

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 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 overstressing 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.

0•10 Daily (pre-ride) checks

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

Engine oil level check – four-stroke models

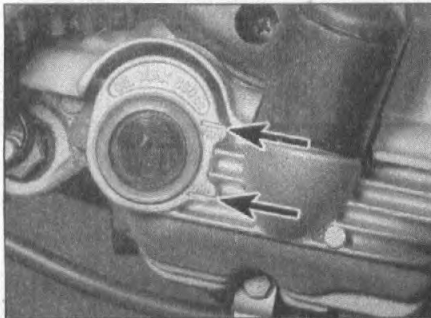
Before you start:

- ✓ Support the machine in an upright position on its centre stand. Make sure it is on level ground.
- ✓ Make sure you have a supply of the correct oil available.

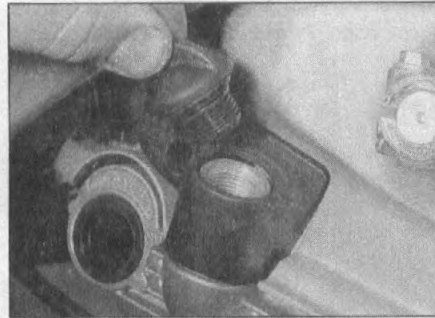
- ✓ Check the oil level when the engine is cold. Wait at least 5 minutes after the engine has been run.

Bike care:

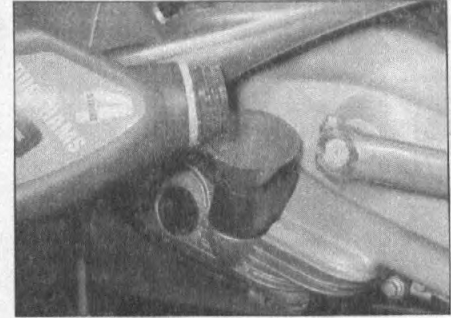
- If you have to add oil frequently, you should check whether you have any oil leaks. If there is no sign of oil leakage from the joints and gaskets the engine could be burning oil due to worn piston rings or failed valve stem seals.



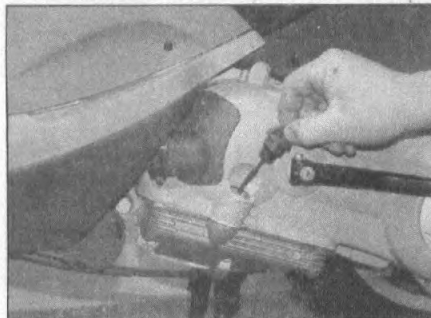
1 Some engines have a sightglass in the left-hand side of the crankcase. Wipe the window clean if necessary. The oil level should lie between the MAX and MIN level lines (arrowed).



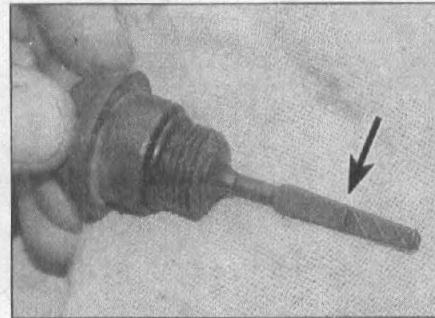
2 If the level is below the MIN line, unscrew the oil filler cap.



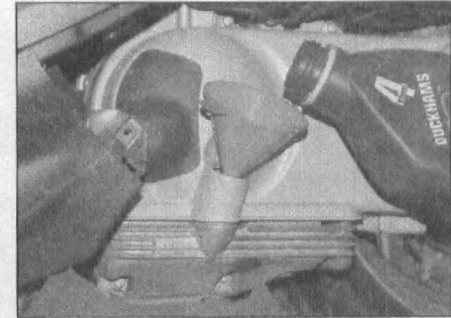
3 Top the engine up with the recommended grade and type of oil, to bring the level up to the MAX line on the sightglass. Do not overfill.



4 Some engines have a dipstick on the oil filler cap. Unscrew the cap and wipe the dipstick on some clean rag, then insert the clean dipstick back into the engine and screw the cap fully in.



5 Unscrew the cap - the oil level should be up to the MAX line (arrowed).



6 If necessary, top the engine up with the recommended grade and type of oil, to bring the level up to the MAX line. Do not overfill.

