

# HONDA



## CB250 & CB400 N Super Dreams

249cc ~ 395cc. 1978 to 1984

## OWNERS WORKSHOP MANUAL

THE  
BOOK



# Honda CB250N & CB400N Super Dreams Owners Workshop Manual

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by Martyn Meek

With an additional Chapter on the 1981 to 1984 models by Penelope A. Cox

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## Models covered

CB250 N. 249cc. Introduced February 1978	CB250 NDB. 249cc. Introduced February 1981
CB400 N. 395cc. Introduced May 1978	CB400 NB. 395cc. Introduced February 1981
CB250 NA. 249cc. Introduced November 1979	CB250 NDC. 249cc. Introduced 1982
CB400 NA. 395cc. Introduced November 1979	CB400 NC. 395cc. Introduced 1982
CB250 NB. 249cc. Introduced February 1981	

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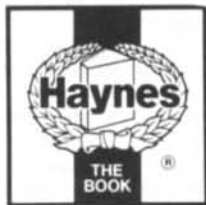
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overcoming the lack of service tools. Tony Steadman arranged and took the photographs that accompany the text. Mansur Darlington edited the text.

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## About this manual

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The purpose of this manual is to present the owner with a concise and graphic guide which will enable him to tackle any operation from basic routine maintenance to a major overhaul. It has been assumed that any work will be undertaken without the luxury of a well-equipped workshop and a range of manufacturer's service tools.

To this end, the machine featured in the manual was stripped and rebuilt in our own workshop, by a team comprising a mechanic, a photographer and the author. The resulting photographic sequence depicts events as they took place, the hands shown being those of the author and the mechanic.

The use of specialised, and expensive, service tools was avoided unless their use was considered to be essential due to risk of breakage or injury. There is usually some way of improvising a method of removing a stubborn component, provided that a suitable degree of care is exercised.

The author learnt his motorcycle mechanics over a number of years, faced with the same difficulties and using similar facilities to those encountered by most owners. It is hoped that this practical experience can be passed on through the pages of this manual.

Where possible, a well-used example of the machine is chosen for a workshop project, as this highlights any areas which might be particularly prone to giving rise to problems. In this way, any such difficulties are encountered and resolved before the text is written, and the techniques used to deal with

them can be incorporated in the relevant Section. Armed with a working knowledge of the machine, the author undertakes a considerable amount of research in order that the maximum amounts of data can be included in the manual.

Each Chapter is divided into numbered sections. Within these Sections are numbered paragraphs. Cross reference throughout the manual is quite straightforward and logical. When reference is made 'See Section 6.10' it means Section 6, paragraph 10 in the same Chapter. If another Chapter were intended, the reference would read, for example, 'See Chapter 2, Section 6.10'. All the photographs are captioned with a section/paragraph number to which they refer and are relevant to the Chapter text adjacent.

Figures (usually line illustrations) appear in a logical but numerical order, within a given Chapter. Fig. 1.1 therefore refers to the first figure in Chapter 1.

Left-hand and right-hand descriptions of the machines and their components refer to the left and right of a given machine when the rider is seated normally.

Motorcycle manufacturers continually make changes to specifications and recommendations, and these, when notified, are incorporated into our manuals at the earliest opportunity.

Whilst every care is taken to ensure that the information in this manual is correct no liability can be accepted by the author or publishers for loss, damage or injury caused by any errors in or omissions from the information given.

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Right-hand view of Honda CB250N



Left-hand view of Honda CB250N

# Introduction to the Honda CB250N and CB400N Super Dream models

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The present Honda empire, which started in a wooden shack in 1947, now occupies a vast modern factory.

The first motorcycle to be imported into the UK in the early 60's, the 250 cc twin 'Dream', was the thin edge of a wedge which has been the Japanese domination of the motorcycle industry. Strange it looked too, to Western eyes, with pressed steel frame, and 'square' styling.

In 1959, Honda commenced road racing in Europe, at the IOM TT races. They came 'to learn, next year to race, maybe', but walked off with the manufacturer's team award. A few years after this derided start, they were to dominate all classes, with such riders as Mike Hailwood, Jim Redman, and the late Tom Phillis and Bob McIntyre, on four, five and six cylinder machines. Even the previously unbeaten Italian multis no longer had things their own way, and were hard put to continue racing under really competitive terms.

