

II. Engine : General Maintenance

1. ENGINE CONSTRUCTION

The major components of the engine are as follows:

H Series

1. Carburetor, air cleaner
2. Cylinder, cylinder head
3. Piston, piston pin
4. Piston rings
5. Left engine cover
6. AC generator
7. Engine sprocket
8. Clutch release
9. Oil pump cover, tachometer cable
10. Distributor, oil pump
11. Right engine cover
12. Clutch
13. Primary gear
14. Shift mechanism
15. Kick shaft
16. Transmission
17. Crankshaft
18. Crankcase

During engine disassembly, remove parts in the order listed. This will make disassembly easy and avert unnecessary steps. Reassemble the engine in the reverse order.

2. MINOR DISASSEMBLY

The engine can be disassembled to a certain extent without removing it from the frame.

1) Air Cleaner

- * Left side cover
- * Air inlet pipes
- * Air cleaner (See page 13.)
- * AC generator wires
- * Signal generator rotor (CDI models only)
(See page 22.)

2) Carburetors

- * Air inlet pipes
- * Carburetors
- * Stator
(See page 23.)
- * Rotor
(See page 23.)

3) Clutch Cable and Engine Sprocket

- * Gear shift pedal
- * Front chain cover
- * Clutch cable
(See page 8.)
- * Chain
(See page 94.)
- * Engine sprocket
(See page 22.)

5) Right Engine Cover and Oil Pump

- * Oil pump cover
- * Tachometer cable
(See page 6.)
- * Distributor cap and rotor (H1 CDI only)
- * Oil pump cable
(See page 7.)
- * Oil inlet pipe
(See page 7.)

4) AC Generator

- * Left engine cover
- * Oil outlet pipes
(See page 24.)

- * Right engine cover

NOTE: Before removing right engine cover, first drain transmission oil.

- * Oil pump
(See page 26.)

6) Clutch and Primary Gear

- * Spring plate, friction plates, clutch plates, spring plate pusher
(See page 29.)

- * Oil pump pinion
(See page 31.)

- * Primary gear
(See page 31.)

- * Clutch hub
(See page 29.)

- * Clutch housing
(See page 29.)

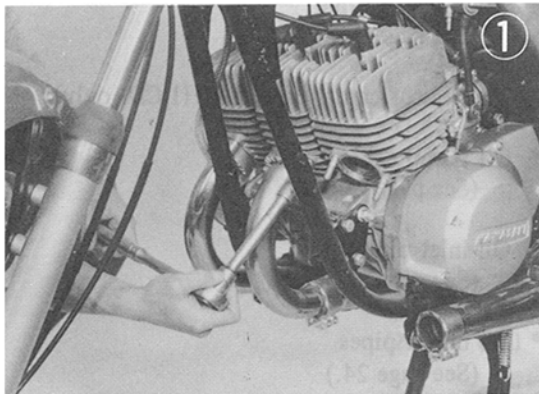
7) Pistons

- * Exhaust pipes
- * Cylinder heads
- * Cylinders
- * Piston pins, pistons, small end needle bearings
(See page 19.)
- * Piston rings
(See page 21.)

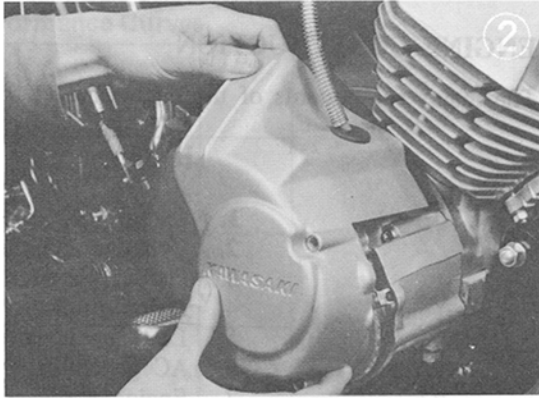
3. ENGINE REMOVAL

To remove the engine from the frame for replacement or disassembly, the order given shows the minimum amount of parts that it is necessary to remove. Any other order than that given here will involve more work and a greater number of parts to be removed.

