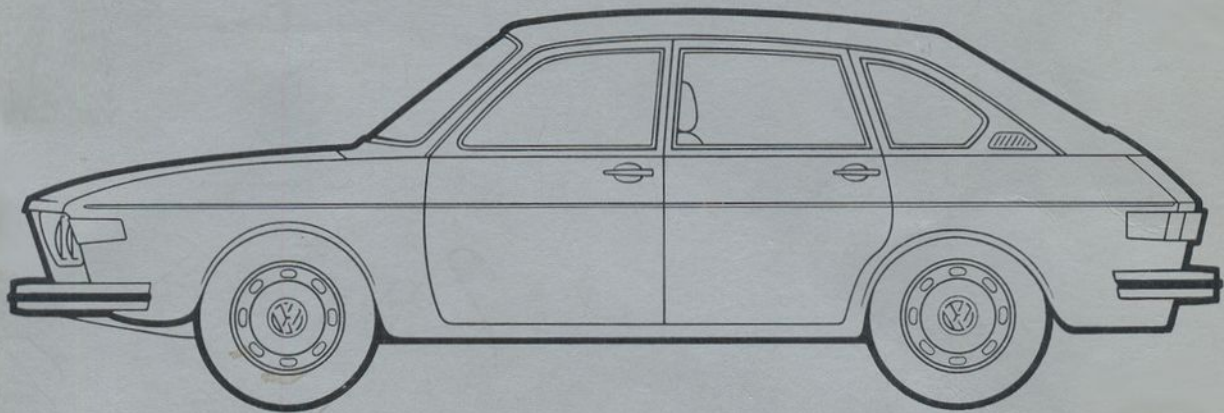


Volkswagen Owner's Manual: Operation and Maintenance

Type 4



Volkswagen Owner's Manual

1971 Models

Volkswagen 411



Four Door Sedan

Three Door Sedan

V O L K S W A G E N W E R K A K T I E N G E S E L L S C H A F T

Introduction

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 Volkswagen.

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 in 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.

The pictures and text in this manual are based on the Volkswagen 411 Four Door Sedan with the automatic transmission. Where the controls, equipment and technical data of the manual transmission differ considerably, attention is drawn to the difference. The Volkswagen 411 Three Door Sedan is dealt with in a separate section at the end of the book.

Specifications are subject to alteration without notice.

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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 — who knows his vehicle and all the controls,
— who maintains his vehicle properly,
— 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.

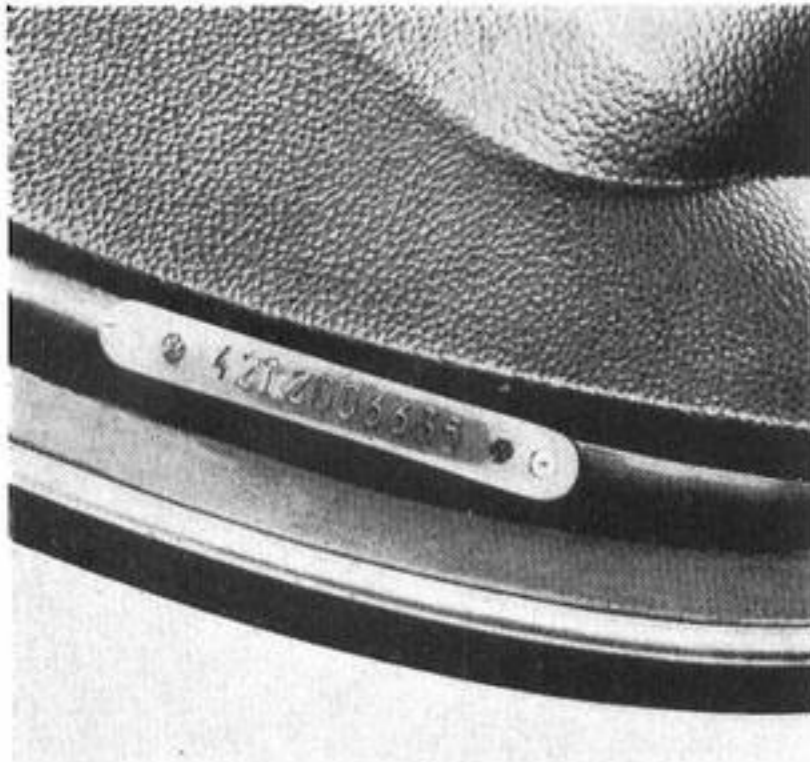
Do not invite car theft!

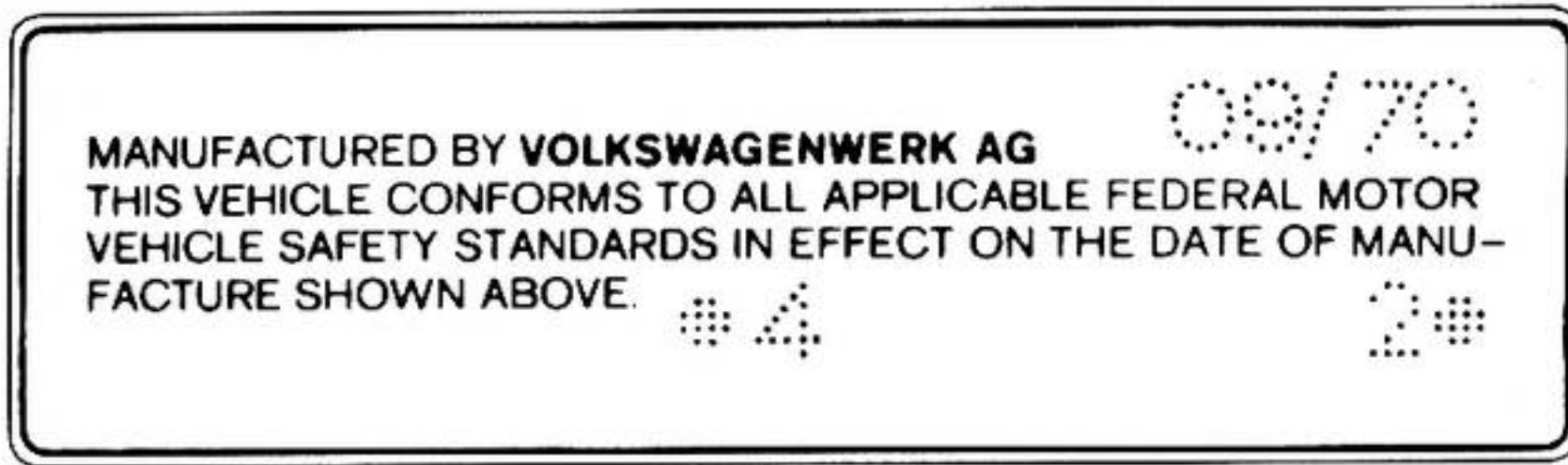
An unlocked car with the key in the ignition switch offers both opportunity and temptation.

Therefore, a steering wheel lock and a buzzer alarm are standard equipment in your Volkswagen 411. 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 pull the key out of the steering/ignition lock and lock the doors.

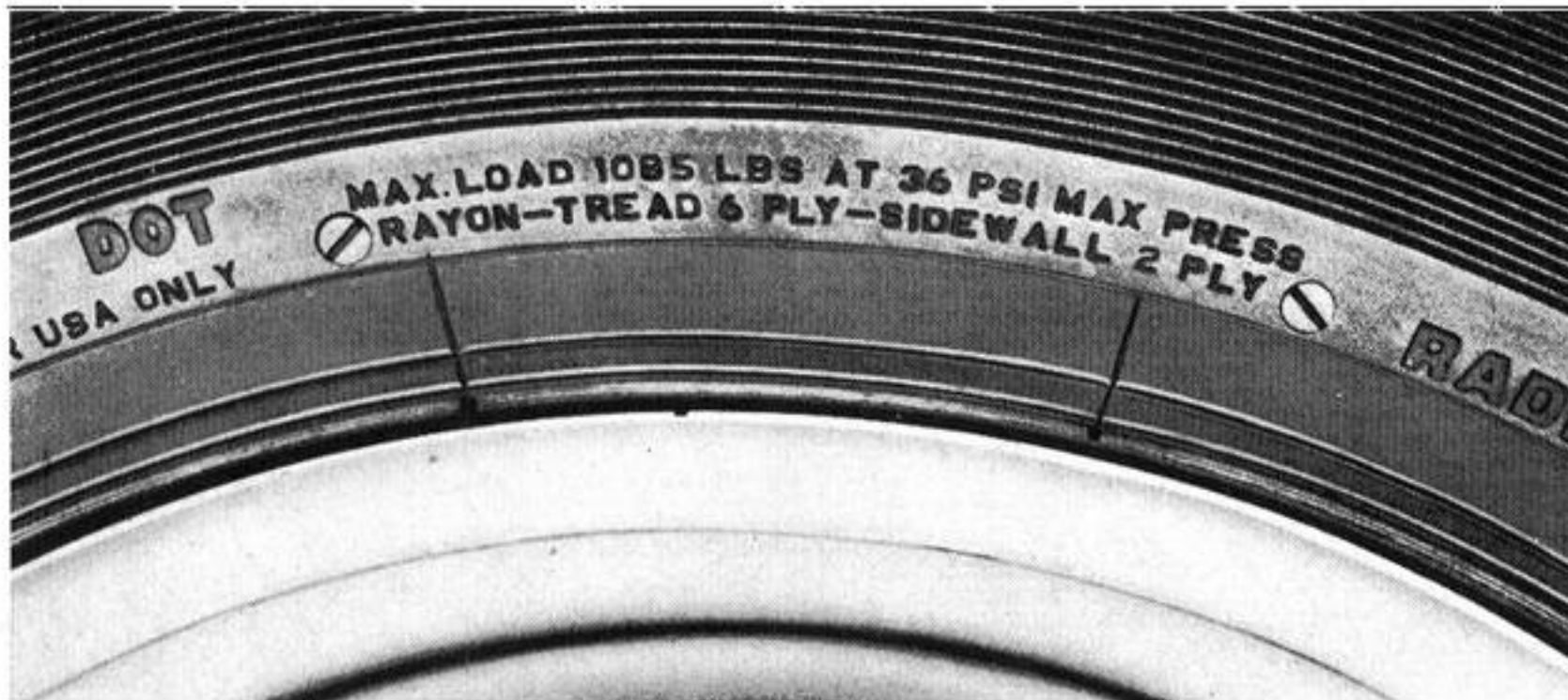
In accordance with Federal Safety Regulations, the chassis number of your car is located on the left of the instrument panel and can be seen from the outside.

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 1971 Volkswagen complies with all Federal Motor Vehicle Safety Standards which were in effect at the time the vehicle was produced.



The tires of your Volkswagen conform to the Federal Motor Vehicle Safety Standards.

When purchasing replacement tires, make sure that they show the same specifications for tire size, load carrying capacity etc. This also applies to VW recommended alternate replacement tires.

Identification plate, Chassis Number, Engine Number

The identification plate

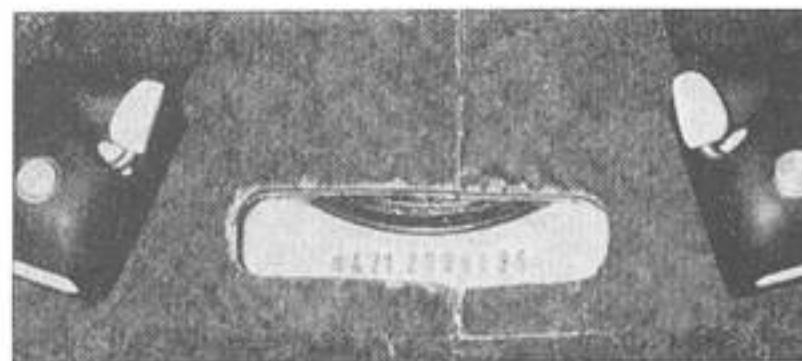
is found under the front hood beside the hood lock. The 10 digit number after the words "Fahrgest. Nr." is the chassis number. It describes the model number, model year and serial number of the vehicles as shown in this sample:

42	1	2006635
Model	Year	Serial Number



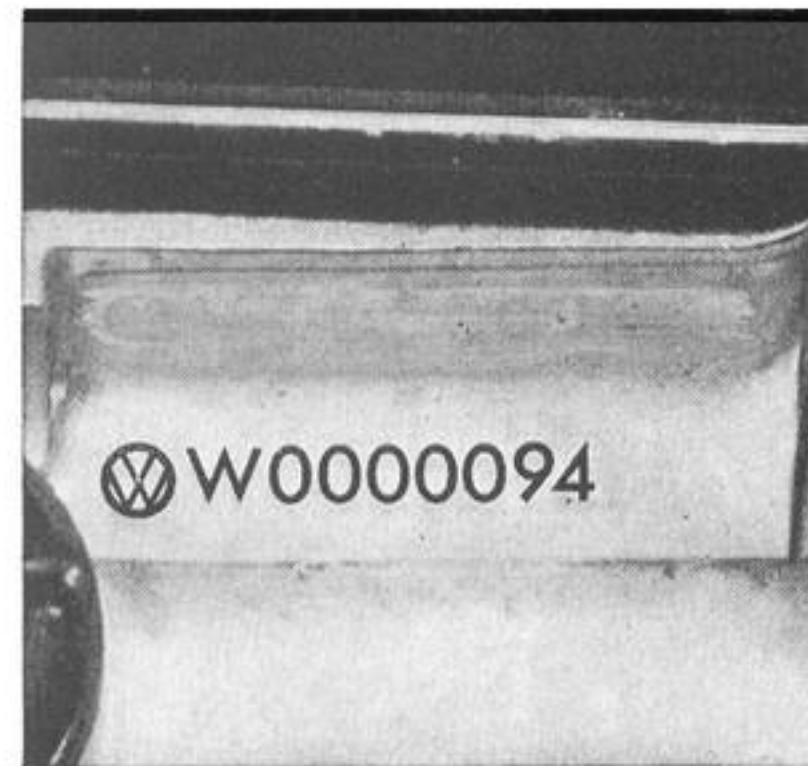
The chassis number

is on the instrument panel so that the number is visible from outside the car ... and on the frame tunnel under the rear seat.



The engine number

is on the right-hand and half of the crankcase, near the crankcase breather.



Keys



Two sets of keys are supplied with the Volkswagen 411.

The symmetrically shaped key is for the front doors, the steering/ignition lock and for the rear luggage compartment lid of the Three Door Sedan.

Because of its shape there is no "wrong" way of inserting this key in the lock.

The other key is for the glove compartment.

It differs in design from the ignition key making both keys easily distinguishable.

Be sure the key numbers are recorded on the first page of your VW Maintenance Record.

If you should lose a key, you can obtain a replacement from your authorized Volkswagen dealer.



Doors

The sturdy door check rods hold the doors open firmly — even when the vehicle is parked on a steep hill or when it is very windy.

Both front doors can be locked from the outside.

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 you leave the vehicle unattended.

To lock and unlock the door —
turn the key one quarter turn to the left or right. A spring in the lock returns the key to its original position where it can be removed.

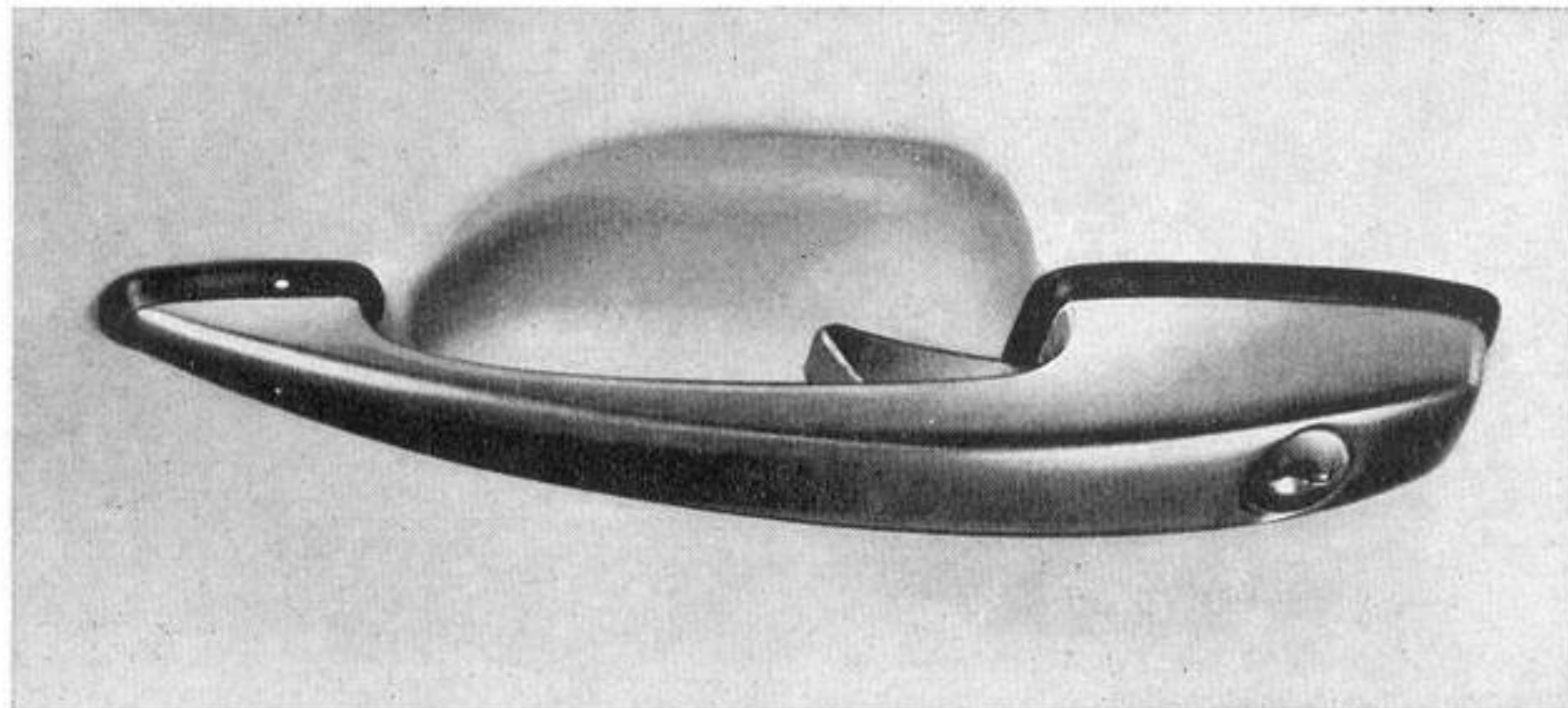
To open the door —
depress the trigger in the outer door handle.

To lock and unlock doors from inside —
depress or raise locking knob.

To lock doors from outside —
depress locking knob and pull the trigger in the outer door handle as you close the door.

If the door closes by itself after the locking knob has been depressed, the door will not lock because the locking knob will spring up automatically.

This is an additional safety measure to prevent you from being locked out if the door should slam shut while the key is still inside the vehicle.

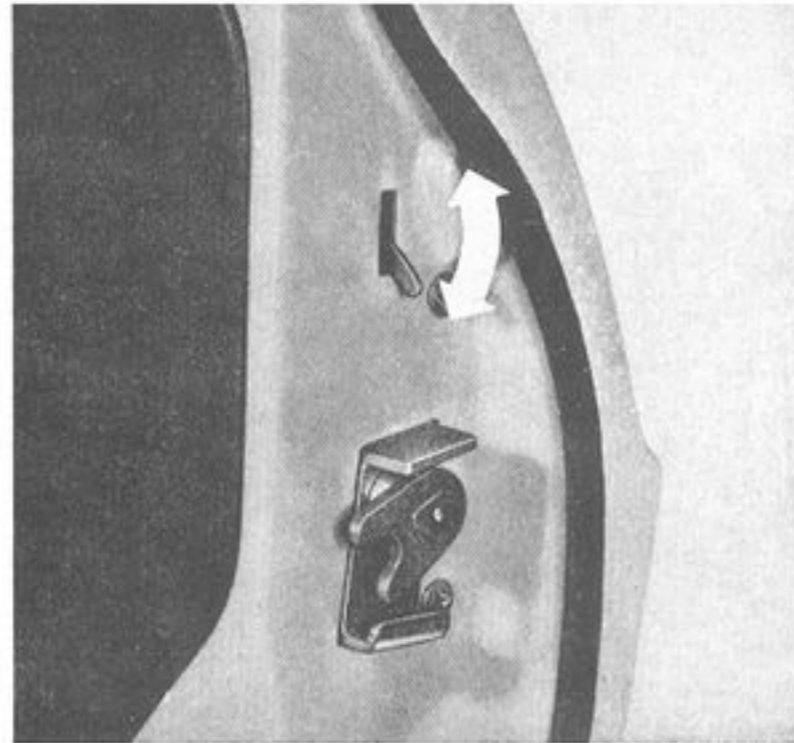
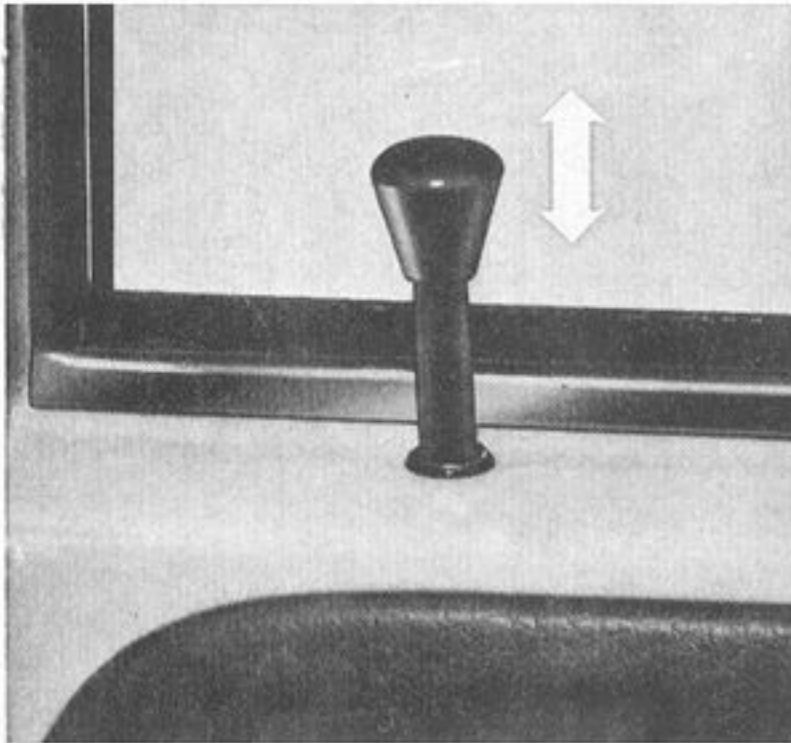


Locking knobs in the door frames can be depressed to prevent accidental opening of the door from the inside and unauthorized entrance from the outside. The locking knobs for the rear doors are installed within reach of the driver's seat.

To prevent children riding in the back seat from accidentally opening the rear doors, the Volkswagen 411 Four Door Sedan is equipped with an additional safety mechanism.

To open the door raise locking knob and operate trigger in inner door handle.
To lock rear doors from outside depress locking knob and close door.
To lock and unlock rear doors from inside depress or raise locking knob.

When the small lever above the rear door lock latch is moved upward before the door is closed, the door cannot be opened from the inside. To open the door it is necessary to raise the locking knob and depress the trigger of the outside door handle.



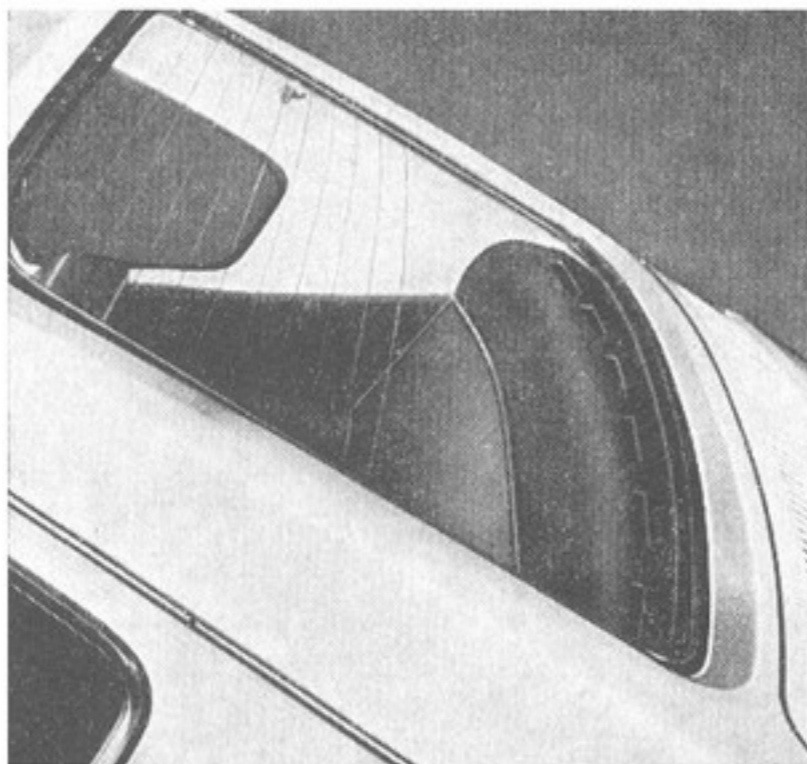
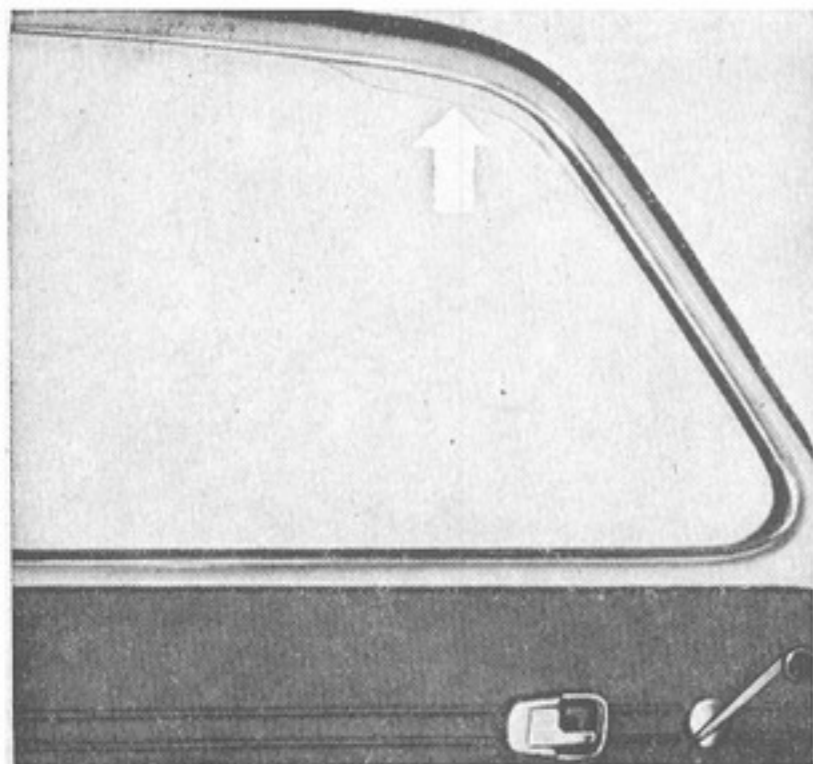
Windows

The large windshield and windows offer clear, unobstructed visibility.

The door windows can be lowered and raised by means of window winders, which have knobs of a soft material for safety.

The windows in the front doors are of a special design to give draft-free ventilation.

The rear window is equipped with an electric defogger.



Seats

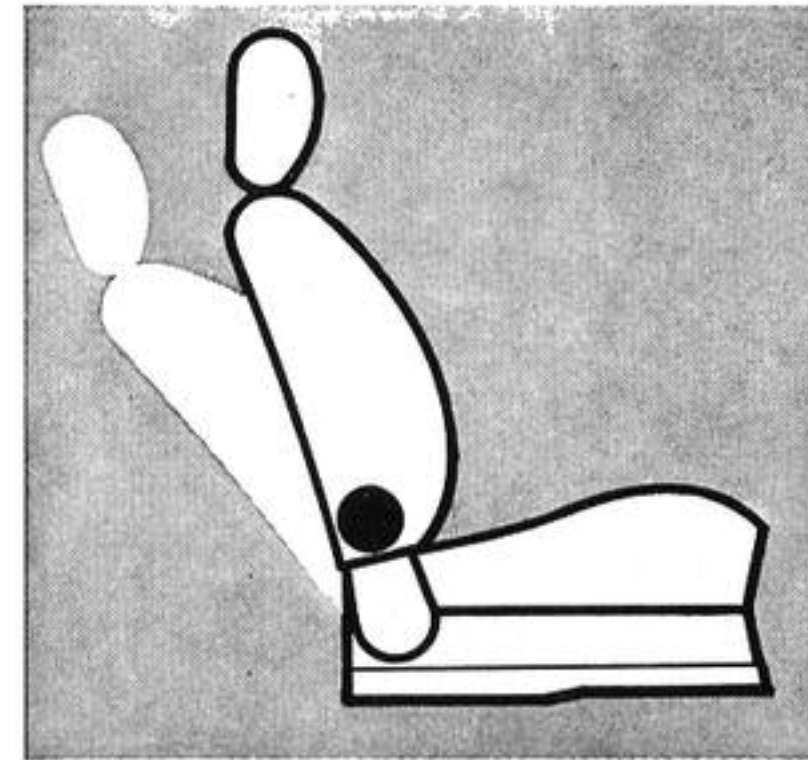
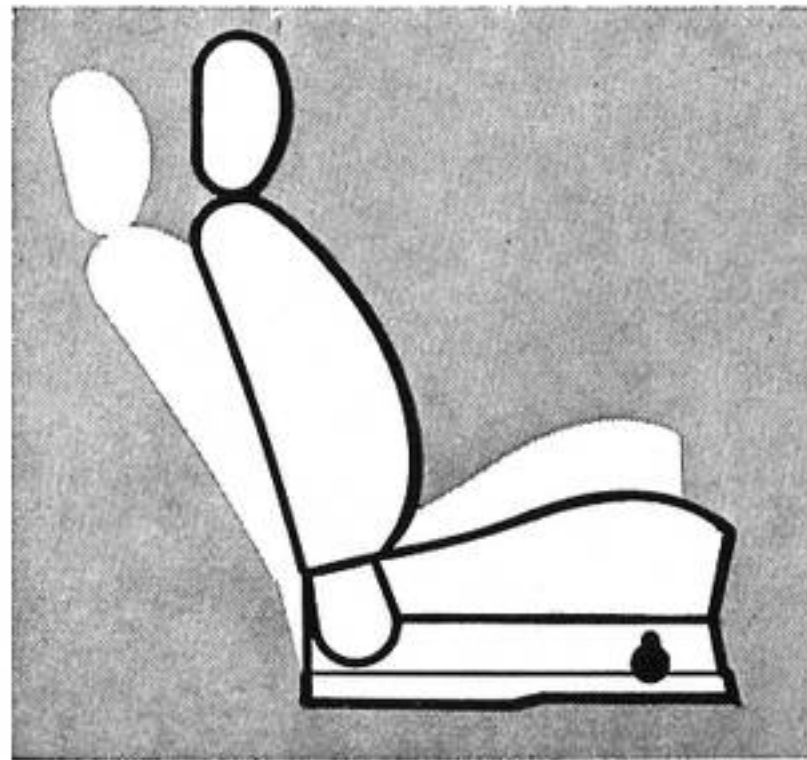
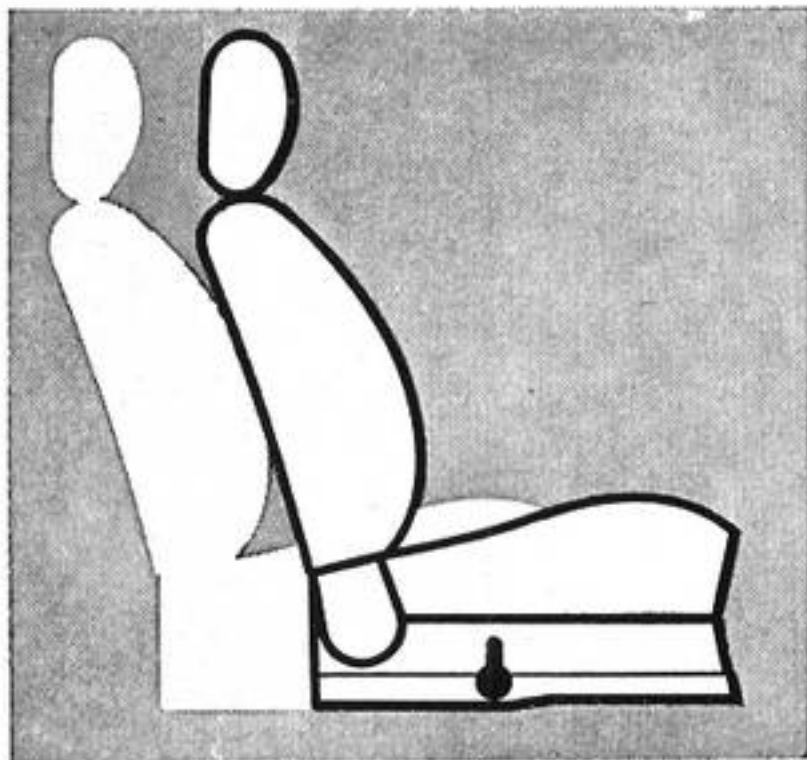
Your Volkswagen 411 has separately adjustable contoured front seats. They can be moved forward and backward and varied in height.

The backrests can be adjusted to different angles and can also be fully reclined. The rear seats have a hinged center arm rest.

To move seat forward and backward
lift rear lever, move seat to desired position and engage lever.

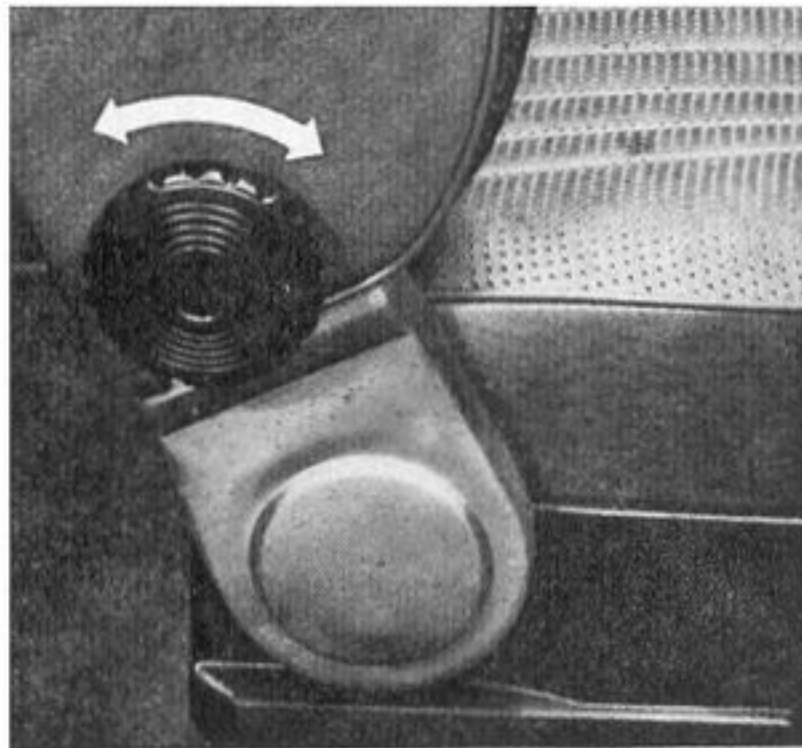
To adjust height of seat
lift front lever, move seat to desired position by shifting body weight, release the lever and let it engage in the next position.

