



Working with STEM Learning Cloud – Automotive

Brought to Australia and New Zealand by



Pullman Academic

Better Learning Outcomes

A Division of Pullman Learning Group

Start work in 2 minutes

World class hardware for
hands-on training



www.pullmanacademic.com.au

LJ Create Automotive – Innovation in Education

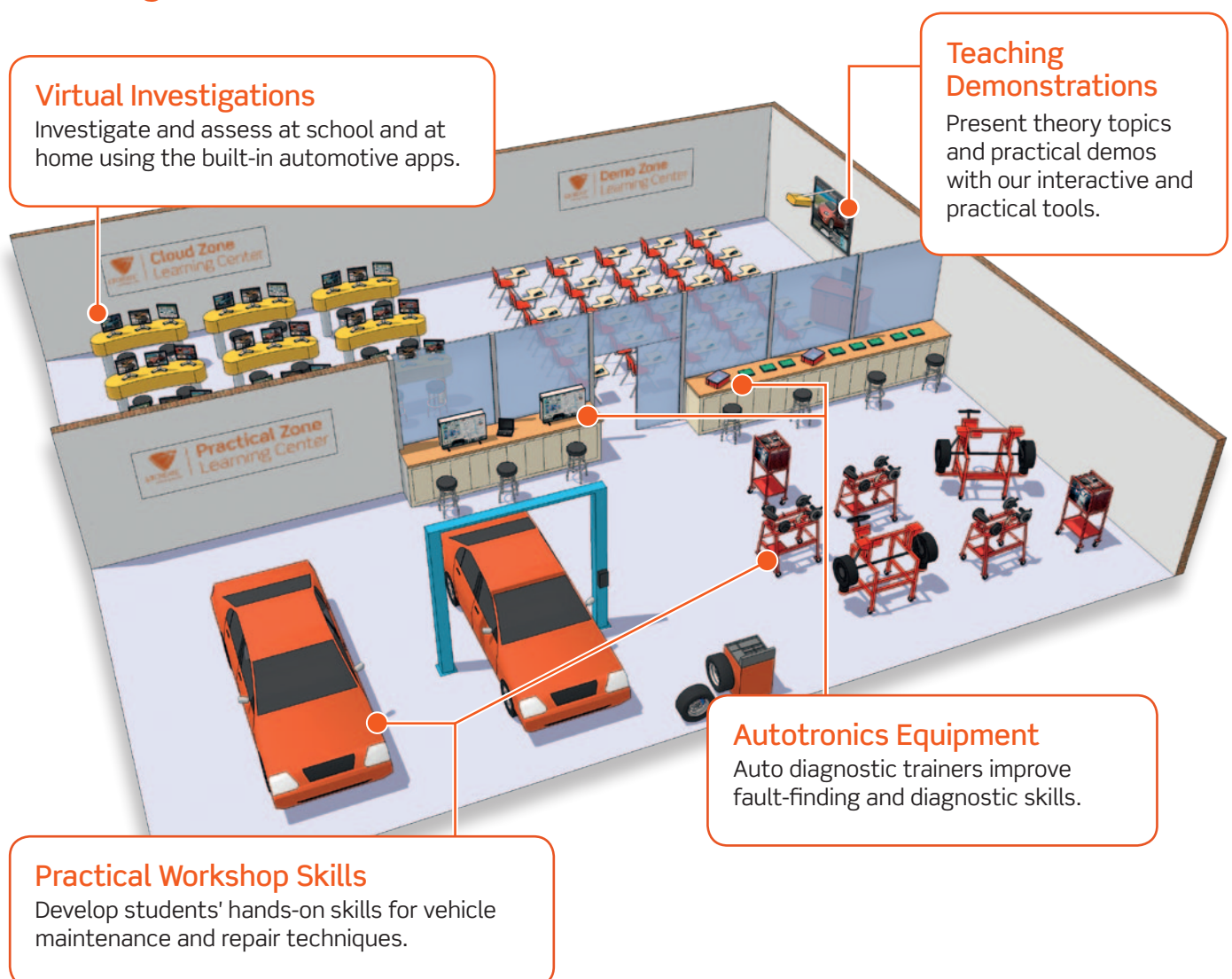
LJ Create Automotive has been designed to allow you to build a motor vehicle course that will enable your students to become new hi-tech maintenance and repair technicians.

The LJ Create Automotive programme combines a series of cloud-based resources with practical equipment that can be used to create an automotive teaching facility that will deliver the knowledge and practical skills students need to achieve success.

Our aim is to help you develop skilled technicians with a solid understanding of automotive technology and fault-finding techniques.

LJ Create Automotive delivers a resource to impact every aspect of automotive education and training.

The Multi-Mode Automotive Learning Environment



The descriptions, images and availability of systems contained in this brochure are based on information available to Pullman Learning Group at the time of printing. While we endeavour to update this information regularly, from time-to-time descriptions may change or systems may be modified or discontinued.

LJ Create Automotive – Cloud Software Package

our solution

Cloud-based
blended learning ...

Start work in 2 minutes



The LJ Create Automotive cloud-based software packages are based upon a large library of content that is continuously growing and updated to meet motor vehicle teaching standards.

Our Solution

Purchase an annual site licence and you will be provided with a domain within our Automotive database that provides the following:

- Easy access via our cloud-based portal
- Continuously updated content
- Access for all enrolled students and staff
- Student and school performance reporting facilities

Beautiful, Immersive Content

The range of content provided will allow each topic area to be supported with amazing and captivating resources. The multi-mode nature of the content provides the following types of learning materials:

- Multimedia Presentations
- Virtual Lab Investigations
- Hands-On Lab Activities
- Academic and Technical Support Tasks
- Topic Assessments

The following pages allow you to explore the cloud-based learning environment and see how the practical tasks within the learning content link to our unique automotive hardware.

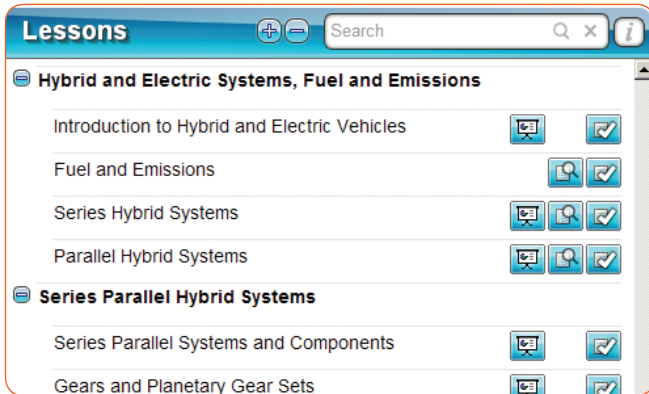


LJ Create Automotive – Annual Site License
Order As: WWS/AL

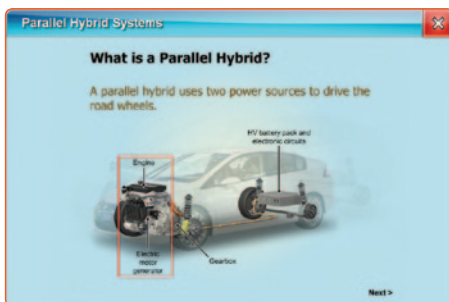
LJ Create Automotive – Putting Interactive Learning into the

eLEARNING

A wide range of presentations, investigations and assessments to help develop skills and knowledge in automotive technology.



