PORSCHE

911 T/E/S

MODEL '73

OWNER'S MANUAL

Type 911 T-E-S

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USA/CANADA

Various items shown or described in the manual may be options on certain models. Check with your authorized dealer on available options or accessories.

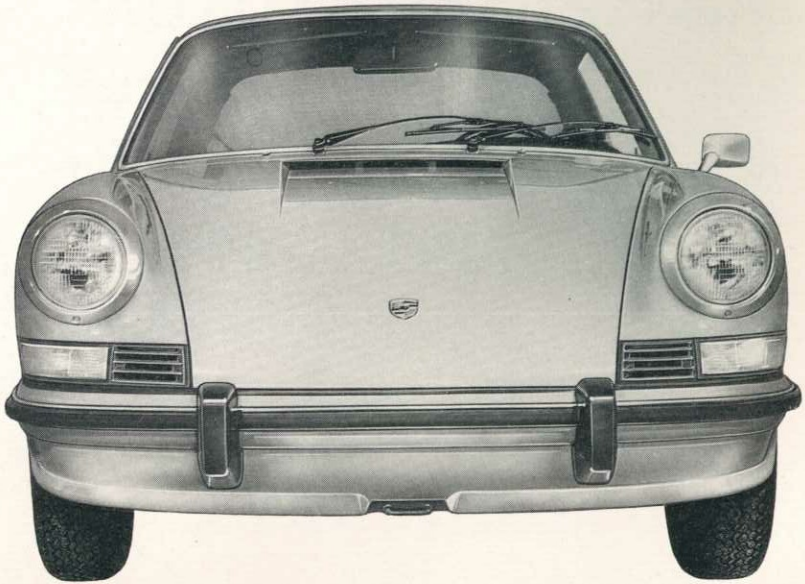
It has always been Porsche's policy to continuously make technical improvements; therefore the right is reserved to make changes at any time during the model year without notice.

Judging by the car you have chosen, you are a motorist of a special breed. Although you probably are no novice when it comes to automobiles, we have compiled much useful information in the section entitled Operating Instructions with which you should become familiar before driving your Porsche.

In the subsequent sections you will find many additional hints that will help you to get to know your car more intimately.

We wish you many miles of safe and pleasurable driving in your

PORSCHE



PORSCHE

911 T/E/S

OPERATING INSTRUCTIONS

OPERATING INSTRUCTIONS

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Vehicle Identification



Chassis Number

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



Chassis Number

The chassis number is also located in the front luggage compartment underneath the carpeting, on the Safety Compliance Sticker (perforation) and on the identification plate.



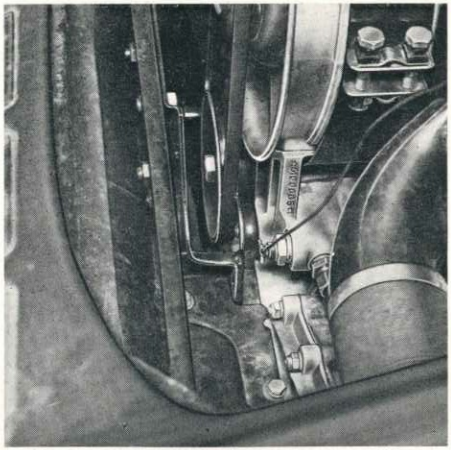
Identification Plate

The identification plate is located next to the front hood lock.



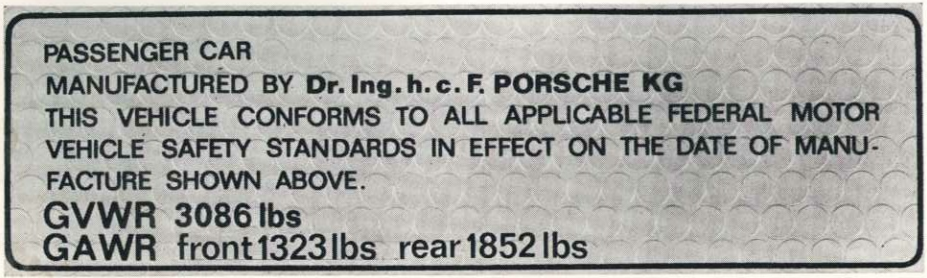
Paint Number

The paint number is on the front doorpost on the driver's side.



Engine Number

When ordering parts or submitting inquiries, always include the chassis and engine numbers in your correspondence to ensure prompt and correct response.



The Safety Compliance Sticker is your assurance that your Porsche complies with all Federal Motor Vehicle Safety Standards which were in effect at the time the vehicle was manufactured. It is located on the rear doorpost on the driver's side.

Because safe driving is important to you, we suggest that you read these Operating Instructions carefully, maintain your Porsche properly and follow the check list shown below whenever you use your Porsche.

Before getting behind the wheel:

1 - Make sure that the tires are inflated properly.
2 - Watch the tread wear 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 signals 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 safety belts.
4 - Check brake warning light (ignition on).
5 - Check brake operation.
6 - Make sure that all doors are properly closed and locked.

And when you are on the highway:

1 - Always drive defensively. Expect the unexpected.
2 - Use signals to indicate turn 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 - When stopped or parked, always set the parking brake.
9 - When stalled or stopped for repairs, move the car well off the road. Set the emergency flasher and use road flares or other warning devices to warn other motorists.

Do not invite car theft!

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

A steering wheel lock and a buzzer alarm are standard equipment in your Porsche. The buzzer will sound if you open the driver's door while the key is in the ignition/steering lock. It is your reminder to pull the key out of the ignition/steering lock and lock the doors.

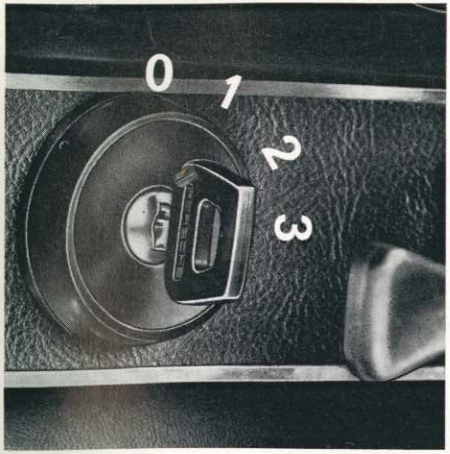


Keys

Two sets of keys are supplied with the vehicle. Each set contains one master key (black handle) which fits all the locks. The second key (red handle) fits only the door locks and ignition/steering lock.

Replacement keys can only be made if the key number is given. The key number, together with the chassis number, is listed on a tag attached to the keys. Detach this tag and keep it in a safe place. Remove the glue-on label showing the key number, from the head of the keys.

It is a good idea to also keep a record of your key numbers in your wallet together with your license.



Ignition/Starter Switch with Steering Lock

The steering is equipped with an anti-theft ignition lock.

Fasten safety belts.

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

Sportomatic vehicles can only be started with the selector lever in Park or Neutral.

There are 4 key positions:

0 – Steering locked; all electric circuits wired through the ignition switch are turned off. The ignition key can only be withdrawn in the "0" position.

1 – Steering unlocked. All electric circuits wired through the ignition will operate, except for the brake, turn signals, back-up lights and the fresh air blower.

2 – Ignition on, steering unlocked. All electric circuits can be switched on. The red alternator warning light and the green oil pressure warning light (on cars without oil temperature/oil pressure gauge) will come on.

3 – The starter is operated by turning the ignition key fully to the right. As soon as the engine has started, release the key. It will return to the ignition "on" position. While the starter is cranking the engine, the circuits for headlights and wiper motor are interrupted.

The starter should not be operated for more than 10–15 seconds at a time. If the engine does not start the first time or stalls at any time, the ignition will have to be switched off and then on again. The non-repeat lock in the switch prevents the starter from being operated when the engine is running and thus from being damaged.

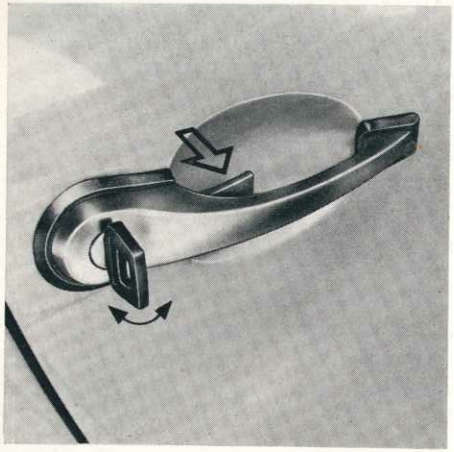
To remove the key and to lock the steering, turn the key back to position "0" and pull it out. Turn the steering wheel until it locks.

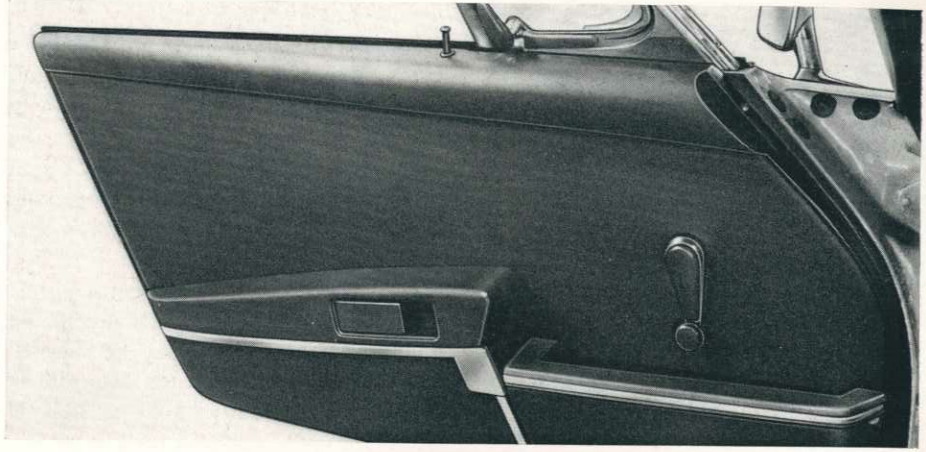
If you leave the key in the ignition/steering lock, the buzzer will sound when the driver's door is opened. This is your reminder to remove the key.

The steering column will lock when you remove the key. Therefore do not remove the key while you are driving or as the car is rolling to a stop.

Warning

Never start or let the engine run in an enclosed unventilated area. Exhaust fumes from the engine contain carbon monoxide which is colorless and odorless. Carbon monoxide, however, is a very harmful gas, and can be fatal if inhaled.





Doors

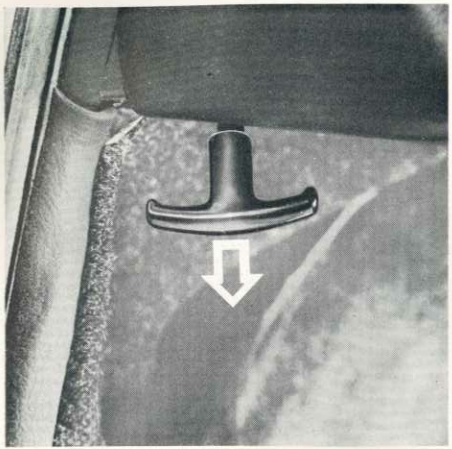
Both doors can be locked and unlocked with the key.

To lock the doors without a key, first depress the locking button on the door sill. Then pull the trigger in the outside door handle as you close the driver's door. The door on the passenger's side locks without pulling the trigger in the outside door handle.

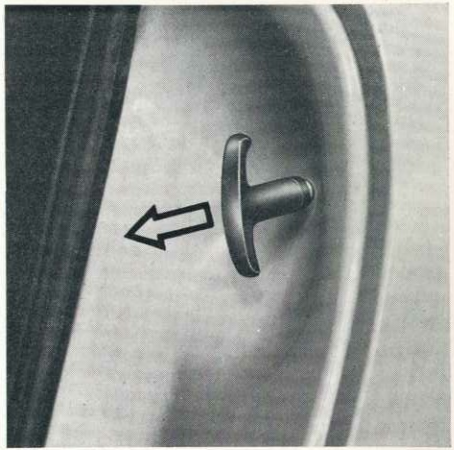
To lock or unlock doors from the inside depress or pull out the locking button.

The inside door handles are located in the armrests. Pull lever in handle to open door.

We suggest you to drive with locked doors (locking button depressed) to prevent inadvertent opening of a door from the inside, especially with small children in the car.







Front Hood Release

The front hood release trigger is located on the left side under the instrument panel.

Pull to unlock the hood.

Make sure windshield wiper arms are not raised up from windshield when you open the hood.

Open the hood by first lifting the safety catch under the hood. Spring tension keeps the hood in the open position.

To close the hood, press it down firmly.

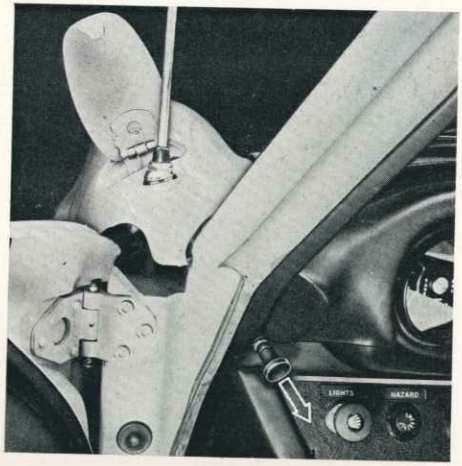
The front hood of Targa models is lockable to prevent unauthorized access to the front luggage compartment when the top is folded down.

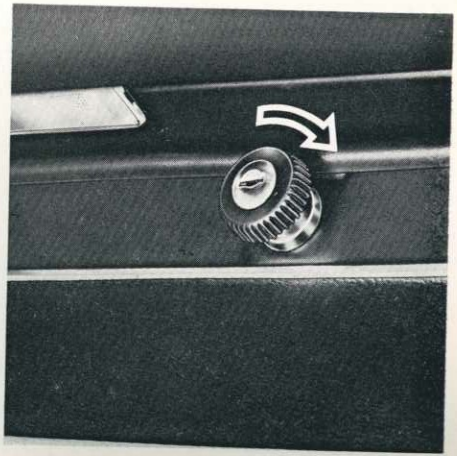
If the operating cable should break, the front hood will spring open, and will only be held down by the safety catch. Be sure to have a broken cable repaired promptly.

Engine Compartment Lid Release

The release handle for the engine compartment lid is located in the left rear door post. Pull the handle to open the lid. Spring tension keeps the lid in the open position. To close, push the lid down firmly until the lock snaps shut.

The lid is designed to open automatically if the operating cable should break.





Fuel Tank Filler

The filler neck for the fuel tank is located in the left front fender. To open the flap, pull the release button on the left side of the instrument panel.

To protect the paint finish when filling the fuel tank, a protective apron has been provided.

The engine requires "Regular" gasoline with a minimum octane rating of 91 (RON). In the interest of cleaner air, the Porsche engine is designed to run also on low-lead or lead-free gasoline.

When travelling outside the United States or Canada, regular gasolines may have a considerably lower octane rating. Therefore, make sure the gasoline you are using does not have an octane rating lower than 91 RON.

Glove Compartment

The glove compartment is lockable. To open the glove compartment, turn the knob clockwise. The interior is illuminated (see also page 31).

Controls

Clutch Pedal

Always depress the clutch pedal fully when changing gears. Do not hold the car on a steep hill with the clutch pedal partially depressed. This may cause premature wear or damage.

Proper pedal adjustment is about 3/4" to 1" (20 to 25 mm). To check, pull pedal away from the floorboard. (See page 69).

Brake Pedal

Make sure that the movement of the brake pedal is not obstructed by a floor mat or any other object.

Since the brakes are self-adjusting, the brake pedal free travel will always be constant providing that the hydraulic brake system is free of air bubbles. Pedal travel to the point of brake actuation may be 30–50 % of total brake pedal travel. Whenever the brake pedal can be pushed in farther the brakes should be checked at your authorized dealer.

Parking Brake

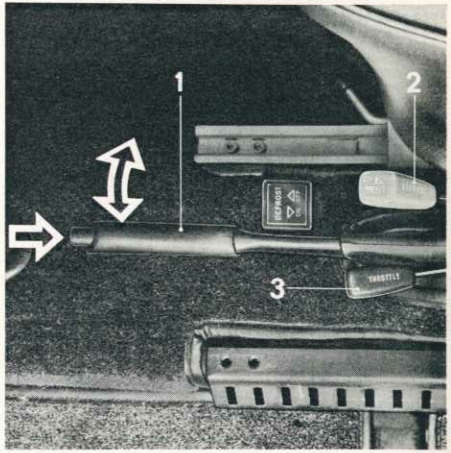
The parking brake is set and automatically locked in position by pulling the lever up. The parking brake can be released by first pulling the lever up slightly, pushing the release button in, and at the same time lowering the lever to the "off" position.

To prevent wear of the parking brake linings, the brake warning light will flash when the engine is running as long as the parking brake is applied. It will go out when the parking brake has been fully released.

Hand Throttle

Until the engine reaches its normal operating temperature, the idle speed can be increased by pulling the hand throttle lever up (as for cold starting).

When the correct engine operating temperature is reached, return the hand throttle lever to its down position.



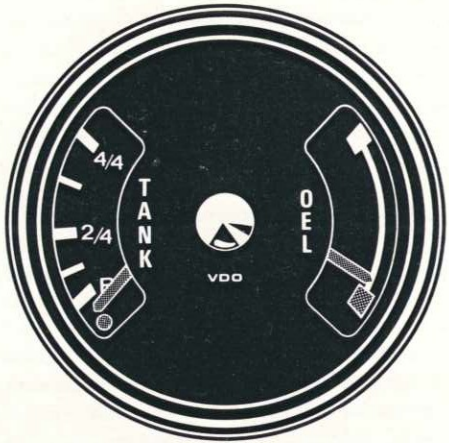
1 Parking brake lever
2 Heater control lever (red)
3 Hand throttle lever (black)

Heater Control Lever

When the control lever is up, hot air flows into the car. When the lever is down, the flow of hot air is stopped.

The **brake warning light** (red) monitors the parking brake as well as the hydraulic brake system. It flashes when the ignition is on and goes out when the parking brake is fully released and the engine is running. If the brake warning light fails to come on (ignition on), the bulb should be checked.
When the warning light comes on while you are applying the brakes, one of the two brake circuits may have failed. In this case refer to page 65 for further information.

Instruments 911 S



Fuel/Oil Level Gauge
(optional on 911 T and 911 E)

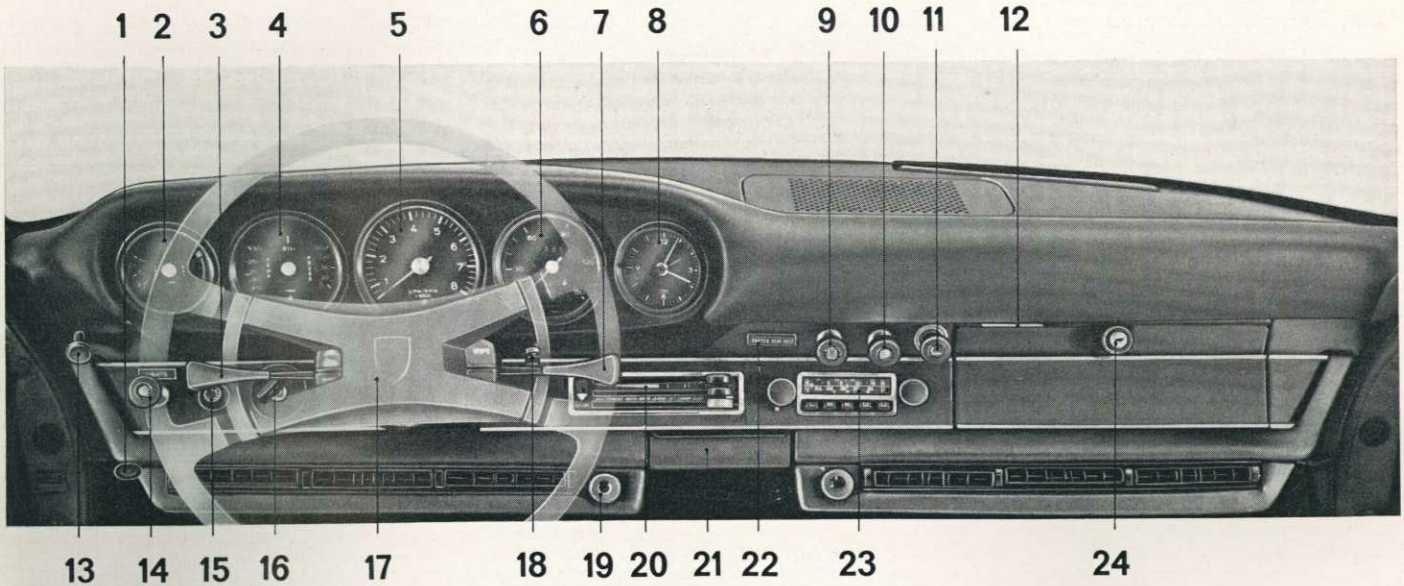
When the ignition is on the gauge shows the amount of fuel and oil in the tanks.

The fuel gauge has a red warning light which lights up when the fuel level in the tank drops to about 1.6 US gals. (1.3 Imp. gals.)

The oil level gauge indicates the amount of oil in the oil tank. If the pointer is in the upper white portion of the dial while the car is on level ground with engine at idle speed and the oil temperature at approx. 176° F there is sufficient oil in the oil tank. If the pointer should drop below this point, the oil should be topped up in the oil tank. Be careful, never to let the oil level reach the red portion of the dial.

Checking the oil level accurately can only be accomplished by using the oil dipstick.

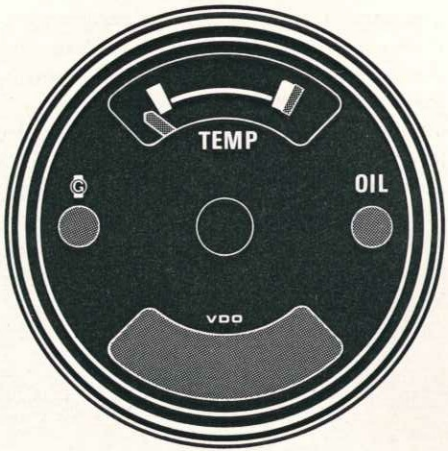
If the pointer of the oil level gauge begins to drop as engine speed increases, you have the necessary check that the indicator is functioning.



1 Front hood release
2 Fuel gauge (911 T, 911 E) or fuel/oil level gauge (911 S)
3 Turn signal/headlight dimmer switch
4 Oil temperature gauge (911 T, 911 E) or oil temperature/pressure gauge (911 S)
5 Tachometer
6 Speedometer
7 Wiper/washer lever
8 Clock
9 Rear window defogger switch
10 Fog light switch (optional)
11 Cigarette lighter
12 Glove compartment light
13 Release for fuel tank filler flap
14 Light switch
15 Emergency flasher switch
16 Ignition/starter switch and steering lock
17 Horn ring
18 Trip odometer reset control
19 Air conditioning control (optional)
20 Heating and ventilation controls
21 Ashtray
22 Safety belt warning sign and light
23 Radio (optional)
24 Glove compartment lock

Instruments 911 T, 911 E





Fuel Gauge

The fuel gauge has a control light which lights up when the fuel supply in the tank drops to approximately 1.6 US gals. (1.3 Imp. gals.)

Oil Temperature Gauge

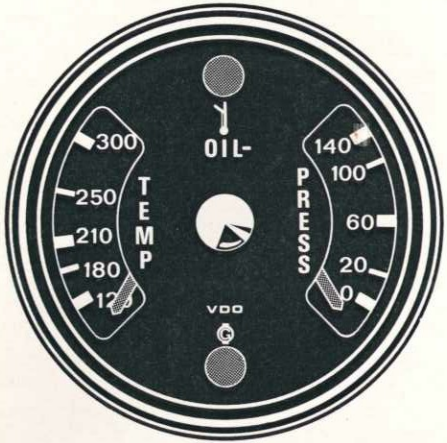
The oil temperature indicator should normally stay within the white field. If the needle enters the red field, stop and check the oil level. The oil level should never be below the minimum mark on the dipstick. If the oil level is correct but the needle remains in the red field, you may proceed at reduced speed. The needle should return to the white field when the engine oil has sufficiently cooled down. If, however, the needle remains in the red field, contact your nearest authorized dealer for assistance.

Note: Excessively high engine oil temperatures may be caused by a low oil level, incorrect engine timing or a slipping V-belt.

The oil temperature gauge also contains the warning lights for alternator, oil pressure and brakes.

The **oil pressure warning light** (green) comes on when the ignition is switched on and goes out as soon as the engine is running and the correct oil pressure has been reached. If the light comes on again when driving the car, this is a sign that oil pressure has fallen too low. In this event stop at once and check engine oil level. If the oil level is correct, consult the nearest authorized repair shop and have the fault traced. Occasional flickering of the oil pressure warning light when the engine is hot at idle speed is of no significance.

The **alternator warning light** (red) monitors the alternator, the V-belt and the cooling blower. It comes on with the ignition and goes out as engine speed rises. If the light flickers or burns steadily when the car is being driven, the V-belt may be loose or broken and should be retensioned or replaced. Alternatively, the fault may be in the regulator or the alternator itself, and in this case an authorized repair shop must be consulted.



Oil Temperature/Pressure Gauge
(optional on 911 T and 911 E)

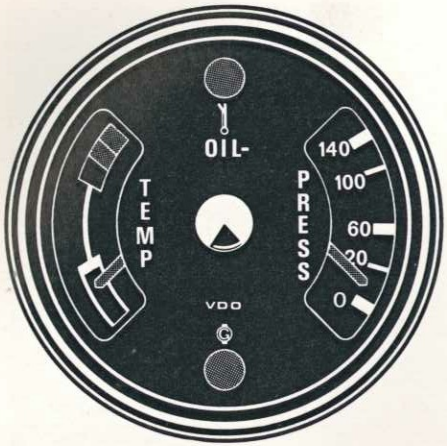
The large combined instrument contains an engine oil pressure gauge, engine oil temperature gauge and warning lights for alternator and brakes. The gauges and warning lights work only when the ignition is turned on.

The **oil temperature gauge** registers degrees Fahrenheit; the oil temperature must not exceed a maximum of 265° F. If the temperature should exceed the limit, stop, check the oil level or, if necessary, consult your authorized dealer.
Improper ignition timing or a slipping V-belt can also cause too high oil temperatures.

Lubricating oil pressure in the engine is shown in psi. At 176° F oil temperature and 5500 rpm engine speed the pressure should be at least 70 psi (the 911 T will show 64 psi because the pressure sensor is in a different location). A drop in oil pressure at idle speed is quite normal. If oil pressure drops suddenly when the car is being driven, the engine should be stopped immediately. If there is enough oil in the engine oil tank, the nearest autohrized repair shop should be consulted.
If the oil pressure reading suddenly rises to 140 psi, the sensor line may be broken. This too should be repaired without delay.

The **alternator warning light** (red) monitors the alternator, the V-belt and the cooling blower. It comes on with the ignition and goes out as engine speed rises. If the light flickers or burns steadily when the car is being driven, the V-belt may be loose or broken and should be retensioned or replaced. Alternatively, the fault may be in the regulator or the alternator itself, and in this case an authorized repair shop must be consulted.

The **brake warning light** (red) monitors the parking brake as well as the hydraulic brake system. It flashes when the ignition is on and goes out when the parking brake is fully released and the engine is running. If the brake warning light fails to come on (ignition on), the bulb should be checked.
When the warning light comes on while you are applying the brakes, one of the two brake circuits may have failed. In this case refer to page 65 for further information.



Oil Temperature/Pressure Gauge (Sportomatic)

This instrument is always installed when the car has Sportomatic transmission. It indicates engine oil temperature, engine oil pressure and also contains warning lights for brakes, alternator and excessive engine oil temperature.

The oil temperature needle should normally be in the white zone on the dial. If it is in the red zone, reduce speed and if necessary consult an authorized repair shop. Low engine oil level, incorrect ignition timing or a slipping V-belt may cause the oil temperature to rise excessively.

The **oil temperature warning light** (red) in the upper part of the dial will not go out until the temperature has been reduced to normal by selecting the next lower speed range.

If immediate downshifting does not make the warning light go out, stop at once and check the oil level. If the oil level is as specified (see page 51), do not continue driving but contact your nearest authorized dealer.

Under heavy load conditions the oil level should always be kept at the "maximum" mark, since a greater quantity of oil assists heat dispersion.

