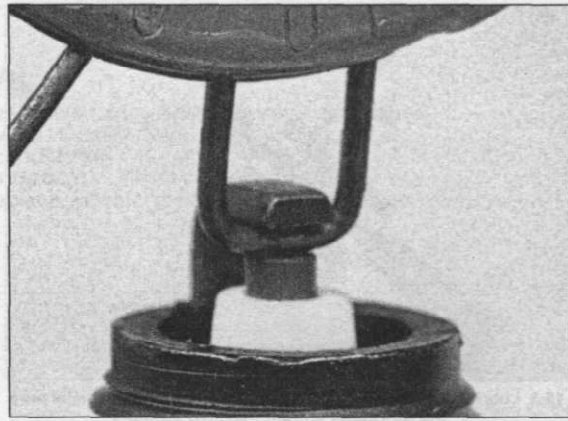


14.2 Use the correct size tool when removing spark plugs



14.6a Using a wire type gauge to measure the spark plug gap

## 14 Spark plugs - check and replacement

Refer to illustrations 14.2, 14.6a and 14.6b

1 All models are equipped with spark plugs which have 12 mm threads and an 18 mm hex. Make sure that your spark plug wrench or socket is the correct size before attempting to remove the plugs.

2 Disconnect the spark plug caps from the spark plugs. If available, use compressed air to blow any accumulated debris from around the spark plugs. Remove the plugs and lay them out in relation to their cylinder number; if any plug shows up a problem it will then be easy to identify the troublesome cylinder (**see illustration**).

3 Inspect the electrodes for wear. Both the center and side electrodes should have square edges and the side electrode should be of uniform thickness. Look for excessive deposits and evidence of a cracked or chipped insulator around the center electrode. Compare your spark plugs to the color spark plug reading chart. Check the threads, the washer and the ceramic insulator body for cracks and other damage.

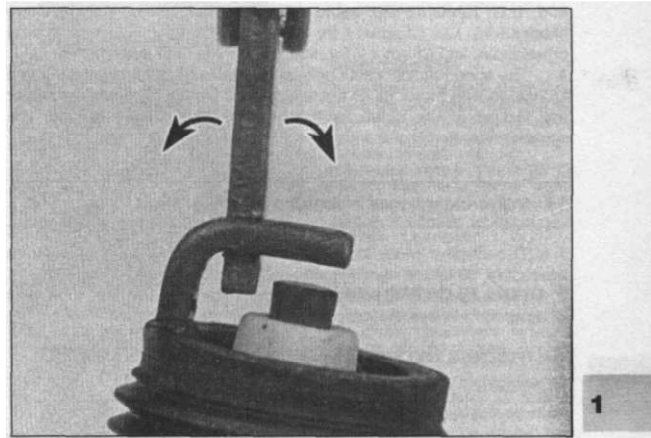
4 If the electrodes are not excessively worn, and if the deposits can be easily removed with a wire brush, the plugs can be regapped and re-used (if no cracks or chips are visible in the insulator). If in doubt concerning the condition of the plugs, replace them with new ones, as the expense is minimal.

5 Cleaning spark plugs by sandblasting is permitted, provided you clean the plugs with a high flash-point solvent afterwards.

6 Before installing new plugs, make sure they are the correct type and heat range. Check the gap between the electrodes, as they are not preset. For best results, use a wire-type gauge rather than a flat (feeler) gauge to check the gap. If the gap must be adjusted, bend the side electrode only and be very careful not to chip or crack the insulator nose (**see illustrations**). Make sure the washer is in place before installing each plug.

7 Since the cylinder head is made of aluminum, which is soft and easily damaged, thread the plugs into the heads by hand. Since the plugs are recessed, slip a short length of hose over the end of the plug to use as a tool to thread it into place. The hose will grip the plug well enough to turn it, but will start to slip if the plug begins to cross-thread in the hole - this will prevent damaged threads and the resultant repair costs.

8 Once the plugs are finger-tight, the job can be finished with a socket. If a torque wrench is available, tighten the spark plugs to the specified torque listed in this Chapter's Specifications. If you do not have a torque wrench, tighten the plugs finger-tight (until the washers bottom on the cylinder head) then use a wrench to tighten them an



14.6b Bend the side electrode only to adjust spark plug gap

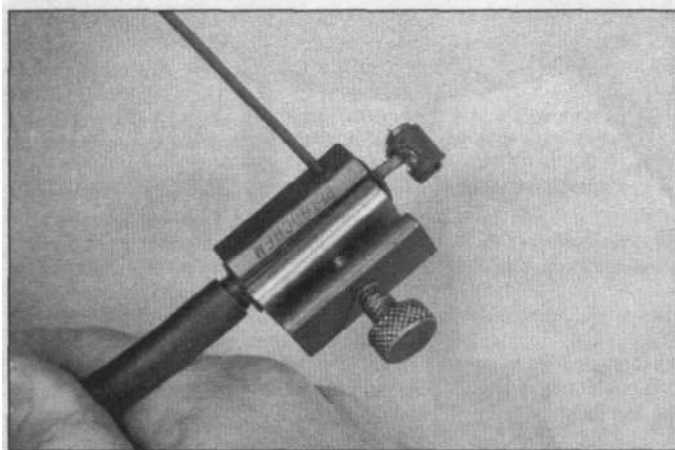
additional 1/4 turn. Regardless of the method used, do not over-tighten them. 9 Reconnect the spark plug caps.

## 15 Lubrication - general

Refer to illustration 15.3

1 Since the controls, cables and various other components of a motorcycle are exposed to the elements, they should be lubricated periodically to ensure safe and trouble-free operation.

2 The footpegs, clutch and brake lever, brake pedal, shift lever and side and main stand pivots should be lubricated frequently. In order for the lubricant to be applied where it will do the most good, the component should be disassembled. However, if chain and cable lubricant is being used, it can be applied to the pivot joint gaps and will usually work its way into the areas where friction occurs. If motor oil or light grease is being used, apply it sparingly as it may attract dirt (which could cause the controls to bind or wear at an accelerated rate). **Note:** One of the best lubricants for the control lever pivots is a dry-film lubricant (available from many sources by different names).



**15.3 Lubricating a cable with a pressure lube adapter (make sure the tool seats around the inner cable)**

3 To lubricate the cables, disconnect the relevant cable at its upper end, then lubricate the cable with a pressure lube adapter (**see illustration**). See Chapter 4 for the choke and throttle cable removal procedures, and Chapter 2 for clutch cable removal details.

4 The speedometer cable should be removed from its housing and lubricated with motor oil or cable lubricant. Do not lubricate the upper few inches of the cable as the lubricant may travel up into the speedometer head.

