment results, and discussions as possible. To achieve a certificate, students will need to provide written evidence of their findings e.g. when we say observe X, we need to know the results you see and when we say discuss X, we need to know the implications of these findings as well.

In most programs, students can send a record of their actions and results by clicking the email button that will appear in the top menu bar of the app, at mid to end point of the training.