Alfetta 2000

OWNER'S MANUAL

1975 MODEL YEAR VERSION «49 STATES»

FUEL REQUIREMENTS

The Alfa Romeo injection engine has a rather low octane requirement considering its performance and fuel economy. For your 2000 you can use a high quality 91 R.O.N. (research octane number) gasoline performance and information system. Your engine is quite insensitive to lead content and you may use « no » or « low » lead fuels. Always refuel from pumps displaying one of the symbols shown at left. Gasolines of a number higher than 2 can be used. Never use gasoline with antiknock ratings lower than 2 or 91 R.O.N. otherwise damaging detonation or « knock » may occur. This « knock » occurs mainly at full throttle. This characteristic metallic rapping noise is audible only at low RPM. It cannot be heard at high RPM, in the range where piston damage occurs quickly. Because anti-knock ratings are not always significant of actual road octane requirements, you may experience « knock »; if so, try another brand of gasoline. In case of prolonged or persistent « knock » go to your dealer immediately. Alfa Romeo cannot warranty damage due to « knock » since it is misuse.

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 manual and in the maintenance manual.
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.

The Alfa Romeo Spider Veloce® provides superb handling, high performance, fuel economy and safety. Like any true sports car, the Spider has a low center of gravity and a low profile. Because road surfaces in some areas are not consistently smooth, it is important to avoid potholes and debris or damage may occur.

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 all maintenance and repair work to an authorized Alfa Romeo Dealer as such Dealers are equipped with the proper tools and staffed by specially trained mechanics.

Owners are reminded that Alfa Romeo cannot be responsible for any errors made by unauthorized service stations or for any damage resulting from the use of nongenuine spare parts and/or lubricants other than those indicated.

ALFA ROMEO *CUSTOMER SERVICE*

The data relating to weights, consumptions and speeds are approximate only: Alfa Romeo reserves the right to change without notice any features and data given in this book. Some of the equipments are optional extras. Refer to price list for a comprehensive list of optionals.

CONTENTS

WARRANTY AND LIMITATION OF LIABILITY FOR NEW 1975 MODEL PASSENGER CARS

Warranty period: Alfa Romeo warrants this vehicle for 12 months or 12,000 miles, whichever occurs first, according to the following terms.

What is covered by the warranty: any part of this vehicle manufactured or supplied by Alfa Romeo (except tires) found defective in material or workmanship.

Warranty start date: the warranty starts on the date of sale to the original retail purchaser or on the date this vehicle is originally placed in service, whichever occurs first.

Obtaining warranty service: warranty service will be provided by the Selling Dealer at his place of business. The Selling Dealer will repair or replace, at Alfa Romeo's option, the defective part whithout charge for parts or labor.
In the event the owner cannot return to the Selling Dealer (the Selling Dealer has ceased to do business as an authorized dealer or the owner is travelling, has moved or is living in a different locality and cannot return to the Selling Dealer), the owner may obtain warranty service at any authorized Alfa Romeo dealership.

WHAT IS NOT COVERED BY THE WARRANTY

This warranty will not apply to:

- any vehicle on which the odometer mileage is altered;
- normal maintenance services (as outlined in the Owner's manual supplied with this vehicle) and the parts used in connection with such services;
- damages resulting from modifications, alterations, or tampering;
- repairs necessitated by accident, abuse, negligence or racing;
- loss of use of the vehicle, loss of time, inconvenience or other consequential damages.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES OR CONDITIONS, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES UNDER THIS WARRANTY ARE EXCLUSIVE AND ALFA ROMEO NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION.

Tires: tires originally installed on new passenger cars are warranted separately by the tire manufacturer and not by Alfa Romeo.
Although the specific terms of these warranties will differ, generally tire manufacturers guarantee their tires for the life of the original tread against defects in material and workmanship and failure caused by normal road hazards such as blow-outs, fabric breaks, cuts, bruises and snags. These guarantees do not cover damage or failure caused by punctures, running flat, fire, wrecks, chain cuts, irregular wear, abuse, etc. Generally these guarantees provide that any tire determined to be defective or damaged within the terms of such guarantee will be repaired or replaced at the tire manufacturer's option. If replacement is made, the owner must pay the tire manufacturer's current adjustment base price plus transportation charges and taxes for such tire less a pro rata allowance based on the amount of the original tread remaining on the tire replaced. In some instances, the owner must also pay a service charge.
Warranty services pertaining to tires may be obtained from an authorized service station of the tire manufacturer or an authorized Alfa Romeo dealer providing such services. If necessary, an authorized Alfa Romeo dealer will assist an owner in requesting an adjustment.
The foregoing guarantees specifically provide that they do not cover consequential damage and that they are the only guarantees issued by the tire manufacturers.

EXAMPLES OF ITEMS NOT COVERED BY WARRANTY

Items, such as the following, normally are not considered defects in material or workmanship and, as such, normally are not covered by the warranty. Accordingly the cost of such items are owner responsibility unless required as a result of a defect in material or workmanship.

- Routine maintenance services such as oil changes. tuneups, front end alignment, wheel balancing, rotating of tires, brake and clutch adjustments, lubrication, winterization, coupon services.
- Replacement of items such as spark plugs, fuel, air, or oil filters used in connection with routine maintenance services.
- Repairs necessitated by accident, abuse or negligence.
- Repairs required as a result of failure to perform the maintenance services specified in the Owners Manual supplied with this vehicle.
- Repairs required as a result of modifications not recommended or approved by Alfa Romeo.
- Normal wear or deterioration of such items as hoses, belts, upholstery, soft trim, bright metal parts (i.e., grille, mouldings and bumpers), windshield wiper blades, brake lining, clutch lining, paint.
- Repairs required as a result of racing, sustained high speed use, acceleration trials, wide open throttle operation, high speed acceleration or shifting trasmission gears at high engine RPM, negligent operation, accident, abuse.
- Adjustment of such items as trasmission linkage, controls or bands, brakes and clutch.
- Loss of engine oil, lubricant, anti-freeze or refrigerant.
- Removal of engine carbon or sludge.
- Repairs required as a result of hauling trailers.

Also, Alfa Romeo assumes no responsibility for loss of use of the vehicle, loss of time, inconvenience or other consequential damage including but not limited to, expense for gasoline, telephone, travel, lodging, loss or damage to personal property or loss of revenues.

EMISSION CONTROL SYSTEM WARRANTY

The fuel injection system for the 2000 and Alfetta models has been designed not only to attain high performance and low fuel consumption but also to keep the exhaust emissions below the levels allowed by U.S.A. regulations. The low exhaust emissions have been obtained by improving the fuel distribution and combustion and providing devices to burn the unburned gases downstream of the exhaust valves.
Simple and efficient systems for controlling crankcase and evaporative emissions are fitted.
Of course, even with the mentioned systems fitted to the 2000 and Alfetta models, the emissions will not continue to meet Federal and State regulations unless the owner himself provides to have the prescribed servicing carried out by authorized Alfa Romeo Dealers and provided that, when remedying troubles or performing any maintenance work on engine or fuel feed systems, the factory prescribed procedures are strictly followed.
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.

To obtain this service the owner must submit written receipts or routine maintenance book for services obtained that will verify the vehicle has been maintained according to the written instructions issued by Alfa Romeo to assure proper functioning of emission control devices and systems on the vehicle.
This warranty is the only warranty in addition to the standard Alfa Romeo warranty in the routine maintenance book or owner's manual applicable to the vehicle and is expressly in lieu of any warranty or conditions implied in law pertaining to emission or emission control systems.
The remedies under this warranty shall be the only remedies available to the owner of the vehicle or any other person, and neither Alfa Romeo S.p.A. or A.R.Inc. nor the authorized selling dealer assumes any other obligation or responsibility with respect to the condition of the vehicle, and neither assumes nor authorizes anyone to assume for any of them, any additional liability.
Federal Law prohibits manufacturers and dealers from knowingly removing or rendering an emission control system inoperative or ineffective after sale and delivery to an ultimate purchaser.

Alfa Romeo

SERVICE NETWORK

The Alfa Romeo Services are listed in the Guide supplied with every vehicle. In any event rely on your Alfa Romeo Dealer displaying the shield with the Alfa Romeo emblem and name.

ROUTINE MAINTENANCE BOOK

Alfa Romeo take steps to ensure the optimum performance of their cars by providing Owners with special services during the entire life of their vehicles.

The **Routine Maintenance Book,** supplied with every new vehicle, explains the conditions that govern the provision of Alfa Romeo Services and the replacement of damaged parts during the period covered by the warranty.

Every Owner of an Alfa Romeo vehicle is supplied with two coupons covering certain free maintenance during the warranty period, and they **must use these coupons on completion of the mileage as stated thereon.**

It is important that the Routine maintenance book be filled in properly following each routine service. It is a log of maintenance performed on your Alfa Romeo and is subject to inspection. See page 5 for evidence of compliance requirement.

The labor cost of the maintenance work listed on the 1000 mile and 5000 mile coupons is free, but the lubricants and the filtering elements used are at the Owner's expense. Any work not covered by free coupons but found necessary during the inspection will be subject to the General Terms of Warranty. The coupons should be used whenever possible at the shop of the Dealer that sold the car during his normal working hours.

WHAT TO DO IF YOU HAVE A COMPLAINT

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 misunderstand may arise regarding service or warranty. If it happens that you have a problem with your dealer you should:

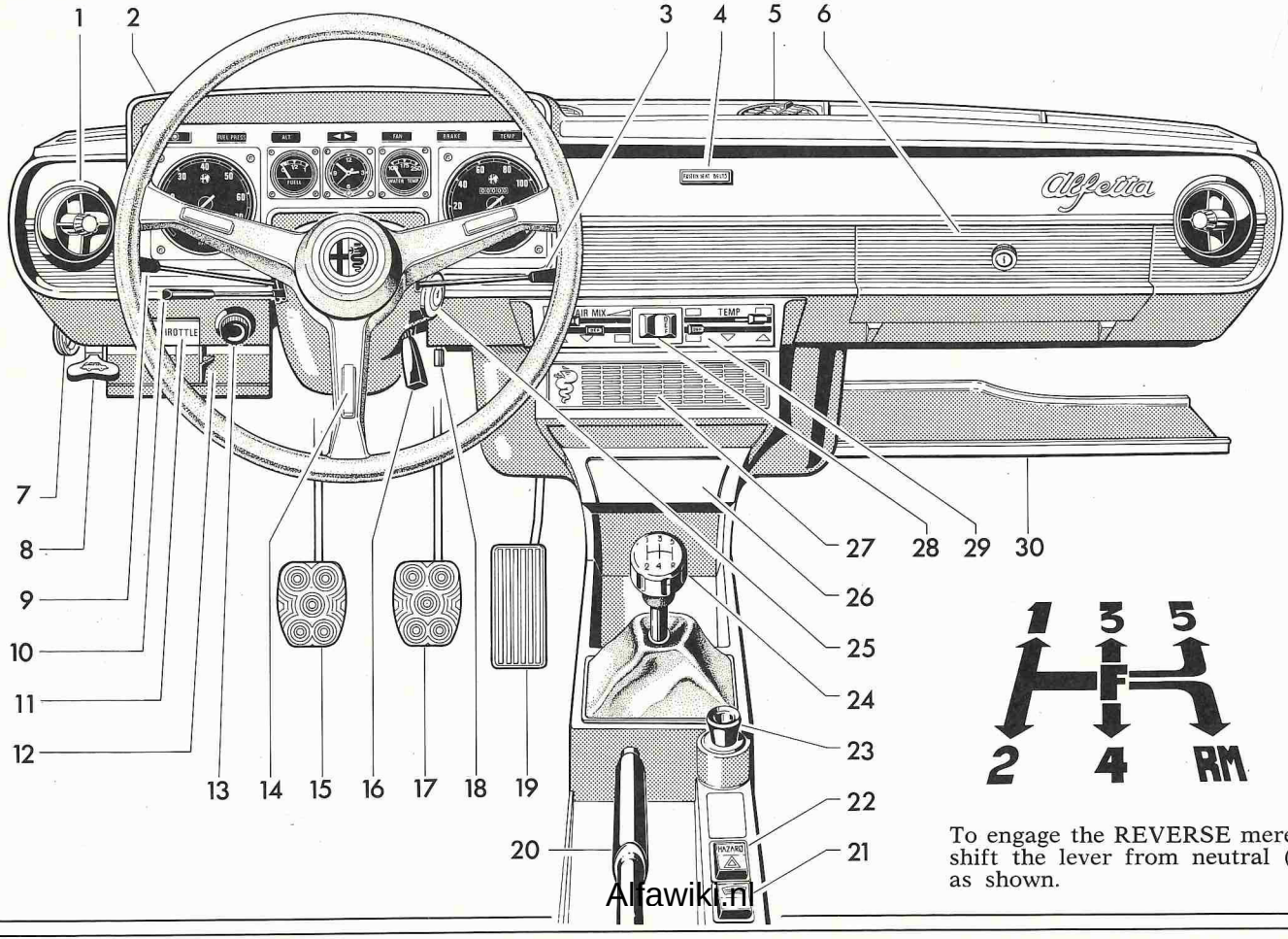
- **First:** Talk it over with the general manager or owner of the dealership. Chances are the problem will be resolved right away.
- **Second:** if your dealer can't solve the problem phone the Alfa Romeo divisional office nearest you and ask for the Service Representative calling on your dealer. He'll 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

HOW TO USE YOUR CAR

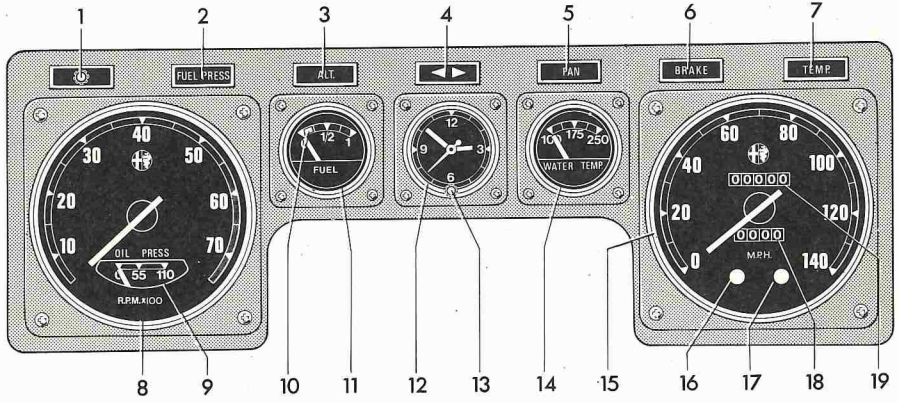
CONTROLS AND INSTRUMENTS



To engage the REVERSE merely shift the lever from neutral (F) as shown.

CONTROLS

1 Ram air vent
2 Instrument cluster
3 Windshield wiper and washer pump switch
4 « Fasten Seat Belts » warning light.
5 Windshield demisting outlets.
6 Glove compartment.
7 Hood emergency release.
8 Hood release.
9 Headlamp. dimmer and flashing switch.
10 Direction indicator switch.
11 Hand throttle.
12 Fusebox.
13 Dimmer for Hazard light and heater control panel light (lighting only when parking lights are on).
14 Horn.
15 Clutch.
16 Wheel rack adjustment lever.
17 Brake.
18 Tripmeter reset.
19 Accelerator.
20 Handbrake (for emergency and parking).
21 Heated rear window switch.
22 Road hazard light switch.
23 Cigarette lighter.
24 Gearshift lever.
25 Ignition switch & antitheft.
26 Ash tray.
27 Provision for radio.
28 Blower switch.
29 Ventilation and heater control panel.
30 Parcel shelf.

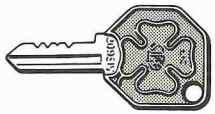


INSTRUMENTS

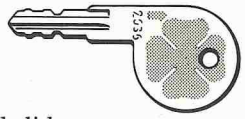
1 Dimmer for instrument lights: to increase instrument light brilliance turn knob clockwise.
2 Low fuel pressure warning light.
3 Alternator warning light.
4 Direction indicator warning light
5 Blower warning light.
6 Handbrake, low brake pressure and fluid level warning light.
7 Coolant temperature warning light.
8 Tachometer.
9 Oil pressure gauge.
10 Fuel reserve warning light.
11 Fuel level indicator.
12 Clock.
13 Clock reset.
14 Coolant temperature indicator.
15 Speedometer.
16 Parking light warning.
17 Headlamp high beam warning light.
18 Tripmeter. (push knob up and turn clockwise to reset).
19 Odometer.

Ignition and antitheft key

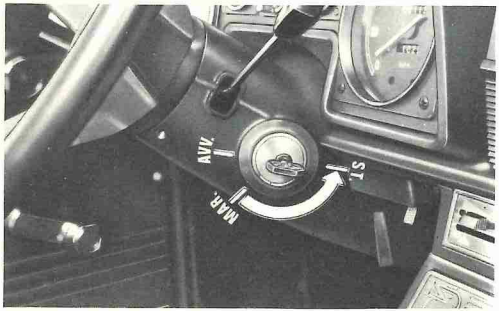
Symbol _____



Symbol _____



Key to driver's and passenger's door, 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 and the « Fasten Seat Belts » warning light.

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.
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.

NOTE

If the warning light does not flash on or stays on, this is an indication of failure of the indicating device or fuel feed system; therefore have them checked as soon as possible by an authorized Alfa Romeo Dealer.
When opening driver's door, a suitable buzzer will alert you, if the key has been left in the ignition switch.

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.

1 - DIRECTION INDICATORS

Move the lever:
— up, to signal a right turn;
— down, to signal a left turn.
The warning light on instrument panel will flash on-and-off.

EXTERNAL LIGHTING

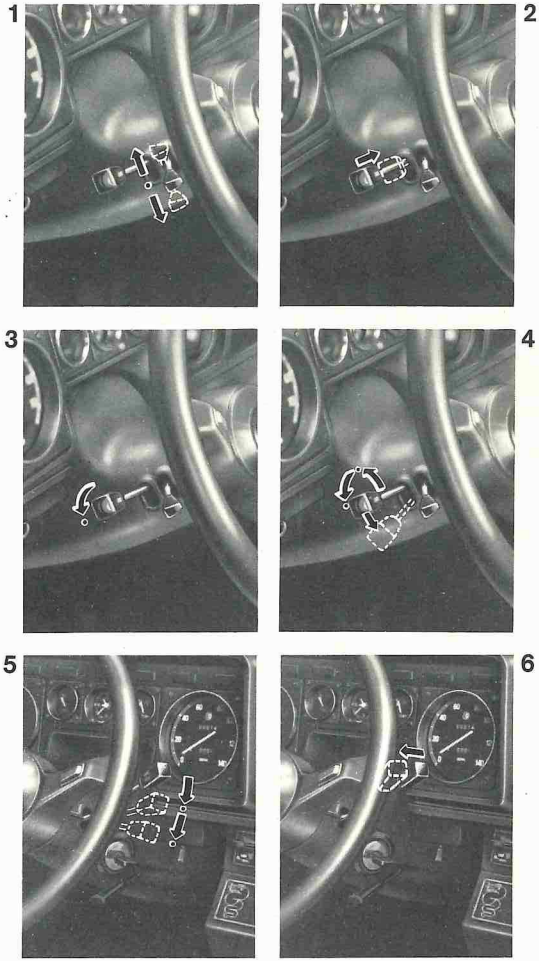
2 - Flashing
Pull up the knob irrespective of the position of the switch lever. Flashing is possible even when parking lights are off.

3 - Parking lights and license plate ligth
To switch them on turn the knob to the first notch toward the instrument panel. The warning light in panel will light up.

4 - Low or high beams
Turn the knob forward to the second notch: if the lever is up the low beams come on (no flashing); if down, 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.

5 - Windshield wiper
The two-speed wiper is controlled by a switch lever which has three positions:
— Lever up: wiper is off.
— Lever at the center: wiper operates at normal speed.
— Lever down: wiper operates at high speed.

6 - Windshield washer
To operate the electric washer pump pull the switch lever toward steering wheel.



PRECAUTIONS

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		
Mileage reading	r.p.m.	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.
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.