Honda withdrew from racing in 1967, when at the top of the tree, not to return again until the 1977 season started. Honda's success in racing has been mirrored in their sales of road going machinery, a range which included models from 49 cc to 1000 cc, and encompasses engine configurations of widely differing types such as single cylinder, transverse six

cylinder and even V-twin types.

The Honda CB250N and the CB400N (known also as Super Dreams) were introduced in the middle of 1978 to take a larger slice of the markets that were previously contested by their forerunners, the CB250T and CB400T (Dreams). Although still on the market in the USA (where they are known as Hawks) the existing Dreams were only available in the UK for a six month period.

Both models are of a similar design, having many interchangeable components. The Super Dreams have what Honda has termed European styling, with a much more sporting profile than their immediate predecessors, including an integral-looking tank and side panel unit, a slimmer seat and new 'tail' hump, lower handlebars, and footrests repositioned rearwards. Mechanically there have also been several changes. Both models now have a six-speed gearbox, modified inlet and exhaust porting and valve timing, redesigned crankcases, and longer silencers. The 400 version now sports a twin disc front brake and a quartz halogen headlamp unit. Reference is made in the text, in the dismantling and reassembly procedures, to the various differences in each model's equipment.

## Model dimensions and weight

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	<b>CB250N</b>	<b>CB400N</b>
<b>Overall length</b> .....	2115 mm (83.3 in)	2115 mm (83.3 in)
<b>Overall width</b> .....	730 mm (28.7 in)	730 mm (28.7 in)
<b>Height</b> .....	1105 mm (43.5 in)	1105 mm (43.5 in)
<b>Wheelbase</b> .....	1395 mm (54.9 in)	1390 mm (54.7 in)
<b>Ground clearance</b> .....	165 mm (6.5 in)	165 mm (6.5 in)
<b>Dry weight</b> .....	167 kg (367 lb)	171 kg (377 lb)

# Safety first!

Professional motor mechanics are trained in safe working procedures. However enthusiastic you may be about getting on with the job in hand, do 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 certain elementary precautions.

There will always be new ways of having accidents, and the following points do not pretend to be a comprehensive list of all dangers; they are intended rather to make you aware of the risks and to encourage a safety-conscious approach to all work you carry out on your vehicle.

## Essential DOs and DON'Ts

**DON'T** start the engine without first ascertaining that the transmission is in neutral.

**DON'T** suddenly remove the filler 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.

**DON'T** attempt to drain oil until you are sure it has cooled sufficiently to avoid scalding you.

**DON'T** grasp any part of the engine, exhaust or silencer without first ascertaining that it is sufficiently cool to avoid burning you.

**DON'T** allow brake fluid or antifreeze to contact the machine's paintwork or plastic components.

**DON'T** syphon toxic liquids such as fuel, brake fluid or antifreeze by mouth, or allow them to remain on your skin.

**DON'T** inhale dust – it may be injurious to health (see *Asbestos* heading).

**DON'T** allow any spilt oil or grease to remain on the floor – wipe it up straight away, before someone slips on it.

**DON'T** use ill-fitting spanners or other tools which may slip and cause injury.

**DON'T** attempt to lift a heavy component which may be beyond your capability – get assistance.

**DON'T** rush to finish a job, or take unverified short cuts.

**DON'T** allow children or animals in or around an unattended vehicle.

**DON'T** inflate a tyre to a pressure above the recommended maximum. Apart from overstressing the carcass and wheel rim, 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 slacken a stubborn nut or bolt. It is generally better to pull on a spanner, rather than push, so that if slippage occurs you fall away from the machine rather than on to 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, tie 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 specialist advice.

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

## Asbestos

Certain friction, insulating, sealing, and other products – such as brake linings, 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 (gasoline) 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.

Always disconnect the battery earth (ground) 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.

**Note:** Any reference to a 'torch' appearing in this manual should always be taken to mean a hand-held battery-operated electric lamp or flashlight. It does **not** mean a welding/gas torch or blowlamp.

## Fumes

Certain fumes are highly toxic and can quickly cause unconsciousness and even death if inhaled to any extent. Petrol (gasoline) 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 earth (ground) terminal before working on the fuel or electrical systems.

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 and when carrying the battery. The acid electrolyte, even when diluted, is very corrosive and should not be allowed to contact the eyes or skin.

