

EURO ACADEMY



PROSPECTUS



**E**

ESSENTIAL

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BOSCH VSE 1

ESSENTIAL TEST PROCEDURES



ESSENTIAL



COURSE OVERVIEW

All technicians require electrical system know-how and fault finding skills to work on modern vehicle systems. The content of this course is essential knowledge for the development of a technician's diagnostic capability. The overall learning goal is to provide delegates with a working knowledge of standard electrical test procedures and how they are applied correctly. These tests allow delegates to perform electrical confirmation checks with confidence when carrying out diagnostic routines. Attendance is not necessary for technicians who are already proficient in electrical circuit testing theory and practice.



COURSE CONTENT

- Electrical values and their measurement for test purposes
- Identification of typical circuit symbols and use of wiring diagrams
- Test methods for circuit continuity, insulation and resistance
- The properties and testing of series and parallel circuits
- The application and use of voltage drop measurement tests
- Battery starting and charging systems. Operation, testing and diagnostics



PREREQUISITES

We recommend that delegates are familiar with the operation of a typical digital multimeter and can use it correctly on automotive applications.



ATTAINMENT

- On successful completion of VSE 1, delegates will be able to:
- Refer to a typical system wiring diagram to identify the electrical components
 - Identify the current paths connecting them to the control unit(s) of the system
 - Use electrical test equipment correctly on vehicle system circuits
 - Carry out test procedures using voltage resistance and current measurement
 - Carry out test procedures using voltage drop method to indicate circuit faults
 - Use additional equipment to test battery condition and circuit conditions



BOSCH
Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



DURATION

2 Days

BOSCH VSH 24.1

HYBRID & ELECTRICAL VEHICLE SYSTEMS



ESSENTIAL



ESSENTIAL



COURSE OVERVIEW

All vehicle repair professionals should attend training on the safe maintenance and service of hybrid and electric vehicles. The technological developments utilized with HEV's along with the critical safety measures required, make them different to deal with compared to conventional powered vehicles. Workshop supervisors and technicians require a complete awareness of the risks and hazards present whilst working on them and the safety measures that must be employed to minimise risk to all who come into contact with them in the garage. This course combines both training and an integrated technician assessment. An additional fee covers both registration and certification. It is not suitable for junior technicians or those that will not be carrying out work on these types of vehicles.



COURSE CONTENT

- Hybrid system components and operation
- How to work safely on hybrid and related vehicle systems
- Maintenance and repair methods when working on hybrid vehicles
- Assessment of procedures to ensure a hybrid vehicle is safe to work on
- Assessment of knowledge of hybrid vehicle safe working practices.



PREREQUISITES

Delegates must hold a minimum Level 2 qualification in automotive service and repair. Alternatively, they must have at least 2 years practical experience in automotive service and diagnostics.



ATTAINMENT

- On successful completion of VSH 24.1, delegates will be able to:
- Identify high voltage components and the dangers to staff they present
 - Make a hybrid or electric vehicle safe to work on so that routine service procedures can be safely completed
 - Candidates successfully completing the QCF Assessment during VSH 24.1 will be awarded a certificate from IMI Awards Ltd



BOSCH

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Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician



DURATION

2 Days



BOSCH VSD 12

ESSENTIAL DIESEL KNOWLEDGE

E

ESSENTIAL



COURSE OVERVIEW

Technicians who have a good understanding of petrol injection can achieve the same level with diesel cars and light vans with this course, which provides an important introduction to diesel technology and contains the foundation knowledge required to attend further Bosch courses on specific diesel systems. The well proven mix of classroom sessions to reinforce knowledge, and workshop practical tasks to develop skills, are combined to give technicians confidence in their work. This course is not necessary for technicians who have already achieved competence in diesel system diagnostics.



COURSE CONTENT

- Diesel engine design and combustion
- Fuel system circuits
- Diesel timing and quantity control
- Induction and exhaust components
- Typical diesel system sensors and actuators
- Emission control devices



PREREQUISITES

We recommend that delegates are familiar with the use of a typical diagnostic tester and an oscilloscope. Previous experience with petrol injection systems is also a distinct advantage. The Bosch courses VSTD 9 and VSG 5 can provide the knowledge and skills required.



ATTAINMENT

On successful completion of VSD 12, delegates will be able to:

- Identify components of typical electronic diesel control systems and state their function
- Carry out fault diagnosis and test procedures on typical electronic diesel control systems
- Perform tests to ensure the serviceability of components on these diesel systems



DURATION

2 Days



BOSCH

Invented for life

Senior Manager	<input type="checkbox"/>
Service Manager	<input type="checkbox"/>
Service Receptionist	<input type="checkbox"/>
Technician	<input checked="" type="checkbox"/>
Diagnostic Technician	<input type="checkbox"/>
Electrical Technician	<input checked="" type="checkbox"/>
Diesel Technician	<input checked="" type="checkbox"/>
Bodyshop Technician	<input type="checkbox"/>

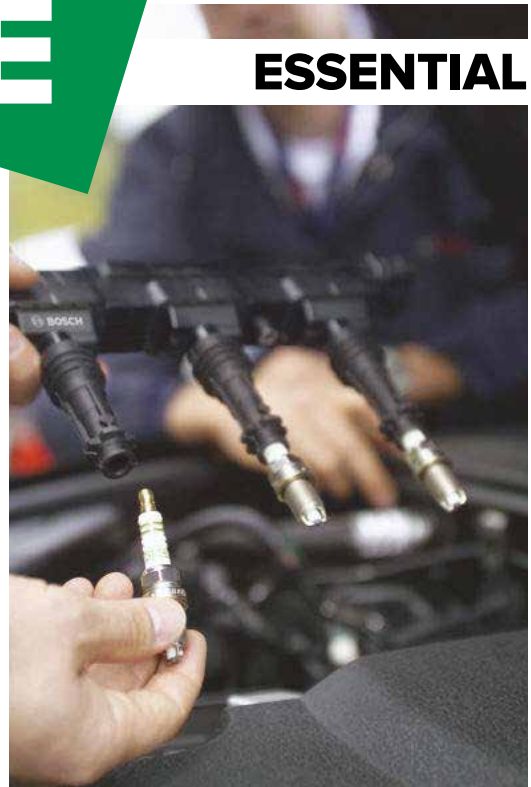
BOSCH VSG 2

ENGINE MANAGEMENT SPARK IGNITION & DIAGNOSIS



ESSENTIAL

ESSENTIAL



COURSE OVERVIEW

This course is relevant to all technicians involved in the diagnosis and repair of petrol engine management systems. While some operating conditions and faults can be indicated by the use of a diagnostic tester, an ignition oscilloscope is a vital diagnostic tool, and an understanding of ignition waveforms can aid in diagnosing combustion faults and the ignition system performance. The course covers all spark ignition technologies, and will provide delegates with an in-depth understanding of the ignition process and analysis of ignition related faults.



COURSE CONTENT

- Spark ignition principles
- Inductive and hall effect systems
- ECU controlled ignition
- Oscilloscope testing of primary and secondary ignition
- Ignition waveform analysis
- Testing of Wasted Spark and Coil on Plug systems



PREREQUISITES

We advise delegates to have some prior experience in using an oscilloscope or to have attended our course VSTD 9 prior to registering on VSG 2.



ATTAINMENT

- On completion of VSG 2, delegates will be able to:
- Fully understand the working principles of ignition system components
 - Connect and use an oscilloscope to display ignition waveforms
 - Interpret Primary and Secondary ignition oscilloscope displays
 - Carry out ignition diagnostic tests to indicate ignition system and engine management system faults
 - Pinpoint ignition system component faults



DURATION

2 Days



BOSCH

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Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

BOSCH CS 1 CUSTOMER CARE



ESSENTIAL



COURSE OVERVIEW

First class customer care has long been acknowledged as vital to business reputation and customer retention. Positive customer impressions and attitudes are essential for the overall success of any business. While the actions of all staff can have a great influence upon the experience for the customer, the application and maintenance of good techniques in this area requires a specific set of knowledge and skills. This course has been specifically designed to address the customer care skills requirements for garage staff. It also meets the requirements for technicians wishing to complete the Bosch Diagnostic Technician and Master Technician programs.



COURSE CONTENT

- Why customer service is important
- Understanding your customer needs
- Common problems and complaints
- How to deliver outstanding customer service
- Finding out what your customers think
- Case studies and practical exercises



PREREQUISITES

None



ATTAINMENT

On completion of CS 1, delegates will be able to:

- Identify the key skills required in providing excellent customer service
- Compare the application of good and bad customer service using case studies and group activities
- Utilise the principles of best practice in customer care and apply defined improvements to benefit the business and working environment



DURATION

1 Day



BOSCH
Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

ELECTRICITY & ELECTRONICS

E

ESSENTIAL

ESSENTIAL



COURSE OVERVIEW

This course is designed for the study of the electricity and electronics found in modern vehicles. For this, it starts from the most essential knowledge of electricity, goes on to the operation of the various components involved in the circuit (relays, transistors, diodes, sensors, actuators, etc.) and studies their characteristics, parameters and substitute functions.



