



# EURO ACADEMY



# PROSPECTUS







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**EURO ACADEMY E-Learning Courses combine  
8 hours online training with a 1 Day practical masterclass.**

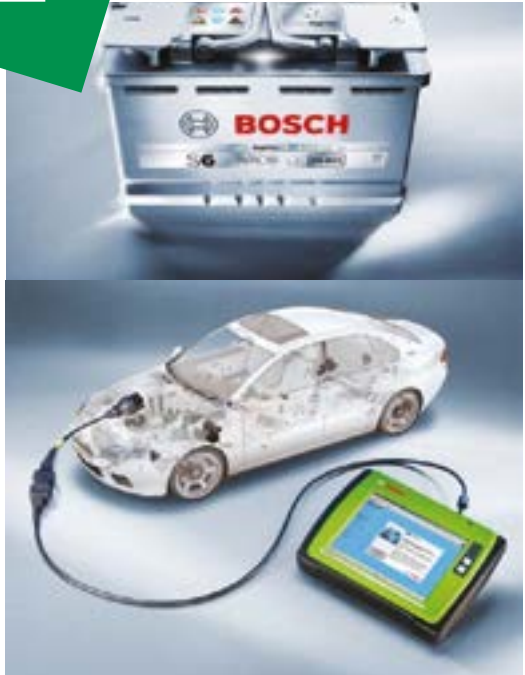
- It is recommended that course bookings are made with sufficient time for candidates to complete the online training well in advance of the one day practical.
- On receipt of bookings, candidates will receive a login and password information, allowing ongoing access to the Euro Academy training portfolio.

**For further information please contact: [training@eurocarparts.com](mailto:training@eurocarparts.com)**

# 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 measurements
  - 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

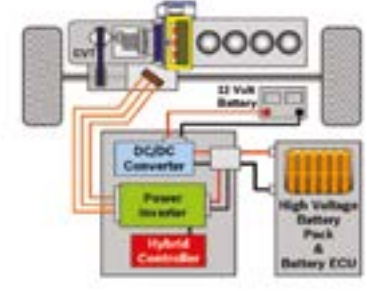
2 Days

# 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



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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



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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 type="checkbox"/>

# BOSCH CS1 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	<input checked="" type="checkbox"/>
Service Manager	<input checked="" type="checkbox"/>
Service Receptionist	<input checked="" 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"/>



# EURO ACADEMY

## GED1

### ESSENTIAL ELECTRICS



ESSENTIAL

ESSENTIAL



#### COURSE OVERVIEW

With the ever changing technology in the cars of today, we have developed this course to focus on the electrical components found in a modern vehicle. We first look at the fundamentals of electricity and the role it plays in our vehicles, how the various components operate and how we can test them.



#### COURSE CONTENT

- The fundamentals of electricity
- Electrical applications in a vehicle
- How to work safely with electricity
- Interpreting wiring diagrams from various manufacturers



#### ATTAINMENT

- On completing this course, you will be able to:
- Understand how electricity works and how it applies to the modern workshop.
  - Carry out test procedures on electrical components and circuits in a modern vehicle.
  - Understand the safety element surrounding electricity and the danger it brings to the human body.
  - Interpret any electrical wiring diagram from any manufacturer.
  - IMI Certification is available for this course.



#### DURATION

8hrs e-Learning - 1 day practical

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

# EURO ACADEMY

## GED2

### SENSORS AND ACTUATORS



ESSENTIAL



#### COURSE OVERVIEW

The development of engine management systems has brought about an ever advancing motor industry. In this course we aim to break down the complications surrounding electronic engine management and will study the various sensors and actuators that are vital for the smooth operation of our engines. In particular we focus on the characteristics, operation and parameters for most sensors and actuators used in a modern vehicle.



#### COURSE CONTENT

- Introduction to engine management
- Basic concepts of electronic engine management
- Fuel injection systems
- Study of sensors
- Study of actuators
- Technical features
- Main settings



#### ATTAINMENT

- On completing this course, you will be able to:
- Locate the different sensors and actuators in the vehicle, understand what their functions are and recognise when they operate correctly.
  - Know how to test and evaluate the different sensors and actuators in the vehicle.
  - Correctly connect the appropriate test equipment and understand the figures and signals produced.
  - Carry out an efficient diagnosis on the engine management system and its performance.
  - IMI Certification is available for this course.



