Volkswagen Owner's Manual

1970 Models

Station Wagon
and Kombi

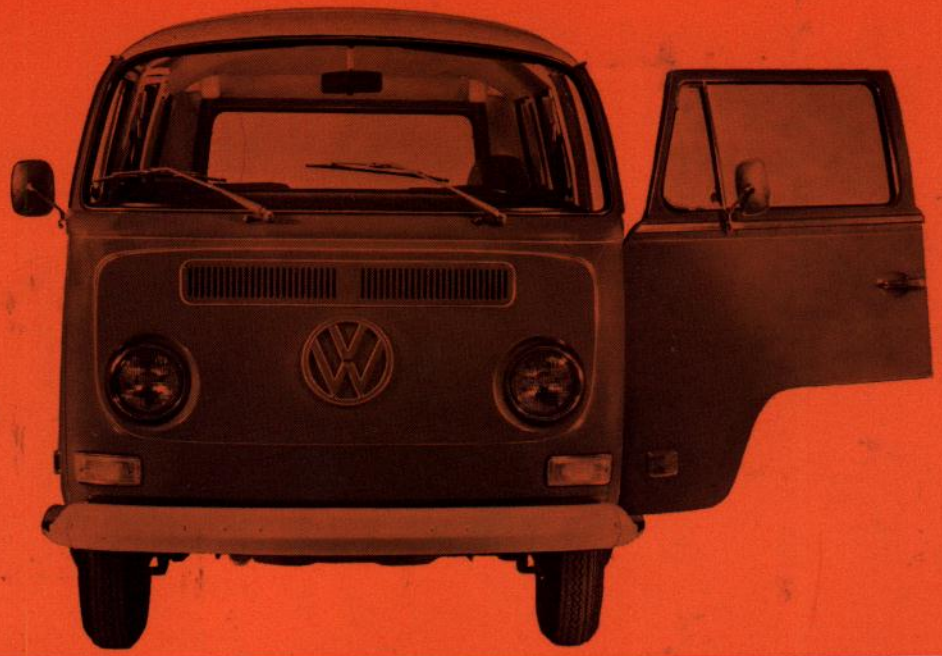
Delivery Van

Pick up

Double Cab

VOLKSWAGENWERK AKTIENGESELLSCHAFT

Owner's Manual



Dear VW Owner:

Congratulations!

You are now the owner of a Volkswagen. A lot has gone into the manufacture of your car. Including advanced engineering techniques, rigid quality controls and thorough inspections. The engineering and safety features that have gone into your VW will be enhanced by . . . you.

You, the safe driver – one who knows his vehicle and all the controls
– one who maintains his vehicle properly
– one who uses his driving skills wisely

Because safe driving is important to you, we suggest that you read this manual carefully, maintain your VW properly and get into the habit of following the check list shown below each time you use your VW.

Before getting behind the wheel:

1 – Make sure that the tires are inflated correctly.

2 – Watch the tread depth indicator on the tires. Look for bruises and wear.

3 – See that all windows are clean and unobstructed.

4 – Check that headlight and tail light lenses are clean.

5 – Check that all lights are functioning properly.

6 – Check turn signal lamps and indicator light (ignition on).

In the driver's seat:

1 – Position seat properly for easy reach of controls.

2 – Adjust inside and outside mirrors for unobstructed rear view.

3 – Fasten seat belts.

4 – Check brake warning light (ignition on).

5 – Check brake operation.

6 – Make sure that all doors are closed securely and locked.

And when you are on the highway:

1 – Always drive defensively. Expect the unexpected.

2 – Use signals to indicate turns and lane changes.

3 – Turn on headlights at dusk.

4 – Follow at a safe distance. A good rule of thumb is to allow a minimum of one car length for each 10 mph of speed.

5 – Reduce speed during night hours and inclement weather.

6 – Observe speed limits and obey highway signs.

7 – When tired, get off the highway, stop and take a rest.

8 – Use emergency lights when stalled or stopped for repairs.

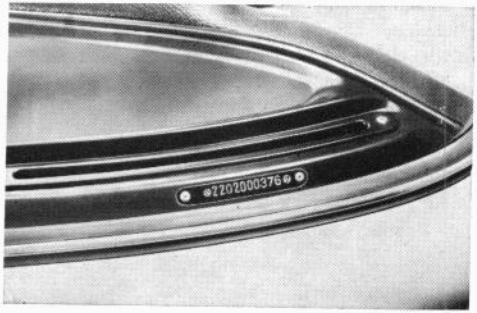
9 – Pull hand brake lever when vehicle is stopped or parked.

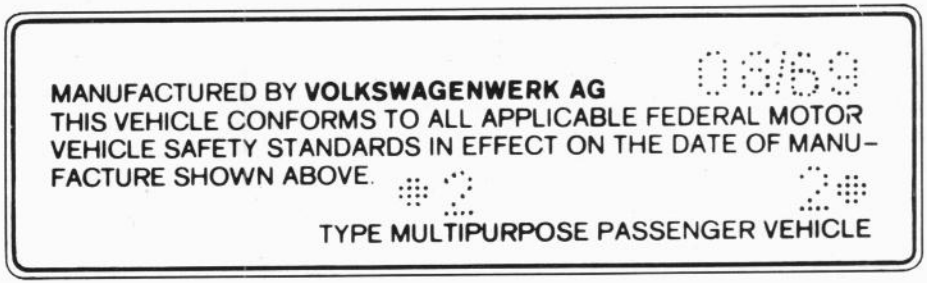
Do not invite car theft!

An unlocked car with the key in the ignition offers both opportunity and temptation.

Therefore, a steering wheel lock and a buzzer alarm are standard equipment in your 1970 Volkswagen. The buzzer will sound if you open the driver's door while the key is in the steering/ignition lock. It is your reminder to take the key and lock the doors.

In accordance with Federal Safety Regulations, the chassis number of your car is located on the left of the instrument panel and can be seen from the outside. This precaution is taken for your protection – to aid in the apprehension of thieves and the recovery of stolen vehicles.





This sticker assures you that your 1970 Volkswagen complies with all Federal Motor Vehicle Safety Standards which were in effect at the time the vehicle was produced.

Contents

All pictures are of the Volkswagen Station Wagon and the text is based on this vehicle. Where the controls, equipment and technical data of the commercial models differ considerably, attention is drawn to the difference.

Specifications are subject to alterations without notice.

Get to know your new car quickly so you can start off on your first trip with complete confidence. The first part of this booklet deals with the operation of your Volkswagen. We urge you to read it carefully.

The second part tells you everything about winter driving and care of the car. It also contains some useful do-it-yourself tips. Plus some information on proper fuel and oil, lubrication and technical data.

When you have studied this manual, you will know how to operate your car properly. Then you can expect many years of reliable and economical service from your car.

This brings us to the Volkswagen Maintenance Record – which you also receive with the car. The Record explains what VW Diagnosis and Maintenance is all about. And tells you how to keep your VW in top driving condition. Always have the Volkswagen Maintenance Record with you when you take the vehicle to an Authorized VW Dealer for service – it helps establish proper contact with the service department staff. In your own interests: Have your Volkswagen serviced as indicated an the Volkswagen Maintenance Record right from the start. Proper treatment plus complete proof of all maintenance work carried out can be of vital importance should you have occasion to make a claim under warranty.

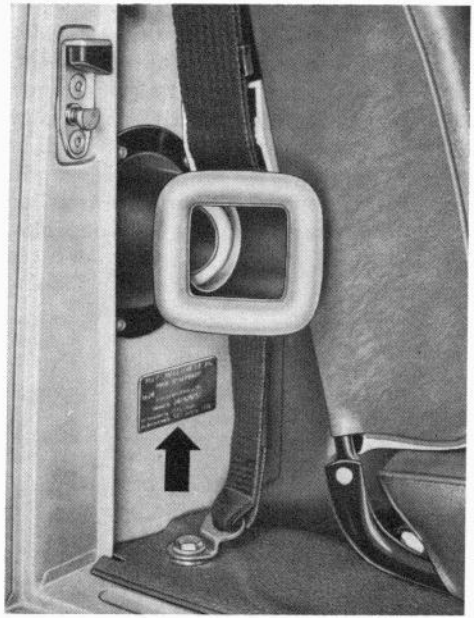
Identification plate, Chassis Number, Engine Number

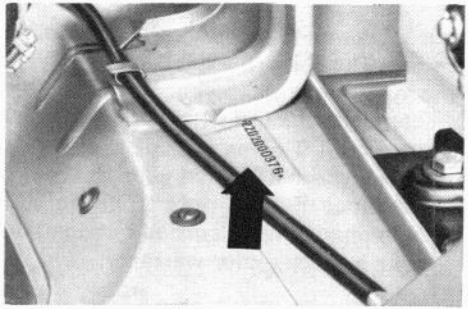
The identification plate
is located in the driver's cabin behind the passenger seat. The 10 digit number after the words "Fahrgest. Nr." is the chassis number. It describes the model number, model year and serial number of the vehicle as shown in this sample.

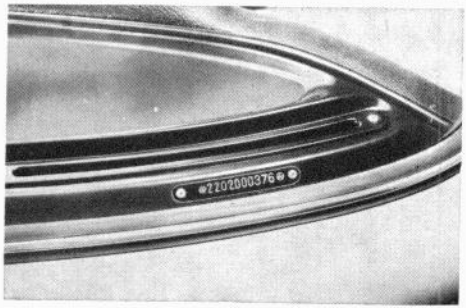
22 0 2000376
Model Year Serial Number

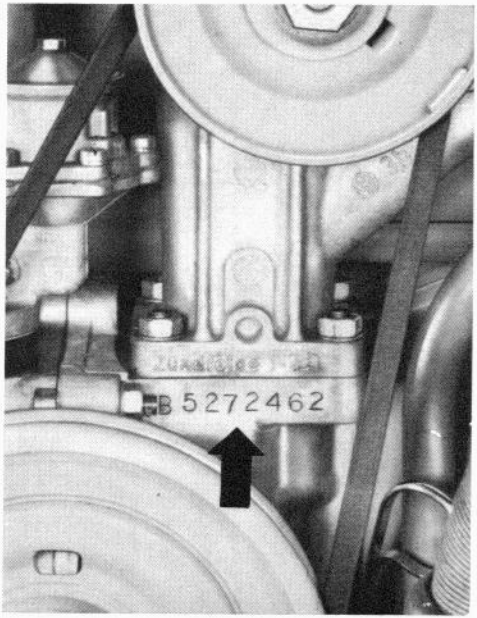
The chassis number
is also stamped on the right-hand engine cover plate . . .
. . . and on the instrument panel so that the Number is visible from outside the car.

The engine number
is on the generator support flange.



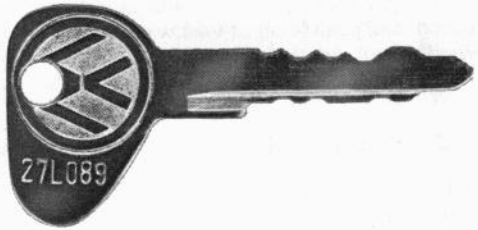






Operation

Key



Only one key is required to unlock and lock the doors and to start the engine.

Be sure the key number is recorded in the front of the VW Maintenance Record. If you should lose a key, you can obtain a replacement from your Authorized Volkswagen Dealer.

Doors

All the doors of your Volkswagen can be unlocked and locked from the outside.

The front doors

of the Station Wagon are equipped with vent wings.

1 – Vent wing fastener

To open the vent wing, turn knob of vent wing fastener until locking catch points in driving direction, and push knob of vent wing fastener forward.

2 – Window crank

3 – Door closing grip

4 – Inside door handle with locking lever

The doors cannot be opened from inside or outside unless the locking levers are pulled out.

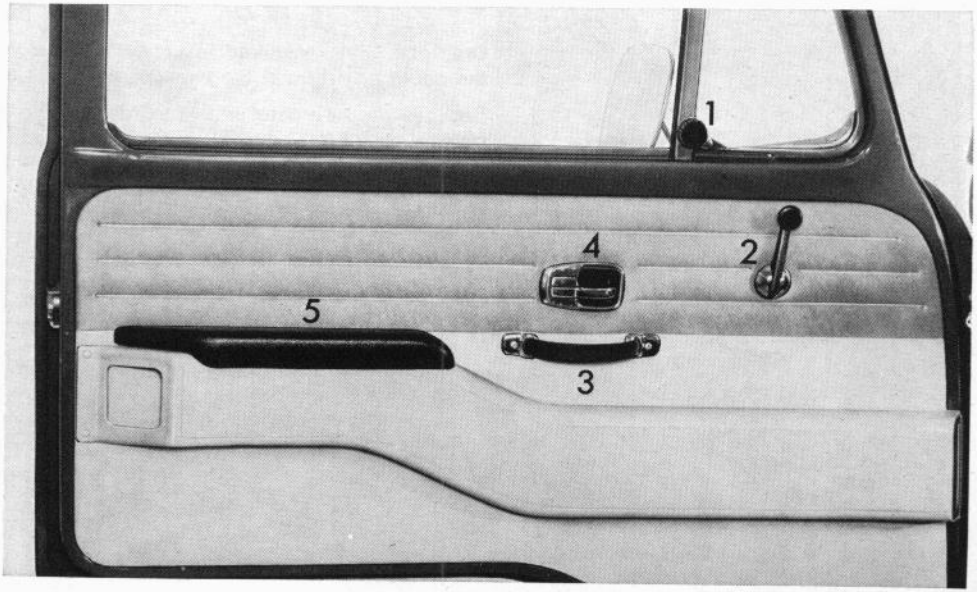
When you open the driver's door while the key is still in the steering / ignition lock the buzzer alarm will sound. It is your reminder to take the key and lock the doors.

When leaving the vehicle, just push in the locking lever and pull the trigger in the outer handle as you close the door. The vehicle is then locked.

If the door closes by itself after the locking lever has been pushed in, it will not lock because the locking lever will spring out automatically. This is an additional safety measure to prevent you from being locked out if the door should accidentally slam shut while the key is still inside the vehicle.

5 – Arm rest on fresh air ventilation duct

Only Station Wagons have this equipment.

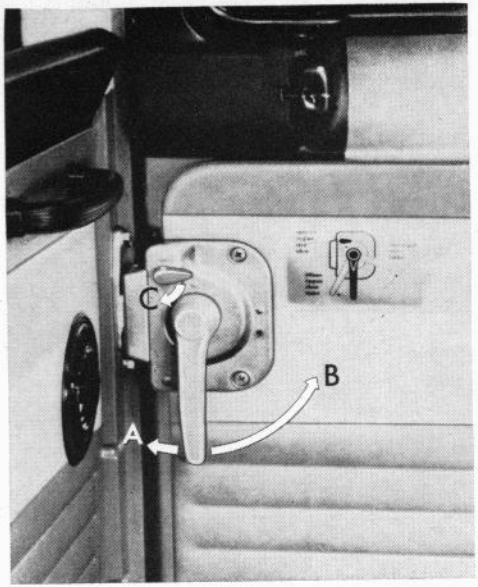


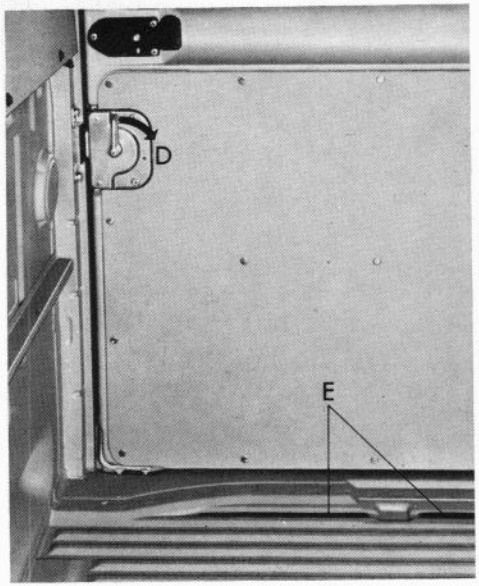
The sliding door

opens smoothly when the door handle is pressed downward. When fully open it is held in position by a hook.

To close, press the door handle down (which releases the hook) and push the door forward until it latches. Then pull the handle up firmly until the sliding door is flush with the rear panel. Make sure that the sliding door is **fully closed** while the vehicle is moving.

To open the door from the inside, push inner handle forward -A-. To close the door, pull handle backward -B-.





