ALFA ROMEO 1750 BERLINA

INSTRUCTION BOOK

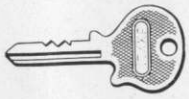
WARNING

Beware of the danger of carbon monoxide! Never run the engine in an enclosed space. The exhaust gases contain carbon monoxide, a deadly gas. Carbon monoxide is particularly dangerous as, being it colorless, odorless and tasteless, its presence is very difficult to detect.

It is a good rule to keep a record of the symbol stamped on the key handle.

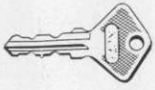
Ignition and antitheft device key

SYMBOL



Key to front doors, glove compartment, boot lid

SYMBOL



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

The operation and maintenance instructions contained in this handbook

MUST BE CAREFULLY OBSERVED

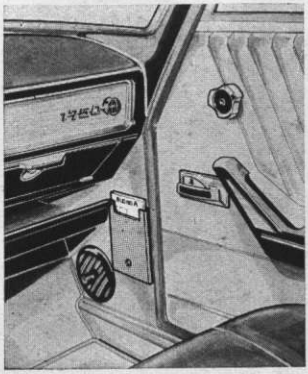
by every owner who desires to get the best from this vehicle and to ensure a long life for every component.

Owners are recommended, in their own interest, to entrust all maintenance and repair work to an authorized Alfa Romeo Service Station as such Stations are equipped with the proper tools and staffed by specially trained mechanics who are kept up-to-date by our technical literature.

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 recommended. *

Direzione Assistenza

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.



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

The **Service Coupon Book,** supplied with every new vehicle, bears the conditions that govern the provision of Alfa Romeo Services and the replacement of damaged parts during the period covered by the guarantee.

Every purchaser of an Alfa Romeo motorcar is supplied with two coupons covering certain free maintenance during the guarantee period, and he **must use these coupons on completion of the mileage as stated thereon.**

The labour cost of the maintenance work listed on the coupons is free, but the lubricants used are to user's account.
Any work not covered by free coupons but found necessary during the inspection will be subject to the General Terms of Guarantee.
The coupons should be used whenever possible at the garage of the Agent that sold the car and during normal working hours.

GUARANTEE

The Supplier guarantees the products of the Factory for 6 months from the date of delivery to the Client; the guarantee does not cover tyres and non-essential accessories if made by third parties, nor does it cover spare parts.

The guarantee covers the free repair of, or free supply and replacement of, any parts found to be unserviceable **because of an acknowledged defect of materials;** defects will be acknowledged after prior investigation of them and of their cause exclusively by the manufacturer's workshops or by workshops authorized by the manufacturer, and at the said workshops.

Should the Purchaser insist on the services of an Alfa Romeo technician for the purpose of inspecting faulty or allegedly faulty parts, the expenses of such a technician will be the responsibility of the Purchaser. **Delays, if any, shall not entitle the Purchaser to receive compensation for damages, nor to any extension of his rights under the guarantee.**

The guarantee shall lapse automatically:
if the products are used otherwise than in accordance with the manufacturer's instructions;

if they are modified, repaired or dismantled elsewhere than in the manufacturer's workshops or workshops authorized by the manufacturer;
if bodies of different origin which have not been previously approved by the manufacturer are fitted to the chassis.

The Purchaser shall not be entitled, in any of the cases stipulated by this article, to claim cancellation of the Contract or compensation for damages.

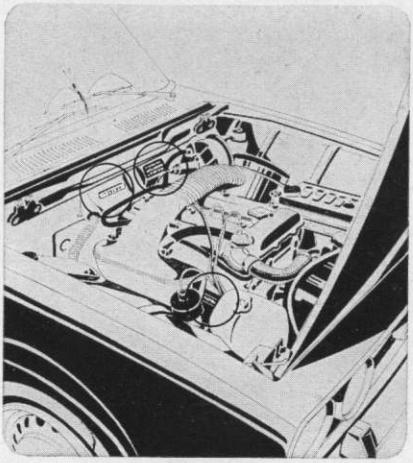
Contents

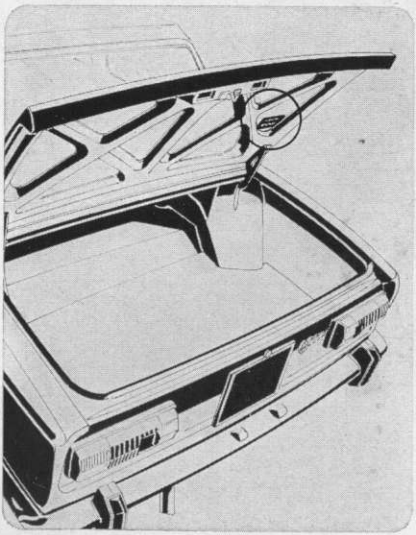
On bulkhead panel:

- Chassis serial no. (metal stamped)
- Identification plate (car model & type approval number)

On crankcase R.H. side

- Engine no. (metal stamped)

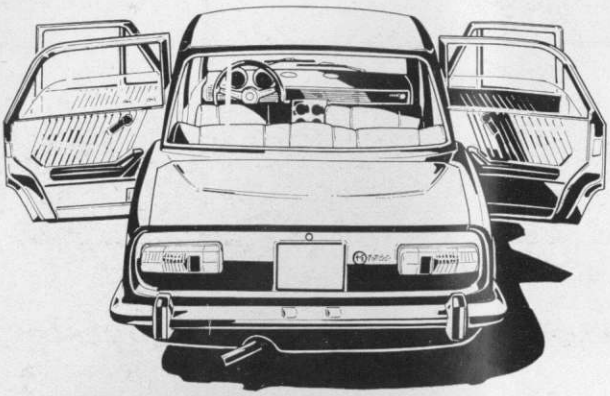


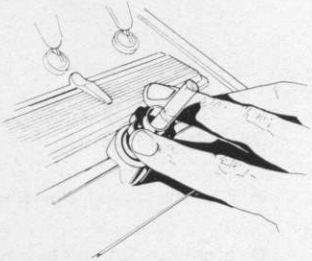


On luggage boot lid

- Finish plate (paint type & make)

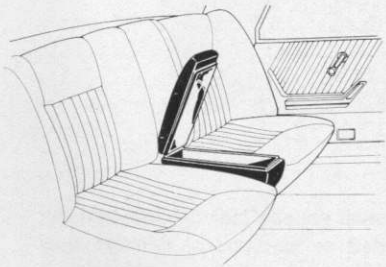
On contacting the Factory or a Member of our Service Organization please state: car model, chassis no., registration date, distance covered and car's purchase data.

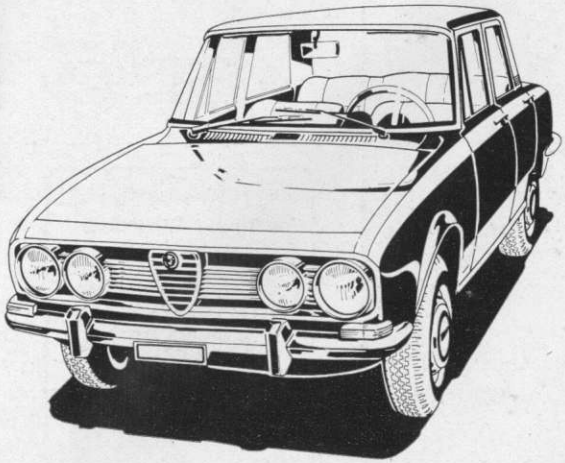




1750

Alfa Romeo





Specification

Engine

Number and layout of cylinders		4 in line
Bore and stroke	mm	80 x 88.5
Total displacement	cc.	1779
Max. power at 5500 rpm SAE	HP	132

Chassis

Minimum turning circle	mm	11100
Number of seats		5
Tyres (Kleber Colombes **V 10** - Michelin **ZX** - Pirelli **Cinturato SR**)		165-14
Kerb weight (full tank)		2447 lbs (1110 Kg)

Fuel consumption

Fuel, oil and coolant

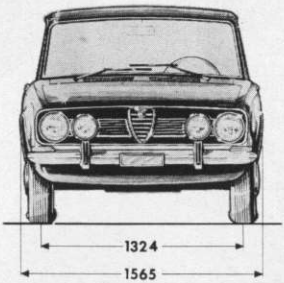
	I	GB	USA
Per **100 Km** to Italian CUNA standards (full load) abt.	**11.6 lt**	24.4 mpg	20.3 mpg
Cooling system:			
« Alfa Romeo coolant mixture » »	**9.7 lt**	2.1 gals	2.5 gals
Fuel »	**46 lt**	10.1 gals	12.1 gals
For best engine performance the use of premium grade fuel is advised.			
Fuel reserve »	**6 to 7 lt**	1.3-1.5 gals	1.6-1.8 gals
Oil			
Engine (sump and filter) when full ☆ »	**6.00 Kg**	5.95 qts	7.1 qts
Engine (sump and filter) danger level »	**4.00 Kg**	3.95 qts	4.75 qts
Gearbox »	**1.65 Kg**	3.2 pts	3.8 pts
Differential »	**1.25 Kg**	2.5 pts	3.0 pts
Steering box »	**.25 Kg**	.5 pt	.6 pt
☆ This quantity is that needed for regular changing. The total amount of oil in the circuit (sump, filter and passages) is	**6.50 Kg**	6.5 qts	7.8 qts

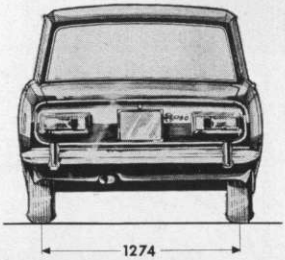
PERFORMANCE with 43 : 10 final drive

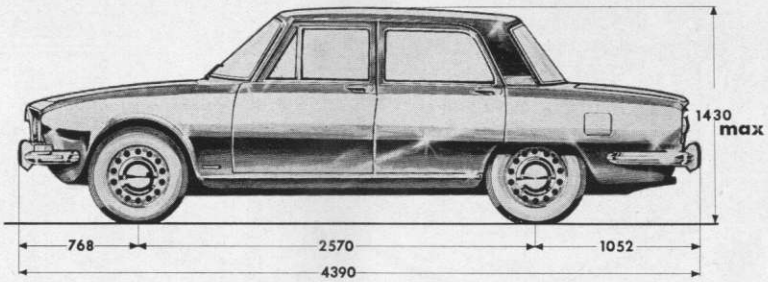
GEAR	AFTER RUNNING IN	
	Km/h	mph.
1st	44.5	28
2nd	74	46
3rd	109	68
4th	146	91
5th	180	112
Rev.	48	30

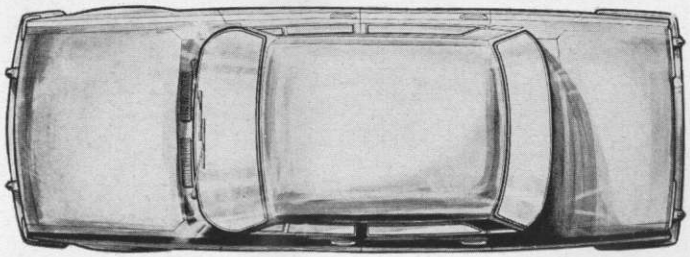
The maximum speeds indicated should not be exceeded or mechanical damage may result.

The performances given are related to the use of the vehicle in normal travelling conditions in Central Europe.





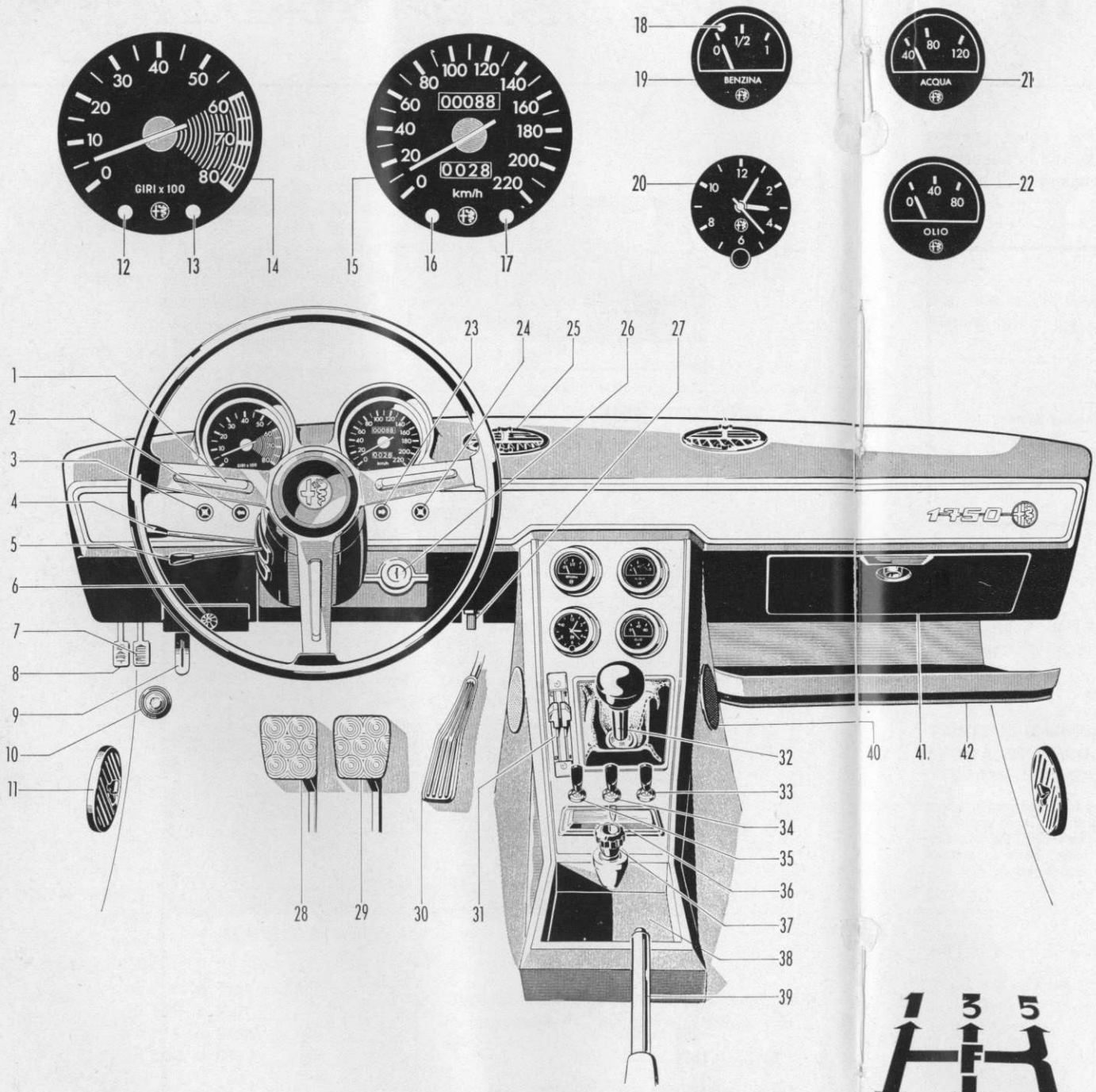


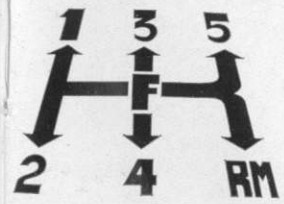


4390 = 172.7 in.
2570 = 101 in.
1565 = 61.7 in.
1324 = 52.1 in.

1430 = 56.3 in.
1274 = 50.1 in.
1052 = 41.4 in.
768 = 30.2 in.

Dimensions in mm - overall height with unladen car





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

Controls and instruments

Controls

1 Horn
4 Light dipping and flashing switch
5 Direction indicator switch
7 Hand throttle
8 Choke
9 Bonnet catch release
10 Windscreen washer: when the control is pressed the windscreen wiper also comes into action
26 Ignition switch & antitheft
27 Trip odometer zero setting
28 Clutch
29 Brake
30 Accelerator
31 Heating, ventilating and demisting
32 Gear lever
33 Blower switch (2-speed)
34 Instrument light switch (operates when external lights are on)
35 Windscreen wiper switch (2-speed)
39 Handbrake (for emergency and parking)

Instruments

2 Warning light for L.H. direct. indicator
3 Choke warning light
6 Fusebox
12 Blower operation warning light
13 Alternator warning light
14 Tachometer
15 Speedometer
16 External light warning
17 Headlamp high beam warning light
18 Fuel reserve warning light
19 Fuel level indicator
20 Electric clock
21 Water temperature gauge
22 Oil pressure gauge
23 Warning light for R.H. direct. indicator
24 Low oil pressure warning light

Luxury fittings

11 Ventilating air outlet
25 Windscreen demisting outlet
36 Ash tray
37 Cigarette lighter: insert a cigarette then push the knob in: this brings into operation an electric element which turns itself off after a few seconds
38 Utility recess
40 Speaker compartment
41 Glove compartment
42 Shelf

WARNING FOR THE FIRST 1900 miles (3000 km.)

RUNNING IN

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

RECOMMENDATIONS FOR THE FIRST 1900 MILES

Mileage	Max. speeds **mph**				
	1st	**2nd**	**3rd**	**4th**	**5th**
Up to **600**	**17**	**29**	**42**	**57**	**71**
601 to **1900**	**21**	**35**	**51**	**69**	**88**

Cold starting:
— press in choke as soon as possible;
— before driving, run engine at approx. 1500 r.p.m. for at least 1 minute in summer and 2-3 minutes in winter.

While driving:
— dd 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.

RECOMMENDATIONS FOR THE FIRST 3000 KMS

Kiloage	Max. speeds Kph				
	1st	2nd	3rd	4th	5th
Up to 1000	27	46	67	91	115
1001 to 3000	34	56	82	111	141

Cold starting:
— press in choke a
— before drivi

While driving
— do not d

— never
— now
— avoi

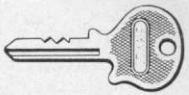
DURING RUNNING-IN STRICTLY FOLLOW THE ABOVE INSTRUCTIONS!

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

FREE SERVICE COUPONS

COUPON A
COUPON B

At the first **450-750 mi.** (700-1200 Km)
At the first **3100-3750 mi.** (5000-6000 Km)
} carry out the free servicing included in coupons



STARTING THE ENGINE
Insert the key.

Turn the key to **GARAGE** position. To help in freeing the steering lock, slightly rotate the wheel in both directions.

Turn the key to **MARCIA** position. Ignition circuits are on (alternator warning light lit).

Turn the key further to **AVVIAM.** The starting motor comes into action and the key, as soon as released, returns automatically to **MARCIA.** If the engine fails to start, the key must be returned to **GARAGE** and the operation repeated.

STOPPING THE ENGINE

Return the key to **GARAGE.** In such a position the ignition is « off » and the wheels can be steered even if the key is withdrawn.

ANTITHEFT DEVICE/STEERING LOCK

Turn the key back to **BLOCCO.** By withdrawing the key the steering is locked; to engage the lock properly, slightly rotate the wheel in both directions.

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

MARCIA = ignition; AVVIAM. = starting; BLOCCO = lock.

From cold

Before starting the engine make sure the gear lever is in neutral. Pull out the choke, insert the key in the ignition switch and start the engine. Particularly when starting from cold in winter, it is advisable, in order to facilitate starting, to press the clutch pedal down fully and the accelerator through about one quarter of its stroke while at the same time operating the choke lever.
As soon as the engine fires release the ignition key.

If the engine fails to start at once, do not keep the starting motor running (or the battery will soon become discharged) but wait a few minutes and try again.

If it still will not start, look for the cause as follows:

- the battery charge may be too weak to rotate the starting motor sufficiently fast to start the engine;
- the ignition equipment may be defective (dirty plugs, excessive spark gaps, oxidized contact-breaker points, wet or cracked distributor cap, damaged distributor or coil);
- the carburettor may be dirty and jets clogged;
- electric circuits may be broken or fuses blown.

