U.S.A. SPECIFICATION



JAGUAR
XJ6L SERIES 2

Operating, Maintenance and Service Handbook

IMPORTANT

MAINTENANCE

When you take delivery of your new car you will do so with the knowledge that your Dealer has completed a pre-delivery check to ensure that the vehicle is functioning correctly.

To keep the car in this condition it is necessary for certain small items to receive regular attention from the owner between the periods of normal servicing. It is strongly recommended that **EACH DAY** the levels of **Engine Oil and Radiator Coolant** are checked and topped up as necessary.

EACH WEEK your Filling Station attendant should be requested to **examine the water level in the Battery and Screen Washer Bottle and check tyre pressures.**

It is normally recommended that the engine sump should be drained and refilled with new oil at 6,000 miles (10,000 Km.) periods. If the car is regularly used for short journeys or if heavy traffic conditions predominate, it is earnestly suggested that engine oil should be changed every 3,000 miles (5,000 Km.).

BRAKE SERVO

The brakes of this car are assisted in operation by a Vacuum Servo which will only operate when the engine is running.

Increased pressure on the brake pedal is required to operate the brakes when the servo is not in action.

Do not coast the car in neutral with the engine switched off.

BRAKES

To obtain satisfactory braking from high speeds your car is fitted with brake friction pads which are manufactured of a hard material having a relatively low coefficient of friction.

To obtain fully satisfactory results it is important that careful attention is paid to the following points during the first 1,000 miles running of your car.

1. Other than in the case of emergency, avoid heavy braking. (Heavy braking or rough usage of the brakes before the friction pads are fully bedded can result in damage being caused to the friction pads and brake discs).

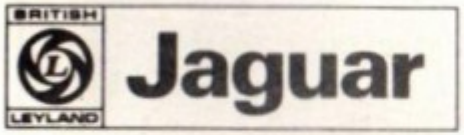
2. Frequent light application of the brakes is desirable to obtain full bedding of the brake friction pads before the normal running-in period is completed and the car operated at high speeds, when maximum brake efficiency will be required.



BY APPOINTMENT
TO H.M. QUEEN ELIZABETH
THE QUEEN MOTHER
MOTOR CAR MANUFACTURER
JAGUAR CARS – BRITISH LEYLAND UK LIMITED
OF COVENTRY

JAGUAR XJ6L

SERIES 2



Telephone: ALLESLEY 2121 (P.B.X.)
Code BENTLEY'S SECOND
Telegrams: JAGUAR, COVENTRY
Telex 31622

JAGUAR CARS
BRITISH LEYLAND UK LIMITED,
COVENTRY, ENGLAND

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JAGUAR XJ6L SERIES 2

FOREWORD

An owner is recommended to have operations not covered in this Handbook executed by the local Dealer, who is in a position to give authoritative advice and service. The satisfactory running and fine performance of which the car is capable, depends to a great extent upon the care and attention it receives from the owner. We, therefore, earnestly recommend that careful attention is paid to all instructions and that the necessary servicing is carried out at the suggested periods.

The layout of this handbook is designed to introduce the owner to the instruments, controls and accessories of his car in a logical sequence.

Recommended starting, driving and operating procedures are then given, and, finally, information on maintenance procedures which can be carried out by the enthusiast. Where possible, maintenance procedures relevant to a particular function or component of the car are given at the same time as the operating instructions. Attention is drawn to maintenance details by printing the information on a coloured background as depicted by this sentence.

Routine Maintenance

For details of maintenance schedule, please refer to Passport to Service booklet. Maintenance operations carried out by your Dealer will be in accordance with current recommendations and may be subject to revision from time to time.

Safety Regulations

Certain Safety Regulations are mandatory in some countries. The owner is reminded that he has the responsibility of ensuring his vehicle complies with such Regulations.

Note

All references in this Handbook to 'right-hand side' or 'left-hand side' are made assuming the person to be looking from the rear of the car or unit.

IMPORTANT

This model has a Negative ground system and certain of the electrical components are different to those fitted to positive ground cars. When fitting auxiliary equipment or replacing any of the electrical components use only those specified for this particular model or ensure that they are suitable for use with negative ground.

Do **not** run the engine with the alternator electrical cables disconnected or loose, otherwise the alternator may burn out.

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FEDERAL SAFETY STANDARD PLATE

The Federal safety standard plate is attached to the underside of the bonnet.

The plate contains the month/year of manufacture, and the Commission number.

TYRE INFORMATION

All tyres fitted to cars sold in U.S.A. have data moulded on the tyre, necessary to conform to U.S.A. Federal Regulations.

The tyre gives the following information:–
- Maximum pressure.
- Maximum load rating.

Further information is given on a 'Tyre Recommendation Plate' attached to the glove box lid.

This lists:–
- Vehicle capacity weight.
- Designated seating capacity.
- Designated seating distribution.
- Recommended tyre pressure.
- Recommended tyre size.

LAMP BULBS

LAMP FUNCTION	LUCAS PART NO.	VOLTS	WATTS	APPLICATION
Outer Headlight (Main and dipped Beam)	Sealed Beam Sealed Beam	12 12	37.5/50W 50/37W	U.S.A. Japan
Inboard Main Beam only	Sealed Beam	12	37.5W	
Front Side Lamps		12	5W	
Reversing Lamps		12	21W	
Sidemarker Lamps		12	5W	
Flasher Side Repeaters				
Number Plate Lamps		12	5W (c)	
Stop/Tail Lamp		12	21/5W	
Flasher Lamps		12	21W	
Map Light		12	6W (f)	
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Tachometer		12	2.2 (Mes)	
Demist Warning		24	2.8 (Mes)	
Selector Switch Lamps		12	1.5W (Mes)	
Auto Transmission Selector Indicator		12	2 (p)	
Fibre Optic System Source Lamp		12	5	
Fog lamp – Cibie 35 (if fitted)	H2 (Cibie)	12	55W	

FUSES

FUSE NO.	CABLE COLOUR	PROTECTED CIRCUITS	CURRENT CAPACITY
1		Fog lamps	25 amp
2		Hazard Warning	35 amp
3		Map & Interior lights, Cigar lighter, Clock, Electric aerial	35 amp
4		Instruments, Choke warning light	10 amp
5		Brake lights, Flashers, Battery cooling, Horn relay winding, Kickdown switch	35 amp
6		Reversing lights	10 amp
7		Panel lights	10 amp
8		Left: Side/Rear lights	10 amp
9		Right: Side/Rear lights	10 amp
10		Air conditioning relay, Windscreen wipers, Windscreen washer	35 amp
11		Air conditioning	35 amp
12		Heated rear window	25 amp
	Pink	Headlight (Main beam)	25 amp
	Pink/Blue	Headlight (Dipped beam)	10 amp
	Purple/Brown	Horns	17 amp

CAR IDENTIFICATION

It is imperative that the Chassis and Engine numbers, together with any prefix or suffix letters are quoted in any correspondence concerning the vehicle. This also applies when ordering spare parts.

Chassis Number

Stamped on the right-hand tie bar bracket attached to the top of the valance and on Commission Plate in engine compartment.

Suffix 'BW' to the car number indicates that automatic transmission is fitted.

Engine Number

Stamped on top of cylinder block at rear of engine and on Commission Plate in engine compartment.

'L' following engine number will denote compression ratio.

'L' – Low.

Gearbox Number

On a label affixed to left-hand side of Automatic gearbox casing and on Commission Plate in engine compartment.

Ignition and Lock Keys

Three different types of keys are provided for locking the car as follows:-

(a) The square headed key operates the door locks and the petrol filler locks.

(b) the rectangular headed key operates the locks for the boot and the glovebox.

(c) The large headed key operates the ignition/steering column lock.

IMPORTANT

Three ignition/steering column lock keys are supplied with each car. **FOR SECURITY REASONS THESE WILL NOT BE EASILY REPLACEABLE.** For the same reason the key number is not stamped on the key but is etched on the plastic strap which is supplied with the keys.

New keys can **ONLY** be obtained through your Dealer and it is essential that the serial number of the key and the chassis number of the car are quoted when ordering.

One ignition key will be found attached to the left hand wing valance in the engine compartment.

It is suggested that the owner records the key number, and keeps a spare in a safe place.

Commencing Serial Numbers

Short Wheel Base	Long Wheel Base
2N.50001	2T.50001

Engine

Bore	3.625 in. (92,07 mm.)
Stroke	4.1732 in. (106 mm.)
Cubic capacity	4,235 cc. (258.43 cu. in.)
Distributor contact breaker gap	0.14 in.–0.16 in. (,36mm.–,41 mm.)
Spark plug type	Champion N11Y
Spark plug gap	.025 in. (,64 mm.)
Ignition timing (Static)	
L–Compression ratio	8 deg. B.T.D.C.
Ignition timing (Dynamic) (vac. ret. dis)	
1400 r.p.m.	10–15 deg. B.T.D.C.
2500 r.p.m.	22–26 deg. B.T.D.C.
5000 r.p.m.	30–34 deg. B.T.D.C.
Valve clearances (cold)	
Inlet and exhaust	.012 in.–.014 in. (,304 mm.–,355 mm.)
Valve seat angle	
Inlet and exhaust	45 deg.
Firing order	1, 5, 3, 6, 2, 4

Tightening Torque Figures

Flywheel	67 lb. ft. (9,2 kg. m.)
Connecting rod	40–41 lb. ft. (5,53–5,66 kg. m.)
Main bearings	72 lb. ft. (9,96 kg. m.)
Cylinder head	54 lb. ft. (7,5 kg. m.)
Camshaft bearings	9 lb. ft. (1,24 kg. m.)

Carburetters

Type	Stromberg 175CD–2SE (2 off)
Needle	Fixed orifice EGR – B1CG
	Variable orifice EGR – B2AZ
Spring	Natural

Automatic Transmission

Borg-Warner	Model 12, three speed or Model 65, three speed

Front Suspension and Steering

Caster angle	+2¼ deg. ±¼ deg.
Camber angle	+½ deg. ±¼ deg.
Front wheel alignment	$\frac{1}{16}$ in.–$\frac{1}{8}$ in. (1,6–3,18 mm.) toe-in

Rear Suspension

Camber angle	–¾ deg. ±¼ deg.
Rear wheel alignment	Parallel ±$\frac{1}{32}$ in. (±0,8 mm.)

Final Drive Unit

Hypoid–possibly fitted with 'POWR-LOK' differential	3.31 : 1

Capacities

	U.S.	Litres
Engine (refill including filter)	17½ pints	8,25
Automatic transmissionunit (from dry) Model 12	19¼ pints	9,1
Automatic transmission unit (from dry) Model 65	15 pints	7,1
Final drive unit	3¼ pints	1,5
Cooling system (including heater)	39.1 pints	18,5
Petrol tank – left hand	12 gals.	45,5
Petrol tank – right hand	12 gals.	45,5
Luggage compartment	17 cu. ft.	,48 m

Dimensions

	S.W.B.	L.W.B.
Wheelbase	109.0 in. (2770 mm.)	113.0 in. (2870 mm.)
Track, front	58.0 in. (1473 mm.)	58.0 in. (1473 mm.)
Track, rear	58.6 in. (1488 mm.)	58.6 in. (1488 mm.)
Overall length	190.7 in. (4843 mm.)	194.7 in. (4945 mm.)
Overall width	69.7 in. (1770 mm.)	69.7 in. (1770 mm.)
Overall height	54.1 in. (1375 mm.)	54.1 in. (1375 mm.)
Turning circle	37 ft. (11.3 m.)	38 ft. (11.6 m.)
Ground clearance	6.0 in (15.2 cm.)	6.0 in. (15.2 cm.)

Weights (approximate)

Automatic transmission	4074 lb. (1848 kg.)	4114 lb. (1865 kg.)

Tyres

Dunlop Whitewall ER.70 VR15 S.P. Sport

Pressures	**Front**	**Rear**
For normal use up to 100 m.p.h. (160 km./hr.) with driver and two passengers	27 lb./in.^{2} 1,90 kg./cm.^{2} 1,86 Bars	26 lb./in.^{2} 1,83 kg./cm.^{2} 1,79 Bars
For normal use up to 100 m.p.h. (160 km./hr.) with full load (inc. luggage) of 904 lb. (410 kg.)	27 lb./in.^{2} 1,90 kg./cm.^{2} 1,86 Bars	30 lb./in.^{2} 2,11 kg./cm.^{2} 2,07 Bars
For speeds above 100 m.p.h. (160 km./hr.) with full load (inc. luggage) of 904 lb. (410 kg.)	33 lb./in.^{2} 2,32 kg./cm.^{2} 2,27 Bars	36 lb./in.^{2} 2,53 kg./cm.^{2} 2,48 Bars

RECOMMENDED SNOW TYRES

The following tables are intended to assist in the correct choice of snow tyres and it must be emphasized that the tyres mentioned are the only snow tyres recommended.

Inner tubes stamped with the wording "Weathermaster only" are available and must ALWAYS be fitted when using 185/15 SP. M & S tyres.

TYRE DESIGNATION	RECOMMENDED FITMENT	ROAD SPEED AND TYRE PRESSURES	REMARKS
1. E.70-15 SP.44 Weathermaster (Tubeless)	Complete sets or rear wheels only providing ER.70 VR.15 SP Sport tyres are fitted to front wheels	Up to 85 m.p.h. (137 k.p.h.) **FRONT**: 25 lb./sq. in. / 1,75 kg./cm.^{2} / 1,70 Bars **REAR**: 26 lb./sq. in. / 1,8 kg./cm.^{2} / 1,76 Bars From 85 m.p.h. (137 k.p.h.) up to a maximum of 100 m.p.h. (161 k.p.h.) **FRONT**: 33 lb./sq. in. / 2,3 kg./cm.^{2} / 2,1 Bars **REAR**: 34 lb./sq. in. / 2,4 kg./cm.^{2} / 2,36 Bars	1. Snow chains **MUST NOT** be fitted. 2. Tyres may be fitted with studs providing maximum speed does not exceed 75 m.p.h. (121 k.p.h.)
2. 185-15 SP. M & S (Tubed)	Complete sets only	As above	1. Snow chains may be fitted to rear wheels only. 2. Tyres may be fitted with studs providing maximum speed does not exceed 75 m.p.h. (121 k.p.h.)

RECOMMENDED LUBRICANTS, FLUIDS, FUEL CAPACITIES AND DIMENSIONS

U.S.A. SPECIFICATIONS FOR LUBRICANTS, BRAKE FLUID, COOLANT ADDITIVE, ETC.

COMPONENT	TEMPERATURE RANGE	SERVICE CLASSIFICATION	S.A.E. VISCOSITY SPECIFICATION
Engine and for oil can use	ALL	MIL-L-2104B or A.P.I. SE	S.A.E. 20/50 or S.A.E. 20W/40
Automatic Transmission, Power Assisted Steering	ALL	A.T.F. Type F	
'POWR-LOK' Differential	ALL	See note below*	
Steering Rack, Hubs and Chassis Greasing points	ALL	N.L.G.I. Consistency No. 2	
Brake Fluid	ALL	S.A.E. J.1703D U.S. Federal safety standard D.O.T.3	

COMPONENT	ADDITIVE
Cooling system	1. Bars Leaks inhibitor (Jaguar Part No. C.30151) – One sachet per car. 2. Marston SQ.36 Corrosion Inhibitor – 4% solution (1 part SQ.36 to 24 parts water) in tropical countries. 3. (a) Smiths BLUECOL 'U' Antifreeze – 55% concentration (5 parts BLUECOL 'U' to 4 parts water). (b) Texaco – 55% concentration. (c) Prestone 2 – 55% concentration.
Windscreen Washer	Windscreen washer antifreeze fluid (proprietary brands).

IMPORTANT NOTES:

1. * Use proprietary brands of oil specially formulated for the 'POWR-LOK DIFFERENTIAL.
2. **CHANGE COOLANT ANNUALLY.** In places where BLUECOL 'U' is not available, drain the cooling system, flush and refill with a solution of an antifreeze which complies with specification BS.3150.
3. ALWAYS top up the cooling system with recommended strength of antifreeze NEVER WITH WATER only.

SERVICE INSTRUCTIONS

Fuel Requirements for Low (L) Compression Ratio Engines

The engine of your car is fitted with low compression ratio pistons (L); use only fuel with minimum octane rating of 94 (RON).

Important

Carburetter tuning and ignition timing should only be carried out by your Dealer.

Tuning by unqualified persons or personnel SHOULD NOT be attempted.

Cooling Fan

The fan is of the fluid coupling type which slips at a pre-determined engine speed. When the engine is stationary the fan is free to rotate and it should not be assumed that the fan belt is slipping.

Recommended Hydraulic Fluid
Braking System and Clutch Operation

Castrol-Girling Brake/Clutch Fluid (Green). This fluid exceeds S.A.E. J1703/C specification.

MAINTENANCE INTERVALS *These items are emission related. Carry out the service indicated by X in column. The lubrication service at 3,000 miles or 3 month intervals. (3/3) A. At 6,000 miles or 6 month intervals. (6/6) B. At 12,000 miles or 12 months intervals. (12/12) ● Specified otherwise.	SERVICE LUBRICATION 3/3	6/6	12/12
LUBRICATION		A	B
* Lubricate per Owner's Manual	X	X	X
Check level of all fluid reservoirs, brake clutch battery, power steering, rear axle – transmission cooling system – windscreen washer.	X	X	X
Renew engine oil	X	X	X
Renew engine oil filter		X	X
ENGINE			
* Check all drive belts – adjust or renew			X
* Check all hoses, vacuum, air and water for condition and tightness			X
* Renew air cleaner element (carburetter)			X
* Clean crankcase breather filter			X
* Check gulp valve operation (renew if necessary)			X
* Check air intake automatic temperature valve			X
* Check exhaust gas recirculating valve (variable orifice specification only)			X

FUEL SYSTEM	A	B
* Replace fuel line filter		X
* Check condition of fuel filter cap seal		X
* Check fuel pipes and unions for chafing, corrosion and leaks		X
* Top up carburetter piston dampers	X	X
OSCILLOSCOPE COMBUSTION CHECK		
* Check distributor points, resistance and dwell	X	X
* Renew distributor points		X
* Check ignition timing and distributor advance or retard characteristics	X	X
* Check spark plugs (cruise and unload condition)	X	X
* Renew spark plugs		X
* Check distributor cap and wires	X	X
* Check charging system output	X	X
* Check ignition retard control valve (thermostatic)	X	X
* Power check engine, cylinder comparison		X
* Check idle speed	X	X
* Check choke and carburetter fast idle setting	X	X
* Check exhaust emission (CO, HC) AT IDLE	X	X

SAFETY	A	B
Check/adjust front wheel alignment		X
Check visually hydraulic pipes, unions for chafing, leaks and corrosion		X
Check/adjust hand brake and operation	X	X
Inspect brake pads for wear and disc condition		X
Check/adjust headlights		X
Check tyres visually and report depth of tread, cuts in fabric, exposure of ply or cord structure, lumps or bulges	X	X
Check operation of all door locks and window controls		X
Check condition, operating and security of seats, safety belts/interlock		X
Check wiper blades for condition		X
ROAD TEST		
Ensure that operation of vehicle is satisfactory and report all items requiring attention	X	X

The following items should be checked weekly by driver

Engine oil level
Brake fluid level
Automatic fluid level
Radiator coolant level
Battery water level
Windscreen washer reservoir water level
All tyre pressures
All lights
Horn
Windshield wipers

● **24,000 miles or 24 month intervals**
Check air-pump (correct or renew if necessary).
* Renew all drive belts
* Carburetters – install emission pack
* Renew adsorption canister
* Perform compression or cylinder test

● **36,000 miles or 36 month intervals**
Replace all hydraulic brake seals

Fig. 1

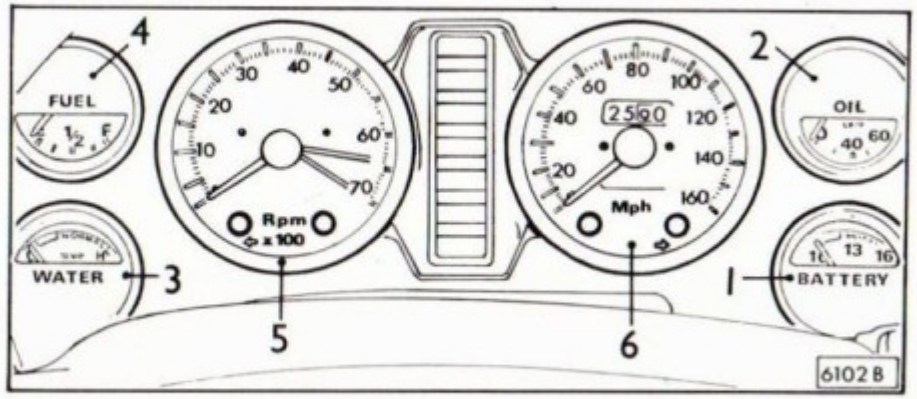
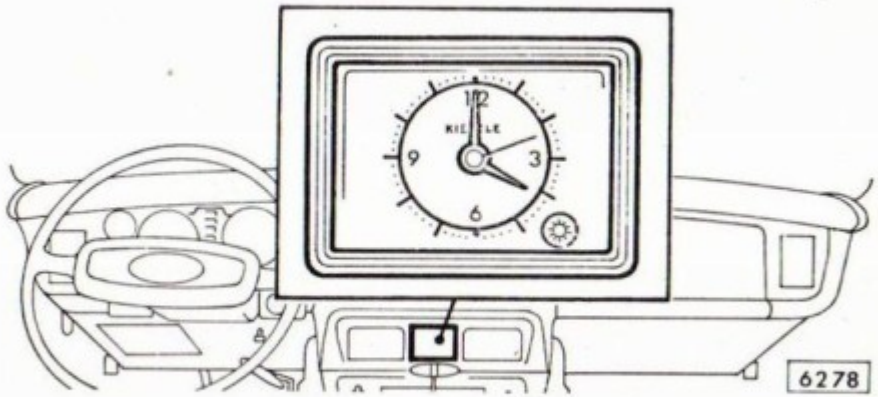


Fig. 2



Battery Condition Indicator (Fig. 1/1)

Indicates the condition of the battery. It does NOT indicate the charging rate of the alternator in amperes. Instructions for reading the battery voltage by means of the meter are given on page 56.

