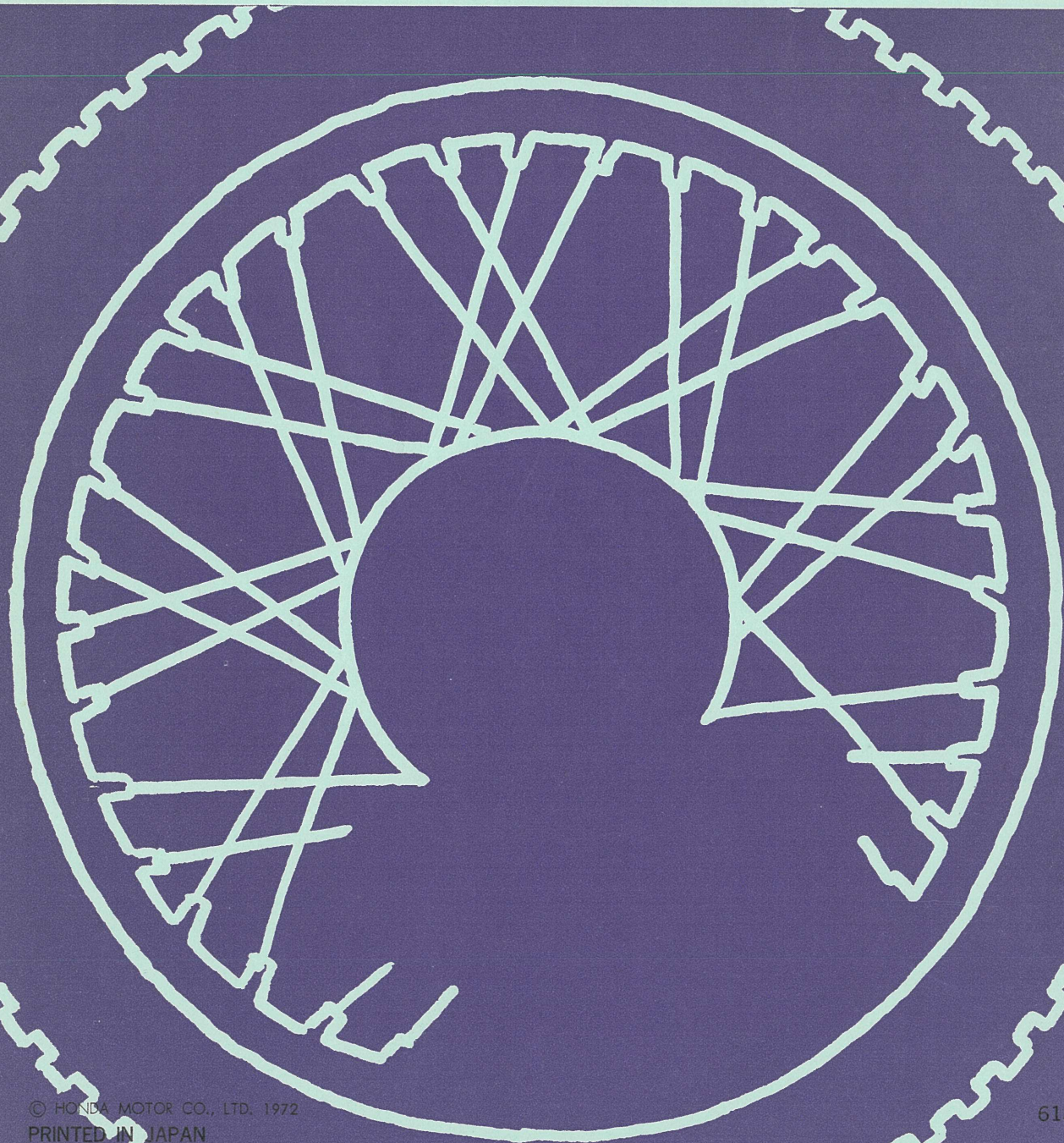


SHOP MANUAL

HONDA
XL250



AMERICAN HONDA MOTOR CO., INC.

ACTION
0221A



AMERICAN HONDA MOTOR CO., INC.



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PREFACE

This Shop Manual is issued to provide key information necessary for disassembling, inspecting and assembling the HONDA XL250. Strict adherence to the instructions given in this manual will result in the longer life of your machine.

To remove the electrical parts for MOTOCROSS riding, refer to the items for "MOTOCROSS riding".

There are Special Tools, Specifications, Torque Specifications and Service Data put at the end of the manual.

This shop manual is compiled on the basis of the machines produced as of April, 1972 and thereafter.

Some instructions contained in this manual are subject to change without notice.

HONDA MOTOR CO., LTD.

AMERICAN HONDA MOTOR CO. INC.



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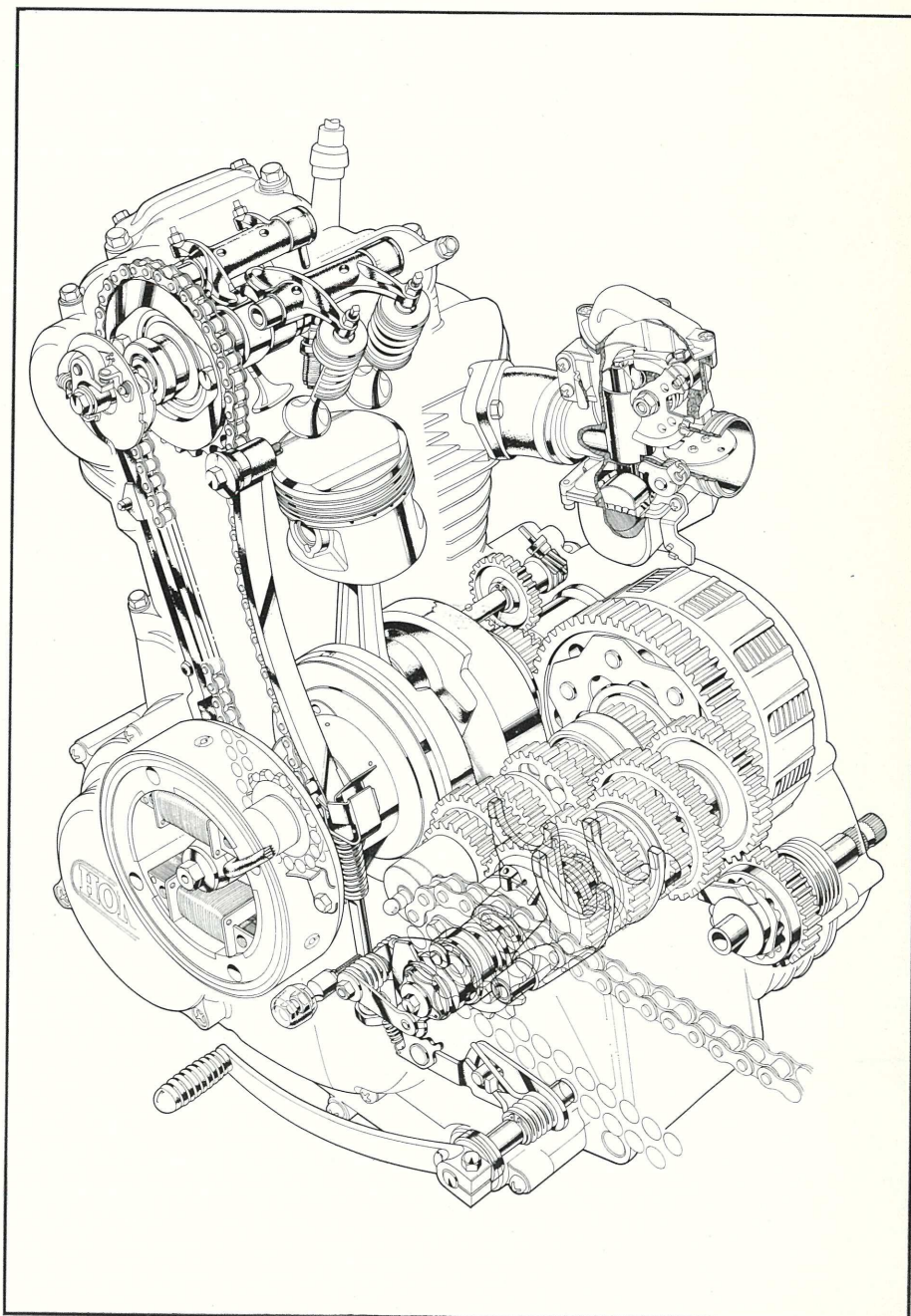
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PRECAUTIONS FOR YOUR SERVICE JOBS

Following are the precautions and safe practices recommended by HONDA to have your service jobs done better and safer:

1. Use genuine **HONDA** or **HONDA-recommended parts** and lubricants when servicing your machine.
2. Be sure to use **special tool(s)** designed for the type of work where necessary.
3. **Renew** packings, gaskets, O-rings, cotter pins, tongued washers, etc. when reassembling.
4. Use a test hammer or wrench when checking cotter-pinned bolts or nuts for tightness unless otherwise specified.
5. When torquing bolts or nuts, begin with **larger-diameter or inner bolt** first, and tighten them to specified torque in a **criss-cross pattern**.
6. Wash clean engine and transmission parts upon disassembly. Coat their sliding surfaces with **good-quality lubricant** when reassembling them.
7. **Grease parts** by coating or filling where specified as such.
8. After reassembling, **check to be sure** each part is tightened good and hard without any sign of abnormal condition.
9. When working with any other person, confirm **safety** by making signals to each other.



1. ENGINE

1. DISASSEMBLY WORK

(to be performed with engine installed)

	Part	Page
1	Camshaft and cylinder head	2
2	Cylinder and piston	6
3	Cam chain tensioner	5
4	Oil filters and oil pump	8
5	Clutch and gear shift mechanism	9
6	Kick starter	11
7	Electrical parts (generator, contact point, etc.)	—

2. REMOVAL OF ENGINE

Remove engine in numerical order.

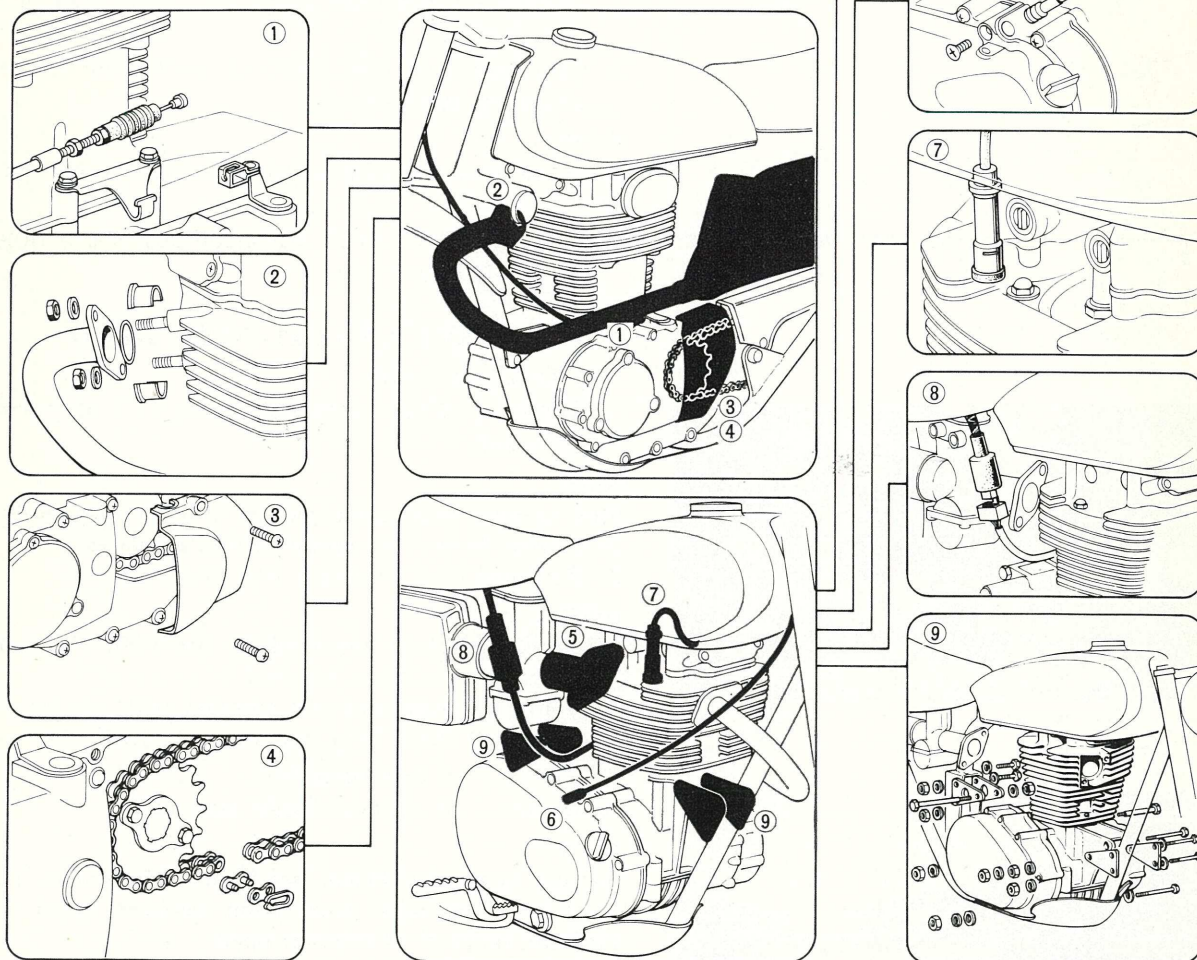


Fig. 1-1

- ① Clutch wire ② Muffler ③ Drive sprocket cover ④ Drive chain ⑤ Carburetor insulator
⑥ Speedometer cable ⑦ Spark plug cap ⑧ Wire connector ⑨ Hanger bolt

After reinstalling engine, following adjustments should be made:

- Clutch lever free travel
- Drive chain tension

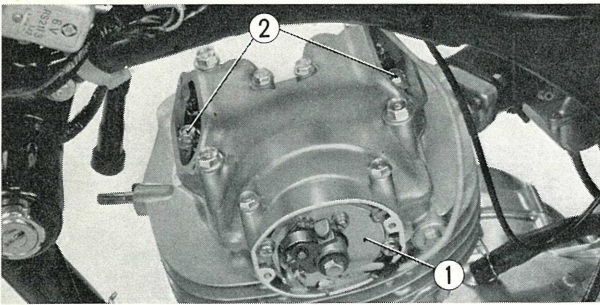


Fig. 1-2 ① Contact point base plate
② 6mm bolts

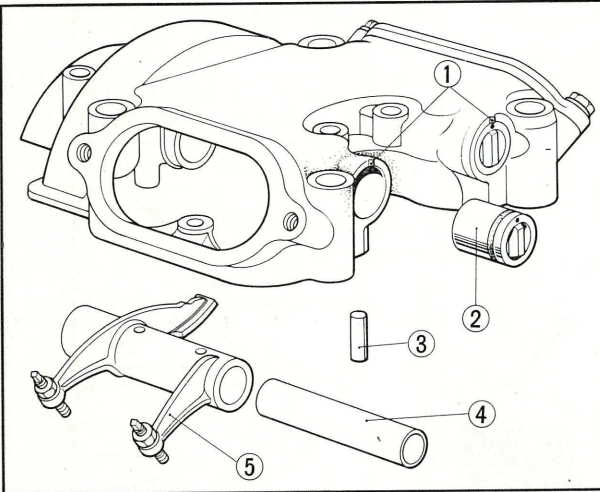


Fig. 1-3 ① Matching marks
② Rocker arm shaft plug
③ Dowel pin
④ Rocker arm shaft
⑤ Rocker arm

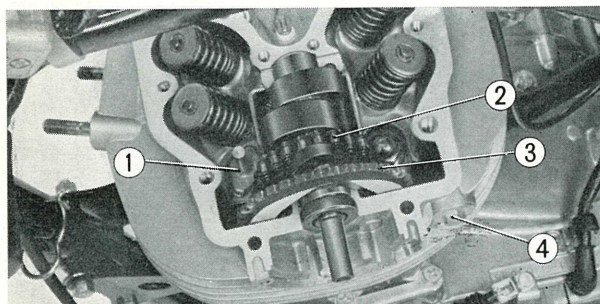


Fig. 1-4 ① Sealing cap ③ Cam sprocket
② Cam chain ④ Tensioner bolt

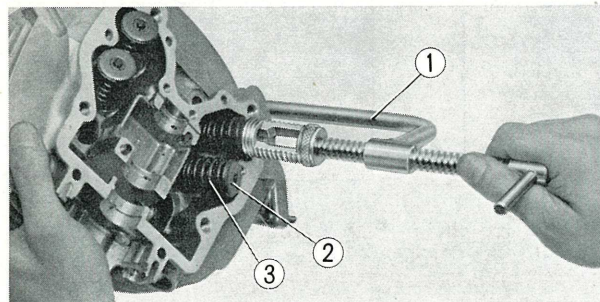


Fig. 1-5 ① Valve lifter (07031-32901)
② Valve cotteners
③ Valve spring

3. CYLINDER HEAD COVER AND ROCKER ARM SHAFTS

Key to Disassembly

1. Removal of contact point base plate and spark advancer.
2. Removal of tappet adjusting hole covers and 6mm bolts.
3. Removal of 6mm dowel pins and rocker arm shaft plugs.

Inspection

1. Inspection of excessive wear or other defects on rocker arm contact surfaces.
2. Measurement of rocker arm-to-shaft clearance.

Key to Assembly

1. Alignment of matching marks on cylinder head cover and rocker arm shaft plugs and installation of 6mm dowel pins.
2. Application of heat resisting sealant on head cover attaching surfaces.

NOTE:

Wipe off excess sealant allowed to enter inside the head cover.

3. Engagement of spark advancer dowel pin hole and camshaft dowel pin.

4. CAMSHAFT AND CYLINDER HEAD

Key to Disassembly

1. Removal of cam sprocket attaching bolts (two) and sprocket.

NOTE:

Stuff cylinder head space around sprocket with waste cloth to prevent bolts from dropping into crankcase.

2. Removal of cam chain and camshaft.

NOTES:

1. Place cam chain removed to the right side of cam sprocket to facilitate removal of camshaft.
2. Hold cam chain and cam sprocket with wire or the like to prevent them from dropping into crankcase.
3. Removal of tensioner bolt.
4. Removal of cylinder head assembly.

NOTE:

Be sure to remove 10mm nut from under sealing cap and head attaching nuts (four) from between head fins to facilitate removal of cylinder head.

5. Removal of cylinder head gasket.
6. Compression of valve springs and removal of valve cotteners, valves and valve springs.

NOTE:

When compressing valve springs, use valve lifter (Tool No. 07031-32901).

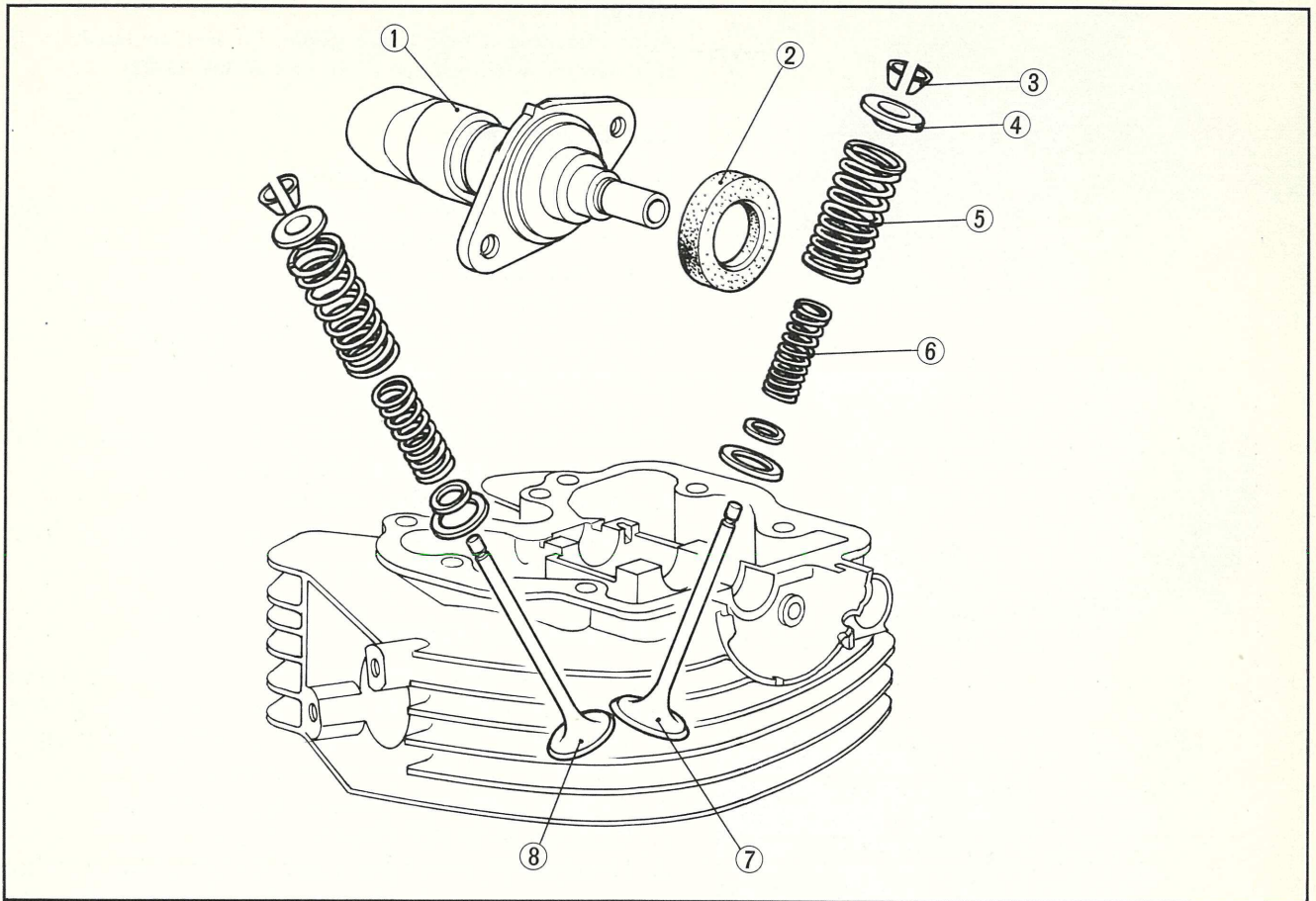


Fig. 1-6

- | | | | |
|------------|-------------------------|----------------------|-----------------|
| ① Camshaft | ③ Valve cotter | ⑤ Outer valve spring | ⑦ Inlet valve |
| ② Oil seal | ④ Valve spring retainer | ⑥ Inner valve spring | ⑧ Exhaust valve |

Inspection

1. Inspection of valve seat contact.

Apply a thin coat of prussian blue or similar paste to valve seat. Press valve against seat and rotate it to check for proper contact. If improper, lap valve and seat and recheck. If still improper, reface valve seat with a valve seat cutter. To reface, use a 60° cutter, a 140° cutter and a 90° cutter in this order. After refacing, relap valve and seat until proper seat contact width **0.7–1.0 mm (0.028–0.039 in.)** is obtained.

CAUTION:

Do not cut valve seat excessively.

2. Measurement of valve stem OD.
3. Measurement of valve-to-guide clearance.
4. Replacement of valve guides.

When replacing a valve guide, be sure to use an an oversize OD valve guide together with new O-ring **10×1.6 mm**. To drive out valve guide, use valve guide remover (Tool No. 07046-32901) and to drive in, valve guide driver (Tool No. 07047-32901).

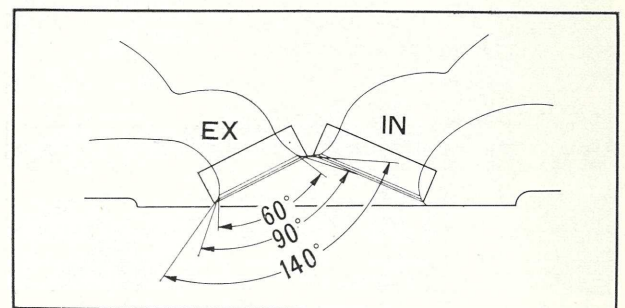


Fig. 1-7 Valve seat angle

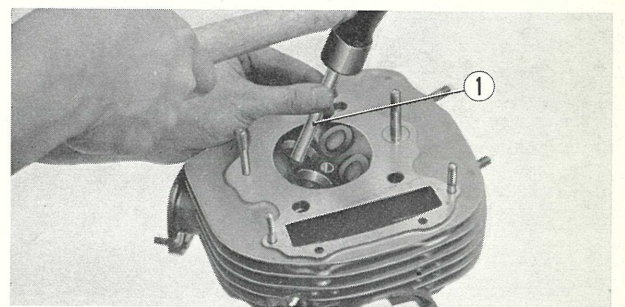


Fig. 1-8 ① Valve guide remover

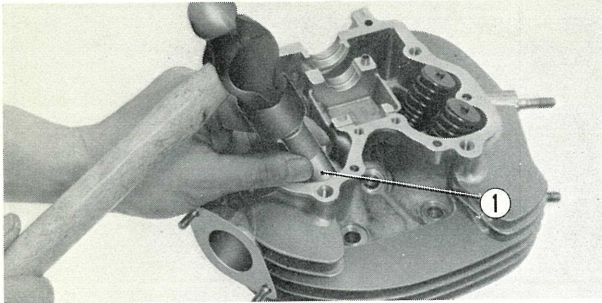


Fig. 1-9 ① Valve guide driver (07047-32901)

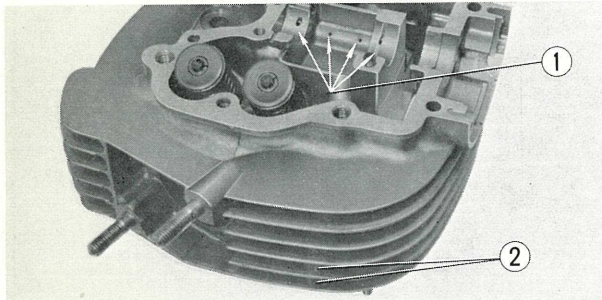


Fig. 1-10 ① Oil holes ② Rubber inserts

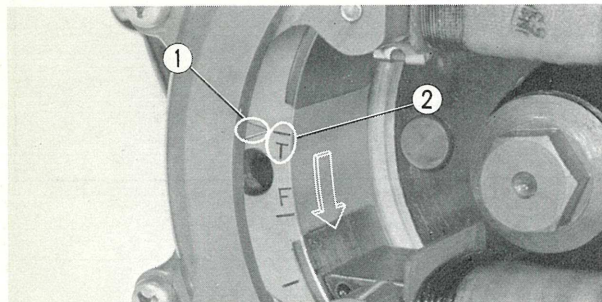


Fig. 1-11 ① Index mark ② "T" mark

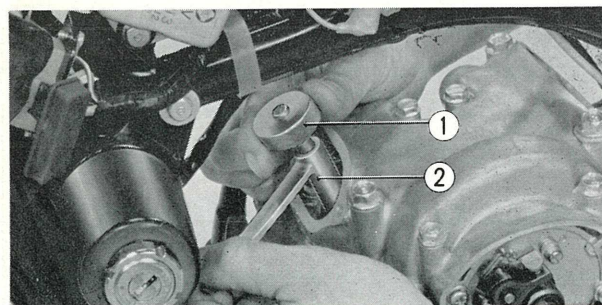


Fig. 1-12 ① Tappet wrench A (07081-32901)
② Tappet wrench B (07081-32905)

NOTE:

After installing a new valve guide, be sure to finish its inside surface with reamer (Tool No. 07008-32301).

Key to Assembly

1. Installation of valve springs.
Install valve spring on valve with its narrower pitch side facing valve head, since pitches of valve spring are not uniform.
2. Installation of cylinder head gasket.
Install cylinder head gasket in right place; otherwise internal gases may leak.
3. Inspection of oil holes.
Make sure all oil holes (one in each camshaft bearing and two in oil sump) are not clogged.
4. Inspection of rubber inserts.
Make sure all rubber inserts are inserted in place, since they are provided to prevent resonance.

Adjustment of Tappets

Too large tappet clearance may cause noisy tappet operation, and too small clearance may cause a damage to valves and insufficient power. This is why tappet clearance should be maintained properly.

1. Remove inlet and exhaust tappet covers.
2. Remove generator cover.
3. Hand-rotate generator rotor CCW while watching the movement of cylinder inlet tappets. Stop rotating the rotor when these tappets come to their BDC position. Then check to make sure index mark ① is aligned with mark "T" ② with piston at TDC position on compression stroke. Inlet and exhaust valves should now be in fully closed position.
4. Check tappet clearance by inserting feeler gauge into between valve stem and tappet adjusting screw. If the clearance is correct, there will be a slight drag or resistance as the gauge is inserted. The standard tappet clearances are:

Inlet: 0.05 mm (0.002 in.)

Exhaust: 0.08 mm (0.003 in.)

5. Adjust the clearance by loosening lock nut ⑤ and turning tappet adjusting screw ④. Use tappet wrench (Tool No. 07081-32910). Tappet wrench consists of tappet wrench A and B.

NOTE:

Make sure the adjustment has not been disturbed while tightening lock nut.

Alignment of Valve Timing

1. Align "T" mark on flywheel with matching mark on LH crankcase cover. In case where flywheel is removed, face woodruff key upward as shown.
2. Align matching line on cam sprocket with the upper end face of cylinder head with camshaft dowel pin facing upward as shown.

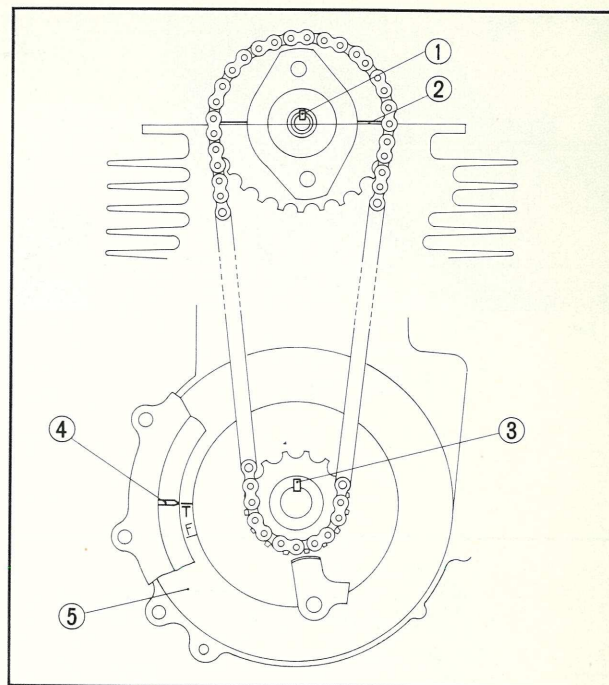


Fig. 1-13 ① Dowel pin ④ Matching mark
② Matching line ⑤ Flywheel
③ Woodruff key

5. CAM CHAIN AND CAM CHAIN TENSIONER

The cam chain tensioner is made up of spring steel-backed heat-resistance synthetic rubber coated with teflon to provide greater durability.

Key to Disassembly

1. Removal of cam chain tensioner and cam chain guide.

Key to Assembly

1. Installation of cam chain set plate.
Install cam chain set plate so that it does not come in contact with cam chain.
2. Setting of tensioner set bar.
Set tensioner set bar with it fully lowered.
3. Setting of cam chain tensioner.
Set cam chain tensioner on tensioner set bar concave head.
4. Installation of cam chain.

