






# Chapter 1

## Routine maintenance and servicing

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### Degrees of difficulty

Easy, suitable for novice with little experience		Fairly easy, suitable for beginner with some experience		Fairly difficult, suitable for competent DIY mechanic		Difficult, suitable for experienced DIY mechanic		Very difficult, suitable for expert DIY or professional	
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### Specifications

#### Engine

Spark plugs	
Type	
Standard	NGK DPR8EA-9 or Nippondenso X24EPR-U9
For cold climate (below 5°C)	NGK DPR7EA-9 or Nippondenso X22EPR-U9
For extended high speed riding	NGK DPR9EA-9 or Nippondenso X27EPR-U9
Electrode gap	0.8 to 0.9 mm
Valve clearances (COLD engine)	
Intake valves	0.13 to 0.17 mm
Exhaust valves	0.18 to 0.22 mm
Engine idle speed	
600 engine	1200 ± 100 rpm
650 engine	1100 ± 100 rpm
Carburettor synchronisation	
Maximum difference between cylinder readings	40 mm Hg
Cylinder compression	192 ± 28 psi (13.25 ± 1.9 Bar)

# Maintenance & servicing

## Miscellaneous

### Freeplay adjustments

Throttle grip	2 to 6 mm	
Clutch lever	10 to 20 mm	
Tyre pressures (cold)	<b>Front</b>	<b>Rear</b>
Solo rider	33 psi (2.3 Bar)	33 psi (2.3 Bar)
Rider and pillion	33 psi (2.3 Bar)	41 psi (2.8 Bar)

## Torque settings

Spark plugs	14 Nm
Crankshaft end cap	15 Nm
Timing mark inspection cap	10 Nm
Valve clearance adjuster locknuts	23 Nm
Valve cover bolts	10 Nm
Oil drain plug	35 Nm
Oil filter cartridge	10 Nm
Final drive oil filler cap	12 Nm
Final drive oil drain bolt	20 Nm
Side stand pivot bolt	38 Nm
Swingarm right pivot bolt	10 Nm
Swingarm right pivot bolt locknut (using special tool)	90 Nm
Swingarm left pivot bolt	100 Nm
Steering stem nut	105 Nm
Steering head bearing adjuster nut	22 Nm
Top yoke fork clamp bolts	23 Nm

## Recommended lubricants and fluids

Engine/transmission oil type	SE, SF or SG motor oil
Engine/transmission oil viscosity	SAE 10W40
Engine/transmission oil capacity	
Oil and filter change	2.6 litres
Following engine overhaul - dry engine, new filter	3.0 litres
Final drive oil type	SAE 80 Hypoid gear oil
Final drive oil capacity	Approx. 110 cc
Brake fluid	DOT 4
Coolant type	50% distilled water, 50% corrosion inhibited ethylene glycol antifreeze
Coolant capacity	
After draining	1.6 litres
Total capacity	2.2 litres
Fork oil level*	
J model	182 mm
K, M and P models	123 mm
S and T models	106 mm
Fork oil capacity	
J model	405 cc
K, M and P models	466 cc
S and T models	482 cc
Fork oil type	ATF

*\*Fork oil level is measured from the top of the tube, with the fork tube compressed and the spring removed.*

## Miscellaneous

Wheel bearings	Multi-purpose grease
Rear suspension bearings	Multi-purpose grease
Steering head bearings	Multi-purpose grease
Cables, lever and stand pivot points	Motor oil
Throttle grip	Multi-purpose grease or dry film lubricant

**Note:** Always perform the daily (pre-ride) checks at every maintenance interval (in addition to the procedures listed). The intervals listed below are the intervals recommended by the manufacturer for each particular operation during the model years covered in this manual. Your owner's manual may have different intervals for your model.

## Daily (pre-ride) checks

- ☐ See 'Daily (pre-ride) checks' at the beginning of this manual.

## After the initial 600 miles (1000 km)

**Note:** This check is usually performed by a Honda dealer after the first 600 miles (1000 km) from new. Thereafter, maintenance is carried out according to the following intervals of the schedule. .

## Every 4000 miles (6000 km) or 6 months

Carry out all the items under the Daily (pre-ride) checks

- G Clean the crankcase breather (Section 1)
- ☐ Check the spark plug gaps (Section 2).  
Check and adjust the idle speed (Section 3).  
Check the brake pads for wear (Section 4).  
Check the operation of the clutch (Section 5).  
Check the tyre and wheel condition, and the tyre tread depth (Section 6).

## Every 8000 miles (12 000 km) or 12 months

Carry out all the items under the 4000 mile (6000 km) check, plus the following:

- G Check the fuel hoses and system components (Section 7).
- ☐ Check throttle/choke cable operation and freeplay (Section 8).
- G Replace the spark plugs (Section 9).
- G Check the valve clearances (Section 10).
- D Change the engine oil and replace the oil filter (Section 11).
- D Check carburettor synchronisation (Section 12).
- ☐ Check the cooling system (Section 13).
- ☐ Check the final drive oil level (Section 14).
- n Check the operation of the brakes, and for fluid leakage (Section 15).
- Q Check the headlight aim (Section 16).
- n Check the side stand (Section 17).
- n Check the front and rear suspension (Section 18).

## Every 8000 miles (12 000 km) or 12 months (continued)

- G Check the swingarm bearings (Section 19).
- G Check the steering head bearing freeplay (Section 20).
- n Check the wheel bearings (Section 21).
- G Lubricate the stand(s), lever pivots and cables (Section 22).
- G Check the tightness of all nuts and bolts (Section 23).

## Every 12 000 miles (18 000 km) or 18 months

Carry out all the items under the 4000 mile (6000 km) check, plus the following:

- ☐ Replace the air filter (Section 24).
- L] Change the brake fluid (Section 25).

## Every 24 000 miles (36 000 km) or 2 years

Carry out all the items under the 8000 (12 000 km) and the 12 000 mile (18 000 km) check, plus the following:

- G Change the coolant (Section 26).

## Every 24 000 miles (36 000 km) or 3 years

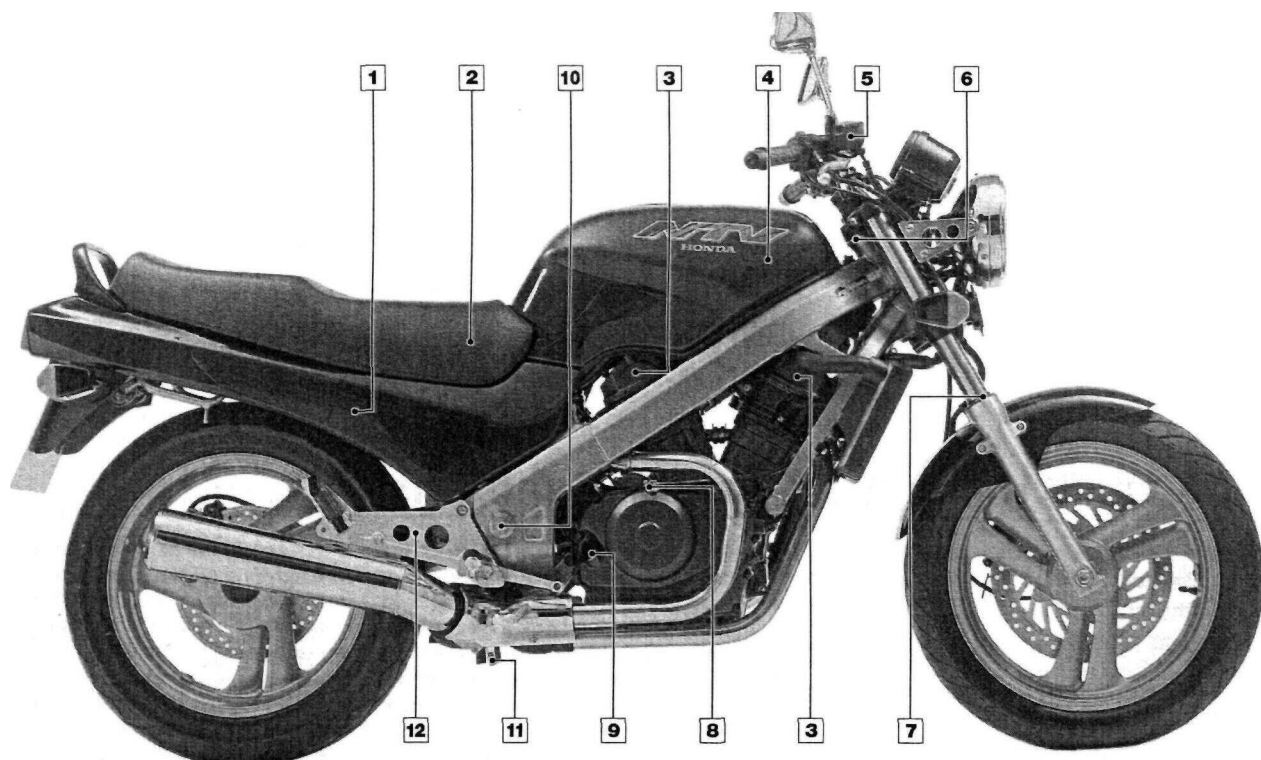
Carry out all the items under the 8000 (12 000 km) and the 12 000 mile (18 000 km) check, plus the following:

- G Change the final drive oil (Section 27).

