

# JOB ROLE – AUTOMOTIVE SERVICE TECHNICIAN

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



PSS Central Institute of Vocational Education  
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# **UNIT 5 : Auto Electrical**

## **Session 8: Circuit Diagram of Ignition System and Checking of Ignition Circuit**

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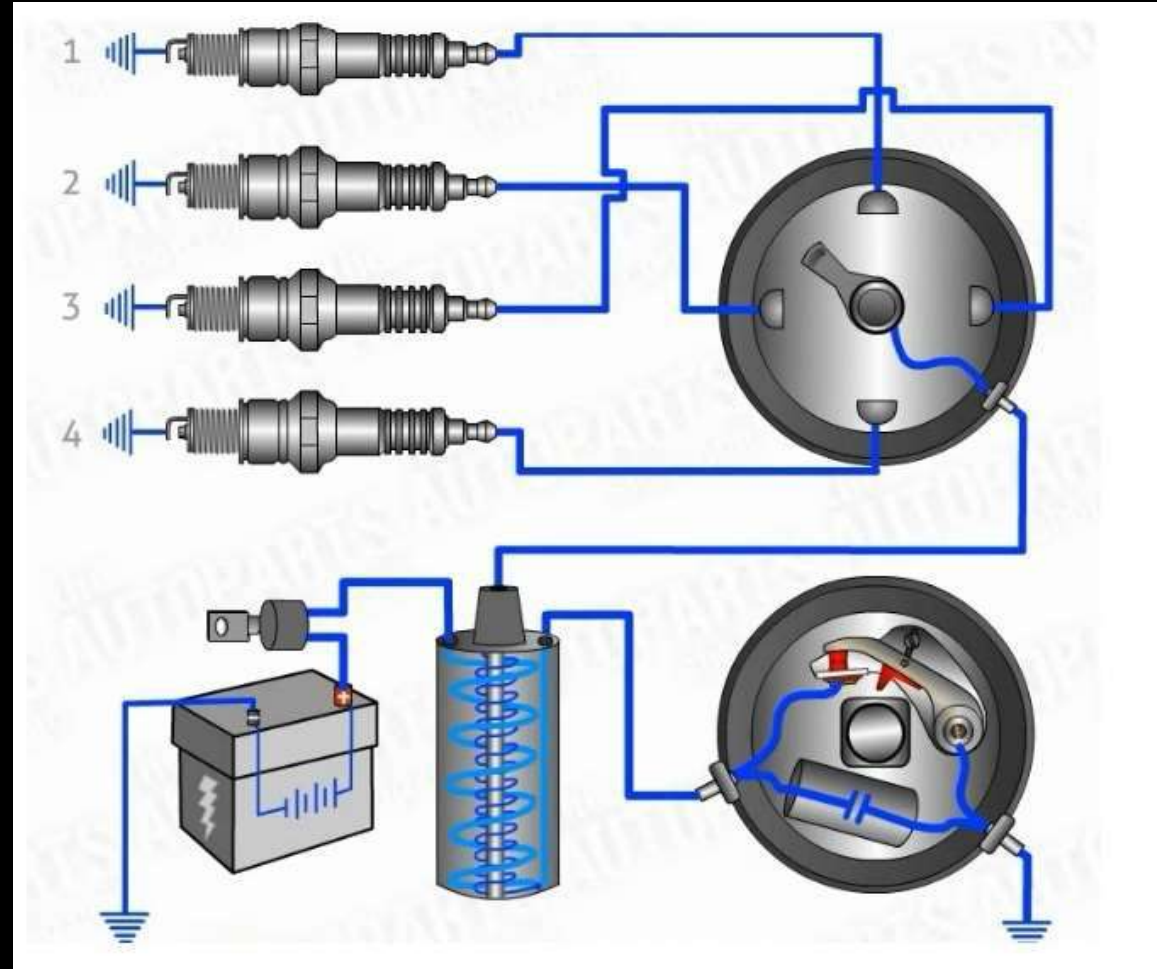
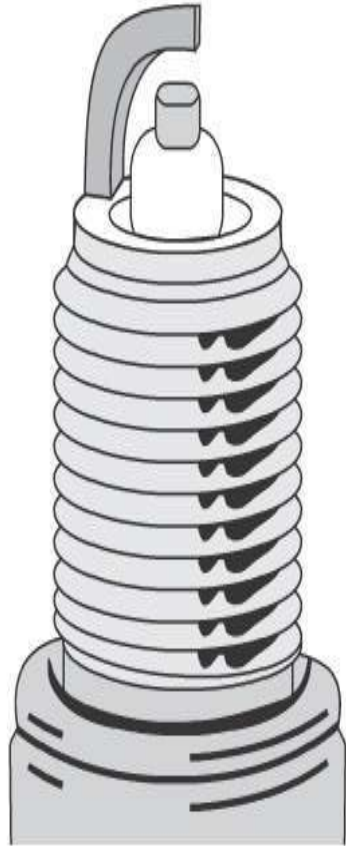
# Session Objectives