Fuel and two-stroke engine oil checks

Fuel

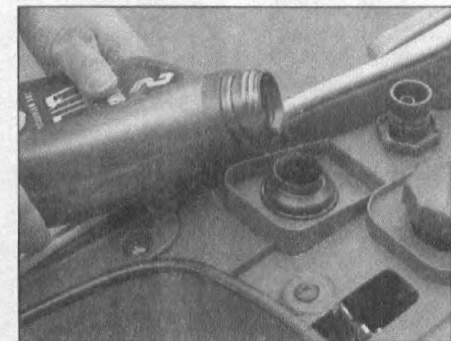
- This may seem obvious, but check that you have enough fuel to complete your journey. If you notice signs of leakage – rectify the cause immediately.
- Ensure you use the correct grade of unleaded fuel, minimum 95 octane.

Two-stroke oil

- On all two-stroke models check that the oil level warning light extinguishes immediately when the engine is started. If the light stays on

or if it comes on whilst the scooter is being ridden, the oil tank requires topping-up.

- Do not rely on the oil warning light to tell you that the oil tank needs topping-up. Get into the habit of checking the level of oil in the oil tank at the same time as you fill up with fuel.
- If the engine is run without oil, even for a short time, engine damage and very soon engine seizure will occur. It is advised that a bottle of two-stroke oil is carried in the storage compartment for such emergencies.



Top-up the oil tank with a good quality two-stroke oil designed for motorcycle oil injection systems.

Coolant level check – liquid-cooled models



Warning: 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 cold.

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

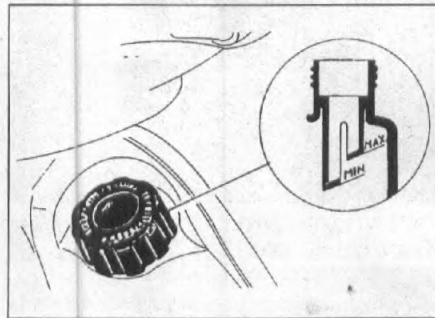
✓ Support the scooter in an upright position whilst checking the level; make sure it is on level ground.

Bike care:

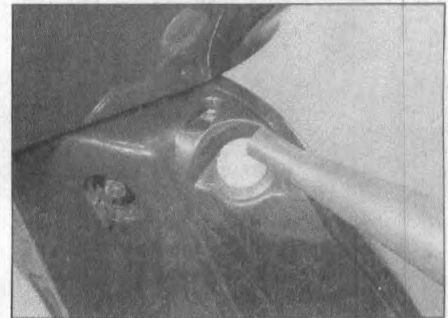
● Use only the specified coolant mixture. It is important that anti-freeze is used in the system all year round, and not just in the winter. Do not top the system up using only water, as the system will become too diluted.

● Do not overfill the reservoir tank, which is located behind the fairing on all models. If the coolant is significantly above the UPPER or MAX line at any time, the surplus should be syphoned or drained off to prevent the possibility of it being expelled under pressure.

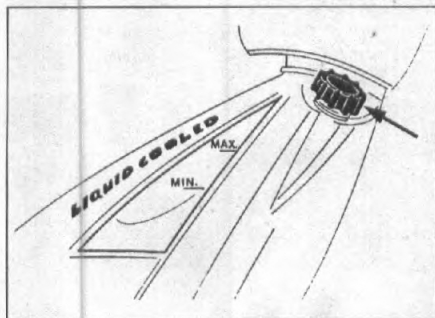
● If the coolant level falls steadily, check the system for leaks (see Chapter 1). If no leaks are found and the level continues to fall, it is recommended that the machine is taken to a Piaggio dealer for a pressure test.



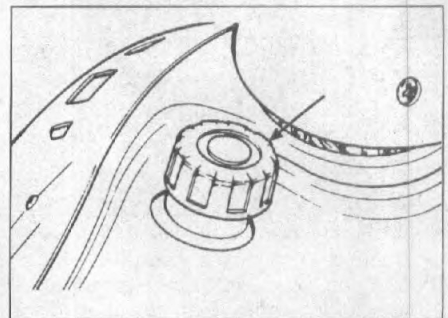
1 On all Hexagon, B125, X8 and X9 models, the coolant MAX and MIN level lines are visible by looking down the filler neck . . .



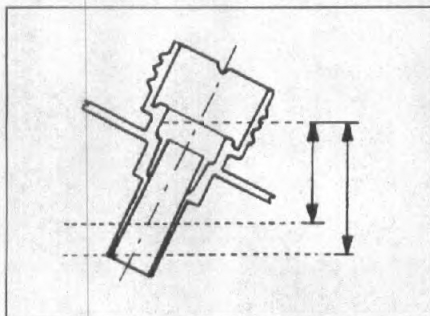
2 . . . top-up if necessary with the specified coolant mixture.



