CHAPTER THREE

LUBRICATION, MAINTENANCE AND TUNE-UP

A motorcycle, even in normal use, is subjected to tremendous heat, stress and vibration. When neglected, any bike becomes unreliable and actually dangerous to ride.

To gain the utmost in safety, performance and useful life from the Suzuki Intruder, it is necessary to make periodic inspections and adjustments. Frequently minor problems are found during these inspections that are simple and inexpensive to correct at the time. If they are not found and corrected at this time they could lead to major and more expensive problems later on.

Start out by doing simple tune-up, lubrication and maintenance. Tackle more involved jobs as you become more acquainted with the bike.

Table 1 is a suggested factory maintenance schedule. **Tables 1-6** are located at the end of this chapter.

NOTE

Where differences occur relating to the United Kingdom (U.K.) models they are identified. If there is no (U.K.) designation relating to a procedure, photo or illustration it is identical to the United States (U.S.) models.

ROUTINE CHECKS

The following simple checks should be performed at each^top at a service station for gas.

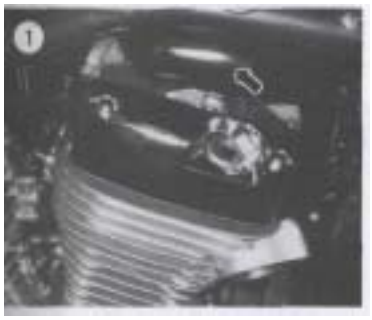
Engine Oil Level

Refer to *Engine Oil Level Check* under *Periodic Lubrication* in this chapter.

Fuel

All Intruder engines are designed to use gasoline that has a pump octane number (R+M)/2 of 85 or higher or a gasoline with a research octane number of 89 or higher. The pump octane number is normally displayed at service station gas pumps. Using a gasoline with a lower octane number can cause pinging or spark knock, both conditions of which can lead to engine damage. Unleaded fuel is recommended because it reduces engine and spark plug deposits.

When choosing gasoline and filling the fuel tank, note the following:



a. When filling the tank, do not overfill it. Fuel expands in the tank due to engine heat or heading by the sun. Stop adding fuel when the fuel level reaches the bottom of the filler tube inside the fuel tank.
b. To help meet clean air standards in some areas of the United States and Canada, oxy- I genated fuels are being used. Oxygenated fuels are conventional gasolines that are blended with an alcohol or ether compound to increase the gasoline's octane. When using an oxygenated fuel, make sure that it meets the minimum octane rating as previously specified.
c. Because oxygenated fuels can damage plastic and paint, make sure not to spill fuel onto the fuel tank during fuel stops.
d. An ethanol (ethyl or grain alcohol) gasoline that contains more than 10 percent ethanol by volume may cause engine starting and performance related problems.
e. Amethanol (methyl or wood alcohol) gasoline that contains more than 5 percent methanol by volume may cause engine starting and performance related problems. Gasoline that contains methanol must have corrosion inhibitors to protect the metal, plastic and rubber parts in the fuel system from damage.
f. Suzuki states that you can use a gasoline containing no more than 15 percent MTBE (Methyl Tertiary Butyl Ether) by volume.
g. If your bike is experiencing fuel system damage or performance related problems from the use of oxygenated fuels, consult with a mechanic in an area where this type of fuel is widely sold and used.

Coolant Level

Check the coolant level in the radiator only when the engine is **COOL.** Preferable prior to the first ride of the day. The coolant reserve tank **(Figure** 1) is not transparent and therefore cannot be used to check coolant level in the system. The only visual inspection possible is by removing the radiator cap and looking into the filler neck. 1. Remove the screws securing the radiator cover **(Figure** 2) and remove the cover.

WARNING

Do not remove the radiator cap when the engine is ***HOT.*** *The coolant is under pressure and scalding and severe burns could result.*

2. Slowly turn the radiator cap **(Figure** 3) *counter clockwise* to release any residual pressure.
3. Remove the radiator cap completely.
4.. Hold the bike vertical and observe the level in the radiator. The coolant should be up to the bottom of the radiator cap inlet fitting on the upper tank of the radiator.

NOTE

If the coolant level is very low, there may be a leak in the cooling system. If this condition exists, refer to ***Cooling System Inspection*** *in this chapter.*

NOTE

Never add just water to the system as this will dilute the coolant-to-water mixture to an unsafe level.

5. Insert a small funnel **(Figure** 4) into the radiator filler neck and add a 50:50 mixture of distilled water and antifreeze into the radiator to bring the level to the cap inlet fitting on the upper tank of the radiator, 6. Install the radiator cap and turn it *clockwise* until it stops turning and is locked in place. 7. Install the radiator cover and tighten the screws securely.

General Inspection

1. Quickly inspect the engine for signs of oil or fuel leakage.
2. Check the tires for embedded stones. Pry them out with a suitable small tool.
3. Make sure all lights work.

NOTE

At least check the brake light. It can burn out at any time. Motorists cannot stop as quickly as you and need all the warning you can give.

fire Pressure

Tire pressure must be checked with the tires cold. Correct tire pressure varies with the load you are arrying or if you have a passenger. See **Table 2.**

Brake Operation

Check that both brakes operate with full hydraulic (front) or mechanical (rear) advantage. Check the front brake fluid level as described under *Disc Brake Fluid Level Inspection* in this chapter. Check that there is no brake fluid leakage from the front master cylinder, front caliper or brake lines.

Battery

Remove the inspection cover **(Figure** 5) on the right-hand side of the battery case. The electrolyte level must be between the upper and lower level marks on the case.

NOTE

This inspection window area shows the electrolyte level in the one cell next to the window only. It is suggested that the battery be removed so the level can be checked in all 6 cells.

For complete details see *Battery Removal, Installation and Electrolyte Level Check* in this chapter.

Check the level more frequently in hot weather; electrolyte will evaporate rapidly as ambient heat increases.

Throttle

Sitting on the bike, with the brake ON, the transmission in NEUTRAL and with the engine idling, move the handlebars from side to side, making sure the idle does not increase or decrease by itself. Check that the throttle opens and closes smoothly in all steering positions. Shut off the engine.

Engine Stop Switch

The engine stop switch **(Figure** 6) is designed | primarily as an emergency switch. It is part of the right-hand switch assembly next to the throttle housing and it has 2 operating positions: OFF and RUN. When the switch is in the OFF position, the engine will not start or run. In the RUN position, the engine should start and run with the ignition switch on, the clutch lever pulled in, while pressing the starter button. With the engine idling, move the switch to OFF. The engine should turn off.

Sidestand Check Switch System Inspection (1987-on Models)

1. Place wood block(s) under the engine to support the bike securely with the rear wheel off the ground.
2. Check the sidestand spring (A, **Figure** 7). Make sure the spring is in good condition and has not lost tension.
3. Swing the sidestand (B, **Figure** 7) down and up a few times. The sidestand should swing smoothly and the spring should provide proper tension in the raised position.
4. While sitting on the motorcycle, shift the trans mission into NEUTRAL and move the sidestand up.
5. Start the engine and allow it to warm up. Then pull in the clutch lever and shift the transmission into gear.
6. Lower the sidestand with your foot. The engine should stop as the sidestand is lowered.
7. If the sidestand check switch did not operate as described, inspect the sidestand check switch as described in Chapter Eight.

Crankcase Breather Hose

Inspect the hose for cracks and deterioration and make sure that the hose clamps are tight.

Evaporative Emission Control System (California Models)

Inspect the hoses to make sure they are not kinked or bent and that they are securely connected to their respective parts.

Lights and Horn

With the engine running, check the following.
1. Pull the front brake lever on and check that the brake light comes on.
2. Push the rear brake pedal down and check that the brake light comes on soon after you have begun depressing the pedal.
3. With the engine running, check to see that the headlight and taillight are on.
4. Move the dimmer switch up and down between the HI and LO positions and check to see that the headlight elements are working in the headlight(s).
5. On U.K. models, move turn the switch on and off and check to see that the headlight elements are working in the headlight.
6. Push the turn signal switch to the left and right positions and check that all 4 turn signals are work ing.
7. Push the horn button and make sure that the horn blows loudly.
8. If during the test, the rear brake pedal traveled too far before the brake light came on, adjust the rear brake light switch as described in Chapter Eight.
9. If the horn or any of the lights failed to operate properly, refer to Chapter Eight.

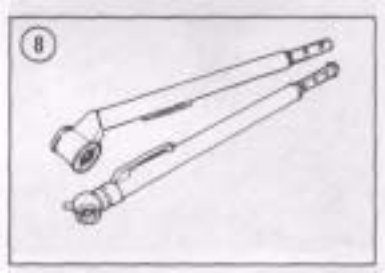
PRE-CHECKS

The following checks should be performed prior to the first ride of the day.
1. Inspect all fuel lines and fittings for wetness,
2. Make sure the fuel tank is full of fresh gasoline.
3. Make sure the engine oil level is correct. Add oil if necessary.
4. Make sure the final drive unit oil level is correct. Add oil if necessary.
5. Check the operation of the front brake. Add hy draulic fluid to the front brake master cylinder if necessary.
6. Check the operation of the rear brake. Adjust the rear brake pedal free play as described in this chap ter.
7. Check the operation of the clutch. Add hydraulic fluid to the clutch master cylinder if necessary.
8. Check the throttle and the rear brake pedal. Make sure they operate properly with no binding.
9. Inspect the front and rear suspension; make sure they have a good solid feel with no looseness.
10. Check tire pressure. Refer to **Table 2.**
11. Check the exhaust system for damage.
12. Check the tightness of all fasteners, especially engine mounting hardware.

SERVICE INTERVALS

The services and intervals shown in **Table 1** are recommended by the factory. Strict adherence to these recommendations will ensure long service from the Suzuki. If the bike is run in an area of high humidity, the lubrication services must be done more frequently to prevent possible rust damage.

For convenience when maintaining your motorcycle, most of the services shown in these tables are described in this chapter. However, some procedures which require more than minor disassembly or adjustment are covered elsewhere in the appropriate



chapter. The *Table of Contents* and *Index* can help you locate a particular service procedure.

TIRES AND WHEELS

Tire Pressure

Tire pressure should be checked and adjusted to maintain the tire profile, good traction and handling and to get the maximum life out of the tire. A simple, accurate gauge **(Figure** 8) can be purchased for a few dollars and should be carried in your motorcycle tool kit. Tire pressure should be checked when the tires are cold. The appropriate tire pressures are shown in **Table 2.**

NOTE

After checking and adjusting the air pressure, make sure to install the air valve cap ***(Figure 9).*** *The cap prevents small pebbles and dirt from collecting in the valve stem; this could allow air leakage or result in incorrect lire pressure readings.*

NOTE

A loss of air pressure may be due to a loose or damaged valve core. Put a few drops of water on the top of the valve core. If the water bubbles, tighten the valve core and recheck. If air is still leaking from the valve after tightening it, replace the valve stem assembly.

Tire Inspection

The tires take a lot of punishment so inspect them periodically for excessive wear. Inspect the tires for the following:

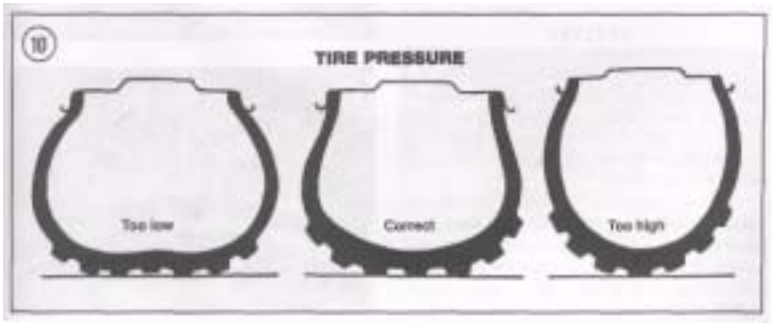
a. Deep cuts and imbedded objects (i.e., stones, nails, etc.). If you find a nail or other object in a tire, mark its location with a light crayon prior to removing it. This will help to locate the hole for repair. Refer to Chapter Ten for tire chang ing and repair information.
b. Flat spots.
c. Cracks.
d. Separating plies.
e. Sidewall damage.

Tire Wear Analysis

Abnormal tire wear should be analyzed to determine its causes. The most common causes are the following:

a. Incorrect tire pressure: Check tire pressure as described in this chapter.
b. Overloading.
c. Incorrect wheel balance: The tire/wheel assem bly should be balanced when installing a new tire and or tube and then re-balanced each time the tire is removed and reinstalled.
d. Worn or damaged wheel bearings.

Incorrect tire pressure is the biggest cause of abnormal tire wear **Figure 10.** Under-inflated tires will result in higher tire temperatures, hard or imprecise steering and abnormal tire wear. Overinflated tires will result in a hard ride and abnormal tire wear. Examine the tire tread, comparing wear in the center



of the contact patch with tire wear at the edge of the contact patch. Note the following:

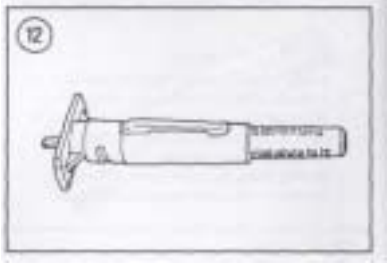
a. If a tire shows excessive wear at the edge of the contact patch, but the wear at the center of the contact patch is okay, the tire has been underinflated.
b. If a tire shows excessive wear in the center of the contact patch, but the wear at the edge of the contact patch is okay, the tire has been overinflated.

