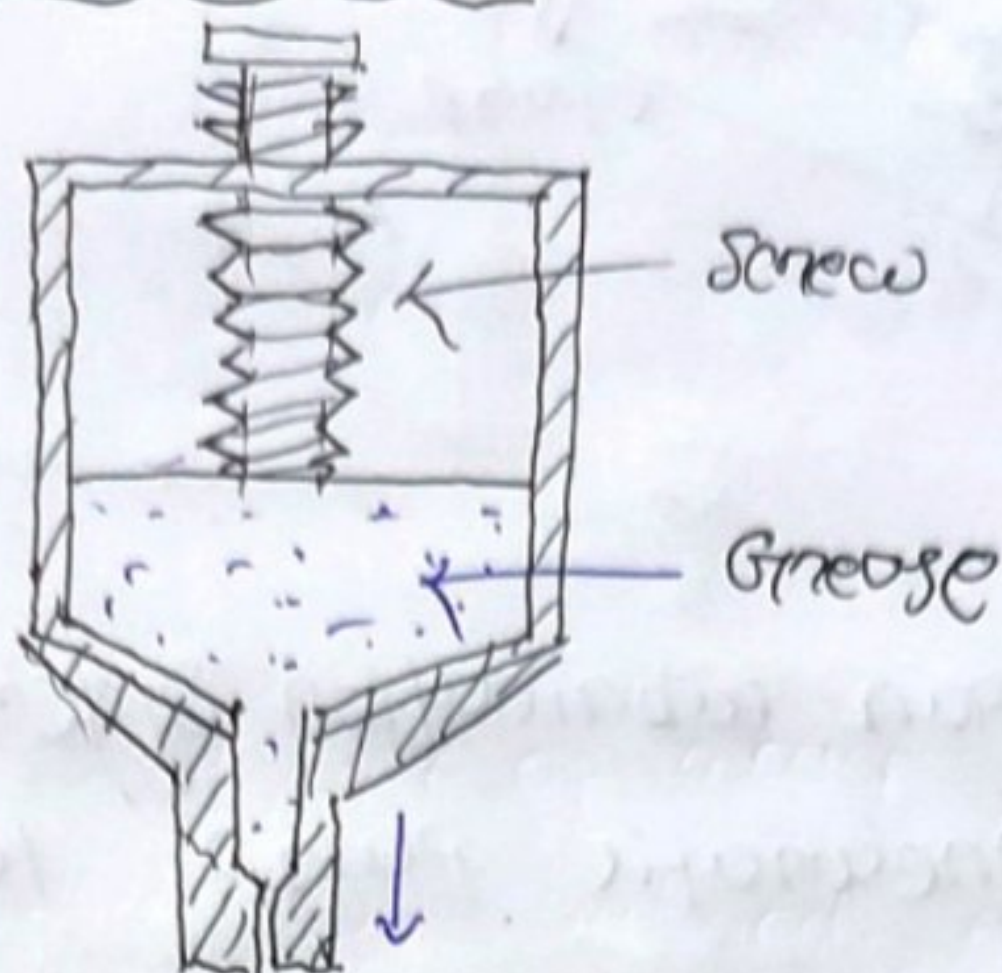


## Lubrication Methods

(B)

### Screw Down Grease Cap

Diagram:



