Chapter: 1. Introduction

1.1 Introduction of Skoda

By 1990 the Czech management of Skoda was looking for a strong foreign partner. Volkswagen AG (VAG) was chosen because of its reputation for strength, quality and reliability.

It is the largest car manufacturer in Europe providing an average of more than five million cars a year giving it a 12% share of the world car market.

Volkswagen AG comprises the Volkswagen, Audi, Skoda, SEAT and Volkswagen Commercial Vehicles.

Each brand has its own specific character and is independent in the market. Skoda UK sells Skoda cars through its network of independent franchised dealers.

In Top Gear's 2007 customer satisfaction survey, 56,000 viewers gave their opinions on 152 models and voted Skoda the 'number 1 car maker'. Skoda's Octavia model has also won the 2008 Auto Express Driver Power 'Best Car'.

1.1.1 Variants of vehicles:
- Octavia
- Laura
- Superb
- Fabia
- Rapid
- Yeti
1.2 Introduction of Torque Automotive Pvt. Ltd.

Torque Group has been operating in the automobile business with world’s leading premium brands across the state of Gujarat.

The Torque Group Gujarat strategy encompasses significant investment in branding, marketing, exclusive dealerships and after sales service for the upcoming years.

RAJKOT:

1.2.1 Company profile:

<table>
<thead>
<tr>
<th>Torque Automotive Pvt. Ltd. Rajkot Dealership and serving</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Address:</strong> Plot no. 64, Nr. Kishan Petrol Pump, Kangshiyali, Gondal Highway, Rajkot-364004.</td>
<td></td>
</tr>
<tr>
<td><strong>Sales:</strong> Jitendra Tank</td>
<td></td>
</tr>
<tr>
<td><strong>Mail address:</strong> <a href="mailto:jitendra.tank@torqueauto.in">jitendra.tank@torqueauto.in</a></td>
<td></td>
</tr>
<tr>
<td><strong>Contact no:</strong> 9825609888</td>
<td></td>
</tr>
<tr>
<td><strong>Service:</strong> Pradeep Prajapati</td>
<td></td>
</tr>
<tr>
<td><strong>Contact no:</strong> 9099040126</td>
<td></td>
</tr>
</tbody>
</table>

Table: 1. Company Profile.

1.2.2 Department Heads:

- **Satheesh Lazar** – Service Manager he manage workshop and Accident bay.
- **Pradeep Prajapati** – Asst. Service Manager he manage CRE and all Servicing staff.
- **Hardik Vaishnavi** – Floor Supervisor he order to technician for Complete the car service.
- **Service Advisor** – Chetan Bhalsod, Rajni Radadiya, Laxmidas Mavariya, Jignesh Satapara.
  They are advise to customer require.
- **Varghese Lazar** – Parts manager he is manage store room.
- **Raxit Goswami** – Warranty In charge he manage warranty parts.
- **Jeorge Johnson** – Accident floor supervisor he manage accidence.
- **Manoj Rathod** – Painter, his paint accident car and other damage car.
1.3 Hierarchy of industries:

Organization Structure

Figure: 1 Organization Structure.
Chapter: 2. Industry layout

2.1 Industry layout:

Figure: 2. Industry Layout.
2.1.1 Industry Layout description:

**Showroom:** Display the new car in front view.

**Service bay:** The car is repaired in a particular place called bay. All the repairing is done in here.

**Store room:** All the spares of different cars are stored in here.

**Paint shop:** Paint the damage car and car’s parts.

**Washing:** Clean car interior, car washing and polish.

**Warranty:** Change warranty parts in car.

**Service Manager:** Manage Servicing Staff.

**Engine room:** Engine repair and change engine parts.

**Wheel Alignment:** Balancing of wheel and alignment of cars are carried out here.

**Office and Visit room:** Main office and customer visit, where customers can watch their vehicle being repaired and billing is carried out in the office.

**Customer care Dept.:** Customers are called to ask if the service was good or not and complaints are recorded here.
2.2 Modify modern layout:

Figure: 3. Modify Layout
2.2.1 Layout Description:

- The Accident bay is set in to new workshop , because the old Accident bay Area is very close to workshop some time is not clearly work in Accident bay.
- The Major repair, Paint shop and washing are set in Accident bay.
- Customer parking is opposite to new show room, because the servicing car parking and customer parking is gathering so parking space is very sort.
- Accidental parts store and servicing parts store are to gather, because many parts is same to used in servicing and accident car.
- Warranty dep. Is set in to new show room.
- Wheel Alignment is done in alignment buy near the engine room because the space is blank near the engine room.
Chapter: 3. Equipments, Instrument and Machine used in Industry

3.1 List of major equipments:

1. Tire Remover
2. Battery Charger
3. Wheel balancing equipment
4. Washing Equipment
5. Lift
   - Lifting jacks
6. Axel Stand
7. Lubricating Equipment
3.1.1. Tire Remover:

Hydraulic tire remover for cars. These can be either floor mounted for permanent fixing in workshop or are available as portable models also for roadside tire and wheel service. Fig shows Skoda car tire remover.

**Tire Remover**
- **Approximate Cost:** 55,000Rs.
- **Specific Use:** Tire remove and change, wheel plat change.

3.1.2. Battery Charger:

When a Battery is discharged and is not capable of delivery any current, it may be recharge. This is done by supplying it with a flow some external source, such as a generator, which forces current through the battery in a reverse direction. Thus, the plates are restored to their original composition and the battery becomes recharged. It is than ready for use. A battery charade is used for this purpose (fig)

**Battery Charger:**
- **Approximate Cost:** 10,000Rs
- **Specific Use:** Battery Recharge
3.1.3. Wheel Balancing equipment:

Wheel balancing for both on and off the car wheel balancing are available in workshop. It enables simultaneous indication of both static and dynamic unbalance. One simply has mount the wheel on the high speed mounting plates, dial the wheel width and diameter, push the start button and digital redoubt indicates the value and position for weights required on both inner and outer planes.

**Wheel Balancing equipment:**

**Approximate cost:** 50,000Rs

**Specific use:** Tire balanced

3.1.4. Washing Equipment:

Regular chassis washing of both cars and commercial vehicles to remove grease, oil, mud and other corrosive deposits is most essential. This type of cleaning is a true representative of preventive maintenance. This is easily done by a spray of water with a solvent at high pressure.
3.1.5. Lift:

In a Skoda workshop, a lift becomes necessary to facilitate the servicing work. It may be pneumatically operated, but more common these days are the electrically operated ones. The lift raises the vehicle high enough to carry out the work under it. There are various safety features which prevent the lift from coming down in case of power failure or leakage of seal in case of oil-operated lifts. This lift is lifting up electrically and down hydraulically Capacity 3 to 3.5 tones. Show in fig.