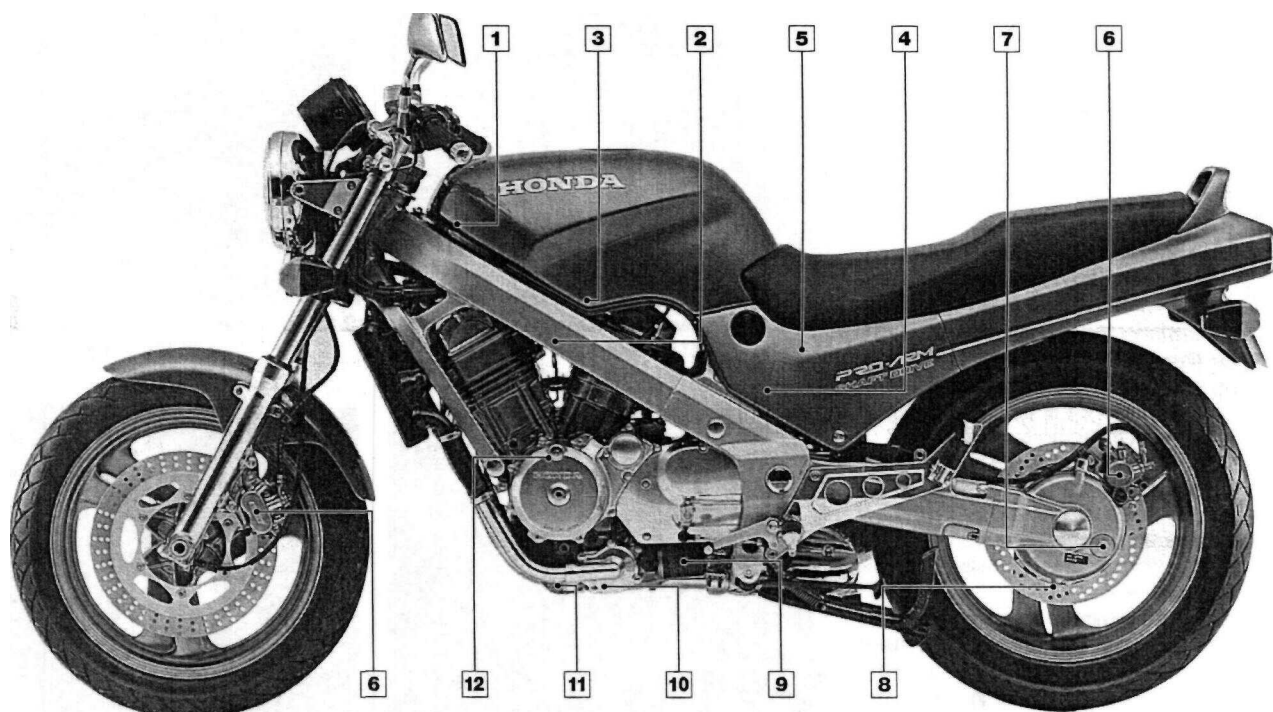
## Non-scheduled maintenance

- G Change the front fork oil (Section 28).
- G Check the cylinder compression (Section 29).
- G Re-grease the steering head bearings (Section 30).
- G Re-grease the swingarm bearings (Section 31).
- G Replace the brake master cylinder and caliper seals (Section 32).
- G Replace the brake hoses (Section 33).

## 1.4 Component locations



- |                              |                               |                               |                            |
|------------------------------|-------------------------------|-------------------------------|----------------------------|
| 1 Rear brake fluid reservoir | 4 Air filter                  | 7 Fork seals                  | 10 Swingarm pivot          |
| 2 Battery                    | 5 Front brake fluid reservoir | 8 Clutch cable lower adjuster | 11 Crankcase breather tube |
| 3 Valves and spark plugs     | 6 Steering head bearings      | 9 Engine oil filler/dipstick  | 12 Rear brake light switch |



- |                              |                     |                                     |                          |
|------------------------------|---------------------|-------------------------------------|--------------------------|
| 1 Radiator pressure cap      | 4 Coolant reservoir | 7 Final drive oil filler/level plug | 10 Coolant drain plug    |
| 2 Engine idle speed adjuster | 5 Fuel filter       | 8 Final drive oil drain plug        | 11 Engine oil drain plug |
| 3 Carburetors                | 6 Brake calipers    | 9 Engine oil filter                 | 12 Rotor inspection cap  |

1 This Chapter is designed to help the home mechanic maintain his/her motorcycle for safety, economy, long life and peak performance.

2 Deciding where to start or plug into the routine maintenance schedule depends on several factors. If the warranty period on your motorcycle has just expired, and if it has been maintained according to the warranty standards, you may want to pick up routine maintenance as it coincides with the next mileage or calendar interval. If you have owned the machine for some time but

have never performed any maintenance on it, then you may want to start at the nearest interval and include some additional procedures to ensure that nothing important is overlooked. If you have just had a major engine overhaul, then you may want to start the maintenance routine from the beginning. If you have a used machine and have no knowledge of its history or maintenance record, you may desire to combine all the checks into one large service initially and then settle into the maintenance schedule prescribed.

3 Before beginning any maintenance or repair, the machine should be cleaned thoroughly, especially around the oil filter, spark plugs, valve cover, side panels, carburetors, etc. Cleaning will help ensure that dirt does not contaminate the engine and will allow you to detect wear and damage that could otherwise easily go unnoticed.

4 Certain maintenance information is sometimes printed on decals attached to the motorcycle. If the information on the decals differs from that included here, use the information on the decal.

## Every 4000 miles (6000 km) or 6 months

### 1 Crankcase breather - draining

1 Remove the plug from the bottom of the crankcase breather tube located behind the side stand (**see illustration**). Allow the deposits to drain into a suitable container, then fit the plug back into the bottom of the tube. **Note:** *The crankcase breather should be drained more often if the bike is ridden frequently in the rain or at full throttle, or if the bike is washed or has been dropped. Drain the tube at any time when deposits are seen in the clear part of the tubing.*

### 2 Spark plug gaps - check and adjustment

1 This motorcycle is equipped with two spark plugs per cylinder. One plug is located on the side of the engine, the other is located within the valve cover (there is no need to remove the valve cover to access the plug for removal) (**see illustrations**). Make sure your spark plug socket is the correct size before attempting to remove the plugs - a suitable one is supplied in the motorcycle's tool kit.

2 Remove the seat and disconnect the battery negative (-ve) lead.

3 Remove the fuel tank (**see Chapter 4**).

4 Clean the area around the valve cover and plug caps to prevent any dirt falling into the spark plug channels.

5 Check that the cylinder location number is marked on each plug lead, then pull the spark plug caps off the spark plugs. Using a socket type wrench, unscrew the plugs from the cylinder head (**see illustration**). Lay the plugs out in relation to their cylinder; if either plug shows up a problem it will then be easy to identify the troublesome cylinder.

6 Inspect the electrodes for wear. Both the centre 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 centre electrode. Compare your spark plugs to the colour spark plug reading chart at the end of this manual. Check the threads, the washer and the ceramic insulator body for cracks and other damage.

7 If the electrodes are not excessively worn, and if the deposits can be easily removed with

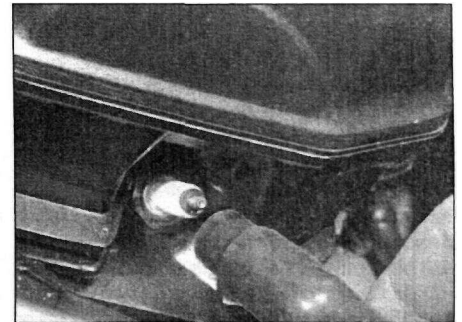
a wire brush, the plugs can be regapped and re-used (if no cracks or chips are visible in the insulator). If in doubt concerning the condition of the plugs, replace them with new ones, as the expense is minimal.

8 Cleaning spark plugs by sandblasting is permitted (though not recommended), provided you clean the plugs with a high flash-point solvent afterwards.

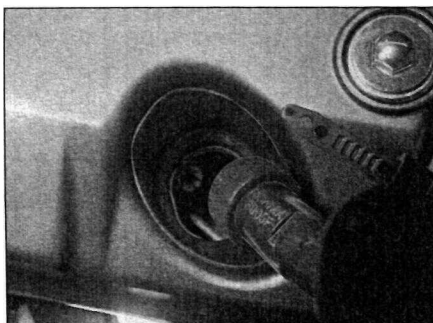
9 Before installing the plugs, make sure they are the correct type and heat range and check the gap between the electrodes (they are not pre-set on new plugs). For best results, use a



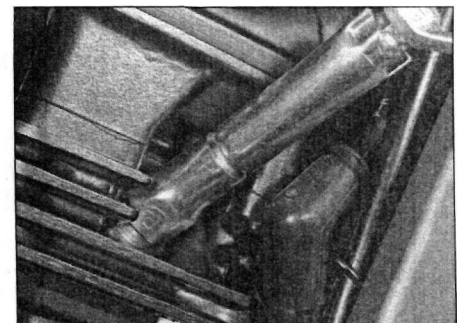
1.1 Remove the plug and allow any deposits to drain from the crankcase breather



2.1a Each cylinder has a spark plug on the side of the engine . . .

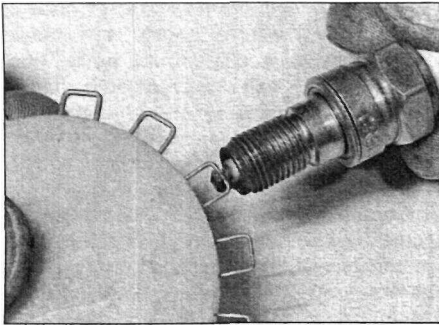


2.1b . . . and one within the valve cover

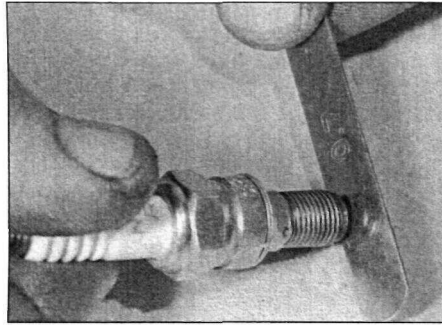


2.5 Remove the spark plugs using the tool provided in the tool kit or a deep plug socket

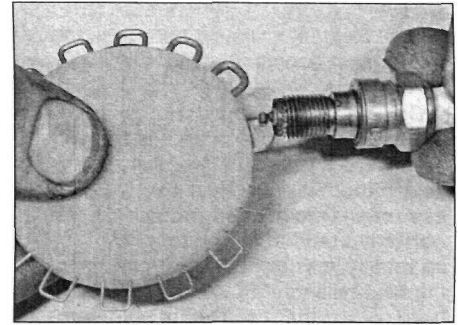
## 1.6 Every 4000 miles (6000 km) or 6 months



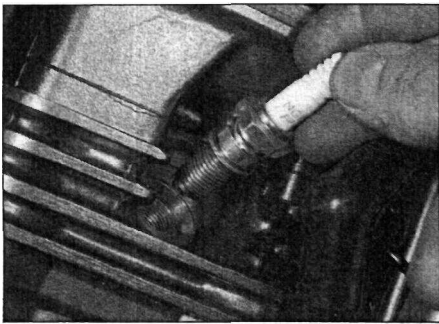
**2.9a** A wire type gauge is recommended to measure the spark plug electrode gap



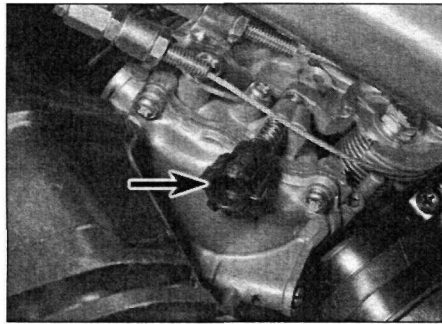
**2.9b** A blade type feeler gauge can also be used



**2.9c** Adjust the electrode gap by bending the side electrode



**2.10** Thread the plug in as far as possible by hand



**3.3** Idle speed adjusting screw (throttle stop screw) (arrow)

wire-type gauge rather than a flat (feeler) gauge to check the gap. Compare the gap to that specified and adjust as necessary. 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.