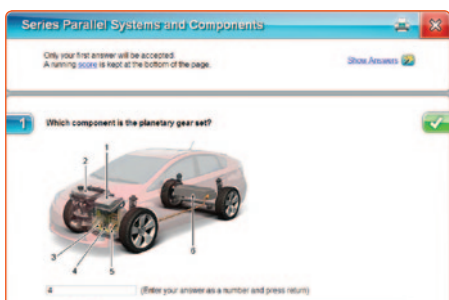
EXAMPLE CONTENT Presentations



Investigations



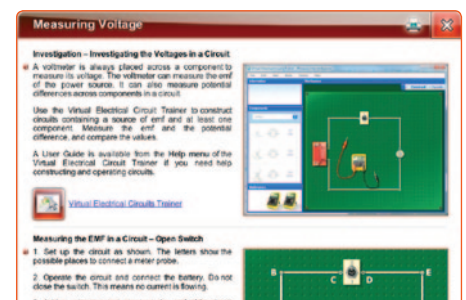
Assessments



Practical Tasks



Support Materials



Our Two-Minute Rule

Once a user has logged in, they are ready to start work with no installation or training required.

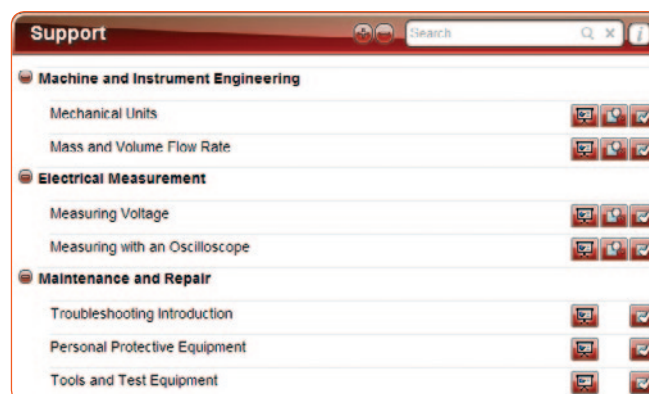
The intuitive menu system has been designed to meet our 'two-minute rule'.

We insist to our content development team that you **MUST** be able to use our software within two minutes.



ACADEMIC AND TECHNICAL SUPPORT

Resources offering background technical knowledge and academic support for maths and English.



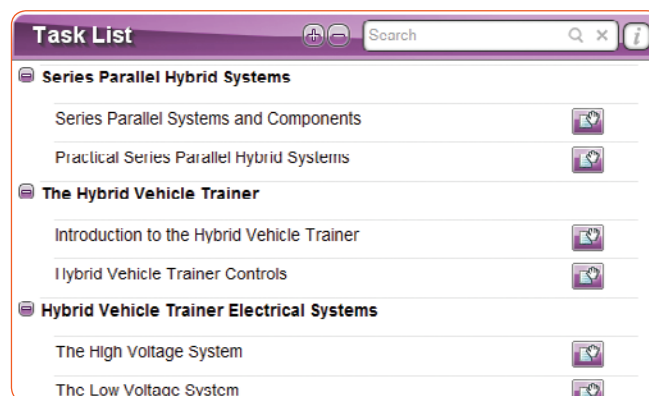
LEARNING MANAGEMENT SYSTEM

Automatically tracks and records student/school progress and attainment.

Module	Hours	Progress	Score
Drum Brakes	15	8	45%
Disc Brakes	17.5	8	72%
Master Cylinders and Warning Systems	25	12	90%
Brake Pipes Hoses and Proportioning Valves	19	10	73%
Brake Assist Systems	16	11	67%
Brake System Procedures	22	8	66%
Brake System Diagnosis	22	10	54%
Electronic Brake System Fundamentals	21	10	77%
ABS Input Devices	15.5	9	79%
The ABS ECU	18.5	10	49%
ABS Output Devices	19	12	45%
ABS Procedures	23	12	91%
Traction and Stability Control Systems	15	8	84%
SI Engine Fundamentals	17	9	90%

PRACTICAL TASKS

Hands-on activities linked to theoretical resources provide users with the ability to develop practical skills.



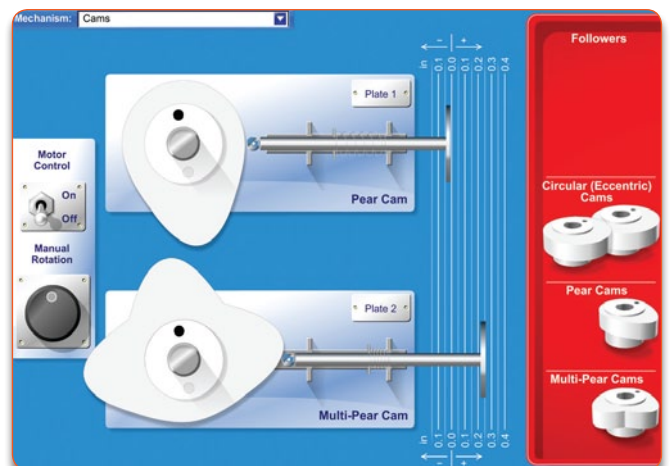
LJ Create Automotive – Cloud Software Package

The LJ Create Automotive Cloud Software Package includes the following topic groups:

- Engine Repair
- Automatic Transmission and Transaxle
- Manual Drive Train and Axles
- Suspension
- Steering
- Brake Systems
- Brake Components
- Brake Servicing
- Automotive Electrical Fundamentals
- Automotive Starting and Charging
- Automotive Lighting
- Automotive Transducers
- Ignition Systems
- Engine Management and Control
- Fuel and Emissions
- Electric and Hybrid Vehicle Technology
- Networked Systems
- CAN Bus Lighting Systems
- CAN Bus Auxiliary Systems
- CAN Bus Starting and Charging Systems
- Automotive Heating and Air Conditioning
- Auto Shop
- Passenger Safety Systems
- Heavy Vehicle Systems
- Motorcycle Lighting



Automotive Technology Simulators - Hybrid



Mechanical Science Investigations



Diagnostic Fault-Finding Simulations

LJ Create Automotive – Annual Site License
Order As: WWS/AL

Automotive Electrical/Electronic Systems Hardware

Electrical/Electronic Systems

Resources to help you gain skills in the of diagnosis and repair of starting, charging and lighting systems.



300+ units of
online instruction



7 hardware trainers



25+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Electrical/Electronic Systems including over 325 units of instruction that cover:

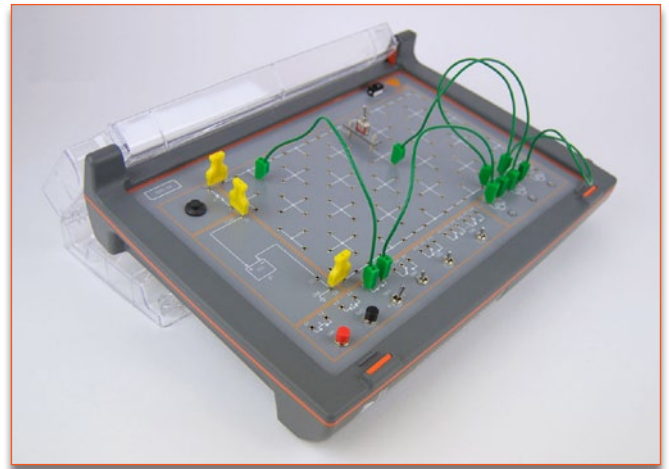
- Electrical Fundamentals
- Electrical Circuits and Components
- Charging and Starting Fundamentals
- Lighting Fundamentals
- Lighting Systems and Circuits
- Battery Construction and Operation... and much more!

Hardware

The practical equipment resources for Electrical/Electronic Systems, which help you teach automotive theory in a practical way, include:

- Automotive Electronic Circuits Board
- Lighting Circuits Board
- Starting and Charging Board
- Auxiliary Systems Circuits Board
- Displays and Accessories Panel Trainer
- Vehicle Electrical System Trainer
- Hybrid Vehicle Systems Panel Trainer

Automotive Electronic Circuits Board



This hands-on learning resource allows students to build a variety of introductory automotive electronic circuits using a range of on-board and carrier-mounted components.