## 16 Valve clearances - check and adjustment

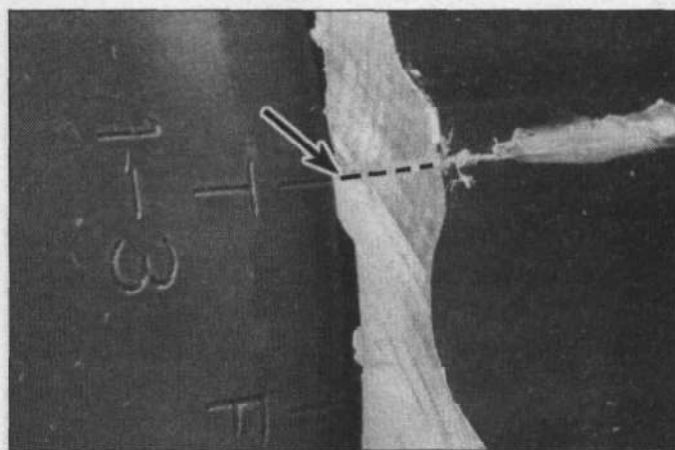
1 The engine must be completely cool for this maintenance procedure, so let the machine sit overnight before beginning.

2 Place the motorcycle on its stand. Remove the fuel tank (see Chapter 4). Remove the side covers (see Chapter 6).

### **All models except 1986 through 1988 700/750 Magnas**

Refer to illustrations 16.6, 16.8 and 16.9

3 Drain the coolant (see Section 20) and remove the radiator (See Chapter 3). On the 1986 1100 Magna model it is possible to shut off the tap at the radiator bottom hose union, having released coolant pressure by momentarily loosening the coolant drain plug set in the



**16.6 Align TDC mark with crankcase rear joint when checking valve clearances (mark for cylinders 1 and 3 shown)**

subframe, disconnect the radiator side mountings and wiring, disconnect the top and bottom hoses and pivot the radiator forwards about its top mounting point; tie it to the forks out of the way of the front cylinder (see Section 20).

4 Remove all four spark plugs.

5 Remove the valve cover bolts and lift off both valve covers, plus the rear cylinder valve cover base (see Chapter 2).

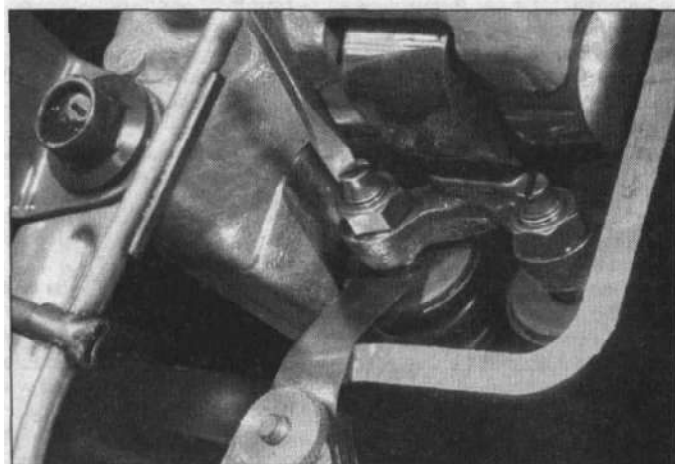
6 Remove the alternator cover from the left side of the engine. Note that oil will run from the cover so have a drain tray positioned to catch the oil. Wipe any oil off the alternator rotor. Rotate the crankshaft end bolt clockwise until the T1.3 mark on the rotor aligns exactly with the casing rear joint (**see illustration**).

7 With the T1.3 mark positioned as described, the rear cylinders are at TDC. Check whether cylinder No 1 is on compression (all four valves closed) and if not, rotate the crankshaft one full turn to realign the T1.3 mark. Carry out the valve clearance check on No 1 cylinder's valves.

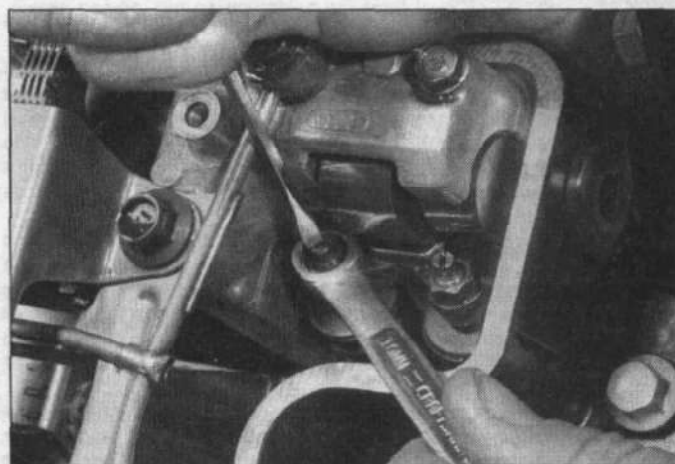
8 Using two feeler blades of the correct thickness (see Specifications), insert them between each valve stem end and its adjuster screw tip of the rocker and check that they are a firm sliding fit (**see illustration**).

**Note:** It is important that two feeler blades are used to prevent twisting of the rocker arm and subsequently incorrect readings.

9 If the feeler blades are not a firm sliding fit, loosen the locknut on the adjusting screws and turn the adjusting screw in or out to obtain the correct clearance. Hold the adjuster screw still screw while the locknut is tightened, then recheck the clearance to ensure that it has

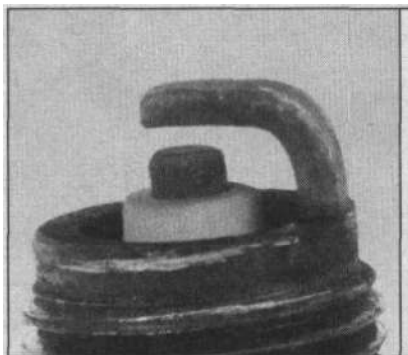


**16.8 Measuring the valve clearances (both valves should be checked at the same time)**



**16.9 Adjusting the valve clearances**

# Common spark plug conditions



## NORMAL

**Symptoms:** Brown to grayish-tan color and slight electrode wear. Correct heat range for engine and operating conditions.

**Recommendation:** When new spark plugs are installed, replace with plugs of the same heat range.



## WORN

**Symptoms:** Rounded electrodes with a small amount of deposits on the firing end. Normal color. Causes hard starting in damp or cold weather and poor fuel economy.

**Recommendation:** Plugs have been left in the engine too long. Replace with new plugs of the same heat range. Follow the recommended maintenance schedule.



