

# Instruction Manual





# **Instruction Manual and Service Card**

**VW 1600 L Karmann Ghia Coupé**

August 1966

**VOLKSWAGENWERK AKTIENGESELLSCHAFT**



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Apart from Sealed-Beam headlights, special equipment such as is often required due to local regulations in various countries is not shown in this manual.



## It is advisable

to read the first part of this instruction manual, which deals with the operation of your Volkswagen, very carefully. You will then get to know your new car quickly and will be able to start off on your first trip with complete confidence.

Everything about winter driving, tips on care of the vehicle and numerous points on carrying out small repairs and adjustments are given in the second half of this manual. This part also contains information on lubrication and maintenance and some interesting technical data.

At the back of the book is the service card, the warranty voucher and terms of warranty and a voucher for the free-of-charge maintenance service. The stamps in the squares show you that the lubrication and maintenance services have been carried out regularly by a VW Dealer.

**Only one key** is required to open the door and the rear hood and to start the engine. The other key is for the glove compartment lid.

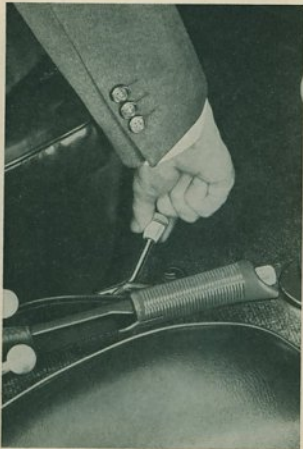
It is a good idea to note the numbers of the keys on a slip of paper which is then put with the vehicle documents. If you should lose the keys, you can always obtain replacements from your VW Dealer.



## Sit down and make yourself comfortable

When driving, you must be comfortable. That is why the Volkswagen has separate front seats which are built so that you can alter seat position and backrest rake to suit your requirements. This is quite

simple — just lift the lever at the front right-hand side of the seat and slide the seat forward or backward. After adjusting, make sure that the seat is securely locked in position.



The backrest rake can be set to various angles by turning the large knob on the other side of the seat. Try it out until you find the angle which suits you best.

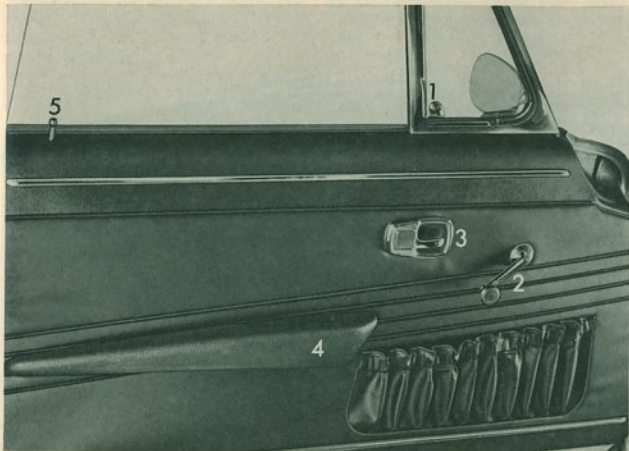
When the doors are closed, cable-operated safety catches prevent the backrests from tilting forward.



## Before closing the door from inside,

it is advisable to open a window slightly. The door will then be easier to close because the air can escape from inside the body.

- 1 - Vent wing fastener
- 2 - Window crank
- 3 - Lock release lever
- 4 - Armrest and door closing grip
- 5 - Safety knob for lock



The doors cannot be opened from inside with the release lever until the safety knobs have been lifted.

When leaving the vehicle, just press the safety knob down and depress the button



under the outer handle as you close the door. The vehicle is then locked.

If the door closes on its own after the safety knob has been depressed, it will not lock itself because the safety knob springs up automatically. This is an additional safety measure to prevent you from being locked out if the door should slam to while the key is still inside the vehicle.

## In front of you – the instrument panel

Even if it is not your first Volkswagen, just have a quick look at the dash and try out the various knobs and levers with the ignition switched on:

### 1 - Speedometer

### 2 - Fuel gauge

The following warning lamps are in the fuel gauge dial:

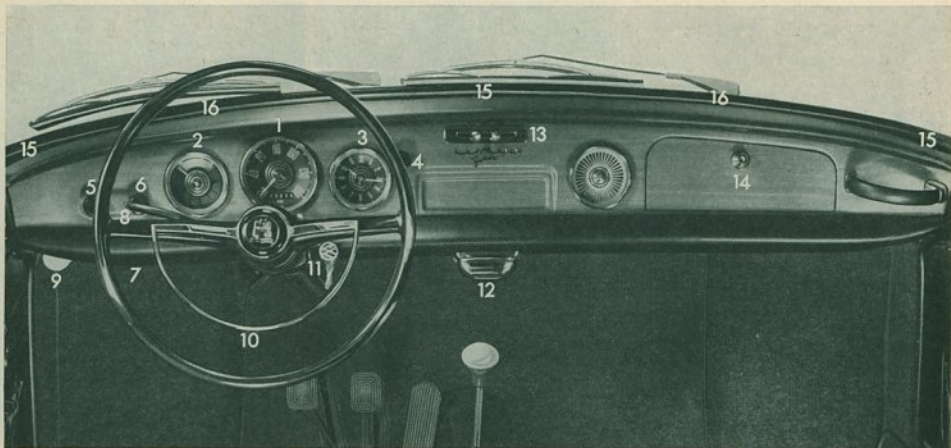
dark green — fog lamps  
blue — headlamp high beam  
red — generator  
light green — oil pressure  
light green arrows — turn signals

When the needle is on the vertical mark "R" there are about 5 liters (1 gallon) of

fuel left in the tank — time to refuel at the next opportunity.

### 3 - Clock

The clock is electrically operated. The hands can be moved by pressing in and turning the knob in the dial center.



#### 4 - Cigarette lighter

To switch the lighter on, press it in and then release it. When the element is hot, it springs back slightly and is ready for use.

#### 5 - Windshield wipers and windshield washer system

The two-speed wipers are switched on by turning the switch. They park automatically when switched off. When the knob in the center of the wiper switch is pressed, the washer sprays water on to the windshield.

#### 6 - Lighting switch

Pull the knob out to the first stop to switch on the parking, license plate and tail lights. When the knob is pulled out to the next stop, the headlamps are switched on as well. The headlamp beams are switched up and down with a small button in the turn signal lever. A blue warning light in the fuel gauge dial shows when the headlamp high beams are switched on.

The instrument lighting is switched on and controlled in brightness by turning the main lighting switch.

#### 7 - Fog lamps

The fog lamps are switched on with a separate switch underneath the instrument panel on the left. The fog lamps only work together with the headlamp low beams and when they are switched on, a green warning lamp in the fuel gauge dial lights up.

#### 8 - Turn signal switch

With ignition on:

- Lever up — right turn signals
- Lever down — left turn signals

The turn signals are cancelled automatically after taking a corner as soon as the steering wheel is returned to the straight ahead position.

With ignition off:

Lever up — right parking lamp

Lever down — left parking lamp

The button in the turn signal lever switches the headlamp beams up and down. When the lights are not on or only the parking lights are on, the button serves as a headlamp flasher (not with Sealed Beams).

#### 9 - Knob for front hood

#### 10 - Horn ring

#### 11 - Steering-ignition lock

- 1 — Ignition off — steering locked
- 2 — Ignition off — steering free
- 2 — Ignition on
- 4 — Starting



#### Important

Remove key from lock only when vehicle is stationary.

#### 12 - Ashtray

To remove ashtray, press leaf spring down and pull ashtray out.

#### 13 - Fresh air ventilation

The two levers control the flow of air through the vents at lower edge of windshields separately on each side of vehicle. As the levers are pressed outwards the flow of air increases.

#### 14 - Glove compartment

The knob is lockable. Press the knob to open the glove compartment lid.

#### 15 - Defroster vents

#### 16 - Fresh air vents

## Above the windshield

### 17 - Sun visors

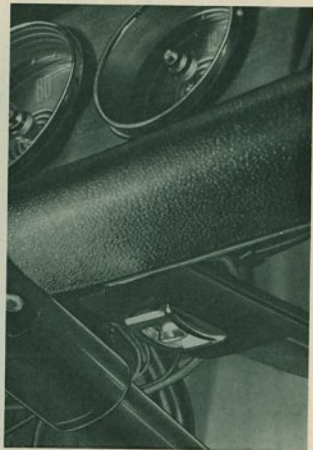
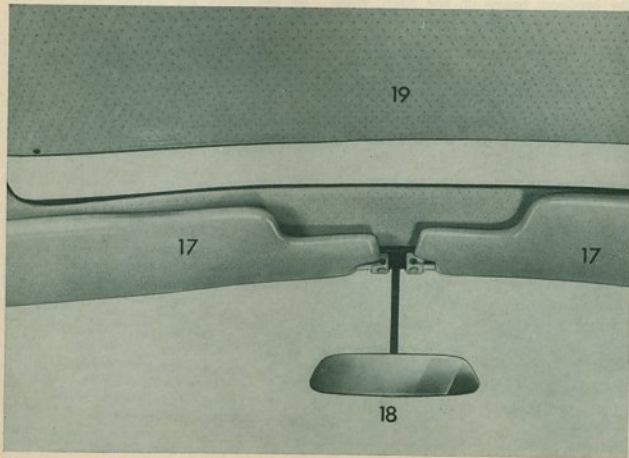
You can pull the visors out of the center mounting near the mirror and swing them towards the door windows to prevent dazzle from the side.