Exhaust pipes



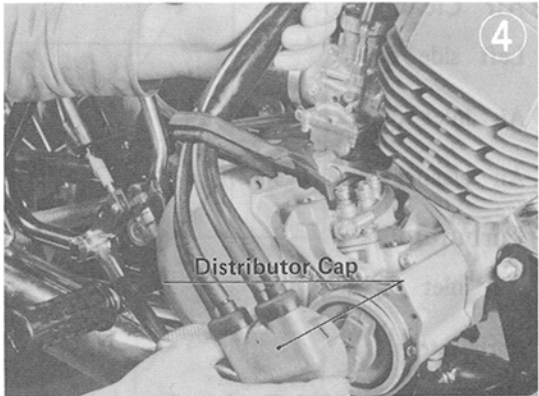
Oil pump cover



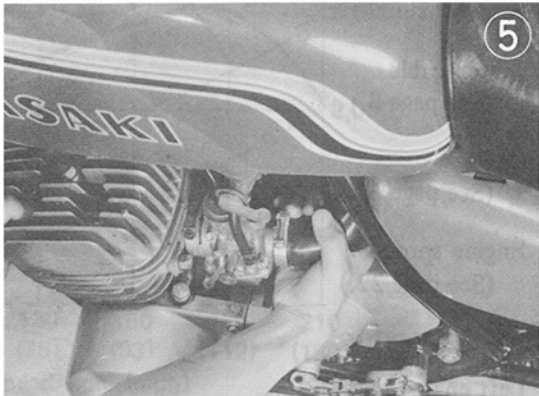
Tachometer cable



Distributor cap (H1 CDI only)

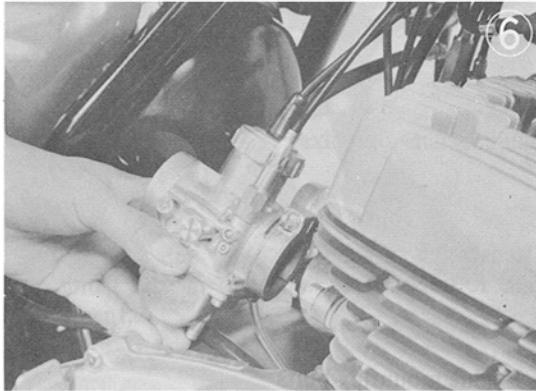


Air inlet pipes (See page 13.)

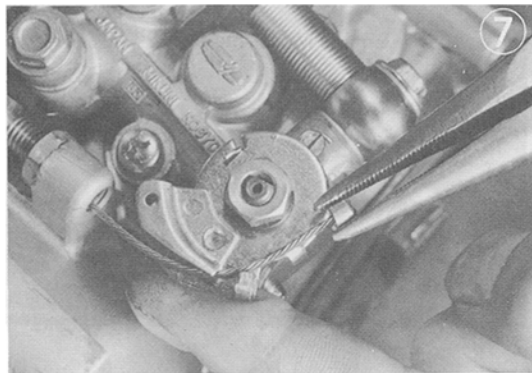


Carburetors

NOTE: First close the fuel tap and remove the fuel pipe.