NOTE:

After installing cam chain, adjust chain tension properly.

Adjustment of Cam Chain

Loosen tensioner set nut with piston at TDC position on compression stroke. Slightly rotate timing sprocket CCW to give a tension to chain guide and loosen tensioner set bolt. Then, a proper chain tension will be obtained. After adjusting, tighten tension set bolt and nut to a specified torque.

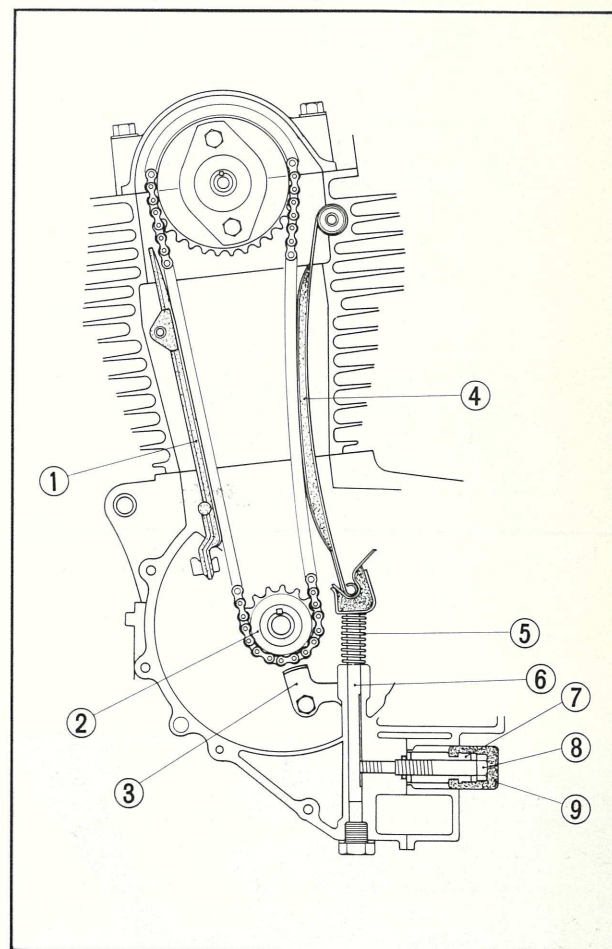


Fig. 1-14 ① Cam chain guide ⑥ Tensioner set bar
② Timing sprocket ⑦ Tensioner set nut
③ Cam chain set plate ⑧ Tensioner set bolt
④ Cam chain tensioner ⑨ Tensioner set bolt cap
⑤ Tensioner spring

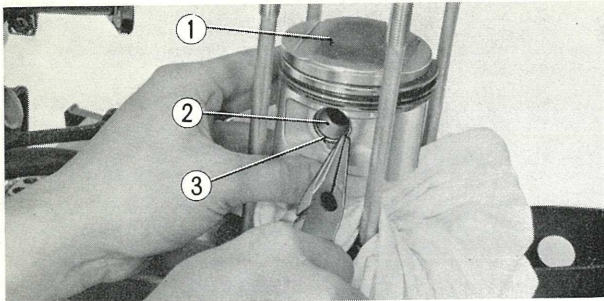


Fig. 1-15 ① Piston
② Piston pin
③ Piston pin clip

6. CYLINDER AND PISTON

Key to Disassembly

1. Removal of cylinder.

NOTE:

Before removing cylinder, thoroughly remove dirt and dust from around it.

2. Removal of piston pin clips, piston pin and piston.

NOTE:

When removing piston pin clips, spread waste cloth under piston to prevent clips from dropping into crankcase.

3. Removal of piston rings.

CAUTION:

Take care not to damage piston

Inspection

1. Measurement of piston OD and piston pin hole dia.
2. Measurement of piston pin OD.
3. Measurement of piston ring-to-groove clearance.
4. Measurement of piston ring gap.
5. Measurement of cylinder bore dia.

Key to Assembly

1. Installation of piston rings.

- 1) The mark on piston ring should face upwards when the rings are installed in place. The product markings are :

N.....NIHON piston ring

R.....RIKEN piston ring

T.....TEIKOKU piston ring

NOTE:

Be sure to use piston rings of the same product in set.

- 2) When using new rings, first install them into ring grooves and then rotate the rings or piston to check for proper fit. If the rings or piston rotates smoothly without any binding, it indicates the rings fit in their grooves properly.
- 3) The ring gaps should be set apart 120° with each other.

2. Installation of piston.

Take care of the installation direction. If piston has an arrow mark on its crown, it should be installed with the mark facing the front. If mark "IN" is stamped on piston, the mark should face inlet valves.

3. Installation of cylinder.

Apply a coat of oil to the bottom of cylinder sleeve. Press down cylinder while installing piston rings in ring grooves.

NOTE:

1. Check the number of rubber inserts.
2. At the time of initial inspection, retighten cylinder 8mm stud bolts to a specified torque of 2-2.5kg-m (14.5-18.1 ft-lb).

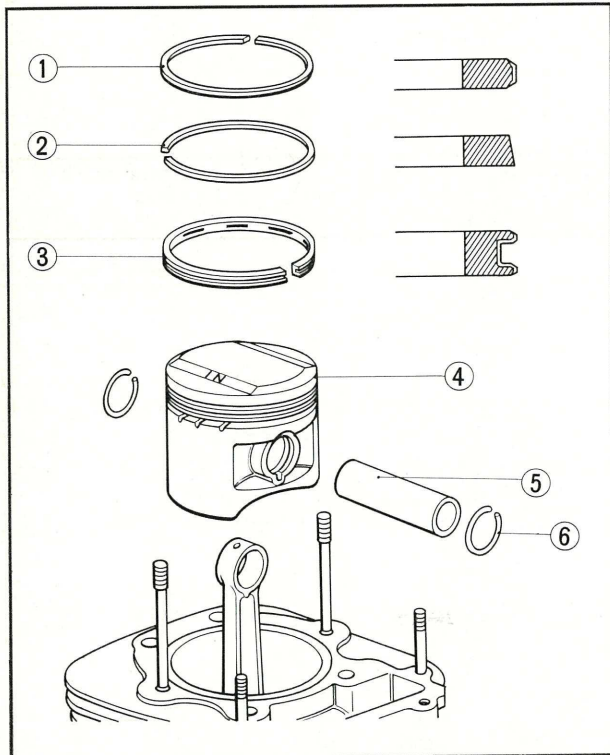


Fig. 1-16 ① Top ring ④ Piston
② Second ring ⑤ Piston pin
③ Oil ring ⑥ Piston pin clip

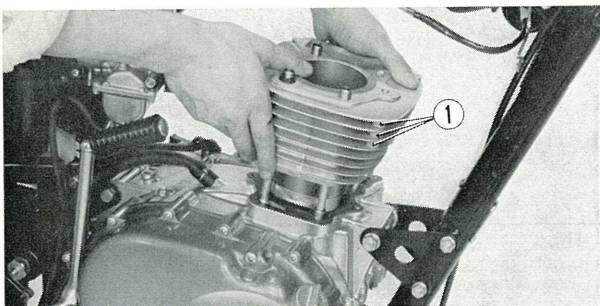


Fig. 1-17 ① Rubber inserts

7. LUBRICATING OIL CIRCUIT

The oil circuit is schematically illustrated below. The lubricating system is of a pressure-feed type using a trochoid type pump. The oil pump which is driven by the kick starter gear lifts the oil from the lower crankcase through the oil filter screen and delivers it under pressure to each component within the engine. Some amount of oil is then distributed through the centrifugal oil filter to around the crankcase.

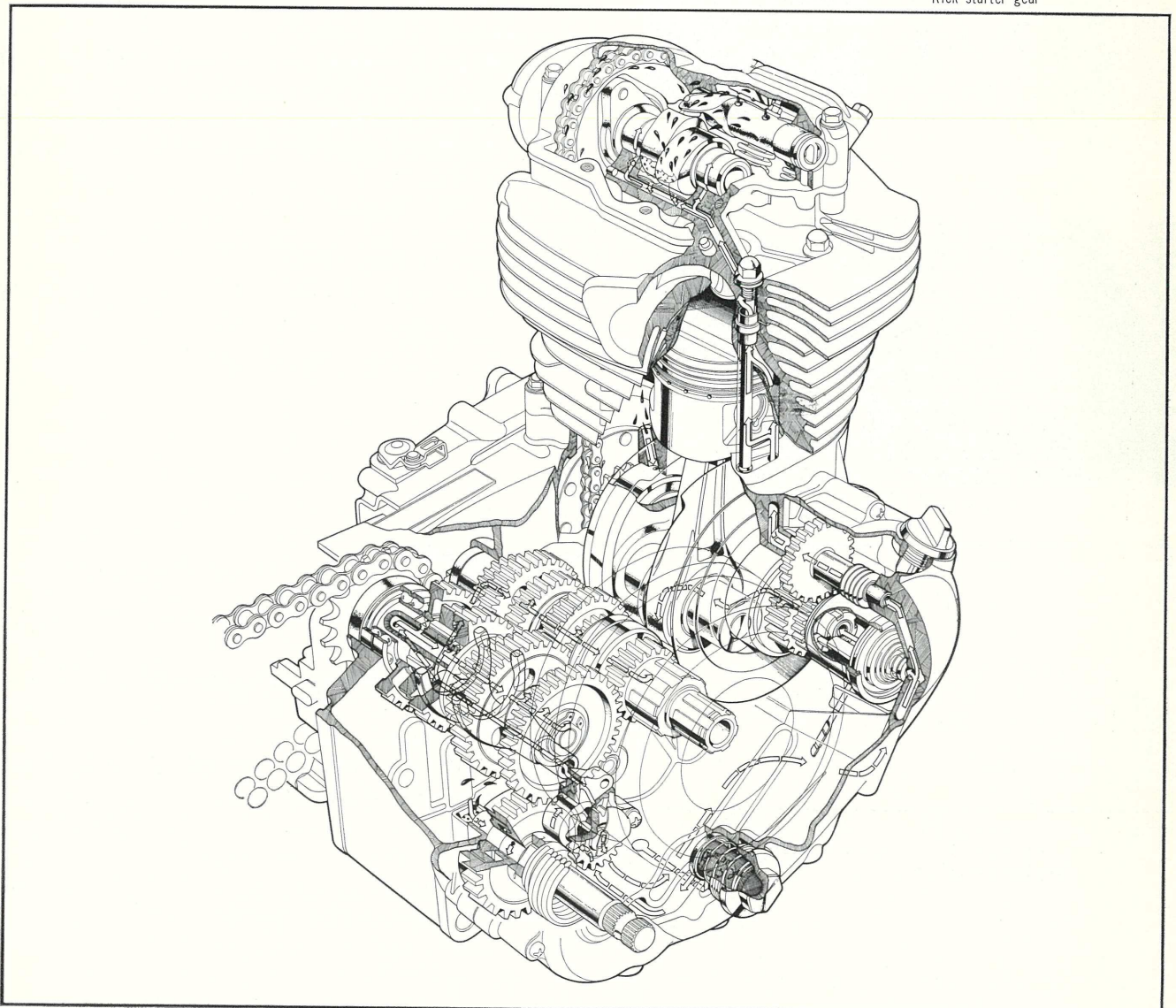
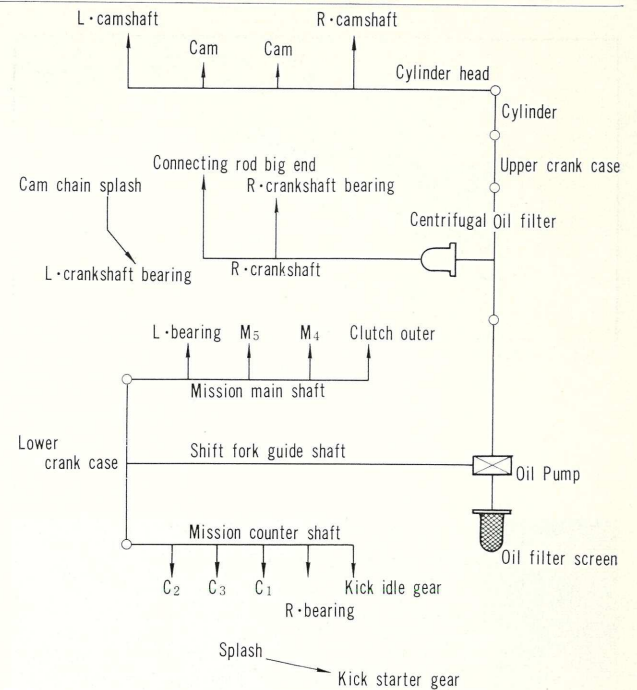


Fig. 1-18

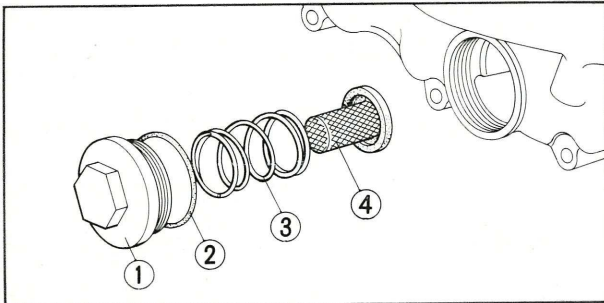


Fig. 1-19 ① Oil filter screen cap ③ Spring
② O-ring ④ Oil filter screen

8. OIL FILTER SCREEN

Key to Disassembly

1. Removal of oil filter screen cap.
To remove oil filter screen cap without draining engine oil, tilt the machine to left more than 20°, since oil may come out under the condition that the machine is at side stand.

Inspection

1. Inspection of oil filter screen.
If necessary, wash a dirty oil filter screen or replace a damaged oil filter screen, if any.

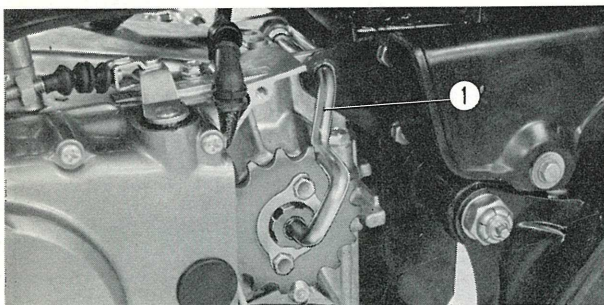


Fig. 1-20 ① Drive sprocket holder (07022-32901)

9. CENTRIFUGAL OIL FILTER

Key to Disassembly

1. Draining of engine oil and removal of RH crankcase cover.
2. Removal of 45 mm circlip and oil filter cap.
3. Removal of oil filter rotor.
Straighten the locking lug of lock washer. Hold drive sprocket with drive sprocket holder (Tool No. 07022-32901) and remove lock nut with box wrench (Tool No. 07086-28301). Then, oil filter rotor will be removed.

Inspection

1. Inspection of filter rotor.
Remove metallic dust from inside the rotor, if any.

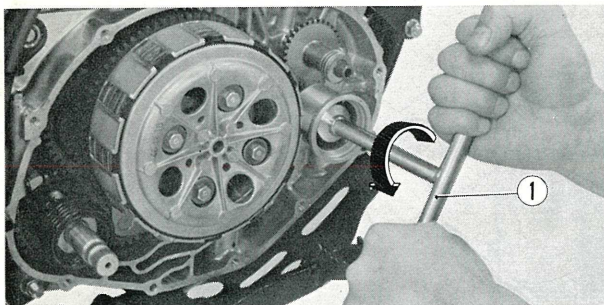


Fig. 1-21 ① Box wrench (07086-28301)

Key to Assembly

1. Installation of washer.
The mark "OUTSIDE" should come to the outside.
2. Installation of lock nut.
The side which is roughly chamfered should come the rotor side.
3. Installation of oil through.
After installing, make sure oil through moves smoothly without any binding.

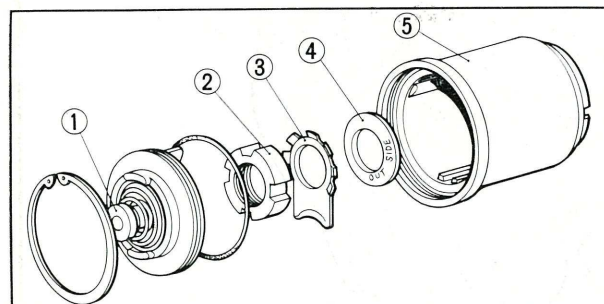


Fig. 1-22 ① Oil through ④ Washer
② Lock nut ⑤ Oil filter rotor
③ Lock washer

10. OIL PUMP

Key to Disassembly

1. Removal of RH crankcase cover, kick starter spindle and clutch case.
2. Removal of two **6mm** bolts and oil pump assembly.
3. Removal of two **6mm** screws and disassembly of oil pump.

Inspection

1. Measurement of inner rotor and outer rotor-to-pump body side clearances.
2. Measurement of inner rotor-to-outer rotor clearance.

Key to Assembly

1. Do not forget to install O-rings and packing.

NOTE:

When replacing packing, be sure to use a genuine part.

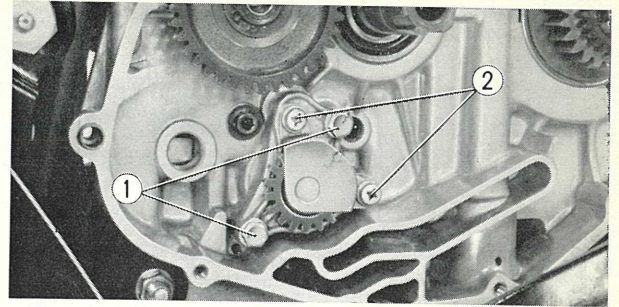


Fig. 1-23 ① 6mm bolts
② 6mm screws

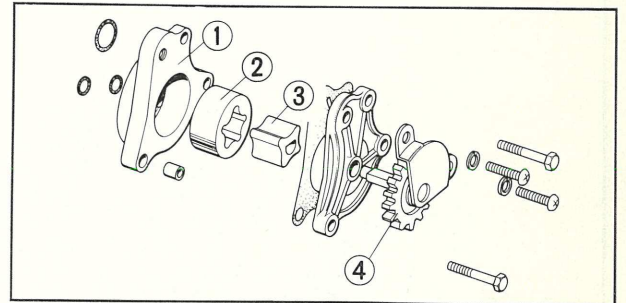


Fig. 1-24 ① Oil pump body
② Outer rotor
③ Inner rotor
④ Oil pump drive gear

Inspection of Oil Pressure

Remove **10mm** cap nut from cylinder head cover. If oil comes out within 12 seconds after engine start-up (at about 1000 rpm and oil temperature of 20°C or 68°F), it indicates oil pressure is normal. If not, it indicates insufficient efficiency of oil pump, clogging of oil lines or oil leakage. Check and repair if necessary. In cold weather, it may be difficult that oil comes out within 12 seconds due to higher oil viscosity.

NOTE:

After inspecting, tighten the cap nut to a specified torque of 3.0–3.6 kg-m (21.7–26.0 ft-lb).

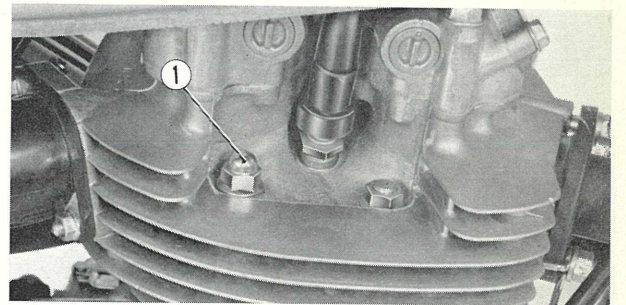


Fig. 1-25 ① 10mm cap nut

11. CLUTCH

Key to Disassembly

1. Draining of engine oil.
2. Removal of speed meter cable, kick starter pedal, RH step and RH crankcase cover.
3. Removal of four **6mm** bolts and friction disks.
4. Removal of centrifugal oil filter and clutch case.

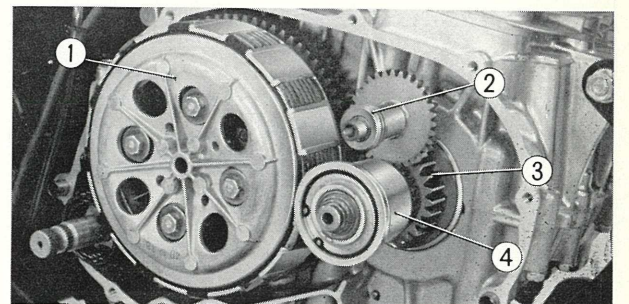


Fig. 1-26 ① Clutch
② Speedometer gear
③ Drive gear
④ Centrifugal oil filter

Inspection

1. Measurement of thickness of friction disks.
2. Measurement of clutch plate face runout.
3. Inspection of clutch spring.

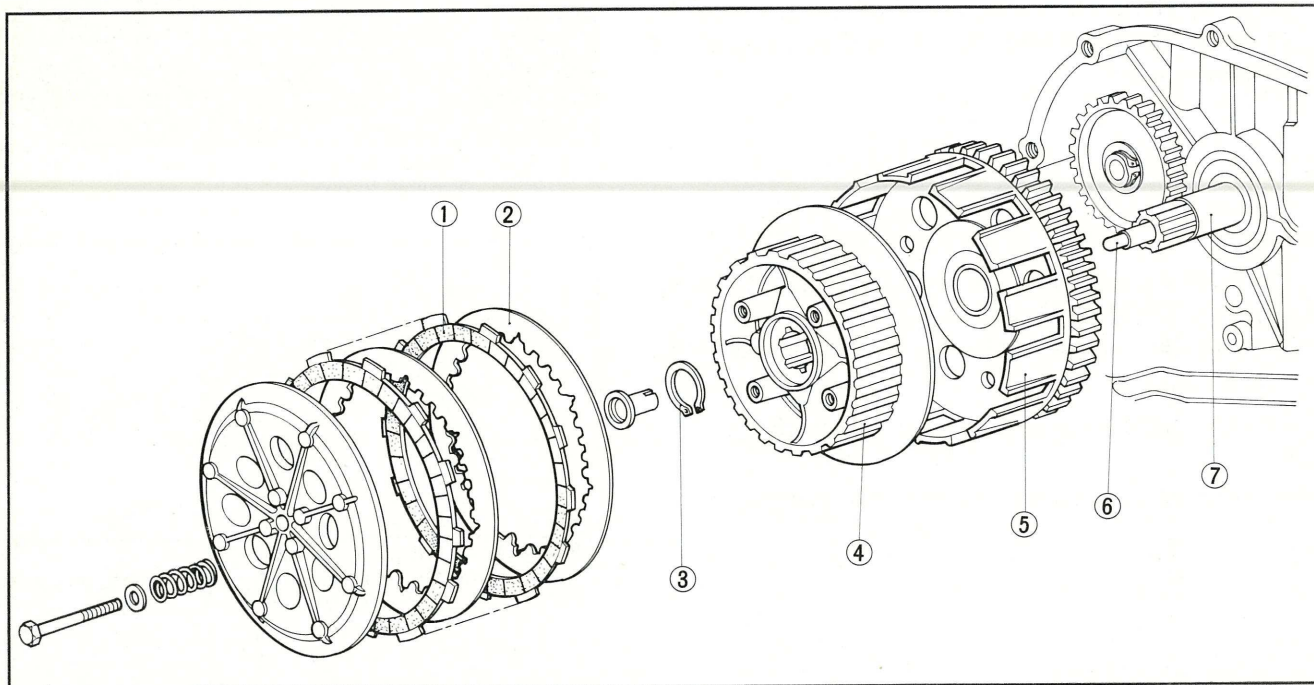


Fig. 1-27

- | | | | |
|-----------------|-----------------|---------------------|--------------|
| ① Friction disk | ③ 25mm circlip | ⑤ Clutch outer | ⑦ Main shaft |
| ② Clutch plate | ④ Clutch center | ⑥ Clutch lifter rod | |

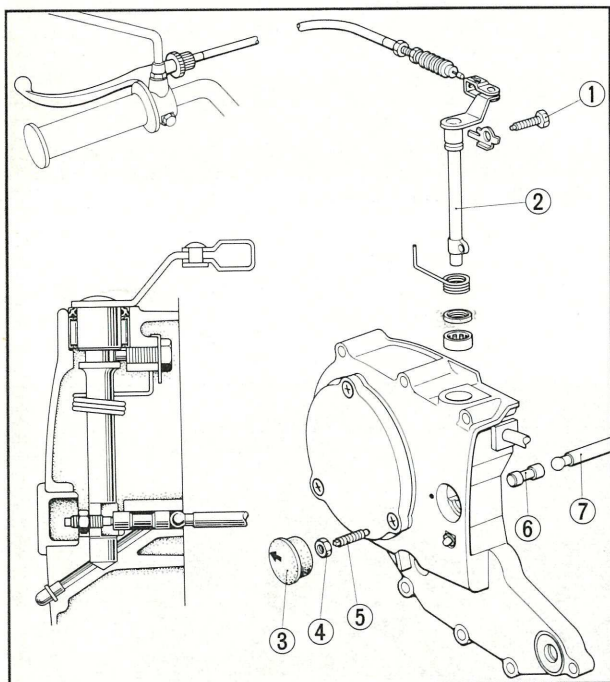


Fig. 1-28

- | |
|-------------------------------|
| ① 6mm knock bolt |
| ② Clutch lever |
| ③ Clutch adjusting cap |
| ④ Lock nut |
| ⑤ Adjusting screw |
| ⑥ Clutch lifter rod end piece |
| ⑦ Clutch lifter rod |

Key to Assembly

1. Installation of clutch outer.
After installing, make sure spline backlash is anywhere between **0.02–0.09 mm (0.00079–0.00354 in.)**.
2. Inspection of number of clutch plates and friction disks:
 No. of clutch plates: 6
 No. of friction disks: 7
3. Installation of **25mm** circlip.
After installing, make sure clutch rotates smoothly without any binding.

Clutch Lever

The clutch lever is installed inside the LH crankcase cover and its movement is transmitted to clutch through clutch lifter rod.

Adjustment of Clutch

Remove clutch adjusting cap and loosen lock nut. Turn in adjusting screw until it is no longer turned and then it out about 1/2 turn. After that, tighten lock nut. Align the arrow mark on clutch adjusting cap with the mark (•) on LH crankcase cover and install the cap.

NOTE:

To adjust clutch, first adjust it with this adjusting screw and then with cable end or clutch lever adjusting nut.

12. KICK STARTER

The kick starter is of a primary kick type, which makes it possible to crank the engine for start-up regardless of transmission gear position.

This starter is operated by a ratchet mechanism. When the arm is not depressed, the pole is in contact with the stopper bolt to place the spindle and gear in disengaged position as shown in Fig. 1-29 (A). When the arm is depressed, the pole engages in the internal gear groove to allow the gear to be driven as shown in Fig. 1-29 (B). The gear then rotates the crankshaft through the crankshaft drive gear.

Inspection

1. Inspection of excessive wear on starter pole.
2. Inspection of looseness of stopper bolt.

Key to Assembly

1. Installation of spring retainer.

The spring retainer should face upward with starter pole come in contact with stopper bolt.

2. Inspection of movement of starter pole.

If the kick starter gear lightly rotates with starter pole come in contact with stopper bolt and it does not rotate in any other position of starter pole, it is an indication that the pole is in good condition.

NOTE:

Do not fail to install 17 mm thrust washer.

13. CRANKSHAFT AND CONNECTING ROD

Key to Disassembly

1. Removal of piston and upper crankcase.
2. Removal of crankshaft.

Inspection

1. Measurement of connecting rod small end ID.
2. Measurement of crankpin-to-connecting rod big end clearance.
3. Measurement of looseness of crankshaft bearings.
4. Measurement of side clearances of connecting rod big end.
5. Inspection of clogging of oil holes in RH and LH bearings.

Key to Assembly

1. Installation of crankshaft bearings.

To install, securely fit crankshaft bearing pins in the grooves in lower crankcase.

2. Installation of upper crankcase.

When installing upper crankcase, apply a thin coat of sealant to case attaching part.

NOTE:

To facilitate installation, set tensioner bar in fully lowered position.

