PETROL ENGINE SERVICE LAB
LAB MANUAL

Course code: 322
Department of Automobile Engineering
Semester 3

SAFETY PRECAUTIONS

Safety means protecting yourself and others from possible danger and injury. Don't want to get hurt and you don't want to hurt others.

1. Work quality and give your full attention, for the job you are doing.
2. Keep your tools and equipment under control.
3. Keep jack handles out of the way stand creeper against the wall when it is not in use.
4. Never indulge in horse play or other foolish activities. You would cause some to get seriously hurt.
5. Don't put sharp objects, such as screw driver in your pocket. You could cut yourself or you could damage upholstery in the car.
6. Make sure you clothes are right for the job dangling sleeves or ties can get caught in machinery and cause serious injuries. Don't wear sandals or open toe shoes. Wear full leathers shoes with non skid rubber heal and soles. Keep long hair out of machinery by wearing a cap.
7. Don't wear rings, bracelets or watches when working around moving machinery or electrical equipment. Jewelry can catch in moving machinery with very serious results. Also if a ring or a bracelet should accidently create a short circuit of the car battery; the metal of the ring or bracelet may become white hot in an instant. This would produce serious burns.
8. Wipe excess oil and grease off your hands and tools so that you can get a good grip on tools or parts.
9. If you spill oil, grease or any liquid on the floor, clean it up so that no one will slip and fall.
10. Never use compressed air to blow dirt from your cloths. Never point a compressed air blow gun at another person.
11. Always wear safety glasses or goggles or a face shield.

12. Watch out for sparks flying from a grinding wheel or welding equipment. The sparks can get your cloths on fire.

13. To protect your eyes wear goggles when using chemical such as solvents. If you get a chemical in your eyes, flush them with pure water at once and then see the school nurse or doctor as soon as possible.

14. When using a car jack, make sure it is centered so that it won't slip. Never Jack up a car when someone is working under it. People have been killed when the jack slipped and the car fell on them. Always use safety stands before going under a car.

15. Always use the right tool for the job. The wrong tool could damage the part being worked on and would get hurt.

16. Keep your hands from the engine fan and belt when the engine is running. You would be badly cut or even loose fingers, if your hand gets caught in the fan or fan belt.

17. Do not stand directly in line with the engine fan when it is turning or the engine is running. Some fans, especially fans with the flexible blade can throw off a blade while spinning. A flying fan blade can injure or kill anyone if strikes.

18. Oiling or greasing may not be done while the machine is being operated.

19. If in the workshop fire is caused due to oil or petrol or electricity; it may not be extinguished by water. For this sand and fire extinguishing gas may be used.

20. Before starting any work; full planning of the work mat be sketched.

21. Machines may be properly leaned and lubricated before starting any operation on them.

22. Properly clean and put the tools and machines at proper places after using them.

STUDY OF TOOLS

Aim

To study about automobile servicing lab tools.

Apparatus required

Auto servicing lab tools.

Introduction

You will use tow main types of tools in the shop type is known as hand tools because the hand supplies the energy to operate them. Other type is called machine or power tools.

HAND TOOLS

1. **Screw driver**:- Which is used to drive or turn the screws. Most common type is a single flat blade for driving screws with slotted heads. There are also the Philips head and read and pansies Screw driver.
2. **Ball peen hammer**:- The ball peen hammer is the commonly used hammer in the workshop. It should be gripped on the end of the handle. Rubber hammers are used to strike easily marked surface. When you swing the hammer. The face should strike the object squarely and not at an angle.
3. **Wrenches**:- Wrenches are used to turn screw and nuts and bolts with hexapod heads. A variety of wrenches are used in the shop to work on the both domestic and imported cars.
4. **Open wrench:**- The wrenches are the simplest to use the opening should be the right size of fit the out or belt if the wrench opening is too layer it could round off the corners of the box. The makes the use of the proper wrenches more difficult open end wrenches usually have a different size on each end.
5. **Box wrench**- The box wrench does the same job as the open and spanners. However opening for the or bolt head surroundings or boxes. The nut or bolt head. The box wrenches can be used in very light places

because the wrench is thin wrenches hold better on a nut or bolt but are of limited use in dose spaces box wrenches have different size on each end.