Tread Depth

Check local traffic regulations concerning minimum tread depth, Measure the tread depth at the center of tire and to the center of the tire tread **(Figure 11)** using a tread depth gauge **(Figure** 12) or a small ruler. Suzuki recommends that original equipment tires be replaced when the front tire tread depth is 1.5 mm (1/16 in.) or less, when the rear tread depth is 2.0 mm (3/32 in.) or less or when tread wear indicators appear at the designated area on the tire indicating the minimum tread depth.

Rim Inspection

Frequently inspect the wheel rims **(Figure 13).** If a rim has been damaged it might have been enough to knock it out of alignment. Improper wheel alignment can cause severe vibration and result in an unsafe riding condition. If the rim portion of a wire wheel is damaged it can be replaced. If the rim portion of an alloy wheel is damaged the wheel must be replaced as it cannot be serviced or repaired.



BATTERY

The battery is an important component in the electrical system. It is also the one most frequently neglected. In addition to checking and correcting the battery electrolyte level on a weekly basis, the battery should be cleaned and inspected at periodic intervals listed in **Table 1.**

The battery should be checked periodically for electrolyte level, state of charge and corrosion. During hot weather periods, frequent checks are recommended. If the electrolyte level is below the fill line, add distilled water as required. To assure proper mixing of the water and acid, operate the engine

immediately after adding water. *Never* add battery acid instead of water; this will shorten the battery's life.

CAUTION

If it becomes necessary to remove the battery breather tube when performing any of the following procedures, make sure to route the tube correctly during installation to prevent electrolyte or gas from spewing onto the battery case or any other component. Incorrect breather tube routing can cause structural and/or cosmetic damage.

Removal, Installation and Electrolyte Level Check

1. Place the bike on the sidestand.
2. Remove the bolt and disconnect the battery negative (-) lead **(Figure** 14).
3. Remove the screw (A, **Figure** 15) securing the battery positive (+) cable terminal protector, remove the protector (B, **Figure 15).**
4. Remove the bolt and disconnect the battery positive (+) lead **(Figure 16).**
5. Remove one of the front lower bolts (A, **Figure** 17) securing the battery case floor (B, **Figure** 17) in place.
6. Either hold onto the battery case floor or place wood block(s) under it to support the floor when the other bolt is removed.
7. Remove the front lower bolt from the other side of the case.
8. Lower the battery case floor (A, **Figure** 18) and slide the battery (B, **Figure** 18) out of the case. Remove the battery.

9. The electrolyte level should be maintained be tween the 2 marks on the battery case (A, **Figure 19).**

WARNING

Protect your eyes, skin and clothing. If electrolyte gets into your eyes, flush your eyes thoroughly with clean water and get prompt medical attention.

CAUTION

Be careful not to spill battery electrolyte on plastic, painted or plated surfaces. The liquid is highly corrosive and will damage the finish. If it is spilled, wash it off immediately with soapy water and thoroughly rinse with clean water.

10. Rinse the battery off with clean water and wipe dry.

11. Remove the caps from the battery cells **(Figure** 20) and add distilled water to correct the level. Never add electrolyte (acid) to correct the level.

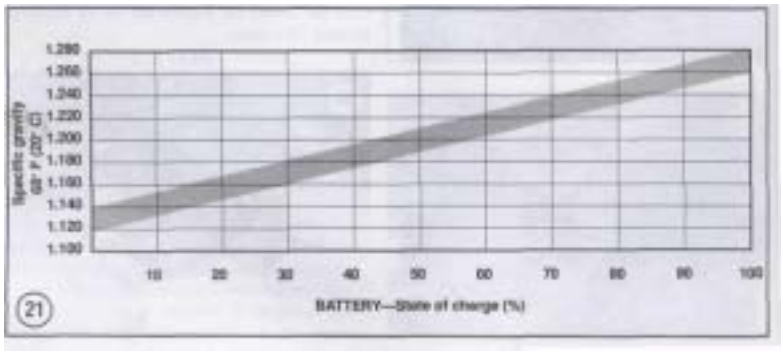
NOTE

If distilled water has been added, reinstall the battery caps and gently shake the battery for several minutes to mix the existing electrolyte with the new water.

12. After the fluid level has been corrected and the battery allowed to stand for a few minutes, remove the battery caps and check the specific gravity of the electrolyte with a hydrometer **(Figure** 21). See *Battery Testing* in this chapter.

CAUTION

If distilled water has been added to a battery in freezing or near freezing weather, add it to the battery, dress warmly and then ride the bike for a ***minimum of 30 minutes.*** *This will help mix the water thoroughly into the electrolyte in the battery. Distilled water is lighter than electrolyte and will float on*



top of the electrolyte if it is not mixed in properly. If the water stays on the top, it may freeze and fracture the battery case, ruining the battery.

13. After the battery has been refilled, recharged or replaced, install it as follows:

a. Clean the battery terminals (B, Figure 19) of all corrosion and/or oxidation. After a thorough cleaning, coat the terminals with a thin layer of dielectric grease to retard corrosion and de composition of the terminals.

b. Position the battery on the ground with the negative (-) terminal (A, **Figure** 22) toward the *left-hand* side of the bike. The positive (+) terminal and the breather outlet are on the *right-hand* side (B, Figure 22).

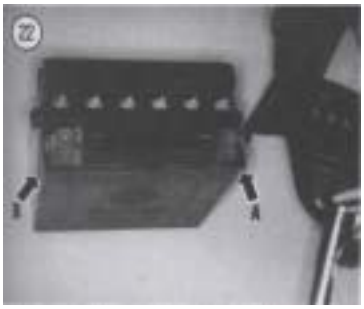
c. Make sure the breather tube (C, Figure 18) is in place on the battery prior to installing the battery.

d. Carefully move the battery (B, Figure 18) up into the battery case and hinge the case floor (A, Figure 18) up into position. Install one of the bolts (A, Figure 17) only finger tight at this time.

e. Install the bolt on the other side and tighten securely. Then tighten the first bolt securely.

f. Attach the red positive (+) cable and bolt (Fig ure 16) first then the black negative (-) cable (Figure 14). Tighten the bolts securely.

g. Install the battery positive (+) cable terminal protector, (B, Figure 15) and tighten the screw securely.



Testing

Hydrometer testing is the best way to check battery condition. Use a hydrometer with numbered graduations from 1.100 to 1.300 rather than one with color-coded bands. To use the hydrometer, squeeze the rubber ball, insert the tip into the cell and release the pressure on the ball. Draw enough electrolyte to float the weighted float inside the hydrometer. Note the number in line with the surface of the electrolyte; this is the specific gravity for this cell. Squeeze the rubber ball again and return the electrolyte to the cell from which it came.

The specific gravity of the electrolyte in each battery cell is an excellent indication of that cell's condition. A fully charged cell will read from 1.265-1.280, while a cell in good condition reads from 1.225-1.265 and anything below 1.225 is practically dead.

NOTE

Specific gravity varies with temperature. For each 10° the electrolyte temperature above 2 7° C (80° F), add 0.004 to readings indicated on the hydrometer. Subtract 0.004 for each 10° below 27° C (80° F).

If the cells test in the poor range, the battery requires recharging. The hydrometer is useful for checking the progress of the charging operation. Table 3 shows approximate state of charge.

Charging

WARNING

During the charging process, highly explosive hydrogen gas is released from the battery. The battery should be charged only in a well-ventilated area away from any open flames (including pilot lights on home gas appliances). Do not allow any smoking in the area. Never check the charge by arcing (connecting pliers or other metal objects) across the terminals; the resulting spark can ignite the hydrogen gas.

CAUTION

Always remove the battery from the bike's frame before connecting the battery charger. Never recharge a battery in the bike's frame; the corrosive mist that is

emitted during the charging process will corrode all surrounding surfaces

1 Connect the positive (+) charger lead to the posi tive (+) battery terminal and the negative (-) charger lead to the negative (-) battery terminal

2 Remove all vent caps from the battery, set the charger to 12 volts and switch the charge ON If the output of the charger is variable, it is best to select a low setting—1 1/2 to 2 amps Normally, a battery should be charged at a slow charge rate of 1/10 its given capacity

CAUTION

The electrolyte level must be maintained at the upper level during the charging cycle, check and refill as necessary

3 The charging time depends on the discharged condition of the battery The chart in Figure 23 can be used to determine approximate charging times at different specific gravity readings For example, if the specific gravity of your battery is 1.180, the approximate charging time would be 6 hours.

4 After the battery has been charged for about 6 hours, turn the charger OFF, disconnect the leads and check the specific gravity of each cell It should be within the limits specified in Table 3 If it is, and remains stable for 1 hour, the battery is considered charged

5 To ensure good electrical contact, cables must be clean and tight on the battery's terminals If the cables terminals are badly corroded, even after per forming the above cleaning procedures, the cables should be disconnected, removed from the bike and cleaned separately with a wire brush and a baking soda solution After cleaning, apply a very thin coat ing of dielectric grease, petroleum jelly (Vaseline) or sihcone spray to the battery terminals before reat-taching the cables.

NEW BATTERY INSTALLATION

When replacing the old battery with a new one, be sure to charge it completely (specific gravity 1.260-1 280J before installing it in the bike. Failure to do so or using the battery with a low electrolyte level will permanently damage the new battery

NOTE

Recycle your old battery When you re-place the old battery, be sure to turn in the old battery at that time The lead plates and the plastic case can be recy-cled Most motorcycle dealers will ac-cept your old battery in trade when you purchase a new one but if they will not, many automotive supply store certainly will Never place an old battery in your household trash since it is illegal, in most states, to place any acid or lead (heavy metal) contents in landfills There is also the danger of the battery being crushed in the trash truck and spraying acid on the truck operator

BATTERY ELECTRICAL CABLE CONNECTORS

To ensure good electrical contact between the battery and the electrical cables, the cables must be clean and free of corrosion.

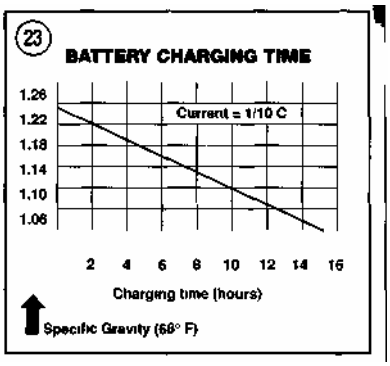
1. If the electrical cable terminals are badly cor roded, disconnect them from the bike's electrical system.

2. Thoroughly clean each connector with a wire brush and then with a baking soda solution Rinse thoroughly with clean water and wipe dry with a clean cloth.

3. After cleaning, apply a dim layer of dielectric grease to the battery terminals before reattachmg the cables.

4 If disconnected, attach the electrical cables to the bike's electrical system.

1



5. After connecting the electrical cables, apply a light coating of dielectric grease to the electrical terminals (B, **Figure 19)** of the battery to retard corrosion and decomposition of the terminals.

PERIODIC LUBRICATION

Oil

Oil is graded according to its viscosity, which is an indication of how thick it is. The Society of Automotive Engineers (SAE) system distinguishes oil viscosity by numbers. Thick oils have higher viscosity numbers than thin oils. For example, an SAE 5 oil is a thin oil while an SAE 90 oil is relatively thick. If the oil has been tested in cold weather it is denoted with a "W" after the number as "SAE 10W."

Grease

A good quality grease (preferably waterproof) should be used. Water does not wash grease from parts as easily as it washes off oil. In addition, grease maintains its lubricating qualities better than oil on long and strenuous rides. In a pinch, though, the wrong lubricant is better than none at all. Correct the situation as soon as possible.

Engine Oil Level Check and Adding Oil

Engine oil level is checked with the oil level inspection window, located at the right-hand side of the engine on the clutch cover.

1. Place the bike on the sidestand on level ground.
2. Start the engine and let it idle for 1-2 minutes.
3. Shut off the engine and let the oil settle for 1-2 minutes.
4. Hold the bike in the true vertical position. A false reading will be given if the bike is tipped to either side,
5. Look at the oil level inspection window. The oil level should be between the 2 lines **(Figure** 24). If the level is below the lower "F" line, add the recom mended weight engine oil to correct the level.
6. Remove the oil filler cap **(Figure** 25).
7. Insert a funnel into the oil fill hole and fill the engine with the correct viscosity and quantity of oil. Refer to **Table 4.**
8. Install the oil filler cap and tighten securely.
9. Repeat Steps 2-5 and recheck the oil level.

Engine Oil and Oil Filter Change

Change the engine oil and the oil filter at the same time at the factory-recommended oil change interval indicated in **Table 1.** This assumes that the motorcycle is operated in moderate climates. In extreme climates, oil should be changed every 30 days. The time interval is more important than the mileage interval because acids formed by combustion blowby will contaminate the oil even if the motorcycle is not run for several months. If the motorcycle is operated under dusty conditions, the oil will get dirty more quickly and should be changed more frequently.

Suzuki recommends the use of Suzuki Performance 4 Motor Oil that is a very high performance motor oil which has a special friction modifier added. If this type of oil is not used, use only a high-quality detergent motor oil with an API rating of SE or SF. The API rating is stamped on top of the can or printed on the label on the plastic bottle

(Figure 26). Try to use the same brand of oil at each change. Use of any oil additive is not recommended as it may cause clutch slippage. Refer to **Figure** 27 for correct oil viscosity to use under anticipated ambient temperatures (not engine oil temperature). To change the engine oil and filter you will need the following:

a. Drain pan.
b. Funnel.
c. Open-end wrench (drain plug).
d. Suzuki oil filter wrench or equivalent.
e. Oil (refer to **Table 4** for quantity).
f. New oil filter element.