To adjust backrest
take weight off backrest and turn large dial.



Moving front seats to reclining position

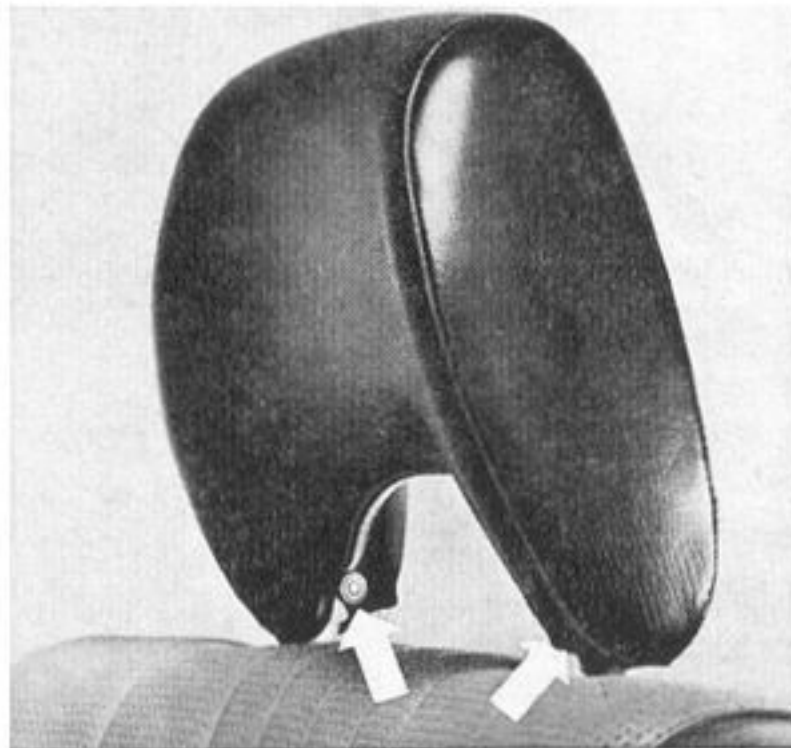
Take head restraints off. Push seat all the way to the front and lower backrest with adjusting dial.



To adjust head restraint

Depress buttons on the mounting tubes and adjust restraint to the desired position.

To remove head restraint — press knobs and pull restraint out.



To release backrest lock

— on the Three Door Sedan — lift knob on outside of backrest.



Safety belts

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

Do not wear the belts loosely.

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

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

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.



The front seats

The front seat combination lap/shoulder 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 belt retracts and the belt should be hung on the hook on the door post by means of the hole in the belt tongue. This prevents the belt end from lying about, lashing out, getting



dirty and permits easy entrance and exit for the rear seat passengers.

Operation: After sitting down and adjusting the seat and backrest positions, pull the belt across in front of you to the center of the car. Insert the belt tongue into the anchor housing on the frame and press it in lightly. A click will be heard when the belt tongue locks.

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 belt from housing, hold belt tongue at a right angle to belt and pull belt through.

To release the belt, pull the unlocking lever on the anchor housing upward. Only a light pull on the belt and a small movement of the lever is necessary.

The rear seats

Each 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. Insert the belt tongue into the buckle and press lightly together. A click will be heard when the buckle locks. **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 belt tongue at a right angle to belt and pull belt through.

To release the belt, pull the unlocking lever on the buckle. Only a light pull on the belt and a small movement of the lever is necessary. For each rear seat, a third mounting point is provided to facilitate subsequent installation of combination lap/shoulder belts.



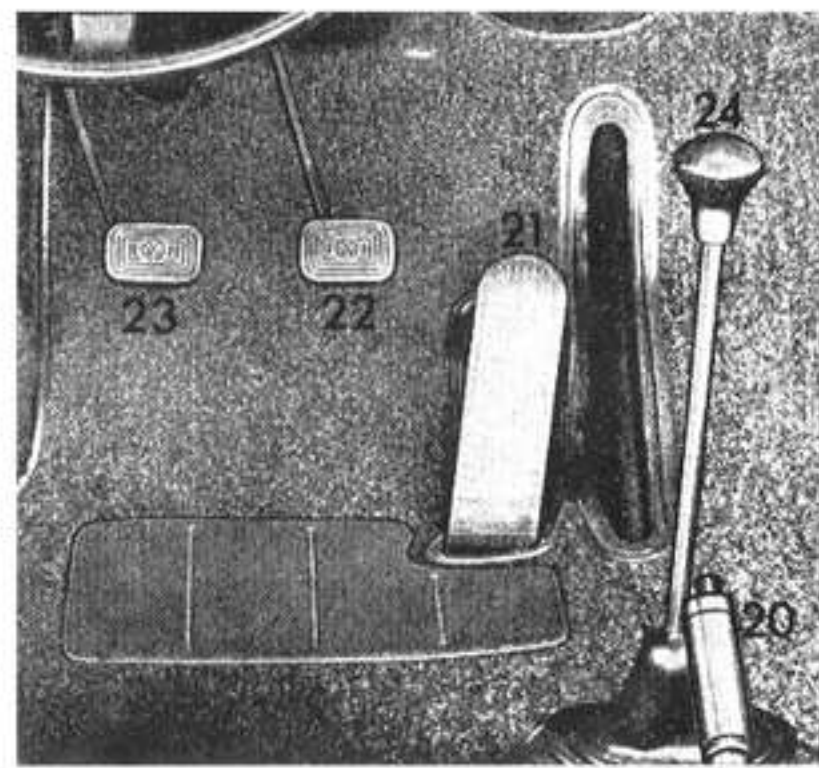
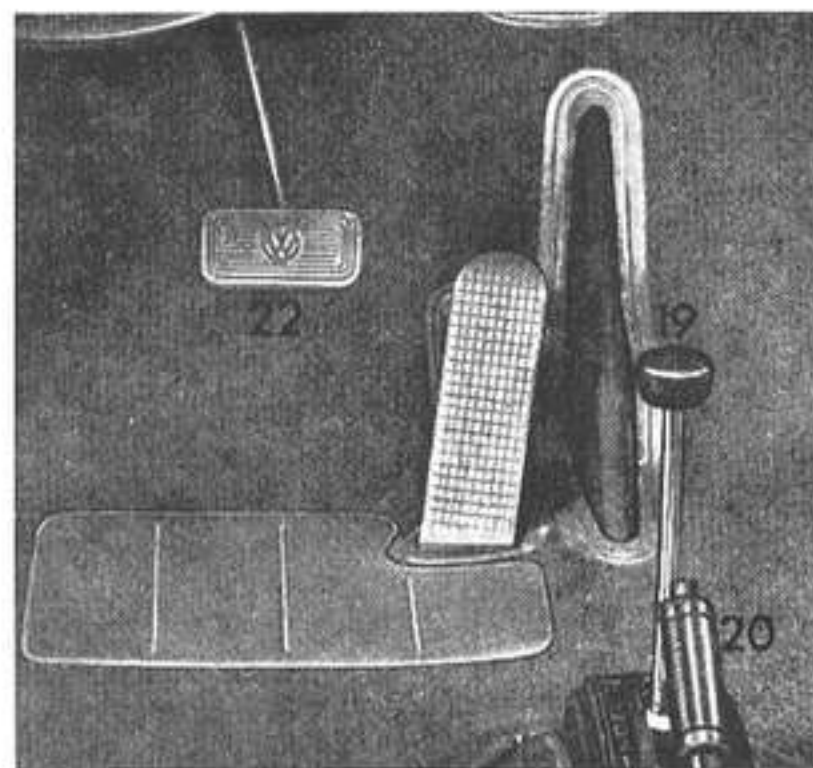
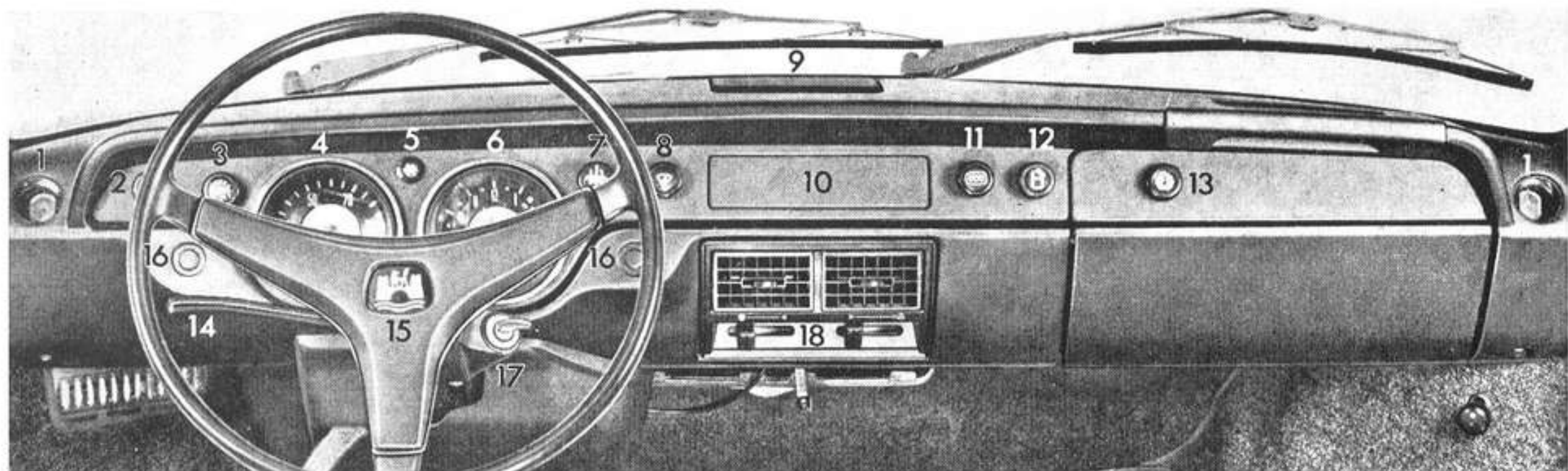
Instrument panel, hand and foot controls

The padded instrument panel and steering wheel are attractively styled for maximum safety and driving ease.

The various controls, gauges and warning lights are conveniently arranged and marked with readily recognizable symbols.






A flexible grabhandle is flush mounted in the padded edge of the instrument panel on the passenger side.

-
- | | |
|--|---|
| 1 - Adjustable warm air vent | 13 - Glove compartment door with lock |
| 2 - Light switch | 14 - Turn signal and dimmer switch lever |
| 3 - Emergency flasher switch | 15 - Horn |
| 4 - Speedometer, odometer | 16 - Location for optional accessory switches |
| 5 - Dual circuit brake warning light | 17 - Steering/ignition lock |
| 6 - Clock, fuel gauge, warning lights | 18 - Fresh air outlets |
| 7 - Temperature regulating switch for heater | 19 - Driving range selector lever |
| 8 - Windshield wipers and washer | 20 - Hand brake |
| 9 - Ashtray | 21 - Accelerator pedal |
| 10 - Location for optional radio | 22 - Brake pedal |
| 11 - Switch and warning light for rear window defogger | 23 - Clutch pedal |
| 12 - Cigarette lighter | 24 - Gearshift lever |



Warning lights, fuel gauge and clock

Warning lights

- a — green  turn signals
- b — red  oil pressure
- c — blue  high beam
- d — green  parking lights
- e — red  generator

Warning lights b and e should not be on when the engine is running. For further details see page 43.

Fuel gauge

When the needle is at R there are about 1½ gallons of fuel left in the tank.

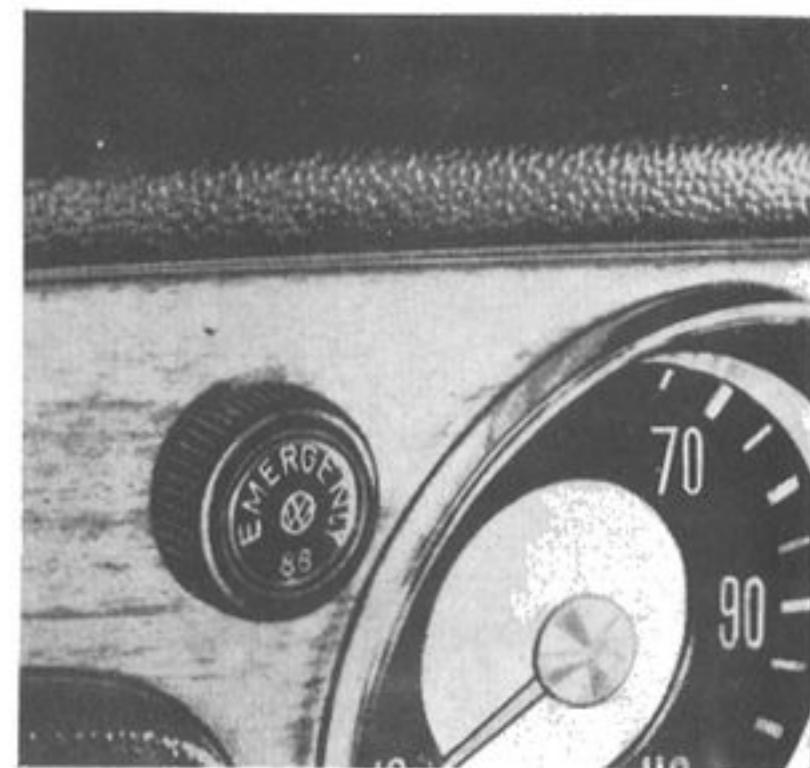
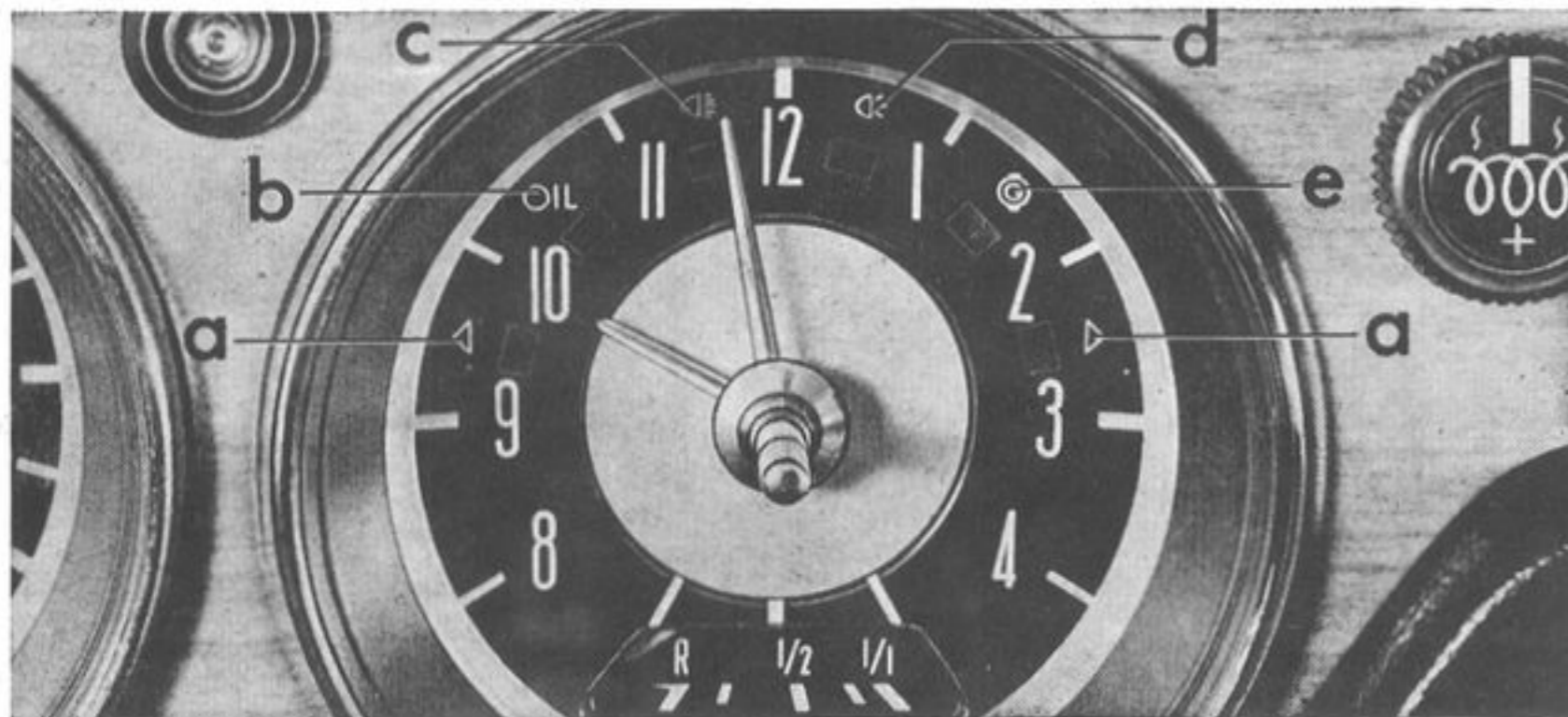
Clock

To set, press knob in and turn.

Clock and fuel gauge are electrically operated.

Emergency flasher switch

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



Light switch

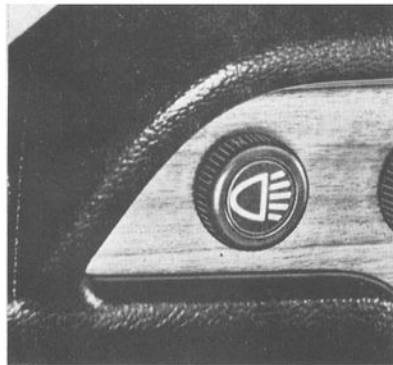
Pull the knob to the first stop to turn on **parking lights** as well as license plate, tail and instrument lights and — on vehicles with Automatic Transmission — the light for the selector lever console.

A green warning lamp lights up in the clock dial.

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

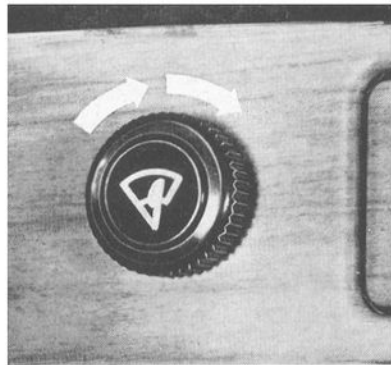
To turn on the **headlights** pull the knob out all the way with the ignition turned on.

To preserve the battery the headlights will go out automatically when the ignition is turned off or when the engine is being started.



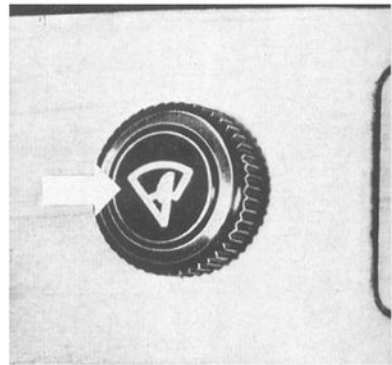
Windshield wipers

The two-speed wipers are controlled by turning the wiper switch knob. The blades park automatically when turned off.



Windshield washer

Push button in the knob to spray fluid on windshield. Fluid will spray as long as button is held in.



Turn signal switch

Lever up — right turn signals

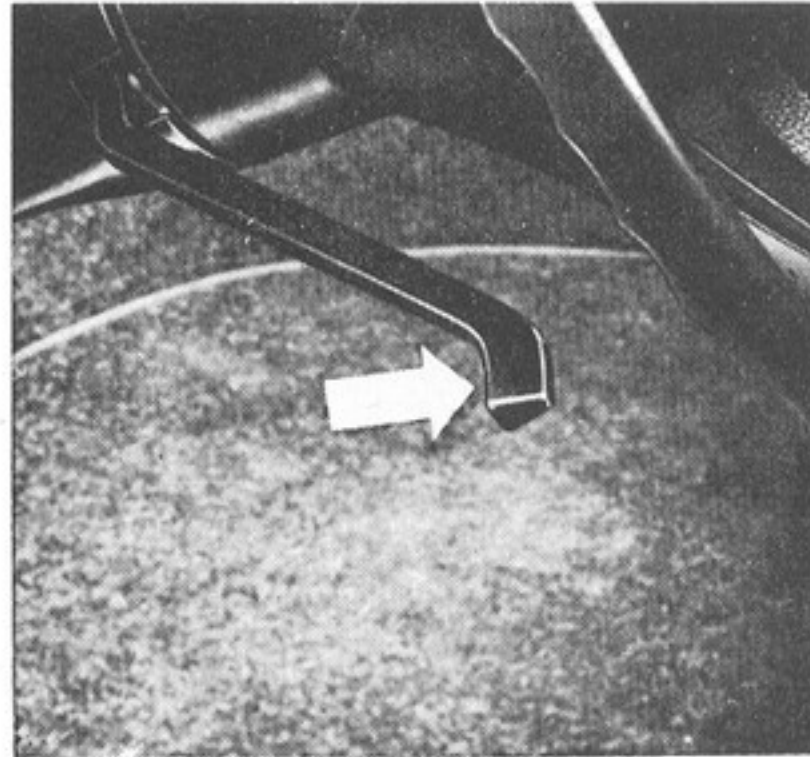
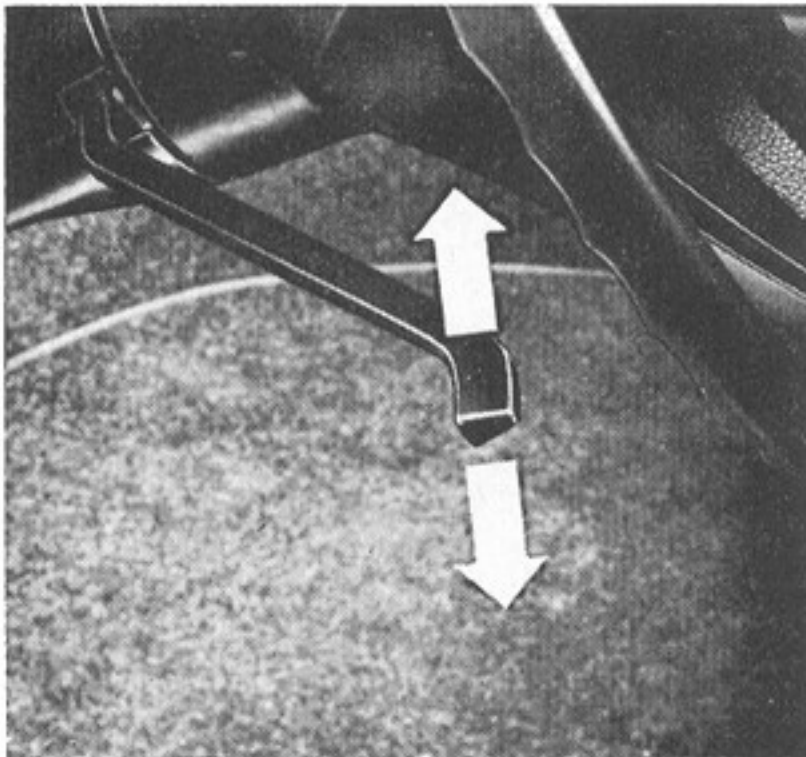
Lever down — left turn signals

The turn signals cancel automatically when steering wheel returns to straight ahead position.

To raise and lower headlight beams

(Light switch out to second stop.)

Pull turn signal switch towards steering wheel. When high beams are on, the blue warning lamp in the clock comes on.



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 on — steering free

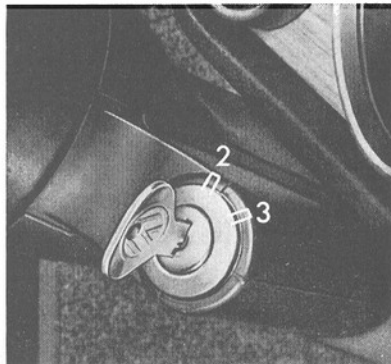
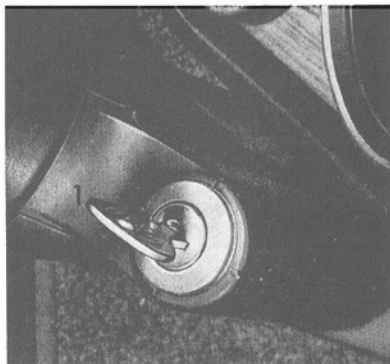
3 - Starting

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.

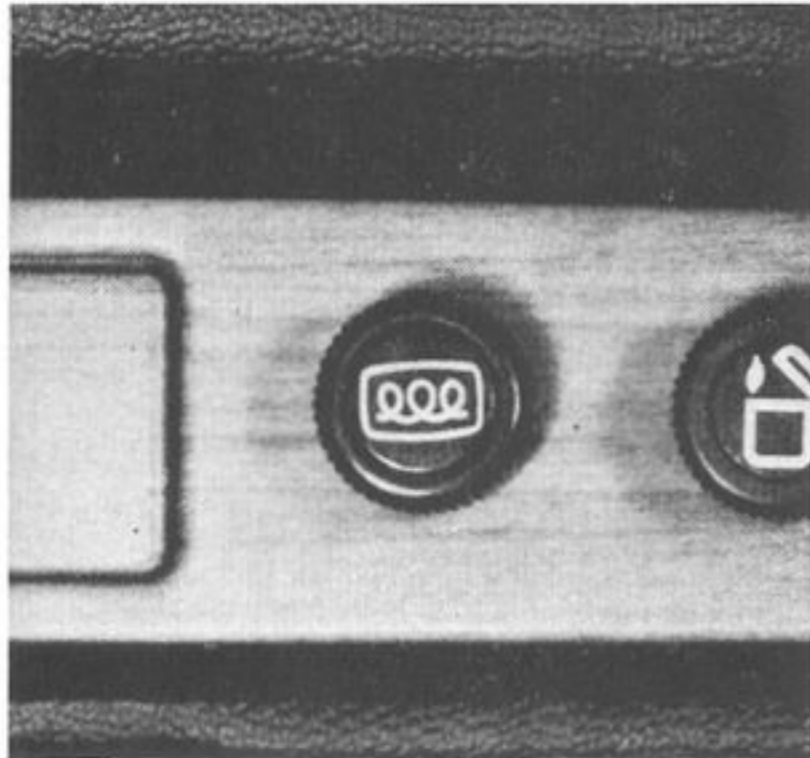
*) Remove key and turn steering wheel until locking pin engages.



Switch for rear window defogger

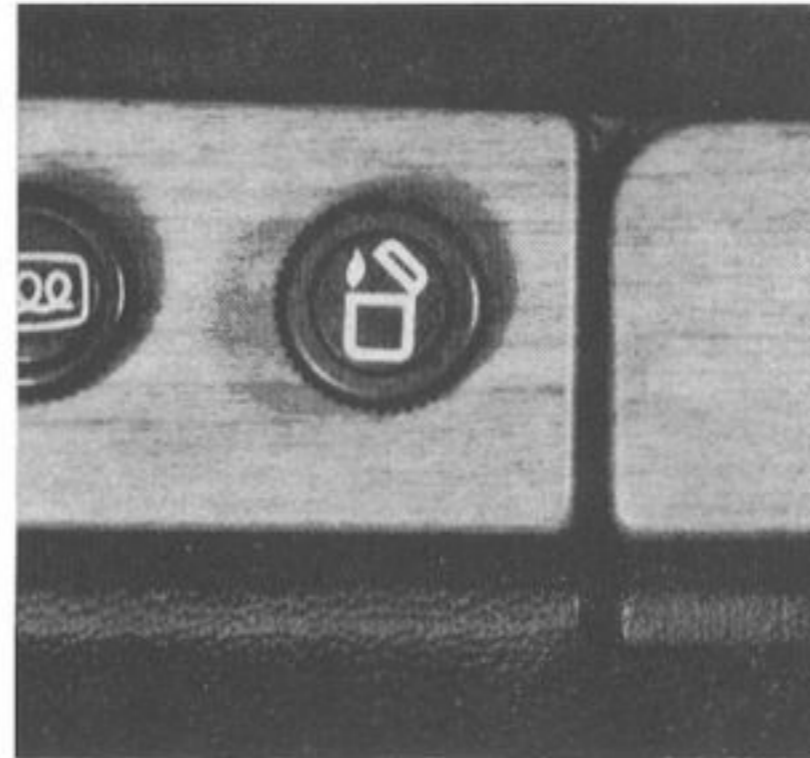
With the ignition switched on, the rear window defogger is activated by pulling the knob. The green control lamp inside the knob will light up when the system is in operation.

After the rear window has been cleared, switch off the rear window defogger to avoid an unnecessary drain on the battery.



Cigarette lighter —

to operate, push in knob. When the lighter is ready for use it will spring back.



Glove compartment door with lock

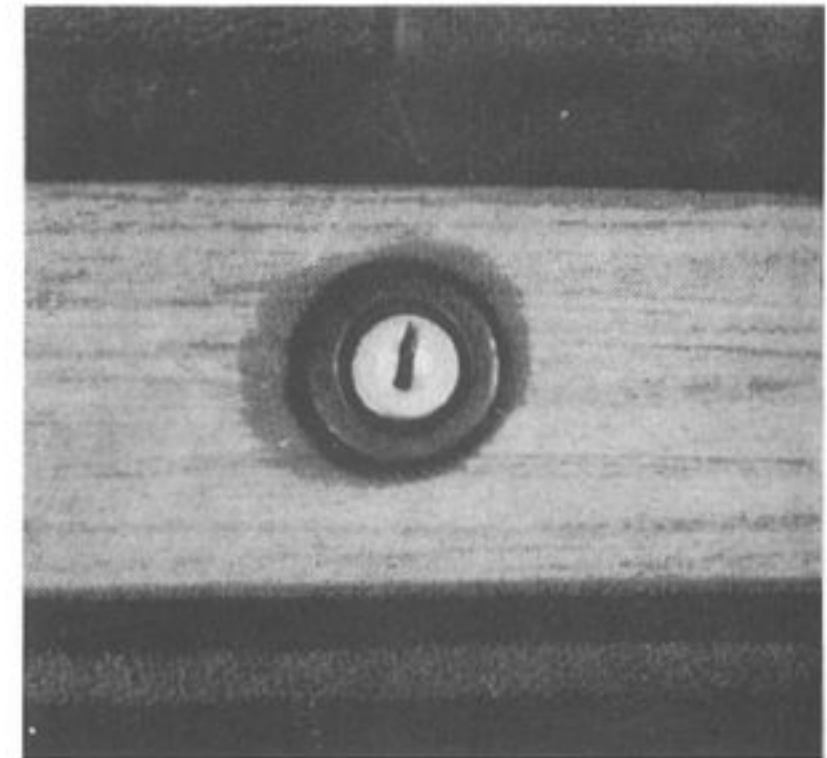
To lock or unlock: Turn key to right or left

To open: Turn knob to left

To close: Press door (lock engages)

Inside the glove compartment is the release lever for the front hood (see page 32).

This prevents access to the front luggage compartment and spare wheel.



Heating

The fresh air heating system of the Volkswagen 411 is designed to maintain the interior of the vehicle at a comfortable temperature.

In this system the engine heat exchangers are combined with a gasoline operated heater booster which draws its fuel from the vehicle gasoline tank.

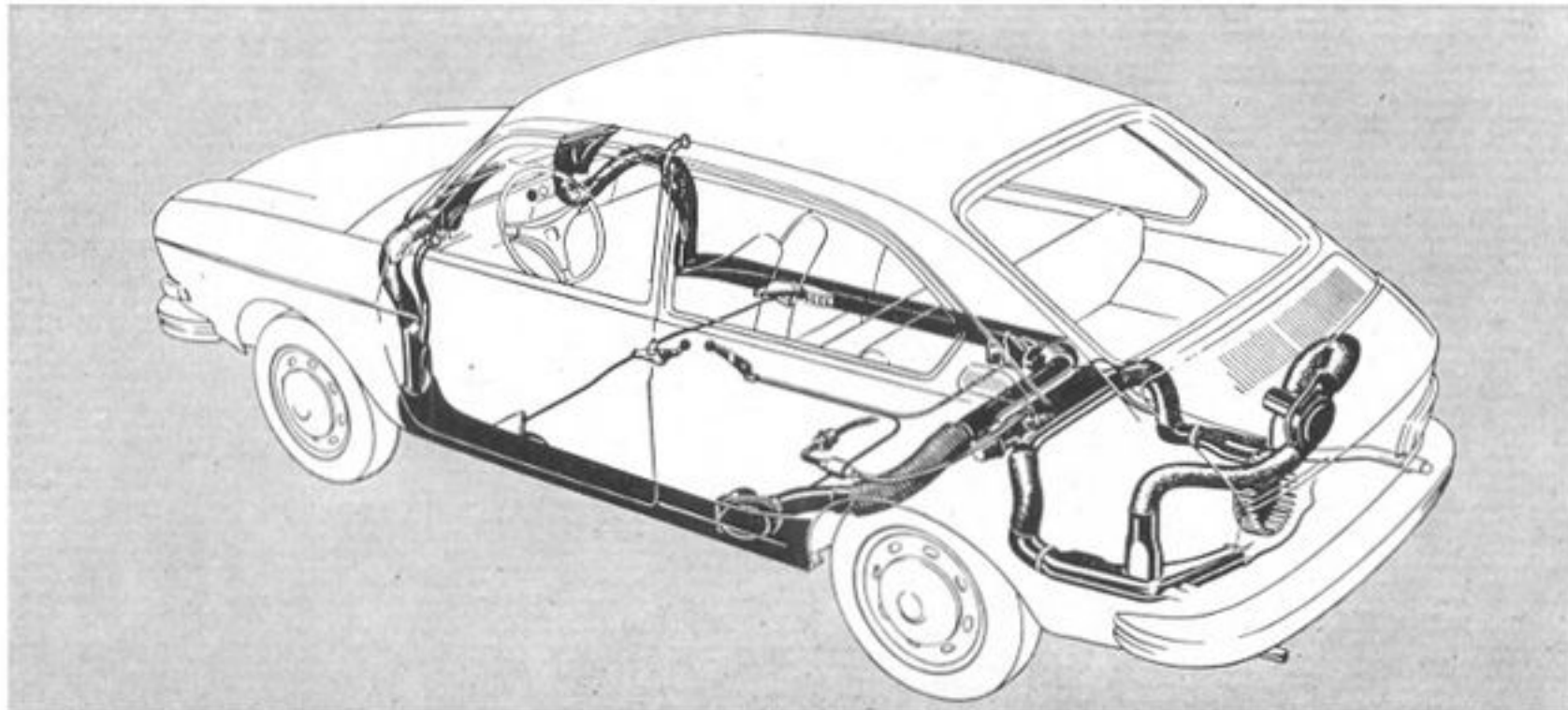
The fresh air is preheated in the heat exchangers and then passed on to the heater booster.