1,000 MILE FREE SERVICE COUPON

Have the lubrication and maintenance operations of 1000 mile free service coupon in the routine maintenance 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, partially and progressively, the accelerator pedal. After a cold start and particularly when the ambient temperature is below freezing point, wait 3 minutes at 1500 RPM before getting away so as to warm up properly all engine parts and allow the oil to reach all points requiring lubrication.

Do not accelerate the engine until it has warmed up, since when the engine is cold the oil cannot reach all points requiring lubrication.

Top performance must never be demanded of the car until coolant temperature is at least 160°F.

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 falls 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, oxidized contact-breaker points, 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

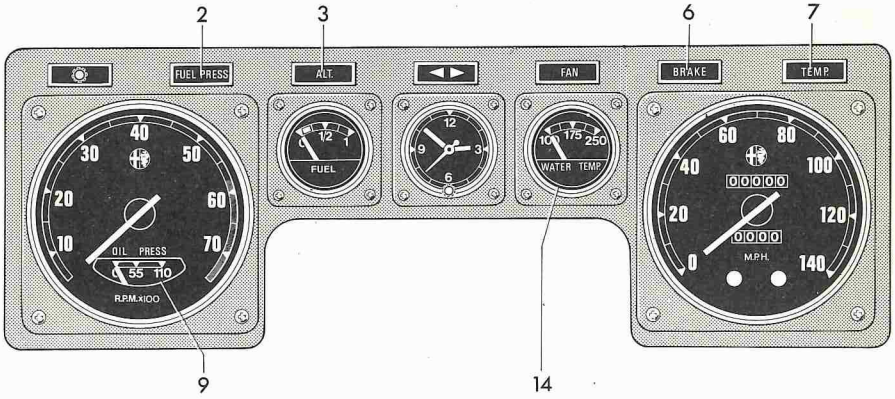
Check brake warning light (6, page 13) for proper operation.

This light should:

- Stay lit until handbrake is engaged
- Go off when handbrake is disengaged. If the warning light still remains on after having released the handbrake, check the level of fluid in brake fluid reservoir.

WHILE DRIVING

Make sure the alternator warning light (3) goes off as speed exceeds idling.



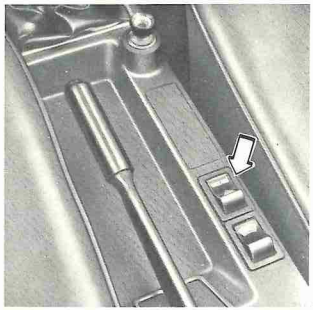
- Take care **not to run the engine beyond the maximum RPM** range shown as a red area on tachometer dial.
- When shifting gears, take care to depress the clutch pedal fully; this will ensure smooth operation and save synchronizers from excessive wear.
  Do not rest your on clutch pedal when not actually 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 that the low fuel pressure warning light 2 is off; when on, it means that the feed system is developing troubles; therefore, have it checked by your Dealer.

Occasionally, check the coolant temperature indicator 14. Also check the coolant temperature warning light 7 on instrument panel. Should the warning light come on, stop the car and have the cooling system checked by an Alfa Romeo 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

Road hazard flashers
To operate the hazard flashers, push the switch mounted on the console.

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.
Never leave the key in the MAR. position (ignition « on ») to prevent battery discharge and coil damage. 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 towards the curb.

ALFA ROMEO RICAMBI ORIGINALI	ALFA ROMEO **ANTIFREEZE** Std. no. 3681-69958	For ambient temperatures **above** −20 °C (−4 °F)
ALFA ROMEO RICAMBI ORIGINALI	ALFA ROMEO **Concentrated antifreeze** Std. no. 3681-69956	For ambient temperatures **below** −20 °C (−4 °F)

Temperat. °C	Temperat. °F	Radiator c.c.	Reservoir c.c.	Total lts.	Total gals
−30	−22	1000	200	1.2	0.32
−40	−40	2200	450	2.65	0.7

FOR VERY LOW AMBIENT TEMPERATURES

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

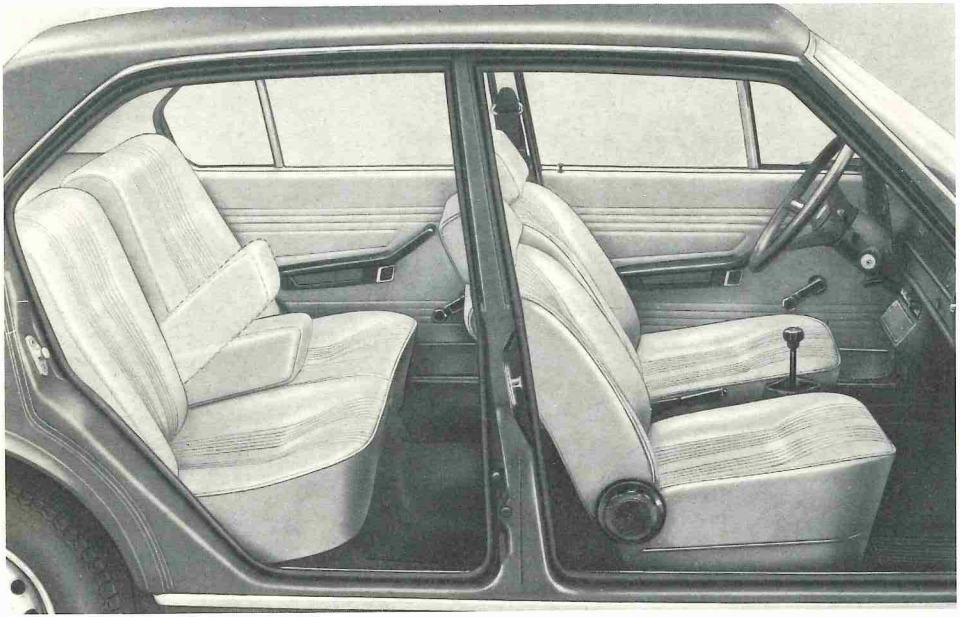
The concentrated antifreeze - to - distilled water proportion is as follows:

Antifreeze: 3.5 litres (0.9 gals)
Distilled water: 4.5 litres (1.2 gals)

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.

INTERIOR



FRONT SEATS

The positioning of the front seats is controlled by releasing the lever 1. By removing the pin 4 the seat may be moved all the way backward.

Two knobs 2 at the outboard sides of the seats control the angle of the backrests.

The seats are provided with vertically adjustable head restraints. This device is controlled by the knob 3 at the side of backrest.

REAR SEATS

The arm rest provided between rear seats can be lowered or raised as desired.

Pockets are provided at the rear of front seat backrests.

STEERING WHEEL RACK ADJUSTMENT

The adjustable steering wheel can be set in a position to suit your preference.

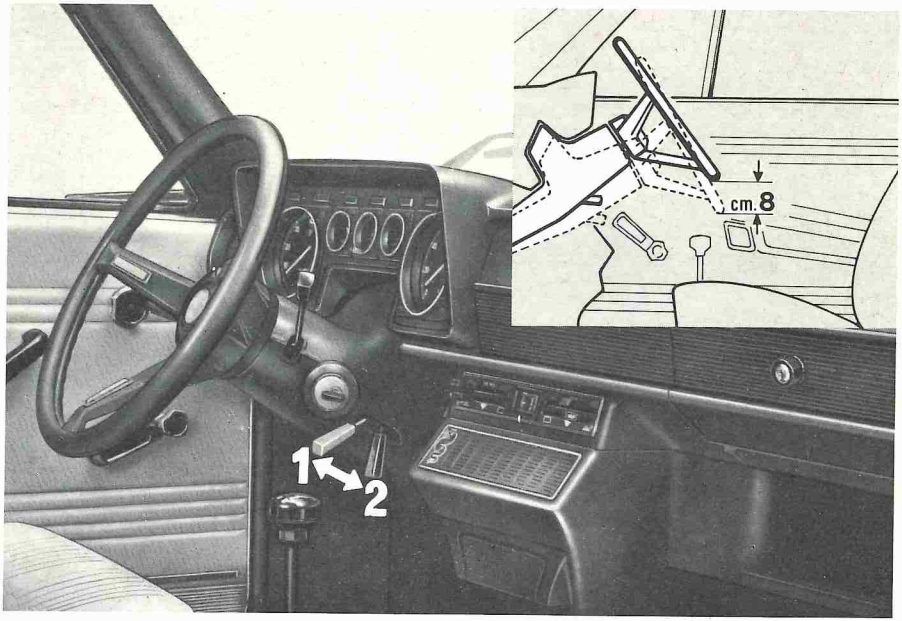
Position changes can be made as follows:

— Pull the release lever toward steering wheel (posit. 1).

— move the steering wheel to the desired position

— lock in place the wheel by pushing the lever all the way toward the panel (posit. 2).

The adjustable range is about 80 mm (3 in.).



SIDE AND REAR VIEW MIRRORS

The rearview mirror which detaches automatically in the event of a crash, has a day/night antiglare device controlled with the lever shown at the illustration.

SUN VISORS

The front seats are equipped with sun visors which can be moved laterally. The driver's side visor has a pocket for documents.

SAFETY BELTS

The car is fitted with safety belts of harness type at the front seats and lap type at the rear seat. The belts are provided with automatic retractors.

Fasten seat belts before getting away.

Front seat belts.

Note. When belt is retracted in its storage position the belt tongue is at the post under the anchoring lug. Pull out the belt (slide belt tongue along belt) (Fig. 1) until it is extended sufficiently to connect the belt tongue to the buckle on tunnel (Fig. 2). If the retractor locks while the belt is being pulled out return the belt by a few inches and then repeat the operation.

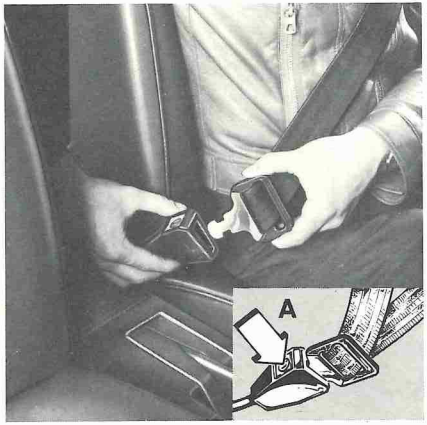
Warning: if the driver fails to wear his seat belt, as the ignition key is turned to « MAR » position the « Fasten Seat Belts » warning light and a buzzer will be activated for a few moments.

Furthermore, even if the driver has properly fastened the seat belt, the « Fasten Seat Belts » light will remain lit for a few seconds. Usually seat belts enable the occupants to assume comfortable seating position; however, brisk movements should be avoided or the belt safety lock device will be operated.

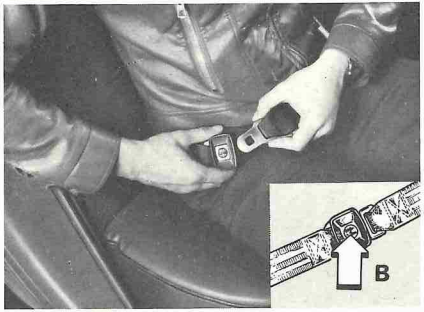
To unfasten the belts push the button on buckle (A, Fig. 2) taking care not to let the belt twist while being rewound on its reel. Slide belt tongue along belt to facilitate full rewinding.

1

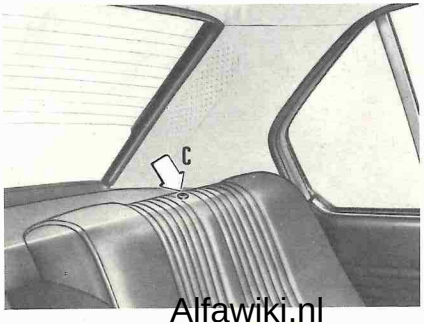
2



3



4



Rear Seat Belts.

Pull out the belt and latch the buckles (Fig. 2). If the retractors locks while the belt is being pulled out, return the belt **completely** and then repeat the operation.

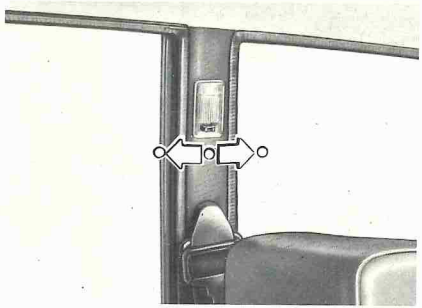
To unfasten belts push the button on buckle (B, Fig. 3).

Provision is made for fitting optionally safety belts of the shoulder type to the rear seats by using the suitably reinforced attachment points (C, Fig. 4).

INTERIOR LIGHTING

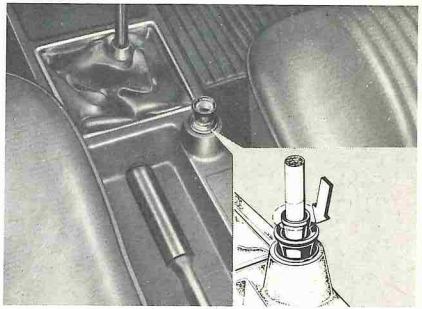
Courtesy lighting is provided by two dome lights at the top of center posts, the switches have three positions:

one in the center: lights always off
two at the sides: lights always on or automatically operated when opening doors.



CIGARETTE LIGHTER

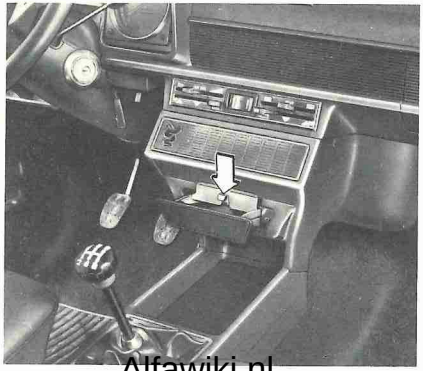
Push the black plastic knob in and insert a cigarette; this brings into operation an electric element which lights the cigarette then turns itself off automatically.

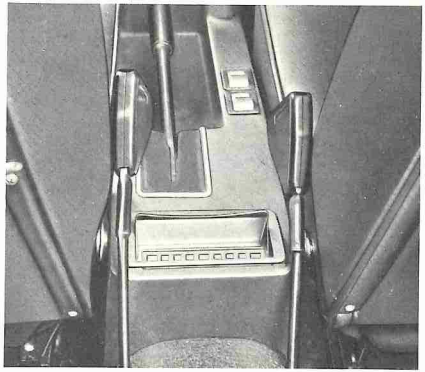


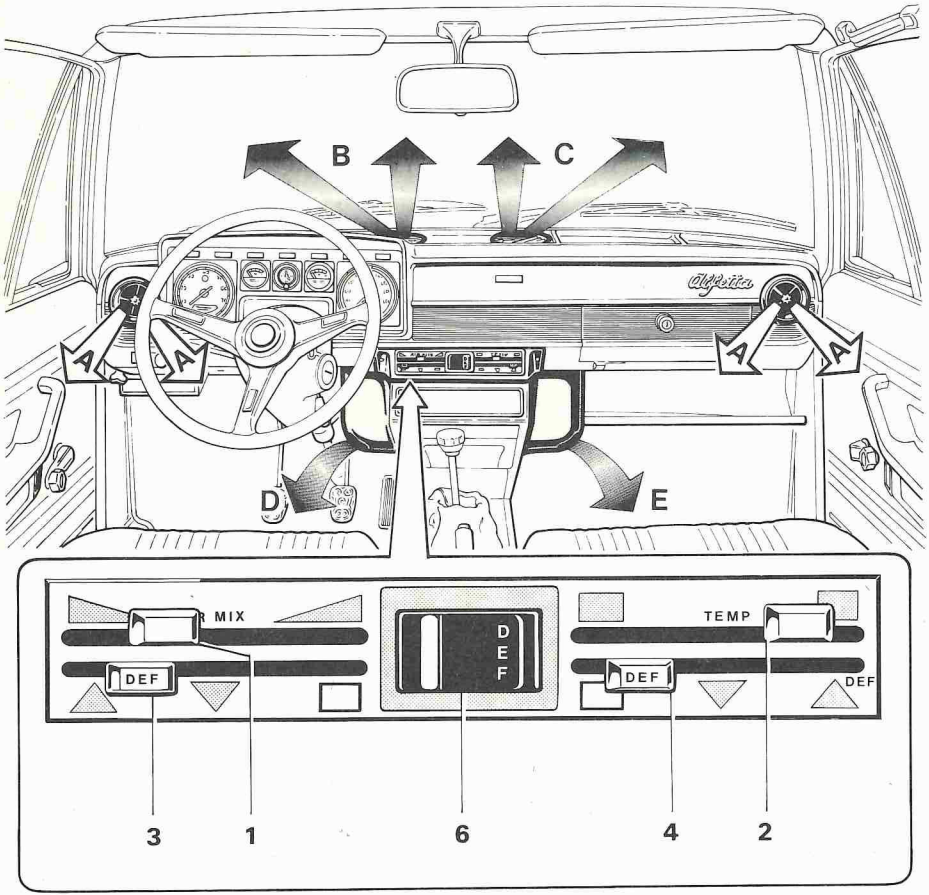
ASH TRAYS

The front ash tray can be removed for emptying by pressing down the small metal spring.

The ash tray for rear seats is located on central tunnel; to remove the ash tray, pull it upward.







VENTILATION-DEMISTING AND HEATING

The air can be admitted to the car both through the ram ventilation outles A and vents B, C, D, E, which also provide heating and demisting.

AIR FLOW CONTROL

The vents A at the instrument panel sides enable to direct the flow of ram air as desired. The flow of ram air can be regulated by the knob at the center of the vent.

Amount of air intake through driver's side vents B-D and passenger's side vent C-E can be regulated separately by the levers 3 and 4 respectively.

Both levers can be positioned as follows:

□ lever at this mark: shut

▼ lever at this mark: demisting, ventilation, heating. Air enters through vents B, C, D, E.

▲ lever at this mark: maximum demisting; air is delivered to the grilles B and C which can be rotated by hand as desired to obtain: windshield demisting, spot demisting, windshield and window demisting.

TEMPERATURE CONTROL

The temperature is adjusted by the levers 1 and 2:

— Lever 1: fresh/warm air blending control

— Lever 2: heater valve control.

By moving the levers from inside (blue area) toward the outside (red area) the air is gradually heated as desired up to maximum heat position.

AIR DISCHARGE

Ventilation of car interior is enhanced by the discharge ports provided in C-posts; the air is discharged outside owing to a difference in pressures created by aerodynamic effect.

TWO-SPEED ELECTRIC BLOWER

In order to produce a satisfactory flow of air into the car at low speeds, switch on the blower with the switch (6, page 20). Warning light 5 indicates that fan is operating.

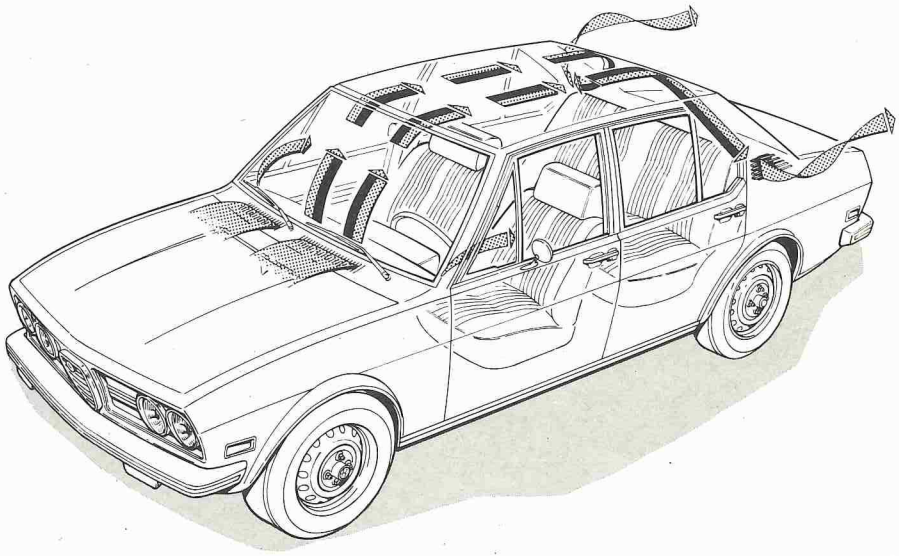
HEATED REAR WINDOW

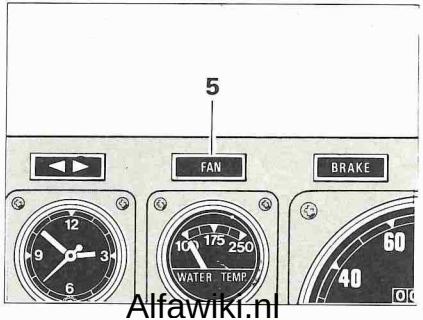
The car is provided with an electrically-heated rear window.