There are a number of ways to discard the old oil safely. Some service stations and oil retailers will accept your used oil for recycling; some may even give you money for it. Never drain the oil onto the ground nor place it in your household trash.

NOTE

If you are going to recycle the oil, do not add any other type of chemical (fork oil, brake fluid, etc) to the oil as the oil recycler will probably not accept the oil. Final drive gear oil is acceptable.

1. Start the engine and let it reach operating tem perature; 15-20 minutes of stop-and-go riding is usually sufficient.
2. Turn the engine off and place the bike on level ground on the sidestand.
3. Place a drain pan under the left-hand rear portion of the crankcase and remove the drain plug **(Figure** 28). Remove the oil filler cap **(Figure** 25) this will speed up the flow of oil.
4. Inspect the sealing washer on the crankcase drain plug. Replace if its condition is in doubt.
5. Install the drain plug and washer and tighten to the torque specification listed in **Table 5.**

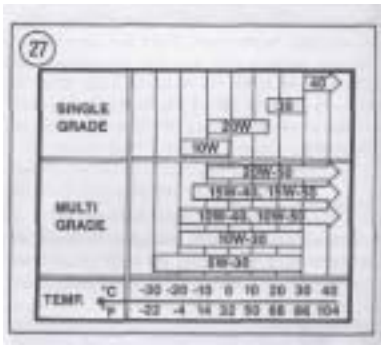
NOTE

Before removing the oil filter, clean off all road dirt and any oil residue around it ***(Figure*** *29).*

6. Move the drain pan under the oil filter at the front of the engine.

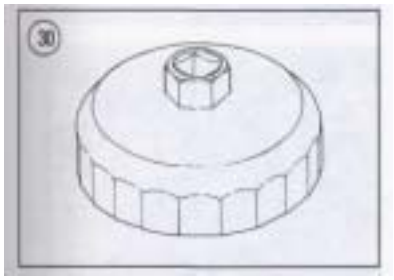
NOTE

Because the front exhaust pipe and the radiator lower hose outlet are so close to the oilfiller there is very little working room for oil filter removal and in-



stallation. The easiestway to remove the oil filter is to use a Suzuki "cap type" oil filter wrench (Figure 30) (part No. 09915-47320) and a box wrench.

1. Use the special tool and socket wrench and unscrew the oil filter (Figure 31) from the engine. Place the old filter in a reclosable plastic bag and close it to prevent residual oil from draining out. Discard the used oil filter properly.



8. Clean off the oil filter mating surface of the crankcase with a shop rag and cleaning solvent. Remove any sludge or road dirt. Wipe it dry with a clean, lint-free cloth.

9. Apply a light coat of clean engine oil to the O-ring seal on the new oil filter (Figure 32).

10. Screw on the new oil filter by hand until the O-ring seal contacts the crankcase mating surface.

11. Make a mark on the face of the oil filter wrench with a permanent marker pen so it can be easily seen. Position this mark at the 12 o'clock position and install the wrench on the oil filter. Tighten the oil filter 2 full turns, then stop. The filter is now tight enough.

12. During oil filter removal, some oil may get onto the exhaust pipe. Prior to starting the engine, wipe off any spilled oil with a shop cloth. If necessary, spray some aerosol electrical contact cleaner on the pipe to remove the oil residue. If the oil is not cleaned off it will smoke once the engine is started and the exhaust pipe gets hot.

NOTE

Approximately every 3rd or 4th time the engine oil is changed it's a good idea to remove the oil sump plate and clean and inspect the inlet screen as described in the following procedure.

13. Insert a funnel into the oil fill hole and fill the engine with the correct viscosity and quantity of oil. Refer to **Table 5.**

14. Install the oil filler cap (Figure 25) and tighten securely.

15. Start the engine, let it run at idle speed and check for leaks.

16. Turn the engine off and check for correct oil level as described in this chapter; adjust as neces sary.

Engine Oil Sump

Approximately every 3rd or 4th time the engine oil is changed it's a good idea to remove the oil sump plate and clean and inspect the sump inlet screen. If the bike is ridden in dusty areas it's a good idea to remove and clean it more often.

1. Drain the engine oil as described in this chapter.
2. Move the drain pan under the oil sump cover plate.

CAUTION

If the rear camshaft has been removed, pull up on the camshaft chain and keep it taut, make certain that the camshaft chain is properly meshed onto the crankshaft timing sprocket then rotate the crankshaft. If this step is not followed, the chain may become kinked and cause damage to the crankcases, the camshaft chain and the timing sprocket on the crankshaft.

17. Use a 17 mm socket and wrench on the alterna tor rotor bolt **(Figure** 20). Rotate the engine *clock wise,* as viewed from the left-hand side, until the other sprocket bolt is visible.

18. Straighten the tab on the other camshaft sprocket bolt lockwasher and remove the exposed bolt and the lockwasher.

19. Disengage the camshaft drive chain from the camshaft sprocket and remove the camshaft.

20. Tie a piece of wire to the camshaft chain and tie it to an external portion of the engine or insert a long drift or long socket extension through the camshaft drive chain **(Figure** 23) to prevent the camshaft chain from falling down into the crankcase.

CAUTION

If the crankshaft must be rotated with the camshaft removed, pull up on the camshaft chain and keep it taut, make certain that the camshaft chain is properly meshed onto the crankshaft timing sprocket then rotate the crankshaft. If this step is not followed, the chain may become kinked and cause damage to the crankcases, the camshaft chain and the timing sprocket on the crankshaft.

21. Inspect the camshaft as described in this chapter.

22. Inspect the cylinder head cover as described in this chapter.

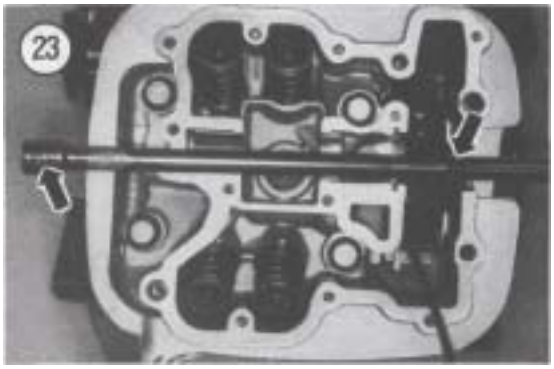
Front Cylinder Installation

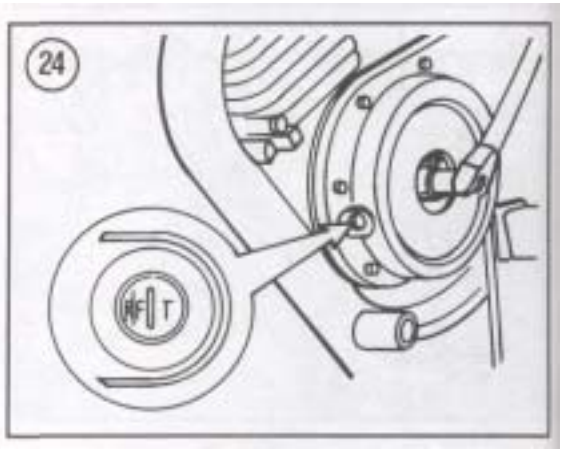
CAUTION

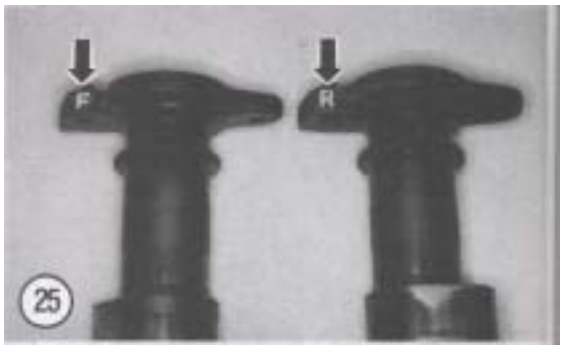
If the engine has been completely disassembled, first install the rear cylinder camshaft and cylinder head cover then install the front. If only the front cylinder camshaft was removed, the ***rear cylinder*** *must be at TDC on the compression stroke prior to installing the front camshaft. This is necessary for correct camshaft timing of both cylinders.*

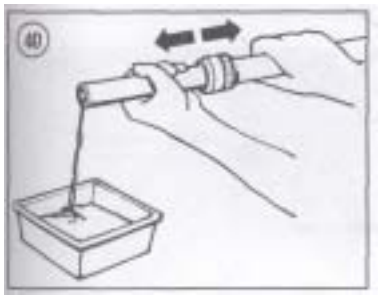
NOTE

During this procedure, reference is made to the timing marks "RIF T" for the ***rear cylinder.*** *This is correct, since proper camshaft timing is based on the rear cylinder being at TDC on the compression stroke for camshaft installation on both the front and rear cylinders.*









b. Funnel.
c. Approximately 200 ml (6.8 oz.) of hypoid gear oil.

Discard old oil as outlined under *Engine Oil and Filter Change* in this chapter.

1. Ride the bike until normal operating temperature is obtained. Usually 15-20 minutes of stop-and-go : riding is sufficient.
2. Place the bike on the centerstand.
3. Place a drain pan under the drain plug.
4. Remove the oil filler cap **(Figure** 38) and the drain plug **(Figure 39).**
5. Let the oil drain for at least 15-20 minutes to ensure that the majority of the oil has drained out.
6. Inspect the sealing washer on the drain plug; replace the sealing washer if necessary.
7. Install the drain plug and tighten it securely.
8. Insert a funnel into the oil filler cap hole.
9. Add hypoid gear oil until the oil level is correct. Refer to **Table 4** for correct oil viscosity and type to use under anticipated ambient temperatures.

NOTE

In order to measure the correct amount of fluid, use a plastic baby bottle. These have measurements in milliliters (ml) and fluid ounces (oz.) on the side.

J 0. Install the oil filler cap **(Figure 38).** 11. Test ride the bike and check for oil leaks. After the test ride recheck the oil level as described in this chapter and readjust if necessary.

Front Fork Oil Change

It is a good practice to change the fork oil at the interval listed in Table 1 or once a year. If it becomes contaminated with dirt or water, change it immediately.

The front forks are not equipped with a drain screw. In order to change the fork oil, the forks must be removed from the bike and partially disassembled.

1. Remove the fork assemblies as described under *Front Forks* in Chapter Ten.
2. Remove the fork spring.
3. Turn the fork assembly upside down and drain the fork oil into a suitable container. Pump the fork several times by hand to expel most of the remaining oil **(Figure 40).** Dispose of the fork oil properly.

NOTE

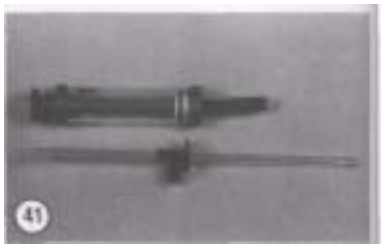
If you recycle your engine oil, do ***not*** *add the fork oil to the oil as the oil recycler will probably not accept the oil.*

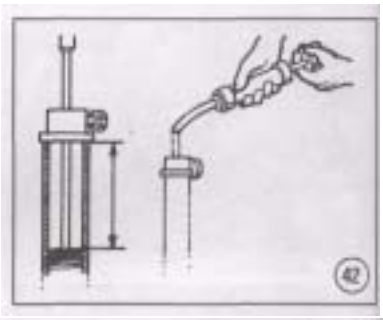
NOTE

Suzuki recommends that the fork oil level be measured, if possible, to ensure a more accurate filling.

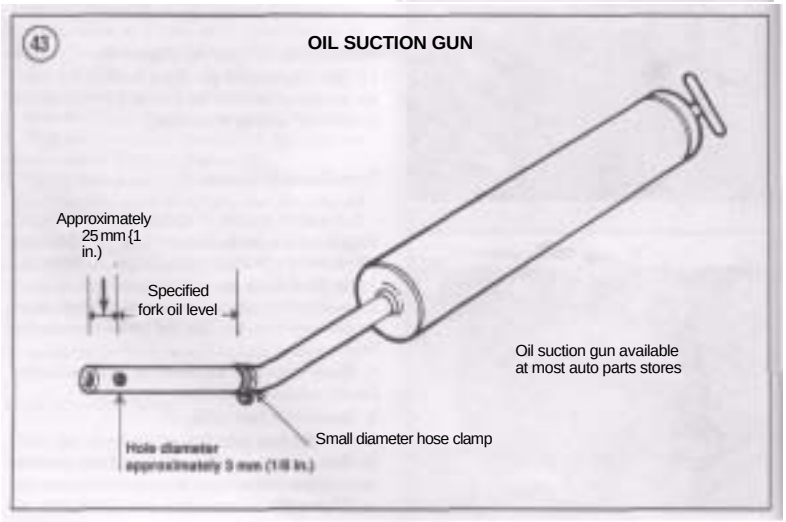
NOTE

To measure the correct amount of fluid, use a plastic baby bottle. These bottles have measurements in milliliters (ml) on the side.