This booster, which is thermostatically controlled, increases the temperature of the preheated fresh air to the desired level.

The heat produced by the heater booster varies according to the temperature in the engine heat exchangers. The heater booster shuts off automatically when the engine supplies sufficient heat by itself.

When the engine is not running, the heater booster alone heats the car.

The fuel consumption varies from .35 to 1.0 pint per hour according to the heat output.



Heater controls

- 0 - heater off
- 1 - heater on
- 1—2 - temperature range

While driving

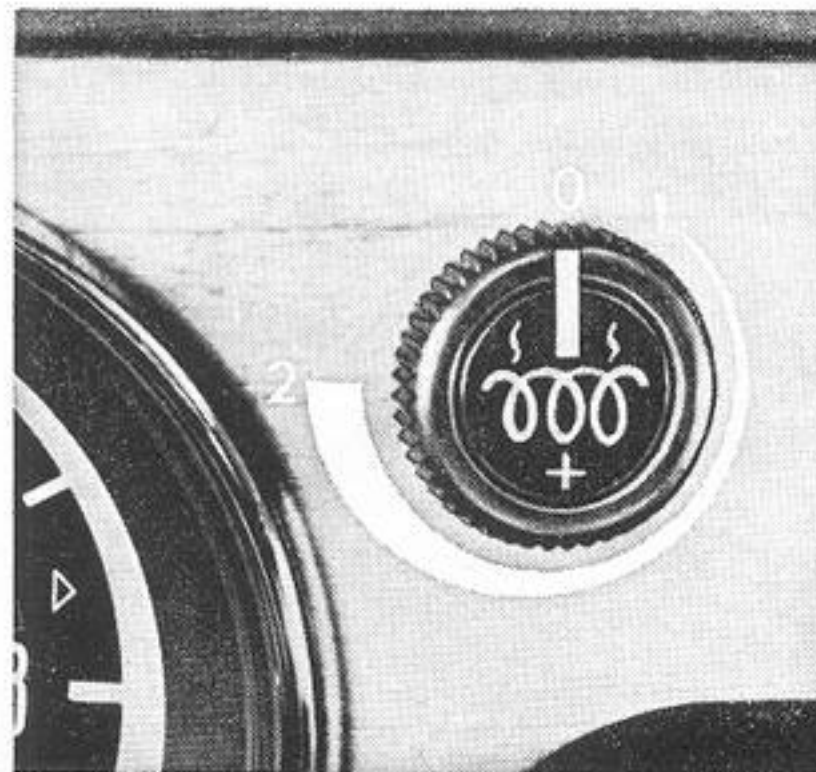
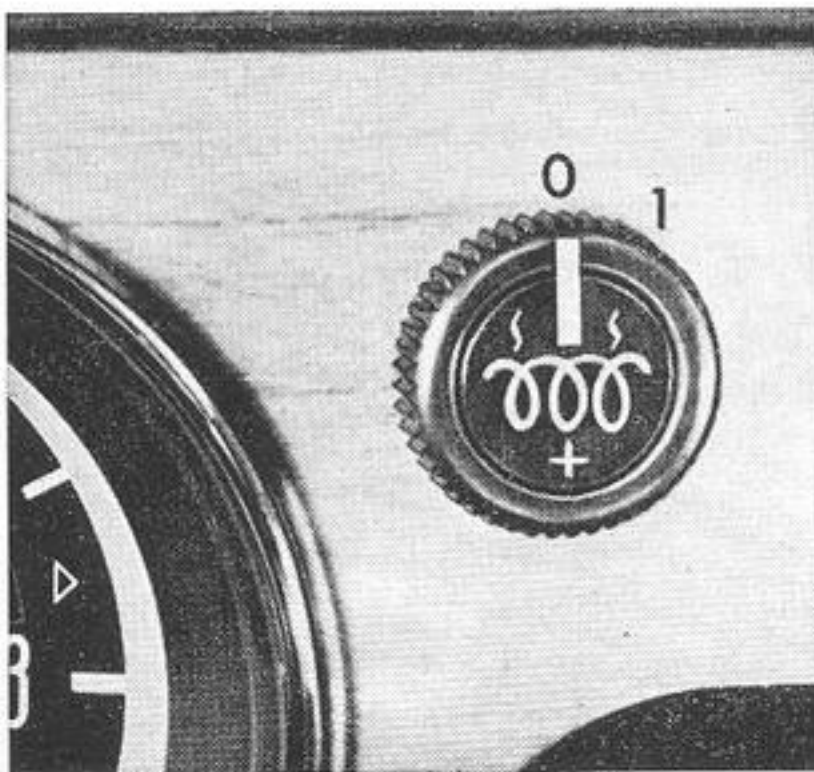
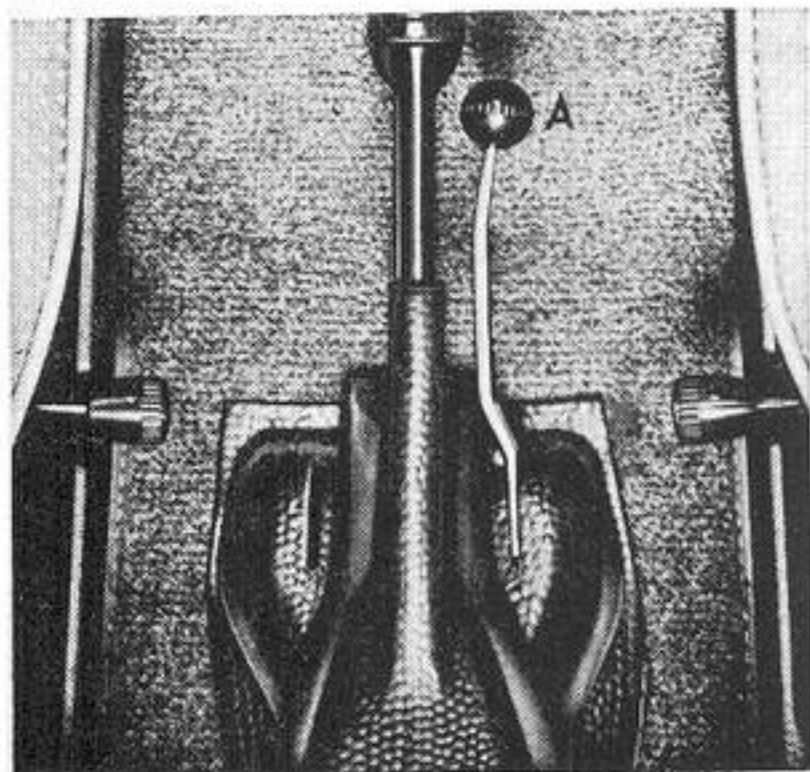
To turn heater on —

Pull lever — A — fully to the rear. Turn temperature regulating switch to the right to position 1. The green warning light in the switch lights up indicating that the heater is on.

The desired temperature can be selected by turning the switch further to the right from low (1) to high (2).

To turn heater off —

Turn temperature regulating switch to position 0. The warning light goes out indicating that the heater is off. Push lever — A — fully forward.



Vehicle stationary — engine not running

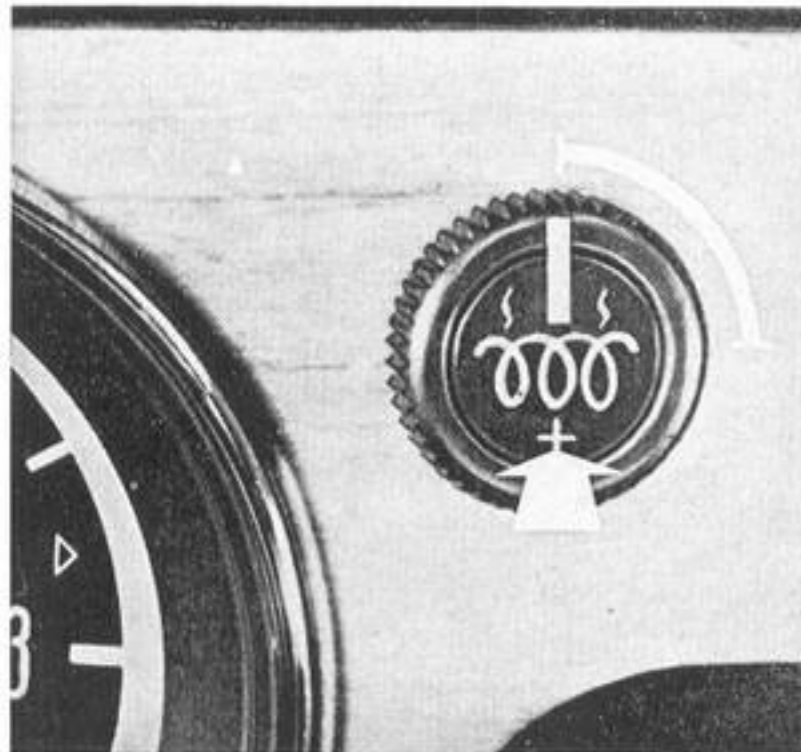
Approximate heating time 10 minutes.

To turn heater on —

Pull lever — A — fully to the rear.

Depress temperature regulating switch and turn 90° to the right. **Release** switch. In this position the green warning light comes on.

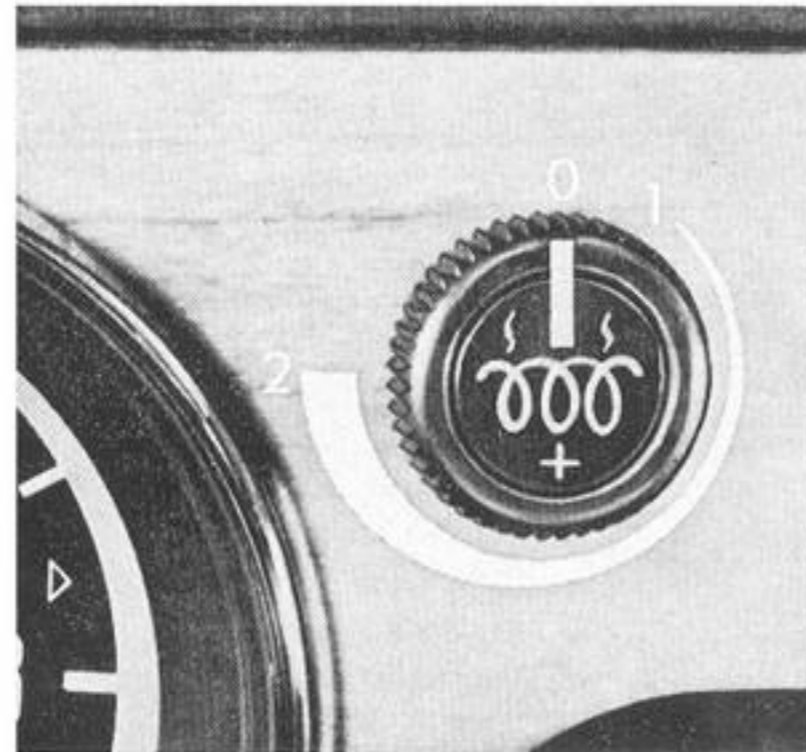
You can now select the desired temperature by turning the switch further to the right (range 1—2).



To turn heater off —

The timing mechanism built into the switch automatically turns the heater off after approximately 10 minutes and the warning light goes out.

You can, however, turn the heater off at any time by turning the temperature regulating switch back to the 0 position. The timer, however, will continue to run until it is unwound.



Please note:

- ❶ - After the heater has been turned off, the hot air fan and the combustion air blower continue to run on for a short period to cool the heater down quickly.
- ❷ - **When filling the tank always make sure that the heater is turned off** (the warning light is out). However, you need not wait until the "run-on" is finished.
- ❸ - The heater uses about the same amount of electricity as the headlights on high beam. To prevent excessive battery drain, we recommend that the heater is not operated several times successively when the car is stationary.

This applies particularly when the temperature is low and the full battery capacity is required to start the engine.
- ❹ - If the heater is not used for a long time, fuel deposits can settle in the heater and cause trouble when the heater is used again.

This can be avoided by turning the heater on for a few minutes at least once every two months, even during the warm periods of the year.

Heat distribution

The warm air is distributed with two levers:

- 1 = left side of body
- 2 = right side of body

Levers forward:

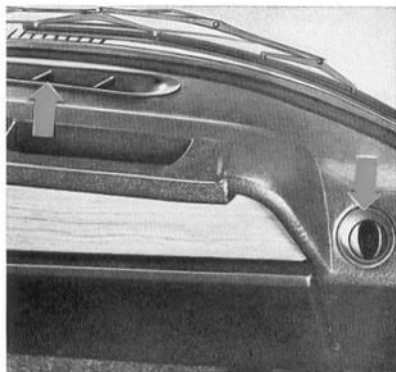
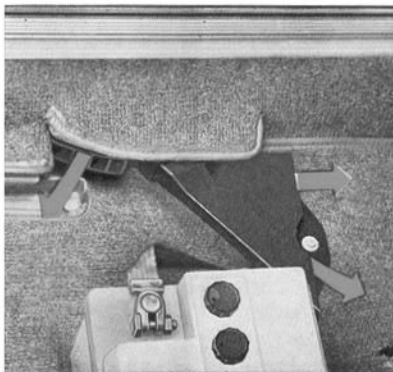
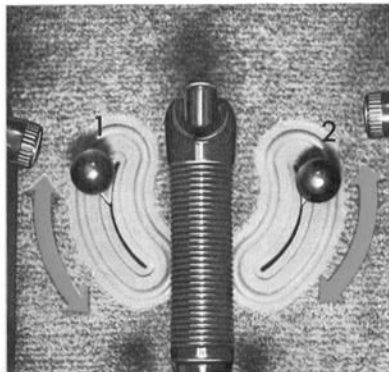
Outlets in foot well open

Levers to rear:

Vents in instrument panel: combination vents for windshield, round vents for side windows (defrosting).

Levers in intermediate position:

Air to footwell and window defrosting according to lever position.



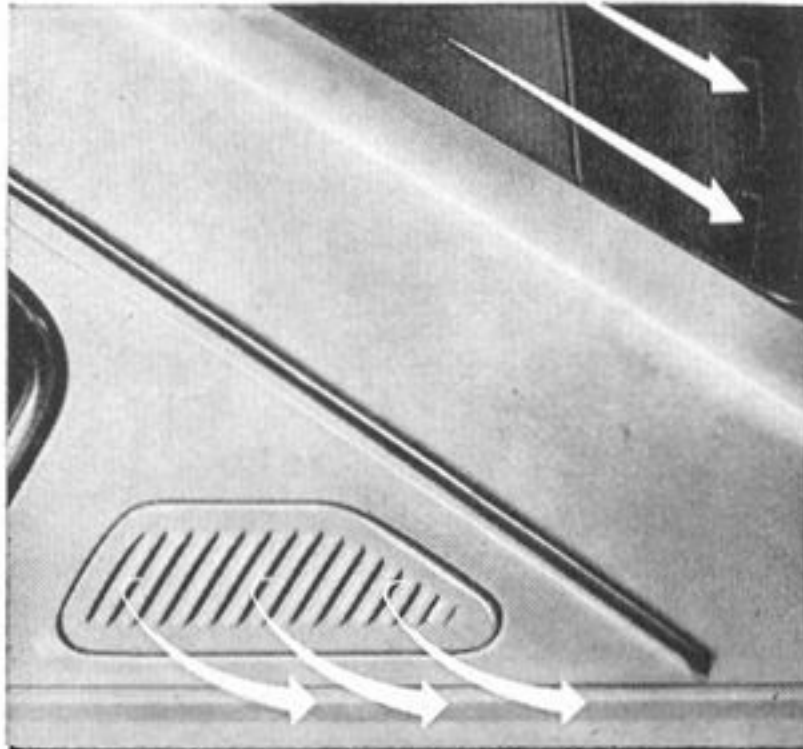
Ventilation

The ventilation system of the VW 411 makes it possible to obtain adequate draft free ventilation.

A two-speed electric fan increases the air flow when driving slowly or standing still.

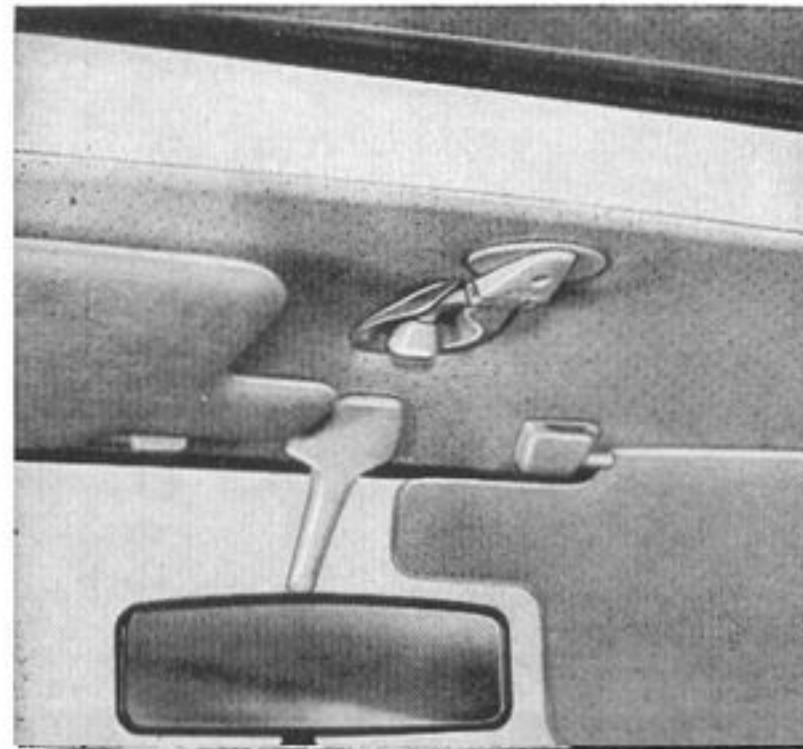
For those who like plenty of air and sunshine the VW 411 is available with a sliding roof.

Even when the windows are closed, openings below the rear window which are connected to vents behind the rear side windows allow the air to escape. Before the air enters the openings it flows past the rear window helping to keep it clear of condensation.



Sliding roof

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.



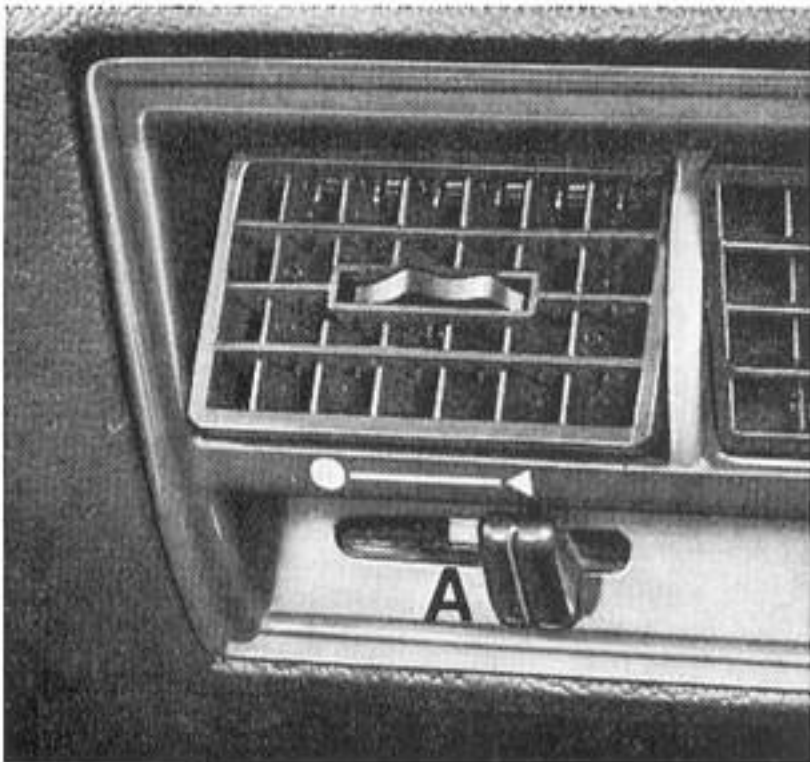
Ventilating interior

Lever — A — fully to right.
Both grilles in instrument panel closed.

Lever — A — to left.
Both grilles in instrument panel open.

Air flow up or down —
swing grille in desired direction.

Air flow to right or left —
lever in grille turned in desired direction.



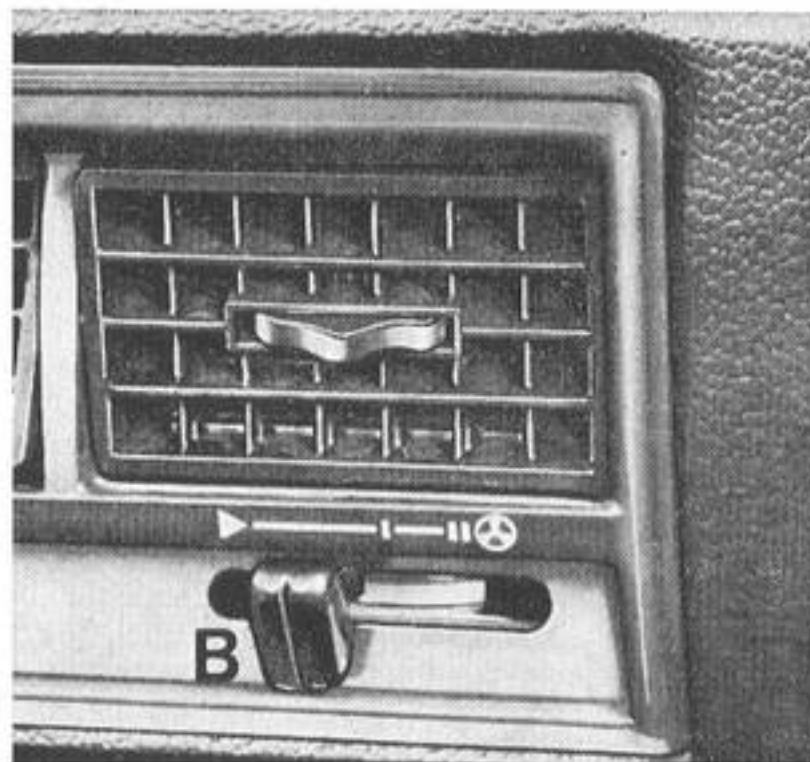
Ventilating windshield

Lever — B — to left.
Combination vents for windshield closed.

Lever — B — to right.
Combination vents for windshield open.

Moving lever — B — to position — I — turns
the fan on at low speed.

Moving lever — B — to position — II —
changes the fan speed to high.



Defrosting windshield

To defrost the windshield and the front side windows:

- Turn heater on (page 24)
- Turn warm air distribution levers 1 and 2 to rear (page 26)
- Lever — A — fully to right
- Lever — B — fully to left
- Round vents open

After the ice has been melted turn on fan:

- Lever — B — fully to right (high fan speed)

As soon as the windshield is clear the footwell outlets should be opened (warm air distribution outlets 1 and 2 page 26) so that the interior of the vehicle heats up as quickly and evenly as possible.

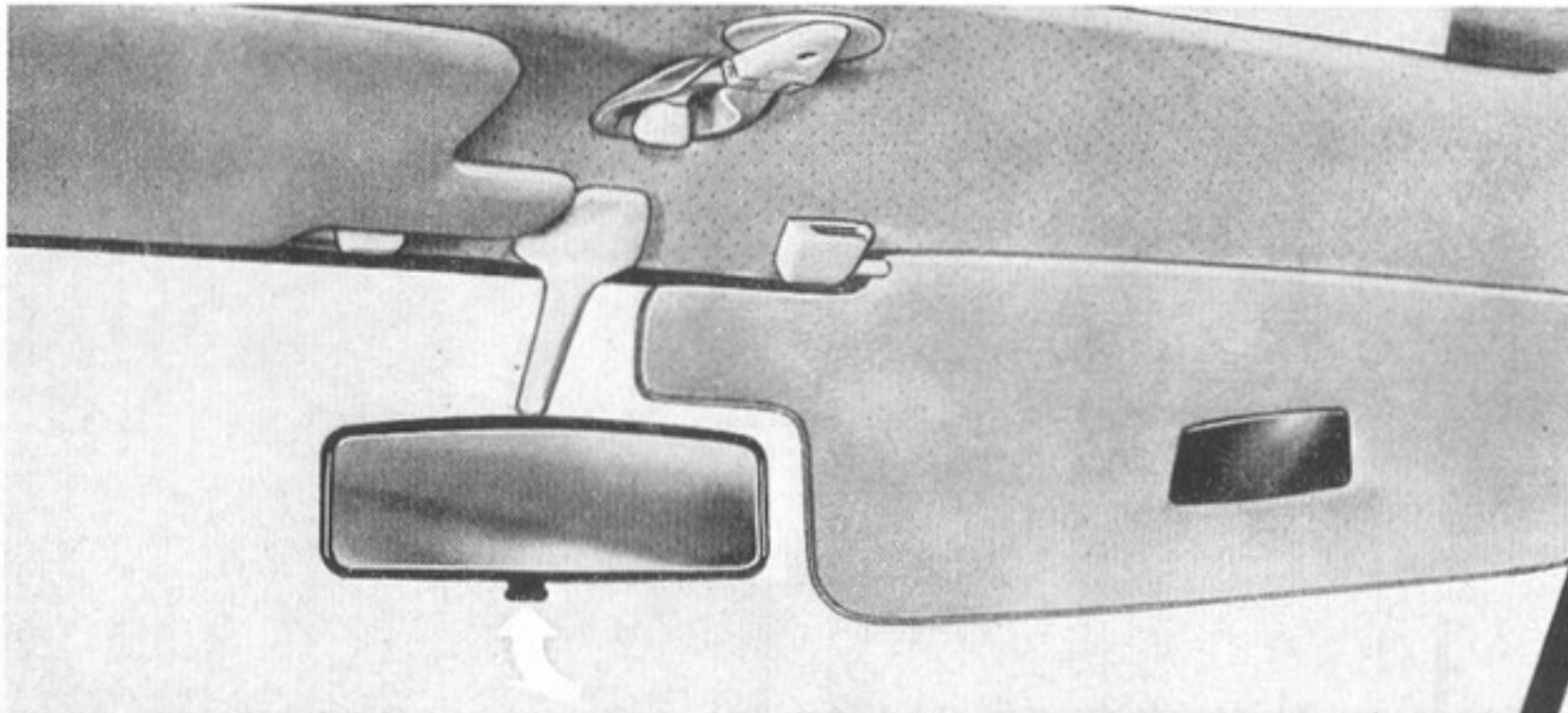
Interior trim

When maximum internal safety is required, even the smallest details must not be forgotten.

Sun visors

The large sun visors are well padded. They can also be swung to the side after lifting them out of the mounting near the inside mirror.

There is a **vanity mirror** in the back of the sun visor on the passenger's side.



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 mirror is 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.

The interior light is smooth and flush-mounted and has a built-in switch. It is switched on by pressing on the lens.

Center position – light comes on when door is opened

Pressed on right – light is on all the time

Pressed on left – light is off all the time.

The ashtrays are also flush mounted for safety reasons.

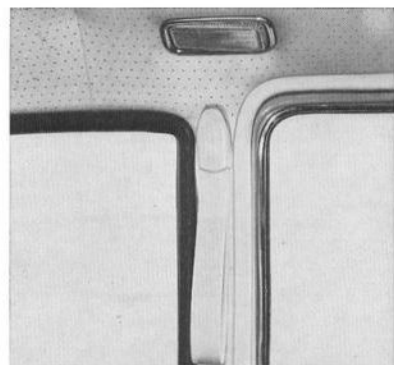
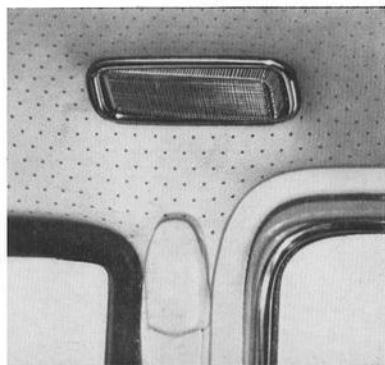
They can be taken out easily for emptying.

The ashtray in the top of the instrument panel has a magnetic lid.

To empty front ashtray—open lid, lift ashtray out by opened lid. Press ashtray in again until the two springs engage.

To empty rear ashtray—open it, press spring down and take ashtray out. To insert again, press spring down.

The assist loops are of strong plastic material and the coat hooks are covered with soft plastic.



Engine compartment lid, tank filler neck

Engine compartment lid

The engine compartment cannot be opened when vehicle doors are locked.

The lock release lever is in the lock pillar of the lefthand door.

The lid is springloaded so that it stays in the open position.

To open — pull lever — the lid springs open slightly.

To close — press lid down until the lock clicks.

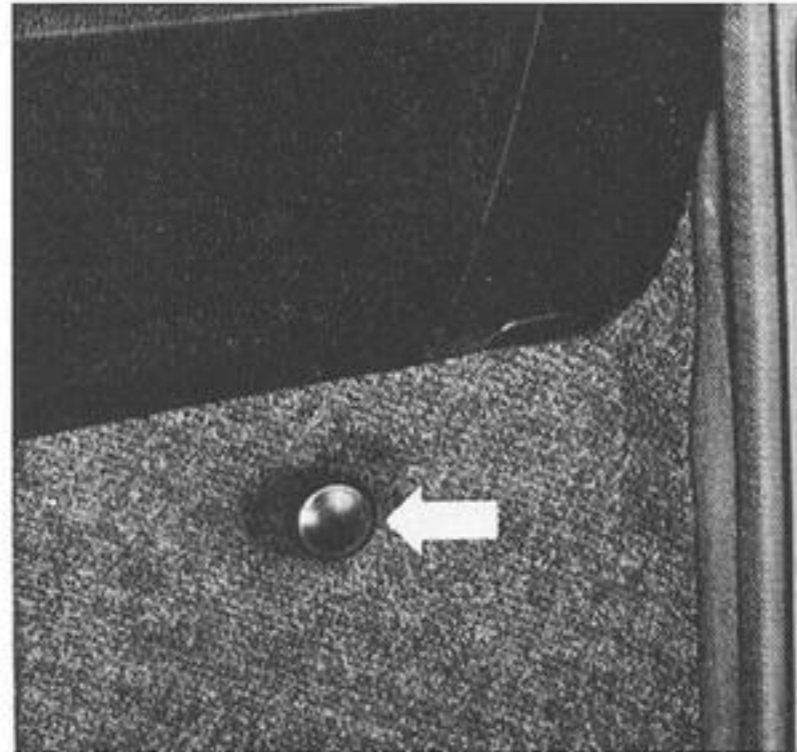


Tank filler neck

The tank filler neck is located in the right front fender under a locked flap which can only be opened from inside the vehicle.

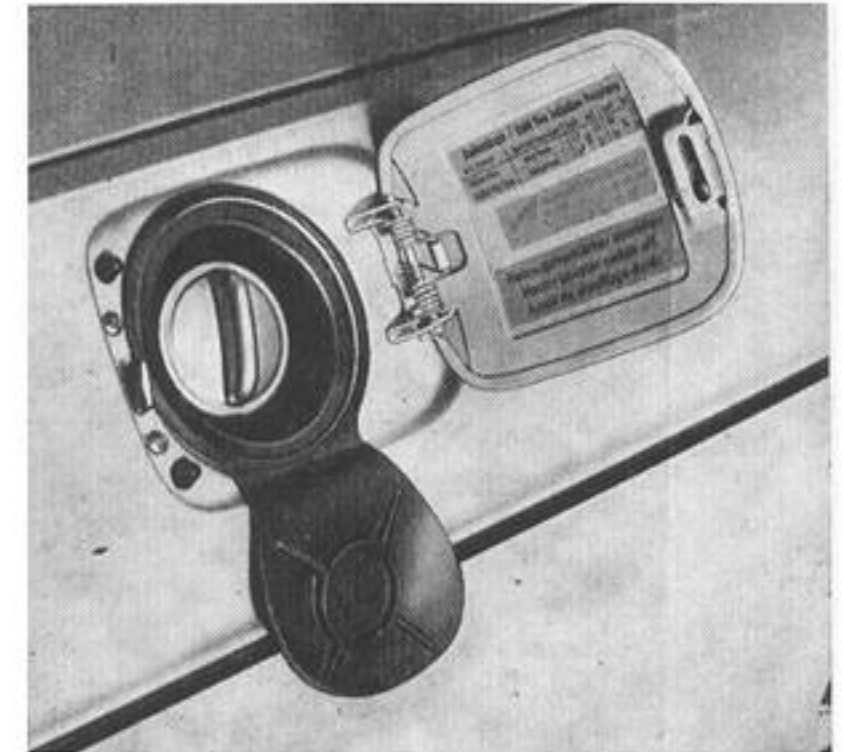
The release knob is on the right underneath the instrument panel.

There is a rubber apron to prevent the filler nozzle from damaging the paint.



To open flap — pull knob, flap springs up

To close flap — press it down until catch engages.



Luggage compartments

The roadability and handling of the VW 411 are excellent. This is the result of the advanced chassis and suspension design. Correct distribution of load will add to these driving characteristics.

