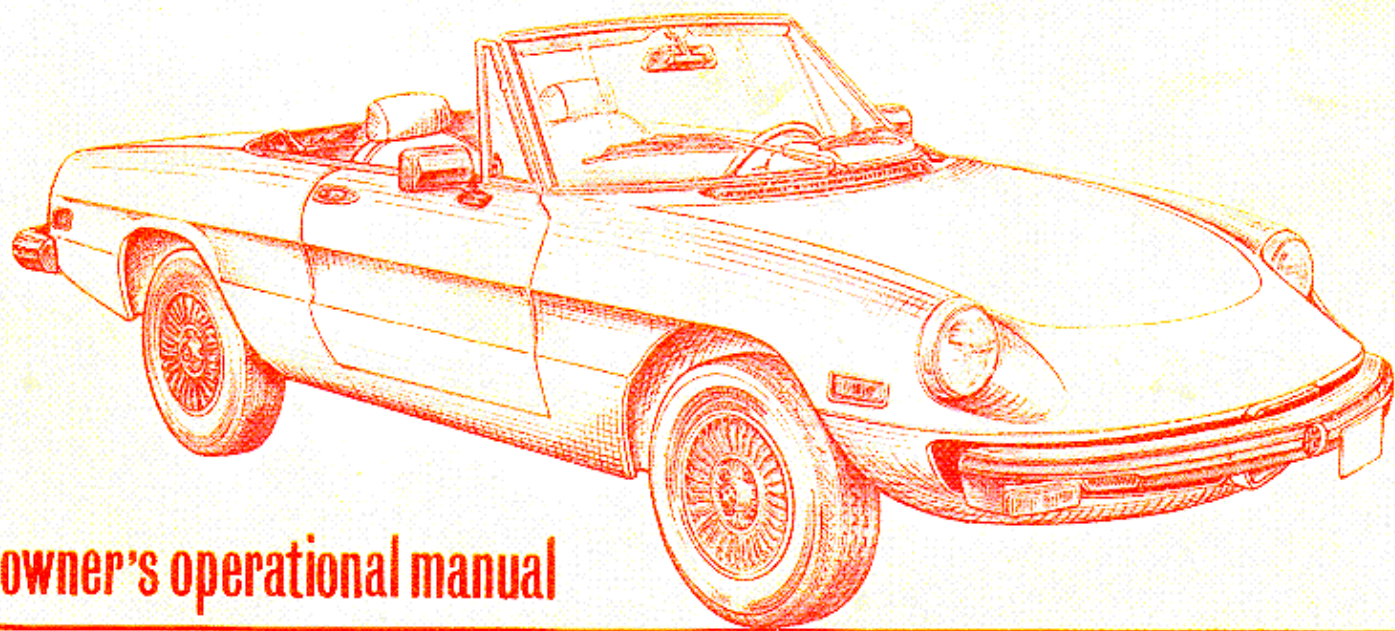


49 state version

1981 model year



owner's operational manual

Alfa Romeo

AlfaWiki.nl

Spider Veloce®

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The operation and maintenance instructions contained in this manual, particularly as far as the efficiency of the fuel injection system is concerned,

MUST BE CAREFULLY OBSERVED

by every owner who desires to get the best from his vehicle and to ensure a long life for every component.

Owners are recommended, in their own interest, to entrust maintenance and repair work to Dealers equipped with the proper tools and staffed by specially trained mechanics.

ALFA ROMEO

CUSTOMER SERVICE

The technical data are approximate only. Alfa Romeo reserves the right to change without notice any features and data given in this book. Some of the equipment are optional extras. Refer to price list for a comprehensive list of options.

FUEL REQUIREMENTS

To prevent serious damages to the catalytic converter **only unleaded gasoline** of at least **91 R.O.N.** must be used. In the case of gas stations using **FEDERAL TRADE COMMISSION** octane numbers on gasoline pumps, use only unleaded gasoline with a rating of a least 87, i.e.:

$$\frac{R + M}{2} = 87.$$

The filler neck of the tank prevents accidental filling with other than **unleaded gasoline**.

WARNING

The Clean Air Act, as amended, provides in sect. 203 that tampering with emission related components or specifications is prohibited.

« Tampering » can be defined as any operation performed that causes any change in the specifications contained with in this owner's operational manual and in the maintenance program book.

All Alfa Romeo vehicles are certified and are controlled to insure that they meet these specifications when they leave the factory. Vehicles being out of specification due to maladjustment or modification will usually exceed established emission standards for that vehicle, as well as consume excessive fuel.

The specifications contained in this manual have been furnished to Federal and State Environmental Control Agencies, and are those which are used in surveillance programs to determine the vehicles conformity to its certified configuration.

Alfa Romeo

ALFA ROMEO NEW CAR LIMITED WARRANTY

Except for the Emission Control System Warranty, this is the only express warranty given by Alfa Romeo, Inc. Alfa Romeo, S.p.A., the manufacturer of Alfa Romeo cars, gives no express warranty. Alfa Romeo, Inc. and Alfa Romeo, S.p.A. do not authorize any other person, including an authorized Alfa Romeo dealer, to change this warranty or create for them any other obligation in connection with Alfa Romeo cars.

Alfa Romeo, Inc. will not do anything other than what is stated in this warranty if a defect is found to exist in an Alfa Romeo car. All other remedies are excluded, including any obligation or liability on the part of Alfa Romeo, Inc. or Alfa Romeo, S.p.A. for consequential or incidental damages (such as loss of use of the car, loss of time or inconvenience) arising out of a defect.

ALL IMPLIED WARRANTIES ON THE PART OF ALFA ROMEO, INC. AND ALFA ROMEO, S.p.A. APPLICABLE TO ALFA ROMEO CARS, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, and some states do not allow limitations on how long an implied warranty lasts so the above exclusion or limitation may not apply to you.

WHAT IS COVERED BY THE MANUFACTURER'S WARRANTY

Alfa Romeo, Inc., 250 Sylvan Avenue, Englewood Cliffs, New Jersey warrants to the consumer owner of each Alfa Romeo automobile, that it will repair or replace, at its option, free of charge, any part (except tires) which is defective in workmanship or material. **This warranty is effective for 12 months from the date the car is delivered to the first consumer purchaser.**

WHAT IS NOT COVERED BY THE MANUFACTURER'S WARRANTY

- Charges for parts and labor made in connection with normal or suggested maintenance service.
- Defects or damages resulting from misuse, negligence, alterations, improper adjustments, modifications, disconnections, tampering, disturbing seals, locks, limiting devices, or by accident.
- Defects or damages resulting from failure to operate, maintain and service the car as suggested in the Owner's Operational Manual and Maintenance Program Book including improper maintenance or service, the subsequent failure except for consequential damage of a part other than an original Alfa Romeo replacement part or the improper installation of any part. Although it is recommended that suggested maintenance and service be performed by an authorized Alfa Romeo dealer, it will not effect your rights under this warranty if the suggested maintenance and service is properly performed elsewhere.
- Any car registered or predominantly operated outside the United States.
- Any car on which the odometer readings have been altered.
- Tires.

WHAT TO DO IF YOU REQUIRE WARRANTY SERVICE

- Present your car to any authorized Alfa Romeo dealer during normal business hours. You must also show your Maintenance Program Book to verify warranty coverage. In some cases it may be necessary for you to show maintenance has been performed. It is your responsibility to keep and provide records (such as the Maintenance Program Book or repair orders) of maintenance on your car.
- Authorized Alfa Romeo dealers are listed in the Yellow Pages of their local telephone directories.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

EMISSION CONTROL SYSTEM WARRANTY

Alfa Romeo warrants to the ultimate purchaser and each subsequent purchaser that the vehicle is designed, built, and equipped so as to conform at the time of sale with all U.S. emission standards applicable at the time of manufacture and that it is free from defects in materials and workmanship which would cause it not to meet these standards within the period of 5 years or 50,000 miles, whichever occurs first. Failures, other than those resulting from defects in material or workmanship which arise solely as a result of owner abuse and/or lack of proper maintenance, are not covered by the warranty. Federal Law prohibits manufacturers and dealers from knowingly removing or rendering an emission control system inoperative or ineffective.

EMISSIONS PERFORMANCE WARRANTY

Alfa Romeo warrants that if your vehicle which is maintained and operated in accordance with the written instructions for proper maintenance found in this manual and your Maintenance Program Book fails to conform at any time during its useful life to the applicable emission standards as judged by an EPA-approved

emission test, and such failure results in you having to bear any penalty or other sanction (including the denial of the right to use the vehicle) under local, State or Federal law, then Alfa Romeo shall remedy the non-conformity at no cost to the owner, except that, if the vehicle has been in operation for more than 24 months or 24,000 miles, Alfa Romeo shall be required to remedy only those nonconformities resulting from the failure of components which have been installed in or on the vehicle for the sole or primary purpose of reducing vehicle emissions and that were not in general use prior to model year 1968. (see Emissions Performance Warranty Parts List on page 4 of this manual).

(b) The warranty period shall begin on the date the vehicle is delivered to its ultimate purchaser, or if the vehicle is first placed in service as a «demonstrator» or «company car» prior to delivery, on the date it is first placed in service.

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY AUTOMOTIVE REPAIR ESTABLISHMENT OR INDIVIDUAL USING ANY AUTOMOTIVE PART WHICH HAS BEEN CERTIFIED IN ACCORDANCE WITH EPA REGULATIONS.

Emission related parts not required to be replaced in the maintenance instructions are warranted by Alfa Romeo for a period of 5 years or 50,000 miles whichever occurs first.

No Emission Performance Warranty claim shall be denied on the basis of any certified replacement part having been used other than an Alfa Romeo part in the course of maintenance or repair of your Alfa Romeo.

Although non-certified parts may be used in the maintenance or repair of your vehicle, Alfa Romeo shall not honor an Emission Performance Warranty claim if a non-certified part has been used which demonstrates inferior workmanship or is not equivalent in emission performance to the original part and you the owner are unable to prove otherwise.

**ALFA ROMEO
5 YEAR/50,000 MILE PERFORMANCE
WARRANTY PARTS LIST**

- I. Air/Fuel Metering System
- Feedback Control System and Sensors.
 - Electric Choke.
 - Altitude Compensation System.
 - Deceleration Controls.
 - Early Fuel Evaporative Controls.
- II. Ignition Spark Advance/Retard System
- Dual Diaphragm Vacuum Advance Unit.
 - Electronic Spark Controls.
 - Valves and Switches Sensing Vacuum.
- Temperature, Time, Transmission Gear, etc. used to control advance/retard.
- III. Evaporative Emission Control System
- Vapor Storage Canister and Filter.
 - Vapor Liquid Separator.
- IV. Positive Crankcase Ventilation (PCV) System
- PCV Valve.
- V. Exhaust Gas Recirculation (EGR) System
- EGR Valve.
 - EGR Spacer Plate.
 - Sensors and Switches used to control EGR flow.
- VI. Air Injection System
- Air Pump.
 - Air Distribution System.
 - Check Valve.
- VII. Catalytic Converter System
- Catalytic Converter.
 - Catalyst Material and Internal Structure.
 - Unleaded Fuel Only Restricted Filler Neck.
- VIII. Hoses, Clamps, Brackets, Tubing, Gaskets, Belts, Seals, Connectors, etc. used in above systems.

**EMISSIONS PERFORMANCE WARRANTY
CLAIM ARBITRATION INSTRUCTIONS**

A warranty claim may be submitted by bringing your Alfa Romeo to:

- any repair facility authorized by Alfa Romeo to service your vehicle *
- any repair facility authorized by Alfa Romeo to perform Emission Performance Warranty repairs on your vehicle *

By law, Alfa Romeo is required to provide you with a final decision regarding your claim within a reasonable time not to exceed 30 days from the time at which your vehicle is initially presented for repair or within the time period during which you are required by local, State or Federal law to have your vehicle repaired without incurring further penalties or sanctions upon you (whichever is shorter).

Alfa Romeo's failure to notify you within the required time period (as determined by the above paragraph) for reasons that are not attributable to you or events which are not beyond the control of Alfa Romeo or the repair facility, shall result in Alfa Romeo being responsible for repairing the vehicle free of charge to you.

Alfa Romeo shall incur all costs associated with a determination that an Emission Performance Warranty is valid.

* Alfa Romeo authorized facilities are shown on a listing which is supplied with every vehicle.

For further Emission Performance Warranty information, or if you feel you have been treated unfairly concerning this warranty and wish to report any violation of the terms of the Emission Performance Warranty, you may contact:

Director, Field Operation and
Support Division (EN-397)
U.S. Environmental Protection Agency
401 « M » Street, S.W.
Washington, D.C. 20460

TIRE INFORMATION

Tires are covered by the tire manufacturer's warranty which is issued only to the tire manufacturer. Any authorized Alfa Romeo dealer will assist you in requesting an adjustment if this becomes necessary.

SERVICE NETWORK

Alfa Romeo Dealers are shown in the list supplied with every vehicle. In any event rely on your Alfa Romeo Dealer displaying the shield with the Alfa Romeo emblem and name.

ANY QUESTIONS ABOUT YOUR LIMITED WARRANTY?

Your dealer is the most important link between you and Alfa Romeo. You are his customer and he is vitally interested in you. Even so, it is possible that a misunderstanding may arise regarding service. If it happens that you have a problem with your dealer you should:

- **First:** Talk it over with the general manager or owner of the dealership. Chances are the problem will be resolved right away.
- **Second:** If your dealer can't solve the problem phone the Alfa Romeo divisional office nearest you and ask for the Service Representative calling on your dealer. He'll work with you and the dealer together... in person, if necessary.
- **Third:** If for some reason there still has been no solution, contact Owner Relations at either Alfa Romeo divisional office.

EASTERN DIVISION

Alfa Romeo, Inc.
250 Sylvan Avenue
Englewood Cliffs
New Jersey 07632
(201) 871-1234

WESTERN DIVISION

Alfa Romeo, Inc.
215 Douglas Street South
El Segundo
California 90245
(213) 772-4414

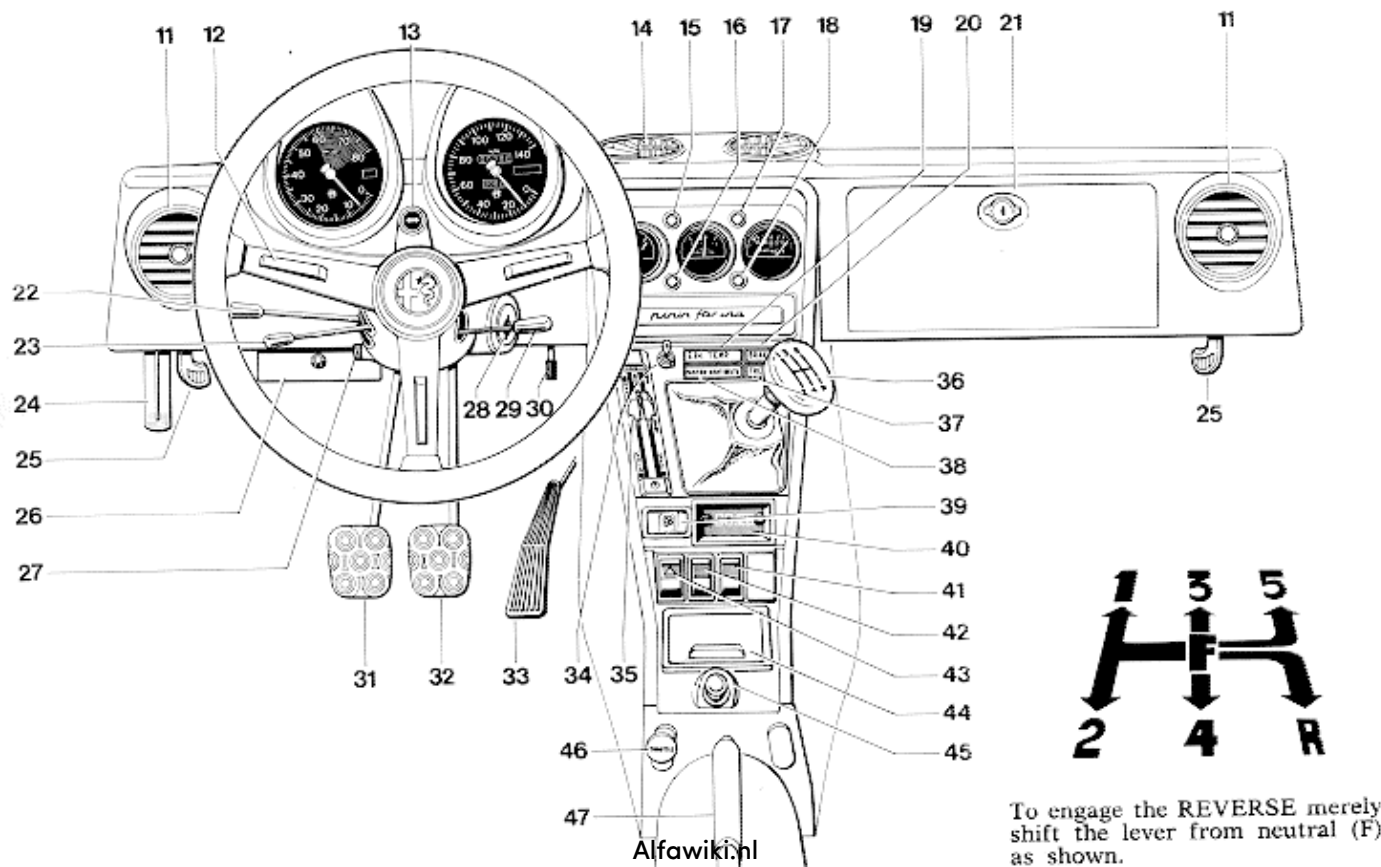


Alfa Romeo

HOW TO USE YOUR CAR

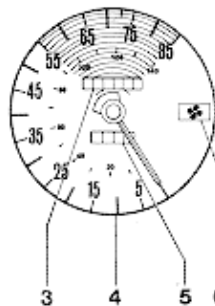
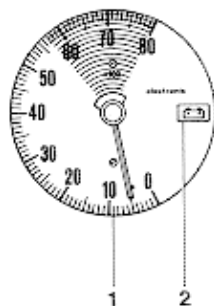
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CONTROLS AND INSTRUMENTS



CONTROLS

- 11 Ventilating air outlet
- 12 Horn
- 13 Direction indicator warning light
- 14 Windshield demisting outlet
- 15 Low fuel pressure warning light
- 16 Parking light warning
- 17 Low oil pressure warning light
- 18 Headlamp high beam warning light
- 19 Catalyst overtemperature warning light « Exh. Temp. »
- 20 Warning light for minimum brake fluid level and parking brake
- 21 Glove compartment (with interior lighting that comes on when lid is opened)
- 22 Headlamp, dimmer & flashing switch
- 23 Direction indicator switch
- 24 Hood release
- 25 Side outlet lever
- 26 Fusebox (at its left there is an additional fuse holder)
- 27 Dimmer for HAZARD - DEF lights
- 28 Ignition switch antitheft & buzzer
- 29 Windshield wiper and washer pump
- 30 Tripmeter reset knob (push knob up and turn clockwise to reset)
- 31 Clutch
- 32 Brake
- 33 Accelerator
- 34 Door mirror remote control switch
- 35 Heating, ventilating and demisting



- 36 Gearshift lever
- 37 Throttle warning light
- 38 « Fasten seat belts » light
- 39 Blower switch (two-speed)
- 40 Digital clock
- 41 Right power window switch
- 42 Left power window switch
- 43 Hazard flasher push button switch with built in warning light
- 44 Ash tray (removable)
- 45 Cigarette lighter
- 46 Hand throttle
- 47 Hand brake (for emergency and parking)

INSTRUMENTS

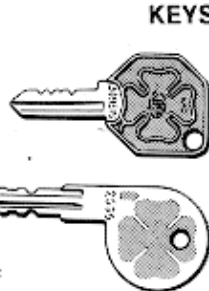
- 1 Tachometer
- 2 Alternator warning light
- 3 Odometer
- 4 Speedometer
- 5 Tripmeter
- 6 Heater blower warning light (glows brighter when blower operates on high speed)
- 7 Fuel reserve warning light
- 8 Fuel level indicator
- 9 Oil pressure gage
- 10 Coolant temperature indicator

Ignition and
antitheft key

Symbol _____

Symbol _____

Key to driver's and
passenger's door, glove
compartment, trunk lid.