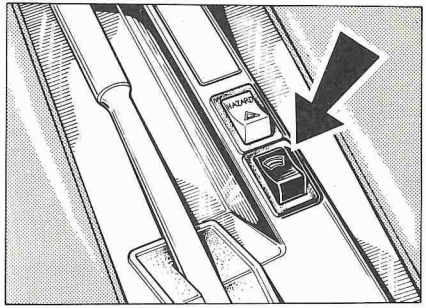
When switched on, the electric resistance embedded in the glass will demist it.

The warning light built into the switch button indicates that the heated rear window is on.

As soon as the window has cleared, turn off the switch.







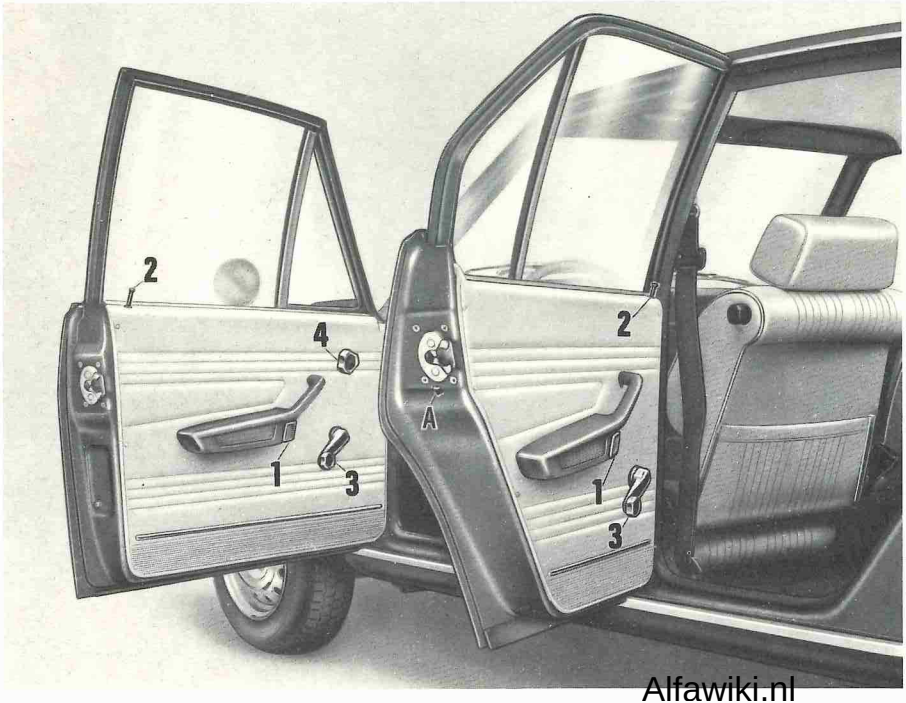
DOORS

1 Handle for opening the door from inside.

2 Safety lock button: for locking the door from inside, push the button in after the door is shut. On rear doors the safety button can be pushed in for pre-locking even if the door is open. Both front doors have locks for closing from the outside.

3 Window regulator handle.

4 Vent window control.

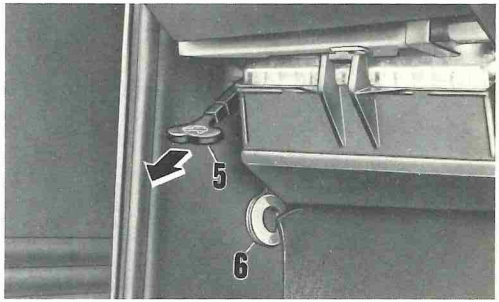


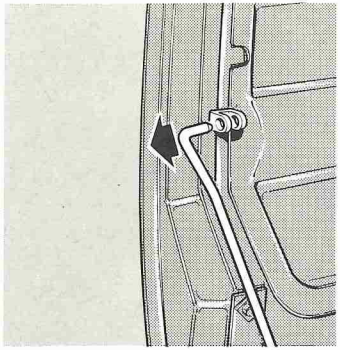
Child-guard door locks

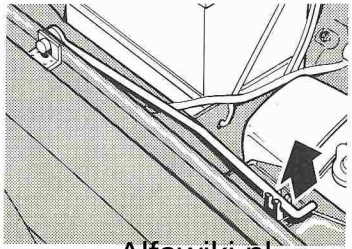
A special device on rear doors prevents opening from inside even if the door is not locked.
The child-guard lock is engaged by pushing the lever A shown in the detail view.

ENGINE HOOD

The hood opens opposite travel direction; to release the catch, pull the lever 5 under the instrument panel. To release the hood in an emergency, pull the ring 6 shown by the arrow.







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.

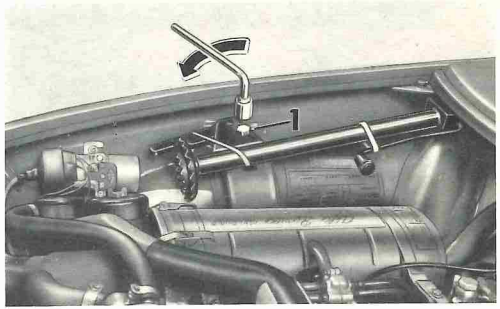
TRUNK

To open the trunk lid, only rotate the key in the lid lock.
The illumination of the trunk is by a light that operates automatically when the lid is raised and the parking lights are on.

The spare tire and the tool kit are in the trunk under the mat.

WHEEL CHANGE

The jack is located at the right front of the engine compartment. To remove the jack loosen the attaching screw 1.



WARNING

Switch on the road hazard lights when required.

CAUTION: before operating the jack, apply the parking brake, and chock the wheels.

Wheel removal

- Slacken wheel nuts by one turn with the wheel wrench.
  Turn the nuts counterclockwise to unscrew.
- Raise the car by inserting the jack arm in the special socket at the front or rear of body rocker panel.
- Fully unscrew the nuts and remove the cover and 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.

  As soon as possible, check that tire inflation pressure and nut tightening torque are as specified.

CONSUMER INFORMATION

ACCELERATION AND PASSING ABILITY

Description of vehicles to which this table applies:

ALFETTA BERLINA

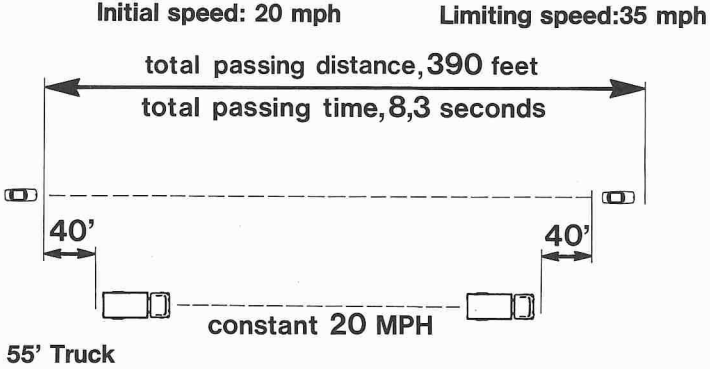
This figure indicates passing times and distances that can be met or exceeded by the vehicles to which it applies, in the situations diagrammed below.

The low-speed pass assumes an initial speed of **20** mph and a limiting speed of **35** mph. The high-speed pass assumes an initial speed of **50** mph and a limiting speed of **80** mph.

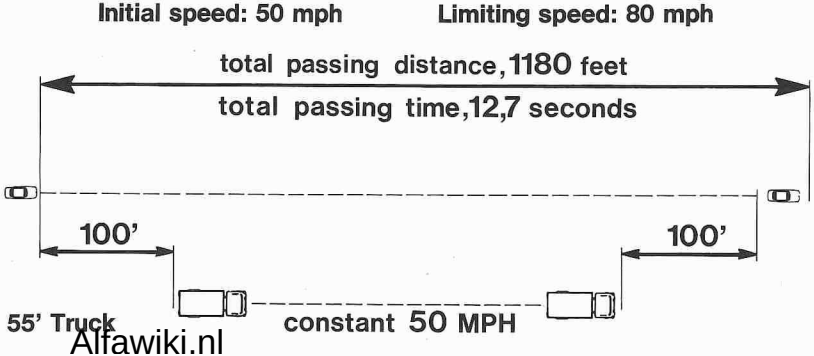
Notice: the information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

Summary table:
Low speed pass **390** feet; **8.3** seconds
High-speed pass **1180** feet; **12.7** seconds

LOW SPEED



HIGH SPEED



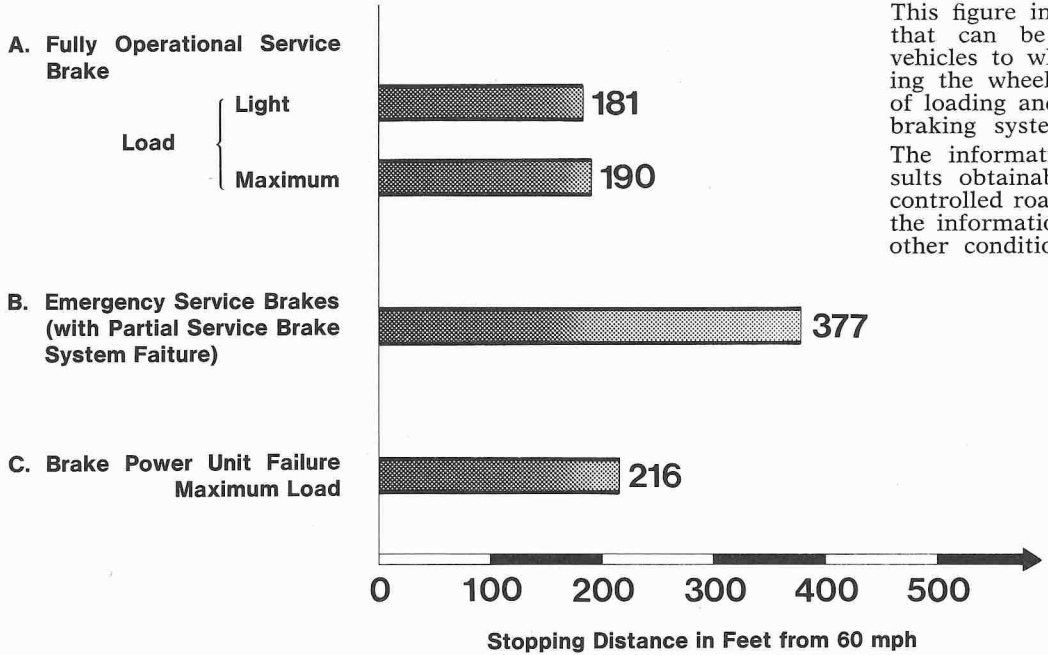
VEHICLE STOPPING DISTANCE

Description of vehicles to which this table applies:

ALFETTA BERLINA

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.



Recommended tire size designations		165 SR 14		
		Continental Good-year Pirelli	Michelin	Kleber
Recommended cold inflation pressure for maximum loaded vehicle weight (psi)	**Front**	23	26	23
	Rear	26	29	30
Tire reserve load percentage (1)		6.8	12.1	13.7

(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.

TIRE RESERVE LOAD

Description of vehicles to which this table applies:

ALFETTA BERLINA

This tables 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.

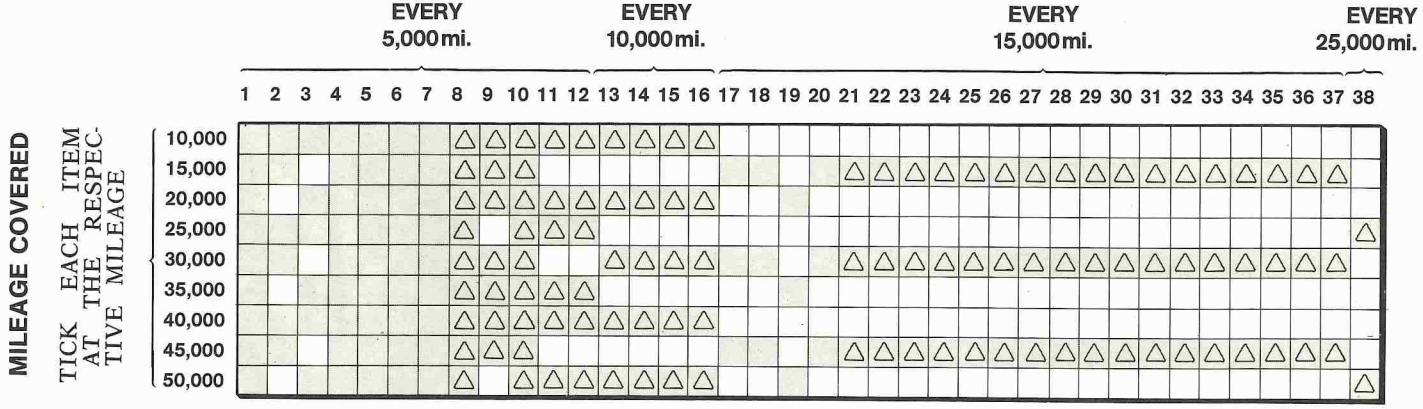
LUBRICATION AND MAINTENANCE

ROUTINE SERVICING

DURING EACH REFUELLING: check engine oil level
AT THE FIRST 1,000 MILES: have the free servicing of 1,000 mile free coupon carried out by an Alfa Romeo Dealer.
AFTER 5,000 MILES: have the free servicing of 5,000 mile free coupon carried out by an Alfa Romeo Dealer.

EMCON MAINTENANCE

ITEMS NOT RELATED TO EMCON MAINTENANCE



EVERY 5,000 MILES

1 Check bellows of C.V. joints and steering rods for soundness
2 Check level of gearbox and differential oil and top up if necessary
3 Check level of brake fluid and top up, if necessary
4 Check level of clutch fluid and top up, if necessary
5 Check tire pressures
6 Check battery electrolyte level and top up with distilled water, if necessary
7 Check brake pads and hydraulic system components; change as necessary
8 Change engine oil and filter (or every six months whichever occurs first)
9 Check engine coolant level and top up, if necessary
10 Adjust timing chain tension
11 Clean air pump filter
12 Clean air cleaner elements

EVERY 10,000 MILES

13 Change tank fuel filter and main fuel filter element
14 Change injection pump oil filter
15 Check hoses, connections, seals, thermostat of engine cooling system and heater; replace if necessary
16 Check brake booster vacuum hose and check-valve; change as necessary

EVERY 15,000 MILES

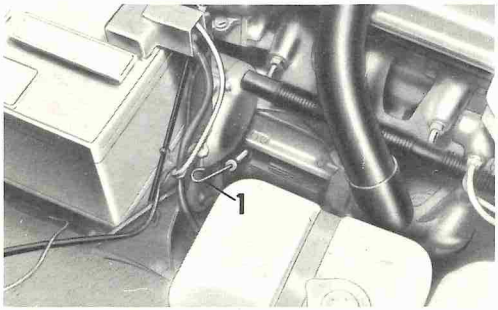
17 Test vehicle
18 Change brake fluid (or every 12 months whichever occurs first)
19 Change gearbox and differential oil
20 Clean, check and lubricate accelerator cable

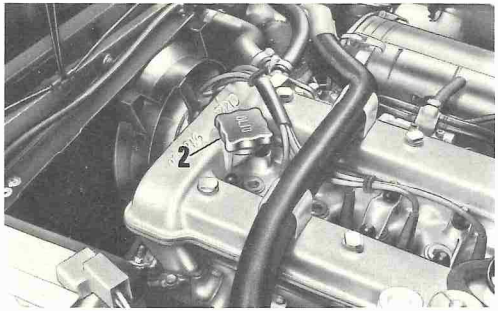
21 Check alternator drive belt tension and adjust as necessary-change belt, if necessary
22 Check engine bolts and cylinder head nuts for tightness
23 Check valve clearance and adjust, if necessary
24 Change spark plugs
25 Clean and check crankcase ventilation system components; change as necessary
26 Clean and check fuel evaporative system components; change as necessary
27 Check fuel tank, filler cap and gasket, lines and connections; change as necessary
28 Clean throttle throats and adjust control linkage
29 Change air pump filter
30 Change air cleaner elements

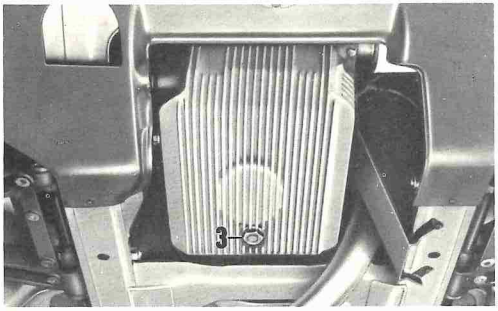
31 Check and adjust air pump and check-valve; change as necessary-clean air injection nozzles, if necessary
32 Check baffle control linkage, vacuum actuator, thermal sensor; adjust or change as necessary
33 Check and adjust dwell angle and ignition advance; lubricate cam
34 Check, adjust or change, if necessary, coil, condenser, rotor arm, cap, spark plug wiring, rubber protections and connectors; change contact -breaker
35 Check, adjust and change, if necessary, cold start device solenoid and thermostatic actuator
36 Check fuel cut-off solenoid and microswitch; change as necessary
37 Check and adjust control linkage stop screws, idle exhaust emissions

EVERY 25,000 MILES

38 Change engine coolant mixture (or every two years whichever occurs first)







IMPORTANT NOTE

The lubricants used for the first filling, shown by the plate in the engine compartment (see page 73) 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.
In countries where the above mentioned lubricants are not available, **and when absolutely necessary,** it is possible to replace them with products of other leading makes provided that in accordance with the grades given in the table: in such a case, however, it is essential to renew all the lubricant in the circuit.

CHECK ENGINE OIL LEVEL

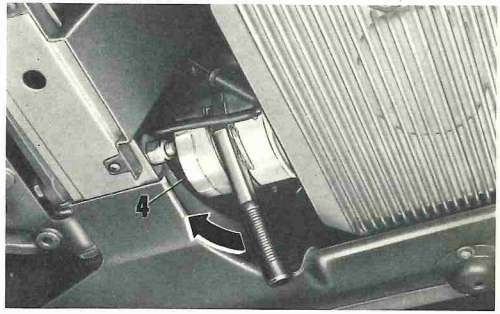
When checking (with car on a level surface and the engine stopped) push the dipstick 1 all the way down. Never allow the oil to fall below the minimum or, while topping up, to exceed the maximum level, The quantity of oil needed for replenishing from « MIN » to « MAX » level is about 2 liters (4 pts).

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 the specified torque.
Replace the oil filter (4, page 33) whenever engine oil is changed.
Replenish with new oil, of quantity and type as specified, thru the filler port 2.

CHANGE ENGINE OIL FILTER

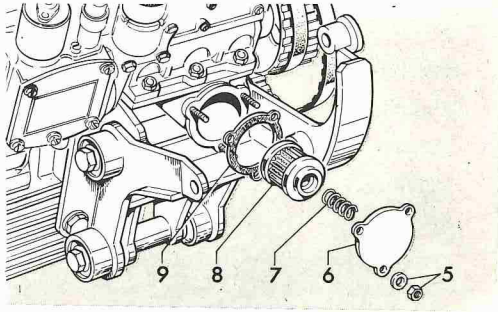
To remove the filter 4 slacken it with the suitable wrench then unscrew the filter by hand.
On refitting, smear the gasket with oil then screw in the oil filter and lock hand tight or to the specified torque with a wrench.
After having replenished the engine pan with oil, start the engine, run it at 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:

- Remove air pump (see page 47);
- 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.

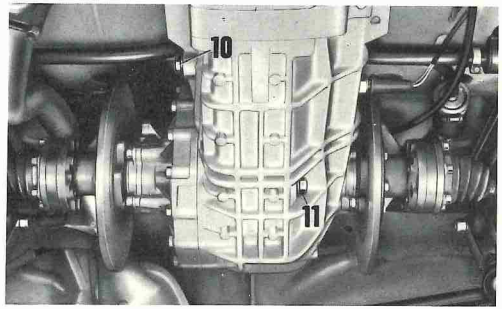


CHECK LEVEL OF GEARBOX-DIFFERENTIAL OIL

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-DIFFERENTIAL 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.