COURSE CONTENT

- Electricity basics
- Applications
- Effects of electric current on the human body
- Interpretation of diagrams
- Introduction to electronic management
- Injection systems
- Study of sensors
- Study of actuators



PREREQUISITES

None



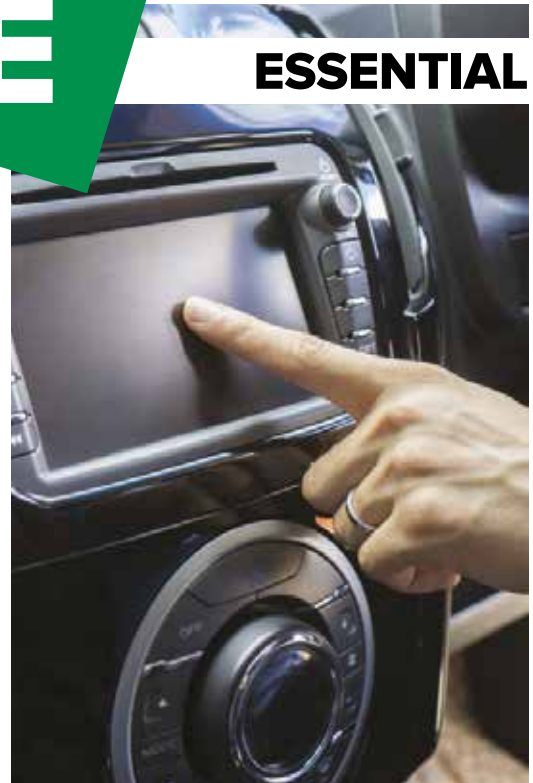
ATTAINMENT

- Introduction
- Different types of multimeters
- Multimeter measurements
- The oscilloscope
- Technical specifications
- Leads and clamps used
- Basic concepts
- Main settings
- Options menu on oscilloscopes
- Use of several channels
- Testing a quiescent electrical circuit
- Testing an active electrical circuit
- Detection and location of an electrical load
- Testing the starting and charging system
- Testing the preheating systems
- Testing the ignition systems
- Checks on sensors
- Checks on actuators
- Diagnostics of the multiplexing network
- Finding intermittent faults



DURATION

2 Days



Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

DIAGNOSIS



ESSENTIAL



COURSE OVERVIEW

Due to the large quantity of electrical and electronic components used in modern vehicles, the technician must know how to use the multimeter and oscilloscope correctly. In this course, the technician will learn how to diagnose the possible faults that may appear in a vehicle using this apparatus, particularly with the oscilloscope as its use is increasingly necessary for the verification of many current systems and components.



COURSE CONTENT

- Identification of the vehicle with a diagnostic tool
- EOBD diagnostics
- Specific management system diagnostics
- Parameter diagnostics
- Error diagnostics
- State diagnostics.
- Activation diagnostics
- Diagnostic methodology
- Usage protocol for fault diagnostic environments



PREREQUISITES

None



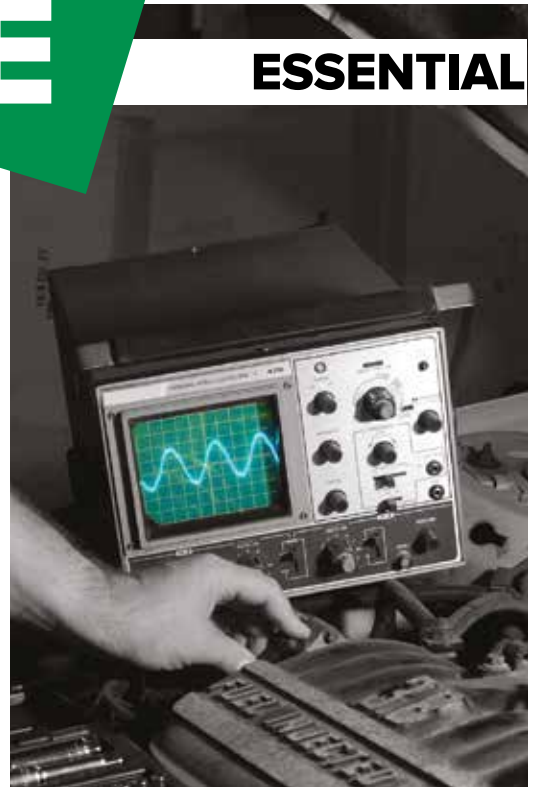
ATTAINMENT

On completing this course, the technician will be better prepared to make error-free diagnosis of any vehicle, removing the need to 'try a part' and correctly assessing component replacement. The technician will also better understand error codes, the protocols to follow for effective diagnosis and the operation of the diagnostic equipment in all its working environments: error code reading, parameters, component activation, information and coding of a control unit, etc. whether through specific vehicle diagnostics or by EOBD.



DURATION

2 Days



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

PETROL INJECTION

E

ESSENTIAL

ESSENTIAL



COURSE OVERVIEW

In this course, the basic operation of a petrol engine is studied along with the evolution of indirect petrol injection fuel feed systems. BOSCH Injection systems are used as an example.



COURSE CONTENT

- Fuel supply systems
- Ignition systems
- Multipoint injection with integrated electronic ignition
- Intake circuit
- Fuel circuit
- Exhaust circuit
- Electronic management
- Evolution of petrol injection



PREREQUISITES

None



ATTAINMENT

On completing this course, technicians will have obtained the necessary knowledge on indirect petrol injection systems that will enable them to fully analyse the air intake, fuel and exhaust gas circuits, and the electronic management system and its components.



DURATION

2 Days

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

DIESEL INJECTION

E

ESSENTIAL



COURSE OVERVIEW

The diesel injection course will describe the operation of the different rotary pumps (mechanical VE, electronic VE and VP), as well as the components that can be repaired by a mechanic in the workshop and those that must be repaired by a specialised centre.

Practical training includes the removal of VE & VP BOSCH injection pumps in order to be able to see their differences in operation and evolution.

Once these concepts are understood, the static and dynamic set up of an electronic VE pump will be undertaken in a vehicle, with focus on rectification of regularly occurring faults.



COURSE CONTENT

- Introduction
- Mechanical VE injection pump
- Electronic VE injection pump
- Injector
- VP injection pump
- Fuel circuit
- Air circuit
- Operating strategies
- Practicals



PREREQUISITES

None



ATTAINMENT

On completing this course, technicians will be capable of distinguishing the different types of injection pumps currently on the market and which components they can repair in their workshop, if it is necessary to remove it or not from the engine for the repair of the faulty component, and how to set it up.

They will also obtain the necessary knowledge for assessing the parameters and fault codes provided by a diagnostic unit and the oscillograms of the main injection system components.



DURATION

2 Days

Senior Manager Service Manager Service Receptionist Technician Diagnostic Technician Electrical Technician Diesel Technician Bodyshop Technician

AIR CONDITIONING

E

ESSENTIAL

ESSENTIAL



COURSE OVERVIEW

This course provides essential knowledge for the maintenance of vehicle air conditioning systems. It starts with a study of the evolution of the various systems, breaking down their components and detailing how to check their operation. The course is then concluded with interesting practical activities to complete the training.



COURSE CONTENT

- Evolution of air conditioning systems
- Compressors
- Heat exchangers
- Expansion valves
- Filter-dryers
- Control and safety devices
- Verification and diagnostics



PREREQUISITES

None



ATTAINMENT

The purpose of this course is to acquire the capability to accurately determine that an air-conditioning system is operating correctly, provide a correct diagnostic and go on to effectively repair any anomaly.



DURATION

2 Days



Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

BRAKES



ESSENTIAL



COURSE OVERVIEW

During this course, the braking system will be studied with an explanation of its operating principle, components, etc. as well as the various current brake types. The relevant diagnostics and checks will also be discussed for the correct resolution of faults, both mechanical and electrical.



COURSE CONTENT

- Regulations
- Hydraulic diagrams
- Braking systems
- Components
- Diagnostics
- Common faults



PREREQUISITES

None



ATTAINMENT

On completing the course, the technicians will have obtained the necessary knowledge on braking systems currently used, and will be able to solve mechanical and electrical faults that they may have.



DURATION

2 Days



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

PAGID MODULE 1

IMI QAP AWARD IN LIGHT VEHICLE BRAKE FITTING



ESSENTIAL



ESSENTIAL



COURSE OVERVIEW

The Pagid Professional Academy is a comprehensive brake training program. Combining background theory and practical, hands-on skills training, the course is designed to benefit workshop technicians at all levels. Step-by-step distance learning, using an easy to follow training workbook, students learn at their own pace. On completion of the distance learning students attend a two day training master class and practical test.



COURSE CONTENT

- Types of Brake
- Drum Brakes
- Discs Brakes
- Hydraulic Operating Systems
- Brake Fluid
- Servo Operation
- An Introduction to Anti-Lock Braking Systems



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

- Students gain background theory and practical, hands-on skills
- Covering brake discs, drums, hydraulics, servo, fluid and anti-lock systems

On completion of this qualification, candidates will receive the IMI QAP Award in Light Vehicle Brake Fitting.



DURATION

Training Manual + 2 Day Practical
or E-Learning + 2 Day Practical & Assessment

PAGID

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

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MOTOR INDUSTRY



KLARIUS IMI LEVEL 1

INTRODUCTION TO EXHAUSTS, CATS, DPFS & ADDITIVE SYSTEMS

E

ESSENTIAL



COURSE OVERVIEW

This training programme provides an introduction to exhausts, catalytic converters, diesel particulate filters and additive systems, the technology used in them, aspects of component servicing, replacement and their requirement as part of the overall UK legal emissions and MOT vehicle standards. The course forms part of the continued Klarius emissions system development programme.



COURSE CONTENT

- How a catalytic converter, diesel particulate filter and Eolys system works
- Identify the components of a catalytic converter, diesel particulate filter and Eolys system
- The operational life and causes for catalytic converter, diesel particulate filter and Eolys system failure
- Service and replacement of diesel particulate filters and Eolys system
- The legal responsibilities associated with catalytic converters, diesel particulate filters fitment and correct functioning



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

On completion of this qualification, candidates will receive an IMI Klarius QAP Level 1 Introduction to CATs, DPFS & Additive Systems Diagnosis.



DURATION

2 Days


KlariusTM
Senior Manager Service Manager Service Receptionist Technician Diagnostic Technician Electrical Technician Diesel Technician Bodyshop Technician 
 INSTITUTE OF THE
MOTOR INDUSTRY

EURO ACADEMY IMI



ESSENTIAL

INTRODUCTION TO CLUTCH & HYDRAULIC SYSTEMS, RELEASE SYSTEMS & COMMON FAULTS & DIAGNOSIS



ESSENTIAL



COURSE OVERVIEW

This Euro Academy E learning program provides an introduction to clutch and hydraulic systems, the clutch release system and common faults and diagnosis. Through a combination of E learning and practical training, this program forms part of the Euro Academy Clutch, DMF and transmission training programme. Elearning and self-assessment is required to achieve progression. The course is completed following practical training and final assessment.



