

# JOB ROLE – AUTOMOTIVE SERVICE TECHNICIAN

Sector: Automotive  
(Qualification Pack Code : ASC/Q1401)



PSS Central Institute of Vocational Education  
Shyamla Hills, Bhopal – 462013, Madhya Pradesh, India

---

[www.psscive.ac.in](http://www.psscive.ac.in)

# **Unit 1: Automobile and their Components**

## **Session 4 : Lubrication System**

# Content

Title	Slide No.
Session Objective	4
Introduction	5-6
Importance of Lubrication	7-8
Properties of a good lubricant	9-12
Type of lubricants	13-15
Summary	16

# Session Objectives

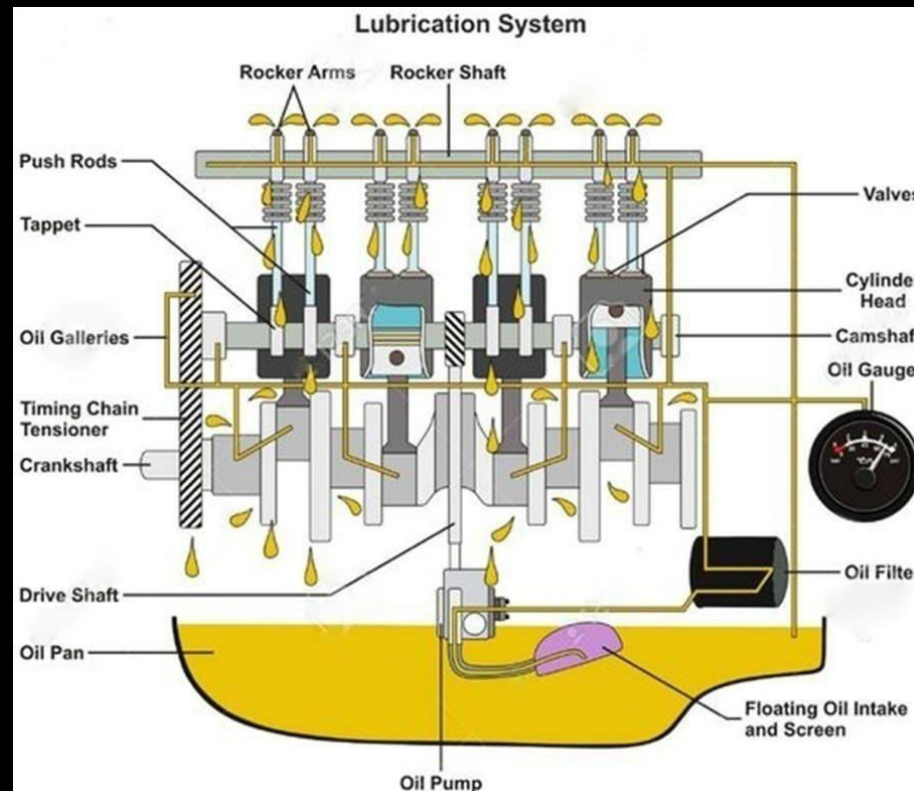
1. The student will be Able to understand Importance of lubrication in engine.
2. Able to understand the Properties of a good lubricant .

# Introduction

Lubrication is required for maintenance of engine. Lubrication circuit is one of the most important ones in the engine. The engine cannot run smoothly for more than a few minutes without the lubricating oil. Whenever two metallic surfaces move over each other under direct contact, dry or solid friction is produced. This is due to the irregularities on the two surfaces interlocking each other. The dry friction thus created produces a lot of heat and results in wear and tear of the metal surface.

# Lubrication

Lubrication is required for maintenance of engine. Lubrication circuit is one of the most important ones in the engine. The engine cannot run smoothly for more than a few minutes without the lubricating oil.