Working:-

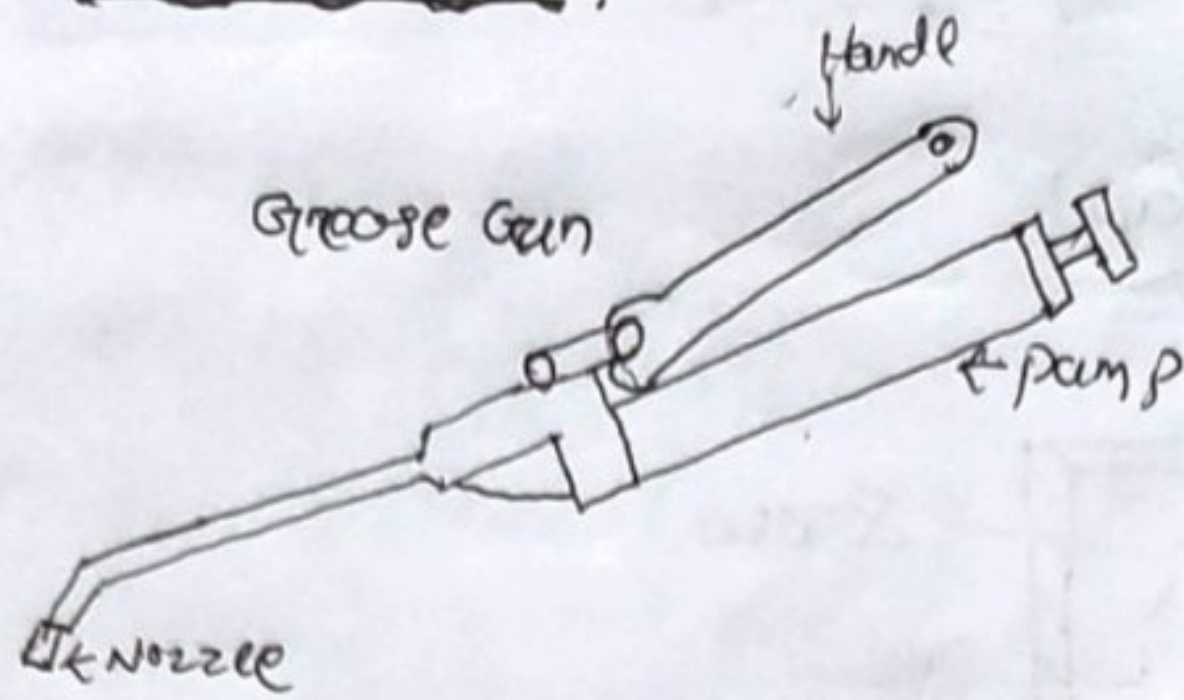
- ⇒ The screw down grease cap lubrication system works by using a screw mechanism to push or compress a grease-filled cap, forcing grease into machinery elements that require lubrication.
- ⇒ By turning the screw downward <sup>it</sup> increases pressure, forcing the grease out through a nozzle into parts needed lubrication.
- ⇒ It is a simple mechanism i.e. used in older machinery.

Applications

- Automotive parts
- Heavy machinery
- bearings
- Gears & rotating components.

## (ii) Pressure Grease Gun

Diagram



Working

⇒ The pressure grease gun lubrication system works by using a manual or pneumatic pump to generate pressure forcing grease through a nozzle into machinery elements that required lubrications.

⇒ By reciprocating the pump it increases <sup>pressure</sup> ~~temp~~ of grease is delivered into port that require lubrication. like bearings

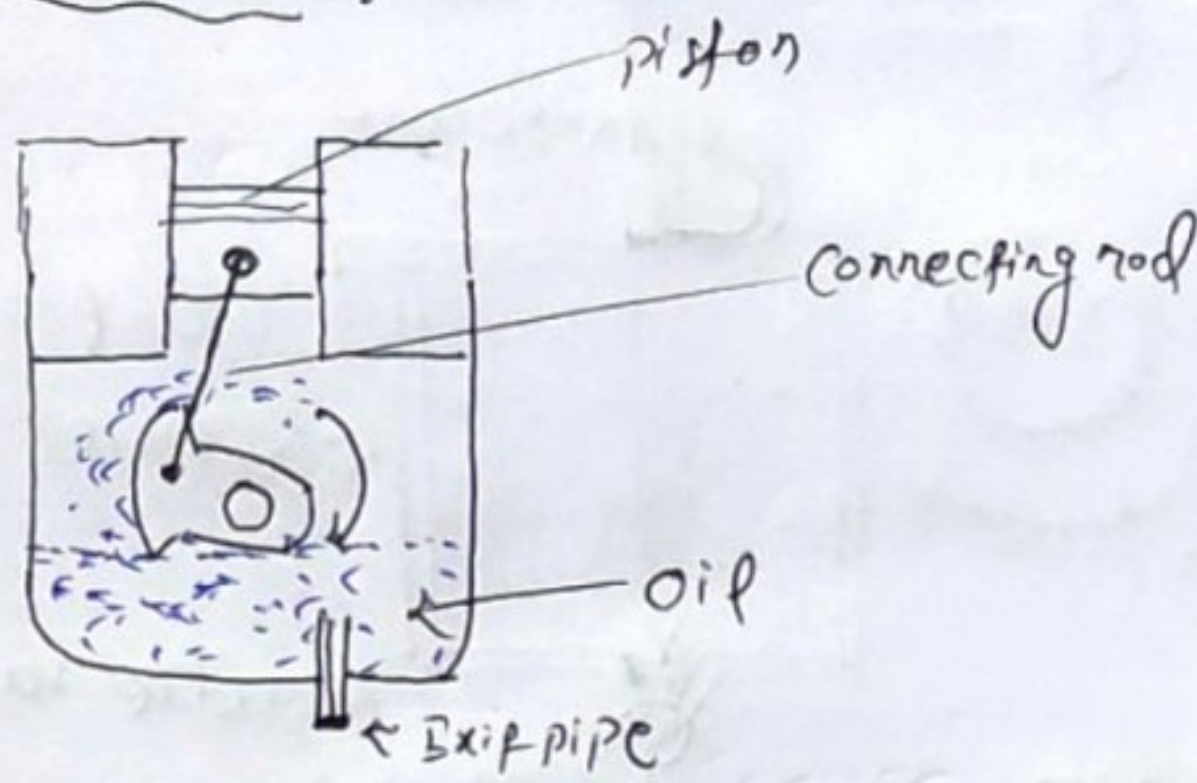
& joints.