COURSE CONTENT

- Introduction and identifying the clutch components
- Main functions and requirements of the clutch system
- Clutch Types
- The Clutch Plate
- The Clutch Cover
- The "SAC", Self-Adjusting Clutch
- The Clutch Release System
- The Clutch Hydraulic System
- Common clutch faults and diagnosis
- Self-assessment answers and next steps



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

On completion, candidates will receive the IMI Euro Academy QAP award - Introduction to Clutch & Hydraulic Systems, Release Systems and Common Faults and Diagnosis.



DURATION

2 Days
8 Hours E-Learning / 1 Day Practical



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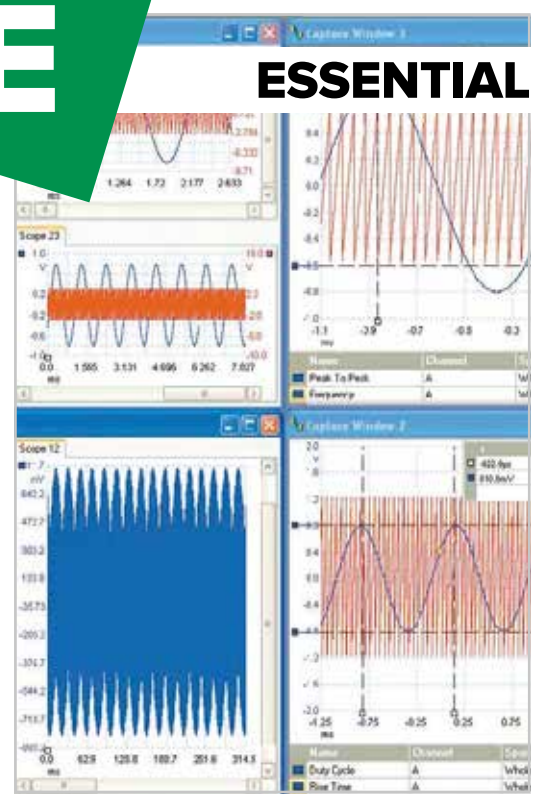
Senior Manager	<input type="checkbox"/>
Service Manager	<input type="checkbox"/>
Service Receptionist	<input type="checkbox"/>
Technician	<input checked="" type="checkbox"/>
Diagnostic Technician	<input checked="" type="checkbox"/>
Electrical Technician	<input checked="" type="checkbox"/>
Diesel Technician	<input checked="" type="checkbox"/>
Bodyshop Technician	<input checked="" type="checkbox"/>

PICO

STEP 2



ESSENTIAL



COURSE OVERVIEW

You have an Oscilloscope – now make the most of it.
 This training session will help you make the most of your equipment. Beginning with navigating the software and setting it up through to measuring and evaluating the waveforms it produces.

COURSE CONTENT

- Software Navigation
- Filtering
- Measuring
- 20:20 rule
- Probes
- Guided Tests

PREREQUISITES

Read or attended Pico Step 1.

ATTAINMENT

- On completion of Pico Step 2, delegates will be able to:
- Measure confidently standard sensors and actuators
 - Know their way around the software
 - Make use of guided tests

DURATION

1 Day



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

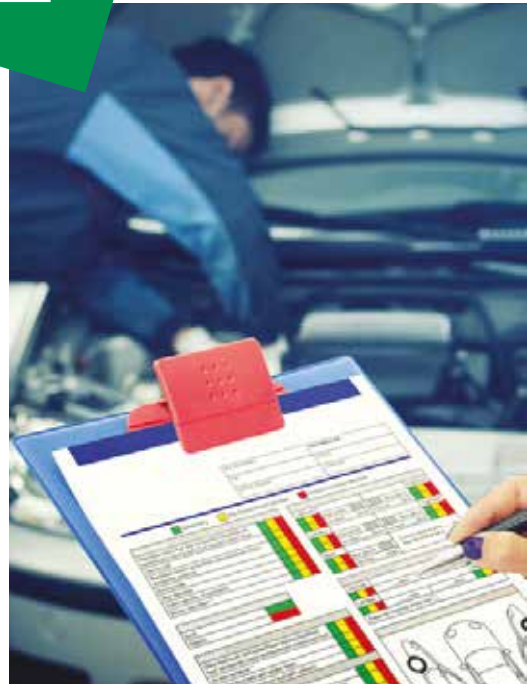
IMI LEVEL 2

LIGHT VEHICLE SERVICE MAINTENANCE TECHNICIAN



ESSENTIAL

ESSENTIAL



COURSE OVERVIEW

The IMI Accreditation Light Vehicle Service Maintenance route is intended for technicians whose job role involves the service, maintenance and repair of light vehicles.



COURSE CONTENT

- Mechanical Systems - Basic
- Electrical Systems - Basic
- Computer Based Test Equipment - Basic
- Braking Systems - Basic
- Vehicle Inspection - Basic



PREREQUISITES

The Service Maintenance Technician should be working in the light vehicle sector of the industry and ideally have at least two years' experience to ensure they are familiar with the skills, knowledge and techniques required to service, maintain and repair vehicles.



ATTAINMENT

On successful completion this accreditation will give the candidate an IMI Level 2 qualification.



DURATION

1 Day Assessment



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MOTOR INDUSTRY

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

F-GAS

REFRIGERANT HANDLING



ESSENTIAL



COURSE OVERVIEW

This course has been specifically designed to provide the knowledge, training and qualification necessary to satisfy EU legislation in the mobile air conditioning market. It is designed for anyone involved within the automotive industry including mobile mechanics, garages, main dealerships and automotive dismantlers.



COURSE CONTENT

- Introduction to Automotive Air Conditioning
- Basic heat Processes
- Pressure and temperature relationships
- The refrigeration cycle and system
- Lubrication
- Refrigerant Flushing
- The Electrical Components
- Types of Refrigerants used
- The environmental Impact
- Regulations
- Service Equipment
- Health & Safety Precautions and PPE
- System Inspection and Testing
- Refrigerant Recovery
- Refrigerant Re-charge



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

On completion of this qualification, candidates will receive the City & Guilds Level 3 Certificate in Mobile Air Conditioning Systems.



DURATION

1 Day



Senior Manager	<input type="checkbox"/>
Service Manager	<input type="checkbox"/>
Service Receptionist	<input type="checkbox"/>
Technician	<input checked="" type="checkbox"/>
Diagnostic Technician	<input checked="" type="checkbox"/>
Electrical Technician	<input checked="" type="checkbox"/>
Diesel Technician	<input checked="" type="checkbox"/>
Bodyshop Technician	<input checked="" type="checkbox"/>



INTERMEDIATE

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BOSCH VSB 8

AIRBAG & SUPPLEMENTARY SAFETY SYSTEMS



INTERMEDIATE



COURSE OVERVIEW

This course is must for technicians involved in fault diagnosis, inspection and repairs to a vehicle Airbag or Supplementary Restraint System. The objective of the course is to provide delegates with a working knowledge of Airbag and SRS control systems and enable them to carry out accurate diagnosis on these safety critical systems. Technicians must also be aware of the safety implications when working with pyrotechnic devices of this type, therefore technicians who book on this course must provide evidence that they have the essential electrical knowledge and skills required to safely work on these systems.



COURSE CONTENT

- Airbag and SRS systems review of principles and operation
- SRS Systems and safe working practices
- Airbag and SRS system generic components and function
- Airbag and SRS vehicle system overviews
- Airbag and SRS system testing and diagnosis
- Developments in design of passive safety systems



PREREQUISITES

It is a safety requirement that delegates have gained the essential knowledge and skills to use a digital multi-meter, the Bosch VSE 1 course will provide the necessary training required.



ATTAINMENT

- On successful completion of VSB 8, delegates will be able to:
- Carry out safe diagnostic test routines on Airbag and SRS control systems, components and wiring, as indicated by fault codes retrieved from the system.
 - Carry out safe system and component test procedures that identify where appropriate repair or replacement should be carried out



DURATION

2 Days



BOSCH

Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

BOSCH VSB 26

AUTOMOTIVE AIR CONDITIONING SYSTEM DIAGNOSIS



INTERMEDIATE



INTERMEDIATE



COURSE OVERVIEW

This course provides knowledge essential to the servicing of vehicle air conditioning systems, and also covers the required underpinning knowledge and practical skills for technicians intending to undertake the assessment for refrigerant handling certification. EU legislation requires all technicians involved in the servicing, recharging and repairs to vehicle air conditioning in passenger cars and light vans to be certified to carry out this work. An air conditioning technician assessment for certification is conducted separately from this course and is granted to candidates who successfully complete the Bosch assessments AC1RHA or ATA Refrigerant Handler.



COURSE CONTENT

- Mandatory legislation, health and safety procedures
- Introduction to air conditioning
- Refrigeration systems TXV and FOT
- Air conditioning system components
- Service equipment and procedures
- Safe handling of refrigerant and environmental concerns



PREREQUISITES

While the course content covers all the required subjects in detail, it is an advantage if delegates have some prior knowledge of the operation of automotive air conditioning systems and the typical service equipment used.