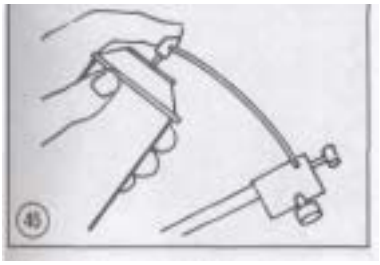


4. Hold the fork assembly in a vertical position and compress the fork completely.
5. Add the recommended amount of SAE lOWfork oil to the fork assembly listed in **Table 4.**
6. Hold the fork assembly as close to perfect vertical as possible.
7. Use an accurate ruler or the Suzuki oil level gauge (part No. 09943-74111), or equivalent **(Figure** 41), to achieve the correct oil level listed in **Table 4.** Refer to **Figure 42.**



NOTE

*An oil level measuring device can be made as shown in **Figure 43.** Position the lower edge of the hose clamp the specified oil level distance up from the small diameter hole. Fill the fork with a few mi's more than the required amount of oil. Position the hose clamp on the top edge of the fork tube and draw out the excess oil. Oil is sucked out until the level reaches the small diameter hole. A precise oil level can be achieved with this simple device.*



8. Allow the oil to settle completely and recheck the oil level measurement. Adjust the oil level if neces sary.
9. Install the fork spring with the closer wound coils **(Figure** 44) going in last.
10. Hold the fork assembly in a vertical position (the upper end is open) and install the fork assem blies as described in Chapter Ten.

Throttle Cable

The throttle control cable should be lubricated at the cable inspection intervals specified in **Table 1** or when it has become stiff or sluggish. At this time, it should also be inspected for fraying, and the cable sheath should be checked for chafing. The cables are relatively inexpensive and should be replaced when found to be faulty.

The cable should be lubricated with a cable lubricant and a cable lubricator **(Figure 45).**

CAUTION

*If the stock cable has been replaced with nylon-lined cables, do **not** oil them as described in the following procedure. Oil and most cable lubricants will cause the liner to expand, pinching the liner against the cable. Nylon lined cables are normally used dry. When servicing nylon-lined cables, follow the cable manufacturer's instructions.*

NOTE

The main cause of cable breakage or cable stiffness is improper lubrication. Maintaining the cables as described in this section will assure long service life.

1. Remove the screws securing the right-hand switch assembly **(Figure 46)** together to gain access to the throttle cable end.
2. Disconnect the throttle cable from the grip as sembly and the upper portion of the switch assembly **(Figure 47).**
3. Remove the fuel tank as described under *Fuel Tank Removal/Installation* in Chapter Seven.
4. Attach a lubricator following the manufacturer's instructions **(Figure 45).**
5. Place a clean shop cloth at the other end of the cable to catch the excess lubricant as it exits the cable end.

6. Insert the nozzle of the lubricant can in the lubri cator, press the button on the can and hold down until the lubricant begins to flow out of the other end of the cable.
7. Remove the lubricator, reconnect the cable and adjust the cable.
8. Install the fuel tank.

Brake System

The following brake components should be lubricated with silicone grease (specified for brake use) whenever the components are removed for service:

a. Master cylinder rubber boots (inside).
b. Brake caliper boots (inside).
c. Brake caliper pin bolt sliding surface.

Rear Brake Pedal Rod
(Models So Equipped)

Whenever the rear brake pedal is adjusted or when the pedal feels stiff, lubricate the points shown in **Figure 48** with clean engine oil,

Brake Pedal
Pivot Shaft Lubrication

The brake pedal should be removed, as described in Chapter Twelve, periodically and the pivot shaft lubricated with grease.

Speedometer Cable Lubrication

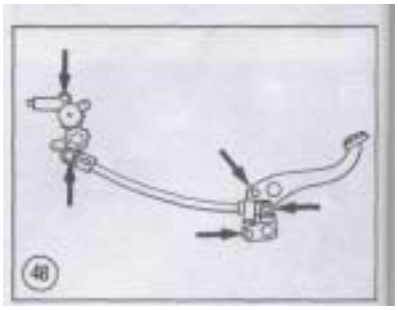
The inner speedometer cable should be lubricated periodically or whenever needle operation is erratic. At the same time, check the outer cable for damage.
1. Unscrew the knurled speedometer cable ring at the left-hand side of the speedometer case
2. At the front wheel, remove the speedometer cable **(Figure** 49) from the speedometer gear housing.
3. Attach a cable lubricator **(Figure** 45) to the cable following the manufacturer's instructions.
4. Insert the nozzle of the lubricant can into the lubricator, press the button on the can and hold it down until the lubricant begins to flow out of the other end of the cable. If the lubricant flows out from the cable lubricator, the lubricator is not installed properly onto the end of the cable. You may have to install the lubricator a few times to get it to seal properly. Place a shop cloth at the base of the speedometer cable to catch all excess lubricant that will flow out.

NOTE
If lubricant does not flow out the end of the cable, check the entire cable for fraying, bending or other damage.

5. Remove the lubricator and wipe off all excess lubricant from the cable.
6. Install the speedometer cable into the speedome ter gear housing at the front wheel.
7. Reconnect the upper end of the speedometer cable to the speedometer housing.

Steering Stem Lubrication

The retainer-type ball bearings used in the steering system should be removed, cleaned and lubricated with bearing grease as described in Chapter Ten.



Miscellaneous Lubrication Points

Lubricate the clutch lever, front brake lever, sidestand pivot point and the footpeg pivot points. Use SAE 10W-40 engine oil.

PERIODIC MAINTENANCE

Disc Brake Fluid Level

The fluid level should be up between the upper and lower mark within the reservoir. If the brake fluid level reaches the lower level mark **(Figure** 50) on the side of the master cylinder reservoir, the fluid level must be corrected by adding fresh brake fluid.

1. Place the bike on level ground and position the handlebars so the front master cylinder reservoir is in its normal riding position.
2. Clean the top of the master cylinder of all dirt and foreign matter.
3. Remove the screws securing the cover **(Figure** 51). Remove the cover and the diaphragm.
4. Add brake fluid until the level is to the upper level line within the master cylinder reservoir. Use fresh brake fluid from a sealed brake fluid container.

WARNING

Use brake fluid from a sealed container clearly marked DOT 3 or DOT 4 only (specified for disc brakes). Others may vaporize and cause brake failure. Do not intermix different brands or types of brake fluid as they may not be compatible. Do not intermix a silicone based (DOT 5) brake fluid as it can cause brake component damage leading to brake system failure.

CAUTION

Be careful when handling brake fluid. Do not spill it on painted or plated surfaces or plastic parts as it will destroy the surface. Wash the area immediately with soapy water and thoroughly rinse it off.

5. Reinstall the diaphragm and the top cover (Figure 51). Tighten the screws securely.

Front Disc Brake Line

Check hydraulic brake line **(Figure** 52) between the front master cylinder and the front brake caliper. If there is any leakage, tighten the connections and bleed the brakes as described under *Bleeding the System* in Chapter Twelve. If this does not stop the leak or if a brake line is obviously damaged, cracked or chafed, replace the brake line and bleed the system.

Clutch Fluid Level Check

The clutch is hydraulically operated and requires no routine adjustment.

The hydraulic fluid in the clutch master cylinder should be checked as listed in ***Table* 1** or whenever the level drops, whichever comes first. Bleeding the clutch system and servicing clutch components are covered in Chapter Five.

CAUTION

If the clutch operates correctly when the engine is cold or in cool weather, but operates erratically (or not at all) after the engine warms-up or when riding in hot weather, there is air in the hydraulic line and the clutch system must be bled. Refer to ***Bleeding the System*** *in Chapter Five.*

The fluid level in the reservoir should be up to the upper mark within the reservoir. This upper level mark is only visible when the master cylinder top cover is removed. If the fluid level reaches the lower level mark **(Figure** 53), visible through the viewing port in the master cylinder reservoir, the fluid level must be corrected by adding fresh hydraulic (brake) fluid.

1. Place the bike on level ground and position the handlebars so the master cylinder reservoir is in its normal riding position.
2. Clean any dirt from the area around the top cover prior to removing the cover.
3. Remove the screws securing the top cover and remove the top cover **(Figure** 54) and the diaphragm.

WARNING

Use hydraulic fluid from a sealed container clearly marked DOT 3 or DOT 4 only. Do not intermix different brands or types of hydraulic fluid as they may not be compatible. Do not intermix a silicone based (DOT 5) hydraulic fluid as it can cause clutch component damage leading to clutch release system failure.

CAUTION

Be careful when handling hydraulic fluid. Do not spill it on painted or plated surfaces as it will destroy the surface. Wash the area immediately with soapy water and thoroughly rinse it off.

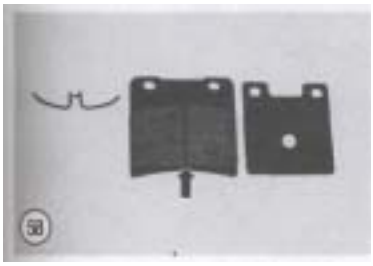
4. Add clutch fluid until the level is to the upper level line within the master cylinder body. Use fresh

hydraulic fluid from a sealed hydraulic fluid container.

5. Reinstall the diaphragm and the top cover **(Figure** 54). Tighten the screws securely.

Clutch Hydraulic Line

Check clutch line **(Figure** 55) between the master cylinder and the clutch slave cylinder. If there is any leakage, tighten the connections and bleed the clutch as described under *Bleeding the System* in Chapter Five. If this does not stop the leak or if a clutch line is obviously damaged, cracked or chafed, replace the clutch line and bleed the system as described in Chapter Five.



Disc Brake Pad Wear

Inspect the brake pads for excessive or uneven wear, scoring and oil or grease on the friction surface.

1. Remove the dust cover **{Figure** 56) from the brake caliper.
2. Look into the caliper assembly **(Figure** 57) and check the wear lines on the brake pads.

NOTE

***Figure** 58 is shown with the brake pads removed from the caliper for clarity. The wear line is visible without removing the pads.*

3. Replace both pads if the wear line **(Figure** 58) on the pads reaches the brake disc.
4. If this condition exist, replace the pads as described in Chapter Twelve.

Disc Brake Fluid Change

Every time the reservoir cap is removed, a small amount of dirt and moisture enters the brake fluid. The same thing happens if a leak occurs or any part of the hydraulic system is loosened or disconnected. Dirt can clog the system and cause unnecessary wear. Water in the brake fluid vaporizes at high temperature, impairing the hydraulic action and reducing the brake's stopping ability.

To maintain peak performance, change the brake fluid as indicated in **Table 1.** To change brake fluid, follow the *Bleeding the System* procedure in Chapter Twelve. Continue adding new fluid to the master cylinder and bleeding out at the caliper until the fluid leaving the caliper is clean and free of contaminants.

WARNING

Use brake fluid from a sealed container clearly marked DOT 3 or DOT 4 only (specified for disc brakes). Others may vaporize and cause brake failure. Do not intermix different brands or types of brake fluid as they may not be compatible. Do not intermix a silicone based (DOT 5) brake fluid as it can cause

brake component damage leading to brake system failure.

Rear Drum Brake Lining Wear Indicator

The rear drum brake is equipped with a brake lining wear indicator. This enables you to check the brake lining condition without removing the rear wheel and brake assembly for inspection purposes.

1. Apply the rear brake fully.
2. Observe where the line on the brake camshaft (A, **Figure** 59) falls within the embossed wear range (B, **Figure** 59) on the brake panel.
3. If the lines falls within this range the brake lining thickness is within specification and do not require any service.
4. If the lines falls outside of this range **(Figure 60)** the brake linings are worn to the point that they require replacement.
5. If necessary, replace the rear brake linings as described under *Rear Drum Brake* in Chapter Twelve.

Rear Brake Pedal
Height and Freeplay Adjustment

The rear brake pedal height should be adjusted at the interval listed in **Table 1.** The pedal height will change with brake lining wear from use. The top of the brake pedal should be positioned above the top surface of the footpeg **(Figure 61)** 40 mm (1.6 in.). The pedal freeplay should be 20-30 mm (0.8-1.2 in.).

1. Make sure the brake pedal is in the at-rest posi tion.

NOTE

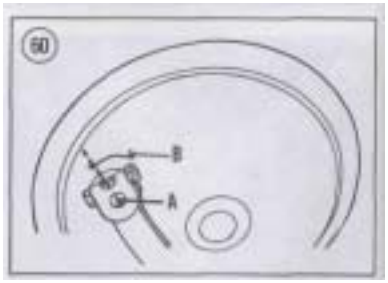
***Figure 62** is shown with the footpeg assembly removed from the frame for clarity. It is not necessary to remove the footpeg assembly to adjust the brake pedal.*

2. To change height position, loosen the locknut (A, **Figure 62)** and turn the adjust bolt (B, **Figure 62)** until the correct height is achieved. Tighten the locknut (A) securely.
3. To change the freeplay adjustment, turn the adjust nut **(Figure 63)** at the end of the brake rod, or cable. Turn the adjust nut in either direction until the cor rect amount of freeplay is achieved.

Throttle Cable Adjustment

The throttle cable should have 0.5-1.0 mm (0.02-0.04 in.) of free play. If adjustment is necessary, perform the following.

1. At the throttle assembly end of the throttle cable, loosen the locknut (A, **Figure 64)** and turn the adjuster (B, **Figure 64)** in either direction until the correct amount of free play is achieved.
2. Tighten the locknut (A).



4. If the proper amount of adjustment cannot be achieved using this procedure, the cable has stretched to the point where it needs replacing. Refer to *Throttle Cable Replacement* in Chapter Seven.