6. **Combination wrench**:- The combination wrench has a box on are end and an open and on other. Both ends are the same size. The box wrench is more convenient for final tightness or breaking loose of a nut or bolt because it will not slip off the box must be lifted. Completely free after each swing.
7. **Adjustable wrench**:- The wrenches has just that can be adjusted to light nuts and bolt heads of a various sizes.
8. **Torque wrench**:- It is used to lightening for loosening the nut cylinder head nuts. It has a smaller level for shifting to each side and the nut or bolt can be loosed every easily which at a high torque.
9. **Piston ring expander**:- A piston ring expander is used for to remove the piston ring and refitting from end. To the piston try.
10. **Circlip plier**:- It is used to remove and refitting or circlips there use type of circlip pliers.
11. **Claw hammer**:- It is used for remove or strike the naids from the wall or coy other nuts of an object.
12. **Oil can**:- Oil can is a device used for lubricating purpose. A vacuum pump is provided inside the oil tank and when the handle is operated the oil is lubricated on.
13. **Pullers**:- Pullers are used for to remove gear and brake from shafts bearing from blind holes and cylinders linear from engine blocker. A puller set has many pieces that can be filttad together to from the proper combination for any pulling job. There are three basic types, pressure screw hammer & combination
14. **Nose plier**:- Nose plier is used for hold small it teeth is very small and king it is having ion and sharp nose. This plier is used for removing air dips in the piston. Bases to take out needle and pins which at sovets or slots and such there worker.

15. **Socket Wrenches**:- Socket wrench sets are the most widely used tools in the workshop. They are the same as box wrenches, except that the head of socket is detachable you make up the socket wrenches that you need from the set in tool box.
16. **Hack saw**:- Hack saw used for swing metal blade are made of special steel. All hard blades made of high speed steel are used for writing border materials.
17. **File:-** File are cutting tools where a large number of cutting edges or teethes several types of files are flat file, triangular file, half round file, equal file, round file etc.
18. **Allen key**:- Some allen keys are polder key rings. It is used screwing are answering after screws. Mostly after screws are in hexagonal shapes at the head so it is made in hexagonal shape on and in bent at an angle 90^{o}.
19. **Ring Spanner**:- This an another type of a spanner. The majority of the ring spanner is that it will not slip from the nut or bolt. Bit it has certain other limitations compare to the double and spanner.
20. **Tabular spanner**:- It is also used for lighting and loosing nuts and bolts.
21. **Feeler guage**:- It is a guarge which is used for checking the clearance between the mating surfaces. They are made in the form of a set of steel precision machine blade 03 to 1mm. Thick and 10 mm long. The blades are pivoted balder each blade have a indication of its thickness.
22. **Piston ring grew cleaner**:- These are used for cleaning the piston greases this devices is used in automobile workshop.
23. **Piston ring compressor**:- It is used to compress the piston ring when it is used in the ring grow.
24. **Combination plier**:- This is another type of plier which is used for cutting wires holding puts etc.
25. **Spring plier**:- This is used to take out this spring's in the engine valves fuel pump etc.

26. **Brake shoe spring remover**:- These devices are used to remove the break shoe spring.
27. **Screw jack**:- Screw jack is used for lighting purpose at the time of changing wheels and another when the vehicle. Lifted with the help of screw jack. The vehicle belted at plane load and it light with help of screw jack.
28. **Stud remover**:- It is used to remove studs from engine cylinder head it is stud or bolt bracks of the broken parts must be removed if the brake is above the surface it must be easy. If the broke is below the surface are a stud remover fits over the stud and a centred wheel provided grip when this trial is used with a strict stud.
29. **Dial Gauge**:- A gauge that a dial dose and a needle to register used to measure variations in dimensions and distance too small to be measured accuracy by the means it is used to measure and play so shaft or fears also.
30. **Compression gauge**:- The compression gauge measure the ability of the cylinder to hold compression, pressure operating on a diaphragm in a lecture cause the needle on the face of the lester to more a round indicate the pressure being supplied the compression gauge is actually used in one engine is to measure the pressure in the engine cylinder.
31. **Vaccuam Gauge:-** It is really a pressure and is often released is as one absolute pressure gauge when the vaccuam gauge is constructed it measure the amount of vaccuam in the engine daring section stroke. If the ready is lower or unsteady than there is again trouble.
32. **Valve lifter for over head valve**:- The valve may be removed from the cylinder head or block. As the case may be by mars of valve lifter. The functions of valve fifty is to compress the spring end remove the spring reliant lock after. Which value may be taken at in the early type ford engine.
33. **Valve lapstick**:- The valve lapstick which has a hollow rubber causing at it end is pressed tightly once the valve so that the hollow rubber

casing pets attached to the valve top because of the vaccuam thus introduced inside casing. The valve is now given reciprocating rotary which the plains of the hand on the stick.