**10** Since the cylinder head is made of aluminium, which is soft and easily damaged, thread the plugs into the heads by hand (**see illustration**). Once the plugs are finger-tight, the job can be finished with a socket. Tighten the spark plugs to the specified torque listed in this Chapter's Specifications; do not over-tighten them.

**11** Reconnect the spark plug caps, making sure they are securely connected to the correct cylinder.

**12** Install the fuel tank (see Chapter 4).

### 3 Idle speed - check and adjustment

**1** The idle speed should be checked and adjusted before and after the carburettors are synchronised 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 cable 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 centre stand, or hold it upright, and make sure the transmission is in neutral.

**3** With the engine idling, adjust the idle speed by turning the throttle stop screw in or out until the idle speed listed in this Chapter's Specifications is obtained. The throttle stop screw is located under the carburettors behind the left-hand side frame spar (**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 carburettor information.

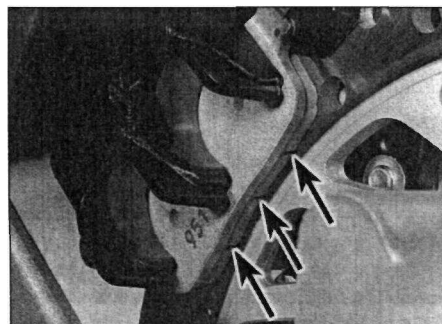
### 4 Brake pads - wear check

**1** The OE (original equipment) brake pads have three wear indicator grooves (single groove on the rear brake) that can be viewed without removing the pads from the caliper. The pad wear indicator grooves are visible by looking up at the bottom of the pad (**see illustrations**). If the pads are worn to or beyond the base of the groove(s), they must be replaced. If you are in any doubt about the amount of pad material remaining, remove the pads for thorough inspection (see Chapter 7).

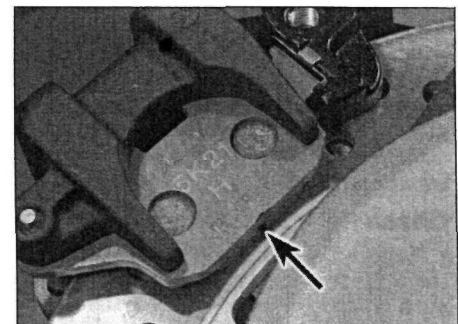
**2** Refer to Chapter 7 for details of pad replacement.



*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.*

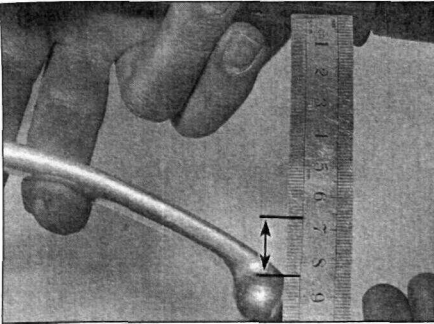


**4.1a** Front brake pad wear indicator grooves (arrows)

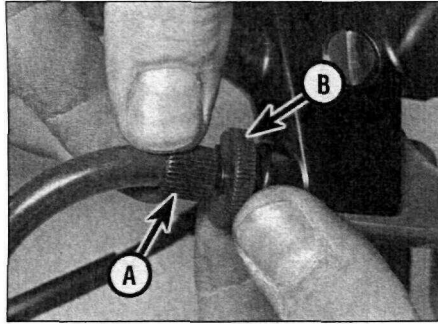


**4.1b** Rear brake pad wear indicator groove (arrow)

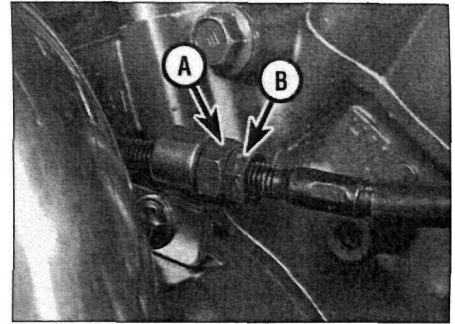
## Every 4000 miles (6000 km) or 6 months



5.1 Measuring clutch lever freeplay



5.2 Clutch cable (lever end) adjuster (A) and locking (B)



5.3 Clutch cable (clutch end) adjuster (A) and locknut (B)

### 5 Clutch - check

1 Periodic adjustment of the clutch cable is necessary to compensate for wear of the clutch plates and stretch in the cable. Check that the amount of freeplay at the clutch lever end is within the specifications listed at the beginning of the Chapter (**see illustration**). If adjustment is required, it can be made at either the lever end of the cable or at the clutch end.

2 To adjust cable freeplay at the lever, pull back the rubber cover, then loosen the locking ring and turn the adjuster in or out until the required amount of freeplay is obtained (**see illustration**). To increase freeplay, turn the adjuster clockwise. To

reduce freeplay, turn the adjuster anti-clockwise. Tighten the locking ring securely.

3 To adjust cable freeplay at the clutch, loosen the locknut and turn the adjuster nut until the required amount of freeplay is obtained (**see illustration**). To increase freeplay, turn the adjuster nut anti-clockwise. To reduce freeplay, turn the adjuster nut clockwise. Tighten the locknuts securely.

4 If all the adjustment has been taken up at the lever, reset the adjuster to give the maximum amount of freeplay, then set the correct amount of freeplay using the adjuster at the clutch end of the cable. Subsequent adjustments can now be made using the lever adjuster only.

### Wheels and tyres - general check

#### Wheels

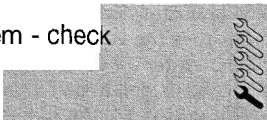
1 Cast wheels are virtually maintenance free, but they should be kept clean and checked periodically for cracks and other damage. Also check the wheel runout and alignment (see Chapter 7). Never attempt to repair damaged cast wheels; they must be replaced with new ones. Check the tyre valve rubber for signs of damage or deterioration and have it replaced if necessary. Also, make sure the valve stem dust cap is in place and tight.

#### Tyres

2 Check the tyre condition and tread depth thoroughly - see Daily (pre-ride) checks.

## Every 8000 miles (12 000 km) or 12 months

### 7 Fuel system - check



**Warning: 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 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 Remove the fuel tank (see Chapter 4) and check the tank, the tap, and the fuel hose for signs of leakage, deterioration or damage; in particular check that there is no leakage from the fuel hose. Replace any hoses which are cracked or deteriorated.

2 If the fuel tap is leaking, tightening its nut and screws may help. If leakage persists, remove the tap from the tank as described in Chapter 4. Unscrew the screws and disassemble the tap, noting how the components fit. Inspect all components for wear or damage, and replace the O-ring at the tap and tank joint. If any of the components are worn or damaged beyond repair a new tap must be fitted as components are not available individually.

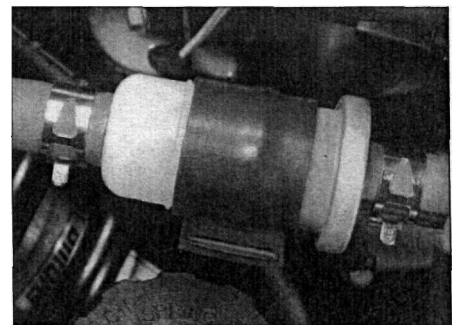
3 If the carburettor gaskets are leaking, the carburettors should be disassembled and rebuilt using new gaskets and seals (see Chapter 4).

#### Filter cleaning

4 Cleaning or replacement of the fuel filters is advised after a particularly high mileage has been covered. It is also necessary if fuel starvation is suspected.

5 The fuel tap incorporates a gauze type filter inside the fuel tank. Remove the fuel tap (see Chapter 4) and clean the filter, being careful not to tear the gauze. If the gauze is damaged, replace it with a new one.

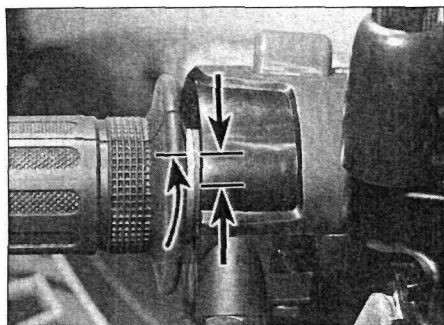
6 The fuel hose incorporates an in-line filter between the tank and the fuel pump; remove the left-hand side panel for access (**see illustration**). This is a sealed unit and cannot be cleaned or serviced. If it is suspected of being blocked, replace it with a new one. To replace the filter, turn the fuel tap OFF, and with a rag held under the filter to catch any fuel spills, disconnect both pipes from the filter. Work the filter out of its housing. Install the new filter, noting that the arrow on its



7.6 In-line fuel filter is located in hose from tap to fuel pump



# Every 8000 miles (12 000 km) or 12 months



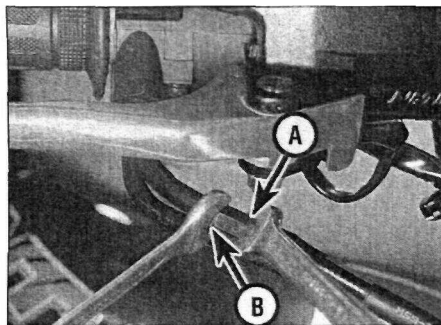
**8.3 Throttle cable freeplay is measured in terms of free twistgrip rotation (arrow)**

body must point in the direction of fuel flow (ie towards the fuel pump). Install the fuel pipes and secure them with their clips. Turn the fuel tap ON and check that there is no sign of fuel leakage from the filter connections. Install the side panel.

## 8 Throttle and choke cables - check

### Throttle cables

- 1 Make sure the throttle grip rotates easily from fully closed to fully open with the front wheel turned at various angles. The grip should snap shut automatically when released.
- 2 If the throttle sticks, this is probably due to a cable fault. Remove the cables (see Chapter 4) and lubricate them. Install the cables, making sure that they are correctly routed. If this fails to improve the operation of the throttle, the cables must be replaced. Note that in very rare cases the fault could lie in the carburettors rather than the cables, necessitating the removal of the carburettors and inspection of the throttle linkage (see Chapter 4).
- 3 With the throttle operating smoothly, check for a small amount of freeplay at the grip (**see illustration**). The amount of freeplay in the throttle cable, measured in terms of twistgrip rotation, should be as given in this Chapter's Specifications. If adjustment is necessary, adjust the idle speed first (see Section 3).
- 4 The accelerator (opening) cable is adjustable at either the throttle end or the carburettor end. Minor adjustments should be made at the throttle end. To adjust the cable freeplay, slacken the locknut on the cable adjuster and rotate the adjuster until the correct amount of freeplay is obtained, then tighten the locknut against the adjuster (**see illustration**). If all the adjustment has been taken up at the throttle, re-set the adjuster to give maximum freeplay and then set the correct amount of freeplay by adjusting the accelerator (opening) cable at the carburettor. Subsequent adjustments can now be made at the throttle.



