

Creating skilled **automotive** engineers

Working with STEM

Complete Automotive Program

Aligned to ASE

Knowledge and Skills Lessons



Working with STEM

→ **AutoLab**

Age 16+



→ Welcome

We're LJ Create, Education Specialists since 1979

Since 1979 we have been providing award winning, world-class active learning solutions for technical education.

Today we create complete systems combining digital lesson libraries and tailor-made hardware kits that deliver **innovative, inspiring learning** in science, technology, automotive, and engineering.

At LJ Create our mission is to enable learners throughout the world to achieve their full potential in a wide range of science and engineering areas by providing innovative teaching solutions for schools and further education.

AutoLab has been one of our flagship learning programs since 2001. Now we are relaunching AutoLab alongside **Working with STEM**, our brand-new cloud-based library of over 4,300 vocational lessons.

The AutoLab program is **a complete system of hardware and software for teaching automotive repair skills to ASE standards**. Alternatively, our high-tech trainers and unique simulators could make a fantastic addition to an existing program in your high school or college.

Our skilled team of curriculum developers are automotive specialists; they produce up-to-date lesson plans, materials and assessments to make teaching and documentation easy.

To find out more about our hardware range of operational auto rigs, electronic panel trainers, sectioned trainers and more, please turn to **page 8**. If you want to see how our learning program aligns with ASE standards, you can read more on **page 4**. Or, if you'd like to find out about our collection of lessons, please take a look at **page 6**.

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Pull-out Section (Center Pages)

- ASE Crosswalk

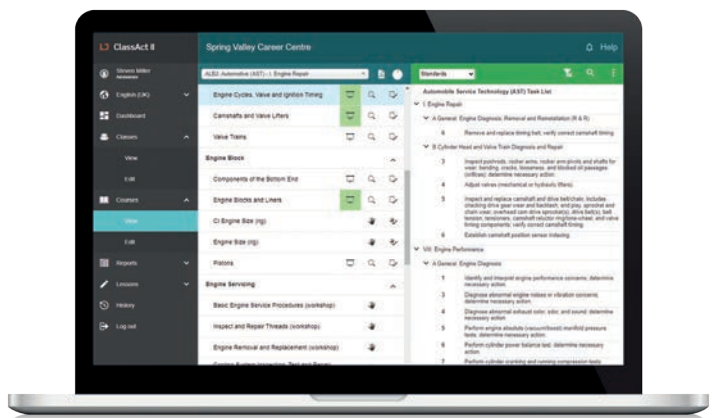


→ AutoLab and ASE

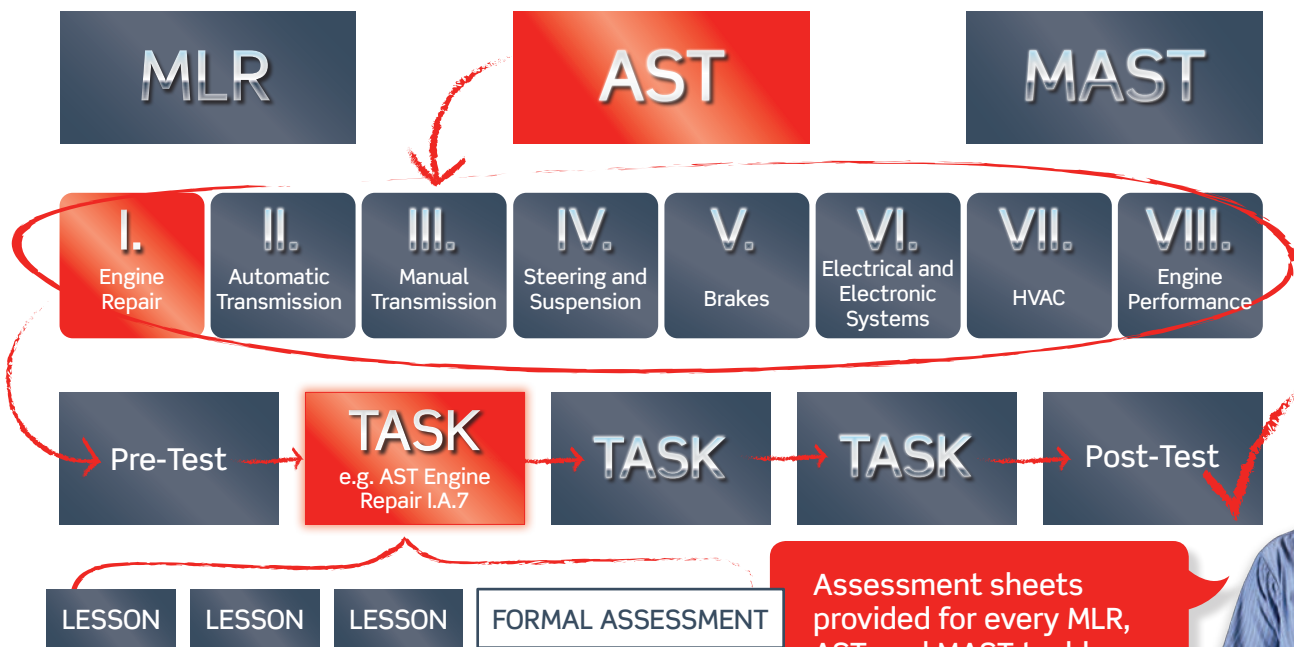
AutoLab and ASE: your learning journey

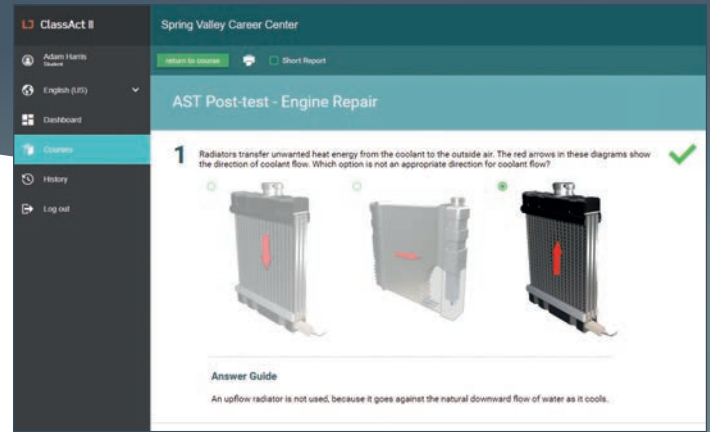
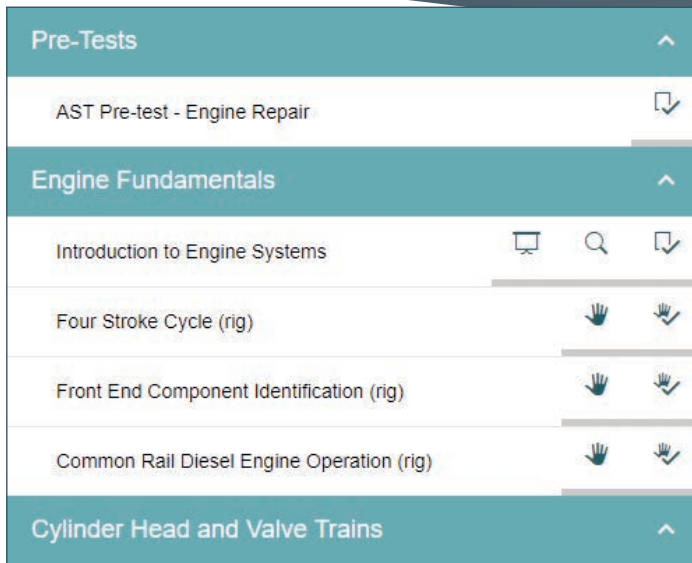
Inspired by ASE's specific tasks and learning outcomes, the **AutoLab learning journey** equips your students with the skills, knowledge, and experience they need to become successful auto technicians.

The AutoLab learning journey follows the ASE framework at every level; MLR, AST and MAST. In each subject area, for example Engine Repair, your AutoLab journey begins with the specific **tasks** and **learning outcomes** defined by ASE.



THE ASE LEARNING JOURNEY





AutoLab guides students through each lesson in the task, e.g. AST Engine Repair I.A.7, with a series of **Knowledge Lessons** in the form of presentations, simulations and investigations to reinforce a theoretical understanding of the subject area. At this point, you can confirm your students' knowledge with a short assessment.

Once students are confident, they can move on to practical **Skills Lessons** in the classroom or shop, using our operational auto rigs, panel trainers, circuit trainers, sectioned trainers, and shop activities including workshop job sheets.

Again, you can confirm your students' knowledge with a short assessment. The process repeats with the next lesson in the task.

When ready, students complete their **formal assessment** to conclude the task.

TYPICAL AUTOLAB LESSON



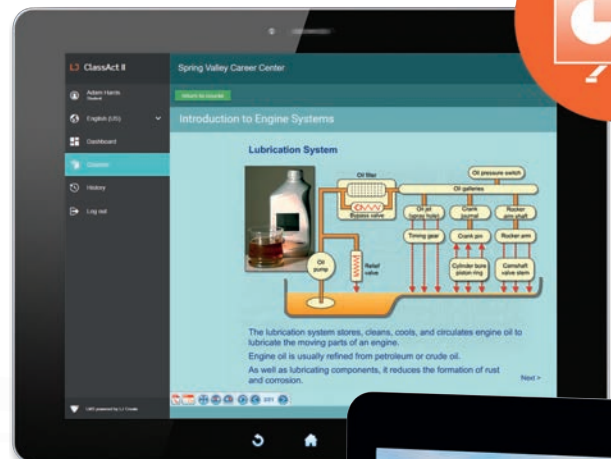
→ Knowledge Lessons

The AutoLab digital library

The AutoLab **digital library** is a comprehensive resource for all the theory behind ASE's specified subject areas. Students can access the library through an online portal; no specialist software or downloads are needed. An Internet connection and browser is all they require to access our collection of **Knowledge Lessons**.

Our Knowledge Lessons consist of **Presentations** for use in front of a class, or for students to refresh their knowledge individually; **Investigations** where students can put knowledge into practice with tasks and challenges; and **Assessments**, short quizzes with instant feedback so you can be confident that your students are ready to progress.

Presentations



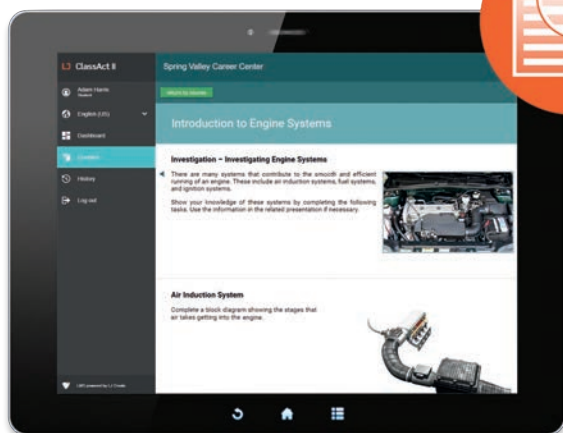
Simulators



Simulators

As well as lessons, our library includes several unique simulators of vehicle systems such as Hybrid Engines and CAN bus systems.



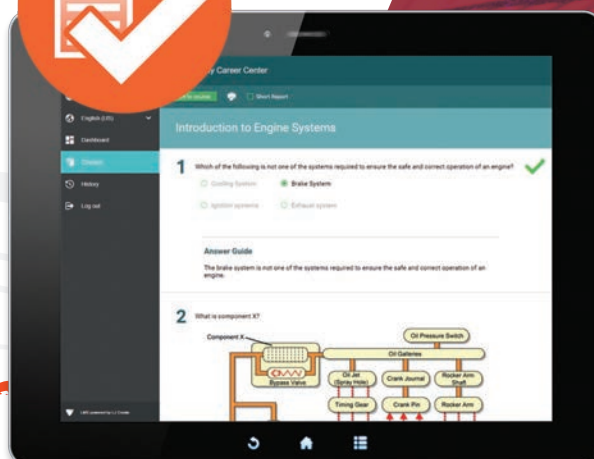


Standards

Support and Standards

It's easy to see where our lessons align with ASE: just use the Standards menu on the right to filter lessons by ASE level, subject and task.

We also include academic support in the science and math concepts relating to each subject area. Just click on the Support tab for supporting lessons.