If you ever need to prepare electrolyte yourself, always add the acid slowly to the water, and never the other way round. Protect against splashes by wearing rubber gloves and goggles.

## Mains electricity and electrical equipment

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 earthed (grounded). 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 the relevant national safety standards.

## Ignition HT voltage

A severe electric shock can result from touching certain parts of the ignition system, such as the 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 fitted, the HT voltage is much higher and could prove fatal.

## Ordering spare parts

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When ordering spare parts for any Honda, it is advisable to deal direct with an official Honda agent, who should be able to supply most items ex-stock. Parts cannot be obtained from Honda (UK) Limited direct; all orders must be routed via an approved agent, even if the parts required are not held in stock.

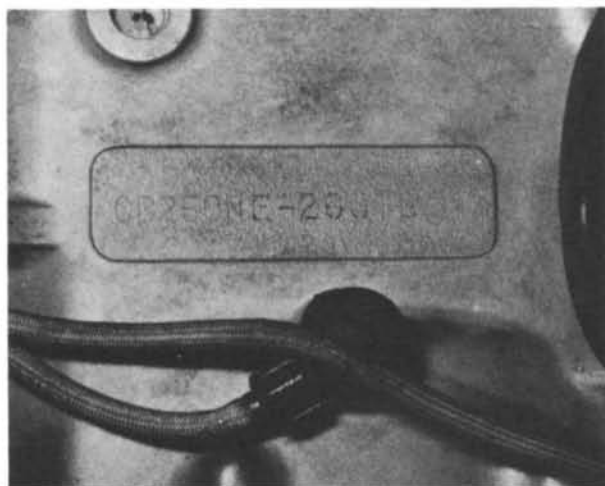
Always quote the engine and frame numbers in full, and colour when painted parts are required.

The frame number is located on the side of the steering head, and the engine number is stamped on the crankcase below the right-hand carburettor.

Use only parts of genuine Honda manufacture. Pattern

parts are available, some of which originate from Japan, but in many instances they may have an adverse effect on performance and/or reliability. Honda do not operate a 'service exchange' scheme.

Some of the more expendable parts such as sparking plugs, bulbs, tyres, oils and greases etc., can be obtained from accessory shops and motor factors, who have convenient opening hours, and can often be found not far from home. It is also possible to obtain parts on a Mail Order basis from a number of specialists who advertise regularly in the motorcycle magazines.



Location of engine number



Location of frame number



# Routine Maintenance

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Periodic routine maintenance is a continuous process which should commence immediately the machine is used. The object is to maintain all adjustments and to diagnose and rectify minor defects before they develop into more extensive, and often more expensive, problems.

It follows that if the machine is maintained properly, it will both run and perform with optimum efficiency, and be less prone to unexpected breakdowns. Regular inspection of the machine will show up any parts which are wearing, and with a little experience, it is possible to obtain the maximum life from any one component, renewing it when it becomes so worn that it is liable to fail.

Regular cleaning can be considered as important as mechanical maintenance. This will ensure that all the cycle parts are inspected regularly and are kept free from accumulations of road dirt and grime.

Cleaning is especially important during the winter months, despite its appearance of being a thankless task which very soon appears pointless. On the contrary, it is during these months that the paintwork, chromium plating, and the alloy casing suffer the ravages of abrasive grit, rain and road salt. A couple of hours spent weekly on cleaning the machine will maintain its appearance and value, and highlight small points, like chipped paint, before they become a serious problem.

The various maintenance tasks are described under their respective mileage and calendar headings, and are accompanied by diagrams and photographs, where pertinent.

It should be noted that the intervals between each

maintenance task serve only as a guide. As the machine gets older, or if it is used under particularly arduous conditions, it is advisable to reduce the period between each check.

For ease of reference, most service operations are described in detail under the relevant heading. However, if further general information is required, this can be found under the pertinent Section heading and Chapter in the main text.

No special tools are required for the normal routine maintenance tasks. The tools contained in the kit supplied with every new machine will prove adequate for each task, but if they are not available, the tools found in the average household should suffice.

Additional items, such as a good quality socket set, and an impact driver may be added to the list, as can a small multimeter which is invaluable for diagnosing electrical faults.