KEYS

Keep a record of the symbol stamped on the key handle. Write it here, and also on the back of your owner service card.

When ordering duplicate keys, **please quote the symbol.**

STARTING THE ENGINE

Place the gearlever in neutral. Fasten the seat belts. Failure to fasten the driver's seat belt will activate the reminder buzzer.

Insert the key in the ignition switch and turn it clockwise to the MAR. position (ignition « on ») make sure the low fuel pressure warning light goes off after having flashed on. Also make sure that « Fasten Seat Belts », « Exh. Temp. » and brake warning lights come on and stay lit for a few second (this means that the above indicating devices are operating properly). If all or any of the warning lights should not come on and stay on for a few seconds have the lights and or the relevant circuit or components checked immediately.

Wait a few moments and then turn the ignition key further clockwise to AVV, to operate the starter. As soon as the engine fires release the key. If the engine fails to start, the key must be returned to STOP and the operation repeated.

WARNING

On turning the ignition key to « MAR. » position, should the « Exh. Temp. » catalyst overtemperature warning light either fail to come on for a few seconds or stay lit permanently, have the circuit of « Exh. Temp. » warning light checked at once.

If the fuel pressure warning light does not flash on, this is an indication of failure of the indicating device or fuel feed system or coming into operation of the inertia switch (refer to page 13).

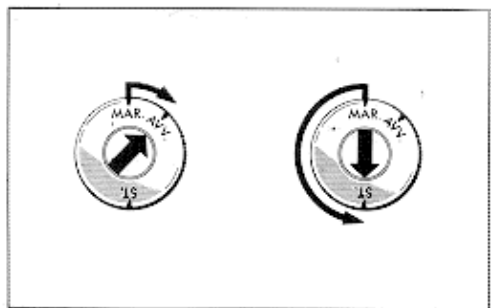
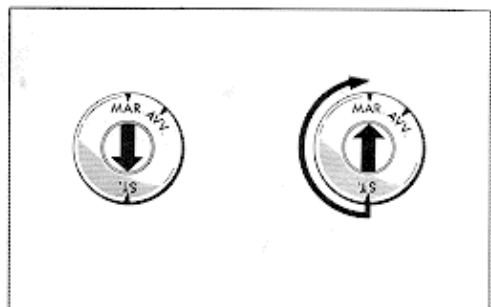
STOPPING THE ENGINE

Return the key counterclockwise to STOP. In such a position the ignition is « off ». The key can be withdrawn only in STOP position. When the key is withdrawn it is no longer possible to rotate the steering wheel.

Never withdraw the key before the car has come to a complete stop as the « steering lock » condition may occur.

ANTITHEFT - STEERING LOCK

By withdrawing the key (when in STOP position and steering wheel spokes balanced for straight ahead direction), the steering is locked; to release the lock easier slightly rotate the wheel in both directions, after having inserted the key.



1 - DIRECTION INDICATORS

Direction indicators are controlled by the lever shown at right.

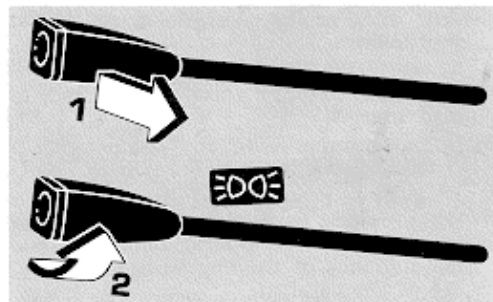
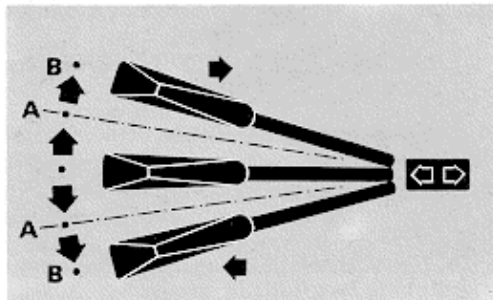
Move the lever:

— up, to signal a right turn;

— down, to signal a left turn.

The green warning light on facia panel will flash on-and-off.

Note: the switch lever may be held at position A to signal either a left or a right turn and will cancel the indication immediately it is released without movement of steering wheel. When clicked into position B the switch lever holds on in fully selected position; this selection is automatically cancelled by return of steering wheel to the straight ahead position.



EXTERNAL LIGHTING

1 - Flashing

Pull up upon the lever knob irrespective of the position of the switch lever. Flashing is possible even when parking lights are off.

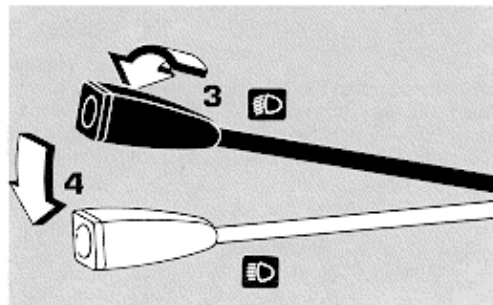
2 - Parking lights and license plate light

To switch them on turn the knob to the first notch toward the instrument panel. The warning light on the instrument panel will light up.

3-4 - Low or high beams

Turn the knob forward to the second notch: if the lever is up (3) the low beams come on (no flashing); if down (4) the high beam and the respective warning light come on (the low beams also stay lit).

The movement of the lever up and down allows the light to be dimmed or returned to high beam.



PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN CATALYTIC EQUIPPED MODELS

- Use only unleaded gasoline.
- Avoid the fuel tank from becoming empty.
- Do not ever operate the engine with a spark plug lead disconnected and do not ever ground spark plugs.
- Don't exceed overloading the engine for prolonged period. Be careful when pulling trailers or when climbing long hills or grades.
- Avoid turning off ignition while driving in any condition or coasting. Vehicle must be stopped before shutdown.
- Avoid parking over or in vicinity of combustible materials such as: dry glass, spilled fuel, dry leaves, rubbish, etc.
- Do not tamper with any component of the emission control system. It is prohibited by law (see WARNING on page 1).
- Have maintenance operations performed as prescribed in the Owner's Operational Manual. The perfect maintenance of the engine is the main factor for the life of the catalyst.

BREAKING IN

To allow the various parts of the car, **particularly the engine, transmission and differential**, to settle in gradually, a breaking in period is necessary, during which maximum performance must not be demanded of the car.

RECOMMENDATIONS FOR THE FIRST 1000 MILES

Maximum engine speed during breaking in period		Cold starting: - before using the vehicle, run the engine for a few minutes at low revs. While driving: - do not drive at max. recommended speeds for long periods; - never fully depress the accelerator pedal; - now and then release the accelerator pedal; - avoid full and extended braking during the first 600 miles.
Mileage reading	r.p.m.	
Up to 300	3500	
from 301 to 1000	4500	

Note: The same recommendations apply also in the case of engine reconditioning involving replacement of cylinder barrels, pistons, piston rings and bearings.

1,500 MILE FREE SERVICE COUPON

Have the lubrication and maintenance operations of 1,500 mile free service coupon in the maintenance program book carried out by an Alfa Romeo Dealer.

STARTING ENGINE FROM COLD

When starting from cold in winter, it is necessary to press the clutch pedal down fully.

Automatic devices, besides doing away with the conventional choke, facilitate the initial running of engine after a cold start, allow a faster warming up of the engine and improve driveability.

As an aid in starting from cold, depress the accelerator pedal partially (about ½ inch.). After a cold start, and especially when the outside temperature is below freezing, let the engine run for 2 to 3 minutes at fast idle of between 2000 & 2500 rpm. Use the hand throttle if required. This helps warm the engine and permits the oil to reach critical points.

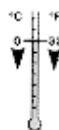


for



2 or 3 minutes

when



STARTING ENGINE WHEN HOT

When the engine is already hot or with very high ambient temperatures (above 77°F) slowly depress the accelerator pedal to facilitate starting.

ENGINE DOES NOT START

If the engine fails to start, look for the cause as follows:

- the battery charge may be too weak to rotate the starter sufficiently fast to start the engine;
- the ignition equipment may be defective (dirty plugs, wet or cracked distributor cap, damaged distributor or coil);
- the solenoid-actuated cold start device may fail to operate;
- electric circuits may be broken or fuses blown.

PRIOR TO GET AWAY

(For item numbers refer to the illustrations on pages 8 and 9).

Check the fuel pressure warning light (15). If the light remains on this may be attributable to the inertia switch that, in the event the car comes into collision, cuts off feed to electric fuel pump. The warning light should therefore be tested by pushing the inertia switch reset button. If warning light still remains lit, contact an Alfa Romeo Dealer.

Check brake warning light 20 for proper operation.

With engine running and ignition on this light should:

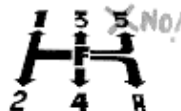
- Stay on for a few seconds after starting.
- Stay lit until handbrake is engaged.
- Go off when brake is disengaged. If the warning light still remains on after having released the handbrake stop the car and have the level of fluid in brake fluid reservoir checked by an Alfa Romeo Dealer.



USE OF THE GEARBOX

Driving away when cold:

When driving away after having started from cold, it is recommended to shift from 1st to 2nd gear at 20 mph. This will improve driveability. Avoid the use of 5th gear when engine temperature is below 80 deg C (175 deg F).



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Normal use:

The most efficient use of the engine will result by using these recommended shift points;

1st to 2nd at 15 mph	3rd to 4th at 40 mph
2nd to 3rd at 25 mph	4th to 5th at 47 mph

DRIVING PRECAUTIONS

Temperature of the catalyst

Excessive temperature in the catalyst bed during driving can cause damage to the pelletized catalyst thereby lowering their conversion efficiency as well as cause damage to the container and to the vehicle or possibly cause fire hazard.

Then when the «Exh. Temp.» warning lamp is flashing indicating abnormal catalyst temperature the driver **must reduce the engine load** by easing up the accelerator pedal. If after a certain period the lamp does not stop flashing or if it stays lit permanently, indicating a further increase of the temperature, there is evidence of need for possible engine maintenance. We recommend that the car be driven slowly to the nearest ALFA ROMEO Dealer for diagnosis of the cause of the overtemperature.

Engine malfunctions that can cause catalyst overtemperature are:

- Wrong spark timing or defective timing switching devices.
- Spark plug fouling of one or more cylinders.
- Defective fuel injection pump or injectors.
- Air filter elements very dirty.
- Defective thermostatic actuator.
- Defective air intake temperature control system.
- Engine accelerator control linkage out of setting.
- Engine and related devices not set to factory specifications.

Driving methods that can cause catalyst overtemperature are:

- Use of wrong gears.
- Too low level in the fuel tank.
- Engine overloading for prolonged time e.g. when racing the engine, pulling trailers or climbing long hills or grades.
- Driving or coasting with the ignition turned off.

These recommendations should also be followed:

- Take care **not to run the engine beyond the maximum RPM range** shown as a red area on tachometer dial.
- When shifting gears, take care to depress the clutch pedal fully; this will ensure smooth operation and save synchronizers from excessive wear.
Do not rest your foot on clutch pedal when not actually using it.
- Do not drive at high speed until the oil in the engine, transmission and differential has warmed up properly.
- Check the oil pressure gage 9 from time to time and **stop the engine** if the pressure with a hot engine and at maximum revolutions should fall below limits shown.

Oil pressures with hot engine-psi

Engine idling	minimum 7
Engine running fast	minimum 50 maximum 65-70

- Check the low oil pressure warning light 17: if on it is an indication of a trouble in the lubricating system: in this case, stop the car and have the lubricating system checked by an authorized Dealer.

However, it is possible for the warning light to come on when the car is cornering: this may be caused by a low level of oil in the pan which can be easily remedied by topping up.

No trouble exists if the warning light comes on while the engine is idling, specially when hot.

- Check that the low fuel pressure warning light 15 is off; when on, it means that either the inertia switch has cut off feed to the fuel pump or the feed system is developing troubles; therefore, have it checked by your Dealer.

Do not coast downhill with the engine stopped; there will be no suction in the brake boosters and a greater pressure will be needed with the brake pedal to obtain comparable braking effect.

WHILE PARKING

NEVER REMOVE THE RADIATOR CAP UNLESS ABSOLUTELY NECESSARY; IN ANY CASE, TO AVOID SEVERE INJURIES, WAIT THAT THE LIQUID IS COOLED DOWN TO OUTSIDE TEMPERATURE

Never leave the key in the **MAR.** position (ignition «on»). Apply the hand brake and, when parking the car uphill or downhill, shift into a low gear and steer the front wheels in such a direction as to cause the car, should the parking brake disengage accidentally, to move toward the curb.

When opening driver's door, a suitable buzzer will alert you, if the key has been left in the ignition switch.

Caution: the antipollution system of your Alfa Romeo causes high exhaust system temperatures.

Driving or parking the car over flammable materials such as dry leaves or grass may cause them to burn.

WARNING

Switch on the road hazard lights when required.
To operate the hazard flashers, push the switch (43, page 8) mounted on the console.

IMPORTANT

Under no circumstances must towing be attempted by attaching chain or cables to the bumpers. The bumpers are mounted on energy absorbing units that can easily be damaged by towing and render ineffective their low speed protective characteristics.

TIRE CHAINS

The tire chains are to be fitted to the drive wheels.

FOR VERY LOW AMBIENT TEMPERATURES

The **Alfa Romeo Antifreeze** gives full protection against freezing down to -20°C (-4°F).

In places where the temperature falls below -20°C , the antifreeze mixture can be made stronger by varying its concentration.

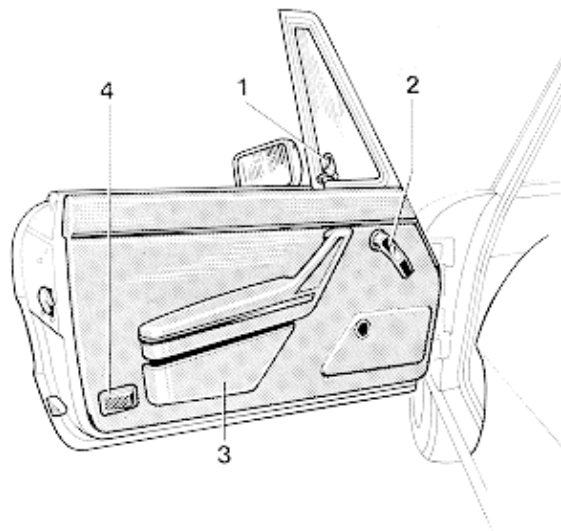
To this end, a certain amount of mixture should be drained off the circuit and replaced with the same quantity of Alfa Romeo concentrated Antifreeze drawn from suitable containers available by Alfa Romeo Dealers.

It is recommended that this operation should be entrusted to an authorized Dealer.

For protection to		Drain off and replace		
$^{\circ}\text{F}$	$^{\circ}\text{C}$	Radiator	Reservoir	Total
-16	-26	800 cc.	200 cc.	1,000 cc.
-30	-35	1,600 cc.	400 cc.	2,000 cc.
-48	-44	2,400 cc.	600 cc.	3,000 cc.

INTERIOR

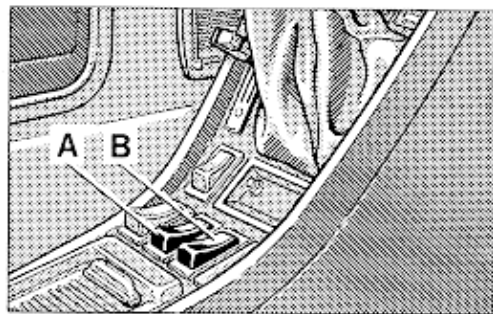
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DOORS

- 1 Vent window control (with a safety catch).
- 2 Lever to open and lock the doors (pull the lever backward to open). Both doors can be locked from the outside with the key. When doors are shut, pushing the lever forward will lock the doors. When so locked the doors cannot be opened from the outside unless the key is used.
- 3 Map pocket.
- 4 Reflector for signalling opening of the door.

At the front of the armrest there is a grip for pulling the door when closing from inside.



POWER WINDOWS

Electrically-operated windows are fitted as standard equipment; to raise or lower the windows tilt the switch rockers on the console panel between front seats.

Note - The engine must be running or the ignition switched « ON » (key in « MAR » position) to operate the electric windows. The individual switches, each controlling a window as stated below, automatically return to a neutral position when released:

Switch A: driver's door window

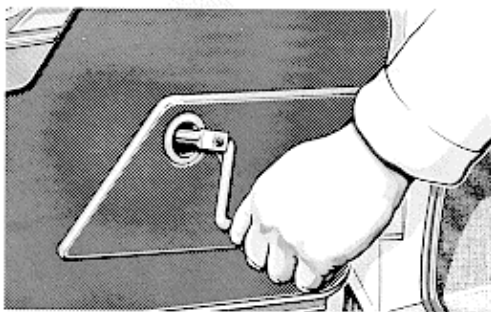
Switch B: right door window.

Warning - Do not held the switch in the operating position when the window reaches the end of its upward or downward travel.

Important note - When leaving children in the car unattended, withdraw the ignition key from the lock to prevent them from being injured by ~~Alfo~~ ~~wikin~~ lifting of windows.

