

# HONDA

## CB500 Twin

'93 to '01



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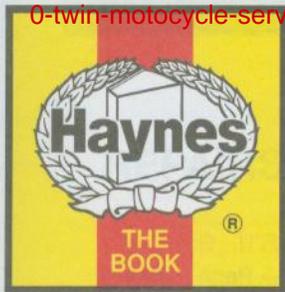
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# Honda CB500

## Service and Repair Manual

by Phil Mather

### Models covered

CB500. 499cc. 1993 to 2001

CB500S. 499cc. 1998 to 2001

(3753-256-4AD1)

ABCDE  
FGHIJ  
KLMNO  
PQR

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# The Birth of a Dream

by Julian Ryder

There is no better example of the Japanese post-war industrial miracle than Honda. Like other companies which have become household names, it started with one man's vision. In this case the man was the 40-year old Soichiro Honda who had sold his piston-ring manufacturing business to Toyota in 1945 and was happily spending the proceeds on prolonged parties for his friends.

However, the difficulties of getting around in the chaos of post-war Japan irked Honda, so when he came across a job lot of generator engines he realised that here was a way of getting people mobile again at low cost.

A 12 by 18-foot shack in Hamamatsu became his first bike factory, fitting the generator motors into pushbikes. Before long he'd used up all 500 generator motors and

started manufacturing his own engine, known as the 'chimney', either because of the elongated cylinder head or the smoky exhaust or perhaps both. The chimney made all of half a horsepower from its 50 cc engine but it was a major success and became the Honda A-type.

Less than two years after he'd set up in Hamamatsu, Soichiro Honda founded the Honda Motor Company in September 1948. By then, the A-type had been developed into the 90 cc B-type engine, which Mr Honda decided deserved its own chassis not a bicycle frame. Honda was about to become Japan's first post-war manufacturer of complete motorcycles. In August 1949 the first prototype was ready. With an output of three horsepower, the 98 cc D-type was still a simple two-stroke but it had a two-speed transmission and most importantly a pressed steel frame with telescopic forks and hard tail rear end. The frame was almost triangular in profile with the top rail going in a straight line from the massively braced steering head to the rear axle. Legend has it that after the D-type's first tests the entire workforce went for a drink to celebrate and try and think of a name for the bike. One man broke one of those silences you get when people are thinking, exclaiming 'This is like a dream!' 'That's it!' shouted Honda, and so the Honda Dream was christened.

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**'This is like a dream!'**  
**'That's it'**  
**shouted Honda**

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Honda C70 and C90 OHV-engined models

Mr Honda was a brilliant, intuitive engineer and designer but he did not bother himself with the marketing side of his business. With hindsight, it is possible to see that employing Takeo Fujisawa who would both sort out the home market and plan the eventual expansion into overseas markets was a masterstroke. He arrived in October 1949 and in 1950 was made Sales Director. Another vital new name was Kiyoshi Kawashima, who along with Honda himself, designed the company's first four-stroke after Kawashima had told them that the four-stroke opposition to Honda's two-strokes sounded nicer and therefore sold better. The result of that statement was the overhead-valve 148 cc E-type which first ran in July 1951 just two months after the first drawings were made. Kawashima was made a director of the Honda Company at 34 years old.

The E-type was a massive success, over 32,000 were made in 1953 alone, a feat of mass-production that was astounding by the

standards of the day given the relative complexity of the machine. But Honda's lifelong pursuit of technical innovation sometimes distracted him from commercial reality. Fujisawa pointed out that they were in danger of ignoring their core business, the motorised bicycles that still formed Japan's main means of transport. In May 1952 the F-type Cub appeared, another two-stroke despite the top men's reservations. You could buy a complete machine or just the motor to attach to your own bicycle. The result was certainly distinctive, a white fuel tank with a circular profile went just below and behind the saddle on the left of the bike, and the motor with its horizontal cylinder and bright red cover just below the rear axle on the same side of the bike. This was the machine that turned Honda into the biggest bike maker in Japan with 70% of the market for bolt-on bicycle motors, the F-type was also the first Honda to be exported. Next came the machine that would turn Honda into the biggest motorcycle manufacturer in the world.

The C100 Super Cub was a typically audacious piece of Honda engineering and marketing. For the first time, but not the last, Honda invented a completely new type of motorcycle, although the term 'scooterette' was coined to describe the new bike which had many of the characteristics of a scooter but the large wheels, and therefore stability, of a motorcycle. The first one was sold in August 1958, fifteen years later over nine-million of them were on the roads of the world. If ever a machine can be said to have brought mobility to the masses it is the Super Cub. If you add



The CB250N Super Dream became a favorite with UK learner riders of the late seventies and early eighties

in the electric starter that was added for the C102 model of 1961, the design of the Super Cub has remained substantially unchanged ever since, testament to how right Honda got it first time. The Super Cub made Honda the world's biggest manufacturer after just two years of production.

Honda's export drive started in earnest in 1957 when Britain and Holland got their first bikes, America got just two bikes the next year. By 1962 Honda had half the American market with 65,000 sales. But Soichiro Honda had already travelled abroad to Europe and the USA, making a special



The GL1000 introduced in 1975, was the first in Honda's line of GoldWings



Carl Fogarty in action at the Suzuka 8 Hour on the RC45



An early CB750 Four

point of going to the Isle of Man TT, then the most important race in the GP calendar. He realised that no matter how advanced his products were, only racing success would convince overseas markets for whom 'Made in Japan' still meant cheap and nasty. It took five years from Soichiro Honda's first visit to the Island before his bikes were ready for the TT. In 1959 the factory entered five riders in the 125 class. They did not have a massive impact on the event being benevolently regarded as a curiosity, but sixth, seventh and eighth were good enough for the team prize. The bikes were off the pace but they were well engineered and very reliable.

The TT was the only time the West saw the Hondas in '59, but they came back for more the following year with the first of a generation of bikes which shaped the future of motorcycling – the double-overhead-cam four-cylinder 250. It was fast and reliable – it revved to 14,000 rpm – but didn't handle anywhere near as well as the opposition. However, Honda had now signed up non-Japanese riders to lead their challenge. The first win didn't come until 1962 (Aussie Tom Phillis in the Spanish 125 GP) and was followed up with a world-shaking performance at the TT. Twenty-one year old Mike Hailwood won both 125 and 250 cc TTs and Hondas filled the top five positions in both races. Soichiro Honda's master plan was starting to come to fruition, Hailwood and Honda won the 1961 250 cc World Championship. Next year Honda won three titles. The other Japanese factories fought back and inspired Honda to produce some of the most fascinating racers ever seen: the awesome six-cylinder 250, the five-cylinder 125, and the 500 four with which the immortal Hailwood battled Agostini and the MV Agusta.

When Honda pulled out of racing in '67 they had won sixteen rider's titles, eighteen manufacturer's titles, and 137 GPs, including 18 TTs, and introduced the concept of the modern works team to motorcycle racing. Sales success followed racing victory as Soichiro Honda had predicted, but only because the products advanced as rapidly as the racing machinery. The Hondas that came to Britain in the early '60s were incredibly sophisticated. They had overhead cams where the British bikes had pushrods, they had electric starters when the Brits relied on the kickstart, they had 12V electrics when even the biggest British bike used a 6V system. There seemed no end to the technical wizardry. It wasn't that the technology itself was so amazing but just like that first E-type, it was the fact that Honda could mass-produce it more reliably than the lower-tech competition that was so astonishing.

When in 1968 the first four-cylinder CB750 road bike arrived the world of motorcycling changed for ever, they even had to invent a new word for it, 'Superbike'. Honda raced again with the CB750 at Daytona and won the

World Endurance title with a prototype DOHC version that became the CB900 roadster. There was the six-cylinder CBX, the CX500T – the world's first turbocharged production bike, they invented the full-dress tourer with the GoldWing, and came back to GPs with the revolutionary oval-piston NR500 four-stroke, a much-misunderstood bike that was more a rolling experimental laboratory than a racer. Just to show their versatility Honda also came up with the weird CX500 shaft-drive V-twin, a rugged workhorse that powered a new industry, the courier companies that oiled the wheels of commerce in London and other big cities.

It was true, though, that Mr Honda was not keen on two-strokes – early motocross engines had to be explained away to him as lawnmower motors! However, in 1982 Honda raced the NS500, an agile three-cylinder lightweight against the big four-cylinder opposition in 500 GPs. The bike won in its first year and in '83 took the world title for Freddie Spencer. In four-stroke racing the V4 layout took over from the straight four, dominating TT, F1 and Endurance championships with the RVF750, the nearest thing ever built to a Formula 1 car on wheels. And when Superbike arrived Honda were ready with the RC30. On the roads the VFR V4 became an instant classic while the CBR600 invented another new class of bike on its way to becoming a best-seller. The V4 road bikes had problems to start with but the VFR750 sold world-wide over its lifetime while the VFR400 became a massive commercial success and cult bike in Japan. The original RC30 won the first two World Superbike Championships in 1988 and '89, but Honda had to wait until 1997 to win it again with the RC45, the last of the V4 roadsters. In Grands Prix, the NSR500 V4 two-stroke superseded the NS triple and became the benchmark racing machine of the '90s. Mick Doohan secured his place in history by winning five World Championships in consecutive years on it.

In yet another example of Honda inventing a new class of motorcycle, they came up with the astounding CBR900RR FireBlade, a bike with the punch of a 1000 cc motor in a package the size and weight of a 750. It became a cult bike as well as a best seller, and with judicious redesigns continues to give much more recent designs a run for their money.

When it became apparent that the high-tech V4 motor of the RC45 was too expensive to produce, Honda looked to a V-twin engine to power its flagship for the first time. Typically, the VTR1000 FireStorm was a much more rideable machine than its opposition and once accepted by the market formed the basis of the next generation of Superbike racer, the VTR-SP-1.

One of Mr Honda's mottos was that technology would solve the customers' problems, and no company has embraced



The CX500 – Honda's first V-Twin and a favorite choice of dispatch riders

cutting-edge technology more firmly than Honda. In fact Honda often developed new technology, especially in the fields of materials science and metallurgy. The embodiment of that was the NR750, a bike that was misunderstood nearly as much as the original NR500 racer. This limited-edition technological tour-de-force embodied many

of Soichiro Honda's ideals. It used the latest techniques and materials in every component, from the oval-piston, 32-valve V4 motor to the titanium coating on the windscreen, it was – as Mr Honda would have wanted – the best it could possibly be. A fitting memorial to the man who has shaped the motorcycle industry and motorcycles as we know them today.



The VFR400R was a cult bike in Japan and a popular grey import in the UK



CB500



CB500S

## Jack of all trades

There are some things Honda do better than anyone else and always have done. Giving customers value for money and quality in smaller capacity machines is one of them. Remember the old 400 cc Dream, that workhorse of the 1980s? It took the place in Honda's range previously occupied by the 400/4 of blessed memory. Heresy said the enthusiasts, ignoring the fact that the new twin was in every measurable way an improvement on old multi. It was lighter, faster, better handling and cheaper to name just four areas of improvement. Sure the 250 Dream was underpowered, but that was just a sleeved down 400 for the UK learner market. The 400 Dream, and latterly 400 Super Dream, stayed in the range for what seemed like decades and was the most popular machine around for despatch riders, commuters and newly qualified riders.

The CB500 took on the challenge of doing the same job from 1993 and well into the 21st-Century. Like the old Dream it is a parallel twin in a steel, twin-shock chassis and like the old bike it has remained very largely unchanged through its model life. The addition of a rear disc brake in its third year is the only significant change to the specification made since it arrived late in 1993. Like the Dream, the CB500 is a true all-rounder, unlike the Dream, the CB500 is also a good-looking bike.

## Acknowledgements

Our thanks are due to Bransons Motorcycles of Yeovil who supplied the machines featured in the illustrations throughout this manual. We would also like to thank NGK Spark Plugs (UK) Ltd for supplying the colour spark plug condition photographs, the Avon Rubber Company for supplying information on tyre fitting and Draper Tools Ltd for some of the workshop tools shown.

Thanks are also due to Julian Ryder who wrote 'The Birth of a Dream' and to Honda (UK) Ltd who supplied model photographs.

## About this Manual

The aim of this manual is to help you get the

best value from your motorcycle. It can do so in several ways. It can help you decide what work must be done, even if you choose to have it done by a dealer; it provides information and procedures for routine maintenance and servicing; and it offers diagnostic and repair procedures to follow when trouble occurs.

We hope you use the manual to tackle the work yourself. For many simpler jobs, doing it yourself may be quicker than arranging an appointment to get the motorcycle into a dealer and making the trips to leave it and pick it up. More importantly, a lot of money can be saved by avoiding the expense the shop must pass on to you to cover its labour

and overhead costs. An added benefit is the sense of satisfaction and accomplishment that you feel after doing the job yourself. References to the left or right side of the motorcycle assume you are sitting on the seat, facing forward.

