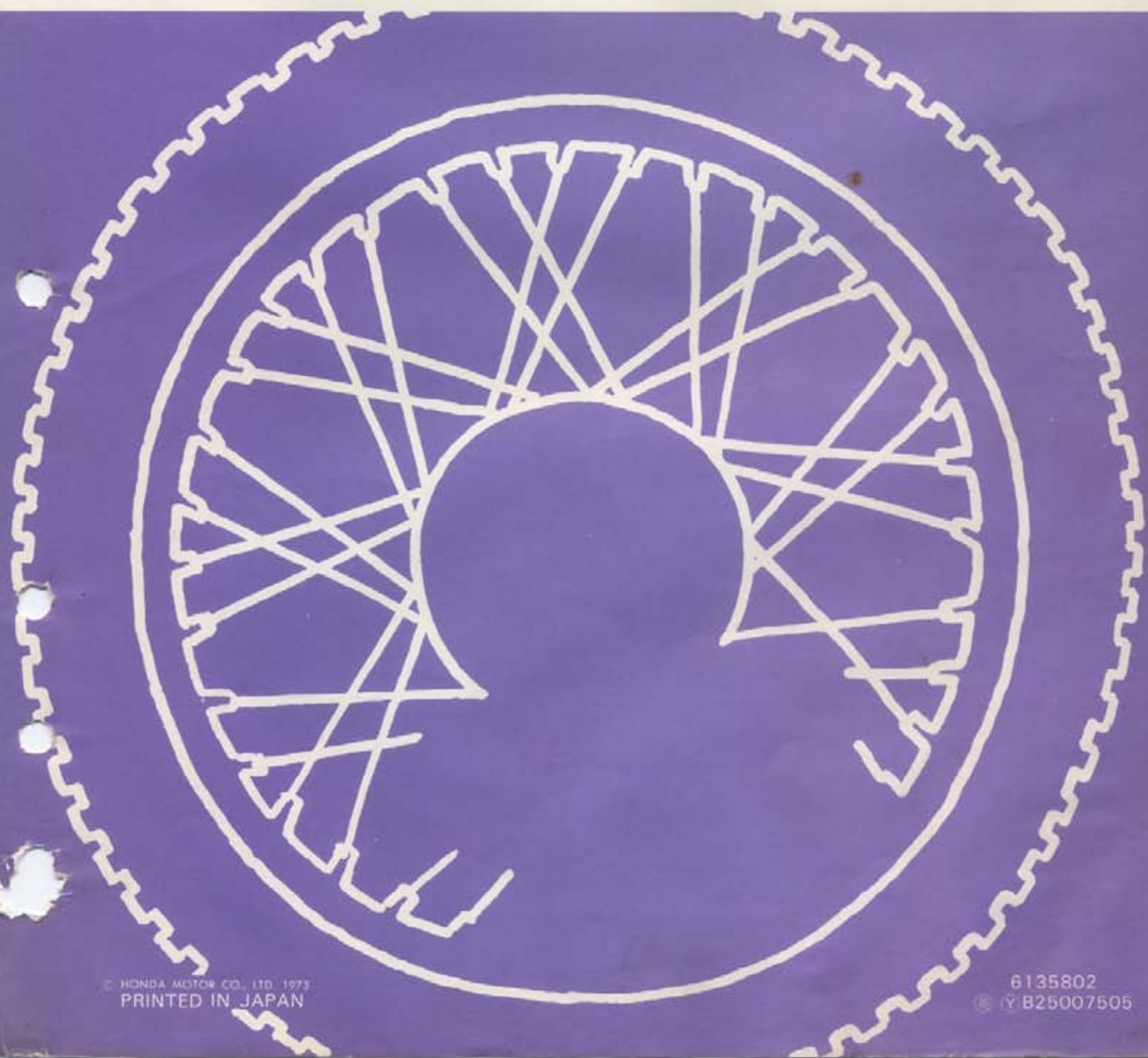


SHOP MANUAL

HONDA
MT250



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PREFACE

This SERVICE MANUAL has been prepared as a "SERVICE GUIDANCE" for the mechanic responsible for the upkeep of the HONDA MT250.

It is compiled into seven 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 service work.

All information, illustrations and specifications contained herein are based on the 1973 model.

HONDA reserves the right to make changes at any time without notice and obligation.

HONDA MOTOR CO., LTD.
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1. ENGINE

Crankshaft

The crankshaft which is made of carbon steel of high mechanical strength, is of a pressed two-piece construction. Its journals and crankpin are induction hardened for increased wear resistance.

An AC generator rotor is installed at the left shaft half and the primary drive gear is spline-installed on the right shaft half.

Two large ball bearings support the crankshaft. These are built with extra margin of capacity throughout the entire range of speeds and power.

The right bearing is splash lubricated by oil from the transmission.

The left bearing is lubricated by gas and oil mixture supplied through oil hole drilled to the scavenging gas passage in the crankcase.

Connecting rod

The connecting rod is of an H-beam shaped forging; it is made of chrome molybdenum steel.

It is attached at one end to the crankpin on the crankshaft and at the other to the piston through the needle roller bearing.

The bearing surface of each end is ground to very close tolerances after carburizing. The needle roller bearings are of a single-row type with a chrome molybdenum retainer around the needles.

The big end are cut with a pair of slots around its periphery. This aids in optimum big-end bearing lubrication.

A side plate with oil pockets is installed on each side of the big end. The design encourages oil to lubricate the clearance between the big end and crankshaft.

The piston pin is a selective fit to the bore of the small end. A marking is stamped on each side of the small end so that the original combination can be restored at assembly.

The small end bearings are available in three sizes. Their sizes are identified by color; red, blue and white, in increments of 0.002 mm in the order listed. (See page 38).

Piston, Piston pin and piston rings

The piston has a semicircular head. It is made of low-expansion aluminum alloy to control thermal expansion and to resist wear.

The piston is cam-ground so that the skirt has a gradual change in oval shape along its length. It is also taper, thereby assuring perfect roundness when heated to the operating temperature. The piston pin is offset by 0.5 mm (0.02 in.) from the centerline of the piston toward the major thrust face.

This eliminates piston slap by providing a gradual change in thrust pressure against the cylinder wall as the piston travels its path.

The pin is a sturdy forged rod of chrome molybdenum steel and has a floating fit in the piston.

One top (compression) ring and one oil ring are used, each being made of cast iron. The rings are further chrome plated for increased resistance to wear.

"UNIFRON" coating over the ring surfaces improves initial break-in; i.e., the ring seats-in more rapidly than a conventional ring.

The top ring is of a KEYSTONE type. The design allows a relative motion between the ring and piston to break up the formation of carbon and prevent ring sticking.

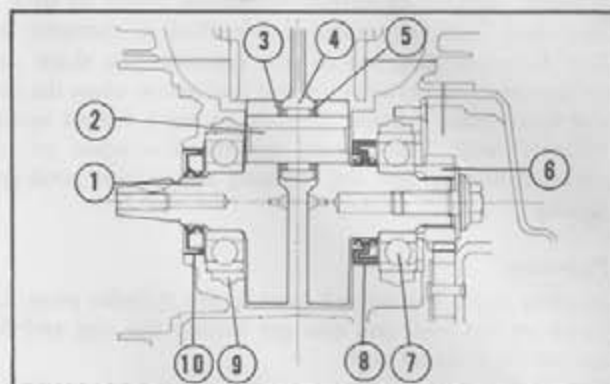


Fig. 1-1 ① Crankshaft ② Crankpin ③ Side plate ④ Connecting rod ⑤ Side plate ⑥ Primary drive gear ⑦ Ball bearing ⑧ Oil seal ⑨ Ball bearing ⑩ Oil seal

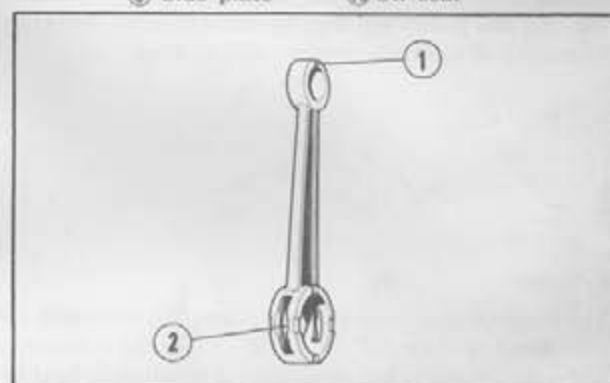


Fig. 1-2 ① Aligning mark ② Slit

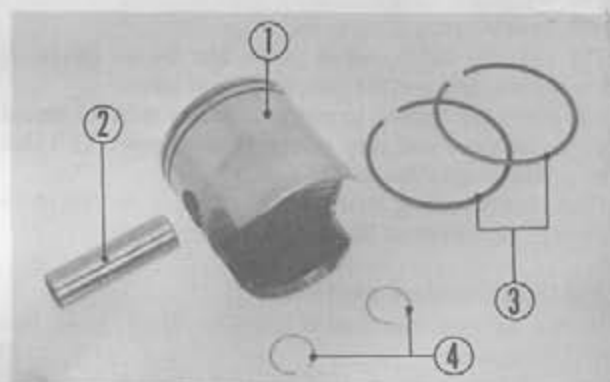


Fig. 1-3 ① Piston ② Piston pin ③ Piston ring ④ End ring

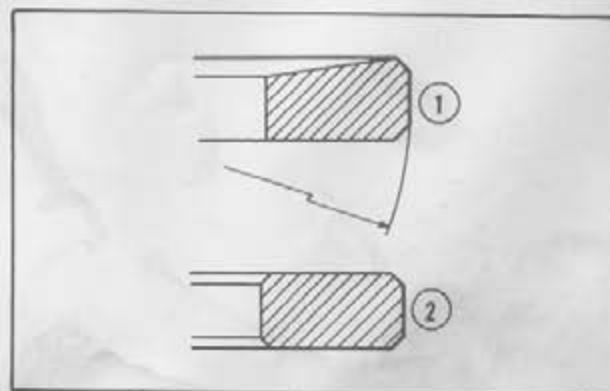


Fig. 1-4 ① Top ring ② 2nd ring

Feature of KEYSTONE ring

Varnish, lacquer or carbon formation tends to stick piston rings and cause incomplete combustion or excessive blowby. The Keystone ring has its side tapered. This shape causes a relative motion between the ring and piston when the ring gets the assist from cylinder pressure in being forced against the cylinder wall. This breaks up the formation of carbon, prevents blowby and ring sticking and assures good cylinder sealing.

Plain ring

In plain rings, pressurized gases in the cylinder press the ring down on the land and also get behind the ring and force it against the cylinder wall.

Keystone ring

The keystone ring has its side tapered. The design allows pressurized gases to force the ring against the cylinder wall before they get behind the ring. Sliding movement between the ring and piston will then be instantaneous, breaking up the formation of carbon to prevent ring sticking.

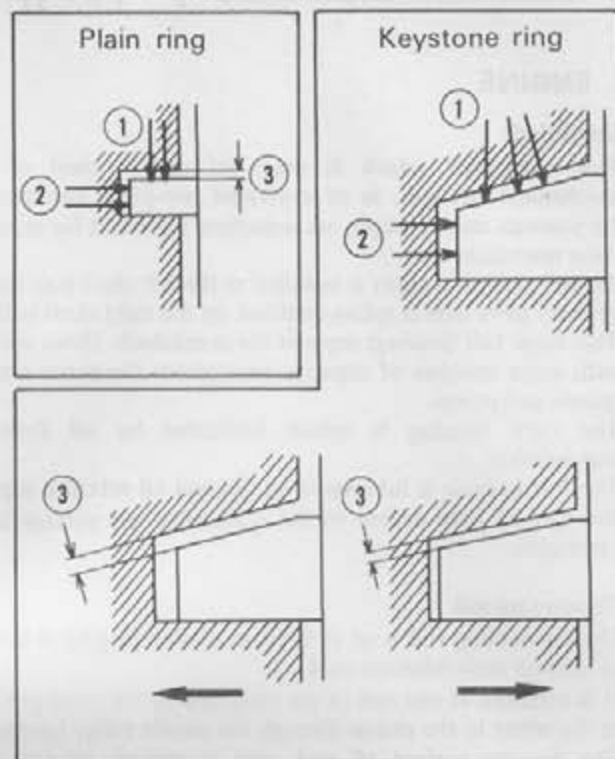


Fig. 1-5 ① Gas pressure
② Back pressure
③ Side clearance

Cylinder

The engine has an iron sleeve cast into the aluminum cylinder. The sleeve is a special "ALCOM" fit in the cylinder, so that when the engine is hot more even dissipation of heat from the cylinder will result.

The cylinder is finned to give a most effective radiating surface with least possible distortion.

The cylinder has 6 cast-in ports; one for air intake, four for scavenging, and one for escape of spent gases.

The ports are formed to give a sufficient radii for smooth flow of the mixture and easy escape of spent gases. This also assists in quieter engine operation.

Four anti-vibrating rubbers are attached to the cylinder to prevent vibrations of the fins during operation.

ALCOM (Aluminized combine)

In this method, the liner is specially plated before being cast into the cylinder.

This assures a tight, welded fit of the liner in the cylinder for good transfer of heat from the sleeve and to prevent distortion.

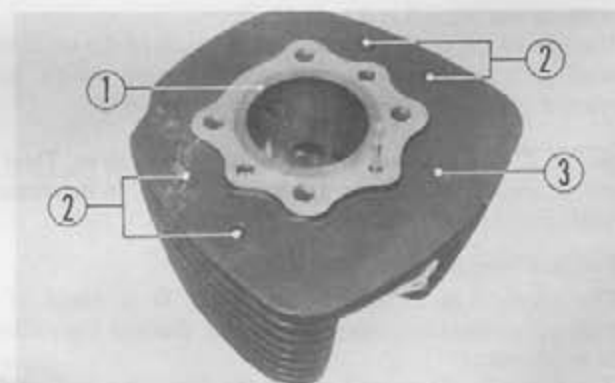


Fig. 1-6 ① Sleeve ② Cushion rubbers ③ Cylinder

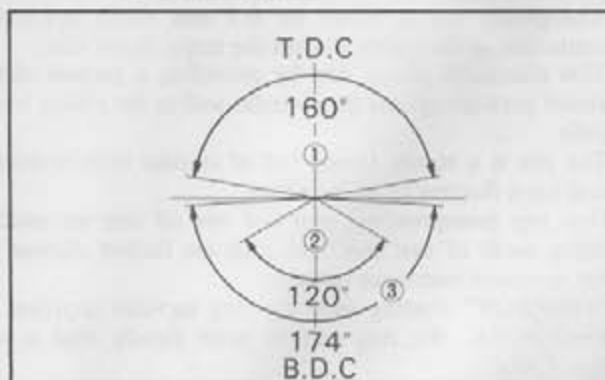


Fig. 1-7 ① Intake ② Scavenging ③ Exhaust

Cylinder head

A cast aluminum alloy head is used for the engine. It is light-weight yet of sturdy construction.

The head uses a "SQUISH DOME" which assists in more turbulence or swirl.

Piston-induced squish promotes combustion and reduces temperature throughout the entire range of speeds and power. Two holes are provided in the head; one for the spark plug and the other for the spare or decompression device. One of the holes is normally plugged.

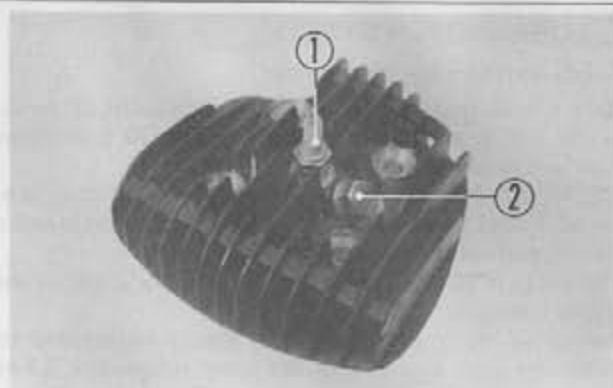


Fig. 1-8 ① Spark plug ② Spare plug (blind plug)

Squish area

The engine uses piston-induced squish to obtain added turbulence or swirl.

The added turbulence is obtained by a space around the rim of the piston which becomes very narrow at top dead center.

Squish action of the piston, as it approaches the top dead center, causes an inward flow of mixture toward the chamber in the head. This creates added turbulence and promotes combustion.

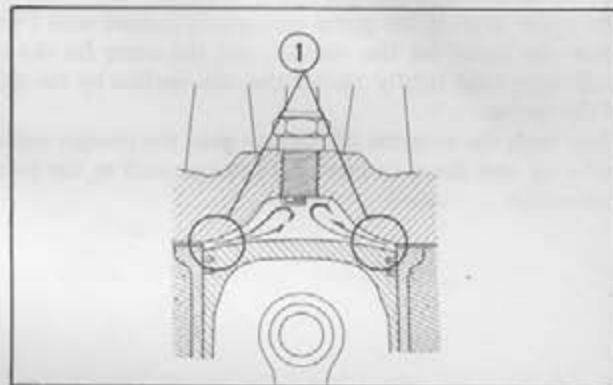


Fig. 1-9 ① Squish area

Crankcase

The crankcase is a two-piece construction of high-grade aluminum casting.

Location of the joint between the right and left cases is at the center-line, which are bolted together with through-bolts from the left side.

Two dowels are used to aid in assembling of the case halves.

The crankcase and transmission housing are built en-block, with a partition wall between the two.

A breather hole is drilled in the rear face of the crankcase to release pressure when the engine is heated.

At the rear of the left crankcase is an oil pump. Smooth flow of mixture to the scavenging ports and effective pumping are obtained by smoothened opening to the ports.

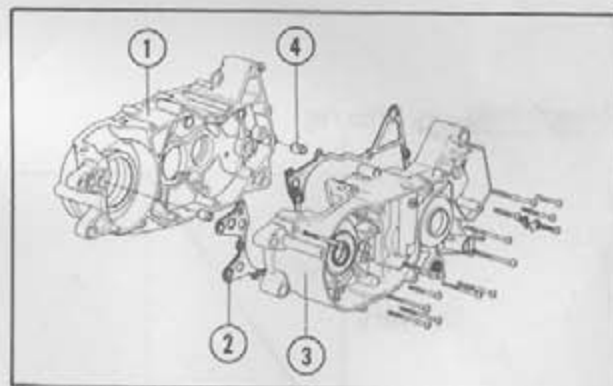


Fig. 1-10 ① Right crankcase ③ Left crankcase
② Gasket ④ Dowel pin

R/L crankcase covers

Overall rigidity and light-weight construction are obtained by use of a magnesium alloy casting.

The left cover is equipped with a window through which the ignition timing can be inspected. The right cover incorporates a clutch adjuster cap.

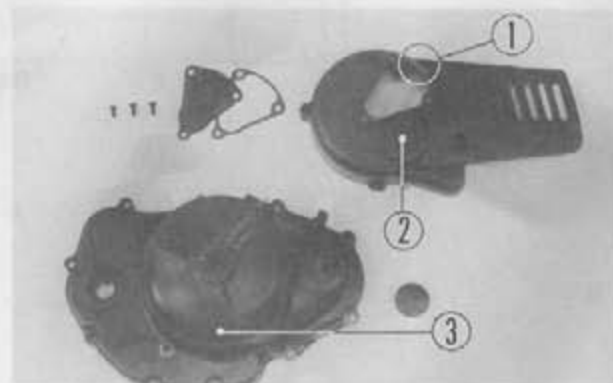


Fig. 1-11 ① Ignition timing mark
② Left crankcase cover
③ Right crankcase cover

2. LUBRICATION SYSTEM

Honda 2-plunger injection system

Most 2-cycle engines have their parts lubricated by oil carried by the fuel in a certain proportion of, say, 20:1, or separately from an outside sump tank.

MT250 model uses an independent lubricating system in which a special dual plunger pump feeds oil to the bearings and other moving parts of the engine.

The pump is located behind a cover at the rear side of the left engine crankcase.

Portion of the engine out-put is always transmitted to the pump cam drive gear so that the pump rotates at $1/3.3$ of the engine crankshaft speed.

The rotation of the cam drive gear is further conveyed to the pump cam gear at a reduced ratio of 22:1.

The upper face of the pump cam gear is formed with a pair of cams; the inner for the plunger, and the outer for the valve, each being held tightly against the cam surface by the tension of the spring.

Thus, with the rotation of the cam gear, the plunger and valve move up and down to meet the requirements at the point of lubrication.

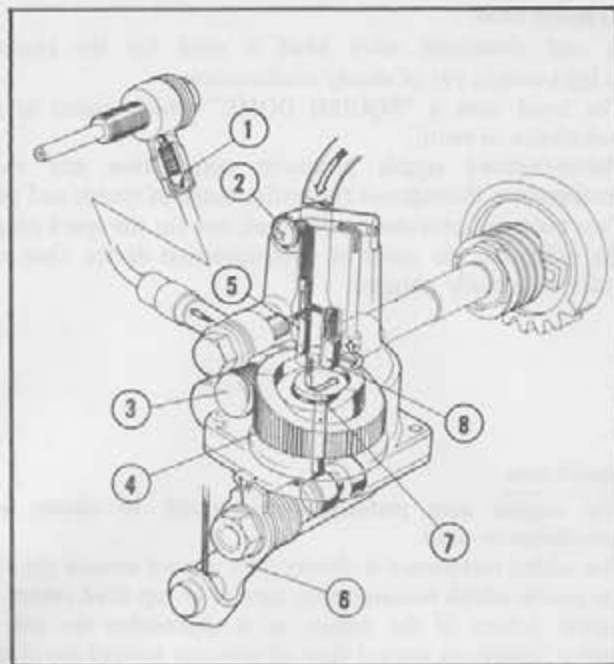
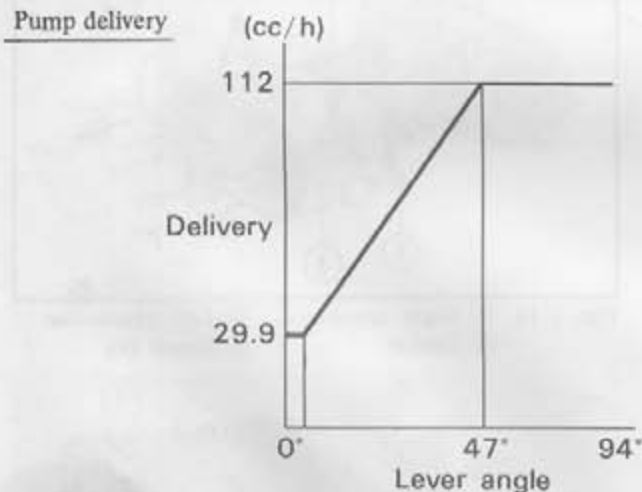


Fig. 1-12 ① Check valve ⑤ Valve
② Oil check screw ⑥ Control lever
③ Cam drive gear ⑦ Control rod
④ Cam gear ⑧ Plunger



Amount of deliver at
3300 RPM (crankshaft)

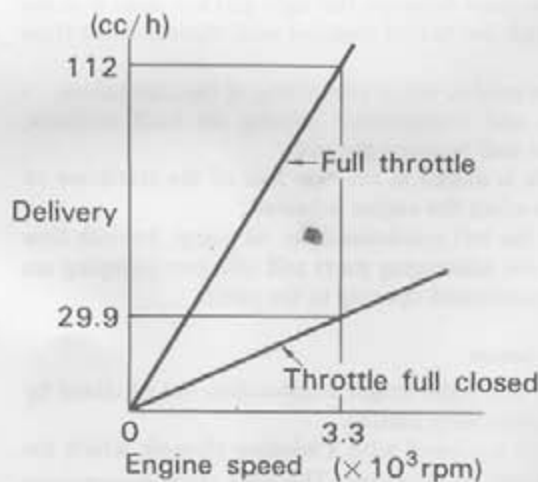


Fig. 1-13

Operation

• Intake stroke

During the intake stroke, the valve is moved down by the force of the valve spring.

As it reaches the bottom dead center (Intake position), the discharge port is closed by the valve plunger, and the intake port is uncovered.

Thus, with further downward movement of the valve, oil is drawn through the suction port into the space above the plunger. Fig. (2)

Suction ends when the valve reaches the bottom dead center.

• Discharge stroke

As the valve rises on the upward stroke, the suction port is closed. Fig. (3)

Further movement of the valve uncovers the discharge port; i.e., the space above the plunger communicates with the discharge port. Fig. (4)

Near the end of the upward stroke, the plunger is pushed up by the cam. This forces the oil out of the space above the plunger into the engine through the discharge port, oil pipe and spring-loaded check valve at the carburetor insulator.

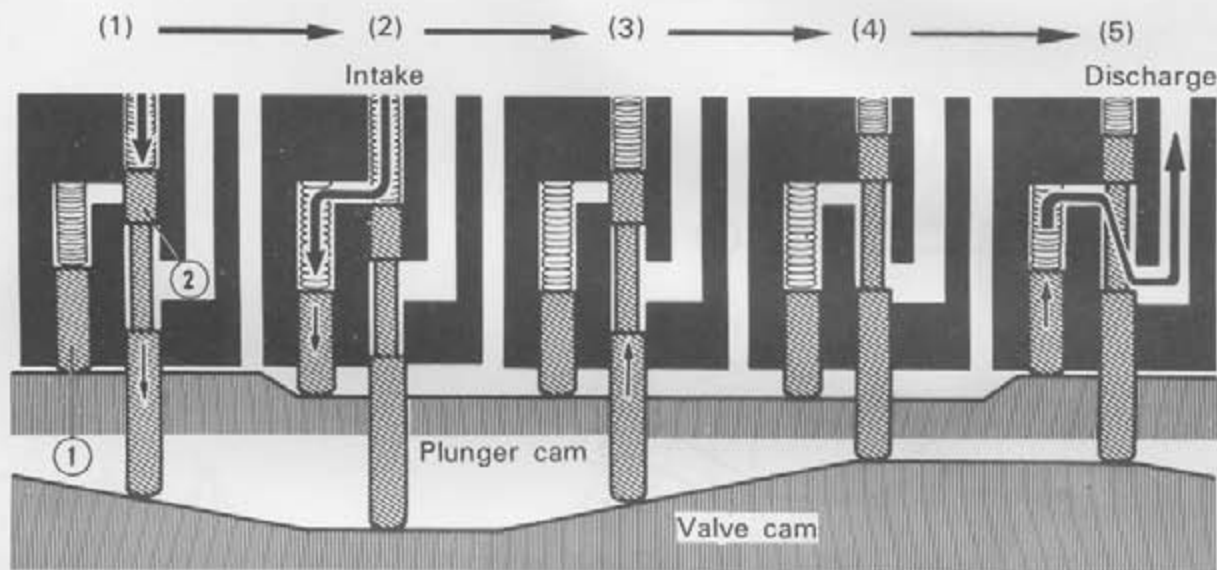


Fig. 1-14 Operation of oil pump

① Plunger ② Plunger valve

• Throttling

The quantity of oil entering the engine is metered by moving the carburetor throttle.

Opening the throttle causes the throttle cable to move the control lever, and this movement of the lever rotates the cam.

As this takes place, the bottom dead center of the plunger is lowered, causing the plunger to take greater stroke. The quantity of oil delivered to the engine is increased.

As the rod is lowered below the cam surface, this prevents the plunger to take further stroke. Under this condition, the pump delivers a constant amount of oil to the engine as determined by the cam.

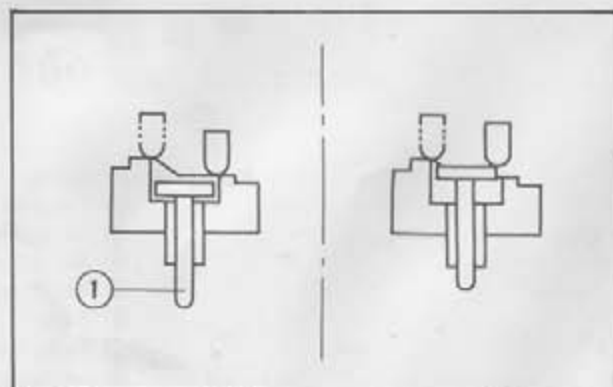


Fig. 1-15 Fully open (Stroke increased)

Fully closed (Stroke decreased)

① Control rod

3. CARBURETOR

The type PW carburetor is attached through an insulator to the engine cylinder.

The short insulator makes use of the effect of pulsation to such a degree that there is no restriction to the air flow.

The carburetor contains all the conventional systems of carburetion. These are the float, slow, main and starter systems.

When the engine is being cranked for starting, the carburetor must deliver a very rich mixture.

In 2-stroke-cycle installation, the engine requires richer mixture since vacuum developed in the manifold is lower.

Thus, to produce sufficient fuel flow during cranking, the carburetor incorporates the starter system.

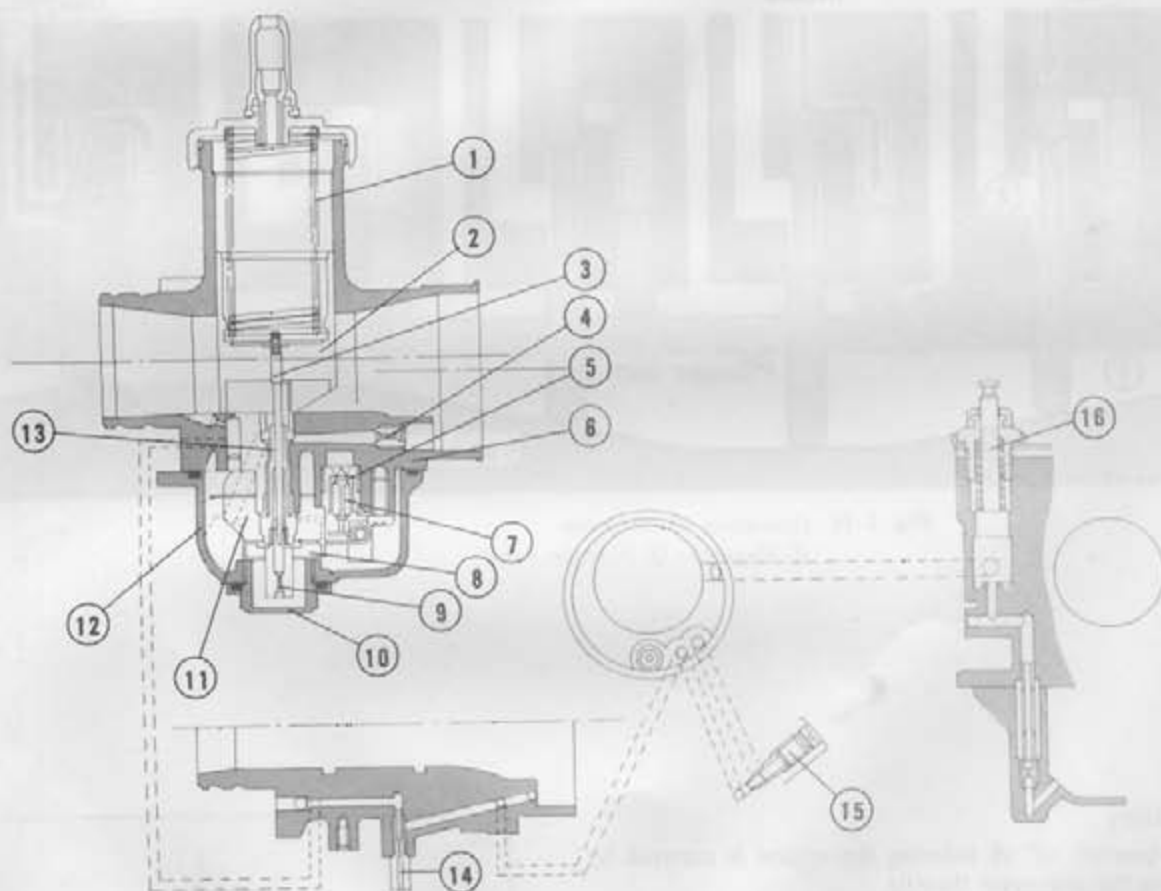


Fig. 1-16

- | | |
|------------------|---------------------------------|
| ① Spring | ⑨ Main jet |
| ② Throttle valve | ⑩ Sealing bolt |
| ③ Jet needle | ⑪ Float |
| ④ Air jet | ⑫ Float chamber body |
| ⑤ Valve seat | ⑬ Needle jet |
| ⑥ Body | ⑭ Slow jet |
| ⑦ Float valve | ⑮ Air screw |
| ⑧ Jet holder | ⑯ Fuel mixture enrichment lever |

• Starter system

The carburetor is equipped with a starter circuit. The purpose of this system is to deliver an extra rich mixture for cold engine starting.

As the fuel mixture enrichment lever is operated, the starter valve (1) is opened. Fuel from the float bowl is first metered by the starter jet (2). The metered fuel then mixes with air in the emulsion tube (3), and travels up in that tube.

When the fuel reaches the lower end of the starter valve, it mixes with additional air entering through the passage (4). The mixture next moves through the starter horizontal passage and is sprayed into the carburetor air horn past the discharge port (5).

The starter operates only when the throttle valve is fully closed. When temperatures are cold, the throttle valve should be kept closed if the starter is to function satisfactorily.

When the engine is hot, the throttle should be opened to 1/4 to 1/2 part-throttle position.

Should the throttle be left open when the ambient temperature is cold, this allows leaner mixture from the main circuit to enter the system and off-sets the rich mixture; i.e., hard starting will result.

• Slow system

The slow system provides sufficient mixture richness for idle- and part-throttle operation.

The fuel is first metered by the slow jet (6) as it passes through it and travels up in the vertical slow tube.

When the fuel reaches the slow air bleed, it mixes with air moving through the slow air passage, and is sprayed through the bypass (8) out of the pilot outlet (9).

In addition to the mixture of fuel and air, there is air entering through the main bore and throttle valve.

These combine to produce the correct fuel/air mixture for idle- and slow-speed operation.

Air from the slow air passage is controlled by the air screw (7).

• Main system

The purpose of the main system is to supply the mixture during part-to wide-open throttle.

When the throttle valve is opened, air passes through the clearance between the carburetor air horn and throttle valve.

The fuel from the float bowl is then pushed up by the atmospheric pressure and rises up in the clearance between the jet needle (11) and needle jet (12).

The fuel is metered by the main jet (10) as it passes through it.

When the mixture reaches near the top of the passage, it mixes with additional air metered by the air jet (13), and moves onto the carburetor, through the nozzle tip, and into the engine cylinder (primary system).

A semicircular plate (14) at the tip of the needle jet is called "primary choke," and helps atomize the mixture by shutting off a part of air supply flowing through the main bore (to provide turbulence on the other side).

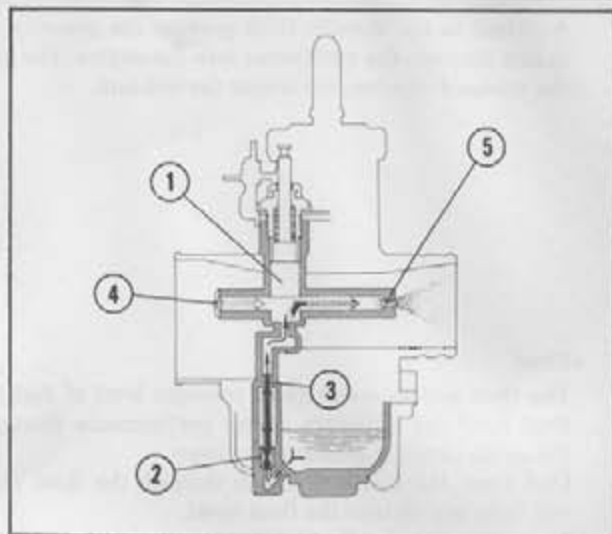


Fig. 1-17

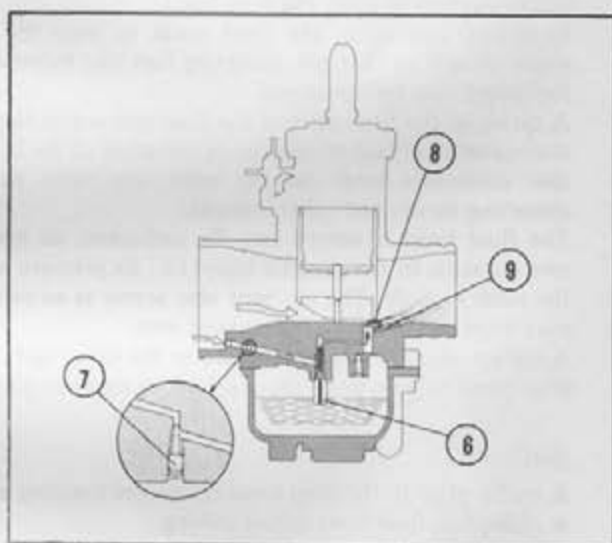


Fig. 1-18

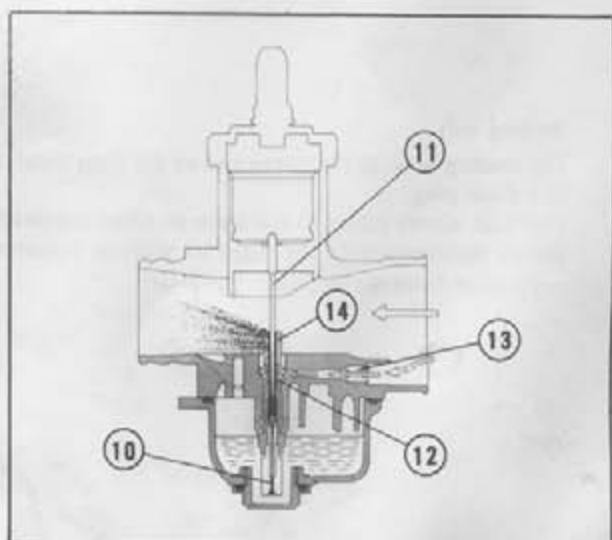


Fig. 1-19

A cutout in the throttle valve governs the quantity of air drawn through the carburetor into the engine. The greater the stamped number, the leaner the mixture.

• Float

The float system maintains a constant level of fuel in the float bowl for optimum engine performance throughout the entire range of speeds and power.

Fuel from the fuel tank enters through the float valve ⑮ and valve seat ⑯ into the float bowl.

This will cause the float to move up and push up the float valve ⑮ into the valve seat ⑯.

If the float moves down, the valve ⑮ is released to allow additional fuel to enter the float bowl.

In normal operation, the float tends to keep the valve partly closed so that the incoming fuel just balances the fuel being used by the engine.

A spring in the float valve at the float arm contacting area eliminates abnormal movement or vibration of the float. It also minimizes wear on the valve and valve seat by absorbing shocks and other impacts.

The float bowl is vented into the carburetor air horn by two air vents in the throttle body; i.e., air pressure will be the same in both. The air vent also serves as an overflow pipe when the motorcycle is turned over.

A regular overflow pipe is located at the lower end of the float bowl to help keep the machine as clean as possible.

• Baffle plate

A baffle plate in the float bowl eliminates foaming as well as changes in float level during driving.

• Sealing bolt

The sealing bolt, at the lower end of the float bowl, serves as a drain plug.

The bolt allows access to the main jet when removed. This allows replacement of the main jet without removing the carburetor from the engine.

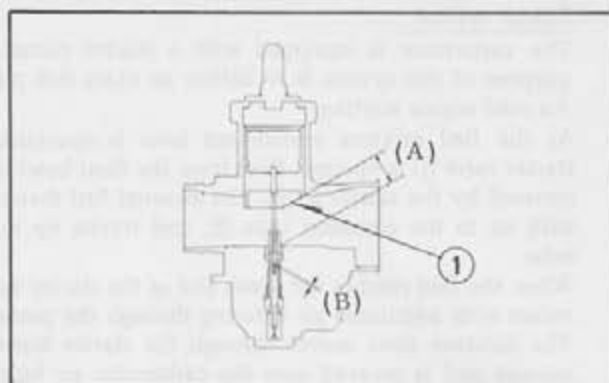


Fig. 1-20 ① Cutaway

(A) Air is limited by sectional area at this point

(B) Fuel is limited by clearance at this point

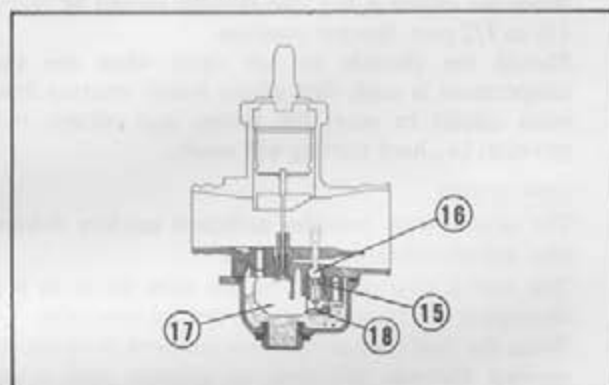


Fig. 1-21

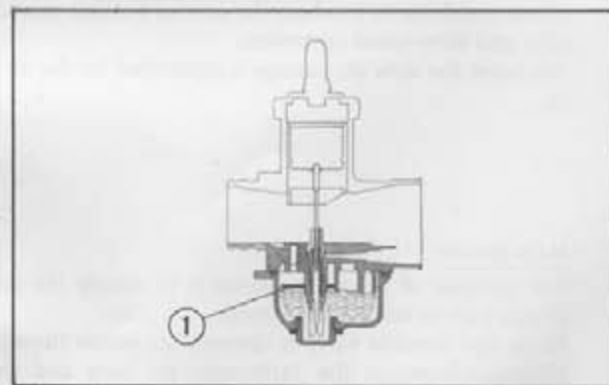


Fig. 1-22 ① Baffle plate

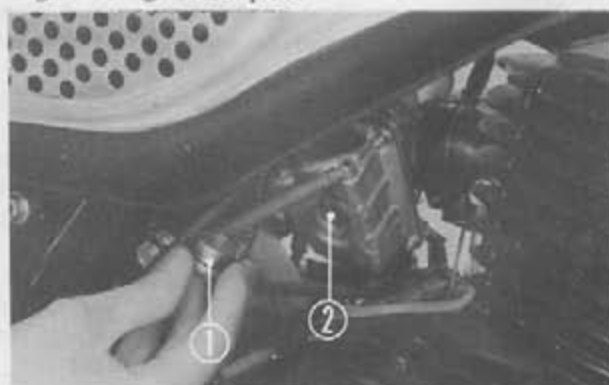


Fig. 1-23 ① Sealing bolt
② Main jet

4. POWER TRANSMITTING SYSTEM

Clutch

The clutch is a multi-plate wet type. It is located at the right hand side of the engine crankshaft and transmission.

The clutch assembly consists of the friction discs, pressure plates and springs. The clutch outer has a primary driven gear and a housing to which the gear is rivetted through a rubber damper.

	MT250
Clutch plate	6
Friction disc	7
Clutch spring	6

Applying the hand lever rotates the clutch lever at end of the clutch cable. Since the clutch lifter rod is operated by a cam at the end of the clutch lever, this actuates the lifter center piece. Movement of the center piece then lifts the pressure plates away from the clutch discs; the clutch is disengaged.

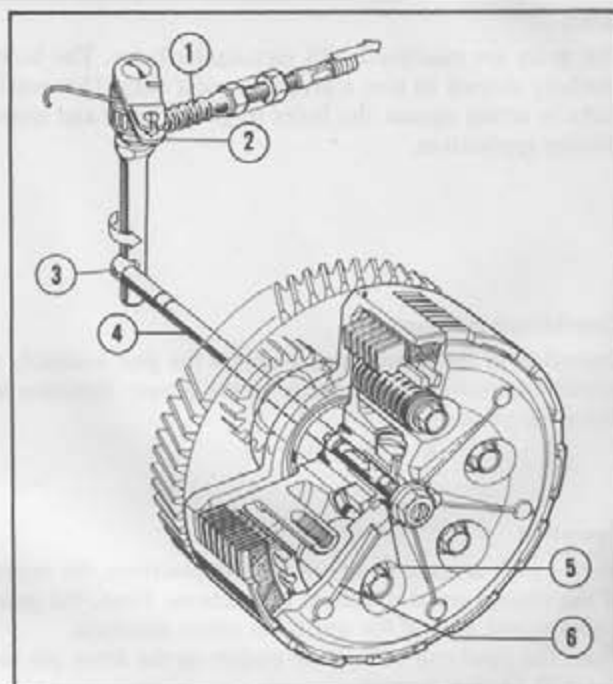


Fig. 1-24 ① Clutch cable ④ Clutch lifter rod
② Clutch lever ⑤ Center piece
③ Cam ⑥ Pressure plate

Transmission

The five-speed constant-mesh transmission is used to take the full advantage of the engine throughout the entire range of speeds and power.

To simplify the shifting action for the driver, the pedal is returned to the pre-set height each time the shift is made to any of the five speed positions.

In operation, power from the engine is carried by the primary drive gear to the clutch outer and from there, to the transmission main shaft through the clutch center.

The transmission provides a means of varying this torque or gear ratios between the engine crankshaft and drive sprocket.

• Primary reduction ratio	Primary driven gear/ primary drive gear	66/22=3.300	
• Secondary reduction ratio	Sprocket wheel/ drive sprocket	44/15=2.933	
Transmission	Transmission gear ratio	Total reduction ratio	Total gear ratio
Low	36/17=2.235	7.375	21.630
2nd	33/21=1.571	5.184	15.204
3rd	29/25=1.160	3.828	11.227
4th	26/29=0.896	2.956	8.669
5th	23/32=0.718	2.369	6.948

• Total reduction ratio:

Transmission gear ratio x primary gear ratio

• Total gear ratio :

Total reduction ratio x secondary reduction ratio

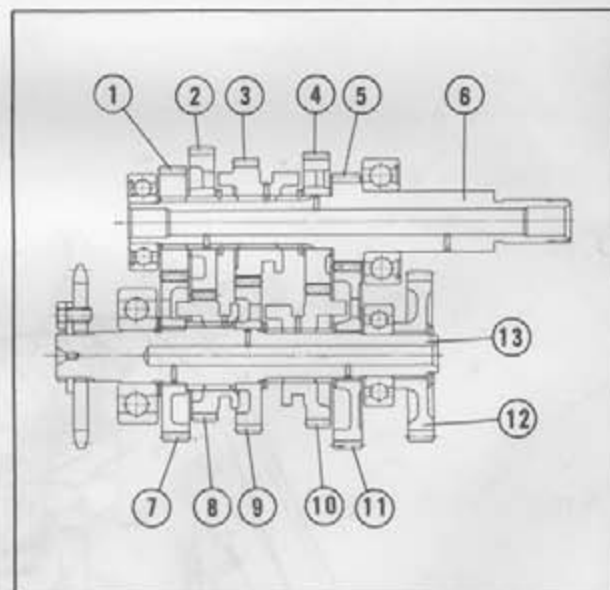


Fig. 1-25 ① M2 gear (21) ⑧ C5 gear (23)
② M5 gear (32) ⑨ C3 gear (29)
③ M3 gear (25) ⑩ C4 gear (26)
④ M4 gear (29) ⑪ C1 gear (38)
⑤ M1 gear (17) ⑫ Starter idler gear
⑥ Main shaft ⑬ Countershaft
⑦ C2 gear (33)

Gears

The gears are machined with rectangular holes. The holes are carefully slotted to give a proper angular play. This assists the forks in acting against the holes to give a faster and smoother shifting application.

Gear-shifting mechanism

Operation of the change pedal selects the gear assembly to be moved and moves the assembly in the proper direction in the following pattern:

① - N - ② - ③ - ④ - ⑤

Operation

When a shift is made to any of the five positions, the operation of the change pedal produces two actions. First, the gearshift arm is moved around the spindle in either direction.

Then, the pawl end of this arm pushes on the drum pin so that the shift drum is rotated.

Around the shift arm are guide grooves to guide the forks into position. After shifting gears, the shift arm is returned to the original position by means of the return spring.

The drum is held in place by the drum stopper to prevent gears from jumping out of place during operation.