Oil Pressure Gauge (Fig. 1/2)

Records the oil pressure being delivered by the oil pump to the engine. It does NOT record the quantity of oil in the sump. The minimum pressure at 3,000 r.p.m. when hot should not be less than 40 lb./sq. in. (2,8 kg./sq. cm.).

Note: After switching on, a period of approximately 20 seconds will elapse after starting the engine before a correct reading is obtained.

Water Temperature Gauge (Fig. 1/3)

Indicates the temperature of the coolant. Should the indicator advance to the 'H' mark, the engine is overheating and the cause should be investigated immediately.

Fuel Level Gauge (Fig. 1/4)

Records the quantity of fuel in the supply tank being used. To obtain readings for the opposite tank operate the fuel changeover switch on the centre panel. Readings will only be obtained when the ignition is switched 'ON'.

Tachometer (Fig. 1/5)

Indicates the speed of the engine in revolutions per minute.

Speedometer (Fig. 1/6)

Indicates the vehicle speed in miles per hour, total mileage and trip mileage. The trip figures can be set to zero by pushing the winder upwards and rotating it anti-clockwise.

Electric Clock (Fig. 2)

This instrument is 'wound' electrically: the mechanism being powered by the car battery. A 'click' will be heard periodically when the winding mechanism is actuated.

The hands are set by means of a knurled knob in the centre of the dial. The instrument is regulated at the factory and should not require further adjustment.

Lever clock from facia to renew bulb.

Fig. 3

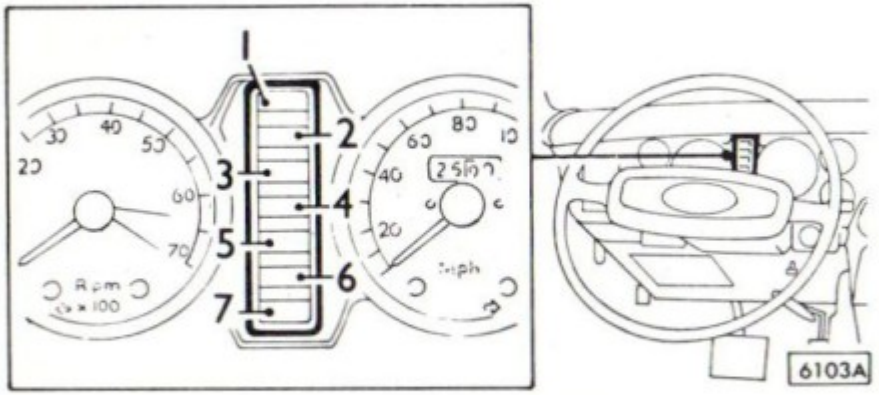
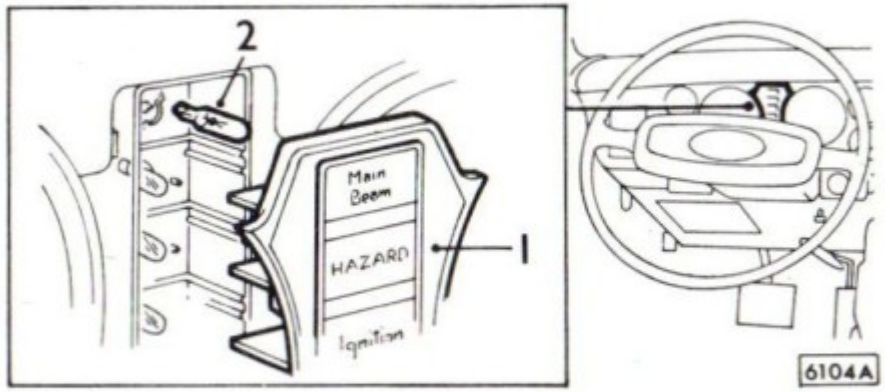


Fig. 4



The Panel (Fig. 3)

Contains a strip of warning lights. From top to bottom the lights are:

1. Main Beam (Fig. 3/1)

Lit when the headlights are in the main (full) beam condition.

2. Hazard (Fig. 3/2)

Flashes simultaneously with the two front and two rear direction (turn) indicator lights when the hazard warning switch is operated.

3. Ignition (Fig. 3/3)

Illuminates immediately the ignition is switched 'ON', or when the engine is running at a speed insufficient to charge the battery. The latter condition is not harmful but always switch off the engine if it is not required. It is extinguished when sufficient engine revolutions are obtained to provide current to the battery.

4. Park Brake (Fig. 3/4)

Illuminated while the handbrake is applied. It operates as soon as the ignition is switched on and will remain illuminated until the handbrake is fully released.

5. Brake Warning (Fig. 3/5)

Serves two purposes. It illuminates to indicate a low fluid level in the brake hydraulic system reservoir, or to indicate a lowering of the efficiency of one of the two separate hydraulic circuits (see BRAKES – page 34).

The light is also illuminated while the handbrake is applied. This provides a check that this warning circuit is operating satisfactorily. It does NOT indicate brake malfunction unless the light remains on when the handbrake is released.

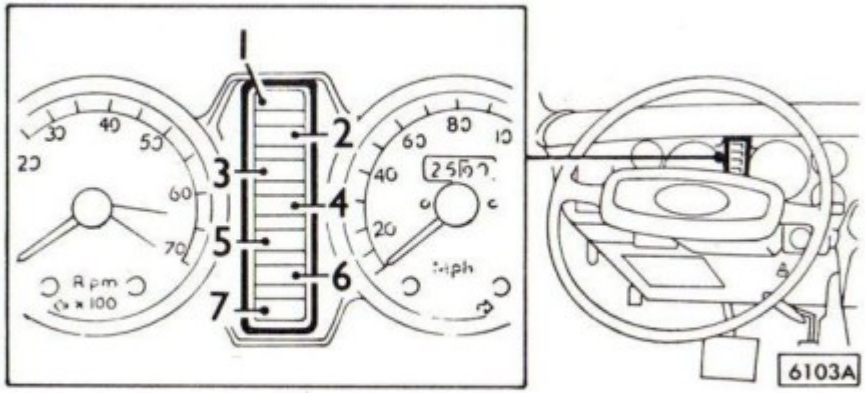
Should the light remain illuminated the car MUST be taken to your Dealer at the very first opportunity.

6. Oil Pressure (Fig. 3/6)

Serves to indicate that engine oil pressure is not present.

The light is illuminated when the engine is stationary

Fig. 3



with the ignition switched 'ON' and is extinguished when the engine is running with adequate oil pressure.

If the warning light appears when the engine is running STOP the car IMMEDIATELY, switch OFF the engine and investigate the cause.

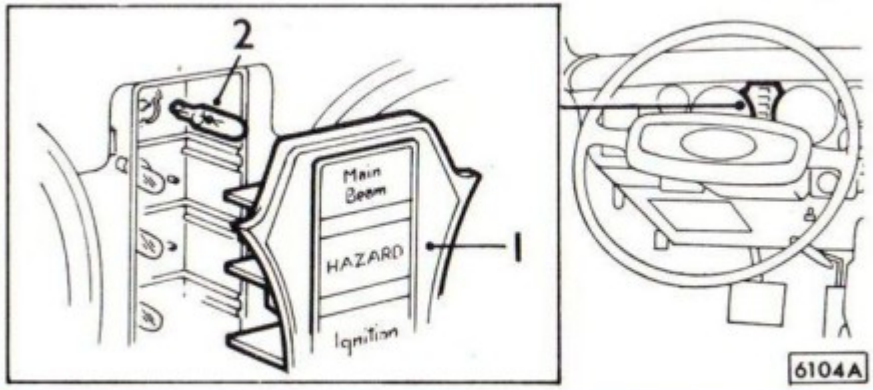
The warning light is additional to the OIL PRESSURE GAUGE.

7. Fasten Belts (Fig. 3/7)

This warning light works in conjunction with the ignition buzzer alarm. The light is illuminated, when, upon selection of any gear, the driver's or passenger's seat belt is not fastened.

A recommended procedure for fastening seat belts is given on page 14.

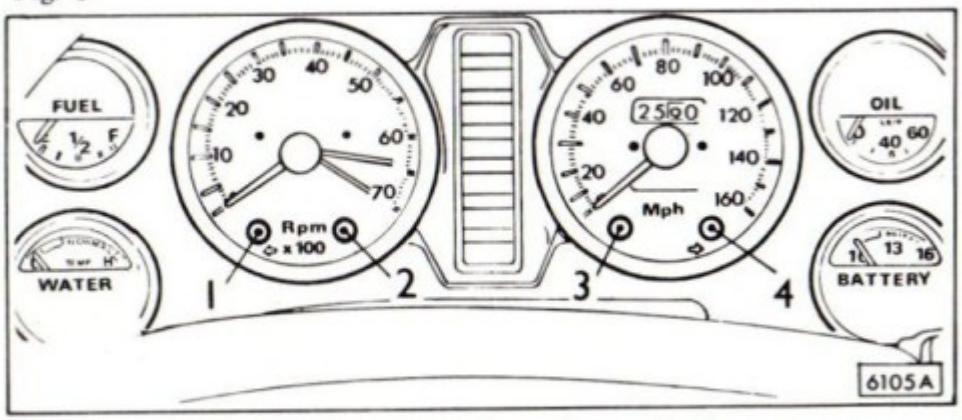
Fig. 4



To renew a Bulb (Fig. 4)

1. Draw the cover from warning light cluster.
2. Remove the defective bulb.
3. Insert new bulb.
4. Refit warning light cluster cover.

Fig. 5



Warning lights are situated in the main instruments, two in the tachometer and two in the speedometer.

Lights in the tachometer are:

1. Left Turn (Fig. 5/1)

Flashes simultaneously with the external turn lights when a left turn is indicated.

2. Choke (Fig. 5/2)

Illuminated when the choke control lever is at any position except fully closed.

Lights in the speedometer are:-

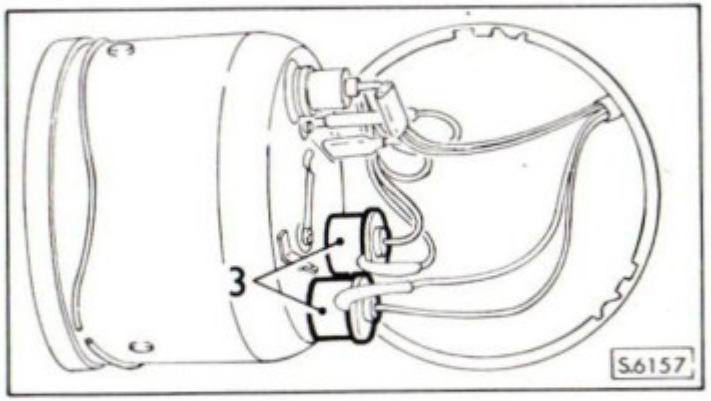
3. Demist (Fig. 5/3)

Illuminated when the rear window demist element is operating.

4. Right Turn (Fig. 5/4)

Flashes simultaneously with the external turn lights when a right turn is indicated.

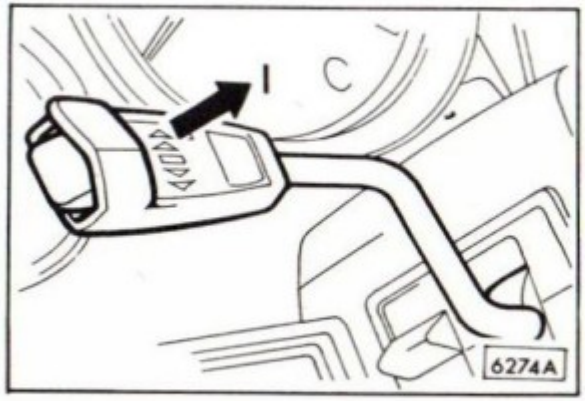
Fig. 6

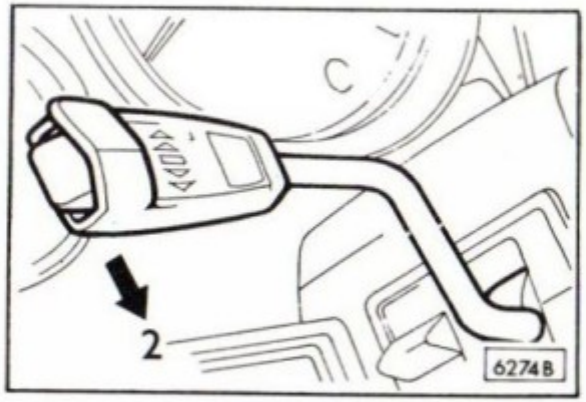


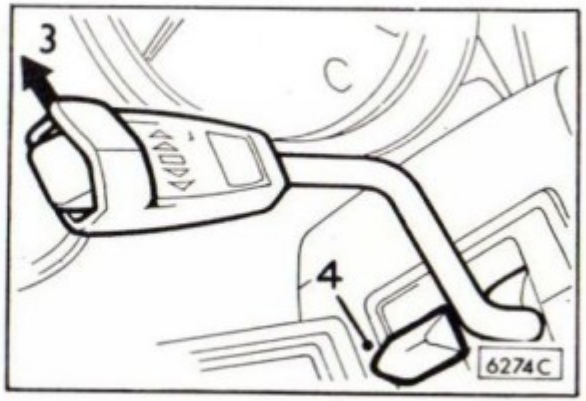
To renew a Bulb in the Tachometer or Speedometer (Fig. 6)

1. Twist the instrument through a small angle anti-clockwise.
2. Draw instrument from facia panel.
3. Remove bulb holder and renew bulb.
4. Reverse operations 1 to 3 inclusive.

Fig. 7







The lever behind the steering wheel (Fig. 7) controls headlight main beam and dip, headlight flash and right-turn and left-turn indicators. Selection of headlight main beam and dipped beam is only possible while the light switch at the left-hand side of the steering column (Fig. 21) is set to 'HEAD'.

Headlight Flash (Fig. 7/1)

To flash the headlights, pull the lever towards you against a spring pressure, when released the lever will return to its original position. The headlight flash operates when the light switch beside the steering column is in any position except 'HEAD'.

Headlight Main Beam/Dipped Beam (Fig. 7/1)

When the light switch is set to 'HEAD', the lever operates as a dip switch and switches from headlight dipped beam to main beam and vice versa.

Flashing Turn Indicators

To operate the flashing (turn) indicators on the right-hand side of the car, move the lever clockwise (Fig. 7/2), for left-hand operation move the lever anti-clockwise (Fig. 7/3). While the indicators are in operation, warning lights operate in the tachometer or speedometer for left- and right-hand turns respectively.

Parking Lights

When the ignition switch is set to 'LOCK' and the key removed, a parking light facility is available, that is, parking light and tail light on one side of the car only are illuminated.

To switch on the parking lights, move the flashing turn indicator lever towards the side on which the lights are required, see Fig. 7/2 or 7/3.

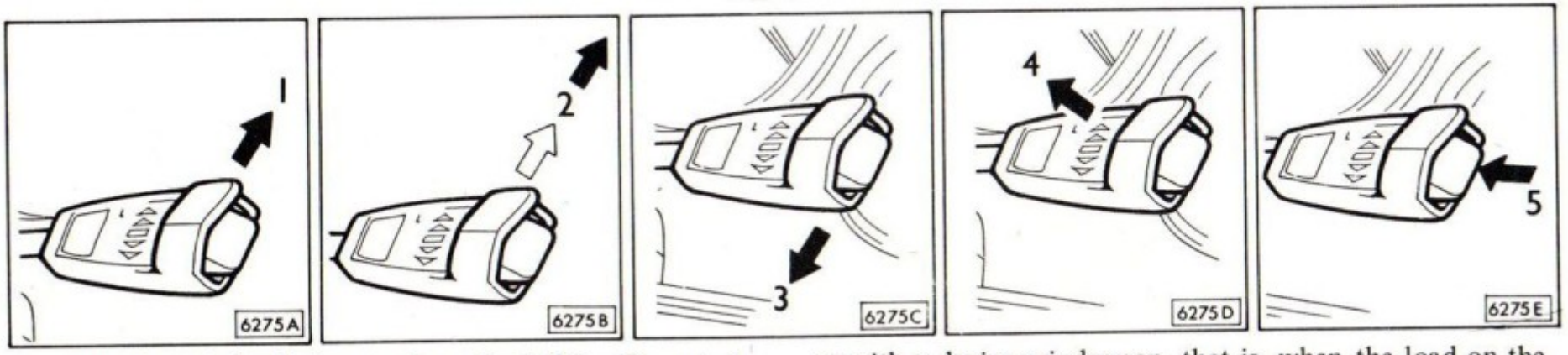
When the ignition key is inserted and the switch moved from 'LOCK', the flashing turn indicators start, and must be cancelled by setting the lever to the central position.

It is the responsibility of the driver to ensure that use of these parking lights does not contravene legal requirements in the area in which the vehicle is being used.

Hazard Warning Switch (Fig. 7/4)

Operation of this switch causes all four flashing (turn) indicators on the car to flash simultaneously. Function of the Hazard Warning system is indicated by the warning lamp in the central panel.

Fig. 8



The lever behind the steering wheel (Fig. 8) controls windscreen wiping and washing facilities.

Windscreen Wipers

To operate the windscreen wipers at a slow speed, move the lever upwards to the first position (slow) (Fig. 8/1). This position is recommended for all normal weather conditions and snow.

For conditions of very heavy rain or for fast driving in rain, move the switch to the second position upwards (fast) (Fig. 8/2). This position should not be used in heavy snow or with a drying windscreen, that is, when the load on the motor is in excess of normal.

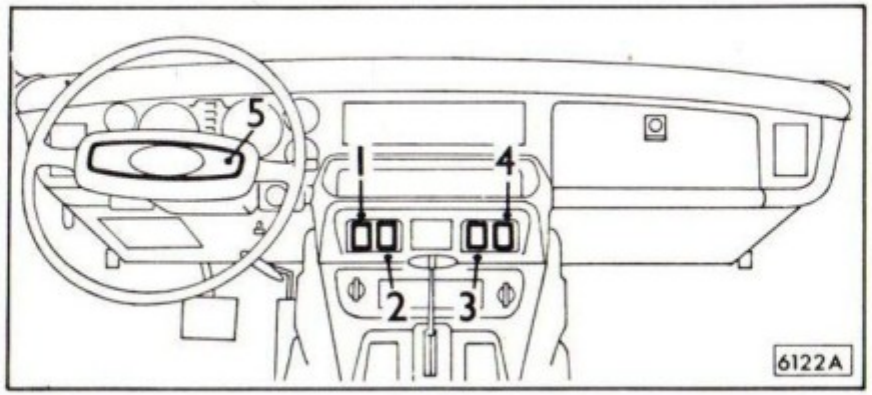
To park the windscreen wipers i.e. to set them low on the windscreen, press the lever momentarily downwards (Fig. 8/3).

To operate the 'flick wipe' facility, pull the lever (Fig. 8/4) momentarily outwards from the central (off) position.

Windscreen Washers

To operate the windscreen washers, press in the button on the end of the lever (Fig. 8/5). For full instructions on the use of the windscreen washing equipment see Page 40.

Fig. 9



A row of "Push/Push" type switches (Fig. 9) control items enumerated below. At night an illuminated green panel indicates that the switch is "OFF" and a red panel indicates "ON".

To renew bulb, carefully pry switch panel from plastic rivets and pull bulb holder from light block.

Fuel (Fig. 9/1)

Indication of the fuel tank selected is given, during daylight, by a white band being visible around the switch when the right-hand tank is being used. At night, illuminated arrows at the top and bottom of the switch point to left or right as an indication of the tank selected.

The switch simultaneously causes the fuel gauge to register the contents of the fuel tank selected.

Heated Window (Fig. 9/2)

Controls the heated rear window. A warning light in the speedometer is illuminated while the demister is operating.

The heater element only functions when the ignition is switched on.

Care must be taken when cleaning the rear window as the heating element is imprinted on the "inside" surface of the glass.

Map (Fig. 9/3)

Illuminates a map light beneath the centre of the facia crash roll.

Interior (Fig. 9/4)

Controls interior lights on each side of the car. Interior lights are automatically switched on when the doors are opened and extinguished when the doors are closed.

Instructions for renewal of the interior light bulbs are given on page 48.

Horns (Fig. 9/5)

Dual electric warning horns are operated by pressing the steering wheel boss anywhere within the area marked.

