

Sharan

Tips and Maintenance

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Petrol

The fuel used by your vehicle can be found listed in Booklet 3.3 "Technical Data" and on the inside of the tank flap.

General notes

- Unleaded petrol must comply with DIN EN¹⁾ 228.
- If in an emergency the octane rating of the available petrol is lower than that required by the engine, only drive with medium engine speeds and low engine loading. **High engine loading with full throttle or high revs can cause engine damage.** Fill tank with petrol of the correct rating as soon as possible.
- Fuel with a higher octane rating than that required by the engine can be used without limitation. There are however no advantages regarding output and consumption.

 ***On vehicles with catalytic converter only unleaded petrol may be used.***

 ***Even one tankful of leaded petrol will detract from the efficiency of the catalytic converter.***

Please also refer to the notes in Booklet 3.1.1, "Filling up".

¹⁾ Euro-Norm

Petrol additives

The quality of the fuel has a decisive influence upon the running behaviour, performance and service life of the engine. The additives which are mixed into the petrol are of particular significance. It is therefore advisable only to use **good quality petrol containing additives.**

If such fuel is not available, or if engine troubles such as starting difficulties, stalling during idling, vibration and loss of power occur, the appropriate additives should be mixed with the petrol when filling the tank. At temperatures between about 0 and 15 degrees C, these additives prevent possible icing up of the carburettor, have an anti-corrosion effect, clean the fuel system and prevent deposits building up in the engine.

Not all petrol additives available in accessory outlets have shown themselves to be effective. Therefore tested additives sold under the name "Volkswagen/Audi Genuine petrol additives for petrol engines" are available from Volkswagen dealers in Germany and in many export countries. The Volkswagen dealers are also informed concerning the use of additives, and they know what to do in cases where deposits have already built up.

Other petrol additives should not be mixed with the petrol.

Diesel

Diesel fuel

Diesel fuel must correspond to DIN EN¹⁾ 590.

CN²⁾ not lower than 51.

RME fuel (diester)

corresponding to DIN 51 606.

Vehicles with diesel engines can also run on **RME fuel (Rapeseed Methyl Ester)**.

Please use only RME fuel when filling up with diester!

Please ask your Volkswagen dealer or an automobile club where diester is available.

Please also refer to the notes in Booklet 3.1, "Filling up".

Notes

- Performance figures may be slightly lower.
- Fuel consumption may be slightly higher.
- **The fuel filter could block up if fuel is used that deviates from the norm.**
- RME can be used in winter to temperatures down to approx. -10°C .
- We recommend that diesel fuel be tanked at ambient temperatures of under -10°C .

1) **Euro-Norm**

2) **Cetane Number** - Measurement of diesel fuel ignitability.

Driving in winter

When using summer Diesel trouble may be experienced at temperatures below 0°C because the fuel thickens due to wax separation.

For this reason, "winter Diesel", which is more resistant to cold, is sold during the winter in Germany.

In countries with different climatic conditions the Diesel fuels offered have a different temperature characteristic. Check with Volkswagen dealers or filling stations in the country concerned regarding the characteristics of Diesel fuels.

The vehicle is fitted with a filter preheater. This will ensure that the fuel system remains operational down to approximately -24°C provided that the winter Diesel used is cold resistant down to -15°C .

If, at temperatures below -24°C , the fuel is waxed to such an extent that the engine will not start it is sufficient to place the vehicle in a warm room for a while.

Fuel additives (anti-waxing agents), petrol and similar agents may not be mixed into the diesel fuel.

Supplementary heating unit*

(TDI engines only)

The supplementary heating unit increases the output of the heating system when the engine is running and the ambient temperature is low. The unit switches itself on and off automatically.

The exhaust gases which are produced as a result are guided out through an exhaust pipe which is fitted under the vehicle.

Smoke could develop if the percentage share of RME in the mix is higher than 50 %, during short journeys or at low ambient temperatures.

- Every time the engine is switched off the blower will continue to run for a while to cool the heater down quicker. When filling tank it is not necessary to wait to end of run-on.

Brakes

General notes

- Brake lining wear depends to a large extent on the operating conditions and style of driving. On vehicles which are used mainly in town traffic and stop/start conditions or are driven hard it may be particularly necessary to have the thickness of the brake linings checked in between the intervals given in the Service Schedule.
- Change down in good time when driving downhill, in order to make use of the engine braking effect. This relieves strain on the brake system. If additional braking power is required, do not apply the brakes continuously, apply and release them alternately.

Warning

- **New brake linings must be run in and thus do not have the optimum friction properties during the first 200 km. The slightly reduced braking effect can be compensated for by more pressure on the brake pedal. This also applies when new linings have been fitted.**

What can have a negative effect on the brakes?

Wetness or grit

Warning

- **Under certain conditions e.g. after driving through water, heavy rain falls or after the vehicle has been washed, the brakes could set in later than normal due to damp, or in winter-frozen, brake discs and linings – the brakes must first be dried through careful braking.**
- **Full braking power might also set in later than normal even when driving on gritted roads if you have not braked for some time – the layer of salt on the brake discs and brake linings must first be worn down whilst braking.**

Please also read the warning notes on the next page.

Overheating of the brakes

Warning

● Never let the brakes "rub", by pressing the pedal too lightly when you do not really need to brake. This causes the brakes to overheat, leads to longer braking distances and to a higher level of wear.

● Before starting on a long stretch of road in a very hilly area, please reduce your speed, change to a lower gear (manual gearbox) or choose a lower position (automatic gearbox). In this way you will use the braking power of the engine and relieve pressure on the brakes.

● If a front spoiler, full size wheel trims etc., is retrofitted, it is necessary to ensure that the flow of air to the front brakes is not restricted – otherwise the brakes can overheat.

Brake servo

Warning

The servo is operated by vacuum which is only generated when engine is running. For this reason the vehicle should not be allowed to roll with the engine switched off.

When the brake servo is not working because, for example, the vehicle is being towed or because a defect has occurred on the brake servo itself, the brake pedal must be pressed considerably harder to compensate for the absence of servo assistance.

Anti-locking brake system*

The ABS plays a major part in increasing the active safety of the vehicle. The big advantage when compared with a conventional brake system is that even when braking hard on a slippery road surface the best possible steerability is retained for the road condition because the wheels do not lock.

However, one must not expect the ABS system to shorten the braking distance under all conditions. When driving on gravel or on fresh snow covering a slippery surface, i.e. when one should be driving very slowly and carefully, the stopping distance may even be slightly longer.

Modifications to the vehicle (e.g. to the engine, brakes system, running gear or a different wheel/tyre combination) can affect the functioning of the ABS, EDL, ESP and TCS.

Please refer therefore to the notes on page 49.

Power assisted steering*

How the ABS system works

An automatic check is made when a speed of approx. 7 km/h is reached. When this happens a pumping noise can be heard.

When the turning speed of a wheel reaches a level which is too low for the vehicle speed and it tends to lock, the brake pressure to this wheel is reduced. On the front axle the brake pressure is regulated for each wheel individually, whereas on the rear axle, the pressure is regulated for both wheels at the same time. As a result the braking effect is the same for both rear wheels and the driving stability is retained as far as possible.

This regulating process makes itself known by movement of the brake pedal and is accompanied by noises.

This is done deliberately as a warning to the driver that a wheel or the wheels are in the locking range. So that the ABS can regulate effectively in this range the brake pedal must remain depressed – on no account should it be pumped!

Warning

However the ABS system cannot overcome the physical limits. This must be borne in mind particularly on slippery or wet roads. When the ABS comes into the control range the speed must immediately be adapted to the road and traffic conditions. The increased amount of safety available must not tempt one into taking risks.

You should never leave the steering wheel at full lock for longer than 15 seconds when the engine is running. The hydraulic oil will be heated to a high temperature by the PAS pump as a result of the extended period of steering lock.

The power assisted steering system could be damaged as a result.

Furthermore, the system will make noises every time a full lock is engaged whilst the vehicle is stationary as the PAS pump is placed under high pressure as a result. The idling speed of the engine will also dip briefly as a result.

Electronic Differential Lock (EDL)*

Vehicles with anti-lock brakes (ABS)* can also be equipped with an electronic differential lock.

The EDL makes it much easier, or even possible, to pull away, accelerate and climb steep gradients under unfavourable conditions.

The EDL works fully automatically – the driver does not need to do anything at all.

It uses the ABS sensors to monitor the speed of the drive wheels.

Up to a speed of about 80 km/h (50 mph), a difference in speed of the drive wheels of approximately 100 rpm caused by a slippery road surface on **one side** is balanced out by slowing down the wheel which is slipping and thereby applying more driving force to the other drive wheel through the differential.

This control procedure can be noticed through the sound it makes.

Warning

When accelerating on a slippery road surface, e.g. on ice or snow, use the accelerator pedal carefully. The wheels can spin, even with EDL, and thus impair driving stability.

To ensure that the brake disc of the braked wheel does not overheat, the EDL will automatically switch itself off if excessive demands are placed on it. The vehicle remains operational and has the same characteristics as a vehicle without EDL. For this reason, the switching off of the EDL is not indicated.

As soon as the brakes have cooled off, the EDL will switch itself back on again.

If the ABS warning lamp lights up there may be a fault present in the EDL. Take the vehicle to a qualified dealership as soon as possible!

Warning

The style of driving must always be adapted to suit road surface and traffic conditions. The increased safety offered by the EDL should not encourage one to take unnecessary risks.

Modifications to the vehicle (e.g. to the engine, brakes system, running gear or a different wheel/tyre combination) can affect the functioning of the ABS, EDL, ESP and TCS. Please refer therefore to the notes on page 49.

Electronic Stabilisation Programme*

The electronic stabilisation programme* (ESP) contains ABS, EDL and TCS.

How the ESP system works

The ESP reduces the risk of spinning by braking individual wheels.

In assessing the angle of the front wheels and the speed of the vehicle, the driver's intended direction of travel is determined and then compared with the actual movement of the vehicle. If any deviations are calculated, e.g. the vehicle is starting to skid, the ESP will automatically brake the appropriate wheel.

The vehicle will be stabilised again through the braking forces acting on the wheel. If the vehicle is oversteering (rear end tends to break away) the brake will primarily be applied to the front outside wheel, and if the vehicle is understeering (tends to push out of the curve) to the rear inside wheel.

Warning

The limits defined by the laws of physics cannot be negated by the ESP. This is particularly applicable to icy and wet roads as well as when driving with a trailer.

The driver's style of driving must always be adapted to suit the current road quality and traffic situation. The increased safety aspect offered by the ESP should not encourage the driver to take unnecessary risks!

How the TCS system works

The TCS prevents the driving wheels on vehicles with front wheel drive from losing traction during acceleration by reducing the engine output. The system works at all speeds together with ABS. If there is a fault in the ABS, the TCS will not function.

The TCS makes it much easier, or even possible, to pull away, accelerate and climb steep gradients under unfavourable conditions.

Warning

The style of driving must always be adapted to suit road surface and traffic conditions. The increased safety offered by the traction control system (TCS) should not encourage one to take unnecessary risks.

General notes

In order to guarantee a fault-free function of the ESP or TCS, all four wheels must have the same tyres. Different roll circumferences on the tyres could lead to an unwanted reduction in engine performance.

Modifications to the vehicle (e.g. to the engine, brakes system, running gear or a different wheel/tyre combination) can affect the functioning of the ABS, EDL, ESP and TCS. Please refer therefore to the notes on page 49.

Four-wheel drive* (4MOTION)

The drive concept

The four-wheel drive requires no user operation.

The drive is distributed automatically and is adapted to best suit your driving style and the road conditions.

Warning

The style of driving must always be adapted to suit road surface and traffic conditions. The increased safety offered by this type of vehicle must not encourage one to take unnecessary risks.

In particular, one must always remember that the braking ability is limited by the adhesion of the tyres on the road surface and no different from a two-wheel drive vehicle.

For this reason, one should never be tempted by the good acceleration capabilities, even on slippery road surfaces, to drive too fast.

It should be noted that the front wheels can aquaplane when driving at high speeds on wet road. When this happens – contrary to vehicles with front wheel drive only – the start of the aquaplaning is not indicated by a sudden revving up of the engine. For this reason, do not drive too fast, always adapt the speed to the existing road conditions.

What else should be noted?

Using winter tyres

With the four-wheel drive the vehicle has good traction in winter road conditions even with the standard tyres. However, the use of winter/all-weather tyres **on all four wheels** is recommended to further improve handling and braking.