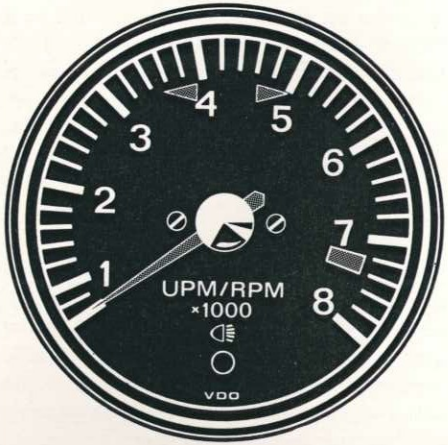
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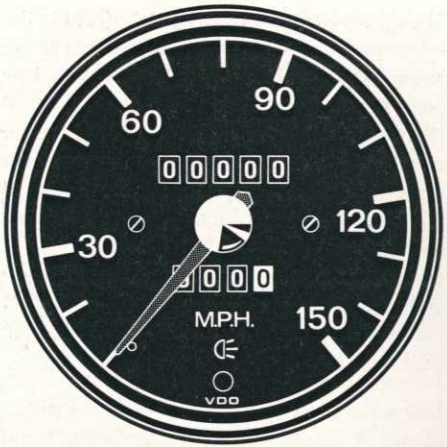
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When the warning light comes on while you are applying the brakes, one of the two brake circuits may have failed. In this case refer to page 65 for further information.



Tachometer

The transistorized tachometer operates on the pulse count principle and shows engine speed in revolutions per minute (rpm).
The red mark on the tachometer dial has been provided as a reminder for maximum permissible engine speed. The speed limiting governor integrated into the distributor rotor prevents the engine of being overrevved under load.
The **turn signal indicator** (green) is located in the upper part of the dial. A faster flashing rate indicates a malfunction in the signal lights.
The **high beam indicator** (blue) in the lower part of the dial lights up as soon as the high beam headlamps are switched on.



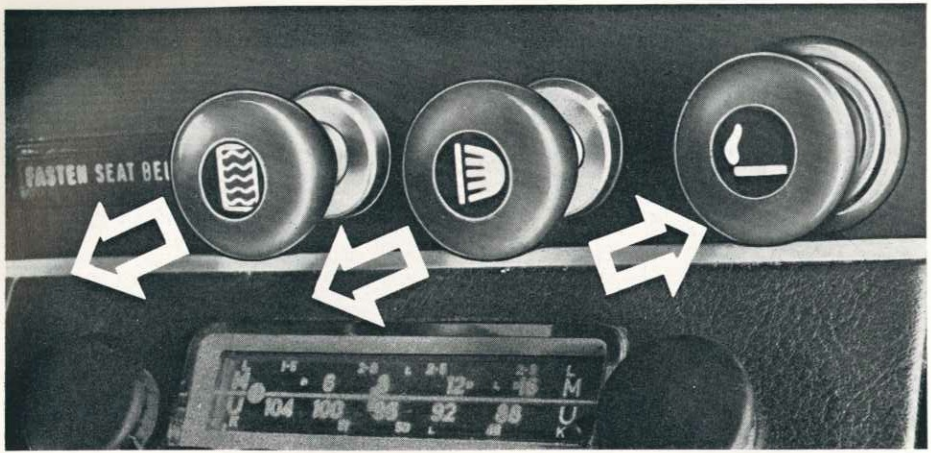
Speedometer

The speedometer indicates speed in miles per hour. The upper odometer records total miles driven and cannot be turned back. The **trip odometer** in the lower part of the instrument can be turned back to zero at any time by a knob below the dashboard.
The **parking light indicator** (green) comes on when the parking light is switched on. It goes out when the head lights are switched on.



Clock

The electric clock is standard equipment. The elapsed-time monitor needle (white) may be reset by turning the knob in the dial center. The clock can be reset by first pushing the button in and then turning.



Rear Window Defogger

The electric rear window heating system is switched on through a push-pull switch on the instrument panel. The heating element greatly reduces fogging or icing. A two-position push-pull switch is installed in cars which have a dual heating circuit (standard equipment for Targa models) in the rear window. When the knob is pulled out to first stop, the 150 watt heating circuit is energized; at the second stop, the 300 watt circuit is energized.

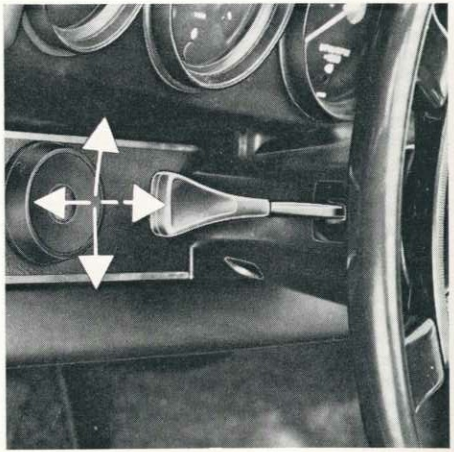
Fog Lights (optional)

The two fog lights are turned on by a push-pull switch. A green indicator light glows in the switch knob as long as the fog lights are on.

Cigarette Lighter

To operate, push in knob. When ready for use, the lighter will snap back.
With the cigarette lighter removed, the holder can be used as a socket for small electrical equipment such as electric light or shaver. The maximum rating of such equipment should not exceed 120 Watt/12 Volt.
Do not damage the socket by trying to insert plugs of the wrong pattern. The cigarette lighter can only be used at position 1 or 2 of the ignition switch.





Light Switch

Parking lights – pull out knob to first stop. Headlights – pull out knob to second stop. The tail lights, the license plate and instrument panel lights are on in both positions. In the parking position the green parking light indicator in the speedometer also lights up. Instrument lights go on automatically when parking lights or headlights are turned on. The brightness of the instrument lights can be varied by turning the light switch.

Emergency Flasher

All four turn signals will flash in unison when the emergency flasher switch is pressed. A red warning light in the switch indicates that the system is working. This system warns approaching drivers when the car has stopped in traffic due to an emergency. The emergency flasher can be switched on independently of the position of the ignition switch.

The normal turn signals are automatically switched off when the emergency flasher is on.

Turn Signal/Headlight Dimmer Lever

With ignition on:

Lever up – right turn signal
Lever down – left turn signal

The turn signal lever turns off automatically when the steering wheel straightens out after making a turn.

If the lever is moved only as far as the point of resistance, the turn signal will operate only until the lever is released.

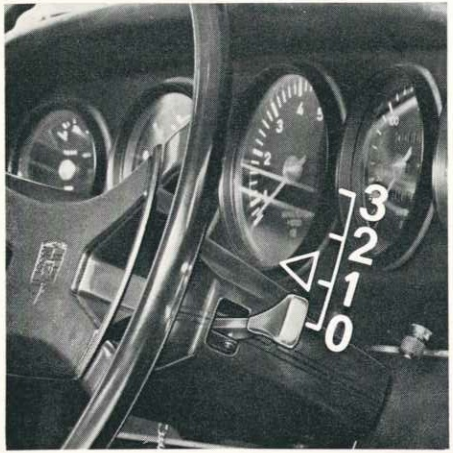
With ignition off:

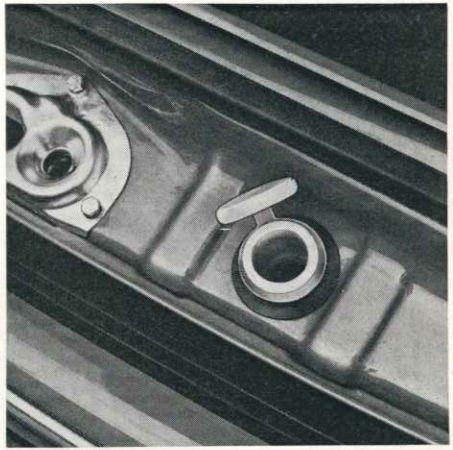
Lever up – right side parking lights
Lever down – left side parking lights

High beams
(Headlight switch all the way out)

Push lever toward instrument panel to select high beam. The blue indicator light in the tachometer comes on when high beam is switched on.

Pull the turn signal lever toward the steering wheel to select low beam.





Windshield Wiper/Washer Lever

The wiper/washer lever has four positions:

0 – Wipers turned off
1 – Low wiping speed
2 – Medium wiping speed
3 – High wiping speed

The electric windshield washer is actuated by pulling the lever toward the steering wheel.

When the wiper switch lever is in Position 0, two washer stages can be switched on:

1st stage – Windshield is sprayed with washer fluid

2nd stage – Spray continues while wiper blades clear the windshield at high wiping speed, as in Pos. 3.

When the wiper switch is in Position 1 through 3, the washer lever controls only the flow of the washer fluid and does not affect the wiper speed. As soon as the washer control lever is released, it automatically returns to the "off" position stopping the flow of washer fluid.

Before operating the wipers, the windshield must be sufficiently wet, as the glass surface will be scratched otherwise. The wiper blades should be frequently checked and replaced at least once a year.

The **washer reservoir** is located in the front luggage compartment. Be always sure that ample water is in the reservoir. To remove silicone deposits off the windshield, it is advisable to add an adequate cleaning solution to the water.

In the winter use an antifreeze cleaning solution, available at your authorized dealer.







Inertia Reel Safety Belt

Your Porsche is equipped with a safety belt for each seat.

Occupants of the vehicle should wear the belts at all times.

Shoulder belts should not be worn by persons less than approximately 4′ 7″ in height.

Do not wear the belts loosely.

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

Fastening the belt:

Sit back in your seat so that your body is supported by the backrest. Grasp the belt tongue and pull the belt in a slow continuous motion across your chest and lap. Insert the belt tongue into the corresponding buckle in the inboard side of the seat. Push down until it is securely locked with an audible click.

Be sure the belts are not twisted.

Remove slack by pulling the shoulder section of the belt in direction of the arrow to make sure the belt is drawn snug around the hips.

The inertia reel safety belt provides safety with freedom of movement. It adjusts automatically to your size and movements as long as the pull on the belt is slow. A sudden motion locks the belt.



Releasing the belt:

To unfasten the belt, push in the red release marked PRESS on the anchor housing. The belt tongue will spring out of the anchor housing.

To store the belt, guide the belt tongue to its stowed position on the door post. With the movable stop you can mark the section across your lap and at the same time keep the belt tongue from gliding down when the belt is wound up.

Make sure the belt is fully wound up on the inertia reel. This prevents the belt from lying about and becoming obstructive.

Belt Care

Keep belts clean. Wash belts with mild soap without removing them from vehicle.
Dry belts in the shade until they are completely dry.

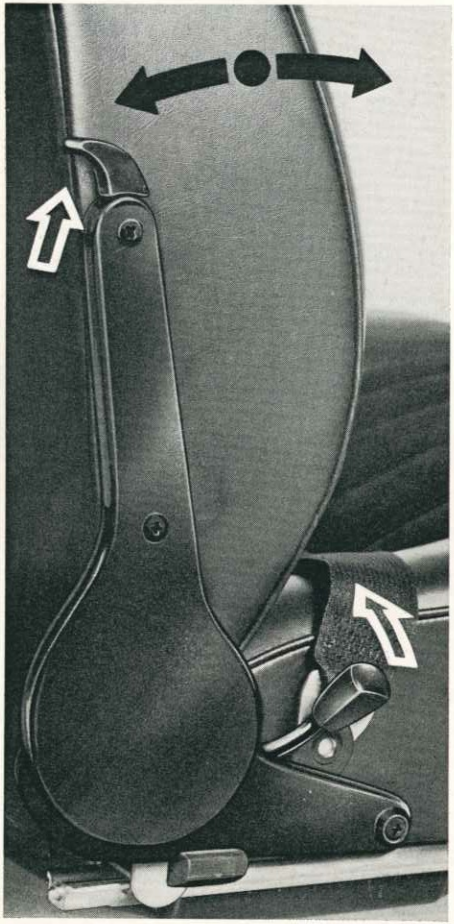
Do not bleach or dye the belts or use any other material to clean the belts. They may weaken the webbing.

Check belts periodically for wear and damage. Safety belts that were subjected to excessive stretch forces during an accident should be replaced.



Safety Belt Warning Light

An audio-visual warning system will remind the driver and the passenger to put on their safety belts. The buzzer will sound and the fasten seat belt sign on the dashboard will light up when the ignition is on and the parking brake is released. The warning system will also be activated if the passenger is not wearing the safety belt.



Head Restraint

The head restraints are fully adjustable. They can be lowered or raised and set to either up or down position. They can also be removed.

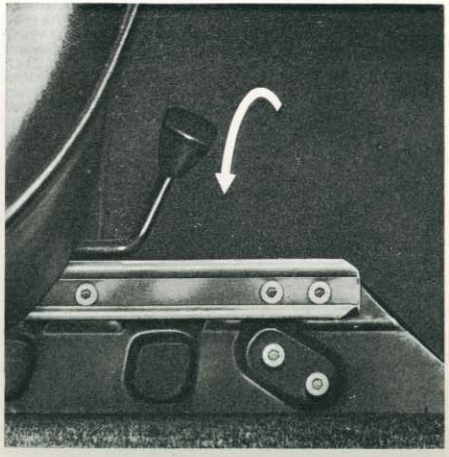
We recommend you adjust the head restraint to a position where its upper edge is at least at the same level as your eyes.

Backrest Release

The backrests can be folded forward. To release them, pull the locking lever on the side of the backrest up and, at the same time, tilt the backrest forward. When the seat is tilted back, the lock will engage automatically.

Reclining Seats

To adjust the position of the seat backrest, lean against the seat while pulling the release lever up (located at the outboard side of the seat). The backrest is always under spring tension and will return to the up position when the control lever is moved up.

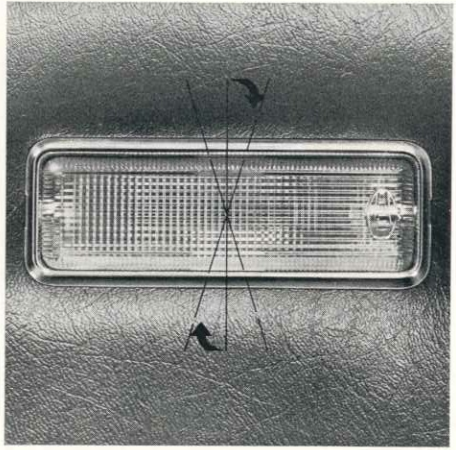


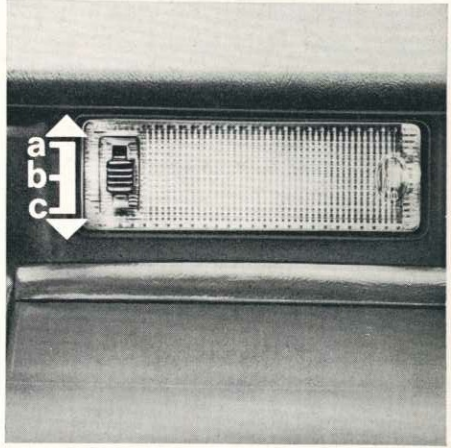
Seat Adjustment

The seats can be adjusted forward and backward by moving the release lever up and sliding the seat into the desired position; the release lever is located on the inboard side of both front seats.

Do not adjust the drivers seat while driving. Your seat may suddenly change position which could result in loss of control.







Interior Lights in Coupe Models

The above illustration shows the right interior light. The light has a built-in switch which is operated by pressing on the side of the lens.

There are three positions:

Lens in center position –
light comes on when door is opened.

Forward half of lens depressed – light on.

Rear half of lens depressed – light off.

Interior Light in Targa Models

The light has a built-in switch which is operated by pressing on the side of the lens.

There are three positions:

Lens in center position – light off.

Forward half of lens depressed – light on.

Rear half of lens depressed –
light comes on when door is opened.

Glove Compartment Light

The glove compartment light is located above the glove compartment and has three switch positions:

a – Light on – all the time

b – Light off – all the time

c – Light on – when glove compartment is opened

Before starting the engine, make sure the gearshift lever is in Neutral. Sportomatic vehicles can be started with the selector lever in Neutral or Park.

If the engine fails to start after 10–15 seconds of cranking, do not attempt to restart until approx. 10 seconds have passed.

Warning

Never start or let the engine run in an enclosed unventilated area. Exhaust fumes from the engine contain carbon monoxide which is colorless and odorless. Carbon monoxide, however, is a very harmful gas, and can be fatal if inhaled.

Starting Cold Engine

Pull the hand throttle lever all the way up. After the engine has started, slowly depress the hand throttle lever until engine idle speed is around 1200–1400 rpm. As the engine warms up, gradually push the hand throttle lever all the way down.

When the outside temperature is below -5° F slightly depress the accelerator pedal in addition to operating the hand throttle lever.

Do not turn the ignition on without operating the starter, otherwise the electric cold start device will switch off after a very short time, which would lead to irregular running of the engine after starting up.

Starting Warm or Hot Engine

Pull the hand throttle lever all the way up. After the engine is started, slowly push down the hand throttle lever.

At very high outside temperatures and when the engine is warm (oil temperature 212–250° F), instead of using the hand throttle lever, fully depress the accelerator pedal, and keep it depressed while starting the engine. Release the accelerator pedal after the engine has started.

Break-In Rules

Continued excellence of performance and economy depend to a great degree upon the treatment and handling of the car during the first 600 miles of operation. It cannot be overemphasized that not only the engine will benefit from proper break-in, but the entire vehicle as well. During this crucial period, the car must not be driven at full power over extended distances, nor should it be driven too slow, (with the exception of the 1st gear, do not drive at less than 1500 rpm if at all possible).

The general rules are as follows:

1. Maximum engine speed during the first 600 miles must not exceed 5000 rpm.
2. Increase the maximum engine speed by 500 rpm between odometer readings of 600 and 1000 miles, meaning not to exceed 5500 rpm. Drive briskly, change speeds frequently, use full throttle for short spurts only.
3. Increase maximum engine rpm to 6000 between odometer readings of 1000–1200 miles.
4. Be sure never to lug the engine with heavy throttle at low engine speeds, a rule which applies not only during break-in but at all times.
5. After 1200 miles, you can subject the car to full acceleration.

A special distributor rotor with an integral governor prevents an overspeeding of the engine under load by limiting the engine speed. The tolerance of the speed governor is ± 100 rpm.

Maximum Engine Speed

(The red mark on the tachometer dial serves as an optical reminder).

911 T: 6,500 rpm
911 E: 7,100 rpm
911 S: 7,300 rpm

There may be a slight stiffness in the steering, gearshifting or other controls during the break-in period, which will gradually disappear.

Breaking-in Brake Pads

Brakes may not have the highest possible braking efficiency when new. Therefore, allow for longer braking distance during the initial 100 to 150 miles. This also applies when the brake pads are replaced.

Shifting Gears

The fully synchronized transmission permits shifting into any gear without manipulating the accelerator pedal or "double-clutching". Make sure that the clutch pedal is fully depressed and the selected gear fully engaged. The following maximum engine speeds must not be exceeded when downshifting (applies to standard gear ratios only):

4-speed transmission

911 T 4th to 3rd gear = 4700 rpm
3rd to 2nd gear = 4100 rpm
2nd to 1st gear = 3600 rpm

911 E 4th to 3rd gear = 5000 rpm
3rd to 2nd gear = 4300 rpm
2nd to 1st gear = 3700 rpm

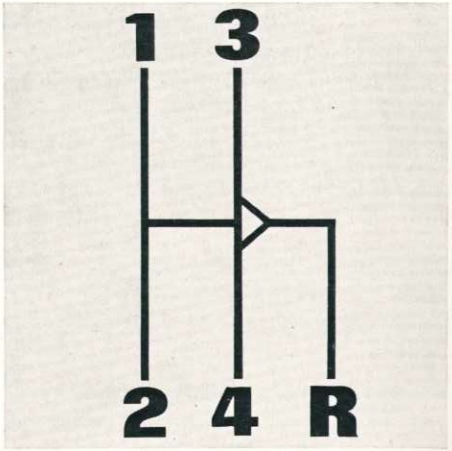
911 S 4th to 3rd gear = 5300 rpm
3rd to 2nd gear = 4700 rpm
2nd to 1st gear = 4100 rpm

5-speed transmission (optional)

911 T 5th to 4th gear = 5100 rpm
4th to 3rd gear = 5000 rpm
3rd to 2nd gear = 4500 rpm
2nd to 1st gear = 3700 rpm

911 E 5th to 4th gear = 5400 rpm
4th to 3rd gear = 5200 rpm
3rd to 2nd gear = 4700 rpm
2nd to 1st gear = 3900 rpm

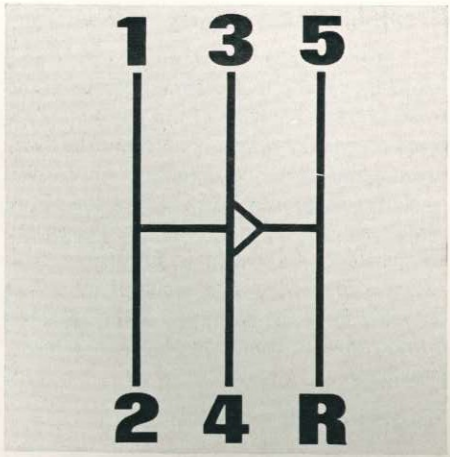
911 S 5th to 4th gear = 5700 rpm
4th to 3rd gear = 5500 rpm
3rd to 2nd gear = 5000 rpm
2nd to 1st gear = 4100 rpm



Four-speed shift pattern

1st gear – left forward over the spring guide
2nd gear – left rearward over the spring guide
3rd gear – straight forward
4th gear – straight rearward

Reverse – right rearward over the spring guide (but wait a few seconds after depressing the clutch pedal) The back-up lights are switched on automatically whenever reverse gear is engaged.



Five-speed shift pattern (optional)

1st gear – left forward over the spring guide
2nd gear – left rearward over the spring guide
3rd gear – straight forward
4th gear – straight rearward
5th gear – right forward over the spring guide
Reverse – right rearward over the spring guide (but wait a few seconds after depressing the clutch pedal) The back-up lights are switched on automatically whenever reverse gear is engaged.



Either the foot brake or the parking brake must be on when a gear is engaged in a stationary car. This is necessary because the converter does not interrupt the power transfer entirely even when the engine is only idling. The car tends to move slowly. The lower the gear or the higher the engine speed, the stronger the tendency to creep.
To select a gear, the connection from engine to gearbox must be interrupted. This is effected by a separator clutch which automatically disengages as soon as the selector lever is moved in the direction of a gear. When driving, the selector lever should therefore only be touched to change gear.
Should the selector lever be moved unintentionally, the engine speed would increase because of the reduced load on the engine. This would put a heavy load on the clutch when the selector lever is released.

Oil Temperature Warning Light

Should the torque converter become overheated as a result of stop-and-go traffic, mountain driving, etc., the oil temperature warning light in the oil temperature gauge dial will come on. By selecting a lower range, the oil will cool down and the warning light should go out.
If immediate downshift throug the driving ranges does not make the warning light go out, stop at once and check the oil level. If it is as specified (see page 51), do not continue driving but contact your nearest authorized dealer to have the cause traced and corrected.
Under heavy load conditions, the oil level should be kept at the upper mark (max) of the dipstick to aid in the dissipation of heat.

Sportomatic (optional)

For operation of the "Sportomatic" only a few points need to be observed in order to realize its advantages.
With Sportomatic a torque converter is built in between engine and gearbox, which serves as starter clutch and allows smooth, unbroken progression from one gear to another.

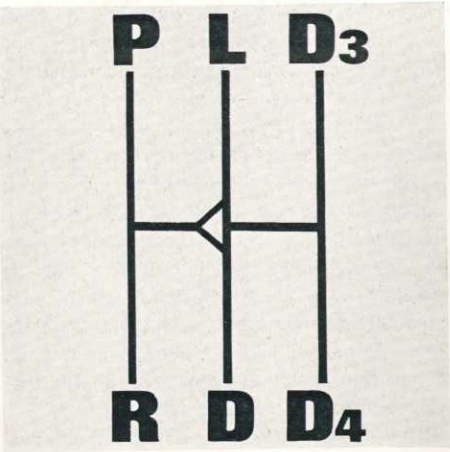
Sportomatic vehicles can only be started with the selector lever in Neutral or Park.

Speed Ranges (Sportomatic)

The torque delivered by the engine is multiplied by the torque converter to continuously suit the driving load for any given time. It is therefore possible to drive off in all gears and to reduce the driving speed down to zero.

For optimal acceleration and engine braking, however, the most suitable gears should be selected. Use the tachometer to check the max. permissible engine speed.

Do not exceed the following engine speeds when downshifting:



911 T

D 4 to D 3	speed range = 5000 rpm
D 3 to D	speed range = 4900 rpm
D to L	speed range = 4400 rpm

911 E

D 4 to D 3	speed range = 5300 rpm
D 3 to D	speed range = 5100 rpm
D to L	speed range = 4600 rpm

911 S

D 4 to D 3	speed range = 5700 rpm
D 3 to D	speed range = 5500 rpm
D to L	speed range = 5000 rpm

L range:

Straight forward off the spring guide for very slow driving.

D range:

Straight back, for starting off and accelerating. Also for driving in city traffic.

D 3 range:

Right forward, for driving under normal conditions.

D 4 range:

At right rear for driving at high speeds.

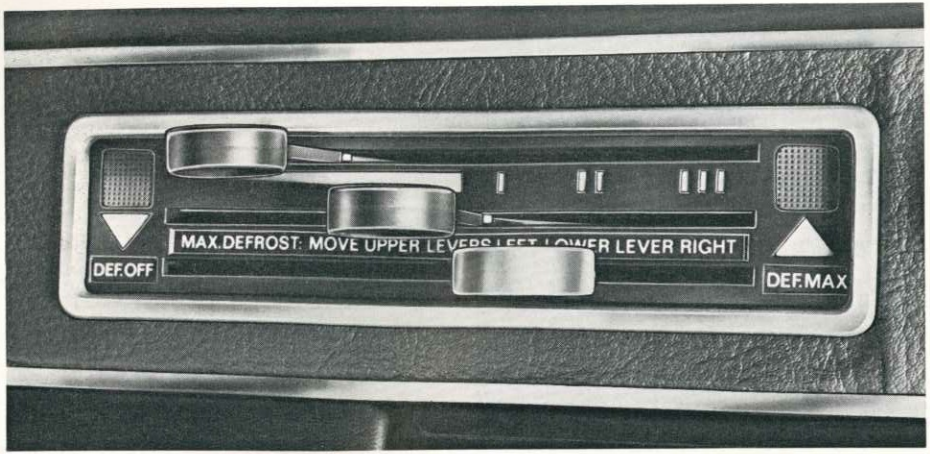
Reverse:

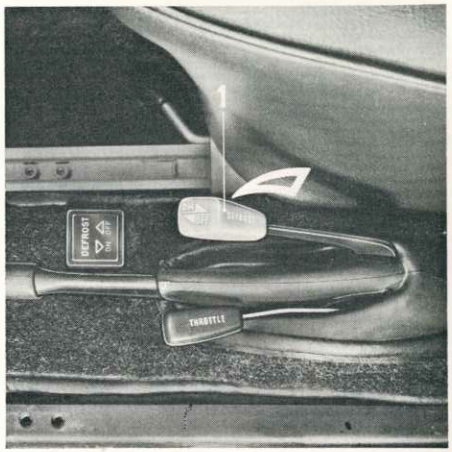
Press to the left over the spring guide and then pull straight back.
The back-up lights are switched on automatically whenever reverse gear is engaged.

Park:

Press to the left over the spring guide and then push straight forward; driving wheels are locked.

Only shift into Park after the engine has been stopped and the parking brake is set.





3 Heater control lever (red)

Ventilation System

The control-unit is located in the middle of the dashboard and it functions as follows:

The upper lever in the control panel controls the fresh air control flaps and ventilating fan. When the lever is at the left stop, air control flaps are closed. As the lever is moved to the right, the gates open and let fresh air into the passenger compartment through the inlet below the windshield as long as the car is moving. When the lever is pushed past the center position, the fan goes on. The fan can be set to position I, II and III, depending on the desired ventilating effect. The indicator light on the right side of the ventilation control panel will come on when the fan is on.

The center lever regulates the distribution of fresh air. When the lever is at the left, the air flow is directed to the leg area. In center position, the air flows to the lower and upper compartment areas. When the lever is moved to the right stop, air flow is directed upward only.

The lower lever (red) regulates the flow of hot air from the heat exchangers when the heater is turned on. This lever distributes the heated air in the same manner as the center lever distributes fresh air.

Since the fresh air flow is controlled separately from the heated air flow, it is possible to mix and direct the flow of fresh air and manifold heat in any desired manner. When the auxiliary heater is turned on, the circulating hot air can be mixed with fresh outside air.