Application

- Automotive parts
- Heavy machinery
- Fire alarm parts
- Agriculture Equipments
- Marine & Aerospace industry.
- General maintenance.

### (iii) Splash Lubrication ?

Diagram!



Working!

- ⇒ splash lubrication system is a method used in I.C engines to lubricate moving components.
- ⇒ It works by partially submerging rotating parts, such as gears & bearing in a pool of lubricant.
- ⇒ As these components rotate, they pick up the lubricant and splash it around the components to lubricate them.
- ⇒ These lubricants also dissipate heat & reduce wear & tear.

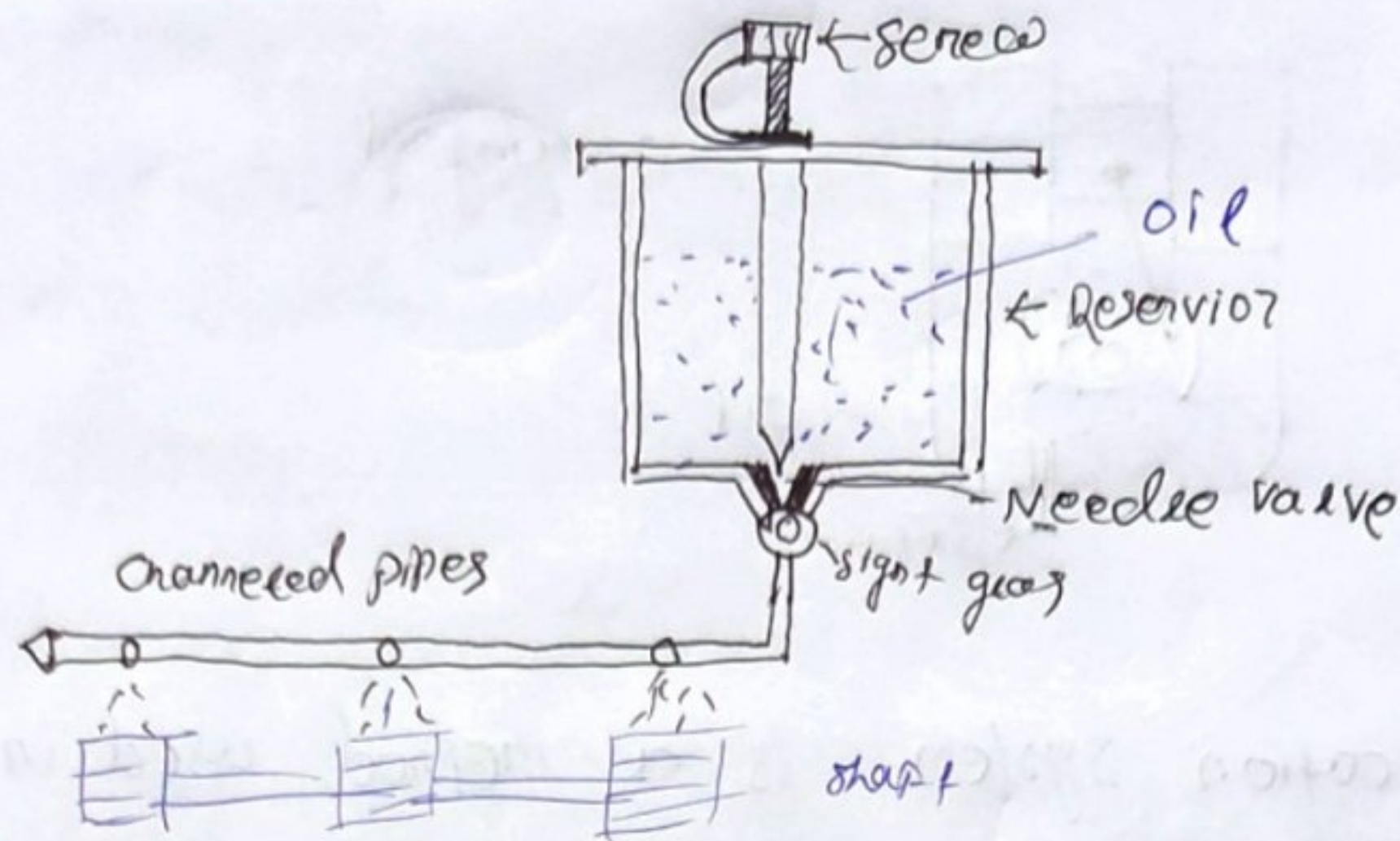
Application!