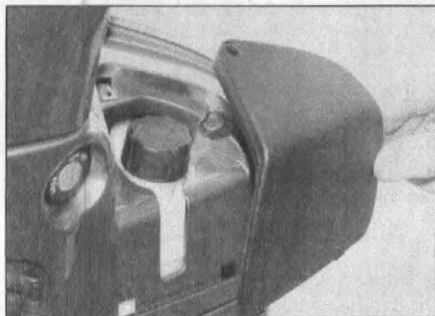
3 On the NRG MC² and MC³ models, the level can be viewed through the cutout in the front panel left-hand side and topped up by removing the filler cap (arrowed).



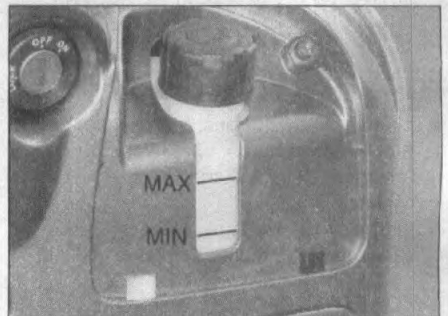
4 On Zip SP/RS and NRG Power DD models, remove the filler cap (arrowed) from the kick panel . . .



5 . . . and check that the coolant level lies just above the base of the filler neck.



6 On Vespa GT125/200 and GTS/GTV125 models, remove the access panel . . .



7 . . . and check that the coolant level lies between the MAX and MIN level lines.

Brake fluid level check – disc brake models



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 scooter in an upright position.

- ✓ Make sure you have a supply of DOT 4 hydraulic fluid.

- ✓ Wrap a rag around the reservoir to ensure that any spillage does not come into contact with painted or plastic surfaces.

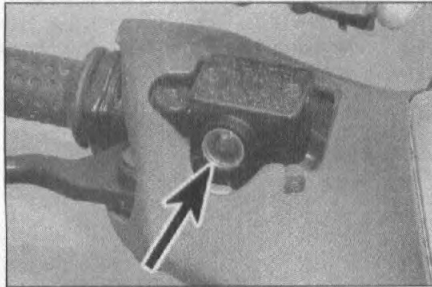
Bike care:

- The fluid in the front brake master cylinder reservoir will drop slightly as the brake pads wear down.

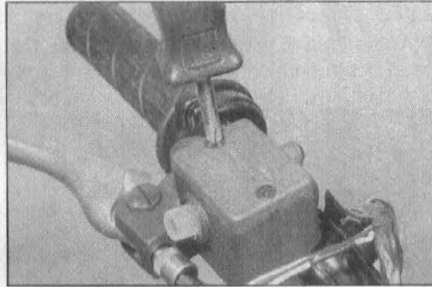
- If the fluid reservoir requires repeated topping-up this is an indication of an hydraulic leak somewhere in the system, which should be investigated immediately.

- Check for signs of fluid leakage from the hydraulic hoses and components – if found, rectify immediately.

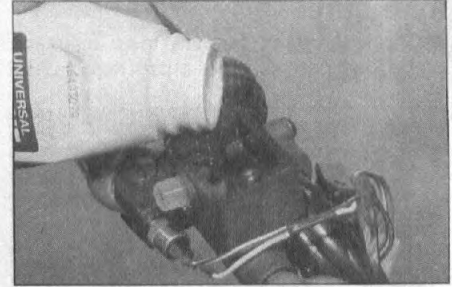
- Check the operation of the brake before riding the scooter; if there is evidence of air in the system (spongy feel to lever), it must be bled as described in Chapter 8.



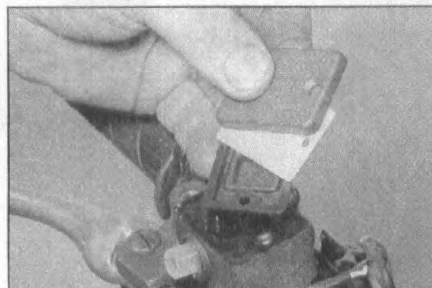
- 1** On models with a handlebar-mounted master cylinder, the brake fluid level is visible through the window in the reservoir body (arrowed). If necessary, remove the reservoir cover or the handlebar cover (see Chapter 7) to check the level. The level must be above the MIN level line.



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



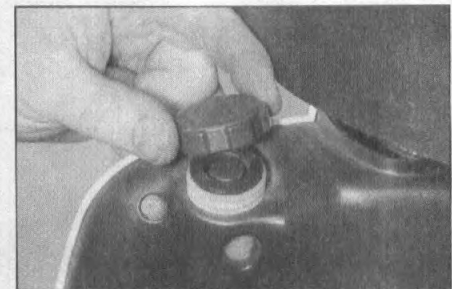
- 3** Top-up with new clean hydraulic fluid of the recommended type, until the level is above the MIN mark. Take care to avoid spills (see **Warning** above).