That bit of race-track cred helps explain why the bike has hardly changed since it first appeared at the end of 1993 ('94 model year), it simply didn't need improving. There were detail changes and a rear disc replaced the drum stopper for the 1997 model year. The Cup model was an option alongside the standard model – it had silver paint and a 'Cup' logo on the tank to go with the race series. The CB500S was introduced in 1998, a half-faired model with square headlight and modified instrumentation. Right through its model life, the other changes to the CB500 have been limited to new paint schemes for each model year.

Although the CB500 was obviously aimed at the new or impecunious rider, it would be a mistake to pigeon-hole it as mere commuter fodder. It will do just about anything short of long-distance motorway bashing with two people and their luggage on-board and it won't just do it, it will do it in style while providing the rider with plenty of reasons to smile. If you really need to know the verdict on the CB500 consider this remark which passed between two very high-up European members of Honda staff at the press launch. At a mid-ride stop, the two gentlemen who had better remain nameless for their own sakes took of their helmets, put their heads together and spoke loudly enough for one remark to be overheard: "Was it meant to be this good?"

**We take great pride in the accuracy of information given in this manual, but motorcycle manufacturers make alterations and design changes during the production run of a particular motorcycle of which they do not inform us. No liability can be accepted by the authors or publishers for loss, damage or injury caused by any errors in, or omissions from, the information given.**

### Frame and engine numbers

The frame serial number is stamped into the right-hand side of the steering head. The engine number is stamped into the top of the crankcase on the right-hand side. Both of these numbers should be recorded and kept in a safe place so they can be furnished to law enforcement officials in the event of a theft. There is also a carburettor identification number on the intake side of each carburettor body, and a colour code label on the top of the rear mudguard, under the seat.

The frame serial number, engine serial number, carburettor identification number and colour code should also be kept in a handy place (such as with your driver's licence) so they are always available when purchasing or ordering parts for your machine.

The procedures in this manual identify models by their code letter (eg X, meaning a 1999 standard model, and SX, meaning a

1999 faired model). The code letter is printed on the colour code label stuck to the top of the rear mudguard. Refer to the colour code label or the table below to identify your exact model, noting that the actual engine and frame number details given relate to those for sale in the UK market.

### Buying spare parts

Once you have found all the identification numbers, record them for reference when buying parts. Since the manufacturers change specifications, parts and vendors (companies that manufacture various components on the machine), providing the ID numbers is the only way to be reasonably sure that you are buying the correct parts.

Whenever possible, take the worn part to the dealer so direct comparison with the new component can be made. Along the trail from the manufacturer to the parts shelf, there are numerous places that the part can end up

with the wrong number or be listed incorrectly.

The two places to purchase new parts for your motorcycle – the accessory store and the franchised dealer – differ in the type of parts they carry. While dealers can obtain every part for your motorcycle, the accessory dealer is usually limited to normal high wear items such as shock absorbers, tune-up parts, various engine gaskets, cables, chains, brake parts, etc. Rarely will an accessory outlet have major suspension components, camshafts, transmission gears, or cases.

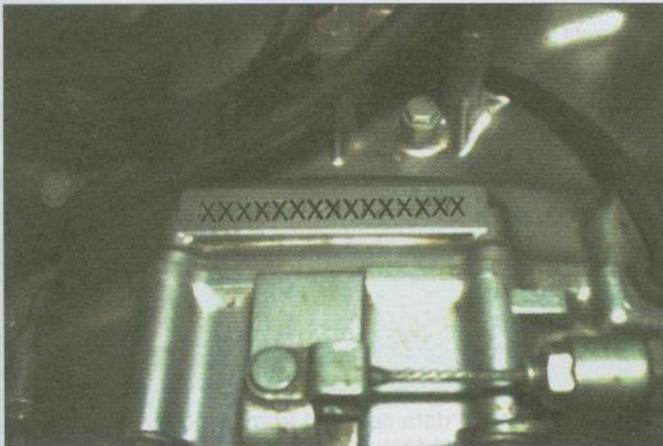
Used parts can be obtained for roughly half the price of new ones, but you can't always be sure of what you're getting. Once again, take your worn part to the breaker for direct comparison.

Whether buying new, used or rebuilt parts, the best course is to deal directly with someone who specialises in parts for your particular make.

Model	Code	Year	Initial engine no.	Initial frame no.	Carb ID no.
CB500	R	1993/4/5	PC26E-2000094	PC26-2000074	VPN0B-A
CB500	T	1996	PC26E-2100001	PC32A0TF000001	VPN0F-A
CB500	V	1997	PC26E-2200001	PC32A0VF100001	VPN0F-A
CB500	W	1998	PC26E-2300001	PC32A0WF200001	VPN0K-A
CB500	X	1999	PC26E-2400001	PC32A0XF206241	VPN0K-A
CB500	Y	2000/1	PC26E-2500001	PC32A0YF220001	VPN0K-A
CB500S	W	1998	PC26E-2300001	PC32E0WF300001	VPN0K-A
CB500S	X	1999	PC26E-2400001	PC32E0XF306261	VPN0K-A
CB500S	Y	2000/1	PC26E-2500001	PC32E0YF320001	VPN0K-A



The colour code label is stuck to the rear mudguard



Engine number location



Frame number location

## Bike spec



### Weights and dimensions

Overall length	.....2090 mm (82.3 in)	Seat height	.....775 mm (30.5 in)
Overall width	.....720 mm (28.3 in)	Ground clearance	.....145 mm (5.7 in)
Overall height		Engine weight	......56 kg (123 lb)
R, T, V, W, X, Y models	.....1050 mm (41.3 in)	Dry weight (no fuel and oil)	
S-W, S-X, S-Y models	.....1160 mm (45.7 in)	R and T models	......170 kg (375 lb)
Wheelbase		V, W, X, Y models	......173 kg (381 lb)
R, T, V, W, X, Y models	.....1430 mm (56.3 in)	S-W, S-X, S-Y models	......179 kg (395 lb)
S-W, S-X, S-Y models	.....1435 mm (56.5 in)	Max. payload (rider, passenger, luggage, accessories)	...184 kg (406 lb)

## Performance data

### Maximum power

Claimed .....57 bhp (42.5 kW) @ 9500 rpm

### Maximum torque

Claimed .....34.7 lbf ft (47 Nm) @ 8000 rpm

### Top speed

Estimated .....115 to 120 mph (185 to 193 km/h)

### Acceleration

Time taken to cover a 1/4 mile from a standing start .....13.5 seconds

Terminal speed after 1/4 mile .....97.5 mph (157 km/h)

### Average fuel consumption

Miles per Imp gal, miles per litre,  
litres per 100 km .....49 mpg, 10.7 mpl, 5.8 l/100 km

### Fuel tank range

Based on average fuel consumption rate .....196 miles (315 km)

Performance data sourced from Motor Cycle News road test features. See the MCN website for up-to-date biking news.

**MCN** [www.motorcyclenews.com](http://www.motorcyclenews.com)

## Engine

Type	Liquid-cooled, 8V parallel twin cylinder, 20° inclined from vertical
Capacity	499 cc
Bore and stroke	73 x 59.5 mm
Compression ratio	10.5 :1
Camshafts	DOHC, chain-driven
Carburettors	2 x 34 mm flat-slide Keihin VP type
Ignition system	Digital transistorised with electronic advance
Clutch	Wet multi-plate, cable-operated
Gearbox	6-speed constant mesh
Final drive chain	RK 525SMOZ5 or DID 525V8 (108 links)

## Chassis

Frame type	Double cradle of tubular and box-section steel construction
Fuel tank capacity (including reserve)	18 lit (4.0 Imp gal, 4.8 US gal)
Fuel tank reserve	2.5 lit (0.55 Imp gal, 0.66 US gal)
Rake	27°20'
Trail	
R, T, V, W, X, Y models	113 mm (4.45 in)
S-W, S-X, S-Y models	108 mm (4.25 in)
Front suspension	
Type	37 mm oil-damped telescopic forks
Travel	115 mm (4.5 in)
Adjustment	non-adjustable
Rear suspension	
Type	Twin shocks acting on a steel, box-section swingarm
Travel	117 mm (4.6 in)
Adjustment	5 position pre-load
Wheels	17 inch 6-spoke alloys
Tyres	
Front	110/80-17 57H
Rear	130/80-17 65H
Front brake	
CB500R and T models	single 296 mm disc with Nissin 2-piston sliding caliper
All other models	single 296 mm disc with Brembo 2-piston sliding caliper
Rear brake	
CB500R and T models	160 mm drum
All other models	single 240 mm disc with Brembo single piston sliding caliper

## Model development

### CB500-R (1994 model year)

The very first CB500 model was the CB500-R, introduced in October 1993.

The CB500 uses a new 180° parallel twin engine, with a balancer shaft to smooth out engine vibration. Drive to the double overhead camshafts is by a centrally-positioned chain for direct operation of the four valves per cylinder. The engine is liquid-cooled, although the cosmetic finning on the cylinders and head give the appearance of an air-cooled engine. The clutch is a conventional wet multi-plate unit and the gearbox is 6-speed. Drive to the rear wheel is by chain and sprockets.

The engine sits in a double cradle frame, with box-section tubing for the upper rails. Front suspension is by conventional oil-damped 37 mm forks. Rear suspension, rather unusually, is by twin shock absorbers. Braking is by a single disc at the front and drum at the rear.

The CB500-R was available in black, red, green and blue colour schemes. It continued unchanged through 1995.

### CB500-T (1996 model year)

The CB500-T was introduced in November 1995. There were no significant changes from the R model.

### CB500-V (1997 model year)

The CB500-V was introduced in November 1996. The front brake caliper changed to Brembo manufacture, previously Nissin. The rear disc brake, also manufactured by Brembo, replaced the drum brake used on previous models.

This year saw the start of CB500 Cup race series. One of the production models was available in silver with cup logo on the fuel tank to celebrate the race series.

### CB500-W and S-W (1998 model year)

The CB500-W was introduced in October 1997. There were no significant changes from the V model apart from colours and graphics. The CB500-W was available in red, yellow, black and silver.

The half-faired CB500S Sport model was introduced in February 1998. The S model differed from the standard model in having new instrumentation, a square headlight set in the fairing, and a different handlebar mounting arrangement. Colours were red, yellow and black.

### CB500-X and S-X (1999 model year)

The CB500-X and S-X were introduced in December 1998. There were no significant changes from the previous models.

### CB500-Y and S-Y (2000 model year)

The CB500-Y and S-Y were introduced in September 1999. There were no changes from previous models apart from graphics. Colours were black, red and metallic blue and all models had gold anodised wheels.

The CB500-Y and S-Y models continued unchanged through 2001.

Professional mechanics are trained in safe working procedures. However enthusiastic you may be about getting on with the job at hand, take the time to ensure that your safety is not put at risk. A moment's lack of attention can result in an accident, as can failure to observe simple precautions.

There will always be new ways of having accidents, and the following is not a comprehensive list of all dangers; it is intended rather to make you aware of the risks and to encourage a safe approach to all work you carry out on your bike.

## Asbestos

● Certain friction, insulating, sealing and other products - such as brake pads, clutch linings, gaskets, etc. - contain asbestos. Extreme care must be taken to avoid inhalation of dust from such products since it is hazardous to health. If in doubt, assume that they do contain asbestos.

## Fire

● Remember at all times that petrol is highly flammable. Never smoke or have any kind of naked flame around, when working on the vehicle. But the risk does not end there - a spark caused by an electrical short-circuit, by two metal surfaces contacting each other, by careless use of tools, or even by static electricity built up in your body under certain conditions, can ignite petrol vapour, which in a confined space is highly explosive. Never use petrol as a cleaning solvent. Use an approved safety solvent.

● Always disconnect the battery earth terminal before working on any part of the fuel or electrical system, and never risk spilling fuel on to a hot engine or exhaust.

● It is recommended that a fire extinguisher of a type suitable for fuel and electrical fires is kept handy in the garage or workplace at all times. Never try to extinguish a fuel or electrical fire with water.

## Fumes

● Certain fumes are highly toxic and can quickly cause unconsciousness and even death if inhaled to any extent. Petrol vapour comes into this category, as do the vapours from certain solvents such as trichloroethylene. Any draining or pouring of such volatile fluids should be done in a well ventilated area.

● When using cleaning fluids and solvents, read the instructions carefully. Never use materials from unmarked containers - they may give off poisonous vapours.

● Never run the engine of a motor vehicle in an enclosed space such as a garage. Exhaust fumes contain carbon monoxide which is extremely poisonous; if you need to run the engine, always do so in the open air or at least have the rear of the vehicle outside the workplace.

## The battery

● Never cause a spark, or allow a naked light near the vehicle's battery. It will normally be giving off a certain amount of hydrogen gas, which is highly explosive.

● Always disconnect the battery ground (earth) terminal before working on the fuel or electrical systems (except where noted).

● If possible, loosen the filler plugs or cover when charging the battery from an external source. Do not charge at an excessive rate or the battery may burst.

