

SHOP MANUAL

HONDA
CB500T



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HONDA MOTOR CO., LTD.
HONDA MOTOR CO., LTD.

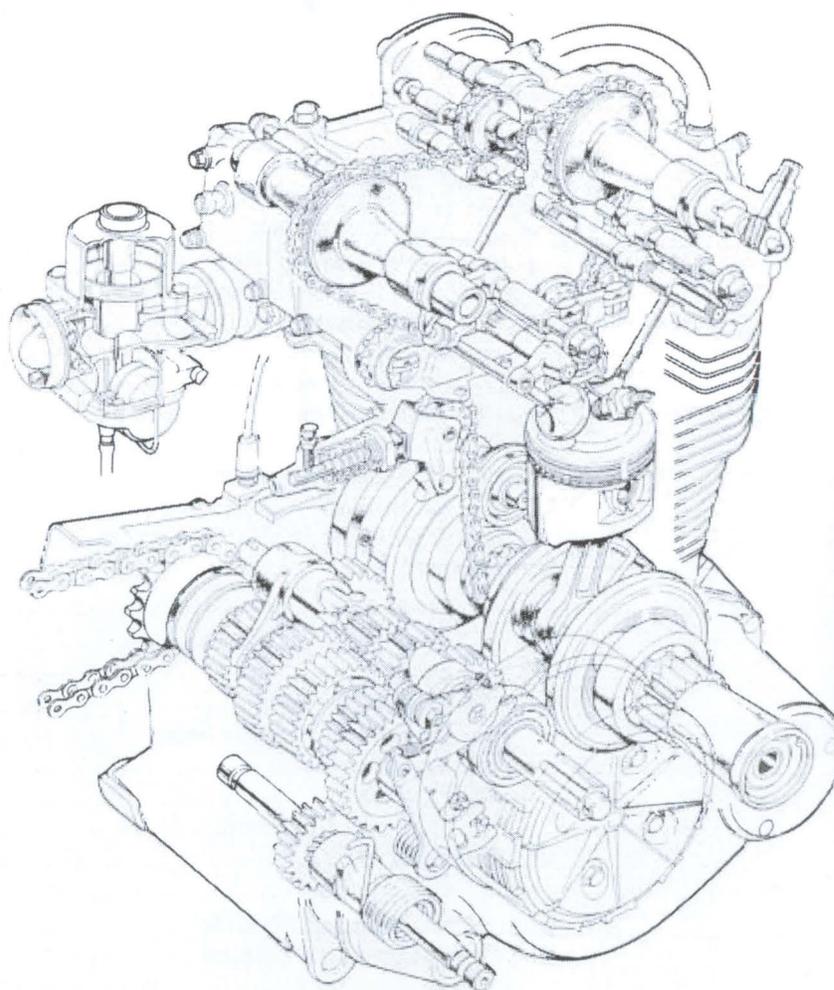
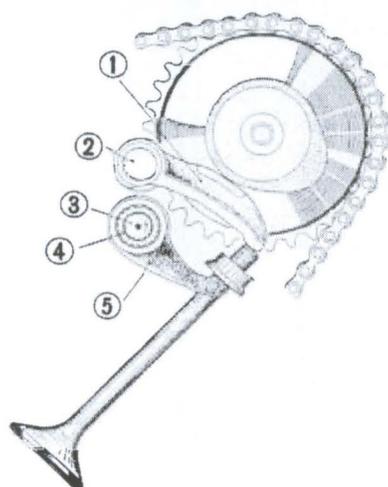
CONTENTS

I. TECHNICAL FEATURES	2
1. Valve mechanism	2
2. Air-cut valve	3
3. Blow-by gas circulator	5
II. SERVICE PRECAUTIONS	6
III. INSPECTION AND ADJUSTMENT	7
1. Tappet	7
2. Contact breaker point gap	8
3. Ignition timing	8
4. Carburetor	10
5. Throttle cable	11
6. Clutch	11
7. Cam chain	12
8. Engine oil	12
9. Front brake	13
10. Rear brake	14
11. Air cleaner	15
12. Oil filter	16
13. Fuel filter	17
14. Spark plug	17
15. Drive chain	17
16. Front suspension	18
17. Rear suspension	19
18. Wheels	19
19. Side stand	20
IV. ENGINE	21
1. On-frame servicing	21
2. Engine removal and installation	21
3. Valve mechanism	22
4. Cylinders and pistons	30
5. Crankshaft and crankcase	33
6. Lubrication system	35
7. Clutch	38
8. Gearshift mechanism	40
9. Transmission	42
10. Kick starter	45
11. Cam chain tensioner	46
12. Carburetor	48
13. Engine electrical	53
V. FRAME	62
1. Front wheel	62
2. Front disc brake	65
3. Steering	69
4. Front suspension	73
5. Rear wheel and rear brake	75
6. Rear suspension	80
7. Frame body	82
8. Electrical equipment	85
VI. SERVICE DATA	88
1. Special tools	88
2. Maintenance schedule	89
3. Torque specifications	90
4. Service data	91
5. Wiring diagram	93
6. Specifications	94

I. TECHNICAL FEATURES

1. VALVE MECHANISM

The CB500T engine employs a vertical, twin cylinder double overhead camshaft (DOHC). The valve mechanism is mounted to the cylinder head and there are two camshafts to minimize the moving weight in the valve mechanism, one is an intake camshaft and another, an exhaust camshaft. The movement of the camshaft is transferred to the valve by means of the rocking motion of the cam follower. The valve spring is a torsion bar type to eliminate surging and permit high speed operation. The DOHC camshaft is driven by an endless chain and the chain noise is reduced by means of 7 guide rollers.



- (1) Cam follower
- (2) Cam follower shaft
- (3) Torsion bar valve spring
- (4) Torsion bar outer
- (5) Outer arm

Fig. 1-1

AIR-CUT VALVE

General

An air-cut valve is used on all CB500T model motorcycles.

When the throttle is closed quickly, a high vacuum is created in the intake pipe of the carburetor. If correct mixture is not obtained in this condition, misfiring occurs in the combustion-chamber.

As the result, combustion may take place even in the exhaust pipe. To prevent such after-firing, the carburetor has an air-cut valve in it.

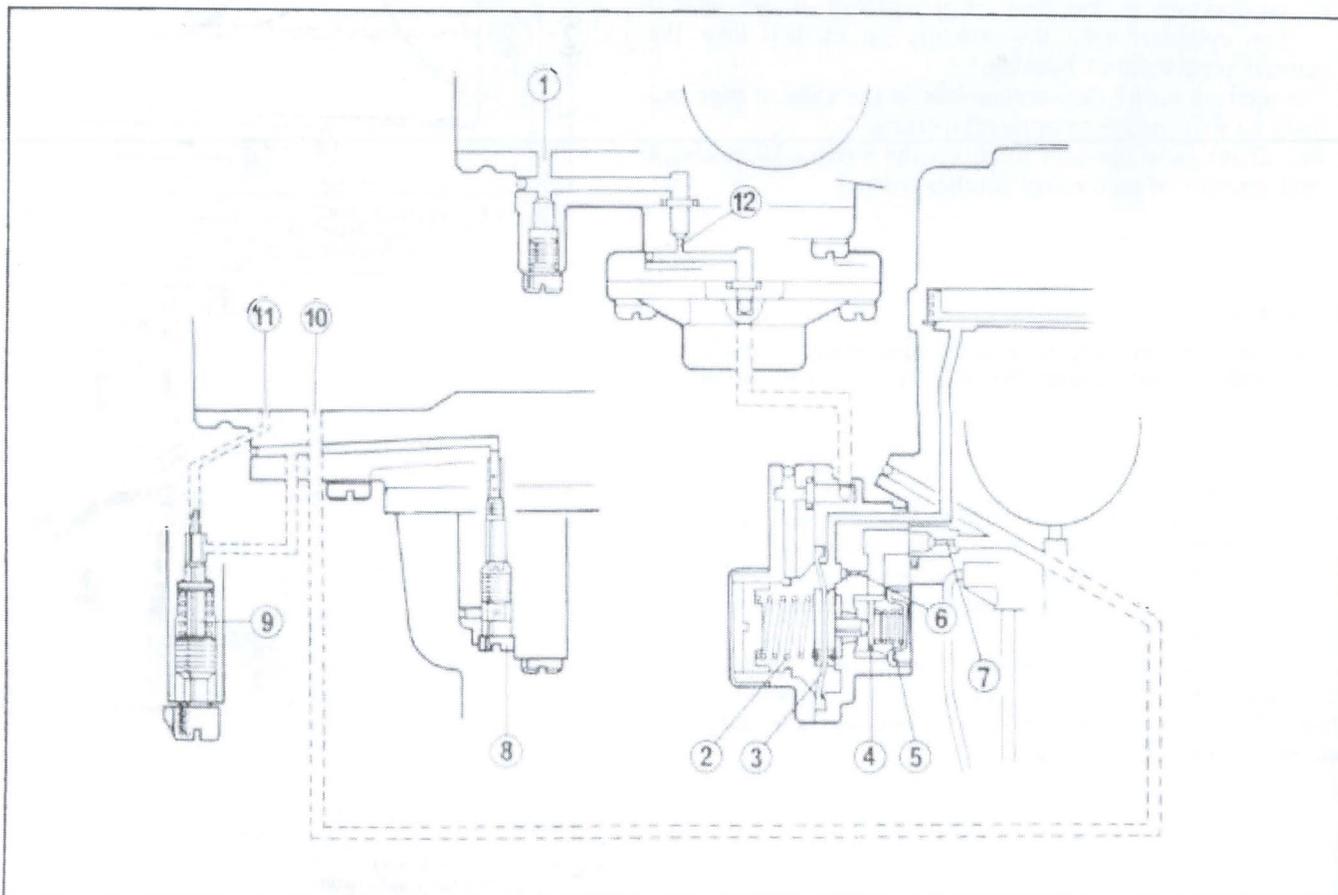


Fig. 1-5 (1) Vacuum intake tap (7) Slow air jet
 (2) Diaphragm spring (8) Slow jet
 (3) Diaphragm (9) Pilot screw
 (4) Valve plate (10) Bypass
 (5) Valve spring (11) Pilot outlet
 (6) Leak hole (12) Boost jet

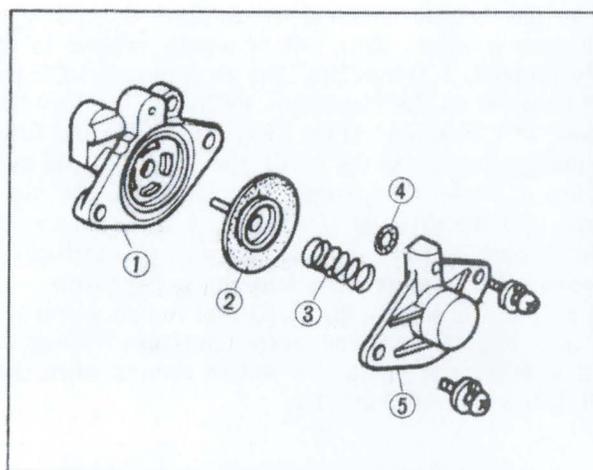


Fig. 1-6 (1) Air-cut valve body (4) O-ring
 (2) Diaphragm (5) Air-cut valve cover
 (3) Diaphragm spring

When the throttle valve is closed quickly to its full closed position:

1. The carburetor supplies fuel to the engine only through the slow-speed circuit.
2. A sufficient amount of air is required for the high speed operation. As the result, a high vacuum occurs in the intake tube.
3. Thus, there is an excessively lean mixture entering the engine cylinder.
4. If the mixture is too lean, it is difficult to be ignited in the cylinder; i.e., the mixture is carried into the exhaust pipe without burning.
5. The mixture might then accumulate in the exhaust pipe and could be rich enough to cause after-firing.
6. The air-cut valve operates to enrich the mixture by passing a small amount of air through another circuit.

Operation

The air-cut valve is essentially a vacuum-operated diaphragm that controls the fuel mixture through the slow speed circuit.

Normal riding

Adequate amounts of air mix with fuel for normal-, partial- and full-throttle operations. For, under such conditions, the vacuum created will not exceed that at which the valve operates (360–400 mm Hg). Note that the highest vacuum is as low as 220 mm/Hg at idle. See Fig. 1-7.

The diaphragm is kept deflected in the arrow (\Rightarrow) direction by the tension of the diaphragm spring, which in turn forces the plate off its normal position. This means that adequate air is delivered to the carburetor slow-jet.

Deceleration

When the throttle is closed rapidly from the wide-open to the full close position, there will be a high vacuum in the intake tube (approx. 500 mm/Hg). The vacuum created flows through the boost jet to the diaphragm, deflecting the diaphragm in the arrow (\Rightarrow) direction, (Fig. 1-9), overcoming the force of the diaphragm spring. As the result, the plate is moved by the plate spring to close the passage through which the air normally flows into the slow jet. Thus, only a small amount of air can pass through a leak hole into the slow jet, and this will then cause a richer mixture to be delivered to the engine.

As the vacuum lowers, the diaphragm and plate will be returned to their original positions; correct mixture richness for partial and wide-throttle operations will be secured when the vacuum falls below 360–400 mm/Hg.

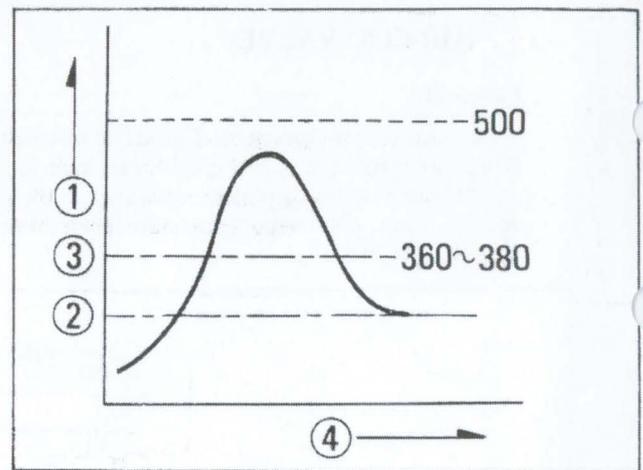


Fig. 1-7 (1) Vacuum pressure (inlet) (mm Hg) (4) Time
(2) Vacuum pressure at idle
(3) Valve operating pressure

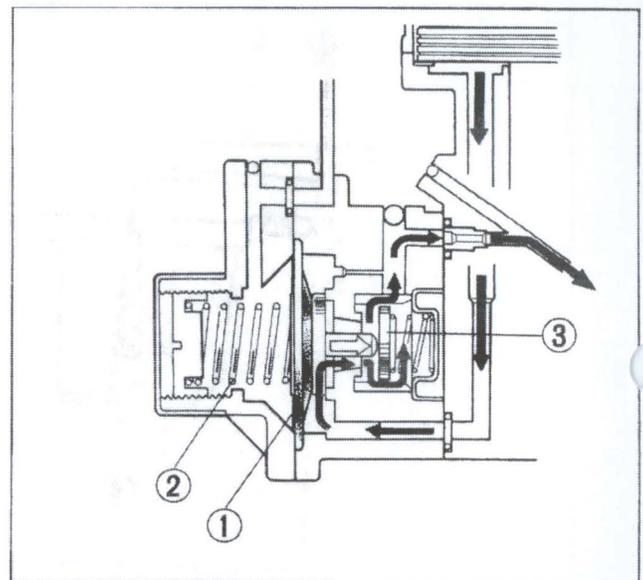


Fig. 1-8 (1) Diaphragm
(2) Diaphragm spring
(3) Plate

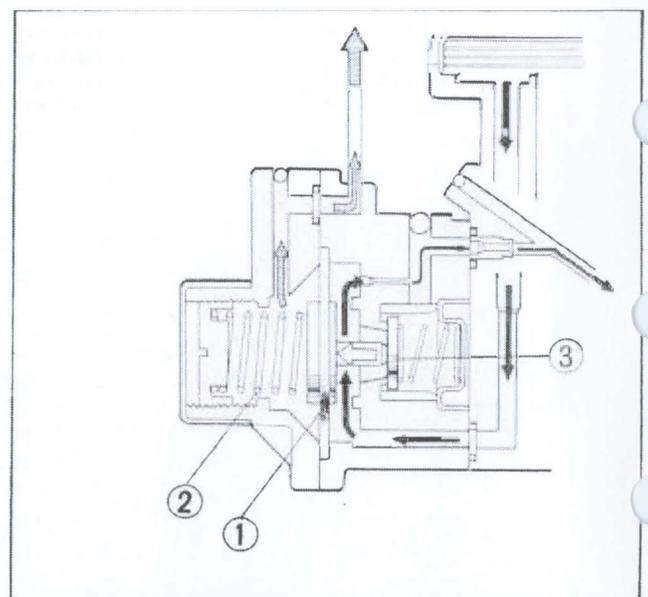


Fig. 1-9 (1) Diaphragm (3) Plate
(2) Diaphragm spring (4) Leak hole

3. BLOW-BY GAS CIRCULATOR

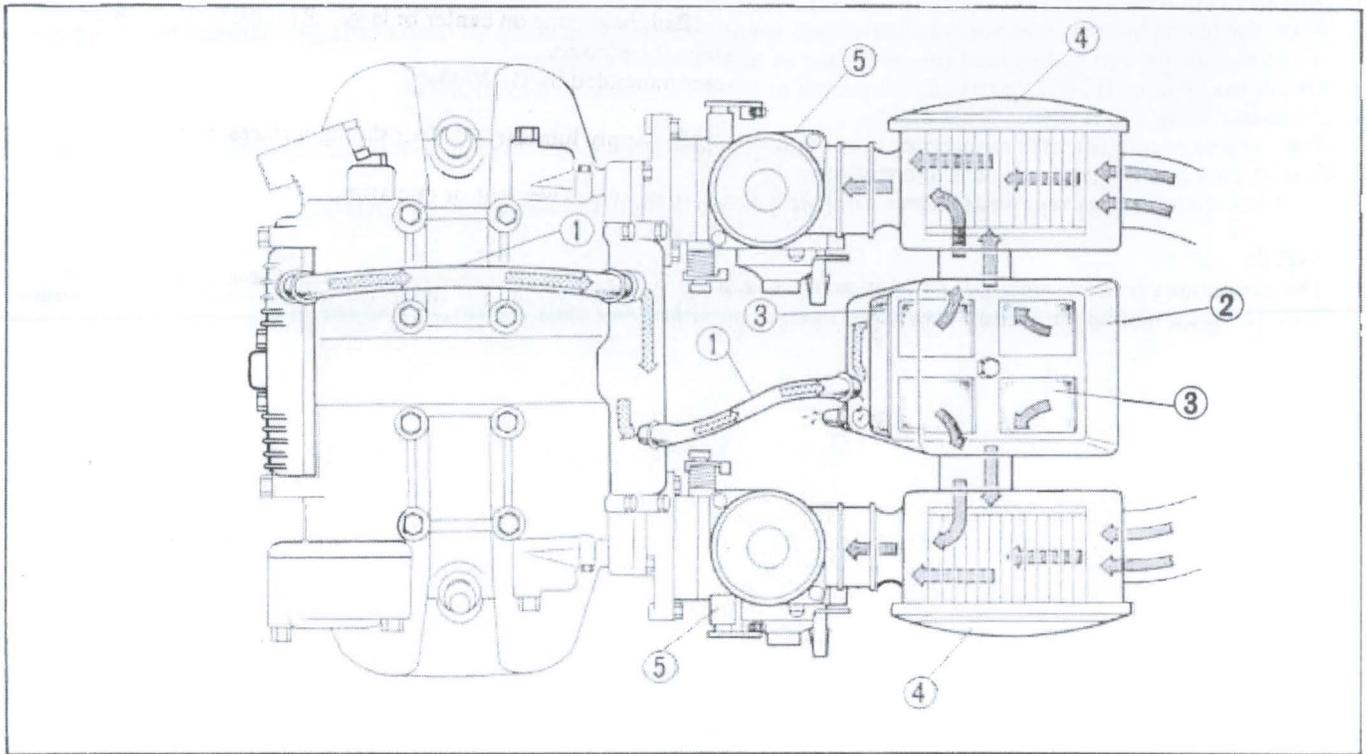
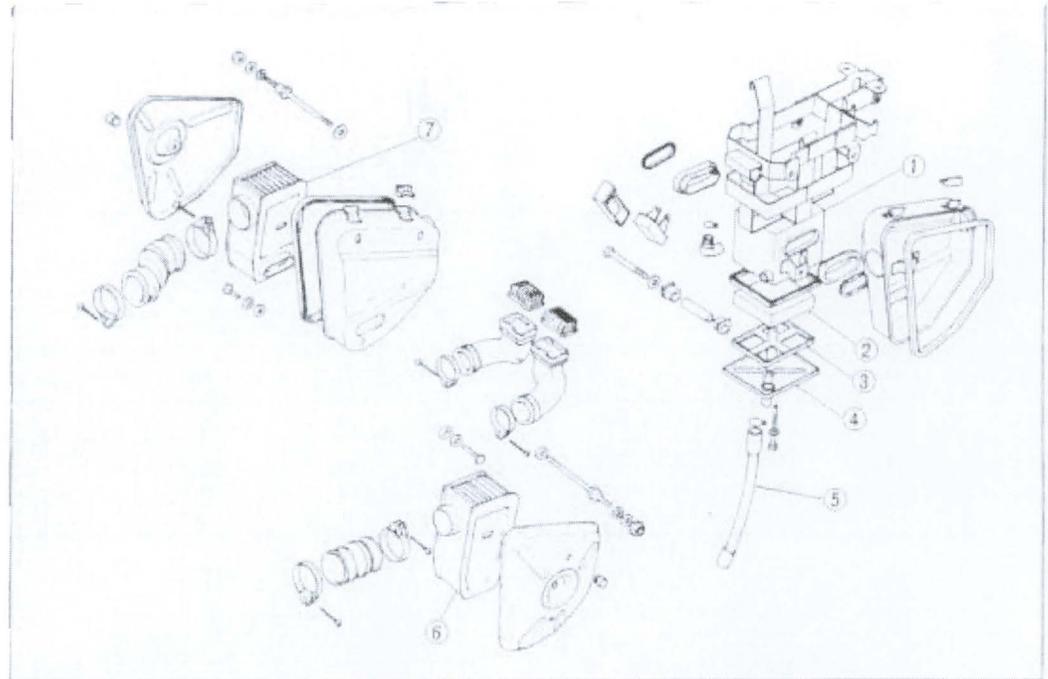


Fig. 1-10 (1) Breather tube (2) Breather box (3) Breather element (4) Air cleaner (5) Carburetor

The blow-by gas from inside the cylinder head, enters the breather box through the breather tube. The oil is separated by the breather element and the gas is then led to the air cleaners. The gas enters the air cleaners and is filtered together with the fresh air by the air cleaner elements and is then again led to the combustion chambers through the carburetors. Therefore, the blow-by gas is reduced by recombustion of the unburned gas.

Fig. 1-11

- (1) Breather box (Battery case)
- (2) Breather element
- (3) Breather retainer
- (4) Breather cover
- (5) Drain tube
- (6) Left air cleaner element
- (7) Right air cleaner element



II. SERVICE PRECAUTIONS

1. Always replace gaskets, O-rings and cotter pins whenever reassembling.
2. When tightening bolts or nuts for which sequence is not specified, beginning on center or larger diameter bolts, tighten them in a criss-cross pattern to specified torque in two or more steps if necessary.
3. Always use genuine HONDA parts and lubricants or those recommended by HONDA.
4. Use special service tool where so specified.
5. Clean engine parts in or with cleaning solvent upon disassembly. Apply lubricant to their sliding surfaces when reassembling.
6. Coat or pack parts with grease where so specified.
7. Upon assembling, check every possible part for proper installation and movement or operation.

NOTE:

The procedures for reassembling the engine and frame parts are, as a rule, not described in this manual. To assemble, reverse the disassembling procedures carefully observing the titles "Assembly", if any, in each section.

III. INSPECTION AND ADJUSTMENT

This section describes the inspection and adjustment for the important items of the periodical maintenance of the HONDA 500 Model CB500T. Cross-refer to PERIODICAL MAINTENANCE SCHEDULE on page 89, if necessary. For the items other than those not described in this section, refer to the "Inspection" of each segment in this manual.

1 TAPPET

Inspection and adjustment of the tappet clearance should be made while the engine is cold.

1. Turn the fuel cock to the "OFF" position and disconnect the fuel tubes from the fuel cock. Open the seat and remove the fuel tank.
2. Remove the cylinder head cover A (intake side) and B (exhaust side).
3. Remove the generator cover and the point cover.
4. Rotate the generator rotor counterclockwise and align the "LT" mark with the index mark. If the matching marks of both the intake and exhaust camshafts are aligned with the marks on the bearing holders, the piston position is at top dead center on the intake stroke, therefore, the rotor should be turned one full turn to bring it to top dead center on the compression stroke.

5. Check the left hand cylinder tappet clearances in the exhaust and intake valves by inserting the feeler gauge between the cam and the cam follower.

Tappet clearance: 0.03mm (0.0012-in.)

6. To adjust, loosen the lock nut and rotate the cam follower shaft until within the specified range shown in Fig. 3-3 until the correct clearance is obtained.
7. Tighten the lock nut and recheck the clearance and, if necessary, readjust.

NOTE:

It is important that the small line at right-angles to the screwdriver slot on the rocker shafts face away from the cylinder head. If this precaution is not observed incorrect valve timing, and damage to valve mechanism will result. See Fig.

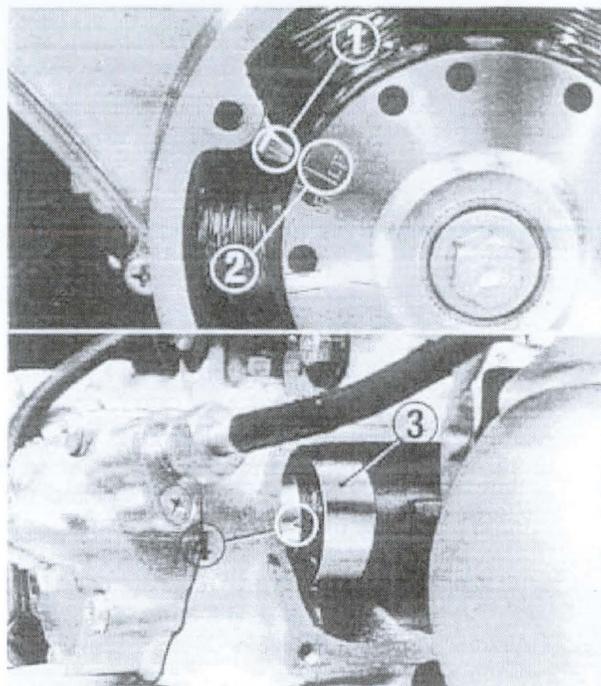


Fig. 3-1 (1) Index mark (2) "LT" mark (3) Camshaft (4) Matching mark

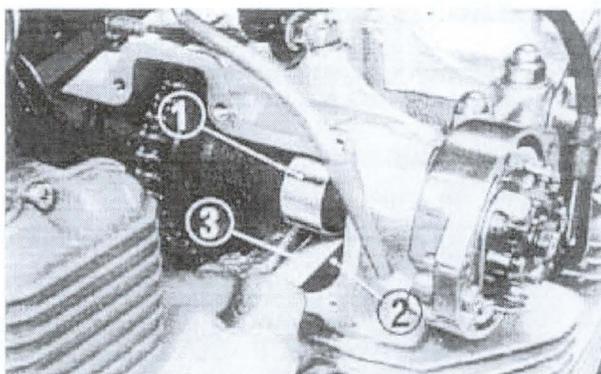


Fig. 3-2 (1) Cam (2) Cam follower (3) Feeler gauge

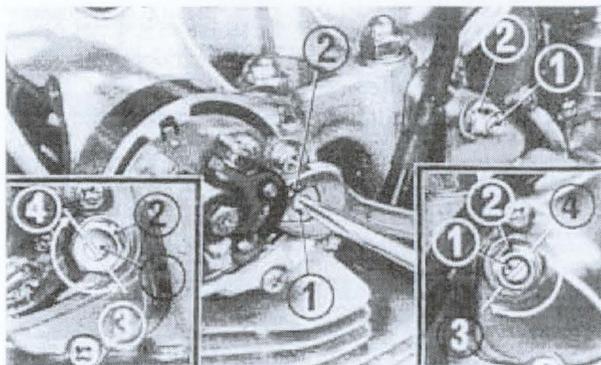


Fig. 3-3 (1) Cam follower shaft (2) Lock nut (3) To decrease (4) To increase

- Rotate the generator rotor 180 degree and align the "T" mark with the index mark. Use the similar procedure as on page 3 to the right hand cylinder valves.

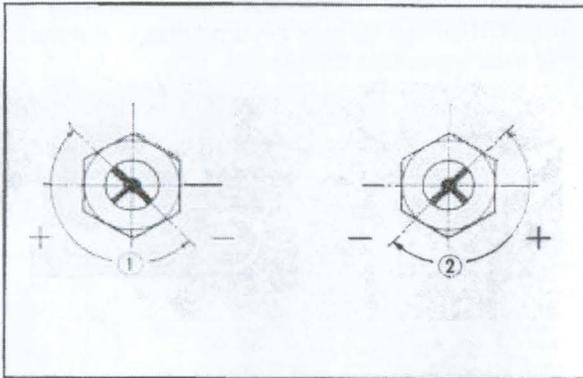


Fig. 3.25-b ① Adjusting range ② Adjusting range

2. CONTACT BREAKER POINT GAP

- Remove the generator cover and point cover.
- Clean and inspect the contact breaker points. Replace if worn or badly pitted. Light pitting may be removed with a ignition point file.
- Rotate the generator rotor counterclockwise and check the point gap at its maximum.
Specified maximum gap: 0.3–0.4mm (0.012–0.016-in.)
- To adjust the gap, loosen the locking screws and move the breaker point plate.
- After adjustment, tighten the locking screws and recheck the gap.

3. IGNITION TIMING

Before attempting to adjust ignition timing, make sure the contact breaker point gap is adjusted properly.

With stroboscopic timing light:

- Connect the timing light to the system for the left hand cylinder properly. Refer to the instructions furnished by the manufacturer.
- Start the engine and allow it to idle at 1,100 rpm
- Aim the index mark with the timing light and see if the mark "LF" aligns with the index mark. If not aligned, loosen the screws and manually rotate the base plate in either direction. Rotating the plate clockwise will advance the timing. Rotation of the plate in a counterclockwise direction will retard the timing.
- Tighten the locking screws and check if the contact breaker point gap of 0.3–0.4mm (0.012-0.016-in.) is maintained for the left hand breaker points.
- Connect the timing light to the ignition system for the right hand cylinder.
- Restart the engine and allow it to idle at 1,100 rpm.

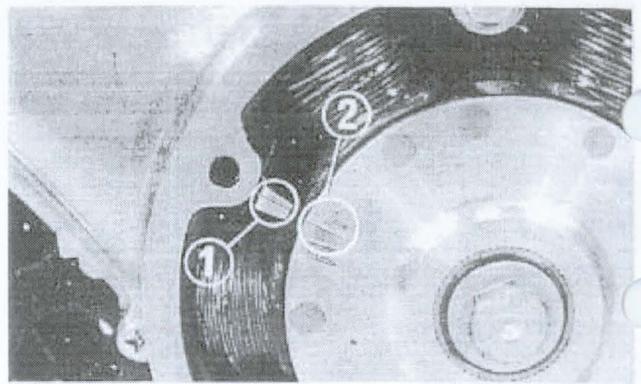


Fig. 3-4 (1) Index Mark
(2) "T" mark

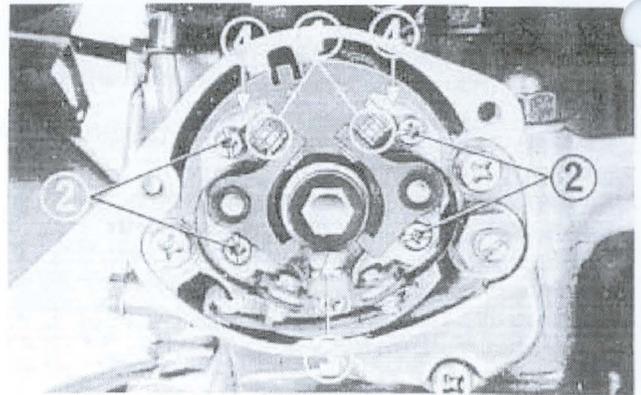


Fig. 3-5 (1) Contact breaker points (3) Point cam
(2) Locking screw (4) Breaker point plate

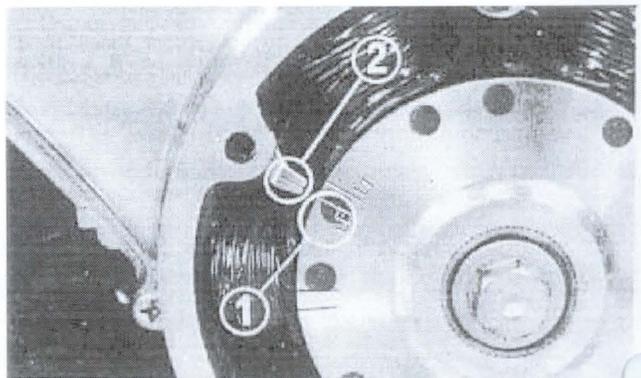


Fig. 3-6 (1) "LF" mark
(2) Index mark

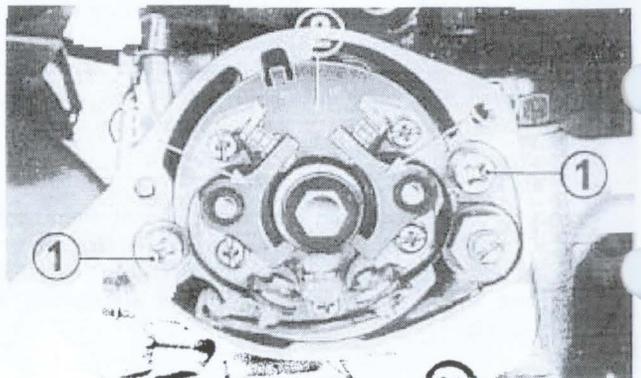


Fig. 3-7 (1) Locking screw (3) Left hand breaker
(2) Base plate (4) Right hand breaker

7. Aim the index mark with the timing light and, if the mark "F" aligns with the index mark, The ignition timing is correct.

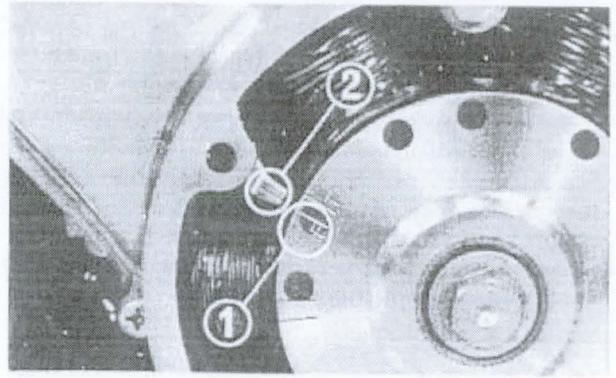


Fig. 3-8 (1) "F" mark
(2) Index mark

8. If the ignition timing is incorrect, loosen the screw and vary the right hand point gap within the range of the correct gap to adjust the ignition timing.
 9. When the correct ignition timing is not obtained even if the right hand point gap is varied within the range of correct gap, loosen the base plate locking screws and move the base plate to adjust the ignition timing for the right hand cylinder properly.

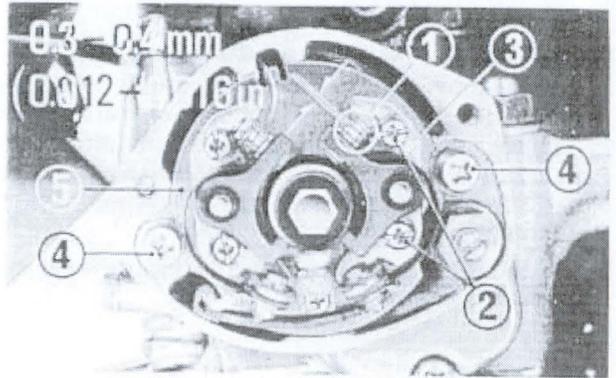


Fig. 3-9 (1) Right hand points (4) Base plate locking screw
(2) Screw (5) Base plate
(3) Breaker plate

10. Adjust the left hand ignition timing by moving the left hand contact breaker plate within the range where the left hand correct point gap is maintained.
 11. Recheck the right and left hand points gaps and ignition timings.

NOTE:

If the correct ignition timing is not obtained for either left or right hand cylinder within the point gap adjustable range, replace the contact breaker point assembly with a new one and make a readjustment.

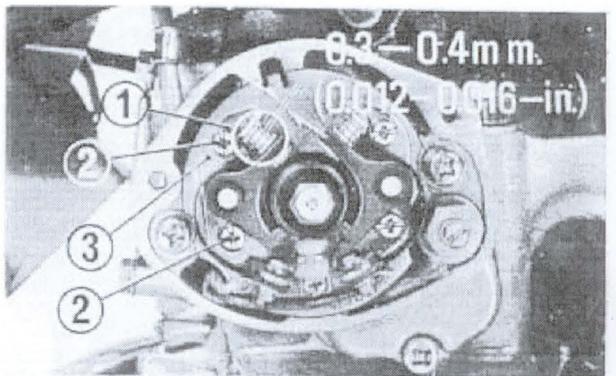


Fig. 3-10 (1) Left hand points
(2) Screw
(3) Contact breaker plate

12. Raise the engine speed up to 4,000 rpm and again check the index mark. The ignition timing is correct if the index mark is between the two advance marks.

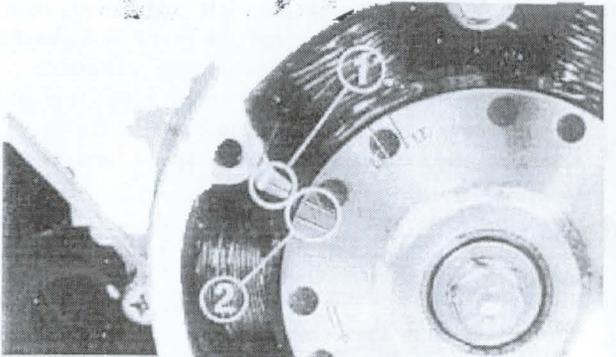


Fig. 3-11 (1) Index mark
(2) Left hand advance mark

With test lamp (12V-3W):

1. Connect one lead of the test lamp to the contact breaker spring and the other to the engine (ground).
2. Turn on the main and engine stop switches.
3. Slowly turn the generator rotor in a counterclockwise direction until the lamp is about to light. Timing is correct if its mark "LF" or "F" is lined up with the index mark. (The points just open with the mark "LF" or "F" and index mark aligned.)
4. When adjustment is necessary, use the similar procedures as with a stroboscopic timing light.

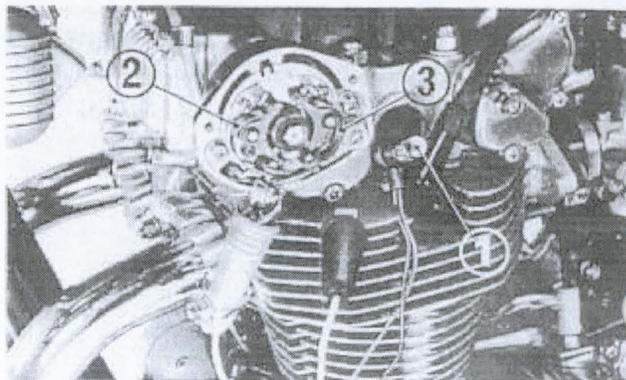


Fig. 3-12 (1) 12V-3W test lamp
(2) Left hand breaker spring
(3) Right hand breaker spring

4. CARBURETOR

Make the adjustments with the engine warmed up.

1. Remove the fuel tank from the machine. Connect longer fuel tubes between the fuel cock on the tank and carburetors.
2. Remove the plugs from the carburetors and connect special tool "Vacuum Gauge" (Tool No. 07504-3000100) to the holes by using "Vacuum Gauge Attachment" (Tool No. 07510-3000200):
3. Loosen the lock nuts and screw the throttle cable adjusters in to loosen the throttle cables.

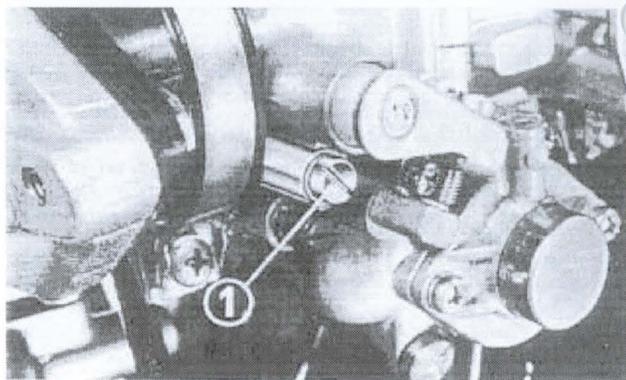


Fig. 3-13 (1) Plug

4. Start the engine and adjust the throttle stop screws to allow the engine run at an idle speed of 1,100 rpm. Rotation of the stop screw in the "A" direction increase the speed.

Specified idle speed: 1,000-1,200 rpm

5. Take the readings of each vacuum gauge. Both gauges should register the same value within specification. To adjust, turn the throttle stop screw in or out.

Specified value: 200-240 mm Hg

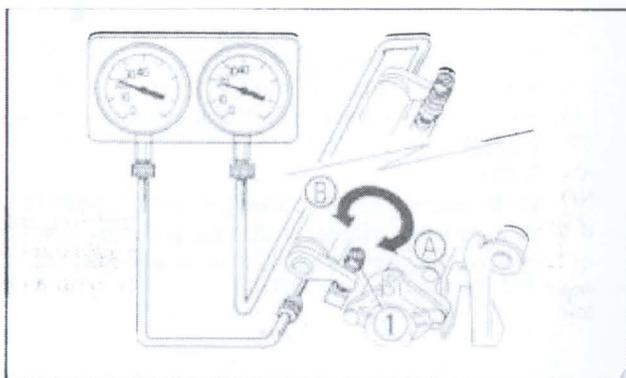


Fig. 3-14 (1) Throttle stop screw

6. Start with either the right or left carburetor, turn the idle limiter (pilot screw) and find the point of highest rpm. The same should be done with the opposite carburetor.

Turning the idle limiter in will create a lean fuel air mixture, turning the limiter out will create a rich mixture.

7. Recheck the vacuum and idle speed and, if necessary, readjust the throttle stop screws.

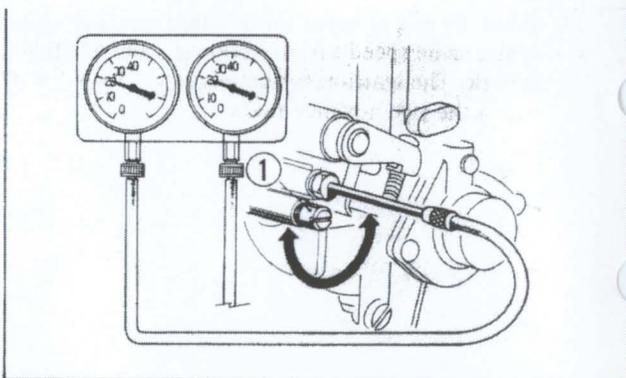


Fig. 3-15 (1) Idle limiter (pilot screw)

8. Adjust the synchronization so the right and left throttle valve will both move the same amount when the throttle grip is moved slightly.

The adjustment can be made by turning the throttle cable adjuster.

NOTE:

Upon adjustment, tighten the lock nut securely and snap the throttle grip three or four times to recheck the synchronization.

9. After completing the adjustment, check and adjust the free play of the throttle grip.
10. Remove the vacuum gauges and install the plugs and fuel tank.

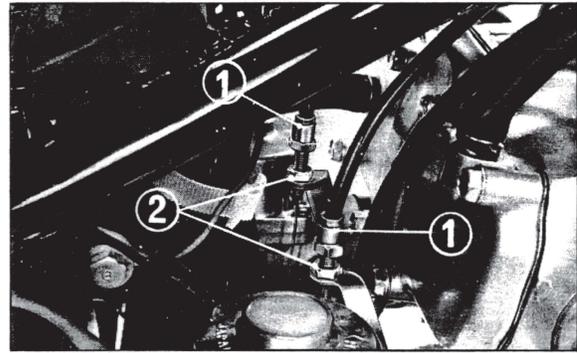


Fig. 3-16 (1) Cable adjuster
(2) Lock nut

5. THROTTLE CABLE

Check the free play of the throttle grip. It should be 1.3–2 mm (0.04–0.08 in.) at the throttle grip flange or 10–15 deg. of the grip rotation.

To adjust, loosen the lock nut and turn the grip play adjuster either in or out as necessary. Turn the adjuster in the direction “A” to decrease the play, or “B” to increase it.

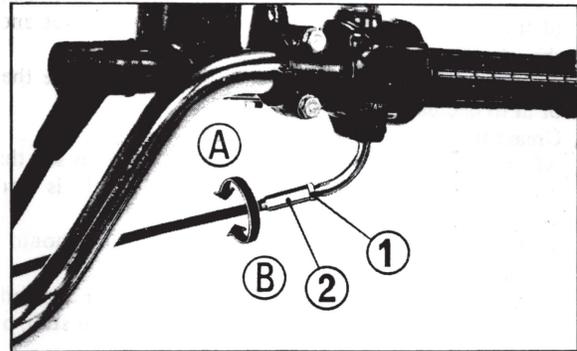


Fig. 3-17 (1) Lock nut
(2) Grip play adjuster

Check the throttle cable for twisting or interference with adjacent parts; also for proper routing, while turning the handlebar to each extreme.

Repair or, if necessary, replace the cable with a new one.

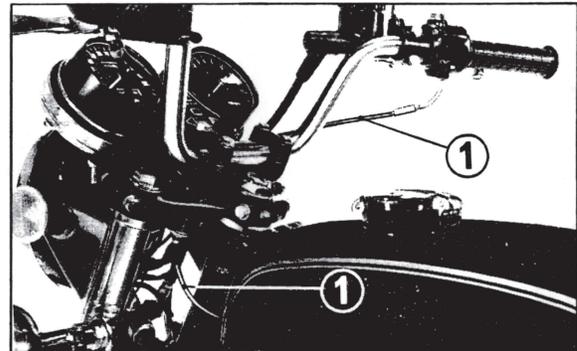


Fig. 3-18 (1) Throttle cable

6. CLUTCH

Check the clutch lever for free play at its tip.
Standard play: 10–20mm (0.4–0.8 in.)

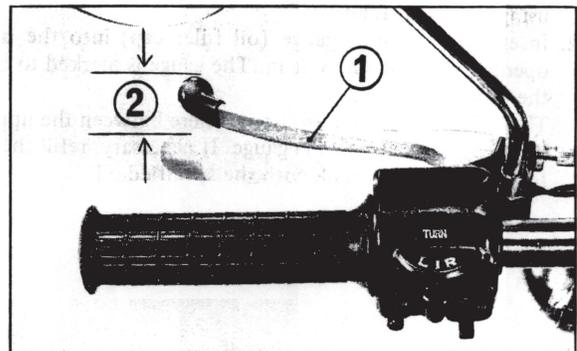


Fig. 3-19 (1) Clutch lever
(2) Free play

2. To adjust the lever play, loosen the adjuster locking bolt and turn the adjuster in or out as necessary. Rotation of the adjuster in the "A" direction decreases the play and rotating in the "B" direction increases the play.

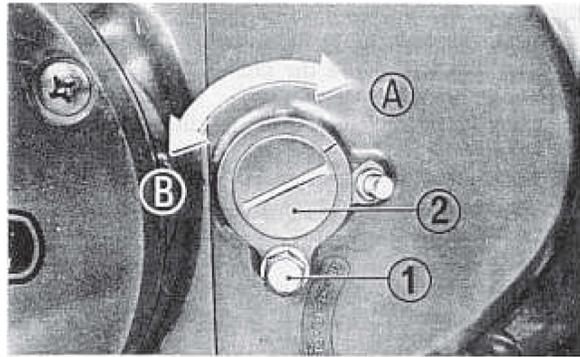


Fig. 3-20 (1) Locking bolt
(2) Adjuster

3. Minor adjustment can be made on adjusters, one on each end of the clutch cable. To adjust, loosen the lock nut and turn the adjuster until the lever has the correct play. Turn the adjuster in the direction "A" to decrease the play, or in to decrease it.
4. Grease the clutch lifter at the grease fitting.
5. After the adjustment has been made, check to see that the clutch is not slipping and that the clutch is properly disengaging.
 - a. When the kick starter is used, the engine should easily start without the clutch slipping.
 - b. After the engine starts, pull the clutch lever and shift into gear, and make sure that the engine does not stall, nor the motorcycle start to creep.
 - c. Gradually release the clutch lever and open the throttle, the motorcycle should start smoothly and gradually accelerate.

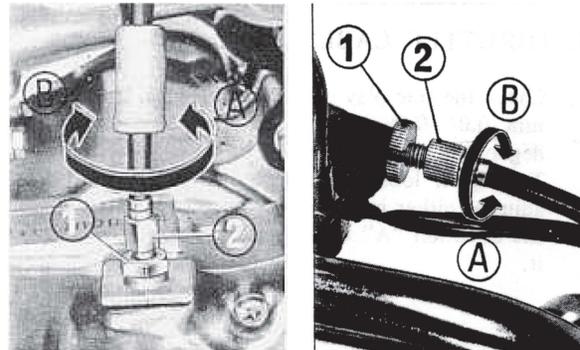


Fig. 3-21 (1) Lock nut
(2) Adjuster

7. CAM CHAIN

1. Loosen the lock nut and the cam chain tensioner bolt. The cam chain will be automatically tensioned properly when the tensioner bolt is loosened.
2. Tighten the tensioner bolt and secure with the lock nut.