### 18 - Rear view mirrors

Inner and outer mirrors are ball joint mounted so that they can be set to give clear vision to the rear at all times.

### 19 - The sliding roof

The sliding roof is electrically operated and is controlled with a switch under the instrument panel to the right of the steering column. To open roof, slide switch to the rear, to close it move switch to front. The roof stops moving when the switch is released.





## In the footwell and between front seats

- 20 - Clutch pedal
- 21 - Brake pedal
- 22 - Accelerator pedal
- 23 - Gearshift lever

### 24 - Handbrake

To release the handbrake, pull the lever up slightly and press the locking knob.

### 25 - Heating control levers

- Lever up — heating on
- Lever down — heating out

The heating will be more effective if you open one of the vent wings slightly when the heating is on because the fan can then force the warm air into the body interior more easily.

### 26 - Heater control slides in front footwell

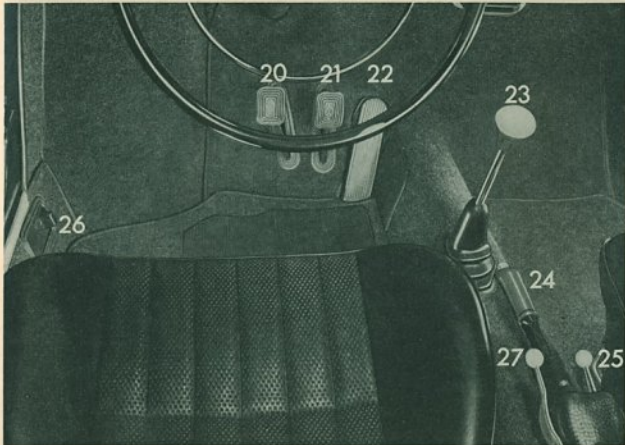
The flow of warm air into the front footwell can be controlled separately on each side by means of slides over the outlets.

### 27 - Control lever for heating in rear footwell

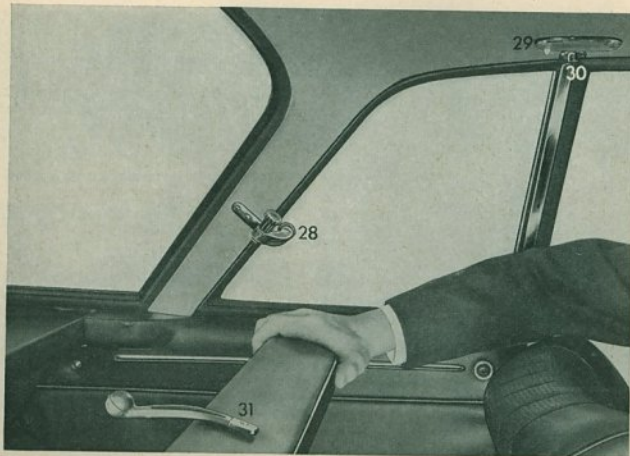
This lever controls the flow of warm air into the rear footwell when the heating is on.

- Lever up — flaps open
- Lever down — flaps closed

At low temperatures it is advisable to leave the rear outlets closed when first moving off. This increases the flow of air to the windshield and also helps to prevent steaming up when the air humidity is high. As soon as the windshield is clear, the rear footwell outlets should be opened so that the interior of the body heats up as quickly and uniformly as possible.



## Behind you . . .



**28 - Hinged window**

**29 - Interior lighting**

The light has a built-in switch which has three positions:

Knob down —  
light comes on when a door is opened

Knob up —  
light on

Knob in center —  
light off

**30 - Assist straps and coat hooks**

**31 - Emergency seat**

The bench behind the front seats is for children or can serve as an emergency seat. The backrest is held in the normal position by a rubber loop.

If you fold the backrest forward, you gain quite a lot of extra space for luggage.

### Safety belts

can be obtained from every VW Dealer. The belts for the driver and front seat passenger are fixed to mounting points on the quarter panels and on the side of the tunnel in the rear footwell.



Now let us have a look . . .

## ... in the front luggage compartment

Whether you are taking a lot of luggage with you or not, please load the front luggage compartment first, using the heaviest pieces of luggage if possible. A good distribution of load means good roadholding so take advantage of the possibilities offered by the Volkswagen with its two luggage compartments.



The knob which opens the front hood is right over on the left under the dash board. The hood springs up slightly first under spring pressure and can be opened fully when the safety hook near the lock has been pressed back. To close the hood press it down firmly until you hear a click. Never try to close the hood by pressing at the side, always press it in the center near the lock.

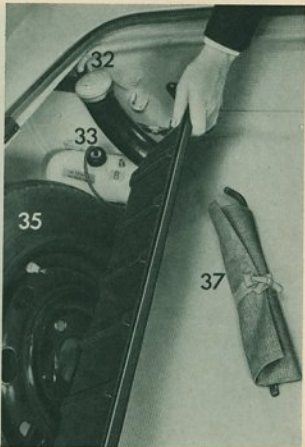
### 32 - Fuel tank filler

The tank holds 40 liters (10.6 US gallons 8.8 Imp gallons). The choice of fuel is left entirely to you. The Volkswagen will run satisfactorily on all normal commercial fuels which fulfil the octane requirements of the engine (90 octane).

If regular fuels with adequate anti-knock qualities are not available, premium fuels should be used or mixed with the regular fuel.

### 33 - Container for windshield washer

The container can be filled with water until it overflows. There is always room for sufficient air to operate the washer. The correct air pressure is 2.5 kg/cm<sup>2</sup> (35 psi). It is advisable to add a cleaning solution to the water as clear water alone is usually not adequate to ensure that the windshield is cleaned quickly and properly. If enough of this cleaning agent is put in, it also acts





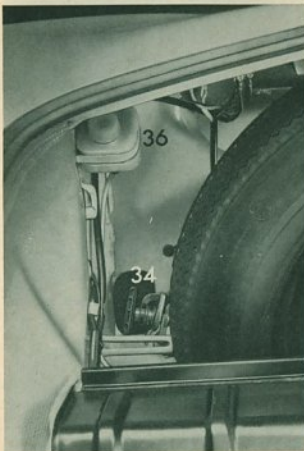
as an anti-freeze solution in the winter. Details of the mixing proportions are given in the list of cleaning materials on page 26. Methylated spirits can also be used as an anti-freeze agent. In this case a mixture of 1 part meths to 3 parts water will protect the water from freezing down to about  $-12^{\circ}\text{C}$  ( $10^{\circ}\text{F}$ ).

#### 34 - Jack

How you operate the jack is described together with wheel changing on page 30.

#### 35 - Spare wheel

Have the air pressure in the spare wheel checked from time to time. Inflate it to the highest pressure you will normally require. It is then easier to lower the pressure when fitting the wheel than to inflate to the pressure required.



#### 36 - Brake fluid reservoir

The container must be at least three quarters full. If this is not so, have your VW Dealer check the brake system.

#### 37 - Tools

In the tool bag you will find

- 1 wheel cap remover
- 1 pair of combination pliers
- 1 screwdriver with reversible blade for slotted and Phillips screws
- 1  $8 \times 13$  mm open-end wrench
- 1 socket wrench and bar for spark plugs
- 1 socket wrench for the wheel bolts
- 1 bar for the jack and the wheel bolt wrench

## ... and under the rear hood

which is opened by pressing the knob above the license plate. The catch which holds the hood in the slightly opened position can be released by pressing the hood down lightly.

The luggage compartment light goes out when the hood is closed. To lock the rear

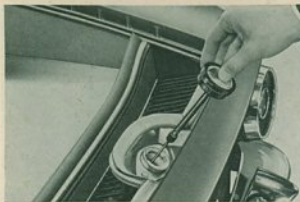
luggage compartment, you use the same key as for the doors and the ignition switch.

To get to the engine, detach the floor covering and roll it forward. The lid can be taken out after turning the two catches to the left.



## Before moving off, check

the fuel, the brakes, the lights and, at regular intervals, the oil level in the engine and the tire inflation pressures.



**The fuel** in the tank, when full, is sufficient for 400 — 450 kms (250 — 280 miles).

**The brakes** should be applied once or twice just after moving off to see that they are working properly.

**The lights** include headlamps, fog lamps, rear lights, license plate light, turn signals and brake lights.

The turn signals and brake lights must be checked with the ignition on. If a turn signal is defective, the warning lamps in the fuel gauge dial flash much quicker than usual. The brake lights only work, of course, when the brake pedal is depressed.

**The oil level** should be between the two marks on the dipstick and must never be below the lower mark. Wipe the dipstick clean before checking.

The vehicle must be on a level surface when the oil level is checked otherwise the dipstick reading will be inaccurate. Do not check the oil immediately after stopping the vehicle. Wait at least 5 minutes to give the oil in the engine time to drain down into the bottom of the crankcase.

Try to always use the same brand of gasoline engine HD oil. Further details about the viscosity of the oil to be used are given on page 41.

### Tire pressures

	front	rear
with 1 to 2 occupants	1.2 kg/cm <sup>2</sup> (17 psi)	1.8 kg/cm <sup>2</sup> (26 psi)
fully loaded	1.1 kg/cm <sup>2</sup> (16 psi)	1.7 kg/cm <sup>2</sup> (24 psi)

For long, high-speed motorway trips, the tire pressures should be increased by 0.2 kg/cm<sup>2</sup> (3 psi) at front and rear.



### Two more important points:

1 - The carburetors of your Volkswagen should draw in preheated air at temperatures below + 10° C (50° F). This helps to keep down fuel consumption in cold weather and prevents the carburetor icing which sometimes occurs when air humidity is high.