## CARBON DEPOSITS

**Symptoms:** Dry sooty deposits indicate a rich mixture or weak ignition. Causes misfiring, hard starting and hesitation.

**Recommendation:** Make sure the plug has the correct heat range. Check for a clogged air filter or problem in the fuel system or engine management system. Also check for ignition system problems.



## ASH DEPOSITS

**Symptoms:** Light brown deposits encrusted on the side or center electrodes or both. Derived from oil and/or fuel additives. Excessive amounts may mask the spark, causing misfiring and hesitation during acceleration.

**Recommendation:** If excessive deposits accumulate over a short time or low mileage, install new valve guide seals to prevent seepage of oil into the combustion chambers. Also try changing gas-line brands.



## OIL DEPOSITS

**Symptoms:** Oily coating caused by poor oil control. Oil is leaking past worn valve guides or piston rings into the combustion chamber. Causes hard starting, misfiring and hesitation.

**Recommendation:** Correct the mechanical condition with necessary repairs and install new plugs.



## GAP BRIDGING

**Symptoms:** Combustion deposits lodge between the electrodes. Heavy deposits accumulate and bridge the electrode gap. The plug ceases to fire, resulting in a dead cylinder.

**Recommendation:** Locate the faulty plug and remove the deposits from between the electrodes.



## TOO HOT

**Symptoms:** Blistered, white insulator, eroded electrode and absence of deposits. Results in shortened plug life.

**Recommendation:** Check for the correct plug heat range, over-advanced ignition timing, lean fuel mixture, intake manifold vacuum leaks, sticking valves and insufficient engine cooling.



## PREIGNITION

**Symptoms:** Melted electrodes. Insulators are white, but may be dirty due to misfiring or flying debris in the combustion chamber. Can lead to engine damage.

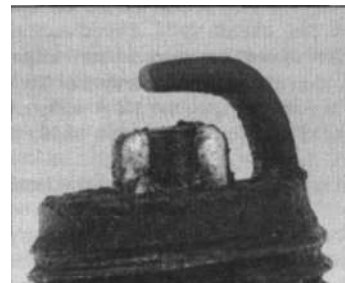
**Recommendation:** Check for the correct plug heat range, over-advanced ignition timing, lean fuel mixture, insufficient engine cooling and lack of lubrication.



## HIGH SPEED GLAZING

**Symptoms:** Insulator has yellowish, glazed appearance. Indicates that combustion chamber temperatures have risen suddenly during hard acceleration. Normal deposits melt to form a conductive coating. Causes misfiring at high speeds.

**Recommendation:** Install new plugs. Consider using a colder plug if driving habits warrant.



## DETONATION

**Symptoms:** Insulators may be cracked or chipped. Improper gap setting techniques can also result in a fractured insulator tip. Can lead to piston damage.

**Recommendation:** Make sure the fuel anti-knock values meet engine requirements. Use care when setting the gaps on new plugs. Avoid lugging the engine.



## MECHANICAL DAMAGE

**Symptoms:** May be caused by a foreign object in the combustion chamber or the piston striking an incorrect reach (too long) plug. Causes a dead cylinder and could result in piston damage.

**Recommendation:** Repair the mechanical damage. Remove the foreign object from the engine and/or install the correct reach plug.

not altered (**see illustration**). **Note:** A Honda service tool is available which allows the adjuster screw to be held securely while the locknut is tightened. Carry out the check on the other pair of valves.

10 Rotate the crankshaft clockwise until the T2.4 mark is aligned with the rear crankcase joint, then all clearances on No 2 cylinder.

11 Rotate the crankshaft clockwise to align the T1.3 mark once again and check the valves of No 3 cylinder.

12 Rotate the crankshaft further clockwise and align the T2.4 mark, then check the valves of No 4 cylinder.

13 When all clearances have been checked and if necessary adjusted, install the valve covers (see Chapter 2).

14 Fit a new gasket to the left side engine cover, install the cover and tighten its bolts securely. Top up the engine oil.

15 Install the spark plugs.

16 Install the radiator (see Chapter 3) and refill the cooling system with fresh coolant and bleed it of air (see Section 20). On 1986 1100 Magna models, reconnect the radiator (see Chapter 3) and check that its hoses are securely clamped. Turn the radiator tap to ON. Check the level of coolant, topping it up if necessary. Bleed the cooling system of air (see Section 20).

17 Install the fuel tank (see Chapter 4).

18 Start the engine and check that there is no sign of oil leakage from the valve covers.

### 1986 through 1988 700/750 Magna models

19 Shut off the tap at the radiator bottom hose union and release coolant pressure by momentarily loosening the coolant drain plug set in the subframe. Disconnect the radiator side mountings and its top and bottom hoses, disconnect its wiring, then pivot the radiator forwards about its top mounting point; tie it to the forks out of the way of the front cylinder (see Section 20).

20 On 1987 and 1988 models, pull off its wires and unbolt the horn from the left frame tube.

21 Remove all four spark plugs.

22 Remove the valve cover bolts and lift off both valve covers, plus the rear cylinder valve cover base (see Chapter 2).

23 Remove the alternator cover from the left side of the engine. Note that oil will run from the cover so have a drain tray positioned to catch the oil.

24 Rotate the crankshaft by turning the alternator rotor bolt in a clockwise direction until the intake cam lobes of No 3 cylinder (**see illustration 1.1 in Chapter 2 for cylinder identification**) are at maximum lift (valves fully depressed). In this position, check the clearances on the intake valves of cylinder No 1.

25 Check and adjust the valve clearances as described in Steps 8 and 9 above.

26 Rotate the alternator bolt further clockwise until the intake cam lobes of No 1 cylinder are at maximum lift, then check the clearances of No 3 intake valves.

27 Rotate the alternator bolt clockwise until the exhaust cam lobes of No 3 cylinder are at maximum lift, then check the clearances of No 1 exhaust valves. Further rotate the crankshaft until the No 1 exhaust cam lobes are at a maximum lift and check the clearances of No 3 exhaust valves.