**Approximate cost:** 1,00,000 Rs

**Specific use:** use for car lift and service in workshop.

- **Lifting jacks:**
  
  To work under the car or to change wheels, it is necessary to lift the car. This lifting jack is used which may be mechanically or hydraulically operated. Two types lifting jack is used in Skoda workshop mechanically and hydraulically operated jack.
3.1.6. Axel Stand:

It is always necessary to make sure before starting working under the car that it is not supported on the jack alone, because that could be dangerous if the jack gives way any time. Placing bricks below the axle is also not very safe. It is always better to use axle stands for this purpose. Shawn in fig.

Approximate cost: 8,000 Rs

Specific use: remove the axle of the car.

3.1.7. Lubricating Equipment:

The two commonly used pieces of lubricating equipment are the oil gun and grease gun, out of which the oil gun has been show in fig. High pressure greasing equipment work with compressed air and can handle any grade of grease.
3.2 List of Instruments:

3.2.1. Chisel
3.2.2. Files
3.2.3. Punch
3.2.4. Vices
3.2.5. Hammers
3.2.6. Pliers
3.2.7. Screwdriver
3.2.8. Wrenches
3.2.9. Open-end Wrench
3.2.10. Socket Wrench
3.2.11. Adjustable Wrench
3.2.12. T-Socket Wrench
3.2.13. Ring-end Wrench
3.2.14. Set of Star Allen-Key
3.2.15. Set of Hexagonal Allen-Key
3.2.16. Constants: 10-10mm Spine bit
3.2.17. 9-Star socket bit:
3.2.18. 8Pc Hex socket bit set
3.2.19. Wire cutter
All Instruments are set of workshop servicing tools trolley of Wroth Company.

Approximate cost: 4,00,000 Rs.

3.2.1 Chisels:

Chisel is one of the most important tools of the accident workshop. It is used for cutting and chipping the work piece when it is cold. Chisels are made of high carbon steel or tool steel.

3.2.2 Files:

File is one of the most important tools of the fitting shop. It is used for filing the metal surface. Files are made of high carbon steel and tungsten steel by forging.

3.2.3 Punch:

A punch is a circular rod having one end pointed and the other end flat. Its body is knurled. It is used to mark points on the work piece for further operation like drilling, filing, cutting, chipping.
3.2.4 Vices:

Any job being performed manually requires proper holding. They are normally held by certain devices and one of these is called a vice. Most of the manual operation such as filling, sawing, cutting and many machine operations such as shaping.

3.2.5 Hammers:

The hammer is man’s primitive tool. In the earliest time, stone was used to tight a wooden piece and for striking. Different types of hammers and it’s used. Two type hammers are used in workshop plastic hammer and ball peen hammer show in fig.
3.2.6. Pliers:

Pliers are a hand tool used for holding and gripping objects at places where the use of hands is unsafe or inconvenient. It is also often as a wrench to hold and turn, but this is not a safe practice and should be avoided. Generally, there are two types of pliers in common use: Combination pliers and Long nose pliers.

3.2.7 Screwdrivers:

The screwdriver is one of the most commonly use tools in the workshop. It is used to loosen and tighten screws which have slots in their heads. Different types and size of screwdriver is available in instrument store.

3.2.8 Wrenches:

With the greater application of machinery, the variety and sizes of wrenches in daily use have also increased. Different type of wrenches is used in workshop.
3.2.9 Open-end Wrenches:

The open-end wrench is used where there is sufficient space for driving it. The nut may be turned little farther, enabling the workman to get a fresh start on the nut. Different sizes of open-end wrenches are shown in fig.

3.2.10 Driver Socket wrench set:

These wrenches have detachable parts such as the head, the socket and the ratchet. This is very useful where it is difficult to work with open-end wrenches. Wrenches have handles fitted with a ratchet which enables the worker to drive the shaft quickly and save time as it is not necessary to remove the head of the wrench from the nut and bolts.

Driver Socket wrench set:
18 pc: Socket: 10 to 32 mm, 1pc: Ratchet handles, 1pc: Extension bars 5” & 10”, 1pc: Spark plug 21mm, 1pc: Sliding T-bar, 1pc: Universal joint.

3.2.11 Adjustable wrench:

The main advantage of this wrench over on open end wrench is that the jaws can be opened within limit according to the size of the wrench. The jaws are adjustable and fit the cavity to the shape of the open end wrench.

3.2.12 T-socket wrenches:

This is made in the shape of the ‘T’. The hole suitable to the nut is made in the head. The wrench is suitable for applying a great force.
3.2.13 Ring-end wrenches:

The wrench head has twelve notches in the hole. The point of the nut may be gripped by six notches in case of a hexagonal nut and four notches in the case of square nut. It is also known as ring spanner. A two types spanner ring-end spanners and ring-fix spanners.

3.2.14 Set of Star Allen-Key:

This is made from a star bar and is bent to drive a socket or an Allen head-screw. Shown in fig.

3.2.15 Set of Hexagonal Allen-Key:

This is made from a hexagonal bar and is to drive a socket or an Allen head-screw.

3.2.16 Constants: 10-10mm Spine bit:

These tools are used in removing piston head open piston head’s bolts.

Different types and size:
M5, M6, M8, M10, M12 (30mmL)
M5, M6, M8, M10, M12 (75mmL)
1 Bit holder ½” DRX 10mm

3.2.17 9-Star socket bit:

These sockets are used for 9-star type head bolts open and remove the car.

Sizes: T20, T25, T27, T30, T40, T45, T50, T55, T60 (55mmL)
3.2.18 8Pc Hex socket bit set:

These sockets are used in body penal bolts, chassis bolts

Sizes: 5; 6; 7; 8; 10; 12mm (55mmL) 14mm (65mmL), 17mm (70mmL)

3.2.19 Wire cutter:

This tool is made from wire cutting. This type tool is specially use for electrical wire cutting.
3.3 Special Tools:

1. Set for Cleaning the Contact areas
2. Stripper with Conductor Cutter
3. Electric hot-air fan with Special Nozzle
4. Piston ring Compressor

3.3.1. Set for Cleaning the Contact area:

The repairs in the area of the contact transfers for threaded connections of cable sets in the high power circuit and battery connection must be carried out with a set for cleaning the contact areas VAS 6410 (releasing and charging current, grounding conductors, battery terminals and poles).