- I.C engines
- Gear box & transmissions
- heavy machinery etc.

(iv)

## Gravity Lubrication system

Diagram:



Working:

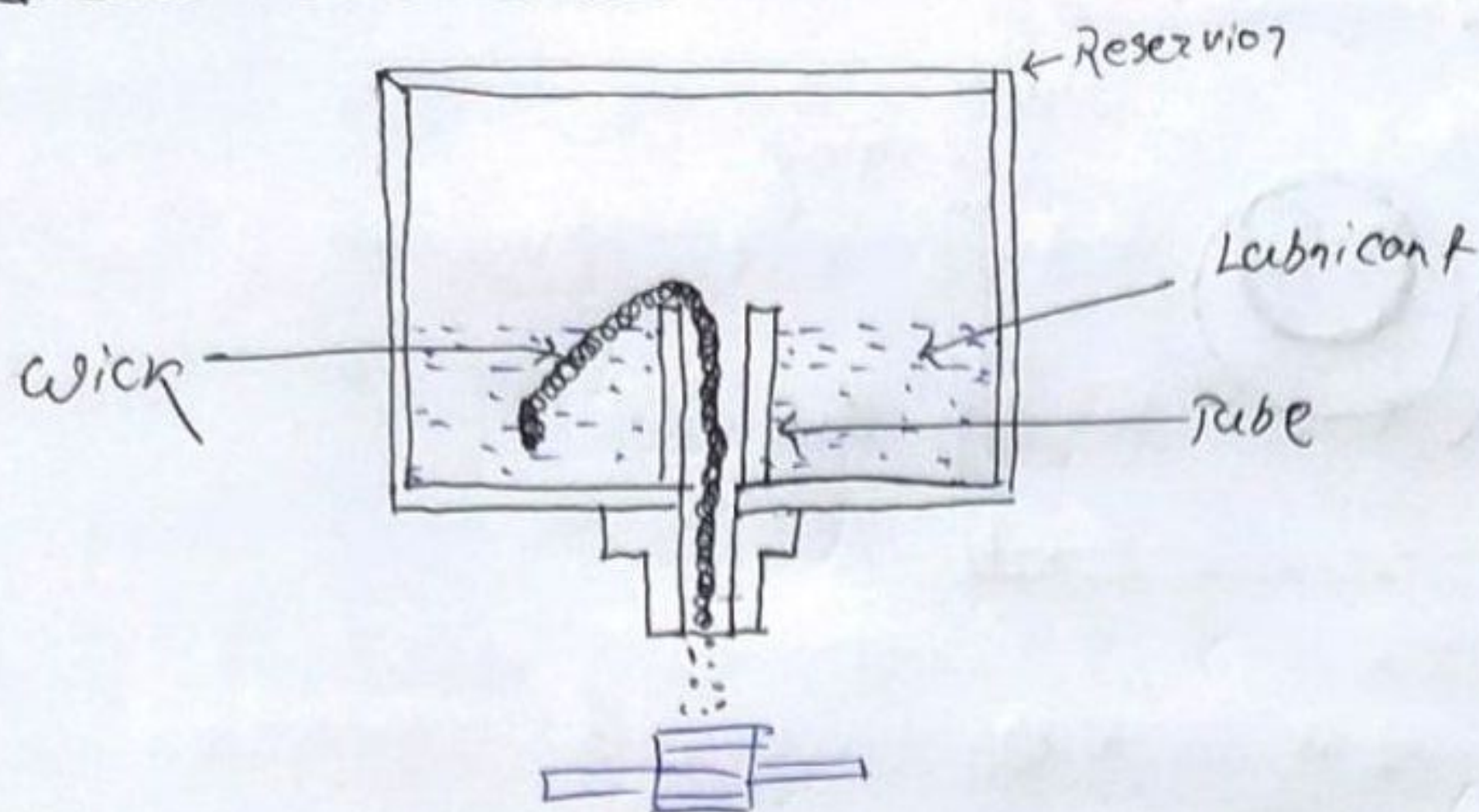
- ⇒ Gravity lubrication system utilizes the force of gravity to distribute lubricants in machinery.
- ⇒ It consists of an elevated ~~oil~~ reservoir that contains lubricant, which then uses gravity to feed the lubricant to the machinery element that require lubrication.
- ⇒ As the lubricant flows down through the channeled pipes it coats moving parts with lubricant.