5. Check the throttle cable from the throttle grip to the throttle cable joint above the front carburetor. Also check from the cable joint to each carburetor. Make sure they are not kinked or chafed. Replace as necessary.

5. Make sure the throttle grip rotates freely from a fully closed to fully open position. Check with the handlebar at center, at full right and at full left. If necessary, remove the throttle grip and apply a lithium base grease to the rotating surfaces.

WARNING
With the engine idling, move the handlebar from side to side.

If idle speed increases during this movement, the throttle cable may need adjusting or may be incorrectly routed through the frame. Correct this problem immediately. Do **not** ride the bike in this unsafe condition.

Camshaft Chain Tensioner Adjustment

There is *no* provision for cam chain tensioner adjustment on this engine. Camshaft chain tension is maintained automatically.

Exhaust System

Check for leakage at all fittings. Tighten all bolts and nuts; replace any gaskets as necessary. Refer to *Exhaust System* in Chapter Seven.

Air Filter Elements

The front and rear air filter elements should be removed and cleaned at the interval listed in **Table 1**. Always replace both air filter elements at the same time and they should be replaced sooner if soiled, severely clogged or broken in any area.

The air filter element removes dust and abrasive particles from the air before the air enters each carburetor and the engine. Without the air filter, very fine particles could enter into the engine and cause rapid wear of the piston rings, cylinders and bearings and might clog small passages in the carburetors. Never run the bike without both air filter elements installed.

Proper air filter servicing can do more to ensure long service from your engine than almost any other single item.

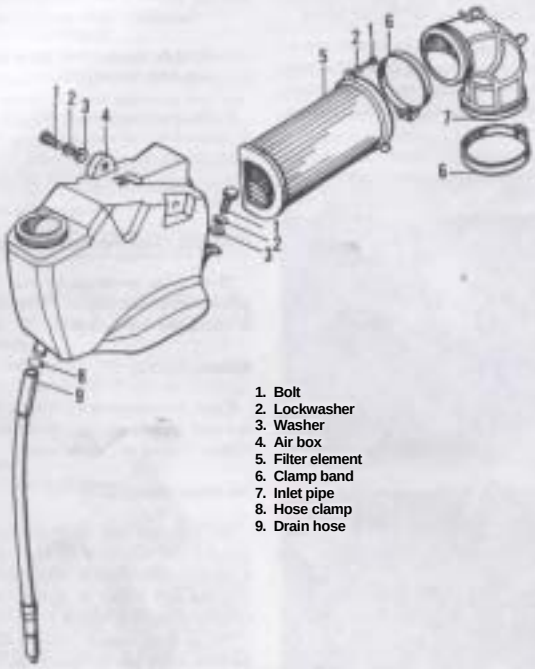
The air filter elements are a dry-element type; no oiling is required.

Front Air Filter
Removal/Installation

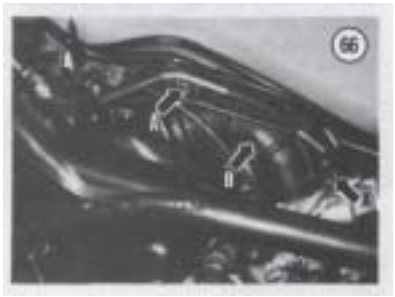
Refer to **Figure 65** for this procedure:

65

FRONT AIR FILTER HOUSING



1. Bolt
2. Lockwasher
3. Washer
4. Air box
5. Filter element
6. Clamp band
7. Inlet pipe
8. Hose clamp
9. Drain hose

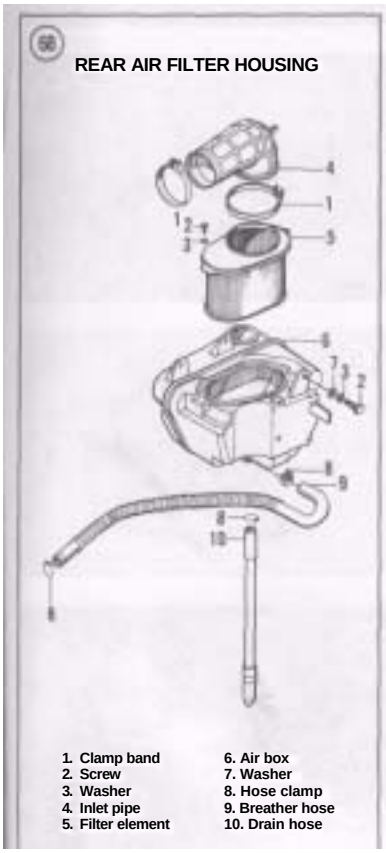


1. Remove the rider's seat as described under *Seat Removal/Installation* in Chapter Thirteen.

2. Remove the fuel tank as described in Chapter Seven.

3. Disconnect the battery negative (-) lead as described in this chapter.

4. Loosen the screws (A, **Figure 66)** on the clamping bands on each end of front air filter inlet pipe. Slide the clamping bands onto the inlet pipe.



5. Remove the cable bands from the inlet pipe and move the cables out of the way.

6. Remove the inlet pipe (B, **Figure 66)** from the front air filter element and the carburetor inlet. Remove the front inlet pipe.

7. Remove the 3 bolts securing the air filter element **(Figure** 67) to the air filter case and remove the element from the air box.

8. Inspect the element as described in this chapter.

9. Install the air filter element and make sure it is correctly seated into the air box so there is no air leak, then install the bolts. Tighten the screws securely.

10. Install all items removed.

Rear Air Filter
Removal/Installation

Refer to **Figure 68** for this procedure:

1. Remove the rider's seat as described under *Seat Removal/Installation* in Chapter Thirteen.

2. Remove the fuel tank as described in Chapter Seven.

3. Disconnect the battery negative (-) lead as described in this chapter.

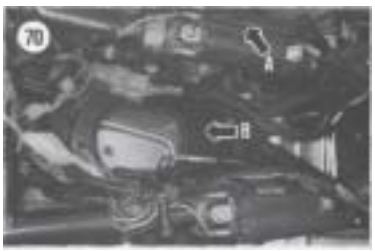
4. Remove the tiewrap bands from the inlet pipe and move the hose (A, **Figure 69)** out of the way.

5. Loosen the screws (B, **Figure 69)** on the clamping bands on each end of rear air filter inlet pipe. Slide the clamping bands onto the inlet pipe.

6. Remove the inlet pipe (C, **Figure 69)** from the rear air filter case and the carburetor inlet. Remove the rear inlet pipe.

7. Loosen the mounting bolts on the right-hand ignition coil (A, **Figure** 70) and move the coil toward the outside.

8. Remove the screws securing the air filter element (B, **Figure** 70) to the air filter case and remove the element from the case.
9. Inspect the element as described in this chapter.
10. Install the air filter element and make sure it is correctly seated into the air box so there is no air leak, then install the screws. Tighten the screws securely.
11. Install all items removed.

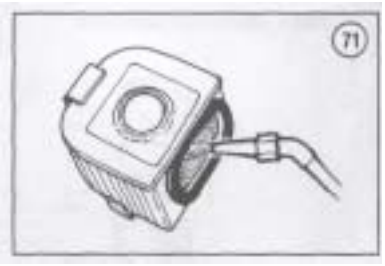


Inspection (Front and Rear)

1. Wipe out the interior of both air boxes with a shop rag dampened with cleaning solvent. Remove any foreign matter that may have passed through a bro ken element.
2. Gently tap the air filter element to loosen the dust.

CAUTION

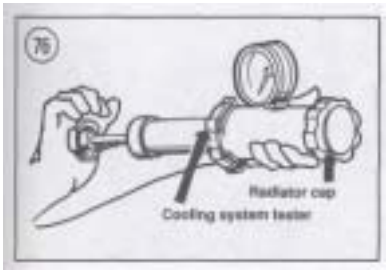
In the next step, do not direct compressed air toward the outside surface of the element. If air pressure is directed to the outside surface it will force the dirt and dust into the pores of the element thus restricting airflow. Also use low pressure, if high pressure is used a good element may be damaged.



3. Gently apply *low* compressed air toward the *in side surface* of the element **(Figure** 71) to remove all loosened dirt and dust from the element.
4. Inspect the element **(Figure** 72); if it is torn or damaged in any area it must be replaced. Do not *run* the bike with a damaged element as it may allow dirt to enter the engine. Also if the filter is severely soiled, replace it with a new one.
5. Make sure the foam gasket **(Figure** 73) is in place and is not broken or damaged. This gasket cannot be replaced separately, if damaged; replace the air filter element.

Fuel Line Inspection

Inspect the fuel line from the fuel shutoff valve to the carburetors **(Figure** 74) and the fuel lines attached to the fuel pump **(Figure** 75). If any are cracked or starting to deterioration they must be replaced. Make sure the hose clamps are in place and holding securely.



WARNING

A damaged or deteriorated fuel line presents a very dangerous fire hazard to both the rider and the vehicle if fuel should spill onto a hot engine or exhaust pipe.

Vacuum Line Inspection

Inspect the condition of all vacuum lines for cracks or deterioration; replace if necessary. Make sure the hose clamps are in place and holding securely.

Cooling System Inspection

At the interval indicated in **Table 1,** the following items should be checked. If you do not have the test equipment, the tests can be done by a Suzuki dealer, automobile dealer, radiator shop or service station.

1. Have the radiator cap pressure tested **(Figure** 76). The specified radiator cap relief pressure is 75-105 kPa (10.7-14.9 psi). The cap must be able to sustain this pressure for a minimum of 10 seconds. Replace the radiator cap if it does not hold pressure or if the relief pressure is too high or too low.

CAUTION

Do not exceed the indicated test pressure. If test pressure exceeds the specifications the radiator may be damaged.

2. Leave the radiator cap off and have the entire cooling system pressure tested. The entire cooling system should be pressurized up to, but not exceed ing, 100 kPa (14.2 psi). The system must be able to sustain this pressure for 10 seconds. Replace or repair any components that fail this test.
3. Test the specific gravity of the coolant with an anti-freeze tester to ensure adequate temperature and corrosion protection. The system must have at least a 50:50 mixture of anti-freeze and distilled water. Never let the mixture become less than 40% anti freeze or corrosion protection will be impaired.
4. Check all cooling system hoses for damage or deterioration. Refer to **Figure** 77, **Figure** 78 and **Figure** 79. Replace any hose that is questionable. Make sure all hose clamps are tight.
5. Carefully clean any road dirt, bugs, mud, etc. from the front surface of the radiator core (A, **Figure** 80). Use a whisk broom, compressed air or low-pres-

sure water. If the radiator has been hit by a small rock or other item, carefully straighten out the fins with a screwdriver.

NOTE

If the radiator has been damaged across approximately 20% or more of the frontal area, the radiator should be re-cored or replaced as described under ***Radiator Removal/Installation*** *in Chapter Nine.*

Coolant Change

The cooling system should be completely drained and refilled at the interval indicated in Table 1.

It is sometimes necessary to remove the radiator or drain the coolant from the system on order to perform a service procedure on some parts of the bike. If the coolant is still in good condition (not time to replace the coolant), the coolant can be reused if it is kept clean. Drain the coolant into a clean drain pan and pour it into a clean scalable container like a plastic milk or bleach bottle. This coolant can then be reused if it is still clean.

CAUTION

Antifreeze is poisonous and may attract animals. Do not leave the drained coolant where it is accessible to children or animals.

CAUTION

Use only a high quality ethylene glycol anti-freeze specifically labeled for use with aluminum engines. Do not use an alcohol-based anti-freeze.

In areas where freezing temperatures occur, add a higher percentage of anti-freeze to protect the system to temperatures far below those likely to occur. **Table 4** lists the recommended amount of anti-freeze for protection at various ambient temperatures.

The following procedure must be performed when the engine is cool.

CAUTION

Be careful not to spill anti-freeze on painted surfaces as it will destroy the surface. Wash immediately with soapy water and rinse thoroughly with clean water.

1. Place the bike on the sidestand.
2. Remove the screws securing the radiator cover (B, **Figure** 80) and remove the cover.
3. Remove the radiator cap **(Figure 81).** This will speed up the draining process.
4. Place a drain pan under left-hand frame rail be low the water pump cover. Remove the drain bolt **(Figure** 82).
5. Remove the air bleeder bolt **(Figure** 83) on the left-hand upper frame rail. This will allow additional ah" into the system to aid in the complete draining of the coolant.
6. Do not install the drain bolt or air bleeder bolts yet.
7. Take the bike off the sidestand and tip the bike from side to side to drain any residual coolant from the cooling system. Place the bike back onto the sidestand.
8. Install the air bleeder bolt and tighten securely. Do not over tighten as this bolt will be loosened later in the procedure.
9. If the drained coolant was contaminated or very dirty; flush the cooling system with freshwater. Al low the water to run through the cooling system for approximately 5 minutes. Shut off the water and allow the water to drain out.
10. Take the bike off the sidestand and tip the bike from side to side to drain all residual water from the cooling system. Place the bike back onto the sidestand.
11. Install the drain bolt and washer to the frame rail and tighten securely.

NOTE

An anti-leak solution is added at the factory to the cooling system to help prevent possible leakage. Suzuki recommends adding 2 packs of Bar's Leak anti-leakage material, or equivalent, to the coolant solution at every coolant change.