#### DURATION

8hrs e-Learning - 1 day practical



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"/>

# EURO ACADEMY

## GED3

### MULTIMETER AND OSCILLOSCOPE



ESSENTIAL

ESSENTIAL



#### COURSE OVERVIEW

Due to the ever increasing number of electronic components in a vehicle, we must know how to diagnose and interpret electrical circuits. By using a multimeter and oscilloscope we can ensure an efficient and effective diagnosis. On this course we will become more familiar with the capabilities of using a multimeter and oscilloscope and discover the various tests we can carry out to verify faults.



#### COURSE CONTENT

- Different types of multimeter and their measurements
- When to use an oscilloscope and how it operates
- Leads and clamps used
- Basic concepts
- Options menu on oscilloscopes
- Use of several channels
- Testing active and passive electrical circuits
- Testing the starting and charging system
- Testing the preheating systems
- Testing the ignition system
- Checks on sensors
- Checks on actuators
- Diagnostics of multiplexing networks
- Finding intermittent faults



#### ATTAINMENT

- On completing this course, you will be able to:
- Choose the correct measuring tools and use them to identify faults within various circuits.
  - Safely measure the various sensors and actuators in the vehicle.
  - Make use of guided tests and diagnose electrical circuits and intermittent faults.
  - IMI Certification is available for this course.



#### DURATION

8hrs e-Learning - 1 day practical

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

# EURO ACADEMY

## GED4

### DIAGNOSTICS



ESSENTIAL



#### COURSE OVERVIEW

With diagnostics we invite technicians to follow a logical process of fault finding. Here we will learn about the various diagnostic tools available to the independent aftermarket and their capabilities as well as their applications. This includes everything from the verification of faults to using the diagnostic tool in the correct repair of the vehicle. We will look at different electronic control units and how we can interpret them in depth to ensure a time efficient repair.



#### COURSE CONTENT

- Identifying the vehicle with a diagnostic tool
- EOBD diagnostics
- Specific management system diagnostics
- Parameter diagnostics
- Error diagnostics
- State diagnostics
- Activation diagnostics
- Diagnostic methodology
- Protocols used for fault diagnostics



#### ATTAINMENT

- On completing this course, you will be able to:
- Make the correct diagnosis of a fault on any vehicle with the use of a diagnostic tool.
  - Order the correct spare parts for the repair to ensure a first time fix.
  - Understand the different types of error codes and the sequence to follow for an effective diagnosis of a vehicle.
  - Understand the operation of the diagnostic equipment including: error code reading, parameters, activation of components, information and programming of a control unit.
  - IMI Certification is available for this course.



#### DURATION

8hrs e-Learning - 1 day practical

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

# EURO ACADEMY

## GED5

### COMMON RAIL DIESEL



ESSENTIAL

ESSENTIAL



#### COURSE OVERVIEW

The purpose of this course is to understand the operation of the Common Rail system and its components. In order to do this, we will study the high pressure fuel system found on a large number of diesel engines as well as the safety precautions to be followed when handling and repairing the system. To assist in an efficient repair of this system, we will learn how to test the electronic components of high pressure fuel systems from various manufacturers.



#### COURSE CONTENT

- Introduction to high pressure direct injection
- Main components of low pressure
- Main components of high pressure
- Operation of the electromagnetic injector
- Operation of the piezoelectric injector
- Electronic management system
- Troubleshooting Common Rail
- Precautions and safety when handling and repairing the high pressure fuel system



#### ATTAINMENT

- On completing this course, you will be able to:
- Recognise, evaluate, diagnose and repair the different elements that make up the Common Rail system.
  - Work safely when carrying out any repairs on the high pressure fuel system.
  - Use diagnostic tools and oscilloscopes to correctly test the main components in the fuel injection system.
  - IMI Certification is available for this course.