**8.4 Throttle cable adjuster (A) and locknut (B)**

- 5 After adjustment check that the throttle twistgrip operates smoothly and snaps shut quickly when released.

- 6 With the engine idling, turn the handlebars through the full extent of their travel. The idle speed should not change. If it does, the cable may be incorrectly routed.

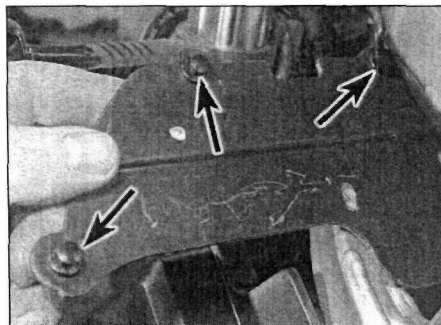
**Caution:** Correct this condition before riding the bike (see Chapter 4).

### Choke cable

- 7 If the choke does not operate smoothly this is probably due to a cable fault. Remove the cable as described in Chapter 4 and lubricate it. Install the cable, routing it so it takes the smoothest route possible. If this fails to improve the operation of the choke, the cable must be replaced. Note that in very rare cases the fault could lie in the carburettors rather than the cable, necessitating the removal of the carburettors and inspection of the choke valves (see Chapter 4).

- 8 There should be a very small amount of freeplay at the choke lever when the choke is in the OFF position; this ensures that the choke is not in operation when the engine is running normally. An adjuster elbow immediately underneath the handlebar switch enables adjustment of the cable.

- 9 To check the choke cable setting, remove the fuel tank (see Chapter 4) and trace the choke cables (single cable from the handlebar splits into two) to the carburettors. Peel back the rubber cover and unscrew the retaining nut to allow the plunger to be withdrawn from each carburettor body. With the choke lever in



**10.3 The heat guard is secured by three trim clips (arrows)**

the OFF (fully forwards) position, measure the distance from the choke plunger to the retaining nut on both carburettors. It should be between 10 to 11 mm. If not, back off the locknut at the cable elbow under the handlebar switch and rotate the elbow to make cable adjustment - tighten the locknut on completion.

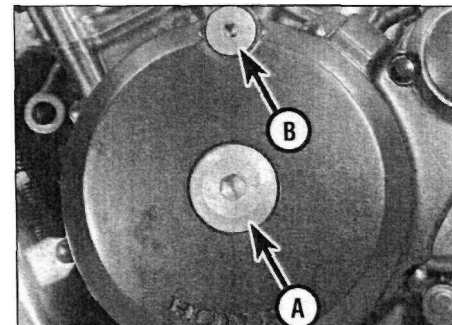
- 10 Install the choke plungers in the carburettors and secure them with their retaining nuts. Slip the rubber covers back into place. Install the fuel tank as described in Chapter 4.

## 9 Spark plugs - replacement

See Section 2 'Sparkplug gap check' under the 4000 mile (6000 km) or 6 months heading for details.

## 10 Valve clearances - check and adjustment

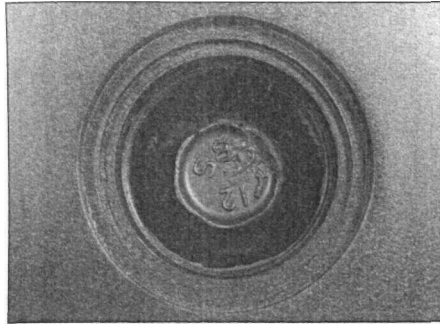
- 1 The engine must be completely cool for this maintenance procedure, so let the machine sit overnight before beginning.
- 2 Remove the fuel tank and the air filter housing (see Chapter 4).
- 3 Pull out the three trim clips securing the heat guard to the frame and remove the guard (**see illustration**).
- 4 Remove the radiator and the thermostat housing (not necessary if working the on rear cylinder only).
- 5 Unscrew the crankshaft end cap and the timing mark inspection cap from the left-hand side crankcase cover (**see illustration**).
- 6 Remove the valve cover from each cylinder (see Chapter 2). Unscrew the spark plugs to allow the engine to be turned over easier.
- 7 The engine can be turned over by rotating the crankshaft anti-clockwise using a suitable socket on the flywheel bolt (**see illustration**). Starting with the front cylinder, rotate the engine until it is at TDC (Top Dead Centre) on the compression stroke. At this point the "FT" mark on the flywheel aligns with the notch in



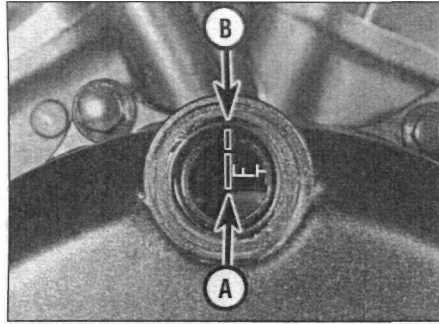
**10.5 Crankshaft end cap (A) and timing mark inspection cap (B)**



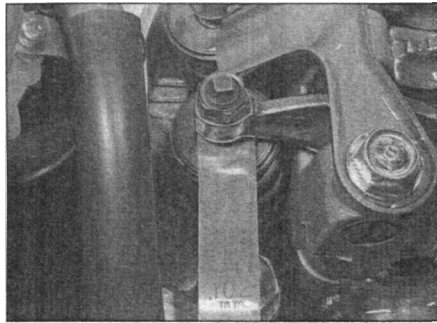
# Every 8000 miles (12 000 km) or 12 months 1.9



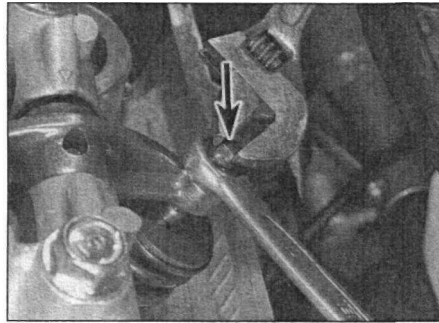
**10.7a** Use a socket on the flywheel bolt behind the crankshaft end cap to rotate the engine



**10.7b** Align the "FT" mark (A) with the notch (B) in the inspection hole



**10.7c** Check the valve clearance using a feeler gauge



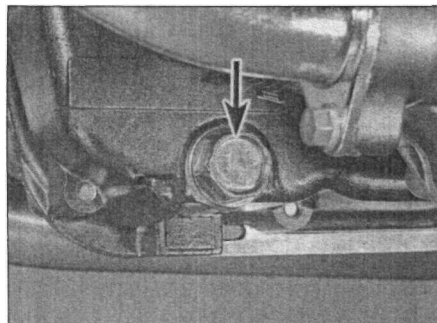
**10.8** Adjust the valve clearance by turning the adjuster (arrow) whilst counter-holding the locknut

the timing mark inspection hole (**see illustration**), and both camshaft lobes will be pointing almost downwards (**see illustration 8.25b in Chapter 2**). Insert a feeler gauge of the correct thickness (see Specifications) between each rocker arm adjuster screw and valve and check that it is a firm sliding fit (**see illustration**).

8 If it is not, unscrew the locknut and rotate the adjuster until a firm sliding fit is obtained, then tighten the locknut to the torque setting specified at the beginning of the Chapter, making sure the adjuster does not rotate as you do so (**see illustration**). Re-check the clearances, not forgetting that there is a difference between the inlet valve clearance and the exhaust valve clearance.

9 Moving to the rear cylinder, rotate the engine until it is at TDC (Top Dead Centre) on the compression stroke. At this point the "RT" mark on the flywheel aligns with the notch in the inspection hole, and both camshaft lobes will be pointing almost downwards. Check and adjust the valve clearance as described in Steps 7 and 8 above.

10 Install all disturbed components in a reverse of the removal sequence, referring to the relevant Chapters where necessary. Apply engine oil to the valve assemblies and camshafts before installing the valve covers. Apply a smear of molybdenum disulphide grease to the threads of the crankshaft end cap and the timing mark inspection cap and tighten them to their specified torque settings.



**11.4** Engine oil drain plug location (arrow)



**11.5** Engine oil filter location

## 11 Engine oil and oil filter - change



**Warning:** Be careful when draining the oil, as the exhaust pipes, the engine, and the oil itself can cause severe burns.

1 Consistent routine oil and filter changes are the single most important maintenance procedure you can perform on a motorcycle. The oil not only lubricates the internal parts of the engine, transmission and clutch, but it also acts as a coolant, a cleaner, a sealant, and a protectant. Because of these demands, the oil takes a terrific amount of abuse and should be replaced often with new oil of the recommended type and viscosity. Saving a little money on the difference in cost between a good oil and a cheap oil won't pay off if the engine is damaged.

2 Before changing the oil, warm up the engine so the oil will drain easily.

3 Put the bike on its side stand and place a clean drain tray below the engine. Unscrew the oil filler cap on the right-hand side crankcase cover to vent the crankcase and to act as a reminder that there is no oil in the engine.

4 Next, unscrew the oil drain plug from the left-hand side of the engine and let the oil flow into the drain tray (**see illustration**). Discard the drain plug sealing washer as it should be replaced whenever the plug is removed.

5 Position the oil drain tray so that it is below the oil filter (**see illustration**). Using an oil filter removing tool (there are several types commercially available at little cost), unscrew the filter from the rear of the engine. Clean the filter thread and housing on the crankcase using clean rag. Wipe off any remaining oil from the filter sealing area.

6 When the oil has completely drained, fit a new sealing washer over the drain plug. Fit the plug to the crankcase and tighten it to the torque setting specified at the beginning of the Chapter. Avoid overtightening, as damage to the threads will result.

7 Apply a smear of clean engine oil to the rubber sealing ring on the new filter, then install the filter onto the engine (**see illustration**). Using an oil filter wrench (if



**11.7** Apply a smear of motor oil to the sealing ring of the filter on installation

# 10 Every 8000 miles (12 000 km) or 12 months

available), tighten the filter to the specified torque setting. If the wrench is not available, tighten the filter firmly by hand. Do not overtighten the filter as the seal will be damaged and the filter will leak.

8 Refill the crankcase with oil to the proper level (see *Daily (pre-ride) checks*) and install the filler cap. Start the engine and let it run for two or three minutes (make sure that the oil pressure light extinguishes after a few seconds). Shut it off, wait a few minutes, then check the oil level. If necessary, add more oil to bring the level up to the upper mark on the dipstick. Check around the drain plug and filter for leaks.

9 The old oil drained from the engine cannot be re-used and should be disposed of properly. Check with your local refuse disposal company, disposal facility or environmental agency to see whether they will accept the used oil for recycling. Don't pour used oil into drains or onto the ground.

**HINT** Check the old oil carefully - if it is very metallic coloured, then the engine is experiencing wear from running-in (new engine) or from insufficient lubrication. If there are flakes or chips of metal in the oil, then something is drastically wrong internally and the engine will have to be disassembled for inspection and repair. If there are pieces of fibre-like material in the oil, the clutch is experiencing excessive wear and should be checked.