12. Refill the cooling system as follows:
    a. Loosen the air bleeder bolt **(Figure** 83) on the left-hand upper frame rail
    b. Insert a small funnel **(Figure 84)** into the radia tor filler neck.

CAUTION

*Do not use a higher percentage of coolant-to-water than recommended for the ambient temperature. A higher concentration of coolant (60% or greater) will actually **decrease** the performance of the cooling system.*

    c. Add a 50:50 mixture of distilled water and antifreeze into the radiator to bring the level to the cap inlet fitting on the radiator upper tank.
    d. Tighten the ah" bleeder bolt securely.
    e. Do not install the radiator cap at this time.

f. Lean the bike from side to side to bleed out as much air from the system as possible.

13. Start the engine and let it run at idle speed until the engine reaches normal operating temperature. Make sure there are no air bubbles in the coolant and that the coolant level stabilizes at the correct level. Add coolant as necessary.

14. Shut off the engine.

15. Install the radiator cap and turn it *clockwise* until it is on securely and will turn no farther.

16. Test ride the bike and readjust the coolant level if necessary after the cooling system has cooled down.

17. Install the radiator cover.

Crankcase Breather
(U.S. **Only)**

Inspect the breather hose from the cylinder head cover breather cover to the air filter air case. If it is cracked or starting to deteriorate it must be replaced. Make sure the hose clamps are in place and holding securely.

Evaporative Emission Control System (California Models Only)

Fuel vapor from the fuel tank is routed into a charcoal canister when the engine is stopped. When the engine is started these vapors are drawn, through the vacuum controlled valves, into the carburetors and into the engine to be burned. Make sure all vacuum hoses are correctly routed and attached. Inspect the hoses and replace any if necessary.

Refer to Chapter Seven for detailed information on the *Evaporative Emission Control System* and for vacuum hose routing.

Wheel Bearings

There is no factory-recommended mileage interval for cleaning and repacking the wheel bearings. They should be inspected and serviced, if necessary, every time the wheel is removed or whenever there is a likelihood of water contamination. The correct service procedure are covered in Chapter Ten and Chapter Eleven.

Front Suspension Check

1. Apply the front brake and pump the forks up and down as vigorously as possible. Check for smooth operation and check for any fork oil leaks around the oil seal area on each fork leg.
2. Make sure the fork cap bolt **(Figure** 85) and the lower fork bridge bolt **(Figure 86)** are tight on both j fork assemblies.
3. Remove the trim caps **(Figure** 87) and make sure the bolts securing the handlebar holders to the upper fork bridge are tight.
4. On 1992-on models, make sure the screws secur ing the handlebar balancer weight end caps are tight and secure.
5. On 1987-on models, remove the front axle trim cap **(Figure** 88) from each fork leg.
6. On 1985 and 1986 models, remove the cotter pin and check the tightness of the front axle nut on the right-hand side.
7. Make sure the front axle pinch bolt **(Figure 89)** and front axle **(Figure 90)** are tight.

CAUTION

If any of the previously mentioned bolts and nuts are loose, refer to Chapter Nine for correct procedures and torque specifications.

8. On 1985 and 1986 models, install a new cotter pin through the axle nut and bend the ends over completely.

Rear Suspension Check

1. Place a wood block(s) under the engine to sup port the bike securely with the rear wheel off the ground.
2. Push hard on the rear wheel (sideways) to check for side play in the rear swing arm bearings. Remove the wood block(s).
3. Remove the trim cap from the upper bolt, then check the tightness of the shock absorber's upper and lower mounting bolts and nuts **(Figure 91).**
4. On the right-hand side, remove the trim cap **(Fig ure** 92) covering the swing arm pivot bolt nut.
5. Make sure the nut **(Figure 93)** on the swing arm pivot bolt is tight.
6. On the right-hand side, remove the trim cap **(Fig ure 94)** covering the rear axle bolt nut.

7. Make sure the nut **(Figure 95)** on the rear axle bolt is tight.
8. Make sure the 3 nuts **(Figure 96)** securing the final drive unit to the swing arm are tight. Only 2 of the nuts are visible, be sure to check all 3 nuts for tightness.
9. Remove the rubber cap **(Figure** 97) from the rear brake torque arm nut.
10. Remove the cotter pin and check the tightness of the rear brake torque arm nut **(Figure 98).** Rein stall the cotter pin.

CAUTION

If any of the previously mentioned bolts and nuts are loose, refer to Chapter Ten for correct procedures and torque specifications.

11. Install all trim caps removed.

Nuts, Bolts and Other Fasteners

Constant vibration can loosen many of the fasteners on the motorcycle. Check the tightness of all fasteners, especially those on:

a. Engine mounting hardware.
b. Engine crankcase covers.
c. Handlebar and front forks.
d. Gearshift lever.
e. Brake pedal and lever.
f. Final drive unit nuts.
g. Exhaust system.
h. Lighting equipment.

Steering Head Adjustment Check

Check the steering head bearings for looseness at the interval listed in **Table 1.**
1. Place wood block(s) under the engine to support the bike securely with the front wheel off the ground.
2. Hold onto the front fork tube and gently rock the fork assembly back and forth. If you feel looseness, refer to Chapter Ten.

TUNE-UP

Perform a complete tune-up at the interval listed in **Table 1** of normal riding. More frequent tune-ups may be required if the bike is ridden in stop-and-go traffic. The purpose of the tune-up is to restore the

performance lost due to normal wear and deterioration of parts.

The spark plugs should be routinely replaced at every other tune-up or if the electrodes show signs of erosion. In addition, this is a good time to clean the air filter elements. Have all known new parts on hand before you begin.

Because the different systems in an engine interact, the procedures should be done in the following order:

a. Adjust valve clearances.
b. Run a compression test.
c. Change spark plugs.
c. Synchronize the carburetors.
d. Set the idle speed.

Table 6 summarizes tune-up specifications. To perform a tune-up on your Suzuki, you will need the following tools and equipment:

a. 18 mm (5/8 in.) spark plug wrench.
b. Socket wrench and assorted sockets.
c. Flat feeler gauge and valve adjuster wrenches **(Figure 99).**
d. Compression gauge.
e. Spark plug wire feeler gauge and gapper tool.
f. Carburetor synchronization tool—to measure manifold vacuum.

Valve Clearance Measurement and Adjustment

The correct valve clearance for all models is listed in **Table** 6. The exhaust valves are located at opposite ends of the engine adjacent to the exhaust pipes and the intake valves are located at the center V-portion of the engine adjacent to the carburetors. There are 2 intake valves and 2 exhaust valves per cylinder.

The valves hi the rear cylinder are to be adjusted first and then the valves in the front cylinder.

NOTE

This procedure must be performed with the engine cool, at room temperature (below 35° C [95° F]).

1. Remove the carburetor from the front cylinder head as described in Chapter Seven. Perform only the steps necessary to move the front carburetor away from the front cylinder head in order to gain access to the intake valve inspection cap on the front cylinder head.
2. Place a clean shop cloth into the front cylinder's intake pipe **(Figure 100)** to prevent the entry of foreign matter.

3. Remove both spark plugs as described in this chapter. This will make it easier to rotate the engine.

4. Remove the bolts securing the cylinder head side cover **(Figure 101).** Remove all 4 side covers and the cushions from the spark plug side.

NOTE

*Either use a wide flat-tipped screwdriver or a special tool made by Suzuki. This special tool **(Figure 202)** is made specifically for this purpose and if carefully used, will not mar nor damage the surface on the rotor bolt cover.*

5. On the alternator cover, remove the timing inspection hole cap (A, **Figure 103)** and the rotor bolt cover (B, Figure 103).

NOTE

The following steps are shown with the engine removed from the frame for clarity. It is not necessary to remove the engine to adjust the valves.

NOTE

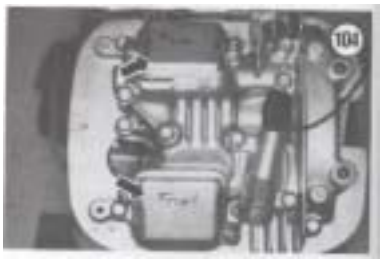
Prior to removing the valve adjuster covers, mark each with the cylinder letter "F" (front) or "R" (rear) and front and rear location on the cylinder head so they will be reinstalled in the correct location.

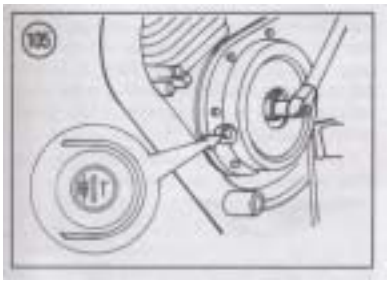
6. Remove the bolts securing both valve adjuster covers **(Figure 104)** on the cylinder head. Remove both covers on each cylinder head.

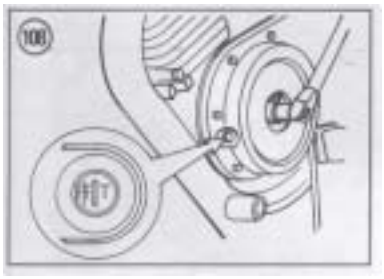
NOTE

*A cylinder at TDC will have free play in **both** sets of intake and exhaust valve rocker arms indicating that all of the valves are closed.*

1. Use a socket and wrench on the alternator rotor bolt. Rotate the engine clockwise, as viewed from the left-hand side, until the rear cylinder is at top dead center (TDC) on the compression stroke. Align the "R/F T" mark with the center of the inspection hole in the alternator rotor **(Figure 105).** 8. With the "R/F T" mark aligned with the center of the inspection hole in the alternator rotor, jiggle both rocker arms and make sure both have free play. If one of rocker arms (either intake or exhaust) is still under tension, rotate the engine an additional 360° until both rocker arms have free play.







9. Again check that the "R/F T" mark is still aligned with the center of the inspection hole in the alternator rotor **(Figure 105).**

10. With the engine in this position, check the clear ance of the intake and exhaust valves. The clearance measurement for both the intake and exhaust valves are the same.

11. Check the clearance by inserting a flat feeler ! gauge between the adjusting screw and each valve stem **(Figure 106).** When the clearance is correct, there will be a slight drag on the feeler gauge when it is inserted and withdrawn.

12. To correct the clearance, perform the following:

a. Loosen the adjuster 10 mm locknut (A, **Figure** 107) on one of the intake valve adjusters.

b. Screw the adjuster (B, **Figure 107)** in or out so there is a slight resistance felt on the feeler gauge (C, **Figure** 107).

c. Hold the adjuster to prevent it from turning further and tighten the locknut securely.

d. Recheck the clearance to make sure the ad juster did not turn after the correct clearance was achieved. Readjust if necessary.

CAUTION

Adjust both the right- and left-hand valve clearance as close to each other as possible.

e. Repeat this step for the adjuster of the other intake valve.

13. Repeat Step 12 for the exhaust valves.

14. Use a socket and wrench on the alternator rotor bolt. Rotate the engine clockwise, as viewed from the left-hand side 450° (1 1/4 turns), until the front cylinder is at top dead center (TDC) on the compres sion stroke. Align the "F/F T" mark with the center of the inspection hole in the alternator rotor **(Figure 108).**

15. With the "F/F T" mark aligned with the center of the inspection hole in the alternator rotor, jiggle both rocker arms and make sure all 4 have free play. If one of the rocker arms (either intake or exhaust) is still under tension, rotate the engine an additional 360° until both rocker arms have free play.

16. Again check that the "F/F T" mark is still aligned with the center of the inspection hole in the alternator rotor **(Figure 108).**

17. Repeat Steps 10-13 for the intake and exhaust valves on the front cylinder.

18. Rotate the engine several complete revolutions and recheck the valve clearances. Readjust if neces sary.
19. Inspect the O-ring seal **(Figure 109)** on the valve adjuster covers, replace if necessary. Install the covers in the correct location and tighten the bolts securely.
20. Inspect the seal on the timing inspection hole cap (A, **Figure 110)** and the rotor bolt cover (B, **Figure 110)** for wear or damage. Replace as nec essary. Install the cap and cover and tighten se curely.
21. On the spark plug side of the cylinder head, install the cushion **(Figure 111)** on the cylinder head prior to installing the cylinder head side cover.
22. Install the cylinder head side cover **(Figure 101)** and bolts. Tighten the bolts, on the side opposite the spark plug, to the torque specification listed in **Table** 5. Tighten the bolts on the other side securely.
23. Install the spark plug and reconnect the spark plug lead.
24. Remove the clean shop cloth from the front cylinder's intake pipe,
25. Install the front cylinder's carburetor as de scribed in Chapter Seven.

Compression Test

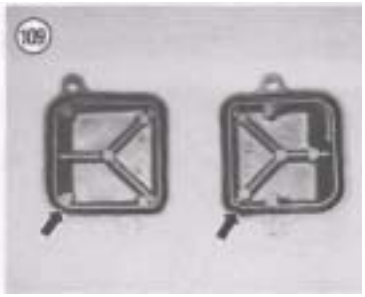
Check the cylinder compression at the interval indicated in **Table 1.** Record the results and compare them to the results at the next interval. A running record will show trends in deterioration so that corrective action can be taken before complete failure.

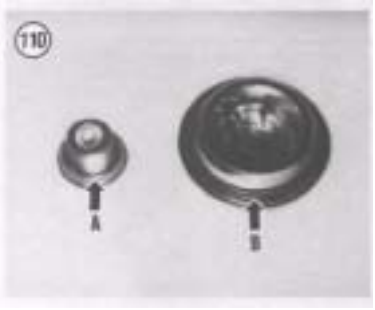
The results when properly interpreted, can indicate general cylinder, piston ring and valve condition.

