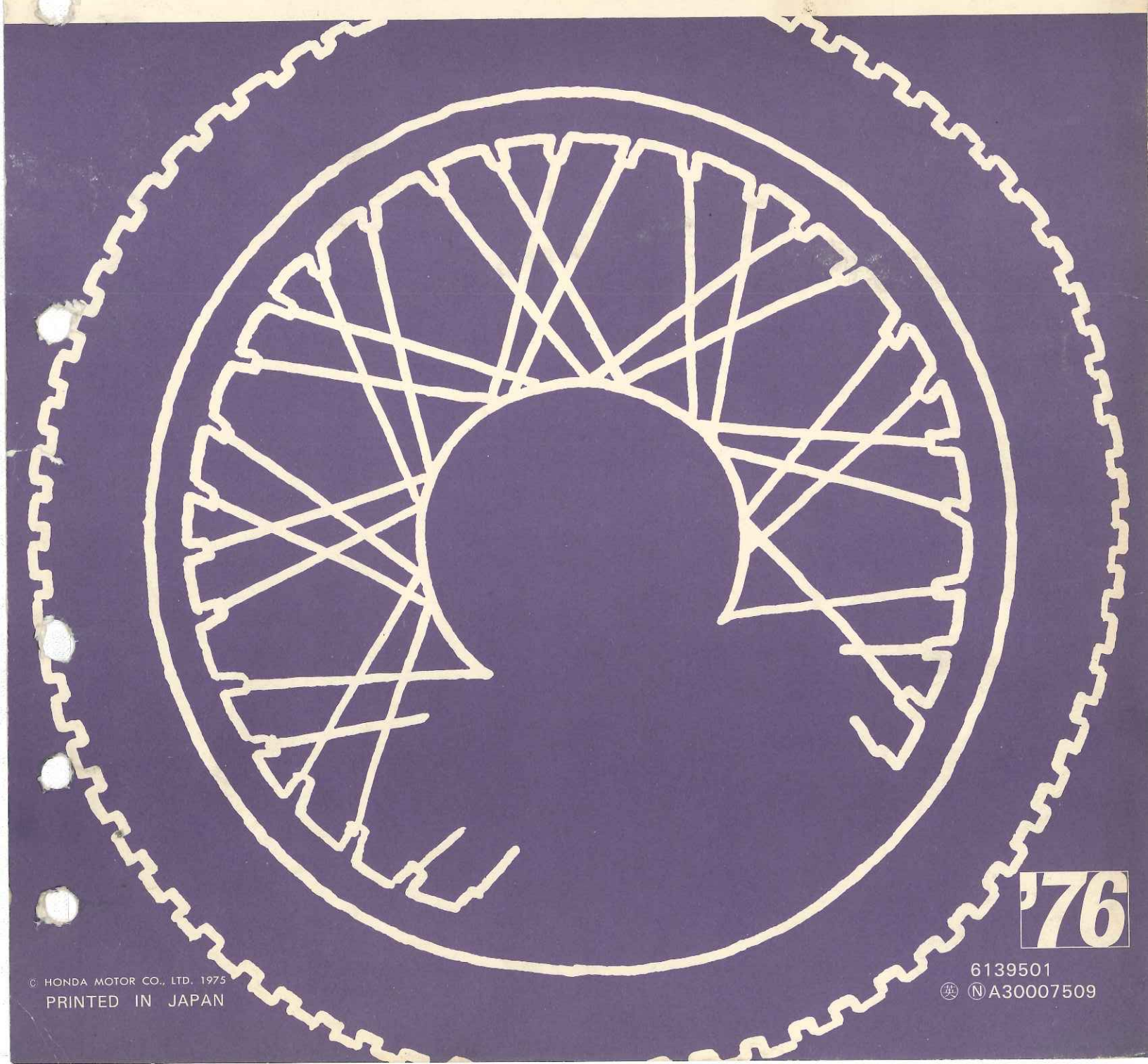
SHOP MANUAL

HONDA

MR 250



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PREFACE

This SERVICE MANUAL has been prepared as a "SERVICE GUIDANCE" for the mechanics responsible for the upkeep of the Honda MR250.

It is compiled into six sections and summarizes the procedures for disassembling, inspecting and reassembling the components of the machine.

Strict adherence to the instructions given herein will result in better, safer work.

All information, illustrations and specifications contained are based on the 1975 model. Honda reserves the right to make changes at any time without notice and obligation.

HONDA MOTOR CO., LTD.
SERVICE PUBLICATIONS OFFICE

CONTENTS

I. SERVICE PRECAUTIONS

1. Always replace gaskets, O-rings, cotter pins, etc. with new ones when reassembling.
2. When tightening bolts, nuts or screws, begin on larger-diameter or inner one first and tighten them to specified torque in a criss-cross pattern.
3. Use genuine Honda or Honda-recommended parts and lubricants when servicing.
4. Be sure to use a special tool or tools where specified.
5. A joint work of more than two persons must be carried out with mutual safety attention paid.
6. Wash clean engine parts upon disassembly. Coat their sliding surfaces with high-quality lubricant (crankshaft bearings, connecting rod small end bearings and piston rings with two-cycle motor oil) when reassembling.
7. Coat or pack grease where so specified.
8. After reassembling, check to be sure each part is tightened properly. Also check for proper operation.
9. Be sure to retain fuel pipes with clips.

Electrical System

1. If any electrical part is at fault, locate the cause according to the wiring diagram at the end of the manual and inspect carefully.
2. Check cables and wires for disconnection, open circuit, binding or breakage of insulation and grommets. Repair or replace if necessary.
3. Making sure that wiring is in good condition, check electrical parts for condition.

NOTE:
It is advisable to check the electrical parts at a temperature of about 20°C (68°F) (room temperature).

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II. INSPECTION AND ADJUSTMENT

This chapter covers inspection and adjustment of important ones of items involved in MAINTENANCE SCHEDULE on page 77. For other items, see paragraph for "Inspection" in each section.

1. TRANSMISSION OIL

Transmission Oil Level

To check oil level and add oil, proceed as follows:

1. Start engine and warm it up for about three minutes.
2. Stop engine. Place motorcycle in an upright position and remove oil check bolt.

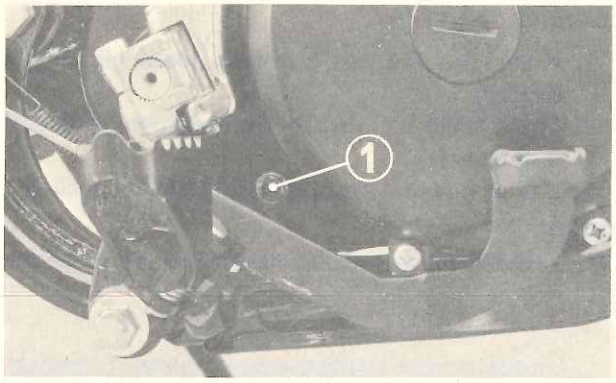

Fig. 2–1 (1) Oil check bolt

3. Oil should flow out of oil check bolt hole. After checking, tighten oil check bolt securely.
4. If oil does not flow out, add oil slowly through oil filler hole until oil starts to flow out of oil check bolt hole.

Transmission Oil Change

Transmission oil should be changed in accordance with maintenance schedule on page 77. Use only motor oil of grade and viscosity recommended in table below.

Recommended oil viscosity:

General, all temperatures SAE 10W-30 or 10W-40

Alternate:

Above 59°F (15°C)	SAE 30
32°F (0°C) to 59°F (15°C)	SAE 20 or 20W
Below 32°F (0°C)	SAE 10W

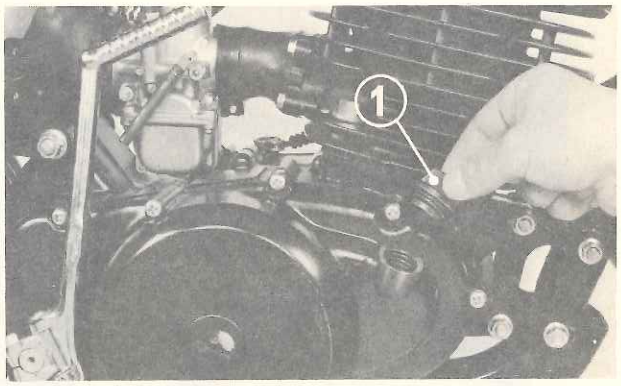

Fig. 2–2 (1) Oil filler cap

When changing oil, drain used oil from crankcase while engine is warm. This will ensure complete and rapid draining.

1. Start engine and warm it up for about three minutes.
2. Remove oil filler cap from right crankcase cover.

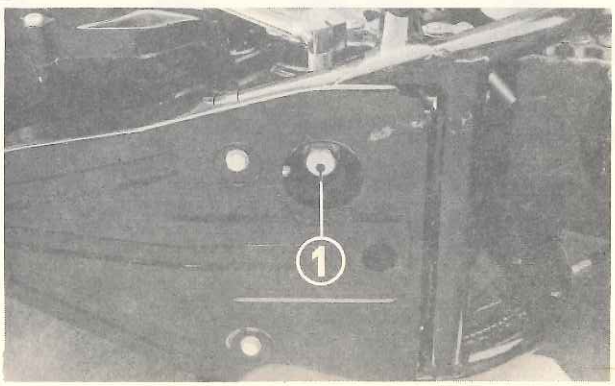

Fig. 2–3 (1) Drain plug

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3. Place an oil drain pan under engine to catch oil, and then remove drain plug with a 17 mm wrench.
4. When oil has been completely drained, ensure that drain plug sealing washer is in good condition and reinstall drain plug.
5. Pour recommended oil (approximately 0.8 ℓ or 0.8 U.S. qt.) slowly through oil filler hole. Place motorcycle in an upright position and check oil level. Refer to oil level checking section.

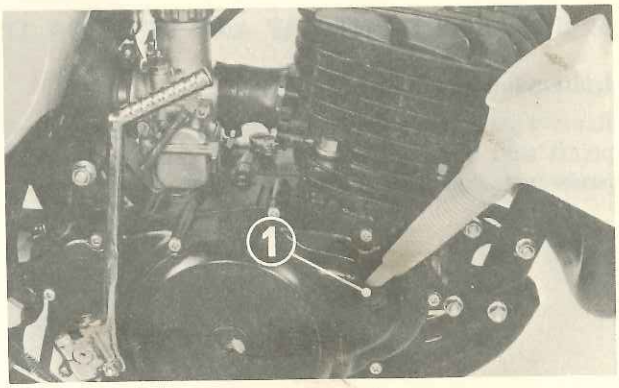

Fig. 2–4 (1) Transmission oil filler hole

CAUTION:

- **Oil level should not be above check bolt hole level. If oil has been poured excessively, wait until it stops to flow out of oil check bolt hole, and then tighten check bolt securely.**

NOTES:

- **It takes approximately 1.0ℓ (1.1 U.S. qt.) to fill a dry transmission.**

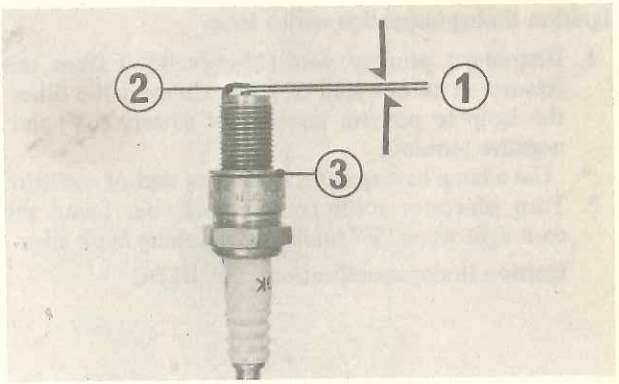

Fig. 2–5 (1) Spark plug gap
(2) Side electrode
(3) Sealing gasket.

2. SPARK PLUG

NGK B-8ES or NDW-24ES spark plug is standard for this model. If replacing with any spark plug of other makes, be certain to select correct reach and heat range.
Before removing spark plug, clean spark plug area thoroughly to prevent dirt from entering cylinder.

1. Measure spark plug gap with a wire gauge, and adjust by carefully bending side electrode.
   Recommended spark plug gap is 0.6–0.7 mm (0.024–0.028 in.).
2. Inspect firing tip of used spark plug. Electrodes and insulator nose should appear medium gray.
   To obtain accurate spark plug firing condition, switch ignition off at operating speed, coast to a stop with clutch engaged, then remove and inspect spark plug.
   Idling or low speed operation will produce darker spark plug condition or increase fouling.
   If electrodes appear burnt or insulator nose is white or very light gray, this indicates one or more of the following conditions:
   * Spark plug heat range too hot
   * Ignition timing advanced
   * Fuel mixture too lean
   * Insufficient oil in fuel mixture
3. Install and tighten spark plug finger tight, then draw down with a spark plug wrench until sealing gasket is compressed (1/2 to 3/4 turn to compress a new spark plug gasket).

CAUTION:

Use of spark plug of incorrect reach or heat range can cause engine damage.

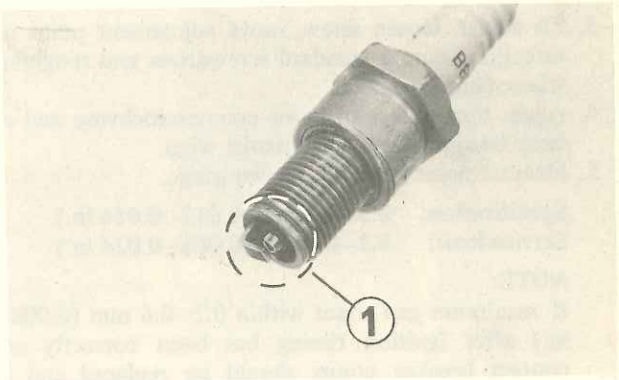

Fig. 2–6 (1) Electrodes

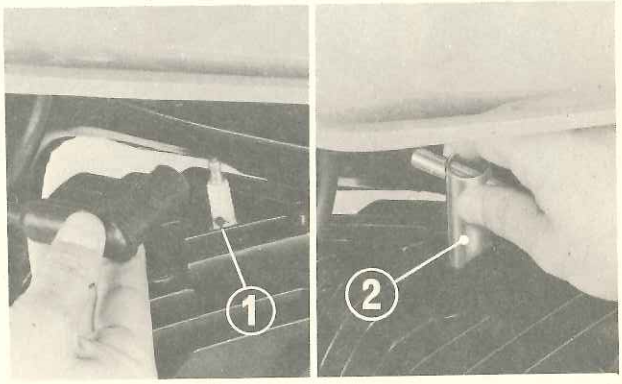

Fig. 2–7 (1) Spark plug
(2) Spark plug wrench

3. BREAKER POINT GAP AND IGNITION TIMING

Ignition timing adjustment

Remove generator cover. Adjust ignition timing so that breaker points start opening the moment "F" mark on generator rotor passes matching mark on crankcase cover.

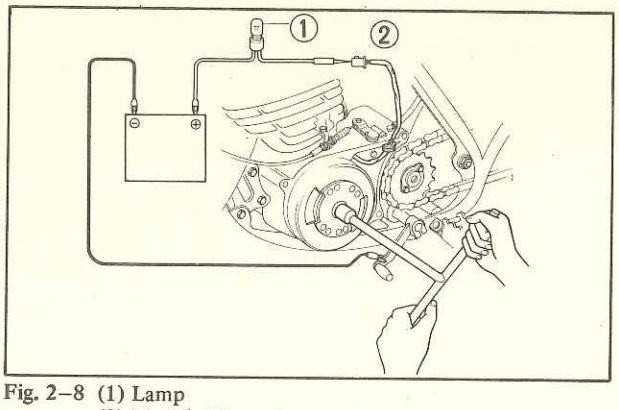

Fig. 2–8 (1) Lamp
(2) Black/yellow wire

Ignition timing inspection with a lamp

1. Disconnect primary wire (black/yellow) from stator and connect it to one lead of lamp. Connect the other lead of the lamp to positive terminal of battery (6V) and ground negative terminal.
   * Use a lamp having same wattage as that of taillight.
2. Turn generator rotor counterclockwise. Lamp should be dark light when "F" mark and matching mark align.
   Ignition timing specification: 20° BTDC

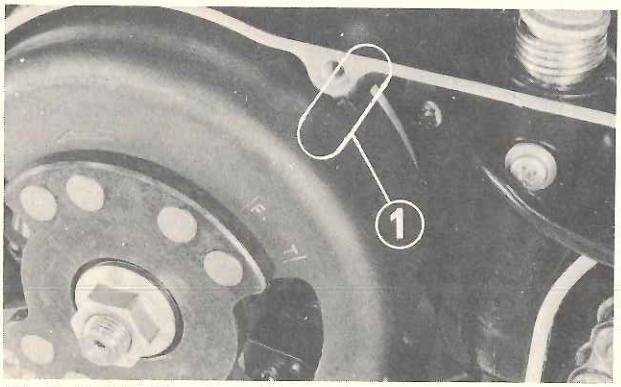

Fig. 2–9 (1) "F" and matching marks

3. To adjust, loosen screw, move adjustment point in either direction using a standard screwdriver and retighten screw where lamp comes on.
4. Again turn generator rotor counterclockwise and check if lamp becomes dark when marks align.
5. Measure point gap with a feeler gauge.
   Specification: 0.3–0.4 mm (0.012–0.016 in.)
   Service limit: 0.2–0.6 mm (0.008–0.024 in.)
   NOTE:
   If maximum gap is not within 0.2–0.6 mm (0.008–0.024 in.) after ignition timing has been correctly adjusted, contact breaker points should be replaced and ignition timing reset.
6. Finally recheck ignition timing with a storoboscopic timing light.

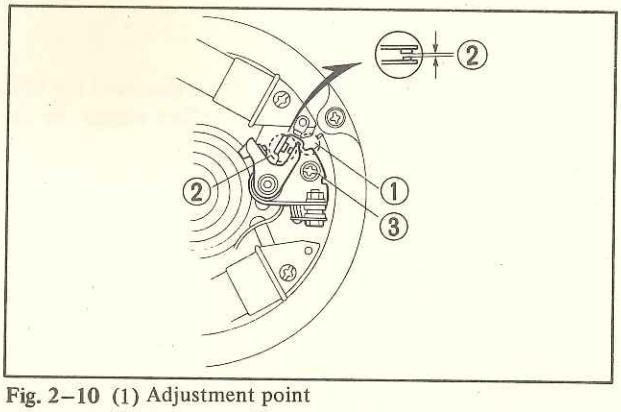

Fig. 2–10 (1) Adjustment point
(2) Point gap
(3) Screw

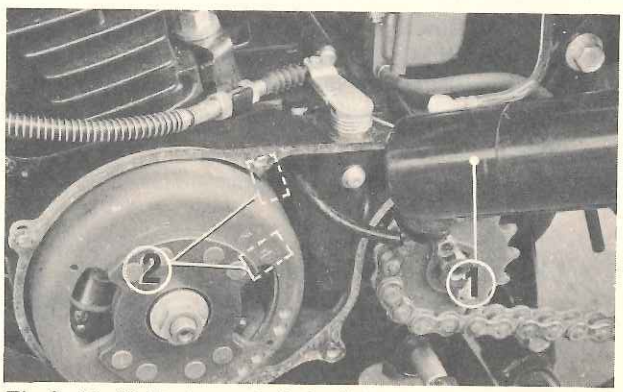

Fig. 2–11 (1) Stroboscopic timing light
(2) Matching marks

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4. CYLINDER HEAD DECARBONIZING

Carbon deposits which build up in combustion chamber and exhaust pipe will decrease engine performance. These carbon deposits must be removed periodically.

1. Remove exhaust pipe, and scrape carbon deposits from throat of pipe.
2. Remove spark plug and cylinder head bolts; then remove cylinder head. See page 17.
3. Decarbonize combustion chamber walls and piston crown using a scraper or soft material. Take care not to score or scratch surfaces.

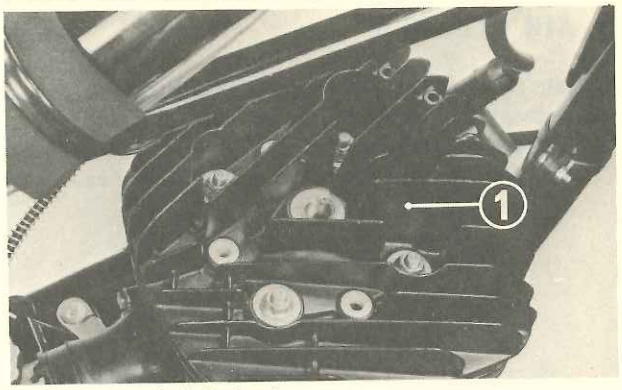

Fig. 2–12 (1) Cylinder head

4. Ensure that debris does not enter ports. To assemble, reverse disassembly order. Cylinder head tightening torque is **100–130 kg.cm (7.2–94 lbs. ft)** for 6 mm nut and **200–250 kg.cm (14.5–18.1 lbs. ft)** for 8 mm nuts.

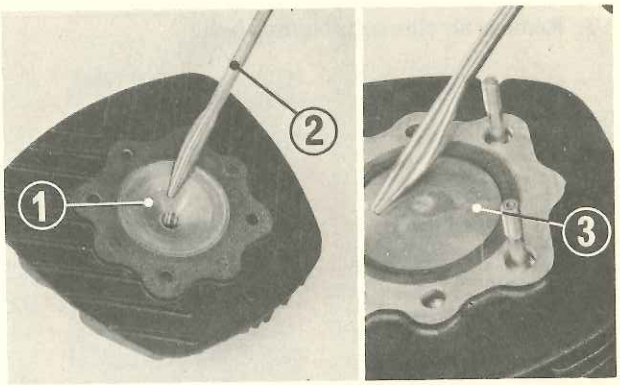

Fig. 2–13 (1) Cylinder head combustion chamber
(2) Scraper
(3) Piston

5. CARBURETOR

Idle speed adjustment

Carburetor should be adjusted only after engine has attained operating temperature.

1. Adjust idle speed screw until engine idles at approximately 1,400 rpm. Turn idle speed screw clockwise to increase idle speed or counterclockwise to decrease idle speed.
2. Turn air screw clockwise until engine begins to miss or decreases in speed, then counterclockwise until engine again misses or decreases in speed. Set air screw exactly between these two extreme positions. Usually correct setting between extremes of rich and lean will be found to be **1.0–1 1/2 turns** open from a fully closed position.
3. If speed changes after adjusting fuel mixture, readjust idle speed screw.

NOTE:
Before making adjustments to carburetor, be sure ignition system is functioning properly, and engine has good compression. Do not attempt to compensate for other faults by carburetor adjustment.

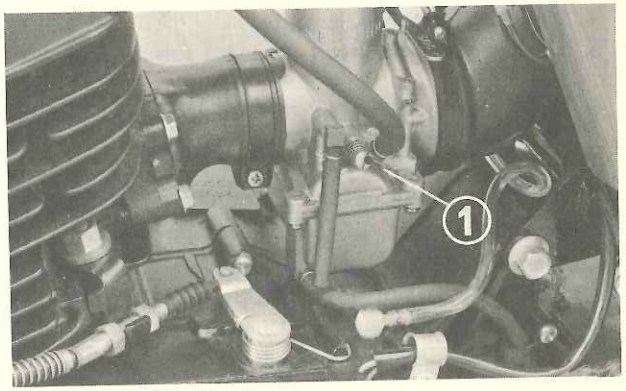

Fig. 2–14 (1) Throttle stop screw

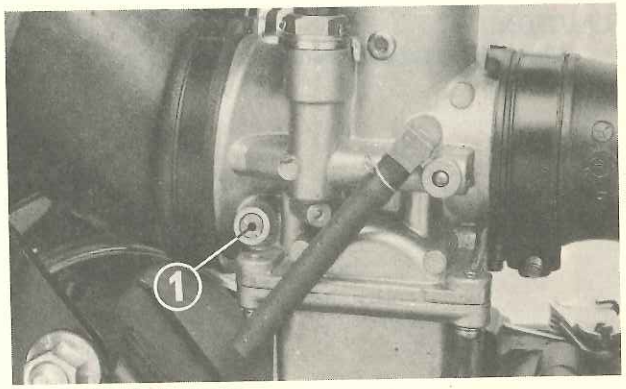

Fig. 2–15 (1) Air screw

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6. AIR CLEANER

The air cleaner uses a polyurethane element. A dirty element will reduce engine output. To clean the element:

1. Remove right side cover.
2. Remove two screws and remove air cleaner case cover.

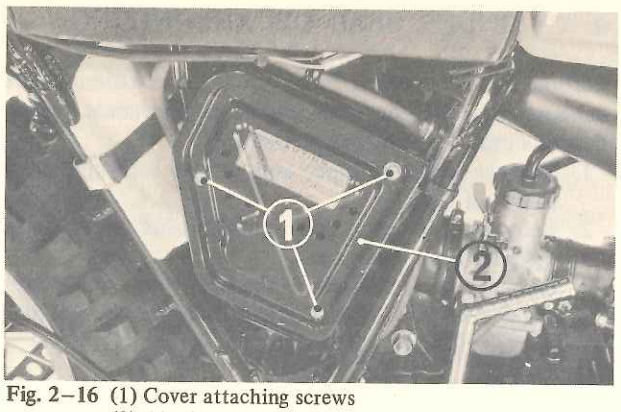

Fig. 2–16 (1) Cover attaching screws
(2) Air cleaner case cover

3. Remove air cleaner mounting bolt.

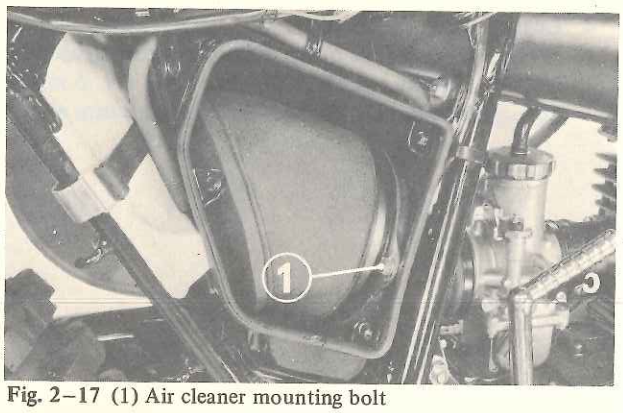

Fig. 2–17 (1) Air cleaner mounting bolt

4. Remove air cleaner element.
5. Wash element in clean stoddard solvent and dry it thoroughly.
6. Soak element in clean gear oil (SAE 80–90) until it is saturated. Then squeeze to remove excess.
7. Install element.
8. Install air cleaner case cover and tighten screws.

WARNING:
Gasoline or low flash point solvents are explosive and highly flamable and must not be used to clean air cleaner element. Fire or explosion could result.

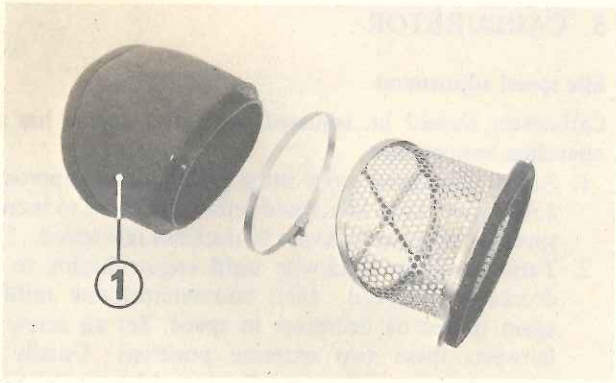

Fig. 2–18 (1) Air cleaner element

CAUTION:
- **Check drain tube for contamination.**

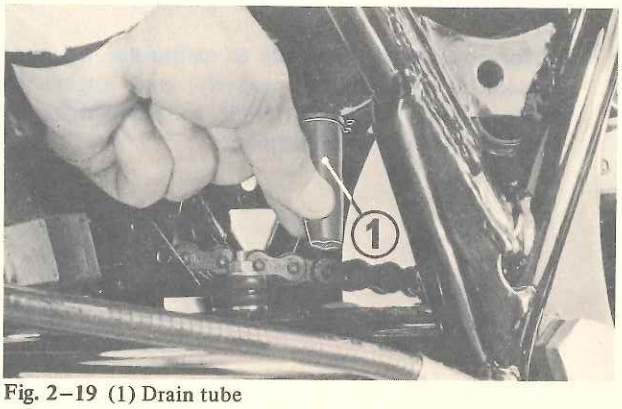

Fig. 2–19 (1) Drain tube

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7. CLUTCH

Adjustment of clutch

1. Make sure center of clutch cable lower end is aligned with index mark on crankcase as shown. If not, loosen lock nut and turn clutch cable lower adjuster.

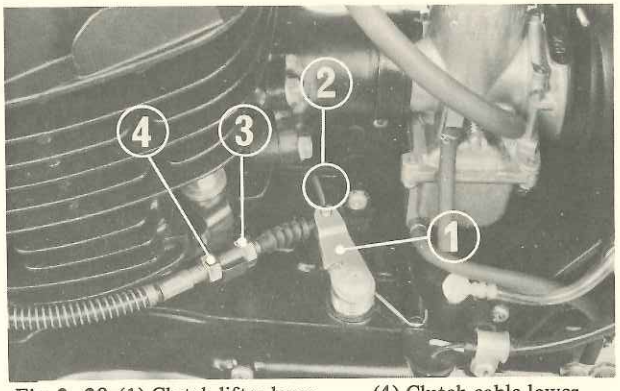

Fig. 2–20 (1) Clutch lifter lever (2) Index mark (3) Lock nut (4) Clutch cable lower adjuster

2. Remove clutch adjuster cap from right crankcase cover.
3. Loosen adjuster lock nut and turn clutch adjusting clockwise until it will no longer go. From that position, turn out adjuster counterclockwise 1/2 turn and tighten lock nut.
4. Replace clutch adjuster cap and tighten securely.

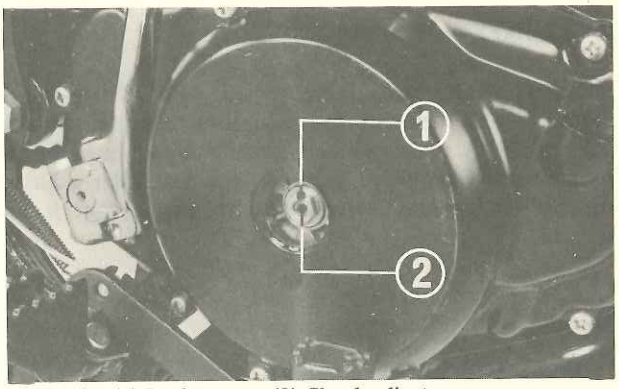

Fig. 2–21 (1) Lock nut (2) Clutch adjuster

5. Check clutch lever free play. Normal clutch lever free play is **10–20 mm (0.4–0.8 in.)** at tip of lever.

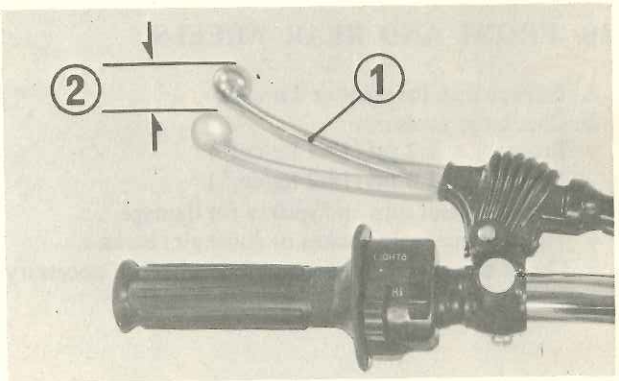

Fig. 2–22 (1) Clutch lever (2) Clutch lever free play

To install, remove dust cover, loosen lock nut and turn upper adjuster in either direction. Turning adjuster in direction (A) will increase free play and turning it in direction (B) will decrease free play. After adjusting, tighten lock nut and install dust cover.

6. Test ride to be sure clutch operates properly without slip or drag. If clutch operation is not satisfactory after adjustment, check condition of clutch plates and friction discs. See pages 24 through 25.

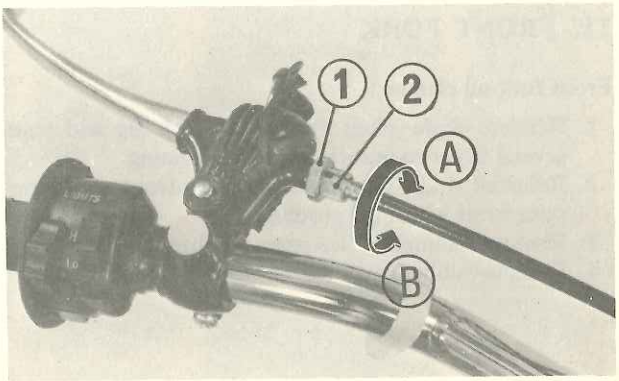

Fig. 2–23 (1) Lock nut (2) Upper adjuster

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8. HANDLEBAR

Check handlebar for deformation or cracks and upper holders for proper tightness. Turn handlebar to right and left to check for smooth operation.

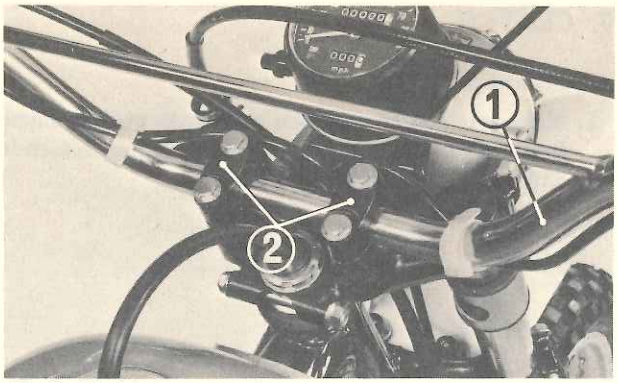

Fig. 2–24 (1) Handlebar (2) Upper holders

9. THROTTLE GRIP

Standard throttle grip free play is 5°–10° of grip rotation. To adjust, loosen lock nut and turn throttle cable adjuster. Turn adjuster in direction (A) to increase free play or in direction (B) to decrease free play. Tighten lock nut after adjustment is completed. Operate throttle grip to ensure that it functions smoothly.

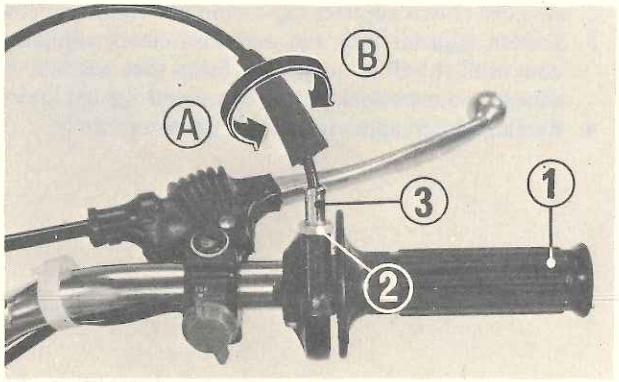

Fig. 2–25 (1) Throttle grip
(2) Lock nut
(3) Throttle cable adjuster

10. FRONT AND REAR WHEELS

1. Inspect tires for wear or damage.
2. Check tire pressure:
   Front: 1.2 psi (17.1 kg/cm²)
   Rear: 1.0 psi (14.2 kg/cm²)
3. Inspect wheel rims and spokes for damage.
4. Tighten any loose spokes or loose rim locks.
5. Check wheel rim runout and true wheels if necessary.

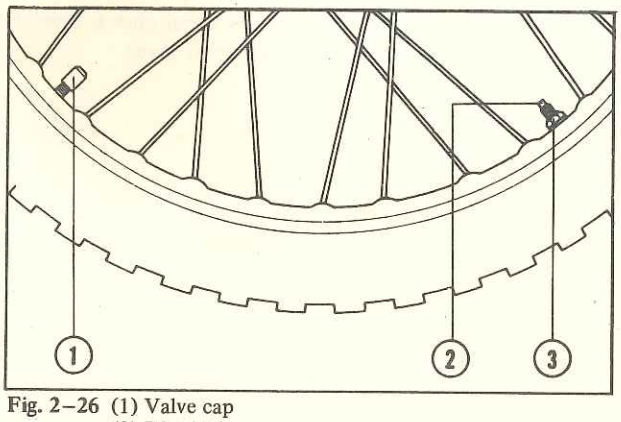

Fig. 2–26 (1) Valve cap
(2) Rim lock
(3) Lock nut

11. FRONT FORK

Front fork oil change

1. Remove drain plugs from each fork leg and pump forks several times to ensure complete draining.
2. Reinstall drain plugs and block up front of motorcycle to raise front wheel off ground.
3. Remove handlebar. See pages 51 through 55.
4. Remove rubber cap.

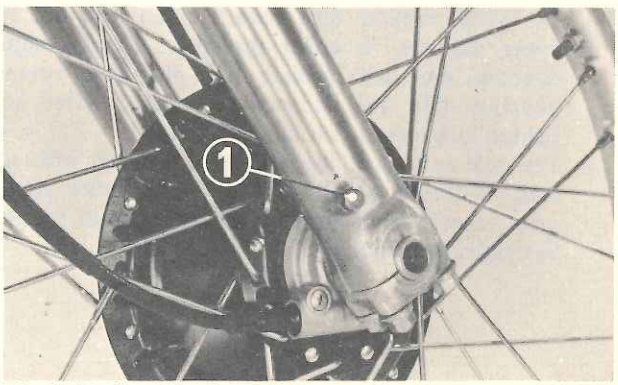

Fig. 2–27 (1) Drain plug

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5. While pushing down spring upper seat with tip of a screwdriver, remove snap ring using snap ring pliers. Then remove spring upper seat. See page 56.

   CAUTION:
   When removing snap ring, spring upper seat may accidentally jump out by means of force of shock absorber spring.

6. Fill each fork leg with approx. 5.5 ozs (163 cc) of premium quality Automatic Transmission Fluid (ATF).
7. Installation is reverse of removal order.

   NOTE:
   Securely set snap ring in ring groove in front fork.

Amount required to fill dry assembly	173–177 cc (5.9–6.0 ozs.)
Amount required to refill after draining (total capacity less amount of residual fluid).	163 cc (5.5 ozs.)

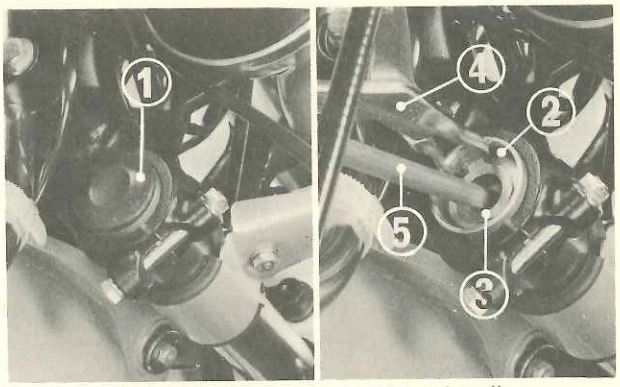

Fig. 2–28 (1) Rubber cap
(2) Snap ring
(3) Spring upper seat
(4) Snap ring plier
(5) (+) Driver

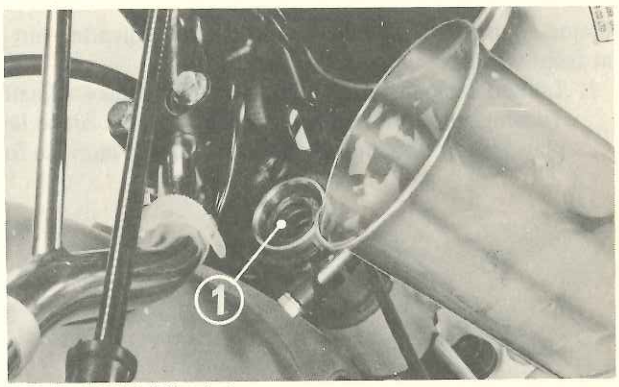

Fig. 2–29 (1) Filler hole

12. REAR SUSPENSION

Inspection

Inspect shock absorbers for damage or leakage. Inspect rear fork bushings for looseness by checking side play at rear wheel.

Adjustment

Rear suspension spring tension is adjustable in five increments to suit riding condition and rider weight. Turn adjusters to the desired setting using a pin spanner. Be certain that both right and left rear suspension springs are adjusted to identical settings.

Lubrication

Lubricate rear fork pivot with chassis grease. A grease fitting is provided at center of pivot.

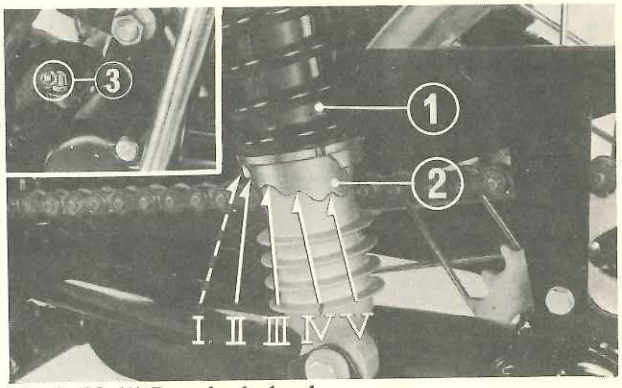

Fig. 2–30 (1) Rear shock absorber
(2) Spring adjuster
(3) Grease fitting

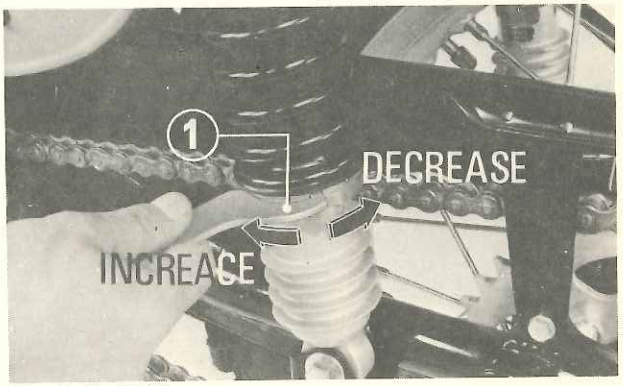

Fig. 2–31 (1) Pin spanner

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13. FRONT BRAKE ADJUSTMENT

Free play, measured at tip of front brake lever, should be maintained at **20–30 mm (0.8–1.2 in.)**. Free play is the distance brake lever moves before brake starts to engage.

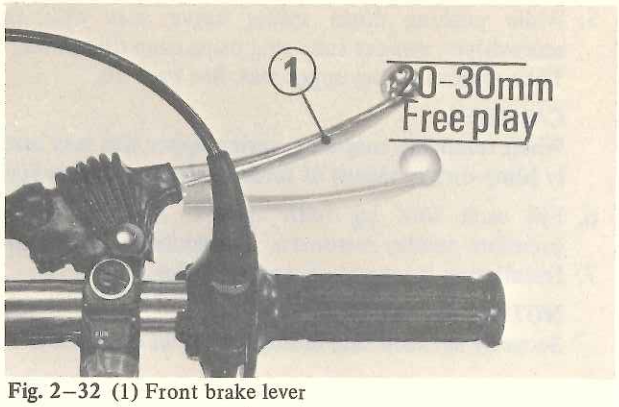

Fig. 2–32 (1) Front brake lever

Major adjustments should be made using adjusting nut located at front wheel.

1. Loosen lock nut and then turn front brake adjusting nut. Turning nut in direction (A) will decrease brake lever free play and turning nut in direction (B) will increase free play.

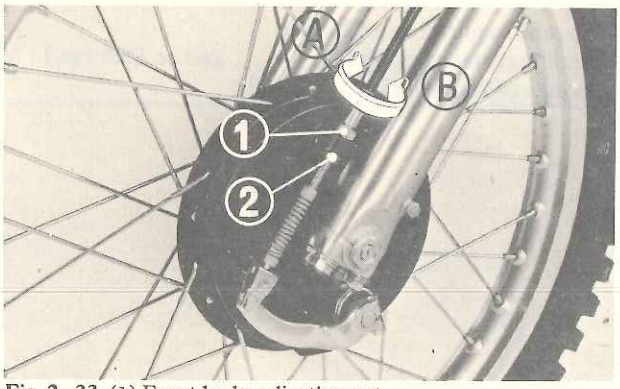

Fig. 2–33 (1) Front brake adjusting nut
(2) Lock nut

2. Minor adjustments can be made with front brake cable adjuster at front brake lever.
   Remove dust cover, loosen lock nut and turn front brake cable adjuster. Turning adjuster in direction (A) will decrease brake lever free play and turning adjuster in direction (B) will increase free play.