Students are set tasks that encourage them to explore circuits practically, to help develop their understanding of electrical components, circuits and systems. They also develop diagnostic and fault-finding skills using real test equipment.

Typical Practical Activities Include:

- Construct a simple circuit (battery and lamp)
- Measure DC voltage using a digital multimeter
- Investigate the operation of a switch and fuse
- Investigate the concept of a common ground connection
- Construct a circuit from a schematic diagram
- Measure DC current using a digital multimeter
- Calculate power use in lamp circuits
- Measure voltage drops and current across lamps connected in series, parallel and combined
- Use a multimeter to investigate the operation of a range of switches
- Investigate switches connected in series and parallel
- Measure resistance
- State Ohm's Law

Order As: 700-10

Automotive Electrical/Electronic Systems Hardware

Lighting Circuits Board



This training system is designed to provide a practical approach to theoretical learning, as well as developing technical skills for electronic system fault finding.

The resource is contained within an ergonomic plastic base with a hinged cover that also provides a mechanism to tilt the trainer towards the user for ease of use.

Typical Practical Activities Include:

- Explore CAN Bus Park, Tail, and Headlight Systems
- Investigate CAN Bus Fog Light Systems
- Explore CAN Bus Turn Signal and Hazard Warning Systems
- Explore CAN Bus Stop and Reverse Light Systems
- The CAN Data Bus
- Perform CAN Bus Park and Tail Light System Measurements
- Perform CAN Bus Headlight System Measurements
- Perform CAN Bus Fog Light System Measurements
- Perform CAN Bus Turn Signal and Hazard Warning System Measurements
- CAN Bus Stop and Reverse Light System Measurement
- CAN Data Bus Measurement
- Diagnose 8 Different CAN Bus Lighting Faults

Order As: 701-02

Starting and Charging Board



This training system is focused on the starting and charging systems of a modern vehicle. Students are set tasks that encourage them to explore CAN Data Bus systems practically and also improve their knowledge of components, circuits, signals and systems.

Students will also be directed to work through a number of fault-finding activities (8 in all), encouraging fault-diagnosis skills.

Typical Practical Activities Include:

- Explore CAN Bus Conventional and Advanced Starting and Charging Systems
- Investigate High Speed CAN Data Bus
- Perform CAN Bus Conventional and Advanced Starting and Charging System Measurements
- Perform CAN Bus Consumers Measurements
- Perform Automatic Stop Start System Measurements
- Perform CAN Data Bus Measurements
- Diagnose 8 Different CAN Bus Starting and Charging Faults

Order As: 720-02

Automotive Electrical/Electronic Systems Hardware

Auxiliary Systems Circuits Board



Students are set tasks that encourage them to explore CAN Bus electric window, door mirror, seat and central locking circuits practically and improve their knowledge of these systems.

Students will also be directed to work through a number of fault-finding activities (7 in all), encouraging fault-diagnosis skills.

Typical Practical Activities Include:

- Explore CAN Bus Window, Mirror and Seat Systems
- Investigate CAN Central Locking System
- Explore CAN Data Bus
- Perform CAN Bus Window, Mirror and Seat System Measurements
- Perform Central Locking System Measurements
- Perform CAN Data Bus Measurements
- Diagnose 7 Different CAN Bus Auxiliary Faults

Order As: 721-01

Displays and Accessories Panel Trainer



This trainer provides students and instructors with the opportunity to demonstrate, investigate, and fault-find a simulation of typical automotive display systems.

The trainer is designed to allow access to a variety of test points for vehicle electrical components and explore how they relate to dashboard displays and warning lights, as well as provide an understanding of the overall system layout and configuration.

To facilitate the development of techniques in diagnostics and fault-finding skills, the panel includes a range of fault-insertion options to simulate typical real-world system malfunctions.

Typical Practical Activities Include:

- Measurement and display of vehicle speed
- Measurement and display of engine RPM
- Measurement and display of fuel level
- Measurement and display of oil pressure
- Measurement and display of coolant temperature
- Direction indicator-light warning system
- Seat belt warning system
- Brake warning system
- Lamp monitoring system
- Air-bag systems (SRS)
- Audio system
- Windscreen wipers

Order As: 752-01

Automotive Electrical/Electronic Systems Hardware

Vehicle Electrical System Trainer



This real component trainer offers a fully operational automotive electrical system designed for teaching basic electrical principles. Investigations and demonstrations allow students to acquire an understanding of how simple electrical circuit theory is key to developing sound automotive fault-finding techniques.

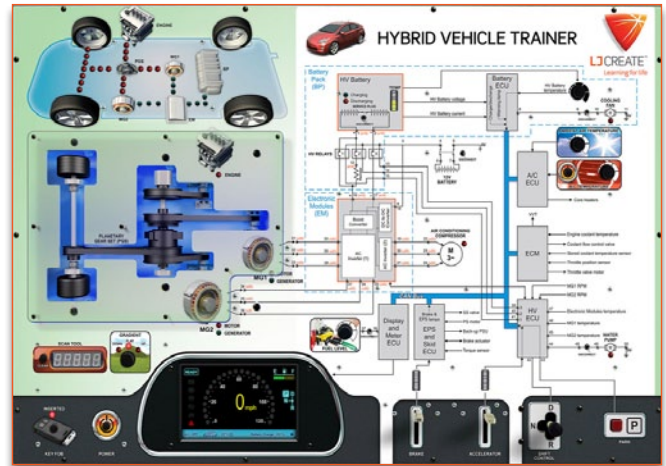
Full operation of headlights, side lights, brake lights, indicators, and alternator via a speed controller can be observed.

Typical Practical Activities Include:

- Identification of all basic electrical components
- Measurement of basic electrical components
- Fault finding on all basic electrical systems
- Switched faults with real fault-finding exercises

Order As: 770-01

Hybrid Vehicle Systems Panel Trainer



This trainer provides students and instructors with the opportunity to demonstrate, investigate and fault-find a simulation of a hybrid vehicle electrical system. The trainer is designed to allow access to a simulation of the mechanical operation as well as provide a mimic of the electrical power flow.

The panel also includes test points at a safe voltage level to allow for investigation of electrical circuits.

To facilitate the development of techniques in diagnostics and fault-finding skills, the panel includes a range of fault-insertion options to simulate typical realworld system malfunctions.

Typical Practical Activities Include:

- Series, parallel and series-parallel systems
- Hybrid brake systems
- Electric motors
- Storage devices
- Hybrid engines
- Cables, connectors, protection devices and controllers
- Power-control modules
- Safety
- Routine maintenance and repair

Order As: 756-01

Automotive Engine Repair Hardware

Engine Repair

A blended mix of hardware and software resources relating to engine diagnosis and repair.



50+ units of
online instruction



8 hardware trainers



20+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Engine Repair including over 70 units of instruction that cover:

- SI Engine Fundamentals
- Top End Components
- Bottom End Components
- The Lubrication System
- The Cooling System
- Hybrid Vehicles... and much more!

Hardware

The practical equipment resources for Engine Repair, which help you teach automotive theory in a practical way, include:

- Duratec Engine (CAN Control) Trainer
- Duratec Engine (CAN & Climate Control) Trainer
- Toyota Yaris VVTI Engine Trainer
- Common Rail Diesel Engine (CAN Control) Trainer
- Distributorless Ignition System Trainer
- HDI Common Rail Fuel Injection System Trainer
- Sectioned 4-Cylinder Petrol Engine Trainer
- Sectioned Diesel Engine (Common Rail) Trainer

Duratec Engine (CAN Control) Trainer



This trainer provides the instructor with a complete working engine with an engine management system for group or whole-class demonstration.