Defogging/Defrosting Hints

Defogging and defrosting is most effective if the upper levers are moved to the left, and the lower lever is moved fully to the right. At the same time, the heater control lever (red) on the center tunnel should be raised all the way up.

Air Conditioning
(optional)



The air conditioner will ensure pleasant interior compartment temperature in hot weather. The system consists of the following components:

1. The compressor with an electromagnetic clutch, located in the engine compartment.
2. The condensers under the cooling air grille of the rear lid and the front bumper.
3. The evaporator with expansion valve and blower in the forward part of the car below the luggage compartment.
4. The control knobs on the instrument panel.
5. The hoses and tubes, and the cold air outlets.

The system is controlled by two rotary switches on the instrument panel. The cooling intensity can be varied with the temperature switch.

Left stop - low cooling
Turning to right - increased cooling effect
Right stop - maximum cooling

The blower switch has 4 positions:

Left stop - Blower off
Right turn - Blower on
Position I - low speed
Position II - medium speed
Position III - maximum speed

Optimum cooling is achieved when the windows are closed and the ventilating air supply is turned off. Both rotary switches must be fully turned to the right.
If the car has been in the hot sun for a long time, it is best to open the windows first and turn on the ventilator system and air conditioner, and then close the windows.

Once the desired temperature has been attained in the car's interior, the cooling output can be reduced or the fresh air ventilator system turned on.

If the window fog over in relatively humid and cold weather, the cooling intensity or air volume of the air conditioner should be reduced.

The air is drawn in from the car's interior and blown through the evaporator where it is cooled. The cooled air flows in through outlets below the instrument panel. The air flow can be directed up, down, right, or left by means of pivoting louvers.

When the air blower is switched on, the electromagnetic compressor clutch is energized. Cooling efficiency of the air conditioner is dependent on the engine rpm. The higher the engine rpm, the greater the cooling effect of the air conditioner.

The selected temperature is kept constant by a thermostat. The sensor is located between the cooling fins of the evaporator and regulates the temperature by engaging or disengaging the electromagnetic compressor clutch.

Note:

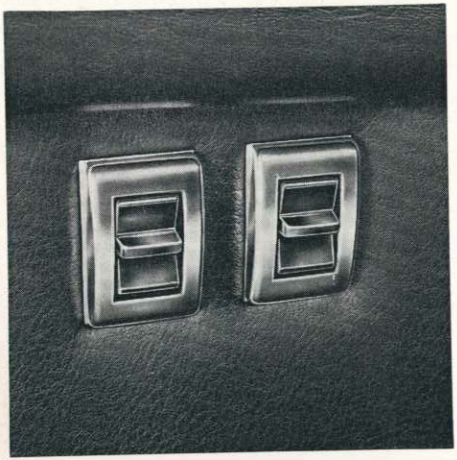
The air conditioner must be switched to position I for a short time at least once each month. Periodic operation of the air conditioner is necessary for seal lubrication at the crankshaft expansion valve. This is especially true during the cold season when the air conditioner is not used.

For better comfort during periods of high humidity and relatively low temperatures (fogging windows), the air conditioner can be switched on together with the heating system, with the heater control lever in the ON position and the air flow control for DOWN (on heater control panel).

This will dehumidify the air in the car and the windows will clear up. This adjustment provides the pleasant effect of cool upper compartment with warm air at the bottom.

Should uncooled air be coming from the air conditioner outlets, switch the system off. Further operation could lead to compressor damage.

The air conditioner works only when the engine is running. It must only be operated when the lid of the engine compartment is closed.



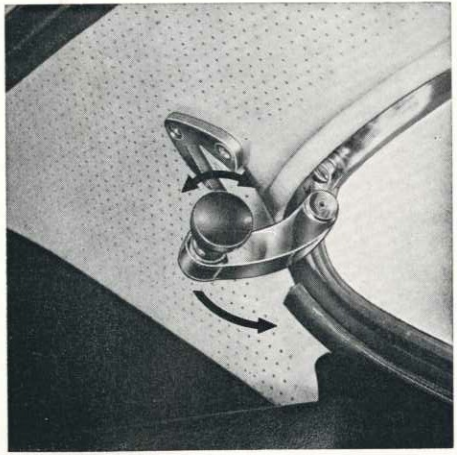
Electrical Door Window
(optional – Coupe models)

Both door windows can be controlled by "up – down" switches located in the door panels. The door window on the passenger's side can also be operated from the driver's side. They only work with the ignition key in position one or two.



Ashtray

To open the tray, push down on the cover. To remove the tray, depress the leaf spring in the center of the tray and pull out.
Insert the tray with the leaf spring depressed and holding the tray slightly tilted upward. Release the spring.





Side Windows

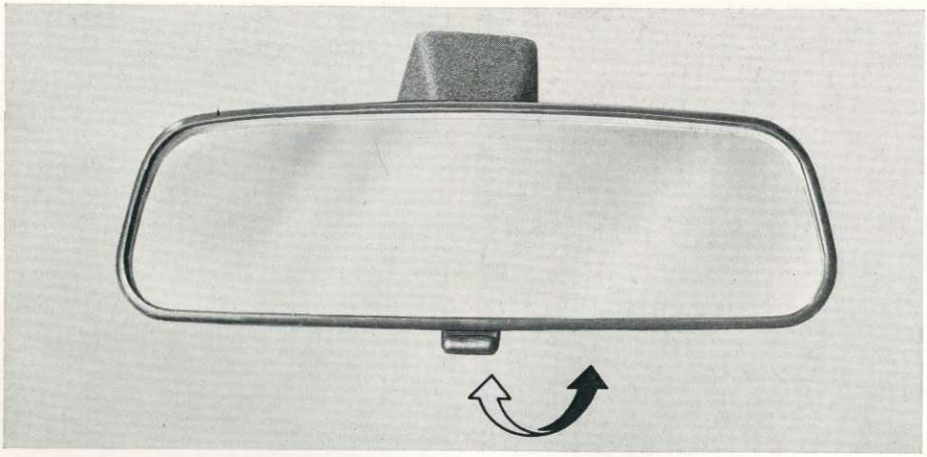
The side windows can be opened by crank handles.

On the Targa models, the front doors have vent windows, which can be opened by pushing the lever forward.

The Coupe models have opening rear side windows which are hinged and swing out. Open by turning the knob counterclockwise; pull lever and press out window. To keep window in desired position, turn knob clockwise.

Sun Visors

The sun visors can be moved to the sides after lifting them out of their center mounting (Coupe models only).



Rear view mirrors

Adjust the outside and inside mirrors before driving off. It is important for safe driving that you have good vision to the rear.

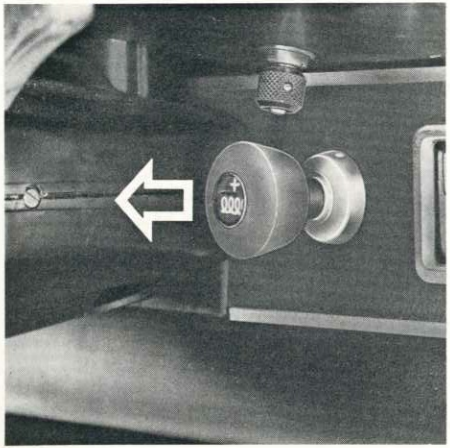
Inside day-night mirror

You can move the day-night mirror from clear daylight visibility to non-glare visibility at night by adjusting the lever upward or downward at the bottom of the mirror.

Outside mirror

The outside mirror is hinged and folds flat against the car when struck from either direction.

Heater Controls
Auxiliary Combustion Heater
(optional)



With the lever at the left stop, all air flows downward. With the lever in the center, warm air flow is directed to both the leg area and upper parts of the compartment. When the lever is moved to the right stop, the air flows upward only.
The heated air can be mixed with cold outside air by moving the upper lever to the desired position.
When the heater is switched off, the blower will continue to run for about 3 minutes. Should the heater not cool down sufficiently within that time, the cooling cycle will automatically repeat.

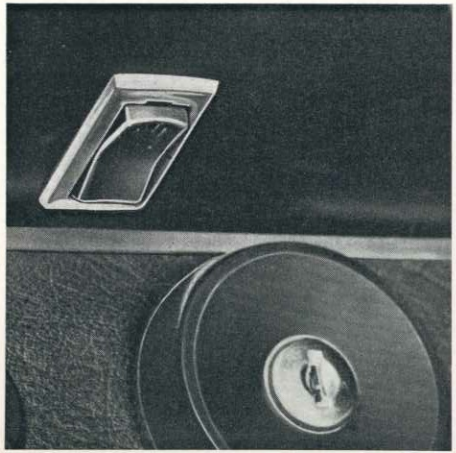
The auxiliary combustion heater is a recirculating unit for heating and ventilating the car's interior. It works independently from the exhaust manifold heater. The heater is located in the front part of the car and is accessible through the luggage compartment.
The heater forces heated air out through the fresh air ducts in the forward part of the passenger compartment.

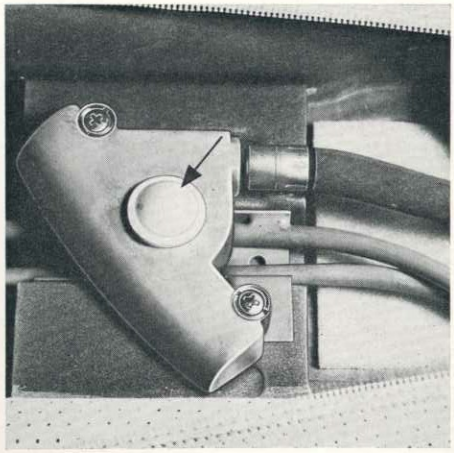
Operating Instructions

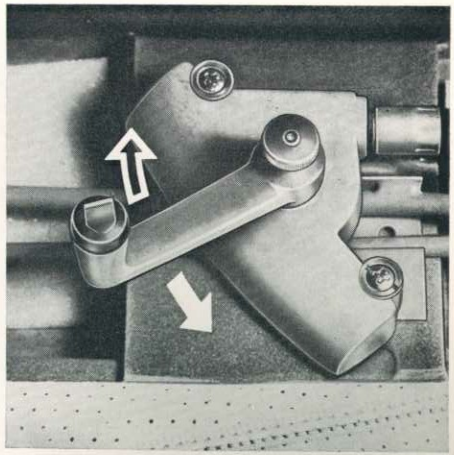
The heater can be turned on through a push-pull switch on the instrument panel.
Prior to switching the heater on, it is necessary to turn the ignition key to position one or two. When the heater is on, a control lamp lights up in the left part of the ventilation control panel.
The **center lever** in the control panel controls the flow of heated air.

The combustion heater exhaust gases are as dangerous as those of the engine. Never run engine or auxiliary heater in an enclosed area.

For technical data, see page 82 and 104.







Electric Sunroof (optional)

On special request, the Coupe models can be equipped with an electric sunroof. The sunroof is controlled through a spring-loaded rocker switch located above the ignition switch. With the ignition on, appropriate movement of the switch brings the roof into the desired position. When released, the switch returns to its neutral position and roof motion stops.

The sunroof is equipped with a safety clutch which disengages the drive mechanism when certain resistance is met, thus excluding the possibility of accidental injuries.

Manual operation

A hand crank has been provided for manual operation in the event of an electrical failure.

To move the roof manually, open the zipper above the rear window and remove plastic cap from the drive unit. Unscrew the now visible slotted screw with the screwdriver tip in the hand crank. Before inserting the fork-end of the crank, remove spacers which were under the screw. Turn the knurled screw of the crank into the threaded hole in the shaft making sure that the tips engage in the slots. The roof can then be moved by turning the crank.

Instructions for the Targa Convertible

The folding top is secured to the roll bar by means of two pawls, and to the windshield frame by two locks, facilitating easy removal and installation.

Removing Folding Top

The folding top should be cleaned with a soft rag prior to removal to prevent chafing in storage or transfer of dust onto clothes. A good place to store the folded top is in the front luggage compartment which should be opened prior to removal of the top.

1. Insert both operating handles into the right and left lock receptacles located in the front roof support bow; position both handles to point to the left and push in until they snap in place (Fig. 1).
2. Pull both handles downward and turn until they point to the right at an angle of approx. 45° (Fig. 2).
3. Continue to push one handle to the stop while gently lifting the same side with the other hand in order to snap it out of the safety lock (Fig. 3). Do the same on the other side. Remove handles and stow conveniently to permit rapid top installation when necessary.
4. Step out of the car. Holding the roof as shown in the illustration, push it up at the front bow and remove with a forward motion (Fig. 4). At this time it is best to keep one foot in the car so as to have proper body support during weight shift when the top assembly slides out of the attaching pawls in the roll bar.
5. Place the roof with its rear edge on a soft support (such as both shoe tips as shown in the illustration) and apply simultaneous pressure to the middle of both bows (Fig. 5).
6. Fold the roof by applying light pressure to the sides (Fig. 6).

The roof may now be easily stowed away in the car (Fig. 7).

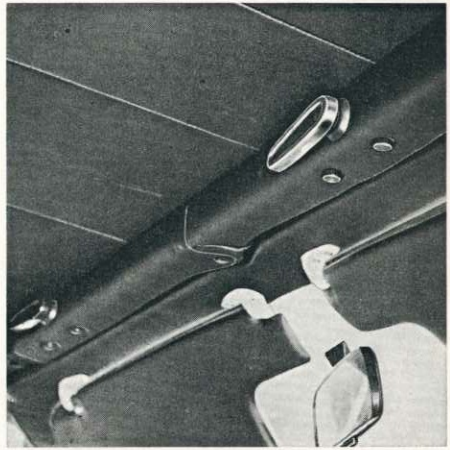


Fig. 1

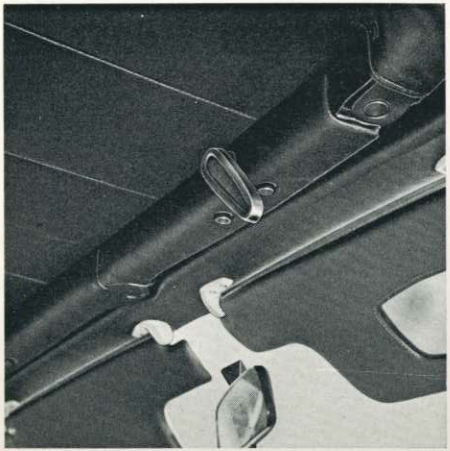


Fig. 2



Fig. 3

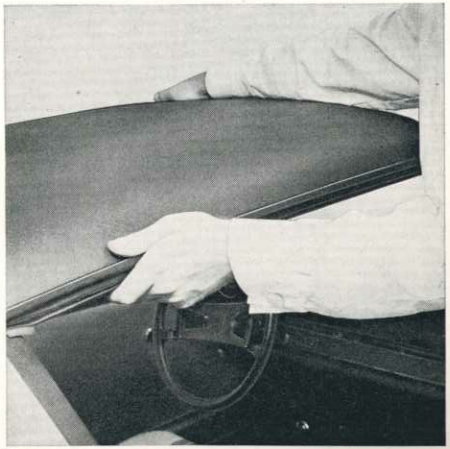


Fig. 4



Fig. 5



Fig. 6



Fig. 7

Installing Folding Top

1. Place the roof with its rear edge on a soft support (shoe tips) and pull sideways to unfold (Fig. 6).
2. Simultaneously push both pivoting linkages outward to tension the cover (Fig. 5).
3. Guide the stop assembly into the rear supporting pawls in the roll bar (Fig. 8) and push rearward until fully seated.
4. Applying light pressure from above, press the forward end of the top down to engage it in the safety locks (Fig. 9).
5. Insert both operating handles into the right and left receptacles located in the front support bow; position both handles to point to the right at an angle of approx. 45° and push in until they snap in place (Fig. 2).
6. While pushing the top down with one hand, turn the handle to the left to stop (Fig. 10 and 11.) Do the same on the other side.
7. Remove handles and stow where convenient.



Fig. 8

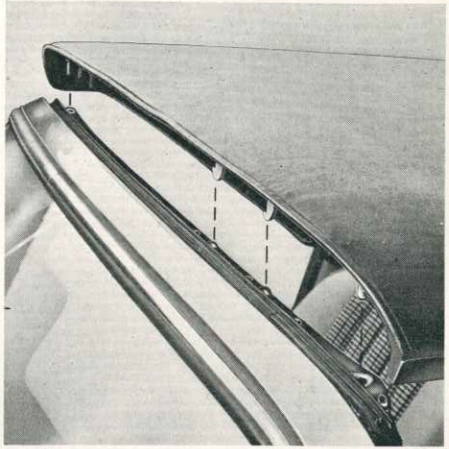


Fig. 9



Fig. 10



Fig. 11

Hints for Winter Operation

Engine Oil

Make sure that thinner oils having the proper specifications for winter use are put in the engine before the cold winter weather starts. Details of the various oils to be used are given on page 108.

Battery

During the winter months, the battery is subjected to greater use than in the summer months. More current is consumed when starting at very low temperatures. Lights and rear window defogger are used more often. Besides, the battery tends to decrease in capacity as the temperature drops.

Therefore, it is very important to keep your battery in the best possible condition. Have the battery checked regularly and, if necessary, charged between regular inspections. For details see page 75.

Corrosion Prevention

The road salts used to keep the roads and highways free of ice and snow promote corrosion. For this reason, we recommend that any damage to the factory-applied undercoating be repaired before the winter. Protective sprays containing oil should not be used as they attack both the rubber components and the protective undercoating.

In addition, the body should be coated with wax for protection, and the chrome ornamentation on the car, including hub caps and bumpers, with a chrome preservative.

Winter Tires

Winter radial ply tires give good traction in snow or slush. For a better grip on hard snow or ice, you can use winter tires with studs, but check with your local Motor Vehicle Bureau for possible restrictions.

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

Winter tires should always be mounted on all four wheels. They should also conform to the same load requirements as original equipment tires.

For safety reasons, it is not advisable to drive with winter tires at top speeds. Winter tires do not have the same degree of traction on dry, wet or snow-free roads as regular tires.

Use only snow chains with fine pitch links, so that enough space remains between the chains and the inside of the wheel arches. Follow the instructions issued by the supplier of the chains.

Windshield Washer

Add anti-freeze to the washer fluid, available at your authorized dealer to prevent it from freezing. Follow the instructions on the can for the right amount to be used.

Locks

Locks can freeze in the winter if water gets into the lock cylinders. When washing your car in the winter, do not aim the water jet directly at the locks. It is a good idea to tape the keyholes to prevent the water from seeping into the lock cylinder. Water in the locks must be removed with compressed air afterwards. Squirt lock de-icer, antifreeze, or glycerine into the lock cylinders to prevent freezing.

To open a frozen lock, warm up the key before inserting it. Do not use hot water as it will later freeze in the lock.

Rubber Mouldings

Rubber mouldings around the doors, the front hood and the luggage compartment lid should be lightly coated with glycerine to protect them against freezing.

Emergency Equipment

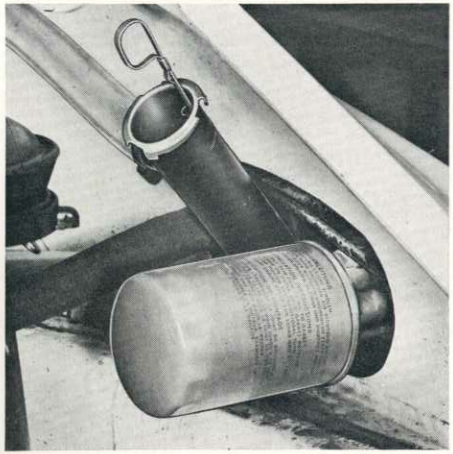
It is good planning to carry emergency equipment in your car. Some of the things you should have are: window scraper, snow brush, container or bag of sand or salt, flares, small shovel, first-aid kit, etc.

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CARE AND LUBRICATION

Checking Engine Oil Level in the Reservoir



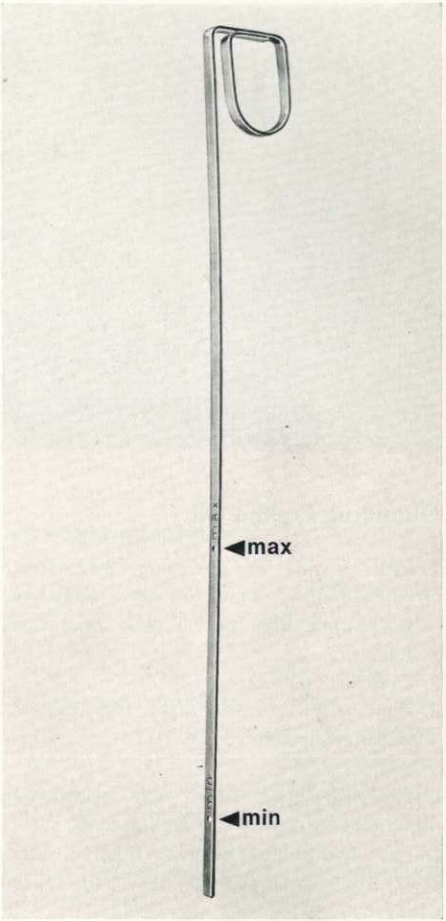
The oil level should be checked with the engine idling and the oil warm (approx. 176° F) and the car on level ground.

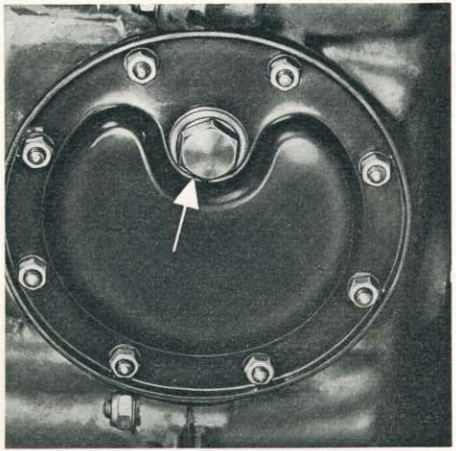
The engine should be running at idle speed for about one-half minute prior to reading the oil level gauge or checking with the dipstick. This allows the oil to settle in the tank.

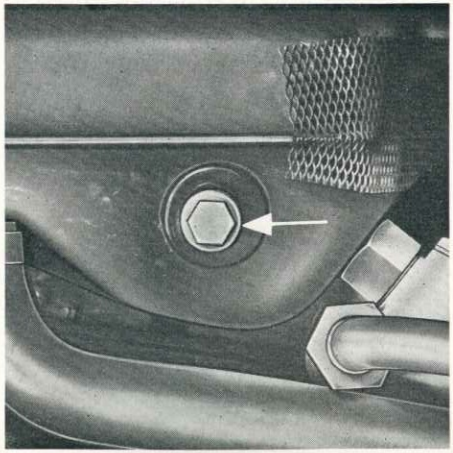
Remove oil filler cap from filler neck and pull out dipstick. Wipe dipstick clean and reinsert into guiding tube. Wait a few moments and pull out to check oil level.

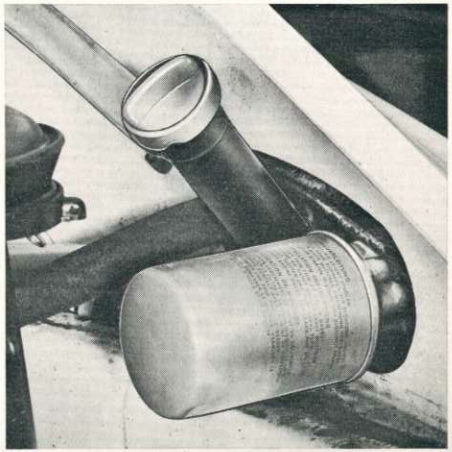
The oil level should be between the two marks on the dipstick, and must never drop below the lower mark. Do not overfill.

When operating the vehicle under extreme conditions such as prolonged high-speed driving in summer, the oil level should be kept just under the upper mark.









Changing Engine Oil

1. With engine at operating temperature (engine off), remove oil drain plug from the engine and the oil tank; open tank filler cap.
2. Drain oil completely.
3. Remove oil strainer, clean and re-install with new gaskets.

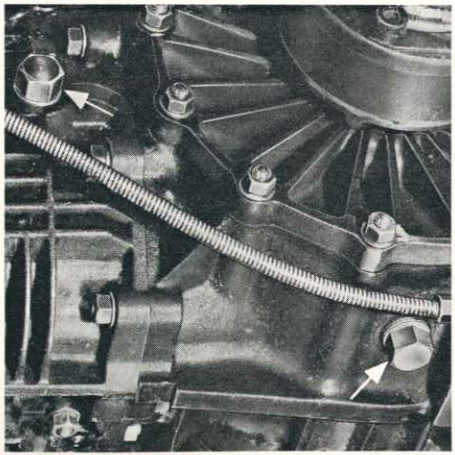
Note: Install the strainer with its opening fitting closely around the suction pipe.
Do not overtighten hexagon nuts, in particular when thick gaskets are used, or the cover may be distorted.

4. Change oil filter cartridge.
5. Clean and reinstall oil drain plugs, tighten properly.
6. Fill the oil tank with approx. 2.64 US gals. (2.2 Imp. gals.) of premium grade HD oil.
7. Secure oil filler cap.
8. Start the engine and check oil level with dipstick at idle speed when the oil has reached a temperature of 176° F. Add more oil if necessary. When checking, keep the engine running until the oil level has stabilized (about 1/2 minute).
9. Inspect for leaks.

Changing Oil Filter

The oil filter should be changed at the specified intervals (see Maintenance Record).

1. Unscrew filter with gasket.
2. Place a light coat of engine oil on the new gasket.
3. Screw on new filter with gasket until filter contacts base.
4. Tighten assembly by about one-half turn more. Do not overtighten.
5. Start engine and check for leaks.



Changing Transmission Oil

1. Remove oil drain plug from the bottom of transmission housing.
2. Allow oil to drain completely.
3. Clean drain plug, reinstall, and tighten securely.
4. Wipe dirt from oil filler plug before removing it.
5. Fill transmission with approx. 3.17 US qts. (2.63 Imp. qts.) SAE 90 transmission oil, Mil-L-2105 B (or Mil-L-2105).
   The oil level should reach the lower rim of the oil filler hole, with the car standing on level ground.
6. Clean the oil filler plug, insert and tighten.

Transmission

Both transmission and final drive are combined in one housing. The lubricant used is hypoid oil that is changed by your dealer at 1,000 miles and then every 10,000 miles as part of the lubrication service. See Maintenance Record.

The transmission is checked for leaks during the maintenance service. Should the need arise to replenish the oil filling, it should only be done with the necessary workshop equipment. Generally hypoid oil is not marketed in small quantities.

Lubricating Linkage

1. Lubricate all linkage pivot points left and right with 1–2 drops of engine oil, moving the linkage at the same time.
2. Lubricate linkage of accelerator pump.
3. Disconnect thrust rods, place a small amount of high-temperature bearing grease into all ball cups and re-assemble.
4. Move linkage back and forth several times to check correct action.

Do not disturb setting of microswitch or operating lever.

Care of Coachwork

The Porsche paint finish is of a high quality baked synthetic enamel. The color and enamel type designation is indicated on a plate attached to the left front doorpost. In correspondence pertaining to the paint finish, make sure to include the car's identification numbers.

In daily use the car is exposed to many mechanical and chemical factors as well as hot sun rays, rain, snow, and frost. The ultraviolet rays, the rapid temperature changes with rain, snow, industrial dust and chemical deposits attack the paint finish which can withstand this only through regular and proper care.

Car Washing

During the initial few weeks, the new car should be washed with clear water only. This is best accomplished by applying a fine water spray to the entire surface to first soften the dirt and remove the worst of it. Clean the surface by using a soft sponge and plenty of water, rinse well, and then wipe dry with a chamois. Do not wash or wax the car as long as the surface is hot from exposure to the sun or engine heat.

Since water will usually wet the brakes when the car is washed, resulting in poor braking action or one-sided pulling, it is important to test the brakes after the car has been washed.

Dust should never be wiped off the car with a dry rag since dust particles are abrasive and will rapidly dull the finish and cause scratches that may be difficult to repair.

Care of the Finish

Oils contained in the paint are the most important ingredients contributing to the elasticity of the finish. Because these oils are gradually lost, due to weather and similar causes, they must be replenished through regular and proper care of the finish. Proper cleaning and application of preservatives will result in high luster and provide a long lasting protective coating. Given proper care, the original finish will retain its brilliance for many years. The use of polishes is recommended only after it becomes evident that the normal preservatives no longer accomplish the job.

Keep silicone polishes off the windshield to avoid wiper smear in rain.

Application	Porsche Products
Car wash and liquid wax	Car Wash and Wax – ZDW 234 201
Paint touch-up	Touch-Up Paint (available in all colors)
Targa top cleaning, upholstery and carpet cleaning, whitewall tire cleaning	All Purpose Cleaner – ZDW 243 101

Whenever using commercial cleaning agents follow the directions of the containers. Be aware of warning or caution labels.