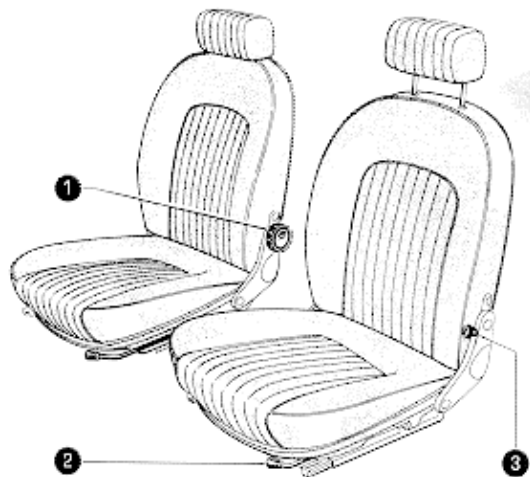
The electric window lifters are protected by fuses; if lifters fail to operate electrically (blown fuses, electric motor malfunction, etc.) the windows can be raised or lowered manually by using the handle in the locker. Proceed as follows:

- remove the cover from the door trim panel
- insert the handle into the hole and raise or lower the window
- to withdraw the handle press on the spring at the handle body; refit the cover.



SEATS

- The handwheels 1 at the inboard sides of the seats control the angle of the backrests. Pushing down the levers 3 at the outboard sides of the seats will unlock the backrests for tipping forward.
- The positioning of the seats is controlled by the lever 2 on the front edge of each seat: by freeing the lever the seat may be moved to the position desired.
- The bucket seats are provided with vertically-adjustable head restraints.





SAFETY BELTS

The car is fitted with safety belts of harness type. The belts are provided with automatic retractors.

Fasten seat belts before getting away.

Hold belt tongue 1 and pull out belt (slide it thru lug 2 at the outboard top of each seat) until it is extended sufficiently to connect the belt tongue to the buckle 3 on tunnel. Ensure the buckles are firmly latched.



Warning: if the driver fails to wear his seat belt, as the ignition key is turned to «MAR» position the «Fasten Seat Belts» warning light and a buzzer will be activated for a few moments.

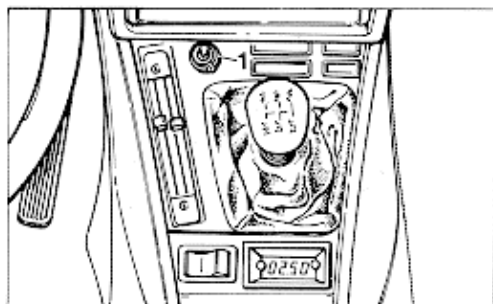
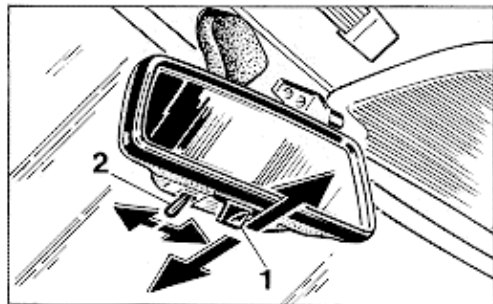
Furthermore, even if the driver has properly fastened the seat belt, the «Fasten Seat Belts» light will remain lit for a few seconds.



To unfasten the belts push the button 4 on buckle. Take care not to let the belt twist while being rewound on its reel until the tongue stops against the lug.

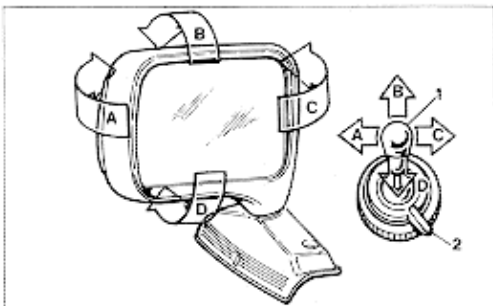
REARVIEW MIRROR / INTERIOR LIGHTING

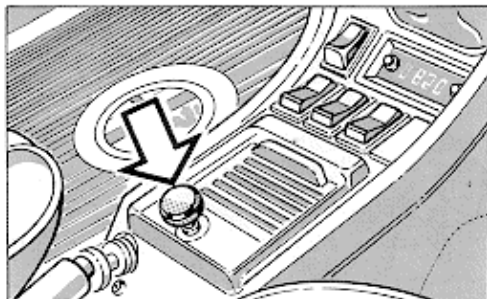
- The rearview mirror, which disengages automatically in the event of a crash, has a day/night antiglare device operated by the lever 1 shown at the illustration.
- Internal lighting is provided by a lamp in the rearview mirror; the switch 2 has two positions: light always on and courtesy light automatically operated when opening doors.



REMOTE CONTROL DOOR MIRRORS

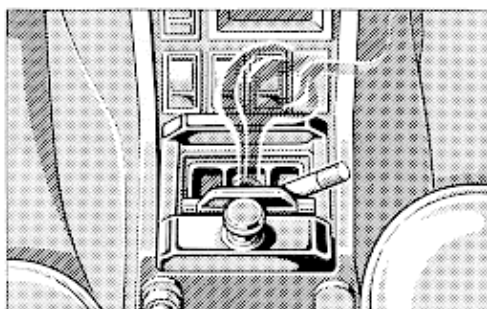
Both door mirrors are controlled by the switch 1. Push the switch stalk as desired towards one of the four directions in which the mirror is adjustable (see illustration). To adjust the driver's mirror move the knob on ring 2 to the left. Move the knob to the right for adjustment of the passenger's mirror. **Warning:** objects in the right door mirror are closer than they appear.





CIGARETTE LIGHTER

To operate press the black plastic knob fully in; when ready for use the lighter will automatically eject itself partially. A lamp at the lighter will glow when parking lights are on.



ASH TRAY

It is at the center of console.

To unclip the ash tray off its seat for emptying, pull up on the center spring.

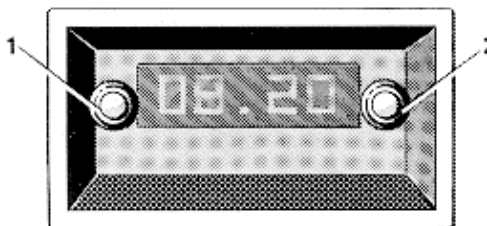
DIGITAL CLOCK

This electronic digital clock features a 24 hour display format. Four digits display time in hours and minutes, the colon flashes twice to indicate a second. Brightness of digital readout, at its maximum during the day, diminishes automatically when parking lights are switched on so as to provide a dimmed illumination consistent with ambient lighting (e.g. at night).

To reset the clock, first depress hours-set button 1 until correct indication is obtained; then, depress the minutes-set button 2 (digits change at a slower rate) until the indication of minutes is corrected. By depressing buttons 1 and 2 simultaneously all four digits are set to zero. On switching off the ignition (ignition key in «ST» position) the display is off as well, to prevent consuming current uselessly, but the clock still runs, ensuring that, when engine is started again, the clock resumes displaying the accurate time.

Note: in the event of power interruption (e.g. for battery removal, blown fuse) the clock circuitry stops operating.

However, as power is again fed, the four digits start flashing to indicate the clock is resetting.



WINDSHIELD WIPER AND WASHER PUMP

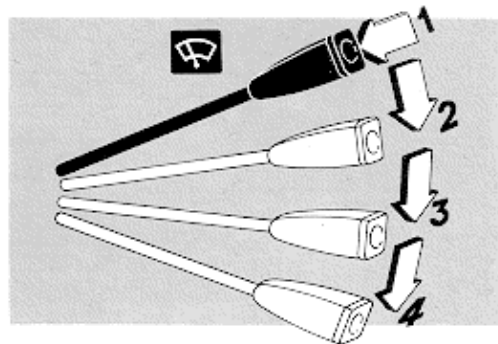
1 Washer pump

To operate the electric windshield washer pump move the windshield wiper switch lever toward the wheel.

Windshield wiper

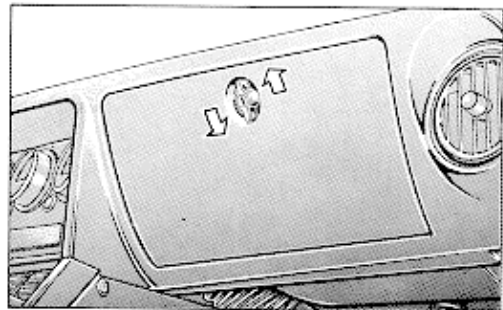
The wiper is controlled by a switch lever which has four positions:

- Lever up: the wiper is off.
- 2 Lever down to the first click: intermittent operation. Wipers operate automatically through a single wipe at a pre-set time interval.
- 3 Lever down to the second click: wiper operates at normal speed.
- 4 Lever down to the third click: wiper operates at high speed.



GLOVE BOX

To open the glove box door rotate the lock handwheel counterclockwise; the lock uses the same key as the door. Lighting is provided by a bulb which is automatically switched off when closing the glove box door.

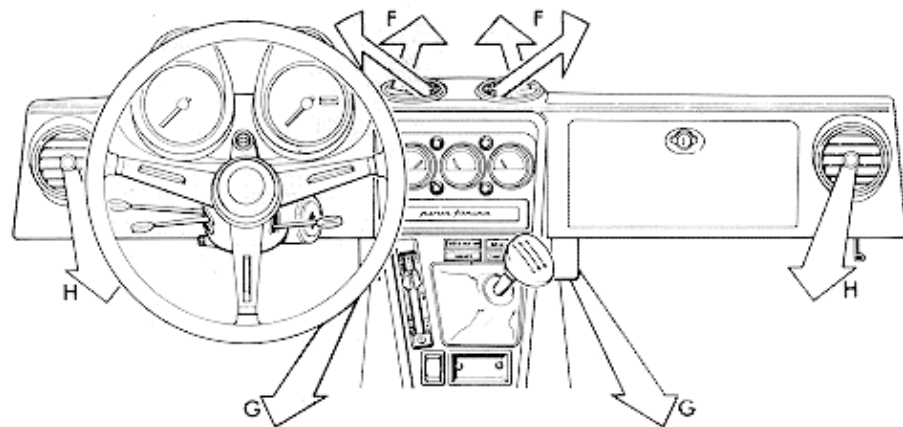


RADIO

Provision is made in the instrument panel for the installation of the radio. To install it, remove the ornament from the instrument panel. The speakers are fitted as standard equipment at the front wings.

N.B. - The cars are provided at the factory with the necessary wiring harness for the installation of the radio; refer to the car's wiring diagram for identifying the wires connecting together the components of the radio equipment (radio set, speakers, antenna). Alfawiki.nl





VENTILATION-DEMISTING AND HEATING

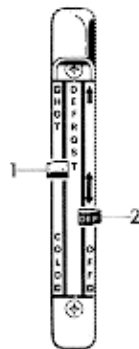
Air enters through:

- **F** for windshield demisting (warm and fresh air)
- **G** for ventilation and heating
- **H** for ventilation

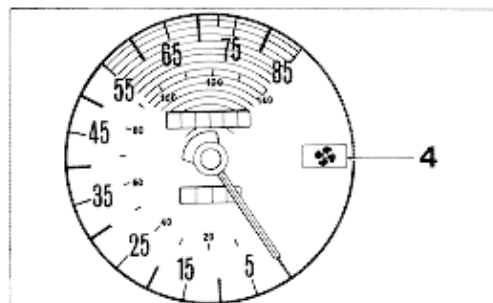
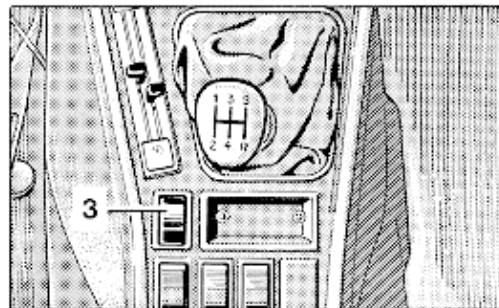
CONTROLS

- The air admitted to the car can be gradually heated by the movement of the lever 1 (operate this lever only when engine is warmed up).
- The movement of the lever 2 gradually regulates the flow of air through the openings **F** and **G**. Specifically:

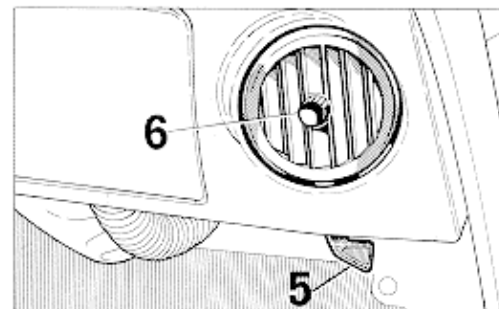
With the lever all the way down (OFF) the flow to vents **F** and **G** is cut off; moving the lever upward part of the air will be directed to vent **F** and part to vent **G**; with the lever all the way up all the air will flow out of vent **F** for maximum demisting of windshield (or both windshield and side windows according to the direction of grilles of vents **F**).



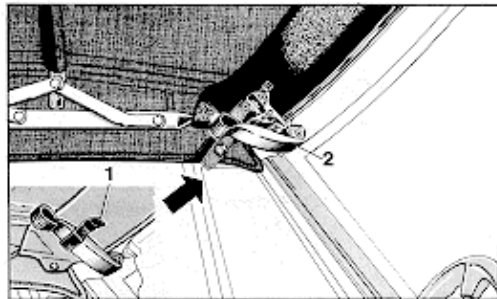
- In order to produce a satisfactory flow of air into the car at low speeds, switch on the electric blower by means of switch 3. Warning light 4 indicates that this has been done.



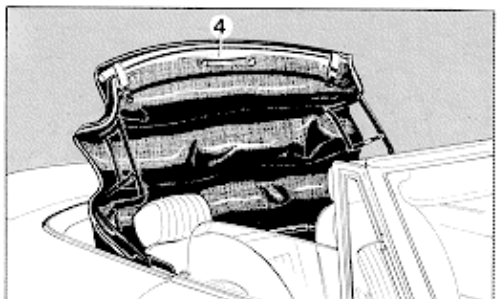
- To open the outlets H push the lever 5 toward the inside of car. The flow of air can then be directed as desired by rotating the knob 6.



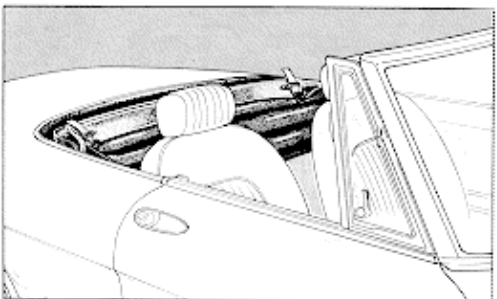
FOLDING THE TOP



Lower the side windows and sun visors. Slacken the straps 1 and release the toggle clamps 2 securing the top to the windshield bow.

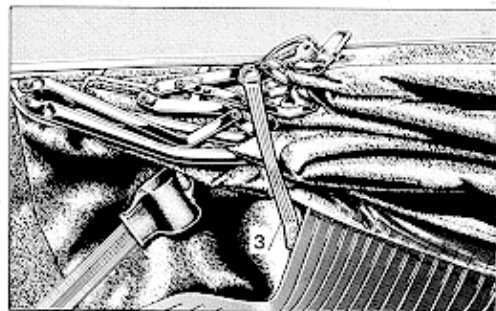


Slacken the two rubber belts 3 and, with handle 4, push the top frame backward. As the top is lowered make sure that the window folds evenly by guiding it with your hand.

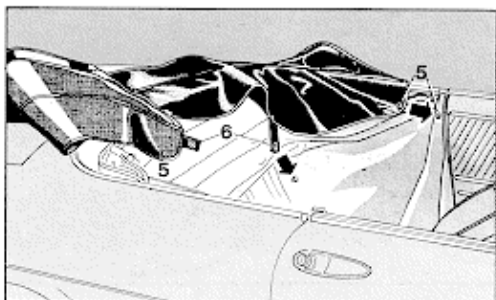


In order to prevent chafing of the top while in the down position the corners of the last fold should be tucked in. Lock the clamps in place with the straps 1.

Attach the hooks of the rubber straps **3** to the frame of the top as shown to prevent excessive movement.



Spread the top cover on to the top and secure the cover with the fasteners **5** and the belts **6** (fit the button holes of belts **6** to the button at the bottom of strap **3** and turn the tab on button to retain the belt **6**).



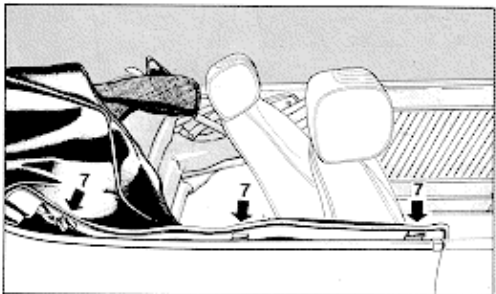
Finally, insert the plastic clips **7** into the chrome moulding.

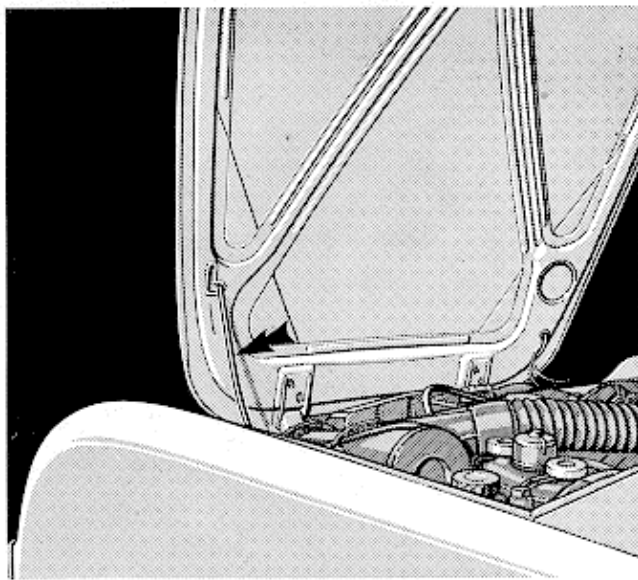
Note: to raise the top reverse the folding procedure.

HARD TOP

Provision is already made for the installation of a hard top. It is a Dealer installed option.

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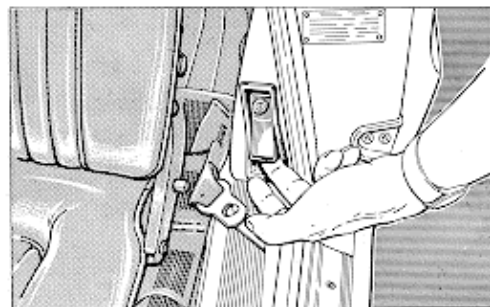


ENGINE HOOD

The hood opens opposite travel direction; to release the catch, pull the lever under the instrument panel.

The hood is held in open position by the rod. Illumination of the engine compartment is by a light under the hood. It operates automatically when the hood is raised and the parking lights are on.

Prior to close the hood withdraw the support rod from lug and secure it to the plastic retainer on wheelhouse.



TRUNK LID

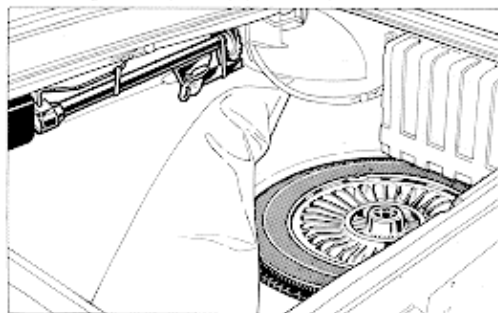
To open, lift the lever situated on the door jamb on the driver's side. The lock uses the same key as the doors.