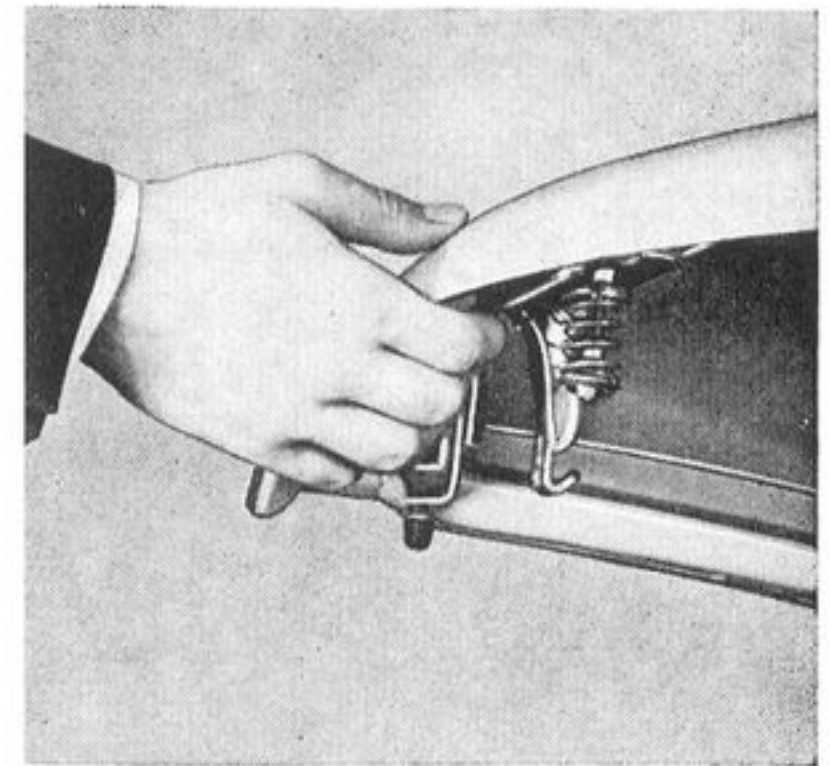
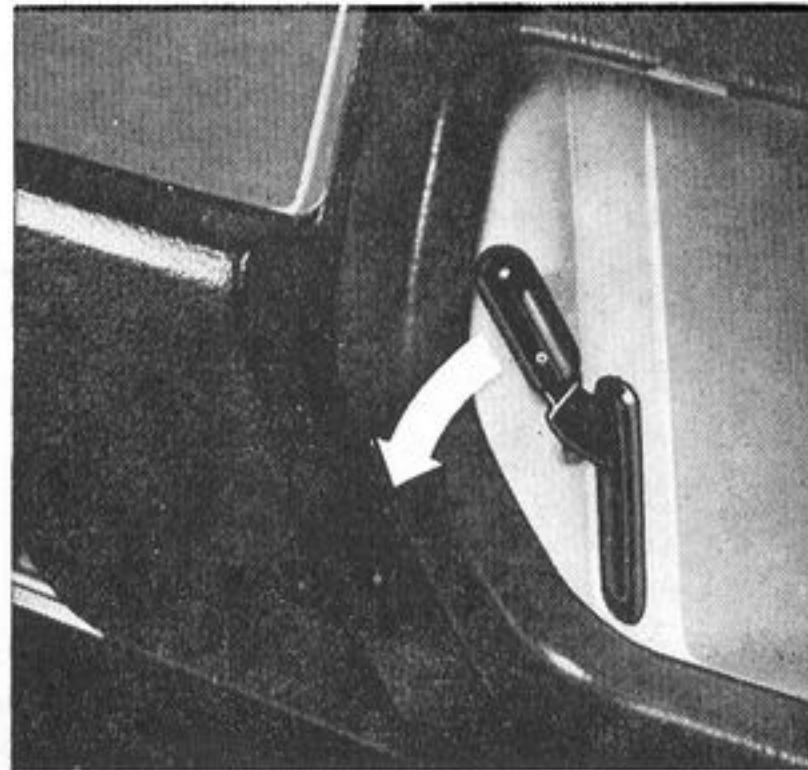
Always put the heavy pieces of luggage in the large front luggage compartment before using the shelf at the rear.

The front hood is opened by pulling the lever on the left inside the glove compartment.

The hood springs up slightly under spring pressure and can be opened fully when the safety hook near the lock has been pressed upward.

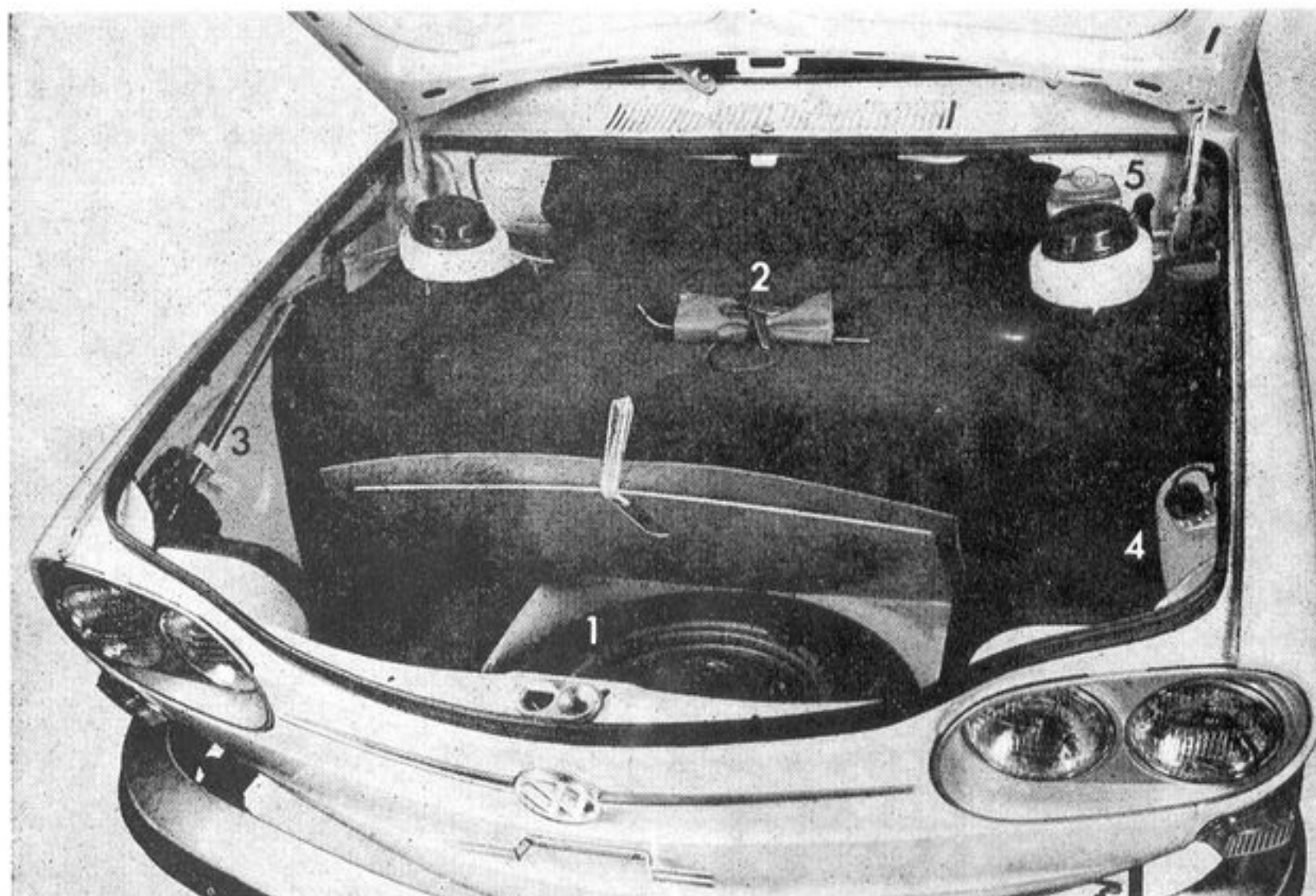
To close the hood press it down firmly until you hear a click.

Never try to close the hood by pressing at the side, always press it in the center near the lock.



The large front luggage compartment is accessible from the front and both sides. In it you will find:

- ❶ - The spare wheel lies flat in a recess in the luggage compartment and is covered by a strong, leatherette trimmed board
- ❷ - Tool kit
- ❸ - Jack
- ❹ - Fluid container for windshield washer
- ❺ - Brake fluid reservoir



Driving hints

Traffic safety and vehicle roadworthiness belong together.

You can often save yourself a lot of trouble by checking the following items before moving off on a long trip:

the amount of fuel in the tank	page 35
the lighting and turn signals	page 35
the brakes	page 36
the windshield washer	page 38

and at regular intervals

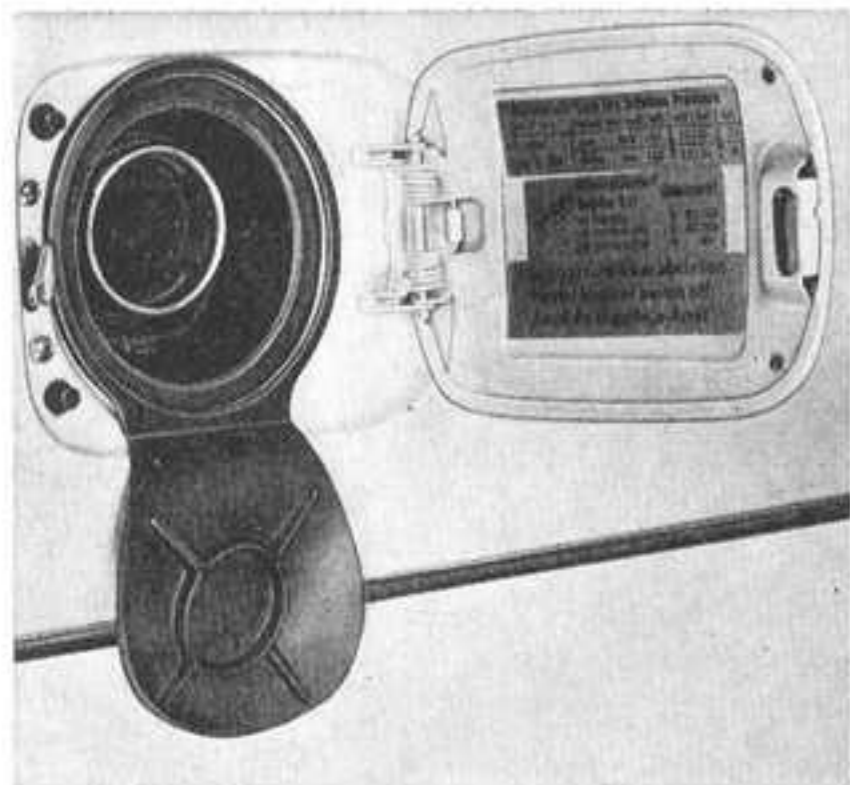
the oil level in the engine	page 40
the brake fluid level	page 37
the tire pressures	page 41

Fuel — reserve — refueling

The engine of your VW 411 will run satisfactorily on "Regular" fuels with an octane rating of 94 RON commonly sold in the United States and Canada.

If you drive your car outside the United States or Canada where "Regular" fuel with this rating may not be available, "Premium" fuels are to be used to run the engine efficiently.

If you tow a trailer with your VW 411 always use "Premium" fuel with an octane rating of at least 98 RON.



The **tank** holds 13.2 gallons of fuel. Of this amount 1.6 gallons is reserve.

To fill tank — open flap over neck, fold rubber apron out. Turn cap to left, take it off.

After filling tank — turn cap to right until it clicks, fold apron together and close the flap.

Switch the heating off when filling the tank.



Lighting and turn signals

The VW 411 is equipped with dual headlights for good visibility.

Turn signals, side marker lights and parking lights are incorporated in single housings on both front and rear fenders.

The rear units also contain the tail lights, stop lights and back-up lights.

The rear license plate is illuminated.

When checking the lights, remember that the headlights, tail lights, stop lights, back-up lights and turn signals only operate when the ignition is turned on.

The stop lights only work when the brake pedal is depressed.

The back-up lights only work when reverse gear is engaged or the selector lever is at "R".

If a turn signal is defective, the warning light flashes much quicker than usual or does not light up at all.

You can easily replace a defective bulb or fuse yourself if necessary.

The proper bulb replacements are listed on page 64.

How to replace the bulbs is described on pages 62—64 and instructions on replacing fuses are given on page 66.

Brakes

The VW 411 is equipped with a hydraulic dual circuit brake system with self-adjusting disc brakes at the front and drum brakes at the rear.

A brake force limiting valve ensures that there is optimum brake pressure distribution between the front and rear brakes. Its principle function is to prevent the rear wheels from locking-up during a sudden stop.

The brakes should be checked by applying the brake pedal just after moving off to make sure that they are working properly.

The **hand brake** should be checked at the same time. It should start to become effective at the 3rd notch.

While the Volkswagen automobiles have excellent brakes, 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.

The efficiency of the brake pads can be reduced if water reaches the brake discs — during heavy rains for instance.

Although the discs dry immediately, a lag in braking action may be noticeable after applying the brakes.

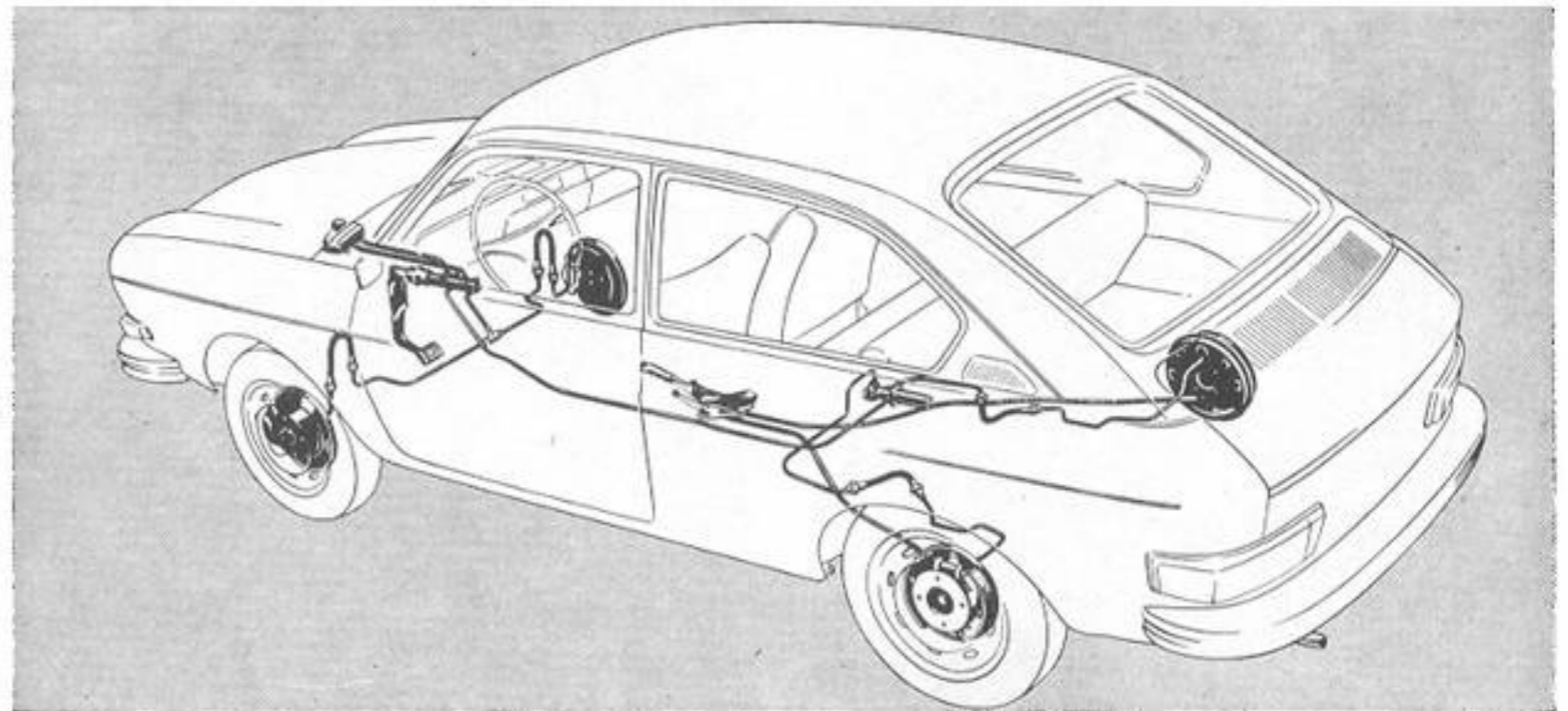
Reduced traction of the tires during rain adds to this condition.

Therefore take care when driving and remain at a safe distance behind the preceding vehicle, particularly when roads are wet and slippery.

Always set the hand brake when parking your car. On steep hills turn the front wheels toward the curb.

Please bear in mind that the 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 the specified maintenance intervals.



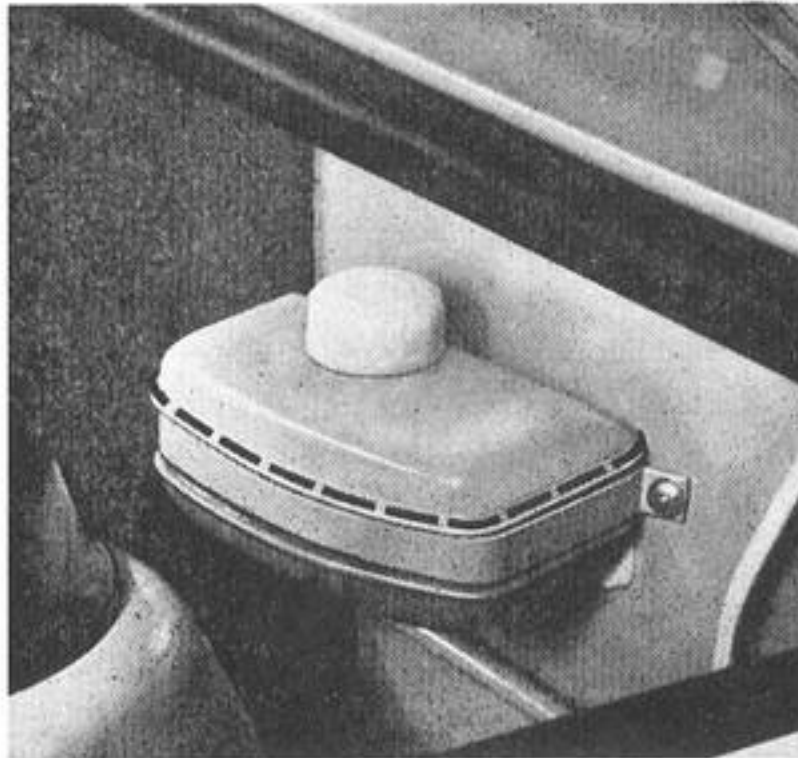
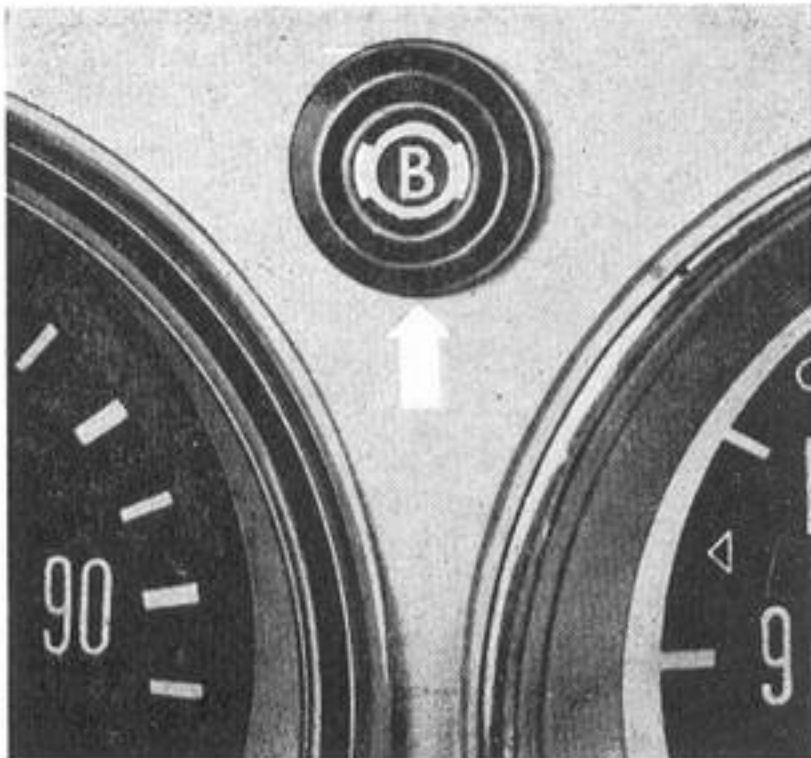
The **brake warning light** monitors the brake circuits. Should the indicator lamp light up while applying the brakes, see your Authorized VW Dealer as soon as possible because one of the two brake circuits may have failed. The brakes will still operate, but a longer distance is required to bring the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

In the **brake fluid reservoir** the fluid level should always be above the protruding edge near the top of the container.

A slight drop in the fluid level when the vehicle is in operation is normal and is caused by the automatic clearance adjustment of the front brake disc pads.

If the brake fluid level falls considerably below this edge, the complete brake system should be thoroughly examined by your Authorized VW Dealer.



Brake fluid is water absorbent and has to be, therefore, renewed every 2 years.

The pneumatic windshield washer system is supplied by compressed air from the spare tire. Consequently the spare tire pressure should occasionally be checked and inflated to 42 psi as follows:

Detach connecting hose — A — and inflate tire to 42 psi at valve — B —.

Reconnect hose — A — to valve — B —.

The air flow from the spare tire to the washer container will automatically be interrupted by a valve in the filler cap if the tire pressure falls below 28 psi.

As a result, the spare tire will always have the required pressure, should it be needed.

As soon as the filler cap of the container is loosened, the air supply from the spare tire to the windshield washer container is interrupted by means of a valve in the filler cap.

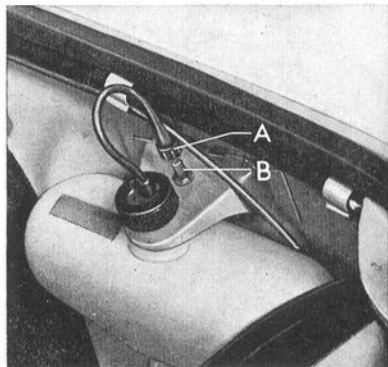
The washer container can be filled completely with water.

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

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

If enough of this cleaning agent is put in, it also acts as an anti-freeze solution in the winter. Follow the directions on the can for the right mixture.

To check the operation of the windshield washer, push the button in the wiper switch knob. A steady stream should be sprayed out of each jet onto the windshield as long as the button is pressed.



*) Three Door Sedan see page 84.

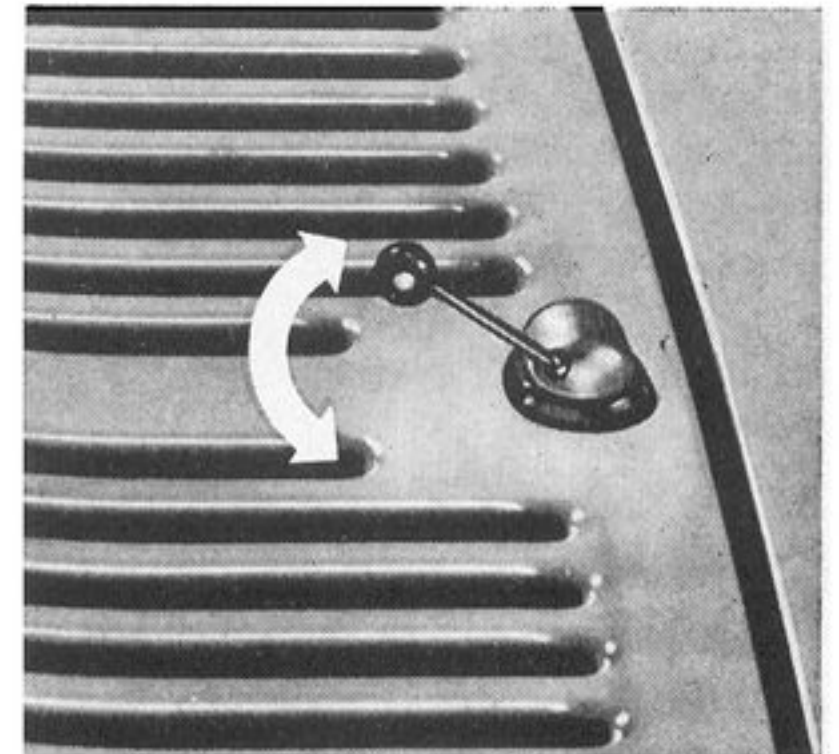
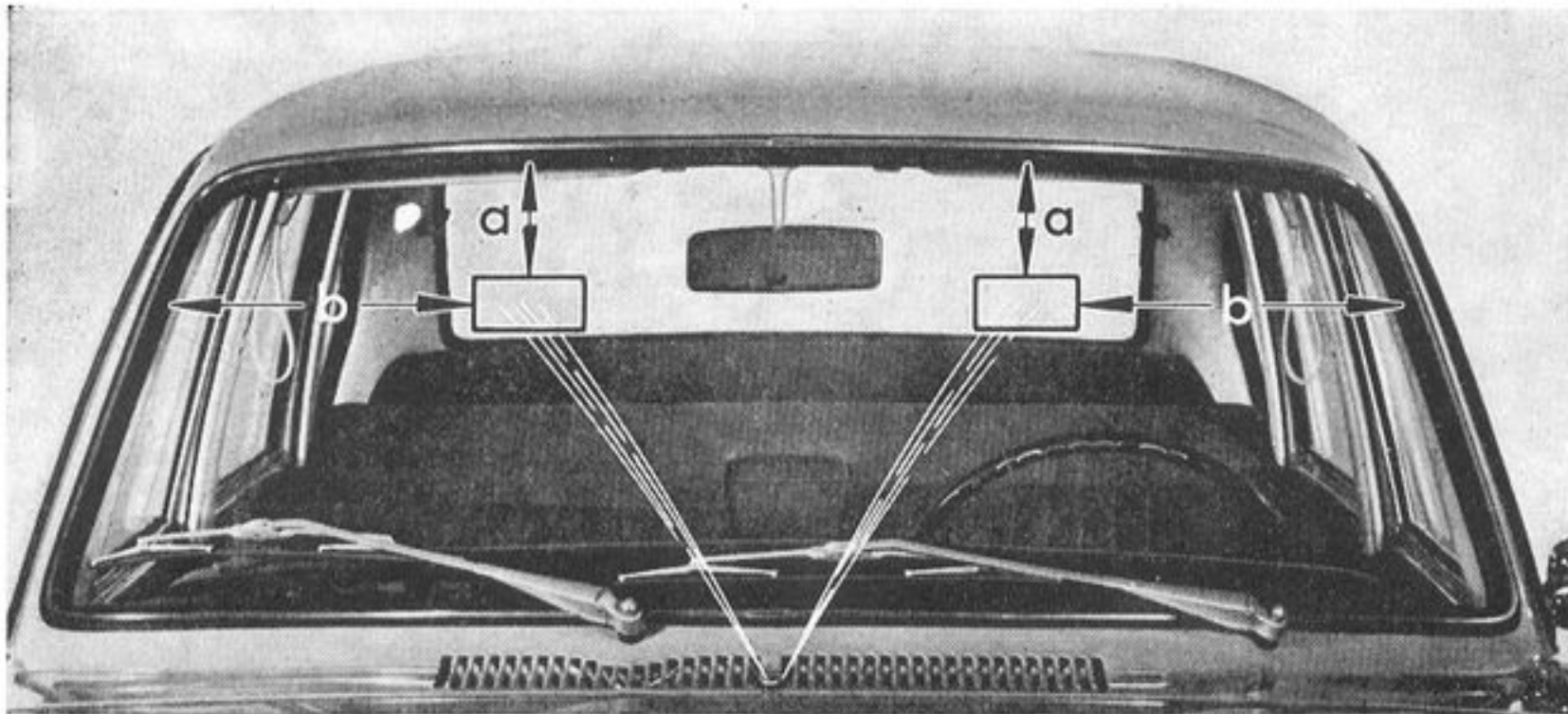
Checking windshield washer jets

Always operate the washer before turning the wipers on to prevent the possibility of scratching the glass.

The illustration shows where the washer fluid should strike the windshield when the vehicle is standing still. This ensures that the spray pattern is adequate at highway speeds.

a = 6—8 inches; b = 15—19 inches

The jets can be adjusted with a straight pin.



Engine oil level

The engine oil level should always be between the two marks on the dipstick and must never be below the lower mark. The vehicle must be on a level surface when checking the oil level.

Do not check the oil immediately after stopping the engine as the oil in circulation takes a few minutes to drain down into the crankcase.

Add sufficient oil to ensure that vehicle will run to next oil change without level falling below lower mark.

When operating the vehicle under extreme conditions such as high speed highway driving or sustained mountainous driving, the oil level should always be at the upper mark.

Checking oil level *)

Pull dipstick out and wipe it with a clean cloth. Push dipstick in fully, pull it out again and check level. The difference in oil quantity between upper and lower marks is 2.1 U.S. pints.

Adding oil

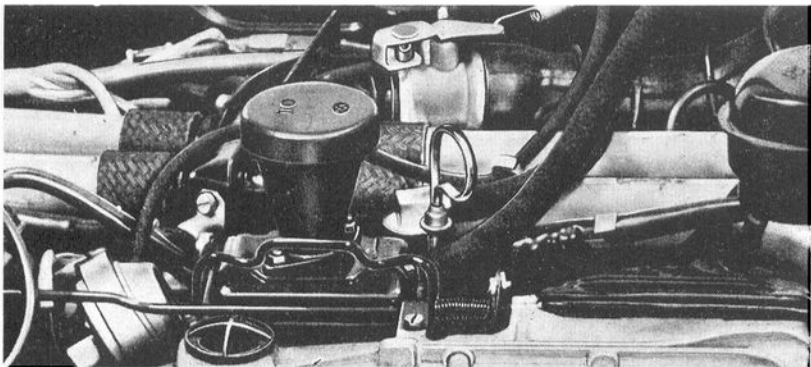
Unscrew cap from oil filler tube.

Add oil.

Check level with dipstick — level should not be over upper mark.

Screw cap back on tightly.

Notes on the use of different makes of oil and viscosity grades are given on page 74.



*) VW 411 Three Door Sedan see page 83.

Tires *)

The VW 411 is equipped with tubeless radial ply tires. Size 155—SR 15 *).

Conventional cross ply tires should not be used.

For maximum safety it is best not to combine tires of different construction or tread pattern.

Tire pressures *)

For good handling and long service life it is important to maintain recommended tire pressures.

Tire pressures, cold

With 1—2 occupants

front

rear

20 psi (1.4 kg/cm²) 26 psi (1.8 kg/cm²)

Fully loaded

23 psi (1.6 kg/cm²) 30 psi (2.2 kg/cm²)

In the interest of safety the tire pressures should be checked at least once a week.

Before going on a trip the inflation of all tires, including the spare, should be checked.

*) VW 411 Three Door Sedan see page 84.

Tire wear

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 1/2-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.

For maximum safety it is best to replace all 4 tires at the same time. If this is not possible, at least replace tires in pairs, either front or rear.

Brand new tires do not possess maximum traction. They should, therefore, be driven with moderate speed for the first 60 miles.



Uneven tire wear is not always due to improper wheel alignment. It is often the result of individual driving habits such as cornering at high speeds. If the tire pressure is not checked regularly, abnormal tire wear can result.

To avoid having to replace tires earlier than necessary, it is recommended that the wheels be exchanged according to the sketch below.

Afterwards the tire pressure must be corrected. The wheel bolts must be torqued diagonally to **110 ft. lbs.**

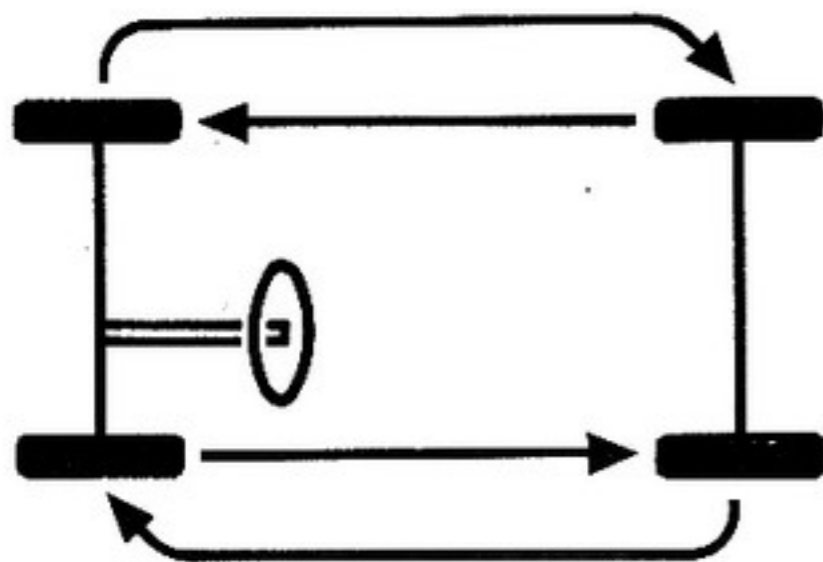
Spare tire *

The spare tire pressure should be between 28—42 psi (2.0—3.0 kg/cm²). The pressure can be checked at valve — B — by disconnecting the hose to the windshield washer container.

Wheel balancing

For smooth handling and long tire life it is essential that the wheels are balanced properly. Even regular use can cause unbalance. A wheel should always be balanced after a tire repair.

Winter tires *), see page 51.



*) VW 411 Three Door Sedan see page 84.

Starting the engine

Before starting the engine the accelerator pedal must be fully depressed. This holds true for the engine being cold or after having attained operating temperature and also for low or high outside temperatures.

The amount of fuel and air required for starting is automatically supplied by the fuel injection system with which your Volkswagen is equipped.

Make sure the gear shift lever is in Neutral before turning the ignition key.

Vehicles with Automatic Transmission can be started in Neutral only.

If your car is equipped with a Manual Transmission and the outside temperature is below freezing, the clutch pedal should be depressed to help the starter motor turn the engine only.

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

Do not try to warm the engine up by letting it idle with the vehicle stationary — drive off 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 switched on and started again.

The nonrepeat lock in the switch which prevents the starter from being operated when the engine is running and thus from being damaged.

The warning lights in the clock will come on when the ignition is switched on. As soon as the engine starts, these lights will go out.

Red warning light for generator

If this light comes on when you are driving, the generator has stopped charging. 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, stop at once because the flow of lubricating oil in the engine may be interrupted.

Check the oil level first.

Should the cause of the trouble be elsewhere, 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.

Automatic Transmission

There are a few points you should know if you want to take full advantage of your automatic transmission.

Remember the following two basic rules.

- 1 - Apply the hand or foot brake before selecting a driving range. The torque converter does not completely interrupt power even at idling speeds, and your car may start rolling.
- 2 - Do not accelerate while selecting a driving range. At this time the engine must run at idling speed so that no undue stress will be placed on the automatic clutches in the transmission.
If the selector lever is accidentally moved into neutral position (N) while driving, take your foot off the accelerator pedal and wait until the engine speed has dropped to idling before selecting a driving range.