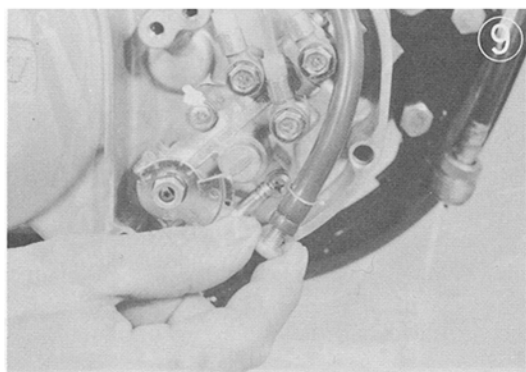


Oil pump lever cover (H1) and oil pump cable

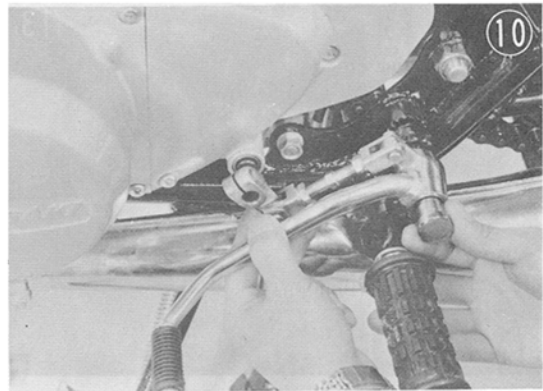


Oil inlet pipe

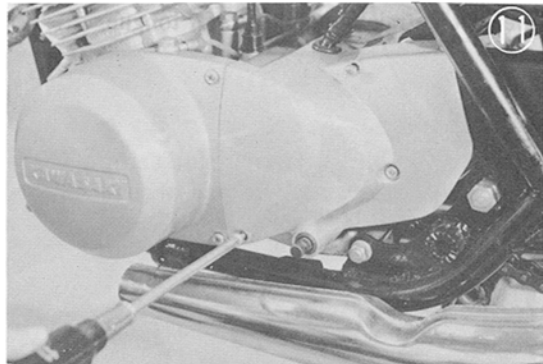
To prevent oil from leaking, remove the banjo bolt, take the banjo fitting out of the oil pipe, and insert a screw into the end of the pipe as illustrated.



Shift pedal



Front chain cover

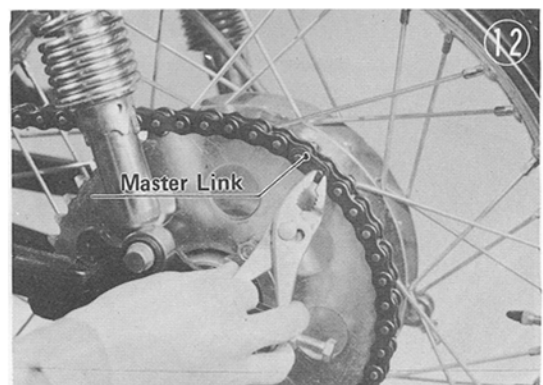


Drive chain

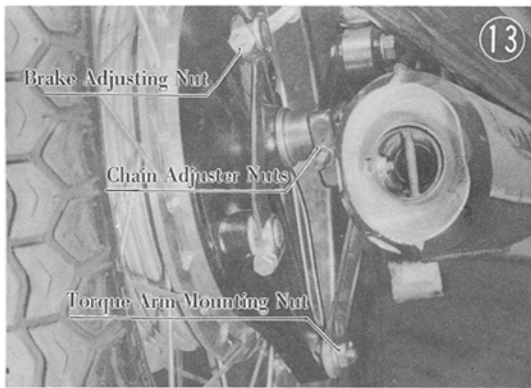
The H1 drive chain comes off after removing the clip and taking out the master link.

The H2, because of its high power, has no master link. To take the chain off the sprockets, loosen the rear torque arm mounting, brake adjusting nut, rear axle nut and chain adjusters. Then move the rear wheel forward to give the chain play.

