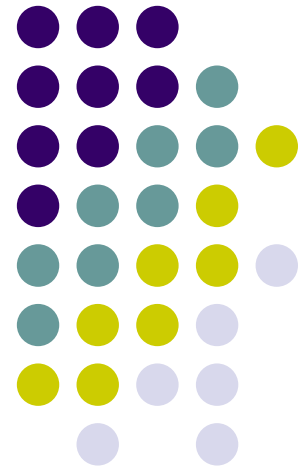
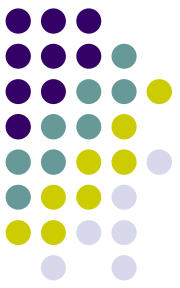


# OIL AND NATURAL GAS CORPORATION, LTD

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# DIESEL ENGINES

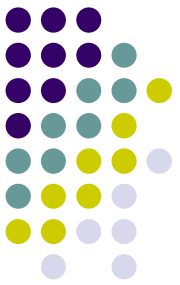


## WORKING

## REPAIR

## &

## MAINTENANCE



# DIESEL ENGINE

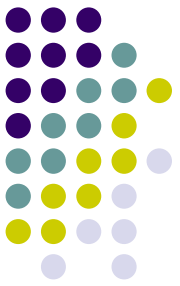
- The working of Diesel engine can be mainly departed in four stages.
- Suction
- Compression
- Expansion
- Exhaust

# BASIC ENGINE PARTS



- **1.STATIONARY PARTS**
- The stationary parts of an engine include the cylinder block, cylinder, cylinder head or heads crankcase and the exhaust and the intake manifolds.

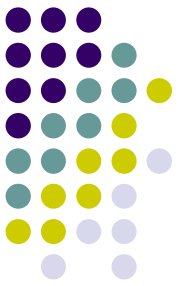
# 1.1.ENGINE CYLINDER BLOCK



- The engine cylinder block is the basic frame of a liquid cooled engine, whether it is the in-line, horizontally opposed or V-Type  
the cylinder block and crankcase are often cast in one piece that is the heaviest single piece of metal in engine

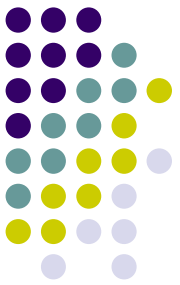


## 1.2.CYLINDER HEAD



- The cylinder head provide the combustion chamber for the engine cylinders.
- The cylinder bolted to the top of the cylinder block to close the upper end of the cylinder.



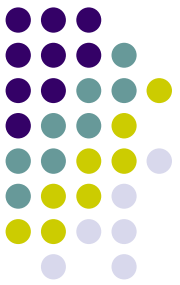


## 1.3.EXHAUST MANIFOLD

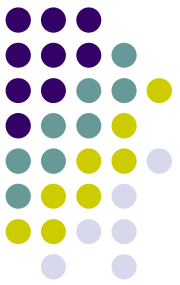
- The exhaust manifold is a tube that carries waste products of combustion from the cylinders.
- Exhaust manifolds may be single iron casting or may be cast in sections. They have a smooth interior surface with no abrupt change in size.