34. **Three Pitch Guage**:- It is used for measuring the pitch of screwed position.
35. **Plug Spanner**:- The play spanner is used to remove the spark play from the engine.
36. **Wheel spanner**:- The wheel spanner is used to remove the wheel of the vehicle from it axil.
37. **Valve Grinding machine:-** The valve grinding is used to reface or griod the valves at the specified angle. The valve grinder has a grinding wheel a coolant and a chock with holds the valve for grinding set the chock to grind the valve for at the specified ang.e
38. **Tyre lever:-** The tyre liver is used for remove and refilling purpose.
39. **Greece gun**:- The devices is used for lubricating purpose. A pressure pump is filled into it pressure is applied then the lubricating is occurred.
40. **Valve die:-** Valve die is used for the remove that the air from the air filled jar.
41. **Connection Rod Aligner**:- Connecting rod aligner is to chock the alignment of the connecting rod.
42. **Fuel Injector tester:-** Fuel injector tester is used to test the injector pressure.

SERVICING AND MAINTENANCE OVER HAULING

SERVICING

Servicing jobs sue very from simple to difficult. But no job requires more than side steps. There are

1. Measuring

2. Dir assembling
3. Machinery
4. Installing new or serviced posts
5. Reassembling
6. Adjusting

1. **MEASURING:-**

Linear measurement are the most common kind of measurement. They are measurement you take in a straight line. For example you might measure an opening or a diameter using the familiar (U.S.C.S) you take measurements in mm. All imported and many domestic vehicles are measured with the metric system there are other ways to measure. Some times the measuring is done by listening as when you listen to running engine. When you check out oil in an engine you measure its level in the crank case you are test instrument to measure battery conditions. When you check out engine vaccuam at compression you measure engine performance.

2. **DISASSEMBLING:-**

Disassembling the measurement show that the is trouble you then have disassemble as take a part the component to pet at the trouble suppose your measurement show that the valves are not doing their job you then have to take some part of engine off to pet the valves and repair them.

3. **MACHINING:-**

Sometimes you have to remove metal from a part using a machine is remove metal is called machinery suppose you find valve trouble, this could require machinery or grinding. The valves and valve sects. You might find that the engine cylinder require machining special are required to do the jobs.

4. **INSTALLING:-**

You might that some part are won that they most be thrown away than new parts must be installed in their place.

5. **RE ASSEMBLING:-**

After repair, you may have to put some parts back to gether. This is called re assumbling you put the pasts back together to make a complete assembling.

6. **ADJUSTING:-**

As an automobile is aparted. Parts normally wear this requires adjustments from time to time, also adjustments may be required after a service job for eg:- After grinding the valve put every thing back then together then you measure the valve action it is not at right.

MAINTENANCE:-

The maintenance is divided into commonly two there are daily maintenance, schedule maintenance operational conditions owing to which there is great obtain on its working parts it is neither the age of an automobile not the milage which determine its usefulness. In general the maintenance is the process of keeping a motor vehicle in good running condition. The life of the automobile depends up on mainly the following two points.

1. How the vehicle has been driver.
2. How the vehicle has been looked after maintenance.

Then the maintenance are three types

1. Preventive maintenance.
2. Operating maintenance.
3. Break down maintenance.

PREVENTING MAINTENANCE:-

It is the attention provided to a motor vehicle it is to be laid of driving rather running for long period. For this following points are considered.

1. Thoroughly wash and lubricate vehicle parts and avoid corrosion.
2. Remove spark play power, petrol engine and to the spark play holes then the engine coven a few times.
3. Drain the petrol tank.
4. Drain the battery and chock.

OPERATING MAINTENANCE:-

It is attention to provide auto mobile after in separation for special line at correct distance. Thus maintenance may be daily, weekly, quarterly after or yearly covering distance of 500 km, 1000 km, 200 km.