Using snow chains

Snow chains must also be used on vehicles with four wheel drive when snow chains are obligatory. Further details about using snow chains are given on page 48.

Snow chains may only be fitted on the front wheels – this also applies to vehicles with four wheel drive (4MOTION).

Renewing wheels/tyres

Vehicles with four wheel drive must have wheels which all have the same rolling circumference.

For further notes see page 45.

The first 1500 km – and afterwards

Running-in

During the first few operating hours the engine internal friction is higher than later on when all the moving parts have bedded down. How well this running-in process is done depends to a considerable extent on the way the vehicle is driven during the first 1500 km.

Up to 1000 kilometres

the following general rules apply:

- **Do not use full throttle**
- **Do not drive faster than 3/4 of top speed**
- **Avoid high engine speeds**
- Trailer towing should if possible be avoided.

From 1000 – 1500 km

The speed can be gradually increased to the road or engine maximum.

During and after the running-in period the following applies:

- Do not overrev the engine when cold – either in neutral or in the gears.
- ✿ ***Do not drive with the engine speed unnecessarily high – changing up early helps to save fuel, reduces noise and protects the environment – see also page 13.***
- Do not let engine labour – change down when engine no longer runs smoothly.

Warning

- **New tyres must be “run in” as they have not yet reached their optimum grip level. This should be taken into account in your driving style during the first 500 km.**
- **New brake linings must also be run in and do not have the optimum friction properties during the first 200 km. The slightly reduced braking effect can be compensated for by more pressure on the brake pedal. This also applies when new linings have been fitted.**

Exhaust emission control system*

Trouble-free functioning of the exhaust emission control system is decisive for the environment-friendly operation of the vehicle.

The following points should therefore be noted:

- Vehicles fitted with a catalytic converter may only be driven on unleaded petrol – see page 2.
- Never drive until the fuel tank is completely empty on vehicles with a catalyst. The irregular fuel supply can cause misfiring. This allows unburnt fuel into the exhaust system. This can cause overheating and damage to the catalyst.
- If whilst driving, the engine misfires, loses power and runs unevenly, this could be due to a fault in the ignition system. In a this case, unburnt fuel can enter the exhaust system and then escape to atmosphere. Furthermore, the catalytic converter could become damaged due to overheating. The vehicle speed must be reduced immediately. The defect should be dealt with at the nearest qualified dealership.
- Do not overfill engine oil – see page 32.
- Do not tow start vehicle for more than 50 m – see page 77.

Warning

● **Due to high temperatures which can occur in the catalytic converter in very unfavourable conditions, the vehicle should not be parked so that the catalytic converter can come into contact with inflammable materials.**

● **Never use additional under floor protection or anti-corrosion agents for the exhaust silencer, exhaust pipe, catalysts or heat shields. This substances could ignite whilst the vehicle is in motion.**

Note

Even in the case of a perfectly working exhaust emission control system there can, under certain engine operating conditions, be a sulphurous exhaust smell.

This depends upon the sulphur content in the fuel being used.

Quite often this can be remedied by selecting another brand of fuel or, filling up with unleaded premium petrol.

Driving economically and with respect for the environment

Fuel consumption, environmental compatibility and wear on the engine, brakes and tyres depend largely on three different factors:

- personal driving style,
- the individual conditions of use,
- technical conditions.

Fuel consumption can be reduced easily by 10–15 percent with a proper and economic driving style. The 10 tips given in this chapter have been drawn up in order to make your driving not only easier on the environment, but also on your wallet!

Tip 1

Look ahead when driving!

A vehicle uses the most fuel when accelerating. Look ahead when you are driving – in that way you will have to brake less and thus accelerate less. You should also, if possible, allow the vehicle to roll to a stop, if it can be seen that the next traffic lights are red, for example.

Tip 2

Correct tyre pressures!

Always ensure that your tyres have the correct pressure. The fuel consumption will increase by up to 5 percent, even at an incorrect pressure of 5 Bar too little. If the tyre pressures are not high enough they will also cause increased road resistance and thus to increased wear on the tyres and a poor driving response.

The tyre pressures should only be checked when the tyres are cold!

Another tip: Do not use winter tyres all year round as they are louder and will cause fuel consumption to rise by up to 10 percent – They should only be used when really needed!

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Tip 3

Shifting gear to save energy!

Another effective method of saving fuel is to shift up through the gears: fuel will be used unnecessarily if the gears are driven to a high rev.

The illustration shows the relationship between consumption (ltr/100 km) to speed (km/h) in the gear as selected.

The following guidelines can help: You should only drive the length of one vehicle in first gear. You should always shift up to the next highest gear at approximately 2000 revs.

The accelerator on vehicles equipped with automatic gearboxes should be operated slowly and not be depressed down to the kick-down position. In this way, an economical programme is selected which will shift gears to lower consumption, by shifting up early and shifting down late.

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Tip 4

Slower is more economical!

You should never travel at top speed in your vehicle if at all possible. Fuel consumption, emissions and driving noise all increase at an incredible rate at high speeds.

The illustration above shows the ratio of consumption (ltr/100 km) to speed (km/h).

The fuel consumption of your vehicle will be reduced by approximately 50% if you drive at roughly 75% of its possible top speed.

Tip 5

Idling speed down to a minimum!

It is worthwhile switching the engine off when in a traffic jam, at level crossings and at traffic lights with a long red phase: The amount of fuel saved after only 30–40 seconds is greater than the amount of fuel needed to switch the engine back on again.

Tip 6

Regular servicing!

An important basis for economic driving can be laid down even **before** you start driving by taking your vehicle into a Volkswagen dealer for regular servicing! The level of servicing of the vehicle engine will not only have an effect on road safety and the prolonged value of the vehicle, but also on the level of vehicle consumption.

A badly tuned engine can consume up to ten percent more fuel than necessary!

Check the oil level every time you fill up!

The consumption of oil is very dependent on the load and rev of the engine. Oil consumption can be up to 1 ltr/1,000 km, depending on your style of driving.

Extra tip: The use of high lubricity oils can help to reduce the level of consumption.

Tip 7

No unnecessary loads!

There are further possibilities to reduce fuel consumption alongside driving style and regular servicing of the vehicle:

Do not carry unnecessary loads.

As every kilogram of weight will increase the fuel consumption, it is worthwhile checking the luggage compartment occasionally to ensure that unnecessary loads are not being transported.

A roof load carrier is often left in place out of convenience, even when it is no longer needed. At a speed of 100–120 km/h, your vehicle will consume approximately 12 percent more fuel as a result of the increase in wind resistance caused by the roof load carrier – even when it is empty!

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Tip 8

Fewer short trips!

The engine and catalytic converter must reach their proper working temperature in order to be able to reduce consumption and emissions effectively.

The cold engine of a mid-class vehicle will, directly after starting the ignition, consume between 30 and 40 litres of fuel per 100 km. The consumption will sink to 20 litres per kilometre after a further kilometre. The engine will not have reached its full operating temperature until approximately **four** kilometres after starting and the level of consumption will be normal. Short trips should, therefore, be avoided if at all possible.

The ambient temperature is also decisive in this context: The illustration shows the different levels of consumption (ltr/100 km) for the same journey (km), at +20°C and -10°C. Your vehicle will always consume more fuel in winter than in summer!

Tip 9

Save electricity!

Electricity is created and made available by the alternator in your vehicle. The fuel consumption will rise in parallel to the load placed on the the alternator by electrical consumers.

Rear window heating, additional headlights, hot air blowers and air conditioning systems* all require a large amount of energy. The rear window heater will, for example, increase fuel consumption by approximately one litre over ten hours.

Electrical consumers should, therefore, always be switched off when they are no longer needed!

Tip 10

Keep a record!

A record of the trips you have made is also an effective method of reducing consumption. It is possibly to quickly notice any changes (either positive or negative) and – if necessary – take appropriate action to stop them. If the fuel consumption is very high, you should take time to consider how, where and under what sort of conditions you were driving to use the last tank of fuel.

Driving abroad

If the vehicle is to be taken abroad, the following must also be borne in mind:

- If the vehicle has a petrol engine and catalytic converter, one must ensure that unleaded petrol will be available during the journey – see page 2. The automobile clubs offer information about the unleaded filling station network.
- Although there are more than 10,000 Volkswagen dealers all over the world to service Volkswagen vehicles there are countries in which only a limited amount of service is available or none at all.
- In certain countries it is also possible that your vehicle model is not sold so that certain spare parts will not be available or that the Volkswagen personnel are not familiar with the repair procedure should anything go wrong.

The Volkswagen Distribution Centres in Germany or the Importer concerned will be only too pleased to give advice on the necessary technical preparation of the vehicle, on the maintenance required and on the repair possibilities.

The addresses can be found in the "Assistance in Europe" booklet.

Adjusting/Attaching adhesive strips to headlights

When the vehicle is driven in a country which drives on the opposite side of the road to the home country, the asymmetric dipped headlights will dazzle oncoming traffic.

Depending on the type of headlight fitted, the headlight must either be adjusted or areas of the headlight lens must be covered with opaque tape to stop this dazzle effect. Further information can be obtained from your Volkswagen dealer.

Trailer towing

The vehicle is intended mainly for the transportation of persons and luggage but it can, with the appropriate technical equipment, also be used to tow a trailer.

Technical requirements

- If the vehicle is supplied with a factory-fitted* tow hook, all that is technically and legally necessary for trailer towing will have been taken into account.
- If the trailer to be towed has a 7-pin plug, an adapter cable can be used which is obtained from a Volkswagen dealer.
- If the vehicle is retrofitted with a tow hook, this must be done according to the manufacturer's instructions – please also refer to Booklet 3.3, "Technical Data".
- We recommend that the tow hook be fitted by a Volkswagen dealer.

Operations instructions

- On vehicles with a factory-fitted tow hook* the removable ball coupling, together with instructions on fitting, is stored in the luggage compartment.
- The permissible trailer weight must not be exceeded on any account – see Booklet 3.3, "Technical Data".

- Where possible make full use of the maximum permissible drawbar weight on ball of the tow hook, but do not exceed it.
- If the maximum permissible trailer weight is not used, correspondingly steeper gradients can be climbed.
- The given trailer weights are only applicable for altitudes up to 1000 m above sea level. As the engine output and thus the climbing ability drops due to the decreasing air density, the combined weight¹⁾ must also be reduced by 10 % for each further 1000 m or part thereof.
- While observing the permissible trailer and drawbar weight, distribute the load in the trailer so that heavy objects are as near as possible to the axle. The objects must also be secured so that they cannot slip about.
- Check the tyre pressures on the towing vehicle, and adjust for full load conditions, and also check the pressures on the trailer.
- Additional mirrors are required if the traffic behind the trailer is not visible with the exterior mirrors fitted as standard. Both exterior mirrors must be attached to brackets in such a way that a sufficient field of vision to the rear is guaranteed at all times.

¹⁾ The combined weight is made up of the actual weight of the pulling vehicle and the actual weight of the trailer. If the max. permissible towing weight is to be used, the weight of the pulling vehicle might have to be reduced if necessary.

- The headlight settings, should be checked with trailer attached before moving off and adjusted as necessary.

On vehicles with headlight beam control it is only necessary to turn the knurled disc in dash in the appropriate direction.

Driving tips

To obtain the best possible handling of vehicle and trailer, the following should be noted:

- Always keep the ESP switched on, if your vehicle is fitted with it, when driving with a trailer. The ESP system will make it easier for you to stabilise a trailer which is skidding from side to side.
- Try to avoid driving with an unladen vehicle and a loaded trailer. If this cannot be avoided, only drive slowly to allow for the unfavourable weight distribution.
- As driving stability of vehicle and trailer decreases when the speed increases do not drive at the maximum permissible top speed in unfavourable road, weather or wind conditions – particularly when going downhill.

In any case the speed must be reduced immediately the trailer shows the slightest sign of snaking. On no account try to stop the snaking by accelerating.

Please also refer to the notes on trailer towing loads in Booklet 3.3, "General notes on the technical data".

- Always brake in good time. If the trailer has an overrun brake, apply the brakes gently at first then firmly. This will avoid the jerking caused by the trailer wheels locking. Change down before going down a steep hill so that the engine can act as a brake.
- When a long climb in a low gear with extremely high engine revs must be negotiated at exceptionally high ambient temperatures the coolant temperature gauge must be observed. When the gauge needle moves to the right end of the scale, the road speed must be reduced immediately. If, however, the warning lamp flashes, stop immediately and allow the engine to cool off at idling speed for several minutes.