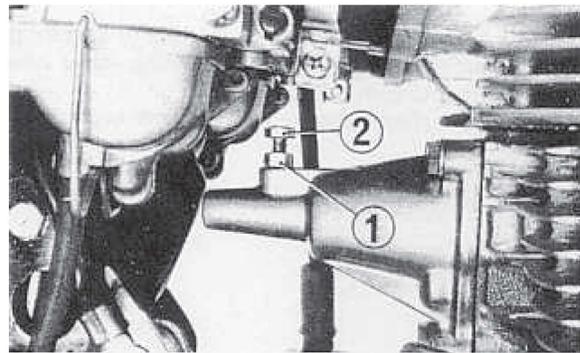


Fig. 3-22 (1) Lock nut
(2) Tensioner bolt

8. ENGINE OIL

Checking oil level

1. After warming up the engine, place the machine upright by using the main stand.
2. Insert the oil level gauge (oil filler cap) into the oil filler opening. Do not screw it in. The gauge is marked to indicate the proper oil level.
The oil level should be somewhere between the upper and lower level marks on the gauge. If necessary, refill the engine to the upper level mark with the specified oil.

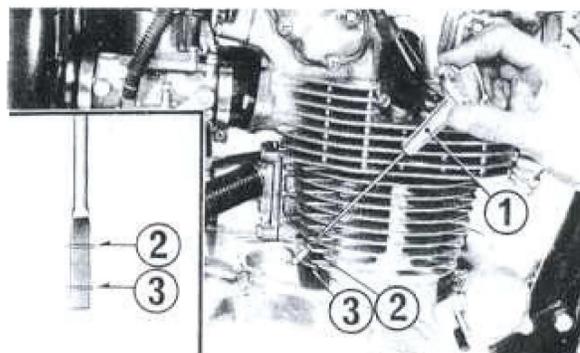


Fig. 3-23 (1) Oil level gauge (Filler cap)
(2) Upper level mark
(3) Lower level mark

Changing oil

1. After warming up the engine, turn the main switch to "OFF" and remove the oil filler cap.
2. Drain the oil thoroughly by removing the drain plug. After the oil stops draining, operate the kick starter several times to drain any oil which may be left in the engine.
3. Replace the drain plug. Fill the engine through the filler opening with specified oil. Keep level as close as possible to upper level mark without overfilling.

Capacity: 2.8 liter (3.0 US qt., 2.5 Imp. qt.)

Recommended oil:

API service classification – SE

Viscosity – All temperature:

SAE IOW-30 or SAE IOW-40

Alternate:

Above 15 deg. C (59 deg. F) SAE30

0 deg. (32 deg.) to 15 deg. C (59 deg. F) SAE 20 or 20W

Below 0 deg. C (32 deg. F) SAE 10W

4. Replace the oil filler cap. Recheck the oil level after warming up the engine.

9. FRONT BRAKE

Checking fluid level

1. Remove the fluid reservoir cap of the master cylinder.
2. Check to see the brake fluid level is up the level line inside the reservoir. If the level is low, add SAE DOT 3 brake fluid, or SAE J1703 brake fluid.

Checking brake pad

1. Check the brake pads for excessive wear. Discard if worn down to the red wear line. Always replace both brake pads if either is unserviceable.

Replacing brake pads

1. Remove the caliper bolts and separate the caliper A and B from the caliper holder.

NOTE:

Move the caliper A upward by using care not to allow the brake pipe to bend.

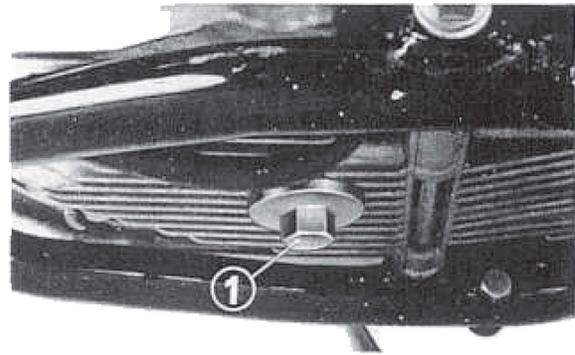


Fig. 3-24 (1) Drain plug

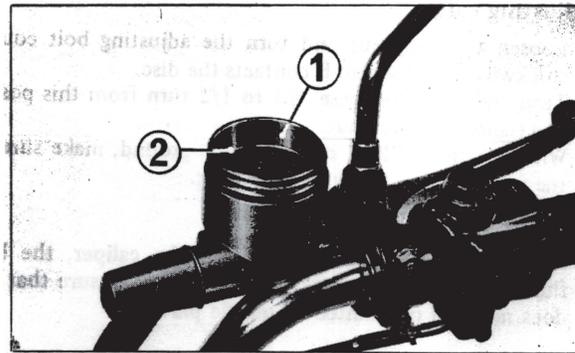


Fig. 3-25 (1) Brake fluid reservoir
(2) Level line

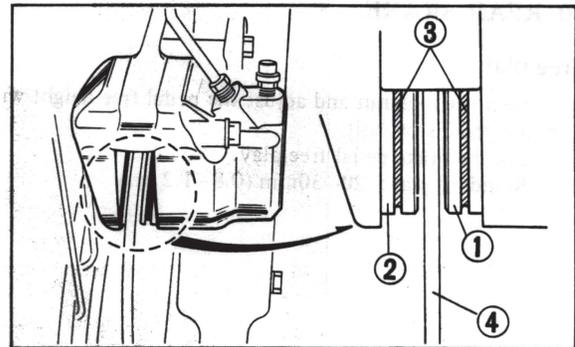


Fig. 3-26 (1) Brake pad A (4) Brake disc
(2) Brake pad B (3) Wear line (red)

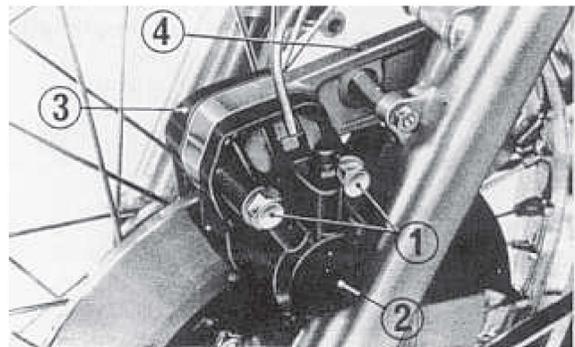


Fig. 3-27 (1) Caliper bolt (3) Caliper B
(2) Caliper A (4) Caliper holder

2. Remove the pad A from the caliper A.
3. Pry off the cotter pin and remove the pad B from the caliper B.
4. Wipe clean the pad sliding surfaces of the caliper. Apply a light coat of silicon sealing grease to the sliding surface of the calipers and back plate of new pads.
5. Install the pads to the calipers. Lock the pad B to the caliper B with a new cotter pin.
6. Install the calipers to the holder with the caliper bolts.
7. Adjust the calipers.

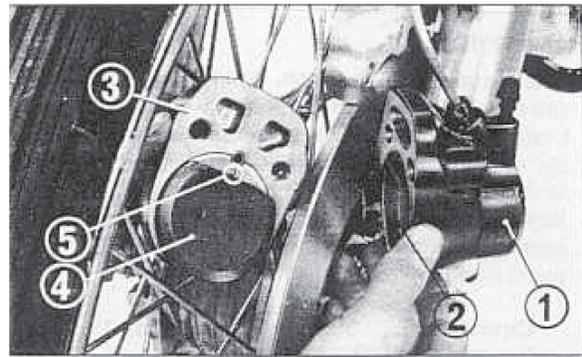


Fig. 3-28 (1) Caliper A (4) Pad B
(2) Pad A (5) Cotter pin
(3) Caliper B

Adjusting calipers

1. Loosen the lock nut and turn the adjusting bolt counter-clockwise until the pad B contacts the disc.
2. Turn the bolt clockwise 1/3 to 1/2 turn from this position and tighten the lock nut.
3. With the front wheel raised off the ground, make sure that the wheel rotates freely without drag.

NOTE:

As the piston is pushed back into the caliper, the brake fluid level in the master cylinder will rise. Ensure that fluid does not spill on painted or plastic parts.

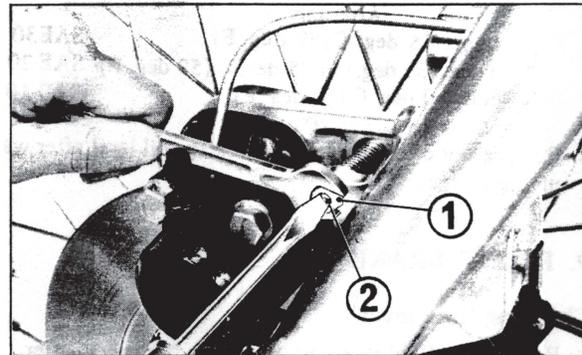


Fig. 3-29 (1) Lock nut
(2) Caliper adjusting bolt

10. REAR BRAKE

Free play

1. Loosen the lock nut and adjust the pedal free height with the brake pedal stop bolt.
2. Check the brake pedal free play.
Standard play: 20–30mm (0.8–1.2 in.)

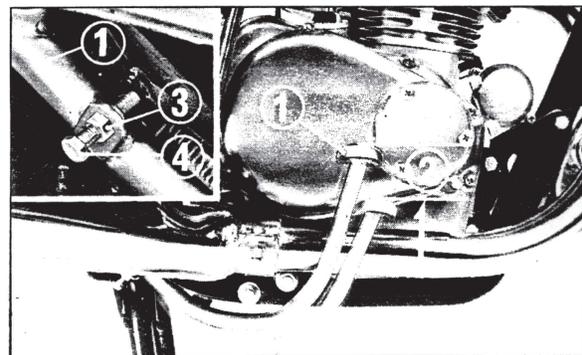


Fig. 3-30 (1) Rear brake pedal (3) Lock nut
(2) Free play (4) Pedal stop bolt

3. To adjust the brake pedal free play, turn the brake adjusting nut either in or out as necessary. To decrease the play, rotate the nut in the direction "A", and vice versa.
4. If necessary, adjust the rear stop light switch.

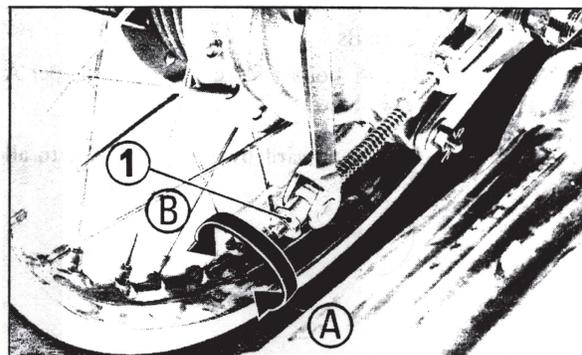


Fig. 3-31 (1) Brake adjusting nut

Brade shoe

1. Check the distance between the arrow adjacent to the brake arm and reference mark on the brake panel on full application of the brake.
2. If the arrow aligns with the reference mark on full application of the brake, replace the brake shoes and check the brake drum for wear.

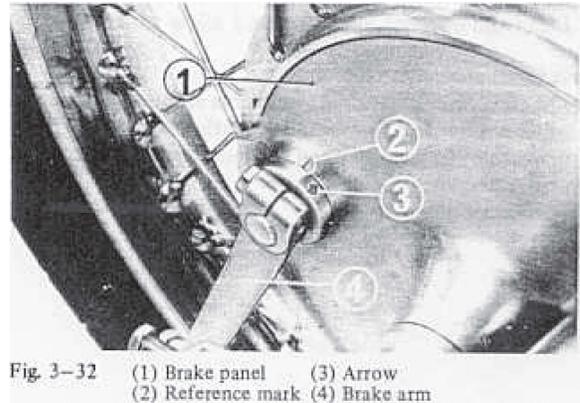


Fig. 3-32 (1) Brake panel (2) Reference mark (3) Arrow (4) Brake arm

11. AIR CLEANER

Air cleaner element

1. Remove the side covers.
2. Loosen off the nuts and remove the air cleaner covers.
3. Loosen the connecting tube clamps and remove the element fixing bolts; remove the elements.

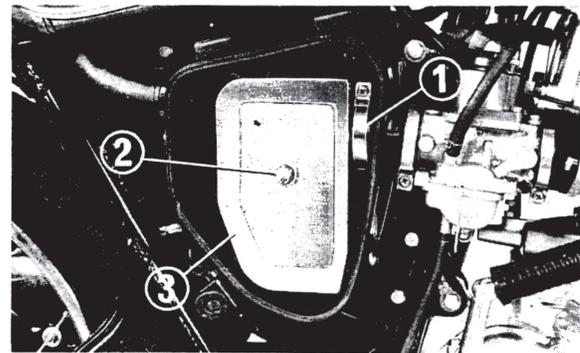


Fig. 3-33 (1) Tube clamp (2) Element fixing bolt (3) Air cleaner element

4. Lightly tap the element to remove dust and dirt and blow with compressed air from the center of the element outward.

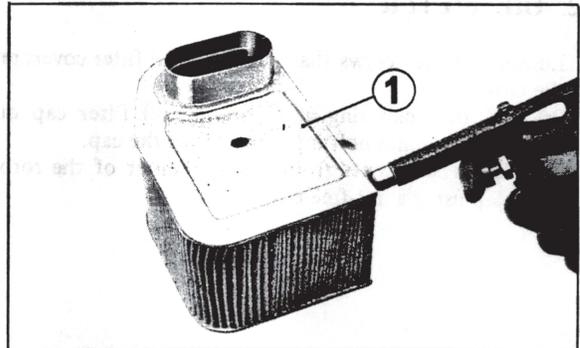


Fig. 3-34 (1) Air cleaner element

Breather element and tube

1. Remove the air cleaner elements.
2. Remove the bolt and take out the breather cover from the breather box.

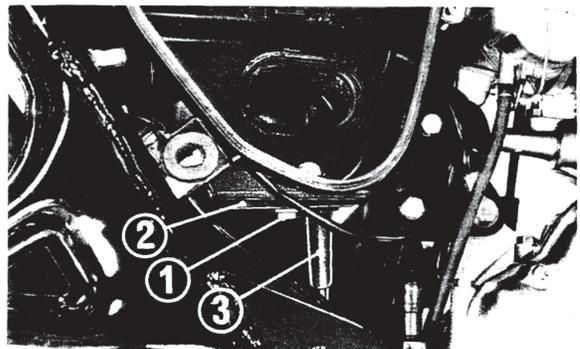


Fig. 3-35 (1) Bolt (2) Breather cover (3) Drain tube

3. Remove the breather element from the breather box.
4. Clean the element in solvent and allow to dry thoroughly.

WARNING:

Gasoline or low flash point solvents are highly flammable and must not be used to clean the breather element.

5. Soak the element in clean gear oil or engine oil, and then squeeze out excess oil.

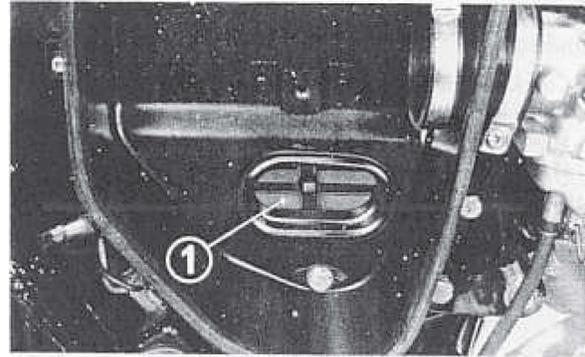


Fig. 3-36 (1) Breather element

6. Clean the breather cover, drain tube, and breather case. Check the slit of the drain tube end for clogging.
7. To install the breather element, reverse the removal procedures.

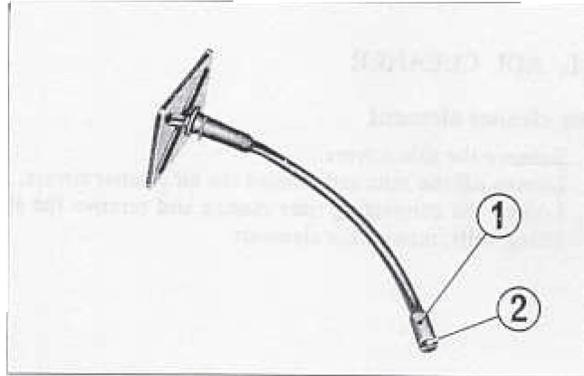


Fig. 3-37 (1) Drain tube end
(2) Slit

12. OIL FILTER

1. Loosen off the screws that secure the oil filter cover; remove the cover.
2. Pry off the snap ring and pull the oil filter cap out by screwing in a 6mm bolt into the hole in the cap.
3. Wipe clean sediments from around center of the rotor and rotor cap using a lint-free cloth.

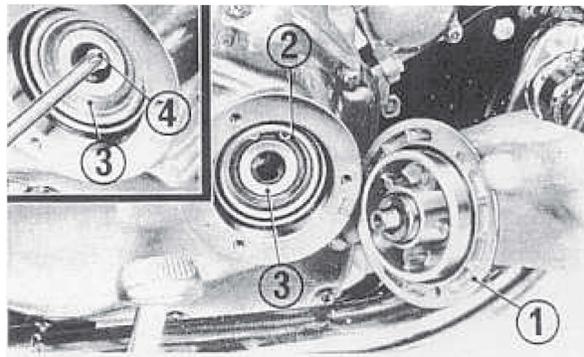


Fig. 3-38 (1) Oil filter cover (2) Snap ring
(3) Rotor cap (4) 6mm bolt

4. Install the rotor cap, make sure that the rib on the cap aligns with the groove of the rotor and install the snap ring.
5. After making sure the oil guide metal moves freely, install the oil filter cover to the right crankcase cover.

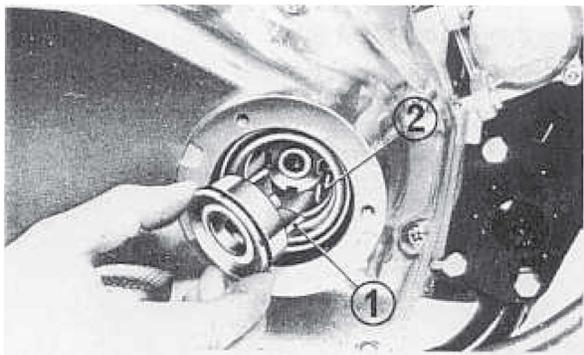


Fig. 3-39 (1) Groove
(2) Rib

13. FUEL FILTER

1. Place the fuel cock lever in the "OFF" position; disconnect the fuel tubes. Take off the fuel tank.

Loosen the fuel cock fixing nut and then remove the fuel cock and fuel filter from the fuel tank.

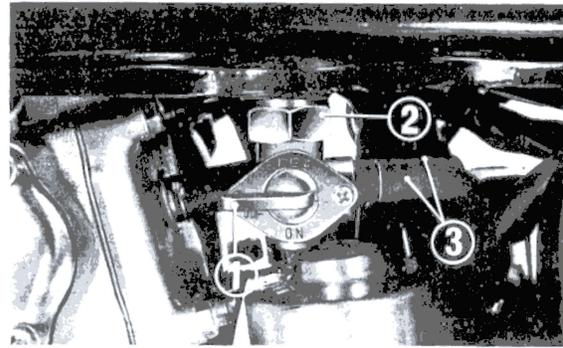


Fig. 3-40 (1) Fuel cock lever (2) Fuel cock fixing nut (3) Fuel tube

3. Check the gasket to see if it is damaged. Replace with a new one, if found to be damaged too badly beyond use.
4. Wash the fuel filter in solvent and dry with compressed air. Any slight damage cannot be tolerated here. Also replace the filter with a new one if found to be clogged.
5. Install the fuel filter to the fuel cock with the fixing nut. Do not forget to install the gasket into the groove of the fixing nut.
6. Install the fuel cock to the fuel tank with the fixing nut.
7. Install the fuel tank in place on the frame; connect tubes and secure with the clips.
8. Fill the tank with fuel. With the fuel cock lever in the "ON" position, check for any leakage past the tube joints or connections.

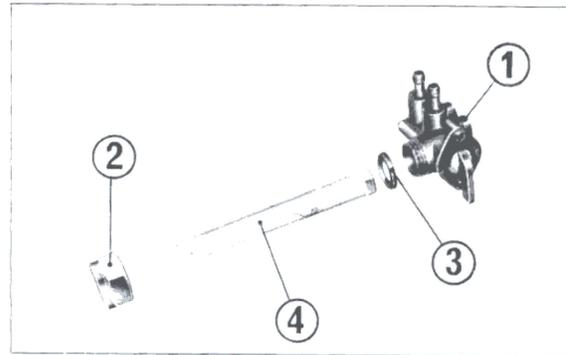


Fig. 3-41 (1) Fuel cock (2) Fixing nut (3) Gasket (4) Fuel filter

14. SPARK PLUG STANDARD PLUG NGK B8ES

1. Remove the spark plug cap from the spark plug. Unscrew the plug, using spark plug wrench, and remove the spark plug from the cylinder head.
2. Check the spark plug for deposits, electrode erosion and damaged gasket. A spark plug with burned electrodes, or damaged gasket should be replaced with a new one. Fouled spark plug can be cleaned in spark plug cleaner or with a wire brush.
3. Using a feeler gauge, adjust the gap to the specification.
Specified plug gap: 0.7–0.8mm (0.028–0.032-in.)
To adjust, bend the side electrode only.
4. Clean the plug seat in the cylinder head. Screw the plug into the thread hole in the head in two steps; first, finger-tight, and then use a spark plug wrench to tighten the plug an additional 1/2 to 3/4 turn or until the sealing gasket is compressed.

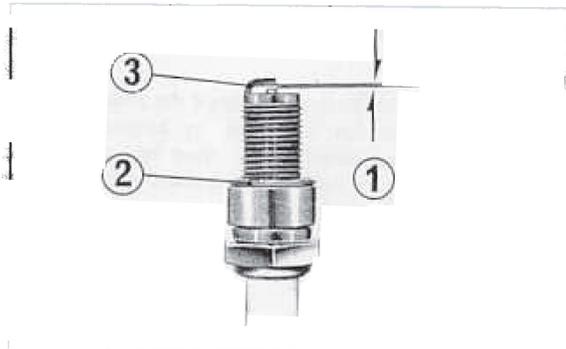


Fig. 3-42 (1) Spark plug gap (2) Gasket (3) Side electrode

15. DRIVEN CHAIN

Chain tension

1. Raise the rear wheel off the ground with the main stand. Shift the transmission into neutral.
2. Check the tension of the drive chain. This can be made by applying a thumb pressure on a point midway between the sprockets and measure the slack.
Specified slack: 20mm (3/4 in.)

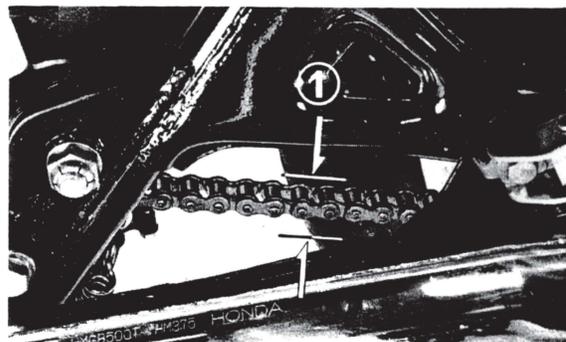


Fig. 3-43 (1) Drive chain slack

3. To adjust, loosen the rear brake adjusting nut, pry out the cotter pin, loosen the rear axle nut and lock nuts, and turn the adjusting bolts in or out as necessary. The index mark on the right and left drive chain adjusters should be aligned with the identical notches on the side scales on the fork.
4. Tighten the rear axle nut and lock nuts.
5. Recheck the drive chain slack and, if the slack is correct, insert the cotter pin with end through the axle.
6. Adjust the rear brake.

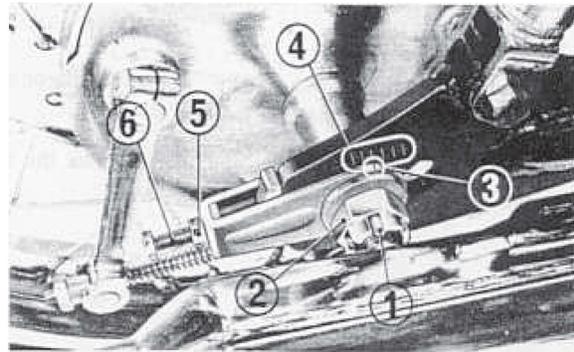


Fig. 3-44 (1) Cotter pin (4) Side scale
(2) Rear wheel axle nut (5) Lock nut
(3) Index mark (6) Adjusting bolt

Lubrication

1. Clean the chain with a brush and recommended cleaning solvent, and wipe dry with a line-free cloth.
2. Check the chain for wear (sloppy joints), stiffness and binding at the joints, and broken or separated rollers. If damaged or worn, the chain should be replaced. (See page 77.)
3. Apply a liberal amount of recommended chain lubricant to the chain.

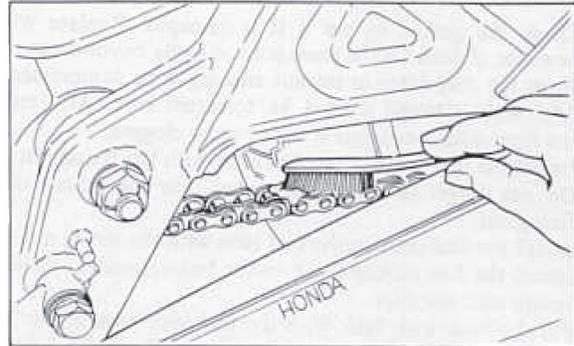


Fig. 3-45 Lubricating chain

16. FRONT SUSPENSION

Checking

1. With the front brake applied, check the action of the shock absorbers. This can be done by bouncing the shock absorbers up and down several times by hand. Also check for leaks, twists or bends, and replace any parts if worn or damaged beyond repair.
2. Check the front forks and handlebar mounting bolts for looseness.

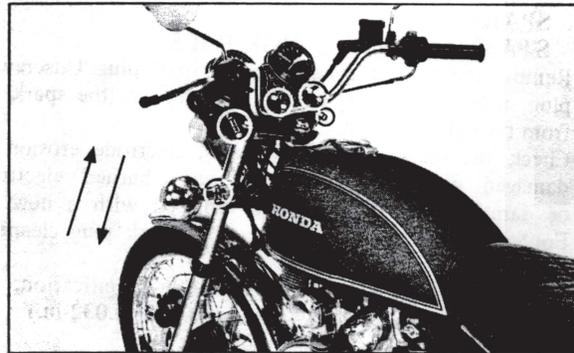


Fig. 3-46 Checking front suspension

Changing front fork oil

1. Remove the drain plugs from both forks. Grasp the handlebars and bounce the forks up and down several times to assist in draining remaining oil.
2. Replace the drain plugs. Place a suitable stand under the engine to raise the front wheel off the ground.

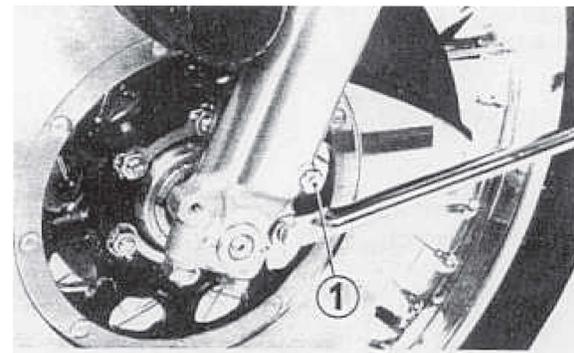


Fig. 3-47 (1) Front fork drain plug

- Remove the oil filler plugs and pour the specified amount of ATF (permanent quality automatic transmission fluid) into the holes.

Capacity: 165–180 cc (5.8–6.3 ozs.) when forks have been drained.

NOTE:

Specified amount of fluid will be required to fill one fork whenever disassembled.

Specified amount: 185–191 cc (6.2–6.5 ozs.) when forks have been disassembled.

- Replace the filler plugs and remove the stand under the engine.

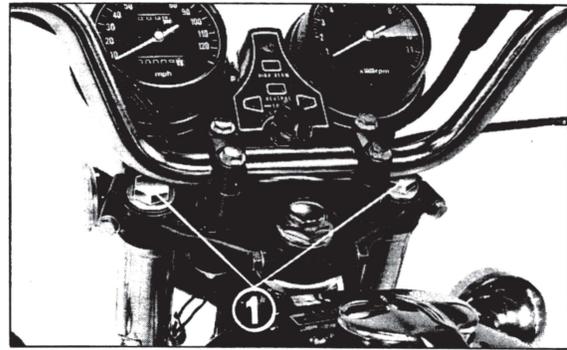


Fig. 3–48 (1) Oil filler plug

17. REAR SUSPENSION

- Raise the rear wheel off the ground. Auxially move the rear wheel in and out with force to see if the rear fork bushings are worn. If worn excessively beyond use, replace.
- Check the suspension mountings for looseness.



Fig. 3–49 (1) Rear fork
(2) Rear shock absorber

18. WHEELS

- Check the tire pressure.

Specified pressure:

	Up to 200 lbs. load	Up to vehicle capacity load
Front:	2.0kg/sq. cm (28 psi.)	2.0kg/sq. cm (28 psi.)
Rear:	2.0kg/sq. cm (28 psi.)	2.4kg/sq. cm (34 psi.)

- Check the tire for cracks, excessive wear or any other defects.
- Check the wheel for wobble.
- Check the tube valve for air leaks.

Wheel balance

- Raise the wheel off the ground. Mark the side of the tire and lightly spin the wheel several times.
- If the mark comes to rest at the same point each time, it is an indication that wheel is out of balance.

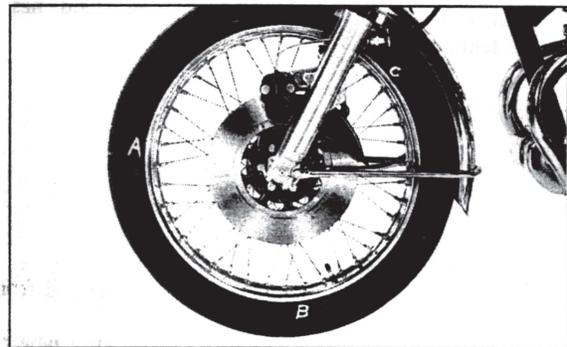


Fig. 3–50 Wheel balancing

- Install a balance weight to the nipple end of the spoke at the top of the wheel directly opposite the heaviest point (the bottom of the wheel).
The balance weights are available in four different weights 5, 10, 15 and 20gr.
- Repeat the testing several times. If the wheel no longer stops at the similar place each time, it is completely balanced.
- The wheel balancing for the front wheel should be made with the brake disc installed.

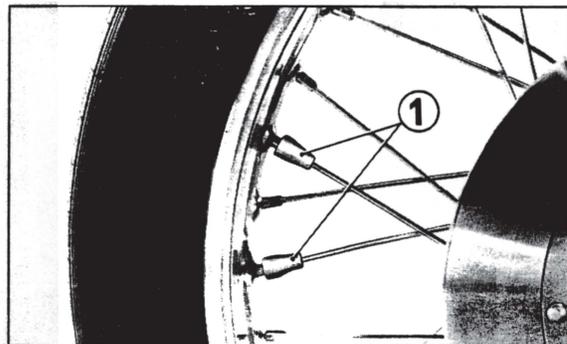


Fig. 3–51 (1) Balance weight

19. SIDE STAND

1. Check the entire stand assembly (side stand bar, bracket and rubber pad) for installation, deformation or otherwise excessive damage.
2. Check the spring for freedom from damage or other defects.

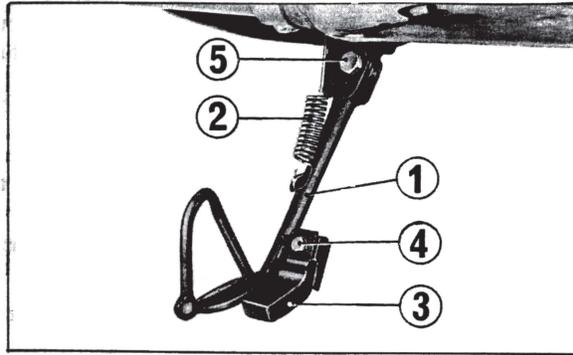


Fig. 3-52 (1) Side stand bar (4) 6mm bolt
(2) Spring (5) Side stand pivot bolt
(3) Rubber pad

3. Check the side stand for proper return operation:
 - a. With the side stand applied, raise the stand off the ground by using the main stand.
 - b. Attach a spring scale to the lower end of the stand and measure the force with which the stand is returned to its original position.
 - c. The stand condition is correct if the measurement falls within 2-3 kg (4.4-6.6 lbs.)
If the stand requires force exceeding the above limit, this might be due to neglected lubrication, overtightened side stand pivot bolt, worn stand bar or bracket, or otherwise excessive tension. Repair as necessary.

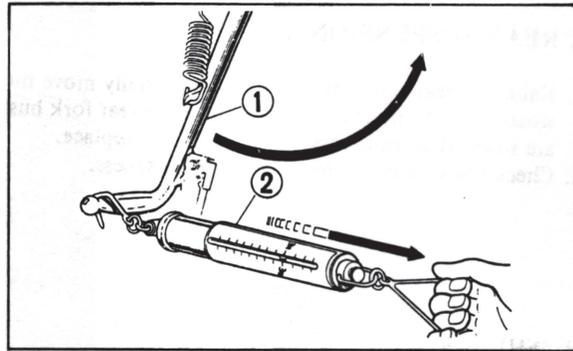


Fig. 3-53 (1) Side stand bar
(2) Spring scale

4. Check the rubber pad for deterioration or wear.
When the rubber pad wear is excessive so that it is worn down to the wear line, replace it with a new one.
It is intended that the rubber pad will return the stand upon contact with the ground if the stand has been accidentally left in the down position.

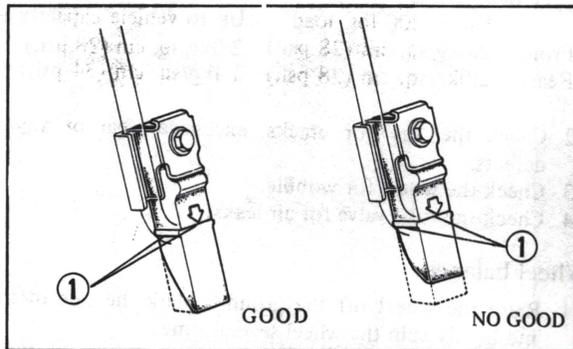


Fig. 3-54 (1) Wear line

Rubber pad replacement

1. Remove the 6mm bolt; separate the rubber pad from the bracket at the side stand.
2. After making sure the collar is installed, put a new rubber pad in place in the bracket with the arrow mark out.

NOTE:

Use rubber pad having the mark "OVER 260 lbs. ONLY"

3. Secure the rubber pad with the 6mm bolt.

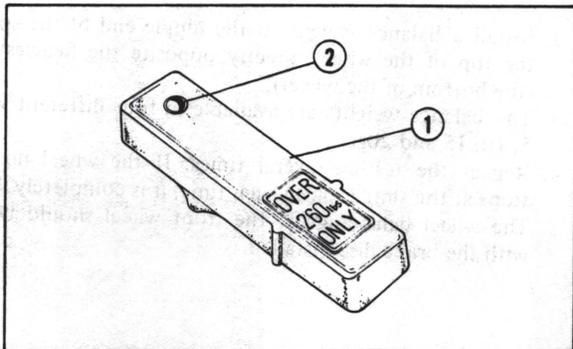


Fig. 3-55 (1) Rubber pad
(2) Collar

IV. ENGINE

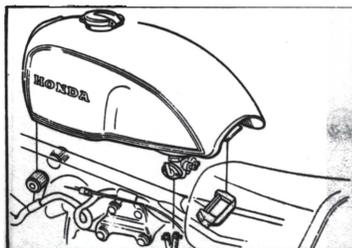
1. ON-FRAME SERVICING

Parts to be serviced	Refer to page
Oil pump and oil filter	35
Clutch	38
Gearshift mechanism	40
Carburetor	48
Electrical system (Generator, contact points and starting motor)	53

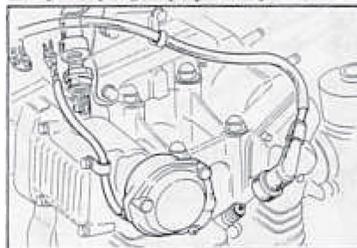
2. ENGINE REMOVAL AND INSTALLATION

Remove the engine in the order given below.
To install, reverse the removal procedure.

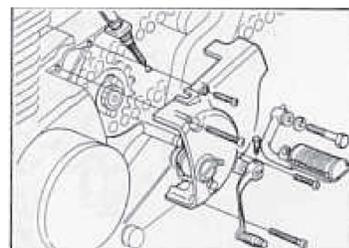
1. Fuel tank



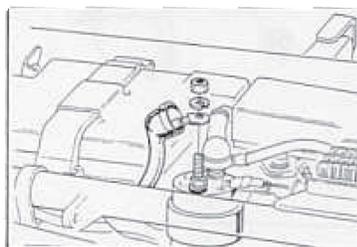
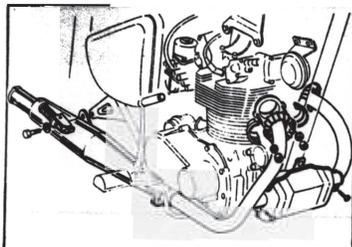
5. Spark plug cap, primary cord



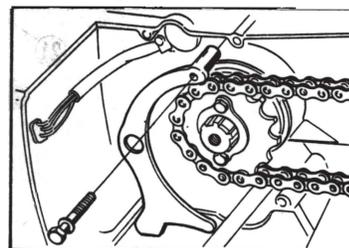
9. Crankcase rear cover



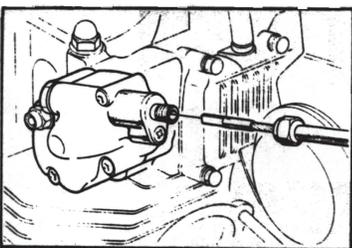
2. Muffler



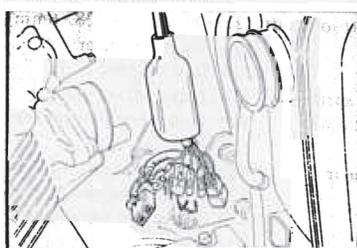
10. Drive sprocket protector



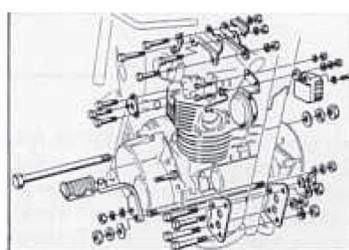
3. Tachometer cable



7. Generator harness



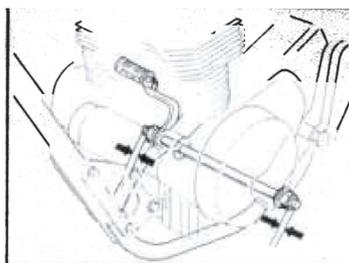
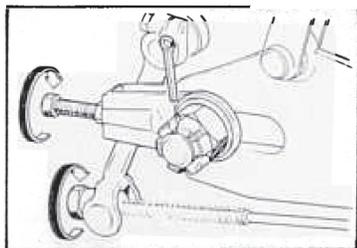
11. Hanger bolt



4. Carburetor



8. Loosening drive chain



NOTE:
Hanger bolt, nuts
should be tightened
equally on both side
(common on footrest)

Fig. 4-1

3. VALVE MECHANISM

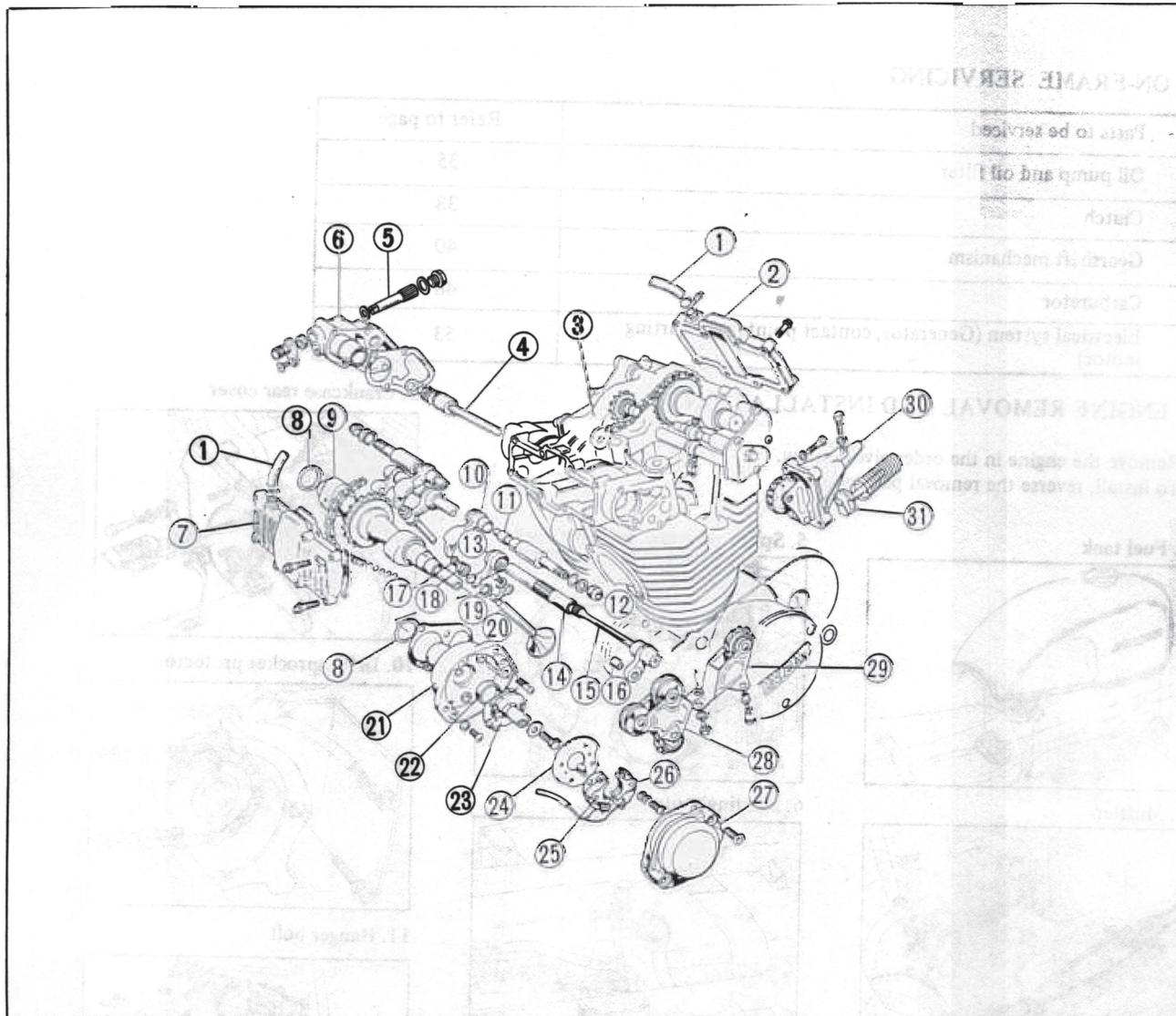


Fig. 4-2

- | | | |
|---------------------------|----------------------------------|-----------------------------------|
| (1) Breather tube | (11) Cam follower shaft | (21) Point base |
| (2) Cylinder head cover A | (12) Cam follower shaft lock nut | (22) Oil seal (18×28×6mm) |
| (3) Cylinder head | (13) Outer arm | (23) Spark advancer |
| (4) Tachometer pinion | (14) Torsion bar outer | (24) Breaker base plate |
| (5) Tachometer gear | (15) Torsion bar valve spring | (25) Left contact breaker |
| (6) Tachometer gear box | (16) Knock pin (8×12mm) | (26) Right contact breaker |
| (7) Cylinder head cover B | (17) Valve cotter | (27) Point cover |
| (8) Camshaft shim | (18) Valve spring retainer | (28) Front cam chain guide roller |
| (9) Camshaft | (19) Valve stem seal | (29) Rear cam chain guide roller |
| (10) Cam follower | (20) Valve | (30) Cam chain tensioner |
| | | (31) Push bar |

Disassembly

1. Loosen off the bolts and remove the cylinder head cover A and B.
2. Remove the cam chain tensioner.
3. Remove the spark plugs by using a plug wrench.
4. Remove the generator cover.

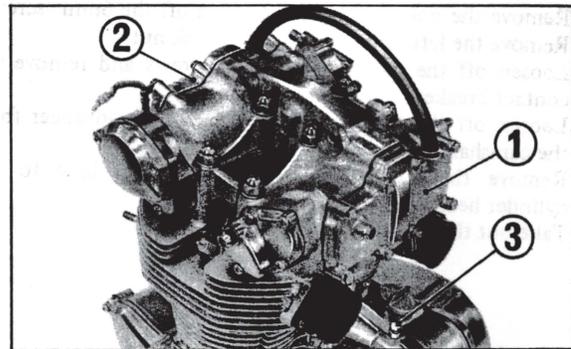


Fig. 4-3 (1) Cylinder head cover A (3) Tensioner bolt
(2) Cylinder head cover B

5. Rotate the generator rotor counterclockwise until the cam chain joint reaches to the opening of the intake side. The joint link has a slightly blue colour and has hollowed ends on the pins.

6. Disconnect the cam chain at the joint by using a special tool "Cam Chain Cutter" (Tool No. 07968-2830100).

NOTES:

- a. When disconnecting, use care not to allow joint to drop into the crankcase.
- b. Hold both ends of the chain with wires or the like to prevent the chain from falling in the crankcase.

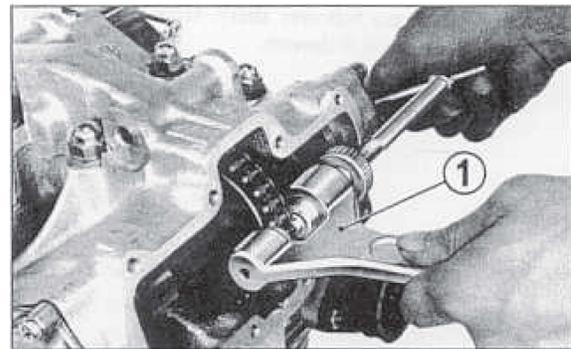


Fig. 4-4 (1) Cam chain cutter

7. Loosen off the 10mm cap nuts that secure the cylinder head; remove the cylinder head.
8. Remove the intake side cam follower shaft lock nuts.
9. Remove both right and left cylinder head side covers by loosening off the screws. Take out the intake camshaft.

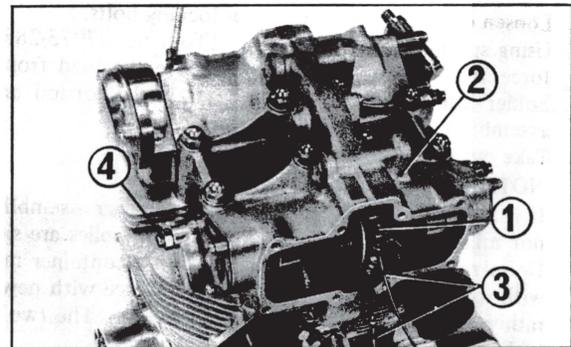


Fig. 4-5 (1) Cam chain (3) Wire
(2) Cylinder head (4) Cam follower shaft lock nut

10. Remove the cam follower shaft lock nut from the tachometer gear box.
11. Loosen off the 6mm screws and remove the tachometer gear box.

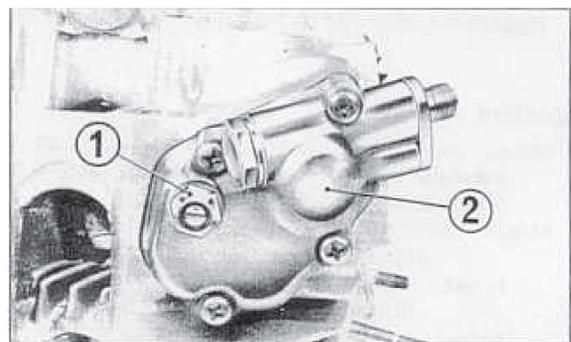


Fig. 4-6 (1) Right cam follower shaft lock nut
(2) Tachometer gear box

12. Remove the point cover by loosening off the 6mm screws.
13. Remove the left cam follower shaft lock nut.
14. Loosen off the base plate locking screws and remove the contact breaker from the base plate.
15. Loosen off the bolt and remove the spark advancer from the camshaft.
16. Remove the screws that secure the point base to the cylinder head; remove the point base.
17. Take out the exhaust camshaft.