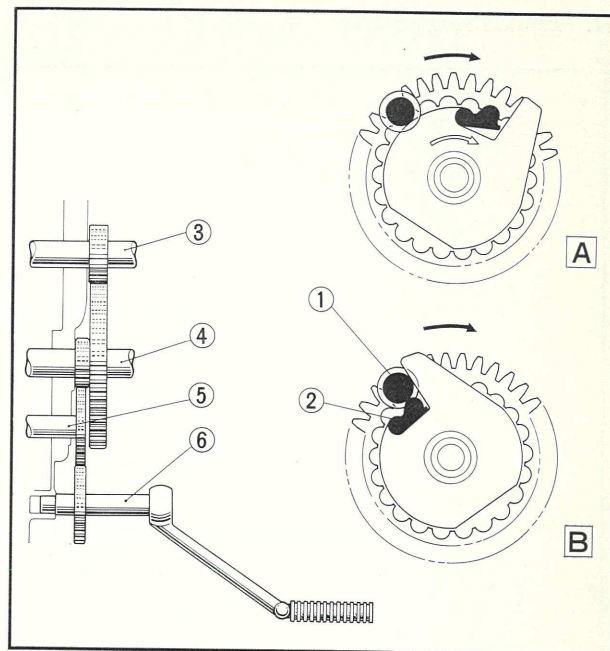


Fig. 1-29 ① Stopper bolt ④ Main shaft
② Starter pole ⑤ Countershaft
③ Crankshaft ⑥ Kick starter spindle

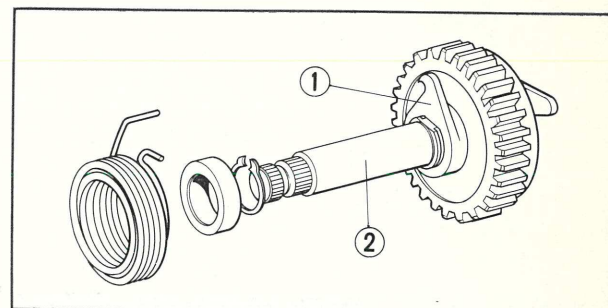


Fig. 1-30 ① Spring retainer
② Kick starter spindle

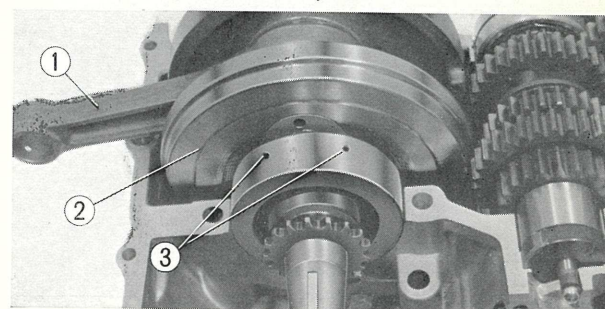


Fig. 1-31 ① Connecting rod ③ Oil holes
② Crankshaft

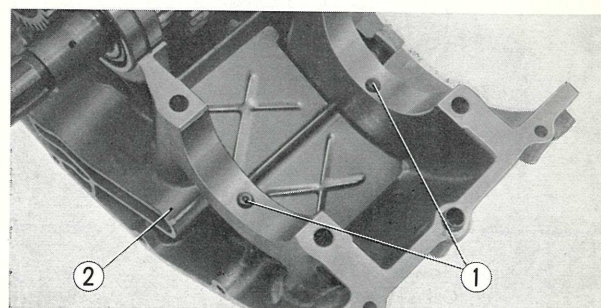


Fig. 1-32 ① Bearing pins
② Lower crankcase

14. TRANSMISSION

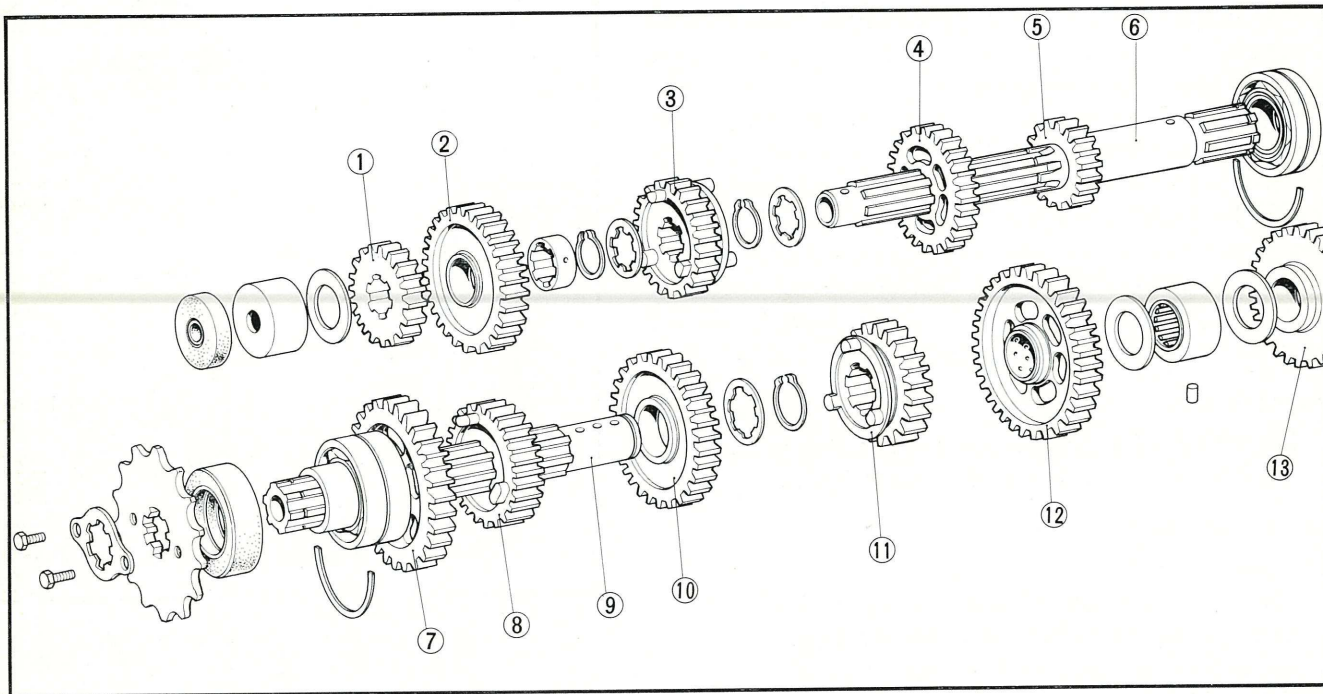


Fig. 1-33

- | | |
|-----------------------------------|-----------------------------------|
| ① Main shaft second gear (21 T) | ⑧ Countershaft top gear (25 T) |
| ② Main shaft top gear (31 T) | ⑨ Countershaft |
| ③ Main shaft third gear (25 T) | ⑩ Countershaft third gear (32 T) |
| ④ Main shaft fourth gear (23 T) | ⑪ Countershaft fourth gear (28 T) |
| ⑤ Main shaft low gear (17 T) | ⑫ Countershaft low gear (40 T) |
| ⑥ Main shaft | ⑬ Idle gear (36 T) |
| ⑦ Countershaft second gear (35 T) | |

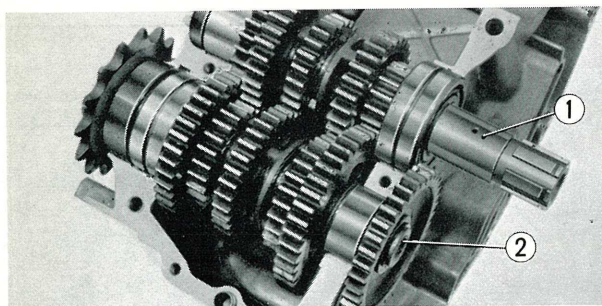


Fig. 1-34 ① Main shaft ② Countershaft

Inspection

1. Measurement of gear backlash.
2. Inspection of lugs of gears.
When a lug is worn excessively (more than **2.5 mm** or **0.098 in.**), replace the gear with new one. Also check if gears move smoothly on shaft splines.

Key to Assembly

1. Installation of countershaft oil seal.
When installing oil seal, properly fit the lug of countershaft oil seal in the mating groove in lower crankcase. This is because oil is delivered through hole in oil seal from lower crankcase to countershaft. Therefore, improperly installation will result in clogged oil hole and sticking countershaft and gears.

NOTE:

When new countershaft idle gear and 20 mm thrust washer are installed and the idle gear-to-washer side clearance exceeds 0.76 mm (0.03 in.), proceed as follows: Add a 20 mm (0.79 in.) × 0.7 mm (0.028 in.) thrust washer so as to obtain a side clearance of 0.06–0.75 mm (0.002–0.03 in.). Usually, a thrust washer 1.0 mm (0.039 in.) thick is used.

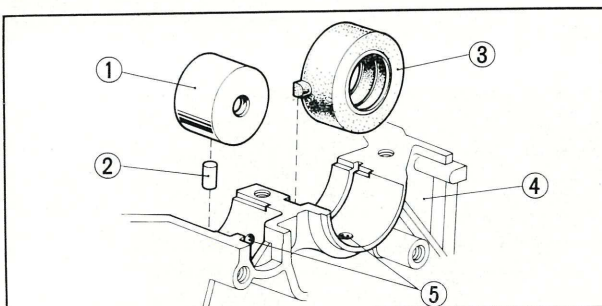


Fig. 1-35 ① Needle roller bearing
② Dowel pin
③ Oil seal
④ Lower crankcase
⑤ Oil holes

- Installation of main shaft needle roller bearing
Properly install needle roller bearing to lower crankcase with dowel pin. Improperly installation will also cause sticking main shaft and gears.

15. GEAR SHIFT MECHANISM

As shown in Fig. 1-35, the gear shift drum is parallel to the RH and LH gear shift forks, resulting in a decreased overall width of transmission. Then it adds much to a small-size, lightweight engine.

Key to Disassembly

- Lowering of engine and separation of upper and lower crankcases.
- Removal of main shaft and countershaft.
- Removal of RH and LH gear shift forks.
To facilitate removal of shift forks, pull out shift guide shift toward right side.
- Removal of bearing set plate and gear shift drum.

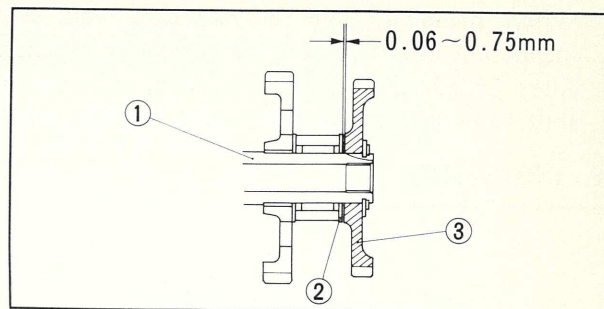


Fig. 1-36 ① Counter shaft ② Thrust washer ③ Idle gear

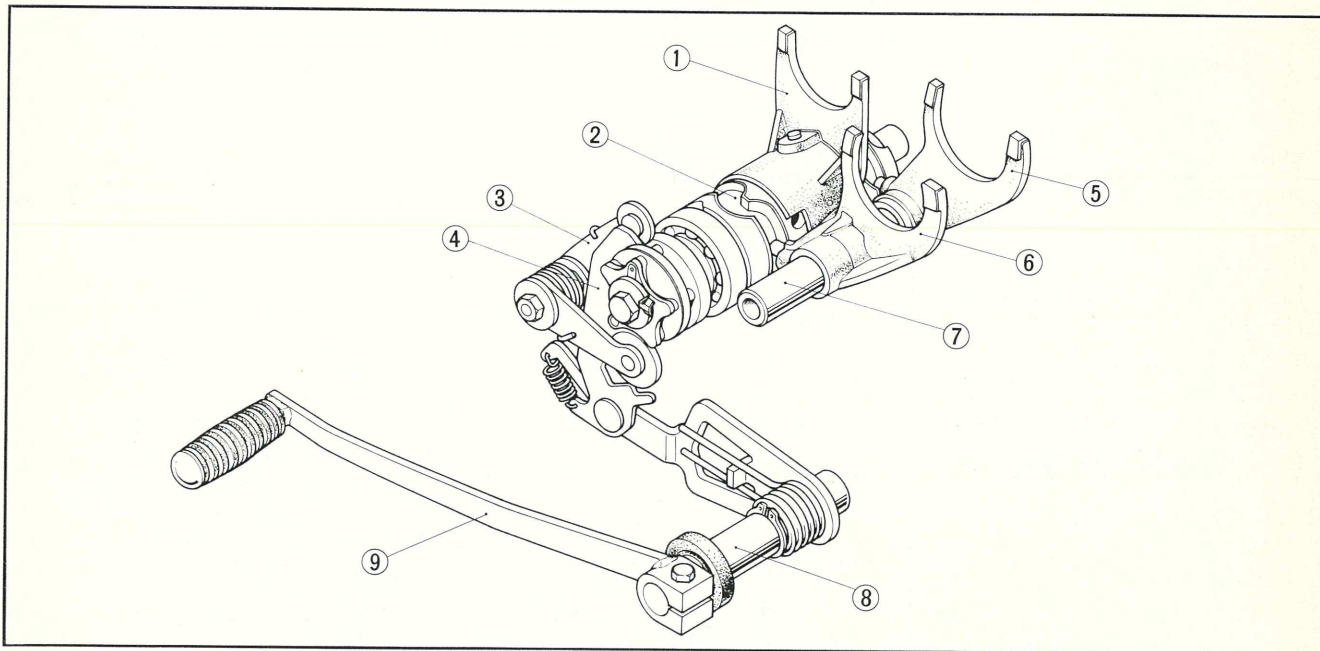


Fig. 1-37

- | | | |
|--------------------------|----------------------|--------------------------|
| ① Center gear shift fork | ④ Shift drum stopper | ⑦ Shift fork guide shaft |
| ② Gear shift drum | ⑤ RH gear shift fork | ⑧ Gear shift spindle |
| ③ Neutral stopper arm | ⑥ LH gear shift fork | ⑨ Gear change pedal |

Inspection

- Measurement of gear shift drum-to-shift fork clearance.
- Measurement of shift fork guide shaft-to-shift fork clearance.
- Measurement of thickness of shift fork pawls.

Key to Assembly

- Installation of gear shift fork guide pin.
Install guide pin to center gear shift fork by guide pin clip with its groove facing upward.
- Installation of RH and LH gear shift forks.

NOTE:

The marks "R" and "L" are stamped on the gear shift forks for identification.

- Installation of gear shift spindle and gear change pedal.

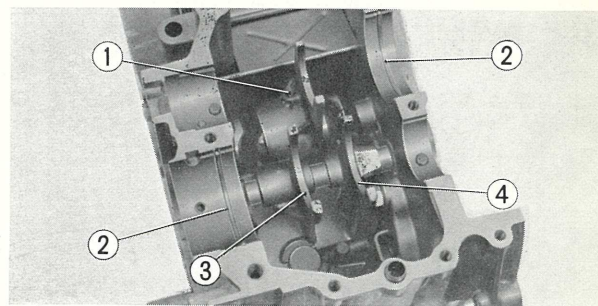


Fig. 1-38 ① Guide pin ② Bearing clip ③ L-gear shift fork ④ R-gear shift fork

When installing, align the matching mark on spindle with the punch mark in pedal.

4. Inspection of movement of gear shift mechanism.

After installing all parts in place, subassemble lower and upper crankcases and check to make sure shift forks operate at each gear position without any binding.

16. BREATHER

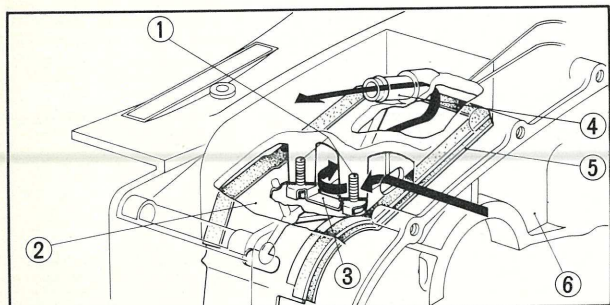


Fig. 1-39 ① 6 mm bolts ④ Breather pipe
② Breather plate ⑤ Seal rubber
③ Tongued washer ⑥ Upper crankcase

Key to Assembly

1. Installation of breather plate.

NOTE:

Take care not to produce a clearance between seal rubber and upper crankcase. Improperly installation of breather plate may cause oil to come out of breather tube.

2. Tightening of 6mm bolts and bending of tongued twin washer.

CAUTION:

Securely tighten the bolts and lock them with the washer. A dropped bolt may be clogged into between the teeth of a transmission gear.

17. CARBURETOR

1. Description

The carburetor is of a pressure-switch type. This type of carburetor assures unrestricted air bleeding into fuel jets even in full throttle closing.

The installation of main jet and valve seat is made in spigot fashion using O-rings for improved serviceability.

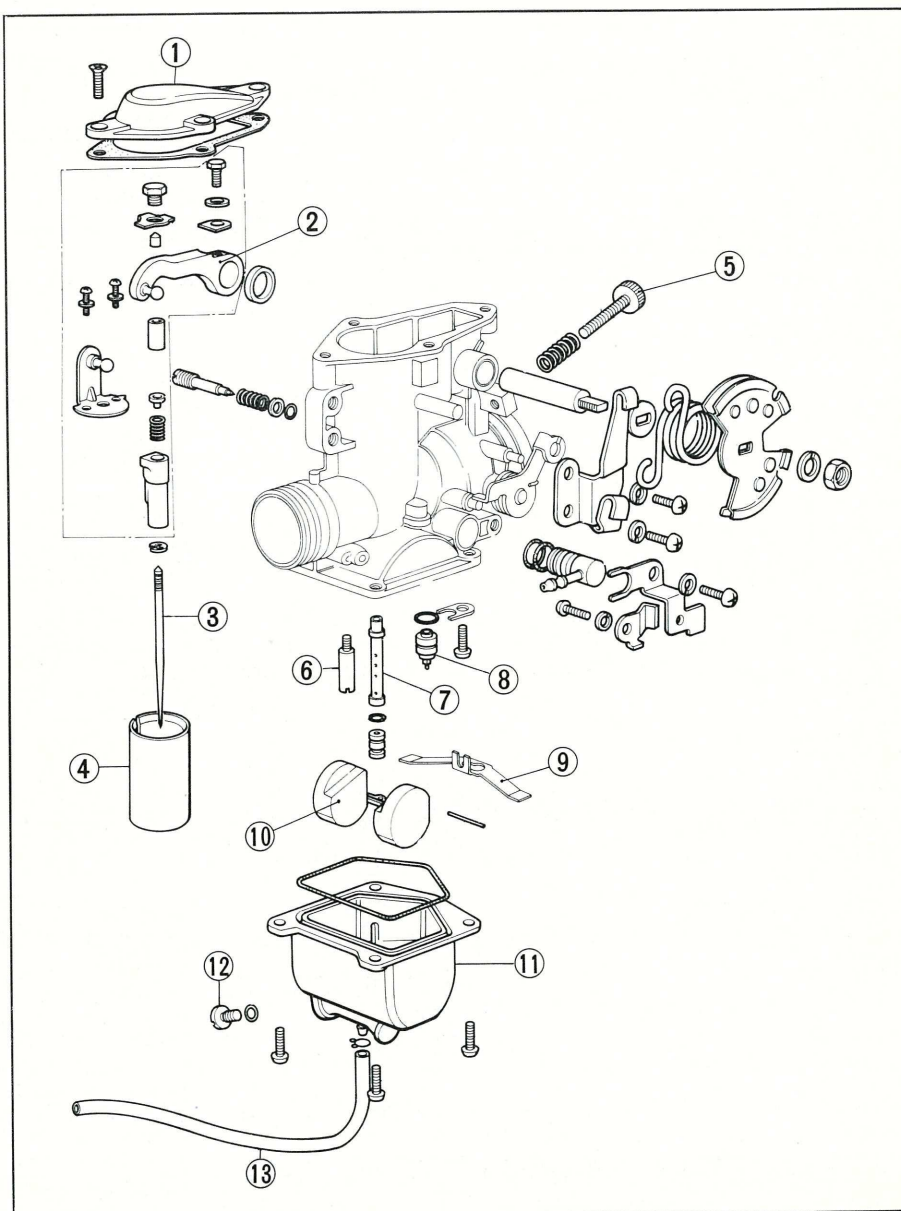


Fig. 1-40

- ① Top cover
- ② Link arm
- ③ Jet needle
- ④ Throttle valve
- ⑤ Throttle stop screw
- ⑥ Slow jet
- ⑦ Needle jet
- ⑧ Float valve
- ⑨ Leaf spring
- ⑩ Float
- ⑪ Float chamber
- ⑫ Drain screw
- ⑬ Over flow tube

Starting circuit

When the choke lever is pulled, the negative pressure is produced within the throttle bore and fuel is fed to the bore from the low-speed and main circuit.

Low-speed circuit

The low-speed circuit is provided to supply the proper amount of mixture to the engine at idle and extremely low speeds. The fuel metered by slow jet is mixed with the air bled by slow air jet and flows into the throttle bore.

Main circuit

The main circuit is provided for the middle and high speed engine operation. The fuel metered by main jet is mixed with the air bled by air jet. This mixture flows into the jet needle.

Float chamber

When the fuel flows into the float chamber through the clearance between the valve seat and valve, buoyance is given to the float. The valve is pushed up by the float arm and comes in contact with the valve seat. Then, the fuel flow is stopped to maintain the fuel level constant. In case where the fuel level is elevated due to excessively tilting of machine, the extra fuel flows out through the over-flow pipe.

18. THROTTLE VALVE AND JET NEEDLE

Key to Disassembly

1. Removal of screws and carburetor top.
2. Straightening of two lock washers and removal of bolts.
3. Removal of 13mm nut (located at throttle shaft side) and throttle shaft.
4. Removal of valve plate.
Remove two 3mm screws. Turn valve plate so as to fit the lug of plate in the side hole in throttle valve, permitting the plate to be removed.
5. Removal of jet needle from throttle valve.

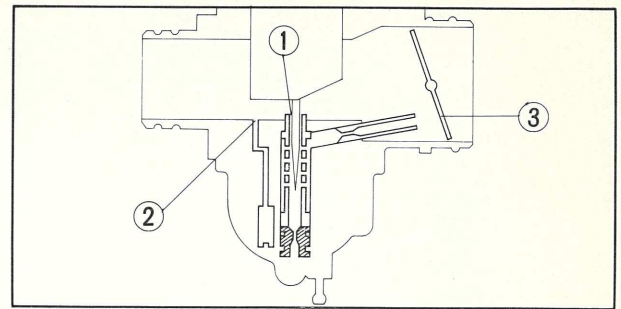


Fig. 1-41 ① Main circuit ② Low-speed circuit ③ Choke valve

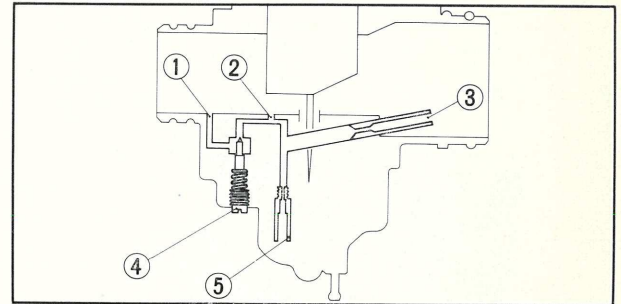


Fig. 1-42 ① Pilot outlet ② Bypass ③ Slow air jet ④ Air screw ⑤ Slow jet

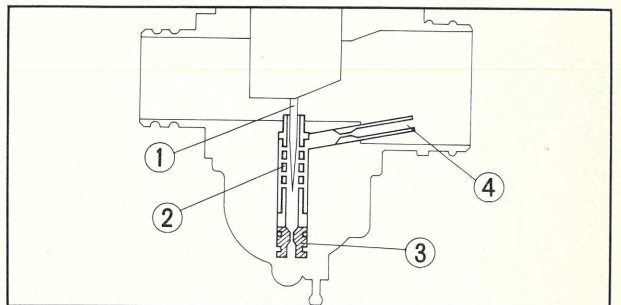


Fig. 1-43 ① Jet needle ② Needle jet ③ Main jet ④ Air jet

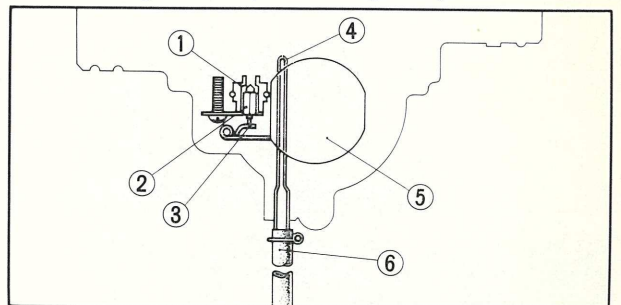


Fig. 1-44 ① Valve seat ② Valve ③ Float arm ④ Over-flow pipe ⑤ Float ⑥ Over-flow tube

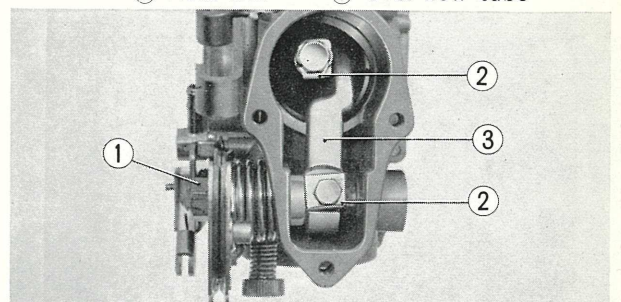


Fig. 1-45 ① 13mm nut ② Tongued washer ③ Link arm

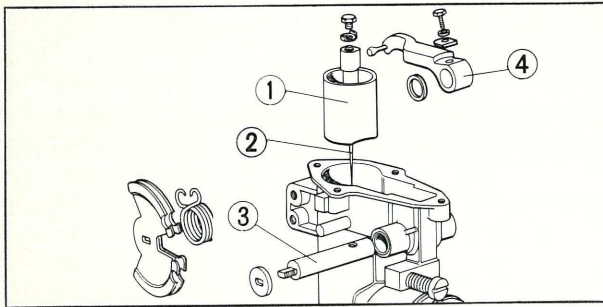


Fig. 1-46 ① Throttle valve ③ Throttle shaft
② Jet needle ④ Link arm

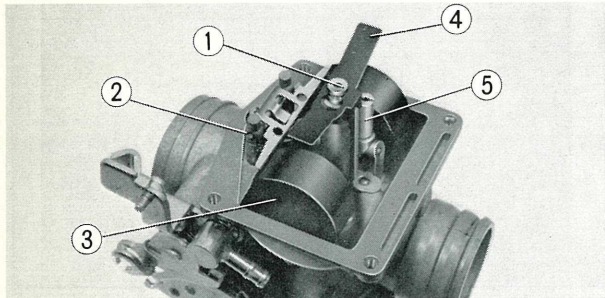


Fig. 1-47 ① Main jet ④ Leaf spring
② Float arm pin ⑤ Slow jet
③ Float

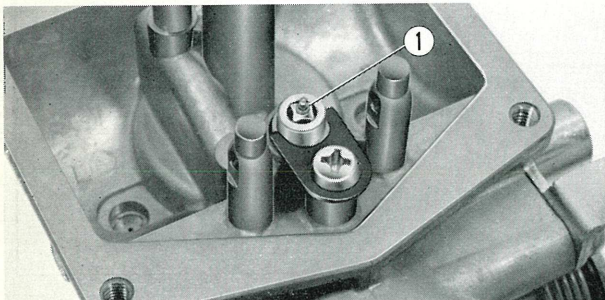


Fig. 1-48 ① Valve seat

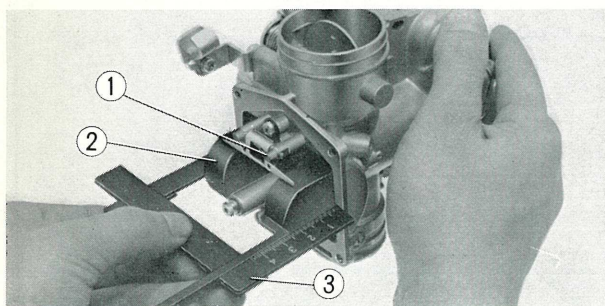


Fig. 1-49 ① Float arm ③ Level gauge (07144-99998)
② Float

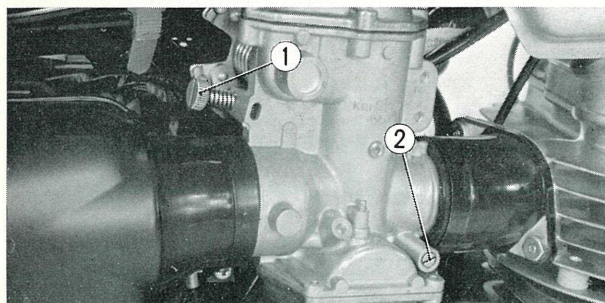


Fig. 1-50 ① Idle speed screw ② Air screw

Inspection

1. Inspection of damage to throttle valve.
2. Inspection of wear on jet needle.

Key to Assembly

1. Installation of throttle valve.
Install throttle valve to carburetor body with its cutaway side facing choke valve.
2. Installation of carburetor top and throttle shaft.

CAUTION:

Take care not to produce a clearance around carburetor top and throttle shaft.

19. FLOAT, MAIN JET AND SLOW JET

Key to Disassembly

1. Removal of float chamber.
2. Removal of leaf spring and main jet.
3. Removal of slow jet.
To remove, use a screw driver.
4. Removal of clip plate and valve seat.

Inspection

1. Inspection of clogging of main and slow jets.
2. Inspection of valve seat contact.

Key to Assembly

1. Installation of leaf spring.
2. Installation of main and slow jets.

CAUTION:

Carefully handle the jets, since their material is soft.

Adjustment of Oil Level

Slowly tilt the float so that the valve closed is placed in the open position. When the float arm is slightly separated from the open position. When the float arm is slightly separated from the tip of valve, measure the height of float with level gauge (No. 07144-99998). The specified level is 24mm (0.94in.). If the level is out of specification, adjust it by bending the float arm.

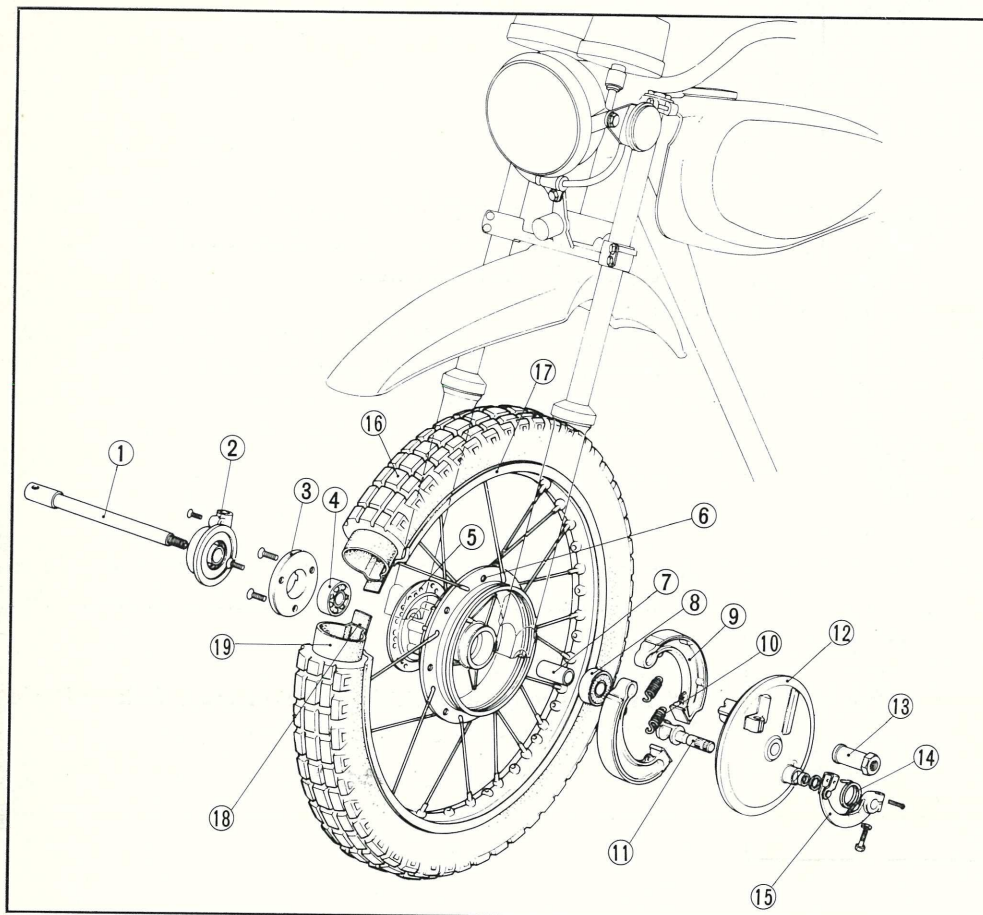
Adjustment of Carburetor

The engine should be warmed up thoroughly before carburetor is adjusted. To adjust, proceed as follows:

1. Adjust idle speed screw ① until the engine idles at approximately 1,200rpm. Turn the idle speed screw CW to increase idle speed or CCW to decrease idle speed.
2. Turn air screw ② CW until the engine misses or decreases in speed, then CCW 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 richness and leanness) will be found to be $7/8$ - $1\frac{1}{8}$ turns open from a fully closed position.
3. If the idle speed changes after adjusting the fuel mixture, readjust the idle speed screw.

2. CHASSIS

1. FRONT BRAKE AND FRONT WHEEL



- ① Front wheel axle
- ② Speedometer gear box
- ③ Bearing retainer
- ④ 6302 ball bearing
- ⑤ Front spoke frange
- ⑥ Front wheel hub
- ⑦ Front axle distance collar
- ⑧ 6302 ball bearing
- ⑨ Brake shoe
- ⑩ Brake shoe spring
- ⑪ Brake cam
- ⑫ Brake panel
- ⑬ Wheel axle nut
- ⑭ Brake arm return spring
- ⑮ Brake arm
- ⑯ Tire
- ⑰ Wheel rim

Fig. 2-1

The front wheel rim is in material aluminium alloy. The wheel hub is of a single hub type to provide improved self-cleaning action during operation.