**Note:** It is antisocial and illegal to dump oil down the drain. To find the location of your local oil recycling bank, call this number free.

## 12 Carburettors - synchronisation



**Warning:** 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 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.



**Warning:** Take great care not to burn your hand on the hot engine unit when accessing the gauge take-off points on the intake manifolds. Do not allow exhaust gases to build up in the work area; either perform the check outside or use an exhaust gas extraction system.

1 Carburettor synchronisation is simply the process of adjusting the carburettors so they pass the same amount of fuel/air mixture to each cylinder. This is done by measuring the vacuum produced in each cylinder. Carburettors that are out of synchronisation will result in decreased fuel mileage, increased engine temperature, less than ideal throttle response and higher vibration levels. Before synchronising the carburettors, make sure the valve clearances are properly set.

2 To properly synchronise the carburettors, you will need some sort of vacuum gauge set-up, preferably with a gauge for each cylinder, or a manometer, which is a calibrated tube arrangement that utilises columns of mercury or steel rods to indicate engine vacuum.

3 A manometer can be purchased from a motorcycle dealer or accessory shop and should have the necessary rubber hoses supplied with it for hooking into the vacuum take-off stubs.

4 A vacuum gauge set-up can also be purchased from a dealer or mail-order specialist or fabricated from commonly available hardware and automotive vacuum gauges.

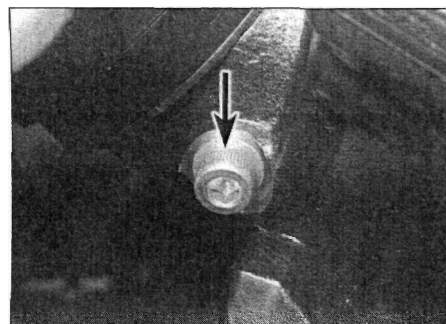
5 The manometer is the more reliable and accurate instrument, and for that reason is preferred over the vacuum gauge set-up; however, if using a mercury manometer, extra precautions must be taken during use and storage of the instrument as mercury is a liquid, and extremely toxic.

6 Because of the nature of the synchronisation procedure and the need for special instruments, most owners leave the task to a Honda dealer.

7 Start the engine and let it run until it reaches normal operating temperature, then shut it off.

8 Remove the fuel tank (see Chapter 4).

9 Unscrew the vacuum take-off plug from the intake port on each cylinder and install the



**12.9** The vacuum take-off plug (arrow) is located in the intake port of each cylinder

vacuum take-off adapter in its place (see illustration). If your vacuum gauge set or manometer does not contain the correct size adapters, they are available from a Honda dealer (Pt. No. 16124-MBO-000).

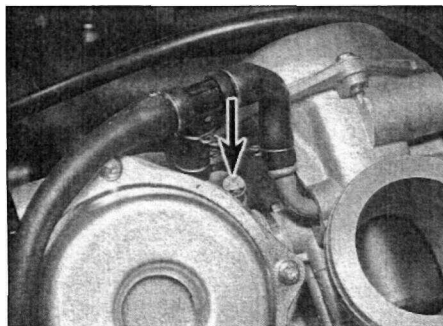
10 Connect the gauge hoses to the take-off adapters. Make sure there are no air leaks as false readings will result.

11 Arrange a temporary fuel supply, either by using a small temporary tank or by using extra long fuel pipes to the now remote fuel tank. Alternatively, position the tank on a suitable base on the motorcycle, taking care not to scratch any paintwork, and making sure that the tank is safely and securely supported.

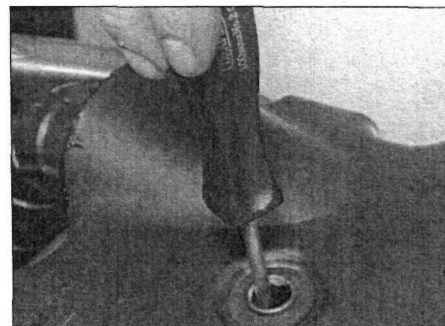
12 Start the engine and make sure the idle speed is as specified at the beginning of the Chapter. If it isn't, adjust it (see Section 3). If the gauges are fitted with damping adjustment, set this so that the needle flutter is just eliminated but so that they can still respond to small changes in pressure.

13 The vacuum readings for both of the cylinders should be the same, or at least within the tolerance listed in this Chapter's Specifications. If the vacuum readings vary, proceed as follows.

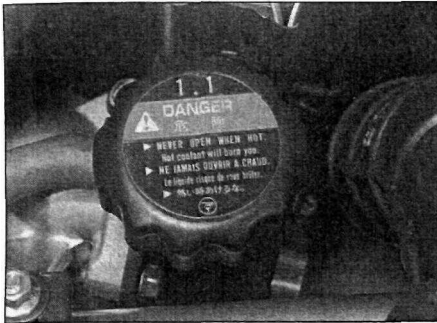
14 The carburettors are adjusted by turning the synchronising screw situated in-between the carburettors, in the throttle linkage (see illustration). The screw is accessed using a long screwdriver inserted through the hole in the air cleaner housing (see illustration). Turn the screw until the reading on each gauge is the same. **Note:** Do not press down on the screw whilst adjusting it, otherwise a false



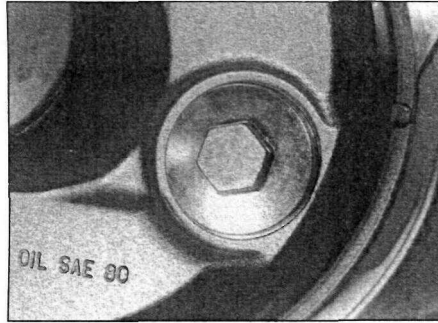
**12.14a** Carburettor synchronisation screw (arrow) (with air filter housing removed)



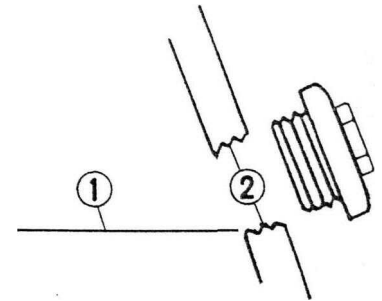
**12.14b** Adjust the synchronisation screw through the hole in the air filter housing



**13.6** Observe caution when releasing the radiator pressure cap



**14.2a** Unscrew the oil filler cap from the final drive housing . . .



**14.2b** . . . and check that the oil (1) is up to the edge of the filler hole (2)

reading will be obtained. When the carburettors are synchronised, open and close the throttle quickly to settle the linkage, and recheck the gauge readings, readjusting if necessary.

**15** When the adjustment is complete, recheck the vacuum readings, then stop the engine. Remove the vacuum gauge or manometer and install the blanking plugs, complete with their sealing washers.

**16** Detach the temporary fuel supply and install the fuel tank (see Chapter 4).

## 13 Cooling system - check



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

**1** Check the coolant level (see *Daily (pre-ride) checks*).

**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.

**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 professionally 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, clean them using water or low pressure compressed air directed through the fins from the rear side. If the fins are bent or distorted, straighten them carefully with a screwdriver. If the air flow is restricted by bent or damaged

fins over more than 30% of the radiator's surface area, replace the radiator.

**6** Remove the fuel tank to access the radiator pressure cap (see Chapter 4). Remove the pressure cap from the filler neck by turning it anti-clockwise until it reaches a stop (**see illustration**). 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. Check the condition of the coolant in the system. If it is rust-coloured or if accumulations of scale are visible, drain, flush and refill the system with new coolant (See Section 26). Check the cap seal for cracks and other damage. If in doubt about the pressure cap's condition, have it tested by a Honda dealer 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 no further. Install the fuel tank.

**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 26).

**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.

**10** Periodically, check the drainage hole on the underside of the water pump cover (see Chapter 3). Leakage from this hole indicates failure of the pump's mechanical seal.

## 14 Final drive oil level - check

**1** Place the motorcycle on its centre stand, or support it in an upright position using an

auxiliary stand, making sure it is on level ground.

**2** The check should be made after the machine has been standing for a few hours. Unscrew the oil filler cap and check that the oil is up to the edge of the filler hole (**see illustrations**). If the level is below this, look for signs of leakage, such as oil staining on the underside of the casing. If leakage is evident, the problem must be rectified to avoid the possibility of damage to the final drive and oil contaminating the rear tyre (see Chapter 6).

**3** Replenish the oil if necessary to the correct level using the type specified at the beginning of the Chapter, then install the filler cap, using a new O-ring smeared with clean oil, and tighten it to the torque setting specified at the beginning of the Chapter.

## 15 Brake system - check

**1** A routine general check of the brake system will ensure that any problems are discovered and remedied before the rider's safety is jeopardised.

**2** Check the brake lever and pedal for loose connections, excessive play, bends, and other damage. Replace any damaged parts with new ones (see Chapter 7).

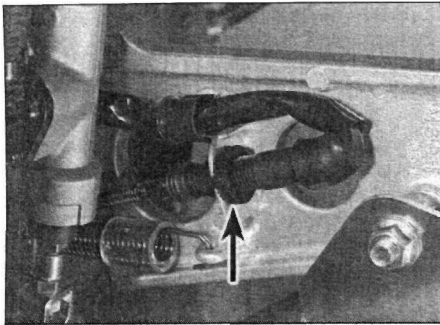
**3** Make sure all brake fasteners are tight. Check the brake pads for wear and make sure the fluid level in the reservoirs is correct (see *Daily (pre-ride) checks*). Look for leaks at the hose connections and check for cracks in the hoses. If the lever or pedal is spongy, bleed the brakes (see Chapter 7).

**4** Make sure the brake light operates when the front brake lever is depressed. The front brake light switch is not adjustable. If it fails to operate properly, check it (see Chapter 9).

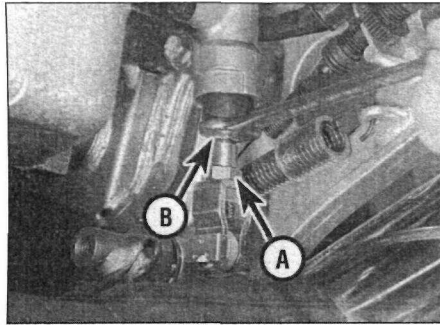
**5** Make sure the brake light is activated just before the rear brake pedal takes effect. If adjustment is necessary, hold the switch and turn the adjusting nut on the switch body until the brake light is activated when required (**see illustration**). If the switch doesn't operate the brake lights, check it (see Chapter 9).