#### DURATION

8hrs e-Learning - 1 day practical

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"/>

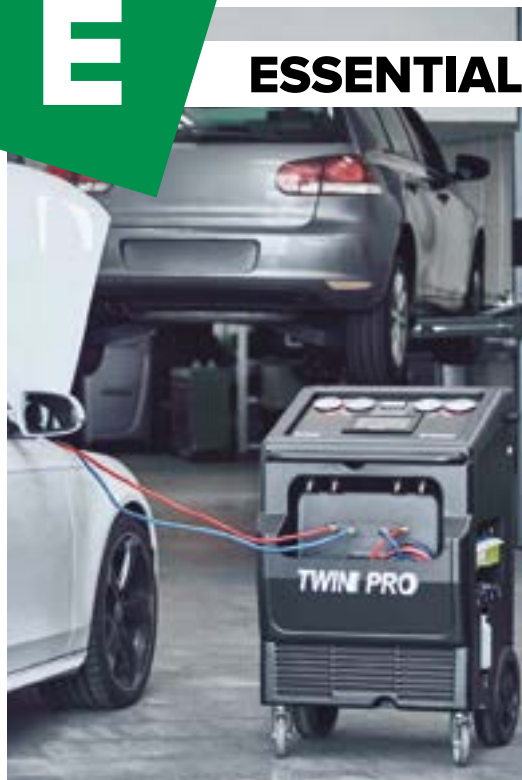
# EURO ACADEMY

## GED6

### AIR CONDITIONING



**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 explaining how to check their operation in detail. To follow on from the theory, we will use the latest equipment to explain the procedures for recharging vehicles in a safe and time efficient manner.



#### COURSE CONTENT

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



#### ATTAINMENT

- On completing this course, you will be able to:
- Accurately determine the correct operation of an air conditioning system in a vehicle.
  - Diagnose and repair any faults in the air conditioning system safely.
  - IMI Certification is available for this course.



#### DURATION

8hrs e-Learning - 1 day practical

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"/>

# EURO ACADEMY

## GED7

### STEERING



ESSENTIAL

ESSENTIAL



#### COURSE OVERVIEW

In this course, we will discover the different types of steering systems used in both passenger cars and off road vehicles including power assisted and fully mechanical systems. Within power assisted steering we examine both hydraulic and electrical power assisted systems.

Steering on a modern vehicle is not only limited to the front axle, with several manufacturers opting to use the rear axle to adjust road handling. We will also explore these systems as well as explaining the importance for correct steering geometry and 4 wheel alignment. Also described within this course are the most common faults that occur in steering systems and the best practice for carrying out safe repairs.



#### COURSE CONTENT

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



#### ATTAINMENT

- On completing this course, you will be able to:
- Quickly identify faults in a vehicles steering system and the best method of repair to be carried out.
  - Understand how important steering geometry is to a vehicle.
  - Undertake repair work on all types of steering that may be fitted to a passenger or off road vehicle.
  - IMI Certification is available for this course



#### DURATION

8hrs e-Learning - 1 day practical

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician

# EURO ACADEMY

## GED8

### HYBRID – SAFETY AND AWARENESS



ESSENTIAL



#### COURSE OVERVIEW

This course explores the idea of hybrid vehicles being an alternative to the conventional petrol and diesel engines as the main source of power. We will identify the pros and cons of hybrid vehicles and their place in the independent workshop. This includes identifying a hybrid, its main components and how to work on these vehicles safely.

Using a 2nd Gen. Toyota Prius, we will examine the operation of the high voltage system including the hybrid motors, high and low voltage batteries, inverter, and the vehicles braking system as it utilises regenerative braking.

The vehicle itself comprises of a 1500cc Atkinson cycle petrol engine with VVT-I variable timing system, two electric motors known as motor generators coupled by an epicyclic gear set to the petrol engine.



#### COURSE CONTENT

- Introduction
- Hybrid vehicles, an alternative
- Structure and function of the different systems
- Existing hybrid models
- Different Prius generations
- Main component layout
- The internal combustion engine
- Transmission
- HV Battery
- Inverter



#### ATTAINMENT

On completing this course, you will be able to:

- Identify the components of the high voltage system.
- Safely work on the vehicles systems including braking and engine servicing.
- Safely and efficiently diagnose faults on the hybrid system.
- Understand how the charging system and air conditioning system works on a hybrid vehicle.