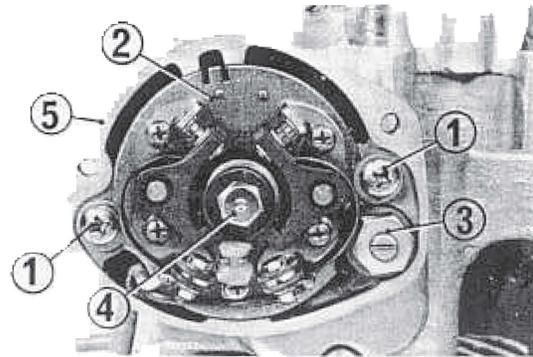


Fig. 4-7 (1) Base plate locking screw (4) Spark advancer bolt
(2) Base plate (3) Cam follower shaft lock nut (5) Point base

18. Withdraw the cam follower shafts from the cylinder head and remove the cam followers.

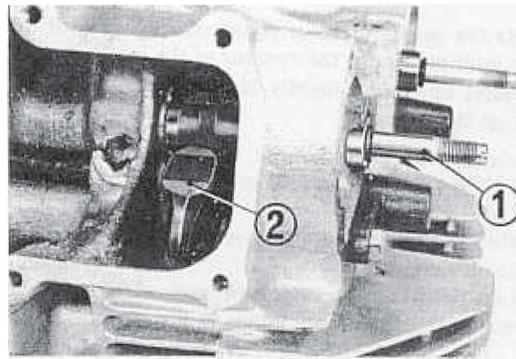


Fig. 4-8 (1) Cam follower shaft
(2) Cam follower

19. Loosen off the torsion bar holder locking bolts.
20. Using special tool "Valve Lifter" (Tool No. 07973-2830001), force the torsion bar so as to relieve the load from the holder knock pin and then withdraw the torsion bar assembly from the cylinder head.
Take out the outer arm.

NOTE:

It is absolutely essential that the torsion bar assemblies are not mixed, the diagonally opposite assemblies are similar. Upon removal place each assembly in a container marked with its location. If bars get mixed, replace with new ones rather than take the risk of bars breaking. The two types of bars twist in opposite directions.

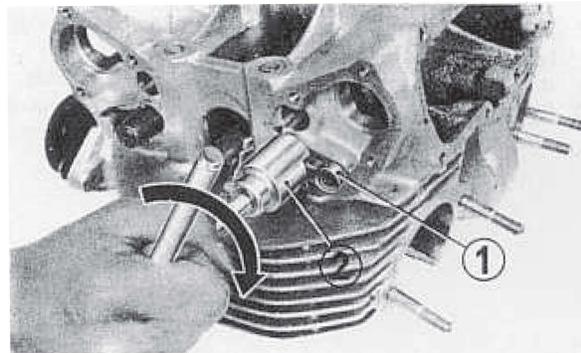


Fig. 4-9 (1) Torsion bar holder
(2) Valve lifter

21. Remove the valve cotters, valve spring retainer and valve.

Inspection

1. Measure the outside diameter of each camshaft journal.
Standard value: 21.967–21.980mm (0.8648–0.8654-in.)
Service limit: 21.92mm (0.8622-in.)
2. Measure the height of each cam.
Standard value: Service limit:
Intake: 4.688–4.728 mm 4.65 mm
(0.1846–0.1853-in.) (0.1830-in.)
Exhaust: 4.688–4.728 mm 4.65 mm
(0.1846–0.1853-in.) (0.1830-in.)

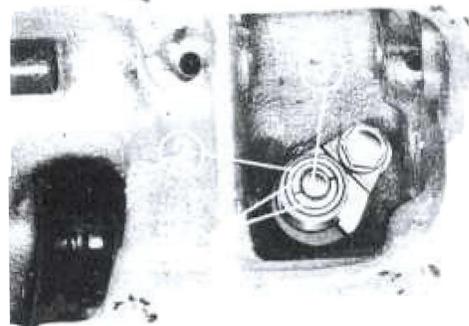


Fig. 4-10 (1) Valve cotter
(2) Valve spring retainer
(3) Valve

3. Check the camshaft for bend.
 Standard value: 0.01mm (0.0004-in.) max.
 Service limit: 0.05mm (0.002-in.)
4. Measure the inside diameter of the camshaft bearing in the cylinder head.
 Standard value: 22.0–22.021mm (0.8661–0.8669-in.)
 Service limit: 22.05mm (0.8681-in.)
5. Measure the inside diameter of the cam follower.
 Standard value: 10.20–10.218mm (0.4016–0.4023-in.)
 Service limit: 10.28mm (0.4047-in.)
6. Check the cam follower shaft for wear.
 Standard value: 10.166–10.184mm (0.3992–0.4009-in.)
 Service limit: 10.10mm (0.3976-in.)
7. Measure the inside diameter of the valve guide.

	Standard value	Service limit
Intake:	7.0–7.01mm (0.2756–0.2760-in.)	7.05mm (0.2776-in.)
Exhaust:	7.0–7.01mm (0.2756–0.2760-in.)	7.05mm (0.2776-in.)

Valve guide replacement:

- a. Loosen off the bolt and remove the valve guide stopper and stem seal.
- b. Drive out the guide from the cylinder head using “Valve Guide Remover” (Tool No. 07942-2830000).
- c. Use “Valve Guide Driver” (Tool No. 07942-1180100) when driving a new oversize valve guide. After driving, ream to size with “Valve Guide Reamer” (Tool No. 07984-5900000).

8. Measure the outside diameter of the valve stem.

	Standard value	Service limit
Intake:	6.974–6.988mm (0.2746–0.2751-in.)	0.96mm (0.2740-in.)
Exhaust:	6.968–6.982mm (0.2743–0.2749-in.)	6.95mm (0.2736-in.)
9. Measure the valve stem for bend.
 Service limit: 0.02mm (0.0008-in.)
10. Measure the valve seat width.
 Coat the valve seat with Prussian blue; then seat the valve in place. Rotate the valve one turn with light pressure. Check and measure the valve seat width.
 Standard width: 1.0–1.3mm (0.0394–0.0512-in.)
 Service limit: 2.0mm (0.0787-in.)

If the Prussian blue shows a band of uniform width all the way around both seat and valve, the valve contact is normal.

If contact is improper, lightly lap the valve with a finest grade lapping compound. Remove all the compound after lapping operation. If still defective, reface the valve seat with a valve seat grinder, Model GVS-27A, recommended by HONDA.

NOTE:

When using a valve seat grinder, be sure to follow the instructions given by the valve seat grinder manufacturer.

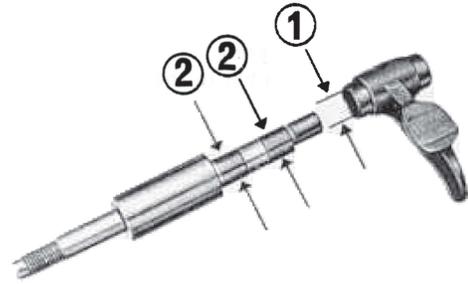


Fig. 4-11 (1) Inside diameter of cam follower
(2) Out side diameter of shaft

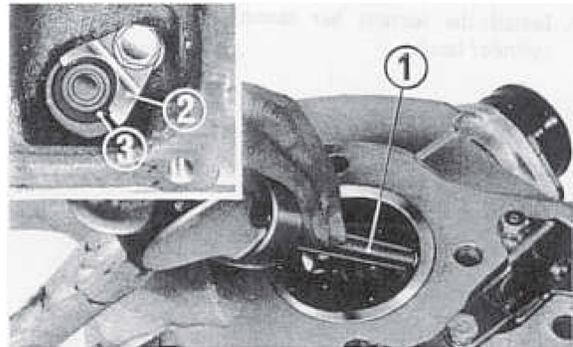


Fig. 4-12 (1) Valve guide remover
(2) Valve guide stopper
(3) Stem seal

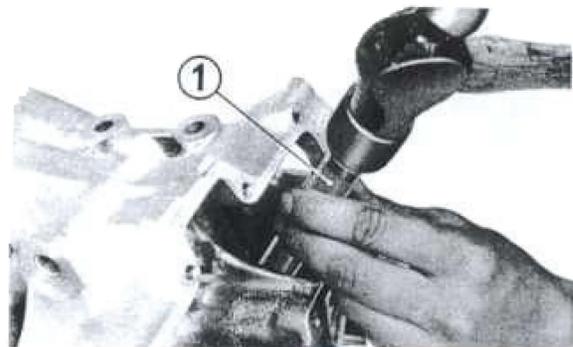


Fig. 4-13 (1) Valve guide driver

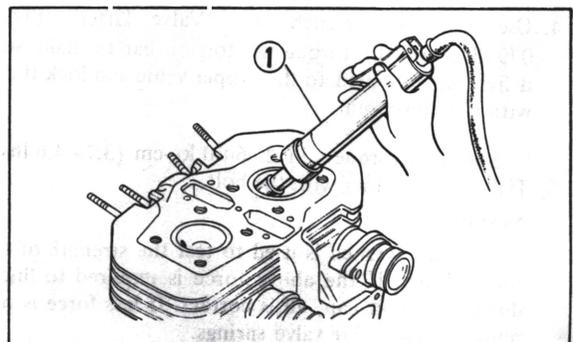


Fig. 4-14 (1) Valve seat grinder

Assembly

Valve and torsion bar valve spring

1. Install the outer torsion bar to the torsion bar valve spring.

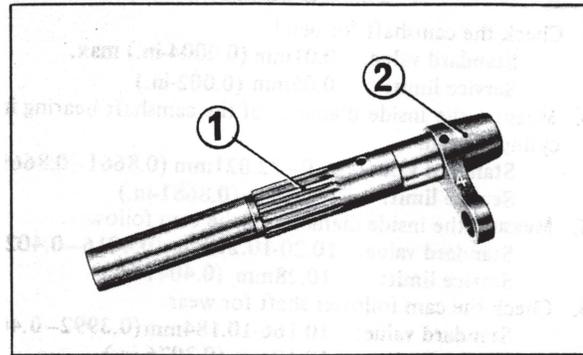


Fig. 4-15 (1) Outer torsion bar
(2) Torsion bar holder

2. Install the torsion bar assembly and outer arm to the cylinder head.

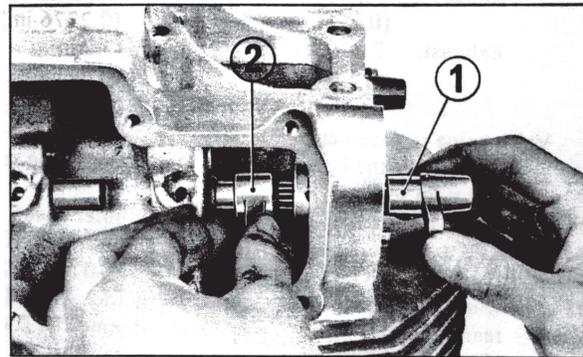


Fig. 4-16 (1) Torsion bar assembly
(2) Outer arm

3. Install the valve, valve spring retainer and valve cotters.

NOTE:

After assembly, check to make sure that the valve stem and the fork of the outer arm is not binding. If they are binding, the valve stem may be bent.

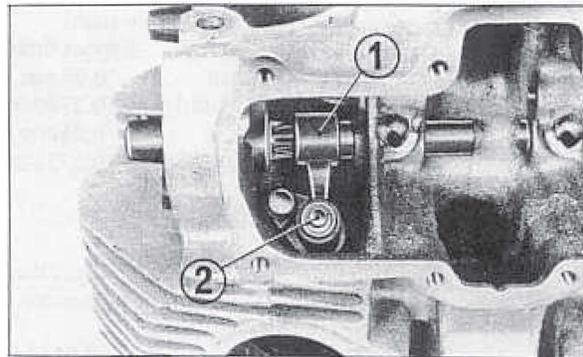


Fig. 4-17 (1) Outer arm
(2) Valve

4. Use a torque wrench and "Valve Lifter" (Tool No. 07973-2830001), torque the torsion bar to make sure that it has been torqued to the proper value and lock the holder with the dowel pin.

Specified torque: 51.2–64.0 kg-cm (3.7–4.6 lbs-ft)

5. Tighten the holder with the bolt.

NOTE:

The torque wrench is used to test the strength of the valve torsion bars. If the above force is required to line up the dowel and end cap, all is correct. If less force is required, replace torsion bar valve springs.

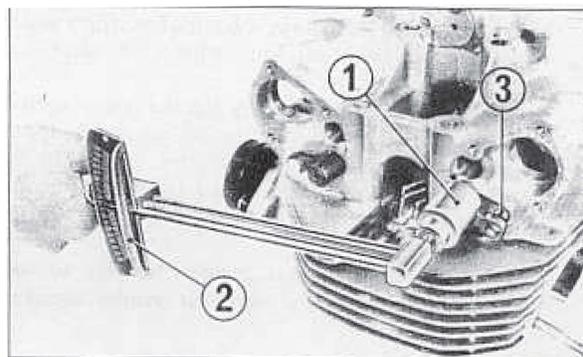


Fig. 4-18 (1) Valve lifter
(2) Torque wrench
(3) Dowel pin

Cam follower and camshaft

1. Install the intake cam followers and cam follower shafts to the cylinder head so that the marks on end of the shafts are directed as shown in Fig. 4-19.
2. Install the intake camshaft.
3. Install the right and left cylinder head side covers.

NOTE:

When adjusting valve clearances, follower shafts must face as in Fig. 4-19. Otherwise damage to valve mechanism may result.

i.e. lines at 90° to screwdriver slots to face away from engine.

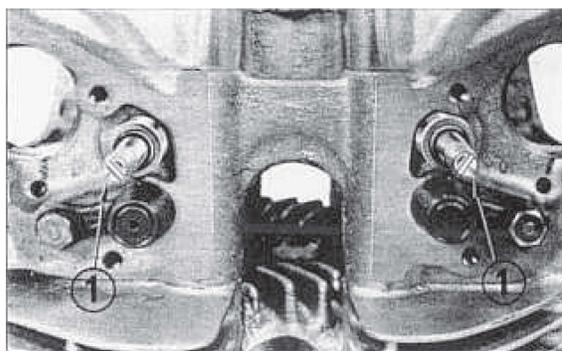


Fig. 4-19 (1) Cam follower shaft mark

4. Check the side clearance of the intake camshaft. If necessary, adjust the clearance by increasing or decreasing the shims.

Specified side clearance: 0.05–0.35mm (0.002–0.014-in.)

Shims are available in 0.1mm (0.004-in.) and 0.2mm (0.008-in.) in thickness.

If the clearance is excessively large, noise will result, and if it is too small the shaft may seize.

5. Install the exhaust cam followers and cam follower shafts so that the mark on end of the shafts are directed as shown in Fig. 4-19.
6. Install the exhaust camshaft.

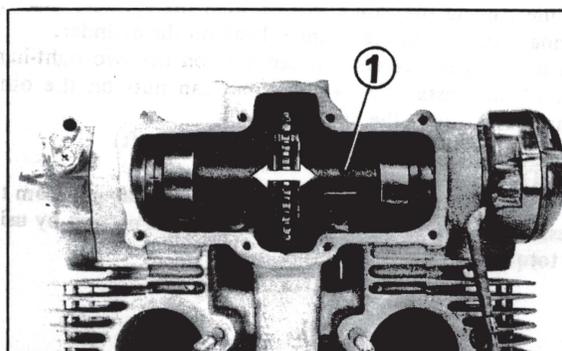


Fig. 4-20 (1) Camshaft

7. Install the tachometer gear box so that the convex section of the pinion aligns with the grooves on the camshaft.
8. Install the point base to the cylinder head.
9. Check and adjust the side clearance of the exhaust camshaft using the similar procedure as on the intake camshaft.

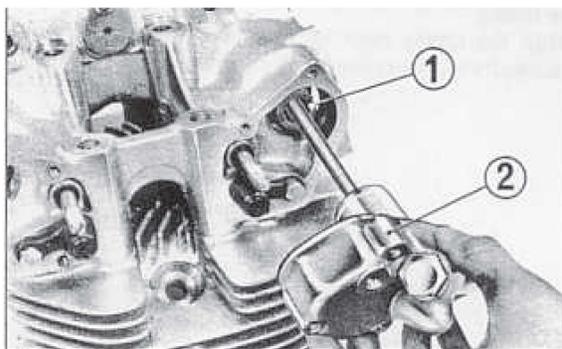


Fig. 4-21 (1) Groove on camshaft
(2) Tachometer gear box

10. Install the spark advancer so that its groove aligns to the knock pin on the camshaft.
11. Install the contact breaker to the point base.
12. Temporarily tighten the cam follower shaft lock nuts.

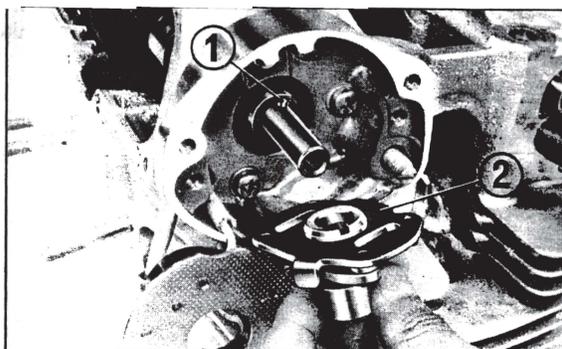


Fig. 4-22 (1) Knock pin
(2) Spark advancer

Cylinder head

1. Place a new cylinder head gasket, three dowel pins and two new O-rings on top of the cylinder.

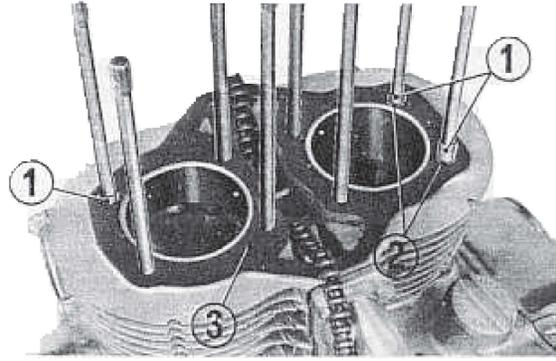


Fig. 4-23 (1) Dowel pin
(2) O-ring
(3) Gasket

2. While passing the cam chain through the cylinder head by using wires, install the cylinder head on the cylinder.
3. Install copper washers and cap nuts on the two right-hand studs, and install flat washers and cap nuts on the other studs, and torque the nuts.

Tightening torque: 350 kg-cm (25.3 lbs-ft)

NOTE:

Tightening the nuts should be performed starting from the inside and working outward in a criss-cross pattern by using a torque wrench.

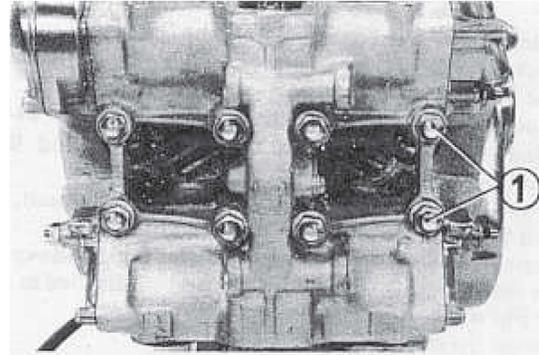


Fig. 4-24 (1) Copper washer

Valve timing

1. Align the timing mark on the right side of the respective camshafts to the timing index on the respective bearings.

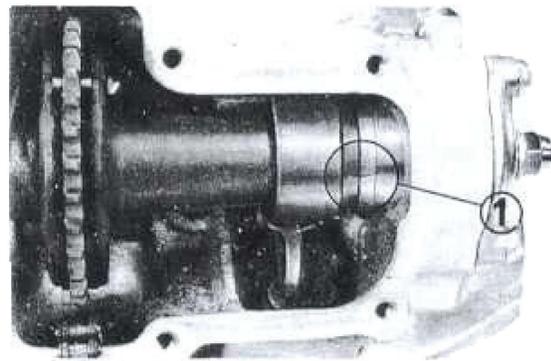


Fig. 4-25 (1) Timing mark

2. Rotate the generator rotor so that the mark "LT" on the rotor aligns with the index mark on the left crankcase cover.

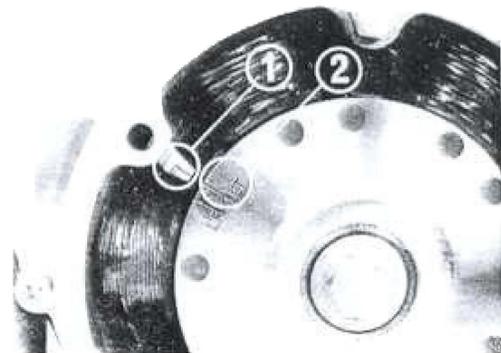


Fig. 4-26 (1) Index mark
(2) "LT" mark

3. After making sure that the cam chain is routed properly, connect the cam chain with a new chain joint.

NOTES:

- a. Be careful not to drop the cam chain and chain joint into the crankcase.
- b. It is easier to connect the cam chain from the intake side.
- c. A new cam chain joint should be always used.

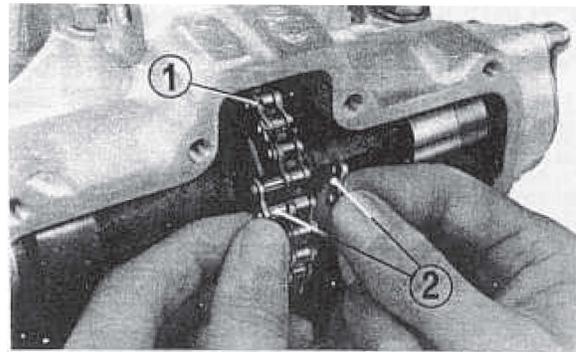


Fig. 4-27 (1) Cam chain
(2) Chain joint

4. Make sure that the timing marks on the camshafts are aligned with index mark on the bearing, and the "LT" mark is aligned with the index mark.
5. Stake the cam chain joint by using "Cam Chain Pincher" (Tool No. 07968-2830200).
6. Adjust the cam chain tension. (See page 12.)
7. Adjust the tappet clearance. (See page 7.)
8. Install the cylinder head covers.

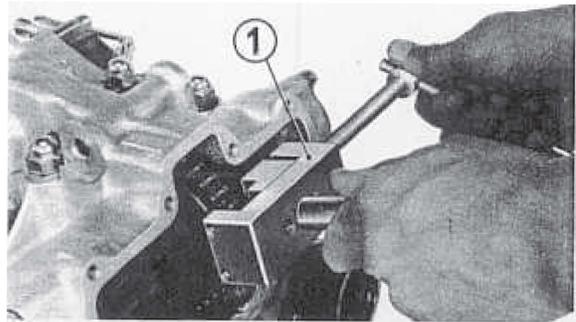
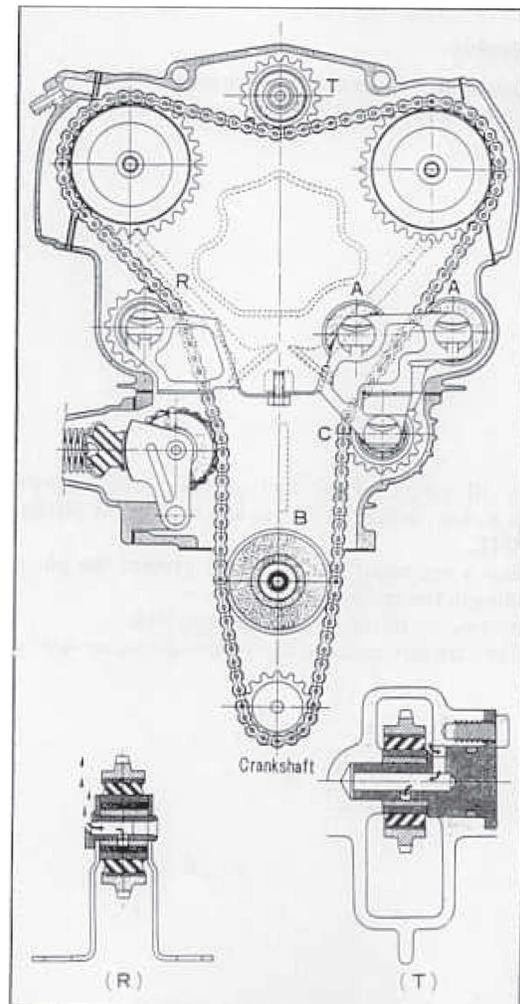


Fig. 4-28 (1) Cam chain pincher

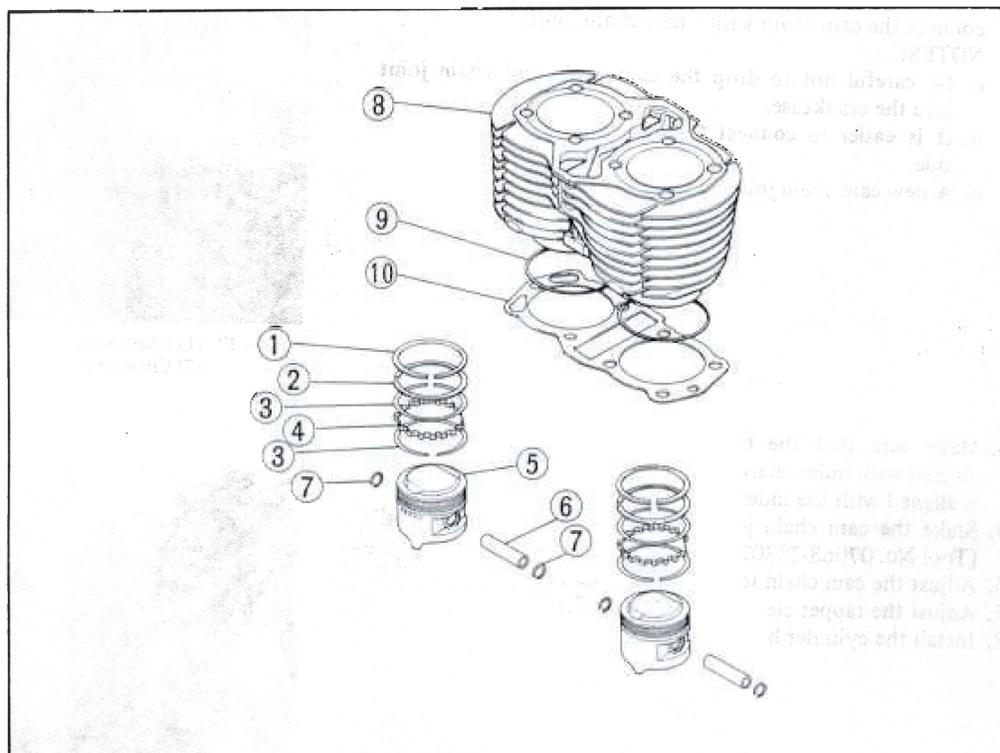


Cam chain guide roller

4. CYLINDERS AND PISTONS

Fig. 4-29

- (1) Piston ring (Top)
- (2) Piston ring (Second)
- (3) Piston ring (Rail)
- (4) Piston ring (Spacer)
- (5) Piston
- (6) Piston pin
- (7) Piston pin clip
- (8) Cylinder
- (9) O-ring (75.8 × 2mm)
- (10) Cylinder gasket



Desassembly

1. Remove the cylinder head. (See page 23.)
2. Remove the cylinder.

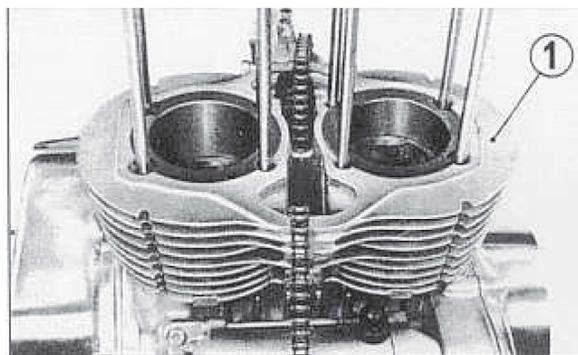


Fig. 4-30 (1) Cylinder

3. Pry off the piston pin clip from the end of the piston pin in the piston; withdraw the pin and remove the piston.

NOTE:

Place a rag under the piston to prevent the pin clip from falling in the crankcase.

4. Remove the piston rings from the piston.
Take care not to score the piston during service operation.

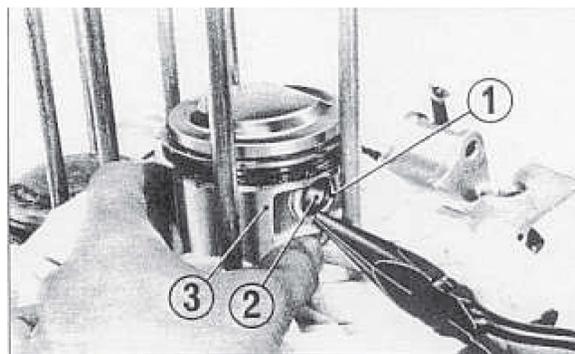


Fig. 4-31 (1) Piston pin clip
(2) Piston pin
(3) Piston

Inspection

1. Measure the inside diameter of each cylinder.
 Measure the bore at the top, middle and bottom with an accurate cylinder gauge placed at right angle (X) and parallel (Y) to the center line of the crankshaft.
Standard value: 70.0-70.01mm (2.7559-2.7564-in.)
Service limit: 70.11mm (2.76-in.)
 If the wear is so great that the service limits are exceeded, the cylinders should be rebored and oversize pistons and piston rings installed. The following four oversize pistons and piston rings are available as service parts:

Oversize pistons and rings (mm)	Size to which cylinders are to be rebored mm (in.)
0.25	70.25-70.26 (2.7657-2.7662)
0.50	70.5-70.51 (2.7756-2.7761)
0.75	70.75-70.76 (2.7854-2.7859)
1.00	71.0-71.01 (2.7953-2.7958)

2. Measure the outside diameter of the piston at its skirt.
Standard value: 69.95-69.97mm (2.754-2.755-in.)
Service limit: 69.87mm (2.751-in.)
3. Measure the inside diameter of the piston pin hole in the piston.
Standard value: 17.002-17.008mm (0.6693-0.6696-in.)
Service limit: 17.1mm (0.6732-in.)
4. Measure the outside diameter of the piston pin.
Standard value: 16.994-17.00mm (0.6690-0.6693-in.)
Service limit: 16.95mm (0.6673-in.)
5. Check the clearance between the piston ring and ring groove.

	Standard value	Service limit
Top:	0.040-0.070mm (0.0016-0.0028-in.)	0.15mm (0.006-in.)
Second:	0.020-0.045mm (0.0008-0.0018-in.)	0.15mm (0.006-in.)

	Standard value	Service limit
Top:	0.3-0.5mm (0.013-0.03-in.)	0.8mm (0.031-in.)
Second:	0.3-0.5mm (0.012-0.03-in.)	0.8mm (0.031-in.)
Oil:	0.2-0.4mm (0.008-0.016-in.)	0.8mm (0.031-in.)

Assembly

Piston rings

1. To install the oil ring, first place the spacer and then the rails in position. The spacer and rail gaps must be staggered **20-30mm (0.8-1.2-in.)**.
2. Install the second and top rings in this order in the piston with their markings facing upward.

NOTES:

- a. Do not mix the top and second rings.
- b. After installing all rings in the piston, hand-rotate them and check to be sure they move smoothly without any sign of binding.

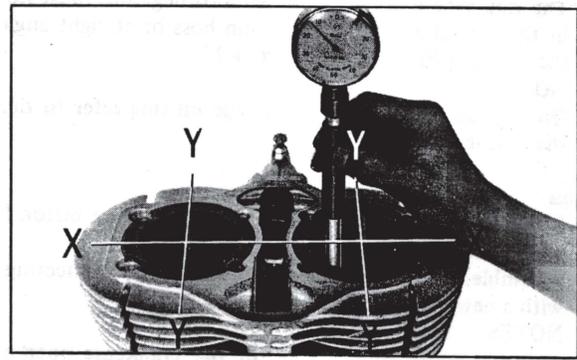


Fig. 4-32 Measuring cylinder bore

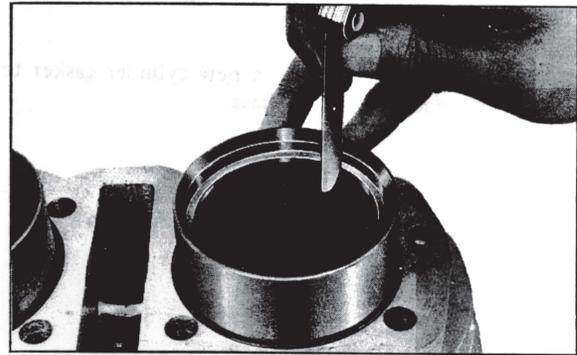


Fig. 4-33 Measuring piston ring end gap

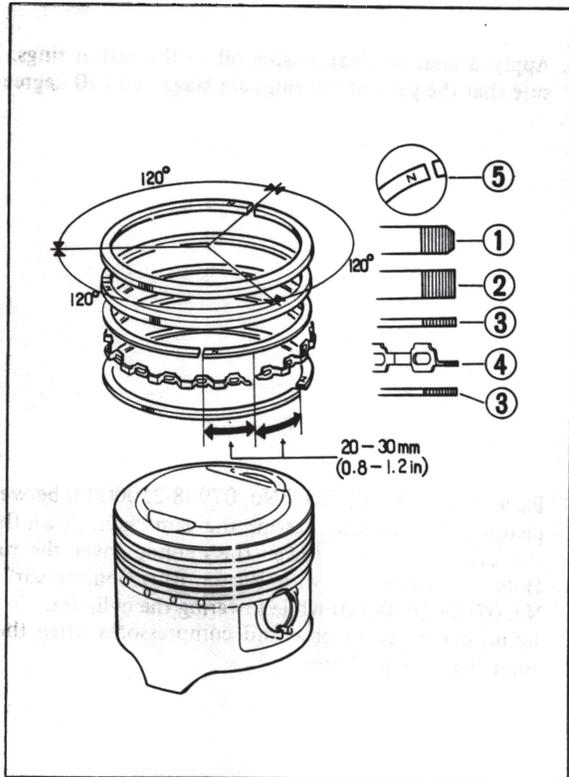


Fig. 4-34 (1) Top ring (4) Spacer
 (2) Second ring (5) Piston ring marking
 (3) Rail

- The ring gaps must be staggered 120 deg. and must not be in the direction of the piston pin boss or at right angle to the pin. See Fig. 4-34 and Fig. 4-37.

NOTE:

On the gap of the three-piece type oil ring refer to that of the spacer.

Piston

- Install the piston with the "IN" mark on the piston head toward the rear (intake side) of the engine.
- Assemble the piston and piston pin to the connecting rod with a new piston pin clip.

NOTES:

- Put a waste or the like in the crankcase opening to prevent the clip from falling in the crankcase.
- Install the piston pin clips, so that their end gaps are lined up with the piston pin hole grooves.

Cylinder

- Install two dowel pins and a new cylinder gasket to the cylinder surface of the crankcase.

- Apply a coat of clean engine oil to the piston rings. Make sure that the gaps of the rings are staggered 120 degrees.

- Place "Piston Base" (Tool No. 07958-2500000) between the piston and crankcase. Passing the cam chain down through the cylinder, slowly lower the cylinder over the pistons. Hold the piston rings with "Piston Ring Compressor" (Tool No. 07954-2830000) while lowering the cylinder. Remove the piston base and compressors when the rings enter the cylinder bores.

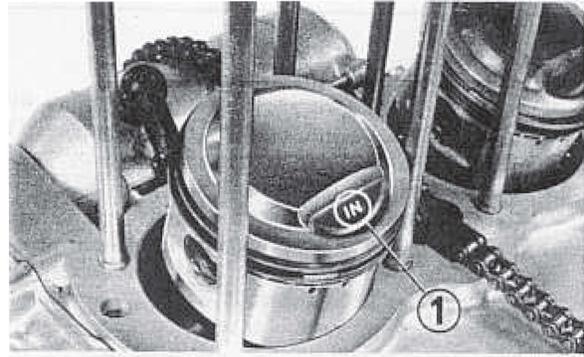


Fig. 4-35 (1) "IN" mark

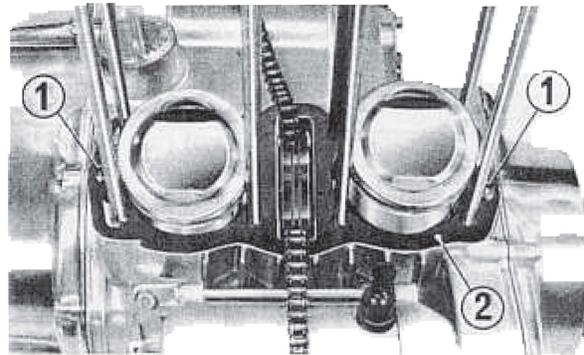


Fig. 4-36 (1) Dowel pin
(2) Gasket

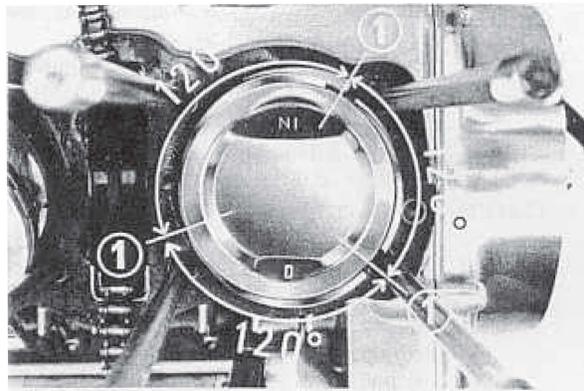


Fig. 4-37 (1) Piston ring gaps

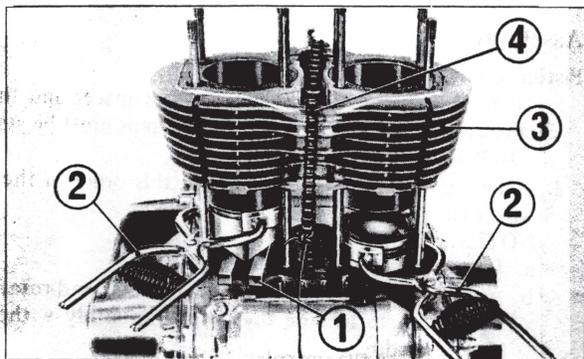
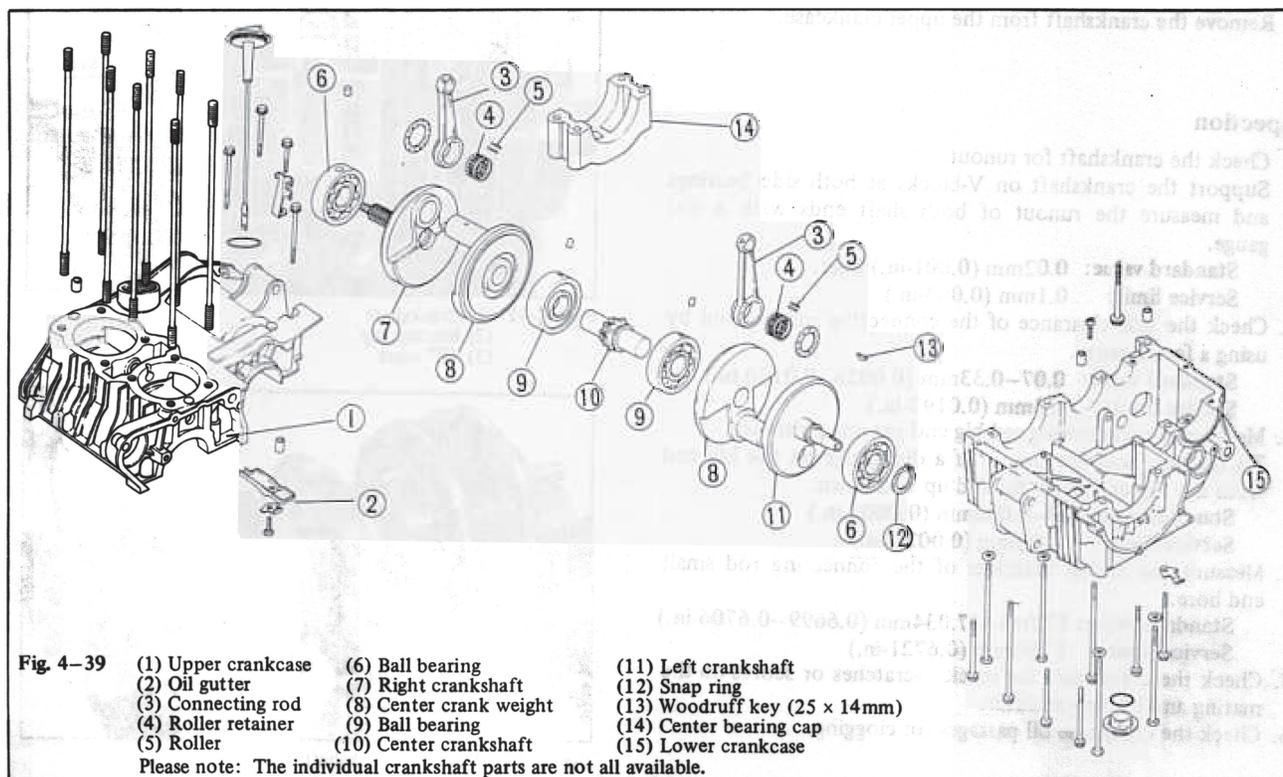


Fig. 4-38 (1) Piston base (2) Piston ring compressor (3) Cylinder (4) Cam chain

5. CRANKSHAFT AND CRANKCASE



Disassembly

1. Remove the cylinder head. (See page 23.)
2. Remove the cylinder and pistons. (See page 30.)
3. Remove the left crankcase cover and generator rotor. (See page 54.)
4. Remove the starting sprocket, starting motor sprocket and starting chain. (See page 60.)
5. Remove the right crankcase cover, oil filter, clutch and oil pump. (See page 36.)
6. Pry off the snap ring from the gearshift spindle.
7. Loosen off four 6mm bolts that secure the upper crankcase to the lower half.
8. With the upper crankcase facing down, loosen off six 6mm bolts and four 8mm bolts securing the crankcase.
9. Separate the lower crankcase from the upper crankcase while disengaging the hook of the gearshift arm from the gearshift drum and lightly tapping the upper case with a wooden hammer.

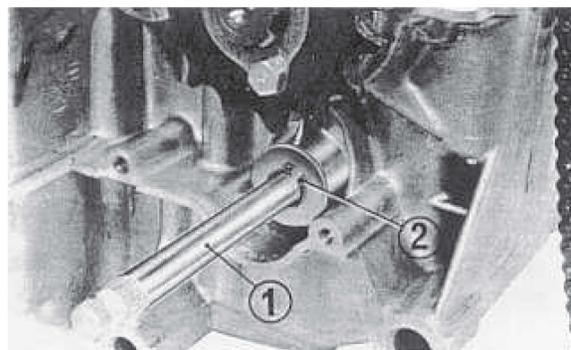


Fig. 4-40 (1) Gearshift spindle
(2) Snap ring

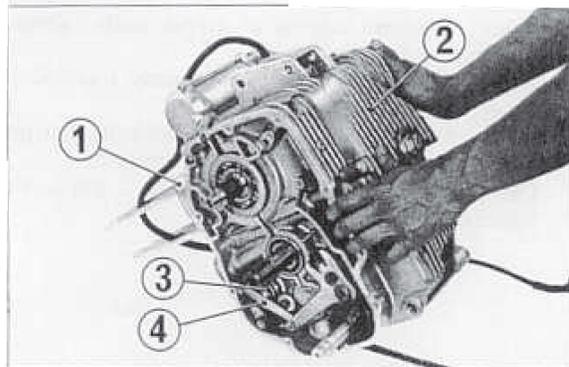


Fig. 4-41 (1) Upper crankcase (3) Gearshift drum
(2) Lower crankcase (4) Gearshift arm

10. Loosen off the 8mm bolts and remove the center bearing cap.
11. Remove the crankshaft from the upper crankcase.

Inspection

1. Check the crankshaft for runout.

Support the crankshaft on V-blocks at both side bearings and measure the runout of both shaft ends with a dial gauge.

Standard value: 0.02mm (0.001-in.) max.
Service limit: 0.1mm (0.004-in.)
2. Check the side clearance of the connecting rod big end by using a feeler gauge.

Standard value: 0.07–0.33mm (0.0028–0.0130-in.)
Service limit: 0.5mm (0.0197-in.)
3. Measure the connecting rod big end bearing clearance.

To do this, bear the needle of a dial gauge on the big end from the top and move the rod up and down.

Standard value: 0–0.008mm (0.0003-in.)
Service limit: 0.05mm (0.0020-in.)
4. Measure the inside diameter of the connecting rod small end bore.

Standard value: 17.016–17.034mm (0.6699–0.6706-in.)
Service limit: 17.07mm (0.6721-in.)
5. Check the crankcases for cracks, scratches or scores on the mating and bearing surfaces.
6. Check the crankcase oil passages for clogging.

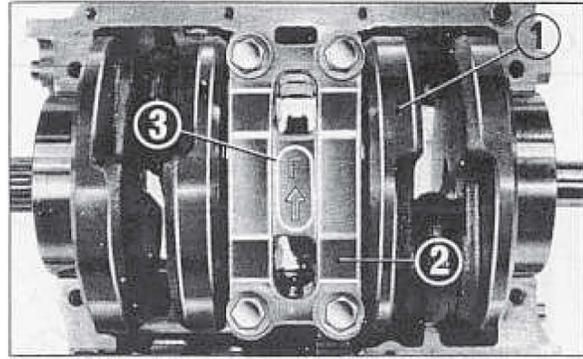


Fig. 4-42 (1) Crankshaft
(2) Bearing cap
(3) "F" mark

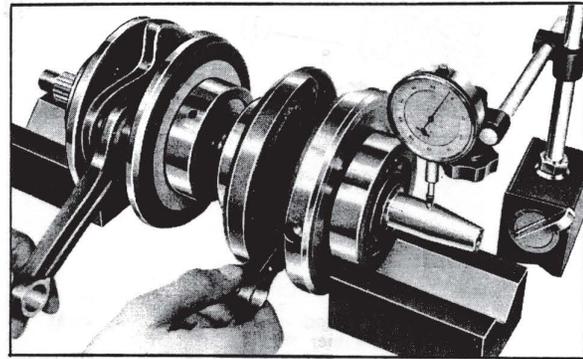


Fig. 4-43 Measuring crankshaft runout

Assembly

1. Install four knock pins to the crankcase and crankshaft.

Install the crankshaft to the crankcase so that the knock pins align with the pin holes.
2. Install the center bearing cap and uniformly tighten the four center bearing cap bolts in criss-cross pattern with a torque wrench.

Tightening torque: 250–350 kg-cm (18.1–25.3 lbs-ft)

NOTE:
The "F" mark on the center bearing holder should be pointed toward the front of the machine.

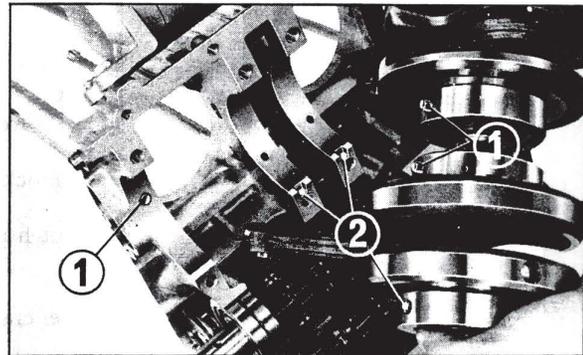


Fig. 4-44 (1) Knock pin
(2) Knock pin hole

3. Apply a uniform coating of proper sealing agent to the crankcase mating surfaces.
4. Make sure all dowel pins are properly installed in their respective positions.
5. Tighten four 8mm bolts and ten 6mm bolts, starting at the center toward outside in a criss-cross pattern.

Use care not to damage the starting motor cable while tightening.

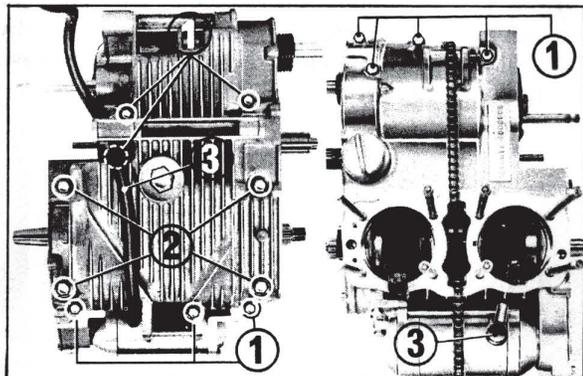


Fig. 4-45 (1) 6mm bolt
(2) 8mm bolt
(3) Starting motor cable

6. LUBRICATION SYSTEM

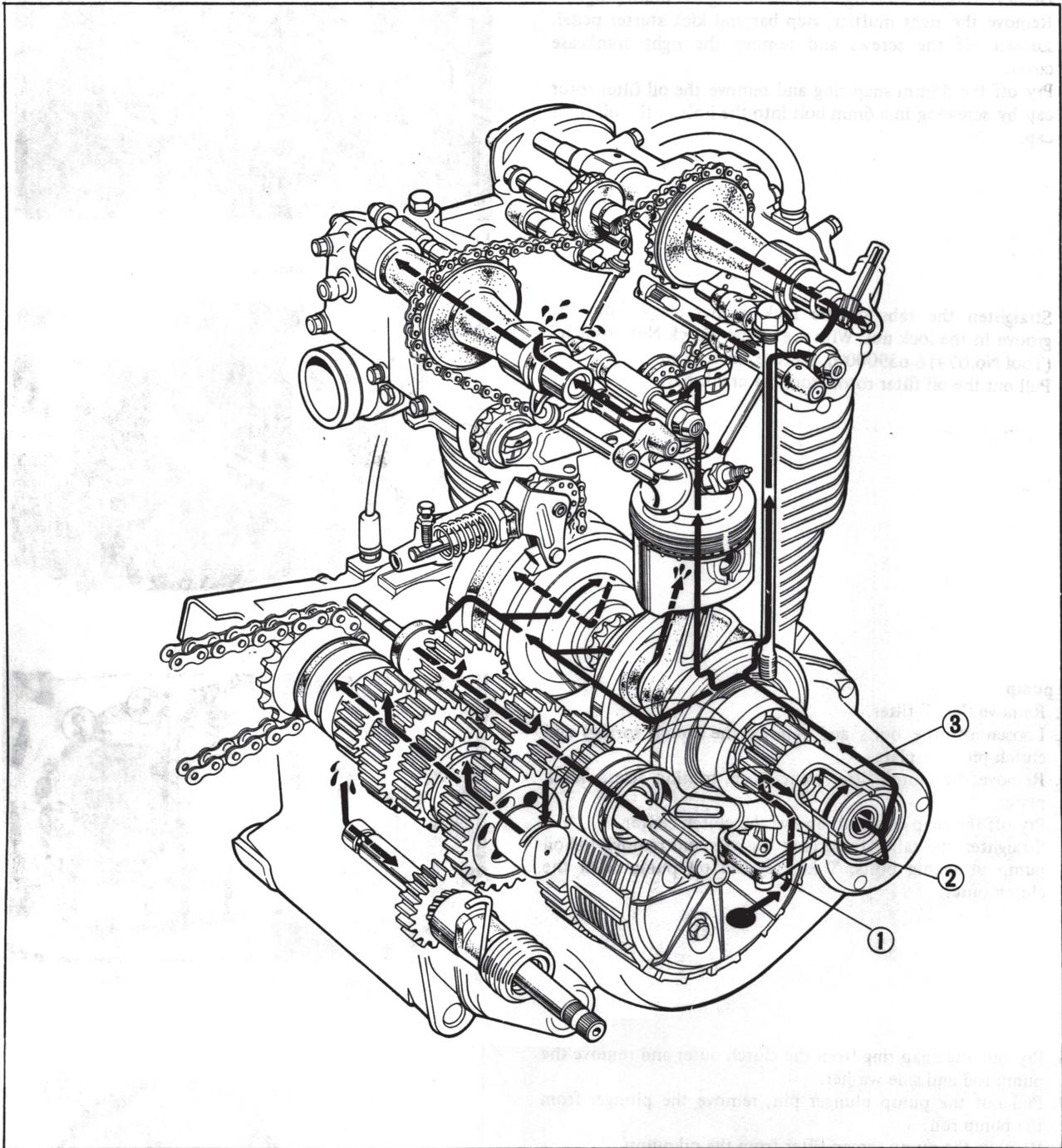


Fig.