The door can be locked either from the outside with the key or from the inside by pushing the small lever to position C. On the Delivery Van, instead of the locking lever a small sliding button has to be moved to the right.

On the Delivery Van with full width cab partition, open the door by pulling the handle rearward -D-. You can then get out if the sliding door closes accidentally while you are in the load compartment.

In the Kombi and the Delivery Van red lines (E) on the load compartment floor mark the limit to which cargo can be loaded without obstructing the operation of the sliding door.

The rear door

for the luggage compartment of the vehicle is opened by depressing the push button on the lower part of the door. After pulling the door up, it is held open by springs.

To close the door, swing it down firmly. Make sure that it is properly closed.

Do not operate vehicle with rear door open.

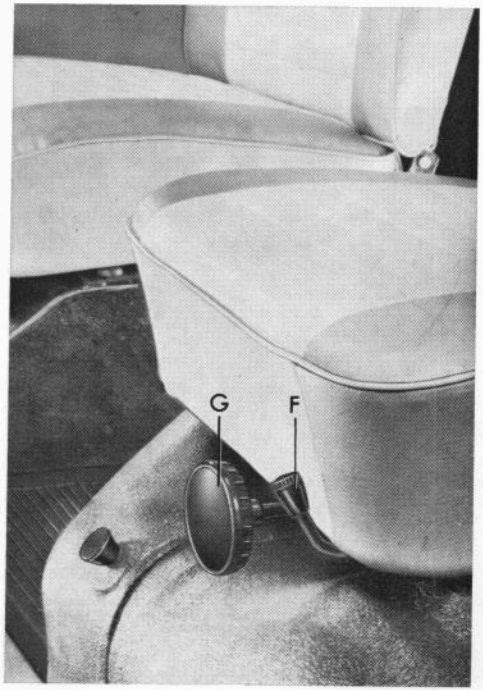
Seats

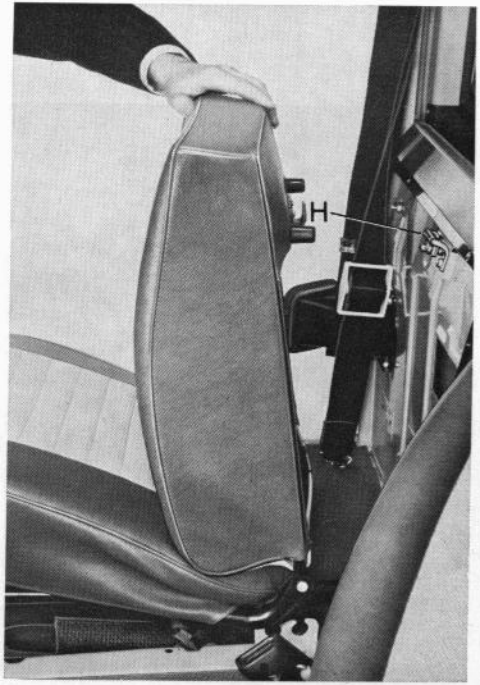
Driver's cabin

The seat and back rest positions of the driver's seat in your vehicle can be altered to suit your requirements. This is quite simple to do – just lift the lever - F - on the front left hand side of the seat frame and slide the seat forward or backward. After adjusting, release the lever and move the seat slightly until it is securely locked in position.

The back rest is secured and cannot tilt forward accidentally. It can be adjusted by turning the wheel - G -.

The front passenger seat and backrest can be adjusted to two positions. First, the seat is lifted up in front until the backrest becomes detached from the mounting - H - on the partition of the driver's compartment. The seat can then be lifted easily and moved to fit into the other adjustment notch. Make sure that the backrest is secured on the mounting of the partition after adjusting.

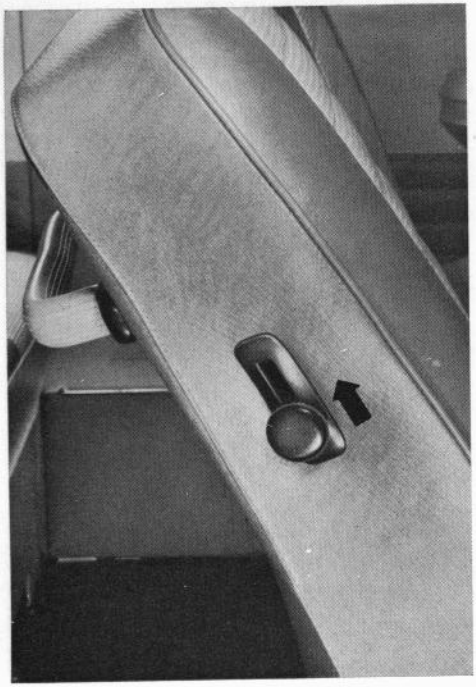


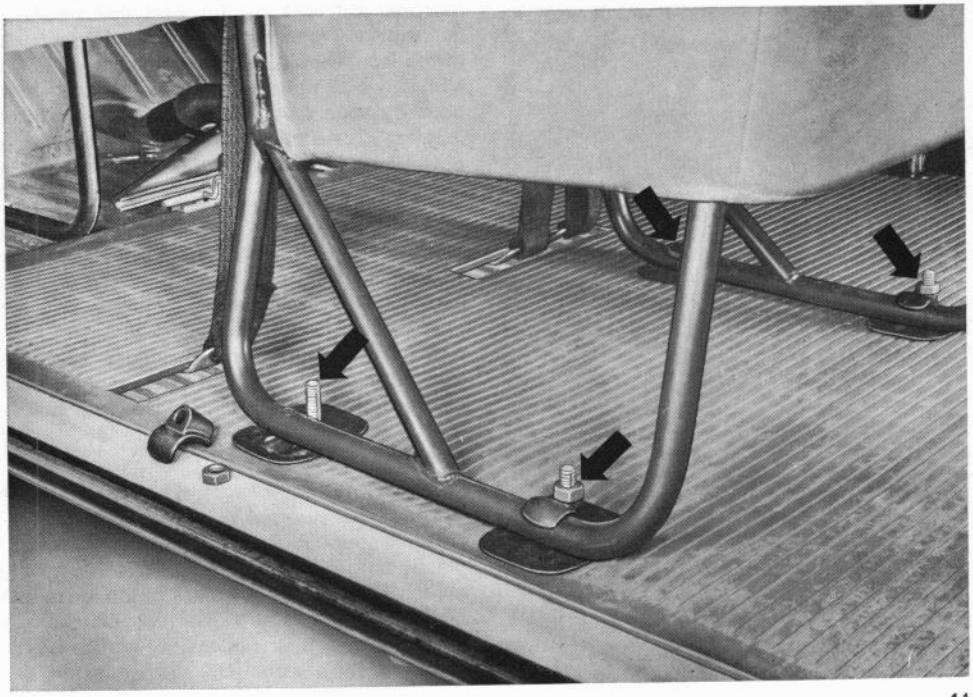


Passenger compartment

The back rest of the front seat can be tilted forward to facilitate entry and exit of rear seat passengers. The catches can be released by pulling up the knob on the side of the back rest.

All seats can be removed for transporting bulky goods. To do this, remove the side trimming for the front and rear seat frames, unscrew the nuts and take off the mounting supports. Take out the seats and the mounting plates and remove the bolts by turning them 90°.





Seat Belts

Your Volkswagen is equipped with a seat belt for each seat. Occupants of the vehicle should wear the belts at all times.

Shoulder belts should not be worn by persons less than approximately 55 inches in height.

The front seats

Each of the outer front seats is equipped with a combination lap / shoulder belt. In models with a three passenger front seat, the middle seat is equipped with a lap belt, which is described on the next page. Each belt is completely adjustable to fit different sized persons and to allow for seat and backrest adjustment. When not in use, the lap section of the lap / shoulder belt retracts and the belt should be hung on the hook on the door post by means of the hole in the buckle tongue. This prevents the belt from lying about, lashing out and getting dirty and keeps the belts handy.

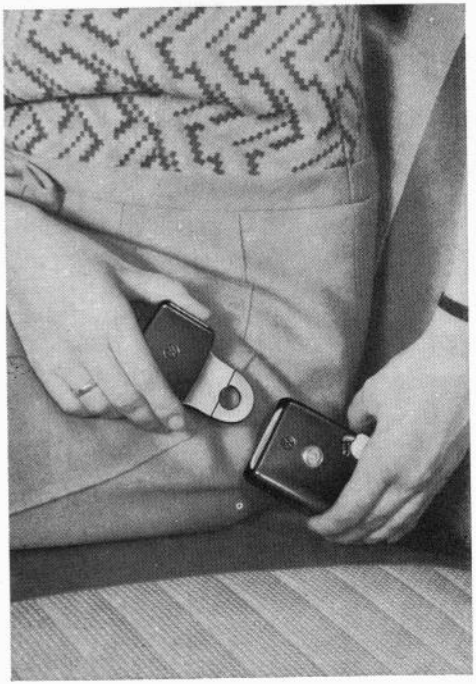
Operation: After sitting down and adjusting the seat and backrest positions, pull the belt buckle across in front of you to the center of the car. With the three passenger front seat, the inboard belt and buckle lie on the seat cushion: with the two passenger seat the inboard buckle is attached to the inboard side of the seat. In either case, insert the buckle tongue into the recess in the other buckle and press lightly together.

A click will be heard when the buckles interlock. **Be sure the belt is not twisted.** Pull lap belt through buckle until belt is completely unrolled from retractor and fits snugly across lap. Take up any slack of the loose belt end by moving slide. Adjust shoulder belt by pulling belt until it fits snugly across chest. Take up any slack by moving slide. To lengthen either section of the belt, release buckles, hold buckle at a right angle to belt and pull belt through buckle.

To release the belt, pull the unlocking lever on the inboard buckle. Only a light pull on the belt and a small movement of the lever is necessary.

The center and rear seats

Each center and rear seat is equipped with an adjustable lap belt.



Operation: After sitting down and making yourself comfortable, pull the longer section of the belt across in front of you until the buckles meet. Insert the tongue of the outboard buckle into the recess in the inboard buckle and press lightly together. A click will be heard when the buckles interlock. **Be sure the belt is not twisted.** Pull belt through the buckle until belt fits snugly across the pelvic area. Take up any slack by moving the slide. To lengthen the belt, release buckle, hold buckle on longer section at a right angle to belt and pull belt through buckle.

To release the belt, pull the unlocking lever on the inboard buckle. Only a light pull on the belt and a small movement of the lever is necessary.

Each of the outer seats

is also equipped with a third mounting point to facilitate subsequent installation of combination lap / shoulder belts.

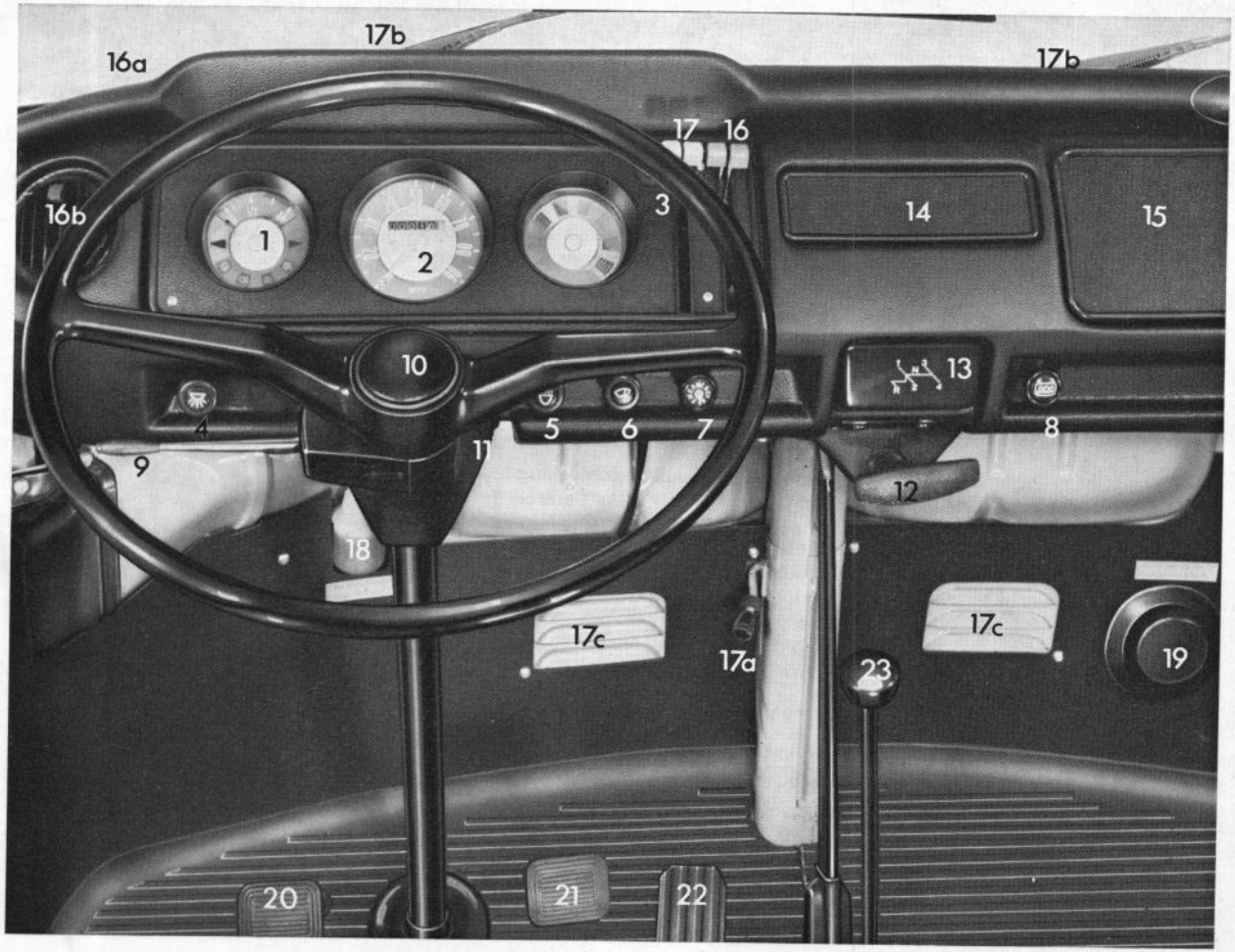
Do not wear the belts loosely.

Do not strap in more than one person with each belt.

Keep belts clean. Wash belts with mild detergent without removing from vehicle. Dry belts in the shade and do not allow lap belts to retract until completely dry.

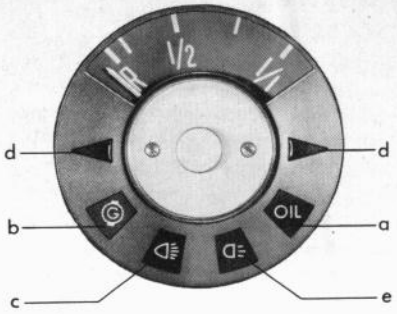
Do not bleach or dye the belts or use any other material to clean the belts because some of these agents can weaken the webbing.

Check buckles, retractors and fittings periodically to make sure they function correctly and check belts to ensure that the webbing has not been damaged.


16a
17b
17b
17 16
16b
3
1
2
14
15
10
13
4
5
6
7
8
11
9
12
18
17c
17a
17c
19
23
20
21
22

Instrument panel, hand and foot controls

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 – Fuel gauge

When the needle is on the "R" mark, there is about one gallon of fuel left in the tank – time to refuel at the next opportunity.

In addition, the fuel gauge contains the following warning lights:

a – red	– oil pressure
b – red	– generator
c – blue	– high beams
d – light green arrows	– turn signals
e – dark green	– parking lights

4 – Push / pull knob for interior light at rear

When the knob is pulled out, the light in the passenger or load compartment can be switched on and off with the switch built into the lamp.

5 – Light switch

Pull the knob to the first stop to switch on parking and side marker, license plate, tail and instrument lights. A green warning lamp lights up in the fuel gauge dial. Pulling the knob all the way switches the headlights on and turns off the green warning lamp for the parking lights. The parking lights remain lit when headlights are used, serving as position lights.

The brightness of the instrument lights can be adjusted by turning the light switch knob.

6 – Windshield wipers and washer

The two-speed wipers are controlled by turning the wiper switch knob.

