



LEARNING
WITH OXFORD

Automotive Maintenance - Electrical Systems

Learn where you want -
when you want...

Online lessons that include that include
theory presentations, exciting investigation
activities and assessment quizzes.

Electrical Systems - Lesson Examples:

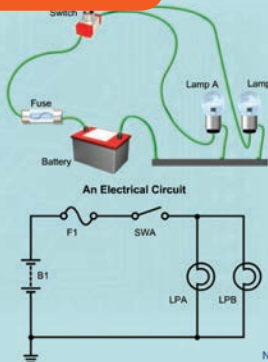


Introduction to Wiring Diagrams

Pictures of electrical
circuits can become
overcrowded and
difficult to understand.

A wiring diagram
can be used to represent
the same circuit.

It is easier to understand
than the picture and can
contain more information,
but it does not show the
physical locations of the
components.



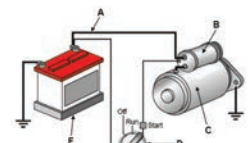
Starting Systems Investigation

To start an internal combustion engine, the crankshaft must be rotated.
Early vehicles used a hand crank rod that required great effort and could be dangerous.
Modern vehicles use electricity from a battery to turn a starter motor to crank an engine.
Use the information from the related presentation to show your understanding of starter
motor circuit components and starter motor operation.



Starter Circuit Components

a) Use the letters from the labelled diagram to complete the table.



Our tried and tested online learning
sequence has been successful
around the world:

Lesson presentation
(audio and video)

Interactive investigation
and challenge

Short quiz and
instant feedback

Types of Light Sources

Quartz Halogen Bulbs

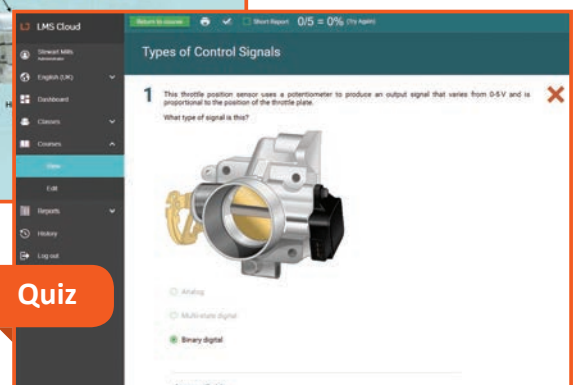
Quartz is used instead
of glass because it is
stronger and can withstand
higher temperatures.

The use of a pressurized
halogen gas (iodine)
reduces vaporization
(burning away) of the
tungsten filaments.

They are used for high
(main) and low (dipped)
beam headlamps, spot
lamps, driving lamps, and
front fog lamps.



Presentation



Electrical Fundamentals

- Simple Circuits
- Controlling and Protecting Simple Circuits
- Common Ground Circuits and Wiring Diagrams
- DC and AC Current
- Power
- Continuity and Circuit Faults
- Pushbutton Switches and Switch Circuits
- Changeover Switches
- Resistance and Ohm's Law
- Electricity
- Electromagnetic Principles
- Electrical Safety and Circuit Checks
- Introduction to Wiring Diagrams
- Control Principles
- Control Examples
- Information Flow
- Physical Environment to Electrical Transformation

Electrical Components and Operation

- Capacitor Types and Applications
- Diode Types and Applications
- Transistors
- Relays
- Signal Processing
- Sensors
- Types of Control Signals
- Batteries

Electrical Measurement

- Electrical Test Equipment
- Using a Multimeter
- Measuring Current
- Reading Wiring Diagrams
- Voltage Drop
- Calculating and Adjusting Permitted Voltage Drop
- Symbols, Device Markings and Terminal Block Designations

Starting Systems

- Starting Systems
- Starting and Charging
- Starting System Fault Diagnosis

Charging Systems

- Charging Principles
- Magnetism and Electromagnetism
- Charging Systems
- Alternator Construction
- Work of the Regulator
- Alternator Output Tests
- Charging System Fault Diagnosis

Lighting Systems

- Types of Light Sources
- Headlamps
- Headlamps 1
- Headlamp Flash Circuit
- Stop and Backup Lamps
- Series Lamp Circuits
- Hazard Warning Lamps
- Turn Signal Systems
- Park, Tail, and Headlamp Circuits 1
- Internal Lighting
- Park and Tail Lighting
- Parallel Lamp Circuits
- Introduction to Fault-Finding
- Lighting Fault Diagnosis