The selector lever has 6 positions:

- P = Parking lock
- R = Reverse
- N = Neutral
- D = Drive
- 2 = } Lower driving ranges
- 1 = }

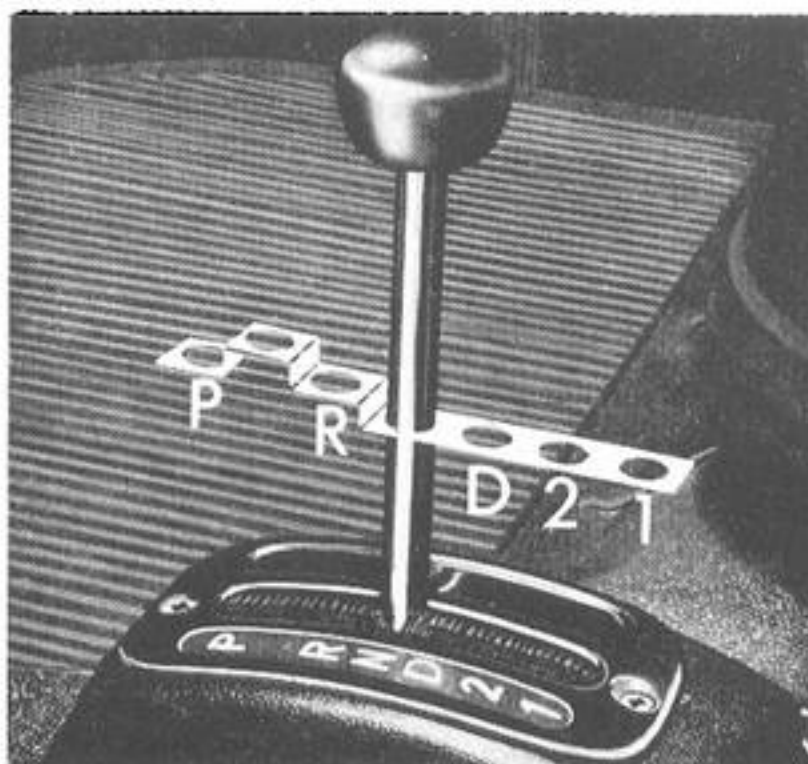
The selector console is illuminated when the parking or headlights are switched on.

The driving ranges

The automatic transmission has 3 forward driving range and one reverse.

In position D

all three gears are engaged automatically according to driving conditions ranging from starting to top speeds. On acceleration the vehicle moves forward in first gear and



depending on engine load (accelerator position part or full throttle) and the driving speed, second and third gear are engaged automatically. With decreasing speed the transmission automatically shifts down to the lower gears.

In position 2

the transmission will not shift into third gear. Therefore this position should not be used when you drive faster than 60 mph. Below 60 mph Position 2 can be selected without releasing the accelerator.

Position 1

is needed only on rare occasions. In this case the transmission will not shift into second or third gear. Therefore, do not drive faster than 40 mph in this range.

Reverse

should be selected only when the vehicle is stationary and without depressing the accelerator. To select reverse you must lift the lever slightly.

Parking

When you park your car apply the hand brake and move the selector lever to position — P —. It is necessary to move the lever through reverse then lift it to the parking position. The transmission is then mechanically locked. The parking position may only be engaged when the vehicle is stationary.

Accelerator "kickdown"

When depressing the accelerator pedal you will find resistance at the full throttle position. By applying greater pressure, the pedal can be pushed beyond this point to the kickdown position. If you maintain the kickdown position, the transmission shifts into the next gear only after the engine has reached the speed of the greatest out-put (approximately 40 mph in second, 60 mph in third gear). This means maximum acceleration. If you need maximum acceleration when passing, the kickdown will shift the automatic transmission down to second gear when driving below 55 mph and down to first gear when driving below 35 mph. As soon as you release the pedal from the kickdown position, the next higher gear is automatically engaged.

Starting the engine

is only possible when the selector lever is in Neutral. As long as one of the driving ranges or the parking lock is engaged a safety switch prevents the engine from being started. For further details on starting see page 43.

Moving off

Before selecting a driving range, the foot or hand brake must be applied to prevent the vehicle from rolling. Normally you start to drive in the following sequence:

Apply hand brake or foot brake

Move selector lever to position — D —.

Release brakes and accelerate.

Stopping

When stopping temporarily, at traffic lights for example, it is not necessary to move the selector lever to Neutral. Simply apply one of the brakes. To start off again release brake and accelerate.

Mountain driving

When driving on long, steep and winding mountain roads select range 2 or 1.

Maneuvering

When maneuvering the vehicle it is important to remember that positions Reverse and Drive may only be selected when the car is stationary and with the engine running at idling speed.

Towing

Should it become necessary to tow your Volkswagen, the towing speed should not exceed 30 mph and the towing distance should not be longer than 30 miles because the transmission will not be adequately lubricated due to the lack of oil pressure, normally provided when the engine is running.

These limitations do not apply if the vehicle is lifted at the rear or if the drive shafts are disconnected. For further hints about towing see page 58.

Emergency starting

Your Volkswagen with automatic transmission cannot be started by pushing or towing. Should the engine fail to start, consult your nearest Authorized Volkswagen Dealer.

Manual Transmission

Your new car can be driven at full speed from the first day.

There are, however, certain permissible speed ranges for the various gears:

1st gear	0—25 mph
2nd gear	10—44 mph
3rd gear	15—68 mph
4th gear	28—96 mph

If you have to do a bit of rapid overtaking anytime you can accelerate up to

48 mph in 2nd gear
and 75 mph in 3rd gear
for a brief period.

Economic driving

If you drive smoothly and in a controlled style you will be rewarded by a saving in fuel and general expenses. Very fast, sporty driving with full throttle acceleration and violent changes between accelerating and braking will mean more frequent visits to a gas station not to mention increased tire and brake lining wear.

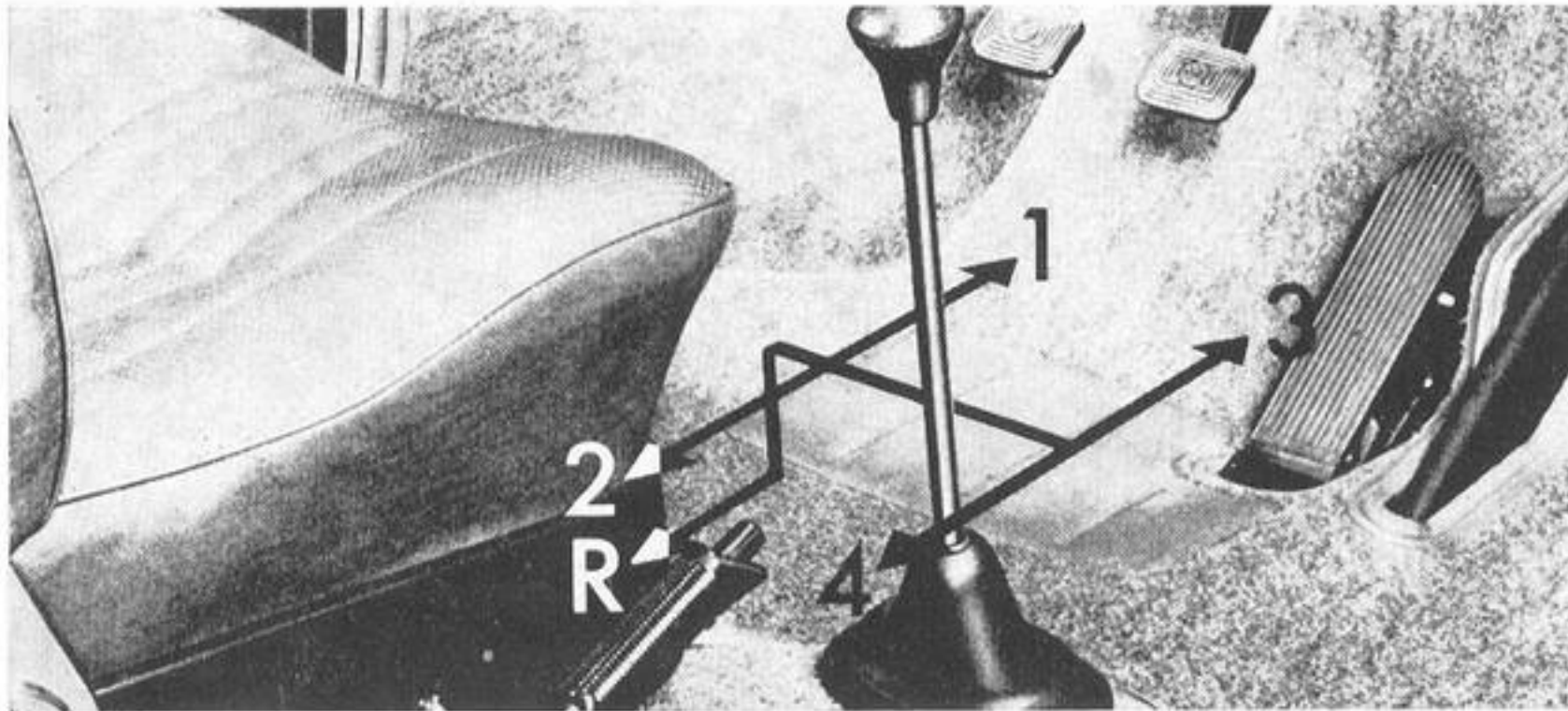
You can drive very economically between:

10 mph and 28 mph	in 2nd gear
18 mph and 55 mph	in 3rd gear
28 mph and 75 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 gear.

He always depresses the clutch pedal fully when changing gear, he also changes down into the appropriate gear when driving in a long line of vehicles and when cornering instead of slipping the clutch and he never uses the clutch pedal as a footrest.



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.

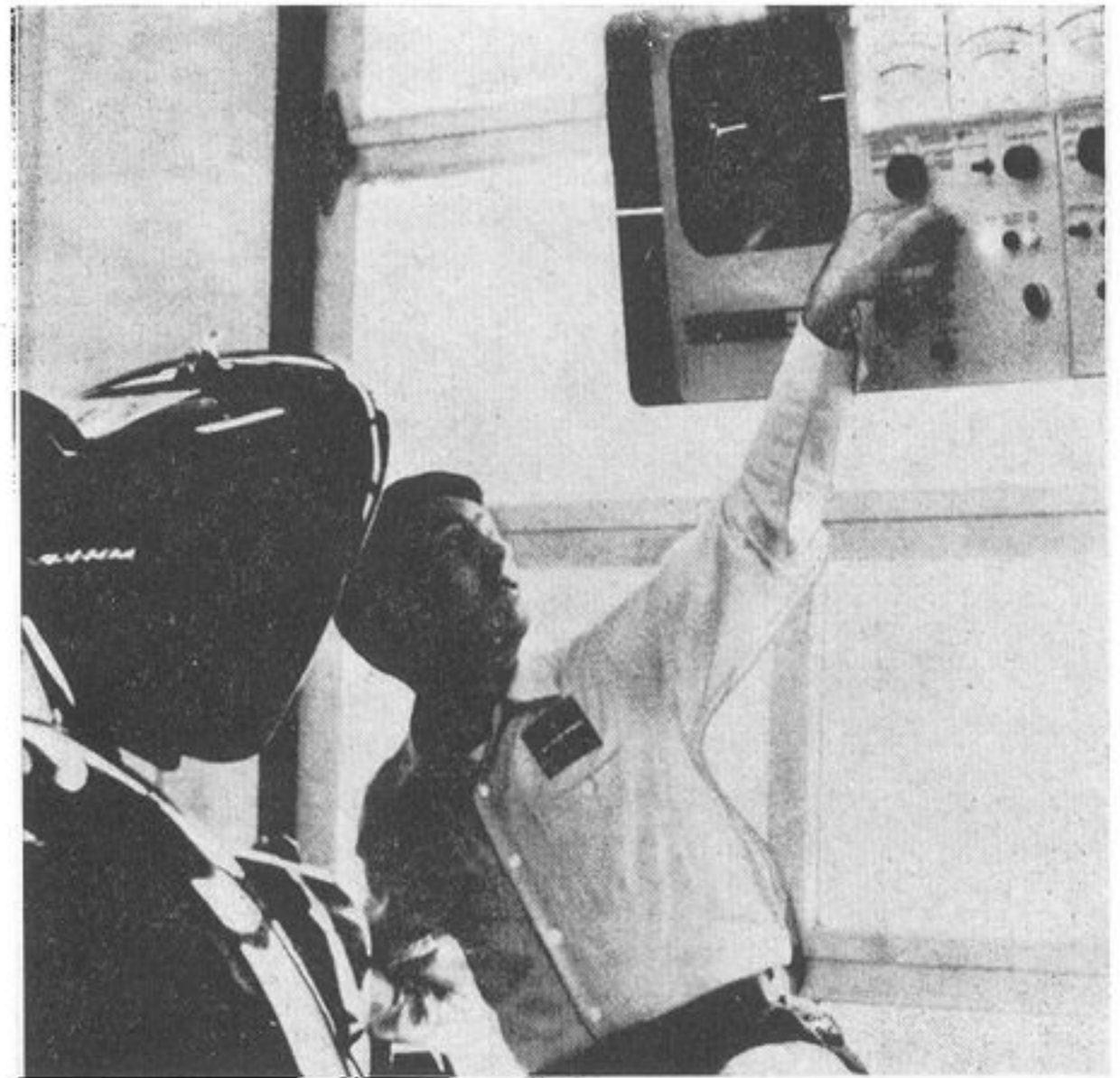
But they cannot offer you VW Diagnosis and Maintenance — our new service system.

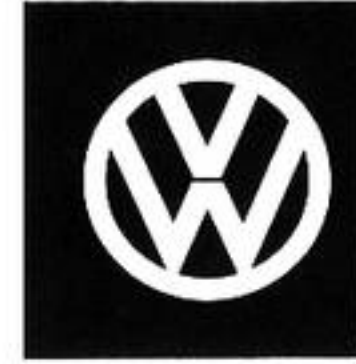
Instead of giving every VW the same basic maintenance, we now treat each one as an individual.

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.





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. They 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.

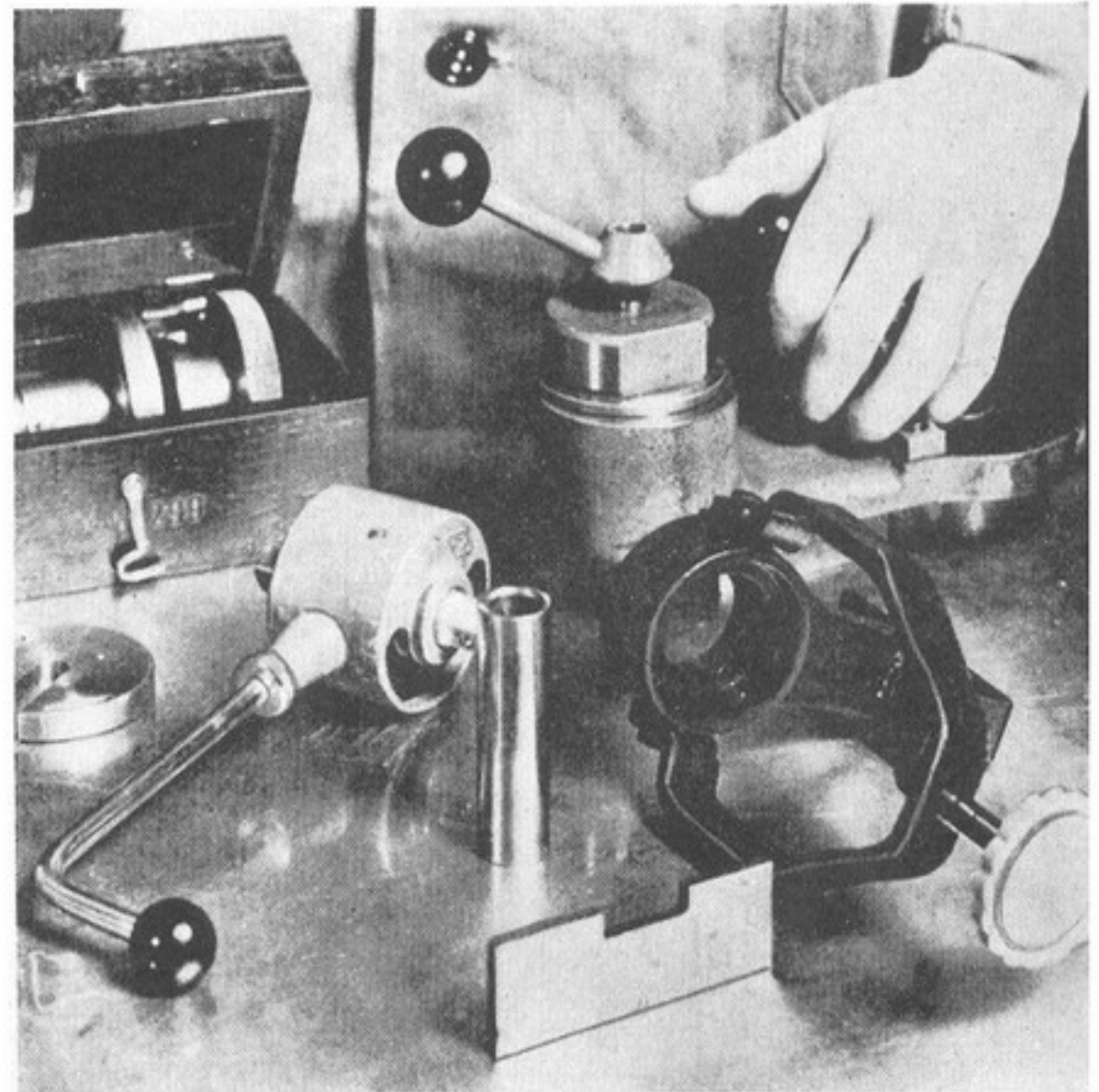
In any authorized VW dealer's service department, you get VW Specialist who know VW's intimately.

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 Volkswagen before he starts working on your car. Rather than while he's working on your car.

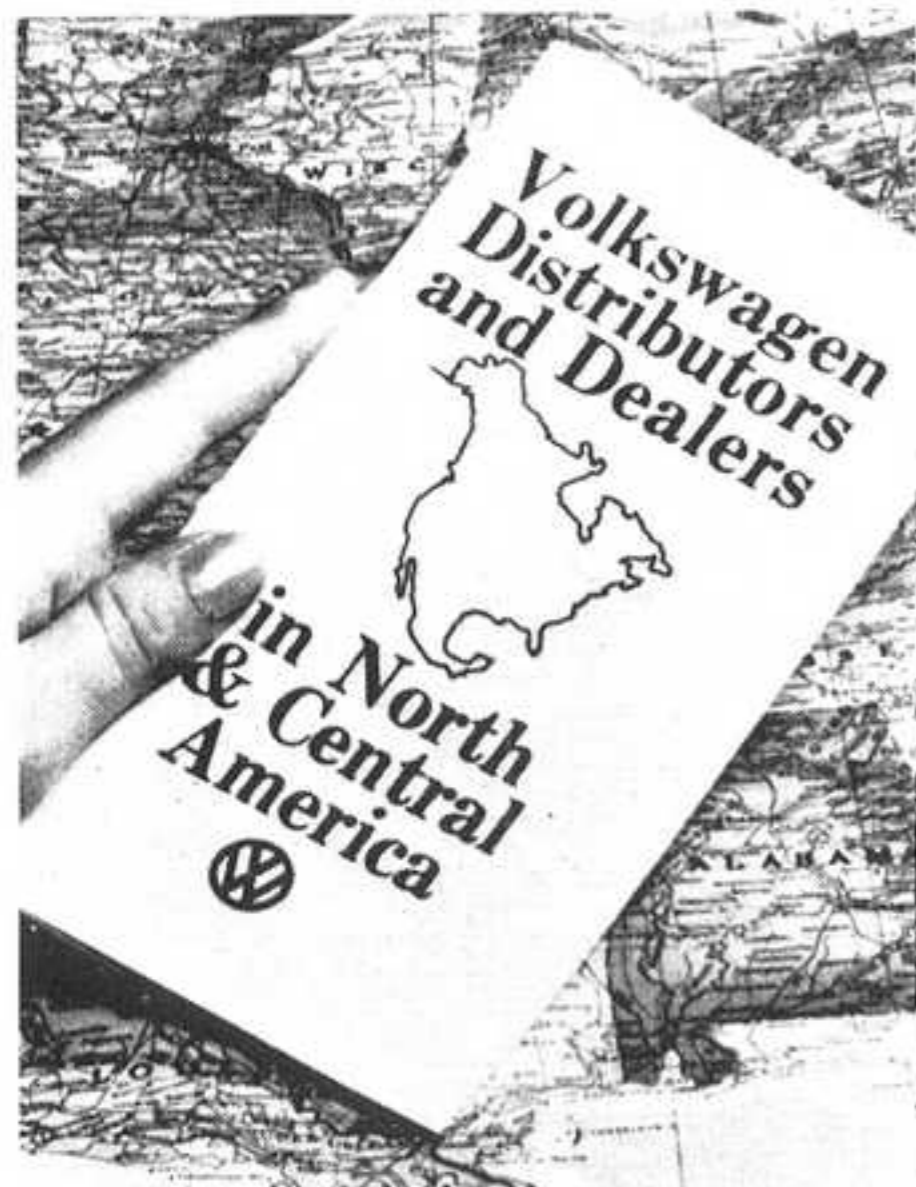
We think it's better that way.



All over North and Central America Volkswagen dealers are ready to give you reliable service. Their names and addresses are contained in the booklet shown below.

Any one of these Authorized Volkswagen Dealers is well equipped to answer all questions you might have about your car.

And if needed fourteen VW Distributors will gladly help you too.



Authorized Volkswagen Distributors and Regional Offices in the U.S.

- | | |
|-------------------------|---|
| Maine | Volkswagen of America, Inc. |
| Massachusetts | Northeastern Region |
| New Hampshire | Volkswagen Customer Relations |
| Rhode Island | 100 Fordham Road |
| Vermont | Wilmington, Massachusetts 01887
(617) 658-6700 |
| Illinois | Volkswagen of America, Inc. |
| Iowa | North Central Region |
| Minnesota | Volkswagen Customer Relations |
| North Dakota | 3737 Lake Cook Road |
| South Dakota | Deerfield, Illinois 60015 |
| Wisconsin | (312) 272-5500 |
| Kentucky | Midvo, Incorporated |
| Ohio | Volkswagen Customer Relations |
| | 5000 Post Road |
| | Dublin, Ohio 43017 |
| | (614) 889-2911 |
| Indiana | Import Motors Ltd., Inc. |
| Michigan | Volkswagen Customer Relations |
| | P.O. Box 2008 |
| | 2660 28th Street, S.E. |
| | Grand Rapids, Michigan 49501 |
| | (616) 949-7788 |
| Delaware | Volkswagen Atlantic, Inc. |
| Pennsylvania | Volkswagen Customer Relations |
| | P.O. Box 830 |
| | 1001 South Trooper Road |
| | Valley Forge, Pennsylvania 19482 |
| | (215) 666-7500 |
| Alabama | International Auto Sales |
| Louisiana | & Service, Inc. |
| Mississippi | Volkswagen Customer Relations |
| Tennessee (West) | P.O. Box 29127 Michoud Station |
| | 4200 Michoud Boulevard |
| | New Orleans, Louisiana 70129 |
| | (504) 254-1500 |
| Connecticut | World-Wide Volkswagen Corporation |
| New York | Volkswagen Customer Relations |
| New Jersey | Greenbush Road |
| | Orangeburg, New York 10962 |
| | (914) 359-5000 |

- | | |
|-------------------------|-------------------------------|
| Florida | Volkswagen of America, Inc. |
| Georgia | Southeastern Region |
| Maryland | Volkswagen Customer Relations |
| North Carolina | 9300 George Palmer Highway |
| South Carolina | Lanham, Maryland 20801 |
| Tennessee (East) | (301) 577-2600 |
| Virginia | |
| West Virginia | |
| Washington, D.C. | |

- | | |
|-------------------|---|
| Arizona | Volkswagen of America, Inc. |
| California | Western Region |
| Nevada | Volkswagen Customer Relations |
| Utah | 11300 Playa Street |
| Hawaii | Culver City, California 90230
(213) 390-8011 |

- | | |
|-------------------|-------------------------------|
| Alaska | Riviera Motors, Inc. |
| Idaho | Volkswagen Customer Relations |
| Montana | P.O. Box 2963 |
| Oregon | Portland, Oregon 97208 |
| Washington | (503) 645-5511 |

- | | |
|-----------------|---|
| Arkansas | Volkswagen Mid-America, Inc. |
| Kansas | Volkswagen Customer Relations |
| Missouri | 8825 Page Boulevard |
| Nebraska | St. Louis, Missouri 63114
(314) 429-2141 |

- | | |
|-------------------|---|
| Colorado | Volkswagen of America, Inc. |
| New Mexico | South Central Region |
| Oklahoma | Volkswagen Customer Relations |
| Texas | P.O. Box 2207 |
| Wyoming | San Antonio, Texas 7898
(512) 341-8881 |

Authorized Volkswagen Zone Offices in Canada

- | | |
|---------------------|-------------------------------|
| Eastern Zone | Volkswagen Canada Ltd. |
| | Volkswagen Customer Relations |
| | 3500 Trans Canada Highway |
| | Pointe Claire, Quebec |
| | (514) 697-5930 |
| Central Zone | Volkswagen Canada Ltd. |
| | Volkswagen Customer Relations |
| | 1920 Eglinton Ave., East |
| | Scarborough, Ontario M1L 2M2 |
| | (416) 750-4700 |
| Western Zone | Volkswagen Canada Ltd. |
| | Volkswagen Customer Relations |
| | 8081 Loughheed Highway |
| | Burnaby, B.C. V5A 1X1 |
| | (604) 299-9321 |

Winter operation

Do not, under any circumstances, try to influence the heating of the vehicle by covering up the louvers in the rear of the car. These louvers must always be clear so that air can flow into the engine cooling fan and the fuel injection system.

Winter tires*) are not absolutely essential on the VW 411 because the radial ply tires are very good on winter roads.

Better are radial ply M+S and M+S studded tires.

If you decide to mount winter tires on your car we advise you to get the radial ply M+S studded type. This type of tire is much safer on hard snow or ice.

They should have the same load capacity as tires of the original equipment.

Winter tires should always be mounted on all four wheels.

Winter tires with studs should be run at moderate speeds when new in order to give the studs time to settle.

The correct pressures for radial ply winter tires are:

front: 23 psi, rear: 30 psi.

Tires with badly worn treads and studs are very dangerous. Make sure they are replaced in time.

Winter tires do not fulfill their purpose if the tread depth is less than $\frac{5}{32}$ " (4 mm).

For safety reasons, it is not advisable to drive a vehicle mounted with winter tires at top speed. You cannot expect winter tires 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.

Check your state laws before using studded tires.

*) VW 411 Three Door Sedan see page 84

Snow chains *)

Only thin chains which do not protrude from the tire tread and inner side wall more than $\frac{1}{2}$ 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.

Hand brake

Brake linings may become wet due to splashing or condensation during winter which would cause them to freeze to the drums. You can avoid this when parking your car. Instead of applying your handbrake if there is a danger of frost, place your shift lever in — P — position. With a manual transmission engage first or reverse gear.

When parking on steep hills turn the front wheels toward the curb.

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 74. If you drive mostly short distances and in city traffic, especially in the winter, we recommend that you have the engine oil changed at 1500 miles-intervals.

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.

For the automatic transmission there are no special winter instructions.

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

This applies also to the **final drive** of the Automatic Transmission.

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 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.

Before having a quick-charge performed, disconnect both battery cables to avoid serious damage to the electronic components of the electrical equipment, especially to the control unit of the fuel injection system.

Further details are given on page 68.

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 in the winter to clear away the 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

Even the finest paint requires a certain amount of care. This is easy to appreciate if you consider for a moment the elements 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 as possible.

The paint should be rewaxed when 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 spare wheel compartment behind the jack 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 paint-work 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.

Cleaning cloth upholstery

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

Cleaning leatherette

The leatherette parts of the headlining, side trim panel 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.

Do-it-yourself tips

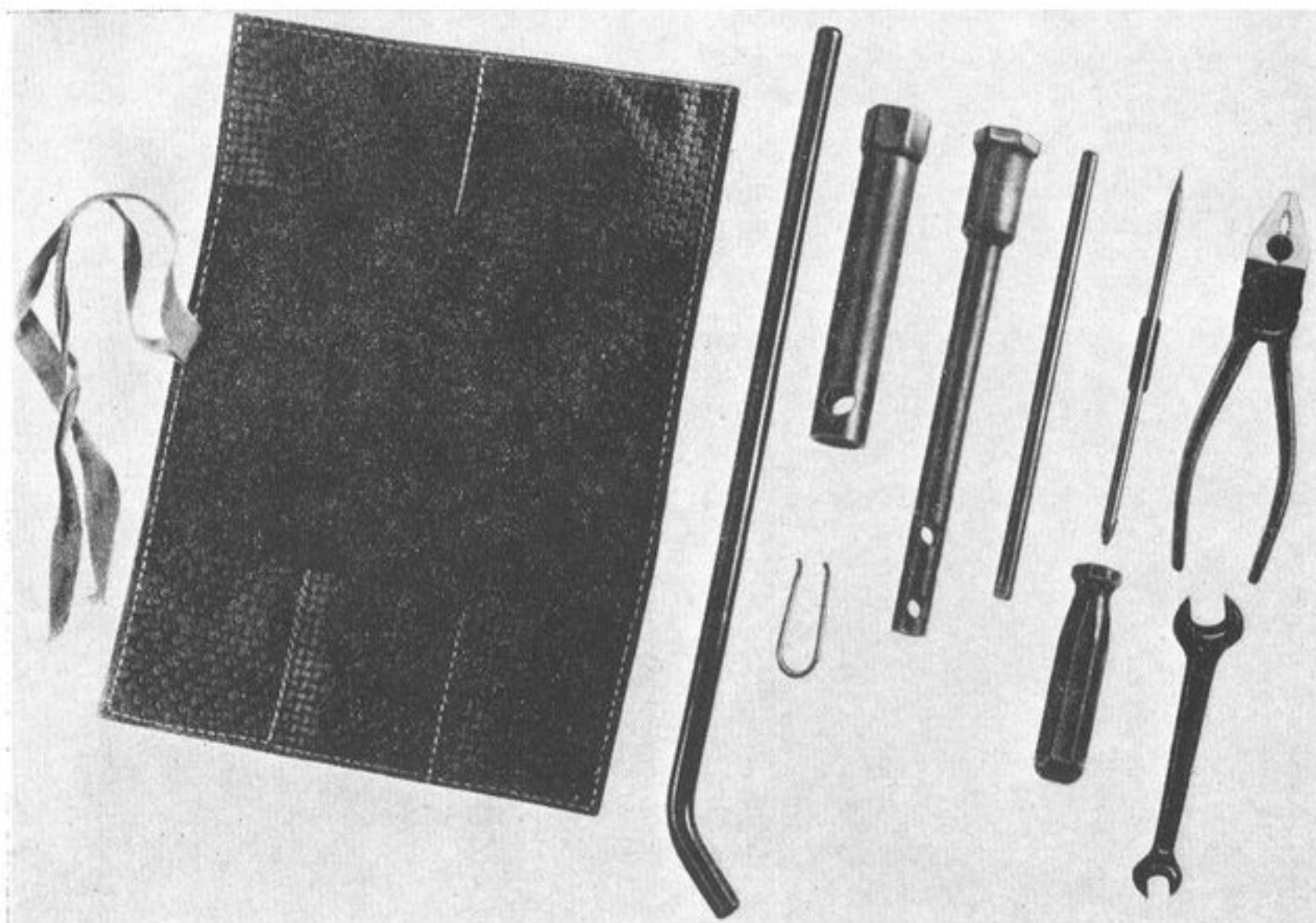
Just in case you have to carry out a repair yourself we have included some information on the next few pages which should help you.

All other repairs should always be performed by an Authorized Volkswagen Dealer.

The tool kit supplied with your car contains the following:

- a short socket wrench — for the wheel bolts
- a long socket wrench — for the spark plugs*)
- a long bar — for wheel bolt wrench and jack
- a short bar — for the plug wrench
- a puller hook — for the wheel caps
- a screwdriver with reversible blade — for slotted and Phillips screws
- a double-ended open wrench — for 8 and 13 mm nuts and screws
- a pair of combination pliers

Whenever you see the familiar VW sign on the roadside, you can be sure of expert advice and quick, efficient assistance.



*) VW 411 Three Door Sedan: short socket

Changing wheels

Apply the hand brake and block the wheel opposite the defective wheel.

Before taking out the spare wheel, disconnect the hose — arrow — leading to the windshield washer container.

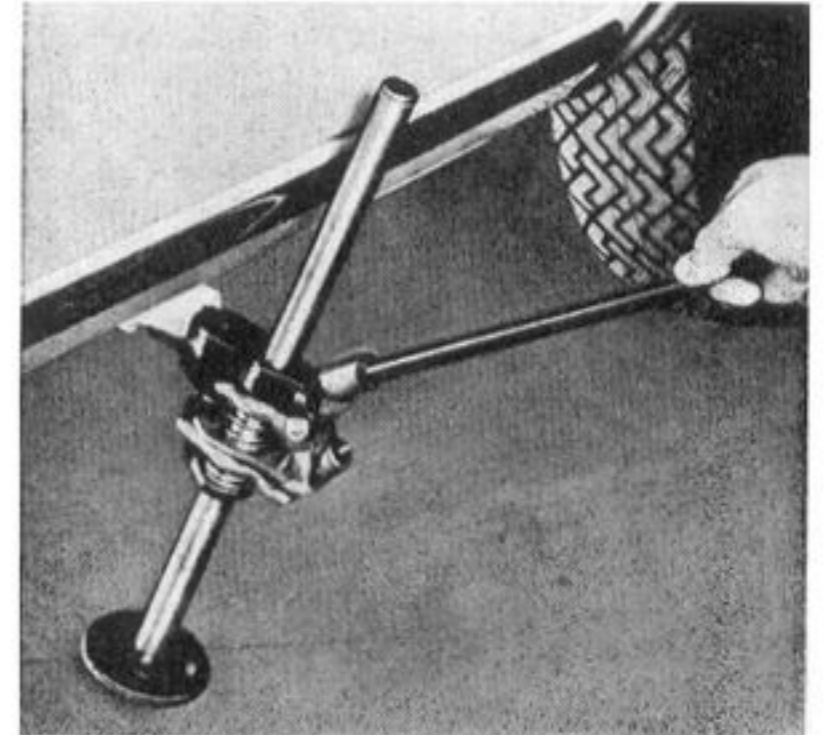
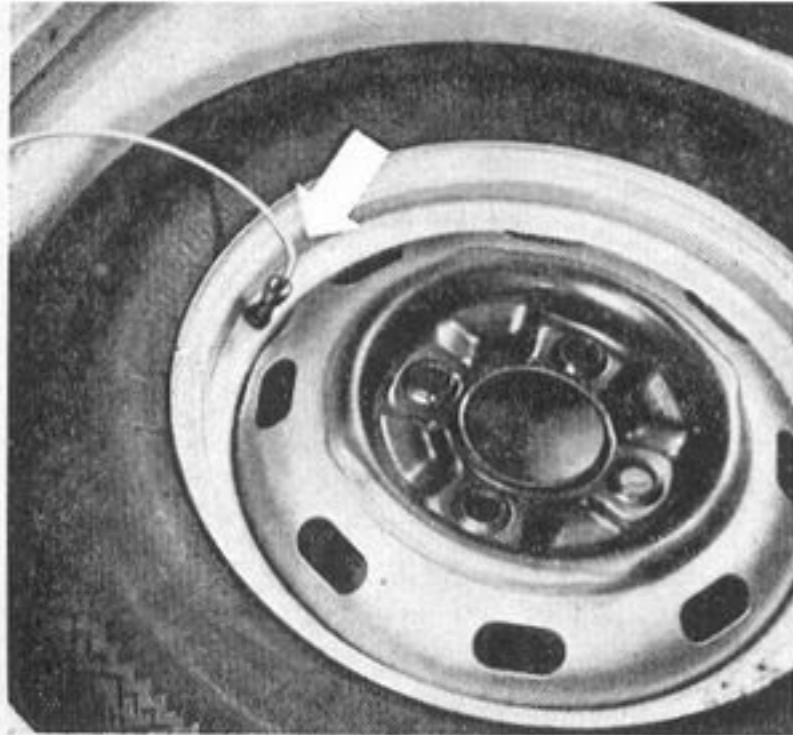
Take off hup cap with remover and jack bar by hooking the remover into the holes in the edge of the cap and levering against the wheel rim with the jack bar.