● Take care when topping up, cleaning or carrying the battery. The acid electrolyte, even when diluted, is very corrosive and should not be allowed to contact the eyes or skin. Always wear rubber gloves and goggles or a face shield. If you ever need to prepare electrolyte yourself, always add the acid slowly to the water; never add the water to the acid.

## Electricity

● When using an electric power tool, inspection light etc., always ensure that the appliance is correctly connected to its plug and that, where necessary, it is properly grounded (earthed). Do not use such appliances in damp conditions and, again, beware of creating a spark or applying excessive heat in the vicinity of fuel or fuel vapour. Also ensure that the appliances meet national safety standards.

● A severe electric shock can result from touching certain parts of the electrical system, such as the spark plug wires (HT leads), when the engine is running or being cranked, particularly if components are damp or the insulation is defective. Where an electronic ignition system is used, the secondary (HT) voltage is much higher and could prove fatal.

## Remember...

**X Don't** start the engine without first ascertaining that the transmission is in neutral.

**X Don't** suddenly remove the pressure cap from a hot cooling system - cover it with a cloth and release the pressure gradually first, or you may get scalded by escaping coolant.

**X Don't** attempt to drain oil until you are sure it has cooled sufficiently to avoid scalding you.

**X Don't** grasp any part of the engine or exhaust system without first ascertaining that it is cool enough not to burn you.

**X Don't** allow brake fluid or antifreeze to contact the machine's paintwork or plastic components.

**X Don't** siphon toxic liquids such as fuel, hydraulic fluid or antifreeze by mouth, or allow them to remain on your skin.

**X Don't** inhale dust - it may be injurious to health (see Asbestos heading).

**X Don't** allow any spilled oil or grease to remain on the floor - wipe it up right away, before someone slips on it.

**X Don't** use ill-fitting spanners or other tools which may slip and cause injury.

**X Don't** lift a heavy component which may be beyond your capability - get assistance.

**X Don't** rush to finish a job or take unverified short cuts.

**X Don't** allow children or animals in or around an unattended vehicle.

**X Don't** inflate a tyre above the recommended pressure. Apart from over-stressing the carcass, in extreme cases the tyre may blow off forcibly.

**✓ Do** ensure that the machine is supported securely at all times. This is especially important when the machine is blocked up to aid wheel or fork removal.

**✓ Do** take care when attempting to loosen a stubborn nut or bolt. It is generally better to pull on a spanner, rather than push, so that if you slip, you fall away from the machine rather than onto it.

**✓ Do** wear eye protection when using power tools such as drill, sander, bench grinder etc.

**✓ Do** use a barrier cream on your hands prior to undertaking dirty jobs - it will protect your skin from infection as well as making the dirt easier to remove afterwards; but make sure your hands aren't left slippery. Note that long-term contact with used engine oil can be a health hazard.

**✓ Do** keep loose clothing (cuffs, ties etc. and long hair) well out of the way of moving mechanical parts.

**✓ Do** remove rings, wristwatch etc., before working on the vehicle - especially the electrical system.

**✓ Do** keep your work area tidy - it is only too easy to fall over articles left lying around.

**✓ Do** exercise caution when compressing springs for removal or installation. Ensure that the tension is applied and released in a controlled manner, using suitable tools which preclude the possibility of the spring escaping violently.

**✓ Do** ensure that any lifting tackle used has a safe working load rating adequate for the job.

**✓ Do** get someone to check periodically that all is well, when working alone on the vehicle.

**✓ Do** carry out work in a logical sequence and check that everything is correctly assembled and tightened afterwards.

**✓ Do** remember that your vehicle's safety affects that of yourself and others. If in doubt on any point, get professional advice.

● If in spite of following these precautions, you are unfortunate enough to injure yourself, seek medical attention as soon as possible.

**Note:** The daily (pre-ride) checks outlined in the owner's manual covers those items which should be inspected on a daily basis.

## Engine/transmission oil level check

### The correct oil

- Modern, high-revving engines place great demands on their oil. It is very important that the correct oil for your bike is used.
- Always top up with a good quality oil of the specified type and viscosity and do not overfill the engine.

Oil type	API grade SE, SF or SG
Oil viscosity	SAE 10W30

### Before you start:

✓ Start the engine and allow it to reach normal operating temperature.

**Caution:** Do not run the engine in an enclosed space such as a garage or workshop.

✓ Stop the engine and place the motorcycle on its centre stand on level ground. Allow it to stand undisturbed for a few minutes to allow the oil level to stabilise.

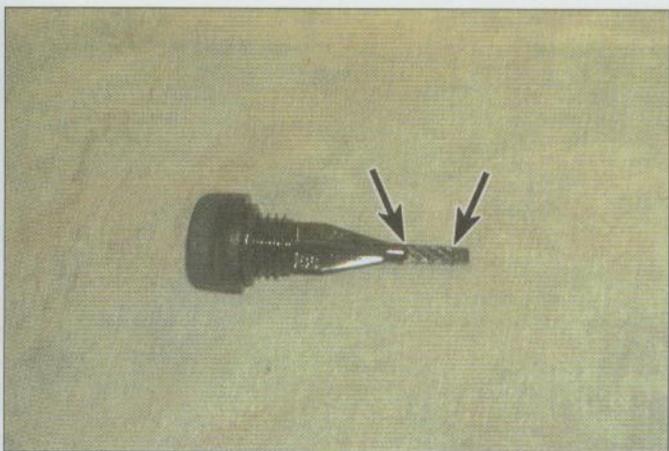
### Bike care:

● If you have to add oil frequently, you should check whether you have any oil leaks. If there is no sign of oil leakage from the joints and gaskets the engine could be burning oil (see *Fault Finding*).



**1** Unscrew the oil filler cap (arrowed) from the right-hand crankcase cover. The dipstick is integral with the oil filler cap, and is used to check the engine oil level.

**2** Using a clean rag or paper towel, wipe off all the oil from the dipstick. Insert the clean dipstick back into the engine, but **do not** screw it in.



**3** Remove the dipstick and observe the level of the oil, which should lie somewhere between the upper and lower level lines (arrowed).

**4** If the level is below the lower line, top the engine up with the recommended grade and type of oil, to bring the level up to the upper line on the dipstick. Do not overfill.

## Brake fluid level checks



**Warning:** Brake hydraulic fluid can harm your eyes and damage painted surfaces, so use extreme caution when handling and pouring it and cover surrounding surfaces with rag. Do not use fluid that has been standing open for some time, as it absorbs moisture from the air which can cause a dangerous loss of braking effectiveness

### Before you start:

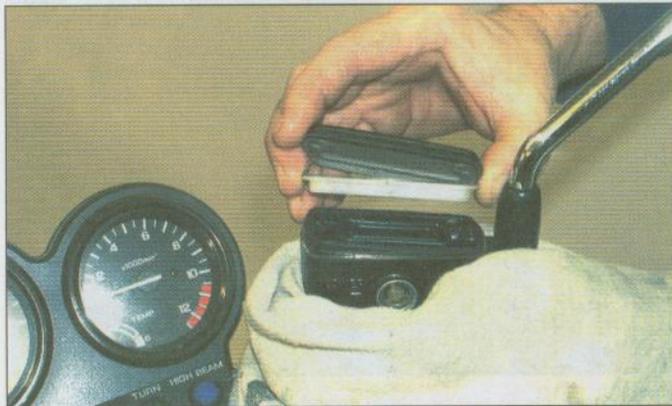
- ✓ Support the motorcycle on its centre stand on level ground, and turn the handlebars until the top of the front master cylinder is as level as possible. The rear master cylinder reservoir is located below the seat cowl on the right-hand side of the machine.
- ✓ Make sure you have the correct hydraulic fluid – DOT 4 is recommended.
- ✓ Wrap a rag around the reservoir being worked on to ensure that any spillage does not come into contact with painted surfaces.
- ✓ Access to the rear reservoir cap is restricted by the seat cowl. Unscrew the reservoir mounting bolt to gain access to the cap if topping up is required.

### Bike care:

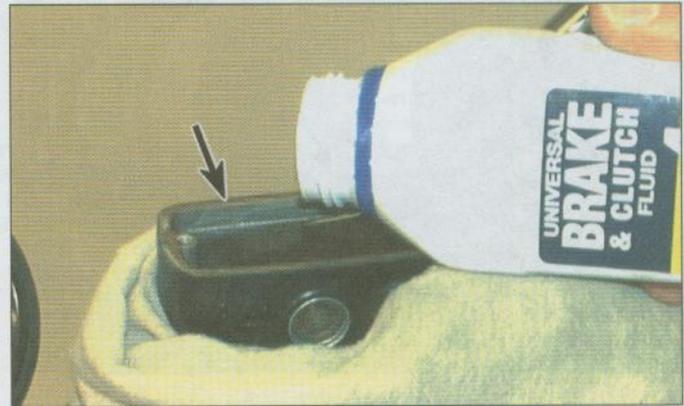
- The fluid in the front and rear brake master cylinder reservoirs will drop slightly as the brake pads wear down.
- If any fluid reservoir requires repeated topping-up this is an indication of an hydraulic leak somewhere in the system, which should be investigated immediately.
- Check for signs of fluid leakage from the hydraulic hoses and components – if found, rectify immediately.
- Check the operation of both brakes before taking the machine on the road; if there is evidence of air in the system (spongy feel to lever or pedal), it must be bled as described in Chapter 7.



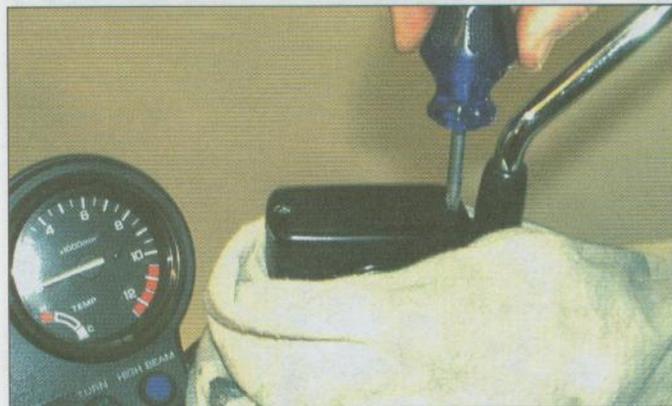
**1** The front brake fluid level is visible through the sightglass in the reservoir body – it must be above the LOWER level line (arrowed).



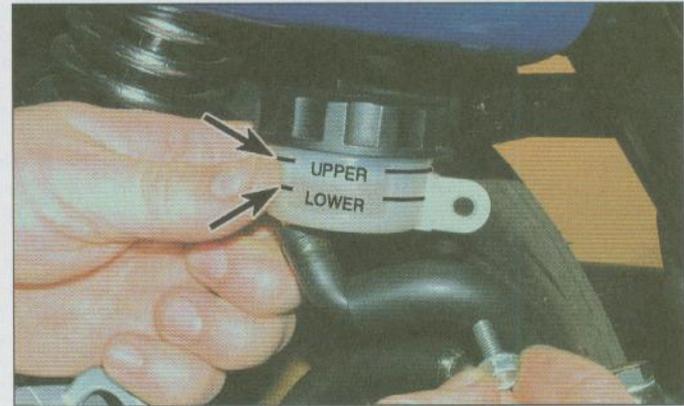
**2** If the level is below the LOWER level line, remove the two reservoir cap screws and remove the cap, the diaphragm plate and the diaphragm.



**3** Top up with new DOT 4 hydraulic fluid, until the level is just below the UPPER level line cast on the inside of the reservoir (arrowed). Do not overfill, and take care to avoid spills (see **Warning** above).



**4** Ensure that the diaphragm is correctly seated before installing the plate and cap. Tighten the cap screws securely.



**5** The rear brake fluid level is visible through the reservoir body – the fluid level must be between the UPPER and LOWER level lines (arrowed). Remove the reservoir mounting bolt and carefully manoeuvre the reservoir out to access the cap.

## Tyre checks

### The correct pressures:

- The tyres must be checked when **cold**, not immediately after riding. Note that low tyre pressures may cause the tyre to slip on the rim or come off. High tyre pressures will cause abnormal tread wear and unsafe handling.
- Use an accurate pressure gauge.
- Proper air pressure will increase tyre life and provide maximum stability and ride comfort.

### Tyre care:

- Check the tyres carefully for cuts, tears, embedded nails or other sharp objects and excessive wear. Operation of the motorcycle with excessively worn tyres is extremely hazardous, as traction and handling are directly affected.
- Check the condition of the tyre valve and ensure the dust cap is in place.
- Pick out any stones or nails which may have become embedded in the tyre tread. If left, they will eventually penetrate through the casing and cause a puncture.

- If tyre damage is apparent, or unexplained loss of pressure is experienced, seek the advice of a motorcycle tyre fitting specialist without delay.

### Tyre tread depth:

- At the time of writing UK law requires that tread depth must be at least 1 mm over  $\frac{3}{4}$  of the tread breadth all the way around the tyre, with no bald patches. Many riders, however, consider 2 mm tread depth minimum to be a safer limit. Honda recommend a minimum of 2 mm on both tyres.
- Many tyres now incorporate wear indicators in the tread. Identify the triangular pointer or 'TWI' mark on the tyre sidewall to locate the indicator bar and renew the tyre if the tread has worn down to the bar.