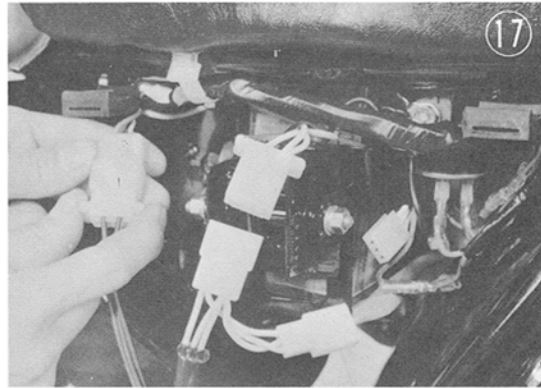
H1



H2

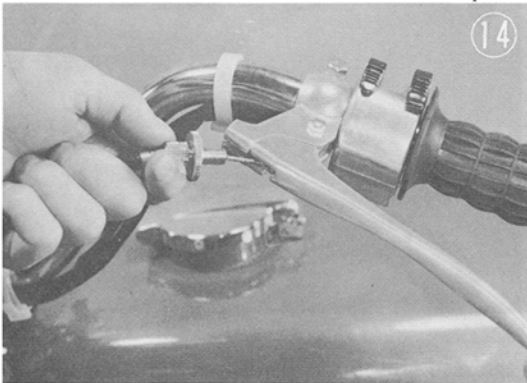


H2

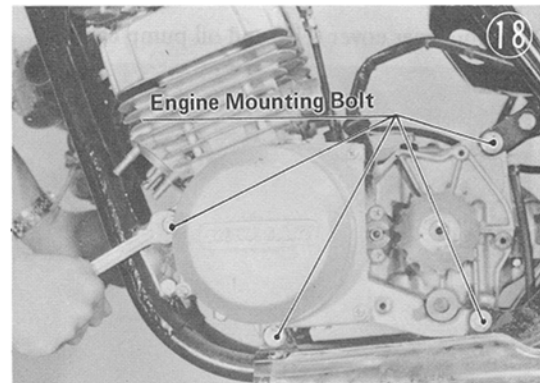


Clutch cable

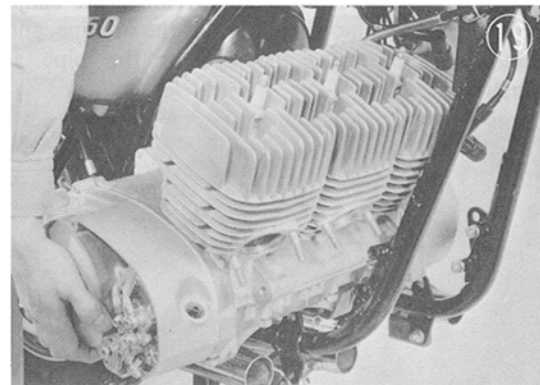
To remove the clutch cable, loosen the clutch release lock nut, and giving the cable plenty of play with the adjusting screw, remove the inner wire of the clutch cable from the clutch release lever after straightening the lever tongue.



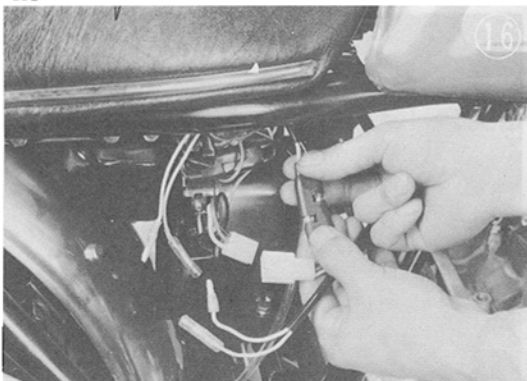
Engine mounting bolts



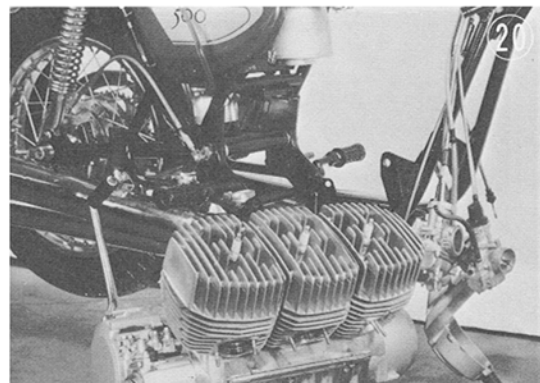
Engine



AC generator wiring



Completed disassembly



4. ENGINE MOUNTING

Engine mounting is in the reverse order of removal.

When mounting the engine, be especially careful of the following items:

*Tightening torque link, axle and chain adjuster nuts

* The open end of the clip on the chain master link must face in the opposite direction of chain movement.

* The wiring connections of the AC generator and high voltage cables. HV cable connections are marked on the distributor cap: R=Right cylinder; L=Left cylinder; C=Center cylinder; IC=Ignition Coil.

* Tightening of the engine mounting bolts

When starting up the engine again, double check the following:

*Engine oil

*Transmission oil

*Engine adjustments

- a. Idle (This page)
- b. Starter cable (See page 11.)
- c. Oil pump cable (See page 11.)
- d. Clutch (See page 12.)
- e. Ignition timing (See page 100, 103, 107, 109, 118.)

* Frame adjustments

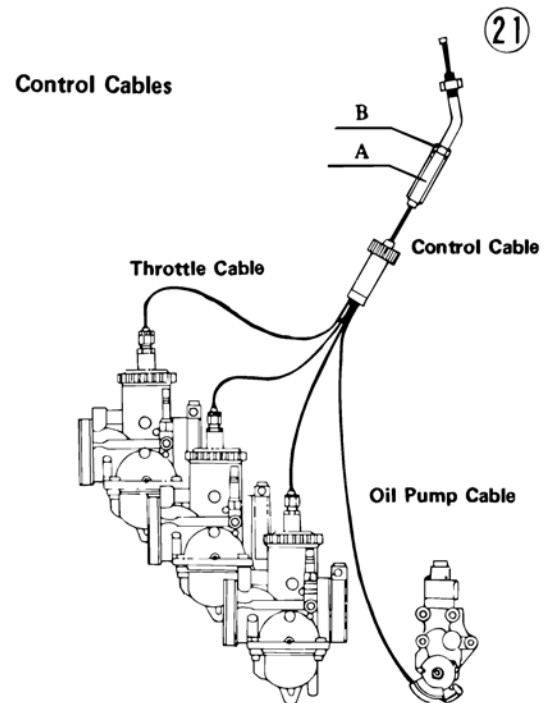
- a. Brake and brake lamp switch (See page 67.)
- b. Drive chain (See page 94.)