BREAK DOWN MAINTENANCE:-

It is the attention which is to provided. When a motor vehicle become immobility due to falls create driving running this fault are starting fault, electrical fault, fuel supply fault then over heating beaming breakage and accidently.

OVER HAULING:-

It is the process of general cleaning inspection light engine up and thread adjusting involving certain minor replacement for the over baiting of an a

automobile like engine indicator. Carburetor, Clutch and transmission components as well as running gais parts wheel, breakers, steering, assembly, springs, etc.. Should be cleaned inspected or tested and adjusted or reported.

ENGINE OVERHAUL:-

The engine overhaul include compression test, ignition and wiring engine clearing mysterious engine parts front and chain etc. we cleaned.

TOP OVERHAUL:-

It consist of cleaning of the engine repair and replacement of most assembles and keeping the valve good condition.

MAJOR OVERHAUL:-

Major overhaul means completed overhauling engine is done.

FUEL PUMP [AC MECHANICAL]

Inspecting, replacing parts and re-assembling a petrol engine AC fuel pump.

FUNCTION DESCRIPTION:-

The function of a fuel pump is to deliver fuel from fuel tank to the carbureted. This fuel pump is operated by an electric on the engine camshaft. This pump is mounded on the side of the cylinder operates the diaphram such the fuel through the strange from the fuel tank and upward. Movement of the diaphram, pushes the fuel up which it the float chamber of the carburetor is completely

filled up and is do need of more pumping of fuel till some of its consumed rod the engine consumed and the engine conditions to such the pump will built up excessive pressure. Which may damage the pump to avoid rod is made flexible with the help of spring the excessive pressure produced holds the diaphram in an intermediate quarter so that the lam is not moved up and down.

EQUIPMENT TOOLS AND MATERIALS:-

1. Petrol engine mechanical fuel pump assembly.
2. Screw driver.
3. Petrol to wash the pods.
4. Air blowers to can filler.
5. Necessary new parts

   Preparation:-

   Clean the tray

PROCEDURAL TASKS

(a) Dismantling

1. Remove the fuel pump from the engine by removing flexibly petrol pipes and mounding parts.
2. Clean the fuel pump externally.
3. Remove the body fixing screw to separate the upper body assembly the lower body assembly.
4. Lio screw the lever housing assembly fixing screw.
5. Press down the diaphram main assembly and pull out level having assembly now the diaphram, main assembly can be taken away.

6. In the upper body assembly answer and the braked assembly will be free o taken out.
7. All parts thoroughly washed in petrol and filter is air beloved to remove any sendiments as dist remains after wishing.

(a) Inspection and re-assembling

1. Inspection pump diaphram selecting washer have to the charged in every furling.
2. Check out new washer order to that of dissembling by fixing new washer in place of old one which we to the charged fix pump to the engine block.

RESULT:-

Inspected and re-assembled the fuel pump.

OVERHAULING OF WATER PUMP

OBJECTIVE:-

Removing, dimaintaing, cleaning, checking assembling, adjusting and refitting.

TOOLS AND EQUIPMENTS USED:-

Double ended spannel set (inch) brakes drift ball them hammer (2½ pounds) lose angle, screw drive (6'') grease gun pin punch (3''). Raw materials reuired water pump scale basket grease, cotton waste.

PROCEDURE:-

1. Loose lover lose pipe clamp and dismounted for belt from water pump and drain out engine cooling water.

2. Unthreaded adjusting bolt and dismounted for belt from pulley untreaded bolt of dynamo from water pump body.
3. Unthroded all four bolts of cooling fan using ring spanner and dismount belt.
4. Dismounted water pump from engine by unloading all four foundation bolts on it.
5. Cleaned wader pump and tools our having our with the help of nose ….
6. Hammered bearings through pin punch to bring it out and also took out rotor, water pump screw and water pump …… from water ……..
7. Checked all components and found that the seal was defective.
8. Filled water pump bearing with the help of hammer and brases drift over bearing shift.
9. Filled water pump seal over water pump's stead.
10. Mounded impeller over bearing put with the help of digit.
11. Locked water pump bearing.
12. Used feeles gauge to measure and adjust Clarence. …….. rair just and …… body to 0.20
13. Mounted flange in from of water pump bearing with the help of hammer and digit over being shaft.
14. Checked water pump for any leakage etc.
15. Filled now gasket, to pump over mounted is with engine them all four bolts.
16. Mounted prally and fan mounted it with engine bock fighter all four bolt of it.
17. Thusded dynamo bolt and mounted fan ball property and adjusted bolt tension.
18. Clamped sad lightened the lover those pipe with water pumps it.