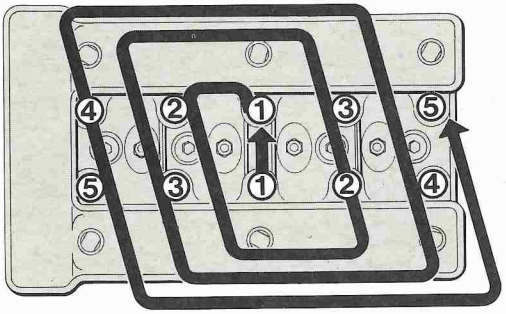


LUBRICATE HINGES OF DOORS, HOOD AND DECK LID

Clean door, hood and deck lid hinges and apply some drops of oil.

TIGHTENING TORQUE SPECIFICATIONS

	N m	kg$_F$m	lb-ft
CYLINDER HEAD NUTS			
After reconditioning tighten, when cold and in proper sequence, with lube between washer and nut to	78-79	7.9-8.1	57.1-58.5
Then warm up the engine by actually driving the car and when hot **retighten without unscrewing to**	82-83	8.4-8.5	60.7-61.4
After tested the car, slacken, **when cold** and in proper sequence, the nuts **by one and one half turn and torque,** with lube between washer and nut to	78-79	7.9-8.1	57.1-58.5
MISCELLANEOUS ITEMS			
Engine oil filter	17-20	1.7-2	12.3-14.5
Oil pan drain plug	69-78	7.0-8	50.6-57.8
Spark plugs (with graphite grease)	25-34	2.5-3.5	18-25.3
Injectors	28-31	2.8-3.2	20.2-23.1
Injection pipe fittings (and check for leaks)	abt. 25	abt.2.5	abt. 18



To avoid stressing the metal, tighten as follows **with a torque wrench set to the prescribed torque.**

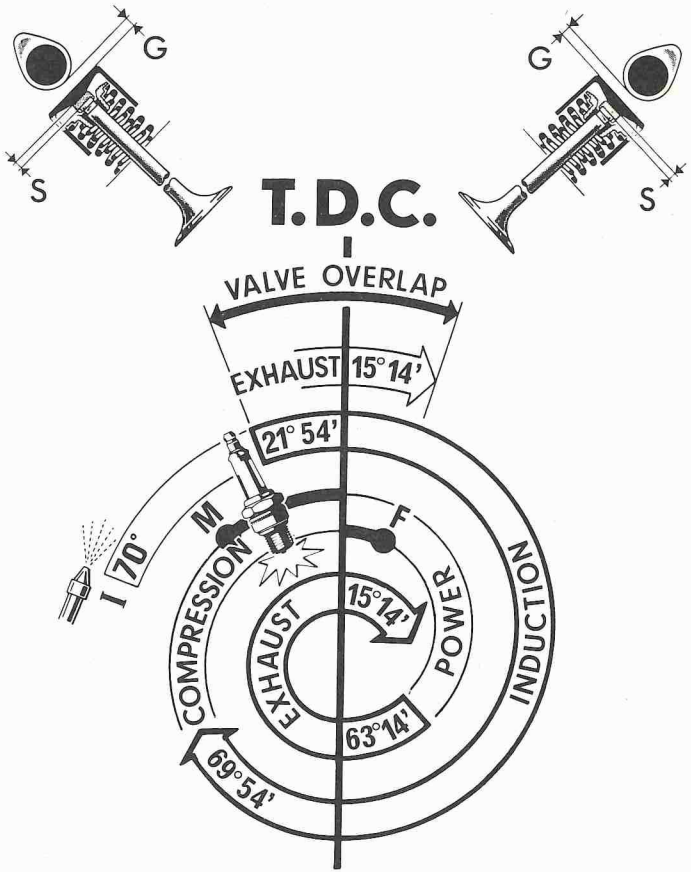
The illustration at left shows the tightening sequence of cylinder head nuts.

CHECK AND ADJUST VALVE CLEARANCE

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

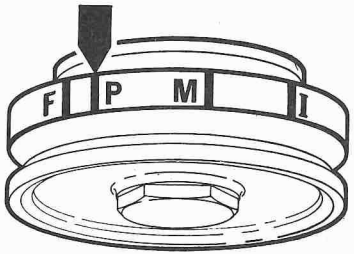
G = Intake: 0,475 — 0,500 mm (.0187 - .0197in.)
Exhaust: 0,525 — 0,550 mm (.0206 - .0216in.)

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 is the correct one shown in the diagram.
To facilitate this adjustment the pads are made available in a series of thicknesses ranging from 1,3 - 3,5 mm. (051 to .138 in.) in increments of 0,025 mm. (.001 in.).

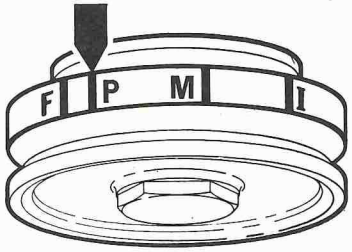


VALVE TIMING DIAGRAM

REFERENCE MARKS ON CRANKSHAFT PULLEY



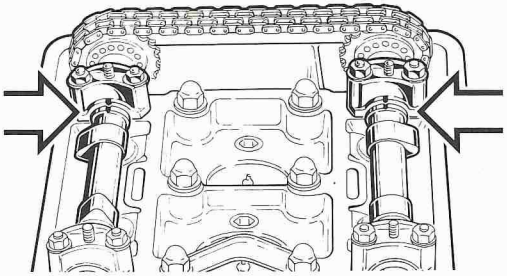
- **M** IGNITION TIMING AT 5000 RPM
- **F** IGNITION TIMING AT IDLE
- **I** TIMING OF INJECTION START
- **P** T.D.C. OF FIRST CYLINDER PISTON



CHECK VALVE TIMING

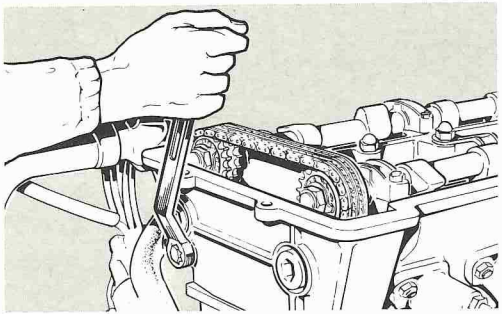
The valve timing is correct when:

- with valve clearance as specified
  — no. 1 piston on compression stroke, the timing mark cut in the crankshaft pulley and marked P, is in line with the reference plate and...



  — ...when the timing marks cut on the camshaft front journals are in line with those on the journals bearings.

- No 1 cylinder cams must be positioned as shown in the illustration, i.e. **POINTING OUTWARD.**

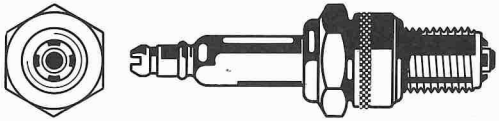


ADJUST CHAIN TENSION

- run engine at idling speed; while performing the following adjustment any revving up of the engine must be absolutely avoided;
- slacken off the setscrew securing the chain tensioner; wait a few minutes to allow the tensioner to tighten the chain, then lock the chain tensioner setscrew firmly.

SPARK PLUGS

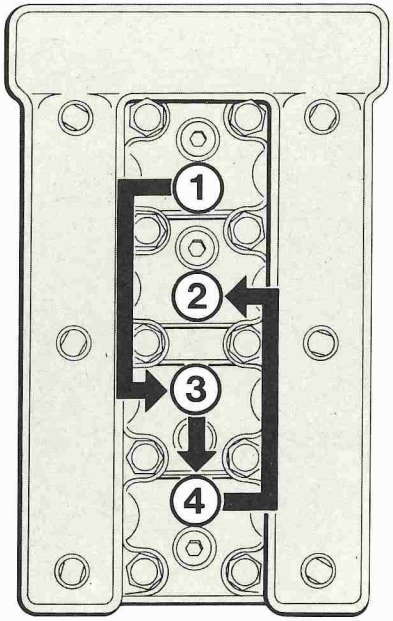
The standard plugs fitted to the engine are **LODGE HL.** A decal, giving the specifications for these plugs, in attached under the hood. Below, the text of the decal is repeated.



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.

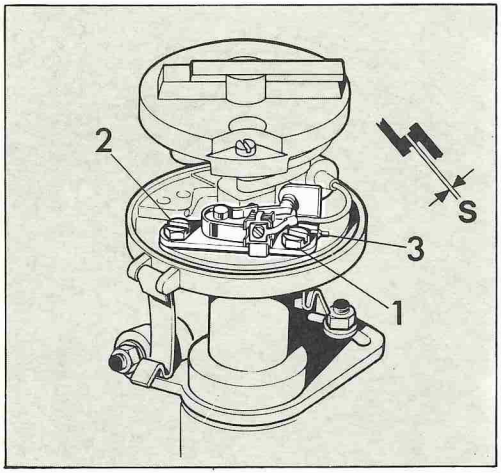
The spark plugs are of the surface gap type with four points and a central electrode. The only maintenance required is occasional cleaning with a brush of the central electrode and points. No routine adjustment is necessary of the gap between the electrode and points. If the ceramic insulator is cracked or the electrodes are excessively worn away, the spark plugs must be replaced.

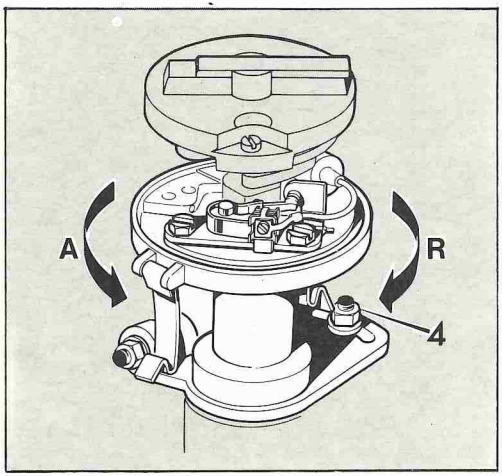
Under no condition can substitute spark plugs be used, unless they are specifically advised and approved by Alfa Romeo. **Use of other plugs can promote serious engine damage, as well as alter emission levels.**



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.





IGNITION ADVANCE AND RETARD

At the prescribed intervals:

Check with a feeler gage the contact-breaker point gap.

Distributor gap (S):	**0.017 – 0.019"**
Dwell:	**60° ± 3°**

To adjust, loosen the screws 1 and 2, insert a screwdriver in the adjustment slot 3 and pry the stationary-point plate back or forth as required.
If contacts are burned or pitted, they may be smoothed with a very fine file and then cleaned with gasoline.
If the contacts show excessive wear, replace them with new ones and have the condenser checked.
Lightly smear the distributor cam with grease.
Check the inside of the distributor cap for any sign of moisture, carbon deposits or cracks. Check also the central power electrode for free movement in its seat, and that spring action is effective. At last, check the rotor arm for proper insulation and terminals on brush and cap for good operating conditions.
Replace the defective parts.
At the prescribed intervals change the contact-breaker and check coil condenser, rotor arm, cap, spark plug wiring, rubber protections and connectors; change as necessary.

IGNITION DISTRIBUTOR

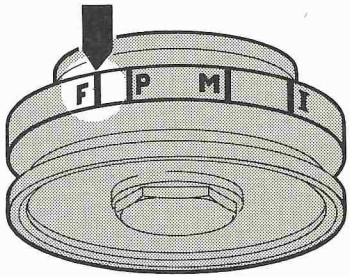
If the timing requires adjustment, proceed as follows:

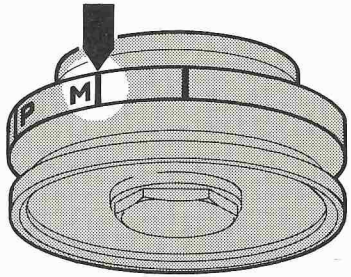
- unscrew the distributor securing nut 4 on the stud so as to allow the distributor to be rotated together with its supporting clamp;
- rotate the distributor body counter-clockwise or clockwise according to whether it is necessary to respectively advance (A) or retard (R) the ignition setting;
- retighten the nut, taking care not to move the distributor body;
- recheck timing.

CHANGE THE DISTRIBUTOR

When reinstalling or replacing the distributor, perform the following procedure:

- rotate the crankshaft to bring no. 1 cylinder piston to the compression stroke that is with both valves closed;
- by slightly rotating the crankshaft bring the advance mark F on pulley into line with the reference pointer;
- fit the supporting clamp into the distributor body and tighten the clamp just snug;
- remove distributor cap and rotate the drive shaft by hand to bring the rotor arm in line with the contact for no. 1 cylinder;
- as a trial installation place the distributor on engine and move the supporting clamp so that the stud is centered in the clamp slot **when the contact-breaker points are about to open for no. 1 cylinder;**
- then, remove the distributor with its supporting clamp, taking care not to disturb the distributor body/clamp setting and lock the clamp in place;
- reinstall the distributor and adjust timing as directed.





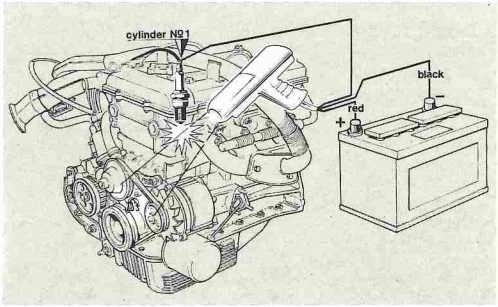
CHECK THE IGNITION TIMING

To check the ignition timing, proceed as follows:

- rotate the crankshaft to bring no. 1 cylinder piston to the compression stroke, that is with both valves closed;
- by slightly rotating the crankshaft, bring the advance mark F cut in the drive pulley into line with the reference plate;
- remove the distributor cap and check that the contact-breaker points begin to open when the engine is turned further in its normal direction of rotation.

A more accurate check should be made with a stroboscopic timing light as follows:
run the engine at about 5000 rpm and direct the light from the timing light onto the pulley: if the timing is correct, the M mark on the pulley will be seen in line with the reference plate.

WARNING
Timing light should not be connected to vehicle's battery system.
A separate power source should be used.
Timing at idle speed must be adjusted with special care as it affects more greatly the emission levels.



ALFA ROMEO-SPICA FUEL INJECTION SYSTEM

Fuel is supplied to the engine by injection into the intake port of each cylinder in quantities exactly metered in accordance with the opening of throttles and RPM range.

The metering device, or « control unit », consists mainly of a barrel shaped cam which slides automatically lengthwise as the RPM varies and rotates about its axis exactly timed with the opening of throttles.

The lift of a follower, moving closely against the cam contour, controls the delivery of the injection pump, without any lag in respect to the demand of power.

On deceleration, the fuel delivery is automatically cut off only to eliminate the unburned gases in a condition remarkably critical for exhaust emission levels, but also to reduce the fuel consumption.

The control unit also includes compensating devices which give automatically proper corrections for atmospheric pressure, engine and ambient temperature, cold starting and initial running ensuring the optimum under all operating conditions.

WARNING

Never tamper with the control unit, it is prohibited by law.

AIR INTAKE TEMPERATURE CONTROL SYSTEM

The system is designed to maintain the temperature of intake air entering the engine at approximately 40 °C (104 °F).

The sensor element (7, page 42) is a bimetallic bleed unit, modulating the vacum from the engine, and controlling the position of the damper 1 in the intake snorkel tube. The position of the damper controls the amount of hot air entering the inlet manifold, maintaining the correct air temperature under all engine temperature and driving conditions.

AIR INDUCTION SYSTEM

The filtered air enters the engine thru four intake ports each with a throttle 26.

The idling air (throttle valves closed) is fed thru a separate circuit which, starting from the air cleaner connects to the intake ports downstream of the throttle valves and includes the idle air equalizer 8.

The accelerator pedal is mechanically linked thru the rods and the relay crank to the throttle valve lever and the control unit lever. Therefore, any position of the accelerator pedal corresponds to an exact position of throttle valve and control unit levers.

FUEL FEED SYSTEM

Inserting the key in the ignition switch and rotating clockwise to the first click will operate the electric pump 20. The gasoline flows from the tank thru tank filter 19 and filter 6 and feeds the injection pump 12.

The excess fuel, acting also as a coolant for the injection pump, before returning to the tank, passes thru a calibrated orifice which regulates the fuel pressure within the injection pump. A pressure switch 5 inserted in the delivery pipe will switch on the warning light on dashboard if a pressure drop occurs in fuel lines.

A pressure relief valve limits the fuel pump outlet pressure bypassing fuel to the recovery pipe.

CRANKCASE VENTILATION SYSTEM

The exhaust gases and the oil vapors developed during engine operation collect in the camshaft cover; from here they are sucked in the combustion chambers and burned as well as the fuel tank vapors.

The crankcase ventilation system controls gases both at high engine RPMs and at idling speed when the throttles are closed.

When the throttles are fully opened the vapors flow thrue the hoses to the oil separator 3 and to the manifold chamber communicating with the intake ports.

When the throttles are partially closed, the secondary circuit comes into operations; such a circuit starts from the oil separator 3 and conveys unburned gases and vapors directly into the intake ports downstream of the throttles by means of the idle air system provided with calibrated orifices. The oil collected in the separator returns to the pan via a suitable hose.

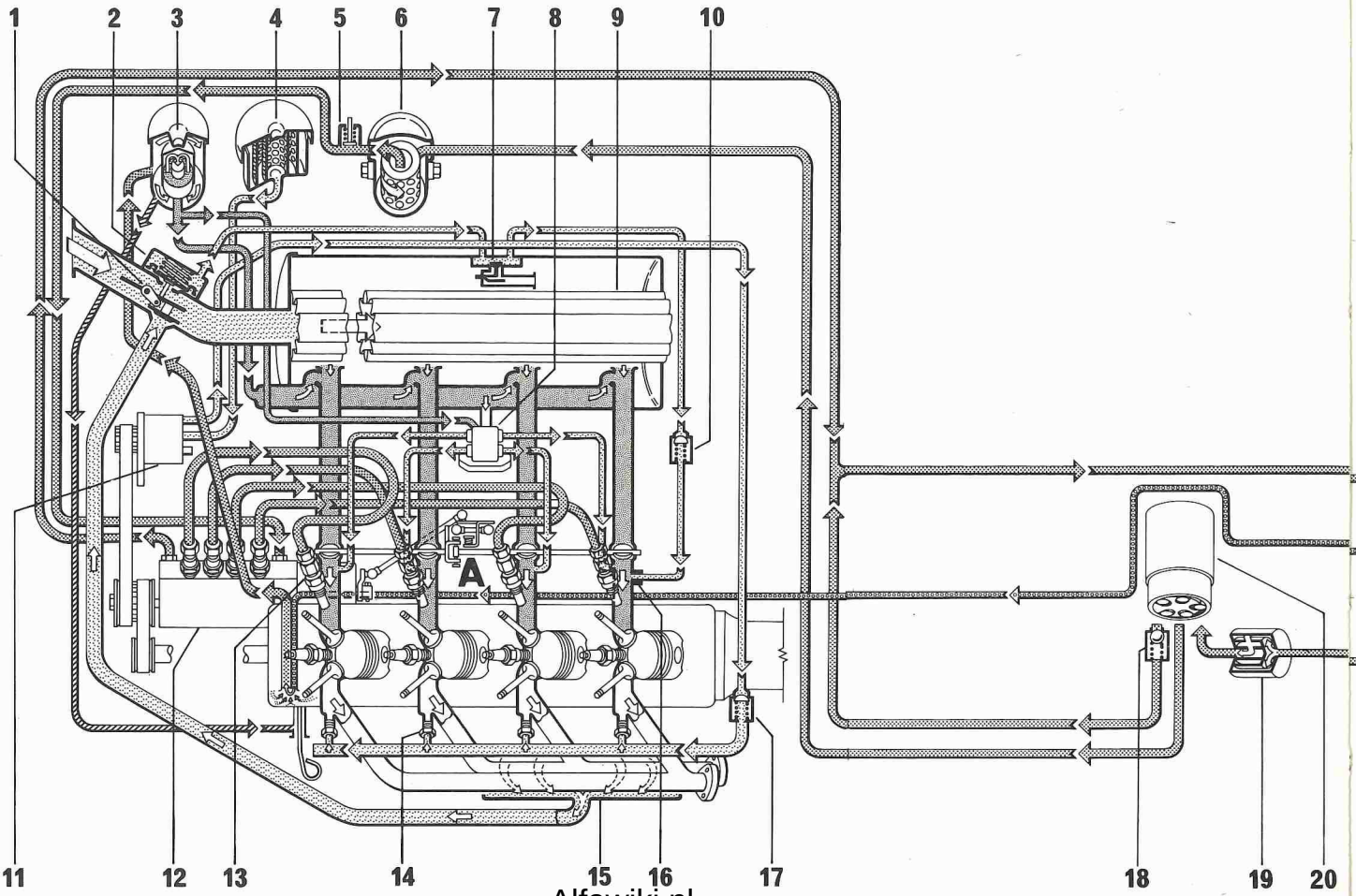
At the prescribed periods have the hoses of crankcase ventilation system checked for sound conditions and leaks and the connections for tightness; clean and change as necessary.