Lighting of the trunk is provided by a suitable lamp. It operates automatically when the lid is raised and the parking lights are on.

Caution - When closing the trunk lid, to avoid deforming the lid panel, apply pressure with both hands to the rear lid edge only, never to the center of lid panel.

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In the trunk there are the jack secured with a wingnut (under the carpeting), the battery at the right behind the protection shield and the spare tire and the tool kit under the carpeting.



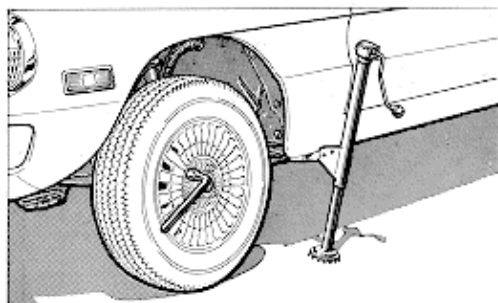
WHEEL CHANGE CAUTION

Before operating the jack apply the parking brake and chock the wheels.

If necessary, switch on the road hazard lights.

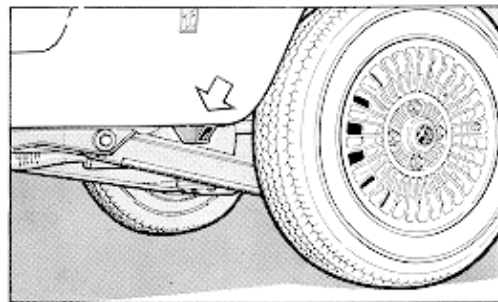
Wheel removal

- Slacken wheel nuts by one turn with the wheel wrench.
- Turn the nuts counterclockwise to unscrew.
- Remove jack from trunk.
- Raise the car by inserting the jack arm in the special socket in the body rocker panel.
- Fully unscrew the nuts and remove the wheel.



Reinstallation

- Tighten the nuts carefully in diagonal order.
- Check again tightness of nuts after lowering the jack. Turn the nuts clockwise to tighten.
- Release the parking brake.
- As soon as possible, check that the inflation pressure is as specified (refer to inside backcover).



CONSUMER INFORMATION

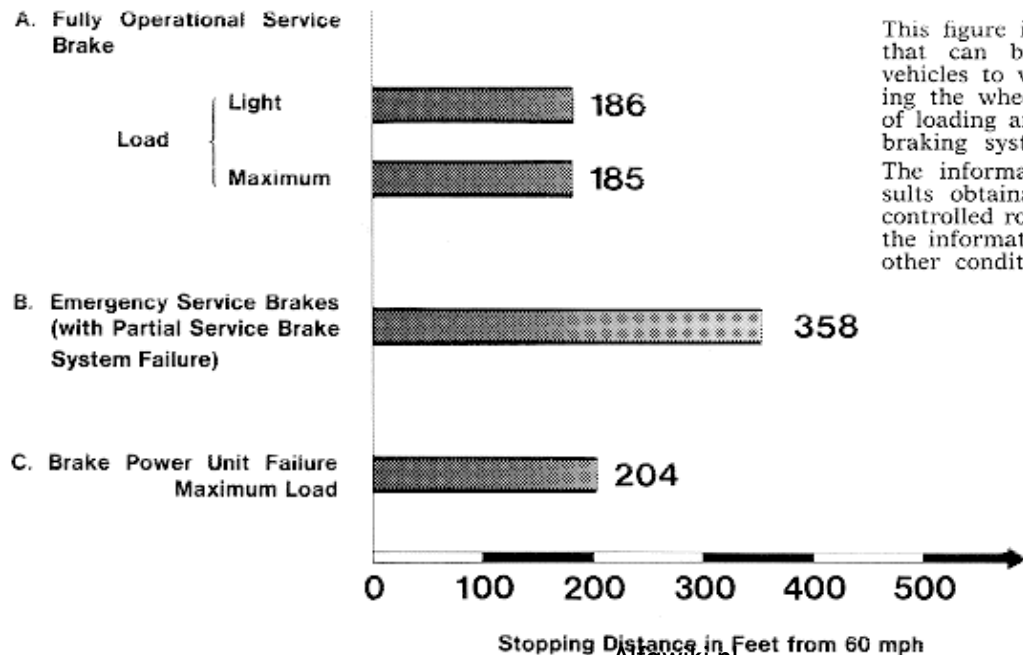
VEHICLE STOPPING DISTANCE

Description of vehicle to which this table applies:

SPIDER VELOCE

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system.

The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.



TIRE RESERVE LOAD

Description of vehicle to which this table applies:

SPIDER VELOCE

This table lists the Tire Size Designations recommended by the manufacturer for use on the vehicles to which it applies, with the recommended inflation pressure for maximum loading and the tire reserve load percentage for each of the tires listed. The tire reserve load percentage indicated is met or exceeded by each vehicle to which the table applies.

WARNING - Failure to maintain the recommended tire inflation pressure or increase tire pressure as recommended when operating at maximum loaded vehicle weight, or loading the vehicle beyond the capacities specified on the tire placard affixed to the vehicle, may result in unsafe operating conditions due to premature tire failure, unfavorable handling characteristics, and excessive tire wear. The tire reserve load percentage is a measure of tire capacity not of vehicle capacity. Loading beyond the specified vehicle capacity may result in failure of other vehicle components.

Recommended tire size designations		MICHELIN XVS Tubeles	185/70 HR 14"
Recommended cold inflation pressure for maximum loaded vehicle weight (psi)	Front	24	
	Rear	26	
Tire reserve load percentage (1)			27.8

(1) The difference expressed as a percentage of tire load rating, between (a) the load rating of a tire at the vehicle manufacturer's recommended inflation pressure at the maximum loaded vehicle weight and (b) the load imposed upon the tire by the vehicle at that condition.

UNIFORM TIRE QUALITY GRADING

Quality grades can be found where applicable between tread shoulder and maximum section width. (See example).

TREADWEAR 160 TRACTION A
TEMPERATURE B

All passenger Car Tires Must Conform to Federal Safety Requirements in Addition to These Grades.

TREADWEAR

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test course. For example, a tire graded 150 would wear one and a half ($1\frac{1}{2}$) times as well on the government course as a tire graded 100. The relative performance of tires depends upon the actual conditions of their use, however, and may depart significantly from the norm due to variations in driving habits, service practices and differences in road characteristics and climate.

TRACTION A, B, C

The traction grades, from highest to lowest, are A, B, and C and they represent the tire's ability to stop on wet pavement as measured under controlled conditions on specified government test surfaces of asphalt and concrete. A tire marked 0 may have poor traction performance.

Warning: The traction grade assigned to this tire is based on braking (straightahead) traction tests and does not include cornering (turning) traction.

TEMPERATURE A, B, C

The temperature grades are A (the highest), B, and C, representing the tire's resistance to the generation of heat and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel. Sustained high temperatures can cause the material of the tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure. The grade C corresponds to a level of performance which all passenger car tires must meet under the Federal Motor Vehicle Safety Standard No. 109. Grades B and A represent higher levels of performance on the laboratory test wheel than the minimum required by law.

Warning: The temperature grade for this tire is established for a tire that is properly inflated and not overloaded. Excessive speed, underinflation, or excessive loading, either separately or in combination, can cause heat buildup and possible tire failure.

LUBRICATION AND MAINTENANCE

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MAINTENANCE SCHEDULE

DURING EACH REFUELLING:

- check engine oil level
- check engine coolant level
- check tire pressures
- check battery electrolyte level.

Note: with high speed or sporting driving practice, or in particular ambient conditions, a more frequent check of brake pads is recommended.



MAINTENANCE REQUIRED FOR PROPER
FUNCTION OF EMISSION CONTROL SYSTEM
PERFORMANCE

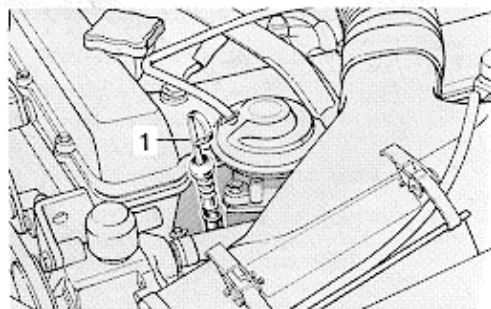


MAINTENANCE RECOMMENDED

MILEAGE COVERED
TICK EACH ITEM
AT THE RESPEC-
TIVE MILEAGE

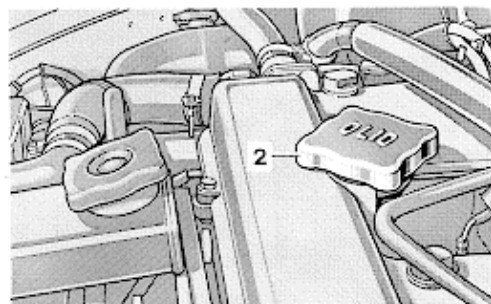
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
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45,000																			△								

- 1 Grease drive shaft slip yoke
- 2 Check level of gearbox and differential oil
- 3 Check level of brake fluid
- 4 Check level of clutch fluid
- 5 Check tire pressures
- 6 Check brake pads; change as necessary
- 7 Check battery electrolyte level and top up with distilled water, if necessary (more frequently during summer months) clean terminals and grease if necessary
- 8 Change engine oil and filter (or every 12 months whichever occurs first)
- 9 Change tank fuel filter and main fuel filter
- 10 Check brake system
- 11 Change injection pump oil filter
- 12 Check parking brake travel and adjust, if necessary
- 13 Lubricate door and lid hinges; adjust strikers, if necessary
- 14 Test vehicle
- 15 Change brake fluid (or every 12 months whichever occurs first)
- 16 Change gearbox and differential oil
- 17 Clean, check and lubricate accelerator cable
- 18 Check alternator drive belt tension and adjust as necessary
- 19 Check valve clearance and adjust, if necessary
- 20 Change spark plugs
- 21 Check level of steering box oil
- 22 Change air cleaner elements
- 23 Tighten cylinder head nuts
- 24 Check front wheel toe-in and adjust, if necessary
- 25 Check headlamp beam aiming; adjust, if necessary
- 26 Tighten all engine bolts
- 27 Change engine coolant mixture (or every two years whichever occurs first)



CHECK ENGINE OIL LEVEL

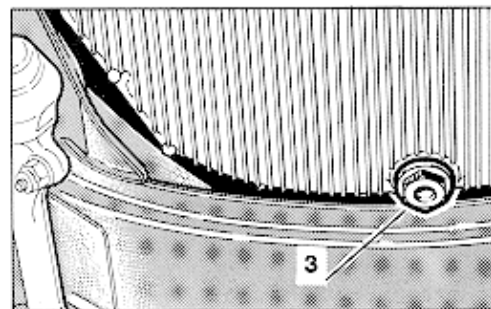
When checking (with car on a level surface and the engine stopped) push the dipstick 1 all the way down. Never allow the oil to fall below the minimum or, while topping up, to exceed the maximum level.



IMPORTANT NOTE

The lubricants used for the first filling, shown by the plate in the engine compartment (see page 71) and the table « Lubricants » on inside back cover, are factory tested for meeting completely the operation requirements.

These lubricants can be used both for topping up and changing. **When topping up**, it is recommended to use exclusively the same type of oil as already filled in the engine or the main unit.



CHANGE ENGINE OIL

With the engine warmed up and stopped remove drain plug 3 from oil pan and drain off old oil; refit drain plug and tighten it to a torque of 7-8 kgm (50.6-57.8 lb-ft).

Replace the oil filter (4, page 37) whenever engine oil is changed. Replenish with new oil, of quantity and type as specified, thru the filler port 2.

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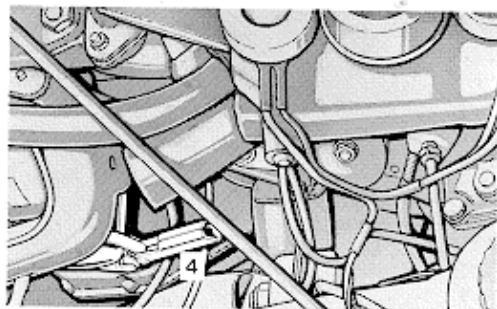
CHANGE ENGINE OIL FILTER (also see page 42, top left)

Release the fasteners 1 securing the air cleaner housing to the wing panel; raise the housing and disconnect the hot air duct from the housing bottom; remove the hot air duct by detaching it from the hot air intake. Detach the duct (connecting the cleaner housing to the intake plenum chamber) from the cleaner housing and cautiously turn the housing 3 upward to gain access to the oil filter.

To remove the filter slacken it with the suitable wrench 4 then unscrew the filter by hand.

On refitting, smear the gasket with oil then screw in the oil filter and lock hand tight or to the specified torque of 1.7-2 kgm (12.3-14.5 lb-ft). Reconnect the ducts, previously disconnected, to the housing 3 and secure it to the wing panel with the fasteners 1.

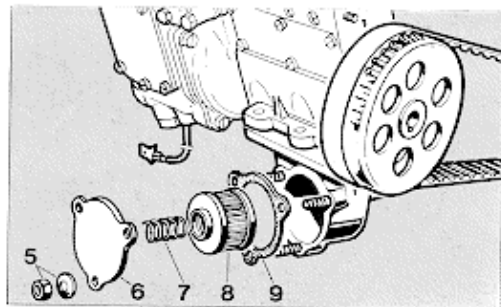
After having replenished the engine pan with oil, start the engine, run it at idle to fill the filter housing and check for no oil leaks.



CHANGE INJECTION PUMP OIL FILTER

At the prescribed intervals (or in the event the engine oil has to be renewed due to contamination by water or other foreign substances) change the oil filter, located in the injection pump support, by proceeding as follows:

- clean very carefully the filter housing cover 6 and the surrounding areas with gasoline;
 - unscrew the three nuts 5 and remove the cover 6, the spring 7 and the filter 8;
 - clean thoroughly the filter housing and insert the new filter and the spring in such a way that the spring faces the cover, renew the cover gasket 9 if necessary.
- Slightly tighten the two upper cover retaining nuts and lock securely the nut at the bottom. Run engine at idle for a few minutes until the oil just oozes out; then lock the upper nuts.



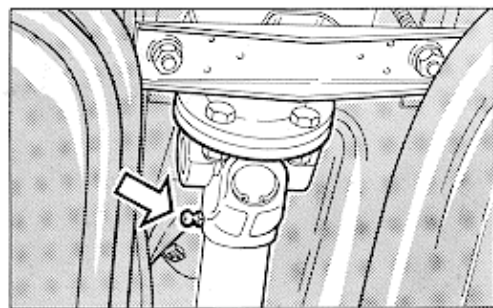


CHECK LEVEL OF GEARBOX OIL

Remove filler plug 10; oil level should be at the edge of filler orifice. Replenish as necessary with oil of the specified type. Clean and refit filler plug 10.

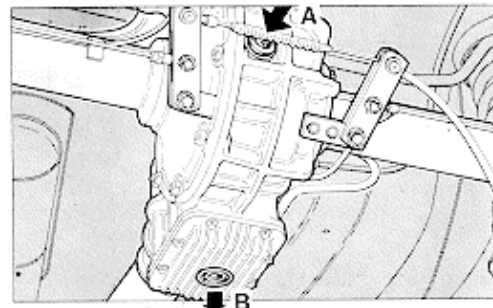
CHANGE GEARBOX OIL

Drain off old oil by removing filler plug 10 first, then drain plug 11. Clean and refit drain plug 11. Replenish with new oil, of quantity and type as specified, thru the filler port. Check that oil level is at the edge of filler orifice; clean and fit filler plug 10.



GREASE DRIVE SHAFT SLIP YOKE

The drive shaft is in two sections and has an intermediate flexible support attached to the body. The front section is provided with a rubber coupling at the transmission end; a universal joint is provided at each end of the rear section. Grease the slip yoke at the scheduled intervals.



CHECKING AND CHANGING DIFFERENTIAL OIL

To check differential oil level at the prescribed intervals, remove filler plug A; oil level should be at the edge of filler orifice.

To change oil proceed as follows (with hot engine):

- Drain off old oil by removing drain plug B and filler plug A;
- Clean drain plug B and refit it;
- Replenish with oil of the prescribed type (refer to inside back-cover) through filler plug A. Check that oil level is at the edge of filler orifice; clean filler plug and fit it.

Check that **limited-slip differential** is full of oil to the edge of the filler orifice.

STEERING GEAR AND LINKAGE

This model is produced alternatively with steering of the worm and roller or recirculating ball type.

C - Recirculating ball steering.

At the prescribed intervals check:

- the oil level in the steering box (by removing the plug 1 shown in the figure);
- the steering linkage joints for play.

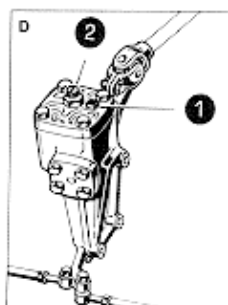
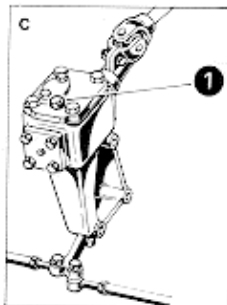
The steering of the recirculating ball type does not require any regular adjustment.

D - Worm-and-roller steering.

At the prescribed intervals check:

- the oil level in the steering box (by removing the plug 1 shown in the figure);
- the steering linkage joints for play;
- the worm and roller for play (adjust with screw 2, if necessary).

The ball and socket joints of the rods do not require any lubrication.



CYLINDER HEAD NUTS TIGHTENING

Slacken when cold and in proper sequence (see figure) the nuts by one turn, lube between washer and nuts and tighten them to the torque of 8.9-9 kgm (63.8-65 lb-ft).



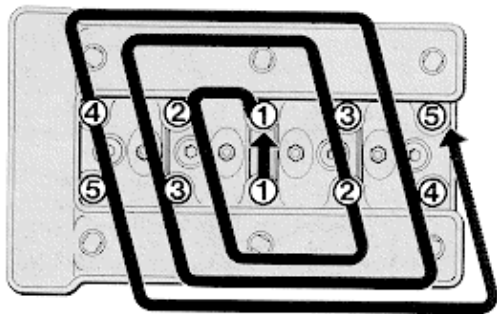
CHECK AND ADJUST VALVE CLEARANCE

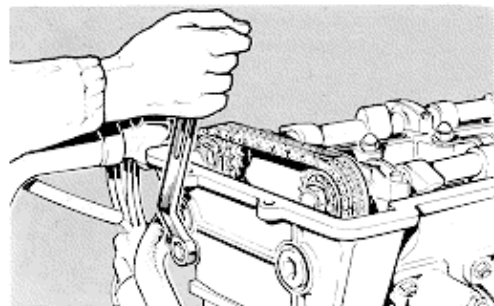
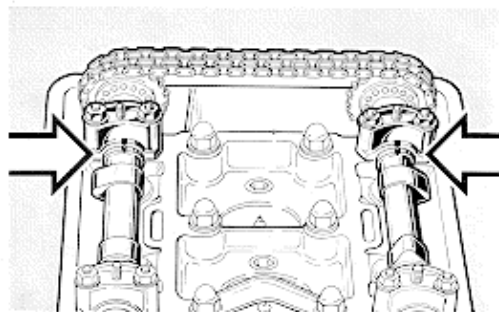
When the engine is cold, carefully measure the clearance G with a feeler gage.