Fig. 10

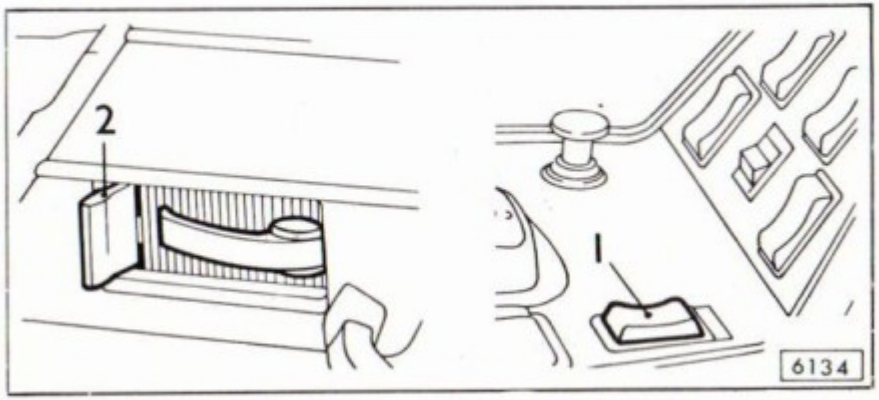


Fig. 11

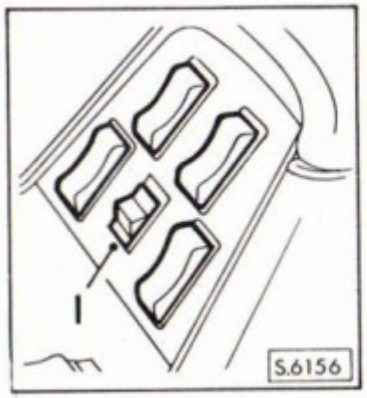
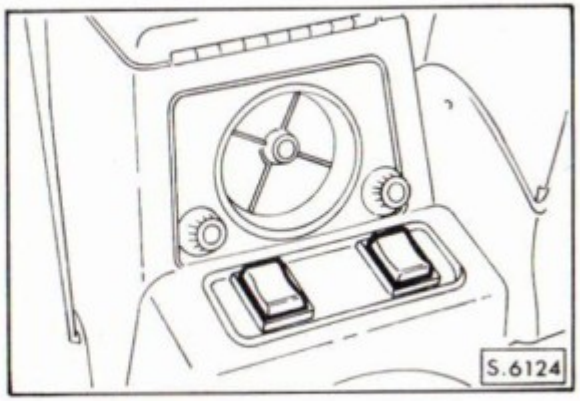


Fig. 12



Thermal Circuit Breakers for Electric Window and Door Lock Solenoid Circuits

A thermal circuit breaker is fitted in both the door lock solenoid and electric window lift circuits to provide protection against overload. The circuit breakers are located behind the dash casing, above the main fuse block.

Under conditions of sustained or successive operation, the circuit breaker can cut out but it should not be assumed that this indicates a fault.

The circuit breaker will require time to cool down after cutting out **before** the circuit is automatically re-set. During this cooling period the door lock solenoid or window lift motor, whichever is affected, **WILL NOT FUNCTION.**

Electrically operated Door Locks (Fig. 10/1)

Controls the electric door locks and enables all four doors to be locked quickly and simultaneously by the driver or front seat passenger. This switch makes it impossible for the doors to be opened from the outside without a key.

A thermostatic circuit breaker protects the system from repetitious operation, e.g. children left unattended in the vehicle. This is necessary as the door lock circuit is operative with the ignition switched off. The switch operation can be over-ridden by unlocking any of the doors manually from the inside (Fig. 10/2).

Electrically Operated Windows (Fig. 11, Fig. 12)

Electrically operated windows are fitted. This system enables the windows to be raised or lowered by means of switches which automatically return to a neutral position when released.

The switch between the two front window switches is an isolator that prevents ANY of the other switches operating their respective windows (Fig. 11/1).

Individual switches are provided for the rear seat passengers (Fig. 12). Either of these switches may be over-ridden by the driver's switches should they be operated simultaneously.

The driver's front window switch will also operate as a master switch over-riding ALL other switches.

To lower the windows depress the applicable switch. Lift switch to raise the window.

To lower the rear windows by use of the rear switches pull the switch rearwards. Pushing the switch forward will raise the window.

Fig. 13

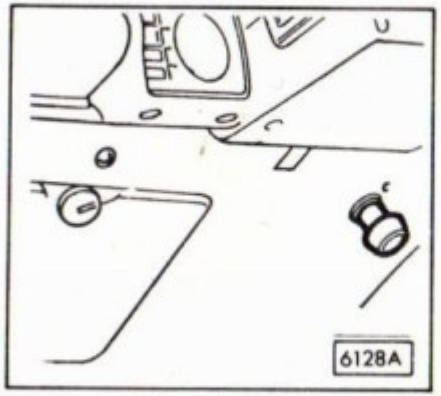


Fig. 14

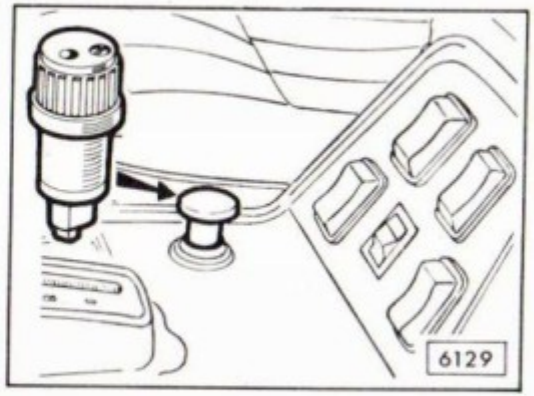
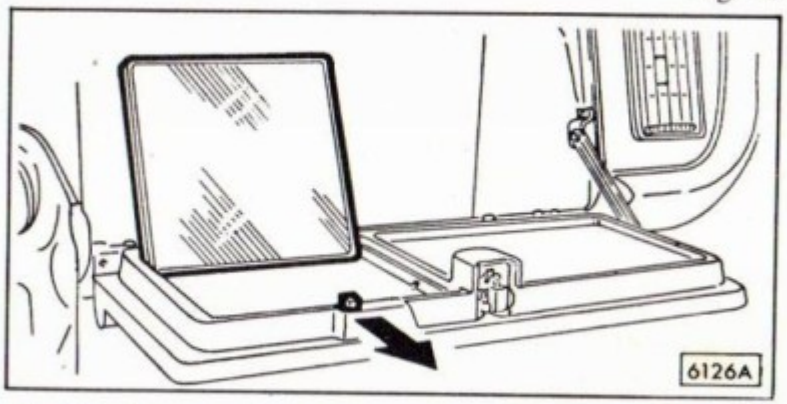


Fig. 15



If it is desired to open a window slightly, releasing the switch will allow the window to stop at the required height.

Note: The electric windows will not operate while the ignition switch is in the 'LOCK' position.

Panel Light Control (Fig. 13)

Rotating the control will alter the brightness of the instrument panel lighting. The panel lights may be switched off by rotating the control fully in an anti-clockwise direction.

Braking Lights

The brake lights automatically function when the footbrake is applied.

Reversing Light

The reversing light is automatically brought into operation when reverse gear is engaged and the ignition is switched on.

Luggage Compartment Illumination

The luggage compartment is automatically illuminated when the lid is opened. The lamp operates only when the sidelights are switched on.

Cigar Lighter (Fig. 14)

To operate, press the holder into the socket on the console panel and release.

On reaching the required temperature the holder will return to the extended position. Do not hold the lighter in the 'Pressed in' position.

The cigar lighter holder may also be used to provide a trickle charge point for the battery or as an inspection lamp point. A plug for this purpose is provided and will be found in the glovebox together with fitting instructions.

The cigar lighter is illuminated when the sidelights are switched 'ON'.

Glove Box (Fig. 15)

The lockable glove box is opened by pressing the push button and pulling on the finger grip.

A vanity mirror is concealed on the left-hand side of the lid and is opened by pulling the catch and lifting the mirror to an upright position.

Fig. 16

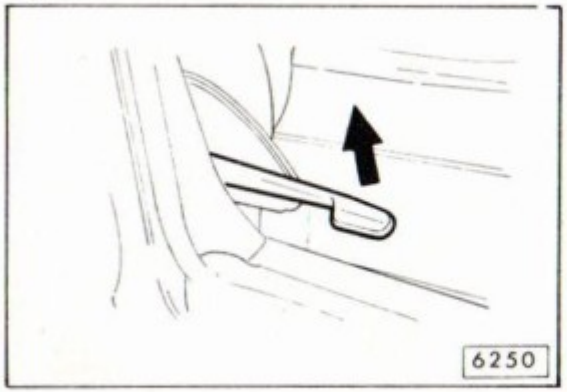


Fig. 17

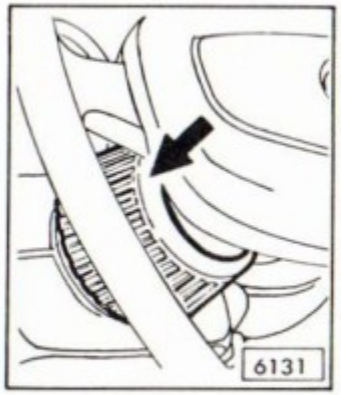
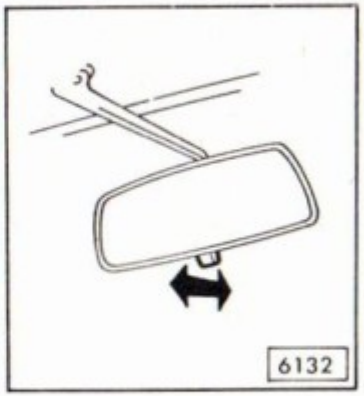


Fig. 18



Seat Adjustment (Fig. 16)

Both front seats are adjustable for reach.

Lift the lock bar situated under the front edge of the seat cushion, and slide the seat into the required position. Release the lock bar and slide the seat until the mechanism engages with a click.

The seat back is adjustable from the vertical to the reclined position.

To adjust, lift the lever located on the outside of the seat cushion and adjust the seat back to the desired position.

Release the lever to lock in position.

Head Restraints

Head restraints are fitted to both front seats. Lifting the head restraint provides adjustment for taller persons, an internal friction device ensuring retention in the desired position.

To be fully effective, the head restraint should be adjusted to support the back of the seat occupant's head at approximately eye level.

Steering Wheel Adjustment (Fig. 17)

Rotate the knurled ring in an anti-clockwise direction two full turns when the steering wheel may be slid into the desired position. Turn the knurled ring clockwise to lock the steering wheel.

Interior Driving Mirror (Fig. 18)

This is of the dipping type. Move the lever for night driving to avoid being dazzled by the lights of a following car.

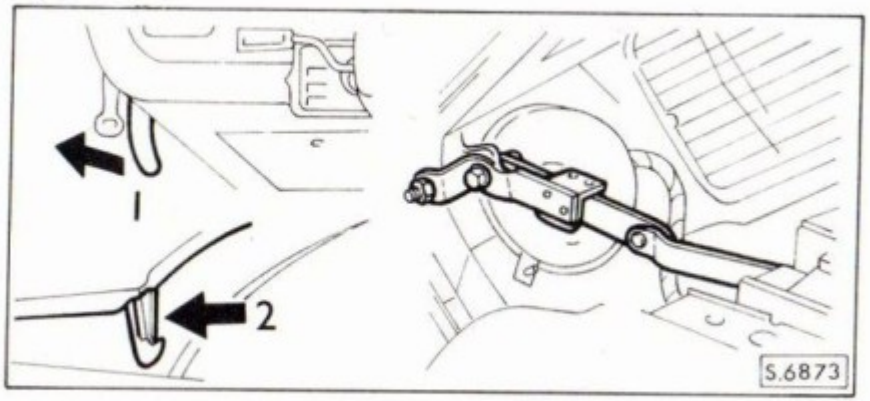
As a safety precaution the mirror stem is designed to collapse away from the spring retainer on the mounting bracket under impact.

Bonnet Lock Control (Fig. 19)

The bonnet lock is controlled from the driving compartment. To open the bonnet, pull the lever (Fig. 19/1), this will release the bonnet which will now be retained by the safety catch (Fig. 19/2). Insert the fingers under the rear edge of the bonnet and lift up the safety catch.

To retain the bonnet of early model cars in the raised position, it is necessary to lift the centre of the bonnet stay

Fig. 19



so that the tongue on the forward strap engages in the notch in the rearmost strap.

Before closing, the centre hinge pin of the stay must be tapped sharply downwards using the heel of the hand, the bonnet may then be closed by following the procedure detailed below.

On later cars the bonnet is automatically retained in the fully open position.

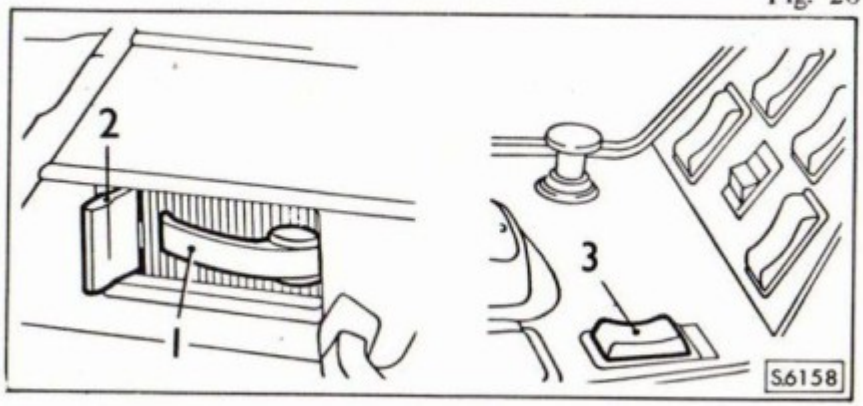
To close the bonnet, stand in front of the car and push bonnet back and down towards closed position. While bonnet is still moving transfer fingers to a position either side of the grille motif, and pull sharply upwards.

In an emergency, that is if the bonnet lock will not release after pulling the lever remove the rubber plug located beneath both front wheel arches. Insert a screwdriver through the access hole to push the extension lever on the lock rearwards.

Refit the rubber plug when the bonnet is opened to prevent the entry of mud and water.

The release cable should be re-adjusted by your Dealer at the earliest opportunity.

Fig. 20



Door Locks

Close the doors by pushing firmly, there is no necessity to 'slam' the doors to close them.

Doors are opened from the outside by pressing the button incorporated in the door handle and are opened from the inside by pulling the remote control handle rearwards (Fig. 20/1).

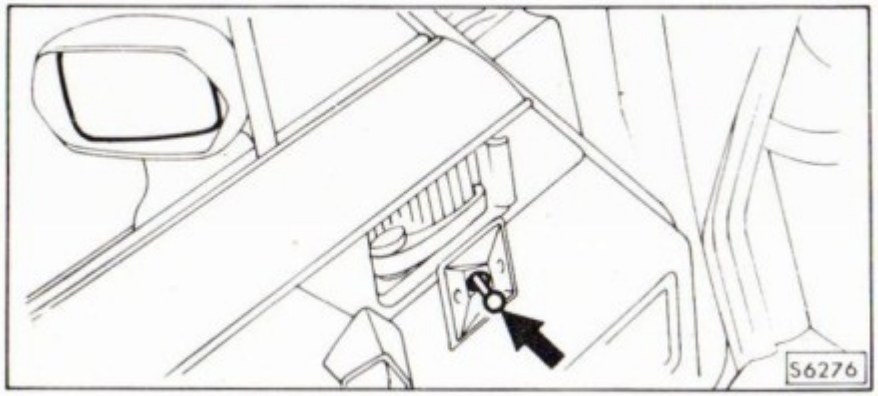
A safety device is provided in the rear doors to prevent accidental opening by children. To operate the lock, open the door and press the small lever adjacent to the lock in the door shut face. The door can then be closed and the interior handle will be inoperative.

Open the door by pressing the button in the outside handle and pull out the small lever in the door shut face. Full interior opening will then be available.

The doors can be locked from the inside of the car by moving the locking lever towards the handle (Fig. 20/2). Reverse the movement of the locking lever to unlock.

The doors can be unlocked from the outside by inserting the key in the lock and rotating clockwise on the

Fig. 21



left-hand door and anti-clockwise on the right-hand door. Keyless locking is not available.

It is possible to electrically lock the doors by operating the switch at the left-hand side of the centre console (Fig. 20/3). The operation of this switch has been described at greater length on page 8.

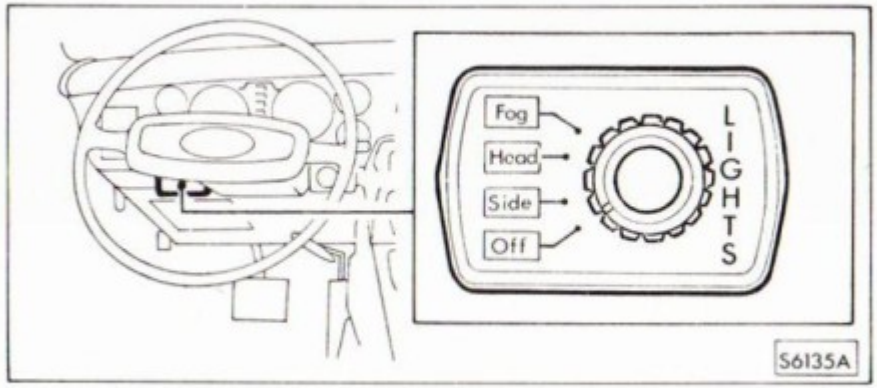
IMPORTANT

It is not possible to manually or electrically lock a front door from inside the car unless the door is closed. Attempting to operate the locks when the door is open may damage the lock mechanism.

Remote Control Door Mirror (Fig. 21)

The protective cover is fixed, the mirror moving freely within it. The position of the mirror may be adjusted to suit driver requirements by use of the adjustment lever mounted on the inside of the driver's door. The adjustment lever is located directly beneath the driver's door release handle.

Fig. 22



Head and Parking Lamp Switch (Fig. 22)

Situated at the left-hand side of the steering column. It is a four position switch which operates as follows:-

'OFF'

The normal position for this switch for daytime driving.

'SIDE'

With the switch set in this position, front parking, tail, number-plate, panel lights and any marker lights required by local legislation are illuminated.

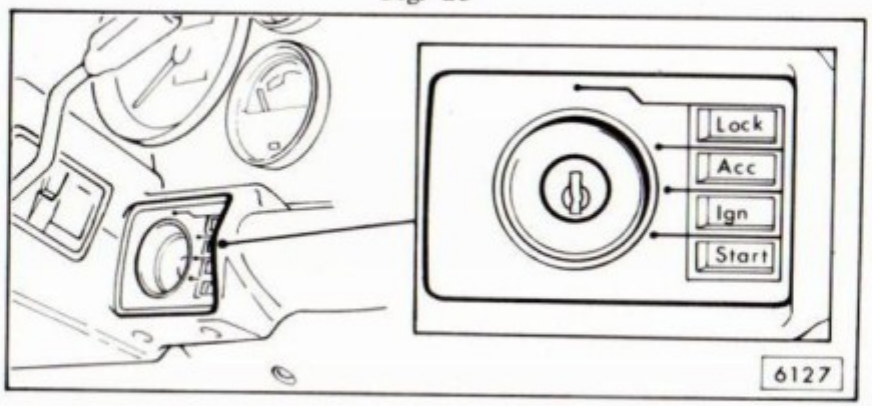
'HEAD'

When the switch is set in this position the control lever on the steering column becomes operative, controlling head light and dipped light as detailed on page 5.

'FOG'

When the switch is pressed in and rotated to this position the headlights are inoperative and fog lights, if fitted, are switched on. All other lights are in the condition described in 'SIDE'.

Fig. 23



Ignition/Starter Switch (Fig. 23)

The switch is situated on the right-hand side of the steering column and has three operative positions as described below.

'LOCK'

This is the off position. Withdrawing the key when in this position will allow the steering column lock to operate by engagement of the lock bolt with the register in the inner column. It should be noted that the anti-theft device operates only when the key is turned to the 'LOCK' position and removed.

IMMEDIATELY THIS IS DONE, THE COLUMN IS LOCKED AND IT BECOMES IMPOSSIBLE TO STEER THE CAR.

It is, therefore, important to remember that if the ignition is switched off THE IGNITION KEY SHOULD NEVER BE REMOVED FROM THE LOCK WHILE THE CAR IS MOVING.

Re-inserting the key and TURNING to position 'IGN' or 'ACC' will unlock the column. MERELY INSERTING THE KEY DOES NOT FREE THE STEERING COLUMN.

'ACC'

This position will allow the operation of accessories such as Radio and Electric Window Lift Control with the ignition switched off.

The key cannot be removed.

Do not leave the car with the ignition key in this position.

'IGN'

This is the driving position. The key cannot be removed and the ignition is 'on'. Do not leave the key in this position for any length of time with the engine stationary.

'START'

This is the starting position. On release, the key will automatically return to the ignition 'on' position.

IMPORTANT

Operation of the starter switch will momentarily isolate ALL IGNITION CONTROLLED EQUIPMENT (except Coil and Petrol Pump) including Air Conditioning system (when fitted) allowing full battery power to be available for engine cranking.