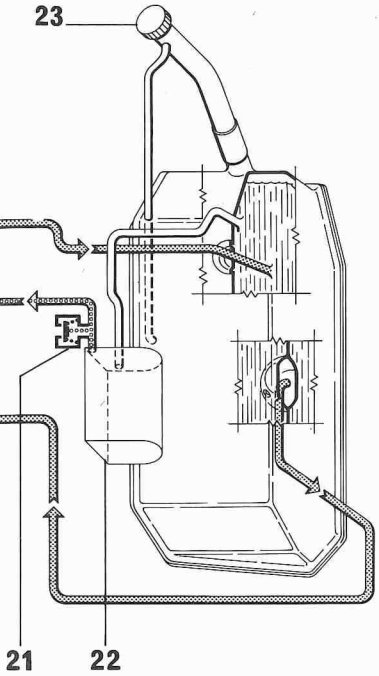
AIR INJECTION SYSTEM

The system has been designed to inject air into the exhaust manifold so as to obtain a combustion of the exhaust gas. The air is supplied by a vane type pump 11 through a check valve 17 to an air manifold that distributes the air to four injection nozzles located near the exhaust ports. The check valve is provided in the system to stop gas flowing back into the air pump when air pressure drops for any reason, such as drive belt failure.

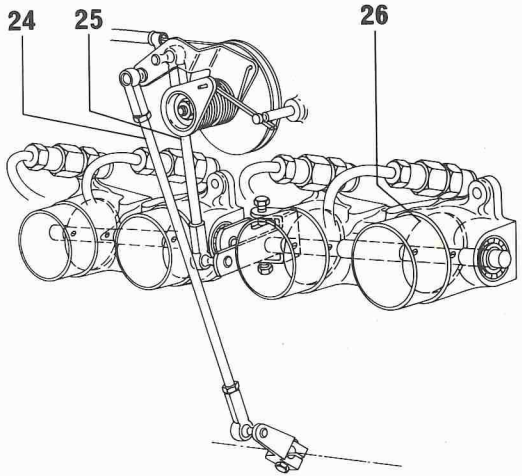
WARNING

Any adjustment or servicing of the injection system must be entrusted only to an Alfa Romeo Dealer.



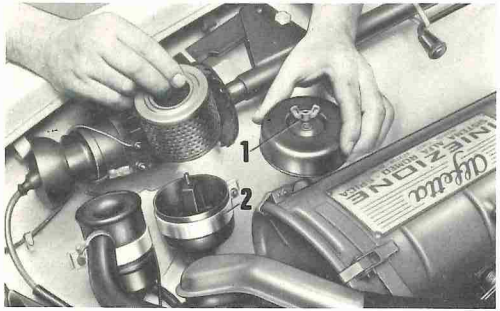


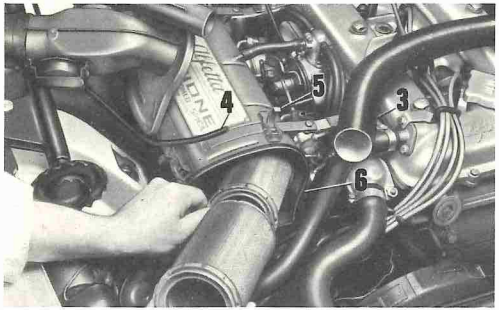
DETAIL VIEW **A**

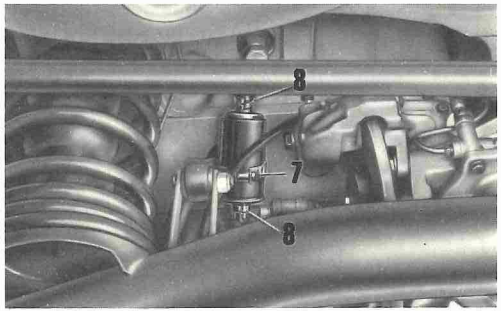


FUEL INJECTION SYSTEM OPERATING DIAGRAM

1 Damper
2 Vacuum actuator
3 Oil separator
4 Air pump filter
5 Pressure switch
6 Main fuel filter with moisture separator
7 Sensor
8 Idle air system
9 Air cleaner
10 Check valve
11 Air pump
12 Injection pump
13 Injectors
14 Air injection nozzle
15 Hot air snorkel tube
16 Control damper vacuum connection
17 Check valve
18 Pressure relief valve
19 Tank filter
20 Electric pump
21 Vacuum relief valve
22 Liquid vapor separator
23 Sealed filler cap
24 Relay crank-to-control unit rod
25 Relay crank-to-throttle rod
26 Throttle throats







CLEAN/CHANGE AIR PUMP FILTER ELEMENT

Unscrew the wingnut 1 securing cover to filter housing. Remove the element and clean the inside of filter housing. Clean the filter element and fit it again into its housing. Cleaning should be performed every 5000 miles. Every 15000 miles replace the element with a new one. To prevent dust particles from entering the hose while cleaning the inside of filter housing it is advisable to loosen the fastening clamp 2 and remove the filter assembly.

CLEAN/CHANGE AIR CLEANER ELEMENTS

The air cleaner is equipped with two pleated elements offering the maximum filtering surface.

To remove the elements proceed as follows:

- Disconnect: the hot air inlet duct 3 and the hose 4 (front section) from the sensor.
- Loosen the two fasteners 5 at the top and the one at the bottom securing the front cover of cleaner;
- Remove the front cover assembly and the two elements.

Clean the elements blowing them through from the inside with low pressure compressed air or replace the elements with new ones.

On refitment, check the outer element for proper centering and the seal 6 stuck to the cleaner body for proper positioning; secure the cover with its three fasteners and reconnect the pipes.

Air filtering elements should be replaced at shorter intervals if vehicle is used in dusty areas.

REPLACE THE TANK FUEL FILTER

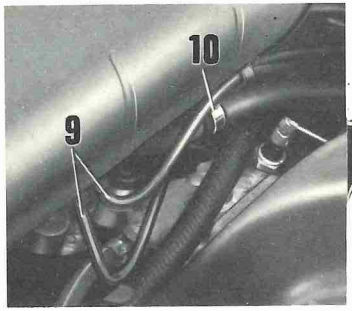
At the prescribed periods, replace as follows the tank filter located at the rear underbody of the car;

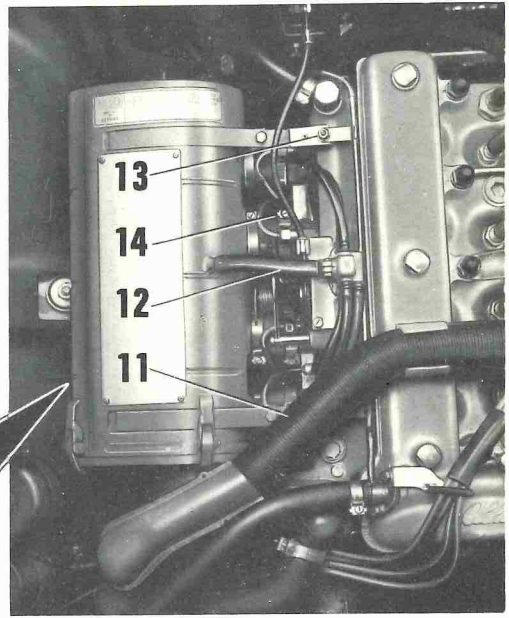
- slacken the nut 7 on the clamp securing the filter to the underbody;
- loosen the clamps 8 securing the hoses to the filter inlet and outlet adapters; it is advisable to blank out temporarily the pipe from fuel tank;
- remove the filter and replace it with a new one by proceeding in reverse order of removal; take care to fit the hoses properly.

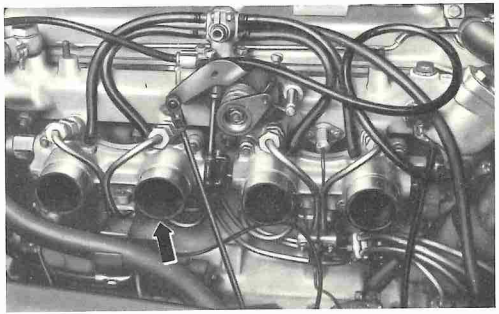
REMOVE THE AIR CLEANER

To remove the air cleaner proceed as follows:

- disconnect the control damper sensor hoses 9;
- loosen clamp and disconnect duct 10 from oil separator;
- disconnect hot air snorkel tube 11;
- disconnect idle air system hose 12;
- detach two upper anchoring straps 13 at manifold side;
- loosen at the engine side the four clamps 14 on the intake hoses.

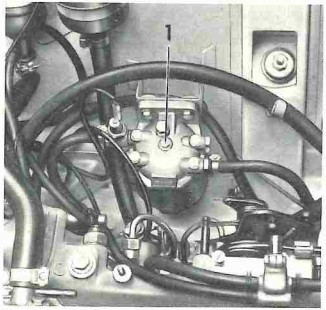


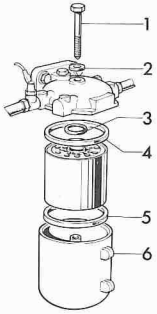


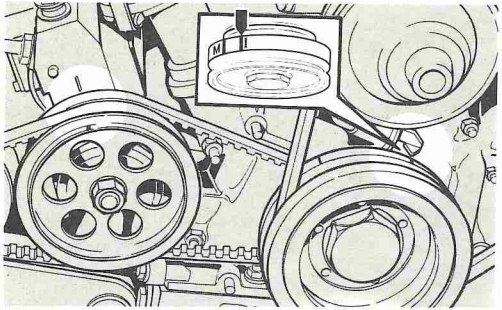


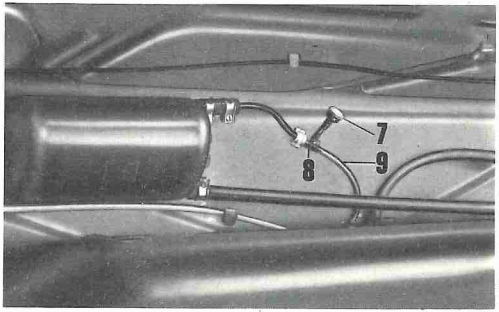
CLEAN THE THROTTLE THROATS

Clean the throttle throats at the areas of contact of throttle edges with throat bore by holding the throttles in full open position and using a brush soaked in gasoline; the cleaning can be completed by rubbing repeatedly the affected areas with a lint-free cloth. Then, clean in a similar way the throttle edges taking care not to strain the spindles.









CHANGE THE MAIN FUEL FILTER ELEMENT

At the prescribed periods replace the main fuel filter element.
To provide room for this operation, the air cleaner must be removed as outlined on page 45.

- **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).

TIMING THE INJECTION PUMP

To check the injection pump timing, proceed as follows:

- turn the crankshaft over (by shifting into fourth and pushing the car either forward or backward) so as to **bring the reference mark I in line with the pointer;** remove the spark plug from cylinder no. 1 and **check that the exhaust valve is still open** (if closed, turn the crankshaft over by one more revolution).
- **check that the reference mark on the splined pulley and the pointer on the pump body are aligned.**

Note: reference mark and pointer can be out of alignment within a tolerance of about ± 5 mm. (0.2") corresponding to half pitch of the pulley splines.
If the pump is out of timing time it according to the same procedure as for drive belt replacement.

VACUUM RELIEF VALVE

If, with freezing weather, performance and driveability are impaired or the low fuel pressure warning light comes on, the cause may be

vacuum taking place in the fuel tank owing to a stuck closed relief valve 7 and an obstruction of the pipe 9.
To remedy this trouble, remove the relief valve from the T-adapter 8 and blow the valve through to clear it from foreign matter (if the valve is instead defective, replace it with a new one). The vent pipe 9 must also be disconnected from the T-adapter and blown through to clear it from any obstruction which may have formed. Refit all parts.
At the prescribed intervals perform the following:

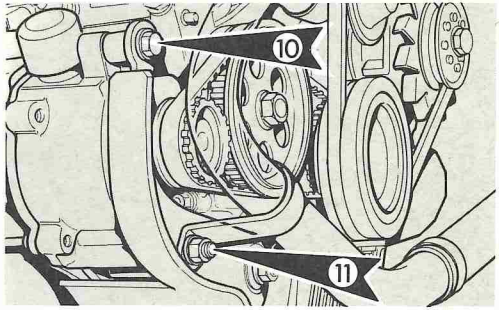
- Clean and inspect the lines, connections and vacuum relief valve of fuel evaporative system; replace as necessary;
- Inspect fuel tank, filler cap and gasket pipes and connections for sound conditions; **change filler cap gasket, if necessary.**

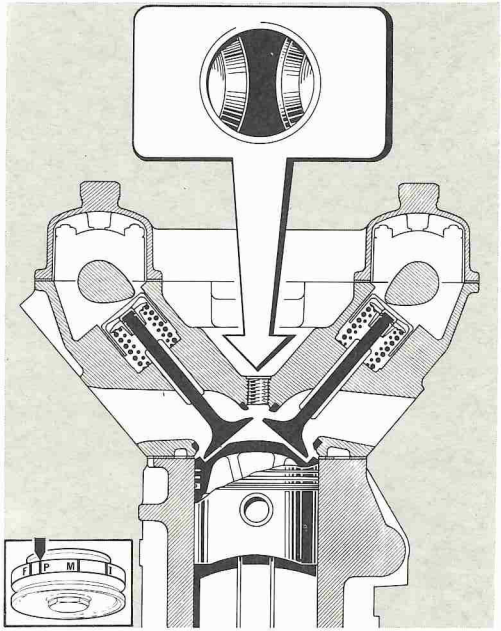
REPLACE THE INJECTION PUMP AND AIR PUMP DRIVE BELT

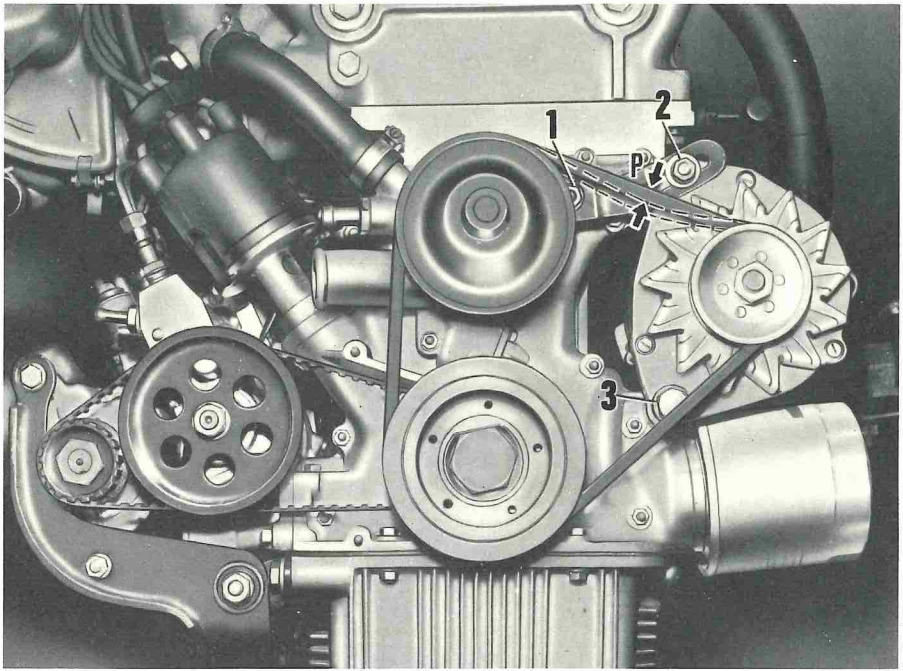
Should the injection pump or air pump drive belt need replacement:

- remove the air cleaner, the electric fan and the air pump (after having detached the fuel filter from car's body); the air pump is secured to its bracket with screw 10 and nut 11; mount the new belt onto the injection pump pulley, refit the air pump and mount the belt also onto the air pump pulley prior to tighten the attaching bolts.
- Loosen the alternator attaching bolts and remove the drive belt (refer to page 48).
- Replace the injection pump drive belt with a new one; to install the new drive belt, first mount it onto the crankshaft splined pulley.
- Turn the crankshaft over (by shifting into fourth and pushing the car either forward or backward) so as to bring the n. 1 piston to the T.D.C.; remove the spark plug from cylinder no. 1 to check that both valves, intake and exhaust, are in the open position (overlap stage).
  (If the valves are closed, turn the crankshaft over by one more revolution).
- In this conditon, the mark P on the crankshaft pulley shall line up with the pointer.
- Push the car slowly backward so as to rotate the crankshaft counterclockwise by 70 degrees, **i.e. in such a way that mark I on crankshaft pulley and pointer line up** (see page 46).
- Shift to neutral since at this stage the crankshaft must not be turned over;
- align the reference mark on the pulley with the pointer on pump body (see page 46) and mount the toothed belt onto the pump pulley;

N.B. Reference mark and pointer can be out of alignment within a tolerance of about 5 mm. (± 0.2") corresponding to half pitch of the splines.







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 P = 10 - 15 mm. (0.4 - 0.6").
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 and check again tension.

IDLE ADJUSTMENT

Usually, idle speed is adjusted only when regular maintenance operations as set out on the coupons of Routine Maintenance Book are performed. However, if a pressing need for idle adjustment should arise, warm up the engine, inspect the ignition system for proper operation, the proceed as follows:

- **Idle too slow but even**
  (engine runs smoothly)
  This is due to too rich a mixture fed to the engine.
  To correct this trouble, remove the hose 4 connecting the idle equalizer to the air cleaner, loosen the bolt 5 and **gradually unscrew** the adjuster 6 with a coin until the engine is idling at as fast a speed as possible yet with no roughness. Back up the adjuster by one third of the amount it was previously unscrewed, then retighten the bolt 5 and refit the hose 4.

- **Idle too slow and rough**
  (engine runs unevenly)
  One of the hoses 7 connecting idle equalizer to throttle throats is obstructed (by buckling) cracked or disconnected from a fitting. Reconnect or replace the hose, if necessary.

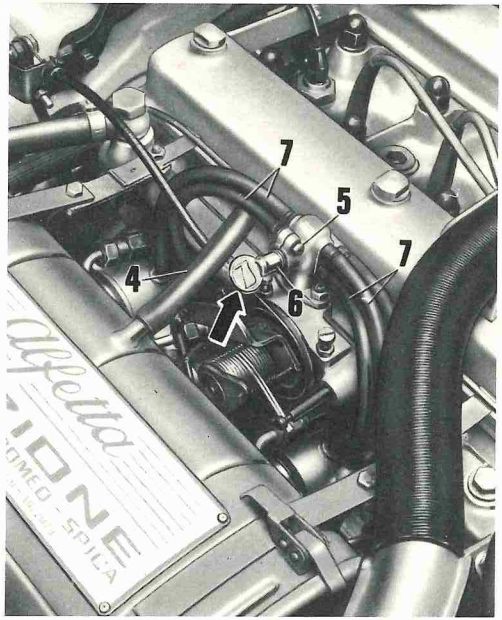
- **Idle too fast and rough**
  (engine runs unevenly; hunting also takes place)
  This is caused by too lean a mixture fed to the engine due to air leaking through one of the hoses 7 connecting idle equalizer to throttle throats. Check the four hoses 7 for sound conditions and leaks.