ATTAINMENT

- On successful completion of VSB 26, delegates will be able to:
- Identify all the main components of an automotive air conditioning system and state their function
 - Complete a typical automotive air conditioning service using a Bosch Air Conditioning recovery unit and demonstrate safe working practices



DURATION

2 Days



BOSCH
Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

BOSCH VSTD 9

OSCILLOSCOPE OPERATION & SIGNAL TEST METHODS



INTERMEDIATE



COURSE OVERVIEW

The oscilloscope is now a standard piece of diagnostics equipment for the modern automotive technician in the workshop. The ability to test and read the signals passing between electronic systems and the respective actuators or sensors is now a 'must have' skill set for the job. This course will enable the technician to competently operate an oscilloscope and use all its functions to aid in the diagnosis of vehicle systems. This course is essential for all technicians other than those who already use an oscilloscope regularly during vehicle system diagnosis work.



COURSE CONTENT

- Preliminary review of the oscilloscope
- Waveform display with control adjustments and settings
- Connections and test methods
- Waveform display practice on typical system components
- Waveform comparison and interpretation



PREREQUISITES

We recommend delegates are fully conversant with the electrical values of voltage, current and resistance and the use of a digital multi-meter. The skills and knowledge for this are covered in the Bosch course VSE1.



ATTAINMENT

- On successful completion of VSTD 9, delegates will be able to:
- Connect a typical automotive oscilloscope to a vehicle system component or wiring to display a signal wave form
 - Adjust the common oscilloscope controls and settings to manipulate the signal displayed so that it can be analysed
 - Monitor, analyse and compare signal wave forms to determine indications of component or wiring faults



DURATION

2 Days



BOSCH
Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

BOSCH VSG 5

ENGINE MANAGEMENT - DIAGNOSIS OF UNIVERSAL COMPONENTS



INTERMEDIATE



INTERMEDIATE



COURSE OVERVIEW

This course provides technicians the skills and knowledge to test and diagnose engine management systems with confidence. It gives delegates a sound working knowledge of all the components within a typical engine management system and how to test them. This is done via a mixture of classroom theoretical sessions and workshop practical tests to build the skills in a step by step manner. This course also provides the foundation knowledge for progression onto further Bosch engine management training courses – both diesel and petrol.



COURSE CONTENT

- Engine management systems overview
- Fuel supply sub-systems
- Diagnostic testing and circuit diagrams
- System inputs and sensor testing
- System outputs and actuator testing
- Diagnostics fault memory, adaption and additional functions
- Overview of emissions systems



PREREQUISITES

We recommend that delegates should be competent in the use of an automotive system diagnostic tester, a digital multimeter and an oscilloscope prior to attendance on VSG 5. These skills are covered by the Bosch courses WTE 1, VSE 1 and VSTD 9.



ATTAINMENT

On successful completion of VSG 5, delegates will be able to:

- Complete tests to prove the integrity of fuel supply sub-systems
- Carry out diagnostic tests to display diagnostic data and fault codes
- Interpret the diagnostic data and utilise additional settings and functions
- Describe the working principles of all key engine management components
- Perform oscilloscope testing to identify faults in components or wiring



BOSCH

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician



DURATION

2 Days

BOSCH VSC 6

BRAKING & CHASSIS SYSTEMS: ABS & ESP



INTERMEDIATE



COURSE OVERVIEW

This course is designed for technicians involved in the inspection and repair of modern vehicle braking systems. It provides essential knowledge about the operation, maintenance and testing of electronically controlled braking systems, covering both Bosch and non-Bosch variants. The course includes the hydraulic actuation and electronic control of typical Anti-lock Braking Systems, and an introduction to Electronic Stability Control. The skills learnt will enable technicians to apply the correct procedures when carrying out service activities and diagnosis on these safety critical systems. This course is not necessary for technicians who have previously attended the advanced ESP and chassis control course VSC 13.



COURSE CONTENT

- Hydraulic braking systems
- Developments in Anti-lock Braking Systems (ABS)
- Wheel speed sensor technology and testing
- Electronic brake modulation technology
- Traction Control systems and process implementation (ASR/TC)
- Electronic Stability Program systems (ESP)



PREREQUISITES

All delegates should be familiar with the use of a vehicle system diagnostic tester and an oscilloscope prior to attendance. The Bosch course VSTD 9 provides training on the oscilloscope skills required.



ATTAINMENT

- On successful completion of VSC 6, delegates will be able to:
- Complete typical ABS or ESP tests to prove the integrity of the system and the related brake functions in ABS or ESP control unit
 - Carry out fault diagnostic tests on typical ABS or ESP systems that locate system and component faults that require repair or replacement



DURATION

2 Days



BOSCH
Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

BOSCH VSC 28

STEERING GEOMETRY & FOUR WHEEL ALIGNMENT



INTERMEDIATE



INTERMEDIATE



COURSE OVERVIEW

Technicians involved in the inspection of vehicle suspension and steering systems require specialist knowledge to identify the appropriate adjustments and where component replacement is necessary. Incorrect steering geometry or wheel alignment can affect the vehicle's stability and cause uneven tyre wear. The principles of steering geometry, the operation of alignment equipment, and the interpretation of measurements are covered in this course, enabling technicians to correctly diagnose faults and propose the appropriate corrective action. This course is not suitable for technicians without access to wheel alignment test equipment in their workplace.



COURSE CONTENT

- Principles of suspension and steering
- Understanding geometric values and ride height
- Preparatory checks and inspection
- Tyre characteristics and the influence on the vehicle
- Carrying out measurements correctly
- Practice using a typical Bosch wheel aligner
- Advanced suspension systems



PREREQUISITES

We advise delegates to familiarise themselves in advance, with the wheel alignment equipment in their workplace and the primary vehicle measurements.



ATTAINMENT

With completion of VSC 28, delegates will be able to:

- State the mechanical and geometric measured values in relation to suspension and steering systems and the effects if incorrect
- Measure and record the alignment related values on a typical vehicle for all wheels to determine the alignment adjustments required
- Carry out adjustments to return the vehicle to the correct specification



DURATION

2 Days



BOSCH

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

BOSCH VSG 11

PETROL DIRECT INJECTION: SYSTEM DIAGNOSIS



INTERMEDIATE



COURSE OVERVIEW

Technicians with a good understanding of manifold fuel injection systems can advance their skills by attending this in-depth practical training on typical Petrol Direct Injection applications. The system variants, the components used, the operating modes and system diagnostics are covered in this course. The theoretical knowledge gained, will supplement the practical exercises completed during training, where system diagnostics using serial port data and testing of the system components using an oscilloscope form an integral part of the course. This course is not suitable for technicians new to petrol injection.



COURSE CONTENT

- Overview of the system layout and design concept
- Design and function of the individual working components
- Air, fuel supply and exhaust system component operation
- Fueling modes of operation and other unique system functions
- System testing and diagnosis



PREREQUISITES

We recommend that delegates are already familiar with manifold type gasoline injection systems. The Bosch courses VSG 2, VSG 5 and VSTD 9 provide the essential prerequisite knowledge for this course.



ATTAINMENT

- On successful completion of VSG 11, delegates will be able to:
- Identify and state the function of a typical Bosch GDI system including the operating modes, the sensors and actuators
 - Utilise serial diagnostic data and the oscilloscope for the testing of system component input and output signals
 - Diagnose typical system running faults and perform system tests that determine the required system or component repairs



BOSCH
Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



DURATION

2 Days

BOSCH VSD 15

COMMON RAIL SYSTEM DIAGNOSIS



INTERMEDIATE



INTERMEDIATE



COURSE OVERVIEW

Technicians who need to be involved in system testing, fault diagnosis and repair of Common Rail Diesel systems will find this course of great value. The course will introduce delegates to Bosch Common Rail technology and provide information on system diagnosis and practical awareness of safety related procedures. Technicians will gain an in depth knowledge of the hydraulic and electronic system functions and the fault diagnosis processes using the latest Bosch equipment, use will also be made of additional specific test equipment for common rail system pressure testing. This course is not suitable for technicians without previous training or experience in diesel injection.



COURSE CONTENT

- Low pressure fuel system
- High pressure fuel system and control
- Solenoid & Piezo injector function
- Common Rail injector analysis
- In-depth test procedures and fault diagnosis



PREREQUISITES

We recommended that delegates are competent with gasoline injection systems and already familiar with the essentials of diesel car and light van technology. The Bosch courses VSG 5 and VSD 12 provide essential prerequisite knowledge.



ATTAINMENT

- On successful completion of VSD 15, delegates will be able to:
- Complete diagnostic tests on a Common Rail, high pressure fuel system using safe working practices
 - Identify both fuel system and electrical component faults
 - Carry out diagnostic test routines on common rail systems, which will enable correct identification of faulty injectors



DURATION

2 Days



BOSCH
Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

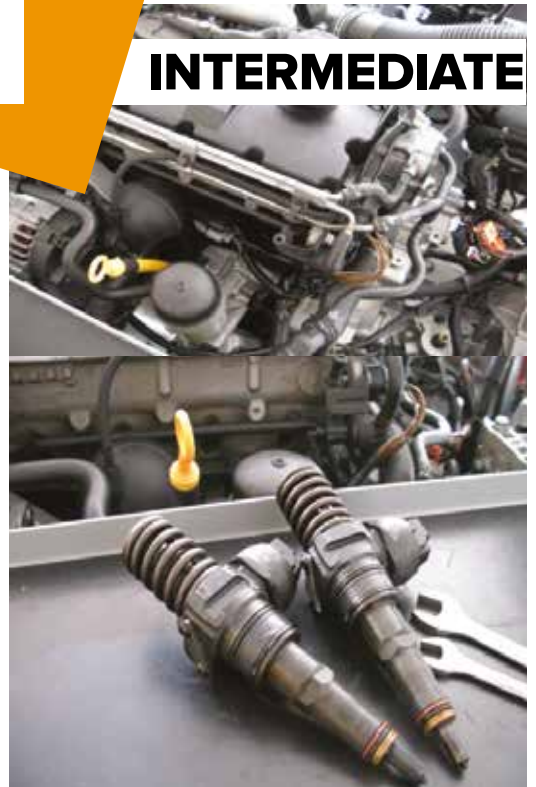
Bodyshop Technician

BOSCH VSD 16

UNIT INJECTOR SYSTEM DIAGNOSIS



INTERMEDIATE



COURSE OVERVIEW

This course is designed to provide technicians with diagnostic testing skills on Bosch Unit Injection systems fitted to diesel passenger cars and light vans. The operation of the system sensors and hydraulic components is covered in depth, along with vital information for the safe testing of components and correct fault diagnosis. Interpretation and analysis of the various system inputs and outputs is integral to a good diagnostic process. A series of tests are conducted using an oscilloscope, along with other Bosch test equipment for a variety of system diagnosis procedures. This course is not suitable for technicians without previous training or experience in diesel injection.