When the engine has started, move choke lever halfway back until the engine is warm and then push it down.

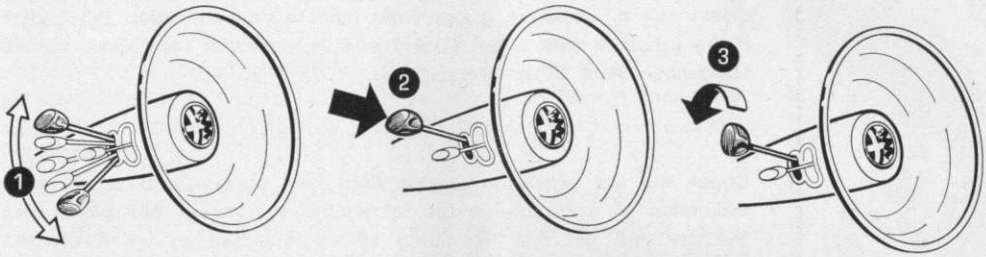
Do not accelerate the engine until it has warmed up, since when the engine is cold the oil cannot reach all points requiring lubrication.

Make sure the oil pressure shown by the gauge is as prescribed and the oil pressure warning light goes off as soon as the engine speed exceeds idling.

Make sure the alternator warning light goes off as soon as engine speed exceeds idling.

Hot engine

In summer, or when the engine is already hot, do not use the choke. Starting will be facilitated if the accelerator is depressed about half way so that the carburettor throttle is opened in order to lean the mixture.



The switch lever may be in either of the two positions. The warning lights on the dashboard are out.

1 Lights off

Press on the knob irrespective of the position of the switch.

2 Flashing

Irrespective of the position of the lever, turn the knob to the first notch. The warning light (**16,** page 10) on the dashboard will light up and flashing is still possible by pressing the knob.

3 Parking lights and number plate light

From position 3 turn the knob forward to the second notch.

If the lever is up, the **dipped lights** come on (no flashing).

If on the other hand, it is down, the **beam lights** and the respective warning light (**17** page 10) come on (flashing possible).

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

The lights are extinguished by turning the knob back over the notches.

1 Lights off

While driving

Take care not to run the engine beyond the maximum R.P.M.

Check the oil pressure gauge from time to time and stop the engine if the pressure with a hot engine and at maximum revolutions should fall below limits shown on page 33.

Check the low pressure warning light (see page 10): **if on, it is an indication of a trouble in the lubricating system: in this case, stop the car and get the lubricating system checked by an Authorized Workshop.**

However, it is possible for the warning light to come on when the car is cornering: this may be caused by a low level of oil in the sump which can be easily remedied by topping up.
No trouble exists if the warning light comes on while the engine is idling, especially when hot.

Do not drive at high speed until the oil in the engine, in the gearbox and in the differential has warmed up properly.

When shifting gears, take care to depress the clutch pedal fully; this will ensure smooth operation of gearbox and save synchronizers from excessive wear.
Do not rest your foot on clutch pedal when not actually using it.

While parking

Never leave the key in the « **MARCIA** » 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 hand brake disengage accidentally, to move toward the kerb.

Cooling circuit

The **Alfa Romeo Coolant Mixture** gives full protection against freezing down to —20°C. (—5°F.).
In places where the temperature falls below —20°C, the antifreeze mixture can be made stronger by varying its concentration.

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

The quantities of antifreeze to be added to radiator and reservoir depending on the lowest anticipated temperature are the following:

Temperature		Amount of **Alfa Romeo Coolant Mixture** to be replaced with an equal quantity of **Alfa Romeo Antifreeze.**		
°C	°F	Radiator	Reservoir	Total
—26	—16	800 cc.	200 cc.	1 lt.
—35	—30	1600 cc.	400 cc.	2 lts.
—44	—48	2400 cc.	600 cc.	3 lts.

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

A Air inlets in engine bonnet

B Air shutter

C Electric blower

D-E Water pipes

F Windscreen demisting slits

G Air outlets into car

H Ram air ventilation

1 Blower switch

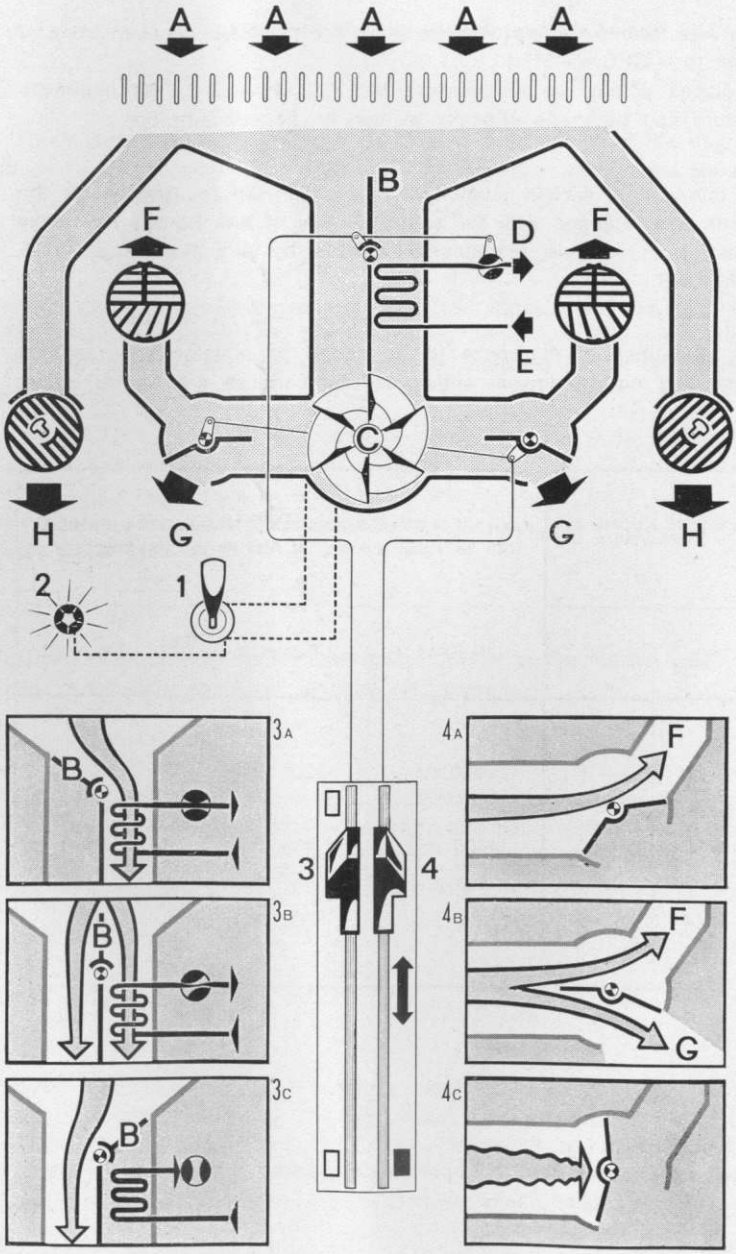
2 Blower operation warning light

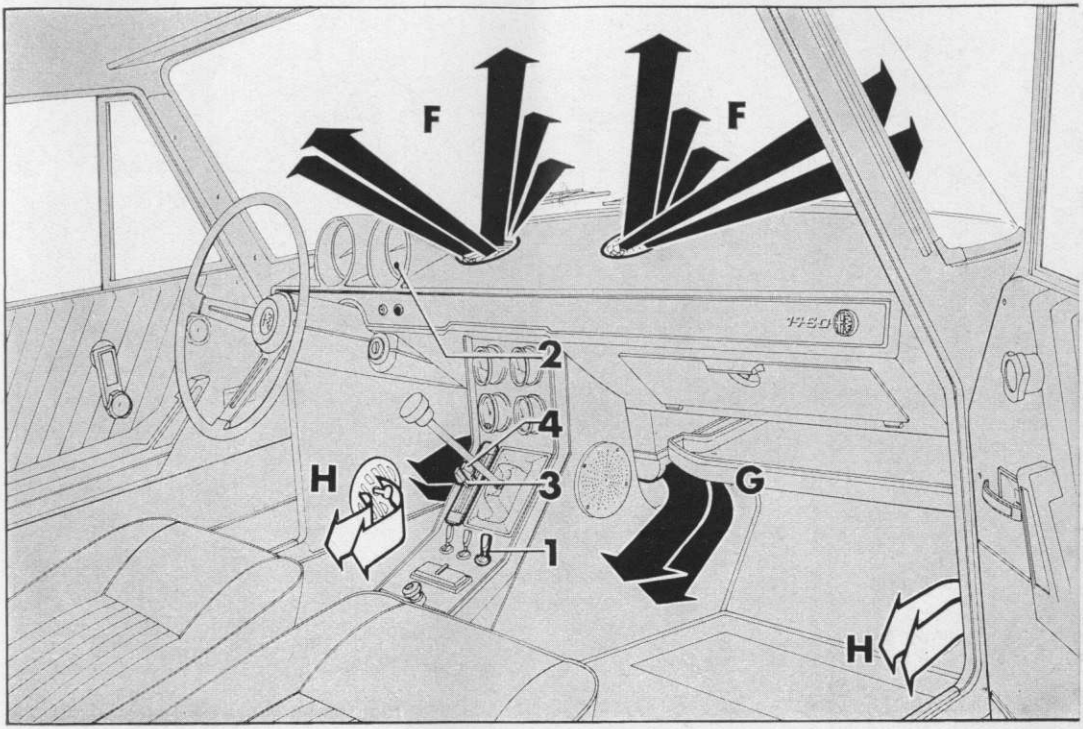
3 Temperature control

- 3a Warm air
- 3b Warm & fresh air
- 3c Fresh air

4 Air control

- 4a Demisting
- 4b Demisting ventilation heating
- 4c Closed





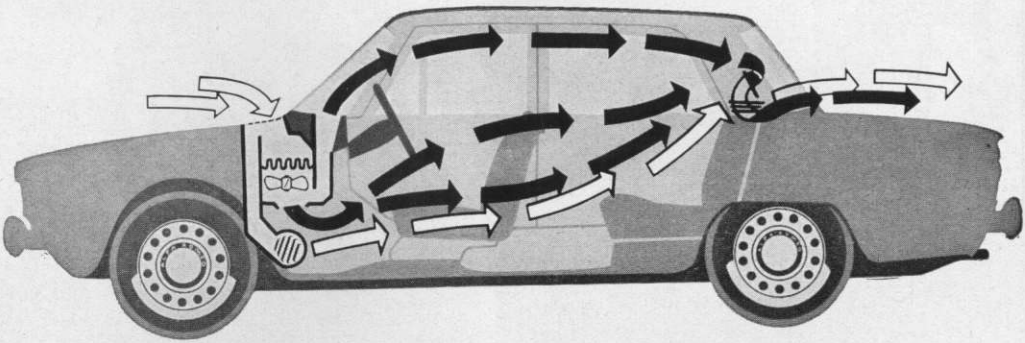
From **A** air enters through:

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

Controls

- The air admitted to the car through **B** can be gradually heated by the movement of the lever **3** which operates the shutter **B** and the cock **D** in the water pipes (operate this lever only when engine is warmed up).
- The movement of the lever **4** gradually regulates the flow of air through the openings **F** and **G.**
- In order to produce a satisfactory flow of air into the car at low speeds, switch on the two-speed electric blower by means of switch **1.** Warning light **2** indicates that this has been done.

Location of controls and air outlets
(refer to page 18)

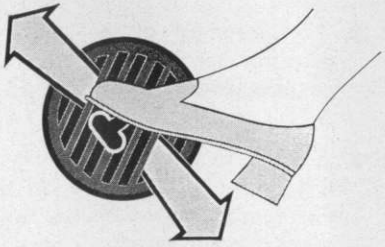


Fresh air

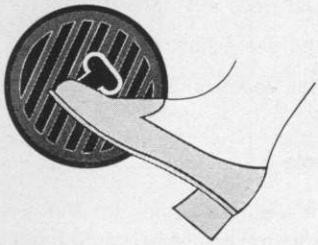
Fresh or warm air

For a best ventilation, flow away slits are provided at rear window posts.

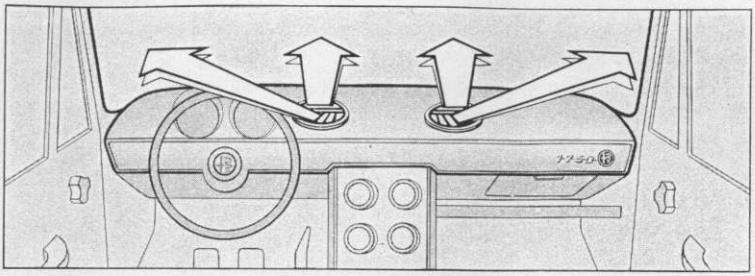
Ventilating outlets



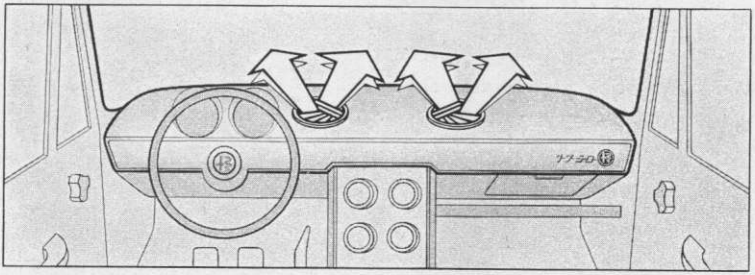
LEVER DOWN
« OPEN »



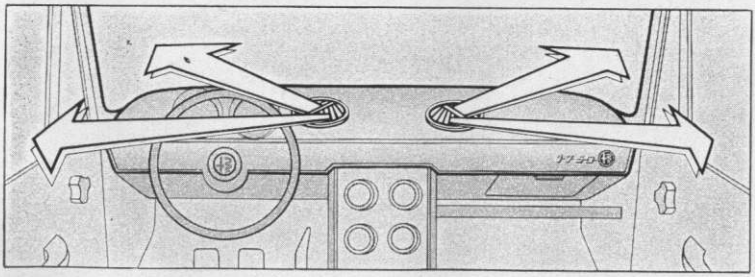
LEVER UP
« CLOSED »



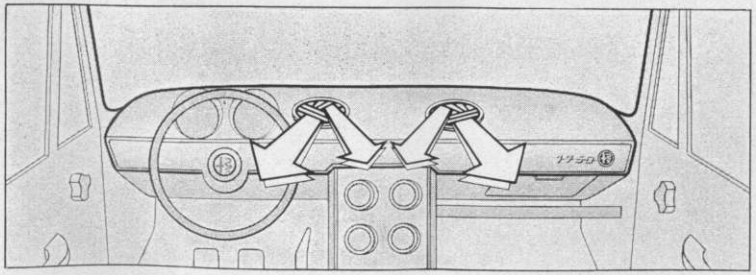
Windscreen demisting



Spot demisting



Windscreen and front windows demisting



Ventilating or heating

The illustrations show some examples of outlet positions.
The outlets can be rotated by hand as desired.

Sun visors

- The front seats are equipped with padded sun visors which can be moved laterally.
  The passenger's visor is provided with a vanity mirror.

Rearview mirror

- The rearview mirror has a day-night anti-dazzle device.

Internal lighting

- Internal lighting is provided by two ceiling lights; the switches have three positions:
  one in the centre: lights always off
  two at the sides: lights always on or automatically operated when opening doors.

Ash trays

- At the sides of the rear seats are two ash trays. They can be removed for emptying by pressing down the small central spring inside the ash tray.

Front seats

- The positioning of the front seats is controlled by a lever situated on the front edge of each seat: by freeing the lever the seat may be moved to the position desired.
  Two knobs at the outboard sides of the seats control the angle of the backrests.

Rear seats

- An arm rest with utility recess is provided between rear seats.

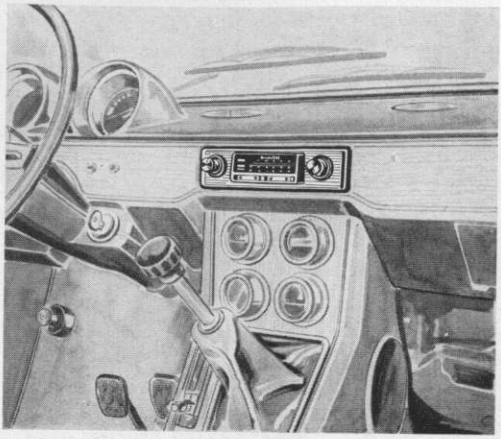
  Should three persons be accomodated on rear seats, the arm rest can be removed and replaced with the padded cushion found in the luggage compartment.

Radio

Provision is made in the dashboard for the installation of the radio.

The location is:

- in the dashboard for the radio set
- in the console and on backshelf for the speakers.

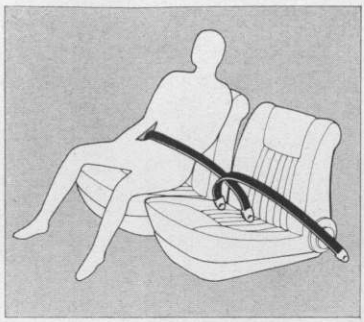


Setup of seats for camping

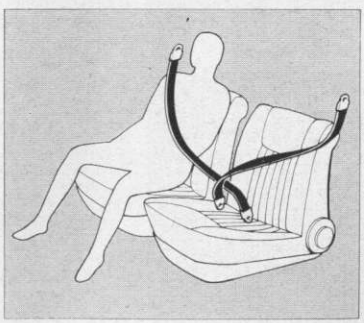
A comfortable arrangement of seats is obtained as follows:

- push all the way forward the front seats;
- recline the backrests by rotating the knob on the outboard side of seats.

SAFETY BELTS



LAP



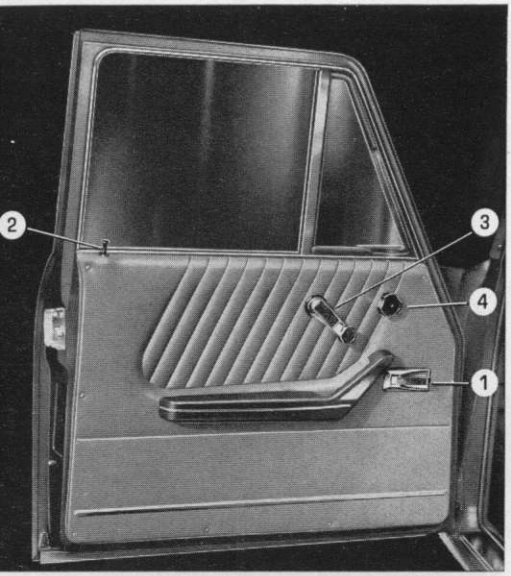
SHOULDER

Provision is made for the fitting of safety belts to front seats.

Suitably reinforced attachment points are located:

- for lap belts: on the central tunnel and on side rails;
- for shoulder belts: on the central tunnel and on centre pillars.

Furthermore, all three attachment points can be used for the installation of lap and diagonal harness.



Front door

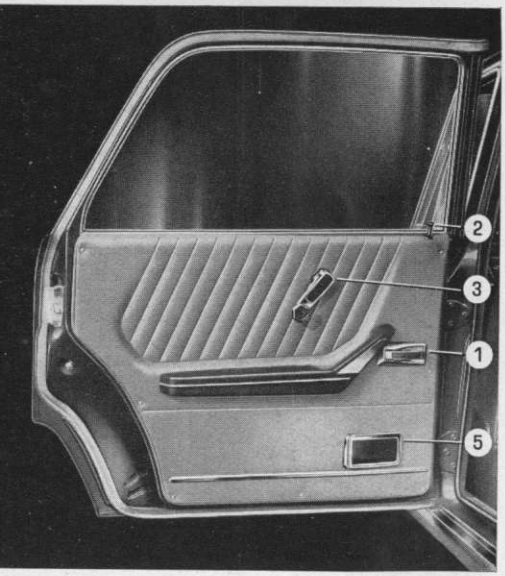
1 Handle for opening the door from inside.

