

Fig. 300 ① Carbon brushes
② Springs
③ Commutator

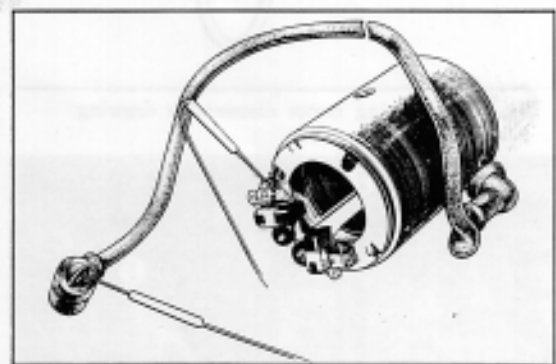


Fig. 301 Stator coil inspection

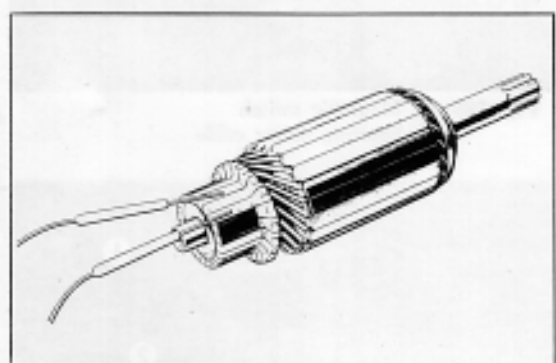


Fig. 302 Armature coil inspection

B. Inspection

1. Carbon brush inspection

Worn carbon brush, pitted or rough contact surface and weakened brush spring will cause starting difficulty, therefore, they should be replaced.

2. Commutator cleaning

Dirty commutator will give poor starting motor performance.

Surface of the commutator should be polished with a fine grade emery paper and completely washed before reassembly.

3. Stator coil inspection

Check continuity between the brush wired to the stator coil and the starting motor cable. Lack of continuity indicates an open stator coil and should be replaced.

4. Armature coil inspection

A grounded armature coil will render the starting motor inoperative.

Perform a continuity test between the commutator and the core. A continuity condition indicates a grounded stator coil and should be replaced.

Starter Magnetic Switch

The starting motor requires a large current of approximately 100 A to operate. To minimize resistance, a large cable is used for wiring, also, a switch with heavy duty contacts is required. Sparking across the contacts will result, as well as resistance depending upon the contact pressure, when the contacts are opened suddenly to shut off the flow of large current. To cope with these conditions, a magnetic switch is used separately which is operated electrically by a small current through a push button starter switch.

Inspection

1. Primary coil continuity test.
If there is no continuity, the primary coil is open.
- If a clicking noise is heard when a 12 V battery is connected to the two leads of the coil, the primary coil is satisfactory.
2. After long use, the magnetic switch contacts will become pitted or burnt from the large current which flows across it, and gradually build up resistance which may prevent the current from flowing. Connect 12 V to the primary coil leads of the magnetic switch. If there is no continuity across the switch contacts, the switch is defective.