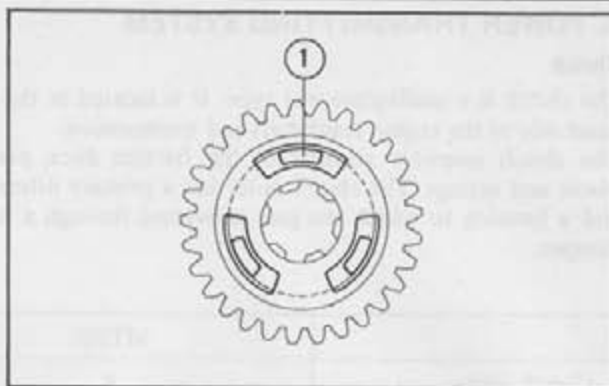


Fig. 1-26 ① Slot

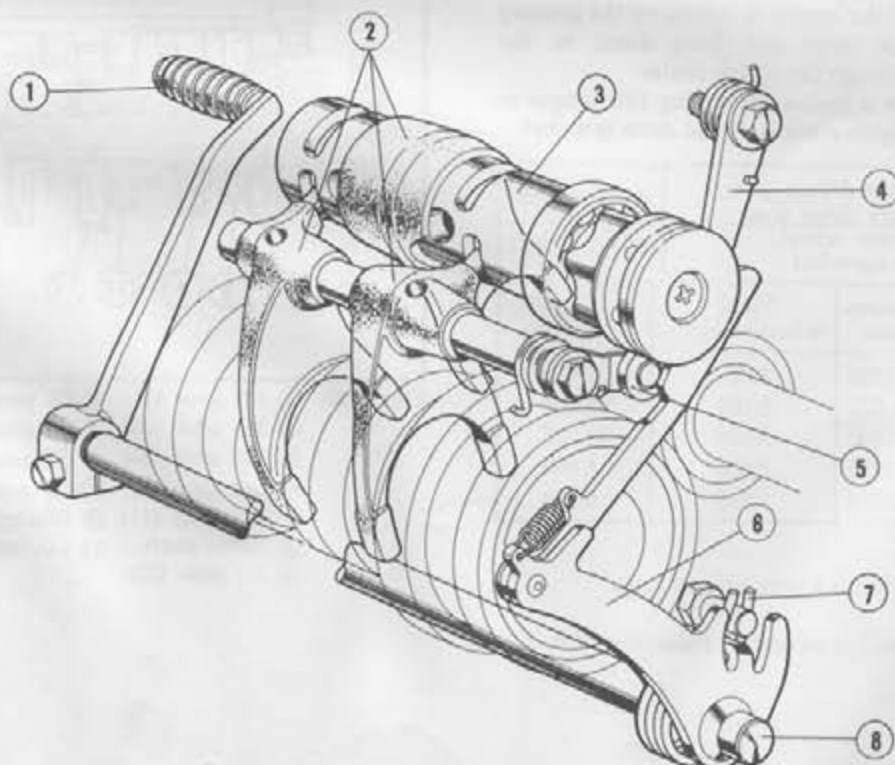


Fig. 1-27 ① Gear change pedal ⑤ Drum stopper
② Shifter fork ⑥ Shifter arm
③ Change drum ⑦ Return spring
④ Drum stopper ⑧ Spindle

Primary kick

MT250 model uses a primary kick system, in which the engine is cranked through the primary drive gear.

This offers an easy starting independently of the main shaft (regardless of the position of the change pedal).

Cranking is accomplished by applying the kick pedal.

Movement of the kick pedal is carried through a starter-pinion and an idle gear to the toothed periphery of the clutch outer.

The idle gear is made to rotate freely on the main shaft.

The starter pinion is in constant mesh with the oil pump drive gear. Operating the kick pedal, however, brings a steel pawl in the starter spindle out of engagement with the return pin and into mesh with the pinion.

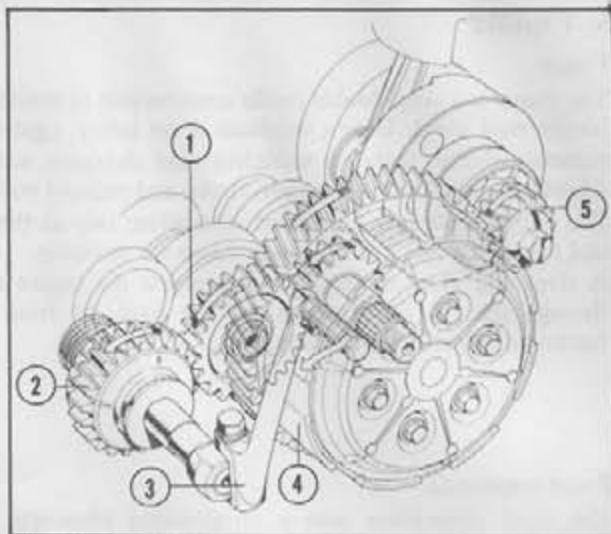


Fig. 1-28 ① Starter idle gear
② Kick starter pinion
③ Kick pedal
④ Clutch outer
⑤ Crankshaft primary drive gear

Starting

As the pedal is kicked, the spindle is moved in the arrow direction. When the spindle moves to that direction, the starter steel pawl is also moved away from the return spring and into mesh with an inner notch in the pinion by means of the spring. The spring is built in the boss of the starter pinion.

The pinion and spindle must then turn together so that cranking takes place to start the engine.

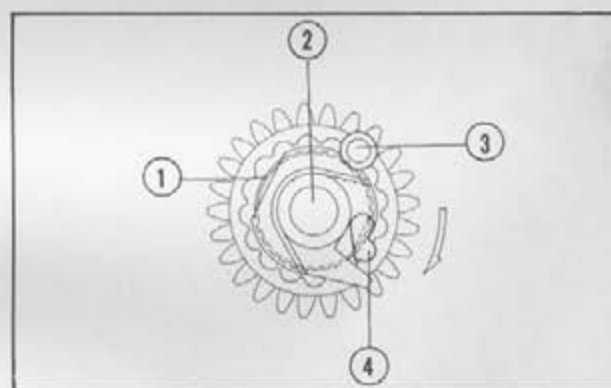


Fig. 1-29 ① Pawl spring ③ Starter return pin
② Spindle ④ Starter pawl

Driving

When the kick pedal is released, the spindle is moved in the arrow direction. The return pin in turn pushes on the steel pawl, causing it into the spindle away from the pawl groove. The pinion will then be free from the spindle.

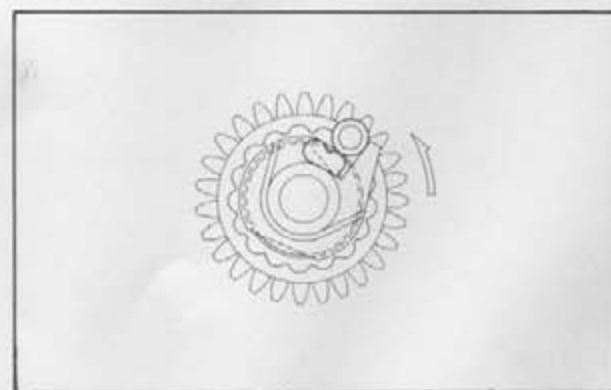


Fig. 1-30

5. FRAME

Frame

The frame is a semi-double cradle construction of welded high tensile steel pipes. Design emphasis is on safety, rigidity and maneuverability, featuring sufficient road clearance, extended wheelbase, long front suspension stroke and reduced width.

The engine utilizes a four-point sustension; two at the front and two at the rear, allowing easy access for servicing.

A steel skid plate at the bottom protects the engine against damage due to obstructions on the road, or from bombardment of pebbles and stone.

Front suspension

The front suspension uses a direct-acting telescopic shock absorber with a free valve. In operation, the long-stroke damper prevents excessive wheel movement as the wheel meets holes or bumps in the road. The aluminum bottom leg offers pleasant appearance as well as rigidity.

On MT250 model, height is adjustable in three steps to suit the individual driver.

In addition, two springs of different attenuation in each unit give a smoother rider over rough surfaces. The stroke is 181 mm (7.1 in.).

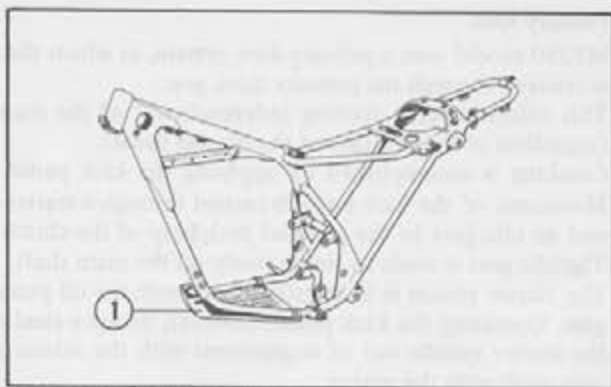


Fig. 1-31 ① Skid plate

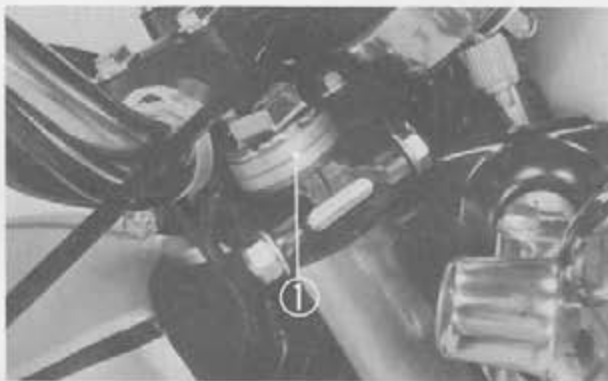


Fig. 1-32 ① Groove

Operation

• Compression

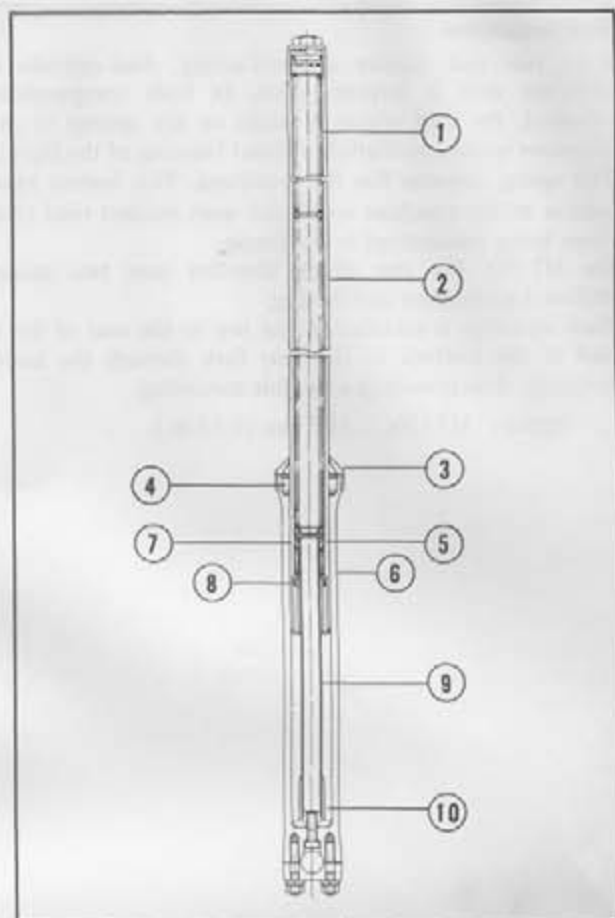
When the wheel meets holes or bumps in the road, it moves up and down. This up-and-down movement of the wheel is transmitted to the bottom leg.

Since the bottom leg is integrated with a pipe, the pipe also moves up and down. With either action, two springs on the pipe flex and rebound, absorbing the road shocks to the motorcycle.

In this case, oil in the chamber ⑧ pushes up the free valve and flows into the space ⑤ freely.

At the same time, oil in the chamber ⑧ also flows through orifices in the lower end of the spring under seat into the space ⑥ by the amount by which the pipe is moved up.

Fig. 1-33 ① Front spring "A" ⑦ Front rebound spring
② Front fork pipe ⑧ Free valve
③ Front fork dust seal ⑨ Bottom pipe
④ Oil seal ⑩ Oil lock piece
⑤ Piston ring
⑥ Front fork bottom leg



• Extension

As the wheel has passed the bump or hole, it moves down. To eliminate excessive up-and-down motion of the spring and wheel, there will be a restraint on the spring and wheel action. In operation, as the wheel moves down, the free valve is closed, introducing high pressure in the space ⑤. This high pressure then forces the oil out and into the space ⑥ through the orifices in the spring under seat.

Since the oil encounters a restraint as it passes through the orifices, excessive wheel and spring movement as well as spring oscillation are prevented.

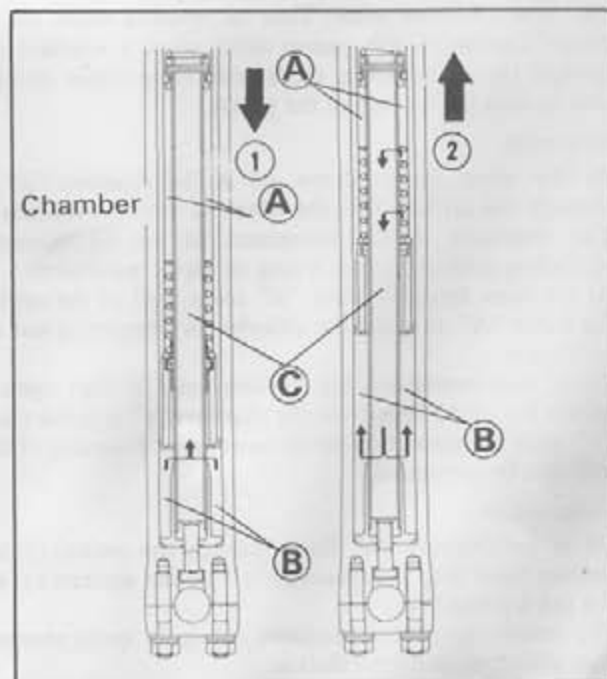


Fig. 1-34 ① Compression
② Extension

Rear suspension

Each rear fork carries a direct-acting, dual-cylinder shock absorber with a bottom valve. In both compression and rebound, the unit places a strain on the springs to prevent excessive spring, oscillation without foaming of the liquid.

The spring adjuster has five positions. This feature plus long piston stroke combine to absorb even hardest road vibration from being transmitted to the frame.

On MT250, the rear shock absorber uses two springs of different springiness and flexing.

Each absorber is attached at the top to the rear of the frame and at the bottom to the rear fork through the individual bushings, thus providing a flexible mounting.

Stroke: MT250.....105 mm (4.13 in.).

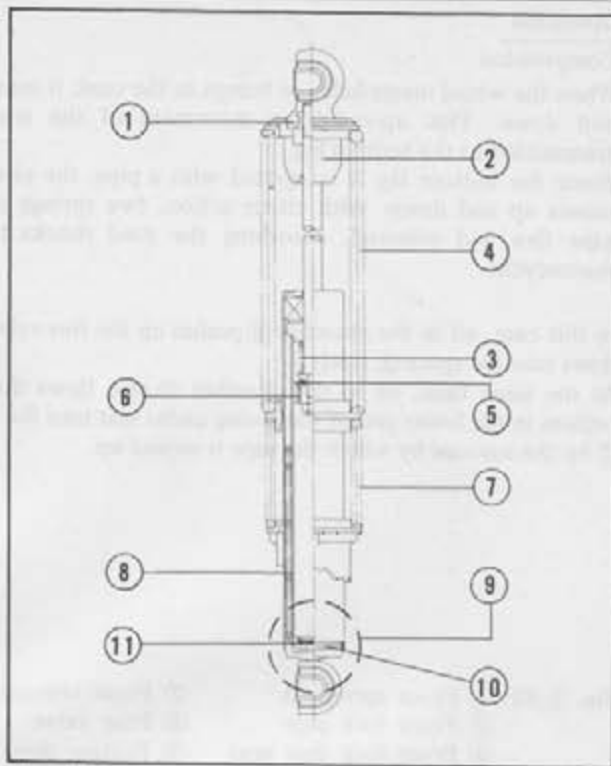


Fig. 1-35

- | | |
|----------------------------------|-----------------------|
| ① Upper joint | ⑧ Dumper spring |
| ② Rubber stopper | ⑨ Bottom valve |
| ③ Rebound stopper spring | ⑩ Bottom pipe |
| ④ Rear shock absorber | ⑪ Bottom valve spring |
| ⑤ Valve "A" | |
| ⑥ Dumper piston | |
| ⑦ Rear shock absorber spring "A" | |

Operation

The shock absorber incorporates two piston valves "A" and "B" and a bottom valve. Thus on rebound when the wheel moves downward, the piston valves place a restraint on the springs. On compression, the bottom valve comes into operation to slow the motion of the piston.

• Extension

As the wheel moves down, oil in the chamber "a" flows through the orifices (1) in the valve "A" into the chamber "b". The resistance to the movement of the oil through the restricting orifices imposes a drag on spring movement.

At the same time, the valve "B" covers half of the orifices in the valve "A" to assist the absorber in dampening out spring oscillation.

Under that condition, the bottom valve is kept open. This allows the oil to flow from the chamber "c" into the chamber "b" with no restriction to its movement. Foaming of the oil will then be prevented.

• Compression

Oil in the chamber "b" flows through the orifices (2) in the bottom valve into the chamber "c" by the amount by which the rod is pushed in.

The restricting orifices produces a drag on spring movement, thus absorbing spring oscillation.

Meanwhile, oil flows from the chamber "b" into the chamber "a" freely since the piston valves are opened.

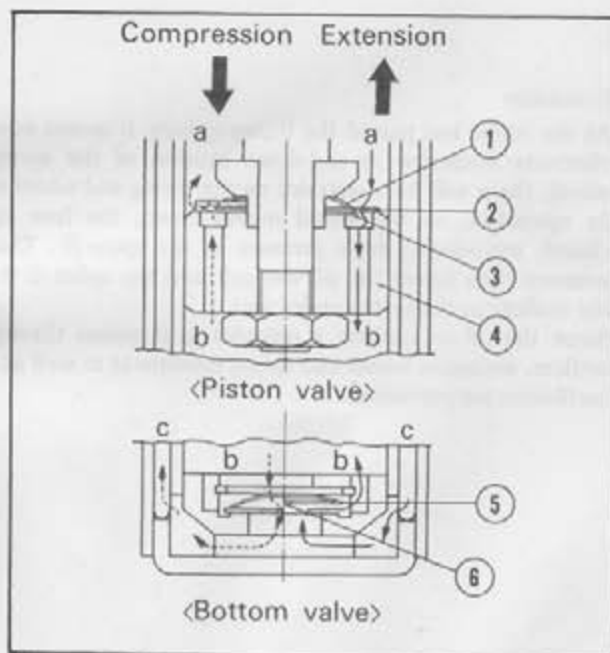


Fig. 1-36 ① Orifice (1) ④ Piston
② Valve "A" ⑤ Bottom valve
③ Valve "B" ⑥ Orifice (2)

Rear fork

The rear fork is a welded construction of sturdy steel pipes. It is attached at the front to the frame with bushings and pivot bolt and at the rear to the rear shock absorber. Construction of this unit is such that it moves up and down on its front pivot.

The chain tensioner is entirely new for these models, in which the chain is tensioned by a more positive "push" action. Formerly, the chain was pulled to rear to compensate for elongation.

On MT250 model, the chain guide includes a rubber roller to extend the life of the chain and for more silent chain action.

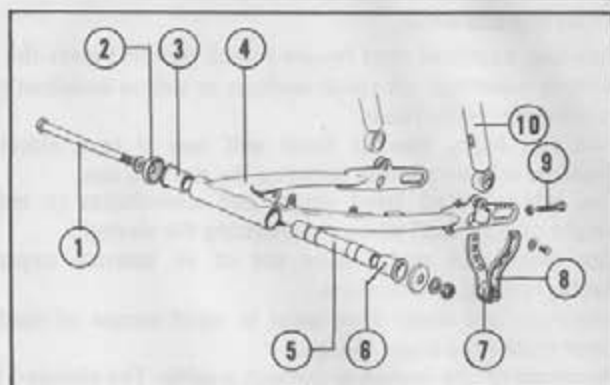


Fig. 1-37 ① Rear fork pivot bolt ⑦ Roller
② Dust seal cup ⑧ Chain guide
③ Rear fork bushing ⑨ Adjusting bolt
④ Rear fork ⑩ Rear shock absorber
⑤ Rear fork center collar
⑥ Rear fork bushing

Handlebar

The steel tubular handlebar is light weight of sturdy construction. It is wide, high and slightly swept-back to help maneuver on roughest surfaces.

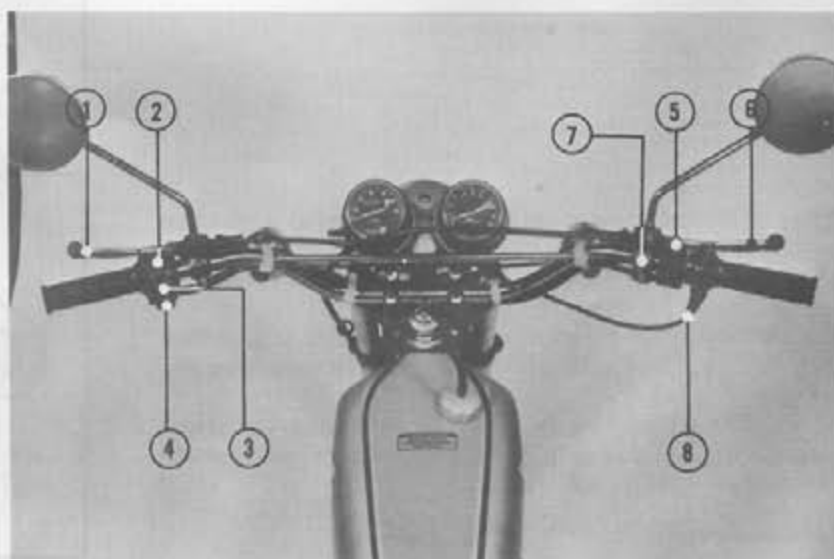
The new handle grips with a revised grip pattern provide a more positive hold to the gripping hand.

The handlebar is attached to the top bridge with a total of four bolts. The ignition switch, headlight switch and front brake lever are mounted on the right side.

The throttle readily yields to the operating hand through use of a free wire. On the right side of the handlebar are the dimmer switch, turn signal switch, horn switch and clutch lever to engage or disengage the engine and transmission.

Operation of the levers is easy and smooth. Made of aluminum alloy, the levers take more punishment in overturns with less possibility of breakage.

The dust covers prevent entry of mud, water and air-borne dust and dirt.



① Clutch lever ⑤ Headlight switch
② Dimmer switch ⑥ Front brake lever
③ Turn signal switch ⑦ Ignition switch
④ Horn switch ⑧ Throttle cable

Fig. 1-38

Wheel tire and brake

Full-size, excellent stud layout (block pattern) gives the rider obvious advantage on rough surfaces as well as excellent riding comfort on public roads.

Two rim locks, one at front and two at rear, effectively eliminate relative motion between the tire and rim.

The side-mounted front wheel hub contributes to reduced weight of the wheel without sacrificing the strength.

The front and rear brakes are of an internal expanding leading-trailing construction.

Labyrinth and water hole assist in rapid escape of mud and water to wet the brake linings.

Operation of the brakes is through a cable. The clamped front cable to the front fork affords considerable advantage when rider goes through wood or grass.

The rear brake pedal stroke is hardly influenced by movement of the rear wheel as it passes over bumps or holes in the road.



Fig. 1-39 ① Front brake cable
② Rear brake cable

6. AIR INTAKE AND EXHAUST SYSTEMS**Air cleaner**

The air cleaner is a wet, closed construction, in which the air intake is open inside the rider's seat.

This allows the engine to breathe cleanest possible air and gives obvious advantage on trials or racing.

The filter element is made of a foamed urethane that is wet with oil. Design emphasis is on least resistance to air flow, longer life and excellent dirt-removal ability.

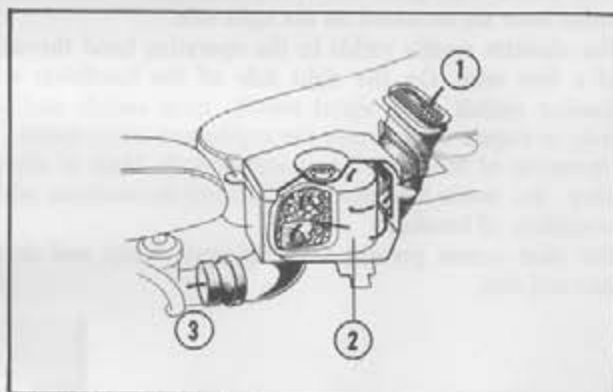


Fig. 1-40 ① Air intake ② Oil-pregnant urethane filter element
③ To carburetor

Muffler

The muffler is integrated with the exhaust pipe. It is raised up to the lower face of the rider's seat. This allows the rider to lean into hill when going uphill. It is covered with a protective cover.

The muffler makes use of effect of gas pulsation to smoothen out pressure waves with no adverse effect on scavenging and air charge.

It is rubber mounted to the frame at two locations; at center and rear of the frame with a bolt. Two bolts are used to retain the muffler to the engine cylinder.

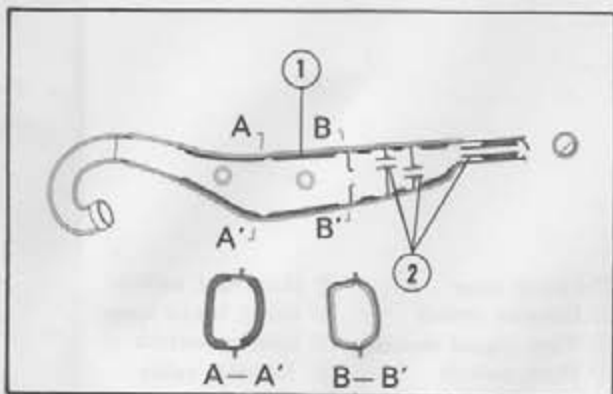


Fig. 1-41 ① Glasswool
② Inner tube

Fuel tank

The narrow, streamlined fuel tank is designed for action, yet affords new riding comfort at all speeds and under all conditions.

It mounts on the chassis frame with three bolts; two at front and one at rear.

The tank cap includes a breather pipe, whose end is run into the hole drilled in the stem nut.

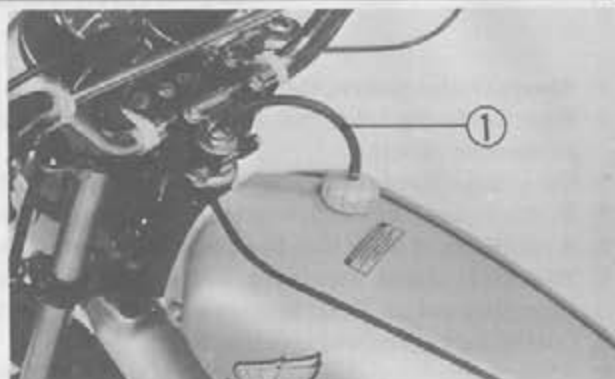


Fig. 1-42 ① Breather pipe

Front and rear fenders

Made of resin, the fenders contribute to the reduced weight of the motorcycle.

The front fender is rubber mounted to the lower end of the steering stem. A flap at the fender top eliminates splashes.



Fig. 1-43 ① Flap
② Front fender

A wide rear fender is also shock mounted to the frame through rubber cushions.

The fender plus chain cover protect the engine and chain from annoying splashes.



Fig. 1-44 ① Rear fender
② Drive chain case

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 so 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 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. When reassembling an engine, bleed the oil pump. Then let the engine warm up for about seven minutes.
10. Be sure to retain fuel and oil pipes with clips.

Electrical System

1. If any electrical part is at fault, locate the cause according to the wiring diagram put at the end of manual and inspect carefully.
2. Check cables and wires for disconnection, open circuit, binding or breakage of coverings and grommets and covers for removal or breakage. Repair or replace if necessary.
3. Check if fuse failure is due to blow-out or to mechanical open circuit. If it is due to blow-out, locate the cause and reinstall a new, proper-capacity fuse.
4. Route a battery breather tube as shown on the label.
5. Making sure that wiring and battery are 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).



This section covers the inspection and adjustment of important ones of the items involved in the MAINTENANCE SCHEDULE on page 94. For other items, see the paragraph for "Inspection" of each group.

1. OIL PUMP

Air bleeding

1. Remove the left crankcase cover and oil pump case cover.
2. Remove the oil check screw.
3. Making sure that the oil comes out continuously, install and tighten the oil check screw.
Check to be sure that the oil does not leak from around the oil check screw.
4. Install the oil pump case cover and left crankcase cover.
5. After starting the engine, break-in it with the throttle grip twisted inward 1/2 turn or less for about seven minutes. Then the oil pump can be bled completely.

Oil pump cable adjustment

1. Remove the oil pump case cover.
2. Fully close the throttle grip.
3. Turn the cable adjusting screw in either direction until the marks on the control lever and lower cover align.
4. Operate the throttle grip two or three times to make sure the mark alignment does not slip.
5. Retighten the adjusting screw and lock nut.

Throttle cable adjustment

1. Check the oil pump cable adjustment. If correct, adjust the throttle grip free play to 5-10° of grip rotation.
2. If incorrect, adjust to specification after making oil pump control cable adjustment.
3. To adjust, turn the carburetor top adjusting screw in either direction. Turning the adjusting screw in the direction A will decrease the free play and turning it in the direction B will increase the free play.
4. After adjusting, check the throttle grip for smooth rotation.

2. OIL FILTER SCREEN CLEANING

1. Clean the oil filter screen using compressed air or cleaning solvent.
2. Before installing, dry the screen thoroughly. For installation, refer to page 82.



Fig. 3-1 ① Oil check screw



Fig. 3-2 ① Marks on control lever and lower cover
② Adjusting screw
③ Lock nut



Fig. 3-3 ① Adjusting screw ② Lock nut

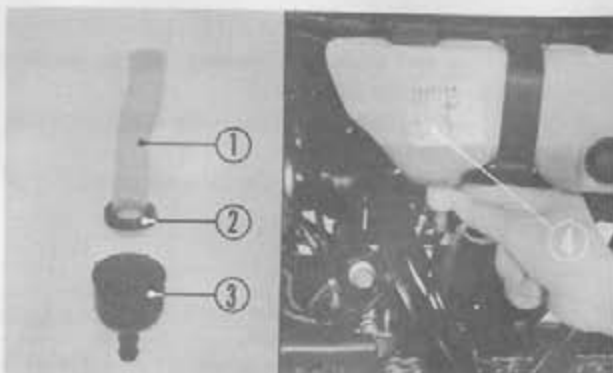


Fig. 3-4 ① Oil filter screen ③ Oil filter screen cap
② Gasket ④ Oil tank

3. TRANSMISSION OIL

Oil level check and refilling

1. Warm up the engine for about three minutes. With the motorcycle placed in the upright position, remove the oil check bolt and check if the oil should flow out of the check bolt hole.
2. If necessary, refill with the recommended oil through the oil filler hole.

Transmission Oil Recommendation

Use only high detergent, premium quality motor oil.

The regular use of special oil additives is unnecessary and will only increase operating expenses.

NOTE:

Non-detergent and low quality oils are specifically not recommended.

Viscosity

Viscosity selection should be based on the average atmospheric temperature in your riding area. Change to the proper viscosity oil whenever the changes in average atmospheric temperature require it.

Recommended oil viscosity:

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

Alternate:

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

3. Check the oil level with the oil level gauge.

NOTE:

1. Do not screw the oil level gauge in.
2. If the oil level is above the upper mark on the gauge, adjust it to the specified level. If the oil level is below the lower mark, refill.

Oil change

1. After warming up the engine, remove the drain bolt and drain the oil.

NOTE:

For quick and complete draining, tilt the motorcycle to left after draining some oil.

2. Install and tighten the drain bolt. Then fill with about 0.85 lit. (0.9 USqt)

Recheck the oil level with the oil level gauge.

• Filling of oil should be performed slowly.

Amount of oil to be filled	When changing oil	About 0.85 ℓ (0.9 USqt)
	When separating crankcase	About 1.0 ℓ (1.0 USqt)



Fig. 3-5 ① Oil check bolt

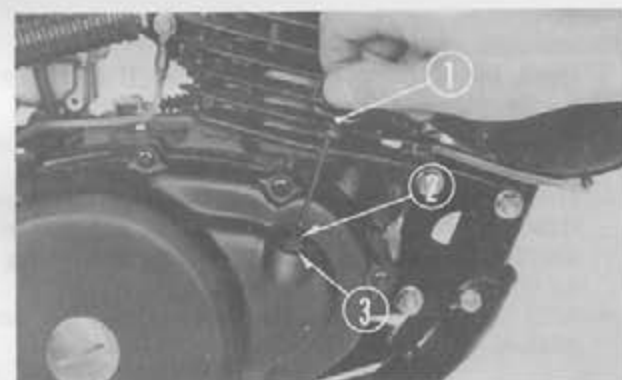


Fig. 3-6 ① Oil level gauge ② Upper level mark ③ Lower level mark



Fig. 3-7 ① Drain bolt

4. BREAKER POINT GAP AND IGNITION TIMING

Ignition timing adjustment

Remove the generator cover.

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

Ignition timing inspection with a lamp

1. Disconnect the primary wire (black/white) from the stator and connect it to one lead of the lamp. Connect the other lead of the lamp to the positive terminal of the battery and ground the negative terminal.
• Use a lamp having the same wattage as that of the headlight.
2. Turn the generator rotor counterclockwise. The lamp should go out when the "F" mark and matching mark align.

Ignition timing specification: 20° BTDC



Fig. 3-8 ① Lamp ② Black/white wire



Fig. 3-9 ① "F" and matching marks

3. To adjust, loosen the screw, move the adjustment point in either direction using a standard screwdriver and retighten the screw where the lamp comes on.
4. Again turn the generator rotor counterclockwise and check if the lamp goes out when the marks are aligned.
5. Measure the 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 the maximum gap is not within 0.2–0.6 mm (0.008–0.024 in.) after ignition timing has been correctly adjusted, the contact breaker points should be replaced and ignition timing reset.

6. Finally recheck the ignition timing with a stroboscopic timing light.

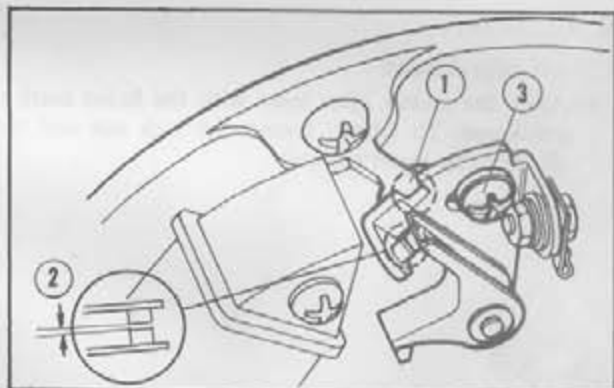


Fig. 3-10 ① Adjustment point ③ Screw
② Point gap

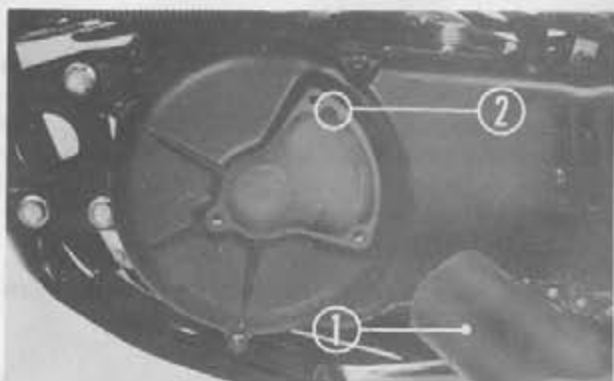


Fig. 3-11 ① Stroboscopic timing light
② Matching mark

5. CARBURETOR

Idle speed adjustment

The carburetor should be adjusted only after the engine has attained operating temperature.

1. Adjust the idle speed screw until the engine idles at approximately 1,500 rpm. Turn the idle speed screw clockwise to increase idle speed or counterclockwise to decrease idle speed.
2. Turn the air screw clockwise until you hear the engine begin to miss or decrease in speed, then counterclockwise until the engine again misses or decreases in speed. Set the air screw exactly between these two extreme positions. Usually the correct setting (between extremes of rich and lean) will be found to be 1.0–1½ turns open from a fully closed position.
3. If idle speed changes after adjusting fuel mixture, readjust the idle speed screw.

NOTE:

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



Fig. 3-12 ① Throttle stop screw

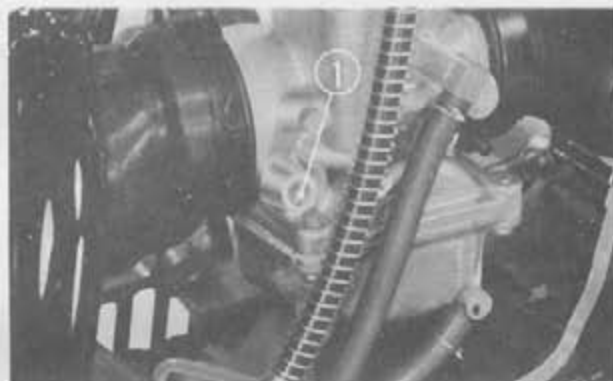


Fig. 3-13 ① Air screw

6. CLUTCH

Clutch adjustment

1. Align the clutch lifter lever with the index mark on the crankcase. To adjust, loosen the lock nut and turn the clutch cable lower adjuster.

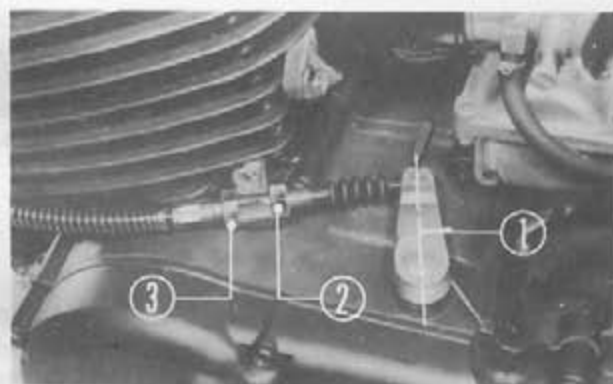


Fig. 3-14 ① Align clutch lifter lever with index mark on crankcase
② Lock nut
③ Clutch cable lower adjuster

2. Remove the clutch adjuster cap from the right crankcase cover.
3. Loosen the adjuster lock nut and turn the clutch adjuster clockwise until it no longer turns. From that position, turn the adjuster counterclockwise 1/2 turn and tighten the lock nut.

NOTE:

Use the clutch adjusting wrench (Tool No. 07908-3570000).

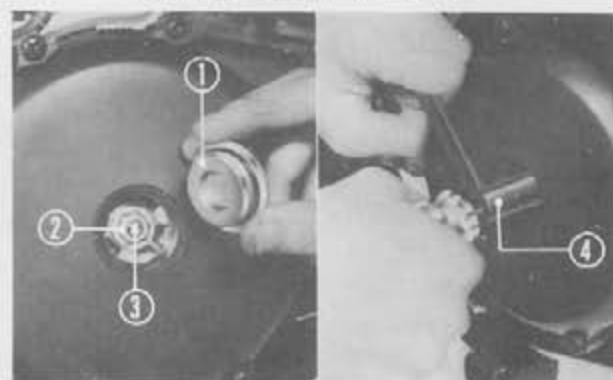


Fig. 3-15 ① Clutch adjuster cap
② Clutch adjuster lock nut
③ Clutch adjusting screw
④ Clutch adjusting wrench

Clutch lever free play inspection

The normal clutch lever free play is 10–20 mm (0.4–0.8 in.) as measured at the tip of the lever. To adjust, remove the dust cover, loosen the lock nut and turn the upper adjuster in either direction. Turning the adjuster in direction A will increase the free play and turning it in direction B will decrease the free play. After adjusting, tighten the lock nut and install the dust cover.

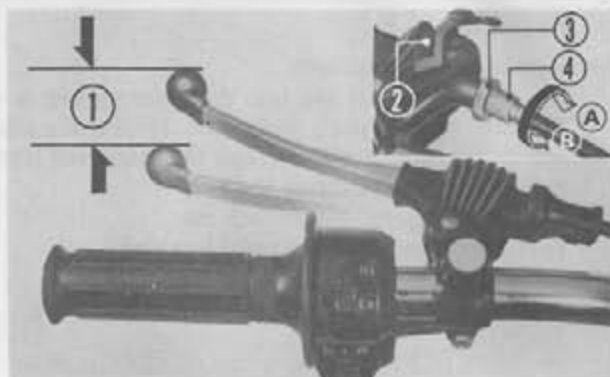


Fig. 3-16 ① Clutch lever free play
② Dust cover
③ Lock nut
④ Upper adjuster

7. FRONT BRAKE**Front brake lever free play**

The normal front brake lever free play is 20–30 mm (0.8–1.2 in.) as measured at the tip of the lever. The free play is the distance the brake lever moves before the brake starts to be applied.

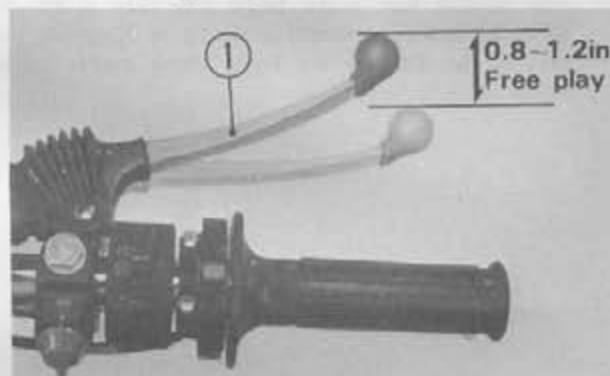


Fig. 3-17 ① Front brake lever

- Major adjustments should be made using the adjusting nut located at the front wheel. Loosen the lock nut and turn the front brake adjusting nut in either direction. Turn the adjusting nut in direction A will decrease the free play and turning it in direction B will increase the free play.
- Minor adjustments can be made with the front brake cable adjuster located at the front brake lever. Remove the dust cover, loosen the lock nut and turn the front brake cable adjuster in either direction. Turning the adjuster in direction A will decrease the free play and turning it in direction B will increase the free play.
- If the correct front brake adjustment cannot be obtained in the above steps, move the brake arm by one tooth of the serration with respect to the punch mark. Do not exceed one tooth to move.
- If it is still impossible to adjust the front brake correctly check the front brake drum and shoes for condition.

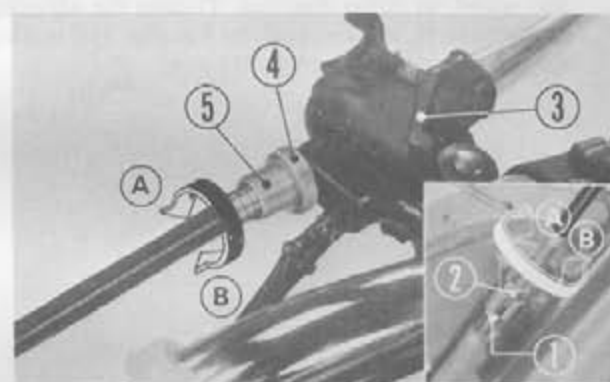


Fig. 3-18 ① Lock nut ④ Upper lock nut
② Adjusting nut ⑤ Front brake cable adjuster
③ Dust cover



Fig. 3-19 ① Punch mark on serration

8. REAR BRAKE

Brake pedal height adjustment

1. Loosen the lock nut and turn the adjusting bolt in either direction to suit rider's preference. Turning the adjusting bolt in direction A will decrease the height and turning it in direction B will increase the height.
2. After adjusting, tighten the lock nut. Then adjust the rear brake pedal free play.

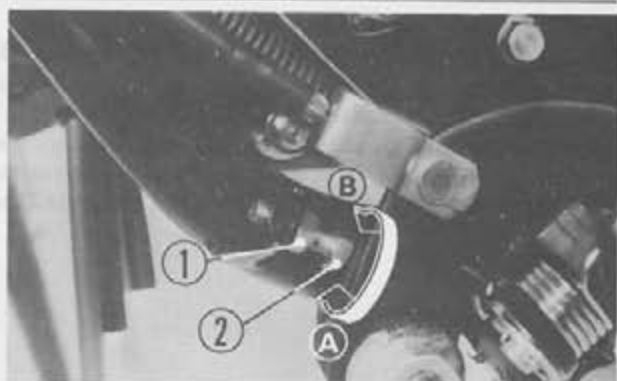


Fig. 3-20 ① Lock nut ② Adjusting bolt

Rear brake pedal free play adjustment

1. The normal rear brake pedal free play is 20–30 mm (0.8–1.2 in.) as measured at the tip of the pedal. The free play is the distance the brake pedal moves before the brake starts to be applied.

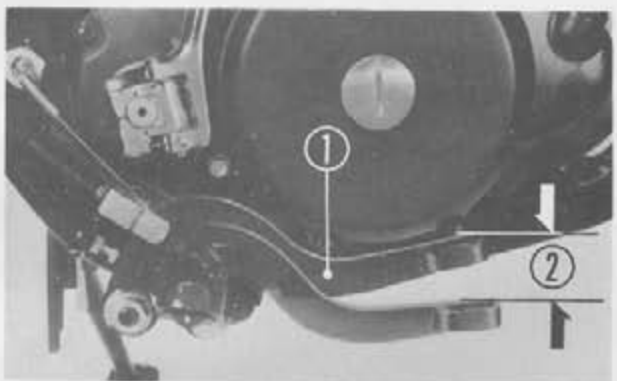


Fig. 3-21 ① Rear brake pedal
② Rear brake pedal free play

2. To adjust, turn the rear brake adjusting nut located at the rear wheel, in either direction. Turning the adjusting nut in direction A will decrease the free play and turning it in direction B will increase the free play.

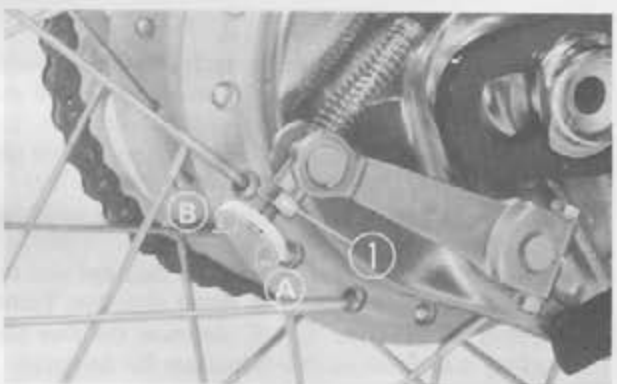


Fig. 3-22 ① Adjusting nut

9. DRIVE CHAIN

Chain tension inspection

The drive chain should be adjusted so that a slack of 20 mm (0.8 in.) can be obtained. To adjust, proceed as follows:

1. Remove the rear axle nut cotter pin and loosen the rear axle nut.
2. Loosen the lock nuts and turn the adjusting bolts in either direction. Align the index marks on the chain adjusters with the reference marks on both sides of the rear fork.
3. Tighten the rear axle nut and secure it with the cotter pin. Replace the cotter pin if it is damaged.
4. Tighten the adjusting bolts and secure them with the lock nuts.

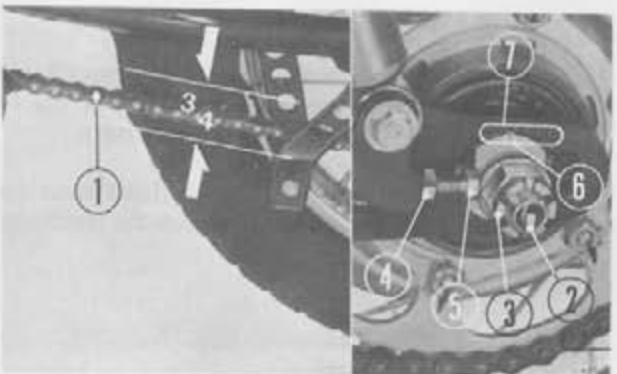


Fig. 3-23 ① Drive chain ② Cotter pin ③ Rear axle nut ④ Lock nut ⑤ Adjusting bolt ⑥ Index mark ⑦ Reference marks

Chain guide roller installation

After adjusting the chain tension, install the chain guide roller so that it is apart approximately 10 mm (0.4 in.) from the chain.

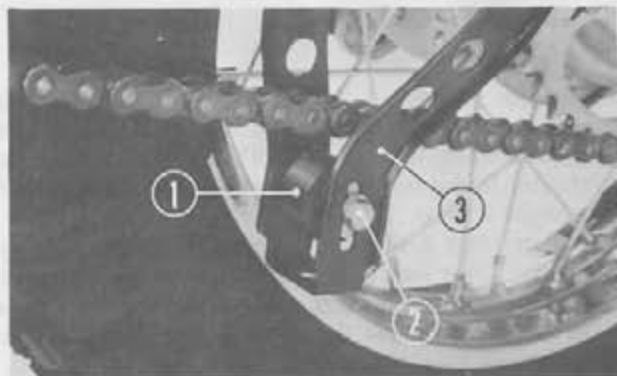


Fig. 3-24 ① Chain guide roller ③ Chain protector
② Locking bolt

10. AIR CLEANER ELEMENT

1. Open the seat.
2. Remove the tool tray.
3. Remove the wing nut and remove the air cleaner case lid.
4. The air cleaner element can be removed together with the element holder. Remove the holder.

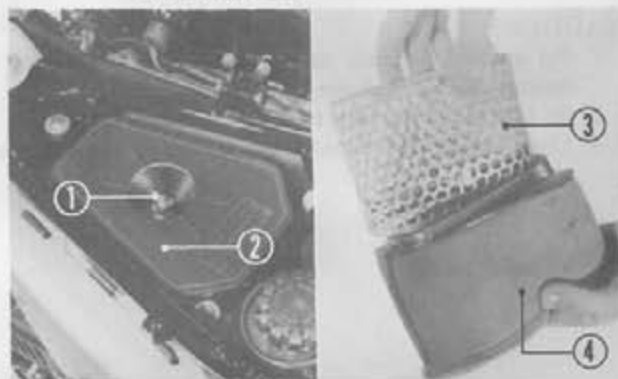


Fig. 3-25 ① Wing nut
② Air cleaner case lid
③ Element holder
④ Air cleaner element

5. Wash the element in clean stoddard and dry it thoroughly.
6. Soak the the element in clean gear oil (SAE 80- SAE 90) until it is saturated. Then squeeze out excess oil.
Amount of oil: 20 gr.