28 Repeat the same procedure to check the clearances of the front cylinders (Nos 2 and 4).

29 When all clearances have been checked and if necessary adjusted, install the valve covers (see Chapter 2).

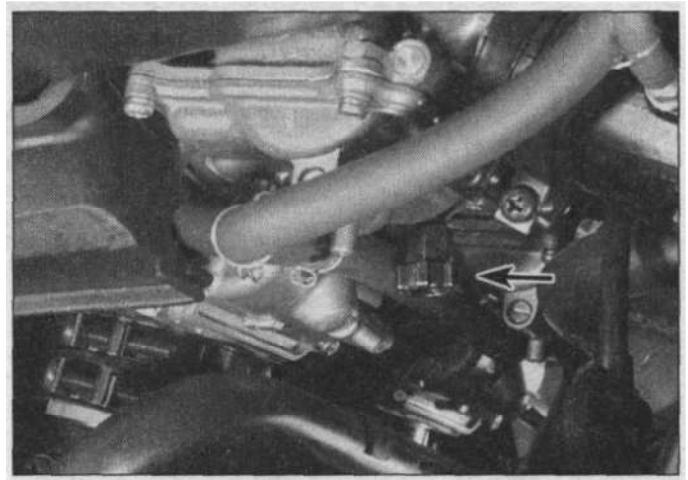
30 Fit a new gasket to the left side engine cover, install the cover and tighten its bolts securely. Top up the engine oil.

31 Install the spark plugs.

32 Reconnect the radiator (see Chapter 3) and check that its hoses are securely clamped. Turn the radiator tap to ON. Check the level of coolant, topping it up if necessary. Bleed the cooling system of air (see Section 20).

33 Install the fuel tank (see Chapter 4).

34 Start the engine and check that there is no sign of oil leakage from the valve covers.



17.3 Idle speed adjuster (arrow)

## 17 Idle speed - check and adjustment

Refer to *illustration 17.3*

1 The idle speed should be checked and adjusted before and after the carburetors are synchronized and when it is obviously too high or too low. Before adjusting the idle speed, make sure the valve clearances and spark plug gaps are correct. Also, turn the handlebars back-and-forth and see if the idle speed changes as this is done. If it does, the throttle cables may not be adjusted correctly, or may be worn out. This is a dangerous condition that can cause loss of control of the bike. Be sure to correct this problem before proceeding.

2 The engine should be at normal operating temperature, which is usually reached after 10 to 15 minutes of stop and go riding. Place the motorcycle on its stand and make sure the transmission is in Neutral.

3 Turn the idle speed screw, located at the base of the No 1 cylinder carburetor until the idle speed listed in this Chapter's Specifications is obtained (**see illustration**).

4 Snap the throttle open and shut a few times, then recheck the idle speed. If necessary, repeat the adjustment procedure.

5 If a smooth, steady idle can't be achieved, the fuel/air mixture may be incorrect. Refer to Chapter 4 for additional carburetor information.

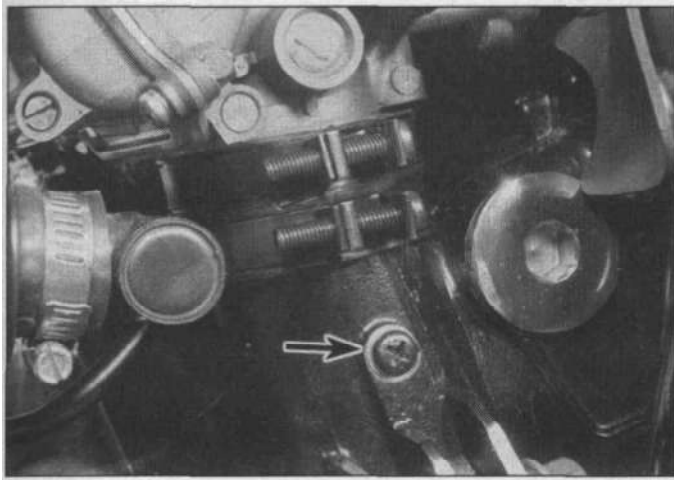
## 18 Carburetor synchronization - check and adjustment

**Warning:** Gasoline (petrol) is extremely flammable, so take extra precautions when you work on any part of the fuel system. Don't smoke or allow open flames or bare light bulbs near the work area, and don't work in a garage where a natural gas-type appliance (such as a water heater or clothes dryer) is present. If you spill any fuel on your skin, rinse it off immediately with soap and water. When you perform any kind of work on the fuel system, wear safety glasses and have a fire extinguisher suitable for a Class B type fire (flammable liquids) on hand.

1 Carburetor synchronization is simply the process of adjusting the carburetors so they pass the same amount of fuel/air mixture to each cylinder. This is done by measuring the vacuum produced in each cylinder. Carburetors that are out of synchronization will result in decreased fuel mileage, increased engine temperature, less than ideal throttle response and higher vibration levels.

2 To properly synchronize the carburetors, you will need some sort of vacuum gauge setup, preferably with a gauge for each cylinder, or a mercury manometer, which is a calibrated tube arrangement that utilizes columns of mercury to indicate engine vacuum.

3 A manometer can be purchased from a motorcycle dealer or accessory shop and should have the necessary screw-in adaptors



**18.8 Carburetor synchronization adapter plugs are located in intake tracts (arrow)**

supplied with it for hooking into the intake tract of the engine.

4 A vacuum gauge setup can also be purchased from a dealer or fabricated from commonly available hardware and automotive vacuum gauges.

5 The manometer is the more reliable and accurate instrument, and for that reason is preferred over the vacuum gauge setup; however, since the mercury used in the manometer is a liquid, and extremely toxic, extra precautions must be taken during use and storage of the instrument.

6 Because of the nature of the synchronization procedure and the need for special instruments, most owners leave the task to a dealer service department or a reputable motorcycle repair shop.

7 Start the engine and let it run until it reaches normal operating temperature. Check the idle speed and adjust if necessary, then shut it off.

### **700/750 Sabres, 1987 and 1988 700/750 Magna models**

*Refer to illustration 18.8*

8 On Sabre models, remove the plugs from the No 2, 3 and 4 cylinder intake tracts, and on Magna models remove the plugs from the No 1, 3 and 4 cylinder intake tracts (**see illustration**). Install the vacuum gauge or manometer adaptors into the intake tract plug holes, then hook up the vacuum gauge set or the manometer according to the manufacturer's instructions. Make sure there are no air leaks in the set up, as false readings will result.

9 Start the engine and clamp the vacuum line running between the automatic fuel valve and the No 1 (Sabre) or No 2 (Magna) cylinder head intake tract, then stop the engine and disconnect the vacuum line from the fitting on the cylinder head. Connect the remaining line from the vacuum gauge or manometer to this fitting.