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

Insert jack into socket and push the jack tube down until it touches the ground. Place bar in **upper link** of jack and **raise** vehicle by pumping handle up and down.

Note:

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



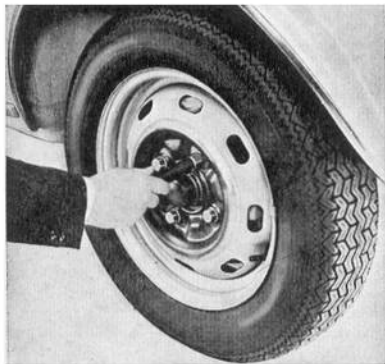
Unscrew wheel bolts and take wheel off.

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

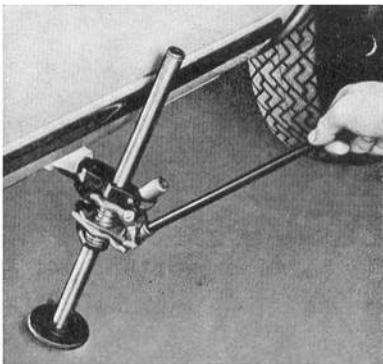
Insert the bolt and tighten it only so far that the wheel can be swung around to align the other holes.

Insert remaining bolts.

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



Insert bar in **lower link** of jack and **lower** the vehicle by pumping handle up and down.



Insert bar into wrench and tighten the wheel bolts diagonally to 110 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 64 (VW 411 Four Door Sedan) and
page 84 (VW 411 Three Door Sedan).



Towing

A towrope can be attached to the towing eyes at front or rear.

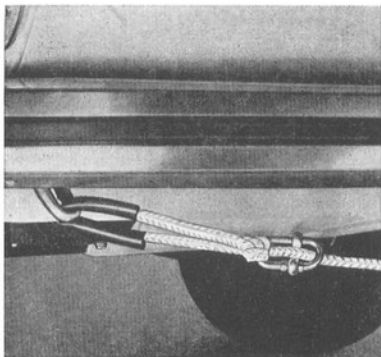
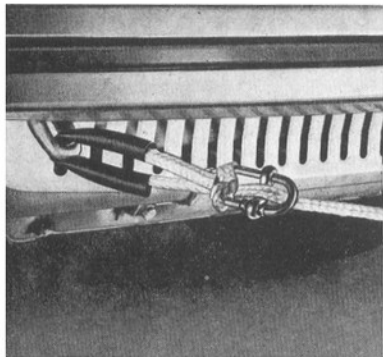
Avoid using excessive towing effort and do not jerk.

During towing operations on other than paved roads there is the danger that the attachment parts on the car can be overloaded and damaged.

The towrope should be slightly elastic in order to reduce the jerking between towing and towed vehicle.

The driver of the vehicle should keep the towrope taut.

Further instructions on towing and being towed with the automatic transmission are given on page 45.



Always observe state laws and municipal ordinances governing towing.

Cleaning or replacing spark plugs

Pull connector off.

Remove plug with socket wrench and bar.

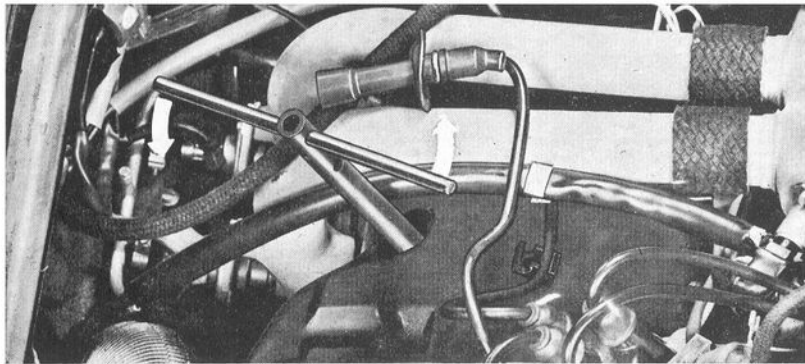
Take care not to crosstread the plugs when inserting them, and tighten them firmly, but do not overtighten.

Dirty plugs should be cleaned with a sand blaster but in an emergency, the carbon can be removed with a chip of wood. Do not use a wire brush.

The plugs should also be clean and dry on the outside to avoid shorting and tracking.

The gap can be set by bending the outside electrode. The gap should be .028 in.

New plugs should be installed every 12,000 miles.



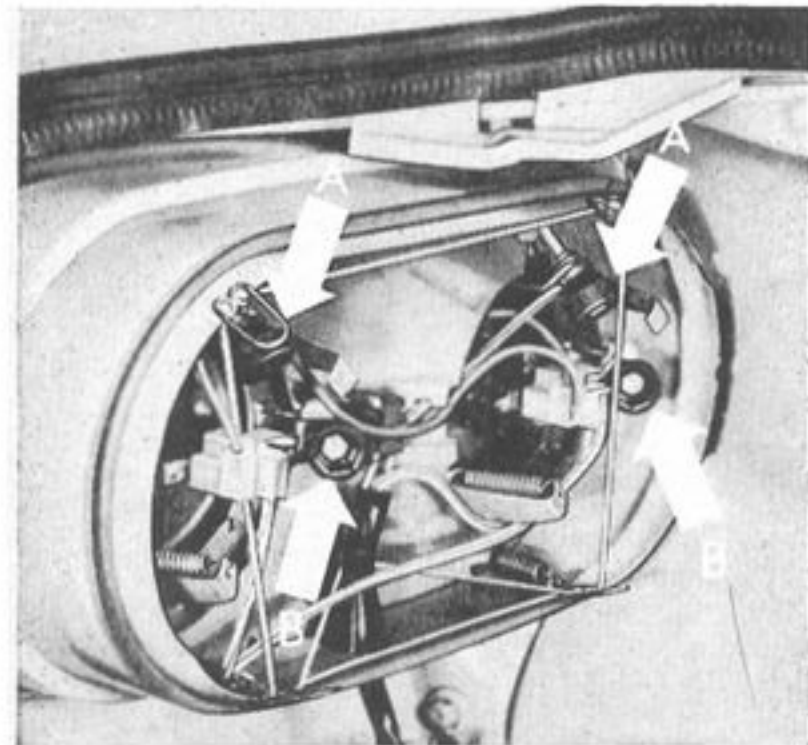
Adjusting headlights

It is 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.

Outer headlight = Low beam / High beam
 Inner headlight = High beam



Each beam and each headlight is set separately. The headlights have adjusting screws on the back of the reflectors for vertical and lateral aim.

A = Vertical adjustment

B = Lateral adjustment

The screws are accessible after lifting hood and taking the protective caps off.

No tools are required to adjust the beams.

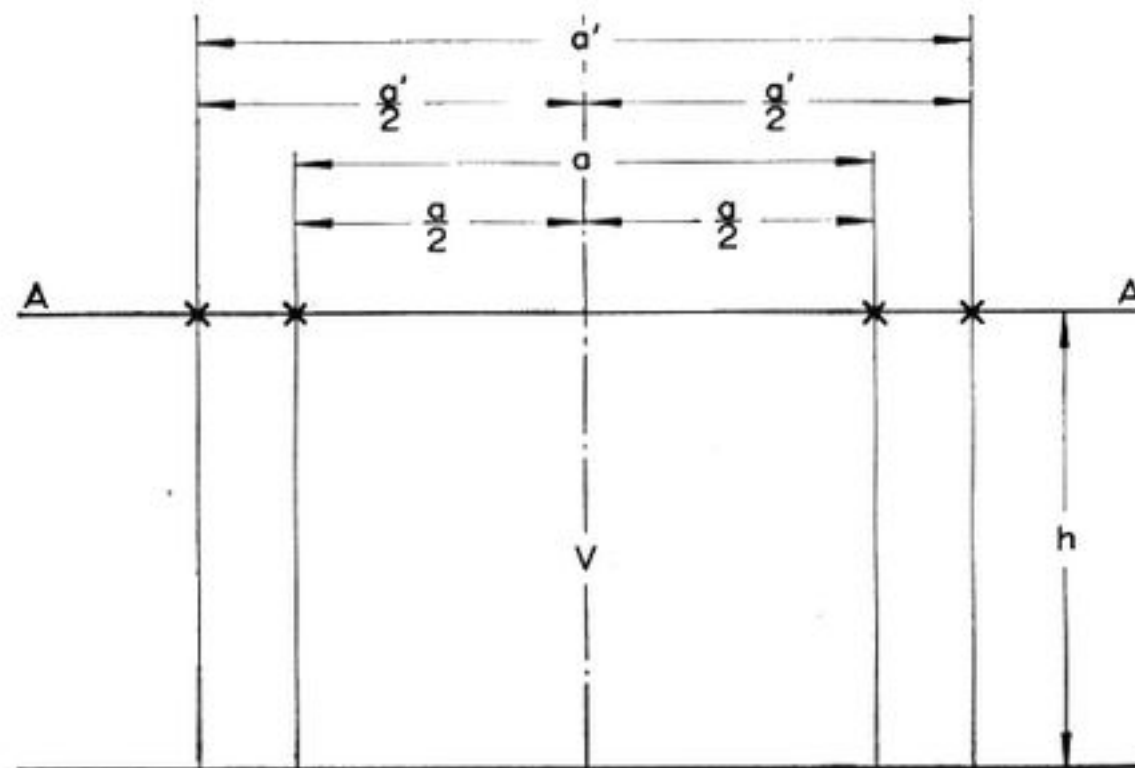
Preparation of wall

- Make a mark on the wall in line with the longitudinal centerline of the vehicle. The vertical line — V — is then drawn at this point.
- Measure height of headlight center — h — from ground (— h — is the same for low and high beam headlights). Make the horizontal line A—A on the wall at this height.

Distance between headlight centers

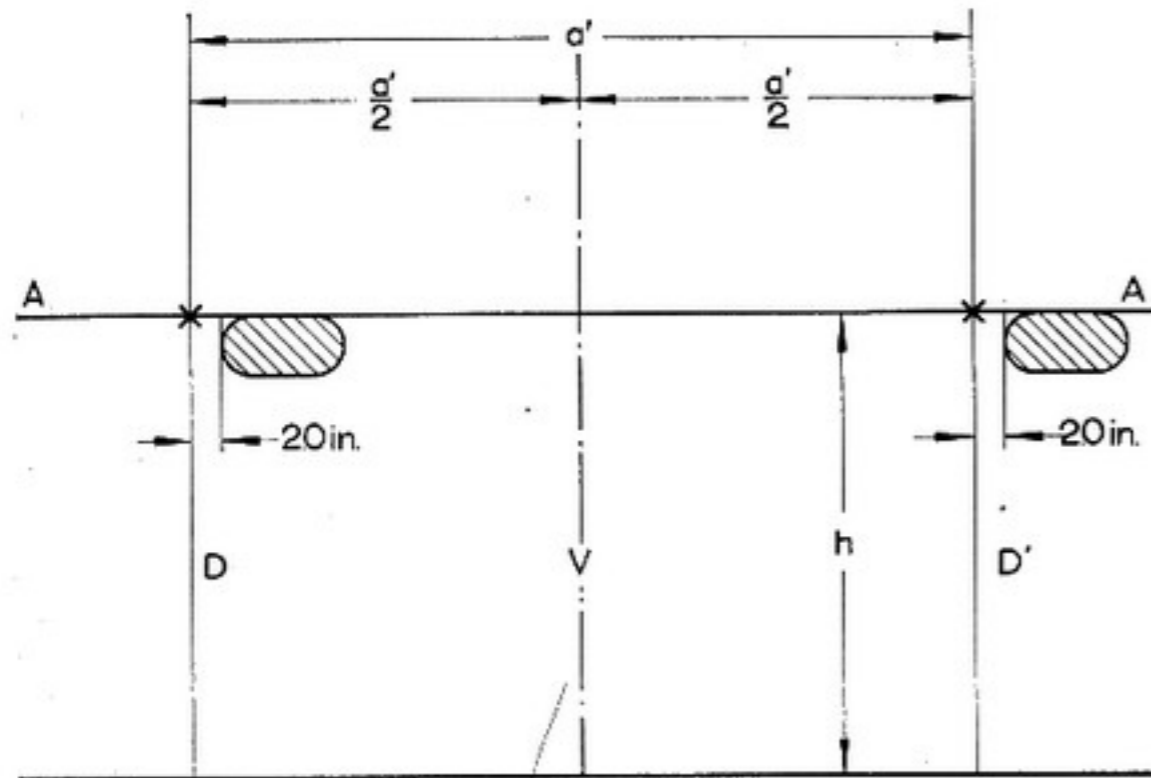
$$a = 37.3 \text{ in.} \quad \frac{2}{a} = 18.65 \text{ in.}$$

$$a' = 50 \text{ in.} \quad \frac{a'}{2} = 25 \text{ in.}$$



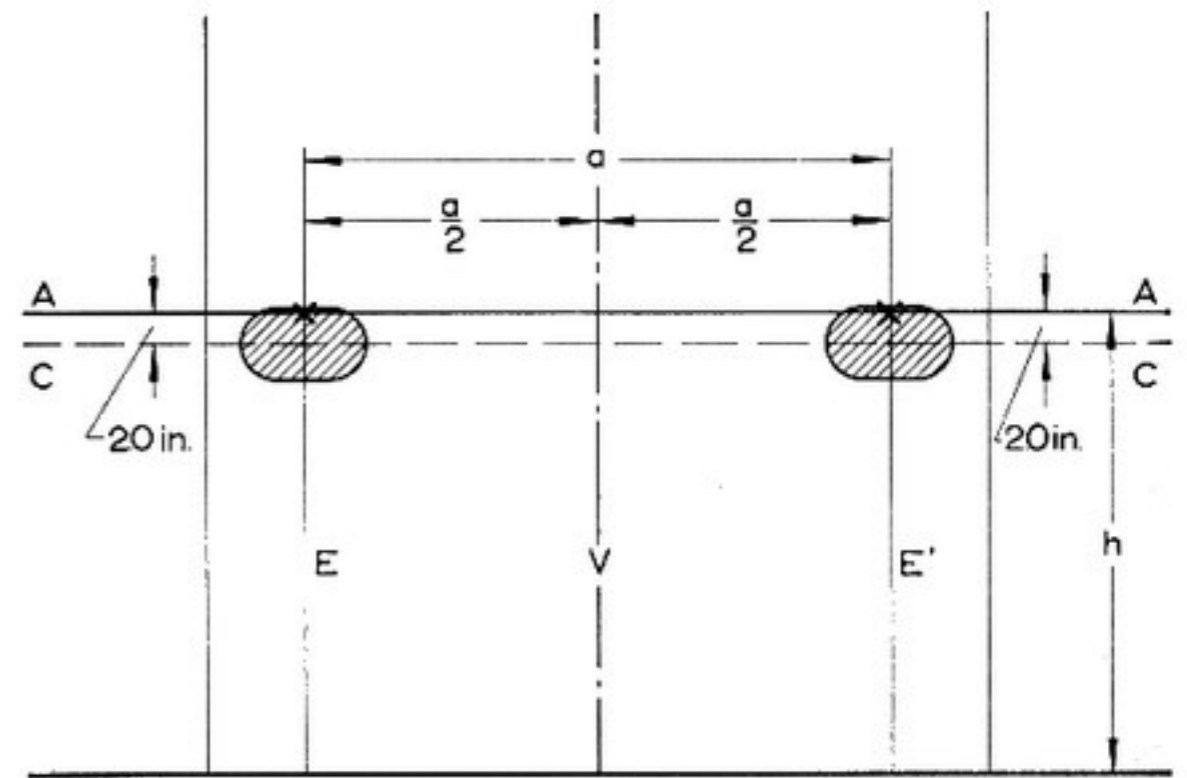
Setting the outer headlights:

- Cover one headlight and adjust other one to correct height first. The top edge of the high intensity zone should be on horizontal line A—A.
- Then adjust laterally so that the left edge of high intensity zone is 2.0 inches to the right of the lines D or D'.



Setting the inner headlights:

- Cover one headlight and adjust the other one by turning knurled screw until the bright spot is centered on the cross formed by the horizontal line C—C (2.0 inches below line A—A) and the vertical lines E or E'.
- Adjust other headlight in the same way.



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

Replacing bulbs

Before replacing a bulb, switch the appropriate light off. Avoid touching new bulbs with bare fingers. Finger marks left on the glass evaporate when the bulb is hot. The resulting film on the reflector might cause it to spoil.

You will find a bulb chart on page 64.

A bulb kit containing a small assortment of bulbs is available at any Authorized VW Dealer.

Headlights

The sealed beam units in the center are for high beam and have one filament, the outer units are for low beam and high beam and have two filaments.

Should it be necessary to replace either one of them, proceed as follows:

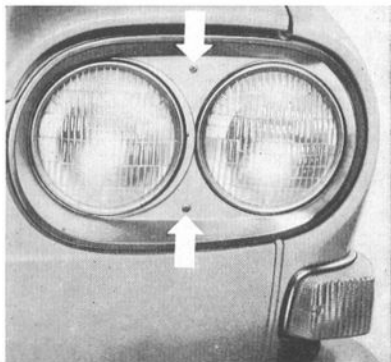
Open front hood — remove knurled screw and take plastic cap off headlights. There are two ridges on the bottom edge of the cap to facilitate removal.

Pull connector off defective lamp. Remove two Phillips screws and take trim plate off.

Loosen the three Phillips screws and take out retaining ring and lamp insert. Note that the Sealed-Beam insert for the high beam (inner) has two cable connecting tabs and the insert for low beam has three tabs. The housings have lugs which engage the setting ring so that the Sealed-Beam inserts are installed correctly.

When putting the plastic caps back, make sure that the rubber seal is located correctly.

Do not overtighten the knurled screw.



Parking / Front turn signal and side Marker bulb

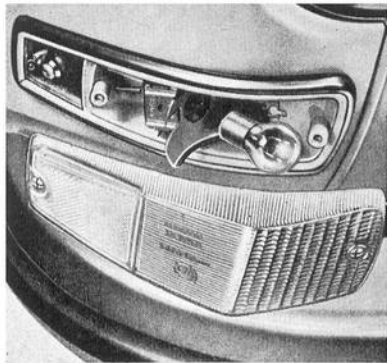
Remove two Phillips screws.

Take lens off.

Press bulb into holder lightly, turn and take out.

When installing the new twin-filament bulb, the pin nearest to bulb glass must show to the right.

Do not overtighten the screws.



Rear lights — The lenses of the three compartment rear lights are in two parts. Turn signal (red) — Reflector. Brake-, tail-, back-up lights (red, red, white).

Each lens is secured with two Phillips screws.

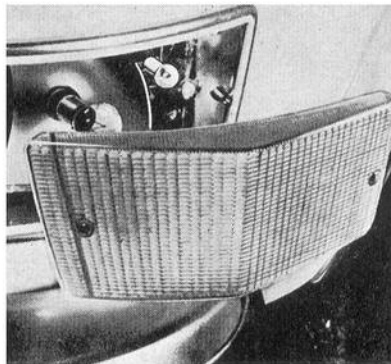
Rear turn signal or side Marker bulb

Unscrew two Phillips screws until lens can be taken off.

Press bulb lightly into holder, turn and take out.

Install new bulb.

Do not overtighten the screws.



Bulbs for brake-, tail-, back-up lights

Unscrew two Phillips screws until lens can be taken off.

Bulb positions:

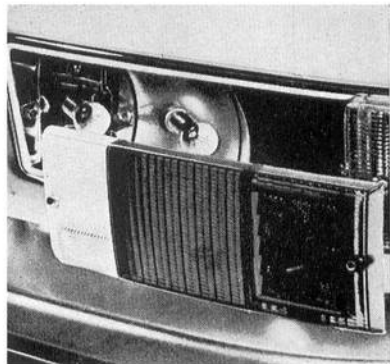
Outer — brake and tail light

inner — back-up light

Press bulb lightly into holder, turn and take out.

When installing the twin-filament bulb for brake and tail lights, the pin nearest to bulb glass must be to the right on top.

Do not overtighten the screws.



License plate light bulb*)

Unscrew two Phillips screws until lens can be taken off.

Press bulb lightly into holder, turn and take out.

Install new bulb.

Do not overtighten screws.

Interior light bulb

Pull interior light out carefully with a screwdriver.

Take bulb out.

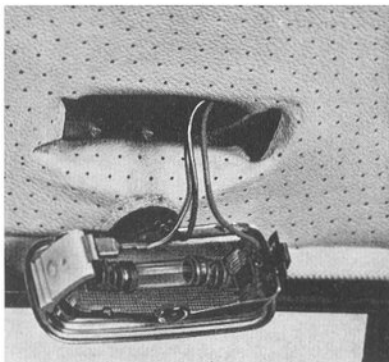
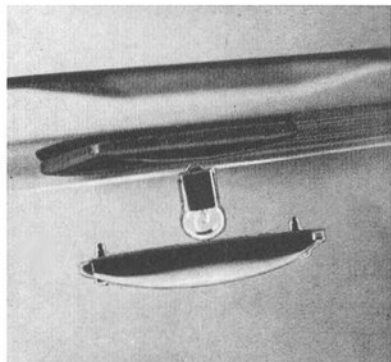
install new bulb.

Insert housing at rear first, then press it in until retaining spring engages.

Bulb chart

Bulb for	US Re- placement bulbs	VW Part No.		
Sealed beam (high beam)	4001	411 941 263 A		
Sealed beam (high/low beam)	4002	411 941 261 A		
Parking light, turnsignal and sidemarker, front	1034	N 17 738 2		
Side marker, rear	67	N 17 718 2		
Brake/tail light	1034	N 17 738 2		
Back-up light	1073	N 17 710 2		
License plate light	69	N 17 719 2		
Interior light	—	N 17 723 2		
Instrument lighting: Speedometer Clock Indicator light	}	N 17 751 2		
Warning lights: High beam Parking light Turn signal Oil pressure Generator Heating			}	N 17 751 2
Emergency flasher Dual circuit brakes Heated rear windows				

*) VW 411 Three Door Sedan see page 84.



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 and 16 amp fuses in the vehicle.

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

Symbols on the plastic cover indicating the location of the main fuses.

Terminal 58 — Parking lights

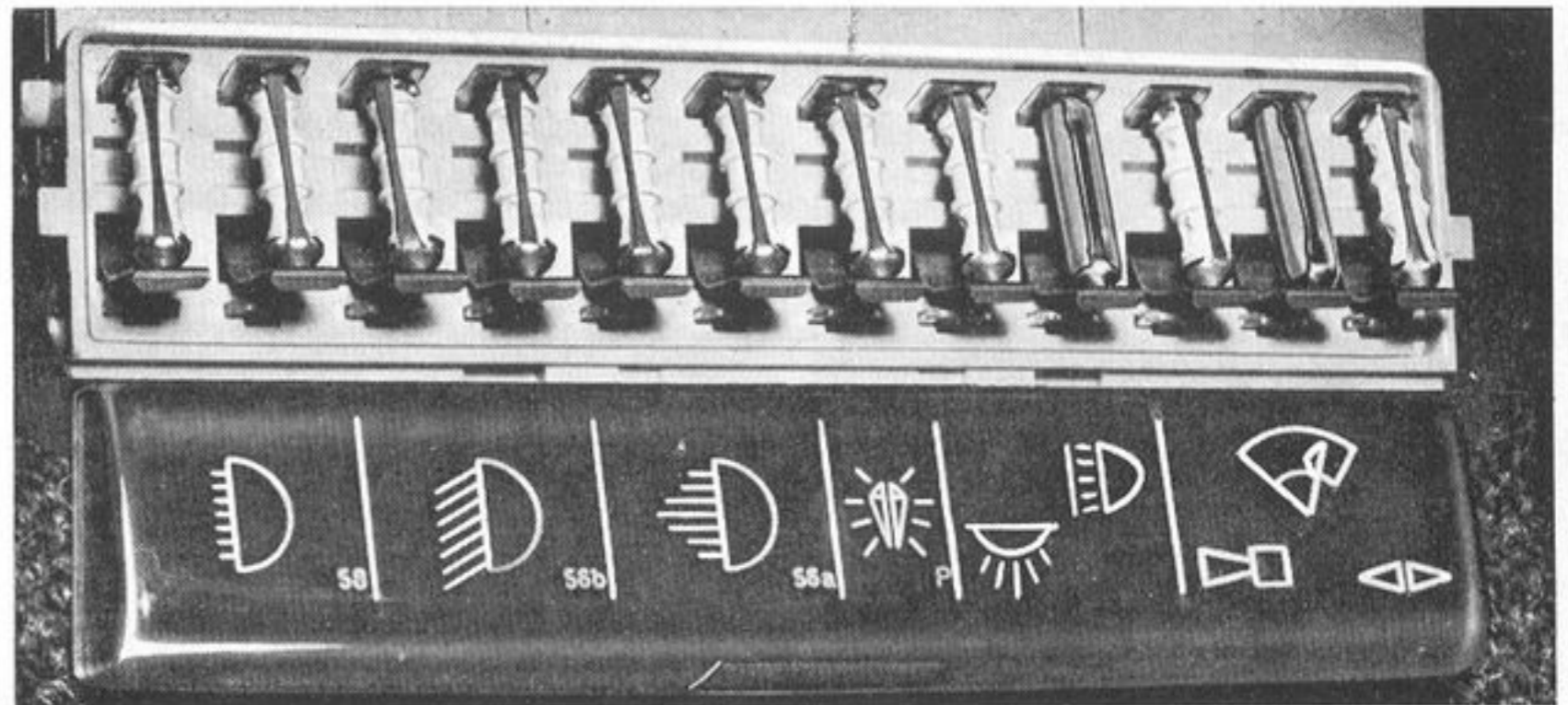
Terminal 56b — Low beams

Terminal 56a — High beams

Terminal P — Fuel pump

Terminal 30 — interior light

Terminal 15 — Wipers, horn, turn signals



Replacing fuses in fuse box

Take transparent cover off by pressing it up at the bottom.

Take blown fuse out.

Install new fuse — do not bend retaining springs.

The fuse must fit tightly.

Insert cover at top and press it down.

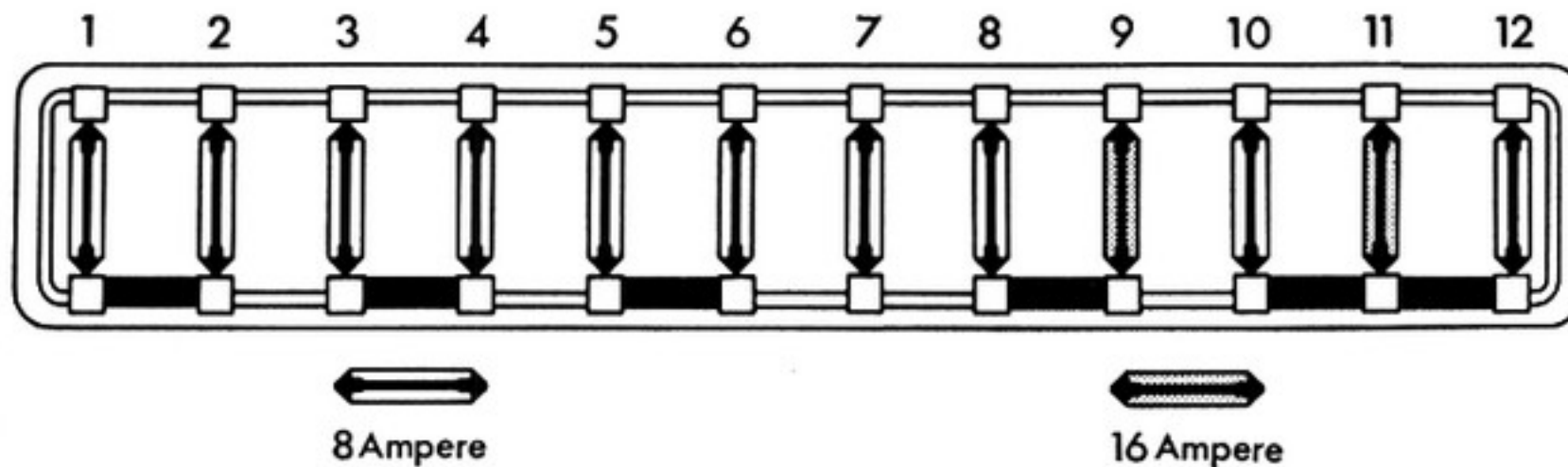
Replacing fuse in connector

Press two halves together lightly and twist until connector can be opened.

Take fuse out.

Install new fuse.

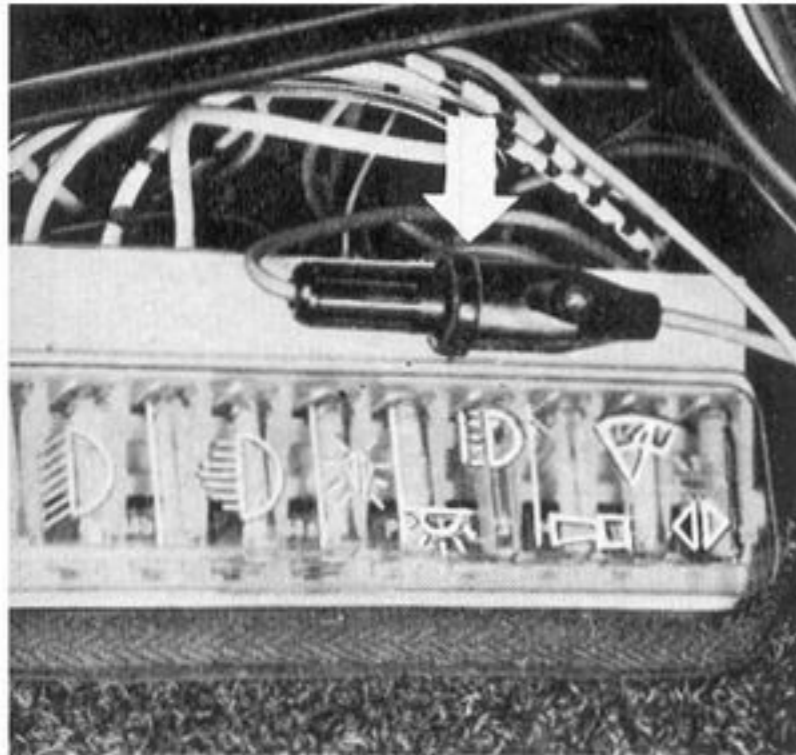
Press halves together lightly and twist until they engage.



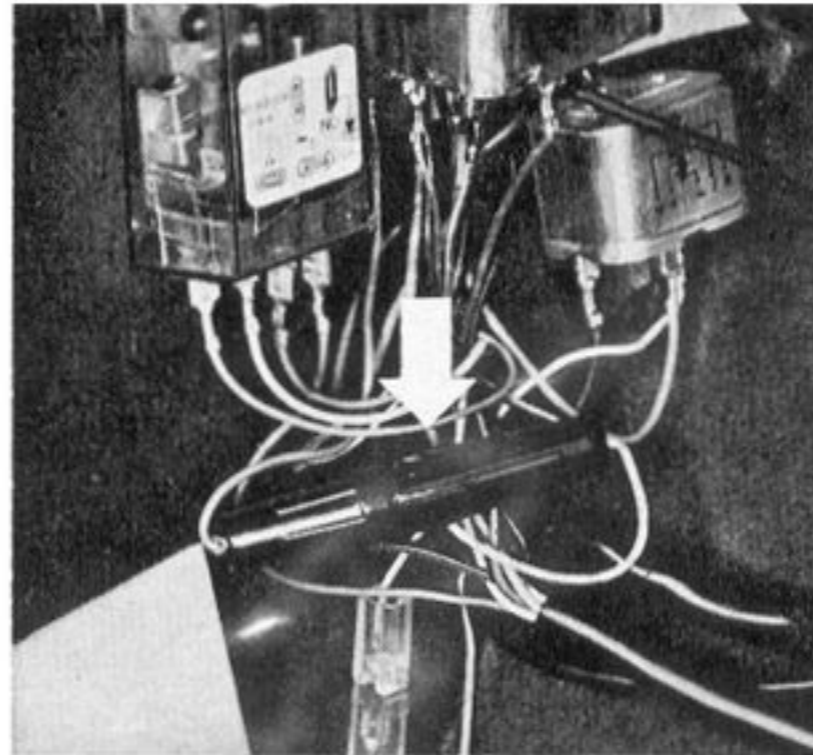
The individual circuits connected to the 12 fuses are as follows (reading from left to right):

- 1 - Left and right parking lights, right tail light, right rear side marker light, license plate light
- 2 - Left tail light, left rear side marker light
- 3 - Left low beam
- 4 - Right low beam
- 5 - Right high beam
- 6 - Left high beam, high beam control light
- 7 - Fuel pump
- 8 - Emergency flasher, interior light
- 9 - Cigarette lighter, heater (switch current)
- 10 - Left and right stoplights, horn
- 11 - Windshield wipers, back-up lights (autom. transmission)
- 12 - Turn signals, fuel gauge, rear window defogger (switch current), fresh air fan, warning light for oil pressure and generator

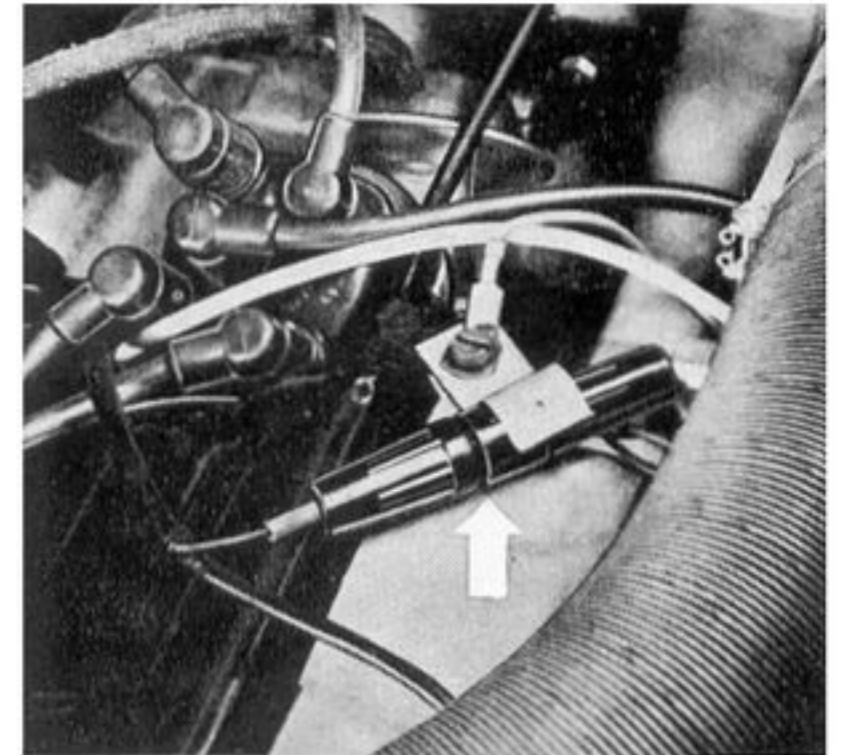
The main current circuits for the heating and heated rear window have a common 16 amp. fuse which is located in a connector under the instrument panel above the fuse box.