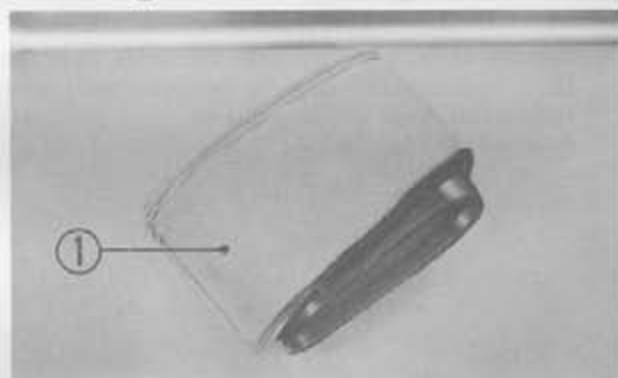


Fig. 3-26 ① Air cleaner element

7. To install the element, reverse the removal procedures.
• Face the marking "FRONT" toward the front as shown.

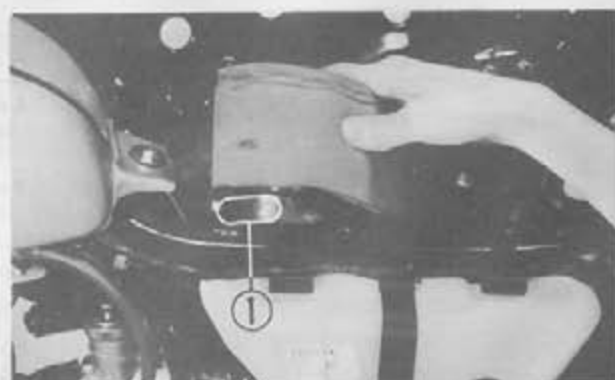


Fig. 3-27 ① Marking "FRONT"

11. FRONT FORKS

Fork height adjustment

Front fork height can be adjusted to change the handling characteristics of the motorcycle. The upper part of each fork tube is marked in 5 mm (0.197 in.) graduations that are referenced to the surface of the upper fork bridge to indicate fork height settings.

To adjust front fork height, loosen the clamp bolts on the upper and lower fork bridges, and raise or lower the forks to the desired setting. Be certain that both fork tubes are set at equal height. Retighten the clamp bolts after fork height adjustment.

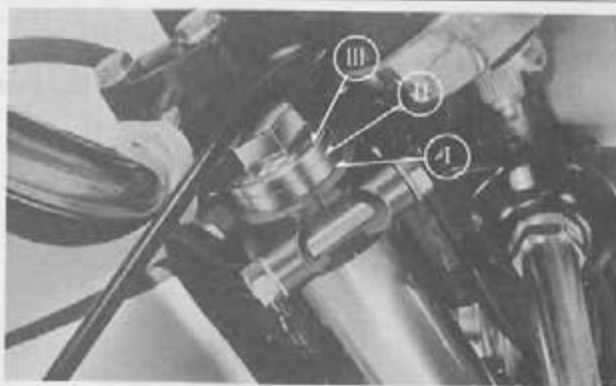


Fig. 3-28

CAUTIONS:

1. Do not set the fork to any other height than the three heights described above.
2. Be sure to set the fork to the height mark.
3. The right and left front forks must be identical in height.



Fig. 3-29

Front fork oil change

1. Remove each front fork bolt and drain plug. With the front brake applied and the handlebar held, move the forks several times and drain the oil.
2. Reinstall the drain plugs.



Fig. 3-30 ① Drain plug

3. Fill each fork with premium quality automatic transmission fluid (ATF).

FRONT FORK FLUID CAPACITY	
Volume required to fill dry assembly.	165 cc (5.6 ozs) each fork leg
Volume required to refill after draining (total capacity less volume of residual fluid).	145 cc (4.9 ozs) each fork leg

4. Reinstall and tighten the front fork bolts to the specified torque.

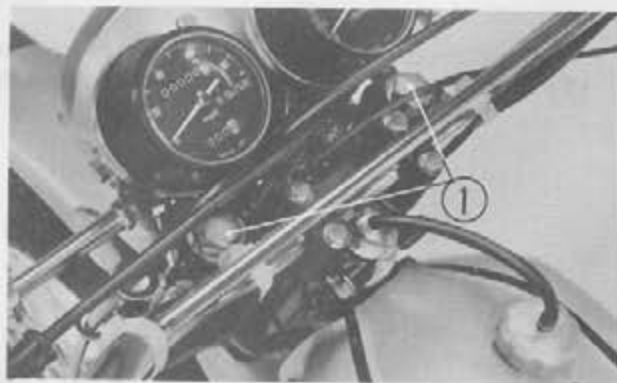


Fig. 3-31 ① Front fork bolts

12. REAR SHOCK ABSORBERS

Spring tension adjustment

The rear shock absorber springs are adjustable for five different ratings of tension to suit riding conditions and rider weight. Turn the adjusters to any desired rating using a pin wrench. Be certain that both the right and left rear shock absorber springs are identical in tension.

Position (III) is the standard setting.

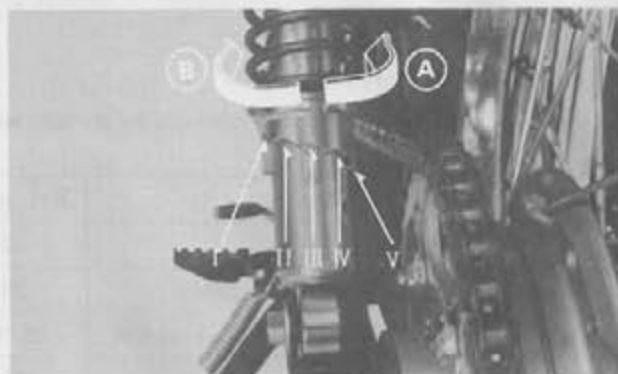


Fig. 3-32

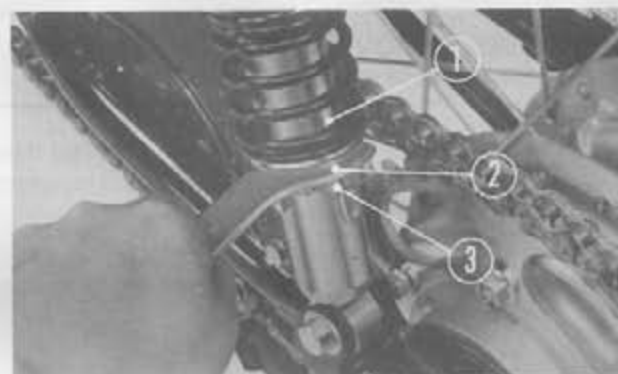


Fig. 3-33 ① Rear shock absorber
② Pin wrench
③ Adjuster

MEMO

1. ON-FRAME SERVICING

Component units in the following table can be serviced with engine on frame.

No.	Part	Ref. page
1	Oil pump	32
2	Cylinder head, cylinder, piston	34
3	L/H crankcase cover, AC generator	48, 39
4	Clutch	41

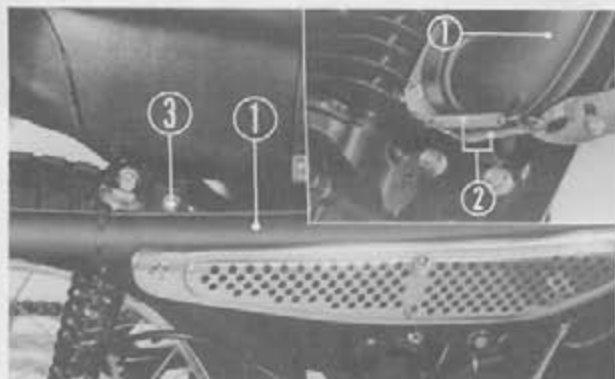
No.	Part	Ref. page
5	Kick starter	44
6	Gearshift mechanism (portion of it)	47
7	Carburetor	56

2. ENGINE REMOVAL AND INSTALLATION

Engine removal sequence

① Disconnect the muffler

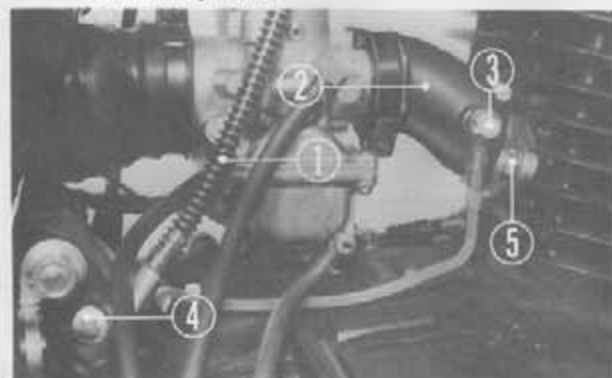
- Remove the two exhaust pipe springs and then the two muffler mounting nuts. Then disconnect the muffler while forcing it forward.



- ① Muffler ③ Muffler mounting nut
② Exhaust pipe spring

③ Disconnect the tachometer cable and then disconnect the inlet pipe from the cylinder.

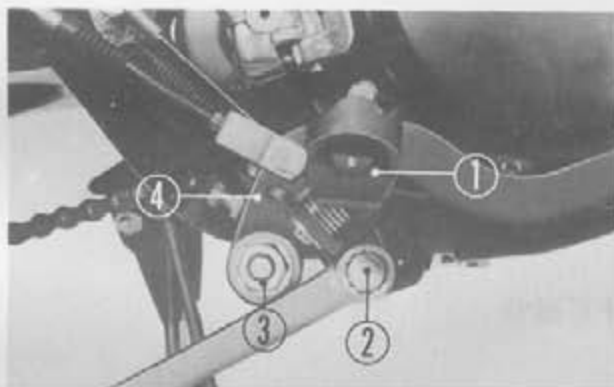
- Disconnect the carburetor tubes from the clampers. Then remove the screw ④ and disconnect the tachometer cable.
- Remove the inlet one-way bolt. Then remove the two bolts ⑤ and disconnect the inlet pipe from the cylinder.



- ① Tachometer cable ③ Inlet one-way bolt
② Inlet pipe

② Remove the right foot rest and brake pedal.

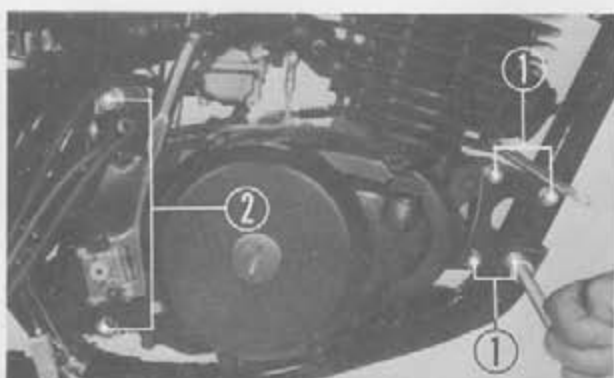
- Remove the 8 mm bolt and remove the foot rest. Remove the 10 mm nut and remove the brake pedal.



- ① Right foot rest ③ 10mm nut
② 8mm bolt ④ Brake pedal

④ Remove the six nuts securing the engine mounting bolts.

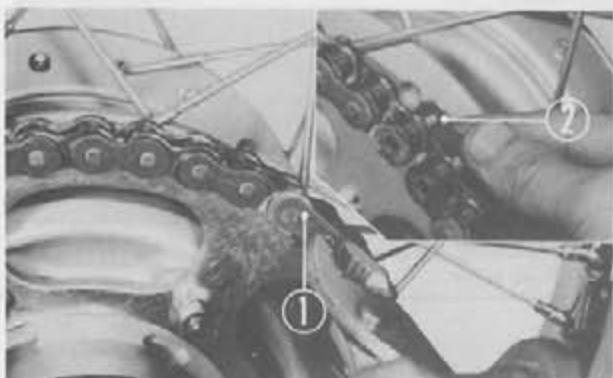
- Front: Four 8 mm flanged nuts
- Rear: Two 10 mm flanged nuts



- ① 8mm flanged nut
② 10mm flanged nut

⑥ Remove the drive chain.

- Remove the clip from the drive chain joint and pull out the master link. Then remove the drive chain.



① Master link retaining clip ② Master link

⑦ Remove the left side cover and disconnect the oil pipe from the oil tank. Then remove the oil pump case cover.

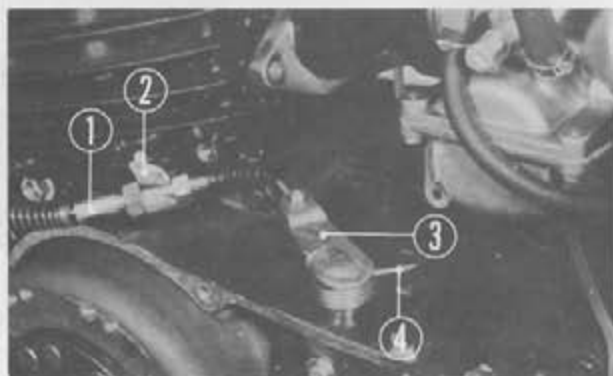
- Plug the oil tank to prevent the oil from coming out.



① Oil tank ③ Oil pump case cover
② Oil pipe

⑧ Disconnect the clutch cable.

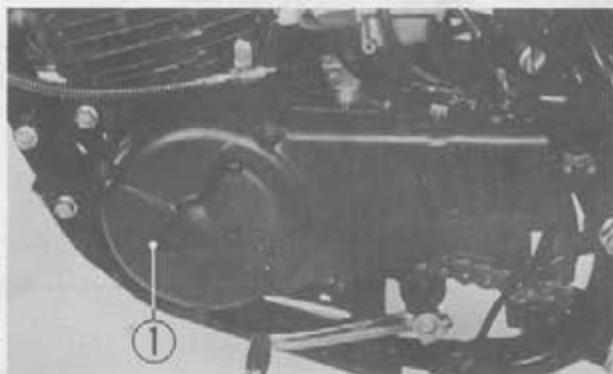
- Loosen the clutch adjusting screw.
- Remove the cable clamp stay. Then remove the clutch lever spring from the lever and disconnect the cable end from the lever.



① Clutch cable ③ Clutch lever
② Stay ④ Clutch lever spring

⑨ Remove the wire harness connector and left crankcase cover.

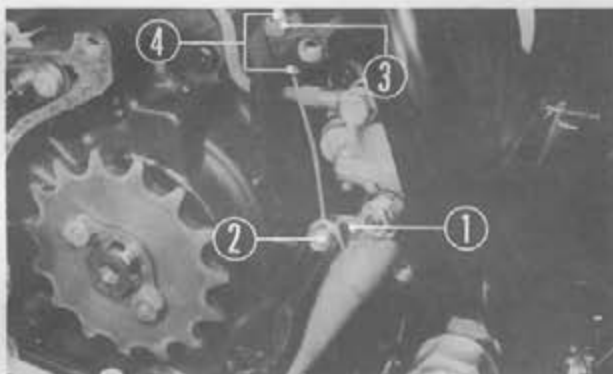
- Remove the 6 mm screws and remove the left crankcase cover.



① Left crankcase cover

⑩ Disconnect the oil pump cable.

- Pick out the cable pin while raising the lever and disconnect the cable.
- Loosen the lock nut and adjusting bolt and disconnect the cable from the crankcase.



① Lever ③ Lock nut
② Cable pin ④ Adjusting bolt

⑪ Disconnect the high-tension cord. Remove the engine hanger bolts and remove the engine.



- ⑪ When removing the fuel tank, turn the fuel valve lever to "OFF" and slightly dislocating the clip, separate the fuel tube by pulling it out so as not to cut.

- Remove three fuel tank mounting bolts ② and dismount the fuel tank.



① Mounting bolts
② Fuel tube

- ⑫ When removing the engine for disassembly, it is advisable to perform this operation while draining the transmission oil.

- ⑬ After removing the engine, plug the carburetor insulator and cylinder ports to prevent entry of dust and dirt.

- ⑭ Take care not to allow dust and dirt to come in contact with the oil pipe and its related parts.

Installation

- To install the engine, reverse the removal procedures.

1. Install the front engine hanger plate in the direction shown in Fig. 4-1. Secure the skid plate to the front lower side of the plate.

- The bolt securing the skid plate together is longer than the other three bolts.

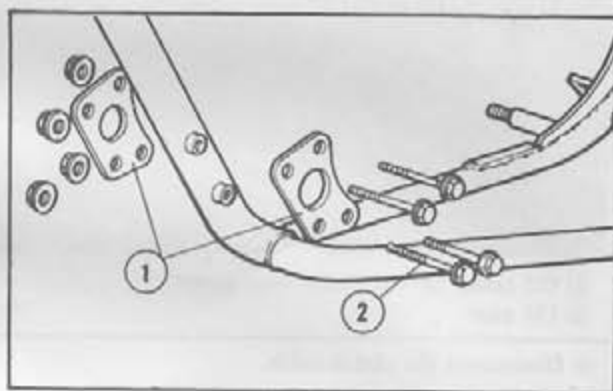


Fig. 4-1 ① Front engine hanger plate
② Bolt

2. When connecting the muffler face the exhaust pipe ring gaps upward and take care not to break the ring.

- To prevent an accidental exhaust pipe gasket blow-out, first tighten the 6 mm nuts ④ and ⑤ temporarily and install the exhaust pipe springs. Then retighten the nuts beginning on the lower nut.

- After installing the exhaust pipe springs, hook their ends for locking.

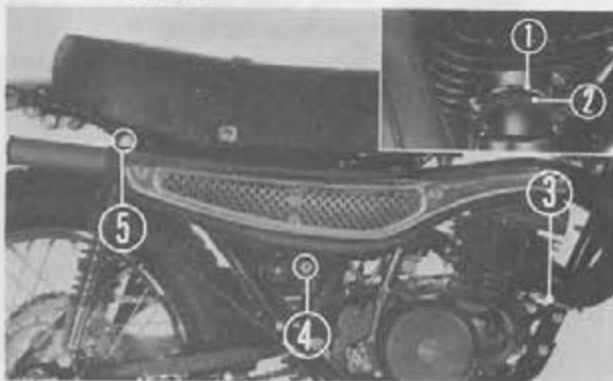


Fig. 4-2 ① Exhaust ring
② Exhaust pipe gasket
③ Exhaust pipe spring
④ 6 mm nut
⑤ 6 mm nut

3. When installing the rear brake pedal, make sure that the pedal shaft seal is not dislodged.
4. Install the fuel tank routing the cables and wires correctly as shown in Fig. 4-4 and 4-5.
 - Do not forget to install the fuel tube clip.

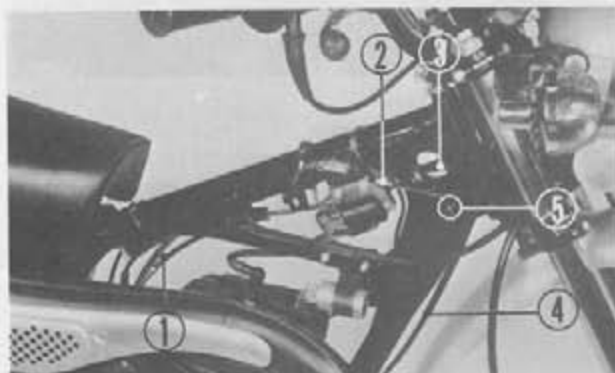


Fig. 4-4 ① Tachometer cable
② Front stop switch lead
③ Ignition switch lead
④ Clutch cable
⑤ Tank location

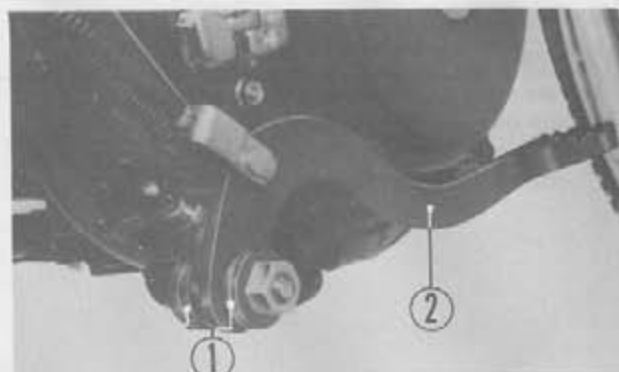


Fig. 4-3 ① Pedal shaft seal ② Brake pedal

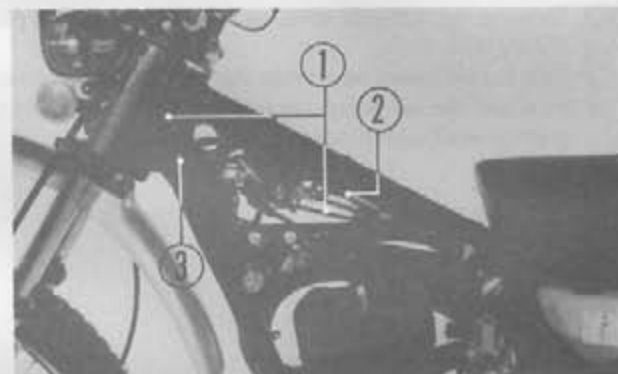


Fig. 4-5 ① Throttle cable ③ Tank location
② Wire harness

5. Route the pipes and tubes correctly as shown in Fig. 4-6.

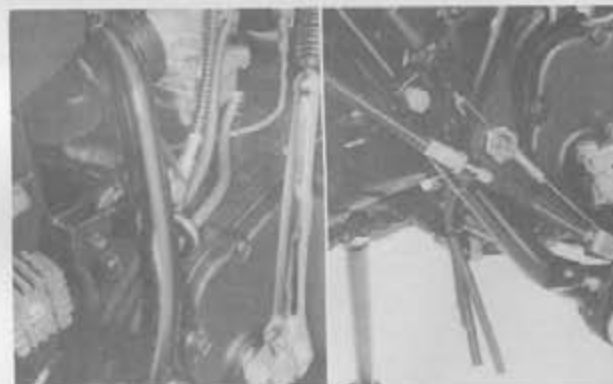


Fig. 4-6

6. Drive chain installation
 - Pull out the cotter pin and loosen the axle nut and chain adjuster. Then install the drive chain on the driven sprocket and connect it with the master link. Finally install the master link retaining clip securely.
 - Install the retaining clip so that the closed end of the clip will face the direction of forward wheel rotation.
7. After installing the engine, adjust the following items.
 - Drive chain tension (See page 24.)
 - Bleeding of oil pump (See page 19.)
 - Oil pump control cable (See page 19.)
 - Throttle cable (See page 19.)
 - Clutch cable (See page 22.)
 - Routing of cables, tubes and pipes

Engine start-up precautions

1. Before starting the engine, be sure to check the transmission oil level with the level gauge.
2. After bleeding the oil pump, allow the engine to break-in for about seven minutes with the throttle grip twisted inward 1/2 turn or less.



Fig. 4-7 ① Master link retaining

3. OIL PUMP

Removal

Do not remove the oil pump if not necessary.
Do not disassemble the pump.

1. Remove the drive chain and left crankcase cover. Then remove the oil pump case cover.

2. Remove the left side cover and disconnect the oil pump at the oil tank.
 - Plug the oil pump to prevent the oil from coming out.
3. Pick out the oil pump control cable pin while raising the control lever and disconnect the wire.

4. Remove the one-way bolt.
5. Remove the two screws (2) and remove the pump by pulling it backward.



Fig. 4-8 ① Oil tank
② Oil pump pipe
③ Oil pump case cover

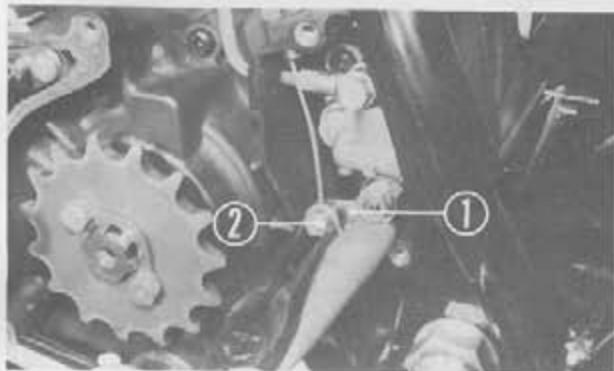


Fig. 4-9 ① Control lever ② Cable pin



Fig. 4-10 ① Oil pump

Installation

- To install, reverse the removal procedures.
1. Insert one end of the oil pipe into the inlet grommet hole and pull it toward the oil tank.
 2. Fit the oil pump drive gear shaft into the opening in the crankcase and push it by hand until it comes in close contact with the crankcase gasket. Then tighten the two parts securely.
 3. Tighten the outlet hose with the one-way bolt.

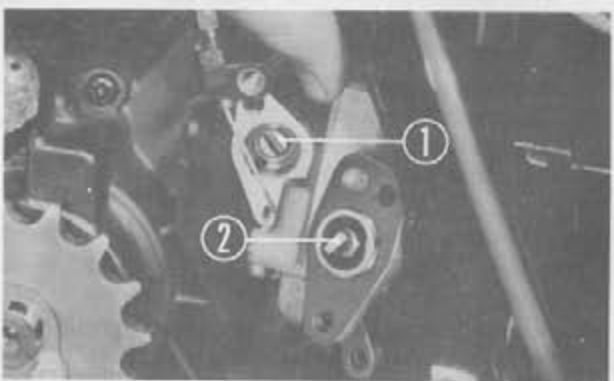


Fig. 4-11 ① Opening in crankcase
② Drive gear shaft

4. With the oil pump control lever raised, insert the wire pin into position.

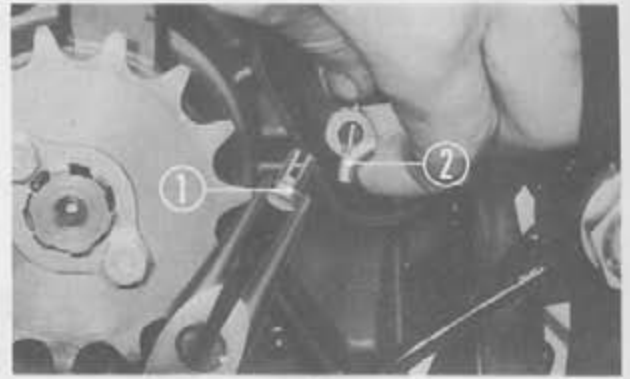


Fig. 4-12 ① Wire pin ② Cable end

5. Insert the oil pipe into the tank completely and secure it with the clip.
6. Bleed the oil pump. (See page 19.)
7. Adjust the oil pump control cable. (See page 19.)

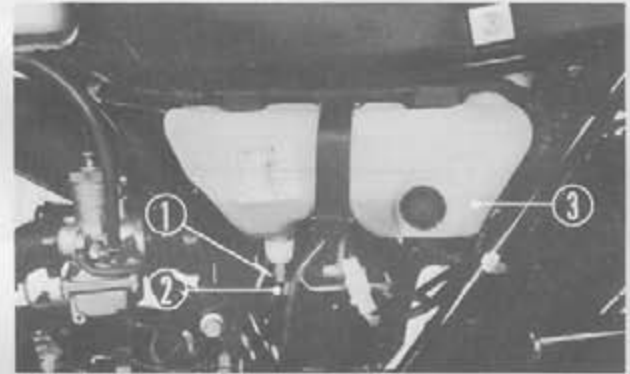


Fig. 4-13 ① Clip ② Oil pipe ③ Oil tank

MEMO

4. CYLINDER HEAD, CYLINDER AND PISTON

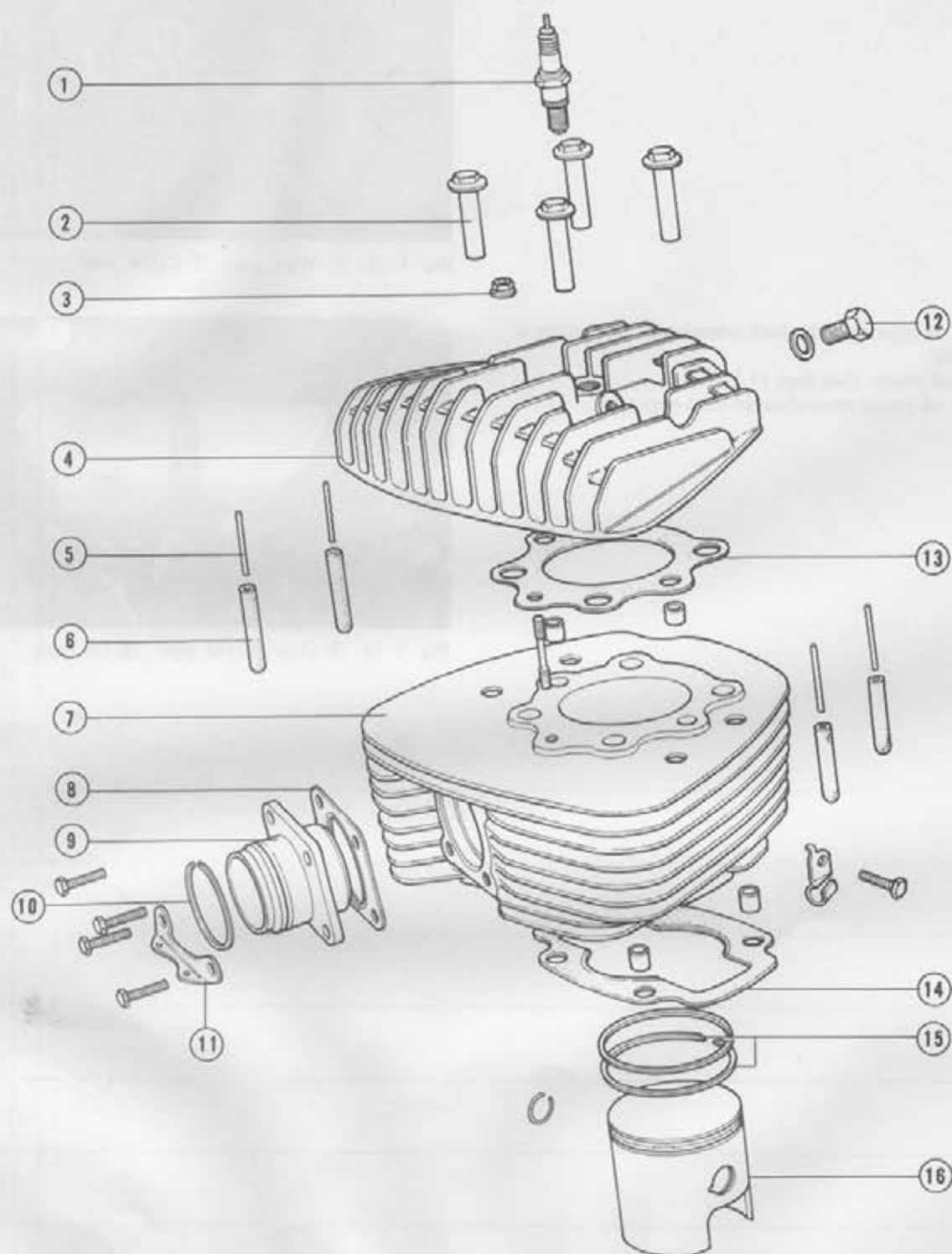


Fig. 4-14 ① Spark plug
 ② 8mm special nut
 ③ 6mm flanged nut
 ④ Cylinder head
 ⑤ Insert bar
 ⑥ Insert rubber
 ⑦ Cylinder
 ⑧ Exhaust pipe joint gasket
 ⑨ Exhaust pipe joint
 ⑩ Exhaust ring
 ⑪ Exhaust pipe spring stay
 ⑫ 14mm sealing bolt
 ⑬ Cylinder head gasket
 ⑭ Cylinder gasket
 ⑮ Piston ring
 ⑯ Piston

Disassembly

- Before disassembling, remove dust, dirt and mud from around the engine completely.
- Take care not to allow dust and dirt to enter and/or attach to the cylinder, crankcase and outlet hose.

1. Open the seat and remove the fuel tank.
2. Remove the muffler. (See page 28.)
3. Remove the inlet pipe one-way bolt and then the inlet pipe tightening bolts.
4. Remove the spark plug cap. Remove the 6 mm flanged nut and 8 mm special nuts and remove the cylinder head.

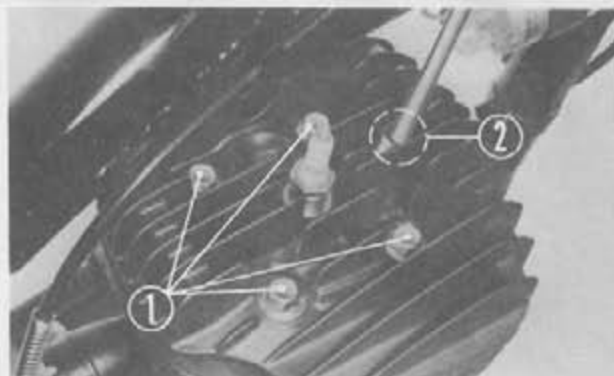
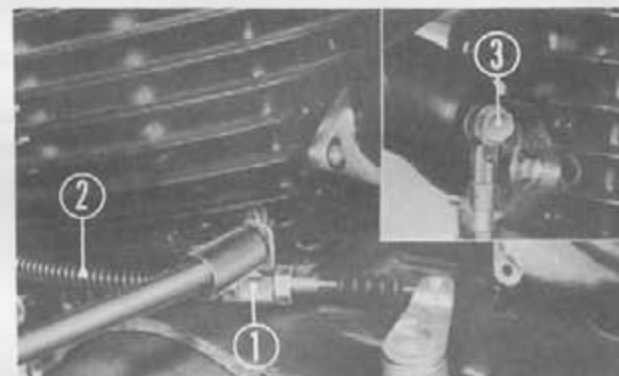
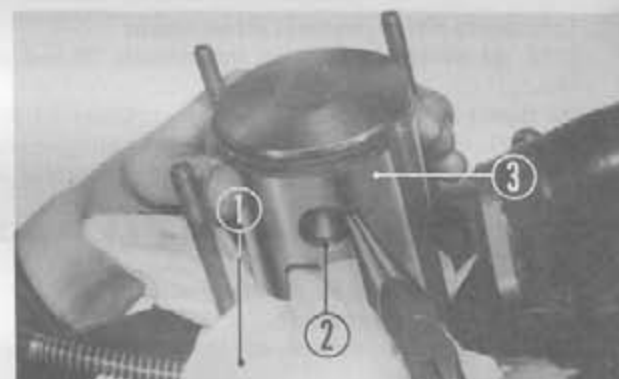


Fig. 4-15 ① 8mm special nut ② 6mm flanged nut

5. Remove the clutch cable clamp stay.

Fig. 4-16 ① Clutch cable clamp stay
② Clutch cable ③ One-way bolt

6. Remove the cylinder taking care not to damage the piston and piston rings.
7. Remove the piston pin clips and pull out the piston pin. Then remove the piston.
- Place a waste cloth over the crankcase to avoid the piston pin clips from dropping into the crankcase.

Fig. 4-17 ① Waste cloth ③ Piston
② Piston pin clip

8. Remove the piston rings from the piston.
- Expand the rings with the right and left thumbs and remove them from the direction opposite to the gaps.



Fig. 4-18 ① Piston ring

9. When replacing the cylinder:

- a. Remove the exhaust pipe joint.
- b. Remove the insert bars and then remove the insert rubbers.

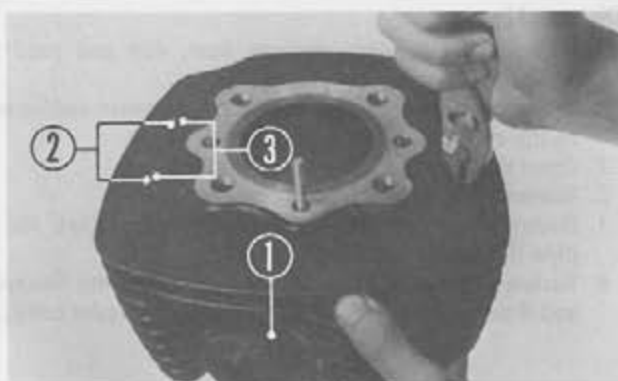


Fig. 4-19 ① Exhaust pipe joint ③ Insert rubber
② Insert bar

Inspection

1. Check the cylinder head combustion chamber for carbon deposits.
 - If necessary, decarbonize the chamber with a scraper taking care not to score or scratch the spherical surface.
 - After decarbonizing, wash the chamber thoroughly.

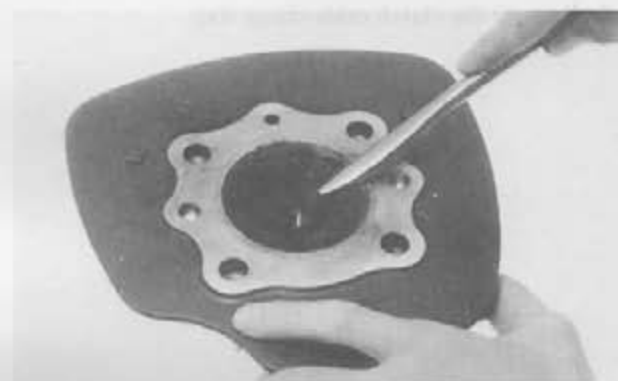


Fig. 4-20 Decarbonizing cylinder head

2. Cylinder-to-piston clearance measurement

Find the difference between the cylinder ID and piston OD.

- As shown in Fig. 4-21, measure the cylinder ID at four points ① in the longitudinal direction and at two points in the directions X and Y. The maximum dimension is the measured value.
 - The piston OD must be measured at 5.0 mm (0.2 in.) apart from the bottom of the piston.
3. Decarbonize the cylinder exhaust port.
 - Use a scraper or screwdriver.
 4. Check the inner surface of the cylinder for scores, scratches or wear.
 5. Check the piston for scores, scratches, cracks or carbon deposits.
 - If the piston rings are sticking, remove them and clean the ring grooves in the piston with the tip of a screwdriver taking care not to damage them.
 6. Check the piston ring dowels for wear.
 - If the dowels are excessively worn, replace the piston.

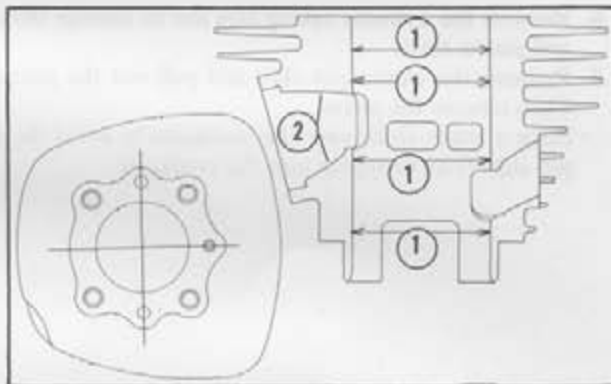


Fig. 4-21 ① Carbon deposit in cylinder exhaust port

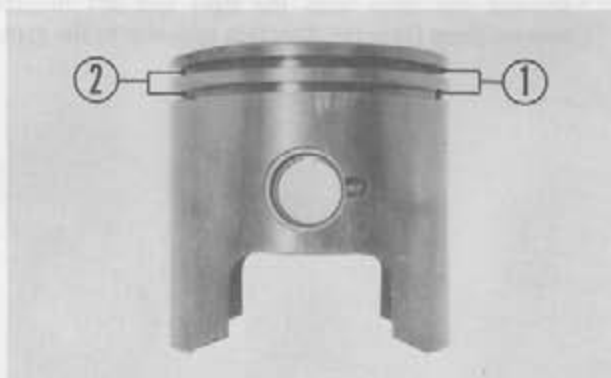


Fig. 4-22 ① Piston ring dowels
② Ring grooves in piston

7. Measure the piston ring gaps and the ring side clearance.

NOTE:

The ring gaps should be measured with the rings installed properly in the cylinder.

8. Check the piston rings for warpage or wear.

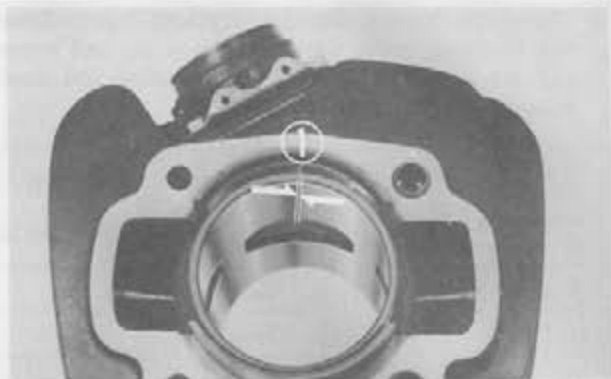


Fig. 4-23 ① Piston ring gap

9. Check the connecting rod small end bearing for looseness.

NOTE:

If the bearing is excessively loose, replace it according to the bearing fit classification table. (See page 38.)

10. Check the piston for wear and the piston pin clearance in pin hole.



Fig. 4-24 Checking connecting rod small end bearing for looseness

Assembly

- To assemble, reverse the disassembly procedures.
1. Install the piston rings to the piston.

NOTE:

- Be careful of the identification of the top and second rings. The top ring is of a keystone type.
- Use the piston rings of the same manufacturer in a set.
- The markings on the rings should face upward.
- After installing, compress the rings to check for proper fit.

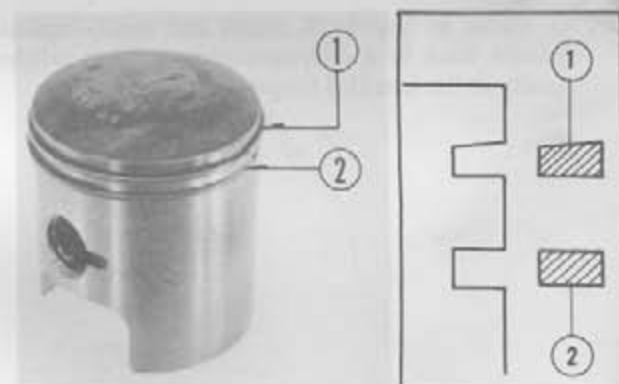


Fig. 4-25 ① Top ring ② Second ring

2. Insert the needle bearing into the connecting rod small end and install the piston.

NOTE:

- Apply a thin coat of the two-cycle motor oil to the needle bearing.
- Install the piston ring dowels so that they are toward the inlet port.



Fig. 4-26 ① Piston ring stopper

3. The needle bearing should be replaced in accordance with the following table since the piston pin and connecting rod are selective-fitted. (The connecting rod small end bearings are packed in colors.)

Piston pin dia. Connecting rod small end ID	A (With notch)	B (Without notch)
I (One notch)	Red	—
II (Two notches)	Blue	Red
III (Three notches)	White	Blue

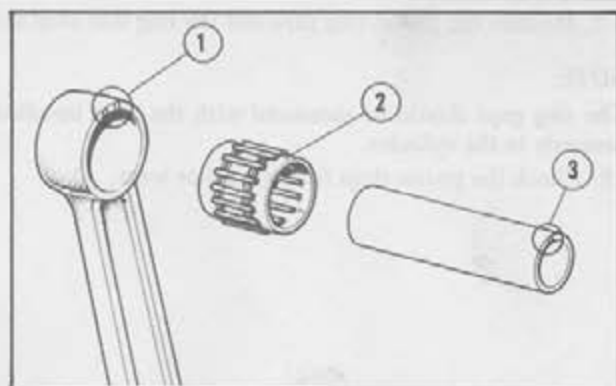


Fig. 4-27 ① Connecting rod small end notch
② Small end bearing
③ Crank pin notch

4. With the piston rings fitted on the ring dowels, install the cylinder.

- Apply a thin coat of the two-cycle motor oil to the piston rings.

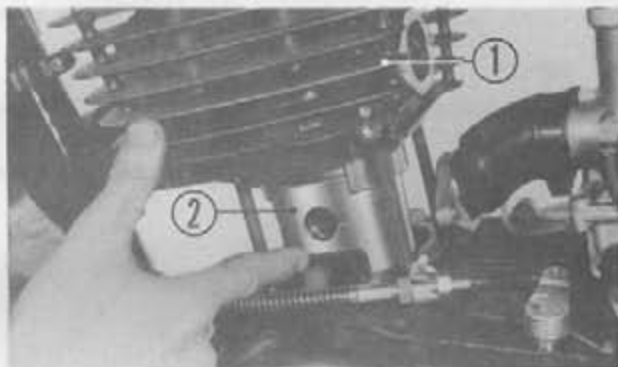


Fig. 4-28 ① Cylinder ② Piston

5. As shown in Fig. 4-29, install and slowly tighten the cylinder head in a criss-cross pattern. Then retighten it equally to the specified torque.

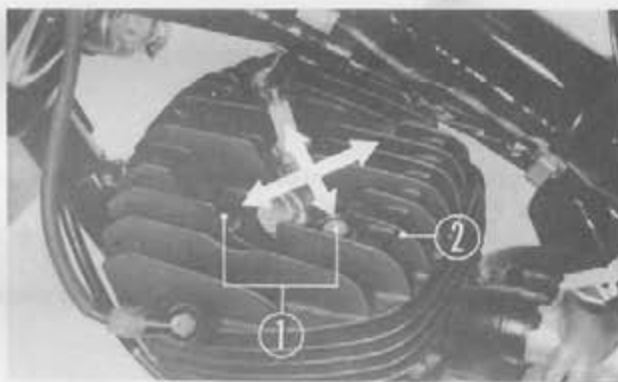


Fig. 4-29 ① 10mm special nut ② Cylinder head

6. Connect the inlet pipe to the cylinder. Then install and tighten the inlet pipe one-way bolt.

7. Make the following inspections or adjustments.

- Carburetor
- Clutch cable
- Leak of compression from cylinder head
- Ignition timing

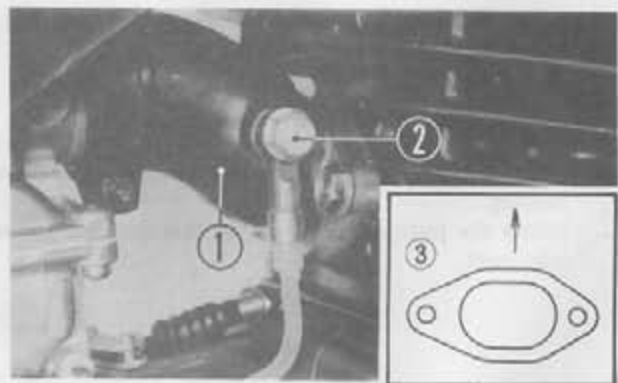


Fig. 4-30 ① Inlet pipe
② Inlet pipe one-way bolt
③ Inlet pipe gasket orientation

5. AC GENERATOR

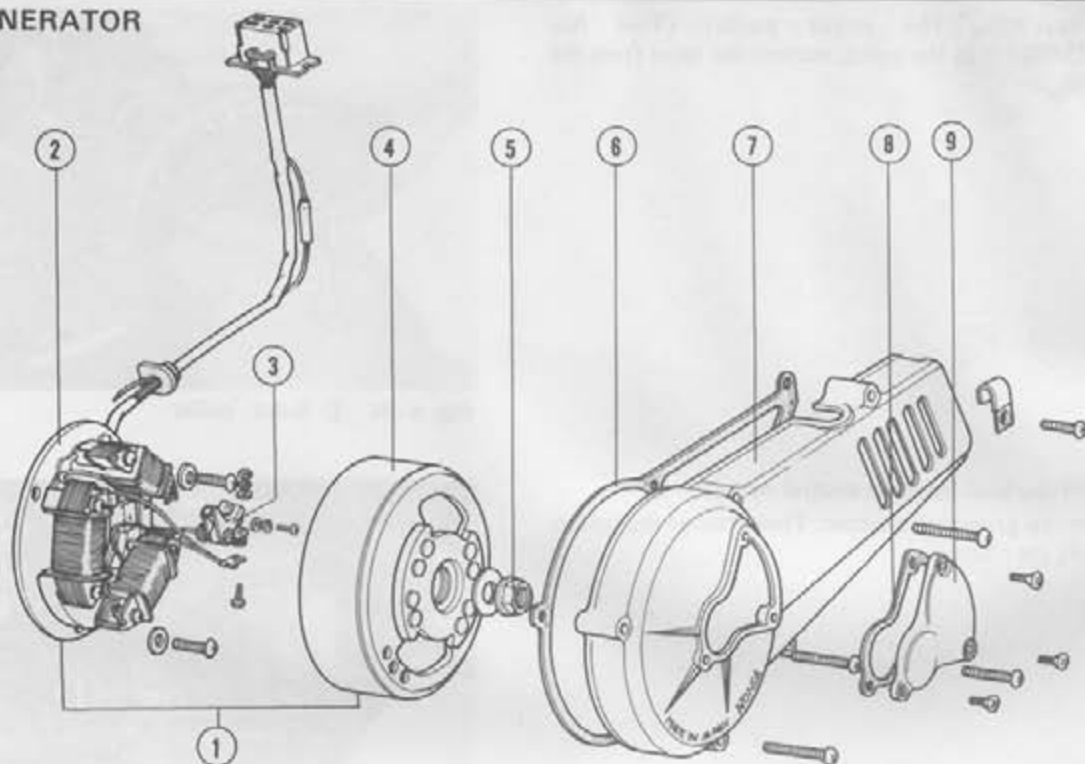


Fig. 4-31 ① A.C. generator assy ⑥ Left crankcase cover gasket
 ② A.C. generator stator ⑦ Left crankcase cover
 ③ Contact breaker ⑧ Generator rotor cover gasket
 ④ A.C. generator rotor ⑨ Generator rotor cover
 ⑤ 12mm special nut

Disassembly

1. Remove the left side cover and then the wire harness connector.
2. Remove the generator rotor cover and left crankcase cover.



Fig. 4-32 ① Wire harness connector
 ② Left crankcase cover
 ③ Generator rotor cover

3. With the transmission gears placed in any position other than the neutral position, set the drive sprocket holder (Tool No. 07922-3570000) as shown in Fig. 4-33 and remove the 12 mm special nut tightening the generator rotor.