Re-engagement of the starter (cranking) motor will not be possible until the key is returned to the 'ACC' or 'LOCK' position. This is a safety device introduced to prevent damage to the starter drive through accidental engagement when the engine is running.

Key Alarm

In addition to the operations detailed above, the switch has an additional feature incorporated to conform to Federal Regulations, known as Key Alarm.

In operation, a warning buzzer will sound whenever the driver's door is opened if the ignition key has been left in the lock, and if upon selection of any gear the driver's or passenger's seat belt is not fastened.

Removal of key will disconnect the buzzer.

Inertia Reel Safety Harness

The inertia reel safety harness embodies lap and diagonal straps and careful fitting will ensure maximum comfort and safety in operation. Fitting instructions are detailed below.

Fitting (Fig. 23a)

Pull shoulder strap (1) from door post until a loop is formed and pass the outboard arm through the loop. Pull shoulder strap diagonally across body until tongue (2) can be inserted in to safety harness anchorage (3). Press tongue into anchorage until a 'click' is heard; this indicates that the harness is locked. Ensure that the strap is not twisted.

The lap portion (4) must pass across the top of the thighs and NOT across the stomach.

Lightly tug upwards on the diagonal portion of the harness to settle the lap strap correctly.

To release the harness, press the button (5) when the tongue will automatically disengage from the anchorage.

While the harness is stowed the tongue may be located in a convenient position by placing the tongue retaining bar as high as possible on the webbing (6).

Cleaning

An occasional wipe with a warm soapy sponge will keep the harness clean. Do not use bleach or dyes as they may affect the efficiency of the harness.

Seat Belt Warning/Starter Interlock

The car is fitted with a sequential starting interlock/seat belt warning system that prevents the engine being started unless the following operations are carried out in the order given.

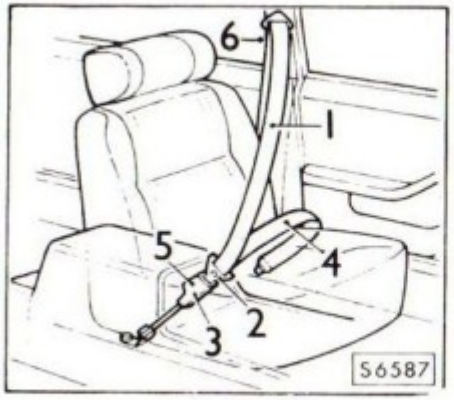
Start sequence – The driver must . . . . .

1. Sit in the car.
2. Extend and correctly secure his seat belt.
3. Ensure that the handbrake is applied and that the transmission selector lever is in 'N' or 'P' position.
4. Turn the ignition key to start the engine, operating the manual choke as described on page 16.

Should the sequence not be followed before the ignition key is turned, a buzzer will sound, a warning lamp will come on and the engine will not start.

Note: If a front seat passenger is being carried, the passenger's seat belt must be extended and correctly

Fig. 23a



fastened before engaging the transmission or a continuous seat belt warning, buzzer and lamp, will be given.

A seat belt warning – buzzer and lamp – will be given if the seat belts are unfastened once the engine is running.

Note:

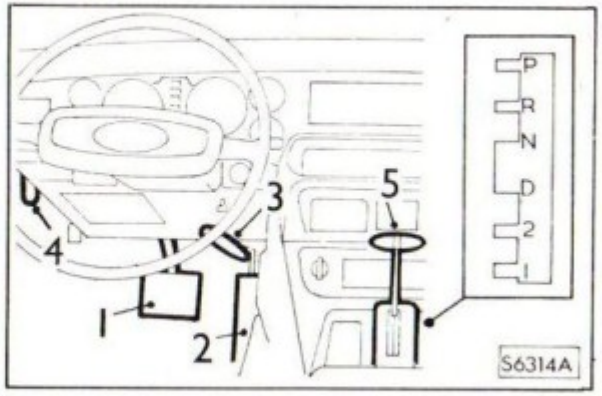
1. Provided that there are no front seat occupants, it is possible to reach into the car and start the engine. However, the belt must be correctly secured on each occupied front seat before a gear is selected; the buzzer and warning light will operate to indicate a violation.
2. A re-start can be obtained after the driver's seat belt has been unfastened provided he has not vacated his seat. A seat belt warning – buzzer and lamp – will be given, however, until the belt is re-fastened.

Brake Pedal (Fig. 24/1)

Operates the vacuum-servo assisted disc brakes on all four wheels.

Maintenance instructions for the braking system are given on page 34.

Fig. 24



Accelerator Pedal (Fig. 24/2)

Controls the speed of the engine.

Handbrake Lever (Fig. 24/3)

Positioned under the dash on the driver's side. The handbrake operates mechanically on the rear discs only and is provided for parking, driving away on a hill and when at a standstill in traffic. To apply the brake, pull the lever out and the trigger will automatically engage with the ratchet. The handbrake is released by twisting the lever handle until the ratchet is disengaged allowing the control to return to the off position.

Choke Control (Fig. 24/4)

Instructions concerning the use of this control will be found on page 16.

Automatic Transmission Selector (Fig. 24/5)

For full instructions on the operation of the automatic transmission, see page 18. (Model 65 gate illustrated.)

Prior to Starting

Before starting the engine the new owner should familiarise himself with the location and function of the instruments and controls by reading the relevant preceding pages.

Ensure that the water level in the radiator and the oil level in the sump are correct. Check for sufficient petrol in the tanks.

The selector lever must be in the 'P' or 'N' position.

Fit seat belt Page 14. If a front seat passenger is to be carried, the passenger side seat belt must also be extended and correctly secured.

Starting from Cold

The manual mixture control (choke) is located beneath the facia panel behind the steering wheel (Fig. 24/4). Pulling the knob outwards gives 'Fully rich' mixture. A warning light in the tachometer indicates when the choke is in operation.

The choke control incorporates a spring-loaded ball to locate the lever in intermediate positions. Switch on ignition and operate starter switch but do not touch the accelerator. Release the starter switch as soon as the engine starts. If, for any reason, the engine does not continue to run, return ignition key to position 'ACC' or 'LOCK' and wait until engine and starter have come to rest before attempting to start engine again.

When starting in very cold weather, pull the choke control to its maximum 'Fully Rich' position but RELEASE THE CONTROL IMMEDIATELY THE ENGINE FIRES. Return the choke to a mid-way position where it will be retained by the spring-loaded ball. When the engine is running IT IS IMPORTANT THAT THE CHOKE CONTROL IS RETURNED TO THE 'FULLY OFF' POSITION AFTER APPROXIMATELY ONE MINUTE.

Warming up

Do not operate the engine at a fast speed when first started but allow time for the engine to warm up and the oil to circulate. A thermostat is incorporated in the cooling system to assist rapid warming up. In very cold weather run the engine at 1,500 r.p.m. with the car stationary until a rise in temperature is indicated on the temperature gauge.

Driving

(a) Careful adherence to the 'Running in' instructions given under the next heading will be amply repaid by obtaining the best performance and utmost satisfaction from the car.

(b) The habit should be formed of reading the oil pressure gauge, water temperature gauge and battery indicator occasionally as a check on the correct functioning of the car. Should an abnormal reading be obtained an investigation should be made immediately.

(c) Always apply the footbrake progressively; fierce and sudden application is bad for the car and tires. The handbrake is for use when parking the car, when driving away on a hill and when at a standstill in traffic.

(d) It should be noted that when the engine ceases to rotate, the effort required to turn the steering wheel is greatly increased.

'Running-in' Instructions

Only if the following important recommendations are observed will the high performance and continued good running of which the car is capable be obtained.

During the 'running-in' period do not allow the engine to exceed the following speeds and particularly do not allow the engine to labour on hills; it is preferable to select a lower gear and use more revolutions rather than allow the engine to labour at low speed:–

First 1,000 miles (1,600 km.) . . . . . 2,500 r.p.m.
From 1,000-2,000 miles
(1,600-3,200 km.) . . . . . 3,000 r.p.m.

Have the engine sump drained and refilled as recommended at the free service, that is, after the first 1,000 miles (1,600 km.).

Inertia Reel Safety Harness–Check

At intervals of 6,000 miles (10,000 km.) or 6 months, whichever is first achieved, the inertia reel mechanism must be checked for satisfactory working condition on driver's and passenger's safety harness. Proceed as follows:–

(a) Fit safety harness, driver and passenger, as previously described.

(b) Start engine and drive in a normal manner until speed reaches 15 m.p.h. (24 km./h.).

(c) Ensuring that it is safe to do so, **brake sharply**. The inertia reel should automatically lock, the safety harnesses holding driver and passenger in a secure position.

(d) Check that diagonal portion of belt maintains its correct position i.e. in light contact with body following bodily movement.

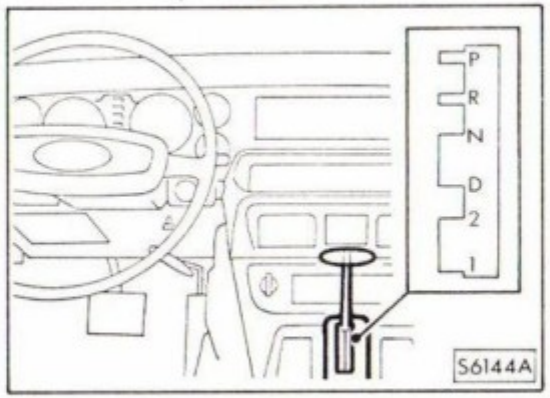
Important

The safety harness inertia reel mechanism is locked by retardation of the car, not by body movement. Any attempt to throw the body forward in anticipation of 'arrest' will cause a 'snatch' action at the reel and the locking mechanism will not operate.

Warning

The inertia reel mechanism should be checked only under 'maximum safety' road conditions i.e. level, dry road with no following or oncoming vehicles, etc. The test must not be carried out on wet roads, ice or mud or under any condition which is not considered to be safe.

Fig. 25



The Model 12 Automatic Transmission is a hydraulically operated, three speed epicyclic transmission, with variable change speeds actuated by road speed and manifold depression. The Model 65 transmission is actuated by road speed and throttle pedal position. Power is transmitted from engine to gearbox via the three element torque converter with torque multiplication to a maximum value of 2 : 1 available.

Gear selection is controlled through the gear selector lever (Fig. 25) and gear ratios in D are influenced by road speed and engine manifold depression (Model 12) or road speed and throttle position (Model 65).

To move the gear selector lever from 'P' to 'R' or 'N' the lever must be pressed to the right against the spring bias. The lever moves freely between 'N' to 'D' and '2' to '1'.

Warning

The handbrake or footbrake should be fully applied before selecting any of the forward or reverse drive ranges from a stationary position.

P (Park)

In the park position the gearbox is mechanically locked by means of the parking pawl which engages with external teeth formed on the ring gear integral with the driven shaft.

Park should not be selected when the car is in motion.

Use of the Park position is recommended whenever the car is parked with or without the engine running.

R (Reverse)

Placing the gear selector in 'R' engages reverse gear immediately. Do not select 'R' when the car is moving forward.

N (Neutral)

With neutral (N) selected there is neither drive nor engine braking, therefore the handbrake must be applied whenever the selector lever is in this position and the car is at rest.

D (Drive range)

Position gives full automatic up and down changes through all forward gears depending upon road speed and throttle position.

In the 'D' range, downshifts can be obtained by using two driving techniques, one of which entails partial

depression of the accelerator pedal – "part throttle kickdown" and the other "full throttle kickdown".

A part throttle downshift will permit intermediate gear to be obtained by partially depressing the accelerator pedal when in high gear if road speed has fallen below approximately 20 m.p.h. (32 k.p.h.) Model 12, or 42 m.p.h. (67 k.p.h.) Model 65.

Depressing the accelerator pedal to full kick down at road speeds below approximately 28 m.p.h. (45 k.p.h.) Model 12, or 35 m.p.h. (56 k.p.h.) Model 65, will enable low gear to be obtained.

2 (Intermediate Gear)–Model 12

Selection of 2 from either 'D' or '1' will result in a shift to '2' (intermediate gear). Once '2' is engaged, no shift up or down will occur, and it is recommended that this condition be used in conditions of traffic congestion.

2 (Intermediate Gear)–Model 65

The '2' position will lock out top gear (direct drive). Selection of '2' from 'D' will result in an immediate downshift to intermediate gear which will provide engine braking for descending gradients or for use in an emergency. It is recommended however, that this is not done at speeds in excess of 80 m.p.h. (128 k.p.h.).

Should car be driven from rest with selector lever in '2', first gear will engage until appropriate road speed is reached when an upshift from '1' to '2' will occur. Once '2' is engaged however, no further upshift will occur but kickdown will cause a shift from '2' to '1'. Box will also change from '2' to '1' when road speed decreases.

1 (Low Gear)

Selection of '1' from '2' will result in a downshift when road speed has been reduced to approximately 24 m.p.h. (39 k.p.h.) Model 12, or 10 m.p.h. (16 k.p.h.) Model 65.

Selection of '1' from 'D' can only be obtained at road speeds of approximately 33 m.p.h. (53 k.p.h.) Model 12, or 15 m.p.h. (24 k.p.h.) Model 65.

If selected at a higher speed than this when decelerating, a change into intermediate will result, low gear being subsequently obtained automatically when road speed falls to approximately 20 m.p.h. (32 k.p.h.) (not Model 65).

Manual selection of low gear is not advisable when road conditions are adversely affected by rain, snow or ice.

Starting

A starter inhibitor switch ensures that the starter will operate only when the selector is in either the 'P' or 'N' position.

Rocking the Car

In order to extricate a car from mud, sand or snow, employ a constant slight throttle opening and rock the car backwards and forwards by alternately selecting 'R' and 'D' positions.

Stopping

To bring the car to rest, release the accelerator and apply the brakes.

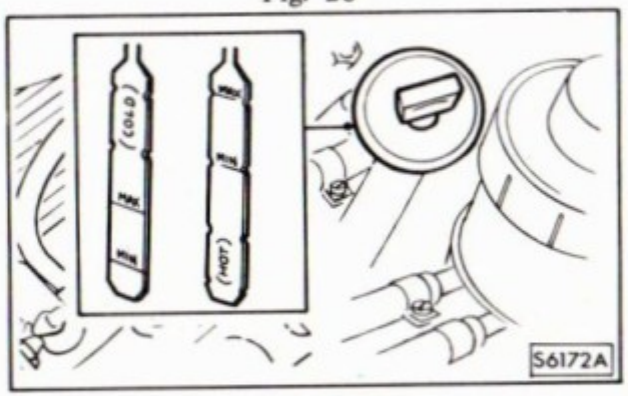
The selector lever may be left in 'D' or '2' unless the car is to be parked.

If the car is temporarily stopped for traffic lights, etc., the selector lever may be left in any forward range but the foot or handbrake should be applied to stop any tendency for the car to 'creep'.

Parking

When the car is stationary firmly apply the handbrake and select the 'P' (Park) position.

Fig. 26



Towing—Automatic Gearbox Functioning Correctly

1. Add an additional 3·6 pints of fluid of correct specification to gearbox.
2. Position selector lever at 'N'.
3. Car may be towed for a distance no greater than 30 miles (48 km.) at a speed not exceeding 30 m.p.h. (48 k.p.h.).
4. Ensure fluid added to gearbox in Operation 1 is drained and oil brought to correct gearbox level prior to car being driven normally.

Towing—Automatic Gearbox Defective

1. The car should be towed with rear wheels clear of the ground or the propeller shaft disconnected at the final drive input flange.
   If propeller shaft is disconnected, firmly secure shaft to one side of final drive input flange.

Check Transmission Fluid Level

The transmission filler tube and dipstick are located on the left-hand side of the engine (Fig. 26).

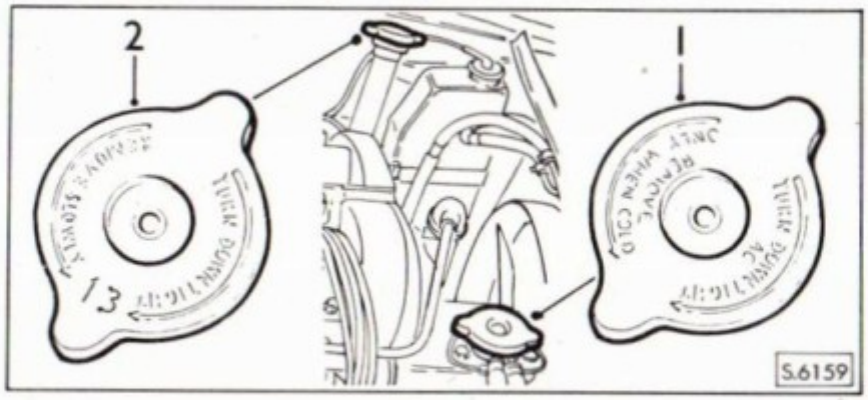
Before checking the fluid level, the car should be on level ground and the transmission should be at the normal operating temperature.

1. Firmly apply handbrake and run engine at a maximum speed of 750 r.p.m. for several minutes. Pass selector through complete range to ensure transmission system is primed.
2. Position selector at 'P' (park).
3. Run engine at idle speed.
4. Using lint free cloth, wipe dipstick clean and immediately check fluid.
5. If necessary, add fluid to bring the level to the "MAX" mark on the 'Hot' side of the dipstick.

Note: Model 12 gearboxes have plain dipsticks; the correct level on these dipsticks is midway between the two marks with oil hot.

6. After topping up (if required) repeat operations 1 to 4. Be careful not to overfill.

Fig. 27



Antifreeze

During winter months Bluecol 'U', Texaco or Prestone 2 antifreeze must be used. These are specially formulated antifreezes designed to afford maximum corrosion protection to all metals normally found in engine cooling systems as well as having the normal frost protection properties necessary during winter months, they should not, therefore, be mixed with other antifreezes.

A 55% solution by volume of antifreeze must be used at all times, either when topping up or replenishing the cooling system. For maximum corrosion protection, the concentration should never be allowed to fall below 25%. Always top-up with recommended strength of antifreeze. NEVER WITH WATER ONLY.

Soft water should be used if available; hard water produces scale which in time will affect the cooling efficiency of the system.

In countries where it is unnecessary to use antifreeze, Marston SQ.36 Corrosion Inhibitor must be used in the cooling system in the proportion of 3 fluid ounces to one gallon of water. CHANGE COOLANT ANNUALLY.

Checking Coolant Level (Cold)

Check the level of the coolant in the engine header tank (Fig. 27/1). If necessary top up to the base of the filler neck.

Check the level of the coolant in the expansion tank (Fig. 27/2). The expansion tank should be approximately half full.

When checking the level, care must be taken to ensure that the header and expansion tank caps are not reversed.

Do **NOT** remove engine header tank cap (Fig. 27/1) when engine is hot.

Care must be taken when removing the expansion tank filler cap if the engine is hot; it is advisable to protect the hands against escaping steam. Turn the cap slowly anti-clockwise until the resistance of the safety stop is felt. Leave the cap in this position until all pressure is released before removing completely.

Fig. 28

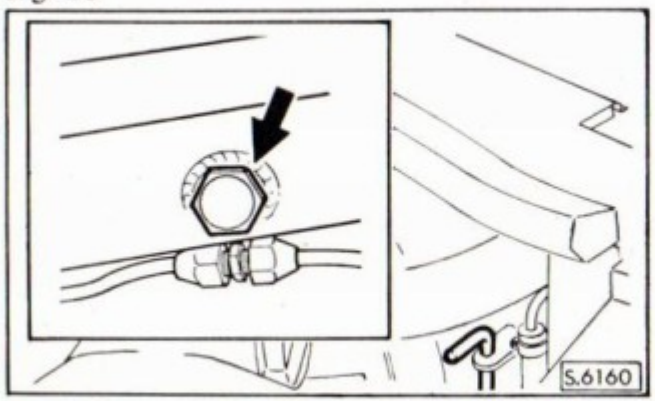
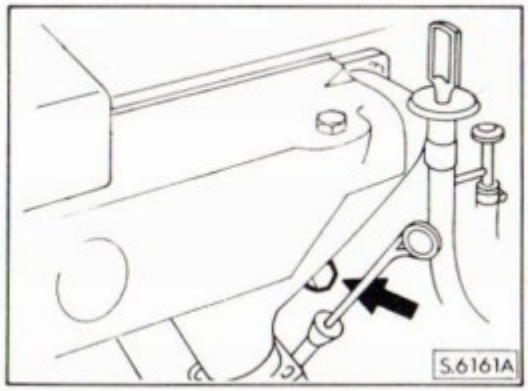


Fig. 29



Cooling System—Draining and Flushing

At commencement of each winter season, the coolant must be drained and the entire cooling system flushed out and refilled with the correct concentration of antifreeze. To do this, open the radiator tap and remove bottom hose drain plug (Fig. 28). Remove drain plug from cylinder block (Fig. 29). Insert a water hose into the header filler neck. Allow the water to flow through the system, with the engine running at a fast idle speed (1,000 r.p.m.) to cause circulation, until the water runs clear. Adjust flow from hose so that the header tank remains full with minimum spillage.

Cooling System—Filling

To ensure satisfactory mixing, measure the recommended proportion of water and antifreeze solution (or corrosion inhibitor) in a separate container and fill the system from this container, rather than add the solution direct to the cooling system.