*Tightening of all nuts, bolts and screws.

5. ENGINE ADJUSTMENTS

1) Idling Adjustment

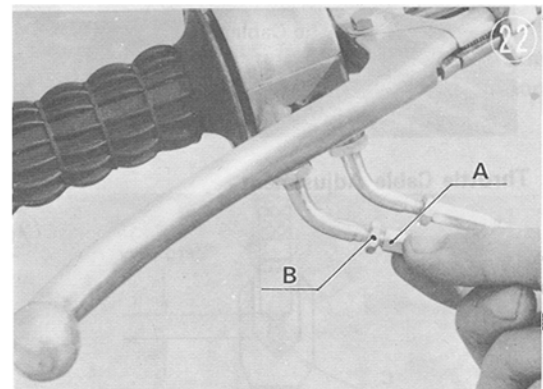
In engines of more than one cylinder, the carburetors must be adjusted evenly to achieve the correct idle adjustment. Especially with these 3 cylinder machines, be careful to adjust each carburetor to the same point by following the order given.



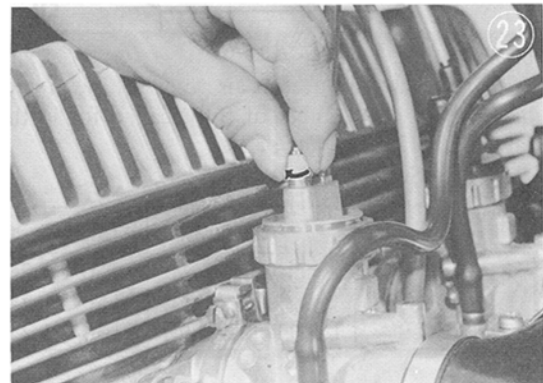
a. Throttle Cable

In order to have all three cables move together, the cables must all be adjusted for zero play with the throttle in the fully closed position. Adjust them as follows:

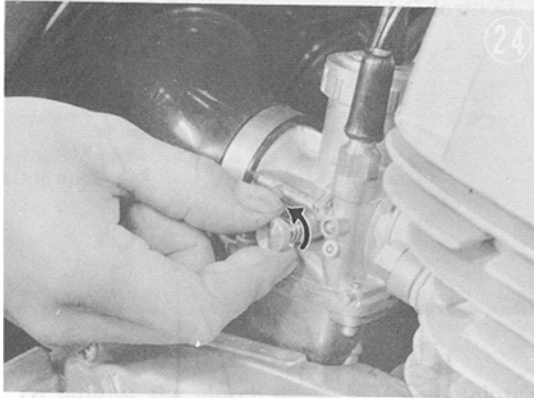
Loosen lock nut B and screw in control cable adjuster A to give the throttle grip ample play.



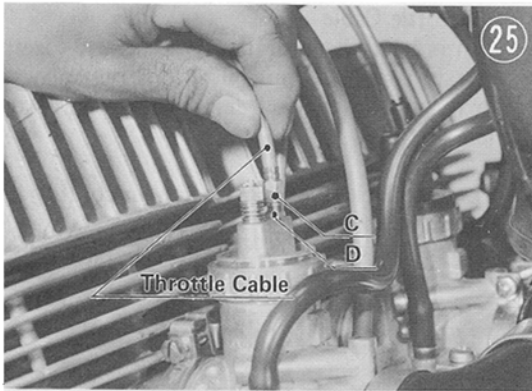
H1: Turn each throttle stop screw in until the throttle valves are in the fully closed position.



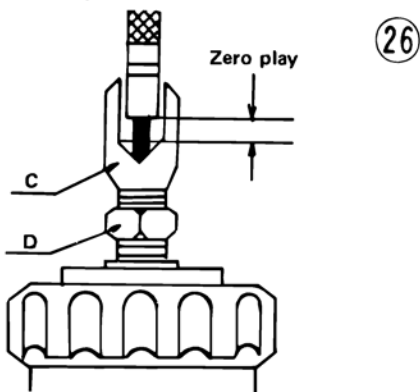
H2: Back out each throttle stop screw until the throttle valves are in the fully closed position.