- With the two drive sprocket fixing bolt positions in a level line as shown in Fig. 4-33, mesh the drive sprocket and drive sprocket holder with each other.



Fig. 4-33 ① AC generator rotor
 ② Drive sprocket fixing bolts
 ③ Drive sprocket holder

4. While screwing the rotor puller (Tool No. 07933-3580000) in the rotor, remove the rotor from the crankshaft.

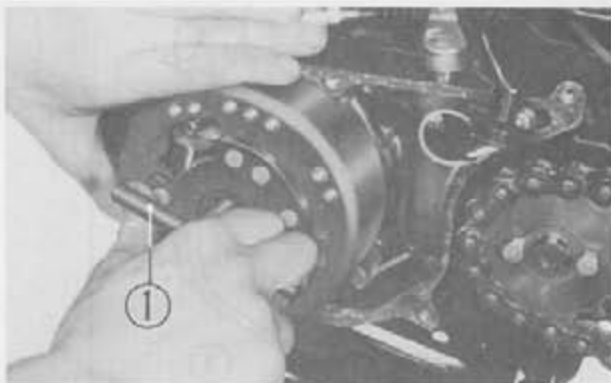


Fig. 4-34 ① Rotor puller

5. Disconnect the lead from the neutral switch.
6. Straighten the generator clamber. Then remove the screws and remove the stator.

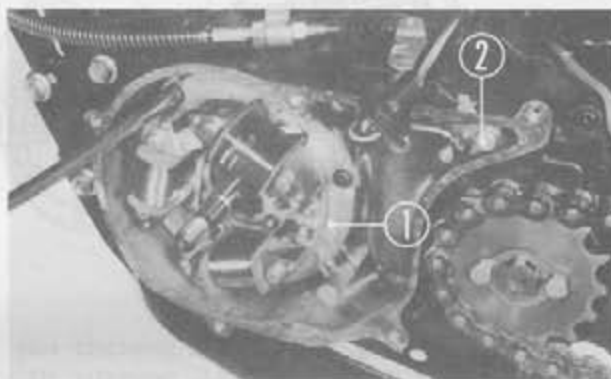


Fig. 4-35 ① Stator ② Neutral switch

7. To remove the contact breaker for replacement, remove the screw ① and nut ③.

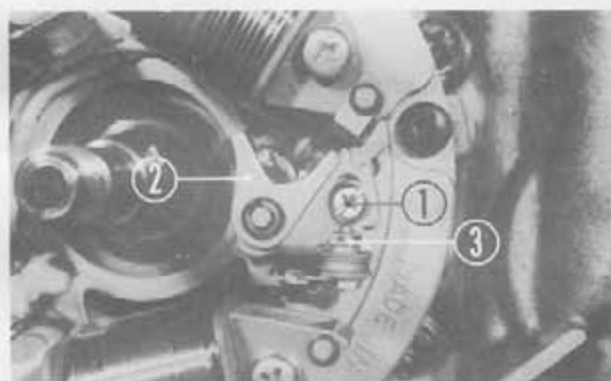


Fig. 4-36 ① Screw ② Contact breaker

Inspection

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

Assembly

- To assemble, reverse the disassembly procedures.
1. Making sure that the screw, bolt and washer are not remained in the rotor, install the rotor.
 2. When the stator is removed, the ignition timing should be adjusted.
 3. Make sure that the generator clamber does not interfere with the generator rotor.



Fig. 4-37 ① AC generator clamber

6. RIGHT CRANKCASE COVER AND CLUTCH

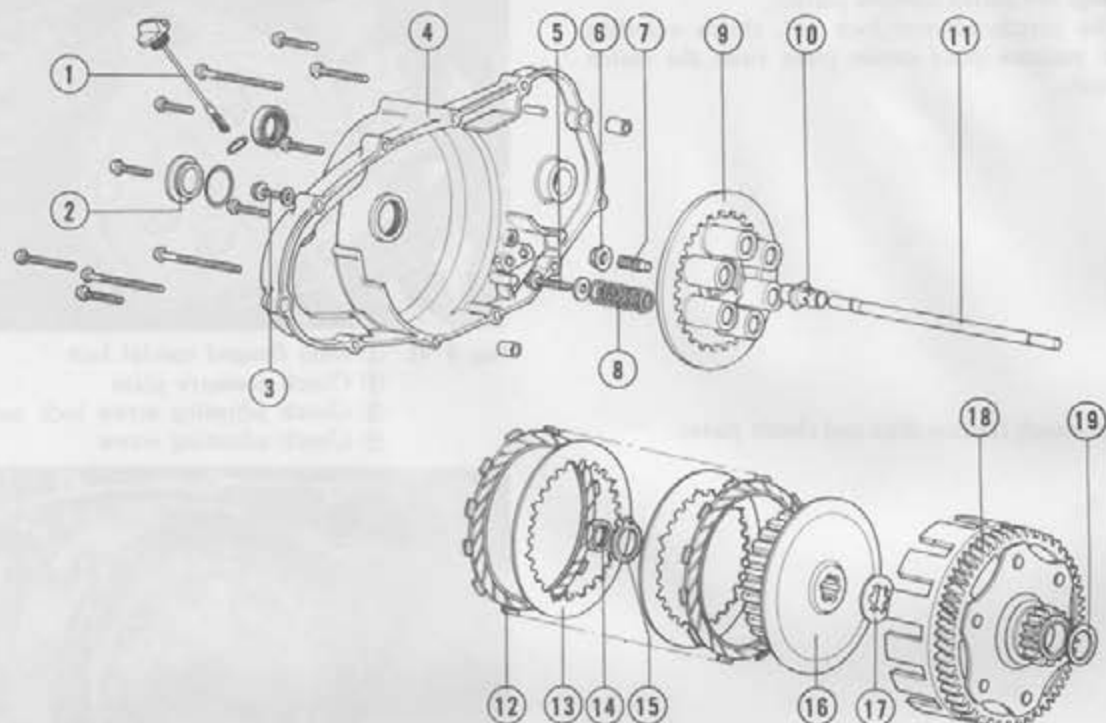


Fig. 4-38 ① Transmission oil level gauge ⑥ 6mm flanged nut ⑪ Clutch lifter rod ⑫ Clutch center
 ② Clutch adjust cap ⑦ Clutch adjusting screw ⑬ Clutch friction disc ⑭ 22mm thrust washer
 ③ Transmission oil check bolt ⑧ Clutch spring ⑮ Clutch plate ⑯ Clutch outer
 ④ Right crankcase cover ⑨ Clutch pressure plate ⑰ 18mm lock nut ⑱ 25mm thrust washer
 ⑤ 6mm special flanged bolt ⑩ Pressure plate center piece ⑲ 18mm lock washer

Disassembly

1. Remove the drain bolt and drain the transmission oil.
 • If the motorcycle is tilted toward left, it is unnecessary to drain the oil. Take care not to damage each part of the motorcycle.
2. Remove the right foot rest and brake pedal.

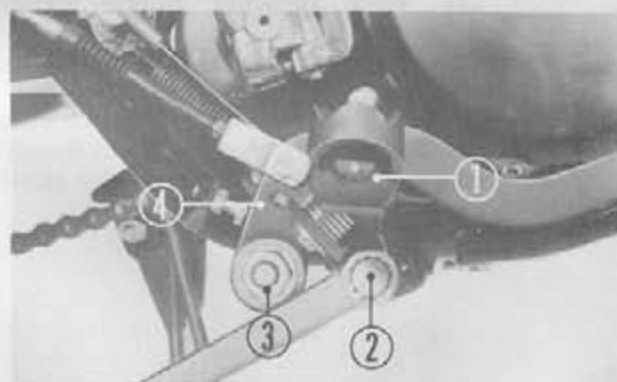


Fig. 4-39 ① Right foot rest ③ 10mm nut
 ② 8mm bolt ④ Brake pedal

3. Remove the 8 mm bolt and remove the kick starter pedal.
4. Remove the right crankcase cover tightening screws and remove the cover.
 • Place a pan under the crankcase to collect the spilled oil.
 • It is advisable to remove the skid plate since the spilled oil may contaminate the plate.

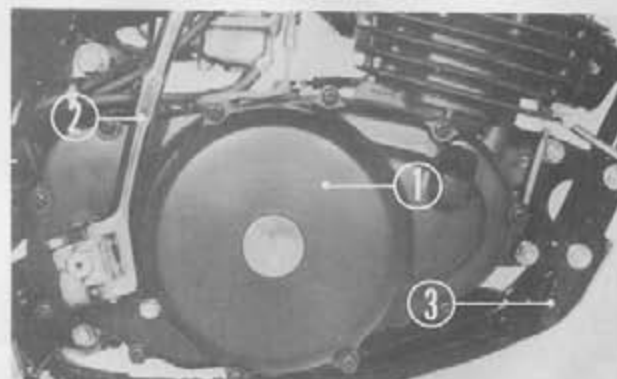


Fig. 4-40 ① Right crankcase cover ③ Skid plate
 ② Kick starter pedal

5. Remove the 6 mm flanged special bolts and remove the clutch springs and clutch pressure plate.
6. Remove the clutch adjuster lock nut, clutch adjusting screw and pressure plate center piece from the clutch pressure plate.

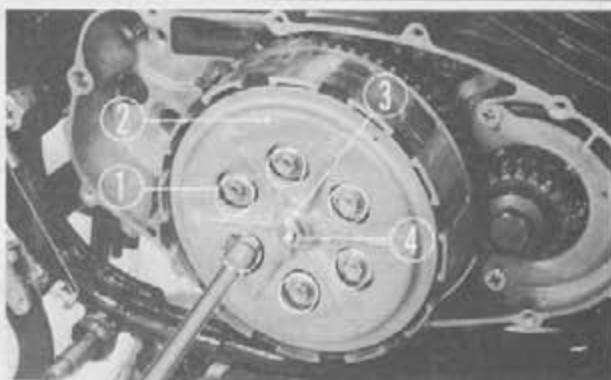


Fig. 4-41 ① 6mm flanged special bolt
② Clutch pressure plate
③ Clutch adjusting screw lock nut
④ Clutch adjusting screw

7. Remove the clutch friction discs and clutch plates.

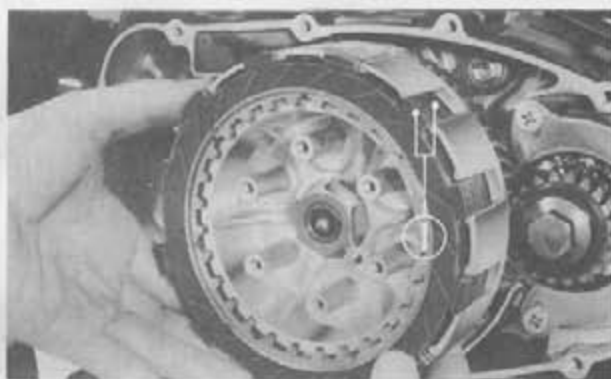


Fig. 4-42 ① Clutch friction discs and clutch plates

8. With the transmission gears meshed, hold the clutch center with the drive sprocket holder (Tool No. 07922-3570000).
• Set the drive sprocket holder as shown in Fig. 4-33 on page 39.
9. Straighten the locking tab of the 18 mm lock washer and remove the 18 mm nut with the lock nut wrench (Tool No. 07907-935000). Then remove the clutch center.

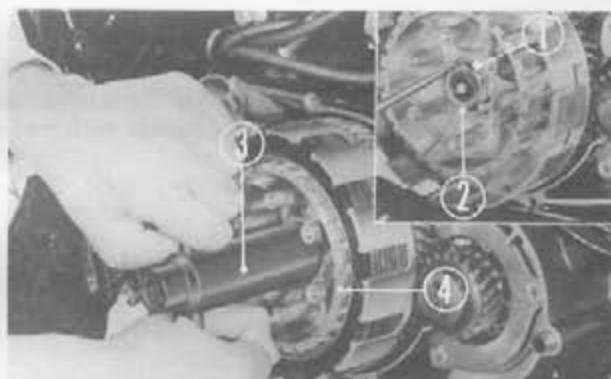


Fig. 4-43 ① 18mm lock washer ③ Lock nut wrench
② 18mm lock nut ④ Clutch center

10. Remove the 22 mm thrust washer and remove the clutch outer.
11. See page 49, remove the clutch lever.

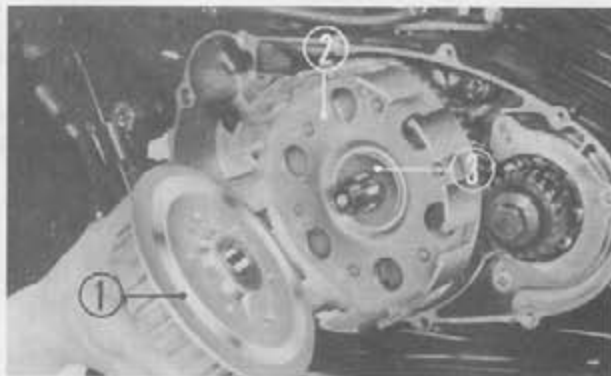


Fig. 4-44 ① Clutch center ③ 22mm thrust washer
② Clutch outer

Inspection

1. Measure the friction disc thickness. Also check the friction discs for burning.
2. Check the clutch plates for warpage.
3. Measure the clutch spring free length.

Assembly

- To assemble, reverse the disassembly procedures.
- 1. Making sure that the 25 mm thrust washer is in correct position, install the clutch outer.
- Mesh the clutch outer with primary drive gear and starter idle gear securely.
- 2. Install and tighten the clutch center. Insert the locking tab of the 18 mm lock washer into the attaching hole in the clutch center and tighten the 18 mm lock nut with the lock nut wrench.
- Do not forget to install the 22 mm thrust washer.
- Bend the locking tab of the 18 mm lock washer completely.

3. Install the clutch friction discs and clutch plates in this order to the clutch center alternately.
- Face the oil grooves in the friction disc in the direction shown in Fig. 4-47.

4. Install the pressure plate center piece into the groove in the clutch pressure plate. Then install and tighten the clutch adjusting screw and clutch adjuster lock nut.

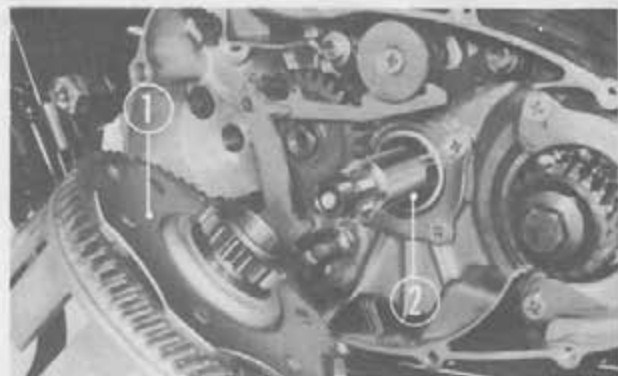
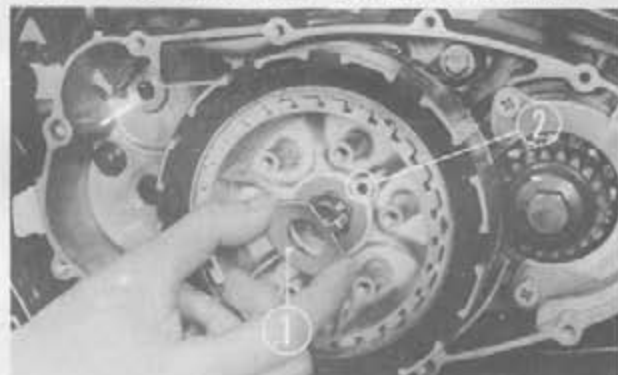
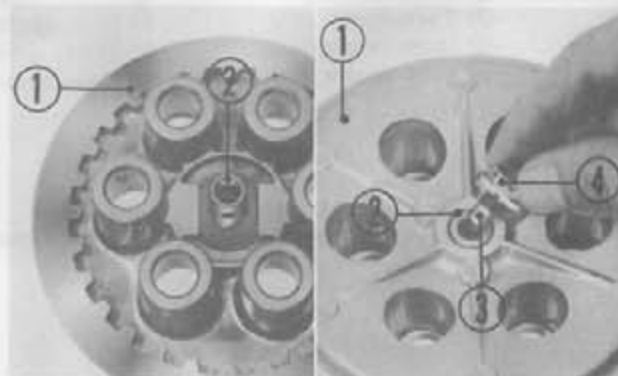


Fig. 4-45 ① Clutch outer ② 25mm thrust washer

Fig. 4-46 ① 18mm lock washer
② Attaching hole in clutch centerFig. 4-47 ① Oil grooves in friction disc
② Bend lock lug of 18mm lock washerFig. 4-48 ① Clutch pressure plate
② Pressure plate center piece
③ Clutch adjusting screw
④ Clutch adjuster lock nut

5. Install the clutch lifter rod with one end (spherical) toward the pressure plate.
(The opposite end is flat.)

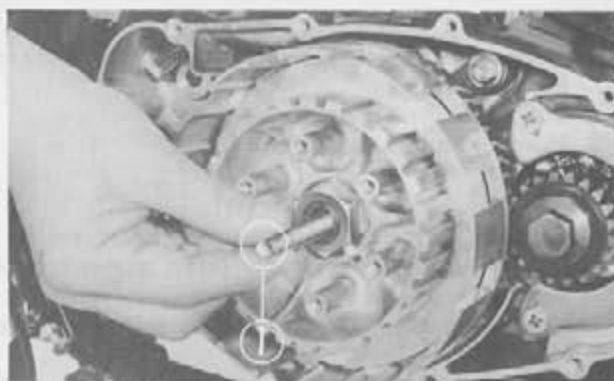


Fig. 4-49 ① Clutch lifter rod end (spherical)

7. KICK STARTER, OIL PUMP DRIVE SHAFT AND TACHOMETER GEAR

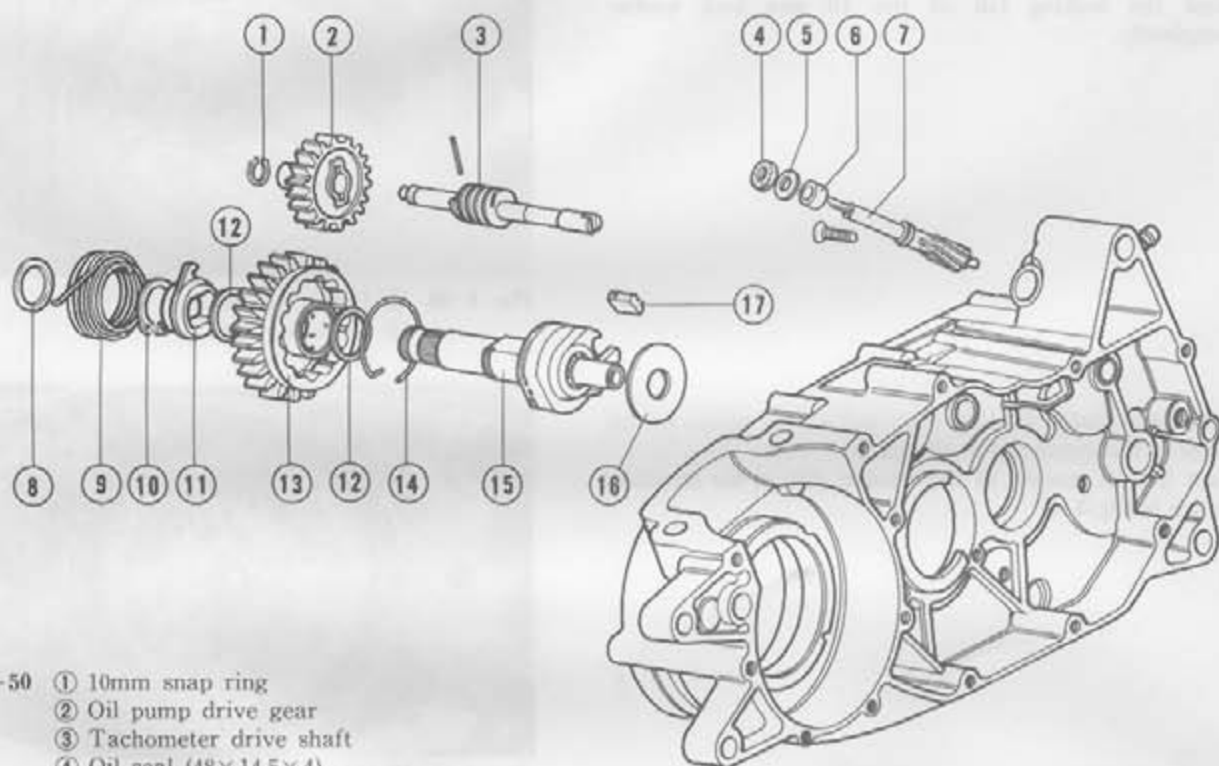


Fig. 4-50 ① 10mm snap ring
② Oil pump drive gear
③ Tachometer drive shaft
④ Oil seal (48×14.5×4)
⑤ Thrust washer
⑥ Tachometer gear collar
⑦ Tachometer gear
⑧ 18mm washer
⑨ Kick starter spring
⑩ 22mm snap ring
⑪ Kick starter retainer
⑫ 22mm thrust washer
⑬ Kick starter pinion
⑭ Pawl set spring
⑮ Kick starter spindle
⑯ 16mm washer
⑰ Kick starter pawl

Disassembly

1. Remove the right crankcase cover. (See page 41.)
2. Remove the kick starter spring and kick starter assembly.

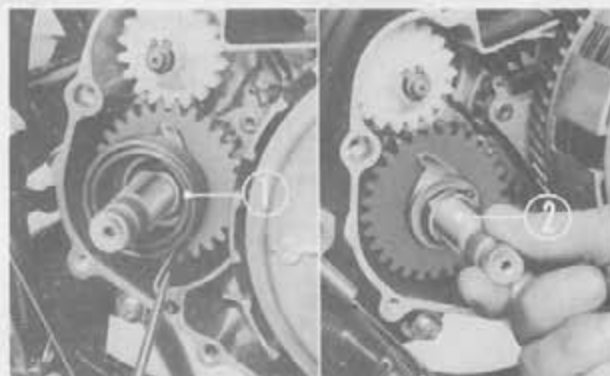


Fig. 4-51 ① Kick starter spring
② Kick starter assembly

3. Remove the tachometer drive shaft and oil pump drive gear.
4. Remove the 10 mm external snap ring and separate the oil pump drive gear from the tachometer drive shaft.

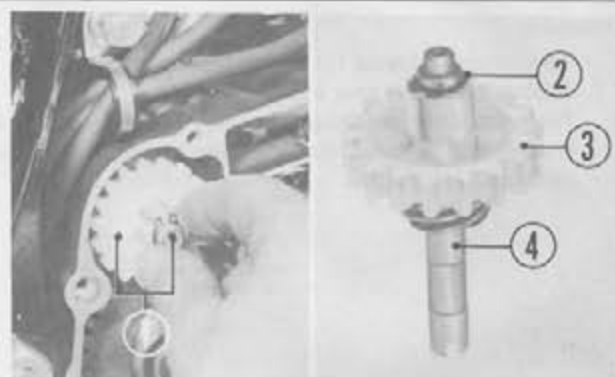


Fig. 4-52 ① Tachometer drive shaft and oil pump drive gear
② 10mm external snap ring
③ Oil pump drive gear
④ Tachometer drive shaft

5. To remove the kick starter, remove the 22 mm external snap ring and remove the kick starter spring retainer and kick starter pinion in this order.

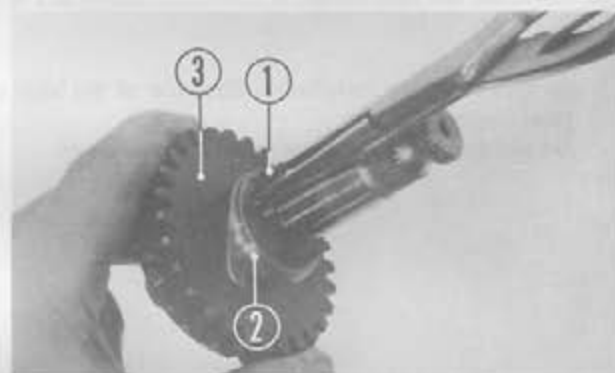


Fig. 4-53 ① 22mm external snap ring
② Kick starter spring retainer
③ Kick starter pinion

6. Remove the kick starter pawl set spring and then remove the kick starter pawl and kick starter spindle.

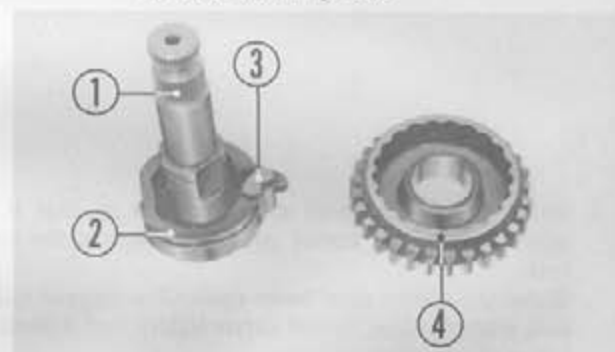


Fig. 4-54 ① Kick starter spindle ④ Kick starter pinion
② Pawl set spring
③ Kick starter pawl

7. Tachometer drive gear removal

Disconnect the tachometer cable and remove the tachometer drive gear from the crankcase while pushing the bottom of the drive gear.

Inspection

1. Check the inside surface of the kick starter pinion for wear.
 2. Check the kick starter pawl for wear.
 3. Check the kick starter pawl stopper for weakness.
- In either case, slippage may occur in the kick starter pedal operation. Replace the part(s).



Fig. 4-55 ① Tachometer drive gear
② Tachometer cable

Assembly

- To assemble, reverse the disassembly procedures.

1. Tachometer drive gear installation

Push the drive gear together with the gear collar, thrust washer and oil seal into position using the tachometer cable end as a guide.

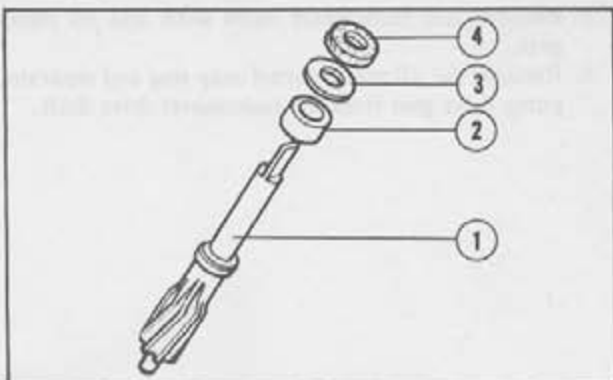


Fig. 4-56 ① Tachometer drive gear
② Tachometer gear collar
③ Thrust washer
④ Oil seal

2. Assemble the kick starter in that order shown in Fig. 4-57.

NOTE:

Be careful of the installation direction of the kick starter pawl stopper.
Do not expand the stopper more than necessary.

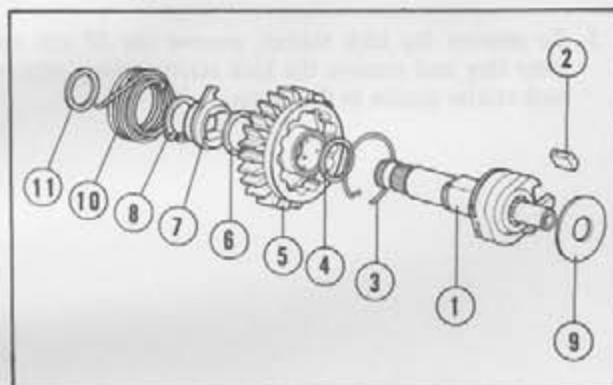


Fig. 4-57

3. Install the kick starter spring retainer so that it faces upward when the starter pawl bears against the stopper bolt.

- Where the starter pawl bears against the stopper bolt, the kick starter pinion should rotate lightly and it should not rotate in any other position.

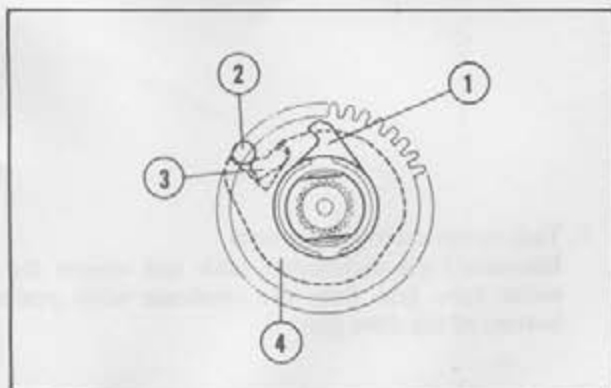


Fig. 4-58 ① Kick starter spring retainer
② Stopper bolt
③ Starter pawl
④ Kick starter spindle

8. GEARSHIFT MECHANISM

Disassembly

1. Remove the clutch outer. (See page 42.)
2. Remove the gear change pedal.
3. Remove the gearshift arm from the drum and pull out the gearshift spindle.

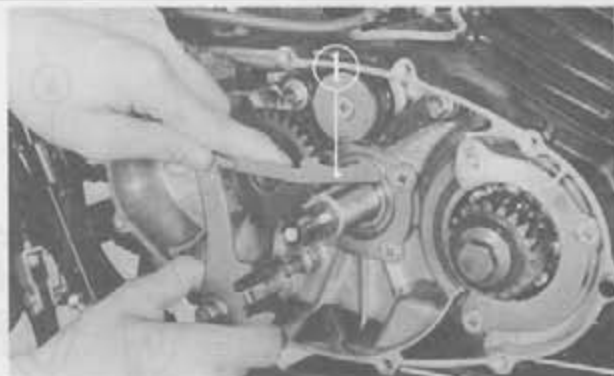
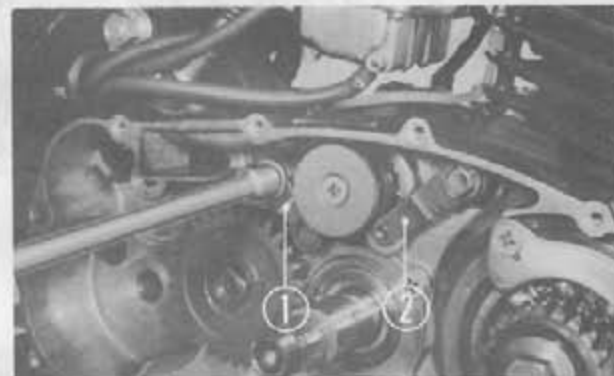


Fig. 4-59 ① Gearshift spindle

4. Remove the drum stopper and neutral stopper arms.

Inspection

1. Check the gearshift arm spring for weakness.
2. Check the shift return spring pin for looseness.
3. Check the drum stopper spring for weakness.
4. Check the neutral stopper spring for weakness.

Fig. 4-60 ① Neutral stopper arm
② Drum stopper arm

Assembly

- To assemble, reverse the disassembly procedures.
- 1. Install the drum stopper arm and neutral stopper arm as shown in Fig. 4-61.

- ① Drum stopper arm spring
- ② Drum stopper washer
- ③ Drum stopper arm
- ④ Drum stopper collar
- ⑤ Neutral stopper arm spring
- ⑥ Neutral stopper collar
- ⑦ Neutral stopper arm
- ⑧ Washer

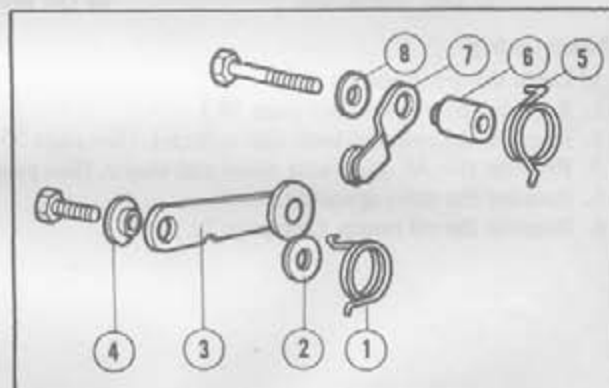
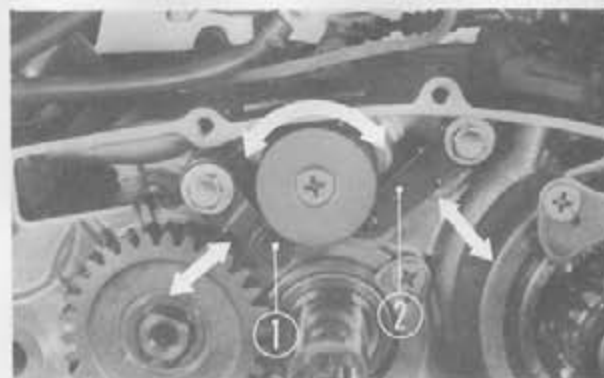


Fig. 4-61

2. After installing the drum stopper arm and neutral stopper arm, operate them by hand.

If they will not operate or operate stiffly, the tightening torque is beyond the specification or the collar and washer are not in correct position. If necessary, recheck.

Fig. 4-62 ① Neutral stopper arm
② Drum stopper arm

9. LEFT CRANKCASE

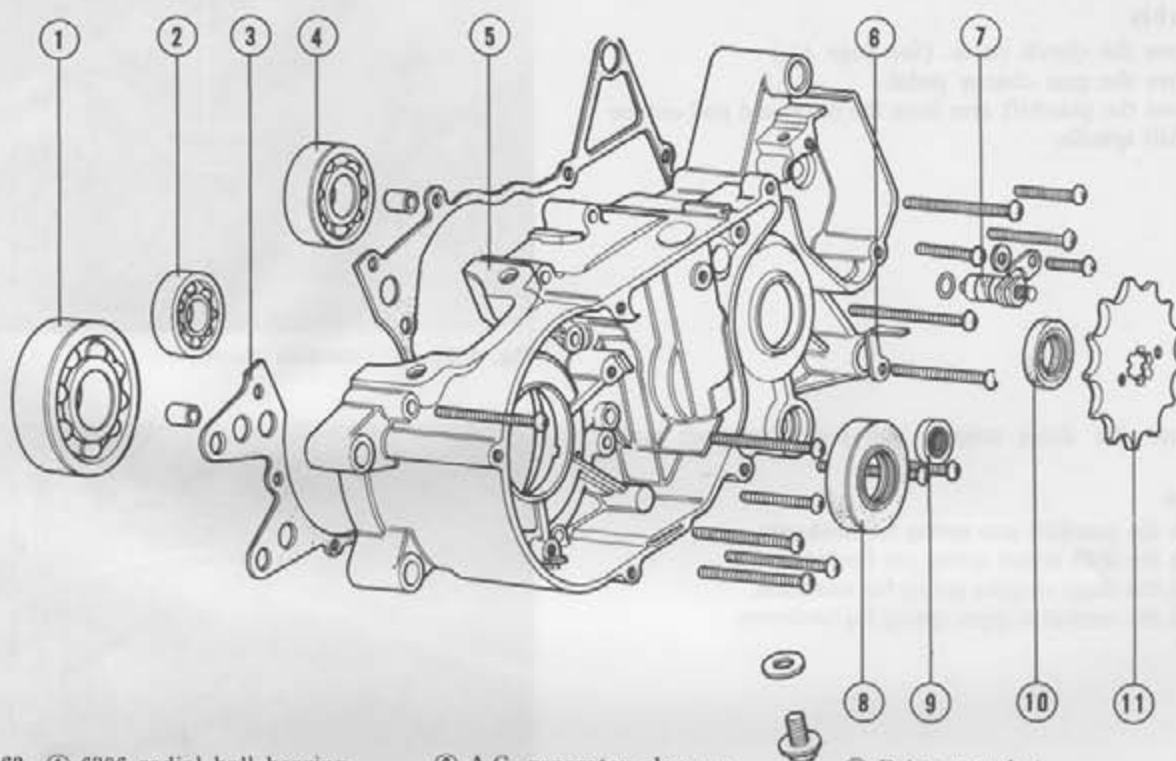


Fig. 4-63 ① 6306 radial ball bearing ⑥ A.C. generator clamper
 ② 6203Z radial ball bearing ⑦ Neutral switch
 ③ Crankcase gasket ⑧ Crank oil seal (25×55×10)
 ④ 66/22 radial ball bearing ⑨ Oil seal (14×28×7)
 ⑤ Left crankcase ⑩ Oil seal (20×34×7)
 ⑪ Drive sprocket

Disassembly

1. Drain the transmission oil.
2. Remove the engine. (See page 28.)
3. Remove the cylinder head and cylinder. (See page 35.)
4. Remove the AC generator rotor and stator. (See page 39.)
5. Remove the drive sprocket.
6. Remove the oil pump. (See page 32.)

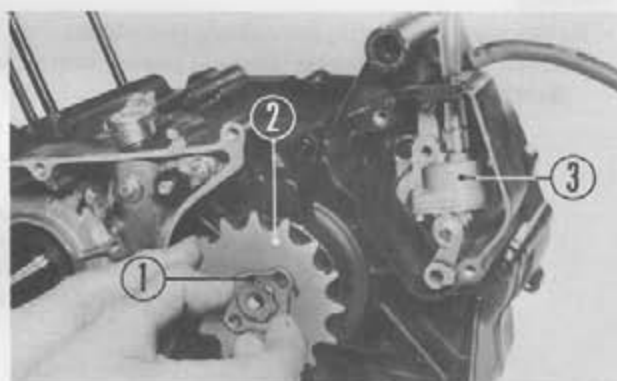


Fig. 4-64 ① Drive sprocket fixing plate
 ② Drive sprocket
 ③ Oil pump

7. Remove the 14 crankcase tightening screws.

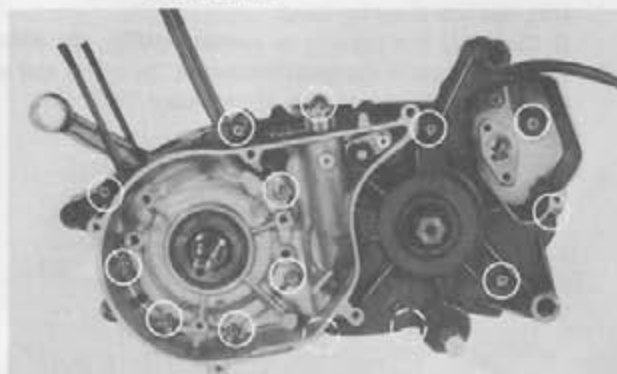


Fig. 4-65 ① Crankcase tightening screws (fourteen)

8. As shown in Fig. 4-66, set the crankcase puller (Tool No. 07937-3580000) into the two 8 mm tapped holes in the left crankcase. While screwing the puller in, separate the crankcase into two parts.
- Use the puller while tapping the countershaft.

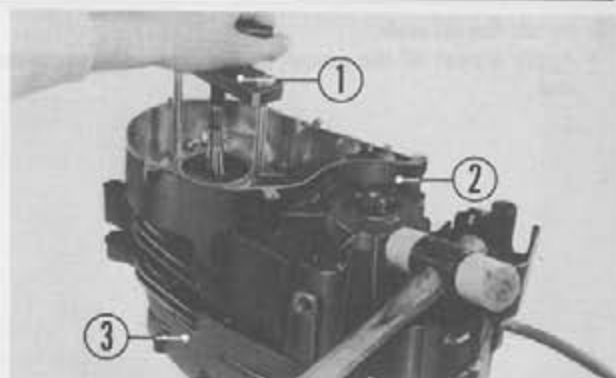


Fig. 4-66 ① Crankcase puller ② Left crankcase ③ Right crankcase

9. Remove the oil seals and ball bearings.
10. Remove the clutch lever.
11. Remove the neutral switch plate and then the neutral switch.

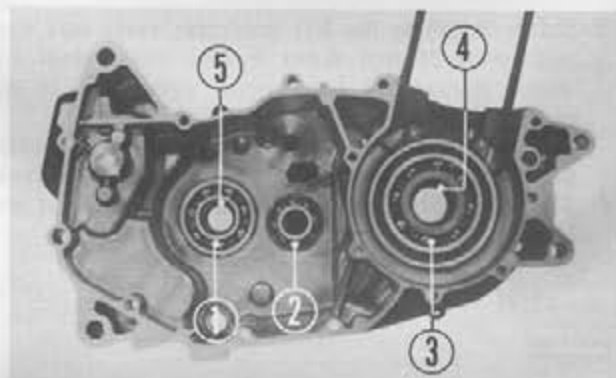


Fig. 4-67 ① 6322 radial ball bearing
② 6203Z radial ball bearing
③ 66/22 radial ball bearing
④ 25x55x10mm oil seal
⑤ 14x28x7mm oil seal

Clutch lever and clutch lever spring

1. Remove the left crankcase cover. (On-frame servicing)
2. Disconnect the clutch cable. (On-frame servicing)
3. Remove the 5 mm special bolt, remove the clutch lever and remove the clutch lever spring.
4. Remove the oil seal and 16 mm needle bearing.
5. After assembling, adjust the clutch. (See page 22.)

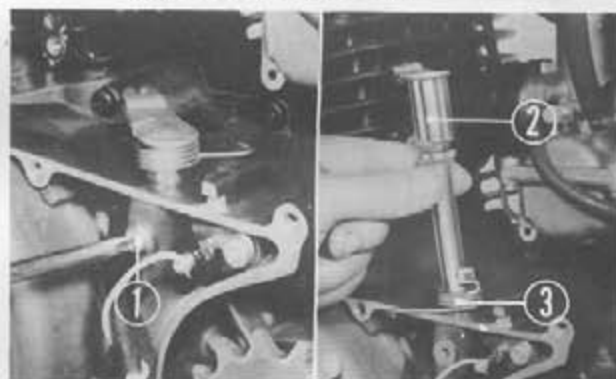


Fig. 4-68 ① 5mm special bolt ② Clutch lever ③ Clutch lever spring

Inspection

1. Check the ball bearings for looseness.
2. Check the neutral switch for breakage.
3. Check the crankcase for crack or breakage.
4. Check the crankcase matching surface for bruise or any other damage.

Assembly

- To assemble, reverse the disassembly procedures.
1. When installing ball bearings, use the ball bearing driver attachment (Tool No. 07946-3570000).

NOTE:

When installing, place an appropriate iron block to the rear side of the bearing to prevent damage to the crankcase.

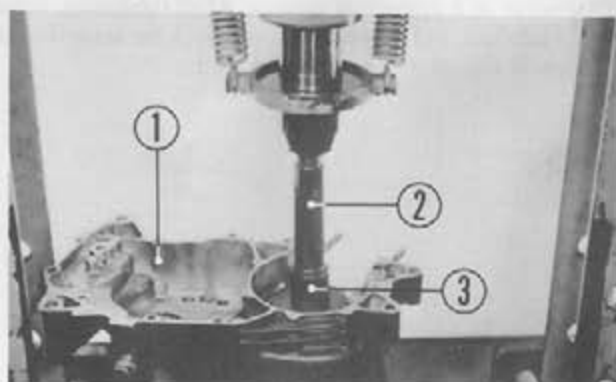


Fig. 4-69 ① Left crankcase
② Driver handle
③ Driver attachment

2. Install the oil seals.

- Apply a coat of the grease to the lip of the crankcase oil seal.

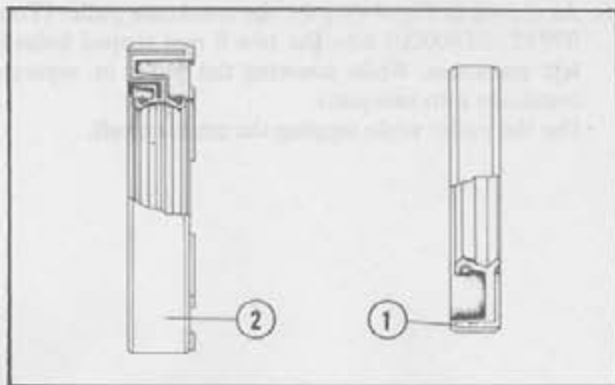


Fig. 4-70 ① Left crankcase oil seal ② Right crankcase oil seal

3. Before installing the left crankcase, make sure that the main shaft 25 mm thrust washer, countershaft 23 mm thrust washer and countershaft cotters are in correct position.

- Apply a coat of grease to the countershaft cotters to prevent it from coming out when installing the crankcase.
- The countershaft cotters are split type since it receives lateral pressure.

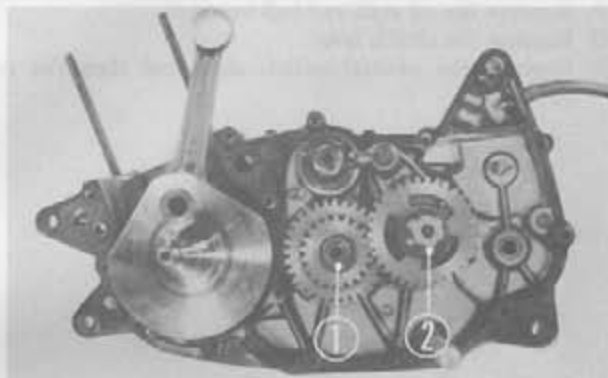


Fig. 4-71 ① 25mm thrust washer ② 23mm thrust washer

4. Install the left crankcase to the right crankcase.

- Take care not to damage the oil seal lip.
- Using the crankcase assembly tool (Tool No. 07965-3610000), install and tighten the crankcase slowly.

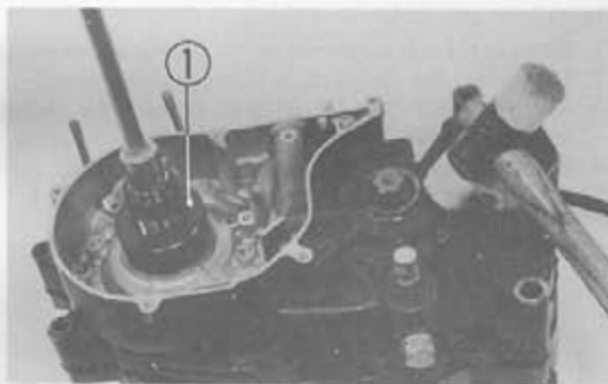


Fig. 4-72 ① Crankcase assembly tool

5. Tighten the 14 crankcase 6 mm screws to the specified torque in a criss-cross pattern. After tightening, rotate the crankshaft and countershaft to check for smooth rotation.
6. Install the oil pump. (See page 32.)



Fig. 4-73

10. RIGHT CRANKCASE, TRANSMISSION, GEARSHIFT MECHANISM AND CRANKSHAFT

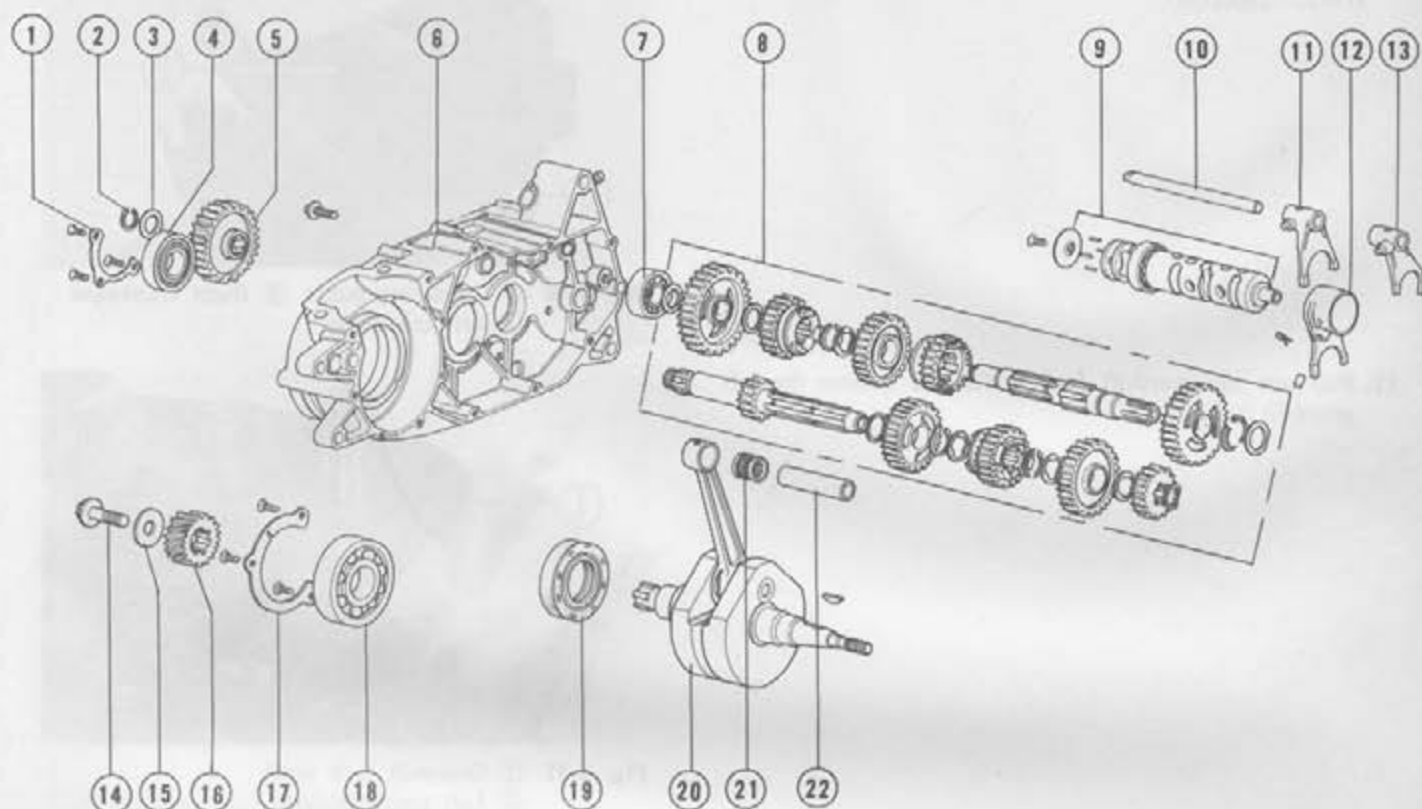


Fig. 4-74

① Bearing stopper plate	⑫ Center gear shift fork
② 17mm snap ring	⑬ Left gear shift fork
③ 17mm thrust washer	⑭ 12mm U.B.S bolt
④ 6205Z radial ball bearing	⑮ Primary washer
⑤ Starter idle gear	⑯ Primary drive gear
⑥ Right crankcase	⑰ Bearing set plate
⑦ 17×42×12 radial ball bearing	⑱ 6306 radial ball bearing
⑧ Transmission gears	⑲ 38×64×13 crank oil seal
⑨ Gear shift drum	⑳ Crankshaft
⑩ Gear shift fork shaft	㉑ Connecting rod small end bearing
⑪ Right gear shift fork	㉒ Piston pin

Disassembly

1. Drain the transmission oil.
2. Remove the engine. (See page 28.)
3. Remove the cylinder head and cylinder. (See page 35.)
4. Remove the AC generator rotor and stator. (See page 39.)
5. Remove the drive sprocket. (See page 48.)
6. Remove the oil pump. (See page 32.)
7. Remove the right crankcase cover and remove the clutch, primary gear, kick starter spindle, gearshift spindle, gearshift drum stopper and neutral stopper. (See page 44.)
8. Remove the 17 mm snap ring and remove the starter idle gear.
9. Remove the bearing set plate and bearing stopper plate.