The weighted flap in the air cleaner intake pipe must be free to move in the winter and the cool seasons. If the average temperature is above + 10° C, the flap must be fixed open by jamming the lever under the ridge on the intake pipe.

2 - If the vehicle is used mainly in very dusty conditions, the oil bath air cleaner must be checked frequently, even daily if necessary.

How this is done is described on page 44.

## Starting the engine



Before turning the ignition key, make sure that the gear shift lever is in neutral.

**At temperatures above freezing point** or when the engine is still warm, depress the accelerator pedal slowly while operating the starter. When the engine is very warm, depress pedal fully but do not "pump" it.

**At temperatures below freezing point** or when engine is cold, depress the accelerator pedal fully once and then release it so that

the automatic choke can work. Then switch ignition on and start **immediately**. Declutch so that the starter only has to turn the engine.

As soon as the engine starts, release the ignition key so that the starter is switched off.

Do not try to warm the engine up by letting it idle with the vehicle stationary — drive off straight away. Do not race the engine while it is still cold.

If the engine does not start the first time or stalls when declutching, the ignition will have to be switched off and then on again because there is a non-repeat lock in the switch which prevents the starter from being operated when the engine is running and thus being damaged.

**The warning lights** in the fuel gauge dial which come on when the ignition is switched on, go out when the engine starts.

The red warning light for the generator shows that the generator is working. If this light comes on when you are driving, the generator has stopped charging.

In this case, you can drive on but try to get the vehicle into a workshop as soon as possible because the battery will soon run down.

If the green warning light for the oil pressure comes on while driving, however, stop at once because the flow of lubricating oil in the engine may have ceased. Check the oil level first. Should the cause of the trouble be elsewhere, you are advised to get expert assistance.

**Be careful when running the engine in confined spaces. Ensure that there is ample ventilation so that the poisonous exhaust gases can escape.**



## ... it runs ... and runs ... and runs ...

You can drive your Volkswagen at full speed from the first day. There are, however, certain permissible speed ranges for the various gears:

	1st Gear	2nd Gear	3rd Gear	4th Gear
kph	0—30	10—60	30—90	45—145
mph	0—18	6—37	18—56	28—90

When a particular traffic situation makes it essential to move rapidly, you can ac-

celerate up to 70 kph (43 mph) in 2nd gear and up to 100 kph (62 mph) in 3rd gear for brief periods only. Bear in mind, however, that full throttle acceleration puts fuel consumption up considerably. It is more economical to drive smoothly and keep the top speed fairly constant. Very fast, racy-sporty driving, alternating between full throttle and hard braking will mean more frequent visits to a filling station not to mention increased tire and brake lining wear.

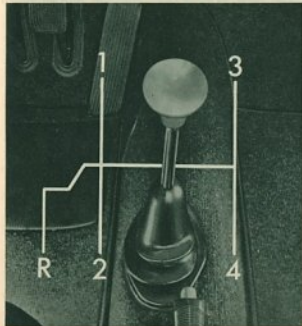
You can drive very economically between:  
10 and 35 kph in 2nd gear ( 6 and 22 mph)  
30 and 60 kph in 3rd gear (18 and 37 mph)  
45 and 110 kph in 4th gear (28 and 68 mph)

Just a few words about the clutch while we are on the subject of driving. The clutch is a very hard worked part of the vehicle. A good driver slips the clutch as little as possible when moving off and changing gear. He always depresses the clutch fully when changing gear, he changes down into the appropriate gear in queues and city traffic instead of slipping the clutch and never uses the clutch pedal as a "rest" for his left foot.

Shift into reverse gear only when the vehicle is standing still. Reverse gear is fitted with a lock so that it cannot be engaged unintentionally. To engage reverse, press the lever down, move it over to the left and pull it back to the stop.

Volkswagen automobiles have first class brakes which can stop the vehicles in the shortest possible distance. But do not forget that the braking distance increases very rapidly as the speed increases. At 100 kph for example it is four times longer than at 50 kph (30 mph). Apply the brakes in good time whenever possible but do not use too much force, locked wheels increase the braking distance.

Water reduces the tire adhesion and the coefficient of friction of the brake linings but we cannot do anything about this. You can, however, take care when driving, remain at a safe distance behind the preceding vehicle particularly when roads are wet and slippery. Safety first is the motto.



**That just about covers the operation of the car and how to drive it properly. The following pages deal with tips for winter driving, cleaning, breakdowns and all there is worth knowing about the lubrication and maintenance of the vehicle.**

## When it snows and freezes . . .

Your car has two features which you will appreciate in the winter: Air cooling and heating. You can leave your car out in the bitter cold without fear — the aircooled engine will always start readily and supply warm air for the interior of the body.

Do not, under any circumstances, try to influence the heating of the vehicle by covering up the slots in the rear hood. These slots must always be clear so that air can flow in to the carburetors and to the engine cooling fan.

**The brakes** may freeze up in the winter if water gets into the drums due to splashing or condensation so leave the car in 1st or reverse gear when parking it and do not apply the handbrake.

When parking on steep hills, turn the front wheels against the kerb as well to stop the vehicle rolling away. If there is no kerbstone, it may be advisable to place a stone or wedge under a wheel.

**Tires** with badly worn treads are very dangerous particularly in the winter so ensure that they are replaced in good time.

M + S tires with special heavy treads give good roadholding in snow and slush. They can be fitted to all four wheels but never use them on the front wheels only.

Better still are M + S tires with spikes which increase the safety margin even on hard snow and ice. These tires should always be fitted on all four wheels. The maximum speed for a vehicle fitted with M + S and M + S spiked tires is 130 kph (80 mph).

The specific characteristics of winter tires can be improved by raising the tire pressures to 0.2 kg/cm<sup>2</sup> (3 psi) above the normal operating pressure for the tire concerned. This inflation pressure then covers the recommended pressure increase of 3 psi for fast highway driving. M + S tires with spikes should be run at moderate speeds when new in order to give the spikes time to settle.

In general, winter tires only have real advantages when conditions on the road are really wintry. For safety reasons, it is not advisable to drive a vehicle fitted with any type of winter tire at top speed. You cannot expect a winter tire to have the same degree of adhesion on dry, wet or snow-free roads as a normal tire. Furthermore, under these conditions M + S tires wear rapidly, particularly at high speeds.

When M + S ice tires are fitted, it may be necessary to fit clips on the lower torsion arms of the front axle to prevent the tires from rubbing in the wheel housing on full lock.

**Snow chains** can be fitted to normal and winter tires on the rear wheels only. Only thin chains which do not stand clear of the tire tread and inner side wall more than **15 mm** (.5in.) including tensioner, are suitable. When driving over long stretches of road which are free of snow, the chains should be removed. They serve no useful purpose here but merely damage the tires and wear out quickly.

**Engine oil** of SAE 30 grade will tend to thicken at temperatures around freezing point and may cause difficult starting. As soon as winter temperatures are expected, change over in good time to a thinner grade of engine oil. Details of the various oils to be used are given on page 41.

If you only drive mainly short distances and in city traffic in the winter we recommend that you have the engine oil changed at 2500 km (1500 mile) intervals.

Should you only drive a few hundred miles a month under these conditions, it is advisable to have the oil changed every 6 to 8 weeks. At other times these additional changes are unnecessary and uneconomical.

In countries with arctic climates and temperatures below about  $-25^{\circ}\text{C}$  ( $-13^{\circ}\text{F}$ ) the engine oil should be changed every 1250 km (750 miles).

**Transmission oil** of SAE 90 grade can generally be used all the year round. Only in countries with arctic climates is it necessary to use the thinner SAE 80 transmission oil.

**The battery** not only tends to drop in capacity as the temperature drops, it also has to work much harder in the cold weather. Quite apart from the higher current consumption when starting and using the lights more often, there are numerous other electrical items used mainly in the winter, such as heated rear windows. A really cold battery which may in any case not be fully charged has only a fraction of the capacity that a battery at normal temperature has and this is fatal when trying to start a cold engine. Particularly if the car is only driven short distances and in city traffic, the battery should be charged from an external source from time to time.

**The spark plugs** should not have excessively large gaps especially in the winter. The

gap is normally 0.7 mm (.028 in.) but when the weather is very cold the gap can be temporarily reduced to 0.4—0.5 (.016— .020 in.) to facilitate starting.

**The chassis** is exposed to very arduous conditions particularly in the winter. The steadily increasing use of chemicals to de-ice the roads produces solutions which attack even the most durable paintwork after a time. The underside of the Volkswagen is sprayed with a wax-based compound to protect it from these influences. It is advisable to examine the protective film at the beginning of the winter and have it repaired by respraying so that the full protective effect is retained. Do not apply oily anti-corrosion compounds to the wax-coated surface.

**Door locks** can freeze up in winter if water gets into the lock when washing the vehicle so do not aim the water jet directly at the locks. It is a good idea to cover the keyholes up beforehand. A frozen lock can be opened by warming the key well before inserting it. An anti-freeze solution or glycerine should then be squirted into the lock cylinder as soon as possible.

**It is a good idea** to carry a shovel or a short-handled spade in the car to clear away snow if you get stuck. A small hand brush for sweeping snow off the vehicle and a plastic scraper for the windshield are also useful.



## A clean, smart car looks better

We have provided your vehicle with paintwork which is not only extremely durable and has a very high gloss but which also has a long service life. This has been achieved by special chemical treatment of the body metal and the use of a four layer synthetic resin paint technique.