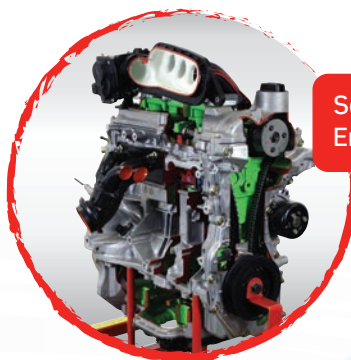
→ Skills Lessons

Guide your students from the classroom to the shop

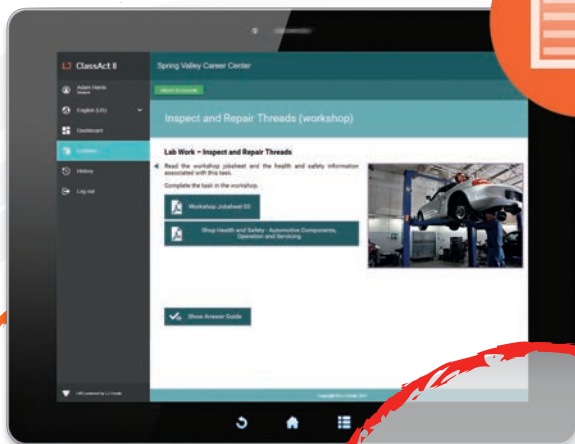
What is involved in maintaining and repairing a modern vehicle? All modern cars use a complex CAN Bus network to control all of their electrical systems, from raising and lowering a window to stopping and restarting the engine automatically to save fuel. This level of complexity requires new skills to be learned by today's automotive students. In addition, the importance of traditional, hands-on mechanical knowledge and skills has not diminished.

Our **Skills Lessons** are also found in our AutoLab Digital Library, and consist of practical activities that can be undertaken on our range of automotive training equipment, as well as shop job sheets, and health and safety guidelines.

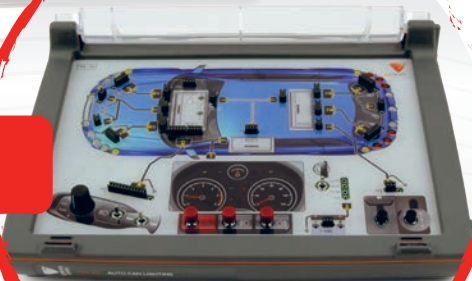
Practical Tasks



Sectioned Gasoline Engine Trainer (p.24)



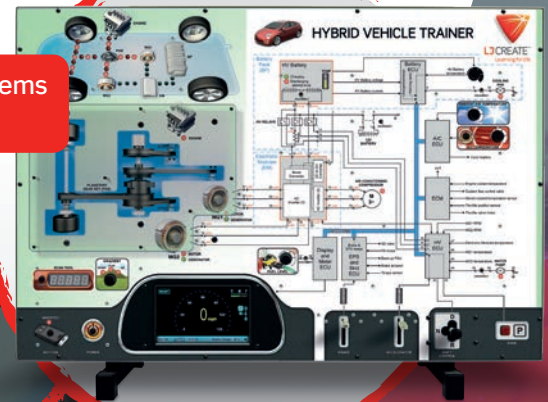
Modern Auto Lighting Circuits Trainer (p.11)



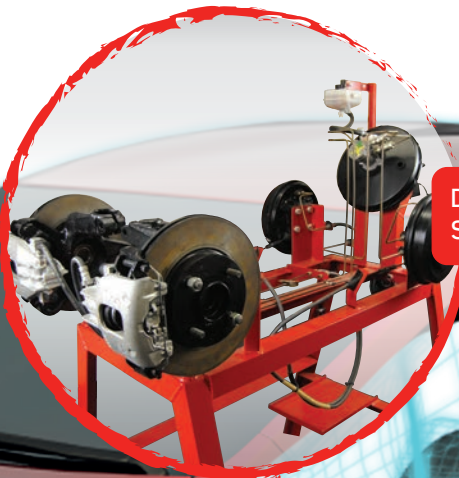
Our training equipment ranges from cut-away **sectioned trainers** that allow students to see what is happening inside working components, to desktop **trouble-shooting trainers and electronic panel trainers** that simulate complex automotive systems, through to fully-functioning **operational auto rigs and vehicle trainers**.

We don't just cater to light vehicles, please see page 30 for equipment for medium and heavy vehicle training.

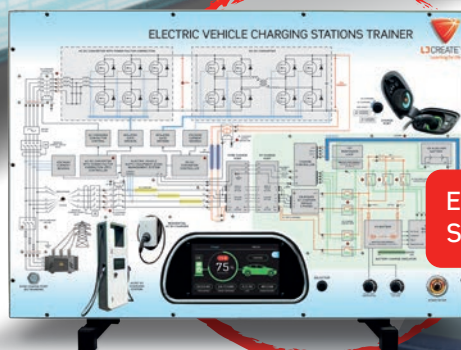
Hybrid Vehicle Systems Panel Trainer (p.14)



Disc and Drum Braking System Trainer (p.17)



Electric Vehicle Charging Stations Panel Trainer (p.28)



Light Vehicle Autotronics Circuit Trainers

Our range of autotronics trainers present **a practical approach to theoretical learning**. Your students can confidently develop diagnostic skills from the safety of the classroom. Faults can be introduced to the system of each trainer via a fault code, which highlights the area that should be investigated in order to solve the problem. The trainers are protected with a hinged cover and are stackable for easy storage.

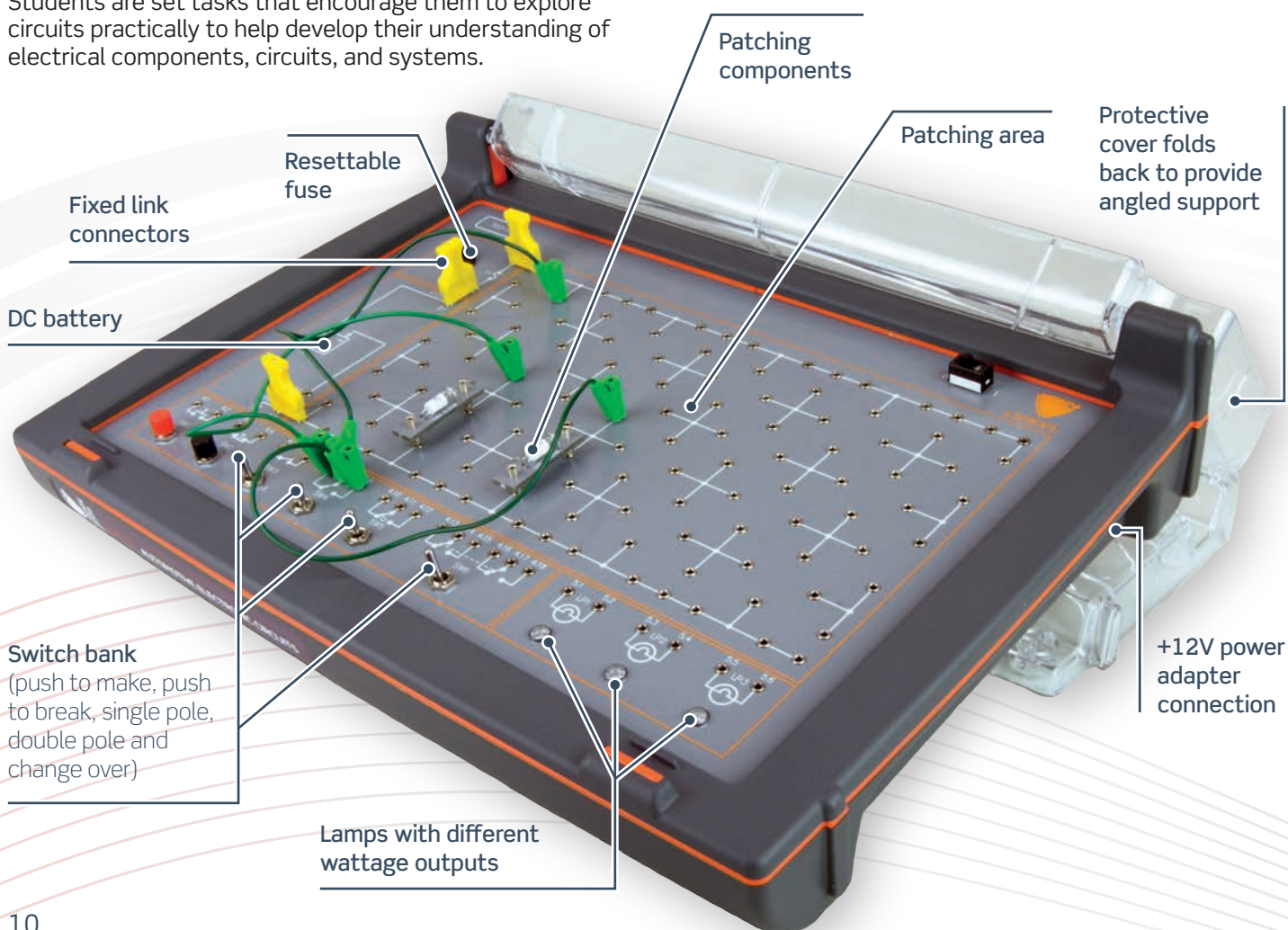
Auto Electronics Trainer (700-10)

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.

Order as:

- 700-10 Auto Electronics Trainer



Modern Auto Lighting Circuits Trainer (701-02)

Our autotronics trainers are designed to provide a practical approach to theoretical learning. Students are set tasks that encourage them to explore CAN controlled lighting circuits practically and improve their knowledge of electrical components, circuits, signals and systems.

Order as:

- 701-02 Modern Auto Lighting Circuits Trainer



Modern Starting and Charging Systems Trainer (720-02)

This trainer 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.

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

Order as:

- 720-02 Modern Starting and Charging Systems Trainer



Modern Auxiliary Systems Trainer (721-01)

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, encouraging fault-diagnosis skills.

Order as:

- 721-01 Modern Auxiliary Systems Trainer



Light Vehicle Autotronics Panel Trainers

Our innovative computer-linked panel trainers give students and instructors the opportunity to **demonstrate and investigate a range of simulated vehicle operations**. These trainers are designed to be used in a classroom environment with test points at a safe voltage level.

To facilitate the development of diagnostic and fault-finding skills, these panels include a range of fault insertion options to simulate typical real-world system malfunctions. Your students can perform troubleshooting tasks on the system using diagnostic equipment.

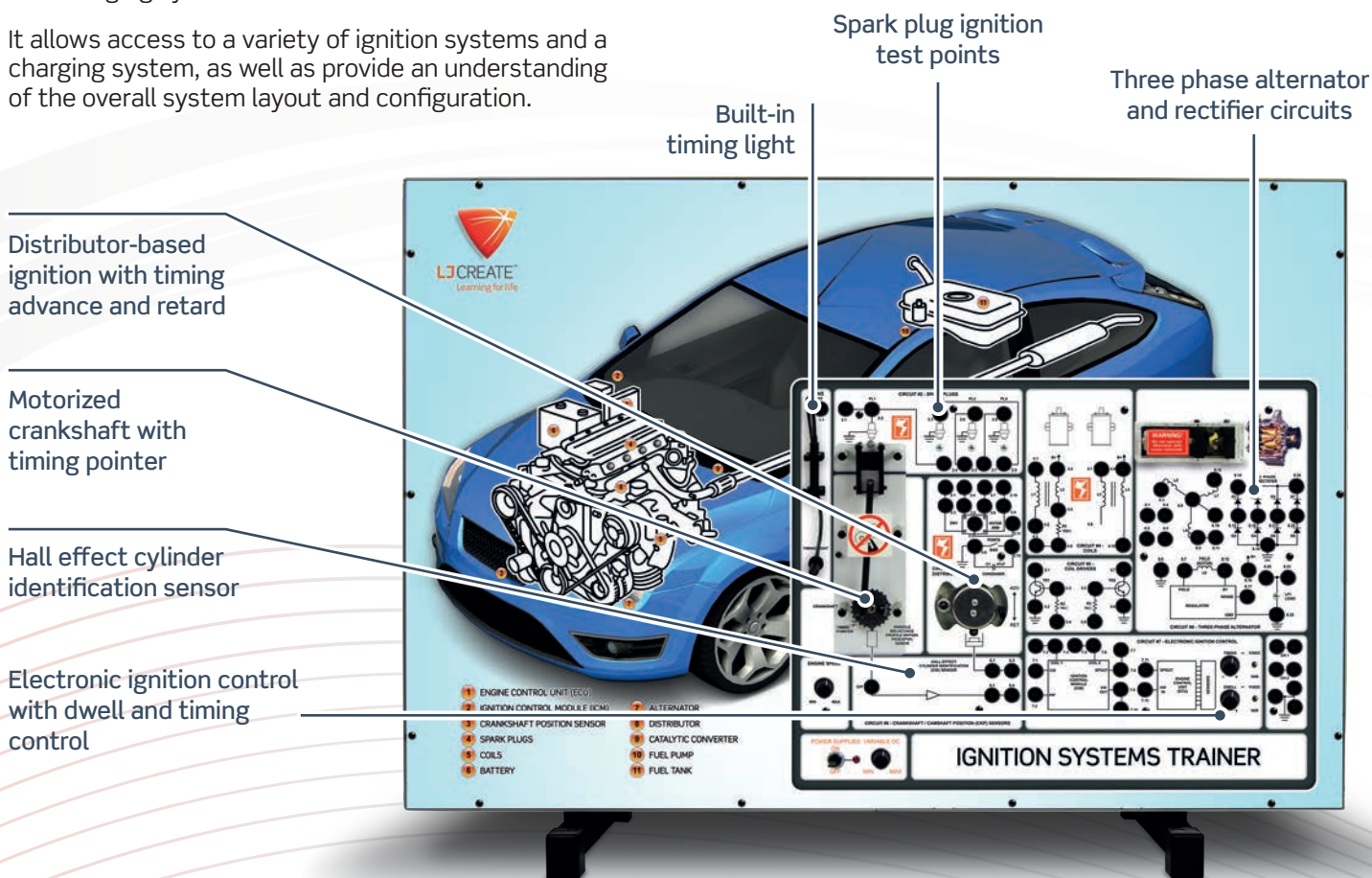
Ignition and Charging Systems Panel Trainer (750-01)