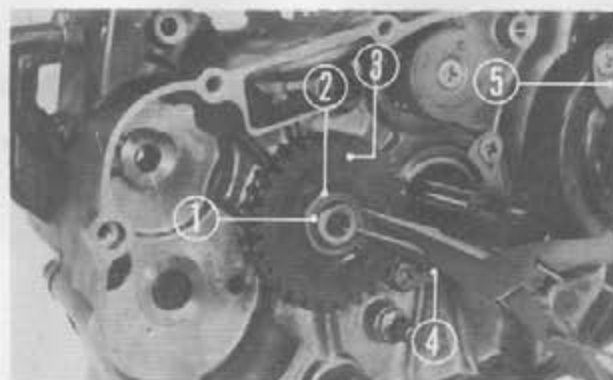


Fig. 4-75

① 17mm snap ring
② 17mm thrust washer
③ Starter idle gear
④ Bearing stopper plate
⑤ Bearing set plate

10. With the right crankcase placed to the lower side, remove the 6 mm screws and separate the crankcase assembly into two parts with the crankcase puller (Tool No. 07937-3580000).

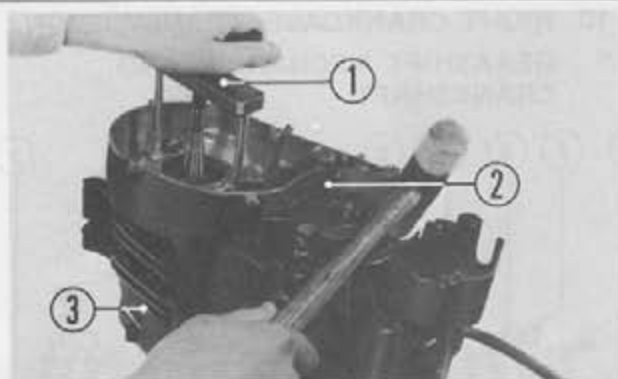


Fig. 4-76 ① Crankcase puller ③ Right crankcase
② Left crankcase

11. Pull out the gearshift fork shafts and remove the left gearshift fork.



Fig. 4-77 ① Gearshift fork shaft
② Left gearshift fork

12. Remove the transmission, gearshift drum and center and right gearshift forks as an assembly.

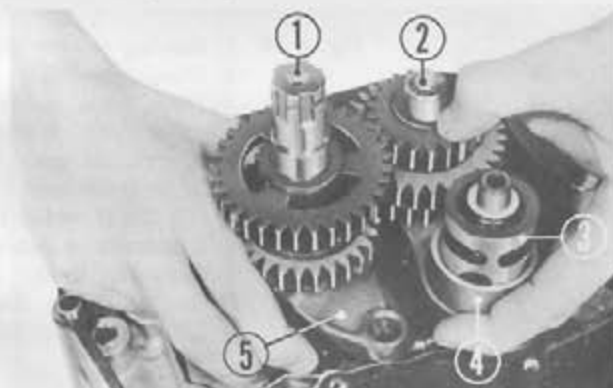


Fig. 4-78 ① Countershaft ④ Center gearshift fork
② Main shaft ⑤ Right gearshift fork
③ Gearshift drum

13. Remove the crankshaft from the crankcase by giving a hammer blow to it.
• Do not give a hammer blow to the shaft more than necessary.
14. Remove the tachometer gear. (See page 45.)
15. Remove the kick stopper pin.
16. Remove the shift return spring pin.

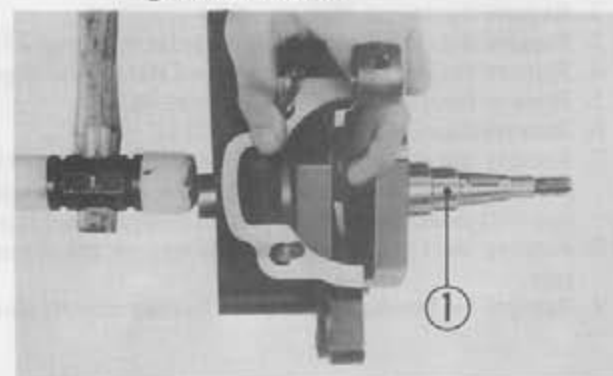


Fig. 4-79 ① Crankshaft

17. Remove the ball bearings.

- The crankshaft bearing (6306 radial ball bearing) must be removed after the 38 x 64 x 13 mm oil seal is removed.

Inspection

1. Check the connecting rod big end axial play.
2. Check the connecting rod big end radial play.
3. Measure the transmission gear backlash.
4. Measure the gearshift drum OD.
5. Measure the center gearshift fork ID.
6. Measure the shift fork guide shaft OD.
7. Measure the right and left gearshift fork ID.
8. Measure the shift fork finger thickness. Also check the shift forks for abnormal wear.

Assembly

- To assemble, reverse the disassembly procedures.

1. Install the ball bearings with a bearing driver. Use the driver attachment (Tool No. 07946-3570000) for the 6306 radial ball bearing.

When installing, place an appropriate iron block to the rear side of the bearing to prevent damage to the crankcase.

2. Apply a coat of grease to the lip of the crankshaft oil seal (38 x 64 x 13 mm oil seal).
3. Apply a coat of the two-cycle motor oil to the crankshaft ball bearing, crankshaft and connecting rod big end bearing.

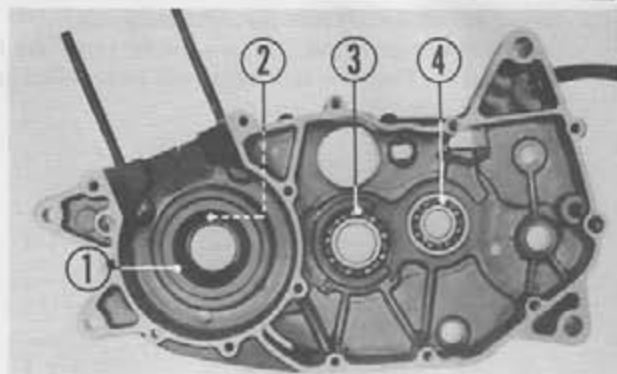


Fig. 4-80 ① 38×64×13mm oil seal
② 6306 radial ball bearing (crankshaft)
③ 6205Z radial ball bearing
④ 17×42×12mm radial ball bearing

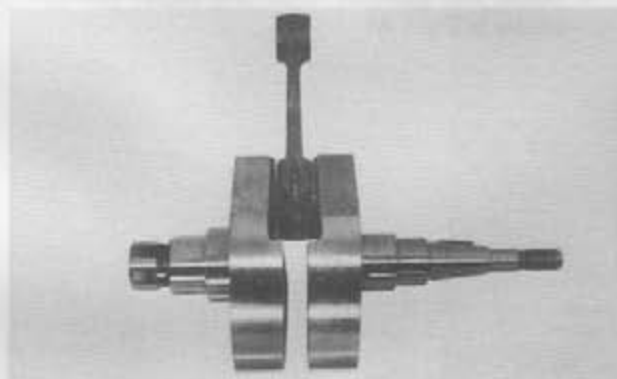


Fig. 4-81

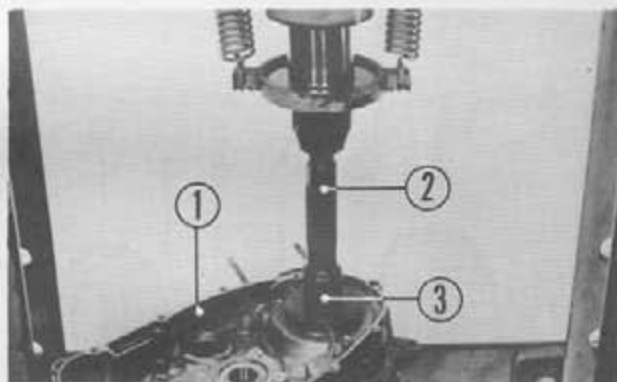


Fig. 4-82 ① Right crankcase
② Bearing driver
③ Bearing driver attachment

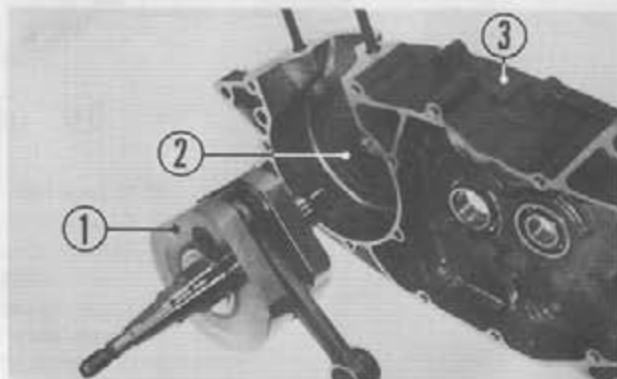


Fig. 4-83 ① Crankshaft
② 38×64×13mm crankshaft oil seal
③ Right crankcase

4. Install the crankshaft into the right crankcase.

- Using the primary drive gear as a guide, screw the 12 mm UBS bolt in. Then the crankshaft will be installed into the crankcase properly.

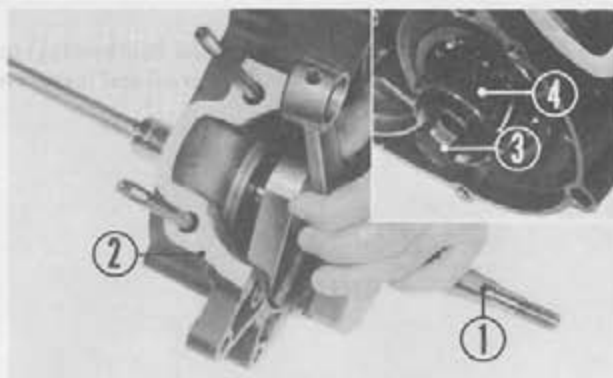


Fig. 4-84 ① Crankshaft ④ Primary drive gear
② Right crankcase
③ 12mm UBS bolt

5. Install the gearshift drum and center gearshift fork as shown in Fig.4-85.

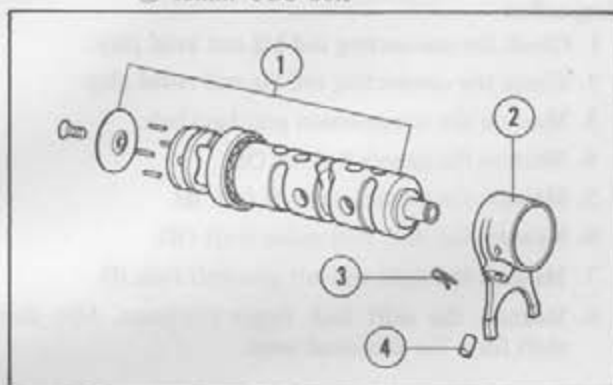


Fig. 4-85 ① Gearshift drum
② Center gear shift fork
③ Gearshift fork guide pin clip
④ Gearshift fork guide pin

6. Assemble the transmission as shown in Fig.4-86.

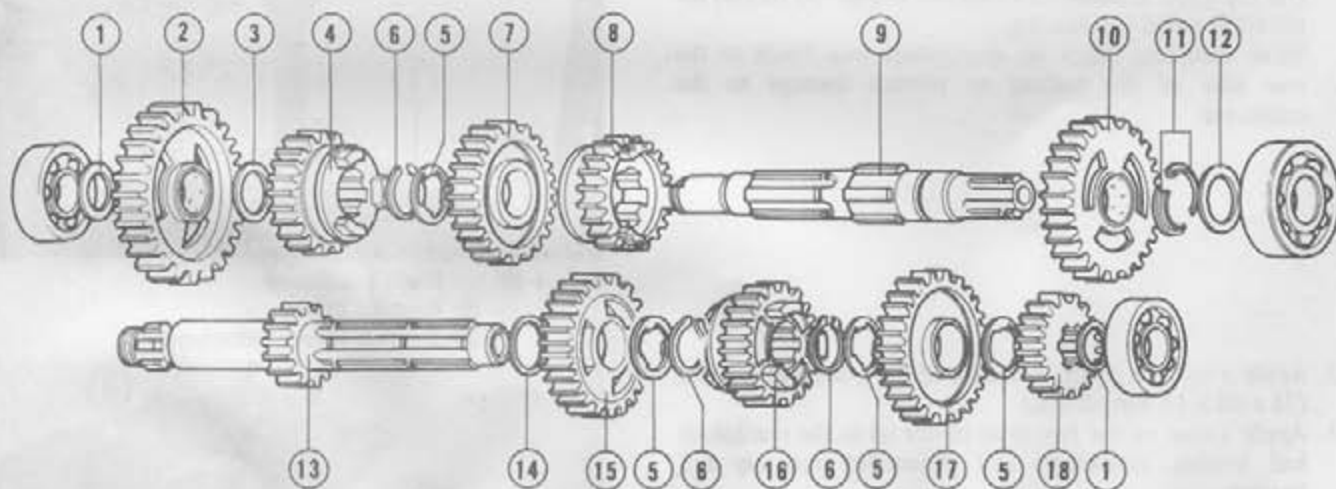


Fig. 4-86 ① 17.2mm thrust washer ⑩ Countershaft 2nd gear
② Countershaft low gear ⑪ Countershaft cotteners
③ 18.6mm thrust washer ⑫ 23mm thrust washer
④ Countershaft 4th gear ⑬ Main shaft
⑤ 22mm spline washer ⑭ 22mm thrust washer
⑥ 22mm snap ring ⑮ Main shaft 4th gear
⑦ Countershaft 3rd gear ⑯ Main shaft 3rd gear
⑧ Countershaft 5th gear ⑰ Main shaft 5th gear
⑨ Countershaft ⑱ Main shaft 2nd gear

7. Be careful of the identification marks (R and L) on the gearshift forks. Install the right gearshift fork to the countershaft 4th gear and the left gearshift fork to the countershaft 5th gear by engaging the fork fingers with the gear teeth.
- The markings should face toward left.

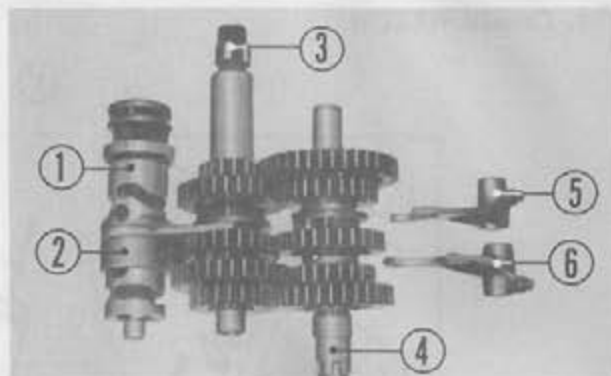


Fig. 4-87 ① Gearshift drum ⑥ Left gearshift fork
② Center gearshift fork
③ Main shaft
④ Countershaft
⑤ Right gearshift fork

8. With the center gearshift fork finger engaged with the main shaft 3rd gear, install the transmission and gearshift drum to the right crankcase.

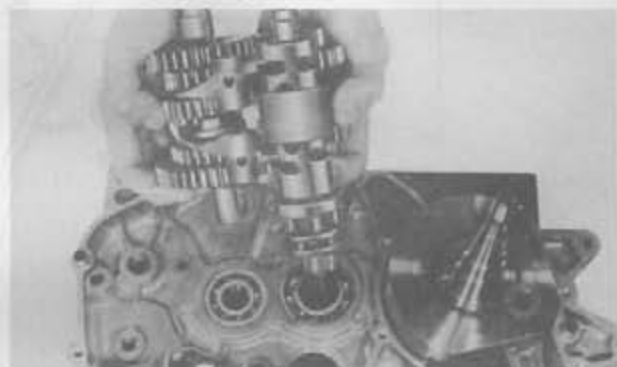


Fig. 4-88

9. Install the left crankcase. (See page 49.)
10. The bearing set plate and bearing stopper plate screws must be flared out after they are tightened.

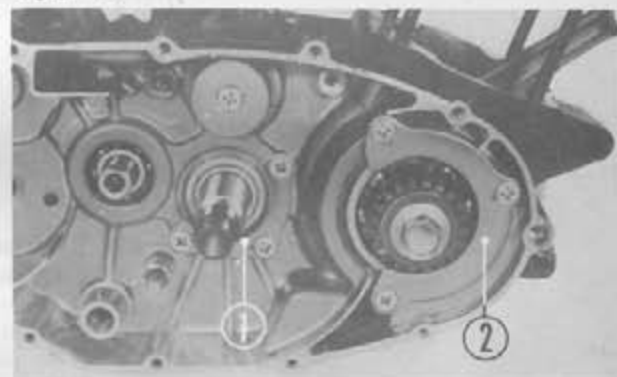


Fig. 4-89 ① Bearing stopper plate
② Bearing set plate

11. The primary drive gear should be installed before the clutch center is installed. Then tighten the drive gear after installing the clutch center.
- Use the lock nut wrench and drive sprocket holder.

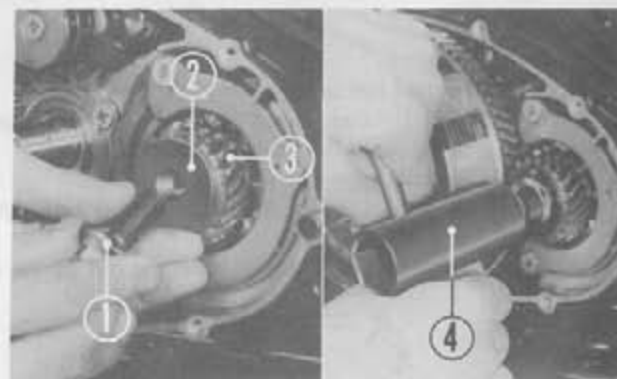


Fig. 4-90 ① 12mm UBS bolt
② Primary washer
③ Primary drive gear
④ Lock nut wrench

11. CARBURETOR

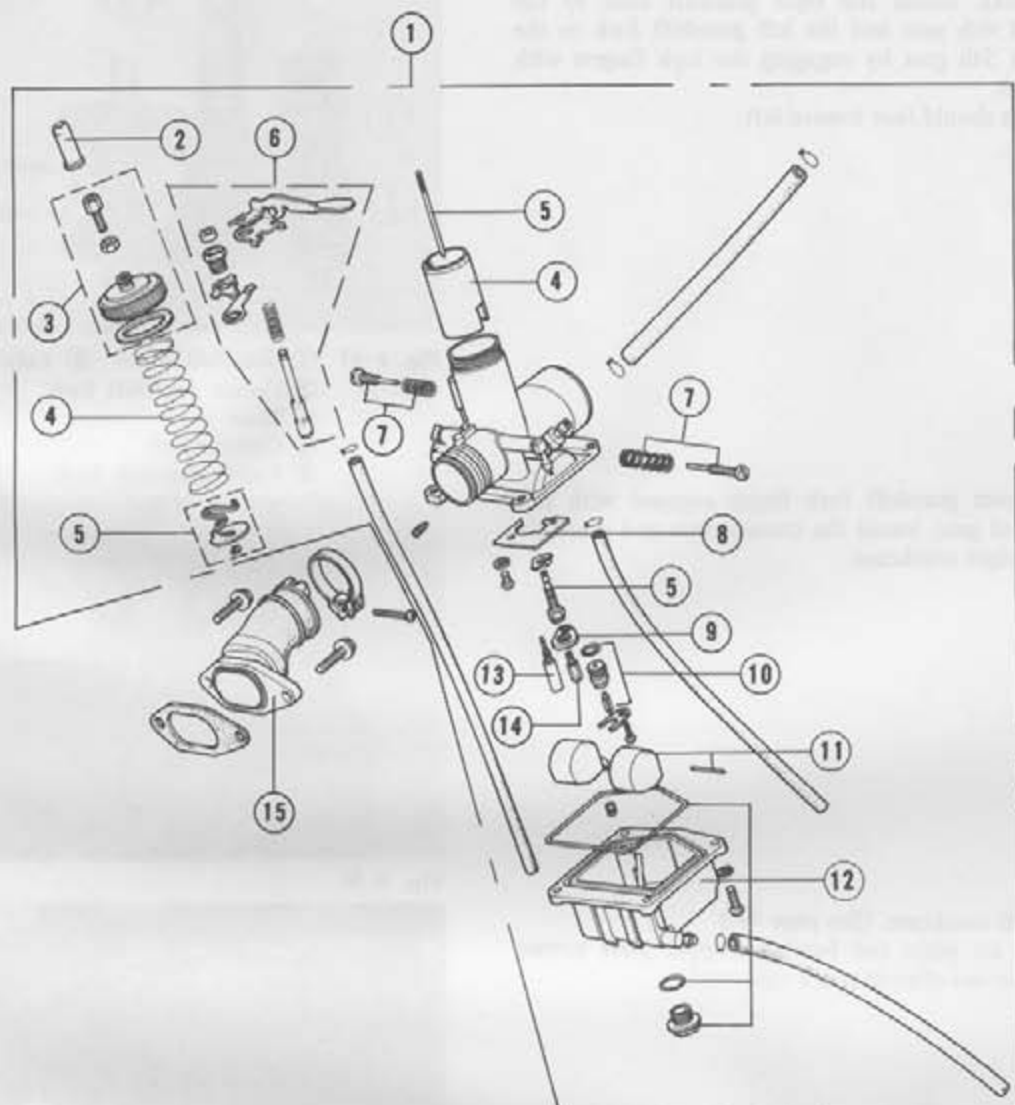


Fig. 4-91 ① Carburetor assy. ⑨ Jet holder
 ② Rubber cap ⑩ Float valve set
 ③ Top set ⑪ Float set
 ④ Throttle valve set ⑫ Float chamber set
 ⑤ Jet needle set ⑬ Slow jet
 ⑥ Starter valve set ⑭ Main jet
 ⑦ Screw set ⑮ Inlet pipe
 ⑧ Baffle plate

Removal

1. Clean all around the carburetor.
2. With the fuel valve lever placed in "OFF" position, disconnect the fuel tube from the carburetor.
3. Remove the inlet pipe one-way bolt.
 - Do not allow dust and dirt to come in contact with the bolt.
 - Take care not to allow the oil to come out of the outlet hose.



Fig. 4-92 ① Fuel valve ② Fuel tube

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

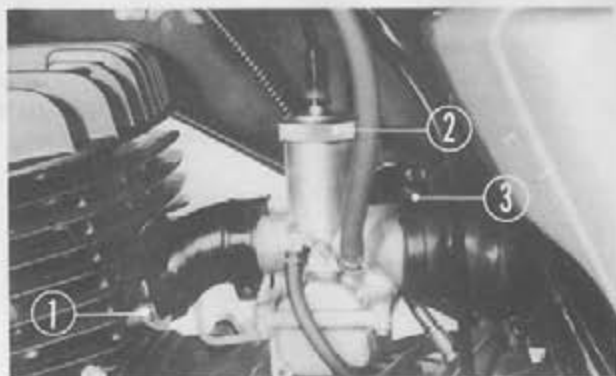


Fig. 4-93 ① Inlet pipe tightening bolt
② Carburetor top
③ Connecting tube band

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

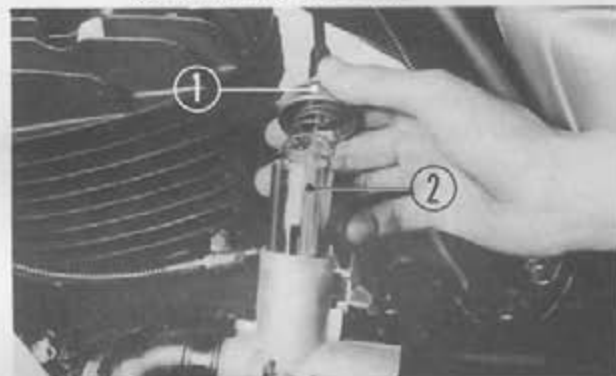


Fig. 4-94 ① Carburetor top ② Throttle valve

7. Remove the needle clip plate from the throttle valve.
8. Take the valve plate out of the throttle valve and pull the throttle cable out of the groove in the throttle valve. At this time, take care not to allow the jet needle to come out accidentally.
9. Remove the rubber cap and disconnect the throttle cable from the carburetor top.

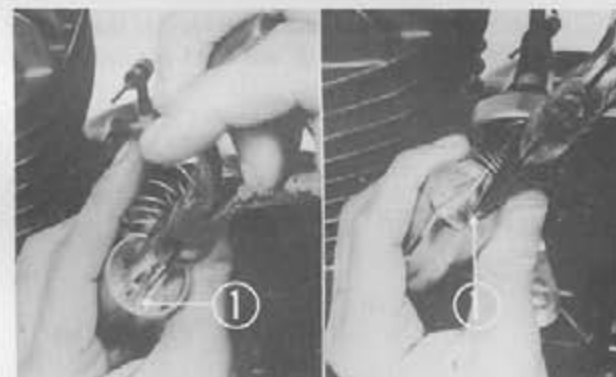


Fig. 4-95 ① Needle clip plate

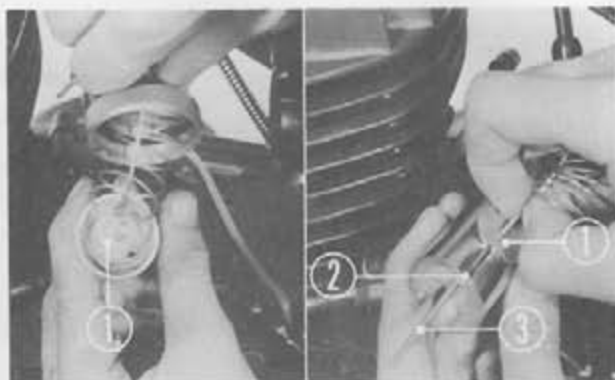


Fig. 4-96 ① Valve plate
② Throttle cable end
③ Jet needle

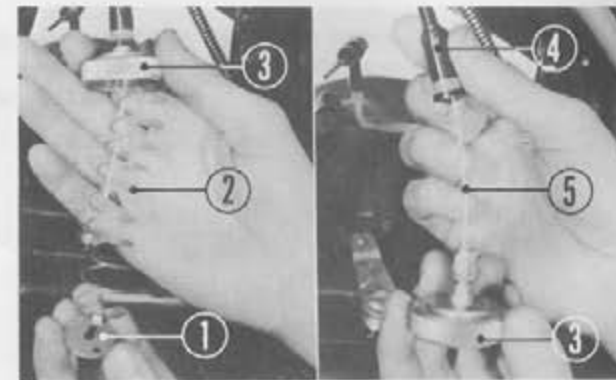


Fig. 4-97 ① Valve plate ③ Carburetor top
② Throttle valve spring ④ Rubber cap
⑤ Throttle cable

10. Carburetor starter lever removal

Straighten the locking tab of the lock washer and remove the 8 mm nut ③. Pull the starter valve and remove the starter lever from the starter valve. Then the starter valve can be removed from the carburetor body.

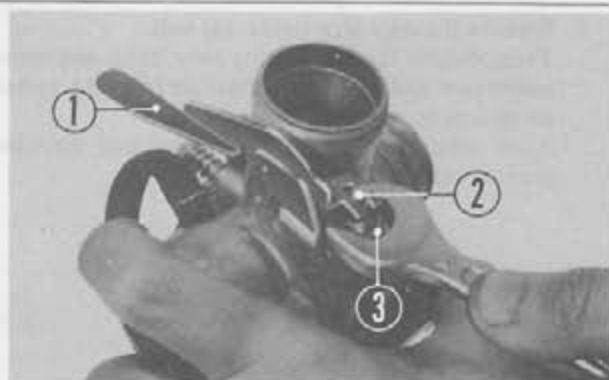


Fig. 4-98 ① Starter lever
② Starter valve

Installation

- To install, reverse the removal procedures.
 - Before installing, be sure to clean the carburetor and related parts using compressed air.
1. Install the valve plate in the direction shown in Fig. 4-99.

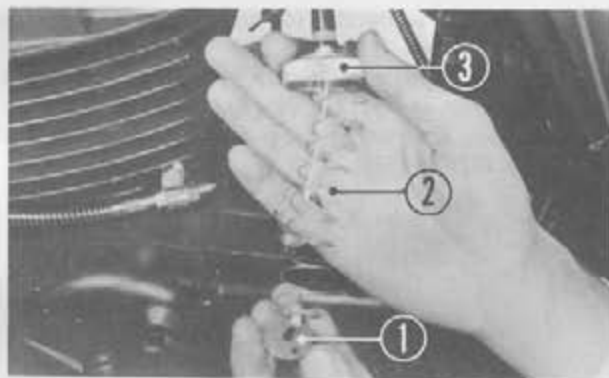


Fig. 4-99 ① Valve plate
② Throttle valve spring
③ Carburetor top

2. After installing the starter lever to the starter valve, tighten the 8 mm nut ③ and bend the locking tab of the lock washer.
3. After installing, check the starter lever for proper operation.

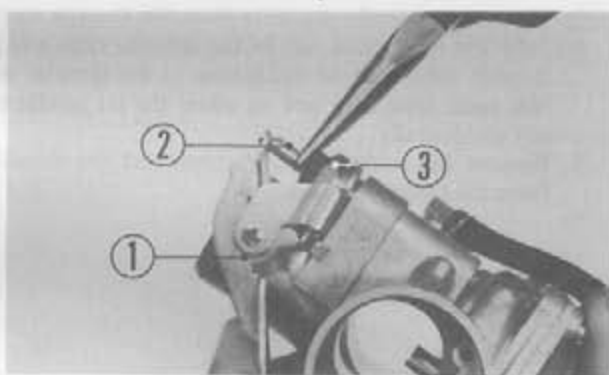


Fig. 4-100 ① Starter lever
② Starter valve

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



Fig. 4-101 ① Inlet pipe ② Recess in inlet pipe

5. Install the carburetor beginning on the air cleaner side.
6. Install the throttle valve by inserting the lug located on the carburetor side into the groove in the throttle valve.

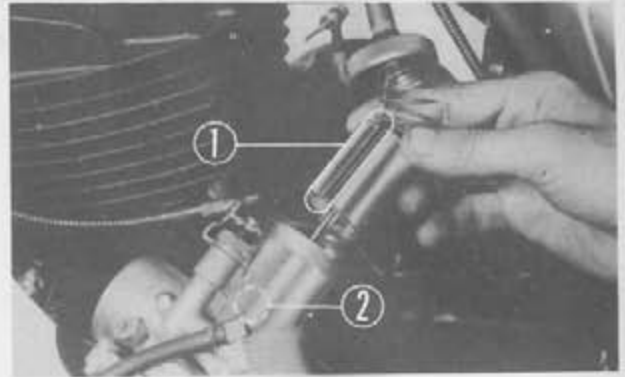


Fig. 4-102 ① Groove in throttle valve
② Lug located on carburetor side

7. Route the tubes as shown in Fig. 4-103.



Fig. 4-103

Disassembly

- Carefully handle the jets since they are scored or scratched easily.
1. Remove the sealing bolt and drain the fuel from the carburetor.
 2. Loosen the four screws (3) and remove the float chamber body.
 3. Remove the main jet by removing the float chamber body sealing bolt.



Fig. 4-104 ① Sealing bolt

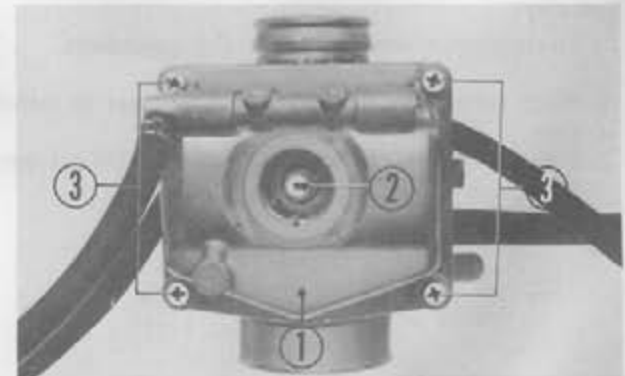


Fig. 4-105 ① Float chamber body
② Main jet

4. Remove the float pin and remove the float.
5. Loosen the screw ⑤ and remove the valve seat set plate, then pull out the valve seat.

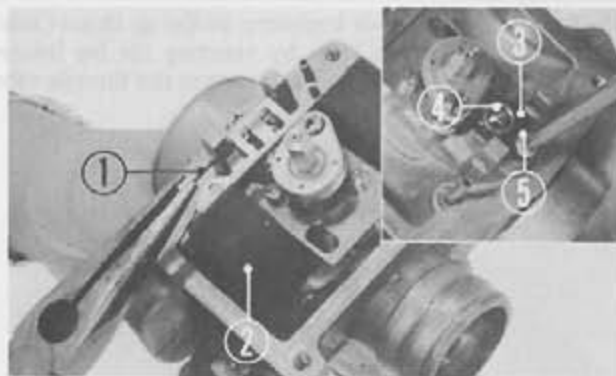


Fig. 4-106 ① Float pin ③ Valve seat set plate
② Float ④ Valve seat

6. Remove each part as shown in Fig. 4-107.

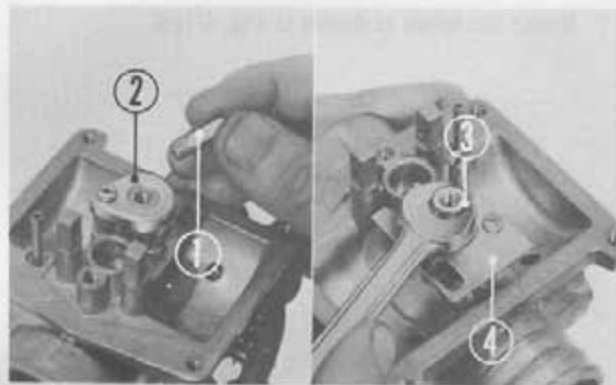


Fig. 4-107 ① Main jet ③ Jet needle
② Jet holder ④ Baffle plate

Inspection

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

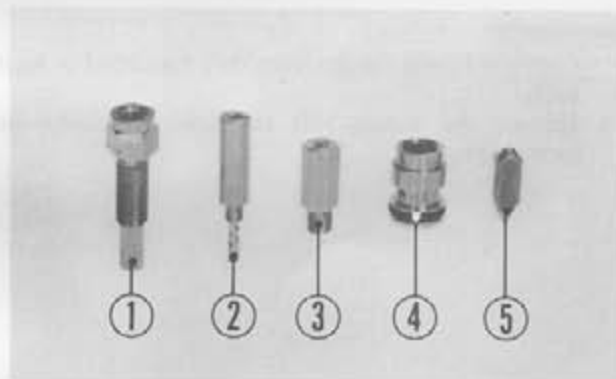


Fig. 4-108 ① Jet needle ④ Valve seat
② Slow jet ⑤ Float valve
③ Main jet

Assembly

- To assemble, reverse the disassembly procedures.
1. When connecting the tubes, do not forget to install the clips.
 2. Install the valve seat set plate correctly. Do not install it upside-down.

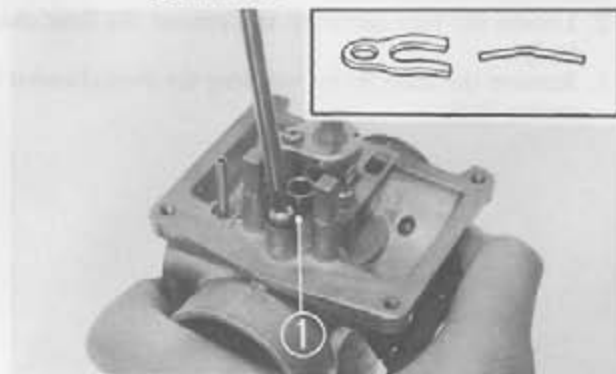


Fig. 4-109 ① Valve seat set plate

Float level adjustment

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

Float height (distance between the carburetor body and the opposite edge of the float) should be 20 mm (0.79 in.) when the float valve just closes.

If adjustment is needed, carefully bend the float arm tang toward or away from the float valve until the specified float height is obtained. Replace any damaged or leaking float.

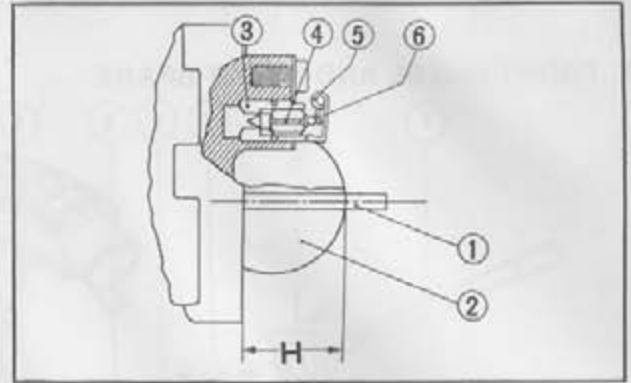


Fig. 4-110

① Float valve gauge	④ Float valve
② Float	⑤ Float arm pin
③ Valve seat	⑥ Float arm tang

MEMO

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1. FRONT WHEEL AND FRONT BRAKE

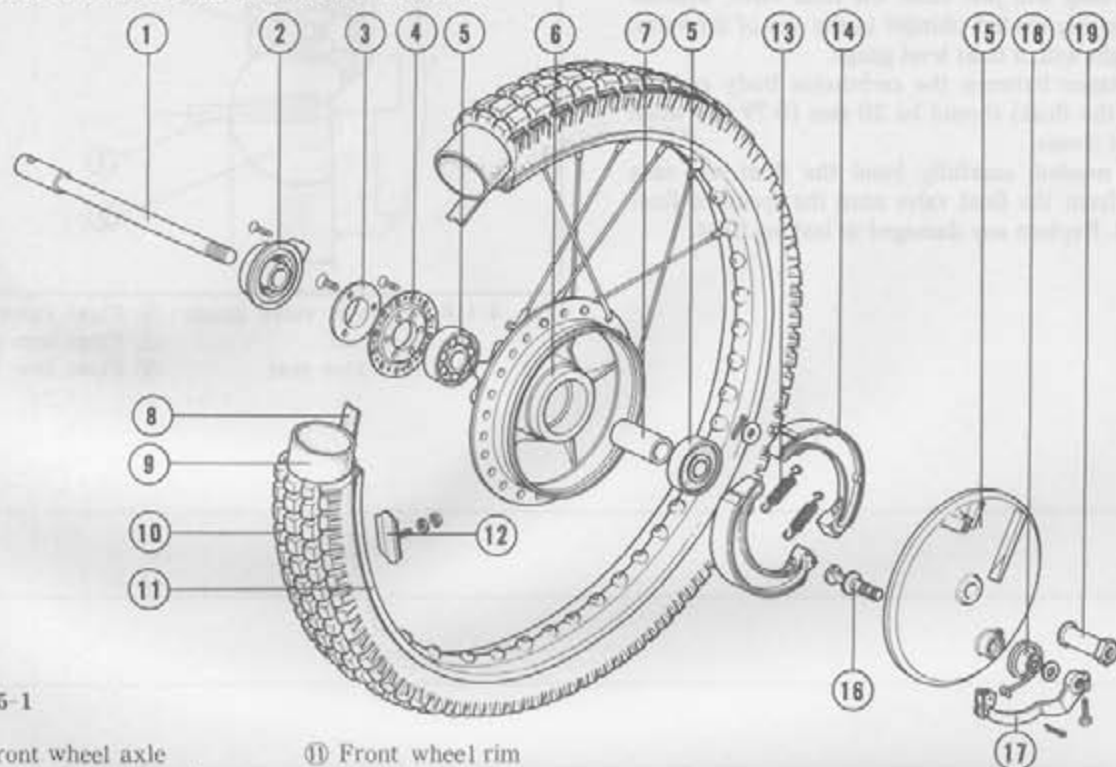


Fig. 5-1

- | | |
|------------------------------|---------------------------|
| ① Front wheel axle | ⑪ Front wheel rim |
| ② Speedometer gear box | ⑫ Rim lock |
| ③ Bearing retainer | ⑬ Brake shoe spring |
| ④ Front spoke flange | ⑭ Brake shoe |
| ⑤ 6302 radial ball bearing | ⑮ Front brake panel |
| ⑥ Front wheel hub | ⑯ Brake cam |
| ⑦ Front axle distance collar | ⑰ Front brake arm |
| ⑧ Tire flap | ⑱ Brake arm return spring |
| ⑨ Front wheel tube | ⑲ Front axle nut |
| ⑩ Front wheel tire | |

Disassembly

1. Disconnect the front brake cable from the brake panel.
 - Fully loosen the lock nut and adjusting nut. Then disconnect the cable end from the brake arm and the cable from the brake panel.
2. Disconnect the speedometer cable by loosening the screw.
3. Remove the eight axle holder tightening nuts and remove the front axle holders. Raise the front of the motorcycle and remove the front wheel from the front forks.
 - Place a stand under the engine to prevent the motorcycle from tilting forward.

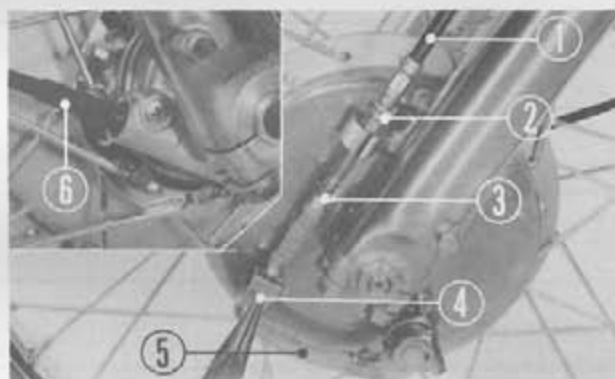


Fig. 5-2 ① Front brake cable ④ Cotter pin
 ② Adjusting nut ⑤ Front brake arm
 ③ Lock nut ⑥ Speedometer cable



Fig. 5-3 ① Front axle holder
 ② Axle holder tightening nuts

4. With the axle nut held in a vice, turn the front wheel axle and remove the axle nut.
5. Pull out the front wheel axle and remove the brake panel and speedometer gear box.



Fig. 5-4 ① Front wheel axle
② Speedometer gear box

6. Remove the three screws and then the bearing retainer.
7. Remove the two ball bearings.

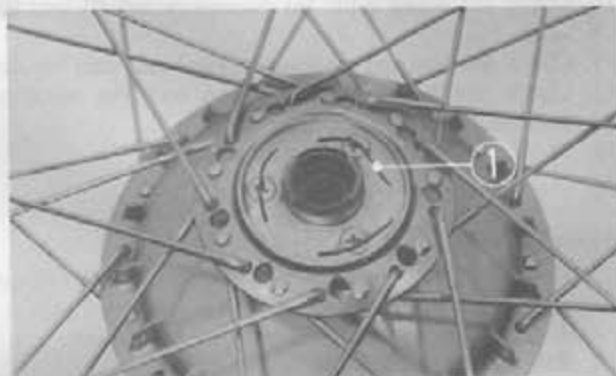


Fig. 5-5 ① Bearing retainer

Front brake panel

1. Before removing the front brake panel, remove the 6 mm bolt and then the front brake arm and brake arm return spring.
2. Pull the cotter pin out of the anchor pin and remove the washer.
3. While expanding the brake shoes by hands, remove them together with the brake shoe springs from the brake panel.



Fig. 5-6 ① Cotter pin ② Brake shoe spring
③ Brake shoe

Front brake cable

1. Disconnect the front brake cable from the front brake panel.
2. Remove the dust cover from the front brake lever.
3. With the slots in the adjusting nut and lock nut aligned, disconnect the brake cable from the front brake lever.
4. When connecting, route the brake cable through the cable guides.

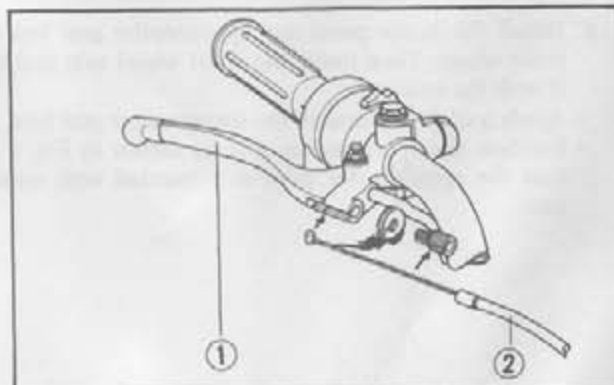


Fig. 5-7 ① Brake lever ② Brake cable

Inspection

1. Check the front wheel axle for bend.
2. Check the ball bearings for looseness.
3. Check the front wheel rims for runout or damage.
4. Check to see if metal pieces or stones are not bitten in the tire tread pattern or wall. Also check the tire for scores, scratches or wear.
5. Check the tire flap for scores or scratches.
6. Check the rim lock for looseness.
7. Check the tire inflation pressure.
Specification: 1.5 kg/cm² (21 psi)
Also check the tire valve for leakage.
8. Check the front wheel hub, brake shoes and brake cam for wear.
9. Check the brake panel for cracks or any other damage.
10. Check the brake cable for damage or insufficient lubrication.
11. Check the cam and serration of the brake cam for damage.
12. Check the brake arm for bend and the serration for damage.
13. Check the bearing retainer for wear.

Assembly

- Take care not to allow oil, grease, dust and dirt to come in contact with the brake shoes and front wheel hub.
- To assemble, reverse the disassembly procedures.

1. Ball bearing installation

Fill the void in the ball bearings and inside the wheel hub with grease. Then install the bearings with the ball bearing driver attachment (Tool No. 07945-3330100) taking care not to allow the distance collar to incline.

- Face the sealed side of the bearing toward the outside.
2. Apply a thin coat of grease to the brake cam and anchor pin and install the brake shoes into position.
 3. Install the brake arm by aligning the punch marks on the arm and brake cam.
 - Do not forget to insert the dust seal.
 - Apply a coat of grease to the dust seal.

4. Install the brake panel and speedometer gear box to the front wheel. Then insert the front wheel axle and tighten it with the axle nut.
- Apply a coat of grease to the speedometer gear box.
- Position the speedometer gear as shown in Fig. 5-11 so that the speedometer cable is connected with reasonable ease.

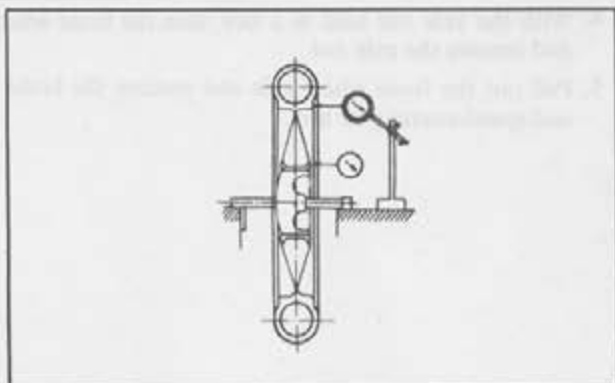


Fig. 5-8

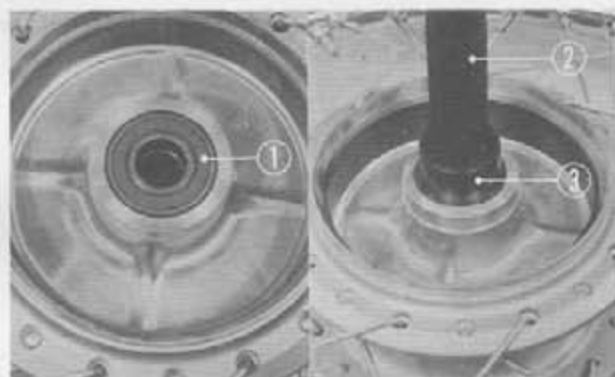
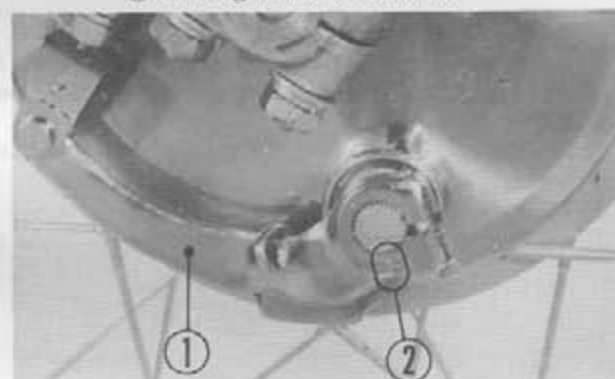
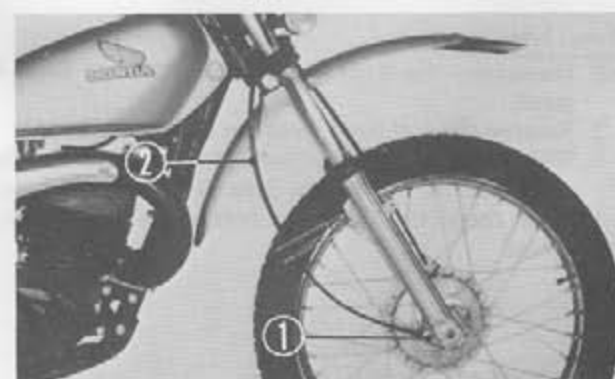
Fig. 5-9 ① Ball bearing ② Bearing driver
③ Bearing driver attachment

Fig. 5-10 ① Brake arm ② Punch mark

Fig. 5-11 ① Speedometer gear box
② Speedometer cable

5. Install the front axle holders with the "F" mark toward the front. Then tighten them in the numerical order in Fig. 5-12.

