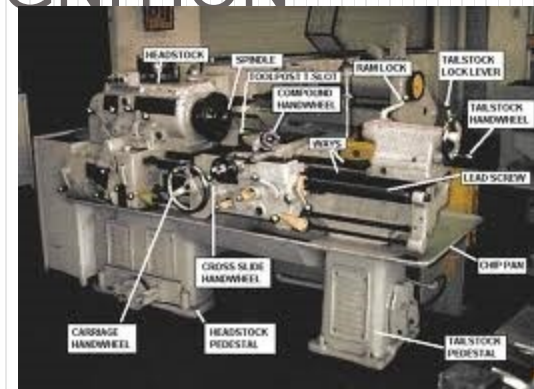
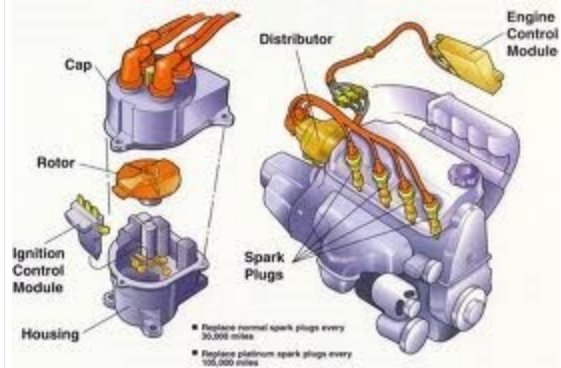


AIM

1) STUDY OF BATTERY IGNITION SYSTEM

2) STUDY OF MAGNETO IGNITION SYSTEM



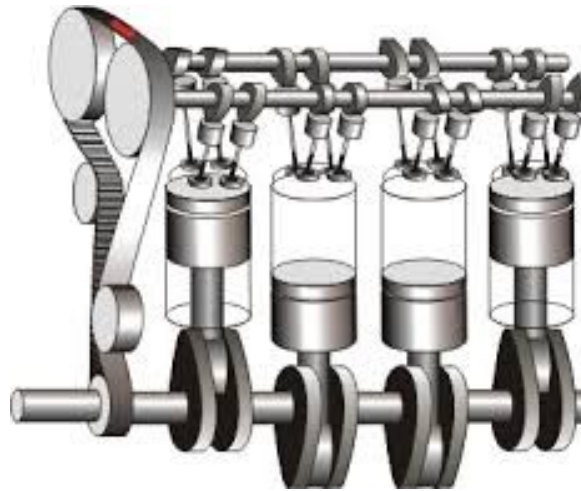
SCOPE

- 1. Study of various types of ignition systems used in motor vehicles.
- 2. Testing procedure for trouble shooting.
- 3. Adjustment of point gap or dwell.
- 4. Adjust ignition timing.
- 5. Firing order setting.
- 6. Contact breaker gap adjustment.



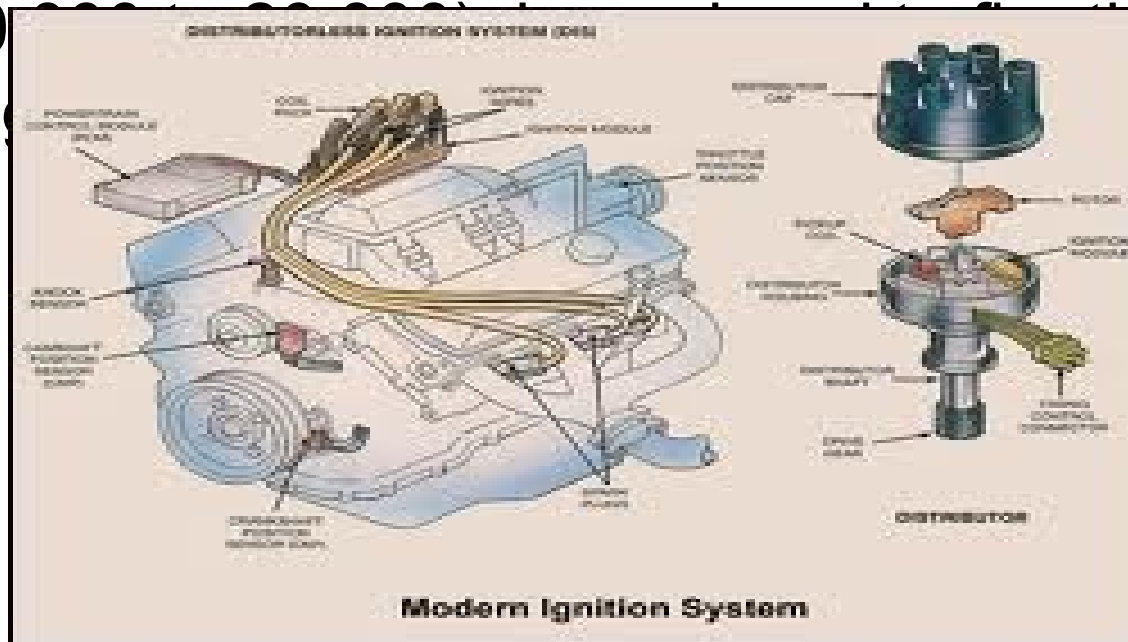
EQUIPMENT REQUIRED

- 1. Motor cycle and a multi- cylinder engine.
- 2. Total kit consisting of spanner set, set of screw drivers, feeler gauges.
- 3. Petrol and cotton rag.