The cylinder head gasket must be in good condition and the cylinder head nuts pulled down correctly, since if coolant leaks into the crankcase, a mixture will be formed with the engine oil which is likely to cause blockage of the oil-ways with consequent damage to working parts. Check the tightness of all water hose connections, water pump and manifold joints.

Close radiator tap and refit drain plug.

Empty contents of one sachet of Barr's Leaks into engine header tank.

Set heater control to 'DEF'.

Add coolant to tank until correct level is reached.

Fit filler cap, run engine at fast idle for five minutes.

Check coolant level and if necessary, top up by removing cap from expansion tank and filling to base of neck. Fit pressure cap.

Engine Heater

Provision is made on the right-hand side of the cylinder block for the fitment of an American standard engine heater element No. 7, manufactured by 'James B. Carter Ltd., Electrical Heating and Manufacturing Division, Winnipeg, Manitoba, Canada', or George Bray & Co. Ltd., Leicester Place, Blackman Lane, Leeds 2, England.

WARNING: The fitting of an engine heater does not obviate the use of "anti-freeze" during the winter months.

Fig. 30

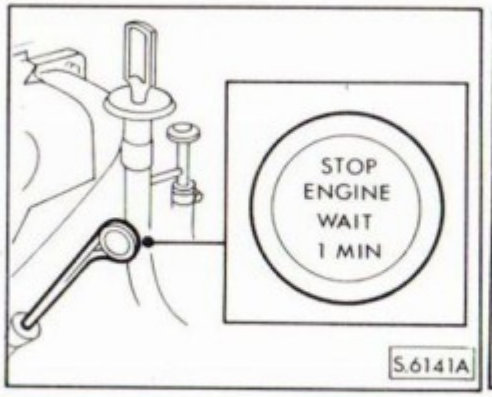


Fig. 31

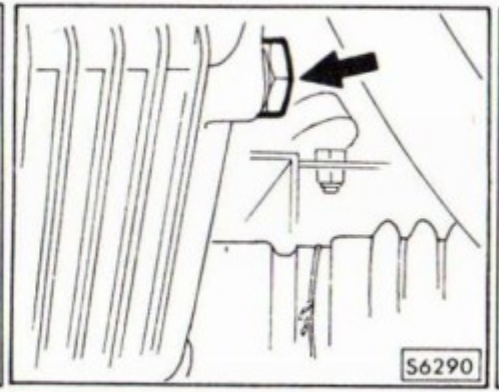
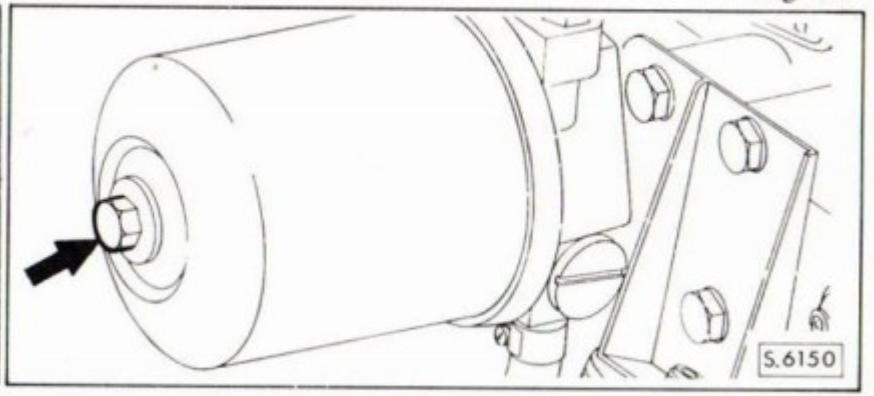


Fig. 32



Checking the Engine Oil Level (Fig. 30)

Check the oil level with the car standing on level ground otherwise a false reading will be obtained.

Remove the dipstick and wipe it dry. Replace and withdraw the dipstick; if the oil level is on the knurled patch, with the engine hot or cold, no additional oil is required. If the engine has been run immediately prior to making an oil level check, wait one minute after switching off before checking the oil level. Add oil slowly through filler on the camshaft cover.

Changing the Engine Oil (Fig. 31)

The draining of the sump should be carried out at the end of a run when the oil is hot and therefore will flow more freely. The drain plug is situated at the right-hand rear corner of the sump.

Oil Filter Element

To guard against the possibility of the filter being neglected to the extent where the element becomes completely choked, a balance valve is incorporated in the filter head which allows unfiltered oil to by-pass the element and reach the bearings. This will be accompanied by a drop in the normal oil pressure of some 10 lb. per sq. inch (0,7 kg./sq. cm.) and if this occurs the filter element should be renewed as soon as possible.

Oil Filter Element–Renew (Fig. 32)

To gain access to the element, unscrew the central bolt when the canister, complete with the element, can be removed. Thoroughly wash out the canister with petrol and allow to dry before inserting the new element.

When replacing the canister renew the circular rubber seal in the filter head.

Distributor–Lubrication (Fig. 33)

Take great care to prevent oil or grease from getting on or near the contact breaker points.

Remove the moulded cap at the top of the distributor by springing back the two clips and detaching the waterproof cover. Lift off the rotor arm and apply a few drops of engine oil around the screw '4', (Fig. 33) now exposed. It is

Fig. 33

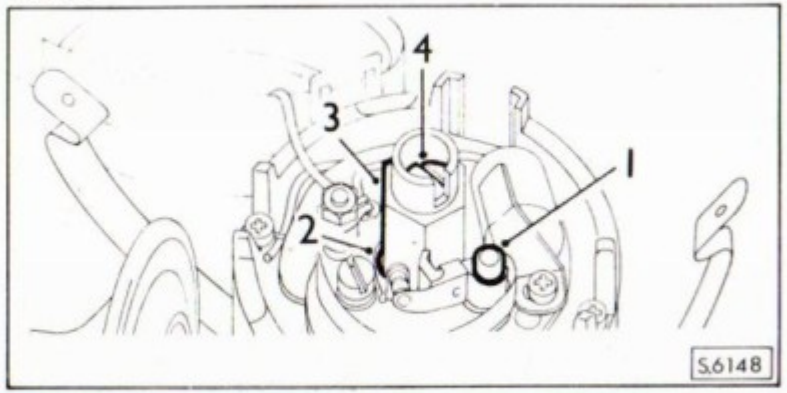
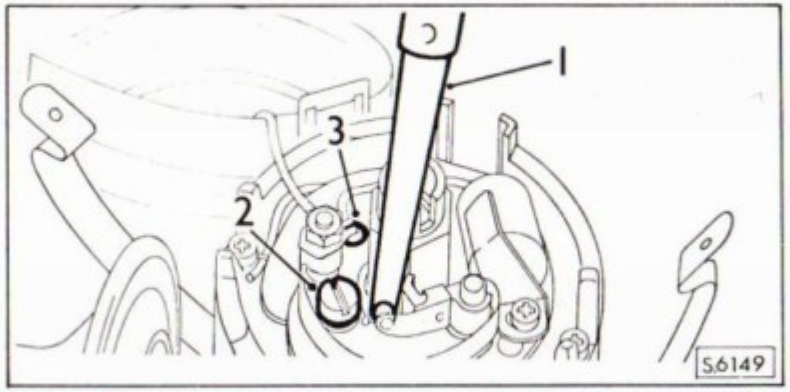


Fig. 34



not necessary to remove the screw as it has clearance to permit the passage of oil.

Apply one drop of oil to the post '1' on which the contact breaker pivots. Lightly smear the cam '3' with grease. Lubricate the centrifugal advance mechanism by injecting a few drops of engine oil through the aperture at the edge of the contact breaker base plate '2'.

Distributor Contact Breaker Points (Fig. 34)

Check the gap between the contact points with feeler gauges when the points are fully opened by one of the cams on the distributor shaft. A combined screwdriver and feeler gauge is provided in the tool kit.

The correct gap .014 in.–.016 in. (,36 mm.–,41 mm.).

If the gap is incorrect, slacken (very slightly) the contact plate securing screw '2', (Fig. 34) and adjust the gap by turning a screwdriver in the nick in the contact plate and the slot in the base plate, '3'. Turn clockwise to decrease the gap and anti-clockwise to increase. Tighten the securing screw and plate.

Examine the contact breaker points. If the contacts are burned or blackened, clean them with a fine carborundum stone or very fine emery cloth. Afterwards wipe away any trace of grease or metal dust with a petrol moistened cloth.

Cleaning of the contacts is made easier if the contact breaker lever carrying the moving contact is removed. To do this remove the nut, insulating piece and connections from the post to which the end of the contact breaker spring is anchored. The contact breaker lever can now be lifted off its pivot post.

Spark Plugs

The only efficient way to clean spark plugs is to have them properly serviced on machines specially designed for this purpose.

The gap between the points should be .025 in. (64 mm.). When adjusting the gap always move the side wire—never bend the centre wire.

Air Cleaner

The air cleaner is of the paper element type, the back plate of the case being attached to the carburetter flanges.

Fig. 35

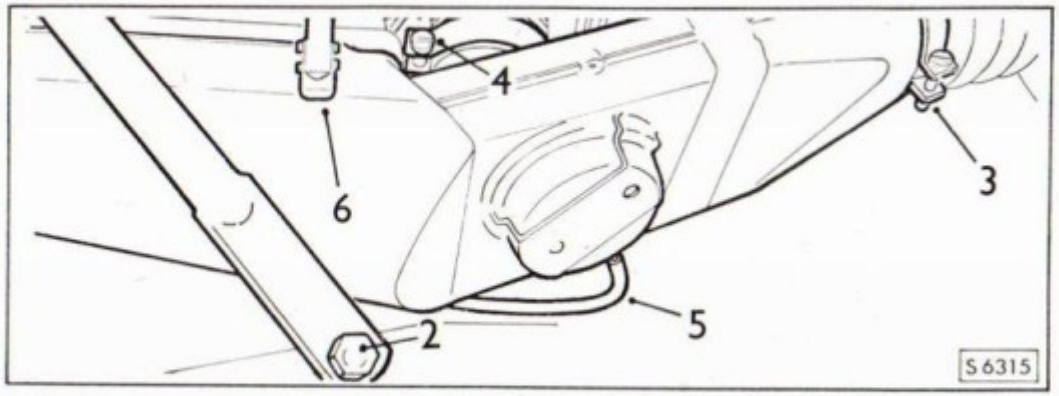


Fig. 36



To renew the element (Fig. 35) proceed as follows:

1. Slacken nut securing inner end of stay to mounting bracket.
2. Remove nut, bolt and washer securing outer end of stay to mounting bracket; swing stay clear of top of air cleaner.
3. Slacken clip and disconnect flexible inlet pipe.
4. Slacken clip and disconnect air duct flexible pipe.
5. Disconnect vacuum pipe from servo motor.
6. Release toggle clips and withdraw air cleaner cover.
7. Lift out filter element.

To refit filter element reverse operations 1 to 7; ensure air cleaner cover is correctly fitted.

Ignition Timing—Checking

Rotate the engine until the rotor arm approaches the No. 6 (front) cylinder segment in the distributor cap.

Slowly rotate the engine until the ignition timing scale on the crankshaft damper is the appropriate number of degrees (see 'General Data') before the pointer on the left-hand side of the lower timing chain cover (Fig. 36).

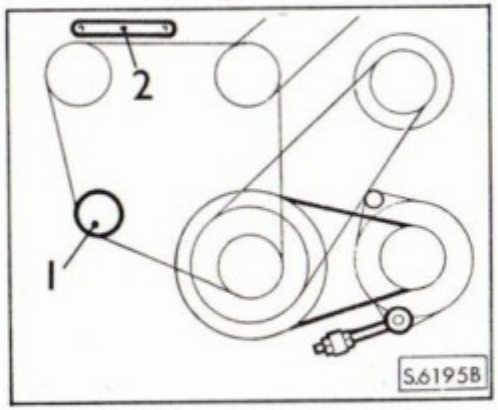
Connect a 12 volt test lamp with one lead to the distributor terminal (or the CB terminal of the ignition coil) and the other to a good earth.

Slacken the distributor clamping plate pinch bolt. Switch on the ignition.

Slowly rotate the distributor body until the points are just breaking, that is, when the lamp lights up.

Tighten the distributor plate pinch bolt.

Fig. 37



Disconnect the vacuum retard pipe and check the distributor centrifugal advance characteristics with a stroboscopic timing light (see General Data).

Fan/Steering Pump Belt—Check for wear (Fig. 37)

The belt tension is automatically adjusted by means of a spring loaded jockey pulley (Fig. 37/1) and routine adjustment is not necessary.

If the belt is to be removed, slacken the adjustment bolts in the support strap (Fig. 37/2), and press the body of the pump in towards the engine. Remove the belt. Press the jockey pulley against the spring and place the new belt over the pulleys. Pull the pump away from the engine and tighten the bolt.

Fig. 38

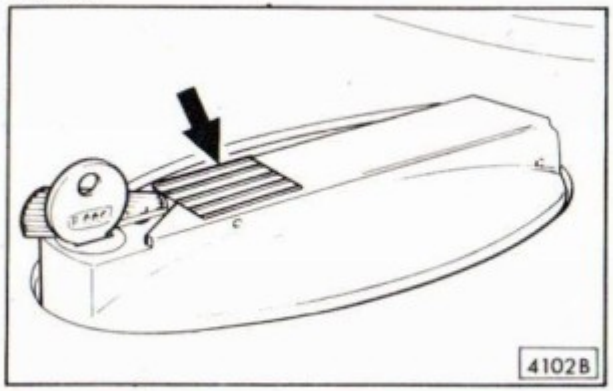
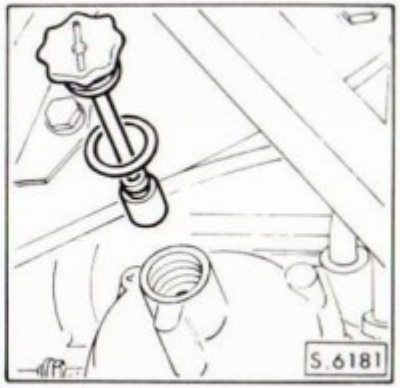


Fig. 39



Fuel Tank Fillers (Fig. 38)

The two fuel tank fillers are situated in the rear wings.

To open, depress the recessed button and release the catch, when the cap will lift against the spring pressure.

Both caps can be locked with the door key.

Fuel tank fillers are fitted with spring loaded anti-surge flaps.

Carburetter Piston Damper–Lubricate

Each carburetter is fitted with a hydraulic piston damper which, unless periodically replenished with oil, will cause poor acceleration and spitting back through the carburetter on rapid opening of the throttle.

To replenish with oil, unscrew the cap on top of suction chambers (Fig. 39/1) and lift out the damper valve which is attached to the cap. Fill the hollow piston spindle, which can be seen down inside the bore of the suction chamber, with S.A.E. 20 engine oil.

Checking Carburetter Slow Running (Fig. 40)

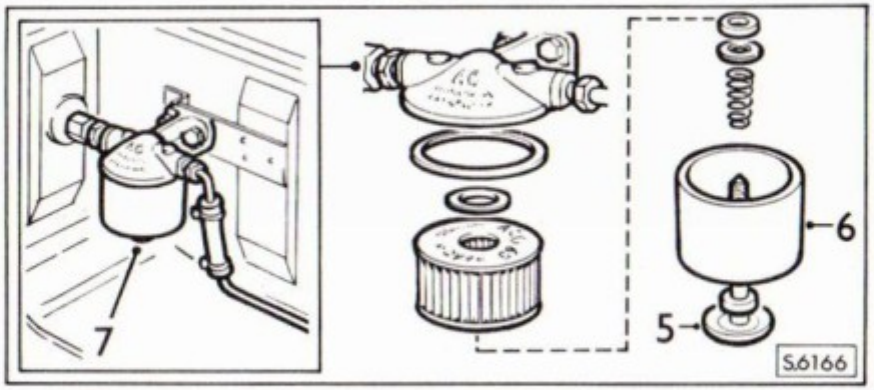
The idling speed of the engine when fully warmed up should be set at 750 r.p.m. with 'P' or 'N' selected–There will be a slight reduction of idling speed when 'D' or '2' is engaged.

Tuning

Before tuning the carburetters, check spark plug gaps, contact breaker gaps, distributor centrifugal advance mechanism and ignition timing. Adjust as necessary. The mixture adjusting screws are pre-set during manufacture and SHOULD ON NO ACCOUNT BE DISTURBED.

Follow the procedure detailed on pages 80 to 81 in the Emission Control section to adjust the carburetters. Emission checks must be carried out after any adjustment is made.

Fig. 40



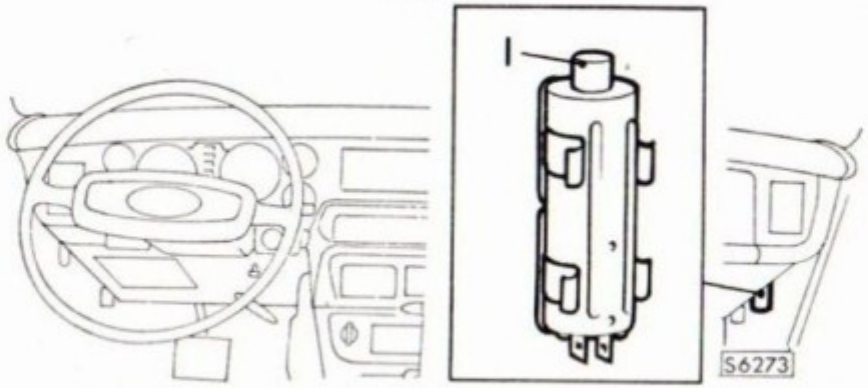
WARNING: A CERTAIN AMOUNT OF FUEL SPILLAGE IS UNAVOIDABLE DURING THIS OPERATION. IT IS THEREFORE IMPERATIVE THAT ALL DUE PRECAUTIONS ARE TAKEN AGAINST FIRE AND EXPLOSION.

Filter Element Renewal (Fig. 40)

The fuel filter is located beneath the floor of the luggage compartment and is accessible after floor panel and spare wheel are removed.

1. Disconnect battery.
2. Remove spare wheel.
3. Fit clamp on fuel inlet pipe.
4. Place shallow tray, lined with rag, beneath filter bowl.
5. Remove centre bolt securing filter bowl.
6. Ensure filter bowl is thoroughly clean; fit new element and seals.
7. Tighten centre bolt to secure filter bowl; DO NOT OVERTIGHTEN.
8. Remove pipe clamp and tray.
9. Reconnect battery.
10. Run engine and check for leaks.
11. Replace spare wheel.

Fig. 41



Fuel Tank Evaporative Loss Control System

To prevent air pollution by vapours from the fuel tank and carburetter vents, the control equipment stores the vapour in a charcoal-filled canister while the engine is stopped and disposes of it via the engine crankcase emission control system when the engine is running.

The system is described in more detail in Emission Control page 67.

Fuel Cut-off Inertia Switch (Fig. 41)

The electrical supply to the fuel pumps is passed through an inertia sensitive switch.

Should the car be subjected to heavy impact forces, the switch opens, isolating the pumps and ensuring that fuel is not spilled into a potentially dangerous situation.

The switch is located on the front passenger side of the car above the fresh air ventilation knob, and can be reset after operation by pressing in the button on top (Fig. 41/1).

Fig. 42

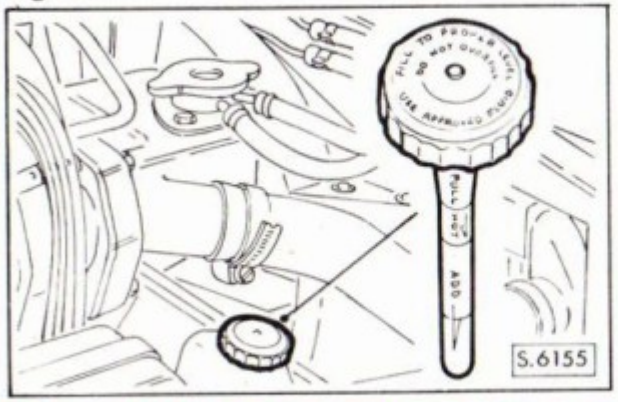
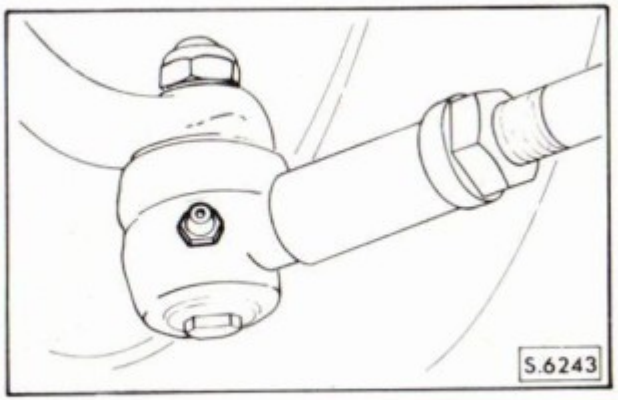


Fig. 43



Fig. 44



Power Assisted Steering Pump Reservoir Top-up (Fig. 42)

1. Run engine until it reaches normal operating temperature.
2. Remove combined filler cap and dipstick from power assisted steering pump reservoir.
3. Check oil level on dipstick; if necessary, add oil to bring level to 'full-hot' mark on dipstick. Refit cap.
4. Turn steering from lock to lock several times.
5. Re-check oil level and top up if necessary.