#### DURATION

2 days.



Senior Manager	<input checked="" type="checkbox"/>
Service Manager	<input checked="" 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"/>



# EURO ACADEMY

## GED9

### DSG

### GEARBOX



**ESSENTIAL**

ESSENTIAL



#### COURSE OVERVIEW

This course covers the operation, maintenance, repair and adjustment of 6 speed & 7 speed DSG dual clutch gearboxes. Using bench mounted DSG gearboxes, candidates will learn to identify and analyse the different components of a dual clutch gearbox practically. They will gain an in-depth understanding of the practices required to successfully carry out diagnosis, maintenance and repair of DSG gearboxes and associated controls.



#### COURSE CONTENT

- Operation of the 6-gear DSG gearbox.
- Identification of the tools and exploded view.
- General maintenance and lubrication.
- Disassembly and assembly of the oil pump (6-gear DSG).
- Mechatronic unit, disassembly, study and assembly (6-gear DSG).
- Double clutch, disassembly, replacement, adjustment and assembly (6-gear DSG).
- Operation of the 7-gear DSG gearbox.
- Identification of the tools and exploded view.
- General maintenance and lubrication.
- Mechatronic unit, disassembly, study and assembly (7-gear DSG).
- Double clutch, disassembly, replacement, adjustment and assembly (7-gear DSG).



#### PREREQUISITES

There are no formal entry requirements for this qualification.



#### ATTAINMENT

- On completing this course, you will be able to:
- Diagnose faults and identify correct operation of current DSG gearboxes.
  - You will have the knowledge to perform maintenance, adjustments and replacement of worn or damaged components, such as oil and filter, wet or dry clutch discs, axle speed sensors or Mechatronic unit.



#### DURATION

2 days.



Senior Manager	<input checked="" type="checkbox"/>
Service Manager	<input checked="" 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"/>

# PAGID MODULE 1

## IMI QAP AWARD IN LIGHT VEHICLE BRAKE FITTING



**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 2 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



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"/>



# KLARIUS IMI LEVEL 1

## INTRODUCTION TO EXHAUSTS, CATS, DPFS & ADDITIVE SYSTEMS



**ESSENTIAL**

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

**Klarius™**

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician



INSTITUTE OF THE  
MOTOR INDUSTRY



# EURO ACADEMY IMI

E

ESSENTIAL

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



### 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. E-Learning 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



INSTITUTE OF THE  
MOTOR INDUSTRY

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

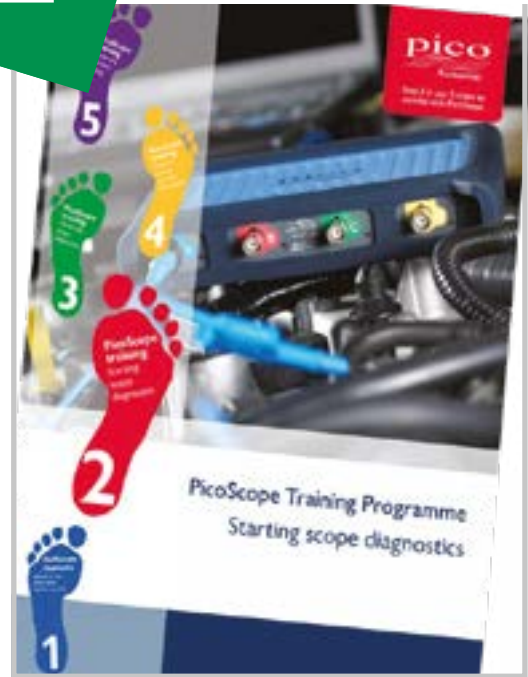
On completion of Pico Step 2, delegates will be able to:

- 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**



**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 2 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



**INSTITUTE OF THE MOTOR INDUSTRY**

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

# F-GAS

## REFRIGERANT HANDLING

# E

## ESSENTIAL

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



## City & Guilds

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician







# INTERMEDIATE

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<b>BOSCH VSB 8</b> AIR BAG & SUPPLEMENTARY SAFETY SYSTEMS	PAGE 27	<b>KLARIUS IMI LEVEL 2</b> INTRODUCTION TO CATS, DPFS & ADDITIVE SYSTEM DIAGNOSIS	PAGE 37
<b>BOSCH VSB 26</b> AUTOMOTIVE AIR CONDITIONING SYSTEM DIAGNOSIS	PAGE 28	<b>PICO</b> STEP 3	PAGE 38
<b>BOSCH VSTD 9</b> OSCILLOSCOPE OPERATION & SIGNAL TEST METHODS	PAGE 29	<b>IMI LEVEL 3</b> LIGHT VEHICLE INSPECTION	PAGE 39
<b>BOSCH VSG 5</b> ENGINE MANAGEMENT - DIAGNOSIS OF UNIVERSAL COMPONENTS	PAGE 30	<b>IMI LEVEL 2</b> AWARD IN MOT TESTING (CLASSES 4 & 7)	PAGE 40
<b>BOSCH VSC 6</b> BRAKING & CHASSIS SYSTEMS: ABS & ESP	PAGE 31	<b>IMI LEVEL 3</b> AWARD IN MOT TEST CENTRE MANAGEMENT	PAGE 41
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# ADAS TECHNOLOGY AND CALIBRATION

## ADVANCED DRIVER ASSISTANCE SYSTEMS



**INTERMEDIATE**



### COURSE OVERVIEW

ADAS systems have been fitted to vehicles since the early 1990's. From 2016 new vehicles require a minimum of two ADAS systems fitted to qualify for a 5 Star NCAP Safety Rating, these consist of Autonomous Emergency Braking (AEB) and Lane Departure Warning. This course covers the implications of incorrect alignment, operation and calibration techniques using the CSC-Tool from HELLA GUTMANN SOLUTIONS, a comprehensive multi-brand workshop tool for calibrating camera and radar-based Advanced Driver Assist Systems (ADAS).



### COURSE CONTENT

- Advanced Driver Assistance Technologies
- Understanding ADAS and ADAS Sensors
- Relationship To Vehicle Alignment and ADAS
- Effects of Incorrect Calibration
- Effects on all related safety systems
- When to Calibrate
- Risks of incorrect Repair procedures
- Dynamic and Static Camera Calibrations
- Radar systems and Calibration
- Pre and Post Calibration
- Future Technology and Developments



### PREREQUISITES

Understanding of Wheel Alignment  
Basic Diagnostic skills



### ATTAINMENT

On completion of the course, delegates will be able to:

- Understand features of Dynamic and Static calibration
- Accurately calibrate camera and radar based driver assist systems



### DURATION

1 Day



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

# BOSCH VSB 8

## AIRBAG & SUPPLEMENTARY SAFETY SYSTEMS



**INTERMEDIATE**



INTERMEDIATE



### COURSE OVERVIEW

This course is a 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**



### 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 an 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	<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"/>

# BOSCH VSTD 9

## OSCILLOSCOPE OPERATION & SIGNAL TEST METHODS



**INTERMEDIATE**



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	<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"/>

# BOSCH VSG 5

## ENGINE MANAGEMENT - DIAGNOSIS OF UNIVERSAL COMPONENTS



### INTERMEDIATE



#### COURSE OVERVIEW

This course provides technicians with 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**

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**



### 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

1 Day



**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**



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**



## 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 a 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**



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 recommend 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