Loading	Front	Rear
Rider only	29 psi (2.00 Bar)	33 psi (2.25 Bar)
Rider and passenger	29 psi (2.00 Bar)	36 psi (2.50 Bar)



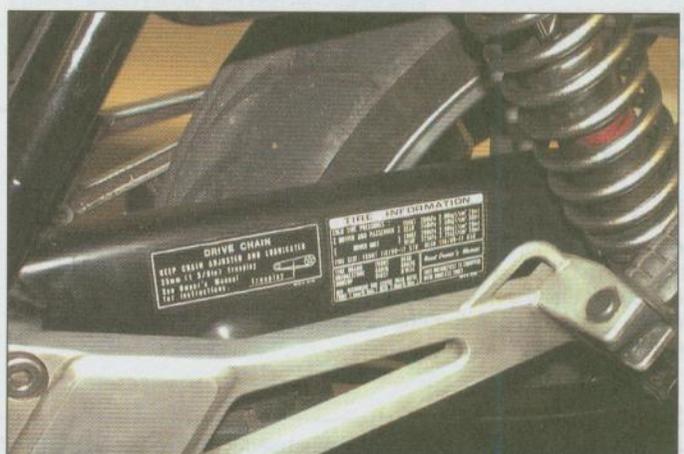
- 1 Check the tyre pressures when the tyres are **cold** and keep them properly inflated.



- 2 Measure tread depth at the centre of the tyre using a tread depth gauge.



- 3 Tyre tread wear indicator bar and its location marking (usually either an arrow, a triangle or the letters TWI) on the sidewall (arrowed).



- 4 Look for the tyre information label on the chainguard.

## Coolant level check



**Warning:** DO NOT remove the radiator pressure cap to add coolant. Topping up is done via the coolant reservoir tank filler. DO NOT leave open containers of coolant about, as it is poisonous.

### Before you start:

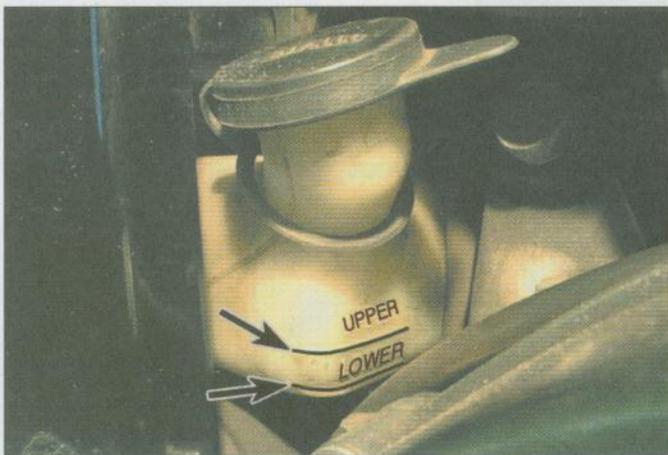
- ✓ Make sure you have a supply of coolant available (a mixture of 50% distilled water and 50% corrosion inhibited ethylene glycol anti-freeze is needed).
- ✓ Always check the coolant level when the engine is at normal working temperature. Start the engine and allow it to reach normal temperature, then stop the engine.

**Caution:** Do not run the engine in an enclosed space such as a garage or workshop.

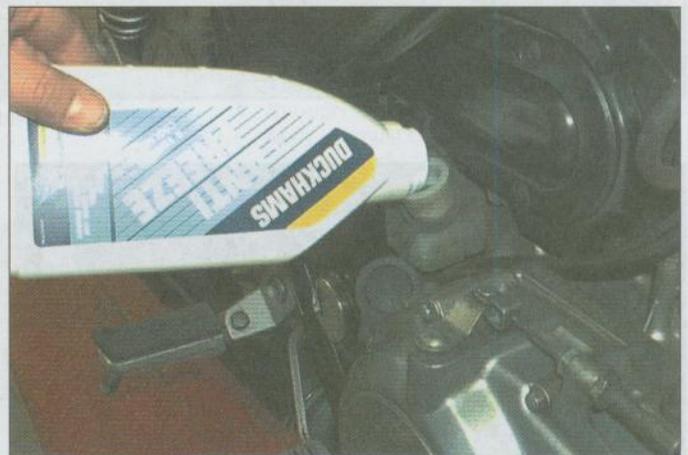
- ✓ Place the motorcycle on its centre stand on level ground.

### Bike care:

- Use only the specified coolant mixture. It is important that anti-freeze is used in the system all year round, and not just in the winter. Do not top the system up using only water, as the system will become too diluted.
- Do not overfill the reservoir tank. If the coolant is significantly above the UPPER level line at any time, the surplus should be siphoned or drained off to prevent the possibility of it being expelled out of the overflow hose.
- If the coolant level falls steadily, check the system for leaks (see Chapter 1). If no leaks are found and the level continues to fall, it is recommended that the machine is taken to a Honda dealer for a pressure test.



**1** The coolant reservoir is located behind the engine unit on the right-hand side. The coolant UPPER and LOWER level lines (arrowed) are on the front of the reservoir.



**2** If the coolant level is not in between the UPPER and LOWER markings, remove the reservoir filler cap and top the coolant level up with the recommended coolant mixture. Fit the cap securely.

## Suspension, steering and final drive checks

### Suspension and steering:

- Check that the front and rear suspension operate smoothly without binding.
- Check that the rear suspension is adjusted as required.
- Check that the steering moves smoothly from lock-to-lock.

### Final drive:

- Check that the drive chain slack isn't excessive, and adjust if necessary (see Chapter 1).
- If the chain looks dry, lubricate it (see Chapter 1).

## Legal and safety checks

### Lighting and signalling:

- Take a minute to check that the headlight, tail light, brake light, instrument lights and turn signals all work correctly.
- Check that the horn sounds when the switch is operated.
- A working speedometer graduated in mph is a statutory requirement in the UK.

### Safety:

- Check that the throttle grip rotates smoothly and snaps shut when released, in all steering positions. Also check for the correct amount of freeplay (see Chapter 1).
- Check that the engine shuts off when the kill switch is operated.

- Check that sidestand return spring holds the stand securely up when it is retracted.
- Check that the clutch lever operates smoothly and with the correct amount of freeplay (see Chapter 1).
- On R and T models, check the operation of the rear brake drum. If brake stopping power is poor or the brake does not free-off when the pedal is released, investigate the problem immediately.

### Fuel:

- This may seem obvious, but check that you have enough fuel to complete your journey. If you notice signs of fuel leakage – rectify the cause immediately.
- Ensure you use the correct grade unleaded fuel – see Chapter 4 Specifications.

# Chapter 1

## Routine maintenance and servicing

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### Degrees of difficulty

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

**Note:** Where applicable, models are identified by their production code letter – refer to 'Identification numbers' at the front of this manual for details.

### Engine

Cylinder numbering (from left-hand to right-hand side of the motorcycle) .....	1-2
Spark plugs	
Type	
Standard .....	NGK CR8EH-9 or Nippondenso U24FER-9
For extended high speed riding .....	NGK CR9EH-9 or Nippondenso U27FER-9
Electrode gap .....	0.8 to 0.9 mm
Engine idle speed .....	1300 rpm (± 100 rpm)
Carburettor synchronisation – max difference between carburettors ..	40 mmHg
Valve clearances (COLD engine)	
Inlet valves .....	0.16 to 0.18 mm
Exhaust valves .....	0.25 to 0.27 mm
Cylinder compression .....	199 psi (14.0 bar)
Oil pressure (with engine warm) .....	34 psi (2.4 bar) @ 2000 rpm, oil temp 80°C

### Miscellaneous

Drive chain slack .....	30 to 40 mm
Clutch cable freeplay .....	10 to 20 mm
Throttle cable freeplay .....	4.5 to 6.5 mm
Rear brake pedal freeplay .....	20 to 30 mm
Tyre pressures and tyre tread depth .....	see <i>Daily (pre-ride) checks</i>

### Recommended lubricants and fluids

Engine and transmission oil type .....	API grade SE, SF or SG motor oil
Engine and transmission oil viscosity .....	SAE 10W30
Engine and transmission oil capacity	
Oil change .....	2.9 litres
Oil and filter change .....	3.1 litres
Following engine overhaul – dry engine, new filter .....	3.5 litres
Coolant type .....	50% distilled water, 50% corrosion inhibited ethylene glycol anti-freeze
Coolant capacity	
Radiator and engine .....	2.0 litres
Reservoir .....	0.7 litre
Front fork oil .....	see Chapter 6
Brake fluid .....	DOT 4
Drive chain .....	SAE 80 or 90 gear oil or aerosol chain lubricant for O-ring chains

### Miscellaneous

Steering head bearings .....	Lithium-based multi-purpose grease
Wheel bearings (unsealed) .....	Lithium-based multi-purpose grease
Swingarm pivot bearings .....	Molybdenum disulphide grease
Bearing seals .....	Lithium-based multi-purpose grease
Clutch lever and rear brake pedal pivots .....	Molybdenum disulphide grease or dry film lubricant
Front brake lever pivot and piston tip .....	Molybdenum disulphide grease or dry film lubricant
Cables .....	Cable lubricant or 10W40 motor oil
Centre and sidestand pivots .....	Molybdenum disulphide grease
Throttle twistgrip .....	Multi-purpose grease or dry film lubricant

### Torque settings

Rear axle nut .....	90 Nm
Steering head bearing adjuster nut .....	25 Nm
Steering stem nut .....	105 Nm
Top yoke fork clamp bolts .....	23 Nm
Bottom yoke fork clamp bolts .....	40 Nm
Front brake master cylinder clamp bolts .....	12 Nm
Spark plugs .....	12 Nm
Oil drain plug .....	35 Nm
Oil filter .....	10 Nm
Water pump drain plug .....	12 Nm

**Note:** The daily (pre-ride) checks outlined in the owner's manual covers those items which should be inspected on a daily basis. Always perform the pre-ride inspection 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)

- 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 dealer after the first 600 miles (1000 km) from new. Thereafter, maintenance is carried out according to the following intervals of the schedule.

## Every 600 miles (1000 km)

- Check, adjust and lubricate the drive chain (Section 1)

## Every 4000 miles (6000 km) or 6 months (whichever comes sooner)

Carry out all the items under 'Daily (pre-ride) checks' and the 600 mile (1000 km) check, plus the following

- Check and adjust the idle speed (Section 2)
- Check the brake pads and shoe linings (Section 3)
- Check the rear brake pedal position and freeplay – R and T models (Section 4)
- Check and adjust the clutch (Section 5)
- Lubricate the clutch lever, brake lever, brake pedal, centre and sidestand pivots and the throttle, choke and clutch cables (Section 6)
- Clean the crankcase breather (Section 7)

## Every 8000 miles (12,000 km) or 12 months (whichever comes sooner)

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

- Change the engine oil and filter (Section 8)
- Check the brake system and brake light switch operation (Section 9)
- Check the cooling system (Section 10)
- Check the fuel system and hoses (Section 11)
- Check the battery terminals (Section 12)
- Check the spark plug gaps (Section 13)
- Check and adjust the throttle and choke cables (Section 14)
- Check/adjust the carburettor synchronisation (Section 15)
- Check and adjust the headlight aim (Section 16)
- Check the centre and sidestand (Section 17)
- Check the suspension (Section 18)
- Check and adjust the steering head bearings (Section 19)

## Every 8000 miles (12,000 km) or 12 months (whichever comes sooner) (continued)

- Check the wheel bearings (Section 20)
- Check the condition of the wheels and tyres (Section 21)
- Check the drive chain slider (Section 22)
- Check the tightness of all nuts, bolts and fasteners (Section 23)

## Every 12,000 miles (18,000 km) or 18 months (whichever comes sooner)

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

- Change the brake fluid (Section 24)
- Renew the air filter element and clean the sub-air cleaner (Section 25)

## Every 16,000 miles (24,000 km) or two years (whichever comes sooner)

Carry out all the items under the 4000 mile (6000 km) and 8000 mile (12,000 km) checks, plus the following

- Check and adjust the valve clearances (Section 26)
- Renew the spark plugs (Section 27)

## Every 24,000 miles (36,000 km) or three years (whichever comes sooner)

Carry out all the items under the 4000 mile (6000 km), 8000 mile (12,000 km) and 12,000 mile (18,000 km) checks, plus the following

- Change the coolant (Section 28)
- Renew the brake master cylinder and caliper seals (Section 29)