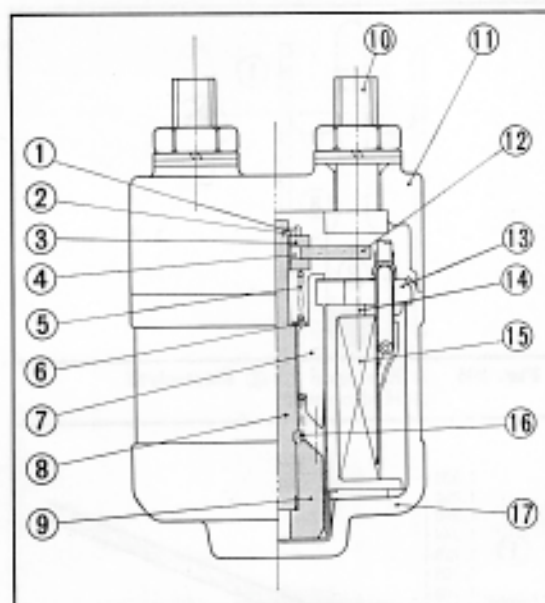


Fig. 303

- | | |
|------------------|-----------------|
| ① Stopper | ⑩ Contact bolt |
| ② Stopper holder | ⑪ Case |
| ③ Washer | ⑫ Contact plate |
| ④ Roller A | ⑬ Yoke |
| ⑤ Contact spring | ⑭ Coil bobbin |
| ⑥ Flat washer | ⑮ Coil complete |
| ⑦ Plunger holder | ⑯ Return spring |
| ⑧ Plunger shaft | ⑰ Body |
| ⑨ Plunger | |

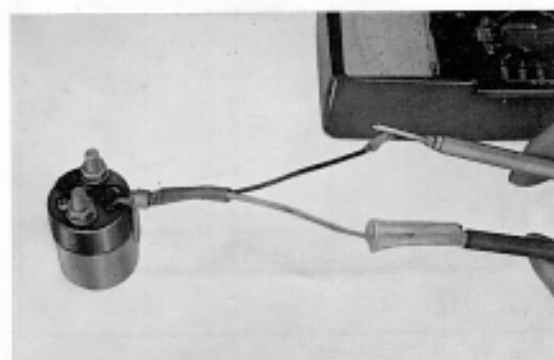


Fig. 304 Primary coil continuity test

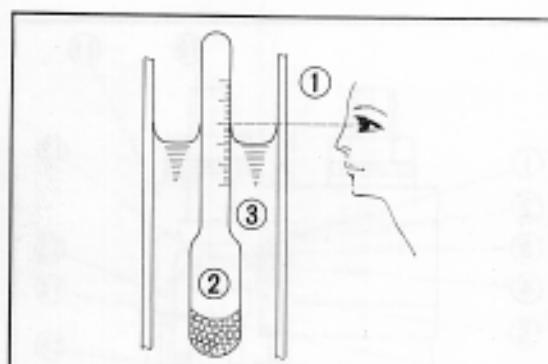


Fig. 305 ① Eye level ③ Electrolyte
② Hydrometer

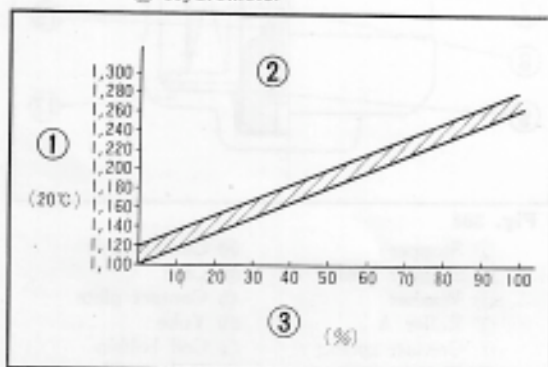


Fig. 306 ① Specific gravity
② Relation between specific gravity
③ Residual charge (%)