1. Warm the engine to normal operating tempera ture, then shut it off. Make sure the choke valves are completely open.
2. Remove both spark plugs as described in this chapter.
3. Connect the compression tester to one cylinder following the manufacturer's instructions.
4. Crank the engine over until there is no further rise in pressure.
5. Remove the tester and record the reading. Repeat for the other cylinder.
6. When interpreting the results, actual readings are not as important as the difference between the readings. The recommended cylinder compression pressure and the maximum allowable difference between cylinders are listed in **Table 6.** Greater differences than that listed in **Table 6** indicate broken rings, leaky or sticking valves, a blown head gasket or a combination of all.

If the compression readings between the cylinders differ less than 10 psi, the rings and valves are in good condition.

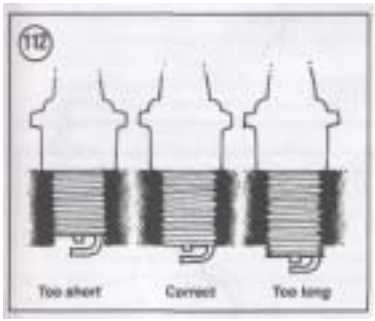
If a low reading (10% or more) is obtained it indicates valve or ring trouble. To determine which, pour about a teaspoon of engine oil through the spark plug hole onto the top of the piston. Turn the engine over once to clear the oil, then take another compression test and record the reading. If the compression returns to normal, the valves are good but the rings are defective. If the compression does not increase, the valves require servicing. A valve(s) could be hanging open but not burned or a piece of carbon could be on a valve seat.





Spark Plug Selection

Select plugs in a heat range designed for the loads and temperature conditions under which the engine will operate. Using incorrect heat ranges, however, can cause piston seizure, scored cylinder walls or damaged piston crowns.



In general, use a hotter plug for low speeds, low loads and low temperatures. Use a colder plug for high speeds, high engine loads and high temperatures.

NOTE

In areas where seasonal temperature variations are great, the factory recommended "two-plug system"—a cold plug for hard summer riding and a hot plug for slower winter operation—may prevent spark plug and engine problems. The plug should operate hot enough to burn off unwanted deposits, but not so hot that it is damaged or causes preignition.

A spark plug of the correct heat range will show a light tan color on the portion of the insulator within the cylinder after the plug has been in service.

The reach (length) of a plug is also important **(Figure** 112). A longer than normal plug could interfere with the valves and pistons, causing permanent and severe damage. The recommended spark plugs are listed in **Table 6.**

Spark Plug Removal/Cleaning

1. Grasp each spark plug lead **(Figure 113)** and carefully pull it off the plug. If the boot is stuck to the plug, twist it slightly to break it loose.

CAUTION

If any dirt falls into the cylinder when the plugs are removed, it could cause serious engine damage.

2. Use compressed air and blow away any dirt that may have passed by the rubber boot on the spark plug lead and accumulated in the spark plug well.

3. Remove spark plugs with an 18 mm spark plug wrench. Keep the spark plugs in the order that they were removed. If anything turns up during the in spection step, you will then know which cylinder it came from.

NOTE

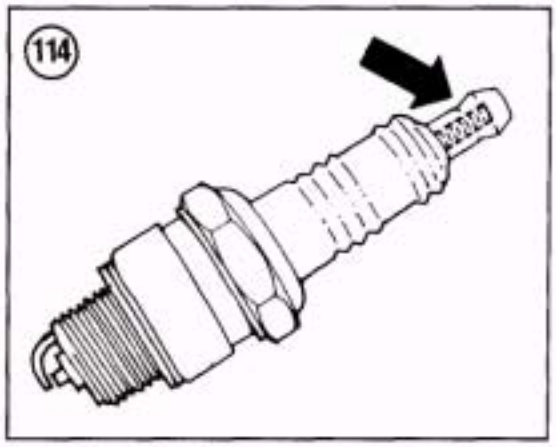
If plugs are difficult to remove, apply penetrating oil around base of plugs and let it soak in about 10-20 minutes.

4. Inspect the spark plug carefully. Look for a plug with broken center porcelain, excessively eroded

electrodes and excessive carbon or oil fouling. Replace such a plug. If deposits are light, the plug may be cleaned in solvent with a wire brush or in a special spark plug sandblast cleaner. Regap the plug as explained in this chapter.

NOTE

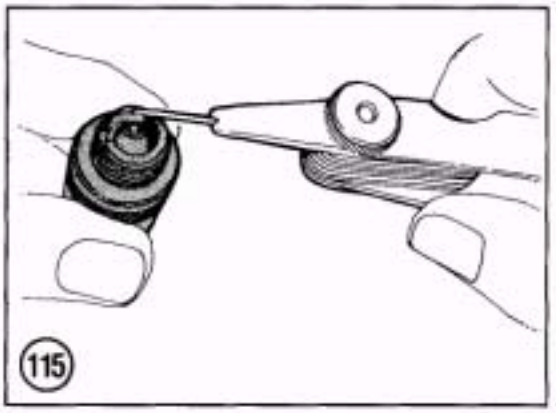
Spark plug cleaning with the use of a sand-blast type device is not recommended. While this type of cleaning is thorough, the plug must be perfectly free of all abrasive cleaning material when done. If not, it is possible for the cleaning material to fall into the engine during operation and cause damage.



Spark Plug Gapping and Installation

A new plug should be carefully gapped to ensure a reliable, consistent spark. You must use a special spark plug gapping tool with a wire feeler gauge.

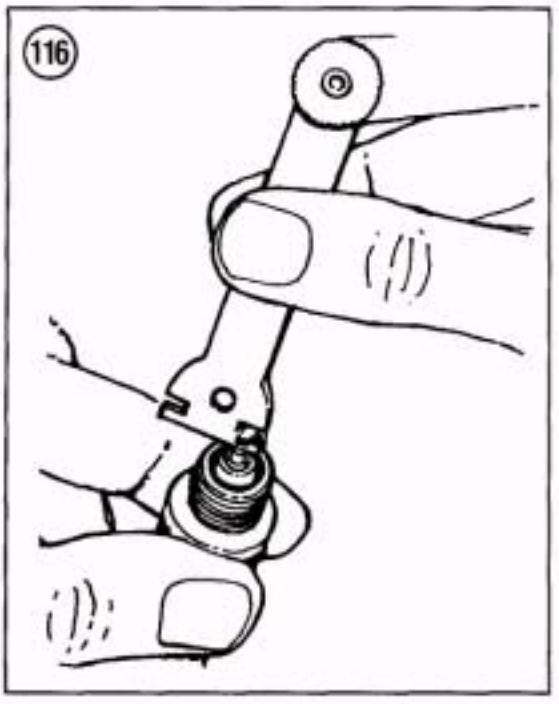
1. Remove the new plug from the box. Do not *screw* on the small piece **(Figure 114)** that is sometimes loose in the box, they are not to be used.
2. Insert a wire feeler gauge between the center and each side electrode of each plug **(Figure 115).** The correct gap is listed in **Table 6.** If the gap is correct, you will feel a slight drag as you pull the feeler gauge through. If there is no drag or the gauge won't pass through, bend the side electrode(s) with the gapping tool **(Figure 116)** to set the proper gap.
3. Put a *small* drop of oil or aluminum anti-seize compound on the threads of the spark plug.
4. Screw each spark plug in by hand until it seats. Very little effort is required. If force is necessary, you have the plug cross-threaded; unscrew it and try again.



NOTE

If a sparkplug is difficult to install, the cylinder head threads may be dirty or slightly damaged. To clean the threads, apply grease to the threads of a spark plug tap and screw it carefully into the cylinder head. Turn the tap slowly until it is completely installed. If the tap cannot be installed, the threads are severely damaged and must be repaired.

5. Tighten the spark plugs an additional 1/2 turn after the gasket has made contact with the head. If you are reinstalling old, regapped plugs and are reusing the old gasket, only tighten an additional 1/4 turn.



CAUTION

Do not over tighten. Besides making the plug difficult to remove, the excessive torque will squash the gasket and destroy its sealing ability,

6. Install the spark plug leads; make sure the leads are on tight.

Reading Spark Plugs

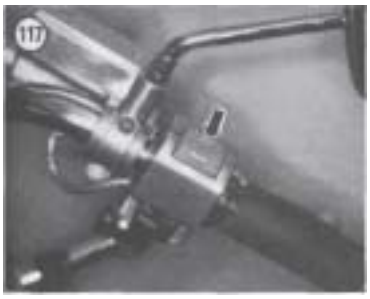
Much information about engine and spark plug performance can be determined by careful examination of the spark plugs. This information is only valid after performing the following steps.

1. Ride the bike a short distance at full throttle in any gear.
2. Move the engine stop switch **(Figure** 117) to the OFF position before closing the throttle and simul taneously pull in the clutch or shift to NEUTRAL; coast and brake to a stop.
3. Remove one spark plug at a time and examine it. Compare it to **Figure 118.** If the insulator is white or burned, the plug is too hot and should be replaced with a colder one.

A too-cold plug will have sooty or oily deposits ranging in color from dark brown to black. Replace with a hotter plug and check for too-rich carburetion or evidence of oil blowby at the piston rings.

If the plug has a light tan or gray colored deposit and no abnormal gap wear or electrode erosion is evident, the plug and the engine are running properly.

If the plug exhibits a black insulator tip, a damp and oily film over the firing end and a carbon layer



over the entire nose, it is oil fouled. An oil fouled plug can be cleaned, but it is better to replace it. 4. Repeat for the other park plug. Replace as a pair if either spark plug is bad.

Carburetor Idle Speed Adjustment

Prior to making this adjustment, the air filter elements must be clean and the engine must have adequate compression. See *Compression Test* in this chapter. Otherwise this procedure cannot be done properly.

1. Start the engine and let reach normal operating temperature. Make sure the choke knob is in the open position, pushed in all the way **(Figure 119).**
2. Connect a portable tachometer following the manufacturer's instructions.
3. On the rear carburetor, turn the idle adjust knob **(Figure 120)** in or out to adjust idle speed.
4. The correct idle speed is listed in **Table 6.**
5. Open and close the throttle a couple of times; check for variations in idle speed. Readj ust if neces sary.

WARNING

With the engine running at idle speed, move the handlebar from side to side. If the idle speed increases during this movement, the throttle cable may need adjusting or it may be incorrectly routed through the frame. Correct this problem immediately. Do ***not*** *ride the bike in this unsafe condition.*

Carburetor Idle Mixture

The idle mixture (pilot screw) is preset at the factory and *is not to be reset.* Do not adjust the pilot screw unless the carburetors have been overhauled. If so, refer to Chapter Seven for service procedures.

Carburetor Cable Synchronization

Synchronizing the carburetor cables makes sure that one cylinder doesn't try to run faster than the other, cutting power and gas mileage. The only accurate way to synchronize the carburetors is to use a set of vacuum gauges that measure the intake vacuum of both cylinders at the same time.

Refer to **Figure 121** for this procedure.

SPARK PLUG CONDITION

NORMAL

- Identified by light tan or gray depos its on the firing tip.
- Can be cleaned.

GAP BRIDGED

Identified by deposit buildup closing gap between electrodes. Caused by oil or carbon fouling. If deposits are not excessive, the plug can be cleaned.

OIL FOULED

Identified by wet black deposits on the insulator shell bore and electrodes. Caused by excessive oil entering combustion chamber through worn rings and pistons, excessive clearance between valve guides and stems or worn or loose bearings. Can be cleaned. If engine is not repained, use a hotter plug.

CARBON FOULED

Identified by black, dry fluffy carbon deposits on insulator tips, exposed shell surfaces and electrodes. Caused by too cold a plug, weak ignition, dirty air cleaner, too rich a fuel mixture or excessive idling. Can be cleaned.

LEAD FOULED

Identified by dark gray, black, yellow or tan deposits or a fused glazed coating on the insulator tip. Caused by highly leaded gasoline. Can be cleaned.

WORN

Identified by severely eroded or worn electrodes.
Caused by normal wear. Should be replaced.

FUSED SPOT DEPOSIT

Identified by melted or spotty deposits resembling bubbles or blisters. Caused by sudden acceleration. Can be cleaned.

OVERHEATING

Identified by a white or light gray insulator with small black or gray brown spots and with bluish-burnt appearance of electrodes. Caused by engine overheating, wrong type of fuel, loose spark plugs, too hot a plug or incorrect ignition timing. Replace the plug.