FRONT WHEEL

Key to Disassembly

1. Place a block as in Fig. 2-2 and raise front wheel off the ground for removal.

Inspection

1. Bend of front axle
2. Wear (preload) on bearing
3. Runout of wheel rim
4. Looseness, bend or breakage of spokes
5. Tire inflation pressure [1.5 kg/cm^2 (21 psi)]
6. Wear or other damage of oil seal
7. Crack or other damage of tires
8. Leakage from tube and mouth piece

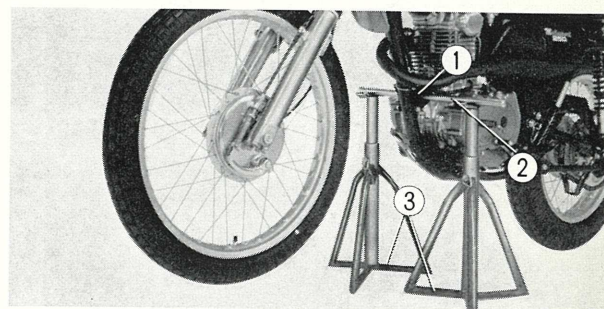


Fig. 2-2 ① Engine mounting flange
② Steel shaft
③ Rigid rack

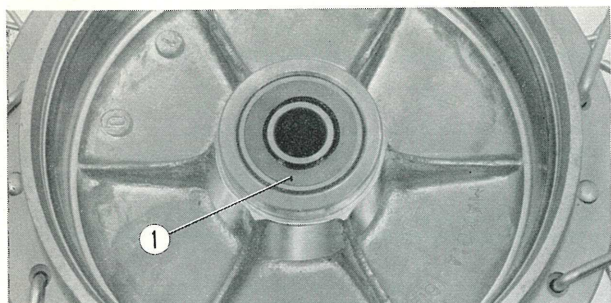


Fig. 2-3 ① 6302 ball bearing

Key to Assembly

1. Coat ball bearings and wheel hub with grease, insert distance collar and drive in bearings.

NOTE:

Distance collar must be inserted in place.

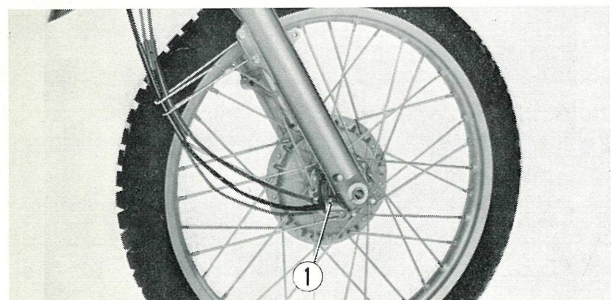


Fig. 2-4 ① Speedometer gear box

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

NOTE:

A failure to install speedometer gear box correctly will result in binding fork. With this kept in mind, set the box at an angle that permits easy installation of speedometer cable and then tighten it with axle nut.

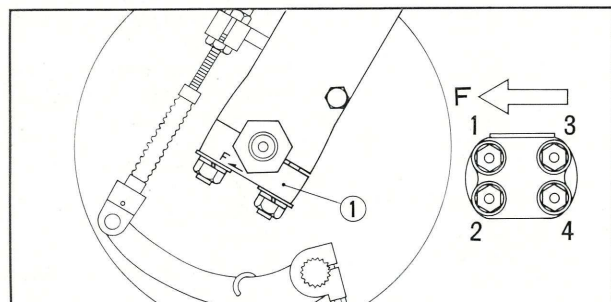
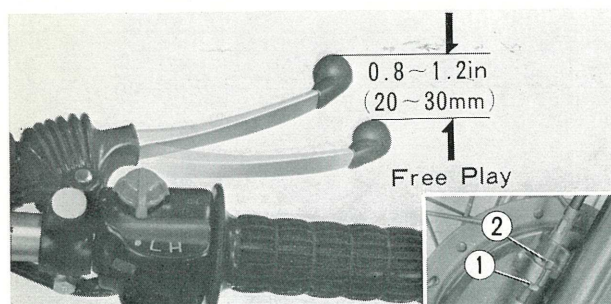


Fig. 2-5 ① Axle holder

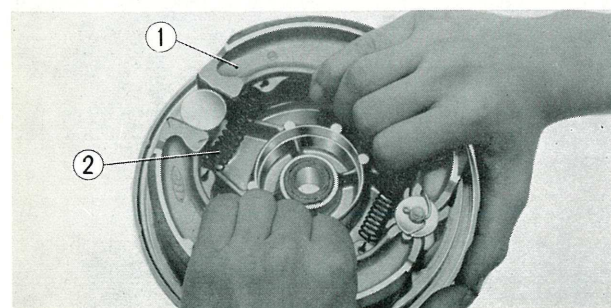
3. Face "F" mark of axle holder at the front and tighten front nut first according to numerical order in Fig. 2-5.

NOTE:

When tightened, the matching face of front fork and axle holder must have no gap at the front.

Fig. 2-6 ① Lock nut
② Adjust nut**ADJUST FRONT BRAKE**

Loosen adjusting nut and adjust brake to allow a 20 to 30 cm (0.8-1.2 in.) play at the handle lever top end. Proceed with lever adjusting nut for fine adjustment.

Fig. 2-7 ① Brake shoe
② Brake shoe spring**FRONT BRAKE****Key to Disassembly**

1. Remove brake arm, expand brake shoe by hand and remove brake shoe spring and brake shoe.

Inspection

1. Wear or damage of brake drum
2. Thickness of brake lining
3. Crack or damage of brake panel

Key to Assembly

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

NOTES:

1. Hook brake shoe spring in the direction as in Fig. 2-8.
2. Coat brake cam and anchor pin with grease of about 1 gramme (0.035 oz).
3. Take care not to put oil on brake lining.
2. Attach brake panel to front wheel hub firmly.
3. Punch marks must be matched when attaching brake arm

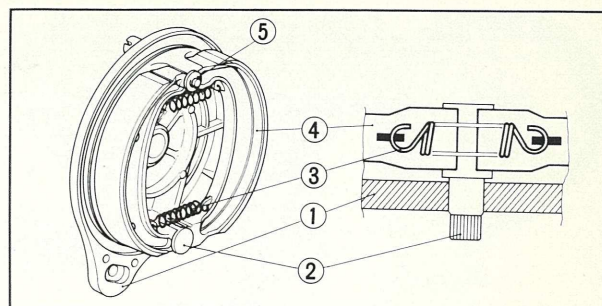


Fig. 2-8 ① Front brake panel ④ Brake shoe
② Brake cam ⑤ Anchor pin
③ Brake shoe spring

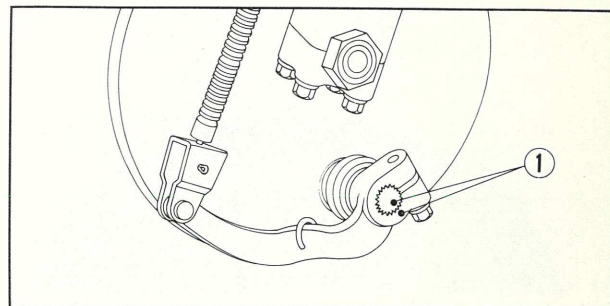


Fig. 2-9 ① Punch marks

2. REAR BRAKE AND REAR WHEEL

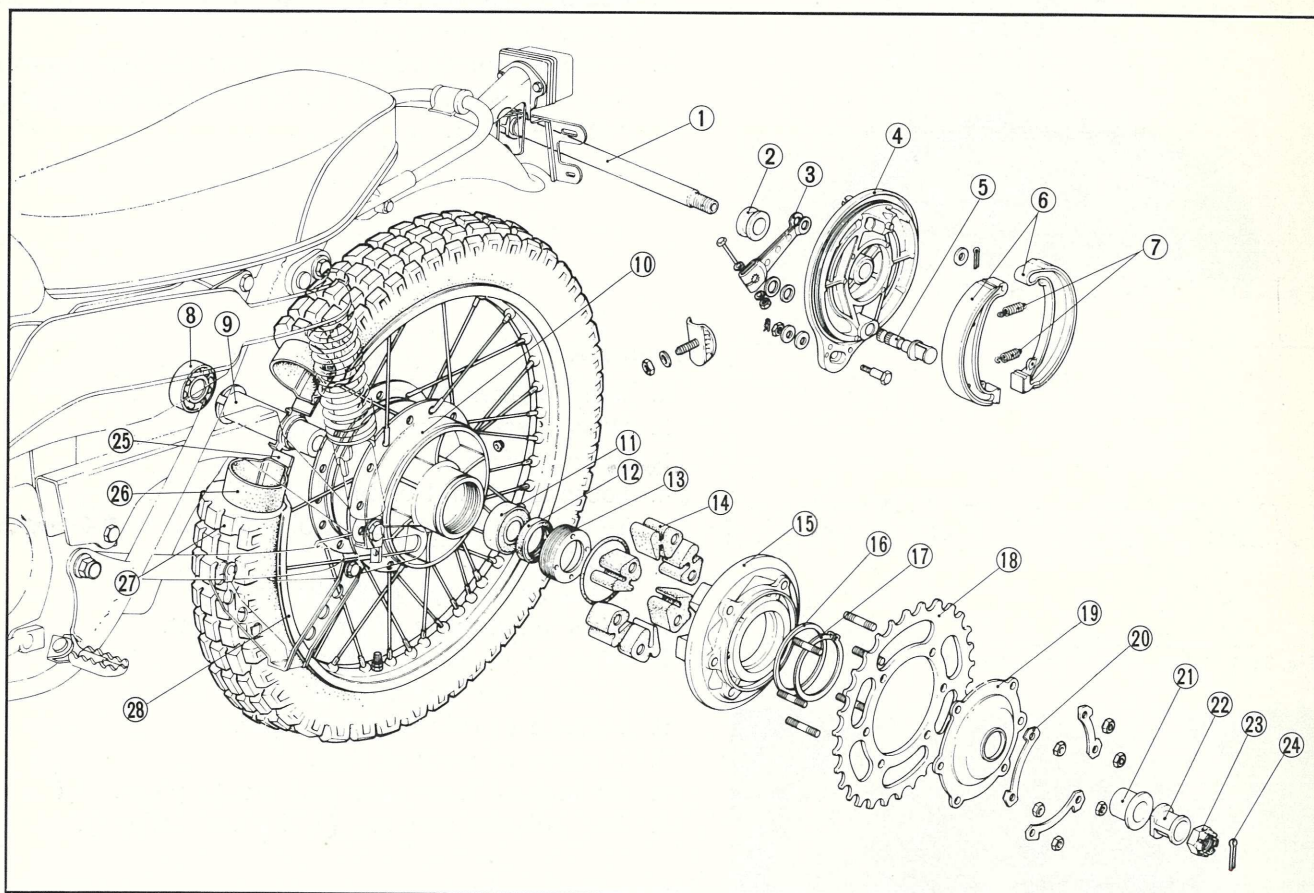


Fig. 2-10

- | | | | |
|---------------------------|----------------------|-----------------------|---------------------|
| ① Wheel axle | ⑦ Brake shoe springs | ⑬ Bearing retainer | ⑲ Hub dust cover |
| ② Brake panel side collar | ⑧ 6204 ball bearing | ⑭ Wheel damper | ⑳ Tongued washer |
| ③ Brake arm | ⑨ Distance collar | ⑮ Final driven flange | ㉑ Wheel side collar |
| ④ Brake panel | ⑩ Wheel hub | ⑯ 66 mm washer | ㉒ Axle collar |
| ⑤ Brake cam | ⑪ 6034 ball bearing | ⑰ 65 mm circlip | ㉓ Wheel axle nut |
| ⑥ Brake shoes | ⑫ Dust seal | ⑱ Driven sprocket | ㉔ Cotter pin |

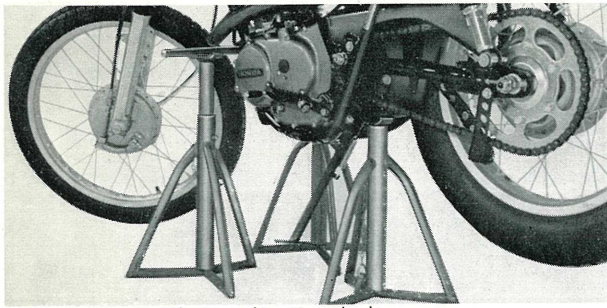


Fig. 2-11 ① Chain adjusting bolt
② Axle nut



Fig. 2-12 ①



Fig. 2-13 ① Retainer wrench (07088-32901)

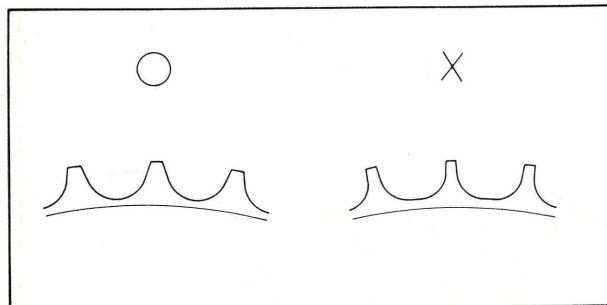


Fig. 2-14 Wear of driven sprocket

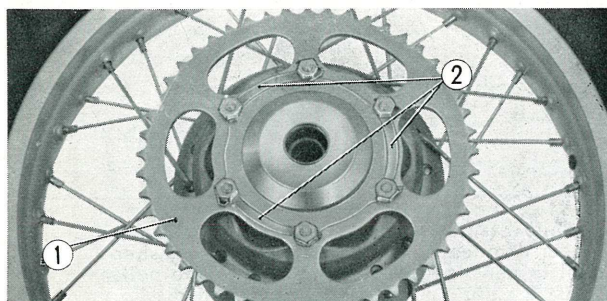


Fig. 2-15 ① Driven sprocket
② Tongued washer

REAR WHEEL

Key to Disassembly

1. Raise rear wheel off the ground.
2. Remove drive chain joint and remove drive chain.

NOTE:

It is preferable to remove drive chain from drive sprocket.

3. Loosen chain adjusting bolt, remove cotter pin and remove wheel axle nut.

4. Remove rear brake in the same manner as done for front brake.
5. Straighten up tongued washer lugs, and remove rear wheel hub dust cover and driven sprocket.

6. Remove 65 mm circlip and remove final driven flange and rear wheel damper.
7. Remove bearing retainer with the retainer wrench (tool No. 07088-32901) and remove ball bearing and distance collar.

Inspection

1. Bend of rear wheel axle.
2. Wear (preload) on bearing.
3. Runout of rim.
4. Looseness, bend or breakage of spokes.
Tightening torque of spokes is **0.2 to 0.45 kg-m (1.4-3.3 lb-ft)**.
5. Crack or damage of brake panel.
6. Wear on damage of driven sprocket.
7. Wear or damage of drive chain.
8. Crack or damage of final driven flange.
9. Damage of rear wheel damper.
10. Damage or wear of tires.
11. Air leakage from tube and mouth piece.
12. Tire inflation pressure [**1.5 kg/cm² (21 psi)**].

Key to Assembly

1. Attach driven sprocket.

2. Attach each collar as in Fig. 2-16 and install rear wheel axle to rear fork.
3. To connect drive chain, direct clip open end against the rotational direction of chain.

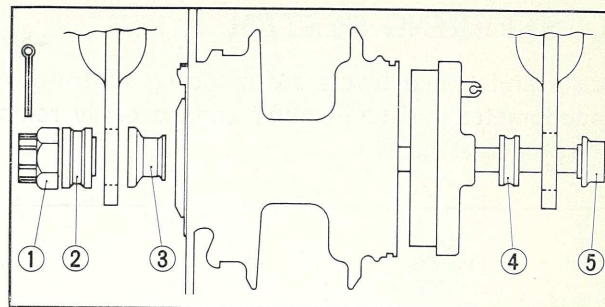


Fig. 2-16 ① Axle nut
② Rear axle collar
③ Rear wheel side collar
④ Rear brake panel side collar
⑤ Rear wheel axle

ADJUST BRAKE PEDAL

1. Properly adjust the brake pedal height with an adjusting bolt. Check to be sure of brake pedal play.

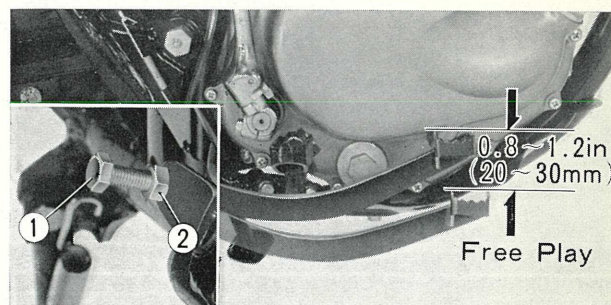


Fig. 2-17 ① Adjusting bolt
② Lock nut

2. Adjust brake pedal to allow a **20 to 30 mm (0.8–1.2 in.)** play at the top end of brake pedal with adjusting nut.

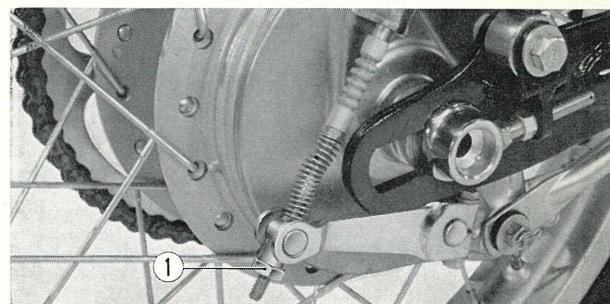


Fig. 2-18 ① Adjusting nut

ADJUST DRIVE CHAIN

1. Adjust drive chain to allow a **20 mm (3/4 in.)** sag.
2. Set notches on right and left adjusters at the same position and adjust drive chain to normal sag with adjusting bolts.
3. After adjustment, don't forget to tighten lock nuts.

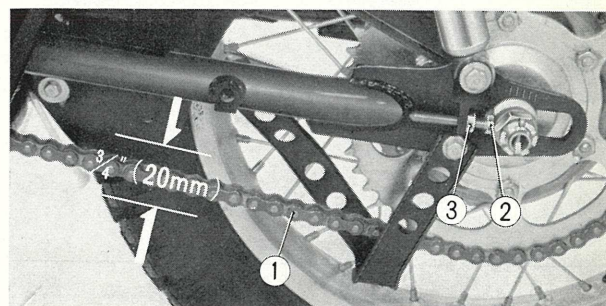


Fig. 2-19 ① Drive chain
② Adjusting bolt
③ Lock nut

3. STEERING SYSTEM

Brake and clutch levers are made up of tough cast aluminium alloy. For off the road riding, headlight, speedometer and tachometer can be easily removed. Boots are attached to handle bar levers to prevent entry of dust or dirt.

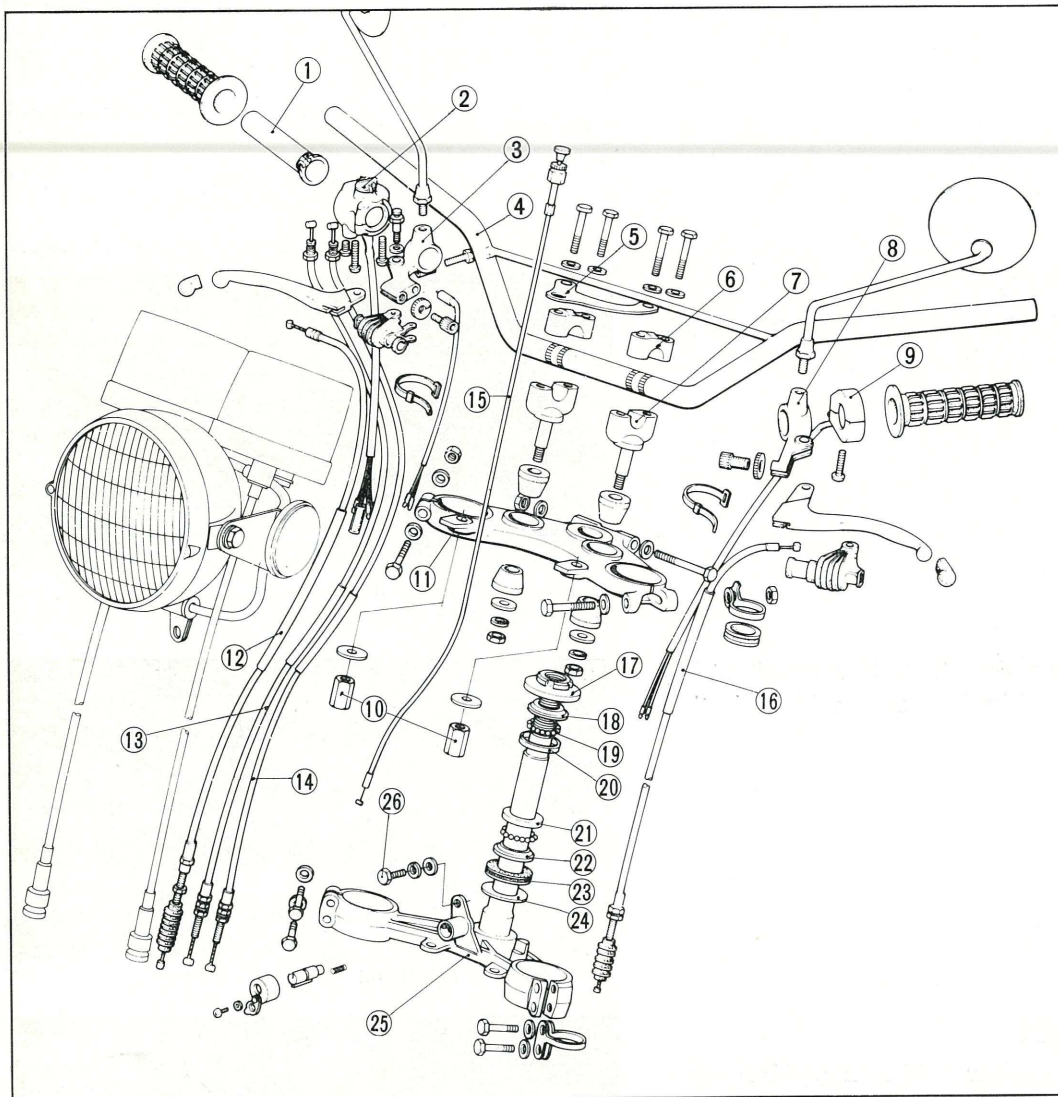


Fig. 2-20

- ① Throttle grip pipe
- ② Switch housing
- ③ Handle lever bracket
- ④ Steering handle pipe
- ⑤ Cable holder
- ⑥ Handle holder (upper)
- ⑦ Handle holder (lower)
- ⑧ Handle lever bracket
- ⑨ Horn switch
- ⑩ Nut
- ⑪ Fork top bridge
- ⑫ Front brake cable
- ⑬ Throttle cable A
- ⑭ Throttle cable B
- ⑮ Choke cable
- ⑯ Clutch cable
- ⑰ Fork top thread
- ⑱ Top corn race
- ⑲ Steel balls
- ⑳ Top ball race
- ㉑ Bottom ball race
- ㉒ Bottom corn race
- ㉓ Dust seal
- ㉔ Dust seal washer
- ㉕ Steering stem

STEERING HANDLE

Key to Disassembly

1. Remove brake and clutch cables at the position as in Fig. 2-21 Remove boots.

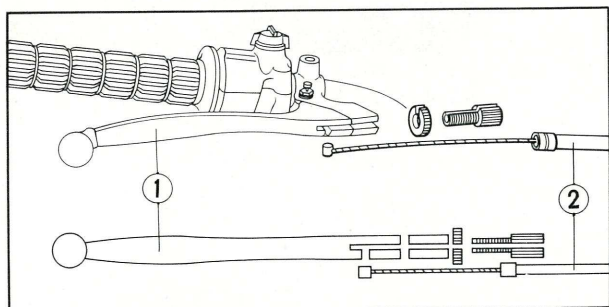


Fig. 2-21 ① Brake lever
② Cable

2. Separate emergency ass'y and remove throttle cable from throttle grip pipe.
3. Remove handle upper holder and remove handle pipe.

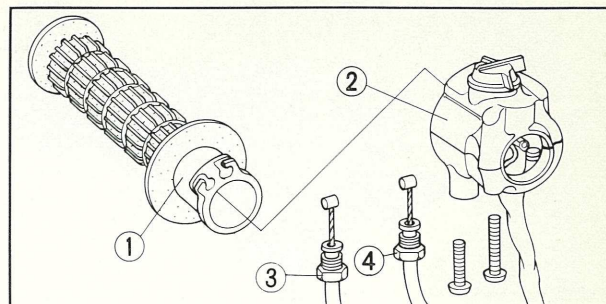


Fig. 2-22 ① Throttle grip pipe
② Emergency switch ass'y
③ Throttle cable A
④ Throttle cable B

Inspection

1. Operating conditions or breakage of each of inner and outer cables.
2. Bend of handle pipe.

Key to Assembly

1. Align punch marks on handle pipe to handle holder upper faces and attach it.

NOTE:

Tighten handle holder at the front first.

2. Guide each cable and electrical wire correctly and attach handle levers.

NOTE:

Check to be sure the unreasonable force will not be applied to each cable and electrical wire when turning steering handle to right and left.

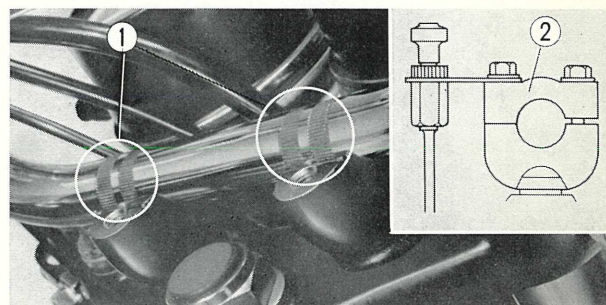


Fig. 2-23 ① Punch marks
② Handle upper holder

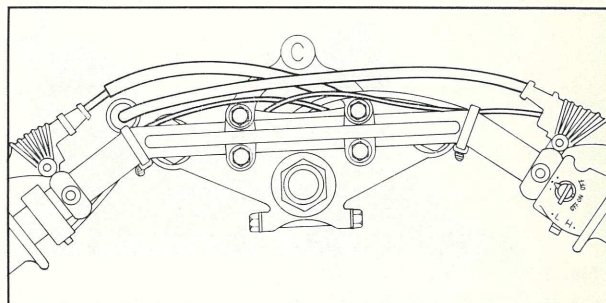


Fig. 2-24

STEERING STEM

Key to Disassembly

1. Separate wire harnesses A, B, remove headlight stay and remove headlight ass'y, speedometer and tachometer as a unit.
2. Remove front wheel and front fork.
3. Remove steering stem nut and fork top bridge tightening bolts and remove fork top bridge.
4. Remove steering head top thread and pull out steering stem from the bottom.

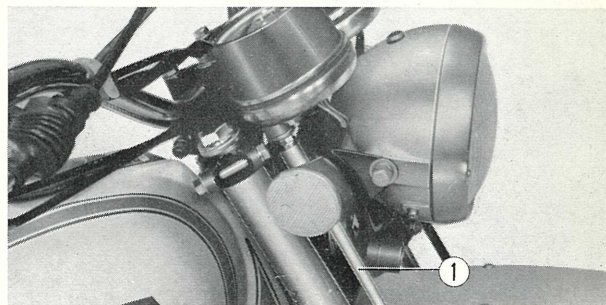


Fig. 2-25 ① Universal box wrench

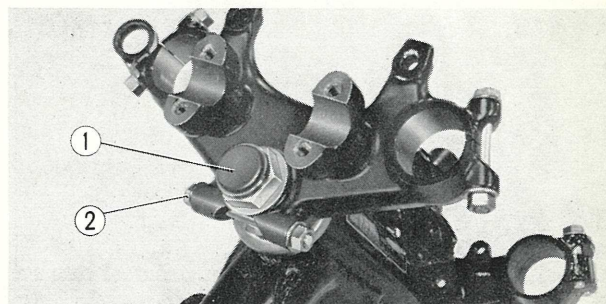


Fig. 2-26 ① Fork top bridge ② Steering stem nut



Fig. 2-27 ① Steering stem
② #8 steel ball

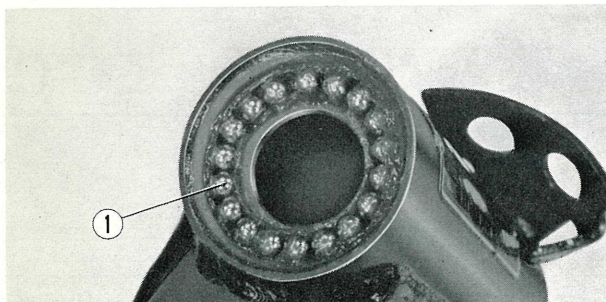


Fig. 2-28 ① #8 steel ball

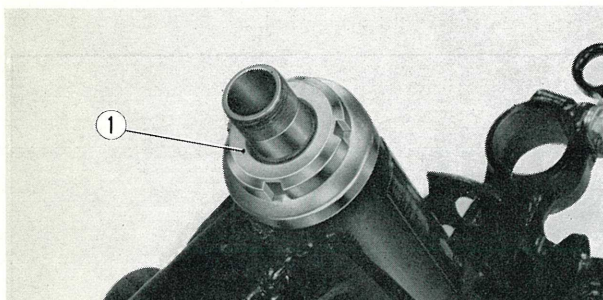


Fig. 2-29 ① Fork top thread

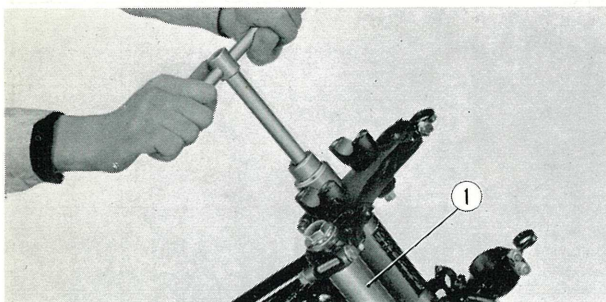


Fig. 2-30 ① Front fork

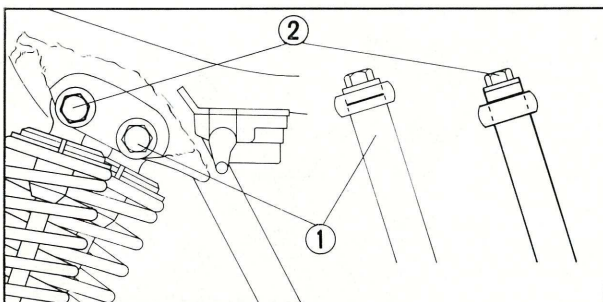


Fig. 2-31 ① Standard position
② High position

Inspection

1. Damage or wear on #8 steel ball.
2. Damage or wear on contact surfaces between top and bottom corn races.
3. Wear of steering head dust seal.

Key to Assembly

1. Coat ball race with grease, build in eighteen #8 steel balls and insert steering stem. Tighten top corn race and head top thread all the way and loosen them to the extent that steering stem can be smoothly driven without looseness.

NOTE:

Wash corn race, ball race and #8 steel balls and renew grease.

2. Temporarily attach front fork and tighten steering stem nut.

3. Attach front fork at the position as in Fig. 2-31.

NOTE:

Check to be sure of the rear cushion attaching positions and also of attaching positions of right and left rear cushions.

ADJUST CLUTCH LEVER

1. Adjust to allow a **10 to 20 mm (0.4–0.8 in.)** play at the lever top end with adjusting nut.

NOTE:

Adjust nut on the engine side first.