### **All other models**

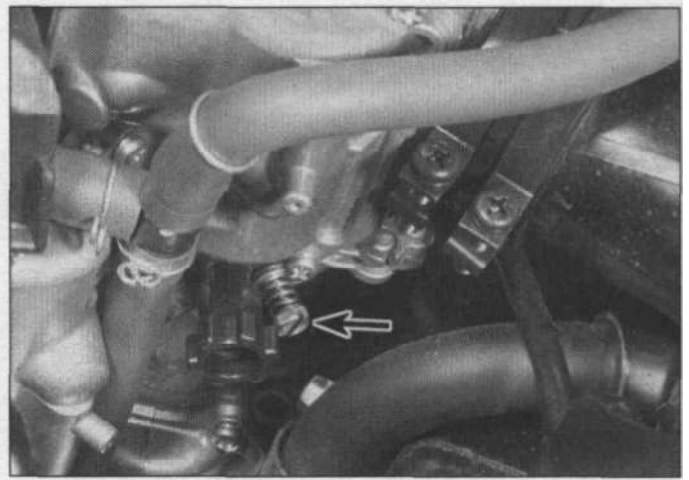
10 Remove the plugs from the intake tracts on all cylinders, install the adaptors into the plug holes and connect up the vacuum gauges or manometer to the adaptors. Make sure there are no air leaks in the set up, as false readings will result.

### **All models**

*Refer to illustration 18.12*

11 Start the engine and check that the idle speed is correct, adjusting it if necessary. If the gauges are fitted with damping adjustment, set this so that the needle flutter is just eliminated but so that they can still respond to small changes in pressure.

12 The vacuum readings for all of the cylinders should be the same, or at least within the tolerance listed in this Chapter's Specifications. If



**18.12 Synchronization screw for No 3 carburetor (arrow)**

the vacuum readings vary, adjust as necessary. First locate the adjusting screws; the adjusting screw for No 3 carburetor is next to the throttle stop screw, whereas those for Nos 2 and 4 carburetors are located in-between the carburetor bodies - all are accessed from underneath (**see illustration**). **Note:** No 1 carburetor has no adjustment screw and should be regarded as the base setting.

13 Adjust each screw until all carburetors are synchronized, then open and close the throttle quickly to settle the linkage and recheck the gauge readings, re-adjusting if necessary. **Note:** Do not press down on the screws while adjusting them, otherwise a false reading will be obtained.

14 When the adjustment is complete, recheck the idle speed, then stop the engine. Remove the vacuum gauge or manometer and adaptors, then install the intake tract plugs. On 700/750 Sabres and 1987 and 1988 700/750 Magnas, remove the clamp from the fuel valve line and reconnect the line to the fitting on the No 1 (Sabre) or No 2 (Magna) carburetor.

## **19 Cooling system - check**

**Warning:** The engine must be cool before beginning this procedure.

1 Check the coolant level as described in Section 3.

2 The entire cooling system should be checked for evidence of leakage. Examine each rubber coolant hose along its entire length. Look for cracks, abrasions and other damage. Squeeze each hose at various points. They should feel firm, yet pliable, and return to their original shape when released. If they are dried out or hard, replace them with new ones.

3 Check for evidence of leaks at each cooling system joint. Tighten the hose clips carefully to prevent future leaks. Similarly, check the coolant crossover pipes between the cylinder banks, the coolant inlet pipe on the left side of the engine, and the subframe connections with the radiator and water pump short hose.

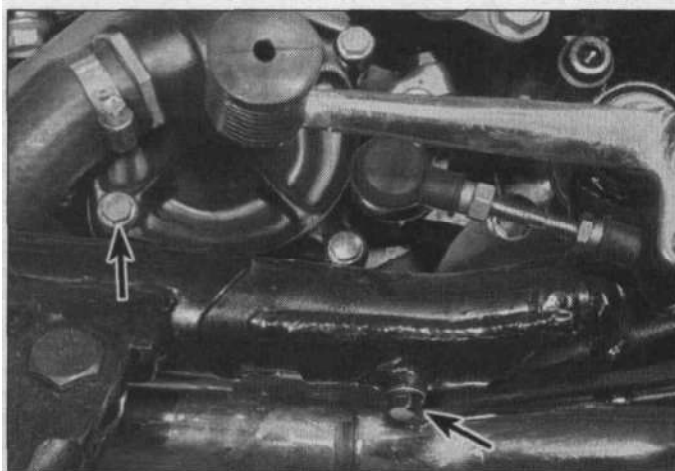
4 Check the radiator for leaks and other damage. Leaks in the radiator leave telltale scale deposits or coolant stains on the outside of the core below the leak. If leaks are noted, remove the radiator (**see Chapter 3**) and have it repaired at a radiator shop or replace it with a new one.

**Caution:** Do not use a liquid leak stopping compound to try to repair leaks.

5 Check the radiator fins for mud, dirt and insects, which may impede the flow of air through the radiator. If the fins are dirty, force water or low pressure compressed air through the fins from the backside. If the fins are bent or distorted, straighten them carefully with a screwdriver.

6 Remove the radiator cap by turning it counterclockwise (anticlockwise) until it reaches a stop. If you hear a hissing sound





**20.2 Coolant drain plug in subframe (right arrow) and in water pump cover (left arrow)**

(indicating there is still pressure in the system), wait until it stops. Now press down on the cap and continue turning the cap until it can be removed. Check the condition of the coolant in the system. If it is rust-colored or if accumulations of scale are visible, drain, flush and refill the system with new coolant (see Section 20). Check the cap seal for cracks and other damage. If in doubt about the pressure cap's condition, have it tested by a dealer service department or replace it with a new one. Install the cap by turning it clockwise until it reaches the first stop then push down on the cap and continue turning until it can turn further.

7 Check the antifreeze content of the coolant with an antifreeze hydrometer. Sometimes coolant looks like it's in good condition, but might be too weak to offer adequate protection. If the hydrometer indicates a weak mixture, drain, flush and refill the system (see Section 20).

8 Start the engine and let it reach normal operating temperature, then check for leaks again. As the coolant temperature increases, the fan should come on automatically and the temperature should begin to drop. If it does not, refer to Chapter 3 and check the fan and fan circuit carefully.

9 If the coolant level is consistently low, and no evidence of leaks can be found, have the entire system pressure checked by a Honda dealer service department, motorcycle repair shop or service station.

