JUPITER PRIME
Consulting • Training • Advisory
جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Hydraulic and Pneumatic Circuit Troubleshooting Training Course

4 – 8 April 2027
Abu Dhabi

jupiterprime.uk
info@jupiterprime.uk
Registered in the United Kingdom and Saudi Arabia

Hydraulic and Pneumatic Circuit Troubleshooting Training Course

Ref: 1558_57350 **Date:** 4 – 8 April 2027 **Location:** Abu Dhabi **Fees:** 6500 GBP

Hydraulic and Pneumatic Circuit Troubleshooting is a 1-week training course for maintenance technicians and engineers who keep automated machinery running, built around a fluid power fault-finding guide each participant writes for one machine. Packaging lines, presses, robots and bottling plants depend on compressed air and oil circuits, and a slow cylinder or leaking valve can halt a whole line. Jupiter Prime Training runs this course on Hydraulic and Pneumatic Circuit Troubleshooting.

Why Hydraulic and Pneumatic Circuit Troubleshooting Matters Now

Production lines now combine electro-pneumatic valve islands, proportional hydraulics and programmable controllers, so a fault may sit in the air, the oil or the signal. Compressed air is among the most expensive utilities in a factory, and unchecked leaks waste energy every shift. Many sites also lose experienced fitters who once traced faults by ear and feel. Teams that read circuits well restore lines quickly and cut air and oil waste; others swap parts at random and repeat the same stoppage. The course rests on standard fluid power graphic symbols, manufacturer data and asset care practice aligned with ISO 55001.

Who Gains Most from Hydraulic and Pneumatic Circuit Troubleshooting

- Technicians who restore stopped machines on production lines
- Engineers who approve circuit changes and component substitutions
- Utility staff who look after compressors, dryers and air networks
- Planners who set inspection and filter change routines
- Automation staff who link sensors and solenoids to controllers

A line maintenance crew that sends its mechanical and automation technicians together gains most, because air, oil and signal faults are then traced in one sequence.

Hydraulic and Pneumatic Circuit Troubleshooting Capabilities

Participants turn a circuit drawing into a step-by-step search that isolates the faulty component quickly.

- Apply graphic symbol reading to trace flow paths through valves and actuators — technician
- Test pressure, flow and cycle time at measuring points — fault isolation decision
- Diagnose solenoid, sensor and valve island faults — automation staff
- Assess compressed air leaks with ultrasonic detection — energy saving priority
- Calculate cylinder force and speed from pressure and flow — component substitution approval
- Build preventive tasks for filters, lubricators and seals — planner

Key Hydraulic and Pneumatic Circuit Troubleshooting Terms

- Directional control valve — a valve that routes air or oil to actuator ports, shown by its number of ports and positions.
- Filter regulator lubricator FRL — the air preparation unit that cleans, sets pressure for and lubricates a pneumatic supply.
- Valve island — a manifold of solenoid valves with shared supply and a single electrical or fieldbus connection.
- Pressure relief valve — a valve that opens at a set pressure to protect a hydraulic circuit from overload.
- Cylinder cushioning — an adjustable restriction at stroke end that slows the piston to prevent impact damage.
- Ultrasonic leak detection — locating compressed air leaks by sensing the high-frequency sound they emit.

Hydraulic and Pneumatic Circuit Troubleshooting Day by Day

Day 1: Fluid Power on the Production Line

- Hydraulic Versus Pneumatic Power Selection — Matching Medium to Task
- Graphic Symbols for Valves, Pumps and Actuators — Reading Circuit Drawings
- Pressure, Flow and Force Relationships — Expected Machine Behaviour
- Line Stoppage Records — Ranking Fluid Power Faults
- Safe Isolation of Stored Pressure — Bleed-Down Before Work

Day 2: Pneumatic Supply and Components

- Compressor Types and Air Dryers — Supply Quality Decisions
- Filter Regulator Lubricator Units — Air Preparation Settings
- Ultrasonic Leak Surveys — Compressed Air Energy Savings
- Pneumatic Cylinder Seals and Cushioning — Stroke Problem Diagnosis
- Vacuum Generators and Grippers — Pick-and-Place Reliability

Day 3: Hydraulic Power Units and Valves

- Gear, Vane and Piston Pump Behaviour — Noise and Heat Symptoms
- Relief and Pressure Reducing Valve Settings — Overload Protection
- Directional and Flow Control Valves — Speed and Sequence Faults
- Hydraulic Oil Contamination and Filtration — Valve Sticking Prevention
- Accumulator Precharge Checks — Stored Energy Safety

Day 4: Electro-Fluid Control and Fault Isolation

- Solenoid Coils and Valve Islands — Electrical or Fluid Fault
- Proximity Sensors and Pressure Switches — Signal Verification
- Controller Input and Output Status Reading — Sequence Fault Location
- Half-Split Fault-Finding Method — Shortening Search Time
- Pressure and Flow Measurement Points — Test Port Planning

Day 5: Practising the Fluid Power Fault-Finding Guide

- Symptom-to-Cause Tables — Applying Pneumatic and Hydraulic Findings
- Machine Fault Cases — Packaging and Metal Forming Lines
- Preventive Task Lists for Filters, Seals and Oil — Interval Setting
- Critical Spares for Valves, Cylinders and Coils — Stock Levels
- Fluid Power Fault-Finding Guide — Completed for One Machine

Applying Hydraulic and Pneumatic Circuit Troubleshooting After the Course

- Run an ultrasonic leak survey on one production area, tag every leak and log the repairs.
- Mark test points on the circuit drawing of one critical machine and record normal pressure and cycle times.

Hydraulic and Pneumatic Circuit Troubleshooting Questions FAQ

What is hydraulic and pneumatic circuit troubleshooting, and why does it matter now?

It is the structured tracing of faults through air and oil circuits, from supply to actuator and control signal. It matters now because automated lines, costly compressed air and fewer experienced fitters make random part swapping expensive.

Which roles gain most from hydraulic and pneumatic circuit troubleshooting?

Line technicians, maintenance engineers, utility staff and automation technicians gain most. Each owns part of the path between the compressor or power unit and the moving machine.

How does hydraulic and pneumatic circuit troubleshooting differ from a hydraulics fundamentals course?

It starts from a stopped machine and finds the cause, while a fundamentals course builds basic principles first. Here you read circuits, measure pressure and flow and separate electrical from fluid faults.

What do you bring back from hydraulic and pneumatic circuit troubleshooting?

You bring back a fluid power fault-finding guide for one machine. It holds symptom-to-cause tables, test points, preventive tasks and a critical spares list.

Hydraulic and Pneumatic Circuit Troubleshooting: The Way Forward

The fluid power fault-finding guide first informs how a technician responds to the next stoppage on that machine. Technicians follow its search steps, planners use its preventive tasks and stores staff hold its spares. After its first use, revisit how stoppage records can refine its symptom tables and extend it to similar machines.