3.3.2. Stripper with conductor cutter:

Stripper with conductor cutter for stripping and cutting off the conductors. A stripper of 6-7 mm is used for stepping the conductor ends.
3.3.3 Electric Hot-air fan with special nozzle:

After pressing in, the swaged socket fitting must be shrunk with a hot-air fan. Warm up the swaged socket fitting in the longitudinal direction from the inside out until the connection seals perfectly and the adhesive flows out.

When pressing, make sure that the other conductors, plastic parts or upholstery do not get damaged with the hot nozzle.

If the repaired conductors were previously bundled, they must be insulated again with a yellow insulating tape. If necessary, you must reattach the conductor with a cable clamp.

3.3.4. Piston Ring Compressors:

They have ruggedly built construction, made of spring steel with a compression tape, also made of the same material. There are two main types of ring compressor are use in workshop:

1. Non-ratcheting type
2. Ratcheting type.

In the first kind, a band is flared at the bottom to prevent the ring compressor from entering into the cylinder when the piston is pushed done.
3.4 List of Machine:

3.4.1. Wheel Alignment
3.4.2. Spark Plug Testing and Cleaning Machine
3.4.3. Spray Painting Machine
3.4.4. A.C Recovery Machine

3.4.1. Wheel Alignment:

Wheel alignment sometimes referred to as breaking or tracking, is parts of standard automobile maintenance that consists of adjusting the angles of the wheels so that they are set to the car maker's specification. The purpose of these adjustments is to reduce tire wear, and to ensure that vehicle travel is straight and true (without "pulling" to one side). Alignment angles can also be altered beyond the maker's specifications to obtain a specific handling characteristic. Motorsport and off-road applications may call for angles to be adjusted well beyond "normal" for a variety of reasons.

All new vehicles leave the factory with their alignment checked and adjusted. Usually the technician paints the heads of the adjustment hardware to show it has been set, also to show if it has moved later on. It is advisable to do the alignment of the car after the first 5000 km, since all the suspension gets set. Failure to do this may result in the camber and toe specifications drifting outside the manufacturer's limit. This may lead to vehicle pulling and tire wear.
3.4.2. Spark plug testing and cleaning machine:

After continuous use a spark plug gets dirty, spoiled and full of carbon deposits. This necessitates its cleaning and also the testing of its working condition.

Spark Plug Cleaner and Tester is an instrument to completely clean and test an old used spark plug which is used in petrol, gasoline and kerosene engines. Spark Plug Cleaner is an instrument which is a necessity of a well equipped modern workshop/garage to make a used spark plug to work as a brand new one show in fig.

**Specification:**

- **Working Air Pressure :** 5kg/cm² – 16kg/cm²
- **For Cleaning the Plug :** 5kg/cm² – 16kg/cm²
- **For Electrical Testing of the Plug :** 10 kg/cm² – 16kg/cm²
- **Power Supply :** Input Voltage 220V AC with earth
- **Output Voltage :** 12kv – 19kv (HT voltage)
- **Electronic Vibrator :** 220V/12V.
3.4.3. Spray Painting Machine:

Spray painting is done by a spray gun. The spray of painting is sprinkled by compressed air. Gun is used with a compressor which is equipped with a pressure regulator for uniform spray and an air filter for supplying cleaner air to the spray gun.

3.4.4. A/C gas Recovery machine:

The gas of the vehicle can be toucan out and can be recharged with new gas for a/c in the vehicle.

This machine is used for recharging the gas used in A/C system gas also can be removed and filled with this machine.

**Figure: 33. A/c Recovery Machine**

**Specification:**

- Voltage -110 or 220 W,
- Power-50/60 HZ
- Compressor Power-3/8 HP
Oil bottle power-330ml,
Max pressure-20bar,
system maximum Pressure-20bar,
modal No- RCC-8A.

3.5 Power Tools:

1. Air gun
2. Portable Drill
3. Polisher and Sander
4. Portable Grinder

Power tools are operated by pneumatic, electric or hydraulic powers. Their use envisages quicker, effortless and efficient service.

3.5.1. Pneumatic Nut and Bolt Tighter (Air gun):

This is a portable machine whose working end can be changed to suit different sizes of bolts and nuts. This tool is operated by air pressure.

Specific use: It tightens and loosens the nuts and bolts in a short time.

3.5.2. Portable Drilling Machine:

It can be taken conveniently to any area of repair, since it is handy, compact and portable. These machine specifications are: Chuck size=6mm, power input=500watt, no load speed=2800rpm, weight=10kg.

Specific use: This is used to make holes wherever required.
3.5.3. Polisher and Sander:

The sanding is accomplished by means of emery paper or emery cloth of coarse grade while the fine grade is used for polishing. Has the specification mentioned as below. Paper size = 115.280mm, Orbits =5000rpm, Power input = 475watt, Weight=20kg.

**Specific use:** this machine used to rub the burrs from the surface of components, and then polish it to super finishing accuracy.

3.5.4. Portable Grinder:

Being sturdy and handy, it can be taken to any remote, restricted and less accessible areas for repairing.

**Specific use:** this is used to grind the rough surfaces, unwanted projections, protruding corners etc.
Chapter: 4 Particulars of Practical Experiences in Workshop

4.1 Particular Experience:

1\textsuperscript{st} day of workshop meet floor supervisor and teaches workshop rules and regulation.

Introduces the Skoda vehicle and services system.

Wheel removed the car.

- Car up by Lift and remove the wheels bolts and wheel.

Brake pads and drum clean:

- Remove the front wheels and open the brake pads clean by air pressure. Note: 1\textsuperscript{st} the brake oil cap is opened because not created linkage the oil lining by pressure.
- Open the rear wheels and drum surface by ruff paper and air pressure. After this process the brake pedal continuous 5 to 6 time compress.

4.1.1. General check-up:

- Oil changing-car lift and oil change cap open. Remove the oil and replenish.
- Fuel filter replace
- Air filter and pollen filter clean by air pressure.
- Wiper check checks the wiper and add wiper water.
- All lighting check
- Check Tire pressure

All service is fully systematically.

Stepwise working

4.1.2. Paid service:

- Change all filter and aliments
- Chang oil
- Check wiper blade
- Wheel pressure check
- Add wiper water, coolant water and brake oil
- Check all lighting
- Wheel balancing & alignment
- Brake pads and drum clean.
4.1.3. Running service:

- Replace linkage – remove the wheels and open the linkage bolts.
- Replace low arm – car lift upper and replace the low arm.
- Replace brake pads – wheel remove the car and replace the brake pads.
- Wheel balanced by wheel balancing machine

4.1.4. Fitted parking sensor in vehicle:

- Remove the rear bumper
- And 4 holes for sensor fitted it
- 4 wire installation in sensor
- Connect to navigation system
4.2 Major Repair:

4.2.1 Clutch Removal and Installation

**Note:** Any time the engine is removed, check the clutch for wear and replace worn components as necessary. The relatively low cost of the clutch components compared to the time and trouble spent gaining access to them warrants their replacement -- unless they are new or in near perfect condition -- anytime the engine is removed.

