

## **UNIT 2 : INJECTION AND IGNITION SYSTEMS IN PETROL ENGINES**

### **1. CONDITIONS OF ACCESS TO THE UNIT:**

#### **TECHNICAL PRE-REQUISITES :**

**Before starting the training course, the student must be able to :**

- Undertake basic maintenance on a petrol engine

#### **METHODOLOGY PRE-REQUISITES :**

**Before starting the training course, the student must be able to :**

- Read a basic electrical diagram
- Explain the basic theory of combustion
- Use an oscilloscope to visualise the signals from vehicle's systems
- Choose the appropriate documents for the job to be done

### **2. VALIDATION OF UNIT 2 :**

**Test:** practical assessment in a real situation allowing the acquisitions obtained during the training course to be assessed.

**Objective of the assessment :** Assess the capacities of the candidate to establish a diagnostic on injection and ignition systems in petrol engines using the appropriate information and testing methods, and to repair the fault.

**Duration:** 2 hours 30 maximum

#### **Material Necessary:**

Written information about the problem

Vehicle presenting a malfunction on the injection and ignition systems.

All useful technical documents

Equipped work station/ multimeter/ oscilloscope/ diagnostic tool....

#### **NB**





The assessment is to be done by at least two instructors competent in the professional domain of automobile maintenance.

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KNOWLEDGE	SKILLS	COMPETENCE
<p><b><u>K1:</u></b> General description</p> <p>K1.1: Combustion K1.2: Fuel K1.3: Advanced theory of combustion</p> <p><b><u>K2:</u></b> Indirect injection system</p> <p>K2.1: Fuel supply system K2.2: Fuel pressure K2.3: Air supply system K2.4: Electrical circuits K2.5: The different ignition systems K2.6: Control unit input and output signals K2.7: Diagnostic tools K2.8: Diagnostic, maintenance and servicing</p> <p><b><u>K3:</u></b> Direct injection system</p> <p>K3.1: Air fuel ratio K3.2: Diagnostic, maintenance and servicing</p>	<p><b>S1:</b> Explain physical phenomena of combustion in petrol engines</p> <p><b>S2:</b> Identify the elements of the injection and ignition systems</p> <p><b>S3:</b> Explain how each element of the injection and ignition system works</p> <p><b>S4:</b> Use electrical diagrams for fault diagnosis</p> <p><b>S5:</b> Measure pressure and flow</p> <p><b>S6:</b> Establish a diagnostic procedure to identify the fault</p> <p><b>S7:</b> Apply the diagnostic procedure using the diagnostic tools</p>	<p><b><u>C1:</u></b> Diagnose and repair a vehicle stability management system</p> <p>C1.1: Identify with precision the symptoms of the fault C1.2: Identify the causes of the fault C1.3: Test the system C1.4: Validate the malfunction and choose the appropriate action to be done C1.5: Respect the methods and schedule</p> <p><b><u>C2:</u></b> Organise the work respecting health and safety rules</p>

### CREDIT POINTS



FINLAND 	FRANCE 	HUNGARY 	ROMANIA 
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