With all the throttle valves fully closed, adjust the outer sleeve of each throttle cable for zero play. Accomplish this by turning throttle cable adjuster C right or left, while moving the cable sleeve up and down until no play is felt. Don't fail to tighten lock nut D after adjustment is made.



Throttle Cable Adjustment

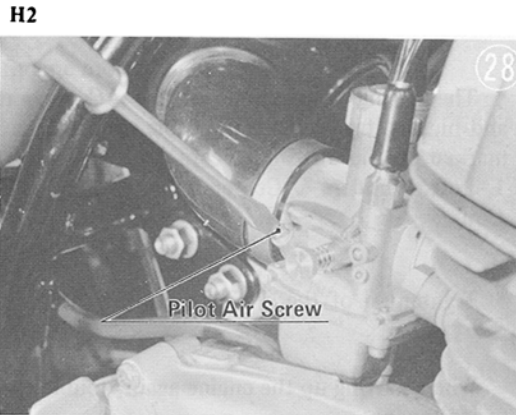
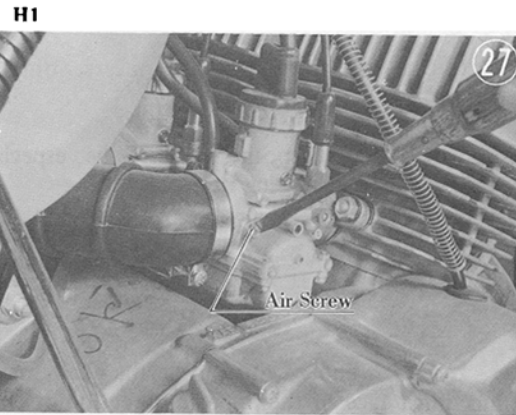


b. Air Screw

Turn each carburetor air screw fully in and back it out the number of turns called for in the table 1 and 21 (See Page 52).

Table 1 Screw Settings

Model	Air Screw	Idle r.p.m.
H1 (CDI)	1 1/4 turns out	1,150 - 1,250
H1 (no CDI)	1 1/2 turns out	1,150 - 1,250
H2, H2-B	1 1/2, 1 3/4 turns out	1,150 - 1,250



c. Throttle Stop Screws

Warm up the engine for one or two minutes to bring engine up to normal temperature, where the gasoline will atomize properly.

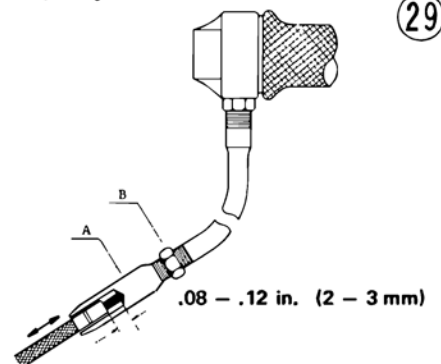
Turn the individual throttle stop screws to bring the engine to the lowest stable rotational speed obtainable.

Hold your hands in back of the mufflers to check that the three exhaust pressures are equal. Make fine adjustments with the stop screws and/or air screws if this is necessary to obtain even exhaust pressure and stable idling.

d. Throttle Grip

Last, adjust the throttle grip play. To adjust the grip for the standard amount of play as shown in the diagram, turn throttle grip adjuster A and lock it in place with lock nut B.

Throttle Grip Adjustment



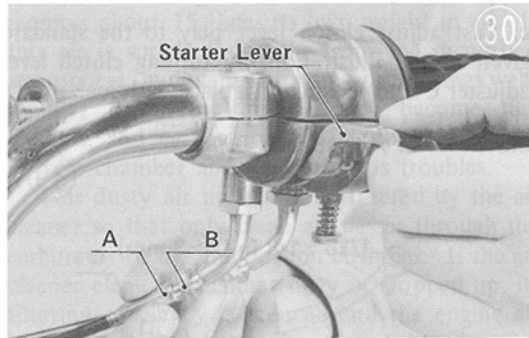
e. Oil Pump

After these adjustments are completed, it is necessary to adjust the oil pump lever for simul-