Oil

Disassembly

Oil filter

1. Drain the engine thoroughly by removing the drain plug.
2. Remove the right muffler, step bar and kick starter pedal.
3. Loosen off the screws and remove the right crankcase cover.
4. Pry off the 45mm snap ring and remove the oil filter rotor cap by screwing in a 6mm bolt into the hole in the oil filter cap.

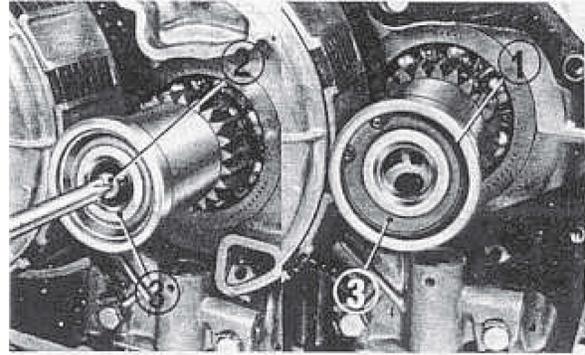


Fig. 4-47 (1) Snap ring
(2) 6mm bolt
(3) Oil filter rotor cap

5. Straighten the tabs of the lock washer away from the groove in the lock nut. With use of the "Lock Nut Wrench" (Tool No.07916-6390000), remove the lock nut.
6. Pull out the oil filter rotor from the crankshaft.

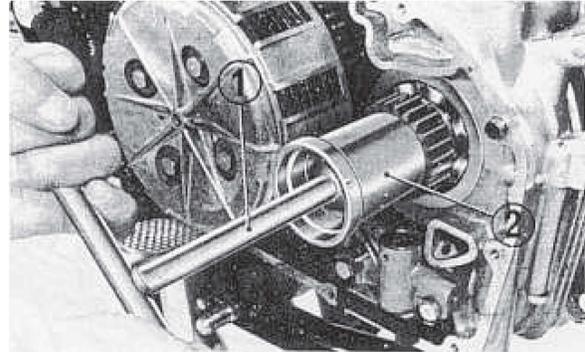


Fig. 4-48 (1) Lock nut wrench
(2) Oil filter rotor

Oil pump

1. Remove the oil filter.
2. Loosen off the bolts and remove the clutch springs and clutch pressure plate.
3. Remove the clutch lifter joint piece, friction discs, clutch plates.
4. Pry off the snap ring and remove the clutch center.
5. Straighten the tabs of the lock washers and remove the oil pump attaching bolts. Take out the oil pump with the clutch outer.

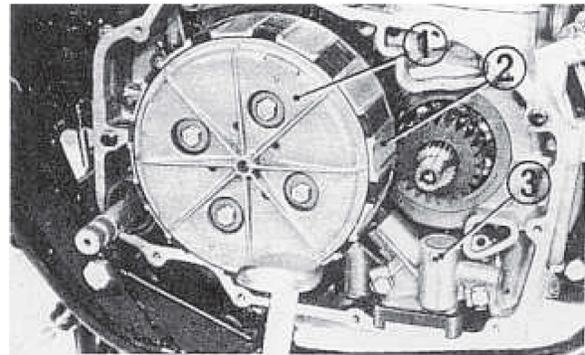


Fig. 4-49 (1) Clutch pressure plate (3) Oil pump
(2) Clutch outer

6. Pry out the snap ring from the clutch outer and remove the pump rod and side washer.
7. Pull out the pump plunger pin; remove the plunger from the pump rod.
8. Remove the pump screen filter from the oil pump.

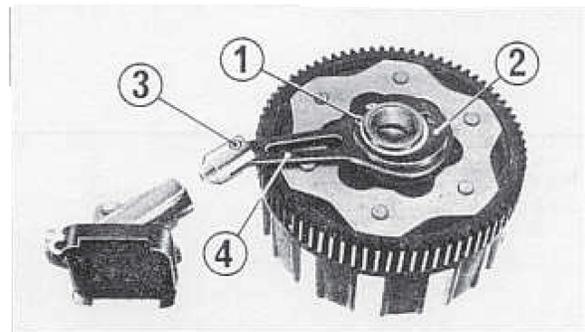


Fig. 4-50 (1) Snap ring (3) Plunger pin
(2) Side washer (4) Pump rod.

Inspection

1. Measure the pump rod-to-clutch outer clearance.
Standard value: 0.025–0.075mm (0.0010–0.0030-in.)
Service limit: 0.15mm (0.0059-in.)
2. Check the pump body-to-plunger clearance.
Standard value: 0.030–0.054mm (0.0012–0.0021-in.)
Service limit: 0.2mm (0.0079-in.)
3. Check the action of the steel ball.

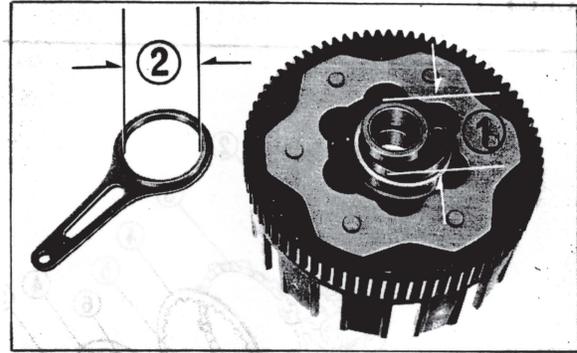


Fig. 4-51 (1) Outside diameter of clutch outer
(2) Inside diameter of pump rod

Assembly

1. Fill the oil pump plunger bore with clean engine oil before installation.
2. Be sure to install the knock pin and a new O-ring under the pump when installing the pump to the crankcase.
3. To assemble the clutch, refer to the relative descriptions under CLUTCH in Item 7.

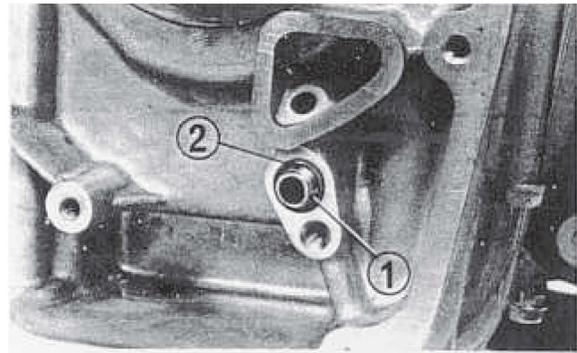


Fig. 4-52 (1) Knock pin
(2) O-ring

4. Install the oil filter rotor to the crankshaft with the lock washers and the 16mm lock nut using "Lock Nut Wrench" (Tool No. 07916-6390000), remove the lock nut.

Tightening torque: 450–550kg-cm (32.5–39.8 lbs-ft)

NOTES:

- a. Install the washer so that the marking "OUTSIDE" is facing outside.
- b. The lock washer should be aligned to the groove in the rotor.
- c. Install the lock nut with the larger chamfered side facing inside.

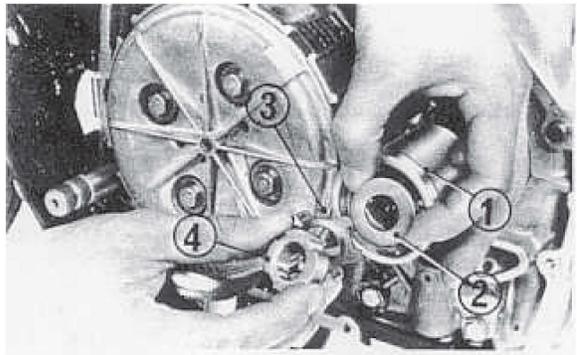


Fig. 4-53 (1) Oil filter rotor (3) Lock washer
(2) Lock washer (4) Lock nut

5. Install the rotor cap so that its ribs are lined up with the groove in the rotor. Install the snap ring in the ring groove in the rotor to lock the cap.
6. After assembling, start the engine and allow it to run at the correct idle speed. Loosen the two cylinder head hold-down cap nuts in the right side, Fig. 4-54, and see if oil is seeping out from the gasketed surface at the copper washers. If so, it is a good indication that the pump is operating properly.

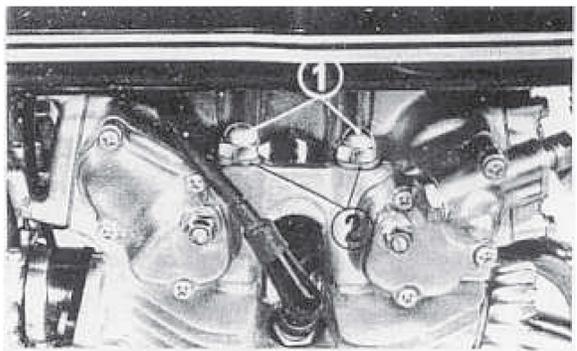


Fig. 4-54 (1) Cap nut
(2) Copper washer

7. CLUTCH

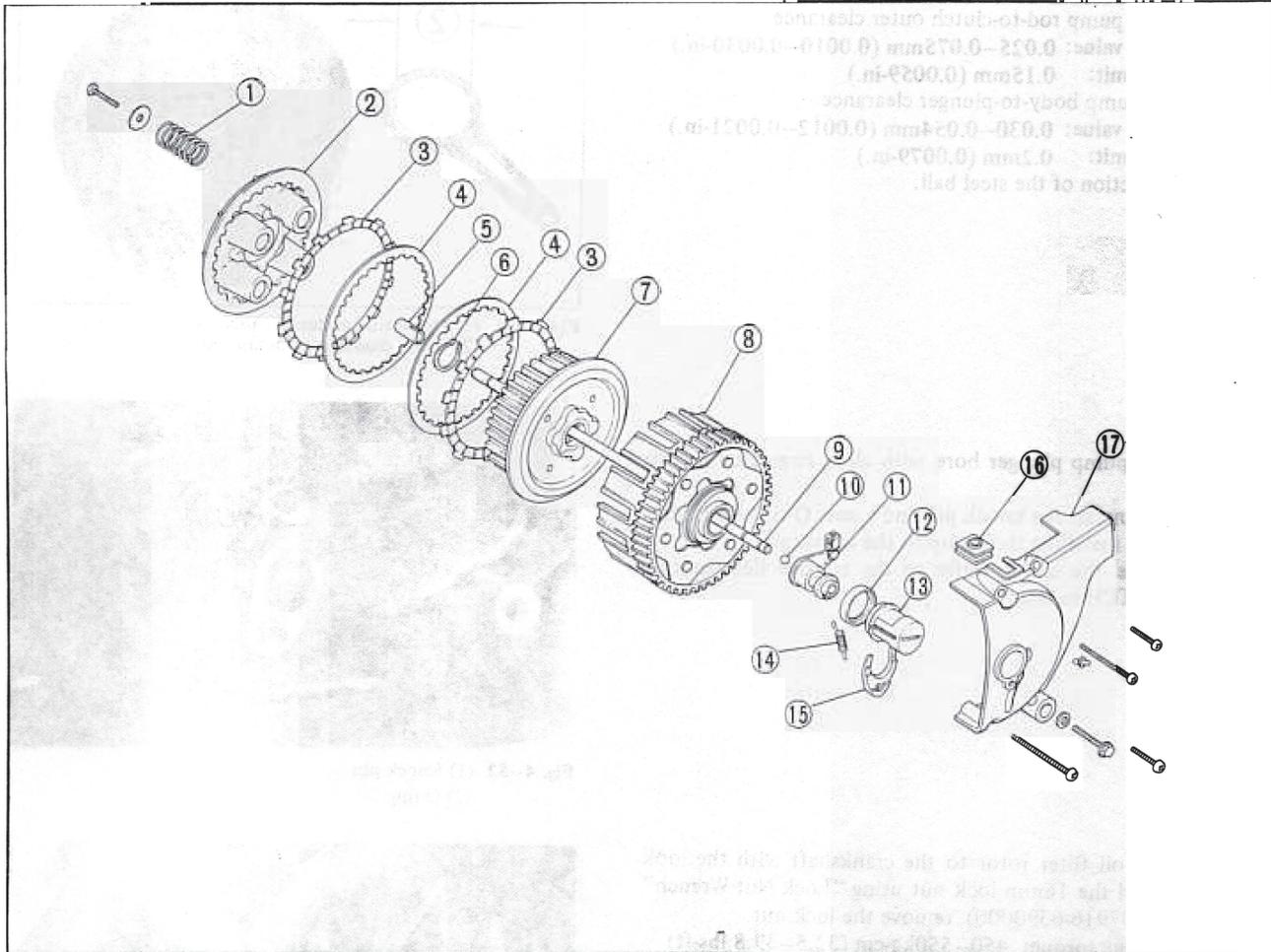


Fig. 4-55 (1) Clutch spring (2) Clutch pressure plate (3) Friction disc (4) Clutch plate (5) Lifter joint piece (6) Snap ring (25mm) (7) Clutch center (8) Clutch outer (9) Clutch lifter rod (10) Steel ball (5/16") (11) Clutch lifter (12) Oil seal (22 x 26 x 29 x 8mm) (13) Clutch adjuster (14) Clutch lever spring (15) Fixing piece (16) Clutch cable joint (17) Crankcase rear cover

Disassembly

1. Follow the steps 1 thru 6 used in removing the oil pump since the clutch can be removed together with the oil pump.
2. Remove the gearshift pedal and left crankcase rear cover by loosening off the screws.
3. Disconnect the clutch cable from the clutch lifter. Remove the clutch locking bolt from the left crankcase cover.
4. Remove the fixing piece, clutch adjuster, spring, clutch lifter and steel ball from the left crankcase cover.

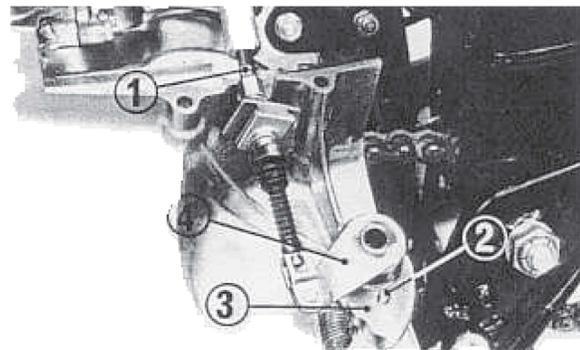


Fig. 4-56 (1) Clutch cable (2) Locking bolt (3) Fixing piece (4) Clutch lifter

Inspection

1. Measure the thickness of the friction disc.
Standard value: 3.42–3.58mm (0.135–0.141-in.)
Service limit: 3.1mm (0.122-in.)
2. Check the clutch plate for face runout.
Standard value: 0.15mm (0.006-in.) max.
Service limit: 0.35mm (0.014-in.)
3. Measure the free length of the clutch spring.
Standard value: 40.1mm (1.575-in.)
Service limit: 3.94mm (1.55-in.)

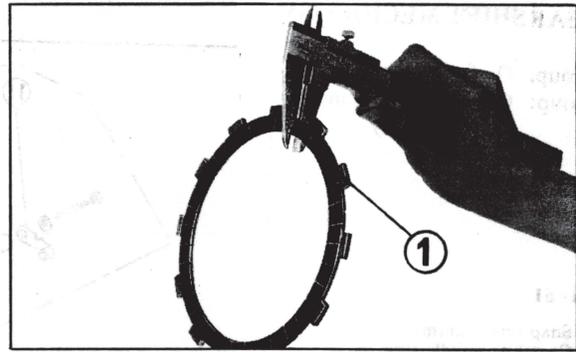
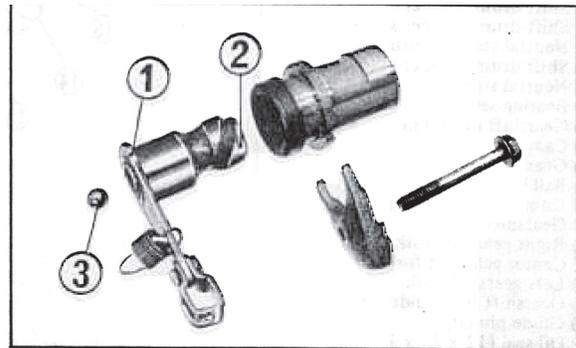


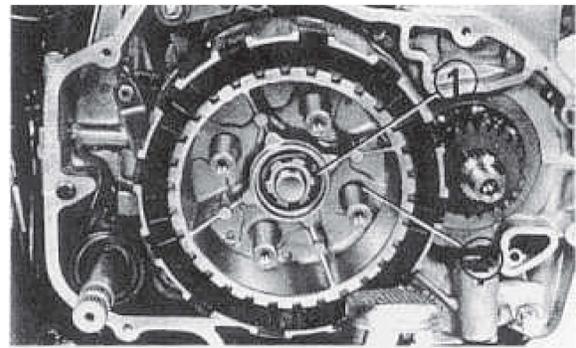
Fig. 4-57 (1) Clutch friction disc

Assembly

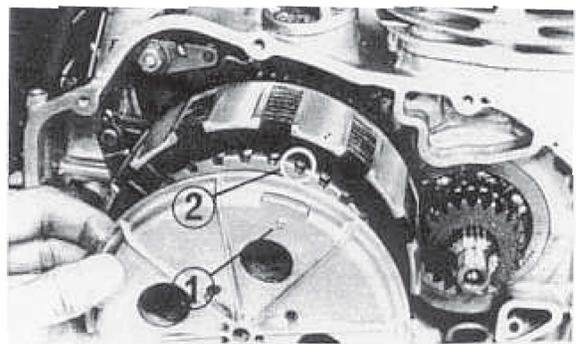
1. Fill the clutch lifter steel ball hole and its screw end with grease.

Fig. 4-58 (1) Clutch lifter
(2) Screw end
(3) Steel ball

2. After installing the snap ring, check the operation of the clutch center. It should rotate freely without binding.

Fig. 4-59 (1) Snap ring
(2) Clutch center

3. Be sure to install the clutch lifter rod and the clutch lifter joint piece in their proper locations.
4. Install the clutch pressure plate so that its arrow mark is aligned to one of the cut-out of the clutch center splines.
5. After assembling, adjust the clutch properly.

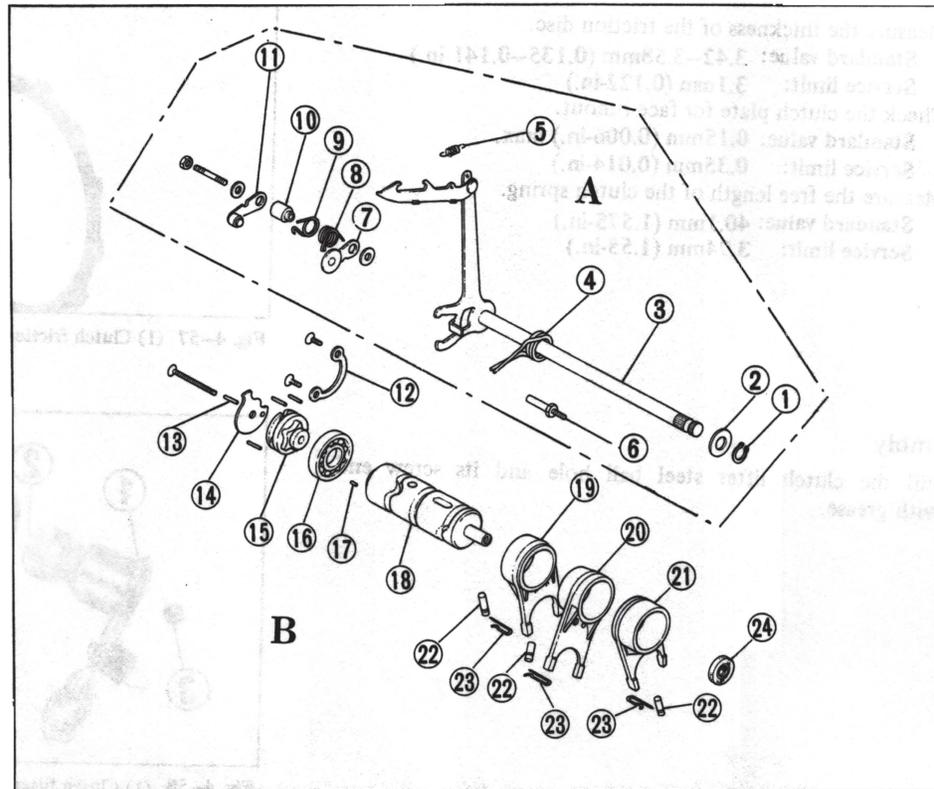
Fig. 4-60 (1) Arrow
(2) Cut-out of the spline

8. GEARSHIFT MECHANISM

A group: On-frame servicing
 B group: Off engine servicing
 (See page 42.)

Fig. 4-61

- (1) Snap ring (12mm)
- (2) Gearshift spindle stop
- (3) Gearshift spindle
- (4) Gearshift return spring
- (5) Gearshift arm spring
- (6) Return spring pin
- (7) Shift drum stopper
- (8) Shift drum stopper spring
- (9) Neutral stopper spring
- (10) Shift drum stopper collar
- (11) Neutral stopper
- (12) Bearing set plate
- (13) Gearshift drum pin
- (14) Cam plate
- (15) Gearshift drum center
- (16) Ball bearing (16004)
- (17) Knock pin (4 × 8mm)
- (18) Gearshift drum
- (19) Right gearshift fork
- (20) Center gearshift fork
- (21) Left gearshift fork
- (22) Gearshift fork guide pin
- (23) Guide pin clip
- (24) Oil seal (12 × 25 × 4.5mm)



Disassembly

A group

1. Drain the engine thoroughly.
2. Remove the right muffler, kick starter pedal and right step bar.
3. Remove the right crankcase cover, oil filter, clutch and oil pump. (See page 36.)
4. Remove the gearshift pedal and left crankcase rear cover.
5. Pry off the snap ring securing the gearshift spindle in place.

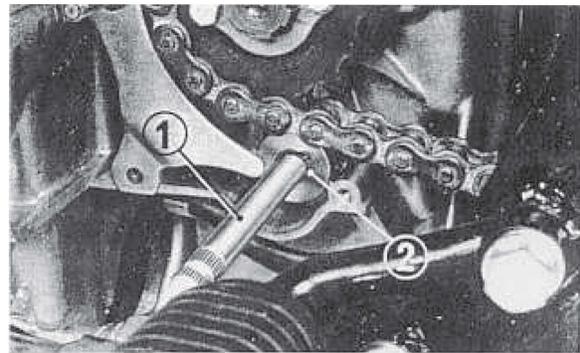


Fig. 4-62 (1) Gear shift spindle
 (2) Snap ring

6. Withdraw the gearshift spindle while disengaging the gearshift arm hook from the gearshift drum.

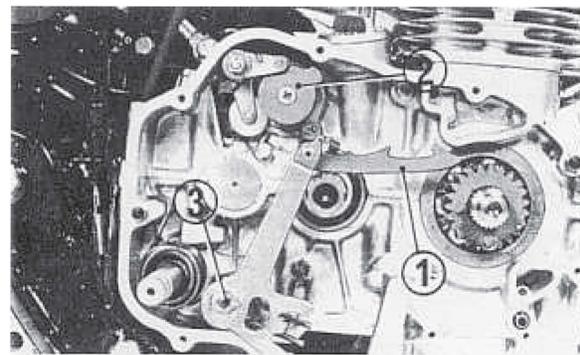


Fig. 4-63 (1) Gearshift arm
 (2) Gearshift drum
 (3) Gearshift spindle

- Loosen off the nut and remove the washers, neutral stopper, stopper collar, neutral stopper spring, shift drum stopper spring and gearshift drum stopper.

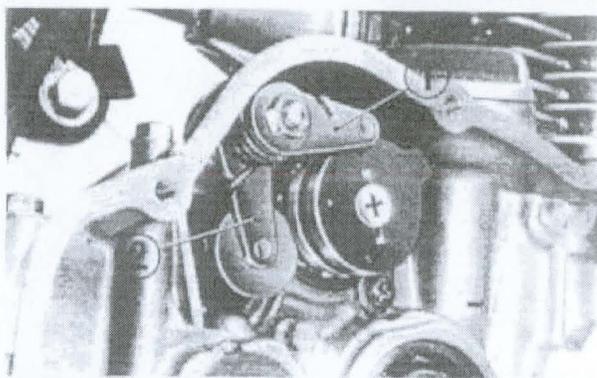


Fig. 4-64 (1) Neutral stopper
(2) Shift drum stopper

Assembly

- Install the gearshift spindle so that the ends of the return spring hold the return spring pin on the crankcase.

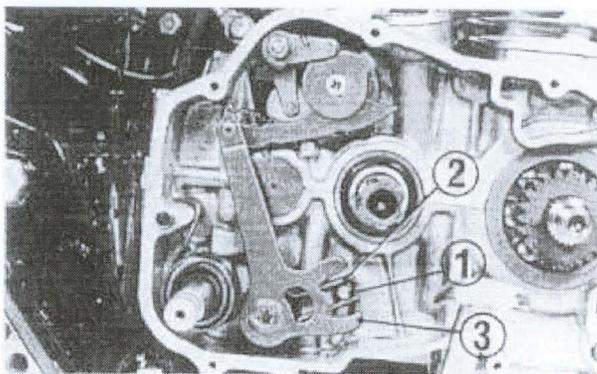


Fig. 4-65 (1) Return spring pin
(2) Return spring
(3) Gearshift spindle

- Check the stop arms to see if they are in their proper positions; also check for operation.
- Operate the gearshift pedal to see if each related part is operating properly.

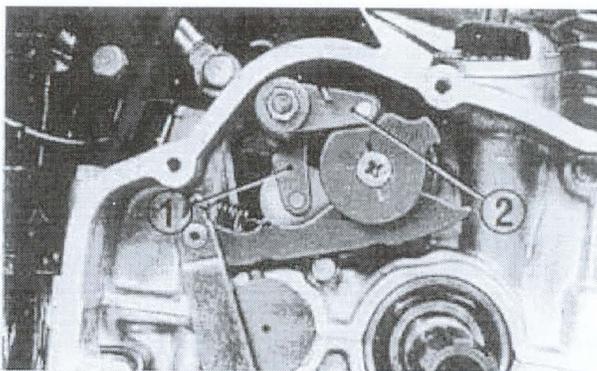


Fig. 4-66 (1) Shift drum stopper
(2) Neutral stopper

9. TRANSMISSION

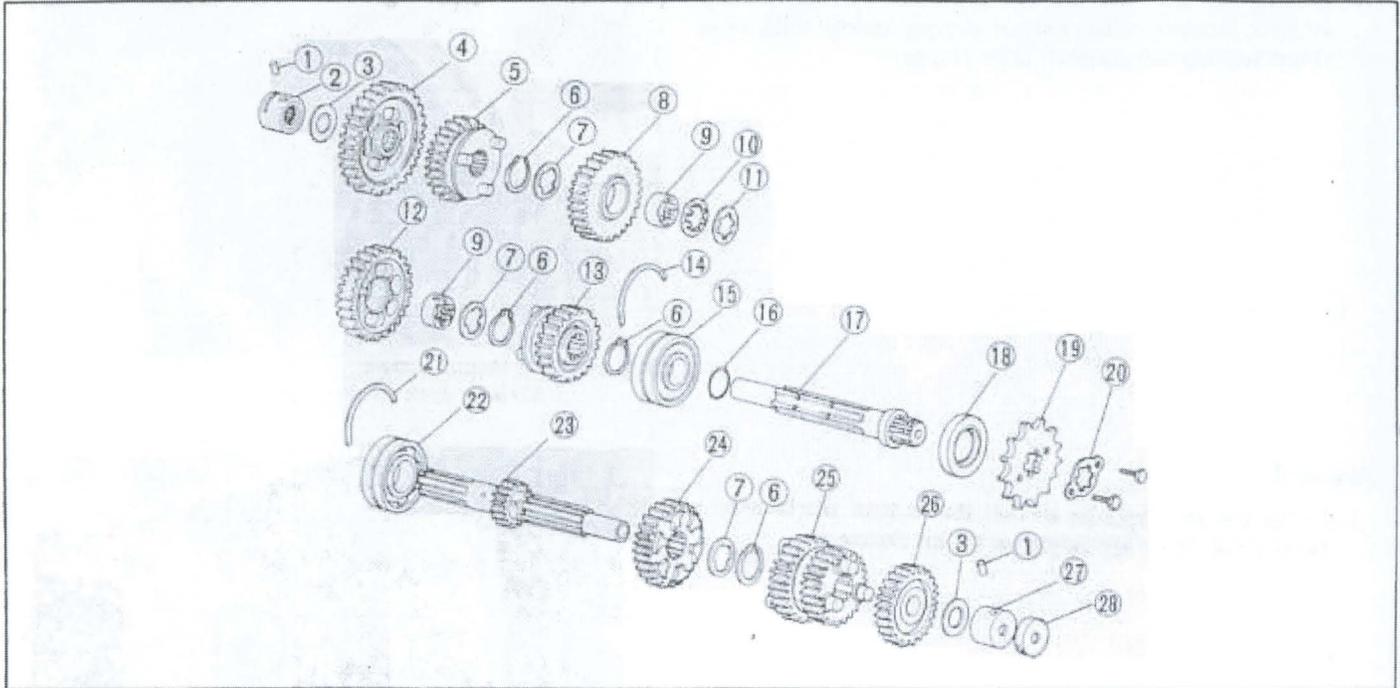


Fig. 4-67

- | | | |
|------------------------------------|-------------------------------------|--|
| (1) Knock pin | (11) Thrust washer B (25mm) | (21) Bearing retaining ring (52mm) |
| (2) Countershaft bearing | (12) Countershaft second gear (35T) | (22) Ball bearing (5205HS) |
| (3) Thrust washer (20mm) | (13) Countershaft fifth gear (27T) | (23) Mainshaft (19T) |
| (4) Countershaft first gear (41T) | (14) Bearing retaining ring (57mm) | (24) Mainshaft fourth gear (29T) |
| (5) Countershaft fourth gear (29T) | (15) Ball bearing (5205) | (25) Mainshaft second, third gear (26T, 23T) |
| (6) Snap ring (25mm) | (16) O-ring (24.5mm) | (26) Mainshaft fifth gear (32T) |
| (7) Thrust washer A (25mm) | (17) Countershaft | (27) Mainshaft bearing |
| (8) Countershaft third gear (32T) | (18) Oil seal | (28) Oil seal (8 × 34 × 8mm) |
| (9) Gear bushing | (19) Drive sprocket (15T) | |
| (10) Lock washer (25mm) | (20) Drive sprocket fixing plate | |

Disassembly

1. Drain the engine thoroughly.
2. Remove the oil filter, clutch and oil pump. Remove the left crankcase cover.
3. Loosen off the 6mm bolts securing the upper crankcase to the lower half.
4. Place the engine with the upper crankcase side down and loosen off the crankcase securing bolts. Separate the lower crankcase from the upper crankcase.

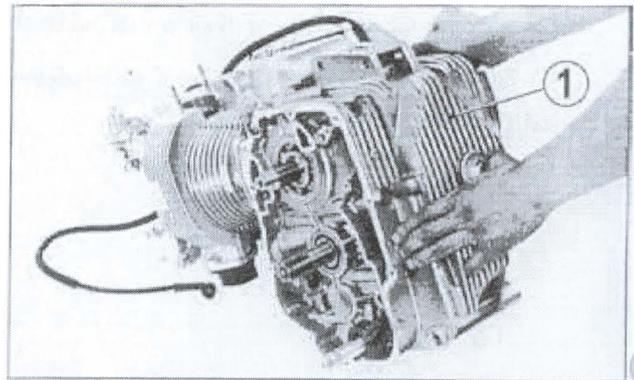
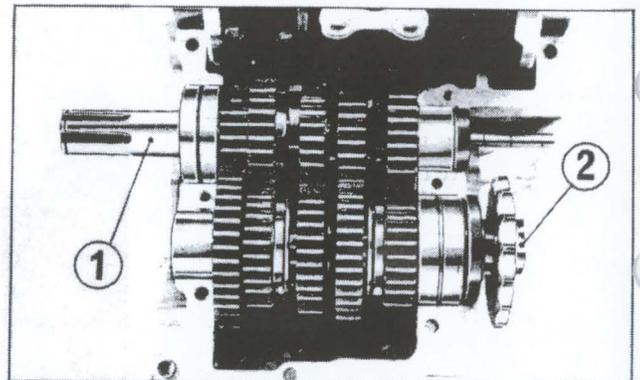


Fig. 4-68 (1) Lower crankcase

5. Remove the transmission mainshaft and countershaft
6. Remove the neutral stopper and shift drum stopper.

Fig. 4-69 (1) Mainshaft
(2) Countershaft

- Loosen off the screws and remove the bearing set plate from the crankcases.

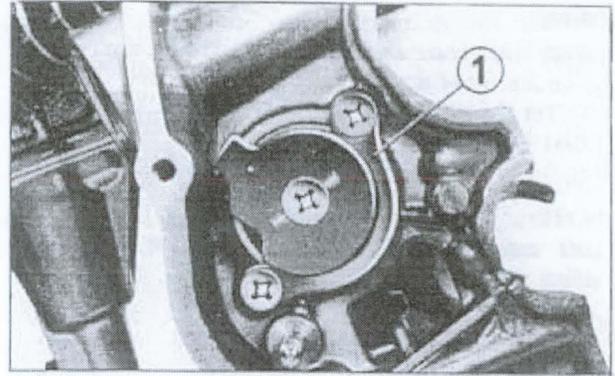


Fig. 4-70 (1) Bearing set plate

- Remove the guide clips and pull off the gearshift fork guide pins. Withdraw the gearshift drum to the right crankcase cover side.

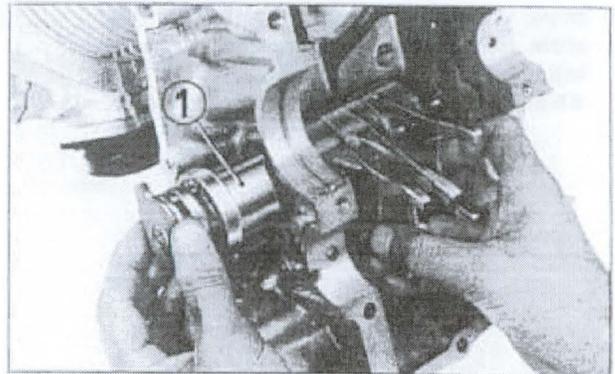


Fig. 4-71 (1) Gearshift drum

Inspection

- Measure the gears for backlash.
 Service limit: 0.2mm (0.0079-in.)
- Check the gear for wear or damage. Replace any gear if its dogs are excessively worn or damaged.
- Check the gears for smooth sliding on the shaft spindles.
- Measure the outside diameter of the gearshift drum.
 Standard value: 34.950–34.975mm (1.3760–1.3770-in.)
 Service limit: 34.9mm (1.3740-in.)
- Measure the inside diameter of the gearshift fork.
 Standard value: 34.0–34.025mm (1.3385–1.339-in.)
 Service limit: 34.1mm (1.3425-in.)
- Measure the width of the gearshift drum groove.
 Standard value: 6.05–6.15mm (0.238–0.242-in.)
 Service limit: 6.5mm (0.256-in.)
- Measure the thickness of the gearshift fork fingers.

	Standard value	Service limit
Left & Right	4.94–5.0mm (0.1941–0.1968-in.)	4.6mm (0.181-in.)
Center	5.93–6.0mm (0.2334–0.236-in.)	5.6mm (0.2205-in.)

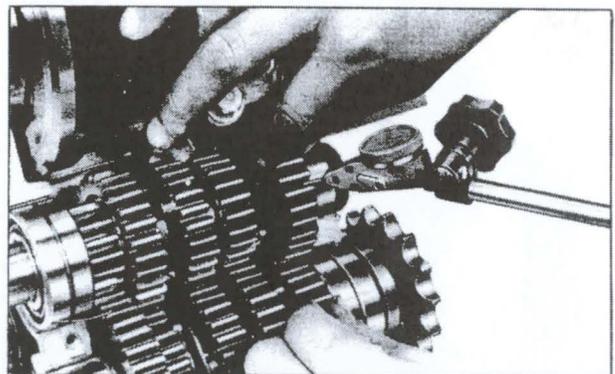


Fig. 4-72 Measuring gear backlash

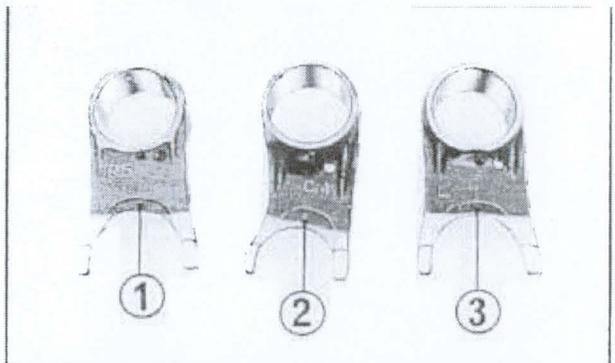


Fig. 4-73 (1) Right gearshift fork
 (2) Center gearshift fork
 (3) Left gearshift fork

Assembly

1. Install the gearshift forks properly in their respective positions. They are provided with the marks "R", "C" and "L" for identification.
2. Insert the shift fork guide pin clips properly as shown in Fig. 4-75.

NOTE:

Left and right, as used above, are as seen from the riding position.

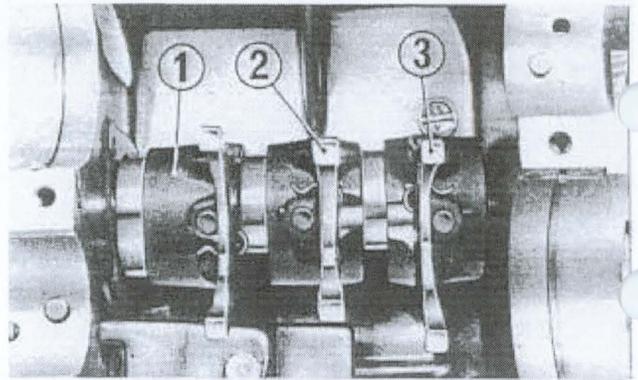


Fig. 4-74 (1) Right gearshift fork
(2) Center gearshift fork
(3) Left gearshift fork

3. Install the ball bearing retaining rings and knock pins to the upper crankcase. Install the mainshaft and countershaft with the bearing grooves and pin holes fitted to the retaining rings and knock pins.

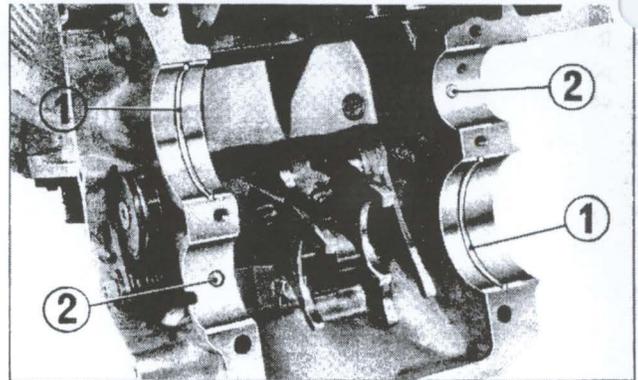


Fig. 4-75 (1) Ball bearing retaining ring
(2) Knock pin

4. With transmission in neutral position, rotate the each shaft by hand to see if it rotates freely without binding.

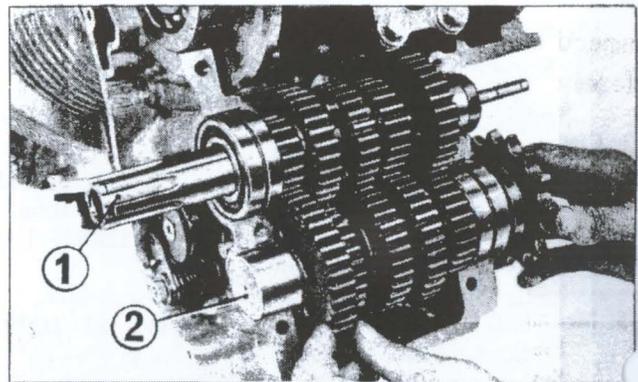


Fig. 4-76 (1) Mainshaft
(2) Countershaft

10. KICK STARTER

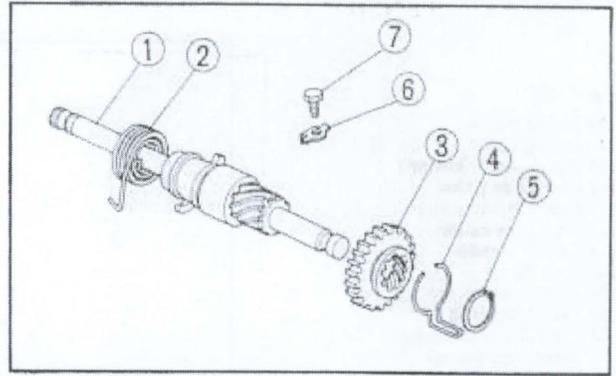


Fig. 4-77 (1) Kick starter spindle (5) Snap ring (25mm)
 (2) Kick starter spring (6) Lock washer (8mm)
 (3) Kick starter pinion (7) Bolt (8mm)
 (4) Friction spring

Disassembly

1. Drain the engine thoroughly.
2. Remove the oil filter, clutch, oil pump and left crankcase cover.
3. Loosen off the 6mm bolt securing the upper crankcase to the lower crankcase.
4. With the upper crankcase side down, loosen off the bolts and separate the lower crankcase from the upper half.
5. Straighten the lock washer and remove the 8mm bolt; remove the kick starter spindle from the lower crankcase, after removing the circlip from the shaft.

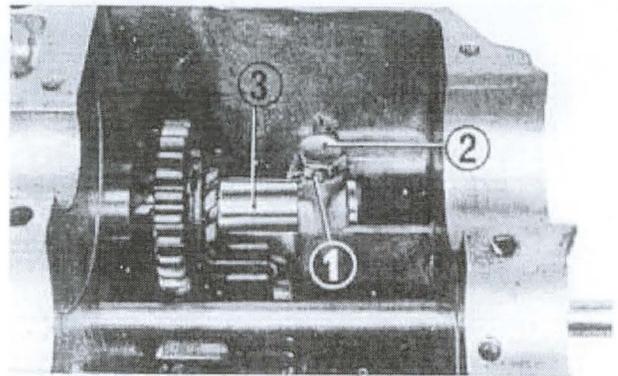


Fig. 4-78 (1) Lock washer
 (2) 8mm bolt
 (3) Kick starter spindle

Inspection

1. Check the kick starter pinion for smooth operation.
2. Check the kick starter spring for weak tension.

Assembly

1. Install the friction spring in the groove in the upper crankcase.

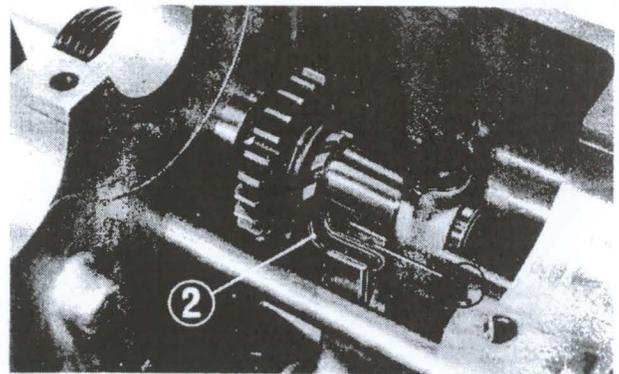


Fig. 4-79 (1) Groove
 (2) Friction spring

2. Engage the starter spring to the spindle hook and attach the other end to the crankcase.

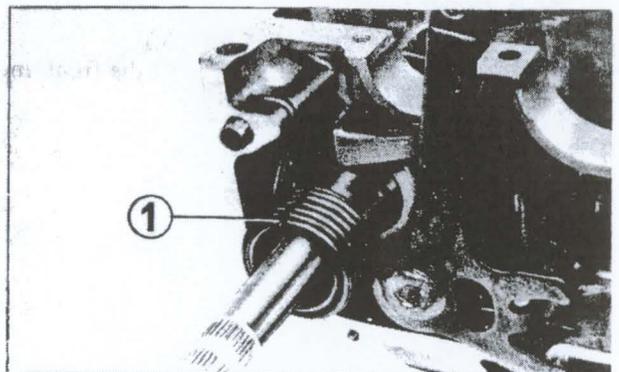
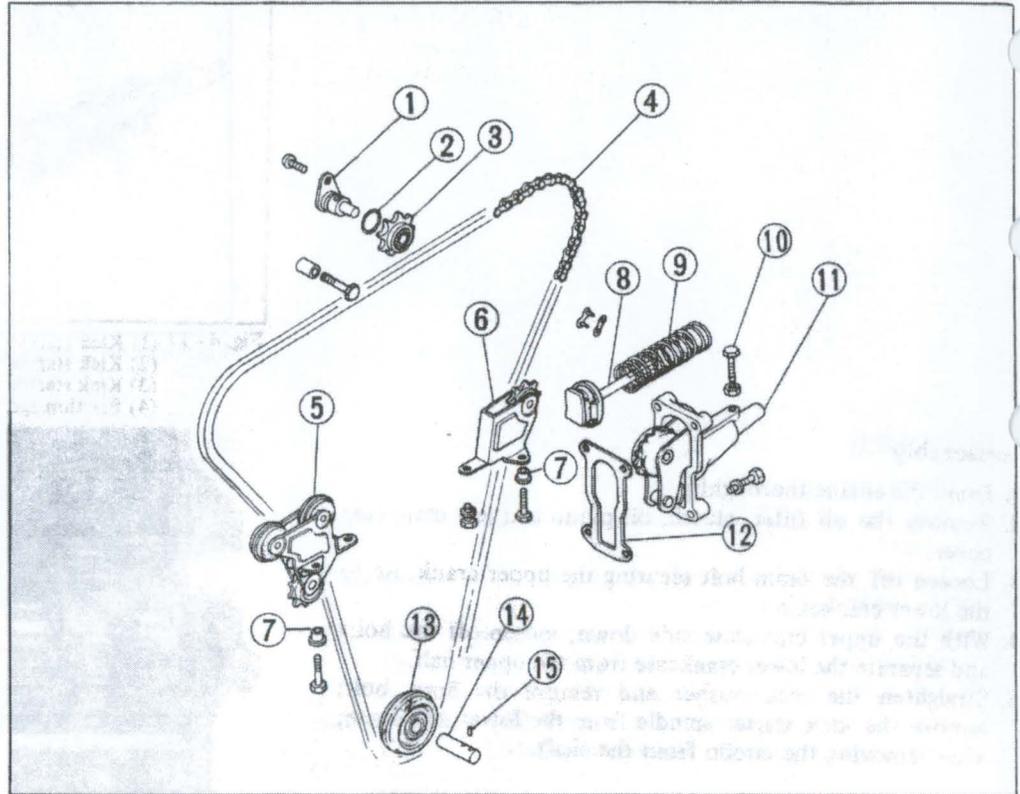


Fig. 4-80 (1) Kick starter spring

11. CAM CHAIN TENSIONER

Fig. 4-81

- (1) Roller pin A
- (2) O-ring (16.4 × 2.4mm)
- (3) Upper guide roller
- (4) Cam chain
- (5) Front guide roller
- (6) Rear guide roller
- (7) Knock pin
- (8) Push bar
- (9) Tensioner spring
- (10) Tensioner bolt
- (11) Cam chain tensioner
- (12) Tensioner gasket
- (13) Lower guide roller
- (14) Roller pin B
- (15) Knock pin (4 × 8mm)



Disassembly

Cam chain tensioner

1. Loosen the lock nut and tensioner bolt.
2. Loosen the 6mm bolts that attach the tensioner to the cylinder head; take out the cam chain tensioner.