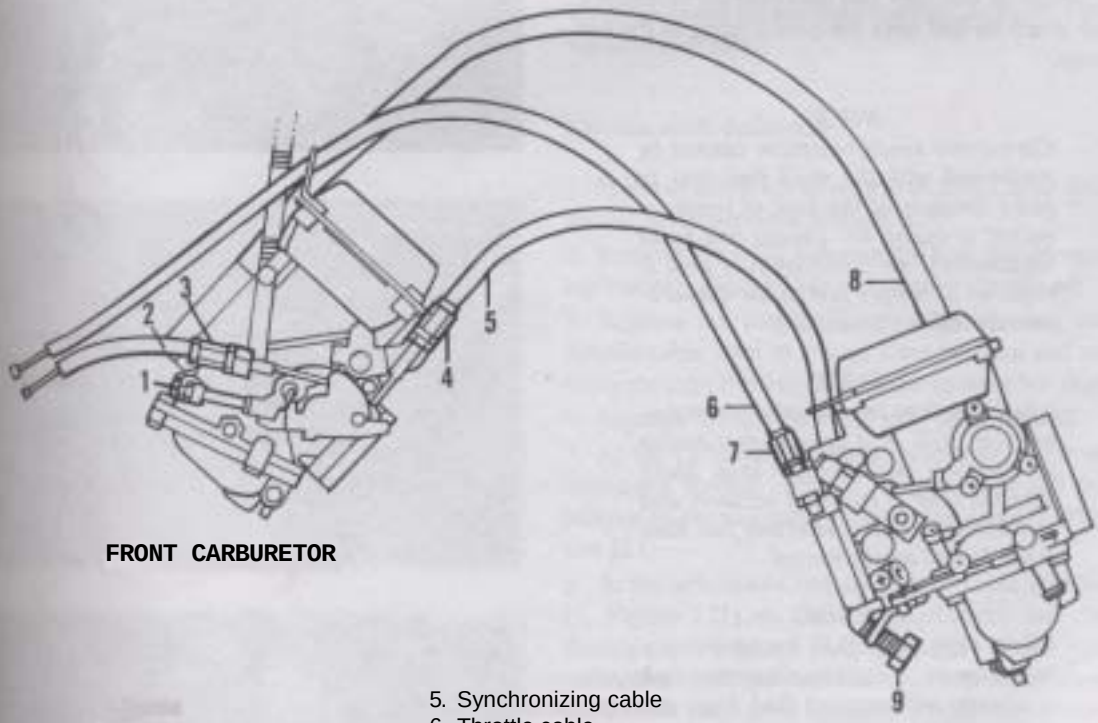
OVERHEATING

PREIGNITION

Identified by melted electrodes and possibly blistered insulator. Metallic deposits on insulator indicate engine damage.
Caused by wrong type of fuel, incorrect ignition timing or advance, too hot a plug, burned valves or engine overheating. Replace the plug.

121

THROTTLE CABLE SYNCHRONIZATION



FRONT CARBURETOR

5. Synchronizing cable
6. Throttle cable (rear carburetor)
7. Throttle cable adjuster (rear carburetor)
8. Fuel hose
9. Throttle stop screw

REAR CARBURETOF

These 2 separate procedures relate to the synchronization of the carburetors after the synchronizing cable (5) has been removed or is incorrectly adjusted-adjusted or when the front throttle cable (2) and/or rear throttle cable (6) have been replaced.

NOTE

Prior to synchronizing the carburetors, the air filters must be clean and the valve clearance properly adjusted.

Synchronizing cable balancing

1. Warm the engine to normal operating tempera ture.
2. Check and if necessary, adjust the idle speed as described in this chapter. Shut off the engine.
3. Remove the fuel tank as described under *Fuel Tank Removal!Installation* in Chapter Seven.
4. Install an auxiliary fuel tank onto the motorcycle and attach its fuel hose the hose leading to the fuel pump.

NOTE

*Carburetor synchronization **cannot** be performed with the stock fuel tank in place because of the lack of room required to install the gauges and make adjustments. An auxiliary fuel tank is required to supply fuel to the carburetors during this procedure.*

NOTE

A fuel tank from small displacement motorcycle, ATV or a lawn mower makes an excellent auxiliary fuel tank. Make sure the tank is mounted securely and positioned so that connecting fuel hose is not kinked or obstructed.

WARNING

When supplying fuel by temporary means, make sure the auxiliary fuel tank is secure and that all fuel lines are tight—no leaks.

5. Remove both vacuum port screws. Refer to **Fig ure 122** for the front carburetor and **Figure 123** for the rear carburetor.

NOTE

***Figure 123** is shown with the carburetors removed from the engine for clarity.*

Do not remove the carburetors to remove these screws.

6. Connect the vacuum lines from the carb-synch tool to the carburetor vacuum ports, following the manufacturer's instructions. Be sure to route the vacuum lines to the correct cylinder. Balance the carb-synch tool at 1,000 rpm prior to starting this test following the manufacturer's instructions.

7. Start the engine and set the idle speed to 1,000 rpm.

8. Check the gauge readings. If the difference in gauge readings is 10 mm Hg (0.4 in. Hg) or less between the 2 cylinders, the carburetors are consid ered synchronized.

9. If the carburetors are not synchronized, proceed as follows:

a. With the engine at idle speed of 1,000 rpm, loosen the locknut and turn the synchronizing cable adjuster (4, **Figure** 121) and the throttle stop screw (9, **Figure 121)** to synchronize the front-to-rear carburetors.

NOTE

To gain the utmost in performance and efficiency from the engine, adjust the carburetors so that the gauge readings are as close to each other as possible.

b. After the carburetors are balanced, tighten the locknut on the synchronizing cable adjuster.

c. Reset the idle speed as listed in **Table 6** and shut off the engine.

10. Disconnect the carb-synch tool vacuum lines from the carburetors.

NOTE

Make sure the vacuum port screws are tight to prevent a vacuum leak.

11. Install the vacuum port screws. Refer to **Figure** 122 for the front carburetor and **Figure 123** for the rear carburetor.

12. Disconnect the auxiliary fuel tank and install the standard fuel tank.

Throttle cable balancing

1. Perform Steps 1-5 *of Synchronizing Cable Bal ancing* in the pervious procedure.

2. Remove the bolts securing the fuel tank mount ing bracket **(Figure** 124) and remove the bracket.

3. Remove the screw **(Figure** 125) securing the throttle cable joint to the air filter housing and re move the joint from the clip on the air filter housing.

4. Separate the throttle cable joint **(Figure 126).**

5. At the carburetors, loosen locknut on the front carburetor throttle cable (3, **Figure 121)** and the locknut on the rear carburetor throttle cable (7, **Fig ure 121).**

6. At the carburetors, turn the throttle cable adjuster (3, **Figure** 121) on the front carburetor and the throttle cable adjuster (7, **Figure** 121) on the rear carburetor until the throttle cable ends protrude from the throttle cable joint **(Figure** 127) the exact same amount.

7. Tighten both throttle cable locknuts securely and reconnect the throttle cable joint.

8. Install the throttle cable joint into the clip on the air filter housing and install the screw. Tighten the screw securely.

9. Install the fuel tank mounting bracket and bolts. Tighten the bolts securely.

10. Connect the vacuum lines from the carb-synch tool to the vacuum ports, following the manufac turer's instructions. Be sure to route the vacuum lines to the correct cylinder. Balance the carb-synch tool at 2,000 rpm prior to starting this test following the manufacturer's instructions.

11. Start the engine and increase the engine speed to 2,000 rpm.

12. Check the gauge readings. If the difference in gauge readings is 10 mm Hg (0.4 in. Hg) or less between the 2 cylinders, the carburetors are consid ered synchronized.

13. If the carburetors are not synchronized, proceed as follows:

a. With the engine running at of 2,000 rpm, loosen the locknut and turn the front carburetor throttle cable adjuster (3, **Figure 121)** to synchronize the front-to-rear carburetors.

NOTE

To gain the utmost in performance and efficiency from the engine, adjust the carburetors so that the gauge readings are as close to each other as possible.

b. After the carburetors are balanced, tighten the locknut on the front carburetor throttle cable adjuster.

c. Reset the idle speed as listed in **Table** 5 and shut off the engine.

14. Disconnect the carb-synch tool vacuum lines from the carburetors.

NOTE

Make sure the vacuum port screws are tight to prevent a vacuum leak.

15. Install the vacuum port screws. Refer to **Figure 122** for the front carburetor and **Figure 123** for the rear carburetor.

16. Disconnect the auxiliary fuel tank and install the standard fuel tank.

Table 1 MAINTENANCE SCHEDULE*

Prior to oaeh ride	Inspect tires and rims and check inflation pressure Check steering for smooth operation with no excessive play or restrictions Check brake operation and for fluid leakage Check fuel supply. Make sure there is enough fuel for the intended ride Check for fuel leakage Check for coolant leakage Check all lights for proper operation Check engine oil level Check final drive oil level Check for smooth throttle operation Check gearshift pedal operation Check clutch operation and for fluid leakage
Initial 600 miles (1,000 km)	Replace engine oil and filter **Replace final drive oil** **Inspect entire brake system** **Check all hoses-fuel, vacuum, brake, coolant** **Check tightness of all fasteners** **Inspect steering head bearings**
Every 4,000 miles (6,4000 km)	**Clean and inspect spark plugs** **Inspect valve clearance; adjust if necessary** **Check idle speed; adjust if necessary** **Inspect and clean air filter elements**

(continued)

Table 1 MAINTENANCE SCHEDULE* (continued)

Every 4,000 miles (8,4000 km) (continued)	Check electrolyte level in battery, check specific gravity Check fuel, vapor and vacuum hoses Check brake fluid level in front brake master cylinder Check clutch hydraulic hose assembly for leakage Check all brake system components Inspect the brake pads and shoes for wear Inspect the side stand operation
Every 7,500 miles (12,000 km)	Replace both spark plugs Change engine oil and filter Replace both air filter elements Check idle speed; adjust if necessary Inspect fuel lines for damage or leakage Check throttle operation Check choke operation Check coolant level in radiator; top off if necessary Inspect cooling system for leaks Inspect evaporation emission control system (models so equipped) Check brake pad wear in the front caliper assembly Check brake shoe wear indicator on rear brake panel Inspect brake hose for leakage Check brake light switch operation (front and rear) Check headlight aim Inspect entire clutch operating system Check fluid level in clutch master cylinder Inspect the side stand operation Check all suspension components for wear or damage Check tightness of all fasteners Inspect wheels and tires for wear or damage Inspect steering head bearings
	Drain and replace hydraulic brake fluid Drain and replace hydraulic clutch fluid Drain and replace coolant
Every 2 years	Replace the brake hose Replace the clutch hose assembly Replace all coolant hoses Replace fuel lines
Every 4 years	Replace evaporative emission lines (models so equipped)

* This Suzuki factory maintenance schedule should be considered as a guide to general maintenance and lubrication intervals. Harder than normal use and exposure to mud, water, sand, high humidity, etc. will naturally dictate more frequent attention to most maintenance items.

Table 2 TIRE INFLATION PRESSURE (COLD)*

	Tire pressure			
	Front		Rear	
Load	psi	kPa	psi	kPa
Solo riding	28	200	32	225
Dual riding	32	225	36	250

* Tire inflation pressure for factory equipped tires. Aftermarket tires may require different inflation pressure.

Table 3 BATTERY STATE OF CHARGE

Specific gravity	State of charge
1.110-1.130	Discharged Almost
1.140-1.160	discharged One-
1.170-1.190	quarter charged One-
1.200-1.220	half charged Three-
1.230-1.250	quarters charged Fully
1.260-1.280	charged

Table 4 RECOMMENDED LUBRICANTS AND FLUIDS

Fuel	Regular unleaded	
U.S. and Canada	87 [(R + M)/2 method] or 91 octane or higher	
U.K. and all others	85-95 octane	
Engine oil	SAE 10W-40 API grade SE or SF	
Capacity		
Change	2.4 L (2.5 U.S. qt/2.1 Imp. qt.)	
Change and filter	2.8 L (3.0 U.S. qt./2.5 Imp. qt.)	
At overhaul	3.3 L (3.5 U.S. qt./2.9 Imp. qt.)	
Coolant	Ethylene glycol	
Capacity at change	1. 7 L (1.8 U.S. qt./1.5Imp. qt.)	
Final drive oil	SAE 90 hypoid gear oil with GL-5 under API classification	
Capacity at change	2-2.2 ml (6.8-7.0 U.S. qt./7.4-7.7 Imp. qt.)	
Brake fluid	DOT 4	
Clutch hydraulic fluid	DOT *3* or DOT 4	
Battery refilling	Distilled water	
Front fork oil capacity (each fork leg)	SAE10W	
1985-1989		
Right-hand fork	358 ml	12.1 oz.
Left-hand fork	370ml	12.5oz.
1990-1991		
U.S.	383ml	13.4oz.
U.K.	394ml	13.8oz.
1992-1993	386ml	13.5oz.
1994-on	412 ml	14.5 oz.
Front fork oil level dimension		
1985-1989	153 mm	6.02 in.
1990-1991		
U.S. and U.K.	175mm	6.89 in.
Canada	187mm	7.36 in.
1992-1993		
U.S., Canada and U.K.	178 mm	7.01 in.
1994-on	177mm	6.97 in.
Fork oil type	SAE 10W fork oil	
Cables and pivot points	Cable lube or SAE 10W/30 motor oil	

Table 5 MAINTENANCE AND TUNE UP TIGHTENING TORQUES

Item	N.m	ft.-lb.
Oil drain plug	18-23	13-16.5
Valve adjuster locknut	13-16	9.5-11.5
Cylinder head side cover bolts (side opposite spark plug)	21-25	15-18

Table 6 TUNE-UP SPECIFICATIONS

Valve clearance	
Intake and exhaust	0.08-0.13 mm (0.003-0.005 in.)
Spark plug type	
1985-1988	NGK DP8EA-9, NO X24EP-U9
1989-on	NGK DPR8EA-9, ND X24EPR-U9
Spark plug gap	0.8-0.9 mm (0.03-0.04 in.)
Idle speed	1,000+1 00 rpm