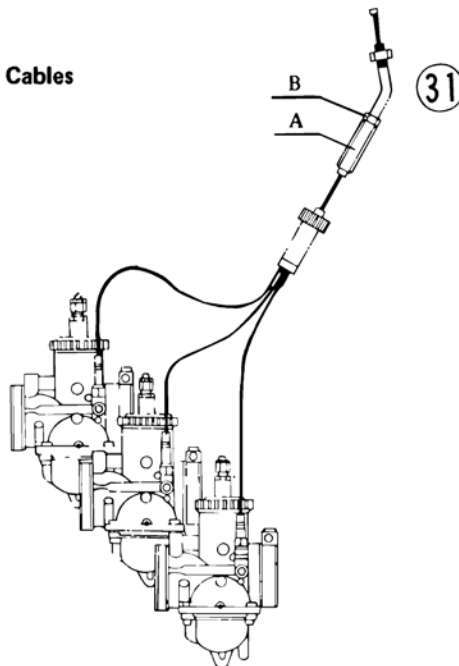
taneous movement with the throttle.
See Oil Pump Adjustment, this page.

2) Starter Lever Adjustment

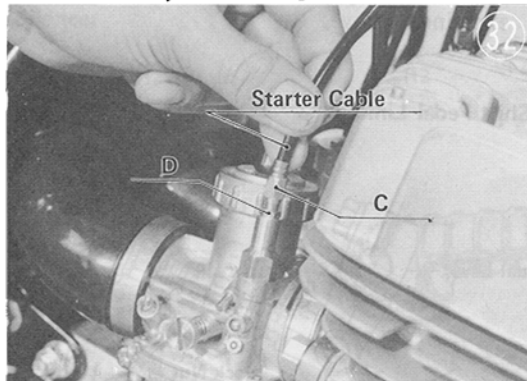
a. First give the starter lever sufficient play.
Lever play is varied with starter lever adjuster A.



Starter Cables



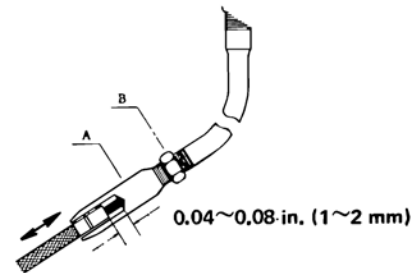
b. With the starter plungers in the fully closed position, adjust the outer sleeve of all starter cables for 0.04~0.08" (1~2 mm) play, in order to have all plungers start moving together. Adjustment is made with adjuster C while moving the cable sleeve up and down until only slight play is felt. Fix adjustment in place with lock nut D.



c. Last, adjust starter lever play as shown in the diagram. Turn starter lever adjuster A, locking it in place with lock nut B.

Starter Lever Adjustment

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3) Oil Pump Adjustment

The oil pump must increase and decrease oil flow rate simultaneously with throttle valve movement. Minimum oil output should correspond to zero throttle valve opening.

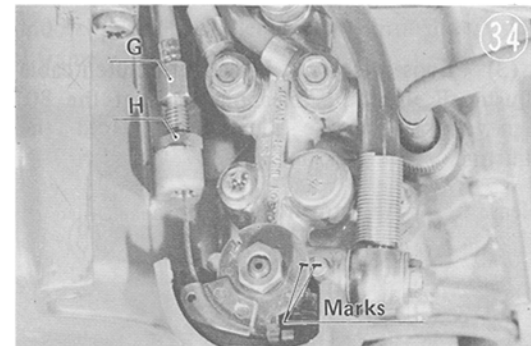
a. First check that the throttle valve adjustment is correct. For adjustment procedure see page 9.

b. After throttle valve adjustment is completed, adjust the oil pump lever so that it begins moving at the same time the throttle valves begin to open. With oil pump cable adjuster G, set the lever so that the mark on the oil pump lever and the mark on the lever stopper are aligned when the throttle valves just start to move. In other words, the marks must coincide at zero throttle opening.

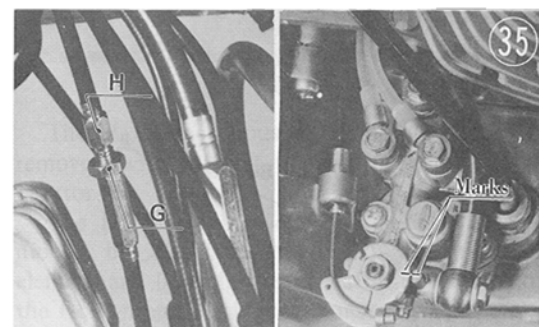
CAUTION:

1. Do not fail to tighten lock nut H after adjustment is made.
2. Be especially careful with this adjustment as improper adjustment may lead to piston seizure. [See illustration next page.]