**Step:**

1. Remove the engine from the car.

   **Note:** The pressure plate assembly and clutch disk remain on the flywheel when remove the engine. The clutch release (throw-out) bearing and related parts stay in the transmission.

2. If the old pressure plate is to be reused, scribe or paint alignment marks on the pressure plate and the flywheel to ensure proper realignment of the pressure plate during reassembly.

3. Hold the pressure plate securely and completely, then loosen the pressure plate-to-flywheel bolts by turning each bolt only a little at a time. Work in across-cross pattern until all spring pressure is relieved. Then remove the bolts, followed by the pressure plate and the clutch disc.

Figure: 39. Presser plate and clutch plate
**Caution:** The pressure plate is under a great deal of spring pressure. If you work your way around the plate, removing each bolt one at a time, it will warp.

4. Clean the friction surface on the flywheel and inspect it for wear, cracks, heat checking, grooves, and other obvious defects. Alternating bright and dull areas indicate a warped plate. A machine shop can machine the surface flat and smooth (highly recommended, regardless of the surface appearance). Light glazing can be removed with medium grit emery cloth.

5. Inspect the diaphragm spring fingers for excessive wear and make sure they are not distorted.

6. Shake the pressure plate assembly and verify that the diaphragm spring, which should be under tension, does not rattle. If the pressure plate is defective in any way, replace it.

7. If you will be reinstalling the engine you removed, clean the flywheel and pressure plate friction surfaces with lacquer thinner or acetone.

**Caution:** DO NOT use oil or grease on these surfaces or on the clutch disk lining. And clean your hands before handling the parts.

8. Inspect the clutch release (throw-out) bearing. If it feels gritty when you turn it, or if it has been making noise, replace it. Never wash the bearing in solvent since this will remove the factory-installed lubricant. If the bearing is unserviceable, replace per the procedure.

9. Inspect the lining on the clutch disk for wear. There should be at least 2mm of friction material remaining above the rivet heads.

10. Check the clutch disk for loose rivets, distortion, cracks, broken springs and other obvious damage.

**Note:** As mentioned above, ordinarily the clutch disk is routinely replaced, so if in doubt the condition, replace it with a new one. If you're planning to re-use the old clutch disk, it's a good idea to check it for run out.

11. Carefully inspect the spines inside the hub of the clutch disk and the spines on the transmission input shaft. They must not be broken or distorted. Lubricate the spines in the disk hub and the spines on the input shaft with graphite or molybdenum disulfide powder (Rob’s last replacement clutch plate came with a tiny tube of special "spine" grease to be smeared sparingly on the spines).

12. Verify that the clutch disk slides freely on the drive shaft spines without excessive radial play. If the clutch disk is in any way un serviceable, replace it.

**Note:** You're probably replacing the clutch disk anyway, but if the spines on the input shaft are damaged, you'll have to replace the input shaft as well.

**Note:** If you are replacing the main oil seal, remove the flywheel at this point and replace the clutch after the flywheel has been reinstalled.
4.2.2. Cars Cooling System Service

Since the colder months will soon be upon us, there are several things considered critical in your vehicle’s maintenance. And since the engine is the heart of vehicle and directly affects its operation, here is what can do to ensure proper engine life and performance. A vehicle’s cooling system should be serviced seasonally to prevent premature engine wear due to extreme climate or engine temperature. According to Everco Industries, a leading manufacturer of automotive cooling system parts, one sure way to prepare the engine’s cooling system for these extreme climate conditions is to have local service dealer perform a few basic preventive maintenance checks during next routine servicing:

1. Check for external leaks.

Usual areas of leakage are water manifolds, radiator seams, water pumps, freeze plugs and all hose connections. The condition of radiator hoses should be carefully scrutinized for possible deterioration from age and/or wear from rubbing against accessory brackets, etc. Be aware that in many cases radiator hoses wear from the inside out, so outside appearance can be deceiving.

2. Check for internal leaks.

Pull the oil dipstick and check for evidence of coolant. It will show up as minute droplets or sludge and should be easy to spot. This could indicate a cracked head, block or blown head gasket.

3. Check the radiator.

This is the one component in your vehicle’s cooling system which can quickly diminish the efficiency and durability of the engine. Check for obstructed air flow and clean any debris from the fins. Also check the radiator mounting for loose bolts or cracked brackets from vibration and stress.

4. Check the cooling fan.

If the vehicle is equipped with a centrifugal thermo-static type fan clutch, it is important to spot problems before they occur. Check for wear by moving the fan blade back and forth. Over 1/4” of play in either direction could point towards excessive bearing wear. You should also turn the fan by hand. If it free-wheels or there is a rough grating feel as the fan turns, this could mean excessive fluid loss or bearing wear respectively. If any of these conditions exist or there is evidence of fluid leakage, the fan clutch should be replaced. If the vehicle is equipped with an electric cooling fan, a quick performance check can be made by turning on the A/C and checking to make sure it operates without excess vibration or noise. Also check all electrical connections for signs of corrosion, or physical damage. With the engine hot, check to see if the fan is coming on at the correct temperature and operating properly.
5. Check the coolant level and conditions.

As a general rule the coolant level should be 1” to 2” below the radiator filler neck when cool. Use an antifreeze tester to determine the protection range of the coolant. It should be at least adequate for the geographic area where you live. If the coolant is over two years old or has rust in it, system flushing and refilling with new antifreeze solution is recommended and will be sufficient for most climates. The two year replacement interval is necessary to maintain proper rust inhibitor and other additive protection in the cooling system.

6. Check the radiator cap.

If your cap is rusted or the rubber seal is dried out, it should be replaced. A pressure tester should be used to be sure the cap is operating at the recommended pressure level.

7. Check the thermostat.

Remove the radiator cap and start the engine. Insert a suitable thermometer into the radiator neck. When the coolant level drops in the radiator, the thermostat has opened and is allowing circulation. Record the temperature on the thermometer and compare to the thermostat specifications. It should be no more than a few degrees either way of the actual thermostat setting. If you are not in the correct range, the thermostat will have to be replaced. Be sure to install a new gasket and inspect the thermostat seating area for corrosion and pitting.