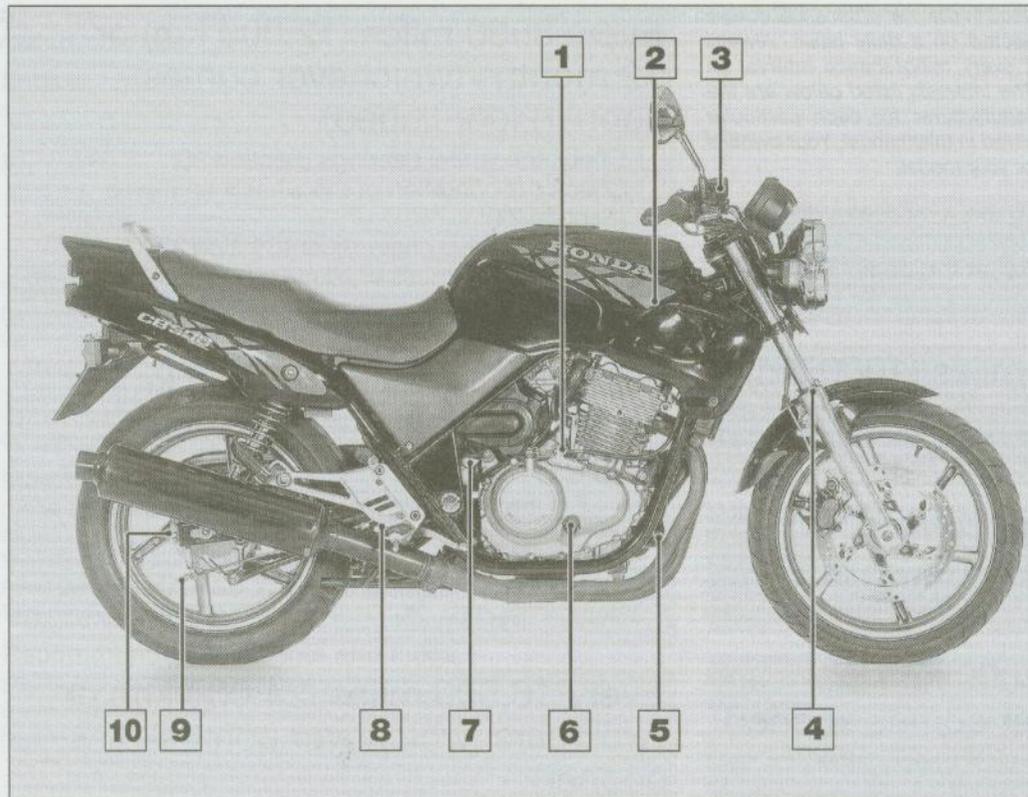
## Every four years

- Renew the brake hoses (Section 30)
- Renew the fuel hoses (Section 31)

## Non-scheduled maintenance

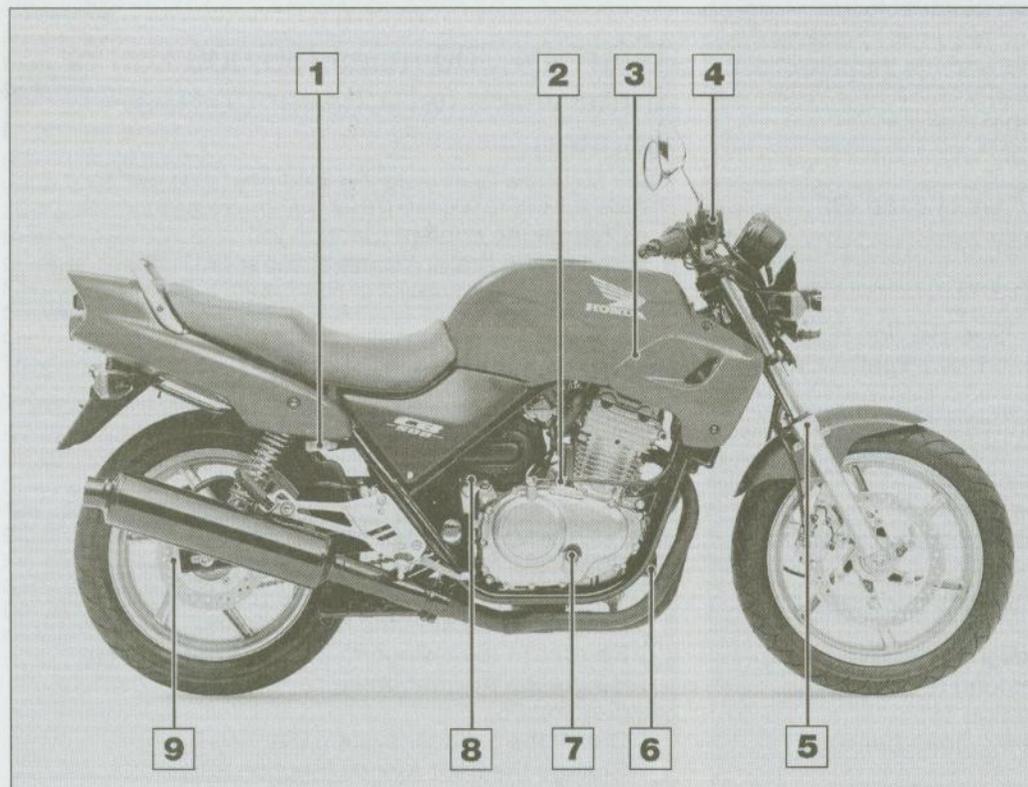
- Check the cylinder compression (Section 32)
- Check the engine oil pressure (Section 33)
- Re-grease the steering head bearings (Section 34)
- Re-grease the swingarm bearings (Section 35)
- Re-grease the rear brake cam – R and T models (Section 36)
- Check the exhaust system (Section 37)
- Change the front fork oil (Section 38)

## 1•4 Component locations



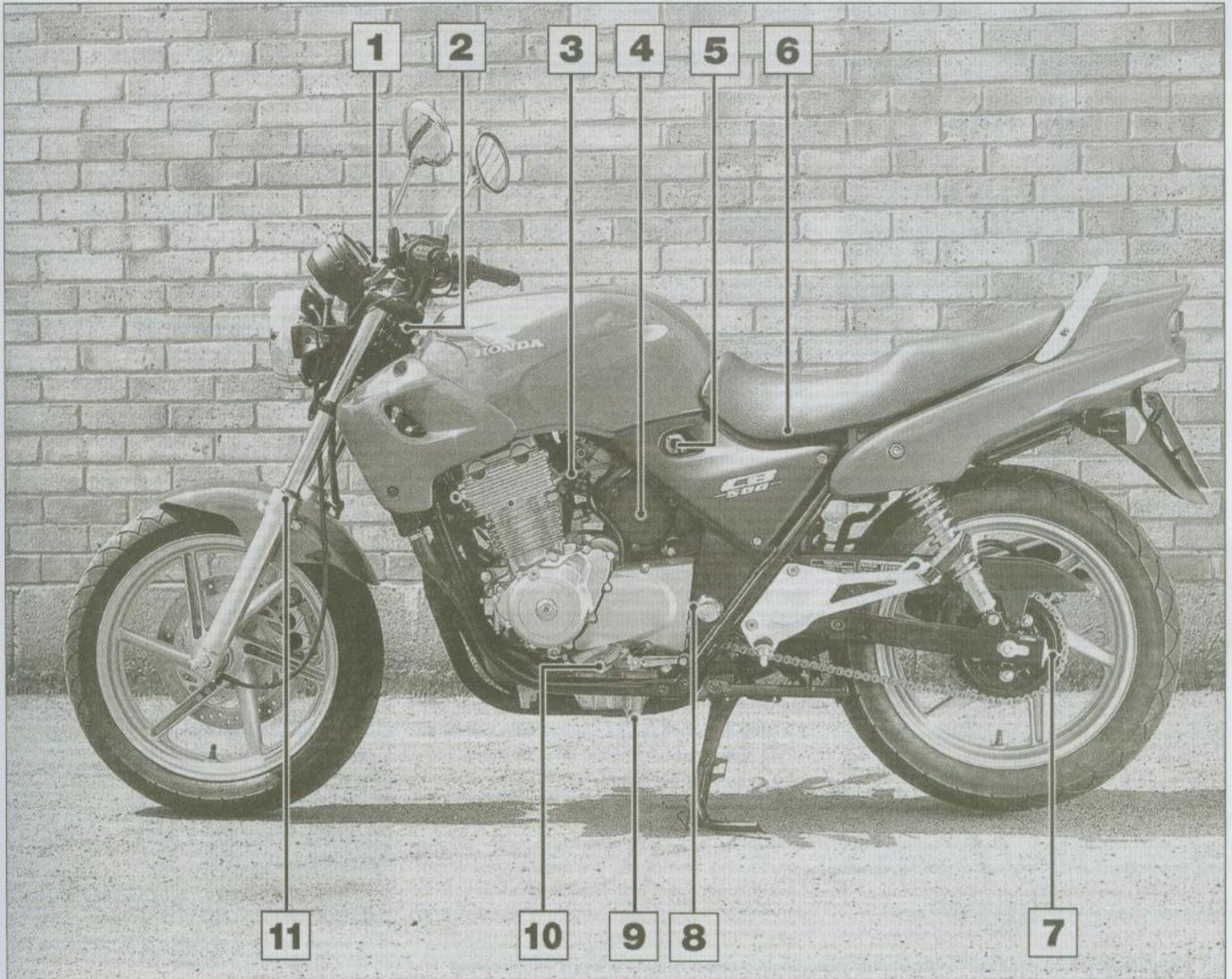
### Component locations on right-hand side - CB500R

- 1 Clutch cable lower adjuster
- 2 Cooling system pressure cap
- 3 Front brake fluid reservoir
- 4 Fork seal
- 5 Oil filter
- 6 Oil filler/dipstick
- 7 Coolant reservoir
- 8 Rear brake pedal height adjuster
- 9 Rear brake freeplay adjuster
- 10 Drive chain adjuster



### Component location on right-hand side - all other models

- 1 Rear brake fluid reservoir
- 2 Clutch cable lower adjuster
- 3 Cooling system pressure cap
- 4 Front brake fluid reservoir
- 5 Fork seal
- 6 Oil filter
- 7 Oil filler/dipstick
- 8 Coolant reservoir
- 9 Drive chain adjuster



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Component locations on left-hand side – all models

- 1 Clutch cable upper adjuster
- 2 Steering head bearing adjuster
- 3 Idle speed adjuster
- 4 Air filter

- 5 Fuel filter
- 6 Battery
- 7 Drive chain adjuster
- 8 Drive chain slider

- 9 Oil drain bolt
- 10 Coolant drain bolt
- 11 Fork seal

# 1.6 Introduction

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, oil and coolant drain plugs, 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 decals.

## Every 600 miles (1000 km)

### 1 Drive chain and sprockets – check, adjustment and lubrication



1 A neglected drive chain won't last long and can quickly damage the sprockets. Routine chain adjustment and lubrication isn't difficult and will ensure maximum chain and sprocket life.

2 To check the chain, place the motorcycle on its centre stand and shift the transmission into neutral. Make sure the ignition switch is OFF. Check the entire length of the chain for damaged rollers, loose links and pins, and missing O-rings and renew it if damage is found. Remove the front sprocket cover (see Chapter 6). Check the teeth on the front and rear sprockets for wear (see illustration).

**Note:** Never install a new chain on old sprockets, and never use the old chain if you install new sprockets – renew the chain and sprockets as a set.

3 To check chain tension, place the motorcycle

on its sidestand. Push up on the bottom run of the chain and measure the slack midway between the two sprockets, then compare your measurement to that listed in this Chapter's Specifications (see illustration). As the chain stretches with wear, periodic adjustment will be necessary (see below). Since the chain will rarely wear evenly, rotate the rear wheel so that another section of chain can be checked midway between the sprockets; do this several times to check the entire length of chain.

4 In some cases where, lubrication has been neglected, corrosion and galling may cause the links to bind and kink, which effectively shortens the chain's length. Such links should be thoroughly cleaned and worked free. Mark the tight area with felt pen or paint and check it again after the motorcycle has been ridden. If the chain's still tight in the same area, it may be damaged or worn. Because a tight or kinked chain can damage the transmission output shaft bearing, it's a good idea to renew it.

**Caution:** If the machine is ridden with

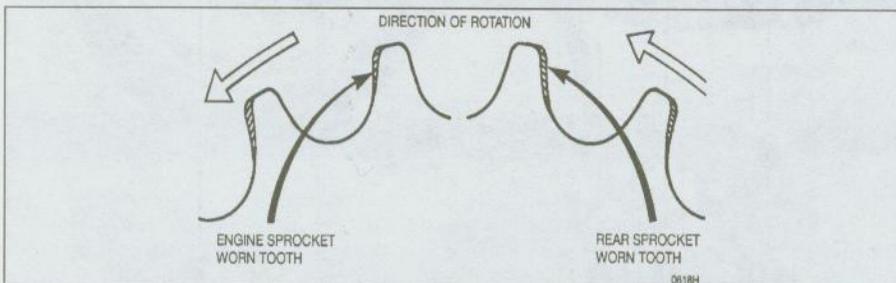
**excessive slack in the drive chain, the chain could contact the frame and swingarm, causing severe damage.**

### Adjustment

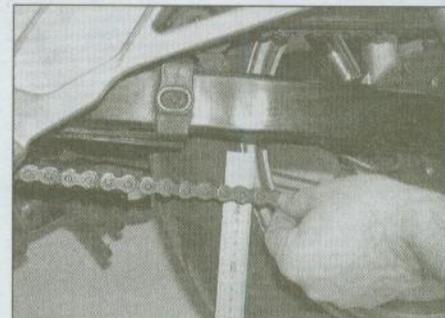
5 Place the motorcycle on its centre stand and rotate the rear wheel until the chain is positioned with the tightest point at the centre of its bottom run.