COURSE CONTENT

- Unit injector (PD) system introduction
- Low pressure fuel control
- Unit injector operation
- System specific components
- Unit injector Piezo type
- System testing and diagnosis



PREREQUISITES

We recommended that delegates are competent with gasoline injection systems and already familiar with the essentials of diesel car and light van technology. The Bosch courses VSG 5 and VSD 12 provide essential prerequisite knowledge.



ATTAINMENT

- On successful completion of VSD 16, delegates will be able to:
- Identify and state the function of sensors, actuators and components of Unit Injection systems for passenger car and light van applications
 - Carry out the key test procedures used for the diagnosis of Unit injector systems used on cars and light vans
 - Correctly identify both fuel system and electrical component faults



DURATION

1 Day



BOSCH

Invented for life

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

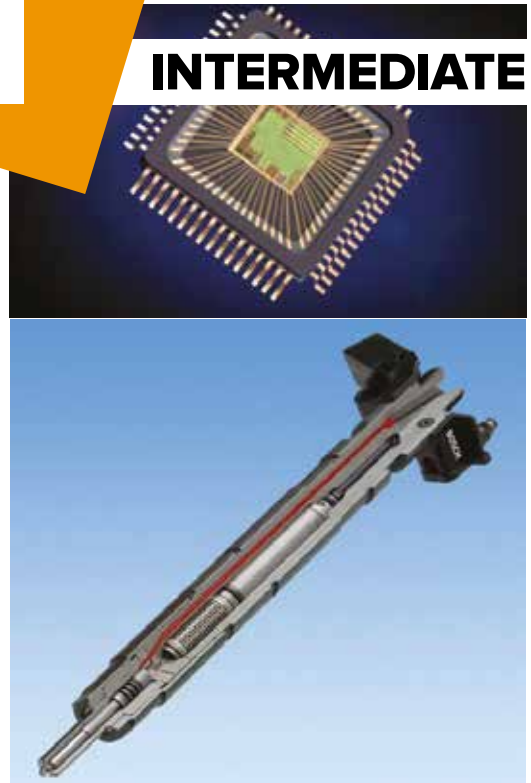
BOSCH VSE 7

AUTOMOTIVE ELECTRONICS: VEHICLE SENSORS & COMPONENTS



INTERMEDIATE

INTERMEDIATE



COURSE OVERVIEW

Technicians involved in diagnostic and repair work on any electronically controlled vehicle system. The aim of this electronics laboratory-based course is to provide a sound knowledge of basic electronic principles to aid in understanding the internal working principles of the sensors and components found on modern vehicle electrical systems. Course emphasis is on the practical construction of electronic circuits using discrete componentry, the study of various sensor technologies and the bench testing of vehicle components. Relationships are established between the fundamental workings of electronics and actual vehicle applications.



COURSE CONTENT

- Electronic properties, atomic behaviour and magnetic principles
- Series, parallel and composite resistive circuits
- Voltage dividers, Wheatstone bridge, MAP and air mass sensors
- Inductors, capacitors and sensor applications
- Semiconductor technology, diodes, LED's and transistors
- Speed, position, movement, gas and further sensor technologies



PREREQUISITES

It is strongly recommended that delegates for this electronics course have successfully completed the Bosch Diagnostic Technician programme. Delegates are expected to be familiar with common electrical principles and an understanding of basic mathematical principles will also be of advantage.



ATTAINMENT

On successful completion of VSE7, delegates will be able to:

- Carry out advanced analysis of vehicle electronic faults at an accomplished level and utilise specific component test procedures to provide extra data in the evaluation of vehicle system and component faults.



BOSCH

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

- Use the knowledge gained on the functioning of electronic devices to confirm components requiring replacement or repair where appropriate



DURATION

3 Days



MULTIMETER & OSCILLOSCOPE

INTERMEDIATE



COURSE OVERVIEW

Due to the large quantity of electrical and electronic components used in the car, the technician must know how to use the multimeter and oscilloscope correctly. In this course, the technician will learn how to diagnose the possible faults that may appear in a vehicle using this apparatus, particularly with the oscilloscope as its use is increasingly necessary for the verification of many current systems and components.



COURSE CONTENT

- Introduction
- Different types of multimeters
- Multimeter measurements
- The oscilloscope
- Technical specifications
- Leads and clamps used
- Basic concepts
- Main settings
- menu on oscilloscopes
- Use of several channels
- Testing a quiescent electrical circuit
- Testing an active electrical circuit
- Detection and location of an electrical load
- Testing the starting and charging system
- Testing the preheating systems
- Testing the ignition systems
- Checks on sensors
- Checks on actuators
- Diagnostics of the multiplexing network
- Finding intermittent faults



PREREQUISITES

None



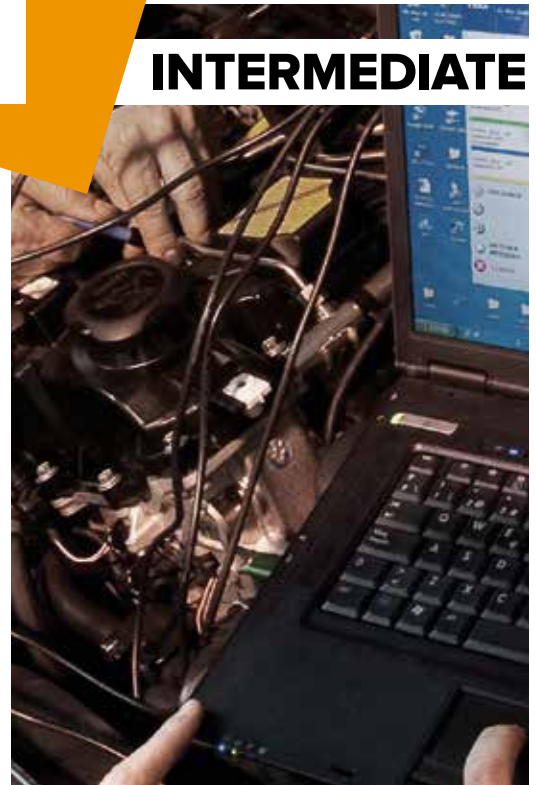
ATTAINMENT

- On completion of the course, the technicians will be able to:
- Choose and correctly use the measurement apparatus and interpret the various signals
 - Safely measure the various sensors and actuators in the vehicle
 - Make use of guided tests
 - Make an effective diagnostic with the help of these measurement apparatus



DURATION

2 Days



Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

SUSPENSION

I

INTERMEDIATE



COURSE OVERVIEW

This course has been designed to study the components and systems that are involved in suspension technology and then to carry out practical activities. In the final part, the participant will get to know some of the most common systems in what are referred to as active suspensions.



COURSE CONTENT

- Introduction to suspension technology
- Suspension systems and elements
- Suspension elastic elements
- Absorption and stability elements
- Active suspension systems
- Common faults



PREREQUISITES

None



ATTAINMENT

The aim of this course is to acquire knowledge on the different suspension systems and components in order to be able to diagnose the most common faults and repair them.



DURATION

2 Days



INTERMEDIATE

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

STEERING

INTERMEDIATE



COURSE OVERVIEW

In this course, we study steering systems that are fitted in passenger cars and off-road vehicles. Fully mechanical and power assisted, hydraulic and electrically powered systems are covered. The vehicle's steering functions do not solely apply to the front axle. Many manufacturers now apply technologies which involve rear axle path tracking. These rear axle steering systems are described and analysed in the course. The course covers common steering faults, system checks and repair solutions.



COURSE CONTENT

- Introduction to steering
- Mechanical steering
- Hydraulic power steering
- Electrical power steering
- Steerable rear axles
- Frequent faults



PREREQUISITES

None.



ATTAINMENT

On completing this course, the technicians will have obtained the necessary knowledge on all types of steering that may be fitted to passenger cars and off-road vehicles. Moreover, they will have obtained the knowledge necessary to diagnose and repair faults relating to steering components.



DURATION

2 Days



Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

KLARIUS IMI LEVEL 2

INTRODUCTION TO CATS, DPFS & ADDITIVE SYSTEMS DIAGNOSIS



INTERMEDIATE

INTERMEDIATE



COURSE OVERVIEW

This training programme provides an introduction to catalytic converters, diesel particulate filters and additive systems diagnosis. Vehicle emissions systems are becoming increasingly more complex and advanced to carry out efficient diagnosis, technicians require a thorough understanding of the operational concept of their components and controls. The aim is to provide candidates with the skill and knowledge required to identify emissions related problems and make effective use of emissions test data for engine fault code diagnosis.



COURSE CONTENT

- Emissions fault diagnosis via interpretation of emissions gas values
- The OBD operational modes – diagnostic trouble code understanding
- CAT, DPF & Additive System design & function
- Diagnosing air leaks
- Emissions systems failure modes
- Injector control system function
- Lambda control sensor function
- Differential pressure sensor function
- Diagnosis code P0420



PREREQUISITES

It is recommended that candidates have successfully completed Klarius IMI Level 1 before enrolling in Klarius Level 2. Candidates should be familiar with the use of a typical 4 gas analyser.



ATTAINMENT

On completion of this qualification, candidates will receive an IMI Klarius QAP Level 2 Introduction to CATs, DPFs & Additive Systems Diagnosis.