8. Check drives belts.

Visually inspect all belts for glazing or deterioration. These conditions usually are caused by wear but can be accelerated by improper adjustment, engine fluid spillage, lubricant leakage or improper belt sizing. Check the vehicle manufacturer’s specification listing for proper belt size, tension and/or deflection specifications.
4.2.3. Fuel pump replacement

Step: 1

Park the vehicle on a solid, level surface and set the parking brake.

Step: 2

On most vehicles, the electric fuel pump is located in the fuel tank. Open the fuel cap and have an assistant turn the key to the ON position while you listen at the filler opening. The fuel pump will hum for two to three seconds if the pump is working. If the fuel pump does not make a sound, replacing the pump may be necessary.

Step: 3

Locate and check the fuel pump fuse and relay.

Step: 4

If the fuse is blown, replace it with a fuse of the same amperage. Check fuel pump operation. If the fuel pump works, you've solved the problem.

Step: 5

If the fuse and relay are okay, check for power and ground at the fuel pump. Removing the fuel tank or the back seat may be necessary. If there is power and ground at the pump, then the pump is defective.

Step: 6

Relieve the fuel system pressure. Disconnect the negative battery cable.

Step: 7

Siphon or drain as much fuel as possible from the fuel tank. Disconnect the filler tube hose and the electrical connection to the pump.

Step: 8

Support the fuel tank with a jack and a block of wood. Remove any retaining straps or bolts holding the tank to the frame. Lower the tank.

Step: 9

Disconnect the fuel lines and remove the fuel pump from the tank.

Step: 10

Compare the new fuel pump with the original to verify that you have the correct part. Install the new fuel pump.
Step: 11

Connect the fuel lines to the pump. Lift the fuel tank up and install the retaining strap. Reconnect the filler tube hose and the electrical connector.

Step: 12

Reconnect the negative battery cable. Fill the tank with fuel.
4.3 Engine overhauls:

What is engine overhauls?

An engine overhaul is necessary once the engine is worn out i.e. high mileage, blowing blue smoke, rattling and rough.

There are different ways of overhauling an engine. Most workshops do what is called an in-chassis rebuild. This is where you don’t remove the engine from the car, you just pull what you need to do the job off it and do a minor overhaul - replace the cylinder liners, pistons (if they need it), piston rings, replace the big end and crankshaft bearings, lap the valves in and replace the valve stem seals, strip and check the oil pump, replace the gaskets and seals Just what is needed to be done to bring the engine back to factory specification and performance.

Turbo engine:

Technical data

Engine code: AGU  
Type: 4-cylinder inline engine/ turbocharger  
Displacement: 1781 cm³  
Bore: 81 mm  
Stroke: 86.4 mm  
Compression ratio: 9.5  
Rated output: 110 kW (150 HP) at 5700 rpm

Max. Torque: 210 Nm at 1750 up to 4600 rpm  
Engine management: Moronic M3.8.2

Figure: 40. Turbo Engine
(M3.8.3 with cruise control system), electronically controlled sequential fuel injection and fully mapped ignition with cylinder-selective knock control

**Technical highlights**

- 5 valves for each cylinder (3 inlet valves, 2 exhaust valves)
- Valve timing with 2 overhead camshafts
- Exhaust camshaft driven with toothed belt by the crankshaft
- Inlet camshaft driven with chain by the exhaust camshaft
- Cast iron cylinder block
- Aluminium alloy cylinder head
- Two-mass flywheel
- Vibration damper at crankshaft

**Faults:**

Vehicles are created blue smoke and engine noise.

Turbo charger replaces.

**Remedies:**

An engine overhaul or out-of-chassis rebuild is much more thorough. The engine is removed from the car first open the car bonnet, disconnect the battery and totally stripped down - every nut and bolt is removed, cleaned, checked. The engine is held by engine holding special tools. The turbocharger is connected to the exhaust manifold with three bolts.

These bolts are made of heat-resistant steel in order to permanently maintain the priestess of the bolts. These bolts should always be replaced when repairing. The turbocharger removes the engine and replaces the turbo charger. Turbo chargers bolt and nuts are tight by torque tighter tools. The engine clean and wash. Engines fitted in car and totally bolt and nuts check. An important point after an oil change! Starting the engine for the first time after an oil change is important for the turbocharger.

The engine must only run at idling speed so long as the oil pressure warning light is still on.

Last stage is starting the engine and check faults solution.
4.3.1. TDI Engine:

Engine data:

- Engine code: AHF
- Engine type: 4-cylinder in-line engine
- Displacement: 1896 cm³
- Bore: 79.5 mm
- Stroke: 95.5 mm
- Compression ratio: 19.5:1
- Mixture formation: Direct injection with electronically controlled distributor injection pump
- Firing order: 1 - 3 - 4 - 2
- Fuel: Diesel, min. 45 CN
- Emission control: Exhaust gas recirculation and oxidation catalytic converter
- Power output: 81 kW (110 HP) at 4150 rpm
- Torque: 235 Nm at 1900 rpm

Figure: 41. TDI Engine

Technical highlights:

- Engine is based on the power plant concept of the 66 kW TDI engine.
- Charging employs a turbocharger without bypass with variable turbine geometry (variable guide vanes), which has a considerable impact on the power boost.
- The swirl level of the combustion chamber and the geometry of the piston bowl are the same as the basic engine. The whole diameter of the five-hole injector has been enlarged to 205 mm.
- The engine can also be operated with biodiesel (VOME - vegetable oil methyl ester).

Faults:

Gasket replaces and clean engine.

Remedies:

First the engine oil is removed engine. Open the bonnets and engine cover.

All bolts and disconnect the battery, bolts and nuts are open by its tools. And remove the fuel line, sensor and wire.

An engine removes the car and hold by engine holding tool.

Open the all bolts and nuts step ways and engine parts.
Replace gasket and clean the engine parts and bolts.

Rejoin all parts and bolts.

Engine fitted in car and fills the engine oil.

Last process is engine start and check by diagnosis system.

### 4.4 Gear box overhaul:

**Manual gearbox:**

![Manual Gearbox](image)

The manually-operated 5-speed manual gearboxes 02K and 02J have been specifically developed for engines with a displacement of 1.6 litres up to 2 litres.

The clutch unit, the manual gearbox and the differential together with the final drive are combined to form a compact gearbox block.

The gearbox has a high efficiency. Gearshifts are achieved with short, convenient and precise travel.

- Two-section housing (clutch housing, gearbox housing) with compact cover for gearbox housing
- All shafts arranged parallel
– Helical gearing is used generally for the spines of the selector gears and gearwheels of the forward speeds

– The shift forks are guided on a rod (single-rod shift)

– The speedometer is driven by the output shaft

– The selector gears (sliding gears) are mounted on needle bearings

Faults:
Flywheel checks or replace.