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

It allows access to a variety of ignition systems and a charging system, as well as provide an understanding of the overall system layout and configuration.

Order as:

- 750-01 Ignition and Charging Systems Panel Trainer



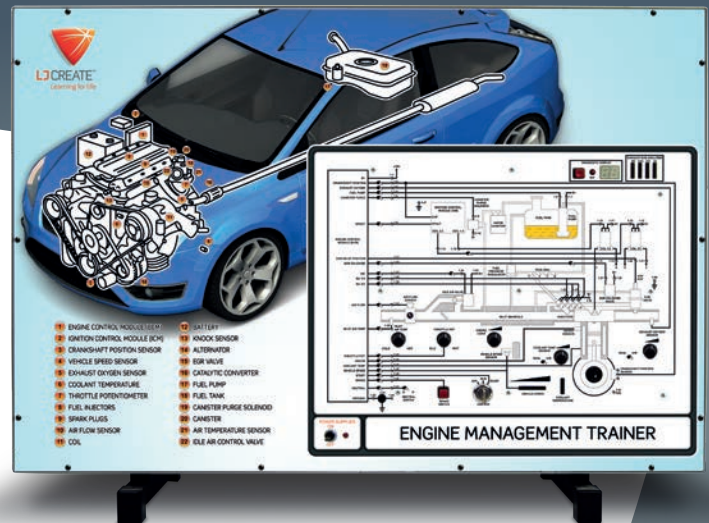
Engine Management Systems Panel Trainer (751-01)

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

It allows access to a variety of test points for engine components and the ECU system, and provides an understanding of the overall system layout and configuration.

Order as:

- 751-01 Engine Management Systems Panel Trainer



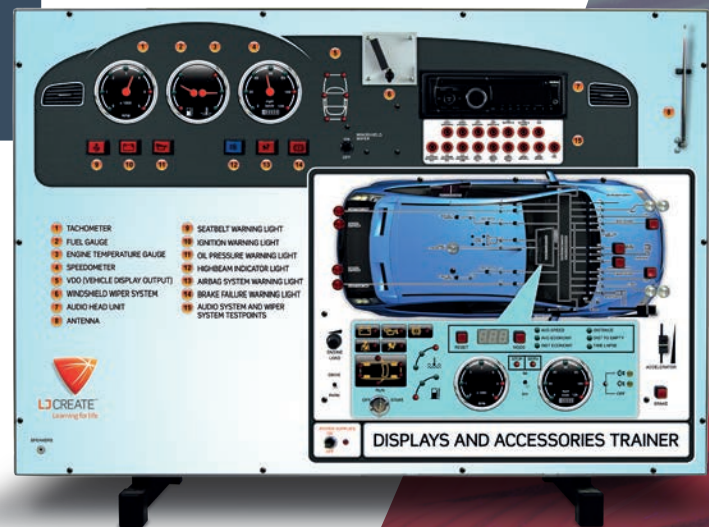
Displays and Accessories Systems Panel Trainer (752-01)

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.

Order as:

- 752-01 Displays and Accessories Systems Panel Trainer



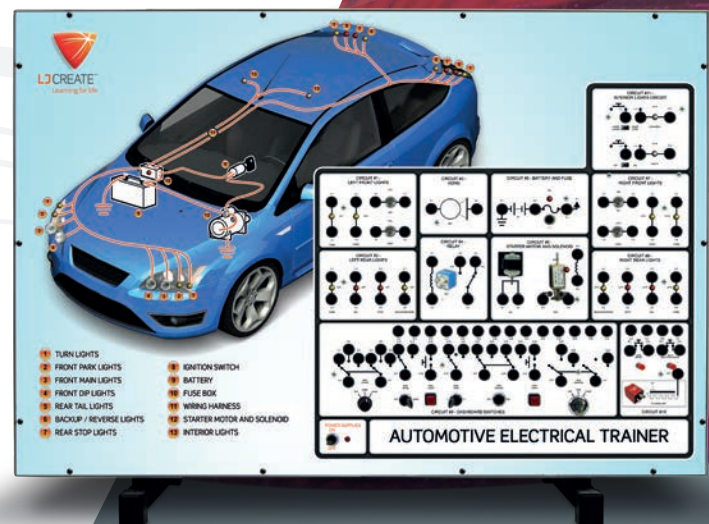
Automotive Electrics Panel Trainer (753-01)

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

Order as:

- 753-01 Automotive Electrics Panel Trainer



Light Vehicle Autotronics Panel Trainers

Hybrid Vehicle Systems Panel Trainer (756-01)

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.

Order as:

- 756-01 Hybrid Vehicle Systems Panel Trainer

Power flow mimic allows students to investigate the balance between electrical and internal combustion power

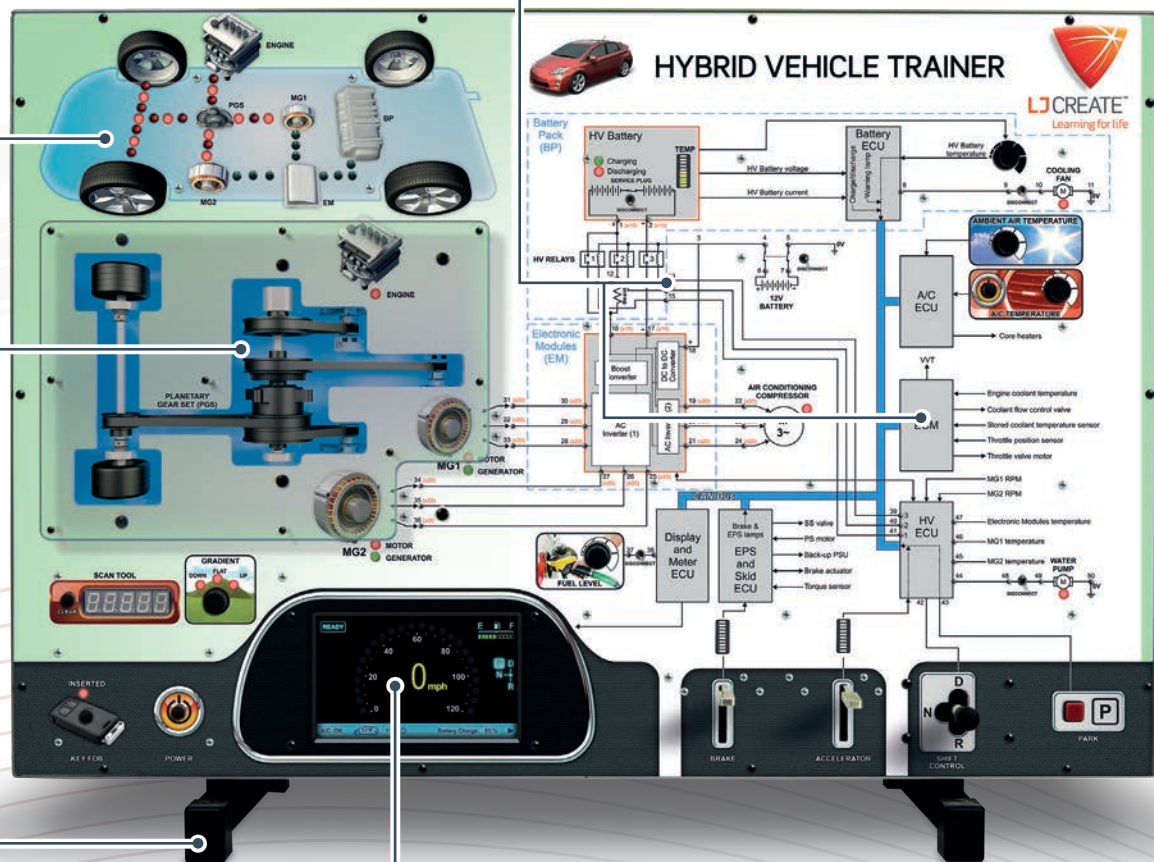
High and Low voltage system test points

Fault insertion options to simulate real-world system malfunctions

Planetary gear set

Retractable feet for desktop use (can also be wall-mounted)

Dashboard display



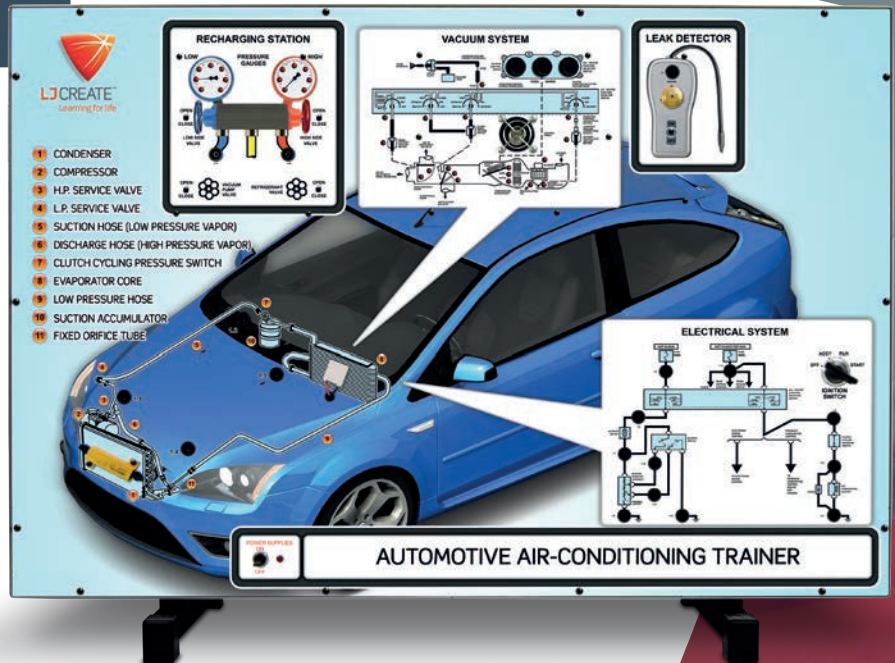
Air Conditioning Systems Panel Trainer (754-01)

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.