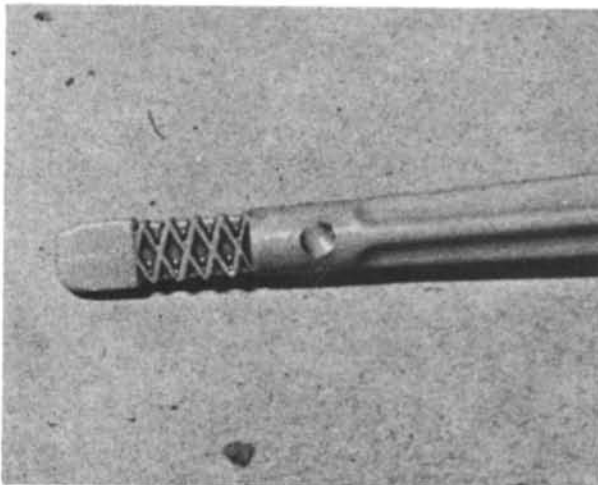
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## Weekly or every 300 miles (500 km)

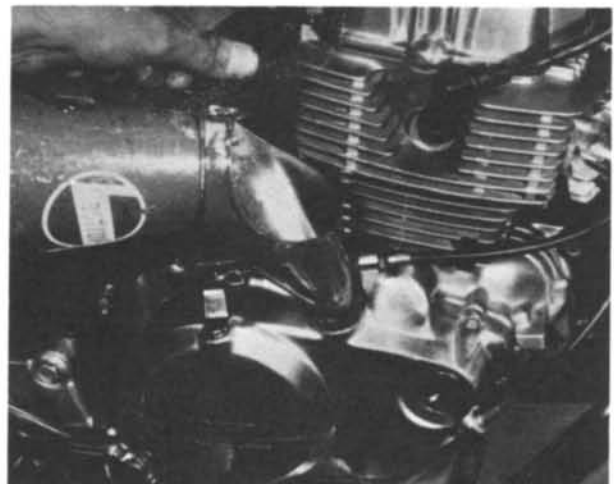
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### 1 *Topping up the engine/transmission oil*

Unscrew the combined filler plug and dipstick, which is situated in the primary drive cover. Wipe off the dipstick and place it in position, but do not screw it home. Withdraw it and note the reading. If necessary, top up the oil level to bring it to the MAX position. Honda recommend the use of a good quality SAE 10W/40 engine oil. If this is unavailable SAE 15W/40 or 20W/50 oil may be used.



Check the oil level by means of the dipstick and ...



... replenish, if required, with the correct grade of oil

## Routine maintenance

**2 Tyre pressures**

Check the tyre pressures with a pressure gauge which is known to be accurate. It is preferable to purchase a gauge so that inaccurate readings from filling station gauges are not encountered. Keep the valve free from dust or mud and always replace the dust cap. Check the pressures when the tyres are cold. If the machine has travelled a number of miles, the tyres will have become hot, and the pressure will have increased. A false reading will therefore result.

*Tyre pressures*

Front	24 psi (1.75 kg/cm <sup>2</sup> )
*Rear	32 psi (2.25 kg/cm <sup>2</sup> )

\* Increase the pressure in the rear tyre by 4 psi (0.25 kg/cm<sup>2</sup>) when carrying a pillion passenger or travelling at continuous high speed.

**3 Battery electrolyte level**

Access to the Yuasa battery is gained after removing the right-hand side panel. The electrolyte level can be checked visually through the battery's transparent case. Make sure that the level in each cell is between the minimum and maximum lines on the battery case and that the vent pipe has not become pinched or obstructed. The transparent case also makes it possible for a quick check on the condition of the battery plates and separators.

Unless acid is spilt, as may occur if the machine falls over, the electrolyte should always be topped up with distilled water to restore the correct level. If acid is spilt on any part of the machine, it should be neutralised with an alkali such as washing soda, and washed away with plenty of water, otherwise serious corrosion will occur. Top up with sulphuric acid, only in the event of spillage.