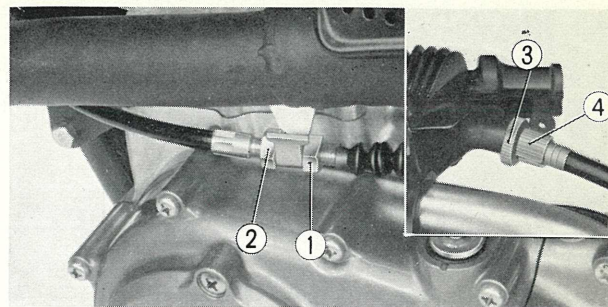


Fig. 2-32 ① Lock nut ② Adjust nut ③ Lock nut ④ Adjuster

ADJUST THROTTLE GRIP

1. To allow a 10° to 15° play for throttle grip turn, adjust with adjusters on the two positions of handle bar and carburetor.

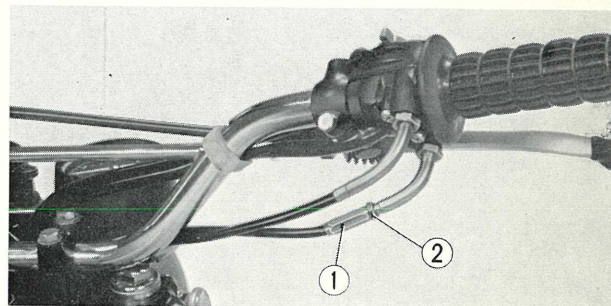


Fig. 2-33 ① Adjuster ② Lock nut

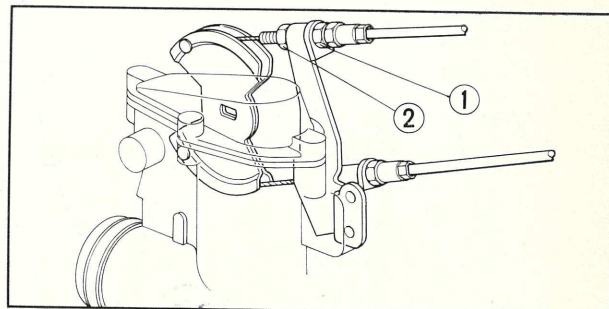


Fig. 2-34 ① Adjusting nut ② Lock nut

PASSAGES OF THROTTLE, CHOKE AND CLUTCH CABLES

1. See the illustration.
2. Attach throttle cables, A, B without mistake.

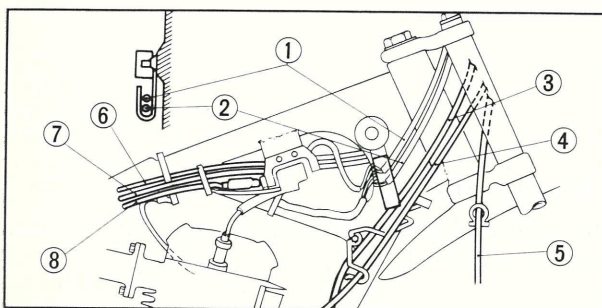


Fig. 2-37 ① Front stop switch cord
② Emergency switch cord
③ Clutch cable
④ Tachometer cable
⑤ Speedometer cable
⑥ Choke cable
⑦ Throttle cable A
⑧ Throttle cables, A, B

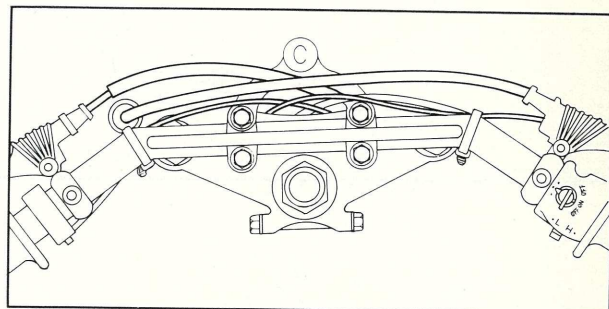


Fig. 2-35

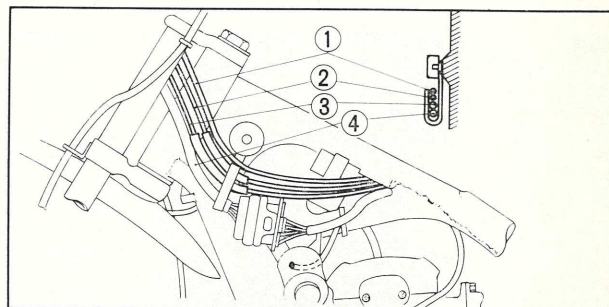


Fig. 2-36 ① Choke cable ② Throttle cable A ③ Throttle cable B ④ Wire harness

4. FRONT SUSPENSION

Front fork is adjustable for adjusting ground clearance. Front suspension surves for general touring with little fatigue and also real off road riding without rebounding of cushion. It performs the sufficient cushion effect for road roughness.

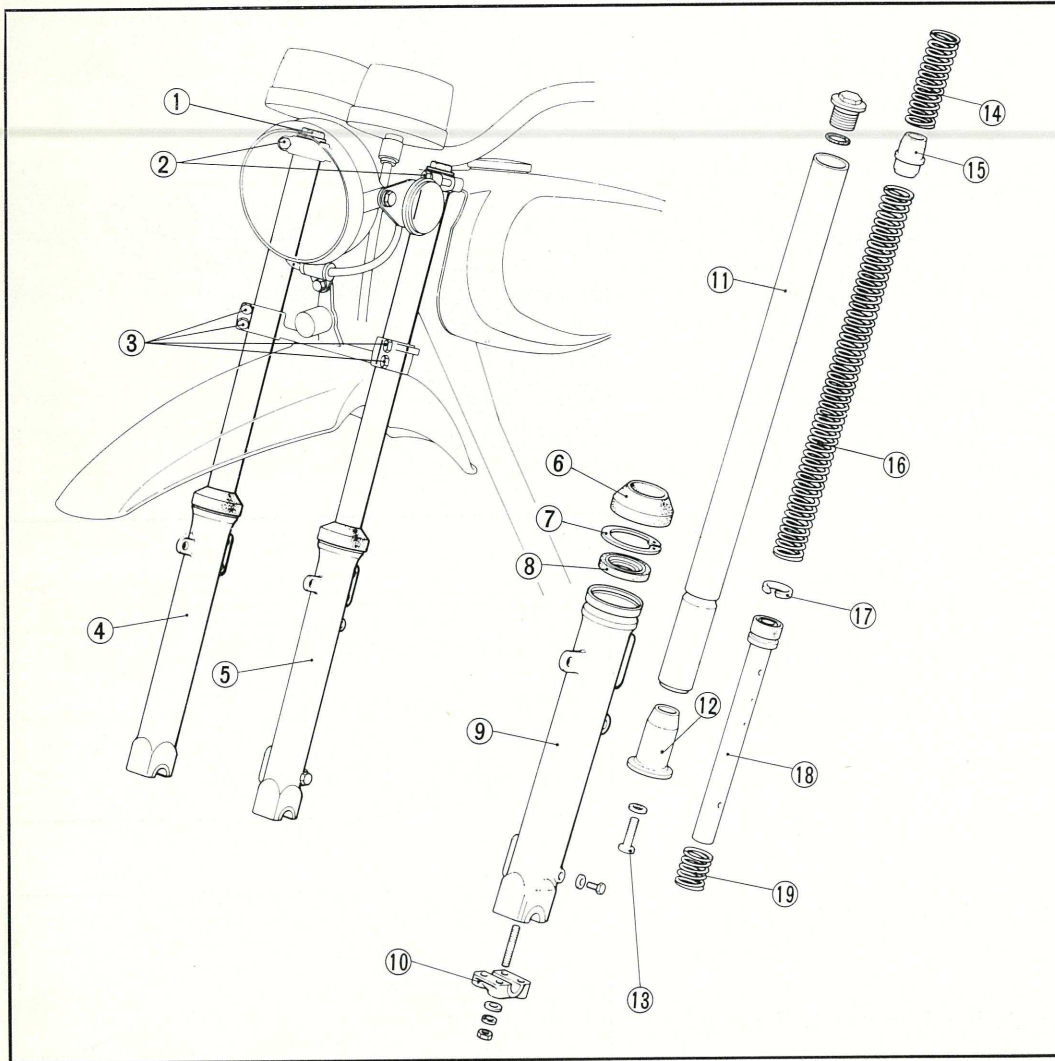


Fig. 3-38

- ① Front fork bolt
- ② 8mm bolt
- ③ 8mm bolt
- ④ Right fork bottom case
- ⑤ Left fork bottom case
- ⑥ Dust seal
- ⑦ Circlip
- ⑧ Oil seal
- ⑨ Fork bottom case
- ⑩ Front axle holder
- ⑪ Fork pipe
- ⑫ Oil lock piece
- ⑬ 8mm socket bolt
- ⑭ Front cushion spring A
- ⑮ Spring joint peace
- ⑯ Front cushion spring B
- ⑰ Piston ring
- ⑱ Bottom pipe
- ⑲ Fork rebound spring

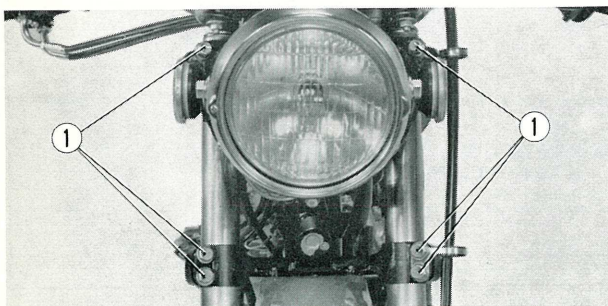


Fig. 2-39 ① 8mm bolts

Key to Disassembly

1. Before disassembling front fork, loosen 8mm bolts.
2. Remove cushion oil.

3. Remove socket bolts with hollow set wrench (tool No. 07085-32301) and separate bottom case and fork pipe.
4. Remove bottom case cover and circlip and remove oil seal.

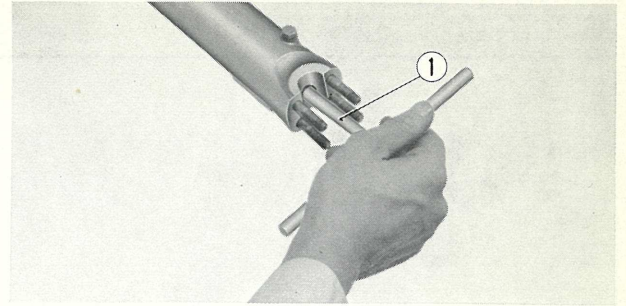


Fig. 2-40 ① Hollow set wrench (07085-32301)

5. Remove fork bolts, and fork pipe, bottom pipe and spring can be disassembled.

Inspection

1. Wear of front fork piston.
2. Free length or load of cushion spring.
3. Wear of front bottom case.
4. Damage or breakage of oil seal.
5. Bend or score or scratch marks of fork pipe.

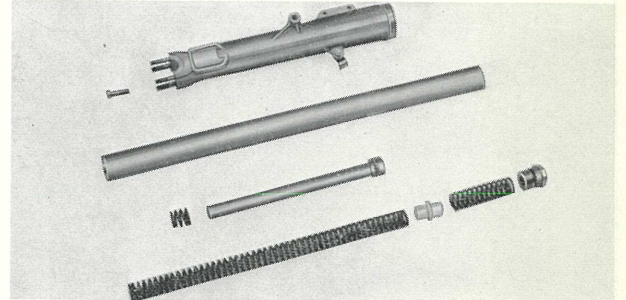


Fig. 2-41 Front fork

Key to Assembly

1. Thoroughly wash all parts before assembly.
2. Attach oil seal with the fork seal driver (No. 07054-32901).

NOTES:

1. When attaching, coat outer and inner lips with HONDA ATF oil or antioil grease.
2. Insert circlip all the way.
3. Insert bottom pipe into fork pipe and attach cushion spring.
4. Install fork pipe to bottom case.

NOTE:

When installing, coat socket bolt with screw lock paint.

5. Apply oil to front cushion correctly.
Oil capacity: Automatic Transmission Fluid of **165cc** (5.6 ozs.).

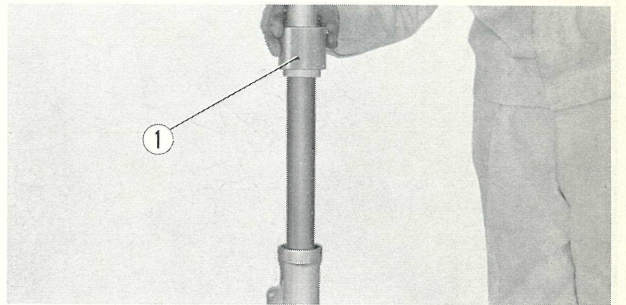


Fig. 2-42 ① Fork seal driver (07054-32901)

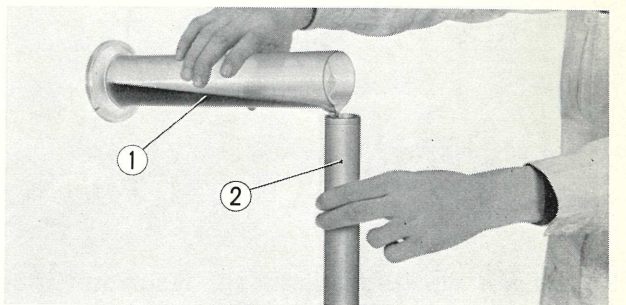


Fig. 2-43 ① ATF
② Front fork pipe

5. REAR CUSHION

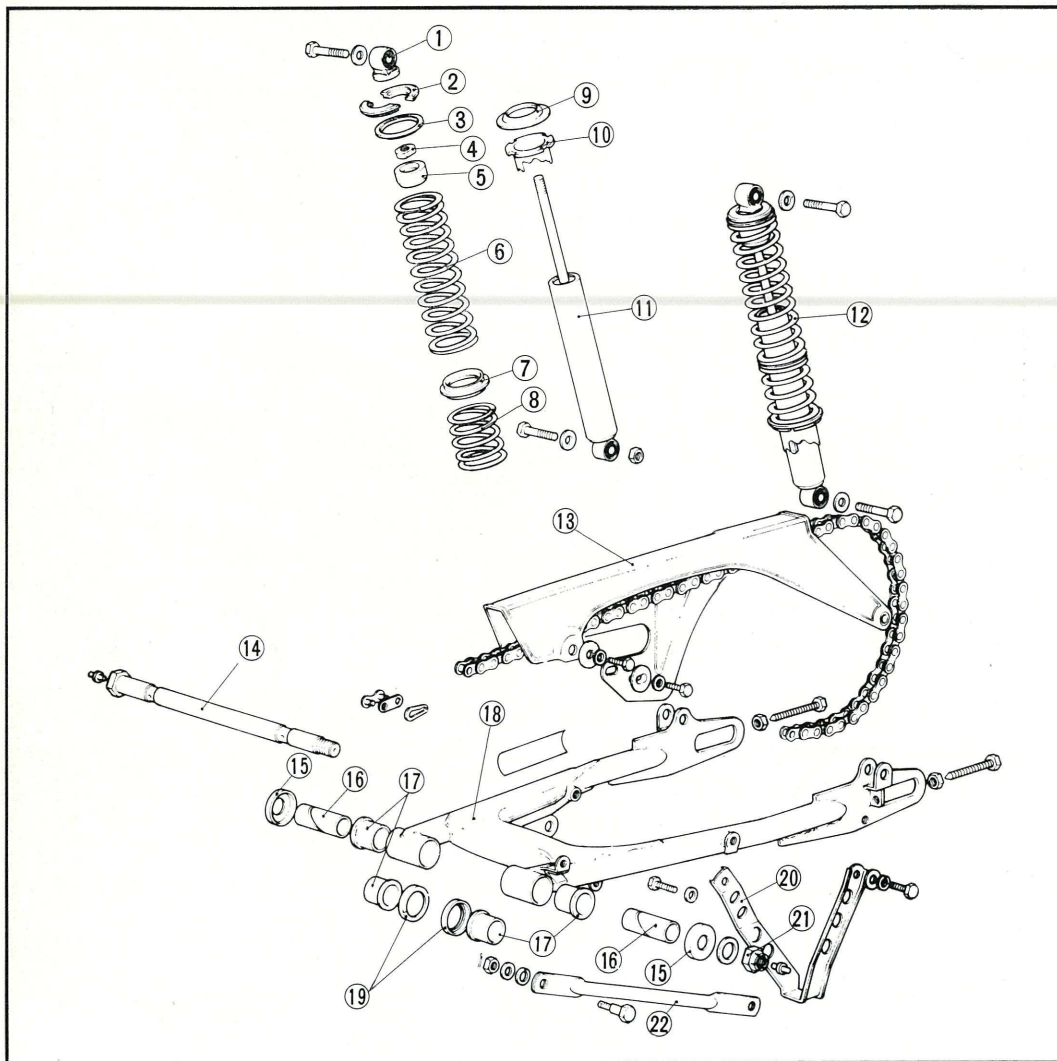


Fig. 2-44

- ① Upper joint
- ② Spring seat stopper
- ③ Rear cushion spring seat
- ④ Lock nut
- ⑤ Stopper rubber
- ⑥ Rear cushion spring B
- ⑦ Rear cushion spring joint
- ⑧ Rear cushion spring A
- ⑨ Under spring seat
- ⑩ Spring adjuster
- ⑪ Rear damper
- ⑫ Rear cushion assembly
- ⑬ Drive chain case
- ⑭ Rear fork pivot bolt
- ⑮ Dust seal rubber
- ⑯ Rear fork center collar
- ⑰ Fork pivot bush
- ⑱ Rear fork
- ⑲ Dust seal cap
- ⑳ Chain guide
- ㉑ Self-lock nut
- ㉒ Rear brake stopper arm

Since five-stage load adjustment rear suspension installs separate top and bottom springs with different pitches, cushion adjustment is allowable according to road conditions.

REAR CUSHION

Key to Disassembly

1. Compress rear cushion with the rear cushion service tool (tool No. 07035-32901), remove spring seat stopper and remove spring.

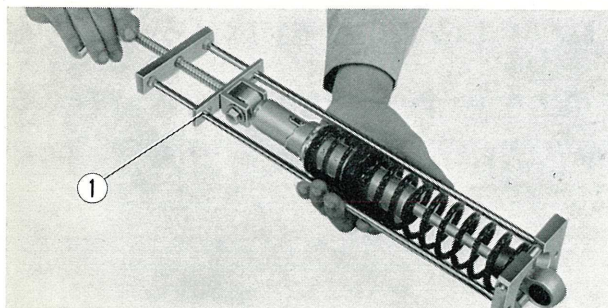


Fig. 2-45 Rear cushion service tool (07035-32901)

Inspection

1. Free length or load of cushion springs.
2. Deformation or oil leakage of rear cushion damper.
3. Breakage of rear cushion stopper rubber.

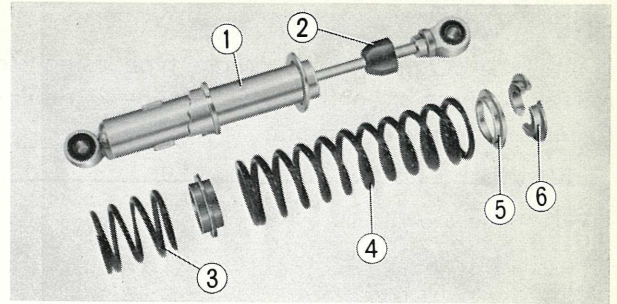


Fig. 2-46 ① Rear damper
② Stopper rubber
③ Rear cushion spring A
④ Rear cushion spring B
⑤ Rear cushion spring seat
⑥ Spring seat stopper

Key to Assembly

1. Compress rear cushion with the rear cushion service tool, raise upper joint upward and set rear cushion with stopper.
2. When attaching rear cushion ass'y usually attach it to the rear attaching hole out of the two located on top bracket.

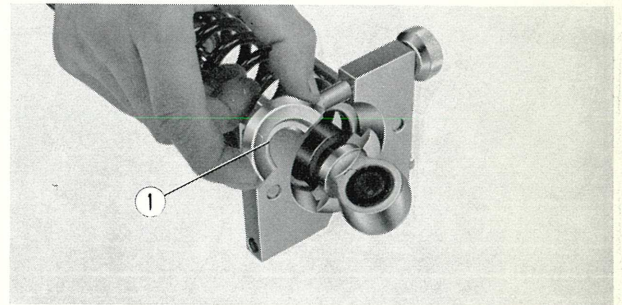


Fig. 2-47 ① Upper joint

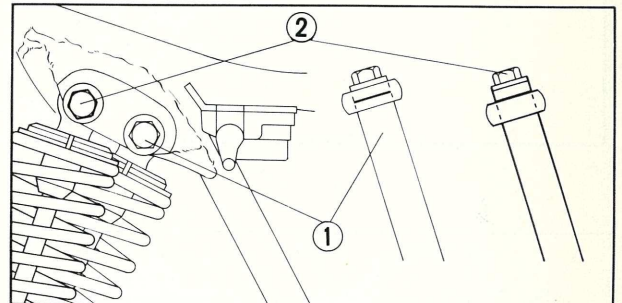


Fig. 2-48 ① Standard position ② High position

REAR FORK**Key to Disassembly**

1. Remove rear fork pivot nut, pull out rear fork pivot nut and remove rear fork.

Inspection

1. Rear fork center collar-to-bush clearance.
2. Bend of rear fork swing arm.

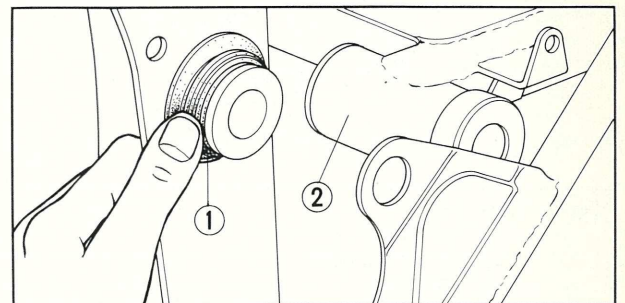


Fig. 2-49 ① Dust seal ② Rear fork

Key to Assembly

1. Attach oil seal lip of dust seal cap as shown, and lip can be easily attached without fold.
2. Coat rear fork center collar with grease and install it to pivot bush.

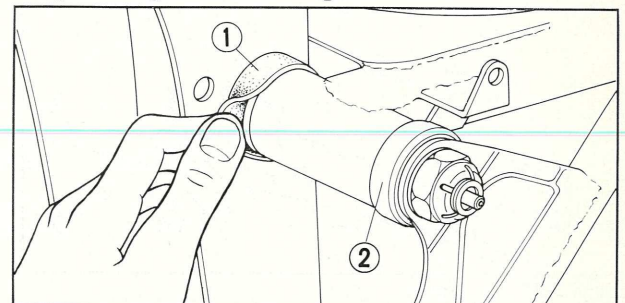


Fig. 2-50 ① Dust seal ② Rear fork

6. FRAME

Frame is of a semi-double cradle type using steel plates and steel pipes for main parts. It is light and resists torsional strength for improving durability with both features of a pressed frame and pipe frame, to meet off the road riding.

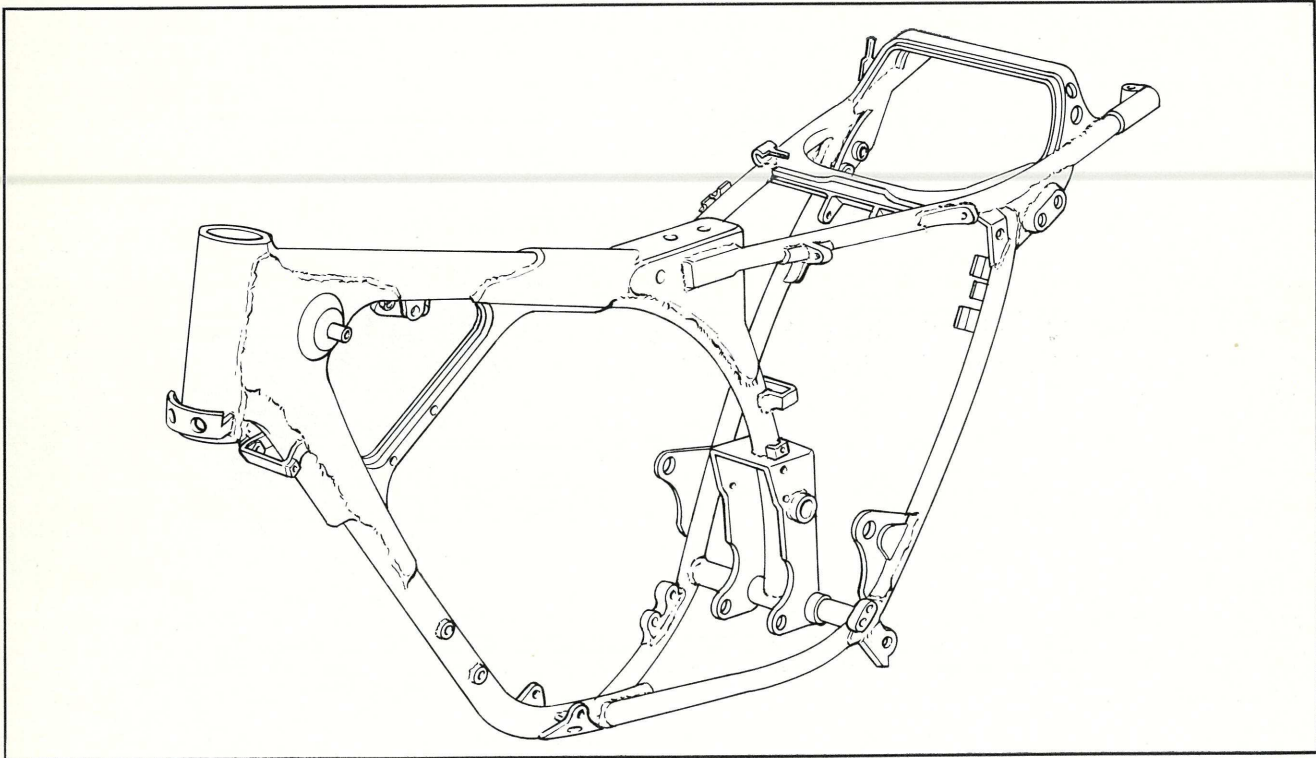


Fig. 2-51

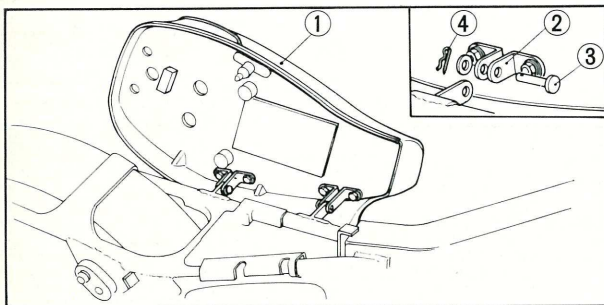


Fig. 2-52 ① Seat
② Seat hinge
③ Seat hinge pin
④ Lock pin

Key to Disassembly

1. Remove seat ass'y.
2. Separate wiring coupler and remove battery.
3. Remove rear fender.

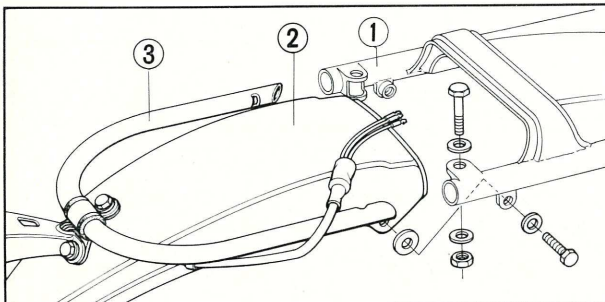


Fig. 2-54 ① Frame
② Rear fender
③ Number bracket stay

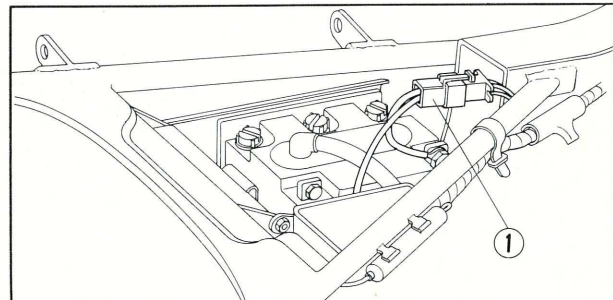


Fig. 2-53 ① Coupler

4. Remove tail and stop lamp, and rear fender guard.

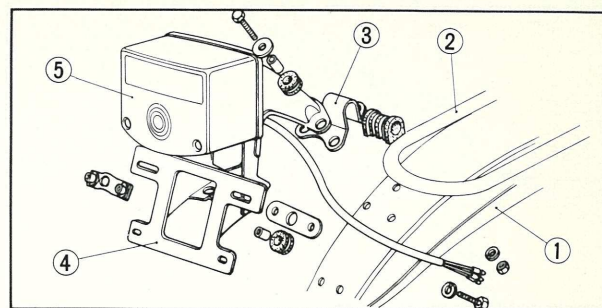


Fig. 2-55 ① Rear fender ② Number bracket stay ③ Stay ④ Number bracket ⑤ Tail light

5. Remove air cleaner and air cleaner inner case.

NOTES:

1. These can be removed as permitting carburettor attached.
2. Remove bolt of tightening both case and battery box.

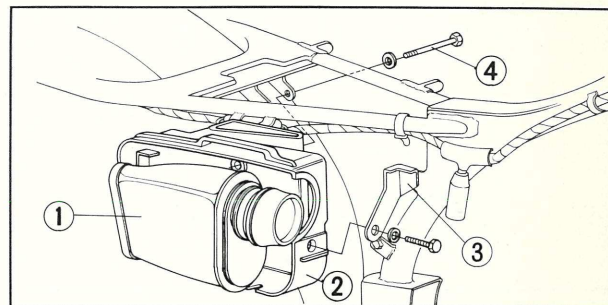


Fig. 2-56 ① Air cleaner element ② Air cleaner inner case ③ Air cleaner stay A ④ Common tightening bolt

6. Battery box and battery protector can be removed as a unit.

NOTE:

Remove exhaust muffler in advance.

7. Remove side stand. Remove spring with a screwdriver and remove side stand pivot screw.

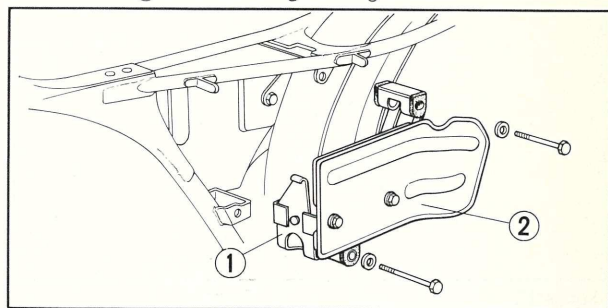


Fig. 2-57 ① Battery box ② Battery protector

8. Remove top and bottom ball races from steering head with the ball race remover (tool No. 07048-32905).

Inspection

1. Overall bend, damage, deformation or crack of frame.
2. Angle and deformation of head pipe.
3. Breakage of exhaust pipe gasket and score or scratched marks or breakage of exhaust muffler.
4. Contact condition, damage or breakage of wire harnesses, electrical connectors and couplers.
5. Clogging of fuel filter cap hole.
6. Wear or damage of drain cock packing and strainer cap packing.
7. Ageing and breakage of fuel tube.

