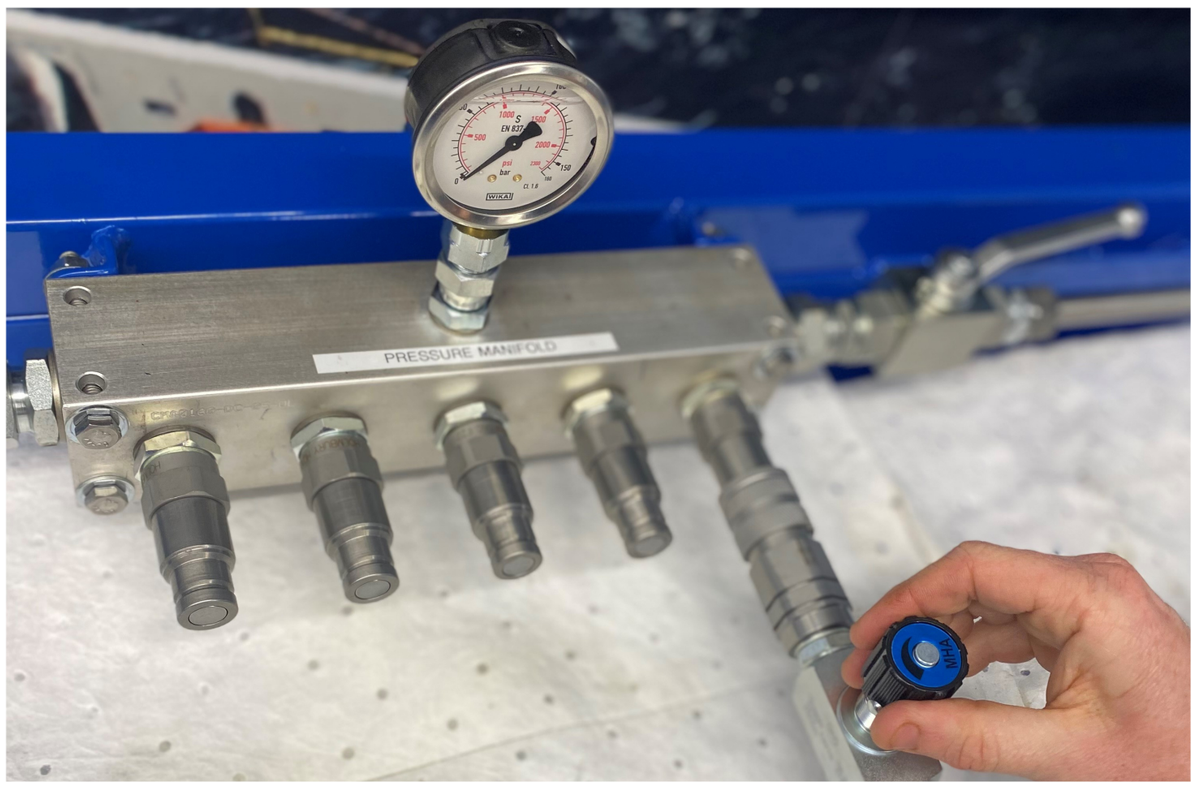
Hydraulic Foundation Course Syllabus

A three day hydraulic course developed in partnership with Armada Engineering & Cornwall Marine Network

Armada Engineering have been approved to deliver training under the BFPA Learing and Development Programme. The course complies with the British Fluid Power Association Minimum Educational Requirements (reference document BFPA Q19)

Objectives:

Understand the basic principles of hydrostatics. Be able to read ISO symbols & circuit drawings. Identify the major components of a hydraulic system. Understand the properties of hydraulic fluid. Understand filtration and fluid cleanliness. Learn basic hydraulic maintenance and testing. To recognise hazards associated with hydraulic systems.



Hydraulic Foundation Course Syllabus

1.0 Basic Principles
- 1.1 The Component Parts of a Hydraulic System
- 1.2 Introduction to open circuits and closed circuits
- 1.3 Fundamental Principles of Hydraulic Systems
- 1.4 Pascal's Law
- 1.5 Pressure, area and force
- 1.6 Flow, displacement and speed
- 1.7 Efficiency and the generation of heat

2.0 Hydraulic symbols ISO1219-1
- 2.1 Recognising the basic shapes
- 2.2 Constructing a circuit using symbols

3.0 Pumps
- 3.1 Gear pumps
- 3.2 Vane pumps
- 3.3 Piston pumps
- 3.4 Introduction to pump controls - pressure compensator

4.0 Fluid and energy storage
- 4.1 Reservoirs
- 4.2 Accumulators

5.0 Pressure Control Valves
- 5.1 Pressure relief valves
- 5.2 Pressure reducing valves
- 5.3 Sequence valves
- 5.4 Counterbalance valves
- 5.5 Setting procedures

6.0 Flow Control Valves
- 6.1 Throttle valves
- 6.2 Pressure compensated flow control valves

7.0 Direction Control Valves
- 7.1 Check valves
- 7.2 Pilot operated check valves
- 7.3 Spool-type direction control valves
- 7.4 2-stage pilot operated direction control valves
- 7.5 Introduction to proportional valves

8.0 Actuators
- 8.1 Hydraulic cylinders
- 8.2 Hydraulic motors
- 8.3 Semi-rotary actuators

9.0 Contamination control
- 9.1 Contamination measurement ISO4406
- 9.2 Sources of contamination
- 9.3 Filtration and 'Beta Ratio'

10.0 Hydraulic Fluid
- 10.1 Function of the hydraulic fluid
- 10.2 Mineral oil viscosity ISO3448
- 10.3 Hydraulic fluid classifications ISO6743-4

11.0 Hydraulic Hose Technology
- 11.1 STAMPED
- 11.2 Hose size, flow rate and pressure drop
- 11.3 Hose construction
- 11.4 Hose installation

12.0 Maintenance Procedures
- 12.1 Fault finding
- 12.2 Fault prevention and system monitoring
- 12.3 Good practice vs bad practice

13.0 Test and Measurement
- 13.1 What to test and why
- 13.2 Measuring instruments
- 13.3 Interpreting test results

14.0 Health and safety
- 14.1 Health and safety law
- 14.2 Personal protective equipment
- 14.3 COSHH
- 14.4 Risk assessments
- 14.5 Fluid injection injury
- 14.6 Summary of hazards

15.0 Skills Based Practical Tasks
- 15.1 Constructing a hydraulic system from a circuit diagram
- 15.2 Measuring flow and pressure
- 15.3 Setting pressure control valves
- 15.4 Setting flow control valves

Delegates attending BFPA courses receive a copy of the course book, a certificate of training along with an individual BFPA Training Passport Card.