## 20 Cooling system - draining, flushing and refilling

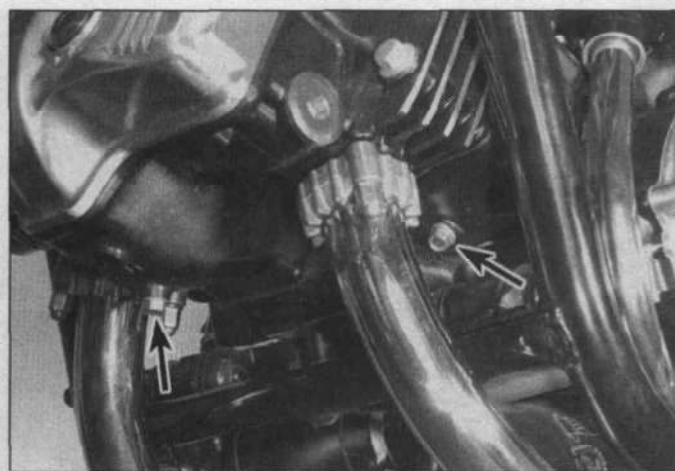
**Warning:** Allow the engine to cool completely before performing this maintenance operation. Also, don't allow antifreeze to come into contact with your skin or the painted surfaces of the motorcycle. Rinse off spills immediately with plenty of water. Antifreeze is highly toxic if ingested. Never leave antifreeze lying around in an open container or in puddles on the floor; children and pets are attracted by its sweet smell and may drink it. Check with local authorities (councils) about disposing of antifreeze. Many communities have collection centers which will see that antifreeze is disposed of safely. Antifreeze is also combustible, so don't store it near open flames.

### Draining

Refer to illustrations 20.2 and 20.4

1 With the engine cold place the motorcycle on the main stand on level ground. Where no main stand is fitted, ensure that the motorcycle is supported in an upright position. Remove the belly fairing on 1987 and 1988 700/750 Magna models (see Chapter 6) and on all models, remove the engine rear cover on the left side (see Chapter 2).

2 Place a suitable container under the coolant drain bolt located in



**20.4 Coolant drain plugs in engine case (arrows)**

the subframe near the gearshift lever and remove the drain bolt to drain the coolant from the radiator (**see illustration**).

3 Remove the radiator cap by turning it counterclockwise (anticlockwise) until it reaches a stop. If you hear a hissing sound (indicating there is still pressure in the system), wait until it stops. Now press down on the cap and continue turning the cap until it can be removed. As the cap is removed the flow of coolant will increase, be prepared for this.

4 Drain coolant from the engine by removing the coolant drain bolt at the water pump and the two drain bolts in the front of the engine case (**see illustration**).

5 When the system is fully drained, replace all drain bolts.

6 Drain the coolant reservoir. Refer to Chapter 3 for reservoir removal procedure. Wash out the reservoir with water and install it.

### Flushing

7 Flush the system with clean tap water by inserting a garden hose in the radiator filler neck. Allow the water to run through the system until it is clear and flows cleanly out of both drain holes. If the radiator is extremely corroded, remove it by referring to Chapter 3 and have it cleaned at a radiator shop.

8 Clean the holes then install the drain bolts and sealing washers, tightening them securely.

9 Fill the cooling system with clean water mixed with a flushing compound. Make sure the flushing compound is compatible with aluminum components, and follow the manufacturer's instructions carefully.

10 Start the engine and allow it reach normal operating temperature. Let it run for about ten minutes.

11 Stop the engine. Let it cool for a while, then cover the pressure cap with a heavy shop towel and turn it counterclockwise (anticlockwise) to the first stop, releasing any pressure that may be present in the system. Once the hissing stops, push down on the cap and remove it completely.

12 Drain the system once again.

13 Fill the system with clean water and repeat the procedure in Steps 10 to 12.

### Refilling

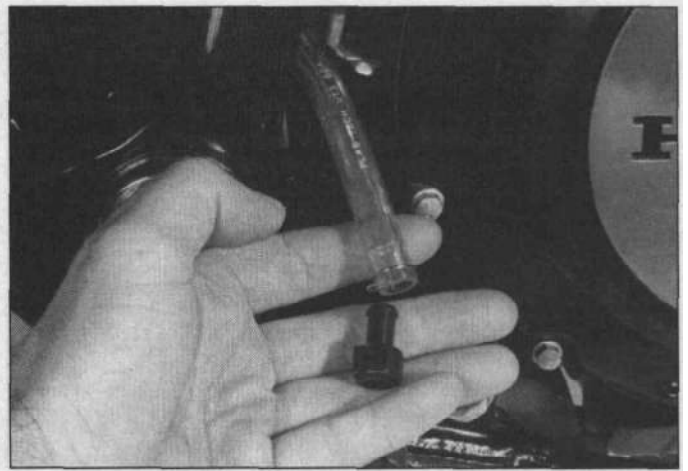
14 Fit new sealing washers to the drain bolts and install them in the engine case, pump cover and subframe, tightening each one securely.

15 Fill the system with the proper coolant mixture (see this Chapter's Specifications) until it is level with the lower edge of the filler neck. Filling it slowly will reduce the amount of air trapped in the system and lessen the time required to bleed it.

16 Remove the rubber cap from the bleed nipple on the thermostat housing and attach a clear plastic hose to it. Place the other end into a



**20.22 1986 through 1988 models have tap in radiator outlet**



**21.2 Remove plug to drain crankcase separator tank on later models**

clean container, such as the one used for draining the coolant.

17 Start the engine and let it idle until it reaches normal operating temperature. Watch the level of the coolant in the radiator and if it drops, add more coolant.

18 Loosen the bleed nipple and observe the coolant running through the hose for air bubbles. Let the engine run until no more air bubbles can be seen in the coolant escaping the tube, then tighten the bleed nipple. Keep checking the coolant level in the radiator, adding more when necessary. The coolant emptied into the container can be poured back into the radiator if the bleed nipple is temporarily tightened while this is being done. When the bleeding procedure is complete, stop the engine and fill the radiator to the bottom of the filler neck one more time, then reinstall the radiator cap.

19 Check the level of coolant in the reservoir tank and, with the coolant hot, fill it to the Upper mark. As a final step, ride the motorcycle for a couple of miles and then recheck the coolant level one last time. Install the engine rear cover and on 1987 and 1988 700/750 Magna models also install the belly fairing.

20 Check the system for leaks and rectify them immediately.

21 Do not dispose of the old coolant by pouring it down the drain. Instead pour it into a heavy plastic container, cap it tightly and take it into an authorized disposal site or service station - see Warning at the beginning of this Section.

## Radiator tap

*Refer to illustration 20.22*

22 1986 through 1988 models are equipped with a tap at the radiator outlet union (**see illustration**). If the radiator requires removal for access to the front cylinder components, full draining of the radiator and lower coolant pipes can be avoided by shutting off the tap in the direction indicated by its arrows.

23 Having shut the tap, loosen and then tighten the coolant drain bolt in the subframe (**see illustration 20.2**) to release pressure. The radiator can be pivoted forwards about its top mounting after removal of the side mounting bolts and disconnection of the radiator hoses.