6 Slacken the rear axle nut and the locknut on each chain adjuster (see illustration).

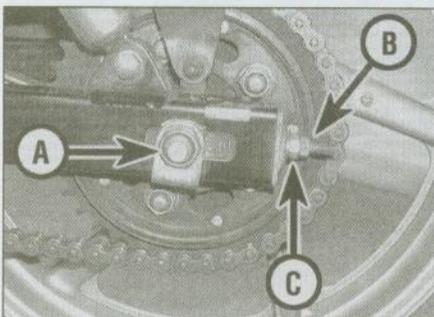
7 Turn the chain adjusters on both sides of the swingarm a small amount at a time until the specified chain tension is obtained (see illustration). Be sure to turn the adjusters evenly to keep the rear wheel in alignment. If the adjusters reach the end of their travel, the chain is excessively worn and should be renewed (see Chapter 6). The chain wear decals will also indicate the need for chain renewal (see illustration).



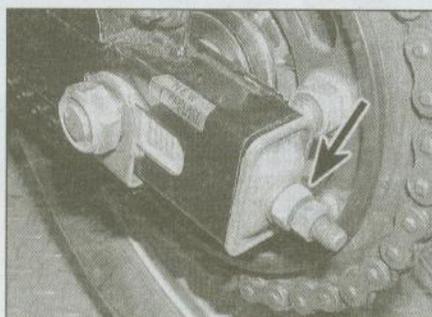
1.2 Check the sprockets in the areas indicated to see if they are worn excessively



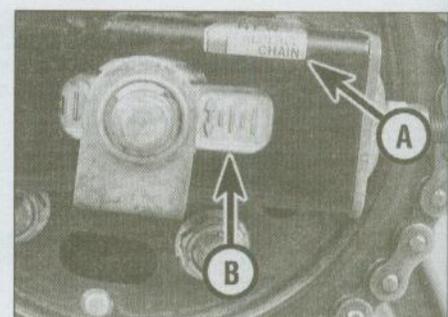
1.3 Push up on the chain and measure the slack



1.6 Rear axle nut (A), locknut (B), adjuster (C)



1.7a Turn the adjusters (arrowed) to obtain specified chain tension



1.7b Chain wear decal (A) and alignment marks (B)

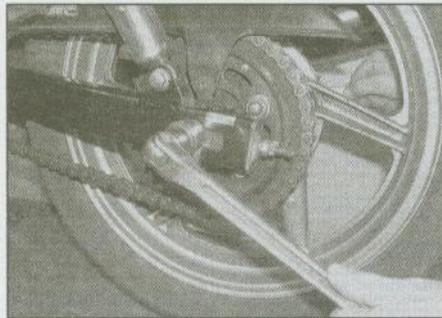
8 When the chain has the correct amount of slack, check that the wheel is correctly aligned by making sure the marks on each adjuster are in the same position relative to the slot in the swingarm (see illustration 1.7b). If there is any discrepancy in the chain adjuster positions, adjust one of them so that its position is exactly the same as the other, then recheck the chain freeplay as described above. It is important each adjuster is identically aligned otherwise the rear wheel will be out of alignment with the front.

9 Tighten the axle nut to the torque setting specified at the beginning of this Chapter (see illustration). Tighten the chain adjuster locknuts securely. On R and T models, reset the freeplay on the rear brake pedal by turning the adjuster nut on the brake rod (see Section 4).

**Lubrication**

10 If the chain is dirty, wash it in paraffin (kerosene), then wipe it off and allow it to dry, using compressed air if available. If the chain is excessively dirty it should be removed from the machine and allowed to soak in the paraffin as described in Chapter 6.

**Caution:** Don't use petrol, solvent or other



1.9 Tighten the axle nut to the specified torque

*cleaning fluids which might damage the internal sealing properties of the chain. Don't use high-pressure water. The entire process shouldn't take longer than ten minutes – if it does, the O-rings in the chain rollers could be damaged.*

11 For routine lubrication, the best time to lubricate the chain is after the motorcycle has been ridden. When the chain is warm, the lubricant will penetrate the joints between the side plates better than when cold. **Note:** Honda specifies SAE 80 to SAE 90 gear oil; if you do use aerosol chain lube ensure that it is



1.11 Apply the lubricant to the overlap in the sideplates

suitable for O-ring chains. Apply the oil to the area where the side plates overlap – not the middle of the rollers (see illustration).

**HAYNES HINT** Apply the oil to the top of the lower chain run, so centrifugal force will work the oil into the chain when the motorcycle is moving. After applying the lubricant, let it soak in a few minutes before wiping off any excess.

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

**2 Idle speed – check and adjustment**



1 The idle speed should be checked and adjusted before and after the carburetors are synchronised (balanced) 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 or routed correctly, or may be worn out. This is a dangerous condition that can cause loss of control of the motorcycle. 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, and make sure the transmission is in neutral.

3 The idle speed adjuster is located between the carburetors (see illustration). With the engine running and the throttle closed, adjust the idle speed by turning the adjuster screw until the idle speed listed in this Chapter's Specifications is obtained. Turn the screw clockwise to increase idle speed, and anti-clockwise to decrease it.

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 (see Chapter 4) or the carburetors may need synchronising (see Section 15).

**3 Brake pads and shoe linings – wear check**

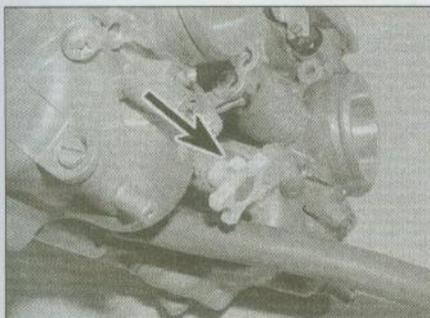


1 Disc brake pads and rear drum brake shoe linings (R and T models only) all have wear indicators. A quick check of brake wear can be made without dismantling components.

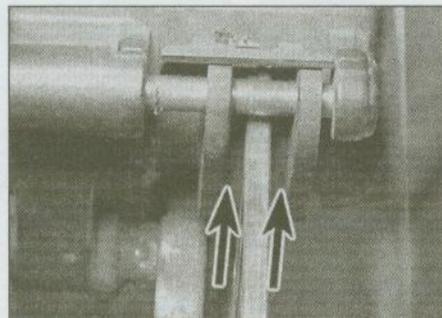
**Brake pads**

2 The amount of pad wear can be judged by looking at the pads from the underside rear of the caliper (both front and rear) (see illustration). A cutout in the friction material indicates the wear limit (see illustration).

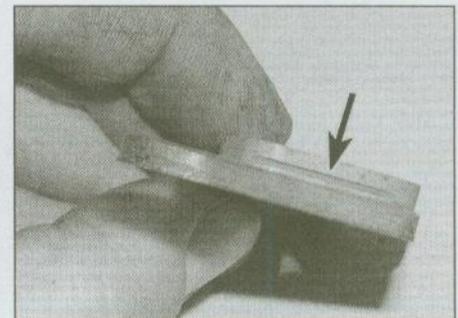
3 If either pad in the caliper has worn down to, or beyond the cutout in the friction material, both pads must be renewed as a set.



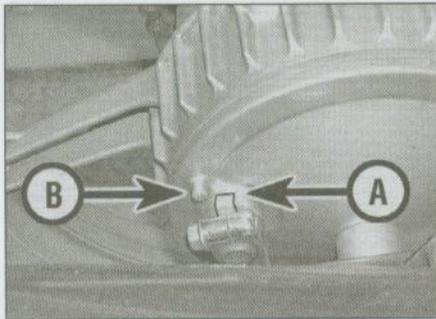
2.3 Idle speed adjuster screw (arrowed)



3.2a Check pad wear from the underside rear of the caliper



3.2b Brake pad wear limit (arrowed)



3.5 Rear brake wear indicator (A) and limit reference (B) on R and T models

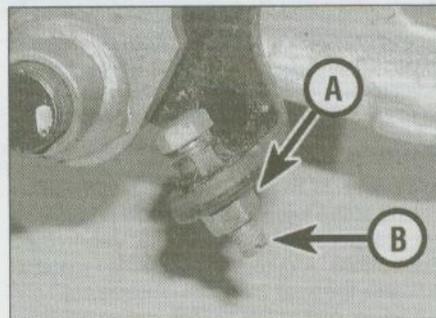
If the pads are dirty or if you are in doubt as to the amount of friction material remaining, remove them for inspection (see Chapter 7). **Note:** Some after-market pads may use different indicators to those on the original equipment as shown.

4 Refer to Chapter 7 for details of pad renewal.

**Rear brake shoe linings – R and T models**

5 To check the rear brake linings, press the brake pedal firmly and look at the indicator on the brake backplate (see illustration). If the pointer on the brake arm aligns with the reference mark on the brake backplate the brake shoes must be renewed.

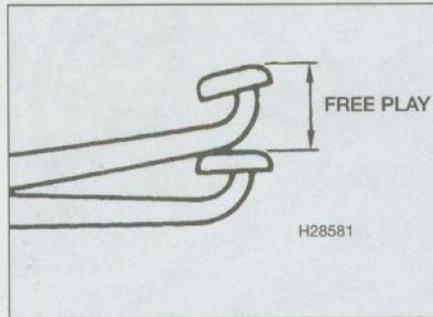
6 Refer to Chapter 7 for details of brake shoe renewal.



4.6a Slacken locknut (A) and adjust pedal height with screwdriver at (B)



4.6b Ensure locknut is tightened after making adjustment



4.1a Measure brake pedal freeplay at the pedal tip

**4 Rear brake pedal position and freeplay (R and T models) – check and adjustment**

**Pedal freeplay check and adjustment**

1 Apply the rear brake and compare the pedal travel with the measurement listed in this Chapter's Specifications (see illustration). If adjustment is necessary, turn the adjuster at the rear end of the brake rod (see illustration).

2 Apply the brake several times and ensure that the wheel turns freely without the brake binding when the brake pedal is released.

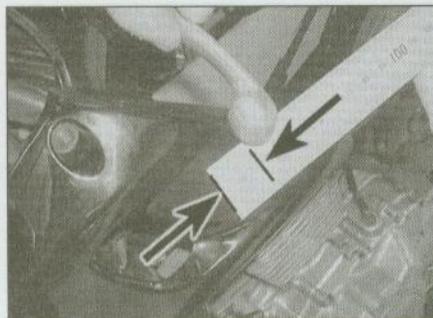
3 Make sure that the cut-out on the adjusting nut is properly seated on the brake arm trunnion after making adjustment.

4 If necessary, adjust the brake light switch (see Section 9).

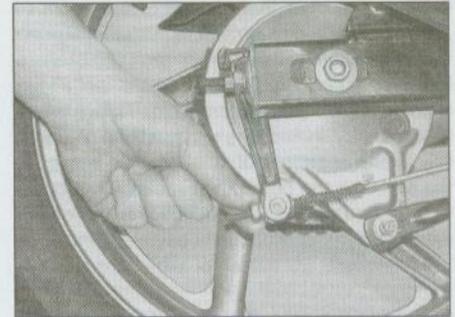
**Pedal height adjustment**

5 It is important that the brake pedal is positioned correctly in relation to the footrest so that the brake can be engaged quickly and easily without excessive foot movement. Pedal position is largely a matter of personal preference and once set up should not need subsequent alteration.

6 To adjust the position of the pedal, loosen the locknut on the adjusting bolt, turn the slotted end of the bolt with a screwdriver to set the pedal position and tighten the locknut (see illustrations).



5.3 Measuring clutch cable freeplay



4.1b Adjusting brake pedal freeplay

7 If the pedal height has been adjusted, recheck the pedal freeplay as described above.

**5 Clutch – check and adjustment**

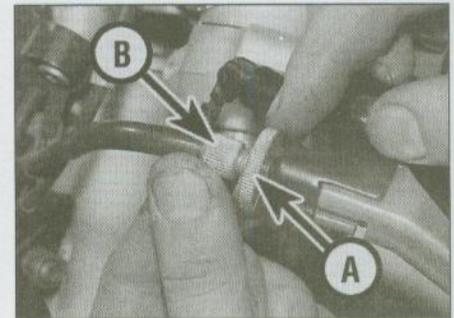
1 Check that the clutch cable operates smoothly and easily.

2 If the clutch lever operation is heavy or stiff, remove the cable (see Chapter 2) and lubricate it (see Section 6). If the cable is still stiff, renew it. Install the lubricated or new cable (see Chapter 2).