General notes

- It is advisable to have the vehicle serviced between the Inspection intervals if it is used frequently for towing a trailer.
- The trailer and drawbar load figures on the data plate of the tow hook are for test certification only. The correct figures for the vehicle, which may be lower than the above figures, are given in the vehicle documents and in Booklet 3.3, "Technical Data".

Care of vehicle

The following points on caring for your vehicle apply to all Volkswagen passenger vehicle models. For this reason, some points in this chapter will not apply to your vehicle.


Regular and expert care helps to maintain the value of the vehicle.

Furthermore it can be one of the stipulations for the upholding of warranty claims should corrosion damage and paint defects occur.

We recommend that you use Volkswagen approved car care materials which can be purchased from your Volkswagen. The instructions for use on the container should be followed.

Warning

- **If misused, car care materials can be injurious to health.**
- **Car care materials must always be stored in a safe place where they are out of the reach of children.**

 ***When buying car care materials one should select products which do not damage the environment. Empty containers which these materials were in do not belong with household waste.***

You should never attempt to remove dirt, mud or dust when the vehicle surface is dry. A dry cloth should also not be used for this purpose as the paint work or the windows of your vehicle could be damaged.

The dirt, mud or dust should first be soaked with a lot of water before you attempt to remove them.

Care of vehicle exterior

Washing

Warning

Dampness and ice in the brake system can have a negative effect on the braking power.

The best protection against damaging environmental influences is frequent washing and waxing.

How often this treatment is required depends, amongst other things on how much the vehicle is used, how it is parked (garage, in open under trees etc.), the seasons, weather conditions and environmental influences.

The longer bird droppings, insects, tree resin, road and industrial grime, tar spots, soot, road salt and other aggressive materials remain on the vehicle paint the more lasting their destructive effect will be. High temperatures e.g. from strong sunlight intensifies the corrosive effect.

In certain circumstances weekly washing can be necessary, in other conditions monthly washing with appropriate waxing may be fully adequate.

After the period when salt is put on the roads the underside of the vehicle must always be washed thoroughly.


Automatic car washes

The vehicle paint is so durable that the vehicle can normally be washed without any problem in an automatic car wash. The influence on the paint depends to a large extent, however, on the design of the car wash, the filtering of the wash water, the type of wash and care material, etc. If the paint has a matt appearance after going through the wash or is even scratched this should be brought to the notice of the car wash operator immediately. If necessary a different car wash should be used.

Note

- Before going through the car wash, apart from the usual precautions (closing windows and sliding roof*) there is nothing further to note.
The exterior mirrors should, however, be folded in in order to prevent damage.
- If there are special fittings on the vehicle – such as spoilers, roof rack, two-way radio aerial etc. it is best to speak to the plant operator.

Washing the vehicle by hand

 ***In the interests of environmental protection the vehicle should only be washed in specially provided wash bays. In some districts, washing cars elsewhere may even be forbidden.***

First soften the dirt with plenty of water and rinse off as well as possible.

Then clean the car with a soft sponge, glove or brush, starting on the roof and going from top to bottom using only slight pressure. Paint shampoo should only be used for very persistent dirt.

Rinse the sponge or glove out thoroughly at short intervals.

Wheels and sill panels should be cleaned last, using a different sponge if possible.

After cleaning the vehicle, rinse thoroughly with water and leather it off.

Warning

- **Never wash the vehicle whilst the engine is running.**
- **Protect your hands from possible cuts on sharp metal edges when cleaning the underbody, the underside of the mudguard (wheel house) or the wheel covers.**

Note

- The vehicle should not be washed in strong sunshine.
- If the vehicle is rinsed with a hose, do not direct the jet of water at the lock cylinders and the door/boot lid shut lines – they can freeze up in the winter.

Washing vehicle with high pressure cleaner

- The operating instructions for the high pressure cleaner must be followed closely – particularly with regard to pressure and working distance.

- Do not use a concentrated jet.

- The water temperature must not exceed 60°C.

● In order to prevent damage to, please maintain sufficient distance to soft materials, such as rubber hoses, plastic parts or sealing materials, with the high pressure cleaner. This also applies when cleaning the painted bumpers.

The material will be placed under more pressure the closer the pressure cleaner is to the surface.

Warning

Tyres must never be cleaned with a concentrated jet! Even at a relatively large working distance and a very short spraying time, damage can occur.

Waxing

A good coat of wax protects the vehicle paintwork to a large extent against the environmental influences listed under “Washing” on the previous page and even against light mechanical damage.

At the latest when water on the clean paint does not form small drops and roll off, the vehicle should be protected by applying a coat of good hard wax. Even when a wax solution is used regularly in the washing water it is advisable to protect the paint with a coat of hard wax at least twice a year.

Paint damage

Small marks in the paint such as scratches or stone damage should be touched up immediately with paint (Volkswagen touch-up stick or spray can) before the metal starts to rust.

However, should rust be found at any time it must be removed thoroughly and then the area treated first with an anti-corrosion primer and then the correct paint applied. You can of course have this work done by a Volkswagen dealer.

The number of the original paint of the vehicle is given on the vehicle data sticker – see Booklet 3.3 “Vehicle Identification Data”.

Door lock cylinder

To de-ice the door lock cylinder we recommend the Genuine Volkswagen Spray, which has lubricating and anti-corrosive qualities.

Door, boot, roof and window seals

The rubber seals will remain supple and last longer if occasionally treated with an appropriate agent (e.g. silicon spray). In this way, a better seat for the rubber lips on the sealing surfaces can be achieved. Furthermore, premature ageing of the seals can be avoided and leaks and large door slamming forces can be stopped. In this way they will also not freeze shut in Winter!

Windows

Remove **snow** from the windows and mirrors, preferably using a brush.

Remove **ice** from windows and mirrors with a soft plastic scraper, or even better with de-icing spray.

To avoid scratches due to dirt on the glass, the scraper should only be pushed in one direction and not moved to and fro.

Never remove snow and ice from windows and mirrors with warm or hot water – there is a risk that the glass could crack!

Traces of rubber, oil, wax¹⁾, grease or silicone can be removed with a window cleaning solution or a silicone remover.

The windows should also be cleaned on the inside at regular intervals.

Do not dry the windows with the leather used for the paintwork because traces of paint cleaner will cause streaks to appear on the glass.

To avoid damaging the **heating element wires** in the rear window do not put stickers over the wires on the inside.

¹⁾ This wax residue can only be removed with a special cleaner. Your Volkswagen dealer will be able to provide you with more detailed information.

Plastic parts

Plastic parts are cleaned by washing normally. If this is not sufficient, please use a **solvent-free** plastic cleaner which has been approved by Volkswagen.

Cleaning agents containing solvents will damage the material.

Polishing


Should only be done if paint has lost its shine and gloss cannot be brought back with wax. If the polish used does not contain preservative compounds, the paint must be waxed afterwards.

Matt painted and plastic parts should not be treated with polish or hard wax.

Cavity preservation

All cavities on the vehicle which could be susceptible to corrosion are given permanent protection at the factory.

This coating does not need checking or any subsequent treatment. Should a small amount of wax run out of the cavities at high ambient temperatures it can be removed with a plastic scraper and some white spirit.

 **If the wax which has run out is removed with clean petrol, heed the environmental protection regulations.**

Steel wheels

The wheels and the wheel trims should be cleaned thoroughly at regular intervals when the vehicle is being washed. This will prevent brake dust, dirt and road salt from accumulating on the wheel. Persistent ingrained brake dust can be removed with an industrial grime remover. Paint damage should be repaired before rust can form.

Warning

Please note when cleaning the wheels that dampness, ice and grit can have a negative effect on the braking power.

Alloy wheels*

In order to maintain the smart appearance of alloy wheels for a long period, regular care is necessary. In particular, salt and brake pad dust must be washed off thoroughly at least every two weeks otherwise the surface of the alloy will be damaged. After being washed, the wheels should be treated with an acid-free cleaner for alloy wheels.

About every three months it is necessary to give wheels a good rubbing with hard wax. Paint polish or other abrasive solutions must not be used. If the protective paint coat has been damaged, e.g. by stone impact, the damaged spots should be dealt with as soon as possible.

Warning

Please note when cleaning the wheels that dampness, ice and grit can have a negative effect on the braking power.

Undercoating

The underside of the vehicle is coated with a special compound to protect it from corrosion and damage.

However, as this protective layer becomes damaged when the vehicle is in use, the protective coating under the body and on the running gear should be examined at defined intervals – preferably before and after the winter season – and any damage repaired.

Volkswagen dealers have stocks of the correct compound, have the necessary equipment and are familiar with the application procedure.

We advise you, therefore, to have the patching up or additional coating done by a Volkswagen dealer.

Warning

Never use additional under floor protection or anti-corrosion agents for the exhaust silencer, exhaust pipe, catalysts or heat shields. These substances could ignite whilst the vehicle is in motion.

Note for vehicles with a catalytic converter

Due to the high temperatures which occur in the afterburning process, additional heat shields are fitted over the catalytic converter. Underbody sealant must not be applied to these shields, the catalytic converter or the exhaust pipes. Removal of the heat shields is also not permissible.

Care of the vehicle interior

Plastic parts, instrument panel and leatherette

Plastic parts and leatherette are cleaned with a damp cloth. If this is not sufficient, these parts may only be cleaned with **special solvent-free** plastic cleaners which have been approved by Volkswagen.

Cleaning agents containing solvents will damage the material.

Warning

Never clean the instrument panel and surface of the airbag module with cleaning agents containing solvents.

Cleaning agents containing solvents will make the surface porous. Serious injuries could result from the breakage of plastic parts should the airbag ever have to be triggered.

Alcantara (Velours leather imitation)

Do not use leather treatments to clean Alcantara covers!

Removing dust and dirt

The Alcantara covers should be wiped down using a slightly damp, soft cloth or treated with an appropriate shampoo.

Particles of dirt and dust will wear down the leather more quickly because of their abrasive nature.

Removing stains

Dampen a soft cloth with lukewarm water or diluted white spirit and treat the stain by moving from the outer edge to the centre.

Stubborn stains should be removed by a specialist company in order to prevent damage.

Natural leather

Ensure that the leather is not exposed to bright, direct sunshine for extended periods as it will otherwise lose its colour.

It must be noted that on no account may solvents, floor wax, shoe polish, spot removers and similar products be used for treating the leather.

Stubborn stains should be removed by a specialist company in order to prevent damage.

Care of the leather

We recommend that, with normal usage, the leather is treated at half-yearly intervals with a leather care agent. This agent is to be applied very sparingly. After it has dried in, wipe with a soft cloth.

Removing dust and dirt

Wipe down the leather areas with a damp cloth. Dirtier areas can be cleaned with a mild soap solution (2 dessert spoonfuls of a neutral soap to 1 litre of water). It is essential to note that the **leather must not be made too wet** and that no water seeps through the seams. After cleaning, wipe dry with a soft cloth.

Particles of dirt and dust will wear down the leather more quickly because of their abrasive nature.

Upholstery cloth and textile trim

Upholstery cloth and textile trim on door panels, luggage compartment covers, headlining etc. are cleaned with special cleaning materials or dry foam and a soft brush.

Care of chrome

Chrome parts should be cleaned with a damp cloth and then polished with a soft, dry cloth. If this is not sufficient, use a chrome cleaning material.

Stains and dirt coatings on the chrome parts can be removed using a chrome cleaning material. You can prevent dirt coatings from building up on the surfaces by using a chrome cleaning material regularly. To this end, ensure that the entire surface is completely and evenly covered with the cleaning material.

Note

- **You should, under no circumstances, use an abrasive cleaning material.**
- **The chrome surfaces should not be cleaned in dusty or sandy environments.**

Thermal box*

Before the thermal box is used for the first time it should be cleaned inside with warm water to which a mild cleaning solution has been added.

To prevent mould and damp stains forming when the thermal box is not used for long periods the lid should be propped open slightly by inserting a towel or cloth which has been folded several times.

Cleaning seat belts

Keep belts clean! They may not retract properly if very dirty.

Dirty belts should be cleaned by washing with a mild soap solution, without taking the belts out of the vehicle.

Note

Inertia reel belts should be completely dry before they are allowed to roll up.

