

# CHAPTER 3 . ENGINE OVERHAULING

## ENGINE REMOVAL

**NOTE:** \_\_\_\_\_  
It is not necessary to **remove** the engine in order to remove the cylinder head, cylinder, or pistons.

### A. Preparation for Removal

1. All dirt, mud, dust and foreign material should be thoroughly removed from the exterior of the **engine** before removal **and** disassembly. **This will help** prevent any **harmful foreign material** from engine ail.
2. Before the **engine** removal and **disassembly**, be **sure that you have the proper** tools and cleaning equipment **so that** you can perform a clean and efficient **job**.
3. During disassembly of the engine, clean and place all of the parts in trays in order of **disassembly**. This will speed up assembly time and help insure **correct** reinstall-action of all the engine **parts**.
4. Place the motorcycle on its center stand. Start the engine and allow it **to warm** up. Stop the engine and drain the **engine** and **middle** gear oil.
5. Remove the **oil** filter element from the crankcase.
6. **Remove** the left and **right** side **covers**.

### B. Seat and Fuel Tank

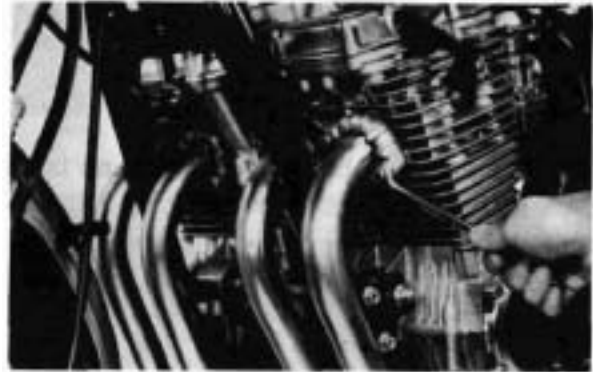
1. Turn the fuel **petcock** to "ON".
2. Remove the seat and the fuel tank holding bolt. Lift the rear end of the fuel tank and **disconnect** the fuel pipes and vacuum pipe from the **petcock**.



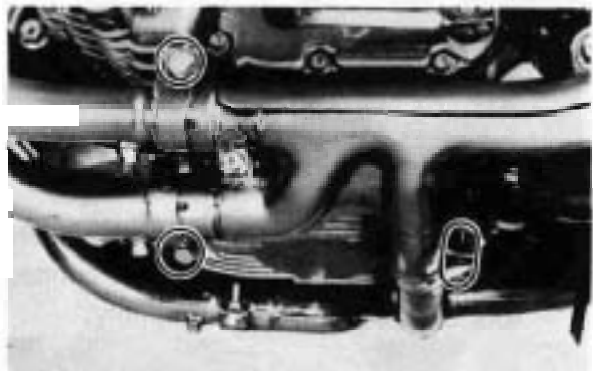
3. Remove the tool tray.

### C. Mufflers

1. Remove the **rear** brake pedal.
2. Remove the exhaust pipe holding nuts **from** the cylinder head.



3. Loosen the **calmp** bolts securing the muffler joints.



4. Remove **the bolts** holding the right and left **mufflers** to the muffler bracket and remove the left and right mufflers.



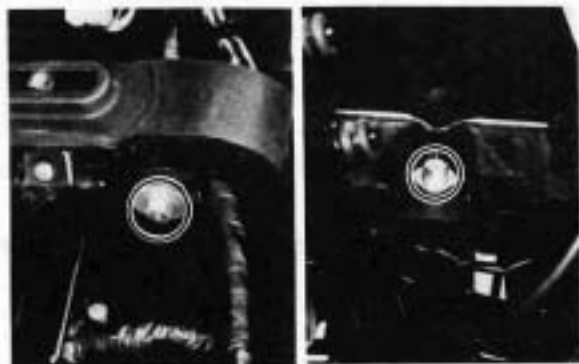
### D. Battery Case

1. Remove the **negative** battery cable from the battery terminal then **remove** the positive **battery** plate. Remove the battery.