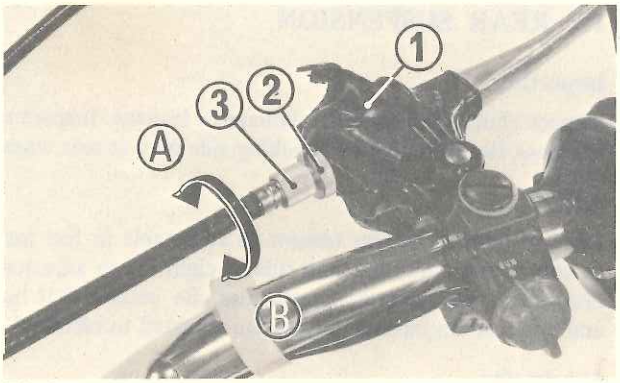

Fig. 2–34 (1) Dust cover
(2) Lock nut
(3) Front brake cable adjuster

14. REAR BRAKE ADJUSTMENT

Rear brake pedal free play, measured at tip of rear brake pedal, should be maintained at **20–30 mm (0.8–1.2 in.)**.
Free play is the distance brake pedal moves before brake starts to engage.

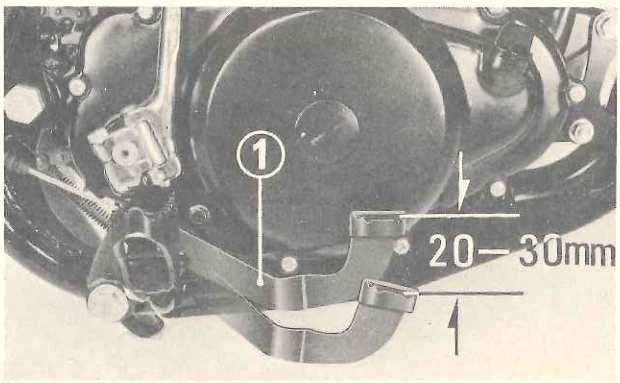

Fig. 2–35 (1) Rear brake pedal

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Adjust brake pedal free play by turning adjusting nut.
Turn adjusting nut in direction (A) to decrease free play or in direction (B) to increase free play. Lubricate rear brake pedal pivot with chassis grease. A grease fitting is provided at rear of pivot.

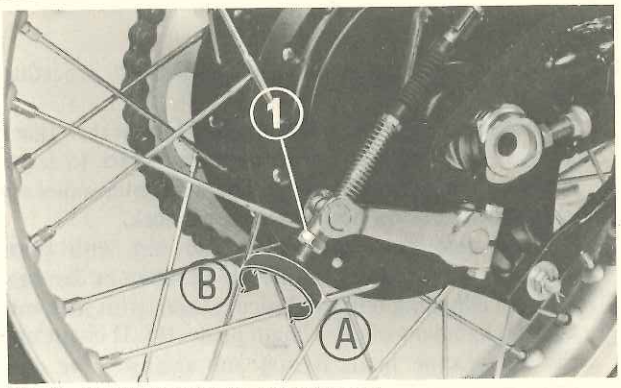


Fig. 2–36 (1) Rear brake adjusting nut

15. DRIVE CHAIN

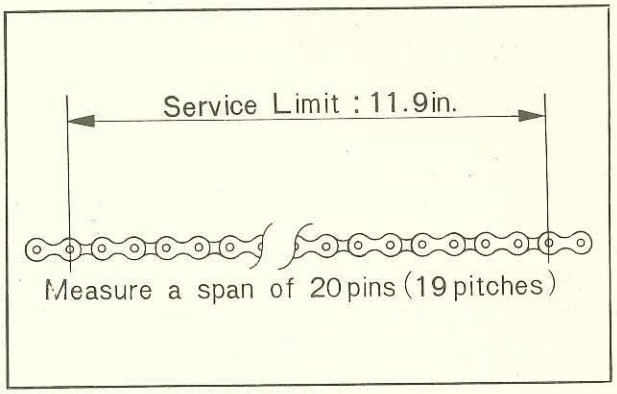
* Damaged rollers
* Loose pins
* Dry and rusted links
* Kinked and binding links
* Excessive wear
* Improper adjustment

Sprockets

* Excessively worn teeth
* Broken or damaged teeth

Measuring drive chain wear

Measure a section of drive chain to determine whether chain is worn beyond its service limits. Put transmission in gear, and then turn rear wheel. forward until lower section of chain is pulled taut. With chain held taut and any still joints straightened, measure distance between a span of 20 pins, from pin center to pin center. In a new MR250 drive chain, this distance will measure **11.875 in. (each pitch x 0.65 in.).**
If distance exceeds 11.9 in., chain is worn out and should be replaced. After chain is measured, shift transmission into neutral again before proceeding with inspection and service.



Inspecting the sprockets

Check drive and driven sprockets for wear or damage. Left rear crankcase cover must be removed for access to drive sprocket. Excessively worn sprocket teeth have a hooked and asymmetric appearance. Replace any sprocket which is damaged or excessively worn.

Standard sprocket sizes:

Drive sprocket (engine)	Driven sprocket (rear wheel)
14 teeth (OPTION: 13, 15 teeth)	47 teeth (OPTION: 49, 51 teeth)

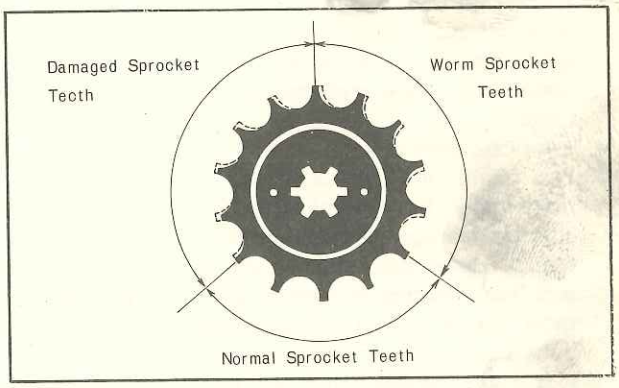


Fig. 2–37

NOTE:
Never install a new drive chain on badly worn sprockets, or use new sprockets with a badly worn drive chain. Both chain and sprockets must be in good condition, or new replacement chain or sprocket will wear rapidly.

Measuring drive chain slack

Check drive chain slack at a point midway between drive sprocket and rear wheel sprocket. Move chain up and down with your fingers, and measure amount of slack. Drive chain slack is adjusted to approximately ¾ in. Slack becomes greater as chain wears. If chain slack is found to exceed a maximum of 1½ in., drive chain must be readjusted. Drive chain tension should remain constant as wheel is rotated. If chain is found to be slack in one segment of its length and taut in another, this indicates that some of links are either worn or kinked and binding. Kinking and binding can frequently be eliminated by lubrication.

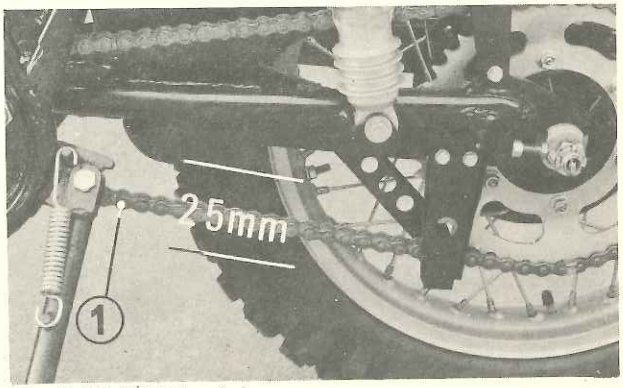


Fig. 2–38 (1) Drive chain

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Drive chain adjustment

If drive chain is found to require adjustment, procedure is as follows:

1. Remove rear axle nut cotter pin and loosen rear axle nut.
2. Loosen lock nuts and turn adjusting bolts to increase or decrease chain tension. Align chain adjuster index marks to reference marks on both sides of rear fork.
3. Tighten rear axle nut and secure nut with cotter pin (replace cotter pin if it has become broken or damaged).
4. Tighten adjusting bolts and secure them with lock nuts.
5. Check alignment of drive chain protector. If chain protector should become bent, it may rub against drive chain and cause rapid wear.

Lubrication

Commercially prepared drive chain lubricants may be purchased at most motorcycle shops and should be used in preference to motor oil or other lubricants. Saturate each chain joint so that lubricant will penetrate into space between adjacent surfaces of link plates and rollers.

Removal and cleaning

When drive chain become extremely dirty, it should be removed and cleaned prior to lubrication.

1. Carefully remove master link retaining clip with pliers. Do not bend or twist clip. Remove master link. Remove drive chain from motorcycle.
2. Clean drive chain in solvent and allow to dry. Inspect drive chain for possible wear or damage. Replace any chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.
3. Inspect sprocket teeth for possible wear or damage. Replace if necessary. Never use a new drive chain on badly worn sprockets. Both chain and sprockets must be in good condition, or new replacement chain or sprocket will wear rapidly.
4. Lubricate drive chain.
5. Pass chain over sprockets and join ends of chain with master link. For ease of assembly, hold chain ends against adjacent rear sprocket teeth while inserting master link. Install master link retaining clip so that closed end of clip will face direction of forward wheel rotation. Master link is most critical part affecting security of drive chain. Master links are reusable, if they remain in excellent condition, but it is recommended that a new master link retaining clip be installed whenever drive chain is reassembled.
6. Adjust drive chain to proper tension.

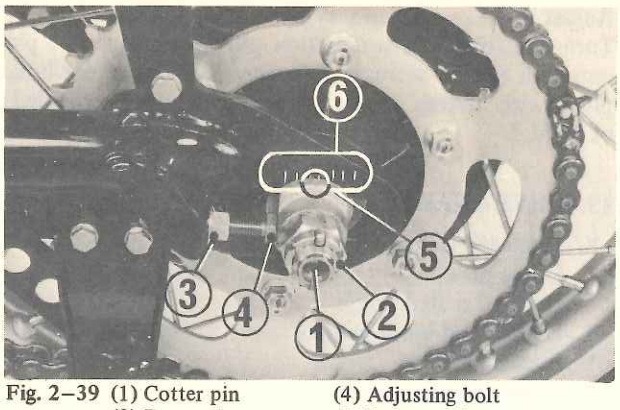

Fig. 2–39 (1) Cotter pin (4) Adjusting bolt
(2) Rear axle nut (5) Index mark
(3) Lock nut (6) Reference marks

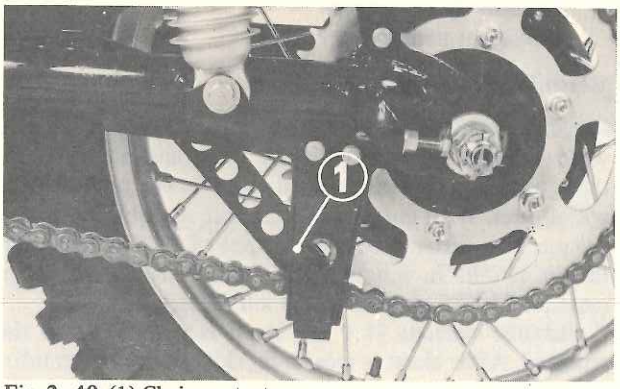

Fig. 2–40 (1) Chain protector

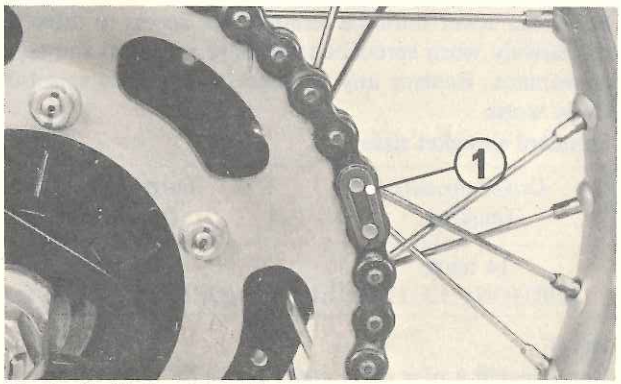

Fig. 2–41 (1) Retaining clip

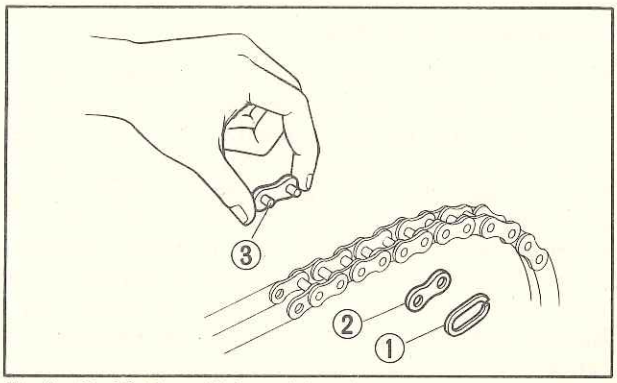

Fig. 2–42 (1) Master link retaining clip
(2) Link plate
(3) Link roller

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16. FUEL TANK

Check fuel tank, fuel valve, and fuel line for leaks.

Fuel Filter

Fuel filter is incorporated in the fuel valve which is mounted on the bottom of the fuel tank at the left side. Accumulation of dirt in the filter will restrict the flow of the fuel and cause the carburetor to malfunction, therefore, the fuel filter should be serviced periodically.

1. Drain fuel from fuel tank.
2. Remove fuel valve by removing lock nut.
3. Reassemble fuel valve in reverse order of removal and turn fuel valve to "ON" position and check for leaks.

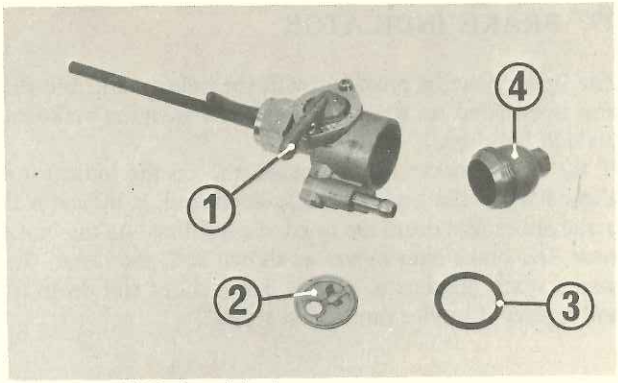

Fig. 2–43 (1) Fuel cock body
(2) Fuel strainer screen
(3) Fuel strainer cap gasket
(4) Fuel strainer cap

17. EXPANSION CHAMBER

Check two exhaust pipe springs, and replace if damaged or stretched.
Check chamber bolts for proper tightness.
Remove carbon deposits from throat of exhaust pipe.
Check expansion chamber for cracks or deformation.
A damaged chamber may cause an excessive drop in engine horsepower.
Check for sign of leak past asbestos packing.

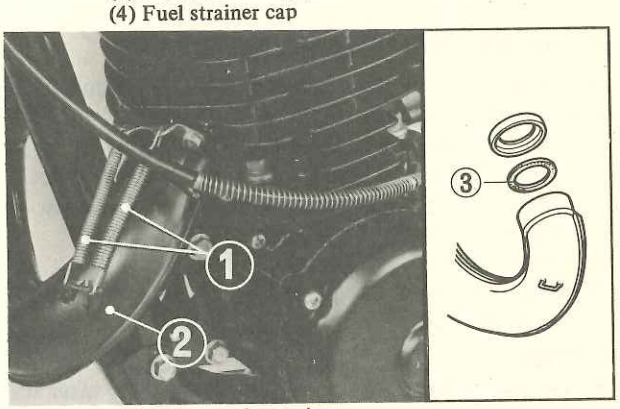

Fig. 2–44 (1) Exhaust pipe spring
(2) Expansion chamber
(3) Asbestos packing

18. FRONT AND REAR BRAKES

Front and rear brakes are of a drum type (drum dia.: 160.0 ~ 160.3 mm (6.2992 ~ 6.3110 in.) and use leading and trailing type shoes. Brake linings are specifically molded and, therefore, the coefficient of friction hardly varies with high temperature and pressure.

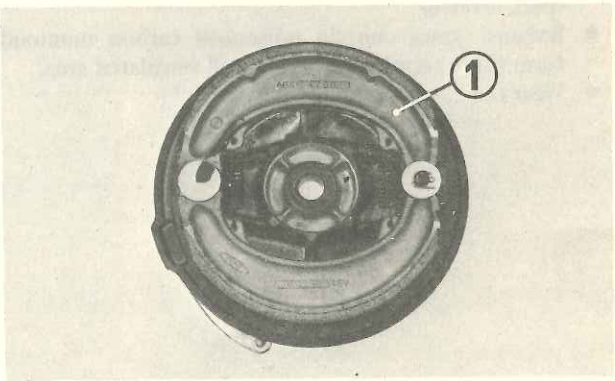

Fig. 2–45 (1) Brake shoes

Rear brake is equipped with brake indicator to make it possible to see wear of brake shoes and drum.

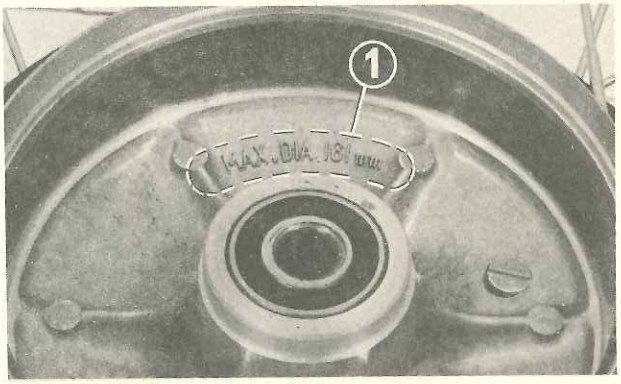

Fig. 2–46 (1) Brake drum indicator

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19. BRAKE INDICATOR

The brake panel is provided with the index mark, and the brake arm is installed on the brake camshaft with the brake indicator plate in between.
If the index marks on the panel and on the indicator are not aligned when the brake pedal is depressed, it indicates that the brake shoes and drum are in good condition. As the brake shoes wear, the brake cam moves as shown and, therefore, the index marks reach alignment. Check brake shoes and drum for wear and replace if service limit is exceeded.

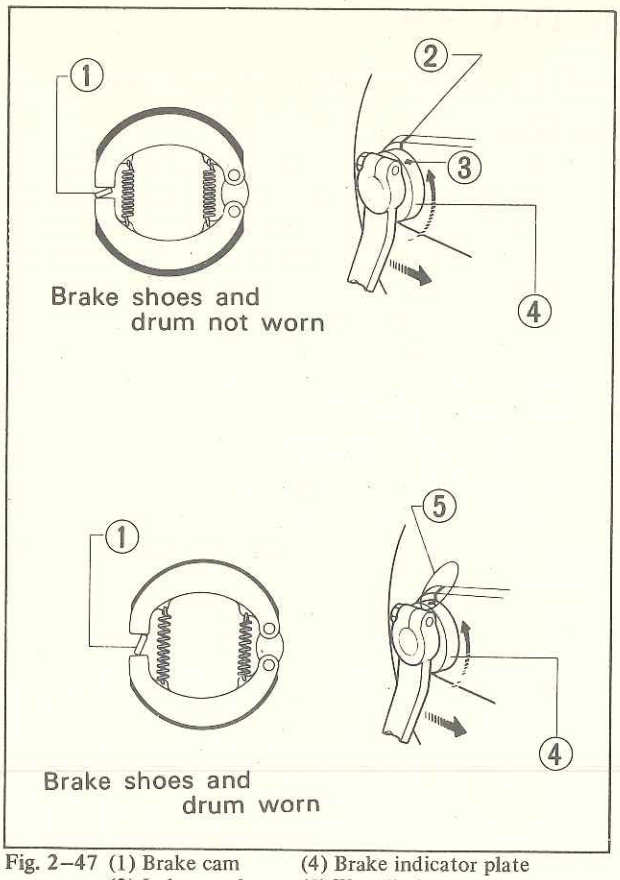

Fig. 2–47 (1) Brake cam (4) Brake indicator plate
(2) Index mark (5) Wear limits
(3) Arrow mark

20. SPARK ARRESTOR MAINTENANCE

The exhaust system spark arrestor must be periodically purged of accumulated carbon.

1. Remove the spark arrestor mounting bolts.
2. Remove the spark arrestor from the muffler outlet.
3. Start the engine and purge accumulated carbon from the muffler by momentarily revving up the engine.
4. Clean the spark arrestor of carbon.
5. Stop the engine and reinstall the spark arrestor and mounting bolts.

WARNING:

- **Do not perform this operation immediately after the engine has been run because the exhaust system becomes very hot.**
- **Because of the increased fire hazard ensure that there are not combustible materials in the area when purging the spark arrestor.**
- **Exhaust gases contain poisonous carbon monoxide. Perform this operation only in a well ventilated area.**
- **Wear the eye protection.**

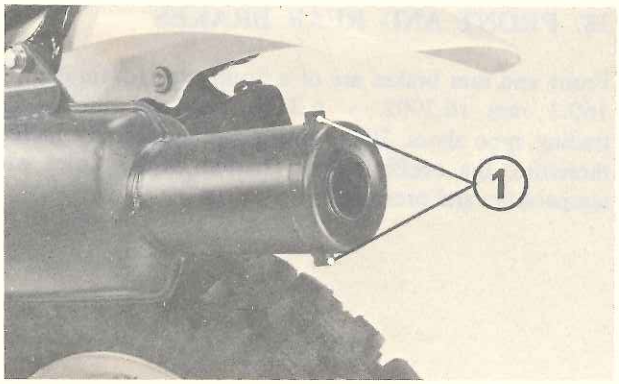

Fig. 2–48 (1) Spark arrestor mounting bolts
(2) Spark arrestor

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III. SERVICING THE ENGINE

1. SERVICE NOT REQUIRING ENGINE REMOVAL

Part to be serviced	Ref. page
Cylinder head, cylinder, piston	16–
A-C generator	21–
Clutch	24–
Kick starter (one part)	27–
Gearshift mechanism (one part)	29–
Carburetor	36–
Electric system	71–

2. ENGINE REMOVAL AND INSTALLATION

Remove the engine from the frame by removing the following parts in the order shown.

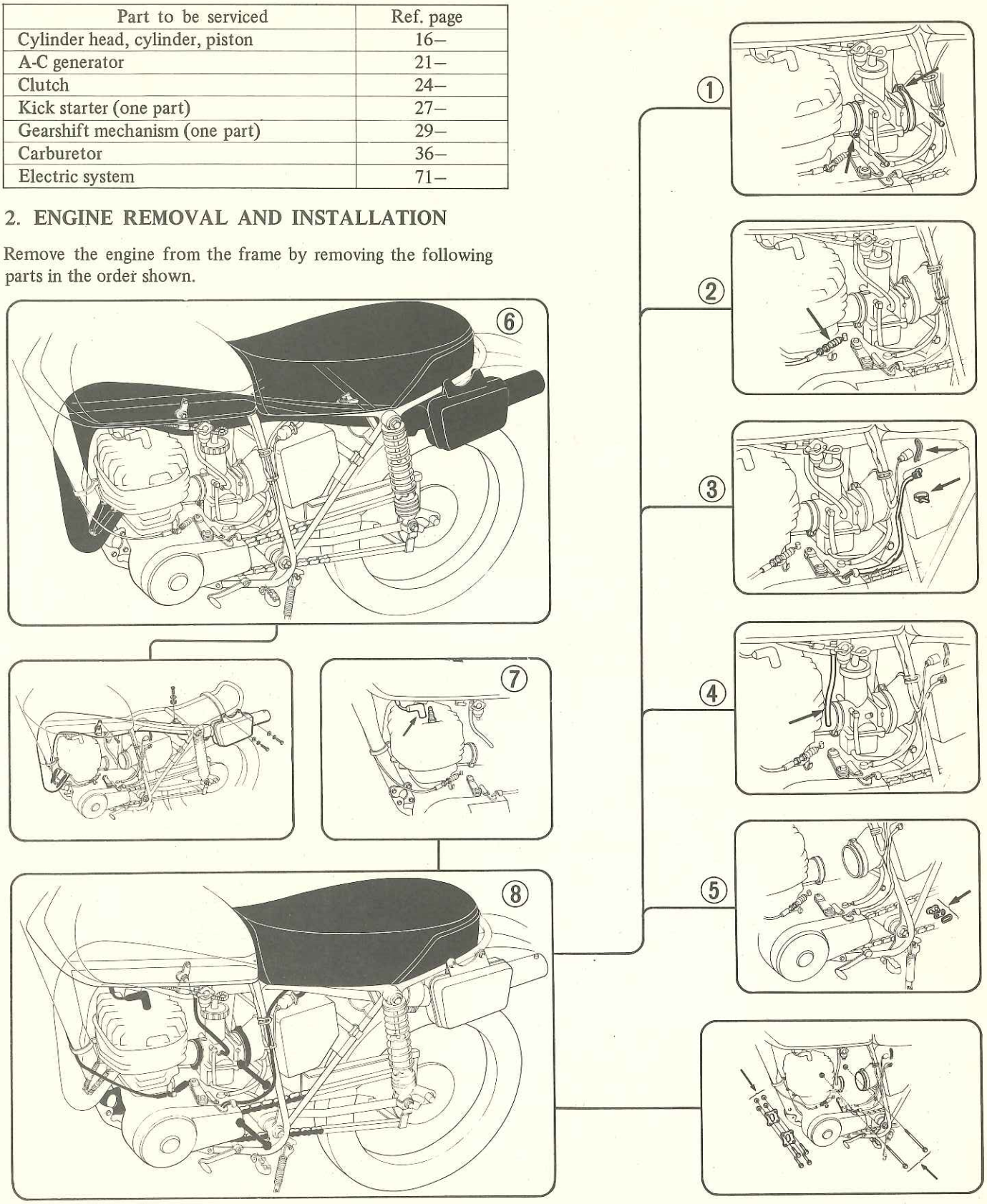

Fig. 3–1

(1) Carburetor connecting bands
(2) Clutch cable
(3) Generator cord connector
(4) Fuel tube and carburetor
(5) Clip and drive chain
(6) Seat, two expansion chamber springs and two bolts
(7) Spark plug cap
(8) Bolts

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3. CYLINDER HEAD, CYLINDER AND PISTON

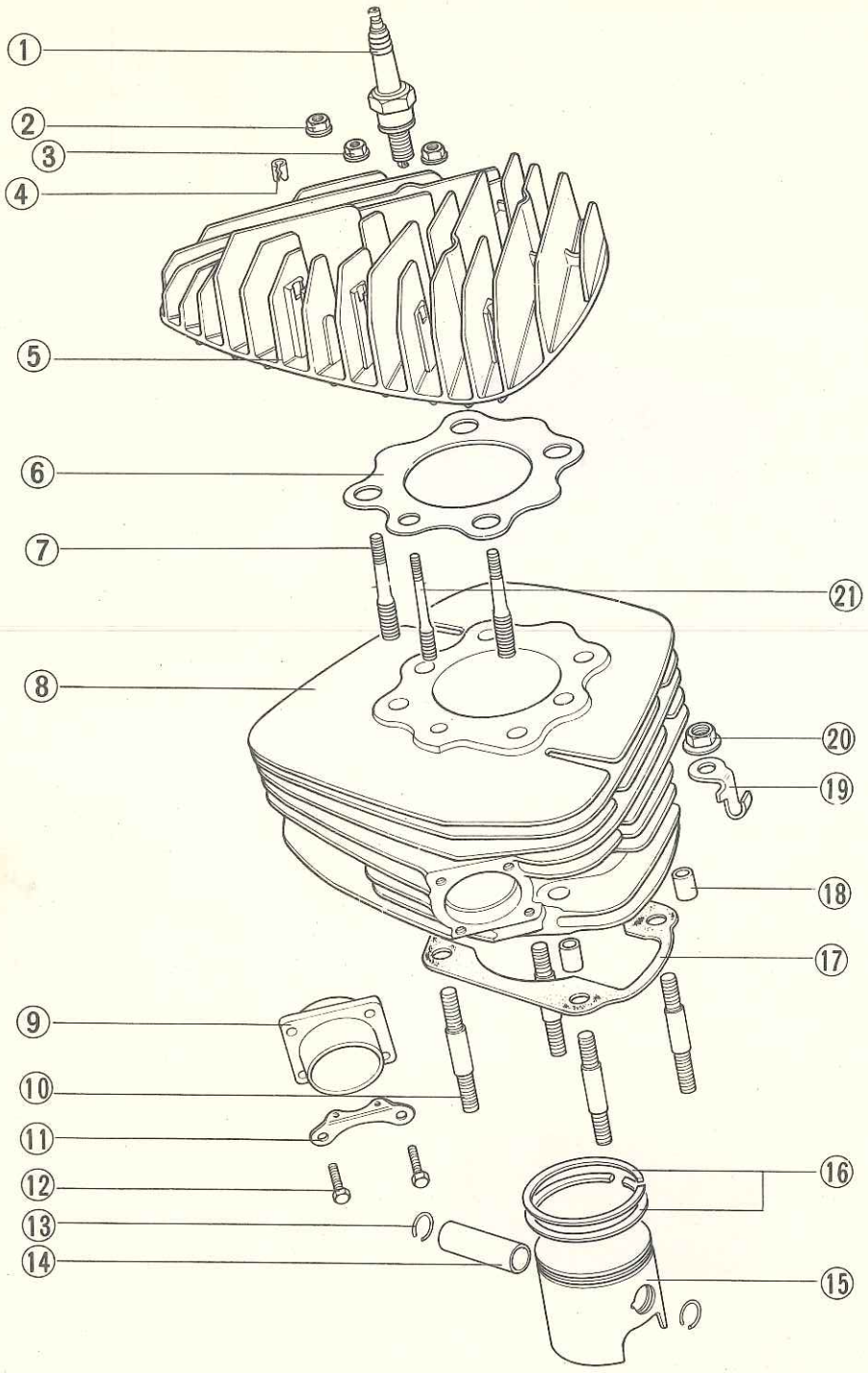

Fig. 3–2

(1) Spark plug
(2) 8mm special nut (four)
(3) 6mm flange nut (one)
(4) 10x10 Spring pin
(5) Cylinder head
(6) Cylinder head gasket
(7) 10x68 Stud belt (four)
(8) Cylinder
(9) Exhaust pipe joint
(10) 10x68 Stud bolt (four)
(11) Exhaust pipe stay
(12) 6x18 Bolt (four)
(13) 18mm Piston pin clip (two)
(14) Piston pin
(15) Piston
(16) Piston ring
(17) Cylinder gasket
(18) 12x16 Dowel pin
(19) Clutch cable clamp
(20) 10mm Special nut
(21) 6x55 Stud bolt

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Disassembly

1. Remove seat.
2. Remove fuel tank.
3. Remove spark plug cap from spark plug.
4. Remove expansion chamber.
5. Remove four 6 mm nuts first and remove four 8 mm nuts and then remove cylinder head.
6. Loosen carburetor insulator band, remove four 10 mm nuts and remove cylinder.

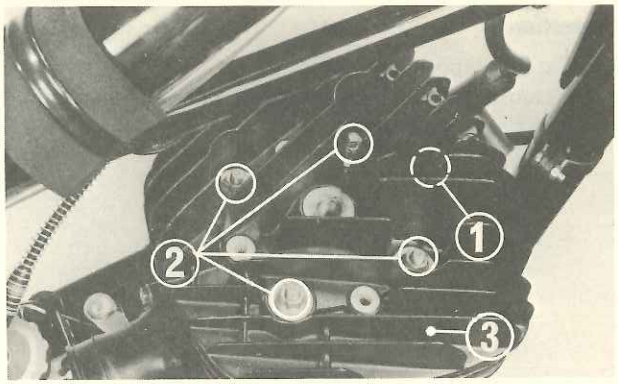

Fig. 3–3 (1) 6mm nut
(2) 8mm nuts
(3) Cylinder head

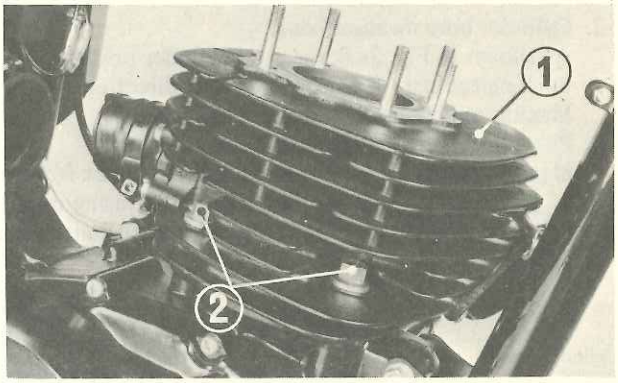

Fig. 3–4 (1) Cylinder (2) 10mm nuts

7. Put clean clotch over bore in crankcase. Remove piston pin clip, piston pin and piston.

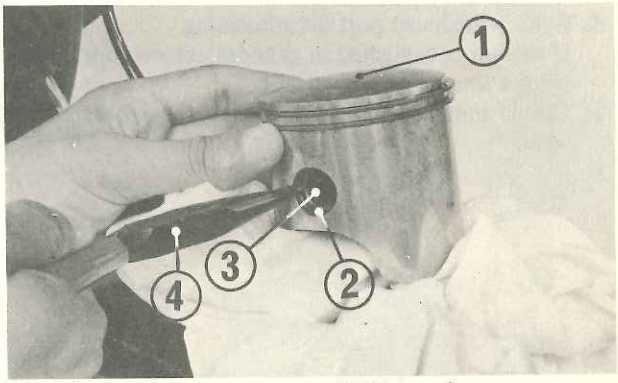

Fig. 3–5 (1) Piston
(2) Piston pin clip
(3) Piston pin
(4) Radio pench

8. Remove piston rings from piston. Expand each ring with right and left thumbs and lift it from direction opposite to gap.

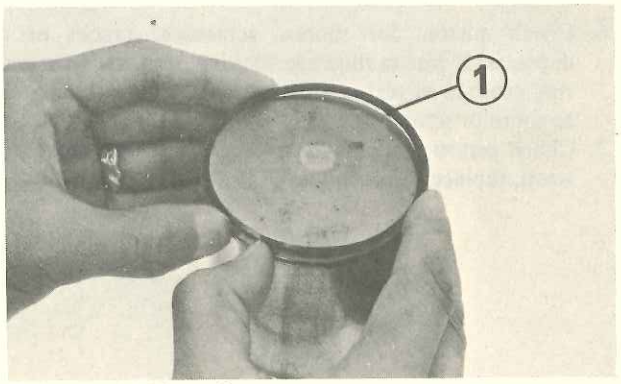

Fig. 3–6 (1) Piston ring

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Inspection

1. Carbon deposit
   Remove carbon deposits from combustion chamber, exhaust port and piston.

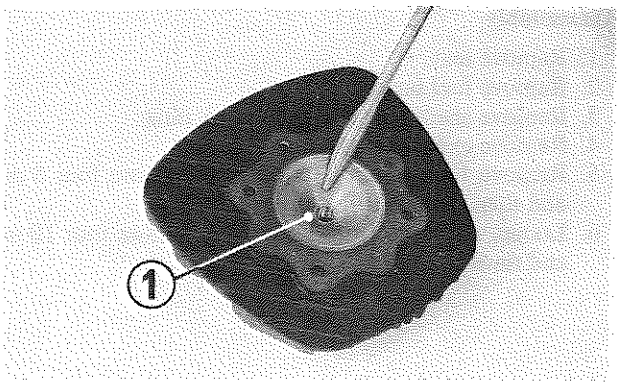

Fig. 3–7 (1) Decarbonizing cylinder head

2. Cylinder bore measurement
   As shown in Fig. 3–8, measure cylinder bore at four points in longitudinal direction and in directions X and Y. Maximum dimension is measured value.
3. Piston OD (outside diameter) measurement
   Measure piston OD at 4 mm (0.157 in.) apart from bottom of piston and 90° from piston pin hole, using micrometer, in directions X and Y. Minimum dimension is measured value.

Unit: mm (in.)

Item	Assembly standard	Service limit
Cylinder bore	70.00–70.01 (2.7559–2.7563)	70.1 (2.7598)
Piston OD	69.94–69.96 (2.7536–2.7544)	69.8 (2.7480)

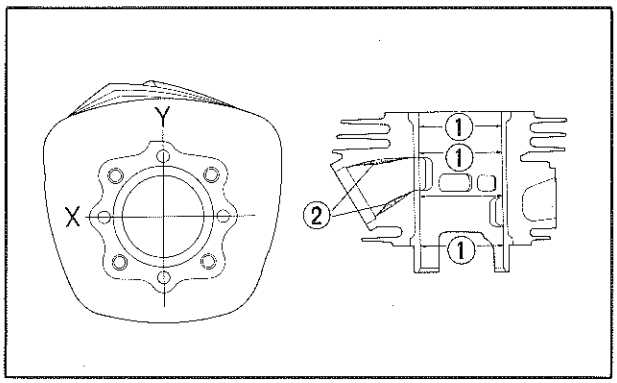

Fig. 3–8 (1) Cylinder bore measurement points
(2) Carbon deposits in cylinder exhaust port

4. Cylinder exhaust port decarbonizing
   If carbon is deposited in cylinder exhaust port, decarbonize using a scraper or screwdriver.
5. Check inner surface of cylinder for scores, scratches or wear.

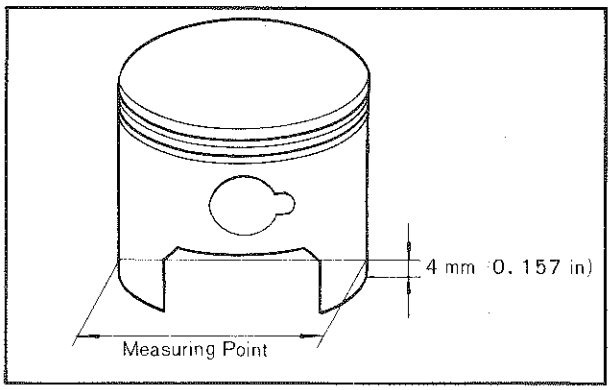

Fig. 3–9 (1) Piston OD

6. Check piston for scores, scratches, cracks or carbon deposits. If piston rings are sticking, remove them and clean ring grooves in piston with tip of a scraper taking care not to score or scratch them.
7. Check piston ring dowels for wear. If dowels are excessively worn, replace piston.

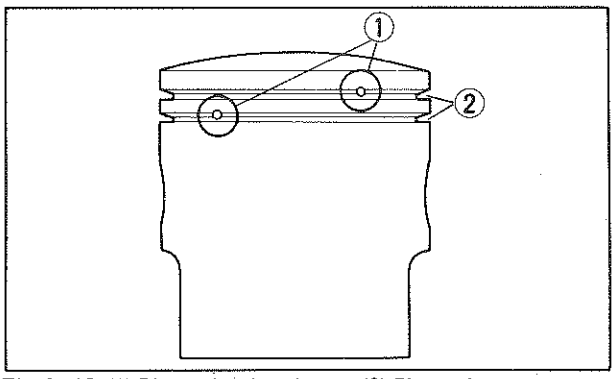

Fig. 3–10 (1) Piston ring dowels (2) Piston ring grooves

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8. Piston ring groove side clearance
Measure side clearance with a feeler gauge. If clearance exceeds service limit, replace rings. If clearance is too great even with new rings, replace piston and rings.

Unit: mm (in.)

Item		Assembly standard	Service limit
Piston ring side clearance	Top	0.050–0.070 (0.0020–0.0028)	0.09 (0.0035)
	2nd	0.030–0.050 (0.0012–0.0020)	0.07 (0.0028)

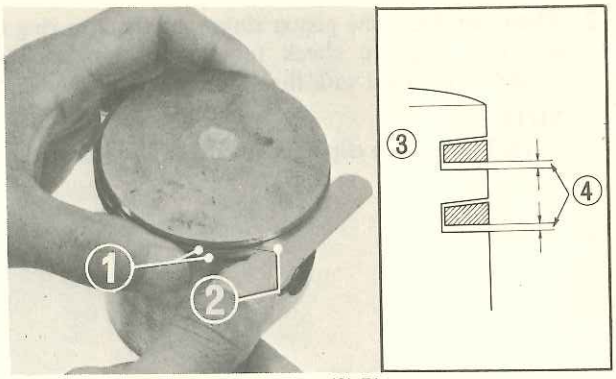

Fig. 3–11 (1) Piston rings (2) Feeler gauge (3) Piston (4) Clearance

9. Piston ring gap
Seat piston rings squarely in skirt of cylinder, and measure ring gap with a feeler gauge. If gap exceeds **0.5 mm (0.0197 in.)**, replace rings with new ones.

Unit: mm (in.)

Item		Assembly standard	Service limit
Piston ring gap	Top	0.2–0.4 (0.0079–0.0157)	0.5 (0.197)
	2nd	0.2–0.4 (0.0079–0.0157)	0.5 (0.197)

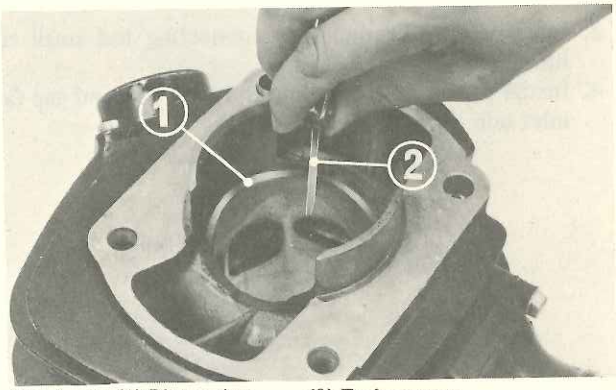

Fig. 3–12 (1) Piston ring (2) Feeler gauge

10. Check connecting rod small end bearing for looseness.

NOTE:
If bearing is excessively loose, replace it according to bearing fit classification table. (See page 35)

11. Check piston for wear and piston pin clearance in pin hole.

Unit: mm (in.)

Item	Assembly standard	Service limit
Piston pin OD	17.992–18000 (0.7073–0.7087)	17.98 (0.7079)
Connecting rod small end ID	21.997–22.009 (0.8660–0.8664)	22.1 (0.8701)

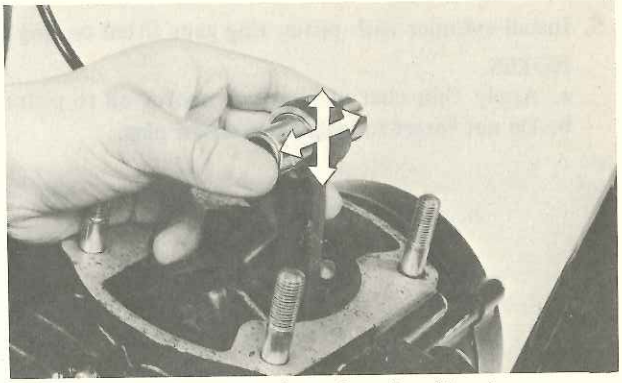

Fig. 3–13 Checking connecting rod small end bearing for looseness

Assembly

* To assemble, reverse disassembly procedures.

1. Install piston rings to piston.

NOTE:
- *** Top and second rings are of a keystone type and inter - changeable.**
- *** Use piston rings of same manufacturer in a set.**
- *** Markings on rings should face upward.**
- *** After installing, compress rings to check for proper fit.**

Unit: mm (in.)

Item	Assembly standard	Service limit
Piston pin hole ID	18.002–18.008 (0.7087–0.7090)	18.1 (0.7126)

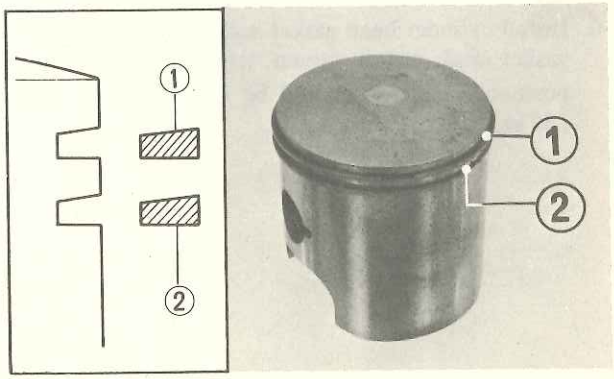

Fig. 3–14 (1) Top ring (2) Second ring

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2. When installing new piston rings, put them in ring grooves and turn rings to check for smooth movement. Rings should be installed with their markings facing upward.

   NOTE:
   Discard piston pin clip once removed. Use a new clip.