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.

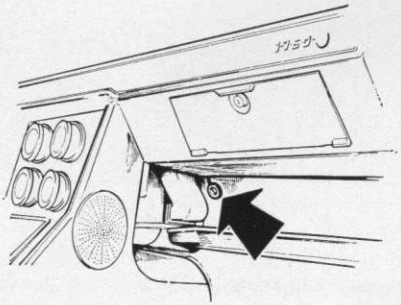
4 Vent window control.

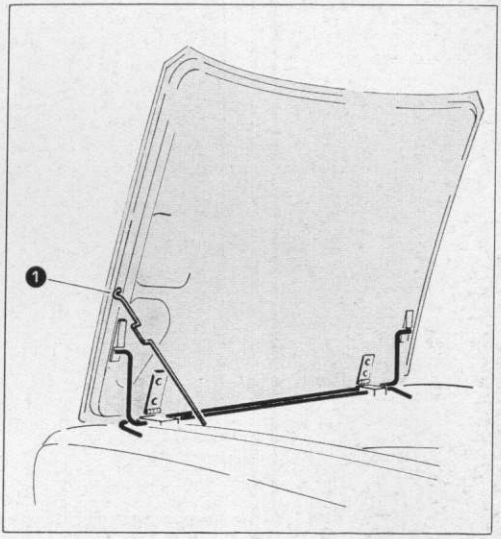
5 Ash tray. It can be removed for emptying by pressing down the small central spring inside the ash tray.



Rear door

The bonnet opens opposite travel direction; to release the catch, pull the lever under the dashboard (see page 10). The bonnet is held in open position by the suitable rod. **1.** To release the bonnet in an emergency, pull the ring shown by the arrow.



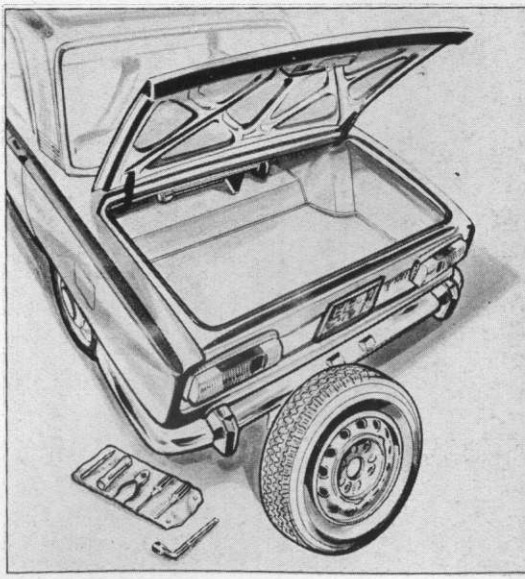


In the boot:

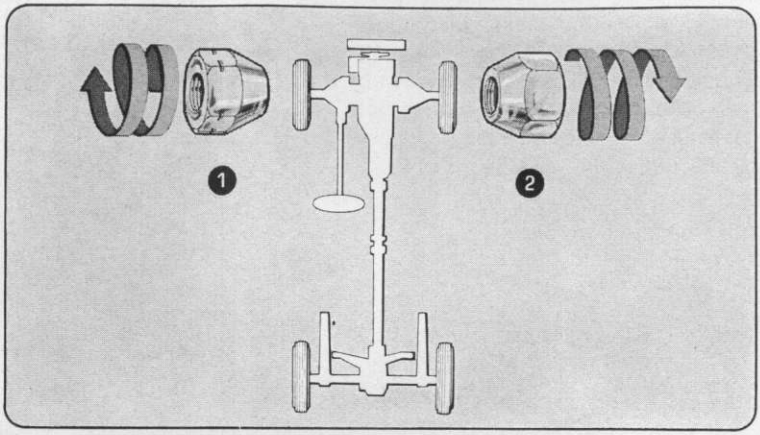
- Spare wheel under the mat
- Jack on the bulkhead
- Tool kit at the L.H. side
- Cushion

TOOL KIT

- Wheel brace
- Pliers
- Box spanner for plugs
- Tommy bar for plug spanner
- Phillips screwdriver
- Screwdriver



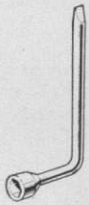
WHEELS



The dimensions of the pressed steel wheels are:

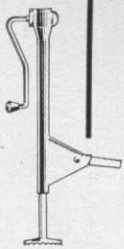
5 1/2 J x 14

Wheel removal



- Remove wheel cover and slacken wheel nuts by one turn with the wheelbrace.

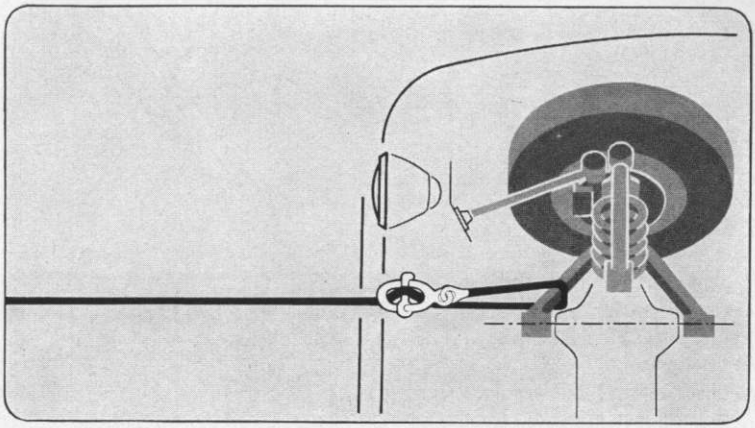
1. left-hand wheels: turn the nuts clockwise to unscrew
2. right-hand wheels: turn the nuts anti-clockwise to unscrew.



- Raise the car by inserting the jack arm in the special socket on the underside of the body longitudinal member.
  Before operating the jack, apply the handbrake.
- Fully unscrew the nuts and remove wheel.

Reinstallation

- Tighten the nuts carefully in diagonal order. Check again tightness of nuts after lowering the jack.
  — left-hand wheels: turn the nuts anti-clockwise to screw in
  — right-hand wheels: turn the nuts clockwise to screw in.

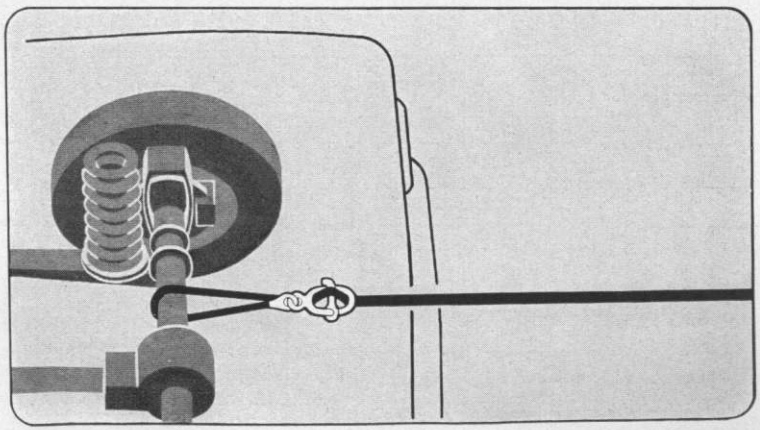


Take A tow

When taking a tow, secure the rope exclusively to the front suspension lower wishbone in correspondence of wishbone attachment to body.

Take IN tow

When taking another vehicle in tow, secure the rope to the axle tube making certain not to damage the pipes of hydraulic brakes.



LUBRICATION

450-750 mi. (700/1200 Km) — Carry out the **Coupon A** from the Service Coupon Book.

3100-3750 mi. (5/6000 Km) — Carry out the **Coupon B** from the Service Coupon Book.

EVERY 300 mi. (500 Km)

1. Check level of engine oil and top up if necessary.
   When checking push the dipstick all the way down. Never allow the oil to fall below the minimum or to exceed the maximum level while topping up.

EVERY 3750 mi. (6,000 Km)

2. Check level of gearbox oil and top up if necessary.
3. Check level of differential oil and top up if necessary.
4. Check level of steering box oil and top up if necessary.
5. Change engine oil (or every 6 months whichever comes first). When topping up never exceed the maximum level.
6. Change oil filter element.
7. Grease ignition distributor.
8. Grease propeller shaft universal joints & sliding yoke.

EVERY 11,250 mi. (18,000 Km)

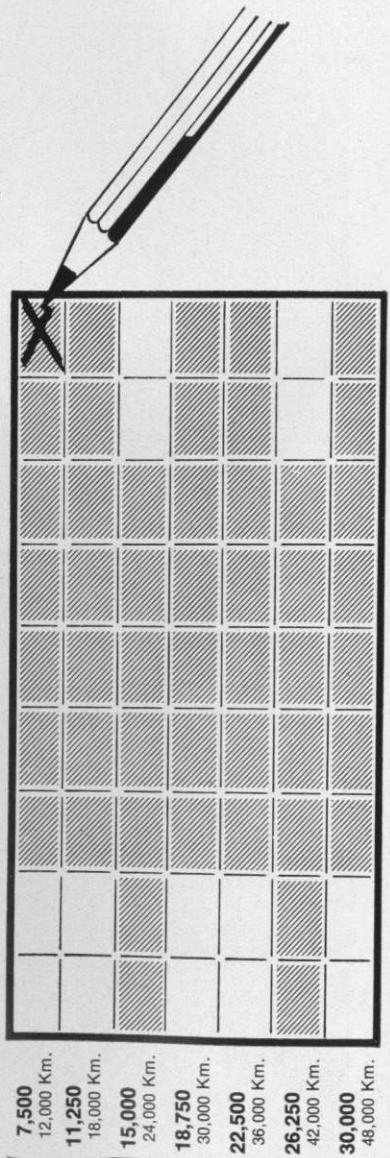
9. Change gearbox oil.
10. Change differential oil.

OCCASIONALLY

Grease the linkage joints & hinges of:

- carburettors
- clutch
- handbrake
- doors & lids

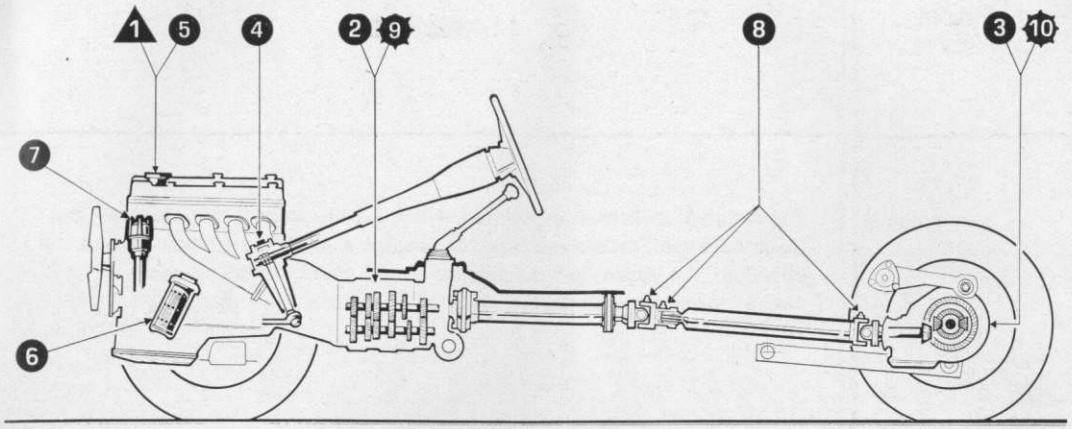
Grease flexible shafts.



7,500 12,000 Km.	11,250 18,000 Km.	15,000 24,000 Km.	18,750 30,000 Km.	22,500 36,000 Km.	26,250 42,000 Km.	30,000 48,000 Km.

MILEAGE COVERED

TICK EACH ITEM AT THE RESPECTIVE MILEAGE



RECOMMENDED LUBRICANTS

PART	Classification	Commercial equivalents AGIP	Commercial equivalents Shell
Engine	SAE 20 W/40 API MS	AGIP F.1 Supermotoroil Multigrade 20 W/40	SHELL Super Motor Oil « 100 »
Gearbox Steering box and differential	SAE 90 API EP	AGIP F.1 Rotra Hypoid SAE 90	SHELL Spirax 90 EP
Propeller shaft universal joints and sliding yoke	NLGI 1	AGIP F.1 Grease 15	SHELL Retinax G
Front wheel bearings (see maintenance schedule)	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 Countries where the recommended lubricants are not available, it is possible to replace them with products of other leading makes provided that **in accordance with the prescribed specifications and grades.**

Lubrication

The engine is pressure lubricated by a gear pump mounted on the front cover of crankcase and driven by a spindle through a pinion keyed to the crankshaft front end.
The oil pressure is adjusted by a relief valve.

Oil level

When checking push the dipstick all the way down. Never allow the oil to fall below the minimum or, while topping up, to exceed the maximum level.

It is recommended to top up with the same type of oil as that in the engine.

Oil change (engine warmed up)

With the engine stopped, drain off old oil thoroughly.
Remove the filter body and clean the inside of it.
Replace the filter element.
Refill with new oil.

Oil replacement after engine reconditioning

With a reconditioned engine follow the instructions given for the **running in period.**

OIL PUMP

Maintenance

The oil pressure is adjusted by a valve in the pump body. **If the pressure falls below the minimum values,** an authorized Alfa Romeo Service Station must be consulted to trace and remedy the fault.
Lubricating circuit faults are indicated by a red warning light, too (see page 16).

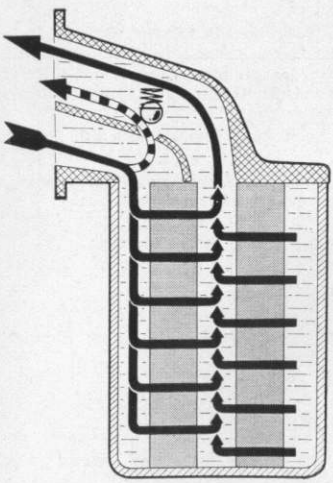
Oil pressures with hot engine		
Engine running fast	min. **50 psi** max. **65-70 psi**	3.5 Kg/cm² 4.5-5 Kg/cm²
Engine idling	min. **7-14 psi**	.5-1 Kg/cm²

OIL FILTER

Maintenance

To remove impurities the engine oil is filtered by a full-flow filter in series with the delivery circuit. The filter is fitted with a valve that by-passes the element if it should become clogged.
When replacing the filter element thoroughly clean the case.
It should be remembered that the periodical replacement of the element, perfect cleaning and careful assembly of the filter are essential for best engine performance.
On reassembling the filter, always replace the seal with a new one.

After refitting the filter to the engine, make sure that there are no oil leaks.



Oil flow with normal operation

Oil flow in an emergency

AT THE FIRST

450-750 mi. 700/1200 Km — **Coupon A** from the Service Coupon Book.

3100-3750 mi. 5/6000 Km — **Coupon B** from the Service Coupon Book.

EVERY 300 mi 500 Km

1. Check tyre inflation pressures.
2. Clean air filter element (more frequently when driving on dusty roads usually).
3. Check battery electrolyte level.
4. Check tension of generator & fan driving belt.
5. Check timing chain tension.

EVERY 3750 mi. 6000 Km

6. Check contact-breaker point gap. Check timing.
7. Clean wire gauze of crankcase ventilation system.
8. Check brake pads.
9. Clean carburettor strainers & jets
10. Check spark plugs.
11. Check level of fluid in brake & clutch reservoir.

EVERY 7,500 mi. 12,000 Km

12. Check clutch pedal free travel.
13. Check valve clearances and adjust, if necessary.
- Check hoses of cooling circuit and heating system and replace, if necessary.

EVERY 11,250 mi. 18,000 Km

14. Change brake fluid-or once a year whichever comes first.
15. Check steering linkage for play.
16. Replace air filter element (more frequently when driving on dusty roads usually).

EVERY 15,000 mi. 24,000 Km

17. Check front wheel toe-in and caster.

EVERY 18,750 mi. 30,000 Km

18. Replace engine coolant mixture-or once a year whichever comes first.
- Inspection of brake system.

EVERY 22,500 mi. 36,000 Km

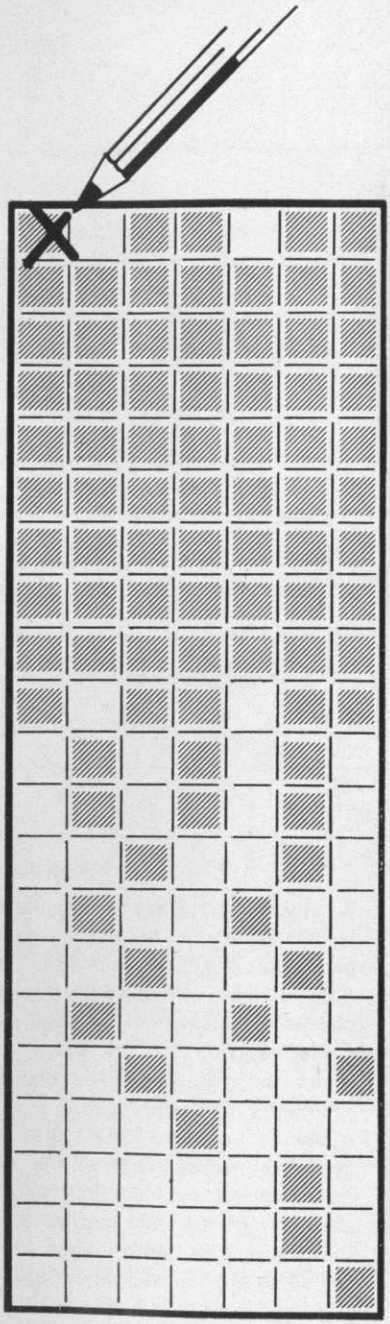
- Tighten all bolts and nuts.

EVERY 30,000 mi. 48,000 Km

19. Adjust front wheel bearing clearance & repack with grease.

OCCASIONALLY

Check level of coolant in engine cooling system reservoir.