Warning

- **The seat belts must not be removed for cleaning.**
- **Do not have the belts cleaned chemically because the cleaning compounds damage the webbing material. Ensure that the belts do not come into contact with corrosive fluids.**
- **You should check the condition of your seat belts regularly. If you find any damage of the belt webbing, belt connections, the belt retractor or the locking parts, the belt in question must be replaced by a qualified dealer.**

Cleaning the engine compartment

Cleaning and anti-corrosion treatment of engine compartment

Warning

- **Before doing any work in the engine compartment it is essential to read the notes on page 27.**
- **For safety reasons pull out ignition key before reaching into the water box. Otherwise if the windscreen wipers are switched on unintentionally the movement of the wiper linkage could cause injury.**

The leaves, blossoms etc. which drop into the water box (underneath the engine bonnet in front of the windscreen) should be cleaned out occasionally. This will prevent the water drain holes becoming blocked and – on vehicles without a fresh air filter – foreign bodies entering the vehicle interior via the heating and ventilation system.


The engine compartment and the outside surface of the power unit are given anti-corrosion treatment at the factory.

In the winter when the vehicle is being driven frequently on salted roads, good anti-corrosion treatment is very important. For this reason the entire engine compartment and the plenum chamber should be thoroughly cleaned before and after the salting period and then preserved so that the salt cannot have a damaging effect.

The ignition must be switched off before washing the engine.

Do not direct the water jet directly at the headlight – it could otherwise be damaged!

If the engine compartment is cleaned at any time with grease removing solutions¹⁾ or if one has the engine washed, the anti-corrosion compound is nearly always removed as well. It is therefore essential to ask for durable preservation of all surfaces, seams, joints and components in the engine compartment to be carried out. This applies also when corrosion protected parts are renewed.

 **Because when washing the engine petrol, grease and oil deposits are washed off, the dirty water must be cleaned by an oil separator. For this reason engine washing should only be carried out in a workshop or filling station.**

Volkswagen dealers have stocks of the cleaning and preservation materials recommended by the factory and have the equipment necessary to apply them.


¹⁾ Only the correct cleaning solutions should be used – on no account petrol or Diesel.

Safety notes for working in the engine compartment

Scalding and injuries, risk of fire and accident can occur during all work carried out in the engine compartment, e. g. checking and refilling operating fluids.

For this reason, it is very important to read the following warning notes and general safety regulations.

When topping up fluids one should ensure that they are not mistaken, one for the other, under any circumstances, otherwise serious functional defects will result.

 So that leaks are quickly detected the ground underneath the vehicle should be checked regularly. If spots as caused by oil or other operating fluids can be seen, the vehicle should be taken to the workshop for checking.

Note

Of course, operating fluids and materials such as coolant additives, engine oils as well as spark plugs are being continually developed. For this reason the details given in this manual can only refer to those available at the time of going to press.

Volkswagen Service is always kept up-to-date by the factory regarding changes. We recommend, therefore, that the operating fluids and material changes should be carried out by a Volkswagen dealer.

Please also refer to the notes in "Accessories, modifications and renewal of parts" on page 49.

Warning notes

Warning

Particular care should be taken when working in the engine compartment!

● **Never open the bonnet or carry out any work on the engine if you notice that steam or coolant is escaping – risk of scalding!**

Wait until you can see no more steam or coolant and the engine has cooled down.

● **Turn engine off, remove ignition key.**

● **Pull handbrake firmly on.**

● **Move gear lever into neutral or "P" position.**

● **Allow engine to cool off.**

● **Keep children away from the engine.**

● **As long as the engine is at operating temperature:**

– **Do not put your hand into the radiator fan, it could switch on suddenly.**

– **Do not open the radiator cap because the cooling system is under pressure.**

Warning

Please take notice of the warning notes on the next page.

- **Never spill any liquids over the hot engine. These liquids could ignite.**

- **Avoid causing short circuits in the electrical system – particularly at the battery.**

- **If checks, servicing, repairs or adjustments have to be carried out with the engine running, there is an additional danger present from rotating parts – e.g. V-belts, alternator, radiator fan etc. – and from the high voltage ignition system.**

- **If work on the fuel or electrics system is necessary:**

- **Disconnect the battery from the electrics**

- **Do not smoke**

- **Never work near naked flames**

- **Always keep a fire extinguisher in the vicinity.**

- **Please refer to the warning notes on page 38 if work has to be carried out on the battery.**

Fan

The radiator fan is driven electrically and controlled by a thermostich from the coolant temperature (also from the engine compartment temperature on some models).

Warning

After the engine has been stopped the fan can continue running for a while (up to about 10 minutes) after the ignition has been switched off. It can also start to run again suddenly after a short time if

- **the coolant temperature increases due to heat build-up**

- **when engine is hot and the engine compartment is heated additionally by strong sunlight.**

Bonnet

B7M-319M

Unlocking

Pull lever on left under instrument panel – the bonnet springs up out of its lock.

At the same time a release button can be seen in the radiator grille – see right illustration.

Note

Before opening the bonnet, ensure that the wiper arms are not lifted off the windscreen. Otherwise the paintwork may be damaged.

Opening

Lift the bonnet slightly and push the release button in the direction of the arrow – see right illustration. The catch is thus released.

Lift the bonnet to the stop. The bonnet is held in position by a gas filled rod.

B7M-320M

Closing

Hold the bonnet on the side where the gas filled rod is fitted. Press the bonnet down until the gas filled rod gives way and then allow the bonnet to fall into position – do not press down!

Warning

● **For safety reasons the bonnet must always be properly closed when vehicle is moving. Always check therefore after closing the bonnet that the lock is engaged. This is the case when the bonnet is flush with the adjacent body panels.**

● **If you should notice that the lock is not engaged, stop the vehicle immediately and close the bonnet.**

Engine compartment

B7M-403M

- 1 - Engine oil dipstick
- 2 - Engine oil filler opening
This position can vary slightly depending on the engine version
- 3 - Coolant expansion tank
- 4 - Brake fluid reservoir
- 5 - Vehicle battery behind a cover
- 6 - Windscreen washer container

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Engine oil

Specifications

A special, high quality multi-grade oil is put in the engine at the factory and this can be used all the year round – except in very cold climates.

The oil specifications approved for your engine can be found in Booklet 3.3.

When topping-up, the oils can be mixed with one another.

The specifications must be on the container and be no older than 1.97.

Important note

Of course, engine oils are also being continually developed. For this reason the details given in this manual can only refer to those oils available at the time of going to press.

Volkswagen dealers are kept up-to-date by the factory regarding changes. For this reason, the oil change should preferably be done by a Volkswagen dealer.

Petrol engines

If none of the oils listed in Booklet 3.3 are available, oil with specification ACEA A2 or A3 may be used.

For vehicles with LongLife Service, only the following engine oil quality should be used:
VW 503 00.

In exceptional cases, a maximum of 0.5 litres of Norm VW 502 00 can be used.

Diesel engines

Only engine oil quality as per **VW 506 01** should be used.

In exceptional cases, a maximum of 0.5 litres of Norm VW 505 00 can be used.

Engine oil additives

No additives should be mixed with the engine oil.

Any damage caused by the use of such additives will not be covered by the warranty.

Checking oil level

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Every engine uses a certain amount of oil. The **oil consumption** can be up to 1.0 litres per 1000 km. The engine oil level must therefore be checked at regular intervals, preferably when filling the tank and before a long journey.

BIM-025M

The location of the oil dipstick can be seen in the illustration of the engine compartment on page 30.

The vehicle must be on a level surface when checking the oil level. After stopping engine wait a few minutes for the oil to drain back to the sump.

Then pull the dipstick out, wipe it with a clean cloth and insert again fully.

Then pull dipstick out again and check the oil level:

A – If the oil level is in area **A**, the oil **may not** be topped up.

B – If the oil level is in area **B**, the oil **can** be topped up.

The oil level could then be in area **A**.

C – If the oil level is in area **C** or lower, the oil **must** be topped up.

It is satisfactory if the oil level is then somewhere in area **B**.

The oil level must not, under any circumstances, be above area A.

When the engine is working hard, such as extended operation of the engine (10 – 12 hours), the oil level should be kept in area **a** – **not above**.

Topping up engine oil

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

The location of the engine oil filler opening can be seen in the illustration of the engine compartment on page 30.

- Unscrew the lid of the engine oil filler opening.
- Pour in a small quantity of oil.
- Wait for some minutes and then check the oil level. It is sufficient if the oil level is somewhere in the **B** area, otherwise pour in some more oil.

The oil level must not, under any circumstances, be above area A.

Otherwise oil can be drawn into the engine via the crankcase breather and escape into the atmosphere via the exhaust system. On engines fitted with a catalytic converter, the oil could burn inside the converter causing it to become damaged.

Carefully close the filler cap and push the oil dipstick in as far as possible, this will prevent oil spill when the engine is running.

Changing engine oil

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

The engine oil must be changed at the intervals given in the service schedule.


Warning

If you want to change the engine oil yourself, you must note the following points:

- **Allow the engine to cool down first to avoid the danger of being scalded by hot engine oil.**
- **Use an appropriate container to drain off the oil. It should be big enough to hold the quantity of oil in your engine.**
- **Wear protective glasses for your eyes.**
- **When removing the oil drain plug with your fingers, keep your arm horizontal so that the oil being drained cannot run down your arm.**

- **If your hands come into contact with engine oil you must wash them thoroughly afterwards.**

- **Old oil must be stored out of reach of children until it is disposed of in the correct manner.**

 ***On no account should oil be poured down drains or into the earth.***

Because of the disposal problems, the necessary special tools and specialist knowledge required the engine oil and filter changing should preferably be done by a Volkswagen dealer.

The cooling system must be filled with a

B7M-380M

The location of the coolant expansion tank can be seen in the illustration of the engine compartment on page 30.

The cap of the expansion tank does not have to be taken off to check the level of the coolant, as the container is transparent.

The coolant level must be between the **max** and **min** marks on the expansion tank when engine is cold and can be slightly above the **max** mark when it is warm.

Topping up coolant

Warning

**Do not remove expansion tank cap when engine is hot – danger of scalding:
System is under pressure.**

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Only new coolant should be used when refilling!

Switch engine off and let it cool down. Then cover expansion tank cap with a cloth and turn cap carefully to the left and remove. Use only new coolant to top up.

As a basic principle, no other coolant may be used if G 12 is not available. In this case only water can be used and the correct mixture concentration must be restored with the specified coolant additive (see page 33) as soon as possible.

If a lot of coolant has been lost, only add coolant after the engine has cooled down. This will prevent engine damage.

Do not fill above the marked area.

The excess coolant will be forced out through the pressure relief valve in the cap when engine becomes hot.

Screw cap on again tightly.

Important note

The coolant additive G 12 (purple colour) can be mixed with the coolant additive G 12 (red colour) or the coolant additive G 11.

You can recognise G12 in the expansion tank by its purple colour. If the fluid in the expansion tank is brown, G 12 has been mixed with another additive!

If this is the case, the coolant must be changed immediately!

Otherwise, serious functional failures or damage to the engine could result!

Windscreen washer system

B7M-382M

The location of the windscreen washer container can be found in the illustration of the engine compartment on page 30.

The rear window washer is supplied with fluid from the container in the engine compartment.

Filling the container

The capacity of the windscreen washer container can be found in Booklet 3.3 "Technical Data".

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

We recommend that **Genuine Volkswagen Washer Fluid** (G 052 164) be added to the water. Plain water alone is not enough to clean the glass and headlight lenses quickly and thoroughly. **Genuine Volkswagen Washer Fluid** is a powerful cleaner with frost protection and can thus be used throughout the year. It can be purchased at your Volkswagen dealer. The mixing ratios on the window cleaner packaging must be adhered to.

Note

Only washer fluid G 052 164 may be used on vehicles with a fan shaped spray to ensure that the tiny openings in the vents do not clog up.

Under no circumstances should you add coolant anti-freeze or other additives.

Windscreen wiper blades

Warning

- For clear vision, it is imperative that the windscreen wiper blades are in good condition.
- In order to prevent streaks on the windscreen, you should clean the windscreen wiper blades regularly with a window cleaner. If the windows are particularly dirty, e. g. insect remains, a sponge or cloth should be used to clean the blades.
- For reasons of safety, you should change the wiper blades once or twice a year. Windscreen wiper blades can be purchased at Volkswagen dealers.