THEORY

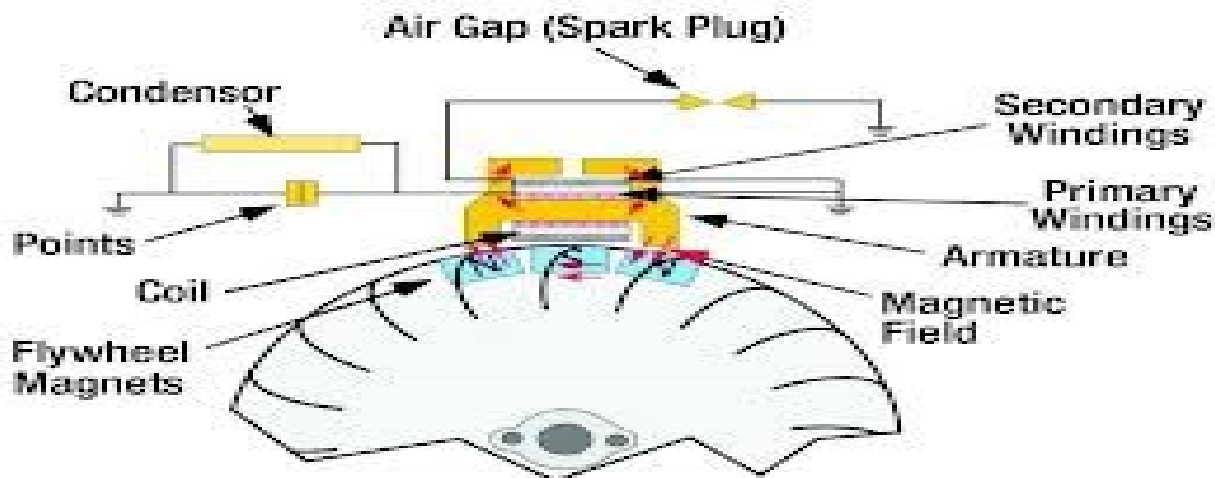
- The ignition system is designed to produce a spark to each cylinder, at the right time, to ignite the air/fuel mixture inside. The system has to ensure that the spark timing must change with engine load and speed and a very high voltage (10,000 volts) to jump the spark plug gap.



Following types of ignition systems are used.