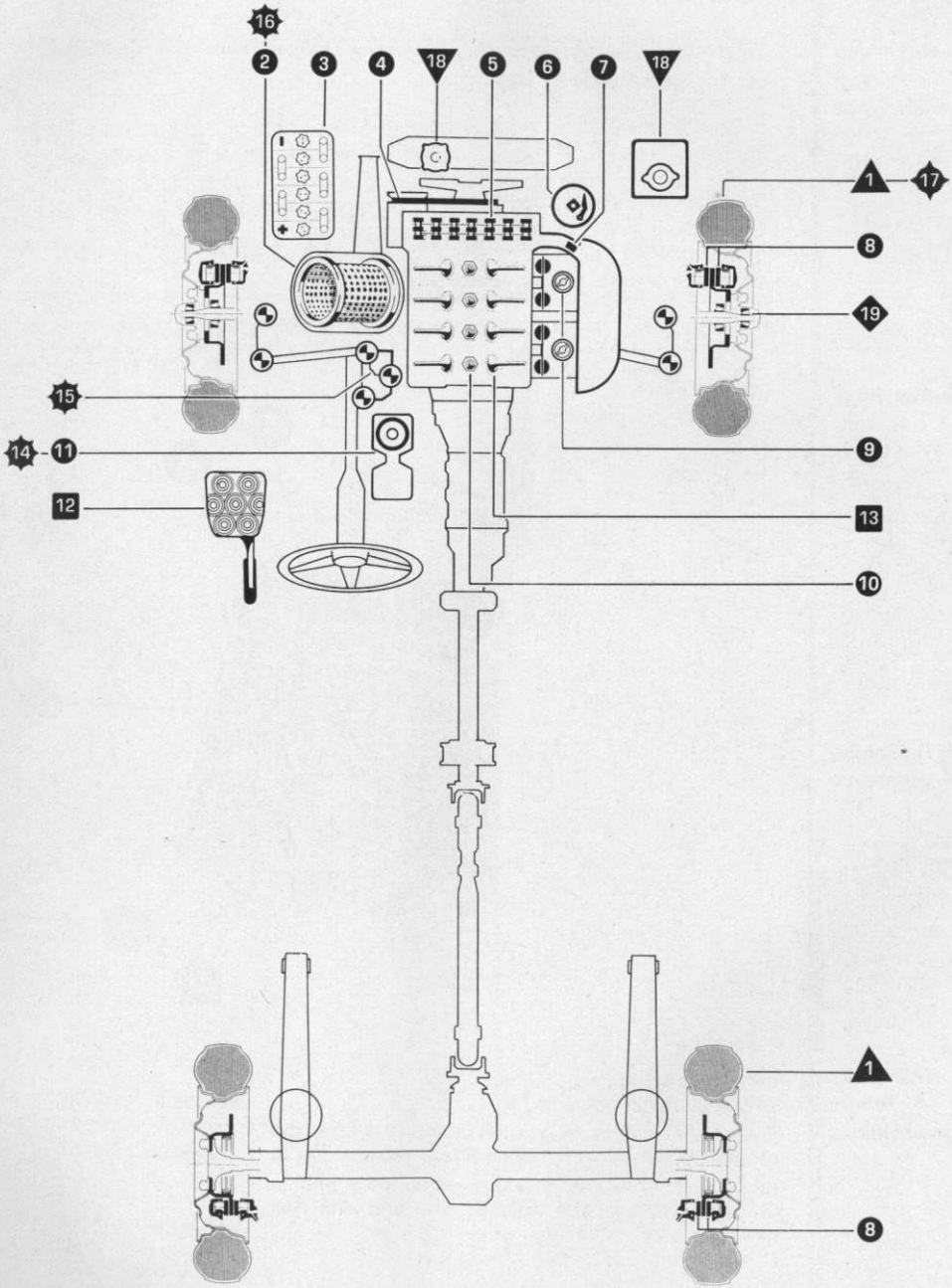


7,500 12,000 Km.	11,250 18,000 Km.	15,000 24,000 Km.	18,750 30,000 Km.	22,500 36,000 Km.	26,250 42,000 Km.	30,000 48,000 Km.

MILEAGE COVERED

TICK EACH ITEM AT THE RESPECTIVE MILEAGE

MAINTENANCE



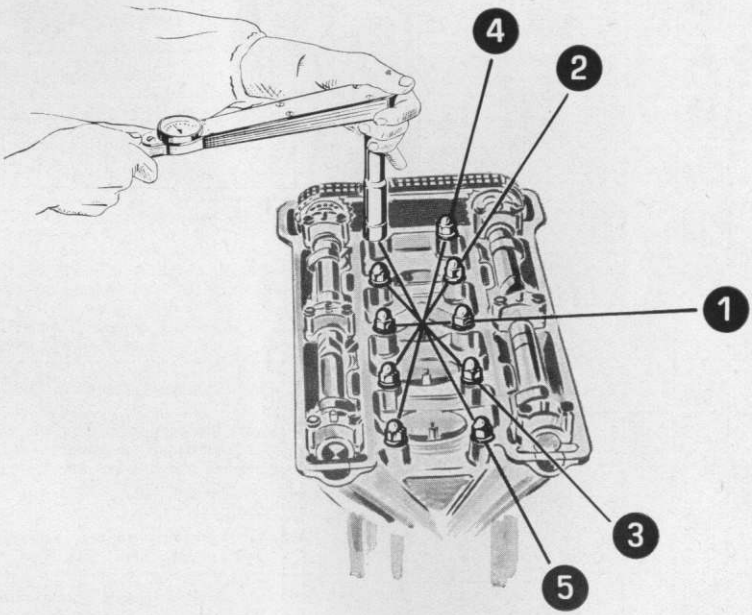
Tightening torque specifications

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

	lb-ft	Kgm
Main bearing caps: lubetorque to . .	**34-36**	4.7-5
Connecting rod bearing caps: lubetorque to	**36-38**	5-5.3
Camshaft journal caps: lubetorque to .	**15-16**	2-2.25

Cylinder head nuts

Tightening sequence



Tightening torque specifications

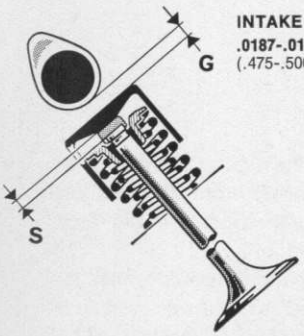
	lb-ft	Kgm
After reconditioning: lubetorque when cold to	**52.1-53.5**	7.2-7.4
Then warm up the engine by actually driving the car and when hot **retighten without unscrewing to**	**55-55.7**	7.6-7.7
After tested the car, slacken, **when cold** and in proper sequence, the nuts **by one and one half turn and lubetorque to**	**52.1-53.5**	7.2-7.4

The V-mounted overhead valves are directly operated by two camshafts acting through oil bath cups.

Valve clearance adjustment

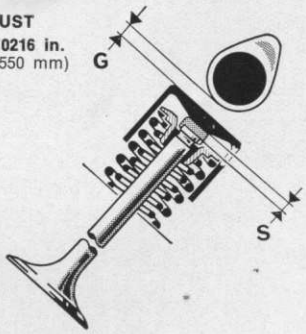
When the engine is cold, carefully measure the clearance **G** with a feeler gauge. If the clearance is not as specified, remove camshafts and valve cups; measure the thickness **S** of the adjusting pad on each valve stem and replace it with another of proper thickness so that the clearance is the correct one shown in the diagram.

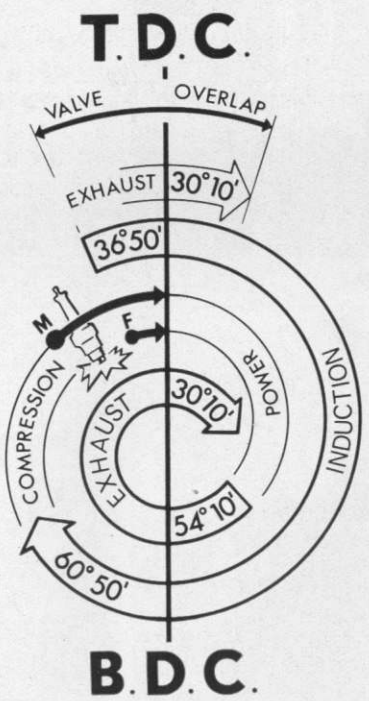
To facilitate this adjustment the pads are made available in a series of thicknesses ranging from **1.3 to 3.5 mm** (.05 to .14 in.) in increments of **.025 mm** (.001 in.).



INTAKE
.0187-.0197 in.
(.475-.500 mm)

EXHAUST
.0206-.0216 in.
(.525-.550 mm)

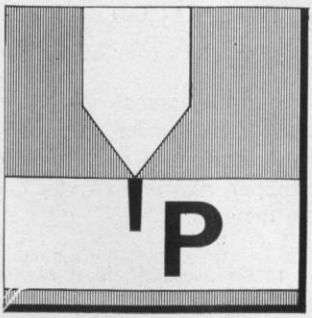




M
MAXIMUM ADVANCE

F
FIXED ADVANCE

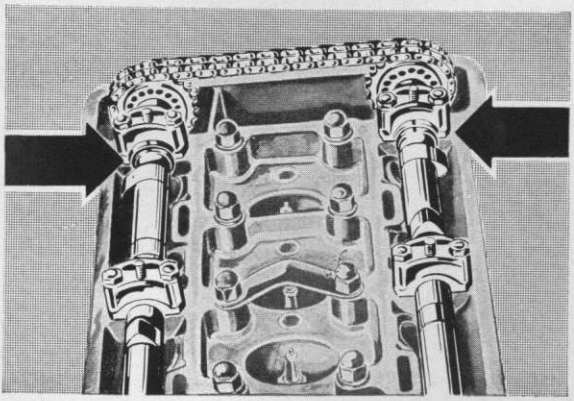
Checking and timing



The valve timing is correct when:

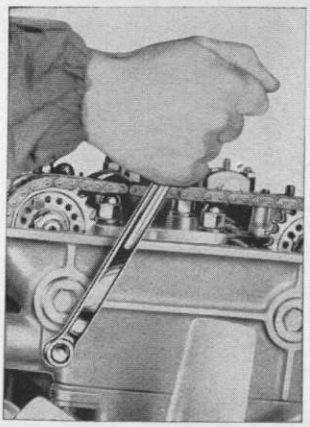
Top dead centre

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

Chain tension adjustment



Proceed as follows:

- slacken off the setscrew securing the chain tensioner;
- run engine at idling speed to allow the tensioner to tighten the chain;
- lock the chain tensioner setscrew firmly.

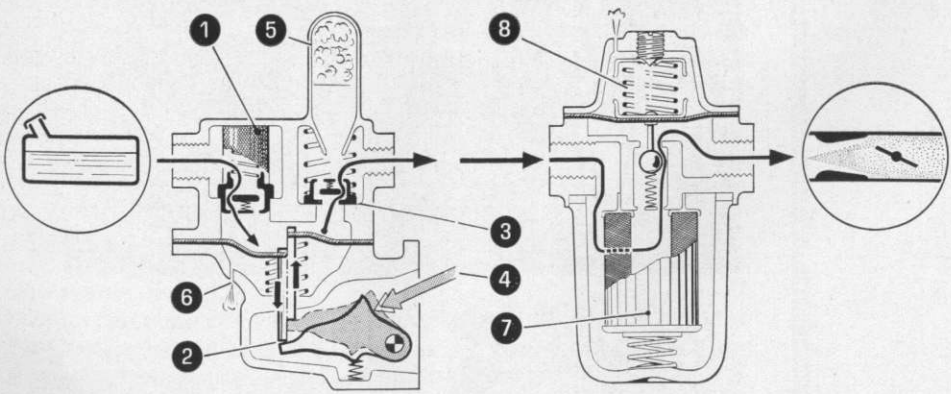
Air filter

The air filter is equipped with a pleated element offering the maximum filtering surface. At the prescribed intervals remove the cover of the filter, withdraw the element and clean it carefully from inside with low pressure compressed air. Moreover at the prescribed intervals change the element.

The fuel supply is effected by a mechanical pump located on the right-hand side of the engine and actuated by the distributor drive shaft. The fuel sucked by the fuel pump reaches the carburettor through a bowl filter on the right-hand side of the engine compartment.
The filter incorporates a device which regulates the outlet pressure of the fuel.
At the prescribed intervals clean or change the filter element, if necessary.

Fuel pump

1 Filter and inlet valve
2 Diaphragm control
3 Outlet valve
4 Push rod operating the pump
5 Vapour trap
6 Vent hole
7 Filter element
8 Pressure regulating device



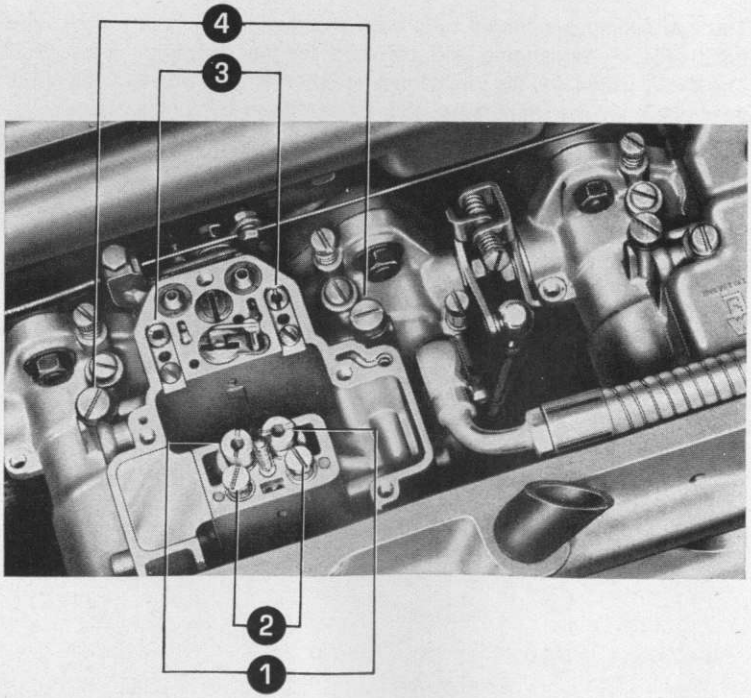
Rating

❶	Main jets	125
	Main air restrictor jets	200
❷	Idling jets (axial passage 170)	50 F 14
	Air restrictor	120
❸	Choke jets	65 F 5
❹	Acceleration pump jets	35
	Venturis (mm)	32

2 CARBURETTORS

WEBER

40 DCOE 32



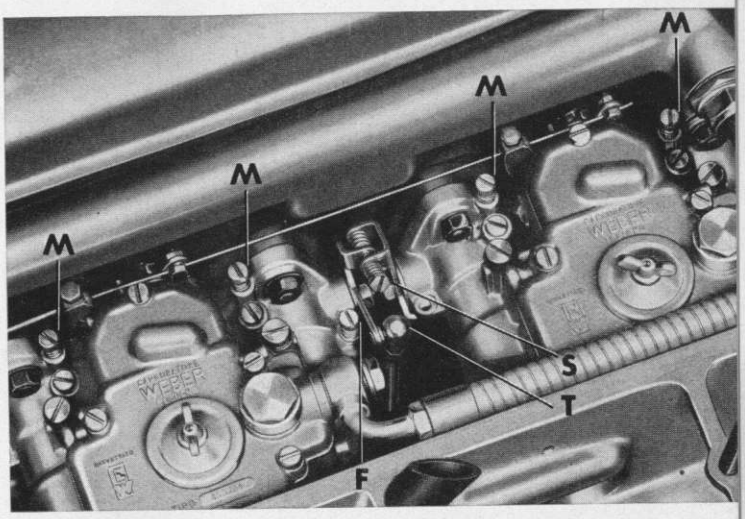
IDLE ADJUSTMENT

F Adjusting screw for minimum opening of throttle

M Idling mixture adjusting screw

S Screw for synchronizing throttles of the two carburettors

T Joint for control linkage (to pedal)



Preparatory steps

Check the ignition timing and inspect the electric system (spark plugs, distributor, coil etc.) for proper operation.
Remove the air filter element and clean thoroughly.
Check the flexible mounts between carburettors and intake manifold for tightness.

Aligning the throttle valves

Detach the control linkage **T** from carburettors.
Slacken the screws **F** and **S** almost fully.
Operate the throttles a few times, making sure that there is no binding.
Fully depress the throttle control lever of rear carburettor so that the throttles are fully closed; then screw in the screw **S** until contact is made.

Idle

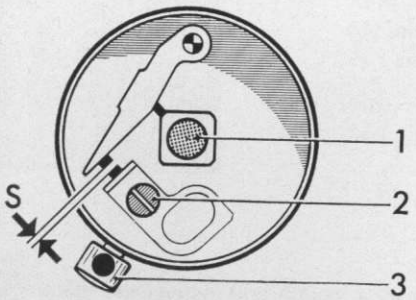
Back off the screws **M half a turn** from closed position.
Tighten the screw **F** to contact, then screw it in **one more turn** to ensure feeding to engine.
Connect the control linkage **T** to carburettors.
Start the engine and warm it up. If necessary, back off the screw **F** very slowly until the engine runs at about 600-700 r.p.m.

Engine maintenance

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

Firing order: 1 - 3 - 4 - 2

Ignition distributor



At the prescribed intervals :

Check with a feeler gauge the contact-breaker point gap:

S = .0138 to .0157 in. (.35-.40 mm)

Adjust by means of screw **2** if necessary.
If contacts are burnt or pitted, they may be smoothed with a very fine file and then cleaned with petrol.
Soak the felt **1** with oil.

Apply some drops of oil through the lubricator **3.**
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.

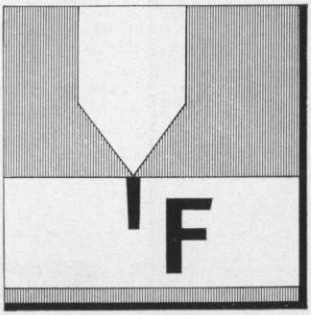
Checking the ignition timing

To check the ignition timing, proceed as follows:

1 rotate the crankshaft to bring no. 1 cylinder piston to the compression stroke, that is with both valves closed;

2 by slightly rotating the crankshaft, bring the fixed advance mark **F** cut in the drive pulley into line with the reference plate;

3 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.



FIXED ADVANCE

2° / 4° BTDC

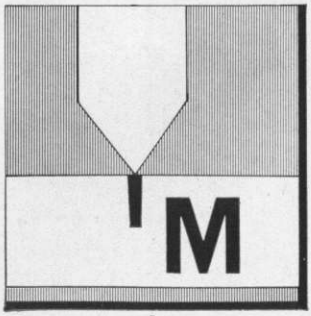
A more accurate check can be made with a **stroboscopic gun** as follows:

run the engine at about 5300 rpm and direct the light from the stroboscopic gun onto the pulley: if the timing is correct, the **M** (max. advance) stamped on the pulley will be seen in line with the reference plate.

If it is found that the max. advance is greater or less than the prescribed value, adjust the fixed advance accordingly, as it is better to have correct timing at high speeds.

MAX. ADVANCE

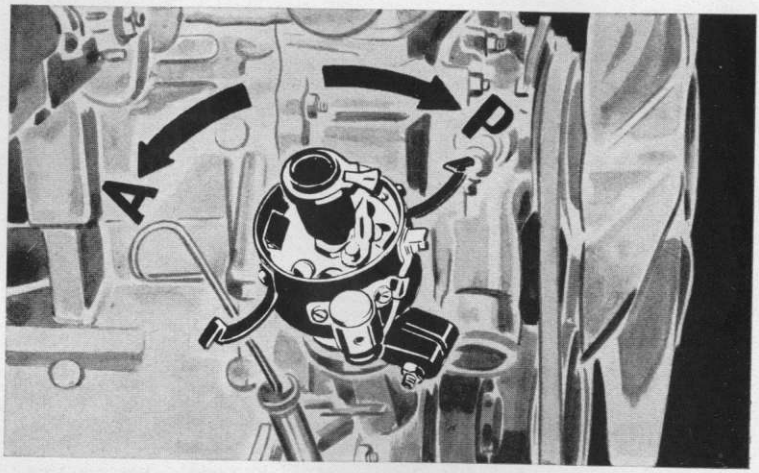
40° / 43° at 5300 rpm



Timing adjustment

If the timing requires adjustment proceed as follows:

1 unscrew the nut on the bolt securing the distributor body;
2 rotate the distributor body anti-clockwise or clockwise according to whether it is necessary to advance (**A**) or to retard (**P**) the ignition setting;
3 retighten the nut, taking care not to move the distributor body.