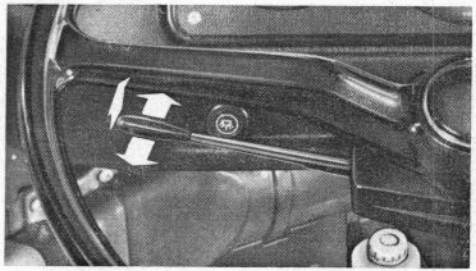
The blades park automatically when turned off. Push button in the knob to spray fluid on windshield. Fluid will spray as long as button is held in.

7 – Emergency flasher switch

If the vehicle is disabled or parked under emergency conditions, pull the switch to make all four turn signals flash at once. A warning light in the switch knob flashes when the system is turned on.

8 – Switch for rear window defogger

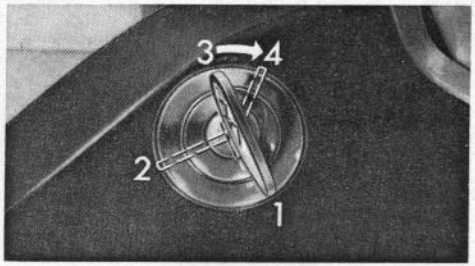
With the ignition switched on, the rear window defogger is activated by pulling the knob. A green control lamp inside the knob will light up when the system is in operation. After the rear window has been cleared, switch off the rear window defogger to avoid an unnecessary drain on the battery.



9 – Turn signal and dimmer switch lever

Lever forward – right turn signals
Lever rearward – left turn signals
The turn signals are cancelled automatically upon completion of a turn.

Pull the lever toward steering wheel to **raise or lower headlight beams.** A blue warning light in the fuel gauge dial shows when high beam is switched on.



11 – Steering / ignition lock

Should it be difficult to turn the key after inserting, gently move the steering wheel from side to side until key turns freely.

1 – Ignition off – steering locked *) – key can be removed
2 – Ignition off – steering free
3 – Ignition on
4 – Starting

*) Remove key and turn steering wheel until locking pin engages.

Important: Remove key from lock only when vehicle is stationary.

If key is left in steering/ignition lock, a buzzer will sound when the driver's door is opened.

12 – Hand brake

To set the hand brake, just pull the handle straight out. To release it, turn clockwise and push handle in.

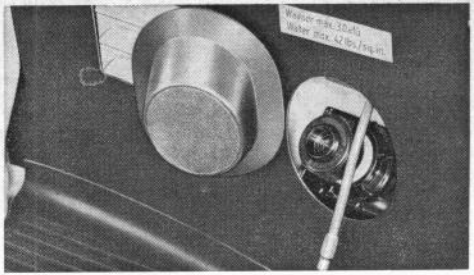
13 – Ashtray

Remove ashtray by depressing leaf spring and pulling ashtray out.

18 – Brake fluid reservoir

The brake fluid level should be at ¾ of an inch below filler neck. If the level ever falls considerably below this point, the brake system should be thoroughly examined by your Authorized VW Dealer.

Brake fluid ist water absorbent and should, therefore, be **renewed every two years.**



19 – Container for windshield washer fluid

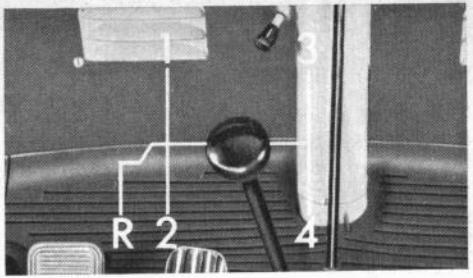
To refill windshield washer container, first remove the cover and then the cap.

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 42 psi.

It is advisable to add a cleaning solution to the water, such as Volkswagen's Windshield Washer Anti-freeze and Solvent, as clear water is usually not adequate for cleaning the windshield quickly and properly.

Follow the direction on the container for the amount to be used.

After filling washer container, ensure that filler cap is screwed on tightly.



23 – Gear shift lever

To engage reverse gear, press the shift lever down, move it to the left and pull it back to the stop. With the ignition switched on, the back-up lights will come on. Do not shift into reverse gear when the vehicle is moving.

Sliding roof

(optional equipment)

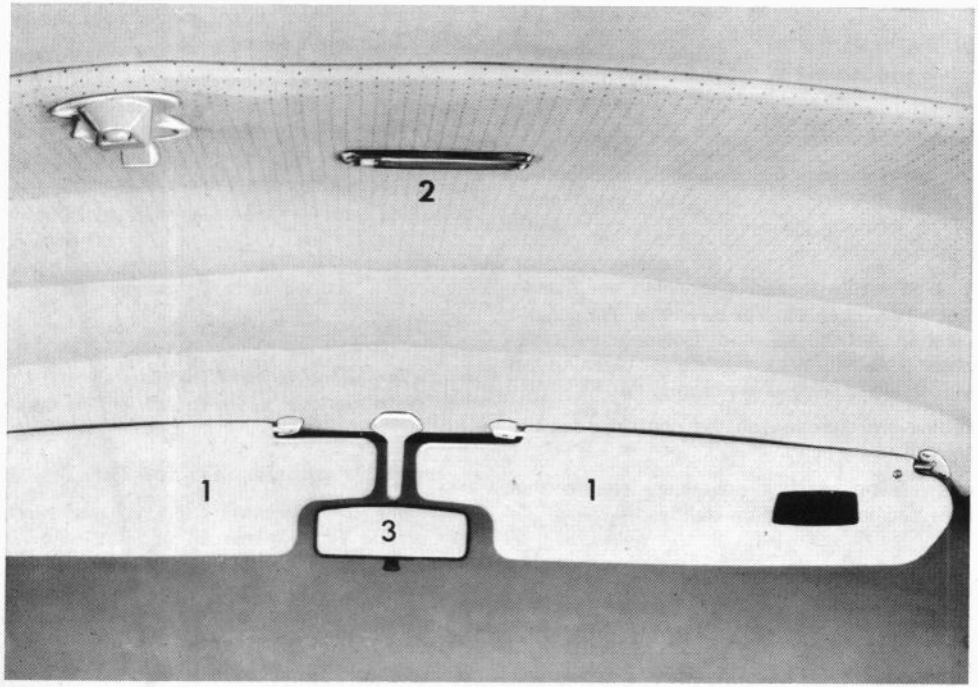
For safety reasons, the sliding roof crank should always be in the recess. When closing the roof turn the crank as far as it will go, then turn it back slightly until it can be folded into the recess.

Interior trim

1 – Sun visors

You can pull the driver's visor out of the center mounting and swing it toward the door window to prevent glare from the side.

In the Station Wagon a mirror is attached to the right hand sun visor.



2 – Cab light

Switch positions:

Front [1] = Light on only when doors are open
Center = Light off
Rear [2] = Light on

Pick-up: [1]) Up [2]) Down

3 – Rear view mirrors

Outside and inside mirrors are adjustable so that they can be set to give clear vision to the rear at all times.

The outside mirrors are hinged to fold flat upon contact.

The inside day/night mirror is rimmed with plastic for safety and designed to detach upon impact. It can be set to the anti-glare position by the switch at the lower portion of the mirror.

On some commercial models the inside mirror is not standard equipment.

Ashtrays in the passenger compartment

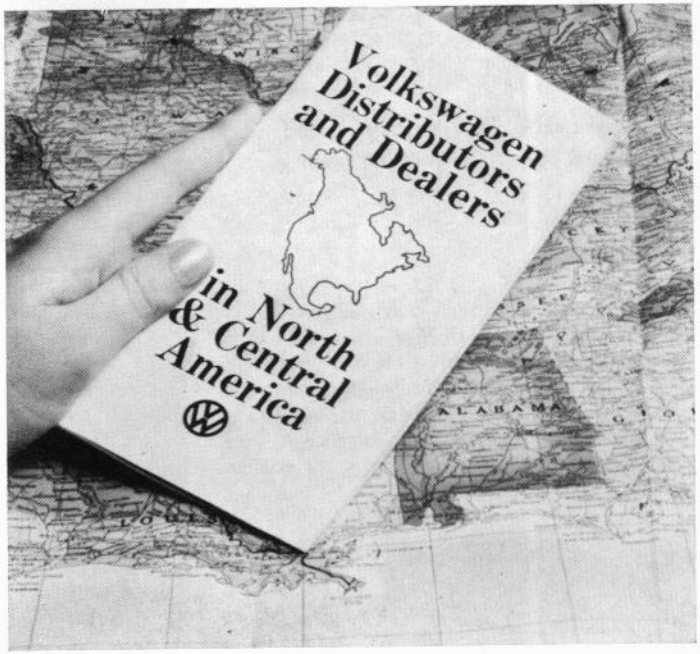
The ashtrays can be removed by lifting them out at the lower portion of the retaining frame. For reinstallation, insert ash tray first at the top where the leaf spring is located, then push it into the retaining frame.

You can get Volkswagen's service only at an authorized VW Dealership. And that means just about everywhere.

Wherever you and your VW go, there is a Volkswagen Dealer close by. You'll find VW Dealers in every state of the U. S., every province of Canada and all the main cities of Central America. Plus more than 130 countries all over the world.

For your convenience, we can provide you with a booklet containing the names and addresses of all authorized VW Distributors and Dealers troughout North and Central America.

Just to make sure your VW is never far from home.

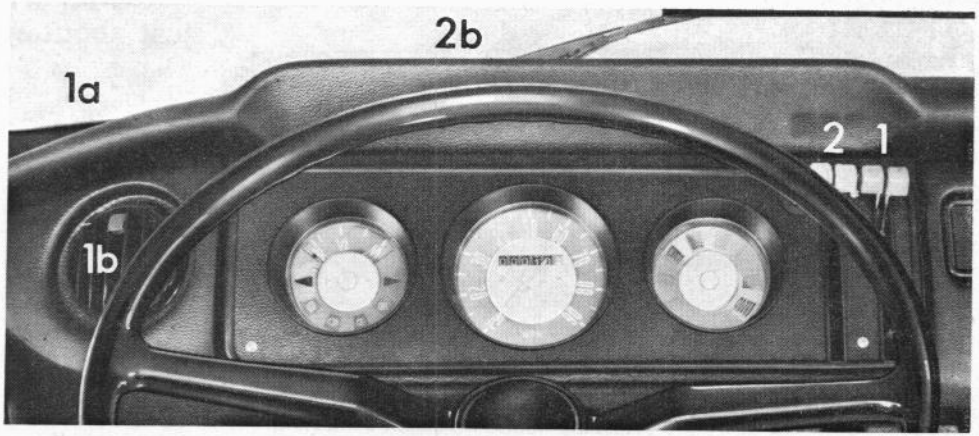


Ventilation and heating

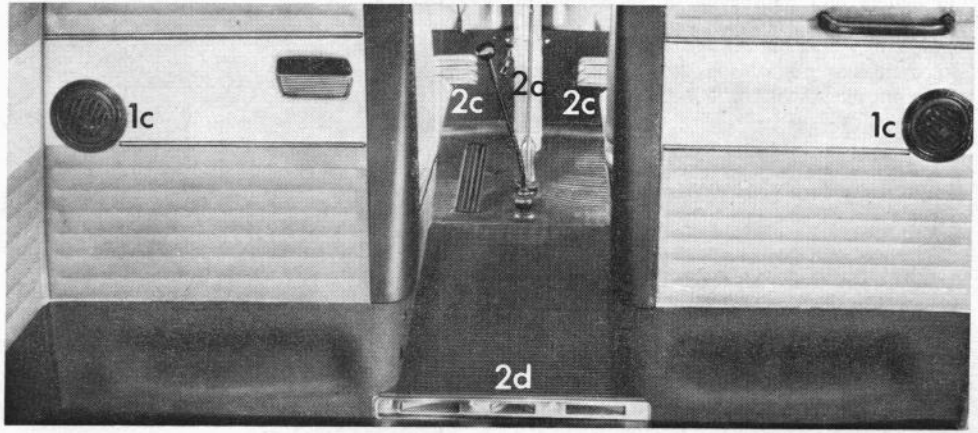
1 – Fresh air control levers

The left and right fresh air ventilation can be turned on and adjusted individually with the two blue operating levers in the dashboard.

Levers up – Ventilation closed
Levers down – Ventilation open



Fresh air enters through two outlets – 1 a – on the lower edge of the windshield and through discharge vents – 1 b – on the right and left side of the dashboard. By turning the discharge vents, the air flow can be pointed in any desired direction. Each discharge vent incorporates a flap to adjust the air volume entering the vehicle.



The Station Wagon has as standard equipment two additional adjustable discharge vents – 1 c – located at the partition between driver and passenger compartments.

2 – Heating control levers

Heating for the left and right side of the vehicle can be turned on and adjusted individually by means of the two red levers in the dashboard.

Levers up – heating off
Levers down – heating on

The distribution of warm air in the vehicle interior can be controlled as follows:

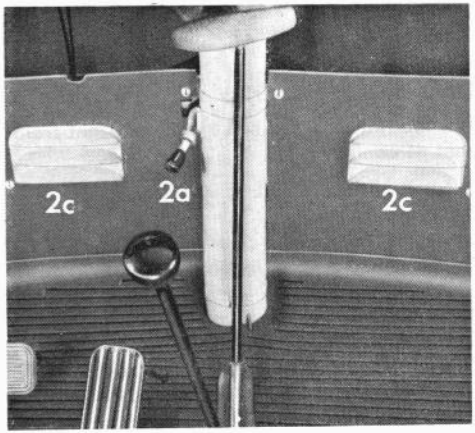
The lever – 2 a – on the front panel regulates the warm air distribution in the driver's compartment. If the lever is pulled down, warm air is discharged from the defroster vents – 2 b – located at the lower edge of the windshield. If the lever is pushed up, warm air will enter the legroom from both lower outlets – 2 c.

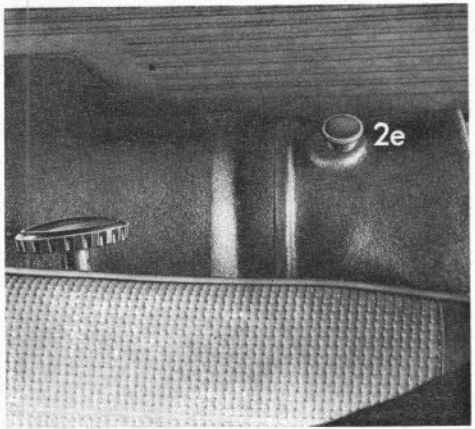
Additional warm air outlets are in the passenger compartment.

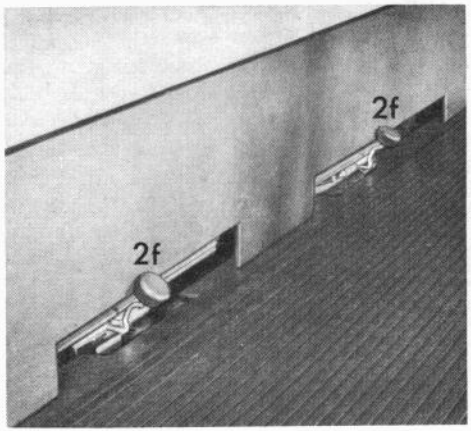
Warm air from outlet – 2 d – in front of the middle seat is regulated by pulling knob – 2 e – under the driver's seat.

The Station Wagon has two outlets – 2 f – under the rear seat bench. If the levers at the vents are moved inward, the warm air flaps are opened.

At low outside temperatures, it is suggested to keep the warm air flaps in the passenger compartment closed. By pulling adjusting lever – 2 a – down the total volume of air is first distributed to the defroster vents keeping the windshield clear. Later on all remaining outlets can be opened to warm up the vehicle interior as quickly as possible.







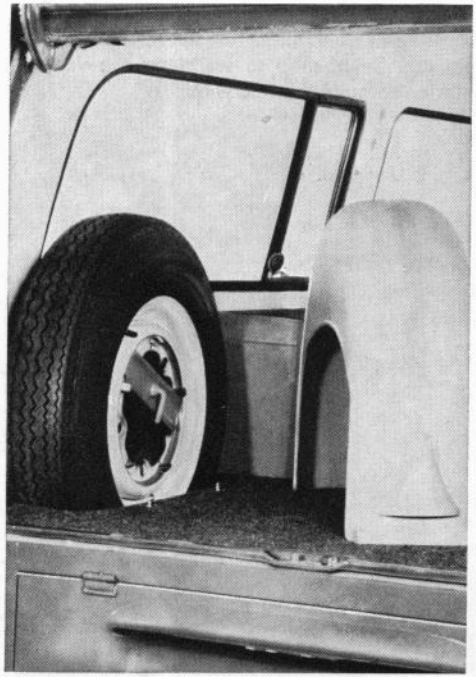
Spare wheel, jack and tools

The spare wheel

is mounted on most models in the rear luggage compartment. To remove it, simply lift off the cover and unscrew the wing nut.