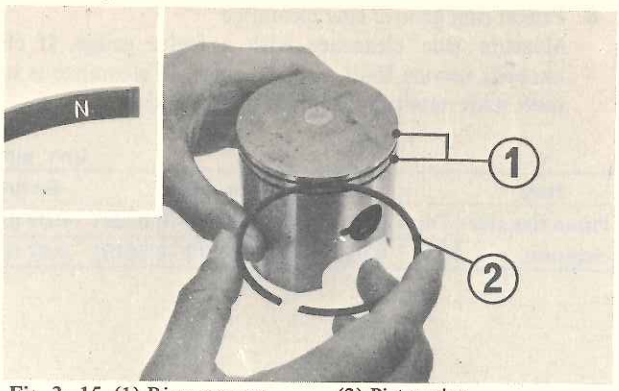

Fig. 3–15 (1) Ring grooves (2) Piston ring

3. Insert needle bearing into connecting rod small end and install piston.
4. Install piston to connecting rod with ring end gap facing to inlet side.

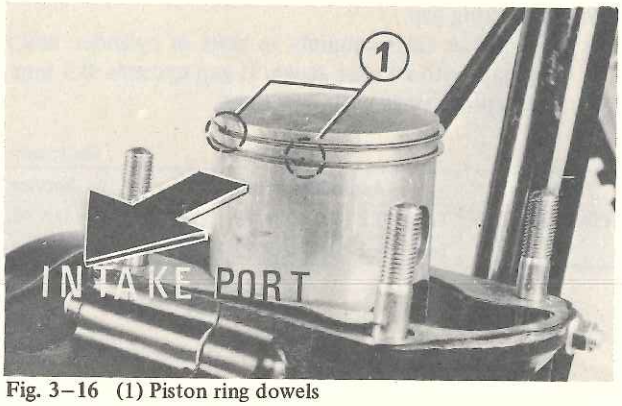

Fig. 3–16 (1) Piston ring dowels

5. Install cylinder with piston ring gaps fitted on ring dowels.

   NOTES:
   a. Apply thin coat of two-cycle motor oil to piston rings.
   b. Do not forget to install two dowel pins.

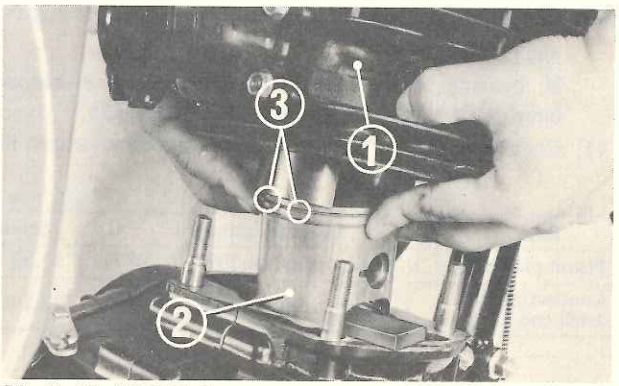

Fig. 3–17 (1) Cylinder
(2) Piston
(3) Piston ring dowels

6. Install cylinder head gasket and measure clearance between gasket and piston crown with piston placed at TDC position. Clearance should be 2.43–2.97mm (0.0957–0.1169 in.).

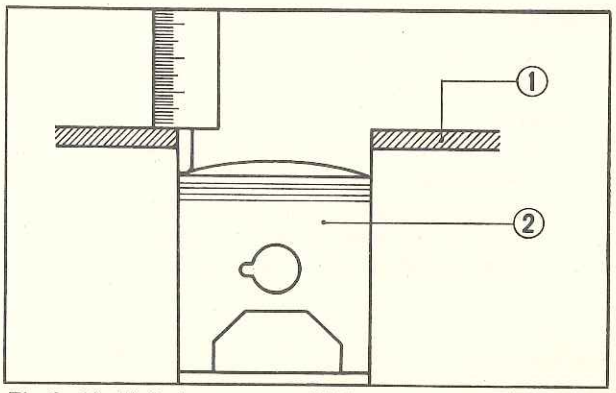

Fig. 3–18 (1) Gasket (2) Piston

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4. A.C. GENERATOR

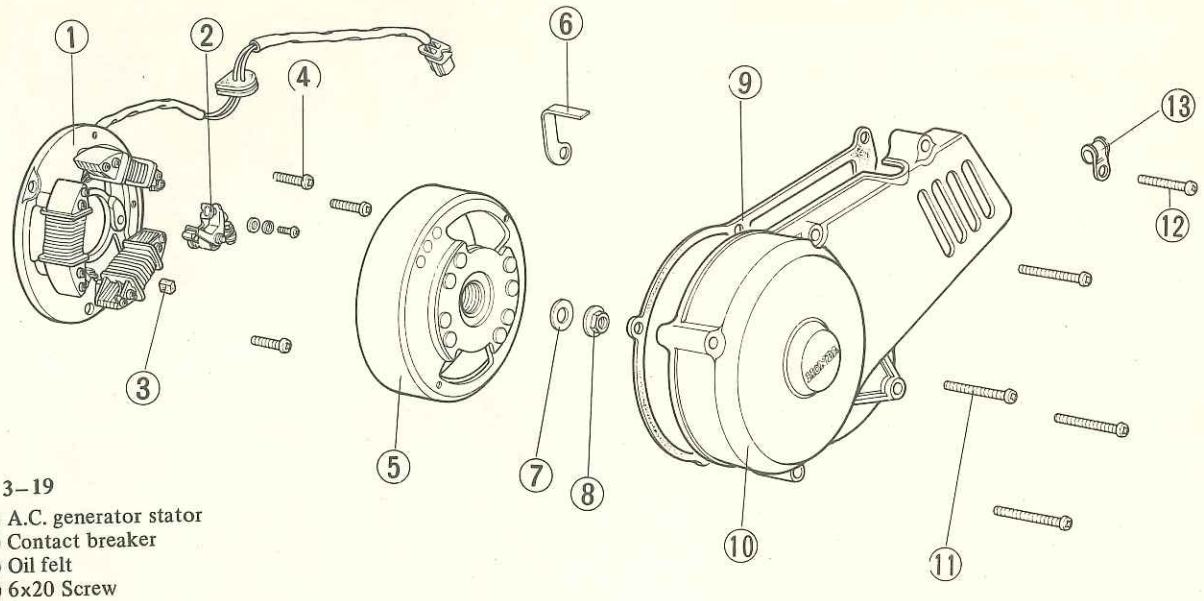

Fig. 3–19
(1) A.C. generator stator
(2) Contact breaker
(3) Oil felt
(4) 6x20 Screw
(5) A.C. generator rotor
(6) A.C. generator clamper
(7) Rotor set washer
(8) 14 mm special nut
(9) Left crankcase cover gasket
(10) Left crankcase cover
(11) 6x20 Screw
(12) 6x28 Screw
(13) Front brake cable clip

Disassembly

1. Remove left crankcase cover.

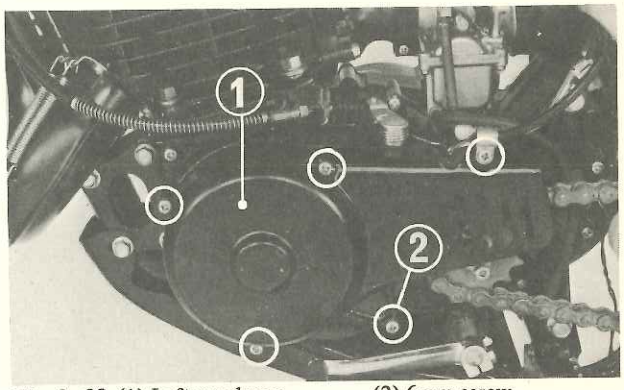

Fig. 3–20 (1) Left crankcase (2) 6mm screw

2. With transmission gear placed in any position other than neutral, set drive sprocket holder (Tool No. 07922–3570000) as shown in Fig. 3–21 and remove 14 mm special nut tightening generator rotor.

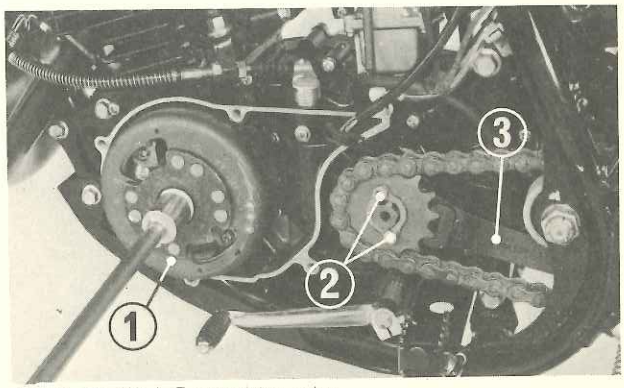

Fig. 3–21 (1) A.C. generator rotor
(2) Drive sprocket fixing bolts
(3) Drive sprocket holder

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4. While screwing rotor puller in rotor (TOOL NO. 07933–3950000) remove rotor from crankshaft.

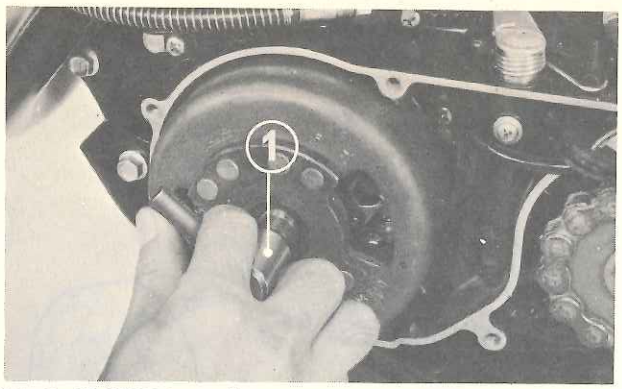

Fig. 3–22 (1) Rotor puller

5. Disconnect stator cord coupler; then remove stator cord.
6. Remove screws and remove stator.

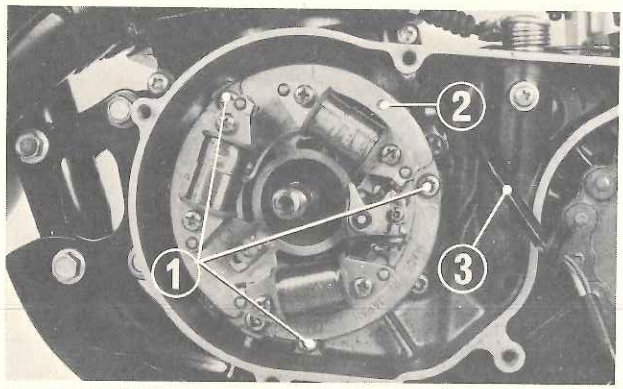

Fig. 3–23 (1) Screws
(2) Stator
(3) Stator cord

7. To remove contact breaker for replacement, remove screw and nut.

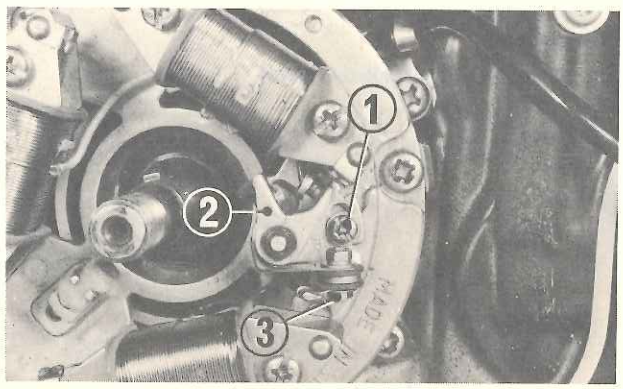

Fig. 3–24 (1) Screw
(2) Contact breaker
(3) Nut

8. Remove joint at clutch lever and remove clutch lever spring. Turn off special 5mm bolt and withdraw clutch lever.

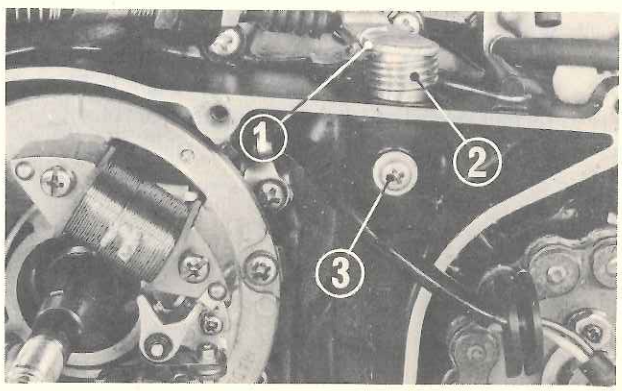

Fig. 3–25 (1) Clutch lifter lever
(2) Clutch spring
(3) 5mm special screw

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Inspection

1. Check stator cord for breakage.
2. Check oil felt for wear.
3. Check contact breaker for damage or burning.
4. Make sure that stator and generator are not interfering with each other.

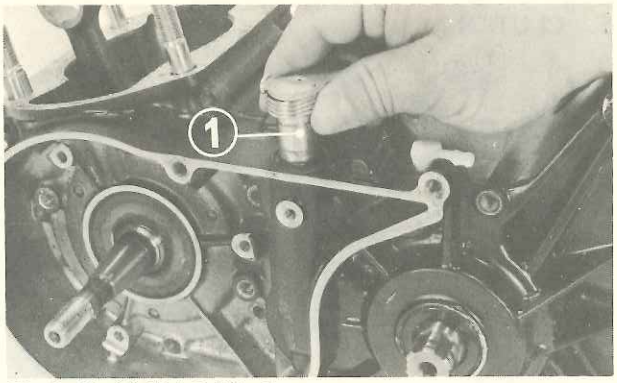


Fig. 3–26 (1) Clutch lifter lever

Assembly

To assemble, reverse disassembly procedure.

1. Insert clutch lever in crankcase and install in reverse order of removal.
2. Making sure that screw, bolt and washer are not remained in rotor, install rotor.
3. When stator is removed, ignition timing should be adjusted.
4. Insert stator cord grommet in case groove in position.

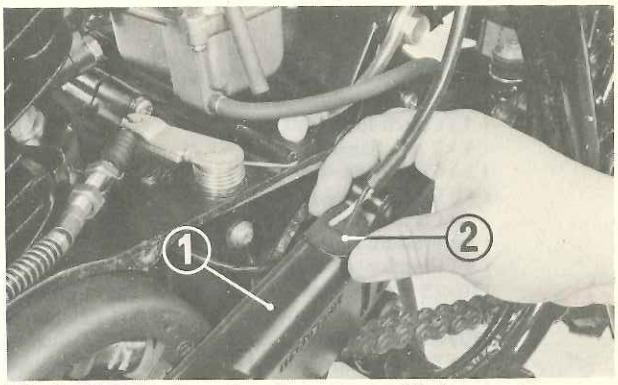


Fig. 3–27 (1) Left crankcase cover (2) Grommet

5. After engine has been assembled, start it and listen for any abnormal noises or other conditions which might interfere with proper engine operation.

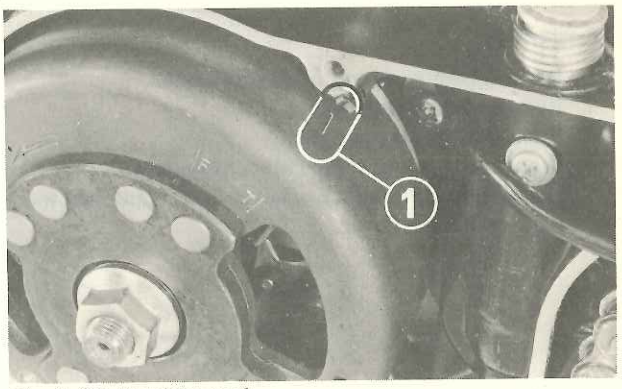
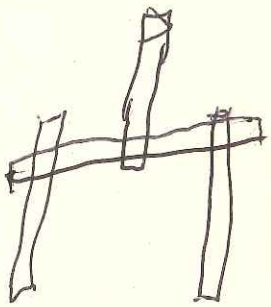


Fig. 3–28 Matching mark



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5. CLUTCH

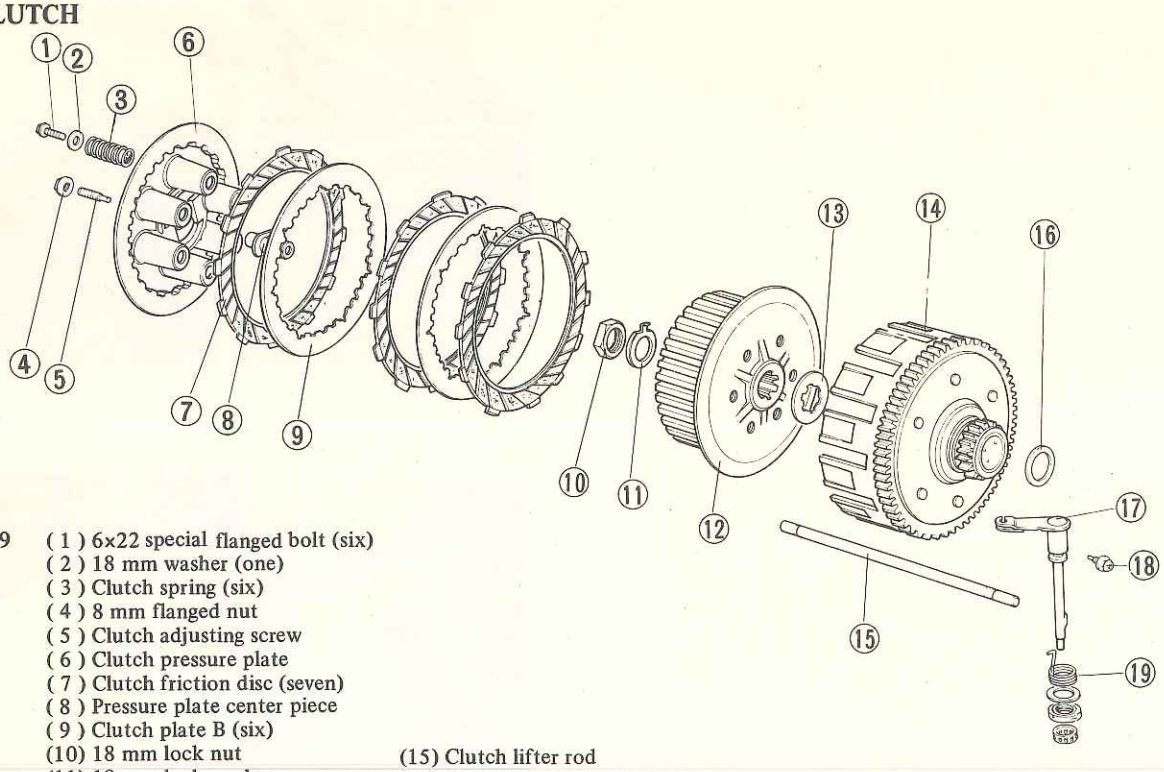

Fig. 3–29
(1) 6x22 special flanged bolt (six)
(2) 18 mm washer (one)
(3) Clutch spring (six)
(4) 8 mm flanged nut
(5) Clutch adjusting screw
(6) Clutch pressure plate
(7) Clutch friction disc (seven)
(8) Pressure plate center piece
(9) Clutch plate B (six)
(10) 18 mm lock nut
(11) 18 mm lock washer
(12) Clutch center
(13) 22 mm thrust washer
(14) Clutch outer
(15) Clutch lifter rod
(16) 25 mm thrust washer C
(17) Clutch lever
(18) 5 mm special belt
(19) Clutch lever spring

Disassembly

1. Drain transmission oil from crankcase.
2. Remove brake pedal pivot.
3. Remove kick starter pedal.
4. Disconnect clutch cable from clutch lever.
5. Remove right crankcase cover tightening screws. Remove right crankcase cover.

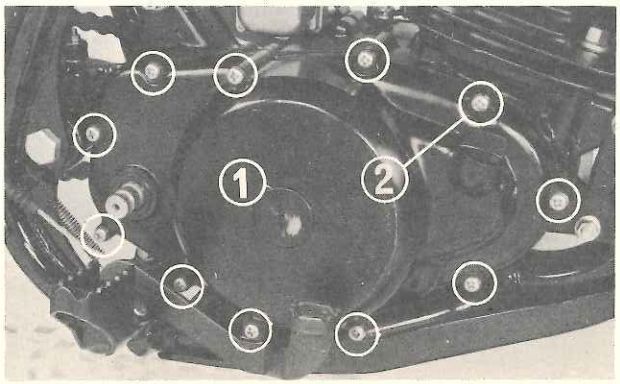

Fig. 3–30 (1) Right crankcase cover (2) 6 mm Screws

6. Remove six 6 mm clutch bolts and remove clutch pressure plate. Then remove center piece and clutch lifter rod.

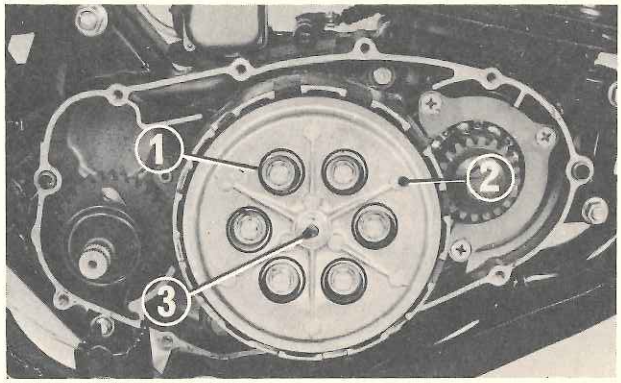

Fig. 3–31 (1) 6 mm bolts
(2) Clutch pressure plate
(3) Clutch lifter rod

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7. Remove seven clutch friction discs and six clutch plates.
8. Using lock nut wrench, remove lock nut, lock nut washer and clutch center. Before removing lock nut, set up drive gear holder (Tool No. 07974–3950000) on outer gear to prevent turning while lock nut is removed.

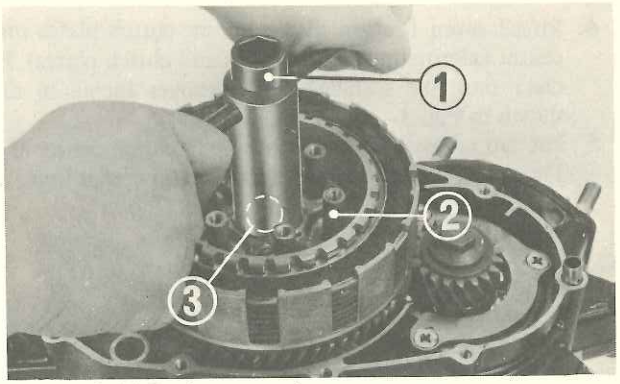

Fig. 3–32 (1) Lock nut wrench
(2) Clutch center
(3) 16 mm lock nut

9. Remove 22 mm splined washer, clutch outer and 25 mm thrust washer C.

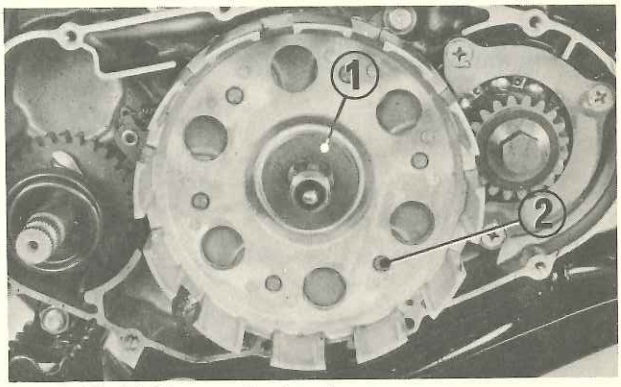

Fig. 3–33 (1) 22 mm splined washer
(2) Clutch outer

Inspection

1. Check clutch friction discs for burning, wear or any other damage, and replace any damage discs.
2. Check clutch plates for face runout. Warped or damaged plates may cause clutch to slip when engaged. Replace plates if necessary.
3. Check clutch springs for fatigue and replace them if necessary.
4. Check clutch outer for stepped wear and replace it if necessary.

Unit: mm (in.)

Item		Assembly standard	Service limit
Clutch friction disc thickness		2.62–2.78 (0.1031–0.1094)	2.4 (0.0945)
Clutch plate face runout		0.15 (0.059)	0.25 (0.0098)
Clutch spring	Free length	42.8–43.0 (1.6850–1.6929)	40.0 (1.5748)
	Tension	24.8/16.7 kg (0.9764/36.8 lbs)	20.5/21 kg (0.8071/46 lbs)

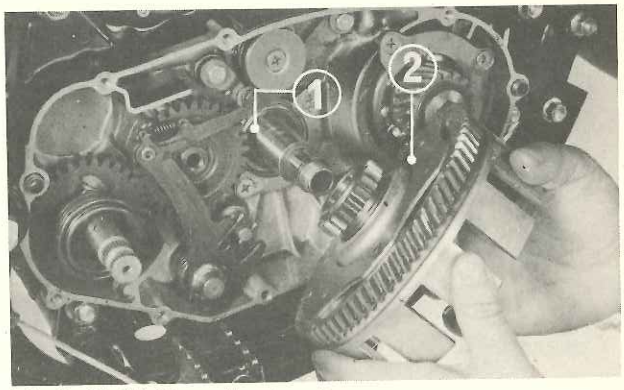

Fig. 3–34 (1) 25 mm thrust washer
(2) Clutch outer

Assembly

1. Install 25 mm thrust washer C to main shaft.
2. Install clutch outer. Install 22 mm splined washer to main shaft and rotate shaft until washer meshes with shaft.

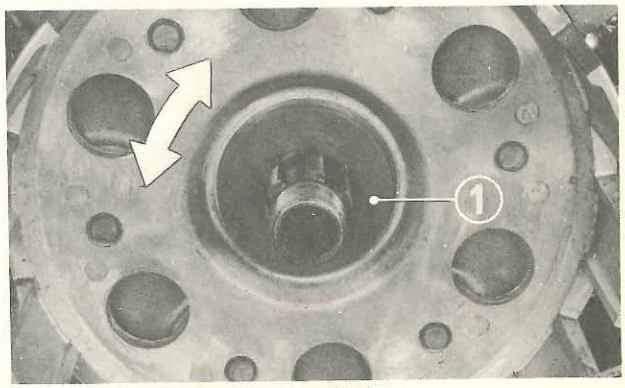

Fig. 3–35 (1) 22 mm splined washer

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4. Install seven friction discs and six clutch plates on clutch center (alternating friction discs and clutch plates). Friction discs must be installed with grooves facing in direction shown in Fig. 3–36.
5. Put tab of lock washer into hole in clutch center as shown. Then insert clutch lifter rod in place in center hole.

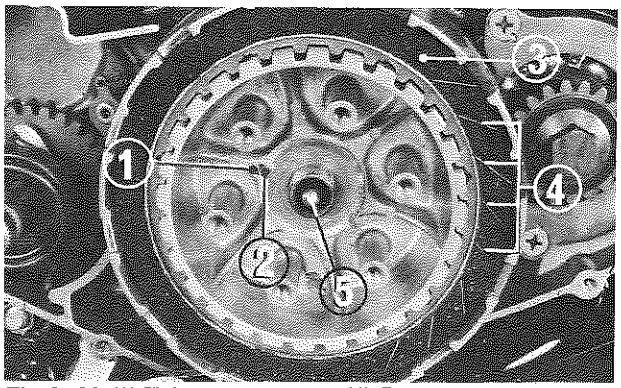

Fig. 3–36 (1) Hole (4) Grooves
(2) Lock washer (5) Clutch lifter rod
(3) Clutch friction disc

6. Tighten lock nut to specified torque. Then, bend tab of lock washer against lock nut.

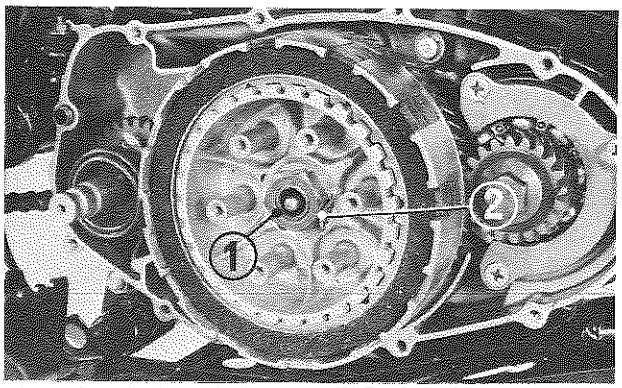

Fig. 3–37 (1) 18 mm lock nut (2) Lock washer

7. Engage pressure plate center piece in recess in back of pressure plate. Hold pressure plate center piece with clutch adjusting screw and flanged nut from behind plate.

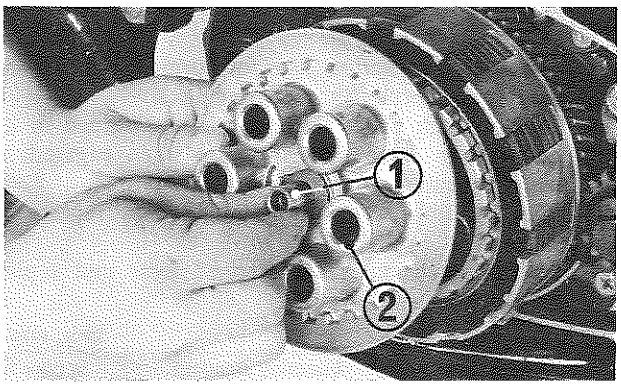

Fig. 3–38 (1) Pressure plate center piece
(2) Pressure plate

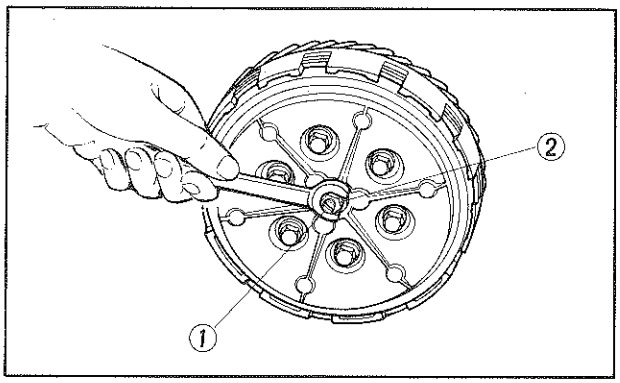

Fig. 3–39 (1) Adjusting screw (2) Flanged nut

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6. KICK STARTER

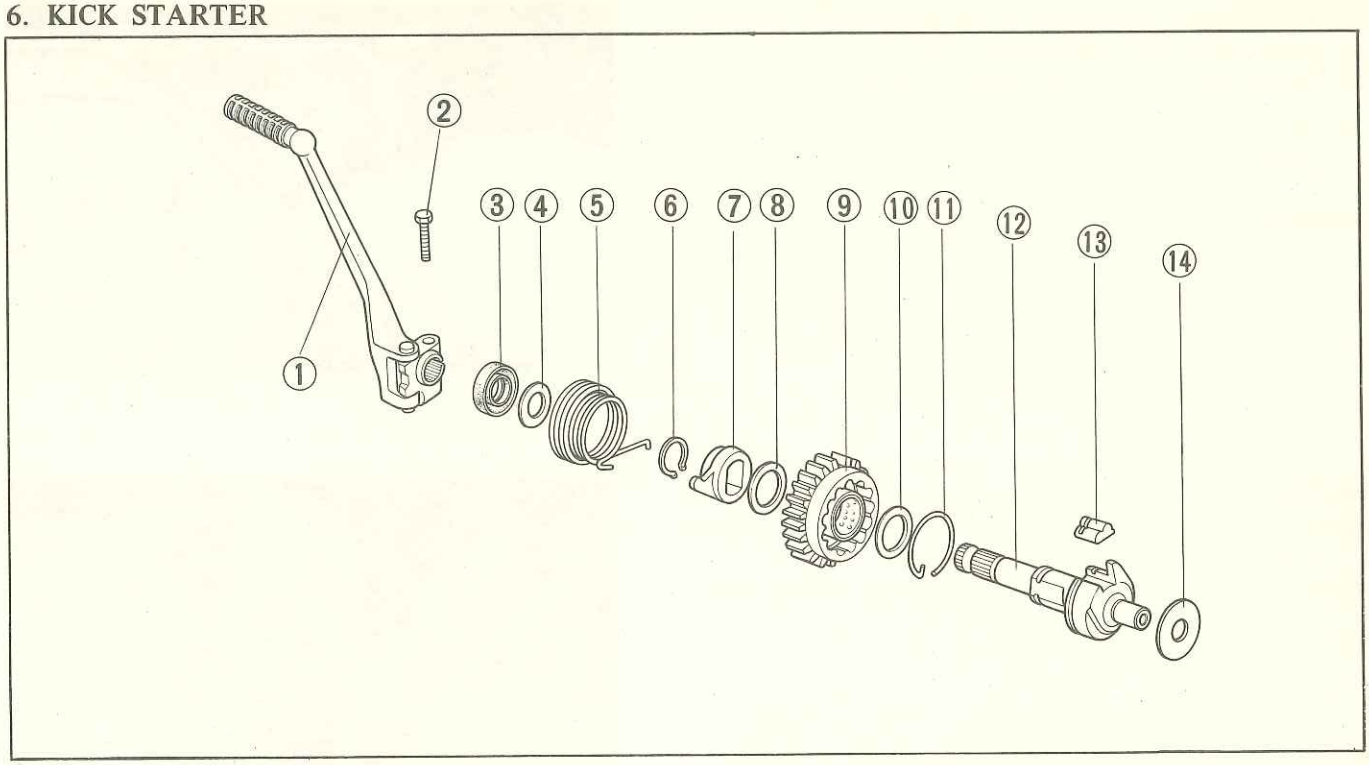

Fig. 3–40 (1) Kick starter arm
(2) 8x25 bolt (hex.)
(3) 18x29x7 Oil seal
(4) 17 mm washer
(5) Kick starter spring
(6) 22 mm external circlip
(7) Kick starter spring retainer
(8) 22 mm thrust washer
(9) Starter pinion (24 teeth)
(10) 22 mm thrust washer
(11) Starter pawl spring
(12) Kick starter spindle
(13) Kick starter pawl
(14) 16 mm washer

1. Remove thirteen right crankcase cover tightening screws. See page 32.

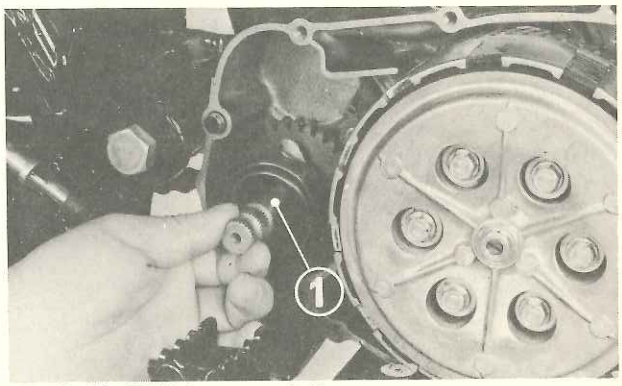

Fig. 3–41 (1) Kick starter spindle

2. Remove kick starter spring with a standard screwdriver. Take care when removing spring since it will loosen suddenly.
3. Remove kick starter spindle as an assembly.

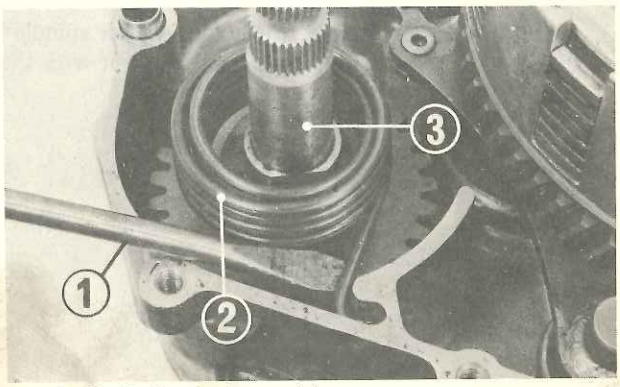

Fig. 3–42 (1) Standard screwdriver
(2) Kick starter spring
(3) Kick starter spindle

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4. Pry off 22 mm external circlip and disassemble kick starter spring retainer and kick starter pinion.
5. Remove 16 mm washer from right crankcase.

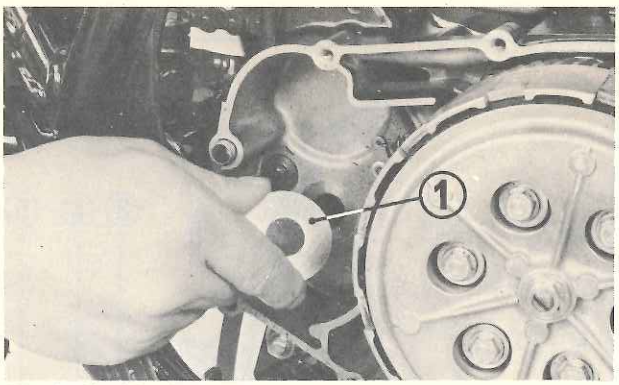

Fig. 3–43 (1) 16 mm washer

Inspection

1. Check ratchet pawl for damage and pawl spring for fatigue.

Assembly

To assemble, reverse disassembly procedure. Pay attention to the following points:

1. Do not forget to install 22 mm thrust washer when installing kick starter spindle assembly.

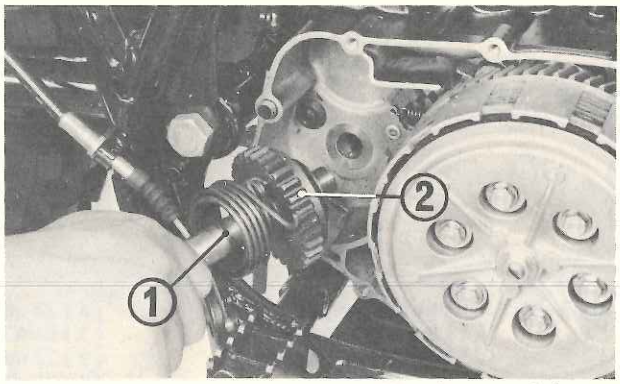

Fig. 3–44 (1) 22 mm thrust washer (2) Kick starter pinion

2. Install kick starter spring and kick starter pedal as per instructions given in Figs. 3–45.

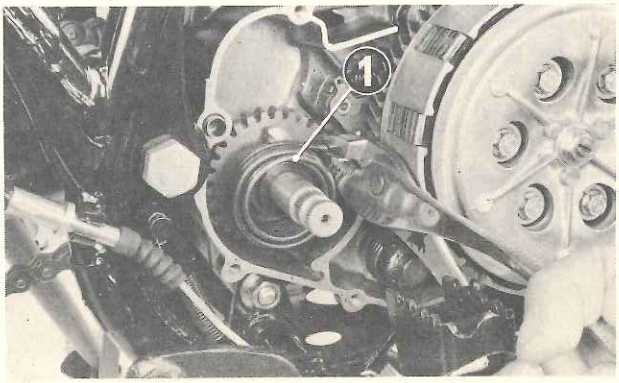

Fig. 3–45 (1) Kick starter spring

3. Install the spring retainer to the kick starter spindle in the direction shown in Fig. 3–46 and secure it with the snap ring.

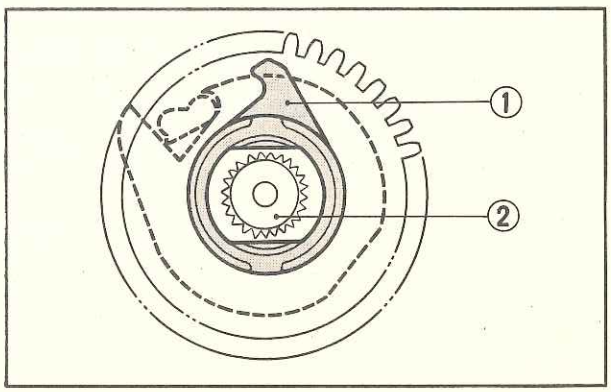

Fig. 3–46 (1) Spring retainer
(2) Kick starter spindle

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6. GEARSHIFT MECHANISM

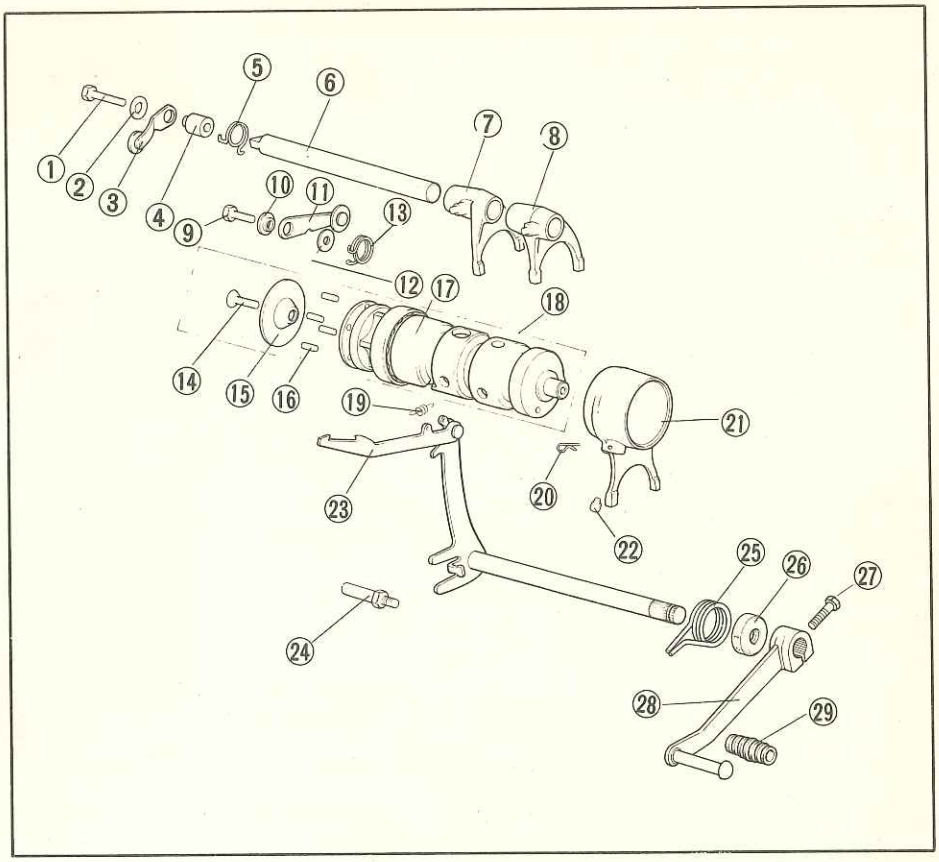

Fig. 3–47
(1) 6x28 hex. bolt
(2) Shift drum stopper washer (two)
(3) Neutral stopper arm
(4) Neutral stopper collar
(5) Neutral stopper arm spring
(6) Gearshift fork guide shaft
(7) Right gearshift fork
(8) Left gearshift fork
(9) 6x18 hex. bolt
(10) Shift drum stopper collar
(11) Drum stopper arm
(12) Shift drum stopper washer
(13) Stopper arm spring
(14) 6x14 screw
(15) Drum pin stopper plate
(16) 4x10 roller (four)
(17) Gearshift drum
(18) Gearshift drum assy.
(19) Gearshift arm spring
(20) Gearshift fork guide pin clip
(21) Center gearshift fork
(22) Gear shift fork guide pin
(23) Gearshift spindle
(24) Shift return spring pin
(25) Gearshift return spring
(26) 14x28x7 oil seal
(27) 6x20 hex. bolt
(28) Gear change pedal
(29) Change pedal rubber

Disassembly

1. Remove engine.
2. Remove cylinder and piston. See page 16 thru 17.
3. Remove generator.
4. Remove clutch. See pages 24 thru 25.
5. Remove gear change pedal.
6. With gearshift spindle arm held down, pull off spindle toward outside.

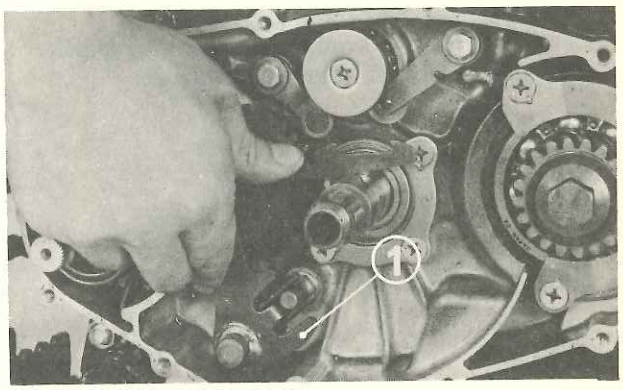

Fig. 3–48 (1) Gearshift spindle

7. Remove kick starter spindle as a unit.
8. Remove starter idle gear.
9. Remove 12 mm UBS bolt and remove drive gear.
10. Remove gearshift drum stopper and neutral stopper.