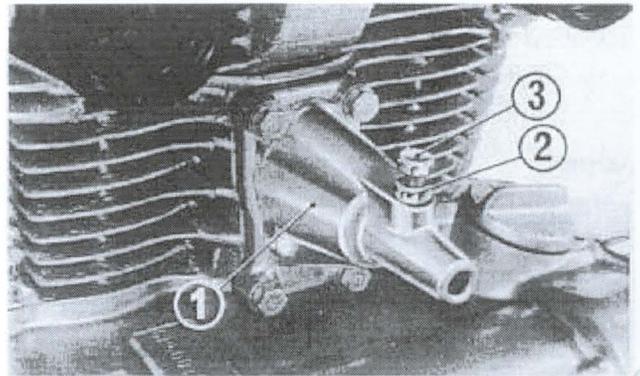


Fig. 4-82 (1) Cam chain tensioner
(2) Lock nut
(3) Tensioner bolt

Front and rear guide roller

1. Remove the cylinder head. (See page 23.)
2. Loosen off five 6mm bolts and remove the front and rear guide rollers from the cylinder head.

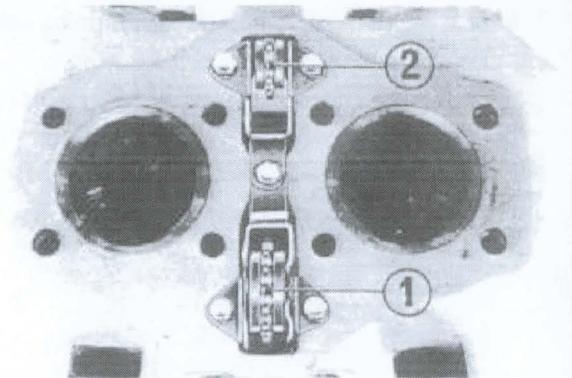


Fig. 4-83 (1) Front guide roller
(2) Rear guide roller

Upper guide roller

1. Remove the cylinder head and remove the intake or exhaust camshaft from the cylinder head. (See page 23.)
2. Loosen off the 6mm screw securing the roller pin A to the cylinder head; withdraw the roller pin A and take out the upper guide roller.

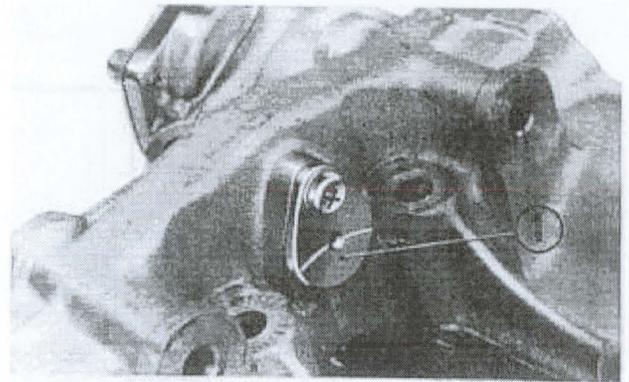
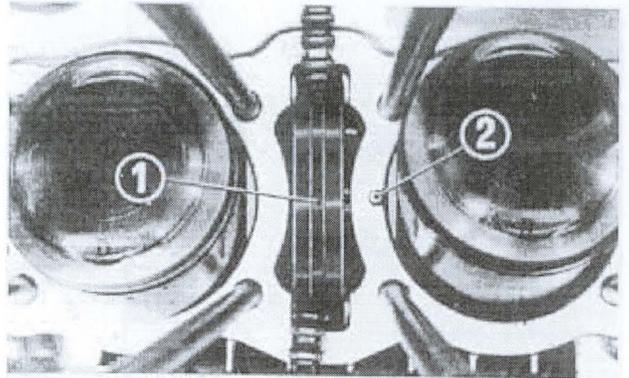


Fig. 4-84 (1) Roller pin A

Lower guide roller

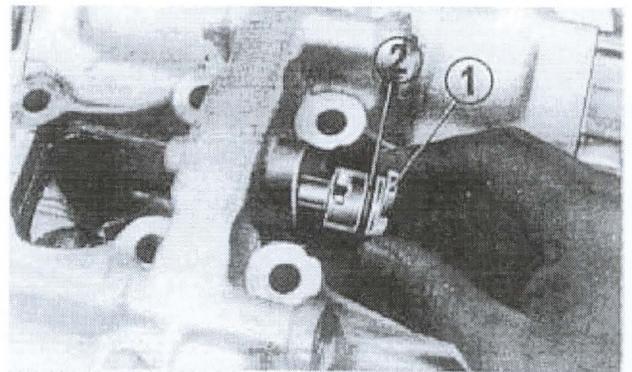
1. Remove the cylinder head. (See page 23.)
2. Remove the cylinder. (See page 31.)
3. Withdraw the roller pin B and remove the lower guide roller from the upper crankcase.

Fig. 4-85 (1) Lower guide roller
(2) Knock pin**Inspection**

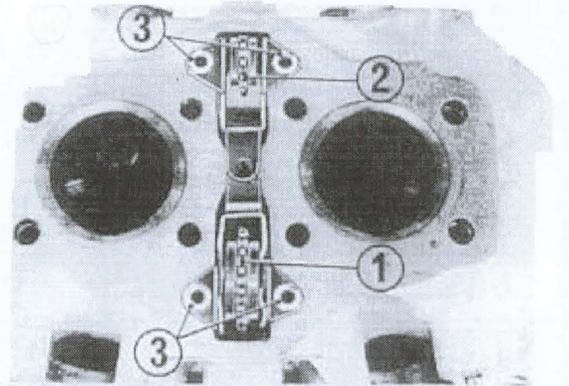
1. Check the cam chain tensioner, roller and guide roller for wear or any other damage.

Assembly

1. Install the lower guide roller so that the knock pin on the pin B is aligned with the groove in the crankcase.
2. When installing the upper guide roller, make sure the O-ring is installed in the groove of the roller pin.

Fig. 4-86 (1) Roller pin A
(2) O-ring

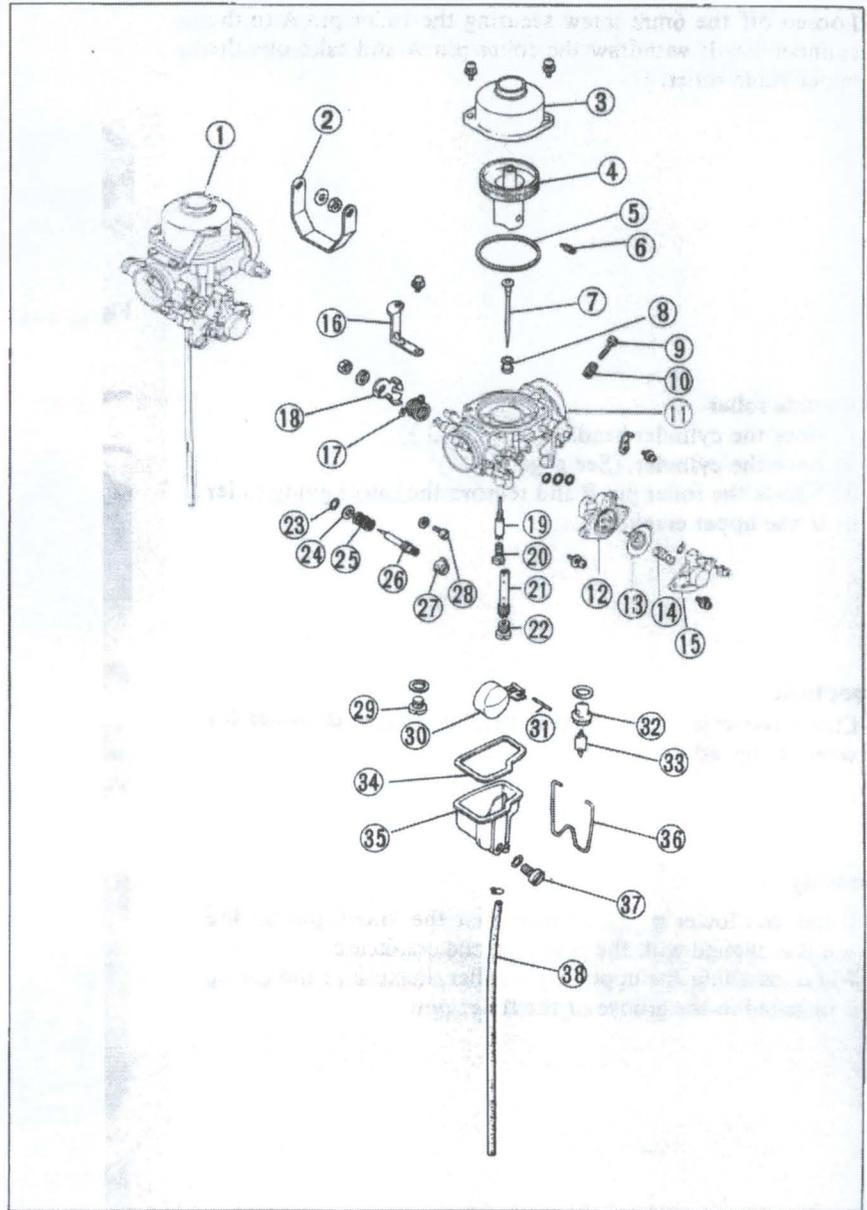
3. The front and rear guide roller should be installed to the cylinder head properly with four knock pins and bolts.
4. Before installing the cam chain tensioner, push the push bar all the way in to the tensioner and then lock it with the tensioner bolt and lock nut.
5. After assembling, adjust the chain tension properly by loosening the tensioner bolt. Tighten the tensioner bolt and lock nut.

Fig. 4-87 (1) Front guide roller
(2) Rear guide roller
(3) Knock pin

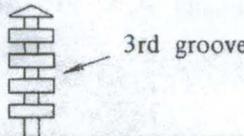
12. CARBURETOR

Fig. 4-88

- (1) Carburetor assembly
- (2) Connecting joint
- (3) Vacuum cylinder
- (4) Vacuum piston
- (5) Vacuum piston stop
- (6) Needle setting screw
- (7) Jet needle
- (8) Jet needle holder
- (9) Throttle stop screw
- (10) Throttle stop spring
- (11) Carburetor body
- (12) Air-cut valve body
- (13) Diaphragm
- (14) Diaphragm spring
- (15) Air-cut valve cover
- (16) Stay plate
- (17) Torsion spring
- (18) Throttle lever
- (19) Slow jet (#80)
- (20) Pilot jet
- (21) Needle jet holder
- (22) Main jet (#145)
- (23) O-ring (2.8mm)
- (24) Washer (3.6 x 0.2mm)
- (25) Pilot screw spring
- (26) Pilot screw
- (27) Idle limiter
- (28) Vacuum intake hole plug
- (29) Plug (8mm)
- (30) Float
- (31) Float arm pin
- (32) Float valve seat
- (33) Float valve
- (34) Float chamber gasket
- (35) Float chamber
- (36) Float chamber clip
- (37) Drain plug
- (38) Overflow tube



Carburetor setting table

Item	
Setting number	751A
Main jet	#145
Slow jet	#80
Jet needle setting	
Pilot screw opening	$1\frac{1}{2} \pm \frac{3}{8}$
Float height (gauge)	20mm (0.787-in.)

Disassembly

1. Clean the exterior of the carburetor.
 2. Turn the fuel cock lever to "OFF" position. Disconnect the fuel tubes from the fuel cock.
 3. Open the seat and remove the fuel tank.
 4. Loosen the connecting bands and remove the carburetor.
-
5. Disconnect the throttle cable from the carburetor by loosening the lock nut and cable adjuster.
 6. Drain the carburetor thoroughly by removing the drain bolt.
-
7. Loosen the screws and remove the vacuum cylinder from the carburetor body.
 8. Remove the vacuum piston from the body.
 9. Loosen the setting screw and remove the jet needle and jet needle holder from the vacuum piston.
-
10. Pry the float chamber clamp and separate the float chamber from the body.
 11. Remove the main jet, needle jet holder, needle jet, pilot jet and slow jet.

NOTE:
It is important that all carburetor parts be handled carefully since rough handling will damage them easily.
 12. Remove the float by pulling the float arm pin out.
 13. Remove the float valve.

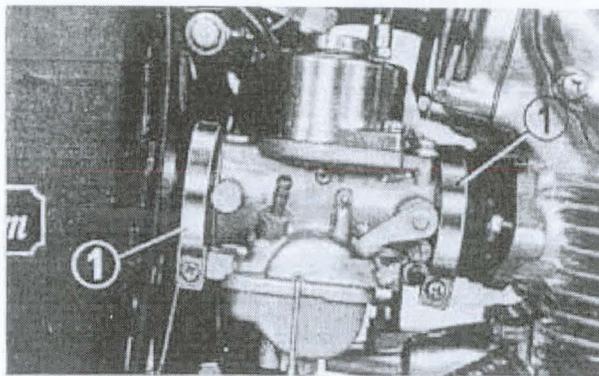
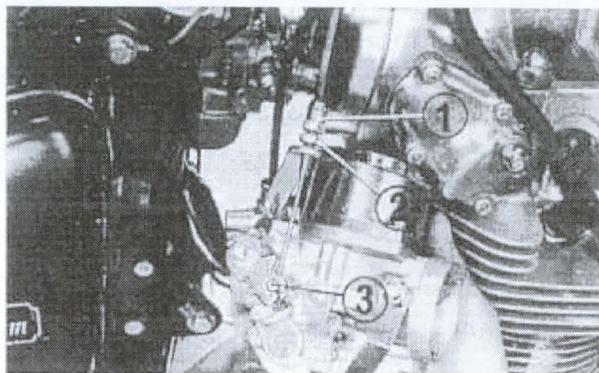
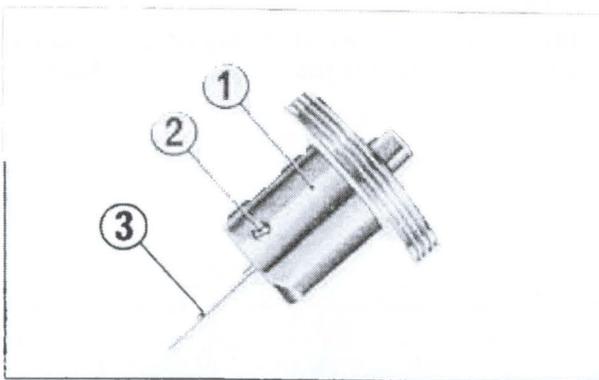
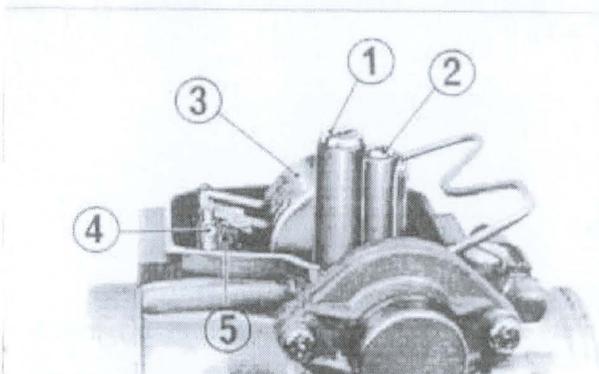


Fig. 4-89 (1) Connecting band

Fig. 4-90 (1) Cable adjuster
(2) Lock nut
(3) Cable endFig. 4-91 (1) Vacuum piston (2) Setting screw
(3) Jet needleFig. 4-92 (1) Main jet (4) Float arm pin
(2) Pilot jet (5) Float valve
(3) Float

14. Loosen off the screws and remove the air cut valve cover, spring and diaphragm.
15. Remove the screws and air cut valve body.

Inspection

1. Blow out each jet to determine if these are clogged.
2. Check the float valve for proper contact with the valve seat.
3. Check the vacuum piston and cylinder for scores or wear.
4. Check the jet needle for scores or wear.
5. Check the air cut valve diaphragm for damage.
6. Measure the float level.

Hold the carburetor with its main bore in a vertical position, so that the float arm tag will just close the float valve, without compressing the spring loaded plunger in the end of the valve. Measure the float height with a float level gauge.

Float height (distance between the carburetor body and the opposite edge of the float) should be 20mm (0.787-in.) when the float valve just closed.

To adjust, carefully bend the float arm tag toward or away from the float valve until the specified float height is obtained. Replace any damaged or leaking float.

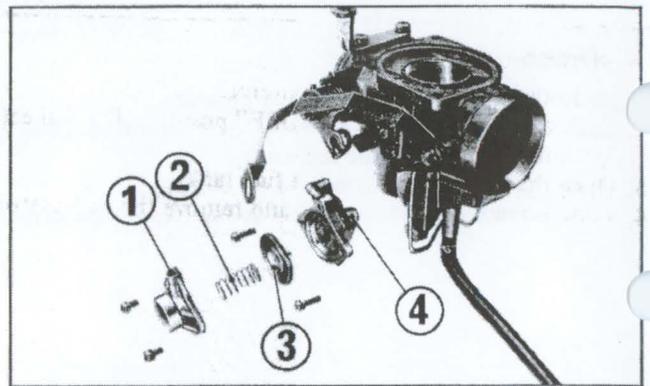


Fig. 4-93 (1) Air cut valve cover (2) Spring (3) Diaphragm (4) Valve body

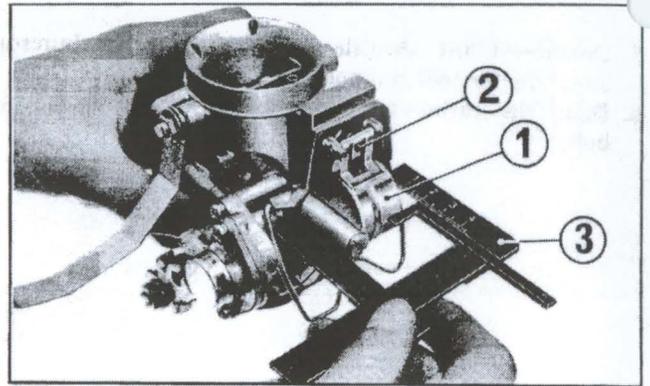


Fig. 4-94 (1) Float (2) Float arm tag (3) Float level gauge

Assembly

1. Install the vacuum piston in the carburetor body so that its groove is aligned with the convex in the carburetor.

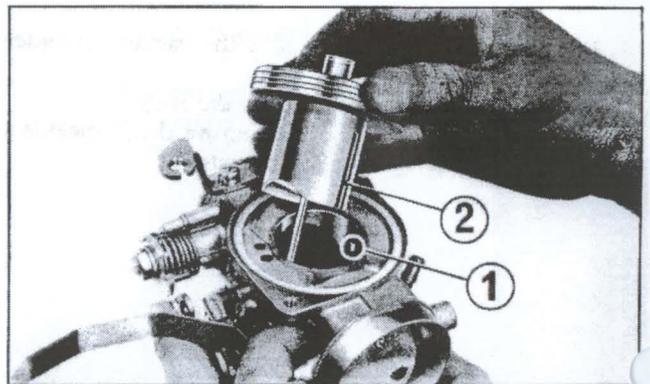


Fig. 4-95 (1) Convex (2) Groove

2. Connect the connecting joint properly as shown in Fig. 4-96.

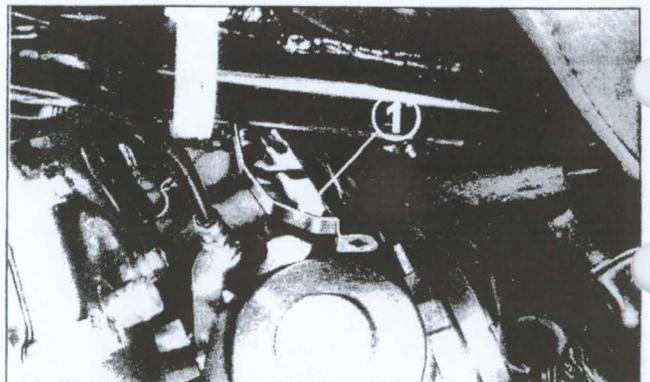


Fig. 4-96 (1) Connecting joint

- Route the overflow tubes and fuel tubes properly as shown in Fig. 4-97.



Fig. 4-97 (1) Fuel tube
(2) Overflow tube

Adjustment

- Remove the fuel tank from the machine. Connect longer fuel tubes between the fuel cock on the tank and carburetors.
- Remove the plugs from the carburetors and connect special tool "Vacuum Gauge" (Tool No. 07504-3000100) to the holes by using "Vacuum Gauge Attachment" (Tool No. 07510-3000200).
- Loosen the lock nuts and screw the throttle cable adjusters in to loosen the throttle cables.
- Remove the idle limiters from the pilot screws. Turn the pilot screws all the way in and then backing them off 1½ turns.
- Start and warm up the engine.

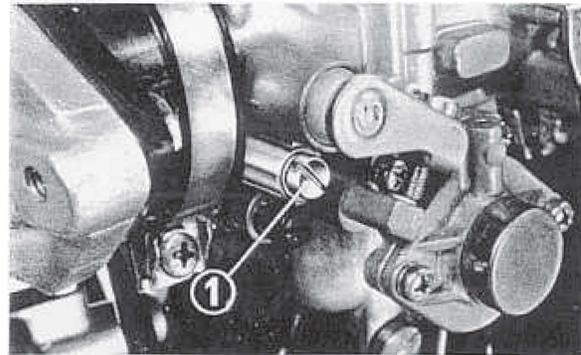


Fig. 4-98 (1) Plug

- Remove the idle limiters from the pilot screws. Turn the pilot screws all the way in and then backing them off 1½ turns.
- Start and warm up the engine.

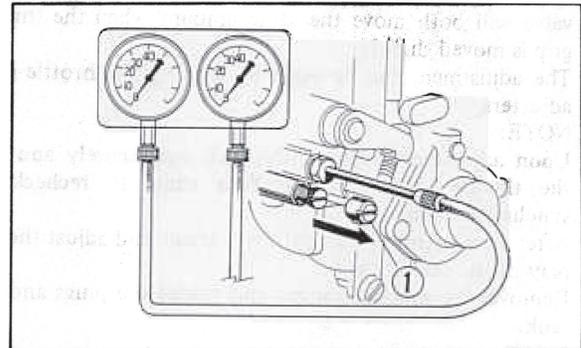


Fig. 4-99 (1) Idle limiter

- Adjust the throttle stop screws to allow the engine to run at an idle speed of 1,100 rpm. Rotation of the stop screw in the direction "A" increase the speed.
Specified idle speed: 1,000–1,200 rpm
- Read each vacuum gauge. Both gauges should register the same value within the specifications. To adjust, turn the throttle stop screw in or out.
Specified value: 200–240 mmHg

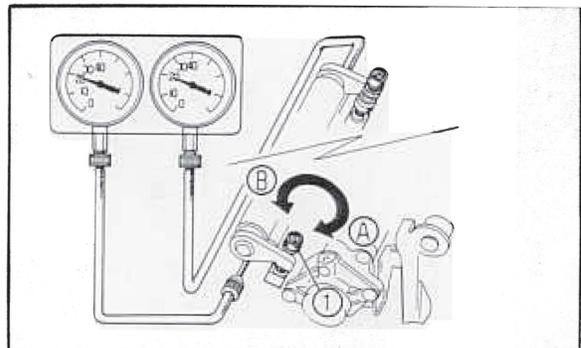


Fig. 4-100 (1) Throttle stop screw

8. Start with either the right or left carburetor, turn the pilot screw and find the point of highest rpm. The same should be done with the opposite carburetor.
Turning the pilot screw in will create a lean fuel air mixture, turning the screw out will create the rich mixture.
9. Recheck the vacuum and idle speed and, if necessary, readjust the throttle stop screws.

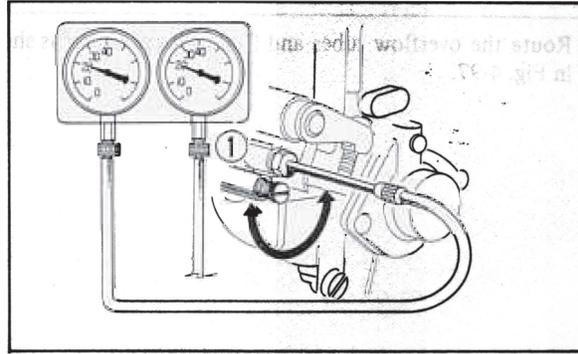


Fig. 4-101 (1) Pilot screw

10. Install the idle limiters to the pilot screws so that its stop is pointed down.

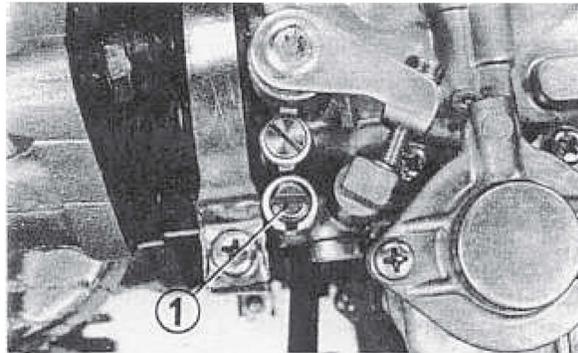


Fig. 4-102 (1) Idle limiter

11. Adjust the synchronization so the right and left throttle valve will both move the same amount when the throttle grip is moved slightly.
The adjustment can be made by turning the throttle cable adjusters.

NOTE:

Upon adjustment, tighten the lock nut securely and snap the throttle grip three or four times to recheck the synchronization.

12. After completing the adjustment, check and adjust the free play of the throttle grip.
13. Remove the vacuum gauges and install the plugs and fuel tank.

NOTE:

The operation of the air cut valve is explained at the beginning of this manual.

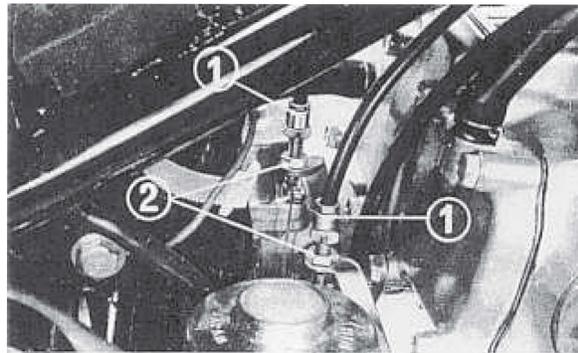


Fig. 4-103 (1) Cable adjuster
(2) Lock nut

13. ENGINE ELECTRICAL

Charging system

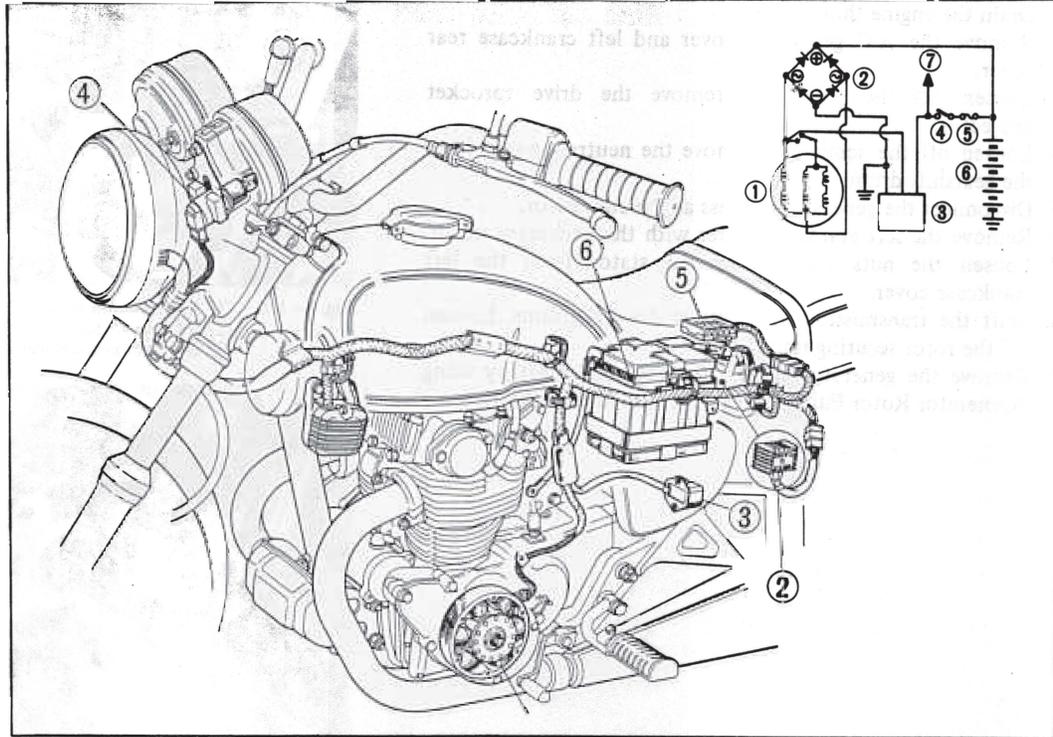


Fig. 4-104 (1) A-C generator (2) Silicon diode rectifier (3) Pointless regulator (4) Main switch (5) Fuse (15A) (6) Battery (7) Load

Charging test

1. Test should be made with a fully charged 12V battery.
(The specific gravity of electrolyte in each cell must be 1.26-1.28 at 20 deg. C or 68 deg. F)
2. Connect the positive lead of the ammeter to the harness, and negative lead to the positive terminal of the battery.
3. Connect the positive lead of the voltmeter to the positive terminal of the battery, and the negative lead to the negative terminal.
4. Run the engine under condition of HIGH BEAM.
If the readings are not within the specifications shown in the following table, the generator, battery, regulator or rectifier should be checked for condition.

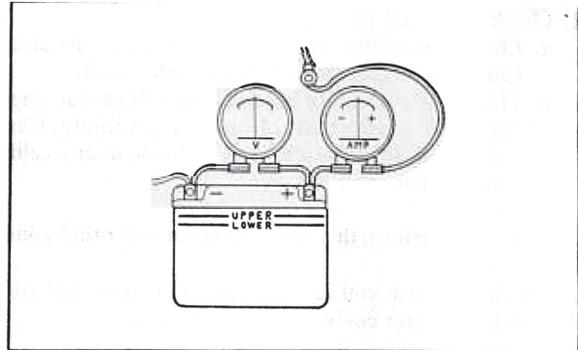


Fig. 4-105 Charging test

Dimmer switch	Initial charging rpm	5,000rpm		8,000rpm	
		Charging current	Battery voltage	Charging current	Battery voltage
HIGH BEAM	2,800 max.	1.2A min.	15.5V	3.5A max.	15.5 V

A-C generator

Removal

1. Drain the engine thoroughly.
2. Remove the A-C generator cover and left crankcase rear cover.
3. Loosen off the bolts and remove the drive sprocket protector.
4. Loosen off the screw and remove the neutral switch from the gearshift drum.
5. Disconnect the generator harness at the connector.
6. Remove the left crankcase cover with the generator stator.
7. Loosen the nuts and remove the stator from the left crankcase cover.
8. Shift the transmission into any of drive positions. Loosen off the rotor securing bolt.
9. Remove the generator rotor from the crankshaft by using "Generator Rotor Puller" (Tool No. 07933-2160000).

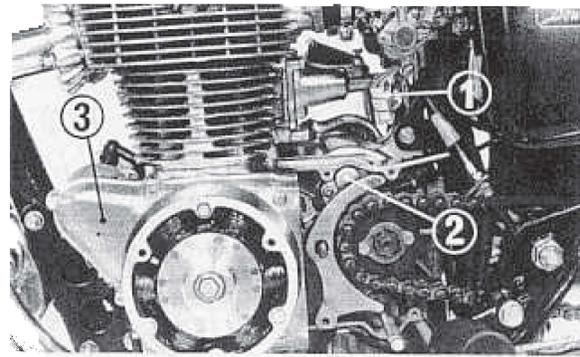


Fig. 4-106 (1) Harness connector
(2) Neutral switch
(3) Left crankcase cover

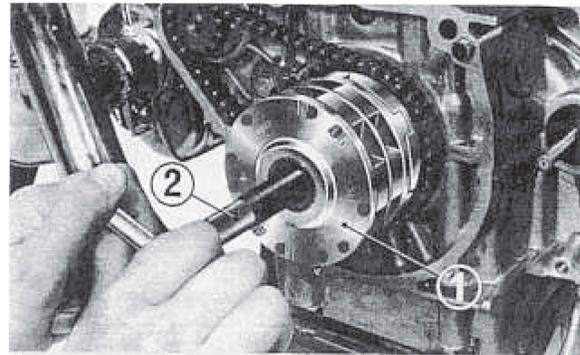


Fig. 4-107 (1) Generator rotor
(2) Rotor puller

Inspection

1. Check stator coil for continuity.
 - a. Check continuity between three leads of the stator coil (pink, white and yellow) with a radio tester.
 - b. Check for continuity between the yellow lead and stator core with a radio tester. If there is continuity, it is a sure indication that the coil has a short-circuit, calling for replacement.

NOTE:

Do not perform this test on steel or any other conductive material.

2. Check the stator coil for breakage or cracked insulation.
3. Check the stator coil lead wire for breakage.

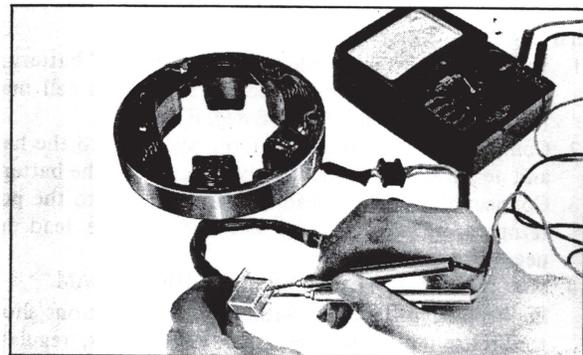


Fig. 4-108 Checking stator coil

Installation

1. Prior to installing the rotor, check the inside of the rotor for magnetized screw, bolt, washer or any other metal.
2. Install the generator lead grommet in the groove of the left crankcase cover properly.
3. Route the generator lead wire properly as shown in Fig. 4-109.

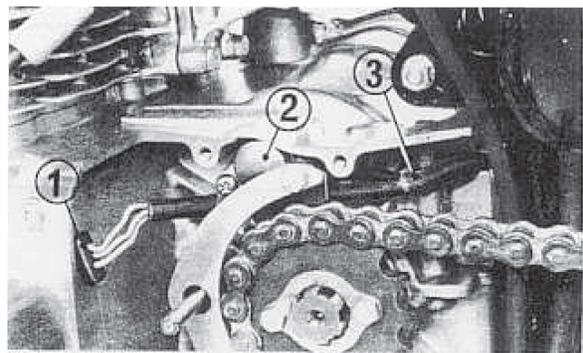


Fig. 4-109 (1) Grommet
(2) Neutral switch
(3) Generator lead

Silicon diode rectifier

Check each diode for continuity with a radio tester in high-reading range. If current flows only in one direction (from cathode to anode), the diode is normal. Current flow in both direction or no current is a sign of malfunction in the diode.

To determine that the rectifier is in good condition, follow the instruction given below. Connect the negative probe of the tester to the terminal (1) (green), and positive probe to the terminal (2) (red/white), (3) (yellow) or (4) (pink). If the needle swings, it is an indication that the diode is normal.

In like manner as above, connect the positive probe to the terminal (2), and negative probe to the terminal (1), (3) or (4). The diode is correct if continuity exists. Continuity should not exist between any terminals of combinations other than those described above.

NOTES:

- a. Do not use a megger as a high voltage generated in the megger will damage the diodes.
- b. Make sure of proper battery polarity when making connections.
 Connection in reverse polarity will shorten the battery service life or cause a high current flow throughout the electrical system, resulting in damage to the diodes or burning up the harness.

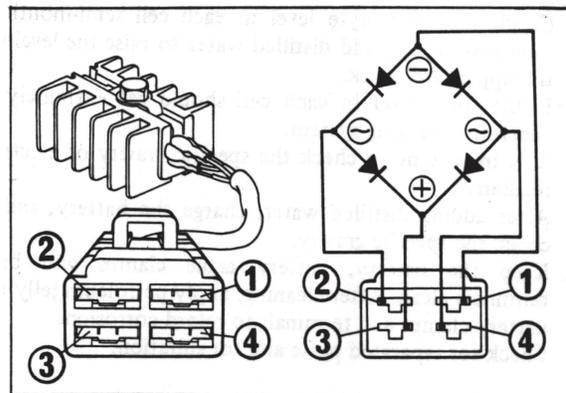


Fig. 4-110 (1) Green lead (3) Yellow lead
 (2) Red/white lead (4) Pink lead

Regulator

Make the connections as shown in Fig. 4-111. Gradually lower the line voltage by operating the knob of the variable resistor. If the needle of the ammeter swings at 14-15V, this could be due to internal problems. The regulator will have an open circuit if the ammeter needle does not swing at all even if the voltage is raised going over the above values. The regulator must be replaced with a new one.

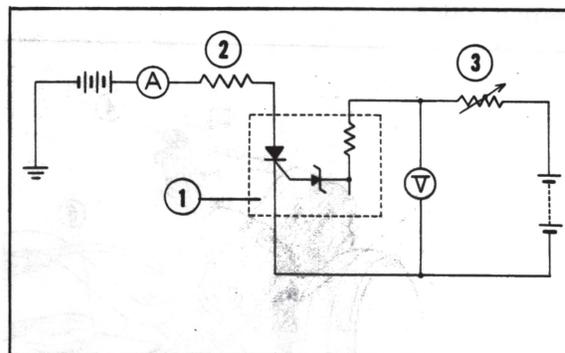


Fig. 4-111 (1) Regulator
 (2) Resistor (to keep current below 3A)
 (3) Variable resistor (to adjust voltage)

Battery

- Type: 12N12A-4A-1
- Voltage: 12V
- Capacity: 12AH
- Charging current: 0.6A
- Specific gravity of electrolyte
- When full charged: 1.260-1.280 at 20 deg.C or 68 deg.F

Measuring specific gravity of electrolyte

Measure the specific gravity of electrolyte in each cell with a hydrometer. Recharge the battery when the reading taken is below 1.200 at 20 deg. C or 68 deg. F. When measuring with a hydrometer, hold the gauge vertically and take the highest level as shown.

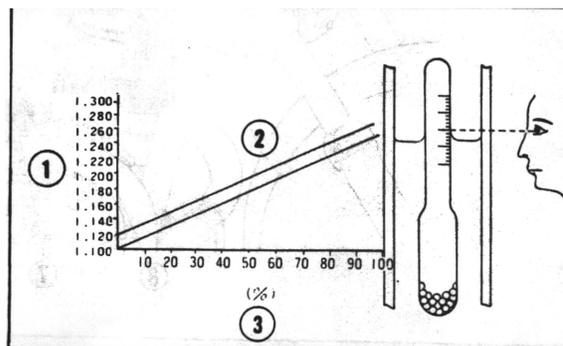


Fig. 4-112 (1) Specific gravity (3) Residual charge
 (2) Relationship between specific gravity and residual charge

Inspection and maintenance

1. Check the electrolyte level in each cell semi-monthly or monthly. If low, add distilled water to raise the level up to the upper level mark.
2. If the fluid level in each cell should get extremely low, check the charging system.
3. It is important to check the specific gravity of electrolyte regularly.
After adding distilled water, charge the battery, and then check the specific gravity.
4. Keep the battery, battery cable clamps and battery terminals clean. After cleaning, apply petroleum jelly to the battery clamps and terminals to retard corrosion.
Check for separated paste and for sulfation.

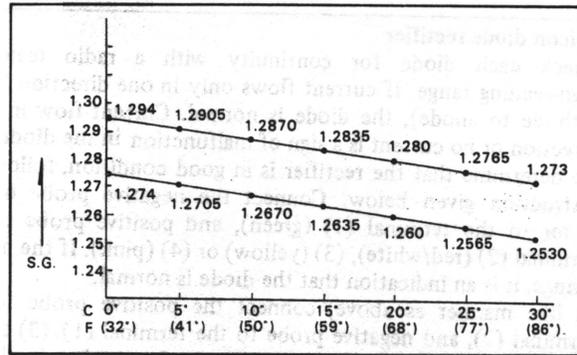


Fig. 4-113 Relationship between specific gravity and atmospheric temperature

Charging battery

1. It is recommended that the battery be charged as slowly as conditions will permit since quick charger combined with high charging rate is very damaging to the battery. When it becomes necessary to charge the battery quickly, the charging rate should be held within 2.0A max.
2. Hydrogen gas is produced during charging operation. Keep away from fire.
3. After charging, flush off with clear water and apply petroleum jelly to the battery terminals.

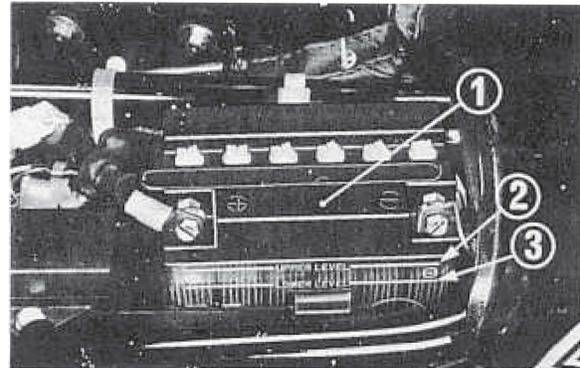


Fig. 4-114 (1) Battery
(2) Upper level mark
(3) Lower level mark

Ignition system

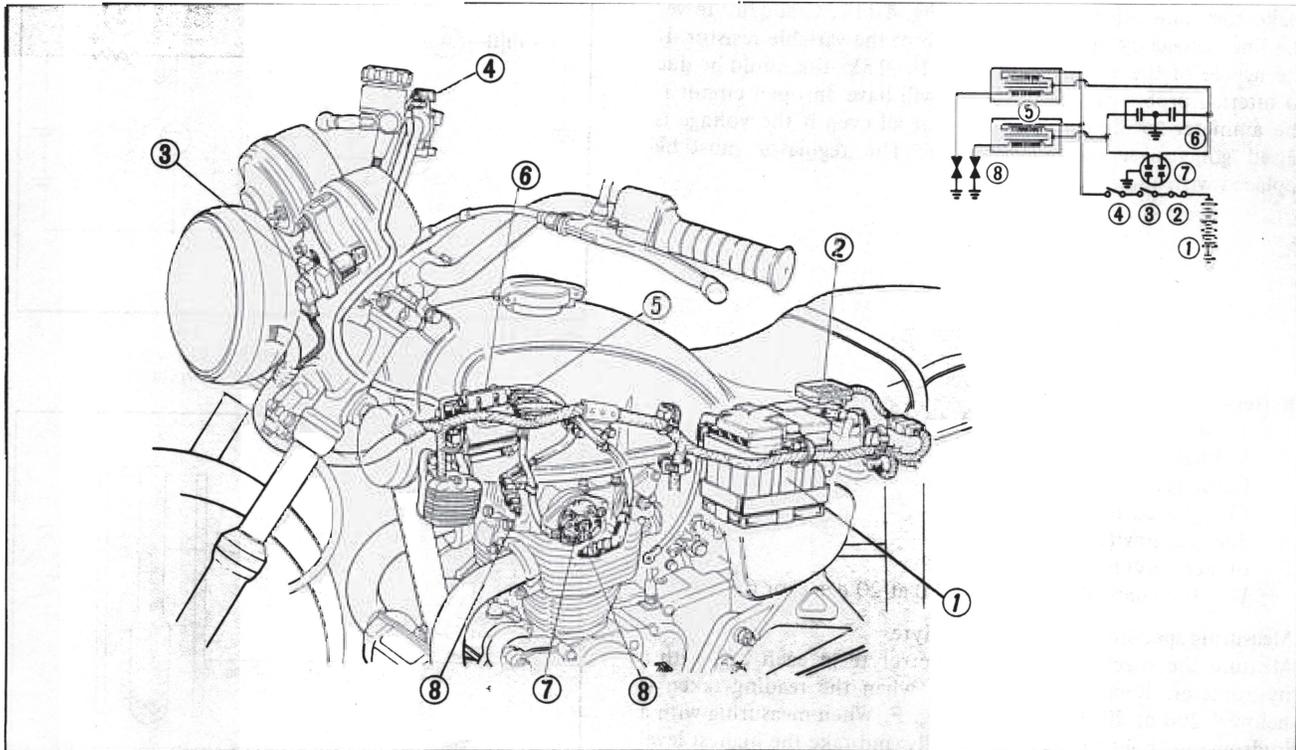


Fig. 4-115 (1) Battery (4) Engine stop switch (7) Contact breaker
(2) Fuse (15A) (5) Ignition coil (8) Spark plug
(3) Main switch (6) Condenser

Ignition coil	3-point spark gap opening	6 mm (0.24-in.) min.
Spark plug	type Plug gap	B8ES 0.7–0.8mm (0.028–0.032-in.)
Contact breaker	Spring force Point gap	650–850 gr. (22.93–30.00 ozs.) 0.3–0.4mm (0.012–0.016-in.)
Condenser	Capacity Insulation resistance	0.24 $\mu\text{F} \pm 10\%$ 10M Ω min. (1,000V with a megger)
Spark advancer	Advance angle (crankshaft) 1 deg. advance (crankshaft rpm) Full advance (crankshaft rpm)	30° 1,800 rpm 3,200 rpm

Ignition coil

1. Check the continuity of the primary coil.
Check for continuity between the two terminals of each primary winding with a radio tester. (Black/white lead wire and yellow or blue lead wire)
2. Check the continuity of the secondary coil.
Check for continuity between the two terminals of each secondary coil.
If there is no continuity, the coil has an open-circuit and must be replaced.

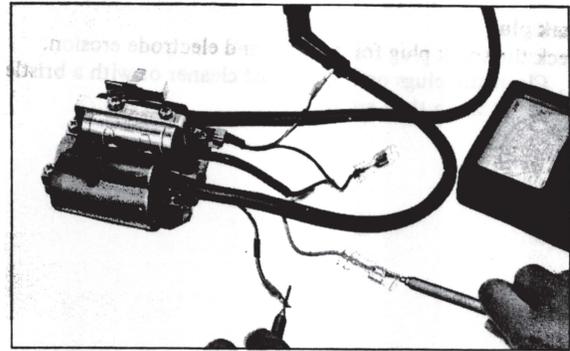


Fig. 4-116 Checking ignition coil for continuity

3. Check the ignition coil for performance.
The coil may sometimes deteriorate in such a way as to produce weak spark at the spark plug gap. This can be checked by the service tester as follows:
Connect the tester power supply cable to the positive and negative terminals of the fully charged 12V battery. Make the connections of the tester following the instructions furnished by the tester manufacturer.
Measure the maximum distance where spark jumps across the gap regularly.

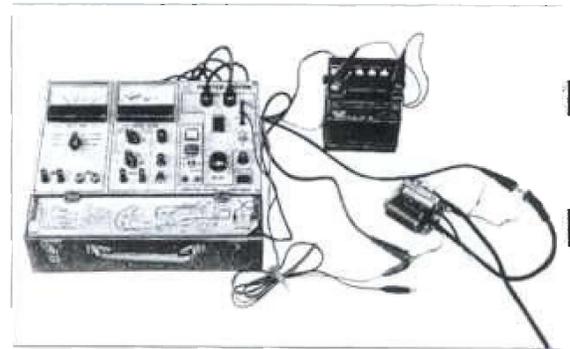


Fig. 4-117 Checking ignition coil performance

NOTE:

Reverse the polarity of the spark plug cables if spark occurs as "B" in Fig. 4-118. Sketch "A" shows the normal test condition.

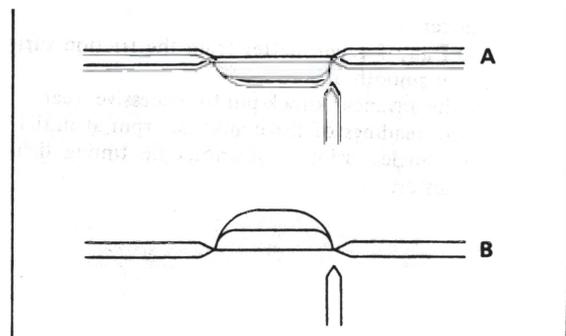


Fig. 4-118 3-point spark tester

Condenser

Make the capacitance test on the condenser using a service tester. Also check for broken insulation.

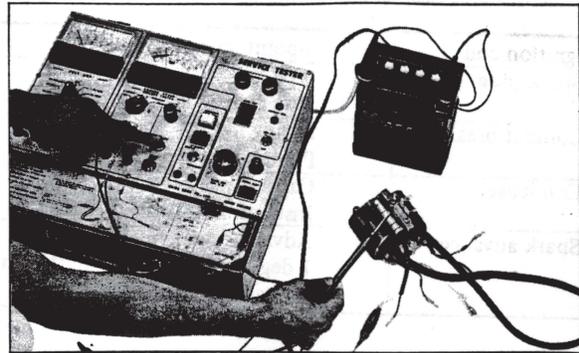


Fig. 4-119 Checking condenser

Spark plug

Check the spark plug for deposits and electrode erosion.

1. Clean the plugs on a sand blast cleaner or with a bristle wire brush when they are fouled.

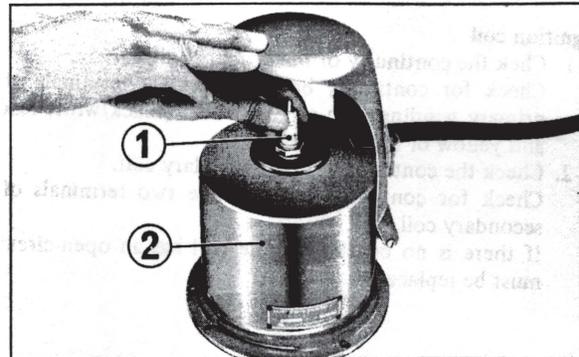


Fig. 4-120 (1) Spark plug
(2) Plug cleaner

2. Replace if found with cracked or broken insulators, badly pitted electrodes, damaged gasket, or other sign of failure.
3. Using a feeler gauge, measure the electrode gap, and regap if necessary. The gap should be adjusted by bending the side electrode.

Specified gap: 0.7–0.8mm (0.028–0.032-in.)