But even the finest paint requires a certain amount of care. This is easy to appreciate if you consider for a moment the influences to which the paint is exposed. Sunlight, rain, industrial fumes, soot, dirt and dust are constantly working on and attacking the paintwork.

In the winter all parts of the vehicle are subjected to even more severe climatic conditions and the effect of aggressive salt solutions. It is advisable to clean and wax the vehicle more frequently in this period.

Every VW Dealership has stocks of car cleaning materials. These materials have been tested by us and found to give the best results. The order numbers of these materials are given on pages 25 and 26.

**Wash** the new vehicle frequently with clear water particularly in the first two or three months as this will help to harden the paintwork. Use a soft sponge or hose brush for the body, a long handled brush for the wheels and plenty of water. Spray the body panels and wheels with a fine soft spray first to loosen the dirt, then start at the top and wash downwards. Rinse the sponge out frequently to avoid scratching the paint.

Later on, the vehicle should always be washed when it is dirty. The longer the dirt is left on the paint the greater is the risk of it damaging the glossy finish. The dirt particles can have a chemical effect on the paint surface or they can cause scratches if rubbed into the paint. If dirt cannot be removed with clear water, a suitable shampoo can be added to the water. Afterwards, rinse all traces of the shampoo off well with clear water and then leather the vehicle dry to avoid water spots.



**Waxing** should be carried out for the first time after about 8 to 10 weeks. Waxing is a means of putting back into the paint certain substances which keep it flexible and are lost in the course of time due to weathering and washing particularly when you use an detergent. The wax coating seals the pores of the paint and makes it water-repellent.

The paint should be re-waxed when water remains in large patches on the surface and does not form beads and roll off. Regular waxing will ensure that the paint retains its original high gloss for a long time.

Another way of waxing the paint is to use a wash-and-wax solution. This is easier than waxing in the normal way. Just wash the vehicle first then put the wash-and-wax solution in a bucket of water and apply it to paintwork. All that remains is to leather off the paint until it is dry. This type of wax will only protect the paint adequately if it is used every time the vehicle is washed and the interval between washes is not more than two or three weeks.

**Polishing** should only be done when the paint has lost its gloss due to weathering or lack of proper care and the gloss can no longer be restored by waxing in the normal way. After treatment with polish, wax the paint thoroughly to retain the gloss which has been obtained.

**Never wash, wax or polish the car in the sunshine**

**Before waxing and polishing, the vehicle must be washed and dried thoroughly**

**Tar spots** tend to penetrate into the paint in a very short time. They should be removed as soon as possible, preferably with a tar remover. Afterwards, the area concerned should be washed with a solution of shampoo and water and rinsed well to remove all traces of tar remover.

**Insects** tend to stick on the front of the vehicle and on the windshield in the summertime. These should also be washed off the paint as soon as possible. When really dried on, the insects can be removed with an insect remover. The paintwork should also be washed, rinsed and leathered off afterwards.

**Parking under trees.** Vehicles which are parked under certain trees in the summer are often found to be covered with sticky spots. These spots can be taken off easily with a shampoo if the treatment is not delayed too long. It is advisable to wax the paint afterwards.

**Chrome parts** should be treated with a chrome cleaner or polish. To give lasting protection in the winter, the chrome parts

can be coated with one of the patent chrome protection compounds which form a hard film. The best way to apply these compounds is by spraying. The film can be removed by washing with kerosene, then washing with shampoo and rinsing to remove all traces.

**The windows** can be cleaned with a sponge and warm water. Always use a special clean leather to dry the windows. This leather must not be used on the paintwork in any circumstances as most paint cleaners and polishes contain ingredients which will cause unpleasant streaks to appear on the windshield when it rains, even if only the smallest trace is present. These streaks can only be removed with a good windshield cleaner. Do not forget the wiper blades.

**The windshield wiper blades** should be taken off from time to time and cleaned with a hard brush and methylated spirits or a strong detergent solution. During long dry periods particularly they tend to get clogged with tar splashes, oil and insects. New blades should be fitted once a year.

# Car care materials for the Volkswagen

	Material	Package and quantity	VW Part No.	Properties	How to use
Vehicle washing	Shampoo	Tin 150 cc	000 096 111	Washes effortlessly and thoroughly. Does not harm paint.	Put 1—2 beakers of shampoo in a bucket. Squirt strong jet of water in or stir well. Wash vehicle with foam, rinse with clear water and leather off.
	Shampoo	Tin 250 cc	000 096 112		
	Sponge	17×11×5.5	000 096 151		
Paint waxing	Wax	Tin 250 cc	000 096 011	Protects paint from weather. Keeps it flexible and durable	Apply thinly to clean, dry paintwork with cotton or spray gun 000 096 064. Rub gently until paint shines again.
	Wax	Tin 1000 cc	000 096 012		
	Wash/wax	Tin 150 cc	000 096 121	Washes and waxes in one operation. Protects paint from weather for a limited period	Wash vehicle. Shake tin well and put 1 beaker of solution into a bucket of water. Wash vehicle with this solution again and then leather dry. Do not polish.
	Wash/wax	Tin 250 cc	000 096 122		
Paint polishing	Paint care	Tube 210 grams	000 096 021	Cleans, polishes and protects paint and brings gloss back again	Apply to clean dry paintwork, small areas at a time. Allow it to dry then rub with cotton until paint shines brilliantly. Do not polish in the sunshine.
	Paint polish	Tin 250 cc	000 096 001	Freshens up paint which has lost gloss	Soak cotton with polish and apply to clean dry paintwork, small areas at a time. Remove remains with clean cotton and rub briefly.
	Paint polish	Tin 1000 cc	000 096 002		
	Polishing cotton	Bag 200 grams	000 096 161		
Removal of tar spots from paint and chrome	Tar remover	Tin 150 cc	000 096 051	Softens and removes tar and asphalt spots	Soak cotton with tar remover and dab it on the spots. Allow it to work for a short time then wipe tar off.
	Tar remover	Tin 250 cc	000 096 052		

	Material	Package and quantity	VW Part No.	Properties	How to use
Removal of insects from paint and chrome	Insect remover	Tube 80 grams	000 096 081	Removes insects from paint and glass	Dampen area to be cleaned, apply insect remover by moistening cotton, let it work for a short time and rub with cotton. Do not let it dry. Rinse area well with clear water.
Care and cleaning of chrome parts	Chrome cleaner	Tube 80 grams	000 096 061	Cleans, polishes and protects chromed parts	Apply thinly to clean chrome surface and polish with soft cloth.
	Liquid film for chrome	Bottle 500 cc	000 096 063	Forms a durable, transparent film on the chrome	Apply evenly to dry chrome. Spray on where possible (with spray gun 000 096 064).
	Spray gun		000 096 064		Used to spray liquid chrome protective film. Can be used for spraying other liquids.
	Chrome grease	Tube 80 grams	000 096 067	Cleans and protects chrome parts	Apply thick or thin coat (according to time of year) with a soft cloth. Renew coating every time vehicle is washed.
Cleaning windshield	Window cleaner	Bottle 200 cc	000 096 105	Added to water in washer it removes stubborn dirt, silicone and grease from windshield. Can be used as anti-freeze to keep washer in action in winter. Can be used neat to remove ice from windshield	As windshield cleaner: in the summer, add about 1/10 of contents of bottle or 1 sachet to water in washer.
	Window cleaner	Sachet approx. 35 cc	000 096 101		As anti-freeze: At temperatures down to — 15° C add entire contents of bottle to water in washer. When not so cold, reduce amount. The contents of one sachet give protection down to — 2° C.



**The cloth upholstery** should be cleaned with a vacuum cleaner or a fairly hard brush. Spots can usually be removed with a lukewarm soap solution. Grease and oil spots can be treated with spot remover. Do not pour the liquid on to the material as this will cause marks. Dampen a clean, plain cloth with the cleaner and remove the spot by rubbing with a circular movement and working inwards.

**The leatherette** parts of the headlining, side trim panels and seats can be cleaned best with a soft cloth or brush. When very dirty, use a lukewarm soap solution or a dry foam cleaner. If the seat upper surfaces and front of backrests are covered with leatherette as well, only use a dry foam cleaner because the material used for these parts is air-permeable and liquid cleaners would penetrate into the textile backing straightaway.

Grease or paints spots should be wiped off before they dry when possible. Once dry, they can be removed by rubbing carefully with a cloth moistened with benzine or methylated spirits. Shoe polish marks can be removed with turpentine but be careful because this will damage the dust repellent surface of the leatherette if allowed to work on it too long. After cleaning, rub the material dry with a soft cloth. So-called preservatives are not suitable for leatherette because they do not soak into the material and merely collect dust and make clothing dirty.

**Airing the body.** If the vehicle is left in the garage for long periods, the garage and car doors must be opened from time to time to prevent the formation of mould and damp stains inside the vehicle.

**Door and window weatherstrips** must be undamaged and supple to ensure that they seal properly. To retain the original flexibility of the rubber, coat the weatherstrips with talcum powder occasionally.

**The tires.** In addition to checking pressures regularly and driving carefully, the following points should be remembered in connection with tires:

- 1 — Check tires for damage occasionally and remove foreign bodies.
- 2 — Keep oil and gasoline away from the tires.
- 3 — Try not to expose tires to strong sunshine for long periods.
- 4 — Replace missing valve dust caps as soon as possible.