Timing after removal of distributor from engine

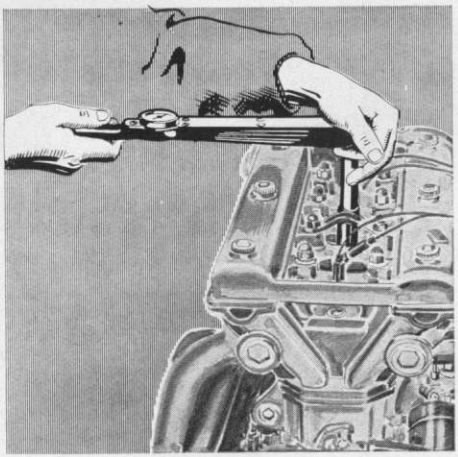
To re-set the timing after the distributor has been removed from the engine proceed as follows:

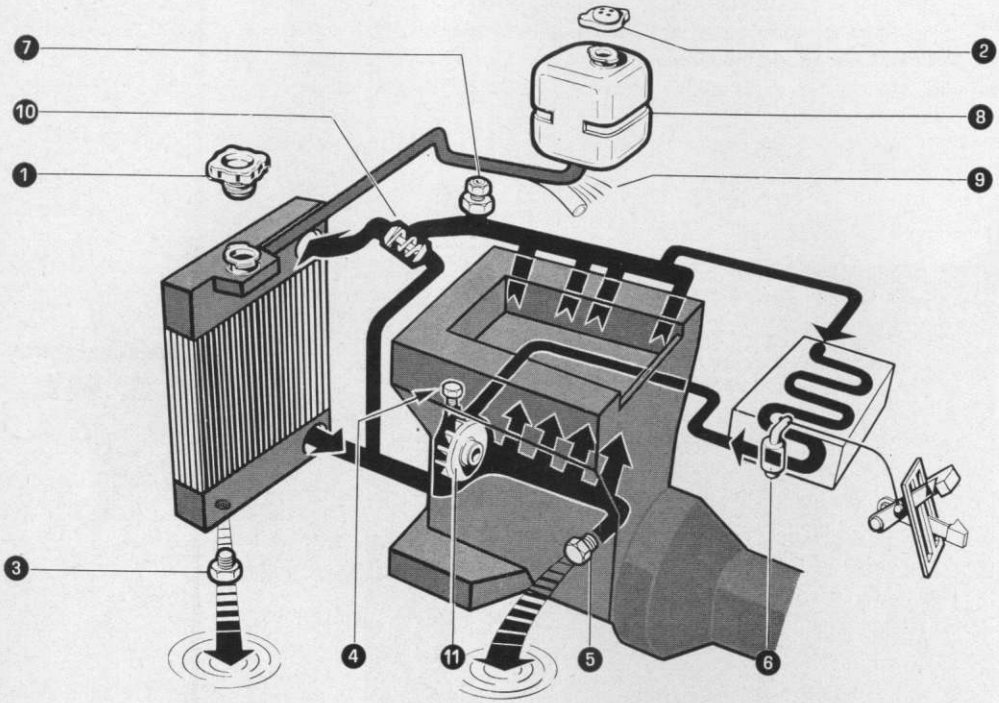
- rotate the crankshaft to bring No. 1 piston to the compression stroke, that is with both valves closed;
- by slightly rotating the crankshaft, bring the fixed advance mark **F** into line with the reference plate;
- remove the distributor cap and rotate the drive shaft by hand to bring the rotor arm in line with the contact for No. 1 cylinder.
- make sure that in this position the contact-breaker points are about to open;
- then without disturbing the drive shaft, mount the distributor on its bracket and tighten the distributor bracket bolt.
- check the ignition timing as described in the previous page.

The spark plugs are of the type with four points and a central electrode.
The only maintenance required is occasional cleaning with a brush of the central and earth electrodes. **No routine adjustment is necessary** of the gap between the electrode and points.

Spark plugs LODGE
2 HL

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





Diagram

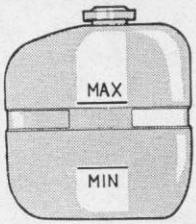
1 Radiator filler plug
2 Reservoir filler plug
3 Radiator drain plug
4 Bleed screw on pump
5 Drain plug on crankcase
6 Heater cock
7 Bleed screw on manifold
8 Reservoir
9 Supply line from reservoir to radiator
10 Thermostat
11 Centrifugal pump.

Cooling circuit

The cooling circuit is provided with a compensating reservoir containing a special **Alfa Romeo Coolant Mixture** which gives full protection against freezing down to —20°C (—5°F).

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

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



The level of mixture in the reservoir should never fall below the « Min » nor exceed the « Max ».

To top up use Alfa Romeo Coolant Mixture drawn from suitable containers available by **Alfa Romeo Service Stations.**

If too frequent a topping up is required, have the cooling system checked by an Authorized Workshop.

Should sudden and excessive leaks be experienced from the system, the use of fresh water is allowed provided that the specified mixture is restored and trouble remedied **as soon as possible** by an Authorized Workshop.

WARNING

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

Engine maintenance

Changing the coolant mixture

Every 18,750 mi - 30,000 Kms (or once a year whichever comes first) get the coolant mixture renewed by an Alfa Romeo Service Station after the circuit has been flushed with a suitable descaling compound.

Refilling the system

Proceed as follows: (refer to the illustration on page 44):

Draining:

- Remove radiator filler plug **1.**
- Unscrew the drain plug **3** and the bleed screw **7** on manifold.
- Turn on the heater cock **6.**
- Remove the drain plug **5** on crankcase; let liquid drain off and empty the reservoir **8** by detaching the pipe **9.**
  Reinstall drain plugs **3** and **5** and reconnect the pipe to the reservoir.

Replenishing:

- Remove radiator and reservoir filler plug and turn on the heater cock.
- Open the bleed screw **7** on manifold and **4** on pump.
- Pour coolant mixture through radiator filler port until coolant escapes from bleed screw **4**; then screw in the latter. Go on in adding mixture until it appears at the bleed screw **7** on manifold.
- With the bleed screw on manifold opened and no plug on filler port of radiator start the engine and keep it running for a few seconds in order to bleed air completely.
- Close the bleed screw on manifold.
- Add mixture to radiator filler port until full.
- Add mixture also to reservoir until « Max » level is reached.
- Put plugs on reservoir and radiator.

IMPORTANT NOTE

The mixture in the cooling circuit gives full protection against freezing down to —20°C. (—5°F.).

In places where the temperature falls below —20°C, the mixture can be strengthened as directed on page 17.

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

Adjusting the tension of fan, coolant pump and alternator driving belt

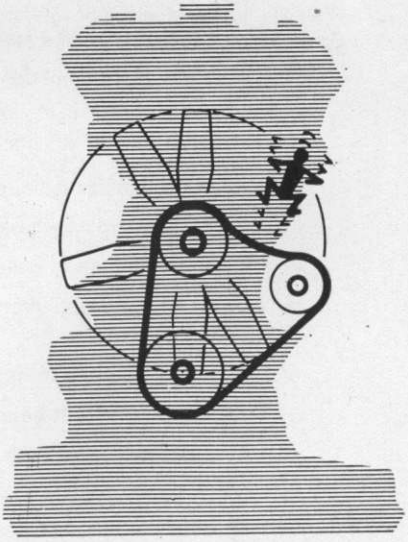
If the tension is insufficient, the belt will slip and wear prematurely; furthermore:

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.

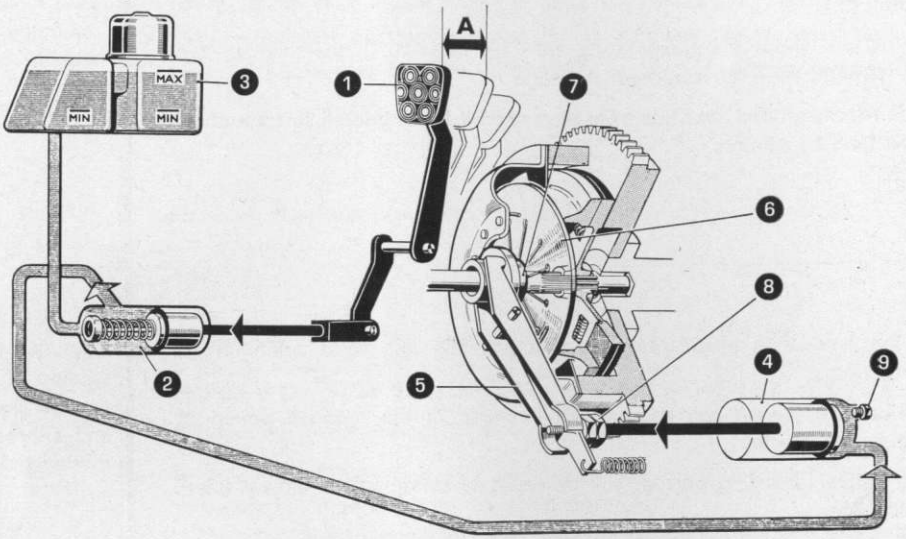
Therefore it is necessary to check the belt tension at the prescribed intervals.



The tension is correct when on pressing the belt down the amount of play is approximately 1/2 in. (10-15 mm).

To tighten the belt unscrew the nut on the adjusting arm and move the alternator outwards.

Carefully retighten the nut after adjusting the belt tension.



Operating diagram

A Pedal free travel

B Actuating rod free travel

1 Pedal

2 Master cylinder

3 Fluid reservoir

4 Actuating cylinder

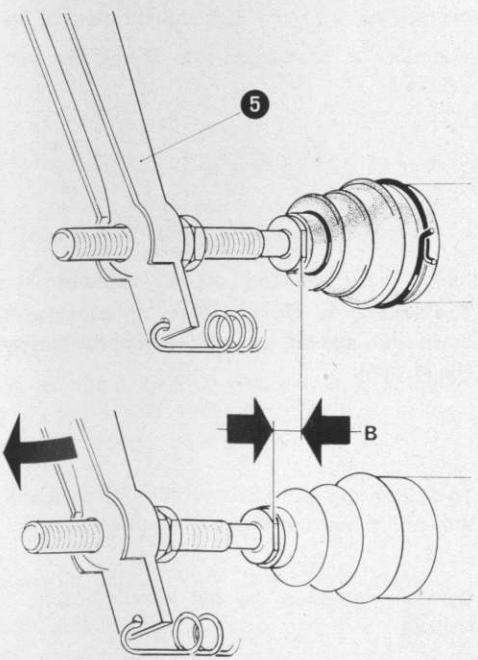
5 Disengagement lever

6 Diaphragm spring

7 Throwout bearing

8 Adjusting nuts

9 Air bleed screw.



The clutch is of the hydraulically-operated single-plate dry type. The clutch pedal acts on a master cylinder supplied with the same type of fluid as the brake system.

When the clutch pedal is depressed the fluid under pressure actuates the piston in the cylinder **4** connected to the clutch disengagement lever **5.**

The pressure plate is controlled by means of diaphragm spring **6.** **The clutch pedal free travel A should be about 1 1/4 in. (30-32 mm.).** When, owing to wear on the clutch disc facing, the pedal free travel is reduced to **3/4 in.** (17-19 mm) the free travel must be restored.

Adjusting the pedal free travel

Measure with a rule the free travel **B** of the actuating rod on the lever **5,** by depressing the pedal until the throwout bearing **7** contacts the spring **6;** the travel **B** should be about **.08-.10 in.** (2-2.5 mm). If the travel is shorter, act on adjusting nuts **8.**

At the same time make sure that, by pressing the pedal as far as it will go, the actuating rod can move through a total travel of **.53-.56 in.** (13.5 - 14.2 mm).

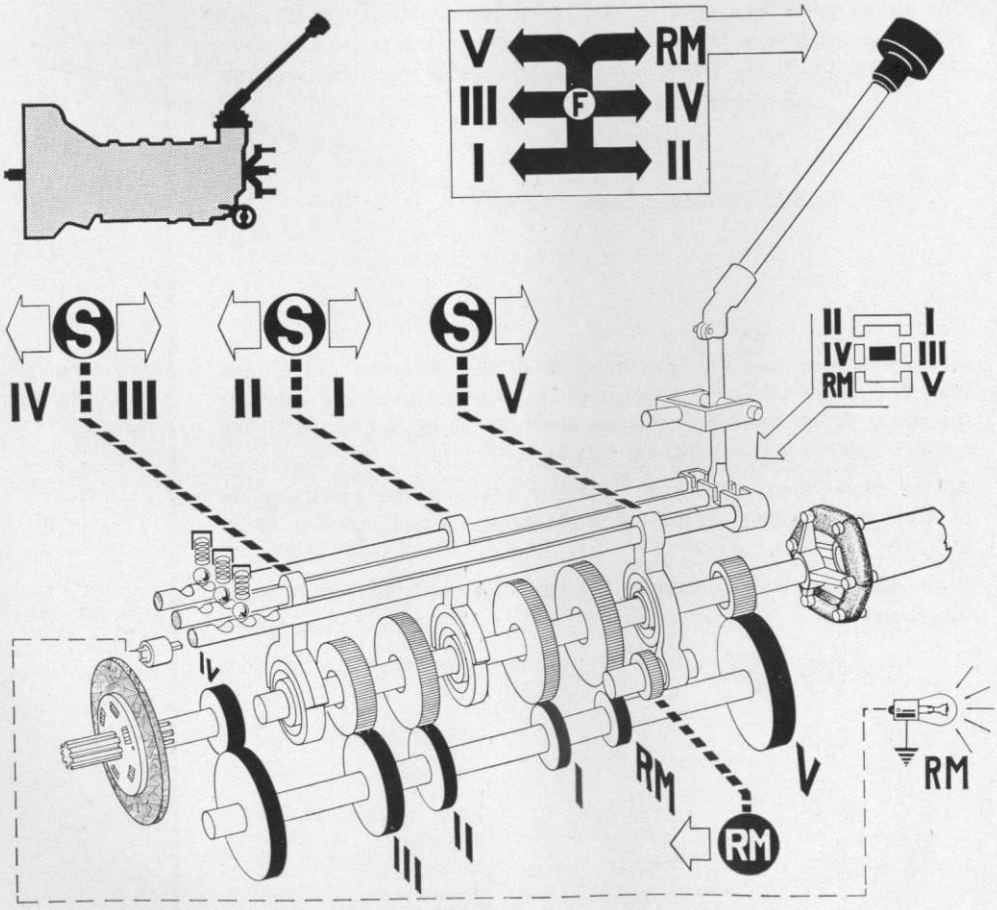
If any component of the system has been removed, thoroughly bleed the circuit.

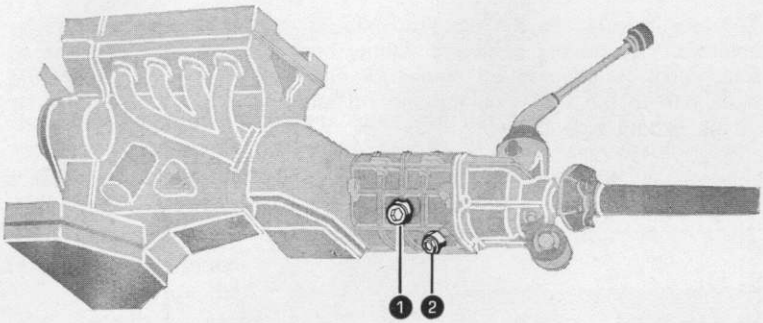
Transmission ratios

1st	3.30 : 1
2nd	1.99 : 1
3rd	1.35 : 1
4th	1.00 : 1
5th	.79 : 1
Rev.	3.01 : 1

The gearbox has 5 synchromesh forward gears and one reverse.
The gear lever is floor mounted.

RM = Reverse
S = Synchromesh
F = Neutral





Any inspection or adjustment of the gearbox must be done only by an **authorized Alfa Romeo Service Station.**

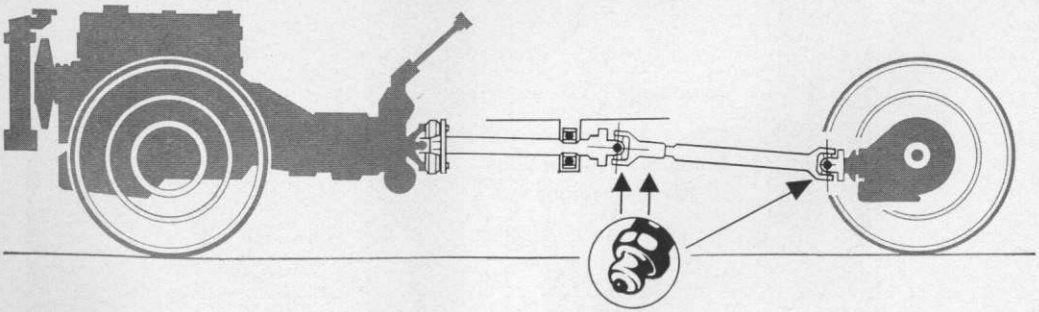
1 Filler plug.
Check that gearbox is full of oil to the bottom edge of the filler orifice.

2 Drain plug.

PROPELLER SHAFT

The propeller shaft is in two sections and has an intermediate flexible support attached to the body.

The front section is provided with a rubber coupling at the gearbox end; a universal joint is provided at each end of the rear section.

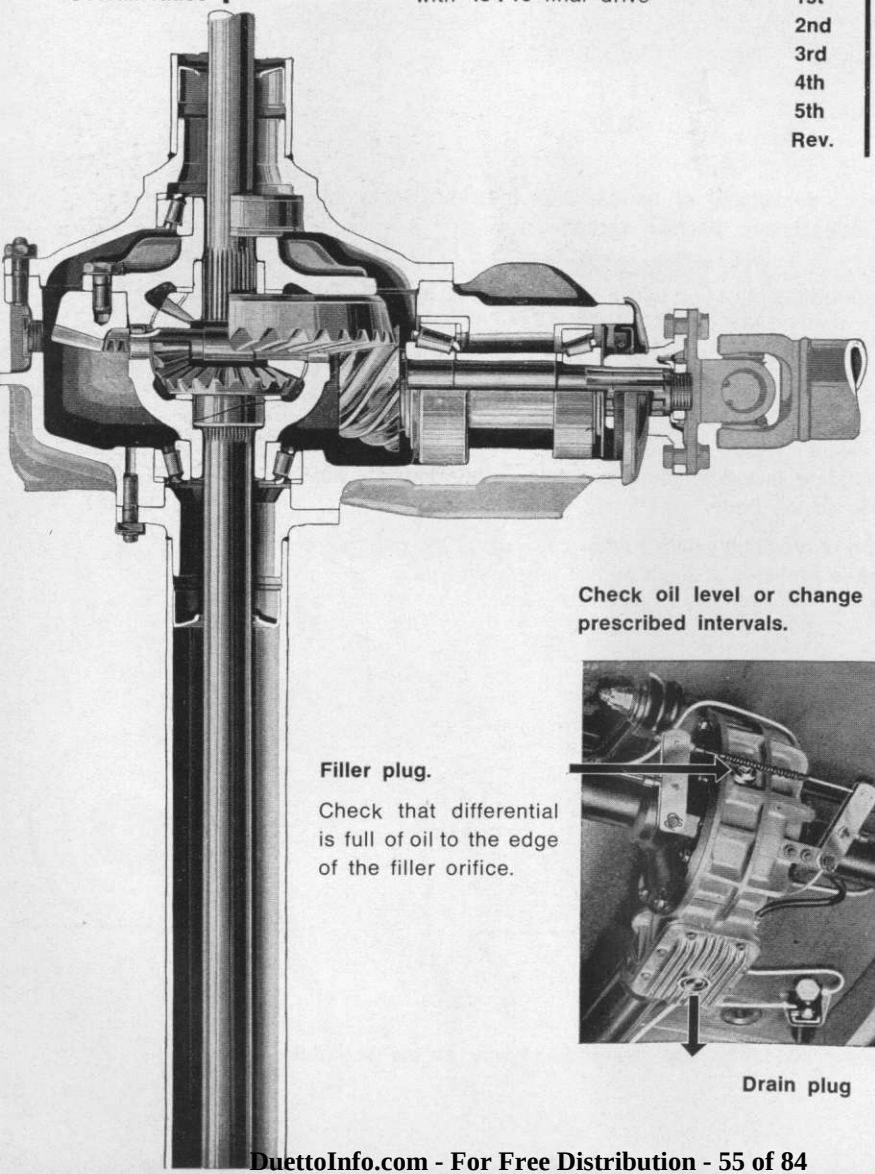


Grease the universal joints and the sliding yoke at the scheduled intervals.