Order as:

- 754-01 Air Conditioning Systems Panel Trainer



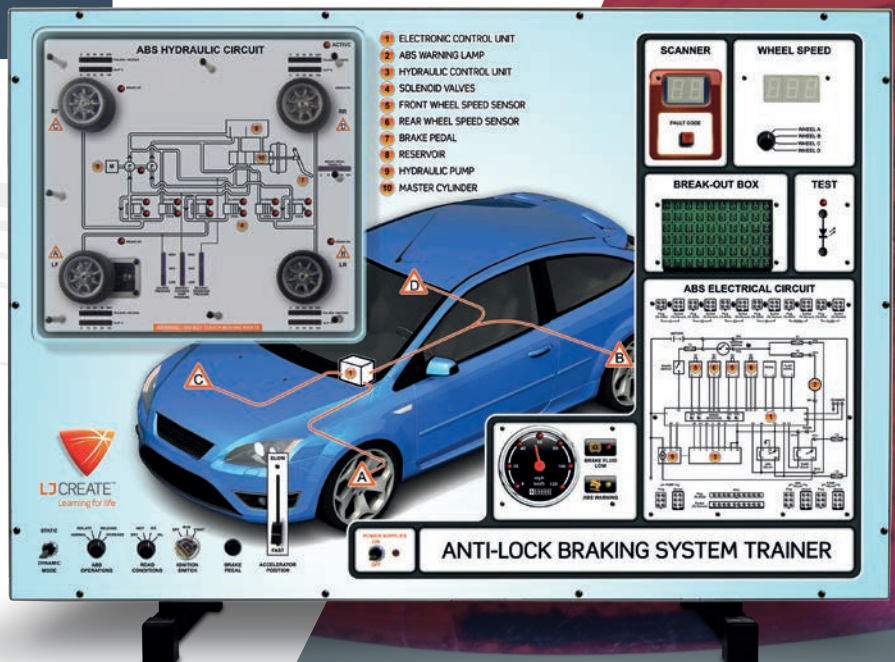
Anti-Lock Braking Systems Panel Trainer (755-01)

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.

Order as:

- 755-01 Anti-Lock Braking Systems Panel Trainer



Light Vehicle System and Component Rigs

Many automotive technology concepts are best taught using **fully functioning vehicle component rigs**, where an instructor can show students a wide variety of diagnostic and maintenance techniques.

Your students are able to perform tasks on systems without the need for a complete vehicle. In some cases, this means practical tasks can also take place in the classroom.

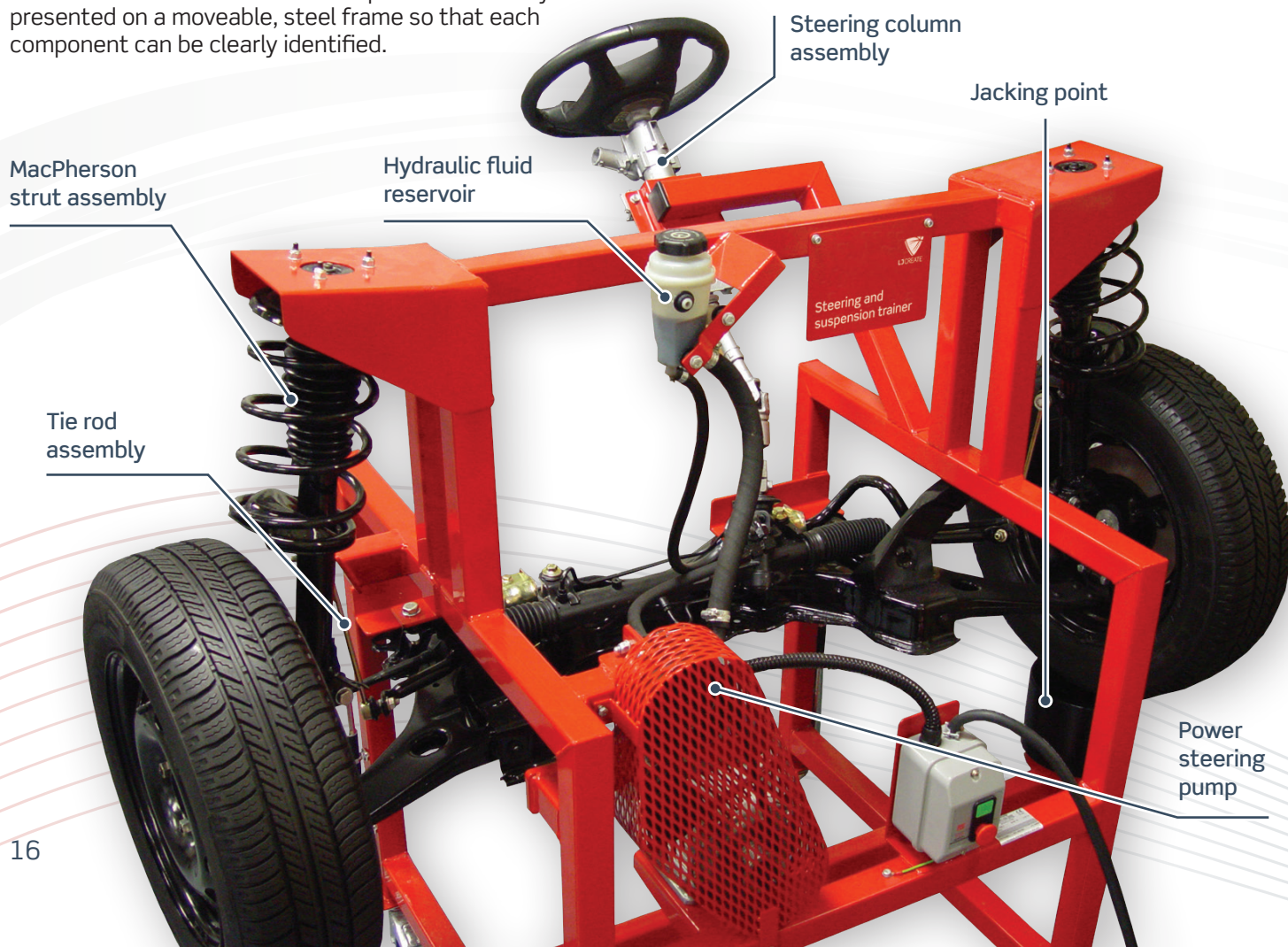
Steering and Suspension System Trainer (764-01)

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

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

Order as:

- 764-01 Steering and Suspension System Trainer



Light Vehicle

ASE Crosswalk

Do you want to find out exactly where our light vehicle hardware aligns to the ASE tasks you need to teach? The ASE crosswalk is for you!

Simply pull it from the centerfold, and use it to match our light vehicle equipment to the relevant ASE tasks.

				Panel Trainers		System Rig	Sectioned Rigs			
				p. 13	p. 14	p. 19	p. 24	p. 25	p. 25	p. 25
				752-01	756-01	765-01	772-01	773-01	774-01	775-01
I. Engine Repair	MLR	AST	MAST				•	•		
	1.A.1	1.A.2	1.A.2	•			•	•		
	1.A.2	1.A.3	1.A.3				•	•		
	1.A.3	1.A.4	1.A.4				•			
	1.A.5	1.A.6	1.A.6				•			
		1.B.1	1.B.1				•			
		1.B.2	1.B.2				•			
		1.B.3	1.B.3				•			
	1.B.1	1.B.4	1.B.4				•			
		1.B.5	1.B.5				•			
			1.B.10				•	•		
			1.B.11				•	•		
			1.B.13				•			
			1.C.2				•	•		
			1.C.3				•	•		
			1.C.6				•			
			1.C.7			•	•	•		
			1.C.8				•	•		
			1.C.12				•	•		
			1.C.13				•			
			1.C.14				•	•		
	1.C.1	1.D.1	1.D.1	•						
	1.C.2	1.D.3	1.D.3				•			
		1.D.9	1.D.9	•						
		1.D.12	1.D.12	•						
II. Automatic Transmission		2.C.1	2.C.1							•
		2.C.3	2.C.3							•
	2.C.2	2.C.5	2.C.5		•					
			2.C.6							•
			2.C.13							•
			2.C.15							•
III. Manual Transmission			2.C.19							•
		3.C.1	3.C.1						•	
			3.C.3						•	
			3.C.4						•	
			3.C.6						•	
	3.E.1	3.E.1	3.E.1						•	
			3.E.6						•	
			3.E.7						•	
			3.E.11						•	
			3.E.12						•	

Light Vehicle

ASE Crosswalk

				Panel Trainers			System Rigs		
				p. 13	p. 13	p. 15	p. 17	p. 16	p. 23
IV. Suspension and Steering	MLR	AST	MAST	751-01	752-01	755-01	763-01	764-01	784-01
			4.A.2					•	
	4.B.8							•	
	4.A.2	4.B.1	4.B.1						•
		4.B.2	4.B.2					•	•
		4.B.3	4.B.3					•	
		4.B.5	4.B.5					•	
		4.B.6	4.B.6					•	
		4.B.7	4.B.7					•	
		4.B.8	4.B.8					•	
		4.B.9	4.B.9					•	
		4.B.10	4.B.10					•	
		4.B.11	4.B.11					•	
		4.B.17	4.B.17					•	
		4.C.6	4.C.6					•	
		4.C.10	4.C.10					•	
		4.D.1	4.D.1					•	
V. Brakes		5.A.0	5.A.1		•		•		
	5.A.1	5.A.3	5.A.3			•			
	5.B.1	5.B.2	5.B.2			•			
		5.B.10	5.B.10		•				
	5.B.5	5.B.11	5.B.11		•	•			
	5.C.1	5.C.2	5.C.2				•		
	5.C.3	5.C.4	5.C.4				•		
	5.C.5	5.C.6	5.C.6				•		
	5.D.1	5.D.2	5.D.2				•		
	5.D.2	5.D.3	5.D.3				•		
	5.D.3	5.D.4	5.D.4				•		
	5.D.4	5.D.5	5.D.5				•		
	5.D.5	5.D.6	5.D.6				•		
	5.D.6	5.D.7	5.D.7				•		
	5.F.2	5.F.3	5.F.3				•		
	5.F.4	5.F.5	5.F.5			•			
		5.G.1	5.G.1			•			
			5.G.8	•		•			





Light Vehicle

ASE Crosswalk

				Panel Trainers		System Rigs		
				p. 13	p. 13	p. 18	p. 19	p. 21
VIII. Engine Performance	MLR	AST	MAST	752-01	751-01	760-02	765-01	767-02
		8.A.1	8.A.1			•		
	8.A.1	8.A.2	8.A.2			•		
		8.A.3	8.A.3			•		
	8.A.6				•			
		8.A.9	8.A.9			•		
		8.A.10	8.A.10	•	•			
	8.B.1	8.B.1	8.B.1		•			
		8.B.3	8.B.3			•		
			8.B.5			•		•
			8.B.6			•		
			8.B.7	•		•		•
		8.C.1	8.C.1		•	•	•	•
		8.C.2	8.C.2		•		•	
		8.C.3	8.C.3		•			
			8.D.1		•	•		•
		8.D.2	8.D.3		•	•		•
	8.C.2	8.D.4	8.D.5			•		
		8.D.6	8.D.7		•	•		•
		8.D.7	8.D.8		•			
		8.E.5	8.E.8		•			



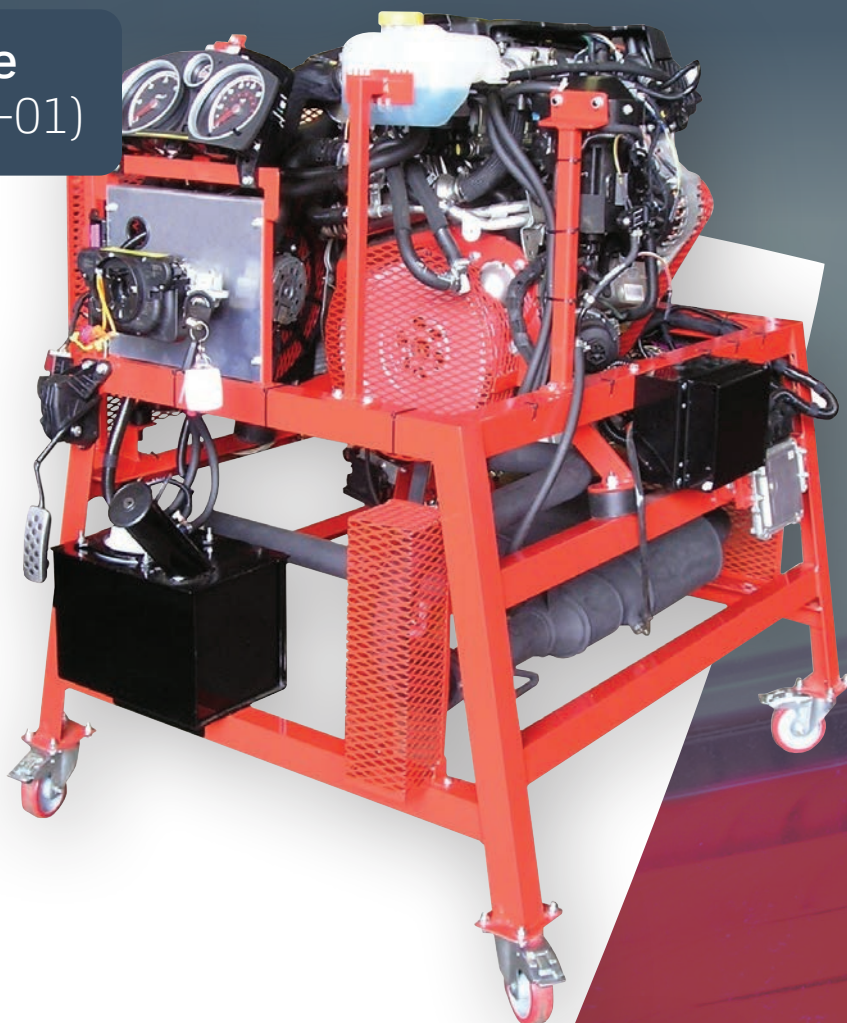
Common Rail Diesel Engine (CAN Control) Trainer (762-01)

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

It 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.