The system comprises all the elements that control the air-fuel ratio, the ignition timing, and the exhaust emissions together with the ECU and all the sensors and actuators associated with the control system.

The system enables fault conditions to be inserted and for these faults to be diagnosed with specialist workshop test equipment.

Typical Practical Activities Include:

- Identification of all engine components
- Engine management operation
- Engine management fault finding
- Switched faults with real fault-finding exercises

Order As: 760-01

Automotive Engine Repair Hardware

Duratec Engine (CAN & Climate Control) Trainer



This trainer provides the instructor with a complete working engine with an engine management system as well as a fully-functional climate-control system for group or whole-class demonstration.

The system comprises all the elements that control the air-fuel ratio, the ignition timing, and the exhaust emissions together with the ECU and all the sensors and actuators associated with the control system.

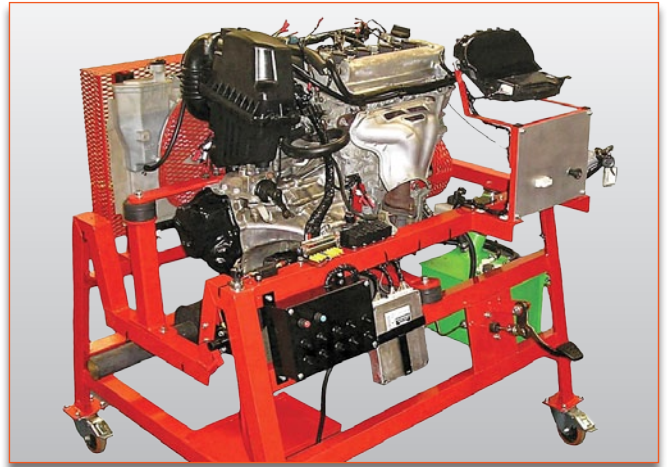
The system enables fault conditions to be inserted and for these faults to be diagnosed with specialist workshop test equipment.

Typical Practical Activities Include:

- Identification of all engine components
- Engine management operation
- Engine management fault finding
- Switched faults with real fault-finding exercises
- A/C components
- Climate-control operation
- Climate-control system fault finding

Order As: 760-02

Toyota Yaris VVTi Engine Trainer



This trainer provides the instructor with a complete working engine with an engine management system for group or whole-class demonstration.

The system comprises all the elements that control the air-fuel ratio, the ignition timing, and the exhaust emissions together with the ECU and all the sensors and actuators associated with the control system.

The system enables fault conditions to be inserted and for these faults to be diagnosed with specialist workshop test equipment.

Typical Practical Activities Include:

- Engine management operation
- Engine management fault finding
- Investigate multipoint fuel injection
- Switched faults with real fault-finding exercises

Order As: 761-01

Automotive Engine Repair Hardware

Common Rail Diesel Engine (CAN Control) Trainer



This trainer provides the instructor with a complete common rail diesel engine with an engine management system for group or whole-class demonstration.

The system comprises all the elements that control the injector timing and the exhaust emissions together with the ECU and all the sensors and actuators associated with the control system.

The system is expandable to enable fault conditions to be inserted and for these faults to be diagnosed with specialist test equipment.

Typical Practical Activities Include:

- Engine management operation
- Engine management fault finding
- Investigate turbo and exhaust systems
- Switched faults with real fault-finding exercises

Order As: 762-01

Distributorless Ignition System Trainer



This real component trainer provides the instructor with a working distributorless ignition system for group or whole-class demonstration.

This includes all the individual components of the system presented on a steel turret so that each component can be clearly identified.

The trainer contains a DC motor that is powered by either a 12V vehicle battery or a 12V bench PSU. Moving parts are fully guarded and the unit is intrinsically safe for use by students. The resource also includes switchable faults for diagnostic demonstrations and fault finding.

Typical Practical Activities Include:

- Investigate the distributorless ignition system
- Inspect and test ignition system sensors
- Inspect and test ignition coils
- Switched faults with real fault-finding exercises

Order As: 765-01

Automotive Engine Repair Hardware

HDI Common Rail Fuel Injection System Trainer



This real component trainer provides the instructor with a working HDI common rail fuel injection system for group or whole-class demonstration.

The system comprises all the elements that control the air-fuel ratio, the injectors, the ECU, and all the sensors associated with the control system.

Variation of the engine speed allows the measurement of parameters within the system that are speed dependent.

This is achieved by changing the rotational speed of the electric motor that drives the unit.

This is a dry-running system that uses electronic indicators to demonstrate injector operation.

The system also includes a range of switchable faults for diagnostics training.

Typical Practical Activities Include:

- Identify electronic common rail diesel fuel components
- Operation of common rail diesel fuel components
- Measurement of electronic components and fault codes
- Fault finding common rail diesel fuel systems

Order As: 771-01

Sectioned 4-Cylinder Petrol Engine Trainer

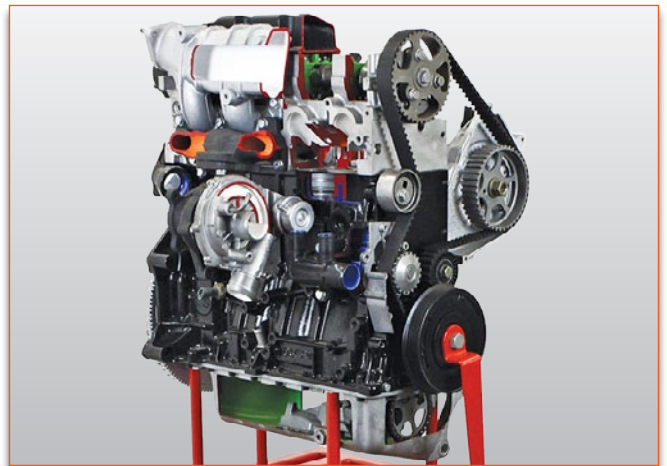


Typical Practical Activities Include:

- Identification of all main engine mechanical components
- Operation of a modern 4-stroke engine
- Critical relationship between engine components
- Measurement of engine capacity

Order As: 772-01

Sectioned Diesel Engine (Common Rail) Trainer



Typical Practical Activities Include:

- Identification of all main engine mechanical components
- Operation of a modern diesel engine
- Identification of fuel system mechanical components
- Identification and setting of cam belt timing

Order As: 773-01

Automotive Automatic Transmission and Transaxle Hardware

Automatic Transmission and Transaxle

A blended mix of hardware and software resources relating to Automatic Transmission and Transaxle.



70+ units of
online instruction



1 hardware trainers



35+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Transmission and Transaxle including over 105 units of instruction that cover:

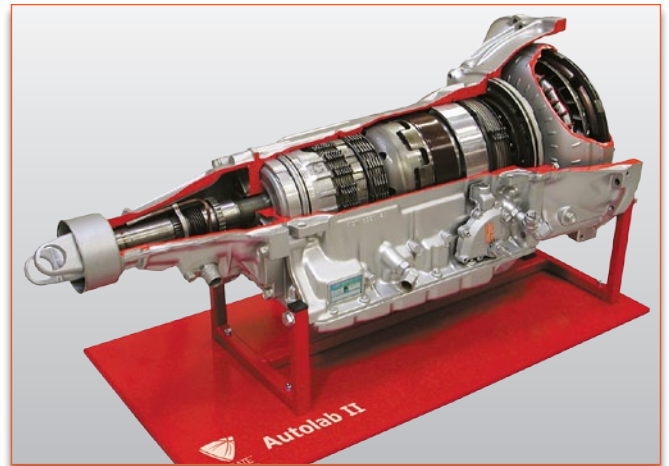
- Transmission System Fundamentals
- Automatic Transmission Systems
- Hybrid Vehicles
- Plug-In Electric Vehicles... and much more!