Application:

- Automotive parts
- Industrial machinery
- Aerospace
- marine
- power generation

## ① Wick Feed Lubrication: ~~error~~

Diagram:



Working:

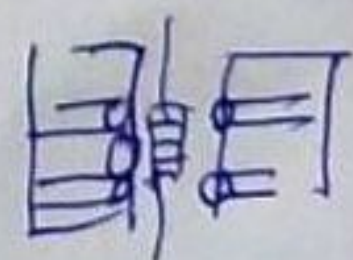
- ⇒ Wick Feed lubrication system is method of providing continuous lubrication to machinery elements.
- ⇒ It consist of a reservoir of lubricant, a wick or porous material and a point where lubrication is needed.
- ⇒ It works when the lubricant travels through the wick via capillary action and reach the point where a steady supply of lubrication is needed.

Application:

- ⇒ Automotive parts
- ⇒ Industrial machines
- ⇒ Small machine parts
- ⇒ metal working - mixing, drilling, grinding

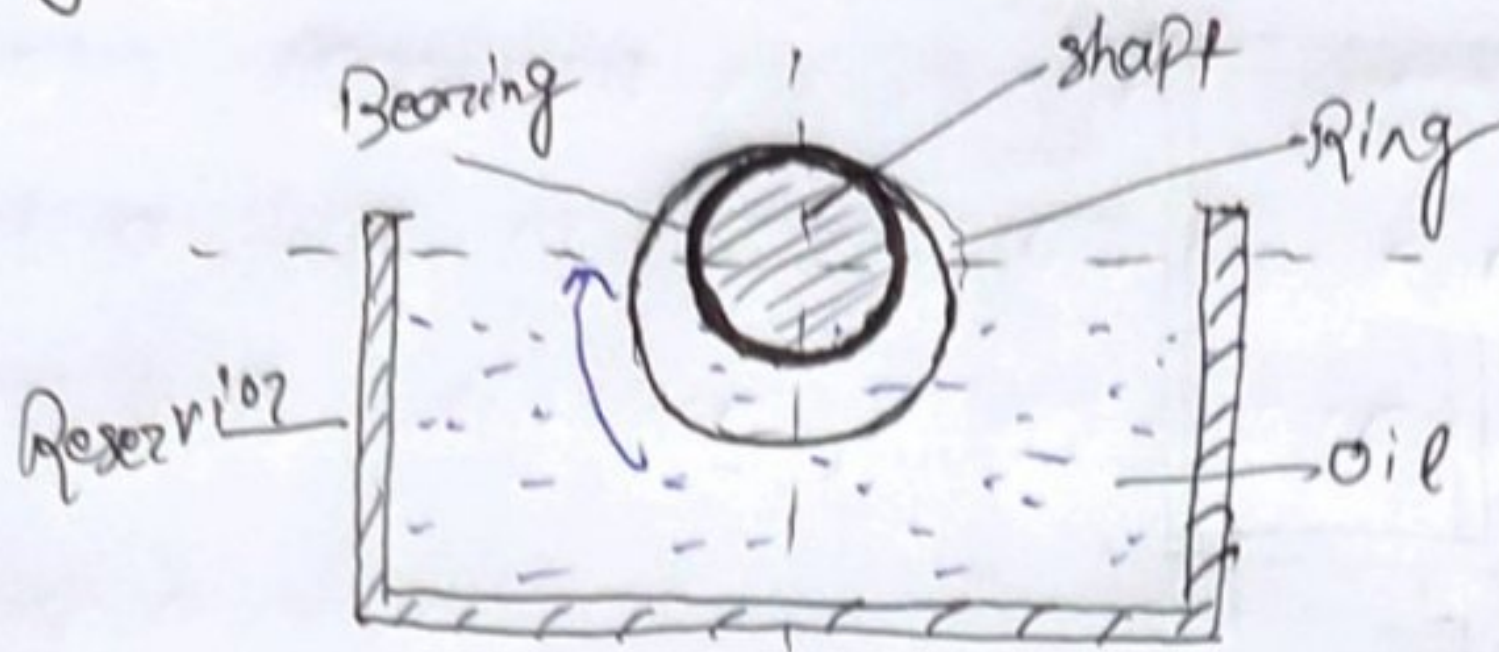
ii) Side Feed lubrication system:

- ⇒ Side feed lubrication system is a method that involves delivering lubricant to various parts of a machine through channels located at the side of the equipment.



## (vii) Ring Lubrication System!

Diagram:



Working:

- ⇒ Ring lubrication system is a method i.e. used in machinery components to supply lubricant to various parts.
- ⇒ It consists of rotating ring that picks up oil from a oil reservoir & distribute it to bearing & other components that required lubrication.
- ⇒ As the ring rotates, it carries the oil & delivers it through various channels to the areas that need lubrication.

Applications:

- Automotive Engines
- Industrial machinery
- marine Engine
- Air craft "
- Power generation
- Hydraulic systems

## Corrosion

④  
⇒ Corrosion refers to the gradual degradation or destruction of metals or alloys due to chemical or electrochemical reactions with their environment.

⇒ Corrosion takes place ~~down~~ in the presence of  $O_2$  & through processes like oxidation, rusting or decay.

Factors affecting corrosion!

i) Environmental Conditions!

⇒ Factors such as temp<sup>n</sup>, humidity, pollutants & pH level can impact corrosion rates.

ii) Material Composition!

⇒ The type of metals ~~or~~ alloys & its purity affect its corrosion rates.

iii) Presence of Electrolytes!

⇒ The presence of electrolytes such as salt water, & acids can accelerate the process of corrosion.

iv) Concentration of Oxygen!

⇒ With an increased concentration of oxygen the process of corrosion accelerates & vice versa.

v) Surface Area!

⇒ Larger surface area is more likely to get corrosion.

## Types of Corrosion!

### i) Uniform Corrosion!

→ It is a type of corrosion where gradual & even corrosion across the surface takes place.

### ii) Pitting Corrosion!

→ Pitting corrosion is a type of localized corrosion, that creates small pits or holes in the material.

### iii) Crevice Corrosion!

→ Crevice corrosion is a type of corrosion that occurs in <sup>(confined)</sup> confined spaces where the environment ~~is different~~ differs from the surrounding area. Nuts, couplings.

### iv) Galvanic Corrosion!

→ Galvanic corrosion is a type of corrosion that occurs when two dissimilar metals are in contact in the presence of an electrolyte.

### v) Stress Corrosion Cracking!

→ Stress corrosion cracking is a corrosion that occurs as a result of a combination of stress & corrosion, leading to cracking of the material.

### vi) Intergranular Corrosion!

→ Intergranular corrosion is a type of corrosion that occurs at the grain boundary of a material, weakening the structure of the material.

## Corrosion prevention methods

(5)

i) Coatings:

⇒ Applying protective coatings like paint, zinc & other material to create a barrier against corrosive elements.

ii) Cathodic protection:

⇒ Using sacrificial anode to protect metal surfaces from corrosion by controlling the electrical potential.

iii) Material selection:

⇒ By choosing corrosion resistance materials such as stainless steel, alloys for construction of parts to minimize chance of corrosion.

iv) Using inhibitors:

⇒ By adding chemicals to the materials to slow down or stop the process of corrosion.

v) Proper maintenance:

⇒ By regular inspection, cleaning & oiling of <sup>metal</sup> parts can minimize the chance of corrosion.