Order as:

- 762-01 Common Rail Diesel Engine (CAN Control) Trainer



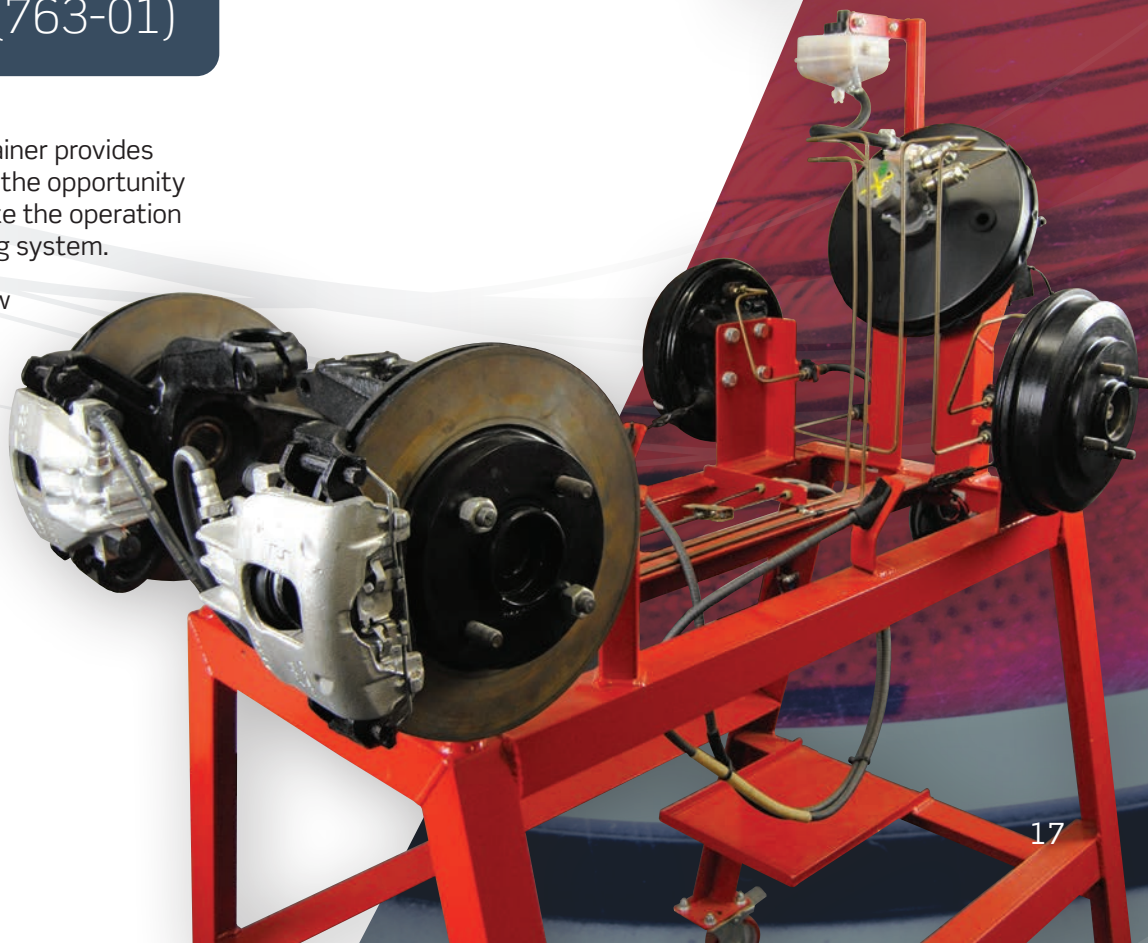
Disc and Drum Braking System Trainer (763-01)

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 disc and drum brake components, as well as providing the opportunity to understand the operation of the hydraulic circuit.

Order as:

- 763-01 Disc and Drum Braking System Trainer



→ Light Vehicle System and Component Rigs

Gasoline Engine (CAN and Climate Control) Trainer (760-02)

This trainer provides a complete working engine with an engine management system incorporating CAN bus control technology. It also includes a fully-functional climate control system for group or whole-class demos.

The engine incorporates the very latest twin independent variable camshaft timing (Ti-VCT) technology to optimize performance, reduce emissions and increase fuel efficiency.

Order as:

- 760-02 Gasoline Engine (CAN and Climate Control) Trainer

Air conditioning controls

Heater and air conditioning unit

Mesh guard for hot components

Easy access to most major/minor components

Exhaust (Silencer/muffler for quiet operation)

Pin out connectors for all main sensors and actuators

Fully operational engine

Mesh guards cover moving parts

Distributorless Ignition System Trainer (765-01)

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.

Order as:

- 765-01 Distributorless Ignition System Trainer



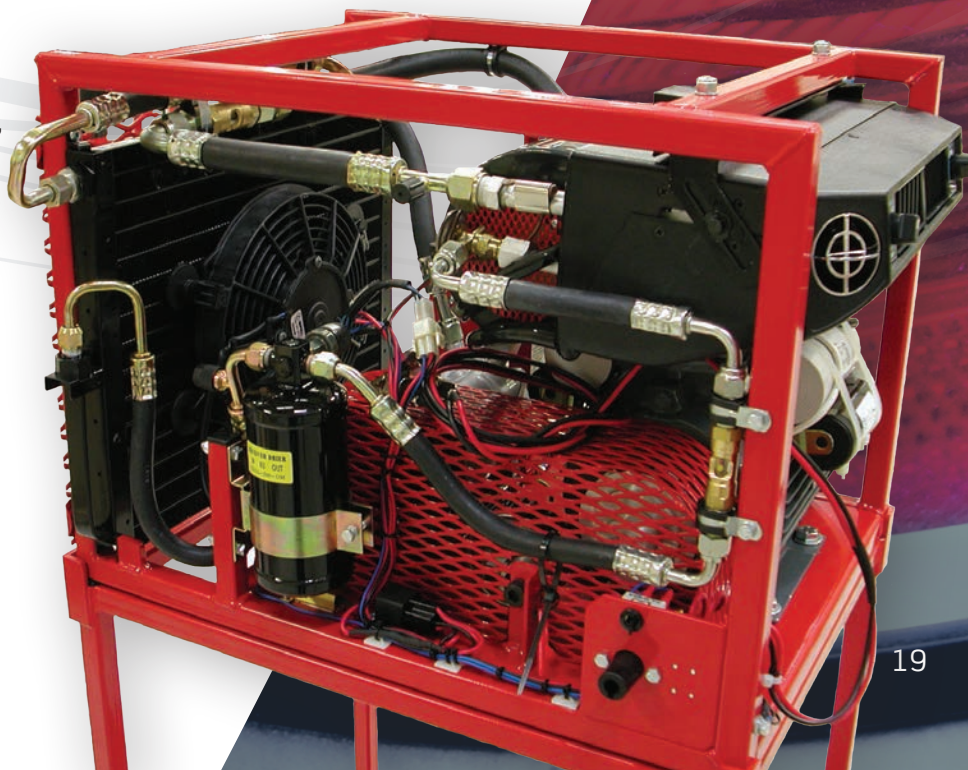
Air-Conditioning System Trainer (766-01)

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.

Order as:

- 766-01 Air-Conditioning System Trainer



Light Vehicle System and Component Rigs

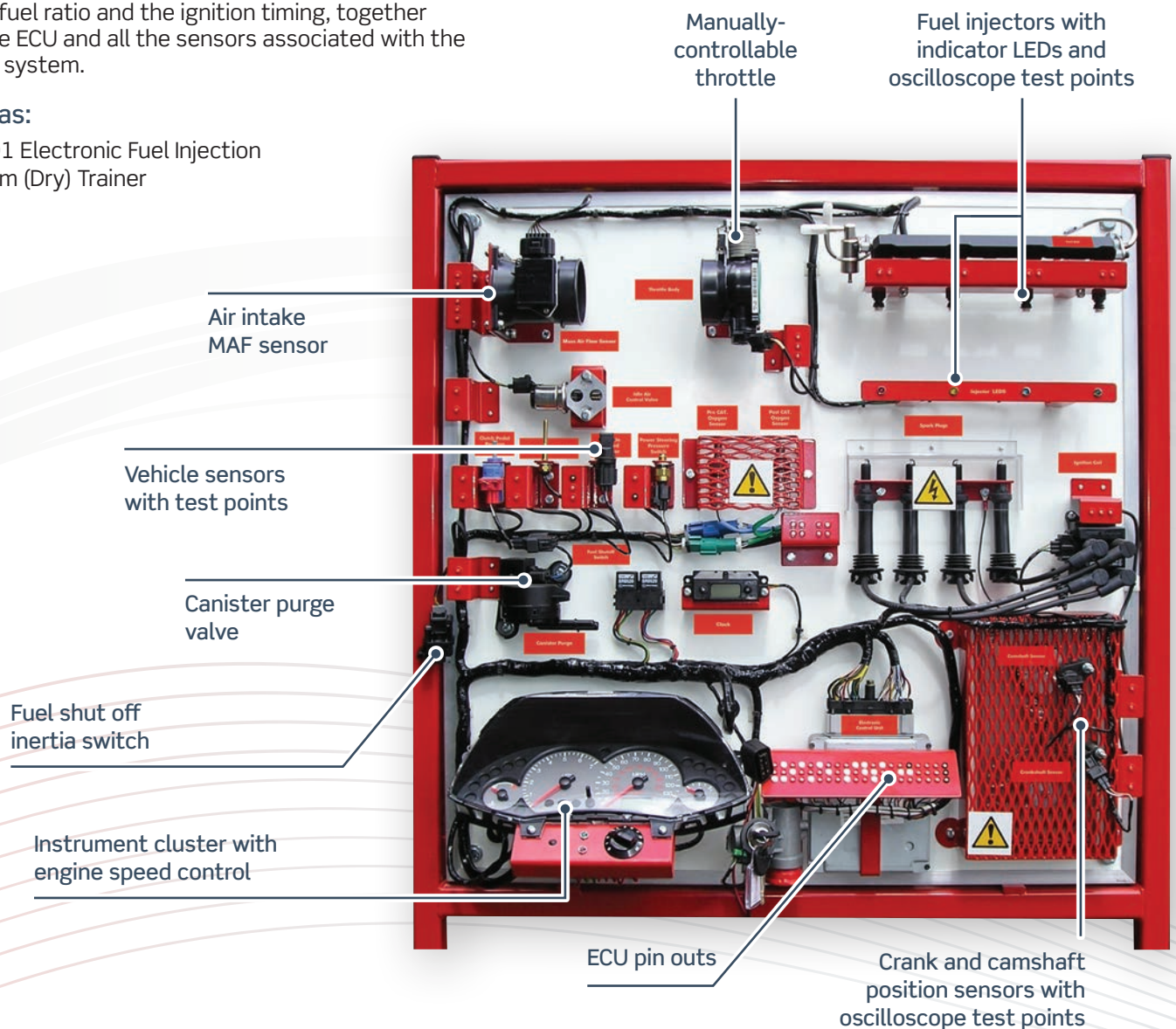
Electronic Fuel Injection System (Dry) Trainer (767-01)

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.