Polishing

It is advisable that repolishing of your car is entrusted to skilled hands of professionals acquainted with this work since a good degree of care and know-how is required. The finish must be polished with clean cotton until high luster is obtained. This should be done in small sections to ensure that the polish does not dry beforehand. A subsequent application of a wax preservative will give the finish a brilliant, long lasting gloss. Metallic paints are especially difficult to maintain and should always be given professional care.

Spots and Stains

Road tar, grease, oil, and insects cannot always be removed with soap and water alone and require special treatment. Spots of any sort should be removed without delay before they set and cause permanent damage.

Road Tar

Road tar should be removed immediately with tar remover since it may cause permanent stains if allowed to stay on for any length of time. Whenever tar removing solvents have been used on the finish, a wax preservative should be applied afterwards.

Insects and Tree Sap

During the warm season, insects will accumulate on the forward surfaces of the body. Since these deposits are somewhat difficult to remove with sponge and water alone, a mild soap solution may be applied. Tree sap accumulating when parking under trees, can also be removed with a mild soap solution. Rinse the car thoroughly after cleaning and follow up with a wax preservative.

Cloth Upholstery

Even though the upholstery fabrics in your Porsche are of top quality, they must be handled with proper care to prevent scuffing or bleaching in the process of cleaning. If a vacuum cleaner is not at hand, the upholstery may be cleaned with a soft brush. More persistent stains may be removed with lukewarm water or, if necessary, soap water solution. Grease and oil spots can be removed with commercial spot removers by using an undyed soft cloth and rubbing the upholstery until dry.

Do not use gasoline, kerosine, naphtha, nail polish remover or other volatile cleaning fluids. They may be toxic, flammable or hazardous in other ways. Only use spot removing fluids in well ventilated areas. Keep them out of reach of children.

Leather and Leatherette

The best way to clean leather and leatherette is by using a lukewarm soap and water solution and a soft brush. Use water sparingly avoiding soaking or drenching. Use a soft sponge to wipe each section completely dry after it has been cleaned. Clean the seams carefully, making certain that these areas have been cleaned evenly and dried well. When cleaning leather, it is advisable to follow up with a good leather preservative.

Chrome Trim

Chromed parts should first be washed with sponge and water, then dried with a soft cloth. Road tar must be removed with tar remover rather than knives or similar objects. By following up with a chrome preservative, a high and long lasting luster will be maintained. During the winter as well as in coastal areas it will be of advantage to cover the chromed parts with a somewhat heavier coating of the preservative as protection against salty air and extended exposure to corrosive road dirt. If necessary, coat the parts with non-corrosive petroleum jelly or other protective compound.

Rubber Weatherstripping

Rubber weatherstripping is used around the doors and windows. Given a certain amount of care, these rubber components will remain pliable; it is normal for rubber to lose elasticity through aging which causes it to become hard and brittle. However, this process can be effectively countered and slowed through the application of talcum powder or glycerine.

Do not apply glycerine to the car's body. Glycerine may damage the paint finish.

Windows

Your Porsche is equipped with two types of glass: the windshield is of laminated safety glass and all other windows of tempered safety glass. The laminated glass consists of two layers of glass bonded together with a transparent layer of pliable plastic. When laminated glass is damaged, only the immediate impact area shatters leaving the rest of the surface intact to provide continued visibility through the windshield.

The best way to clean the glass is by using a lukewarm water solution containing a small amount of alcohol or baking soda, and clean absorbent paper (also newspaper). If a chamois is used for polishing the glass, it should be used exclusively for that purpose, and which has been thoroughly cleaned prior to use. Contact with the painted surfaces must be definitely avoided, especially with polishes and preservatives.

It should be remembered not to engage the windshield wipers until the windshield has been moistened by rain or the windshield washer.

Targa Roll Bar

The roll bar outer surface is made of stainless steel which normally requires no special care. In areas with heavy air pollution, the roll bar may be cleaned with a commercial chrome preservative from time to time to remove any industrial fall-out.

Targa Folding Top

All pivots in the folding top are service free. The top cover is made of leatherette and is easily cleaned and maintained.

Cleaning is best accomplished with a lukewarm solution of soap and water applied with a soft brush. Upon removal of the dirt, rinse the top cover thoroughly with clear water and rub dry with a soft cloth.

We recommend to occasionally treat the top cover with a good commercial leatherette preservative.

Protective Undercoating

The oil industry has developed undercoating and rust proofing materials of bitumen or wax base. These materials do not soften the undercoating sprayed on at the factory. Instead, they solidify and, upon drying, form a tough, pliable protective coat. We recommend that the undercarriage is treated with such a preservative before the winter as well as in the spring.

After cleaning the underside or after repairs to engine or transmission, the undercoating must be renewed.

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MAINTENANCE AND ADJUSTMENTS

The recommended service intervals, as listed in the Porsche Maintenance Record, apply under normal driving conditions.

The condition of oil, and of wear and tear items depends greatly on the amount of driving and on driving habits. Therefore, oil and wear and tear items should be checked more frequently and possibly changed at shorter intervals.

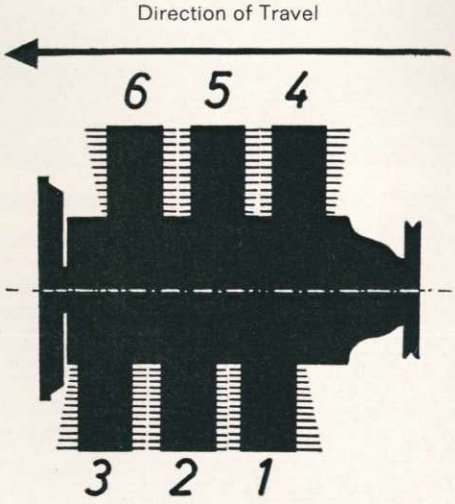
A complete lubrication and maintenance service should be carried out at least once a year, preferably before the winter. The same applies to protective undercoating for the vehicle.

Incomplete or improper servicing may cause problems in the operation of the car. If in doubt about any servicing, have it done by a qualified mechanic or by your authorized dealer.

Before working on any part in the engine compartment, turn off the engine and let it cool down sufficiently. If work has to be done with the engine running, exercise extreme caution to prevent neckties, jewelry or long hair from getting caught in the V-belt.

Adjusting Valve Clearance (cold)

Cylinder Designation

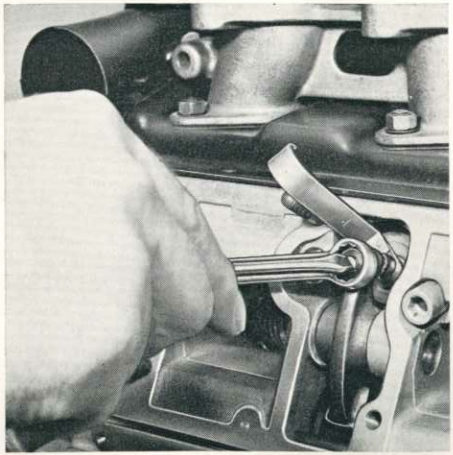


Valve clearance in cold engine:

Intake – 0.004 in. (0.1 mm)
Exhaust – 0.004 in. (0.1 mm)

Excessive valve clearance results in a noisy engine, loss of power and also affects timing. Insufficient valve clearance causes poor performance which may result in burned valves and valve seats. Timing is also affected. Consequently, we recommend that the valves are adjusted at your authorized dealer.

The valves should be adjusted only when the engine is cold by following the firing order, i. e. 1 – 6 – 2 – 4 – 3 – 5. When setting the valves of any cylinder make cure that the piston of that cylinder is at top dead center (TDC) of the compression stroke since the valves are closed when the piston is in that position. If adjustment is to be started at Cylinder 1, turn the crankshaft until both valves of that cylinder have closed and the TDC mark on the belt pulley is in line with the notch in the blower housing.





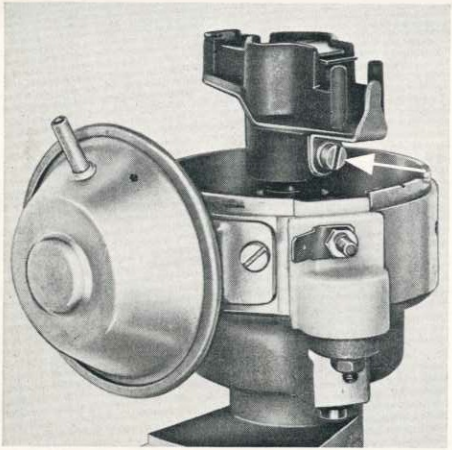
1. Remove valve covers.
2. At first maintenance, check rocker arm shafts for firm seating.
3. Bring the No. 1 piston to TDC on compression stroke.
4. Check valve clearance with a feeler gauge.
5. Loosen hex adjusting nut (lock nut).
6. Adjust clearance by turning the adjusting screw with a screwdriver and, at the same time, holding the lock nut in place and checking the clearance with a feeler gauge.
7. Tighten lock nut while holding the adjusting screw firmly in place.
8. Check the valve clearance again.
9. Repeat this procedure on all other valves.
10. Check valve cover gaskets and replace if necessary. Reinstall valve covers.
11. Start engine and check covers for leaks.

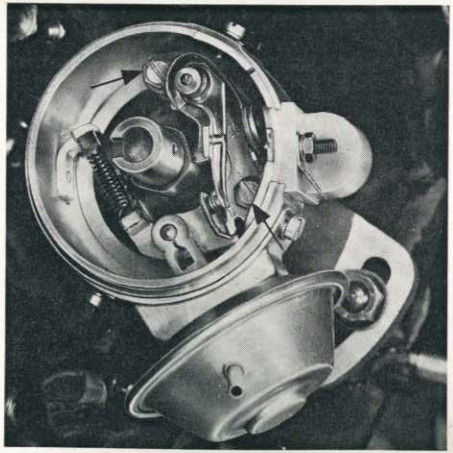
Rocker Arm Shaft

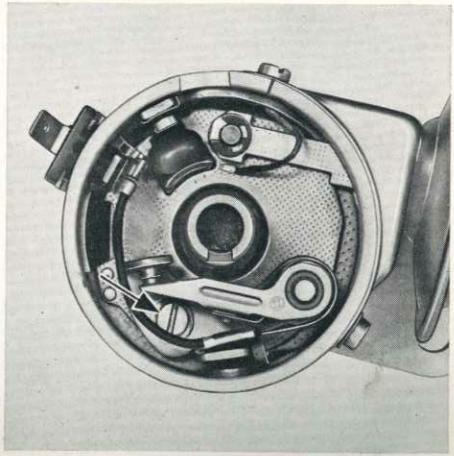
Checking tightness

Remove valve cover and check rocker arm shaft retaining bolts for proper tightness using Allen wrenches.

Proper torque when tightening the bolts on cold engine is 12–13 ft-lbs (1.7–1.8 mkp).







Breaker Points

The distributor breaker points play a vital role in the ignition system. The correct functioning of the ignition system, in turn, is important for the complete burning of the air/fuel mixture, and therefore affects the exhaust emission.

Because of federal emission control regulations, ignition adjustments must be within specifications. If in doubt, have this work done by your authorized dealer, or any other properly equipped workshop. Checking and adjusting the dwell angle and ignition timing should be done at operating temperature of the engine.

Checking Dwell Angle
(with engine turned off)

1. Install dwell meter according to operating instructions.
2. Start car. Dwell angle should be:
   Bosch 38° ± 3°
   Marelli 37° ± 3°
3. Stop engine. If dwell angle is not as specified, the breaker point gap must be adjusted.

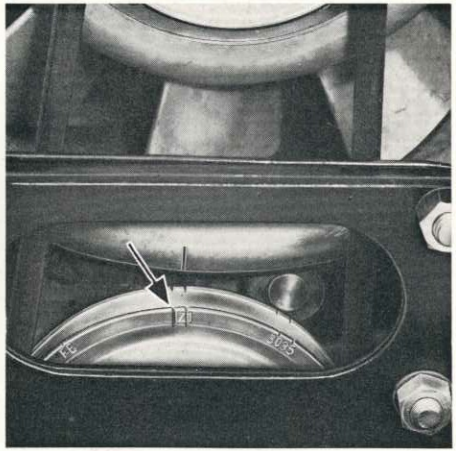
Adjusting Breaker Point Gap
(with engine turned off)

1. Bosch: remove distributor cap, rotor and dust cover.
   Marelli: remove distributor cap, loosen the screw on the rotor, remove rotor.
2. Turn the crankshaft until a lobe of the distributor drive shaft has fully raised the breaker point arm. Slightly loosen the breaker point screw.
3. Adjust breaker point gap.
   Small dwell angle – close gap.
   Large dwell angle – open gap.
4. Tighten breaker point screw.
5. Bosch: reinstall dust cover, rotor and distributor cap.
   Marelli: reinstall rotor, tighten screw on rotor.
6. Start engine, recheck dwell angle. Stop engine. If dwell angle is not as specified, repeat the procedure for adjusting the breaker point gap.

Replacing Breaker Points
(with engine turned off)

When breaker points are badly burnt or pitted, they should be replaced.

1. Bosch: remove distributor cap, rotor and dust cover.
   Marelli: loosen screw on the rotor, remove rotor.
2. Remove breaker point screw. Disconnect wire from terminal.
3. Replace breaker points.
4. Reconnect wire to terminal.
5. Install breaker point screw, tighten slightly.
6. Initially adjust breaker point gap with feeler gauge as follows:
   Bosch: 0.014 in. (0.35 mm)
   Marelli: 0.014 in. (0.35 mm)
7. Tighten breaker point screw.
8. Bosch: reinstall dust cover, rotor and distributor cap.
   Marelli: install rotor, tighten screw on rotor.
9. Recheck dwell angle with dwell meter.



Testing Cylinder Compression

Cylinder compression test is accomplished at cranking rpm. To perform the test, first remove all spark plugs and then proceed with testing. Each cylinder should be allowed about 12 piston strokes (compression strokes). Cylinder pressure should be even on all cylinders. The difference between cylinders should not exceed 22 psi. The test may be accomplished with a common compression gauge.
Perform compression test with fully open throttle and oil temperature not less than 140° F.

Ignition Timing

The first step in adjusting the ignition timing is to check, and readjust if necessary, the breaker point gap. Replace the points if burned or pitted.
Ignition timing is set 5° ATDC. This is indicated by the notch to the left of the no. 1 cylinder TDC mark on the crankshaft pulley.

Note:
Check the timing at idle speed (900 ± 50 rpm) with the engine at operating temperature. Be sure vacuum line is connected. Use a stroboscopic timing light.
Check distributor advance at 6,000 rpm after adjusting basic ignition timing. Timing should be between 32°–38° BTDC with the vacuum line disconnected.

Lubricating Distributor Cam

1. Remove distributor cap.
2. Withdraw rotor arm.
3. Remove dust cover (Bosch).
4. Thinly coat the cam with distributor cam grease.

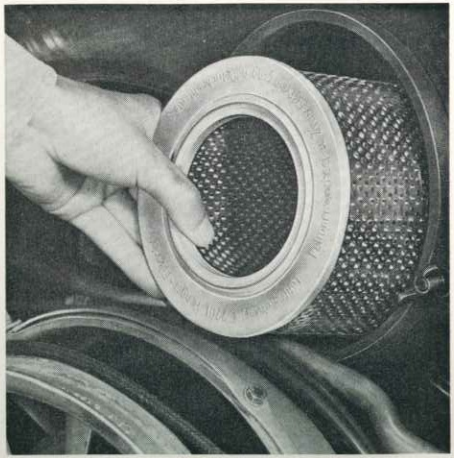
Note:
Do not get grease or dirt on the contact breaker points. Dirty contact points will cause misfiring and quick contact wear.



Cleaning Flame Trap Cartridge

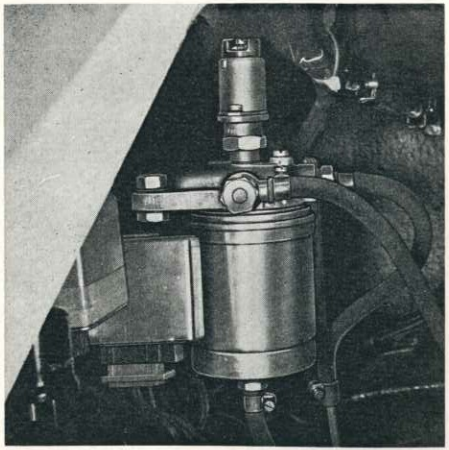
When cleaning the flame trap cartridge, the upper part of the air cleaner has to be removed.

1. Open clips at the filter housing and lift up filter slightly.
2. Detach breather hose connecting the oil tank with the air cleaner, as well as the condensation water hose by pulling the hose off at the air cleaner.
3. Remove flame trap cartridge, clean in cleaning solvent and blow through with compressed air.
4. Reinstall flame trap and reconnect breather hose.
5. Attach condensation water hose before re-installing the air cleaner.



Replacing Air Cleaner Cartridge

1. Remove hose between air cleaner and regulator housing.
2. Remove both wing nuts from air cleaner.
3. Turn the top slightly to the left and remove.
4. Take filter cartridge out.
5. Clean the inside of housing with an oiled cloth. Do not use frayed rags or similar materials.
6. Check rubber seal in housing for damage.
7. Insert new filter cartridge.
8. Reinstall top, tighten wing nuts.
9. Reconnect hose.



Replacing Fuel Filter
(911 E, 911 S)

1. Loosen clamp at lower hose of fuel filter and pull hose off.
2. Collect fuel running out so that it does not drip into engine compartment.
3. Using a 22 mm open end or box wrench, loosen filter; hold upper part of filter to keep it from turning.
4. Unscrew filter.
5. Screw on new filter.
6. Remove connector from old filter.
7. Install hose connector together with gasket into new filter.
8. Slip fuel hose on and tighten hose clamp.

Checking Spark Plugs

The appearance of the electrodes and insulator is a good indicator of the condition of the engine.

Appearance of electrode and insulator

Medium brown:
Proper fuel mixture, spark plug in good condition.

Black:
Fuel mixture too rich, spark plug gap too wide, plug too cold.

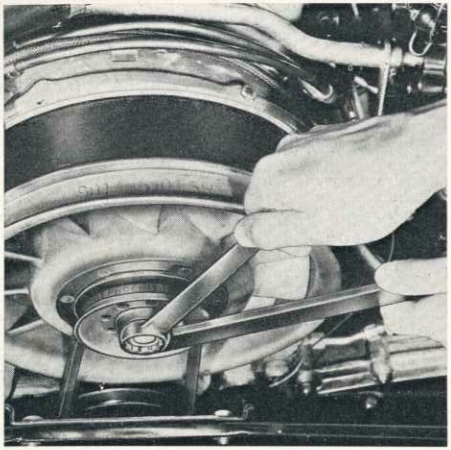
Light grey:
Fuel mixture too lean, spark plug loose or leaking, valves not closing fully, plug too hot.

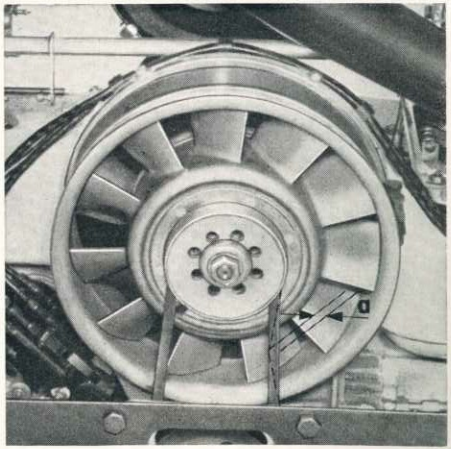
Oil soaked:
Oil drawn into combustion chamber due to worn cylinders or piston rings, plug misfiring.

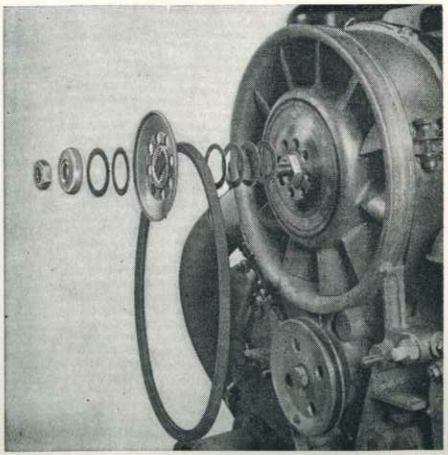
Cleaning Spark Plugs

Spark plugs can be cleaned with a fine wire brush and blown clean with compressed air. The upper insulator should be wiped clean to prevent current leakage and misfiring.

Handle spark plugs with care to prevent damaging the electrodes.







Adjusting V-Belt

The pulley retaining nut must be removed when the V-belt is to be removed or adjusted. Hold the alternator pulley with the holder provided in the tool kit when loosening or tightening the pulley retaining nut.

Proper belt tension is attained by changing the distance between the pulley halves. This is done by adding or removing spacers which are installed between the two pulley halves; spare spacers are kept between the outer pulley half and the retaining nut.

The belt tension is correct when the belt can be depressed by about $^1/_2$ to $^3/_4$ in. (10 to 15 mm) under light thumb pressure (see "a" in above illustration). Recheck the adjustment after turning the crankshaft a few times.

Bear in mind that new belts stretch after the first miles of use. The tension should therefore be checked and adjusted within a short time of installation of a new belt.

Changing V-Belt

When replacing a worn belt, make sure that the replacement has the size 9.5 x 710 mm. To change the belt follow the same procedure as for adjusting tension. Begin assembly by having 5 spacers between both pulley halves and work from there to obtain proper belt adjustment by adding or removing spacers.

Dual Circuit Disc Brakes

The foot brake acts as a disc brake on all four wheels. When the brakes are applied, each brake pad is hydraulically pressed against the internally ventilated brake disc by a brake piston. The brakes are self-adjusting.

The brake discs are protected against road spray and dirt by splash shields, but it is still possible that the brake pads and discs become wet when driving on wet highways. If you should then have to brake, higher pedal pressures will be required for braking. You can keep the brake discs dry by gently appling the brakes to and fro. Do not forget to run the brakes dry after the car has been washed.

Despite the efficiency of disc brakes, use engine braking power when descending long hills. This will keep the brakes from overheating.

When participating in competition events and desiring to facilitate better cooling for the brakes, it is permissible to remove the rear brake shrouds; the front disc shrouds, however, must never be removed.

Your Porsche is equipped with a dual circuit brake system. Both circuits, one for the front brakes and one for the rear brakes, can function independently. If one brake circuit has failed, the other one will still operate, but a longer distance and greater pedal pressure are required to bring the car to a halt.

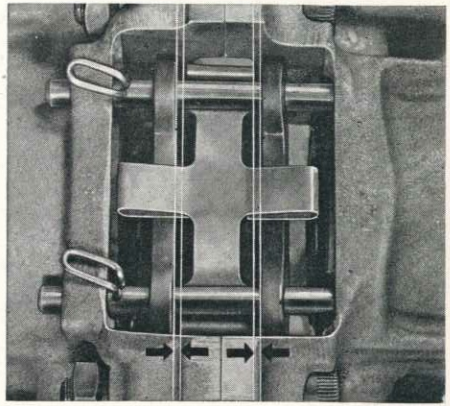
Continued operation of a car with defective brakes is dangerous.

Pull off the road and stop. Try out the effectiveness of the brakes by carefully starting and stopping on the road shoulder. If you judge that the brakes operate safely enough to take you to the nearest dealer, proceed cautiously and at low speed. If you do not feel safe to continue, have your car towed to the nearest dealer for repair.

Brake Pads

Brake pad wear will mainly depend upon the degree of usage, type of driving, and condition of the roads. It may be expected that the pads will wear faster on dirty and wet roads.

Various types of brake pads are available, such as for normal use or for competition.



Competition brake pads wear slower but require higher pedal pressures. We suggest that competition brake pads be removed before the winter and replaced with pads designed for normal use. Thickness of the pads should be checked during all preventive maintenance operations or whenever the wheels are taken off the car (visual check). The brake pads must be thick enough between the brake pad plate and the cross spring to allow a reserve for further wear (see illustration). The permissible wear limit has been reached once the brake pad plate comes to rest against the cross spring (brake pad thickness approx. 2 mm or 0.08 in.). We also suggest that the condition of the brake pads be checked prior to departure on long trips.

Replacing Brake Pads

Each car must be equipped with brake pads of identical type and brand on all wheels. Replace all pads of a given axle at the same time.

Brake pads which were in use and are to be removed for any reason should be appropriately marked to ensure that they are installed in their original position upon reassembly.

1. Place car on stands and remove wheels.
2. Remove safety locks and retaining pins. Depress spring and remove.
3. Mark pads prior to removing, then remove.

Note: When the pistons are pushed back, fluid is forced out of the cylinder and flows back into the reservoir. To prevent spillage, drain some of the brake fluid before pushing the pistons back. The siphoning tool used for this purpose should be completely clean and should not come in contact with anything but the brake fluid.

4. Using a piston depressor, push pistons fully back. If the special tool is not available, the pistons may be pushed back with a piece of wood. Do not use other tools or improvisations for this purpose to avoid damaging the pistons or brake discs.
5. Clean pad seating and supporting surfaces within the housing using denatured alcohol; do not use mineral solvents or sharp objects.
6. Check dust covers and safety rings for condition. Replace covers when hardened or porous.
7. Clean brake discs with fine-grade emery cloth.
8. Install new brake pads with retaining pins, springs, and safety locks. The brake pads must fit freely in their wells. If necessary, install new safety locks and cross springs.
9. Follow the same procedure on remaining brakes.

Note:

Use only replacement pads available at your authorized dealer. Prior to driving the car, depress the brake pedal as far as it will go to bring the brake pistons and pads into their normal position. Afterwards, check brake fluid level in the reservoir and replenish if necessary.

Breaking-in Brake Pads

Brakes may not have the highest possible braking efficiency when new. Therefore, allow for longer braking distance during the initial 100 to 150 miles. This also applies when the brake pads are replaced.

Bleeding Brake System

After any repairs in the brake system due to excessively long pedal travel combined with poor braking action, or due to unevenly pulling brakes, the particular brake circuit (or both circuits, if necessary) must be bled. The work requires two persons and always is initiated at the farthest point from the brake master cylinder:

Rear wheel circuit:

1. Left rear wheel – first outer, then inner bleeder valve
2. Right rear wheel – first outer, then inner bleeder valve

Front wheel circuit:

1. Right front wheel
2. Left front wheel

Note: When the hydraulic brake system has been drained, it should be first filled, and then bled. Open the bleeder valve by about one-half turn, depress brake pedal, close bleeder valve, and release brake pedal. The procedure must be repeated in this sequence until brake fluid begins to flow through the bleeder hose; this applies to all wheels and should be done in proper sequence as shown above. Having filled the hydraulic system with the brake fluid, proceed with the actual bleeding operation.



Bleeding Procedure

1. Remove dust cap from bleeder valve and attach bleeder hose.
2. Place the free end of the bleeder hose into a clear container which has some brake fluid in it so that the hose can be submerged.
3. Quickly pump the brake pedal several times until pressure can be felt. Holding the pedal down, open the bleeder valve by about one-half turn and push the brake pedal all the way down. Do not release the pedal until the bleeder valve has been closed again.

   Repeat this procedure until bubbles cease to appear in the fluid at the end of the hose.
4. Remove bleeder hose and install dust cap.
5. Repeat the above on all other bleeder valves in the outlined sequence. Make sure that the brake fluid reservoir does not run dry since this would allow air to re-enter the system.
6. Check for proper effect of bleeding and for leaks by holding the brake pedal under pressure.
7. Replenish brake fluid in the reservoir.

Note: Brake fluid will damage the paint finish.

Brake fluid which has been pumped out of the brake system must not be used again.



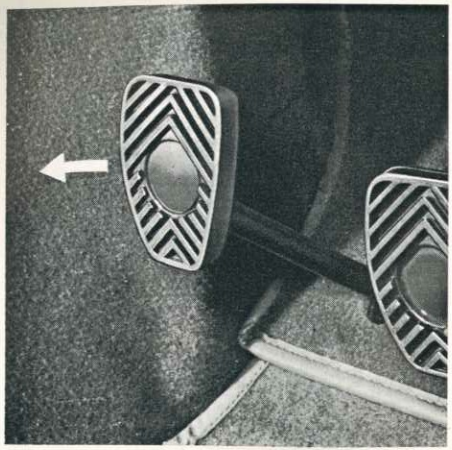
Brake Fluid

Brake fluid level in the reservoir must be checked at regular intervals and replenished whenever below the top mark. Due to the relatively large cylinder cross-section in the brake calipers, the brake fluid level in the reservoir will decrease at a much faster rate, due to brake pad wear, than in cars equipped with drum brakes.