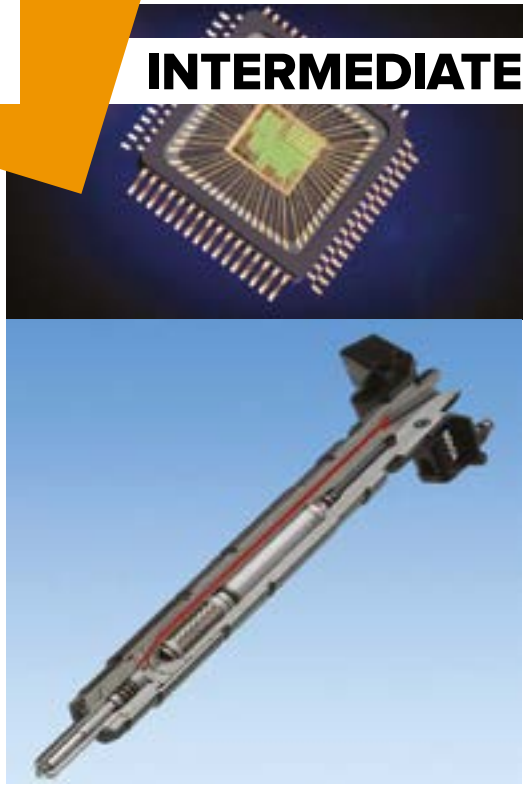
Bodyshop Technician

# BOSCH VSE 7

## AUTOMOTIVE ELECTRONICS: VEHICLE SENSORS & COMPONENTS



**INTERMEDIATE**



### 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



### DURATION

3 Days

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

# 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.



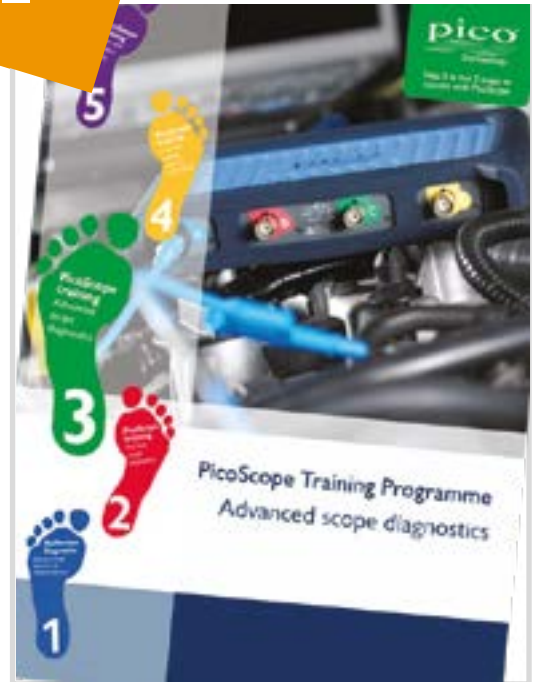
### ATTAINMENT

- 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        | <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"/>            |

# 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 four 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



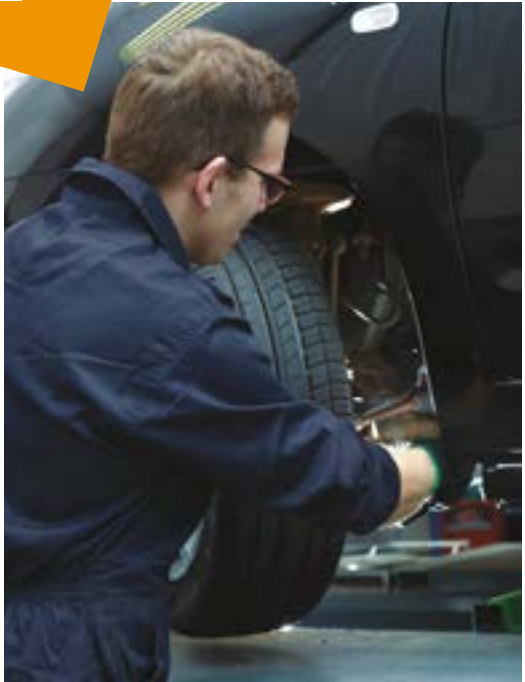
- Senior Manager
- Service Manager
- Service Receptionist
- Technician
- Diagnostic Technician
- Electrical Technician
- Diesel Technician
- Bodyshop Technician




# 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**  
4 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



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



# ZF SERVICES CERTIFICATE

(IMI ACCREDITED)

## 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 successfully passing at the end of course examination, the candidate will be awarded and IMI Accredited 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 ACCREDITED)