An 8 ampere fuse on the heater booster relay which is fitted on the left side of the engine compartment prevents the heater from damage due to overheating.



On vehicles with manual transmission there is a further 8 ampere fuse in a connector in the engine compartment near the distributor. This fuse is for the back-up lights.



The battery

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

When the driver's seat is tilted backward, the filler plugs can be removed from the battery. The electrolyte level should always be in accordance with the mark. If the level is too low, add distilled water.

The electrolyte level drops when the battery is charged due to dissociation of water used to dilute the electrolyte and, to a lesser extent, to evaporation.

How often distilled water has to be added, depends mainly on operating conditions and directly on the time of year.

When a vehicle is often driven long distances in the daytime with hardly any current being used, distilled water has to be added 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.

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 is 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 recharged 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 the vehicle, disconnect both battery cables to avoid serious damage to the electronic components of the electrical equipment, especially to the control unit of the fuel injection system.

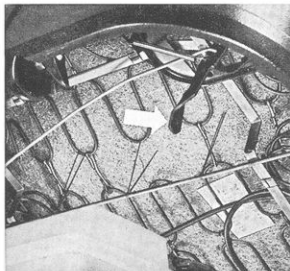
Checking battery

The battery of the VW 411 is located under the driver's seat.

To check the battery slide the driver's seat fully backward. Adjust seat to its highest position using front lever. Move the backrest as far forward as possible.

From the door side reach under driver's seat and pull the locking lever toward you. Hold the lever and tip the seat to the rear.

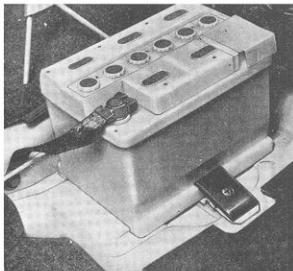
To reinstall the seat pull the lever and engage it again in the height adjusting support.



Checking the electrolyte level

Unscrew plugs and check that the electrolyte is up to the mark.

If the level is down add distilled water.



Removing battery

Lift cover over positive terminal (do not take cover off).

Loosen both connections and take main and ground cable off.

Remove screw in hold-down bracket.

Move battery slightly to the rear and lift it out.

The terminals and posts must be kept clean and coated with terminal grease after battery has been installed.

Ensure that the ground cable makes metal to metal contact and that it is attached firmly to the body.

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 make to get your Volkswagen 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 and ignition timing requires special equipment and training. We suggest that you consult your Authorized Volkswagen Dealer.

Problem	Probable cause	What to do
A - Starter will not turn engine or turns it too slowly	1 - Battery run down 2 - Battery cables oxidized or loose, Battery dead	- Have battery charged or replace. Try to start vehicle by pushing with manual transmission (ignition on, clutch out, 2nd gear engaged. When vehicle is rolling, let clutch in quickly). Vehicles with automatic transmission cannot be push started Clean battery terminals or tighten them. Important To avoid short circuits, take ground cable (—) off first and connect positive cable (+) first. - Have battery charged or replace. Try to start by towing vehicle (ignition on, clutch out, 2nd gear engaged. Let clutch in slowly at about 20 mph). Automatic transmission: See your Authorized VW Dealer.

Problem	Probable cause	What to do
	3 - Starter switch, cables or starter defective	<ul style="list-style-type: none"> - Manual transmission: Push or tow vehicle (see point A 1 and 2) to start engine and see your Authorized VW Dealer. - Automatic transmission: See your Authorized VW Dealer.
<p>B - Engine will not start even though starter is turning it over quickly Read instructions in section on "Starting engine" to ensure that correct procedure is being used. Check that there is fuel in the tank. Do not operate starter longer than 5 seconds at a time. Then switch ignition off and wait about 10 seconds before trying again. If engine does not start after 4 or 5 attempts, locate trouble with aid of table.</p>	<p>1 - Defect in ignition system</p> <p>2 - Plugs wet or dirty</p> <p>3 - No current at coil</p>	<ul style="list-style-type: none"> - Check ignition. Wipe wet cables dry. Pull connector off a plug, and screw connector off cable. Grip cable with piece of dry cloth and hold end about 1/4 in. from a metal part. Have someone turn engine over (gearshift lever or selector lever in neutral). A strong spark should jump from end of cable to metal part. - If a spark appears, take plugs out. Dry plugs, clean electrodes with a chip of wood and check gaps. Install new plugs if necessary. If engine still does not start, look for defect in fuel system. - If there is no spark when checking as at point 1, pull the thin black cable (terminal 15) off the tab on the

Problem	Probable cause	What to do
	<p>4 - Coil defective, breaker points in distributor faulty</p>	<p>coil, switch ignition on and touch cable end briefly to a bare metal part. There should be a spark. If there is no spark, there is a break in the circuit. See your Authorized VW Dealer.</p> <ul style="list-style-type: none"> - Automatic transmission: Switch ignition off, take distributor cap and rotor off, clean points with piece of thick paper calling card. Have someone turn engine over with starter. Every time the points open there should be a strong spark. If there is no spark, see your Authorized VW Dealer. - Manual transmission: If there is a spark, switch ignition off and engage 4th gear. Take off distributor cap and rotor. Push vehicle until points are fully open. The breaker gap should be .016 in. Push vehicle again until points are closed. Clean contacts by pushing a thick paper (calling card) back and forth between the points. Have someone to turn the engine over with starter. Everytime the points open a strong spark should appear between the points. If there is no spark, see your Authorized VW Dealer.

Problem	Probable cause	What to do
5 - Distributor cap and rotor damp or damaged	6 - Defect in fuel system: Mixture too rich due to incorrect starting procedure	- If engine does not start even though there is a spark at the breaker points, wipe cap and rotor with a clean cloth and check for damage, cracks and burning. The carbon brush in the cap must spring up again when pressed in and must not be broken.
7 - Fuel pump fuse blown.		- Switch electric fuel pump off by taking the fuse out (see list of fuses). Start engine with full throttle and let it run until it stalls automatically. Install fuse again and start in normal way. - Install new fuse. If new fuse blows again, see your Authorized VW Dealer.

Lubrication

Fuel

The Volkswagen 411 will run satisfactorily on premium fuel which fulfills the octane requirement of the engine (98 octane).

Engine oil

Always use a name brand oil labeled "For Service MS" for the engine of your Volkswagen.

Engine oils are graded according to their viscosity. The proper grade to be used in your engine depends on existing climatic or seasonal conditions.

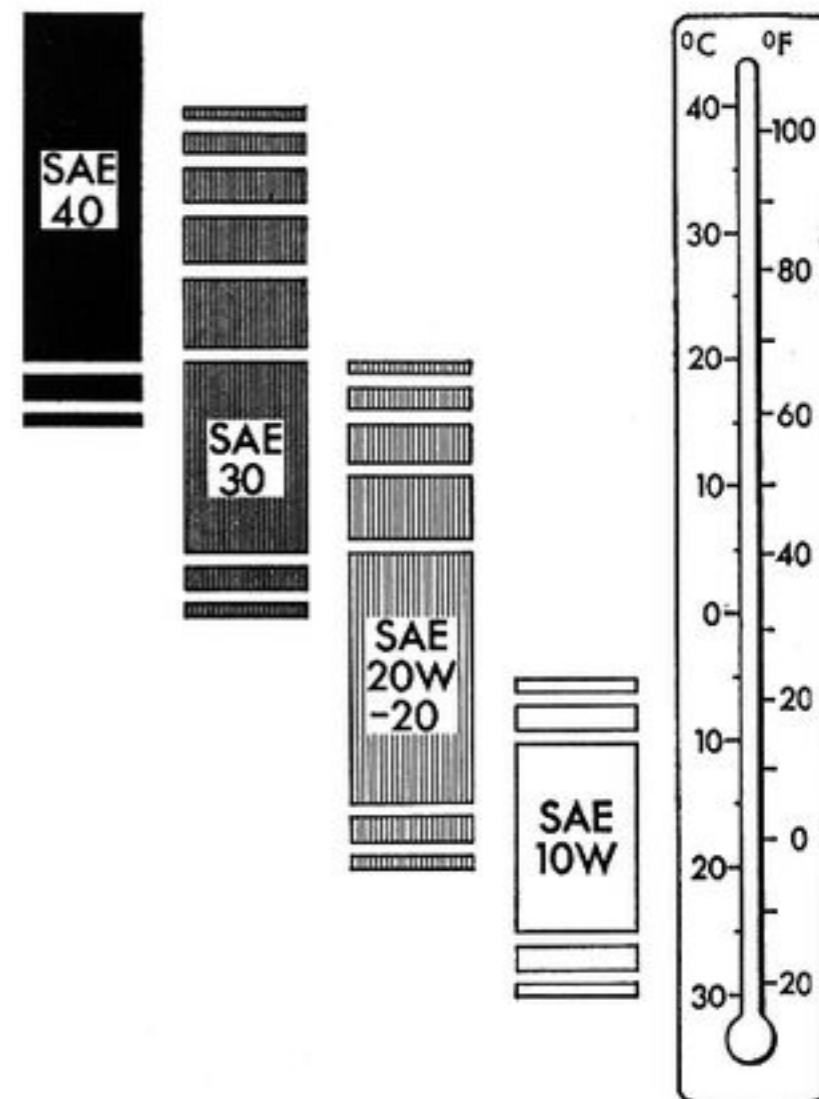
The following table contains the grading for oils to be used in VW engines:

Tropical climate	Hot season		SAE 40
	Cool season		SAE 30
Moderate climate	Summer		
	Winter	At average outside temperature of above 5° F	SAE 20 W—20
		At average outside temperatures not lower than —13° F	SAE 10 W*

If outside temperatures are continuously below —13° F use SAE 5 W*).

*) Avoid high speed long distance driving when using SAE 10 W or SAE 5 W if outside temperatures rise above the indicated limits.

Temperature ranges of SAE grades



As temperature ranges of the different oil grades overlap, **brief** variations in outside temperatures are no cause for alarm. It is also permissible to mix oil of different viscosities if you find it necessary to add oil.

Engine oil changes

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 — A —.

Flushing is not necessary but the strainer — B — must be removed and cleaned at every oil change.

Always use new gaskets and washers.

The center nut for the oil strainer should be tightened with a torque wrench. The correct torque is 7—9 lb. ft. (1.0—1.3 mkg).

The oil change quantities are:

with filter change	3.7 quarts (3.5 liters)
without filter change	3.1 quarts (3.0 liters)

Select oil with the specification "For Service MS." Due to its detergent properties, the fresh oil will look 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 3,000 miles.

It is recommend more frequent oil changes — every 1,500 miles — in the winter if you drive mainly short distances and in city traffic.

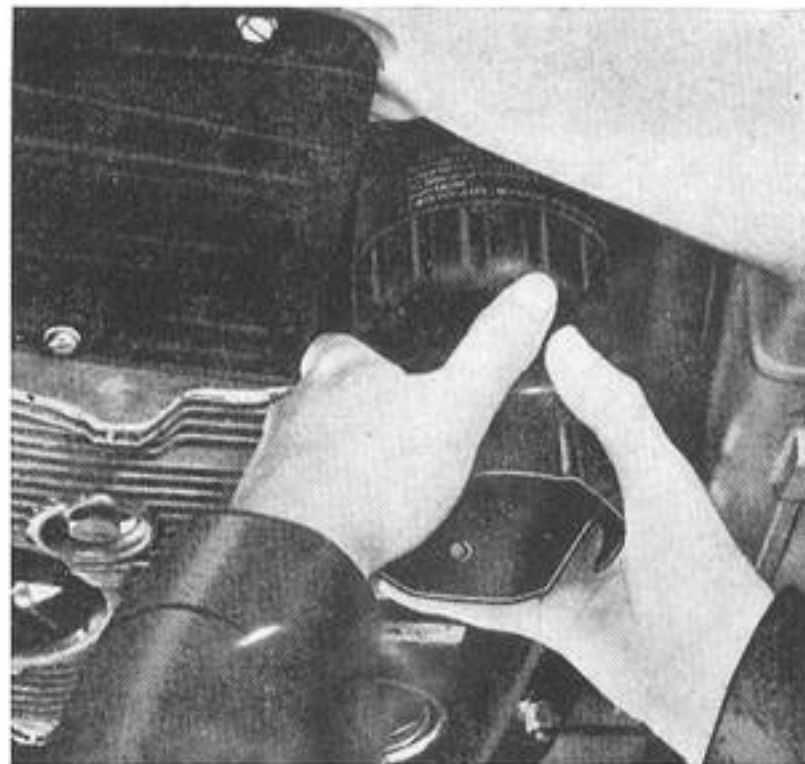
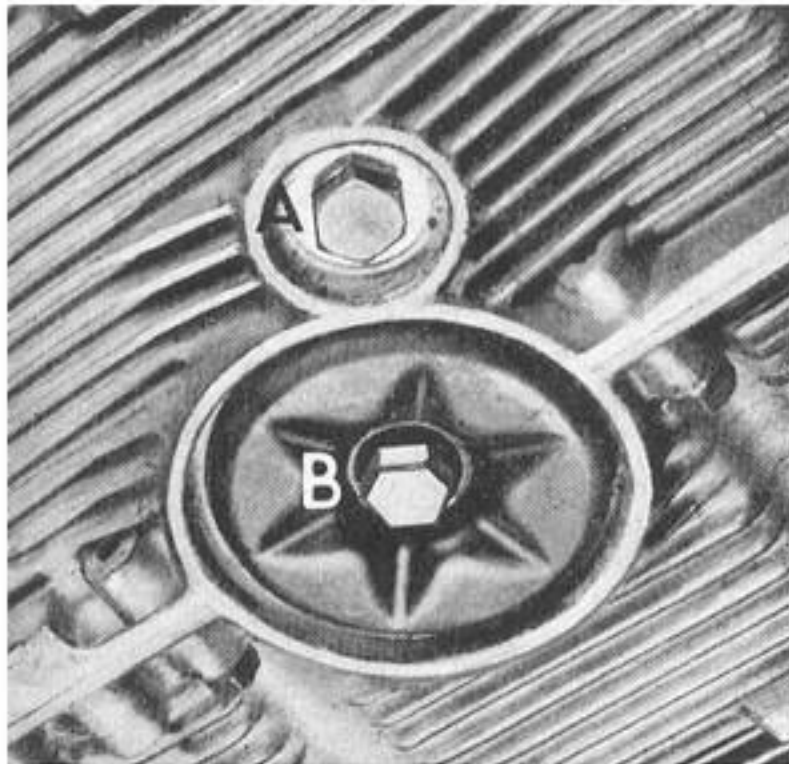
If you drive only a few hundred miles a month under these conditions it is advisable to have the oil changed every 6 to 8 weeks.

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

A special wrench is required to screw the oil filter off and on.

Lubricant additives

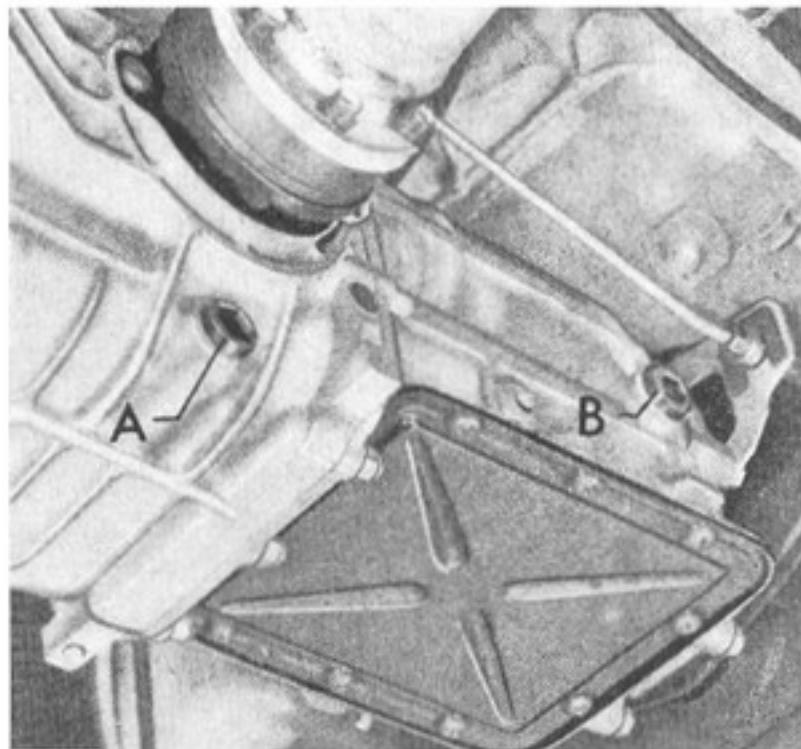
No additives of any kind should be mixed with the fuel, the lubricating oils or fluids.



Transmission oil

Transmission and final drive are combined in one housing and lubricated with the same SAE 90 hypoid oil.

The SAE 80 hypoid oil should only be used in areas with arctic climates.



Manual transmission oil changes

The transmission oil is changed at 600 miles by your Authorized VW Dealer. Later on it could become necessary to change the oil because of a considerable and prolonged change in temperature.

Then proceed as follows:

Drain the old oil when warm. The magnetic oil drain plug (A) must be cleaned carefully and 4.2 U.S. pints of good quality hypoid oil filled in.

The oil should be up to the edge of the filler hole (B).

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 correct amount of oil is used.

The oil level in the transmission should be checked every 6,000 miles.

At the same time the transmission should be checked for leaks.

ATF (Automatic transmission fluid)

The torque converter and the transmission are both operated with and lubricated by the same automatic transmission fluid.

ATF is a special oil for automatic transmissions and can be used all the year around.

All ATF fluids which carry the Dexron test mark, for example, Dexron® No. B 10100 can be used for Volkswagens with automatic transmission.

Suitable products are supplied by all well-known mineral oil firms.

Automatic transmission — Changing ATF

Every 6,000 miles the ATF level has to be checked. The dipstick — A — is used which also serves as a cover for the filler neck — B —. It is located in the engine compartment. To get a true reading, the dipstick should only be pulled out with the engine idling, the selector lever in Position — N — (hand brake applied) and the ATF warm.

The correct ATF level is very important for proper functioning of the transmission; therefore, the level should be checked carefully. Before measuring the level, the dipstick should be pulled out and wiped off with a clean piece of cloth.

The ATF level must not be above or below the two marks. Please keep in mind that the difference between the lower and the upper mark is only 1 U.S. pint.

To add ATF, a clean funnel with an approximately 20" (50 cm) long hose should be used.

Before inserting the dipstick, make sure that the ring-shaped handle of the dipstick is inserted vertically as otherwise proper functioning of the transmission cannot be assured.

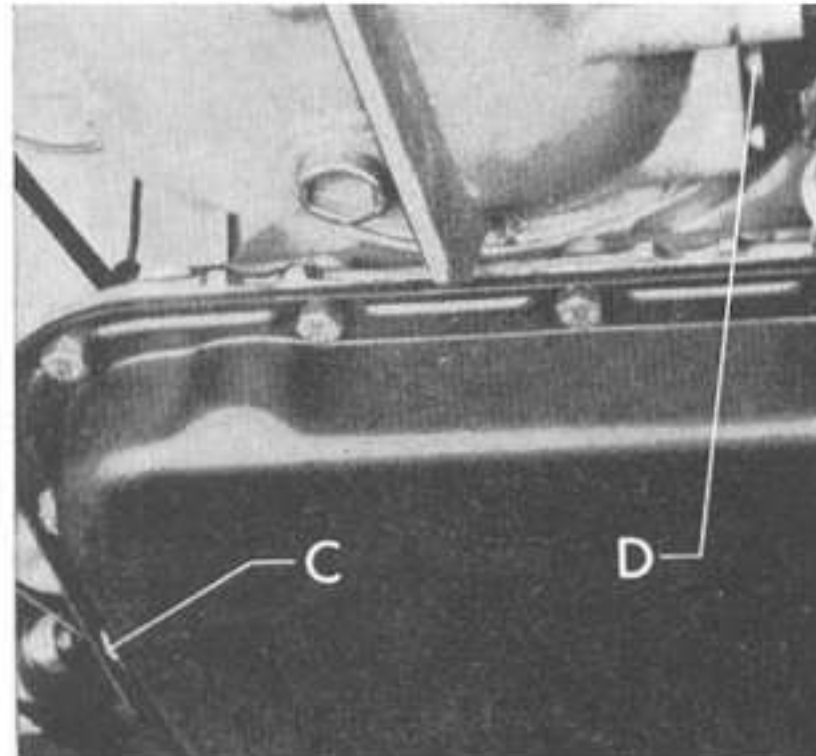
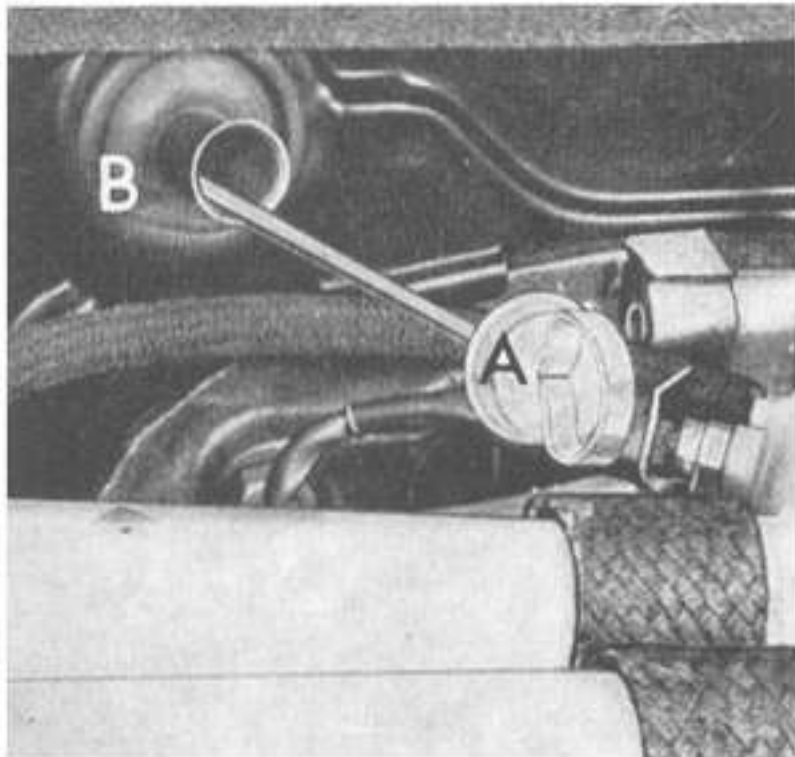
Every 30,000 miles the ATF filling has to be changed. If vehicle is operated under heavy duty conditions such as trailer towing, constant stop and go traffic, continuous mountain driving and extremely high outside temperature change ATF every 18,000 miles.

If in doubt, consult your Authorized VW Dealer.

Important

The vehicle may not be towed and the engine should not be idling when there is no ATF in the transmission.

The transmission oil in the final drive does not have to be changed, but the level should be checked every 6,000 miles. The oil should be up to the edge of the filler hole — D —.



Air cleaner

A dirty air cleaner does not only reduce the engine output, it can also cause premature engine wear.

If local conditions are such that the vehicle is often driven on very dusty roads, the cleaner must be checked frequently, even daily if necessary.

All the dust present in the air drawn in by the engine is retained by the filter element in the upper part of the air cleaner and washed out when the vehicle is in motion by the oil in the lower part.

In time, this causes a layer of sludge at the bottom of the lower part.

When there is only $\frac{3}{16}$ in. of oil above the sludge layer, the lower part must be cleaned and filled with fresh oil.

Removing air cleaner*)

Pull crankcase breather hose off air cleaner — A —, loosen clip and pull hose between air cleaner and intake air distributor off upper part of cleaner — B —, loosen clip on hose (connecting cleaner lower part and air duct) with Phillips screwdriver — C —, pull off hose for activated charcoal filter — D —, loosen wing screw in cleaner and pull out — lift air cleaner out in horizontal position.

Cleaning and installing air cleaner

Loosen two clips and take top part of cleaner off. The top part must not be laid down with the filter element upwards.

Clean lower part of cleaner carefully.

Fill it to mark with fresh engine oil (approx. .8 pints).

SAE 30 oil should be used normally all year around.

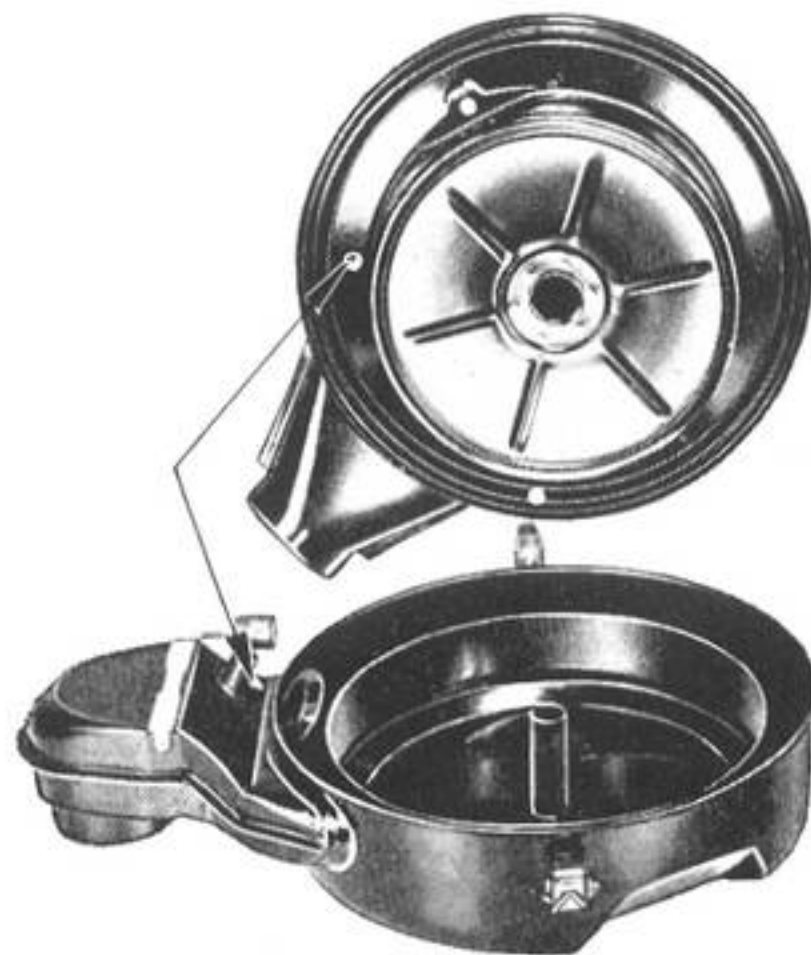
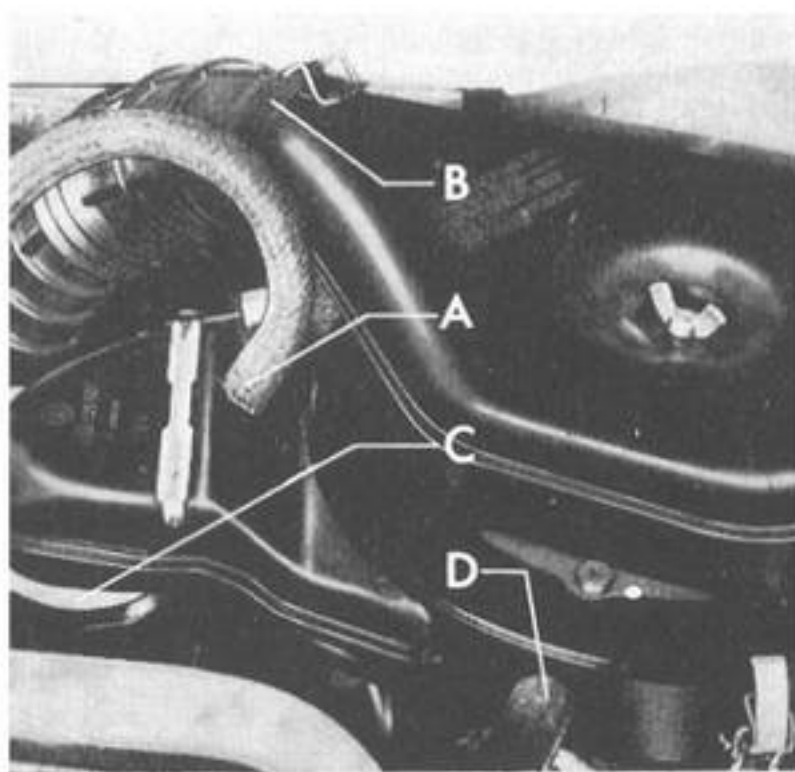
Use SAE 10 only in areas with arctic climate. The top part does not need cleaning normally, but if the filter element has become so dirty due to delayed cleaning of the bottom part or

oil shortage that the air inlet holes on the underside are partly blocked, the encrusted dirt should be scraped off with a piece of wood.

When assembling the air cleaner, ensure that the "4 L" mark on the upper part and the arrow on the lower part are aligned.

Before tightening the wing screw ensure that the hoses are located correctly.

Do not interchange hose — A — and — D —.



*) VW 411 Three Door Sedan see page 83.

Hinges, check straps, locks

At the top of the **hinge pins** 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 out.

Fill with SAE 30 engine oil as necessary and press plug in again.

The bearings of the two rollers for the **door check straps** (front doors only) should also be lubricated with SAE 30 engine oil.

Catch oil drops with a cloth and wipe hinges.

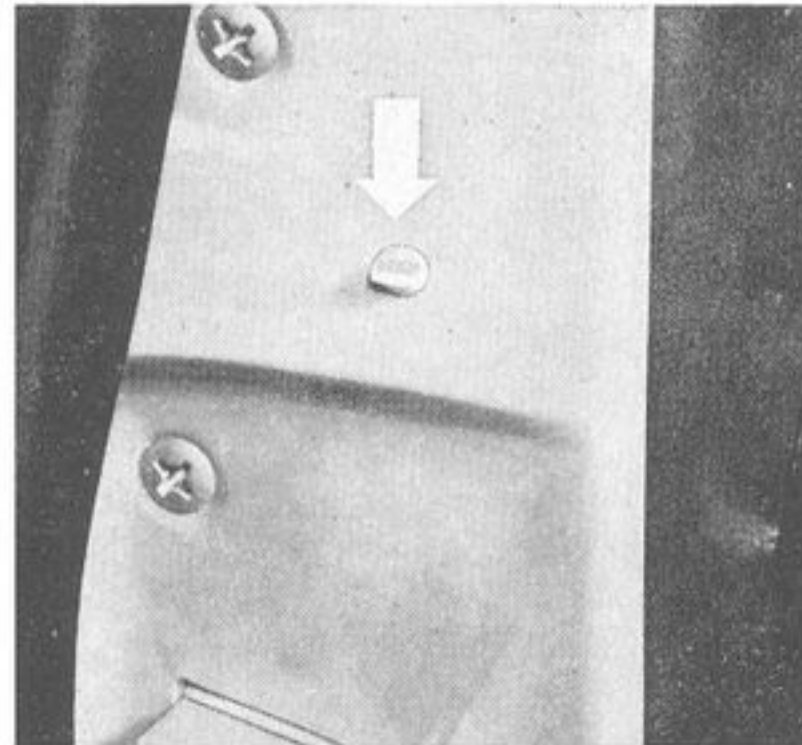
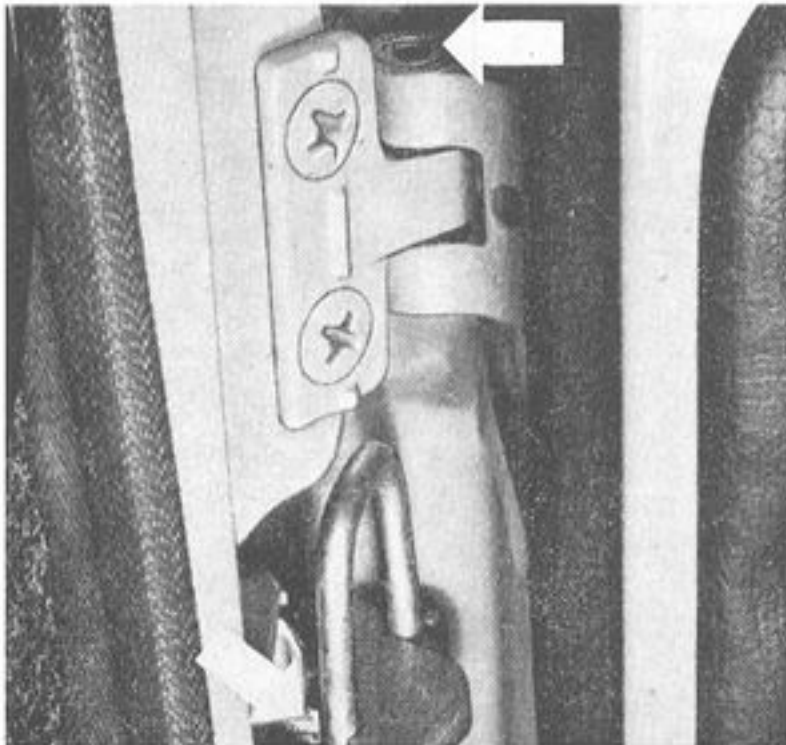
The **door locks** should be given a few drops of oil through a hole in the end of the door which is sealed with a plug.

The **hood locks** should be greased lightly if stiff in operation.

The **lock cylinders** are treated with graphite powder.

The key can be dipped into the graphite and then turned to and fro in the lock a few times.

The friction surfaces of the **latches and striker plates** should be greased lightly when necessary.



VW 411 Three Door Sedan

This vehicle is basically the same in its design as the VW 411 Four Door Sedan.

Details relating to the operation and care of the Three Door Sedan are given on the following pages.