19. Filled water in radiator and started the engine water pump was working property.

PRECAUTIONS:-

1. Bearing lock should be taken out prior to dismoule water pump.
2. While talking the roter our forum breaking shaft pin punch or bor press should be used.
3. After filling the new seal rotor pin to body clearance should be as per manufacture interaction.
4. Rotor fan to body clearance showed be measured with feels large.
5. It there is a line on rotor face then it should be fitted.
6. While fitting the bearing greasing hole should be in front of provided for greasing.
7. Lock should be placed properly.
8. While demanding them bearings greasing hole should be pressed a little thumb because it may pump oil.
9. It bearing's fitment is loosed in water body, them replace water body.
10. After over hauling the pump its seal should be checked for nay leakages etc by filling it with water.
11. Locking device should be used when filling pully and fan.
12. Proper tools should be used.

RESULT

Cleaning, checking, assembling adjusting and refitting are done accurately to the given water pump.

OVERHAULING OF GEAR TYPE OIL PUMP

OBJECTIVE:-

Removing, cleaning, checking assembling, and refitting.

TOOLS AND EQUIPMENTS USED:-

Double ended spannel set (inch) Ring spanner det (inch) solded set (inch) Feller gauge steal foot rule.

RAW MATERIALS USED:-

Cotton waste, Engine Oil, Gasket, shellac, laeposence oil

PROCEDURE:-

1. Drained out expire oil from applying drain play with the help of double ended spanner.
2. Dismounted sump from engine by unthreading all bolts of oil samp.
3. Dismounted oil pump by unthreading foundation bolts.
4. Unthreaded appear plate and took our driven per cleaned an component.
5. Checked back lash between driver and driver year with the help of fedow torque also measured side clearance Back lush fowed to be 0.15 mm.
6. Measured side clearance found to be ok
7. Placed appear plate and tighter all bolts, mounted oil slainer with gasket over oil pump.
8. Immersed oil pump is an engine oil filled lacy.
9. Rotated driven gear so the pump sucked the oil and checked its pleasure.
10. Mounded oil pump with gasket to engine block tighten drain key.

11. Mounded oil pump with gasket to engine block tighter drain key.
12. Filled sea 20 WHO grade of engine oil thrown filler play provided in tapper cover and up to maximum mark given in dipstick.
13. Started engine and checked oil pressure.

PRECAUTIONS:-

1. Oil pump showed be cleaned before mounting it on engine block.
2. Depictive oil sump packing should be replaced.
3. Shallac showed placed towards sump side and grease on engine side of sump packing.
4. Oil pump should be filled with oil before mounting it on engine.
5. Grease and plate clearance should be as per manual instructions.
6. 18 clearance between oil pump body and put is more replace them.
7. If three are lines/groves/rather appearing on glass plate, grind is with fire may paste and glass.
8. Pressure should be adjusted through relief valve.
9. Do not work with daily hands.
10. Oil sump bolts should not be over frightened because cork packing may get damage and oil may leak through it.

RESULT

Geak type oil pump is cleared checked assembled and refilled.

PETROL ENGINE BLOCK

AIM:-

Dismantling, cleaning, checking and assembling

TOOLS AND EQUIPMENTS USED:-

Double ended spanner set (inch) Ring spanner set (inch) socket set (incH0 Ball pear hammer (2½ pounds), malot hammer ….. Lifrer flat screw drivers (6’’), play spanner, ring compressor ring expander.