Only new, unused brake fluid that meets the SAE recommendation J 1703 and conforms to Motor Vehicle Safety Standard No. 116 must be used.

If the brake system has been completely drained for any reason, such as complete brake overhaul, and then refilled, it may become necessary to bleed the brakes again after a short test drive.

Since the brakes are self-adjusting, brake pedal free travel will remain constant at all times providing that there is no air in the brake system. The pedal free travel represents approximately 30–50 % of the total pedal travel. After installation of new brake pads, the pedal free travel will be somewhat longer until the pads have been broken in.



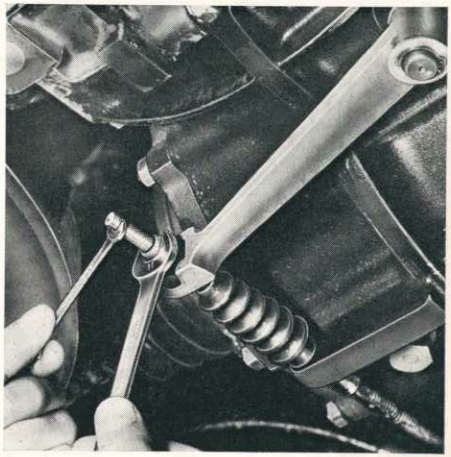
Clutch Pedal Free Travel

Pedal adjustment should always be $^{13}/_{16}$ to 1 in. (20 to 25 mm). It is checked by moving the clutch pedal in direction of arrow.
If the free travel of the clutch pedal is too small, the clutch may not release properly and will soon fail.

Adjusting Pedal Travel

The use of diaphragm-type clutch pressure plate necessitates an exact limiting of clutch pedal travel. This adjustment should be checked when the transmission is warm and the engine running at specified idle speed. Depress clutch pedal and check ease of shifting into reverse gear. If the adjustment is correct, reverse gear can be selected with a minimum amount of gear clash.
The pedal travel stop is a piece of flat iron with an oval hole for adjustment, attached to the floor-board with two bolts.

1. Unsnap forward part of floormat.
2. Loosen both stop retaining bolts.
3. Move pedal stop up or down, as required, until reverse gear will engage with a minimum amount of gear clash.
4. Tighten pedal stop retaining bolts.
5. Recheck pedal travel and fasten floormat.
6. Depress the clutch pedal as far as possible. In this position the outer cable housing should not contact its guide on the transmission housing.



Adjusting Clutch Cable

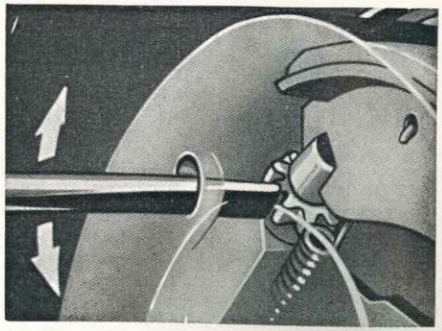
The cable end at the throwout arm is provided with a threaded extension. The cable can be tensioned or slackened by screwing the self-locking nut in or out. Prevent the cable from turning by gripping it at the two flat ends.

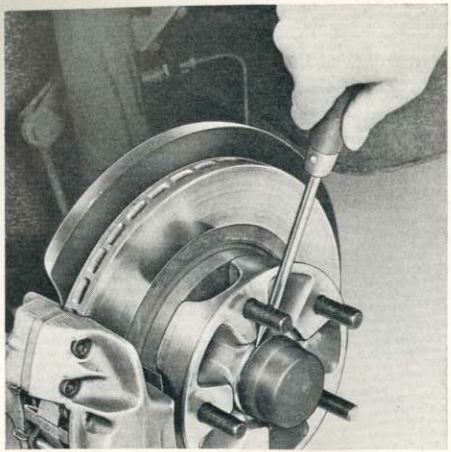
Parking Brake

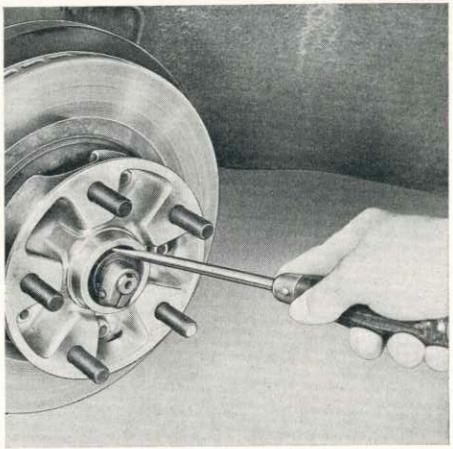
The parking brake is a drum brake. The action is mechanical and applies to rear wheels only.

Adjusting

1. To adjust the parking brake it is necessary to place the car on stands and remove the rear wheels.
2. Release parking brake and free rear brake discs by pushing all brake pads back.
3. Loosen cable lock nuts at the rear cable end and adjust the cable so that it is slack.
4. Insert a screwdriver through the access hole in the parking brake drum and turn adjusting nut until the brake disc can no longer be turned by hand.
5. Adjust the brake cable at the rear cable end so that it just begins to pull and tighten both lock nuts.
6. Turn adjusting nut to release brake shoes so that the disc turns without drag, which normally requires backing off by about 6–8 notches.
7. Follow the same procedure on the opposite wheel.
8. Check free travel of brake lever. Test car to ensure that parking brake works evenly. Should one-sided pulling be encountered, back off adjusting nut of the respective brake to obtain even action.
9. Prior to driving, depress brake pedal several times to bring the disc brake pistons and pads into their operating position. Check brake fluid level in the reservoir.







Front Wheel Bearings

The front wheel bearings must be adjusted in close compliance with the following instructions to ensure long bearing life.

Adjusting and checking should be done only when the hub is cold.

Checking

Front wheel bearings are properly adjusted when the thrust washer at the outer bearing will still yield to lateral pressure of a screwdriver (see illustration above). Before checking, rotate wheel several times.

Adjusting

1. Remove dust cap from hub.
2. Loosen Allen screw which locks clamp nut.
3. Tighten or loosen clamp nut until adjusted so that the thrust washer will still yield to lateral pressure of a screwdriver.
4. Carefully tighten the Allen screw (torque of screw = 11 lb/ft).
   Prevent the clamp nut from turning when tightening the screw. Check the setting again as a precaution.
5. Re-install the dust cap without grease filling using a plastic-headed hammer.

Tires

Porsche tires comply with all applicable Federal Motor Vehicle Safety Standards.
When purchasing replacement tires, make sure that they show the same specifications for tire size, load carrying capacity, tread pattern, etc. This also applies to Porsche-recommended replacement tires.
New tires do not grip the road as well during the first 60–125 miles as after this period. Extra care should be taken when driving with new tires.

Tire pressures

For good car handling and long tire service life, it is important to maintain recommended tire pressures. Tires which are inflated above or below specifications can cause increased tire wear, increased gas consumption and affect the road holding of the car.
In the interest of safety, check the tire pressure of all tires, including the spare tire, at least once a week, and always before going on a long trip. Also, check for unusual wear or damage such as cuts, broken cord and punctures.
Do not drive with worn tires or tires showing cuts or bruises as they may lead to sudden deflation.

Check tire pressure when the tires are still cold.

The tire pressure will increase progressively with increasing temperature; therefore, never let any air out of warm tires to meet cold tire pressure specifications.

Radial ply tires 165 HR 15 or 185/70 VR 15 and radial ply winter tires 165 SR 15 or 185/70 SR 15

front – 29 psi (2.0 atm)
rear – 34 psi (2.4 atm)

Do not exceed the maximum tire inflation pressure listed on the tire label.

If you notice that tires are wearing unevenly, consult your authorized dealer. Uneven wear may not always be due to improper wheel alignment. It can be the result of individual driving habits such as cornering at high speeds. If the tire pressure is not checked and adjusted regularly, abnormal tire wear can also occur.

Wheel balancing

A wheel should always be balanced after a tire repair. Also, since regular use or hard braking can cause tire imbalance, the wheels should be balanced from time to time. Unbalanced wheels may affect car handling and tire life.
When balancing light alloy wheels, use only adhesive balancing weights supplied through the Porsche parts service.

Rims

If you intend to use other than original rims, pay attention that they correspond to the Porsche specifications for your model. Check with your authorized dealer regarding the correct rim specifications for type and model year.



Spare Wheel

The spare wheel is stowed in the front luggage compartment under the floor mat.
Remember to check the spare tire pressure when checking other wheels. The spare tire should be inflated to the same pressure as the rear wheels.

Changing a wheel

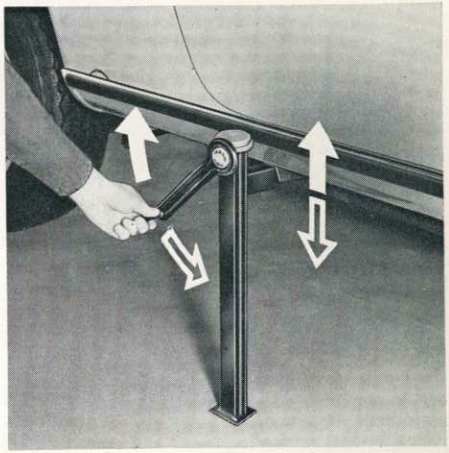
If you have a flat tire, move off the roadway. Turn on the emergency flasher. In addition, mark the position of your car with flares or other warning devices to alert other motorists.

Before you change a wheel, be sure the ground is level and firm, especially near the rear wheels where the jack ports are.

Set the parking brake and block the wheels opposite the defective wheel on the other side of the car.

The jack is only used for changing a wheel. Do not use it as a support to work underneath the car.



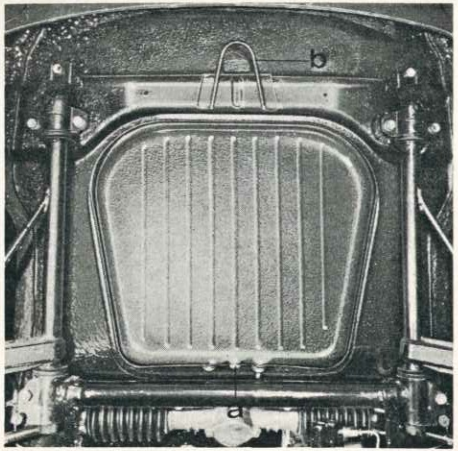


Sequence of operations:

1. On cars with steel rims, take off the hub cap.
2. Loosen the wheel nuts about one turn. Do not yet remove the nuts.
3. Securely insert the jack in the jack port. There is one for each side. It is under the body toward the rear and is used for front and rear wheel changing.
   Never jack the car up by the bumper or the body. Passengers should not remain in the car when the car is jacked up.
4. Turn the jack handle until the wheel you need to change is clear of the ground.
5. Take off all the wheel nuts and remove the wheel.
6. When the new wheel is in position, reinstall the nuts and handtighten them crosswise.
   Be sure the wheel nuts are inserted with the beveled edge toward the wheel. When tightened alternately, the nuts will center the wheel correctly.
7. Lower the car and take out the jack.
8. Firmly tighten the wheel nuts, again in a crosswise pattern, and attach the hub cap if provided.
9. Check that the tire pressure of the spare wheel is correct. See page 72.

Correct tightness of the wheel nuts is important. Correctly tightened nuts should have a torque of 101 lb/ft. This torque can be obtained with the wheel nut wrench by any person of average strength. If in doubt about the correct tightness of the wheel nuts, have it checked with a torque wrench by your dealer or at a service station.

On cars with optional hydropneumatic front suspension struts, the body height will drop to below the normal level when the car is jacked down. Normal level will be attained automatically after the car has been driven a short distance.



a Fuel tank drain
b Towing hook

Fuel Tank Drain

Fumes generated from gasoline are flammable and explosive. Do not smoke or work close to an open flame or electric spark that could ignite fuel.

To drain the fuel tank, remove undershield and unscrew drain plug "a" (open the fuel filler cap to let air in).

When reinstalling the drain plug, make sure that the gasket is in good condition.

Towing

A towing hook to which a tow rope can be attached, is located under the front of the car. A towing hook can also be installed at the rear of the car as optional equipment.

The towing hook on your Porsche is not designed for towing by commercial tow trucks. It is for emergency towing and over short distances only. Also, never have the car towed by the bumper.

Always observe local laws and municipal ordinances governing towing.

The towed vehicle should not be heavier than your own Porsche (approx. 2200 lbs.).

The driver of the towing car must be very careful when driving off and shifting to avoid sudden and abrupt jerks.

The driver of the car that is being towed, must always keep the tow rope taut.

Manual Transmission

When towing your Porsche, place the gearshift in Neutral. Turn the ignition on to be able to operate the turn signals and stop lights. Be sure to release the parking brake.

Sportomatic

With the selector lever in Neutral and the parking brake released, the Porsche Sportomatic can be towed any distance at any speed. Turn the ignition on to be able to operate the turn signals and stop lights.

Never run the engine with a disconnected battery, as it may seriously damage electrical components. This also applies to cars which were later equipped with a battery main switch.

Batteries

The car is equipped with 2 batteries wired in parallel. The batteries are within the left and right wheelhouse and are accessible from the luggage compartment. Both batteries must be disconnected whenever electrical work is performed on the car.

Good engine starting depends upon good condition of the battery. In general, battery care is confined to the addition of distilled water, testing specific gravity of the electrolyte, and testing cell voltage.

Do not expose the battery to an open flame or electric spark. Hydrogen gas generated by the battery is explosive. Do not let battery acid come in contact with skin, eyes, fabric, or painted surfaces.



Adding Distilled Water

The level of the electrolyte contained in the battery decreases with time and use due to deterioration and evaporation of water contained in the electrolyte. The solution should be replenished only with distilled water. The electrolyte level should not be higher than the check bridge or the control neck. If the battery has none of the above reference points, keep the electrolyte level about $^1/_2$ inch above the top of the battery plates.

Testing Specific Gravity of Electrolyte

Specific gravity of the electrolyte is tested with a hydrometer.

Battery fully charged:
specific gravity 1.285
Battery half charged:
specific gravity 1.230
Battery discharged:
specific gravity 1.142

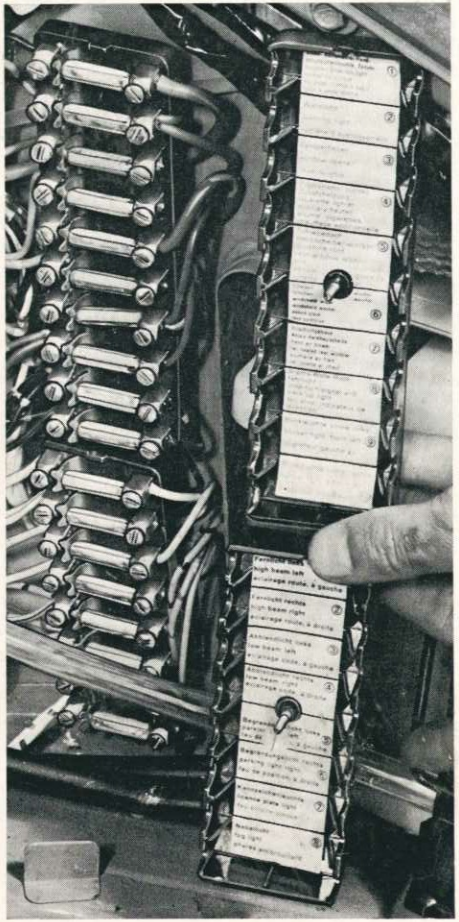
Testing Battery Voltage

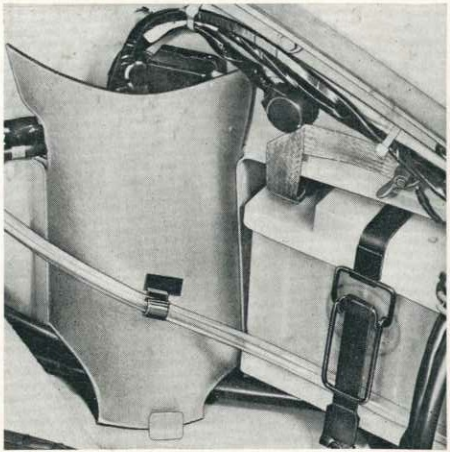
We recommend that battery voltage be tested by an authorized dealer who has the proper equipment.

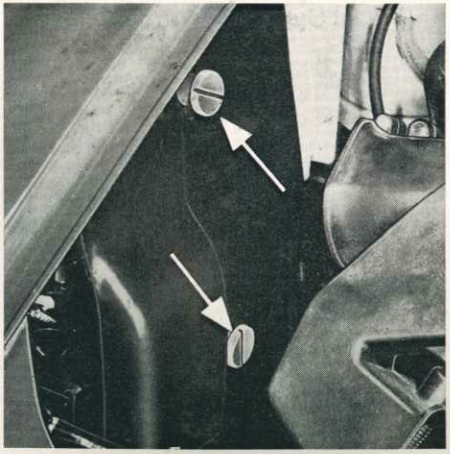
Battery Care

1. The batteries must be securely mounted.
2. Battery terminals and connections must be kept clean and properly tightened. Corrosion and oxidation can be prevented by coating the terminals and connections with petroleum jelly or terminal grease.
3. The vent caps must be securely tightened to prevent spillage.
4. Spilled electrolyte must be rinsed off at once with a solution of soda (baking soda will do) to neutralize the solution and prevent damage to fabrics and metal.

Automotive batteries will lose their potency when not in use. Make sure that the batteries are charged at intervals of approx. 6 weeks if the car is not in operation for prolonged periods. A discharged battery allows a rapid formation of sulfates on the plates, leading to their deterioration.







Replacing Fuses

The fuses are located in the left front part of the luggage compartment next to the battery and are covered with a plastic cover.
The respective fuses are identified inside the cover.
An additional fuse box is located in the engine compartment on the left side under the relay panel cover. It contains the fuses for the rear window defogger, the fuel system, and the Sportomatic (optional).

The fuses are held in position by spring clamps and can be easily removed by hand. A burnt fuse indicates an overload in the circuit and, therefore, the defect cannot be remedied by simply installing a new fuse. The cause of the short circuit or overload must be found.
The patching of fuses with wire or foil is not permissible since it may cause serious damage to other electrical components. Always carry an assortment of spare fuses in the car.



Fuse Capacity

Fuse box I

Fuse	Amp.
①	5
②	16
③	25
④	16
⑤	16
⑥	25
⑦	25
⑧	16
⑨	5
⑩	5

Fuse box II

Fuse	Amp.
①	8
②	8
③	8
④	8
⑤	5
⑥	5
⑦	5
⑧	16

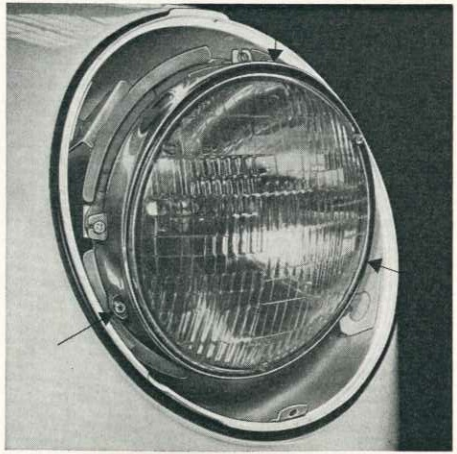
Fuse box III

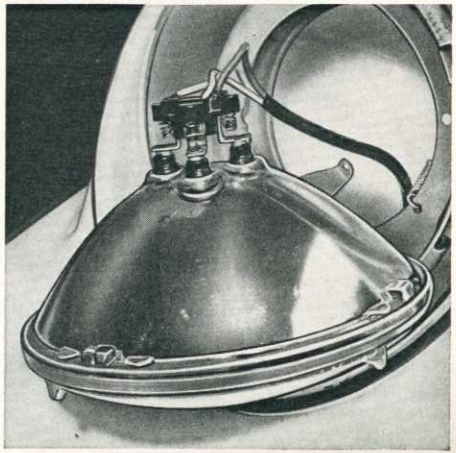
①	5
②	8
③	25

Bulb Chart (12-volt system)

Sealed beam	50/40 W (6012) ZVP 118 114
Fog lights (optional)	35 W
Tail-stop- and flasher-parking lights	32/3 cp (1034) ZVP 118 034
Flasher lights, front	32 cp (1073) ZVP 118 073
Back-up-lights	15 cp (1003) ZPP 118 003
Side marker lights	2 cp (1895)
Luggage compartment light	10 W
Instrument and control lights	1.2 and 2 W
Interior lights	10 W
License plate lights	4 W



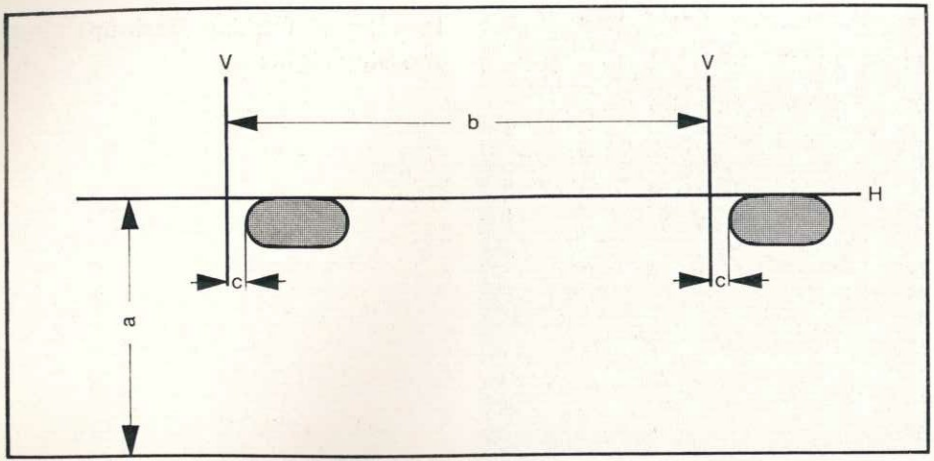




Sealed Beam Headlights

Replacing Light Units

1. Unscrew retaining screw and remove lamp rim.
2. Remove only the 3 screws (arrows) which secure the lamp unit retaining ring, remove retaining ring, and withdraw sealed beam unit.
3. Disconnent plug from rear of unit.
4. Attach plug to rear of new unit.
5. Insert sealed beam unit and retaining ring, tighten hold-down screws.
6. Check headlight adjustment (see page 79).
7. Install lamp rim and tighten retaining screw.





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 pressure, 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 155 lbs.

a = Height of headlamp center from floor
b = Distance between headlamp centers
c = 2 in.

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

Opposite the center of each headlight, draw vertical lines (V) intersecting the horizontal. Drawing a vertical line for the center of the vehicle might help aligning vehicle with screen.

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

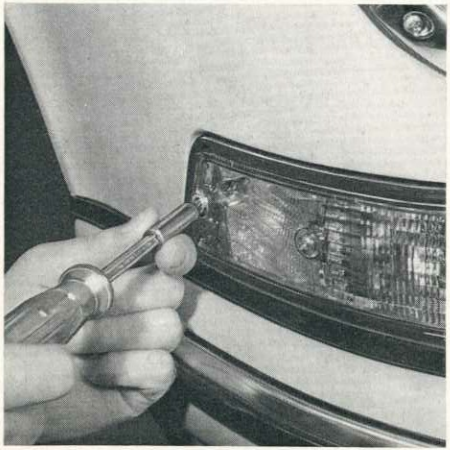
Aim the headlights individually by turning the two aiming screws with low beams switched on. Cover up the second headlight.

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

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

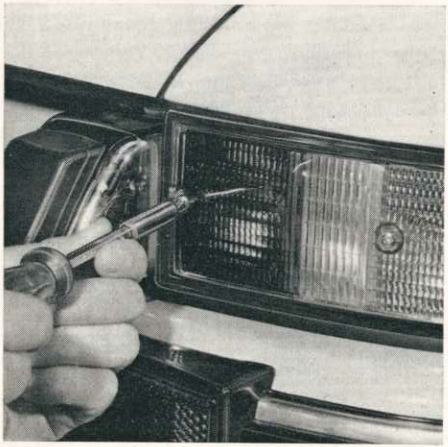
Screw "a" (lateral adjustment)
right turn = beam moves right
left turn = beam moves left

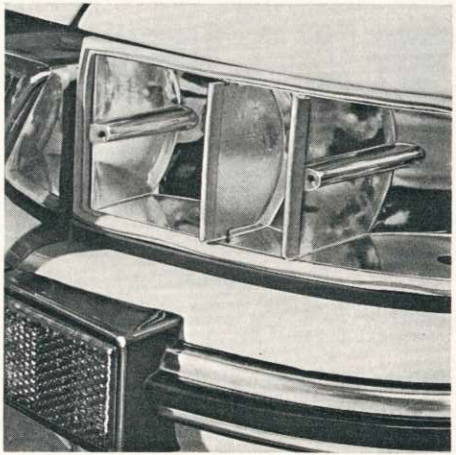
Screw "b" (vertical adjustment)
right turn = beam moves up
left turn = beam moves down





Turn Signal, Parking, Back-up and Stop Lights



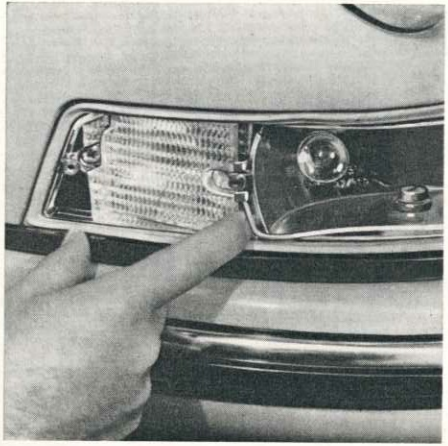


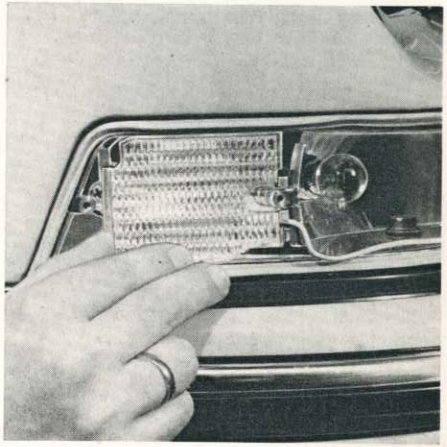
Replacing Bulbs

1. Remove the three Philips screws from lamp lens and remove lens.
2. Push bulb into holder and twist to the left (bayonet mount).
3. Remove bulb.

Note: Keep bulb free of grease and dirt, hold it with a clean cloth or soft paper.

4. Insert new bulb and turn to the right so that it snaps in position.
5. Install lamp lens and tighten the retaining screws evenly, alternating from one to the other.
6. Check lights.





Side Marker Lights

To replace the bulbs, remove reflecting glass. Pull glass away to outside.
To replace reflecting glass, push firmly under retaining spring until the other side can be inserted. Press glass until it is secure.

Auxiliary Combustion Heater
(optional)

Function Description

When the heater switch is pulled out, the following heater components become energized: Mixture pump, fuel pump, spark generator, glow/spark plug.

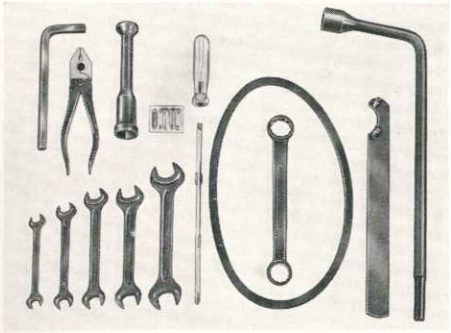
A fuel pump supplies fuel to the metering unit. A mixture pump draws the fuel/air mixture from the metering unit and forces it into the combustion chamber of the heat exchanger. The glow/spark plug ignites the mixture in the combustion chamber and the hot gases heat the walls of the heat exchanger and are then ducted into the open through an exhaust tube. When the heat exchanger reaches predetermined temperatures, the air blower is automatically switched on.
The glow plug is switched off while the spark generator remains in operation.

The internal function switching is assumed by the thermo-switches which also provide overheat protection when air transfer through the heater should be reduced through obstructions.

Once the heater is switched off, the ventilating blower continues to run for about 3 minutes to cool the heat exchanger. Should the heat exchanger not cool down sufficiently, the three-minute cooling cycle will repeat automatically.