Remedies:
Removal the road side engine protection plate and gear oil.
Remove the front wheel and car lift up.
Remove the axel and starring rod.

Figure: 43. Cleaning the Gearbox
Remove gearbox and clean and check.

Remove presser plate and clutch plate

Replace the flywheel and rejoin all parts.

Final the fill gear oil and check by diagnosis system.

4.5 Faults and remedies of vehicles repairs:

4.5.1 Engine overheating:

<table>
<thead>
<tr>
<th>Possible causes</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal condition in ignition system:</td>
<td></td>
</tr>
<tr>
<td>➢ Ignition timing out of adjustment.</td>
<td>Adjust as prescribed.</td>
</tr>
<tr>
<td>➢ Wrong heat value of spark plugs.</td>
<td>Change heat value.</td>
</tr>
<tr>
<td>➢ Breaker point gap out of adjustment in distributor</td>
<td>Adjust as prescribed.</td>
</tr>
<tr>
<td>Abnormal condition in fuel and exhaust system:</td>
<td></td>
</tr>
<tr>
<td>➢ Float level set too low.</td>
<td>Adjust as prescribed.</td>
</tr>
<tr>
<td>➢ Loose inlet manifold.</td>
<td>Retighten.</td>
</tr>
<tr>
<td>➢ Clogged exhaust ports.</td>
<td>Clean.</td>
</tr>
<tr>
<td>Abnormal condition in cooling system:</td>
<td></td>
</tr>
<tr>
<td>➢ Not enough coolant.</td>
<td>Refill.</td>
</tr>
<tr>
<td>➢ Loose or broken fan belt.</td>
<td>Adjust or replace.</td>
</tr>
<tr>
<td>➢ Poor water pump performance.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Abnormal condition in lubricating:</td>
<td></td>
</tr>
<tr>
<td>➢ Oil filter.</td>
<td>Replace.</td>
</tr>
<tr>
<td>➢ Oil strainer.</td>
<td>Clean.</td>
</tr>
<tr>
<td>➢ Oil leakage from oil pan or pump.</td>
<td>Repair.</td>
</tr>
<tr>
<td>➢ Wrong kind of lubrication oil.</td>
<td>Change.</td>
</tr>
</tbody>
</table>

Table: 2. Engine overheating:

4.5.2 Engine noise

<table>
<thead>
<tr>
<th>Possible</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crankshaft noise:</td>
<td></td>
</tr>
<tr>
<td>➢ Worn down bearing, resulting in excessively large running clearances.</td>
<td>Replace.</td>
</tr>
<tr>
<td>➢ Worn connecting rod bearing.</td>
<td>Replace.</td>
</tr>
<tr>
<td>➢ Worn crankpins.</td>
<td>Repair by grinding or replace crankshaft.</td>
</tr>
</tbody>
</table>
Noise due to pistons, rings, pins or cylinder.
- Abnormally worn bores of cylinder.
- Worn pistons, rings or pins.
- Broken Piston rings.
Others:
- Excessively large camshaft thrust play.
- Valve clearance too large.
- Not enough engine oil.
Reborn to next oversize or replace.
Replace and as necessary.
Replace.
Replace.
Adjust as prescribed.
Replenish.

4.5.3 Gear hard shifting

<table>
<thead>
<tr>
<th>Possible causes</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch pedal play too large, resulting in a “dragging clutch”.</td>
<td>Adjust as prescribed.</td>
</tr>
<tr>
<td>Clutch disc facings are worn.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Clutch disc facings are dirty with oil.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Worn synchronizer sleeve.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Worn synchronizer hub.</td>
<td>Replace.</td>
</tr>
</tbody>
</table>

4.5.4 Brakes:

<table>
<thead>
<tr>
<th>Possible causes</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not enough breaking force:</td>
<td>Locate the leaking point and repair.</td>
</tr>
<tr>
<td>Brake oil leakage from brake lines.</td>
<td>Adjust as prescribed.</td>
</tr>
<tr>
<td>Drum-to-shoe clearance out of adjustment.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Badly worn brake shoe lining.</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td>Braking noise:</td>
<td>Replace.</td>
</tr>
<tr>
<td>Glazed shoe lining, or foreign matters stuck to lining.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Worn or loose shoe lining.</td>
<td>Repair or retighten securing bolts.</td>
</tr>
<tr>
<td>Broken front wheel bearing.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Distorted to lose backing plates.</td>
<td>Replace.</td>
</tr>
<tr>
<td>After 10,000 km :</td>
<td>Add.</td>
</tr>
<tr>
<td>Brake pads</td>
<td>Clean or replace.</td>
</tr>
<tr>
<td>Brake oil</td>
<td>Clean by air pressure.</td>
</tr>
<tr>
<td>Brake disc</td>
<td></td>
</tr>
<tr>
<td>Drum</td>
<td></td>
</tr>
</tbody>
</table>
4.5.5 Wiper:

<table>
<thead>
<tr>
<th>Possible causes</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wiper blade:</strong></td>
<td></td>
</tr>
<tr>
<td>Wiper blade damage to created screen scratch.</td>
<td>Replace</td>
</tr>
<tr>
<td>Not enough wiper water.</td>
<td>Replenish.</td>
</tr>
<tr>
<td><strong>Wiper will not run:</strong></td>
<td></td>
</tr>
<tr>
<td>Fuse is set loose or blown off.</td>
<td>Tighten or replace</td>
</tr>
<tr>
<td>Incomplete metal-to-metal contact in connector.</td>
<td>Repair.</td>
</tr>
<tr>
<td>Dirty or burnt commentator.</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td>Short circuited or fused coil.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Loose terminal connection on wiper switch.</td>
<td>Repair.</td>
</tr>
</tbody>
</table>

Table: 6. Wiper

4.5.6 Horn:

<table>
<thead>
<tr>
<th>Possible causes</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Horn will not sound off:</strong></td>
<td></td>
</tr>
<tr>
<td>Blown-off fuse.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Broken circuit wire.</td>
<td>Repair.</td>
</tr>
<tr>
<td>Defective horn.</td>
<td>Replace.</td>
</tr>
<tr>
<td><strong>Poor sound quality:</strong></td>
<td></td>
</tr>
<tr>
<td>Improper point gap or burnt point inside the horn.</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td>Incomplete contacting action inside horn switch.</td>
<td>Repair.</td>
</tr>
<tr>
<td>Cracked diaphragm.</td>
<td>Replace.</td>
</tr>
</tbody>
</table>