Order as:

- 767-01 Electronic Fuel Injection System (Dry) Trainer



Electronic Fuel Injection System (Wet) Trainer (767-02)

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.

Order as:

- 767-02 Electronic Fuel Injection System (Wet) Trainer



Anti-Lock Braking System (Bosch) Trainer (769-01)

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.

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

Order as:

- 769-01 Anti-Lock Braking System (Bosch) Trainer



Light Vehicle System and Component Rigs

Vehicle Electrical System Trainer (770-01)

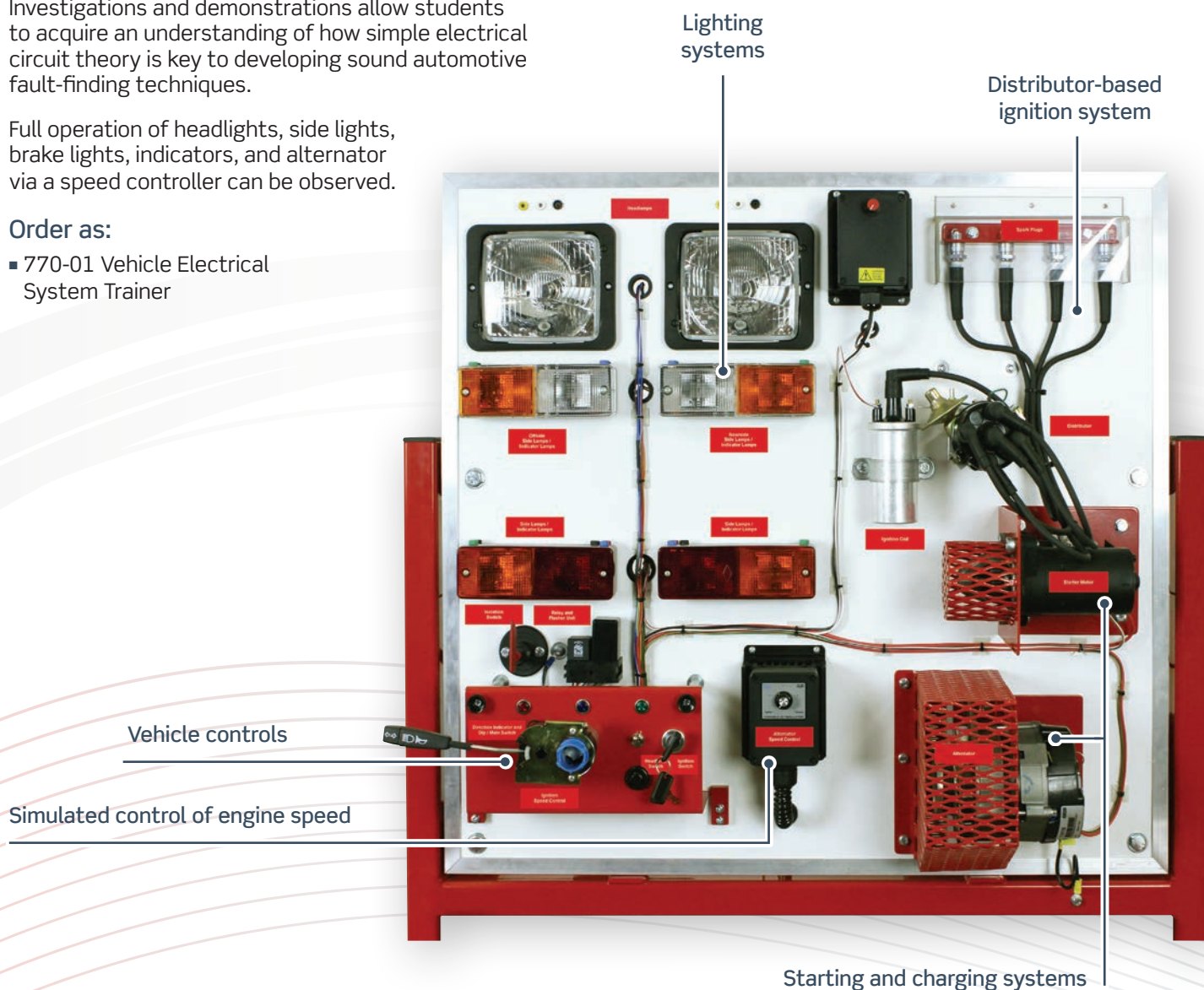
This real component trainer offers a fully operational automotive electrical system designed for teaching basic electrical principles.

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.

Order as:

- 770-01 Vehicle Electrical System Trainer



HDI Common Rail Fuel Injection System Trainer (771-01)

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.

Order as:

- 771-01 HDI Common Rail Fuel Injection System Trainer



Supplemental Restraint System Trainer (784-01)

This trainer comprises real vehicle components that have been made safe for a classroom or shop environment, using charges that have either been pre-deployed or replaced with safe replica charges.

The components have been carefully sectioned and dismantled to show students the various elements that make up the system.

Order as:

- 784-01 Supplemental Restraint System Trainer



Light Vehicle Sectioned Component Rigs

Exposing the inner workings of components provides a safe and accessible way of viewing how complex systems are constructed – **key components are color-coded for easy identification.**

Our cut-aways are fitted with hand cranks to enable students and teachers to see how components interact with each other to create a fully working system. These sectioned rigs are ideal for classroom demonstrations, or you could use them in the shop as a handy reference for students.

Sectioned 4-Cylinder Gasoline Engine Trainer (772-01)

This trainer provides the instructor with a complete 4-cylinder gasoline engine for group or whole-class demonstration. Mounted on a movable, heavy-duty steel frame.

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

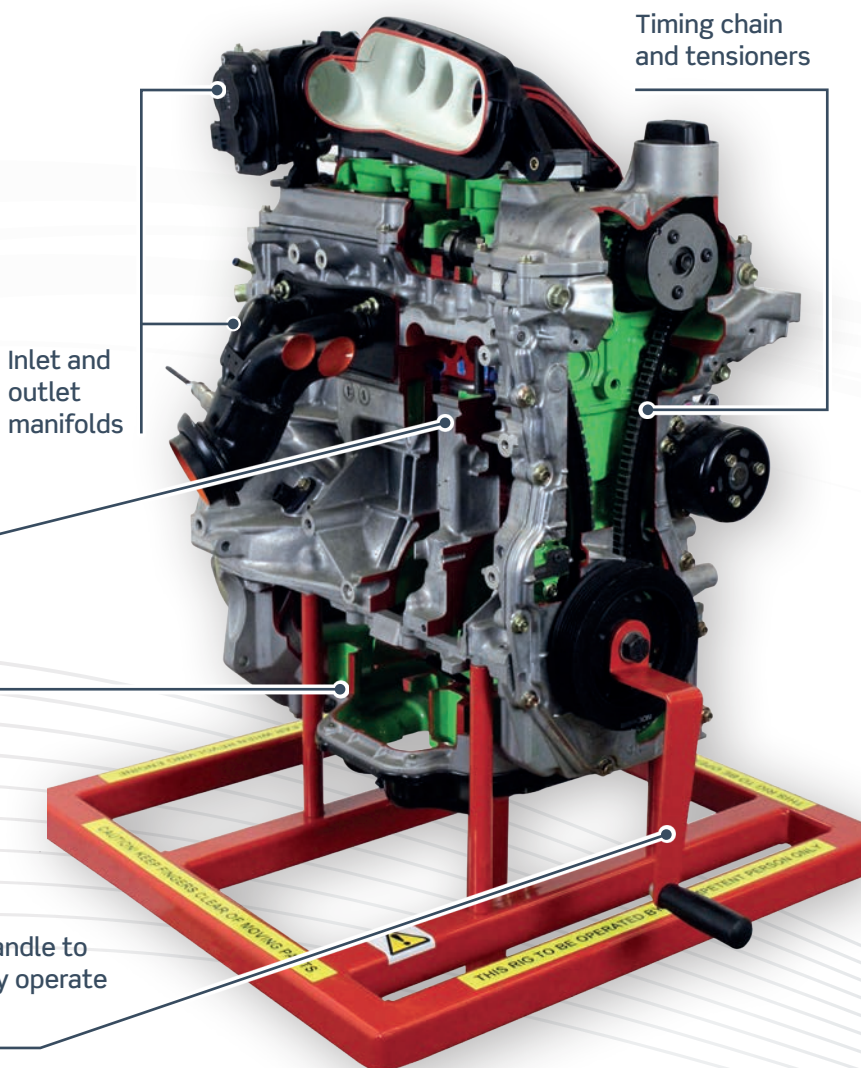
Order as:

- 772-01 Sectioned 4-Cylinder Gasoline Engine Trainer

Cross-sectioned cylinder to show operation of piston and valves

Color-coded sections to show inlet, exhaust, oil, and water pathways

Crank handle to manually operate engine



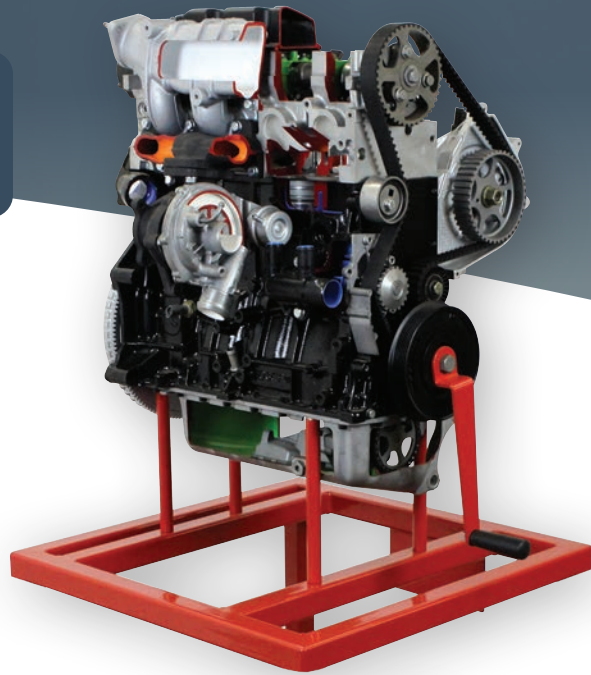
Sectioned Diesel Engine (Common Rail) Trainer (773-01)

This trainer provides the instructor with a complete 4-cylinder diesel engine for group or whole-class demonstration, mounted on a movable, heavy-duty steel frame.

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

Order as:

- 773-01 Sectioned Diesel Engine (Common Rail) Trainer



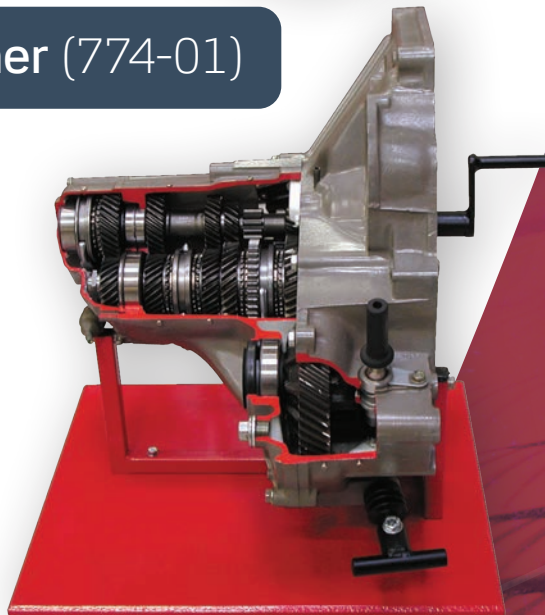
Sectioned Manual Gearbox Trainer (774-01)

This trainer provides the instructor with a complete manual gearbox for group or whole-class demonstration, mounted on a steel plate for use on a shop bench or classroom desk.

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.

