



## Worksheet HV1 & Training Record Hydraulic Control Valves

## Hydraulic Components

Email:

Course:

Provider:

Expected Outcomes: (120-180mins)

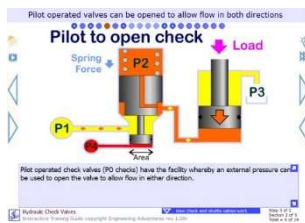
Understand the main types of hydraulic valve including what they do, where they are used, and how they work.

Produce an equipment specification for their scissor lift.

Previous Knowledge Required:

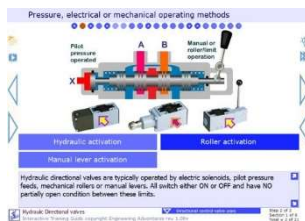
Students should have completed worksheet SP1 'Hydraulic system priorities and specification' or have a good knowledge of where hydraulic components are used.

*Self-driven micro-learning tutor (SDLT)*



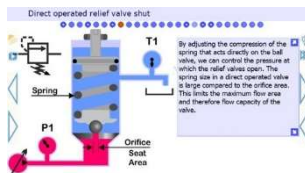
Complete the 'check valve training' SDLT app via [www.e4training.com/hydraulic\\_courses/control\\_valves1.php](http://www.e4training.com/hydraulic_courses/control_valves1.php), phone app or CD/download

Date, score & time:



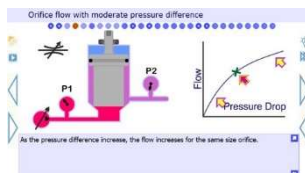
Complete the 'directional valve training' SDLT app via [www.e4training.com/hydraulic\\_courses/directional1.php](http://www.e4training.com/hydraulic_courses/directional1.php), phone app or CD/download

Date, score & time:



Complete the 'pressure relief valve training' SDLT app via [www.e4training.com/hydraulic\\_courses/relief1.php](http://www.e4training.com/hydraulic_courses/relief1.php), phone app or CD/download

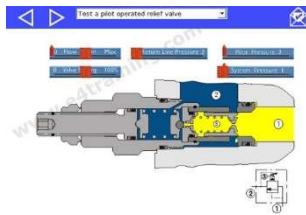
Date, score & time:



Complete the 'Hydraulic check valves training' SDLT app via [www.e4training.com/hydraulic\\_courses/flow1.php](http://www.e4training.com/hydraulic_courses/flow1.php), phone app or CD/download

Date, score & time:

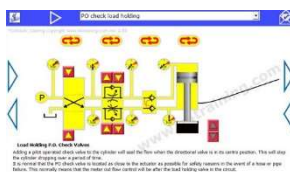
Total score & time:



App date & duration

Experiment with the pressure relief valve simulation at [www.e4training.com/hydraulic\\_valves/relief3.php](http://www.e4training.com/hydraulic_valves/relief3.php) :

- Complete the experiments shown below the simulation
- Increase the pressure 1 and observe results
- Change the valve setting and observe the effects
- Change the return line pressure and observe the effects
- Change the flow through the valve and observe the effects



App date & duration

Experiment with the load control valve circuit simulation at [www.e4training.com/hydraulic\\_valves/directional3.php](http://www.e4training.com/hydraulic_valves/directional3.php) :

- Experiment with the first 5 sections of the simulation using the drop down menu or play button
- Complete the experiments shown at the bottom of the app window to observe and understand the control principle listed below.

Observe the following effects from the components in the simulation experiments:

- Check valves only allow flow in one direction, unless piloted open, and are used for holding unsupported loads.
- Directional valves control the flow direction and are used to extend or retract the cylinder.
- Safety relief valves will limit the system pressure to a pre-set level and are used to prevent loads exceeding the component ratings.
- Flow control valves restrict the flow and are used to control the speed of the actuators.
- If loads are not supported by hydraulic pressure they can fall dangerously fast and create negative pressures in the fluid.



App date & duration

Experiment with the valve fundamentals simulation at [www.e4training.com/hydraulic\\_valves/checkpro3.php](http://www.e4training.com/hydraulic_valves/checkpro3.php):


- Experiment with the first 6 sections of the simulation using the drop down menu or play button
- Complete the experiments shown in the lesson guide at the bottom of the app window to observe and understand the control principles used in every hydraulic valve

Component summary report

Explain which valves would be used for which functions in the hydraulic scissor lift.




## Additional video and instructional resources



Visit [www.e4training.com/hydraulic\\_valves/](http://www.e4training.com/hydraulic_valves/) for additional explanation, videos and experiments.

**Dates & durations (Optional):**

## Coursework

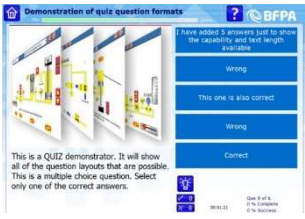


Produce a report to explain which valves could be used for the different required functions in the hydraulic scissor lift. These are likely to include:

- Direction, speed, holding position and safe lowering.

**Component summary report**

## Interactive quiz



Complete the 'TBC' Quiz either online at [www.e4training.com/hydraulic\\_test2.php](http://www.e4training.com/hydraulic_test2.php), phone app, CD or download.

**Quiz name, date, score**

### Qualification pass requirements:

Students will need to complete and return all worksheets to their registered training provider. Methods of testing and qualification may vary between course providers.



For online certificates, students must post their results by clicking the email button that will appear in the app, once the training module has been completed.