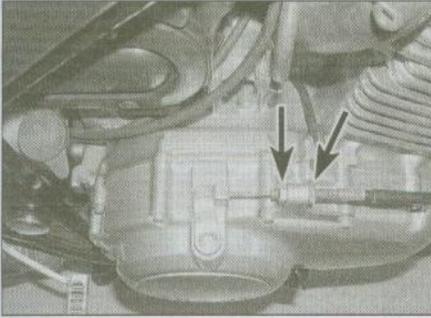
3 With the cable operating smoothly, check that the clutch lever is correctly adjusted. Periodic adjustment is necessary to compensate for wear in the clutch plates and stretch in the cable. Check that the amount of cable freeplay at the clutch lever end is within the specifications listed at the beginning of the Chapter (see illustration).

4 If adjustment is required, loosen the adjuster locking at the lever 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.

5 If all the adjustment has been taken up at the lever, reset the lever adjuster to give the maximum amount of freeplay (ie screw it into the bracket), then set the correct amount of freeplay using the adjuster at the lower end of



5.4 Slacken the locking (A) and turn the adjuster (B) in or out as required



5.5 Clutch cable lower adjuster nuts (arrowed)

the cable where it passes through the bracket on the right-hand side of the engine (see illustration). To reduce freeplay, slacken the rear nut and tighten the front nut until the freeplay is as specified, then tighten the rear nut against the bracket. To increase freeplay, slacken the front nut and tighten the rear nut until the freeplay is as specified, then tighten the front nut against the bracket. Subsequent adjustments can now be made using the lever adjuster only.

6 Levers, stand pivots and cables – lubrication



Pivot points

- 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 clutch and brake levers, brake pedal, footrest, centre and sidestand pivots should be lubricated frequently. In order for the lubricant to be applied where it will do the most good, the component should be

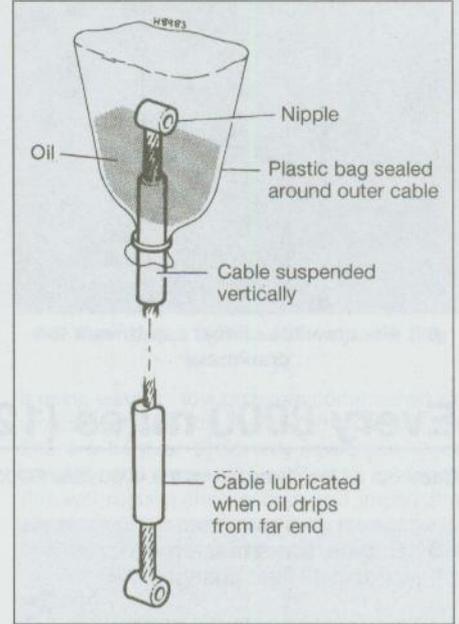


6.3a Lubricating a cable with a cable oiler clamp. Ensure the tool seals around the inner cable

disassembled and the recommended grease applied (see Specifications). 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).

Cables

- 3 To lubricate the cables, disconnect the relevant cable at its upper end, then lubricate the cable with a cable oiler clamp, or if one is not available, using the set-up shown (see illustrations). See Chapter 4 for the choke and throttle cable removal procedures, and Chapter 2 for the clutch cable.
- 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 instrument head.

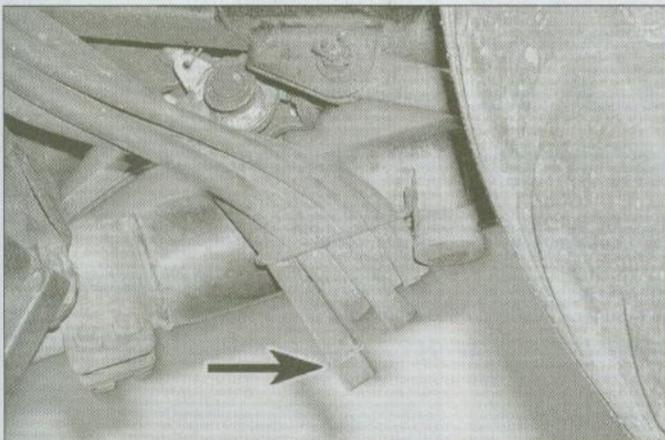


6.3b Lubricating a cable with a makeshift funnel and motor oil

7 Crankcase breather – clean



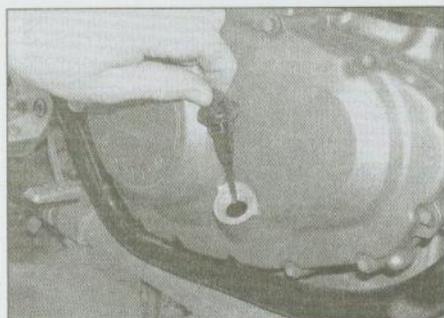
- 1 The crankcase breather hose is routed from the valve cover to the air filter housing where vapours are recycled in the combustion process. Sludge from the vapour collects at the bottom of the housing, where it drains into a tube routed to the underside of the motorcycle behind the engine unit. The tube is retained by a bracket on the exhaust system (see illustration).
- 2 Release the clip that secures the tube plug, remove the plug and drain any deposits into a suitable container (see illustration). Refit the tube plug and ensure the clip is correctly repositioned.



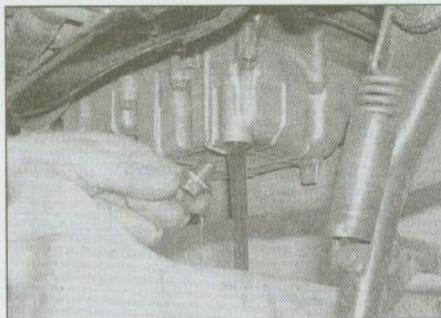
7.1 Crankcase breather tube (arrowed) is located in a bracket on the underside of the silencer



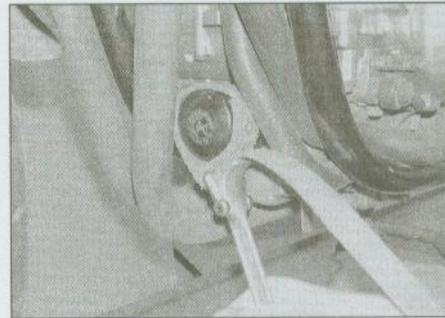
7.2 Remove the plug to drain the breather



8.3 Unscrew the oil filler cap to vent the crankcase



8.4 Remove the drain plug and allow the oil to drain completely



8.6a Unscrew the oil filter . . .

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

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

### 8 Engine/transmission - 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 protector. Because of these demands, the oil takes a terrific amount of abuse and should be changed often with new oil of the recommended grade and type. 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 motorcycle on its sidestand to ensure complete draining of the sump and position a clean drain tray of approximately 5 litres capacity below the engine. Unscrew the oil filler cap from the clutch cover to vent the crankcase and to act as a reminder that there is no oil in the engine (see illustration).

4 Next, unscrew the oil drain plug from the sump on the bottom of the engine and allow the oil to flow into the drain tray (see illustration). Check the condition of the sealing washer on the drain plug and obtain a new one if it is damaged or worn.



**To help determine whether any abnormal or excessive engine wear is occurring, place a strainer between the engine and the drain tray so that any debris in the oil is filtered out and can be examined.**

5 When the oil has completely drained, fit the plug to the sump, using a new sealing washer if necessary, and tighten it to the specified torque. Avoid overtightening, as damage to the sump will result.

6 Now place the drain tray below the oil filter. Unscrew the oil filter using a filter adapter or a strap wrench and empty the filter into the drain tray (see illustrations). Allow any residual oil to drain from the engine.

7 Smear clean engine oil onto the rubber seal on the new filter, then carefully position the filter on its threads and screw it onto the engine (see illustration). Tighten the filter securely using a filter adapter or a strap

wrench (see illustration). To tighten the filter to the specified torque, it is necessary to remove the exhaust system to gain access with a torque wrench.

8 Refill the engine to the proper level using the recommended type and amount of oil (see Specifications). With the motorcycle upright on level ground, the oil level should lie between the upper and lower level lines on the dipstick (see Daily (pre-ride) checks). 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 a mid-point between the upper and lower level lines on the dipstick. Check around the drain plug and the oil filter for leaks.

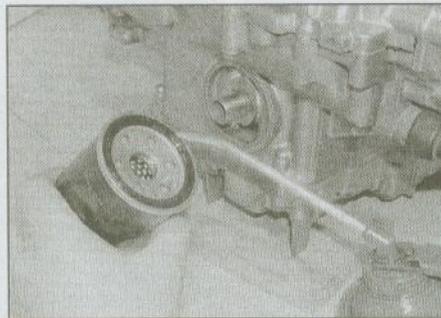


**Saving a little money on the difference between good and cheap oils won't pay off if the engine is damaged as a result.**

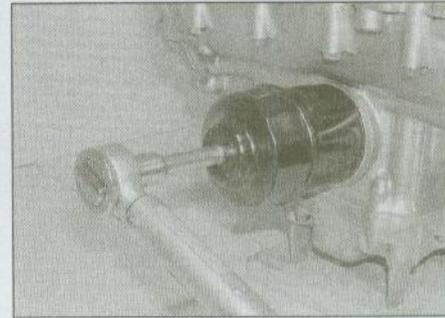
9 The old oil drained from the engine and the filter cannot be re-used and should be disposed of properly. Check with your local refuse disposal company, disposal facility or



8.6b . . . and allow any residual oil to drain



8.7a Smear the filter seal with clean engine oil . . .



8.7b . . . and tighten the filter securely

environmental agency to see whether they will accept the used oil for recycling. Don't pour used oil into drains or onto the ground.



**Note: It is antisocial and illegal to dump oil down the drain. In the UK, call this number free to find the location of your local oil recycling bank. In the USA, note that any oil supplier must accept used oil for recycling.**

0800 66 33 66  
www.oilbankline.org.uk

## 9 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, improper or rough action, excessive play, bends and other damage. On R and T models, check the rear brake linkage. Renew any worn or damaged parts (see Chapter 7).

3 Make sure all brake fasteners are tight. On disc brakes, check the brake pads for wear (see Section 3) and make sure the fluid level in the reservoir is correct (see *Daily (pre-ride) checks*). Look for leaks at the hose connections and check for cracks in the hose (see illustration). If the lever or pedal is spongy, bleed the brakes (see Chapter 7). On R and T models, check the rear brake shoes for wear and check for the correct amount of freeplay at the brake pedal tip (see Sections 3 and 4).

4 Make sure the brake light operates when the front brake lever is pulled in. The front brake light switch, mounted on the underside of the master cylinder, is not adjustable. If it fails to operate properly, check it (see Chapter 9).

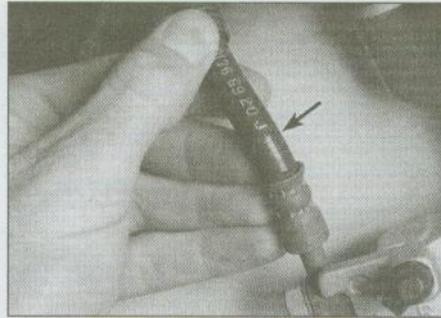
5 Make sure the brake light comes on just before the rear brake takes effect. If adjustment is necessary, hold the rear brake light switch and turn the adjuster ring on the switch body until the brake light is activated when required (see illustration). The switch is mounted on the inside of the rider's right-hand footrest bracket. If the brake light comes on too late, turn the ring clockwise. If the brake light comes on too soon or is permanently on, turn the ring anti-clockwise. If the switch doesn't operate the brake light, check it (see Chapter 9).

## 10 Cooling system – check



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

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



9.3 Flex the brake hose and check for cracks, bulges and leaking fluid

2 On R, T, V, W, X and Y models, remove the two radiator side panels; on SW, SX and SY models remove the fairing (see Chapter 8). Remove the radiator stone guard (see Chapter 8) and the fuel tank (see Chapter 4). 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 cracked or hard, renew them.

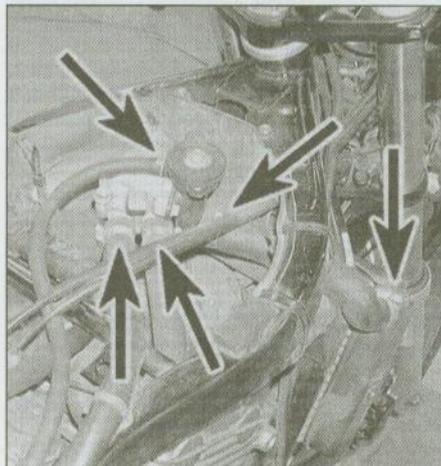
3 Check for evidence of leaks at each cooling system joint. Tighten the hose clips carefully to prevent future leaks (see illustration).

4 Check the radiator for leaks and other damage. Leaks in the radiator leave tell-tale 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 by a specialist.