If the wiper blades judder, it may be caused by various things:

- If the vehicle has been washed in an automatic car wash, residual wax may be left on the windscreen. This residue can only be removed by using a special cleaner. Your Volkswagen dealer will be happy to give you further information.

Filling the windscreen washer container with a window cleaner containing a wax remover can solve the judder problem. Solvent cleaners cannot remove this residue.

- Damaged wiper blades can also lead to judder. In this case the blades should be renewed.
- The blades are set at an incorrect angle. Have the angle checked and, if necessary, adjusted by a qualified dealer.

B7M-643M

Changing wiper blades

Taking the wiper blade off

- Fold the wiper arm away from the screen and position the blade perpendicular to the wiper arm.
- Remove the wiper blade from the wiper arm in the direction of the arrow.

Securing the wiper blade

- Place the wiper blade on the side of the wiper arm at a right-angle to the wiper arm.
- Swing the wiper blade parallel to the windscreen wiper arm and place it against the screen.

Note

The driver's side and front passenger side wiper blades must not be confused with each other whilst the wiper blades are being installed.

Brake fluid

B7M–381M

The location of the brake fluid reservoir can be seen in the illustration of the engine compartment on page 30.

Checking fluid level

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

The fluid level must always be between the "MAX" and "MIN" marks.

The level of fluid tends to sink slightly when the vehicle is used due to the automatic adjustment of brake linings. This is quite normal.

If the fluid level sinks noticeably in a short time or drops below the "MIN" mark, however, the brake system may be leaking. A low fluid level in the reservoir is indicated by the brake system warning lamp lighting up (see Booklet 3.1.1, "Warning lamps").

Take the vehicle to a qualified dealer immediately and have the brake system checked.

Renewing brake fluid

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Brake fluid absorbs moisture. It will, for this reason, absorb water from the surrounding air in the course of time.

Too high a content of water in the brake fluid can in time cause corrosion damage in the system. Furthermore the boiling point of the brake fluid is reduced considerably. **For this reason the brake fluid must be renewed every two years.**

Warning


When the brake fluid becomes too old vapour bubbles can form in the brake system when the brakes are used hard. The efficiency of the brakes and thus the vehicle safety is then seriously affected.

Only use our Genuine brake fluid (please ask for the specification at your Volkswagen dealer). The fluid must be new.

Warning

Brake fluid is poisonous! It must therefore only be stored in the closed original container out of reach of children.

Remember also that brake fluid will attack the paintwork.

 ***Because of the disposal problems, the special tools necessary and the specialist knowledge required, the brake fluid changing should preferably be done by a Volkswagen dealer.***

It is advisable to have the fluid change carried out during an Inspection Service.

Warning notes

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Wear eye protection. Do not allow particles containing acid or lead to come into contact with the eyes, skin or cloths.

Battery acid is highly caustic. Always wear protective gloves and glasses. Do not tip battery – acid can spill out of the vents. Should acid contact the eyes, rinse for several minutes using clean running water. Seek medical assistance immediately. Should acid contact skin or clothes, neutralize immediately using an alkaline soap solution and rinse thoroughly. Should acid inadvertently be drunk, seek medical attention immediately.

Fire, sparks, unprotected

Location

Please take notice of the warning notes on the previous page.

Vehicle battery

The location of the vehicle battery can be seen in the illustration of the engine compartment on page 30.

On batteries with a cover, the cover must first be removed to gain access to the vehicle battery. To do this, turn the quick release catches and lift the cover off.

Starting by connecting an additional battery is described in the Do-It-Yourself section.

Additional battery*

The **additional battery*** is located under the front right seat.

The additional battery supplies the electric sockets* in the luggage compartment and the additional water heater* when the engine is switched off.

A cut-off relay is installed between the additional battery and the vehicle battery. Both batteries are only electrically linked when the engine is running and are thus charged by the alternator.

Winter driving

If the vehicle is not to be used for an extended period of time, protect the battery and additional battery* against frost so that it does not freeze which will destroy the battery.

If the vehicle is not used

If the vehicle is not used for more than four weeks the battery will be discharged by low current consumers, such as the immobilizer and will have to be recharged. In order to avoid this, the battery should be charged intermittently or the negative pole should be disconnected.

Please refer to the warning notes on page 38 before carrying out any work on the vehicle battery.

Checking acid level

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

The acid/electrolyte level should be checked regularly if the following operating conditions apply:

- high mileage
- in countries with a warm climate
- old battery

The battery is otherwise service-free.

If the vehicle is not used for more than four weeks the battery will be discharged by low current consumers, such as the immobilizer and will have to be recharged. In order to avoid this, the battery should be charged intermittently or the negative pole should be disconnected.

It is recommended that the acid level be checked and corrected by a Volkswagen dealer.

Warning

● Never use force to open a battery – Risk of explosion and acid burns! Damaged and leaking batteries should not be connected, but rather disposed of following the appropriate regulations.

BIM-023M

Battery with a magic eye*

A round viewing window is located on the upper side of the battery (see arrow). This "magic eye" will change its colour according to the charge condition and acid level of the battery.

Air bubbles can distort the true colour. You should, therefore, tap carefully on the magic eye.

The acid level in the battery is too low if the display in the viewing window has **no colour or is a light yellow**. Have the battery checked by a qualified dealer.

The colour displays of green and black help your Volkswagen dealership in the diagnosis of the battery.

Charging battery

Battery and additional battery

Before charging, switch off the ignition and all electrical consumers.

When charging with a low current (e.g. with a small charger) the battery cables need not normally be taken off. The instructions from the charger manufacturer must, however, be noted.

Before **Quick charging**, that is charging with a high current, both battery cables must be disconnected.

Please note the following points:

Please refer to the warning notes on page 38 before carrying out any work on the vehicle battery.

Warning

- **Keep children at a distance from the battery and battery acid and from the battery charger.**
- **Only charge the battery in well ventilated rooms. Do not smoke and allow no naked flames or electric sparks near the battery, as a highly explosive gas is produced whilst the vehicle is being charged.**
- **Protect your eyes and face. Do not bend over the battery.**
- **Should acid come into contact with the eyes or skin, rinse for several minutes using clear water. You should then seek medical assistance immediately.**
- **Fast charging a battery is dangerous and should only be carried out by a Volkswagen dealer, as special equipment and knowledge is necessary.**
- **Never charge a battery which has frozen – risk of explosion! There is still a risk of chemical burns from leaking battery acid even after the battery has thawed. Always replace a frozen battery.**

Replace a frozen or thawed as the battery housing might have cracked due to the ice. Battery acid might leak out as a result and damage the vehicle.

- When charging the battery do not remove caps.
- The mains cable of the charger should not be connected until the clips of the charger have been properly secured to the battery terminals:
red = plus (or positive)
black or brown ... = minus (or negative).
- After charging the battery, first switch off the charger and disconnect the mains cable. Then disconnect the clips of the charger from the battery .
- Check the battery acid level – see page 39. Battery acid might evaporate during charging, depending on the technique used.

What happens when the battery is disconnected and then reconnected ...

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Please refer to the warning notes on page 38 before carrying out any work on the vehicle battery.

After reconnecting or recharging the battery you should:

reset the digital clock – see Booklet 3.1.1, "Digital clock".

You should also reset the automatic opening/closing function of the electric windows – see Booklet 3.1.1, "Electric windows".

The starting procedure for petrol engines with starting and idling problems should be carried out as follows: Turn on the ignition for 30 seconds, then switch off the ignition. Then start the engine.

Renewing battery

Only Genuine Volkswagen batteries of the same size should be used.

Battery and additional battery

Our batteries have been developed to suit their fitting location and have been equipped with safety features.

Genuine Volkswagen batteries fulfil the service, performance and safety requirements of the vehicle.

Warning

● Only service-free Genuine Volkswagen batteries conforming to norms TL 825 06 and VW 7 50 73 should be used. This norm must be dated August 2001 or later.

Please refer to the safety notes as of page 27 and the warning notes on page 38 before carrying out any kind of work on the engine or in the engine compartment.

✿ Because of the problem of disposing of the old battery the renewal of a battery should preferably be done by a Volkswagen dealer. Batteries contain, amongst other things, sulphuric acid and lead and must on no account be put with normal household waste.

Removing battery

Vehicle battery

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Before removing the battery, turn off the ignition and all electrical consumers.

On batteries with a cover, the cover must first be removed in the engine compartment to gain access to the vehicle battery. To do this, turn the quick release catches and lift the cover off.

To take battery out, first disconnect the negative cable (normally black or brown) and then the positive cable. Then unscrew the battery retainer and remove the battery.

Additional battery*

Before removing the battery, turn off the ignition and all electrical consumers which are supplied with electricity by the additional battery.

To take battery out, first disconnect the negative cable (normally black or brown) and then the positive cable. Then unscrew the battery retainer and remove the battery.

Installing battery

Battery and additional battery

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Before connecting the battery turn off ignition and all electrical consumers.

Place the battery in the designated position and secure the battery with the battery retainer.

To connect the battery, first connect the positive cable (normally red) and then the negative cable (normally black or brown).

Also install the battery cover in the engine compartment as needed. Turn the quick release catches to secure the cover.

Wheels

General notes

Warning

● **New tyres must be "run in" as they have not yet reached their optimum grip level. This should be taken into account in your driving style during the first 500 km. This "running in" will also help to extend the running life of the tyres.**

- The tread depth of new tyres can vary due to construction and design features, and depending on version and manufacturers.
- Check tyres for damage from time to time (cuts, splits, cracks and lumps) and remove any foreign bodies embedded in the treads.
- To avoid damage to tyres and wheels drive over curbs and similar obstacles very slowly and as nearly at right angles as possible.

Damage to wheels and tyres is not always easy to see. Unusual vibrations or a pulling to one side could indicate tyre damage. **If you suspect damage to a tyre, you should immediately reduce speed.** Check all tyres visually for damage (bulges, tears etc.). If no external damage can be seen, drive carefully to the nearest qualified dealer and have the vehicle checked over.

- Keep grease, oil and fuel off the tyres.
- Replace missing dust caps as soon as possible.

- Mark wheels before taking them off so that they rotate in the same direction when put back on again.

- When taken off, the tyres should be stored in a cool, dry and preferably dark place.

Tyres which are not on wheels should be stored in a vertical position.

Note for tyres where the direction of rotation is stipulated

It is imperative that the designated direction of rotation for tyre treads (which can be determined from the arrow on the side of the tyre) be kept to. The best tyre performance i.e. in aquaplaning, road adhesion, noise and wear are then guaranteed.

Tyre life

Tyre life depends to a considerable extent on the following factors:

Inflation pressure

The inflation pressures for summer tyres can be found on the inside of the tank flap. The values for summer tyres should be increased by 0.2 bar for winter tyres.

The inflation pressure is very important particularly at high speeds. Therefore, the pressures should be checked at least once a month and before every long journey.

At this opportunity do not forget the spare wheel:

- The spare wheel should always be inflated to the highest pressure required on the vehicle.


- Always check the pressures when the tyres are cold. **When warm, the pressure is higher but do not reduce.** If the load changes a great deal the pressure must be altered to suit.

The air pressure tester can be applied directly to the dust cap without having to remove it.

Pressures which are too high or too low shorten tyre life – quite apart from the detrimental influence on vehicle handling.

Warning

At continuous high speeds a tyre in which the pressure is too low flexes more and heats up excessively. This can cause tread separation and tyre blow out.

 ***A pressure which is too low increases the fuel consumption and this burdens the environment unnecessarily.***

Mode of driving

Fast cornering, hard acceleration and violent braking also increase tyre wear.

Balancing wheels

The wheels on new vehicles are balanced. However when the vehicle is running various influences can cause the wheels to become unbalanced and this causes steering vibration.

As imbalance also increases steering, suspension and tyre wear the wheels should be balanced again. Furthermore a wheel should always be rebalanced when the tyre has been repaired or when a new tyre has been fitted.

B1H-235C

Wear indicators

At the bottom of the tread of the original tyres there are 1.6 mm high “wear indicators” running across the tread – see fig. There are 6–8 of these indicators – according to make – evenly spaced around the tyre circumference. Marks on the walls of the tyre (for example the letters “TWI” or symbols) show the locations of the wear indicators.

Warning

- **The tyres must be renewed at the latest when they are worn down to the wear indicators. This should be done without delay.**
- **Worn tyres are detrimental to roadholding particularly at high speeds on wet roads. Furthermore, the vehicle tends to aquaplane sooner.**

Note

When tread depth is down to 1.6 mm measured in the tread groove next to the wear indicator bar – the official permissible minimum tread depth has been reached (in export countries this figure may differ).