- G = Intake: 0.400 - 0.450 mm (.0157 - .0177 in.)
Exhaust: 0.450 - 0.500 mm (.0177 - .0197 in.)

If the clearance is not as specified, remove camshafts and valve cups; measure the thickness S of the adjusting pad on each valve stem and replace it with another of proper thickness so that the clearance G is the correct one.

To facilitate this adjustment the pads are made available in a series of thicknesses ranging from 1.3-3.5 mm. (0.051 to 0.138 in.) in increments of 0.051 mm (0.002 in.).





Refit the camshafts making sure the timing marks are correctly aligned; adjust the timing chain tension as follows:

- slacken the chain tensioner nut with the suitable wrench
- shift into fourth speed gear and push the car forward so as to turn the crankshaft by 2 to 3 revolutions clockwise (corresponding to about one and one half foot travel of the car)
- Re-tighten the tensioner nut; when engine is hot, check for no noisy chain operation.

IGNITION SYSTEM

The breakerless ignition system consists primarily of the electronic amplifier module, the coil, the spark plugs and the magnetic pick-up which replaces the breaker points. Actually, the points wear down rather rapidly; the breakerless distributor and the solid state amplifier, instead, constantly ensure superior performance.

Important note - If doubts arise that the engine ignition system is developing troubles, any consequent inspection and servicing operation must be performed according to a specified procedure to prevent damaging the ignition system components and, above all, injuring the operator. Therefore, we recommend that you have the ignition system checked for faults **exclusively by authorised Alfa Romeo Dealers**. Anyhow, the following should always be complied with:

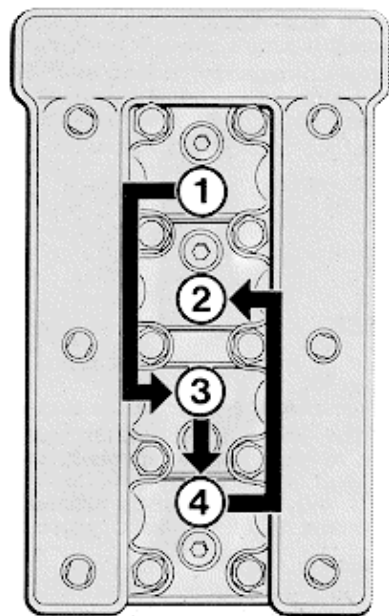
- do not test for live circuits by grounding either high voltage or low voltage components
- do not break any electrical connection when engine is running
- never start the engine if any electrical connection is disconnected
- do not feed the system if the amplifier module has been removed
- when using a timing light connect it **directly** to the battery terminals.
- do not use any diagnostic test equipment which will electronically **Alfawikicnt** the low voltage signal (coil primary/rev. counter).



SPARK PLUGS

The standard plugs fitted to the engine are **LODGE HL**. A decal, giving the specifications for these plugs, is attached under the hood. Below, the text of the decal is repeated.

In order to comply with the Federal rule regarding the control of air pollution the engine is fitted with **LODGE-HL** spark plugs. These plugs are completely adequate when the automobile is driven at speeds not exceeding the limits specified by speed regulations. If the automobile is driven at sustained speeds higher than the said speed limits, **LODGE-2HL** spark plugs must be used.



The spark plugs are of the surface gap type with four points and a central electrode, which due to their superior performance characteristics during all driving conditions when compared to conventional type spark plugs require no regular maintenance other than replacement at the required service interval (consult your maintenance schedule). No routine adjustment is necessary of the gap between the electrode and points. If the ceramic insulator is cracked or the electrodes are excessively worn away, the spark plugs must be replaced.

Use of spark plugs which do not meet identical performance specifications or are dimensionally different can promote serious engine damage as well as alter emission levels.

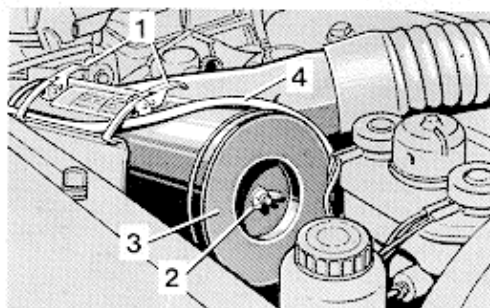
The spark plugs should be tightened when cold to a torque of 2.5 to 3.5 kgm (18-25.3 lb-ft); lubricate the threads with graphite grease before fitting.

Note: when renewing the spark plugs reconnect wires according to the firing order and make sure no one of plug wires is disconnected since this will seriously damage the catalytic converter.

FIRING ORDER 1-3-4-2

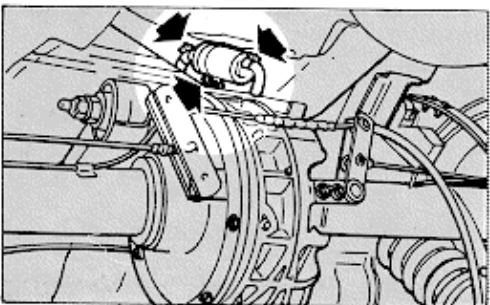
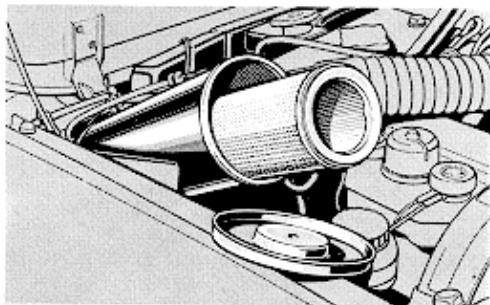
The ignition system is of the battery and coil type with a centrifugal advance governor.

The ignition distributor is protected by two half-jackets fastened together with a retainer.



CHANGE AIR CLEANER ELEMENT

Release the fasteners 1 securing the air cleaner housing to the wing panel; raise the rear of the housing, unscrew the wingnut 2, remove the cover 3 and withdraw the element. Put the new element in its housing and secure the cover with the wingnut; place the cleaner housing in position against the wing panel and fasten it with the fasteners 1; care should be taken that the diaphragm motor hose 4 runs in between fasteners and air cleaner housing. Pay attention not to damage the hose 4 nor to pinch it between the fasteners 1 and the wing panel.



REPLACE THE TANK FUEL FILTER

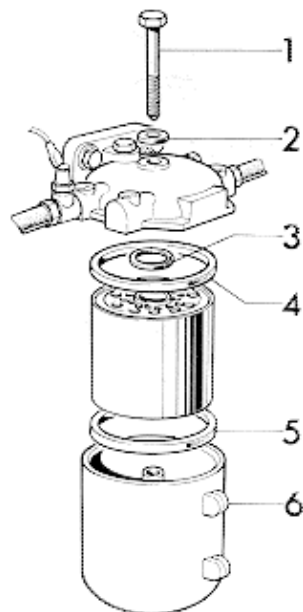
At the prescribed periods, replace as follows the tank filter located at the rear underbody of the car;

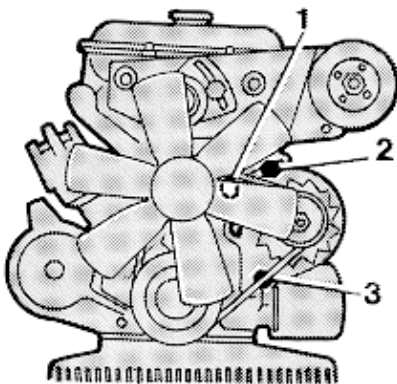
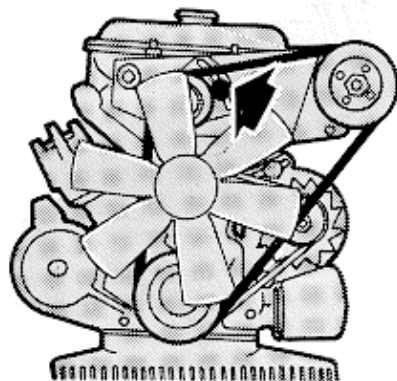
- slacken the nut on the clamp securing the filter to the underbody;
- loosen the clamps securing the hoses to the filter inlet and outlet adapters; it is advisable to blank out temporarily the pipe from fuel tank;
- remove the filter and replace it with a new one by proceeding in reverse order of removal; take care to fit the hoses properly.

CHANGE THE MAIN FUEL FILTER ELEMENT

At the prescribed periods replace the main fuel filter element.
To provide room for this operation, the windshield washer container must be removed.

- **Disconnect the battery negative terminal and the positive starter cable.**
- Clean carefully the outside of filter body and nearby lines to make sure no foreign matter could enter the filter on reassembly (for an easier refitting, loosen the two screws securing filter bracket to car's body).
- Slacken and withdraw the screw 1 (with its copper washer 2) securing filter housing to bracket and remove the filter housing 6 by pushing it downward.
- Withdraw the filter element.
- Get rid of foreign matter that may have collected in the housing; replace the following items, if damaged:
 - ☐ Bottom gasket 5 (between element and housing bottom);
 - ☐ Top gasket 4 and sealing ring 3 between bracket and element;
 - ☐ Copper washer 2 (lubricate washer prior to tighten screw 1).
- Refit the windshield washer container.





CHECK AND/OR CHANGE THE AIR PUMP DRIVE BELT

The air pump drive belt tension is correct when on pressing the belt down the amount of play is approximately $\frac{1}{2}$ in.

To adjust belt tension, loosen the nut on the tensioner and adjust the latter so as to obtain the proper belt tension.

To change the belt, loosen nut, move the tensioner and take the belt away. To refit, pass the new belt between fan blades and shroud. Gaining access from the bottom, fit the belt to the front race of crankshaft pulley; then, from the top, fit the belt to air pump pulley and tensioner. Prior to tighten the tensioner nut, make sure belt tension is as specified.



CHECK AND/OR CHANGE COOLANT PUMP AND ALTERNATOR DRIVING BELT

If the tension is insufficient, the belt will slip and wear prematurely; furthermore:

- the cooling action will be affected because of the reduced speed of the fan and pump;
- the battery charging current will be reduced owing to the slower alternator speed.

If the tension is excessive, the alternator and pump bearings will be overloaded with the consequent risk of damage.

The tension is correct when on pressing the belt down the amount of play is approximately 10-15 mm.

To adjust belt tension:

- loosen the nuts 1 and 2 on the link; also loosen the bolt 3;
- then, move the alternator so as to obtain the proper belt tension.
- After adjusting, tighten the nut 2 and check for proper tension;
- tighten nut 1 and bolt 3;
- check again tension.

Change the belt at the prescribed periods. Prior to do so, it is necessary to remove the air pump drive belt as outlined in the preceding paragraph. To remove the old belt take it away from pulleys and pass it between fan blades and shroud. To refit, pass the new belt, from top, between fan blades and shroud. Gaining access from the bottom, fit the belt to the rear race of crankshaft pulley; then, from top, fit the belt to the pulleys of fan and alternator.

Adjust belt tension as above outlined. Refit the air pump drive belt (refer to the preceding paragraph).

ENGINE TROUBLE DIAGNOSTIC CHART

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Low fuel pressure warning light does not flash on when ignition key is turned.	Fuse no. 1 on additional box blown. Warning light bulb burnt out. Pressure switch faulty (jammed open).	Replace fuse. Replace bulb. Have it checked and replaced, if necessary. D.O.
Low fuel pressure warning light stays on (fuel pump operates; a light buzzing can be heard).	Pressure switch faulty (jammed closed). Fuel pump outlet pressure too low (warning light comes on while running at high speed): – tank fuel filter clogged – main fuel filter clogged – relief valve on main fuel filter defective or stuck open. Fuel pump delivery too low. Relief valve of liquid/vapor separator stuck closed and tank vent pipe obstructed (in winter).	Have it checked and replaced, if necessary. D.O. Have filter checked and replaced, if necessary. D.O. Have filter checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have pump checked and replaced, if necessary. D.O. Have them checked for proper operation and replaced if necessary. D.O.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Low fuel pressure warning light stays on (fuel pump fails to operate).	Inertia switch open. Fuse no. 1 on additional box blown. Electric wires to pump disconnected. Fuel pump faulty.	Reset switch. Replace fuse. Check and reconnect. Have it checked and replaced, if necessary. D.O.
Engine will not start.	Battery charge too weak to rotate the starter sufficiently fast. Ignition system defective: - dirty plugs - defective electrical connections - defective oil - wet distributor cap - cracked or punctured distributor cap - brush disc damaged - interference suppression resistor faulty - retarded pick-up coil faulty - defective electronic unit.	Charge the battery. Have them checked and cleaned or replaced, if necessary. D.O. Have them checked for sound conditions. D.O. Have it cleaned and replaced, if necessary. D.O. Have it cleaned and dried carefully. D.O. Have it checked and replaced, if necessary. D.O. Have the brush disc checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have it replaced. D.O.
Engine will not start from cold.	Solenoid-actuated cold start device fails to operate.	Have the electrical connections to the solenoid checked. D.O. Have the device checked and repaired. D.O.
Smoky exhaust after starting.	Cold start solenoid plunger stuck.	Have it checked and repaired, if necessary. D.O.
Engine misfires; rough idle.	One injector defective.	Have the injectors checked and replaced, if necessary. D.O.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Idle too slow but even.	Idle air adjuster out of adjustment.	Have it adjusted until the recommended idle is obtained. D.O.
Idle too slow and rough; possible stalling.	Defective EGR valve.	Have it checked and replaced, if necessary. D.O.
Idle too fast and rough (engine runs unevenly; hunting also takes place).	Idle air adjuster out of adjustment.	Have it adjusted until the recommended idle is obtained. D.O.
	Air seeping into the plenum chamber.	Have gaskets checked for sound conditions and replaced, if necessary. D.O.
Idle too fast; engine does not slow down to idle on deceleration.	Accelerator linkage fails to return fully.	Have the accelerator linkage checked. D.O.
Too fast an idle.	Faulty thermostatic actuator.	Have it checked and replaced, if necessary. D.O.
	Electrical connection between vacuum switch and relay disconnected or defective.	Have electrical connections checked and reconnected or repaired, if necessary. D.O.
	Defective vacuum switch (jammed open).	Have it checked and replaced, if necessary. D.O.
	Defective relay (burnt coil or switching contact stuck).	Have it checked and replaced, if necessary. D.O.
Idle CO and/or HC too high.	Idle speed incorrect.	Have it adjusted until the recommended idle is obtained. D.O.
	Dirty spark plug.	Have it checked and cleaned, if necessary. D.O.
	Air injection system defective.	Have it checked and repaired or replaced, if necessary. D.O.

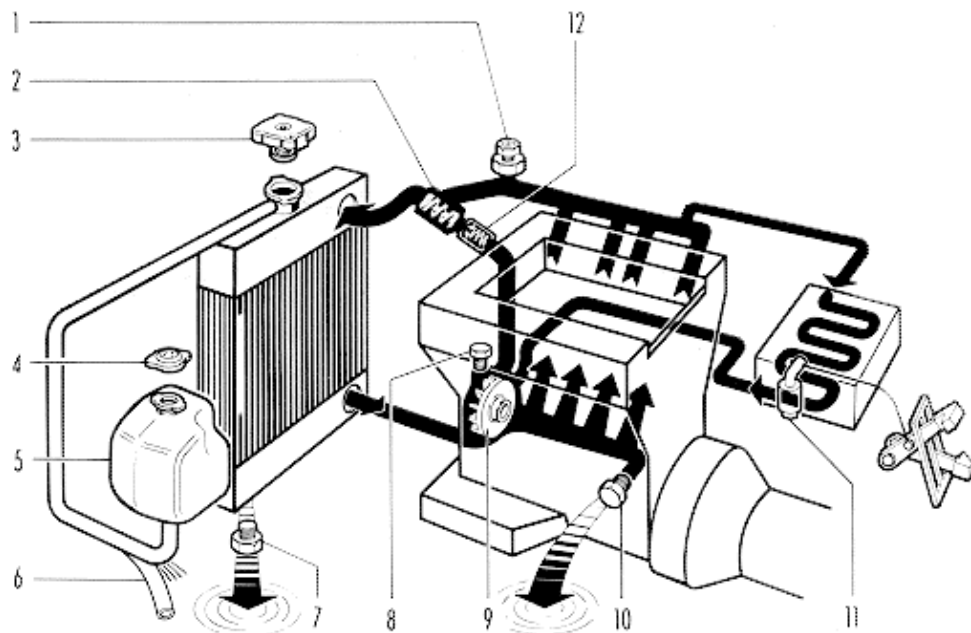
SYMPTOM	POSSIBLE CAUSE	CORRECTION
Engine keeps running at idle but stops on accelerating.	Altitude compensator faulty. Excessive vibrations of injection pump and control unit. Defective distributor (advanced pick-up coil faulty). Defective electrical connection to the relay.	Have it checked and replaced, if necessary. D.O. Have the injection pump and control unit bracket bolts checked. D.O. Have the distributor checked and repaired, if necessary. D.O. Have the electrical connections checked and repaired, if necessary. D.O.
Unsatisfactory driveability: - hesitation: temporary lack of initial response in acceleration rate (initiated with a flat spot) - stumble: short, sharp reduction in acceleration rate - surge: condition of leanness, resulting in short and sharp fluctuations. These can be cyclic or irregular and can occur at any speed or load condition, generally on steady speeds.	Control linkage possibly damaged. Fuel pump outlet pressure too low (warning light comes on while running at high speed): - tank fuel filter clogged - main fuel filter clogged - relief valve on main fuel filter defective or stuck open. Fuel pump delivery too low. Ignition system defective: - dirty plugs - defective electrical connections - defective coil - wet distributor cap - cracked or punctured distributor cap - brush disc damaged - air gap of pulse generator out of setting	Have it checked and repaired, if necessary. D.O. Have filter checked and replaced, if necessary. D.O. Have filter checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have them checked, cleaned or replaced, if necessary. D.O. Have them checked. D.O. Have it checked and replaced, if necessary. D.O. Have it cleaned and dried carefully. D.O. Have it checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have it checked and adjusted, if necessary. D.O.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
	Injector defective. Relief valve of vapor/liquid separator stuck closed and tank vent pipe obstructed (in winter). Air induction clogged. Air intake temperature control system defective Defective injection pump.	Have the injectors checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have the air cleaner checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have the injection pump replaced. D.O.
Excessive fuel consumption.	Thermostatic actuator defective. Defective vacuum hose and connection to vacuum switch. Defective vacuum switch (jammed closed).	Have it checked and replaced, if necessary. D.O. Have hoses and connection checked and repaired, if necessary. D.O. Have it checked and replaced, if necessary. D.O.
Engine stalls flat.	Injection pump driving belt broken.	Have it replaced. D.O.
Detonation in the exhaust pipe on deceleration.	Feed wire disconnected at fuel cut-off solenoid. Loose junction of fuel cut-off device feed wire disconnected. Defective fuel cut-off solenoid. Defective fuel cut-off microswitch.	Re-connect wire. Re-connect junction. Have the fuel cut-off solenoid checked and replaced, if necessary. D.O. Have the fuel cut-off device checked. D.O.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Engine stops: – wholly or occasionally on deceleration in neutral – wholly or occasionally when reaccelerating after deceleration. Engine fires again suddenly and with delay when reaccelerating after deceleration.	Fuel cut-off solenoid stuck in cut-off position or sluggish in backing up.	Have it checked and replaced, if necessary. D.O.
Noisy electric fuel pump.	Line between pump and main filter distorted or forced in the rubber mounting or against the recovery pipe. Tank filter and hoses improperly fitted.	Have the line reset. D.O. Have filter and hoses checked. D.O.
Knocking at full throttle.	Electrical connections to vacuum switch and relay disconnected or defective. Defective vacuum switch (jammed open). Defective relay (burnt coil or switching contact stuck).	Have electrical connections checked and repaired, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O.
Catalyst overtemperature warning light « Exh. Temp. » does not come on (only for a few moments) when the ignition key is turned on.	Fuse no. 6 blown. Light bulb is burned out. Light bulb circuit is disconnected. Electric circuit of the warning device is disconnected. Defective warning device.	Replace fuse. Replace bulb. Have it checked and repaired, if necessary. D.O. Have it checked and reconnected, if necessary. D.O. Have it checked and replaced, if necessary. D.O.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Catalyst overtemperature warning light «Exh. Temp.» stays on when ignition key is turned on and catalyst is cold.	Thermocouple disconnected and/or burned out. Defective warning device.	Have electrical connections checked and reconnected, if necessary. Have thermocouple checked and replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O.
Catalyst overtemperature warning light «Exh. Temp.» flashes or stays on continuously even with minimum engine load.	Defective vacuum hose and connection to vacuum switch. Defective vacuum switch (jammed closed). Defective air intake temperature control system. Defective thermostatic actuator.	Have hose and connection checked and repaired, if necessary. D.O. Have it checked and replaced, if necessary. D.O. Have it checked and repaired or replaced, if necessary. D.O. Have it checked and replaced, if necessary. D.O.
Fuel odor inside the car or in close proximity.	Fuel leakage.	Have the evaporative and fuel systems checked. D.O.