On some models the spare wheel is located under the passenger seat in the driver's cabin. To remove it lift the front edge of the seat to unhook the back rest. Fold the back rest forward and move the entire seat approximately 1 inch forward. Now slide all seat belts to the right side of the seat and turn the seat 90° toward the right door. Remove the spare wheel through the driver's door.

Make sure that the spare tire pressure is always a bit higher than 40 psi which is the maximum operating pressure. It is easier to release some air when the wheel is fitted than to add air.



The jack

is mounted under the right front seat with a clamping device. Wind jack until the end of the folded insert piece is in line with the groove on the jack (see arrow) when storing it after use.

How to operate the jack is described on page 35.

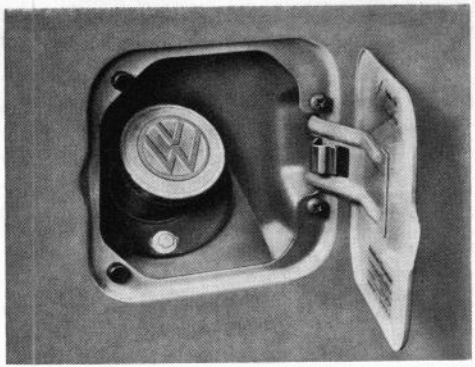
Tools and accessories

The tool kit is also kept under the right front seat. It contains:

1 V belt of the size 9.1 or 9.5x900
1 hub cap remover
1 pair of combination pliers
1 screwdriver with reversible blade for slotted and Phillips screws
1 open-end wrench 8 mm and 13 mm
1 double-ended socket wrench for spark plugs, fan pulley nut, wheel bolts and jack
1 long bar for socket wrench and jack
1 socket wrench 13 mm

What to check

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



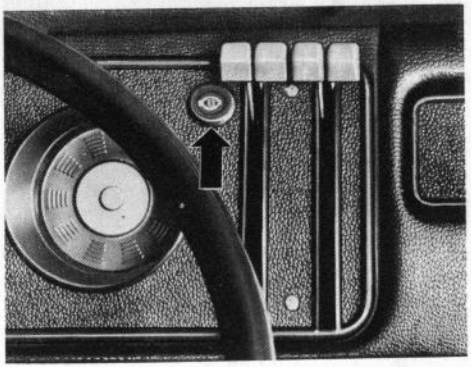
The fuel level

will be indicated by the fuel gauge in the instrument panel when the ignition is switched on (see also page 15). The tank holds approximately 15.9 gal.

The filler neck is located behind a flap above the right rear wheel well.

The brakes

should be checked by applying the brake pedal just after moving off. Your Volkswagen is equipped with a dual brake system. Both systems, front and rear, can function independently.

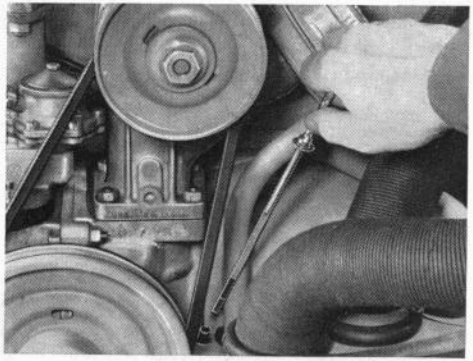


The brake warning light

monitors the brake systems. Should the indicator lamp light up while applying the brakes, see your Authorized VW Dealer as soon as possible because one of the two brake systems may have failed. The brakes will still operate, but a longer distance is required to bring the vehicle to a halt.

To check the brake warning light depress it after switching the ignition on. If the lamp does not light up, the bulb should be replaced.

Please bear in mind that brakes are subject to wear. An increase in pedal travel will indicate this wear. Depending on individual operating conditions, the brakes may have to be adjusted between specified maintenance intervals.



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 so that the dipstick reading will be accurate. Do not check the oil immediately after stopping the engine. Wait at least 5 minutes to give the oil in the engine time to drain down into the bottom of the crankcase.

To top up the oil, a well-known brand should be selected. Although it is advisable to stick to one brand of oil, using a different brand to replenish the oil will not harm the engine. Details about the proper oil viscosities are given on page 46.

The lights

include parking and side marker lights, headlights, tail lights, license plate light, turn signals, brake lights and back-up lights. The turn signals, brake lights and back-up lights must be checked with the ignition on.

If a turn signal is defective, the warning lights in the fuel gauge dial flash much faster than usual or go out. The brake lights work only when the brake pedal is depressed. The back-up lights go on automatically when reverse gear is engaged.

The correct tire pressure

is most important in the interest of safety. Too low as well as too high a tire pressure reduces the life expectancy of the tires and, furthermore, adversely affects the road holding of the vehicle. Although the tubeless tires of your car will hold the inflated tire pressure for a long time, you should check the pressure before you start out on a long trip or at least once a week.

The specified tire pressure can be found in the table on page 56 and also on the label at the, cab partition behind the driver's seat.

Two more important points

1 – If the vehicle is used under very dusty conditions, the oil bath air cleaner must be checked frequently, even daily if necessary.

How this is done is described on page 52.

2 – Do not drive your car with a disconnected battery. On the other hand, both terminals must be taken off before quick-charging a battery in the vehicle. Failure to do this can lead to damage to the electronic components of the electrical equipment.

Starting the engine

Before turning the ignition key, make sure that the gearshift lever is in Neutral.

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

At temperatures below freezing or when the engine is cold, depress the accelerator pedal once fully and then release it slowly so that the automatic choke can work. Switch ignition on and start **immediately.** When the weather is very cold, the engine may turn over slowly during starting. In this case depress the clutch while cranking; if it turns over faster, hold the clutch down until the engine starts. When starting without depressing the clutch, be sure the handbrake is on and the gearshift Neutral.

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 while the vehicle is stationary – drive off immediately.

Do not race the engine while it is cold.

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

The warning lights for generator and oil pressure in the fuel gauge will come on when the ignition is switched on. As soon as the engine starts, these lights will go out. Stop at once if one of these lights comes on when driving:

Red warning light for generator and cooling

Check the belt that drives the generator. If this belt breaks, the engine cooling fan also stops working, which will overheat the engine and cause damage. The proper way to fit a new belt is described on page 36.

If the generator stops charging for any other reason, you can drive on. But try to get the vehicle to an Authorized Volkswagen Dealer as soon as possible because the battery will soon run down.

Red warning light for oil pressure

If this warning light comes on when driving, the flow of lubricating oil in the engine may be interrupted. Check the oil level first. Should the cause of the trouble be elsewhere do not drive on. Contact your nearest Authorized Volkswagen Dealer.

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

Driving hints

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	**0–15 mph**
2nd gear	**10–25 mph**
3rd gear	**15–45 mph**
4th gear	**30–65 mph**

When a particular traffic situation makes it essential to move rapidly, you can accelerate up to 30 mph in 2nd gear and up to 50 mph in 3rd gear for brief periods. Bear in mind, however, that full throttle acceleration raises fuel consumption considerably. It is more economical to drive smoothly and keep the speed fairly constant. Very fast, racy-sporty driving, alternating between full throttle and hard braking will mean more frequent visits to a gas station and increased tire and brake lining wear.

You can drive very economically between:

10 and 20 mph in 2nd gear

15 and 30 mph in 3rd gear

30 and 45 mph in 4th gear

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 gears. He always depresses the clutch fully when changing gears, changes down into the appropriate gear in city traffic instead of slipping the clutch and never uses the clutch pedal as a "rest" for his left foot.

Volkswagen automobiles have excellent brakes. But do not forget that the braking distance increases very rapidly as the speed increases. At 60 mph, for example, it is four times longer than at 30 mph. Apply the brakes in good time whenever possible but do not use too much force – locked wheels increase the braking distance.

Remember that water reduces the tire traction and increases braking distance. Drive carefully and remain at a safe distance behind the preceding vehicle, particularly when roads are wet and slippery.

Always set the handbrake after parking your car. On steep hills turn the front wheels toward the curb.

That just about covers the operation of the car and how to drive it properly.

The following pages deal with tips for winter driving, breakdowns and all there is worth knowing about the vehicle.

Authorized VW Dealers use a new service system specially developed for the VW

Lots of service stations say they can repair Volkswagens and a lot of them really can.

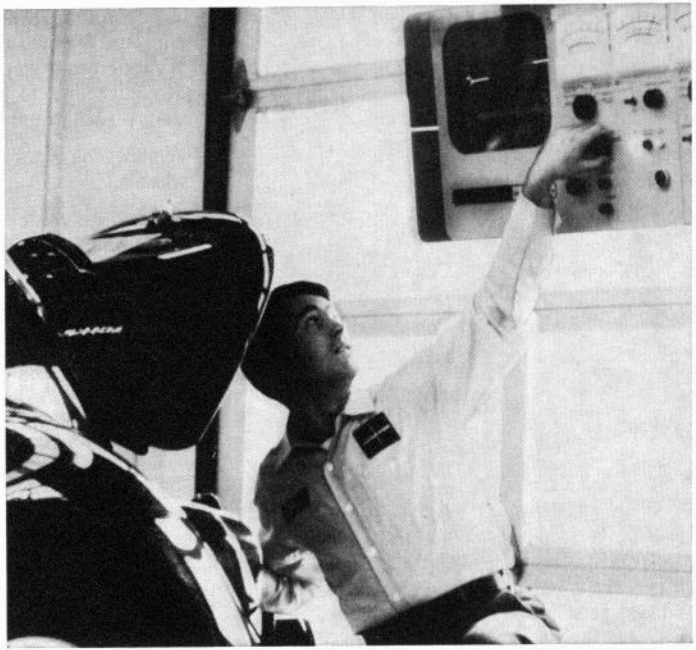
But they cannot offer you VW Diagnosis and Maintenance – our new service system.

Instead of giving every VW the same basic maintenance, we now treat each one as an individual.

This means your VW is thoroughly checked by a specially trained Diagnostician using special testing equipment. And that means your car gets just the maintenance it needs. No more, no less.

And **you** get a Test Report – so you know the exact condition of your VW.

It's something you should know about the car you drive.



Winter operation

Your Volkswagen 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 air cooled engine will always start readily and supply warm air for the interior of the body.

Tires with badly worn treads are very dangerous, particularly in the winter. Make sure they are replaced in time. Winter tires do not fulfill their purpose if the tread depth is less than $^{5}/_{32}$" (4 mm).

Winter tires with special heavy treads give good traction in snow and slush.

Better still are winter tires with studs which increase the safety margin even on hard snow and ice. Winter tires with studs should be run at moderate speeds when new in order to give the studs time to settle. Check your state laws before using studded tires.

Winter tires should always be fitted on all four wheels.

In general, winter tires are of advantage only 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 traction on dry, wet or snow-free roads as a normal tire. Furthermore, winter tires wear rapidly under these conditions, particularly at high speeds.

If winter tires are mounted, they should have the same load capacity as tires of the original equipment.

Snow chains

Only thin chains which do not protrude from the tire tread and inner side wall more than ½ inch including tensioner, are suitable.

While winter tires should be used on all four wheels, chains are required on the rear wheels only.

When driving over long stretches of road which are free of snow, the chains should be removed, because they serve no useful purpose and merely damage the tires and wear out quickly.

Engine oil of SAE 30 grade will tend to thicken at temperatures around freezing and may cause difficult starting. As soon as winter temperatures are expected, change to a thinner grade of engine oil. Details of the various oils to be used are given on page 46.

If you drive mostly short distances and in city traffic, especially in the winter, we recommend that you have the engine oil changed at shorter intervals, say every 1500 miles. At other times, these additional changes are unnecessary and uneconomical.

In areas with arctic climate and temperatures below –13° F, the engine oil should be changed every 750 miles.

Transmission oil of SAE 90 grade can generally be used all year round. Only in areas with cold climate is it necessary to use the thinner SAE 80 transmission oil.

In areas with arctic climate and temperatures below –13° F, ATF (Automatic Transmission Fluid) can be filled into the transmission and final drive. As soon as the temperature rises, this fluid must be replaced by SAE 80 or SAE 90 transmission oil.

The battery not only tends to drop in capacity as the temperature drops, it also has to work much harder in cold weather. Apart from the higher current consumption when starting and using the lights more often, there are numerous other electrical items used mainly in winter, such as rear window defogger and auxiliary heater.

A really cold battery which may not be fully charged has only a fraction of the capacity that a battery at normal temperature has, and this might not be enough to start a cold engine. If the car is only driven short distances and in city traffic, the battery may have to be charged from an external source from time to time. For more details see page 42.

The spark plugs should not have excessively large gaps especially in the winter. The gap is .028 in.

Door locks can freeze in winter if water gets into the lock. When washing the vehicle, do not aim the water jet directly at the locks. It is a good idea to cover the keyholes beforehand. A frozen lock can be opened by heating the key 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.

Care of car

We have provided your vehicle with enamel 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 synthetic resin enamel 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 attacking the paintwork.

In the winter all parts of the vehicle are subjected to even more severe climatic conditions and corrosive salt solutions. It is advisable to clean and wax the vehicle more often at this time of the year.

The items listed below will help you preserve the built-in beauty of your Volkswagen. Compounded especially for use on your VW, they are available at your local Authorized Volkswagen Dealer. Detailed instructions on how to use the various products are imprinted on the individual containers.

Application	Volkswagen Product
Car Washing, Upholstery Cleaning, Whitewall Tire Cleaning	All Purpose Cleaner – ZVW 243 101
Paint Polishing and Paint Waxing	Combination Car Cleaner and Wax – ZVW 241 109
Paint Polishing	Paint Polish – 000 096 001
Paint Waxing	Classic Car Wax – ZVW 246 101
Care and Cleaning of Chrome Parts	Chrome Cleaner and Protection – 000 096 061
Preservation of Chrome Parts	Chrome Preservative – 000 096 067
Windshield Cleaning	Windshield Washer Anti-Freeze & Solvent – ZVW 241 101
Paint Touch-up	Touch-up Paint, all colors

Washing

Wash vehicle with clear water but do not wash it in direct sunshine.

Rinse sponge often to avoid scratching the paintwork.

If the dirt cannot be removed with clear water, All Purpose Cleaner or a suitable shampoo can be added. Afterward, rinse all traces of the cleaner off with clear water and then wipe the vehicle dry to avoid water spots.

Waxing

Wax your car as often possible.

The paint should be rewaxed when the water remains on the surface in large patches and does not form beads and roll off.

If paint is cleaned with Combination Car Cleaner and Wax it need not be waxed afterwards.

Polishing

Should only be done if paint has lost shine and gloss cannot be brought back with wax. After treatment with polish the vehicle must be waxed.

Paint touch-up

Minor paint damages, such as scratches, stone chips and the like, can easily be touched up with a paint stick available at your Authorized VW Dealer.

In the driver's cab on the rear panel you will find a sticker showing a number. This is the code number for the paint color of the vehicle.

Removing tar spots

Treat paint surfaces with a tar remover as soon as possible. After treatment rinse off traces of remover with soap powder solution (water and shampoo).

Removing insects

Dried on insects can be cleaned off paint with an insect remover.

Wash surfaces afterwards.

Parking under trees

Vehicles which are parked under certain trees during 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.

Care of chromed parts

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 Volkswagen's Chrome Cleaner and Protection.

Cleaning windows

Windows can normally be cleaned with a sponge and warm water and dried with a chamois. Do not use this chamois for the paintwork because traces of paint cleaner and polish will cause streaks on the windshield.

These streaks can only be removed with a good windshield cleaner. Do not forget to clean the wiper blades.

Windshield wiper blades

The blades should be taken off from time to time and cleaned with a hard brush and alcohol or a strong detergent solution. During long dry periods they tend to get clogged with tar splashes, oil and insects. New blades should be fitted as often as necessary.

Door and window weatherstrips

The 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 or silicone spray occasionally.

Airing the body

If the vehicle is left in a closed garage for long periods, the garage and car interior should be aired from time to time to prevent the formation of mould and damp stains inside the vehicle.

The driver's seat

If the driver's seat becomes hard to slide, the runners should be lubed lightly a top and bottom after being cleaned with a cloth. The seat can be removed. To do this, push it forward out of the runners.