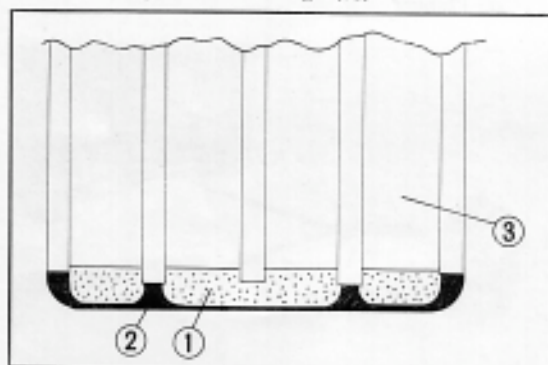


Fig. 307 ① Sediment ③ Plates
② Battery case

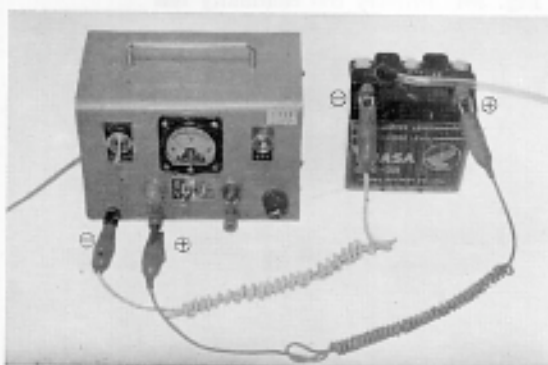


Fig. 308 Charger hook-up

Battery

A. Specification

Type	12N 12 A-4 A-1
Voltage	12 V
Capacity	12 AH

B. Specific gravity measurement

Battery electrolyte is measured with a bulb type hydrometer. When the specific gravity is below 1.200 (at 20°C), the battery should be recharged.

When making a reading, the hydrometer should be held vertical with the electrolyte liquid level, held at the eye level and the value on the floating scale read at point where the liquid separates from the stem of the float.

C. Inspection and replenishment

1. Electrolyte in each cell of the battery should be inspected every half month to a month, and distilled water added to bring the level 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 and the electrolyte sufficiently agitated before making the measurement.
4. Primary battery troubles are due to corrosion around the connectors and terminals causing poor contact, separation of the battery paste, and sulfation (battery which is left in a discharged condition for a long period will have lead sulfate formed on the plates and recharging will not restore it to its original condition), therefore, the inspection should be performed periodically and thoroughly.

Note:

When sediment are formed at the bottom as shown in the figure, the battery should be replaced.

D. Battery charging

(Caution)

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 rate to maximum of 2.0 A.
2. Hydrogen gas is generated during the charging process, therefore, keep fire away.
3. After battery charging is completed, wash the battery with water to remove spilled electrolyte, and apply grease to the terminals.

5. ELECTRICAL EQUIPMENTS

1. Main switch inspection

With the switch in both ON and OFF positions check to see that the continuity conditions in the chart below are satisfied. The switch is defective if there is no continuity where specified, or if there is continuity where not specified.

		BAT	IG	TL _L	TL _R
Color of cords		Red	Black	Brown/white	Brown
Key position	OFF				
	1	○	○	○	○
	2	○			○

2. Front stop switch inspection

Apply tester lead probes to the terminals of the front stop switch cords (black, green/yellow), operate brake lever and check for continuity.

- Take into consideration the lever play 2~5 mm (0.08~0.2 in.).

The stop light should come on when the brake lever travels beyond the play in the lever.

3. Rear stop switch inspection

After making sure that the stop switch spring is disconnected, apply tester lead probes to the switch terminals (green/yellow, black cords) and check for continuity. When the brake pedal is depressed 20 mm (0.8 in.) at the front end of the pedal, the stop light should come on at this point.

Adjustment.

If the stop light is late in coming on, turn the adjuster nut clockwise, and if too early, turn counterclockwise.

4. Horn Inspection

- Check for continuity across the horn lead terminals.
- Alternate method is to connect the horn to a fully charged 12 V battery and check its operation.