1. The student will be able to understand coil ignition system of vehicle
2. Able to describe different types of ignition systems used in vehicle
3. Able to find faults in ignition system of vehicle

# Introduction

## Spark Plug

- A spark is needed to burn air-fuel mixture in a petrol engine. Spark plug needs a very high voltage electricity to create that spark. This high voltage needed by spark plug is not supplied by battery directly.
- Function of ignition system is to generate the high voltage electricity needed to create spark and distribute the same to each of the spark plug at appropriate time.



## Coil Ignition System with CB Point

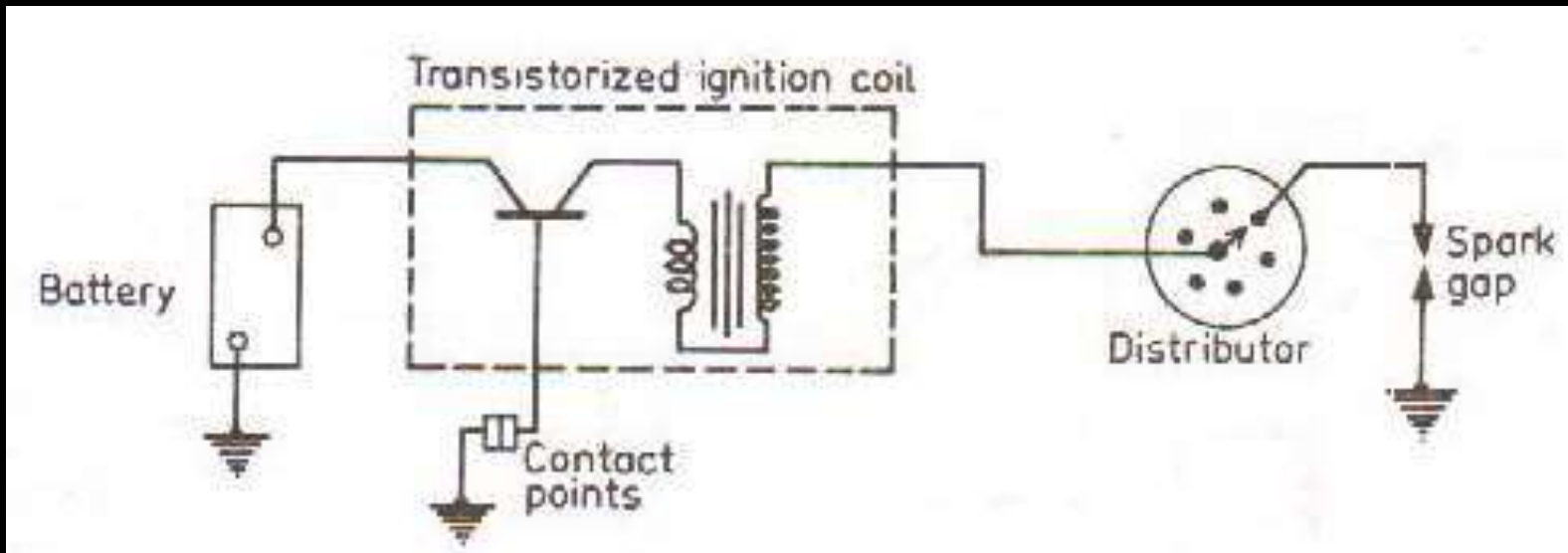
# List of Components

1. Spark Plug
2. Rotor
3. Vacuum advance assembly
4. Distributor
5. Camshaft
6. Ignition capacitor
7. Contact breaker point
8. Cam
9. Ignition coil
10. (a) Primary winding (b) Secondary winding
11. Battery
12. Ignition