Tires should be replaced when the tread depth is only 1 mm all round and on full tread width because this is the absolute limit for safe usage. We advise you however not to let the tires wear down to this extent as tires with treads in this condition cannot grip the road surface properly when driving at high speeds on wet roads. If you notice that the tires are wearing unevenly, get advice from your VW workshop.

For smooth running at high speeds and long tire life it is essential that the wheels are balanced statically and dynamically. As the wheels can get out of balance after being in use for some time due to natural tire wear, the wheels should be balanced again every 10000 km (6000 miles). Furthermore, a wheel should always be balanced again when a tire has been repaired. This also applies to balanced wheels when a tire has lost pressure due to a faulty valve.

**Just in the case** you have to deal with a small defect or a breakdown yourself one of these days we have included some information on the next few pages which should help you.

All other repairs should always be carried out by one of our service stations. The service organization of the VW factory offers you a wide-spread network of authorized workshops staffed by skilled mechanics and equipped with all the specials tools and appliances required. Whenever you see the familiar VW sign on the roadside you can be sure of expert advice and quick efficient assistance.

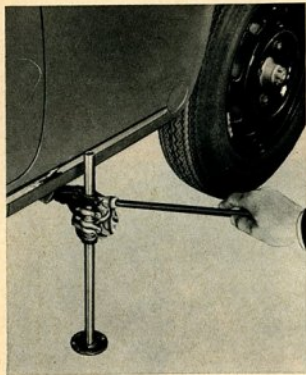
### Wheel changing

Apply the hand brake.

Remove wheel cap with puller and jack bar by hooking the puller into the holes in the edge of the cap and levering against the wheel rim with the jack bar.

Loosen all wheel bolts about one turn with socket wrench and bar.





Insert jack into square hole under the body and push the jack tube down until it touches the ground.

Place bar in upper link of jack and raise vehicle by moving the bar up and down.

Unscrew wheel bolts and take wheel off.

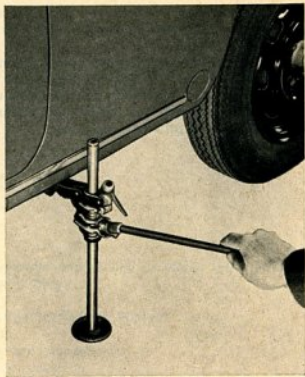


Place spare wheel against drum and raise or lower vehicle as necessary until the holes in the wheel are roughly in line with the threaded holes.

Insert one bolt and tighten it until the wheel can be swung round to align the other holes with the holes in the brake drum.

Insert remaining bolts.

Tighten bolts until the wheel, centered by the spherical shape of the bolt heads, contacts the brake drum evenly.



Place bar in lower link and lower the vehicle by moving bar up and down.

Tighten the wheel bolts evenly and diagonally.

Place trim ring in rim and install wheel caps by giving them a smart blow with the hand.



### Cleaning fuel pump filter

Pull suction line off pump and seal it.  
Remove plug and take filter out.

Wash filter in clean benzine and blow it out.

When installing the filter, ensure that the washer for the plug is located properly.



### Removing and installing spark plugs

Remove air cleaner and unhook return springs from carburetor pull rods.

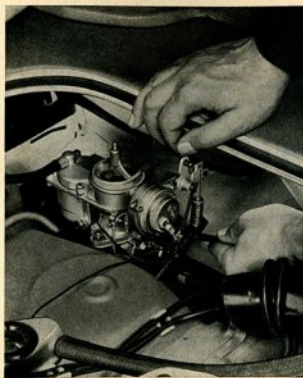
Pull connector off and screw plug out with socket wrench and bar.

Dirty plugs should be cleaned with a sand blaster but in an emergency the carbon can be removed with a chip of wood. Please do not use a wire brush. The plugs should also be clean and dry on the outside as well, in order to avoid shorting and tracking.

The gap can be set by bending the ground electrode. The gap should normally be 0.7 mm (.028 in.) but when it is very cold they can be reduced temporarily to 0.4 — 0.5 mm (.016 — .020 in.) to facilitate starting.

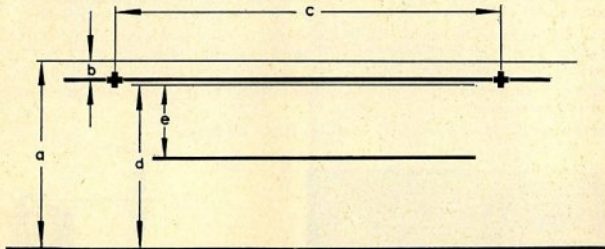
Take care not to crossthread the plugs when inserting them and tighten them firmly but do not overtighten.

New plugs should be fitted every 20000 km (12000 miles).



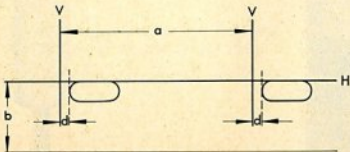
## Headlight adjustment

When adjusting the headlights, ensure that the tires are inflated to the correct pressures. If a headlight aiming device is not available, proceed as follows:



Sketch 1

- a - Height of headlight center from floor
- b - 50 mm (2") - adjusting line for the headlights
- c - 1258 mm (49.5") - distance between headlights
- d - height of fog lamp center from floor
- e - 270 mm (10.6") - adjusting line for fog lamps



Sketch 2 (for Sealed-Beams)  
a - Distance between headlights (49.5")  
b - Height of headlight center from floor  
d - 2"

## 1 - Headlights with separate reflector and bulb

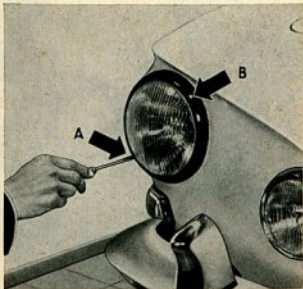
Position the vehicle on a level surface 5 m. (16 ft. 5 ins.) away from a vertical wall. The rear seat must be loaded with one person or a weight of 70 kg. (154 lbs.).

Draw two crosses with setting lines on the wall to the measurements in sketch 1. The longitudinal center line of the vehicle must be aligned exactly with the center between the two crosses and at right angles to the wall.

Remove securing screw in the center below the headlight and take off trim ring.

A - Lateral aim

B - Vertical aim



Aim the headlights individually by turning the two slotted screws with the beams dimmed. Cover up the second headlight.

The headlights are correctly aimed when the light-dark border line is horizontal on the adjusting line to the left of the cross and the angle on light-dark border line is exactly on the center of the cross.

### Fog lamp adjustment

Aim the fog lamps by means of the adjusting screws from inside the spare wheel well so that the center of the light beam is exactly on the adjusting line shown in sketch 1.

## 2 - Sealed-Beam headlights

Position the vehicle on a level surface 7.6 m. (25 ft.) away from a vertical wall. The drivers seat must be loaded with one person or a weight of 70 kg. (154 lbs.).

Draw three setting lines on the wall to the measurements in sketch 2. The longitudinal center line of the vehicle must be aligned with the center between the two vertical lines and at right angles to the wall.

Loosen the screw in the center below the headlight and take the trim ring off.

Aim the headlights individually by turning the two aiming screws with low beams switched on. Cover up the second headlight. The headlights are correctly aimed when the top edge of the high intensity zone is on the horizontal line H and the left edge is 2 in. to the right of the vertical line V.

## Bulb replacement

### Headlight bulb

Remove Phillips screw in the center below the headlight and take off trim ring. Remove securing screw for lens and reflector unit and take off lens and reflector unit. Pull the connector off the bulb base. Turn the cap to the left and remove. Replace the bulb.

The lug in the lamp holder must engage in the notch provided in the reflector. Never touch the glass portion of the bulb with the bare hand.

Insert the cap so that the contact strip is located on the base of the parking light bulb. Check headlight adjustment.

### Sealed-Beam units

Loosen screw in the center below the headlight and take the trim ring off.



Remove three screws in Sealed-Beam retaining ring and take ring off.

Take Sealed-Beam unit out of support ring and pull cable connector off.

When installing new Sealed-Beam units, ensure that the three glass lugs engage properly in the support ring.

Check headlight settings.

### Fog lamp

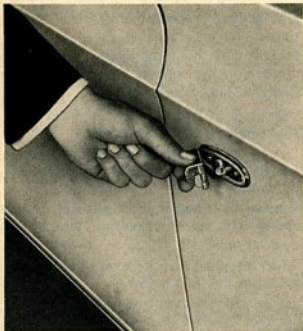
Loosen the Phillips screw in the center below the ring and remove lens and reflector unit.

Remove bulb holder after pushing off the spring clip and unhooking the spring. Replace bulb.

When installing do not forget to engage the spring in the bulb holder.







#### **Parking lamp bulb**

Remove Philips screw.

Take lens off.

Press bulb into holder lightly, turn and take out.

Install new bulb.

Insert the lens into the housing at the rear first.

Do not overtighten screw.



#### **Front turn signal bulb**

Remove two Philips screws.

Take lens off.

Press bulb into holder lightly, turn and take out.

Install new bulb.

Ensure that gasket is located properly when installing.

Do not overtighten screws.



#### **Stop, tail or turn signal bulb**

Unscrew two Philips screws so far that the lens can be taken off.

Bulb positions:

Top — turn signal light

Center — tail light

Bottom — stop light

Press bulb into holder lightly, turn and take out.

Install new bulb.

When fitting the lens, ensure that gasket is located properly. Tighten screws evenly but do not overtighten.