Order as:

- 774-01 Sectioned Manual Gearbox Trainer



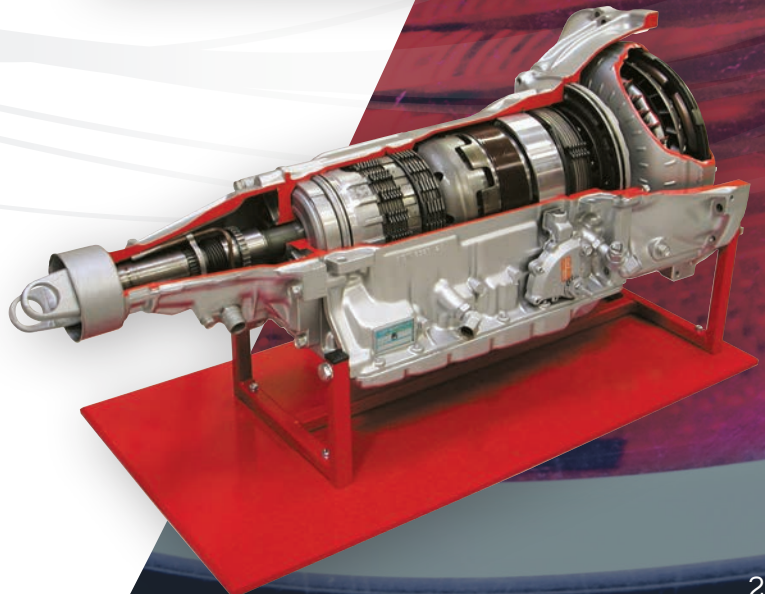
Sectioned Automatic Gearbox Trainer (775-01)

This trainer provides the instructor with a complete automatic gearbox for group or whole-class demonstration, mounted on a steel plate for use on a shop bench or classroom desk.

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.

Order as:

- 775-01 Sectioned Automatic Gearbox Trainer



EV Technology Panel Trainers

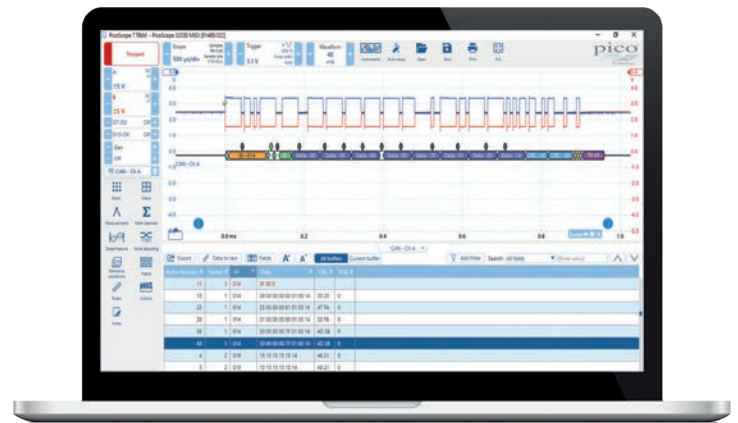
Electric Vehicle Systems Panel Trainer (740-01)

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

A power flow mimic allows students to investigate the effects of regenerative braking, and on-board diagnostics can be explored via the intelligent display panel.

Order as:

- 740-01 Electric Vehicle Systems Panel Trainer



View real-vehicle
CAN bus waveforms
and data packets to
decode messages

Test points for signal
monitoring and fault-finding

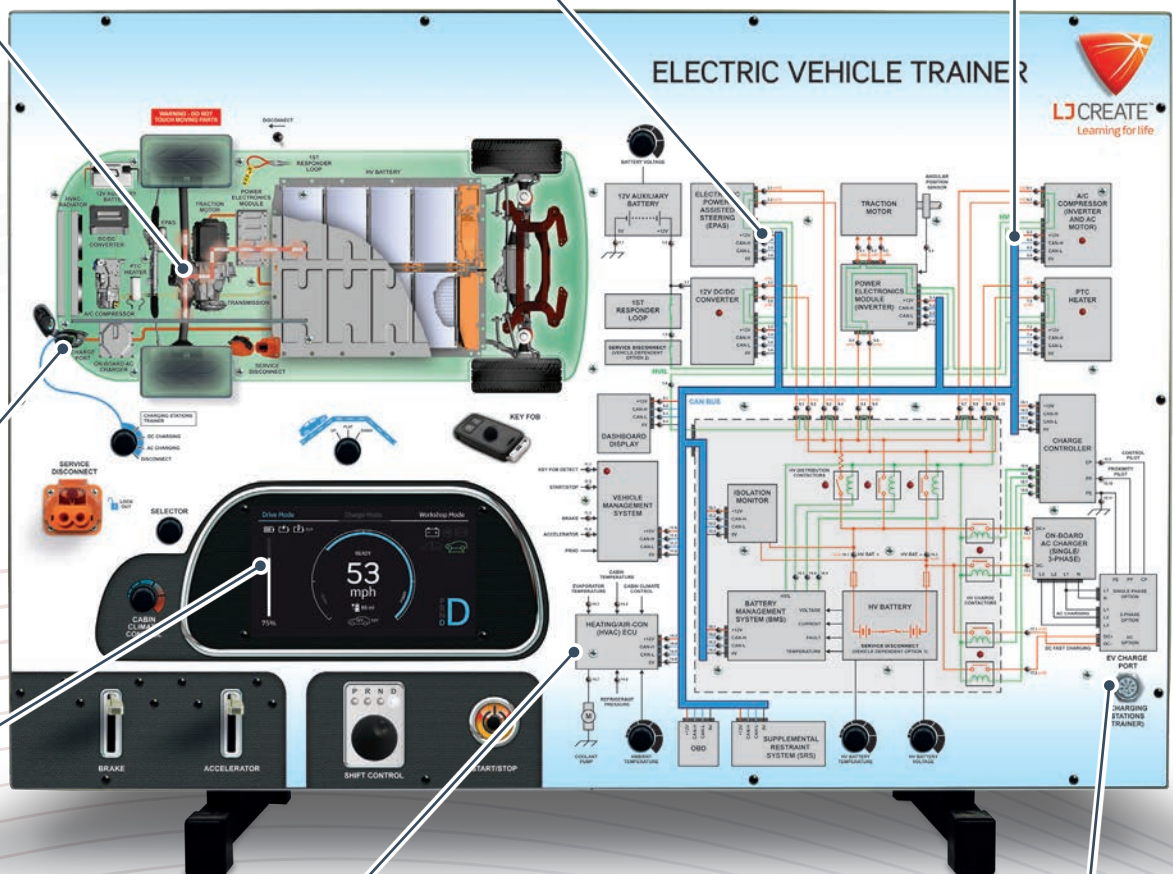
Power flow mimic
allows students
to investigate the
flow of energy to
and from the HV
battery and the
effects of regenerative
braking

Simulated
AC and DC
charging

Touchscreen
display for Drive,
Charge, and
Workshop
modes

HVAC system for cabin
and battery conditioning

Optional charge port connection
from Charging Stations panel (743-01)



EV Motors and Generators Panel Trainer (742-01)

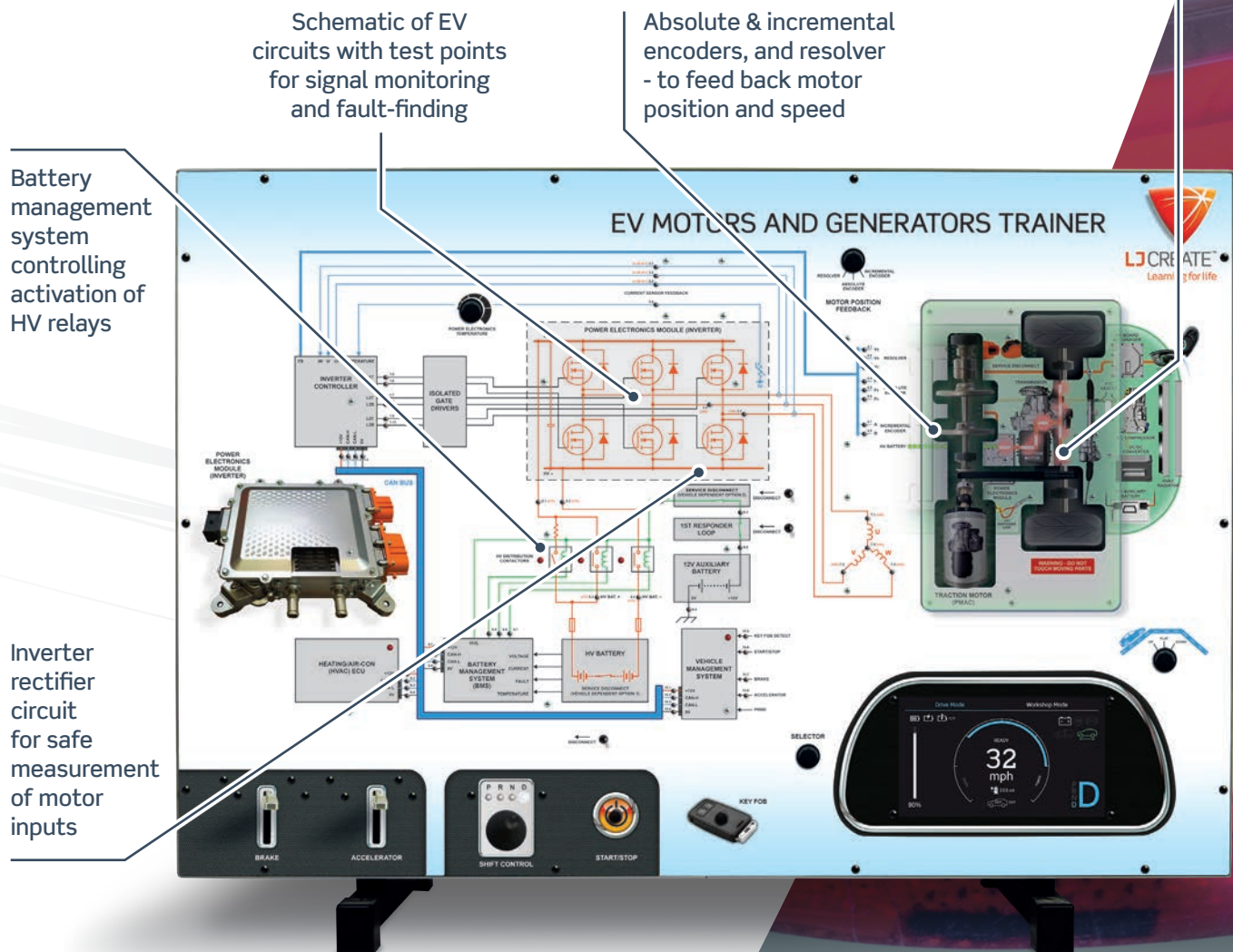
This trainer is focused on motor speed control, and uses a variety of sensors to feed back motor position and speed. Electrical circuit operation is illustrated under different conditions: Throttle, Brake, and Direction of Travel.

The trainer includes a variety of test points for vehicle electrical components including the facility to test each phase of a 3-phase motor.

Order as:

- 742-01 EV Motors and Generators Panel Trainer

Simulated drive train showing motor speed control and the effects of regenerative braking



EV Technology Panel Trainers

EV Batteries and Charging Panel Trainer (741-01)

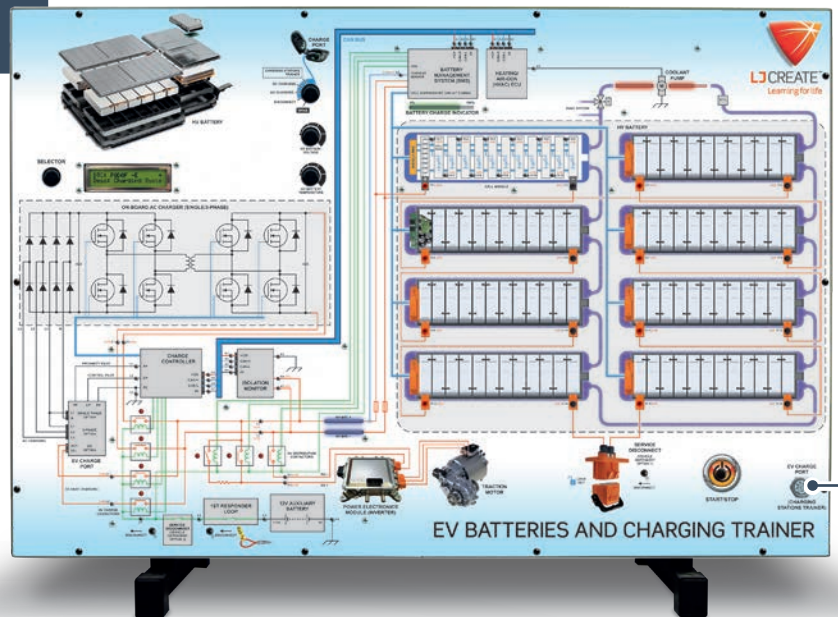
The focus of this trainer is on the operation, safety, structure, and limitations of Electric Vehicle batteries.