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 drivetrain 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 successfully passing at the end of course examination, the candidate will be awarded and IMI Accredited 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 ACCREDITED)

## 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 successfully passing at the end of course examination, the candidate will be awarded and IMI Accredited 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**



# A

# ADVANCED

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<b>BOSCH VSH 25</b> HYBRID & ELECTRIC VEHICLE SYSTEM REPAIR	PAGE 47
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# BOSCH VSC 13

## ADVANCED BRAKING CONTROL SYSTEMS



**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

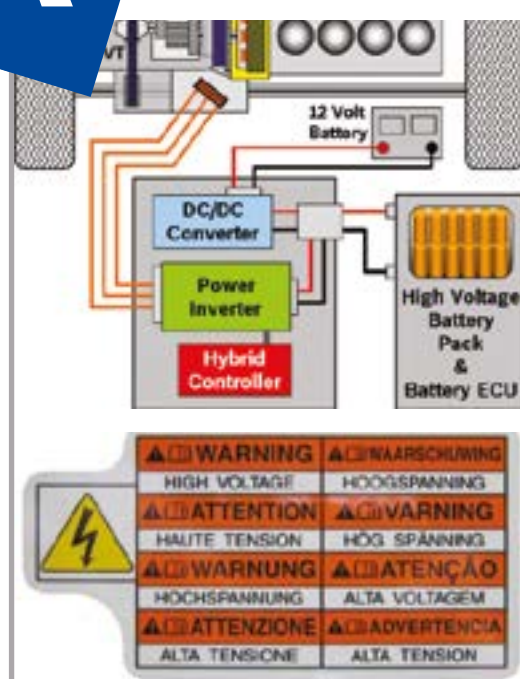
Bodyshop Technician

# BOSCH VSH 25

## HYBRID & ELECTRIC VEHICLE SYSTEM REPAIR



**ADVANCED**



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,



### DURATION

2 Days



**BOSCH**

Invented for life

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.



# BOSCH VSB 10

## BODY CONTROL SYSTEMS, CAN & MULTIPLEXED NETWORKS

# A

## 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 and wiper systems
- Litronic lighting systems, instrumentation and parking aid systems



### PREREQUISITES

It is recommended 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**



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
- 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