# Importance of Lubrication

- When Two metallic surfaces move over each other under direct contact, dry or solid friction is produced.
- This is due to the irregularities on the two surfaces interlocking each other.
- The dry friction thus created produces a lot of heat and results in wear and tear of the metal surface.
- Two objective of Lubrication

1.primary objectives of lubrication

2. Secondary objective lubrication

# Automobile Engine Lubrication

The main parts of an automotive engine which require lubrication are:

- Main crankshaft bearings
- Big end bearings
- Gudgeon pin bearings
- Piston rings and cylinder walls
- Timing Gears
- Camshaft and camshaft bearings



# Properties of a good lubricant

As we understand that the lubricant is a very important component of an engine. We must know some of the properties. These properties are given here

1. **Viscosity:** In simple language, Viscosity may be considered as the resistance of the lubricating oil to flow. It is this property alone, due to which, the bearing surfaces are kept apart, i.e. hydrodynamic lubrication is maintained.

The viscosity of the lubricating oil should be just sufficient to ensure hydrodynamic lubrication.

# Properties of a good lubricant

The viscosity should ideally remain the same at all temperatures. Relative change of viscosity with temperature is called viscosity index.

2. Physical Stability: The lubricating oil must be stable physically at the lowest and the highest temperatures encountered in practice..

3. Chemical Stability: At higher temperature the oil should remain chemically stable. There should not be any tendency for oxide formation; many of the oxidation products being sticky substances clog the lines.

# Properties of a good lubricant

4. **Resistance against Corrosion:** The oil should not have any tendency to corrode the pipe lines, crank case and other engine parts with which it comes into contact.
5. **Pour Point:** The minimum temperature at which the oil will pour is called its pour point. Obviously, since the oil will not be able to flow below the pour point, it cannot be used below this temperature for lubrication. Thus, the pour point of the oil should be less than the lowest temperature encountered in the engine.

# Properties of a good lubricant

6. **Flash Point:** The flash point of the oil should be sufficiently high so as to avoid flashing of oil vapours at the temperatures occurring in common use. A flash point higher than the minimum desired value will not serve any useful
7. **Cleanliness:** The oil should be sufficiently clean and stable itself so that the crank case and oil lines are kept clean. Further it must contain agents, called detergents.

# Types of Lubricants

Depending on widely varying requirements of different parts, the automotive lubricants may be classified as below.

1. On the basis of their state
  - Solid lubricant such as graphite, soapstone, talc, mica, molybdenum disulphide.
  - Semi-solid lubricants such as greases e.g., aluminum paste.
  - Liquid lubricants such as mineral oil, vegetable oils, animal oils.
  - Emulsions such as oil in water.

# Types of Lubricants

2. On the basis of their origin

- Natural lubricants such as mineral oils, vegetable oils, animals oils, graphite.
- Synthetic lubricants such as refined petroleum oils, commercial grade oils, grease.

3. On the Basis of Variation in Viscosity

- Mono-grade oils such as SAE 20, SAE 30, SAE 50 etc.
- Multi-grade oils such as SAE 20W 40, SAE 15W 40 etc.

# Types of Lubricants

4. On the basis of special preparation
  - Blended lubricants such as blended by castor oil, palmitic acid, oleic acid.
  - Compounded lubricants such as compounded with polyglycols, fluorocarbons, silicones.

# Summary

In this session you have learnt a following , Lubrication is required for maintenance of engine. Lubrication circuit is one of the most important ones in the engine. The engine cannot run smoothly for more than a few minutes without the lubricating oil.



**Project Coordinator : Dr. Saurabh Prakash**

**Assistance  
Er. Kuber Singh , Consultant**



**Joint Director**  
PSS Central Institute of Vocational Education  
Shyamla Hills, Bhopal – 462013 , Madhya Pradesh, India

---

**E-mail: [jdpsscive@gmail.com](mailto:jdpsscive@gmail.com)  
Tel. +91 755 2660691, 2704100, 2660391, 2660564  
Fax +91 755 2660481  
Website: [www.psscive.ac.in](http://www.psscive.ac.in)**