# Transistorized Ignition System

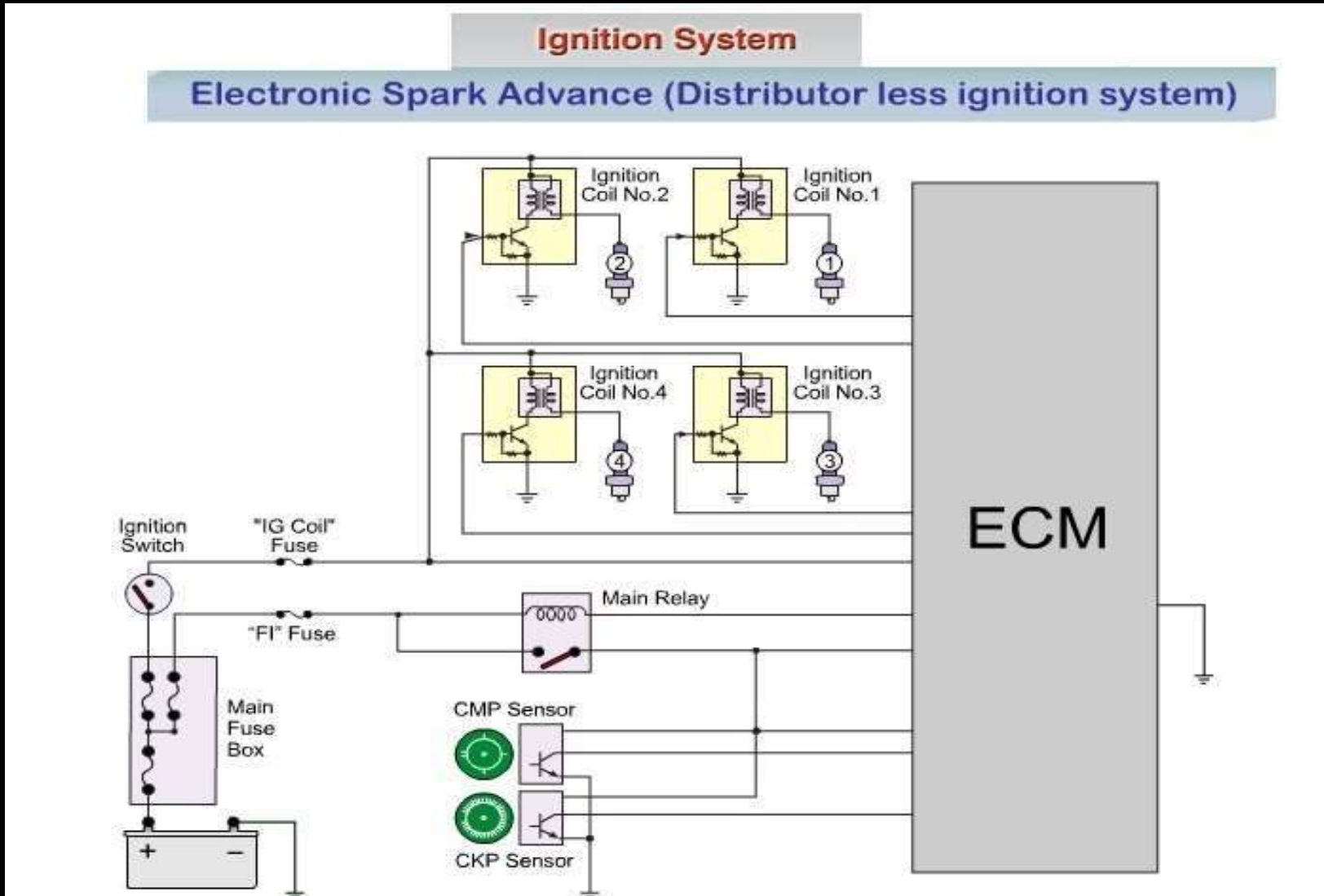
- A transistor is an electronic device that works like a relay. However, a transistor has no moving parts. This means that ignition system components last longer and need less maintenance.
- A transistor has three terminals; a base, a collector and an emitter.
- Transistor terminals the transistor that turns the ignition coil on and off is called the primary transistor. It is located in the ignition module.
- The current for the ignition coil's primary winding flows from the emitter to the collector.
- The relatively high current flow in the ignition coil's primary windings can be started and stopped by changing the voltage that reaches the base of the transistor.