Refer to page 8 thru 11 for instructions on adjustment of the contact breaker point gap and ignition timing.

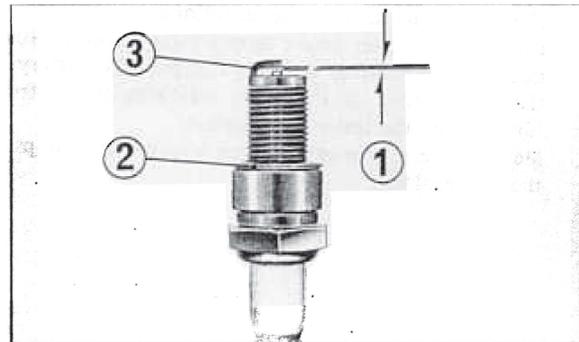


Fig 4-121 (1) Plug gap
(2) Gasket
(3) Side electrode

Spark advancer

1. Wipe off any foreign matter from the friction surfaces and check for smooth operation.
2. Check the advancer knock pin for excessive wear.
3. Take the readings of the crankshaft rpm at initial and full advance angles using a stroboscopic timing light in the service tester.

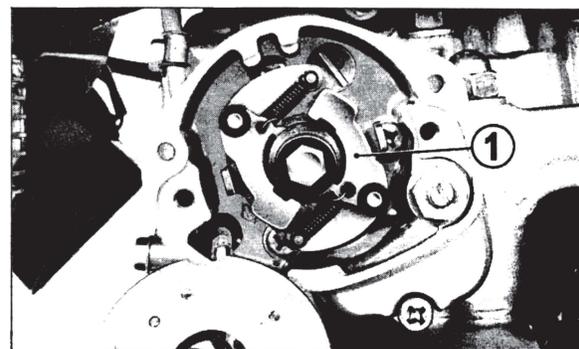


Fig. 4-122 (1) Spark advancer

Starting system

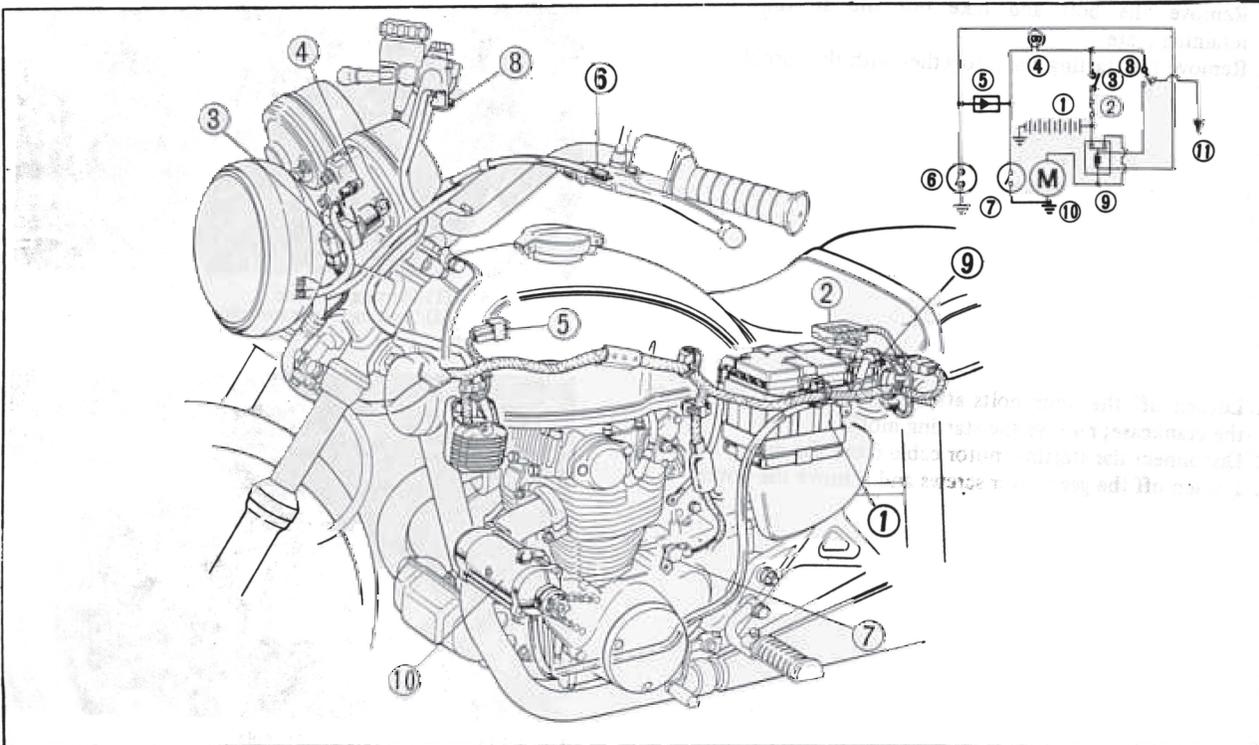


Fig. 4-123 (1) Battery (5) Silicon diode (9) Starting magnetic switch
 (2) Fuse (15A) (6) Clutch switch (10) Starting motor
 (3) Main switch (7) Neutral switch (11) To lighting system
 (4) Neutral pilot lamp (8) Starting switch

Starting motor

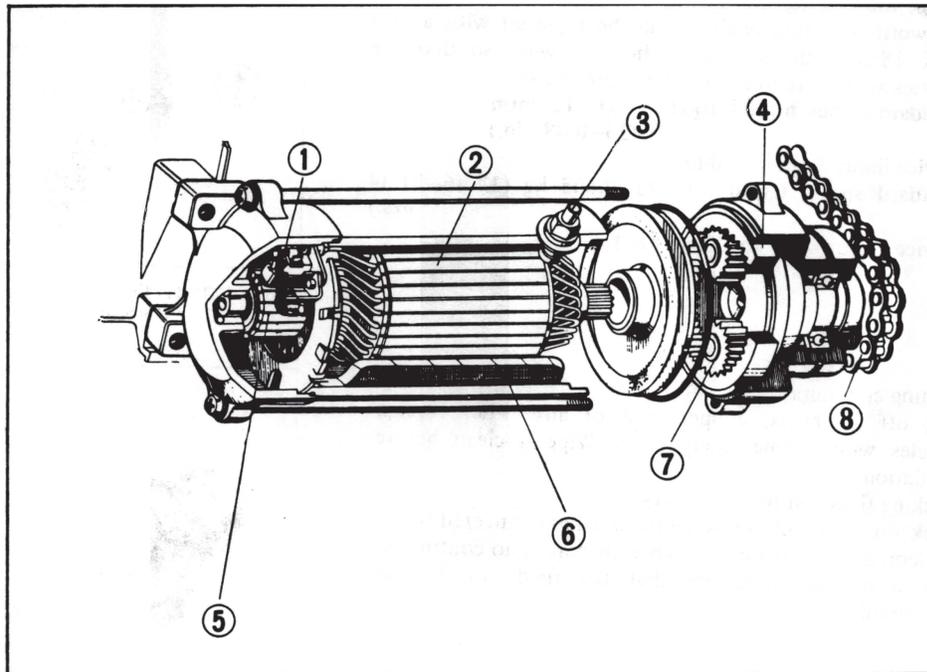


Fig. 4-124

- (1) Carbon brush
- (2) Armature
- (3) Terminal
- (4) Inner gear
- (5) Commutator
- (6) Field coil
- (7) Planetary gear
- (8) Starting chain

Removal

1. Remove the A-C generator. (See page 54.)
2. Remove the bolt and take out the starting sprocket retaining plate.
3. Remove the starting chain together with the sprockets.

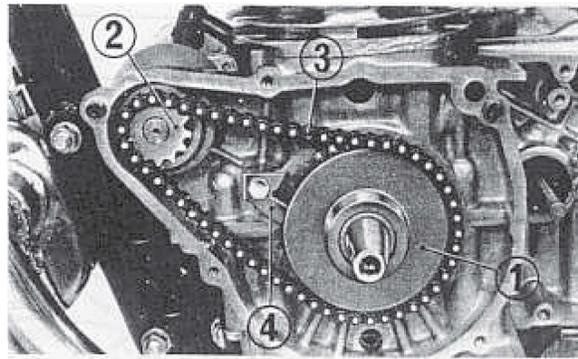


Fig. 4-125 (1) Starting sprocket (3) Starting chain
(2) Starting motor sprocket (4) Retaining plate

4. Loosen off the 6mm bolts attaching the starting motor to the crankcase; remove the starting motor.
5. Disconnect the starting motor cable from the motor.
6. Loosen off the gear cover screws and remove the cover.

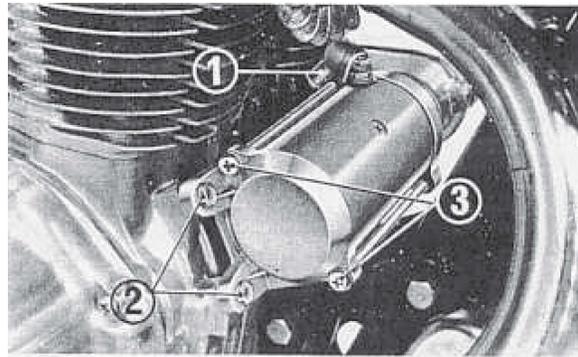


Fig. 4-126 (1) Starting motor cable
(2) 6mm bolt
(3) Gear cover screw

Inspection**1. Checking the carbon brushes**

Check the brushes and springs for condition. Brushes that are worn or pitted badly should be replaced with a new ones. Discard the springs if they are weak so that the brushes are unable to rest on the commutator.

Standard carbon brush length: 11–12.5mm
(0.433–0.492-in.)

Service limit: 5mm (0.020-in.)

Standard spring tension: 0.495–0.605 kg (17.46–21.34
ozs.)

Service limit: 0.495 kg (17.46 ozs.)

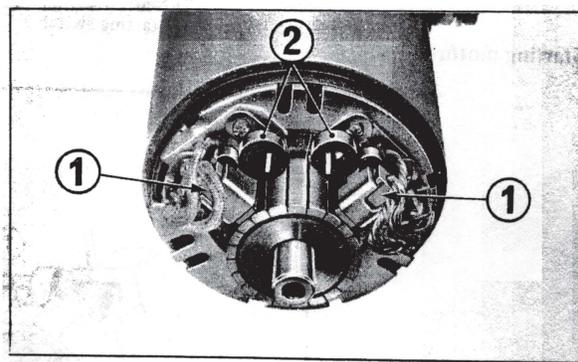


Fig. 4-127 (1) Carbon brush
(2) Brush spring

2. Cleaning commutator

Sand off all burrs, copper dust or any other foreign particles with a fine emery cloth. Wipe it clean before installation.

3. Checking field coil for continuity

Check for continuity between the brushes connected to the field coil and starting motor cable. If there is no continuity, it is a reliable indication that the field coil has an open-circuit.

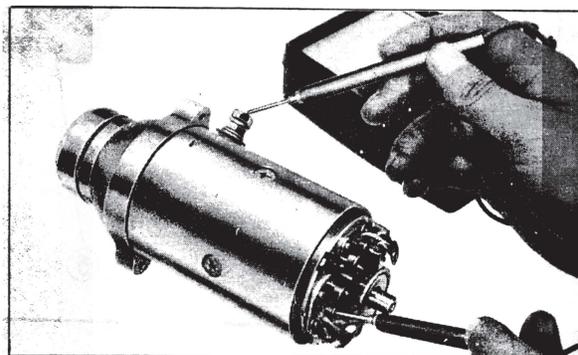


Fig. 4-128 Checking stator coil

4. Checking armature coil for continuity

A shorted or grounded armature would affect the proper operation of the starting motor. The armature is tested electrically for ground by placing one test probe on the laminated core and the other on the commutator bars. If there is continuity, the armature is grounded.

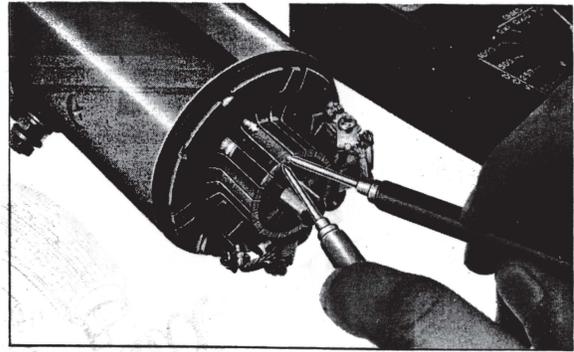


Fig. 4-129 Checking armature coil

Starting magnetic switch

1. Check the field coil for continuity.

If there is no continuity, the field coil has an open-circuit. The field coil is normal if it clicks into position when a 12V battery is connected with the switch turned on.

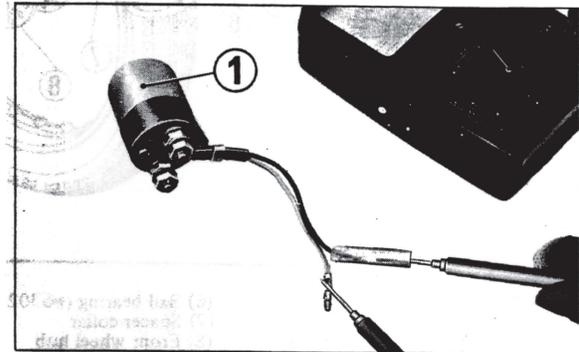


Fig. 4-130 (1) Starting magnetic switch

2. Check the operation of the magnetic switch.

Time may sometimes render it useless due to badly pitted or burnt switch contacts. The switch is tested electrically for function by connecting a 12V battery to the field coil with the switch turned on.

If there is no continuity, it is a signal that the switch is not in a good condition.

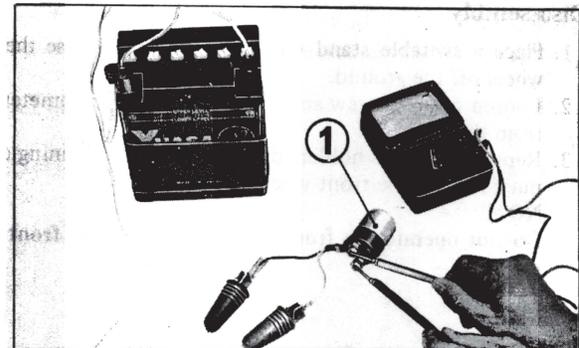


Fig. 4-131 (1) Starting magnetic switch

Starting clutch

1. Check the rollers, roller caps and clutch outer on the generator rotor for wear or damage and, if necessary, replace.
2. Check the rollers and springs for smooth operation.

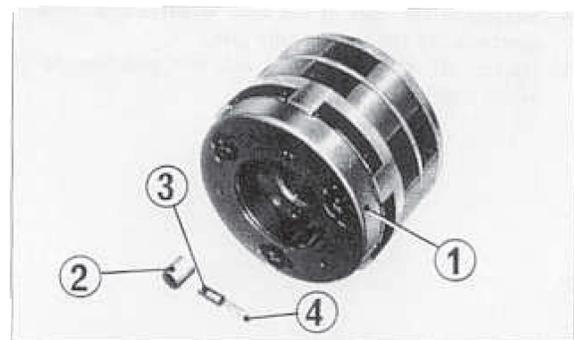


Fig. 4-132 (1) Starting clutch outer (2) Roller (3) Roller cap (4) Spring

V.FRAME

1. FRONT WHEEL

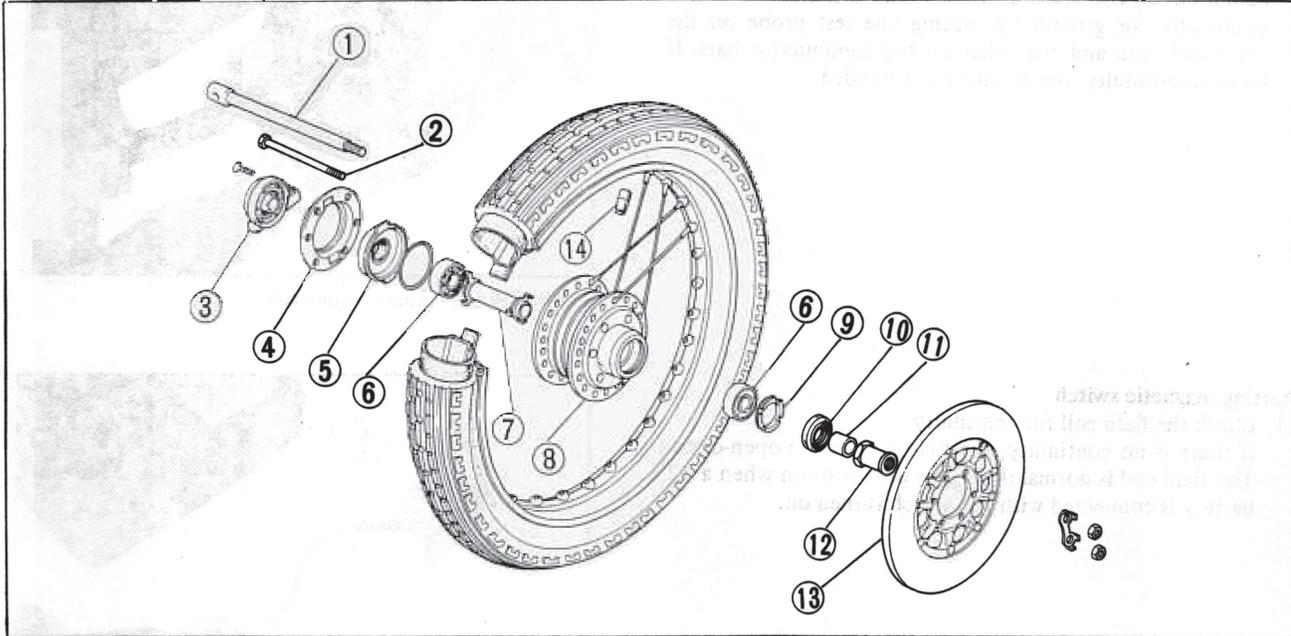


Fig. 5-1 (1) Front wheel axle (2) Bolt (8x102mm) (3) Speedometer gear box (4) Gear box retainer cover (5) Gear box retainer (6) Ball bearing (#6302R) (7) Spacer collar (8) Front wheel hub (9) Bearing retainer (10) Oil seal (11) Collar (12) Front wheel axle nut (13) Brake disc (14) Balance weight

Disassembly

1. Place a switabie stand under the engine to raise the front wheel off the ground.
2. Loosen off the screw and disconnect the speedometer cable from the gear box.
3. Remove the axle holders on both sides by loosening off the nuts; remove the front wheel.

NOTE:

Do not operate the front brake lever with the front wheel removed.

4. Straighten the lugs of the lock washers and loosen off the nuts; remove the front brake disc.
5. Loosen off the front wheel axle nut and remove the front wheel axle.

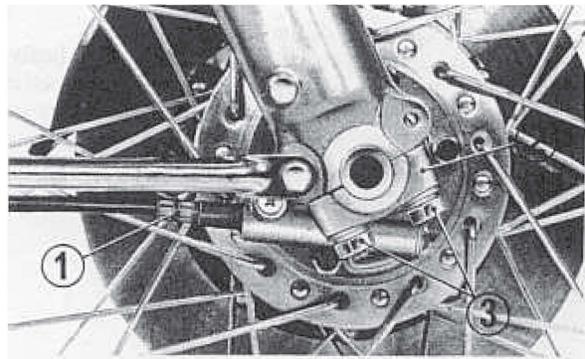


Fig 5-2 (1) Speedometer cable (2) Axle holder (3) Nut

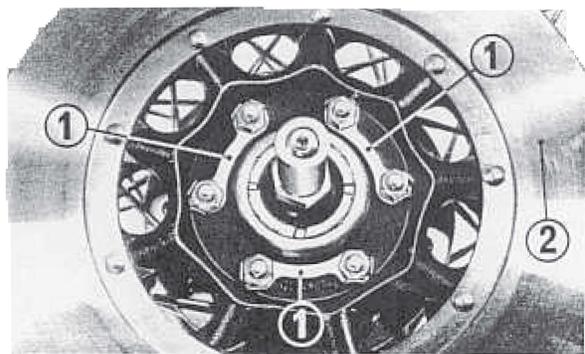


Fig. 5-3 (1) Lock washer (2) Brake disc

6. Remove the speedometer gear box, gear box retainer cover, gear box retainer and O-ring.
7. Remove the oil seals from the speedometer gear box and wheel hub.

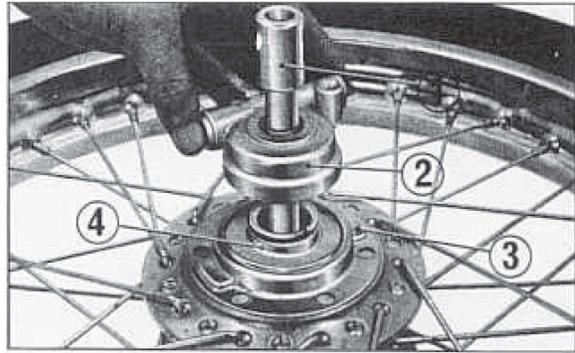


Fig. 5-4 (1) Front wheel axle (3) Gear box retainer cover
(2) Speedometer gear box (4) Gear box retainer

8. Remove the bearing retainer with "Bearing Retainer Wrench" (Tool No. 97910-3230101).
9. Remove the ball bearings and spacer collar from the front wheel hub.

Inspection

1. Check the front wheel axle bend.
Standard value: 0.05mm (0.0020-in.) max.
Service limit: 0.2mm (0.0079-in.)
2. Check the spokes for looseness, bend or any other damage.
3. Check the front wheel rim for face runout.
Standard value: 0.5mm (0.0197-in.) max.
4. Check the brake disc for warpage.
Place the brake disc on a surface plate with the indicating needle of a dial gauge resting against the brake disc. Measurements should be taken in the several places over the brake disc by moving the indicator needle as necessary.
Service limit: 0.05mm (0.020-in.)
5. Check the brake disc for face runout.
With the disc installed, hold the front wheel axle and measure the face runout of the disc with a dial gauge.
Standard value: 0.05mm (0.0020-in.) max.
Service limit: 0.3 mm (0.012-in.)
6. Measure the thickness of the brake disc.
Standard value: 6.9-7.1mm (0.2717-0.2795-in.)
Service limit: 6.0mm (0.2362-in.)

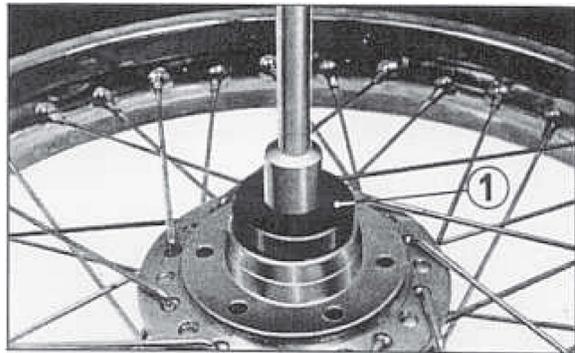


Fig. 5-5 (1) Bearing retainer wrench

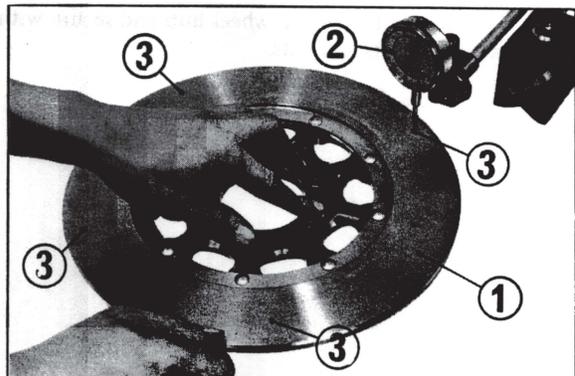


Fig. 5-6 (1) Brake disc
(2) Dial gauge
(3) Measuring points

Assembly

1. Hand pack the wheel bearings and wheel hub with recommended grease. Drive the ball bearings into place in the hub using "Bearing Driver Attachment" (Tool No. 07946-9350200) and "Driver Handle" (Tool No. 07949-6110000).

NOTES:

- a. Do not forget to install the spacer collar.
- b. Install the bearings with the seal side toward the outside.

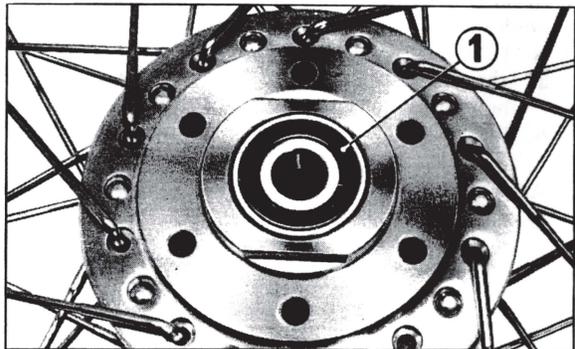


Fig. 5-7 (1) Seal side of ball bearing

2. Install the bearing retainer and stake at two places as shown.

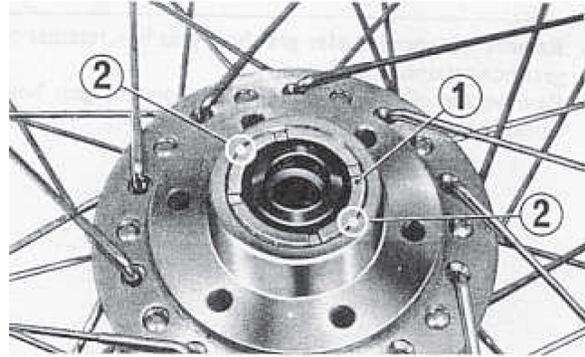


Fig. 5-8 (1) Bearing retainer
(2) Stake

3. Being sure that the O-ring is installed in the wheel hub, install the speedometer gear box retainer and retainer cover.
4. Install the speedometer gear box, aligning it with the groove in the gear box retainer.

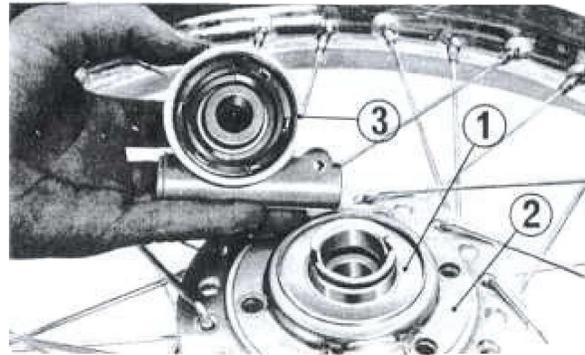


Fig. 5-9 (1) Gear box retainer
(2) Retainer cover
(3) Gear box.

5. Place the brake disc to the wheel hub and secure with new lock washers, bolts and nuts.

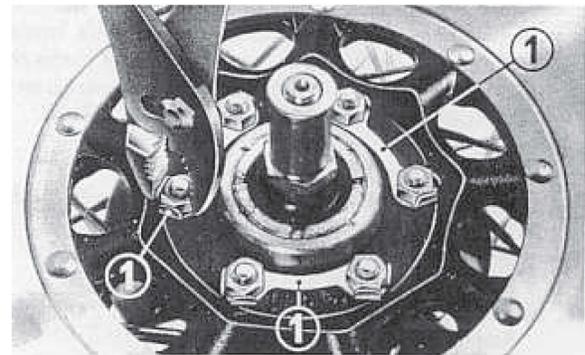


Fig. 5-10 (1) Lock washer

6. Install the front wheel to the front forks with the axle holders.

NOTES:

- a. When fastening the holders to the front forks, tighten the bolts at the front first and then the ones at the rear.
 - b. The "F" mark on the holder should be pointed toward the front of the machine.
7. Adjust the caliper and, if necessary, bleed air in the brake system.

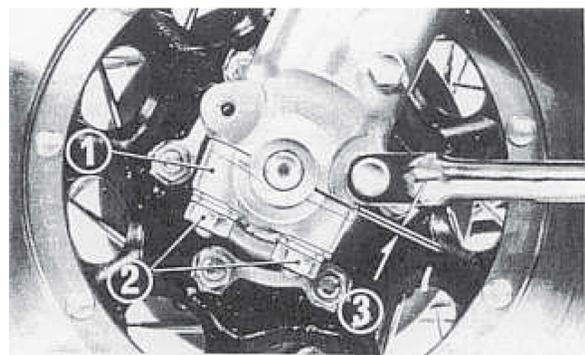
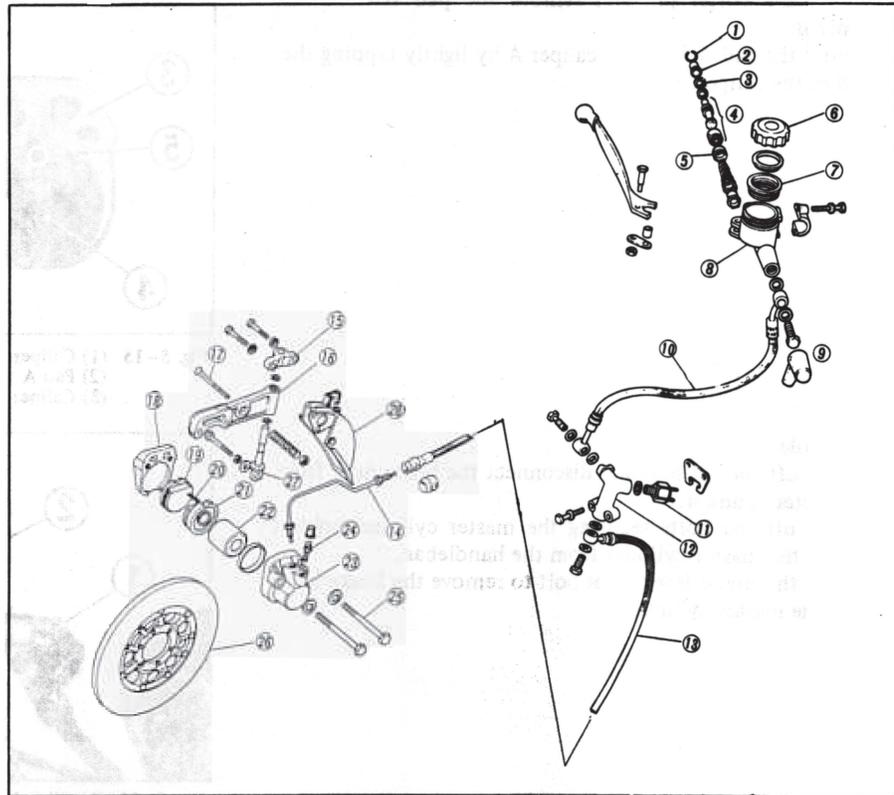


Fig. 5-11 (1) Axle holder
(2) Nut
(3) Gap at rear

2. FRONT DISC BRAKE

Fig. 5-12

- (1) Boot stopper
- (2) Boot
- (3) Snap ring (18mm)
- (4) Piston
- (5) Primary cup
- (6) Cap
- (7) Diaphragm
- (8) Master cylinder
- (9) Oil bolt
- (10) Front brake hose B
- (11) Stop switch
- (12) 3-way joint
- (13) Front brake hose A
- (14) Front brake pipe
- (15) Caliper holder joint
- (16) Caliper holder
- (17) Caliper adjusting bolt
- (18) Caliper B
- (19) Pad B
- (20) Cotter pin
- (21) Pad A
- (22) Piston
- (23) Caliper A
- (24) Bleeder valve
- (25) Caliper bolt (10 x 73mm)
- (26) Brake disc
- (27) Caliper holder pin
- (28) Disc cover



Disassembly

Caliper

1. Drain the brake fluid.
2. Disconnect the front brake tube from the caliper.
3. Loosen the caliper adjusting bolt, 8mm bolt and 6mm bolts to remove the disc cover and caliper assembly.

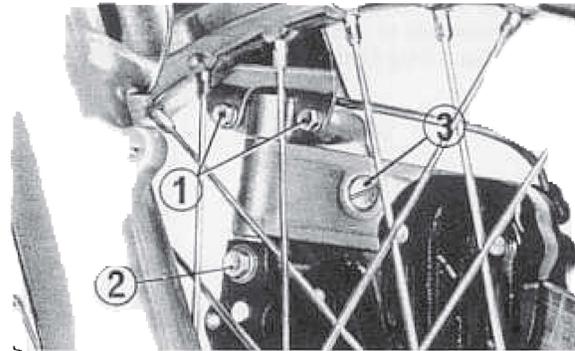


Fig. 5-13 (1) 6mm bolt
(2) 8mm bolt
(3) Caliper adjusting bolt

4. Loosen the two caliper securing bolts and separate the caliper A and B from the caliper holder.

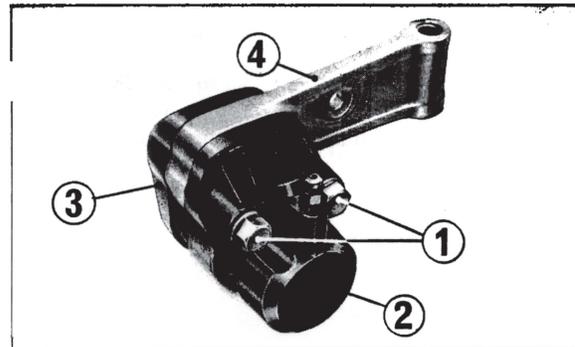


Fig. 5-14 (1) Caliper securing bolt (2) Caliper A
(3) Caliper B (4) Caliper holder

5. Pry off the cotter pin and remove the pad B from the caliper B.
6. Remove the pad A from the caliper A by lightly tapping the head of the caliper.

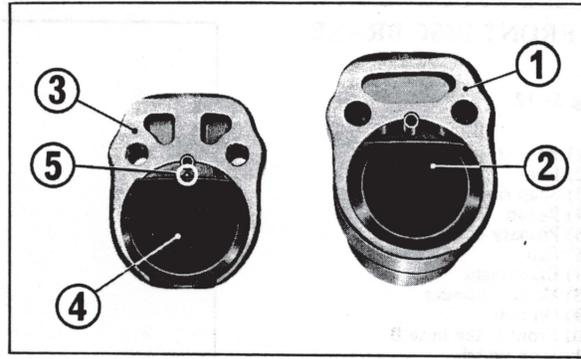


Fig. 5-15 (1) Caliper A (4) Pad B
(2) Pad A (5) Cotter pin
(3) Caliper B

Master cylinder

1. Loosen off the oil bolt and disconnect the brake hose from the master cylinder.
2. Loosen off the bolts securing the master cylinder holder; remove the master cylinder from the handlebar.
3. Loosen the brake lever pivot bolt to remove the brake lever from the master cylinder.

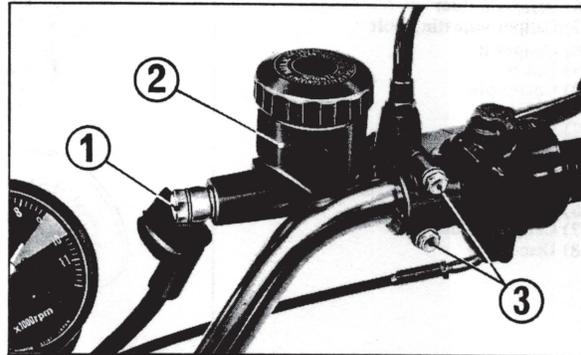


Fig. 5-16 (1) Oil bolt
(2) Master cylinder
(3) Master cylinder holder bolt

4. Remove the boot and boot stopper from the cylinder, taking care not to damage the boot. Remove the snap ring using "Snap Ring Pliers (Tool No. 07914-32300).

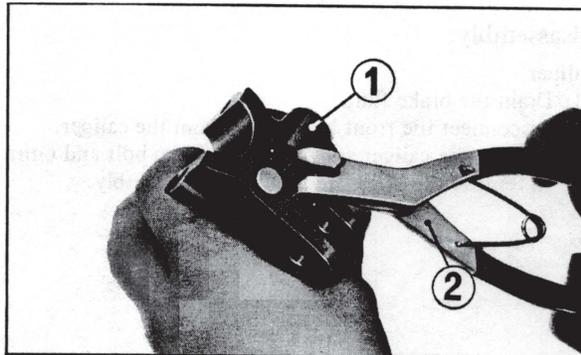


Fig. 5-17 (1) Master cylinder
(2) Snap ring pliers

5. Remove the piston, primary cup, spring and check valve from the master cylinder in this order.

NOTES:

- a. Apply air pressure of 2-3 kg/sq. cm (28-43 psi.) to the brake hose joint to remove the primary cup.
- b. Take care not to damage the check valve when removing it.

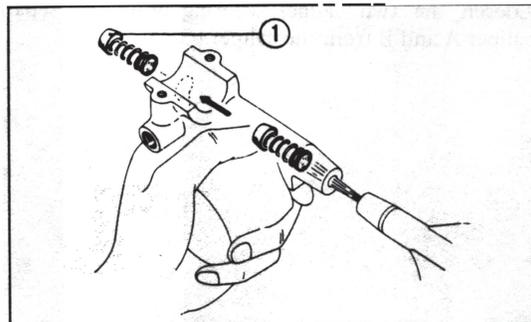


Fig. 5-18 (1) Primary cup

Inspection

1. Check the pad A and B for excessive wear. Replace the pads if it is worn down to its red-line groove (wear limit line).
NOTE:
Replace both pads if any one pad shows excessive wear reaching the red-line groove.
2. Measure the inside diameter of the caliper cylinder.
Standard value: 38.18–38.20mm (1.5032–1.5039-in.)
Service limit: 38.215 mm (1.5045-in.)
3. Measure the outside diameter of the piston.
Standard value: 38.115–38.48mm (1.5006–1.5150-in.)
Service limit: 38.105mm (1.5002-in.)
4. Measure the inside diameter of the master cylinder.
Standard value: 14.00–14.043mm (0.5512–0.5529-in.)
Service limit: 14.055mm (0.5533-in.)
5. Measure the outside diameter of the master cylinder piston.
Standard value: 13.957–13.984mm (0.5495–0.5505-in.)
Service limit: 13.940mm (0.5488-in.)

Reassembly

Caliper

1. Apply a coat of silicon sealing grease to the sliding surface of the calipers when installing the pad A and B.
NOTES:
 - a. Do not grease the friction surfaces of the pads.
 - b. Take care to prevent foreign material from entering the caliper assembly.

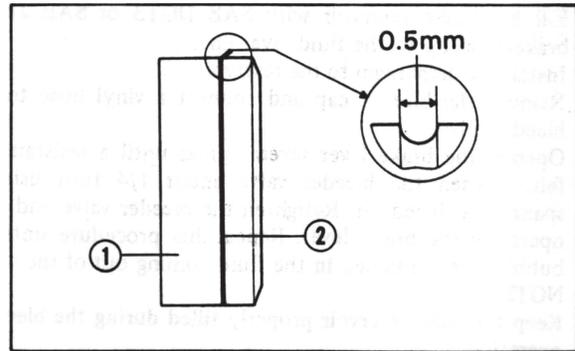


Fig. 5-19 (1) Pad
(2) Red-line groove

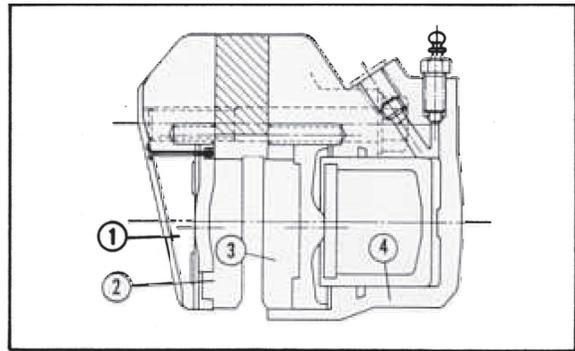


Fig. 5-20 (1) Caliper B (3) Pad A
(2) Pad B (4) Caliper A

Master cylinder

1. Apply a coat of brake fluid to the inside surface of the cylinder.
2. Install the check valve together with the return spring to the cylinder.
NOTE:
Check to see the valve is installed properly in the cylinder.

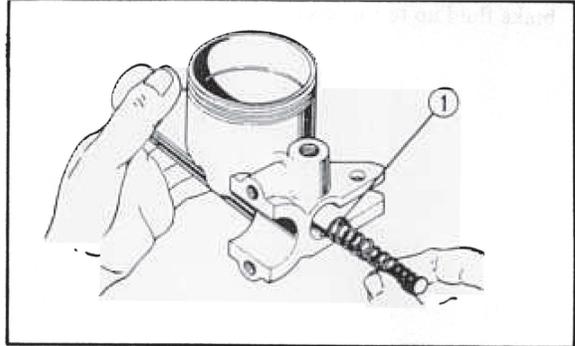


Fig. 5-21 (1) Brake lever
(2) Diaphragm

3. Apply a thin coat of brake fluid to around the primary cup, and install it to the cylinder properly.
NOTES:
 - a. Take care not to damage the primary cup during installation.
 - b. Be sure to renew primary cup when it is disassembled.
4. Install the 18mm snap ring. Check to see the snap ring is seated in place.

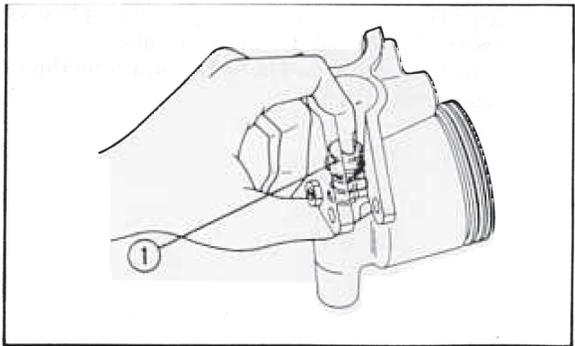


Fig. 5-22 (1) Primary cup

Brake system bleeding

1. Fill the brake reservoir with SAE DOT3 or SAE J1703 brake fluid up to the fluid level line.
2. Install the diaphragm to the reservoir.
3. Remove the bleeder cap and connect a vinyl hose to the bleeder valve.
4. Operate the brake lever several times until a resistance is felt. Loosen the bleeder valve about 1/4 turn using a spanner to bleed air. Retighten the bleeder valve and stop operating the brake lever. Repeat this procedure until no bubbles are contained in the fluid coming out of the valve.

NOTE:

Keep the fluid reservoir properly filled during the bleeding operation.

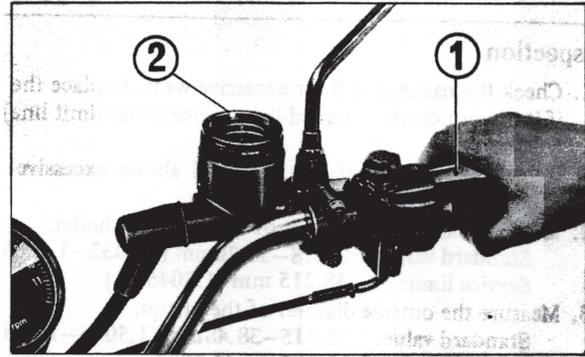


Fig. 5-23 (1) Brake lever
(2) Deaphragm

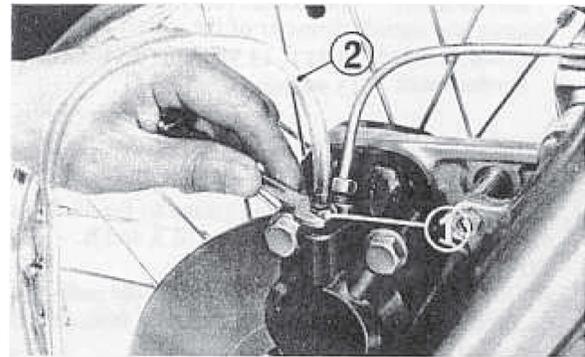


Fig. 5-24 (1) Bleeder valve
(2) Vinyl hose

5. Fill the master cylinder fluid reservoir with recommended brake fluid up to the level line.

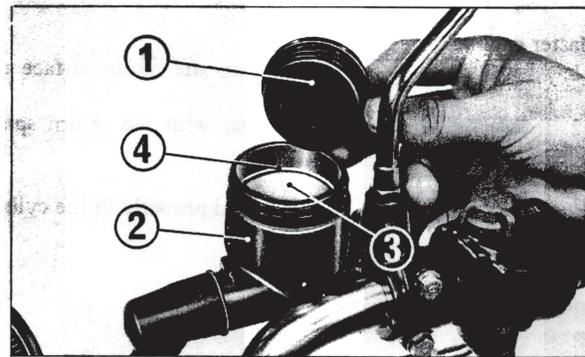


Fig. 5-25 (1) Diaphragm (3) Brake fluid
(2) Master cylinder (4) Level line

Adjusting caliper

1. Loosen the lock nut and turn the adjusting bolt counter-clockwise until the pad B contacts the disc.
2. Turn the bolt clockwise 1/3 to 1/2 turn from this position and tighten the lock nut.

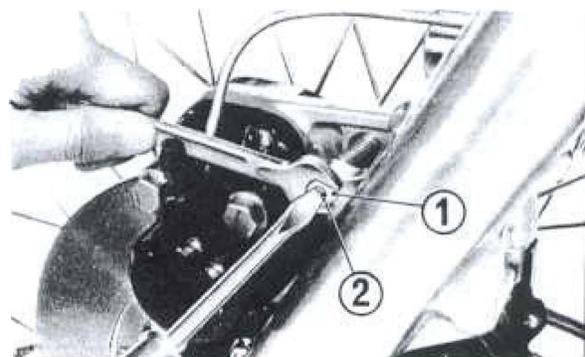
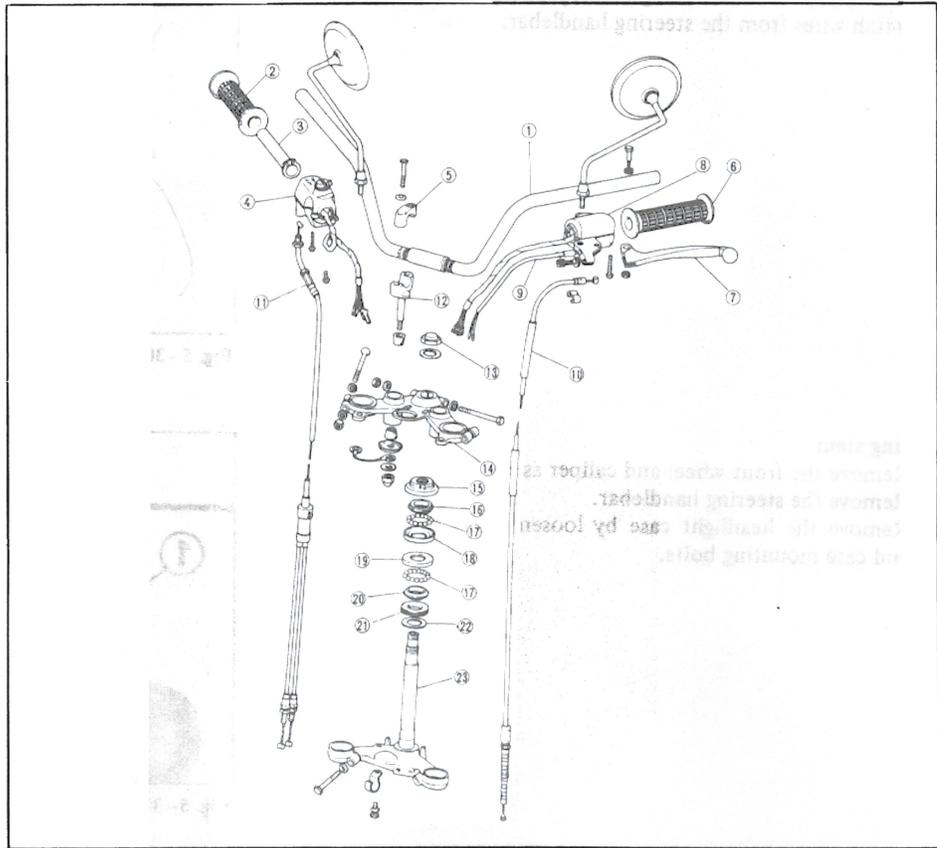


Fig. 5-26 (1) Lock nut
(2) Caliper adjusting bolt

3. STEERING

Fig. 5-27

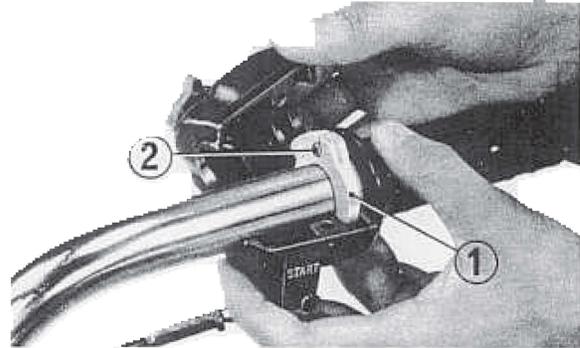
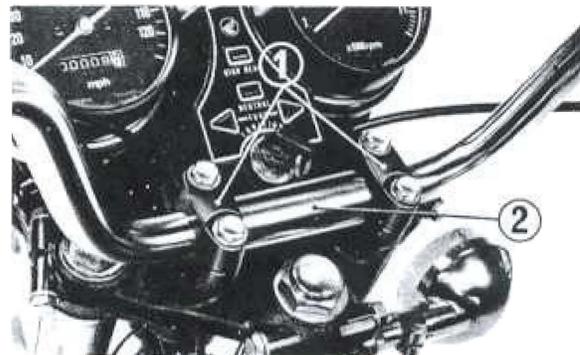
- (1) Steering handlebar
- (2) Throttle grip
- (3) Throttle grip pipe
- (4) Right hand switch housing
- (5) Upper holder
- (6) Left hand grip rubber
- (7) Clutch lever
- (8) Left hand switch housing
- (9) Clutch switch
- (10) Clutch cable
- (11) Throttle cable
- (12) Lower holder
- (13) Steering stem nut
- (14) Fork top bridge
- (15) Steering head top thread
- (16) Top cone race
- (17) Steel ball (1/4")
- (18) Top ball race
- (19) Bottom ball race
- (20) Bottom cone race
- (21) Steering head dust seal
- (22) Dust seal washer
- (23) Steering stem



Disassembly

Steering handlebar

1. Remove the master cylinder, take care not to spill brake fluid.
2. Disconnect the clutch cable at the clutch lever.
3. Loosen off the screws securing the engine stop and starting switch housing. Separate the housing and disconnect the throttle cable end from the throttle grip pipe.
4. Open the seat and remove the fuel tank.
5. Disconnect the turn signal switch, dimmer switch, horn switch, starting switch and engine stop switch wire lead connections at the connector case.
6. Remove the headlight beam and disconnect the clutch switch wire leads in the headlight case.
7. Remove the bolts securing the upper holders. Take out the holders and steering handlebar.