Periodic Maintenance

Before the winter, check and clean the glow/spark plug in the combustion chamber of the heat exchanger as well as the mixture supply line connector. The electrode gap in the glow/spark plug should be 0.08 in. to 0.10 in. (2 to 2.5 mm). In addition, it is necessary to clean the fuel jet in the metering unit and check all electrical connections including the main fuse. Make sure that all hoses leading to and from the heater are in good condition and no defects exist in the exhaust pipe.
A well kept battery is also of importance to the combustion heater.



Tool Kit

The tool kit is standard equipment. It is located in the front luggage compartment. The tool kit contains all tools needed for roadside repairs or minor adjustments

Kit Contents
(subject to change)

Spark plug socket
Wheel nut wrench
5 open-end wrenches
Box-end wrench
Screwdriver
Philips screwdriver
V-belt
Spare fuses
Belt pulley holder
Generator pulley wrench
Combination pliers

PORSCHE

911 T/E/S

GENERAL DESCRIPTION

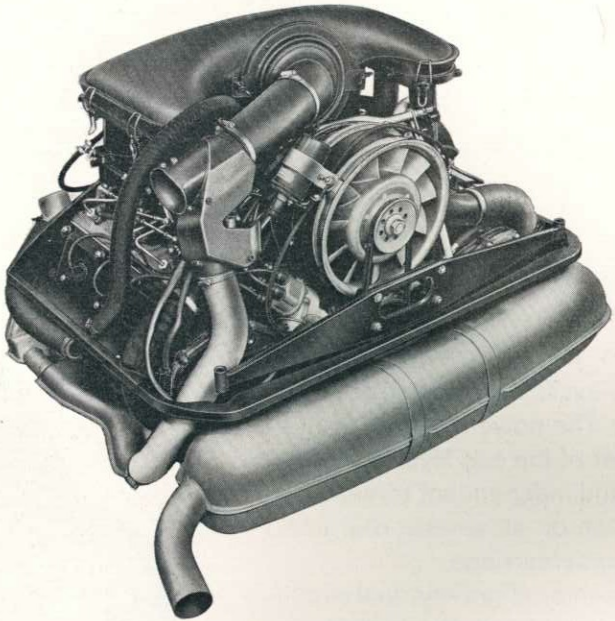
Type 911 bodies are unitized assemblies available in Coupe or Targa versions. The power train is located in the rear of the car. Hydraulic disc brakes and independent torsion bar suspension on all wheels characterize the undercarriage.

The low center of gravity, dual circuit internally ventilated disc brakes, independent suspension, and a powerful, horizontally opposed 6 cylinder engine have made Porsche cars supreme in numerous competition races the world over.

The major individual components and systems are described on the following pages.

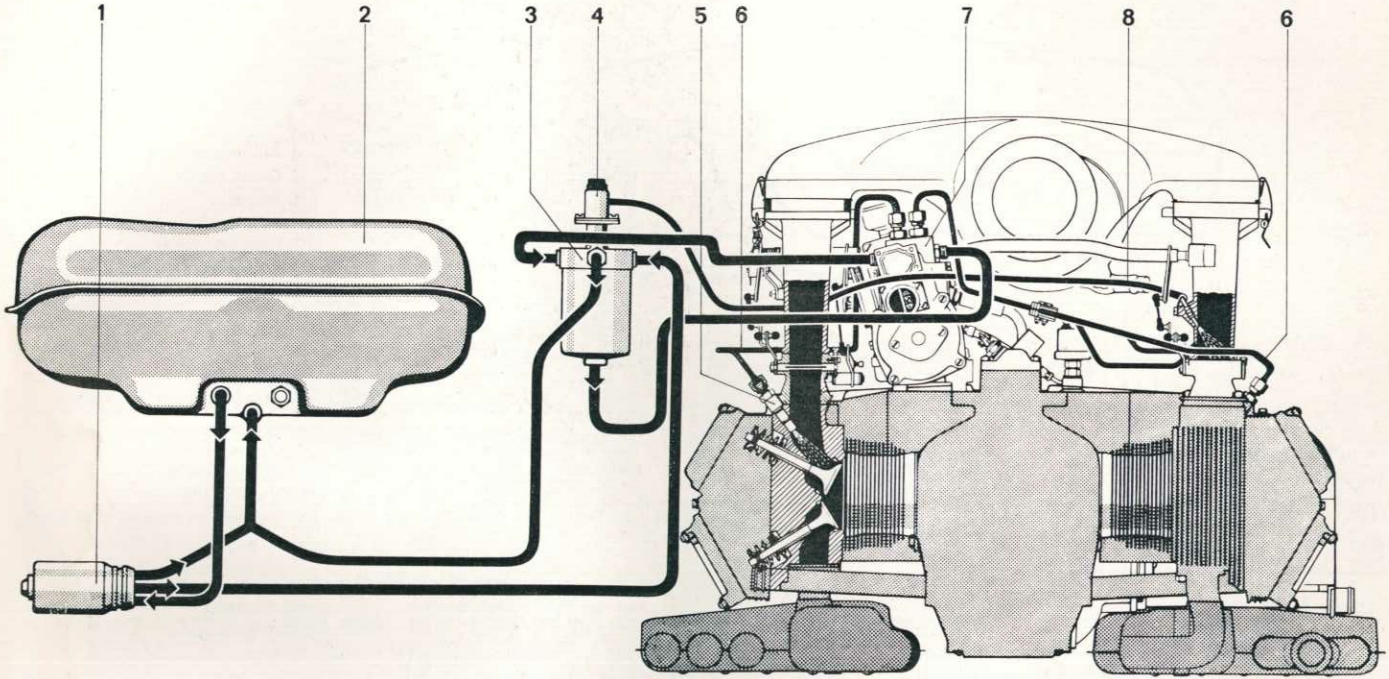


Engine



The engine is an air cooled, four cycle, horizontally opposed six. The crankshaft is located in a two piece light alloy crankcase and has eight plain journal bearings. The six cylinders are arranged in two banks of three cylinders each and mounted in horizontal position on the left and right side of the crankcase. The cylinders are held in place by the extensively finned, light alloy cylinder heads which are attached to the crankcase by steel studs. The valves are housed in individual chambers in an overhead "V" and are actuated through rocker arms and an overhead camshaft on each bank. Both camshafts, together with their rocker arms, are mounted in individual camshaft housings, each actuating the valves of a three-cylinder bank. The camshafts are connected to the crankshaft by means of chains running over a sprocket idler wheel. The chain tension is adjusted and maintained automatically at all times. Engine lubrication is provided by a dry sump system. Two gear-type oil pumps are located in the crankcase; one pump draws oil from the oil tank and forces it to the lubrication points, whereas the second pump scavenges the oil draining from the lubrication points and returns it to the oil tank. A thermostatically controlled oil cooler maintains proper oil temperature in the engine. Oil pressure relief valves control the pressure in the lubricating system. Arranged in the oil return circuit is a full-flow oil filter which removes dirt and abrasives from the oil. Mounted on top of the engine block is an alternator which is driven by the crankshaft with a V-belt. The impeller of the cooling air blower is mounted on the extended alternator shaft. Cooling air drawn by the blower is guided to the engine cooling points over deflector baffles. Part of the cooling air is routed to the exhaust manifold heat exchangers where it is heated. When the heat controls are appropriately set, the hot air flows into the passenger compartment. A single disc, dry clutch is utilized in the power transfer to the transmission.

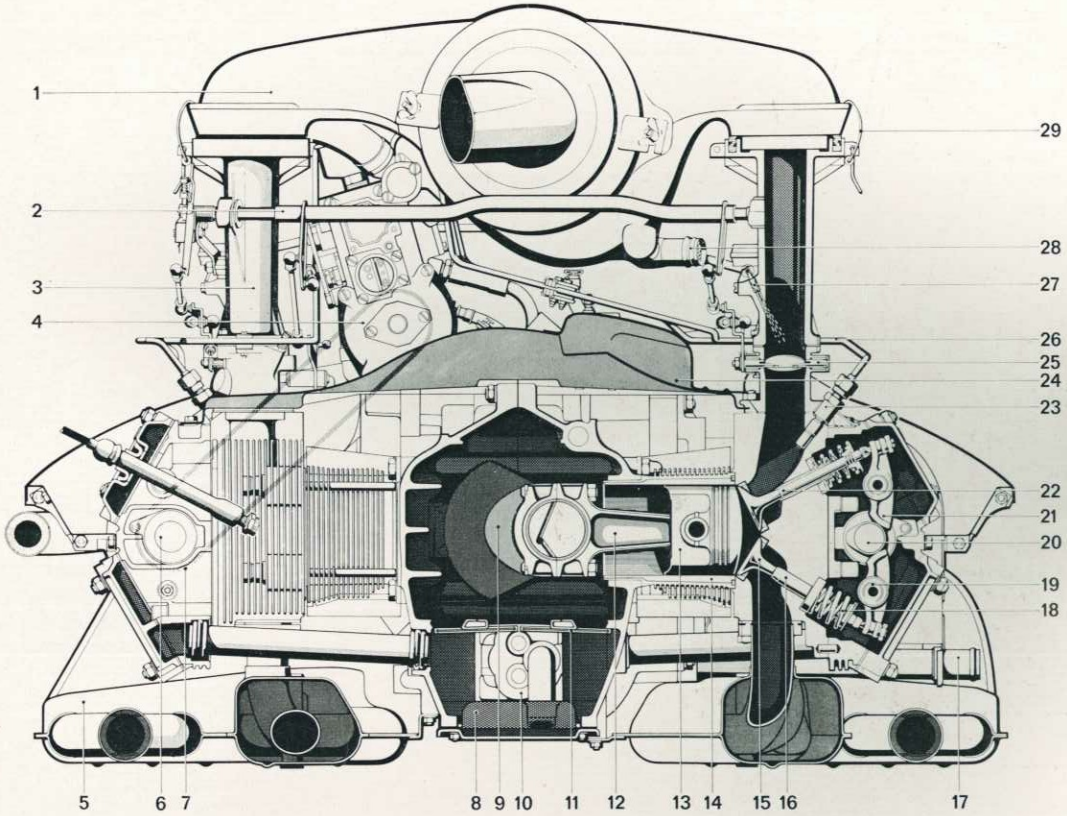
Schematic of Porsche Fuel Injection System (911 E, 911 S)



1 Fuel supply pump
2 Fuel tank
3 Fuel filter
4 Start enrichment solenoid
5 Injector
6 Injection line
7 Injection pump
8 Cold start enrichment hose

Cross Section of Engine (front view)

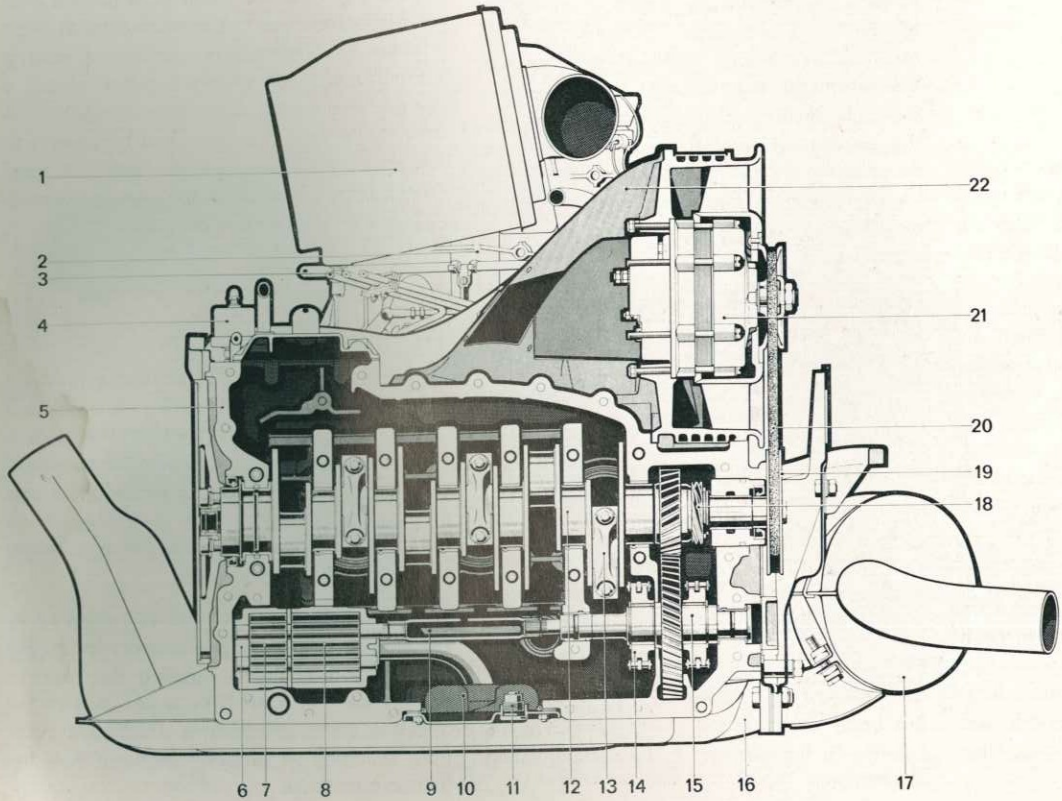
(911 E, 911 S)



1 Air cleaner housing
2 Cross shaft
3 Intake
4 Fuel injection pump
5 Heat exchanger
6 Camshaft
7 Fuel injection pump drive belt
8 Oil strainer
9 Crankshaft
10 Oil pump
11 Oil screen
12 Connecting rod
13 Piston
14 Cylinder
15 Exhaust valve
16 Valve guide
17 Connection from oil tank to oil pump
18 Valve spring
19 Rocker shaft
20 Camshaft
21 Rocker arm
22 Intake valve
23 Injector
24 Fan housing
25 Throttle plate housing
26 Injector tube
27 Cold start device
28 Flame trap cartridge
29 Clamp for air cleaner housing

Cross Section of Engine (side view)

(911 E, 911 S)



1 Air cleaner housing
2 Intake
3 Injector tube
4 Oil pressure sensor
5 Crankcase
6 Oil pump housing
7 Pressure section (to bearings)
8 Scavenge section (to tank)
9 Connecting shaft
10 Oil strainer
11 Oil drain plug (magnetic)
12 Crankshaft
13 Connecting rod
14 Chain sprocket
15 Intermediate shaft
16 Heat exchanger
17 Exhaust muffler
18 Distributor drive pinion
19 Belt pulley
20 V-belt
21 Alternator
22 Fan housing

Fuel Injection System
(911 E, 911 S)

The double row, six-plunger injection pump is driven by the left engine camshaft via a toothed belt. The fuel is delivered from the tank to the injection pump by an electric fuel delivery pump through a fuel filter. Six injection plungers, actuated by the injection pump camshaft, force the fuel through six pressure lines of equal length to the injection valves in the cylinder heads. The injection valves open at a pressure of 220–265 psi and inject the fuel into the intake ports and onto the opening intake valves. This is known as a timed, indirect injection system or manifold injection.

The fuel is metered by rotating the injection plungers and thus resetting a metering land in each. Plunger rotation is controlled by a control rack which is mechanically connected with the plungers by means of toothed segments. As a result, the slanted metering land closes the fuel inlet port at an earlier or later time.

Depending on throttle load and engine speed, the engine needs varying amounts of fuel to attain the right fuel/air mixture. This adjustment is made by the contoured cam whose surface represents the engine's volumetric efficiency values. The contoured cam is mounted on the pump camshaft together with the centrifugal governor. The governor moves the cam axially according to engine speed; the accelerator rotates the cam on its axis to adjust it to the given throttle load. The values are read by a sensor. The sensor movement is mechanically transmitted to the control rack.

Changes in ambient air pressure and temperature require continued correction of injected fuel quantities in proportion to the air charge in the cylinders to keep the fuel consumption and exhaust emission values down. Additionally, further fuel enrichment must be considered for cold and hot engine starting.

Barometric Cell

The barometric cell works in the same way as a barometer. Expansion or contraction of the barometer aneroid is transferred by a plunger to the linkage in the compensating mechanism.

Thermostat

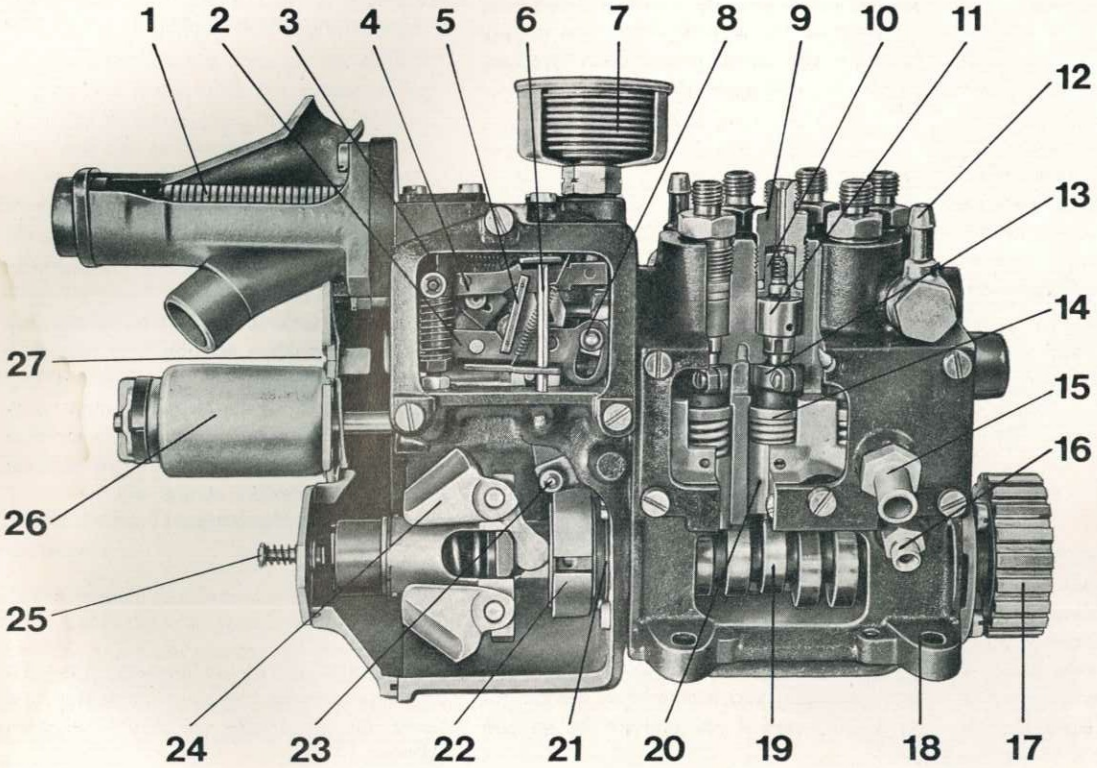
The thermostat is mounted on the control unit housing and responds to engine temperature by means of cooling air ducted from the heat exchanger to the thermostat through a hose. The thermostat consists of several thermal expansion elements which create a certain amount of mechanical movement. A connecting lever transfers this movement to the compensating mechanism which, in turn, corrects the position of the plunger control rack in the injection pump.

Shut-off Solenoid

Function of the shut-off solenoid is to move the plunger control rack to the OFF position and close the fuel delivery to the engine when the car is coasting in gear. The shut-off solenoid is controlled by a micro-switch and an rpm transducer. The micro-switch is mounted on the intake stack and is actuated by the throttle valve linkage.

The movements of the shut-off solenoid is transferred to the plunger control rack by the regulating mechanism, causing the rack to move back and forth. This action moves the injection pump plungers to a different position, resulting in properly metered fuel injection quantities.

Fuel Injection Pump



1 Thermostat
2 Compensating lever
3 Thermostat connecting shell
4 Pivot
5 Connecting link
6 Guide stud
7 Barometric cell
8 Guide
9 Injector line fitting
10 Check valve
11 Plunger unit
12 Fuel inlet
13 Toothed segment
14 Plunger spring
15 Oil return to engine
16 Oil inlet from engine
17 Pump drive wheel
18 Support flange
19 Camshaft
20 Roller tappet
21 Contoured cam spring
22 Contoured cam
23 Sensor
24 Governor counterweight
25 Idle speed adjustment
26 Shut-off solenoid
27 Access to control rack head

Continuous Injection System (CIS) (911 T)

Contrary to the conventional fuel injection systems, the CI-System in the Porsche 911 T is not actuated mechanically or electronically. The CI-System depends on a precise balancing of air and fuel, whereby the intake air quantity is continuously measured and continuously mixed with a precisely metered amount of fuel to meet engine demand.
The main components of the CI-System are: the mixture control unit, the control-pressure regulating valve with warm-up compensation, the throttle-actuated valve, the cold-start valve and the injection valves at each cylinder head.

Mixture Control Unit

The mixture control unit consists of the air-flow sensor and the fuel distributor. A free-floating sensor plate in the air venturi of the air-flow sensor moves up and down according to the flow of intake air. A lever attached to the sensor plate and counterbalanced by a weight relays the air-flow signal to the fuel distributor. Corresponding to the movement of the sensor plate, the control plunger in the fuel distributor moves up and down and releases via the slot-shaped metering port precise amounts of fuel.
The force of air exerted on the sensor plate is counterbalanced by a metered hydraulic pressure on the plunger, called the control pressure. The control pressure is altered according to throttle position.

Control-Pressure Regulating Valve with Warm-Up Compensation

The control-pressure regulating valve is attached to the engine. It regulates the pressure on the plunger and adjusts it according to ambient and engine temperature. During engine warm-up period it helps to enrich the fuel-air mixture to ensure proper engine running. This is done via an electrically heated bi-metallic strip which decreases the control pressure, allowing the plunger to supply the engine with more fuel – the fuel-air mixture thus becomes richer. Since the bi-metallic strip is heated when the ignition is turned on, **you must also operate the starter.**
Starting, idling and accelerating will be adversely affected if you operate the ignition only.

Throttle-Actuated Valve

The throttle-actuated valve is located on the throttle valve housing. A cam, which is attached to the throttle valve shaft, also regulates the control-pressure, thus ensuring an optimal fuel-air mixture from idling to full throttle position.

Cold-Start Valve

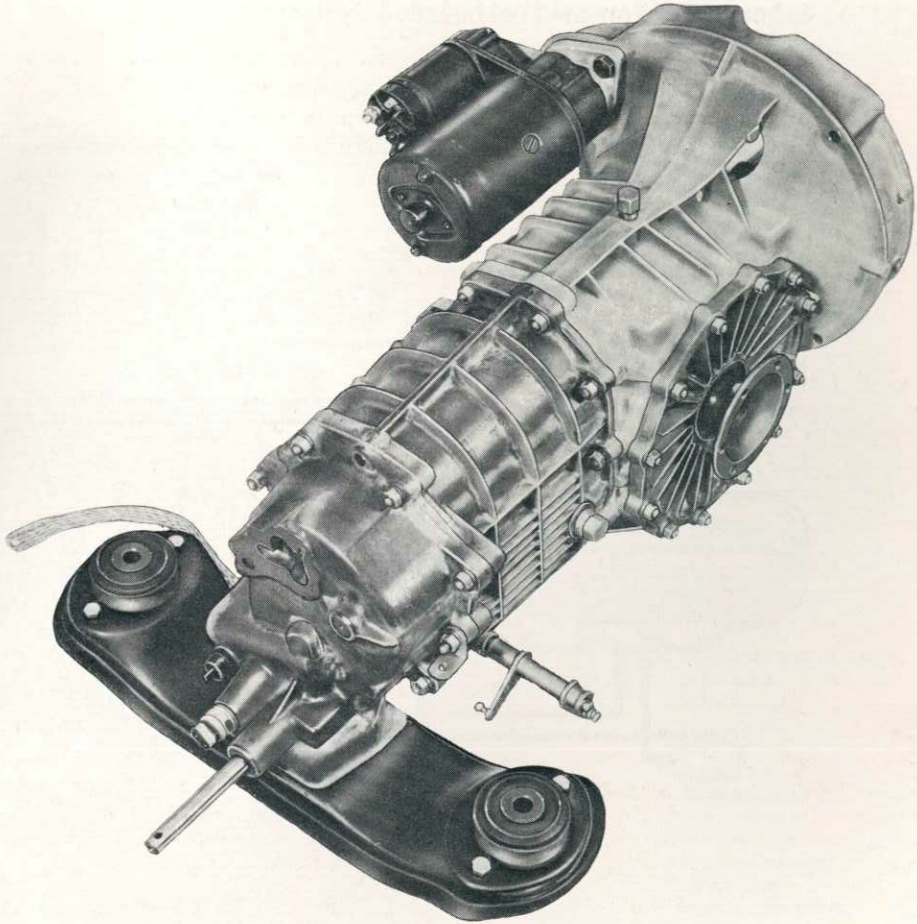
The electro-magnetic cold-start valve is attached to the air distribution housing. It is actuated only during starting.
The hand throttle lever must be in the fully open position when starting. The cold-start valve supplies the necessary starting fuel quantity directly to the air distribution housing. This is necessary because the air flow is insufficient during the starting revolutions to activate the mixture control unit.

Injection Valves

The injection valves continuously inject the precisely metered fuel-air mixture as a fine spray into the intake air channel of each cylinder.

Transmission

The transmission and differential are contained in a common housing. All forward gears are synchronized. When gears are shifted, a toothed sliding sleeve moves off the synchronizing ring running with the previously engaged gear, passes through the neutral position, and slides onto the synchronizing ring of the selected gear; the servo components provide an additional thrust to the synchronizing elements permitting rapid synchronization of the differing gear speeds for easy and fast shifting of gears. Once the speeds are synchronized, the toothed sliding sleeve moves on to engage the synchronizing drive ring thus making a positive mechanical connection between the selected gear and the pinion shaft.



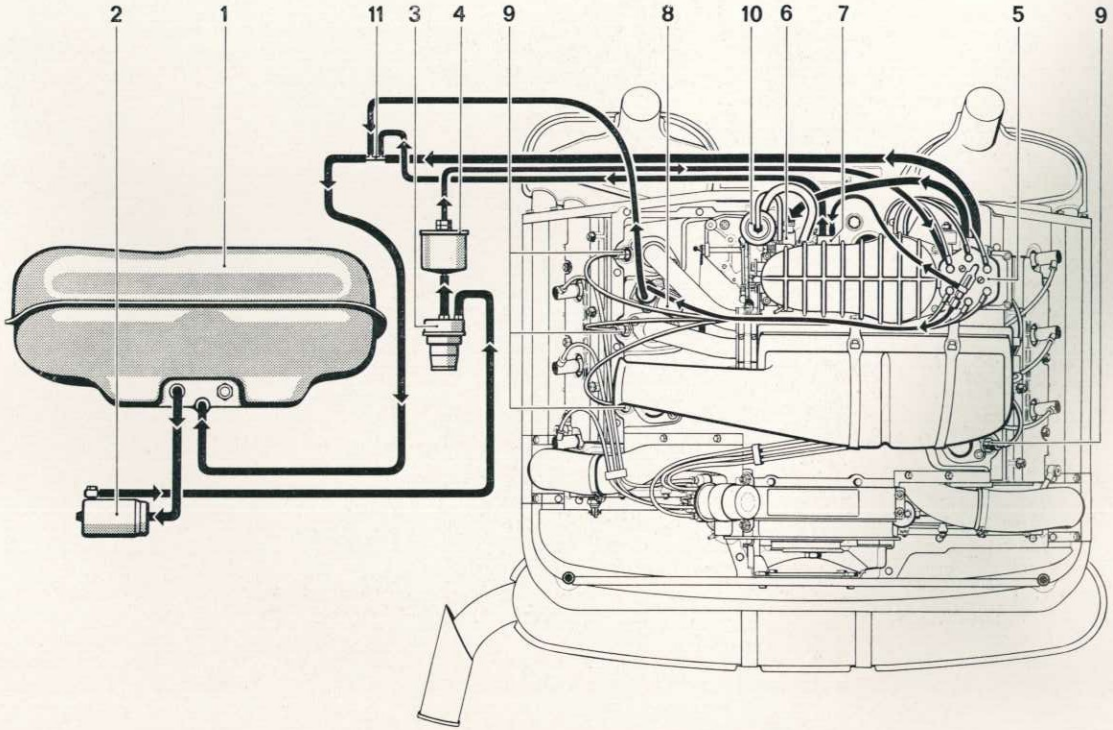
Sportomatic Transmission
(optional)

A hydrodynamic torque converter and a servo clutch are installed in front of the transmission. The gears are selected by the selector lever on the tunnel between the two seats. Moving the selector lever makes an electrical contact, causing the clutch to be operated by vacuum.