COOLING SYSTEM



The cooling system is provided with a compensating reservoir containing a special **Alfa Romeo Antifreeze** which gives full protection against freezing down to -20°C (-4°F).

At the prescribed periods have the hoses, connections and filler cap of cooling system and the heater hoses checked for sound conditions and leaks.

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- 1 Air bleed valve on manifold
- 2 Thermostat
- 3 Radiator cap, 10 p.s.i.
- 4 Reservoir filler cap
- 5 Reservoir
- 6 Supply line from reservoir to radiator
- 7 Radiator drain plug
- 8 Air bleed screw on pump
- 9 Water pump
- 10 Drain plug on crankcase
- 11 Heater valve
- 12 By-pass control valve

CHECK LEVEL OF COOLANT MIXTURE

To ensure the efficient operation of the cooling system, the following procedure should be observed.

WARNING

Never remove the radiator cap unless absolutely necessary; in any case, to avoid severe injuries, wait that the liquid is cooled down to outside temperature.

Check level of coolant in the reservoir: this should be done **exclusively** with a cold engine as with a hot engine the level may increase remarkably, even after stopping the engine.

The level of mixture in the reservoir should never fall below the «Min» nor exceed the «Max» marks. To top up use a coolant suitable for aluminum alloy engines.

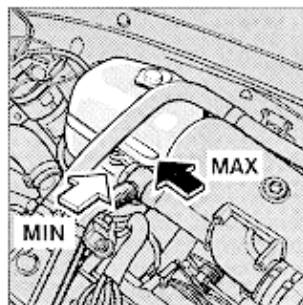
In the event this would not be feasible, distilled water may be used provided the concentration is not altered to prevent impairing the efficiency of the coolant.

Topping up with fresh water actually alters the characteristics of the Antifreeze and should be avoided. If as a provisional measure, fresh water has been added, the whole circuit must be thoroughly drained as soon as possible and replenished with a mixture of antifreeze and distilled water.

IMPORTANT NOTE

The mixture in the cooling circuit gives full protection against freezing down to -20°C (-4°F).

In places where the temperature falls below -20°C the mixture can be strengthened as directed.



Should an excessive consumption of coolant mixture be experienced check for no sign of leaks. Inspect the radiator filler cap to make sure that valves, springs and seals are in sound conditions and properly operating; if doubt exists, it is advisable to replace them with new ones.

CHANGE COOLANT MIXTURE

Every 30,000 miles (or every two years whichever occurs first) have the coolant mixture renewed after the circuit has been flushed with a suitable descaling compound.

DUAL BRAKE SYSTEM

The brake unit consists of a dual power braking system. Each one of the separate circuits, front and rear, is servo assisted and controlled by a tandem master cylinder, with one cylinder operating the front brakes and the other cylinder the rear brakes.

The friction pads of the front and rear brakes are directly actuated by the cylinders integral with the calipers.

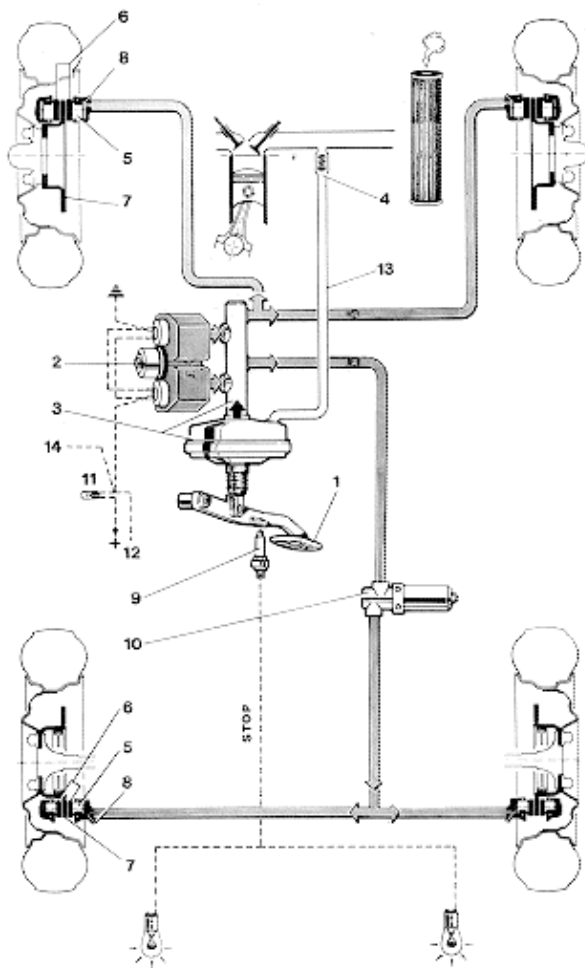
The brakes are self-adjusting.

A valve, inserted in the rear brake circuit, regulates the pressure between front and rear brakes to provide balanced braking action.

WARNING

The pressure regulator must never be tampered with; specifically, do not attempt to act on the adjusting nut as it is factory sealed.

The stop light switch is directly operated by the brake pedal.



DUAL BRAKE SYSTEM

- 1 Brake pedal
- 2 Fluid reservoirs (with warning light switches)
- 3 Power cylinder
- 4 Suction port
- 5 Pistons
- 6 Friction Pads
- 7 Discs
- 8 Bleed screws
- 9 Stop light switch
- 10 Pressure regulator
- 11 Warning light for minimum fluid level and parking brake
- 12 Connection for the switch of parking brake
- 13 Vacuum connection for booster
- 14 Connection for brake warning system control unit.

CHECK BRAKE FLUID LEVEL

At the prescribed periods check that level of fluid in brake reservoirs is between MIN and MAX marks.

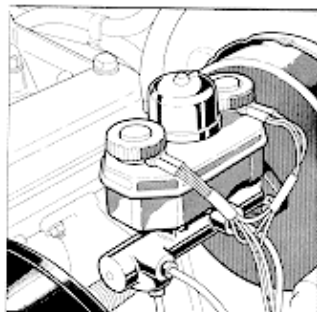
When adding fluid, clean filler cap before removing and leave the strainer in place so as to filter the fluid.

The two brake reservoirs have suitable markings for maximum and minimum levels; the reservoirs are provided with a baffle, which prevents fluid from interflowing between each other; however, the reservoirs are replenished thru a single filler port common to both.

Two microswitches, located at the top of reservoirs, light up a red warning light on instrument panel when the minimum level of fluid in the reservoirs is reached.

This warning light serves also as a warning for the parking brake when applied.

Therefore, should the warning light come on, first make certain the parking brake is fully released; if warning light still remains on, stop the car and check the fluid level in the service brake reservoirs; if the level is at the minimum have the circuit checked for possible failure by an Alfa Romeo Dealer.



To maintain the brakes in good operating condition, follow the servicing instructions given below:

- For renewal or topping up, it is absolutely essential to use only fluids meeting requirements of U.S. FMVSS 116 with the container marked «D.O.T. Grade 3» with minimum wet boiling point of at least 140 °C (284 °F). Always buy fresh fluid by checking container date.
Container must be sealed.

For effective and reliable operation of the brake system, the pipes must always be full of fluid and free of air bubbles.
Excessive and spongy brake pedal action is an indication of the presence of air bubbles in the system. Compressed air must not be used for replenishing the system.

CLEANING OF BRAKES

Flushing the circuit.

Should flushing of the brake circuit be required, use exclusively fluid of the specified type.

Compressed air or alcohol must on no account be used to dry a flushed system.

Washing the outside.

To clean the outside of brake assemblies use suitable detergents mixed with hot water; then thoroughly dry all components with compressed air.

Never use gasoline, trichloroethylene or similar solvents to clean the outside of brakes as these substances are detrimental to the rubber seats.

While servicing the car, be careful not to let lubricants come in contact with the discs and friction pads.

When cleaning the car, it is advisable to mask off the brakes to avoid damaging the brake components with jets of water.

BRAKE BOOSTER

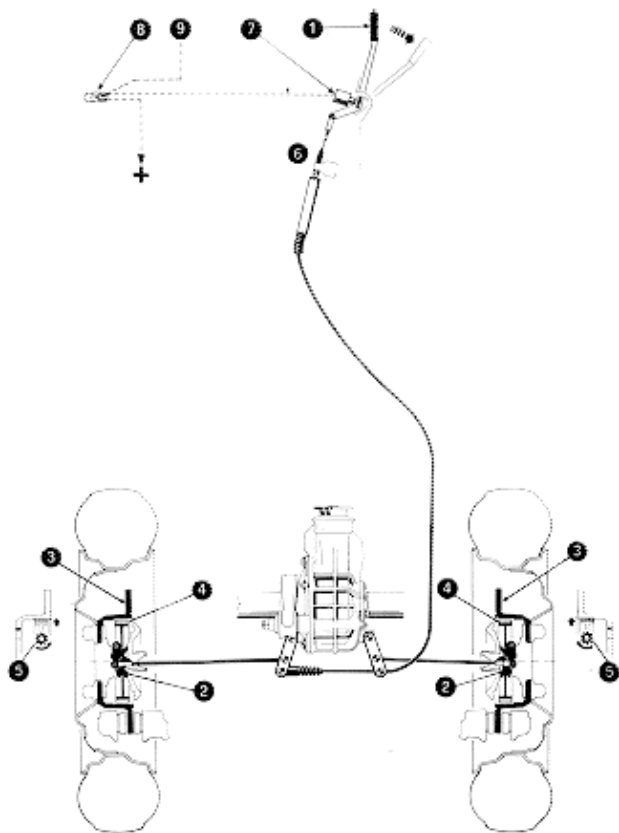
In case of accident or damage to the chassis check that the vacuum booster is undamaged, since even slight superficial body damage may seriously impair the functioning of the brakes.

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PARKING BRAKE

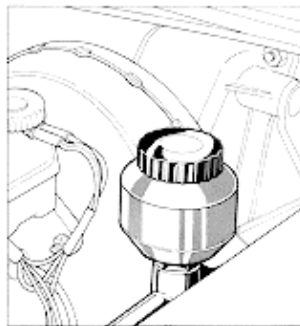
The parking brake is mechanically-operated; the rear wheels are locked thru shoes 4 acting against a drum machined in the disc casting. Pulling the lever causes the shoes, via the operating levers 2, to expand thus locking the wheels. The slack adjuster 6 allows to take up any slackening in the linkage. If an excessive running clearance is the cause for linkage slackening, the shoes can be adjusted by means of the running clearance adjusters 5. When the parking brake is applied, a warning light on the instrument panel comes on to indicate that this has been done.

- 1 Hand lever
- 2 Operating levers
- 3 Discs
- 4 Shoes
- 5 Running clearance adjuster
- 6 Slack adjuster
- 7 Parking brake warning light switch
- 8 Warning light for fluid level, service brake pressure and parking brake
- 9 Electrical connection to brake pressure switch unit and fluid level switches



CLUTCH

The clutch is of the self-adjusting, hydraulically-operated, single-plate dry type. At the prescribed periods check that level of fluid in clutch reservoir is between MIN. and MAX. marks. Top up if necessary. When topping up, use the same type of fluid as specified for brake system (see page 63).



SUSPENSIONS

FRONT SUSPENSION

The front wheels are independently suspended and connected to the body by A-arms.

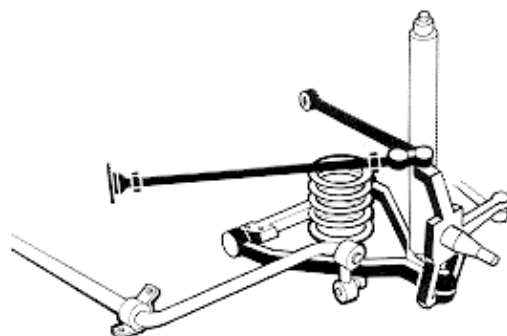
Coil springs and double-acting hydraulic telescopic shock absorbers are located between the lower arms and the body.

The suspension system is completed by a transverse stabilizer rod which improves the stability of the vehicle when cornering.

Upward movement of the arm is restricted by bumper pads situated near the springs. Downward movement is restricted by pads attached to the cross member.

Suspension components require no regular lubrication.

Whenever the damping action of the shock absorbers is uneven, have them checked by an Alfa Romeo Dealer.



FRONT WHEEL TOE-IN

To avoid uneven and premature tire wear, and to ensure positive and stable steering, front wheel toe-in must be set to the prescribed values.

Toe-in $A=B+.12''$

To adjust toe-in lock steering wheel in the central position, i.e. with the spokes symmetrically disposed in relation to the vertical;

starting with the rod 2 on the steering box side, place the corresponding wheel so that the toe-in is .06 in.;

measure the length thus obtained of the rod on the steering box side and shorten by .2 in. the rod 1 on the other side;

bring the right-hand wheel to .66 in. toe-in by adjusting the center track rod 3;

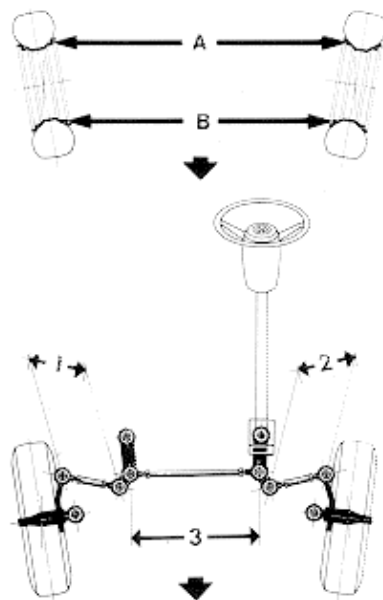
Length of track rods

As measured between ball joint centers, the length should fall within the following limits:

① ② $10.71 \pm .3$ in.

③ $21.26 \pm .4$ in.

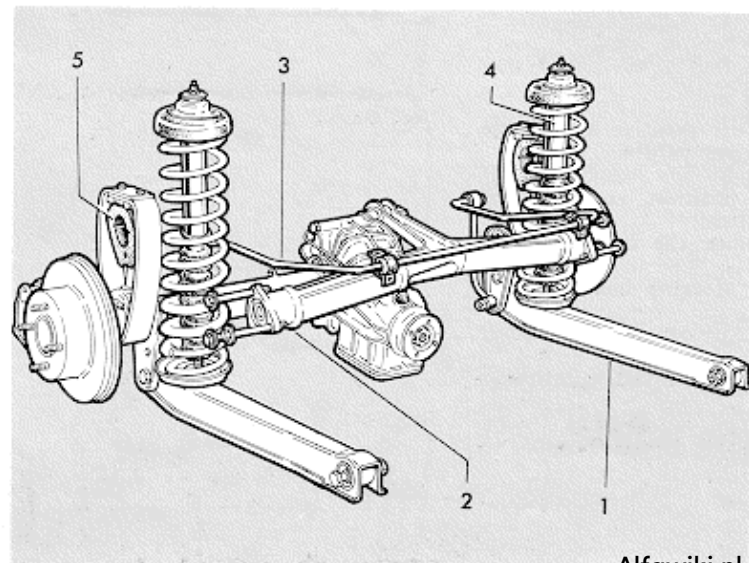
If these values cannot be restored, the cause will probably be attributable to distortion of the body resulting from a collision.



Overall ratios with 41:10 final drive	
1st	13.53 : 1
2nd	8.159 : 1
3rd	5.535 : 1
4th	4.1 : 1
5th	3.239 : 1
Rev.	12.341 : 1

REAR AXLE

The live axle is attached longitudinally to the supporting structure by means of two trailing arms with rubber bushes at the ends; transverse attachment is effected by means of a T-arm hinged to the body and to the rear axle thru rubber bushes. The final drive is of the hypoid type.



REAR SUSPENSION

The rear suspension consists of coil springs and large diameter telescopic shock absorbers coaxial with the springs.

The suspension system is completed by a transverse stabilizer rod linked to the trailing arms and the body.

- 1 Trailing arm
- 2 T-arm
- 3 Stabilizer rod
- 4 Shock absorber
- 5 Rubber buffer and rebound strap.

The rebound of rear axle is limited upward by rubber pads and downward by fabric and rubber straps.

The suspension units do not require any regular lubrication. Whenever the damping action of the shock absorbers is uneven, have them checked by a service station as soon as possible.

TIRES

New tires, including the spare, should be broken in for at least 50 miles at speeds not to exceed 60 miles per hour.