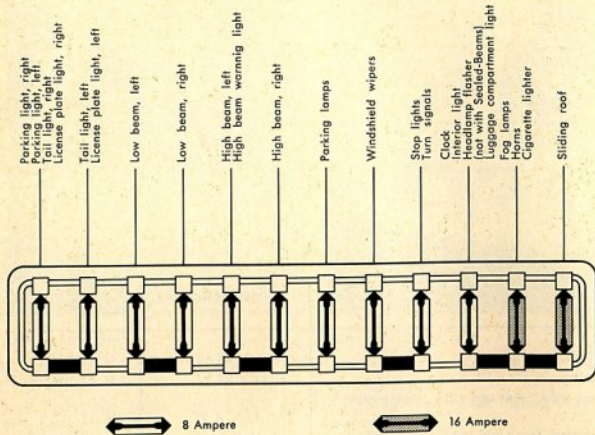


**Bulb chart**      V = Volt, W = Watts

**License plate light bulb**

- Open rear hood.
- Remove screws on each side of lens and take off lens with bulb holder.
- Pull bulb holder out of lens.
- Press bulb into holder lightly, turn and take out.
- Install new bulb.
- When installing, ensure that the gasket fits properly.

Bulb for	German designation	Part No.
Headlight . . . . .	A 12 V 45/40 W	N 17 705 3
Fog lamp . . . . .	D 12 V 35 W	N 17 709 2
Parking light, front and side, license plate lamp . . . . .	AL 12 V 4 W	N 17 717 2
Turn signal, front and rear, stop light . . .	RL 12 V 21 W	N 17 732 2
Tail light . . . . .	G 12 V 5 W	N 17 718 2
Speedo, clock, fuel gauge, warning lamps .	I 12 V 2 W	N 17 722 2
Interior light, luggage compartment lamps .	K 12 V 10 W	N 17 723 2



### Replacing fuses

The fuse box is located under the instrument panel on the left.

When a fuse blows it is not sufficient to merely replace it with a new fuse. The cause of the short circuit or overload must

be established. On no account should fuses be patched up with tin foil or wire as this can cause serious damage elsewhere in the electrical system. It is advisable to always carry a few spare 8 and 16 Ampere fuses on the vehicle.



## Checking battery

The ability of the engine to start readily depends to a great extent on the condition of the battery. For this reason the battery should be checked regularly and given a certain amount of attention.

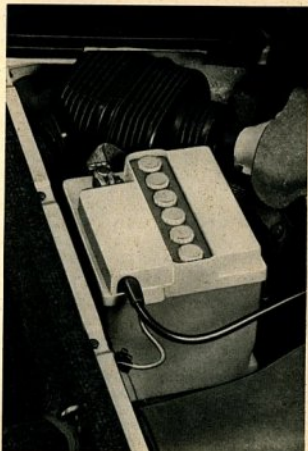
When the rear seat is lifted, the battery cell plugs can be screwed out. The acid should always be just above the tops of the plates. The acid level should be in accordance with the mark. If the level is low, top up with distilled water only.

The acid level drops when the battery is charged due to the dissociation of the water used to dilute the acid and, to a lesser extent, to evaporation. How often the battery has to be topped up depends mainly on operating conditions and indirectly on the time of year. When a vehicle is often driven long distances in the daytime with hardly any current being used, the battery will have to be topped up with distilled water much more often than in the case of a vehicle which is operating under different conditions. As a general rule, the battery acid level must be checked more often in the summer than in the winter. VW drivers in hot countries who do a lot of driving are advised to check the battery at least every week.

Do not put in more water than is necessary because if the level is too high the acid will overflow when the battery is being charged and cause damage.

The terminals and connections should be kept clean and greased with battery terminal grease. Ensure that the ground connection to the body is free of corrosion and tight.

If you lay your vehicle up for a prolonged period, it is advisable to take the battery to a workshop. A battery which is not in constant use will discharge itself in time and this can cause permanent damage to the plates if the battery is not checked about every four weeks and charged as necessary.

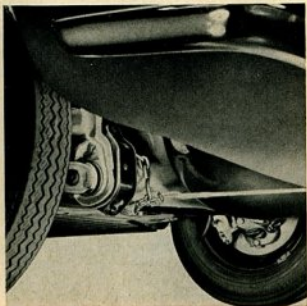
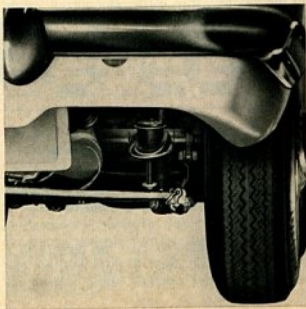




### Towing

Just in case you wish to attach a towrope to your vehicle one day, please note that the bumpers are not suitable for this purpose. At the rear, the rope should be attached to a lower shock absorber bracket. This point is not very easy to get at but it does ensure that your desire to help does not result in damage to your vehicle.

At the front, the rope should be attached to the lower tube of the front axle.





# Give your Volkswagen that individual touch

## Fit approved Volkswagen accessories

Approved Volkswagen accessories are not just any old accessories. They have either been designed specially for the Volkswagen or selected from the vast range of accessories available and tested for use on the Volkswagen in the Volkswagen factory. The trademark "Approved Accessories" is your guarantee for material quality, good workmanship and reliability.

Approved VW accessories are supplied by your VW Dealer who will also fit them for you if necessary but you can fit lots of the accessories yourself.

**VOLKSWAGEN**  
**Erprobtes  
Zubehör**

**Approved Accessories  
Accessoires Agréés  
Accessori Approvati  
Accesorios Aprobados  
Utprovade Tillbehör  
Acessórios Aprovados  
Beproeftde Accessoires**

## Proper lubrication

means regular and careful lubrication. The lubrication chart on page 54 shows you at which intervals the various points require your attention.

### Engine

Regular oil changes are necessary even if the very best brand of HD oil is used because dirty oil in the engine means increased wear and reduces service life.

The oil is drained, when warm, by removing the plug in the oil strainer cover plate. Flushing is not necessary but the strainer must be removed and cleaned at every change. The gaskets and the copper washers under the cap nuts must always be renewed. The engine is then filled with 2.5 liters of HD oil (5.3 US pints/4.4 Imp pints).

Due to the detergent properties of the HD oil, the fresh oil will look very dark after the vehicle has been running for only a short time. This need not worry you and under normal operating conditions there is no reason whatever to change the oil at shorter intervals than every 5000 km (3000 miles). We only recommend more frequent oil changes — every 2500 km/1500 miles — in the winter if you drive mainly short



distances and in city traffic. If you only drive a few hundred miles a month under these conditions it is advisable to have the oil changed every 6 to 8 weeks. In coun-

tries with arctic climates where average temperatures are about  $-25^{\circ}\text{C}$  ( $-13^{\circ}\text{F}$ ) the oil should be changed every 1250 km (750 miles).

### Some more information about oil

When changing and topping up the oil, try to always use the same brand of HD oil for gasoline engines. The quality of modern oils produced by reputable firms is so good that the choice of brand is left entirely to you. The VW engine makes no demands in respect of oil which cannot be fulfilled by every well known and popular brand. It is best to select "your" oil at the first 500 km (300 miles) oil change and stick to this brand on all occasions. Should you have any doubts at all, your VW Dealer will be pleased to advise you.

The classification of oil into various viscosity grades is shown by the designation SAE 30, SAE 20 W/20 and so on. The viscosity of a lubricant indicates its resistance to flow at a given temperature. The VW engine only requires two different viscosity grades which are used, according to season of year, as follows:

- SAE 30            In warm seasons and all the year in countries with hot climates  
SAE 20 W/20    In the winter  
or  
SAE 10 W\*)     In areas where the average temperature is below  $-15^{\circ}\text{C}$  ( $5^{\circ}\text{F}$ )  
SAE 5 W\*)      In countries with arctic climates and temperatures below  $-25^{\circ}\text{C}$  ( $-13^{\circ}\text{F}$ )

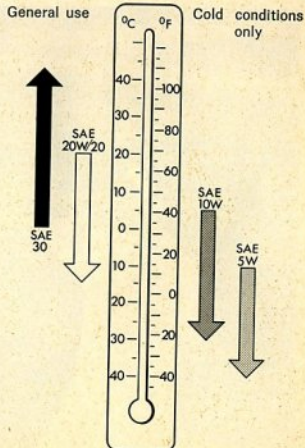
\* Avoid driving at high speeds for long periods if using SAE 10 W oil and the outside temperature is above  $0^{\circ}\text{C}$  or if using SAE 5 W oil when the temperature is above  $-15^{\circ}\text{C}$ .

All SAE grades cover a temperature range of about  $35^{\circ}\text{C}$  and the ranges of two neighbouring grades overlap by at least  $20^{\circ}\text{C}$ . Brief variations in temperature between seasons can therefore be disregarded. For the same reason it is also quite in order to mix oils of different viscosities when oil has to be added between oil changes and the viscosity of the oil in the engine no longer corresponds to the actual temperature. This is subject of course to the stipulation that the same brand of oil must be used.

In some countries, oils are classified according to the API system (American Petroleum Institute). Under this system HD oils suitable for the VW engine are designated "For Service MS".

No **additives** of any sort should be mixed with HD oil.