**6** Check the position of the brake pedal tip in relation to the top of the footrest. Honda do

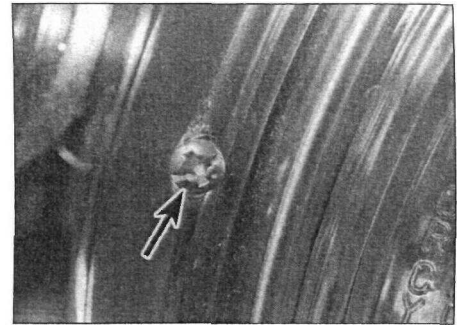
## 1.12 Every 8000 miles (12 000 km) or 12 months



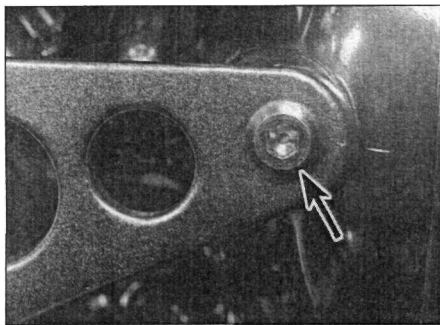
15.5 Rear brake light adjusting nut (arrow)  
- viewed from inside



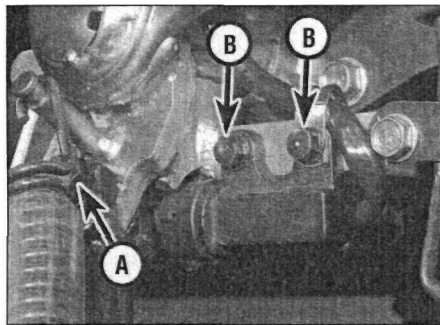
15.6 Slacken the locknut (A) and adjust the pedal height using the nut (B) on the pushrod



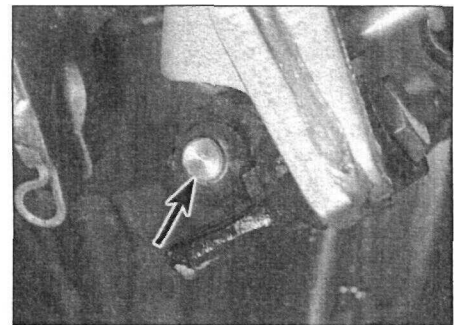
16.2 Headlight horizontal adjustment screw (arrow)



16.3 Slacken the headlight mounting bolts (arrow) for vertical adjustment



17.4a Side stand pivot bolt (A) and side stand switch bolts (B)



17.4b Side stand switch plunger (arrow)

not supply an actual setting for the brake pedal height, but it can be adjusted to suit rider preference. Adjustment is made by slackening the locknut on the master cylinder pushrod, then turning the pushrod until the pedal is at the correct height (**see illustration**). Tighten the locknut securely. Always check and if necessary adjust the rear brake light switch after adjusting the pedal height (see Step 5). **Note:** A setting is given for master cylinder pushrod length in Chapter 7 and it is advised that you do not deviate too far from this setting when making adjustments.

### 16 Headlight aim - check and adjustment

**Note:** An improperly adjusted headlight may cause problems for oncoming traffic or provide poor, unsafe illumination of the road ahead. Before adjusting the headlight aim, be sure to consult with local traffic laws and regulations and refer to MOT Test Checks in the Reference section of this Manual.

1 The headlight beam can be adjusted both horizontally and vertically. Before making any adjustment, check that the tyre pressures are correct and the suspension is adjusted as required. Make any adjustments to the headlight aim with the machine on level ground, with the fuel tank half full and with an assistant sitting on the seat. If the bike is

usually ridden with a passenger on the back, have a second assistant to do this.

2 Horizontal adjustment is made by turning the adjuster screw in the headlight rim (**see illustration**). Turn it clockwise to move the beam to the left, and anti-clockwise to move it to the right.

3 Vertical adjustment is made by slackening the headlight mounting bolts and tilting the unit up or down as required (**see illustration**). Tighten the bolts securely after the adjustment has been made.

### 17 Side stand - check



1 The side stand return spring must be capable of retracting the stand fully and holding the stand retracted when the motorcycle is in use. If the spring is sagged or broken it must be replaced.

2 Lubricate the side stand pivot regularly (see Section 22). Make sure the pivot bolt is tightened to the torque setting specified at the beginning of the Chapter (**see illustration 17.4a**).

3 The side stand switch prevents the engine being started if the stand is extended and the motorcycle is in gear. Check its operation by shifting the transmission into neutral, retracting the stand and starting the engine. Pull in the clutch lever and select a gear. Extend the side stand. The engine should stop

as the side stand is extended. If the side stand switch does not operate as described, check its circuit (see Chapter 9).

4 Check that the switch mounting bolts are secure and that the switch plunger moves freely in and out of the switch (**see illustrations**).

### 18 Suspension - check

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

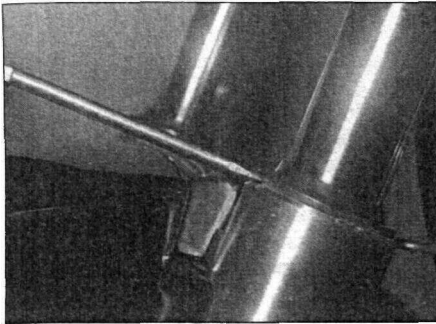
#### Front suspension

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 (see Chapter 6).

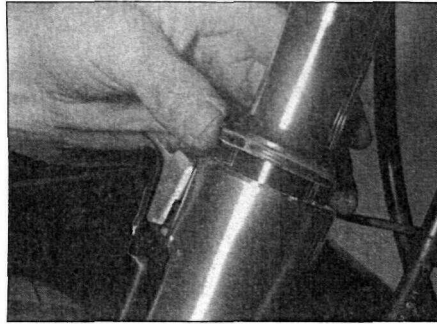
3 Inspect the area above the dust seal for signs of oil leakage, then carefully lever off the dust seal using a flat-bladed screwdriver and inspect the area around the fork seal (**see illustrations**). If leakage is evident, the seals must be replaced (see Chapter 6).

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





18.3a Lever off the dust seal . . .



18.3b . . . and inspect the area above the oil seal for signs of oil leakage

## Rear suspension

5 Inspect the rear shock for fluid leakage and tightness of its mountings. If leakage is found, the shock should be replaced.

6 With the aid of an assistant to support the bike, compress the rear suspension several times. It should move up and down freely without binding. If binding is felt, the shock absorber should be removed and examined further. Also check the swingarm bearings (see Section 19).

7 Position the motorcycle on its centre stand or on an auxiliary stand so that the rear wheel is off the ground. Grab the swingarm and rock it 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 a further check of the swingarm bearings (see Section 19).

8 Inspect the tightness of the rear suspension mounting bolts and nuts.

## 19 Swingarm bearings - check



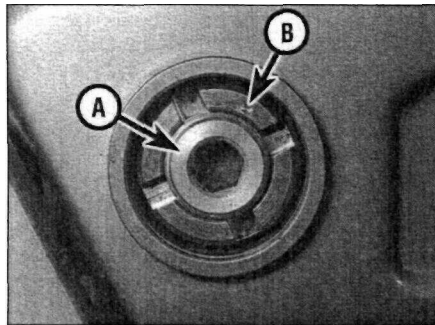
1 To make an accurate assessment of the swingarm bearings, remove the rear wheel (see Chapter 7) and the shock absorber lower mounting bolt (see Chapter 6). Swing the shock absorber backwards to provide clearance for the swingarm to be moved.

2 Grasp the rear of the swingarm with one hand and place your other hand at the junction of the swingarm and the frame. Try to move the rear of the swingarm from side-to-side. Any wear (play) in the bearings should be felt as movement between the swingarm and the frame at the front. If there is any play the swingarm will be felt to move forward and backward at the front (not from side-to-side). Next, move the swingarm up and down through its full travel. It should move freely, without any binding or rough spots.

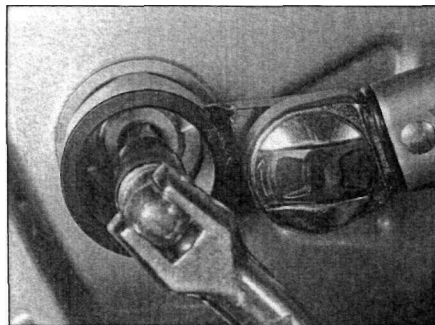
3 If any play in the swingarm is noted, check that the bearings are loaded to the correct torque setting. Prise off the dust cover from the right-hand side of the swingarm pivot, then counter-hold the pivot bolt on the right-hand side and slacken the locknut (see illustration). This requires the use of a Honda

service tool (Pt. No. 07908-ME90000) which is a special wrench that fits the locknut slots (see illustration). There is no alternative to the use of this tool; if you do not have access to it, the swingarm pivot locknut must be unscrewed and later tightened by a Honda dealer. Check that the pivot bolt is tightened to the torque setting specified at the beginning of the Chapter, and adjust if necessary. Install the locknut and tighten it to the specified torque setting using a torque wrench applied to the socket in the arm of the special tool (see illustration). Note: *The specified torque setting takes into account the extra leverage provided by the service tool and cannot be duplicated without it.* Counter-hold the pivot bolt to stop it from turning whilst tightening the locknut.

4 Also check that the left-hand side pivot bolt is tightened to the correct torque setting. Install the dust caps in the frame.



19.3a Swingarm pivot bolt (A) and locknut (B) on right-hand side



19.3c Tighten the locknut using the special tool whilst counter-holding the pivot bolt

5 If any freeplay still exists or if the swingarm does not move freely, the bearings must be removed for inspection or replacement (see Chapter 6).

## 20 Steering head bearings - freeplay check and adjustment

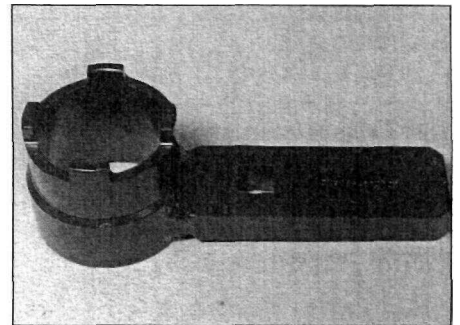
1 This motorcycle is equipped with caged-ball type steering head bearings. Head bearings can become dented, rough or loose during normal use of the machine, and in extreme cases, worn or loose steering head bearings can cause steering wobble - a condition that is potentially dangerous.

### Check

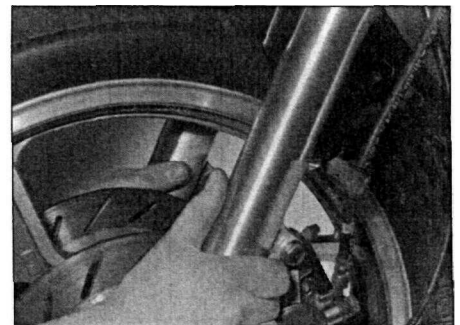
2 Place the motorcycle on its centre stand, or support it using an auxiliary stand. Raise the front wheel off the ground either by having an assistant push down on the rear or by placing a support under the engine.