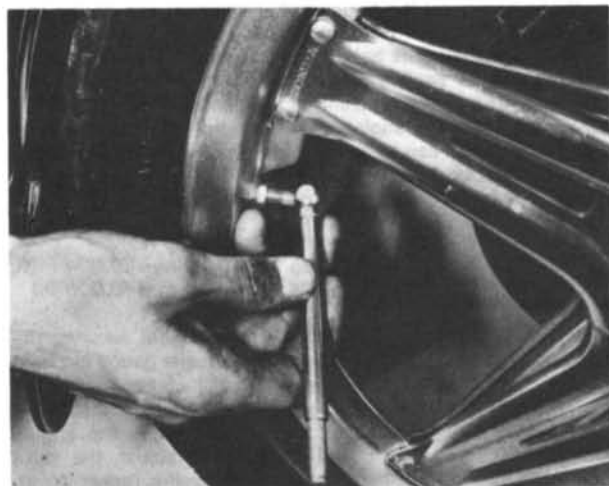
**4 Control cables**

Visually check each cable end for fraying or broken strands. If necessary, adjust to take up any excess free play. Apply a few drops of oil to the exposed inner portion of each control cable and allow it to run down into the outer sheathing. This will prevent the cables sticking or drying up.

**5 Rear chain lubrication and adjustment**

To prolong the life of the chain, regular lubrication and adjustment is essential.

Intermediate lubrication should take place weekly with the chain in situ. Application of one of the aerosol chain lubricants is ideal for this purpose. Ordinary engine oil can be used, though due to the speed at which it is flung off, its effectiveness is limited.



Check tyre pressures

Adjust the chain after lubrication so that there is approximately 15 – 20 mm ( $\frac{1}{2}$  –  $\frac{3}{8}$  in) free movement in the middle of the lower run. Always check with the chain at its tightest point, (it will rarely wear evenly during service), with the machine off its stand and with one person sitting on the rear of the seat.

Adjustment is accomplished after placing the machine on the centre stand and slackening the wheel nut, so that the wheel can be drawn backwards by means of the drawbolt adjusters in the fork ends. The torque arm nuts and the caliper bracket nut must also be slackened during this operation. Adjust the drawbolts an equal amount to preserve wheel alignment. The fork ends are clearly marked with a series of parallel lines above the adjusters, to provide a simple visual check.

**6 Safety check**

In addition to the check on control cables mentioned earlier, check for loose nuts and fittings, and examine the tyres for wear or damage. Pay particular attention to the sidewalls, looking for any possible splits or tears. Remove any stones or other objects which may have become trapped between the treads. This is particularly important in the case of the front tyre, where rapid deflation will cause total loss of control.

**7 Legal check**

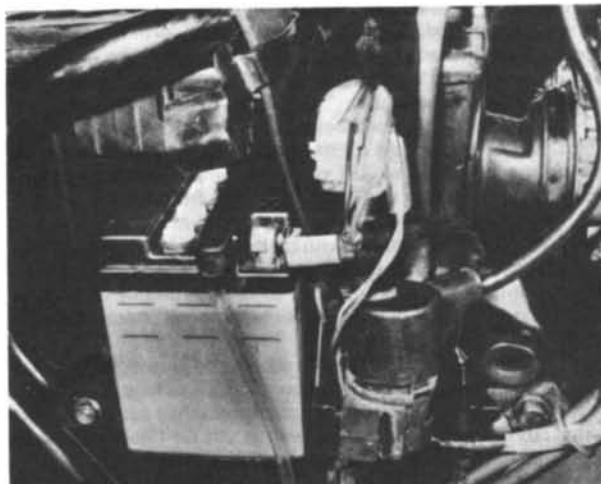
Ensure that the horn, lights, speedometer and indicators all function correctly. Do not forget to check the efficiency of the brakes.

**Six weekly or every 1800 miles (3000 km)**

Carry out the checks listed under the weekly/300 mile heading and then complete the following:

**1 Engine/transmission oil**

With the engine warm, to facilitate thorough draining, the machine should be placed on its centre stand and the crankcase sump contents drained into a suitable container. The oil capacity is approximately 3.0 litres (5.3 pints), so ensure that a container of adequate capacity is to hand before removing the drain plug and filler cap/dipstick. The drain plug is located in the lower right-hand wall of the crankcase, below the primary drive cover. When the oil has drained completely, refit the drain plug. Check that the sealing ring is in good condition, renewing it if necessary. Refill the engine with 2.2 litres (3.9 pints) of SAE 10W/30 engine oil. SAE 15W/40 or 20W/50 may also be used. Allow the level to settle and then top up, as indicated by the reading on the dipstick.



Battery electrolyte level can be seen through translucent case