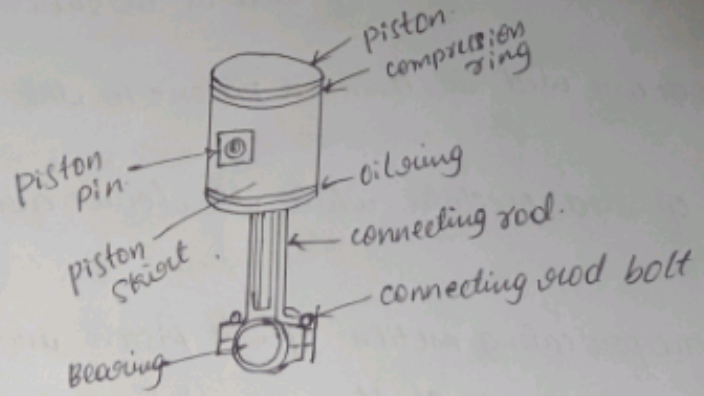
1st internal.

1. a) main components of Internal Combustion engines

1) cylinders
2) piston
3) connecting rod
4) Crank shaft
5) Valves and valve actuating mechanism

piston

* The piston is reciprocating part of the engine and converts the combustion pr in the cylinder to a force on the crank shaft.
* Pistons are the slightly smaller in diameter than the cylinder bore. - the space is called "clearance"
* Aluminium alloy pistons are used in modern automobiles

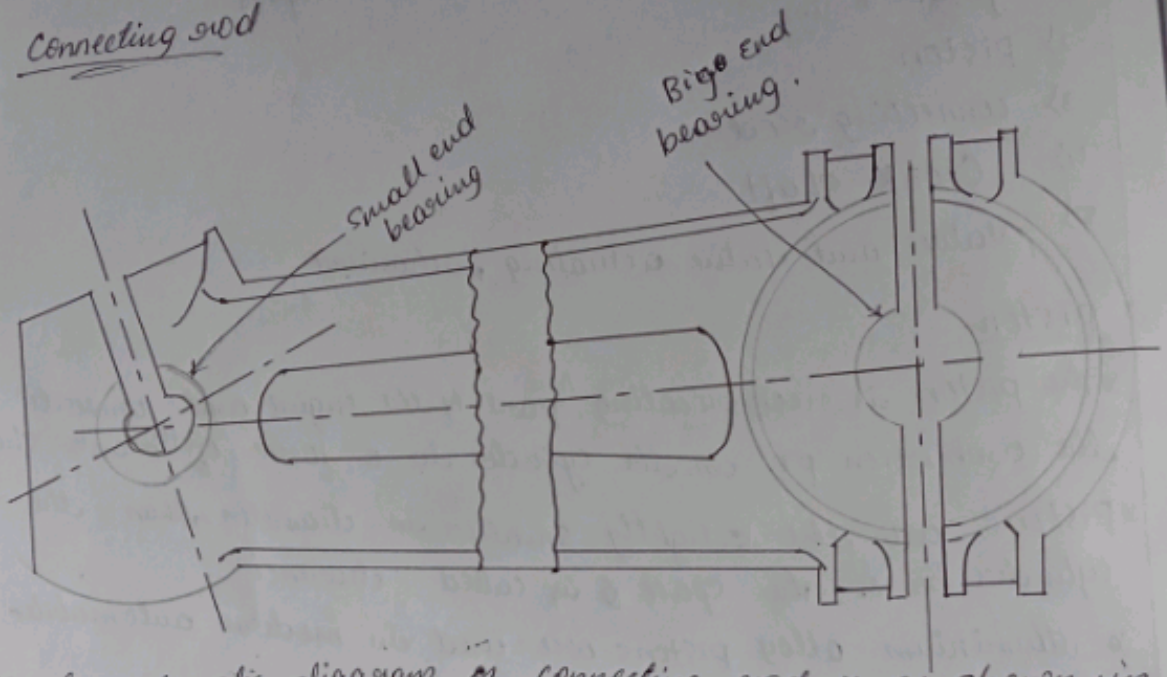


functions

* It forms a seal within the cylinder to avoid entry of high-pr gases from combustion chamber into crank.
* It transmits the force of explosion to the crank.