1. Positive battery plate

2. Remove the battery case holding bolts and remove the battery case.

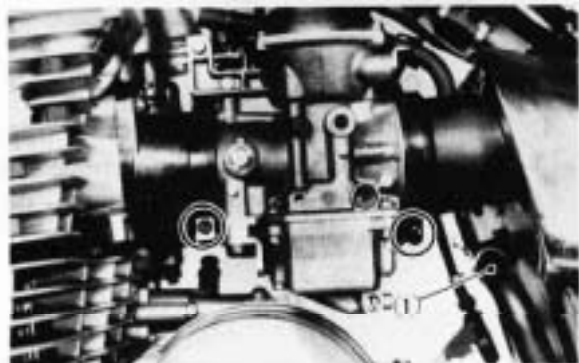


#### E. Air Cleaner Case

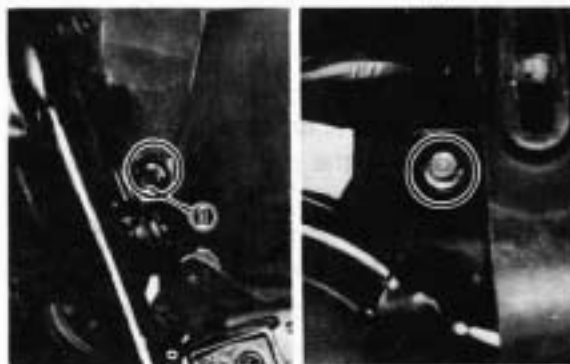
1. Remove the ignitor unit mounting board securing screw and disconnect all connectors. Remove the board assembly.



2. Remove the clamps holding the carburetors to the air cleaner case and intake manifolds. Remove the crankcase ventilation hose at the air cleaner case.



3. Remove the bolts holding the air cleaner case to the frame (left and upper)



1. Engine ground wire

#### NOTE:

The engine ground wire is secured together with left side holding bolt.

4. Remove the starter (CHOKE) cable from the carburetor.
5. Remove the air cleaner joint rubbers and pull the carburetor assembly to the rear.
6. Disconnect the throttle cable from the carburetor throttle lever and remove the carburetor assembly to the right.



1. Starter (CHOKE) cable 2. Throttle cable

#### F. Wiring and Cables

1. Disconnect the clutch cable at the crankcase side.

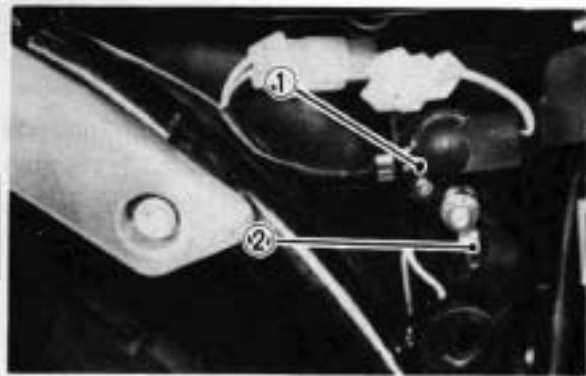


1. Lock nut

- Remove the spark plug lead wires and the tachometer cable.



- Disconnect the electric starter cable at the starter relay switch.



- Starter relay switch
- Electric starter cable

- Disconnect the pick-up coil and A.C.G. lead wire couplers. Position the disconnect lead wires so that they can be safely removed.



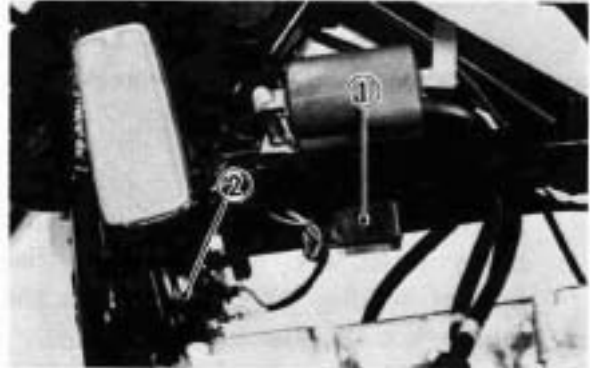
**CAUTION:**

The A.C.G. lead, starter cable, and pick-up lead are clamped at the upper cross tube of the frame. Do not forget to remove this clamp before removing the engine.