- Check pressure regularly.
- Slow down when rounding corners or sharp curves.
- Avoid fast acceleration and prolonged periods of high speed driving.
- Avoid extreme and unnecessary braking.
- Avoid sharp objects and chuck holes in pavement.
- Maintain wheels in balance and front suspension in alignment.

RECOMMENDATIONS SPECIFICALLY CONCERNING TUBELESS TIRES

- Avoid striking the tire sidewalls (e.g. while parking)
- Never tamper with the inflating valve
- Do not insert any tool in between wheel rim and tire bead
- Should the rim be warped out of shape, change the wheel and have the rim trued up
- Should an excessive drop in inflation pressure be experienced, change the wheel and have it checked for leaks
- For dynamic balancing use only balance weights suitable for tubeless tires
- Never fit a tube to repair a tubeless tire.

HOW INFLATION PRESSURE AFFECTS TIRE PERFORMANCE



Correct. The tire gives optimum performance, the tread works over its entire width, thus ensuring uniform tire wear and long life.



Too low. The tire will overheat; the sides of the tread will wear quickly and the tire plies will tend to separate.



Too high. Riding comfort will be reduced, and the tire will suffer from excessive wear in the center of the tread and vulnerability to knocks.

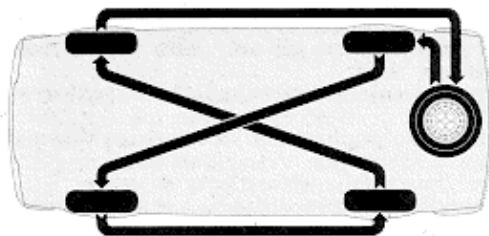
WHEEL BALANCING

Whenever a tire is changed, the wheel must be rebalanced. It should be remembered that unbalanced wheels cause unstable steering, abnormal steering gear wear and uneven tire wear. To balance the rear wheels both tires must be raised from ground.

TIRE ROTATION

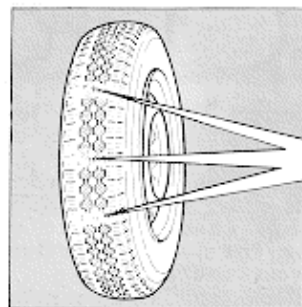
To ensure even and uniform tire wear and long tire life, front and rear wheels and the spare should be changed over regularly.

On completion of rotation inflate tires as specified.



TREAD WEAR INDICATORS

Tread wear indicators are built into the original equipment tires on your car to assist you in determining when your tires have been worn to the point of needing replacement. These indicators are molded into the bottom of the tread grooves and will appear as $\frac{1}{2}$ inch wide bands when tire tread depth becomes $\frac{1}{16}$ of an inch. When the indicators appear in two or more adjacent grooves, tire replacement is recommended (see illustration).



BODY

WASHING THE CAR

The body should be washed frequently, depending on the use of the car, the environmental conditions and the state of the roads. Moreover the lighter is the finish paint shade the more frequent the car should be washed.

Avoid washing the car in the sun and proceed as follows:

- first flush the car all over with jets of water to remove the dust;
- prepare a solution of suitable detergent in water (2% in weight);
- with the solution and a sponge wipe down the whole body;
- rinse thoroughly with plenty of water;
- dry with compressed air, if possible, then with chamois leather.

POLISHING

Note: for cleaning the outside of brakes refer to page 55.

To put fresh gloss on the paintwork, polish once or twice a year with a polish suitable for synthetic or nitrocellulose paint, according to the type of paintwork on the car. On the chromework use gasoline to remove grease and a suitable compound to take out any scratches.

Use only woollen cloth for polishing.

Do not use gasoline or solvents on rubber mouldings and weatherstrips. When refuelling or lubricating, be careful not to splash gasoline or hydraulic fluid on the paintwork.

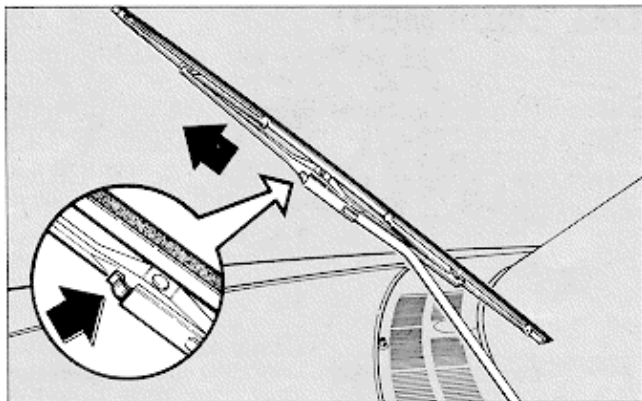
UPHOLSTERY

Periodically dust the inside upholstery using a vacuum cleaner if possible.

To remove oil and grease stains, use diluted ammonia on the cloth parts and vaseline on the leather.

Use trichloroethylene or neutral soap to remove stains from the carpets. The steering wheel and control knobs

Alfawiki.net may be cleaned with gasoline.



CHANGING WINDSHIELD WIPER BLADES

Never attempt to force by hand the wiper arms in their normal directions of operation to avoid straining them and the drive mechanisms.

To remove the blade:

- turn wiper arm over forward
- Press the tip of locking spring 1 toward the blade; withdraw the blade from arm by keeping the spring depressed.

Caution: take care not to let the locking pin get out of its seat; make sure it is properly seated.

To refit the blade position it on the wiper arm and push in until locking pin engages.

STORING THE CAR

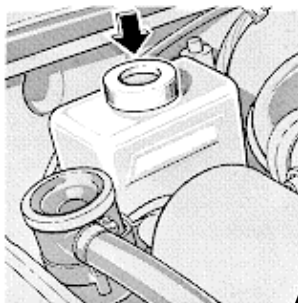
If the car will be left unused for any length of time the following protective steps should be taken:

- add engine oil to the fuel in the tank in such quantity as to get a 2-3 per cent mixture, then run the engine at idle for about 5 minutes to protect the fuel feed system.
- empty the fuel tank; clean the oil filter and the main fuel filter;
- inject a little engine oil into the cylinders thru the spark plug holes and rotate the crankshaft by hand several times in order to spread a film of oil over the cylinder walls;
- remove the battery, store it away from frost, and recharge it once a month; never allow it to become fully discharged or plate sulfation will result;
- jack up the car, clean the tires and slightly deflate them; if tires are removed, dust them internally (and their tubes) with talcum powder; store them in a dark and airy but dry place;
- dust the seats and upholstery with moth preventive;
- cover the car with a dust sheet. To avoid serious damage to the paintwork, do not use polyvinyl-type

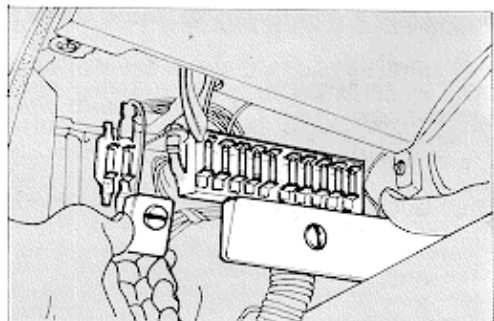
WINDSHIELD WASHER LIQUID

According to environmental conditions replenish the windshield washer container with suitable liquid (better if an antifreeze mixture).

In winter, never add water. If run out of liquid, do not persist in operating the windshield washer or the electric pump will be damaged.



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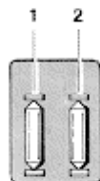
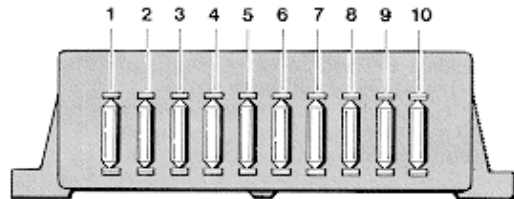
ELECTRICAL EQUIPMENT

FUSEBOXES

The fuseboxes are under the instrument panel, at the left side. The additional fusebox is provided near the main one. To open the boxes loosen the screw at the center of each cover.

Two spare fuses are provided at the center of main box. The circuits protected by fuses, identified by item numbers are as listed below:

MAIN BOX



ADDITIONAL BOX

Fuse	Circuits protected	Amp. rating
1 - Courtesy light	Open-door reminder buzzer - Window lifters	16 A.
2 - Stop lights		8 A.
3 - Direction indicators flasher unit	Digital clock	8 A.
4 - Radio (if fitted)		8 A.
5 - Parking lights - Side markers - Parking lights warning - Engine compartment and trunk lights - Instruments and clock lights - License plate light		8 A.
6 - Catalytic converter device - Seat belts device - Glovebox light - Parking brake, catalytic converter and hand throttle warning lights - Back-up lights - Windings of window lifters relay and retarded breaker cut-off relay - Blower fan - Cigar lighter		8 A.
7 - L.H. high beam - H.B. warning light		8 A.
8 - R.H. high beam		8 A.
9 - L.H. low beam		8 A.
10 - R.H. low beam		8 A.

ADDITIONAL BOX

1 - Fuel pump	8 A.
2 - Windshield wiper	16 A.

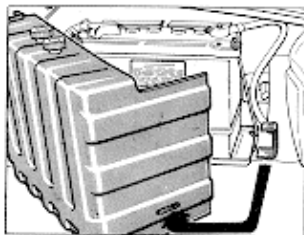
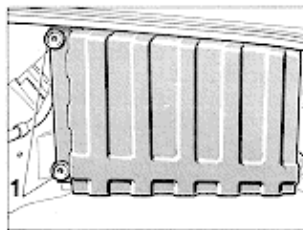
BATTERY

It is at the right side of trunk. To take the protection shield away fully unscrew the knobs 1 and remove the shield from the two threaded pins and the retainer at the rear.

The battery water level should be 45 mm. (3/16") above the plates. When filling up the battery, use only distilled water; **never add acid.**

Make sure that terminals are tight and are sufficiently coated with pure vaseline. Furthermore, the following should be born in mind:

- In summer, check frequently the electrolyte level.
- When recharging the battery, completely disconnect it from the system.
- Never reverse the battery polarity or the alternator diodes will be damaged.
- When electric weldings are carried out on car, disconnect battery making sure the positive terminals is properly insulated. **The engine must be stopped.**
- Do not connect timing lights to the battery-alternator system.



ALTERNATOR

The alternator requires some special cares.

- **It should not be tampered with.**
- Never disconnect the battery terminal of alternator-to-battery cable while the engine is running.
- Avoid overloading the alternator bearings (refer to page 44).
- It is recommended to entrust any inspection or repair work to Alfa Romeo Dealers.

STARTER

Regularly:

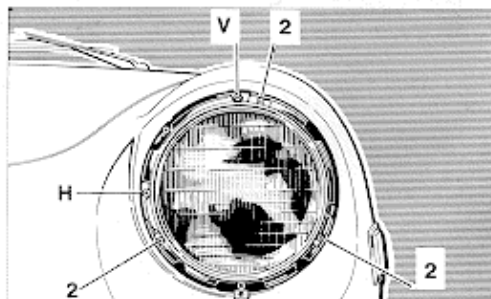
Inspect commutator and brushes.

The brushes must be clean and must slide freely in their holders: brush working face must be cleaned with a cloth soaked with gasoline; the brush spring must apply effective pressure.

When one brush has to be replaced, it is a good rule to replace the other at the same time. Always fit new original brushes of the prescribed type.

After replacing the brushes, run the starter with no load and for such time as is necessary to bed the brush working face to the commutator.

If the commutator is burned or elongated, it must be reworked on a lathe taking care to decrease the diameter of the minimum required only: after machining, undercut the mica between the segments.



HEADLAMP BEAM SETTING

Warning: distance between centers of light beams and level ground **must not** be lower than 619.76 mm (24.4"). For setting the beams it is recommended to use a mechanical aiming device meeting the SAE J 602 requirements.

H - screw for horizontal adjustment of headlamp beams
V - screw for vertical adjustment of headlamp beams

REPLACING SEALED BEAM UNITS

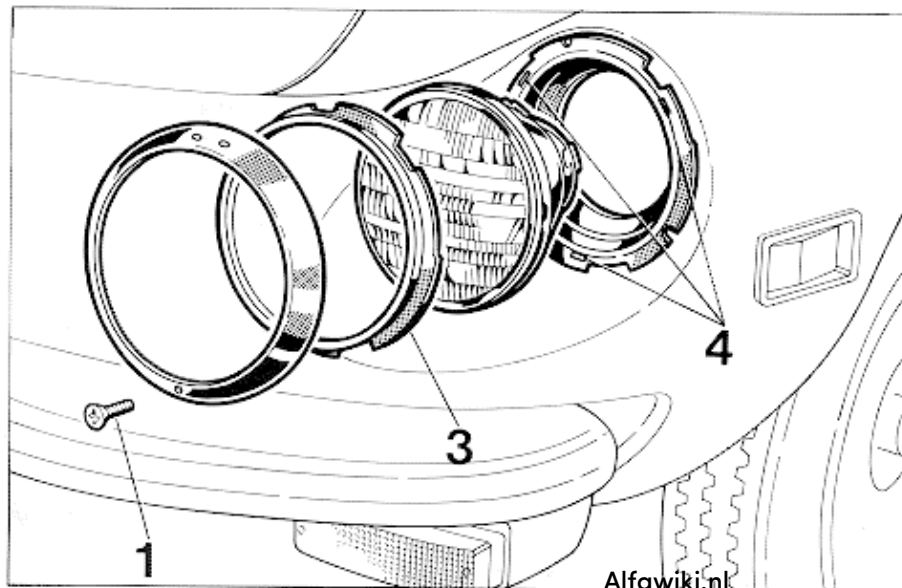
Loosen the outer trim ring attaching screw 1 and remove the trim ring by bending slightly forward the ring bottom. Loosen the three screws 2 securing the ring 3 (take care not to disturb the setting of adjusting screws V and H); rotate ring 3 counterclockwise and remove it. Hold the sealed beam unit firmly to prevent it from dropping out.

Disconnect the feed wire connector from sealed beam unit. Fit the connector to the new sealed beam unit. Mount the unit in such a way that the glass «bosses» seat properly into the notches 4 in the unit support.

Note: the sealed beam unit can be fitted only if correctly positioned. Therefore, if difficulties arise, rotate the unit by 120 degrees clockwise or counterclockwise until it is properly fitted to its support.

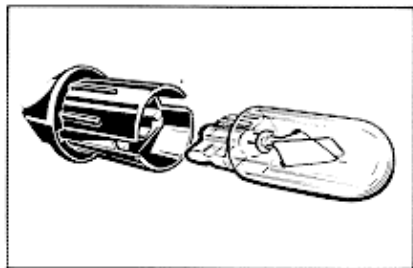
Place the ring 3 in position onto the support and rotate the ring clockwise; then, tighten screws 2.

Fit the two retainers at the trim ring top to their seats and re-tighten the attaching screw 1.



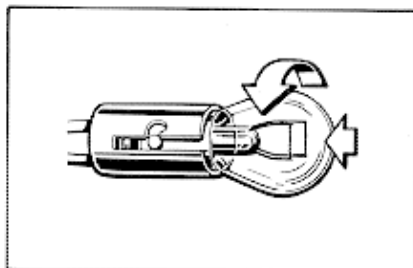
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REPLACING BULBS



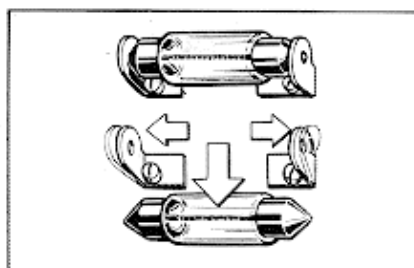
A

All glass type:
to remove, grasp the bulb socket with the fingers and withdraw the bulb.



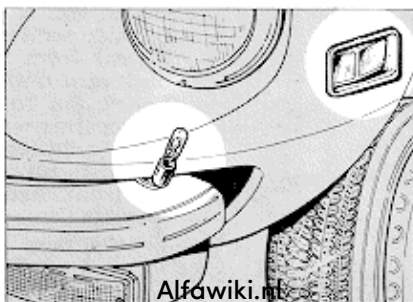
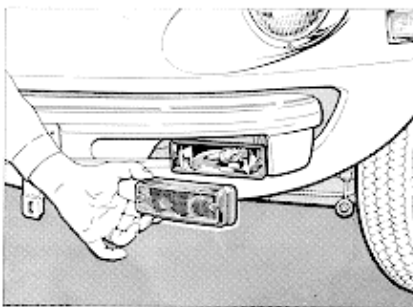
B

Bayonet type mount:
push the bulb in rotate it counter-clockwise and withdraw the bulb.



C

Cylindrical type:
snap the bulb off putting the terminal springs apart.



B

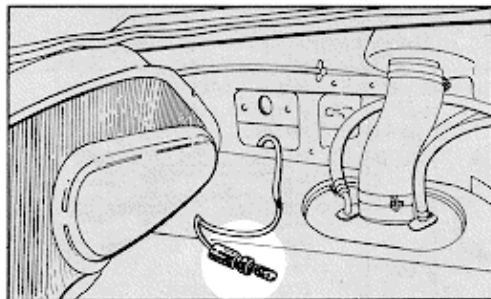
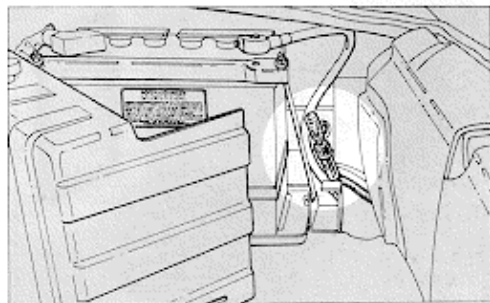
Front direction indicators and parking lights
Slacken the lens attaching screws and remove the lens. Renew the bulb and refit lens.

A

SIDEMARKER LIGHTS

Front

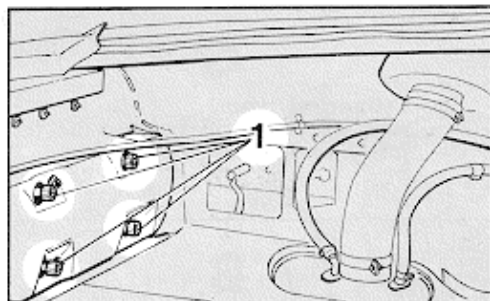
From inside, the wheelhouse, snap the bulb socket off the lens; renew the bulb and refit the socket to the lens.



A

R.H. rear

Remove the battery protection shield. Snap the bulb socket off the lens; renew the bulb and refit the socket to the lens. Refit the battery shield.



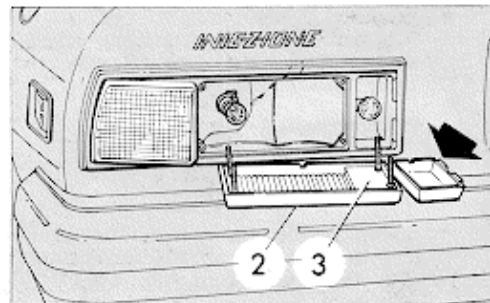
L. H. rear

Remove the carpeting, then the bulb socket and renew the bulb. Refit the socket to the lens.