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

Overall ratios with **43 : 10** final drive

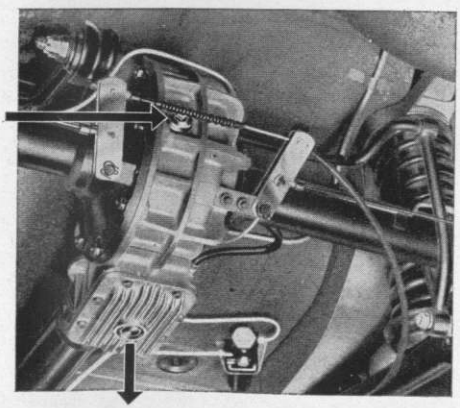
1st	14.20 : 1
2nd	8.55 : 1
3rd	5.82 : 1
4th	4.30 : 1
5th	3.40 : 1
Rev.	12.94 : 1



Check oil level or change the oil at the prescribed intervals.

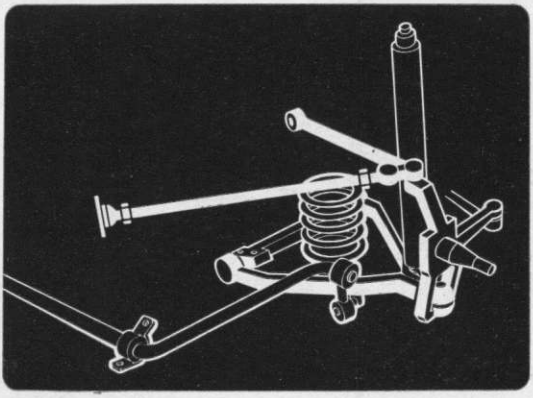
Filler plug.

Check that differential is full of oil to the edge of the filler orifice.

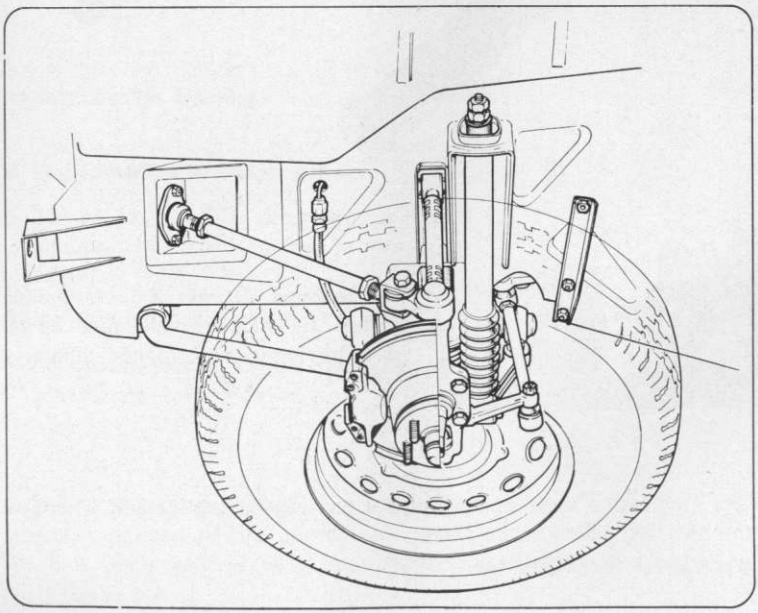


Drain plug

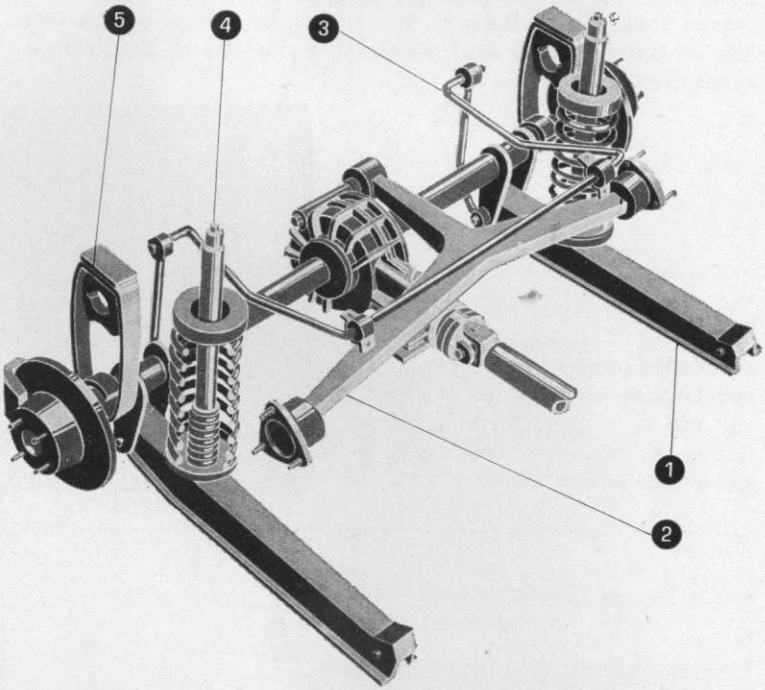
The front wheels are independently suspended and connected to the body by transverse arms.
Coil springs and double-acting hydraulic telescopic shock absorbers are located between the lower arms and the body.
The suspension system is completed by a transverse stabilizer rod which improves the stability of the vehicle when cornering.
Upward movement of the arms is restricted by bumper pads situated near the springs. Downward movement is restricted by pads attached to the cross member.



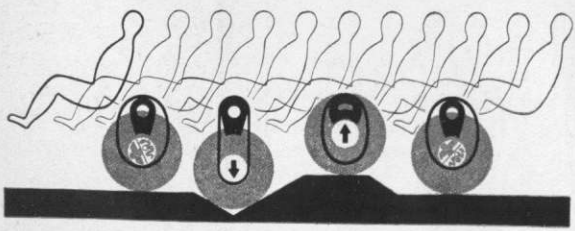
Suspension components require no regular lubrication. Whenever the damping action of the shock absorbers is uneven, have them checked by an authorized Service Station.



The rear suspension consists of coil springs and large diameter telescopic shock absorbers coaxial with the springs.
The suspension system is completed by a transverse stabilizer rod linked to the trailing arms and the body.



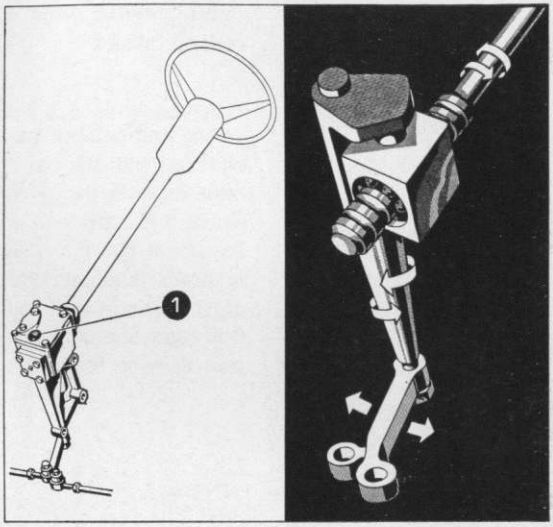
1 Trailing arm
2 T-arm
3 Stabilizer rod
4 Shock absorber
5 Rubber buffer and rebound strap.



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

The suspension units do not require any regular lubrication. Whenever the damping action of the shock absorbers is uneven, have them checked by an authorized Service Station.

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

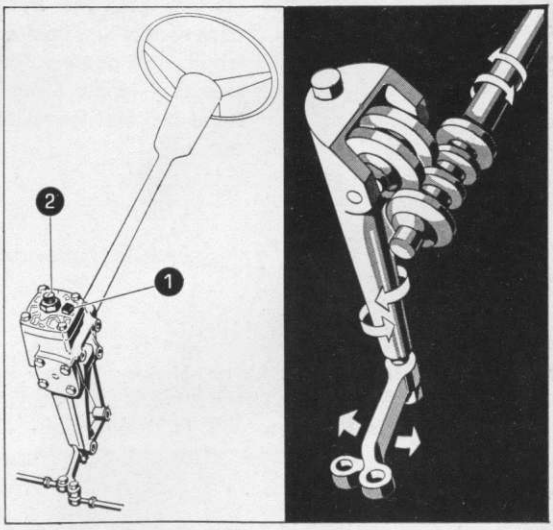


Recirculating ball steering.

At the prescribed intervals check:

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

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



Worm-and-roller steering.

At the prescribed intervals check:

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

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

Toe-in and camber

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

Toe-in and camber vary according to the car load: the values should be checked with the car standing on level ground, with full sump, tank and radiator, with the tyres inflated to the prescribed pressures with spare wheel and tools and with a load corresponding to that of four persons, i.e. about 620 lbs. (280 Kg.).
In order to obtain the correct results these checks should be carried out by specialized mechanics using suitable equipment.
It is recommended that this operation should be entrusted to an authorized Service Station.

Toe-in adjustment

Lock steering wheel in the central position, i.e. with the spokes symmetrically disposed in relation to the vertical;
starting with the track rod **1** on the steering box side, place the corresponding wheel so that the toe-in is 1.5 mm (1/16"); measure the length thus obtained of the track rod and adjust the arm **2** on the other side to a length 5 mm (3/16") shorter;
bring the first wheel to a 1.5 mm toe-in by adjusting the centre track rod **3.**

Length of track rods

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

10.71 ± .3 in.	**21.26 ± .4 in.**
(272 ± 8 mm)	(540 ± 10 mm)

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

Camber

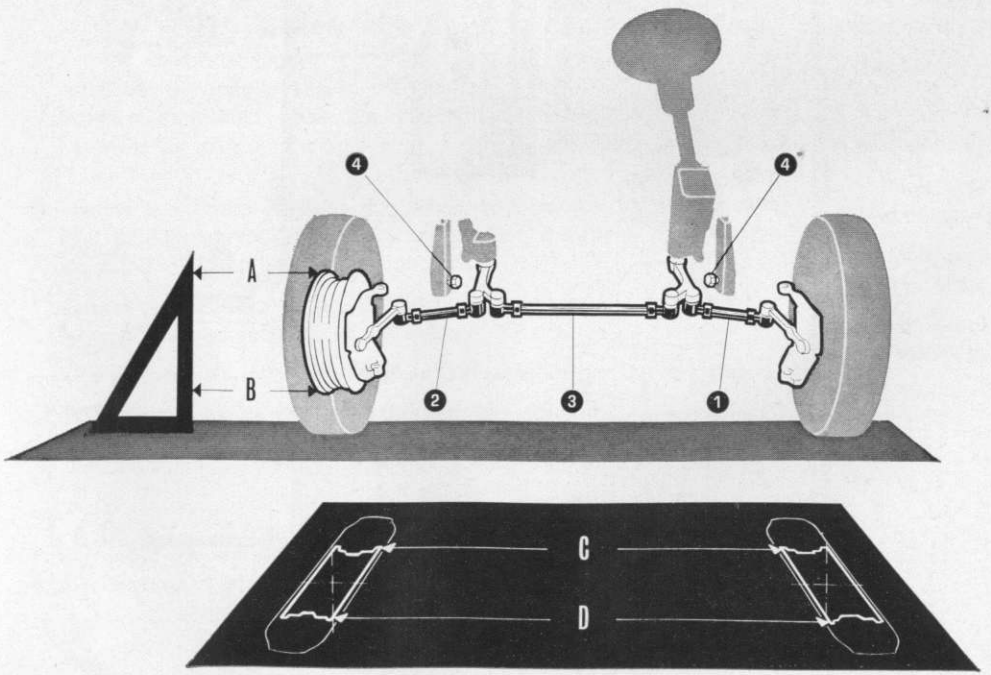
Non-adjustable; check chassis and suspension arms for distortion, if necessary.

Turning circle

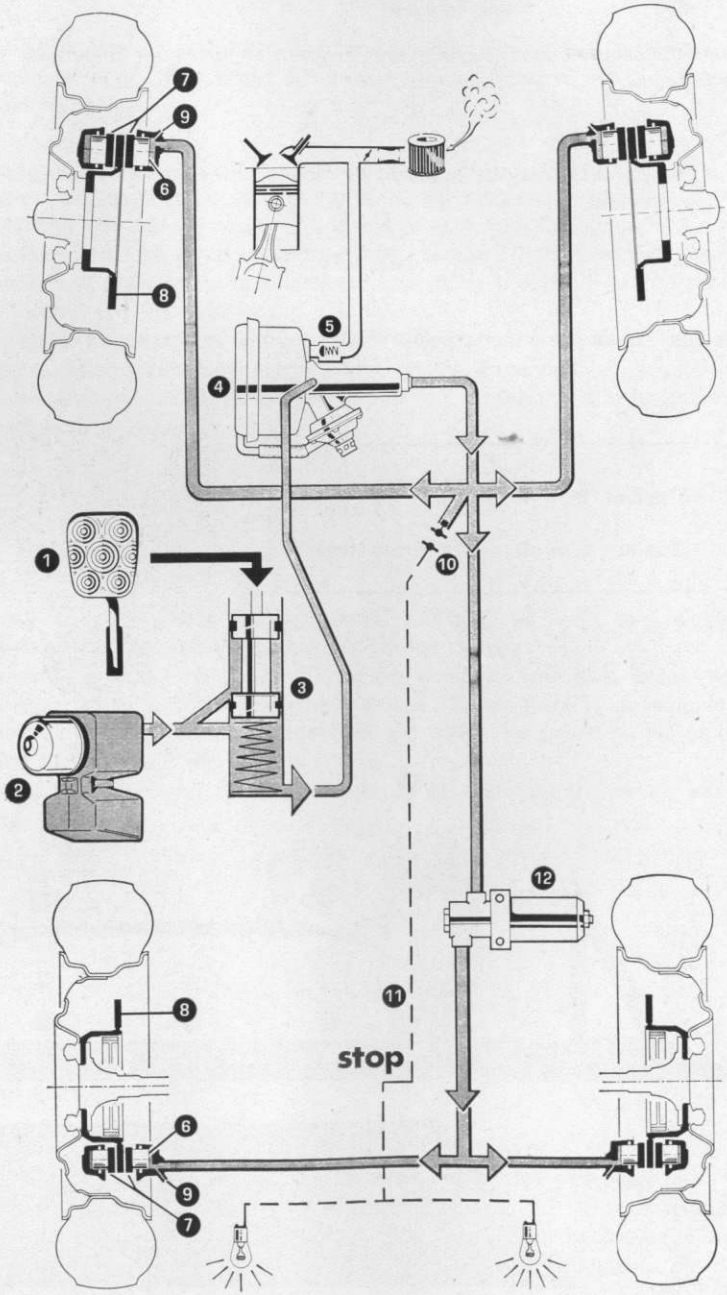
The turning circle may be adjusted by means of the screws **4** indicated in the diagram.

Camber B = A + .20" (+ 5 mm) — .04" (— 1 mm)

Toe-in C = D + .12" (+ 3 mm)



Operating diagram



1 Brake pedal
2 Fluid reservoir
3 Master cylinder
4 Vacuum servo
5 Vacuum connection on intake manifold
6 Slave cylinders
7 Friction pads
8 Discs
9 Bleed screws
10 Stop light pressure switch
11 Stop light cable
12 Pressure regulator

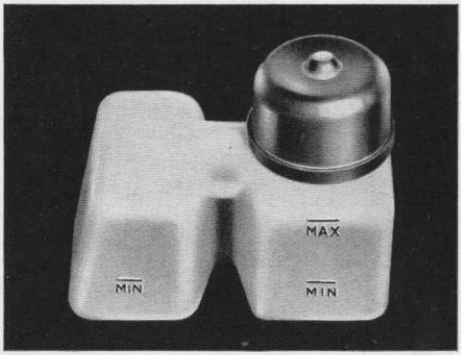
Hydraulic brake

The **ATE** brake system consists of four caliper type disc brakes operated by a master cylinder. The friction pads of the front and rear brakes are directly actuated by the cylinders integral with the calipers. The brakes are self-adjusting.
A pressure regulator controls the braking power to rear brakes.

Such a regulator shall not be tampered with; specifically, do not attempt to act on the adjusting nut as it is factory sealed.

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

- Take care to prevent the **minimum level** of fluid in the reservoir from falling below the **maximum level** by more than a quarter.



- For renewal or topping up, it is absolutely essential to use only

  Ate «Blau H»

  from freshly opened sealed containers. When adding fluid, leave the strainer in place so as to filter the fluid.

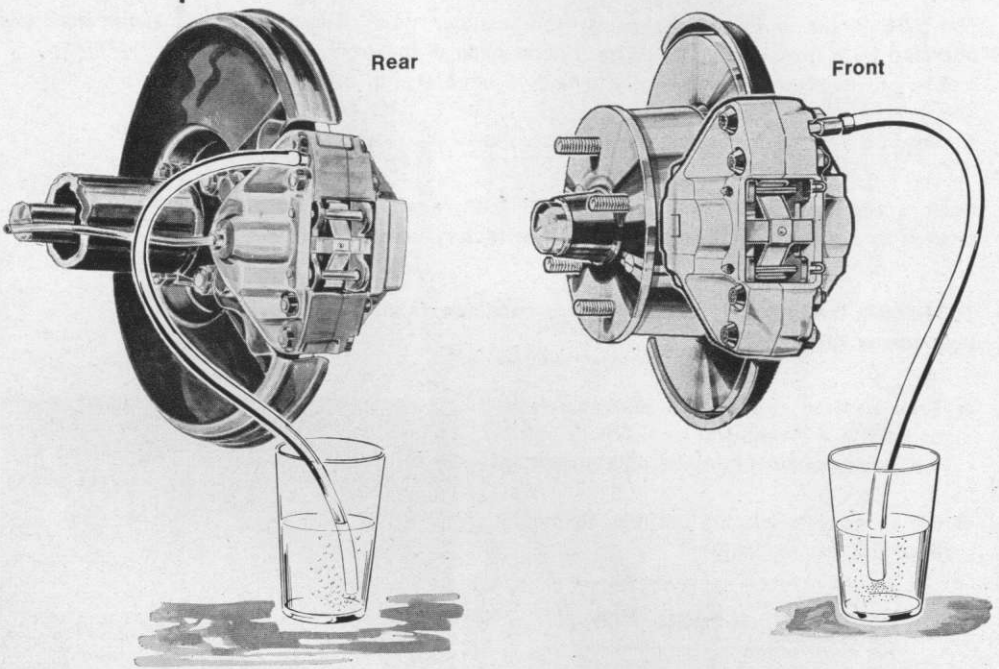
- Renew the brake fluid at the prescribed periods. For effective and reliable operation of the brake system, the pipes must always be full of fluid and free of air bubbles.

  Excessive and spongy brake pedal action is an indication of the presence of air bubbles in the system.

  Compressed air must not be used for replenishing the system.

  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.



Air bleeding

Bleeding should be performed with the greatest care following these instructions:

1 Fill the reservoir, if necessary, with the genuine fluid freshly drawn from sealed containers; during bleeding operations pay attention that fluid level does not drop below the full by more than a quarter.

2 Bleed starting from the rear calipers as follows:
Push a rubber pipe over the bleed screw; the other end will lead to a glass container for collection of fluid.
Loosen the bleed screw.
Depress the brake pedal several times allowing it to return slowly until the pipe discharge fluid free from air bubbles.
Hold the pedal down and tighten the bleed screw.

- If the bleeding has been carefully performed, it will be found that when brake pedal is depressed, direct action on the fluid can be felt, free of resilience, immediately at the end of the free travel. If not, repeat the procedure.

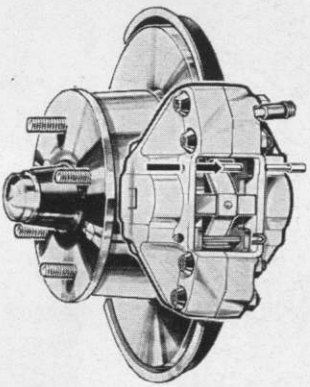
Friction pad inspection

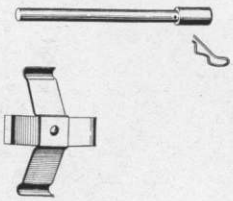
At the prescribed intervals check front & rear pads for wear.