Fig. 5-28 (1) Throttle grip pipe
(2) Throttle cable endFig. 5-29 (1) Upper holder
(2) Steering handlebar

8. Carefully pull out the engine stop switch and turn signal switch wires from the steering handlebar.

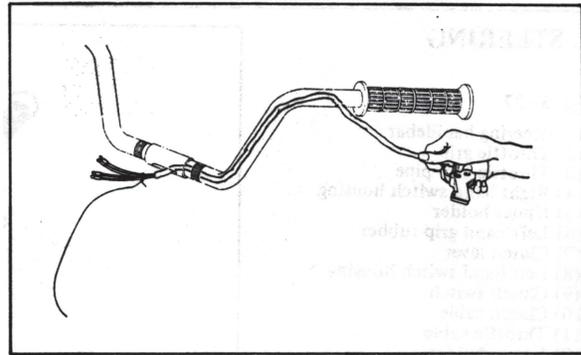


Fig. 5-30 Removing switch leads

Steering stem

1. Remove the front wheel and caliper assembly.
2. Remove the steering handlebar.
3. Remove the headlight case by loosening off the reflectors and case mounting bolts.

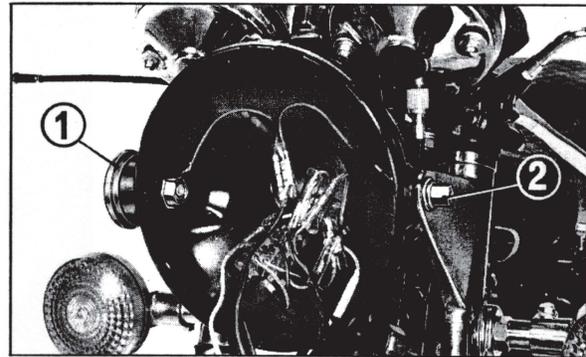


Fig. 5-31 (1) Reflector (2) Bolt

4. Disconnect the tachometer and speedometer cables at the meters.
5. Remove the nuts and take out the tachometer and speedometer.
6. Disconnect the harness connector from the main switch and remove the main switch.
7. Disconnect the front stop leads at the stop switch. Loosen off the bolts and remove the brake hose assembly from the steering stem.

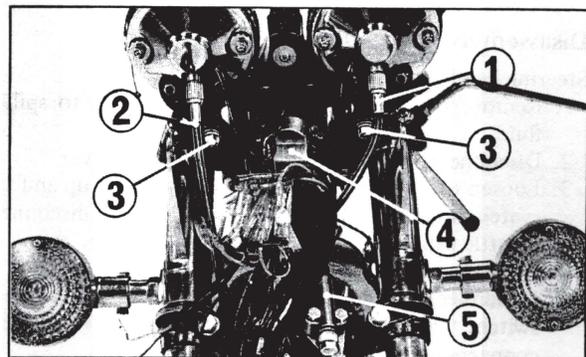


Fig. 5-32 (1) Trachometer (4) Main switch connector
(2) Speedometer cable (5) Brake hose
(3) Meter securing nut

8. Remove the steering stem nut and loosen the fork top bridge bolt; take out the fork top bridge.
9. Remove the front forks.

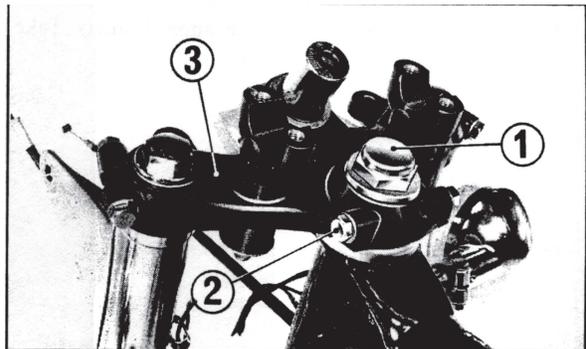


Fig. 5-33 (1) Steering stem nut
(2) Bolt
(3) Fork top bridge

10. After removing the steering head top thread with "Pin Spanner" (Tool No. 07902-2000000), pull out the steering stem toward the bottom.

NOTE:

Keep the steel balls in a parts rack so that they are not scattered and lost.

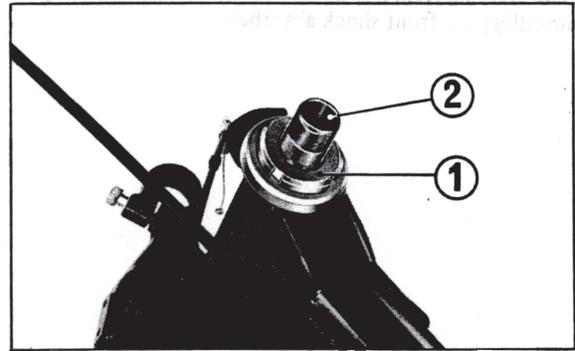


Fig. 5-34 (1) Steering head top thread
(2) Steering stem

If the ball race replacement is necessary, remove the top and bottom races from the steering head pipe using "Ball Race Remover" (Tool No. 07953-3330000)

Inspection

1. Check the steering handlebar for twist or any other damage.
2. Check each wire for breakage or any other defect.
3. Check each cable for damage.
4. Check the steering stem for bend or any other defect.
5. Check the steering top and bottom races for excessive wear or any other damage.
6. Check the steel balls for wear, damage or any other defect.
7. Check the steering head dust seal for wear.
8. Check the steering stopper for crack or deformation.

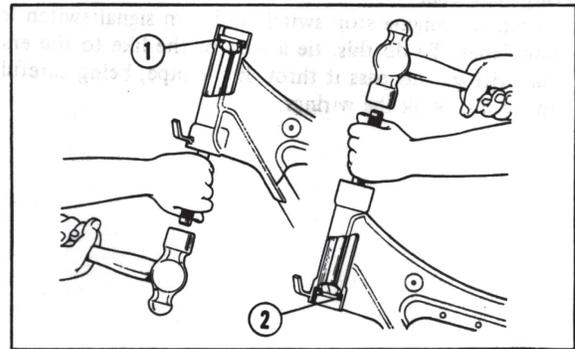


Fig. 5-35 (1) Top ball race
(2) Bottom ball race

Assembly**Steering stem**

1. Evenly drive fit the ball race in the steering head pipe using "Ball Race Driver Attachment" (Tool No. 07945-3330300) and "Driver Handle" (Tool No. 07949-6110000).

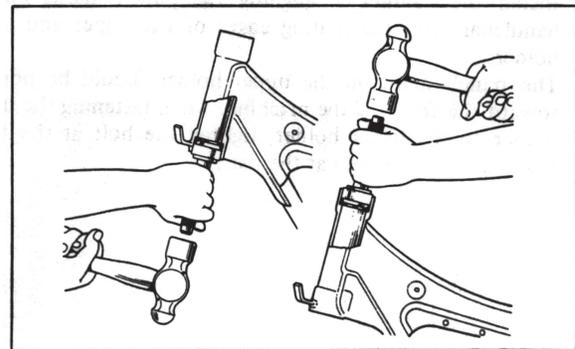


Fig. 5-36 Installing ball race

Apply a coat of grease to the ball races. Install the 1/4" steel balls (upper: 18 pcs. and lower: 18 pcs.) to each race properly. Install the steering stem through the steering head pipe and hand-tighten the head top thread so that it rotates freely without rattle. A slight amount of play in axial direction can not be tolerated here.

NOTE:

Clean the cone races, ball races and steel balls in cleaning solvent and apply a coat of grease before installation.

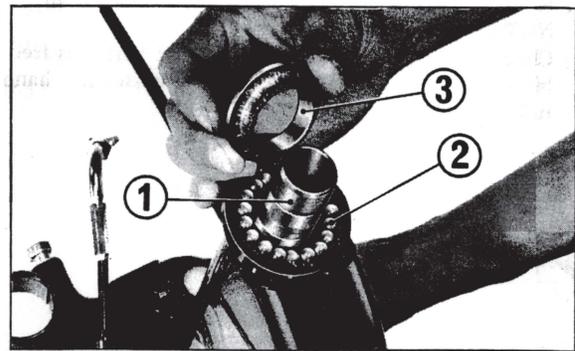


Fig. 5-37 (1) Steering stem
(2) 1/4" steel ball
(3) Top cone race

3. The steering stem nut should be tightened after temporarily installing the front shock absorbers.

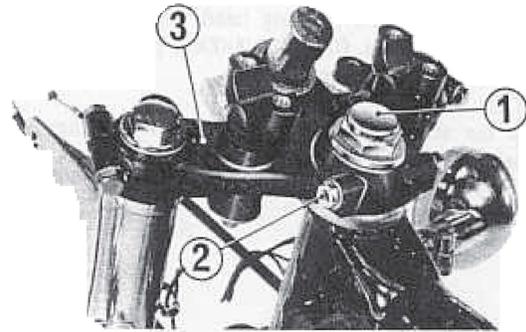


Fig. 5-38 (1) Steering stem nut
(2) Bolt
(3) Fork top bridge

Steering handlebar

1. Install the engine stop switch and turn signal switch to the handlebar. To do this, tie a wire or the like to the ends of the wirings and pass it through the pipe, being careful not to twist or kink the wirings.

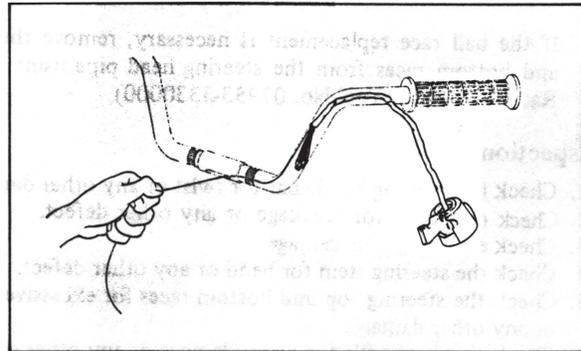


Fig. 5-39 Passing wire through handlebar

Install the handlebar, aligning the punch marks on the handlebar with the mating edges of the upper and lower holders.

The punch mark on the upper holder should be pointed toward the front of the machine. When fastening the upper holder to the lower holder, tighten the bolt at the front first and then the ones at the rear.

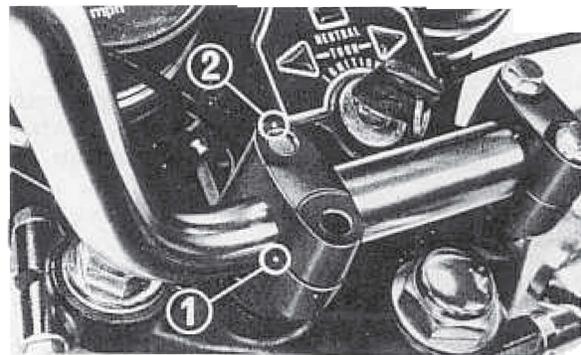


Fig. 5-40 (1) Punch mark on handlebar
(2) Punch mark on upper holder

3. Route the each cable and wiring properly as shown.

NOTE:

Check to be sure that each cable and wiring is free from binding or twisting when turning the steering handlebar fully to either left or right side.

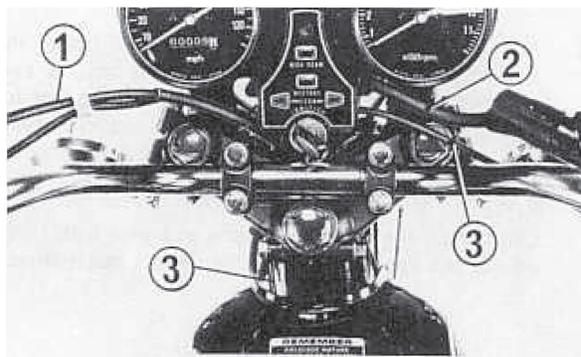
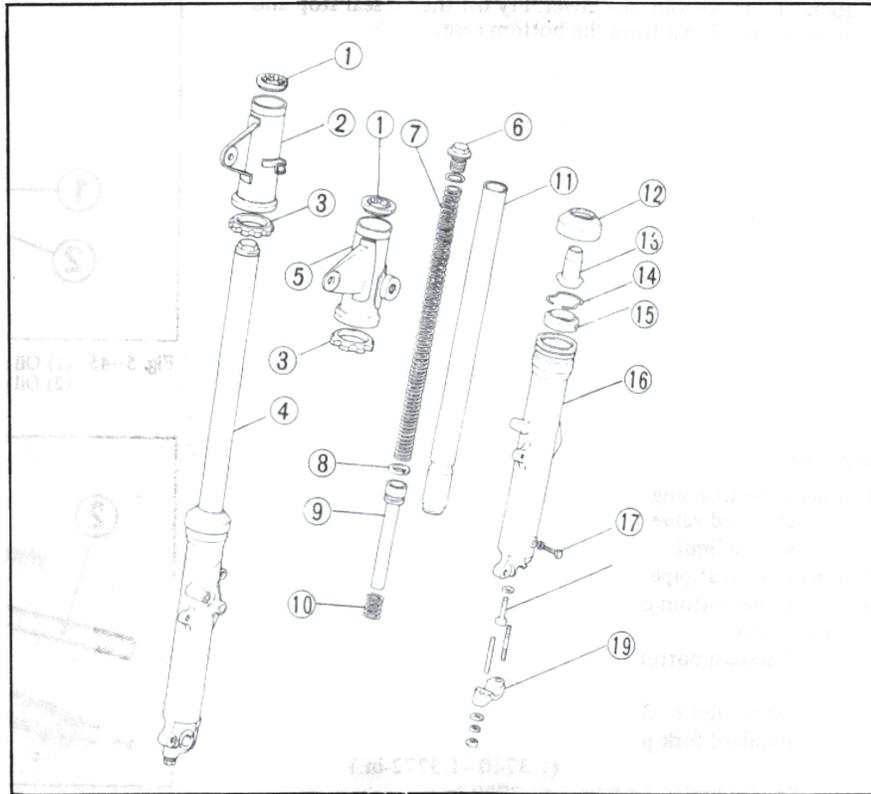


Fig. 5-41 (1) Clutch cable
(2) Brake hose
(3) Throttle cable

4. FRONT SUSPENSION

Fig. 5-42

- (1) Upper cover cushion
- (2) Right fork cover
- (3) Lower cover cushion
- (4) Right front shock absorber
- (5) Left fork cover
- (6) Fork bolt
- (7) Front shock absorber spring
- (8) Piston ring
- (9) Under seat pipe
- (10) Rebound spring
- (11) Front fork pipe
- (12) Bottom case cover
- (13) Oil lock piece
- (14) Oil seal stop
- (15) Oil seal
- (16) Bottom case
- (17) Drain bolt
- (18) Socket bolt
- (19) Front axle holder



Disassembly

1. Remove the front wheel.
2. Remove the caliper assembly from the left front fork.
3. With the front fork bolt loosened, loosen the bolts at the fork top bridge and steering stem, which secure the front fork. Pull the front fork toward the bottom.
4. Drain the front suspension oil.
5. Remove the rust on the front fork pipe, if any, with fine emery cloth.

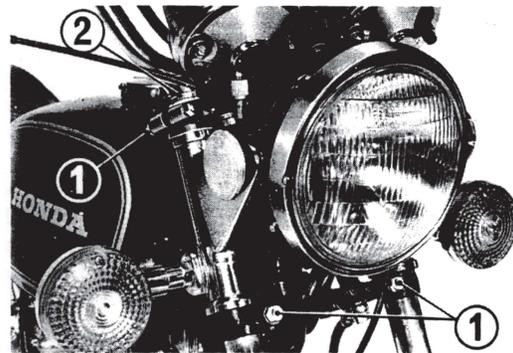


Fig. 5-43 (1) Front fork securing bolt
(2) Front fork bolt

6. Remove the socket bolt and separate the front fork pipe and oil lock piece from the bottom case. Use "Allen Head Wrench" (Tool No. 07922-2870000) to remove the socket bolt.

Protect the shock absorber with cloth when holding it on a vice.

Remove the front fork bolt on top of the front fork pipe; remove the front shock absorber spring, under seat pipe and rebound spring.

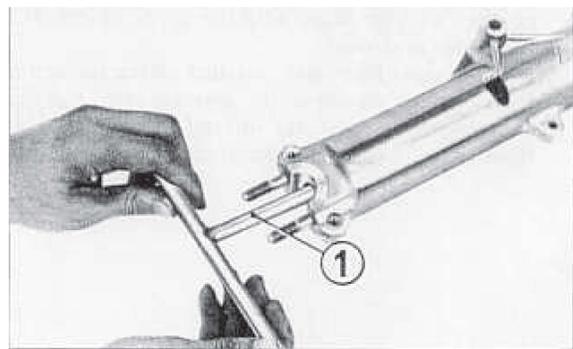


Fig. 5-44 (1) Allen head wrench

- Remove the bottom case cover. Pry off the oil seal stop and remove the oil seal from the bottom case.

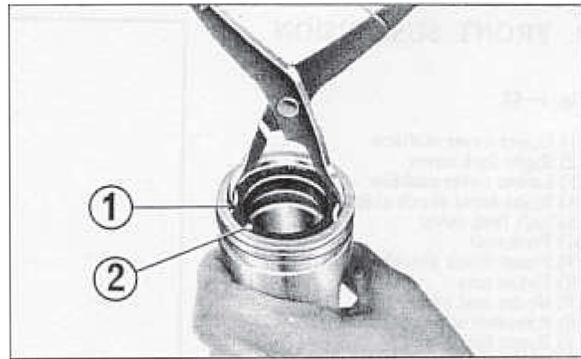


Fig. 5-45 (1) Oil seal stop
(2) Oil seal

Inspection

- Check the free length of the front shock absorber spring.
Standard value: 466mm (18.35-in.)
Service limit: 440mm (17.32-in.)
- Check the seat pipe for wear on the piston ring.
- Check the bottom case and fork pipe for wear, crack or any other defect.
Standard bottom case I.D.: 35.025–35.064mm
(1.3790–1.3810-in.)
Service limit: 35.20mm (1.3859-in.)
Standard fork pipe O.D.: 34.90–34.98mm
(1.3740–1.3772-in.)
Service limit: 34.87mm (1.3729-in.)
- Check the oil seal for wear or damage.

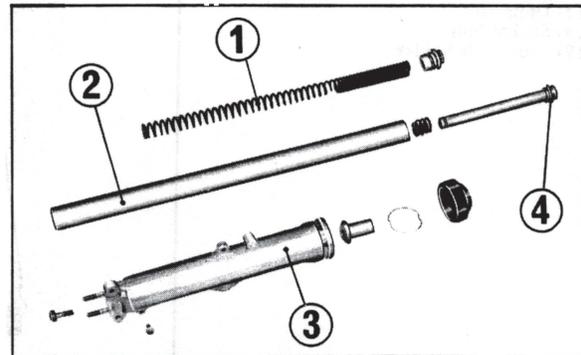


Fig. 5-46 (1) Front shock absorber spring (3) Bottom case
(2) Front fork pipe (4) Piston ring

Assembly

- Clean all parts in solvent before assembly.
- Apply a coating of ATF (automatic transmission fluid) to the entire surface of a new oil seal. Install the oil seal to the bottom case. Drive fit the oil seal using "Fork Seal Driver" (Tool No. 97947-32900). Install the snap ring and bottom case cover.
- Install the rebound spring and seat pipe into the front fork pipe. Insert the front shock absorber spring into the fork pipe so that the end with the large pitch is at the bottom.
- After installing the oil lock piece, insert the front fork pipe to the bottom case and secure with the socket bolt.

NOTE:

Apply liquid sealant to the threads of the socket bolt.

- Fill each front fork with 185–191cc (6.2–6.5 zs.) of ATF before installation.
- Install the front fork assembly so that the chamfered edge on the fork pipe aligns with the upper surface of the fork top bridge as shown.
- After all parts have been installed, check the action of the front shock absorbers by grasping the handlebar and bouncing the front forks up and down. Also, check the front forks for signs of leaks from the oil seal.

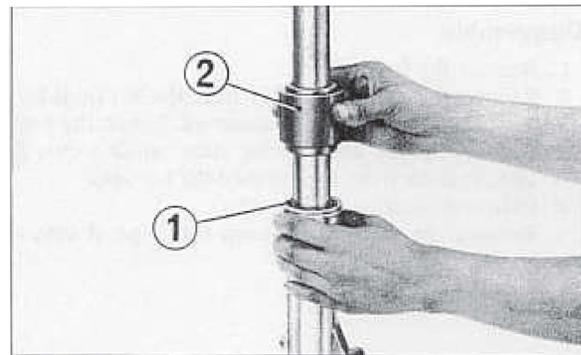


Fig. 5-47 (1) Oil seal
(2) Fork seal driver



Fig. 5-48 (1) Chamfered edge of front fork pipe

5. REAR WHEEL AND REAR BRAKE

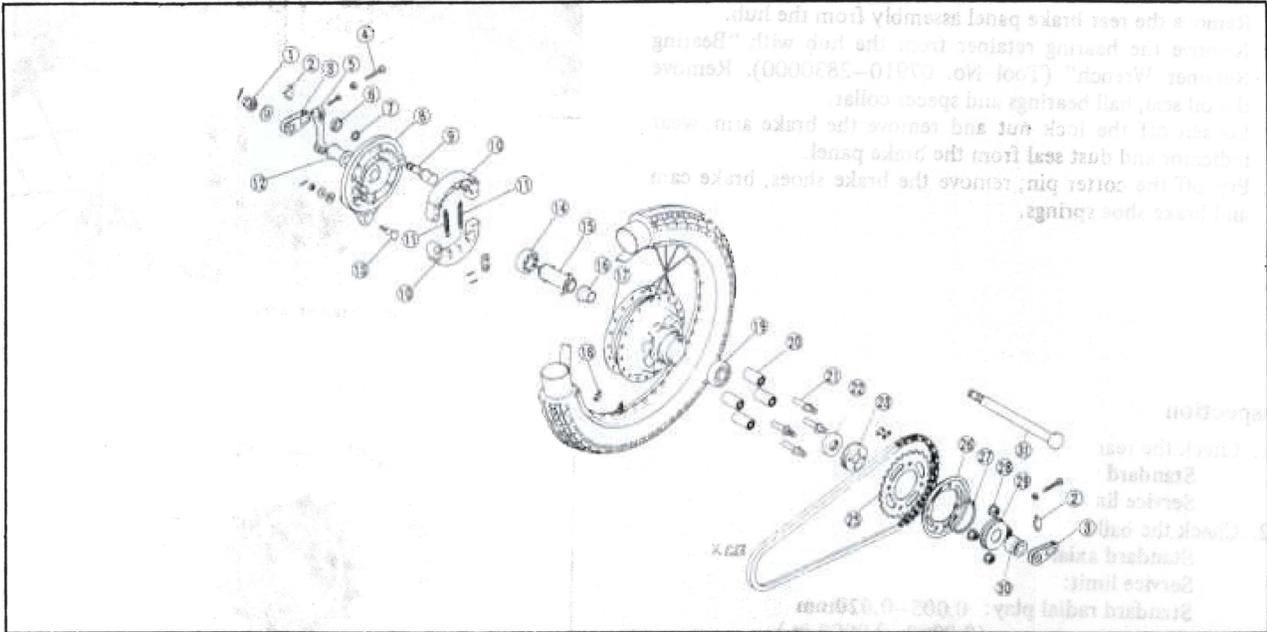


Fig. 5-49

- | | | | |
|--------------------------|------------------------------|----------------------------------|--------------------------|
| (1) Rear axle nut | (9) Brake cam | (17) Rear wheel hub | (25) Driven sprocket |
| (2) Chain adjuster stop | (10) Brake shoe | (18) Balance weight | (26) Sprocket side plate |
| (3) Chain adjuster | (11) Brake shoe spring | (19) Ball bearing (6305Z) | (27) Snap ring |
| (4) Adjusting bolt | (12) Brake panel side collar | (20) Damper bush | (28) Flange nut |
| (5) Brake arm | (13) Brake panel stop bolt | (21) Driven sprocket fixing bolt | (29) Dust cover |
| (6) Brake wear indicator | (14) Ball bearing (6304Z) | (22) Oil seal | (30) Wheel side collar |
| (7) Dust seal | (15) Spacer collar | (23) Bearing retainer | (31) Rear wheel axle |
| (8) Brake panel | (16) Spacer collar B | (24) Drive chaine | |

Disassembly

1. Remove the mufflers.
2. Remove the rear brake adjusting nut and disconnect the brake rod from the brake arm.
3. Remove the lock pin, nut and bolt; separate the rear brake stop arm from the brake panel.
4. Pry off the cotter pin and loosen the rear wheel axle nut. Loosen the lock nuts and drive chain adjusting bolts.
5. Disengage the drive chain from the final driven sprocket. Then take off the rear wheel together with the chain adjusters and rear wheel axle.
6. Take off the dust cover and remove the sprocket side plate by loosening off the nuts.
7. Pry off the snap ring and remove the sprocket and sprocket fixing bolts.

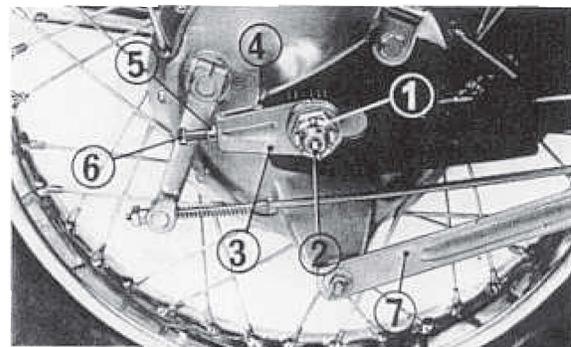


Fig. 5-50 (1) Axle nut (5) Lock nut
(2) Cotter pin (6) Chain adjusting bolt
(3) Drive chain (7) Rear brake stop arm
(4) Chain adjuster stop

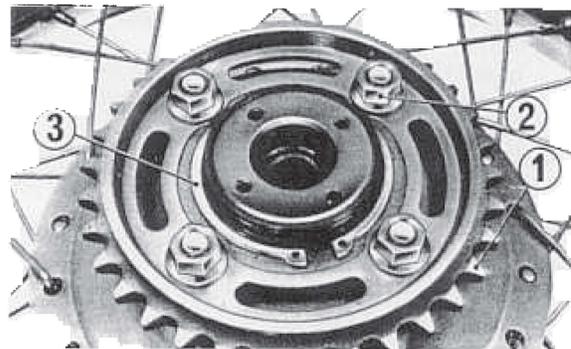


Fig. 5-51 (1) Final driven sprocket
(2) Nut
(3) Snap ring

8. Remove the side collar from the oil seal in the rear wheel hub.
9. Remove the rear brake panel assembly from the hub.
10. Remove the bearing retainer from the hub with "Bearing Retainer Wrench" (Tool No. 07910-2830000). Remove the oil seal, ball bearings and spacer collar.
11. Loosen off the lock nut and remove the brake arm, wear indicator and dust seal from the brake panel.
12. Pry off the cotter pin; remove the brake shoes, brake cam and brake shoe springs.

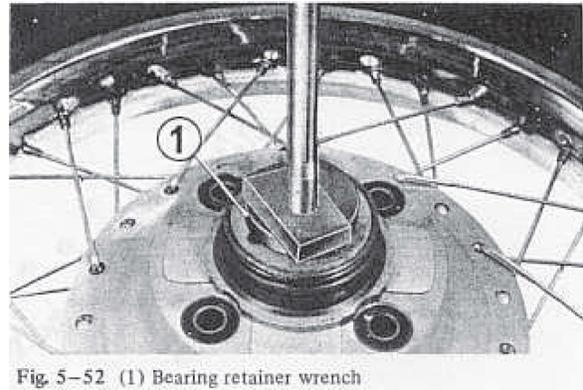


Fig. 5-52 (1) Bearing retainer wrench

Inspection

1. Check the rear wheel axle for bend.
 - Standard value: 0.05mm (0.0020-in.) max.
 - Service limit: 0.2mm (0.0079-in.)
2. Check the ball bearings for play.
 - Standard axial play: 0.07mm (0.0028-in.) max.
 - Service limit: 0.1mm (0.004-in.)
 - Standard radial play: 0.005-0.020mm (0.0002-0.0008-in.)
 - Service limit: 0.06mm (0.0024-in.)
3. Check the rim for face runout.
 - Standard value: 0.5mm (0.0197-in.) max.
 - Service limit: 2.0mm (0.0787-in.)
4. Check the spokes for looseness, bend or other damage.
5. Check the final driven sprocket for excessive wear or any other damage.
6. Check the drive chain for wear, damage or elongation.
7. Check the brake lining for wear.
 - Standard value: 5.0mm (0.197-in.)
 - Service limit: 2.0mm (0.079-in.)
8. Check the brake panel for damage or crack.
9. Check the brake drum for wear or damage.
 - Standard brake drum I.D.: 180mm (7.0866-in.)
 - Service limit: 181mm (7.1260-in.)
10. Check the oil seals for wear or damage.

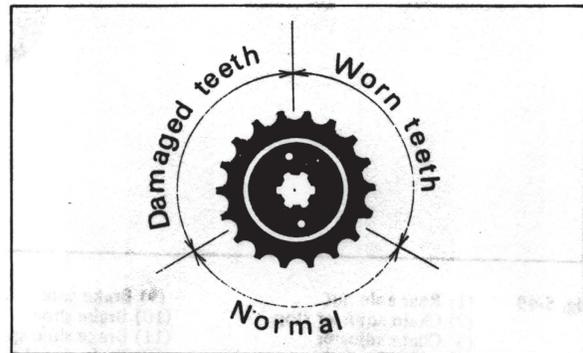
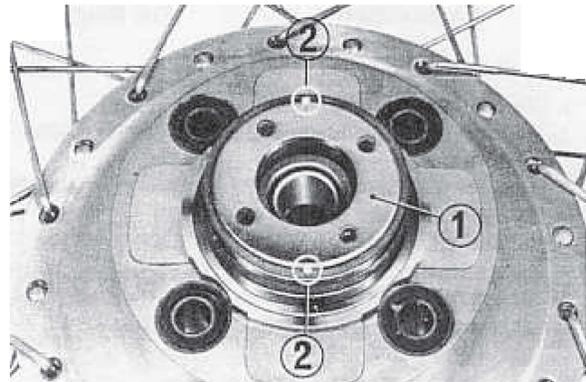


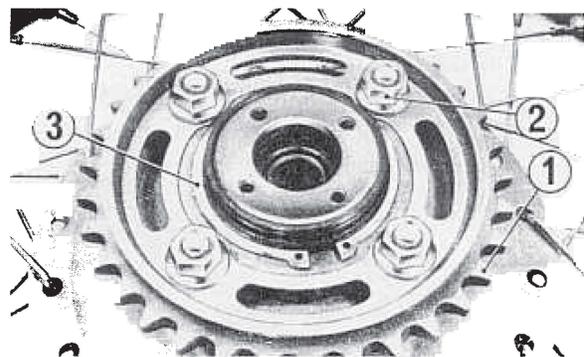
Fig. 5-53 Checking wear on final driven sprocket

Fig. 5-54 (1) Bearing retainer
(2) Stake

Assembly

1. Hand pack the ball bearing and hub with grease. Using "Bearing Driver Attachment" (Tool No. 07946-3290000), (07946-3600000) and "Driver Handlee" (Tool No. 07949-6110000), drive fit the bearings into the wheel hub through the spacer collar.

NOTE:
Install the bearings with the seal side toward the outside.
Do not angle the spacer collar while driving.
2. Drive a new oil seal in the wheel hub.
3. Install the bearing retainer using "Bearing Retainer Wrench" (Tool No. 07910-2830000). Stake the bearing retainer at two places as shown in Fig. 5-54.
4. Install the driven sprocket fixing bolts to the pivot bushings of the wheel hub. Place the driven sprocket so that its groove align with the flanges of the fixing bolts and secure it with the snap ring.

Fig. 5-55 (1) Final driven sprocket
(2) Nut
(3) Snap ring

5. Install the sprocket side cover to the sprocket and tighten it with flange nuts.
6. Sparingly apply grease to the brake cam and anchor pin before installing the brake shoes.

NOTE:

Avoid grease getting on the brake linings and brake drum.

7. Install the brake arm with the punch mark on the brake arm lined up with that on the brake cam.
8. Check the wheel for out of balance and, if necessary, adjust. (See page 19.)
9. Insert the rear wheel axle from the left side when installing the wheel.
10. Adjust the drive chain tension and rear brake.

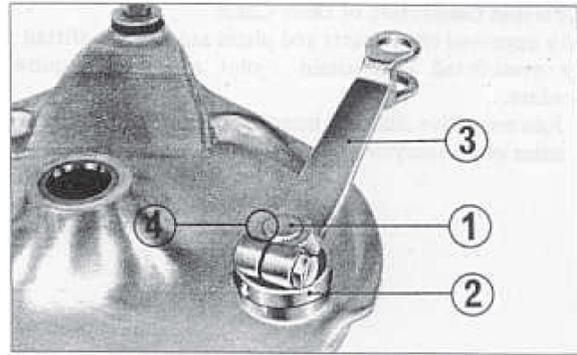


Fig. 5-56 (1) Brake cam (2) Wear indicator (3) Brake arm (4) Punch mark

Replacing drive chain

If the drive chain replacement is necessary, use "Drive Chain Joint Tool" (Tool No. 07975-3000001) and proceed as follows.

A. Disconnection of Drive Chain

1. Position chain link pin to be cut on chain holder in place as shown in Fig. 5-57. Screw in pressure bolt until pressure holder holds chain in position. Back off adjuster bolt so that it does not interfere with chain.
2. By use of handlebar, screw in pressure bolt B until before joint pin is just pushed off joint plate.
3. Position adjacent chain link pin on chain holder and repeat step 1 and 2 screw in pressure bolt B until joint pin is completely pushed off joint plate.
4. Reposition original chain link pin on chain holder and disconnect chain by pushing off joint pin in the same way as in step 3.

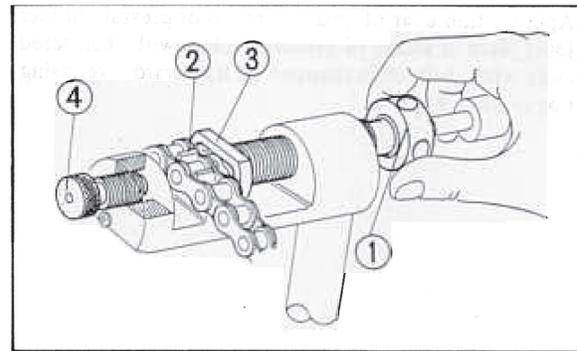


Fig. 5-57 (1) Pressure bolt (2) Chain holder (3) Pressure holder (4) Adjuster bolt

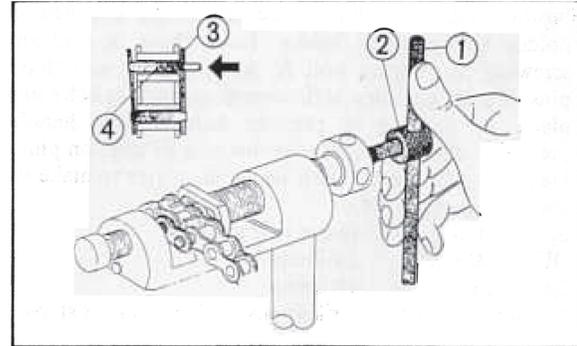


Fig. 5-58 (1) Handle bar (2) Pressure bolt B (3) Joint plate (4) Joint pin

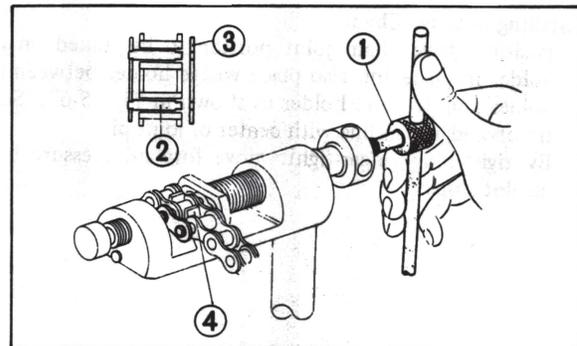


Fig. 5-59 (1) Pressure bolt B (2) Joint pin (3) Joint plate (4) Chain holder

B. Press-in Connection of Drive Chain

Newly improved chain joints and plates are of a pressfitted type. Only press-fitted type chain joint and plate require this procedure.

1. Join new drive chain by inserting joint pin from side toward enter of motorcycle.

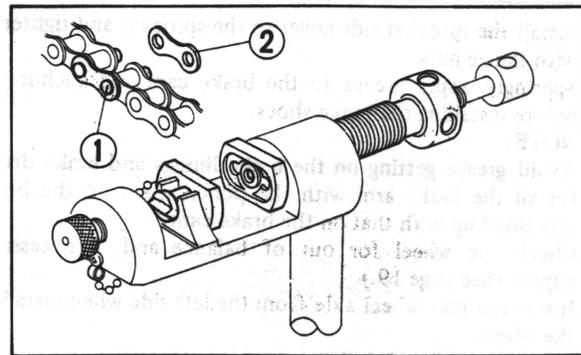


Fig. 5-60 (1) Joint pin
(2) Joint plate

2. Apply a thin coat of grease in recess of pressure holder. Set joint plate in recess of pressure holder with chamfered side (side with chain code stamped on it) inward, exercising care not to drop it.

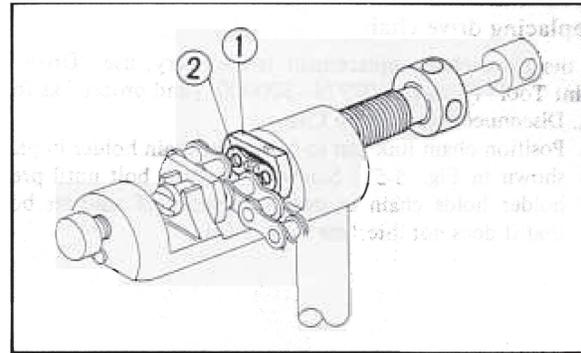


Fig. 5-61 (1) Pressure holder
(2) Joint plate

3. Position chain portion to be connected between chain holder and pressure holder. Hold chain in position by screwing in pressure bolt A. After making sure that two pins of joint pin align with corresponding two holes in joint plate.

4. Measure distance between two joint plates to make sure if correctly press-fitted.

Specified distance between two plates:

DID50HDS 19.7mm

DID50DS 19.0mm

If reading exceeds specifications as above, repeat steps.

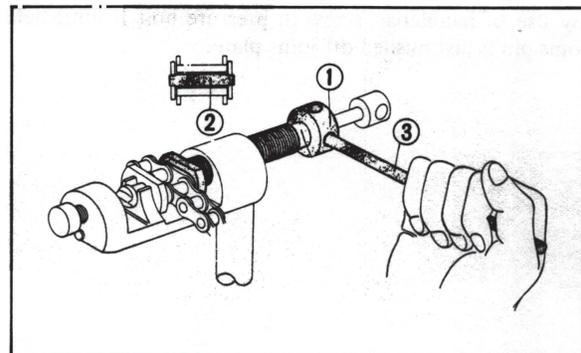


Fig. 5-62 (1) Pressure bolt A
(2) Joint pin
(3) Handle bar

C. Staking of Drive Chain

1. Position drive chain joint portion to be staked on chain holder in place and also place wedge holder between chain holder and pressure holder as shown in Fig. 5-63. So that tip of wedge is in line with center of joint pin.

By tightening finger-tight, move forward pressure bolt A until it stops.

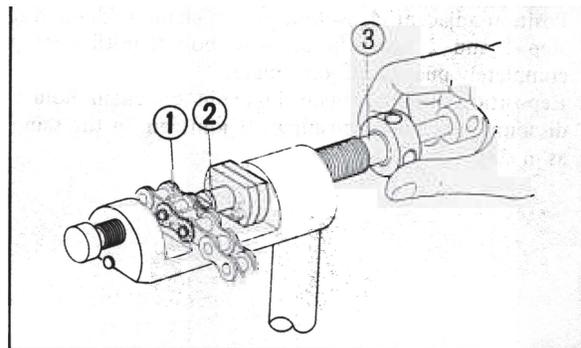


Fig. 5-63 (1) Chain holder
(2) Joint pin
(3) Pressure bolt A

- Screw in adjuster bolt until opposite end of joint pin is forced against it.

NOTE:

Screw in adjuster bolt until finger-tight.

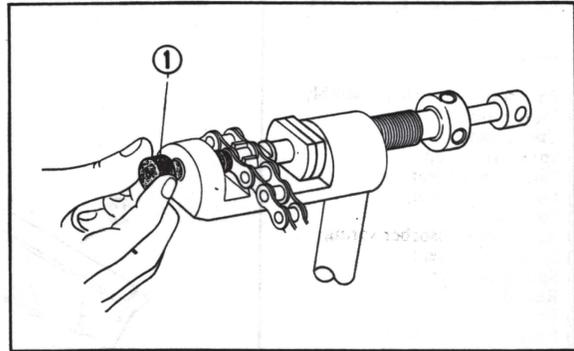


Fig. 5-64 (1) Adjuster bolt

- By use of handlebar, stake end of joint pin by turning pressure bolt B 3/4 turn.

NOTE:

Never exceed 3/4 turn.

- After backing off pressure bolt A approx. two turns, back off wedge pin 1/4 turn (90 degrees) and repeat steps thru 3 so that end of joint pin is staked in a cross pattern. Repeat entire steps on opposite end.

NOTE:

Be sure that cross patterned stakings be performed at 90° angles.

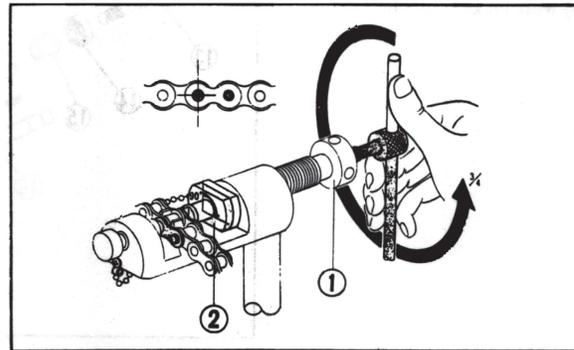


Fig. 5-65 (1) Pressure bolt A
(2) Wedge pin

Rear brake linkage

- Remove the brake adjusting nut and separate the brake rod from the brake arm.
- Remove the right muffler.

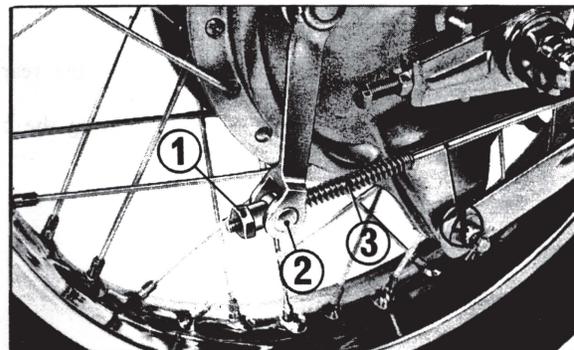


Fig. 5-66 (1) Adjusting nut (3) Brake rod spring
(2) Brake arm joint (4) Brake rod

- Remove the brake pedal spring from the brake pedal.
- Pull out the cotter pin that secures the main stand pivot pipe.
- Loosen the main stand locking bolts. Withdraw the pivot pipe and remove the brake pedal.
- Remove the brake rod from the brake pedal.
- To assemble the brake linkage, reverse the disassembly procedures after applying a coat of grease to the main stand pivot pipe.
- Adjust the brake pedal free height and free play.

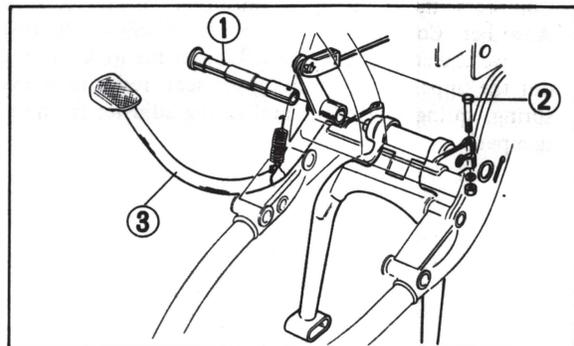
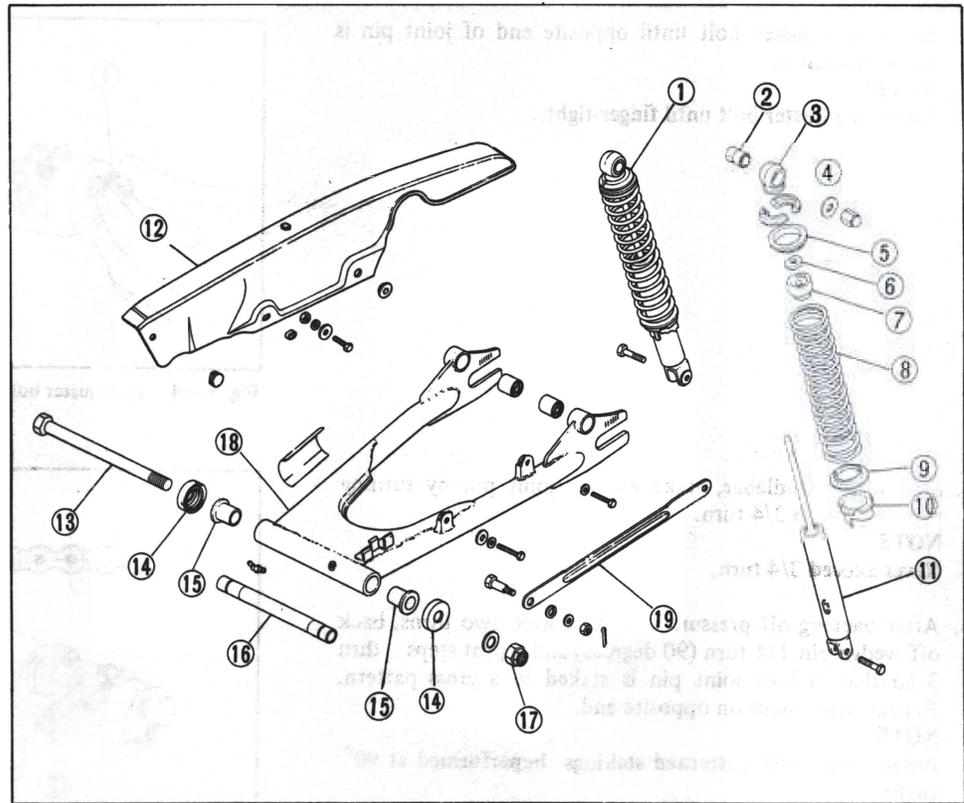


Fig. 5-67 (1) Main stand pivot pipe
(2) Locking bolt
(3) Brake pedal

6. REAR SUSPENSION

Fig. 5-68

- (1) Rear shock absorber assembly
- (2) Joint rubber
- (3) Upper joint
- (4) Spring seat stop
- (5) Spring upper seat
- (6) Lock nut (10mm)
- (7) Stop rubber
- (8) Rear shock absorber spring
- (9) Spring lower seat
- (10) Spring adjuster
- (11) Rear damper
- (12) Drive chain case
- (13) Rear fork pivot bolt
- (14) Dust seal cap
- (15) Rear fork pivot bushing
- (16) Rear fork center collar
- (17) Self-locking nut (14mm)
- (18) Rear fork
- (19) Rear brake stop arm



Disassembly

Rear shock absorber

1. Remove the bolts and cap nuts securing the rear pipe bumper in place.
 2. Remove the rear shock absorber by removing the bolt at the bottom.
-
3. Compress the rear shock absorber using "Rear Shock Absorber Compressor" (Tool No. 07959-3290000) and remove the spring seat stops. Loosen the lock nut and take out the upper joint, spring upper seat, rear shock absorber spring, spring lower seat and spring adjuster from the rear damper.

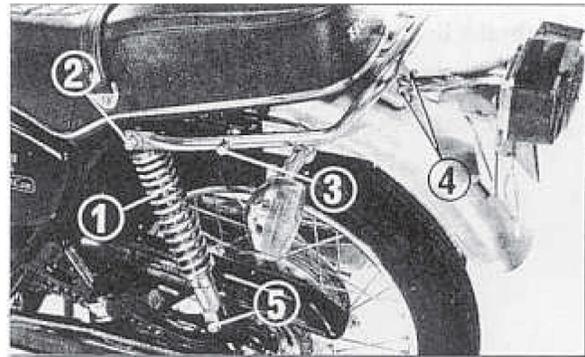


Fig. 5-69 (1) Rear shock absorber (4) Cap nut
(2) Cap nut (5) Bolt
(3) Rear pipe bumper bolt

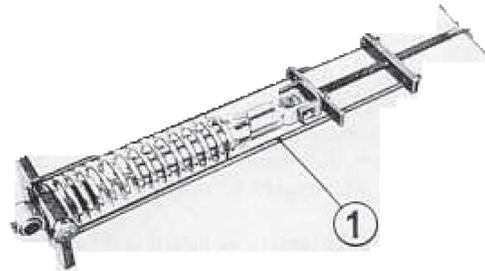


Fig. 5-70 (1) Rear shock absorber compressor

Rear fork

1. Remove the rear wheel. (See page 75.)
2. Remove the rear shock absorbers. (See page 80.)
3. Remove the bolts securing the drive chain case in place; take out the chain case.
4. Remove the left crankcase rear cover and chain protector. Disengage the drive chain from the drive sprocket.
5. Unscrew the self-locking nut and withdraw the rear fork pivot bolt. Remove the rear fork from the frame together with drive chain.