If this does not correct the trouble, remove the hose connecting idle equalizer to air cleaner, loosen the bolt 5 and **gradually screw** in the adjuster 6 **with a coin** until the engine is idling smoothly and sufficiently high. Then, back up the adjuster by one third of the amount it was previously screwed in; retighten the bolt 5 and refit the hose 4. **Performing the above adjustments will also keep exhaust emission at the normal levels.**
Should difficulties arise in adjusting the idle, entrust the adjustment to an Alfa Romeo Dealer.

RECOMMENDED IDLE SETTING

Idle speed must not be lower than: **600 rpm** with transmission in neutral
IDLE EXHAUST EMISSIONS:
carbon monoxide: 0.4-1.2%
unburned hydrocarbons: below . 300 ppm

Important note: the reading of values of carbon monoxide and unburned hydrocarbons must be taken exclusively with **NDIR** instrumentation.



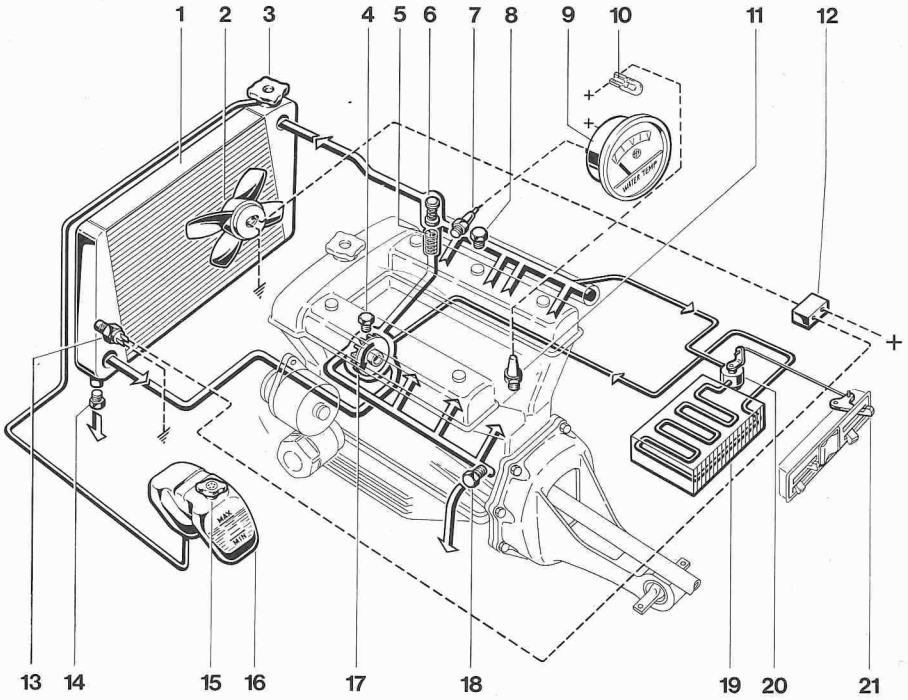
ENGINE TROUBLE DIAGNOSTIC CHART

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Low fuel pressure warning light does not flash on when ignition key is turned.	Fuse no. 7 blown. Warning light bulb burnt out. Pressure switch faulty (jammed open).	Replace fuse. Replace bulb. Have switch checked and replaced if necessary. *DEALER OPERATION*
Low fuel pressure warning light stays on (fuel pump operates: a light buzzing can be heard).	Fuel tank empty. Pressure switch faulty (jammed closed). Fuel pump outlet pressure too low (warning light comes on while running at high speed): – tank to pump lines clogged or air seeping thru them – tank fuel filter clogged – main fuel filter clogged – main filter pressure relief valve defective or stuck open. Fuel pump delivery too low. Relief valve of liquid/vapor separator stuck closed (in winter).	Refuel it. Have switch checked and replaced if necessary. *DEALER OPERATION* have fuel lines inspected. *DEALER OPERATION* replace filter clean filter and replace element have relief valve checked and replaced, if necessary. *DEALER OPERATION* Have fuel pump checked or replaced. *DEALER OPERATION* Remove valve and check it for proper operation; replace, if necessary. (See page 46).
Low fuel pressure warning light stays on (fuel pump fails to operate).	Fuse no. 8 blown. Electric wires to pump disconnected. Fuel pump faulty.	Replace fuse. Check and reconnect. Have the pump checked or replaced. *DEALER OPERATION*
Engine will not start from cold.	Solenoid-actuated cold start device fails to operate.	Check electric connections. Have the device checked or replaced. *DEALER OPERATION*

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Smoky exhaust after starting.	Cold start solenoid plunger stuck.	Have the plunger checked. *DEALER OPERATION*
Engine misfires; rough idle.	One injector defective.	Have the injector replaced, if necessary. *DEALER OPERATION*
	Injection pipe fittings leaking.	Have fittings tightened *DEALER OPERATION*
	Injection pipes cracked.	Have the pipes checked and replaced, if necessary. *DEALER OPERATION*
Idle too slow but even.	Idle air equalizer out of adjustment (adjuster too much screwed in).	Unscrew the adjuster (with a coin) until a faster but again even idle is obtained. (See page 49).
Idle too slow and rough (engine runs unevenly).	Idle air hose(s) disconnected from equalizer or throttle throat fittings or even obstructed or damaged.	Connect, clear or replace hose(s) respectively. (See page 49).
Idle too fast and rough (engine runs unevenly; hunting also takes place).	Idle air equalizer out of adjustment (adjuster too much screwed out).	Screw in the adjuster (with a coin) until an even idle is obtained. (See page 49).
	Air seeping into an idle air hose.	Check idle air hose for sound condition and replace if necessary. (See page 49).
Idle too fast; engine does not slow down	Accelerator linkage fails to return fully.	Have the accelerator linkage checked. *DEALER OPERATION*
Idle CO and HC too high.	Idle speed incorrect; ignition system faulty.	Have them inspected. *DEALER OPERATION*
Too fast an idle and smoky exhaust.	Faulty thermostatic actuator.	Have them inspected. *DEALER OPERATION*
Engine keeps running at idle but stops on accelerating.	Altitude compensator faulty.	Have the altitude compensator replaced. *DEALER OPERATION*
	Excessive vibrations of injection pump and control unit.	Have the injection pump and control unit brackets checked. *DEALER OPERATION*

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Unsatisfactory driveability, hesitations; unsatisfactory road performance.	Control linkage out of adjustment.	Have the throttle/control unit linkage checked. *DEALER OPERATION*
	Fuel pump outlet pressure too low (warning light comes on while running at high speed).	Check and replace, if necessary, tank fuel filter and/or main filter element.
	Injector defective.	Refer to corrections as under «Engine misfires; rough idle». *DEALER OPERATION*
	Injection pump or control unit defective.	Have them checked and replaced, if necessary. *DEALER OPERATION*
	Air induction clogged.	Check and replace air cleaner elements, if necessary.
	Relief valve of liquid/vapor separator stuck closed (in winter).	Remove valve and check it for proper operation; replace, if necessary, (See page 46).
Excessive fuel consumption.	Fuel feed circuit leaks.	Check pipes, fittings, seals and replace defective parts.
	Thermostatic actuator defective; also refer to causes as under «Too fast an idle».	Have the thermostatic actuator checked and replaced, if necessary. *DEALER OPERATION*
	Defective carburation.	Have the injection pump adjusted. *DEALER OPERATION*
Engine stalls flat.	Injection pump driving belt broken.	Have belt replaced. *DEALER OPERATION*
Detonations in the exhaust pipe on deceleration.	Fuse no. 8 blown.	Replace fuse.
	Feed wire disconnected at fuel cut off solenoid.	Re-connect wire.
	Loose junction of fuel cut off device feed wire disconnected.	Re-connect junction.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Detonations in the exhaust pipe on deceleration.	Defective fuel cut off solenoid. Defective fuel cut off device microswitch.	Have the fuel cut off solenoid checked and replaced, if necessary. *DEALER OPERATION* Have the fuel cut off device checked. *DEALER OPERATION*
Engine stops: – wholly or occasionally on deceleration in neutral – occasionally or wholly when reaccelerating after a deceleration. Engine fires again suddenly and with delay when reaccelerating after a deceleration.	Fuel cut off solenoid stuck in cut off position or sluggish in backing up.	Have the fuel cut off solenoid checked and replaced, if necessary. *DEALER OPERATION*
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. *DEALER OPERATION* Have the filter and hoses checked. *DEALER OPERATION*



COOLING SYSTEM

1 Radiator
2 Electric fan
3 Radiator cap, 10 p.s.i.
4 Air bleed screw on pump
5 By-pass control valve
6 Thermostat
7 Coolant thermometer sender
8 Air bleed screw on manifold
9 Coolant thermometer
10 Coolant temperature warning light
11 Thermal switch for coolant temperature warning light
12 Electric fan relay
13 Electric fan thermal switch
14 Radiator drain plug
15 Reservoir filler cap
16 Reservoir
17 Pump
18 Drain plug on crankcase
19 Heater core
20 Heater valve
21 Temperature control lever

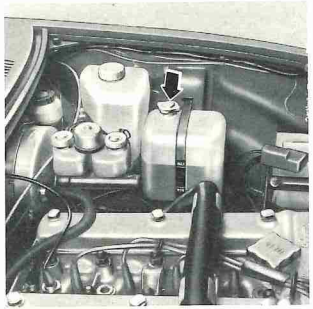
IMPORTANT NOTE

The cooling circuit is of the sealed type with a header reservoir. The coolant, kept in circulation by a pump, cools down the engine then flows to the thermostat. Hence, according to the temperature, the coolant is sucked by the pump either from the thermostat or the outlet line of the radiator.

The mixture in the cooling circuit gives full protection against freezing down to **— 20 °C** (4 °F). In places where the temperature falls below — 4 °F, the mixture can be strengthened as directed. **It is recommended that this operation be entrusted to an Alfa Romeo Dealer.**

CHECK LEVEL OF COOLANT MIXTURE

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



Every 5,000 miles, check level of antifreeze 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 Alfa Romeo Antifreeze suitable for aluminum alloy engines drawn from original containers available from Alfa Romeo Dealers. 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 Antifreeze.
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 Alfa Romeo Antifreeze.
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.

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.

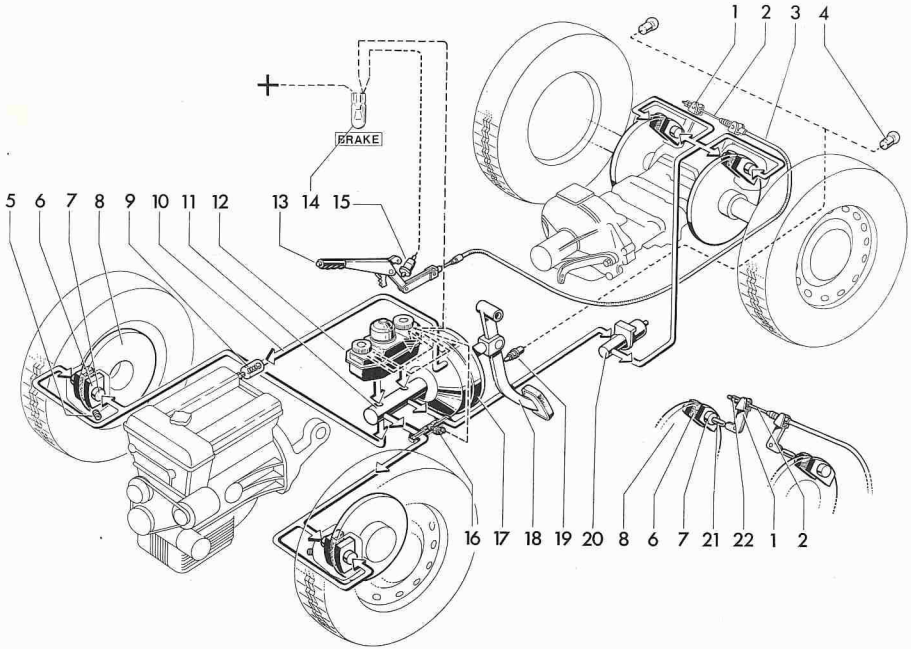
DRAINING AND REPLENISHING THE SYSTEM (WITH COLD ENGINE)

Never remove radiator cap with a hot engine

- Remove filler cap 3 from radiator; turn on the heater valve 20 by shifting the lever 24 to red mark.
  — Remove filler plug 15 from reservoir 16, and detach reservoir - to - radiator adapter; let liquid drain off.
- Unscrew the bleed screw 8; then remove the radiator drain plug 14, the drain plug 18 from crankcase and let liquid drain off.
  Reinstall drain plugs 14 and 18.
- Reconnect the pipe from reservoir 16 to the radiator.
- Open the air bleed screw 4 on pump.
- Pour coolant mixture through filler port until coolant escapes from bleed screw 8 then close this screw and again add coolant until circuit is replenished.
- Add mixture also to reservoir until « MAX » level is reached.
- Put caps on reservoir and radiator filler ports.
- Start the engine and warm it up until the electric fan cuts in; keep engine running for a few seconds in order to bleed air completely.
- Allow the engine to cool down, check again coolant level and replenish, if necessary.

Every 25,000 miles (or every two years whichever occurs first) have the coolant mixture renewed by an Alfa Romeo Dealer after the circuit has been flushed with a suitable descaling compound.
It is recommended that this operation be entrusted to an Alfa Romeo Dealer.

DUAL BRAKE SYSTEM



1 Parking brake pad operating lever
2 Parking brake cable
3 Parking brake cable sheath
4 Stop light bulb
5 Air bleed screw
6 Friction pads
7 Pistons
8 Rotors
9 Check valve on vacuum port
10 Vacuum connection for booster
11 Tandem master cylinder
12 Fluid reservoir with warning light switches
13 Parking brake lever
14 Parking brake low brake pressure and fluid level warning light
15 Switch for parking brake warning light
16 Pressure switch unit for brake pressure warning light
17 Vacuum booster
18 Pedal
19 Stop light switch
20 Pressure regulator
21 Parking brake pad push rods
22 Adjuster

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 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.
In case of accident or damage to the chassis check that the vacuum boosters are undamaged, since even slight superficial body damage may seriously impair the functioning of the brakes.
For effective and reliable operation of the brake system, the pipes must always, be 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.
The stop light switch is directly operated by the brake pedal.
Parking brake.
The parking brake is mechanically operated. It is correctly adjusted when the wheels become locked as the lever is drawn through four/six notches.

CHECK BRAKE FLUID LEVEL

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 level of fluid in the reservoirs is too low.
This warning light serves also as a warning for a drop in service brake pressure and for the parking brake when applied.
Therefore, should be warning light come on, first make certain the parking brake is fully released; if the warning light still remains on, stop the car and check the fluid level in the service brake reservoirs; if the level is too low, 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.
  When adding fluid, leave the strainer in place so as to filter the fluid.

Disc brake and clutch fluids	
Alfa Romeo std. no. 3681.69903	**« Blau S »**

- Take care to prevent the minimum level of fluid in the reservoir from falling below the maximum level by more than 1/4 inch.

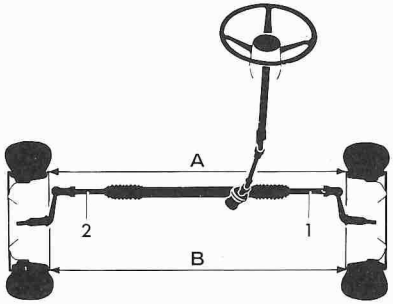
BRAKE BOOSTER

At the prescribed periods have the brake booster vacuum hose, check-valve and connections checked for sound conditions and leaks.

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.

RATIOS		
Gear	**Transmission**	**Overall**
1st	3.30 : 1	13.53 : 1
2nd	2.00 : 1	8.20 : 1
3rd	1.37 : 1	5.62 : 1
4th	1.04 : 1	4.26 : 1
5th	0.83 : 1	3.40 : 1
Rev.	2.62 : 1	10.74 : 1



DRIVE TRAIN

CLUTCH

The clutch is of the self-adjusting, hydraulically-operated single-plate dry type.
This type of clutch has the throwout bearing constantly in contact with the diaphragm spring. No regular adjustment of the play is required.
The hydraulic fluid is the same as in the brake system.

CLUTCH FLUID RESERVOIR

At the prescribed intervals check level of fluid in clutch reservoir. It should be between MIN. and MAX. marks.

DRIVE SHAFT

The drive shaft is in two sections connected by flexible couplings and has an intermediate support attached to the body.
No regular lubrication is required.

GEARBOX/DIFFERENTIAL UNIT

This unit is mounted on the rear suspension and is connected to the body by suitable vibration proof mountings.
The gearbox has 5 synchromesh forward gears and one reverse.
The gear lever is floor mounted and connected to the gearbox by rods and levers.
The differential is in unit with the gearbox. The final drive, of the hypoid type, has a 41:10 ratio. The wheels are driven via floating-type driveshafts with constant velocity joints at both ends.

STEERING GEAR

The steering gear is of the rack and pinion type.
The steering box and the ball joints of steering rods require no regular lubrication.

WHEEL TOE-OUT

With car under static load: A = B — 2 mm. (0.078").
To adjust toe-out act on rods 1 and 2 so that either of the wheels has a 1 mm toe-out.
If the steering wheel spokes are not symmetrically disposed for straight ahead direction, withdraw the steering wheel from the shaft and mount it again on the shaft with the spokes in symmetrical position.

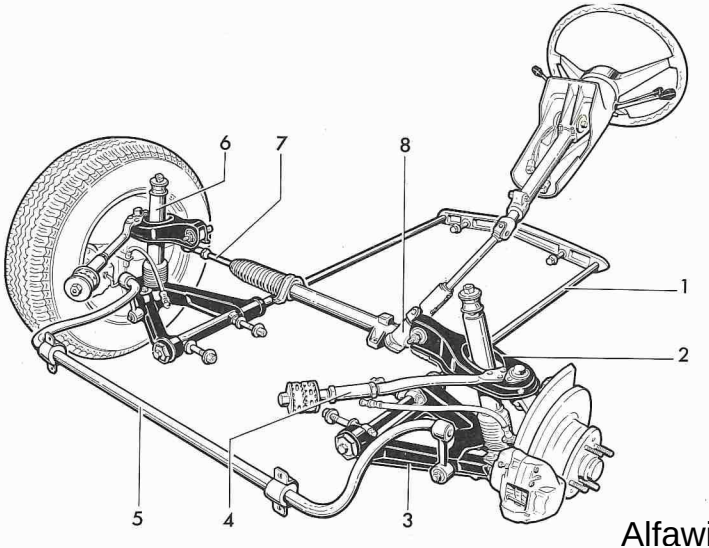
SUSPENSIONS

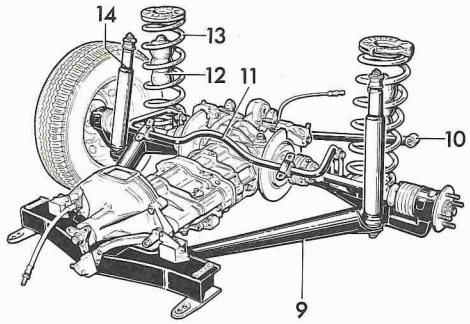
FRONT

The front wheels are independently suspended and connected to the body by tranverse arms.
Springing is by two torsion bars attached longitudinally to the lower wishbone shaft at the front and to a supporting cross member at the rear.
The suspension system is completed by a transverse stabilizer rod.
Suspension components require no regular lubrication.

REAR

The rear suspension consists of a De-Dion tube anchored to the body with links and a joint at the front and of Watt links for tranverse location.
Coil springs, rubber stops, telescopic hydraulic shock absorbers and stabilizer rod complete the suspension.
The suspension units do not require any regular lubrication. Whenever the damping action of the shock absorbers is uneven, have them checked by an authorized Service Station.





1 Torsion bar
2 Upper arm
3 Lower wishbone
4 Slanting arm
5 Stabilizer rod
6 Shock absorber
7 Steering rod
8 Steering gear
9 De-Dion tube link
10 Watt link
11 Stabilizer rod
12 Bump stop
13 Spring
14 Shock absorber

TIRES

TIRE MAINTENANCE

Note
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.