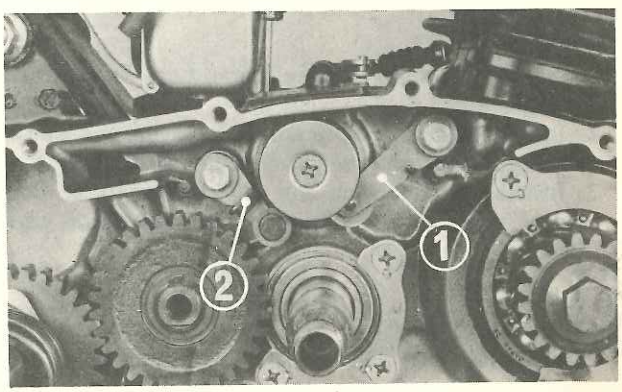

Fig. 3–49 (1) Gearshift drum stopper arm
(2) Neutral stopper arm

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11. Disassemble right and left crankcases. (See pages 32 thru 33) Then, remove gearshift drum and three gearshift forks together with main shaft and countershaft gears.

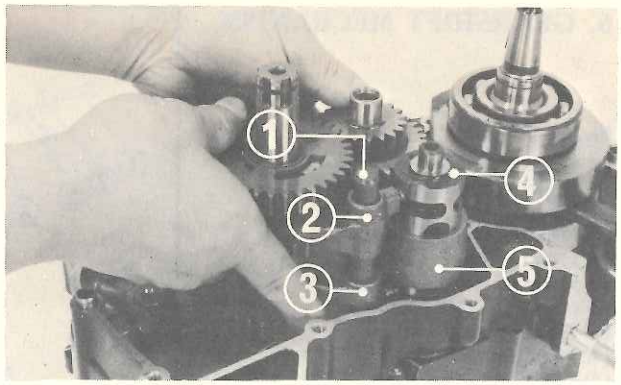

Fig. 3–50 (1) Gearshift fork shaft (4) Gearshift drum
(2) Left gearshift fork (5) Center gearshift fork
(3) Right gearshift fork

Inspection

1. Check condition of gearshift fork finger.
2. Measure gearshift fork guide shaft OD.
3. Measure gearshift fork ID.
4. Measure gearshift drum OD.

Unit: mm (in.)

Item	Assembly standard	Service limit
Shift fork guide shaft OD	11.976–11.994 (0.4715–0.4722)	11.92 (0.4693)
Right, center, left gearshift fork ID	12.00–12.018 (0.4724–0.4731)	12.05 (0.4744)
Shift fork finger thickness	4.93–5.07 (0.1941–0.1969)	4.6 (0.811)

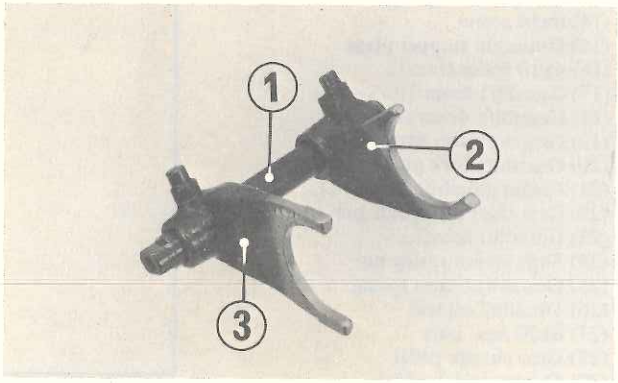

Fig. 3–51 (1) Gearshift fork shaft
(2) Left gearshift fork
(3) Right gearshift fork

5. Check for sticking or bent gearshift forks.
6. Check for broken, worn, or bent gearshift spindle.
7. Remove crankshaft from right crankcase.

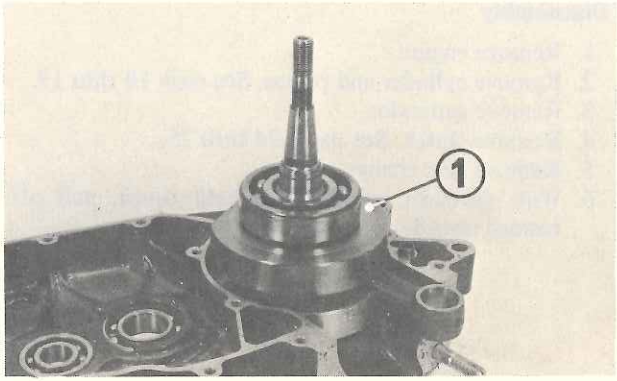

Fig. 3–52 (1) Crankshaft

Assembly

To assemble, reverse removal procedure. Observe following assembly notes:

1. Install right and left gearshift forks on fork shaft. Center gearshift fork must be installed on shift drum.
2. Install gearshift drum and shift fork shaft in right crankcase, together with main shaft and countershaft gears.

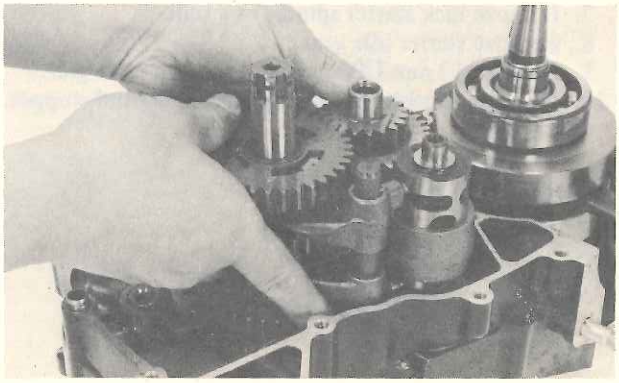

Fig. 3–53 Gearshift fork assembly

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3. Do not forget to install 17mm thrust washer when installing starter idle gear.

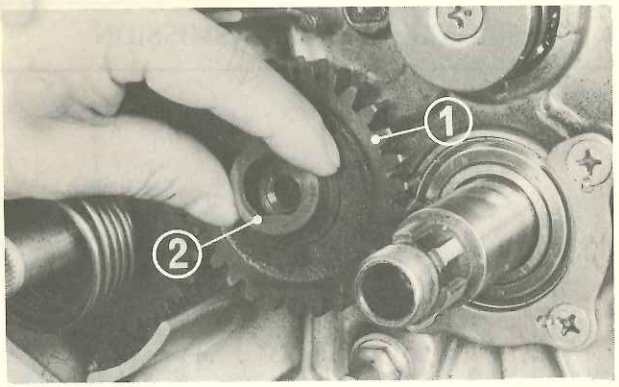

Fig. 3–54 (1) Idle gear (2) 17mm thrust washer

4. Hook neutral and drum stopper arm springs on holders at points (1). After tightening, check to be sure that each collar (neutral stopper collar and shift drum stopper collar) is in alignment with hole in arm. alignment with hole in arm.

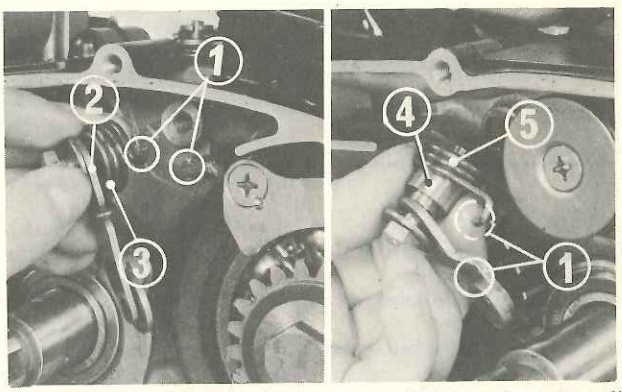

Fig. 3–55 (1) Hook point
(2) Drum stopper arm
(3) Drum stopper arm spring
(4) Neutral stopper collar
(5) Neutral stopper collar spring

5. Check to make sure neutral and drum stopper arms are installed properly.

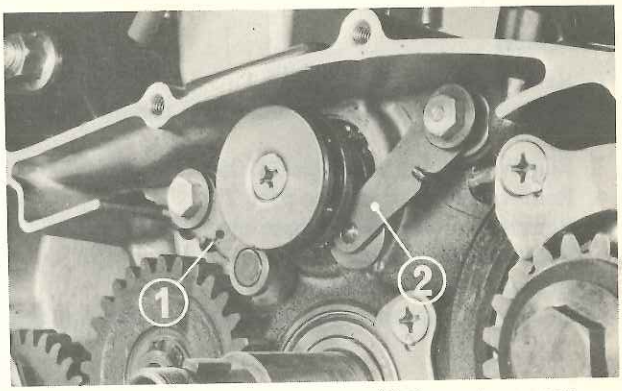

Fig. 3–56 (1) Neutral stopper arm (2) Drum stopper arm

6. After installing gearshift spindle, shift transmission into gears to see if it operates properly.

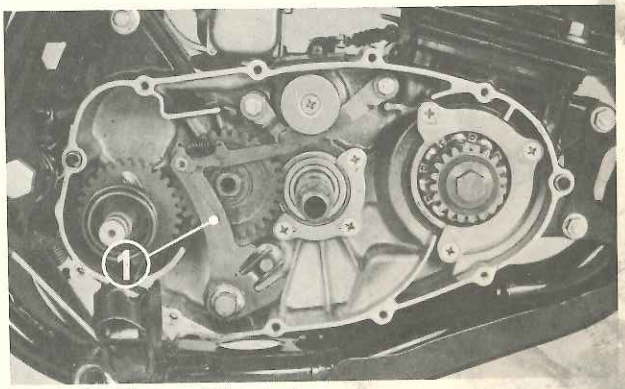

Fig. 3–57 (1) Gearshift spindle

8. CRANKCASE AND TRANSMISSION

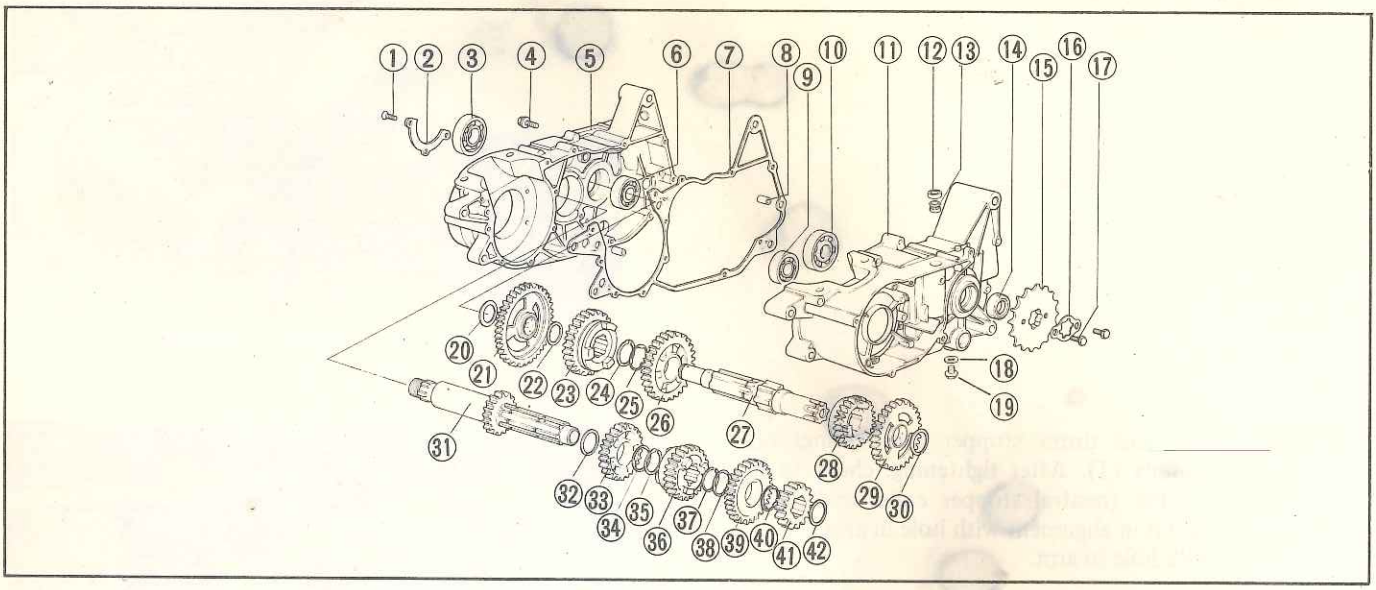

Fig. 3–58

(1) 6x14 screw
(2) Bearing stopper plate
(3) 6205Z ball bearing
(4) Right crankcase cover gasket bolt
(5) Right crankcase
(6) 17x42x12 radial ball bearing
(7) Crankcase gasket
(8) 10x14 dowel pin (two)
(9) 6203Z radial ball bearing
(10) 6304 radial ball bearing
(11) Left crankcase
(12) 16x22x3.5 oil seal
(13) 16 mm needle bearing
(14) 20x34x7 oil seal
(15) Drive sprocket (14 teeth)
(16) Drive sprocket fixing plate
(17) 6x10 mm hex. bolt (two)
(18) 12 mm drain plug washer
(19) Drain plug
(20) 17.2 thrust washer
(21) Countershaft low gear (38 teeth)
(22) 18.6 mm thrust washer
(23) Countershaft fourth gear (26 teeth)
(24) 22 mm snap ring (three)
(25) 22 mm spline washer
(26) Countershaft third gear (30 teeth)
(27) Countershaft
(28) Countershaft fifth gear (23 teeth)
(29) Countershaft second gear (34 teeth)
(30) 20 mm thrust washer
(31) Main shaft
(32) 22 mm thrust washer
(33) Main shaft fourth gear (28 teeth)
(34) 22 mm spline washer
(35) 22 mm circlip
(36) Main shaft third gear (24 teeth)
(37) 22 mm circlip
(38) 22 mm spline washer
(39) Main shaft fifth gear (32 teeth)
(40) 22 mm splined washer
(41) Main shaft second gear (19 teeth)
(42) 17.2 mm thrust washer

Disassembly

1. Remove engine. (See page 15.)
2. Remove cylinder head, cylinder and piston. (See pages 16, 17)
3. Remove clutch. (See pages 24, 25)
4. Remove kick starter. (See page 27)
5. Remove contact breaker base and A.C. generator.
6. Remove drive sprocket.
7. Remove 13 left crankcase screws.
8. Remove 17 mm snap ring and remove starter idle gear.

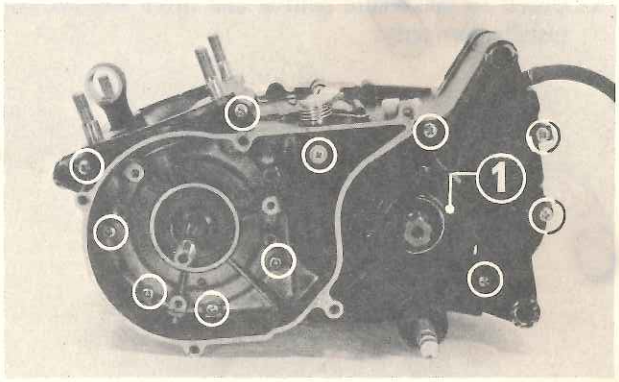

Fig. 3–59 (1) Left crankcase

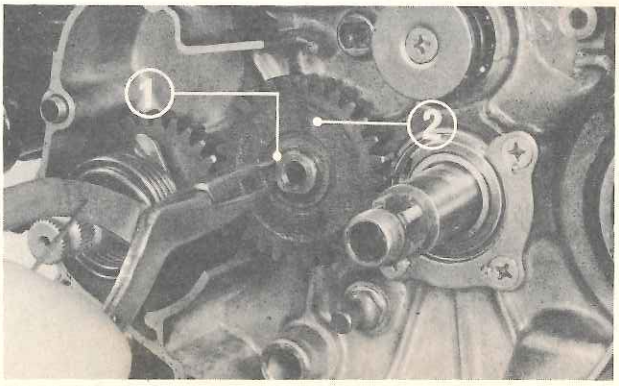

Fig. 3–60 (1) 17 mm snap ring (2) Starter idle gear

9. Bolt crankcase disassembly tool (Tool No. 07937–3570001) to left crankcase as shown. Turn screw of tool against end of crankshaft to separate cases.

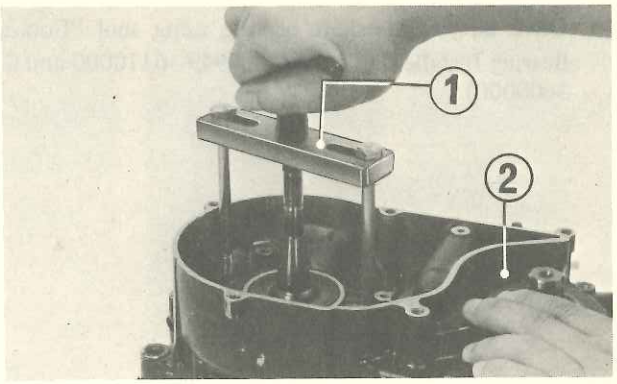

Fig. 3–61 (1) Crankcase disassembly tool (2) Crankcase

10. Remove main shaft and countershaft gears together with gearshift drum and shift forks.

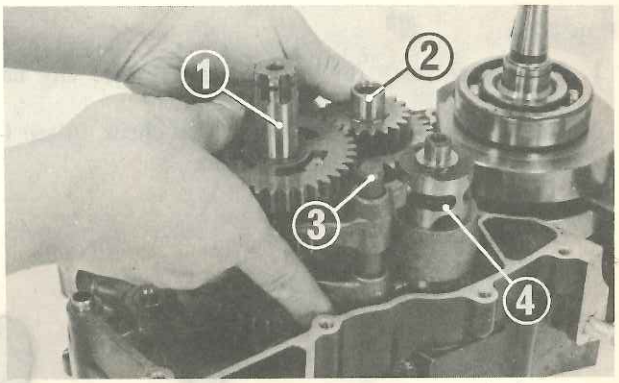

Fig. 3–62 (1) Main shaft (3) Shift fork shaft
(2) Countershaft gears (4) Shift drum

11. Remove bearing stopper plate from right crankcase.

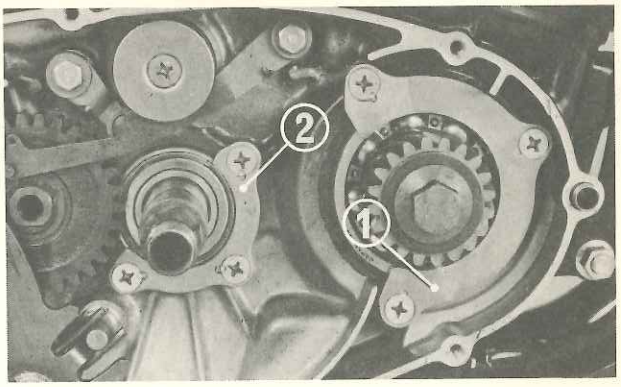

Fig. 3–63 (1) Crankshaft bearing stopper plate
(2) Main shaft bearing stopper plate

12. With use of tool "Crankshaft Bearing Driver Attachment (07946–3600000)" and "Driver Handle (Tool No. 07949–6110000)," drive out crankshaft bearing.

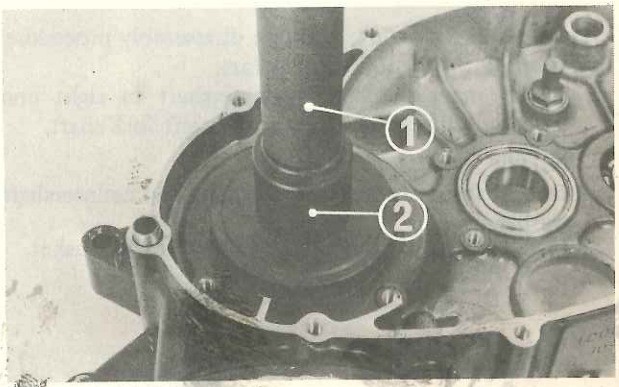

Fig. 3–64 (1) Driver handle
(2) Crankshaft bearing driver attachment

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13. Drive out countershaft bearing using tool "Countershaft Bearing Installer" (Tool Nos. 07949–6110000 and 07946–3600000).

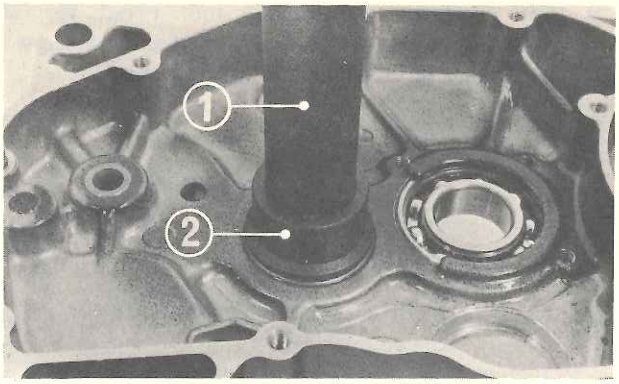

Fig. 3–65 (1) Driver handle (2) Driver attachment

Inspection

1. Check gear teeth for damage, and replace any damaged gears.
2. Check dogs of gears for wear. Also check to see if gears move smoothly along shaft spliners.

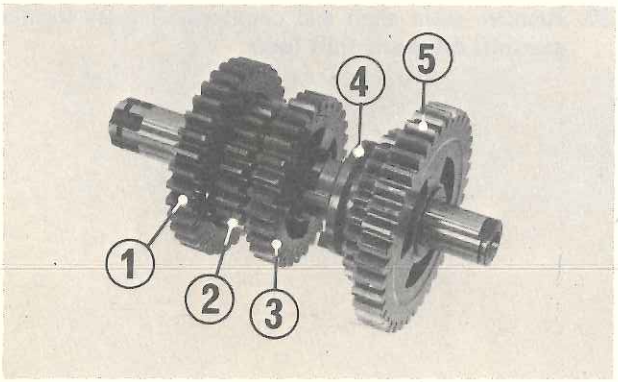

Fig. 3–66 (1) Countershaft low gear (2) Countershaft fourth gear (3) Countershaft third gear (4) Countershaft fifth gear (5) Countershaft second gear

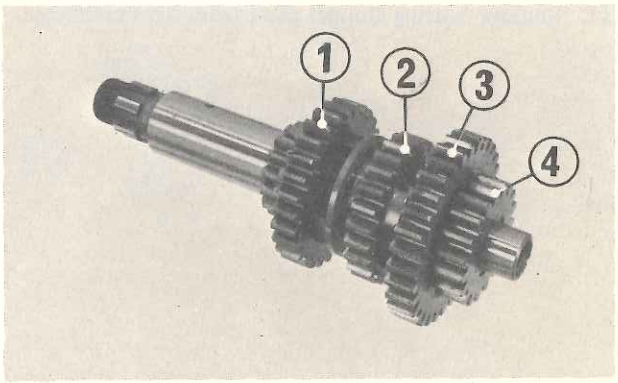

Fig. 3–67 (1) Main shaft fourth gear (2) Main shaft third gear (3) Main shaft fifth gear (4) Main shaft second gear

To reassemble kick starter, reverse disassembly procedure.
Pay attention to the following points:

1. Install main shaft and countershaft in right crankcase, together with gearshift drum and shift fork shaft.

   NOTE:
   Do not forget to install main shaft and countershaft thrust washers.
2. Install crankcase, taking care not to damage gasket.

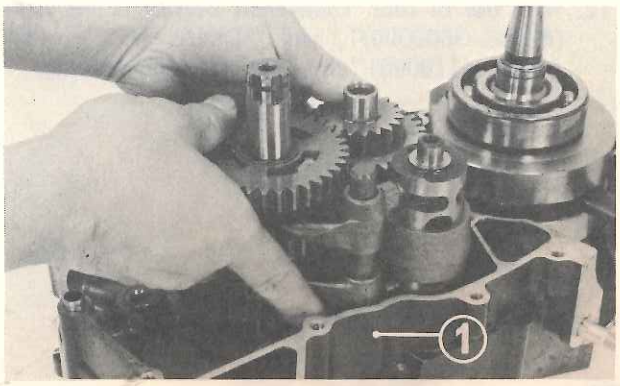

Fig. 3–68 (1) Right crankcase

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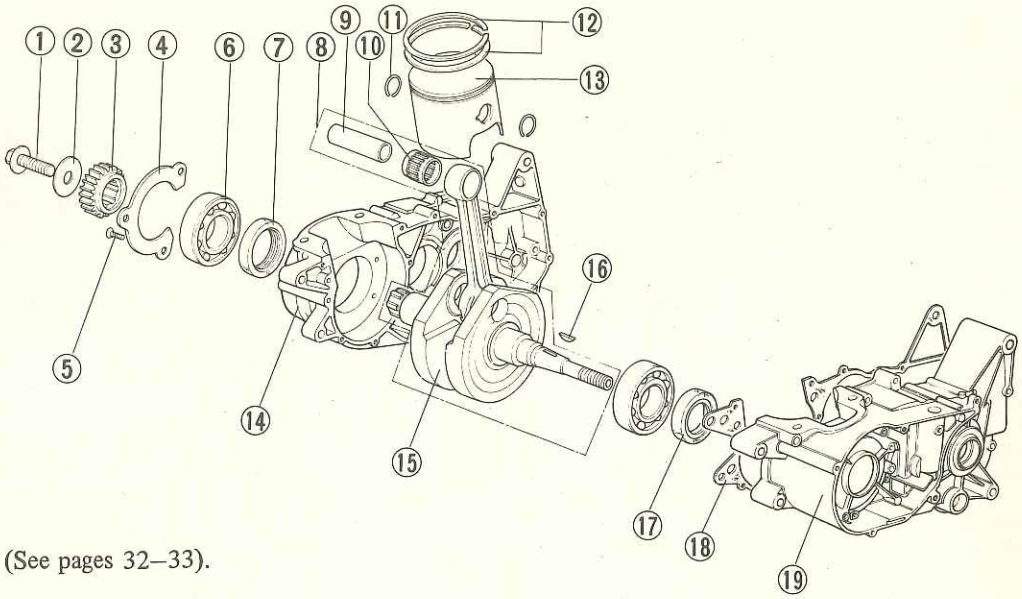
9. CRANKSHAFT AND CONNECTING ROD

Fig. 3–69



(1) 12x30 U. B. S. bolt
(2) Primary washer
(3) Primary drive gear
(4) Bearing set plate
(5) 6x14 screw (three)
(6) 6306 ball bearing (two)
(7) 38x64x13.5 oil seal
(8) Crankshaft Assy.
(9) Piston pin
(10) Small end bearing
(11) Piston pin clip (two)
(12) Piston ring set
(13) Piston
(14) Right crankcase
(15) Crankshaft
(16) 2.5x18 woodruff key
(17) 25x55x10 oil seal
(18) Crankcase gasket
(19) Left crankcase

Disassembly

1. Disassemble crankcase. (See pages 32–33).

   NOTE:
   Before disassembling crankcase, remove primary drive gear.

2. Remove crankshaft assembly from crankcase.

Inspection

Before disassembling, hold both ends of crankshaft to check for looseness. If crankshaft rattles, check to see if rattle is caused by loose bearings or excessive clearance between crankcase and bearing outers.

Assembly

To reassemble crankshaft, reverse disassembly procedure.
Pay attention to following points:
The connecting rod small end bearing is selective-fitted in accordance with the piston pin and connecting rod small end I. D. The connecting rod small end I. D. is identified by the number of notches and the piston pin by the presence of a notch in the end of the pin. For identification, see the table below.

Unit: mm (in.)

Item	Assembly standard	Service limit
Connecting rod small end I.D.	16.010–16.024 (0.6303–0.6309)	–
Connecting rod big end axial clearance	0.2–0.4 (0.0079–0.0157)	0.6 (0.0236)
Connecting rod big end radial clearance	0.010–0.022 (0.0004–0.0009)	0.03 (0.0012)

For identification, see the table below:

Connecting rod small end I.D. identification \ Piston pin identification	With notch	Without notch
One notch	Red	–
Two notches	Blue	Red
Three notches	White	Blue

NOTE:
- **The connecting rod small end bearings are identified by the colors of their packaging.**
- **With the making "OUTSIDE" facing outward, install the primary shaft lock washer with the 12 mm bolt.**

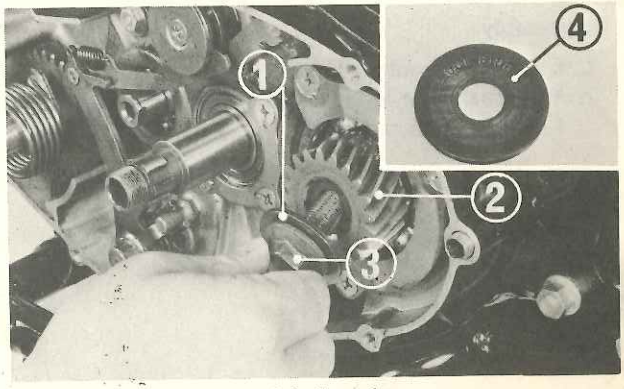


Fig. 3–70 (1) Primary shaft lock washer
(2) Primary drive gear
(3) 12 mm U.B.S. bolt
(4) Outside mark

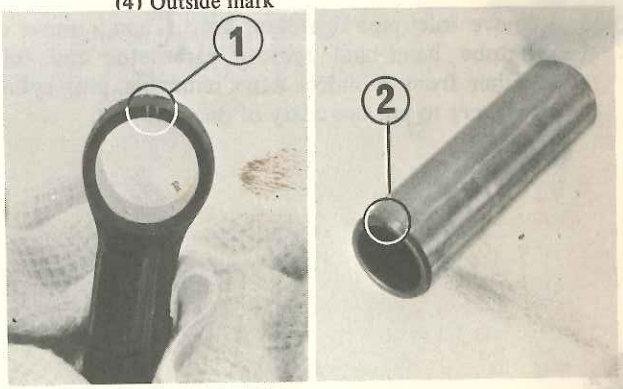


Fig. 3–71 (1) Connecting rod small end I.D. identification mark
(2) Piston pin identification mark

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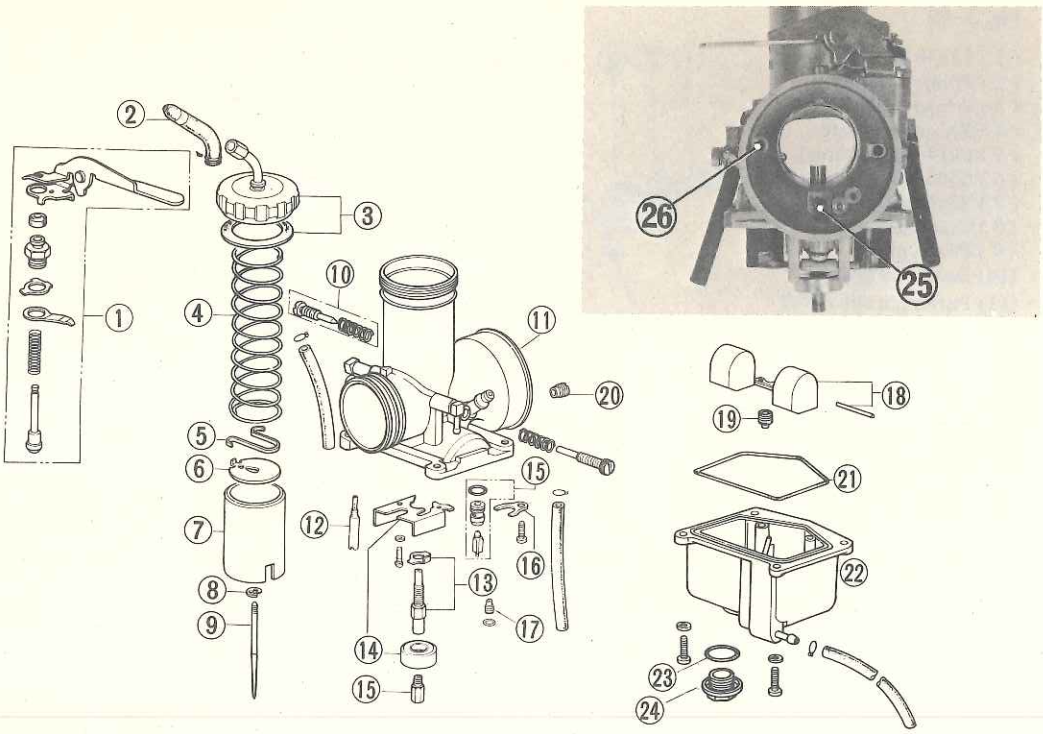
10. CARBURETOR

Fig. 3–72
(1) Starter valve set
(2) Rubber cap
(3) Top set
(4) Carburetor spring
(5) Jet needle clip ring
(6) Clip plate
(7) Throttle valve
(8) Jet needle clip
(9) Jet needle
(10) Throttle stop screw set
(11) Carburetor body
(12) Slow jet
(13) Needle jet set
(14) Jet holder
(15) Main jet
(16) Valve seat set plate
(17) Power jet
(18) Float, float arm pin
(19) Starter jet
(20) Power air jet
(21) Float body gasket
(22) Float body
(23) Drain bolt gasket
(24) Drain bolt
(25) Power air jet
(26) Power nozzle



Disassembly

1. Clean all around carburetor.
2. With fuel valve lever placed in "OFF" position, disconnect fuel tube from carburetor.

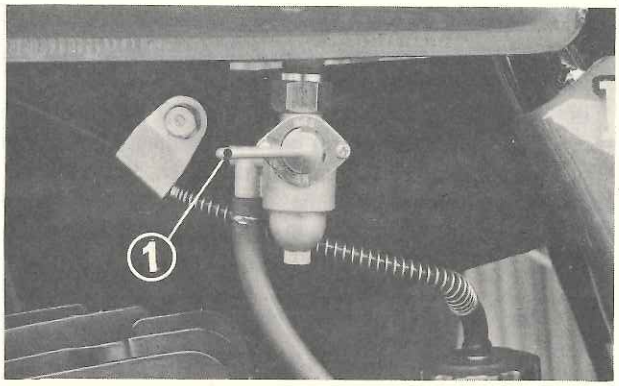


Fig. 3–73 (1) Fuel valve lever

3. Remove inlet pipe tightening bolts. Then, remove connecting tube band and remove carburetor and inlet pipe together from cylinder. After removing, plug cylinder and air cleaner to prevent entry of dust and dirt.

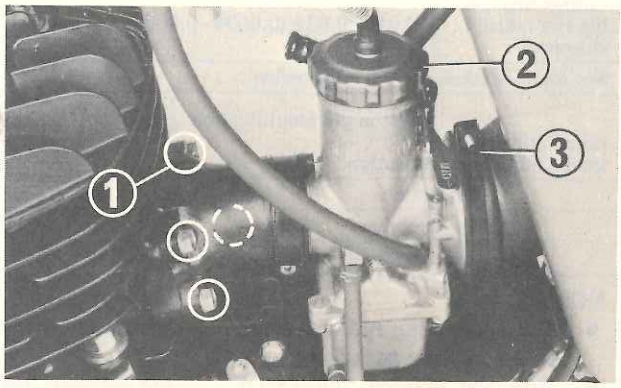


Fig. 3–74 (1) Inlet pipe tightening bolts
(2) Carburetor top
(3) Connecting tube band

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4. Loosen carburetor top and remove it together with throttle valve. Put throttle valve in a nylon bag or the like not to allow dust and dirt to come in contact with it.
5. Remove insulator band and remove carburetor from inlet pipe.

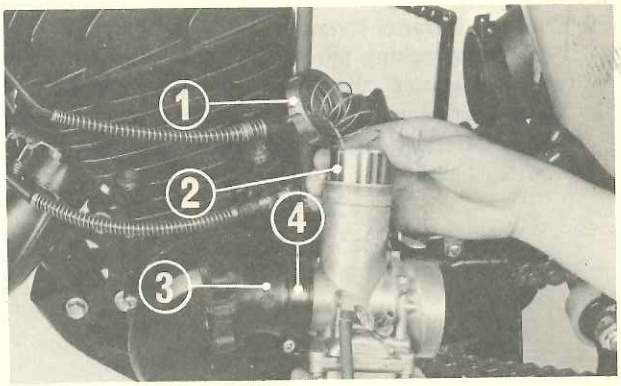

Fig. 3–75 (1) Carburetor top (3) Inlet pipe
(2) Throttle valve (4) Carburetor insulator band

6. Remove needle clip plate from throttle valve.
7. Take valve plate out of throttle valve and pull throttle cable out of groove in throttle valve. At this time, take care not to allow jet needle to come out accidentally.

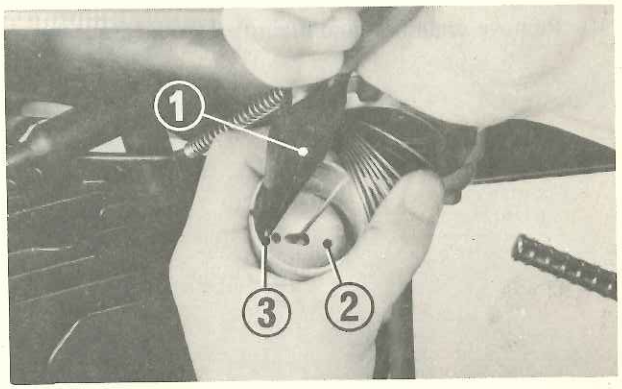

Fig. 3–76 (1) Radio pench
(2) Clip plate
(3) Clip

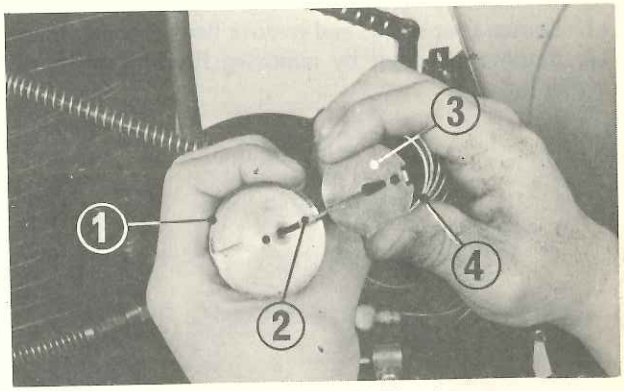

Fig. 3–77 (1) Throttle valve (3) Clip plate
(2) Throttle cable end (4) Carburetor spring

8. Remove rubber cap and disconnect throttle cable from carburetor top.

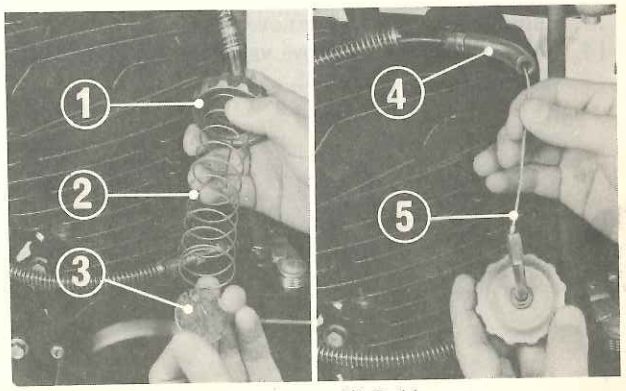

Fig. 3–78 (1) Carburetor top (4) Rubber cap
(2) Spring (5) Throttle cable
(3) Clip plate

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9. Carburetor starter lever removal
   Straighten locking tab of lock washer and remove 8 mm nut. Pull starter valve and remove starter lever from starter valve. Starter valve can then be removed from carburetor body. Carefully handle jets since they may be scored or scratched easily.

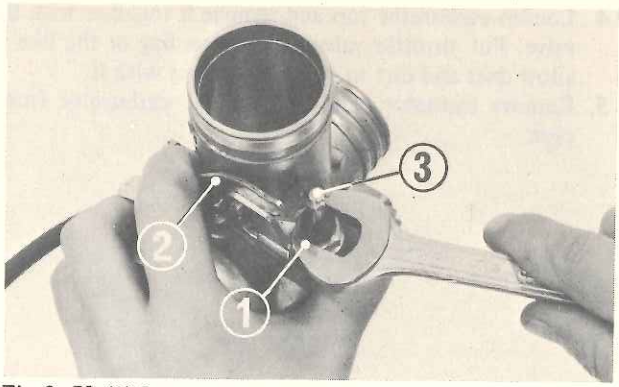

Fig. 3–79 (1) 8 mm nut
(2) Starter lever
(3) Starter valve

10. Remove drain bolt and drain fuel from carburetor.

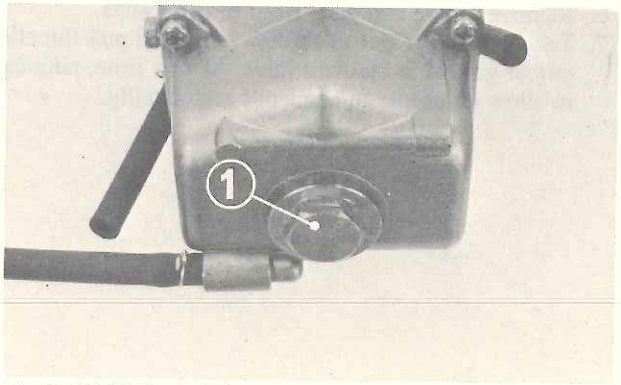

Fig. 3–80 (1) Drain bolt

11. Loosen four screws and remove float chamber body.
12. Remove main jet by removing float chamber body drain bolt.

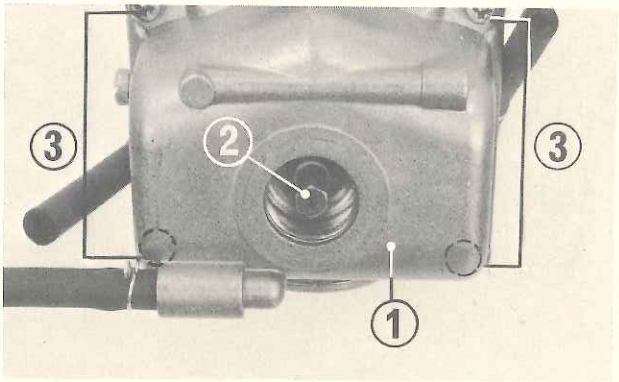

Fig. 3–81 (1) Float chamber body
(2) Main jet
(3) 4 mm screws

13. Remove float pin and remove float.
14. Loosen screw and remove valve seat set plate; then pull out valve seat.

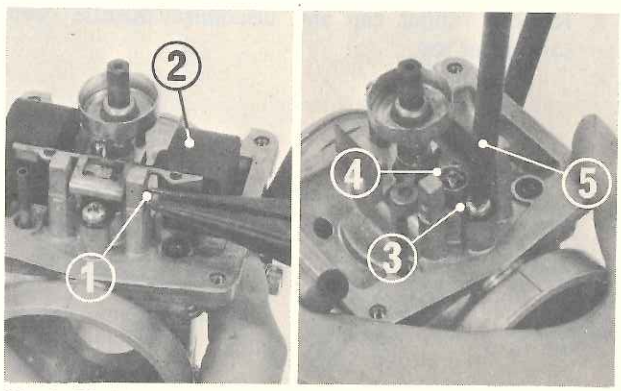

Fig. 3–82 (1) Float pin
(2) Float
(3) Valve seat set plate
(4) Valve seat
(5) Plus screwdriver

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15. Break staked point of jet needle set plate; remove jet needle. Remove buffle plate.

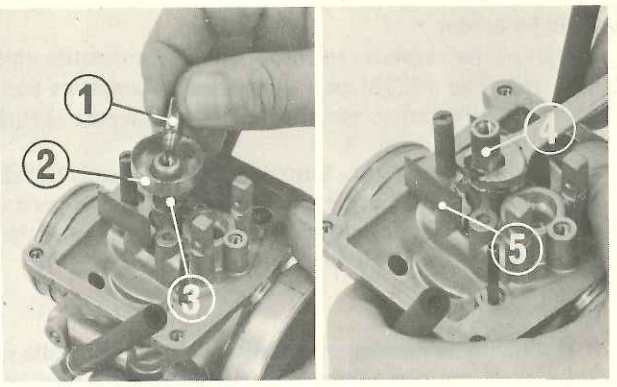

Fig. 3–83 (1) Main jet
(2) Jet holder
(3) Jet needle set plate
(4) Jet needle
(5) Buffle plate

16. Remove each part as shown in Fig. 3–84.

Inspection

1. Blow jets to check for clogging.
2. Check float valve for proper operation.
3. Check throttle valve for breakage or wear.
4. Check jet needle for breakage or wear.