Incorrect wheel alignment

Incorrect wheel alignment not only causes excessive, usually uneven tyre wear but can also impair the car's safe handling. If unusual tyre wear is noticed, contact a Volkswagen dealer.

Renewing wheels/tyres¹⁾

Wheels and tyres are important design features. The wheels and tyres approved by us should be used. They are specially matched to the model concerned and contribute largely to the excellent roadholding and safe driving characteristics.

Volkswagen dealers are fully informed as to which makes of tyre are approved by us. Furthermore, many Volkswagen dealers keep a wide range of tyres and wheels.

● Fitting and repairing tyres requires expert knowledge and special tools. This work may only be carried out by specialist personnel.

✿ Because of the problem of disposing of the old tyres, the special tools necessary and the specialist knowledge required, tyre changing should preferably be done by a Volkswagen dealer.

¹⁾ For vehicles with a Navigation system, please refer to the notes in the supplement.

● For safety reasons the tyres should be renewed in pairs and not singly. The tyres with the deepest tread should always be on the front wheels.

● **You should only combine radial tyres of the same construction, size (rolling circumference) and, as far as possible, the same tread profile on all four wheels.**

● If the spare wheel differs from the version fitted on the vehicle (e.g. winter tyres or wide tyres) the spare may only be used briefly to replace a flat tyre and with an appropriately careful style of driving. It must be replaced with the normal wheel as soon as possible.

● Never fit used tyres where their previous history is not known.

● Knowing the **tyre lettering** and its meaning makes the selection of the correct tyres easier. Radial ply tyres have the following lettering on the sidewall:

e.g.: **195 / 70 R 15 97 S reinforced**

195 = Tyre width in mm

70 = Height/width ratio in %

R = Radial construction code letter
= **Radial**

15 = Wheel diameter in inches

97 = Carrying capability code

S = Speed code letter

rein = Reinforced version

The manufacturing date is also printed on the tyre wall (possibly only on inner side of wheel):

DOT ... 1801 ... means that the tyre was produced in the 18th calendar week of 2001.

Warning

Tyres which are more than 6 years old should only be used in an emergency and then with a particularly careful style of driving.

If you wish to fit your car with non-standard wheels or tyres please note:

The engine output or engine torque has been increased on Sharan vehicles as of model year 2000. It was, for this reason, necessary to adjust the wheels and wheel bolts suitably as well as increase the tightening torque of the wheel bolts.

Volkswagen dealers have all the necessary information about the possible conversion of wheels, tyres and wheel trims.

Warning

● For technical reasons it is not normally possible to use wheels from other vehicles – in certain circumstances not even wheels from the same vehicle model!

● Using types of wheel and/or tyres which have not been approved by us for your vehicle model can impair the safety of the vehicle. The vehicle may also lose its type approval for operation on public roads.

● Wheels and wheel bolts are matched to each other.

Therefore, whenever wheels are changed to a different version (e.g. alloy wheels or wheels with winter tyres), the corresponding wheel bolts with the correct length and taper, must also be used. The security of the wheels and the functioning of the brake system depend on this!

● If wheel trim discs are subsequently installed it is essential to ensure that the air flow remains adequate to cool the brakes.

Wheel bolts

The tightening torque for steel and alloy wheels, as well as the spare wheel, is 170 Nm.

The wheel bolts must be clean and easy to turn – do not grease or oil under any circumstances!

Warning

The wheel bolts could loosen whilst the vehicle is in motion if the tightening torque is too low – risk of accident! The wheel bolts or the wheel bolt thread could be damaged if the torque is too high.

B7M-383M

Changing the wheels round

If the front tyres are worn more than the rear it is advisable to change the wheels round as shown. All tyres will then have approximately the same length of service life.

With certain types of tread wear it can be an advantage to change the wheels diagonally. Volkswagen dealers have the necessary information.

Winter tyres

Warning

In winter conditions, winter tyres will significantly improve the vehicle's handling – even for four-wheel drive vehicles.

Because of their construction (width, rubber mixture, tread formation, etc.), summer tyres provide less traction on ice and snow.

When fitting winter tyres note the following:

- Only radial ply winter tyres may be fitted. All of the tyre sizes listed in the vehicle documentation can also be driven as winter tyres.
- To obtain the best possible handling characteristics, winter tyres must be fitted on all four wheels.
- Winter tyres are no longer fully effective when the tread has worn down to a depth of 4 mm.
- The filling pressure for winter tyres must be 0.2 bar higher than summer tyres, as long as 3.5 bar is not exceeded.

The following speed limits apply for winter tyres:

Code letter Q max. 160 km/h
 Code letter S max. 180 km/h
 Code letter T max. 190 km/h
 Code letter H max. 210 km/h
 Code letter V max. 240 km/h

Please also refer to the further notes on next page.


Warning

The highest permissible speed for your winter tyres must not be exceeded. This could damage the wheel and lead to a serious accident.

In Germany, vehicles which can exceed this speed must have an appropriate sticker in the driver's field of view. Suitable stickers are available from Volkswagen dealers.

Please note regulations to this effect in your country.

- All-weather tyres can also be used instead of winter tyres.
- If you have a flat tyre the remarks on using the spare wheel on page 45 should be noted.
- Do not leave winter tyres fitted for an unnecessary long period because when the roads are free of snow and ice the handling with summer tyres is better.

 ***For environmental reasons summer tyres should be fitted again as soon as possible because normally they are quieter in running, tyre wear is reduced and the fuel consumption is lower.***

Snow chains

Warning

For your own safety, please refer to the details given in the instructions delivered by the snow chain manufacturer.

Snow chains may only be fitted on the front wheels – this also applies to vehicles with four wheel drive.

Information concerning which snow chains may be fitted to which tyre can be obtained from your Volkswagen Service Centre.

Only use thin chains which do not stand clear more than 15 mm (including tensioner).

When using snow chains wheel trim plates and trim rings must be taken off. For safety reasons the wheel bolts must then be fitted with caps which are available from Volkswagen dealers.

When driving over roads which are free of snow you must remove the chains. On such roads they are detrimental to vehicle handling, damage the tyres and wear out quickly.

In Germany, the maximum permissible speed with snow chains is 50 km/h.

Accessories, modifications and renewal of parts

Your vehicle is built in accordance with the most modern principles of safety technology and offers therefore a high degree of active and passive safety. To ensure that this remains so the vehicle as supplied by the factory may not be modified without careful thought. The following points must be noted if the vehicle is to be subsequently fitted with accessories, technically modified or have parts renewed later on:

- Always consult a Volkswagen dealer **before** purchasing accessories spare parts and **before** any technical modifications are carried out, because the Volkswagen Organisation is particularly competent in such matters due to the close cooperation with us.
- Approved Volkswagen accessories and Genuine Volkswagen Parts³⁾ can be obtained from Volkswagen dealers who will, of course, carry out the fitting correctly.
- We recommend that work on your vehicle be carried out by Volkswagen Service using genuine approved Volkswagen accessories and genuine Volkswagen parts.

Please appreciate that Volkswagen Service cannot accept warranty claims for damage resulting from unqualified work carried out on the vehicle.

³⁾ Not available in all countries.

- Appliances which have been retro-fitted and have a direct influence on the driver's control of the vehicle e.g. cruise control system or electronically controlled shock absorber systems must have the **e**¹⁾ symbol and be authorised for that vehicle.
- Additionally connected electric consumers e.g. refrigerators, horns, fans etc. which are not directly linked to the control of the vehicle must carry the **CE**²⁾ symbol.
- If technical modifications are to be made, our guidelines must be observed. This is to ensure that no damage occurs to the vehicle, that the traffic and operating safety is retained and that the modifications are permissible. Volkswagen dealers will also carry out this work correctly or will recommend a specialist workshop.

Warning

Please take notice of the warning notes on the next page.

- ¹⁾ **e** - Authorisation symbol of the European Community
- ²⁾ **CE** - Manufacturer conformity declaration in the European Community

Warning

- **The reliability, safety and suitability of Volkswagen Genuine parts and Volkswagen Genuine accessories³⁾ have been specially established for your vehicle.**
- **Despite continuous market observation we cannot assess or accept responsibility for other products, even in cases where an officially recognized permit has been issued.**
- **Accessories such as telephone retainers or drinks holders must never be attached to the Airbag covers or within their area of effectiveness. They could be a cause of injury if the Airbag is activated during an accident!**
- **Please refer to the safety notes on page 27 before carrying out any work on the engine or in the engine compartment.**

Installing radio

When retro-fitting a radio, but also when replacing a set installed by the factory the following points should be noted:

- The connections* in the vehicle are for Genuine Volkswagen radios¹⁾ as of Model Year 1999.
- Radios with other connections must be connected with an adapter cable which can also be obtained from a Volkswagen dealer.

Warning

On no account cut wires off and leave them without insulation. If necessary use a proper adapter. Otherwise the wiring can be overloaded or short circuits can occur – danger of fire!

Apart from this important electronic components can be damaged or the functioning impaired. If for example the speed signal is disturbed this can lead to faulty management of engine, automatic gearbox, ABS etc.

Even connecting the speed signal to radio sets with speed dependent volume control from other manufacturers can cause such faults.

¹⁾ Not available in all export markets

- It is advisable therefore to have the installation of the radio system done by a Volkswagen dealer. They are fully informed about the technical features of the vehicle, have the Genuine radios¹⁾, the necessary fitting parts from the Genuine Volkswagen Accessory Programme¹⁾ and work in accordance with the guidelines developed by the factory.

- The radios from the Genuine Volkswagen Accessory Programme¹⁾ are similar to those used in the factory and ensure trouble-free installation. These sets are in keeping with the advanced technology and well-planned easy-to-operate design. In Germany there is also an Exchange Service for these radios so that even after years of use a set requiring repair can be exchanged cheaply for a completely reconditioned, good-as-new set by a Volkswagen dealer.

- Loudspeakers, fitting parts, aerials and suppression kits should also be taken from the Genuine Volkswagen Accessory Programme¹⁾. These parts have all been specially developed for each vehicle model.

Mobile telephones and two-way radios

The installation of mobile telephones and two-way radios should be carried out by a specialist workshop, e.g your Volkswagen dealer.

Volkswagen has authorised the use of mobile telephones and two-way radios for your vehicle with correctly installed external aerial and maximum broadcast power of 10 Watts .

On vehicles with a provision for a telephone*, the appropriate connecting cables can be found under a cover plate underneath the driver's seat.

When using mobile telephones or two-way, faults in the vehicle electrics could occur under the following conditions:

- **no external aerial**
- **external aerial incorrectly installed**
- **broadcast power higher than 10 Watts.**

Mobile telephones or two-way radios must not, therefore, be operated inside the vehicle without a separate external aerial or with an aerial which has been incorrectly installed.

Warning

Mobile telephones and two-way radios operated inside the vehicle without a separate external aerial or with an incorrectly installed external aerial can be injurious to health due to the extremely high electromagnetic fields generated!

Furthermore, optimal range is only achieved with an external aerial.

Note

The operating instructions of the mobile telephone or two-way radio must be adhered to!

If you want to use a mobile telephone or two-way radio with a broadcast power of higher than 10 Watt, please ask your Volkswagen dealer. He is aware of the technical possibilities for retro-fitting mobile telephones and two-way radios.

Warning

Please concentrate on your driving first of all!

Never install telephone retainers on the Airbag cover or within its range of effectiveness. This would increase the risk of injury should the Airbag be activated during an accident!

First aid kit, Warning triangle

B7M-109C

Vehicles without removable ball coupling on tow hook

The standard **first aid kit** fits together with a **warning triangle** of the type shown here, in the mounting on left of luggage compartment. They are secured with the rubber band, which is hung behind a retainer (arrow).

Note

- The first aid kit and warning triangle are **not** included in the scope of delivery for the vehicle!
- The first aid kit and warning triangle are **not** included in the scope of delivery for the vehicle in some export markets!
- **The first aid kit and warning triangle must correspond to legal stipulations.**
- **You should also note the use-by date of the contents of the first aid kit.**

B7M-110C

Vehicles with removable ball coupling on tow hook

The standard **first aid kit** fits together with a **warning triangle** of the type shown here, in the mounting on left of luggage compartment. They are secured with the rubber band, which is hung behind a retainer (arrow).

Note

The first aid kit is located behind the left side luggage compartment trim on vehicles equipped with the **multi-media package**.