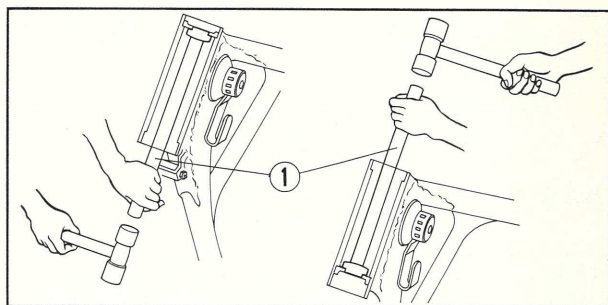


Fig. 2-58 ① Ball race remover (07048-32905)

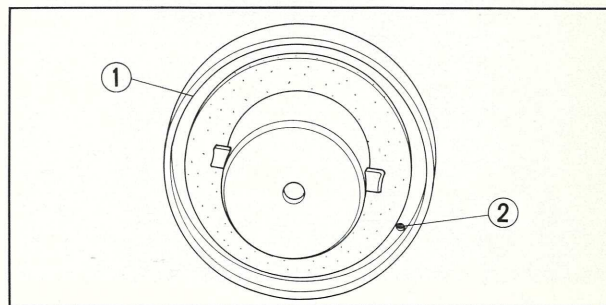


Fig. 2-59 ① Fuel filler cap ② Cap hole

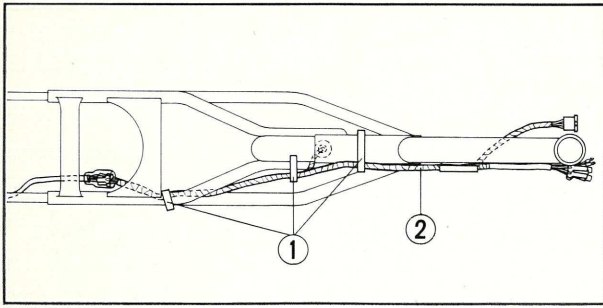


Fig. 2-60 ① Wire harness band
② Wire harness

Key to Assembly

1. Place cord at the front for regulator ass'y.
2. Place cord at the rear for ignition coil.
3. Electrical wires must not be bitten due to coming in contact with frame or other parts.
4. Attach wire harness as in Fig. 2-60 and fix it with a wire harness band.

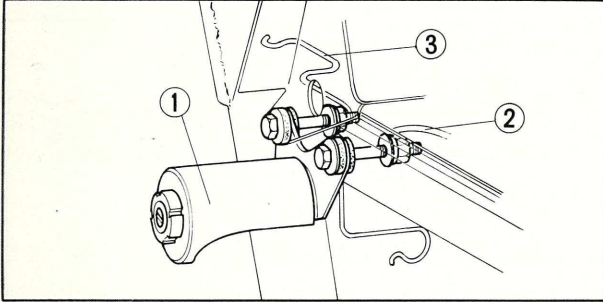


Fig. 2-61 ① Main switch bracket
② Ground (earth) cord
③ Throttle cable clip

5. Attach main switch bracket as in Fig. 2-61.

NOTE:

Don't forget grounding.

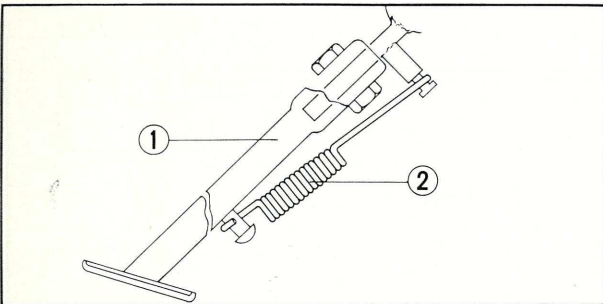


Fig. 2-62 ① Side stand ② Spring

6. Hook side stand spring as in Fig. 2-62.

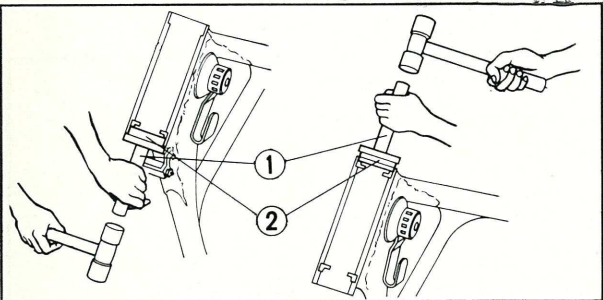


Fig. 2-63 ① Ball race driver handle (07048-61101)
② Ball race driver attachment (07048-32901)

7. Drive in ball race with the ball race driver handle (too No. 07048-61101) the ball race driver attachment (tool No. 07048-32901).

NOTE:

Evenly drive in.

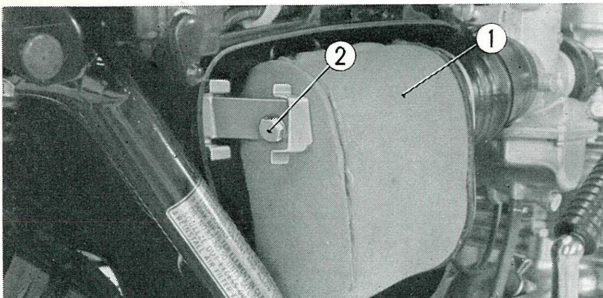


Fig. 2-64 ① Air cleaner element
② 6mm bolt

CLEAN AIR CLEANER ELEMENT

1. Remove air cleaner element. Wash in cleaning solvent and dry it thoroughly.
2. Put it in clean gear oil (No. 80~No. 90), and tightly squeeze it.

Oil capacity: About 40 gramme (1.4 ozs)

3. ELECTRICAL SYSTEM

1. PRECAUTIONS FOR SERVICE WORK

- 1) When electrical unit is with any trouble, consider probable cause according to wiring diagram listed at the end, and then check them.
- 2) Inspect circuits for open or short condition. Check wire leads for peeling or other defects.
- 3) Check to see if fuse is broken ELECTRICALLY or MECHANICALLY. When it is ELECTRICALLY broken, be sure to make the cause clear and use a proper-rating fuse when replacing it.
- 4) Check battery terminal bolts for looseness or missing. Check for dirty terminals and cord end. Also check for electrolyte level and the specific gravity of battery electrolyte.
- 5) It will be necessary to charge battery at shorter intervals when riding at night or during storage. Be sure to remove the negative terminal first when removing battery, and install the positive terminal first when installing battery.
- 6) Battery breather tube must be installed in accordance with the indications on the label.
- 7) Inspect electrical components or parts after seeing that the wiring and power source are in good condition.

2. GENERAL DESCRIPTION

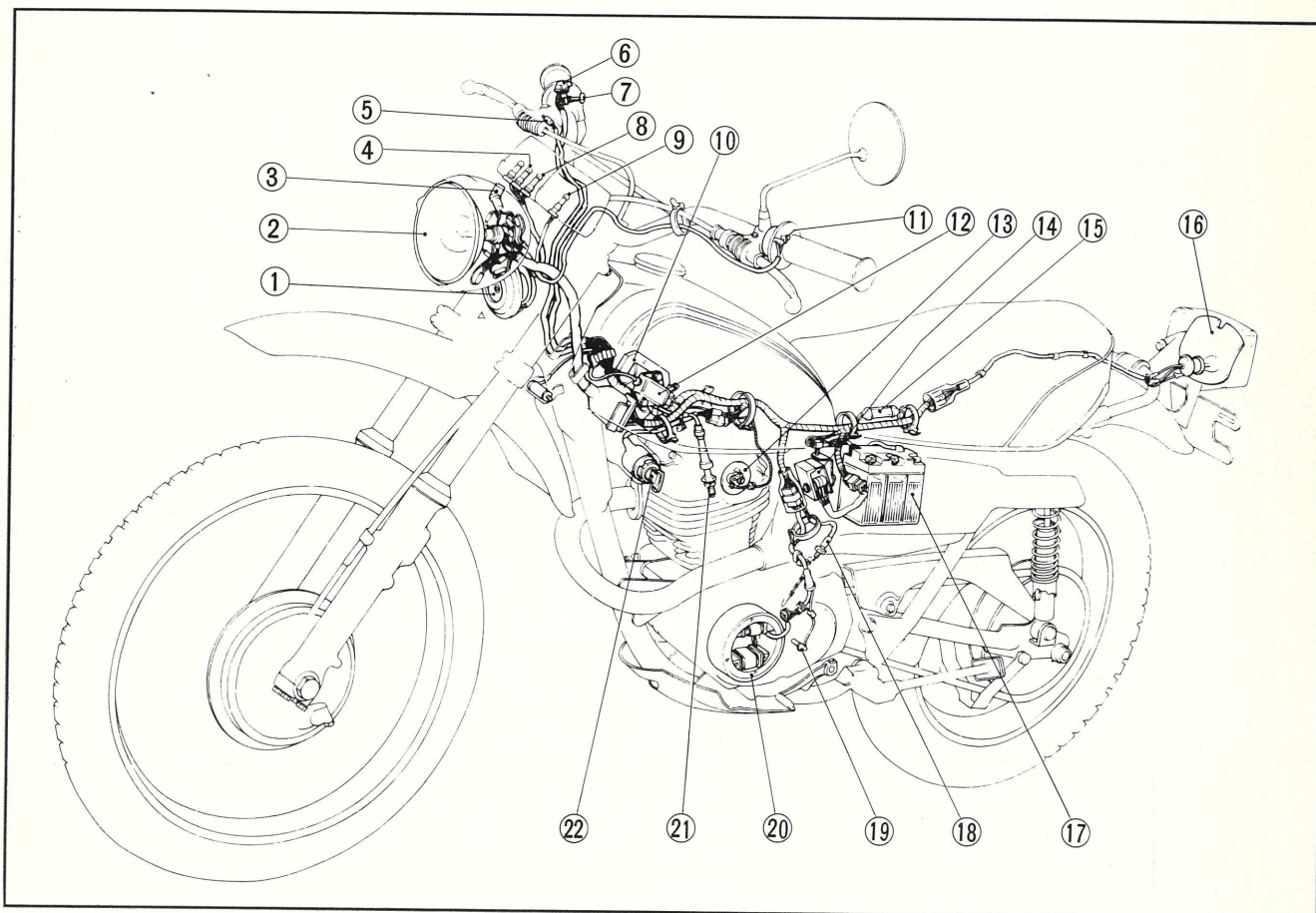


Fig. 3-1

- | | | | |
|---------------------------|--------------------------|----------------------------|--------------------------|
| ① Horn | ⑦ Lamp switch | ⑬ Contact breaker assembly | ⑱ Rear brake stop switch |
| ② Head lamp | ⑧ Neutral lamp | ⑭ Silicon rectifier | ⑲ Neutral switch |
| ③ High beam pilot lamp | ⑨ Speedometer pilot lamp | ⑮ Fuse holder | ⑳ AC generator |
| ④ Tachometer pilot lamp | ⑩ Ignition coil | ⑯ Tail/stop lamp | ㉑ Spark plug |
| ⑤ Front brake stop switch | ⑪ Horn button | ⑰ Battery | ㉒ Main switch |
| ⑥ Emergency switch | ⑫ Current limiter | | |

3. IGNITION SYSTEM

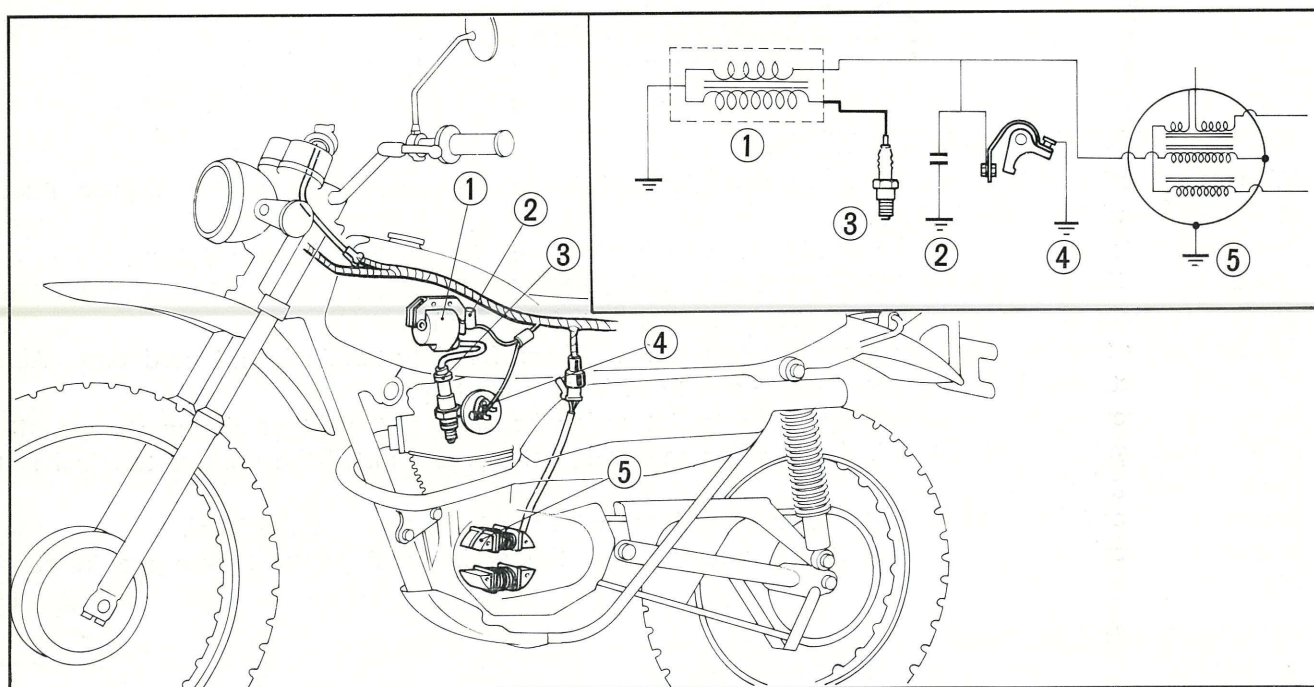


Fig. 3-2 ① Ignition coil ② Condensor ③ Spark plug ④ Contact breaker ⑤ AC generator

The ignition system consists essentially of an a-c generator, an ignition coil, a contact breaker, a spark advancer and a spark plug.

Referring to a block diagram given in the above illustration, the a-c generator is built in the flywheel. The ignition coil is a step up transformer which has its primary circuit broken at regular intervals by a set of contacts operated by a cam mounted on the camshaft. Opening and closing this circuit causes the field to expand and contract, inducing a high voltage in the secondary winding. This high voltage is fed to the spark plug and causes it to flash over and ignite the fuel-air mixture. Ignition timing can be varied for adjustment by varying the angular phase of the cam.

The spark advancer is, in short, a centrifugal type governor, and is provided to automatically change the cam phase in relation to the camshaft (the valve timing) to make the plug give "well timed spark" at all speeds.

Specifications

Ignition coil 3 point spark gap opening	7 mm (0.27 in) min. at 500 rpm
Spark plug Type Plug gap	D8ESL (NGK) 0.6~0.7 mm (0.023~0.027 in)
Contact breaker Point gap Spring force	0.35 mm (0.014 in) $\pm$ 0.05 mm (0.0002 in) 800 g (1.76 lb) $\pm$ 100 g (0.22 lb)
Capacitor Capacity Insulation resistance	0.25 μ F 10 M Ω (1,000 MV)
Spark advancer Advance angle 1 deg. spark advance rpm Full advance	8.5 $\pm$ 1.5° 1,100 $\pm$ 100 rpm (at camshaft) 2,000 $\pm$ 100 rpm

1) Ignition coil

Ignition coil consists of a primary coil with 160 turns of copper wire wound around an iron core of laminated silicon steel sheets and of a secondary coil with 11,000 turns of copper wire wound around a bobbin which covers a primary coil.

The coil is designed to be improved in its performance by forming a closed magnetic circuit connecting the both ends of a center core with a shunt core.

Inspection

Ignition coil continuity test.

Primary coil

Check for continuity between an attaching stay and a primary coil (Black/white lead) by means of a resistance range of a tester.

Secondary coil

Check for continuity between stay and a high tension cord by using a tester. If there is no continuity, the coil must be replaced.

Condensor

Check condensor by using a tester. If the capacity or insulation resistance is less than specified value, ignition coil must be replaced.

Ignition coil performance test

Continuity is not the only criterion for getting a rough idea of whether or not the ignition coil is in good condition. This is why the coil must be checked by using a tester.

To test, proceed as follows :

Connect the power cord of service tester to a 6-V battery, the primary cord and secondary cord to a coil stay, and others as instructed by service tester. Adjusting the three-point spark test knob, measure the spark gap when sparking steady.

The coil is satisfactory when its performance of the spark gap is greater than 7 mm (0.27 in.).

NOTE :

Measure the spark gap, making a spark condition as shown in Fig. 3-7 (A).

If the spark appears as B, connect the cord reverse resulting in A condition

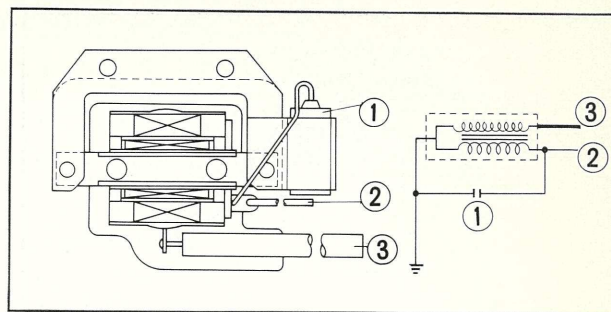


Fig. 3-3 ① Condensor ② Primary cord ③ Secondary cord

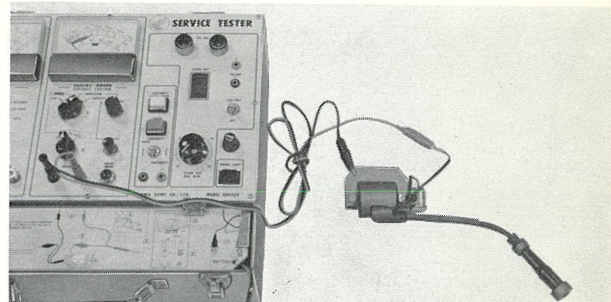


Fig. 3-4 Checking for continuity of primary coil

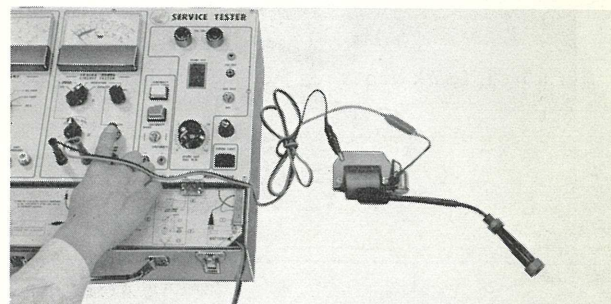


Fig. 3-5 Measuring the condensor

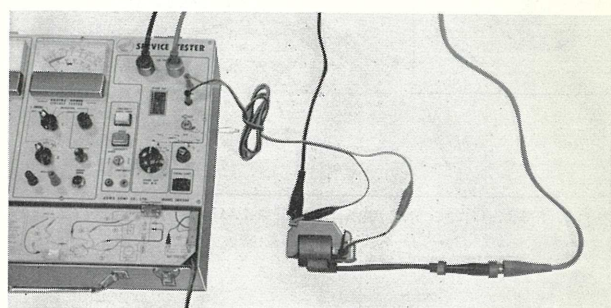


Fig. 3-6 Testing the ignition coil performance

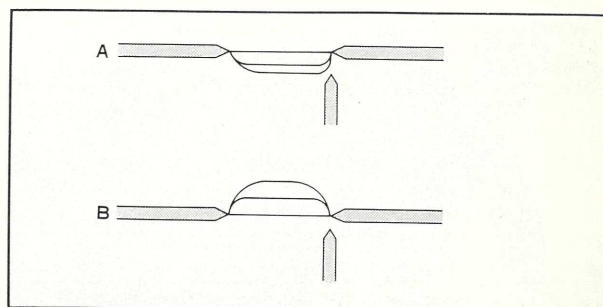


Fig. 3-7 Three-point spark test

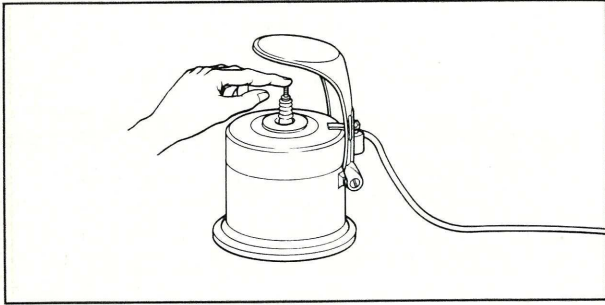


Fig. 3-8 Spark plug cleaning

2) Spark plug

Removal

- (1) Remove any dirt from around the spark plug by using compressed air.
- (2) Remove the spark plug with a plug wrench.

Inspection

Inspect the spark plug for worn electrodes, excessive gap, fouled condition and damaged porcelain insulator.

- (1) Clean dirty spark plug with a plug cleaner or wire brush.
- (2) Measure the electrode gap with a feeler gauge and, if necessary, adjust to the specified gap.
Standard gap : **0.6–0.7 mm (0.023–0.028 in.)**
- (3) Replace the spark plug if the porcelain insulator is damaged, or the gasket if it is damaged or distorted.

Standard spark plug : D8ES-L (NGK)

Reinstallation

- (1) Install the spark plug in the reverse order of removal.

Torque : **1.5–2.0 kgm (11–14 lb-ft)**

NOTE:

1. Exercise care not to drop the plug gasket.
2. Loose plug will not properly dissipate the heat and may result in engine malfunction.

3) Spark advancer

Inspection

- (1) Cleaning of dust and other foreign matter from friction surfaces, and application of grease (having heat and weather resisting properties). See if spark advancer is operated smoothly.
- (2) Visual inspection of wear on advancer pin.
If the wear is excessive, replace advancer pin.

Key to Assembly

- (1) Installation of advancer.
Install advancer to camshaft by aligning camshaft pin with groove in advancer.
- (2) Installation of contact breaker.
Install contact breaker by following the reverse of removing procedure.

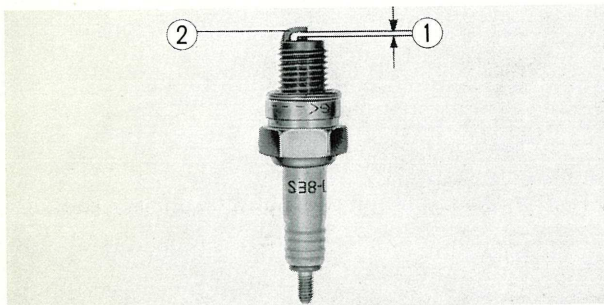


Fig. 3-9 ① Spark gap ② Side electrode

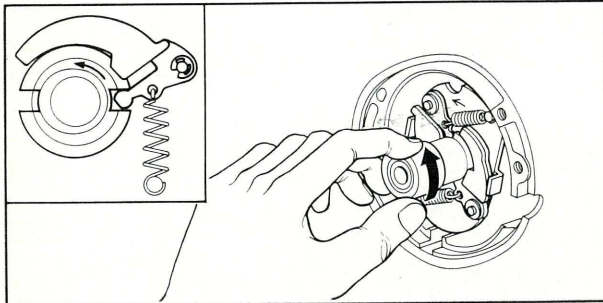


Fig. 3-10 Checking the spark advancer

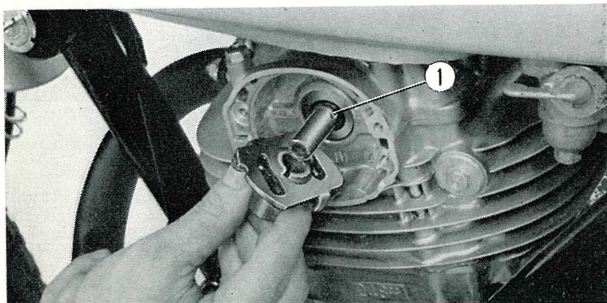


Fig. 3-11 Camshaft pin

4. CHARGING SYSTEM

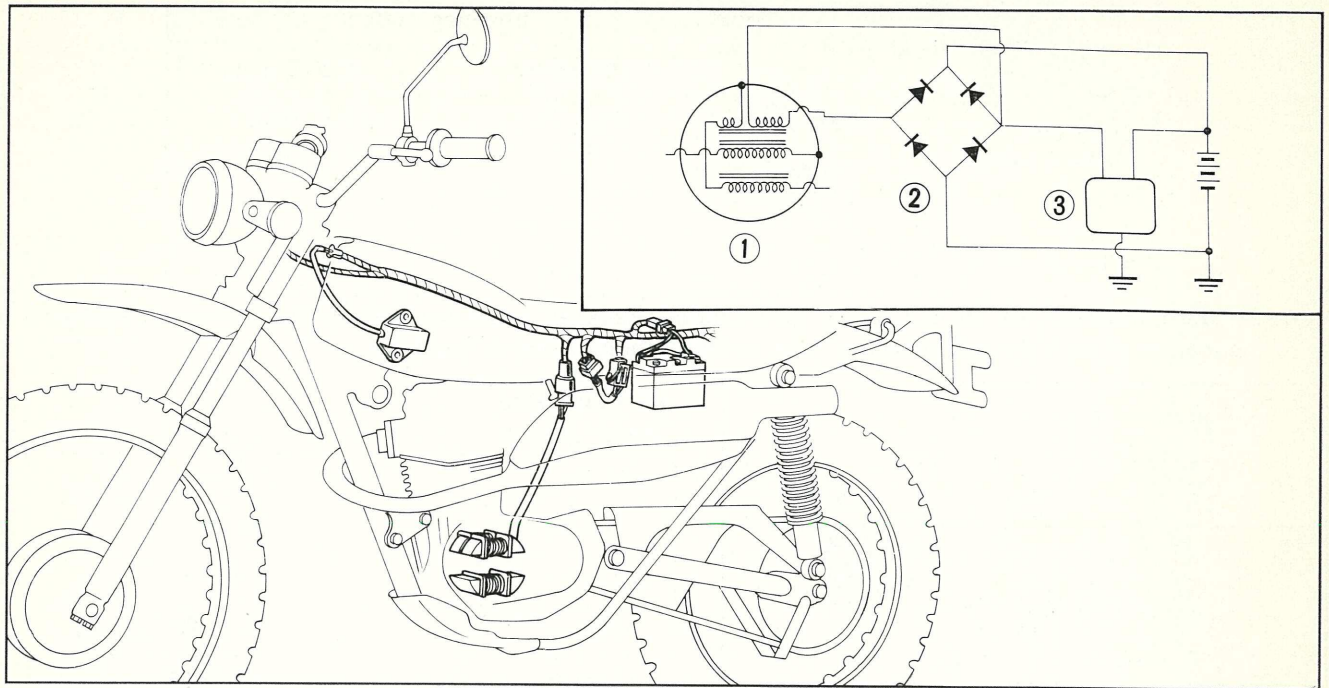


Fig. 3-12 ① AC generator ② Silicon rectifier ③ Voltage regulator

The charging system for XL 250 consists essentially of a flywheel type AC generator (ACG), a silicon rectifier and a current limiter. Alternating current from the flywheel type rotor installed to crankshaft is converted into direct current (DC) by bridge-type silicon rectifier and then is fed to the battery. Upon battery voltage reaches $7.5 \pm 0.5V$, the regulator begins to actuate in order to bypass a surplus current, reducing the amount of charging current, to prevent the battery from being overcharged. At night, head lamp may be operated with the air of AC generator.

Charging test

- 1) Check charging current and voltage by means of voltmeter and ammeter.
- 2) Use a full-charged 6N6-3B battery.
If the specific gravity is lower than 1.26 (at $20^{\circ}C$ or $68^{\circ}F$), recharge battery so that the specific gravity is up to 1.27 ± 0.01 (at $20^{\circ}C$ or $68^{\circ}F$).
- 3) Disconnect the battery cable from the $\oplus$ terminal of the battery, and connect it to the $\oplus$ side of ammeter. Then, connect the $\ominus$ side of the ammeter to the $\oplus$ terminal of battery. Next, connect the $\ominus$ side of voltmeter to the $\oplus$ terminal of battery and consequently $\oplus$ side to the $\ominus$ terminal as shown in Fig. 3-13.
- 4) Check a reading of ammeter and voltmeter during riding at night and in the day time in accordance with the specifications given below:

NOTE:

When checking, disconnect regulator cable.

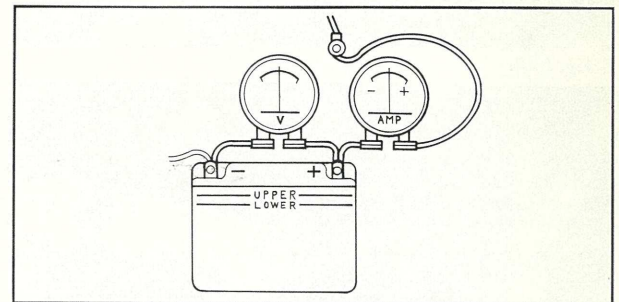


Fig. 3-13 Checking charging current and voltage

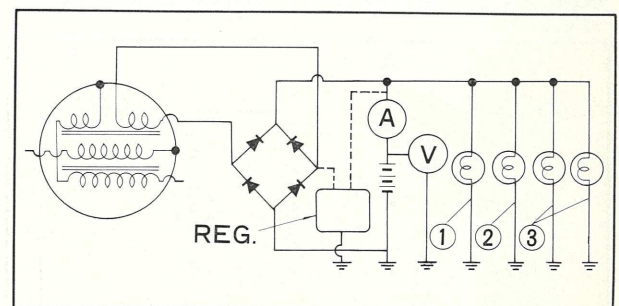


Fig. 3-14 ①②③ Loads

Charging characteristics (without regulator)

Start of charging, rpm		Charging current	
		at 5000 rpm	at 8000 rpm
Day time Battery voltage	1,000 max.	1.5 A, min.	4 A, max.
	6.3 V	8.0 V	8.9 V
Night Battery voltage	2,500 max.	1.2 A, min.	1.3 A, max.
	6.3 V	7.5 V	8.3 V

NOTE: If the meter readings are out of the specifications, check AC generator. Where the battery is subjected to discharge even if the AC generator is in normal condition, check regulator.