Table: 7. Horn

4.5.7 General Faults:

<table>
<thead>
<tr>
<th>Faults</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel unbalanced.</td>
<td>Wheel balance by wheel balancing Machine.</td>
</tr>
<tr>
<td>Wheel created vibration.</td>
<td>Wheel alignment.</td>
</tr>
<tr>
<td>A.C. cooling low.</td>
<td>Add coolant fuel, gas by A.C. recycling machine</td>
</tr>
<tr>
<td>ABS sensor not working.</td>
<td>Use diagnosis system.</td>
</tr>
<tr>
<td>Fuel filter.</td>
<td>After 10,000km replace.</td>
</tr>
<tr>
<td>Pollen filters 10,000km.</td>
<td>Clean or replace.</td>
</tr>
<tr>
<td>Oil filter 10,000km</td>
<td>Replace.</td>
</tr>
</tbody>
</table>
Air filter after 10,000km: Clean or replace.
Engine oil after 10,000km: Replenish.
Sensor sing in dashboard: Clearance by diagnosis system

Table: 8. General faults

4.5.8 Door noise:

<table>
<thead>
<tr>
<th>Faults</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door locking noise</td>
<td>Spray on locks of door by Rust clean</td>
</tr>
<tr>
<td>Door rubber plastic damage</td>
<td>Door setting by Rubber plastic care spray</td>
</tr>
<tr>
<td>Door opening noise</td>
<td>Spray on connector of door by Rust clean</td>
</tr>
<tr>
<td>Door handle noise</td>
<td>Spray inside the handle by Rust clean</td>
</tr>
</tbody>
</table>

Table: 9. Door noise
4.6 Maintenance & Preventive Maintenance:

**Repid:**

- Oil filter = 10,000km
- Fuel filter = 10,000km
- Air filter = 20,000km
- Pollen filter = 20,000km
- Engine oil = 10,000km
  - Quantity = 4.5 liter
- Gear oil = 40,000km
  - Quantity = 7 liter
- Brake pads = 30,000km
- Brake disc = 40,000km
- Wheel alignment = 30,000km
- Wheel balancing = 30,000km
- Wiper blade = 30,000km
- Mud flap = 30,000km
- Linkage = 60,000km
- Low arm = 60,000km
- EGR valve clean = 60,000km
- AC Compressor = 70,000km
- Coolant water = 70,000
- Jumper = 70,000km
- Car scan by diagnosis system before and after service

**Fabia:**

- Oil filter = 10,000km
- Fuel filter = 10,000km
- Air filter = 20,000km
- Pollen filter = 20,000km
- Engine oil = 10,000km
  - Quantity = 4 liter
- Wiper blade = 10,000km
- Gear oil = 40,000km
  - Quantity = 7 liter
- Brake pads = 30,000km
- Brake disc = 40,000km
- Wheel balance = 40,000km
- Car scans by diagnosis system before and after service.

Octavia:
- Oil filter = 10,000km
- Fuel filter = 10,000km
- Air filter = 20,000km
- Pollen filter = 20,000km
- Engine oil = 10,000km
  - Quantity = 4.5 liter
- Gear oil = 40,000km
  - Quantity = 7 liter
- Brake pads = 30,000km
- Brake disc = 40,000km
- Wheel balancing = 30,000km
- Wheel alignment = 40,000km
- AC Gas recovering = 40,000km
- AC Compressor = 60,000km
- Law arm = 60,000km
- Linkage = 60,000km
- Jumper = 70,000km
- Vehicles scan by diagnosis system before and after service.

Superb:
- Oil filter = 10,000km
- Fuel filter = 10,000km
- Air filter = 20,000km
- Pollen filter = 20,000km
- Engine oil = 10,000km
  - Quantity = 4.8 liter
- Gear oil = 40,000km
  - Quantity = 7 liter
- Wiper blade = 10,000km
- Door setting = 20,000km
- Sunroof setting = 30,000km
- Brake pads = 30,000km
• Brake disc = 40,000km
• Wheel balancing = 30,000km
• Wheel alignment = 40,000km
• AC Gas recovering = 40,000km
• AC Compressor = 60,000km
• Law arm = 60,000km
• Linkage = 60,000km
• Jumper = 70,000km
• Vehicles scan by diagnosis system before and after service.

Laura:

• Oil filter = 10,000km
• Fuel filter = 10,000km
• Air filter = 20,000km
• Pollen filter = 20,000km
• Engine oil = 10,000km
  - Quantity = 4.5liter
• Gear oil = 40,000km
  - Quantity = 7liter
• Brake pads = 30,000km
• Brake disc = 40,000km
• Drum = 40,000km
• Wheel balancing = 30,000km
• Wheel alignment = 40,000km
• AC Gas recovering = 40,000km
• AC Compressor = 60,000km
• Law arm = 60,000km
• Linkage = 60,000km
• Jumper = 70,000km
• Vehicles scan by diagnosis system before and after service.
4.6.1 Types of service done in workshop:

Fee service: 5,000km

- Fuel filter replace
- Oil filter replace
- Engine oil change
- Air filter clean
- Pollen filter clean
- Check-up
  - Brake pads
  - Wiper blade
  - All lighting
- Add
  - Wiper water
  - Brake oil

Paid service:

- Fuel filter replace
- Oil filter replace
- Engine oil change
- Air filter replace
- Pollen filter replace
- Check-up
  - Brake pads
  - Wiper blade
  - All lighting
- Add
  - Wiper water
  - Brake oil
- Wheel balance
- Scan vehicle by diagnosis system
- Customer requirement

Running service:

- Customer requirement
Cam service:

- General check-up
- Replace the manufacture faults parts.

Monsoon check-up:

- Wiper blade check or replace
- Add wiper water and washer
- Check all lighting system
- Check power widows.
- General check-up
CHAPTER: 5. COST REDUCTION AND RECONDITIONING

5.1 Cost Reduction:

- Oil filter = 650 Rs.
- Fuel filter = 1,000 Rs.
- Fog light = 8,000 Rs.