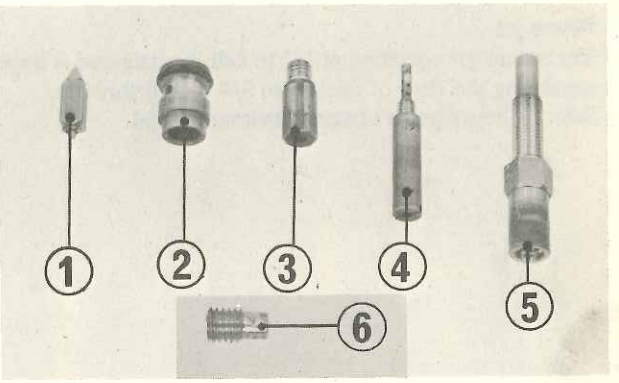

Fig. 3–84 (1) Float valve
(2) Valve seat
(3) Main jet
(4) Slow jet
(5) Main jet holder
(6) Power jet

Slow jet

The slow jet is a means of regulating the fuel flow in the slow circuit. Its setting is based on adjustment of the air screw.

Air screw

The air screw regulates the flow of air in the slow circuit. Turning the air screw clockwise enriches the mixture and turning it counterclockwise leans out the mixture.

To adjust, warm up engine and turn screw so that engine runs smoothly at maximum idle speed. Open throttle slightly and ensure that engine revs up smoothly. If slow jet is too large, response will be slow, too, due to too rich a mixture. Check response smoothness when throttle valve is opened slightly.

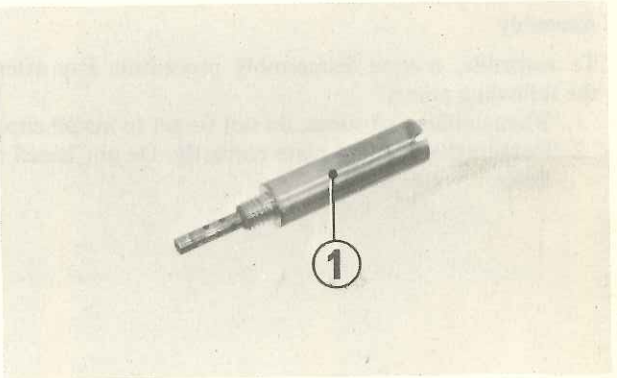

Fig. 3–85 (1) Slow jet

Throttle valve cutaway

Throttle valve cutaway regulates the flow of air at a throttle opening of 1/8–1/4. The higher the value of the marking, the leaner the mixture, and vice versa.

Road test motorcycle with 1/4 throttle. Check spark plug if any unsmoothness is felt. If plug is wet, change throttle valve for one with a larger number and if overheated, use a throttle valve with a smaller number.

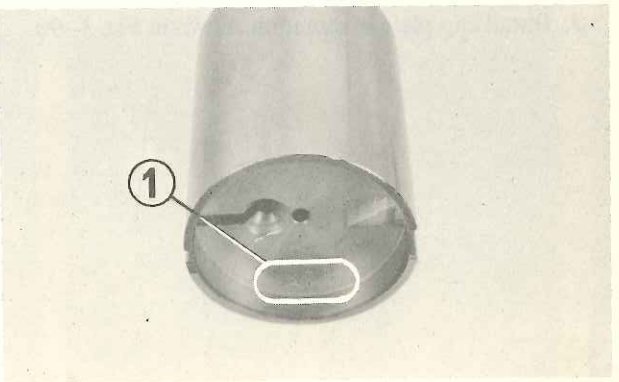

Fig. 3–86 (1) Cutaway number

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Main jet holder

The jet needle regulates the flow of fuel at a throttle opening of 1/4–1/2. The straight part of the needle regulates fuel flow at low throttle opening, and the tapered part regulates fuel flow at mid-throttle.

Five grooves are cut into the needle head to allow for adjustment of the needle. If throttle response is poor or if the engine will not maintain constant rpm, change the position of the needle. Before adjusting, set the main jet.

[**Example:**]

If the engine is running erratically with the jet needle set at the 3rd groove position, change to the 4th groove position. If the motorcycly jerks when accelerated or when running at a certain speed, change to a lower-numbered groove position.

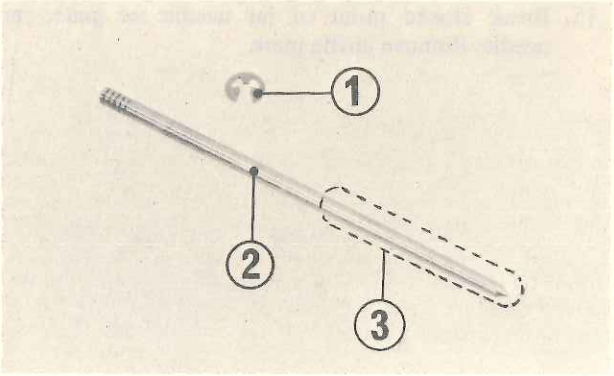

Fig. 3–87 (1) Clip (3) Tapered part
(2) Straight part

Power jet

The power jet operates at 1/2 to full throttle and is important in regulating the flow of fuel from 3/4 to full throttle.

Select a larger jet to obtain maximum speed.

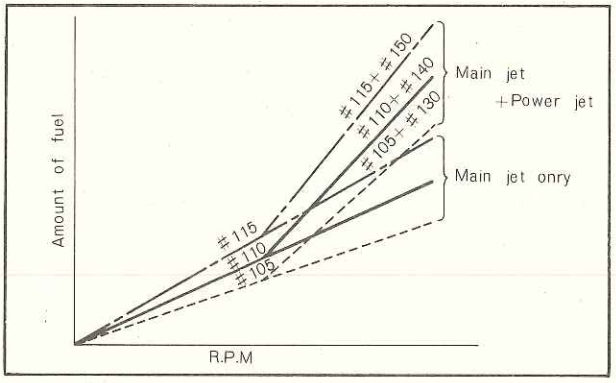

Fig. 3–88 Performance of main jet

Assembly

To assemble, reverse disassembly procedure. Pay attention to the following points:

1. When connecting tubes, do not forget to install clips.
2. Install valve seat set plate correctly. Do not install it upside down.

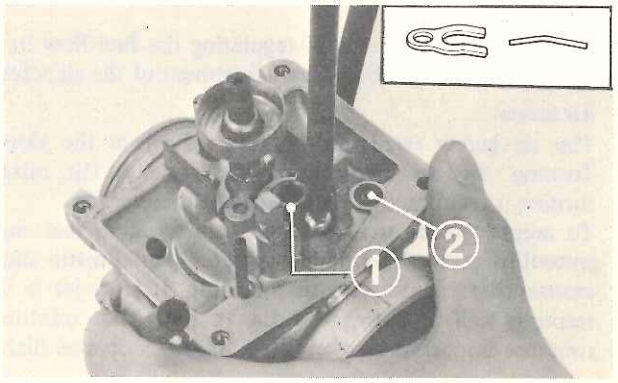

Fig. 3–89 (1) Valve seat set plate (2) Power jet

3. Install clip plate in direction shown in Fig. 3–90.

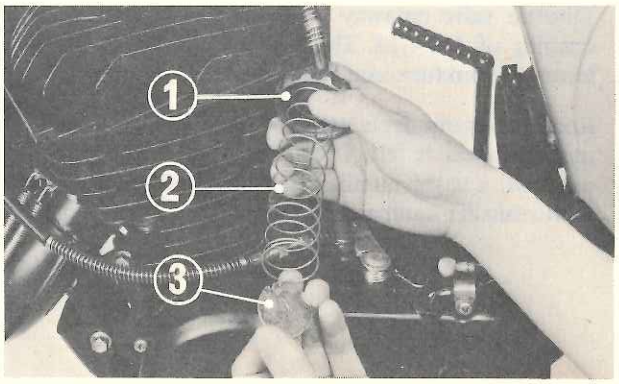

Fig. 3–90 (1) Carburetor top (3) Clip plate
(2) Throttle valve spring

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4. After installing starter lever to starter valve, tighten 8 mm nut and bend locking tab of lock washer.
5. After installing, check starter lever for proper operation.

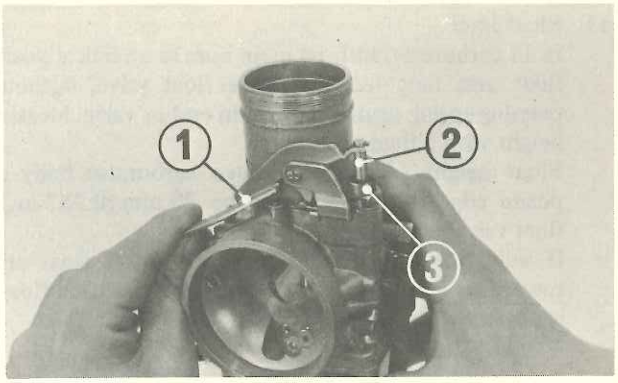

Fig. 3-91 (1) Starter lever (2) Starter valve (3) Starter valve cap

6. Install carburetor to inlet pipe by inserting tab of carburetor into recess in inlet pipe. When installing, apply a coat of soapsuds to matching surfaces.

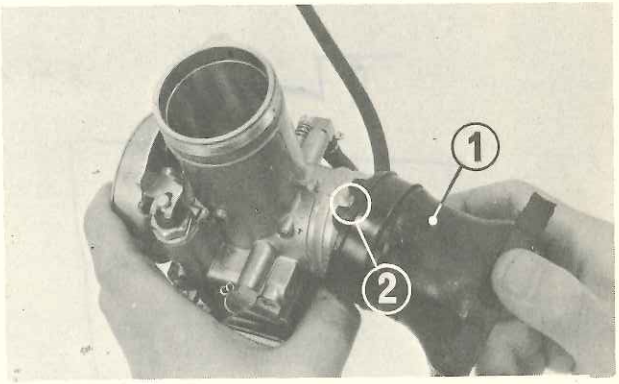

Fig. 3–92 (1) Inlet pipe (2) Recess in inlet pipe

7. Install carburetor beginning on air cleaner side.
8. Install throttle valve by inserting lug located on carburetor side into groove in throttle valve.
9. Route tubes as shown Fig. 3–96.
10. For servicing air cleaner, see page 5.

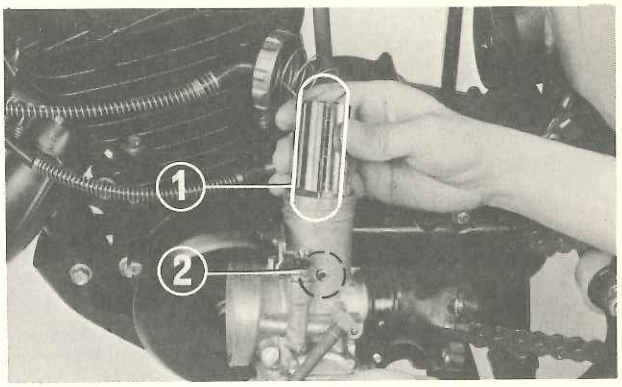

Fig. 3–93 (1) Groove in throttle valve (2) Lug on carburetor side

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11. Float level
Hold carburetor with its main bore in a vertical position, so float arm tang will just close float valve, without compressing spring loaded plunger in end of valve. Measure float height with a float level gauge.
Float height (distance between carburetor body and opposite edge of float) should be **20 mm (0.787 in.)** when float valve just closes.
If adjustment is needed, carefully bend float arm tang toward or away from float valve until specified float height is obtained. Replace any damaged or leaking float.

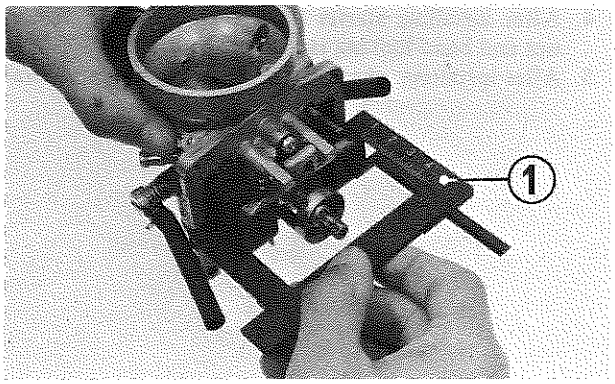

Fig. 3–94 (1) Float valve gauge

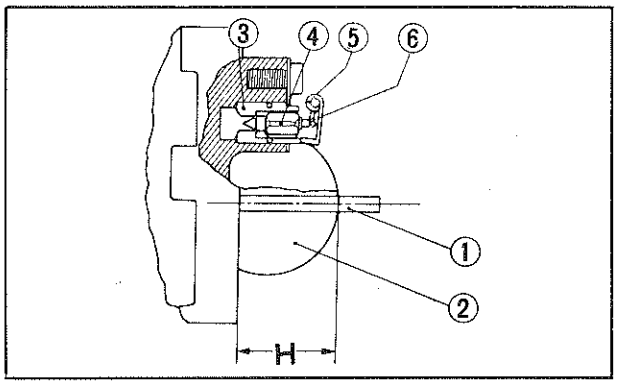

Fig. 3–95 (1) Float valve gauge
(2) Float
(3) Valve seat
(4) Float valve
(5) Float arm pin
(6) Float arm tang

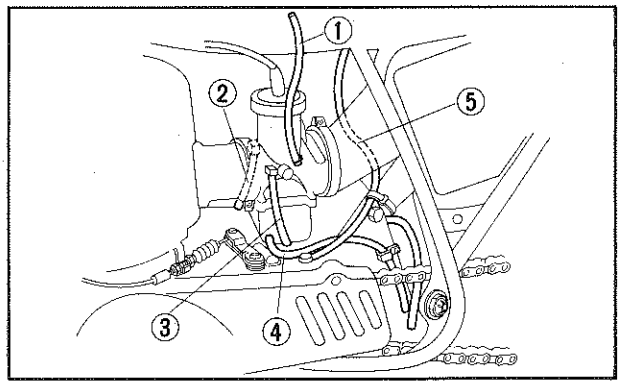

Fig. 3–96 (1) Fuel tube
(2) Right carburator breather tube
(3) Left carburator breather tube
(4) Carburator overflow tube
(5) A.C.G. breather tube
(6) Crankcase breather tube

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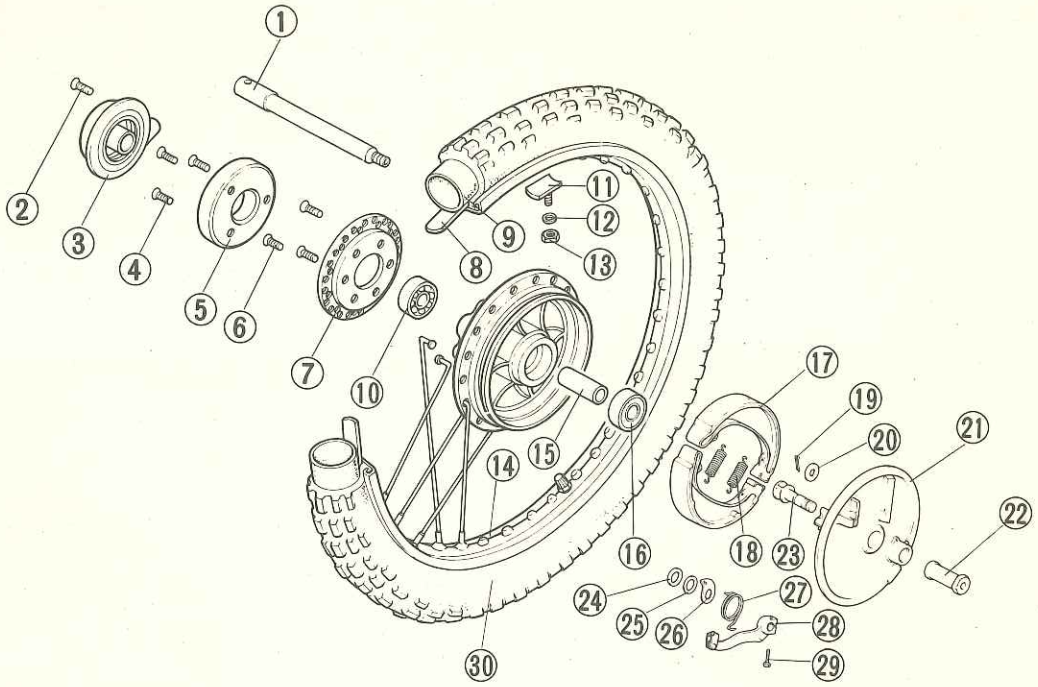
IV. SERVISING THE FRAME

1. FRONT WHEEL AND FRONT BRAKE

Fig. 4–1



(1) Front wheel axle
(2) 3x16 Oval screw
(3) Speedometer gear box
(4) 6x16 Flat screw (three)
(5) Bearing retainer
(6) 5x16 Flat screw (three)
(7) Front spoke flange
(8) Tire flap
(9) Front wheel tube
(10) 6302 ball bearing
(11) Front wheel tire bead stopper
(12) 8 mm Spring washer
(13) 8 mm Nut
(14) Front wheel rim
(15) Front axle distance collar
(16) 6302 Ball bearing
(17) Front brake shoe (two)
(18) Brake shoe spring (two)
(19) 2.0x15 cotter pin
(20) Washer
(21) Front brake panel
(22) Front wheel axle nut
(23) Front brake cam
(24) Brake cam dust seal
(25) 14 mm plain washer
(26) Front brake wear indicator
(27) Front brake arm return spring
(28) Front brake arm
(29) 6x25 bolt
(30) Front wheel tire (3.00–21–4PR)

Disassembly

1. Place a wood block under engine and raise front wheel off ground.
2. Disconnect front brake cable from brake arm.
3. Remove right and left axle holders, and remove front wheel.
4. Remove front axle nut and pull out front axle.

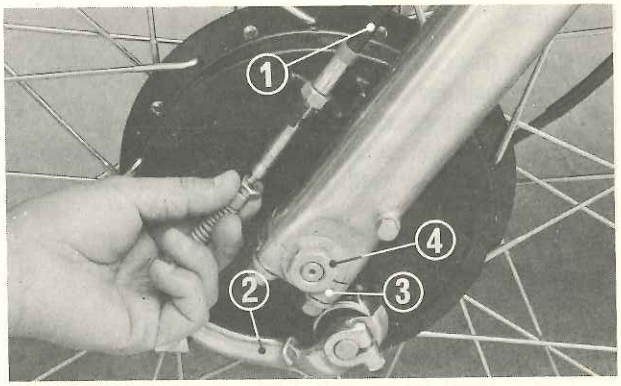


Fig. 4–2 (1) Front brake cable (3) Axle holder
(2) Brake arm (4) Axle nut

5. Remove two brake shoes from front brake panel.

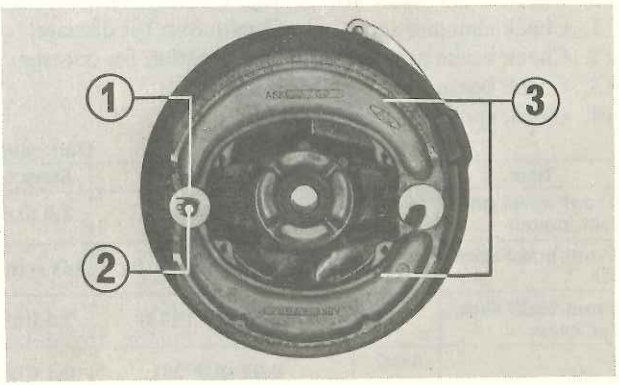


Fig. 4–3 (1) Cotter pin
(2) Washer
(3) Brake shoes

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Front brake panel

- Before removing front brake panel, remove 6mm bolt and then front brake arm and brake arm return spring.
- While expanding brake shoes by hand, remove them together with brake shoe springs from brake panel.

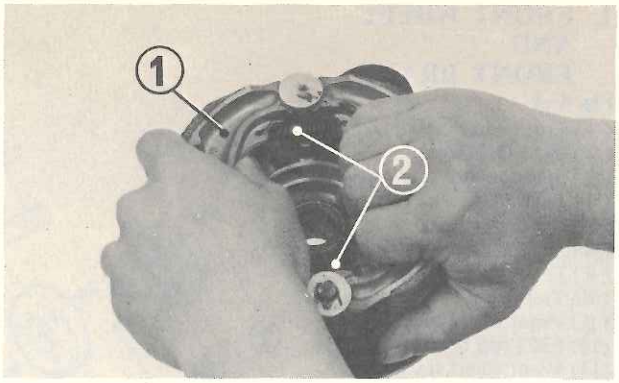

Fig. 4–4 (1) Brake shoes (2) Brake shoe springs

6. Remove speedometer gear box first and then take out bearing retainer by backing off 6mm screws.
7. Drive out 6302 bearing and front axle spacer collar.

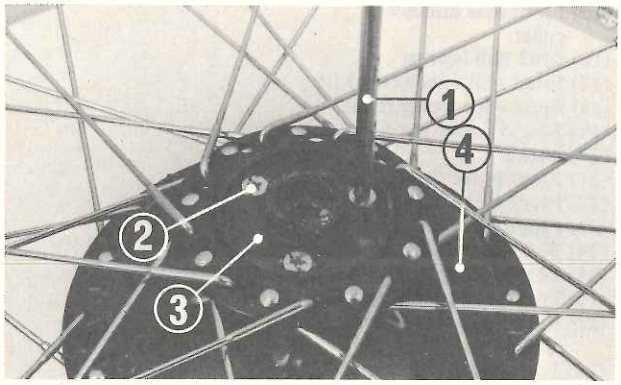

Fig. 4–5 (1) Plus screwdriver (3) Bearing retainer
(2) 6mm screws (4) Front wheel hub

Inspection

1. Check front wheel axle for bend.
2. Check ball bearings for looseness.
3. Check front wheel rims for runout or damage.
4. Check to see if metal pieces or stones are not bitten in tire tread pattern or wall. Also check tire for scores, scratches or wear.
5. Check tire flap for scores or scratches.
6. Check rim lock for looseness.
7. Check tire inflation pressure.
   Specification: 1.2kg/cm² (17.1 psi)
   Also check tire valve for leakage.
8. Check front wheel hub, brake shoes and brake cam for wear.
9. Check brake panel for cracks or any other damage.
10. Check brake cable for damage or insufficient lubrication.
11. Check cam and serration of brake cam for damage.
12. Check brake arm for bend and serration for damage.
13. Check bearing retainer for wear.
14. Check spokes for looseness.

Unit: mm (in.)

Item	Assembly standard		Service limit
Front wheel rim face runout	0.5 (0.0197)		2.0 (0.0787)
Front brake drum ID	160.0–160.3 (6.2992-6.3110)		161.0 (6.3386)
Front brake shoe thickness	4.0–4.3 (0.1575–0.1693)		2.5 (0.0984)
6302 ball bearing	Axial runout	0.07 (0.0028)	0.1 (0.0039)
	Radial runout	9.03 (0.0012)	0.05 (0.0020)

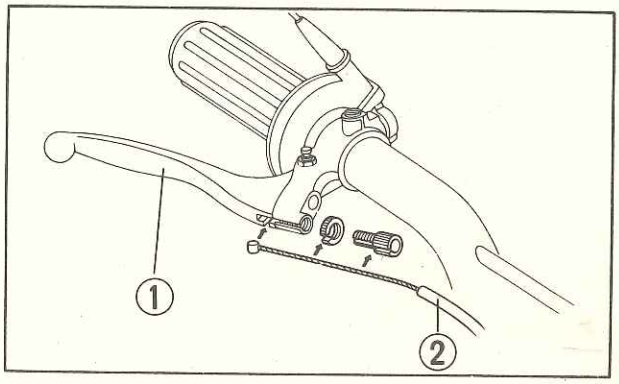

Fig. 4–6 (1) Brake lever (2) Brake cable

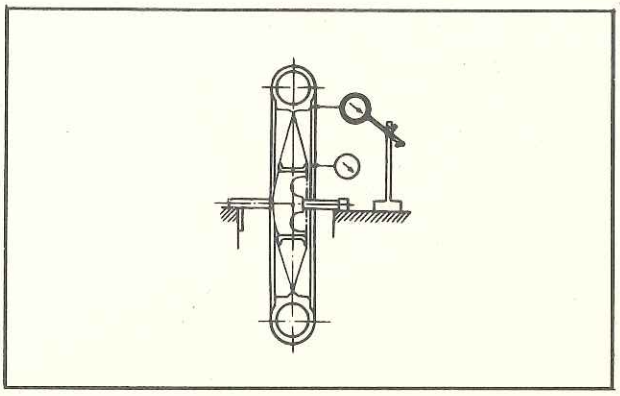

Fig. 4–7 Runout of wheel rim

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Assembly

To assemble, reverse disassembly procedure. Pay attention to the following points:

1. Attach brake cam to brake panel, hook brake shoe spring at brake shoes and fix it on brake panel.

   NOTES:
   1. **Hook brake shoe spring in direction as in Fig. 4–8.**
   2. **Coat brake cam and anchor pin with grease of about 1 gramme (0.035 oz.).**
   3. **Take care not to put oil on brake lining and inside surface of brake drum.**

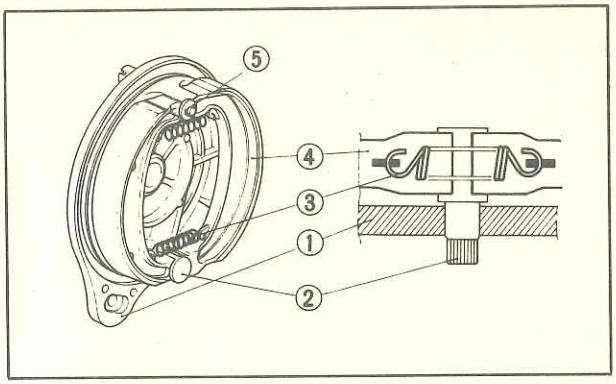

Fig. 4–8 (1) Front brake panel (4) Brake shoe
(2) Brake cam (5) Anchor pin
(3) Brake shoe spring

2. Be sure that brake arm installation groove aligns with brake cam shaft where serration is not provided. Apply a thin coat of grease to brake cam and anchor pin and install brake shoes in place.

   NOTE:
   Apply a coat of grease to dust seal.

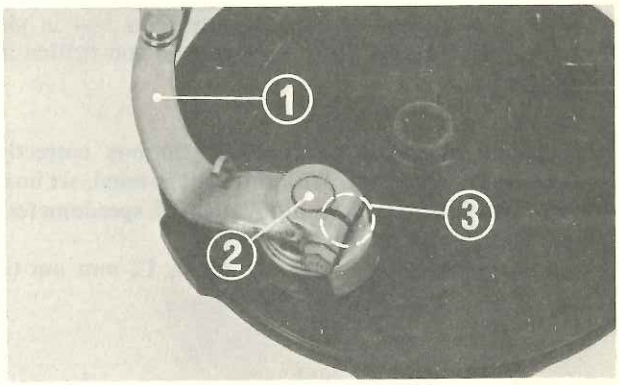

Fig. 4–9 (1) Brake arm
(2) Brake camshaft
(3) Fitting point

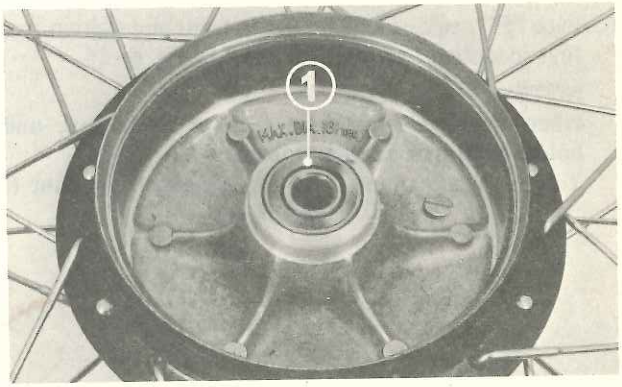

Fig. 4–10 (1) 6302 Ball bearing

3. Ball bearing installation
   Fill cavity of ball bearings and inside wheel hub with grease. Then install bearings with bearing driver (Tool No. 07946–3640000) taking care not to allow distance collar to incline.

   NOTE:
   Face sealed side of ball bearing toward outside.

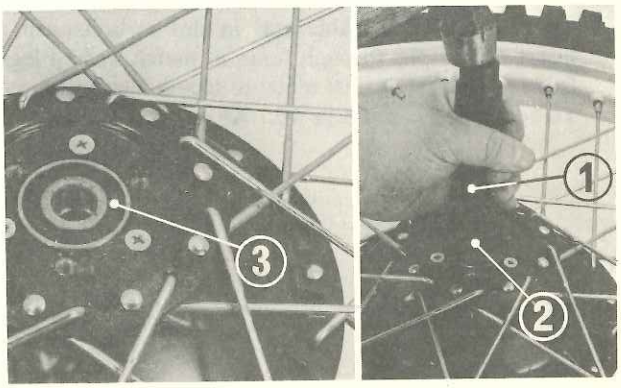

Fig. 4–11 (1) Driver handle
(2) Bearing driver attachment
(3) 6302 Ball bearing

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4. Align tabs of speedometer gear box with recesses in bearing retainer and press in gear box.

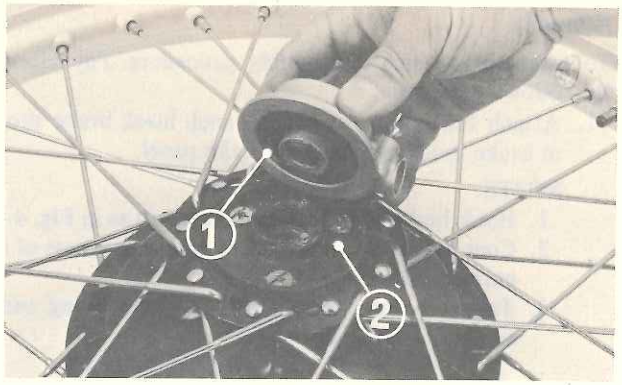

Fig. 4–12 (1) Speedometer gearbox
(2) Bearing retainer

5. Install brake panel and speedometer gear box in place to front wheel. Install shaft through axle and tighten it with axle nut.

NOTE:
A failure to install speedometer gear box correctly will result in binding fork. With this kept in mind, set box at an angle that permits easy installation of speedometer cable and then tighten it with axle nut.
Torque specification: 5.0–7.0 kg-m, 12 mm nut (36.2–50.6 lb-ft)

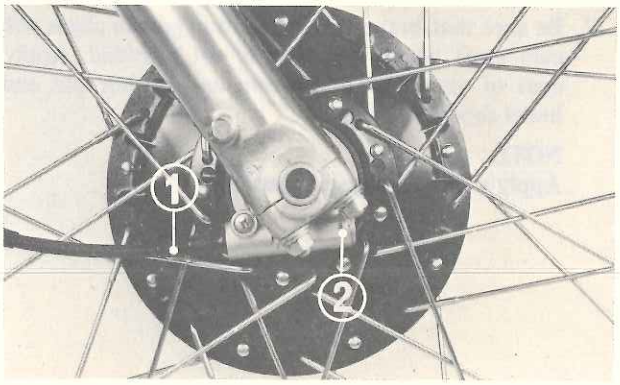

Fig. 4–13 (1) Speedometer cable
(2) Speedometer gearbox

6. Face "F" mark of axle holder to front and tighten front nut first according to numerical order in Fig. 4–14.

NOTE:
When tightened, matching face of front fork and axle holder must have no gap at front.
Torque specification: 1.8–2.5 kg-cm, 8 mm nut (13.0–18.1 lb-ft)

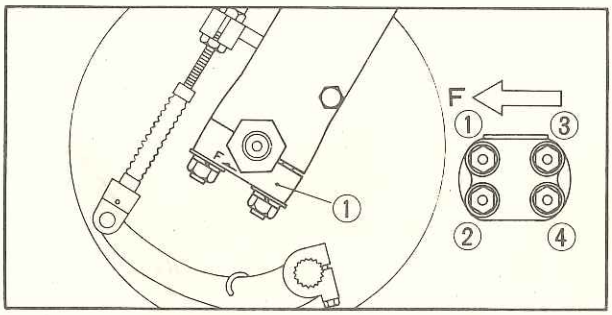

Fig. 4–14 (1) Axle holder

7. Enter front brake cable end in slot in brake arm metal; insert cotter pin through holes in metal. Spread legs away from each other against metal to secure installation.
To adjust brake, see page 10.

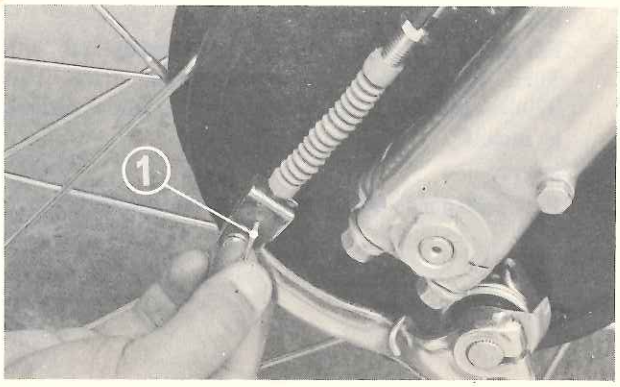

Fig. 4–15 (1) Cotter pin

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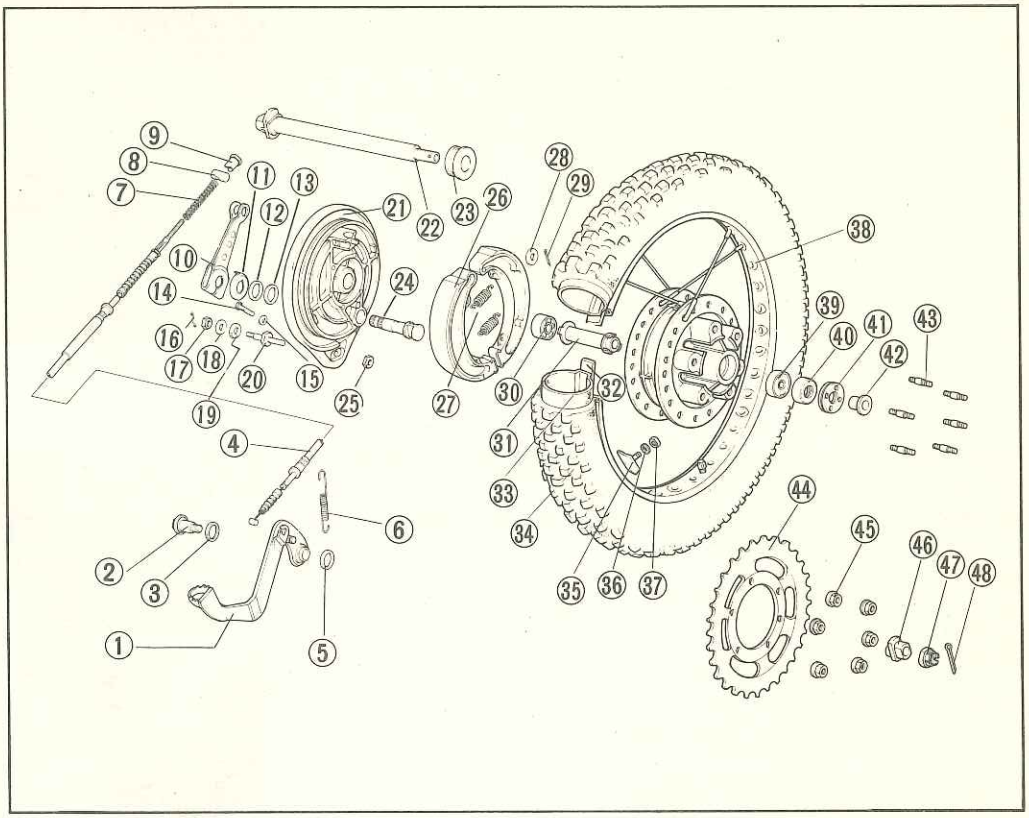
2. REAR WHEEL AND REAR BRAKE

Fig. 4–16



(1) Brake pedal
(2) Brake pivot shaft
(3) Brake pedal dust seal
(4) Rear brake cable
(5) Brake pedal dust seal
(6) Brake pedal spring
(7) Brake cable spring A
(8) Brake arm joint
(9) Adjust nut
(10) Rear brake arm
(11) Rear brake wear indicator
(12) 14 mm plain washer
(13) Brake cam dust seal
(14) 6x36 bolt
(15) 6 mm plain washer
(16) 2.0x15 cotter pin
(17) 8 mm nut
(18) Washer
(19) Stopper arm cushion rubber
(20) Rear brake panel stopper bolt
(21) Rear brake panel
(22) Rear wheel axle
(23) Rear brake panel side collar
(24) Rear brake cam
(25) 10 mm nut
(26) Rear brake shoe
(27) Rear brake shoe spring
(28) Washer
(29) 2.0x15 cotter pin
(30) 6204 radial ball bearing
(31) Rear axle distance collar
(32) Tire flap (2.15x8 BS)
(33) Tire tube (3.75 4.00–18 BS)
(34) Rear wheel tire (4.00–18–4PR BS)
(35) Tire bead stopper
(36) 8 mm spring washer
(37) 8 mm nut
(38) Rear wheel rim
(39) 6304 radial ball bearing
(40) 30x45x9.5 dust seal
(41) Rear wheel bearing retainer
(42) Rear wheel side collar
(43) 8x45 stud bolt
(44) Final driven sprocket (47T)
(45) 8 mm nut
(46) Rear axle collar
(47) Rear wheel axle nut
(48) 4.0x30 cotter pin

Disassembly

1. Remove rear brake adjusting nut.
2. Loosen drive chain adjuster lock nut and screw in adjuster bolt.
3. Remove cotter pin from rear axle nut.
4. Remove master link clip and remove drive chain.
5. Remove torque arm cotter pin and remove lock nut.
6. Remove rear axle and remove rear wheel from frame.

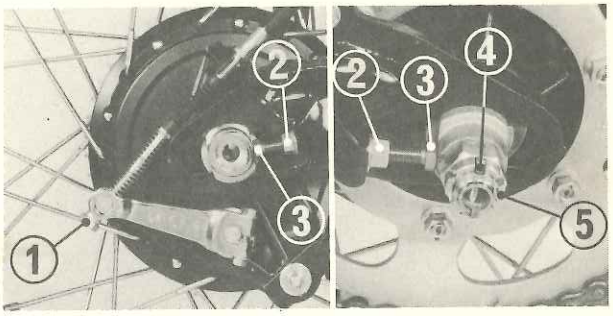


Fig. 4–17 (1) Rear brake adjusting nut (2) Lock nut (3) Adjusting bolt (4) Cotter pin (5) Axle nut

7. Remove two brake shoes from rear brake panel in the same manner as in front brake.

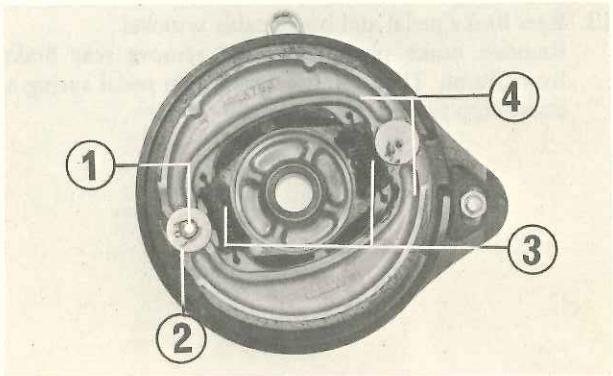


Fig. 4–18 (1) Brake camshaft (2) Cotter pin (3) Brake shoe springs (4) Brake shoes

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8. Remove six lock nuts and remove driven sprocket.

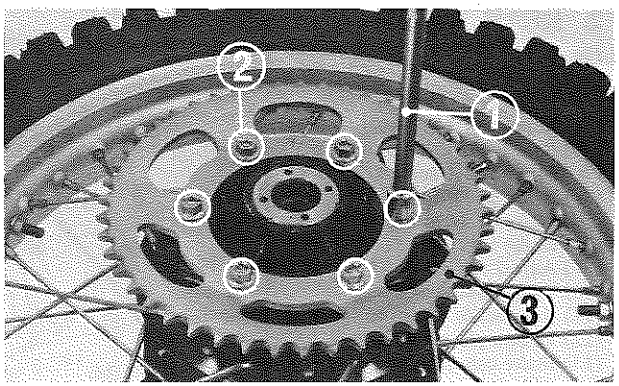

Fig. 4–19 (1) 10 mm box wrench (3) Driven sprocket
(2) Lock nuts

9. If necessary, tap it around with a soft hanner or wooden block.
10. Rear brake panel should be disassembled and assembled in same manner as in front brake panel.

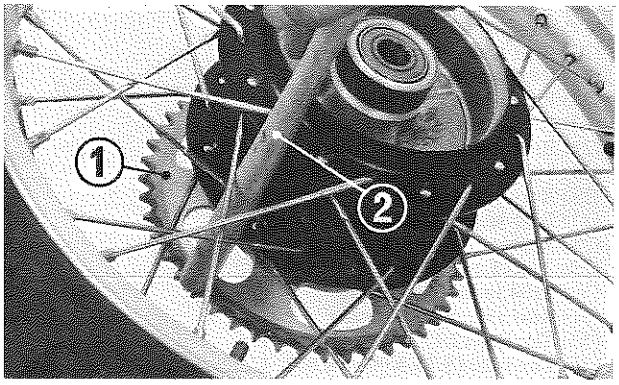

Fig. 4–20 (1) Driven sprocket (2) Wooden block

11. Remove rear wheel bearing retainer with bearing retainer wrench (Tool No. 07910–3600000).
12. Remove ball bearings.

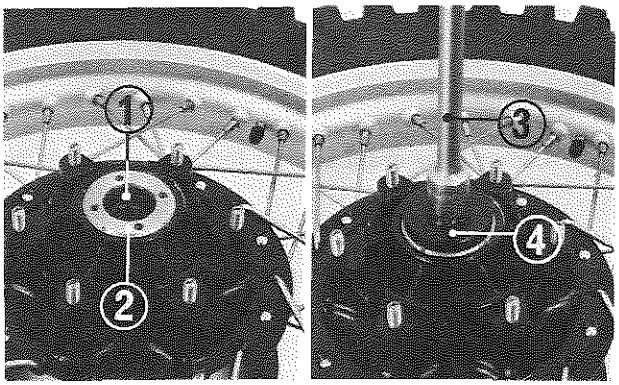

Fig. 4–21 (1) Oil seal (3) 17 mm box wrench
(2) Bearing retainer (4) Bearing retainer

13. Rear brake pedal and brake cable removal
Remove brake pivot shaft and remove rear brake pedal from frame. Then remove rear brake pedal spring and rear brake stop switch spring.

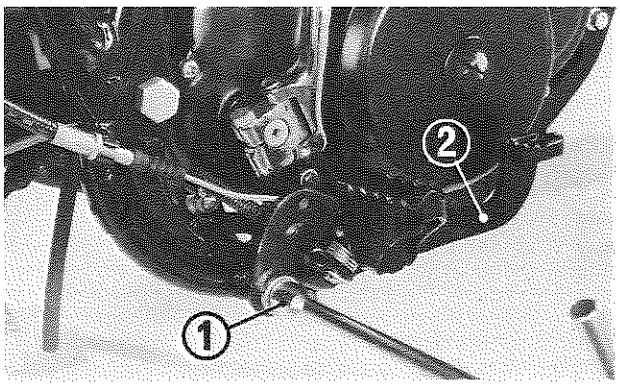

Fig. 4–22 (1) Brake pivot shaft (2) Rear brake pedal

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14. Loosen adjusting nut and disconnect brake cable from frame.

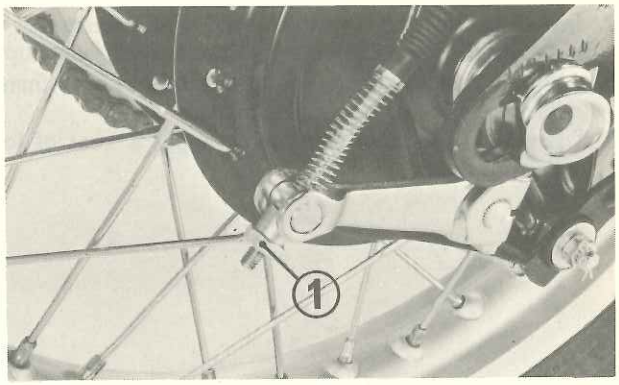

Fig. 4–23 (1) Adjusting nut

Inspection

1. Check rear axle for bend.
2. Check ball bearings for looseness (with them installed).
3. Check wheel rims for runout or damage.
4. Check spokes for looseness or bend.
5. Check to see if metal pieces or stones are not bitten in tire tread pattern or wall. Also check tire for scores, scratches or wear.
6. Check tire flap for scores or scratches.
7. Check two rim locks for looseness.
8. Check tire inflation pressure.
   Specification: 1.0 kg/cm² (14 psi)
9. Check wheel hub, brake shoes and brake cam for wear.
10. Check brake cable for damage.
11. Check serrations of brake cam and arm for wear.
12. Check driven sprocket for wear or damage.
13. Check driven flange for cracks or any other damage.
14. Check rear wheel dampers for damage.
15. Check drive chain for elongation, wear or jamming.
16. Check drive chain master link for looseness.