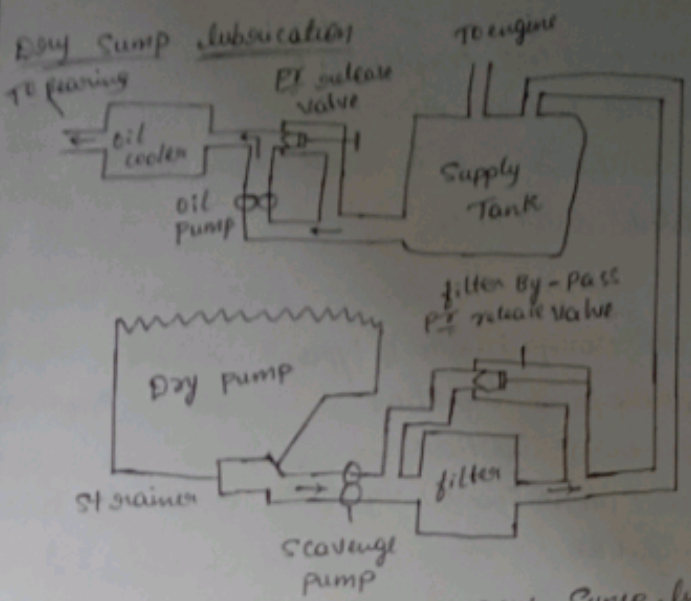
* It acts as a bearing for the gudgeon pin.

Connecting rod



* The schematic diagram of connecting rod is as shown in fig.
* The connecting rods are used to connected pistons to the crank shaft.
* The upper end of rod oscillate while the lower or big end rotate.
* It is converts reciprocating motion of the piston in to rotary motion of the crank shaft.
* The upper end of the rod has a hole through it for the piston pin.
* Generally, rods are made by drop forging of steel or duralumin and also cast from malleable cast iron.

b) Dry Sump lubrication



* The schematic diagram of Dry Sump lubrication is shown in fig.
* In a dry-sump system, the oil still falls to the base of the Engine, but into a much shallower sump.
* In dry sump lubrication, the lubricant is stored in a special tank.
* The oil reaches the lubrication points via a pump. The oil drips off the lubrication points and forms an oil sump.
* This oil sump is sucked in by a second pump & returned to the tank. A lubrication circuit is created.

Advantages.

* prevents engine oil starvation.
* common on larger diesel engines such as those used for ship propulsion.
* A dry sump tends to hold more oil than a wet sump in an [illegible]