24 On installation, ensure that all hose connections are securely made, and open the radiator tap.

## 21 Crankcase breather - check

*Refer to illustration 21.2*

1 On 700/750 Sabres and 1982 through 1984 700/750 Magnas, drain any sludge from the crankcase breather tank at the specified interval.

2 Disengage the drain hose from its bracket, hold it over a container

and remove the plug from its end (**see illustration**). After the deposits have drained, install the plug and secure the hose in its bracket. Note that the crankcase breather is likely to require draining more often if the motorcycle is used at high speeds or in the rain. The transparent drain hose will any build up to be seen at a glance.

3 Check the crankcase breather hoses which run from the rear of the crankcase to the separator tank and from the separator tank to the air filter housing. Replace them if cracked or damaged.

4 On 1100 models and later 700/750 Magnas, there is no drain hose facility on the crankcase breather. For the purpose of routine maintenance, check that the hoses from the breather to the crankcase and air filter housing are not cracked or deteriorated and that they are securely fastened to their unions. If the separator tank is suspected of blockage at any time, disconnect its hoses and drain off any fluid.

## 22 Evaporative emission control system and Secondary air supply system (California models only) - check

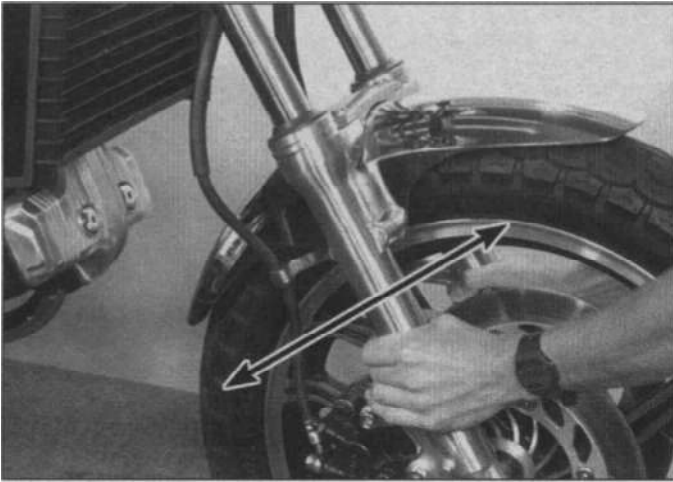
1 The Evaporative emission control system (installed from 1984-on) routes fuel vapors from the fuel system into the engine to be burned, instead of letting them evaporate into the atmosphere. When the engine isn't running, vapors are stored in a carbon canister. The Secondary air supply system (installed from 1986-on) introduces fresh air into the exhaust ports to promote the burning of any excess fuel present in the exhaust gases, reducing that which passes into the atmosphere. Both systems and their components are described in greater detail in Chapter 4.

2 Refer to Chapter 4 for component location details, and inspect the hoses between each system component, replacing them if split or cracked. If any require replacement, take note of their exact routing and connections before removal. Check the emission system canister located on the subframe cross-tube for cracks or damage.

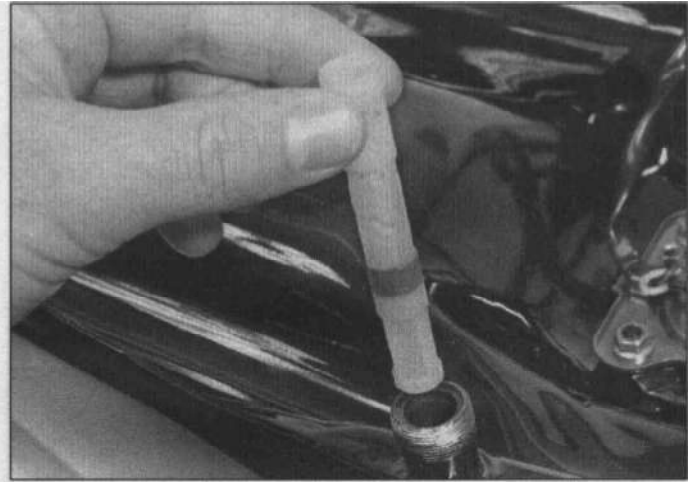
## 23 Exhaust system - check

1 Periodically check all of the exhaust system joints for leaks and loose fasteners. The belly fairing will have to be removed to do this properly on 1987 and 1988 700/750 Magna models (see Chapter 6). If tightening the fasteners fails to stop any leaks, replace the gaskets with new ones (see Chapter 4).

2 The exhaust pipe flange nuts at the cylinder heads are especially prone to loosening, which could cause damage to the head. Check them frequently and keep them tight.



24.4 Feeling for play in the steering head bearings



26.13 Fuel filter takes the form of a gauze element on 700/750 Sabres and 1987/88 Magnas

## 24 Steering head bearings - check and adjustment

1 This vehicle is equipped with caged taper-roller or caged ball type steering head bearings which can become dented, rough or loose during normal use of the machine. In extreme cases, worn or loose steering head bearings can cause steering wobble - a condition that is potentially dangerous.

### Check

Refer to illustration 24.4

2 To check the bearings, place the motorcycle on its main stand and block the machine so the front wheel is in the air. On 1987 and 1988 700/750 Magna models, block the vehicle under the crankcase so that the front wheel is raised off the ground.

3 Point the wheel straight-ahead and slowly move the handlebars from side-to-side. Dents or roughness in the bearing races will be felt and the bars will not move smoothly.

4 Next, grasp the fork sliders and try to move them forward and backward (**see illustration**). Any looseness in the steering head bearings will be felt as front-to-rear movement of the forks, although make sure that this is not due to worn fork bushings. If play is felt in the bearings, adjust the steering head as follows.

### Adjustment

5 Refer to Chapter 6 'Steering stem - removal and installation' and remove the upper triple clamp from the forks and steering stem. The forks can remain in place, although the handlebars and instruments must be removed. The upper triple clamp need only be raised sufficiently to access the steering stem locknut and adjuster nuts, so the ignition switch (1982 through 1986 models) can remain attached to the triple clamp if the wiring will allow.

6 Free the lockwasher tabs from the steering stem locknut and adjuster nut, remove the locknut and lockwasher, then carry out adjustment of the adjuster nut as described under the installation sub-Section of Section 10, Chapter 6.

7 After adjustment, check that all steering play has been removed as described above.

## 25 Fasteners - check

1 Since vibration of the machine tends to loosen fasteners, all nuts, bolts, screws, etc. should be periodically checked for proper tightness.