# Simple Wiring Diagram of distributor with contact points and Transistorized Ignition Coil





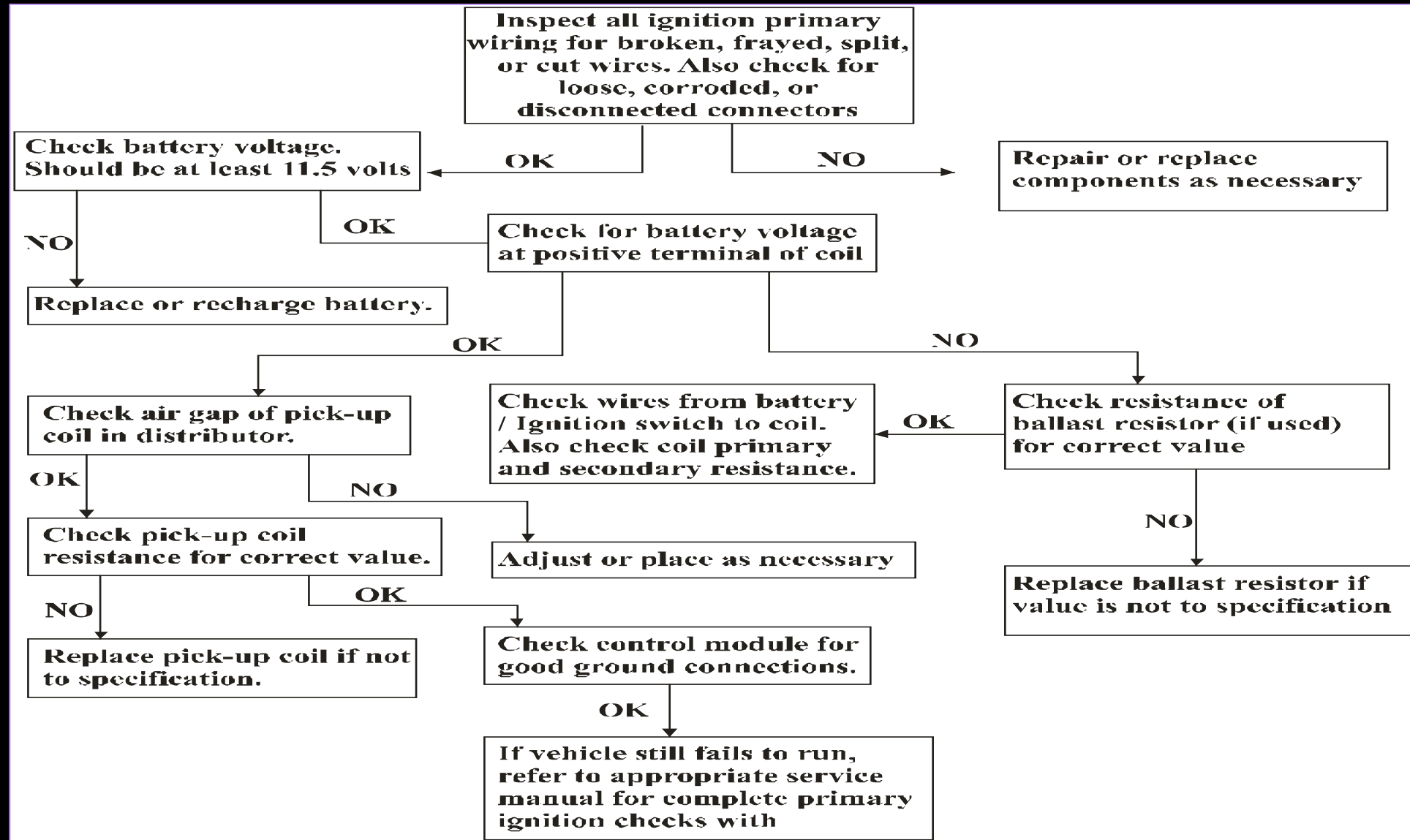
# Distributor less ignition system



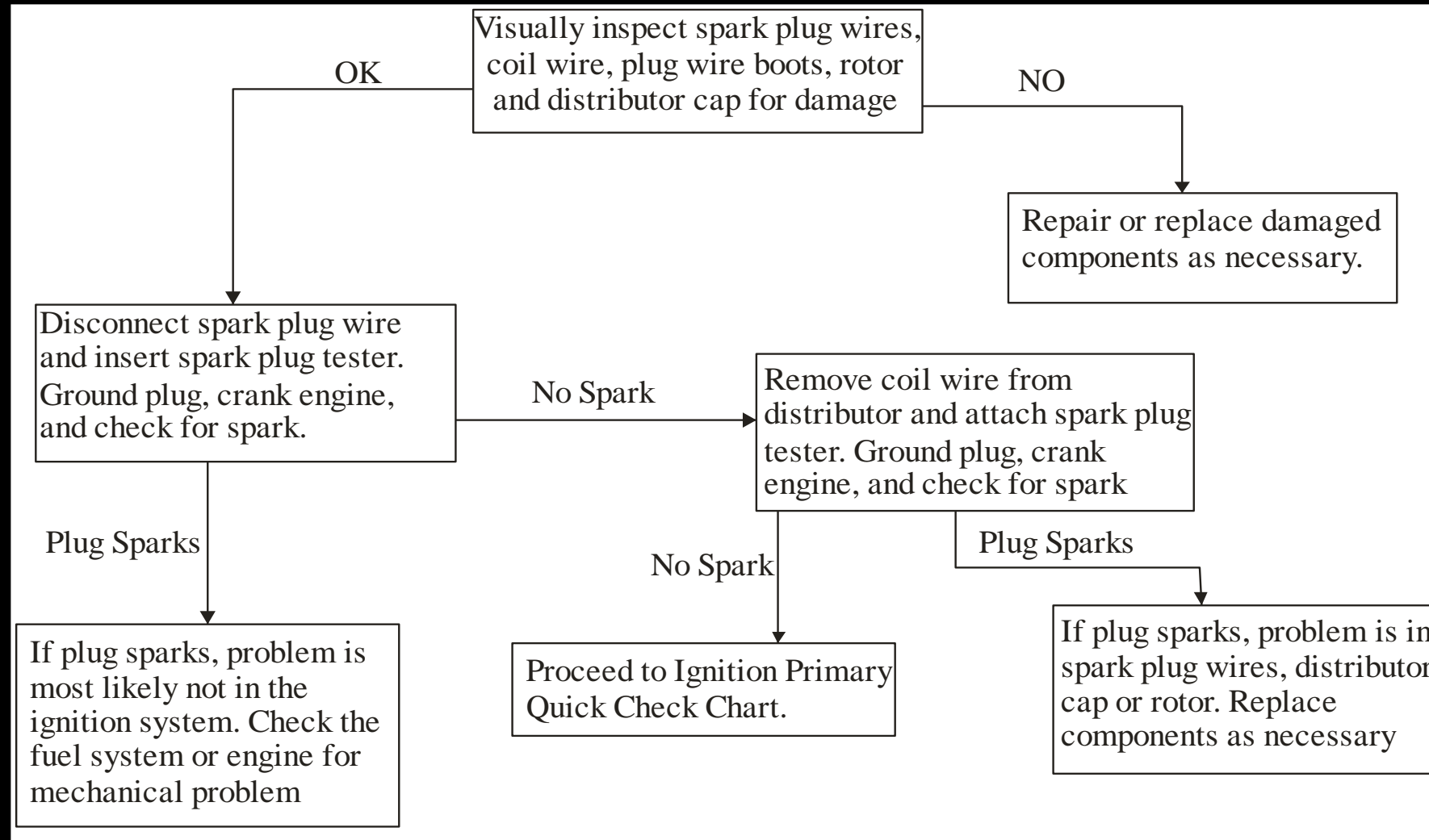
# Computerized Ignition System

Modern ignition systems are fully computerized. The spark that ignites the air/fuel mixture is completely controlled by a computer that uses sensors to determine the optimum ignition timing. The **distributor less ignition** type of system works the same way as the larger, centrally-located coils. The engine control unit controls the transistors that break the ground side of the circuit, which generates the spark. This gives the ECU total control over spark timing. Systems like these have some substantial advantages. First, there is no distributor, which is an item that eventually wears out. Also, there are no high-voltage spark-plug wires, which also wear out. And finally, they allow for more precise control of the spark timing, which can improve efficiency, emissions and increase the overall power of a car.

# QUICK CHECK CHART OF IGNITION PRIMARY CIRCUIT



# QUICK CHECK CHART OF IGNITION SECONDARY CIRCUIT



# Summary

In this session you have learnt about , **Circuit Diagram of Ignition System and Checking of Ignition Circuit, Electronic Ignition System and Distributor less ignition system. Transistorized Ignition System**

- A transistor is an electronic device that works like a relay. However, a transistor has no moving parts. This means that ignition system components last longer and need less maintenance.
- A transistor has three terminals; a base, a collector and an emitter.
- Transistor terminals the transistor that turns the ignition coil on and off is called the primary transistor. It is located in the ignition module.
- The current for the ignition coil's primary winding flows from the emitter to the collector.

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