Students will operate the panel to explore charging/discharging of the HV battery, and will also investigate battery temperature, voltage, and efficiency. Instructors can demonstrate regenerative charging, cell balancing, and more with this on-vehicle charging systems panel trainer.

Order as:

- 741-01 EV Batteries and Charging Panel Trainer

Optional charge port connection from Charging Stations panel (743-01)



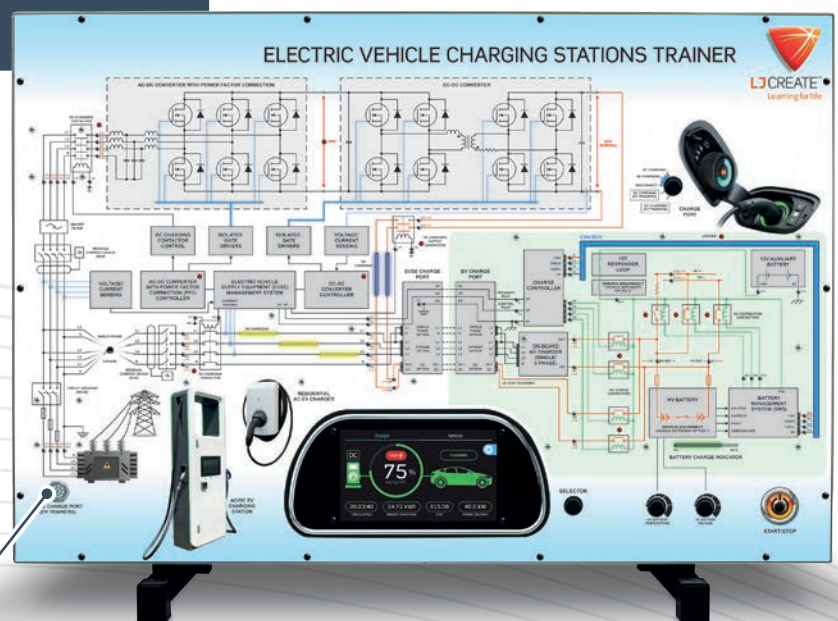
Electric Vehicle Charging Stations Panel Trainer (743-01)

This trainer provides students and instructors with the opportunity to demonstrate, investigate and fault-find the circuitry and operation of off-car charging systems.

Charging principles such as single-phase, 3-phase, and DC charging are covered on this panel trainer.

Order as:

- 743-01 Electric Vehicle Charging Stations Panel Trainer



Optional charge port connection to 740-01/741-01 panels

EV Technology Desktop Trainers

Electric Vehicle Electronics Workstation (730-00)

This workstation allows the practical study of a range of advanced Electric Vehicle circuits and concepts. It includes the Electric Vehicle Electronics Trainer (730-10), component set, and a range of experiment cards.

It is an ideal resource for an advanced automotive/EV electronics program and includes access to digital curriculum materials including theory and practical learning tasks.

Order as:

- 730-00 Electric Vehicle Electronics Workstation

The following Experiment Cards are included:

Electronic Systems Card (320-01)

Practical tasks include the following:

- Investigation of sub-systems
- Intruder alarm system project
- Testing and fault-finding

Electromagnetism Card (320-14)

Practical tasks include the following:

- Reed switch operation
- Field shape and direction for an electromagnet
- DC motor-generator investigation

Input Transducers Card (320-15)

Practical tasks include the following:

- Operation of a humidity and temperature sensor
- PTC temperature sensor operation
- Closed loop temperature control circuit

Analog Integrated Circuits Card (320-32)

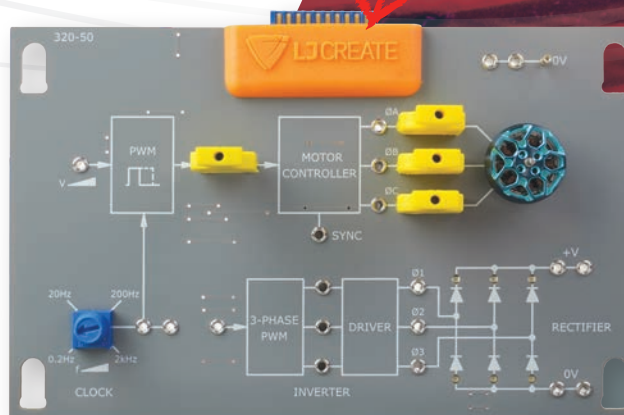
Practical tasks include the following:

- Investigating IC sensors
- Testing a switched capacitor filter
- Investigating the operation of a phase locked loop

Pulse Width Modulation Signals Card (320-50)

Practical tasks include the following:

- Investigation of a 3-phase waveform
- Rectifier with DC smoothing capacitor
- Fault-finding signal conditioning circuits



Medium/Heavy Vehicle Autotronics Panel Trainers

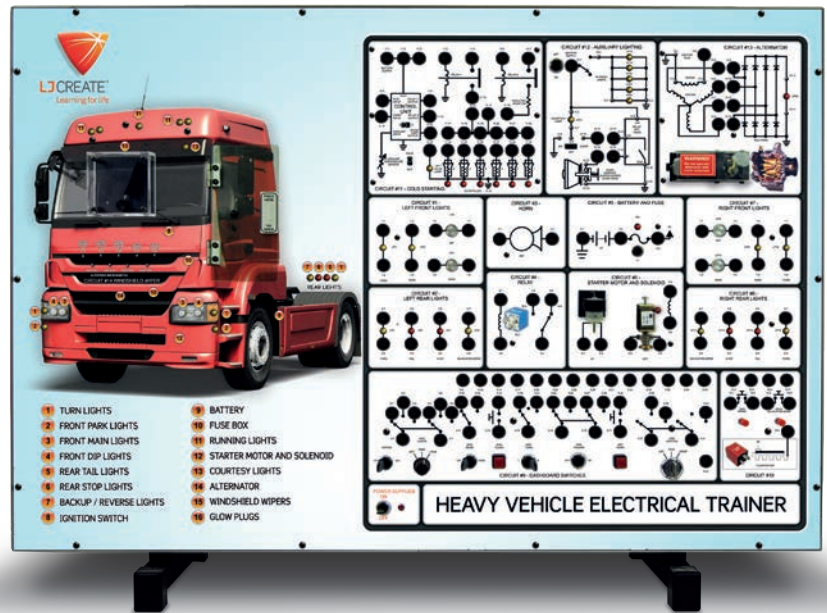
Heavy Vehicle Electrical Systems Panel Trainer (757-01)

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.

Order as:

- 757-01 Heavy Vehicle Electrical Systems Panel Trainer



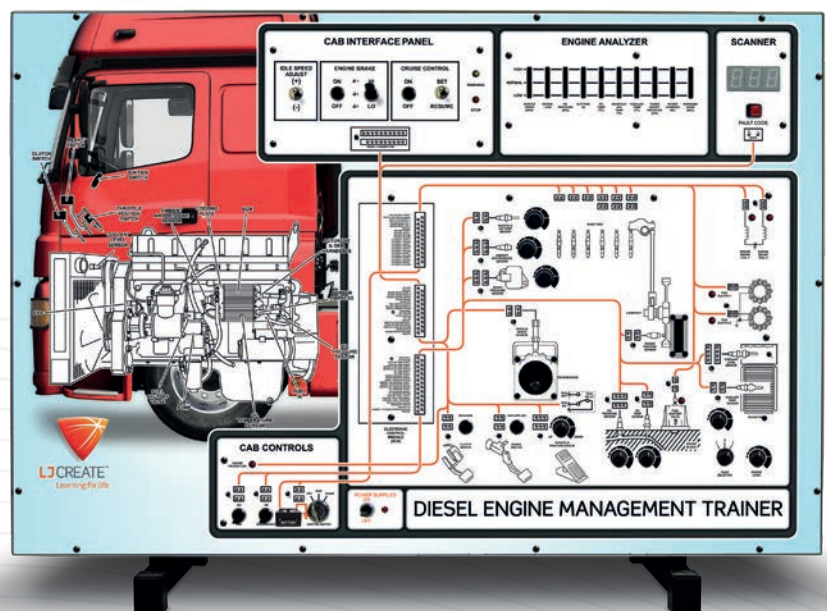
Diesel Engine Management Systems Panel Trainer (758-01)

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.

Order as:

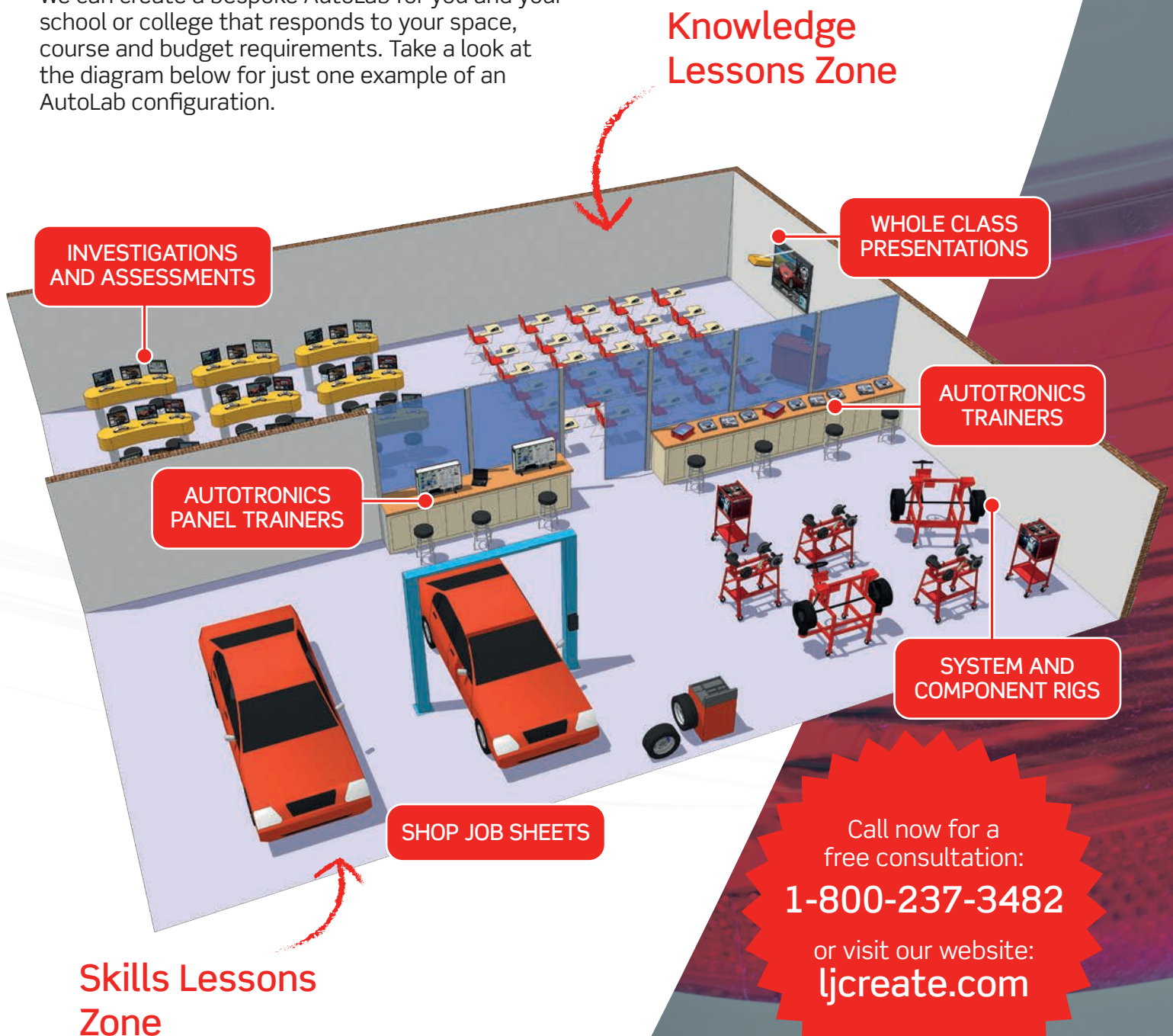
- 758-01 Diesel Engine Management Systems Panel Trainer



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