DURATION

2 Days



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



PICO

STEP 3



INTERMEDIATE



COURSE OVERVIEW

You're beginning to realise just how useful the oscilloscope can be and want to explore more of the features. Step 3 will take you from where we left you at the end of step 2 and look in much more depth at the software and some of the more intricate diagnostics available with your equipment.



COURSE CONTENT

- Manual set-up
- Scaling
- Aligning reference waveforms
- Reducing noise
- Masks
- Math channels
- Customisations
- Multiple signal testing



PREREQUISITES

It is aimed at people that have completed the previous Step 1 and Step 2 or more proficient scope users that want to expand the use of their Pico Scope.



ATTAINMENT

- On completion of Pico Step 3, delegates will be able to:
- Set up the software manually
 - Use math channels to aid diagnosis etc.
 - Carry out full system tests using multiple signals
 - Measure more obscure signals



DURATION

1 Day



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

IMI LEVEL 3 LIGHT VEHICLE INSPECTION



INTERMEDIATE

INTERMEDIATE



COURSE OVERVIEW

The IMI Accreditation Light Vehicle Service Maintenance route is intended for technicians whose job role involves the service, maintenance and repair of light vehicles.

COURSE CONTENT

- Mechanical Systems - Basic
- Electrical Systems - Basic
- Computer Based Test Equipment - Basic
- Braking Systems - Basic
- Vehicle Inspection - Basic

PREREQUISITES

The Service Maintenance Technician should be working in the light vehicle sector of the industry and ideally have at least two years' experience to ensure they are familiar with the skills, knowledge and techniques required to service, maintain and repair vehicles.

ATTAINMENT

On successful completion this accreditation will give the candidate an IMI Level 3 qualification.

DURATION

1 Day Assesment

IMI INSTITUTE OF THE MOTOR INDUSTRY

- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

IMI LEVEL 2

AWARD IN MOT TESTING (CLASSES 4 & 7)



INTERMEDIATE



COURSE OVERVIEW
 This qualification is for individuals who want, or need to become MOT testers.

COURSE CONTENT

- Working safely within a vehicle test centre
- Communicating with colleagues and customers
- How to manage and maintain their CPD
- Carrying out pre-test checks
- Carrying out an MOT test

PREREQUISITES

- A current and full UK driving licence for the vehicle classes being tested
- Be a skilled mechanic with at least 4 years full-time employment in the service and repair of the vehicle types to be tested. (Apprentices who have been employed for 4 years are eligible)
- Have no unspent convictions for criminal offences connected with the MOT testing scheme or the motor trade, or involving acts of violence or intimidation
- Be 'of good repute'
- And to become a nominated tester (NT) for Class 3, 4, 5 or 7 vehicles they must also have an 'appropriate' qualification

ATTAINMENT
 This accreditation will give the candidate the qualification to become an MOT Tester.

DURATION
 5 Days



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

IMI LEVEL 3 AWARD IN MOT TEST CENTRE MANAGEMENT



INTERMEDIATE



INTERMEDIATE



COURSE OVERVIEW

This qualification is primarily developed for learners who wish to run an MOT Vehicle Test Station (VTS), or who will have direct responsibility for MOT operations at the VTS in the future.



COURSE CONTENT

- Managing the legislative and compliance requirements of a VTS
- Dealing with customer service problems and complaints
- Developing and supervising staff within a test centre
- Test centre quality systems and audits



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

This accreditation will give the candidate the qualification to become an MOT Centre Manager.



DURATION

2 Days



INSTITUTE OF THE
MOTOR INDUSTRY

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

ZF SERVICES CERTIFICATE

(IMI QAP AWARD)
ZF AUTOMATIC TRANSMISSIONS
LEVEL 1



INTERMEDIATE



COURSE OVERVIEW

This course is designed to provide an introduction into the function and operation of ZF automatic car transmissions. The course will provide technicians with the knowledge to service the products correctly and to provide an understanding of operation of the transmissions as an aid to the correct diagnosis of faults. The course is aimed at garage based service technicians.



COURSE CONTENT

- The development of ZF automatic transmissions
- Torque convertor operation
- Oil technology and lubrication requirements
- Planetary gear sets, clutches and brakes
- Transmission power flow
- Transmission logic as an aid to diagnostics
- Glycol testing
- Servicing requirements
- Removal of the transmission mechatronic
- Strip a transmission mechatronic
- Future developments
- Start stop function overview
- Hybrid transmission overview



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

On completion of this qualification, and the successfully passing of the end of course examination the candidate will be awarded and IMI QAA certificate of competence.



DURATION

1 Day



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



ZF SERVICES CERTIFICATE

(IMI QAP AWARD)

ZF CAR DRIVETRAIN TECHNOLOGY & DIAGNOSTICS (Excluding Transmissions)



INTERMEDIATE



INTERMEDIATE



COURSE OVERVIEW

This course has been designed to provide the knowledge and training necessary to understand the design and function of ZF drive train components. This will aid the correct diagnosis of faults. Many advances in technology make the correct diagnostics of underlying vehicle faults vital in preserving a long service life for Clutches and Dual Mass Flywheels. The course is aimed at mobile and garage based technicians.



COURSE CONTENT

- Different clutch system types
- Torsion damping and harmonics
- Clutch tolerances and correct lubrication
- Clutch release systems and the influence of wear
- Extended life clutch systems
- The correct installation of clutches
- Wear and damage assessment
- Sachs performance clutch systems
- Dual mass flywheel developments
- Dual mass flywheel function and operation
- Diagnostic tooling (PICO scope use in diagnostics)
- Wear testing and damage assessment of DMF
- Real examples of diagnostic investigations
- Cold start and earth point Issues



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

On completion of this qualification, and the successfully passing of the end of course examination the candidate will be awarded and IMI QAA certificate of competence.



DURATION

1 Day



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



INSTITUTE OF THE MOTOR INDUSTRY



ZF SERVICES CERTIFICATE

(IMI QAP AWARD)
ZF CAR STEERING & SUSPENSION TECHNOLOGY



INTERMEDIATE



COURSE OVERVIEW

This course is designed to provide an introduction into the function and operation of steering and suspension components as an aid to diagnostics. The interrelation of parts in dynamic steering systems makes the correct installation and adjustment of steering parts increasingly important. Vehicle stability and the service life for the components can be compromised if correct installation processes are not followed. The course is aimed at garage based and mobile service technicians.



COURSE CONTENT

- Steering and suspension systems integration
- Shock absorber types and functions
- The effect of worn parts on braking distances
- Continuous damping control shock absorbers
- The use of lightweight materials and composites
- Shock absorber and suspension parts testing and evaluation
- Examination of worn components
- Active Kinematic Control (Overview) AKC
- Torque Vectoring and Steering (Overview)
- Geometry set up B5 Platform S Curve (Case Study)
- Geometry set up and Faults BMW (F11 Case study)
- Vibration checking and analysis



PREREQUISITES

There are no formal entry requirements for this qualification.



ATTAINMENT

On completion of this qualification, and the successfully passing of the end of course examination the candidate will be awarded and IMI QAA certificate of competence.



DURATION

1 Day



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



INSTITUTE OF THE MOTOR INDUSTRY

TOYOTA PRIUS



ESSENTIAL



COURSE OVERVIEW

This course is focussed on finding out about the different types of hybrid motors and their possible connections. Also considered are the operation, structure and components of the high voltage battery, the inverter, the transmission system and the hybrid vehicle's braking system. Also, the high and low voltage system is described as well as the safety standards that must be applied when repairing a vehicle that uses high voltage. The vehicle in which the hybrid system was developed was the second generation Toyota Prius which was marketed between 2004 and 2009. It combines a 1500 cm³ capacity Atkinson cycle petrol engine with VVT-I variable valve timing. Two electric motors of different powers are used in the traction system which are coupled by means of an epicyclic gear set to the internal combustion engine.



COURSE CONTENT

- Introduction
- Hybrid vehicles, the alternative
- Structure and function of the different systems
- Existing models
- Different Prius generations
- Main component layout
- Internal combustion engine
- Transmission
- HV Battery
- Inverter
- Electrical control structure
- Modes of operation
- Brake and stability control
- Comfort system
- Maintenance
- Precautions and response to emergencies



PREREQUISITES

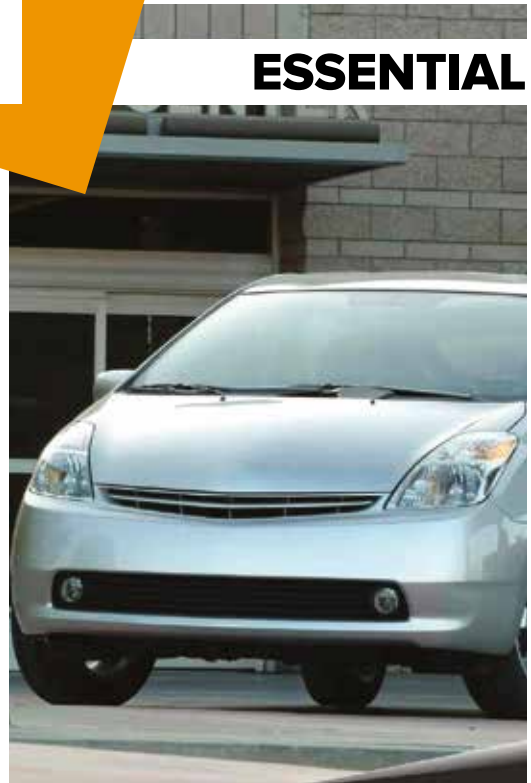
None.



ATTAINMENT

The purpose of this course is to let the technician know the functionality of every control unit of hybrid system. Also to know and recognize how to interpret each one of its parameters and to carry out any repair or maintenance operation following a safety procedure.