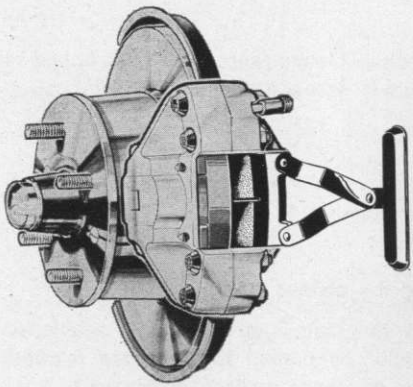
Removal

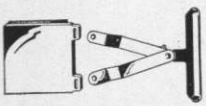
For pad removal, proceed as follows:

- jack up the car and remove the wheel;
- drive the upper retaining pin out of caliper;
- remove the cross-shaped spring;
- drive out the lower retaining pin.





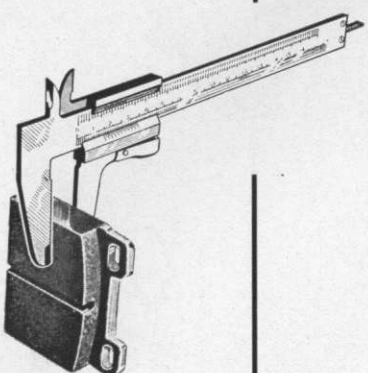




- Winthdraw the pads with the puller **A.2.0150.**

Thrickness:
new
.6 in. (15 mm)
wear limit
.28 in. (7 mm)
REPLACE

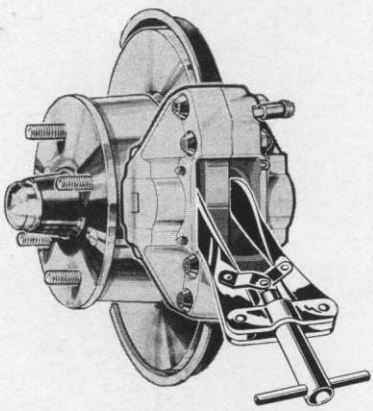
- Check pad thickness.



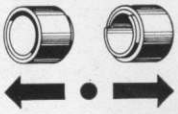
In case of uneven wear of pads, it is advisable to replace the whole set (front or rear).

Pad reassembly

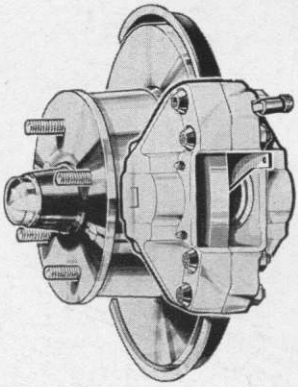
Clean the pad surface; never use mineral base solvents or sharp-edged tools; check that dust excluder and retaining ring are sound; if not, replace them.



Press the pistons to the bottom of cylinders with the resetting tool **A.2.0147;** do not use chance tools which could damage the pistons or the disc.

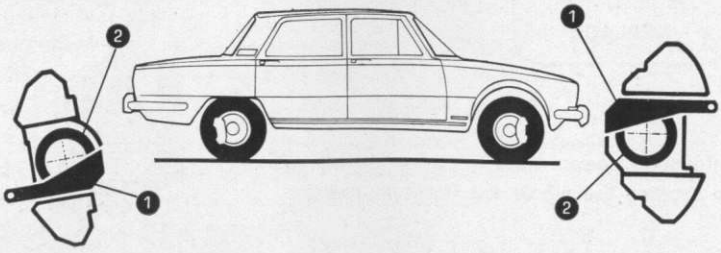


When resetting pistons care should be taken to prevent fluid overflow from the reservoir.

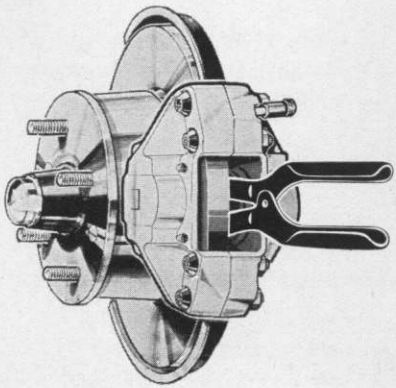


Positioning the pistons

Make sure the pistons are correctly positioned in the caliper by resting the template **A.2.0149** against the reference surface as shown.



1 Template
2 Piston



Pad reassembly
(continued)

If the pistons are not in the correct position rotate them with the special pliers **A.2.0148/1** for rear brakes and **A.2.0159** for front brakes.

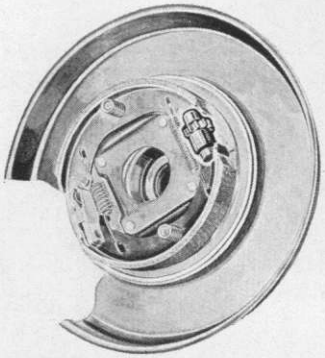
- Insert the friction pads in the caliper; if new pads are fitted, make sure they slide freely in their housing.

- Fit a retaining pin and then the cross-shaped spring; press down the free end of spring so that the other retaining pin can be fitted.

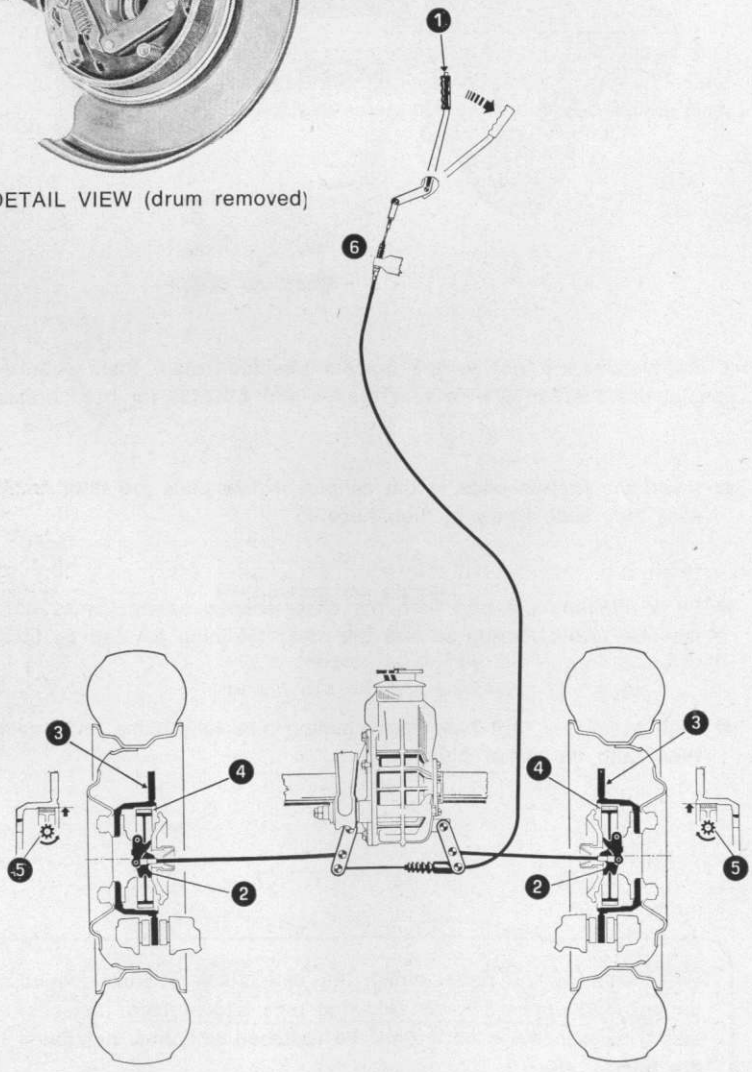
- With a suitable drift push the retaining pins fully home and secure them with the cotter pins.

When refitting the pads, check the conditions of cross-shaped springs and upper & lower retaining pins and replace, if necessary; however, **these parts must be replaced whenever new pads are fitted.**

Handbrake operating diagram



DETAIL VIEW (drum removed)



1 Control lever
2 Operating levers
3 Discs
4 Shoes
5 Running clearance adjuster
6 Slack adjuster

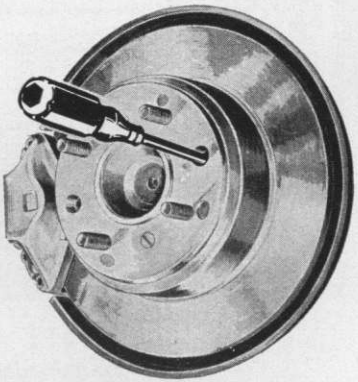
Handbrake system

It is mechanically-operated: the rear wheels are locked through shoes **4** acting against a drum machined in the disc casting. Pulling the lever causes the shoes, via the operating levers **2,** to expand thus locking the wheels.

Handbrake linkage adjustment

A slack handbrake linkage, due to worn shoe linings, is adjusted as follows, one wheel at a time:

- jack up the car and remove the wheel; fully release the hand brake and make sure the control cables to the calipers are slackened;
- act on the running clearance adjuster **5** one notch at a time in the direction shown in the figure until shoes just contact the drum, then back up the adjuster by two-three notches.



Gain access to the adjuster **5** with a screwdriver inserted through one of the holes in the disc casting: if hole and adjuster are not aligned rotate the disc.

The handbrake is correctly adjusted when the wheels become locked as the lever is drawn through half its total travel. If, after this adjustment, the linkage is yet slackened proceed as follows:

- rotate the adjuster **5** until shoes contact the drum and lock it;
- take up any slackening in the linkage by means of the slack adjuster **6;**
- back up the adjuster **5** by two-three notches; in this condition the handbrake linkage will be correctly adjusted.

Cleaning instructions

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 seals.

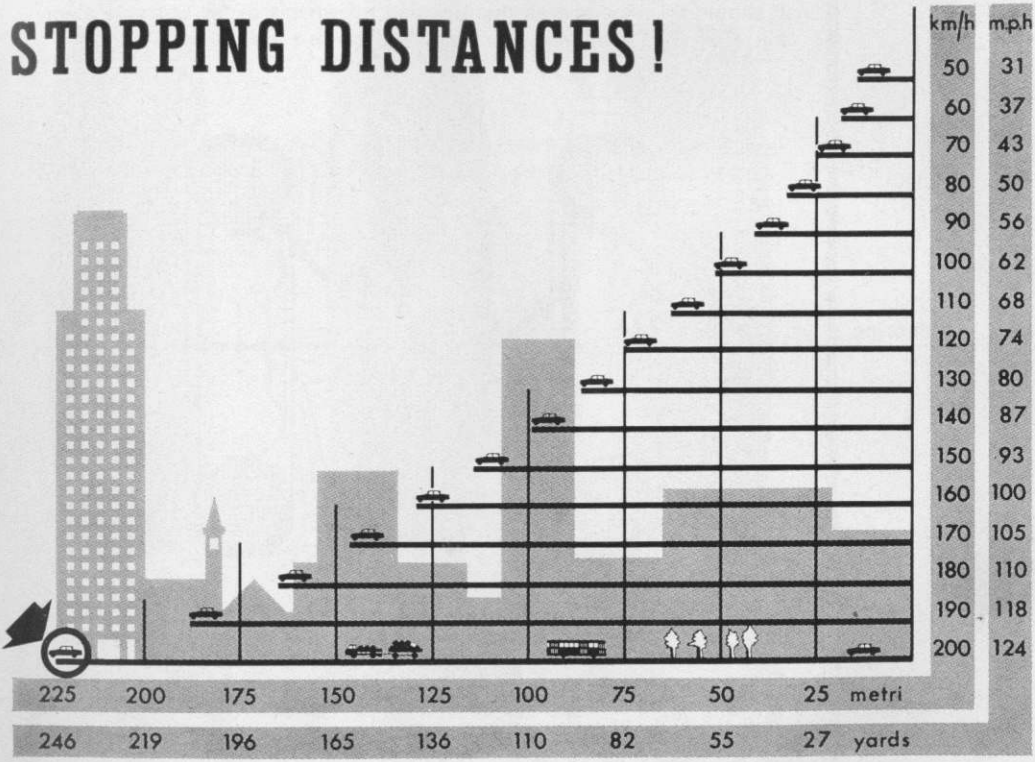
While servicing the car, be careful not to let lubricants come in contact with the discs and frition pads.
When cleaning the underside of the car, it is advisable to mask off the brakes to avoid damaging the brake components with jets of water.

Important warning

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

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

STOPPING DISTANCES!



The distance in which the car can be brought to a stop after application of the brakes increases considerably as the speed increases; the distance also varies according to the road surface, and it is much greater when the road is wet or slippery.
The diagram shows stopping distance for various speeds based on ideal conditions, i.e. flat, dry, asphalt roads, good tyres, well adjusted brakes and loads properly distributed over the car.

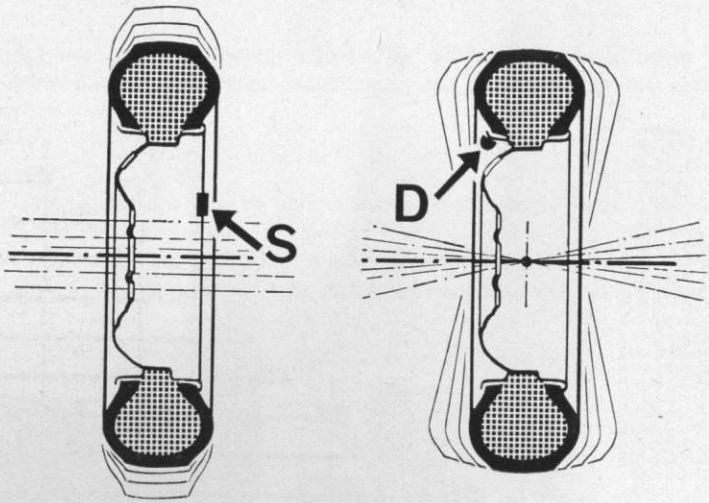
For safety's sake always bear these stopping distances in mind at all times.

Balancing

Each wheel, complete with its tyre, is statically and dynamically balanced at the factory.

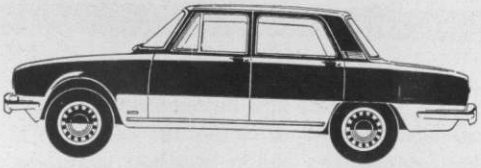
Whenever a tyre is changed, the wheel must be rebalanced.

It should be remembered that unbalanced wheels cause unstable steering, abnormal steering gear wear and uneven tyre wear.



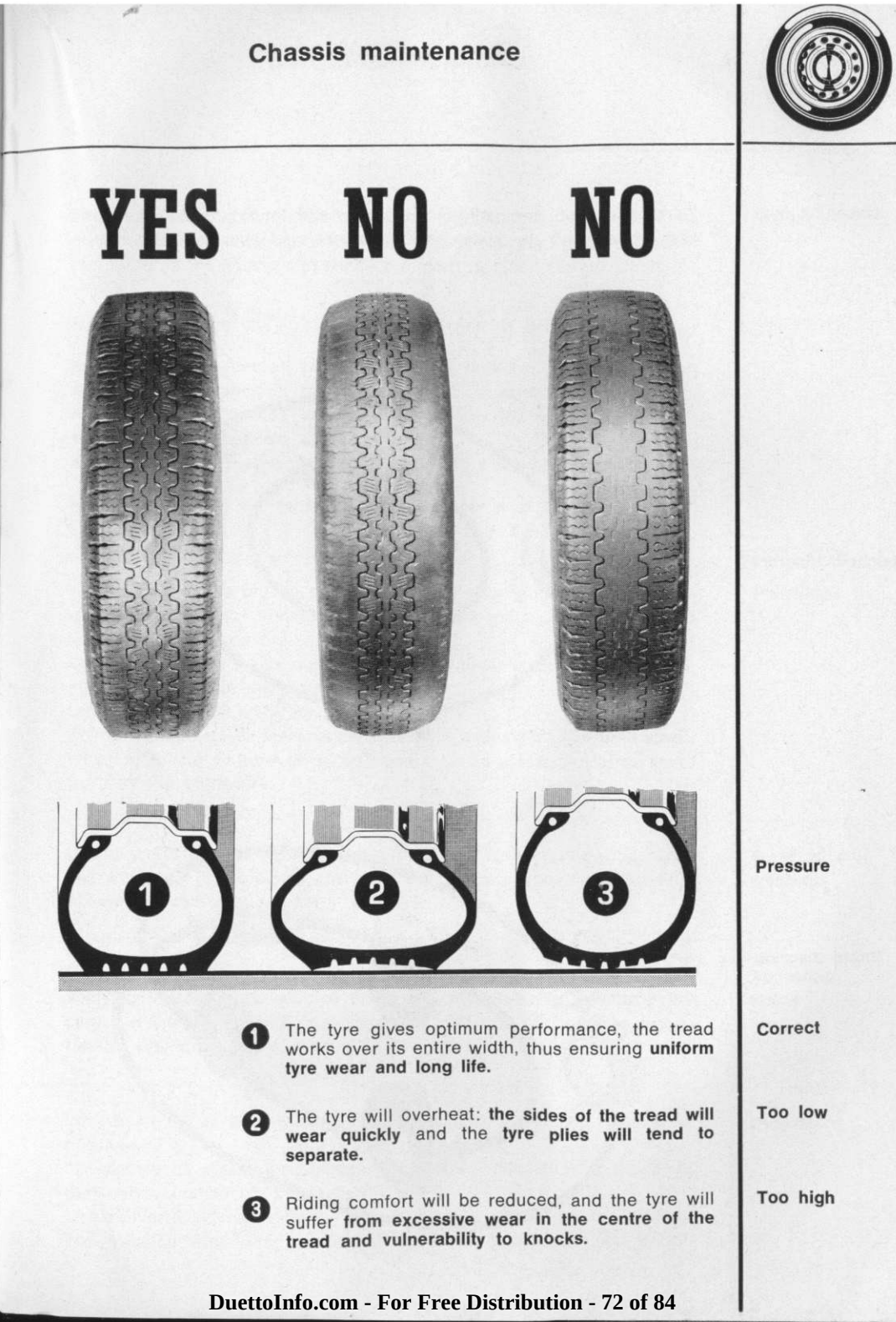
S Static — Balance weight location — D Dynamic

TYRES



Inflation pressures when cold

psi	Kg/cm²	psi	Kg/cm²		
24	1.7	28.5	2.0	Kleber Colombes V 10	With reduced load & touring riding.
27	1.9	31	2.2		With full load and top range of speed.
21.3	1.5	22.7	1.6	PIRELLI	With all conditions.
25.6	1.8	25.6	1.8	MICHELIN	With reduced load & touring riding.
27.7	1.95	31	2.2		With full load and top range of speed.



Pressure

Correct

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

Too low

2. The tyre will overheat: **the sides of the tread will wear quickly** and the **tyre plies will tend to separate.**

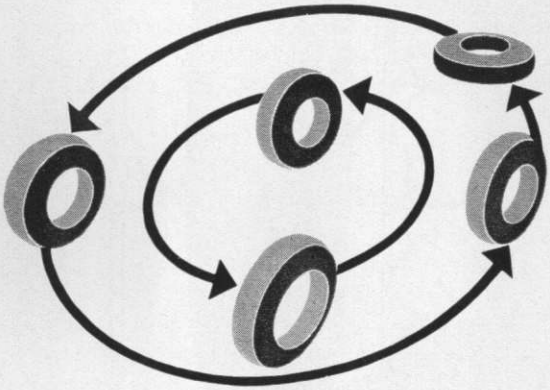
Too high

3. Riding comfort will be reduced, and the tyre will suffer **from excessive wear in the centre of the tread and vulnerability to knocks.**

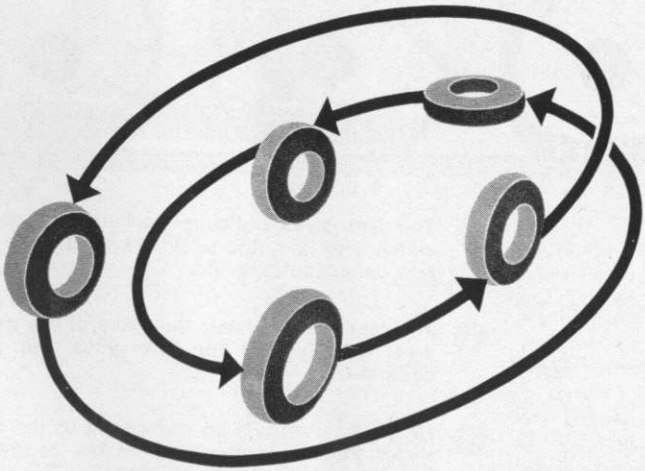
Changing over

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

Michelin diagram



Pirelli diagram



Body maintenance

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 68.