- The front forks and axle holders must be tightened so that there is no clearance between the two parts at the front side.

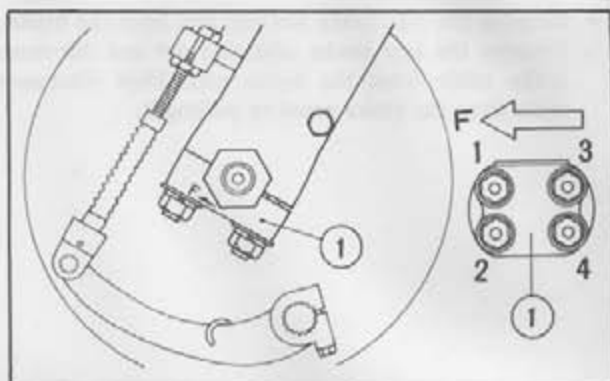
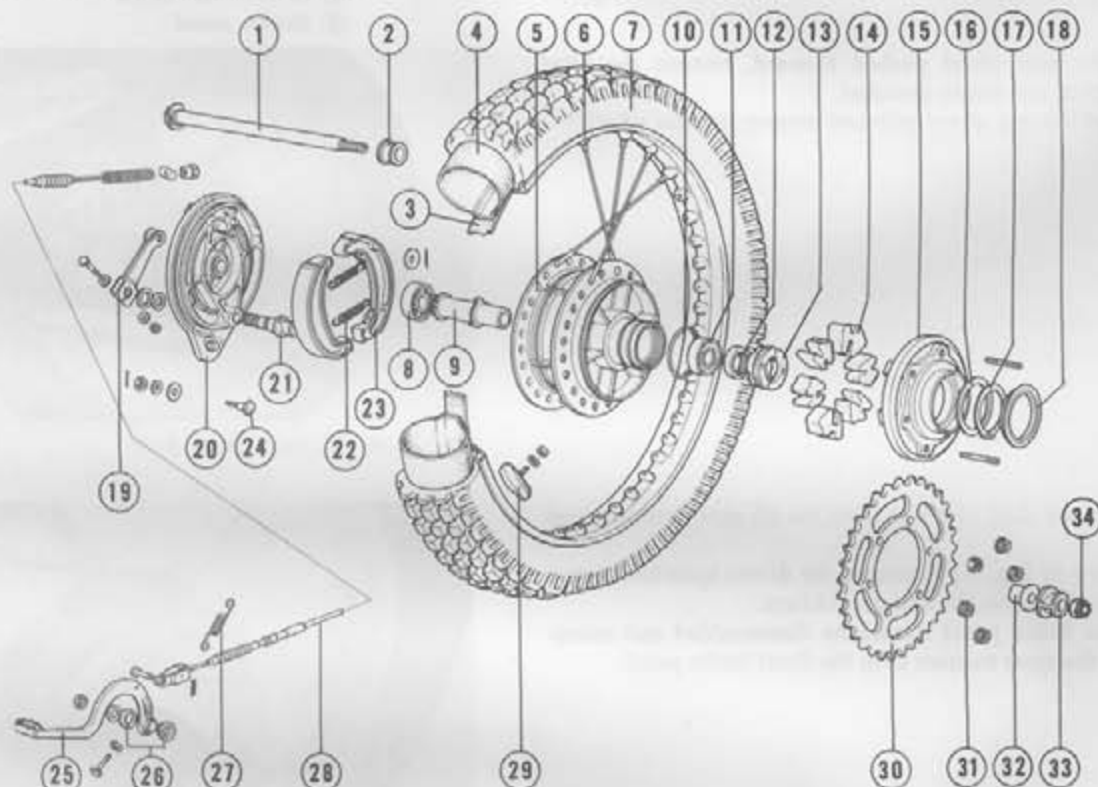


Fig. 5-12 ① Front axle holder

2. REAR WHEEL AND REAR BRAKE



- Fig. 5-13
- | | |
|-----------------------------|--------------------------|
| ① Rear wheel axle | ⑫ 30-45-9.5 dust seal |
| ② Rear panel collar | ⑬ Bearing retainer |
| ③ Rear tire flap | ⑭ Rear wheel damper |
| ④ Rear wheel tube | ⑮ Final driven flange |
| ⑤ Rear wheel hub | ⑯ 66mm washer |
| ⑥ Rear wheel rim | ⑰ 65mm snap ring |
| ⑦ Rear wheel tire | ⑱ Dust seal |
| ⑧ 6204 radial ball bearing | ⑲ Rear brake arm |
| ⑨ Rear axle distance collar | ⑳ Rear brake panel |
| ⑩ 60x2 O-ring | ㉑ Rear brake cam |
| ⑪ 6304 radial ball bearing | ㉒ Rear brake shoe spring |

- | | |
|--------------------------|---------------------|
| ㉓ Rear brake shoe | ㉙ Rim lock |
| ㉔ Rear brake torque bolt | ㉚ Driven sprocket |
| ㉕ Rear brake pedal | ㉛ 8mm flanged nut |
| ㉖ Pedal shaft seal | ㉜ Rear wheel collar |
| ㉗ Pedal spring | ㉝ Rear axle collar |
| ㉘ Rear brake cable | ㉞ Rear axle nut |

Disassembly

- Raise the rear wheel off the ground.
 - Place a stand under the engine to prevent the motorcycle from tilting forward.
- Pull out the cotter pin and remove the rear axle nut.
- Loosen the right and left drive chain adjuster lock nuts and then turn the adjusting bolts in.

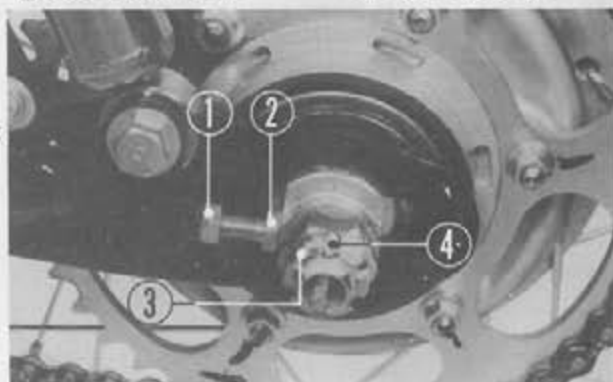


Fig. 5-14 ① Lock nut ③ Rear axle nut
② Adjusting bolt ④ Cotter pin

4. Remove the rear brake stopper arm from the brake panel.
5. Remove the rear brake adjusting nut and disconnect the brake cable from the brake arm. Then disconnect the cable from the brake panel by pulling it.



Fig. 5-15 ① Rear brake stopper arm
② Rear brake arm
③ Rear brake cable
④ Brake panel

6. With the rear wheel pushed forward, remove the drive chain from the driven sprocket.
7. Pull out the rear wheel axle and remove the rear wheel.



Fig. 5-16 ① Rear wheel axle

8. Remove the dust seal and then the 65 mm external snap ring.
9. As shown in Fig. 5-17, remove the driven sprocket, driven flange and remove the damper rubbers.
10. The rear brake panel should be disassembled and assembled in the same manner as in the front brake panel.



Fig. 5-17 ① Wood block ③ Driven sprocket
② Driven flange

11. Remove the rear wheel bearing retainer with the bearing retainer wrench (Tool No. 07910-3290000).
12. Remove the ball bearings.



Fig. 5-18 ① Bearing retainer

Inspection

1. Check the rear wheel axle for bend.
2. Check the ball bearings for looseness (with them installed).
3. Check the wheel rims for runout or damage.
4. Check the spokes for looseness or bend.
5. Check to see if metal pieces or stones are not bitten in the tire tread pattern or wall. Also check the tire for scores, scratches or wear.
6. Check the tire flap for scores or scratches.
7. Check the two rim locks for looseness.
8. Check the tire inflation pressure.
Specification: 1.5 kg/cm² (21 psi)
9. Check the wheel hub, brake shoes and brake cam for wear.
10. Check the brake cable for damage.
11. Check the serrations of the brake cam and arm for wear.
12. Check the driven sprocket for wear or damage.
13. Check the driven flange for cracks or any other damage.
14. Check the rear wheel dampers for damage.
15. Check the drive chain for elongation, wear or jamming.
16. Check the drive chain master link for looseness.

Assembly

- To assemble, reverse the disassembly procedures.

1. Ball bearing installation

Fill the void in the ball bearings and inside the wheel hub with grease. Then install the bearings with the ball bearing driver taking care not to allow the distance collar to incline.

Tool No.	Bearing
07946-3290000	6204 ball bearing
07945-3330100	6302 ball bearing

- The left ball bearing should be installed first. Install the distance collar from the right side.
- Do not forget to flare out the bearing retainer.

2. Install the driven flange to the rear wheel hub and secure it with the 66 mm washer and 65 mm external snap ring.
3. Install the driven sprocket with the 8 mm flanged nuts. Apply a coat of spindle oil to the nuts and tighten them in a criss-cross pattern to the specified torque.
4. When installing new stud bolts, apply a coat of locking sealant to them.



Fig. 5-19 ① Rim locks

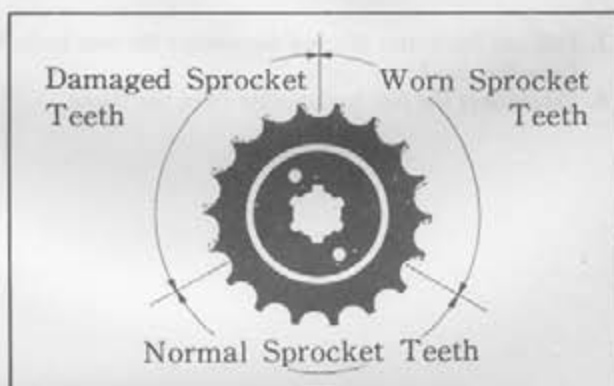


Fig. 5-20

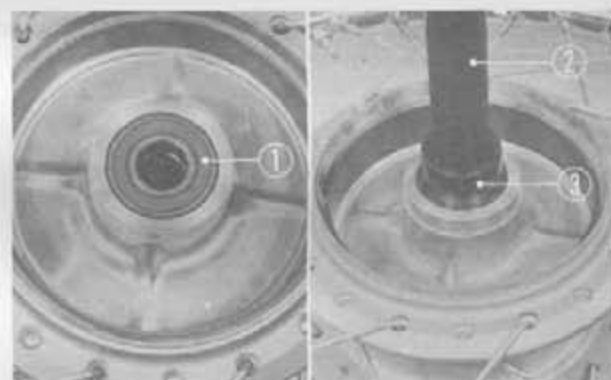


Fig. 5-21 ① Radial ball bearing ② Bearing driver ③ Bearing driver attachment



Fig. 5-22 ① Driven sprocket

Rear brake pedal and rear brake cable

1. Remove the right foot rest.
2. Remove the 10 mm nut and remove the rear brake pedal from the frame. Then remove the rear brake spring and rear brake stop switch spring.

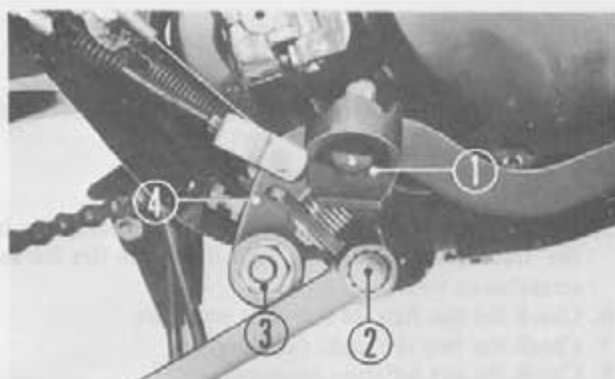


Fig. 5-23 ① Right foot rest ③ 10mm nut
② 8mm bolt ④ Rear brake pedal

3. Pull out the cotter pin and disconnect the rear brake pedal from the rear brake cable.
4. Disconnect the rear brake cable from the frame.

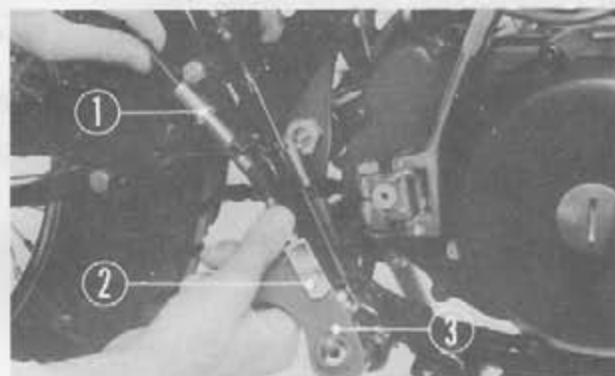


Fig. 5-24 ① Rear brake cable ③ Rear brake pedal
② Cotter pin

5. Remove the rear brake adjusting nut and disconnect the rear brake cable from the rear brake panel.



Fig. 5-25 ① Rear brake arm ③ Rear brake panel
② Rear brake cable

6. To assemble, reverse the disassembly procedures. Apply a coat of grease to the brake pedal attaching surface and install the pedal shaft seals securely as shown in Fig. 5-26.
7. After assembling, adjust the rear brake pedal free play and height.

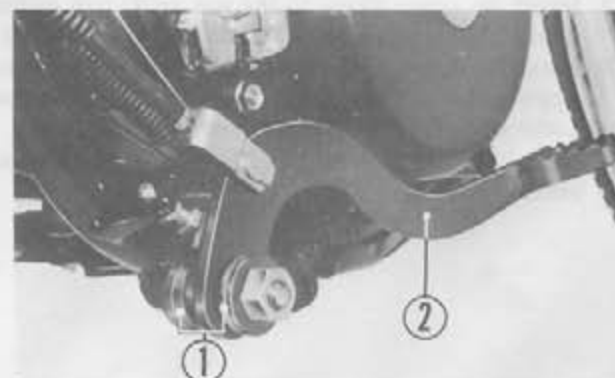


Fig. 5-26 ① Pedal shaft seal ② Rear brake pedal

3. HANDLEBAR

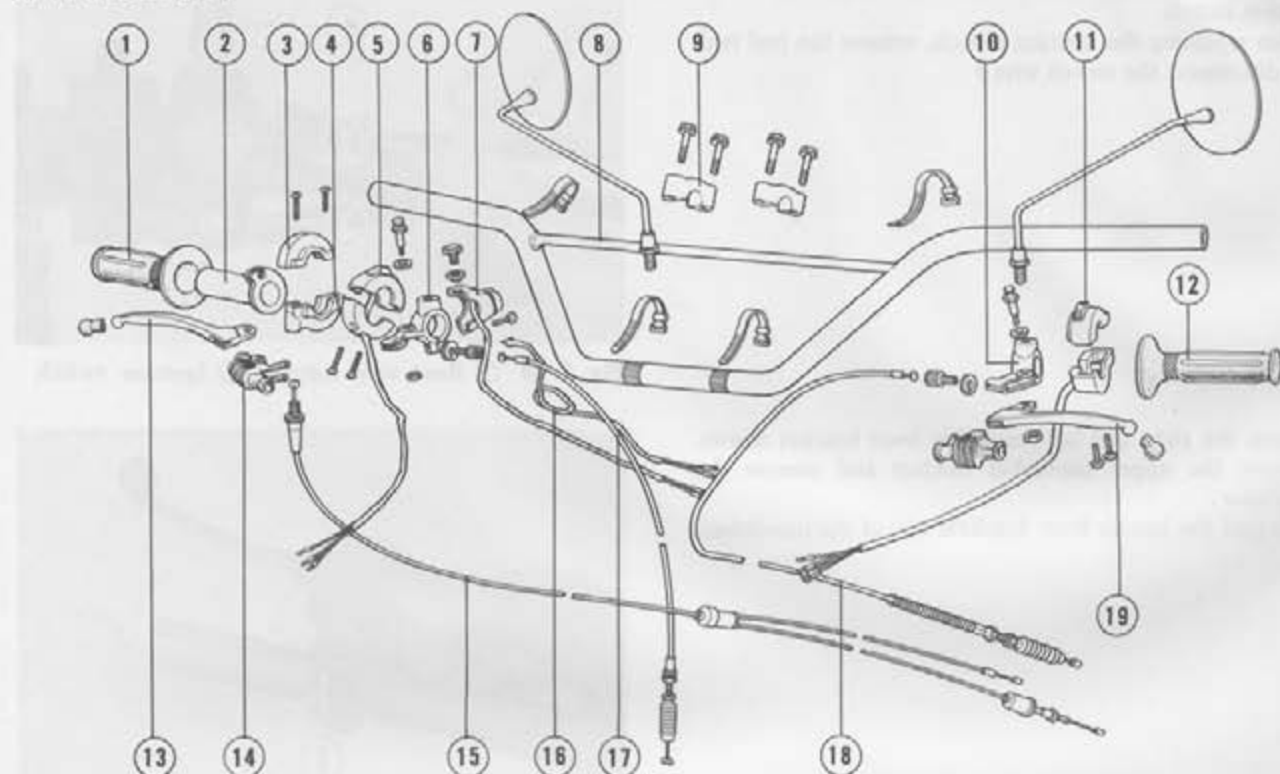


Fig. 5-27 ① Right handle grip ⑧ Handlebar ⑫ Left handle grip ⑯ Front stop switch
 ② Throttle grip pipe ⑨ Handlebar upper holder ⑬ Front brake lever ⑰ Front brake cable
 ③ Throttle housing upper case ⑩ Left handle lever bracket ⑭ Dust cover ⑱ Clutch cable
 ④ Throttle housing lower case ⑪ Headlight dimmer switch ⑮ Throttle cable ⑲ Clutch lever
 ⑤ Headlight switch
 ⑥ Right handle lever bracket
 ⑦ Ignition switch

Disassembly

1. Loosen the throttle cable housing screws and remove the cable housing with the throttle cable from the handlebar.

- Separate the housing into two parts and disconnect the throttle cable end from the grip pipe.
- Disconnect the throttle cable at the carburetor (See page 56) and at the oil pump (See page 32).

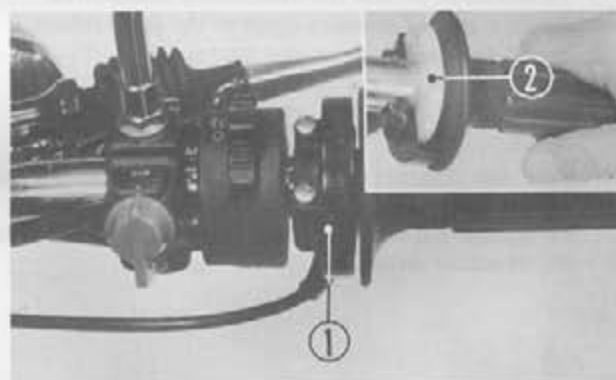


Fig. 5-28 ① Throttle cable housing
 ② Throttle grip pipe

2. Remove the wire bands and headlight switch screws. Then separate the headlight switch bracket into two parts and remove them from the handlebar. Similarly remove the turn signal/dimmer switch. When replacing, open the headlight case and disconnect the leads by pulling it.

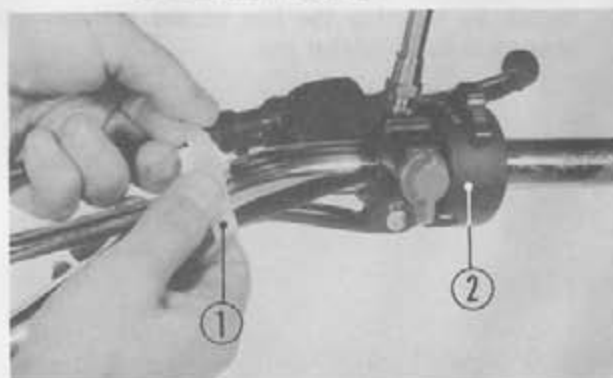


Fig. 5-29 ① Wire band ② Headlight switch bracket

3. Remove the screw ③ and rear view mirrors and remove the ignition switch.
(When replacing the ignition switch, remove the fuel tank and disconnect the switch wire.)

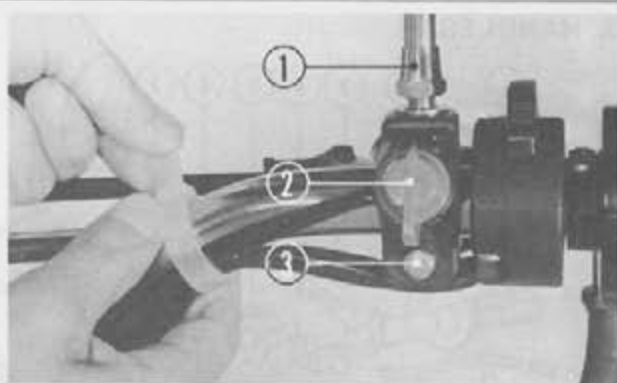


Fig. 5-30 ① Rear view mirror ② Ignition switch

4. Loosen the right and left handlebar lever bracket screws.
5. Remove the upper handlebar holders and remove the handlebar.
Then pull the handle lever brackets out of the handlebar.



Fig. 5-31 ① Handle lever bracket

Assembly

- To assemble, reverse the disassembly procedures.
- 1. Apply a coat of adhesive agent to the grip rubbers.
- 2. Install the handlebar so that the punch marks on the pipe are flush with the top of the fork top bridge.

NOTE:

Face the punch marks on the upper handlebar holders toward the front.

To tighten the upper holders, begin on the front bolts.

No clearance should exist at the front side.

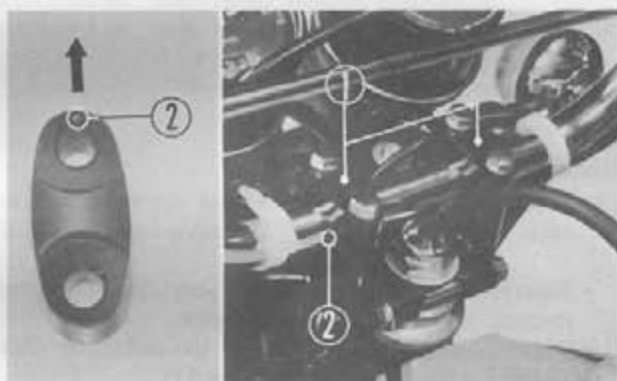


Fig. 5-32 ① Handlebar upper holder
② Punched mark

3. Install the right and left handlebar lever brackets.

Also install the turn signal/dimmer switch and headlight switch by inserting the lugs of the switches into the recesses in the handlebar pipe.

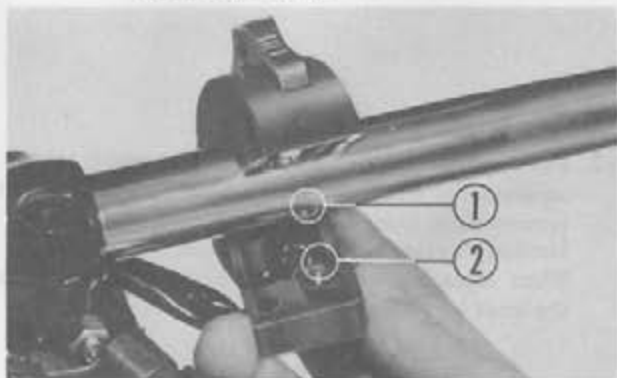


Fig. 5-33 ① Groove
② Lug

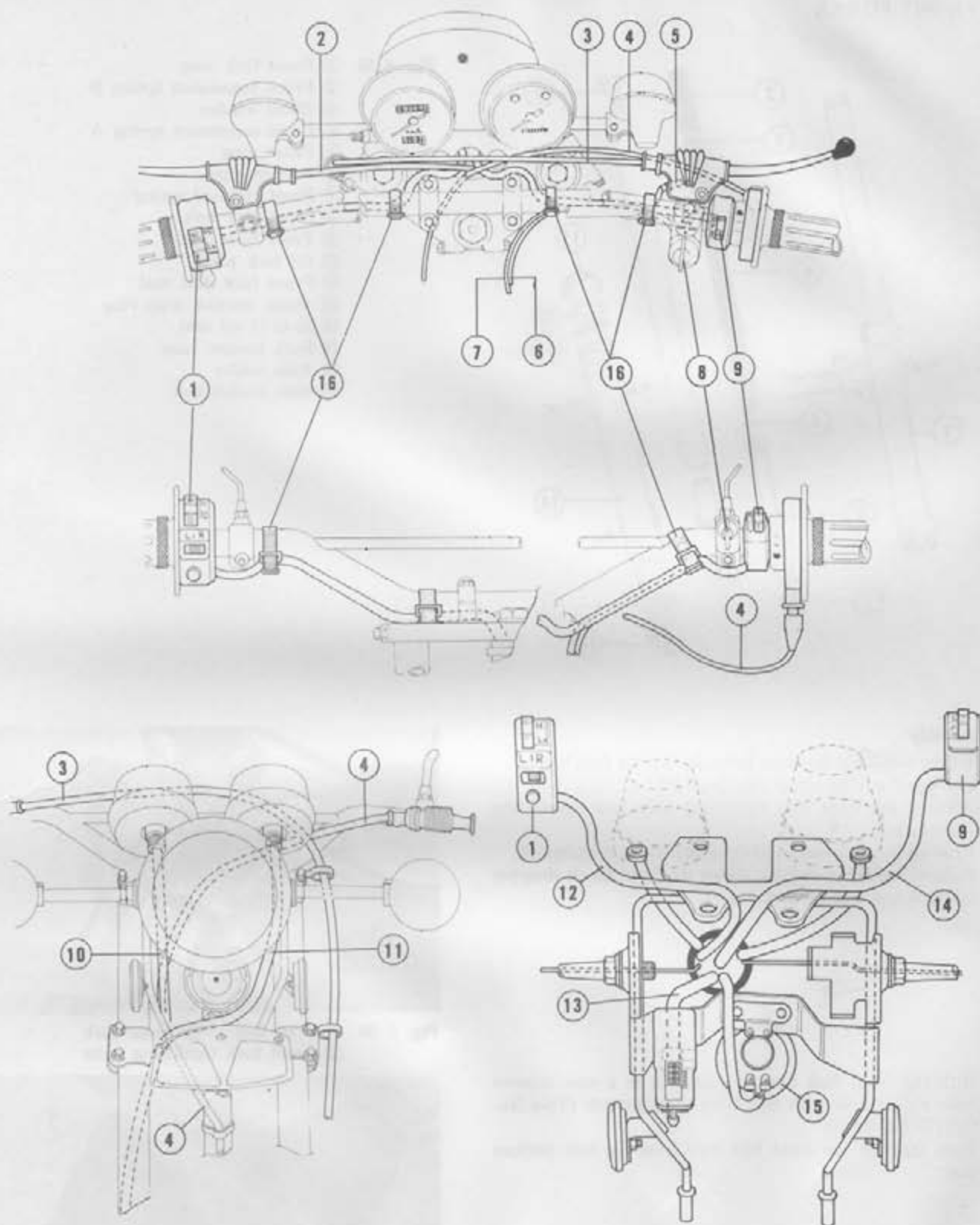


Fig. 5-34 ① Turn signal/dimmer switch ⑨ Headlight switch
 ② Clutch cable ⑩ Tachometer cable
 ③ Front brake cable ⑪ Speedometer cable
 ④ Throttle cable ⑫ Wire lead
 ⑤ Front stop switch ⑬ Wire harness B
 ⑥ Ignition switch lead ⑭ Wire lead
 ⑦ Front stop switch lead ⑮ Horn
 ⑧ Ignition switch ⑯ Wire hand

4. FRONT FORKS

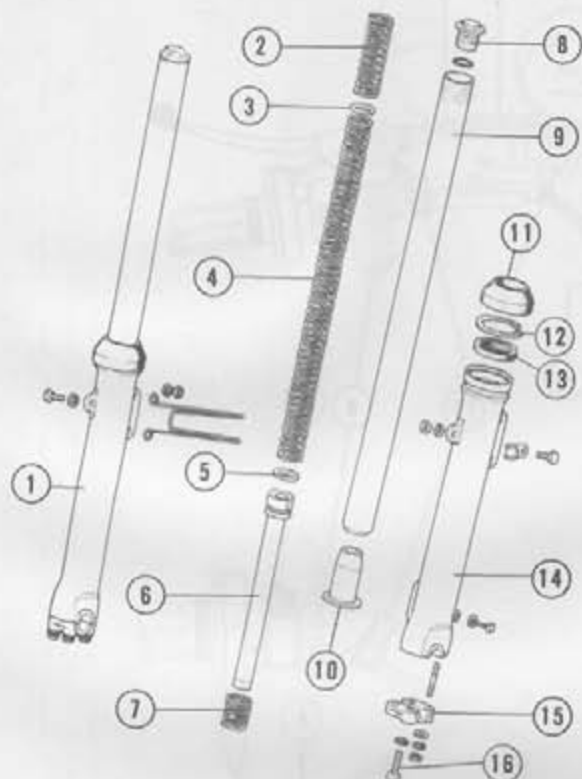


Fig. 5-35 ① Front fork assy.
 ② Front suspension spring B
 ③ 16mm washer
 ④ Front suspension spring A
 ⑤ Piston ring
 ⑥ Bottom pipe
 ⑦ Front rebound spring
 ⑧ Front fork bolt
 ⑨ Front fork pipe
 ⑩ Oil lock piece
 ⑪ Front fork dust seal
 ⑫ 48mm internal snap ring
 ⑬ 35-48-11 oil seal
 ⑭ Fork bottom case
 ⑮ Axle holder
 ⑯ 8mm socket bolt

Disassembly

1. Before removing the front forks, loosen the fork bolts.
2. Remove the front wheel. (See page 62.)
3. Remove the front fork tightening bolts and remove the front forks.
4. Remove the fork bolts and drain the shock absorber oil.
 - Removal of the fork bolts allows the front shock absorber spring A and B to be removed.

5. With the front fork bottom case held in a vice, remove each socket bolt with the Allen head wrench (Tool No. 07917-3230000).
 Then separate the front fork pipe from the fork bottom case.



Fig. 5-36 ① Fork bolt ③ Front fork
 ② Front fork tightening bolts

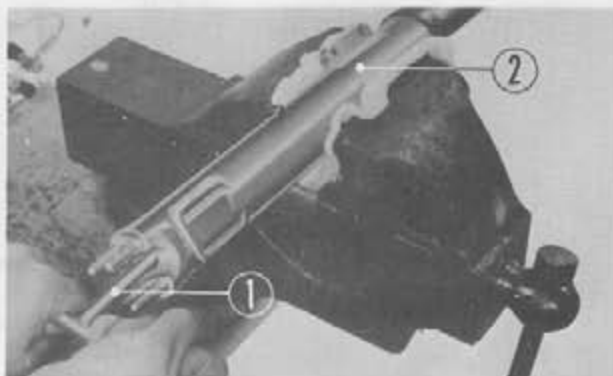


Fig. 5-37 ① Allen head wrench
 ② Front fork bottom case

6. Remove each front fork dust seal, 48 mm internal snap ring and oil seal.

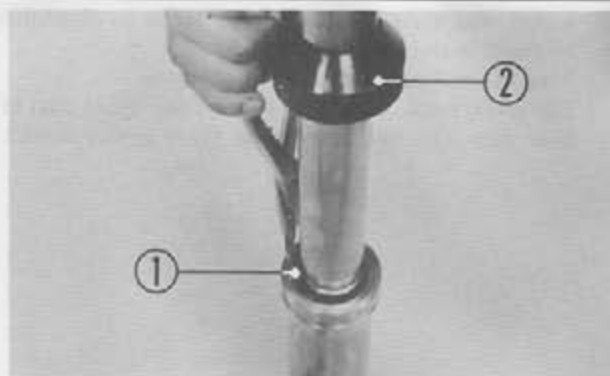


Fig. 5-38 ① 48mm internal snap ring
② Front fork dust seal

Inspection

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

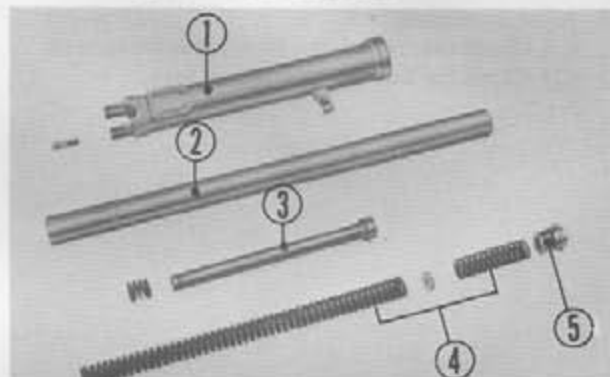


Fig. 5-39 ① Front fork bottom case
② Front fork pipe
③ Bottom pipe
④ Front suspension springs
⑤ Front fork bolt

Assembly

- To assemble, reverse the disassembly procedures.
1. As shown in Fig. 5-40, install each front fork pipe to the fork bottom case and tighten it with the socket bolt securely.
When tightening, apply a coat of locking sealant to the socket bolt.
 2. Apply a coat of grease to each oil seal lip. Then insert the oil seal with the fork seal driver (Tool No. 07947-3290000).
Do not forget to install the snap ring.
 3. Fill the fork pipes with premium quality automatic transmission fluid (ATF) up to the specified level.
(See page 26).



Fig. 5-40 ① Allen head wrench
② Front fork bottom case

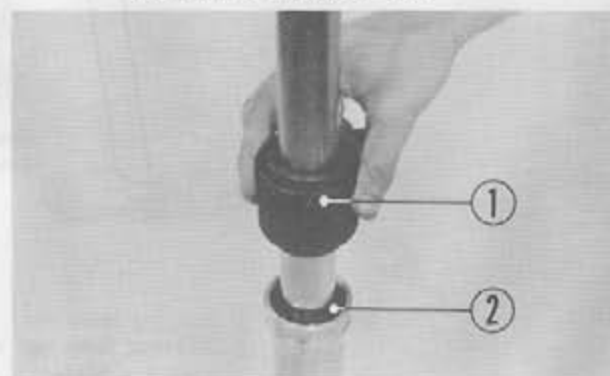


Fig. 5-41 ① Fork seal driver
② Oil seal

4. Install the right and left front forks so that they are identical in the installation height.
- Wipe off oil from around the fork pipes.
 - The groove marks are provided on the upper part of each fork pipe. Use only the upper three groove marks.



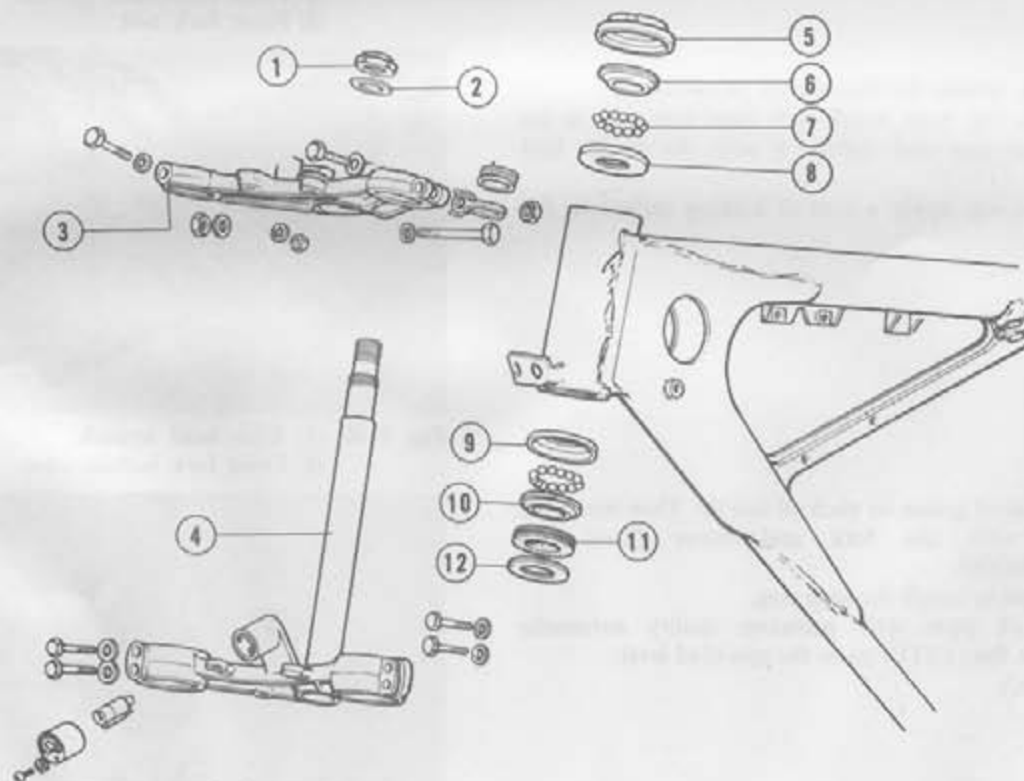
Fig. 5-42 ① Mark on front fork

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



Fig. 5-43

5. STEERING STEM



- Fig. 5-44
- | | |
|----------------------------|-----------------------------|
| ① Steering stem nut | ⑦ #8 steel ball |
| ② Steering stem nut washer | ⑧ Steering top ball race |
| ③ Fork top bridge | ⑨ Steering bottom ball race |
| ④ Steering stem | ⑩ Steering bottom cone race |
| ⑤ Fork top thread | ⑪ Dust seal |
| ⑥ Steering top cone race | ⑫ Dust seal washer |

Disassembly

1. Remove the two wire bands.
2. Remove the turn signal/dimmer switch and headlight switch screws and remove the switches from the handlebar.
3. Disconnect the speedometer cable from the front wheel.
4. Remove the fuel tank.
5. Disconnect the tachometer cable from the crankcase and from the wire clasper.
6. Disconnect the wire harness from the wire harness B.
7. Remove the two headlight stay tightening bolts by using the 10 mm box wrench supplied in the tool kit. And remove the headlight and parts attached to the headlight stay by pulling them upward.
8. Remove the handlebar. (See page 69.)
9. Remove the steering stem nut.
10. Remove the fork top bridge tightening bolts, brake cable guide and front fork upper tightening bolts and remove the fork top bridge.

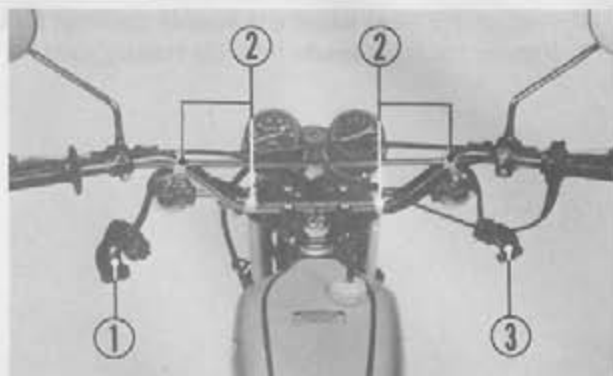


Fig. 5-45 ① Turn signal /dimmer switch
② Wire bands
③ Headlight switch



Fig. 5-46 ① Headlight stay tightening bolts

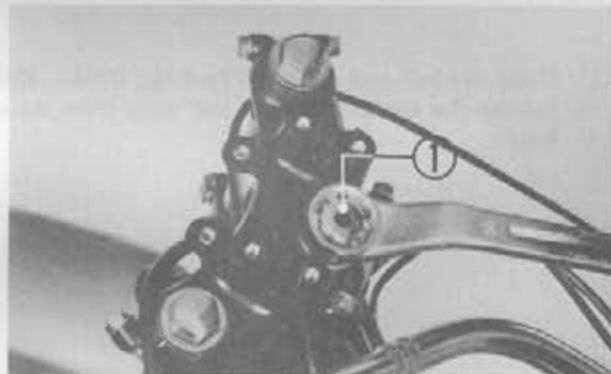


Fig. 5-47 ① Steering stem nut

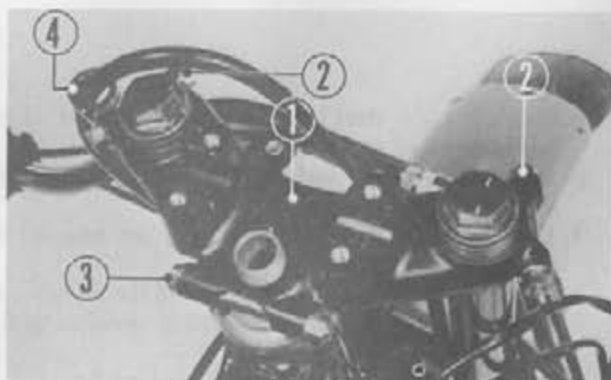


Fig. 5-48 ① Fork top bridge
② Upper front fork tightening bolts
③ Fork top bridge tightening bolt
④ Brake cable guide

11. Remove the front wheel and remove the front forks.
12. Remove the front fender from the steering stem.

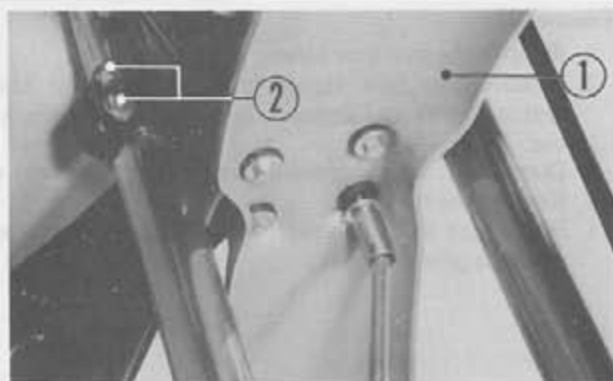


Fig. 5-49 ① Front fender
② Lower front fork tightening bolts

13. Remove the steering head top thread by using the 48 mm pin wrench (Tool No. 07902-2000000) and pull the steering stem downward.
• Do not lose the # 8 steel balls.
14. Remove the handlebar lock.

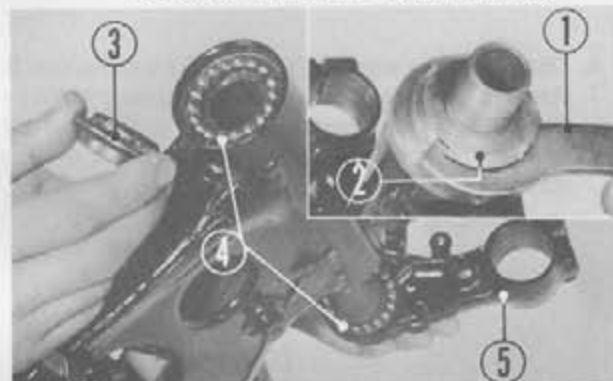


Fig. 5-50 ① 48mm pin wrench
② Steering head top thread
③ Top cone race
④ #8 steel balls
⑤ Steering stem

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

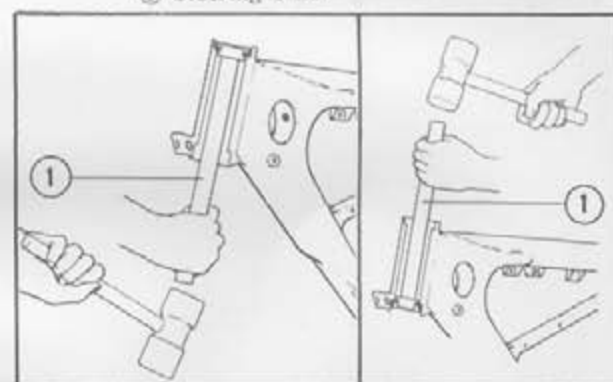


Fig. 5-51 ① Ball race remover

Inspection

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

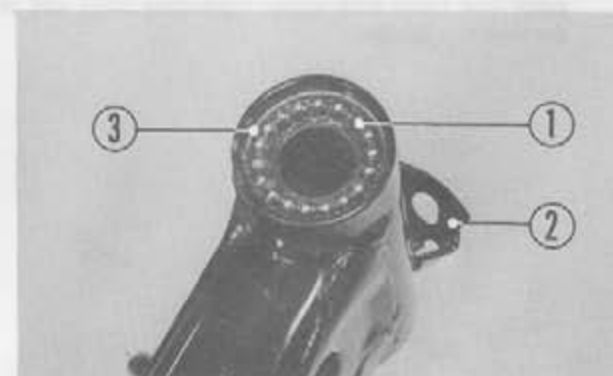


Fig. 5-52 ① #8 steel ball ② Stopper
③ Top cone race

Assembly

- To assemble, reverse the disassembly procedures.

1. Ball race installation.

Using the race driver attachment (Tool No. 07946-3290000), drive the ball races in with uniform force.

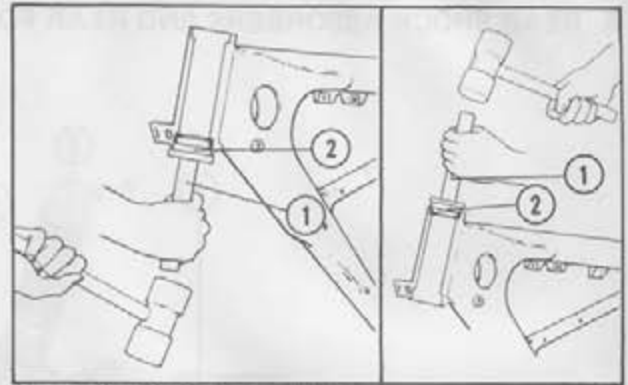


Fig. 5-53 ① Ball race driver

② Race driver attachment

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

Wash the cone races, ball races and # 8 steel balls. Use new grease.

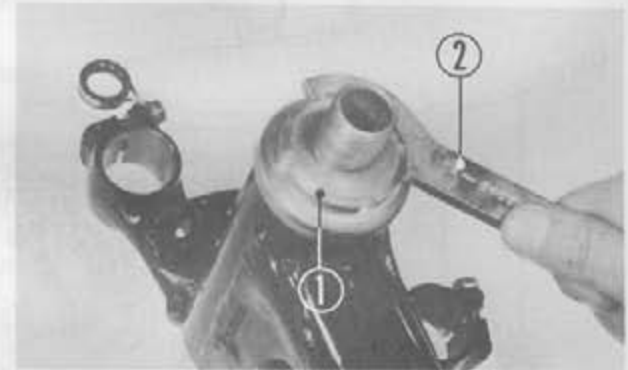


Fig. 5-54 ① Steering head top thread

② 48mm pin wrench

3. Temporarily install the front forks. Install the fork top bridge and tighten the steering stem nut.

After tightening, check to see if the stem moves smoothly by its own weight from the position 5-10° from the center. If the stem will not move, the following causes may be suspected. Check and locate the cause.