Care of tarpaulin

If you own a Pick-up or a Double Cab with tarpaulin, please note the following point: When the tarpaulin is wet always leave it on the frame, firmly attached to the loops, until it is dry, to prevent the material from shrinking.

Cleaning leatherette

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 Volkswagen's All Purpose Cleaner. Use only a dry foam cleaner on the leatherette of the seats and backrests because the material used for these parts is air-permeable and liquid cleaners would penetrate into the textile backing.

Grease or paint spots should be wiped off, when possible, before they dry. Once dry, they can be removed by rubbing carefully with a cloth moistened with benzine or alcohol. Shoe polish marks can be removed with turpentine but be careful because this will damage the dust repellent surface of the leatherette if applied 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 that will soil your clothing.

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 frequently and remove imbedded material.

2 – Keep oil and gasoline away from the tires.

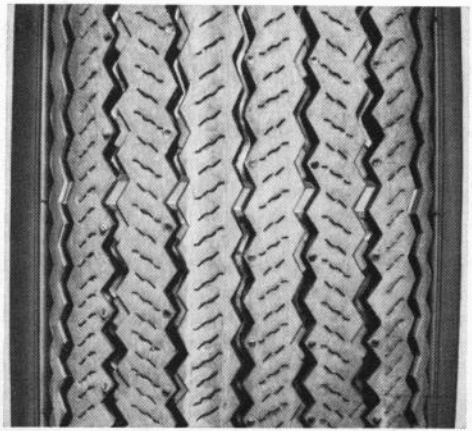
3 – Try not to expose tires to sunshine for long periods.

4 – Replace missing valve dust caps as soon as possible.

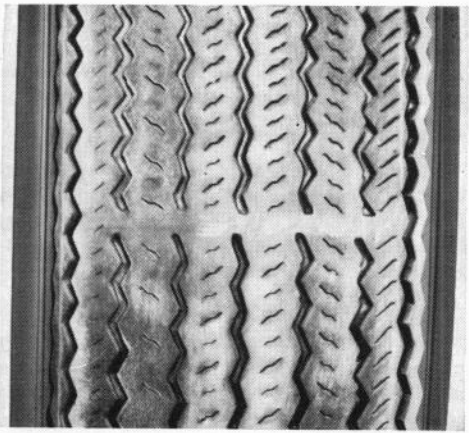
The original equipment tires on your Volkswagen are provided with built-in tread wear indicators to assist you in determining when your tires have been worn to the point of needing replacement. These indicators are molded into the bottom of the tread grooves and will appear as approximately ½-inch wide bands when the tire tread depth becomes $^1/_{16}$ of an inch. When the indicators appear in two or more adjacent grooves, tire replacement due to tread wear is recommended.

We advise you, however, not to let the tires wear down to this extent. Tires with treads in this condition cannot grip the road surface properly at high speeds on wet roads. If you notice that the tires are wearing unevenly, get advice from your Authorized VW Dealer.

Tread still good



Tread worn out

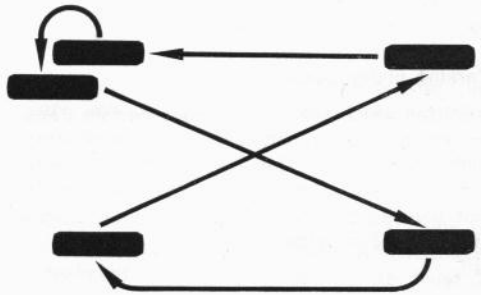


Rotating wheels

Equalize uneven tire wear by rotating the five wheels as shown in the sketch.

However, it is advisable to keep the tires with the best treads on the front wheels.

Tighten the wheel bolts diagonally to 95 ft. lbs. and correct the tire pressures.



Exchange Service

An Authorized VW Dealership is your best source for Genuine VW Parts, VW Exchange Parts and Approved VW Accessories.

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 of the same high quality as the original parts on the vehicle when it leaves the factory. The Genuine VW Parts are expertly installed at any Authorized Volkswagen Dealership.

VW EXCHANGE PARTS are also replacement parts for your Volkswagen just like the Genuine VW Parts. They are covered by the same Warranty conditions as Genuine VW Parts and are available in every VW Dealership. But there is a difference: The price. VW Exchange Parts cost less than Genuine VW Parts but are of the same high quality. They are parts that have been reconditioned. To get an Exchange part, you must turn in your old part.

APPROVED VOLKSWAGEN ACCESSORIES are not just any accessories. The have either been designed especially for the Volkswagen or selected from the vast range of accessories available and tested for use on the Volkswagen. Accessories with trademarks "VW emblem within a square" or the "Wolfsburg City Crest" are your guarantee for material quality, good workmanship, reliability, and compliance with Safety requirements.

Approved VW Accessories are supplied by your Authorized VW Dealer. You can easily install many of them yourself, or installation can be made by your Dealer.

Genuine Volkswagen Parts, new and rebuilt, and Approved Volkswagen Accessories are covered by a warranty guaranteeing them to be free of defects in material and workmanship for a period of 6 months or 6,000 miles, whichever comes first.

Please consult your Authorized Volkswagen Dealer on all questions concerning repairs. You can be sure that your vehicle will be in good hands.

Do-it-yourself tips

Just in case you have to carry out a repair yourself, we have included some information on the next few pages which should help you.

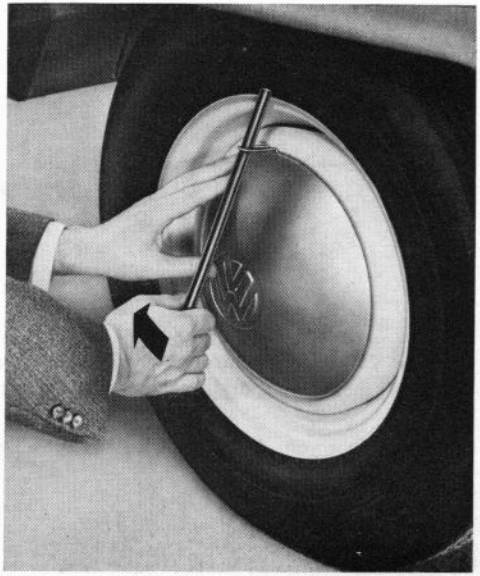
All other repairs should always be performed by an Authorized Volkswagen Dealer. The Volkswagen service organization offers you a wide-spread network of Authorized Volkswagen Dealerships staffed by skilled mechanics and equipped with all the special tools and appliances required. Whenever you see the familiar VW sign on the roadside, you can be sure of expert advice and quick efficient assistance.

Changing wheels

Apply the handbrake and block the opposite wheel.

Take off hub cap with remover and jack bar by hooking the remover into the holes in the edge of the cap and levering against the wheel rim with the jack bar.

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



Insert jack into square socket under body closest to the wheel being changed and turn hexagon at top of jack until the base touches the ground.

Lift vehicle by turning hexagon with socket wrench and bar. Remove wheel bolts and take wheel off.

Note:

The jack is a tool for changing a wheel only. If you work under the car, place a suitable support under car frame.

Place spare wheel against drum and raise or lower vehicle until a hole in the wheel is roughly in line with a threaded hole.

Insert the bolt and tighten it only so far that the wheel can be swung round to align the other holes.

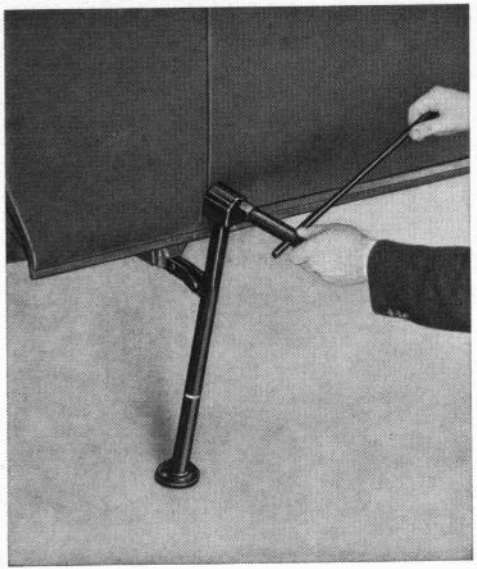
Insert remaining bolts.

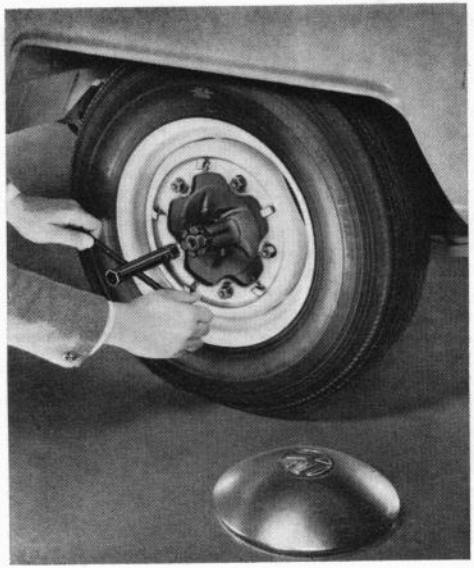
Tighten bolts until the wheel, centered by the spherical shape of the bolt heads, contacts evenly all round.

Lower the vehicle.

Insert bar into wrench and tighten the wheel bolts diagonally to 95 ft. lbs. Have it checked at a service station with a torque wrench because correct tightness of the wheel bolts is important for safety.

Install hub cap with a blow of the hand. Be sure to check the pressure in the tire you have just put on. For correct tire pressure see page 56.

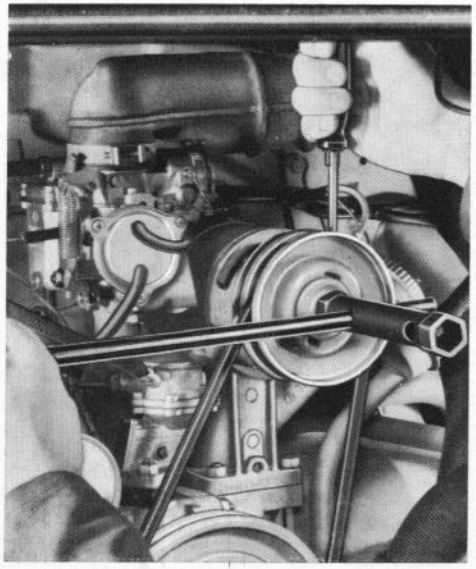


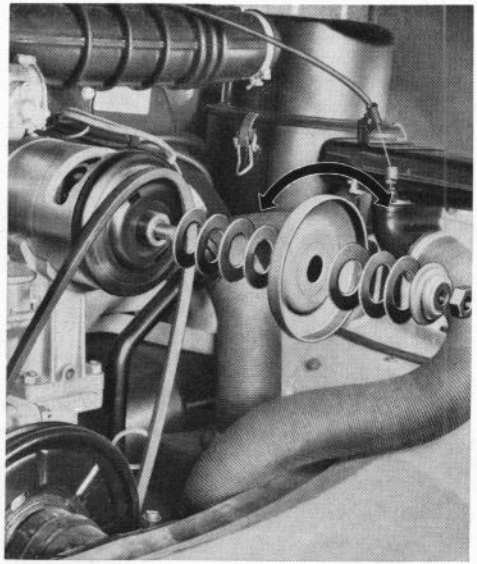


Adjusting or replacing V belt

To adjust the belt, remove the rear part of the pulley on the generator. When loosening and tightening the nut, place a screwdriver in the cutout in the front half of pulley and support the screwdriver in the notch at the generator housing. To fit a new belt, the cover plate for the crankshaft pulley must also be removed after taking out the three screws.

The belt tension is adjusted by varying the number of washer between the pulley halves. Taking washers out increases the tension, putting them in decreases it. Extra washers are stored on the outside of the pulley half.





The V belt tension is correct when the belt can be pressed inward about .6 in. at the center. The belt must not be too tight or too slack. A new belt may stretch slightly at first. It should be checked after about 600 miles and the tension corrected if necessary.

Hint:

Although the life expectancy of the V belt of your VW is very high, you should always carry a replacement belt in the car.

Cleaning fuel pump filter

Install clip on fuel hose between tank and engine compartment.

Remove screw in cover on pump and take cover off.

Take filter out and clean it in benzine.

When installing filter, do not forget the gasket for the cover.

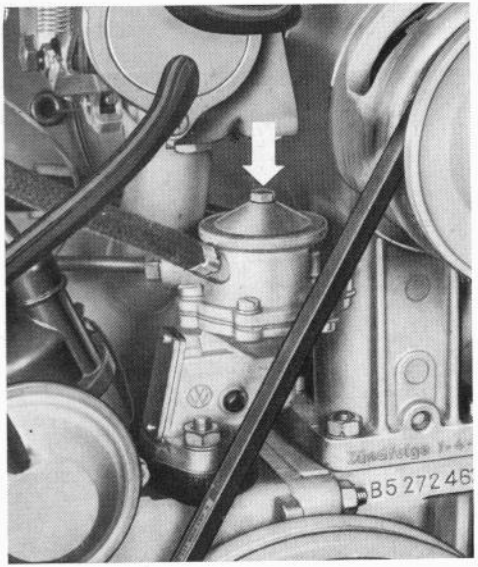
Cleaning or replacing spark plugs

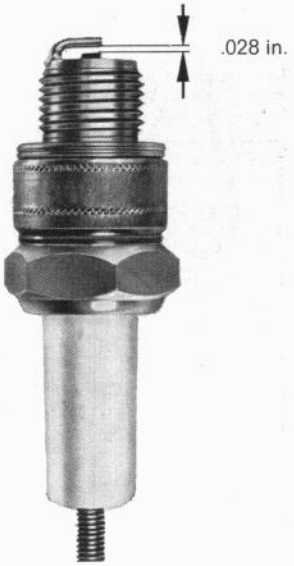
Pull connector off and screw plug out with socket wrench and bar.

The plugs should be clean and dry inside and outside, in order to avoid shorting and tracking. Never use a wire brush for cleaning spark plugs. Instead remove residues from electrodes and insulator with a wood chip. The gap can be set by bending the outside electrode. The gap should be .028 in.

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

New plugs should be installed every 12.000 miles.





Adjusting headlights

It ist best to check the headlight alignment with a regulation screen or aiming device. If none is available, proceed as follows:

Check tire pressures, correct if necessary and park vehicle on level surface squarely facing a wall or screen 25 feet in front of the headlights. The driver's seat must be loaded with one person or a weight of 154 lbs.

Measure height (a) from ground to center of headlights and draw a horizontal line (H) on screen at this height the full width of the vehicle.

Opposite the center of each headlight, draw vertical lines (V) intersecting the horizontal.

These lines should be 42½ inches apart. Drawing a vertical line for the center of the vehicle might help aligning vehicle with screen.

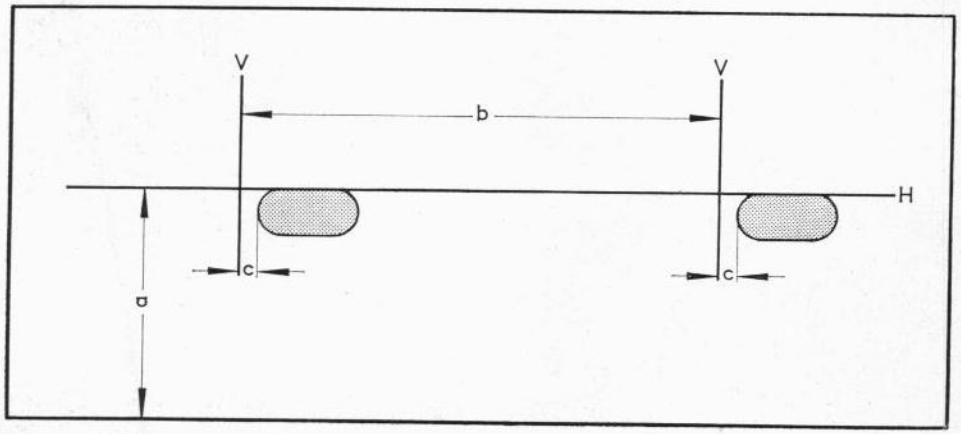
Loosen the screw in the trim ring of the headlights and take ring off.

Aim the headlights individually by turning the two aiming screws with low beams switched on. Cover up the second headlight.