## 1.4.CRANKCASE



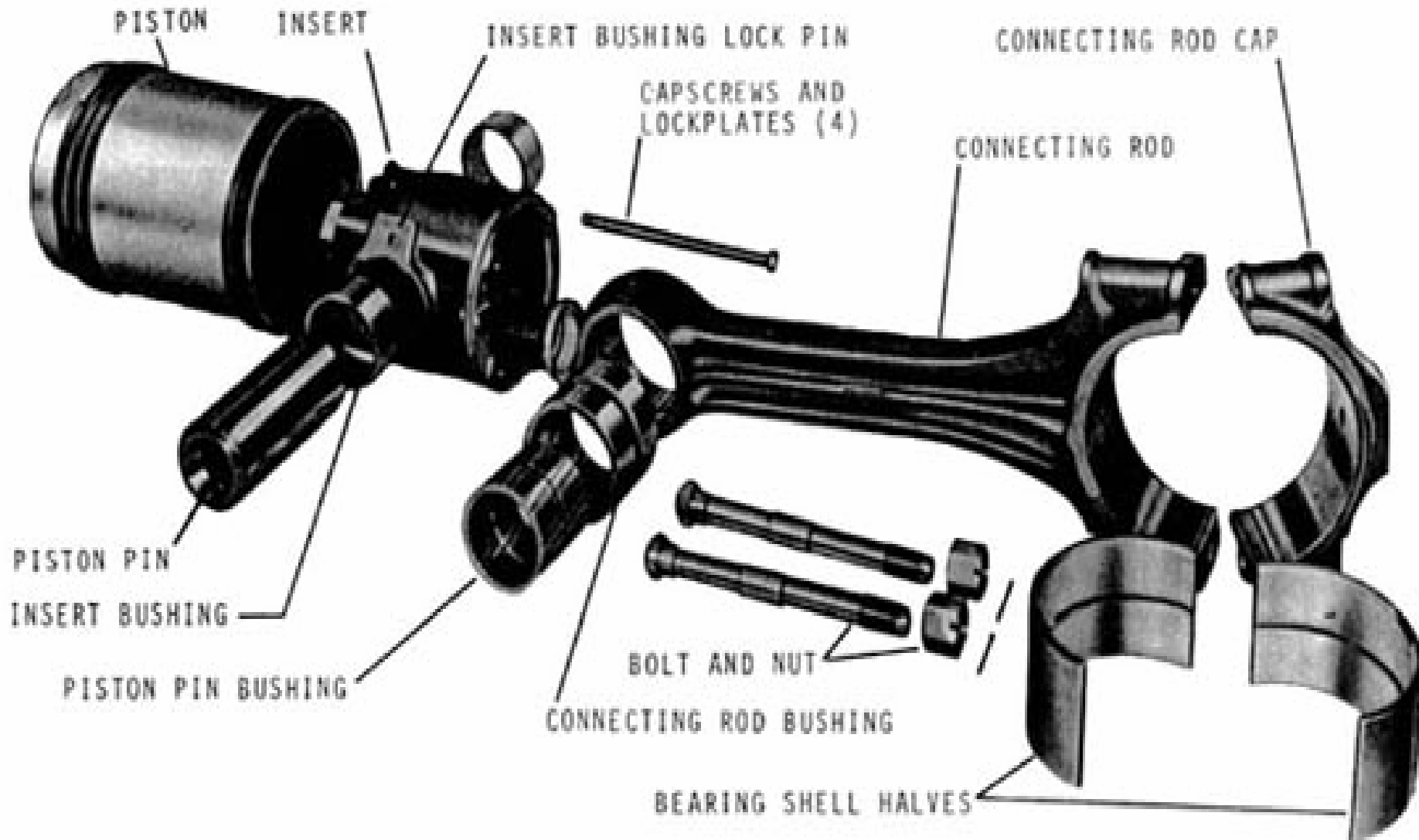
- The crankcase is that part of the engine block below the cylinder. It support and enclose the crankshaft and provide a reservoir for the lubricating oil. Often times the crankcase contains the place for mounting the oil pump, oil filter, starting motor and generator.



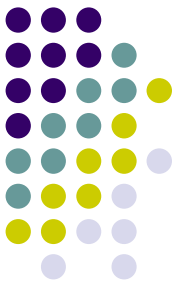
## 2.MOVING PARTS

- The moving parts of an engine serve important function, heat energy into mechanical energy. They further convert motion into rotary motion. The principal moving parts are the piston assembly, connecting rods, crankshaft assembly (includes flywheel and vibration dampener), camshaft, valves, and gear train .