- Throttle Body = Rs.
- Brake Disc = 1,200Rs
- Stabilizer Bush = 500Rs

- Rear Wheel Bearing = 1,100Rs
- Brake Pad = 1,400Rs
- Clutch Plate = 8,000Rs
- Pressure Plate = 8,000Rs
- Front Bumper = 6,500Rs
- Rear Bumper = 7,200Rs

- Air Filter = 600Rs.
- AC Filter = 700Rs.
- Strut Mount = 600Rs
- Cylinder Head Gasket = 800Rs

- Antenna Rod = 1,200Rs
- Rear Axle = 15,000Rs
- Wiper Kit = 2,200Rs
- Drive Shaft = 8,000Rs

- Low arm = 8,800Rs
- Turbocharger =
- Crankshaft =
- Cylinder head =
- Piston =

- Piston Pin =
- Connecting Rod =
- Diesel Injector = 5,000Rs par piece.
- Water Pump =
- Spark plug = 3,000Rs

- Engine Oil = 5,500Rs
- Wiper washer = 100Rs
- Side Mirror = 2,000Rs
- Radiator = 8,000Rs
- Coolant = 11,000Rs

- Crankshaft Bearing =
- Glow plug =
- Distributor =
- Electronic Control Module =
- Jumper kit = 10,000

- Tyre Tubeless = 2,200Rs
- Wheel Rim =
- Fuel pump = 2,000Rs
- Door = 10,000Rs

- Door Fender = 6,500Rs
- Front Windshield = 7,000Rs
- Ac compressor = 30,000Rs
- Head Light = 5,000Rs
- Tail Light = 4,400Rs

- Radiator Fan = 3,000Rs
- Intercooler = 10,000Rs
- Differential =
- Gear Box = 80,000Rs
- Intake Manifold =

- Valve =
- Exhaust Manifold =
- Timing Belt = 6,500Rs
- Water Pump = 8,000Rs

- EGR (Exhaust Gas Recirculation) =
- Starting Motor = 20,000Rs
- Seat = 10,000Rs
Dashboard = 1,00,000Rs
Seat Belt = 6,000Rs
Air Bag = 10,000Rs
Power Window Set =
Hand Brake =
Steering Assembly =

5.2 Reconditioning of Parts:

- A reconditioning of parts is done because to reduce the actual cost.
- Reconditioning means not to change parts but, servicing of that parts and repairing.
- In our organization sometimes we, can’t repair a part but change that part.

The following are the things that done by me in reconditioning of parts.

5.2.1. Brake Pad:

- When the customer problem, is there is decrease in braking performance.
- We change the brake Oil, even brake is not working properly.
- Then we decide to change Brake Pads.
- Sometimes customers says don’t change the Brake Pads, and then we rub the polish paper on Brake Pads.
- And there is increase in brake performance.
- It also reduces the cost.

5.2.2. A/c Compressor:

- When the customer problem is the low cooling, AC compressor is not performed
- We change the AC gas, even no cooling.
- Than we decided to change AC Compressor.
- Sometimes customer says don’t change compressor, then we clean compressor and add new oil.
And the compressor performance is increase.
- It also reduces the cost.

5.2.3. Spark plug:
- When the vehicle more vibrates even after changing the air filter, throttle Body cleaning, etc.
- Then we decided to replace all the Spark Plugs.
- But, sometimes customers says don’t change spark plugs.
- Then we clean all spark plugs with the help of Polish paper.
- It reduces the cost.
5.3 Safety Features:

5.3.1 Safety Features in Workshop:

- Too many people are injured while working in automotive workshops.
- The injury trend occurs across all types of vehicle repair, maintenance or installation work, and on all types of vehicles.
- In our organization there are some rules for safety, which would be followed by all mechanic & helper.
- The rules are made by Company itself.
- If this rules are not followed by anyone, then the Manager has right to suspend him.

The following are the rules made by company itself:

- Wear a uniform which is given by the Service Centre.
- Wear a helmet because of any part or anything falls, that will not damage your head.
- Wear a Shirt not a T-Shirt because any machine that is in working position and you entrapped in machine when wear a T-shirt you can’t easily free but, when you wear a shirt you can easily hack your Shirt.
- Wear a Safety Shoes which is given by Company.
- Clean that area where you have worked, which stops you to sleep on that.

5.3.2 Safety Features in Vehicle:

- Airbag System
  - Driver and front passenger airbag
  - Driver side knee air bag
  - Rear side airbag
  - Head airbag
- ISOFIX system
  - Standard plug type connection for child seats.
- ABS - Antilock brake system
- EBD - Electronic brake pressure distribution
- EBC – Engine Braking Control – an additional function of the ABS
- Anti-theft alarm system with interior monitor
CHAPTER: 6. SPECIAL CHALLINGNG EXPERIENCES

6.1 Special challenging task in Workshop:

6.1.1. Engine noise:

- First of all we taken test drive.
- In test drive we feel the jerking of engine and noise coming from the engine.
- We feel the car is running with low pick-up.
- Then we lifted-up the car & check underbody, but there is no damage found.
- We try with VAS to find out what the problem is but, VAS also displays no damage.
- Then we check the fuel coming properly or not but, the fuel is properly coming.
- We check the fuel filter inlet & Outlet pipes, they are also not damage.
- Then we check the injectors that are also working properly.
- After checking this all we change the Injectors but problem was not solved.
- Then we change the Common Rail with Pressure Regulator Sensor, but still nothing solved.
- Then we change the ECM, then also problem not solved.
- Then we assume that there is something damage in Engine.
- And we decided to remove the gear box.
- After removing the gearbox, check pressure plate, clutch plate and flywheel.
- The flywheel damage, so flywheel is not properly fitted and created noise

Figure: 45. Remove the flywheel
Then we replace the flywheel and problem was solved.

We take a test drive & vehicle runs very smoothly without noise

6.2 My liking and Disliking in Workshop:

6.2.1. Liking of workshop:

- In this chapter I will express My Liking & Disliking of Workshop.
- First of all I like to say that I really enjoy the training.
- A lot of knowledge I got from the Training Manager, Mechanic, Helpers, etc.
- The area in which my organization was situated is nice.
- There is enough space to do different services.
- The management of organization is very perfect.
- The cars are equally distributes to Mechanic.
- The service is done time to time.
- The customer gets her car time to time.
- The way to do different work in workshop is also nice.
- The Machines, Instruments & Equipments use in workshop are also of Standard Quality.
- The maintenance of Machines, Instruments & Equipments are also done time to time.
- A service advisor has talked with customers very nicely & politely.
- There are good Co-ordinates among mechanic.
- The leadership of Manager is also good.
- Training Manager is giving good training to everyone.
- I loved the way of test drive in different roads.
- The tools use in workshop is of Standard quality.
- The mechanic & helpers help me a lot in expanding my knowledge.

6.2.2. Disliking in workshop:

- Sometimes the service is not done properly.
- After servicing the car, the Mechanic is not cleaning the space, where he done the service.
Reference

Books:

- Automobile Engineering - R.B Gupta
- Skoda Octavia fault manual
- Skoda Superb engine manual
- Skoda Workshop SSP manual

Web:

www.rajkotskoda@torqueauto.in