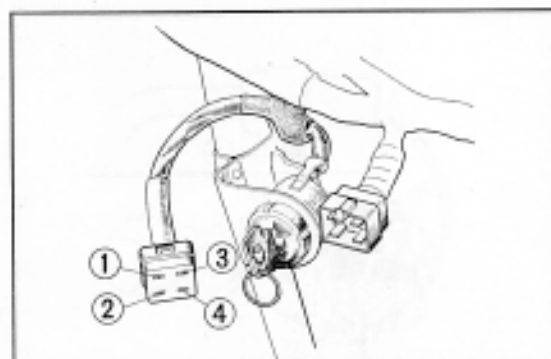


Fig. 309 ① Black ③ Brown
② Brown/white ④ Red



Fig. 310 Front stop switch inspection
① Front stop switch

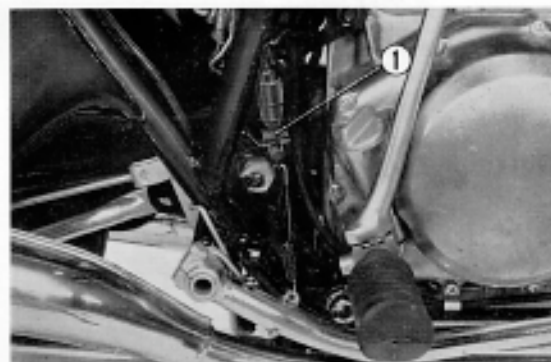


Fig. 311 ① Rear stop switch adjuster nut



Fig. 312 Horn continuity test

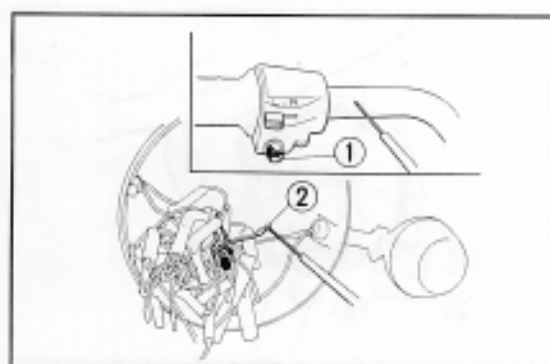


Fig. 313 ① Horn button
② Light green cord

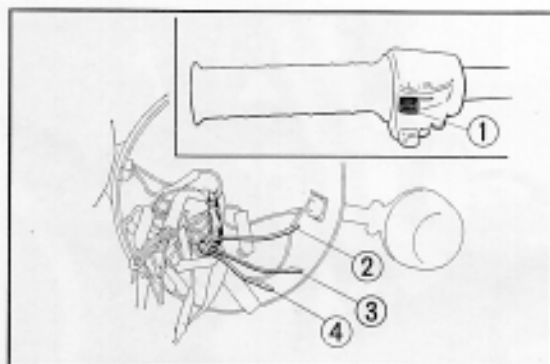


Fig. 314 ① Winker switch
② Light blue cord
③ Gray cord
④ Orange cord

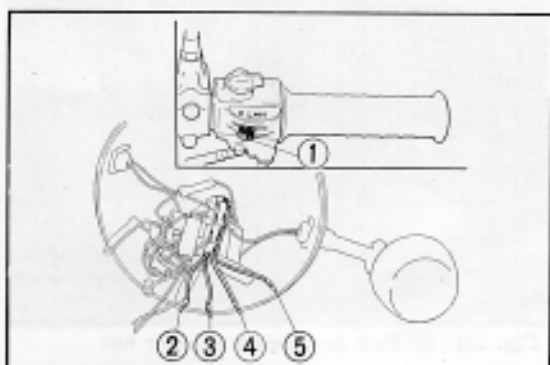


Fig. 315 ① Lighting switch
② Black cord
③ Blue cord
④ Brown/white cord
⑤ White cord

5. Horn button inspection

With the tester lead probes contact the light green cord terminal within the head light case and the the handle bar, and then press the horn button to check for continuity. If continuity exists, the horn button is satisfactory.

6. Winker switch inspection.

Disconnect the winker switch wiring within the head light case. Check continuity between the gray cord terminal and orange cord terminal (left winker), and between the gray cord terminal and light blue cord terminal (right winker) respectively of the winker switch. Continuity for the respective tests should exist according to the switch connections shown in the table below.

Knob	Blue cord	Gray cord	Orange cord
R	○ — ○		
OFF (center)			
L		○ — ○	

7. Lighting switch inspection.

Inspect for broken wire and defective contact between the respective switch cords, using a tester. Continuity between the different cords should exist in accordance with the switching position table shown below. If continuity exists where not indicated the switch is defective.