Polishing

To put fresh gloss on the paintwork, polish once or twice a year with a polish suitable for synthetic or nitrocellulose paint, accordlng to the type of paintwork on the car.
On the chromework use petrol to remove grease and a suitable compound to take out any scratches.
Use only woollen cloth for polishing.
Do not use petrol or solvents on rubber mouldings and weatherstrips.
When refuelling or lubricating, be careful not to splash petrol or brake fluid on the paintwork.

Cleaning the windows

Use only a very soft cloth or chamois leather for cleaning the windscreen and windows. If the panes are very dirty, use windscreen washer fluid or water mixed with alcohol.

Removing stains

Grease, oil and tar stains may be removed from the paintwork by applying petrol to the stained area, and then rubbing it with a dry cloth. If the tar deposits have hardened, use one of the many preparations available on the market.

Upholstery

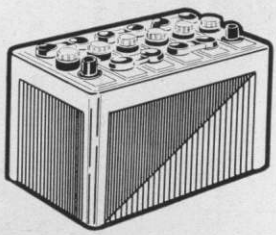
Periodically dust the inside upholstery using a vacuum cleaner if possible.
To remove oil and grease stains, use diluted ammonia on the cloth parts and vaseline on the leather.
Use trichloroethylene or neutral soap to remove stains from the carpets.
The steering wheel and control knobs may be cleaned with petrol.

Laying the car up

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

- empty the fuel tank, the fuel pump and the carburettor float chamber;
- clean the oil filter and the fuel filter;
- inject a little engine oil into the cylinders through 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 tyres and slightly deflate them; if tyres 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.

The 12-volt electrical equipment is wired with protected and insulated cable in order to reduce to a minimum the risk of short circuiting. The negative battery terminal is grounded.
If any instrument fails to operate or any lamp fails to light up, first check the corresponding fuses; if the fuse is sound check to ensure that the cable terminals are tight and that the bulbs are not loose or burnt out. If the trouble persists, the electrical equipment should be checked by a competent auto-electrician.



BATTERY

Water level

The battery water level should never be more than 3/16" (4-5 mm) above the plates and must never leave them uncovered.
When filling up the battery, use only distilled water; never add acid.

Terminals

Make sure that terminals are tight and are sufficiently coated with pure vaseline.

State of charge

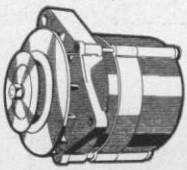
The state of charge can be checked by measuring the specific gravity of the electrolyte with a suitable hydrometer.
The specific gravity/charge ratio is as follows:

specific gravity	1.28	(32°Bé)	= **charged**
	1.23	(27°Bé)	= **half charged**
	1.11 - 1.14	(15° - 18°Bé)	= **discharged**

If distilled water has been added to a battery, the specific gravity should not be measured until mixing is complete; to facilitate mixing, charge the battery for 30 minutes.
In tropical climates where the temperature is nearly always above 30°C (85°F), the specific gravity of the electrolyte, when the battery is fully charged, must be lower than the normal figure, viz. 1.21 (25°Bé).

Electrical equipment

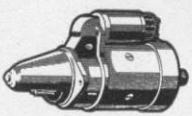
Alternator



The alternator requires some special cares.

- **It should not be tampered with.**
- Never disconnect the battery terminal of alternator-to-battery cable while the engine is running.
- When recharging the battery, completely disconnect it from the system.
- When electric weldings are carried out on car, disconnect battery making sure the positive terminal is properly insulated.
- Never reverse the battery polarity or the diodes will be damaged.
- To avoid overloading the bearings, check frequently the belt for proper tension.
- It is recommended to entrust any inspection or repair work to **Authorized Workshops.**

Starting motor



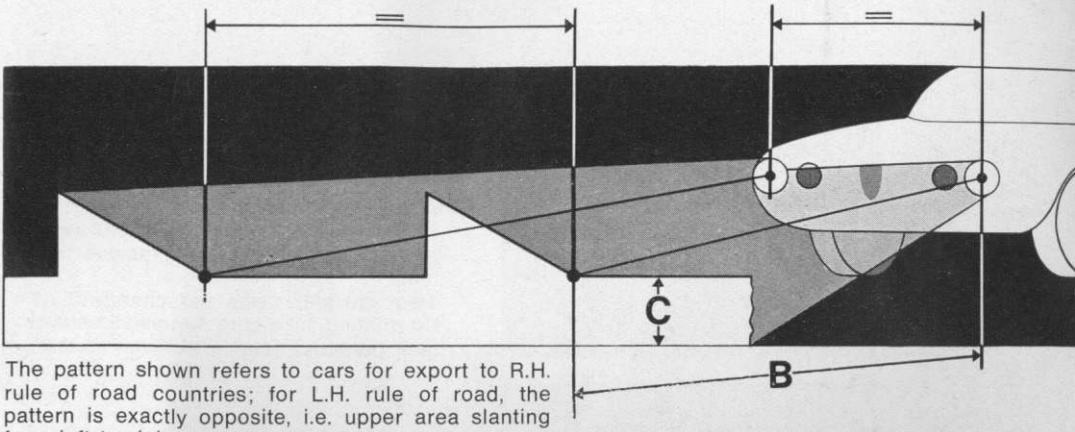
Regularly:

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 petrol; 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 starting motor with no load and for such time as is necessary to bed the brush working face to the commutator.

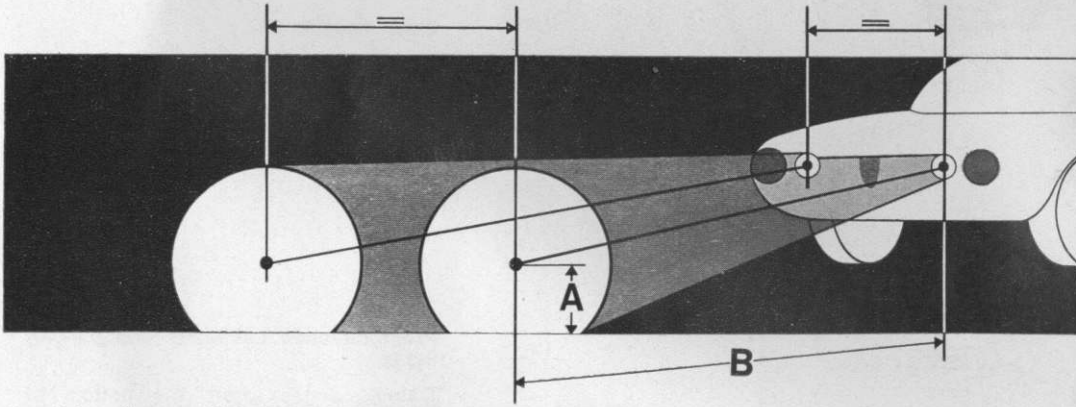
If the commutator is burned or elongated, it must be reworked on a lathe taking care to decrease the diameter of the minimum required only: after machining, undercut the mica between the segments.



The pattern shown refers to cars for export to R.H. rule of road countries; for L.H. rule of road, the pattern is exactly opposite, i.e. upper area slanting from left to right.

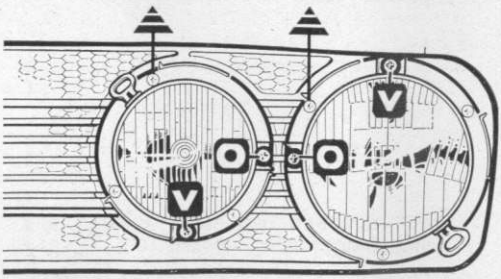
Large headlamps: high and low beams

A = cm 32 = 12.6 in. **B** = metri 10 = 33 ft. **C** = cm 30 = 11.8 in.



Small headlamps: high beams

To align the inner high beams mask out the outer lamps.

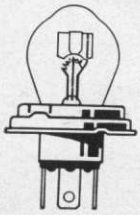


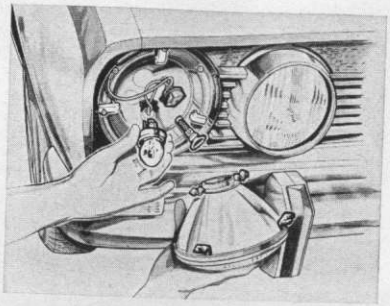
O screw for horizontal adjustment

V screw for vertical adjustment

The headlamp beam setting should be checked against the figures indicated in the diagram, with the car unladen, on a level surface and an absolutely vertical screen.

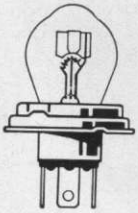
Setting

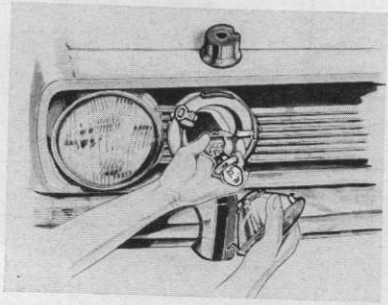




Large headlamps

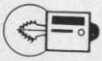
Remove the rim by pulling it off from the top.
Pull the plastic ring at the bottom to release light unit.
Slightly rotate light unit anticlockwise through slotted links and remove light unit.
Take the bulb away and change it.
On refitting, take care that small springs seat properly.

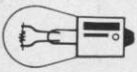


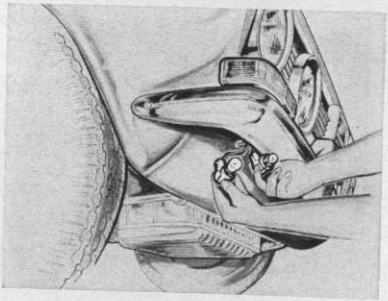


Small headlamps

Proceed as outlined for large headlamps keeping in mind that release ring is located at the top of light unit.
Remove the rubber protection and take the bulb away.

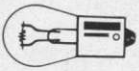


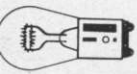


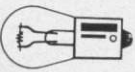


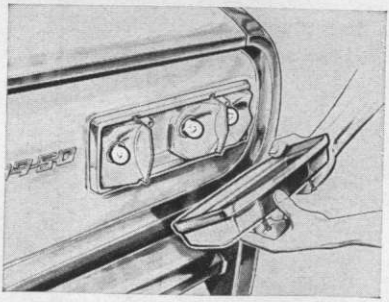
Front direction indicators and parking lights

Gaining access from the bottom of bumper, withdraw the socket with the bulb.
Socket mount is of snap-on type.



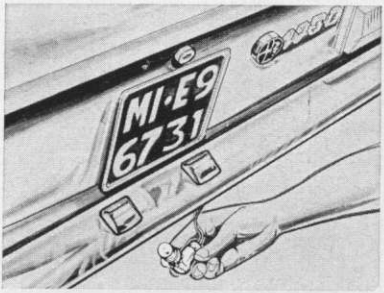


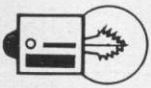




Tail direction indicators, parking and stop lights

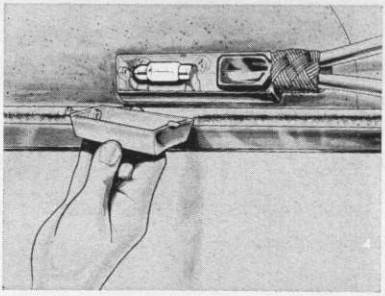
Loosen the attaching screws and remove the lens.

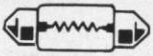




Number plate lights

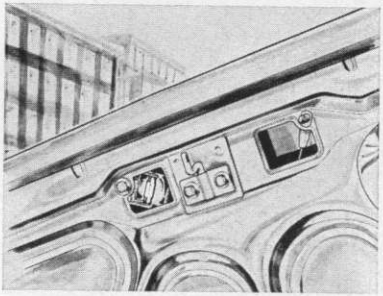
Withdraw socket and bulb from the inside of bumper.
Socket mount is of snap-on type.

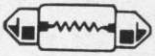




Ceiling lights

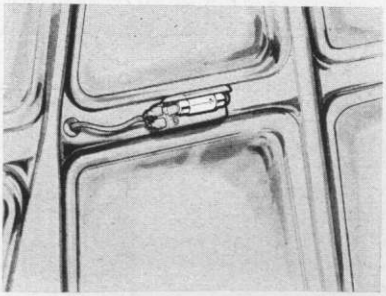
Loosen the screw and remove the lens.
Bulb mount is of snap-on type.

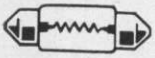




Luggage boot lights

Remove bulb and change it.
Bulb mount is of snap-on type.





Engine compartment light

Remove bulb and change it.
Bulb mount is of snap-on type.

WIRING DIAGRAM

1	Battery	12 V-60 Ah
2	Coil	Bosch K12V
3	Ignition distributor	Bosch JF 4 (R)
4	Starting motor	Bosch EF(R)12V0,7PS
5	Alternator	Bosch K1(R,L)14V35A20
6	Voltage regulator	Bosch AD1/14V
7	Windscreen wiper	(2 speed) Bosch WS4902AR5(o)
8	Horns	
9	Flasher unit, directional	
10	Fuel level sender	
11	Fusebox (8-amp. fuses)	
12	Junction box	
13	Relay	
14	Coolant temperature gauge bulb	
15	Oil pressure gauge sender	
16	Low oil pressure warning sender	
17	Blower motor (2 speed)	
18	Cigarette lighter	

SWITCHES

19 Parking lights, headlamps and flashing
20 Direction indicator
21 Horn control
22 Stop lights
23 Reversing lights
24 Ignition and starting
25 Choke warning light
26 Windscreen wiper
27 Dashboard lights
28 Blower
29 Windscreen washer, foot operated
30 Engine compartment light
31 Ceiling light (microswitch on door jambs)
32 Ceiling light (toggle switch)
33 Luggage boot light

BULBS

34	High beam (small headlamps)	45/40 watts asymmetric
35	High/low beam (large headlamps)	
36	Parking & Stop lights	5/21 watts
37	Front direction indicators	21 watts
38	Rear direction indicators	
39	Back-up lights	
40	Front parking lights	5 watts globular
41	Number plate light	
42	Engine compartment light	5 watts cylindrical
43	Ceiling light	
44	Luggage boot light	
45	Instrument light	3 watts tubular
46	Blower warning light	
47	Alternator warning light	
48	Parking light warning	
49	High beam warning light	
50	Fuel reserve warning light	
51	Choke warning light	1.2 watt tubular
52	Direction indicator warning lights	
53	Low oil pressure warning light	

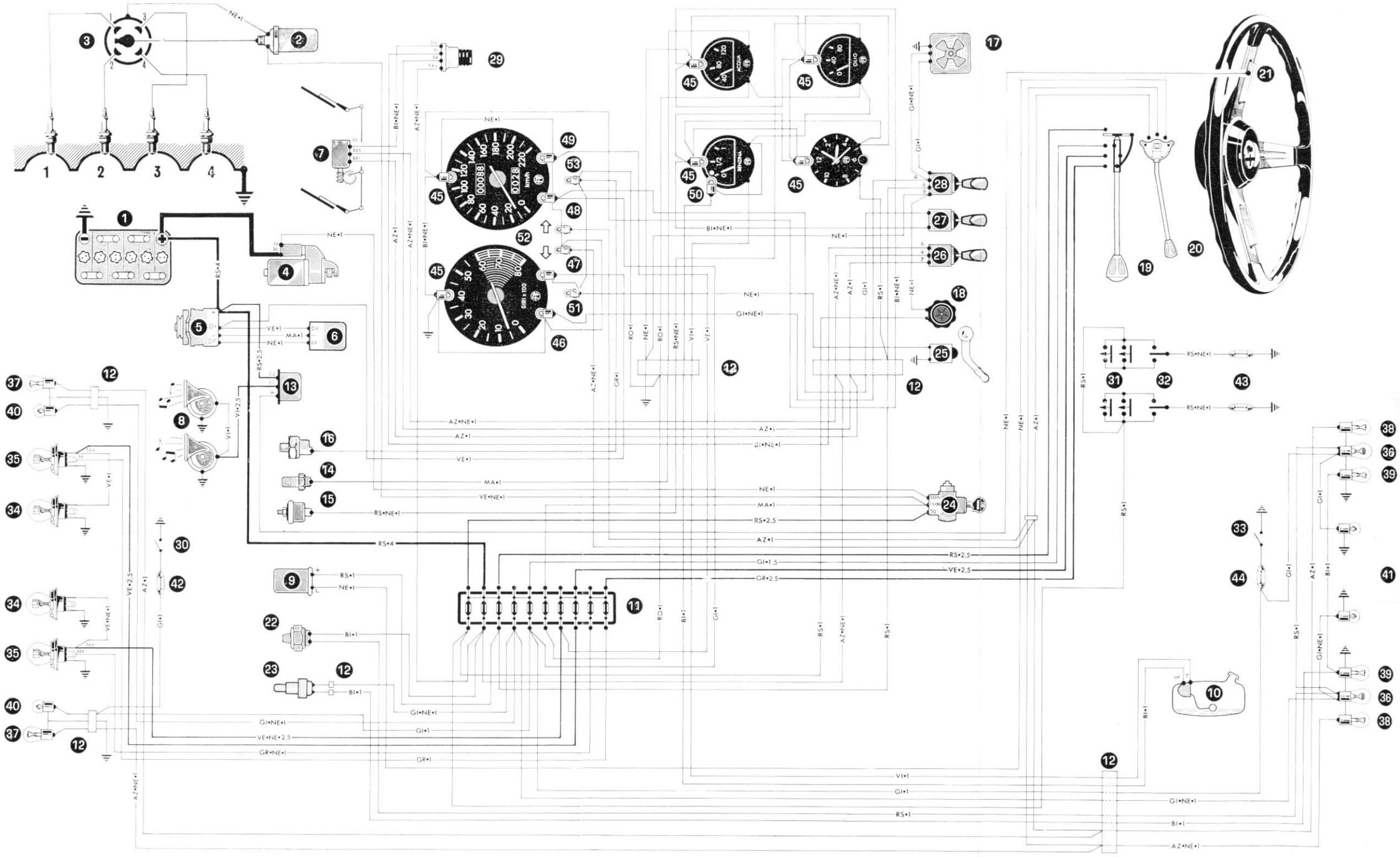
CABLE COLOR CODE

AZ	blue	**MA**	brown	**VE**	green
BI	white	**NE**	black	**VI**	violet
GI	yellow	**RO**	pink		
GR	grey	**RS**	red		

The figure following the color code on the diagram shows the wire gauge in mm^2.

PLATE ON FUSEBOX

1, 2, 3 Main devices
4.5 Parking lights
6 Indicating devices
7 L.H. high beam
8 R.H. high beam
9 L.H. low beam
10 R.H. low beam


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
NE•1
RS•4
VE•1
MA•1
RS•2,5
VI•2,5
AZ•NE•1
AZ•1
BI•NE•1
GI•NE•1
RO•1
RS•NE•1
VE•NE•1
GI•1
BI•1
VI•1
GR•1
RS•1
VE•2,5
GI•1,5
GR•2,5
VE•NE•2,5
GR•NE•1

ALFA ROMEO
Via Gattamelata, 45 - 20149 MILANO

DIASS Pubblic. N. 1318 - R 1 - 1 / 69 (4000)

Printed in Italy
Bertieri Milano

Stampato su carta BURGO SOLEX
da gr. 96 e 200 al mq.