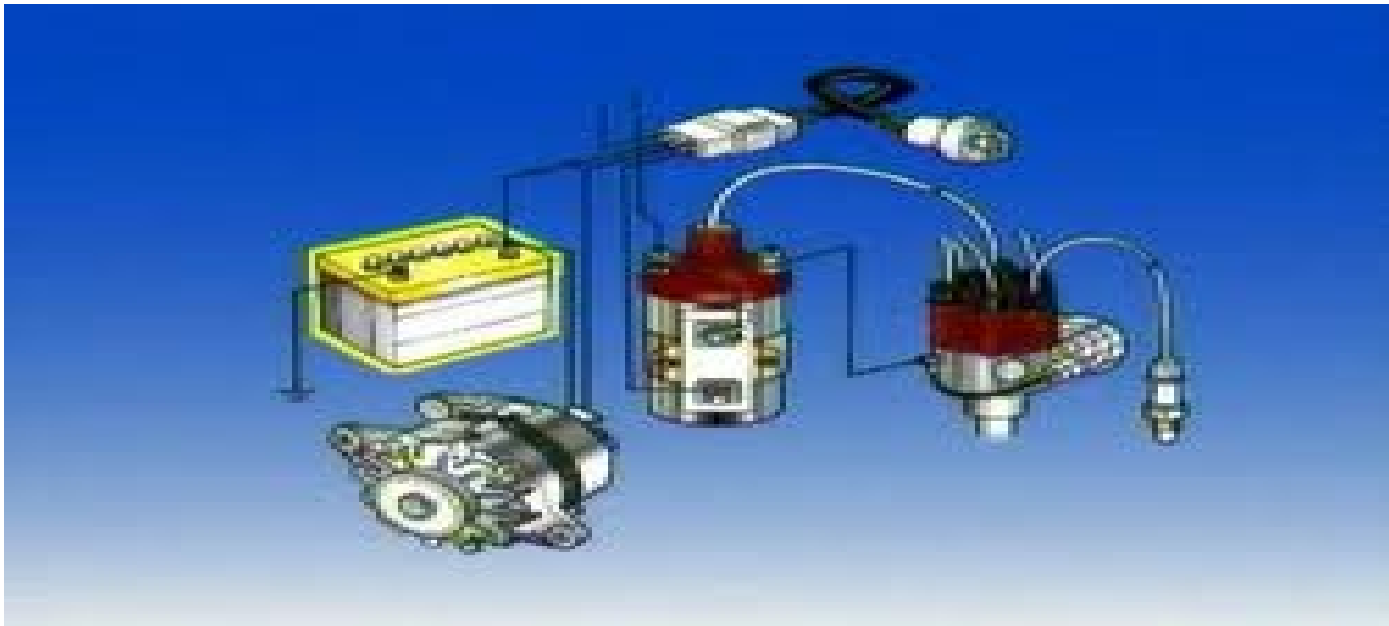
•Magneto Ignition System

It is mostly used in motorcycles, scooters and racing cars. A magneto of fixed armature having primary and secondary winding and rotating magnetic assembly is used in place of battery. The magneto Ignition system with main components is shown in Fig.



Battery Ignition System

- It is used for passenger cars and light trucks. A Battery Ignition system for four cylinder engine

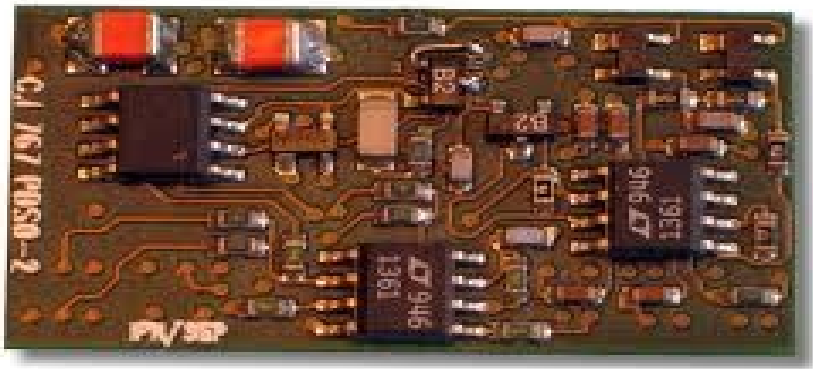


THE MAIN COMPONENT & THEIR FUNCTIONS ARE AS FOLLOWS :

- The battery supplies the electrical energy.
- The ignition switch controls the battery current for starting or stopping the engine.
- The ignition coil transforms the battery low tension current to high tension current required to produce a spark by jumping in a spark plug.
- The distributor delivers the spark to the proper cylinder and incorporates the mechanical breaker, which opens and closes the primary circuit at exact times.
- The various units are connected by electrical wiring.
- The spark plugs provide the spark in engine cylinder.

THE ELECTRONIC SYSTEM GIVE THE FOLLOWING ADVANTAGES :-

- Better emission control.
- Better fuel economy.
- Better engine performance.



SYMPTOMS

- 1. The engine does not start.
- 2. Engine “plugs” under load and runs roughly.
- 3. Engine Misses. (No. defect in Fuel or Valve Systems).
- 4. Engine gets over-heated and there is a loss of power. (No defect in cooling lubrication, braking or fuel system).
- 5. Failure of spark plug.
- 6. Loss of energy in the primary circuit.
- 7. Energy loss in secondary circuit.
- 8. Out of time.

CAUSES

- Discharged battery.
- Wet or dirty spark plug insulators.
- Ignition timing advanced too far.
- Poor connections.
- Defective spark plug
- Late ignition timing
- Burned electrodes due to over heating.
- Incorrect spark plug gap

REMEDIES

- Recharge it.
- Wipe, clean and dry with cloth.
- Check ignition timing. Retard it.
- Adjust the points to specified gap.
- Test them and replace it necessary.
- Check ignition timing. Advance it if retarded.
- Check cooling systems, ignition timing, use new plugs.
- Adjust plug gap according to specified value.

SETTING OF IGNITION SYSTEM

- Disconnect the drive to the contact breaker cover.
- Loosen the clamp of CB casing and distributor unit.
- Set the piston of cylinder NO.2 on TDC against a fixed mark on engine casing.
- Secure the CB camshaft in this position. The ignition timing will



FIRING ORDER SETTING

- Rotate the crankshaft in correct direction.
- Note the order in which inlet valves(or exhaust valve) open.
- This the firing order of the engine



GAP ADJUSTMENT OF CONTACT BREAKER

- Turn the engine shaft manually until the contacts are freely open.
- Move the fixed contact plate with the help of adjustor screw till required gap is achieved
- If gap is not correct, loosen the screws of fixed contact plate.
- Tighten the screw of distributor securing clamp.



PRECAUTIONS

- Use proper tools.
- Apply proper force for tightening or loosening of nuts and screws.
- The feeler gauge for checking the gap should be sliding fit.
- Don't interfere with the body clamping screw when adjusting the ignition timing with the help of graduated scale on the distributor securing clamp.