



Worksheet HP03 & Training Record Hydraulic Symbols

Hydraulics Principles

Email:

Course:

Provider:

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

1. To learn how symbols are used to explain which hydraulic components are used.
2. To learn how to read symbol details and understand how the hydraulic components and circuits work.
3. To be able to draw hydraulic circuits in symbols to describe the functions required.

Previous Knowledge Required:

Students should have completed all of the basic pump and valve 'operation and uses' sections, HD and HV (odd numbers) and have a good understanding of at least one hydraulic system.

Terminology:

Symbols, solenoids, spring return, detent, valves, pumps, pilots.

Record of Achievement:

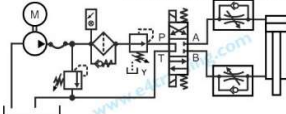


Click the email button (that will appear within each app) to post your results, once training is complete. Enter your training provider or your own email address. Also record progress, times, scores etc. on this training record sheet and keep together with any additional written work or sample calculations.

Coursework investigations

Hydraulic Circuit Symbols

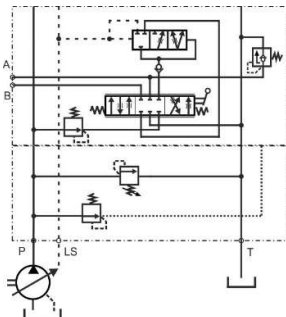
Symbols are based on ISO 1219-1 and 2



Study the detailed information and instructional video at www.e4training.com/hyd_princip/symbols1.php and [symbols2.php](http://www.e4training.com/hyd_princip/symbols2.php)

- Learn about the different component symbols.
- Learn how symbols are organised to explain a hydraulic circuit.

Complete

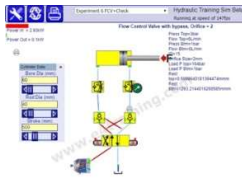


Look at a range of typical circuit examples at www.e4training.com

- Mobile circuits see [hyd_strategy/mobile1.php](http://www.e4training.com/hyd_strategy/mobile1.php)
- Industrial circuits see [hyd_strategy/industrial1.php](http://www.e4training.com/hyd_strategy/industrial1.php)
- Supply circuits see [hydraulic_circuits/supply1.php](http://www.e4training.com/hydraulic_circuits/supply1.php).
- Safety circuits see [hydraulic_circuits/safety1.php](http://www.e4training.com/hydraulic_circuits/safety1.php)
- Load control circuits see [hydraulic_circuits/loads1.php](http://www.e4training.com/hydraulic_circuits/loads1.php)

Complete

Virtual test rig experiments



Experiment with a range of different circuits at www.e4training.com/simulate/simulate2.php

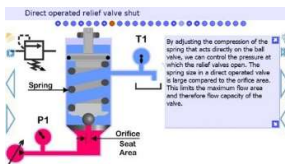
- Load the circuit example associated with your particular project.
- Load the software circuit examples then operate and test the components to see how they perform.
- Design, build and test your own circuits.

Circuit simulation software should be used to learn about and test small sections of each circuit. Testing large circuits is not practical so modelling each small, self-contained section is the correct and most effective approach.

App date & duration

Complete

Practical and coursework assignments



Design and draw a hydraulic circuit based on the specific project you are studying or follow the exercise at

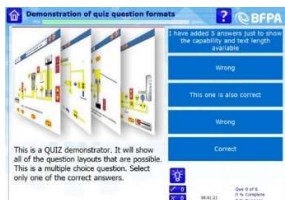
www.e4training.com/hyd_princip/symbols3.php

- Draw a circuit as specified.

Coursework submission

Submit circuit design drawing

Interactive quiz to check and reinforce learning



Complete the 'HP03 hydraulic symbols' quiz questions at [www.e4training.com/hydraulic_test2.php? Quiz - Hydraulics part 1](http://www.e4training.com/hydraulic_test2.php?Quiz-Hydraulics%20part%201)

Post result when complete.

Quiz name, date, score

Tick when posted

Key questions / Plenary

- Can you recognise a 3 way, 2 position spool valve with mechanical roller operation?
- Can you recognise a pilot operated relief valve with a remote pressure sensing feed port?
- Can you describe the difference between a hydraulic cylinder with and without cushions?
- Can you describe the difference between a bladder and piston accumulator?

Record answers:

Tick when complete

And Finally:

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

Follow-on Course Worksheets:

Potential follow-on worksheets include: HP04 – Hydraulic fluid contamination.
Or refer to your individual lesson plan or search the worksheet lists at
www.e4training.com/hydraulic_courses/worksheets1.php or [courses1.php](http://www.e4training.com/courses1.php)