## 2.1.PISTON ASSEMBLY

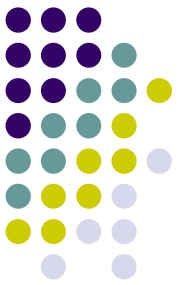


## 2.2 PISTON RINGS



- Piston rings are used on piston to maintain gastight seals between the piston and cylinder.
- Piston rings are of two distinct classifications compression rings and oil control rings



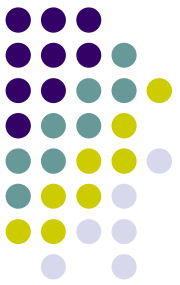


## 2.3.CONNECTING RODS

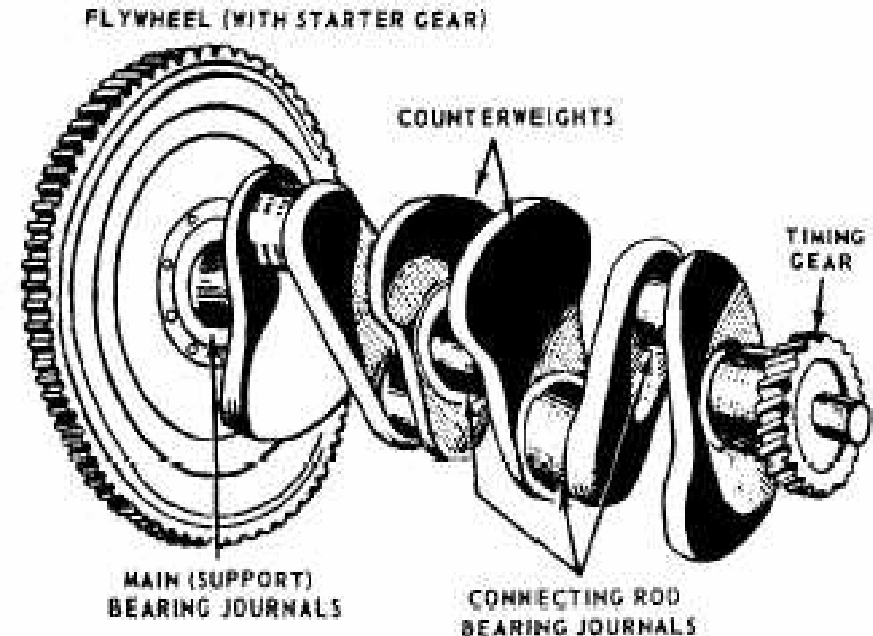
- Connecting rods must be light and yet strong enough to transmit the thrust of the piston to the crankshaft. Connecting rods are drop forged from a steel alloy capable of withstanding heavy loads without bending or twisting.

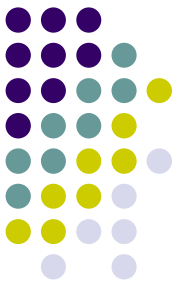


## 2.4.CRANKSHAFT



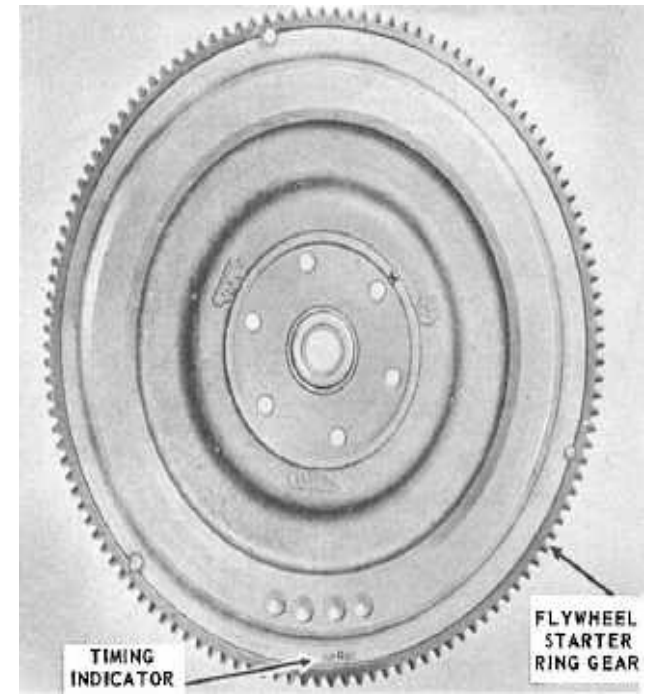
- It ties together the reaction of the piston and the connecting rod, transforming their reciprocating motion into rotary motion. It transmits engine power through the flywheel, clutch, transmission and differential to drive y