**BOSCH**

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

Bodyshop Technician



### DURATION

2 Days

# BOSCH VSD 23

## ADVANCED DIESEL SYSTEM CONTROLS & EMISSIONS

# A

### 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



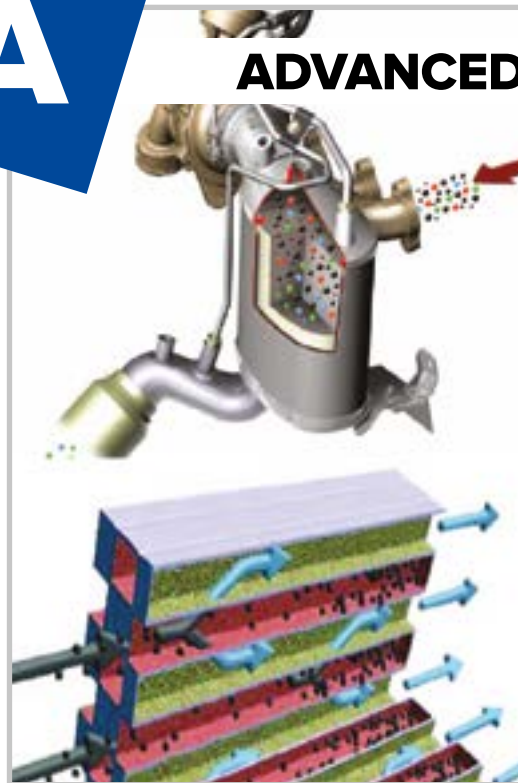
### PREREQUISITES

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



**ADVANCED**



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

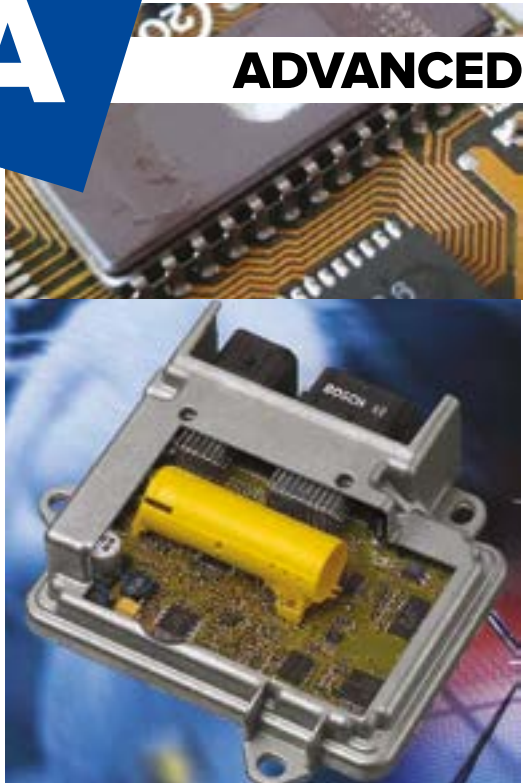
3 Days

# BOSCH VSE 11

## AUTOMOTIVE ELECTRICS ADVANCED: ECU CONTROL & MICROELECTRONICS



**ADVANCED**



### 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



### DURATION

3 Days



**BOSCH**

Invented for life

Senior Manager

Service Manager

Service Receptionist

Technician

Diagnostic Technician

Electrical Technician

Diesel Technician

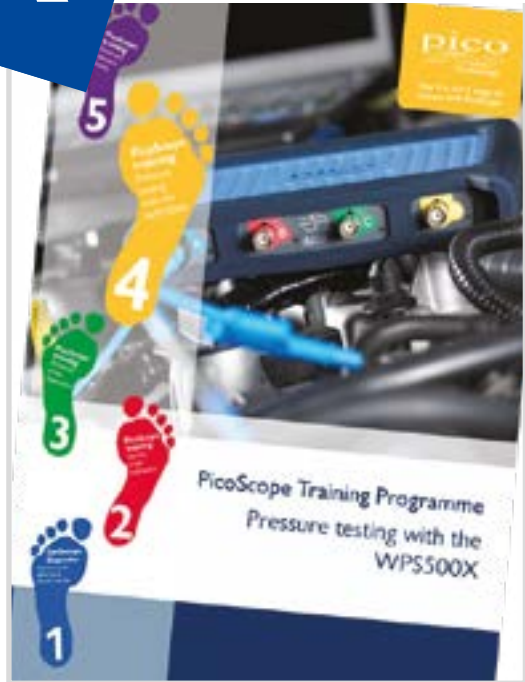
Bodyshop Technician

# PICO

## STEP 4



**ADVANCED**



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



## ADVANCED



### 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

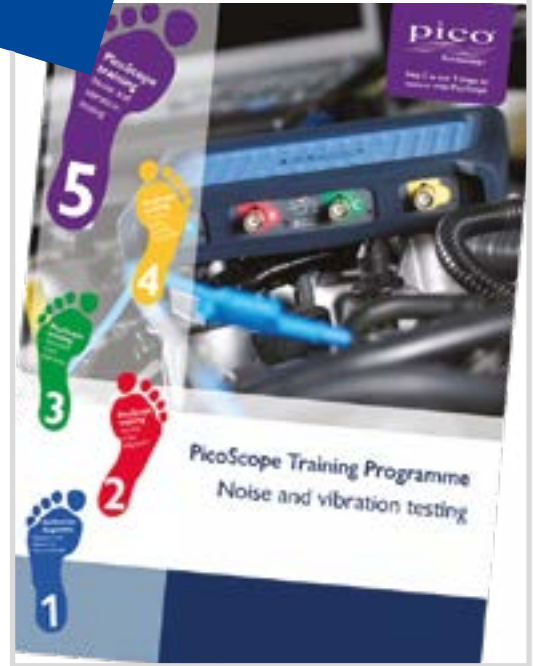
On completion of Pico Step 5, delegates will be able to:

- 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



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"/>

# NOTES

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