RAW MATERIAL REQUIRED:-

Petrol, grease, energy paper, cotton waste

PROCEDURE:-

1. We were given a job to dismantle an unserviceable engine of loep.
2. Cleaned the engine throughoutly.
3. Un threaded tappet corer’s bolts and secrated the coves from cylinder hard.
4. Took out the tapper cover packing alos.
5. Unbolted the heads bolts using socket and handle and serrated cylinder head from engine block.
6. Opened the nuts and took out the rocks shafts assembly push rod.
7. Took out the head gasket from block.
8. Inrerted the bead gasket and unthreaded the bolts of oil chamber and look it out from block.
9. Un threaded the dognut from crank pulley using ring spanner.
10. Drive out the crank pulley from crank shafts front end with the help of a tyre liver.
11. Unbolted the liming cover from end and fly wheel from red end.
12. UN thrashed both bolts or oil strains and took and oil strainer.
13. Connecting rods were taken out after unthreading oil end bolts this make connecting rods free from crank shaft.
14. Drive out the piston and connecting rod as a single units from cylinder or born.
15. Meshed can gear was greeted from crank gear.

16. Unthread the bolts of oil pump and look out the oil pump from engine block.
17. Crank shaft was serrated from block only after …… the bolts of main journals
18. Using valve lifter will the four inlet valve were taken out from cylinder head.
19. Drive out all tapper from block and serrated the comfort block.
20. Using raise lifted all four inlet …. Were taken out from cylinder head.
21. Studied all components after dismantling.
22. Filled can shaft and crank shaft in cleaned engine block.
23. Placed tappers over respective can and filled can lever to it.
24. Loosened and compression piston and ring assembly in ring compressor and hammered to drive in respective cylinder and felted the connecting rod to crank shaft.
25. Bolted the oil straioes to engine block.
26. Bolted the sump to engine and bolted fly wheel to crank flange.
27. Straighten the engine and bolted fly wheel to crank flanges.
28. Meshed oil pump gear to cam shaft and tighten all three bolts of it.
29. Placed and filled all four …… in block.
30. Placed head gasket before placing cylinder head over engine block
31. Tightened all head bolts in correct sequence and with specified torque.
32. Filled rockers and rocker shaft, push rod to cylinder head.
33. Filled tapper over after fixing the required gasket it.

PRECAUTION:-

1. Piston should removed and inserted in block only from up.
2. While inserting ring it showed be compressed with sing compressor.
3. While assembling or dismantling vaiver light should be used.
4. Crank shaft should not be hammered with hammer and only its handle should be usual.

5. Piston showed not be hammered with hammer and only its handle should be usual.
6. While threading or unthreading bolts on cylinders head socket spanners should be used.
7. Socket and torque un reach should be sued while lightening by and caps and main found taps to counting rod and gama shaft respectively.
8. Ring examples should be used while taking and piston rings from piston.
9. Proper tools should be used.
10. Do not work with dirly handle.

RESULT:-

Inspecting and reassembling the given cylinder block assembly

CYLINDER HEAD

AIM:-

Removing, dismantling, cleaning, checking, assembling and regiting

TOOLS REQUIRED:-

Socket set (inch) double endard spanner set (mm) valve lifter fedes gauges flat screw driver (o)

MATERIAL REQUIRED:-

Energy paper, petrol, cotton, waste, head gasket appear cover packing cringing paste, grinding strick.

PROCEDURE:-

1. Unscrewed lower hole pipe clamp and drive it out from water pump, resulting drawing out of cooling water from engine.
2. Un gruad upper house pipe clamp and it was taken out from radiation and outlet elbow.

3. Air cleaner pipe was removed from carburetor.
4. Fuel inlet pipe was removed.
5. Took out accelerator and check cagier from ……
6. Distributor cap and high tension land were taken one from ti.
7. Dist un socket from cylinder head.
8. Unscrewed the muttlers clam from exbeust manifold and took it out.
9. Unthreaded nut of brackets of racked assemblies and they when taken out from law.
10. Push rod ware taken from head and blocking ……it.
11. Cylinder head made serrated from engine block by importing it.
12. Cylinder head gasket found damaged.
13. Using valve ligers using exhaust valve were taken from cylinder head.
14. Using valve ……. exhaust valve were taken out from cylinder block.
15. Unthreaded all four spark play using play spanner.
16. De carbonised all valve
17. All valve select fro were burned out.
18. All valve rust were burned out.
19. De carbonized an spark ling.
20. De carbonized composition champers and piston down using flat screw driver scraper or energy paper.
21. Fitted new head gasket.
22. Filled new head gasket.
23. Placed cylinder land over head gasket and engine block.
24. Tightened all bolts for cylinder head with specified torque and manner using torque wrench.
25. Threaded spark play to cylinder head.
26. Placed push rode over tapper through cylinder head and tighter rocker ram brackets to head.
27. Adjust intel and exhaust valve clearance.
28. Applied shallow bond to tappet clever gasket head side and grease to covers side fitted trapper cover over it.