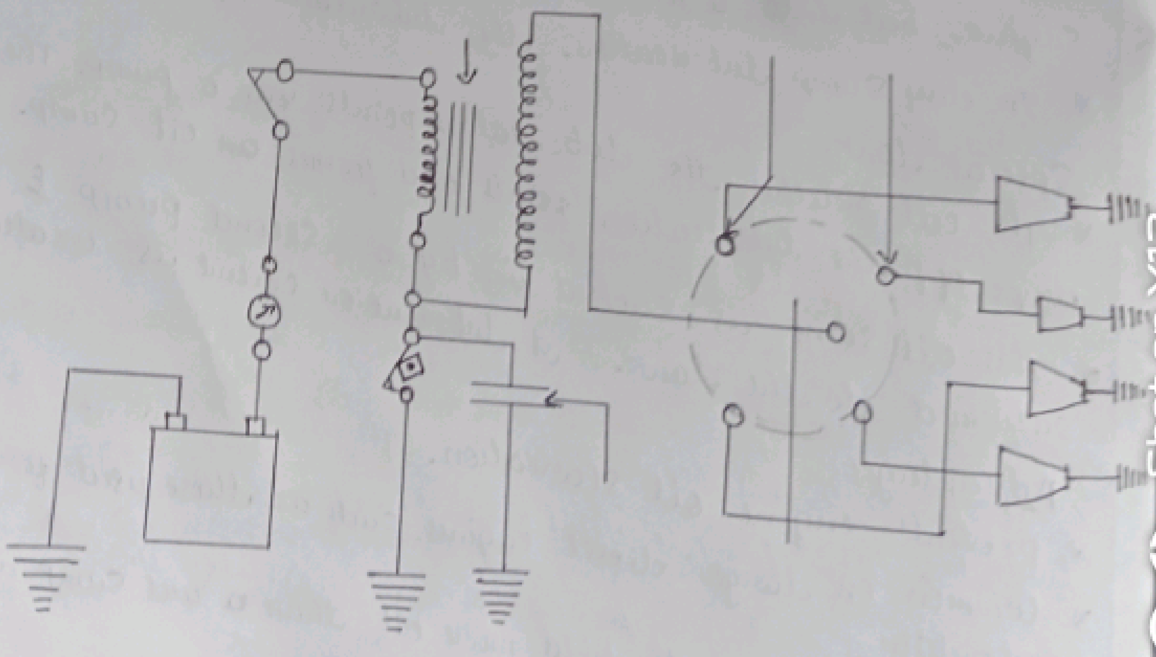
Disadvantages

* Dry-sump system add cost, complexity, & weight.
* high maintance and consume more oil.
* Difficult to fit equipment into a small engine bay.
* require a dedicated drive belt.

3)
a) Ignitions system are classified into 4 types

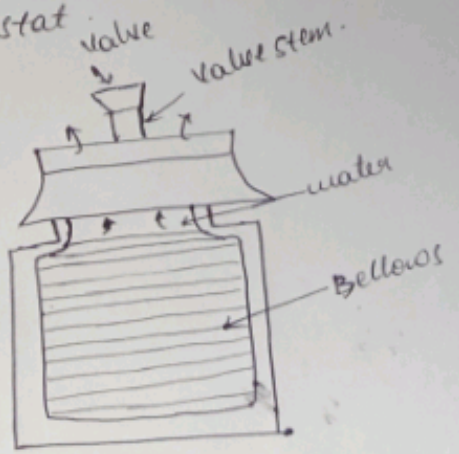
1) conventional breaker-point ignitions
2) high energy (electronic) ignitions
3) distributor-less (waste spark) ignition
4) coil-on-plug ignition

Battery (or) coil Ignition System



* The schematic diagram of battery ignition system as shown fig.
* A battery ignition system is a type of ignition system used in a spark-ignition engine for powering the spark plug.
* The spark can be generated to burn the air-fuel mixture in the combustion chamber.
* The ignition system powered by a 6-(or) 12-volt battery charged by the engine-driven generator.
* There are two basic circuits in this system. they are primary and secondary circuits.
* The battery, primary winding of the ignition coil, condensor and the contact breaker form the primary circuit.
* The secondary winding of the ignition coil, distributor and the sparkplugs forms the secondary circuit.
* The distributor distributes the high voltage to each sparkplug as per firing order.

3)
b) i) Bellow type thermostat



* The schematic diagram of Bellow type thermostat as shown in fig.
* This thermostat consists of metallic bellows filled with some volatile liquids like alcohol, acetone, ether etc..
* whose low boiling temp range b/w 70-85°C
* one end of bellow contains a valve and to the other end a frame is attached which fits in to the cooling passage
* the thermostat is fitted in the water hose pipe at the engine outlet.
* During this warming up period, the liquid inside the bellows has not yet changed its state and hence does not exert any pr. on the valve
* Therefore the valve remains in closed position.

ii) wax Type thermostat.

* The schematic diagram of wax Type thermostat as shown in fig.
* It is also known as Bole thermostat
* This thermostat is more reliable to operate within the specified temp range and is not sensitive to Pr variation.
* The heat carried by the coolant is transmitted to the copper loaded wax having thermal expansion co-efficient.
* The expansion of copper loaded wax makes the rubber plug to contract against the plunger and hence exerted a force on it in upward direction
* This allows the coolant to flow through the radiator.