H1



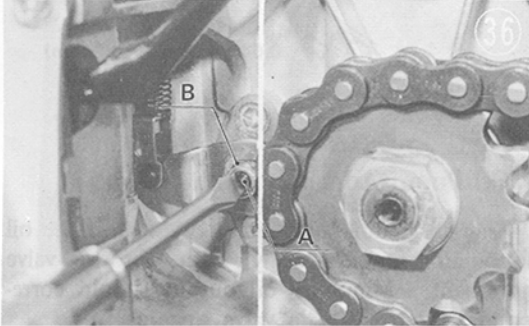
H2



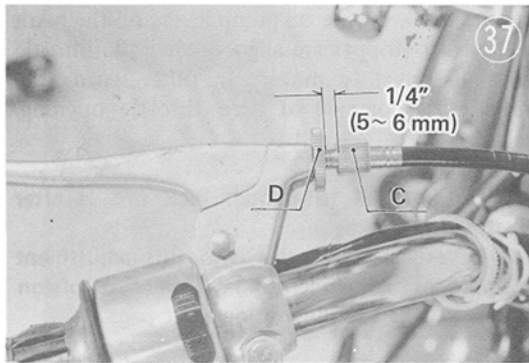
4) Clutch Adjustment

a. First adjust the release lever angle as outlined below.

(1) Loosen lock nut B and back out grooved screw A about 3 or 4 turns to give release lever C ample play.

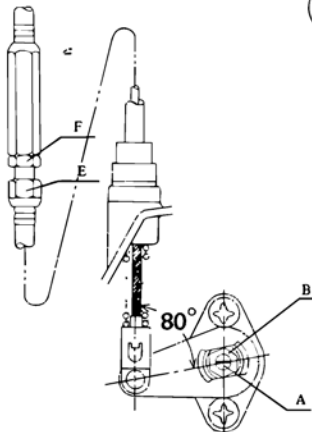


(2) Give the clutch hand lever play by loosening lock nut D and turning adjuster C, until the lever conforms with the measured position in the illustration.



(3) Loosen lock nut F and turn clutch cable adjuster E until the release lever is at the 80° angle shown in the illustration. Hold the adjustment with lock nut F.

Release Lever Adjustment



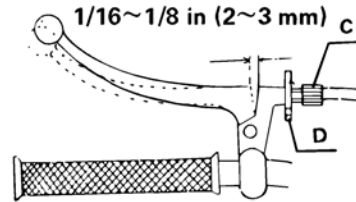
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b. Next adjust the clutch itself. Turn in grooved screw A slowly until it suddenly becomes very hard to turn. This is where the clutch starts pushing on the screw and clutch operation begins. Hold the adjustment at this position with lock nut B.

c. Last adjust clutch lever play to the standard given in the illustration, by turning clutch lever adjuster C and locking it in place with lock nut D.

Clutch Lever Adjustment

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5) Shift Pedal Linkage Adjustment

To make the shift pedal function most effectively, the shift pedal links should be at 90° angles.

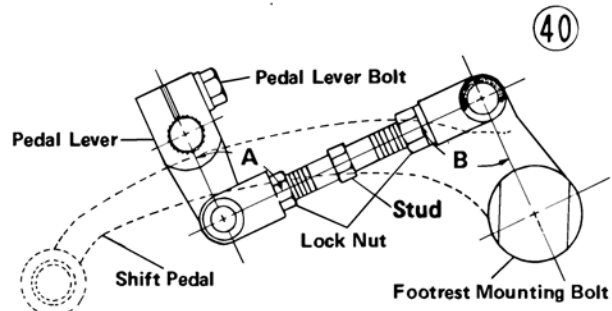
Improper angles of the shift pedal links may cause inaccurate shift operation.

- First loosen both lock nuts.
- Set angles A & B at 90° by turning the stud. Turning it clockwise decreases the angle, and turning it counterclockwise increases it.
- After making the necessary adjustment, tighten the lock nuts.

In case angle B can not be adjusted by only turning the stud, the position of the pedal lever serration should be changed.

- Take out the pedal lever bolt.
- Pull out the pedal lever. When the pedal lever can not be pulled out, loosen the footrest mounting bolt.
- Reset the pedal lever so that angle B will be at 90°.
- Screw in the pedal lever bolt, and tighten the footrest mounting bolt.
- After making angle B adjustment, angle A should be adjusted by turning the stud as explained above.

Shift Pedal Linkage



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