Vehicle tools, Tow hook*, Spare wheel

B7M-094C

Stowage of vehicle tools

The vehicle tools and the jack are located behind the right-hand luggage compartment trim and is accessible by opening a flap. The tool box is secured with a thumb wheel.

Warning

Ensure that the vehicle tools are stowed securely, so that they cannot injure the vehicle occupants should you brake suddenly or be involved in an accident.

Vehicle tools

Warning

- The jack supplied by the factory is only designed for your vehicle model. On no account should heavier vehicles or other loads be lifted!
- With the vehicle lifted, never start the engine – danger of accident.
- If work has to be done underneath the vehicle, ensure that it is supported on suitable stands.

Vehicles may also have:

- Tool box*
- Wheel bolt spanner
- Wire hook* for wheel trims
- Open jaw spanner 10 x 13
- Screwdriver with box spanner in handle for the wheel bolts.
The screwdriver blade is reversible.
- Jack
Before the jack is placed back into the tool box, the claw must be fully wound back. The crank is then tensioned against the side of the jack.

B7M-111C

Stowage of tow hook*

On vehicles with a removable ball coupling on the tow hook*, the ball coupling is stored behind the right side trim in the luggage compartment and is accessible after opening a flap. The ball coupling is secured with a thumb wheel.

Warning

Ensure that the tow hook* is stowed securely, so that they cannot injure the vehicle occupants should you brake suddenly or be involved in an accident.

B7M-127C

An instruction manual for the installation or removal of the ball coupling can be found in a plastic bag in the vehicle tool box.

If the ball coupling has been installed, the cover from the bumper and the plug from the mounting can be placed in the plastic bag and stored in the vehicle as shown in the illustration.

B7M-095C

Stowage of spare wheel

The spare wheel is located outside the vehicle, in a bracket below the luggage compartment floor.

Removing spare wheel

- Fold the small cover **(A)** in the luggage compartment floor near tailgate lock in the luggage compartment floor forwards.
- Remove the rubber seal **(B)** on the eyelet upwards.
- Take the wheel spanner **(C)** from the vehicle tools. Place it as far as it will go over the bolt. Hold in this position and press the locking ring **(D)** down.
- Turn the wheel spanner anti-clockwise until the spare wheel, which is attached to a rope, can be stood next to the vehicle.

B7M-096C

- Squeeze the retainer lightly (arrows **1**) and at the same time fold the cross piece in the direction shown by the arrow **2**. Now guide the retainer through the central opening in the spare wheel.

Stowage of changed wheel

- Stand the wheel behind the vehicle, as shown in the above illustration.
- Guide the retainer from the inner side of the wheel through the central opening of the changed wheel.
- Fold the cross piece in the opposite to arrow **2**.
- Push the changed wheel under the vehicle with the outer side facing down.

B7M-097C

Note

If you need to drive without a spare wheel, the spare wheel bracket, together with the rope, must be fully wound up to the vehicle floor.

- Turn the bolt in the luggage compartment floor clockwise with the wheel spanner to lift the wheel into the wheel bracket under the vehicle. **Ensure that the wheel fits into the recess (arrows) in the bumper, as shown in the illustration.**
- Turn the bolt (max. torque 25 Nm) until the wheel sits firmly in the luggage compartment floor. Seal the opening with the rubber seal and fold the cover back.

B7M-650M

The breakdown set is located behind the right trim in the luggage compartment (see illustration).

To remove the breakdown set, unscrew the winged nut from the breakdown set to the right and move the retainer to the left to the rear.

Note

The vehicle tools will first have to be removed on vehicles fitted with a tow hook.

Warning

● **In case of a flat tyre or puncture, park the vehicle as far as possible away from the traffic flow. If necessary, switch hazard warning lights on and place the warning triangle in position – note any statutory requirements.**

The breakdown set includes:

- A plug
- A tyre filler hose
- A tyre filler bottle with sealant
- A compressor and
- A tyre pressure indicator

Application

Small cuts (up to 4 mm in width), particularly in the tyre road contact surface, can be sealed with the breakdown set.

Foreign bodies (e.g. screws or nails) should not be removed from the tyre.

Warning

Cut or stab damages to the tyre which are larger than 4 mm, tyre damage resulting from driving with extremely low tyre pressure or even empty tyres, or even damages to the disk wheel all present considerable risks to safety – Risk of accident! Please do not drive the vehicle – go to a

Should your vehicle have a flat tyre, leave the engine running and proceed as follows:

- Remove the sticker "max. 80 km/h (50mph)" from the breakdown set and stick it on the instrument panel in the driver's field of vision.
- Remove the valve cover on the defective tyre and screw the tyre filler hose onto the valve.
- Pull the cigarette lighter out and insert the electro-plug from the breakdown set in the cigarette lighter plug.
- Switch the compressor on. Ensure that the air release valve on the pressure indicator is closed!
Leave the compressor on for at least 5, but a maximum of 10 minutes.
Once a pressure of 2.5 to 3.5 bar has been reached, switch the compressor off (after a minimum run-time of 5 minutes).

Warning

**The sealant must not contact skin or eyes under any circumstances – Risk of injury!
Keep the sealant out of the reach of children!**

● **You may not continue with your journey** if the tyre pressure does not reach at least 2.5 bar with 5 to 15 minutes – **Call Volkswagen Service!**

● If a tyre pressure of at least 2.5 bar is reached within 5 to 15 minutes, **continue your journey immediately driving with a maximum speed of 80 km/h (50 mph) for 10 minutes.**

The tyre will be sealed whilst the vehicle is in motion.

The driving response of the vehicle can be affected by the sealant in the tyre.

● Check the tyre pressure of the repaired wheel after driving for approximately 10 minutes. To do this, connect the breakdown set as before and then switch the compressor on briefly and then off again. You will be able to read off the tyre pressure after a few seconds.

● If the tyre pressure has fallen **below 1.8 bar, you may not continue with your journey – call Volkswagen Service!**

● If **more than 1.8 bar** are displayed, correct the tyre pressure to the proper value (see sticker in the tank flap) and continue with your journey at a **max. 80 km/h (50 mph) to the nearest workshop** so that the defective tyre can be replaced.

The tyre filler bottle should be replaced as soon as possible.

Changing wheels

Warning

- **Only Volkswagen approved jacks should be used for your vehicle.**
- **Other jacks, even from other Volkswagen vehicles, may not be used. The jack could slip – risk of injury!**
- **Never leave the engine running when the vehicle is on the jack – risk of accident!**
- **Suitable supports should be used when working underneath the vehicle.**
- **In case of a flat tyre, park the vehicle as far as possible away from the traffic flow. If necessary, switch hazard warning lights on and place the warning triangle in position – follow any statutory requirements.**
- **All vehicle occupants should leave the vehicle and move to a safe area (e.g. behind safety barrier).**
- **Apply handbrake firmly, select a gear or place selector lever to position "P" and chock the opposite wheel with a stone or similar.**
- **When towing a trailer, the trailer must first be disengaged from the towing vehicle before the wheel is changed.**

B7M–387M

- **Carry out wheel change on as flat a surface as possible.**
- Take the tools out of the vehicle.
- Take spare wheel out of bracket.
- To remove wheel trim:
 - Remove wheel bolt caps.
 - Remove hub cap or wheel trim with the wheel spanner and the specially designed wire hook.

Some alloy wheels are fitted with caps on the wheel bolts which can be removed using the wire hook included in the vehicle tool box.

Guide the hook through the opening on the cap and pull the cap off.

B7M-384M

- Push the wheel spanner as far as possible onto the wheel bolt as shown and turn the spanner anti-clockwise. When doing this, grip the spanner as far as possible towards the lever end.

If the bolts cannot be loosened, one can in an emergency, carefully push the spanner down with a foot on the end of the lever. One should ensure that one has a firm stance and a good grip on the vehicle.

Loosen wheel bolts about one turn.

Warning

On no account should the multi-point bolts be loosened on wheels with an outer ring. The wheel could leak – risk of accident!

Refer to page 64 for notes on loosening the anti-theft wheel bolts.

B7M-385M

- Depressions under vehicle for jack:
 - Depressions in the side member at front and rear indicate the points at which the claw of jack must be fitted to the vertical rib of the side member – see arrows in illustration.

Warning

The vehicle could be damaged if the jack is not placed at the positions as described. There is also a risk of injury!

The vehicle could slip off the jack if the ground below the jack is too soft.

The jack should, for this reason, be placed on a solid base. If necessary, use a large and stable underlay for the jack.

If the ground under the jack is slippy (e.g. a tiled floor) a non-slip surface (e.g. rubber mat) should be used.

B7M-388M

- Place jack under vehicle:
 - Wind jack arm up by turning the crank in the spindle until the jack just goes under the vehicle.
 - The foot of the jack must be placed fully and securely on the ground.
 - Align jack and at same time wind claw up further until it contacts the vehicle.

Warning

The claw of the jack must fit round the vertical seam of the sill so that the jack does not slip when the vehicle is being raised – see illustration.

- Lift vehicle until the wheel is just clear of the ground.
- Remove wheel bolts and place them on a clean surface (hub cap, cloth, paper) next to the jack and take the wheel off.
- Fit spare wheel and tighten all bolts using hand only.

To prevent the wheel from rusting solid, the wheel can be greased round the hub.

The thread for the wheel bolts must, however, not be greased.

The wheel bolts must be clean and easy to turn – do not grease or oil under any circumstances!

- Lower vehicle and fully tighten bolts in diagonal sequence using the wheel spanner.
- Refit the wheel trim.
- Place and secure defective wheel in spare wheel bracket.

Please also refer to the further notes on next page.

Notes on changing wheel

● The box spanner in the screwdriver handle makes handling the wheel bolts easier. The blade should be removed when doing this.

Never use the box spanner in the handle of the screwdriver to loosen or tighten wheel bolts.

● The following points should be noted after changing a wheel:

- Check the inflation pressure of the replacement wheel as soon as possible.
- Have the tightening torque of the wheel bolts checked with a torque wrench as quickly as possible. The torque for steel and alloy wheels is 170 Nm.

Warning

The wheel bolts could loosen whilst the vehicle is in motion if the tightening torque is too low – risk of accident! The wheel bolts or the bolt thread could, however, also be damaged if the tightening torque is excessively high.

If the wheel bolts are seen to be corroded or too tight when changing the wheel, they must be replaced before checking the torque

Until this has been done, you should only drive at low speeds.

● When using a spare wheel which differs from those on the vehicle, the points on page 45 must be noted!

● The defective wheel should be repaired as soon as possible.

Warning

If the vehicle is to be subsequently fitted with wheels or tyres which differ from those fitted by the factory, it is essential to read the relevant remarks on page 46.

Note for tyres where the direction of rotation is stipulated

It is imperative that the designated direction of rotation for tyre treads (which can be determined from the arrow on the side of the tyre) be kept to. The best tyre performance i.e. in aquaplaning, road adhesion, noise and wear are then guaranteed.

If a spare wheel has to be fitted against the stipulated direction of rotation, this measure should only be a temporary one. The best possible tyre performance concerning aquaplaning, noise level and wear are no longer fully guaranteed.

We recommend that you take this into account, especially in wet weather, and adjust your speed to the driving conditions.

In order to use the principle of the direction of rotation fully again, the faulty tyre must be replaced as soon as possible.

If necessary, mount the tyre fitted against the direction of rotation in the stipulated direction.

Anti-theft wheel bolts*

Each wheel is also secured with an anti-theft wheel bolt.

We would recommend that you keep the adapter in a location known to the vehicle owner at all times, preferably with the vehicle tools.

Code number

The code number for the wheel bolt is imprinted on the upper side of the adapter.

You should note the code number and keep it in a safe place.

A replacement adapter can only be supplied by Volkswagen using this code card.

B7M-389M

Loosening or tightening the anti-theft wheel bolts

- 1 - Anti-theft wheel bolt
 - 2 - Adapter for the wheel bolt.
- First press the adapter **2** as far as possible into anti-theft wheel bolt **1**. The adapter will only fit in one position on the anti-theft wheel bolt.
 - Push the wheel spanner (from the vehicle tools) as far as possible onto the adapter **2**. The wheel bolt can now be loosened or tightened to the specified tightening torque – see page 63.
 - After changing the wheel, remove the adapter from the wheel bolt.

We would recommend that you keep the adapter in a location known to the vehicle owner at all times, preferably with the vehicle tools.