- (1) Bend of stem
- (2) Incorrect number of balls
- (3) Abnormal wear of races
- (4) Maladjustment of head top thread

4. Route the cables and wires as shown in Fig. 5-56.

5. After assembling, check the parts specified by the road regulations for proper operation.

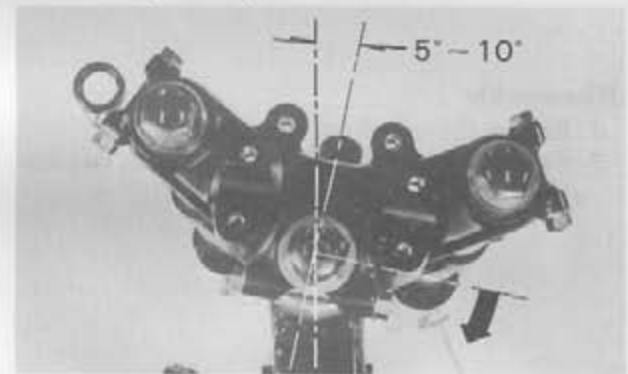


Fig. 5-55

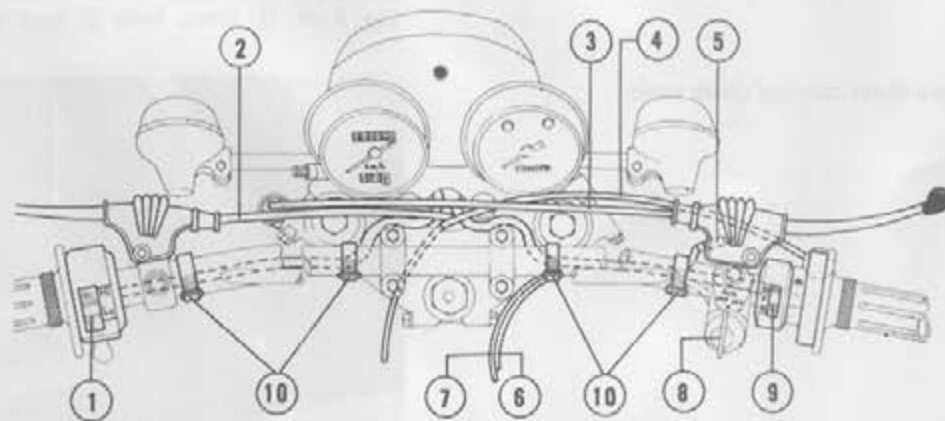


Fig. 5-56 ① Turn signal/dimmer switch ④ Throttle cable ⑦ Front stop switch lead ⑩ Wire band
② Clutch cable ⑤ Front stop switch ⑧ Ignition switch
③ Front brake cable ⑥ Ignition switch lead ⑨ Headlight switch

6. REAR SHOCK ABSORBERS AND REAR FORK

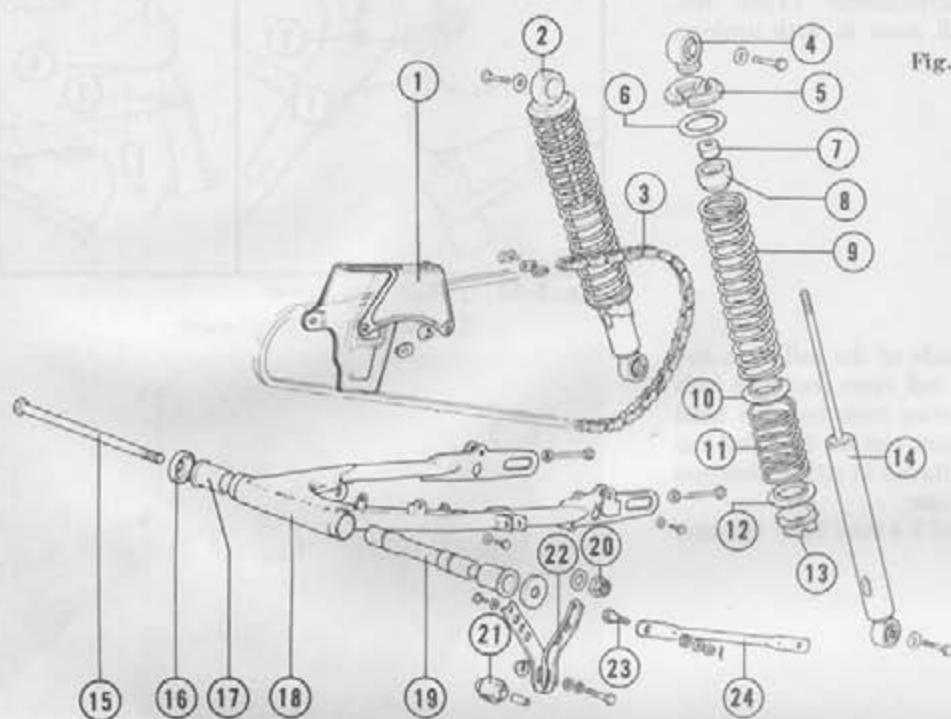


Fig. 5-57

- ① Drive chain case
- ② Rear shock absorber
- ③ Drive chain
- ④ Upper joint
- ⑤ Spring set stopper
- ⑥ Spring seat
- ⑦ 10mm lock nut
- ⑧ Stopper rubber
- ⑨ Rear suspension spring B
- ⑩ Spring joint
- ⑪ Rear suspension spring A
- ⑫ Under spring seat
- ⑬ Spring adjuster
- ⑭ Rear damper
- ⑮ Rear fork pivot bolt
- ⑯ Dust seal cup
- ⑰ Rear fork bushing
- ⑱ Rear fork
- ⑲ Rear fork center collar
- ⑳ 14mm self lock nut
- ㉑ Tensioner roller
- ㉒ Drive chain guide
- ㉓ Stopper arm bolt
- ㉔ Stopper arm

Disassembly

1. Remove the rear wheel. (See page 65.)
2. Remove the two bolts and remove the rear shock absorbers.

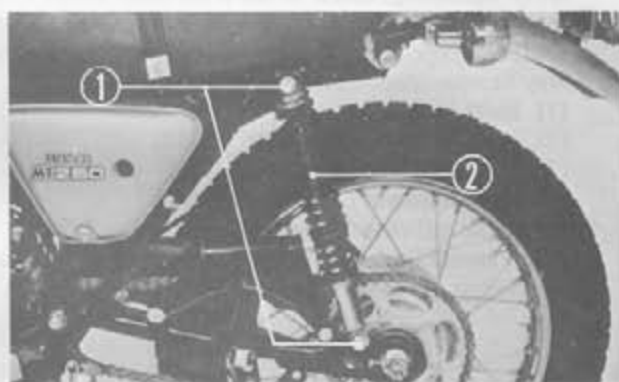


Fig. 5-58 ① 10mm bolts ② Rear shock absorber

3. Remove the drive chain case and chain guide.

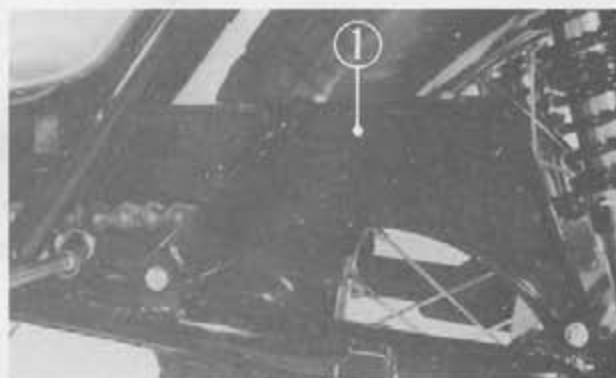


Fig. 5-59 ① Drive chain case

4. Remove the 14 mm self lock nut and pull out the rear fork pivot bolt. Then remove the rear fork.
5. Remove the rear brake stopper arm from the rear fork.

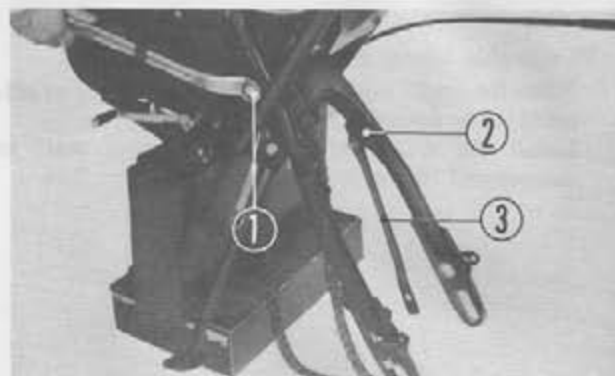


Fig. 5-60 ① 14mm self lock nut ② Rear fork ③ Rear brake stopper

6. Rear shock absorber disassembly.

Compress each rear shock absorber with the rear shock absorber compressor (Tool No. 07959-3290000). Then remove the spring set stopper and disassemble the rear shock absorber.

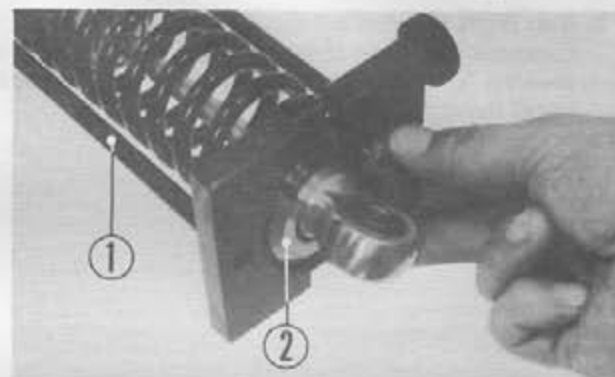


Fig. 5-61 ① Rear shock absorber compressor ② Spring set stopper

7. Loosen the 10 mm lock nut, remove the upper joint and remove the rear shock absorber.

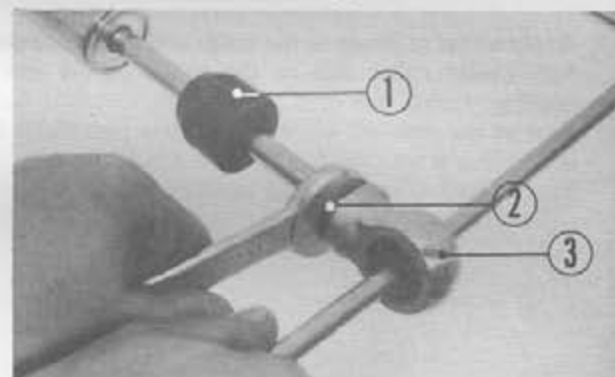


Fig. 5-62 ① Rear damper ② 10mm lock nut ③ Upper joint

Inspection

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

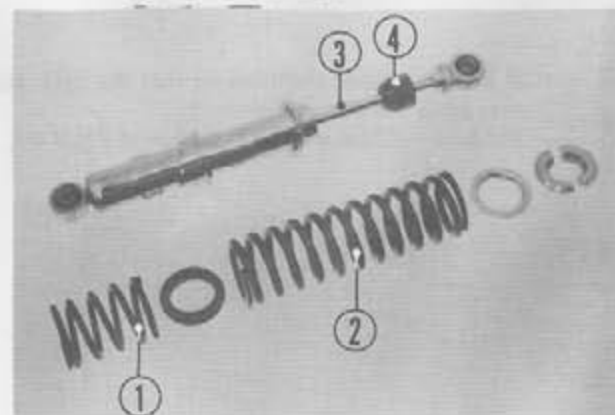


Fig. 5-63 ① Rear suspension spring A ② Rear suspension spring B ③ Rear damper rod ④ Stopper rubber

Assembly

- To assemble, reverse the disassembly procedures.
- 1. When the upper joint is removed, apply a coat of adhesive agent to the tapped holes for the rear dampers.
- Install the spring adjuster, lower spring seat, rubber stopper and 10 mm lock nut to each damper first.

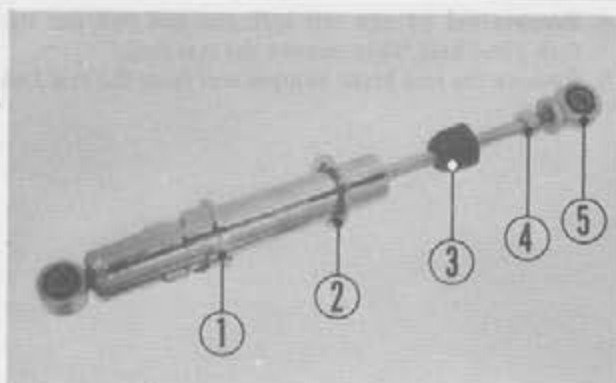


Fig. 5-64 ① Spring adjuster ④ 10mm lock nut
② Lower spring seat ⑤ Upper joint
③ Stopper rubber

2. Rear shock absorber installation.

Compress each rear shock absorber with the rear shock absorber compressor, pull the upper joint upward and install the spring set stopper.

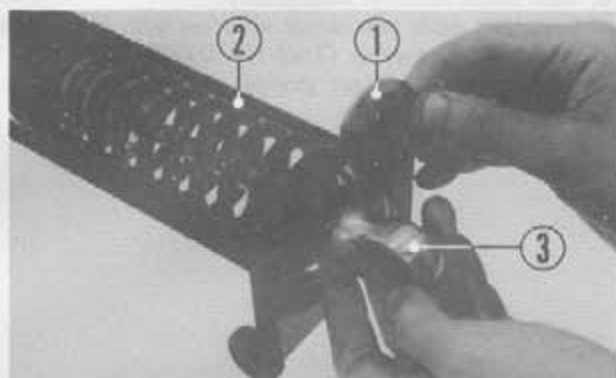


Fig. 5-65 ① Spring set stopper ③ Upper joint
② Rear shock absorber compressor

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

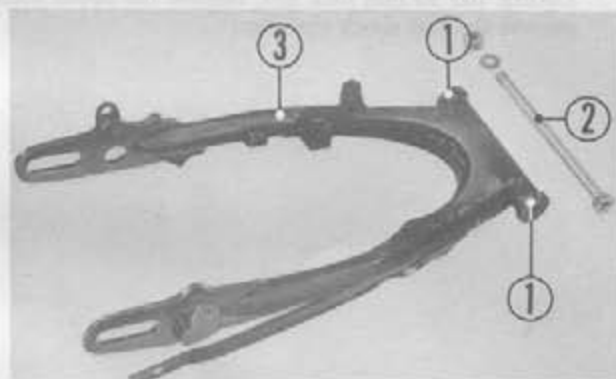


Fig. 5-66 ① Dust seal cup ③ Rear fork
② Rear fork pivot bolt

4. Install the rear shock absorbers so that the right and left adjusters are in the same position.

The standard position is the III position in Fig. 5-67.

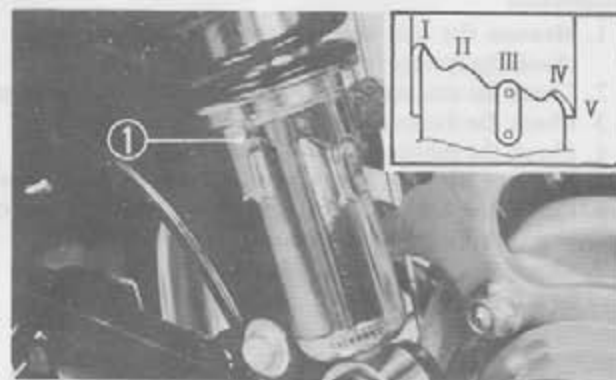


Fig. 5-67 ① Spring adjuster

7. FRAME BODY AND OTHER EQUIPMENTS

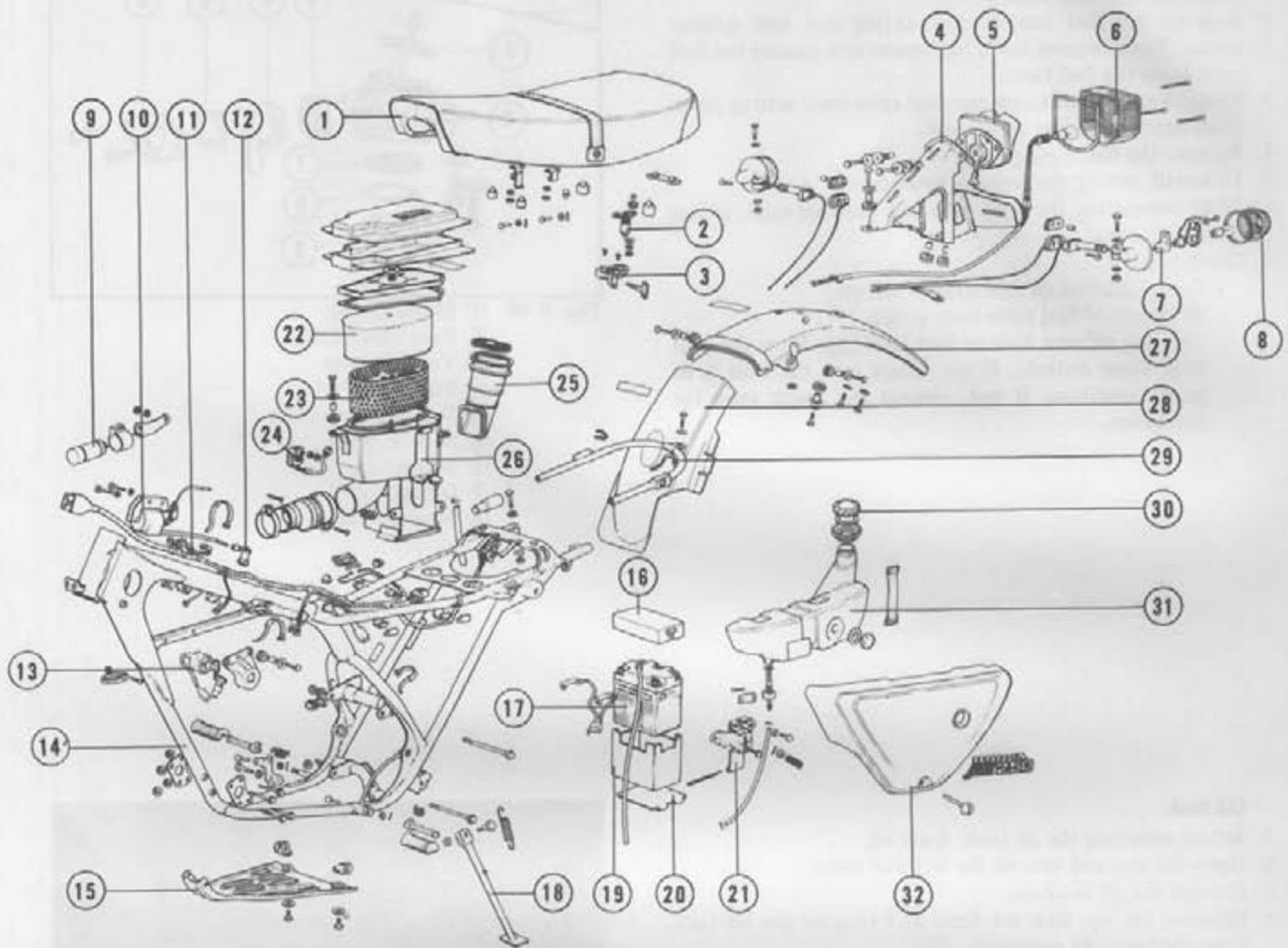


Fig. 5-68 ① Seat ⑫ Noise suppressor cap ⑳ Element holder
 ② Seat lock bar ⑬ Main switch ㉑ Silicon rectifier
 ③ Seat lock ⑭ Frame body ㉒ Inlet air duct
 ④ Number plate bracket ⑮ Skid plate ㉓ Air cleaner case
 ⑤ Taillight base ⑯ Battery cover B ㉔ Rear fender A
 ⑥ Taillight lens ⑰ Battery ㉕ Rear fender B
 ⑦ Turn signallight base ⑱ Side stand ㉖ Number bracket stay
 ⑧ Turn signal light lens ㉗ Battery cover A ㉘ Oil tank cap
 ⑨ Winker relay ㉙ Hinge hook plate ㉚ Oil tank
 ⑩ Ignition coil ㉛ Battery hinge plate ㉜ Left side cover
 ⑪ Wire harness ㉝ Air cleaner element

• Fuel valve and fuel tank cap

1. Drain the tank and remove it.
2. Remove the fuel strainer cup, O-ring and fuel strainer screen. Then remove the 6 mm screw and remove the fuel valve from the fuel tank.
3. Remove the 3 mm screw and fuel valve lever setting plate. Then remove the fuel valve lever.
4. Remove the fuel valve gasket.
5. To install, reverse the removal procedures.
6. After connecting the fuel tube and breather tube, 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 the vent hole from outside. If air comes out, the hole is in good condition. If not, inspect the check valve for condition.

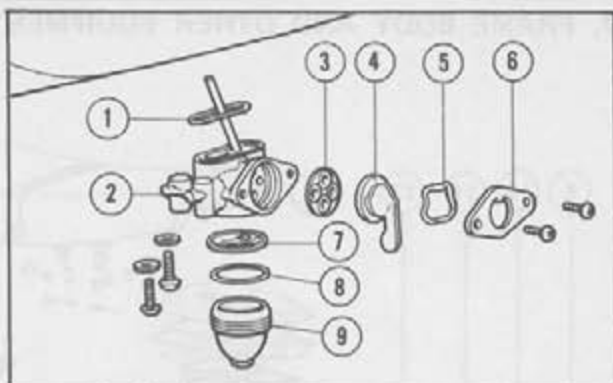


Fig. 5-69 ① 23mm O-ring
② Fuel valve body
③ Valve gasket
④ Fuel valve lever
⑤ Valve lever spring
⑥ Setting plate
⑦ Screen
⑧ O-ring
⑨ Strainer cup

• Oil tank

1. Before removing the oil tank, drain oil.
2. Open the seat and remove the left side cover.
3. Remove the oil tank cap.
4. Remove the oil tank set band and remove the oil tank from the frame by pulling it.



Fig. 5-70 ① Oil tank set band ② Oil tank

5. Disconnect the oil tube.
6. Remove the oil filter screen.
7. To install, reverse the removal procedures.
8. Do not forget to secure the oil tube with the clip.

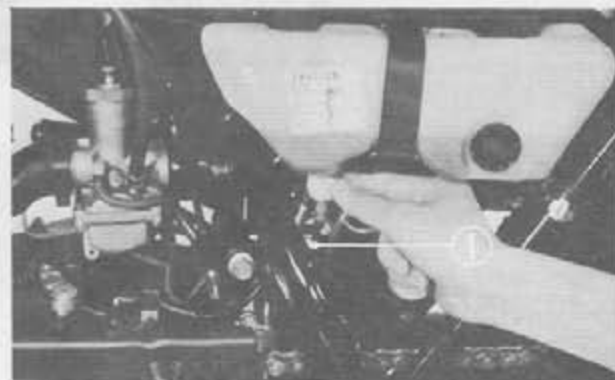


Fig. 5-71 ① Oil tube

• **Battery and battery hinge plate**

1. Remove the left side cover.
2. Remove the two 6 mm bolts and pull the battery hinge plate forward.
3. Remove the battery wiring connector and remove the battery with its covers.
4. Disconnect the battery terminal cords.
5. Pull out the cotter pin and remove the battery hinge plate.

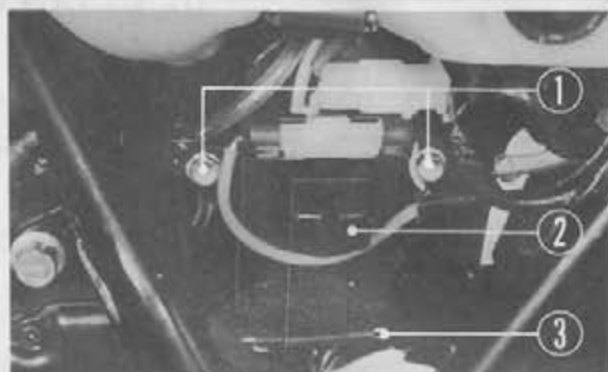


Fig. 5-72 ① 6mm bolts ③ Cotter pin
② Battery hinge plate



Fig. 5-73 ① Battery hinge plate

6. To install, reverse the removal procedures.
7. Apply a coat of grease to the battery terminals.
8. Seeing page 86, check the battery for condition.
9. Connect the battery overflow tube as shown, making sure that it is not bent.

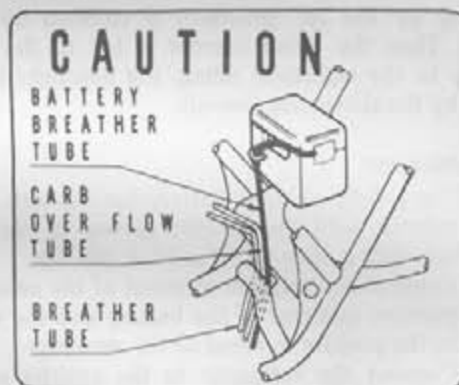


Fig. 5-74

1. CHARGING SYSTEM

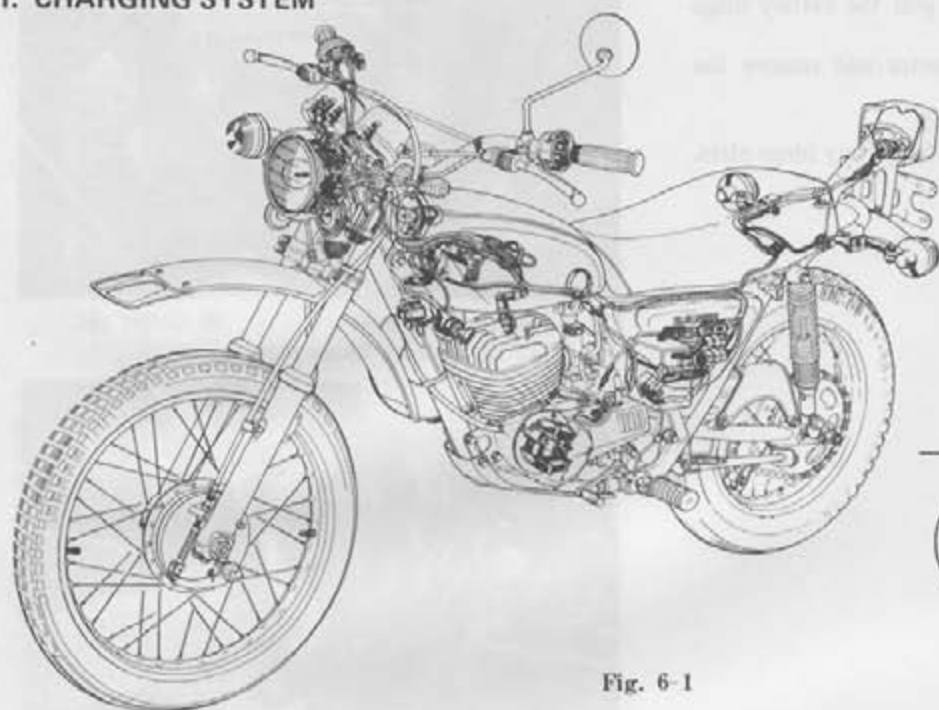


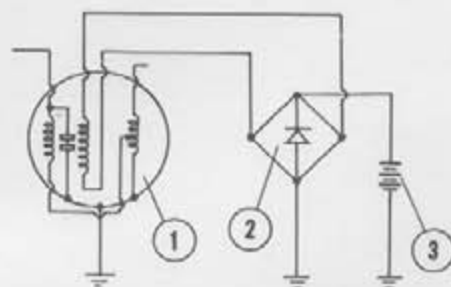
Fig. 6-1

The charging system consists of a flywheel type AC generator, silicon rectifier and storage battery. The alternating current generated by the flywheel type rotor installed to the crankshaft and by the AC generator is rectified by the silicon rectifier. Then the direct current is fed to the battery for charging. In the nighttime riding, the headlight is turned on directly by the alternating current.

(1) Charging test

1. Use a fully charged battery for the test. (Charge the battery until the specific gravity of the electrolyte becomes 1.260–1.280 at 20°C (68°F).)
2. Connect the negative terminal of the ammeter to the positive terminal of the battery and the wire harness to the positive terminal of the ammeter.
3. Connect the voltmeter to the positive and negative terminals of the battery.

4. Start the engine. Simulate the NIGHTTIME RIDING and DAYTIME RIDING conditions and take the ammeter and voltmeter readings at each speed. Compare the readings with those in the charging characteristic chart on the next page. If the two values are different excessively, check the AC generator for condition. (See page 85.)
The output of the AC generator may vary slightly with the change in temperature.



- ① A.C. generator
- ② Silicon rectifier
- ③ Battery

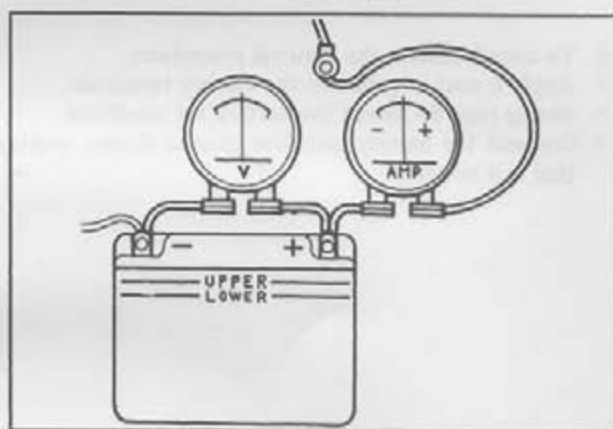


Fig. 6-2 Battery charging test

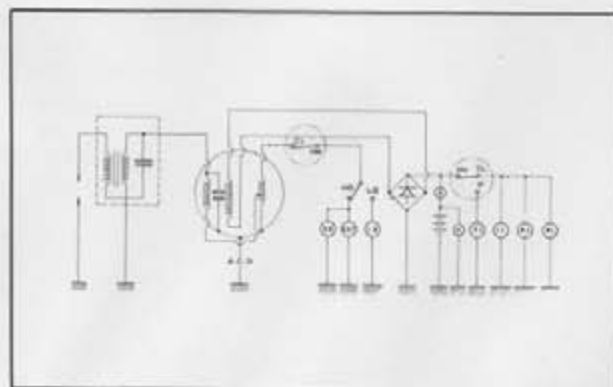


Fig. 6-3 Charging characteristic circuit

Charging characteristic chart

	Beginning of charging	5,000 rpm	7,500 rpm
DAYTIME RIDING	VB=6.3V 1,000 rpm, max.	VB=8.0V 1.5A, min.	VB=8.9V 4A, max.
NIGHTTIME RIDING	VB=6.3V 1,500 rpm, max.	VB=7.5V 1.2A, min.	VB=8.3V 1.5A, min.

(2) AC generator stator

Check the stator for continuity and resistance using a tester. Check for continuity between:

- 1) Black/white wire and stator.
- 2) White/yellow wire and stator.
- 3) Pink and yellow wires.

If there is no continuity or the resistance is out of specification excessively, replace.



Fig. 6-4 Stator continuity test

(3) Silicon rectifier

Check the four diodes for continuity in each direction. Check for continuity between:

- 1) Red/white and pink wires.
- 2) Pink and green wires.
- 3) Green and yellow wires.
- 4) Yellow and red/white wires.

• Use an ohmmeter with the knob in the $K\Omega$ range. If there is a continuity or no continuity in both directions, the rectifier is defective.

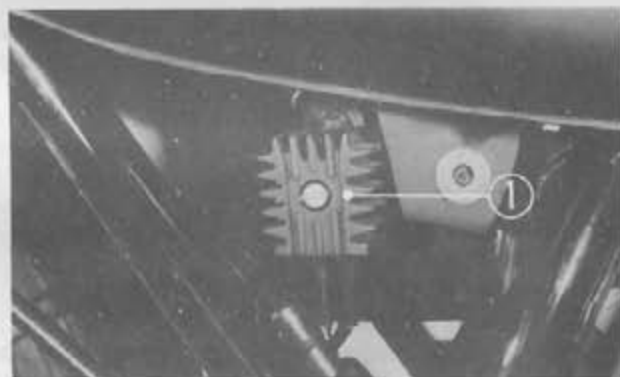


Fig. 6-5 ① Silicon rectifier

CAUTIONS:

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

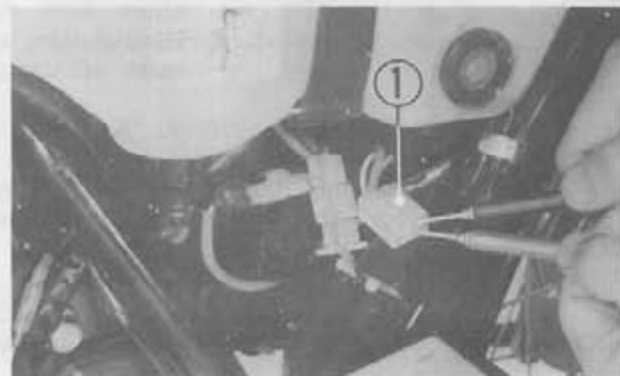


Fig. 6-6 ① Silicon rectifier coupler

(4) Battery

1. Specifications

Model	6N6.3B
Voltage	6V
Capacity	6AH
Electrolyte level	0.27 ℓ

2. State of charge.

The rate of battery charge or discharge can be easily judged from the specific gravity of the electrolyte. To measure the specific gravity, use a suction type hydrometer. Hold the glass tube vertically and mouth-suck the electrolyte until it rises. Take the reading at the uppermost height of the electrolyte. If the specific gravity is below 1.200 (at 20°C or 68°F), recharge the battery.

3. Servicing

- Check the electrolyte level in each cell. If it is below the lower mark, add distilled water up to the upper mark.
- Periodically measure the specific gravity of electrolyte.

When adding the distilled water, thoroughly stir the electrolyte before measuring the specific gravity.

- Thoroughly check for poor contact due to corroded connector and terminals, falling-off of the cell plates and sulphation (when a battery is left unused for any length of time, the plates become white in color.) which may be the major causes of the battery troubles.

4) Charging

Battery charging precautions:

- Avoid boost-charging the battery; otherwise, the service life of battery may be shortened excessively. If the battery must be boost-charged, the charging current should not exceed 2.0A. When recharging the battery from outside sources, for example, by boost-charging with it installed, remove the coupler of the silicon rectifier first.
- While charging the battery, "Keep Out" since hydrogen gas is emitted.
- After charging, thoroughly wash out spilled electrolyte. Apply a coat of grease to the battery terminals.

How to charge:

Connection	<ul style="list-style-type: none"> Charger positive terminal to battery positive terminal. Charger negative terminal to battery negative terminal.
Charging current	0.2A (standard)

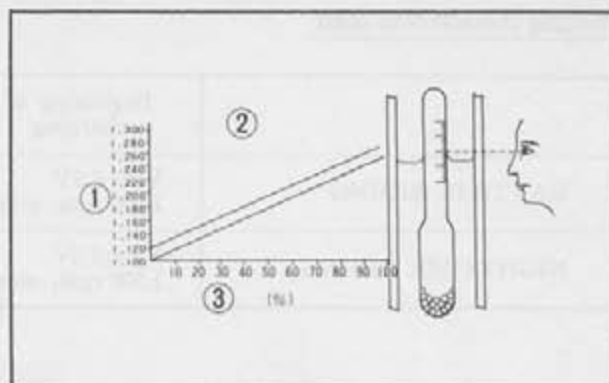


Fig. 6-7 ① Specific gravity of electrolyte
② Relation between state of charge and specific gravity of electrolyte
③ State of charge (%)

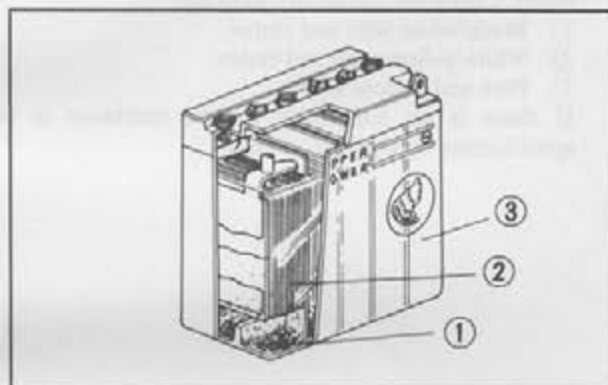


Fig. 6-8 ① Sediment ③ Battery case
② Plate



Fig. 6-9 Charging battery

Completion of charging	Charge until SG value becomes 1.260~1.280 (at 20°C or 68°F). Air bubbles are noted in electrolyte at end of charging.
Charging hours	12~13 on a battery having 1.220 SG (at 20°C or 68°F), maximum.

2. IGNITION SYSTEM

(1) Ignition coil

1. Continuity test

a. Primary winding

Check for the continuity between the attaching stay and primary winding (black/white cord) using a tester with the knob in the Ω range.

b. Secondary winding

Check for the continuity between the attaching stay and high-tension cable using a tester with the knob in the Ω range.

If there is no continuity, the circuit in the coil is open. Replace the coil.

2. Performance test

Even if there is a continuity, the coil may become inferior in the performance. Check the coil performance.

a. With the service tester selector knob turned to COIL TEST, connect in accordance with the instructions provided with the tester.

b. Connect a fully charged battery to the tester. Observing the spark jumping across a 3-point spark gap, turn the knob and measure the stable maximum jumping distance. If the spark appears in the form B in Fig. 6-12, connect the high-tension cable to the tester in the reverse direction and measure the jumping distance with the spark in the form A in the same figure.

Specifications:

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



Fig. 6-10 Ignition coil continuity test

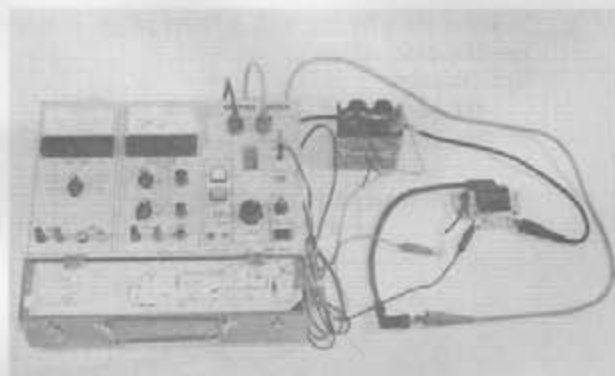


Fig. 6-11 Ignition coil performance test

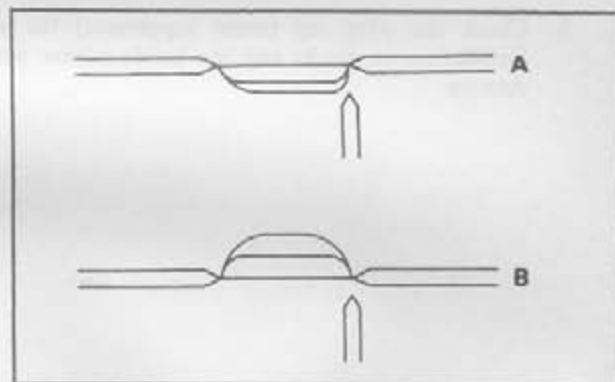


Fig. 6-12 Measuring distance of spark jumping across 3-point spark gap

(2) Condenser

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

Specifications:

Capacity:	0.25 μ F
Insulation resistance:	10M Ω (at 1,000 megger)



Fig. 6-13 Checking condenser for condition

(3) Spark plug

Check the spark plug electrodes for wear, improper gap and fouling. Also check the insulator of the plug for breakage.

1. If the plug is foul, clean it with a plug cleaner or a wire brush.

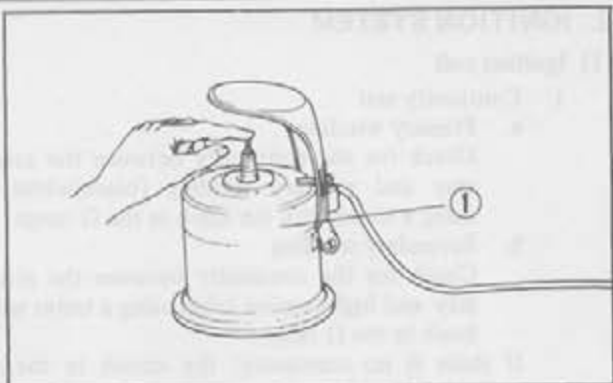


Fig. 6-14 ① Spark plug cleaner

2. Measure the plug gap with a feeler gauge. If it is out of specification, adjust it.

Specification:

0.6–0.7 mm (0.024–0.028 in.)

3. If the insulator or gasket is broken or deformed, replace the plug.

Recommended plug: B-8ES (NGK)

4. If the plug has a bridge, check the cylinder head, cylinder, piston and air cleaner for conditions.

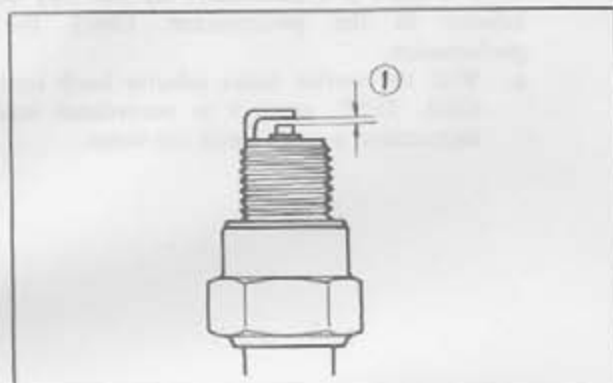


Fig. 6-15 ① Plug gap

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



Fig. 6-16 ① Noise suppressor cap

3. OTHER ELECTRICAL PARTS

(1) Main switch

Check the main switch for continuity at each key position (ON, OFF). If there is a continuity between \bigcirc — \bigcirc in the table below, the switch is in good condition. If there is no continuity or if there is a continuity between the other parts than \bigcirc — \bigcirc , the switch is defective.

	IG	HO	BAT	E
OFF	\bigcirc — \bigcirc			\bigcirc — \bigcirc
ON		\bigcirc — \bigcirc		
Cord color	Black/white	Black	Red	Green

(2) Front stop switch

Attach the probes of a tester to the front stop switch wires (green/yellow and black). Then operate the brake lever and check for continuity. The stop light should come on when the lever moves about 20–30 mm (0.8–1.2 in.) as measured at the tip of the lever.

(3) Rear stop switch

Pull the rear stop spring to the end of the rear stop switch stroke. Check for the continuity between the black and green/yellow wires. If there is no continuity, replace the rear stop switch.

After checking, adjust the rear stop switch by turning the adjusting nut so that the stop light comes on when the brake pedal is depressed and moves about 20–30 mm (0.8–1.2 in.) as measured at the tip of the pedal.

(4) Horn

Disconnect the horn leads in the headlight case. Connect a 6V battery to the wires on the horn side (positive to black and negative to yellowish green). If no abnormal conditions are found, check the horn button switch for condition.

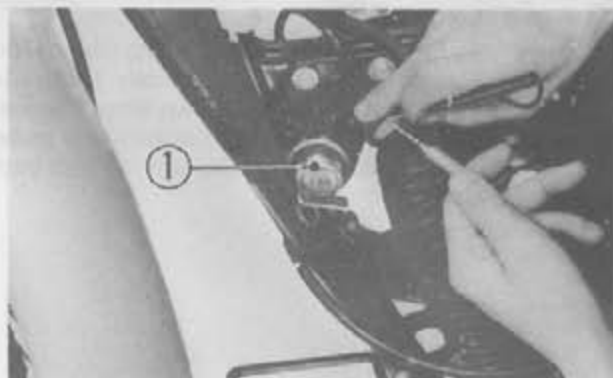


Fig. 6-17 ① Main switch

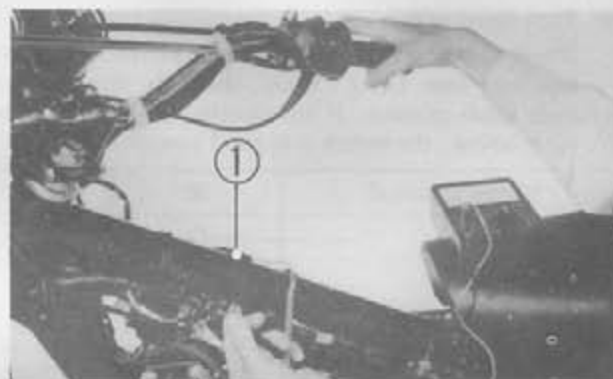


Fig. 6-18 ① Front stop switch cord

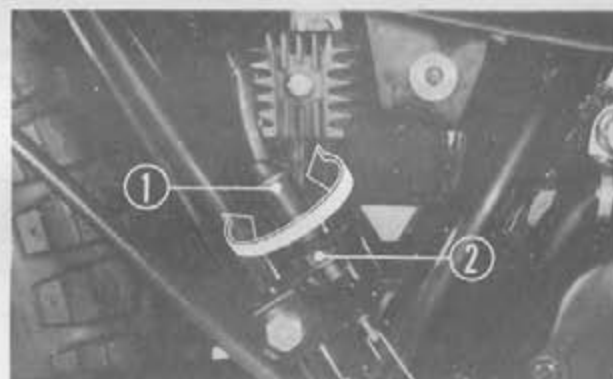


Fig. 6-19 ① Rear stop switch
② Adjusting nut



Fig. 6-20 ① Horn ② Black cord ③ Yellowish green cord

(5) Horn button

Disconnect the turn signal/dimmer switch wires (yellowish green and green) from the headlight case. Using a tester, check for continuity between the two wires. There should be a continuity only when the horn button is pushed. If open circuit is in the horn button or if the horn button is broken, replace.

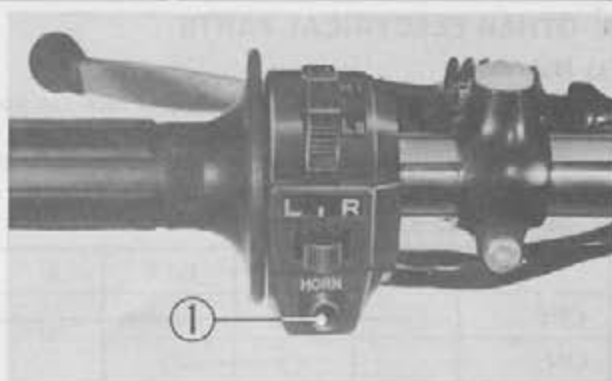


Fig. 6-21 ① Horn button

(6) Turn signal switch

Disconnect the turn signal/dimmer switch leads from the headlight case. Using a tester, check for the continuity at each knob position. If the continuity is as shown in the table below, the switch is in good condition.

IG (+ terminal)		R	L
R	○	○	
(N)			
L	○		○
Cord color	Gray	Sky-blue	Orange

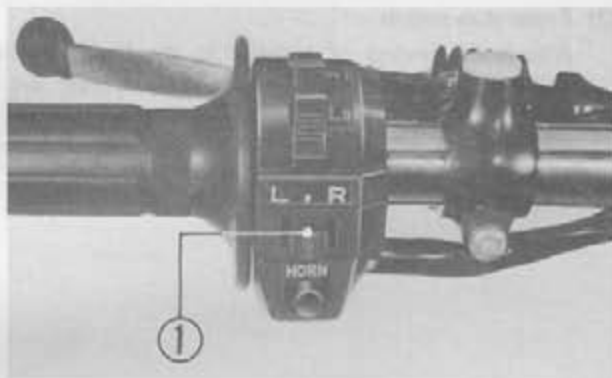


Fig. 6-22 ① Turn signal switch

(7) Dimmer switch

Disconnect the turn signal/dimmer switch leads from the headlight case. Using a tester, check for the continuity at each knob position. If the continuity is as shown in the table below, the switch is in good condition.

IG (+ terminal)		HB	LB
H	○	○	
(N)	○	○	○
L	○		○
Cord color	Blue/white	Blue	White

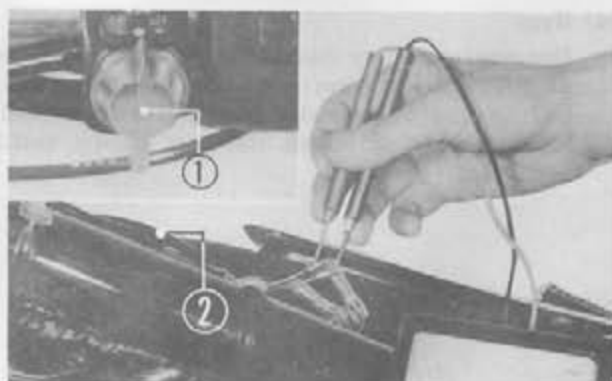


Fig. 6-23 ① Dimmer switch

(8) Ignition switch

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

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

Fig. 6-24 ① Ignition switch
② Ignition switch leads

1. SPECIAL TOOLS



Ref. no.	Tool no.	Tool name	Application
①	07902-2000000	48 mm pin wrench	Stem head adjusting.
②	07907-9350000	Lock nut wrench	18 mm clutch lock nut and primary drive gear turning.
③	07908-3570000	Adjusting wrench	Clutch adjusting.
④	07910-3290000	Retainer wrench	Rear wheel hub turning.
⑤	07917-3230000	Allen head wrench	Front fork disassembly and assembly.
⑥	07922-3570000	Drive sprocket holder	
⑦	07933-3580000	Flywheel rotor puller	Flywheel rotor removal.
⑧	07937-3580000	Crankcase puller	Crankcase separating.
⑨	07946-3570000	Bearing driver attachment	Crankshaft bearing installation (Use with tool No. 13).
⑩	07946-3290000	Race driver attachment	Stem ball race and 6204 ball bearing installation (Use with tool No. 13).
⑪	07946-3290200	Ball race remover	Stem ball race removal.
⑫	07947-3290000	Fork seal driver	Front fork oil seal installation.
⑬	07949-6110000	Driver handle	Use with tool No. 9, 10 or 16.
⑭	07959-3290000	Rear shock absorber compressor	Rear shock absorber disassembly and assembly.
⑮	07965-3610000	Crankcase assembly tool	Crankshaft installation.
⑯	07945-3330100	Bearing driver attachment	6302 and 6304 ball bearing installation.
⑰	07958-2500000	Connecting rod holder	
	07997-2920300	Special tool case	

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.	INITIAL SERVICE PERIOD	REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval, whichever occurs first.	
	Month	6	12
	Mile	3,000	6,000
	Km	5,000	10,000
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	(Service more frequently if operated in dusty area)	○	
*CARBURETOR—Check, and adjust if necessary.		○	
*OIL PUMP OPERATION—Check	●	○	
*CYLINDER HEAD, CYLINDER, PISTON, PISTON RINGS AND MUFFLER—Decarbonize			○
THROTTLE OPERATION—Inspect cable. Check, and adjust free play.	●	○	
*OIL TANK FILTER—Clean			○
FUEL FILTER SCREEN—Clean		○	
*CLUTCH—Check operation, and adjust if necessary.	●	○	
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 RIMS AND SPOKES—Check. Tighten spokes and true wheels, if necessary.	●	○	
TIRES—Inspect.			○
FRONT FORK OIL—Drain and refill.	●		○
REAR FORK BUSHING—Grease. Check for excessive looseness.		○	
*STEERING HEAD BEARINGS—Adjust.			○
BATTERY—Check electrolyte level, and add water if necessary.	●	○	
ALL NUTS, BOLTS, AND OTHER FASTENERS—Check security and tighten if necessary.	●	○	

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

** Initial service period 200 miles.

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	18	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	12	4.5~5.0 (32.5~36.2)	
8	Cylinder head flanged nut	6	1.0~1.3 (7.2~9.4)	} Give special attention to torquing. UBS bolt
9	Cylinder head special nut	8	2.0~2.5 (14.5~18.1)	
10	Primary drive gear	12	5.0~6.0 (36.2~43.4)	
11	Spark plug	14	1.5~2.0 (10.8~14.5)	
12	Carburetor insulator band	5	0.5~0.7 (3.6~5.1)	
13	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	23	8.0~12.0 (57.9~86.8)	
2	Front fork top bridge	8	1.8~2.5 (13.0~18.1)	
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	—	0.2~0.35 (1.4~2.5)	
6	Rear fork pivot bolt	14	6.0~7.0 (43.4~50.6)	
7	Front wheel axle nut	12	6.0~8.0 (43.4~57.9)	
8	Front axle holder	8	1.8~2.5 (13.0~18.1)	
9	Front engine hanger bolt	8	2.3~2.8 (16.6~20.3)	UBS bolt
10	Rear engine hanger bolt	10	3.0~4.0 (21.7~28.9)	UBS bolt
11	Rear axle nut	14	6.0~8.0 (43.4~57.9)	
12	Driven sprocket	8	2.3~2.8 (16.6~20.3)	UBS bolt
13	Brake arm	6	0.8~1.1 (5.8~8.0)	
14	Rear brake torque link	8	1.3~1.8 (9.4~13.0)	
15	Rear shock absorber	10	3.0~4.0 (21.7~28.9)	
16	R/H foot rest	10	3.0~4.0 (21.7~28.9)	
17	Change pedal	6	0.8~1.2 (5.8~8.7)	
18	Rear brake pedal pivot nut	10	3.0~4.0 (21.7~28.9)	
19	Kick starter pedal	8	1.8~2.5 (13.0~18.1)	
20	Handle lever bracket	6	0.3~0.4 (2.2~2.9)	

4. TECHNICAL SERVICE DATA

Engine

Unit: mm (in.)