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.

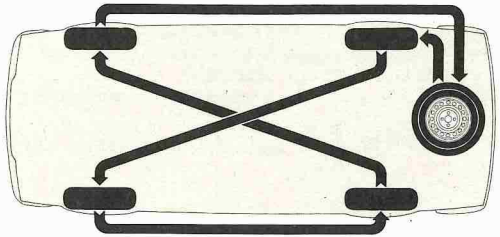
Too high. Riding comfort will be reduced, and the tire will suffer from excessive wear in the center of the tread and vulnerability to knocks.

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.

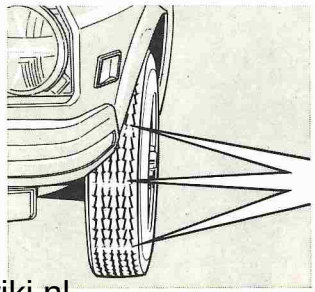


TIRE CHAINS

Tire chains, to be fitted to drive wheels, should provide enough clearance to prevent possible fender interferences (max. overall tire size: 18 mm. larger than tire cross section).

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 ½ inch wide bands when tire tread depth becomes $^1/_{16}$ of an inch. When the indicators appear in two or more adjacent grooves, tire replacement is recommended (see illustration).



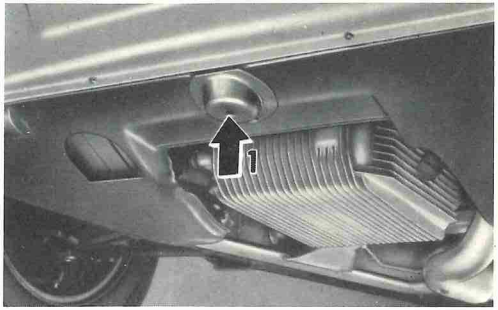
TOWING

When towing another vehicle, secure the cable to the slotted bracket at the left of the car tail.

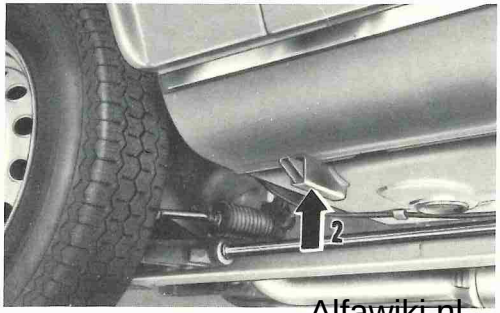
IMPORTANT
Under no circumstances must towing be attempted by attaching chain or cables to the bumpers. The bumpers are mounted on energy absorbing units that can easily be damaged by towing and render ineffective their low speed protective characteristics.

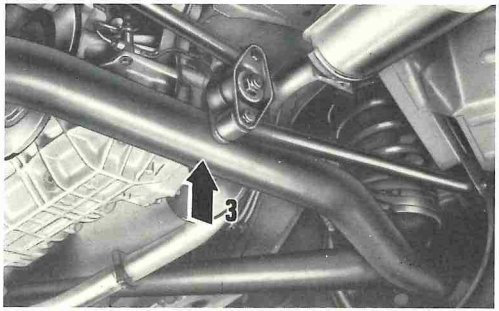
JACKING UP THE CAR

To jack up the car, position the jack " saddle " in:
- the pad at the front underbody.
- the brackets (front and rear) on side longitudinal members.
- the center of rear axle.



1 Jacking up the front
2 Jacking up the sides
3 Jacking up the tail





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.

Note: for cleaning the outside of brakes refer to page 57.

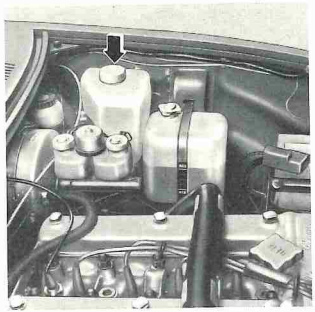
POLISHING

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 painwork 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.

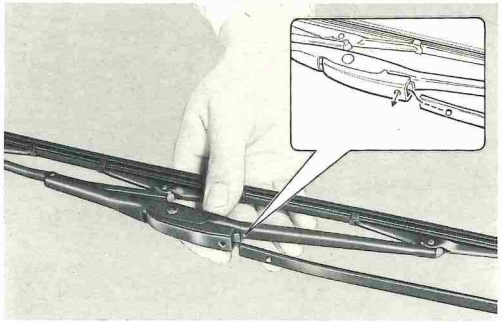
UPHOLSTERY

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 may be cleaned with gasoline.

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.



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
- depress the retaining spring and withdraw the wiper blade.

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:

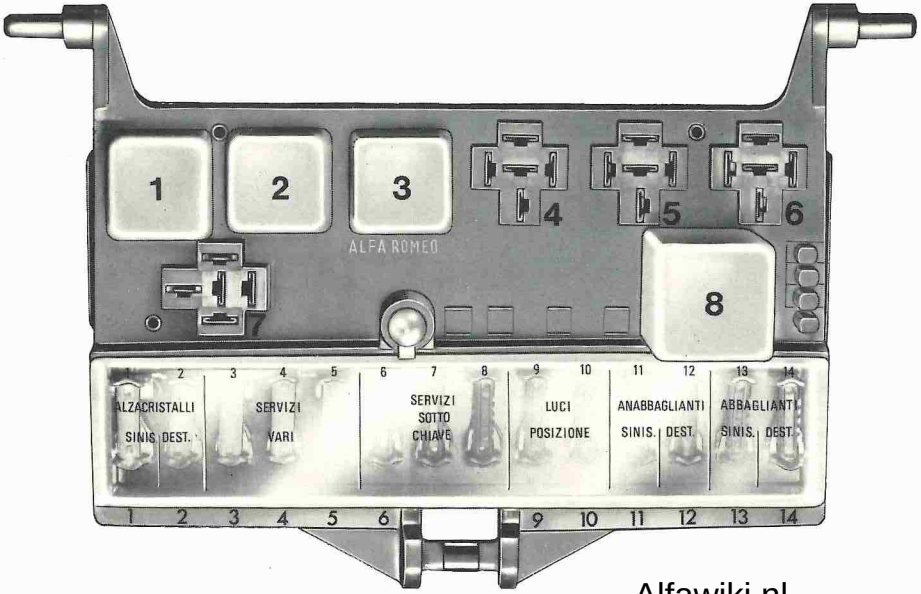
- add engine oil to the fuel in the tank in such quantity as to get a 2-3 per cent mixture, then run the engine at idle for about 5 minutes to protect the fuel feed system.
- empty the fuel tank; clean the oil filter and the main fuel filter;
- inject a little engine oil into the cylinders thru the spark 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 tarpaulins.

ELECTRICAL EQUIPMENT

FUSEBOX

To open the box apply pressure downward.
Fuses are located under a transparent cover. On opening the cover a light will come on (when the engine is running or the ignition switch is in « ON » position) to facilitate inspection and tracing of blown fuses. Four spare fuses are provided at the right side of fusebox. The circuits protected by fuses, identified by item numbers (in relief both on fusebox front and cover) are as listed below:

1	. . . . .	16	Amp.
2	. . . . .	»	»
3	Heated rear window .	»	»
4	Stop lights - Blower . .	»	»
5	Courtesy lights - Flasher unit - Clock - Door buzzer	8	Amp.
6	Windshield wiper - Cigar lighter - Back up lights - Seat belt device	»	»
7	Instruments - relay . .	»	»
8	Fuel pump - Fuel cut off solenoid	»	»
9	Front R.H. and L.H. rear parking lights - Engine compartment light - R.H. license plate light - Heater control panel light - Hazard light switch lighting .	»	»
10	L.H. front and R.H. rear parking lights - Trunk light - L.H. license plate light - Instrument light - Warning lights	»	»
11	L.H. low beam	»	»
12	R.H. low beam	»	»
13	L.H. high beam - beam warning light	»	»
14	R.H. high beam . . .	»	»



The following circuits are not protected by fuses: Starter - Horns - Engine cooling fan - Alternator - Regulator - Coll.
In one-unit with the fusebox there are: at the front, in addition to fuses, the flasher unit (location 8), heated rear window relay (location 3), blower relay (location 2), and horn relay (location 1).

BATTERY

The battery water level should be more than 4-5 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.

- Never disconnect the battery terminal of alternator-to-battery cable while the engine is running.
- Avoid overloading the alternator bearings (refer to page 48).

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 most 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.
Should beam setting require correction, act on the adjusting screw 1 for horizontal adjustment; for vertical adjustment of outer headlamp rotate the tip of setting lever 2 (use a screwdriver); rotate screw 3 for adjustment of inner headlamps.

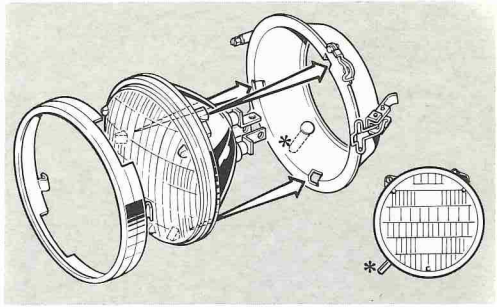
SETTING THE OUTER HEADLAMP BEAM ACCORDING TO THE LOAD

The lever shown allows to set the outer headlamp beam in accordance with load condition of the car. Position the lever of **each headlamp** as follows:
— Laden car: lever down (B)
— Unladen car: lever up (A).

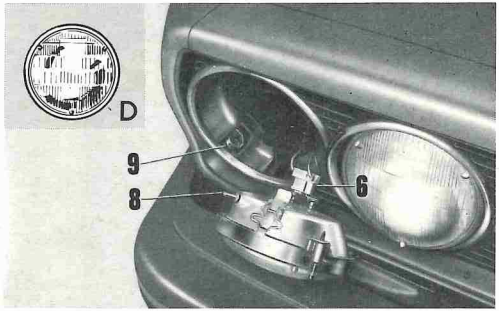
REPLACING SEALED BEAM UNITS

Unscrew the securing screw 4 and free the fastener 5 from adjusting screw seat 1. Take care not to disturb the adjusting screw setting.
Remove the headlamp by tilting it upward.

Disconnect the connector 6 from headlamp socket, release the two retainers 7 securing the metal cup to headlamp outer trim ring.

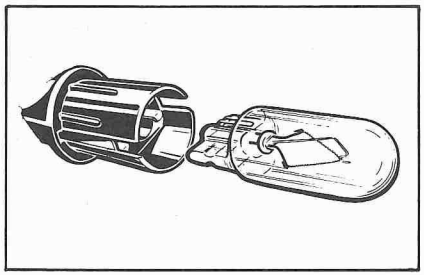


Place the new sealed beam unit in position on the outer trim ring taking care that the « bosses » of the lens glass seat properly into the seats in the cup and at the same time the dowel pin 8 is at an angle of 45 degrees with the reference pointer at the front bottom of the unit as shown. Engage the two retainers 7 and lock them in place.



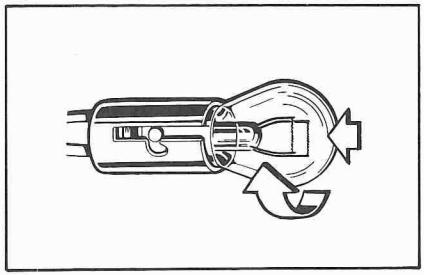
Reconnect the connector 6 and make sure the dowel pin 8 fits properly into its seat 9.
With the sealed beam unit fitted, the glass « bosses » (identified at the detail view D) must be positioned as shown.
Tighten securely the screw 4 and fit the fastener 5 to the screw seat (to do so easier apply a slight pressure by hand to the outer trim ring near the fastener).

REPLACING BULBS



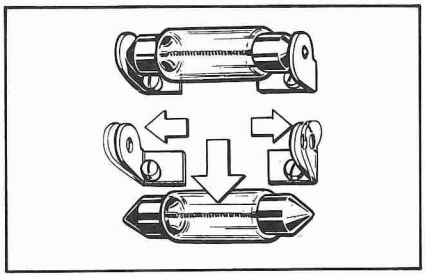
A

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



B

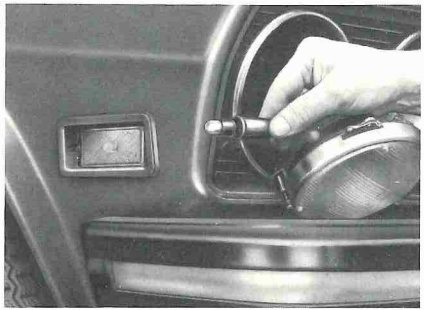
Bayonet type mount:
push the bulb in rotate it counter-clockwise and withdraw the bulb.



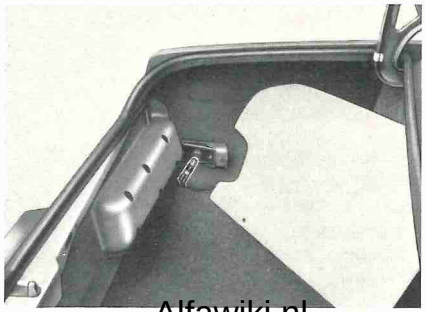
C

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

1



2



A

1 - Front sidemarker lights
Remove the outer headlamp (refer to preceding page). From inside, snap the bulb socket off the lens; renew the bulb and refit the socket to the lens. Re-install the headlamp.

2 - Rear sidemarker lights
Open the deck lid, remove the attaching screws and take the side panel off.
Snap the bulb socket off the lens; renew the bulb and refit the socket to the lens. Refit the side panel.

B

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

4 - Tail direction indicators, parking and stop lights
With the suitably provided wrench, slacken, from inside the baggage compartment the nuts securing the affected lens and renew the bulb. Refit lens.

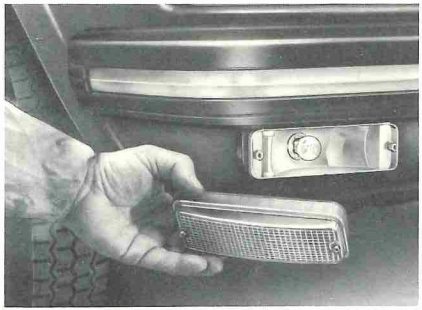
5 - License plate lights
Illumination of license plate is by two bulbs located in two separate housings. To renew the bulb, slacken the housing attaching screws and remove housing. Then, refit it.

C

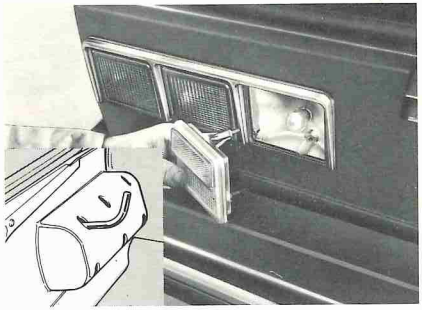
6 - Courtesy lights
Snap off the light unit. Replace the bulb.

7-8 - Engine and baggage compartment lights
Remove bulb and change it.

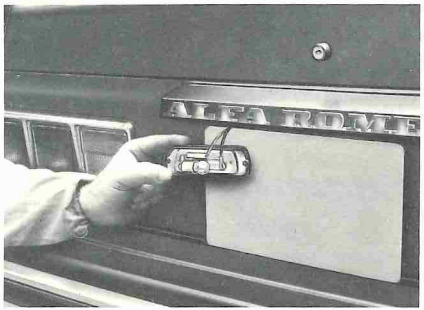
3



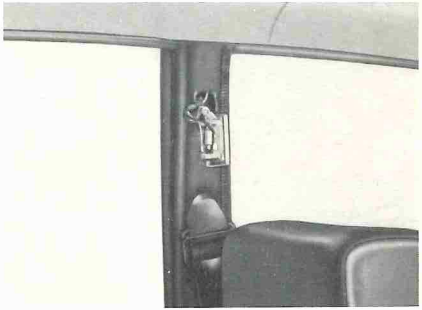
4



5

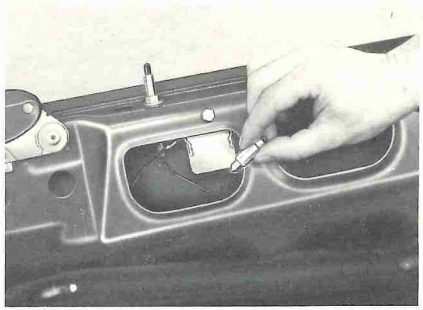


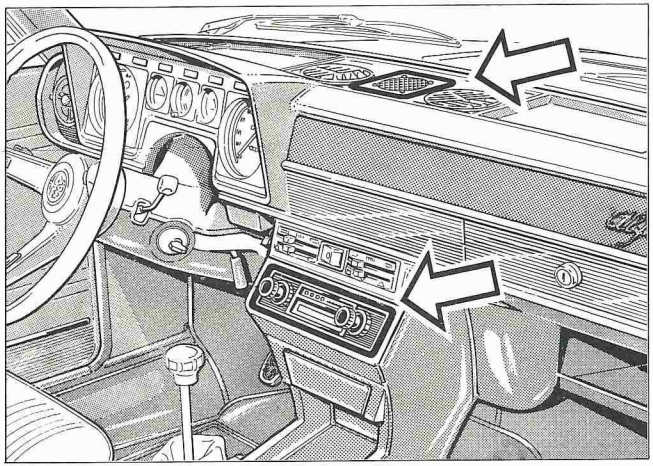
6

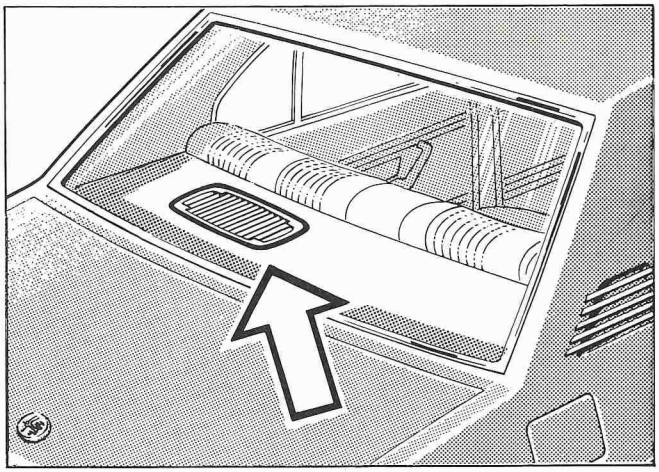


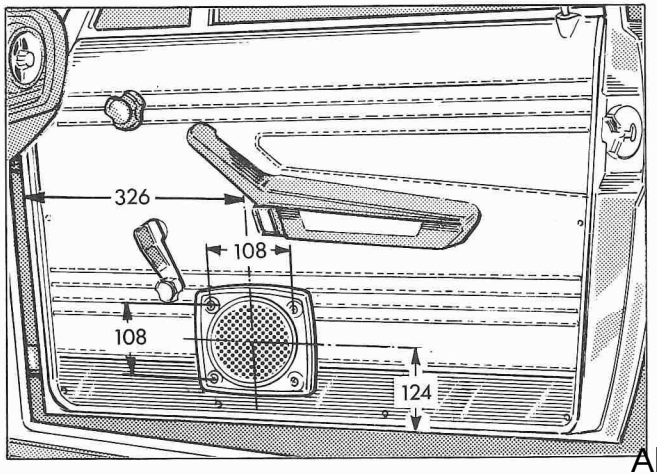
7

8







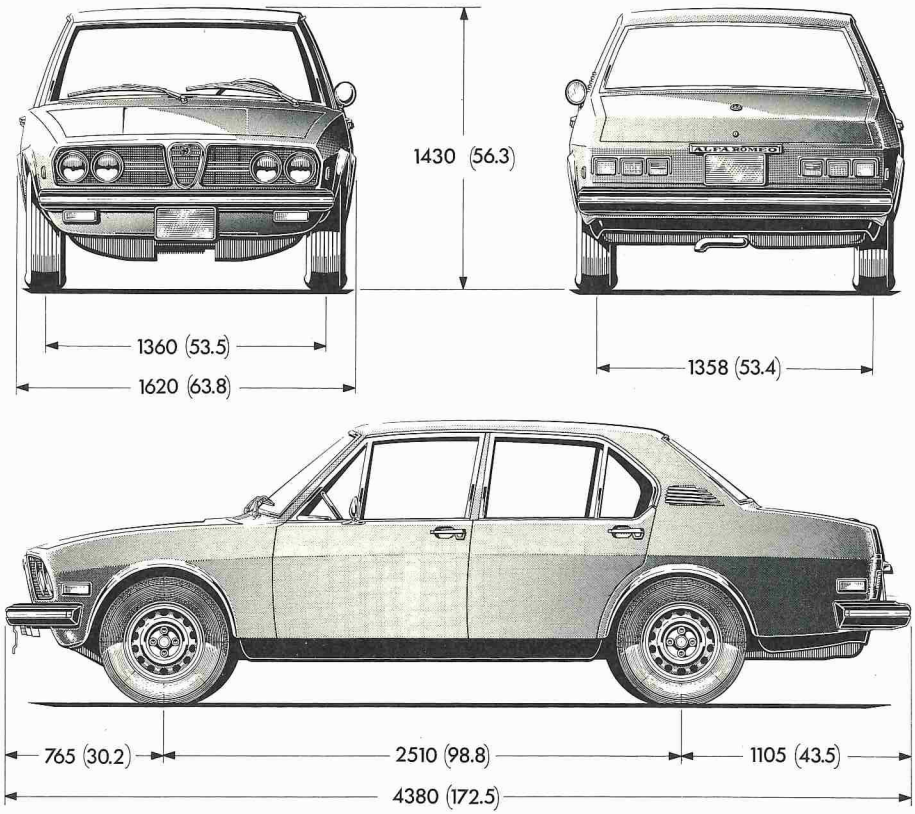


RADIO

Provision is made in the instrument panel for the installation of the ratio.
The location is:

- in the console for the radio set;
- in the panel top and on backself for the speakers.
- Provision is made in the front doors for fitting stereo unit speakers. Such speakers should be installed according to the dimensions shown in the illustration.