- 4** Ensure that the diaphragm is correctly seated before installing the plate and cover.



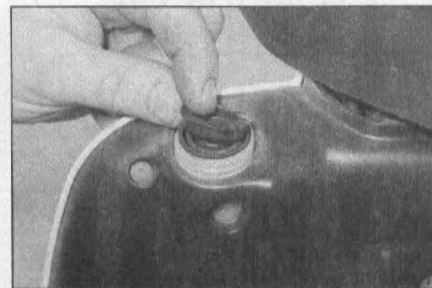
- 5** On models with a cable-operated master cylinder and separate reservoir, the brake fluid level is visible through the reservoir body via the aperture in the kick panel – it must be above the MIN level line.



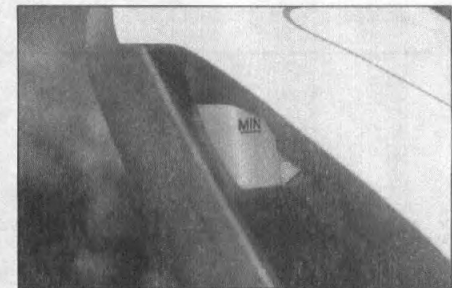
- 6** If the level is below the MIN level line, unscrew the reservoir cap and remove the diaphragm plate and diaphragm.



- 7** Top-up with new clean hydraulic fluid of the recommended type, until the level is above the MIN mark. Take care to avoid spills (see **Warning** above).



- 8** Ensure that the diaphragm is correctly seated before installing the plate and cover. Tighten the cap securely.



- 9** The NRG MC² brake fluid reservoir is located behind the front panel on the right-hand side. The fluid level can be viewed through the panel cutout and the panel must be removed if topping-up is required.

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.
- Refer to *Model specifications* in Chapter 1 for the correct tyre pressures for your model.

Tyre care:

- Check the tyres carefully for cuts, tears, embedded nails or other sharp objects and

excessive wear. Operation of the scooter 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 tyre fitting specialist without delay.

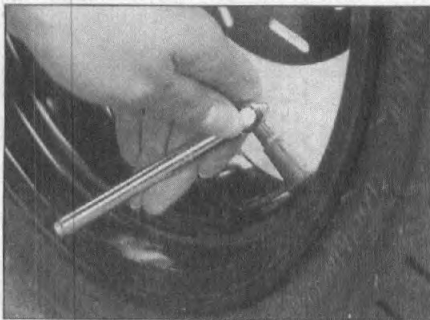
Tyre tread depth:

- At the time of writing UK law requires that tread depth on machines over 50 cc must be

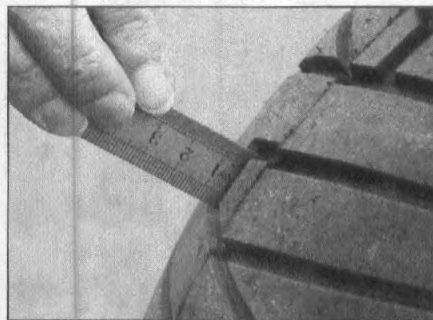
at least 1 mm over 3/4 of the tread breadth all the way around the tyre, with no bald patches. Many riders, however, consider 2 mm tread depth minimum to be a safer limit.

● For machines with an engine size not greater than 50 cc, UK law states that tread depth may be less than 1 mm if the tread pattern is clearly visible across the whole of the tread breadth all the way around the tyre. Many riders, however, consider 2 mm tread depth minimum to be a safer limit.

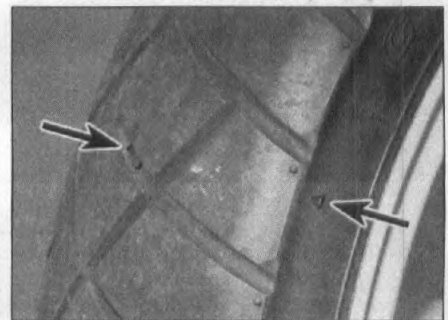
● Many tyres now incorporate wear indicators in the tread. Identify the triangular pointer on the tyre sidewall to locate the indicator bar and replace the tyre if the tread has worn down to the bar.



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 or ruler.



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

Suspension and steering checks

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

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.

- Check that the stand return spring holds the stand securely up when retracted.
- Check that both brakes work correctly when applied and free off when released.