Hardware

The practical equipment resources for Automatic Transmission and Transaxle, which help you teach automotive theory in a practical way, include:

- Sectioned Automatic Gearbox Trainer

Sectioned Automatic Gearbox Trainer



This trainer provides the instructor with a complete automatic gearbox for group or whole-class demonstration,

The sectioned gearbox is operated by hand so that all moving components can be seen and the way they interact can be observed.

Typical Practical Activities Include:

- Identification of all main auto-gearbox components
- Torque converter components
- Gear selector and park mechanisms
- Gearbox control through valves

Order As: 775-01

Automotive Manual Drive Train and Axles Hardware

Manual Drive Train and Axles

A blended mix of hardware and software resources relating to Manual Drive Train and Axles.



50+ units of
online instruction



1 hardware trainers



10+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Manual Drive Train and Axles including over 60 units of instruction that cover:

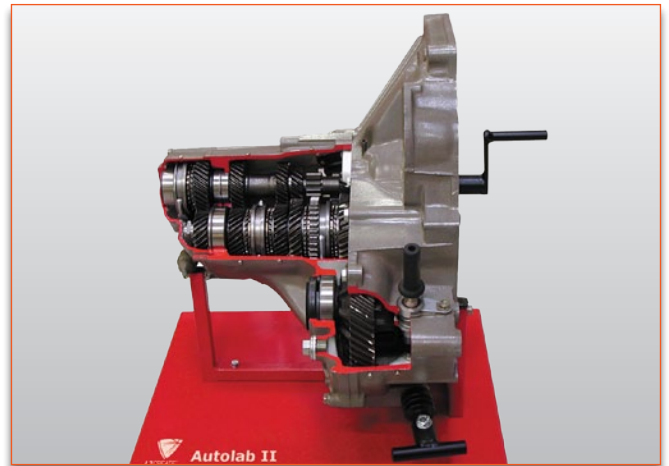
- Drive Train Diagnosis
- Clutch Diagnosis and Repair
- Transmission/Transaxle
- Drive Shafts
- Ring and Pinion Gears
- Limited Slip Differentials
- Drive Axles
- Four-Wheel Drive Systems... and much more!

Hardware

The practical equipment resources for Manual Drive Train and Axles, which help you teach automotive theory in a practical way, include:

- Sectioned Manual Gearbox Trainer

Sectioned Manual Gearbox Trainer



This trainer provides the instructor with a complete manual gearbox for group or whole-class demonstration.

The gearbox is operated by hand and is sectioned so that all moving components can be seen and the way they interact can be observed.

Typical Practical Activities Include:

- Identification of all main gearbox components
- Operation of a synchromesh gearbox
- Calculation of individual gear ratio
- Calculation of final drive ratio

Order As: 774-01

Automotive Suspension and Steering Hardware

Suspension and Steering

A blended mix of hardware and software resources relating to wheels and tyres!



120+ units of
online instruction



1 hardware trainers



30+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Suspension and Steering including over 150 units of instruction that cover:

- Tyres
- Road Wheels
- Steering System Components
- Suspension System Fundamentals
- Geometry... and much more!

Hardware

The practical equipment resources for Suspension and Steering, which help you teach automotive theory in a practical way, include:

- Steering and Suspension System Trainer

Steering and Suspension System Trainer



This real component trainer provides the instructor with a working light vehicle steering and suspension system for group or whole-class demonstration.

The system comprises front wheel assemblies, MacPherson strut and coil spring assemblies, road wheels and power steering rack.

Typical Practical Activities Include:

- Inspect power steering fluid levels and condition
- Diagnose power steering fluid leakage
- Inspect, remove, and replace dampers
- Remove, inspect and install coil springs

Order As: 764-01

Automotive Brakes Hardware

Brakes

Develop the skills and knowledge to diagnose and repair faulty disc, drum and hydraulic brake systems.



170+ units of
online instruction



3 hardware trainers



40+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Brakes including over 210 units of instruction that cover:

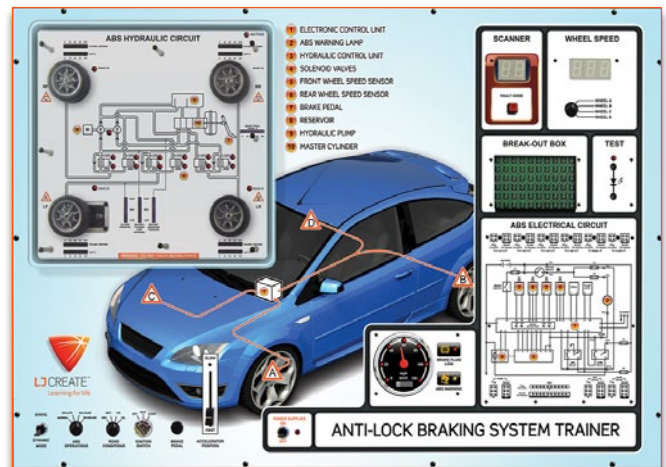
- Brake System Fundamentals
- Drum Brakes
- Disc Brakes
- Brake Lines, Hoses and Proportioning Valves
- ABS Input Devices... and much more!

Hardware

The practical equipment resources for Suspension and Steering, which help you teach automotive theory in a practical way, include:

- Anti-Lock Braking Systems Panel Trainer
- Disc and Drum Braking System Trainer
- Anti-Lock Braking System (Bosch) Trainer

Anti-Lock Braking Systems Panel Trainer



This trainer provides students and instructors with the opportunity to demonstrate, investigate and fault-find a simulation of a typical 4-wheel anti-lock braking system.

The trainer is designed to demonstrate ABS hydraulic and electrical system operation, as well as provide the ability to simulate changes in road conditions that impact ABS operation.

To facilitate the development of techniques in diagnostics and fault-finding skills, the panel includes a range of fault-insertion options to simulate typical realworld system malfunctions.

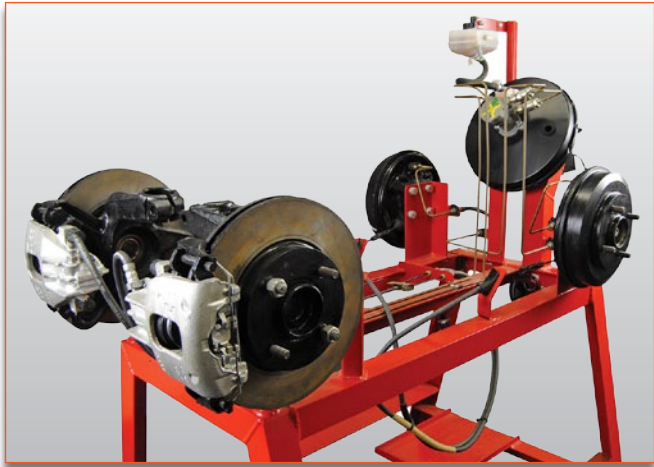
Typical Practical Activities Include:

- Principles of braking systems and vehicle acceleration/deceleration
- Identify the phases of ABS operation
- Test the operation of ABS sensors and switches
- Concepts of wheel spin and slip
- Effects of slip on wheel braking and vehicle stability
- Basic concepts of an ABS system
- Static operation of an ABS system, covering pressure isolation, pressure dump, pressure increase and pressure normal

Order As: 755-01

Automotive Brakes Hardware

Disc and Drum Braking System Trainer



This real component-based trainer provides students and instructors with the opportunity to demonstrate and investigate the operation of a typical automotive braking system.