Thanks to a complete analysis of the traction



INTERMEDIATE

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

battery from inside and outside of the car, the participants will know how to diagnosis it and if it is defective or not. Also how to proceed to recharge it and the process to be followed in case of replacement, this one takes great importance since the traction battery is a component that suffers wear and becomes the more sensitive element of the hybrid system.



DURATION

2 Days



HYUNDAI ix35

ESSENTIAL



COURSE OVERVIEW

The Hyundai ix35 is a segment C off-road SUV, launched onto the market in 2010. It can be fitted with a petrol or a diesel engine, and a manual or automatic gearbox. Depending on the version, an All Wheel Drive system may be installed with an electromagnetic coupler. Its 135 kW (184 CV) 2.0 D4HA diesel engine is a 1995 cm³ inline 4, it has a variable-geometry turbocharger and 16 valves developed by the Hyundai-Kia group. Timing is by double chain and the vehicle is equipped with a Bosch common rail EDC 17 direct injection fuel system. The case study for the vehicle course focuses on the current diesel anti-pollution systems. At the same time, problems that commonly occur in these engines in relation to the European emission standards are examined.



COURSE CONTENT

- Presentation
- Electrical architecture
- Engine specifications
- Transmissions
- Running gear
- Subsystems
- Maintenance



PREREQUISITES

None.



ATTAINMENT

On completing this course, the technicians will have obtained the necessary knowledge on the location and functions of all the control units installed in the vehicle, as well as the full development of the engine, its sensors and actuators, and the subsystems installed in the vehicle.

The technicians will also be able to diagnose faults related to the anti-pollution systems of the Euro 5 standards.



DURATION

2 Days



Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

AUDI A3

1 ESSENTIAL



COURSE OVERVIEW

The Audi A3 is a C segment vehicle and this course is focussed on the "8P" generation (2003-2012). This vehicle can be associated with various petrol or diesel engines, notable among which are those fitted with the common rail system and which can have different displacements and power outputs. Its 105 CV (77 kW) 1.6 TDi CR engine is a 1598 cm³ inline 4, with a variable-geometry turbocharger and 16 valves developed by the VAG group. Timing is by means of a toothed belt and the fuel system is a Simos PCR 2.1 common rail direct injection system from Continental. The case study associated with the vehicle course covers the main VAG group's TDi Common Rail systems.



COURSE CONTENT

- Presentation
- Electrical architecture
- Engine specifications
- Transmissions
- Running gear
- Subsystems
- Maintenance



PREREQUISITES

None.



ATTAINMENT

On completing this course, the technicians will have obtained the necessary knowledge on the location and functions of all the control units installed in the vehicle, as well as the full development of the engine, its sensors and actuators, and the subsystems installed in the vehicle.



DURATION

2 Days



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



A

ADVANCED

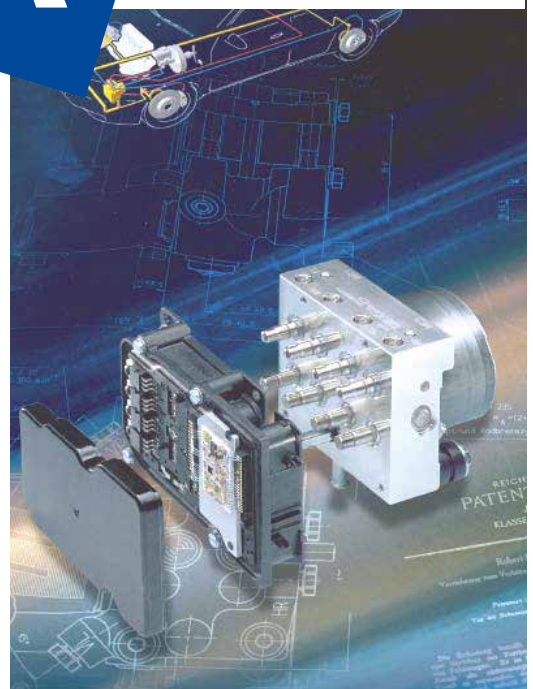
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BOSCH VSC 13

ADVANCED BRAKING CONTROL SYSTEMS



ADVANCED



ADVANCED



COURSE OVERVIEW

An increasing number of electronically controlled systems now influence the area of vehicle dynamics, including systems that actively respond to control the braking, of a vehicle. Technologies such as Electronic Stability Control and Adaptive Cruise Control often work together to enhance the safety and control of a vehicle, alongside other systems such as Active Steering and Electronic Damper Control. This course provides an in-depth view of the functional operation of the ESP system and will equip technicians with the diagnostic skills required for efficient fault diagnosis.



COURSE CONTENT

- Physical Properties
- ESP Overview
- Hydraulic Modulators
- ESP Sensors
- Active Brake Systems



PREREQUISITES

We recommend that candidates have successfully completed the Bosch VSC 6 course prior to attending VSC 13.



ATTAINMENT

On successful completion of VSC 13, delegates will be able to:

- Carry out advanced diagnostic testing on typical ESP Plus systems and the individual system components
- Identify component faults that require replacement or repair where appropriate
- Complete diagnostic tests on active vehicle systems to locate faults and identify items that need to be repaired or replaced
- Carry out initialisation procedures to return ESP and active system components to correct vehicle adaptation settings



DURATION

2 Days



BOSCH

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

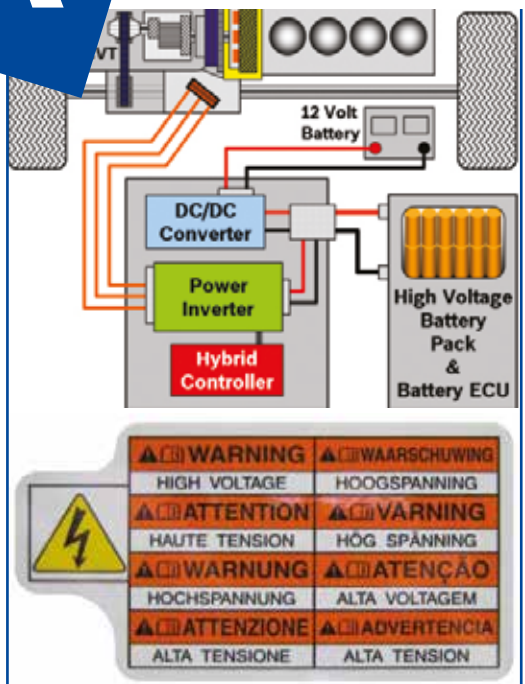
Bodyshop Technician

BOSCH VSH 25

HYBRID & ELECTRIC VEHICLE SYSTEM REPAIR



ADVANCED



COURSE OVERVIEW

Technicians requiring the knowledge and skills to be able to remove and replace HV components for Hybrid and Electric Vehicles safely. With Hybrid Electric Vehicles (HEV's) increasing in popularity, garage technicians will become increasingly involved in the servicing and repair of these vehicles. The technological developments utilised with Hybrid and Electric Vehicles along with the critical safety measures are very different to traditional vehicles.

This Award is designed for motor vehicle professionals who maintain and repair hybrid technology vehicles, including the hybrid or electric drive system itself. The course content, compiled by Bosch, contains the knowledge required to diagnose problems and work safely around a vehicles high voltage systems whilst carrying out repairs or replacement.



COURSE CONTENT

- How to work safely on hybrid and related vehicle systems
- HV system diagnosis using a range of diagnostic test equipment
- Removal and replacement techniques of typical system components



PREREQUISITES

IMI Awards require applicants to already have vehicle maintenance & repair knowledge and skills at Level 2. Technicians holding a Level 2 qualification (or higher) in automotive service and repair, or with proof of a minimum of 2 years' workshop experience at service level may attend this course. Additionally, attainment of the Level 2 award (600/0526/9) is mandatory.



ATTAINMENT

This IMI Awards Level 3 QCF (Qualifications and Credit Framework) qualification comprises the second unit of the Level 3 Award in Electric & Hybrid Vehicle Repair and Replacement QCF (Ref: 600/0527/ 0). However, this Level 3 qualification can only be completed following attainment of the Level 2 award (600/0526/9).

On completion of this second unit qualification,



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- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

technicians will have gained knowledge and skills of high voltage component replacement. Successful candidates completing the IMI Awards online test of VSH 25 will be certificated by IMI Awards Ltd.



DURATION

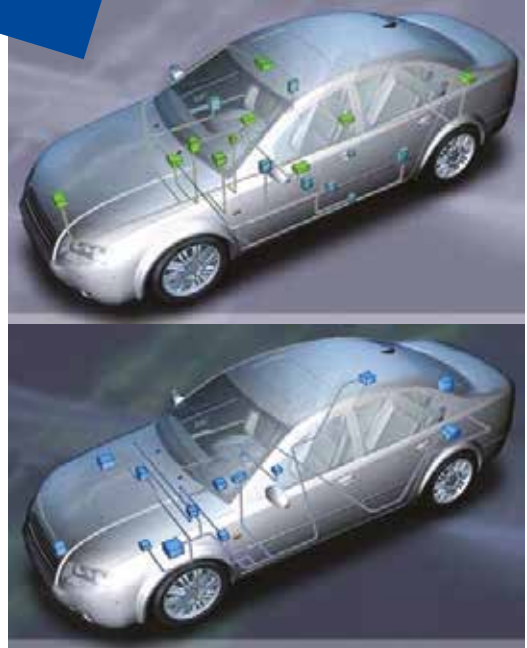
2 Days

BOSCH VSB 10

BODY CONTROL SYSTEMS, CAN & MULTIPLEXED NETWORKS



ADVANCED



ADVANCED



COURSE OVERVIEW

Garage technicians involved in the diagnosis of vehicle network faults and involved in repair work on the various vehicle body electronics systems. Theoretical instruction on the various network mediums and body peripherals combined with practical testing will enable technicians to carry out efficient diagnosis on such systems. The testing of drivetrain networks is also included.