Cord color	IG Black	HB Blue	TL Brown/white	LB White
ON	H ○ — ○			
	P ○ — ○			
	L ○ — ○		○ — ○	
OFF				



8. Emergency switch and starter switch inspection

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 exist where not indicated, the switch is defective.

Emergency switch		
Cord color	Black	Black/white
ON	○ —	○ —
OFF		

Starter switch		
Cord color		Yellow/red
ON	○ —	○ —
OFF		

9. Oil pressure switch inspection

Lubricating oil is supplied under pressure of $4\sim6\text{ kg/cm}^2$ ($56.8\sim85.3\text{ lbs/in.}^2$) by the oil pump to various parts of engine. When the oil pressure drops, the oil supply becomes insufficient. The oil system is designed so that when the oil pressure drops below 0.5 kg/cm^2 (7 lbs/in.^2), the oil pressure switch operates and the warning lamp comes on.

Check the oil pressure switch for continuity without starting the engine and with the main switch on. If there is continuity, the switch is satisfactory. It is normal for the warning lamp to go out when the engine is started.

If the warning lamp does not go out after starting, and the pressure switch is satisfactory, the oil system should be inspected for trouble.

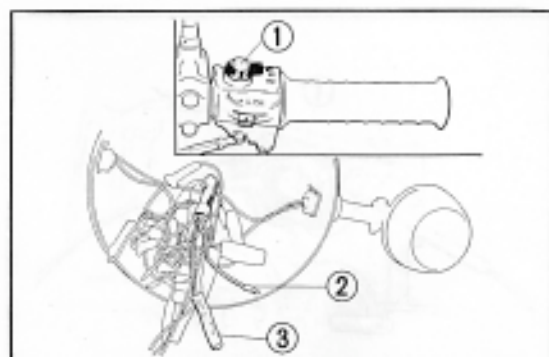


Fig. 316 ① Emergency switch ② Black/white
③ Black

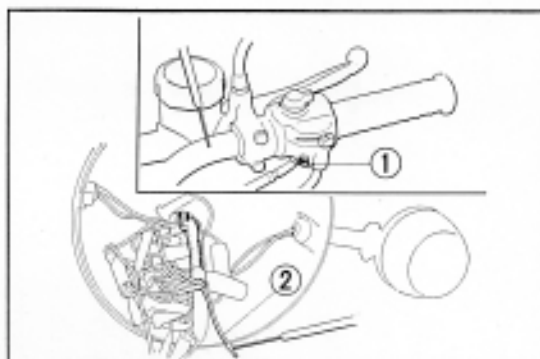


Fig. 317 ① Starter switch
② Yellow/red

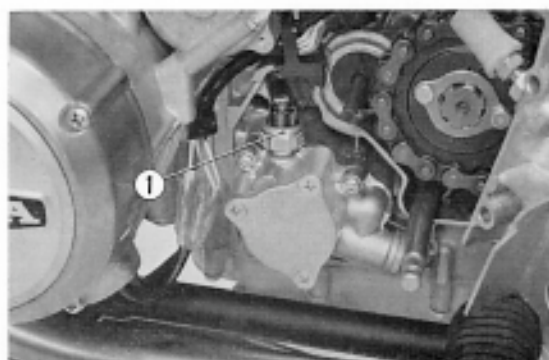


Fig. 318 ① Oil pressure switch

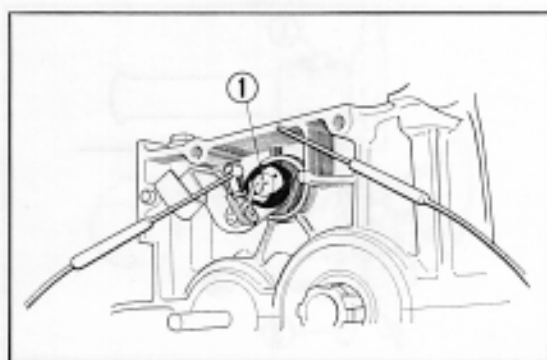


Fig. 319 Neutral switch inspection

① Neutral switch

10. Neutral switch inspection

The neutral switch is mounted on the left side of the upper crankcase. When the transmission is in neutral, the switch becomes grounded and the neutral pilot lamp comes on. Position the transmission in neutral, remove the left crankcase cover and check the continuity of the neutral switch. The switch is satisfactory if there is continuity.