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

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. If play is felt in the bearings, adjust the steering head as follows (see Haynes Hint).



19.3b This Honda special tool is essential for adjusting the swingarm bearings



20.4 Checking for looseness in the steering head bearings

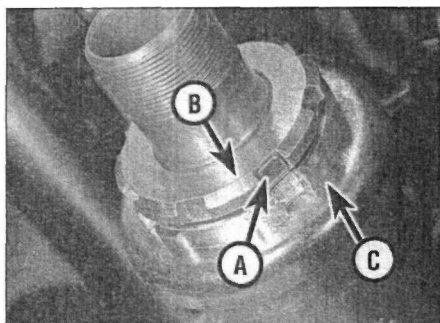
# 1•14 Every 8000 miles (12 000 km) or 12 months



20.7a Remove the steering stem nut and washer



20.7b Slacken the fork clamp bolts (arrows), then lift off the top yoke



20.8 Steering head bearing lockwasher tab (A), locknut (B) and adjuster nut (C)



20.9 Adjust the head bearing adjuster nut using a C-spanner



*Freeplay in the fork due to worn fork bushes can be misinterpreted for steering head bearing play - do not confuse the two.*

## Adjustment

5 On J, K and M models, unscrew the fuse box cover retaining screws and remove the cover, then remove the screws securing the fuse box to the top yoke and move the fuse box aside, leaving its wiring connected and noting its routing.

6 On P, S and T models, unscrew the bolts securing the instrument cluster to the top yoke and move the cluster aside to allow the top yoke to be moved (see Chapter 9 if necessary) - there is no need to disconnect the instrument cluster wiring or speedometer cable. Also displace the handlebars (see

Chapter 5) to gain access to the steering stem nut.

7 Unscrew and remove the steering stem nut and washer, then slacken the fork clamp bolts in the top yoke and lift the top yoke off the steering stem (see illustrations). Support the headlight as the top yoke is removed, and note how the prongs and their rubbers on the top of the headlight bracket frame fit into the holes in the underside of the yoke. Support the assembly carefully whilst adjusting the head bearings.

8 Bend back the tabs of the steering stem lockwasher to release it from the locknut, then unscrew and remove the locknut using a suitable C-spanner (see illustration). Remove the lockwasher and discard it as a new one must be used.

9 Slacken the adjuster nut slightly (using the C-spanner) until pressure is just released, then tighten it until all freeplay is removed, yet

the steering is able to move freely (see illustration). Note that Honda specify a torque setting for the adjuster nut - if this is applied, check afterwards that the steering is still able to move freely from side to side. The object is to set the adjuster nut so that the bearings are under a very light loading, just enough to remove any freeplay.

**Caution:** Take great care not to apply excessive pressure because this will cause premature failure of the bearings.

10 If the bearings cannot be set up properly, or if there is any binding, roughness or notchiness, they will have to be removed for inspection or replacement (see Chapter 5).

11 With the bearings correctly adjusted, install the lockwasher, and bend down two of its opposite tabs to secure the adjuster nut. Install the locknut, and tighten it finger-tight as far as possible, then tighten it further (to a maximum of 90°) until its slots align with the remaining tabs on the lock washer. Counterhold the adjuster nut whilst doing this to prevent it from moving. Bend up the two remaining tabs to secure the locknut.

12 Fit the top yoke to the steering stem, making sure the rubbers are in place on the top prongs of the headlight frame and that they fit into the holes in the underside of the top yoke (see illustration). Install the steering stem washer and nut, tightening it and both fork clamp bolts to their specified torques (see illustrations). On P, S and T models install the handlebars (Chapter 5) and instrument cluster (Chapter 9) onto the top yoke

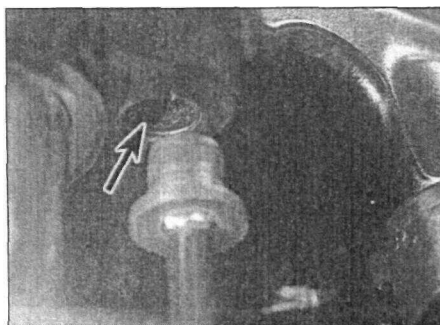
13 Check the bearing adjustment as described above and re-adjust if necessary.

## 21 Wheel bearings - check

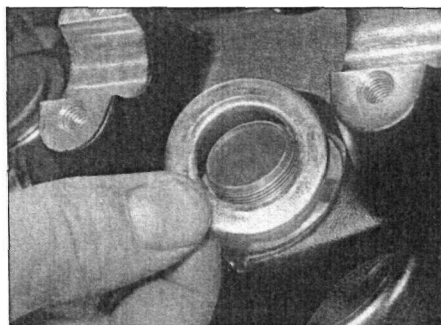
1

1 Place the motorcycle on its centre stand, or support it using an auxiliary stand, and check for any play in the bearings by pushing and pulling the wheel against the hub. Also rotate the wheel and check that it rotates smoothly.

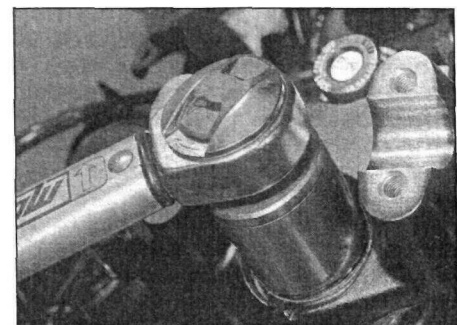
2 If any play is found in the hub, or the wheel does not rotate smoothly (and this is not due to brake drag), the wheel bearings must be inspected for wear or damage (see Chapter 7).



20.12a Headlight frame prongs fit in holes in the underside of the top yoke (arrow)



20.12b Install the steering stem washer . . .



20.12c . . . and tighten the nut to the specified torque setting

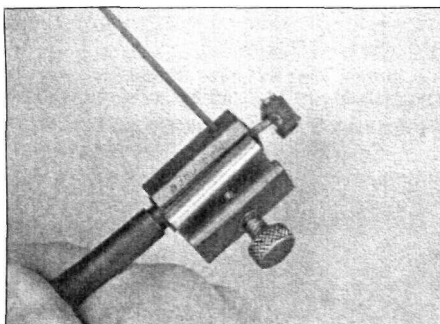


# Every 8000 miles (12 000 km) or 12 months 1•15

## 22 Stand(s), lever pivots and cables - lubrication

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 footrests, clutch and brake levers, brake pedal, gearshift lever linkage and stand pivot(s) 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).



**22.3 Lubricating a cable with a pressure lubricator. Make sure the tool seals around the inner cable**

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

4 The speedometer cable should be removed (**see Chapter 9**) and the inner cable withdrawn from the outer cable 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.

## 23 Nuts and bolts - tightness 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:

*Sparkplugs  
Engine oil drain plug  
Gearshift pedal bolt  
Footrest and stand bolts  
Engine mounting bolts  
Shock absorber mounting bolts  
Handlebar and yoke bolts  
Front axle and clamp bolts  
Rear axle 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.

# Every 12 000 miles (18 000 km) or 18 months

## 24 Air filter - replacement

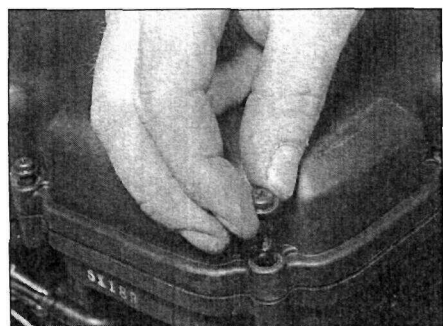
1 Remove the fuel tank (**see Chapter 4**).

2 Remove the screws securing the air filter housing cover and remove the cover (**see illustration**).

3 Remove the old air filter element and install a new one, making sure it is correctly seated (**see illustration**).

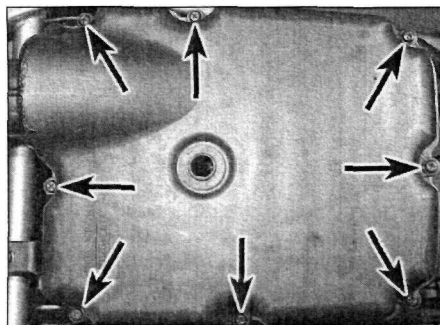
4 Install the air filter housing cover and tighten its screws securely (**see illustration**).

5 Although it is not a scheduled service item, when replacing the air filter element it is advisable to also clean the sub-air filter element, as follows. The sub-air filter connects via hoses to the carburettor breather passages.



**24.4 Secure the air filter housing cover with the eight screws**

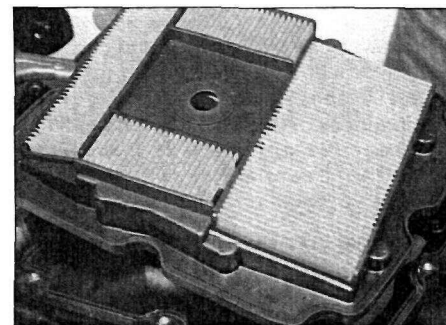
6 Remove the air filter housing (see Chapter 4).  
7 Remove the two screws securing the sub-air filter element cover to the base of the air filter housing and remove the cover and the element (**see illustrations**).



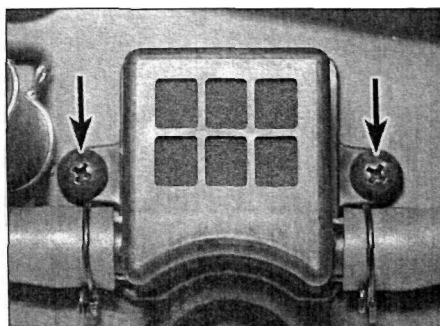
**24.2 The air filter housing cover is secured by eight screws (arrows)**

8 Wash the element in non-flammable solvent, then squeeze it out and leave it to dry. Soak the element in SAE 80 or 90 gear oil, then squeeze out the excess.

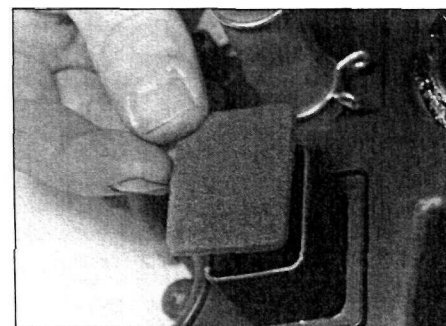
9 Install the element into its housing, then



**24.3 Installing the new air filter element**

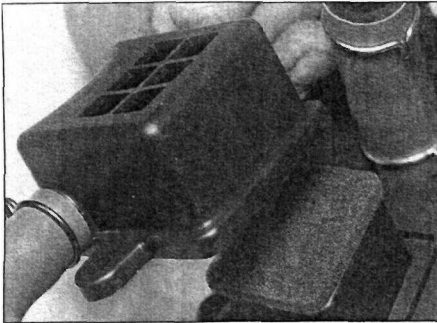


**24.7a Unscrew the two sub-air filter element housing screws (arrows) . . .**



**24.7b . . . and remove the element**

# Every 12 000 miles (18 000 km) or 18 months



24.9 Install the cover over the element

install the cover and tighten its screws securely (see illustration).