COURSE CONTENT

- Serial data transmission, bits and bytes
- Vehicle network requirements and the various topologies
- LIN, CAN, Byteflight, MOST and FlexRay
- Cabled and optical transfer mediums
- Vehicle security, central locking, electric windows, wiper systems
- Litronic lighting systems, instrumentation, parking aid systems



PREREQUISITES

It is recommendation that delegates have successfully completed Bosch courses VSE 1 and VSTD 9. Delegates are expected to be experienced in typical oscilloscope and diagnostic tester operation and should have attended the appropriate equipment operator's courses.



ATTAINMENT

- On successful completion of VSB 10, delegates will be able to:
- Identify the various vehicle network types, typical transmission signal profiles and transport mediums
 - Carry out diagnostic test routines on vehicle network bus systems and analysis of related faults
 - Test body electrical systems and components to identify items requiring replacement or repair where appropriate



DURATION

2 Days



BOSCH

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

BOSCH VSG 17

PETROL ENGINE EMISSIONS ANALYSIS & OBD



ADVANCED



COURSE OVERVIEW

Technicians who carry out gasoline emissions testing or utilise gas readings in the analysis of engine running faults. The aim is to provide delegates with the skills and knowledge required to identify emissions related problems and make effective use of emissions test data for engine management system diagnosis.

Identification of faults by using tail-pipe gas indications requires a thorough understanding of the gasses involved and the related ECU controls. Techniques covered include testing of the system via analysis of the exhaust gasses using emissions test equipment, alongside oscilloscope testing of the oxygen sensors and interrogation of the on-board self-diagnosis system.



COURSE CONTENT

- Primary exhaust gas constituents and the catalytic converter
- Exhaust gas emissions values and gas relationships
- Emissions faults diagnosis via interpretation of gas values
- Emissions control legislation – On Board Diagnosis (OBD)
- The OBD operational modes – diagnostic tester understanding



PREREQUISITES

It is recommended that delegates have successfully completed Bosch courses VSG 2 and VSG 5 prior to attending this advanced course.

Delegates should be familiar with the use of a typical 4-gas analyser and proficient in the operation of an oscilloscope and a diagnostic tester.



ATTAINMENT

On successful completion of VSG 17, delegates will be able to:

- Distinguish the fault indications made by each of the individual exhaust gasses and use gas readings to aid in pinpointing engine running fault



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Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

- Carry out diagnostic test routines to enable the correlation and assessment of exhaust gas values with diagnostic port information and utilise all available OBD diagnostic modes for the evaluation of vehicle faults



DURATION

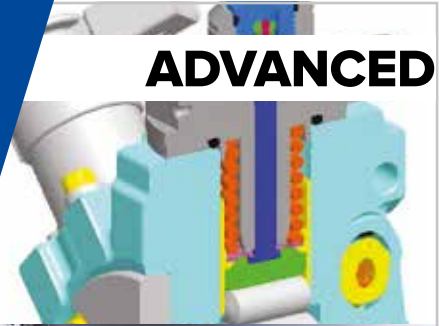
2 Days

BOSCH VSD 23

ADVANCED DIESEL SYSTEM CONTROLS & EMISSIONS



ADVANCED



ADVANCED



COURSE OVERVIEW

This course is for technicians who require training on the more advanced technological aspects of diesel engine management, the developments in component technology, emissions control and the associated sub-systems that are currently found on diesel systems. Highly advanced system components and controls are becoming increasingly common, to carry out efficient diagnosis, technicians require a thorough understanding of the operational concept of these components and controls. Practical test procedures and demonstrations will provide trainees with an in-depth working knowledge.



COURSE CONTENT

- Diesel Emissions Legislation
- Injector Adaptions
- HFM 7 & 8
- Lambda Control
- Pressure Sensing Glow Plugs
- Catalytic Convertors
- Diesel Particulate Filters
- Denoxtronic



PREREQUISITES

It is a recommendation that delegates have successfully completed Bosch diesel engine management courses VSD 12, VSD 15 and VSD 16. Delegates must be fully proficient in the operation of a typical oscilloscope and diagnostic test equipment, and should have attended the appropriate equipment operator's courses.



ATTAINMENT

On successful completion of VSD 23, delegates will be able to:

- Comprehensively identify and state the detailed operation of the sensors, components and actuators of advanced engine management systems
- Carry out advanced diagnostic test routines on systems and individual components, utilising all available data for the evaluation of vehicle faults
- Be able to identify any components requiring replacement or repair and carry out comprehensive system tests to ensure functional serviceability



BOSCH

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician



DURATION

2 Days

BOSCH VSG 14

PETROL ENGINE MANAGEMENT: ADVANCED SYSTEM CONTROLS

A

ADVANCED



COURSE OVERVIEW

Technicians requiring the more advanced technological aspects of gasoline engine management, the developments in component technology, emissions controls, and associated sub-systems.

Highly advanced system components and controls are becoming increasingly commonplace. To carry out efficient diagnosis, technicians require a thorough understanding of the operational concept of these components and controls. Practical test procedures will include analysis of component signal patterns and their characteristics to provide trainees with in-depth working knowledge.



COURSE CONTENT

- Demand controlled fuel supply
- Injector testing and diagnosis
- Intake charge control and variable camshaft timing
- Air mass meter function, advanced testing and diagnosis
- Misfire detection and advanced phase sensing methods
- Lambda adaptation and diagnostic terminologies
- Catalytic converter diagnosis
- Broadband lambda sensor function and testing



PREREQUISITES

It is recommended that delegates have successfully completed Bosch courses VSG 2, VSG 5 and VSG 17. Delegates must be fully proficient in the operation of typical oscilloscope, gas analyser and diagnostic test equipment.



ATTAINMENT

On successful completion of VSG 14, delegates will be able to:

- Comprehensively identify and state the detailed operation of the sensors, components and actuators of advanced engine management systems
- Carry out advanced diagnostic test routines on systems and individual components, utilising all available data for the evaluation of vehicle fault



BOSCH

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician



DURATION

3 Days

BOSCH VSE 11

AUTOMOTIVE ELECTRICS ADVANCED: ECU CONTROL & MICROELECTRONICS



ADVANCED



ADVANCED



COURSE OVERVIEW

Technicians involved in advanced diagnostic procedures and electronic repair work on motor vehicles. The aim of this electronics laboratory-based course is to extend the delegate's knowledge of electronic principles and develop an understanding on the workings of ECU control and electronic circuitry. The diagnosis of complex vehicle systems requires a technician with a high level of understanding. Emphasis on this course is given to the construction of specialised electronic circuits and practical testing using laboratory oscilloscopes.



COURSE CONTENT

- Transistors & application circuitry
- Multi vibrator circuits and combined technologies
- Logic gates and applications
- Clocks, shift registers, frequency dividers, and counters
- Microcontrollers, CPU's, memories and peripherals
- ECU architecture and input/output circuitry
- ECU language, CAN messaging and software



PREREQUISITES

It is strongly recommended that delegates for this electronics course have successfully completed the Bosch course VSE 7 and its prerequisites. Delegates are expected to be familiar with oscilloscope waveform manipulation and advanced electrical fault-finding. A good understanding of mathematical principles will also be an advantage.



ATTAINMENT

On successful completion of VSE 11, delegates will be able to:
 Carry out advanced electronic analysis of vehicle circuitry and control electronics for the high-level diagnosis of vehicle electronic faults
 Use the knowledge and skills gained to aid in identification of hardware or software related faults and correct ECU control function



BOSCH

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- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician



DURATION

3 Days

PICO

STEP 4



ADVANCED



COURSE OVERVIEW

The WPS500X pressure test adaptor take your oscilloscope's capabilities to the next level and beyond. The possibilities in terms of pressure testing are endless, limited just by your imagination (and maximum permissible pressure).



COURSE CONTENT

- What can (and can't) the WPS do?
- What can it prove?
- Standard tests
- The three ranges
- Measurements
- Understanding pressure waveforms



PREREQUISITES

It is aimed at people that have completed the previous Steps 1, 2 and 3 or more proficient scope users that want to expand the use of their Pico Scope to include pressure testing.



ATTAINMENT

On completion of Pico Step 4, delegates will be able to:

Measure and analyse :-

- Exhaust Pulsations
- Crankcase pressures
- Intake Pressures
- In-Cylinder Combustion Pressure
- Fuel Pressure



DURATION

1 Day



- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician

PICO

STEP 5



COURSE OVERVIEW

Are you ready for this? Prepare to blow your mind with the immense new world of testing that this could open up. This is not for your everyday misfire job etc. this is for those problems that no-one else has been able to fix.



COURSE CONTENT

Understanding Vibration theory:

- Hertz
- Pitch
- Energy
- Resonance
- Vibration Orders (Harmonics)
- Getting to know the hardware
- Basic Required Information
- Example Calculations
- Displaying Result



PREREQUISITES

It is aimed at people that have completed the previous Steps 1, 2, 3 and 4 or more proficient scope users that want to expand the use of their Pico Scope Noise, Vibration and Harshness testing.



ATTAINMENT

On completion of Pico Step 5, delegates will be able to:

- Vehicle vibration/noise principles and theory
- Connection of Pico Scope to diagnose customer NVH complaints
- Interpretation of the results displayed in the NVH software
- Identification and diagnosis of wheel/tyre vibrations—**T1**
- Identification and diagnosis of propeller shaft vibrations—**P1**
- Identification and diagnosis of engine related vibrations—**E1**
- Balance procedure for prop shafts
- Diagnosis of unknown vehicle vibrations



DURATION

1 Day



ADVANCED



Senior Manager	<input type="checkbox"/>
Service Manager	<input type="checkbox"/>
Service Receptionist	<input type="checkbox"/>
Technician	<input checked="" type="checkbox"/>
Diagnostic Technician	<input checked="" type="checkbox"/>
Electrical Technician	<input checked="" type="checkbox"/>
Diesel Technician	<input checked="" type="checkbox"/>
Bodyshop Technician	<input type="checkbox"/>