The trainer is designed to allow access to both disc and drum brake components, as well as providing the opportunity to understand the operation of the hydraulic circuit.

Typical Practical Activities Include:

- Friction brake theory
- Drum brake components and operation
- Disc brake components and operation
- Drum brake machining
- Disc measurement and inspection
- Handbrake components and operation
- Handbrake servicing
- Brake problem diagnosis
- Mount brake drum on lathe; machine braking surface
- Check handbrake cables and components for wear, rusting, binding, and corrosion
- Adjust calipers with integrated handbrake system
- Diagnose poor stopping, noise, pulling, grabbing, dragging, or pedal pulsation concerns

Order As: 763-01

Anti-Lock Braking System (Bosch) Trainer



This trainer will provide the instructor with a simulated anti-lock braking system for group or whole-class demonstration, using components from a commercial ABS.

This includes all the individual components of the system, either real or simulated, presented on a moveable, steel-frame panel with each component clearly identified.

The system will demonstrate the basic principles of ABS, including wheel speed sensing, signal processing, fluid pressure and modulation, together with brake pressure measurement.

It is possible to introduce controlled faults into the system, which can be monitored by means of a diagnostic plug.

Typical Practical Activities Include:

- Identification of ABS components
- Operation of a fully functional ABS
- Simulate wheel lock up and the measurable outcomes
- Switched faults with real fault-finding exercises

Order As: 769-01

Automotive Heating and Air Conditioning Hardware

Heating and Air Conditioning

Theory and practical lessons that relate to diagnosis and repair of heating, ventilation and air conditioning.



60+ units of
online instruction



3 hardware trainers



30+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Heating and Air Conditioning including over 90 units of instruction that cover:

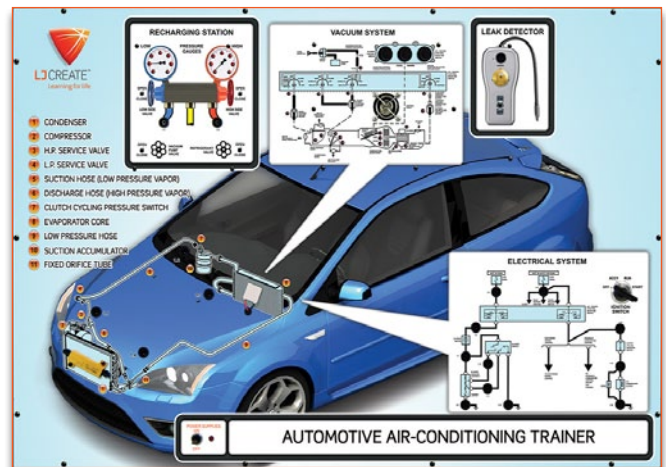
- Heating and Air Conditioning Fundamentals
- Air Conditioning Components
- Heating and Ventilation Systems... and much more!

Hardware

The practical equipment resources for Heating and Air Conditioning, which help you teach automotive theory in a practical way, include:

- Air Conditioning Systems Panel Trainer
- Air-Conditioning System Trainer
- [Duratec Engine \(CAN & Climate Control\) Trainer](#)

Air Conditioning Systems Panel Trainer



This trainer provides students and instructors with the opportunity to demonstrate, investigate, and fault-find a simulation of a typical automotive air conditioning system.

The trainer is designed to allow access to controls for the vacuum system, electrical system and recharging station, as well as provide an understanding of the overall system layout and configuration.

To facilitate the development of techniques in diagnostics and fault-finding skills, the panel includes a range of fault-insertion options to simulate typical real-world system malfunctions.

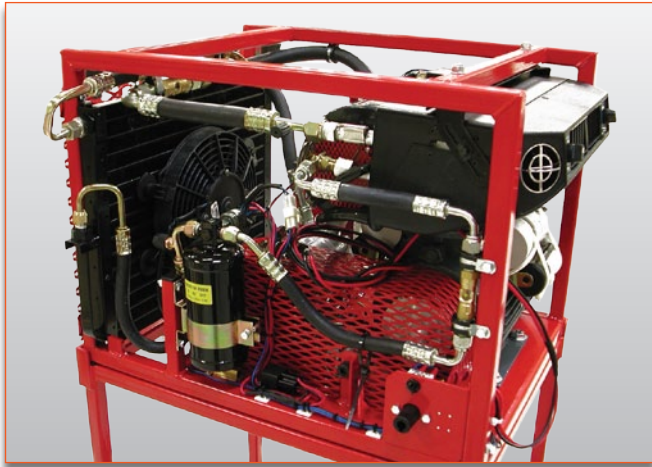
Typical Practical Activities Include:

- Identify the principles of air conditioning.
- Investigate FOTCC system operation.
- Service climate-control systems.
- Troubleshoot an air-distribution system.
- Test airflow components.
- Investigate A/C electrical systems.
- Fault-find heater electrical controls.

Order As: 754-01

Automotive Heating and Air Conditioning Hardware

Air-Conditioning System Trainer



This real component-based trainer provides students and instructors with the opportunity to demonstrate and investigate the operation of a functional automotive air conditioning system.

The trainer is designed to allow access to the vacuum system and electrical system, as well as provide the opportunity to understand the processes involved with system evacuation and charging.

The unit features a dashboard control system and has a single-phase electric motor that drives the a/c compressor.

Special sight glasses are fitted to the high-pressure and low-pressure pipes to allow the student to see the two states of the refrigerant.

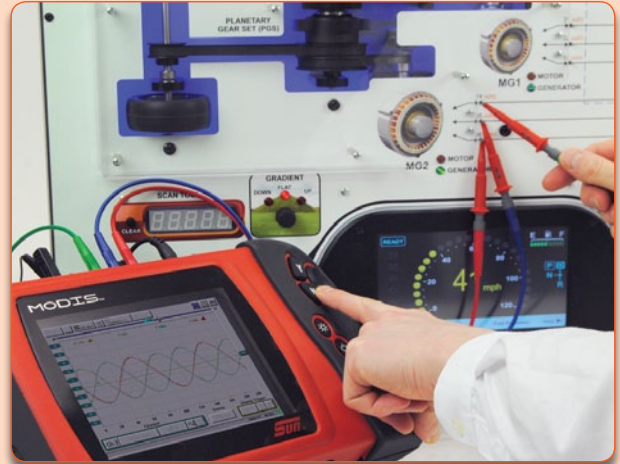
It is possible to use the unit with an industrial standard recharging station, allowing the student to service the entire air conditioning system.

Typical Practical Activities Include:

- Air conditioning trainer familiarisation
- Identify A/C components and operation
- Investigate A/C trainer operation
- Identify refrigerant types
- Conduct an A/C system performance test
- Verify correct operation and maintenance of refrigerant handling equipment
- Identify and recover A/C system refrigerant
- Evacuate and charge A/C system

Order As: 766-01

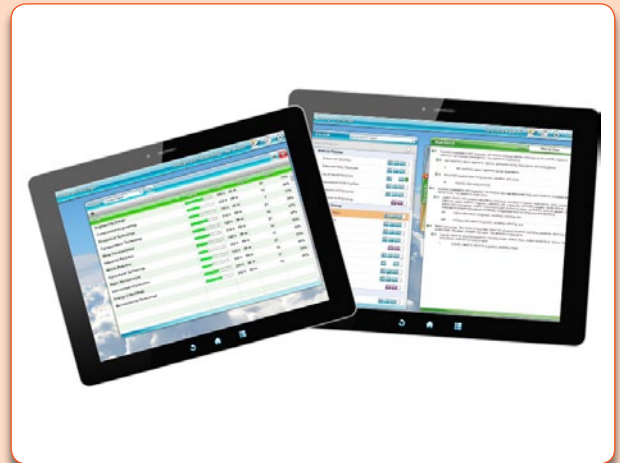
Autotronics Diagnostic Trainers In Action



Our innovative computer-linked panel trainers simulate a range of vehicle operations that can be used in a safe classroom environment.