WARNING: If the oil level is allowed to fall appreciably, the power assistance to the steering will be affected and severe damage to the pump will result.

Steering Housing (Fig. 43)

The steering gear is of the rack and pinion type and is attached to the front suspension cross member. A grease nipple for lubrication of the rack and pinion housing is accessible underneath the front of the car on the driver's side.

Do not over lubricate the steering housing to the extent where the rubber bellows at the end of the housing becomes distended. Check that the clips at the end of the bellows are fully tightened otherwise grease will escape from the housing.

Steering Tie-rods (Fig. 44)

Lubricate the ball joints of the two steering tie-rods with the recommended lubricant. A bleed hole is provided in each ball joint; the hole is covered by a nylon washer which lifts under pressure and indicates when sufficient lubricant has been applied. When carrying out this operation examine the rubber seals at the bottom of the ball housing to see if they have become displaced or split. In this event they should be repositioned or replaced as any dirt or water that enters the joint will cause premature wear.

Fig. 45

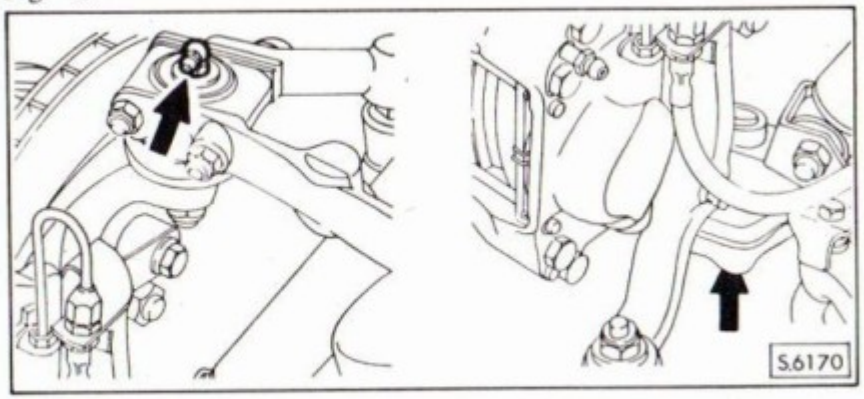
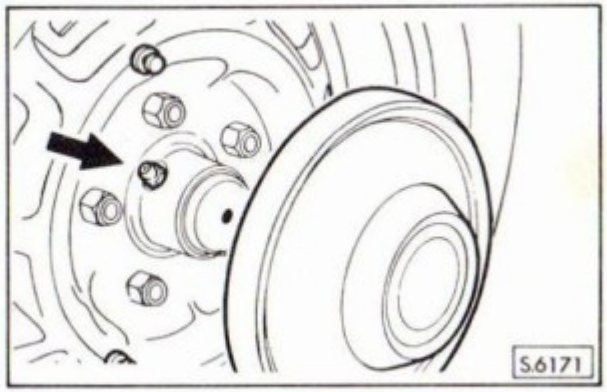


Fig. 46



Ball Joints (Fig. 45)

Lubricate the nipples (four per car) fitted to the top and bottom of the wheel swivels.

The nipples are accessible underneath the front of the car.

Front Wheel Bearings (Fig.46)

Removal of the nave plates will expose a grease nipple in the wheel bearing hubs. Lubricate sparingly with the recommended grade of lubricant. Always thoroughly clean the grease nipple before applying the grease gun.

A bleed hole is provided in the grease cap to indicate when sufficient lubricant has been applied.

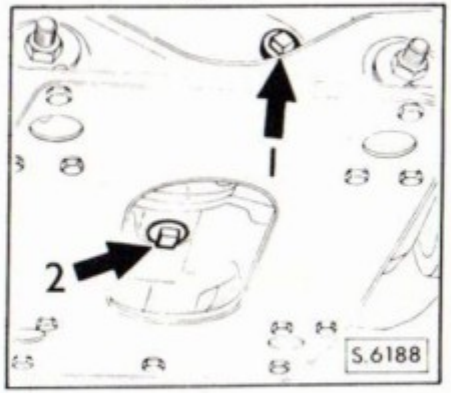
Front Wheel Camber Angle–Adjustment

As adjustment of the front wheel camber angle requires the use of special links to hold the front and rear suspension in the mid-laden position whilst the geometry is being checked, this operation should be carried out by your Dealer.

Front Wheel Caster Angle–Adjustment

To give the correct datum when checking the front wheel caster angle, the front and rear suspension must be held in the mid-laden position by means of special setting links. This work should, therefore, be carried out by your Dealer.

Fig. 47



Checking Final Drive Unit Oil Level (Fig. 47/1)

Check the level of the oil in the final drive with the car standing on level ground.

A combined filler and level plug is fitted on the rear of the casing accessible from underneath the car. Clean off any dirt from around the plug before removing it.

The level of the oil should be to the bottom of the filler and level plug hole; use only HYPOID oil of the correct grade and since different brands may not mix satisfactorily, draining and refilling is preferable to replenishing if the brand of oil in the unit is unknown.

Changing the Final Drive Unit Oil (Fig. 47/2)

The draining of the final drive unit should be carried out at the end of a run when the oil is hot and will therefore, flow more freely. The drain plug is situated in the base of the casing.

After the oil has drained, replace the drain plug. Refill the final drive unit with the recommended grade of oil after removal of the combined filler and level plug situated in the rear cover.

The level of the oil should be to the bottom of the filler and level plug hole when the car is standing on level ground.

Use only HYPOID oil of the correct grade.

Fig. 48

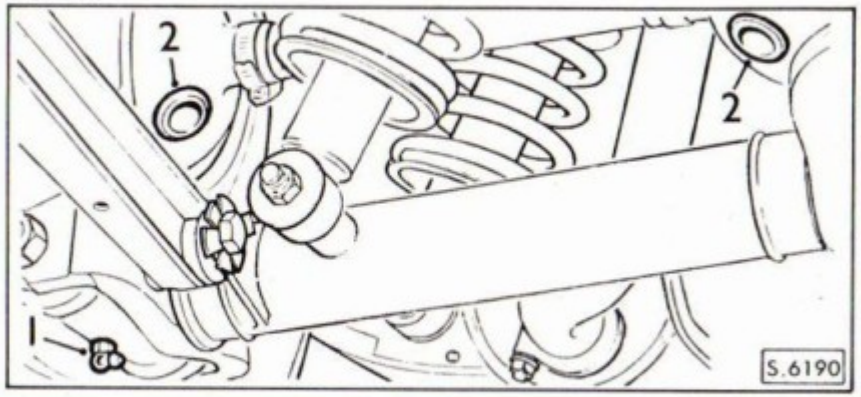


Fig. 49

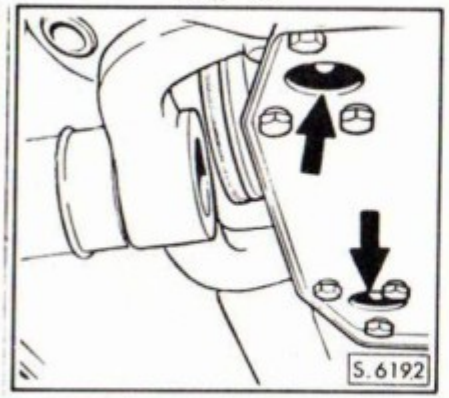
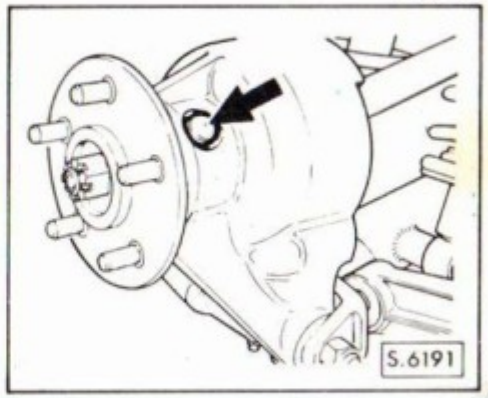


Fig. 50



Outer Pivot Bearings ((Fig. 48/1)

A grease nipple is located in the centre of the rear wishbone outer pivot. Lubricate sparingly with the recommended grade of lubricant. A bleed hole is provided opposite the grease nipple, to indicate when an excess of lubricant has been applied. Always ascertain that the bleed hole is clear before carrying out operation.

Half Shafts (Fig. 48/2)

Lubricate the universal joints of the half shafts (4 per car) with the recommended grade of lubricant. Access to the nipples is gained by removing the plastic sealing plug from each joint cover.

Inner Pivot Bearings (Fig. 49)

Two grease nipples are provided, one at each end of the wishbone fork. Lubricate sparingly with the recommended grade of lubricant.

Rear Wheel Bearings (Fig. 50)

A hole in the hub bearing housing for lubrication of the wheel bearings is accessible after removal of the wheel. Clean off the area around the dust cap to ensure that no dirt enters the hub. Pry out the cap and inject the recommended grade of grease through the hole until no more will enter. If a pressure gun is used take care not to build up pressure in the hub as the grease may escape past the oil seal. Refit the dust cap.

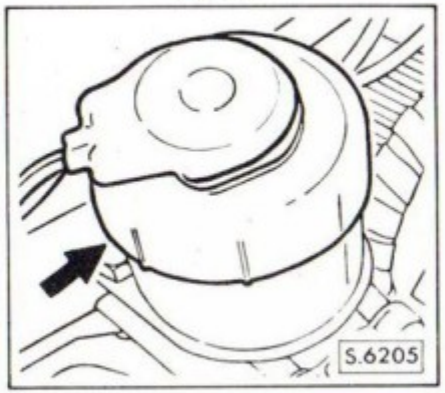
Wheel Bearing Adjustment

As this operation requires the use of special tools it should be entrusted to your Dealer.

Rear Wheel Camber Angle—Adjustment

Owing to the variations in the camber angle with different suspension heights it is necessary to lock the rear suspension in the mid-laden position by means of two setting links. It is recommended that this operation is entrusted to your Dealer.

Fig. 51



The car is equipped with a dual circuit system in which braking to the front wheels is completely isolated from that to the rear. A warning lamp in the central display is illuminated if either part of the hydraulic system falls below full efficiency or if the hydraulic fluid in the reservoir drops below a certain level.

In both cases your Dealer **must** be consulted at the earliest opportunity.

IMPORTANT

When topping up the brake fluid reservoirs care must be taken to ensure that no fluid is spilled on the body work of the car as this will damage the paintwork.

The level is visible through the plastic reservoir container.

Brake Fluid Level (Fig. 51)

The brake fluid dual reservoir is mounted adjacent to the servo unit.

Check the level of the fluid in the reservoir and top up if necessary to the level mark marked 'MAX. LEVEL' using only the correct specification of brake fluid.

Do NOT overfill.

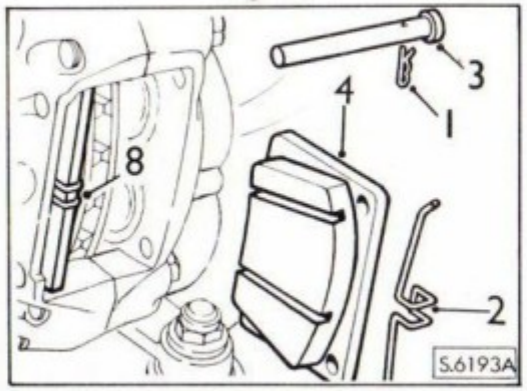
Footbrake Adjustment

Both the front wheel and rear wheel brakes are so designed that no manual adjustment to compensate for brake friction pad wear is necessary as this automatically takes place when the footbrake is applied.

Friction Pads–Examination for Wear

At the recommended intervals, or if a loss of braking efficiency is noticed, the brake friction pads (2 per brake) should be examined for wear; the ends of the pads can be easily observed through the apertures in the brake caliper. When the friction pads have worn down to a thickness of approximately .125 in. (3,18 mm.) they need renewing.

Fig. 52



Friction Pads—Renewal (Fig. 52)

1. Remove wheel (front only). Withdraw the hairpin clips.
2. Withdraw the anti-chatter clips.
3. Extract the pad retaining pins.
4. Lift pads out of caliper.
5. Push the pistons with an even pressure to the bottom of the cylinder bores.
6. Insert the new pads.
7. Refit the pad retaining pins.
8. Refit the anti-chatter clips.
9. Refit hairpin clips.
10. Pump brake pedal several times until 'feel' is restored.

Air Filter in Brake Servo Unit—Renewal

When the vehicle is operated in very dusty conditions, it may be necessary to renew the filter element; this service should be entrusted to your Dealer.

Brake Pipes—Checking

Check all pipes in the brake system at commencement and end of each winter period for possible corrosion due to salt and grit used on the roads.

Brake System—Overhaul

The brake system should be completely overhauled at recommended periods.

This important service should be entrusted to your Dealer.

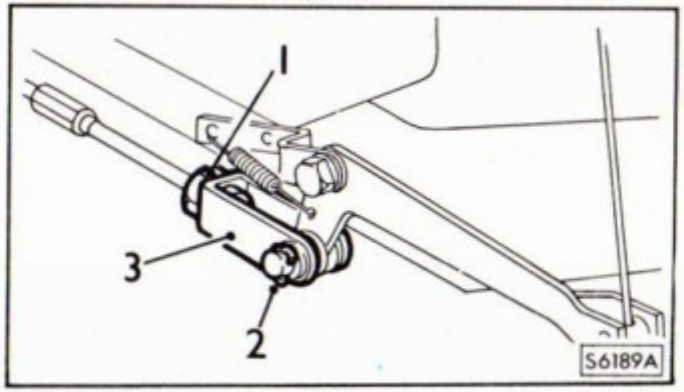
Bleeding the Brake Hydraulic System

Brake bleeding is an extremely delicate and complex operation which should always be entrusted to your Dealer who has personnel suitably qualified for this work.

Handbrake Mechanism

The self-adjusting handbrakes are attached to the rear brake caliper bodies but form an independent mechanically actuated system carrying its own friction pads. The handbrakes are self-adjusting to compensate for friction pad wear and automatically provide the necessary clearance between the brake discs and the friction pads.

Fig. 53



Handbrake Cable Adjustment (Fig. 53)

The handbrake cable adjustment linkage is situated on the underside of the floor panel below the handbrake lever.

To adjust, slacken the locknut (1) at the forked end and remove the clevis pin (2) securing the forked end (3) to the handbrake lever.

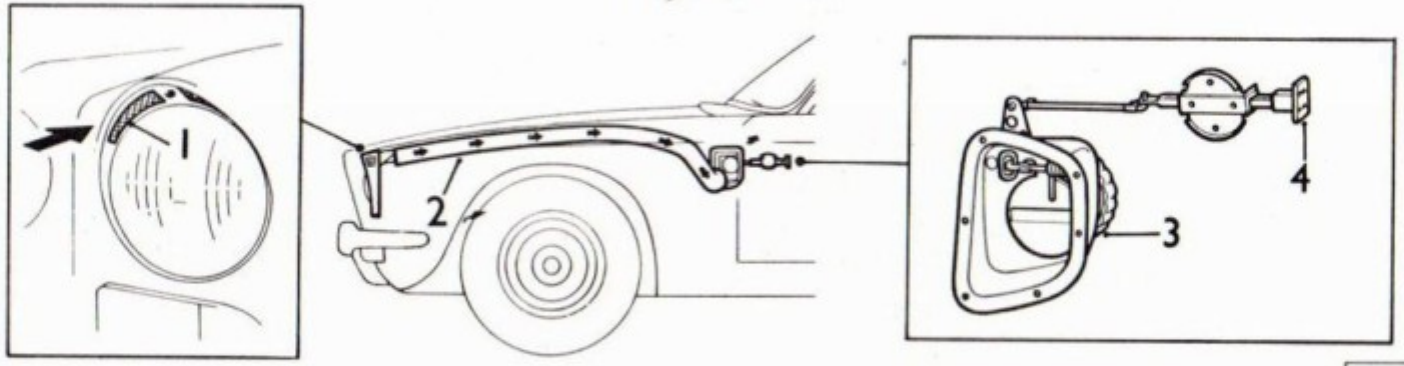
Ensure that the levers at the calipers are in the 'fully off' position by pressing towards the calipers. Adjust the length of the cable by unscrewing the fork (3) to a point just short of where the caliper levers start to move.

Refit the clevis pin (2) and tighten the locknut (1).

Always use a new split pin to retain clevis pin.

No attempt must be made to place the cable under tension otherwise handbrakes may bind.

Fig. 54



Fresh Air Ventilation System (Fig. 54)

A fresh air supply is available to driver and front seat passenger.

A grille, located in the outer headlamp embellisher (1) admits fresh air which is transmitted through a duct under each front wing (2) to a ventilation outlet (3) situated beneath the parcel tray in the scuttle side panel. The outlet is controlled by a three-position knob marked 'PULL AIR' (4).

With the control knob pushed fully inwards, no air will be delivered. Pulling the knob outwards progressively increases the amount of fresh air supplied to the driver/passenger compartment although air flow depends upon the speed at which the car is travelling.

The ventilation outlet has a louvred air direction control ring which, when rotated, directs the air flow where required.

The fresh air ventilation control should be pushed fully inwards before the air conditioning system is used.

Fig. 55

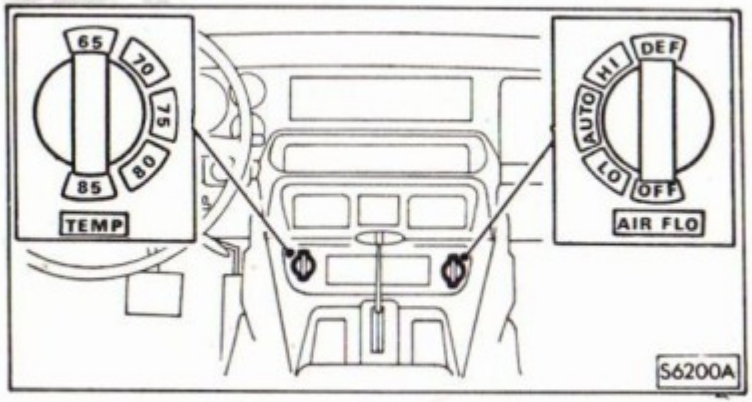


Fig. 56



Air conditioning equipment is fitted as standard on all cars. The air conditioning combines with the heating and ventilating system to give automatic in-car climate control that maintains the chosen temperature at a constant level by automatically selecting the heating or cooling facility as appropriate.

Ducts channel air as required by the driver or passengers in front and rear compartments.

The car windows and the footwell ventilation (Page 37) **must** be closed before the air conditioning system is used.

(a) To the driver and front passenger compartment

Face level outlets at either end of the facia manually opened and closed and adjusted for direction of delivery.

Face level outlet in the centre of the facia, the end sections of which can be adjusted for direction of delivery.

One outlet at each side of the centre console directing air into the front footwells.

(b) To the windscreen

Fixed vents, situated at the base of the windscreen, provide demisting and defrosting.

(c) To the rear passenger compartment (Fig. 56)

Manually controlled louvred outlets into each rear compartment footwell.

A manually opened and closed directional outlet in the rear of the console.

Operating Instructions

The control switches operate as follows:-

Left Hand Switch (Fig. 55)

This switch selects the temperature that is to be automatically maintained in the car.

Right Hand Switch (Fig. 55)

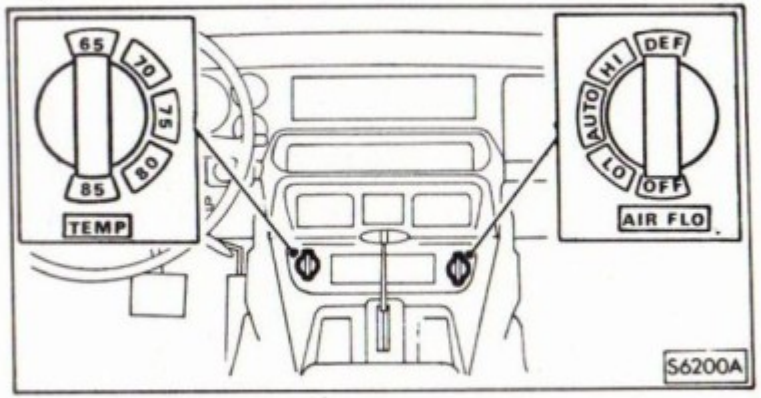
OFF

When the switch is in this position, the temperature control system is inoperative.

AUTO

When the switch is set to this position the control

Fig. 57



system senses the in-car temperature and the outside air temperature in terms of the driver's selection on the left-hand switch. The system then automatically adjusts flaps and heating or cooling modes to achieve the desired result. Blower fan speeds are also selected in four steps to increase or decrease the volume of air flow, depending upon the difference between the in-car temperature, the selected temperature and the ambient air temperature.

'HI' AUTO' and 'LO AUTO' positions select a fixed high or low fan speed independently from that selected by the automatic control.

Air is only delivered from the centre facia vent during the cooling mode.

DEF

When the switch is set to this position the automatic facility is over-ridden and air flow at maximum temperature is distributed 90% to the windscreen and the facia end outlets and 10% to the footwell and rear passenger compartment. The facia end outlets may be aimed to defrost the side windows or closed to concentrate airflow at the windscreen.