Schematic of Porsche Fuel Injection System

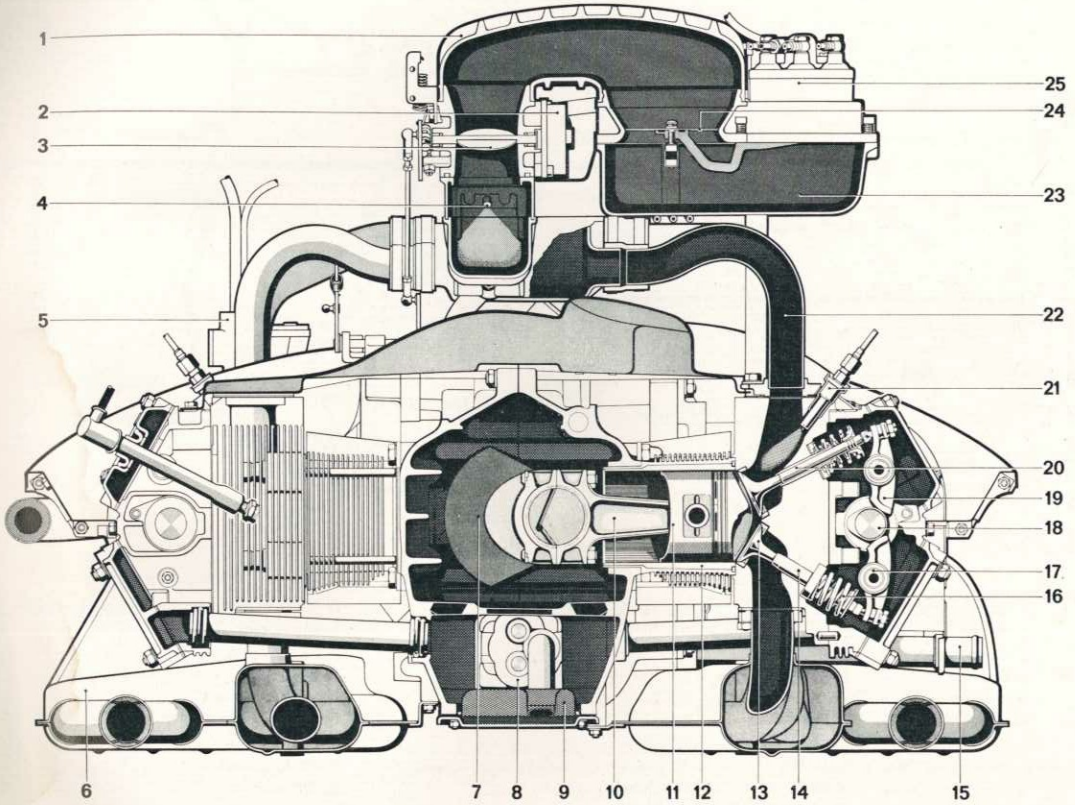
911 T

1 Fuel tank
2 Fuel supply pump
3 Fuel accumulator
4 Fine mesh fuel filter
5 Mixture control unit
6 Cold-start valve
7 Throttle-actuated valve
8 Control-pressure regulating valve with warm-up compensation
9 Injection valves
10 Overrun compensation valve
11 Branch piece for fuel return hoses

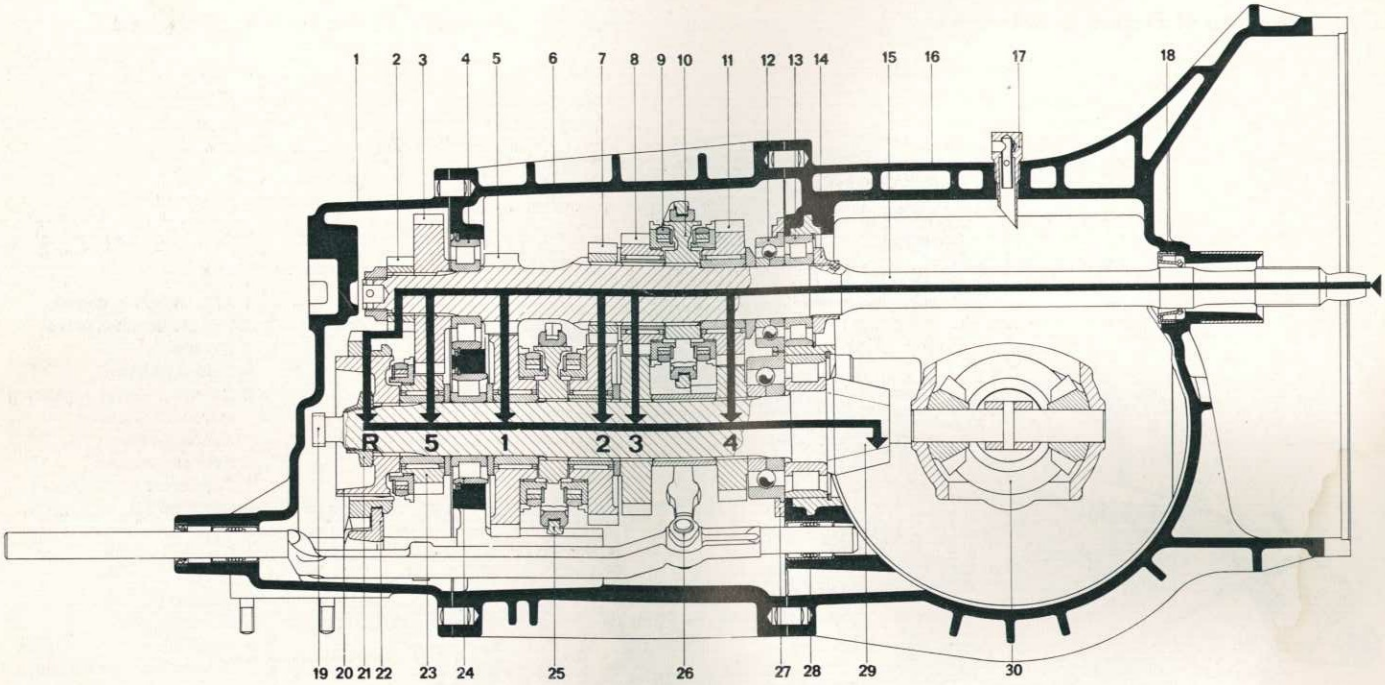


Cross Section of Engine (front view)

911 T

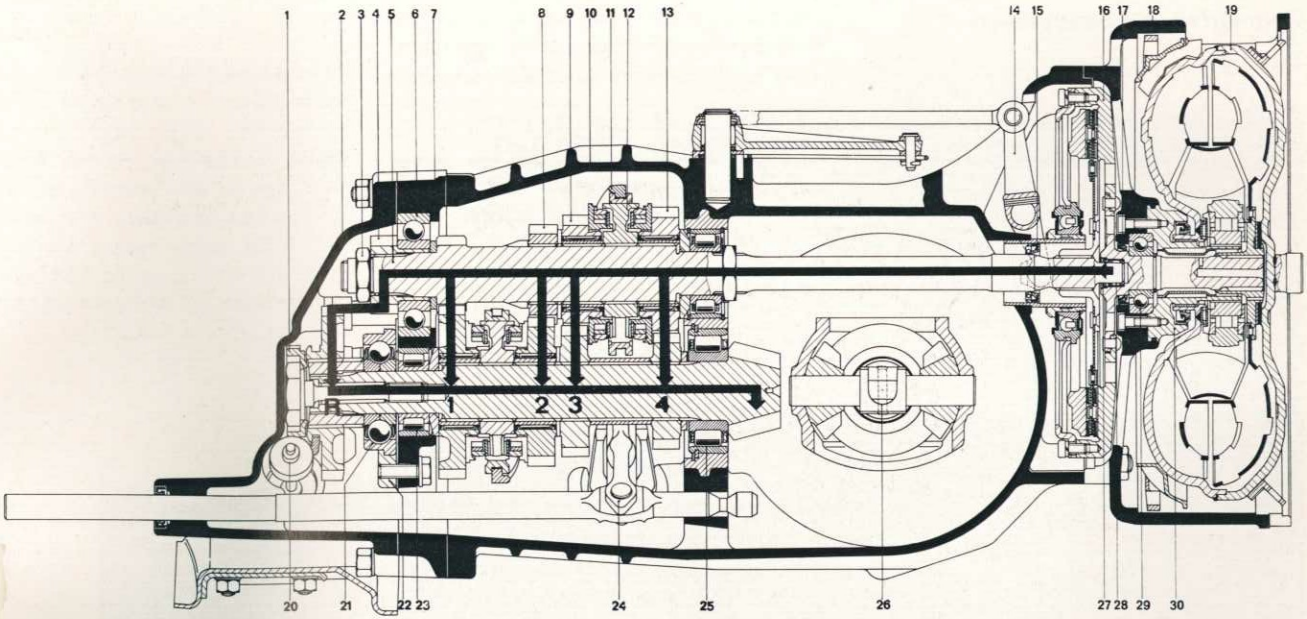


1 Air connecting dome
2 Throttle-actuated valve
3 Throttle
4 Cold-start valve
5 Control-pressure regulating valve with warm-up compensation
6 Heat exchanger
7 Crankshaft
8 Oil pump
9 Oil strainer
10 Connecting rod
11 Piston
12 Cylinder
13 Exhaust valve
14 Valve guide
15 Connection from oil tank to oil pump
16 Valve spring
17 Rocker shaft
18 Camshaft
19 Rocker arm
20 Intake valve
21 Injection valve
22 Intake air pipe
23 Intake air housing
24 Sensor plate
25 Mixture control unit



Five-Speed Transmission
(optional)

1 Transmission front cover
2 Reverse, Gear I
3 5th speed, Gear I, fixed
4 Roller bearing
5 1st speed, Gear I, fixed
6 Gear housing
7 2nd speed, Gear I, fixed
8 3rd speed, Gear I, free
9 Synchronizing ring
10 Spider
11 4th speed, Gear I, free
12 Pinion shaft ball bearing
13 Roller bearing
14 Flange nut
15 Input shaft
16 Transmission housing
17 Breather
18 Seal
19 Speedometer drive, Gear I
20 Spider, 5th and reverse speeds
21 Flange nut
22 Sliding gear, 5th and reverse speeds
23 5th speed, Gear II, free
24 Roller bearing
25 Shift fork, 1st and 2nd speeds
26 Selector shaft
27 Bearing retaining plate
28 Ball sleeve
29 Pinion shaft
30 Differential

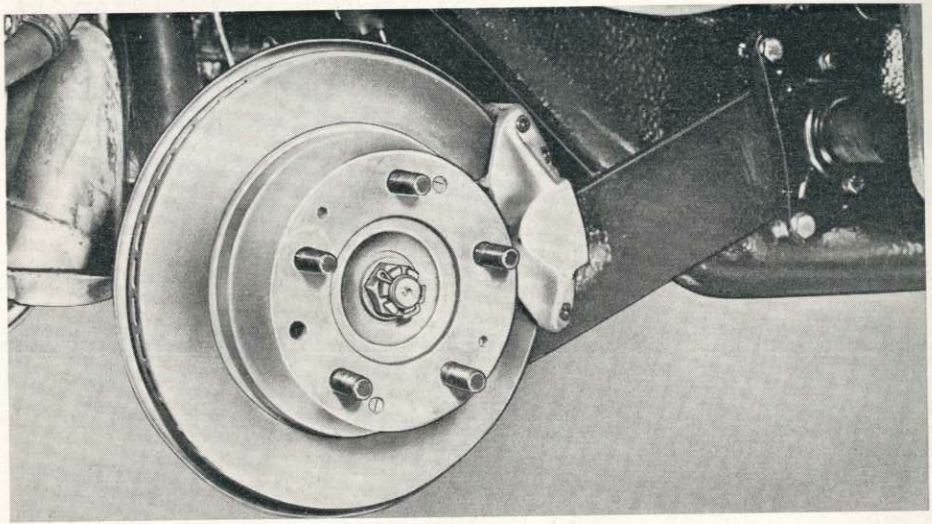


Sportomatic Transmission
(optional)

1 Speedometer drive gear
2 Transmission front cover
3 Hexagon nut
4 Reverse, Gear I
5 Input shaft
6 Ball bearing
7 Intermediate plate
8 2nd speed, Gear I, fixed
9 3rd speed, Gear I, free
10 Gear housing
11 Shift fork, 3rd and 4th speed
12 Spider
13 4th speed, Gear I, free
14 Intermediate lever
15 Oil seal
16 Clutch carrier with turbine shaft
17 Oil seal
18 Torque converter housing
19 Torque converter
20 Speedometer drive
21 Ball bearing
22 Bearing retaining plate
23 Roller bearing
24 Selector shaft
25 Roller bearing
26 Differential
27 Seal
28 Needle bearing
29 Ball bearing
30 Free wheeling support

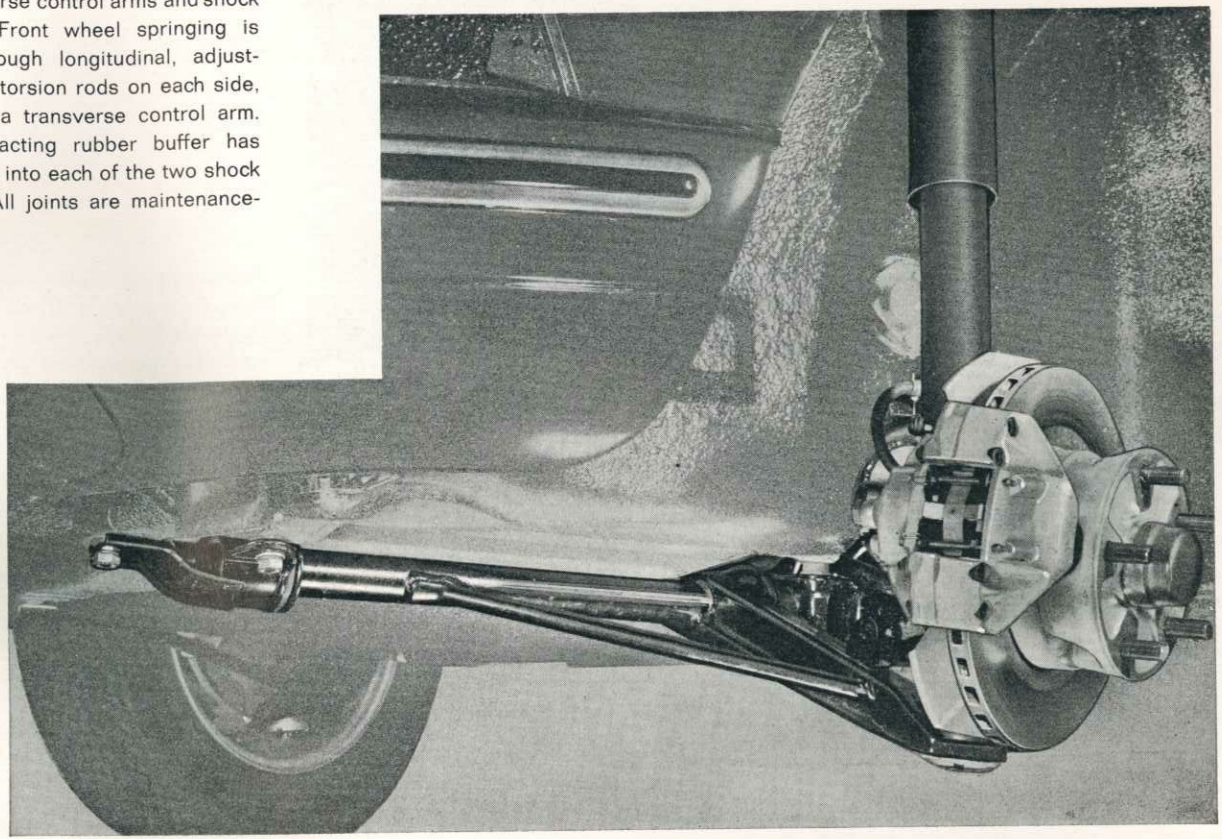
Rear Drive and Suspension

Both rear wheels are guided by triangulated control arms and driven by drive shafts with double constant velocity joints. Each wheel is independently suspended. Springing is effected by a round transverse torsion bar on each side. A progressively acting rubber buffer has been incorporated into each of the two telescopic shock absorbers to supplement springing of each wheel. Both torsion bars can be adjusted by a spline vernier arrangement between the two ends of each torsion bar. All joints are permanently lubricated and are maintenance-free.

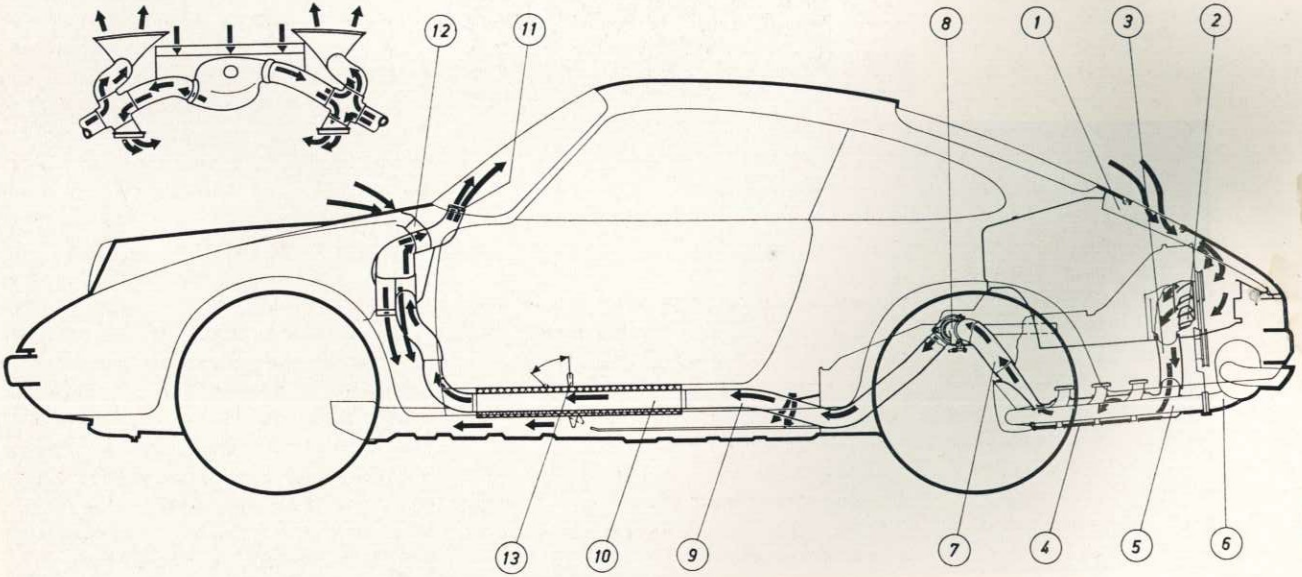


Front Axle

The independent front wheel suspension incorporates transverse control arms and shock absorber struts. Front wheel springing is accomplished through longitudinal, adjustable, service-free torsion rods on each side, each attached to a transverse control arm. A progressively acting rubber buffer has been incorporated into each of the two shock absorber struts. All joints are maintenance-free.



Schematic View of Heating and Ventilating System

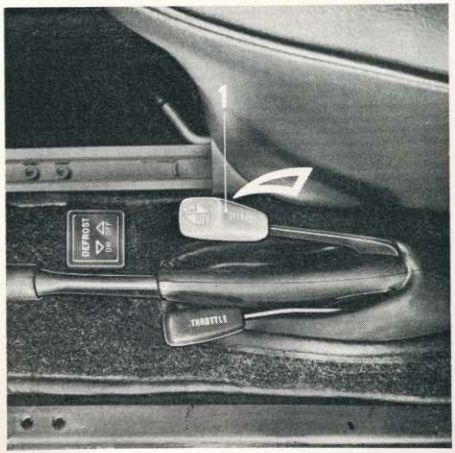


Heating System

Exhaust manifold heater is standard equipment.

Description

The entire fresh air mass enters through the grille in the rear lid ① where it is drawn in by the cooling air blower. Part of the air, as required for heating the passenger compartment, is diverted from the cooling air blower ② into a separate air duct ③ and into two heat exchangers ④ at the engine exhaust manifolds. The heat exchangers consist of sheetmetal jackets which enclose the exhaust pipes ⑤. All detachable joints within the exhaust syst m ⑥ have been arranged outside the heat exchangers. The entire engine exhaust system is located within the free air stream underneath the rear body section. The heated air flows from both heat exchangers through connecting hoses ⑦, control flaps ⑧, guide ducts ⑨ and silencers (in the longitudinal chassis supports) ⑩, to outlets arranged in pairs within the passenger compartment.



1 Heater control lever (red)

Hot air outlets are provided for defrosting the windshield ⑪ and for the forward leg area. The control flaps ⑧ are designed to permit a continuous flow of air through the heat exchangers, regardless of whether the heat controls are turned on or off.

In addition, outside air may be distributed by the ventilation system ⑫. It enters through the vent in front of the windshield, by-passing the heating system.

Operation

The flow of warm air is controlled by a lever ⑬ located adjacent to the parking brake lever. The warm air enters the interior when the lever is moved to the rear, and stops when the lever is moved forward. When the lever is moved, the action is transmitted to the control flaps ⑧ via a cable. Should the cable break, both flaps automatically stop the flow of hot air into the passenger compartment and let it out into the open.

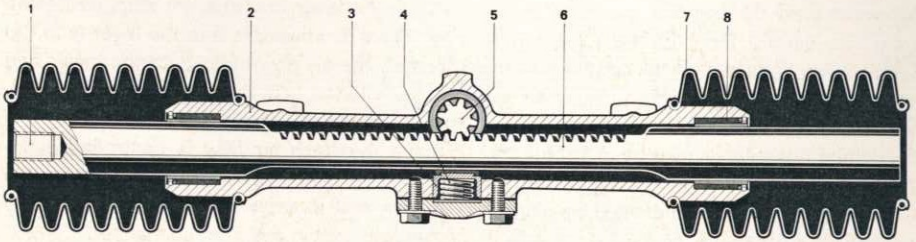
Warm air can be regulated by the lower lever in the control unit on the instrument panel. When the lever is at the left stop, all heated air flows downward; when the lever is in the center, the air flows into both the lower and upper interior, with the lever at the right stop, the heated air flows upward only.

Since the fresh air flow is controlled separately from the heated air flow, it is possible to mix and direct the flow of fresh air and manifold heat in any desired manner.

Steering

The positive action rack and pinion steering assembly lies in a central location of the front axle assembly. Movements of the steering wheel are mechanically transmitted to the steering pinion through an offset connecting rod running in two permanently lubricated universal joints. This arrangement, as compared with that of a solid steering column has technical advantages and also offers protection by its impact absorbing properties.

1 Threaded end for tie-rod
2 Steering housing
3 Pressure block
4 Pressure spring
5 Steering pinion
6 Steering rack
7 Rubber boot
8 Bushing



Body

The all-steel body is welded to the underbody forming a unitized assembly. The doors are attached to the forward door posts on concealed hinges. The outside door locks match the ignition key. The doors can be locked from the inside by depressing a lock button atop each door ledge.

The front and rear lids are mounted on concealed hinges. The front lid lock release is located on the left side of the instrument panel. A safety catch in the front lid prevents an accidental wind-lifting of the lid at speed when the lid lock should malfunction for any reason.

The rear lid release is accomodated in the left rear door post.

The windshield is made of laminated glass. All other windows are made of tempered glass. The individual front bucket seats are fully reclining and slide on rails secured to the floor.

PORSCHE

911 T/E/S

TECHNICAL DATA MODEL '73

Engine	911 T	911 E	911 S
Number of cylinders	6	6	6
Bore (in./mm)	3.31/84	3.31/84	3.31/84
Stroke (in./mm)	2.77/70.4	2.77/70.4	2.77/70.4
Displacement (cu.in./ccm)	142.8/2341	142.8/2341	142.8/2341
Compression ratio	8.0:1	8.0:1	8.5:1
SAE Net-Horsepower (HP/kw)	134/100	157/117	181/135
at rpm	5700	6200	6500
SAE Net-Torque (lb. ft.)	144	147	154
at rpm	4000	4500	5200
Output per liter, SAE Net (HP/l, kw/l)	57/43	67/50	77/58
Fuel octane rating (RON); incl. low-lead or lead-free gasoline	91	91	91
Engine oil consumption (US qts./Imp. qts. per 600 miles) approximately	1.5–2/1.2–1.7	1.5–2/1.2–1.7	1.5–2/1.2–1.7

Design Specifications

Engine, Cooling	Horizontally opposed, four-cycle six, air cooled
Crankcase	Light alloy
Cylinders, individual cylinder	**911 T:** Grey cast iron – **911 E, 911 S:** Grey cast iron liner with finned light alloy jacket
Cylinder head, individual cylinder head	Light alloy
Valve arrangement per individual cylinder	1 intake valve, 1 exhaust valve, overhead, in "V"
Valve actuation	OHC, 1 camshaft per cylinder bank
Camshaft drive	Chain
Camshaft bearings	Plain bearing
Crankshaft	Forged, with 8 plain bearings, three layer
Connecting rod bearings	Plain bearing, three layer
Blower drive	V-belt, over alternator (V-belt size = 9.5 x 710 mm)
Air volume	Approx. 43.5 cu.ft./sec. (1230 l) at 5800 rpm (crankshaft)
Alternator-to-engine-ratio	1:1.3
Engine lubrication	Dry sump system with separate oil container, thermostatically controlled oil cooling, main oil filter in circuit
Fuel pump	1 electrical fuel pump
Fuel supply	**911 T:** Bosch Continuous Injection System; **911 E, 911 S:** 6 plunger, twin row, mechanical Bosch injection pump, manifold injection
Exhaust gas certificate	Clean Air Act (42 U.S.C. 1857 at seq.)

Electrical System

Operating voltage	12 Volts
Battery capacity	2 x 36 Ah
Alternator output	14 volts AC, 770 watts, 55 amps
Ignition system	Battery, capacitive discharge system
Firing order	1 – 6 – 2 – 4 – 3 – 5
Ignition timing	5° after TDC at 900 ± 50 rpm (engine at operating temperature)
Dwell angle	37 ± 3° (Marelli) or 38 ± 3° (Bosch)
Spark plugs (spark plug gap, in.)	**911 T:** Bosch W 235 P 21, Beru 235/14/3 P (0.022) **911 E, 911 S:** Bosch W 265 P 21, Beru 265/14/3 P (0.022) Bosch W 260 T 2, Beru 260/14/3 (0.028)
Interference suppression	Remote suppression

Auxiliary Combustion Heater (optional)

Calorific output (approx.)	10,000 BTU
Fuel consumption/h (approx.)	0.93 US pints (0.77 Imp. pints)
Air flow	3880 cu.ft./h
Heating air temperature (approx.)	185° F
Power draw	70 watts
Operating voltage	12 V

Chassis and Suspension

Frame	Welded assembly, sheet metal box-section, unitized with body
Front suspension	Independent suspension with transverse control arms and shock absorber struts or optional hydropneumatic struts
Front wheel springing	1 round, longitudinal torsion bar per wheel or optional hydropneumatic struts
Rear suspension	Independent suspension with triangulated control arms
Rear wheel springing	1 round, transverse torsion bar per wheel
Shock absorbers	Double action hydraulic shock absorbers front and rear, or rear only if hydropneumatic struts are used in front
Service brake	Hydraulic, dual circuit, vented-disc brakes on all four wheels
Parking brake	Mechanical duo-servo drum type, to rear wheels only
Effective brake disc diameter	**911 T, 911 E:** Front 9.25 in., rear 9.61 in. – **911 S:** Front 9.00 in., rear 9.61 in.
Braking area (service brake), per wheel	**911 T, 911 E:** Front and rear 8.14 sq.in. – **911 S:** Front 11.8 sq.in., rear 8.14 sq.in.
Total effective braking area (service brake)	**911 T, 911 E:** 32.55 sq.in. – **911 S:** 39.84 sq.in.