Computer-inserted faults allow the student to perform troubleshooting tasks on the panel trainer using diagnostic equipment.

Learning Management System



Learning Management System (LMS) automatically tracks and records the progress and attainment of your students. You can see how much time students spend on each module, how often they log in, and instantly see records of their grades across the program.

The LMS gives the teacher control over the construction of courses, allowing them to be tailored for their students, and includes extensive student-tracking and reporting.

Automotive Engine Performance Hardware

Engine Performance

Theory and practical lessons that relate to the diagnosis and repair of emission control systems.



200+ units of
online instruction



11 hardware trainers



30+ units of
supporting instruction

Software and Curriculum

Working with STEM (Automotive) library contains a vast amount of digital learning materials, easily accessible by students and staff through a web browser.

The content will teach you everything you need to know about Engine Performance including over 230 units of instruction that cover:

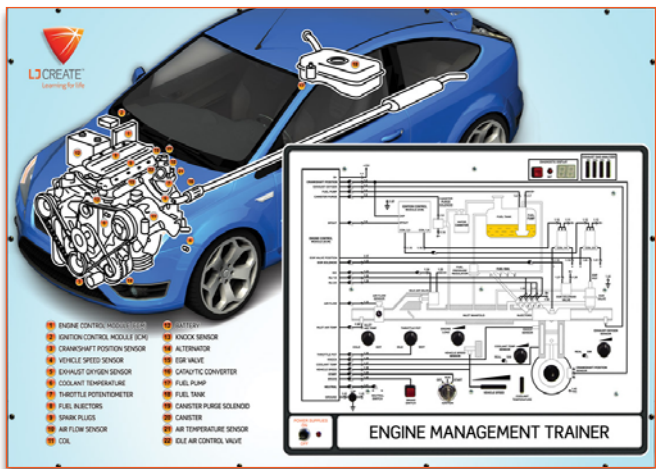
- Emission Control Systems
- Engine Management Systems
- Vehicle Diagnosis
- Fuel System Components and Operation
- Transducer Circuits and Components... and much more!

Hardware

The practical equipment resources for Heating and Air Conditioning, which help you teach automotive theory in a practical way, include:

- Engine Management Systems Panel Trainer
- Electronic Fuel Injection System (Dry)
- Electronic Fuel Injection System (Wet)
- [Duratec Engine \(CAN Control\) Trainer](#)
- [Duratec Engine \(CAN & Climate Control\) Trainer](#)
- [Toyota Yaris VVTI Engine Trainer](#)
- [Common Rail Diesel Engine \(CAN Control\) Trainer](#)
- [HDI Common Rail Fuel Injection System Trainer](#)
- [Sectioned 4-Cylinder Petrol Engine Trainer](#)
- [Sectioned Diesel Engine \(Common Rail\) Trainer](#)
- [Hybrid Vehicle Systems Panel Trainer](#)

Engine Management Systems Panel Trainer



This trainer provides students and instructors with the opportunity to demonstrate, investigate, and fault-find a simulation of a typical automotive engine management system.

The trainer is designed to allow access to a variety of test points for engine components and the ECU system, as well as provide an understanding of the overall system layout and configuration.

To facilitate the development of techniques in diagnostics and fault-finding skills, the panel includes a range of fault-insertion options to simulate typical real-world system malfunctions.

Typical Practical Activities Include:

- Engine management system fundamentals
- The Electronic Control Unit (ECU)
- Transducer circuits and components
- Transducer circuits and components – fault diagnosis
- Actuator circuits and components
- Actuator circuits and components – fault diagnosis
- The exhaust system
- Vehicle emissions
- Intake air temperature control systems
- Emission control
- Air-injection systems
- EGR systems
- EVAP systems

Order As: 751-01

Automotive Engine Performance Hardware

Electronic Fuel Injection System (Dry)



This real component trainer provides the instructor with a working multi-point fuel injection system for group or whole-class demonstration.

The system comprises all the elements that control the air-fuel ratio and the ignition timing, together with the ECU and all the sensors associated with the control system. Variation of the engine speed will allow the measurement of parameters within the system that are speed dependent. This is achieved by changing the rotational speed of the electric motor that drives the unit.

This is a dry-running system that uses electronic indicators to demonstrate injector operation.

The system also includes a range of switchable faults for diagnostics training.

Typical Practical Activities Include:

- LED readout to simulate electronic fuel injection system
- Operate components to see measurable outcomes
- Introduce faults operating outside expected parameters

Order As: 767-01

Electronic Fuel Injection System (Wet)



This real component trainer provides the instructor with a working multi-point fuel injection system for group or whole-class demonstration.

The system comprises all the elements that control the air-fuel ratio and the ignition timing, together with the ECU and all the sensors associated with the control system. Variation of the engine speed will allow the measurement of parameters within the system that are speed dependent. This is achieved by changing the rotational speed of the electric motor that drives the unit.

This is a wet-running system and incorporates a fuel tank.

The system also includes a range of switchable faults for diagnostics training.

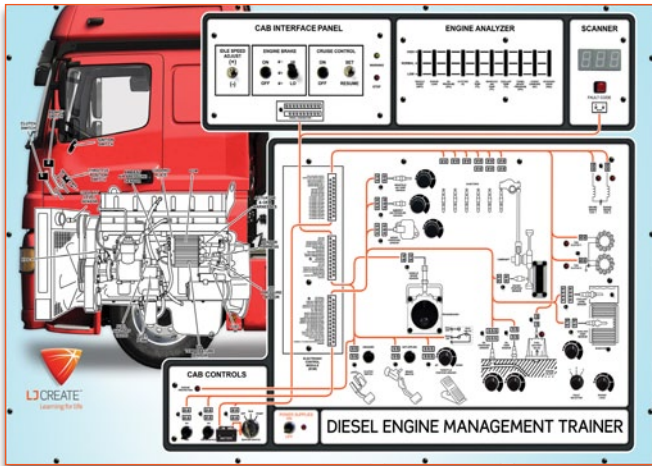
Typical Practical Activities Include:

- Identification of electronic fuel injection components
- Visual view of a functional electronic fuel injection system
- Fault finding electronic fuel injection
- Switched faults with real fault-finding exercises

Order As: 767-02

Automotive Medium/Heavy Vehicles Hardware

Diesel Engine Management Systems Panel Trainer



This trainer provides students and instructors with the opportunity to demonstrate, investigate and fault-find a simulation of typical diesel engine management systems.

The trainer is designed to allow access to a variety of test points for vehicle electrical components, as well as provide an understanding of the overall system layout and configuration.

To facilitate the development of techniques in diagnostics and fault-finding skills, the panel includes a range of fault insertion options to simulate typical real-world system malfunctions.

Typical Practical Activities Include:

- Diagnose faults involving digital sensors and switches
- Interpret voltage levels from a coolant level switch
- Diagnose faults with a fan clutch and fan switch
- Investigate an engine position sensor

Order As: 758-01

4-Cylinder HGV Common Rail Diesel Engine Trainer



This trainer provides the instructor with a complete working 4-cylinder heavy vehicle diesel engine with a Bosch EDC engine management system and high-pressure common rail fuel injection system.

The system comprises all the elements that control the air-fuel ratio, fuel injection, and exhaust emissions, together with the Bosch ECU and all the sensors and actuators associated with the control system.

The system has manually-inserted faults that allow the instructor to demonstrate troubleshooting techniques on a fully operational engine.