Fig. 58

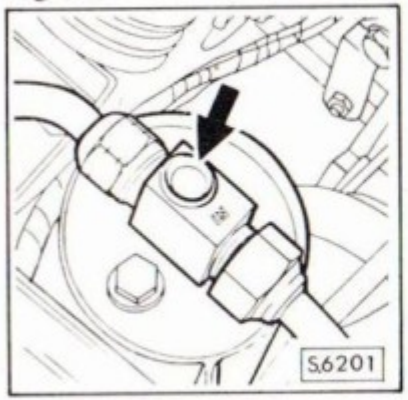
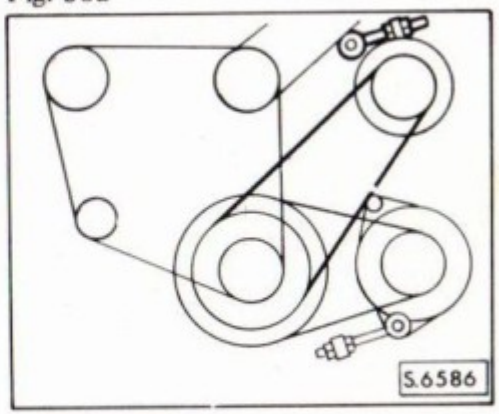


Fig. 58a



Operating Hints

It is recommended that the system is operated for approximately 10-15 minutes per week during the winter (or cool) season. This will help to maintain the components of the system, particularly the compressor, in good working condition.

Note: A sight glass is fitted in the receiver/drier unit (Fig. 58). Slight foaming or bubbles may appear if operating in low ambient temperatures. If excessive foaming or bubbles appear in the glass, the system must be checked by your Dealer.

Compressor drive belt—Adjustment (Fig. 58a)

1. Slacken compressor mounting bolts on front and rear flanges.
2. Slacken adjusting link mounting bolts.
3. Slacken adjusting link locknut.
4. Adjust belt tensioning nut; correct tension is as follows:

   A load of 6.4 lbs (2,9 kg.) must give a total belt deflection of 0.17 in. (4,32 mm.) when applied at mid point of belt.

   Reverse operations 1 to 3.

Fig. 59

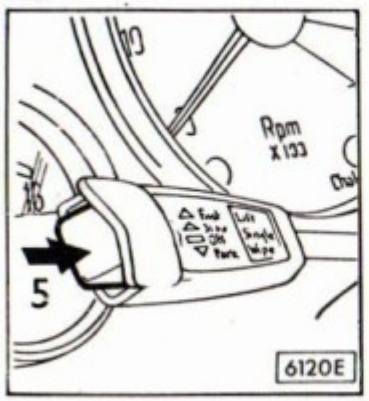
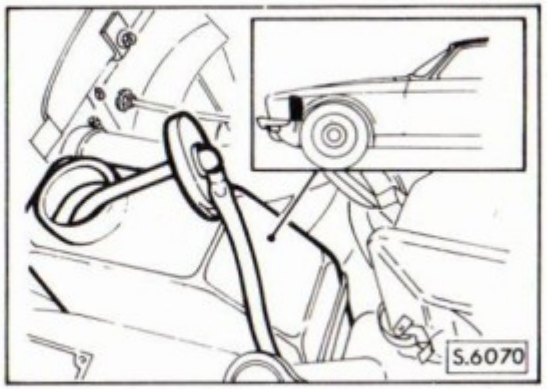


Fig. 60



The windscreen washer equipment is electrically operated. A plastic water container located on the left hand wing valance behind the radiator is connected by a plastic tube to a pump unit mounted on the engine bulkhead beneath the windscreen.

The windscreen washer should be used in conjunction with the windscreen wipers to remove foreign matter that settles on the windscreen.

Press the switch lever button (Fig. 59) and the washer should operate immediately; release the switch when sufficient water has been delivered to the windscreen.

Note

If the washer does not function immediately check that there is water in the container. Fig. 60.

The washer should not be used under freezing conditions as the fine jets of water spread over the windscreen by the blades will tend to freeze.

In summer the washer should be used freely to remove insects before they dry and harden on the windscreen. A good quality windscreen washer fluid may be added to assist the removal and to dissolve greasy smears from the glass.

Water should be absolutely CLEAN. If possible, use **SOFT** water filling the container, but if this is not obtainable and hard water has to be used, frequent operation and occasional attention to the nozzle outlet holes will prevent formation of deposits.

The correct water level is up to the bottom of the container neck. Do not overfill, or unnecessary splashing may result. Always replace the filler cover correctly after filling.

It is not possible to empty the container completely with the pump. Refilling is necessary when the water level has fallen below the filter.

Keep the pump filter clean and the container free from sediment.

Fig. 61

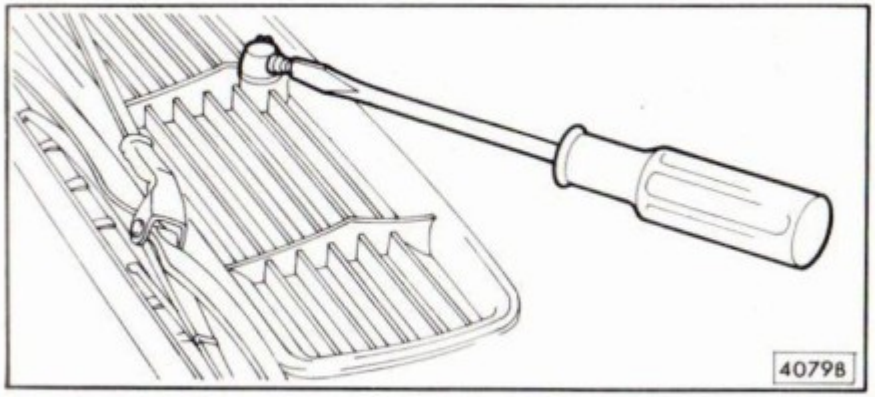
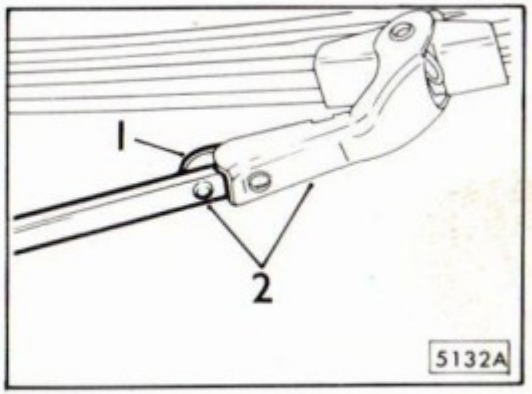


Fig. 62



Cold Weather Precautions

The windscreen washer container, which is made of high density polythene can be given a safe degree of protection from frost damage down to −28 deg. F. (−33 deg. C.) by the use of proprietary anti-freeze solvents.

Instruction regarding the use of the solvent will be found on the container.

Denatured alcohol (Methylated Spirits) **MUST NOT** be used as the use of this chemical will discolour the paintwork.

Adjusting the Jets (Fig. 61)

With a screwdriver turn the jet nozzle in its holder until the water strikes the windscreen in the area swept by the wiper blades. It may be necessary to adjust the nozzle slightly after a trial on the road due to jet of water being deflected by the airstream.

Cleaning the Jet Nozzles

To clear a blocked jet nozzle, completely unscrew the nozzle from the jet holder. Clear the small orifice with a piece of thin wire or blow out with compressed air; operate the washer with the nozzle removed. Allow the water to flush through the jet holder and then replace the nozzle.

Replacing Windscreen Wiper Blades (Fig. 62)

Hold the blade in one hand and, with the thumb nail of the other hand, depress the spring clip (Fig. 62/1).

Press the wiper arm towards the windscreen to disengage the dimple from the blades, slide blade from arm.

To refit blade, press it on to the arm until the dimple engages with the spring clip (Fig. 62/2).

Fig. 63

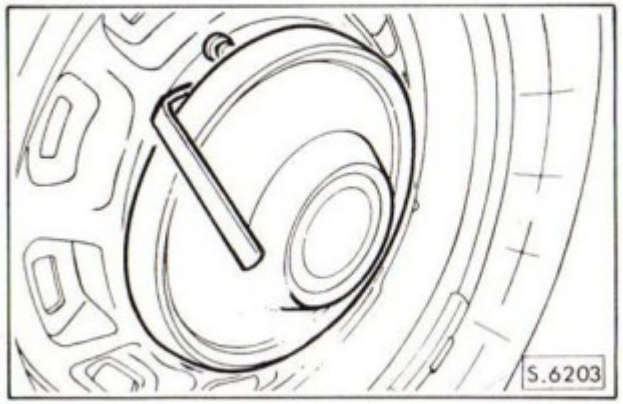
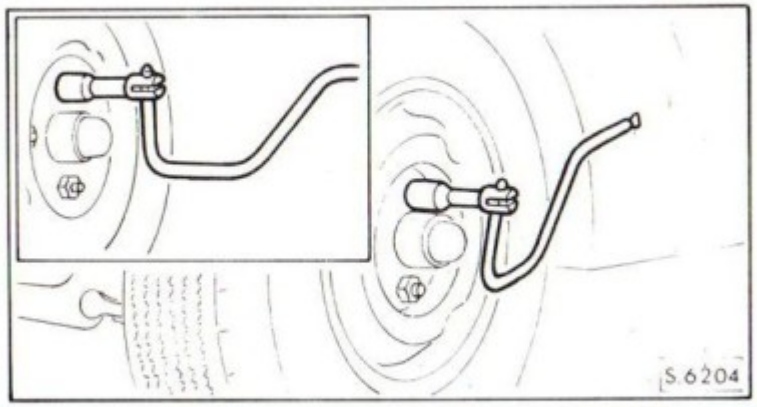


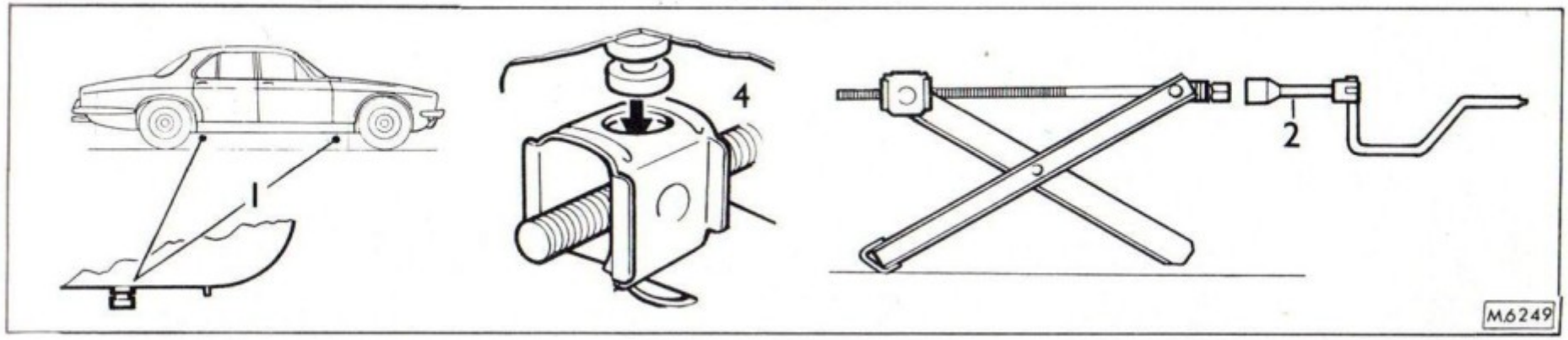
Fig. 64



The spare wheel and wheel changing equipment is housed in the luggage compartment.

Lift trimming and underfelt from luggage compartment floor. Rotate floor panel fasteners anti-clockwise until the catch is released and remove panel. Remove wheel nave plate by levering off with the special lever provided in the tool kit (Fig. 63). Using the wheel brace loosen, but do not remove, the five wheel nuts; all wheel nuts have right-hand threads, that is they are unscrewed anti-clockwise (Fig. 64).

Fig. 65



Four jacking spigots (two per side) are attached to underside of floor in proximity to the door sills to provide positive location for the lifting jack. It is important that the jack is placed squarely beneath the appropriate spigot before operating; also that the locating bracket is in position to accept the spigot through the hole in the bracket (Fig. 65/4). Careful observation should be maintained to ensure that the car is being raised with the bracket positively located to the spigot. The following sequence is suggested to ensure correct operation of the jack.

1. Place jack squarely to appropriate spigot.
2. Engage wheel brace in jack.
3. Rotate handle (clockwise to raise – anti-clockwise to lower).
4. Ensure spigot is firmly located in bracket before attempting to raise car.

Neglect of the jack may lead to difficulty in a roadside emergency. Examine the jack occasionally and clean and grease the thread to prevent the formation of rust.

Tyre Pressures

Tyre pressures are quoted under 'General Data' page xiii.

It is important to maintain the tyre pressures at the correct figures, incorrect pressures will affect the steering, riding comfort and tyre wear.

Check the inflation pressures when the tyres are cold and not when they have attained their normal running temperatures tyre pressures increase with driving and any such increase should be ignored. Always ensure that the caps are fitted to the ends of the valves as they prevent the ingress of dirt and form a secondary seal to the valve core.

Tyre Replacement and Wheel Interchanging

When replacement of tyres is necessary, it is preferable to fit a complete car set. Should either front or rear tyres only show a necessity for replacement, new tyres must be fitted to replace the worn ones. No attempt must be made to interchange tyres from front to rear or vice versa as tyre wear produces characteristic patterns depending upon their position and, if such position is changed after wear has occurred, the performance of the tyre will be adversely affected. It should be remembered that new tyres require to be balanced.

The DUNLOP radial ply tyres specified are designed to meet the high speed performance of which this car is capable.

Only tyres of identical specification as shown under "GENERAL DATA" must be fitted as replacements and, if of different tread pattern, should not be fitted in mixed form.

UNDER NO CIRCUMSTANCE SHOULD CROSS-PLY TYRES BE FITTED.

Door and Body Sill Drain Holes

Clear the drain holes in the bottom of the doors and in each body sill with a piece of stiff wire.

Carpets

These may be cleaned by brushing or with a vacuum cleaner. Grease or oil stains can be removed with gasoline.

Carpet Removal

Do not attempt to remove footwell carpets by merely pulling upwards from one end. Remove press studs securing carpet then carefully release carpets from controls, projections etc.

Certain carpets are secured by adhesive and should not be removed unless major repair work is to be undertaken.

Chromium Plate

Whilst all chrome-plated parts are produced to a high standard, owners should note that deterioration of plate may occur unless regular maintenance treatment is given.

With cars that are washed frequently and not operated in areas where climatic conditions are likely to affect chrome plate exist, normal washing and use of chamois on chrome and occasional use of chrome polish will maintain plate in satisfactory condition.

In certain industrial areas or coastal areas, however, discolouration of chrome plate from deposits in the atmosphere is liable to occur and more frequent attention is required.

Particular attention is drawn to the fact that salt is now commonly used on roads for frost or snow dispersal and it is of greater importance that in areas where this treatment is used cars should be washed off as quickly as possible following use under these conditions.

Head-Lining

Dirt may be removed from the lining by the use of a vacuum cleaner. Stains may be removed by means of a white cloth moistened with alcohol applied briskly but without pressure.

Paintwork

Never clean paintwork other than by washing with a soft sponge and hose pipe. Use a steady flow of water and sponge lightly. A proprietary brand of car shampoo may be used. Dry and polish paintwork with a good quality wash leather.

Tar may be removed with a clean soft cloth moistened in gasoline or with a proprietary brand of tar remover.

Paintwork may be polished from time to time with a good quality polish, either wax or emulsion type.

Upholstery

This should be wiped over occasionally with a cloth damped in a warm soapy water. Repeat operation using fresh cloth and water alone (avoid flooding) and finish by drying and polishing with a soft dry cloth. It is important to use a mild, non-caustic soap of the toilet kind and to avoid the use of gasoline and detergents.

Rear Flasher Bulb–Replacement (Fig. 66/4)

Remove the three retaining screws; detach lens and withdraw bulb.

Replace with one of the correct type.

Rear/Brake Light Bulb–Replacement (Fig. 66/4)

Proceed as for rear flasher bulb but withdraw lower bulb holder. When fitting a replacement bulb note that the pins are offset.

Parking Light Bulb–Replacement (Fig. 66/7)

Remove the screw retaining the light glass and disconnect glass at the three tags under chrome surround. Detach bulb.

Front Flasher Bulb–Replacement (Fig. 66/7)

Remove the screw retaining the light glass and disconnect glass at the three tags under chrome surround. Detach bulb.

Number Plate Light Bulb–Replacement (Fig. 66/6)

Remove the fastenings securing luggage compartment lock trim.

Withdraw the faulty bulb and replace with one of the correct type.

Luggage Compartment Illumination

The luggage compartment is automatically illuminated by a lamp when the lid is opened. The lamp operates only when the sidelights are switched on.

The bulb is accessible through an aperture in the luggage compartment lid.

Fog Light Bulb–Replacement (if fitted) (Fig. 66/3)

CAUTION: Do not touch bulbs with bare fingers even when cold.

Do not touch the metal base cap for some time after the bulb has failed. During use the bulb becomes VERY HOT.

Remove two retaining screws, detach spring clip and remove both using a clean rag or gloves.

Replace, using correct type bulb

Reversing Light Bulb–Replacement (Fig. 66/5)

Remove two retaining screws, detach the lens and remove bulb.

Replace with one of the correct type.

Side Flasher Repeater Light Bulb – Replacement (Japan only)

Remove the retaining screw and detach lens from front clip fixing.

Withdraw bulb from base block.

Note: The bulb does not have a metal cap and care must be taken when re-inserting in the block that the filament wires are not misplaced.

Side Marker Light Bulb – Replacement (Fig. 66/1)

Remove retaining screw and detach lens.

Extract faulty bulb from holder and replace with one of correct type. Refit cover and lens assembly.

Interior Light Bulb–Replacement (Fig. 66/2)

Prise lamp holder and lens from cantrail. Extract faulty bulb from holder and replace with one of correct type.

Refit lamp holder and lens assembly.

Fig. 66

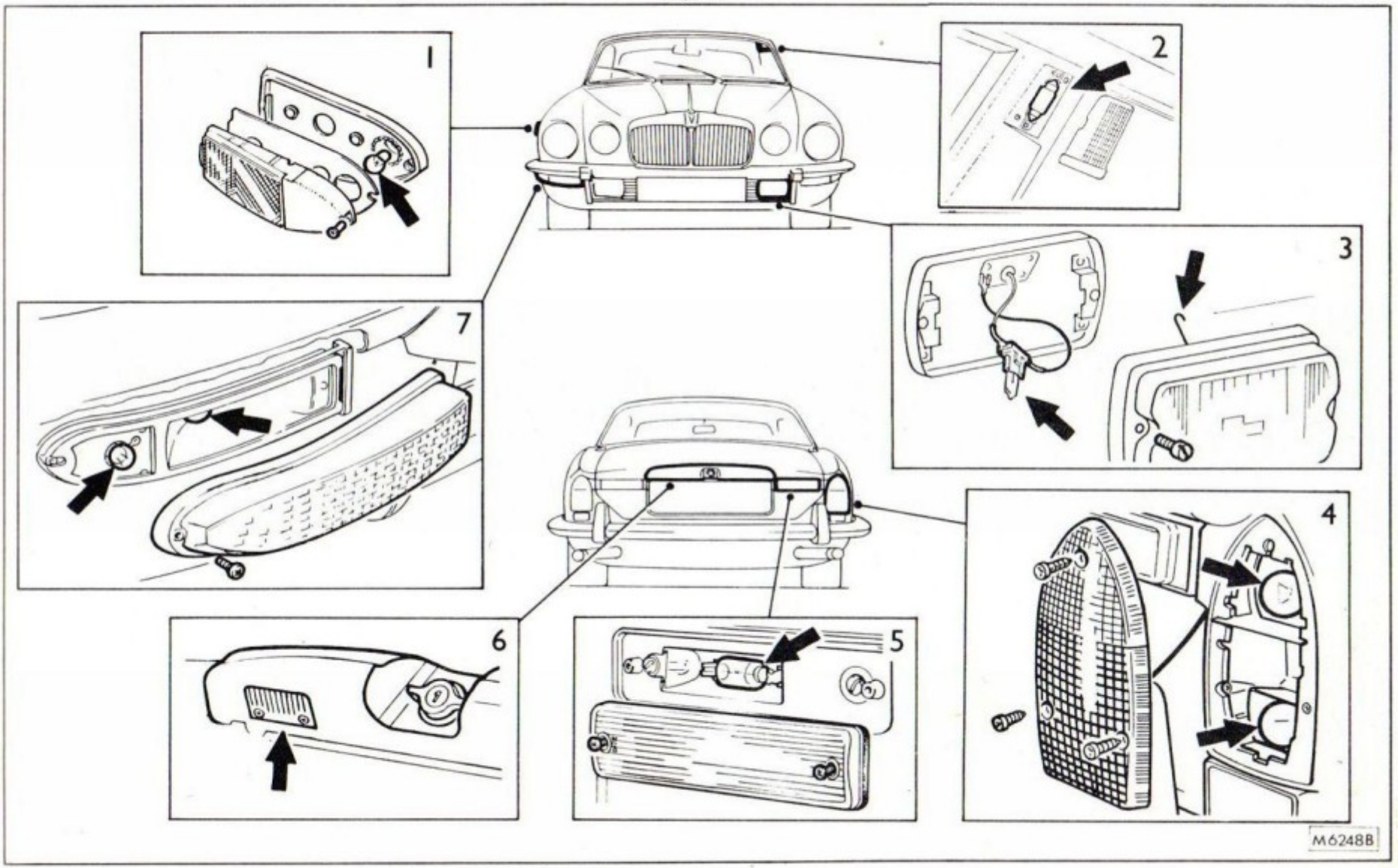
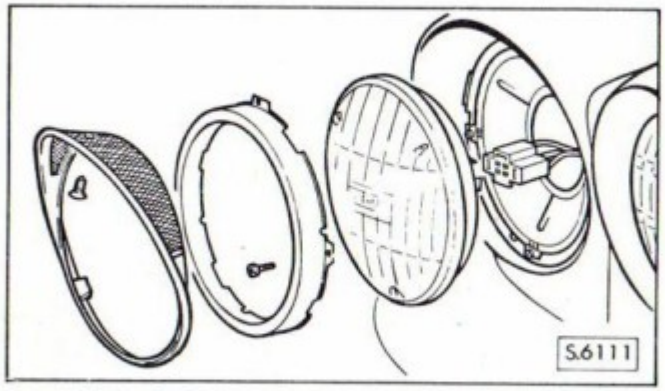


Fig. 67



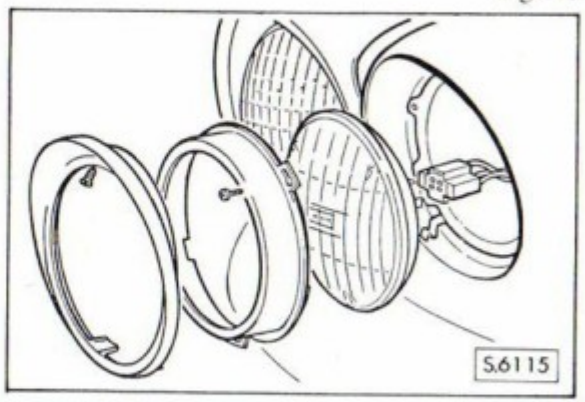
Outer Headlight–Replacement (Fig. 67)

Remove top retaining screw and withdraw headlight chrome trimming, noting two retaining lugs at lower edge. Remove three cross-headed screws and the headlight unit retaining rim. Withdraw headlight and unplug adaptor from rear of unit, the headlight can now be replaced with a sealed beam unit of the correct type (see 'Lamp Bulbs' page viii).