## 2.5.ENGINE FLYWHEEL

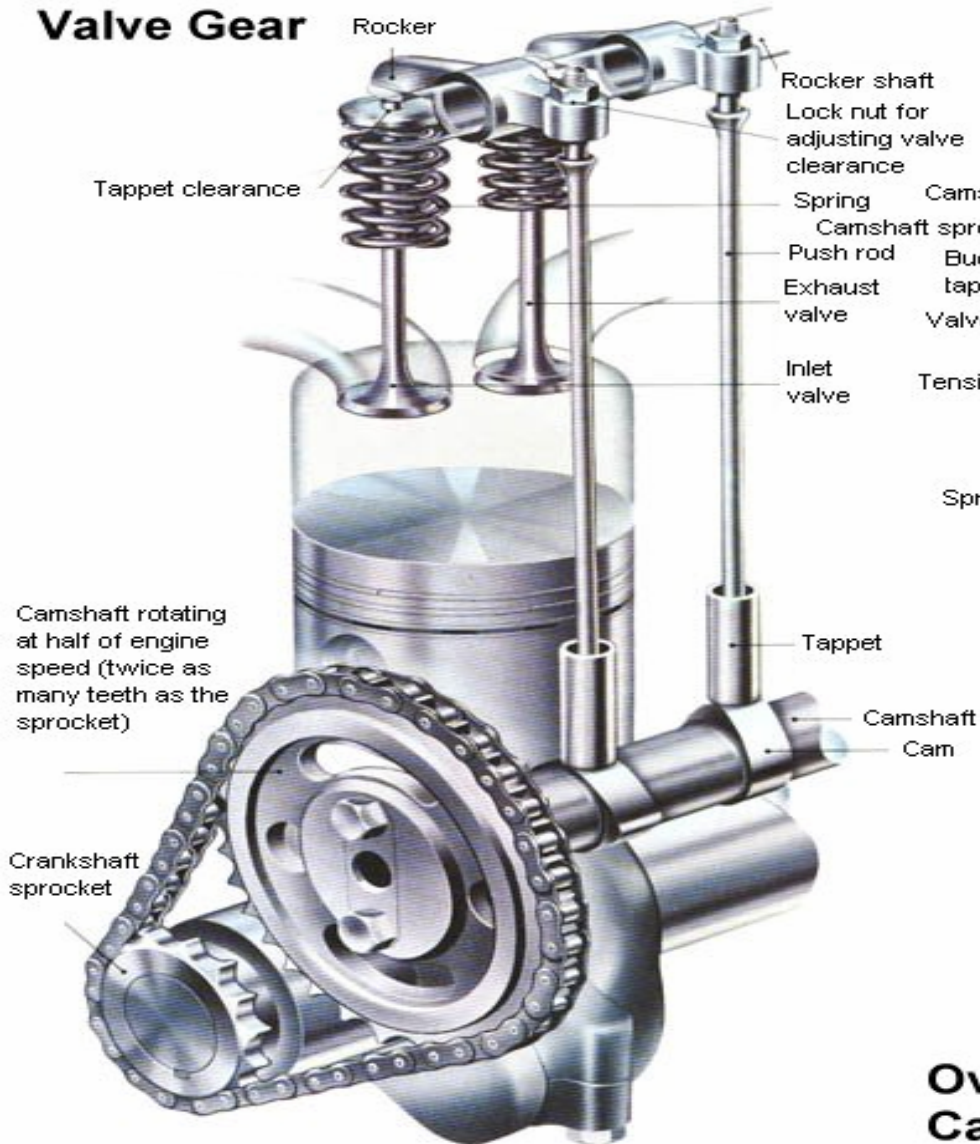
- The flywheel mounts at the rear of the crankshaft near the rear main bearing
- The flywheel stores up the rotational energy during the power impulse of the engine. It release this energy between power impulses, thus assuring less fluctuation in engine speed and smoother engine operation.