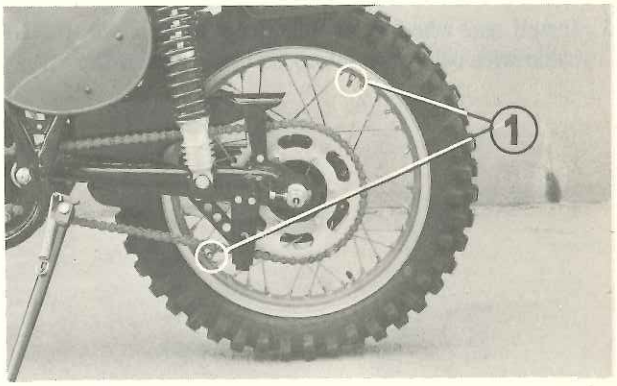

Fig. 4–24 (1) Rim locks

Unit: mm (in.)

Item	Assembly standard		Service limit
6304 ball bearings	Axial runout	0.07 (0.0028)	0.1 (0.0039)
	Radial runout	0.03 (0.0012)	0.05 (0.0020)
Rear wheel rings	Face runout	0.5 (0.0197)	2.0 (0.0787)
Rear wheel axle bend	110.0–110.2 (4.3307–4.3386)		111.0 (4.3701)
Rear brake shoe thickness	4.0–4.3 (0.1575–0.1693)		2.5 (0.0984)

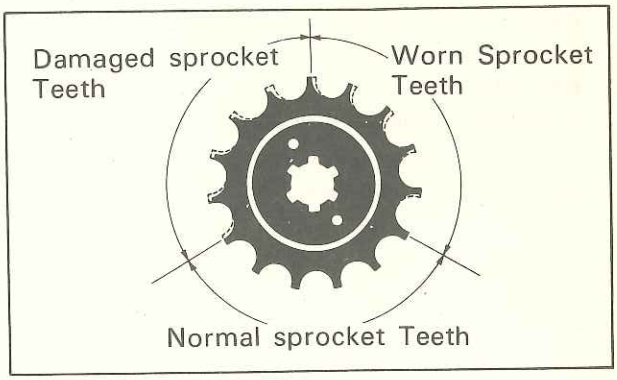

Fig. 4–25

Assembly

To assemble, reverse disassembly procedure.

1. Ball bearing installation
   Fill cavity of ball bearings and inside wheel hub with grease. Install bearings with ball bearing driver taking care not to allow distance collar to incline.

Tool No.	Bearing
07945–3330100	6204 6304 ball bearings

* Left ball bearing should be installed first. Install distance collar from right side.

* Do not forget to flare out bearing retainer.

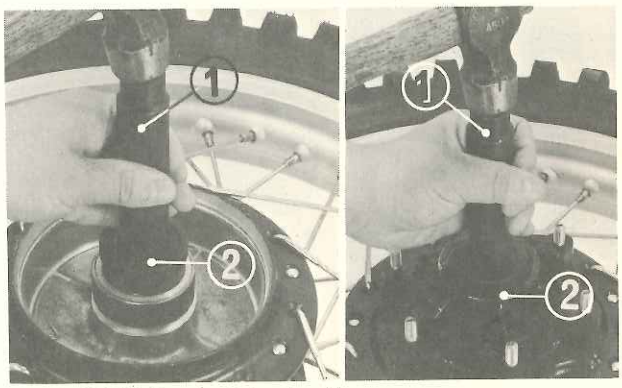

Fig. 4–26 (1) Bearing driver handle
(2) Bearing driver attachment

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2. Install oil seals and rear wheel bearing retainer to rear wheel hub. Install 8 mm UBS nuts with gear mark facing upward.
3. Apply a coat of spindle oil to nuts and tighten them in a criss-cross pattern to specified torque.
4. When installing new stud bolts, apply a coat of locking sealant to them.

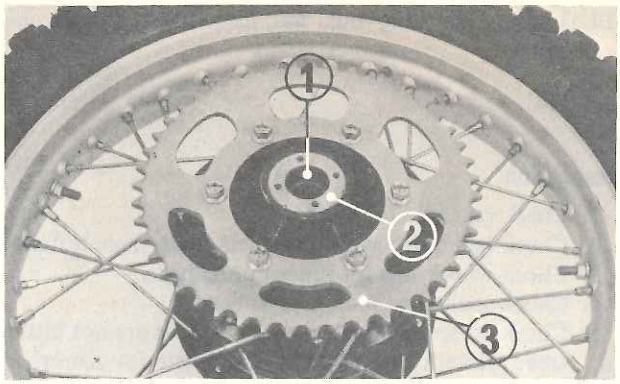

Fig. 4–27 (1) Oil seal
(2) Bearing retainer
(3) Driven sprocket

5. Install rear wheel in reverse order of removal. Install brake cable with cable end set up on brake arm as shown.

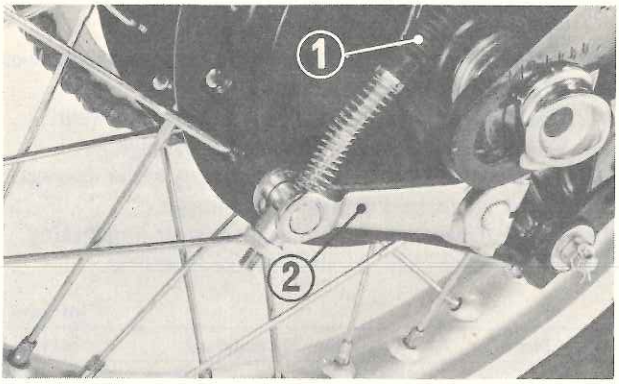

Fig. 4–28 (1) Brake cable (2) Brake arm

6. Apply a coat of grease to sliding surface of brake pedal and a coat of oil to dust seal. Then install brake pedal in place.

   CAUTION:
   Install dust seal properly without any sign of binding.
7. After reassembling, adjust rear brake pedal free height and play, and drive chain slack. See pages 11 thru 12.

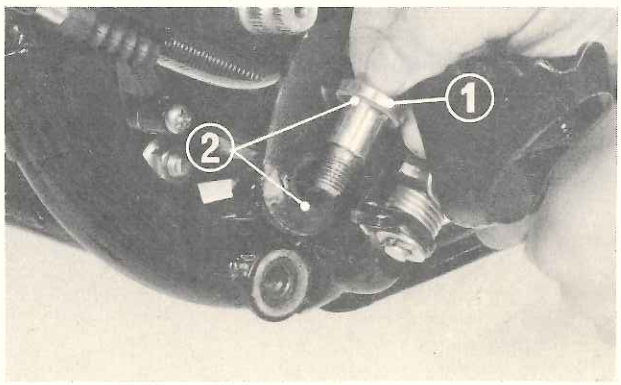

Fig. 4–29 (1) Brake pivot shaft (2) Oil seal

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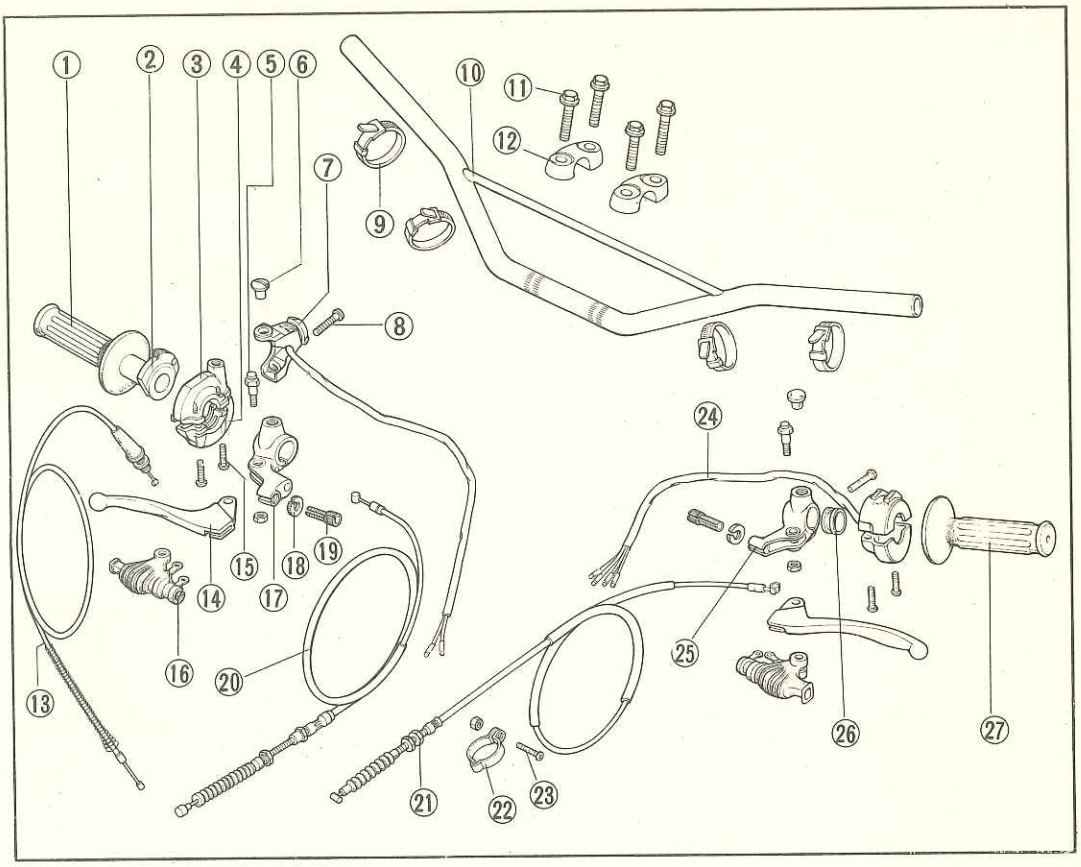
3. HANDLEBAR

Fig. 4–30

(1) Right handle grip
(2) Throttle grip pipe
(3) Throttle housing upper case
(4) Throttle housing lower case
(5) Handle lever pivot bolt
(6) Handle lever bracket plug
(7) Kill switch
(8) 6x28 screw
(9) Wire band
(10) Steering handlebar
(11) 8x36 flange bolt (four)
(12) Upper holder
(13) Throttle cable
(14) Front brake lever
(15) 5x20 screw
(16) Front brake lever cover
(17) Right handle lever bracket
(18) Lock nut
(19) Front brake cable
(20) adjuster
(21) Front brake cable
(22) Clutch cable clamper
(23) 5x18 screw
(24) Lighting switch assy.
(25) Left handle lever bracket
(26) Front brake lever spacer
(27) Left handle grip



Disassembly

1. Loosen throttle cable housing screws and remove cable housing with throttle cable from handlebar.
* Separate housing into two parts and disconnect throttle cable end from grip pipe.
* Disconnect throttle cable at carburetor. (See page 37)

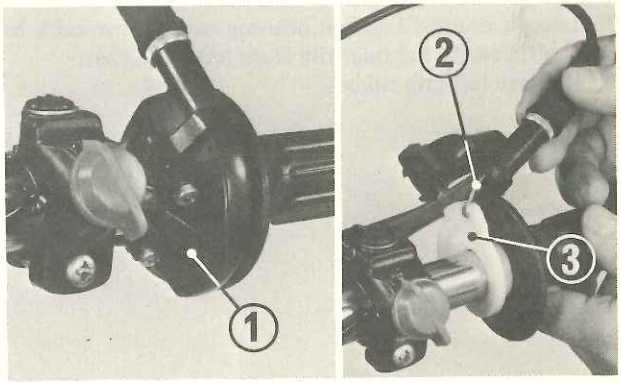


Fig. 4–31 (1) Throttle cable housing
(2) Throttle cable
(3) Throttle grip pipe

2. Remove wire bands from right side handlebar.

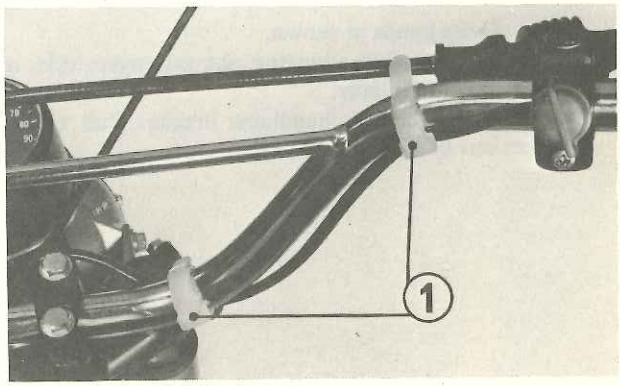


Fig. 4–32 (1) Wire bands

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3. Loosen brake cable on wheel side just enough to permit removal of brake cable at lever.

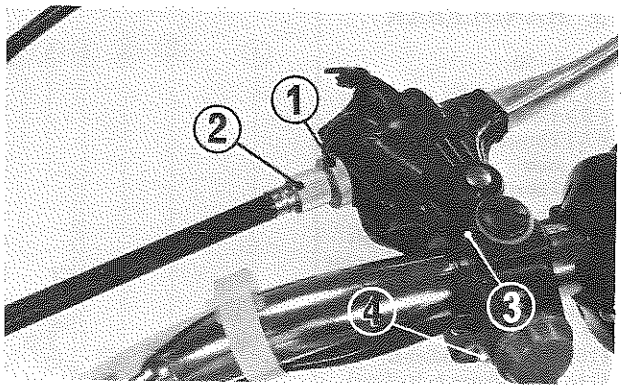

Fig. 4–33 (1) Lock nut (3) Handlebar bracket
(2) Adjusting nut (4) Screw

4. Open headlight case and disconnect ignition leads and left handle lighting wire by pulling it. Remove handlebar bracket.

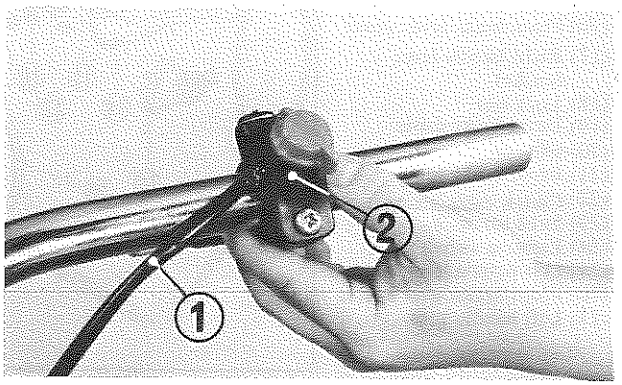

Fig. 4–34 (1) Ignition leads (2) Handlebar bracket

5. Loosen headlight switch housing and remove cable housing together with lighting wire from left handlebar.
6. Remove left grip rubber.

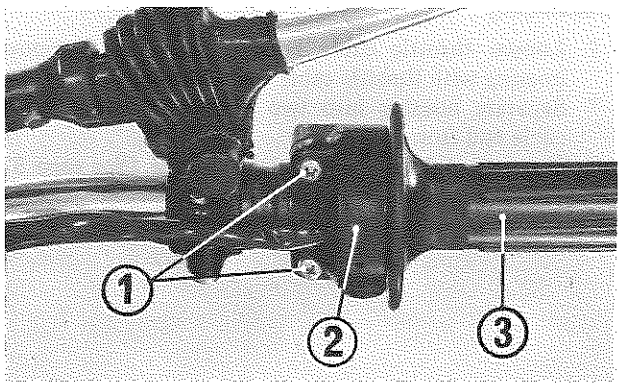

Fig. 4–35 (1) Headlight switch housing screws
(2) Headlight switch housing
(3) Left grip rubber

7. Remove wire bands as shown.
8. Loosen clutch cable adjusting nut on engine side; remove cable from clutch lever.
9. Loosen screw securing handlebar bracket. Pull clutch lever bracket out of handlebar.

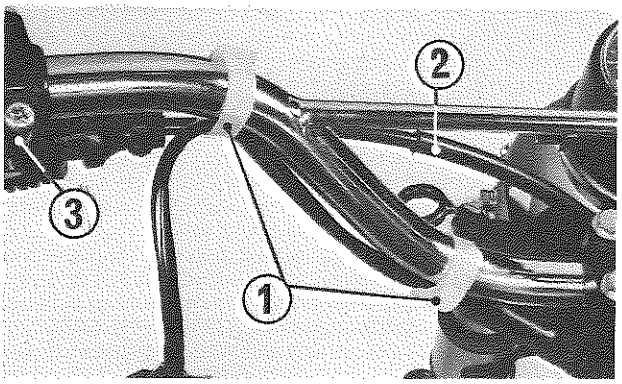

Fig. 4–36 (1) Wire bands
(2) Clutch cable
(3) Handlebar bracket

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10. Remove upper handlebar holders and remove handlebar.

Inspection

1. Check steering handlebar pipe for twist, cracks or any other damage.
2. Check each wire and cable for damaged or frayed insulation, elongation or any other defects.

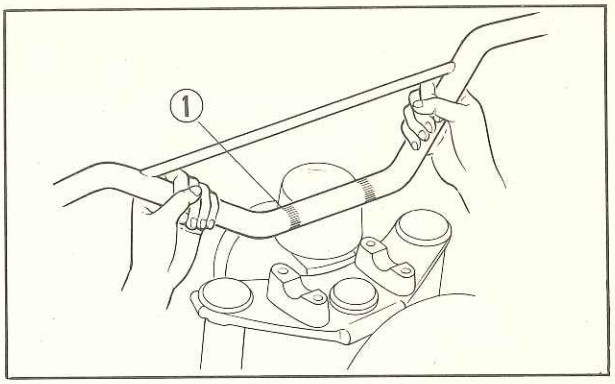

Fig. 4–37 (1) Handlebar

Assembly

To assemble, reverse disassembly procedure. Pay attention to the following points:

1. When installing right and left handlebar grips, apply a coat of proper adhesive agent to inside surface of each grip.

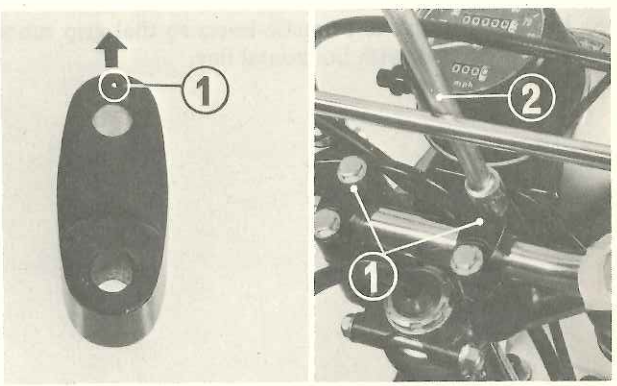

Fig. 4–38 (1) Handle upper holder punch mark
(2) Handle upper holder

2. Install steering handlebar so that center bar is at center between upper holders.

   NOTE:
   Face punch marks on upper holders toward front. See Fig. 4–38. To tighten upper holders, begin on front bolts. No clearance should exist at front side.

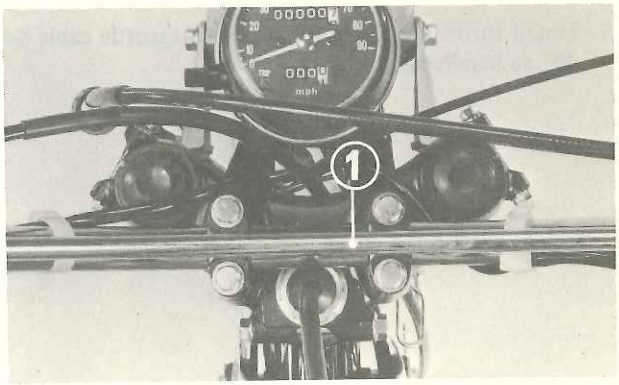

Fig. 4–39 (1) Center bar

3. Put right and left handlebar brackets on handlebar.
4. Insert throttle cable housing, making sure that distance between housing and bracket is as shown in Fig. 4–40.

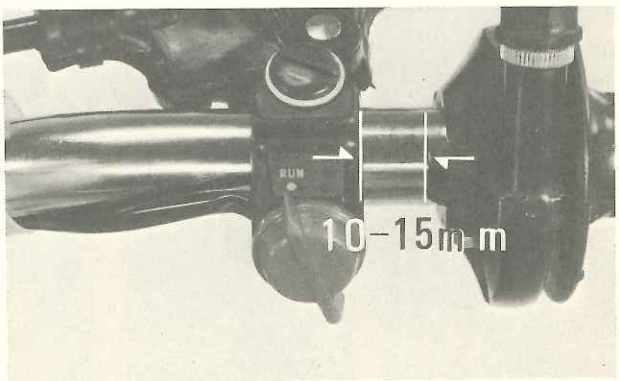

Fig. 4–40

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5. Install handlebar bracked and spacer, so that clearance is as shown in Fig. 4–41.

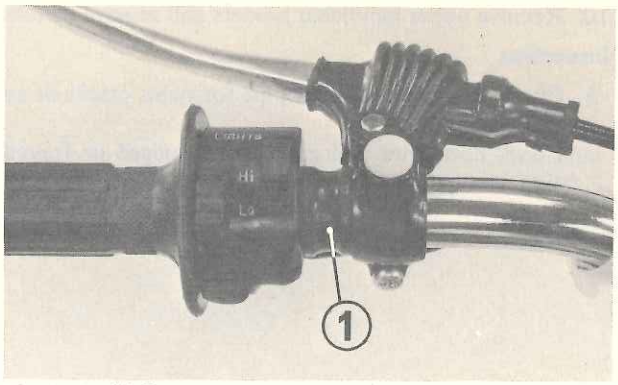

Fig. 4–41 (1) Spacer

6. Install right and left handle levers so that grip rubbers are almost parallel with horizontal line.

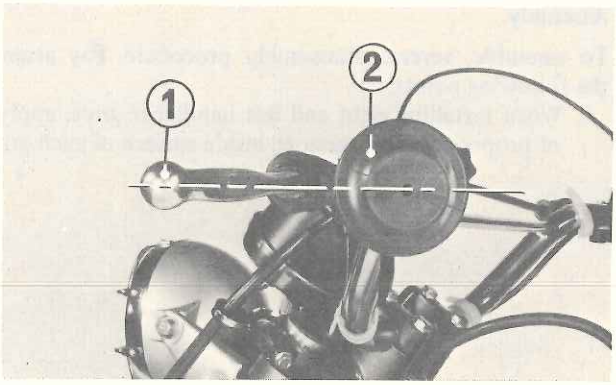

Fig. 4–42 (1) Handle lever (2) Grip rubber

7. Install throttle cable housing so that throttle cable holder is 45° to handlebar.

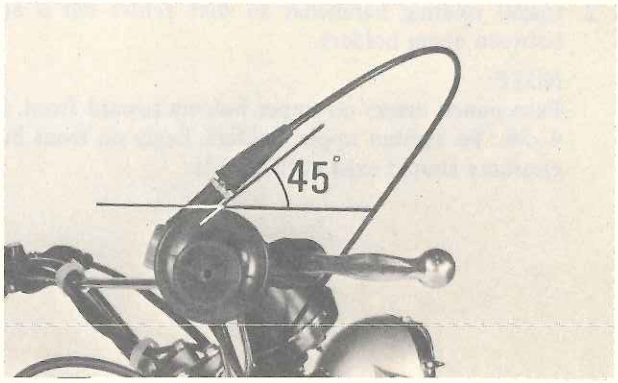

Fig. 4–43

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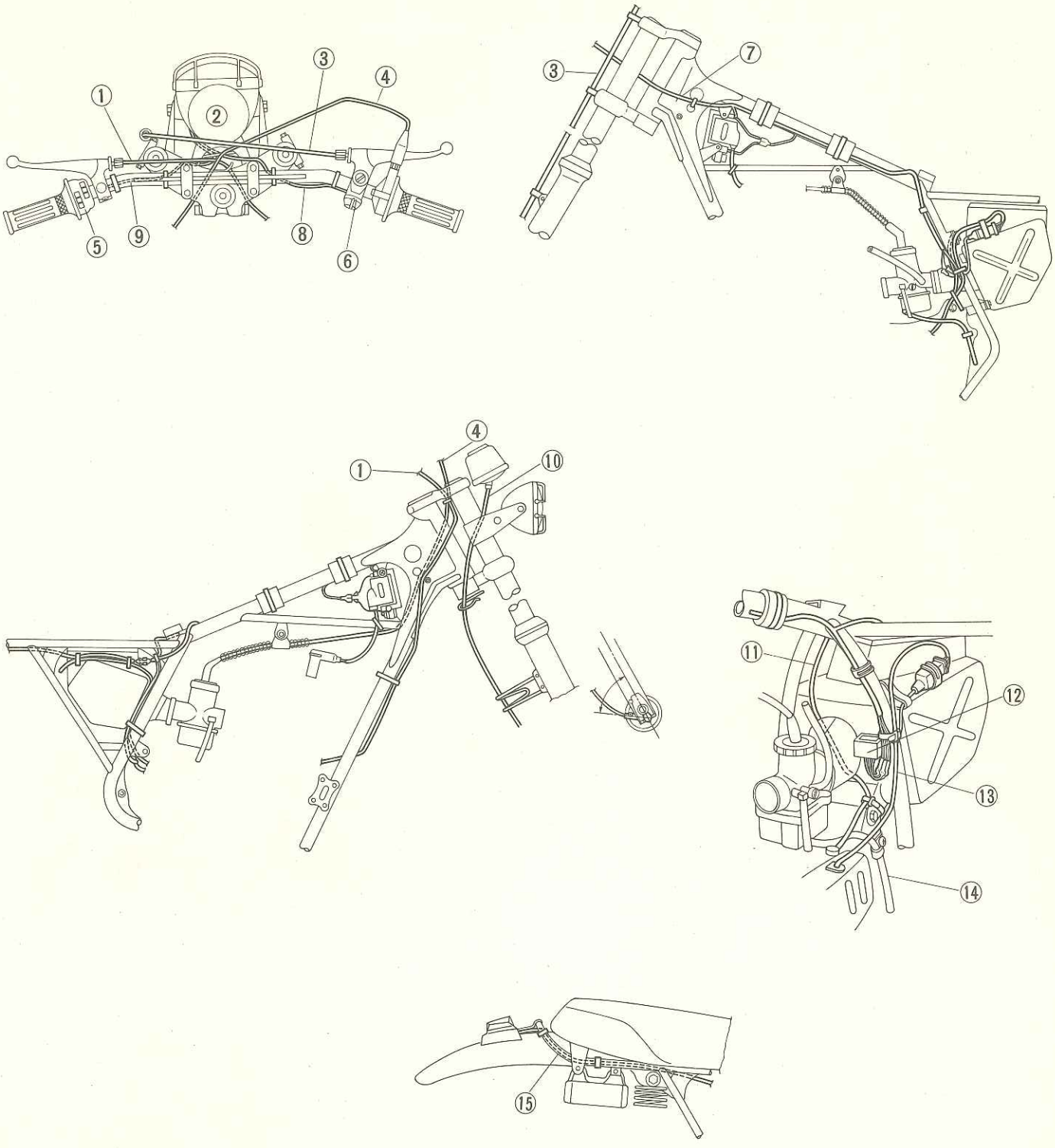

Fig. 4–44
(1) Clutch cable
(2) Speedometer
(3) Front brake cable
(4) Throttle cable
(5) Lighting switch
(6) Engine stop switch
(7) Wire harness
(8) Engine stop switch cord
(9) Lighting switch cord
(10) Tachometer cable
(11) A.C.G. breather tube
(12) Silicon rectifier
(13) A.C.G. cable
(14) Carburetor breather tube
(15) Tail lamp cord

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4. FRONT FORKS

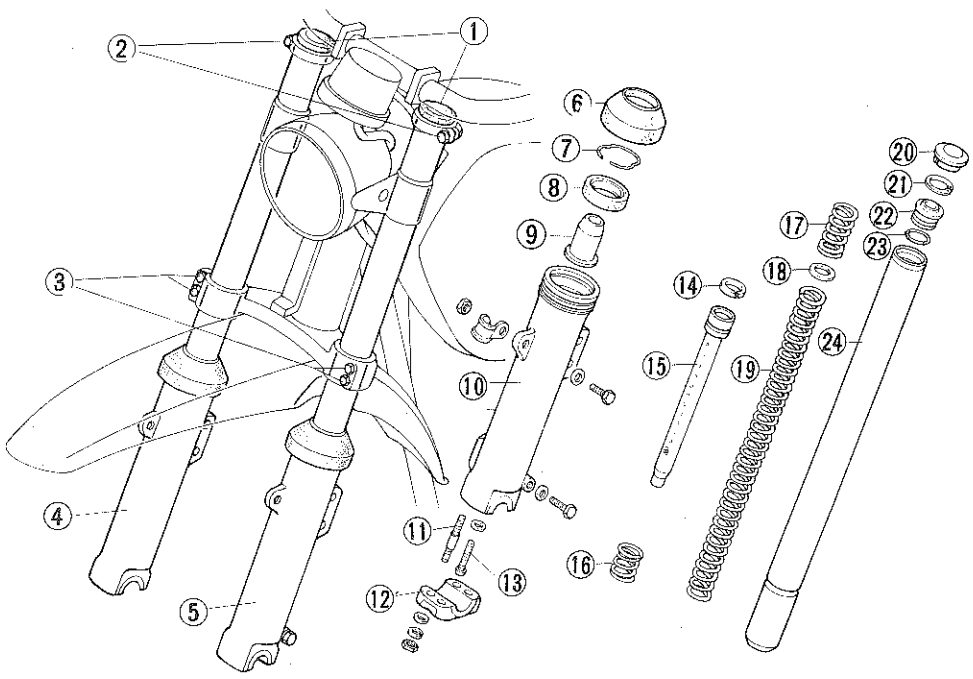

Fig. 4–45
(1) Front fork top cap
(2) 7x54 flange bolts
(3) 8x35 flange bolts
(4) Right front fork
(5) Left front fork
(6) Front fork dust seal
(7) Oil seal stopper ring
(8) 35x48x11 oil seal
(9) Oil lock piece
(10) Front fork bottom case
(11) 8x50 stud bolt
(12) Front axle holder
(13) 8 mm socket bolt
(14) Piston ring
(15) Bottom pipe
(16) Front shock absorber rebound spring
(17) Front cushion spring A
(18) 16 mm washer
(19) Front cushion spring B
(20) Front fork top cap
(21) 30 mm circlip
(22) Spring upper seat
(23) 23x2.8 O-ring
(24) Front fork pipe

The front fork unit consists of a lightweight alminum bottom case with a dual action telescopic hydraulic damper. Cushioning travel is 156.5 mm (6.1614 in.) on compression and 24.5 mm (0.9645 in.) on extension.

Disassembly

Front fork oil change

To change oil without disassembling front forks, see page 8. To change oil after disassembling front forks, proceed as follows:

1. After removing each front fork, loosen drain bolt to make it easier to drain oil.
2. Remove front wheel. (See page 43)

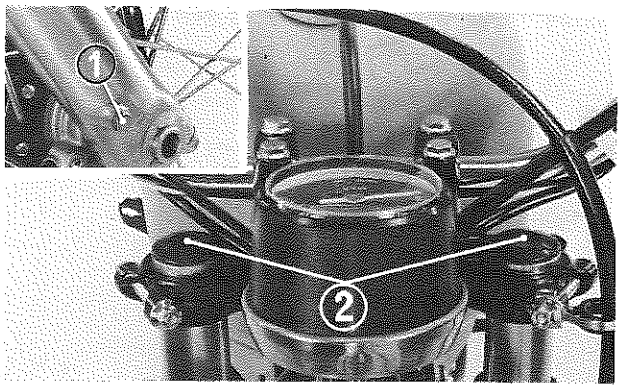

Fig. 4–46 (1) Drain bolt (2) Rubber caps

3. Remove handlebar. (See page 51)
4. Remove snap ring and spring upper seat. They should be removed before front fork is removed. To remove them, proceed as follows:
   While pushing down spring upper seat with tip of a screw driver, remove snap ring using snap ring pliers. Then remove spring upper seat.

   CAUTION:
   When removing snap ring, spring upper seat may accidentally jump out by means of force of shock absorbing spring.

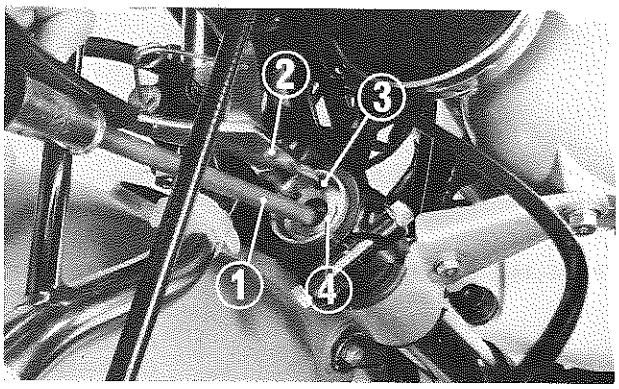

Fig. 4–47 (1) Plus screw driver (3) Snap ring
(2) Snap ring pliers (4) Upper seat

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5. Remove front fork tightening bolts and remove front fork. With front fork placed upside dow, drain oil completely.

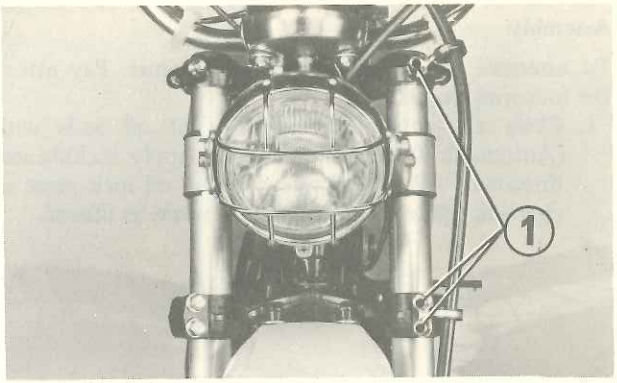

Fig. 4–48 (1) 8 mm bolts

6. Remove Allen head screw with 6 mm Allen wrench (Tool No. 07085–32301). Remove fork bottom case from fork pipe.

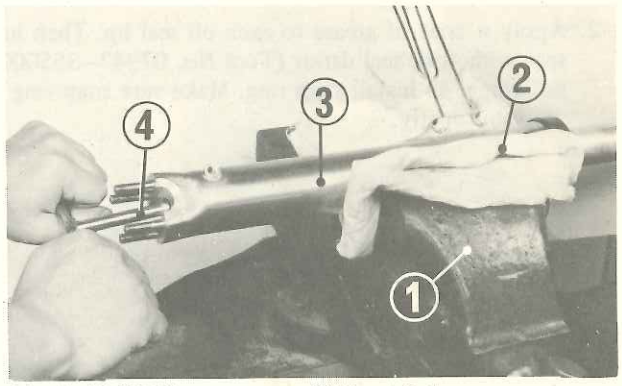

Fig. 4–49 (1) Vise
(2) Waste
(3) Front fork
(4) 6 mm Allen wrench

7. Remove oil seal stopper ring. Remove oil seal from fork bottom case.
8. Remove springs and bottom pipe through top of fork pipe.

Unit: mm (in.)

Item	Assembly standard	Service limit
Front shock absorber spring A free length	53.8 (2.114)	52.0 (2.047)
Front shock absorber spring B free length	448.5 (17.658)	441.0 (17.362)

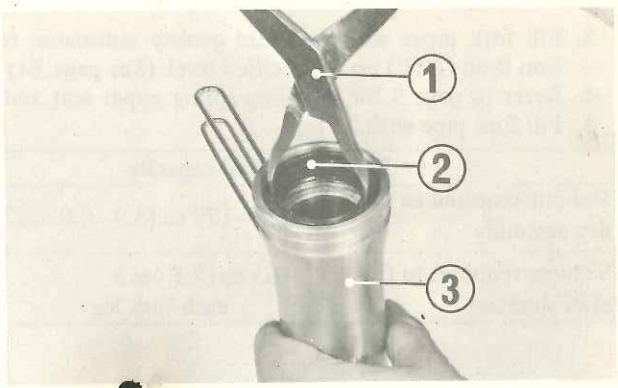

Fig. 4–50 (1) Snap ring plier
(2) Oil seal stopper ring
(3) Front fork bottom case

Inspection

1. Check front fork piston rings for wear.
2. Check front shock absorber springs A and B for tension. Measure spring free length.
3. Check fork bottom cases for wear, scores, scratches, cracks or rust. If rust formation is noticed on pipes, completely remove it with a fine emery cloth.
4. Check oil seals for scores, scratches or breakage.

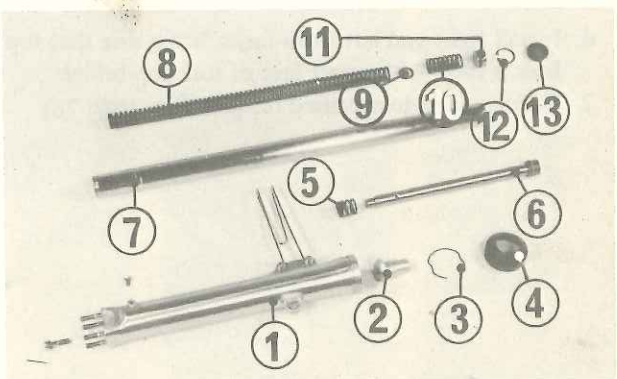

Fig. 4–51
(1) Front fork bottom case
(2) Oil lock piece
(3) 45 mm snap ring
(4) Front fork dust seal
(5) Rebound spring
(6) Bottom pipe
(7) Front fork pipe
(8) Cushion spring B
(9) 16 mm washer
(10) Cushion spring A
(11) Upper seat
(12) 30 mm circlip
(13) Top cap

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Assembly

To assemble, reverse disassembly procedure. Pay attention to the following points:

1. Clean all parts. Lubricate lips of oil seals with ATF (Automatic Transmission Fluid). Apply locking sealant to threads of Allen head screw. Install oil lock piece and seat pipe and tighten with Allen head screw as shown.

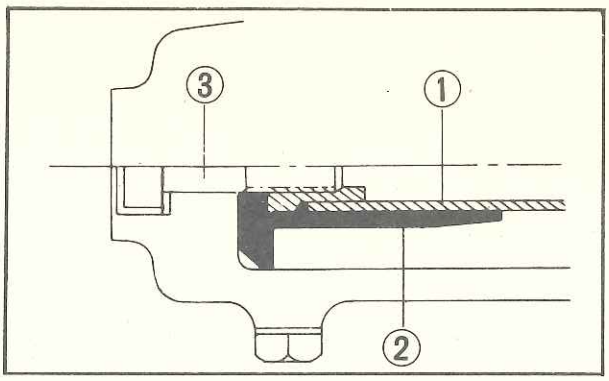

Fig. 4–52 (1) Seat pipe
(2) Oil lock piece
(3) 8 mm Allen head screw

2. Apply a coat of grease to each oil seal lip. Then insert oil seal with fork seal driver (Tool No. 07947–3550000). Do not forget to install snap ring. Make sure snap ring seats in groove properly.

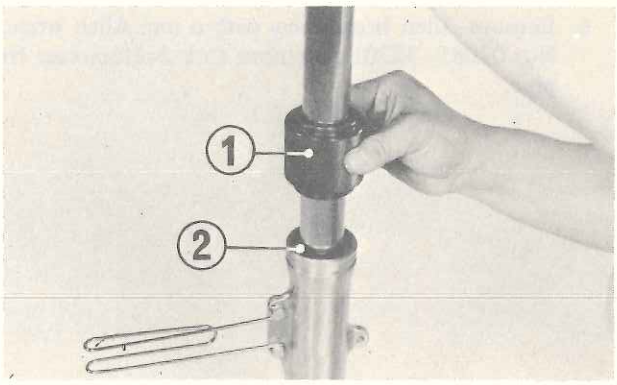

Fig. 4–53 (1) Fork seal driver (2) Fork seal

3. Fill fork pipes with premium quality automatic transmission fluid (ATF) up to specified level. (See page 84)
4. Refer to page 9 for installing spring upper seat and circlip.
5. Fill fork pipe with ATF.

Front fork fluid capacity	
Volume required to fill dry assembly	173–177 cc (5.9–6.0 ozs.)
Volume required to fill after draining	163 cc (5.5 ozs.) each fork leg

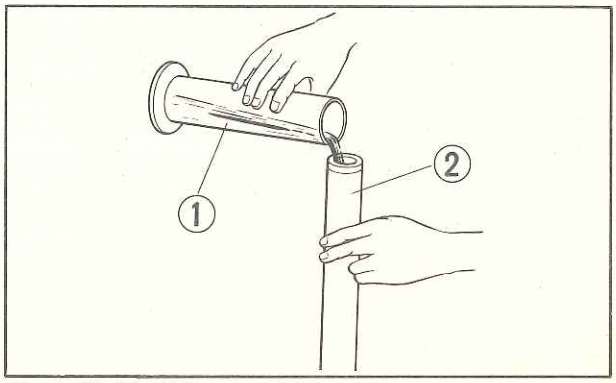

Fig. 4–54 (1) ATF (2) Front fork pipe

6. Install right and left front forks, being sure that top of each fork is flush with upper face of fork top bridge.
7. Tighten parts to specified torques. (See page 78)

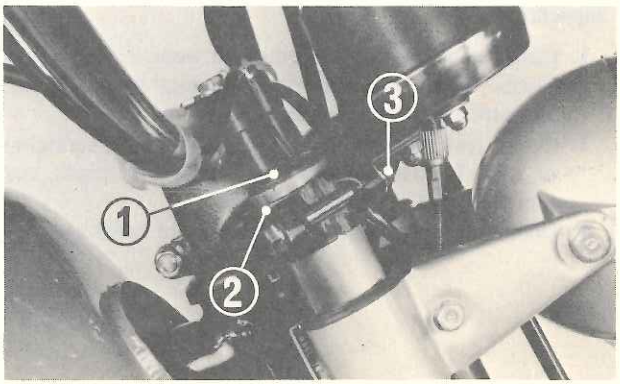

Fig. 4–55 (1) Rubber cap
(2) Top bridge upper face
(3) 8 mm nut

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8. After assembling:
   (1) Check front forks for smooth movement.
   (2) Check for leakage from oil seals.