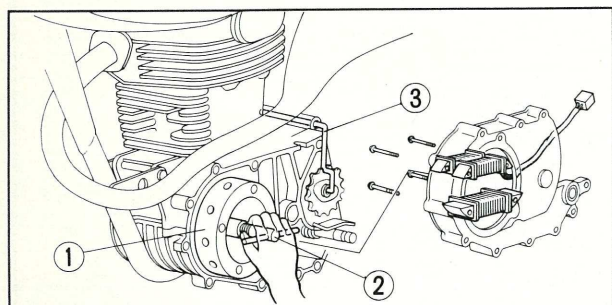


Fig. 3-15 ① Generator rotor
② Generator rotor puller (07011-32901)
③ Drive sprocket holder (07022-32901)

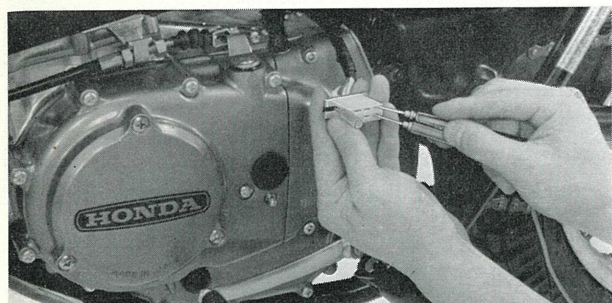


Fig. 3-16

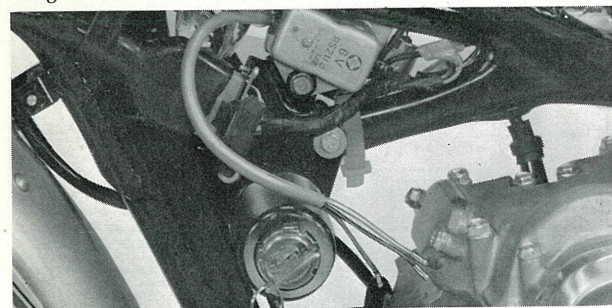


Fig. 3-17

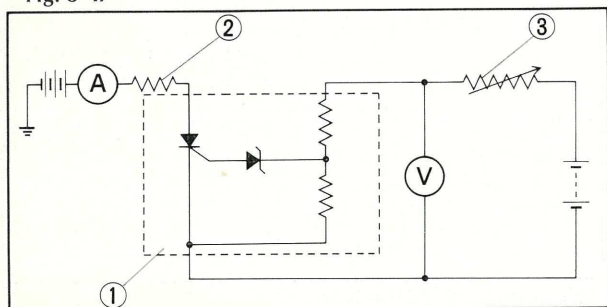


Fig. 3-18 ① Regulator ② Resistor ③ Slide resistor

AC generator

Specifications

Maker	DENSO
Output	80 W
Battery voltage	6 V
Polarity	Negative ground
Charging speed	1000~9000 rpm
Weight	2.8 kg (6.2 lb)

1) Key to disassembly

- (1) Removal of LH side cover.
- (2) Removal of stator coil.
- (3) Removal of generator rotor.

NOTE:

Use generator rotor puller (tool No. 07011-32901) and drive sprocket holder (tool No. 07022-32901)

2) Inspection

- (1) Inspection of resistance and continuity of stator

Inspection point	Resistance	Temperature
Black/white lead and stator	2.29 Ω	at 20°C or 68°F
White/yellow lead and stator	0.36 Ω	
Pink lead and yellow lead	0.57 Ω	

Regulator

Type and maker	RS 2113 KOKUSAN ELECTRIC CO., LTD.
Voltage	7.5 V + 0.5 V

1) Inspection

Connect circuit as shown in Fig. 18 and increase voltage by controlling a slide resistor. If the ammeter pointer swings when voltage is between 7-8 V, it meets requirements. If the pointer swings at low voltage, it is an indication that SCR is defective. When the pointer does not swing even if voltage is increased normally, there will be open circuit. Replace regulator.

Silicon rectifier

Specifications

Rated rectified current	14 V, 5 A
Inverse directional leakage current	0.5 mA (at 50 Hz, 200 V)

1) Inspection

- (1) Inspection of normal and reverse directional rectifying function of four commutators.
- (2) Testing of normal and reverse continuity between each lead listed below.

NOTE:

Use $k\Omega$ range of resistance meter.

Continuity or discontinuity in both directions means that rectifier is defective.

Inspection point	1. Red/white lead and pink lead
	2. Pink lead and green lead
	3. Green lead and yellow lead
	4. Yellow lead and red/white lead

NOTES:

1. Do not use a megger for the test since the high voltage will damage the silicon diodes.
2. Observe the polarity of the battery. Connecting the battery terminals in reverse will shorten battery life as well as causing a large amount of current to flow through the electrical system, causing damage to the silicon rectifier, and also to the wire harness.
3. Do not operate generator at a high speed with the "P" terminal (red/white cord from the magnetic switch) of the silicon rectifier disconnected. The high voltage generated may damage the silicon rectifier.
4. When charging the battery mounted on the motorcycle from an external charging device with high charge rate such as a "quick charge", the wiring to the silicon rectifier should be disconnected at the coupler to prevent damage.

NOTE:

Be sure to reinstall securely so as to insert the pin of stay to the hole in the frame.

Battery

Type	6N6-3B
Voltage	6 V
Capacity	6 AH (10)

1) Checkup of battery charged state

The specific gravity of battery electrolyte tells battery charged state. When the specific gravity is below 1.20 (20°C or 68°F), battery should be recharged. When reading the hydrometer, it should be held vertical with the electrolyte liquid level, held at the eye level and the valve on the floating scale read at point where the liquid separates from the stem of the float as shown in Fig. 3-21.

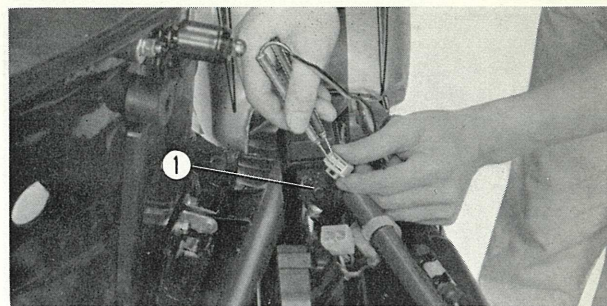


Fig. 3-19 ① Silicon rectifier

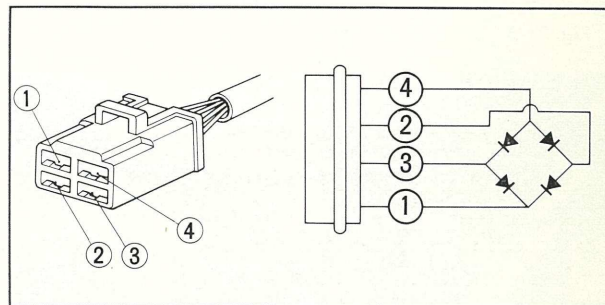


Fig. 3-20 ① Yellow
② Red/white
③ Green
④ Pink

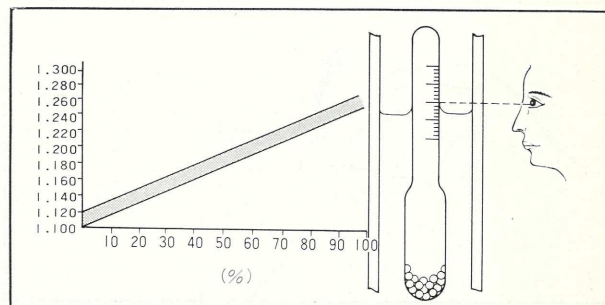


Fig. 3-21 Specific gravity of battery electrolyte

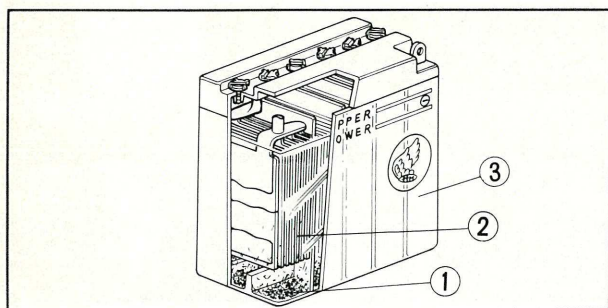


Fig. 3-22 ① Sediment
② Plates
③ Battery

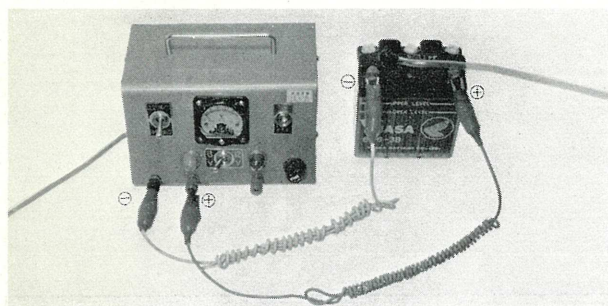


Fig. 3-23 Battery charging

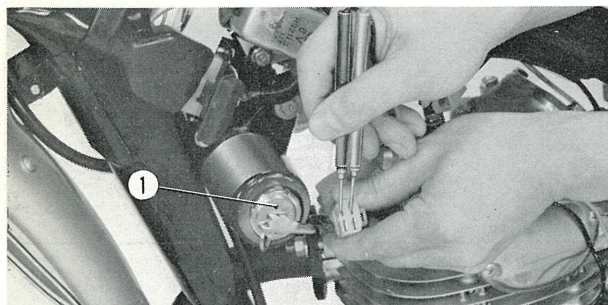


Fig. 3-24 ① Main switch

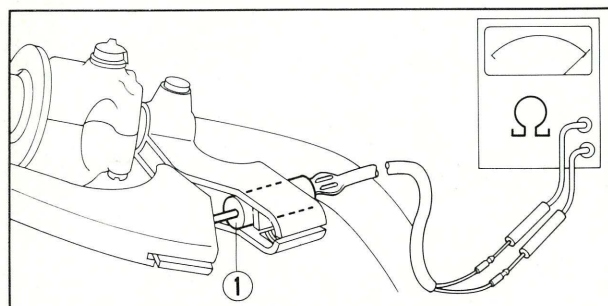


Fig. 3-25 ① Front stop switch

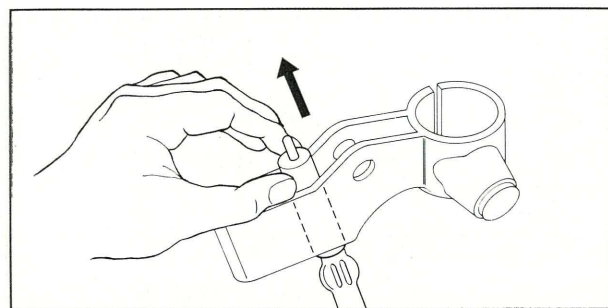


Fig. 3-26 Replacing front stop switch

2) Inspection and replenishment

- (1) Electrolyte in each cell of the battery should be inspected every 15 days or one month. Add distilled water to bring the level up to the upper mark whenever the electrolyte level is below the level mark.
- (2) Whenever there is rapid lowering of the electrolyte level, the charging system should be inspected.
- (3) Periodically measure the specific gravity. After adding distilled water, allow the battery to be charged by operating the engine or riding the motorcycle.
- (4) Most battery troubles are due to corrosion of connectors and terminals causing poor contact, lack of the battery paste, and sulfation (battery which is left in a discharged condition for a long period of time will have lead sulfate formed on the cell plates and recharging will not restore it to its normal condition), therefore, the inspection should be performed periodically.

NOTE:

When sediment are formed at the bottom as shown in the Fig. 3-22, battery should be replaced.

3) Notice on battery charging

- (1) Refrain from charging the battery at a fast rate (quick charge) as it shortens battery life. When rapid charging is necessary, limit the charging current to 1.0 A.
- (2) Hydrogen gas is generated during the charging process, therefore, keep fire away from the battery.
- (3) After battery charging is completed, wash battery with water to remove spilled electrolyte, and apply grease to the terminals.

Inspection for other electrical equipments

1) Main switch

Disconnect coupler and check to see that the continuity in the chart below are satisfied with the switch in either ON or OFF position. Any condition other than listed in the table indicates defective switch.

Cord color		BAT Red	TL Black	IG Black/ white	E Green
Key position	ON	○—○	○—○		
	OFF			○—○	○—○

2) Front stop switch

After adjusting front brake, with brake lever pulled 10-20mm (0.4-0.8 in.) at the extreme right end, check for continuity between white lead and green/yellow lead. When replacing stop switch, remove brake lever and

push the cord-side of switch to allow it to be held by fingers, and then pull out.

When assembling, install cord to switch and assemble it by following the reverse of disassembly procedure. Be sure to align the protrusion of switch with the groove in lever holder.

3) Rear stop switch

Making sure that the stop switch spring is fully pulled to its stroke end, check for the continuity between black lead and green/yellow lead for normal condition. Adjust a lighting timing of rear stop lamp by depressing brake pedal. Turn the adjusting nut clockwise to advance timing, and vice versa.

4) Horn

Disconnect horn leads, and connect black lead to the green $\oplus$ terminal and light green lead to the $\ominus$ terminal of a fully charged 6 V battery respectively. If it is in normal condition, check horn button switch.

5) Horn button switch

Contact tester lead probes with light green cord terminal within head lamp case and with handle bar for continuity test. Tester should register continuity only when button is pressed. If discontinuity or intermittent continuity exists, clean or grind switch point by using an oil stone or the like. If lead is broken or open, replace it.

6) Lighting switch

Inspect for broken wire and defective contact between the respective switch cords. Continuity between the different cords should exist in accordance with the switching position table shown below. If continuity exists, switch is defective.

Cord color		LB White	HB Blue	DY White/yellow	TL Brown/white	HO Black
ON	L	○		○		
	(N)	○	○	○	○	○
	H		○	○		
OFF						

7) Emergency switch

Disconnect emergency switch leads within head lamp case, and check for continuity between the respective switch leads in accordance with the following table.

Cord color	Black/white	Green
ON	○	○
OFF	○	○

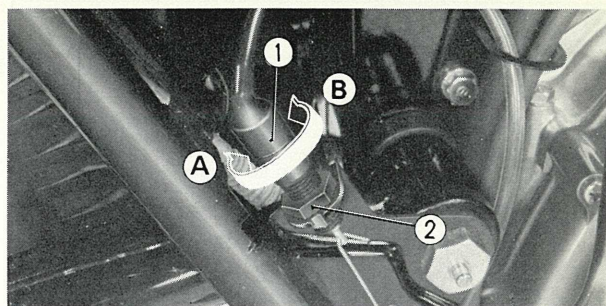


Fig. 3-27 ① Rear stop switch ② Adjusting nut

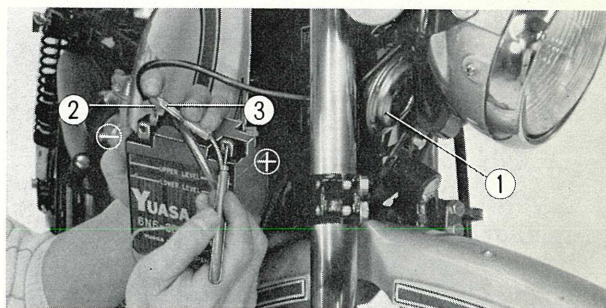


Fig. 3-28 ① Horn ② Black ③ Light green

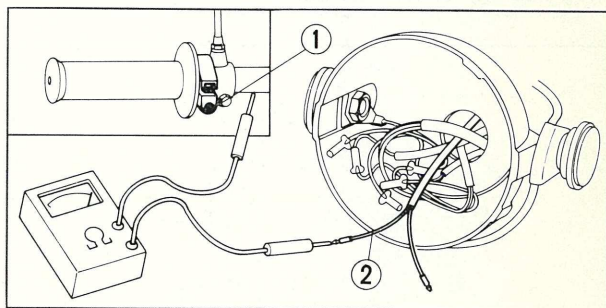


Fig. 3-29 ① Horn button ② Light green

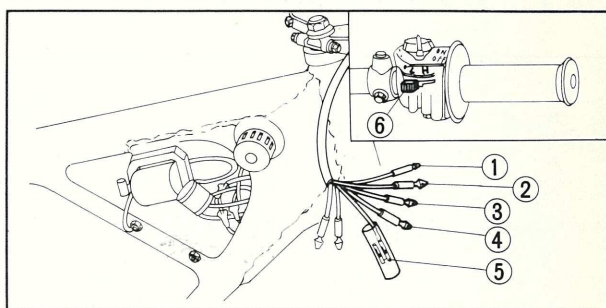


Fig. 3-30 ① White ② Blue ③ White/yellow ④ Brown/white ⑤ Black ⑥ Lighting switch

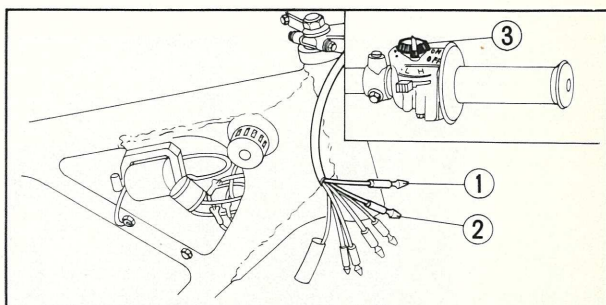


Fig. 3-31 ① Black/white ② Green ③ Emergency switch

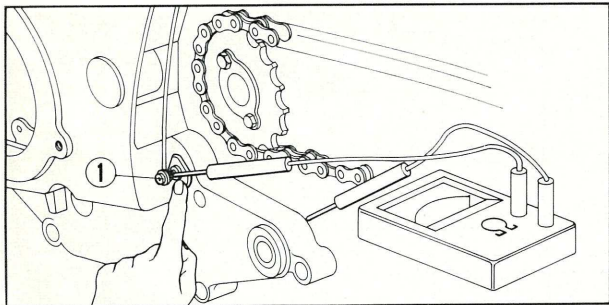


Fig. 3-32 ① Neutral switch

8) Neutral switch

Check for continuity between neutral cord and engine with transmission in neutral position. The continuity should exist only when transmission is in neutral position.

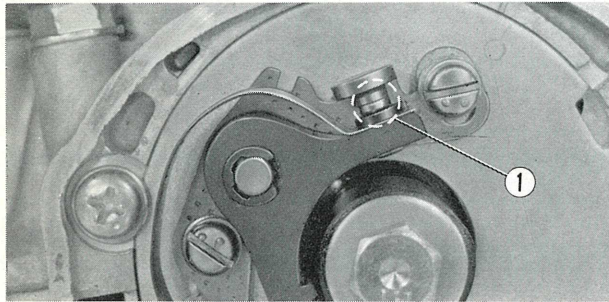


Fig. 3-33 ① Contact points

Adjustment of braker point gap and ignition timing

1. Adjustment of contact breaker point gap

- 1) Rotate crankshaft so that the cam top faces the slipper of contact braker, and then measure the point gap with a feeler gauge. Standard point gap : 0.3–0.4 mm (0.012–0.016 in.).

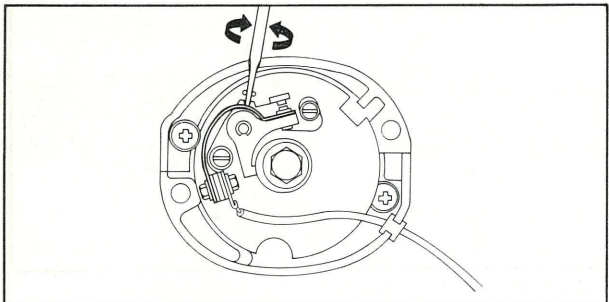


Fig. 3-34 Adjustment of point gap

- 2) When setting the gap, loosen screws and adjust braker assembly with screw driver as shown in Fig. 3-34.

NOTE:

Clean point surface with point file or oil stone if it is dirty or rough. After cleaning, be sure to wipe off with dry cloth.

2. Adjustment of ignition timing

- 1) Adjustment with lamp
 - a. Connect 6 V battery and 6 V–3 W lamp as shown in Fig. 3-34.
 - b. Turn main switch on.
 - c. See if lamp comes on when F mark of fly-wheel aligns with the timing mark with crankshaft rotating slowly.
 - d. When adjusting the timing, loosen screws and adjust base plate so that lamp comes on when F mark aligns with timing mark, and then tighten screws.

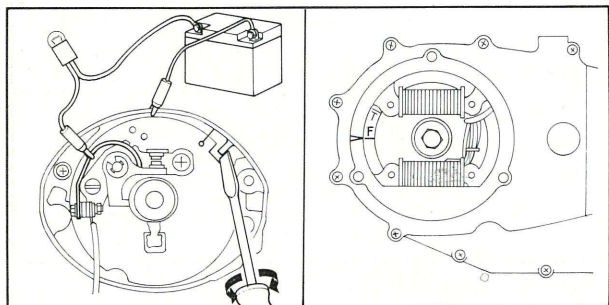


Fig. 3-35 Adjustment of ignition timing

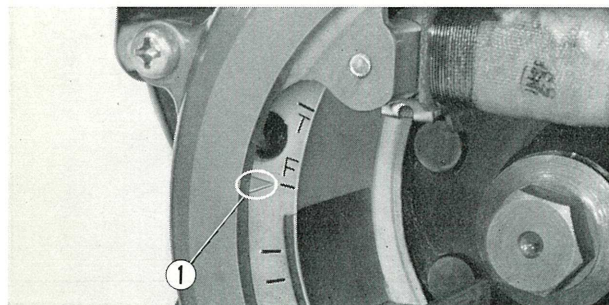


Fig. 3-36 ① Index mark

- 2) Adjustment with timing light
 - a. Insert the plug or timing light cord into the jack of timing light.
 - b. Remove spark plug cap, and connect timing attachment between spark plug and cap.
 - c. Connect high tension voltage cord of timing light to timing attachment. Set control knob on the meter to "TIMING", and then start the engine.
 - d. See if "F" mark aligns with timing mark by directing the beam of timing light to the timing mark. Timing mark should be positioned between the two matching lines adjacent to "F" mark, with the engine operating at **2500 rpm**, for normal ignition timing when advanced angle is maximum.

NOTE:

The most accurate method is to use a stroboscopic type timing light

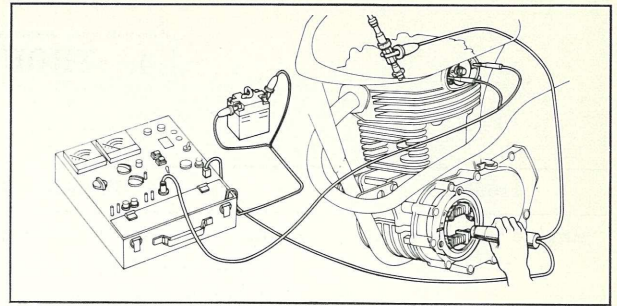


Fig. 3-37 Adjustment with timing light

4. TROUBLE SHOOTING

Trouble	Probable cause	Remedy
Engine will not start.	1. Insufficient compression pressure	Adjust
	1) Incorrect tappet adjustment	Replace or repair
	2) Worn valve guide or improper valve seating	Adjust
	3) Incorrect valve timing	Replace
	4) Worn piston rings	Replace
	5) Worn cylinder	Replace
	2. No sparking at spark plug and contact point	Clean
	1) Dirty spark plug	Clean
	2) Wet spark plug	Clean
	3) Dirty contact breaker point	Adjust
	4) Improper point gap	Adjust
	5) Incorrect ignition timing	Replace
	6) Defective ignition coil	Replace
	7) Disconnection or short circuit of ignition cord	Replace
	8) Short circuit in capacitor	Replace
	3. Fuel does not flow to carburetor	Clean
	1) Clogged vent hole in tank cap	Clean
	2) Clogged fuel cock	Replace
	3) Defective carburetor float valve	Clean
	4) Clogged fuel feed pipe	Clean
Engine stalls soon.	1. Dirty spark plug	Clean
	2. Dirty contact breaker point	Clean
	3. Incorrect ignition timing	Adjust
	4. Clogged fuel feed pipe	Clean
	5. Clogged carburetor jet	Clean
	6. Incorrect tappet adjustment	Adjust
Noisy engine	1. Noisy tappet	Adjust
	1) Large tappet clearance	Replace
	2) Loss of valve spring tension	Replace
	2. Piston knocking	Clean
	1) Worn piston ring or cylinder	Replace
	2) Carbon accumulated in combustion chamber	Replace
	3) Worn piston pin or connecting rod small end	Replace, or adjust cam chain tensioner
	3. Cam chain	Replace
	1) Stretched cam chain	Replace
	2) Worn cam sprocket or timing sprocket	Replace
	4. Noisy clutch	Replace
	1) Loose clutch center spline	Replace
	2) Excessive clearance between clutch friction disc and teeth of clutch outer housing	Replace or repair
	3) Warped friction disc or clutch plate	Replace or repair
	5. Crankshaft	Replace
	1) Worn crankshaft bearing	Replace
	2) Worn connecting rod big end	Replace
	6. Noisy gear	Replace
	1) Worn transmission gear or interference between gears	Replace
	2) Worn spline	Replace

Trouble	Probable cause	Remedy
Noisy engine	3) Worn primary gear or interference between gears 1. Improper clutch adjustment (no play in clutch lever). 2. Weak clutch pressure plate spring 3. Worn or warped pressure plate 4. Warped clutch plate 5. Worn or warped friction disc	Replace Adjust Replace Replace Replace Replace
Clutch slips	1. Improper clutch adjustment (excessive play of clutch lever) 2. Weak or non-uniform tension of clutch springs 3. Warped clutch plate	Adjust clutch lever Replace weak spring Replace
Clutch will not be disengaged.	1. Deformed shift drum stopper 2. Broken gear shift drum 3. Deformed gear shift fork	Repair or replace Replace Repair or replace
Difficult gear shifting	1. Broken gear shift return spring 2. Interference between transmission case and gear shift spindle	Repair or replace Repair
Change gear comes off position.	1. Worm shifting gears on main shaft and counter-shaft 2. Worn or bent gear shift fork 3. Weak shift drum stopper spring	Replace Repair or replace Replace
Engine idling is not stable.	1. Improper tappet adjustment 2. Improper seating of cylinder head valve 3. Defective valve guide 4. Incorrect ignition timing 5. Faulty contact breaker point 6. Excessive spark plug gap 7. Weak ignition spark (defective capacitor or ignition coil) 8. Improper carburetor float level 9. Incorrect carburetor air screw adjustment	Adjust Replace Replace Adjust Repair Repair Replace Adjust Adjust
Engine high speed running is not stable.	1. Weak valve spring 2. Incorrect valve timing 3. Insufficient spark plug gap 4. Retarded ignition timing (faulty automatic advance) 5. Weak point arm spring 6. Defective ignition coil 7. Improper carburetor float level adjustment (low level) 8. Clogged air cleaner element 9. Insufficient fuel in carburetor	Replace Adjust Adjust Adjust Replace Replace Adjust Clean Clean or supply fuel
Exhaust smoke from muffler	1. Excessive engine oil 2. Worn cylinder and piston rings 3. Worn valve guide 4. Defective cylinder	Adjust oil level Check with level gauge Replace Replace Replace
Loss of power	1. Incorrect tappet Adjustment 2. Loss of valve spring tension 3. Incorrect valve timing	Adjust Replace Adjust

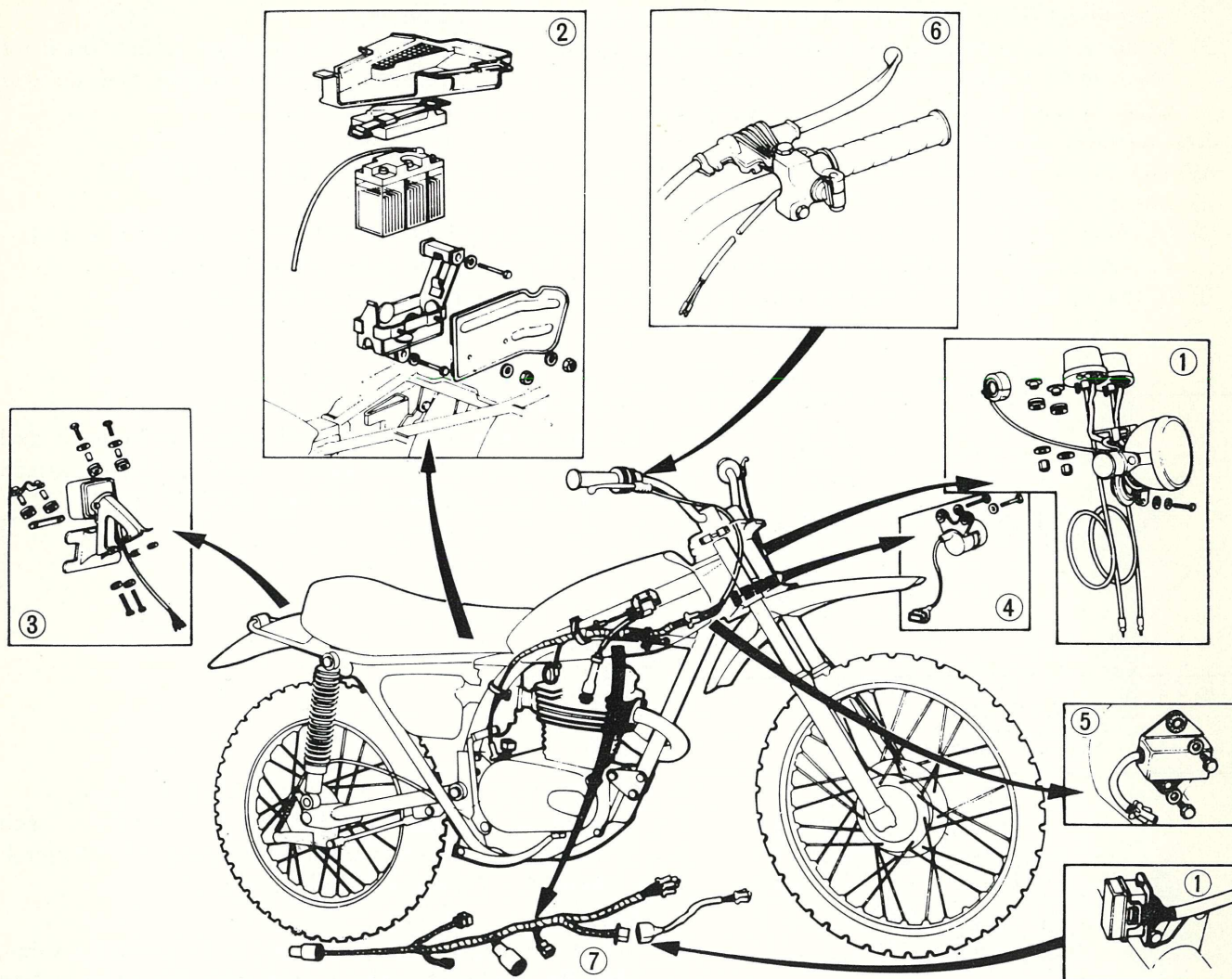
Trouble	Probable cause	Remedy
Loss of power	4. Worn cylinder and piston 5. Improper valve seating 6. Incorrect ignition timing 7. Defective contact breaker point 8. Incorrect spark plug gap 9. Clogged carburetor main or slow jet nozzle 10. Improper float level adjustment 11. Clogged air cleaner	Replace Replace Adjust Repair or replace Repair Clean Adjust Clean
Engine overheating	1. Heavy carbon deposit on cylinder head 2. Insufficient engine oil 3. Defective oil pump, or clogged oil passage 4. Too lean gas mixture 5. Advanced ignition timing (knocking)	Remove carbon Supply to normal level Clean Adjust Adjust
Hard steering	1. Over-tightend steering stem 2. Damaged steering stem steel balls 3. Bent steering stem 4. Low tire inflation pressure 5. Over-tightened steering cone race	Adjust Replace Replace Adjust Adjust
Motorcycle pulls to one side	1. Unequal tension of left and right cushion springs 2. Bent front fork 3. Bent front axle, or incorrect alignment of wheel	Replace Repair or replace Replace or repair
Front wheel wobbles.	1. Deformed rim 2. Worn front wheel bearings 3. Loose spoke 4. Defective tire 5. Loose front axle	Replace Replace Retighten Replace Retighten
Soft front suspension	1. Loss of spring tension 2. Insufficient damper oil	Replace Add oil
Hard front suspension	1. High viscosity of damper oil 2. Excessive damper oil	Change Adjust
Noisy front suspension	1. Interference between cushion case and spring 2. Damaged cushion stopper rubber 3. Insufficient damper oil 4. Loose cushion	Replace Replace Adjust Retighten
Rear wheel wobbles.	1. Distorted rim 2. Worm rear wheel bearings 3. Loose spoke 4. Defective tire	Replace Replace Adjust Retighten
Soft rear suspension	1. Loss of spring tension 2. Improper rear cushion adjuster adjustment	Replace Adjust
Hard rear suspension	Improper rear cushion adjuster adjustment	Adjust
Noisy rear suspension	1. Interference between cushion care and spring 2. Loose installation	Replace Retighten
Poor braking	1. Poor contact of brake shoe 2. Brake lining is contaminated with oil or grease 3. Loose brake cable or worn brake pedal shaft 4. Improper brake adjustment	Replace or repair Replace Repair or adjust Adjust
No adjusting allowance	1. Worn brake shoe 2. Worn brake shoe cam	Replace Replace