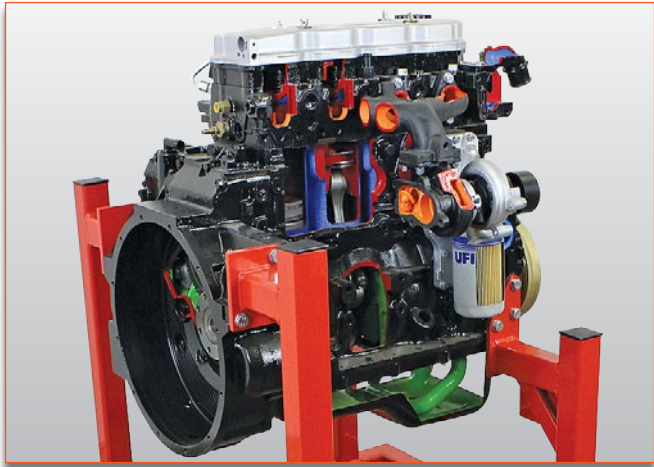
Typical Practical Activities Include:

- Identification of all engine components
- Engine management operation
- Engine management fault finding
- Switched faults with real fault-finding exercises

Order As: 776-01

Automotive Medium/Heavy Vehicles Hardware

Sectioned HGV Diesel Engine (4-Cylinder) Trainer



This trainer provides the instructor with a fully sectioned 4- cylinder truck diesel engine for group or whole-class demonstration.

The engine is operated by hand and is sectioned so that all moving components can be seen and the way they interact can be observed.

Typical Practical Activities Include:

- Identification of all main engine mechanical components
- Operation of a modern diesel engine
- Identification of fuel system mechanical components
- Identification and setting of fuel system components

Order As: 779-01

Sectioned HGV Gearbox Trainer



This trainer provides the instructor with a fully sectioned truck gearbox for group or whole-class demonstration.

The trainer is mounted on a self-contained steel frame and base plate, complete with castors.

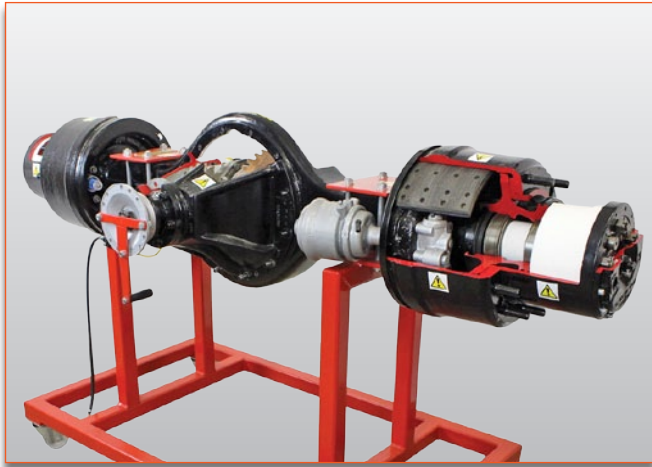
Typical Practical Activities Include:

- Identification of main gearbox mechanical components
- Operation of gearbox and reduction components
- Identification of crawler range components
- Identification of synchro hubs and selection components

Order As: 780-01

Automotive Medium/Heavy Vehicles Hardware

Sectioned HGV Rear Axle Trainer



This trainer provides the instructor with a fully sectioned truck rear axle, for group or whole-class demonstration.

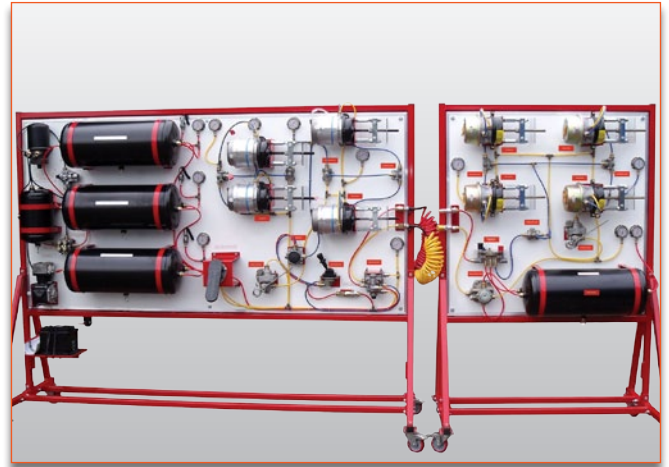
The trainer is mounted on a self-contained steel frame and base plate, complete with castors.

Typical Practical Activities Include:

- Identification of all rear axle mechanical components
- Operation of rear axle and double reduction components
- Identification and ratio of crown wheel and pinion
- Identification of brakes and brake components

Order As: 781-01

Air Brake Tractor/Trailer System Trainer



This comprehensive, panel-mounted system provides a fully operational 2-line air brake system, as fitted to a typical heavy vehicle tractor and trailer unit.

The trainer features quick-fit connectors over the whole board. By limiting the spring actuators at full travel (200mm) and by using 8mm pipes, system operation is slowed down to allow students to observe the full operation of the various components.

All the components used on this trainer are commonly available and are representative of a typical system used on medium- and heavy-duty trucks.

Typical Practical Activities Include:

- Identification of air brake system components
- Operation of air brake components
- Identification and adjustment of operating components
- Use system pressures to identify component serviceability

Order As: 778-01

Automotive Medium/Heavy Vehicles Hardware

Electronic Controlled Air Suspension Trainer



This trainer provides the instructor with a fully operational Electronically Controlled Air Suspension (ECAS) trainer, manufactured using original components.

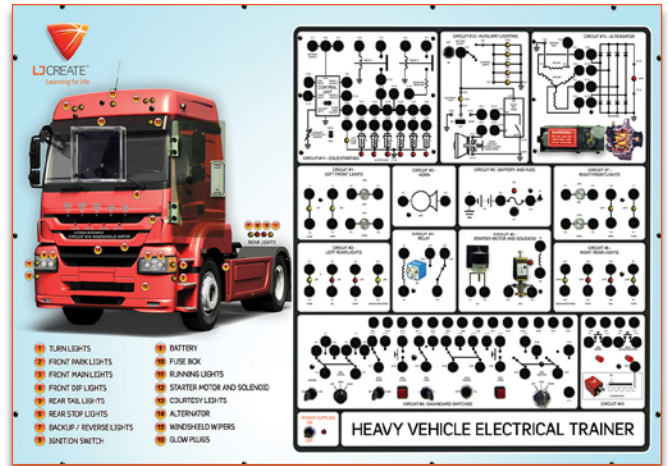
The trainer is mounted on a self-contained steel frame and base plate, complete with castors.

Typical Practical Activities Include:

- Identify electronic controlled air suspension components
- Operation of air suspension components
- Identification and adjustment of operating components
- Use electronic tools to check, test and set the system

Order As: 777-01

Heavy Vehicle Electrical Systems Panel Trainer



This trainer provides students and instructors with the opportunity to demonstrate, investigate and fault-find a simulation of typical diesel electrical systems.

The trainer is designed to allow access to a variety of test points for vehicle electrical components, as well as provide an understanding of the overall system layout and configuration.

To facilitate the development of techniques in diagnostics and fault-finding skills, the panel includes a range of fault-insertion options to simulate typical realworld system malfunctions.

Typical Practical Activities Include:

- Prove measurements on a starter and solenoid
- Diagnose faults in a horn and relay circuit
- Test the operation of a reverse light switch
- Construct a schematic diagram of a turn signal

Order As: 757-01



Inspiring and Exciting Learning Technologies

Pullman Academic is committed to helping Schools develop successful and engaging STEM (Science, Technology, Engineering and Mathematics) environments. We achieve this by:

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