### Temperature ranges of SAE grades



## Transmission

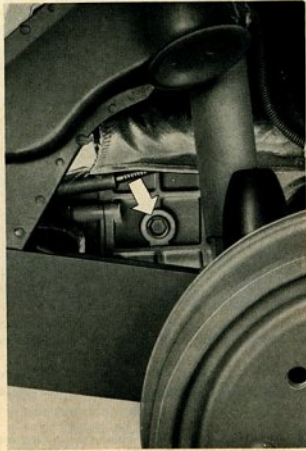
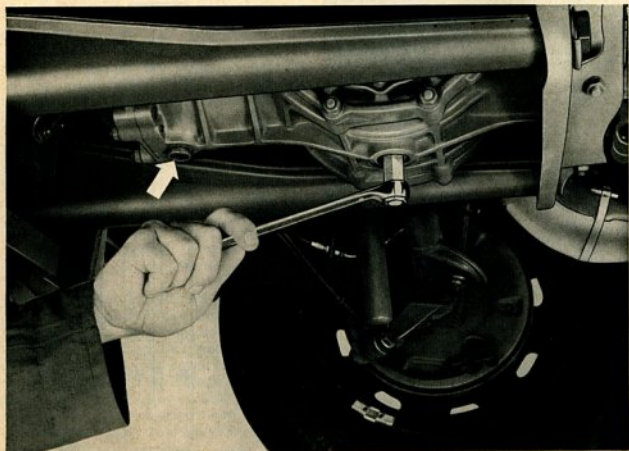
Transmission and differential are combined in one housing and both lubricated with the same hypoid oil. The oil should be up to the edge of the filler hole.

At oil changes, the old oil should be drained when warm. The two magnetic oil drain

plugs must be cleaned carefully and 2.5 liters (4.4 Imp pints) of good quality oil put in. In countries with arctic climates, the thinner SAE 80 oil should be used all the year.

The oil sometimes runs into the transmission housing very slowly. If one attempts to put the oil in too quickly it may overflow and give the impression that the housing is already full although actually only about 1—1.5 liters have been put in. It is essential to the service life and silent running of the rear axle that the correct amount of oil is used in the transmission.

**Additives** should also not be used with hypoid oil.

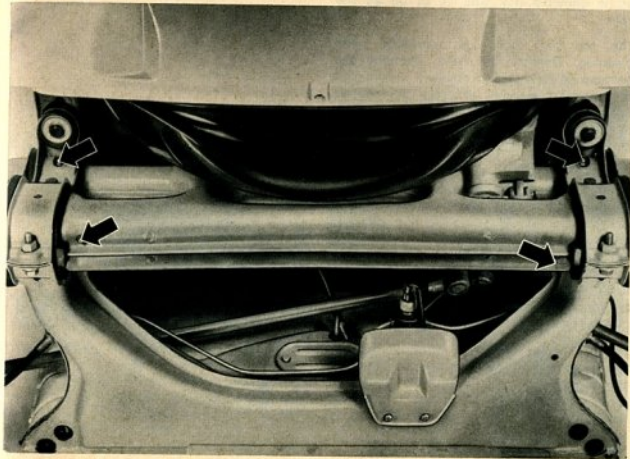




### Front axle

The front axle can only be lubricated properly when the axle is free of load, that is with the front end lifted.

There are four nipples on the axle tubes which must be lubricated with a lithium-based multi-purpose grease. The nipples and the grease gun nozzle should be cleaned carefully. Place gun on nipples and inject grease until fresh grease starts to come out at the torsion arm sealing rings.



Grease and oil must not be left on tires and brake hoses for long periods. Even small traces should be wiped off immediately.

If the vehicle is driven less than 10000 kms (6000 miles) per year, the front axle must be lubricated once a year.

## Air cleaner

A dirty cleaner element not only reduces the engine output, it can also cause premature engine wear. If local conditions are such that the vehicle is often driven on very dusty roads, the cleaner must be checked frequently, even daily if necessary.

All the dust present in the air drawn in by the engine is retained by the filter element in the upper part of the air cleaner and washed out when the vehicle is in motion by the oil in the lower part. In time, this causes a layer of sludge to form at the bottom of the lower part. When there is only 4—5 mm of oil above the sludge layer, the lower part must be cleaned and filled with fresh oil. The cleaner must be removed to do this:

Pull crankcase breather hose off air cleaner intake pipe.

Release clip on intake pipe and pull bellows off pipe.

Take off connecting rod between bell crank and right-hand carburetor.

Remove center wing nut securing air cleaner. Unscrew right and left wing nuts so far that the air cleaner can be lifted off. These nuts cannot be taken out of the cleaner.

Release the five clips and take top part of cleaner off. The top part must not be put down with the filter element upwards.

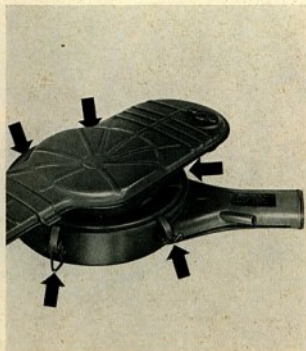
Clean lower part of cleaner carefully. The drain hole in the outer casing of the lower part must be clear.

Fill lower part up to oil level mark with fresh engine oil (approx. 0.4 liter/8 US pints/.7 Imp pints) SAE 30 grade oil should be used all the year. In countries with arctic climates use SAE 10 W oil all the year.

The top part does not normally need cleaning. Only if the filter element has become so dirty due to delayed cleaning of the bottom part or oil shortage that the air inlet holes on the underside are partly blocked, should the encrusted dirt be removed, preferably by scraping with a chip of wood.

When assembling the cleaner note that the embossed marks on upper and lower parts are in line. When installing the cleaner, ensure that the seals between carburetors and cleaner are located properly and that the bellows seals properly on the cleaner intake pipe. Furthermore, it is essential to tighten the two outer nuts securing the cleaner first and then the center one.

Check that the weighted warm air flap in the intake pipe moves freely. At temperatures above + 10° C (50° F) this flap should be fixed in position but at temperatures below + 10° C it should be free to move and regulate the flow of warm air according to the speed of the engine.



#### Doors and hood

The door hinges require no lubrication. The door and hood locks and the hood hinges should however be lubricated at least every 3 months. The door lock should be given a few drops of engine oil through a hole in the end of the door. The hood hinges are also oiled and the hood locks greased lightly. Surplus oil on the hood hinges should be wiped off.

The lock cylinder is treated with graphite as necessary. The key can be dipped into the graphite and then turned in the lock a few times. The friction surfaces of the latches and striker plates should be greased lightly.



# Technical data

## Engine

Four cylinder, four stroke, horizontally opposed, flat design, in rear  
Thermostatically controlled air cooling by fan on crankshaft  
Pressure oil feed with gear-type pump  
Oil cooler  
Mechanical fuel pump  
2 downdraft carburetors with accelerator pumps and automatic chokes  
Oil bath air cleaner with intake air pre-heating

Bore . . . . .	85.5 mm (3.36 in.)
Stroke . . . . .	69 mm (2.72 in.)
Capacity . . . . .	1584 cc (96.6 cu. in.)
Compression ratio . . . . .	7.7:1
Maximum output DIN . . . . .	54 bhp at 4000 rpm
SAE . . . . .	65 bhp at 4600 rpm
Maximum torque DIN . . . . .	11.2 mkg at 2200 rpm
SAE . . . . .	87 ft. lbs. at 2800 rpm
Average piston speed . . . . .	9.2 m/s at 4000 rpm 1811 ft./min.
Fuel consumption <sup>1)</sup> . . . . .	approx. 8.9 liters per 100 km 26.5 miles per US gallon 32 miles per Imp gallon
Fuel rating . . . . .	90 Octane (Res. F 1)
Oil consumption . . . . .	0.5—1.4 liters per 1000 km 1.7—4.8 US pints per 1000 miles 1.4—4.0 Imp pints per 1000 miles
Valve clearance with engine cold . . . . .	Inlet and exhaust 0.10 mm (.004 in.)

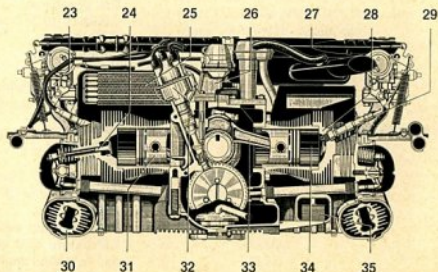
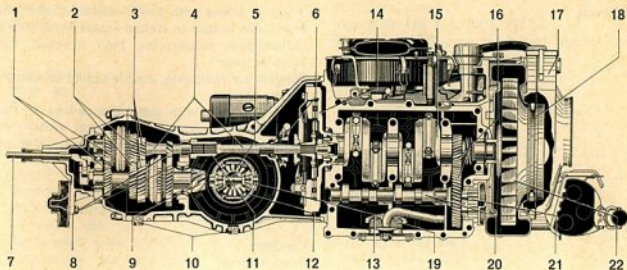
<sup>1)</sup> Measured consumption plus 10%, with half load at a steady  $\frac{3}{4}$  of maximum speed on level road.

## Power transmission

Single plate, dry clutch  
Baulk synchronized four-speed gearbox with bevel gear differential in one housing  
Swing axles  
Gear ratios: 1st gear 3.80:1, 2nd gear 2.06:1, 3rd gear 1.26:1, 4th gear 0.89:1,  
Reverse gear 3.88:1  
Differential ratio: 4.125:1  
Clutch pedal free play: 10—20 mm (.4—.8 in.)