GENERAL DATA



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

SPECIFICATION

ENGINE

Number and layout of cylinders	4 in line.
Bore and stroke	84 x 88.5 mm
Total displacement	1962 cc

CHASSIS

Turning circle	101.00 mm (33.1 ft)
Designated seating capacity	4
Tires	165 SR 14
Curb weight	1222 Kg (2690 lbs)
Trunk capacity	dm^3 600 (cu. ft. 21)
Towing gross weight	kg 1200 (lbs 2645)

PERFORMANCE (WITH 41:10 FINAL DRIVE)

AFTER BREAKING IN maximum speeds						
GEAR	1st	2nd	3rd	4th	5th	Rev.
mph.	**29**	**48**	**69**	**92**	**109**	**36**

The performances given are related to the use of the vehicle in average travelling conditions.

IDENTIFICATION

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

Vehicle identification number
1 Firewall
2 Windshield plate
3 D.O.T. certification label

Production date (month)
3 D.O.T. certification label

Gross vehicle weight
3 D.O.T. certification label

Engine number
4 Left rear side of engine block

Exhaust emission data
5 Emission data label

Useful load - Seating capacity - Tire pressure
6 Label on driver's sun visor

Break in data
7 Label on passenger's sun visor

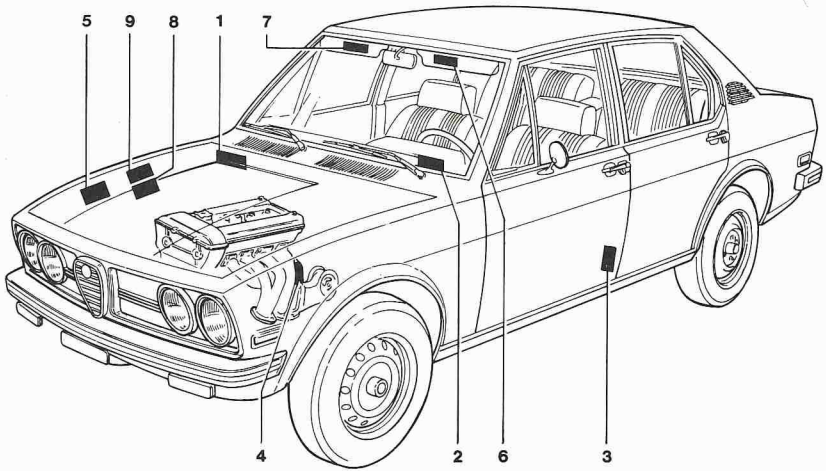
Lubrication data
8 Lubrication data label

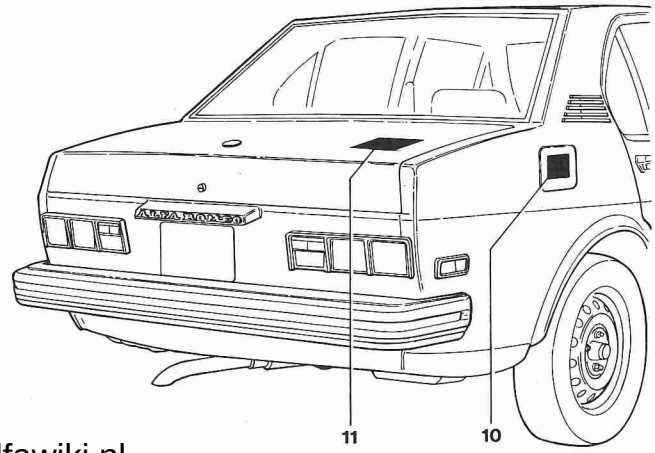
Spark plug data
9 Spark plug data label

Fuel requirements
10 Label on fuel tank filler port cover

Paint
11 Paint label

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.





WIRING DIAGRAM

ELECTRICAL EQUIPMENT ITEMS

1 Front direction indicators and parking lights bulbs 5/21 W
2 Headlamp Hi/Low - Sealed beam
3 Headlamp Hi - Sealed beam
4 Side marker lights bulbs, front - 4 W
5 Junction boxes and connectors
6 Horn
7 Engine compartment light switch
8 Blower motor (two speed)
9 Safety belt device
10 Engine compartment light bulb - 5 W
11 Resistance
12 Electric fan
13 Coil
14 Coolant thermometer sender
15 Windshield wiper (two speed)
16 Ignition distributor
17 Starter
18 Injection pump solenoid
19 Low fuel pressure warning light switch
20 Fuel cut-off solenoid switch
21 Fuel cut-off solenoid
22 Thermal switch for electric fan
23 Thermal switch for coolant temperature warning light
24 Oil pressure gage sender
25 Alternator
26 Brake fluid level warning light switches
27 Battery - 12 V 60 Ah
28 Low oil pressure warning light switch
29 Voltage regulator
30 Reminder buzzer switch
31 Instrument panel connectors
32 Instrument cluster
33 Instrument lights
34 High beam warning light - 1.2 W
35 Parking light warning - 1.2 W
36 Coolant temperature warning light bulb - 1.2 W
37 Warning light for fluid level, service brake pressure and parking brake - 1.2 W
38 Blower warning light - 1.2 W
39 Direction indicators warning light - 1.2 W
40 Alternator warning light - 1.2 W
41 Fuel reserve warning light - 1.2 W
42 Low fuel pressure warning light
43 Coolant thermometer
44 Clock
45 Fuel level gauge
46 Oil pressure gauge
47 Instrument light dimmer
48 Reminder buzzer
49 Dimmer for hazard switch light and heater control panel light
50 Windshield washer electric pump
51 Stop lights switch
52 Buzzer
53 Direction indicators and hazard lights switch
54 Heated rear window relay
55 Electric fan relay
56 Horn relay
57 Fasten seat belts light
58 Ignition and starting switch-antitheft
59 Windshield washer switch
60 Windshield wiper switch
61 Direction indicators switch
62 Horn control switch
63 Parking lights, headlamps and flashing switch
64 Fusebox
65 Fusebox light switch
66 Fusebox light bulb
67 Heated rear window switch
68 Heated rear window warning light (1.2 W) in switch button
69 Hazard flashers switch
70 Hazard switch light 1.2 W
71 Hazard flashers warning light
72 Cigarette lighter
73 Heater control panel light bulb - 1.2 W
74 Blower switch

RECOMMENDED LUBRICANTS

PART	Classification	Commercial equivalents: Agip	Commercial equivalents: Shell
Engine	SAE 10W/50 API SE	AGIP Sint 2000 SAE 10W/50	SHELL Super Motor Oil 10W/50
Gearbox/differential unit	SAE 90 API GL-5	AGIP F.1 Rotra MP SAE 90	SHELL Spirax 90HD
Front wheel bearings	NLGI 2/3	AGIP F. 1 Grease 33 FD	SHELL Retinax AX

SAE - Society of Automotive Engineers
API - American Petroleum Institute
NLGI - National Lubricating Grease Institute

In the event the above lubricants would not be available refer to the directions given under «lubrication» on page 32.

RECOMMENDED TIRE PRESSURE (COLD)

Make	FRONT kg/cm²	FRONT PSI	REAR kg/cm²	REAR PSI
Continental	1.6	23	1.8	26
Good Year	1.6	23	1.8	26
Kleber	1.6	23	2.1	30
Michelin	1.8	26	2	29
Pirelli	1.6	23	1.8	26

CAPACITIES

Cooling system	Litres	gals
Alfa Romeo Antifreeze	8	2.1
Fuel *		
Tank capacity	49	12.9
Fuel reserve	6.5 - 8	1.7 - 2.1

* Fuel requirements (refer to inside front cover)

Oil	Kg	Litres	qts	lbs
Engine				
when full *	5.850	6.5	7.43	12.9
danger level	3.850	4.2	5.06	8.5
Gearbox/differential unit . . .	2.570	2.88	3	5.67
* This quantity is that needed for regular changing. The total amount of oil in the circuit (pan, filter and passages) is	6.265	7	8.41	13.9

ALFA ROMEO - Via Gattamelata 45 - 20149 MILANO
DIASS - Public N. 2365 - 7/75 - 1900 - Printed in Italy

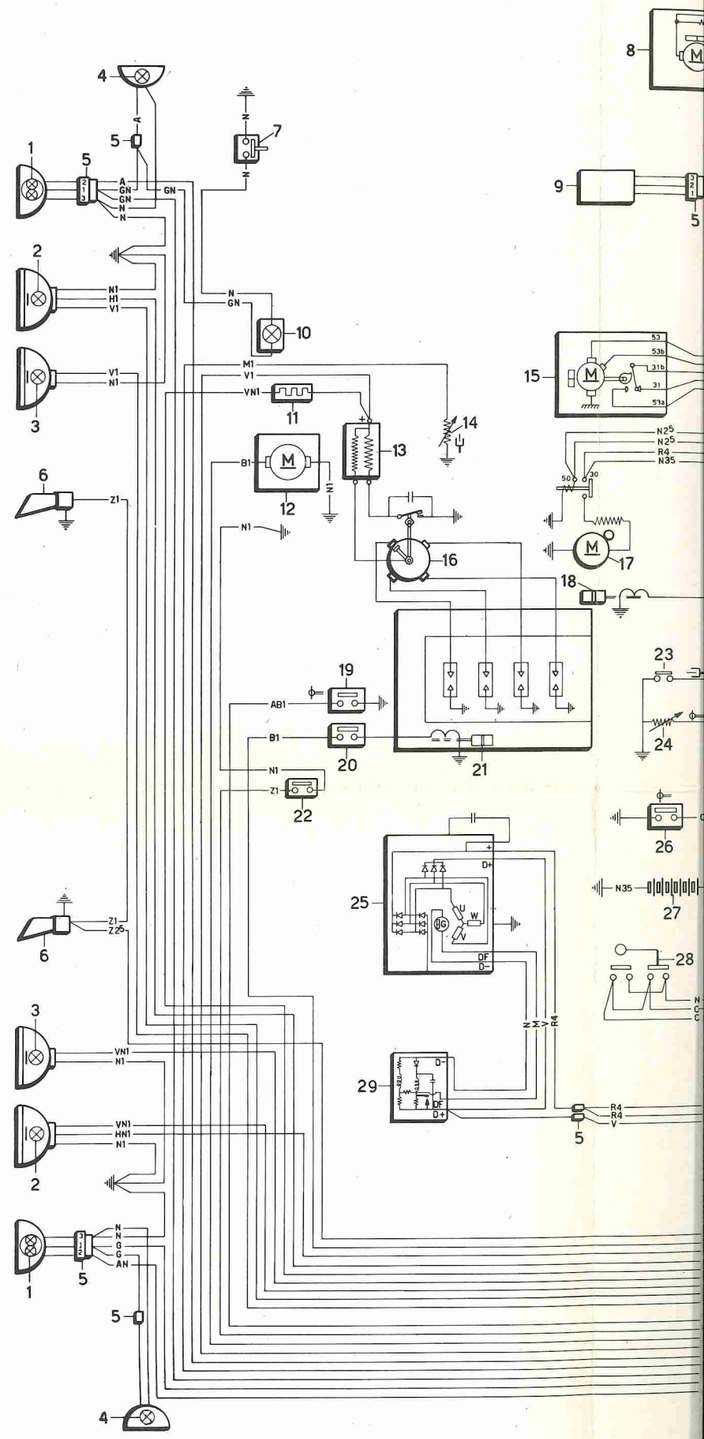
ELECTRICAL EQUIPMENT ITEMS

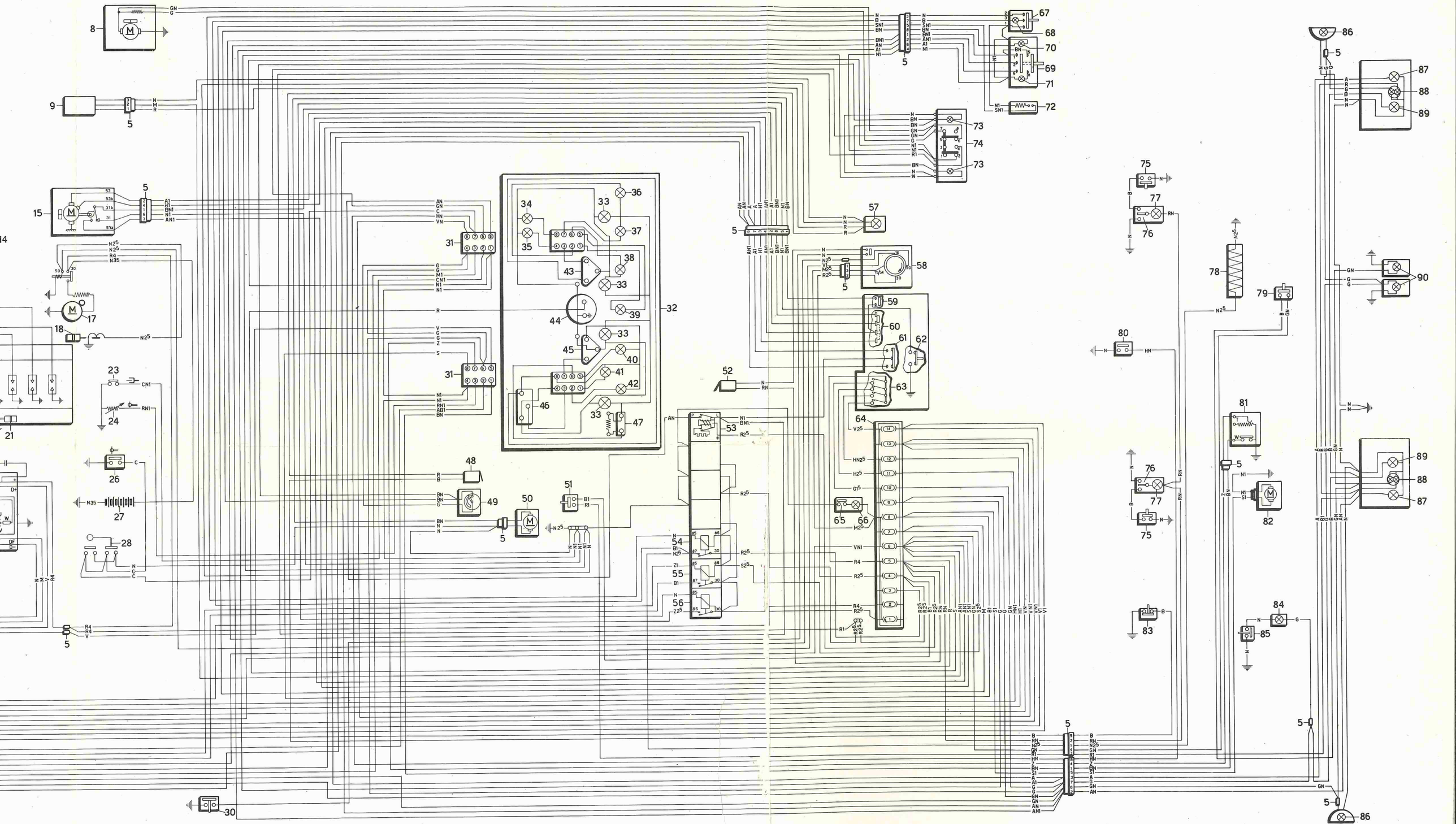
1 Front direction indicators and parking lights bulbs 5/21 W
2 Headlamp Hi/Low - Sealed beam
3 Headlamp Hi - Sealed beam
4 Side marker lights bulbs, front - 4 W
5 Junction boxes and connectors
6 Horn
7 Engine compartment light switch
8 Blower motor (two speed)
9 Safety belt device
10 Engine compartment light bulb - 5 W
11 Resistance
12 Electric fan
13 Coil
14 Coolant thermometer sender
15 Windshield wiper (two speed)
16 Ignition distributor
17 Starter
18 Injection pump solenoid
19 Low fuel pressure warning light switch
20 Fuel cut-off solenoid switch
21 Fuel cut-off solenoid
22 Thermal switch for electric fan
23 Thermal switch for coolant temperature warning light
24 Oil pressure gage sender
25 Alternator
26 Brake fluid level warning light switches
27 Battery - 12 V 60 Ah
28 Low oil pressure warning light switch
29 Voltage regulator
30 Reminder buzzer switch
31 Instrument panel connectors
32 Instrument cluster
33 Instrument lights
34 High beam warning light - 1.2 W
35 Parking light warning - 1.2 W
36 Coolant temperature warning light bulb - 1.2 W
37 Warning light for fluid level, service brake pressure and parking brake - 1.2 W
38 Blower warning light - 1.2 W
39 Direction indicators warning light - 1.2 W
40 Alternator warning light - 1.2 W
41 Fuel reserve warning light - 1.2 W
42 Low fuel pressure warning light
43 Coolant thermometer
44 Clock
45 Fuel level gauge
46 Oil pressure gauge
47 Instrument light dimmer
48 Reminder buzzer
49 Dimmer for hazard switch light and heater control panel light
50 Windshield washer electric pump
51 Stop lights switch
52 Buzzer
53 Direction indicators and hazard lights switch
54 Heated rear window relay
55 Electric fan relay
56 Horn relay
57 Fasten seat belts light
58 Ignition and starting switch-antitheft
59 Windshield washer switch
60 Windshield wiper switch
61 Direction indicators switch
62 Horn control switch
63 Parking lights, headlamps and flashing switch
64 Fusebox
65 Fusebox light switch
66 Fusebox light bulb
67 Heated rear window switch
68 Heated rear window warning light (1.2 W) in switch button
69 Hazard flashers switch
70 Hazard switch light 1.2 W
71 Hazard flashers warning light
72 Cigarette lighter
73 Heater control panel light bulb - 1.2 W
74 Blower switch

75 Courtesy light microswitch on door jambs
76 Courtesy light switch in light unit
77 Courtesy light bulbs - 5 W
78 Heated rear window
79 Back up light switch
80 Parking brake warning light switch
81 Fuel level sender and warning light switch
82 Electric fuel pump
83 Belt switch (driver's side)
84 Trunk light bulb - 5 W
85 Trunk light switch
86 Side marker lights. rear - 4 W
87 Rear direction indicators bulbs
88 Rear parking and stop lights bulbs - 5/21 W
89 Back-up lights bulbs - 21 W
90 License plate lights bulbs - 5 W

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

The figure following the color code on the diagram shows the wire gauge in mm².
Where not shown the wire gauge is 0.5 mm².




8
9
15
17
18
21
23
24
26
27
28
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
Alfawiki.nl