B

Tail direction indicators, parking and stop lights - Back up lights.

Raise the trunk back carpeting. Unscrew the four knurled knobs 1 and, from the outside, remove the center lens 2 of the light unit taking care to prevent the side sections (direction indicators and back up light lenses) from falling. To remove these lenses tilt them backward until the locating tabs get out of their seats. Renew the bulb. Refit the two side lenses making sure the locating tabs seat properly. Refit the center lens carefully (reflector 3 nearer to the center of the car). Keep all lenses pressed against the tail panel and from inside the trunk tighten the knurled knobs 1. Refit the back carpeting in such a way that its bottom edge fits under the carpet.

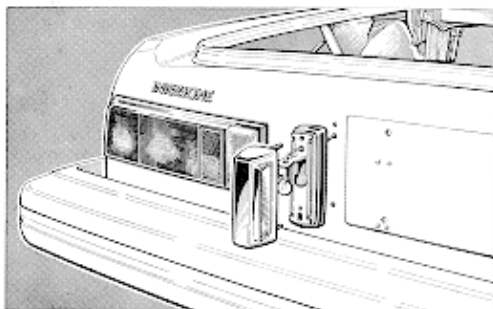
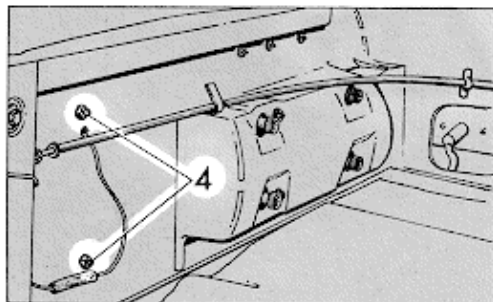


LICENSE PLATE LIGHTS

Raise the trunk back carpeting.

Loosen nuts 4 securing housing to car's body. From the outside remove the housing and renew the bulb. Refit the housing making sure the lens is pointing toward the license plate and the seating gasket fits properly against body panel.

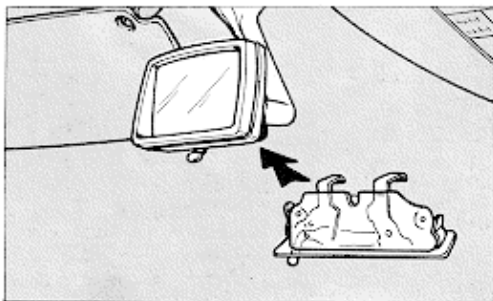
Retighten the two nuts 4 and lower the back carpeting in such a way that its bottom edge fits under the carpet.

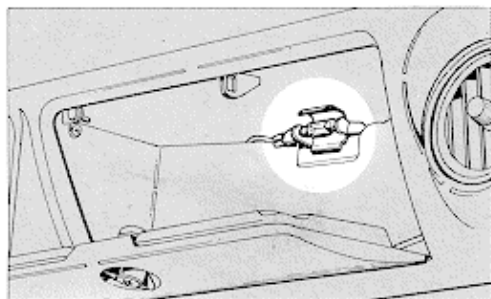
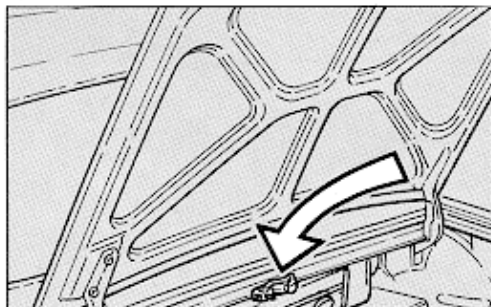
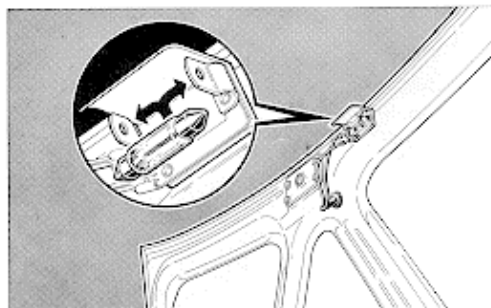


C

COURTESY LIGHTS

Snap off the light unit. Renew the bulb and refit the unit, making sure it is properly positioned (the bent ends of terminal springs should be pointing toward the front of the car).



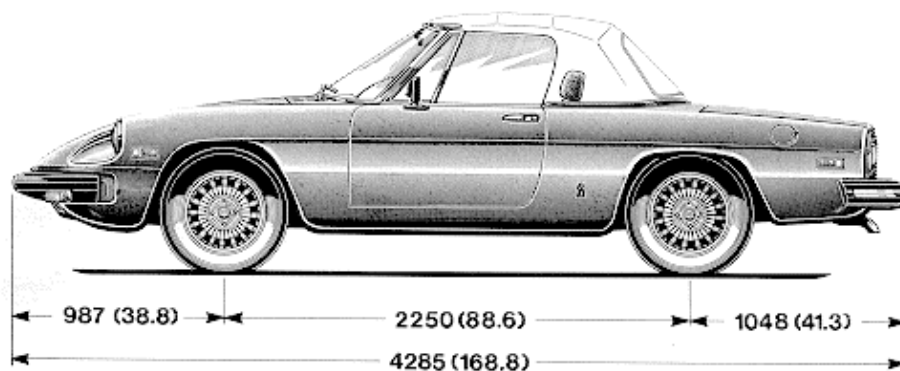
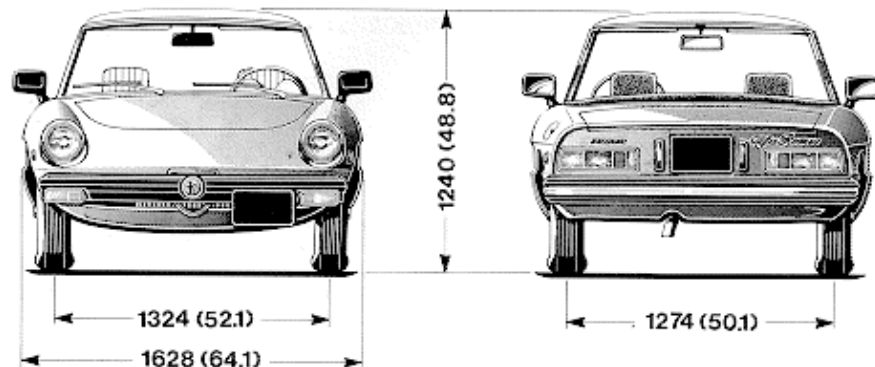


C

Engine glove and baggage compartment lights
Remove bulb and change it.

GENERAL DATA

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Dimensions in millimeters (and inches). Height under static load.

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SPECIFICATION

ENGINE

Number and layout of cylinders 4 in line

Bore and stroke 84×88.5 mm

Total displacement 1962 cc

Idle speed 750 ± 100 rpm
(with transmission in neutral and accessories, if any, disengaged).

CHASSIS

Turning circle (10,400 mm) 34.5 ft

Designated seating capacity 2

Tires see inside backcover

Curb weight kg 1156 (2548 lbs)

Trunk capacity dm³ 300 (cu. ft. 10)

Towing gross weight kg 800 (1764 lbs)

IDENTIFICATION

Identification and/or specification labels and stampings are located as follows:

Body number

1 Firewall

Vehicle identification number

2 Windshield plate

3 D.O.T. certification label

Production date

3 D.O.T. certification label

Gross vehicle weight

3 D.O.T. certification label

Engine number

4 Left rear side of engine block

Engine setting data - Compliance with air pollution regulations

5 Emission data label

Useful load - Seating capacity - Tire pressure

6 Label on inner side of glove compartment lid

Break in data

7 Label on passenger's sun visor

Lubrication data

8 Lubrication data label

Spark plug data

9 Spark plug data label

Fuel requirements

10 Label near fuel tank filler port cover

Paint

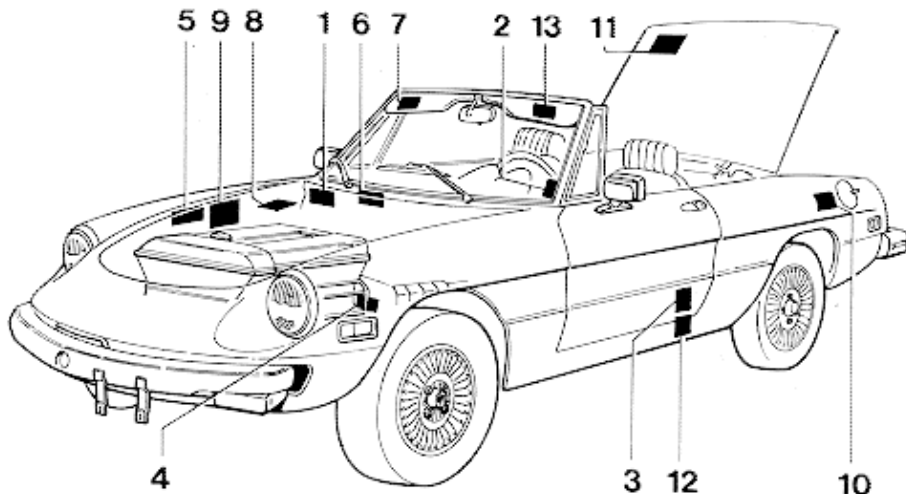
11 Paint label

Compliance with air pollution regulations

12 Label on jamb

Directions for catalytic converter equipped cars

13 Label on driver's sun visor



When contacting a Member of our Service Organization please state: car model no., Vehicle identification number, registration date, distance covered and car's purchase data.

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ELECTRICAL EQUIPMENT ITEMS

1	Front direction indicators-emergency flashers - 21 W	34	Catalyst overtemperature (Exh. Temp.) warning light feed unit	67	Fuseboxes
2	Parking lights - 5 W	35	Safety belt service	68	Blower motor
3	Headlamp Hi/Low - Sealed beam	36	Courtesy light - 5 W	69	Blower switch
4	Horn	37	Glove compartment light	70	DEF light
5	Junction boxes and connectors	38	Glove compartment light switch	72	Cigarette lighter
6	Side marker lights, front - 3 W	39	Instrument lights	73	FASTEN SEAT BELTS light
7	Engine compartment light switch	40	Coolant thermometer	74	Windshield wiper switch
8	Engine compartment light - 5 W	41	High beam warning light	75	Windshield washer switch
9	Alternator	42	Low oil pressure warning light	76	Direction indicators switch
10	Window lifter relay	43	Oil pressure gage	77	Horn control
11	Brake warning light relay	44	Low fuel pressure warning light	78	Parking lights, headlamps and flashing switch
12	Coil	45	Parking light warning	79	Fuse (loose) for radio
13	Electronic unit	46	Fuel level gage	82	Coaxial cable for antenna
15	Ignition distributor	47	Fuel reserve warning light	83	Parking brake warning light switch
16	Starter	48	Blower warning light	84	Belt switch (driver's side)
17	Low fuel pressure warning light switch	49	Speedometer	85	Fuel level sender
18	Coolant thermometer sender	50	Direction indicators warning light	86	Submersed electric pump
19	Oil pressure gage sender	51	Alternator warning light	87	Battery - 12 V/60 Ah
20	Microswitch	52	Electronic tachometer	89	Trunk light - 5 W
21	Fuel cut-off solenoid	53	Stop lights switch	90	Trunk light switch
22	Low oil pressure warning light switch	54	Flasher unit	91	Side marker lights, rear - 3 W
23	Back up light switch	55	Electronic windshield wiper intermittent	92	Rear direction indicators - 21 W
24	Brake fluid level warning light switches	56	Dimmer for HAZARD light and heater control panel light	93	Parking and stop lights-emergency flashers - 5/21 W
25	Inertia switch	57	Safety belt buzzer	94	Back-up lights - 21 W
26	Horn relay	58	Key-reminder buzzer	95	License plate lights - 5 W
27	Windshield wiper	59	Ignition and starting switch	96	Power window motor
28	Courtesy light switch on door jambs	60	Warning light for minimum brake level and parking brake	97	Power window switch
29	Relay for ignition advance	61	Catalyst overtemperature (Exh. Temp.) warning light - 1.2 W	98	Digital clock
30	Windshield washer electric pump	64	HAZARD light - 1.2 W	99	Radio interference suppressor inductance for submersed pump
31	Vacuum switch	65	Emergency flashers switch with built-in warning light - 1.2 W	100	Main fuel pump
32	Thermocouple for catalyst overtemperature warning light	66	Heater control light	101	Door mirrors remote control switch
33	Key-reminder buzzer switch			102	R.H. door mirror
				103	L.H. door mirror

CABLE COLOR CODE

A	blue	AB	blue/white
B	white	AN	blue/black
C	orange	BN	white/black
G	yellow	GN	yellow/black
H	grey	HN	grey/black
M	brown	RN	red/black
N	black	SN	pink/black
R	red	VN	green/black
S	pink	ZN	violet/black
V	green	N-R	red-striped black
Z	violet	N-V	green-striped black

The figure following the color code on the diagram shows the wire gauge in mm².

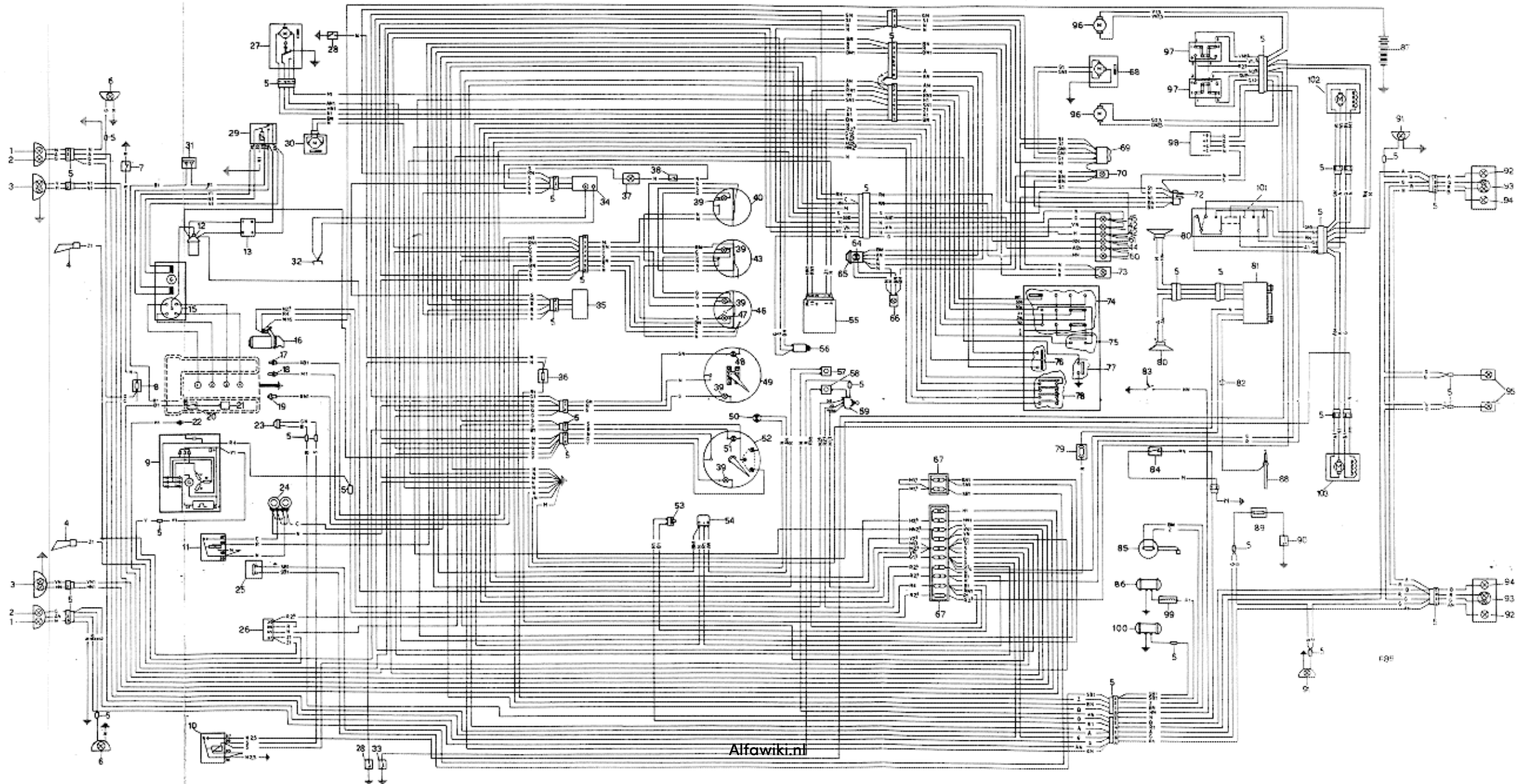
Where not shown the wire gauge is 1 mm².

Provision for radio installation

The items listed below are not actually installed on the car; they are included in the wiring diagram for a better understanding of the function of the wiring harness (standard equipment) to facilitate the hooking up of the radio components.

- 80 - Speaker
- 81 - Radio
- 88 - Antenna

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RECOMMENDED LUBRICANTS

PART	Classification	Commercial equivalents		
			Shell	
Engine	10 W/50 API SE ASTM SE SAE SE	AGIP SINT 2000 SAE 10 W/50	SHELL Super X Motor Oil 10 W/50	IP Super Motor Oil 10 W/50
Transmission Gearbox Steering box and differential	SAE 80 W/90 API GL 5	AGIP F. 1 Rotra MP SAE 80 W/90	SHELL Spirax 80 W/90 HD	IP Pontiac HD SAE 80 W/90
Spline on propeller shaft slip yoke	SAE NLGI 1	AGIP F.1 Grease 15	SHELL Retinax A	IP Auto Grease MP
Front wheel bearings	SAE NLGI 2/3	AGIP F.1 Grease 33 FD	SHELL Retinax AX	IP Auto Grease FD

API - American Petroleum Institute
ASTM - American Society for Testing Materials
SAE - Society of Automotive Engineers
NLGI - National Lubricating Grease Institute

RECOMMENDED TIRE PRESSURE (COLD)

For further information on tires, refer to page 59

	FRONT		REAR	
	PSI	kg/cm ²	PSI	kg/cm ²
185/70 HR 14" Tubeless (with 6 J x 14" H2 alloy rims) Michelin XVS	24	1.7	26	1.8

CAPACITIES

	U.S.A.	METRIC	Oil	U.S.A.	METRIC
Cooling system	abt.	2.5 gals	9,7lts	7.1 qts	6,6 lts
Fuel*				4.75 qts	4,4 lts
Tank capacity	abt.	12.2 gals	46lts	3.8 pts	1,85 lts
Reserve	abt.	1.3-2.1 gals	5 – 8lts	3.0 pts	1,4 lts
* Fuel requirements (refer to page 1)				.8 pt	0,4 lts
			* This quantity is that needed for regular changing. The total amount of oil in the circuit (pan, filter and passages) is	7.8 qts	7,16 lts

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