7. TROUBLE SHOOTING

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ENGINE

Trouble	Probable Causes	Remedies
Engine does not start	<ol style="list-style-type: none"> Excessive wear of piston ring or cylinder Seized valve in valve guide Seized piston Faulty valve timing Low or lack of compression pressure Pressure leak Blown out cylinder head gasket Warped gasketing surface of the cylinder and cylinder head 	<p>Replace</p> <p>Replace</p> <p>Replace</p> <p>Adjust</p> <p>Lap the valve to obtain good valve seating or replace</p> <p>Replace</p> <p>Repair or replace</p>
Poor engine idling	Valve Mechanism <ol style="list-style-type: none"> Incorrect tappet clearance Low or lack of compression pressure Excessive valve guide clearance 	<p>Adjust to standard value</p> <p>Repair</p> <p>Replace valve and guide</p>
Loss of power	<ol style="list-style-type: none"> Valve sticking open Incorrect seating of valve Weak or broken valve spring Faulty valve timing Blown out cylinder head gasket Excessive wear of cylinder and piston Worn, weak or broken piston ring Loose spark plug 	<p>Replace</p> <p>Lap valve</p> <p>Replace</p> <p>Check valve timing and adjust if necessary</p> <p>Replace</p> <p>Replace</p> <p>Replace</p> <p>Retighten</p>
Overheating	<ol style="list-style-type: none"> Heavy carbon deposit on combustion chamber and piston head Lean fuel mixture Retarded ignition timing Low oil level, poor quality Extended operation in low gear 	<p>Remove carbon</p> <p>Adjust the carburetor</p> <p>Adjust ignition timing</p> <p>Add good grade oil</p>
Backfire	<ol style="list-style-type: none"> Incorrect seating of inlet valve Faulty valve timing Incorrect ignition timing Excessive spark plug gap Improper fuel 	<p>Check the valve seating</p> <p>Adjust</p> <p>Adjust</p> <p>Adjust the gap to 0.024~0.028 in (0.6~0.7 mm)</p> <p>Replace</p>
White exhaust smoke	<ol style="list-style-type: none"> Excessive wear of cylinder and piston Overfilled engine oil Excessively high oil pressure Poor quality oil 	<p>Replace the piston</p> <p>Adjust the oil level</p> <p>Check the breather</p> <p>Replace with good quality oil</p>
Black exhaust smoke	Rich fuel mixture	Adjust the carburetor