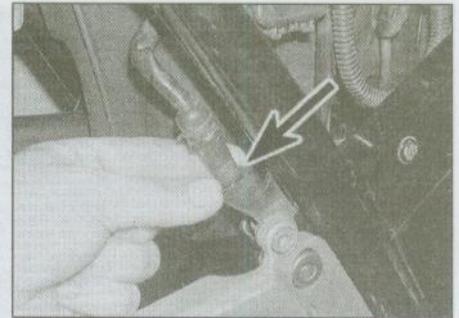
5 Check the water pump for any sign of leakage from its drain hole (see Chapter 3, Section 8).

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

6 Check the radiator fins for mud, dirt and insects, which may impede the flow of air through the radiator. If the fins are dirty, remove the radiator (see Chapter 3) and clean



10.3 Check all coolant hoses and joints (arrowed) for leaks



9.5 Rear brake light switch adjuster ring (arrowed)

it using water or low pressure compressed air directed through the fins from the back. If the fins are bent or distorted, straighten them carefully with a screwdriver. Bent or damaged fins will restrict the air flow and impair the efficiency of the radiator causing the engine to overheat. Where there is substantial damage to the radiator's surface area, renew the radiator.

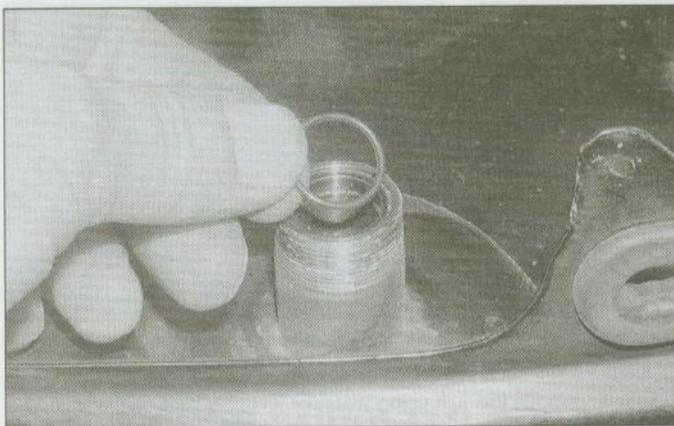
7 Remove the pressure cap from the radiator filler neck by turning it anti-clockwise until it reaches a stop. If you hear a hissing sound when you turn the cap (indicating there is still pressure in the system), wait until it stops before removing the cap and continue turning it until it can be removed (see illustration).

8 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 28). Check the cap seal for cracks and other damage. If in doubt about the pressure cap's condition, have it tested by a dealer or renew it.

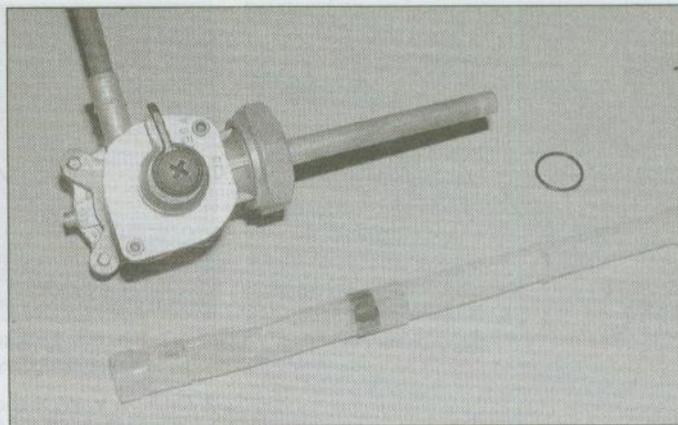
9 Check the antifreeze content of the coolant with an antifreeze hydrometer. A mixture with less than 40% antifreeze (40/60 antifreeze to distilled water) will not provide proper corrosion protection. Sometimes coolant looks like it's in good condition, but might be too weak to offer adequate protection. If the hydrometer indicates a weak mixture, drain, flush and refill the system (see Section 28). A higher than specified concentration of antifreeze decreases the performance of the cooling system and should only be used when



10.7 Turn pressure cap slowly anti-clockwise to remove



11.2 Renew fuel tap O-ring to cure persistent leaks



11.5 Fuel tap, O-ring and fuel filter

additional protection against freezing is needed.

**10** Install the cap by turning it clockwise until it reaches the first stop then push down on the cap and continue turning until it will turn no further.

**11** Start the engine and let it reach normal operating temperature, then check for leaks again. As the coolant temperature increases, the fan behind the radiator 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.

**12** 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.

### 11 Fuel system – check



**Warning:** Petrol (gasoline) 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 tank filler cap, the fuel tap, the fuel hose and the fuel tap vacuum hose for signs of leakage, deterioration or damage; in particular check that there is no leakage from the fuel hose. Renew any hoses that are cracked or deteriorated.

**2** If the fuel tap to tank joint is leaking, tightening the retaining nut may help. Hold the tap to prevent it twisting while tightening the

nut. If leakage persists, the tank must be drained of fuel, the tap removed and its O-ring renewed. It is advised that this is done when there is minimal fuel in the tank. In this way the tank can be rested on its right-hand side whilst the tap is removed. Alternatively, with the tap in the RES position, apply a vacuum to the end of the vacuum pipe to allow the fuel to drain through the fuel pipe and into a suitable container. Remove the tap by unscrewing the retaining nut. Use a new O-ring (see illustration) on refitting and take care not to overtighten the retaining nut.

**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 renewal of the fuel filter is advised after a particularly high mileage has been covered. It is also necessary if fuel starvation is suspected. The fuel filter is mounted in the tank and is integral with the fuel tap.

**5** Remove the fuel tank (see Chapter 4) and the fuel tap (see Step 2), and carefully pull the filter off the fuel supply tube (see illustration). Once the filter is dry, clean the gauze with a soft brush or low pressure compressed air to remove all traces of dirt and fuel sediment. Check the gauze for holes. If any are found, a new filter should be fitted (it is available separately). A damaged filter will allow dirt particles to enter the tap body.

**6** Check the condition of the tap O-ring and renew it if it is in any way damaged or deteriorated. It is advisable to renew it as a matter of course.

### 12 Battery – check



**1** All models covered in this manual are fitted with a sealed, maintenance-free battery which requires no topping-up. **Note:** Do not attempt to remove the battery filler caps, if fitted, to

check the electrolyte level or battery specific gravity. Removal will damage the caps, resulting in electrolyte leakage and battery damage.

**2** All that should be done is to check that the battery terminals are clean and tight and that the casing is not damaged or leaking. See Chapter 9 for further details.

**3** If the machine is not in regular use, disconnect the battery and give it a refresher charge every month to six weeks, as described in Chapter 9.

### 13 Spark plugs – check and adjustment

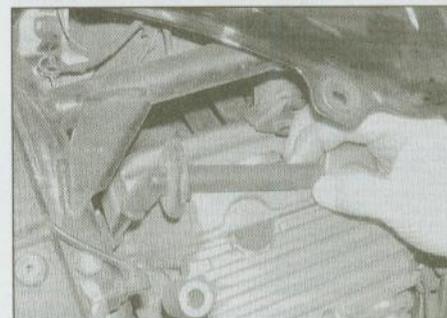


**1** Make sure your spark plug socket is the correct size before attempting to remove the plugs – a special plug spanner is supplied in the motorcycle's tool kit which is stored under the seat.

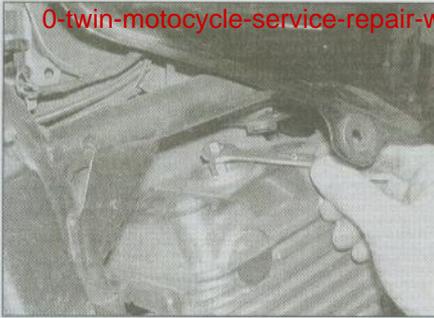
**2** On R, T, V, W, X, and Y models, remove the radiator side panels; on SW, SX and SY models remove the fairing (see Chapter 8).

**3** Clean the area around the plug caps to prevent any dirt falling into the spark plug access passages.

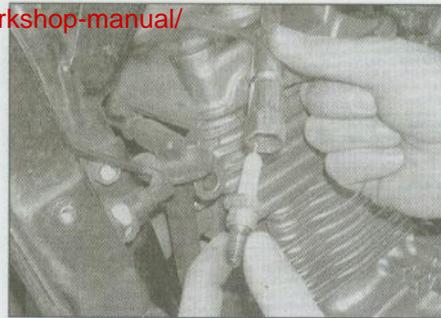
**4** Check that the cylinder location is marked on each plug lead and mark them accordingly if not. Pull the spark plug cap off each spark plug (see illustration). Clean the area around the base of the plugs with low pressure



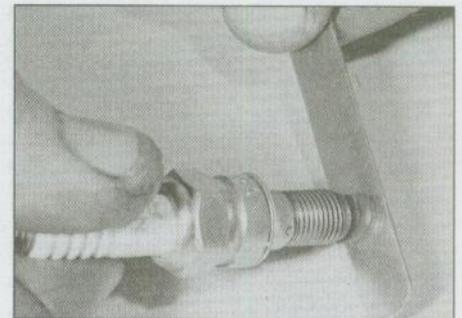
13.4 Pull the cap off the spark plug . . .



13.5a ... then unscrew the spark plug ...



13.5b ... and separate the plug from the tool



13.9a Using a feeler gauge to measure the spark plug electrode gap

compressed air to prevent any dirt falling into the engine.

5 Using either the plug spanner supplied in the motorcycle's toolkit or a deep socket type wrench, unscrew the plugs from the cylinder head (see illustrations). Lay each plug out in relation to its 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 electrodes 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 re-gapped and re-used (if no cracks or chips are visible in the insulator). If in doubt concerning the condition of the plugs, renew them, as the expense is minimal.

8 Cleaning spark plugs by sandblasting is permitted, 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 (see illustrations). 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 illustration). 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 head turning the plug tool by hand to start with. Once the plugs are finger-tight, tighten them to the recommended torque setting (see Specifications). Alternatively, using the plug spanner, tighten a re-usable plug 1/8 to 1/4 turn after it seats. Tighten a new plug 1/2 turn after it seats. Take great care not to over-tighten the plugs.

**HAYNES HINT**

*As the plugs are quite 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.*

11 Reconnect the spark plug caps, making sure they are securely connected to the correct plug. Install all other components previously removed.

**HAYNES HINT**

*Stripped plug threads in the cylinder head can be repaired with a thread insert - see 'Tools and Workshop Tips' in the Reference section.*

**14 Throttle and choke cables - check and adjustment**

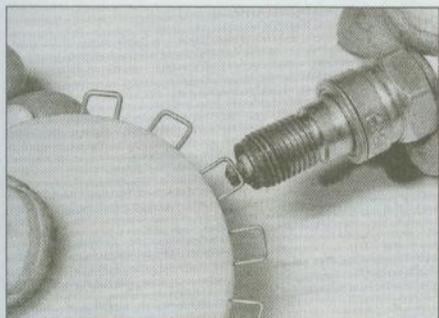
**Throttle cables**

1 Make sure the throttle twistgrip rotates easily from fully closed to fully open with the handlebars turned at various angles. The twistgrip should return automatically from fully open to fully closed when released.

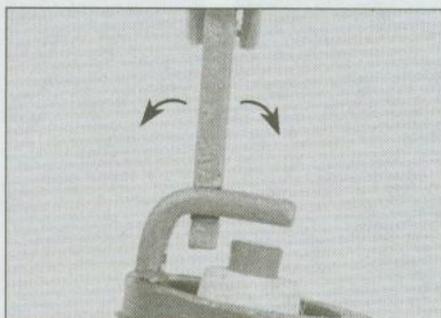
2 If the twistgrip sticks, this is probably due to a cable fault. Remove the cables (see Chapter 4) and lubricate them (see Section 6). Clean the inside of the twistgrip body and lubricate with light grease. Install the cables, making sure they are correctly routed. If this fails to improve the operation of the twistgrip, the cables must be renewed. 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 twistgrip operating smoothly, check for a small amount of freeplay in the cables, measured in terms of the amount of twistgrip rotation before the throttle opens, and compare the amount to that listed in this Chapter's Specifications (see illustration). If it's incorrect, adjust the accelerator cable (opening cable) to correct it.

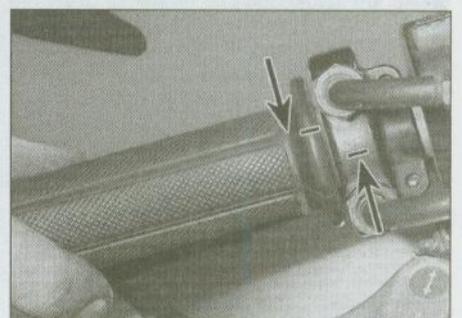
4 Freeplay adjustments can be made at the twistgrip end of the cable. Loosen the locknut



13.9b ... then use a feeler gauge to measure the spark plug electrode gap



14.3 Throttle cable freeplay is measured by the amount of twistgrip rotation before the throttle opens



14.3 Throttle cable freeplay is measured by the amount of twistgrip rotation before the throttle opens