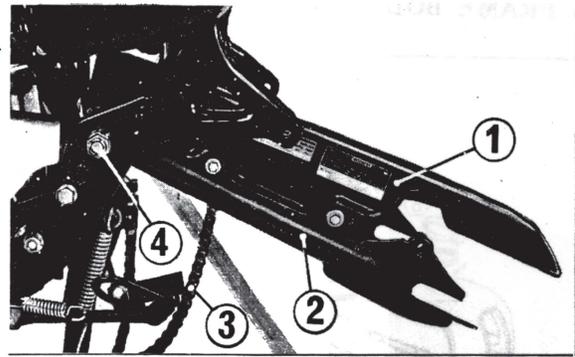


Fig. 5-71 (1) Drive chain case (3) Drive chain
(2) Rear fork (4) Self-locking nut

Inspection

1. Check the free length of the rear shock absorber spring.
Standard value: 210.4mm (8.28-in.)
Service limit: 205mm (8.07-in.)
2. Check the rear damper for distortion or oil leaks.
3. Check the rear rubber stop for cracks or damage.
4. Check the rear fork center collar-to-bushing clearance.
Standard Bushing I.D.: 21.50–21.533mm
(0.8465–0.8478-in.)
Service limit: 216 mm (0.8504-in.)
Standard center collar O.D.: 21.472–21.493mm
(0.8454–0.8462-in.)
Service limit: 21.4 mm (0.8425-in.)
5. Check the rear fork for bend.

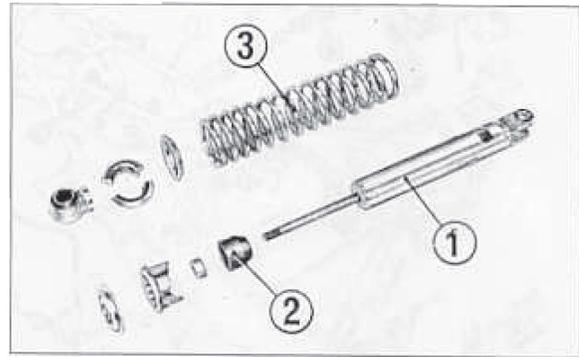


Fig. 5-72 (1) Rear damper
(2) Rubber stop
(3) Rear shock absorber spring

Assembly

1. Apply a coating of grease to the rear fork center collar before installation. Install the rear fork to the frame.
2. Reaching from the right side, insert the rear fork pivot bolt in the fork pivot and secure with the self-locking nut.

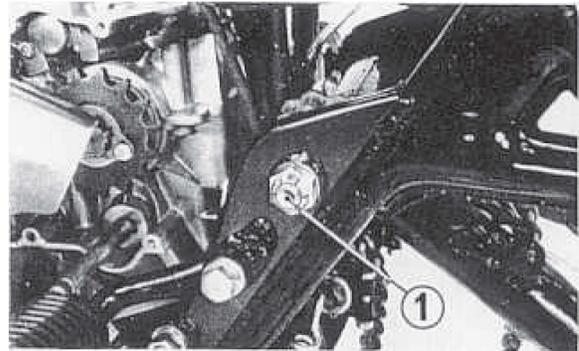


Fig. 5-73 (1) Rear fork pivot bolt

3. Using "Rear Shock Absorber Compressor" (Tool No. 07959-3290000), compress the rear shock absorber spring and pull up the upper joint. Install the spring seat stops to secure the spring.

NOTE:

Install the shock absorber spring so that the end with the large pitch is at the bottom.

4. After assembly, grease the rear fork pivot at the grease fitting.

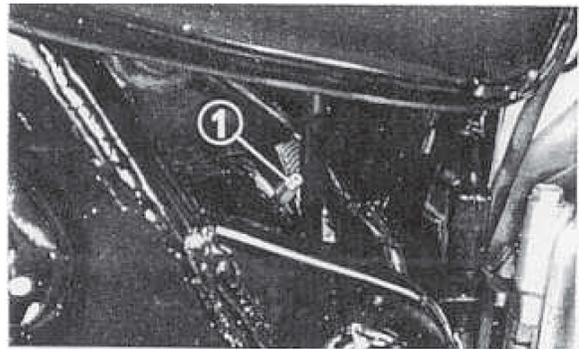


Fig. 5-74 (1) Grease fitting

7. FRAME BODY

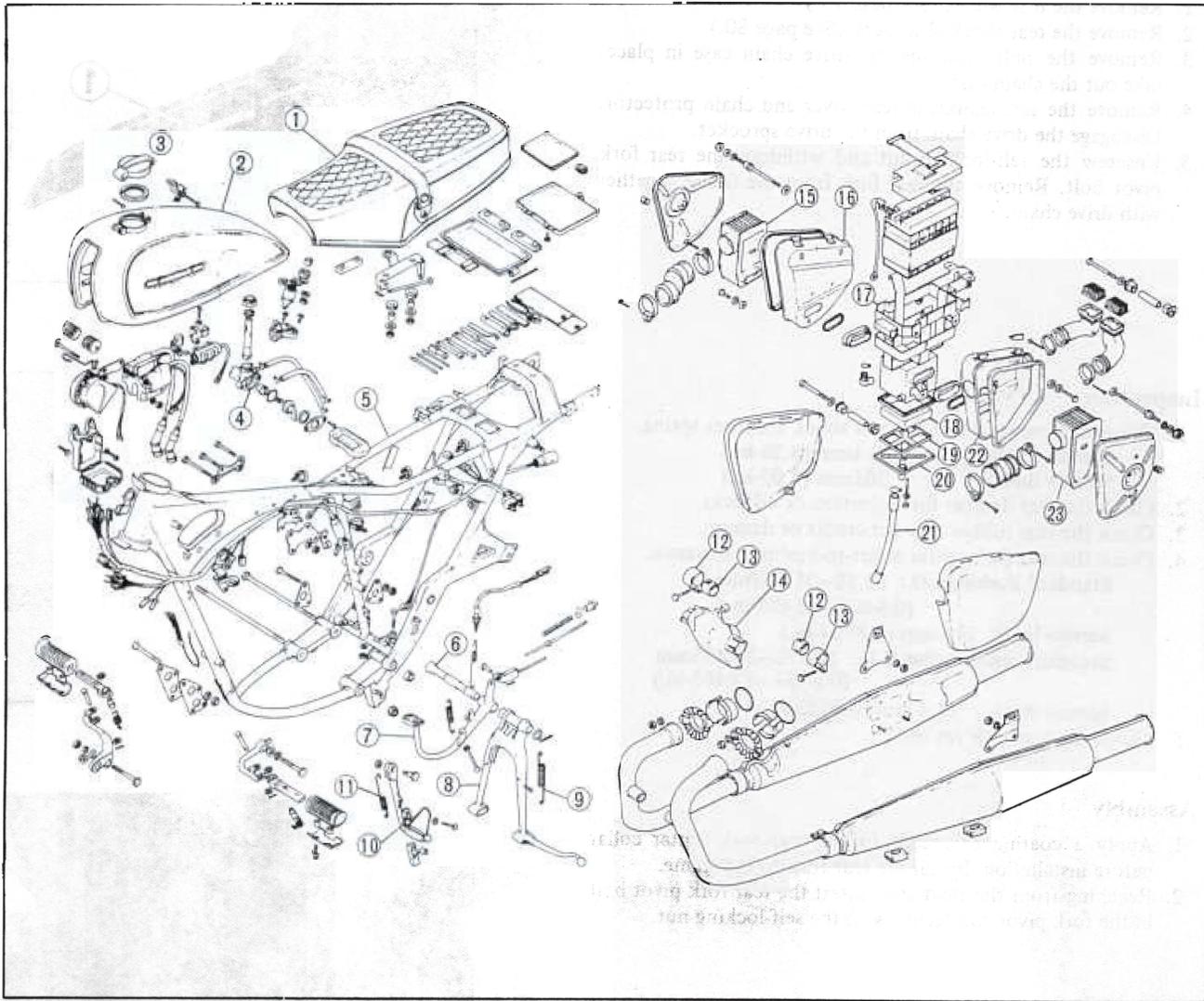


Fig. 5-75

(1) Seat	(7) Brake pedal	(13) Gasket	(19) Breather retainer
(2) Fuel tank	(8) Main stand	(14) Pre-chamber	(20) Breather cover
(3) Fuel filler cap	(9) Main stand spring	(15) Right air cleaner element	(21) Drain tube
(4) Fuel cock	(10) Side stand	(16) Right air cleaner case	(22) Left air cleaner case
(5) Frame	(11) Side stand spring	(17) Battery case	(23) Left air cleaner element
(6) Main stand pivot pipe	(12) Band	(18) Breather element	

Disassembly

1. Remove the seat.
2. Remove the fuel tank.
3. Dismount the battery.

Disconnect the ground (-) cable first, and then remove the cable at the positive terminal.
4. Dismount the engine.
5. Remove the air cleaner elements.
6. Remove the bolts to remove the air cleaner cases.
7. Loosen off the front rear fender securing bolts and battery case bolts; remove the battery case.

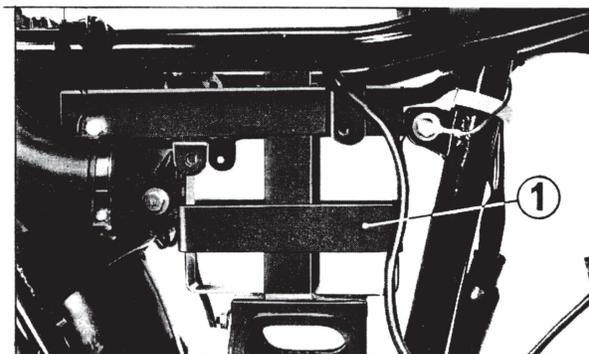


Fig. 5-76 (1) Battery cas.

8. Remove the rear wheel, rear shock absorbers and rear fork.
9. Remove the front wheel, front shock absorbers, steering handle-bar and steering stem.
10. Remove the rear fenders by loosening off the bolts and nuts.
Disconnect the wire leads of the turn signal and tail/stop lamp before removing the fenders.
11. Disconnect each wiring at the connector. Remove the starting magnetic switch, regulator, turn signal relay, silicon diode rectifier, horn and ignition coil.
12. Remove the wire harness from the frame.

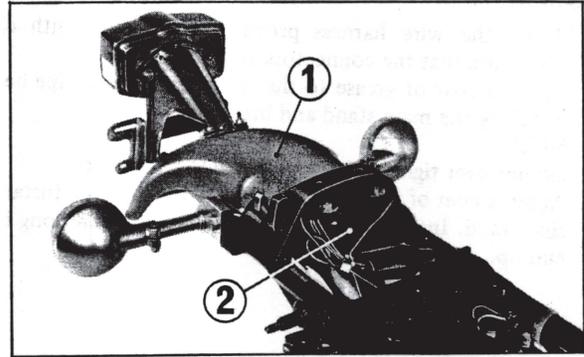


Fig. 5-77 (1) Rear fender
(2) Front rear fender

13. Remove the brake pedal, stop switch, main stand and side stand.

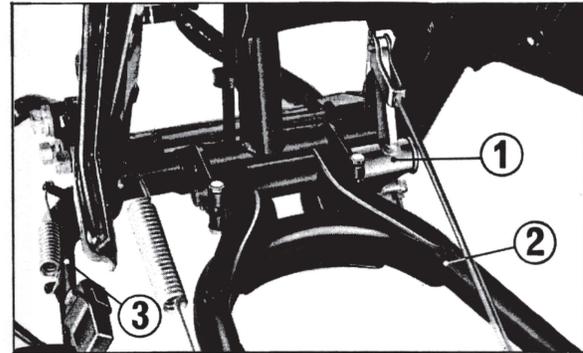


Fig. 5-78 (1) Brake pedal (3) Side stand
(2) Main stand

14. Disassemble the fuel cock.

Loosen off the screws and remove the plate, washer, lever, spring, O-ring and valve from the fuel cock body.

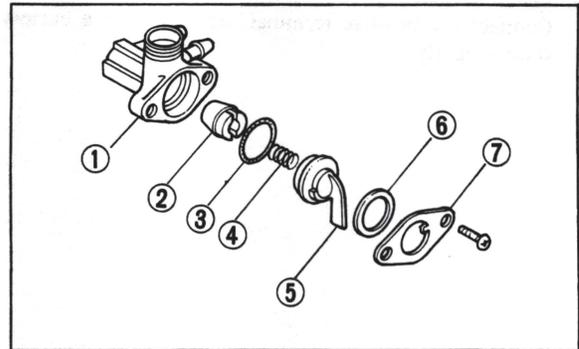


Fig. 5-79. (1) Fuel cock body (4) Spring (7) Lever setting plate
(2) Valve (5) Cock lever
(3) O-ring (6) Washer

Inspection

1. Check the entire frame distortion, damage, crack or any other defect.
2. Check the steering head pipe for misalignment or deformation.
3. Check the wire harness, connectors for breakage, proper connection, damage or any other defect.
4. Check the fuel tube for deterioration; also for cracks or any other imperfections.
5. Check the fuel filler cap for clogging.
6. Check the fuel tank for deformation, cracks or other sign of leaks. Also check the interior and, if necessary, clean.
7. Check the side stand for wear, damage or any other defect. Also check the proper return operation. (See page 20.)
8. Check the muffler pre-chamber gaskets for damage.
9. Check the valve faces of the fuel cock for scores or any other damage.

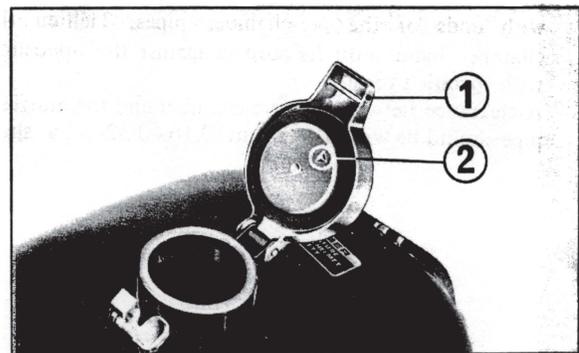


Fig. 5-80 (1) Fuel filler cap
(2) Fuel filler cap hole

Assembly

1. Route the wire harness properly and secure with clips. Make sure that the connectors are firmly fixed.
2. Apply a coat of grease to the main stand pivot pipe before installing the main stand and brake pedal.

NOTE:

Do not over tighten the main stand locking bolts.

3. Apply a coat of grease to the side stand pivot and install the side stand. Install the side stand spring with the long hook end up.

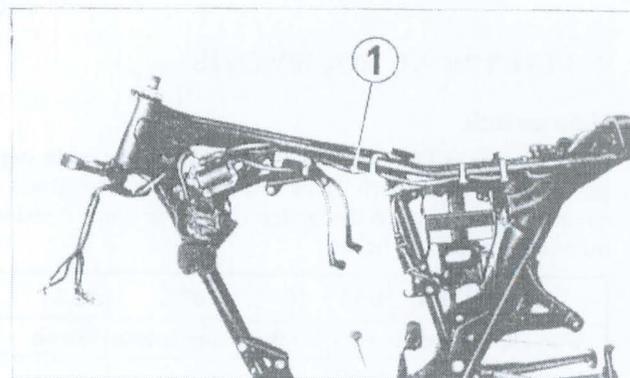


Fig. 5-81 (1) Wire harness

4. Prior to installing the air cleaner and breather elements, clean elements, breather chamber and drain tube.

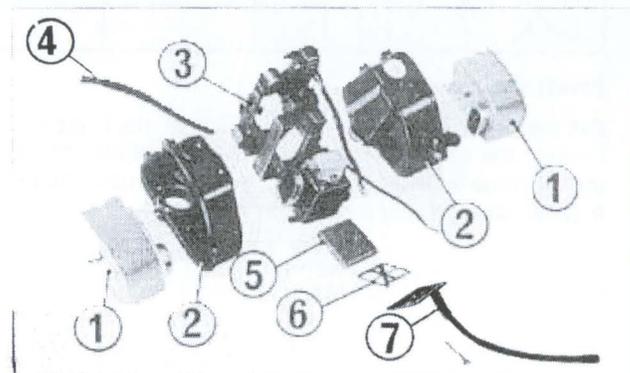


Fig. 5-82 (1) Air cleaner (2) Air cleaner case (3) Battery case (4) Breather tube (5) Breather element (6) Breather retainer (7) Drain tube

Install the battery.

Connect the positive terminal first. Route the battery vent tube properly.

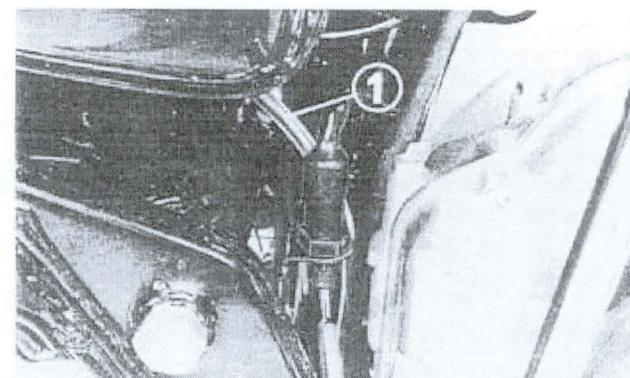


Fig. 5-83 (1) Battery vent tube

6. Insert the muffler pre-chamber gaskets so that it is flush with ends of the pre-chamber pipes. Tighten the pre-chamber band until its stop is against the opposite plate with specified torque.

A clearance between the pre-chamber and the muffler main pipe should be within 4-8 mm (0.16-0.32-in.) as shown.

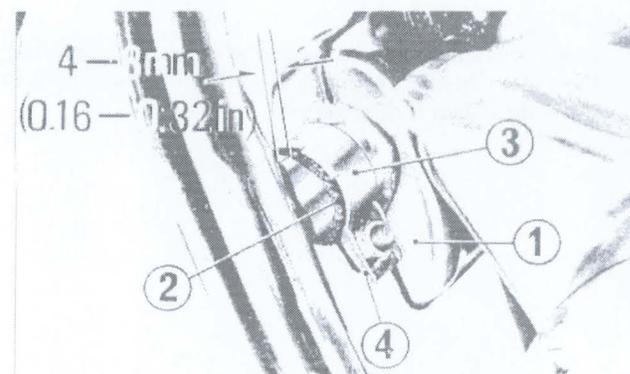


Fig. 5-84 (1) Pre-chamber (2) Gasket (3) Band (4) Stop on band

8. ELECTRICAL EQUIPMENTS

Main switch

With the key in OFF, ON or PARK, check the main switch for continuity. The switch is normal if continuity exists in the circuit (o-o). Discard the switch if there is any continuity in other circuits shown below.

Terminal	BA	BAT	IG	TL1	TL2
Wire color	Brown	Red	Black	Brown/white	Brown
PARK	○—○				
ON		○—○		○—○	
OFF					
LOCK					

Front stop switch

Put the tester probes on the terminals of the front stop switch. Operate the brake lever to check for continuity. The stop light should come on when the brake lever is moved 2–5mm (0.08–0.20-in.) as measured at the lever tip.

Rear stop switch

The only operation that is necessary, is to see whether or not there exists continuity between the black lead and green/yellow lead of the switch. Test should be made with the switch spring pulled to the end of the switch stroke. Discard if there is no continuity. Adjustment is made by turning the adjusting nut either in or out.

Clutch switch

Check the continuity between the green and green/red leads of the switch in the headlight case. Continuity should exist only when the clutch is disengaged.

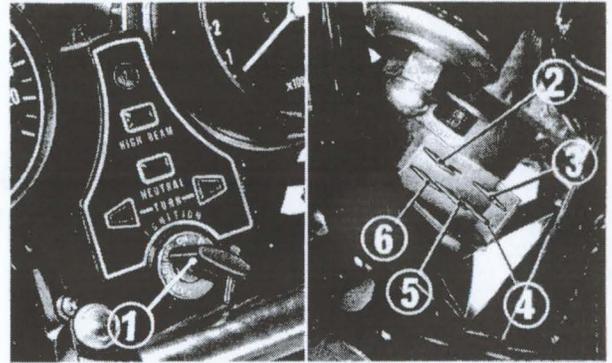


Fig. 5-85 (1) Main switch (2) Brown (TL2) (3) Brown/white (4) Brown (BA) (5) Red (6) Black

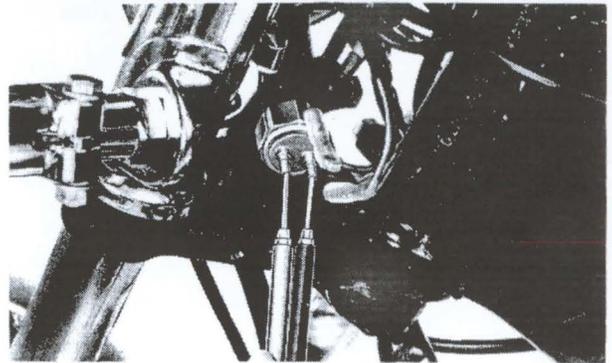


Fig. 5-86 Checking front stop switch

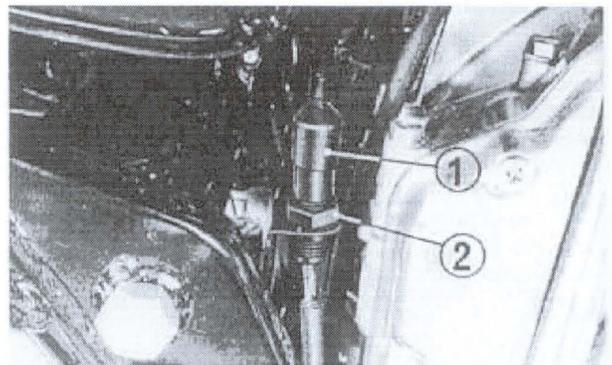


Fig. 5-87 (1) Rear stop switch (2) Adjusting nut

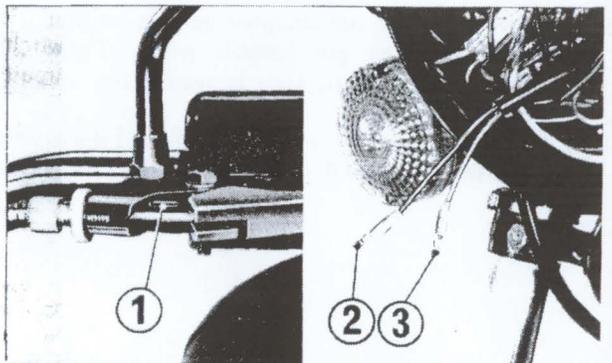


Fig. 5-88 (1) Clutch switch (2) Green lead (3) Green/red lead

Silicon diode

Check the diode for continuity with a radio tester in high-reading range. If current flows only one direction (From cathode to anode), the diode is normal. Current flow in both directions or no current is a sign of malfunction of the diode.

NOTE:

Do not use a megger as a high voltage generated in the megger will damage the diode.

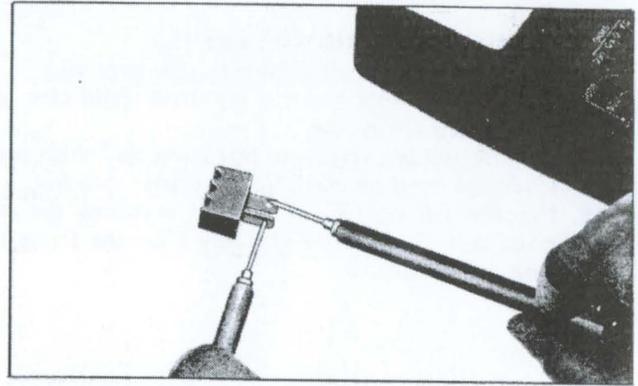


Fig. 5-89 Checking silicon diode

Horn

Disconnect the horn leads at the terminals. Connect the black lead to the positive terminal of a 12V battery, and light green lead to the negative terminal, noting the horn sounds.

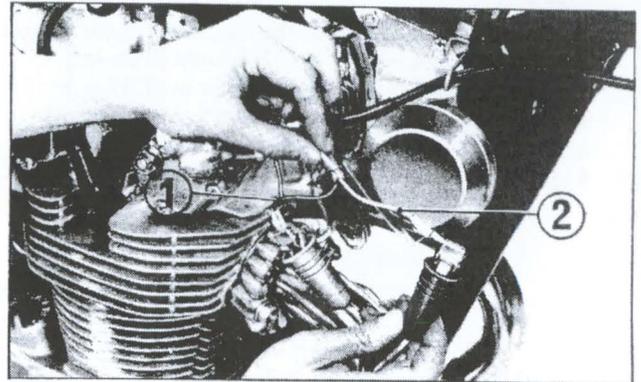


Fig. 5-90 (1) Black lead
(2) Light green lead

Horn switch

Disconnect the terminal of the horn switch lead in the connector case. Check the continuity between the light green lead and ground.

Continuity should exist only when the button is depressed.

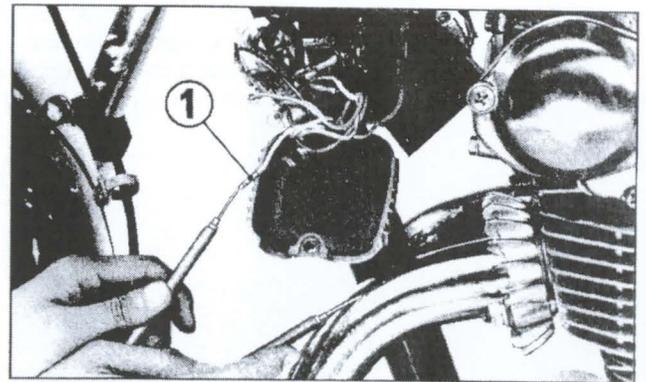


Fig. 5-91 (1) Light green lead

Turn signal control switch

Disconnect the leads of the turn signal control switch in the connector case. Check for continuity between the circuits (o-o) as shown in the table immediately below.

Terminal	W	L	R
Wire color	Gray	Orange	Blue
L	○ — ○		
N			
R	○ —		○

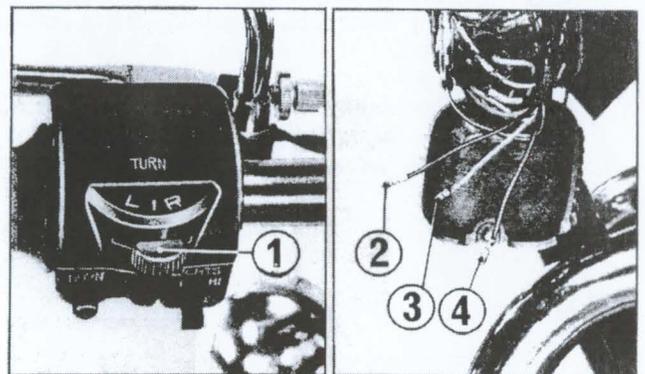


Fig. 5-92 (1) Turn signal switch (2) Gray lead (3) Orange lead (4) Blue lead

Dimmer and position switch

Check for continuity between respective terminals of the switch leads in the connector case. The switch is normal if there is continuity as specified below (o-o) with the switch selector knob in each position.

Terminal	HL	Lo	Hi	P(F)	L(F)	R(F)
Wire color	Black/yellow	White	Blue	-	Orange/white	Blue/white
L	o	o		o	o	o
(N)	o	o	o	o	o	o
H	o	o				

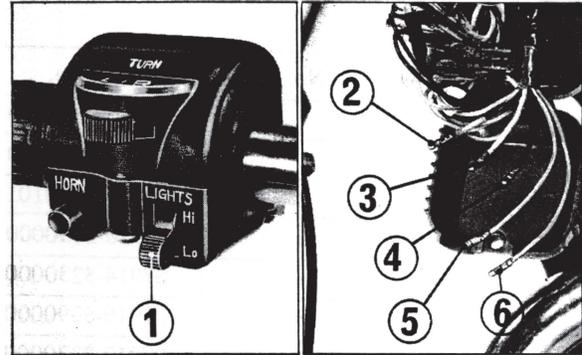


Fig. 5-93 (1) Dimmer switch (2) Black/yellow lead (3) White lead (4) Blue lead (5) Orange/white lead (6) Blue/white lead

Engine stop switch

Check for continuity between the respective terminals of the switch leads in the connector case. The switch is in good condition if there is continuity in the circuit(o-o) with the switch selector knob in each position.

Terminal	KB	KW
Wire color	Black	Black/white
OFF		
RUN	o	o
OFF		

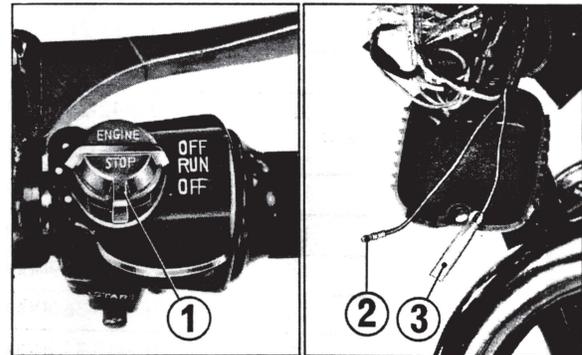


Fig. 5-94 (1) Engine stop switch (2) Black (3) Black white

Starting switch

Disconnect the terminals of the starting switch leads in the connector case. Check for continuity between the circuits (o-o) as shown in the table immediately below.

Terminal	ST1	ST2	HL
Wire color	Black	Yellow/red	Black/red
FREE	o		o
PUSH	o	o	

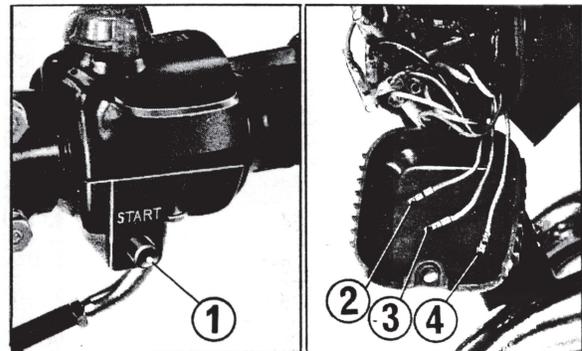


Fig. 5-95 (1) Starting switch (2) Black lead (3) Yellow/red lead (4) Black/red lead

Neutral switch

With the transmission in neutral, touch the neutral switch lead and engine (ground) with a pair of test probes. The switch is normal if continuity exists.

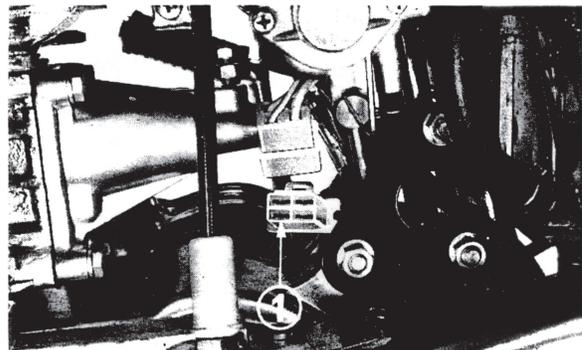


Fig. 5-96 (1) Light green/red lead

VI. SERVICE DATA

1. SPECIAL TOOLS

No.	Tool No.	Description
	07900-3750000	CB500T special tool set
1.	07902-2000000	Pin spanner (48mm)
2.	07910-2830101	Front bearing retainer wrench
3.	07910-2830000	Rear bearing retainer wrench
4.	07914-3230000	Snap ring pliers
5.	07916-6390000	Lock nut wrench (16mm)
6.	07917-3230000	Allen head wrench (6mm)
7.	07921-0010000	Flare nut wrench
8.	07922-2870000	Drive sprocket holder
9.	07933-2160000	Generator rotor puller
10.	07942-1180100	Valve guide driver
11.	07942-2830000	Valve guide remover
12.	07945-3330200	Bearing driver attachment (#6205)
13.	07945-3330300	Ball race driver attachment
14.	07946-9350200	Bearing driver attachment (#6302)
15.	07946-3290000	Bearing driver attachment (#6304)
16.	07946-3600000	Bearing driver attachment (#6305)
17.	07947-3290000	Fork seal driver
18.	07949-6110000	Driver handle
19.	07953-3330000	Ball race remover
20.	07954-2830000	Piston ring compressor
21.	07958-2500000	Piston base
22.	07959-3290000	Rear shock absorber compressor
23.	07968-2830100	Cam chain cutter
23-1	07968-2830300	Cutter pin
24.	07968-2830200	Cam chain pincher
24-1	07968-2830500	Pincher blade
25.	07973-2830001	Valve lifter
26.	07984-5900000	Valve guide reamer
27.	07797-2920300	Special tool case
Optional special tools		
28.	07504-3000100	Vacuum gauge set
29.	07510-3000200	Vacuum gauge attachment B
30.	07975-3000001	Drive chain joint tool

2. MAINTENANCE SCHEDULE

This maintenance schedule is based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.	INITIAL SERVICE PERIOD		REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval, whichever occurs first.			
	Month	—	1	3	6	12
	Mile	500	500	1,500	3,000	6,000
Km	1,000	1,000	2,500	5,000	10,000	
ENGINE OIL—Change	●			○		
CENTRIFUGAL OIL FILTER—Clean						○
OIL FILTER SCREEN—Clean						○
SPARK PLUG—Clean and adjust gap or replace if necessary.					○	
*CONTACT POINTS AND IGNITION TIMING—Clean, check, and adjust or replace if necessary.	●				○	
*VALVE TAPPET CLEARANCE—Check, and adjust if necessary	●				○	
*CAM CHAIN TENSION—Adjust	●				○	
PAPER AIR FILTER ELEMENT AND BREATHER ELEMENT—Clean			(service more frequently if operated in dusty areas)		○	
PAPER AIR FILTER ELEMENT—Replace						○
*CARBURETOR—Check, and adjust if necessary.	●				○	
THROTTLE OPERATION—Inspect cable. Check, and adjust free play.	●				○	
*FUEL FILTER SCREEN—Clean					○	
FUEL LINES—Check					○	
*CLUTCH—Check operation, and adjust if necessary.	●				○	
DRIVE CHAIN—Check, lubricate, and adjust if necessary	***		○			
BRAKE FLUID LEVEL—Check and add fluid if necessary	●				○	
*BRAKE SHOES/PADS—Inspect, and replace if worn.					○	
BRAKE CONTROL LINKAGE—Check linkage, and adjust free play if necessary.	●				○	
*WHEEL RIMS AND SPOKES—Check. Tighten spokes and true wheels, if necessary.	●				○	
TIRES—Inspect and check air pressure.	●		○			
FRONT FORK OIL—Drain and refill.	****					○
FRONT AND REAR SUSPENSION—Check operation.	●				○	
REAR FORK BUSHING—Grease, check for excessive looseness.					○	
*STEERING HEAD BEARINGS—Adjust						○
*SIDE STAND—Check installation, operation, deformation, damage and wear.					○	
BATTERY—Check electrolyte level, and add water if necessary.	●			○		
LIGHTING EQUIPMENT—Check and adjust if necessary.	●		○			
ALL NUTS, BOLTS, AND OTHER FASTENERS—Check security and tighten if necessary.	●		○			

Items marked * should be serviced by an authorized Honda dealer, unless the owner has proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.

Initial service period 200 miles (300 km). *Initial service period 1,500 miles (2,500 km).

3. TORQUE SPECIFICATIONS

Engine

Tightening point	Thread dia., pitch (mm)	Torque	
		kg-cm	lbs-ft
Cylinder head	10,P1.25	450 – 550	32.5 – 39.8
Spark plug	14,P1.25	250 – 300	18.1 – 21.7
Drive gear (oil filter rotor)	16,P1.5	450 – 550	32.5 – 39.8
A-C generator rotor	8,P1.25	300 – 350	21.7 – 25.3

Frame

Tightening point	Thread dia., pitch (mm)	Torque	
		kg-cm	lbs-ft
Front wheel axle shaft	12P1.5	550 – 650	39.8 – 47.0
Steering stem nut	24,P1.0	700 – 900	50.6 – 65.1
Front fork bottom bridge	10,P1.25	300 – 400	21.7 – 29.0
Rear axle shaft	18,P1.5	800 – 1,000	57.9 – 72.3
Rear fork pivot bolt	14,P1.5	1,000 – 1,300	72.3 – 94.0
Spoke	—	15 – 20	1.1 – 1.5

Standard tightening torque

	Torque			Torque	
	kg-cm	lbs-ft		kg-cm	lbs-ft
5mm screw	35 – 50	2.5 – 3.6	10mm bolt, nut	300 – 400	21.7 – 29.0
6mm screw	70 – 110	5.1 – 8.0	12mm bolt, nut	500 – 600	36.2 – 43.4
5mm bolt, nut	45 – 60	3.3 – 4.3	6mm flange bolt	100 – 140	7.3 – 10.1
6mm bolt, nut	80 – 120	5.6 – 8.7	8mm flange bolt	240 – 300	17.4 – 21.7
8mm bolt, nut	180 – 250	13.0 – 18.1	10mm flange bolt	300 – 400	21.7 – 29.0

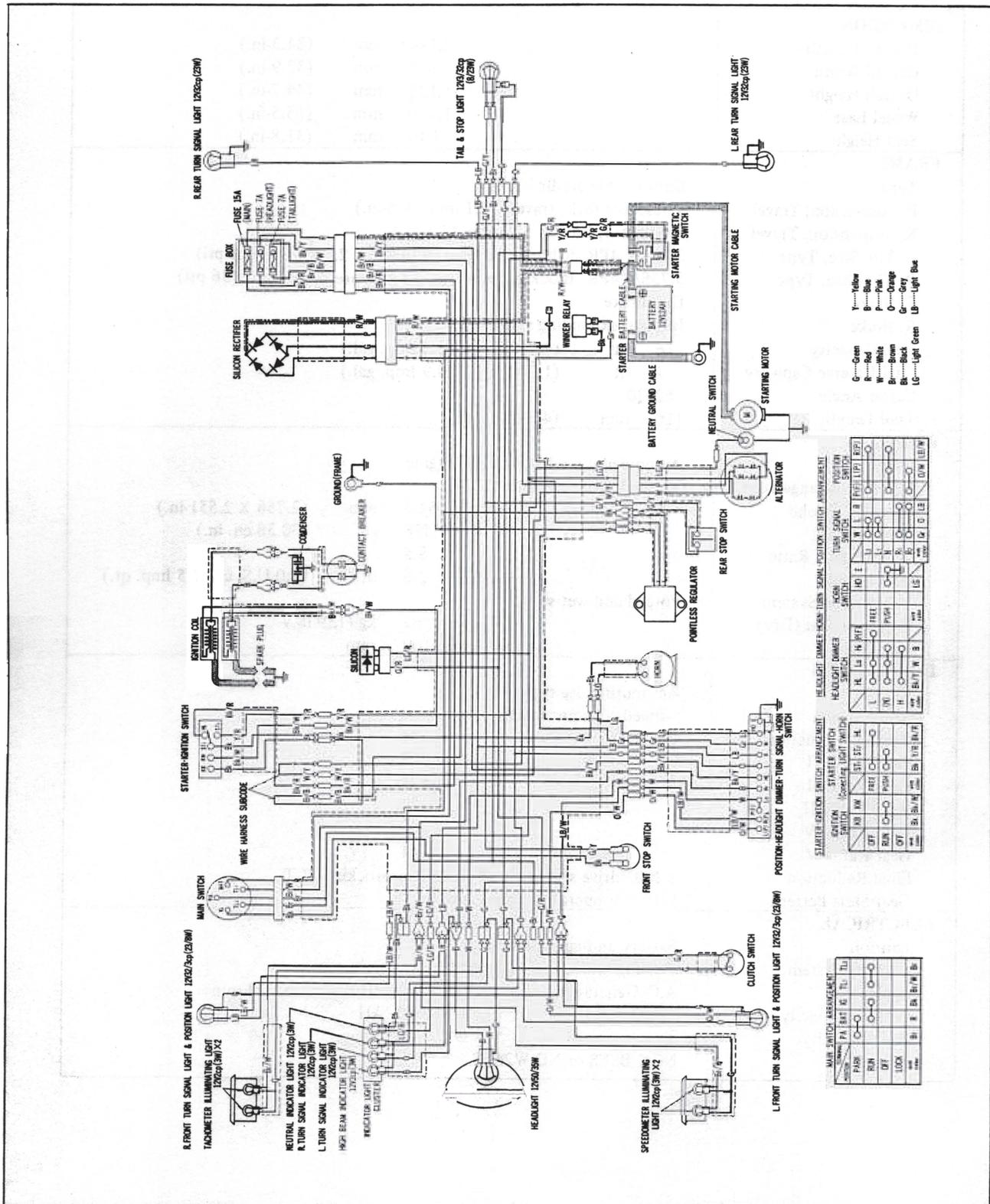
4. SERVICE DATA

Engine		mm (in)	
Item		Standard value	Service limit
Camshaft journal O.D.		21.967 – 21.980 (0.8648 – 0.8654)	21.92 (0.8622)
Cam height	Intake	4.688 – 4.728 (0.1846 – 0.1853)	4.65 (0.1830)
	Exhaust	4.688 – 4.728 (0.1846 – 0.1853)	4.65 (0.1830)
Camshaft runout		0.01 (0.0004) max.	0.05 (0.0020)
Cylinder head camshaft bearing I.D.		22.0 – 22.021 (0.8661 – 0.8669)	22.05 (0.8681)
Camshaft side clearance		0.05 – 0.35 (0.0020 – 0.0138)	
Cam follower I.D.		10.20 – 10.218 (0.4016 – 0.4023)	
Cam follower shaft O.D.		10.166 – 10.184 (0.3992 – 0.4009)	
Valve guide I.D.	Intake	7.00 – 7.01 (0.2756 – 0.2760)	7.05 (0.2776)
	Exhaust	7.00 – 7.01 (0.2756 – 0.2760)	7.05 (0.2776)
Valve stem O.D.	Intake	6.974 – 6.988 (0.2746 – 0.2751)	6.96 (0.2740)
	Exhaust	6.968 – 6.982 (0.2743 – 0.2749)	6.95 (0.2736)
Valve stem runout		—	0.02 (0.0008)
Valve seat width		1.0 – 1.3 (0.0394 – 0.0512)	2.0 (0.0787)
Cylinder bore dia.		70.00 – 70.01 (2.756 – 2.7564)	70.11 (2.7600)
Piston O.D.		69.95 – 69.97 (2.754 – 2.755)	69.87 (2.7508)
Piston pin hole I.D.		17.002 – 17.008 (0.6693 – 0.6696)	17.1 (0.6732)
Piston pin O.D.		16.994 – 17.00 (0.6690 – 0.6693)	16.95 (0.6673)
Piston ring side clearance	Top	0.040 – 0.070 (0.0016 – 0.0028)	0.15 (0.006)
	Second	0.020 – 0.045 (0.0008 – 0.0018)	0.15 (0.006)
Piston ring gap	Top	0.3 – 0.5 (0.012 – 0.03)	0.8 (0.031)
	Second	0.3 – 0.5 (0.012 – 0.03)	0.8 (0.031)
	Oil	0.2 – 0.4 (0.008 – 0.016)	0.8 (0.031)
Crankshaft runout		0.02 (0.001) max.	0.1 (0.004)
Connecting rod big end bearing clearance		0 – 0.008 (0 – 0.0003)	0.05 (0.0020)
Connecting rod big end side clearance		0.07 – 0.33 (0.0028 – 0.0130)	0.5 (0.0197)
Connecting rod small end I.D.		17.016 – 17.034 (0.6699 – 0.6706)	17.07 (0.6721)
Oil pump rod-to-clutch outer clearance		0.025 – 0.075 (0.0010 – 0.0030)	0.15 (0.0059)
Oil pump plunger O.D.		18.955 – 18.970 (0.7463 – 0.7479)	18.93 (0.7453)
Oil pump cylinder I.D.		19.00 – 19.01 (0.7480 – 0.7484)	19.10 (0.7519)
Clutch friction disc thickness		3.42 – 3.58 (0.135 – 0.141)	3.1 (0.122)
Clutch plate face runout		0.15 (0.006) max.	0.35 (0.014)
Clutch spring free length		38.0 (1.496)	37.3 (1.469)
Transmission gear backlash		—	0.2 (0.0079)
Mainshaft-to-fourth gear clearance		0.02 – 0.062 (0.0008 – 0.0024)	0.15 (0.0059)
Mainshaft-to-fifth gear clearance		0.02 – 0.054 (0.0008 – 0.0021)	0.13 (0.0051)
Countershaft-to-low gear clearance		0.02 – 0.054 (0.0008 – 0.0021)	0.10 (0.0039)
Countershaft-to-second or third gear clearance		0.04 – 0.082 (0.0016 – 0.0032)	0.18 (0.0071)
Gearshift drum O.D.		34.950 – 34.975 (1.3759 – 1.3769)	34.9 (1.3739)
Gearshift fork I.D.		34.0 – 34.025 (1.3385 – 1.3390)	34.1 (1.3425)
Gearshift drum groove width		6.05 – 6.15 (0.238 – 0.242)	6.5 (0.2560)
Gearshift fork finger thickness	Left and right	4.93 – 5.0 (0.1941 – 0.1968)	4.6 (0.181)
	Center	5.93 – 6.0 (0.2334 – 0.236)	5.6 (0.2205)

Frame

Item	Standard value	Service limit
Wheel axle bend	0.05 (0.0020) max.	0.2 (0.0079)
Wheel rim face runout	0.5 (0.0197) max.	2.0 (0.0787)
Brake disc face runout	0.05 (0.0020) max.	0.3 (0.0018)
Brake disc warpage	—	0.05 (0.0020)
Brake disc thickness	6.9–7.1 (0.2717 – 0.2795)	6.0 (0.2362)
Caliper cylinder I.D.	38.18 – 38.20 (1.5032 – 1.5039)	38.215 (1.5045)
Caliper piston O.D.	38.115 – 38.48 (1.5006 – 1.5150)	38.105 (1.5002)
Master cylinder I.D.	14.00 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
Master cylinder piston O.D.	13.957 – 13.984 (0.5495 – 0.5505)	13.940 (0.5488)
Front shock absorber spring free length	466 (18.35)	440 (17.32)
Front fork pipe O.D.	34.90 – 34.98 (1.3740 – 1.3772)	34.87 (1.3729)
Front fork bottom case I.D.	35.025 – 35.064 (1.3790 – 1.3810)	35.20 (1.3859)
Wheel (bearing axial play)	0.07 (0.0028) max.	0.1 (0.004)
Wheel bearing radial play	Front	0.003 – 0.018 (0.0001 – 0.0007)
	Rear	0.005 – 0.020 (0.0002 – 0.0008)
Brake lining thickness	5.0 (0.197)	2.0 (0.079)
Brake drum I.D.		181 (7.1260)
Rear shock absorber spring free length		
Rear fork pivot bushing I.D.	21.50 – 21.533 (0.8465 – 0.8478)	21.6 (0.8504)
Rear fork center collar O.D.	21.472 – 21.493 (0.8454 – 0.8462)	21.4 (0.8425)

5. WIRING DIAGRAM



SPECIFICATIONS

Item	
DIMENSION	
Overall Length	2,140 mm (84.3-in.)
Overall Width	835 mm (32.9-in.)
Overall Height	1,135 mm (44.7-in.)
Wheel Base	1,410 mm (55.5-in.)
Seat Height	810 mm (31.8-in.)
FRAME	
Type	Semi-double cradle
F. Suspension, Travel	Telescopic fork, travel 121 mm (4.8-in.)
R. Suspension, Travel	Swing-arm, travel 79 mm (3.1-in.)
F. Tire Size, Type	3.25S/9-4PR Rib pattern, tire air pressure 2.0 kg/cm ² (28 psi)
R. Tire Size, Type	3.75S/8-4PR Block pattern, tire air pressure 2.5 kg/cm ² (36 psi)
F. Brake	Disc brake
R. Brake	Internal expanding shoes
Fuel Capacity	16 lit. (4.2 U.S. gal., 3.5 Imp. gal.)
Fuel Reserve Capacity	4 lit. (1.0 U.S. gal., 0.9 Imp. gal.)
Caster Angle	62°30'
Trail Length	110 mm (4.3-in.)
ENGINE	
Type	Air cooled 4-stroke D.O.H.C engine
Cylinder Arrangement	Vertical Twin paralalled
Bore and Stroke	70.0 × 64.8 mm (2.756 × 2.551-in.)
Displacement	498 cc (30.38 cu. in.)
Compression Ratio	8.5
Oil Capacity	2.8 lit. (3.0 U.S. qt., 2.5 Imp. qt.)
Lubrication System	Forced and wet sump
Engine weight (Dry)	63 kg (139 lb.)
Idle Speed	1,100 rpm
DRIVE TRAIN	
Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Primary Reduction	3.304
Gear Ratio I	2.277
Gear Ratio II	1.521
Gear Ratio III	1.230
Gear Ratio IV	1.000
Gear Ratio V	0.844
Final Reduction	2.200, drive sprocket 15 T, driven sprocket 33 T
Gear Shift Pattern	Left foot operated return system
ELECTRICAL	
Ignition	Battery and ignition coil
Starting System	Starting motor and kick starter
Alternator	A.C. Generator 0.12 kw/ 5,000 rpm
Battery Capacity	12V-12AH
Fuse Capacity	15, 7, 7 amp.
Spark plug	NGK B8ES or ND W24ES