29. Connected matter to exhaust manifold and screwed clamp property.
30. Connected choke and accelerator carrer to carburetor.
31. Connected high tension leads to spark play according to fringe order.
32. Connected air cleaner pipe to carburetor.
33. Connected upper hose pipe to carburetor.
34. Radiator upper hose pipe made connected to water pump and filled radiator with coolant.

RESULT:-

Inspecting and reassembling the given cylinder head assembly.

AIR CLEANER (WET TYPE)

AIM:-

Removing, mishandling, Cleaning, Assembling and Refitting

TOOLS REQUIRED:-

Double and spanner, set, flat-screw driver Air compressor

MATERIAL REQUIRED:-

Engine oil (Sea 40) Piezed, Kerogane oil cotton waste.

PROCEDURE:-

1. Un screwed air clamp using screw drive and separated from carburetor air born upper and lower body.
2. Un shreaded air cleaner fly nuts and spperated upper end lover body.
3. Drain out air cleaner dirty engine oil and cleaned with ……. Oil.
4. Cleaned upper bodies filler using air filler.
5. Filled louler body with engine oil pull up to maximum lover masketed on it moved upper body over lower body and filled flight.
6. Planned rubber ringer below air cleaner.

7. Mounted air cleaner over air from and scrowed its clamp using screw driver.
8. Connected breathes pipe with tappet cover.

PRECAUTIONS:-

1. Oil level and grade of out should be as per manufacture into actions.
2. Air cleaner should not be over leveled without.
3. Air cleaner should be cleaned and out be should be change at each service.
4. Air cleaner oil level should not be less
5. Air cleaner should be tighten on air born or inflamifold.
6. Do not work with dirty hand.

RESULT:-

Inspecting and reassembling the given dry type air cleaner.

OVEHAULING OF ROTOR TYPE OIL PUMP

AIM:-

Removing, Cleaning, Assembling and Refitting

TOOLS REQUIRED:-

Dabble and spanner, set, feels gauge, steel foor rule, socket set

RAW MATERIAL REQUIRED:-

Cotton waste, engine oil, gasket kerosene oil, shellac

PROCEDURE:-

1. Drained out engine oil from engine by un plugging … plug with the help of dabble and spanner.

2. Dismounted oil pump from by on threading all both oil pump.
3. Dismounted oil pump by on threading all there bots of it.
4. Dismounted oil pump and look its row assembly.
5. Cleaned any components wing kerosence oil.
6. Placed inner and outer rows in oil pump body.
7. Checked clearance between both the outer rows and the body found it to be 0.003.
8. Checked clearance between both rows with the help of header. Gauge found it be 0.003.
9. Placed foot rate over oil pump body and checked rooters and surface which was 0.001.
10. Mounted oil sterner and plate over oil pump body and tighten both bolts completely.
11. Filled clearing tray with French engine oil (SAE 20-40) and immersed oil pump in the mounted driven glass and rotate inner motor so that pump packed the oil.
12. Fortier related drive glass and oil started coming outlet with pressure.
13. Mounted oil with gasket on engine and tighten an three holts.
14. Filled for litre of fresh oil through tapot covers filler play.
15. Start engine and check engine oil pressure through pressure gauge slow engine pressure was 15 kg/sq cm and on fall throttle it was 45 kg/sq cm.

PRECAUTIONS:-

1. Inner and outer rows clearance should not be more the 0.003 18 it is more replace both.
2. Clearance between outer rows and oil pump body shoul be better 0.002 and 0.005 if it is more replace outer rotor.
3. Clearance between oil pump body and rotor and should not be more than 0.002 it clearance is more than oil strainer plare should be grained with energy paste and glass set decrease.

4. Oil pump should be filled with oil before mounting it.
5. Now packing should be installed white filling oil pump with engine.
6. If outer rotor, inner rotor, outer body, related data is a known refer work shop manual.
7. Oil pump should be cleaned before mounting in.
8. Oil pump packing should be installed with shellac on pump, side of the packing and grease in other side of it.
9. Oil pump packing should be replaced.
10. Oil pump bolts nor be over brightened it do so packing may be damaged and oil may be rate from it.