Fig. 4–56 Checking movement of front fork

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5. STEERING STEM

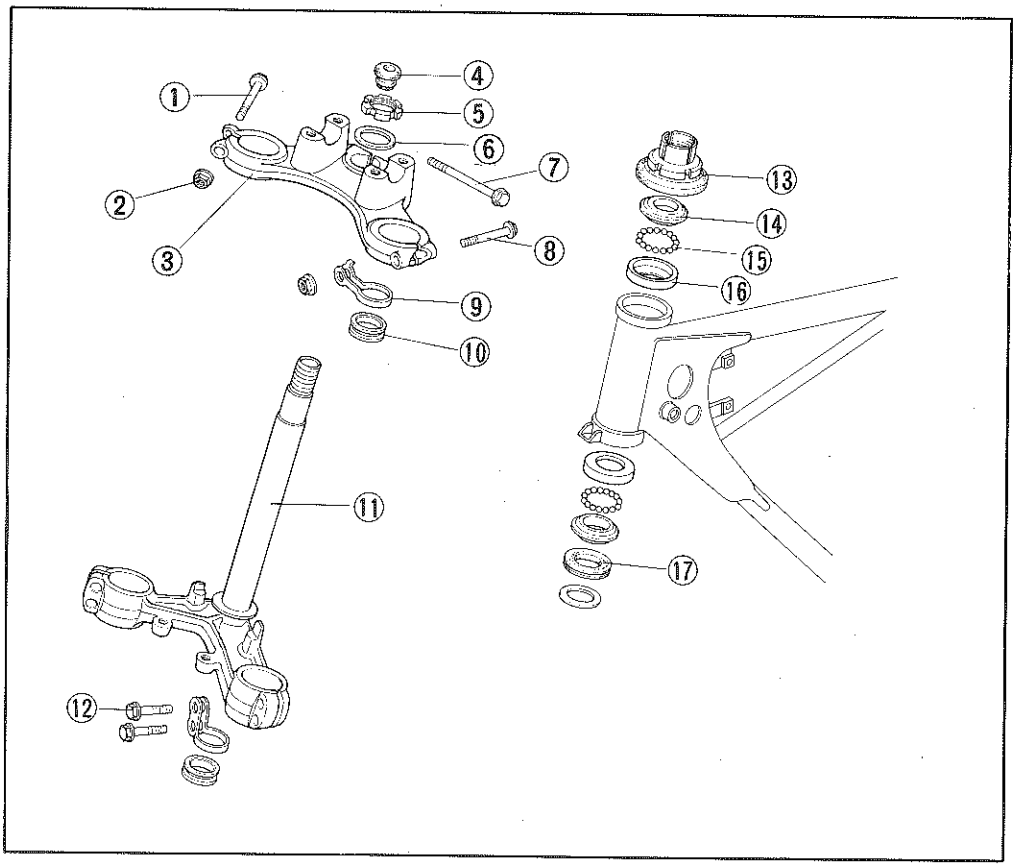

Fig. 4–57
(1) 7×54 flange bolt
(2) 7 mm flange nut
(3) Fork top bridge
(4) Steering stem cap
(5) Steering stem nut
(6) Steering stem washer
(7) 8×72 flange bolt
(8) 7×54 flange bolt
(9) Front brake cable clip A
(10) Cable guide inner
(11) Steering stem
(12) 8×35 flange bolt
(13) Steering head top thread
(14) Steering top cone race
(15) #8 steel ball
(16) Steering head dust seal
(17) Steering head dust seal washer

Disassembly

1. Disconnect speedometer cable from speedometer cable nut.
2. Remove clutch cable from handlebar side.
3. Remove throttle cable from handlebar side.
4. Disconnect wire harness connection inside headlight case to remove headlight switch wire and stop switch wire.

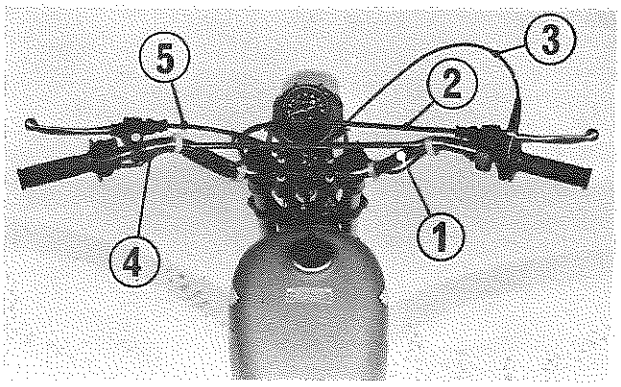

Fig. 4–58 (1) Handlebar (2) Brake cable (3) Throttle cable (4) Headlight switch wire (5) Clutch cable

5. Remove handlebar. (See page 51)
6. Remove steering stem nut using stem nut wrench (Tool No. 07915–0010000).

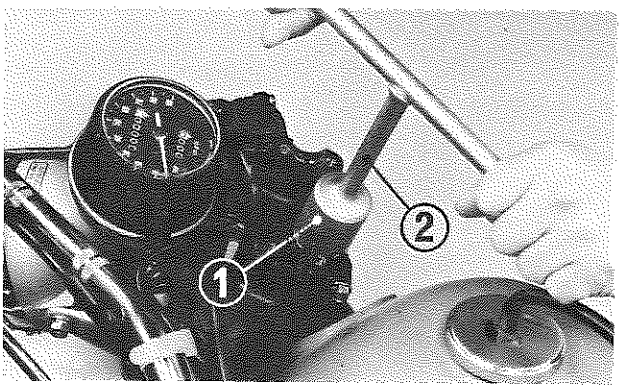

Fig. 4–59 (1) Steering stem nut (2) Steering stem nut wrench

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7. Remove upper brake cable guide, loosen front fork upper tightening bolts and stem tightening bolt and remove fork top bridge.

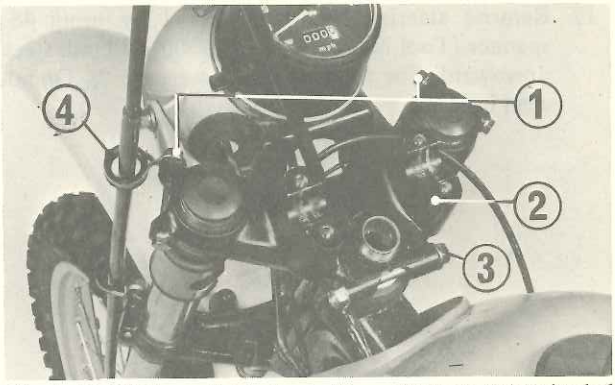

Fig. 4–60 (1) Upper tightening bolts (3) Stem tightening bolt
(2) Fork top bridge (4) Brake cable guide

8. Turn off 6 mm bolts and 8 mm nuts and remove speedometer and speedometer stay.

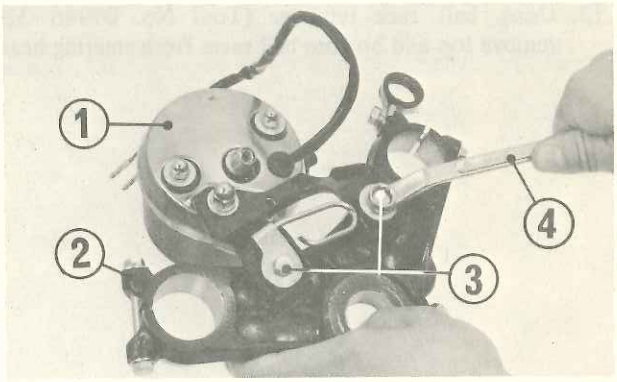

Fig. 4–61 (1) Speedometer (3) 6 mm bolts
(2) Fork top bridge (4) 6 mm spanner

9. Loosen two 6 mm headlight stay tightening bolts and remove headlight stay together with headlight case by pulling them upward.

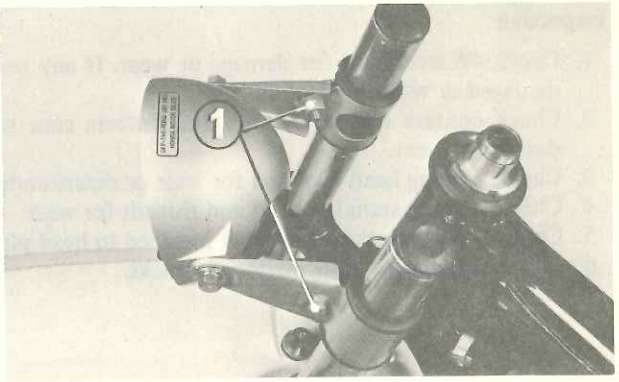

Fig. 4–62 (1) 6 mm bolts

10. Remove front wheel. (See page 43)
11. Loosen front fork lower tightening bolts and pull front forks downward and then remove front fender from steering stem.

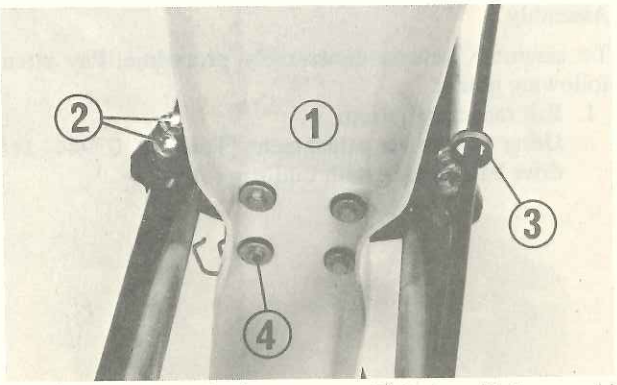

Fig. 4–63 (1) Front fender (3) Brake cable lower guide
(2) Lower front fork tightening bolts (4) 10 mm bolts

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12. Remove steering head top thread by using 46 mm pin spanner (Tool No. 07902–2400000) and pull steering stem downward. For tools required, see page 76. Do not lose #8 steel balls.

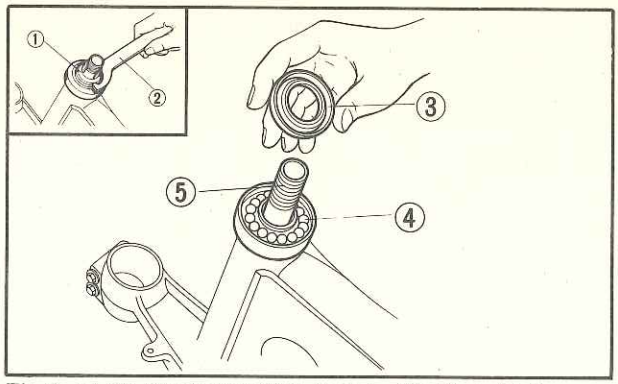

Fig. 4–64 (1) Steering head top thread (4) #8 steel balls
(2) 45 mm pin wrench (5) Steering stem
(3) Top cone race

13. Using ball race remover (Tool No. 07946–3290200), remove top and bottom ball races from steering head.

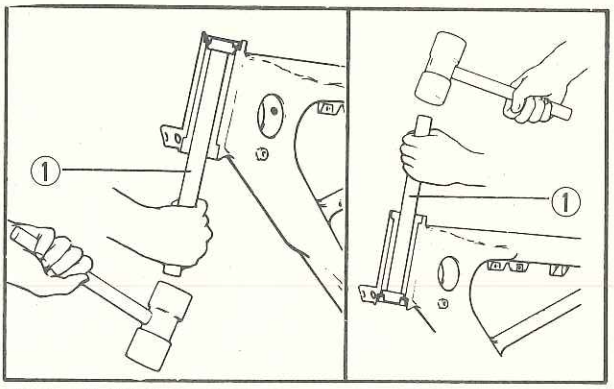

Fig. 4–65 (1) Ball race remover

Inspection

1. Check #8 steel balls for damage or wear. If any one ball is damaged or worn, replace all balls.
2. Check contact surfaces of top and bottom cone races for damage or wear.
3. Check steering head dust seal for wear or deterioration.
4. Check steering stem for bend and threads for wear.
5. Check if cone races are properly installed to head pipe.
6. Check stopper for deformation or cracks.

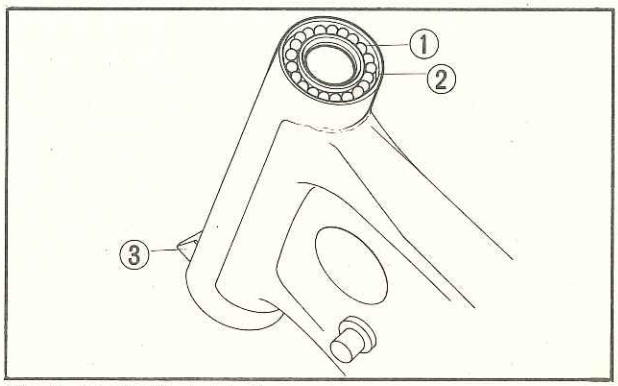

Fig. 4–66 (1) #8 steel ball
(2) Stopper
(3) Top cone race

Assembly

To assemble, reverse disassembly procedure. Pay attention to following points:

1. Ball race installation
   Using race driver attachment (Tool No. 07944–1150000), drive ball races in with uniform force.

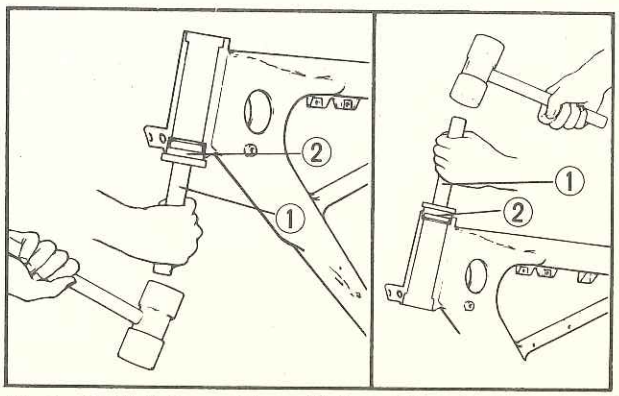

Fig. 4–67 (1) Ball race driver (2) Race driver attachment

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2. Apply coat of grease to inside of ball races and put #8 steel balls into ball races (eighteen balls into each race). Install steering stem into head pipe, install top cone race and tighten head top thread fully. Then turn top thread in either direction until it is turned with reasonable ease. Wash cone races, ball races and #8 steel balls. Use new grease.

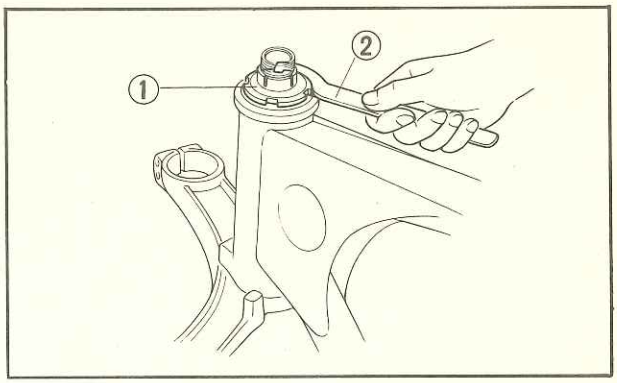


Fig. 4–68 (1) Steering head top thread (2) 46 mm pin wrench

3. Temporarily install front forks. Install fork top bridge and tighten steering stem nut. After tightening, check to see if stem moves smoothly by its own weight from position 5°–10° from center. If stem will not move, following causes may be suspected. Check and locate the cause:
   (1) Bent stem
   (2) Incorrect number of steel balls
   (3) Abnormal wear on races
   (4) Head top thread out of adjustment
4. Route cables and wires as shown in Fig. 4–44.
5. After assembling, check parts specified by road regulations for proper operation. Make sure all bolts and nuts are tightened securely.

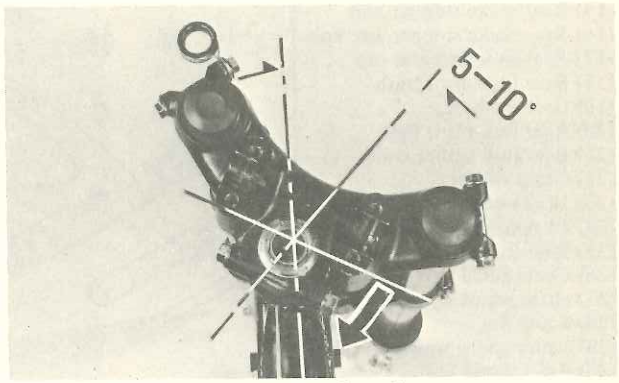


Fig. 4–69 Checking movement of steering stem

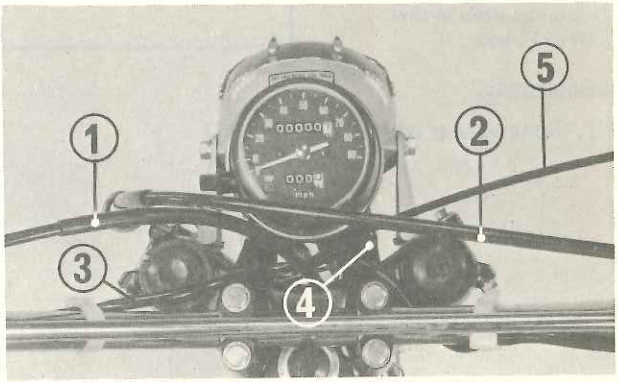
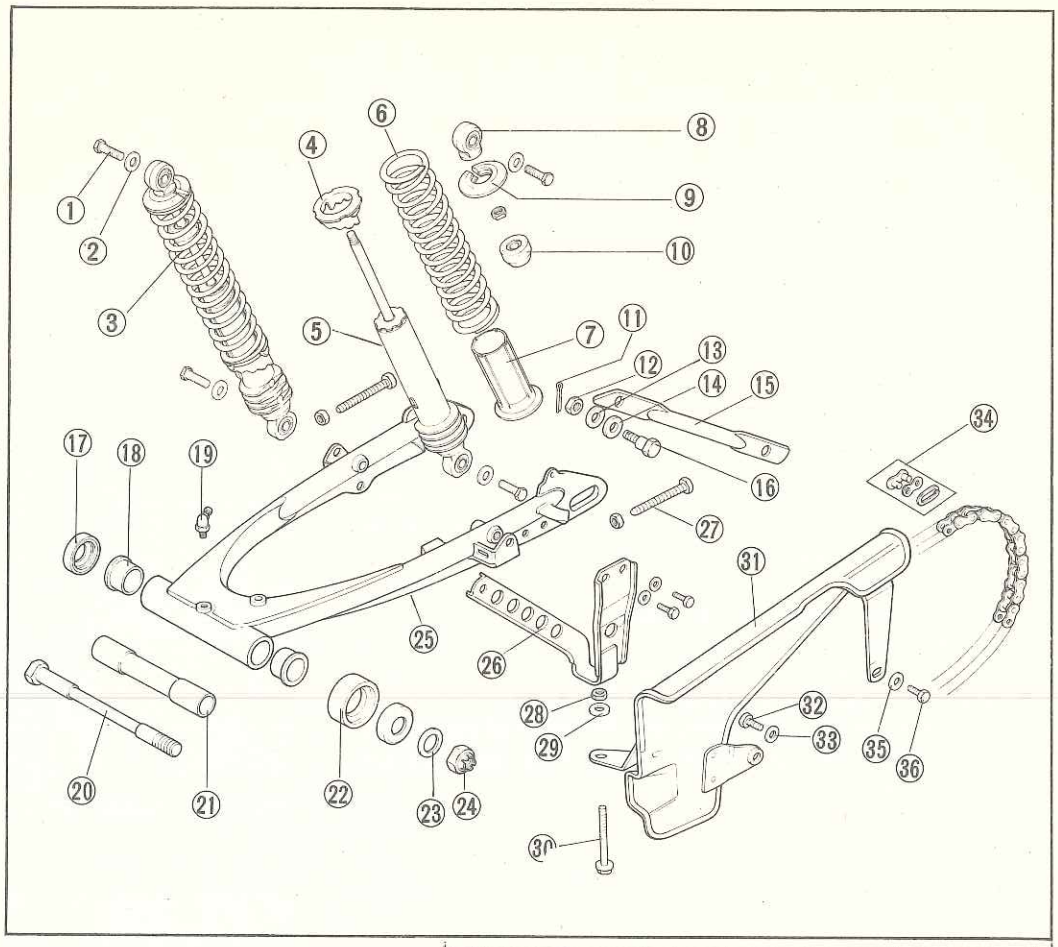


Fig. 4–70 (1) Clutch cable (4) Headlight stay
(2) Front brake cable (5) Throttle cable
(3) Headlight switch lead

6. REAR SHOCK ABSORBERS AND REAR FORK

Fig. 4–71
(1) 10x32 bolt
(2) 10 mm plain washer
(3) Shock absorber assy.
(4) Rear shock absorber spring adjuster
(5) Lower damper
(6) Rear cushion spring
(7) Rear shock absorber spring guide
(8) Upper joint
(9) Spring upper seat
(10) Stopper rubber
(11) 2.0x15 cotter pin
(12) 8 mm nut
(13) Washer
(14) Stopper arm cushion rubber
(15) Rear brake stopper arm
(16) Rear brake stopper arm bolt
(17) Rear fork dust seal cap
(18) Rear fork pivot bush
(19) Grease nipple
(20) Rear fork pivot bolt
(21) Rear fork center collar
(22) Chain slipper
(23) 14x26 washer
(24) 14 mm self lock nut
(25) Rear fork
(26) Chain guide
(27) chain adjusting bolt
(28) 6 mm nut
(29) 6 mm spring washer
(30) 6x55 flange bolt
(31) Drive chain case
(32) 6x12 bolt
(33) 6 mm plain washer
(34) Drive chain joint
(35) 6 mm plain washer
(36) 6x12 bolt



Disassembly

1. Remove rear wheel. (See page 47)

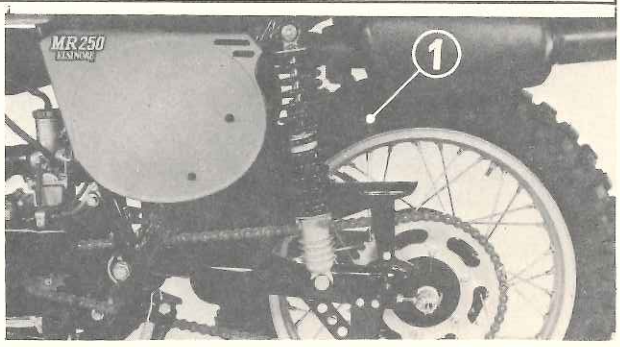


Fig. 4–72 (1) Rear wheel

2. Remove drive chain case and chain guide.
3. Remove two bolts and remove rear shock absorbers.

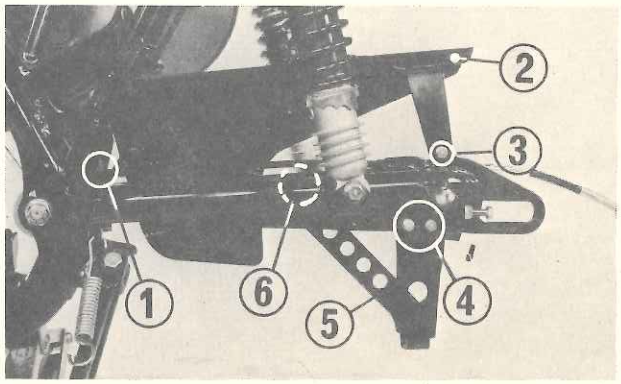


Fig. 4–73 (1) 6x55 mm flanged bolt
(2) Chain case
(3) 6x12 mm bolt
(4) 6x12 mm bolts
(5) Chain guide
(6) Rear fork assembly

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4. Remove 12 mm self-locking nut and pull out rear fork pivot bolt. Then remove rear fork.
5. Remove rear brake stopper arm from rear fork.

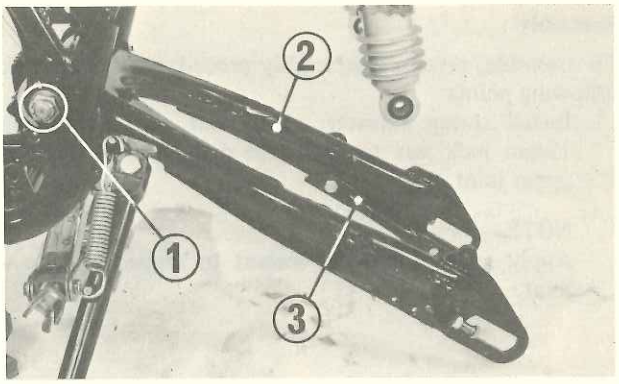

Fig. 4–74 (1) 12 mm self-locking nut
(2) Rear fork
(3) Rear brake stopper arm

6. While compressing rear shock absorber in tool as shown, remove upper spring seat.

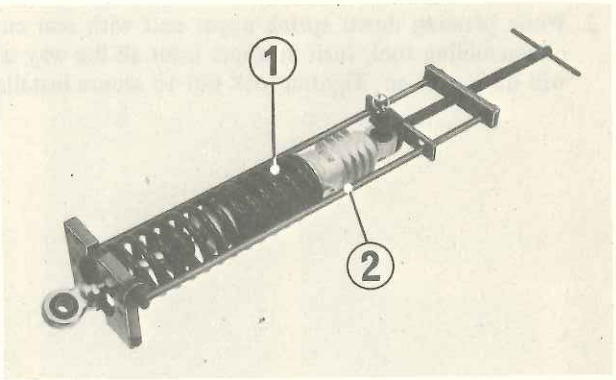

Fig. 4–75 (1) Rear shock absorber
(2) Shock absorber disassembling tool

7. Loosen 12 mm lock nut, remove upper joint and remove rear shock absorber.

Inspection

1. Measure rear shock absorber spring free length. Also check springs for tension.
2. Check rear dampers for deformation or oil leakage.
3. Check damper rods for bend.
4. Check rubber stopper for breakage.
5. Measure rear fork center collar-to-bushing clearance.
6. Check holes for rear axle in rear end of rear fork for proper alignment.
7. Check grease lubrication hole in rear fork pivot bolt for clogging.
8. Wear of chain slipper.

Unit: mm (in.)

Item	Assembly standard	Service limit
Rear fork pivot bushing ID	18.030–18.063 (0.7098–0.7111)	18.20 (0.7165)
Rear fork center collar OD	17.968–17.981 (0.7074–0.7063)	17.88 (0.7039)

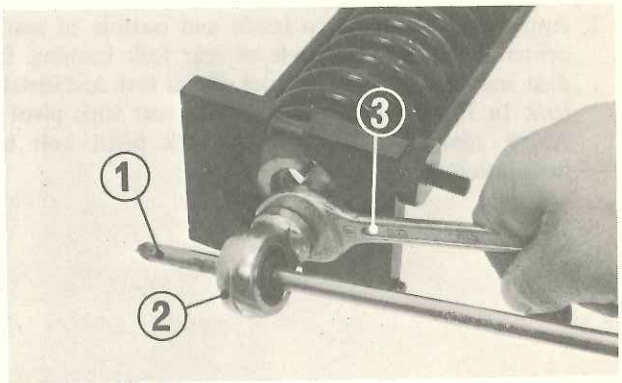

Fig. 4–76 (1) Tee-handle screwdriver
(2) Upper joint
(3) 17 mm spanner

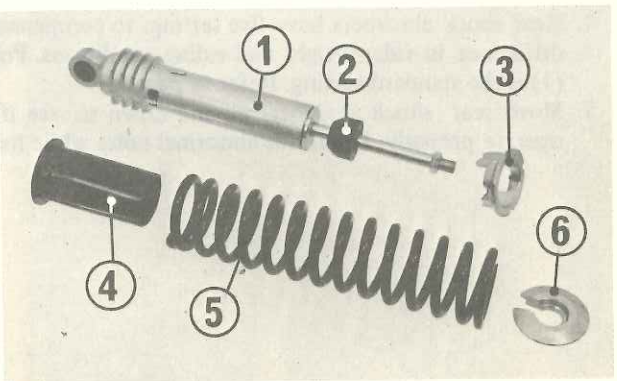

Fig. 4–77 (1) Upper damper
(2) Stopper rubber
(3) Rear shock absorber spring adjuster
(4) Spring guide
(5) Rear cushion spring
(6) Upper seat

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Assembly

To assemble, reverse disassembly procedure. Pay attention to following points:

1. Install spring adjuster, spring seat, stopper rubber and 12mm lock nut to each rear damper first. Then install upper joint.

   NOTE:
   Apply coat of locking sealant to tapped hole in upper joint.

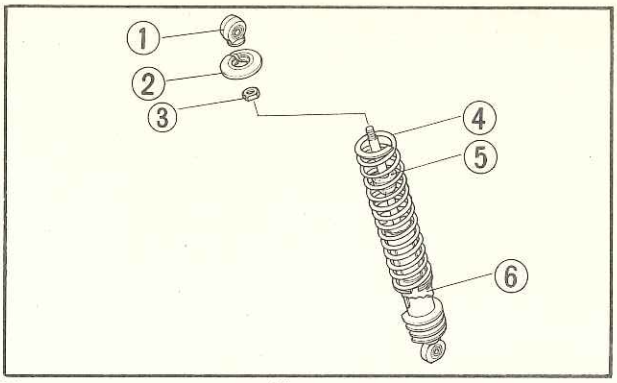

Fig. 4–78 (1) Upper joint (4) Rear shock absorber spring
(2) Spring upper seat (5) Stopper rubber
(3) 12mm lock nut (6) Spring adjuster

2. While pressing down spring upper seat with rear cushion disassembling tool, turn in upper joint all the way until it will no longer go. Tighten lock nut to secure installation.

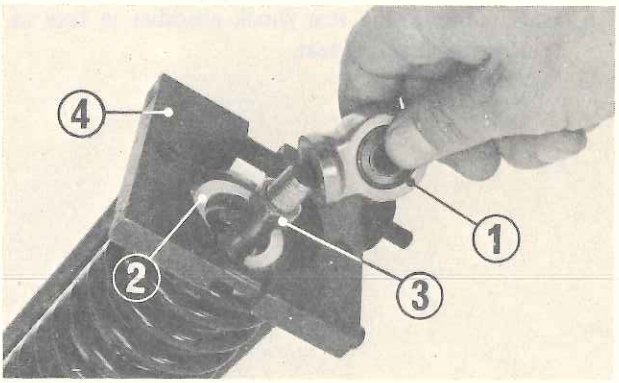

Fig. 4–79 (1) Upper joint (4) Rear cushion disassembling tool
(2) Spring upper seat
(3) 12mm lock nut

3. Apply coat of grease to inside and outside of rear fork center collar and to inside of rear fork bushing. Install dust seal to right and left sides of rear fork and install rear fork to frame and tighten it with rear fork pivot bolt. Apply coat of grease to rear fork pivot bolt before installation.

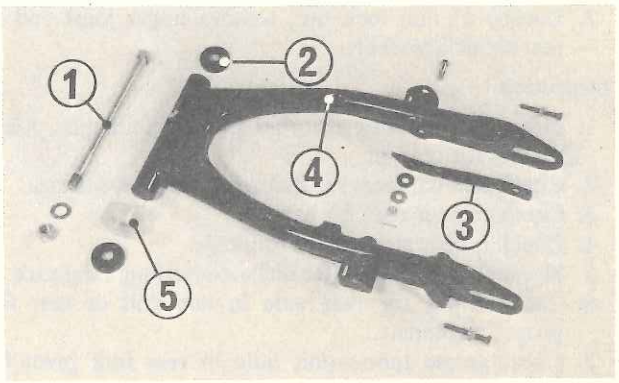

Fig. 4–80 (1) Rear fork pivot shaft (3) Rear brake stopper arm
(2) Dust seal cap (4) Rear fork
(5) Chain slipper

4. Rear shock absorbers have five settings to compensate for difference in rider weight and riding conditions. Position (1) is the standard setting. Refer to page 9.
5. Move rear shock absorbers up and down to see if they operate properly. Listen for abnormal noise while moving.

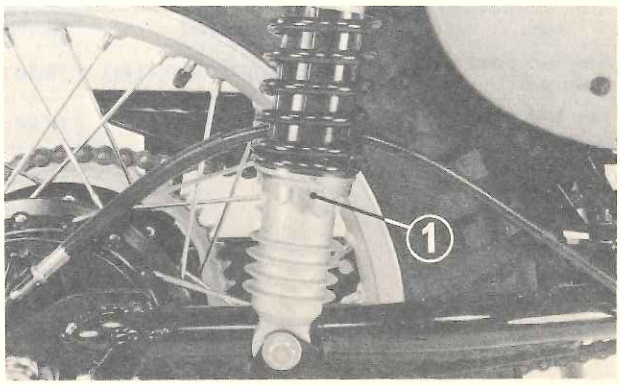

Fig. 4–81 (1) Spring adjuster

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7. FRAME BODY AND OTHER EQUIPMENT

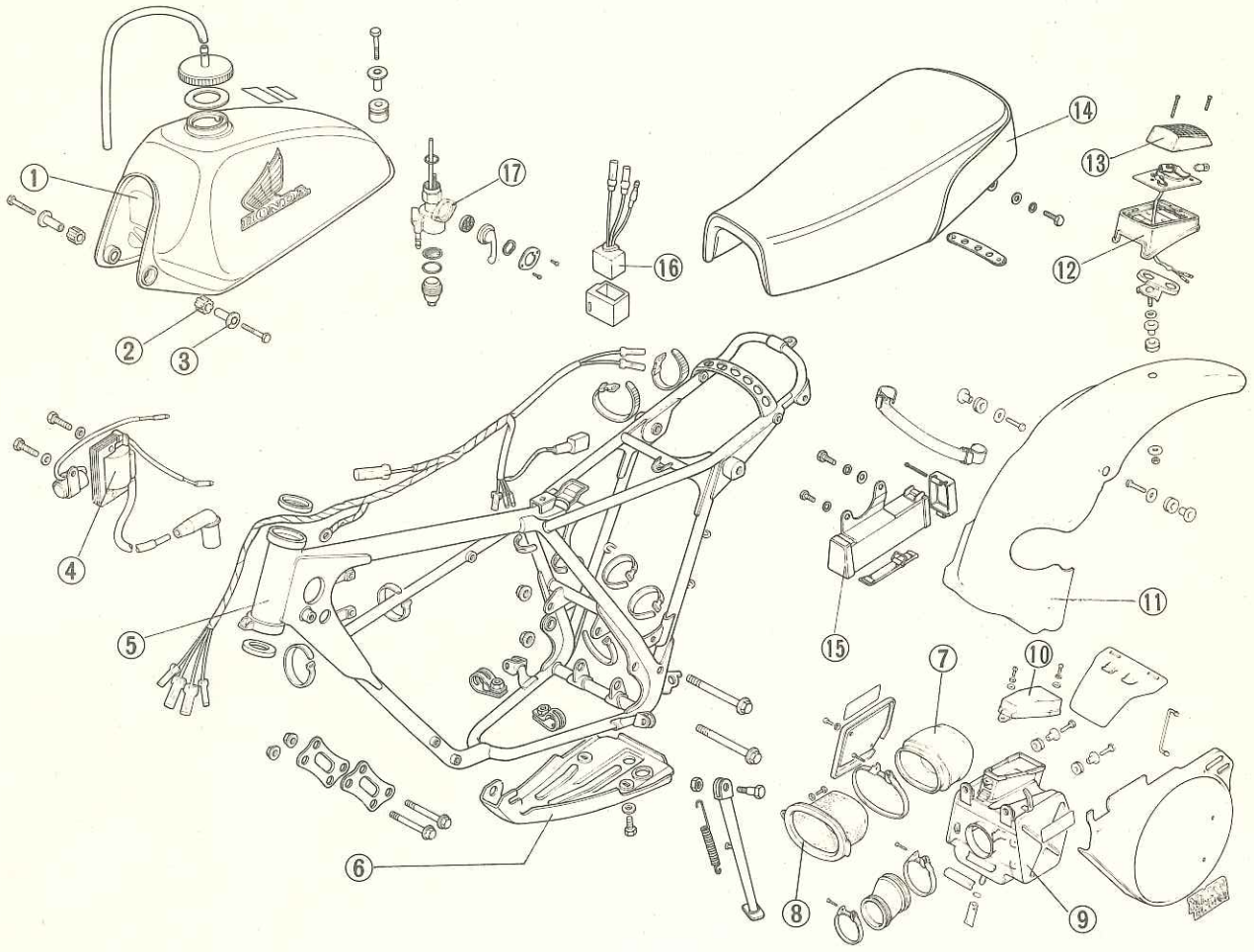

Fig. 4–82

(1) Fuel tank	(7) Air cleaner element	(13) Tail light lens
(2) Fuel tank mount rubber	(8) Air cleaner case base	(14) Seat
(3) Fuel tank front collar	(9) Air cleaner case	(15) Tool box
(4) Ignition coil	(10) Air cleaner duct	(16) Rectifier
(5) Frame body	(11) Rear fender	(17) Fuel cock
(6) Skid plate	(12) Tail light	

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Fuel valve and fuel tank cap removal

1. Drain tank and remove it.
2. Remove fuel strainer cup, O-ring and fuel strainer screen. Then remove 6 mm screw and remove fuel valve from fuel tank.
3. Remove 3 mm screw and fuel valve lever setting plate. Remove fuel valve lever.
4. Remove fuel valve gasket.
5. To install, reverse removal procedure.
6. After connecting fuel tube and breather, secure them with clips.
7. Check for:

* Contamination of fuel strainer screen
* Weakness of fuel valve lever spring
* Clogging of vent hole in fuel tank cap. Blow vent hole from outside. If air comes out, hole is in good condition. If not, inspect check valve for condition.

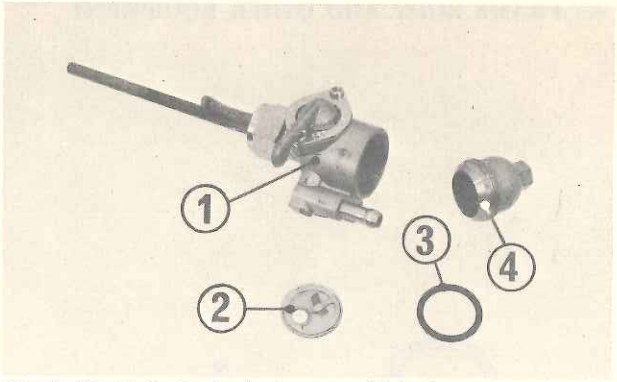

Fig. 4–83 (1) Fuel valve body (3) O-ring
(2) Screen (4) Strainer cup

Rear fender removal

1. Remove seat and rear wheel. (See pages 15 and 47)
2. Remove rear fender cover from rear fender set band.
3. Remove 6 mm bolts and remove rear fender.

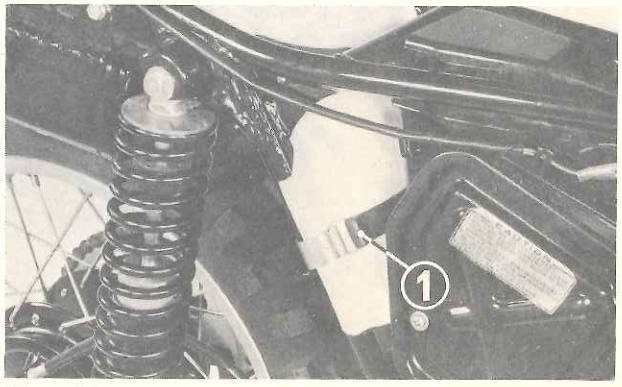

Fig. 4–84 (1) Rear fender set band

4. Disconnect taillight cable.
5. Remove taillight bolt and taillight.

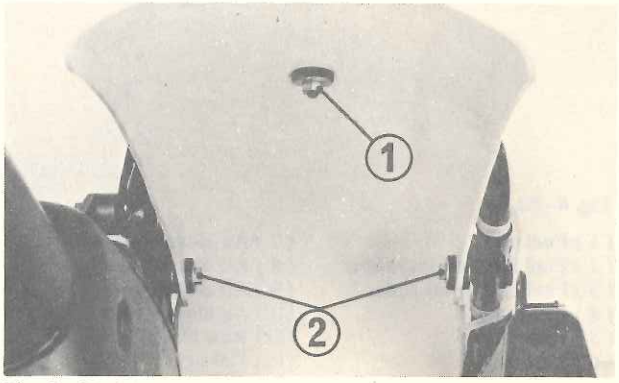

Fig. 4–85 (1) Taillight bolt (2) 6 mm bolts

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Ignition coil removal

Disconnect primary ignition cable and remove 6 mm bolts. Remove high tension cord and remove ignition coil. To install, reverse removal procedure. Refer to pages 72 thru 73 for procedure to be followed in inspecting removed part.
inspecting removed parts.

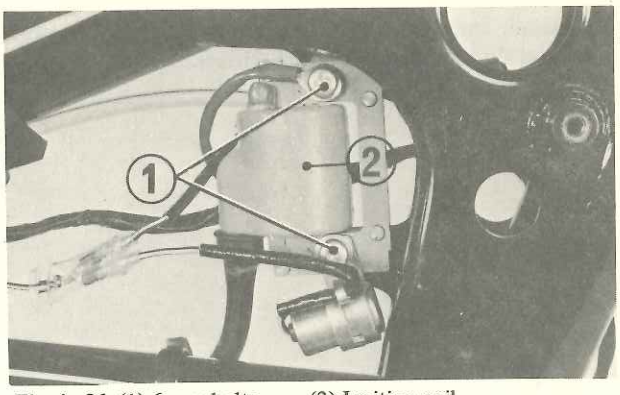

Fig. 4–86 (1) 6 mm bolts (2) Ignition coil

Step arm removal

Remove 1.6 mm split pin and step bar joint pin. Remove right and left steps. To install, reverse removal procedure.

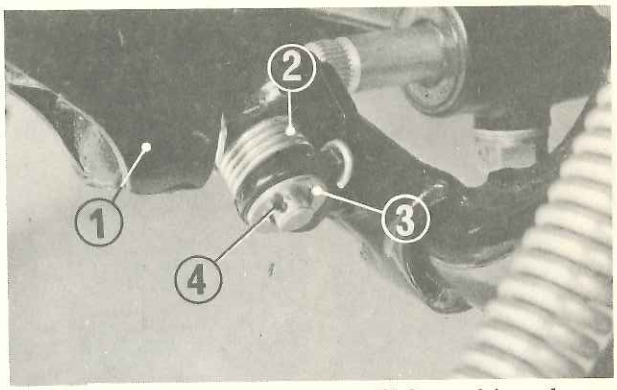

Fig. 4–87 (1) Step arm
(2) Step return spring
(3) 8 mm plain washer
(4) 1.6 mm split pin

Skid plate removal

To remove skid plate, first remove 10 mm nut as shown in Fig. 4–88.

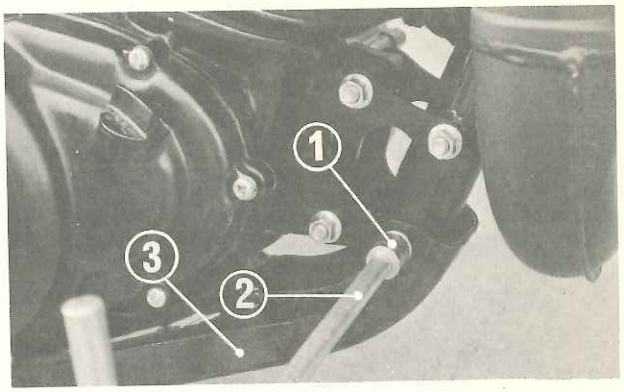

Fig. 4–88 (1) 10 mm nuts
(2) 10 mm box wrench
(3) Skid plate

Then, remove two 6 mm bolts from bottom. Plate can now be taken out from lower tubes.

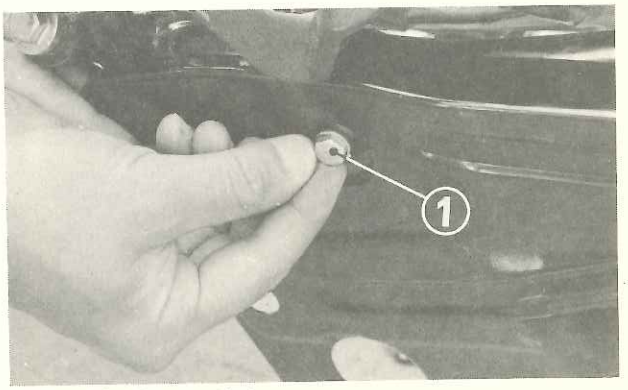

Fig. 4–89 (1) 6 mm bolts

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To install, insert end of skid plate setting band between lower tube and skid plate, and tighten with skid plate.