Parking brake drum diameter	7.09 in.
Total effective braking area (parking brake)	26.35 sq.in.
Wheel rims	**911 T:** 5½ J x 15 steel; optional light alloy or 6 J x 15 steel or light alloy **911 E, 911 S:** 6 J x 15 light alloy
Tires, Pressure	**911 T:** 165 HR 15, optional 185/70 VR 15 on rims 6 J x 15 only; front 29 psi, rear 34 psi **911 E, 911 S:** 185/70 VR 15; front 29 psi, rear 34 psi
Winter tires, Pressure	On wheel rims 5½ J x 15 – tires 165 SR 15 M&S (E) or 185/70 SR 15 M&S (E), last also on rims 6 J x 15; front 29 psi, rear 34 psi
Steering	Rack and pinion
Steering ratio	17.78 : 1
Wheel camber (DIN curb weight)	Front (charged with 33 lbs.) 0° ± 10′, rear – 1° ± 10′
Toe (DIN curb weight)	Front (charged with 33 lbs.) ± 0°, rear 0° to 0° 20′ per wheel
Caster (DIN curb weight)	(charged with 33 lbs.) 6° 5′ ± 15′

Power Train

Manual gearbox version

Clutch		Single plate dry disc	
Porsche servo-lock synchronization			
		4-speed transmission	**5-speed transmission** (optional)
Gear ratios *	1st gear	(11/35) = 3.182 : 1	(11/35) = 3.182 : 1
	2nd gear	(18/32) = 1.778 : 1	(18/33) = 1.834 : 1
	3rd gear	(24/27) = 1.125 : 1	(23/29) = 1.261 : 1
	4th gear	(28/23) = 0.821 : 1	(26/25) = 0.962 : 1
	5th gear		(29/22) = 0.759 : 1
	Reverse gear	(12/21 – 20/38) = 3.325 : 1	(12/21 – 20/38) = 3.325 : 1
Final drive		Spiral bevel pinion and differential	
Drive ratio		(7/31) = 4.429 : 1	
Rear axle drive		Drive shafts with two CV-joints per shaft	
Limited slip differential		Optional for manual gearbox version	

Sportomatic-transmission (optional)	
Clutch	Hydraulic-transformer and low pressure single plate dry disc, servo acted
Number of gears	4 forward, 1 reverse, 1 parking position
Transformer ratio	**911 T, 911 E:** 2,19:1 – **911 S:** 2,1:1
Transmission* 1st driving range	(15/36) = 2.400 : 1
2nd driving range	(20/31) = 1.550 : 1
3rd driving range	(24/27) = 1.125 : 1
4th driving range	(28/24) = 0.858 : 1
Reverse driving range	(15/21 – 21/38) = 2.533 : 1

* In parantheses: numbers of teeth

Final drive Drive ratio	Spiral bevel pinion and differential (7/27) = 3.857 : 1

Climbing Ability (theoretically)*

		4-speed transmission	5-speed transmission	With Sportomatic
911 T:	1st gear	90 %	90 %	62 (>100) %
	2nd gear	39 %	41.5 %	37 (50) %
	3rd gear	22 %	25.5 %	24 (34) %
	4th gear	13 %	17 %	17 (24) %
	5th gear		10,5 %	
911 E:	1st gear	92 %	92 %	48 (90) %
	2nd gear	39 %	41 %	27,5 (43) %
	3rd gear	20,5 %	24,5 %	18 (30) %
	4th gear	12 %	16 %	12,5 (23) %
	5th gear		10,5 %	
911 S:	1st gear	100 %	100 %	50,5 (100) %
	2nd gear	41 %	43 %	28 (44) %
	3rd gear	21,5 %	26 %	19 (31) %
	4th gear	12 %	17 %	12,5 (23) %
	5th gear		10,5 %	

Numbers in brackets: With torque conversion (brief periods only)

Performance

	911 T:	911 E:	911 S:
Maximum speed (approx.)			
manual transmission	129.3 mph	137 mph	143 mph
Sportomatic	126.2 mph	134 mph	140 mph
Aacceleration times from 0–61 mph*	9 sec.**	7.9 sec.**	7 sec.**

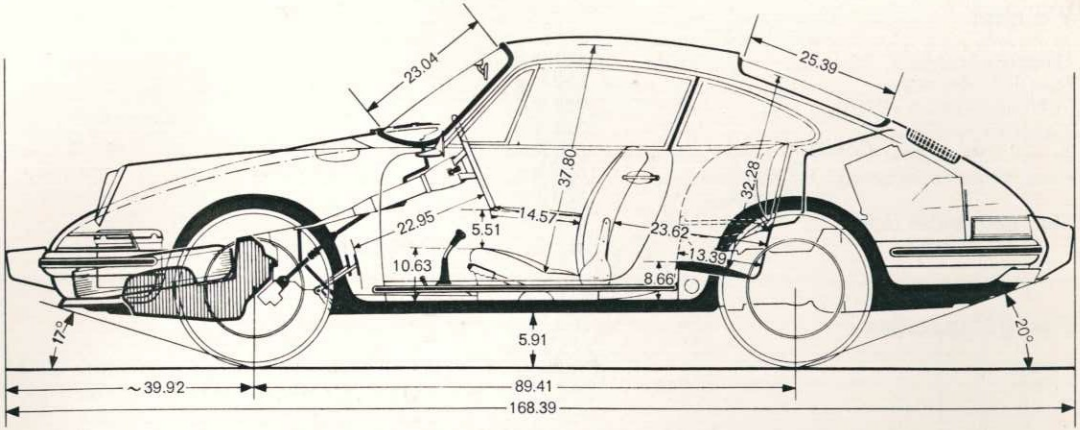
* DIN curb weight + ½ load capacity

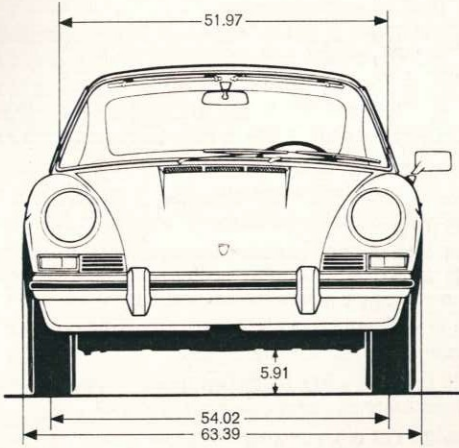
** Only small deviations for Sportomatic and 5-speed transmission

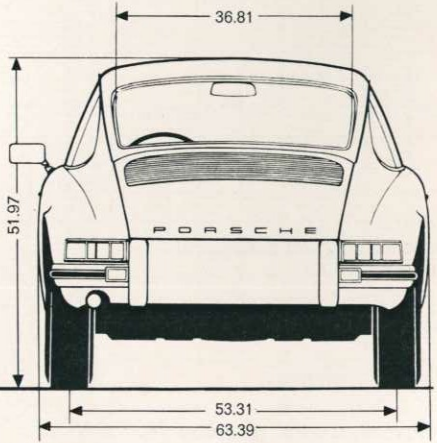
Dimensions

(at DIN curb weight in inch)

Track front	
wheel rim 5½ J x 15	53.54 in.
wheel rim 6 J x 15	54.02 in.
Track rear	
wheel rim 5½ J x 15	52.85 in.
wheel rim 6 J x 15	53.31 in.
Turning circle	35.10 ft.







Weights

Unloaden weight	2425 lbs.
Max .load capacity	529 lbs.
Total permissible weight	3086 lbs.
Max. axle load, front *	1323 lbs.
rear *	1852 lbs.
Permissible trailer weight without brakes	1058 lbs.
with brakes	1320 lbs.
Max. permissible rack load * (Coupe only)	77 lbs.

* Do not exceed total permissible weight

Filling Capacities

Engine

Premium grade HD oil according to API classification SD or SE, in summer SAE 30, in winter SAE 20 or SAE 20 W 20 for temperatures from +32° F to +5°F and SAE 10 W for temperatures below +5° F

Total capacity of the system:

With manual gear box:
911 T, 911 E, 911 S: approx. 2.91 US gals. (2.42 Imp. gals.)
911 S: approx. 3.56 US gals. (2.96 Imp. gals.) (with optional oil cooling device)

With Sportomatic (due to the oil remaining in the torque converter)
911 T, 911 E, 911 S: approx. 3.56 US gals. (2.96 Imp. gals.)
911 S: approx. 4.22 US gals. (3.50 Imp. gals.) (with optional oil cooling device)

Difference between min. and max. marks on the dipstick: approx. 2.1 US qts. (1.7 Imp. qts.)

Note: At all oil changes only 2.64 US gals. (2.20 Imp. gals.) are replaced. This is valid for all three Porsche types. Always check the oil level with the dipstick (see page 51).

Transmission and differential

Approximately 3.17 US qts. (2.63 Imp. qts.) SAE 90 transmission oil according to specification MIL-L-2105 B or MIL-L-2105. For optional limited slip differential use Shell S 1747 A or any other oil meeting classification M 2 C 28 B

Fuel tank

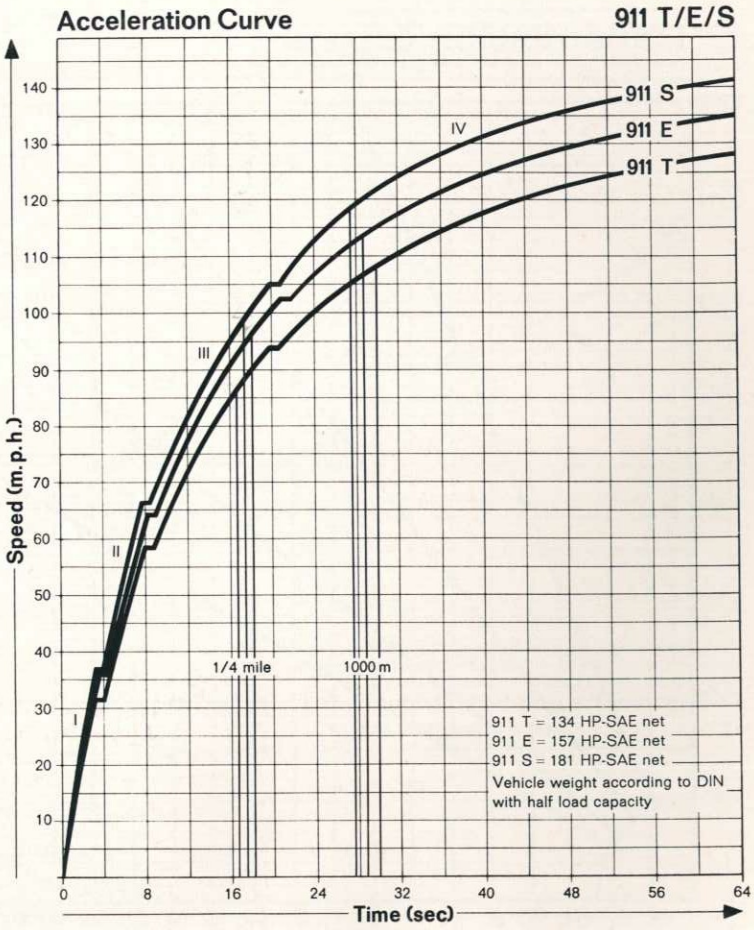
16.4 US gals. (13.65 Imp. gals.) including approximately 1.6 US gals. (1.30 Imp. gals.) reserve. Fuel requirement: at least 91 octane RON

Brake fluid reservoir

Approximately 0.42 US pints (0.35 Imp. pints), brake fluid according to SAE J 1703 and conforming to Motor Vehicle Safety Standard Nr. 116

Windshield washer reservoir

Approximately 2.1 US qts. (1.7 Imp. qts.)

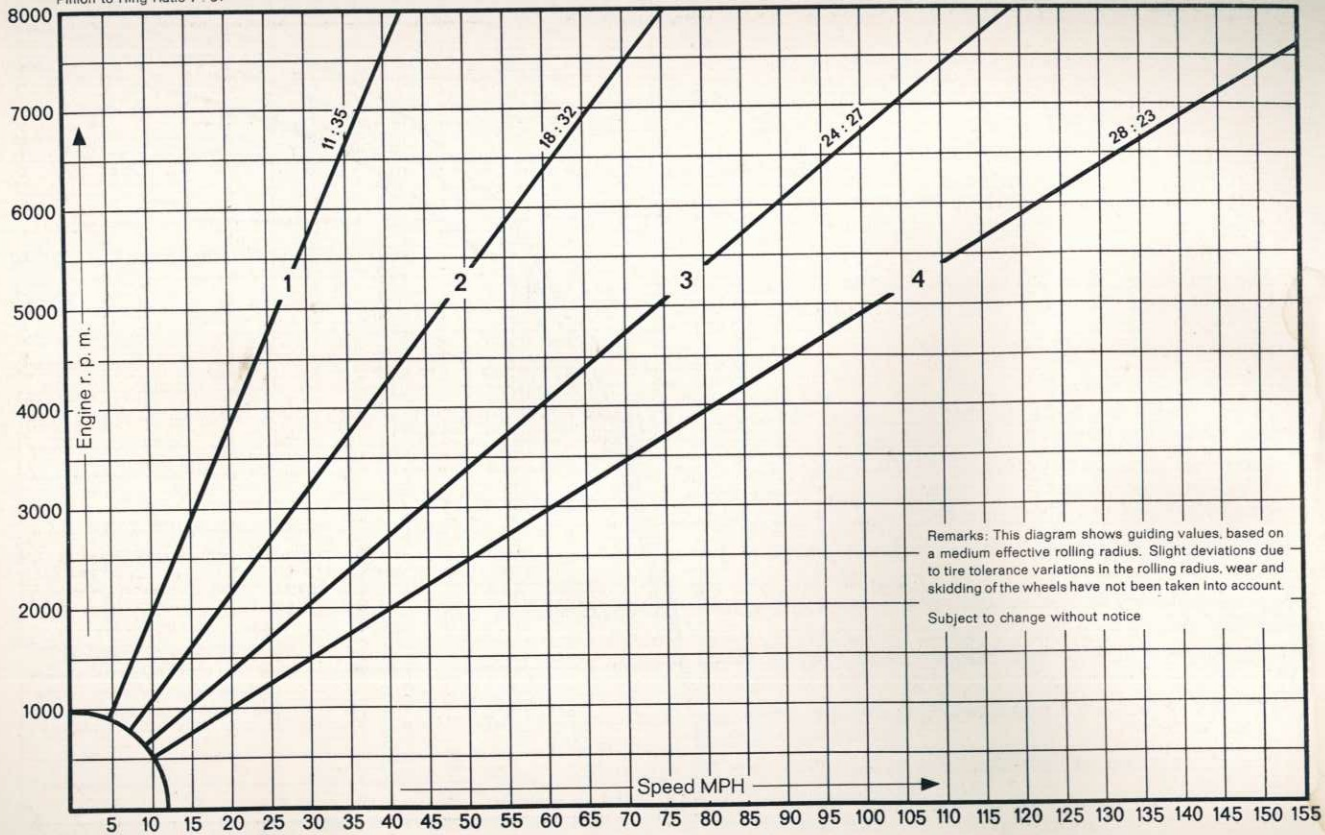

Acceleration Curve
911 T/E/S
Speed (m.p.h.)
140
130
120
110
100
90
80
70
60
50
40
30
20
10
911 S
911 E
911 T
IV
III
II
I
1/4 mile
1000 m
911 T = 134 HP-SAE net
911 E = 157 HP-SAE net
911 S = 181 HP-SAE net
Vehicle weight according to DIN
with half load capacity
0
8
16
24
32
40
48
56
64
Time (sec)

Transmission Diagram

4-speed-transmission

Pinion to Ring Ratio 7 : 31

Type 915 Transmission

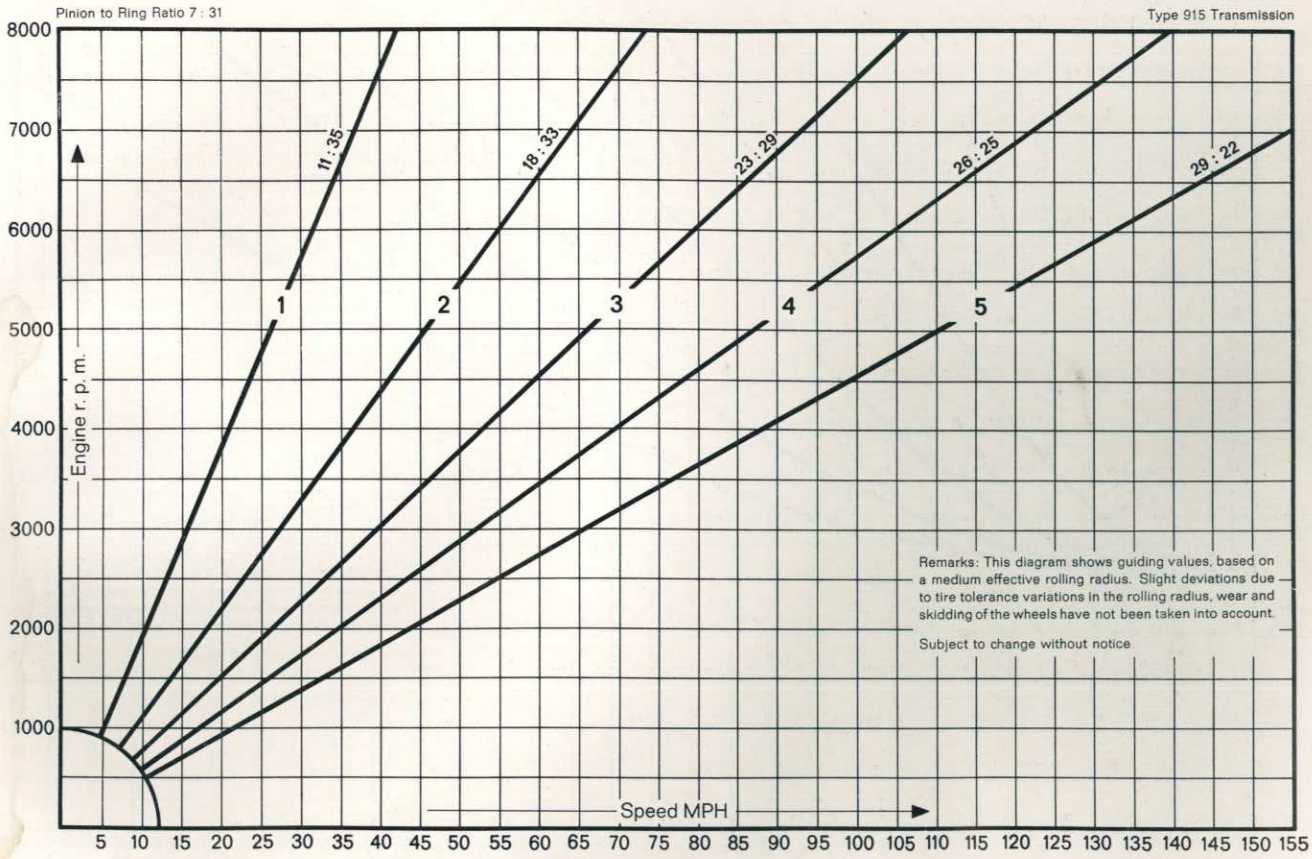


Remarks: This diagram shows guiding values, based on a medium effective rolling radius. Slight deviations due to tire tolerance variations in the rolling radius, wear and skidding of the wheels have not been taken into account.

Subject to change without notice

Transmission Diagram

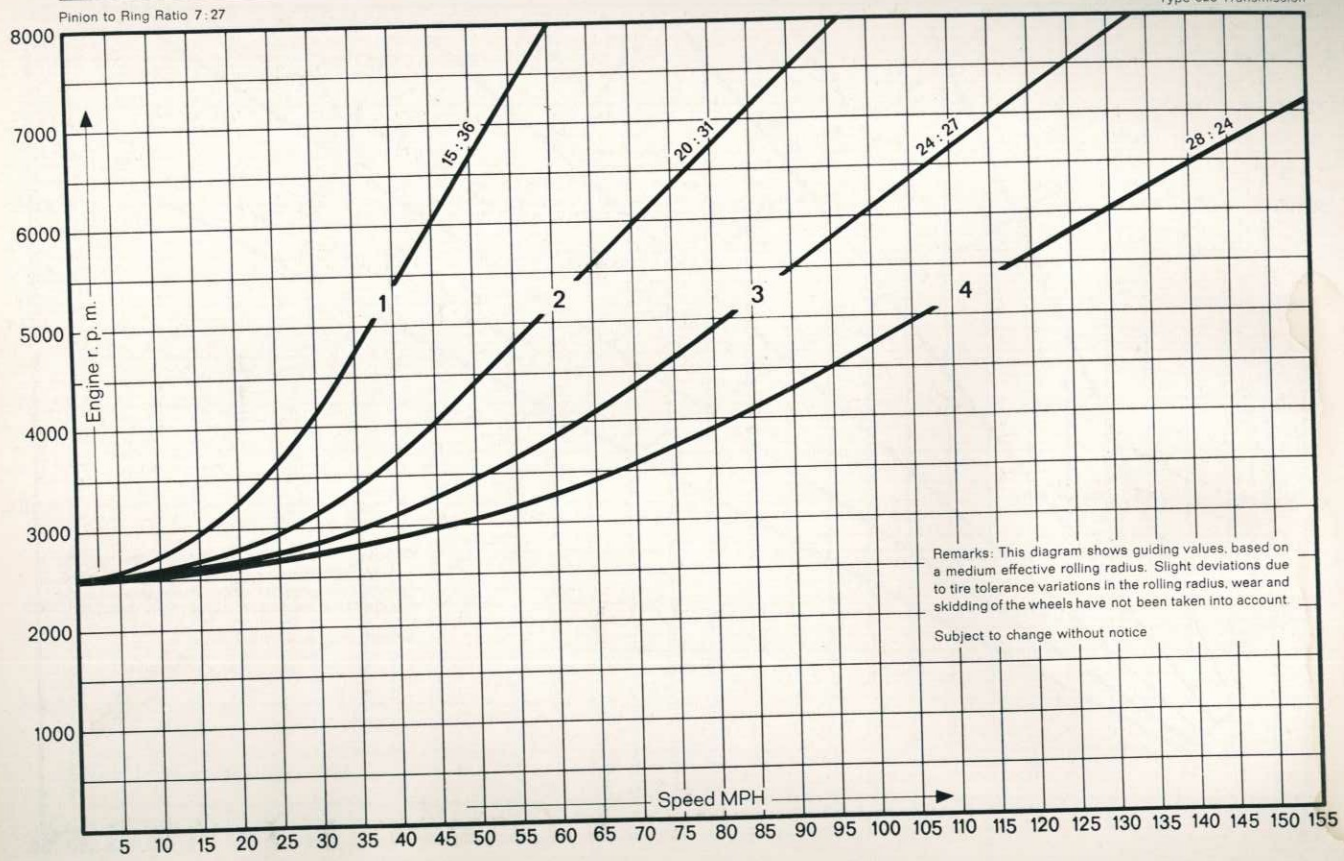
5-speed-transmission



Transmission Diagram 911 T, 911 E

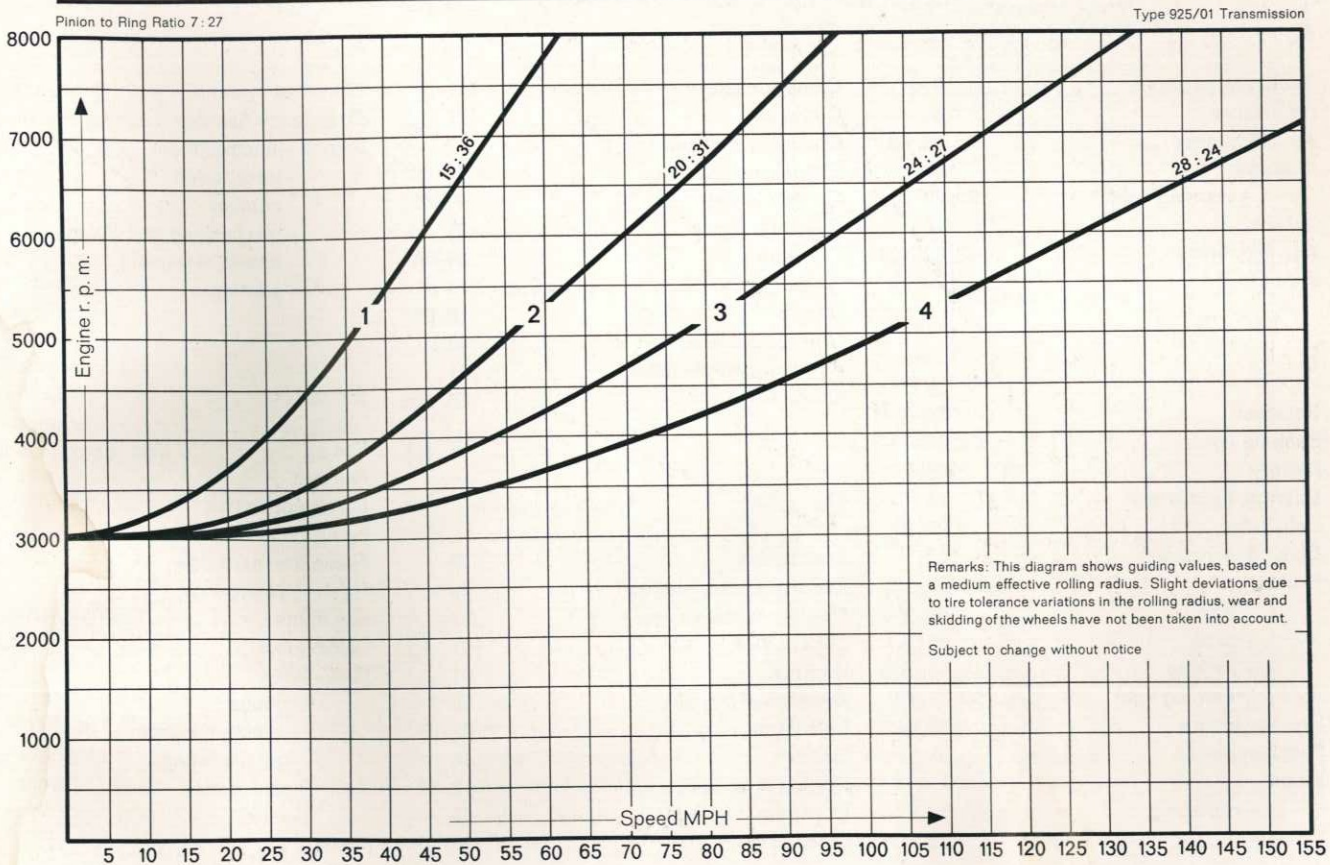
Sportomatic

Type 925 Transmission



Transmission Diagram 911 S

Sportomatic



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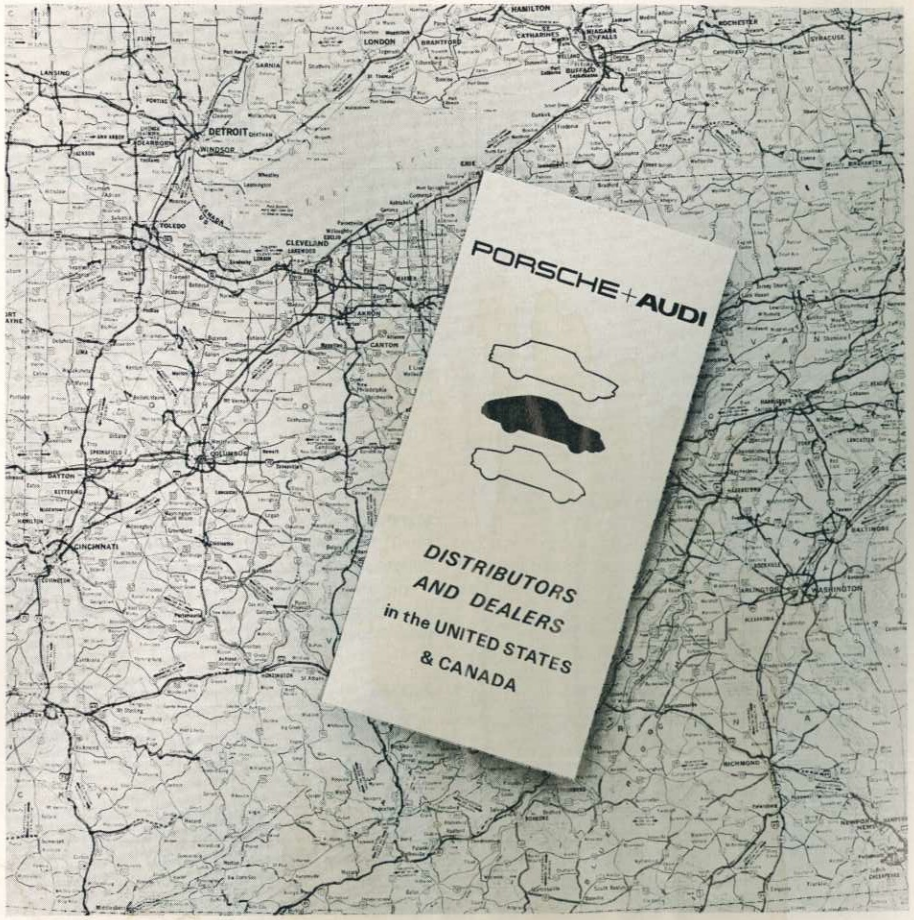
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Anyone of these dealers is well equipped to help you with virtually all Porsche-related matters; and your dealer should be your primary source.

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