10 Install the air filter housing (refer to Chapter 4).

11 Install the fuel tank (see Chapter 4).

cylinder or caliper overhaul is carried out. Refer to the brake bleeding section in Chapter 7, noting that all old fluid must be pumped from the fluid reservoir before filling with new fluid.

## 25 Brake fluid - change

1 The brake fluid should be replaced at the prescribed interval or whenever a master

<b>HAYNES HINT</b>	Old brake fluid is invariably much darker in colour than new fluid, making it easy to see when all old fluid has been expelled from the system.

# Every 24 000 miles (36 000 km) or 2 years

## 26 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 centres which will see that antifreeze is disposed of safely. Antifreeze is also combustible, so don't store it near open flames.

### Draining

1 Remove the fuel tank to access the pressure cap (see Chapter 4). Remove the pressure cap by turning it anti-clockwise until it reaches a stop (see illustration 13.6). 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.

2 Position a suitable container beneath the water pump, then remove the drain bolt and its sealing washer from the pump cover (see illustration). Discard the washer as a new one must be used.

3 Drain the coolant reservoir. Refer to Chapter 3 for the reservoir removal procedure. Wash out the reservoir with fresh water.

### Flushing

4 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 the drain hole. If the radiator is extremely corroded, remove it by referring to Chapter 3 and have it cleaned by a professional.

5 Clean the drain hole then install the drain bolt with its sealing washer.

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

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

8 Stop the engine. Let it cool for a while, then cover the pressure cap with a heavy rag and turn it anti-clockwise 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.

9 Drain the system once again, taking care to avoid scalding your hands.

10 Fill the system with clean water and repeat the procedure in Steps 7 through 9.

### Refilling

11 Fit a new sealing washer to the drain bolt and tighten it securely.

12 Fill the system with the proper coolant mixture (refer to this Chapter's Specifications)

(see illustration). **Note:** Pour the coolant in slowly to minimise the amount of air entering the system.

13 When the system is full (all the way up to the top of the radiator filler neck), install the pressure cap. Also top up the coolant reservoir to the UPPER level mark (see Daily (pre-ride) checks).

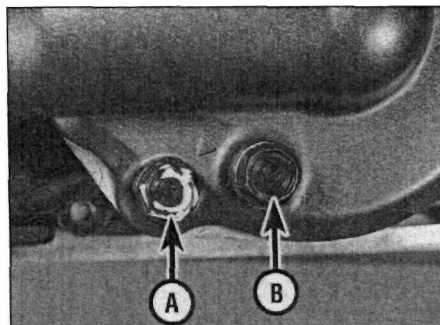
14 Start the engine and allow it to idle for 2 to 3 minutes. Flick the throttle twistgrip part open 3 or 4 times, so that the engine speed rises to approximately 4000 - 5000 rpm, then stop the engine. This process will bleed any air from the system.

15 Let the engine cool then remove the pressure cap as described in Step 1. Check that the coolant level is still up to the radiator filler neck. If it's low, add the specified mixture until it reaches the top of the filler neck. Reinstall the cap. Install the fuel tank (see Chapter 4).

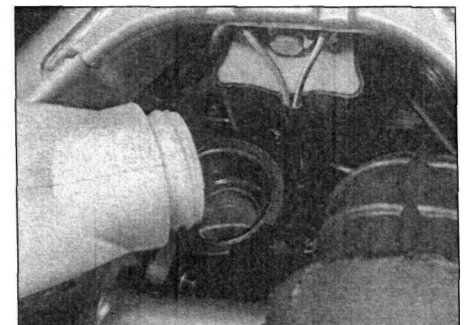
16 Check the coolant level in the reservoir and top up if necessary.

17 Check the system for leaks.

18 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 to an authorised disposal site or service station - see **Warning** at the beginning of this Section.



26.2 Coolant drain bolt - J, K and M models (A), P, S and T models (B)



26.12 Fill the cooling system via the filler neck

## Every 24 000 miles (36 000 km) or 3 years

### 27 Final drive oil - change

- 1 Place the motorcycle on its centre stand, or support it using an auxiliary stand, making sure it is on level ground.
- 2 Place an oil drain pan under the drain bolt in the final drive housing. Unscrew the filler cap

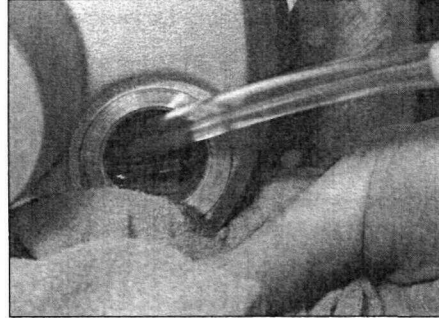


27.2 Final drive oil drain bolt

(see illustration 14.2a) and the drain bolt, and allow the oil to drain into the pan (see illustration).

**Caution:** Make sure that no oil contacts the rear tyre - raise the drain tray or make up a cardboard chute to prevent this.

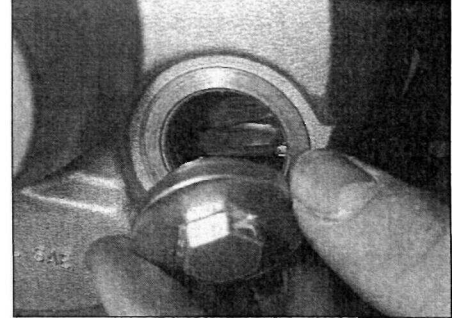
- 3 Check the condition of the drain bolt sealing washer and replace it if necessary (it is advisable to replace it as a matter of course). Install the drain bolt and tighten it to the



27.3 Fill the final drive housing with the correct quantity and grade of oil

torque setting specified at the beginning of the Chapter. Fill the housing using the amount and type of oil specified at the beginning of the Chapter (also marked on the housing itself) (see illustration). The oil should come up to the edge of the filler hole (see illustration 14.2b).

- 4 Install the filler cap, using a new O-ring smeared with clean oil, and tighten it to the specified torque setting (see illustration).



27.4 Install the filler cap using a new O-ring

## Non-scheduled maintenance

### 28 Front fork oil - change

- 1 Although not specified as part of the maintenance schedule, fork oil will degrade over a period of time and lose its damping qualities. It can be changed without removing the forks from the yokes.

2 Remove the handlebars from the top yoke, but leave the levers and switch housings intact (see Chapter 6). Although movement of the handlebars is restricted by the wiring, cables and brake hose, they can be displaced sufficiently to gain access to the fork top bolts. On J, K and M models support the right handlebar, and on P, S and T models the whole handlebar assembly, so the brake master cylinder is upright and no strain is placed on the hose.

- 3 Slacken the fork clamp bolts in the top yokes (see illustration 20.7b), then remove the fork top bolt cover and unscrew the top bolt.



**Warning:** The fork spring is pressing on the fork top bolt with considerable pressure.

Unscrew the bolt very carefully, keeping a downward pressure on it and release it slowly as it is likely to spring clear. It is advisable to wear some form of eye and face protection when carrying out this operation.

- 4 Remove the spacer and spring seat from the top of the spring, then remove the spring from the fork tube, noting which way up it fits.

### HINT

**Slackening the fork pinch bolts in the top yoke releases pressure on the fork top bolt. This makes it much easier to remove and helps to preserve the threads.**

- 5 Place a drain pan under the fork leg, then unscrew the drain screw on the back of the leg and drain the oil into the pan.

6 Pump the forks up and down several times to expel all the old oil, then install the drain screw, using a new sealing washer if the old one shows any signs of damage or deterioration. Tighten the screw securely.

- 7 Fully compress the fork, and pour in the oil using the amount and type specified at the beginning of the Chapter. Slowly pump the forks up and down a few times to fully distribute the oil. The oil level should also be measured and adjustment made by adding or subtracting oil. Fully compress the fork tubes into the sliders and measure the fork oil level from the top of each tube. Add or subtract fork oil until the oil is at the level specified in the Specifications Section of this Chapter.

**Note:** It is important that the level in each fork tube is identical.

- 8 Install the spring, with its closer-wound coils at the bottom, followed by the spring

seat, with its shoulder inserted into the spring, and the spacer.

- 9 Inspect the O-ring on the fork top bolt and replace it if it shows any signs of damage or deterioration. Install the top bolt carefully into the fork tube, making sure it is not cross-threaded, and tighten it to the torque setting specified at the beginning of the Chapter.



**Warning:** It will be necessary to compress the spring by pressing it down using the top bolt to engage the threads of the top bolt with the fork tube. This is a potentially dangerous operation and should be performed with care, using an assistant if necessary. Wipe off any excess oil before starting to prevent the possibility of slipping.



**Use a ratchet-type tool when installing the fork top bolt. This makes it unnecessary to remove the tool from the bolt whilst threading it in making it easier to maintain a downward pressure on the spring.**

- 10 Install the top bolt cap, and tighten the fork clamp bolts to the torque setting specified at the beginning of the Chapter.

- 11 Install the handlebars onto the top yoke (see Chapter 6).

# 18 Non-scheduled maintenance

## 29 Cylinder compression - check

1 A compression test will provide useful information about an engine's condition and if performed regularly, can give warning of trouble before any other symptoms become apparent.

2 Refer to the procedure under the *Fault Finding Equipment* heading in the Reference section of this Manual. The cylinder compression figure is given in the Specifications at the beginning of this Chapter.

## 30 Steering head bearings - re-greasing

1 Over a period of time the grease will harden or may be washed out of the bearings by incorrect use of jet washes.

2 Disassemble the steering head for re-greasing of the bearings. Refer to Chapter 6 for details.

## 31 Swingarm bearings - re-greasing

1 Over a period of time the grease will harden or dirt will penetrate the bearing due to failed dust seals.

2 The swingarm is not equipped with grease nipples. Remove the swingarm as described in Chapter 6 for greasing of the bearings.

## 32 Brake caliper and master cylinder - seal replacement

1 Brake piston fluid and dust seals will deteriorate with age and must be replaced with new ones.

2 Refer to Chapter 7 and dismantle the components for seal replacement.

## 33 Brake hoses - replacement



1 The flexible brake hoses will in time deteriorate with age and must be replaced with new ones.

2 Refer to Chapter 7 and disconnect the brake hoses from the master cylinders and calipers. The hoses should be replaced regardless of their condition. Always replace the banjo union sealing washers with new ones.