Trouble	Probable Causes	Remedies
Difficult gear shifting	<ol style="list-style-type: none"> 1. Improper clutch disengagement 2. Damaged gear or foreign object lodged in the gear 3. Gear shift fork inoperative 4. Incorrect operation of the gear shift drum stopper and change pedal 5. Mainshaft and countershaft out of alignment 6. High oil viscosity 	<p>Adjust the clutch</p> <p>Replace the defective parts</p> <p>Repair or replace</p> <p>Repair or replace</p> <p>Repair or replace</p> <p>Change the oil</p>
Excessive high gear noise	<ol style="list-style-type: none"> 1. Excessive gear backlash 2. Worn main and countershaft bearing 	<p>Repair or replace</p> <p>Repair or replace</p>
Gear slip out	<ol style="list-style-type: none"> 1. Worn fingers on gear shift fork 2. Worn gear dog hole 3. Worn spline 	<p>Replace</p> <p>Replace</p> <p>Replace</p>
Clutch slippage	<ol style="list-style-type: none"> 1. No play in the clutch lever 2. Weak or none uniform clutch pressure plate spring 3. Worn or glazed friction disc 	<p>Adjust the clutch lever</p> <p>Replace the weak spring</p> <p>Replace</p>
Poor clutch engagement	<ol style="list-style-type: none"> 1. Excessive play of clutch lever 2. Warped friction disc 3. Warped pressure plate 4. Bent main shaft 	<p>Adjust clutch lever play</p> <p>Replace</p> <p>Replace</p> <p>Replace</p>
Pedal does not return	<ol style="list-style-type: none"> 1. Faulty return spring 2. Unhook return spring 	<p>Replace</p> <p>Hook return spring</p>
Kick starter gear does not rotate	<ol style="list-style-type: none"> 1. Excessive wear of kick starter pawl 	<p>Replace</p>
Engine does not start	<p>Carburetor</p> <ol style="list-style-type: none"> 1. Choke fully open 2. Carburetor air screw improperly set 3. Air leaking into the cylinder head 4. Clogged carburetor slow jet 5. Clogged fuel valve or piping 6. Clogged vent hole in the fuel tank cap 7. No fuel in the tank 	<p>Close choke</p> <p>Adjust air screw</p> <p>Retighten carburetor connecting tube</p> <p>Check, clean and retighten</p> <p>Disassemble and clean</p> <p>Disassemble and clean</p> <p>Fill tank with gasoline</p>
Poor engine idling	<p>Carburetor</p> <ol style="list-style-type: none"> 1. Clogged or loose carburetor slow jet 2. Improper float level 3. Incorrect air screw adjustment 4. Carburetor linkage malfunction 5. Air leaks 	<p>Check, clean and retighten</p> <p>Adjust</p> <p>Adjust</p> <p>Adjust</p> <p>Tighten all air passage connection</p>
Improper running of engine	<p>Carburetor</p> <ol style="list-style-type: none"> 1. Jet size too small 2. Improper float level 3. Clogged carburetor main jet 4. Carburetor linkage malfunction 5. Air leaks 	<p>Replace with larger size jet</p> <p>Adjust</p> <p>Clean and retighten</p> <p>Adjust</p> <p>Tighten all air passage connection</p>



CHASSIS

Trouble	Probable Causes	Remedies
Heavy steering	<ol style="list-style-type: none"> 1. Steering stem excessively tightened 2. Damaged steering stem steel balls 3. Bent steering 4. Low front tire pressure 	Loosen the steering stem nut Replace Replace Add air to the specified pressure of 1.8 kg/cm ² (25.6 psi)
Front and rear wheel wobble	<ol style="list-style-type: none"> 1. Loose steering stem mounting bolt 2. Worn front and rear wheel bearings 3. Front or rear wheel runout or distorted 4. Loose spoke 5. Defective tire 	Retorque Replace bearing Repair or replace Retorque Replace
Soft suspension	<ol style="list-style-type: none"> 1. Loss of spring tension 2. Excessive load 	Replace
Hard suspension	<ol style="list-style-type: none"> 1. Ineffective front fork damper 2. Ineffective rear damper 	Repair Replace
Suspension noise	<ol style="list-style-type: none"> 1. Front case or rear damper rubbing 2. Interference between cushion case and spring 3. Faulty fork stopper rubber 4. Insufficient front fork oil 	Inspect cushion spring and case Repair or replace Replace Add damper oil
Defective brake	<ol style="list-style-type: none"> 1. Front brake fluid <ul style="list-style-type: none"> - Insufficient brake fluid - Air in the brake system - Worn brake pad - Worn piston - Worn or distorted front brake disc - Brake lever out of adjustment 2. Rear brake <ul style="list-style-type: none"> - Worn brake lining - Worn brake shoe or poor contacts - Worn brake cam - Wet brake from water or oil - Worn brake shaft - Brake pedal out of adjustment 	Add brake fluid Bleed brake system Replace pad Replace piston Replace disc Readjust Replace Replace Replace Clean Replace Readjust