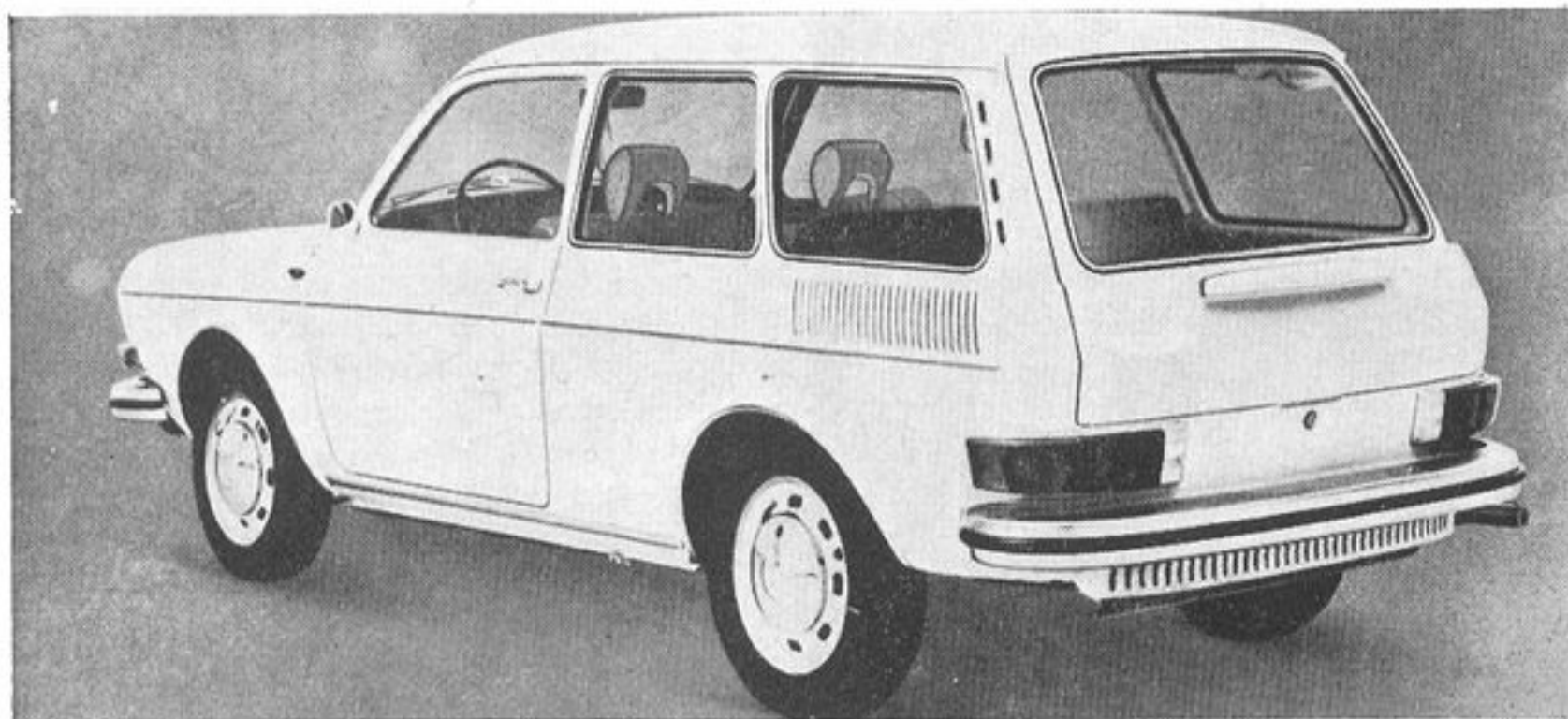
Rear door

The symmetrically shaped key for the front doors and the steering/ignition lock is also used for the rear luggage compartment lid.

To lock and unlock the lid — turn the key one quarter turn to left or right.

To open lid — press button, lock disengages. Grasp lid in recess and lift it up until it is held in the fully open position by torsion springs. Do not let the lid fly up on its own as this may damage the hinges.

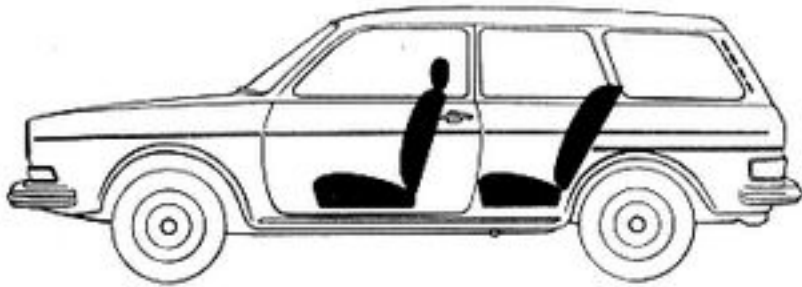
To close lid — swing it down firmly so that the lock engages. Make sure that the lid is properly closed.



Do not operate the vehicle with the rear luggage compartment lid open.

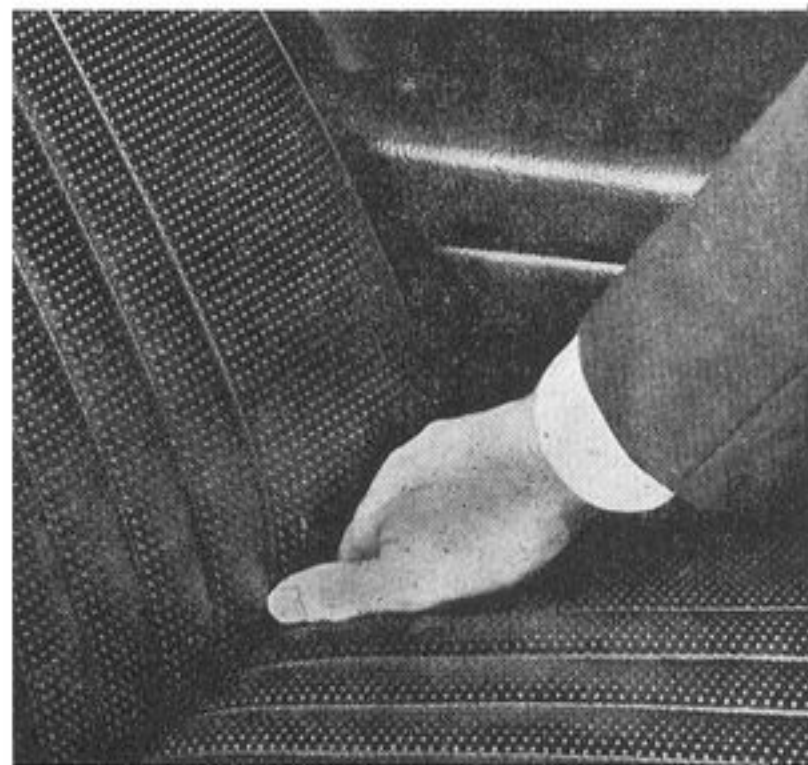
The front and rear seat backrests are locked to prevent them from tilting forward.

The load surface can be increased to 24 sq. ft. by tipping the rear seat cushion and backrest forward.

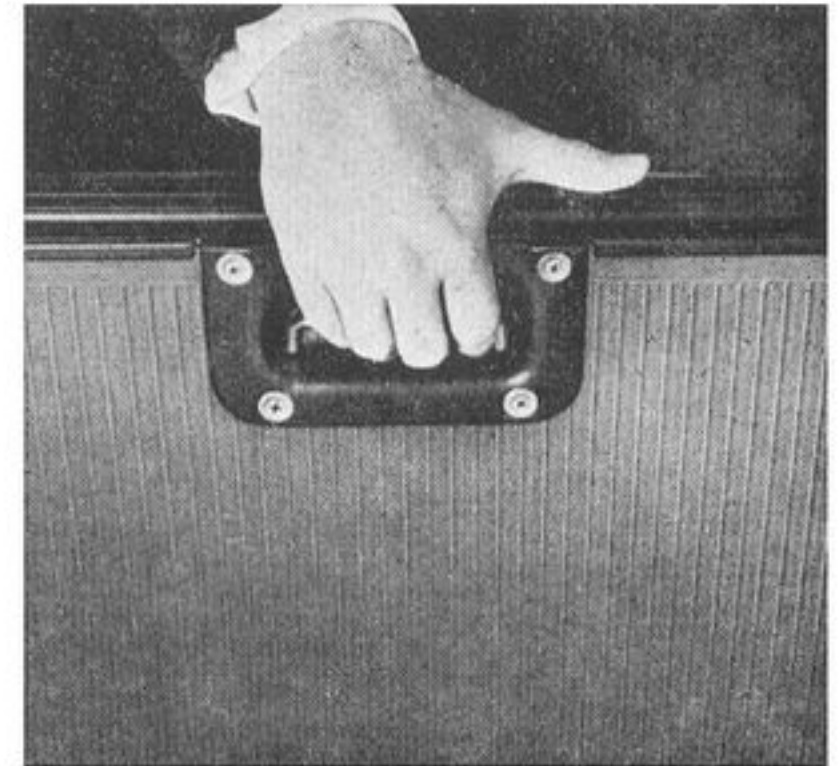


Increasing load surface

Pull rear seat cushion forward — to vertical position.



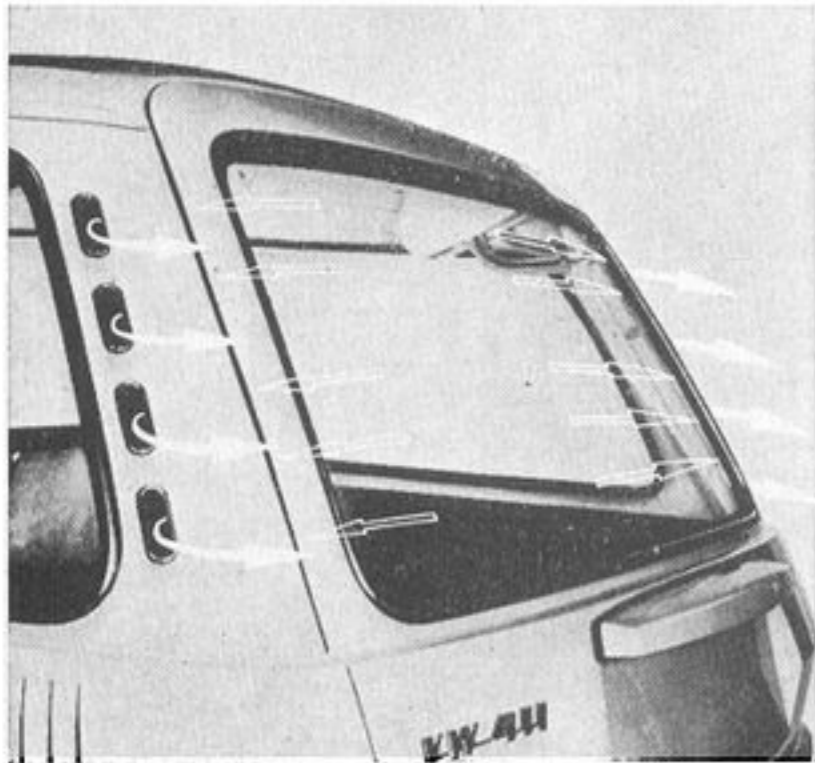
To fold rear backrest down pull release handle on the rear of the backrest upward to disengage the catch. Pull backrest forward and fold it down.



Ventilation

The fresh air ventilation of the Three Door Sedan corresponds to that of the Four Door Sedan.

The outside slots at the rear vehicle are connected to inside openings in the rear roof pillars. Before the air enters these openings it flows past the rear window, helping to keep it clear of condensation.

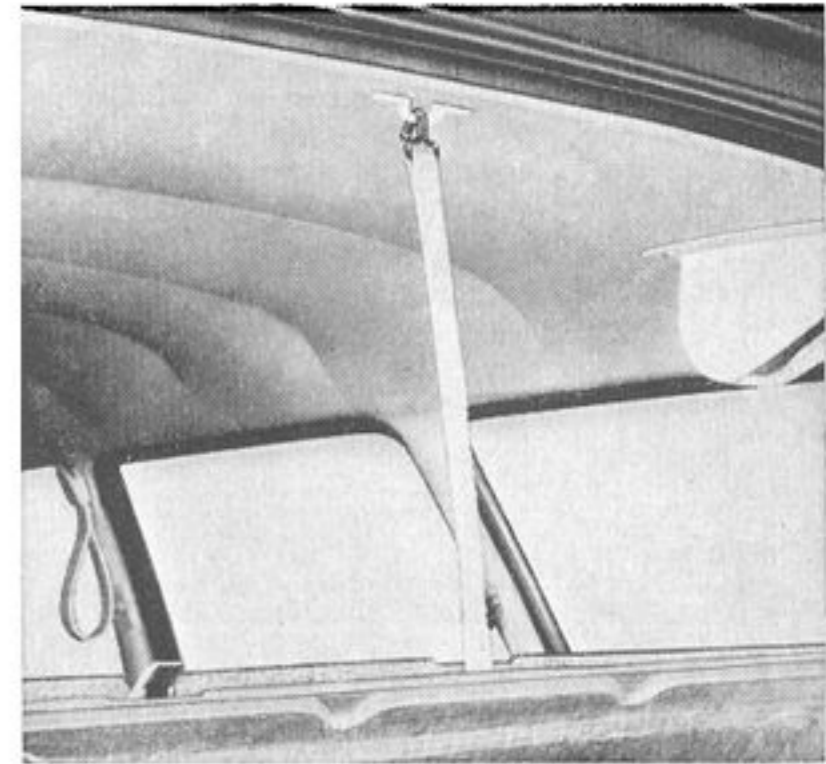
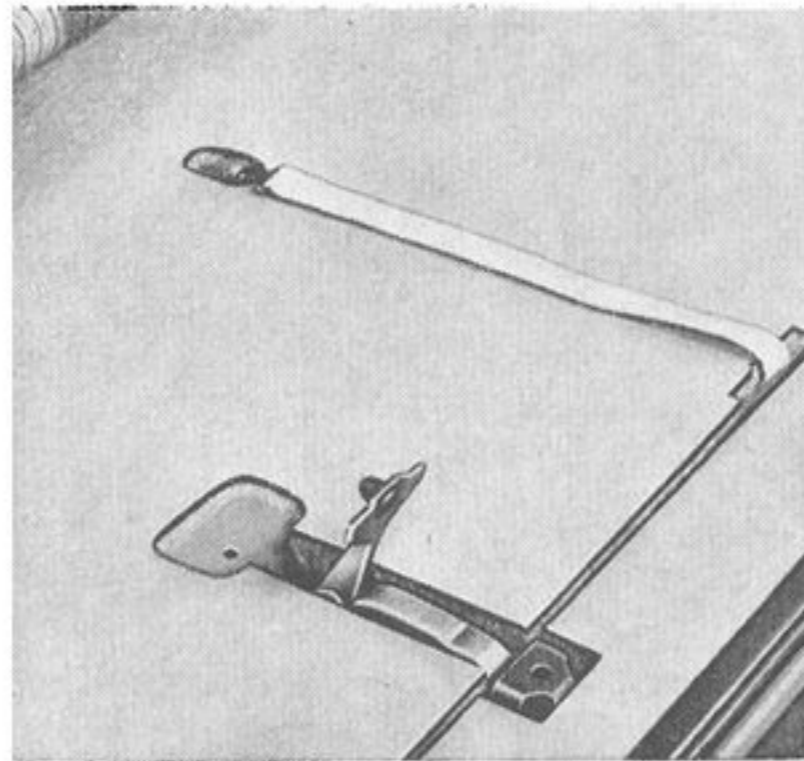


Engine compartment lid

The engine compartment lid forms part of the rear load surface and is covered with a mat.

To open engine compartment lid — open the rear luggage compartment lid — roll mat forward — release catches — raise lid and insert hook of lid strap into eye below the edge of the roof.

After closing lid insert the hook of the strap in the recess provided in the lid insulation.



Engine oil

To check oil level — unscrew cap with attached dipstick and wipe the dipstick with a clean cloth. Insert dipstick again and screw on cap lightly.

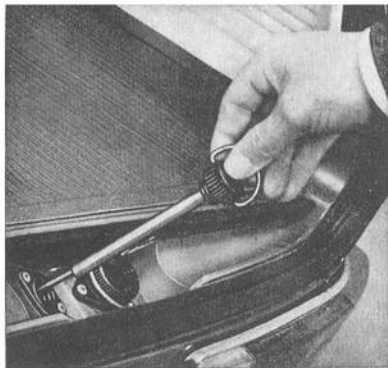
Unscrew cap, take out dipstick and check oil level.

Difference in the amount of oil between lower and upper marks: 2.1 U.S. pints.

Screw on cap and tighten it.

To top up engine oil — unscrew cap, add oil, check oil level with dipstick. The oil level should not be above the upper mark. Screw on cap and tighten it.

Please note instructions given on page 40.



Removing air cleaner

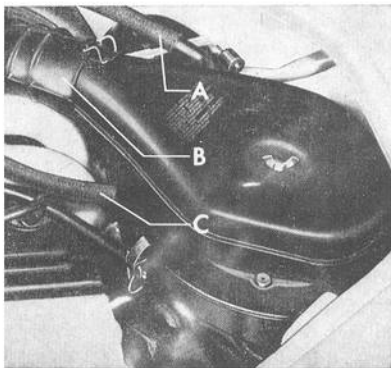
Pull crankcase ventilation hose off air cleaner — A —, pull off hose connecting upper of air cleaner and intake air distributor off air cleaner — B —, pull off hose for activated charcoal filter — C —. Remove wing bolt from air cleaner — lift air cleaner out in horizontal position.

Please note the details on care and maintenance of air cleaner on page 78.

Cleaning and installing air cleaner

Release both clips and take upper part off lower part.

Clean lower part and fill it with fresh engine oil.



Insert upper part into lower part of air cleaner — ensure that the mark "4 V" on the upper part and the arrow on the lower part are aligned — tighten both clips.

When installing air cleaner make sure that the bellows between the lower part and the air duct, and the hoses are properly connected.

Do not interchange hoses — A — and — C —.



Replacing license plate light bulbs

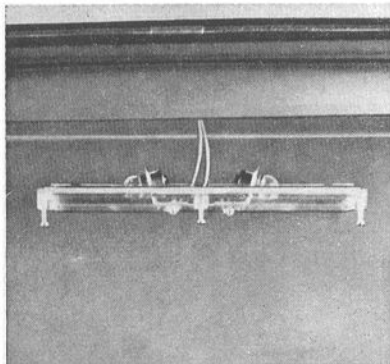
Loosen three screws and remove glass insert.

Press bulb lightly into bulb holder, turn and take out.

Insert new bulb.

Do not tighten screws excessively.

The license plate is properly illuminated only if both bulbs are intact.



The pneumatic windshield washer

The spare tire should be inflated to 56 psi. The air pressure is routed to the water container with a connecting hose. The valve in the hose stops the flow of air to the container automatically when the pressure in the spare tire has dropped to about 40 psi. This ensures that there is always sufficient pressure in the spare tire if it has to be used.

(See instructions on page 38).

Tires

The Volkswagen 411 Three Door Sedan is equipped with tubeless radial ply tires of size 165 SR 15 on 4½ J x 15 safety rims.

The inflation pressures (cold)

should never be lower than:

	front	rear
at half payload	18 psi (1.3 kg/cm ²)	30 psi (2.1 kg/cm ²)
at full payload	18 psi (1.3 kg/cm ²)	36 psi (2.5 kg/cm ²)

Winter tires

designations:

165 R 15 M+S
or 165 R 15 M+SE (width studs)

Inflation pressures (cold)

	front	rear
	18 psi (1.3 kg/cm ²)	36 psi (2.5 kg/cm ²)

Snow chains

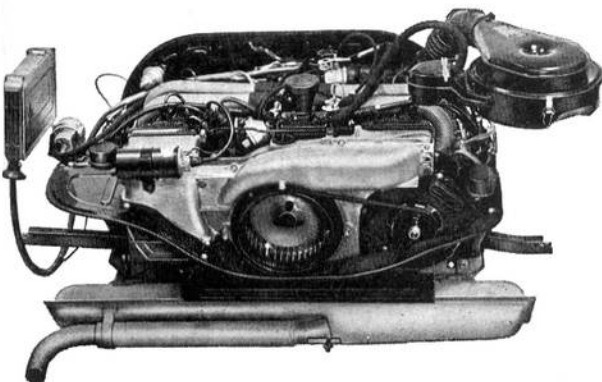
Chains which do not stand clear of the tire tread and inner side wall more than ½ inch, including tensioner, can be used on the rear wheels only.

Technical data

Engine

Four cylinder, four stroke, horizontally opposed engine attached to transmission and hypoid final drive to form a single unit at rear. — Thermostat controlled air cooling by fan on crankshaft — Pressure feed oil system with gear-type pump, cooler, full flow filter and strainer — Electrical fuel pump — Oil bath air cleaner — Electronically controlled fuel injection.

Bore	3.543 in. (90 mm)
Stroke	2.598 in. (66 mm)
Displacement	120.5 cu. in. (1679 cc)
Compression ratio	8.2 : 1



Maximum output SAE	85 bhp at 5000 rpm
Maximum torque SAE	99.4 lb. ft. (13.75 mkg) at 3500 rpm
Mean piston speed at maximum output speed	2124 ft./min (10.8 m/sec)
Fuel consumption*) with automatic transmission	22.4 miles per gallon
with manual transmission	22.6 miles per gallon
Fuel rating	see page 35
Oil consumption	1.7—3.4 pints per 1000 miles
Valve clearance with engine cold Inlet and exhaust006 in. (0.15 mm)
Distributor	centrifugal and vacuum spark advance
Firing order	1—4—3—2
Ignition timing	27° before TDC at 3500 rpm**)
Dwell angle	47 ± 3°
Spark plugs	Beru 175/14/3, Bosch W 175 T 2
Plug gap028 in. (0.7 mm)

*) measured consumption plus 10% with half load at a steady 60 mph. on level road without wind.

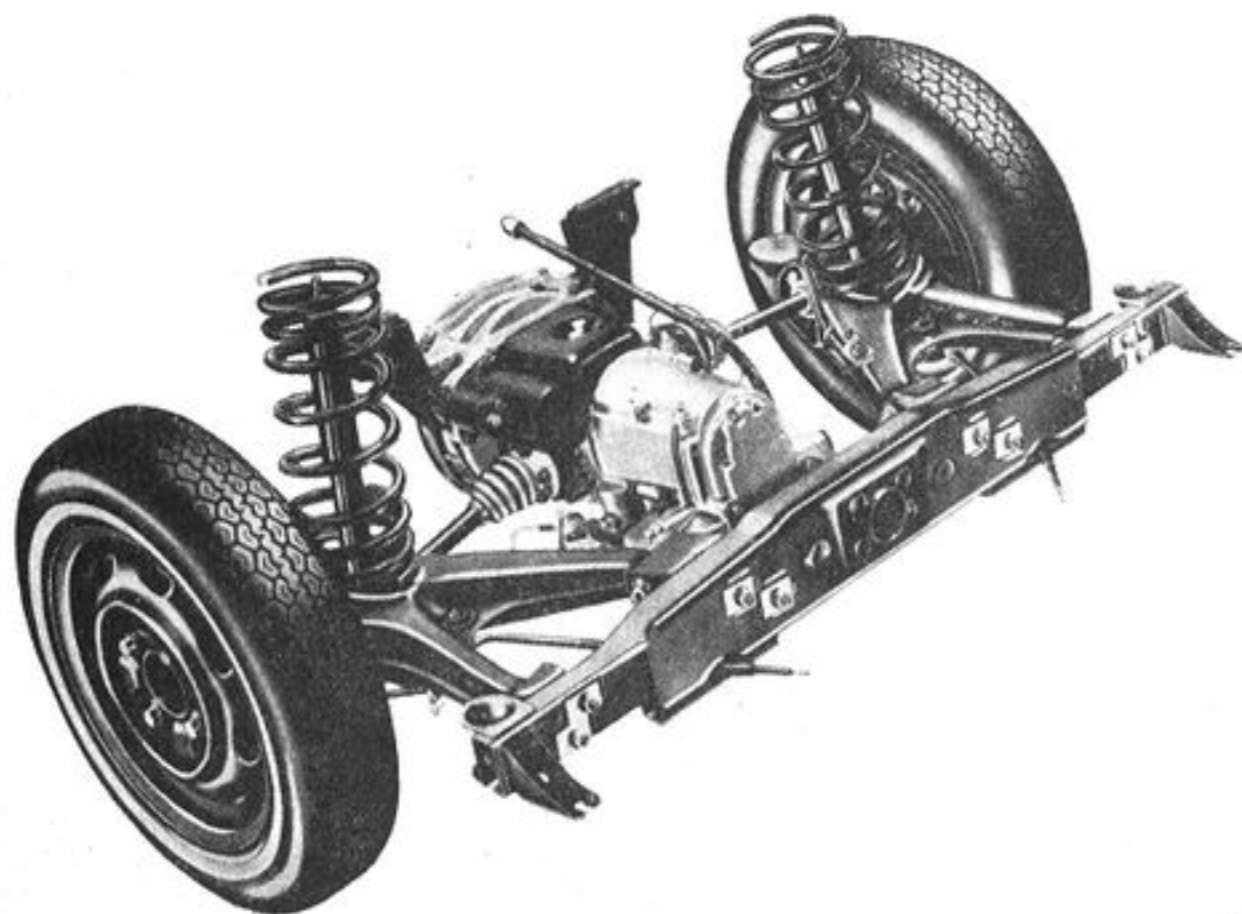
**) red mark on fan.
Set only with stroboscope timing light and vacuum hoses off.
Black mark on fan at 5° before TDC is only for provisional setting.
Must be accurately set to 27° before TDC afterwards.

Rear axle — Independent suspension with trailing wishbones — Rear wheel drive via drive shafts with two constant velocity joints each — Progressive acting coil springs — Telescopic shock absorbers — Stabilizer (Four Door Sedan).

Automatic — Automatic transmission and final drive combined — Separate oil supply for transmission and final drive — Hydrodynamic torque converter and planetary gearbox with three forward speeds and reverse.

Planetary gear ratios: 1st driving range 2.65 : 1, 2nd driving range 1.59 : 1, Drive 1.0 : 1, reverse 1.8 : 1.

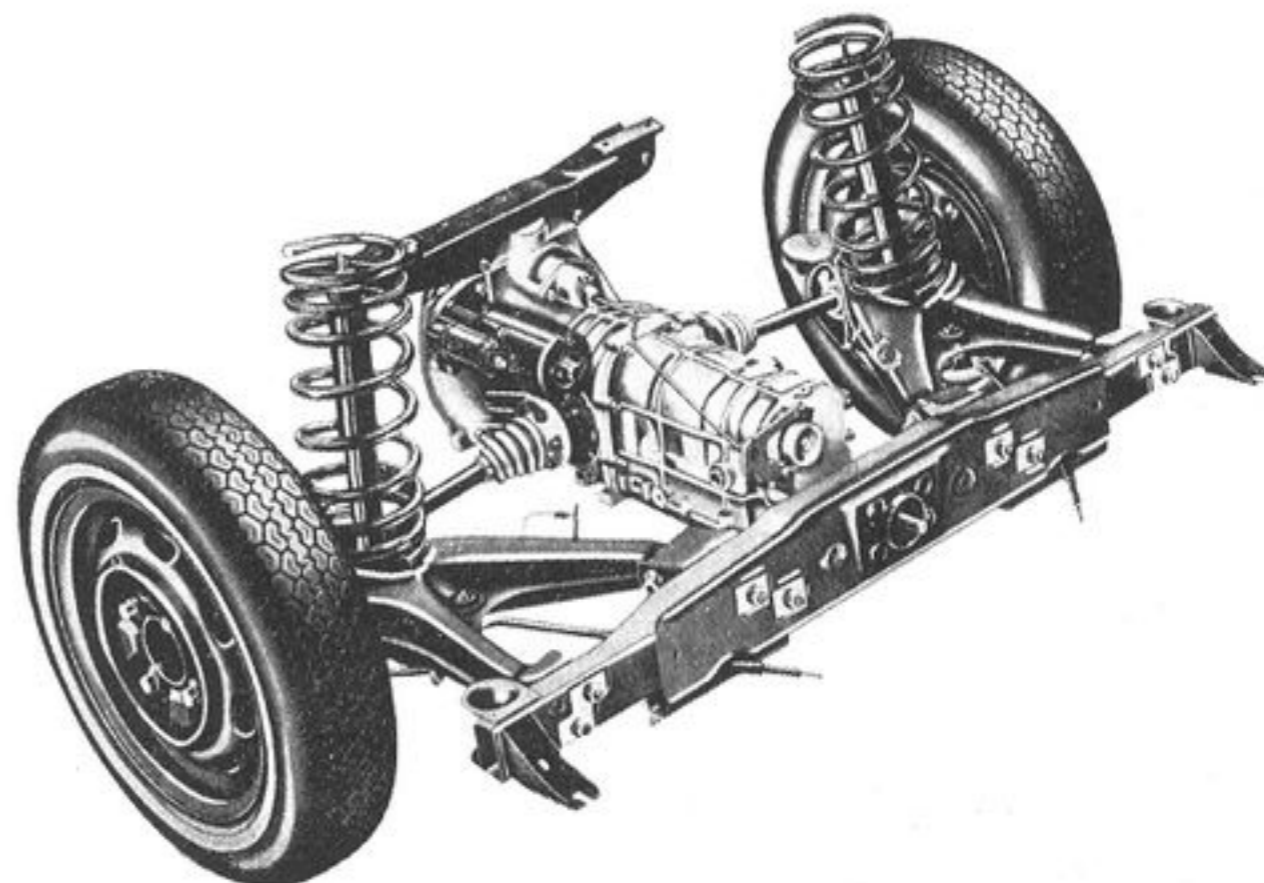
Final drive ratio: 3.91 : 1.



Manual transmission — Hydraulically operated single-disc dry clutch — Four-speed gearbox and bevel gear differential in one housing, forward gears baulk synchronized and silent running.

Gear ratios: 1st gear 3.81 : 1, 2nd gear 2.11 : 1, 3rd gear 1.40 : 1, 4th gear 1.00 : 1, reverse 4.30 : 1.

Final drive ratio: 3.91 : 1.



Front axle — Independent suspension with suspension struts which house shock absorbers and locate attached to axle carrier by track control arms and radius rods. — Progressive acting coil springs — Telescopic shock absorbers — Stabilizer.

Steering — Recirculating ball steering gear with three-part maintenance free tie-rod — Hydraulic steering damper — Safety steering column.



Body

All steel unitary body/chassis — Fenders bolted on — Passenger compartment designed as safety cell — Front and rear ends designed to absorb impact energy.

Electrical system

Voltage	12 volts
Battery	45 Ah
Starter Manual transmission	0.7 hp
Automatic transmission	0.8 hp
AC generator with regulator	max. 55 ampere

Brakes

Footbrakes:	Hydraulic dual circuit brake system —
Front:	Self-adjusting disc brakes with fixed calipers
Rear:	Simplex drum brakes with floating brake shoes and with adjusting screws
	Brake force limiting valve in rear circuit (Four Door Sedan)
Handbrake:	Mechanical, acting on rear wheels.
	Adjusted with cable securing nuts on equalizer lever on handbrake-lever.

Chassis

Wheel base	98.4 in. (2500 mm)	
Track, front	54.2 in. (1376 mm)	
Toe-in04—.12 in. (1—3 mm), wheels not pressed, unladen	
Camber	1° 15' ± 20', unladen	
Track, rear	53.1 in. (1350 mm)	
Rear wheel toe-in	+ 5' ± 5' per wheel, unladen	
Rear wheel camber	— 1° ± 30', unladen	
Turning circle	Four Door Sedan: 37.4 ft. (11.4 m) Three Door Sedan: 38.6 ft. (11.8 m)	
Wheels	perforated disc wheels with drop center rims	
Rim size	4½ J × 15 (Safety type with hump)	
Tires	Tubeless radial ply	
Tire size	front	rear
Four Door Sedan:	155 SR 15	155 SR 15
Three Door Sedan:	165 SR 15	165 SR 15
Tire pressures	Four Door Sedan	
	front	rear
With 1—2 occupants	20 psi (1.4 kg/cm ²)	26 psi (1.8 kg/cm ²)
Fully loaded	23 psi (1.6 kg/cm ²)	31 psi (2.2 kg/cm ²)
	Three Door Sedan	
	front	rear
With 1—2 occupants	18 psi (1.3 kg/cm ²)	30 psi (2.1 kg/cm ²)
Fully loaded	18 psi (1.3 kg/cm ²)	36 psi (2.5 kg/cm ²)

Dimensions and weights

	VW 411	
	Four Door Sedan / Three Door Sedan	
Length	179.2 in. (4553 mm)	
Width	65 in. (1650 mm)	
Height, unladen	58.5 in. (1485 mm)	
Ground clearance	5.3 in. (135 mm)	
	VW 411	VW 411
	Four Door Sedan	Three Door Sedan
Unladen weight	2425 lbs. (1100 kg)	2468 lbs. (1120 kg)
Permissible load	948 lbs. (430 kg)	1200 lbs. (545 kg)
Permissible total weight	3372 lbs. (1530 kg)	3670 lbs. (1665 kg)
Permissible front axle load ...	1499 lbs. (680 kg)	1499 lbs. (680 kg)
Permissible rear axle load	1918 lbs. (870 kg)	2226 lbs. (1010 kg)

Roof load and trailer weights¹⁾

Roof load ²⁾	165 lbs. (75 kg)
Trailer with brakes	1984 lbs. (900 kg)
Trailer without brakes	1102 lbs. (500 kg)

¹⁾ Subject to local regulations which may differ.

²⁾ Use only racks supported in rain channel. Distribute load evenly.

Capacities

Fuel tank	13.2 gallons (50 liters) 1.5 gallons (6 liters) as reserve	
Engine oil — initial amount	3.7 qts. (3.5 liters)	
Engine oil — change amount	3.7 qts. (3.5 liters) with filter change 3.1 qts. (3.0 liters) without filter change	
Oil bath air cleaner	1 pint (0.45 liter) engine oil	
Automatic transmission		
Converter and transmission		
initial amount	approx. 6.3 qts. ATF (6 liters)	} to factory specifications
oil change	approx. 3.15 qts. ATF (3 liters)	
Final drive		
initial and oil change	approx. 1 qt. hypoid oil (1 liter)	} to factory specifications
Manual transmission		
Transmission and final drive		
initial amount	2.7 qts. (2.5 liters)	} hypoid oil to factory specifications
oil change	2.1 qts. (2.0 liters)	
Windshield washer container	approx. 1.6 qts. of water (1.5 liters)	

Performance

	Automatic transmission	Manual transmission
Maximum and cruising speed	94 mph (152 km/h)	96 mph (155 km/h)
Acceleration times from 0—62 mph (0—100 km/h) ...	16.5 seconds	15 seconds
Hill climbing ability on good roads	Four Door Sedan (with two occupants)	Three Door Sedan (with full load)
Automatic transmission		
Forward range	40 %	30 %
Reverse	28 %	20 %
Manual transmission		
1st gear	46.0 %	33.0 %
2nd gear	24.5 %	17.0 %
3rd gear	15.0 %	10.0 %
4th gear	9.0 %	6.0 %

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