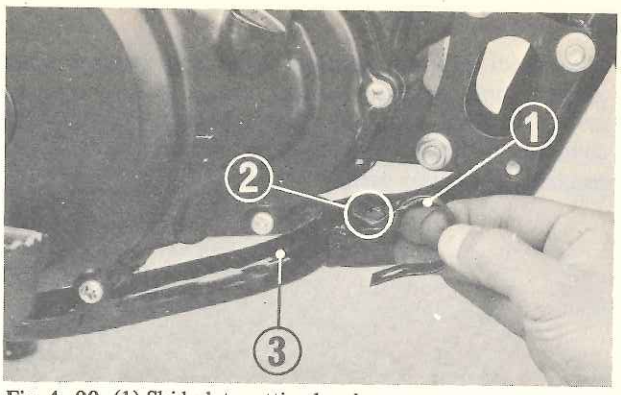

Fig. 4–90 (1) Skid plate setting band
(2) Nut
(3) Lower tube

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V. ELECTRICAL SYSTEM

1. CHARGING SYSTEM

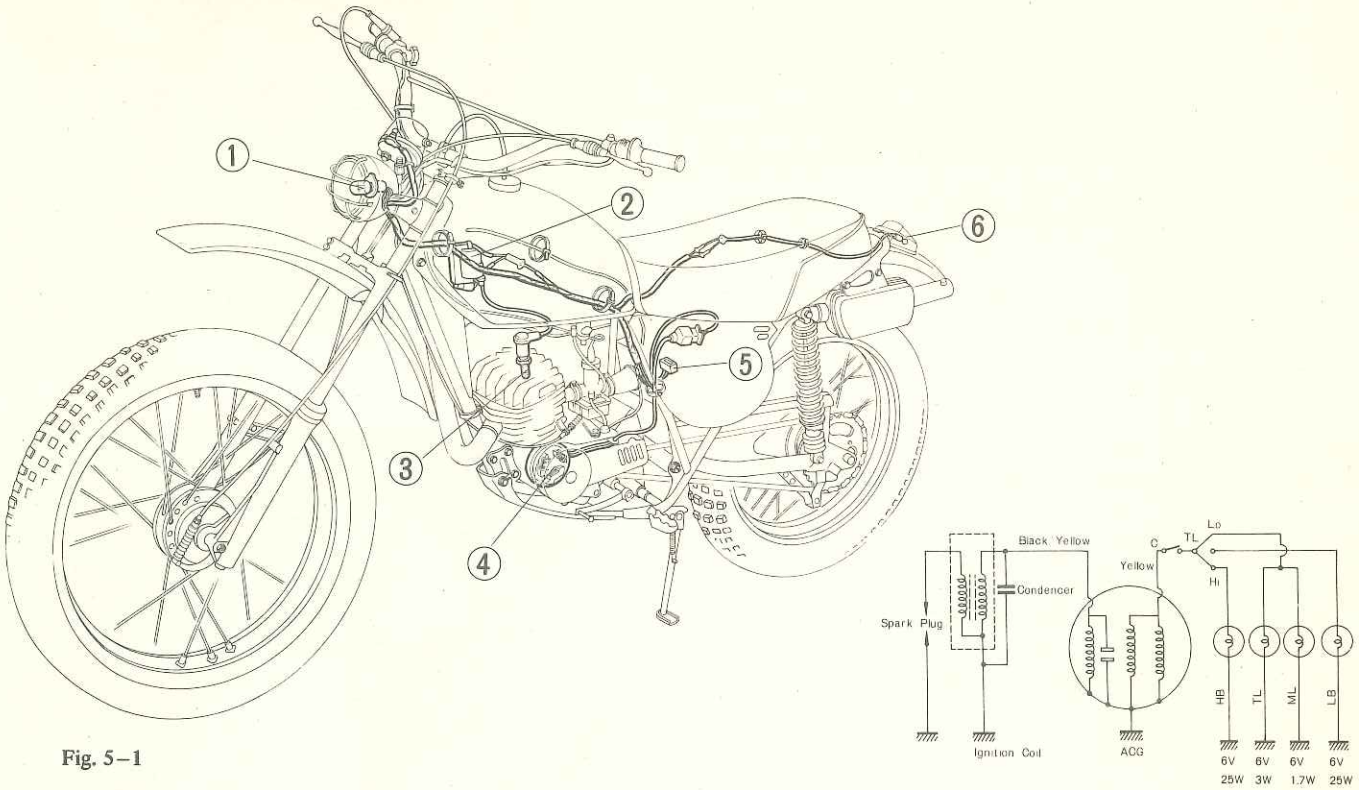

Fig. 5–1

(1) Headlight bulb
(2) Ignition coil
(3) Spark plug
(4) A.C. generator
(5) Silicon rectifier
(6) Taillight bulb

Disassembly

A.C. generator stator (See page 21)

Check stator for continuity using a radio tester. Check for continuity between:

1. Black wire and ground (body)
   If there is no continuity, there is open circuit or poor connection. Discard stator and install a new one.

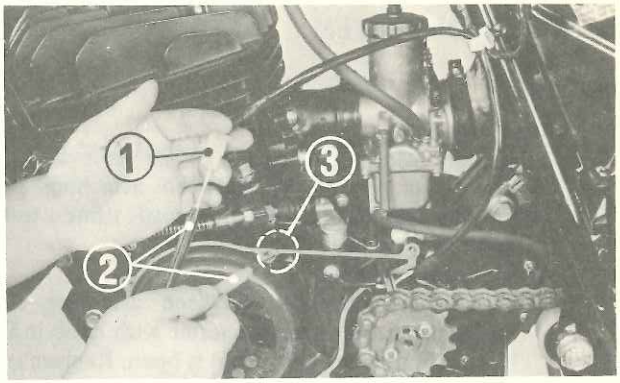

Fig. 5–2 (1) Black lead
(2) Tester probe
(3) Ground (body)

2. Check for continuity with breaker points open. Replace stator with a new one if there exists no continuity.

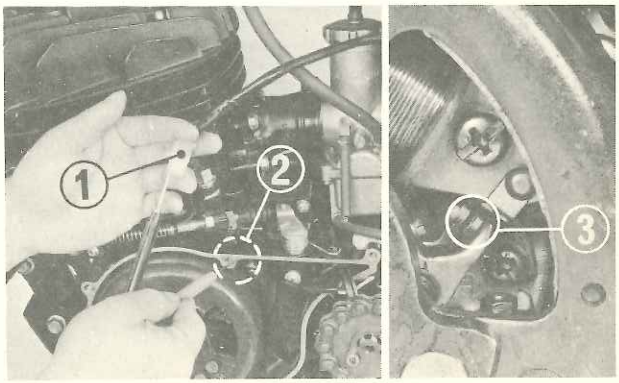

Fig. 5–3 (1) Black/yellow lead
(2) Ground (body)
(3) Points open

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Silicon rectifier

Check two diodes for continuity from each direction. Check continuity between:

1. Black/yellow and Black/white leads.
2. Black/white and Green leads.
   Use an ohmmeter with knob in KΩ range. If there is continuity or no continuity from both directions, rectifier is defective.

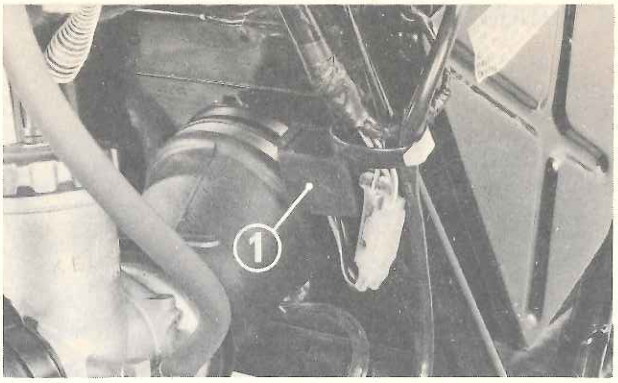

Fig. 5–4 (1) Silicon rectifier

CAUTIONS:

* **Do not use a megger since high voltage may be applied to rectifier to result in damage to diodes.**
* **Connect terminals of battery correctly. If battery is connected in reverse, service life may be shortened and excessive amount of current may flow to electrical system to cause damage to rectifier or burning of wire harness.**
* **When recharging battery from outside sources, for example, by boost-charging with it installed, remove coupler of silicon rectifier first.**

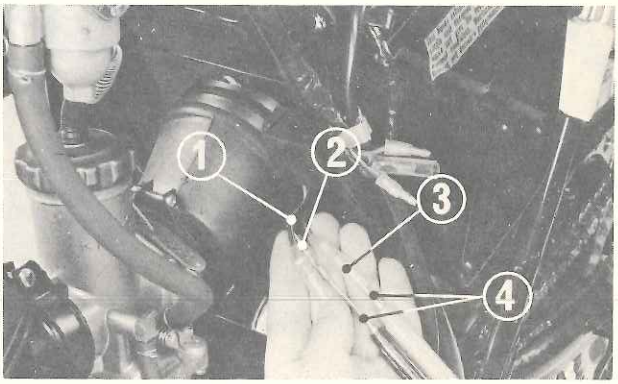

Fig. 5–5 (1) Black/white (3) Green
(2) Black/yellow (4) Tester probes

1. IGNITION SYSTEM

Ignition coil

1. Continuity test
   a. Primary winding. See page 69 for removal procedure. Check for continuity between attaching stay and primary winding (black/white cord) using a tester with knob in Ω range.
   b. Secondary winding
   Check for continuity between attaching stay and high-tension cable using a tester with knob in Ω range. If there is no continuity, coil is open. Replace coil.

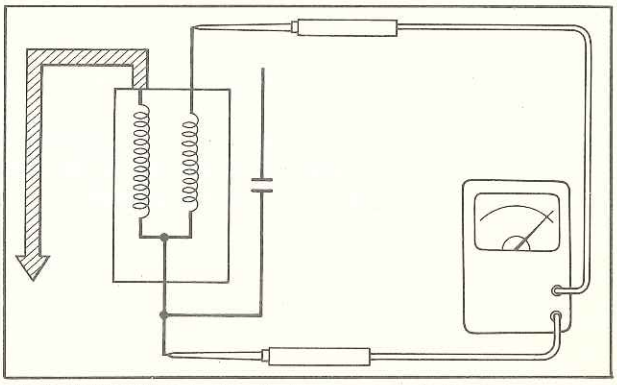

Fig. 5–6 Checking continuity for primary winding

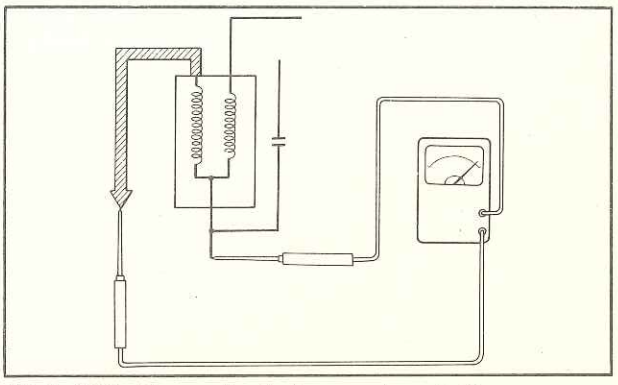

Fig. 5–7 Checking continuity for secondary winding

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2. Performance test
   Even if there is a continuity, coil may become inferior in performance. Check coil performance.
   a. With service tester selector knob turned to COIL TEST, connect in accordance with instructions provided with tester.

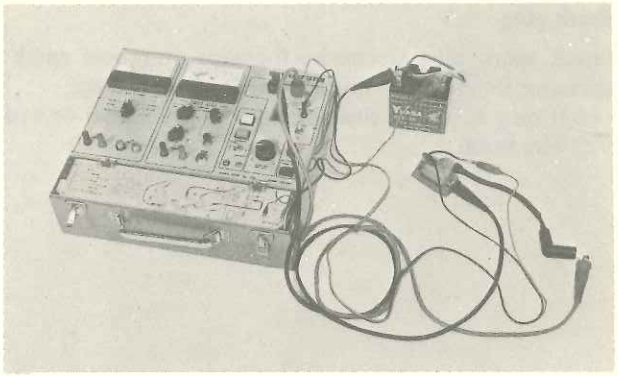

Fig. 5–8 Ignition coil performance test

   b. Connect a fully charged battery to tester. Observing spark jumping across a 3-point spark gap, turn knob and measure stable maximum jumping distance. If spark appears as B in Fig. 5–9, connect high-tension cable to tester in reverse direction and measure jumping distance with spark in form A in the same figure.

   Specifications:
   8 mm (0.27 in.) at 500 rpm (min)
   8 mm (0.32 in.) at 3,500 rpm (min)

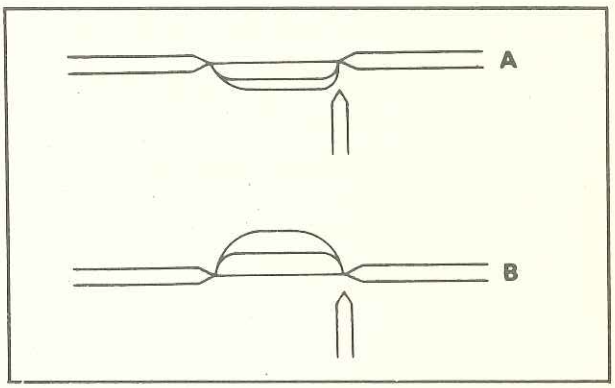

Fig. 5–9 Measuring distance of spark jumping across 3-point spark gap

Condenser

Using a tester, measure capacity of condenser. Also check for short circuit. If capacity is reduced or if insulation resistance is too small, replace condenser together with ignition coil.

Specifications:
Capacity: 0.25μF
Insulation resistance: 10 MΩ (at 1000 Ω megger)

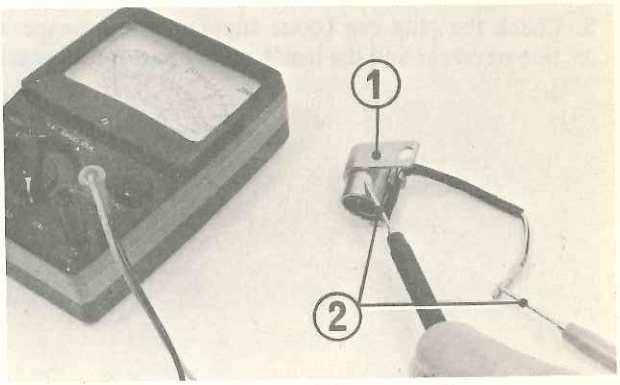

Fig. 5–10 (1) Condenser (2) Tester probes
Checking condenser

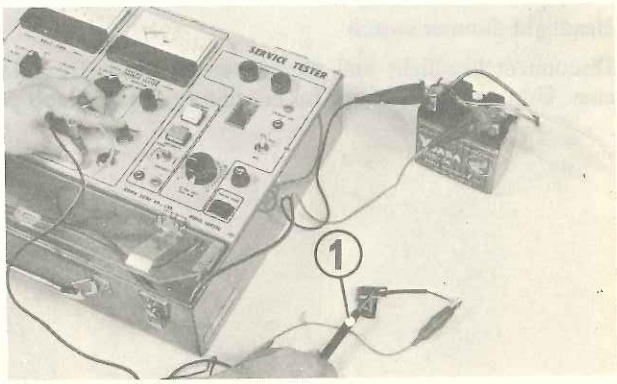

Fig. 5–11 (1) Tester probe

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Spark plug

Check spark plug electrodes for wear, improper spark gap or excessive fouling. Also check insulator for breakage.

1. If plug is fouled, clean in a spark plug cleaner or with a stiff wire brush.

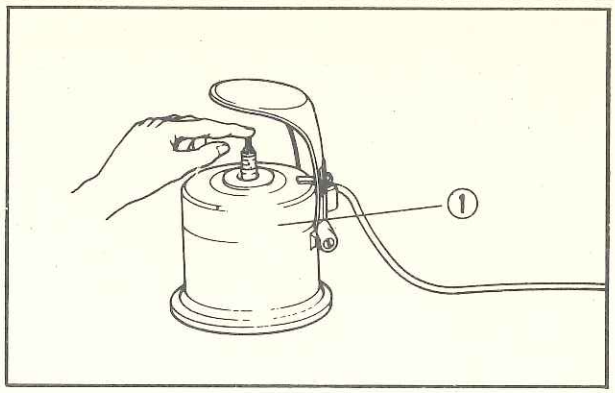

Fig. 5–12 (1) Spark plug cleaner

2. Measure spark plug gap with feeler gauge. If out of specification, adjust.
   Specification: 0.6–0.7 mm (0.024–0.028 in.)
3. If insulator or gasket is broken or deformed, replace plug or gasket.
   Recommended spark plug: B-8ES (NGK) or WD–F24FS (ND)
4. If plug has a bridge, check cylinder head, cylinder, piston and air cleaner for condition.

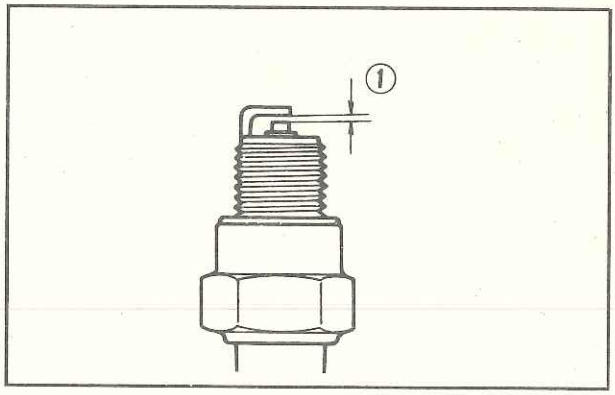

Fig. 5–13 (1) Spark plug gap

5. Check the plug cap (noise suppressor) for proper installation or cracks and the inside rubber part for damage.

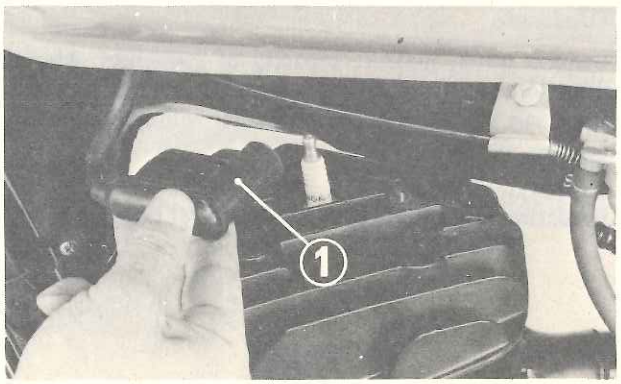

Fig. 5–14 (1) Noise supresser cap

Headlight dimmer switch

Disconnect headlight and dimmer switch leads from headlight case. Using a tester, check for continuity at each knob position.

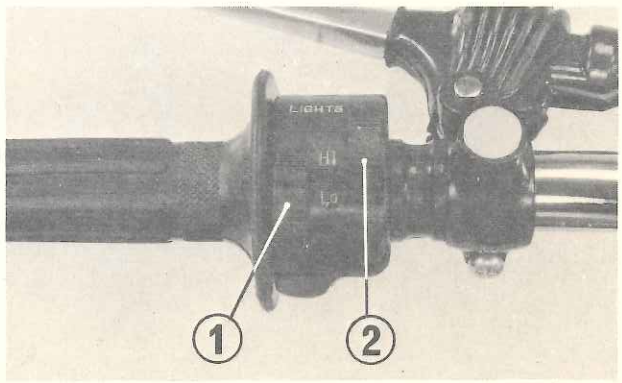

Fig. 5–15 (1) Headlight switch (2) Dimmer switch

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If continuity exists in circuits (O–O), switch is normal.

		C	TL	Hi	Lo
OFF					
ON	Hi	O	O	O	
	Lo	O	O	O	O
Cord color		Yellow	Brown	Blue	White

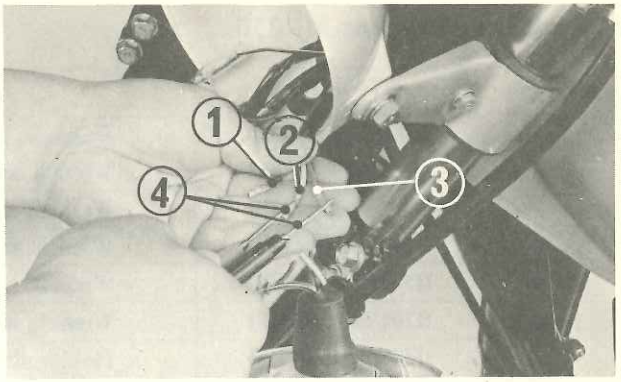

Fig. 5–16 (1) White cord
(2) Blue cord
(3) Brown cord
(4) Tester probes

Headlight switch

Disconnect yellow and brown leads from headlight case at their connectors.
Using a rester, check for continuity at ON and OFF positions. Switch is normal if there is continuity.

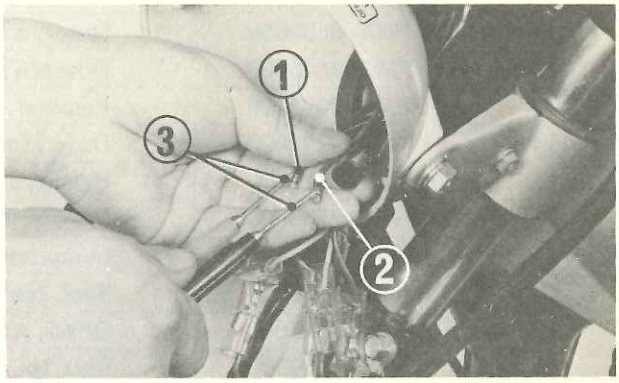

Fig. 5–17 (1) Brown lead
(2) Yellow lead
(3) Tester probes

Ignition switch (kill switch)

Disconnect ignition switch leads and check for continuity between leads on switch side using a tester. If continuity exists as shown in table below, switch is in good condition.

	IG	E
OFF	O	O
RUN	O	O
OFF	O	O
Cord color	Black/white	Green

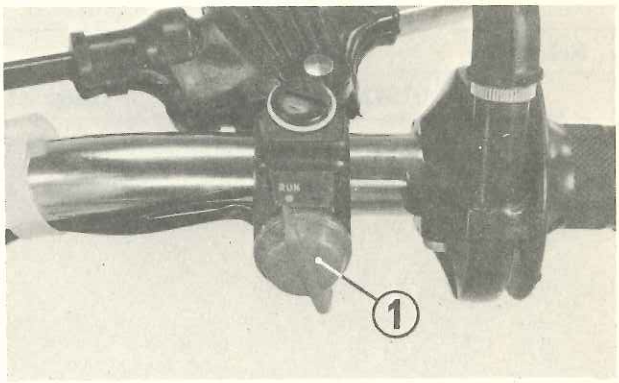

Fig. 5–18 (1) Ignition switch

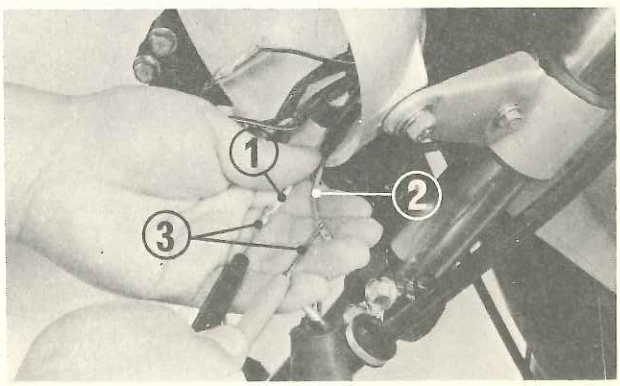

Fig. 5–19 (1) Green cord
(2) Black/white cord
(3) Tester probes

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VI. SERVICE DATA

Special Tool List For MR250

Ref. No.	Tool No.	Tool Name	Q'ty
1	07902–2400000	Spanner, pin 46 mm	1
2	07907–9350001	Wrench, socket 27 mm x 17 mm	1
3	07908–3570000	Wrench, clutch ajusting	1
4	07910–3290000	Wrench, retainer rear	1
5	07915–0010000	Wrench, stem nut	1
6	07917–3230000	Wrench, hollow set 6 mm	1
7	07974–3950000	Holder, drive gear	1
8	07922–2870000	Holder, flywheel	1
9	07937–3570001	Puller, case	1
10	07946–3570000	Driver, ATT, crank case, (R)	1
11	07946–3600000	Driver, ATT, crank bearing	1
12	07946–3640000	Driver, ATT, bearing	1
13	07946–3290200	Remover, ball race	1
14	07947–3290000	Driver, fork seal	1
15	07949–6110000	Handle, driver	1
16	07958–2500000	Base, piston	1
17	07959–3290000	Compressor, rear cushion	1
18	07965–3610001	Tool, crank assembling	1
19	07946–3290000	Driver, ATT, ball race	1
20	07797–2920300	Case, tool	1
21	07933–3950000	Puller, flywheel	1

Optional Special Tool

Ref. No.	tool No.	Tool Name	Q'ty
1	07542–3570000	Gauge set, dial T.D.C.	1

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2. MAINTENANCE SCHEDULE

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.		EVERY RIDING DAY	INITIAL SERVICE PERIOD	REGULAR SERVICE PERIOD Perform at every indicated mileage interval.
	Mile		200	1,000
	Km		350	1,600
DRIVE CHAIN–Check, lubricate, and adjust if necessary.		○	○	
*BRAKE SHOES–Inspect, and replace if worn.				○
BRAKE CONTROL LINKAGE–Check linkage, and adjust free play if necessary.		○		
WHEEL RIM AND SPOKES–Check. Tighten spokes and true wheels, if necessary.		○		
TIRES–Inspect.		○		
REAR FORK BUSHING–Grease. Check for excessive looseness.			○	**○
*STEERING HEAD BEARINGS–Adjust.			○	○
ALL NUTS, BOLTS, AND OTHER FASTENERS–Check security and tighten if necessary.		○	○	
TRANSMISSION OIL–Change.			○	○
SPARK PLUG–Clean and adjust gap or replace if necessary.				**○
*CONTACT POINT AND IGNITION TIMING–Clean, check, and adjust or replace if necessary.			○	○
*POLYURETHANE FOAM AIR FILTER ELEMENT–Clean and oil.		○	○	
*CARBURETOR–Check, and adjust if necessary.				○
*CYLINDER HEAD, CYLINDER PISTON, PISTON RINGS AND MUFFLER–Decarbonize.				○
THROTTLE OPERATION–Inspect cable. Check, and adjust free play.		○		
FUEL FILTER SCREEN–Clean.			○	○
CLUTCH–Check operation, and adjust if necessary.		○		
SPARK ARRESTOR MAINTENANCE–Purge.				○

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.

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3. TIGHTENING TORQUE STANDARD

Engine

Unit:kg-m (lb-ft)

No.	Tightening point	Thread dia. (mm)	Torque	Remarks
1	Drive sprocket	6	0.8–1.2 (5.8–8.7)	
2	Drum stopper	6	0.8–1.2 (5.8–8.7)	
3	Neutral stopper	6	0.8–1.2 (5.8–8.7)	
4	Exhaust pipe muffler	6	0.8–1.2 (5.8–8.7)	
5	Clutch center	16	4.0–4.5 (28.9–32.5)	
6	Clutch pressure plate	6	0.8–1.2 (5.8–8.7)	
7	AC generator rotor	14	7.0–8.0 (50.6–57.9)	
8	Cylinder head special nut	8	2.0–2.5 (14.5–18.1)	Give special attention to torquing.
		6	1.0–1.3 (7.2–9.4)	
9	Primary drive gear	8	3.5–4.0 (25.3–28.9)	UBS bolt
10	Spark plug	14	1.5–2.0 (10.8–14.5)	
11	Carburetor insulator band	5	0.8–1.2 (5.8–8.7)	
12	5 mm special bolt	5	0.3–0.4 (2.2–2.9)	

Frame

Unit:kg-m (lb-ft)

No.	Tightening point	Thread dia. (mm)	Torque	Remarks
1	Steering stem nut	25	8.0–12.0 (57.9–86.8)	
2	Front fork top bridge	7	0.9–1.3 (6.5–9.4)	
3	Handlebar holder	8	1.8–2.5 (13.0–18.1)	
4	Front fork bottom bridge	8	1.8–2.5 (13.0–18.1)	
5	Spoke	–	0.2–0.45 (1.4–3.26)	
6	Rear fork pivot bolt	12	5.5–4.0 (39.8–50.6)	
7	Front wheel axle nut	12	6.0–8.0 (39.8–47.0)	
8	Front engine hanger bolt	8	2.8–3.3 (20.3–23.9)	UBS bolt
9	Rear engine hanger bolt	10	5.0–6.0 (36.2–43.4)	UBS bolt
10	Rear axle nut	14	6.0–8.0 (43.4–57.9)	
11	Driven sprocket	8	2.7–3.3 (19.5–23.9)	UBS nut
12	Brake arm	6	0.8–1.1 (5.8–8.0)	
13	Rear brake torque link	8	1.8–2.5 (13.0–18.1)	
14	Rear shock absorber	10	3.0–4.0 (21.7–28.9)	
15	Change pedal	6	0.8–1.2 (5.8–8.7)	
16	Rear brake pedal pivot nut	10	3.0–4.0 (21.7–28.9)	
17	Kick starter pedal	8	1.8–2.5 (13.0–18.1)	
18	Handle lever bracket	6	0.3–0.4 (2.2–2.9)	
19	Front fork bottom bridge	8	1.8–2.5 (13.0–18.1)	
20	Front fork axle shaft (nut)	12	5.0–7.0 (36.2–50.6)	
21	Tire bead stopper	8	1.0–1.5 (7.2–10.8)	

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4. TECHNICAL SERVICE DATA

Engine

Unit: mm (in.)

Item		Assembly standard	Service limit
Cylinder bore		70.00–70.01 (2.7559–2.7563)	70.1 (2.7598)
Piston OD		69.94–69.96 (2.7536–2.7544)	69.8 (2.7480)
Piston pin hole dia.		18.002–18.008 (0.7087–0.7090)	18.1 (0.7126)
Piston pin OD		17.992–18.000 (0.7073–0.7087)	17.98(0.7079)
Piston ring side clearance	Top	0.050–0.070 (0.0020–0.0028)	0.09 (0.0035)
	2nd	0.030–0.050 (0.0012–0.0020)	0.07 (0.0028)
Piston ring gap	Top	0.2–0.4 (0.0079–0.0157)	0.5 (0.0197)
	2nd	0.2–0.4 (0.0079–0.0157)	0.5 (0.0197)
Connecting rod small end ID		21.997–22.009 (0.8660–0.8664)	22.1 (0.8701)
Connecting rod big end axial clearance		0.2–0.4 (0.0079–0.0157)	0.6 (0.0236)
Connecting rod big end radial clearance		0.010–0.022 (0.0004–0.0009)	0.03 (0.0012)
Clutch friction disc thickness		2.62–2.78 (0.1031–0.1094)	2.4 (0.0945)
Clutch plate face runout		0.15 (0.0059)	0.25 (0.0098)
Clutch spring	Free length	42.8–43.0 (1.6850–1.6929)	40.0 (1.5748)
	Tension	24.8/16.7 kg (0.9764/36.8 lbs)	20.5/21 kg (0.8071/46 lbs)
Transmission gear backlash		–	0.2 (0.0079)
Shift fork guide shaft OD		33.95–33.975 (1.3361–1.3376)	33.9 (1.3346)
R/H & L/H gearshift fork ID		12.00–12.018 (0.4724–0.4731)	12.05 (0.4744)
Shift fork finger thickness		4.93–5.07 (0.1941–0.1996)	4.6 (0.1811)
Center gearshift fork ID		34.00–34.025 (1.3386–1.3396)	34.08 (1.3417)

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Frame

Unit: mm (in.)

Item		Assembly standard	Service limit
Front shock absorber spring A free length		53.8 (2.114)	52.0 (2.047)
Rear shock absorber spring A free length		251.2 (9.8898)	246.0 (9.685)
Front fork bottom pipe OD		34.75–35.00 (0.9744–0.9843)	24.70 (0.9724)
Front fork bottom case ID		35.025–35.064 (1.3790–1.3805)	35.20 (1.385)
Front wheel axle bend		0.01 (0.0004)	0.2 (0.008)
6302 ball bearings	Axial runout	0.07 (0.0028)	0.1 (0.0039)
	Radial runout	0.03 (0.0012)	0.05 (0.0020)
Front wheel rims	Face runout	0.5 (0.0197)	2.0 (0.0787)
Front brake drum ID		160.0–160.3 (6.2992–6.3110)	161.0 (6.3386)
Front brake shoe thickness		4.5 (0.1772)	2.5 (0.0984)
Rear wheel rims	Face runout	0.5 (0.0197)	2.0 (0.0787)
Rear wheel axle bend		0.01 (0.0004)	0.2 (0.008)
6304 ball bearings	Axial runout	0.07 (0.0028)	0.1 (0.0039)
	Radial runout	0.03 (0.0012)	0.05 (0.0020)
Rear fork pivot bushing ID		21.500–21.552 (0.8444–0.8485)	21.7 (0.8593)
Rear fork center collar OD		21.427–21.460 (0.8436–0.8449)	21.00 (0.8267)
Rear brake drum ID		140.0–140.3 (5.5118–5.5236)	141.0 (5.5512)
Rear brake shoe thickness		4.0–4.3 (0.1575–0.1693)	2.5 (0.0984)
Front shock absorber spring B free length		448.5 (17.657)	441.0 (17.362)

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5. TROUBLE SHOOTING

Trouble	Cause	Remedy
Engine will not start or fails to start.	1. Insufficient compression pressure	
	① Leak of crankcase Primary compression leak from oil seal Primary compression leak from case matching surfaces	Replace.
	② Leak of crankcase	Repair.
	③ Worn or stuck piston rings	Replace.
	④ Worn cylinder	Repair or replace.
	2. No spark from spark plug or on points	
	① Fouled plug	Clean or replace.
	② Wet plug	Clean or replace.
	③ Fouled points	Clean or replace.
	④ Incorrect point gap	Replace.
	⑤ Incorrect ignition timing	Adjust.
	⑥ Defective ignition coil	Replace.
	⑦ Open or short circuit in ignition cords	Replace.
	⑧ Short circuit in condenser	Replace.
	⑨ Short circuit in AC generator	Repair or replace.
	3. Raw gas in crankcase	Remove gas (with fuel valve in "OFF" position after stopping engine).
	4. No fuel to carburetor	
	① Clogged jets	Clean.
	② Clogged fuel valve	Clean.
	③ Defective float valve	Clean.
	④ Clogged fuel tube	Replace.
Engine stalls frequently.	1. Fouled plug	Clean or replace.
	2. Fouled points	Clean or replace.
	3. Incorrect ignition timing	Adjust.
	4. Clogged fuel pipes	Clean.
	5. Clogged carburetor jets	Clean.
	6. Leak from crankcase (primary compression)	Repair.
	7. Sucked secondary air	Repair or replace.
Engine does not develop sufficient power.	1. Worn or stuck cylinder or piston rings	Repair or replace.
	2. Incorrect ignition timing	Adjust.
	3. Defective points	Repair or replace.
	4. Incorrect spark plug gap	Repair or replace.
	5. Clogged carburetor jets	Clean.
	6. Incorrect float level	Adjust.
	7. Clogged air cleaner element	Clean or replace.
	8. Cracked exhaust pipe muffler or carbon deposits in muffler	Repair.
Engine overheats.	1. Carbon deposit on cylinder head	Clean.
	2. Too low float level (lean mixture)	Adjust.
	3. Incorrect ignition timing	Adjust.
	4. Clogged exhaust pipe muffler	Clean.
	5. Insufficient lubrication	Check.

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Trouble	Cause	Remedy
Clutch slips.	1. Maladjusted clutch	Readjust.
	2. Weak clutch springs	Replace.
	3. Worn or warped pressure plate	Replace.
	4. Warped clutch plates	Replace.
	5. Worn or warped friction discs	Replace.
Clutch drags when disengaged.	1. Maladjusted clutch	Readjust.
	2. Unequal clutch spring tension	Replace.
	3. Warped clutch plates	Replace.
	4. Too much transmission oil	Adjust.
Transmission gears fail to be shifted smoothly or sequentially.	1. Deformed shift drum stopper	Repair or replace.
	2. Broken gearshift drum	Replace.
	3. Deformed gearshift forks	Repair or replace.
	4. Weak shift drum stopper spring	Replace.
Gear change pedal fails to return.	1. Broken gearshift return spring	Repair or replace.
	2. Interference between gearshift spindle and hole in crankcase	Repair.
Transmission gears disengage accidentally.	1. Worn main shaft and countershaft shifting gears	Replace.
	2. Bent or worn gearshift forks	Repair or replace.
Engine operation is erratic at low speeds.	1. Incorrect ignition timing	Adjust.
	2. Poor point contact	Repair or replace.
	3. Too large a spark plug gap	Adjust or replace.
	4. Weak spark (defective condenser or ignition coil)	Replace.
	5. Short circuit in AC generator	Repair or replace.
	6. Incorrect float level	Adjust.
	7. Maladjusted carburetor air screw	Adjust.
Engine operation is erratic at high speeds.	1. Too small a spark plug gap	Adjust or replace.
	2. Incorrect ignition timing	Adjust.
	3. Weak point arm spring	Replace.
	4. Defective ignition coil	Replace.
	5. Incorrect float level	Adjust.
	6. Clogged air cleaner element	Clean or replace.
	7. Leak of primary compression pressure	Repair.
	8. Rare short in AC generator	Repair or replace.
	9. Collapsed or cracked exhaust pipe muffler, broken tail pipe or carbon deposit in pipe	Repair or replace.
Engine fails to fire.	1. Defective ignition coil	Replace.
	2. Defective spark plug	Replace.
	3. Fouled points or incorrect point gap	Replace.
	4. Rare short in AC generator	Replace.
Breaker points are burning.	1. Poor point contact	Replace.
	2. Defective condenser	Replace.
Spark plug electrodes are foul.	1. Overflooded carburetor	Adjust.
	2. Maladjusted carburetor	Readjust.

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Trouble	Cause	Remedy
Plug electrodes are burning.	1. Incorrect heat range	Use recommended plug.
	2. Engine overheating	
	3. Incorrect ignition timing	Adjust.
	4. Loose spark plug	Retighten.
	5. Lean mixture	Adjust.
Steering is hard.	1. Too tight steering stem	Adjust.
	2. Broken steering stem steel balls	Replace.
	3. Bent steering stem	Replace.
	4. Unevenly worn ball races	Replace.
Front wheel shimmies.	1. Deformed rims	Replace.
	2. Loose front wheel bearings	Replace.
	3. Loose spokes	Adjust.
	4. Loose axle and related parts	Retighten.
Front shock absorbers are spongy.	1. Weak springs	Replace.
	2. Insufficient damper oil	Add.
Front shock absorbers are hard.	1. Too high shock absorber oil viscosity	Replace.
	2. Too much damper oil	Adjust.
Rear wheel shimmies.	1. Deformed rims	Replace.
	2. Loose rear wheel bearings	Replace.
	3. Loose spokes	Adjust.
	4. Loose axle and related parts	Retighten.
Rear shock absorbers are spongy.	1. Weak springs	Replace.
	2. Improper rear shock absorber adjuster operation	Adjust.
Rear shock absorbers are hard.	1. Improper rear shock absorber adjuster operation	Adjust.
	2. Improper spring thrust joint sliding	Repair.
	3. Bent damper rods	Replace.
Braking effect is poor.	1. Poor brake shoe contact	Repair or replace.
	2. Oil or grease on brake linings	Replace.
	3. Broken brake cable or loose brake pedal shaft	Repair or replace.
	4. Maladjusted brake	Readjust.
Brake free play is too small.	1. Excessively worn brake shoes	Replace.
	2. Excessively worn brake cam	Replace.
	3. Poor engagement of brake arm serration	Repair or replace.

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6. SPECIFICATIONS

DIMENSIONS	
Overall length	2,130 mm (83.9-in.)
Overall width	890 mm (35.0-in.)
Overall height	1,155 mm (45.5-in.)
Wheel base	1,435 mm (56.5-in.)
Ground clearance	240 mm (9.5-in.)
Dry weight	112.5 kg (248 lbs)
FRAME	
Type	Semi-double cradle
F. suspension	Telescopic fork
R. suspension	Swing arm
F. tire size, pressure	3.00–21–4PR 17.1 psi. (1.2 kg/cm^2)
R. tire size, pressure	3.50–18–4PR 14:2 psi. (1.0 kg/cm^2)
F. brake	Internal expanding shoes
R. brake	Internal expanding shoes
Fuel capacity	13.0 lit. (3.4 U.S. gal., 2.8 lmp. gal.)
Fuel reserve capacity	3.8 lit. (1.0 U.S. gal., 0.8 lmp. gal.)
Caster angle	58°
Trail length	147 mm (5.8-in.)
Front fork oil capacity	175 cc (5.9 ozs) Amount required to fill dry assembly
ENGINE	
Type	Air cooled, 2-stroke
Cylinder arrangement	Single-cylinder 15° inclined from vertical
Bore and stroke	70.0 x 64.4 mm (2.76 x 2.54-in.)
Displacement	248 cc (15.13 cu-in.)
Compression ratio	6.9 : 1
Transmission oil capacity	1.0 (1.1 US qt)
Lubrication system	Forced and wet sump
Intake Open	74.0°BTDC
Close	74.0°ATDC
Exhaust Open	88.0°BBDC
Close	88.0°ABDC
Scavenge Open	60.0°BBDC
Close	60.0°ABDC
Idle speed	1,400 rpm
DRIVE TRAIN	
Clutch	Wet, multi-plate
Transmission	5-speed constant mesh
Primary reduction	3.300
Gear ratio I	2.533
Gear ratio II	1.789
Gear ratio III	1.250
Gear ratio IV	0.929
Gear ratio V	0.718
Final reduction	3.357
Gear shift pattern	Left foot operated return system
ELECTRICAL	
Ignition	Flywheel magneto
Starting system	Kick starter
Generator	A.C. generator
Spark plug	NGK B8ES
Spark plug gap	0.6–0.7 mm (0.024–0.028-in.)
Ignition timing	20.0° BTDC

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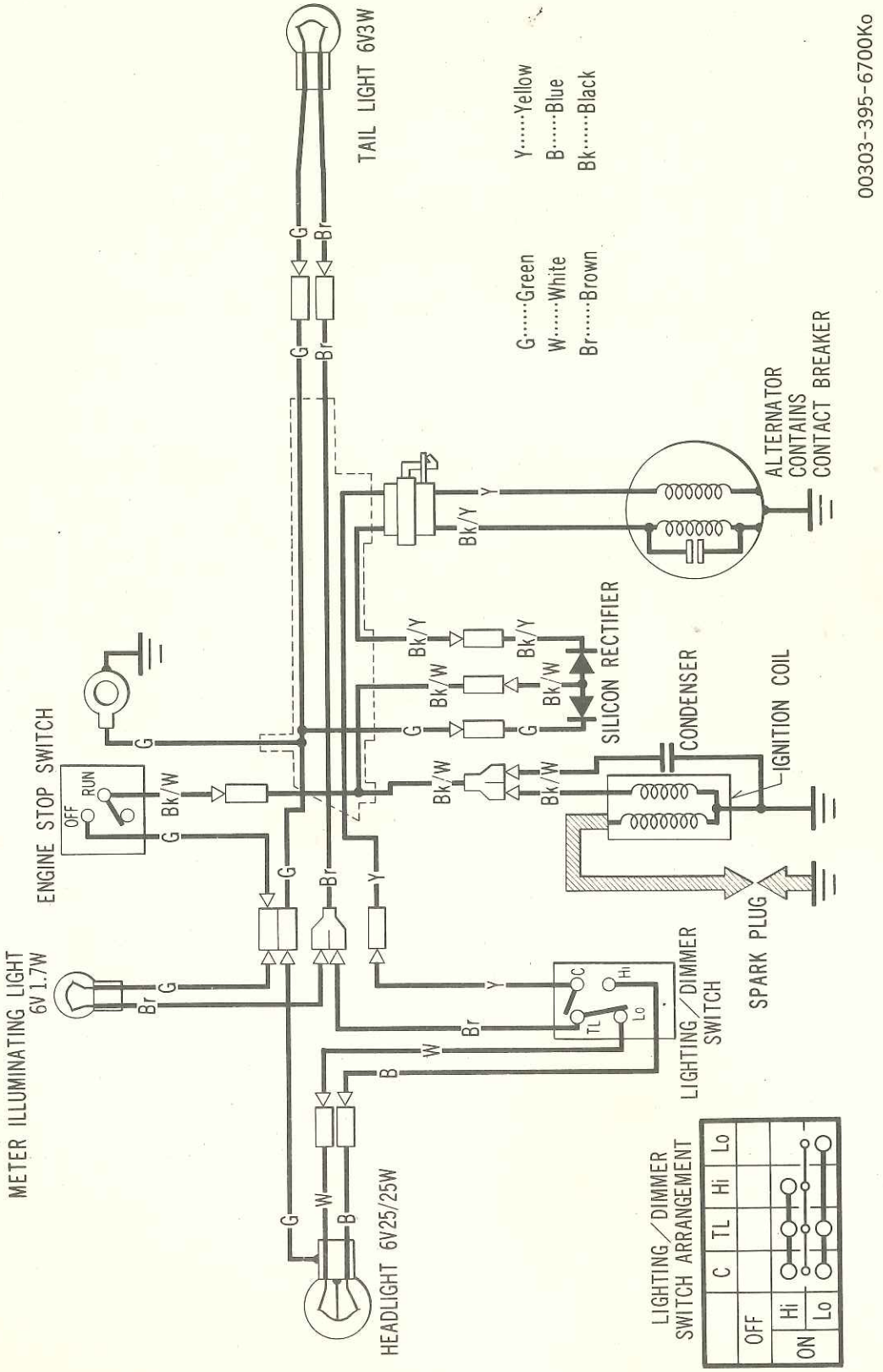
MR250 WIRING DIAGRAM



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