- Clamp

- Remove the horn and flasher relay.



- Flasher relay
- Horn

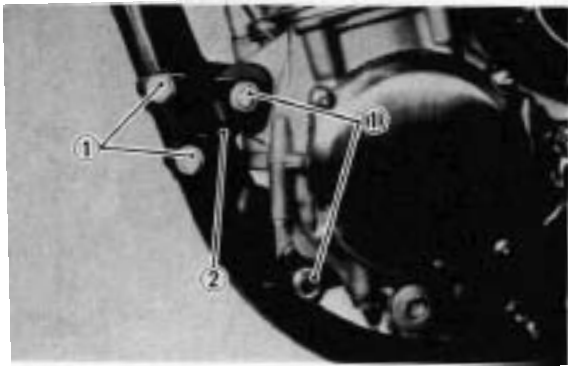
**G. Drive Shaft Joint**

- Remove the coil spring holding the rubber boot.
- Pull the rubber boot from the drive shaft coupling to expose the joint bolts.
- Remove the joint bolts on the drive shaft coupling.



**H. Engine Removal**

- Remove the front engine mounting bolts and nuts. Remove the brackets.



1. Front engine mounting bolts    2. Engine stay

**NOTE:**

It is advisable to hold the engine with a suitable garage jack before removing the engine mounting bolts and nuts.

2. Remove the rear engine mounting bolt and right and *left* footrests. Remove the brake pedal and right side muffler bracket holding bolt and remove the muffler bracket assembly.



3. Slide the engine forward slightly and remove the engine to the right.

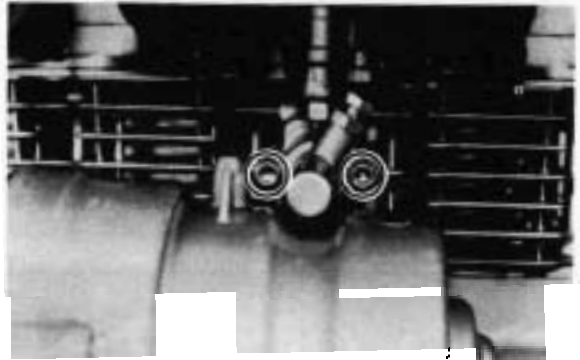
**NOTE:**

Position a box or other support to the right side of the motorcycle for the assistance when removing the engine.

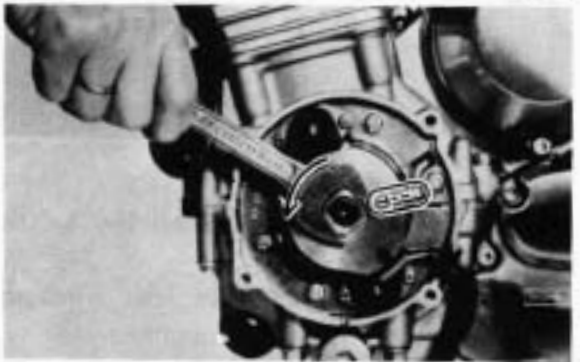
**ENGINE OVERHAUL**

**A. Cylinder Head and Cylinder**

1. Remove the cylinder head cover.
2. Remove the left crankcase cover (pick-up coil cover).
3. Remove the cam chain tensioner.



4. Use a 19 mm wrench on the timing plate flats to rotate the crankshaft counter-clockwise until the engine is at T.D.C.



**CAUTION:**

Never use an allen wrench to rotate the crankshaft. Always use the 19 mm flats provided on the timing plate to rotate this engine.

5. Remove the four cam sprocket bolts.