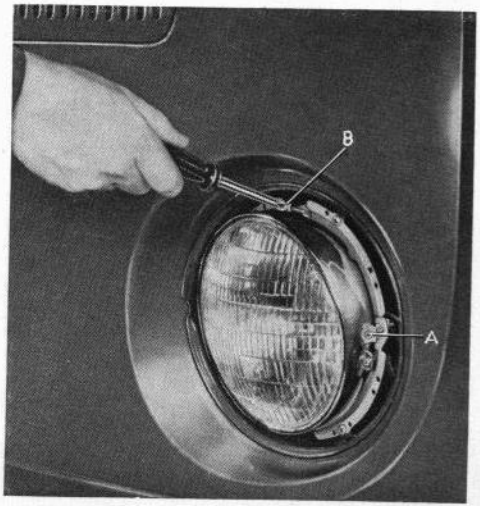
The headlights are correctly aimed when the top edge of the high intensity zone is on the horizontal line H and the left edge is 2 in. to the right of the vertical line V.

Check with your State Bureau of Motor Vehicles for variations from these specifications.

a = Height of headlight centers from ground
b = Distance between headlights = 42½ in.
c = 2 in.



A = Lateral aim
B = Vertical aim



Bulb chart

Bulbs	US replacement bulb	VW Part No.
Headlights	6012	111 941 261 A
Front turn signals / parking lights	1034	N 17 738 2
Side marker lights	57	N 17 717 2
Rear turn signals and stop / tail lights	1034	N 17 738 2
License plate light	89	N 17 719 2
Instrument and warning lights	—	N 17 751 2
Interior lights	—	N 17 723 2
Back-up lights	1073	N 17 733 2

Replacing bulbs

Headlights

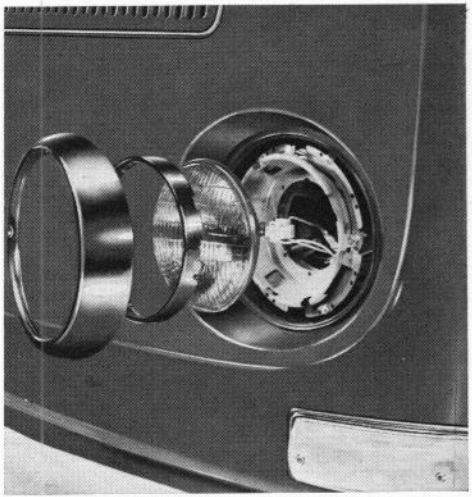
A double filament, type 2, seven inch sealed beam unit of domestic manufacture is used in your Volkswagen. Should it become necessary to replace the unit, loosen screw in the trim ring and take off the trim ring.

Remove three screws in sealed beam retaining ring and take ring off.

Take sealed beam unit out of support ring and pull off cable connector.

When installing a new sealed beam unit, ensure that the three glass lugs engage properly in the support ring.

Check headlight settings.



Front turn signal / parking light bulb

Remove two Phillips screws.

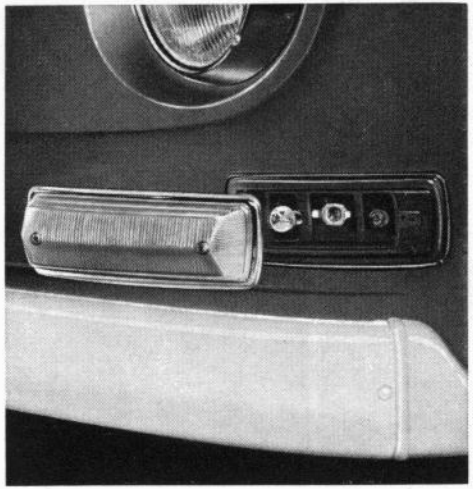
Take off lens.

Press bulb into holder lightly, turn and take out.

Install new bulb.

Ensure that gasket is located properly when installing.

Do not overtighten screws.



Side marker light bulb

Remove two Phillips screws and take off lens.

Press bulb in lightly, turn and take out.

Install new bulb.

When installing lens, ensure that gasket is located properly.

Do not overtighten screws.

Back-up light bulb or Rear turn signal / stop / tail light bulb

Remove two Phillips screws and take off lens.

Press bulb in lightly, turn and take out.

Insert new bulb.

When installing lens, ensure that gasket is located properly.

Tighten lens securing screws evenly but do not overtighten.

Licence plate light bulb

Open engine compartment lid.

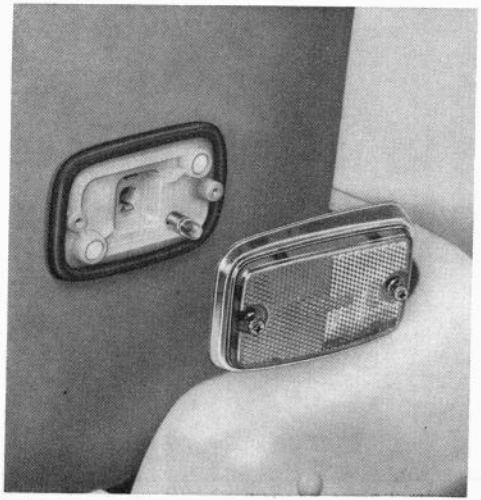
Remove two Phillips screws. Take off lens and bulb holder.

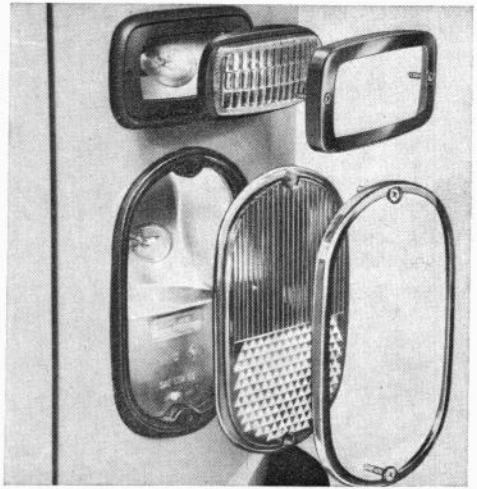
Press bulb in lightly, turn and take out.

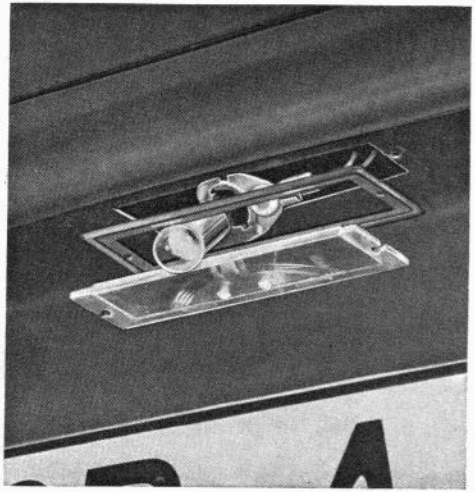
Insert new bulb.

When installing lens, ensure that gasket is located properly.

Tighten lens securing screws evenly but do not overtighten.





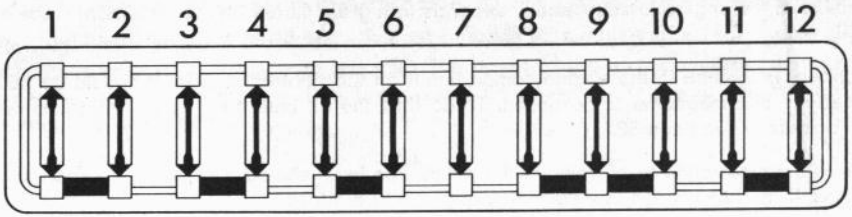


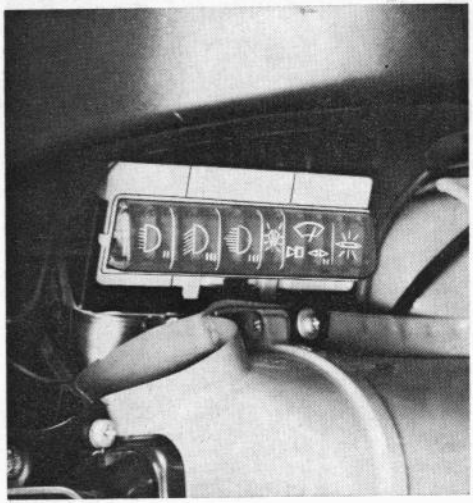
Replacing fuses

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.

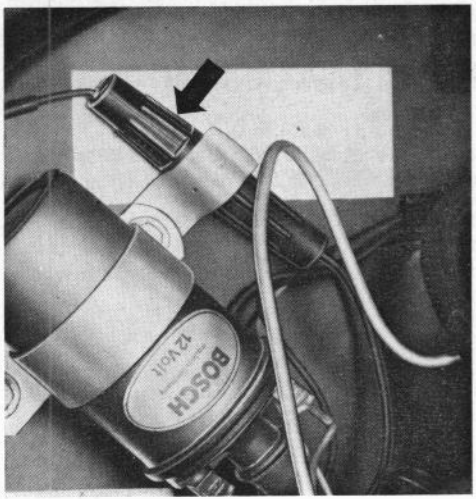
It is advisable to always carry a few spare 8 Ampere fuses in the vehicle.

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





The 8 Ampere fuse for the back-up lights is located in a separate fuse holder – arrow – above the ignition coil in the engine compartment.



Fuse box

1 Parking and side marker lights, tail light right, license plate light

2 Tail light left

3 Low beam right

4 Low beam left

5 High beam right

6 High beam left,
high beam warning light

7 —

8 Windshield wipers

9 Turn signals, Brake warning light,
Fuel gauge

10 Stop lights, Horn, Rear window defogger

11 Interior lights, Emergency flasher system,
Buzzer alarm

12 (open for subsequent installation of electrical accessories)

Care of 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.

The battery is located in the engine compartment on the right-hand side. It should be taken out for checking and maintenance purposes. To do this, the oil bath air cleaner has to be removed first. For details see page 52.

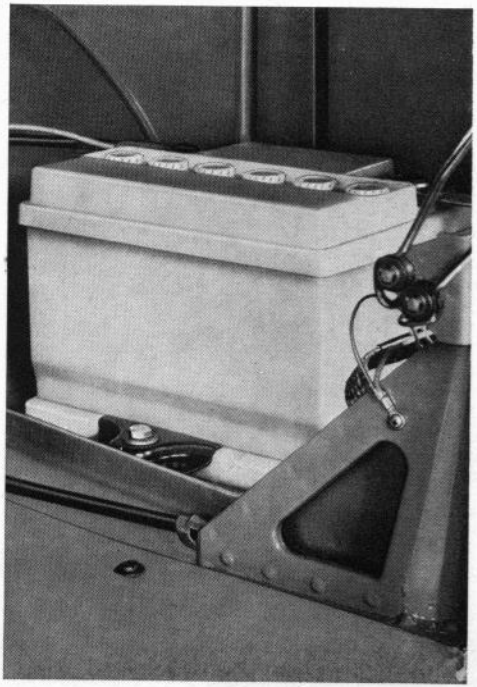
To check the electrolyte level, remove the plugs. The level should always be in accordance with the mark. If the level is too low distilled water must be added.

The electrolyte level drops when the battery is charged due to dissociation of 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 operated under different conditions. As a general rule, the battery electrolyte level must be checked more often in the summer than in the winter. VW drivers in hot areas who do a lot of driving are advised to check the battery at least every week.

Do not add more water than necessary because if the level is too high, the electrolyte will overflow when the battery is being charged and cause damage.

The terminals and connections should be kept clean and greased with battery silicon spray or petroleum jelly. Ensure that the ground connection to the body is free of corrosion and tight.

If you store your vehicle for a prolonged period, it is advisable to take the battery to an Authorized Volkswagen Dealer. 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.



Attention

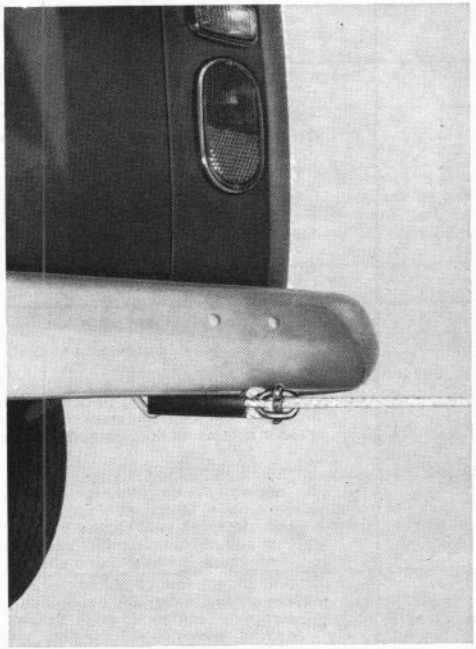
When working on the battery, take care not to short-circuit the terminals. This would cause the battery to heat up very quickly which could lead to damage.

Before having a quick-charge performed on a battery installed in a vehicle, disconnect both terminals to avoid serious damage to the electronic components of the electrical equipment.

Towing

Towing eyes are fitted underneath the rear and front bumpers so it is easy to attach a towrope.

When towing, undue strain and sudden movement should be avoided. Exercise special caution on rough roads to prevent damage to your car. The driver of the towing vehicle must be particularly careful when starting off and shifting gears. The driver of the towed vehicle must take care to keep the tow rope taut.



Here is what to do when trouble troubles you

Your Volkswagen should repay you with trouble – free driving if it receives regular maintenance.

Should you ever encounter difficulty in starting your engine or have trouble on the road, there are a few simple repairs which you can carry out to get your VW going again. Locate the problem and probable cause of the trouble in the guide on the following pages and follow the directions on what to do.

If the trouble is serious or you are uncertain as to its origin, be sure to see an Authorized Volkswagen Dealer as soon as possible.

Note: The adjustment of idling, ignition timing and throttle positioner requires special equipment and training. We suggest that you consult your Authorized Volkswagen Dealer.

Problem	Probable Cause	What To Do
VW will not start: engine will not turn over or turns over too slowly	1. Run down or dead battery	1. Push to start the vehicle (before doing so put in 3rd gear and turn on ignition. At a speed of approximately 20 mph. depress accelerator pedal and release clutch slowly). Have battery charged and cause of high current consumption checked
	2. Loose connection A. At battery B. At starter C. At connections behind dash board	2. Make sure that all connections are tight A. Check both cable connections on battery and grounded end of ground strap B. Check connections at solenoid, mounted on starter, under right rear of vehicle C. Check push-on connectors behind dash board
	3. Starter defective	3. Have vehicle started by pushing and take it to nearest Authorized VW Dealer
VW will not start: engine turns over	4. Loose connection in ignition system	4. Check for loose connections at coil, distributor and spark plugs
	5. Loose connection in primary circuit to coil	5. Turn on ignition. Remove thin black cable from ignition coil, hold it by insulation and strike it against blower housing or other ground, **being careful of gasoline and its fumes** If no spark, electricity does not reach coil from battery. Check push-on connectors behind dash board. If there is still no spark, see the nearest Authorized VW Dealer
	6. If spark is present at black coil cable, trouble is in ignition system	6. Check in this sequence: A. Turn on ignition, remove distributor cap, and turn engine by fan belt until the ignition points are closed. Open and close ignition points several times with a nonmetal object. A visible and audible spark will appear between the points If this is not the case, the cables on ignition coil and distributor should be checked for tightness. If no spark is visible, see your nearest Authorized VW Dealer B. If spark appears at points, remove high tension wire from center of distributor cap and hold it are closed. Open and close ignition points several times with a nonmetal object. A visible and turn over engine or open ignition points as described under A. A strong blue spark must appear. If this is not the case, see your Authorized VW Dealer

Problem	Probable Cause	What To Do
VW will not start: engine turns over		C. If a spark appears at high tension cable, the distributor cap should be cleaned inside and outside. Reconnect high tension cable. Remove all spark plugs. If plugs are clean and dry, reconnect ignition cables to spark plugs and bring spark plugs in connection with metal (gound). **Hold cable with dry piece of cloth to avoid shock.** A spark should appear between spark plug electrodes when the engine is turned over. If not, clean and dry ignition cables and spark plug connectors and check that ignition cables are tight in distributor cap and plug connectors. See your Authorized VW Dealer if the above steps did not ensure proper ignition D. Dirty or wet spark plugs should be cleaned and dried. Install new plugs if necessary. Unburned gasoline on plug electrodes points to excessive fuel supply
	7. If spark is fairly good at plugs, trouble is most likely in fuel system A. Caused by improper starting procedure. If the gas pedal is depressed too often, the accelerator pump in the carburetor injects too much gasoline B. Carburetor may be flooded, float or needle valve may be sticking	7. Check fuel system in the following sequence: A. Depress gas pedal completely and operate starter for a prolonged period. If engine does not start, remove and dry spark plugs, turn over engine with plugs removed for approximately 30 seconds. Reinstall plugs and start engine B. Tap around outside of carburetor with wooden or plastic tool handle. Wait a few minutes and try starting again as described at 7 A
Engine stalls shortly after starting	8. Poor fuel supply	8. See paragraph 11 through 13
	9. Automatic choke does not open, excessive fuel supply	9. Check whether choke valve is in vertical position after ignition has been switched on for 2-5 minutes (depending on outside temperatures). Cover for choke unit must be hot. If choke valve is binding in a closed position, open at fest idle cam and if necessary, retain with wire. See your Authorized VW Dealer
Engine stalls while vehicle is driven	10. Defect in ignition system	10. See paragraph 4 through 6
	11. Fuel supply is exhausted	11. Check whether any gasoline is left in tank
	12. Fuel filter in pump may be clogged	12. Disconnect intake fuel line from fuel pump and plug up line. After removing the pump cover, the fuel filter can be taken out for cleaning
	13. Gasoline may be contaminated by water, dust or dirt	13. See your VW dealer for cleaning of all components of the fuel system
Red warning light for oil pressure comes on while you are driving	14. If light goes on, the oil pressure is too low	14. Stop at once and check oil level. Add oil as necessary. If the oil level is sufficient and light goes on during driving, contact the nearest Authorized VW Dealer before driving on
Red warning light for generator and cooling comes on while you are driving	15. If light goes on, V belt may be torn or generator does not charge	15. If belt drives generator without slipping, switch off all unnecessary electrical equipment (radio, etc.). Drive to nearest VW dealer as otherwise the battery will soon run down. If belt is broken, replace it before driving on because engine cooling fan is no longer working

Fuel and lubricants

Fuel

Your Volkswagen will run satisfactorily on regular fuels which fulfill the octane requirements of the engine (91 Octane). If regular fuels with adequate anti-knock qualities are not available, premium fuels should be used or mixed with the regular fuel.