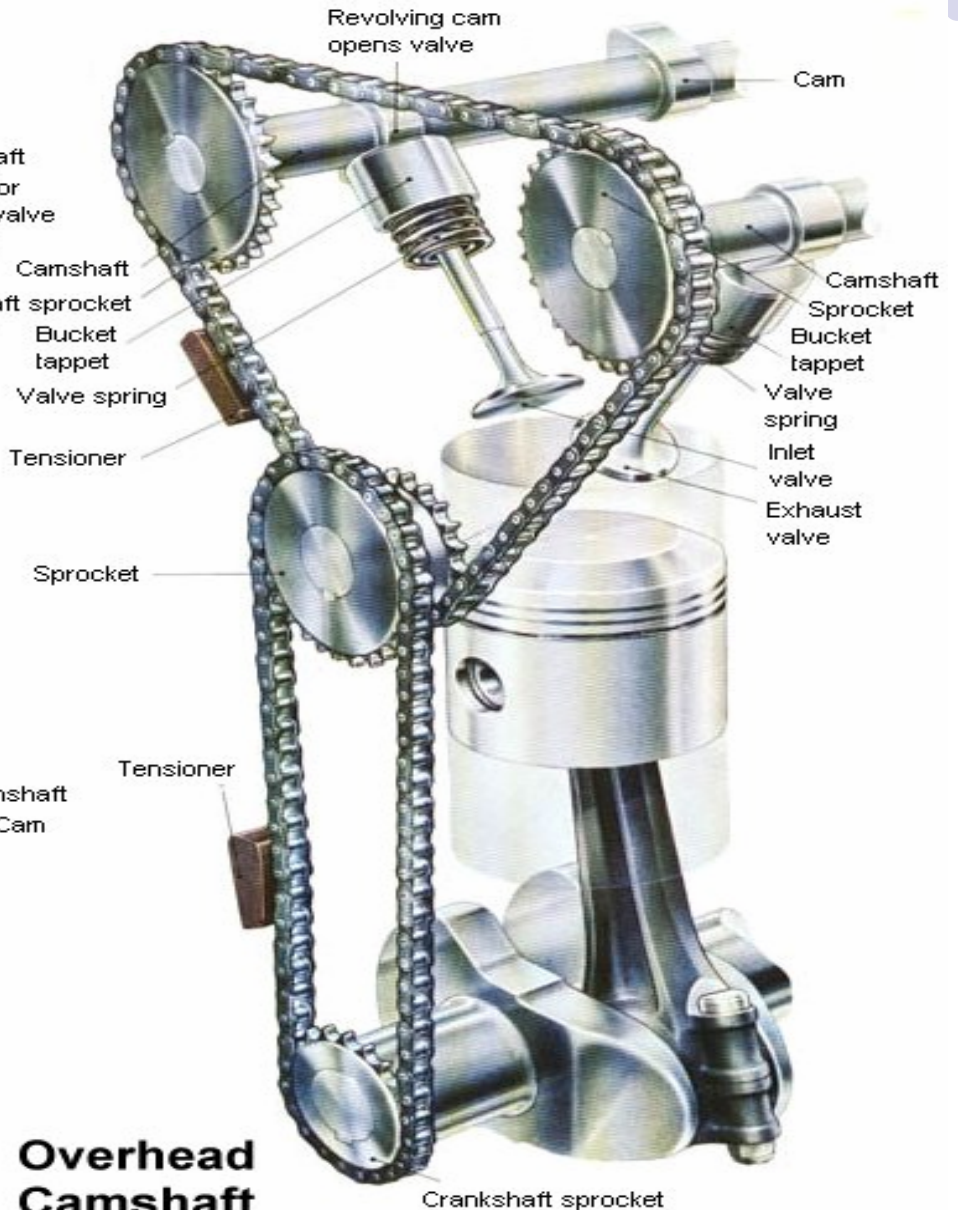
# VALVE AND VALVE MECHANISM



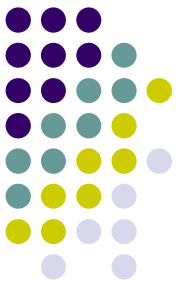
## Push Rod Valve Gear



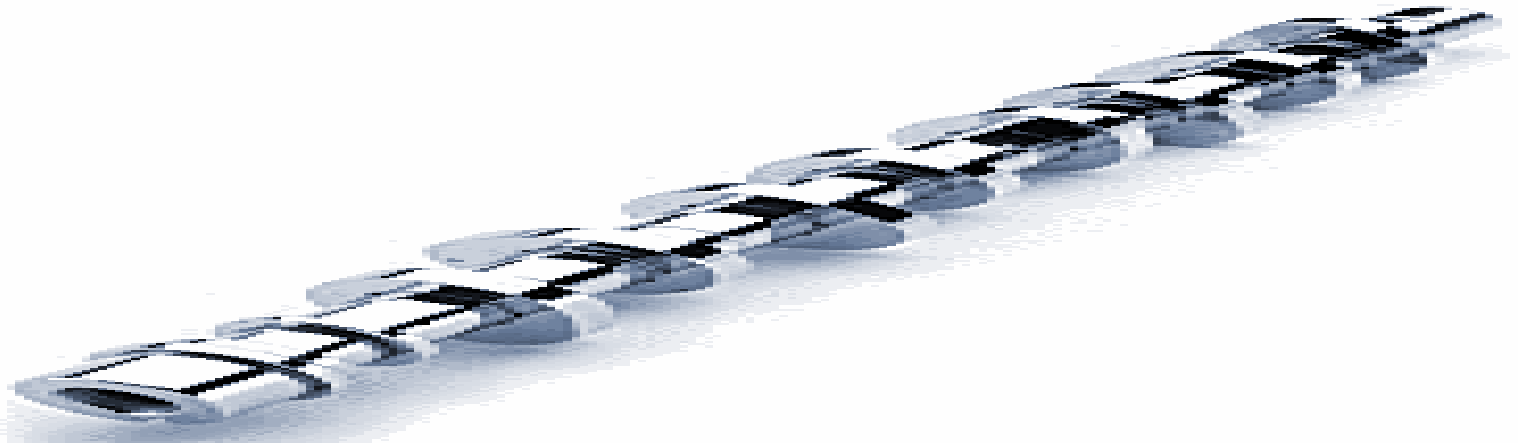
## Overhead Camshaft

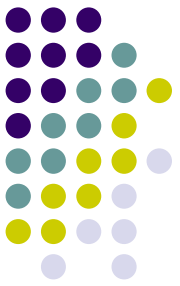


# CAMSHAFT

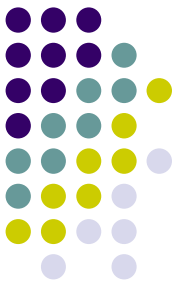


- The camshaft is enclosed in the engine block. It has eccentric lobes (cams) ground on it for each valve in the engine.
- It is usually located directly above the crankshaft .





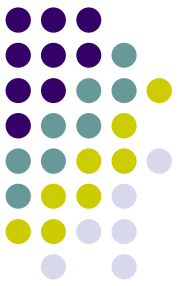
# CONDITION MONITORING



# INTRODUCTION

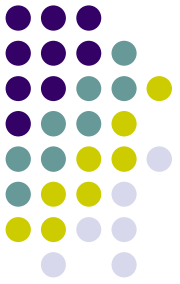
- condition monitoring is to provide information that will keep machinery operating longer at the least overall cost.
- Monitoring is a useful predictive maintenance tool used to avoid potential problems which may occur at later stage by monitoring the health of the equipment.

# METHODS OF MAINTENANCE



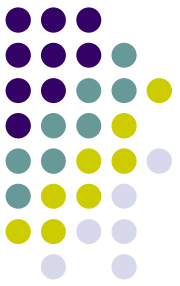
- There are three important ways to perform Condition Monitoring.
- Predictive maintenance.
- Preventive maintenance.
- Reactive (breakdown) maintenance.

# CONDITION MONITORING TECHNIQUES

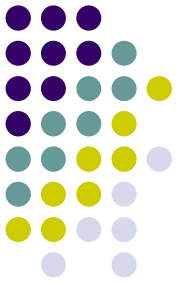


- Vibration analysis.
- Visual inspection.
- Noise monitoring.
- Environmental pollution.

# VIBRATION:



- A body is to vibrate when it describes an oscillating motion about a reference point.
- Components can be revealed by plotting vibration amplitude against frequency.



**Welcome for  
queries ???**

**Thanks**