Trouble	Probable cause	Remedy
No adjusting allowance	- Improperly engaged brake arm serration. - Worn brake cam.	Replace Replace
Brake squeals when applied	- Worn brake shoe. - Foreign matter sticking to brake shoe surface. - Hardened brake shoe surface. - Bent or twisted brake shoe.	Replace Clean or replace Replace Replace
No or poor sparking	- Defective ignition coil. - Defective spark plug.	Replace Replace
Burned contact breaker point	Defective capacitor.	Replace
Spark plug electrode fouled with carbon.	- Too rich gas mixture. - High idling speed. - Poor quality of gasoline. - Clogged air cleaner. - Use of cold spark plug.	Adjust carburetor Adjust carburetor Change Clean Use proper heat range plug
Spark plug electrode fouled with oil	- Worn piston rings. - Worn piston or cylinder. - Excessive clearance between valve guide and valve.	Replace rings Replace piston or cylinder Replace
Spark plug electrode overheated or burnt	- Use of hot spark plug. - Engine overheating. - Incorrect ignition timing. - Loose spark plug. - Too lean gas mixture.	Use proper heat range plug Adjust Retighten Adjust carburetor
No charging	- Broken wire or shorted or loose connection. - Defective generator coil due to short circuit, grounding, or brake. - Defective silicon diode. - Shorted or broken lead wire of regulator - Regulator voltage at no load is too low	Repair or replace Replace Replace Repair or replace Readjust
Insufficient charging	- Wiring - Broken or shorted wire, or loose connection - Generator - Shorting across layer in stator coil - Open circuit in stator coil - Defective silicon diode - Regulator - Voltage below specified value at no load - Dirty or pitted points - Coil or resistor internally shorted - Battery - Low electrolyte level - Defective battery plates	Repair or retighten Replace Replace Replace Readjust Polish and clean Replace Add distilled water to normal level
Excessive charging	- P terminal circuit and F terminal circuit shorted - Battery internally shorted - Regulator - Excessive voltage at no load - Improper grounding - Broken coil lead wire	Replace Repair Repair Ground properly Repair or replace
Unstable charging voltage	Bare wire shorting intermittently under vibration	Repair or replace

Trouble	Probable cause	Remedy
Unstable charging voltage	2. Generator layer shorting 3. Regulator • Intermittent open circuit in coil • Improperly adjusted voltage • Defective key switch • Dirty points	Repair or replace Repair or replace Readjust Replace Clean
Sulfation (Electrode plates are covered with white lay or spots.)	1. Charging rate is too small or else excessively large. 2. Specific gravity or amount of electrolyte is improper. 3. Battery left in discharging condition for many hours (left with switch turned on) 4. Exposed to excessive vibration due to improper installation 5. Motorcycle stored during cold season with battery connected	1. Recharge battery once a month even when motorcycle is left unused 2. Check electrolyte periodically and always maintain the proper level
Self-discharge (Battery discharges by itself in addition to that caused by a connected load.)	1. Dirty battery case and contact area 2. Impurities in electrolyte or excessively concentrated electrolyte	1. Always keep the exterior clean 2. Handle replenishing electrolyte with care
Large discharge rate Specific gravity gradually lowers and horn will be inoperative around 1,100 (S.G.).	1. Fuse and wiring are satisfactory, but loads such as horn and winker do not function. In this condition motorcycle will operate, but with longer use, $\oplus$ and $\ominus$ plates will react with sulfuric acid to form lead sulfide deposits (sulfation), making it impossible to recharge.	1. Recharge battery immediately when specific gravity drops below 1.200 (20°C : 68°F) 2. When battery frequently becomes discharged while operating at normal speed, check generator for output at specified engine rpm 3. If battery discharges under normal charge output, it is an indication of overloading, remove some of the excess load
High charging rate Electrolyte level drops rapidly, but charge is maintained always at 100%. Thus condition appears satisfactory. (Specific gravity over 1.260).	1. Deposit will heavily accumulate at the bottom, causing internal shorting and damage to battery.	1. Make sure of rated charging current
Specific gravity drops. Electrolyte evaporates.	1. Short circuit 2. Insufficient charging 3. Distilled water oversupplied 4. Contaminated electrolyte	1. Check specific gravity.

5. MOTOCROSS RIDING

Removal of Electrical Parts



Some electrical parts must be removed in the MOTOCROSS riding to reduce the overall weight for the improved riding.

1. Removal of head lamp

- 1) Separate wire harnesses from lower left side of tank by removing couplers. (Cover up coupler located at frame side.)
- 2) Remove horn switch by loosening screw.
- 3) Disconnect meter cable from front wheel and engine.
- 4) Remove bracket with head lamp and horn installed by loosening three bolts and nuts.

2. Removal of battery and battery box

- 1) Remove battery coupler and remove battery. Then remove battery box.

3. Removal of tail lamp

- 1) Raise operator's seat and disconnect tail lamp cord wire. Expand tail pipe clip and remove tail lamp cord.
- 2) Loosen rear fender number bracket attaching bolts and remove tail lamp together with the bracket.

4. Removal of main switch

- 1) Remove tank, remove main switch coupler and separate main switch from wire harness.
- 2) Loosen two bolts holding bracket to frame and remove main switch together with the bracket.

5. Removal of regulator

- 1) Disconnect regulator cord from wire harness with tank removed.
- 2) Remove regulator by loosening two bolts.

6. Replacement of lighting switch

When removing head lamp, replace lighting switch by exclusive ignition switch and throttle housing.

- 1) Disconnect lighting switch cord from wire harness with tank removed.
- 2) Remove two screws from under the lighting switch and install exclusive ignition switch on front brake lever holder. (Install throttle cable and throttle clip in exclusive throttle housing and adjust.) Connect cord to the same cord in color and position as in lighting switch.

7. Replacement of wire harness

When removing or replacing parts 1) thru 6) above, replace wire harnesses by exclusive ones.

- 1) Expand clips and remove wire harnesses with tank removed.
- 2) Connect OP wire harness and lock it with clip. Generator, ignition coil, contact breaker and ignition switch harnesses must be connected securely, taking care of color identification.
- 3) Install tank properly in such a manner that harnesses do not interfere with tank.

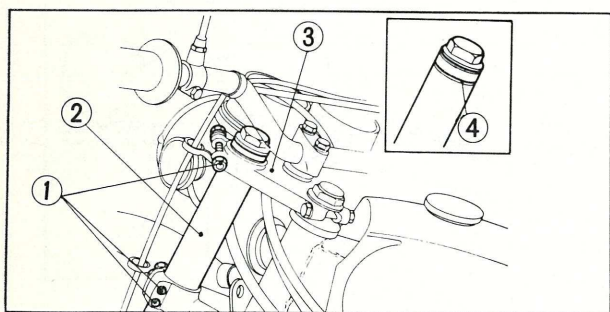


Fig. 5-2 ① Front fork attaching bolts
② Front fork pipe
③ Fork top bridge
④ Alignment mark

Increasing minimum ground clearance

1. Loosen the three front fork attaching bolts ① and lower the front fork pipe ② until its upper surface becomes flush with the fork top bridge ③.

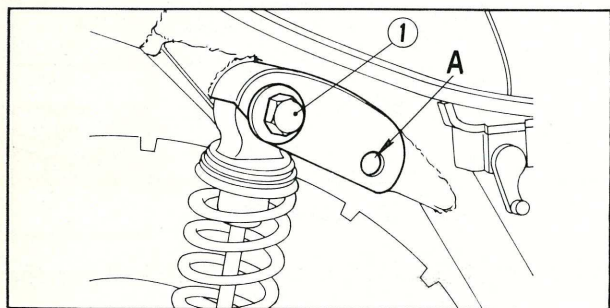


Fig. 5-3 ① Attaching bolt

2. Retighten the front fork attaching bolts firmly.
3. Remove the attaching bolt ① at top of the each rear shock absorber and rebolt the absorber through hole A. Tighten the bolt firmly.

NOTE:

When returning the front fork legs to the normal position, align the alignment marks ④ even with the upper surface of the fork top bridge.

Replacing final drive and driven sprockets:

When replacing the drive sprocket and the driven sprocket, the drive chain and the rear brake anchor arm ① and the rear axle ⑦ should be installed in the combination shown on the table below:

	No. of drive sprocket teeth	No. of driven sprocket teeth	No. of drive chain links	Brake anchor and axle position
Standard	15	48	98	A
Option I	15	51 (option)	100 (option)	A
Option II	14 (option)	48	98	A
Option III	14 (option)	51 (option)	100 (option)	A

NOTE:

To increase the clearance between the rear wheel and rear fender, move the rear brake stopper arm and the rear axle to position B by using the following combinations:

No. of drive sprocket teeth	No of driven sprocket teeth	No. of drive chain links	Brake anchor and axle position
15	48	100	B
14	48	100	B

1. Take off the drive chain clip and master link, and remove the drive chain from the sprockets.
2. Remove the crankcase rear left cover and the two 6 mm bolts ② so that the drive sprocket ③ can be removed.

3. Remove the rear wheel from the frame according to instructions on page 58~59. Straighten the lug of the lock nut washers ①, and unscrew the six lock nuts ② securing the driven sprocket ③ and remove the driven sprocket.

4. The drive sprocket and driven sprocket should be installed in the reverse order of 1. to 3. Make sure that each lug of lock washers is bent toward nut head after tightening.

5. Rear axle ① position varies with the number of the drive chain links. Install rear axle in position A when using a 98- or 100-link chain. Install it in position B when extending wheelbase and using a 100-link chain.

NOTE:

If correct drive chain adjustment requires the rear axle to be moved back farther than the applicable positions indicated in the tables on pages 23 and 24, then the drive chain is excessively worn and should be replaced. For example, if the table specifies axle position A for your sprocket and drive chain combination, then the chain should be considered excessively worn when it becomes necessary to move the rear axle to position B.

Similarly, if the table specifies axle position B, then the chain should be considered excessively worn when it becomes necessary to move the rear axle to position C.

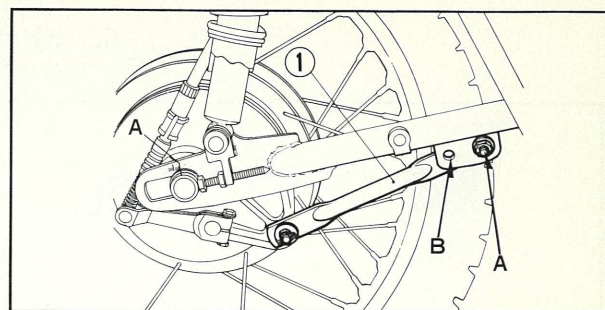


Fig. 5-4 ① Rear break anchor arm

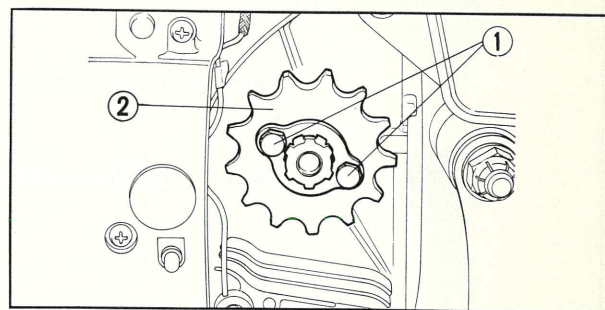
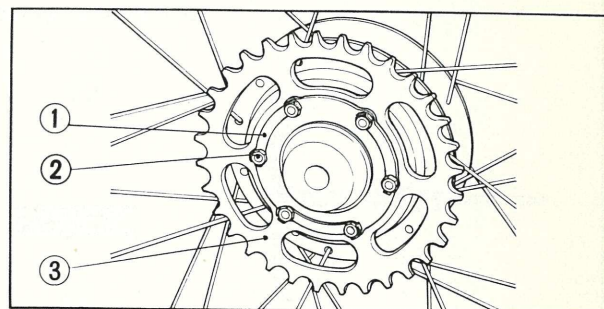
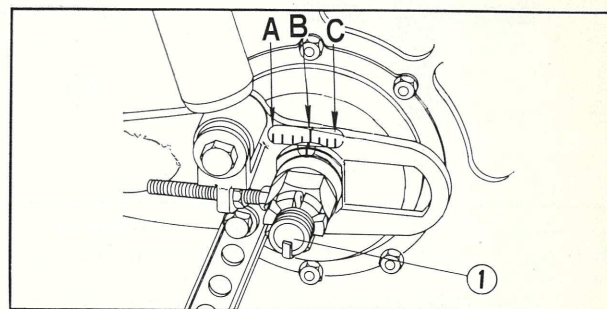
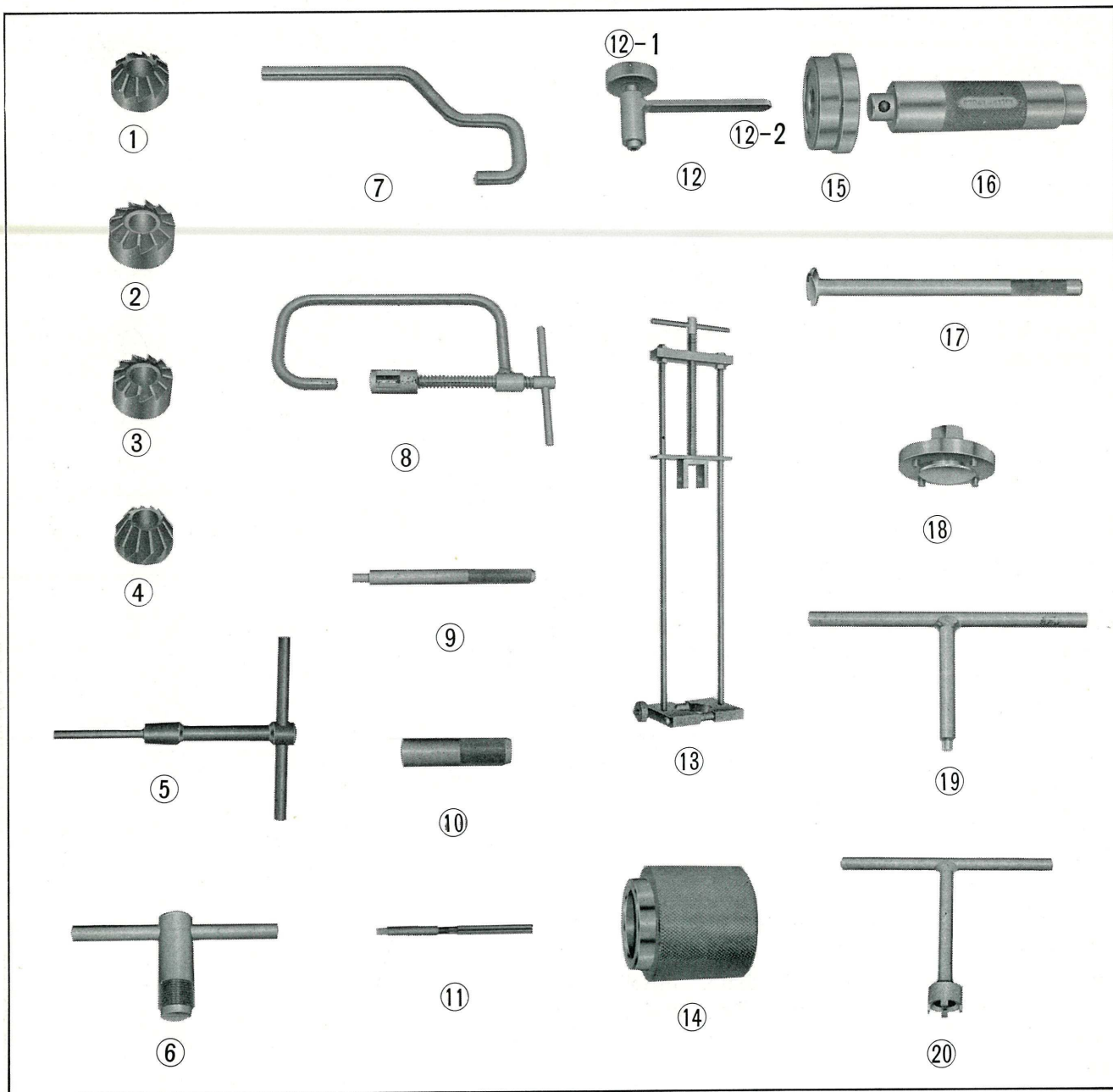
Fig. 5-5 ① 6 mm bolts
② Drive sprocketFig. 5-6 ① Lock nut washers
② Lock nuts
③ Driven sprocket

Fig. 5-7 ① Rear axle

6. SPECIAL TOOLS



Ref. No.	Tool No.	Description	Ref. No.	Tool No.	Description
	07000-32900	Special tool set (A)	⑫	07081-32910	Tappet wrench set
	07000-32905	Valve seat cutter set (B)	⑫-1	07081-32901	Tappet wrench A
①	07001-10702	Valve seat 90° cutter	⑫-2	07081-32905	Tappet wrench B
*②	07003-32901	Inlet valve seat flat cutter	⑬	07035-32901	Rear cushion
*③	07004-32901	Exhaust valve seat flat cutter	*⑭	07054-32901	Front fork oil seal driver
*④	07005-32901	Valve seat interior cutter	*⑮	07048-32901	Ball race driver attachment
*⑤	07007-32901	Valve seat cutter holder	*⑯	07048-61101	Ball race driver handle
*⑥	07011-32901	Generator rotor puller	*⑰	07048-32905	Ball race remover
*⑦	07022-32901	Drive sprocket holder	⑱	07088-32901	Retainer wrench
*⑧	07031-32901	Valve lifter	⑲	07085-32301	Hollow set wrench
*⑨	07046-32901	Valve guide remover	⑳	07086-28301	Box wrench 16mm
*⑩	07047-32901	Valve guide driver		07086-28301	Valve seat cutter case
*⑪	07008-32301	Valve guide reamer		07997-05101	Tool case

Tools marked (*) are for Model XL250 only. Other tools can also be used for other models.

7. SPECIFICATIONS

Dimensions	Overall length	2,120 mm (83.5 in)
	Overall width	840 mm (33.1 in)
	Overall height	1,125 mm (44.3 in)
	Wheelbase	1,385 mm (54.53 in)
	Min. ground clearance	190 mm (7.5 in)
Weight	Dry (excl. oil, fuel)	126 kg (277.7 lb)
	Wet (incl. oil, fuel)	135 kg (297.6 lb)
Tires	Front	2.75-21 (4 PR)
	Rear	4.00-18 (4 PR)
Engine	Type	Gasoline, air-cooled, 4-cycle
	Cylinder arrangement	Single cylinder, tilted forward 10°
	Fuel chamber	Roof type
	Valve arrangement	Overhead type
	Bore × stroke	74.0 × 57.8 mm (2.91 × 2.73 in)
	Displacement	248 cc (15.13 cu.in)
	Compression ratio	9.1 : 1
	Compression pressure	14.0 kg/cm ² (199.13 Psi)—(by kick)
	Max. flywheel horsepower	20 HP/8,000 rpm (at crankshaft, SAE)
	Max. torque	1.95 kgm (14.1 lb-ft)/6,500 rpm (SAE)
	Weight (wet)	39 kg (86 lb)
	Idling speed	1200 ⁺⁰ ₋₂₀₀ rpm
	Starting method	Primary kick
Valves	Intake Opens Closes	At 5° (Before top dead center) At 30° (After bottom dead center)
	Exhaust Opens Closes	At 35° (Before bottom dead center) At 5° (After top dead center)
	Valve clearances Intake Exhaust	0.05 mm (0.002 in cold setting) 0.05 mm (0.002 in cold setting)
Ignition system	Method	Magneto ignition
	Timing	15° (Before top dead center)/2200 rpm (at crankshaft)
	Plug	D-8ESL (NGK)
Fuel system	Air cleaner	Urethane, wet type
	Tank capacity	8.0 l (2.1 usgal)
	Carburetor type	PW-28
Carburetor setting	Main jet	# 120
	Air jet	# 100

Carburetor setting	Slow jet	# 45
	Air screw	1-1/4 ± 3/8
	Fuel level	24 mm (0.94 in)
Lubrication system	Method	Forced-feed, splashed type
	Oil pump	Trochoid type
	Oil filter	Centrifugal, mesh type
	Lubricant capacity	1.8 l (0.47 usgal)
Battery	Type	6N6-3B
	Voltage and capacity	6 V, 6 AH
Generator	Type	AC type
	Voltage and output	6 V, 80 W (at 5,000 rpm)
	Overcharge regulator	Pointless type
Transmission system	Crankshaft-to-transmission reduction ratio	3.125
	Transmission-to-rear shaft reduction ratio	3.200 (via chain)
	Clutch type	Wet, multi-disc (7 discs)
	Reduction ratio 1st	2.352
	2nd	1.666
Steering system	3rd	1.280
	4th	1.000
	5th	0.806
Brakes	Caster	59.5°
	Trail	140 mm (5.51 in)
	Steering angle	45° (right), 45° (left)
Suspension	Type	Wire type (Front), Leading trailing (Rear)
	Front	Telescopic type
Frame	Rear	Swing arm type
	Type	Semi-double cradle

8. TORQUE SPECIFICATIONS

	Tightening point	Torque, kg-m (lb-ft)	Bolts, mm
1. Frame	Steering stem nut	8.0-12.0 (57.84-86.76)	23
	Front fork top bridge	1.8-2.3 (13.014-16.629)	8
	Handle holder	1.8-2.3 (13.014-16.629)	8
	Front fork bottom bridge	1.8-2.3 (13.014-16.629)	8
	Spoke	0.2-0.45 (1.446-3.2535)	
	Rear fork pivot bolt	5.5-7.0 (39.765-50.610)	14
	Front wheel axle shaft nut	5.5-6.5 (39.765-46.995)	12
	Front axle holder	1.8-2.3 (13.014-16.629)	8
	Engine hanger bolt	3.0-4.0 (21.69-28.92)	10
	Rear axle	8.0-10.0 (57.84-72.30)	18
	Driven sprocket	1.8-2.3 (13.014-16.629)	8
	Brake arm	0.8-1.1 (5.784-7.953)	6
	Front brake torque link	1.8-2.3 (13.014-16.629)	8
	Rear brake torque link	1.8-2.3 (13.014-16.629)	8
	Rear cushion, upper/lower	3.0-4.0 (21.69-28.92)	10
	Step bar	1.8-2.3 (13.014-16.629)	8
		3.0-4.0 (21.69-28.92)	10
	Change pedal	0.8-1.2 (5.784-8.676)	6
	Kick arm	1.8-2.3 (13.014-16.629)	8
	Seat band	0.8-1.2 (5.784-8.676)	6
2. Engine	Crankcase cover	0.7-1.1 (5.061-7.953)	6
	Cylinder head	3.0-3.6 (21.690-26.028)	10
	Carburetor insulator	0.8-1.2 (5.784-8.676)	6
	Cam sprocket	1.8-2.2 (13.014-15.906)	7
	Flywheel	6.0-7.0 (43.380-50.610)	12
	Oil filter rotor	4.5-5.5 (32.535-39.765)	16
	Tappet adjusting nut	0.7-1.1 (5.061-7.953)	5
	Upper crankcase	2.4-3.0 (17.352-21.690)	10
	Lower crankcase	2.4-3.0 (17.352-21.690)	10
	Cylinder 8 mm stud bolt	2.0-2.5 (14.460-18.075)	8

Parts other than those specified above should be tightend in accordance with following specifications.

Bolts	Torque, kg-m (lb-ft)
6 mm (0.24 in) machine screw	0.7-1.0 (5.061-7.230)
6 mm (0.24) hex. bolt	0.8-1.2 (5.784-8.676)
8 mm (0.31 in) hex. bolt	1.8-2.5 (13.014-18.075)
10 mm (0.39 in) hex. bolt	3.0-4.0 (21.690-28.920)
6 mm (0.24 in) flange bolt	1.0-1.4 (7.230-10.122)
8 mm (0.31 in) flange bolt	2.3-3.0 (17.352-21.690)
10 mm (0.39 in) flange bolt	3.0-4.0 (21.690-28.920)

9. SERVICE DATA

ENGINE

Item	Unit	Standard value	Service limit
Rocker arm-to-shaft clearance	mm (in)	0.016–0.052 (0.0006–0.0020)	0.090 (0.0035)
Camshaft journal OD	RH	21.939–21.960 (0.8637–0.8646)	21.92 (0.8630)
	LH (tow places)	23.939–23.960 (0.9425–0.9433)	23.92 (0.9417)
Cam height	IN	6.260 (0.2465) *base circle 30 (1.1811)	6.142 (0.2418)
	EX	6.150 (0.2421) *base circle 30 (1.1811)	6.025 (0.2372)
Valve stem OD	IN	5.480–5.490 (0.2157–0.2161)	5.465 (0.2151)
	EX	5.460–5.470 (0.2149–0.2154)	5.445 (0.2144)
Valve stem-to-guide clearance	IN	0.010–0.030 (0.00039–0.00118)	0.06 (0.00236)
	EX	0.030–0.050 (0.00118–0.00197)	0.07 (0.00276)
Valve spring free length	INNER	36.5 (1.43)	36.0 (1.41)
	OUTER	40.7 (1.60)	39.7 (1.56)
Valve spring tension	INNER	14.5/22 (6.6/0.87)	13.48–15.52/22 (6.1–7.0/0.87)
	OUTER	34/26.4 (15.42/1.04)	31.62–36.38/26.4 (14.3–16.5/1.04)
Cylinder bore dia.	mm (in)	73.99–74.01 (2.913–2.914)	74.11 (2.918)
Piston OD	mm (in)	73.97–73.99 (2.912–2.913)	73.88 (2.909)
Piston pin hole dia.	mm (in)	19.002–19.008 (0.7481–0.7483)	19.08 (0.7512)
Piston pin OD	mm (in)	18.994–19 (0.7478–0.7480)	18.96 (0.7465)
Piston ring-to-groove clearance	TOP	0.03–0.06 (0.0012–0.0024)	0.18 (0.007)
	SECOND	0.015–0.045 (0.0006–0.0018)	0.165 (0.006)
	OIL	0.03–0.045 (0.0012–0.0018)	0.17 (0.007)
Piston ring gap	TOP	0.15–0.35 (0.0059–0.0138)	0.75 (0.029)
	SECOND	0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
	OIL	0.20–0.40 (0.0079–0.0157)	0.80 (0.031)
Connecting rod small end ID	mm (in)	19.020–19.041 (0.7488–0.7496)	19.07 (0.751)
Connecting rod big end radial clearance	mm (in)	—	0.05 (0.00197)
Connecting rod big end axial clearance	mm (in)	0.12–0.38 (0.00472–0.01496)	0.60 (0.02362)
Radial clearance of RH and LH crankshaft bearing	mm (in)	—	0.05 (0.00197)
Oil pump delivery flow	l (usgal)/rpm	4.2 (1.11)/5,000 80°C (176°F)	3.4 (0.90)/5,000 80°C (176°F)
Axial clearance of oil pump inner and outer rotors	mm (in)	0.02–0.08 (0.00079–0.00315)	0.1 (0.004)
Clutch friction disc thickness	mm (in)	2.7 (0.106)	2.3 (0.091)
Clutch plate face runout	mm (in)	0.15 (0.006)	0.30 (0.012)
Clutch spring free length	mm (in)	35.5 (1.40)	34.2 (1.35)
Clutch spring tension	kg/mm (lb/in)	23.8/23 (10.8/0.91)	21.8/23 (9.89/0.91)
Transmission gear backlash	mm (in)	—	0.2 (0.0079)
Gear shift fork drum OD	mm (in)	35.950–35.975 (1.4153–1.4163)	35.9 (1.4133)

Item	Unit	Standard value	Service limit
Center gear shift fork ID	mm (in)	36.0–36.025 (1.4173–1.4183)	36.075 (1.4203)
Shift fork guide shaft OD	mm (in)	12.968–12.984 (0.5106–0.5112)	12.9 (0.5079)
RH and LH gear shift fork ID	mm (in)	13.0–13.018 (0.5118–0.5125)	13.05 (0.5138)
Shift fork thickness	mm (in)	4.93–5 (0.1941–0.1969)	4.6 (0.1811)

FRAME

Item	Unit	Standard value	Service limit
Drive chain length (No. of links: 98)	mm (in)	1555.75 (61.25)	1586 (62.44)
Free length of A and B front cushion springs	mm (in)	481.1 (18.94)	470 (18.50)
Free length of A and B rear cushion springs	mm (in)	236.4 (9.31)	230 (9.06)
Fork bottom pipe OD	mm (in)	24.75–25 (0.9744–0.9843)	24.70 (0.9724)
Fork bottom case ID	mm (in)	35.0–35.039 (1.3780–1.3795)	35.18 (1.3850)
Front wheel axle bend	mm (in)	0.01 (0.0004)	0.2 (0.008)
6302 ball bearing axial offset	mm (in)	0.07 (0.0028)	0.1 (0.004)
6302 ball bearing radial offset	mm (in)	0.03 (0.0012)	0.05 (0.002)
Front wheel rim (face runout)	mm (in)	0.5 (0.020)	2.0 (0.08)
Front wheel rim offset	mm (in)	0.5 (0.020)	2.0 (0.08)
Front brake drum ID	mm (in)	160–160.3 (6.2992–6.3110)	161 (6.339)
Front brake shoe thickness	mm (in)	5.0 (0.197)	2.5 (0.098)
Rear wheel axle bend	mm (in)	0.01 (0.00039)	0.2 (0.0079)
Rear fork pivot bushing ID	mm (in)	20–20.052 (0.7874–0.7894)	20.18 (0.7945)
Rear fork center collar OD	mm (in)	19.927–19.960 (0.7845–0.7858)	19.85 (0.7815)
Axial offset of 6204 and 6304 ball bearings	mm (in)	0.07 (0.00276)	0.10 (0.0039)
Radial offset of 6204 and 6304 ball bearings	mm (in)	0.03 (0.0012)	0.05 (0.0020)
Rear wheel rim (face runout)	mm (in)	0.5 (0.020)	2.0 (0.08)
Rear brake drum ID	mm (in)	140.0–140.3 (5.5118–5.5236)	141 (5.5512)
Rear brake shoe thickness	mm (in)	4.5 (0.177)	2.5 (0.098)

10. WIRING DIAGRAM