Engine oil

Always use a name brand oil labeled "For Service MS" for the engine of your Volkswagen. The quality of oil produced by reputable firms is so good that the choice of brand is entirely up to you. The Volkswagen engine makes no special demands with respect to oil quality which cannot be met by the well-known and popular brands. It is suggested that you select "your" brand of oil at the first oil change at 600 miles and that you stick to this brand if at all possible.

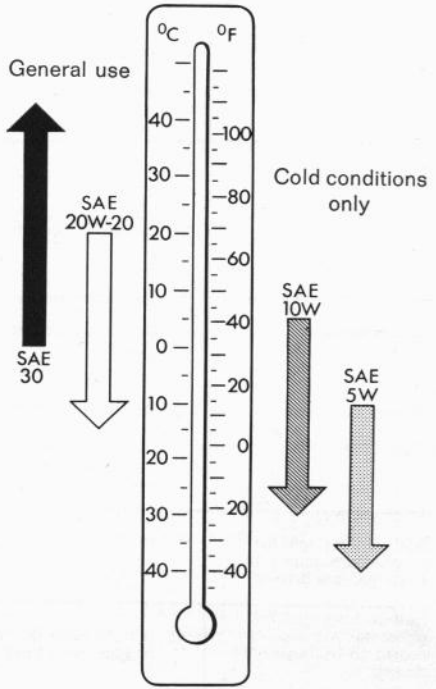
The classification of oil into various viscosity grades is shown by the designations SAE 30, SAE 20W–20 and so on. The viscosity of a lubricant indicates its resistance to flow at a given temperature. The VW engine usually requires only two different viscosity grades which are used, according to season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

SAE 30	In warm seasons and all year round in areas with hot climate.
SAE 20W–20 or SAE 10W *)	In the winter.
	In areas where the average temperature is below 5° F
SAE 5W *)	In areas with arctic climate and temperatures below –13° F

*) Avoid driving at high speeds for long periods if using SAE 10W oil and the outside temperature is above 32° F or if using SAE 5W oil when the temperature is above 5° F.

All SAE grades cover a temperature range of about 60° F and the ranges of two neighboring grades overlap by at least 30° F. Brief variations in temperature between seasons can therefore be disregarded. For the same reason, it is possible 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.

Temperature ranges of SAE grades



Transmission oil and ATF (Automatic Transmission Fluid)

Transmission and final drive are both lubricated with hypoid oil:

SAE 90	In general all year round.
SAE 80	In areas with cold climate.
ATF	In areas with arctic climate and temperatures below –13° F.

ATF is a special fluid for automatic transmissions but ATF can also be used in manual transmissions under the above mentioned climatic conditions.

All ATF's labeled with Dexron® and a five digit number preceded by the letter "B" can be used. Suitable products are supplied by all well-known mineral oil firms.

Lubricant additives

No additives should be mixed with fuel or lubricating oils and fluids.

Grease

1. **Multi-purpose grease with a lithium base** should be used for the front axle.
2. **Silicon spray or petroleum jelly** should be used for the battery terminals and posts.

Lubrication

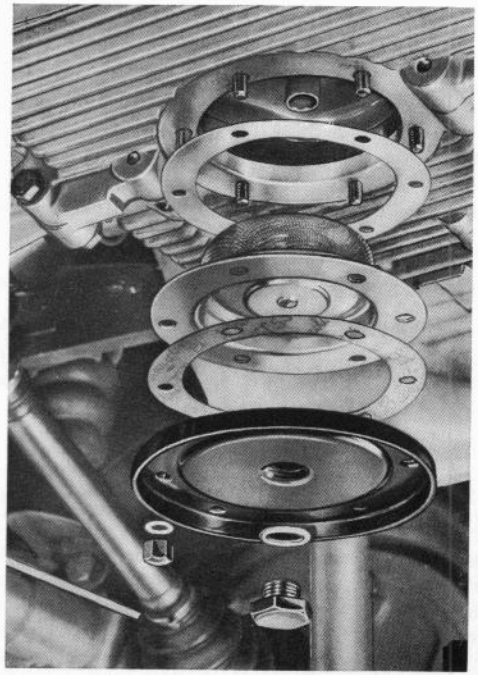
Engine

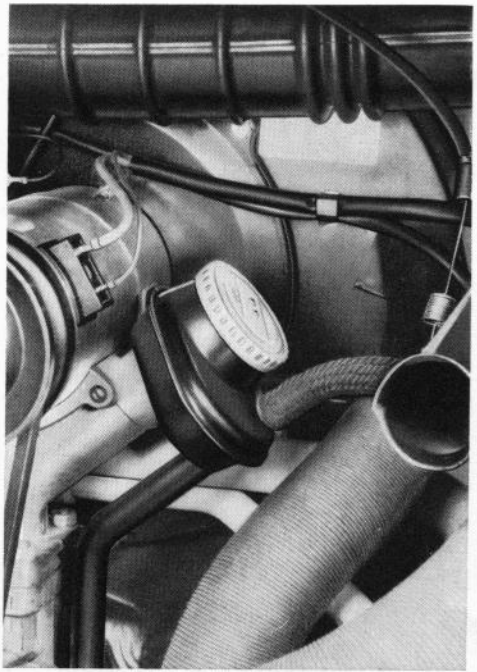
Regular oil changes are necessary even if the very best brand of oil is used because dirty oil in the engine means increased wear and reduces service life.

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 oil change. The gaskets and the copper washers under the cap nuts must always be renewed. The engine is then filled with 5.3 US pints of oil – labeled "For Service MS".

Due to its detergent properties, 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 3000 miles. We do recommend more frequent oil changes – every 1500 miles – in the winter if you drive mainly short distances and in city traffic. If you drive only a few hundred miles a month under these conditions, it is advisable to have the oil changed every 6 to 8 weeks.

In areas with arctic climate where average temperatures are below –13° F the oil should be changed every 750 miles.



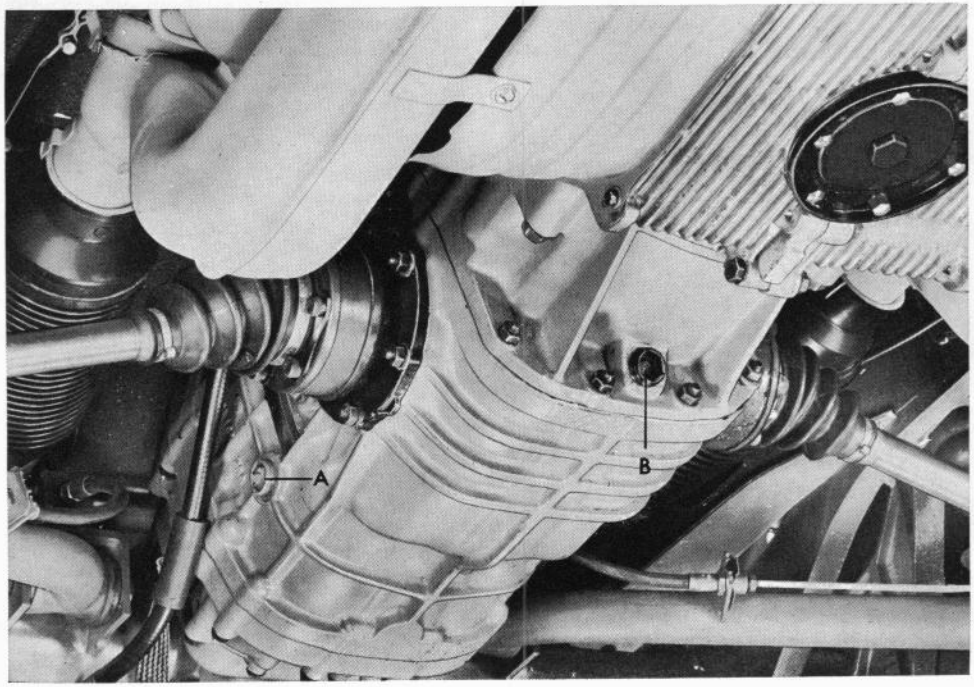


Transmission

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

The transmission oil is only changed at 600 miles by your Authorized VW Dealer. Should it later on become necessary to change the oil because of a considerable and prolonged change in temperature (see page 47), proceed as follows.

At oil changes, the magnetic drain plug – B – should be removed and the old oil drained off while it is still warm. The plug must be cleaned thoroughly and 7.4 US pints of good quality hypoid oil put in.



Sometimes the oil 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 only 2–3 pints have been put in. It is essential to the service life and silent running of the transmission that the correct amount of oil is used.

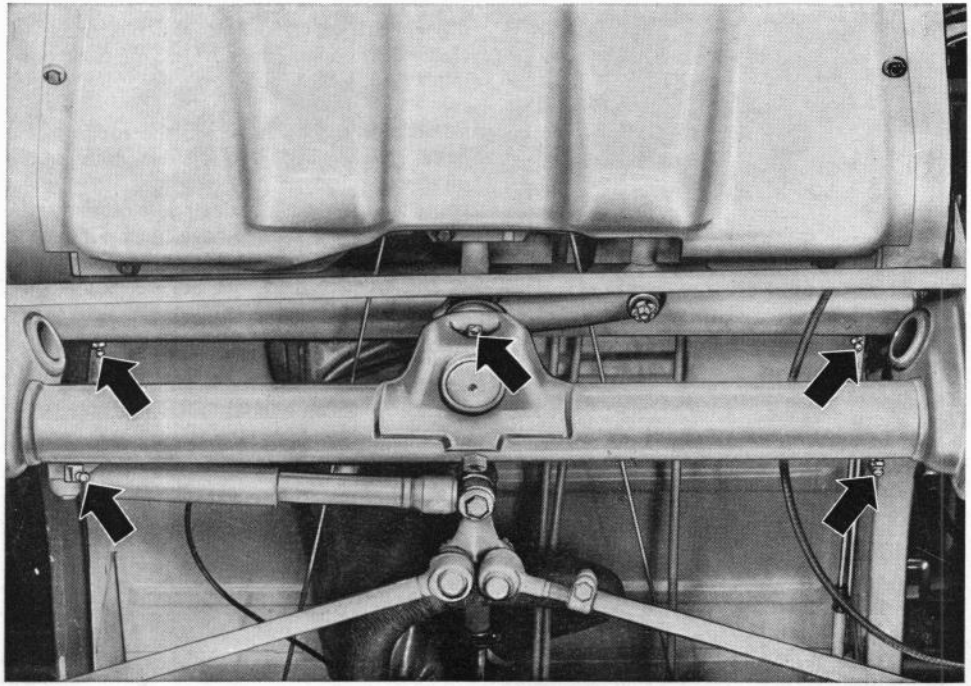
The oil level in the transmission should be checked every 6000 miles. At the same time the transmission should be checked for leaks.

Front axle

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

The four grease fittings on the axle tubes and the one for the swing lever shaft should be lubricated with a lithium-based **multi-purpose** grease.

The fittings and the grease gun nozzle should be cleaned carefully before greasing.
Place gun on fittings and inject grease until fresh grease starts to come out of the bearing.

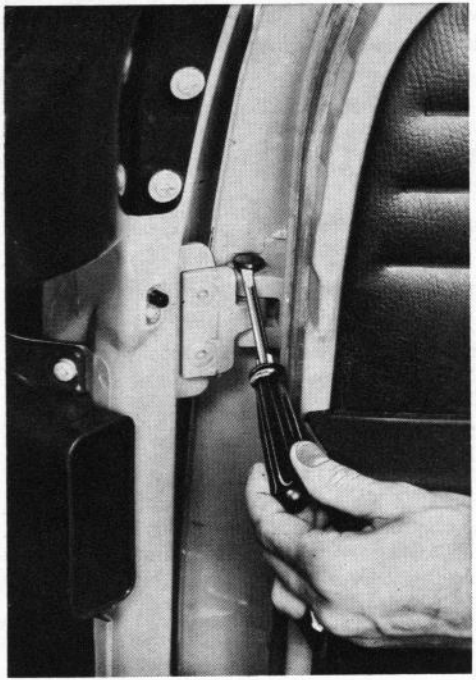


Grease and oil must not be left on tires and brake hoses for long periods. Even small traces should be wiped off immediately.

If the vehicle is driven less than 6000 miles in a year, we recommend lubricating the front axle once a year.

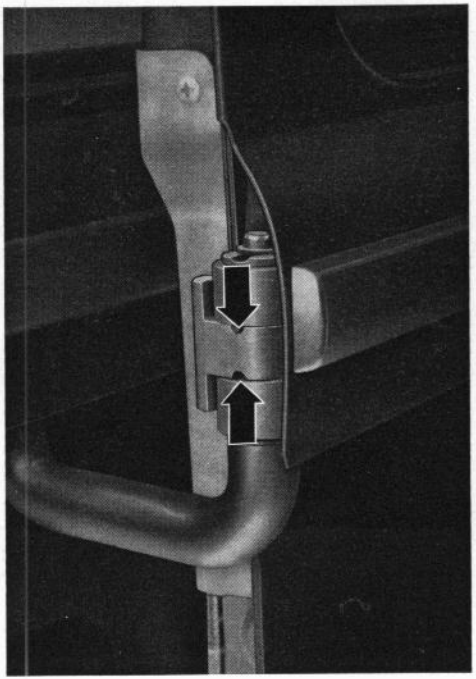
Hinges and locks

Above the door hinge pin is a small oil chamber which is sealed with a plastic plug. At least every three months, the amount of oil in the chamber should be checked after lifting the plug with a screwdriver. The chamber should be filled with SAE 30 engine oil. Press plug in and wipe off excess oil with a cloth.

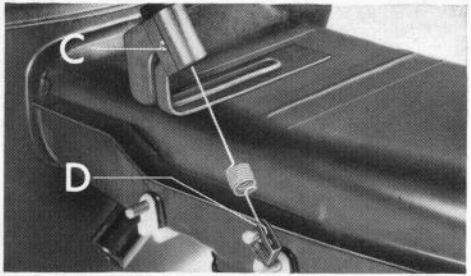


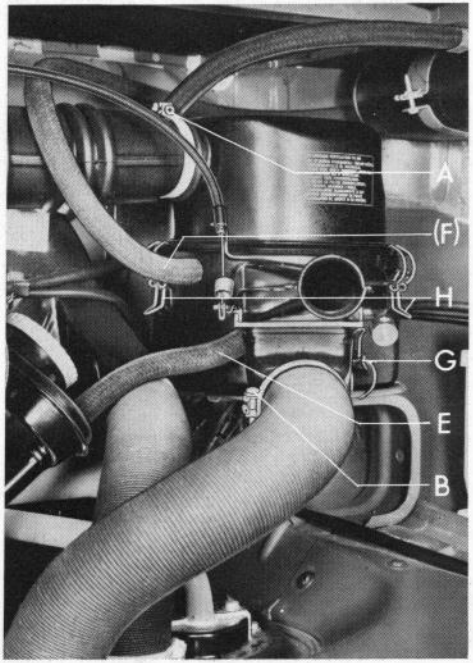
At the same time, the hinge for the sliding door (see arrows), and the rear door hinges should be oiled.