Item		Assembly standard	Service limit
Cylinder bore		70.0~70.01 (2.7559~2.7563)	70.1 (2.7598)
Piston OD		69.93~69.95 (2.7531~2.7539)	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 (0.7083~0.7087)	17.98 (0.7079)
Piston ring side clearance	Top	0.045~0.075 (0.0018~0.0030)	0.09 (0.0035)
	2nd	0.025~0.055 (0.0010~0.0022)	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 (0.8660~0.8665)	
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	41.2 (1.6220)	40.0 (1.5748)
	Tension	22.5/21 kg (0.8858/46 lb)	20.5/21 kg (0.8071/46 lb)
Transmission gear backlash		—	0.2 (0.0079)
Gearshift fork drum OD		33.95~33.975 (1.3366~1.3376)	33.9 (1.3346)
Center gearshift fork ID		34.00~34.025 (1.3386~1.3396)	34.08 (1.3417)
Shift fork guide shaft OD		11.976~11.994 (0.4715~0.4722)	11.92 (0.4693)
R/H & L/H gearshift fork ID		12.00~12.018 (0.4724~0.4731)	12.05 (0.4744)
Shift fork finger thickness		4.93~5.0 (0.1941~0.1969)	4.6 (0.1811)

Frame

Unit : mm (in.)

Item		Assembly standard		Service limit	
Drive chain length		1000.2	(39.3780)	980	(38.5827)
Front shock absorber spring B free length		499.2	(19.6535)	490	(19.2913)
Rear shock absorber spring A free length		251.7	(9.9094)	246	(9.6850)
Front fork bottom pipe OD		34.75~35.00	(1.3681~1.3780)	34.70	(1.3661)
Front fork bottom case ID		35.00~35.039	(1.3780~1.3795)	35.18	(1.3850)
Front wheel axle bend		0.01	(0.0004)	0.2	(0.0080)
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)
6204 & 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		21.60~21.65	(0.8504~0.8524)	21.8	(0.8583)
Rear fork center collar OD		21.475~21.46	(0.8455~0.8449)	21.4	(0.8425)
Rear brake drum ID		140.0~140.3	(5.5118~5.5236)	141.0	(5.5512)
Rear brake shoe thickness		4.5	(0.1772)	2.5	(0.0984)

5. TROUBLE SHOOTING

Trouble	Cause	Remedy
Engine will not start or fails to start.	1. Insufficient compression pressure	
	① Leak of crankcase primary compression from oil seal	Replace.
	② Leak of crankcase primary compression from case matching surface	Repair.
	③ Worn or stuck piston rings	Replace.
	④ Worn cylinder	Repair or replace.
	2. No spark from spark plug or on points	
	① Foul plug	Clean or replace.
	② Wet plug	Clean or replace.
	③ Foul 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).
Engine stalls frequently.	4. No fuel to carburetor	
	① Clogged jets	Clean.
	② Clogged fuel valve	Clean.
	③ Defective float valve	Clean.
	④ Clogged fuel tube	Replace.
	1. Foul plug	Clean or replace.
	2. Foul points	Clean or replace.
	3. Incorrect ignition timing	Adjust.
	4. Clogged fuel pipes	Clean.
	5. Clogged carburetor jets	Clean.
Engine does not develop sufficient power.	6. Leak from crankcase (primary compression)	Repair.
	7. Sucked secondary air	Repair or replace.
	1. Worn or stuck cylinder or piston rings	Repair or replace.
	2. Incorrect ignition timing	Adjust.
	3. Defective points	Repair or replace.
	4. Incorrect plug gap	Repair or replace.
	5. Clogged carburetor jets	Clean.
	6. Incorrect float level	Adjust.
Engine overheats.	7. Clogged air cleaner element	Clean or replace.
	8. Cracked exhaust pipe muffler or carbon deposits in muffler	Repair.
	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.

Trouble	Cause	Remedy
Clutch slips.	<ol style="list-style-type: none"> 1. Maladjusted clutch 2. Weak clutch springs 3. Worn or warped pressure plate 4. Warped clutch plates 5. Worn or warped friction discs 	Readjust. Replace. Replace. Replace. Replace.
Clutch drags when disengaged.	<ol style="list-style-type: none"> 1. Maladjusted clutch 2. Unequal clutch spring tension 3. Warped clutch plates 4. Too much transmission oil 	Readjust. Replace. Replace. Adjust.
Transmission gears fail to be shifted smoothly or sequentially.	<ol style="list-style-type: none"> 1. Deformed shift drum stopper 2. Broken gearshift drum 3. Deformed gearshift forks 4. Weak shift drum stopper spring 	Repair or replace. Replace. Repair or replace. Replace.
Gear change pedal fails to return.	<ol style="list-style-type: none"> 1. Broken gearshift return spring 2. Interference between gearshift spindle and hole in crankcase 	Repair or replace. Repair.
Transmission gears disengage accidentally.	<ol style="list-style-type: none"> 1. Worn main shaft and countershaft shifting gears 2. Bent or worn gearshift forks 	Replace. Repair or replace.
Engine operation is erratic at low speeds.	<ol style="list-style-type: none"> 1. Incorrect ignition timing 2. Poor point contact 3. Too large a plug gap 4. Weak spark (defective condenser or ignition coil) 5. Short circuit in AC generator 6. Incorrect float level 7. Maladjusted carburetor air screw 	Adjust. Repair or replace. Adjust or replace. Replace. Repair or replace. Adjust. Adjust.
Engine operation is erratic at high speeds.	<ol style="list-style-type: none"> 1. Too small a plug gap 2. Incorrect ignition timing 3. Weak point arm spring 4. Defective ignition coil 5. Incorrect float level 6. Clogged air cleaner element 7. Leak of primary compression pressure 8. Rare short circuit in AC generator 9. Collapsed or cracked exhaust pipe muffler, broken tail pipe or carbon deposit in pipe 	Adjust or replace. Adjust. Replace. Replace. Adjust. Clean or replace. Repair. Repair or replace. Repair or replace.
Engine fails to fire.	<ol style="list-style-type: none"> 1. Defective ignition coil 2. Defective spark plug 3. Foul points or incorrect point gap 4. Rare short circuit in AC generator 	Replace. Replace. Replace. Replace.
Breaker points are burning.	<ol style="list-style-type: none"> 1. Poor point contact 2. Defective condenser 	Replace. Replace.
Spark plug electrodes are foul.	<ol style="list-style-type: none"> 1. Overflowing carburetor 2. Maladjusted carburetor 	Adjust. Readjust.

Trouble	Cause	Remedy
Plug electrodes are burning.	<ol style="list-style-type: none"> 1. Incorrect heat range 2. Overheating engine 3. Incorrect ignition timing 4. Loose spark plug 5. Lean mixture 	Use recommended plug Adjust. Retighten. Adjust.
Steering is hard.	<ol style="list-style-type: none"> 1. Too tight steering stem 2. Broken steering stem steel balls 3. Bent steering stem 4. Unevenly worn ball races 	Adjust. Replace. Replace. Replace.
Front wheel shimmies.	<ol style="list-style-type: none"> 1. Deformed rims 2. Loose front wheel bearings 3. Loose spokes 4. Loose axle and related parts 	Replace. Replace. Adjust. Retighten.
Front shock absorbers are spongy.	<ol style="list-style-type: none"> 1. Weak springs 2. Insufficient damper oil 	Replace. Add.
Front shock absorbers are hard.	<ol style="list-style-type: none"> 1. Too high shock absorber oil viscosity 2. Too much damper oil 	Replace. Adjust.
Rear wheel shimmies.	<ol style="list-style-type: none"> 1. Deformed rims 2. Loose rear wheel bearings 3. Loose spokes 4. Loose axle and related parts 	Replace. Replace. Adjust. Retighten.
Rear shock absorbers are spongy.	<ol style="list-style-type: none"> 1. Weak springs 2. Improper rear shock absorber adjuster operation 	Replace. Adjust.
Rear shock absorbers are hard.	<ol style="list-style-type: none"> 1. Improper rear shock absorber adjuster operation 2. Improperly spring thrust joint sliding 3. Bend damper rods 	Adjust. Repair. Replace.
Braking effect is poor.	<ol style="list-style-type: none"> 1. Poor brake shoe contact 2. Oil or grease on brake linings 3. Broken brake cable or loose brake pedal shaft 4. Maladjusted brake 	Repair or replace. Replace. Repair or replace. Readjust.
Brake free play is too small.	<ol style="list-style-type: none"> 1. Excessively worn brake shoes 2. Excessively worn brake cam 3. Poor engagement of brake arm serration 	Replace. Replace. Repair or replace.

[illegible]

7. SPECIFICATIONS

DIMENSIONS Overall length Overall width Overall height Wheel base Ground clearance Dry weight	2,160 mm (85.0 in.) 890 mm (35.0 in.) 1,130 mm (44.5 in.) 1,440 mm (56.7 in.) 250 mm (9.8 in.) 118 kg (260 lbs.)
FRAME Type F. suspension R. suspension F. tire size, pressure R. tire size, pressure F. brake R. brake Fuel capacity Fuel reserve capacity Caster angle Trail length Front fork oil capacity	Semi-double cradle Telescopic fork Swing arm 3.00-21, 21 psi (1.5 kg/cm ²) 4.00-18, 21 psi (1.5 kg/cm ²) Internal expanding shoes Internal expanding shoes 8.5 lit. (2.2 U.S. gal.) 1.5 lit. (0.4 U.S. gal.) 59.5° 143 mm (5.6 in.) 145 cc (4.9 ozs.) ATF
ENGINE Type Cylinder arrangement Bore and stroke Displacement Compression ratio Oil capacity Lubrication system Port timing Intake Open Close Exhaust Open Close Scavenge Open Close Idle speed	Air cooled, 2-stroke Single-cylinder 15° inclined from vertical 70.0 x 64.4 mm (2.756 x 2.535 in.) 248 cc (15.1 cu. in.) 9.0 : 1 1.3 lit. (1.4 U.S. qt.) Forced and wet sump 80° BTDC 80° ATDC 87° BBDC 87° ABDC 60° BBDC 60° ABDC 1,500 rpm
DRIVE TRAIN Clutch Transmission Primary reduction Gear ratio I Gear ratio II Gear ratio III Gear ratio IV Gear ratio V Final reduction Gear shift pattern	Wet, multi-plates 5-speed constant mesh 3.300 2.235 1.571 1.160 0.896 0.718 2.933 Left foot operated return system
ELECTRICAL Ignition Starting system Generator Spark plug Spark plug gap Ignition timing	Flywheel magneto Kick starter A.C. generator NGK B8ES 0.6-0.7 mm (0.024-0.028 in.) 20° BTDC

VIII. SUPPLEMENT TO MT250K1

1. FRONT FORK INTERNAL SNAP RINGS

The internal snap ring securing each front fork oil seal was changed in shape as shown.

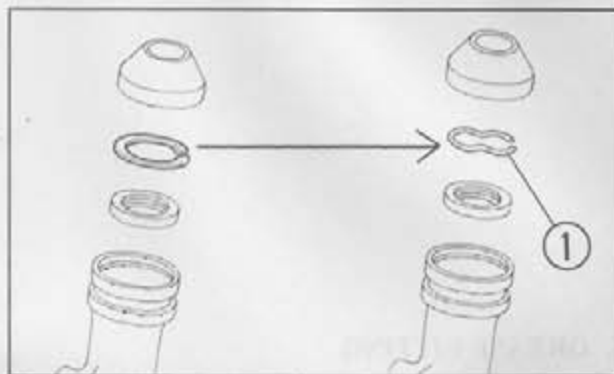


Fig. K1-1 (1) Internal snap ring

2. FUEL COCK

The indication marks and their positions on the fuel cock were changed to a new type.

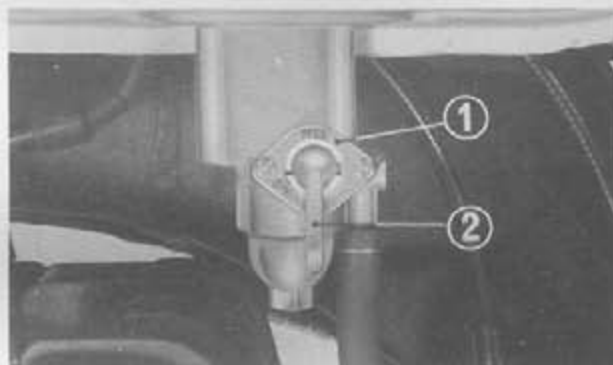


Fig. K1-2 (1) Fuel cock
(2) Lever

3. HEADLIGHT IGNITION SWITCH

On old models the ignition switch and headlight switch were installed separately, but on new models (K1) they are installed in the same switch housing assembly.



Fig. K1-3 (1) Ignition switch
(2) Headlight switch

4. OIL TUBE PROTECTOR

A protector was newly installed to the oil tube running from the oil tank to the oil pump to prevent damage.



Fig. K1-4 (1) Oil tank
(2) Oil tube protector

5. GREASE FITTING

On old models a grease fitting was attached to the end of the rear fork pivot shaft, but on new models (K1) it is attached to the center of the shaft for improved lubricating efficiency.



Fig. K1-5 (1) Grease nipple

6. SIDE STAND

The side stand was changed to a new type with a shock absorbing rubber block.

The stand must be inspected periodically to determine that it is in good condition.

Inspection

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

3. Check the side stand for proper return operation:

- a. With the stand applied, tilt the machine so that it clears the ground.
- b. Attach a spring scale to the lower end of the stand and measure the force with which the stand is returned to its original position.
- c. The stand condition is correct if the measurement falls within 2-3 kg (4.4-6.6lbs.).

If the stand requires force exceeding the above limit, this might be due to neglected lubrication, overtightened side stand pivot bolt, worn stand bar or bracket, or otherwise excessive tension. Repair as necessary.

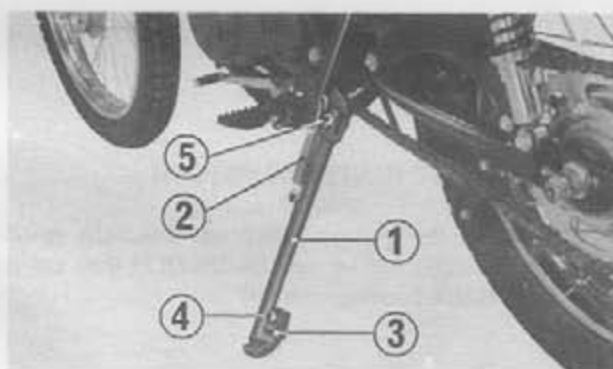


Fig. K1-6 (1) Side stand bar (2) Spring
(3) Rubber block (4) 6 mm bolt
(5) Side stand pivot bolt

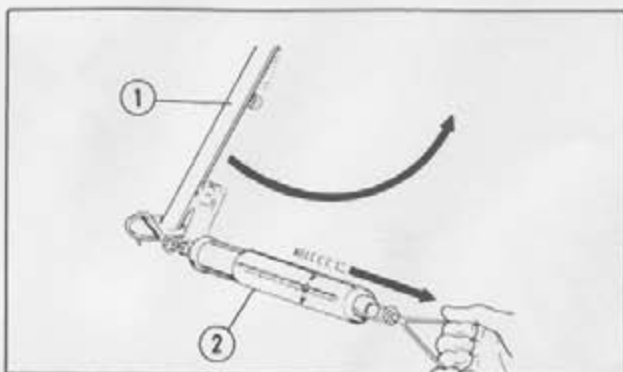


Fig. K1-7 (1) Side stand bar
(2) Spring scale

4. Check the rubber block for deterioration or wear. When the rubber block has worn down to the wear line, replace it with a new one.

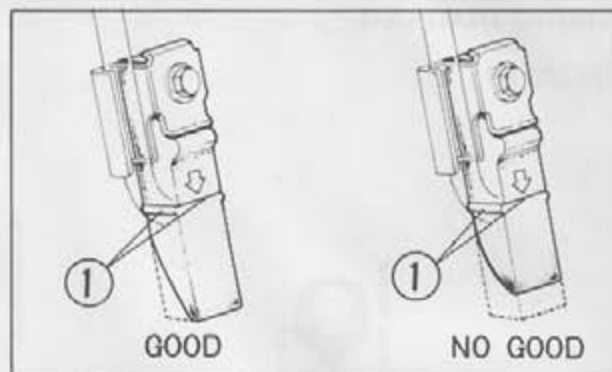


Fig. K1-8 (1) Wear line

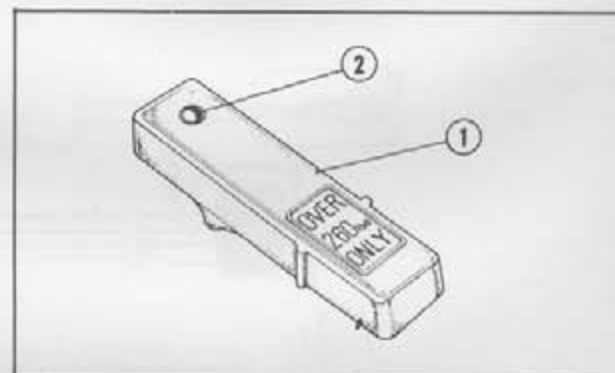
Rubber pad replacement

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

NOTE:

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

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

Fig. K1-9 (1) Rubber block
(2) Collar

7. MAINTENANCE SCHEDULE

Some additions occurred in the MAINTENANCE SCHEDULE, of which details are as shown immediately below:

MAINTENANCE SCHEDULE This maintenance schedule is based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.	INITIAL SERVICE PERIOD 500 miles	REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval, whichever occurs first.			
		1 month 500 miles	3 months 1,500 miles	6 months 3,000 miles	12 months 6,000 miles
* SIDE STAND—Check installation, operation, deformation, damage and wear.				○	

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.

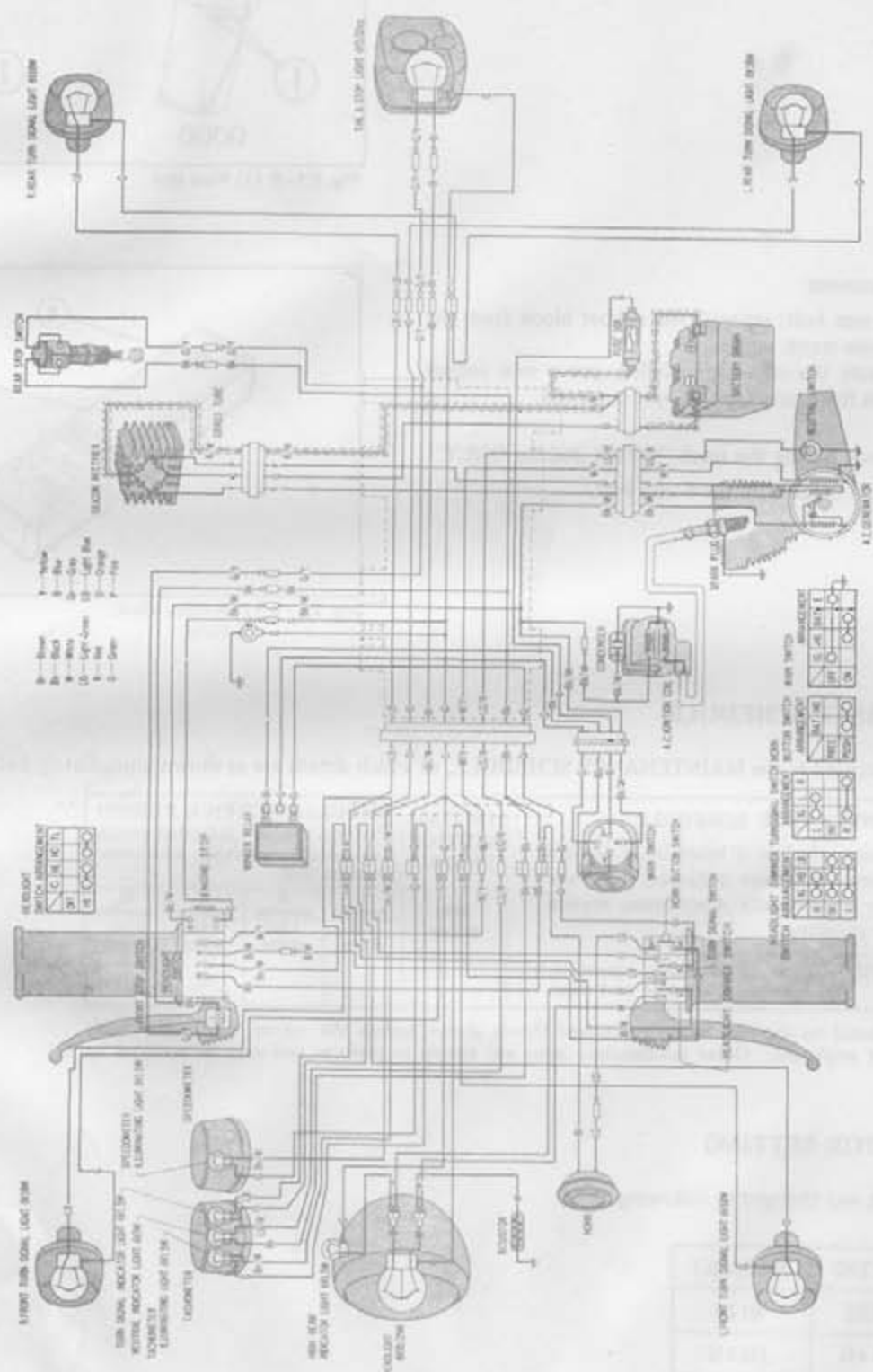
8. CARBURETOR SETTING

Carburetor setting was changed to following.

	MT250	MT250K1
M. J	#122	#115
A. S	1¼ ± ¼	1½ ± ½

WIRING DIAGRAM

(MT250 K1)



Insert this addendum after page 106 of the MT250 Shop Manual.
Engine No. MT250E-3000001 and subsequent
Frame No. MT250-3000001 and subsequent

1. TRANSMISSION OIL

Transmission oil level

The transmission oil level should be checked at the oil check bolt.

1. Start the engine and allow it to warm up for about three minutes.
2. Stop the engine. With the motorcycle standing upright, remove the transmission oil check bolt from the right crankcase cover.
The oil should flow out of the oil check bolt hole.
3. Add oil through the oil filler hole if the oil level is too low.

Transmission oil change

Drain used oil from the transmission while the engine is warm. This will ensure complete and rapid draining.

1. Remove the oil filler cap and oil check bolt from the right crankcase cover.
2. Place a pan under the engine to catch the oil, and remove the drain plug. Rock the motorcycle from side to side to drain all residual oil.
3. Install the drain plug with its sealing washer, and tighten securely.
4. Add the recommended oil (approximately 0.8ℓ or 0.8US qt.) slowly through the oil filler hole until it flows out of the oil check bolt hole.

NOTE:

When reassembling the engine, add oil until it flows out of the oil check bolt hole. It takes approximately 0.9ℓ (1.0US qt.) to fill a dry transmission.

Transmission oil recommendation

Use only high detergent, premium quality motor oil certified to meet or exceed US automobile manufacturer's requirements for Service Classification SE. Motor oils intended for Service SE will show this designation on the container.

Viscosity selection should be based on the average atmospheric temperature in your riding area. Change to the proper viscosity oil whenever the average atmospheric temperature changes substantially.

Recommended oil viscosity:

General, all temperatures SAE 10W-40

Alternate:

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



Fig. K2-1 (1) Oil check bolt



Fig. K2-2 (1) Drain plug



Fig. K2-3 (1) Oil filler opening

MT250 PROVISIONAL SERVICE DATA

PROVISIONAL SERVICE DATA INDEX:

Specifications	Page 1
Torque Specifications	Page 3
Service Data	Page 4

MT250 SPECIFICATIONS

DIMENSIONS

ITEM	
Overall length	2,160mm (85.0 in.)
Overall width	890mm (35.0 in.)
Overall height	1,130mm (44.5 in.)
Wheel base	1,440mm (56.7 in.)
Ground clearance	250mm (9.8 in.)
Dry weight	118kg (260 lb.)

FRAME

ITEM	
Type	Semi-double cradle
F. suspension	Telescopic fork
E. suspension	Swing arm
F. tire size, pressure	3.00-21, 21 psi (1.5kg/cm ²)
R. tire size, pressure	4.00-18, 21 psi (1.5kg/cm ²)
F. brake	Internal expanding shoes
R. brake	Internal expanding shoes
Fuel capacity	8.5 lit. (2.2 U.S. gal.)
Fuel reserve capacity	1.5 lit. (0.4 U.S. gal.)
Caster angle	59.5°
Trail length	143mm (5.6 in.)
Front fork oil capacity	145cc (4.9 ozs.) ATF

ENGINE

ITEM	
Type	Air cooled, 2-stroke
Cylinder arrangement	Single-cylinder 15° inclined from vertical
Bore and stroke	70.0 x 64.4mm (2.756 x 2.535 in.)
Displacement	248cc (15.1 cu. in.)
Compression ratio	9.0:1
Oil capacity	1.3 lit. (1.4 U.S. qt.)
Lubrication system	Forced and wet sump
Port timing	
Intake	Open 80°BTDC
Close	80°ATDC
Exhaust	Open 87°BBDC
Close	87°ABDC
Scavenge	Open 60°BBDC
Close	60°ABDC
Idle speed	1,300 rpm

DRIVE TRAIN

ITEM	
Clutch	Wet, multi-plates
Transmission	5-speed constant mesh
Primary reduction	3.300
Gear ratio I	2.235
Gear ratio II	1.571
Gear ratio III	1.160
Gear ratio IV	0.896
Gear ratio V	0.718
Final reduction	2.933
Gear shift pattern	Left foot operated return system

ELECTRICAL

ITEM	
Ignition	Flywheel magneto
Starting system	Kick starter
Generator	A.C. generator
Spark plug	NGK B8ES
Spark plug gap	0.7-0.8mm
Ignition timing	20°BTDC

MT250 TORQUE SPECIFICATIONS

ENGINE

ITEM	TORQUE, kg-m (lb-ft)	THREAD DIA. (mm)
Drive sprocket	0.8 - 1.2 (5.8 - 8.7)	6
Drum stopper	0.8 - 1.2 (5.8 - 8.7)	6
Neutral stopper	0.8 - 1.2 (5.8 - 8.7)	6
Exhaust pipe	0.8 - 1.2 (5.8 - 8.7)	6
Clutch center	4.0 - 4.5 (28.9 - 32.5)	18
Clutch pressure plate	0.8 - 1.2 (5.8 - 8.7)	6
AC generator rotor	4.5 - 5.0 (32.5 - 36.2)	12
Cylinder head flanged nut	1.0 - 1.3 (7.2 - 9.4)	6
Cylinder head special nut	2.0 - 2.5 (14.5 - 18.1)	8
Primary drive gear	5.0 - 6.0 (36.2 - 43.4)	12
Spark plug	1.5 - 2.0 (10.8 - 14.5)	14
Carburetor insulator band	0.5 - 0.7 (3.6 - 5.1)	JP5
5mm special bolt	0.3 - 0.4 (2.2 - 2.9)	5

FRAME

Steering stem nut	8.0 - 12.0 (57.9 - 86.8)	23
Front fork top bridge	1.8 - 2.5 (13.0 - 18.1)	8
Handlebar holder	1.8 - 2.5 (13.0 - 18.1)	8
Front fork bottom bridge	1.8 - 2.5 (13.0 - 18.1)	8
Spoke	0.2 - 0.35 (1.4 - 2.5)	
Rear fork pivot bolt	6.0 - 7.0 (43.4 - 50.6)	14
Front wheel axle nut	6.0 - 8.0 (43.4 - 57.9)	12
Front axle holder	1.8 - 2.5 (13.0 - 18.1)	8
Front engine hanger bolt	2.3 - 2.8 (16.6 - 20.3)	8
Rear engine hanger bolt	3.0 - 4.0 (21.7 - 28.9)	10
Rear axle nut	6.0 - 8.0 (43.4 - 57.9)	14
Driven sprocket	2.3 - 2.8 (16.6 - 20.3)	8
Brake arm	0.8 - 1.1 (5.8 - 8.0)	6
Rear brake torque link	1.3 - 1.8 (9.4 - 13.0)	8
Rear shock absorber	3.0 - 4.0 (21.7 - 28.9)	10
R/H step bar	3.0 - 4.0 (21.7 - 28.9)	10
Change pedal	0.8 - 1.2 (5.8 - 8.7)	6
Rear brake pedal pivot nut	3.0 - 4.0 (21.7 - 28.9)	10
Kick starter pedal	1.8 - 2.5 (13.0 - 18.1)	8

MT250 SERVICE DATA

ENGINE

ITEM	ASSEMBLY STANDARD mm (in.)	SERVICE LIMIT mm (in.)
Cylinder bore	70.0 - 70.01 (2.7559 - 2.7563)	70.1 (2.7598)
Piston OD	69.93 - 69.95 (2.7531 - 2.7539)	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 (0.7083 - 0.7087)	17.98 (0.7079)
Piston ring side clearance	Top 0.045 - 0.075 (0.0018 - 0.0030) 2nd 0.025 - 0.055 (0.0010 - 0.0022)	0.09 (0.0035) 0.07 (0.0028)
Piston ring gap	Top 0.2 - 0.4 (0.0079 - 0.0157) 2nd 0.2 - 0.4 (0.0079 - 0.0257)	0.5 (0.0197) 0.5 (0.0297)
Connecting rod small end ID	21.997 - 22.009 (0.8660 - 0.8665)	
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	41.2 (1.6220)	40.0 (1.5748)
Tension	22.5/21kg (0.8858/46 lb)	20.5/21kg (0.8071/46 lb)
Transmission gear backlash		0.2 (0.0079)
Gearshift fork drum OD	33.95 - 33.975 (1.3366 - 1.3376)	33.9 (1.3346)
Center gearshift fork ID	34.00 - 34.025 (1.3386 - 1.3396)	34.08 (1.3417)
Shift fork guide shaft OD	11.976 - 11.994 (0.4715 - 0.4722)	11.92 (0.4693)
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 - 5.0 (0.1941 - 0.2969)	4.6 (0.1811)

FRAME

Drive chain length	980 (38.5827)	1000.2 (39.3780)
Front shock absorber A & B free length	499.2 (19.6535)	490 (19.2913)
Rear shock absorber A & B free length	251.7 (9.9094)	246 (9.6850)
Front fork bottom pipe OD	34.75 - 35.00 (1.3681 - 1.3780)	34.70 (1.3661)
Front fork bottom case ID	35.00 - 35.039 (1.3780 - 1.3795)	35.18 (1.3850)
Front wheel axle bend	0.01 (0.0004)	0.2 (0.0079)
6302 ball bearings		
Axial eccentricity	0.07 (0.0028)	0.1 (0.0039)
Radial eccentricity	0.03 (0.0012)	0.05 (0.0020)

MT250 SERVICE DATA (CONTINUED)

FRAME (CONTINUED)

ITEM	ASSEMBLY STANDARD mm (in.)	SERVICE LIMIT mm (in.)
Front wheel rims		
Face runout	0.5 (0.0197)	2.0 (0.0787)
Eccentricity	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)
Eccentricity	0.5 (0.0197)	2.0 (0.0787)
Rear wheel axle bend	0.01 (0.0004)	0.02 (0.0008)
6204 & 6304 ball bearings		
Axial eccentricity	0.07 (0.0028)	0.1 (0.0039)
Radial eccentricity	0.03 (0.0012)	0.05 (0.0020)
Rear fork pivot bushing ID	21.60 - 21.65 (0.8504 - 0.8524)	21.8 (0.8583)
Rear fork center collar OD	21.475 - 21.46 (0.8455 - 0.8449)	21.4 (0.8425)
Rear brake drum ID	140.0 - 140.3 (5.5118 - 5.5236)	141.0 (5.5512)
Rear brake shoe thickness	4.5 (0.1772)	2.5 (0.0984)

HONDA



MT250 #4
REV. 5/24/74

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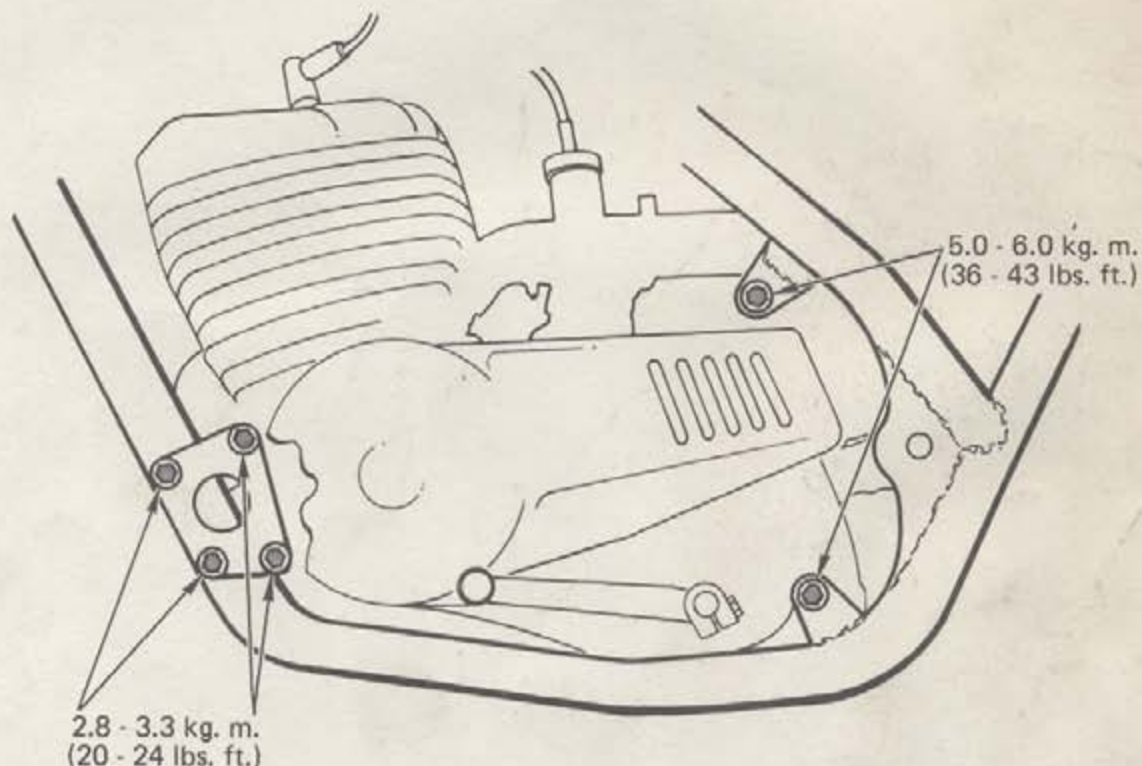
MAINTAINING PROPER ENGINE MOUNTING BOLT TORQUE

If the motorcycle is operated with loose engine mounting bolts, engine vibration causes wear at the mounting points. Wear creates additional looseness which intensifies the vibration.

The engine mounting bolts must be tightened to the torque specified below, and retorqued at each servicing interval. During severe off-road riding conditions, it may be advisable to retorque the engine mounting bolts at the end of each day of riding.

NOTE:

The torque values given below supersede previously published torque values for the engine mounting bolts.



NEW

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PISTON RING INSTALLATION

TOP AND BOTTOM PISTON RINGS ARE NOT INTERCHANGEABLE

The upper surface of the top piston ring is beveled as illustrated in Fig. 1. It is possible to install the top piston ring in either groove of the piston, but only the top groove of the piston has a corresponding bevel for proper clearance.

The bottom piston ring has parallel surfaces and will fit only the bottom groove of the piston.

When installing these piston rings, it is necessary to distinguish top ring from bottom ring and upper surface from lower surface.

As the top piston ring bevel is slight, the two rings look almost identical. The bevel is visible on close inspection of the ring ends.

If you have difficulty discerning the beveled surface, hold the piston ring against a straight edge (Fig. 2), and the beveled angle will be apparent.

The upper surface of each ring is identified by the manufacturer's initials stamped near the ring gap.

Install the parallel surfaced piston ring in the bottom piston groove, with marked side facing upward.

Install the beveled piston ring in the top groove, with marked side facing upward.

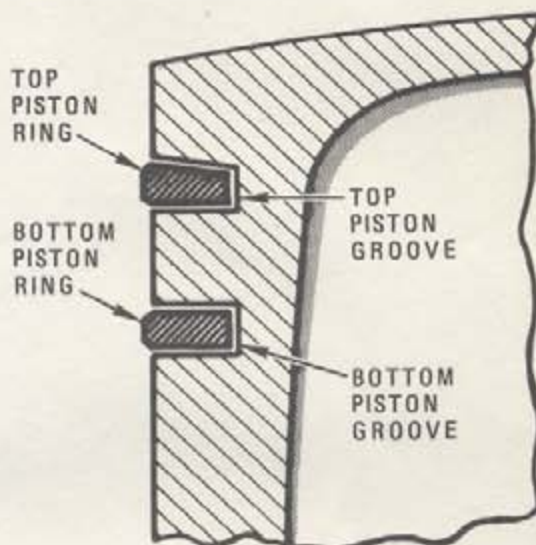


Fig. 1

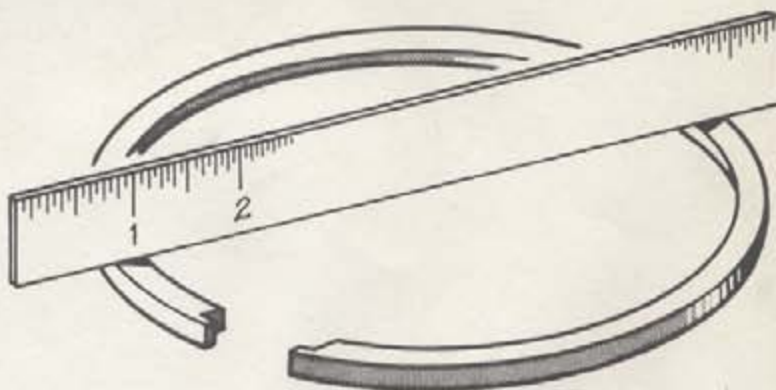


Fig. 2

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MT250 #2
8/3/73

SERVICE BULLETIN

AMERICAN HONDA MOTOR CO., INC. MOTORCYCLE SERVICE DEPARTMENT

OIL TANK OUTLET FITTING CHANGE

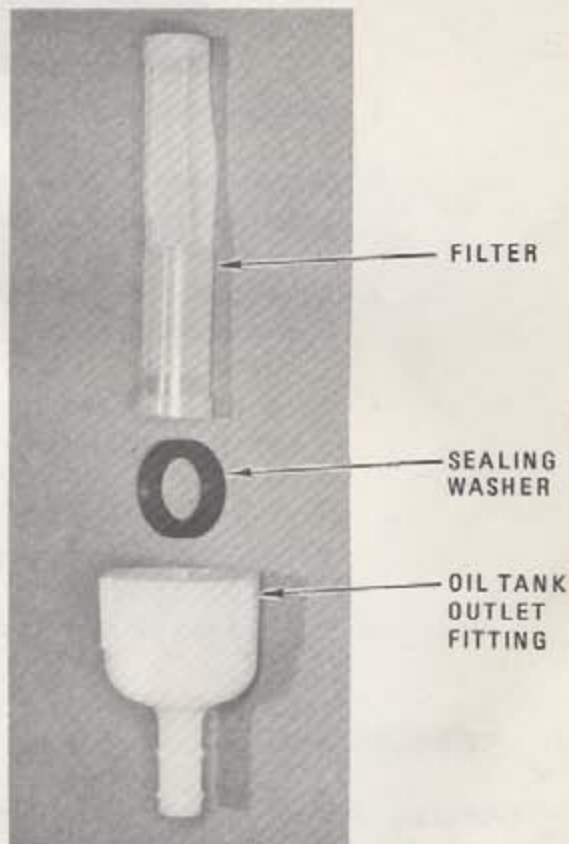
IMPROVED OIL TANK OUTLET FITTING PREVENTS POSSIBILITY OF CRACKING AND LEAKAGE

Early MT-250 oil tank outlet fittings were found to crack and leak in certain instances. An improved fitting now prevents the possibility of cracking and leakage.

The improved fitting is white in color, for easy identification. The early fitting was black. Early type, black fittings will be found on MT-250 motorcycles with frame serial numbers 1002612 through 1006560. All other units have been equipped with improved white fittings.

During set-up of new MT-250 motorcycles with frame serial numbers 1002612 through 1006560, replace the black oil tank outlet fitting, filter, and sealing washer.

A kit of parts, including improved fitting, filter, and sealing washer, will automatically be sent to all dealers who receive MT-250 motorcycles within the affected serial number range.



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1 OF 2

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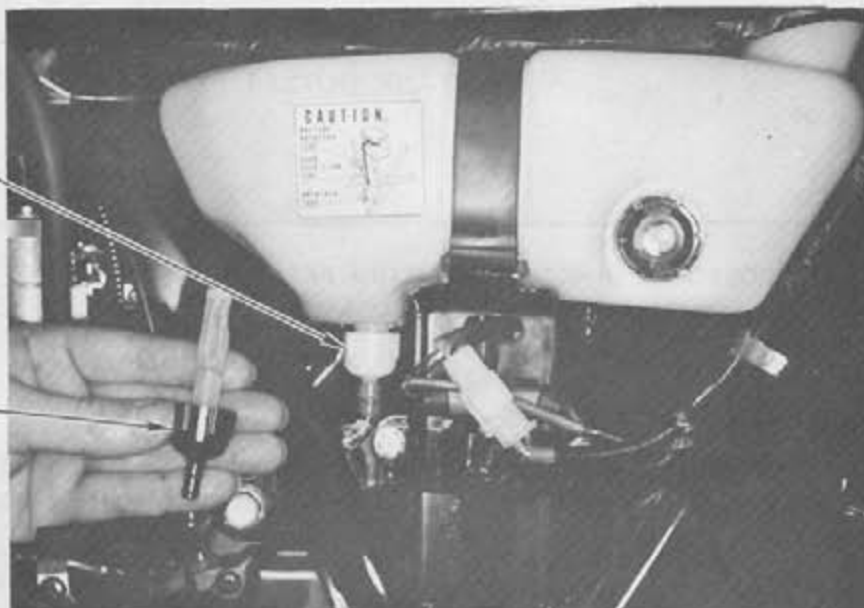
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INSTALLATION:

INSTALL
WHITE FITTING

REMOVE
BLACK FITTING



1. Remove side cover to expose oil tank.
2. Grip the clear plastic oil tube with pliers, and remove the tube from the oil tank outlet fitting.
3. Remove and destroy the black fitting, with its filter and sealing washer.
4. Install the white fitting, with new filter and sealing washer provided in the kit. Tighten the fitting finger tight.

CAUTION: Overtightening may damage the fitting.

5. Connect the oil tube to the fitting.

REIMBURSEMENT:

After replacing the oil tank outlet fitting, submit a standard Warranty Claim Form (W.O.2), using defect code 422 and 0.2 hour labor time.

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MT-250 #1
7/16/73

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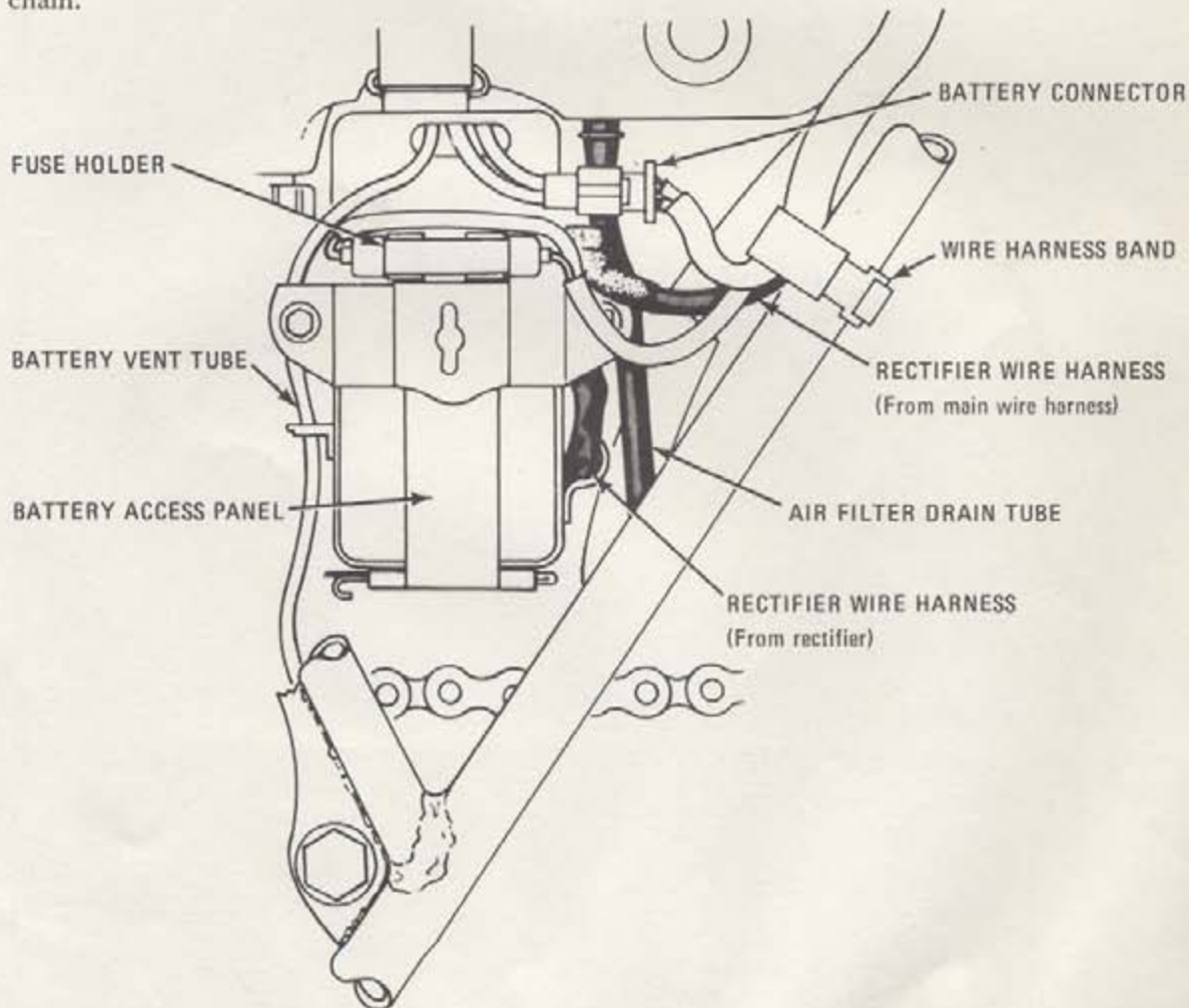
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RECTIFIER WIRE HARNESS ROUTING

During set-up of new MT-250 motorcycles, and anytime the battery is reinstalled, check that the rectifier wire harness is routed as shown in the illustration.

Route rectifier wire harness between the air filter drain tube and the battery box, above the battery access panel tab.

If the rectifier wire harness is permitted to hang down, it can be damaged by the drive chain.



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