RESULT:-

Inspecting and reassembling rotor type oil pump.

SOLEX CARBURETOR

JOB:-

Carburetor servicing

AIM:-

Dismantling assembling the solex carburetor.

SPECIAL INSTRUCTIONAL OBJECTIVES:-

1. From the engine.
2. Dismandle the carburetor.
3. Identify the components.
4. Examine the components.
5. Select and fit new parts.
6. Re-assemble the carburetor.

ENTRY BEHAVIOUR:-

1. Function of a carburetor in a petrol engine.
2. Construction and operation different types of carburetor.
3. Different circuit in a carburetor and its functions.

FUNCTIONS:-

The function of a carburetor is to supply a combitible mixture of a fuel and air in correct pre-operation.

EQUIPMENTS:-

Key, vice, clear, cloth, screw driver, double and spanner set, kerosene, packing kit, required super parts and grease.

PREPARATION:-

1. Clean carburetor.
2. Clean tray.
3. Clean vice.

PROCEDURE:-

1. Dismandle the carburetor.
2. Disconnect able connection.
3. Remove air cleaner.
4. Remove carburetor from the engine inlet main fold.
5. Unscrew there studs on the float clam per cover.
6. Remove float cover assembly.
7. Remove float with toggle.
8. Remove pump injector, assembly with gas kit.
9. Pedal accelerator pump connection tinks.
10. Give punch mark of the accelerator pump assembly cover proper injection.
11. Unscrew accelerator pump assembly.

12. Remove accelerator pump assembly.
13. Unscrew the main jet holder.
14. Unscrew the starter lover screws.
15. Remove main jet from the holder.
16. Unscrew the pump jet holder and remove pumplet.

INSPECTION:-

1. Toughly cleaned all parts in kerosene and ray out on a clean cloth.
2. Check all components for wear and tears.
3. Wipe of all components and clean all circuits pets with compressed air.

FITTING NEW PARTS:-

Check for fitting of parts

RE ASSEMBLING:-

1. Tighten the pump jet holder and get in proper place.
2. Fit main jet and it's holder.
3. Install the started cover and tighter the screw.
4. Instial the accelerator connection to throttle and pump.
5. Install the injector assembly with new gasket.
6. Plane the float and toggle in the float chamber.
7. Lighten float chamber cover assembly with new gasket.
8. Tight the carburetor on the inlet main fold with new gasket.
9. Give connections to accelerator links vaccum advance unit.
10. Installed air cleaner.
11. Tune the carburetor.

RESULT:-

Inspecting and reassembling the Solex Carburetor.

TWO STROKE PETROL ENGINE

AIM:-

Removing Disamdling, Cleaning, Clucking assembling and refilling.

TOOLS AND EQUIPMENTS USED:-

Socket set (mm), half rowed scraper, double ended spanner set combination pliers (6), long nose pliers (6) flat screw driver (10).

RAW MATERIALS REQUIRED:-

Cylinder head gasket carburetor packing, kerosene oil, engine oil grease, petrol, cotton waste.

PROCEDURE:-

1. We have given a model of motor cycle engine (stand mounted) to discarbonise it.
2. Removed engine from stand to tack to work bench.
3. Took out high tension lead and then spark play.
4. Took out carburetor from inlet manifold using ended spanner. (12 – 13 mm)
5. Scratched, worn out carburetor packing.
6. Unthreaded all four nut (14 mm) of cylinder head using socket, extension rod and handle serrate cylinder head from cylinder block.
7. As soon as head was removed, we come to know that gasket was brocken.
8. Un bolted ‘L’ type clamp mounted on the manifold and serrated cylinder from case.

9. Remove carbon deposited in combustion chamber and transfer part with the type of scrapper and cleaned path with petrol.
10. Tightened all for parts after filling all the new gasket to cylinder block and head.
11. Locked gadjen pin with properly after filling piston and connecting rod.
12. Tighten spark play and connected high tension there to it.
13. Tightened carburetor to inlet manifold after planning new packing.
14. Start the engine.

RESULT:-

Checked and reassembling the given tool stroke petrol engine.