B7M-040C

If the system should develop a fault the roof can also be closed by hand.

- Remove interior light by inserting flat

Fuses

The individual current circuits are protected by fuses.

All electric windows are protected together via an automatic fuse which breaks the circuit when overloaded (e.g. windows frozen) and makes the circuit again automatically after a few seconds.

It is advisable to always carry a few spare fuses on the vehicle. These can be obtained from any Volkswagen dealer.

Warning

Never, under any circumstances "repair" the fuses or replace them with more powerful ones, as damage in another part of the electrical system could result. This could even lead to a fire.

Fuse colour code:

Violet:	3 Amp
Beige:	5 Amp
Brown:	7.5 Amp
Red:	10 Amp
Blue:	15 Amp
Yellow:	20 Amp
White	25 Amp
Green:	30 Amp

B7M-386M

Changing a fuse

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

The fuses are located in the instrument panel behind a cover – see illustration and the overview in the front of Booklet 3.1.1, "Cockpit".

On some models, further fuses can be found in the vehicle e.g. in the engine compartment on the battery. These fuses should only be replaced by a qualified dealer.

- Switch off the ignition and the component concerned.
- Take the cover off – see illustration.
- A pair of plastic pliers* is secured inside the lid or in the fuse box and should be used to remove the fuses.
- The fuse layout is shown on a card in the lid of the fuse box.

- Pull out the fuse concerned.
- Replace blown fuse – can be recognised by the burnt metal strip – with a fuse of **same** amperage.
- If the newly inserted fuse blows again after a short time, the electrical system must be checked by a qualified dealer as soon as possible.
- Replace cover.

Fuse layout

The fuse layout is shown on a card in the lid of the fuse box.

A number of consumers may run over the same fuse e.g. heating, air conditioning and the blowers. In this case, several pictures can be seen on the fuse card.

The meaning of the pictures on the card is as follows:

Dipped beam

Main beam

Headlight range control

Parking light

Fog light

Rear fog light

Reverse light

Turn signals

Hazard lights

Instrument lighting

Blower

Air conditioning

Heating

Heated windscreen

Heated rear window

Heated exterior mirror

Exterior mirror adjustment

Folding in exterior mirror

Seat heating

Horn















Windscreen wiper
and washer

Rear window wiper
and washer

Rear window wiper

Headlight cleaning system

Sliding roof

	Electric windows	Telephone, Telematics
	Cigarette lighter	Mobile telephone
	Vent window	Cruise control system
	Locking system	Navigation
	Read owner's manual	Interior lighting
	Central electrics	Reading light
	Ignition electrics	Fuel pump
	Engine electrics	Connector for trailer towing
	ABS	
	ESP	
	Selector lever lighting	
	Immobilizer	
	Licence plate	
	Heated windscreen washer vents	
	Combi-instrument	
	Central locking	
	Radio	
	CD player, CD changer	

Replacing bulbs

It is normally no longer possible to replace a bulb without first removing other vehicle parts. This applies to bulbs in particular as they can only be accessed from the engine compartment. Special skills are thus required to carry out this work.

Warning

Particular care and attention should be paid when working in the engine compartment!

● **H7-bulbs* are pressurized and can explode when changing the bulb. Risk of injury!**

● **There is a potentially fatal risk when working with vehicles fitted with gaseous discharge lamps* if the high voltage part of the lamp is handled incorrectly!**

We recommend, therefore, that the bulbs only be replaced by a Volkswagen dealer, or that you ask them for expert advice.

Please note the following points, however, if you wish to change a bulb:

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

● **The access to the headlights in the engine compartment can, according to the engine version, be extremely difficult and thus hinder the changing of the bulb. You could also, above all, injure your arms and hands.**

Before starting to replace a bulb, you must first always switch off the consumer concerned.

Do not touch the glass part of the new bulb with bare fingers because the finger marks left on the glass evaporate when the bulb becomes hot, the vapour settles on the reflector and dims it.

Always use the same type of bulb. The designation is marked on the base of the bulb or on the glass.

It is advisable to always carry a box of spare bulbs in the vehicle. These can be obtained from Volkswagen dealers.

Please also refer to the further notes on next page.

B7M–390M

Main headlight bulb

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

Renewing the bulb for dipped beam and main beam

- Open bonnet.
- On the left hand side, pull the divider **1** up and out.
- On the right hand side, screw out both of the quick releases (arrows) and remove the battery cover **2**.
- Fold out the appropriate spring clip on the rear of the headlight and fold the clip up.

The spring clip on the left hand side is located between the windscreen washer filler opening and the mudguard.

- Remove the headlight cover by lifting it out and up.
- Replace the defective bulb.
 - Remove the connector from the bulb.
 - Push the spring clip over the lugs and fold it to the side.
 - Pull the bulb out of the reflector.
 - Insert the new bulb so that the lugs are in the bulb plate in the recess in the reflector.
- Place the headlight cover with the retaining lugs wide apart in the receiver.
- Fold the upper spring clip over the headlight cover and engage the clip securely.
- Push the divider **1** into the side guide rails to the very end and also secure the battery cover **2** with the quick releases.
 - Check the headlight setting after installing a new bulb.

B7M-391M

B7M-651M

Lights in the tailgate

- Remove flap in trim.
- Press spring retainer in direction of arrow and remove downwards.
- Press defective bulb into holder, turn it to left and take it out.
- Insert new bulb and turn it fully to the right.

B7M-652M

- Place bulb holder lug first into body opening (arrow) and press holder up at rear until the spring retainer engages.
- Refit flap. To do this, first slide both flap lugs behind tailgate trim and press flap upwards until it engages.

If the engine will not start because the battery is flat, **jumper cables** can be connected to the battery of another vehicle to start the engine. The following points should be noted:

Warning

Please refer to the warning notes on page 27 before carrying out any kind of work in the engine compartment.

- Both batteries must be of the 12 Volt variety and the capacity (Ah) of the booster battery must be approximately the same as that of the flat battery.
- The jumper cables must be heavy enough to carry the load. Note cable manufacturer's data.
- Only use jumper cables with insulated clips.

Warning

Never charge a frozen battery – risk of explosion! There is still a risk of chemical burns from acid leaks even after thawing. Always replace a frozen battery.

Replace a frozen or thawed as the battery housing might have cracked due to the ice. Battery acid might leak out as a result and damage the vehicle.

- There must be no contact between the vehicles, otherwise current can flow as soon as the plus terminals are connected.
- The flat battery must be properly connected to the electrical system.
- The engine of the boosting vehicle must be running.
- Ensure that the insulated clips have enough contact to metal. This is particularly applicable to clips which are attached to the engine block.

Fuse colour code for the starter cable:

B1J-223M

A – Flat battery

B – Boosting battery

The jumper cable must be attached in the following order:

On some models, a cover of the fuse holder* must be opened before it is possible to connect the (+) pole of the battery.

1. One end of (+) cable to the (+) terminal of the flat battery **A**.
2. Other end of the cable to the (+) terminal of boosting battery **B**.
3. One end of (-) cable to the (-) terminal of boosting battery **B**.
4. Other end of cable (**X**) to a solid metal part bolted to the block or to cylinder block itself. This connection should be as far away as possible from the discharged vehicle battery **A**.

Warning

- **Do not connect the negative cable (X) to the negative terminal of the flat battery. The gas emitting from the battery could be ignited by the sparks caused.**

- **The negative cable may never be attached to parts of the fuel system or to the brake cables.**

- **The non-insulated parts of the cable clips must not touch one another on any account. Furthermore the jumper cable attached to the battery positive terminal must not come into contact with electrically conductive vehicle parts – danger of short circuit!**

- **Route the jumper cables so that they cannot come into contact with rotating parts in the engine compartment.**

- **Do not stand with your face over the battery – danger of acid burns!**

- **Keep sources of ignition (naked flames, burning cigarettes etc.) well away from the battery – danger of explosion!**

- Start the engine as described in the "Starting engine" section of Booklet 3.1.1.
- If the engine does not start at once, stop using starter after 10 seconds, wait about half a minute and then try again.
- Turn on the blower and the rear window heating in the vehicle with the discharged battery so that voltage peaks can be minimised when disconnecting.
- **Ensure that the headlights are switched off as the bulbs can be destroyed by voltage peaks when disconnecting the cables.**
- With engine running, disconnect cables in reverse sequence.

Tow starting/towing

General notes

- Check whether there are any local traffic regulations concerning the towing of vehicles.
 - The tow-rope should be slightly elastic to reduce the risk of damage to both vehicles. It is advisable to use synthetic fibre ropes, or ropes of similar elastic material. **It is however safer to use a towing bar!**
- Avoid excessive towing effort and do not jerk. During towing operations on other than surfaced roads there is always the danger that the attachment points will be overloaded and damaged.
- **Before trying to tow start, an attempt should be made to start using the battery of another vehicle – see previous page.**
 - Both drivers must be familiar with towing procedures. Inexperienced drivers should not attempt to tow start or tow.

- When using a tow-rope the driver of the towing vehicle must engage the clutch very gently when moving off and changing gear.
- The driver of the vehicle being towed must ensure that the tow-rope is always taut.
- The emergency lights must be switched on on both vehicles – unless local regulations differ.
- Turn ignition key to "Drive" position so that the steering wheel is free and the turn signals, horn, and, if necessary, the wind-screen wiper and washer can be used.
- As the brake servo only works when the engine is running, considerably more pressure is required on the brake pedal when the engine is not running.
- More force than usual will be required to turn the steering wheel as the power assisted steering does not work when engine is not running.
- When there is no lubricant in the manual or automatic gearbox, the vehicle may only be towed with driving wheels lifted.
- The vehicle must be lifted at the front if the distance to be towed is further than 50 km.

A tow-rope or a towing bar must only be applied at the following points:

B7M-392M

Front towing eye

A cover in the lower area of the bumper on the right hand side must first be removed to gain access to the front towing eye – see illustration.

To remove the cover, press together the plastic part **1** in the given arrow direction. This will disengage the retaining lugs and the cover can be taken off to the front.

To install, first press the cover with the thin side in the rear of the receiver. Then press the cover to the back until it engages fully.

B7M-203C

Rear towing eye

- The towing eye is located on the right under the rear bumper – see illustration.

Tow starting

We recommend as a general rule that you should **not** tow start your vehicle. Emergency starting procedures should be used instead – see page 73.

There are a number of reasons for not tow starting:

- There is a high accident risk when tow starting, e.g. the vehicle could crash into the vehicle that is towing.

- **Unburned fuel can enter the catalytic converter on vehicles with a petrol engine and cause damage.**

If a vehicle is to be tow started despite the above warnings the following points must be noted by the driver of the vehicle being towed:

- **Before** moving off, engage **2nd** or **3rd** gear, depress and hold clutch.

- Switch ignition on.

- Once both vehicles are moving, release the clutch.

- As soon as engine starts, depress clutch and move gear lever into neutral to avoid running into the towing vehicle.

- **For technical reasons tow starting a vehicle with an automatic gearbox is not possible.**

Towing

When towing vehicles with an automatic gearbox, the following points must be noted in addition to the details on page 75:

- Selector lever at “**N**”.

- Do not have the vehicle towed faster than 30 mph (50 km/h).

- To not tow further than 30 miles (50 kilometres).

Reason: When the engine is not running, the gearbox oil pump is not working and the gearbox is not adequately lubricated for high speeds or long distances.

- With a breakdown vehicle the vehicle may only be suspended at the front.

Reason: If given a rear suspended tow, the drive shafts turn backwards. The planetary gears in the automatic gearbox then turn at such high speeds that the gearbox will be severely damaged in a short time.

Lifting vehicle

Vehicle jack

The procedure for lifting with the vehicle jack is described on page 61.

Vehicle hoist

Before driving onto a vehicle hoist, please ensure that there is adequate clearance between the hoist superstructure and the low parts on underside of vehicle.

B7M-102C

Trolley jack

It is essential to use a suitable rubber pad to prevent damage to the underside of the vehicle.

On no account should the vehicle be lifted under the engine, gearbox, rear axle or front axle as this can cause serious damage.

Front

B7M-103C

Warning

- **Never start the engine with the vehicle lifted on the jack – danger of accident!**
- **The vehicle must be supported on suitable stands if work has to be done underneath the vehicle.**

Rear

Lifting points for hoist and trolley jack

The vehicle may only be lifted at the points shown in the illustration as serious damage could otherwise be done to the vehicle.

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