- 1 — 4th gear train
- 2 — 3rd gear train
- 3 — 2nd gear train
- 4 — Main drive shaft
- 5 — Differential pinion
- 6 — Clutch release bearing
- 7 — Transmission shift lever
- 8 — 1st gear train
- 9 — Drive pinion
- 10 — Oil drain plugs
- 11 — Reverse gear
- 12 — Differential housing
- 13 — Differential pinion
- 14 — Flywheel
- 15 — Crankshaft
- 16 — Camshaft drive gears
- 17 — Fan housing
- 18 — Crankshaft pulley
- 19 — Oil strainer
- 20 — Camshaft
- 21 — Oil pump
- 22 — Fan
- 23 — Carburetor
- 24 — Valve
- 25 — Oil cooler
- 26 — Fuel pump
- 27 — Oil bath air cleaner
- 28 — Cylinder head
- 29 — Spark plug
- 30 — Heat exchanger
- 31 — Piston
- 32 — Ignition distributor
- 33 — Connecting rod
- 34 — Cylinder
- 35 — Thermostat



## Chassis

Platform frame with tunnel-shaped center member

Front axle bolted to forked frame head, sub-frame at rear to carry engine-transmission unit

Independent suspension: twin, cranked, trailing arms at front, swing axles on trailing arms at rear

Torsion bar springing, double-acting telescopic shock absorbers, stabilizer at front, equalizer spring at rear

Roller steering with maintenance-free tie-rods and hydraulic steering damper

Footbrakes: Hydraulic dual circuit system with discs at front

Handbrake: Mechanical, effective on rear wheels.

Wheelbase . . . . .	2400 mm (94.5 ins)
Turning circle diameter . . . . .	11.1 m (37 ft)
Track at front . . . . .	1310 mm (51.6 ins)
Toe-in . . . . .	4 to 6 mm (0.16—0.24 in.) unladen
Camber . . . . .	1° 20' ± 20' unladen
Track at rear . . . . .	1346 mm (53.0 in.)
Wheels . . . . .	4½ J × 15 Perforated wheel discs with drop center rims
Tires . . . . .	6.00 S 15 L 4 PR
Tire pressures	
with 1 to 2 occupants . . . . .	front 1.1      rear 1.7 (16 psi)      (24 psi)
fully loaded . . . . .	front 1.2      rear 1.8 (17 psi)      (26 psi)

For sporty driving and for long high-speed motorway trips, the tire pressures should be increased by 0.2 kg/cm<sup>2</sup> (3 psi) at front and rear.

## Electrical system

Voltage . . . . .	12 Volts
Battery . . . . .	36 Ah
Starter . . . . .	0.7 hp
Generator . . . . .	max. 30 Amperes, early cut in
Distributor . . . . .	with vacuum spark advance
Firing order . . . . .	1—4—3—2

Basic ignition timing:

7.5° before TDC (Rotor arm pointing to No. 1 cylinder mark on edge of distributor housing and left-hand mark on crankshaft pulley in line with crankcase joint).

Contact breaker gap . . . . .	0.4 mm (.016 in.)
Spark plugs . . . . .	Bosch W 175 T 1, Beru 175/14, Champion L 87 y or plugs with similar values from other manufacturers
Plug thread . . . . .	14 mm
Plug gap . . . . .	0.7 mm (.028 in.)

### Dimensions and Weights

Length . . . . .	4280 mm (168.5 in.)
Width . . . . .	1620 mm (63.8 in.)
Height . . . . .	1335 mm (52.6 in.)
Ground clearance . . . . .	138 mm (5.4 in.)
Unladen weight . . . . .	910 kg (2006 lbs.)
Maximum load . . . . .	400 kg (882 lbs.)
Permissible total weight . . . . .	1310 kg (2888 lbs.)
Permissible rear axle load . . . . .	790 kg (1741 lbs.)
Permissible front axle load . . . . .	550 kg (1212 lbs.)

### Capacities

Fuel tank . . . . .	40 liters (10.6 US gallons; 8.8 Imp galls)
Engine . . . . .	2.5 liters (5.3 US pints; 4.4 Imp pints)
Rear axle and transmission . . . . .	2.5 liters (3.0 liters when dry 6.3 US pints; 5.25 Imp pints)
Oil bath air cleaner . . . . .	approx. 0.4 liter (.8 US pints; .7 Imp pints)
Windshield washer . . . . .	approx. 1 liter (2.1 US pints; 1.75 Imp pints) operating pressure 2.5 kg/cm <sup>2</sup> (35 psi)

### Performance

Maximum and cruising speed . . . . .	145 kph (90 mph)
Acceleration time from 0—80 kph (0—50 mph)	11.5 seconds
Climbing ability . . . . .	1st 46%
	2nd 24%
	3rd 13.5%
	4th 8.5%



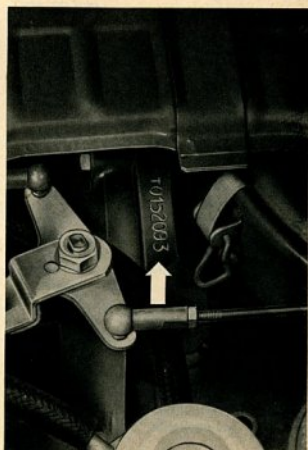
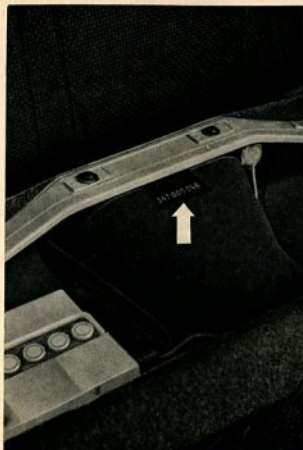
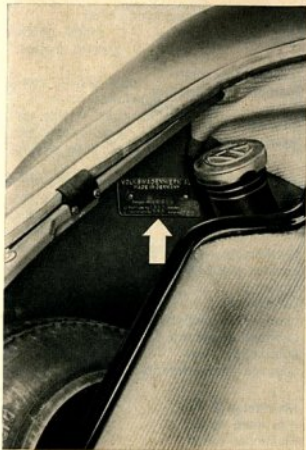


In the vehicle documents are, amongst other things, the model designation, the chassis number and the engine number.

The identification plate is under the front hood near the tank filler neck.

The chassis number is on the frame tunnel under the rear seat.

The engine number is between the oil cooler and air cleaner near the crankcase joint.



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# The lubrication and maintenance charts

List all the operations which we specify for the lubrication and maintenance services. Having this work carried out regularly by an authorized VW Dealer will assure you of many thousands of miles of carefree motoring. Please see also paragraph 6 of our warranty terms.

## Lubrication chart

Operation	W 1 At 500 km (300 miles)	WS 5 At 5000, 15000, 25000 km (3000, 9000, 15000 miles) and so on	W 10 At 10000, 20000, 30000 km (6000, 12000, 18000 miles) and so on
Engine: Change oil, clean oil strainer, check for leaks	x	x	x
Rear axle: Change oil, clean magnetic drain plugs, check for leaks	x		Only at 50000, 100000 km (30000, 60000 miles) and so on
Rear axle: Check oil level, top up as necessary, check for leaks			x
Front axle: Lubricate			x
Door and hood locks: Lubricate		x	x
Carburetor linkage: Lubricate		x	x
Air cleaner: Check, clean lower part if necessary and put fresh oil in			x
Battery: Check voltage and acid level, add distilled water if necessary. Clean and grease terminals		x	x
Windshield washer: Fill	x	x	x

### Important

If your Volkswagen is driven less than 10000 km (6000 miles) a year, have the torsion arm bearings in the front axle greased once a year. The door and hood locks should be lubricated at least every 3 months.

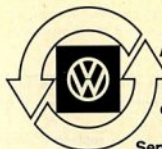


## Maintenance chart

Operation	W 1 At 500 km (300 miles)	W 10 At 10000, 20000, 30000 km (6000, 12000, 18000 miles) and so on
Check tightness of rear axle shaft nuts, tighten if necessary	x	
Check V belt tension, tighten or replace if necessary	x	
Clean fuel pump filter	x	x
Check contact breaker points, replace if necessary, lubricate distributor, adjust breaker gap and ignition timing	x	x
Check valve clearance and fit new cylinder head cover gaskets	x	x
Clean spark plugs, check and adjust plug gaps. Check compression		x
Check weighted control flap for carburetor pre-heating		x
Replace crankcase breather filter		x
Check rubber valve for crankcase ventilation and replace if necessary; check exhaust system for damage		x
Check air intake bellows	x	x
Adjust clutch pedal free-play	x	x
Check dust seals on ball joints and tie-rod ends. Check security of tie-rods, tighten if necessary	x	x
Clean front wheel bearings, pack with grease and adjust (includes removal and installation of both brake discs)		W 50 Only at 50000, 100000 km (30000, 60000 miles) and so on
Check and adjust upper torsion arm axial play		x
Check front wheel camber and toe-in	x	x
Steering gear: Check and adjust play between roller and worm		x
Correct tire pressures. Check tightness of wheel bolts, tighten if necessary	x	
Check tires for wear and damage, correct inflation pressures		x
Check brake system for damage and leaks, check fluid level and top-up if necessary. Adjust hand and foot brakes	x	x
Check thickness of brake linings and pads		x
Check operation of electrical equipment, aim headlights	x	x
Road test: check efficiency of foot and hand brakes, check heating, fresh air ventilation and idling and adjust	x	x



Genuine VW Parts are the proper replacement parts for the Volkswagen. They guarantee accuracy, quality and reliability. Every part of the Volkswagen is available as a Genuine VW Part and all are naturally of the same high quality as the original parts on the vehicle when it leaves the factory. Genuine VW Parts are covered by the same Warranty conditions as brand new vehicles. The genuine parts are expertly installed in every VW workshop.



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158.803.20 - Printed in Germany - 11. 66