All door and hood locks as well as the lock of the engine compartment lid should also be lubricated lightly.



All lock cylinders should be treated with graphite. Dip the key into graphite, insert it into lock and turn several times.





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.

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 by the oil in the lower part when the vehicle is in motion. In time, this forms a layer of sludge at the bottom of the lower part. When there is only $^{3}/_{16}$ in. of oil above the sludge layer, the lower part must be cleaned and filled with fresh oil. To accomplish this the air cleaner must be removed:

Loosen clip – A – on intake elbow and take elbow off.

Loosen clip – B – on hose for preheated intake air and pull hose off.

Loosen screw – C – on outer cable retainer and pull cable out.

Remove retaining clamp – D – of cable for warm air control flap and disconnect cable.

Pull off crankcase ventilation hose – E –.

Remove hose – F – on vehicles equipped with an activated charcoal filter in the fuel system (applies only to vehicles manufactured for use in California).

Release clips – G – securing cleaner to bracket and remove cleaner. Keep air cleaner in upright position to avoid spilling oil.

Loosen the three upper clips – H –, take upper part off and put it down with the filter element downward.

Clean bottom part carefully and put in .95 US pint of fresh engine oil. Oil viscosity: SAE 30 all year except in areas with arctic climate where SAE 10 W oil should be used.

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

After assembling the cleaner, secure it to the bracket in the engine compartment with the two clips. Before connecting the cable for the warm air control flap, check that the flaps move freely. Then push the outer cable into the retainer as far as it will go. After tightening screw – C – attach the end of the inner cable with the clamp – D – to the lever of the non-weighted flap. Tighten intake elbow clip carefully.

Connect hose – F – where applicable. Ensure that the hose for the activated charcoal filter is properly connected; interchanging of hoses impairs the operation of the filter system.

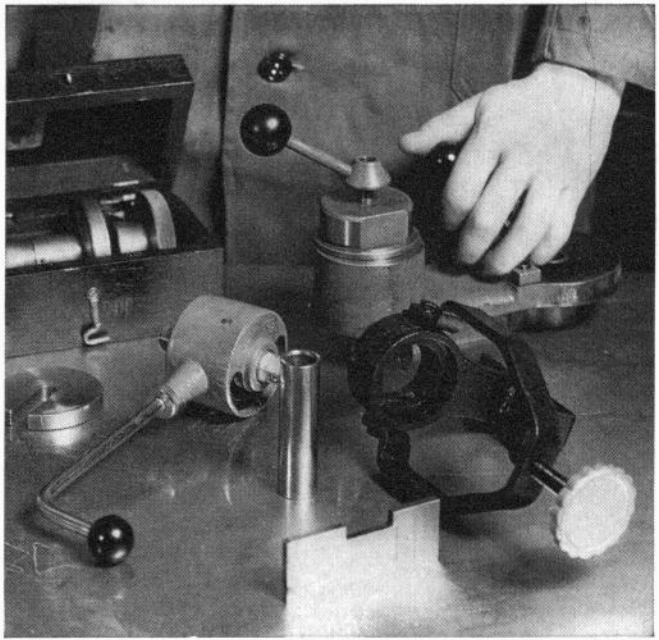
In any authorized VW dealer's service department, you get VW Specialists who know VW's intimately.

A VW Specialist works on VW's. Period.

Every so often he takes time off and gets a refresher course at one of our VW training centers.

So he learns to fix Volkswagens before he starts working on your car. Rather than while he's working on your car.

We think it's better that way.



Technical data

Engine

Four cylinder, four stroke, horizontally opposed in rear
Air cooling by fan, thermostatically controlled
Pressure oil feed with gear-type pump
Oil cooler
Mechanical fuel pump
Downdraft carburetor with automatic choke and accelerator pump
Oil bath air cleaner with thermostat-controlled pre-heating
Exhaust emission control system

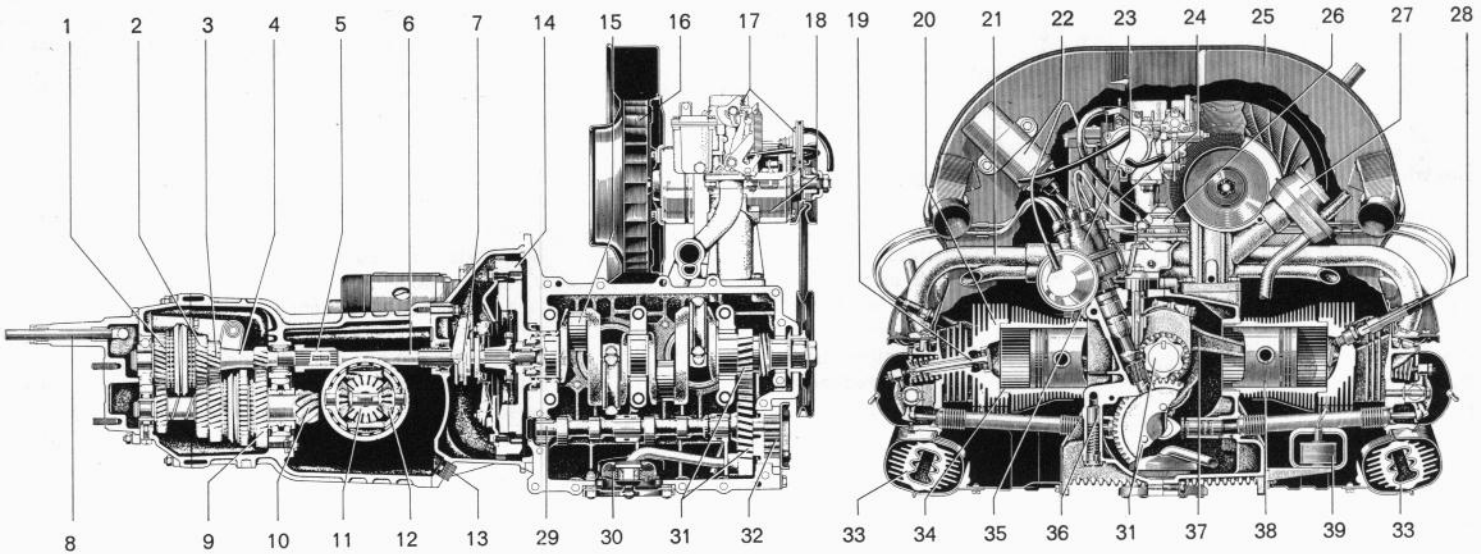
Bore	3.36 in. (85.5 mm)	
Stroke	2.72 in. (69 mm)	
Capacity	96.6 cu. in. (1584 cc)	
Compression ratio	7.5:1	
Maximum output SAE	57 bhp at 4400 rpm	
Maximum torque SAE	81.7 ft. lb. at 3000 rpm	
Valve clearance with engine cold	.004 in. (0.1 mm) intake and exhaust	
Fuel consumption [1]	U.S.	– 22.6 miles per gallon
	Metric	– 10.4 liters per 100 km
	Imp.	– 27.0 miles per gallon
Fuel rating	91 Octane Regular	
Oil consumption	U.S.	– 1.7 – 4.8 pints per 1000 miles
	Metric	– 0.5 – 1.4 liters per 1000 km
	Imp.	– 1.4 – 4.0 pints per 1000 miles

[1]) Measured consumption plus 10 %, with half load at a steady $^3/_4$ of maximum speed (53 mph) on level road.

Power transmission

Single plate, dry clutch
Clutch pedal free play: $^3/_4$ in. (10–20 mm)
Baulk synchronized four-speed gearbox with bevel gear differential in one housing
Gear ratios:
1st gear 3.80:1, 2nd gear 2.06:1, 3rd gear 1.26:1, 4th gear 0.82:1, reverse gear 3.61:1
Differential ratio: 5.375:1
Drive shafts with two constant velocity joints per shaft

1 – 4th gear
2 – 3rd gear
3 – 2nd gear
4 – Drive shaft, front
5 – Reverse gear
6 – Drive shaft, rear
7 – Clutch release bearing
8 – Transmission shift lever
9 – 1st gear
10 – Drive pinion
11 – Differential side gear
12 – Differential pinion
13 – Oil drain plug
14 – Flywheel
15 – Crankshaft
16 – Fan
17 – Carburetor with throttle positioner
18 – Generator
19 – Valve
20 – Cylinder head
21 – Intake manifold
22 – Ignition coil
23 – Distributor
24 – Oil cooler
25 – Fan housing
26 – Fuel pump
27 – Oil filler and breather
28 – Spark plug
29 – Camshaft
30 – Oil strainer
31 – Camshaft drive gears
32 – Oil pump
33 – Heat exchanger
34 – Cylinder
35 – Oil pressure switch
36 – Oil pressure relief valve
37 – Connecting rod
38 – Piston
39 – Thermostat



Chassis

Unit body, frame plates reinforced with side and cross members, front axle bolted to frame side members, engine / transmission suspended in 3 rubber-metal mountings.

Independent wheel suspension: torsion arms with ball joints at front, double jointed axles with trailing arms and diagonal links at rear. Torsion bar springing, telescopic shock absorbers, stabilizer at front.

Ross type steering gear with maintenance-free tie rods and hydraulic steering damper.
Hydraulic dual-circuit foot brakes, mechanical hand brake effective on rear wheels.

Wheelbase	94.5 in. (2400 mm)
Turning circle diameter	approx. 40 ft. (12.3 m)
Track at front	54.5 in. (1385 mm)
Toe-out (wheels pressed together)	.0–.08 in. (0–2 mm)
Camber	0° 40′ ± 15′
Track at rear	56.1 in. (1462 mm)
Wheels	5 JK x 14 (Wheel discs with drop center rims)
Tires	7.00–14 (tubeless), load capacity 1520 lbs. at 40 psi
Tire pressures: front	29 psi (2.0 kg/cm²)
rear with ¾ payload	36 psi (2.5 kg/cm²)
with full load	40 psi (2.8 kg/cm²)

Electrical system

Voltage	12 Volts
Battery	45 Ah
Starter	0.7 hp
Generator	540 Watts, early cut-in
V belt size	9.1 or 9.5 x 900
Ignition distributor	with vacuum spark advance
Firing order	1–4–3–2
Basic ignition timing	TDC, engine at operating temperature
Contact breaker gap	.016 in. (0.4 mm)
Spark plug	Bosch W 145 T 1 Beru 145/14 Champion L 88 } or plugs with similar values from other manufacturers.
Plug thread	14 mm
Plug gap	.028 in. (0.7 mm)

Dimensions and weights		Station Wagon	Kombi	Campmobile	Delivery Van	Pick-up	Double Cab
Length	in.	174.0	174.0	174.0	174.0	174.0	174.0
Width	in.	69.5	69.5	69.5	69.5	69.5	69.5
Height, unladen	in.	77.0	77.0	80.0	77.0	88.5[1]	88.5[1]
Ground clearance	in.	7.3	7.3	7.3	7.3	7.3	7.3
Unladen weight	lbs.	2833	2755	3173	2557	2634	2722
Payload	lbs.	1940	2172	1600	2370	2293[1]	2205[1]
Gross vehicle weight	lbs.	4773	4927	4773	4927	4927	4927
Permissible front axle load	lbs.	2193	2193	2193	2193	2193	2193
Permissible rear axle load	lbs.	2580	2734	2580	2734	2734	2734
Permissible roof and trailer weights:							
Roof weights	lbs.	220[2]	220[2]	220	220[2]	—	165[2]
Trailer without brakes	lbs.	1100	1100	1100	1100	1100	1100

(with tarpaulin

[2]) Applies only to roof rack mounted to rain gutters. Distribute load evenly!

Capacities

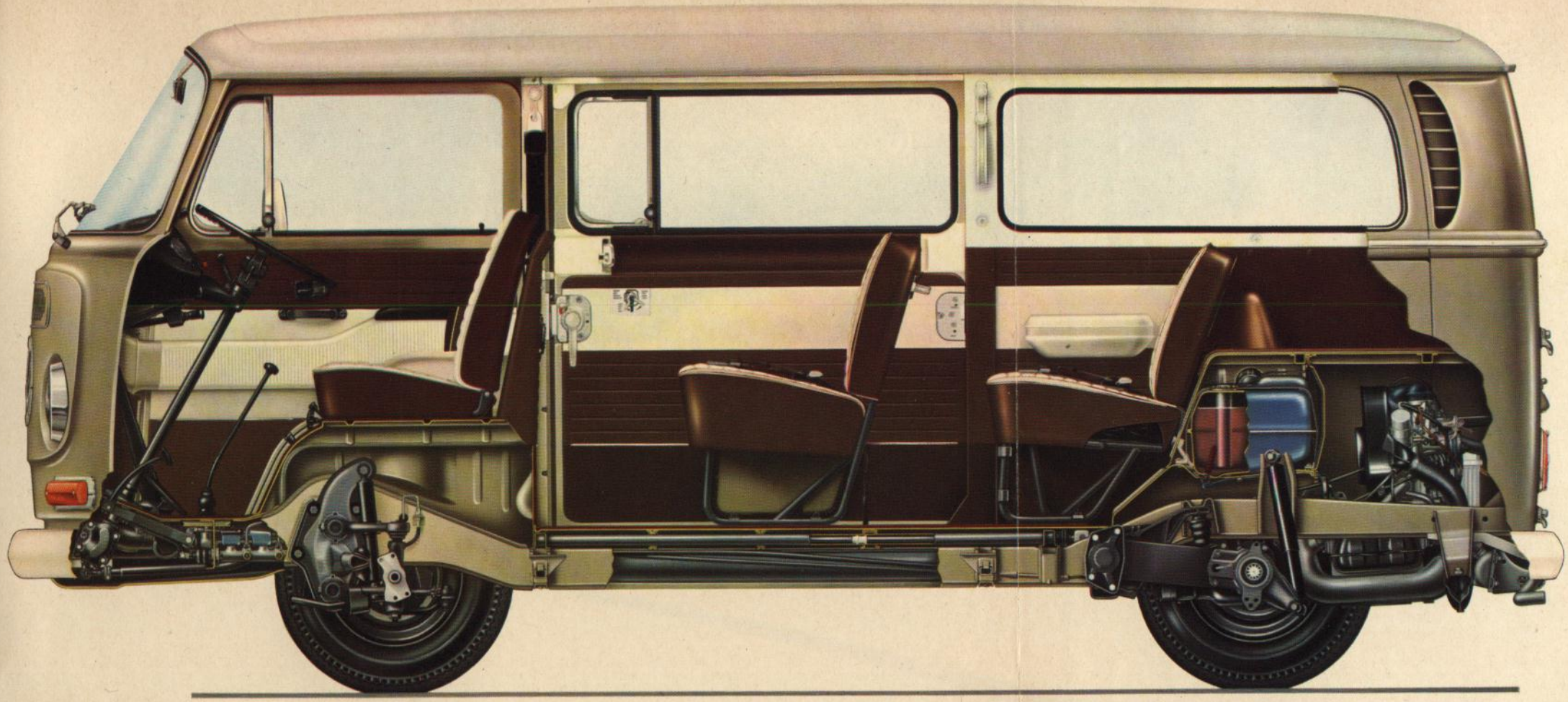
Fuel tank	15.9 US gallons (13.2 Imp. gallons)
Engine	5.3 US pints (4.4 Imp. pints)
Transmission and final drive	7.4 US pints (6.2 Imp. pints)
Brake system	.63 US pint (.53 Imp. pint)
Oil bath air cleaner	.95 pint (.79 Imp. pint)
Windshield washer	1.45 quarts (approx.)

Performance

Maximum and cruising speed	65 mph
Pick up with tarpaulin	59 mph
Climbing ability with full payload on good roads	1st gear 27 %
	2nd gear 14 %
	3rd gear 7 %
	4th gear 4 %

Index

158.570.23 Printed in Germany 1.70



SERVICE

USA 158.570.23