2 Pay particular attention to the following:

*Spark plugs Engine oil drain plugs*

*Gearshift lever  
Footpegs, stand bolts  
Engine mounting bolts  
Shock absorber mounting bolts  
Handlebar and triple clamp pinch bolts  
Rear suspension linkage bolts (Sabres)  
Front axle and clamp bolts  
Rear axle nut and clamp bolt  
Exhaust system bolts/nuts*

3 If a torque wrench is available, use it along with the torque specifications at the beginning of this, or other, Chapters.

## 26 Fuel system - checks and filter replacement

**Warning:** Gasoline (petrol) is extremely flammable, so take extra precautions when you work on any part of the fuel system. Don't smoke or allow open flames or bare light bulbs near the work area, and don't work in a garage where a natural gas-type appliance (such as a water heater or clothes dryer) is present. If you spill any fuel on your skin, rinse it off immediately with soap and water. When you perform any kind of work on the fuel system, wear safety glasses and have a fire extinguisher suitable for a Class B type fire (flammable liquids) on hand.

### Check

1 Check the fuel tank, the tank breather hose (not California models), the fuel tap, the lines and the carburetors for leaks and evidence of damage.

2 If the carburetor gaskets are leaking, the carburetors should be disassembled and rebuilt by referring to Chapter 4.

3 If the fuel tap is leaking, tightening the retaining nut may help but if leakage persists, the tap should be disassembled and repaired or replaced with a new one (see Chapter 4).

4 If the fuel lines are cracked or otherwise deteriorated, replace them with new ones.

5 On 700/750 Sabres and 1987 and 1988 700/750 Magnas, check the vacuum line connecting the fuel diaphragm valve to No 1 (Sabre) or No 2 (Magna) cylinder intake tract. If it is cracked or otherwise damaged, replace it with a new one.

### Filter replacement (1982 through 1986 Magnas and 1100 Sabres)

6 An in-line fuel filter is fitted, which must be replaced at the specified interval.



**700/750 Magna models**

7 On 1982 through 1984 Magnas, remove the right side cover and turn the fuel valve Off; the filter is located below the valve and to the rear of the battery. On later models turn the fuel valve on the tank Off, then remove the left side cover; the fuel filter is located just above the fuel pump.

8 Release the filter from its holder, clamp the fuel lines each side of the filter, then release the hose clips and pull the hoses off the filter.

9 Install the new filter in the same position as the original, push on the hoses and secure with the clips. Clamp the filter in place, turn the fuel valve On and check that there are no leaks.

**1100 models**

10 On Sabre models, remove the right side cover (see Chapter 6) and turn the fuel valve Off. On Magna models, remove the seat and left side cover (see Chapter 6). Turn the fuel valve Off.

11 Release the single screw which retains the filter clamp to the fuel valve mounting bracket (Sabre) or frame (Magna). Clamp the fuel lines each side of the filter, then release the hose clips and pull the hoses off the filter.

12 Install the new filter in the same position as the original, push on the hoses and secure with the clips. Clamp the filter in place, turn the fuel valve On and check that there are no leaks.

**Filter cleaning (700/750 Sabres, 1987 and 1988 700/750 Magnas)**

*Refer to illustration 26.13*

13 A gauze type stack filter is fitted inside the fuel tank as part of the fuel valve. Cleaning is not specified as a maintenance item, but if problems with fuel restriction or fuel contamination are noted it should be removed for cleaning (**see illustration**).

14 Remove the fuel valve and clean the filter (see Chapter 4).

style and load carried.

6 Fork oil replacement is not specified as a maintenance item, but fork oil will degrade in time with loss of damping performance. Renew the oil periodically (see Chapter 6).

**Rear suspension**

7 Inspect the rear shock(s) for fluid leakage and tightness of the mounting nuts. If leakage is found, the shock should be replaced.

8 Set the bike on its main stand, or support it securely where no main stand is fitted. Grab the swingarm on each side, just ahead of the axle. Rock the swingarm from side to side - there should be no discernible movement at the rear. If there's a little movement or a slight clicking can be heard, make sure the pivot shaft locknut is tight (see Chapter 6). If the pivot nut is tight but movement is still noticeable, the swingarm will have to be removed and the bearings replaced as described in Chapter 6.

9 Inspect the tightness of the rear suspension linkage nuts and bolts on Sabre models.

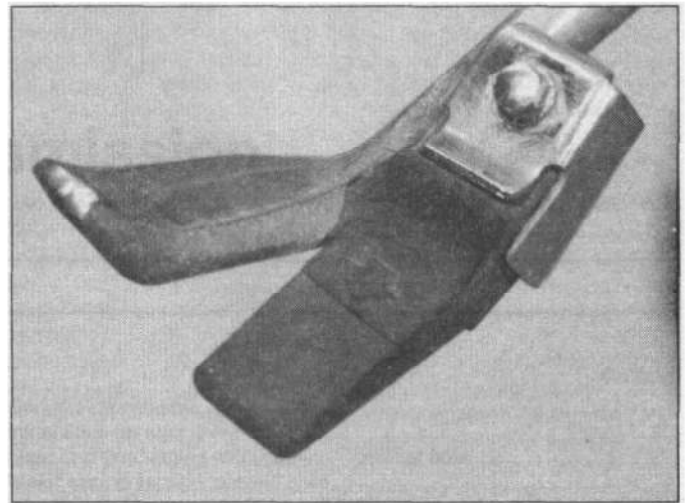
10 Where applicable, check the preload and damping settings to ensure that they suit the riding style and load carried (see Chapter 6).

**28 Stands - check**

*Refer to illustration 28.2*

1 Check that the side and main stands are mounted securely and that their return springs are not stretched or damaged.

2 The side stand has a wear pad attached to its foot which must be replaced when worn down to the wear line indicated by the moulded arrow (**see illustration**).



**28.2 Side stand rubber wear limit is indicated by arrow**

**27 Suspension - check****Front suspension**

1 The suspension components must be maintained in top operating condition to ensure rider safety. Loose, worn or damaged suspension parts decrease the vehicle's stability and control.

2 While standing alongside the motorcycle, apply the front brake and push on the handlebars to compress the forks several times. See if they move up-and-down smoothly without binding. If binding is felt, the forks should be disassembled and inspected as described in Chapter 6.

3 Carefully inspect the area around the fork seals for any signs of fork oil leakage. If leakage is evident, the seals must be replaced as described in Chapter 6.

4 Check the tightness of all suspension nuts and bolts to be sure none have worked loose.

5 Where applicable, check the fork air pressure, anti-dive setting and damping setting (see Chapter 6) to ensure that they suit the riding