

JOB ROLE – AUTOMOTIVE SERVICE TECHNICIAN

Sector: Automotive
(Qualification Pack Code : **ASC/Q01402**)



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UNIT 2 : Serviceability, Replacement or Repair of Engine Components

Session 5: Regular Servicing of MPFI System

Content

Title	Slide No.
Session Objective	4
Introduction of MPFI	5
Advantage of MPFI	6
ECM (Engine Control Module) component and its function	7
Summary	8

Session Objectives

1. The student will be able to understand and explain the working of MPFI.
2. Able to understand the advantages of MPFI over conventional system.
3. Able to understand and explain working of ECM.

Introduction

MPFI

In this system each cylinder has number of injectors to supply/spray fuel in the cylinders as compared to one injector located centrally to supply/spray fuel in case of single point injection system.

Due to legislative requirement to reduce exhaust gas emissions (air pollution) and to increase demands in term of performance of engine, driving comfort and control and safety, MPFI system has been introduced. This system is also called Motronic engine management system.

Advantage of M. P. F. I.

1. More uniform Air-Fuel ratio will be supplied to each cylinder, hence the difference in power developed in each cylinder is minimum. Vibration from the engine equipped with this system is less, due to this the life of engine components is improved.
2. No need to crank the engine twice or thrice in case of cold starting as happens in the carburetor system.
3. Immediate response, in case of sudden acceleration / deceleration.
4. Since the engine is controlled by ECM* (Engine Control Module), more accurate amount of A/F mixture will be supplied and as a result complete combustion will take place.
5. The mileage of the vehicle will be improved.

ECM (Engine Control Module) component and its function: The function of ECM is to receive signal from various sensors, manipulate the signals and send control signals to the actuators.

Sensors: Sensing different parameters (Temperature, Pressure, Engine Speed etc.) of the engine and send signal to ECM. Some of the important sensor are crank angle sensor(CKP), cam sensor, throttle position sensor, AMF (Air mass flow) sensor, coolant temperature sensor, oxygen (lymda) sensor etc.

Actuators: Receives control signal from ECM and does function accordingly. (ISCA, PCSV, Injectors and Power Transistor etc.) Important actuators are fuel injector, immobilizer unit, body control module, motorised headlight, fuel pump etc.

Processor: ECM is also called processor because it collects all the data from sensor and process, take appropriate decision. Any sensor or actuator faults are stored in ECM memory which can be recovered or read by diagnostic equipment.

Summary

In this session you have learnt about, In this system each cylinder has number of injectors to supply/spray fuel in the cylinders as compared to one injector located centrally to supply/spray fuel in case of single point injection system.

The function of ECM is to receive signal from various sensors, manipulate the signals and send control signals to the actuators.

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