On cars fitted with non-sealed beam headlights, proceed as described above until the headlight unit is withdrawn then release the bulb retaining spring clips and withdraw the bulb. Replace with a bulb of the correct type (see page viii). When re-assembling note that a groove in the bulb plate must register with a raised portion on the bulb retainer.

Note: Do not turn the two slotted screws or the setting of the headlight will be affected.

Fig. 68



Inner Headlight (Fig. 68)

The procedure for replacing the inner headlight unit or bulb is the same as that described in 'Outer Headlight – Replacement'. However, when removing the headlight unit retaining rim, it is not necessary to remove the three cross-headed screws. These should be slackened and the rim turned anti-clockwise until it can be withdrawn.

Note: Do not turn the two slotted screws or the setting of the headlight will be affected.

Fig. 69

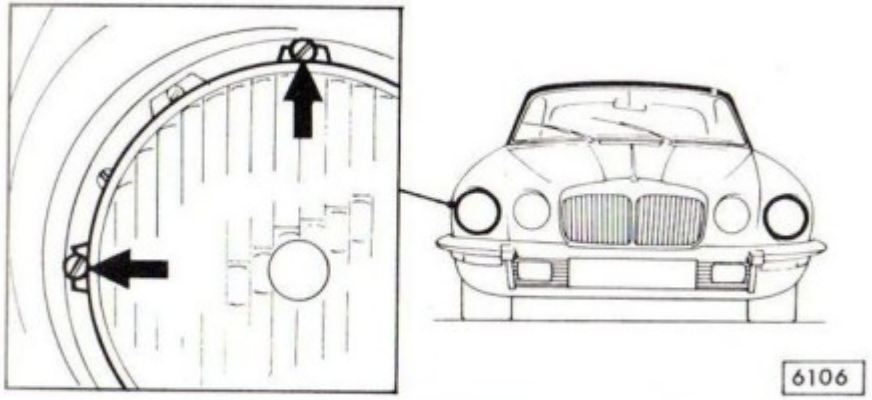
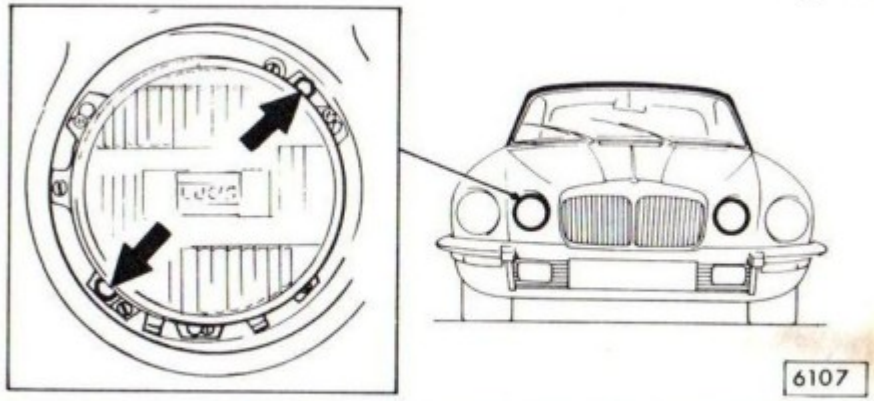


Fig. 70



Headlight Beam Setting

The standard light units fitted are of the sealed beam type having aiming pads moulded into the lenses. These pads are for use with an approved mechanical aimer (such as the Lucas Lev-L-Lite).

To obtain the best possible results from the headlights, it is essential that they are correctly adjusted. The alignment of the headlight beam is set correctly before the car leaves the factory but if for any reason adjustment becomes necessary the following procedure should be entrusted to your Dealer.

The setting of the outer beams (Fig. 69) is adjusted by two screws, one being located at the top centre and the other one centre left-hand side. The top screw is for vertical adjustment, that is, to raise or lower the beam. Turn the screw anti-clockwise to lower the beam and clockwise to raise the beam.

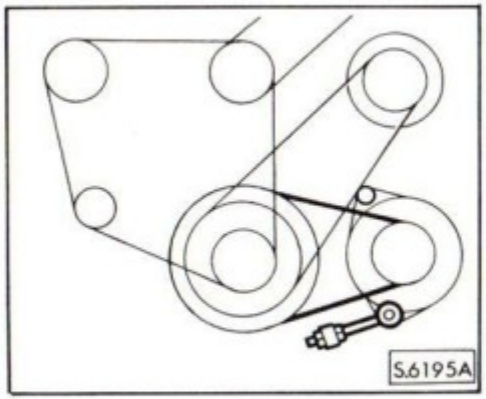
The side screw is for horizontal adjustment, that is, to turn the beam to the right or left. To move the beam to the right turn the screw clockwise; to move the beam to the left turn the screw anti-clockwise.

The setting of the inner beams is adjusted similarly by two screws diagonally opposite each other as illustrated (Fig. 70). To raise the beam turn the upper screw clockwise, to lower the beam turn the lower screw clockwise.

After adjustment replace the surround by engaging the bottom clips and replacing the retaining screw.

CAUTION: Correct headlamp alignment is mandatory.

Fig. 71



Alternator Drive Belt–Adjustment (Fig. 71)

1. Slacken pivot bolts(s).
2. Slacken adjuster screw locknuts and trunnion bolt.
3. Adjust alternator away from engine until correct tension is obtained. Correct tension is as follows:–
   A load of 3.2 lb (1,45 kg) must give a total belt deflection of .15 in (3,8 mm) when applied at mid point of belt.
4. Tighten trunnion bolt, pivot bolt(s) and adjuster screw locknuts.

Fig. 72

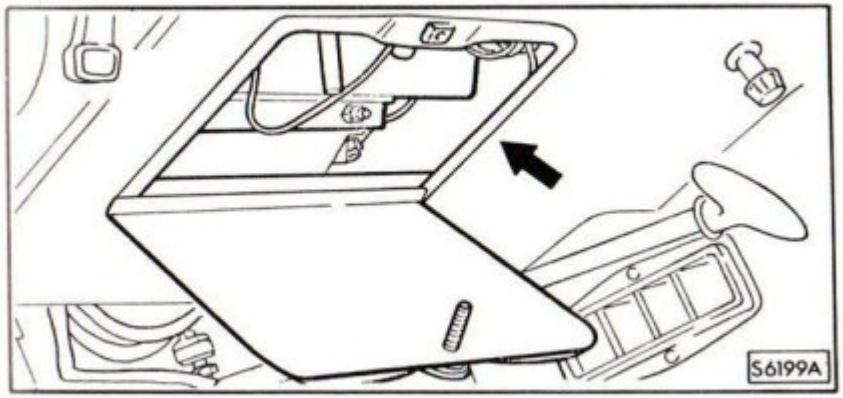
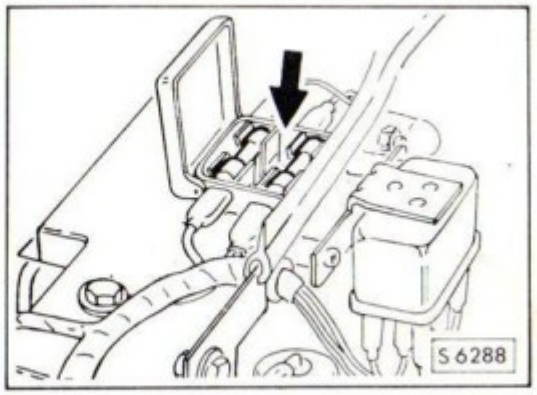


Fig. 73



Fuses

Should a component in the electrical system fail to function it is possible that the fuse protecting that component has blown.

Should a replacement fuse of the correct type also blow this indicates a fault in the circuit serving the affected component, and the car should therefore be taken to the nearest Dealer for examination.

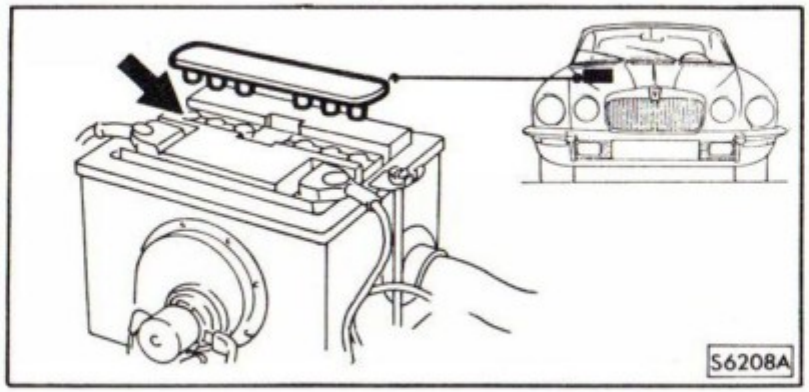
The main fuse block is located behind the dash casing below the drivers instrument panel (Fig. 72). Access is obtained by turning the access panel retaining pin anti-clockwise until it unlocks. The panel can then be dropped slightly and the bottom edge lifted clear of the aperture. A list of protected circuits and fuse ratings is contained on the fuse block cover.

Headlamp fuses are contained in separate fuse blocks located on left- and right-hand sides of engine compartment front cross-member (Fig. 73). To gain access, lift edge of lid and remove fuse link.

Full details of circuits and components protected by fuses other than those described, can be obtained by reference to the electrical circuit diagram.

A list of fuses and their ratings is shown on page ix.

Fig. 74



Battery

Lucas 12 volt 66 AH Pacemaker CP11/8.

WARNING: The battery fitted to this vehicle has special topping up facilities. When battery charging is carried out the vent cover should be left in position allowing gas to escape or flooding of electrolyte will result. The battery is a special high performance type and is located in the engine compartment. It is NOT possible to test this battery with a high rate discharge meter, due to the location of the intercell connectors. The battery top must not be drilled in an attempt to locate the connectors. Check the specific gravity of the electrolyte in each cell using a hydrometer.

A variation of more than 40 points (0.040) in any cell reading means that the battery is suspect and should be removed for testing by a battery agent. If possible prove the battery by substitution.

Battery–Top Up (Fig. 74)

1. Remove vent cover from battery, lifting squarely from both ends.
2. Check whether electrolyte is visible through filling tubes.
   IF ELECTROLYTE IS VISIBLE DO NOT ADD MORE.
3. If electrolyte is not visible, pour distilled water into filler trough to level indicated.
4. Refit vent cover.

State of Charge–S.G. Readings (Fig. 74)

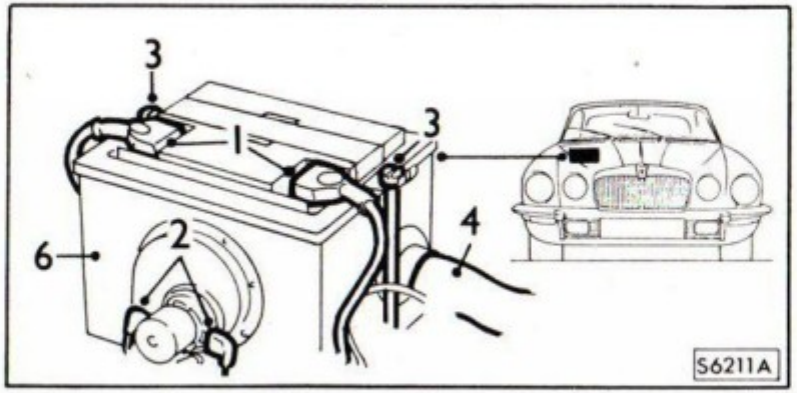
1. Remove vent cover.
2. Insert the hydrometer into each cell through the filling tube and note the readings.

Electrolyte Temperature Correction

For every 18°F (10°C) below 60°F (15°C) subtract 0.007.

For every 18°F (10°C) above 60°F (15°C) add 0.007.

Fig. 75



Battery (Fig. 75)

Remove and refit

Removing

1. Ease back battery terminal covers, slacken pinch bolts and disconnect battery leads.
2. Disconnect snap connectors to battery cooling fan.
3. Slacken retaining bolts (these are hinged and fixed to battery tray).
4. Withdraw cooling outlet pipe from grommet fixing.
5. Release positive battery lead from clip on cooling jacket.
6. Ease battery and cooling jacket forward until clear of scuttle and lift jacket clear of battery.
7. Lift battery from car.

Refitting

Reverse operations 1 to 7.

Note: Ensure that all connections are clean and metal to metal. Protect the battery terminals with a smear of petroleum jelly. Tighten all fixings.

STATE OF CHARGE	SPECIFIC GRAVITY READINGS CORRECTED TO 60 F (15 C)	
	Climates normally below 77°F (25°C)	Climates normally above 77°F (25°C)
FULLY CHARGED	1.270 – 1.290	1.210 – 1.230
70% CHARGED	1.230 – 1.250	1.170 – 1.190
DISCHARGED	1.100 – 1.120	1.050 – 1.070

BATTERY CONDITION INDICATOR

Check the condition of the battery by means of the panel shown below.

RED (Off Charge)		NORMAL			RED (On Charge)
BATTERY CHARGE EXTREMELY LOW	BATTERY CHARGE LOW	WELL CHARGED BATTERY	CHARGING VOLTAGE LOW	CHARGING VOLTAGE SATISFACTORY	CHARGING VOLTAGE TOO HIGH
If with the ignition and electrical equipment e.g. headlamps etc., switched on, but with the engine not running the indicator settles in this section – your battery requires attention.		Ideally the indicator should settle in this section when the ignition and electrical equipment e.g. headlamps etc., are switched on and the engine is not running.	This condition may be indicated when the headlights and other equipment are in use.	The indicator should point to this section when the engine is running above idle.	If the indicator continues to point to this section after 10 minutes running, either your voltage regulator is defective or some other fault has developed.

IMPORTANT All readings on the indicator should be ignored when the engine is idling, since readings may vary at very slow engine speeds due solely to operation of the voltage regulator.

OFF CHARGE

This means more energy is being used from your battery than is being replaced by the alternator on your car. This condition is satisfactory provided it does not persist for long periods, when the engine is running above idle or at speed. If the indicator remains in the section, it may mean that you have a broken or slipping drive belt, a faulty alternator, a defective voltage regulator or some other fault.

ON CHARGE

This means your battery is having more energy put into it than is being taken out of it. Normally this condition predominates and your battery is continuously being recharged by the alternator whenever the engine is running above idle. If however the engine is continually running slowly as may be the case in traffic – or when, in winter, lights and cold starting make extra demands on the battery – you may find the rate of discharge exceeds the rate of charge – that is to say the battery is running down, as will be indicated on your Battery Condition Indicator and you may need an extra charge if 'battery charge low or extremely low' is indicated by the instrument.

EMISSION CONTROL

WARRANTY APPLICABLE TO THE EMISSION CONTROL SYSTEM FOR 1974 MODELS

British Leyland Motors Inc., 600 Willow Tree Road, Leonia, New Jersey 07605, warrants to the ultimate purchaser and each subsequent purchaser of the vehicle that it has been designed, built and equipped so as to conform at the time of sale with all U.S. emission standards applicable at the time of manufacture, and that it is free from defects in materials and workmanship which would cause it not to meet these standards for five years from the first retail delivery of the vehicle or 50,000 miles, whichever occurs first. Failures which result from lack of proper maintenance or from misuse or abuse of the vehicle or engine are not covered by this Warranty.

Like any other piece of complicated machinery, your car will need regular attention and service to make sure that the Emission Control System continues to function properly. This is the owner's responsibility. The manufacturer cannot guarantee that emissions will not rise to unacceptable levels if maintenance of the System is not carefully and regularly done as provided in this manual.

This Warranty guarantees the Emission Control System to be free of "defects". Ordinary wear and tear on the vehicle and the engine, sufficient to require replacement of parts and components at regular intervals, is not evidence of a "defect". As these may affect performance of the Emission Control System, the owner should have these regularly inspected during the Recommended Service Procedures, and replaced where necessary. Some of these replacement items (such as spark plugs) are scheduled for regular replacement under the Maintenance Guidelines. Other illustrations: mufflers and other parts of the exhaust system will normally require replacement during five years; engine valves must be regularly inspected, and replaced where necessary, in order to make sure that emissions will not rise to unacceptable levels. No condition is regarded as a "defect" if it results from a failure to follow recommended service instructions, including component replacement as indicated.

Failure of the System may also result from misuse or abuse of the car or its engine. Operation of the car at excessive speeds, or overloaded, or under heavy dust condition, may, adversely affect the functioning of the Emission Control System. So may racing the car, or fire or

WARRANTY

accident caused to the car. If the car is operated only on short trips, or is not, generally speaking, driven each day for at least several miles, some components of the Emission Control System may deteriorate more rapidly than would otherwise be expected, and this does not show a "defect".

Use of Unleaded Fuels. Regular use of unleaded or low-lead gasolines may cause difficulties with the engine and will result in malfunctions of the Emission Control Systems. The anti-wear additives found in leaded gasolines are necessary to avoid difficulties of this type. While an occasional tankful of unleaded or low-lead fuel is unlikely to cause such problems, conditions attributable to sustained use of such fuels will not be considered "defects".

These examples are given to show the limits on the manufacturer's responsibility under the Emission Control System Warranty. As in the case of other non-warranty work, the owner will be charged by the dealer for labour, parts and lubricants. We are sure you will find this money well spent as your contribution to cleaner air and an improved environment.

EMISSION CONTROL

You and each subsequent owner of the car are urged to make sure that the recommended maintenance procedures are carried out at the intervals specified. In order for the emission controls to continue to function effectively, it is strongly recommended that you arrange for regular maintenance inspections to be carried out by your Dealer.

The Passport to Service provides an inspection and maintenance schedule up to 50,000 miles or five years whichever first occurs, the period for which federal law requires that the emission control systems shall continue to function effectively. You should have the maintenance record completed by your Dealer at the regular mileage intervals indicated in the Schedule. The Handbook and Passport to Service should be handed to subsequent purchasers of the vehicle at the time of sale so that the maintenance instructions are available and that the record of maintenance can be continued.

Each owner should consult the warranty applicable to this vehicle, found in the Passport to Service, for those provisions applicable to the emission control systems. The warranty provides that the manufacturer guarantees to you and each subsequent purchaser that the emission control systems with which your car is equipped conformed at the time of manufacture with applicable regulations, and are free from defects in materials and workmanship which might cause the vehicle or engine to fail to conform with those regulations.

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The exhaust emission control system fitted to this engine is designed to keep emissions within legislated limits providing ignition timing and carburetter settings are correctly maintained and the engine is in sound mechanical condition.

It is essential that routine maintenance operations detailed in the handbook are carried out by your Dealer **at the specified mileage intervals.**

Exhaust Emission Testing

In order that engine exhaust emissions are kept within legislated limits an exhaust emission test **MUST** be carried out after completing certain operations. The following table lists these operations together with the type of emission test required.

CAUTION: CO content MUST not exceed 4½% with air delivery pipe hose disconnected. It is essential that the equipment used for testing purposes is of the following type.

1. An infra-red CO exhaust gas analyser.
2. Engine and ignition diagnostic equipment.
3. A carburetter balance meter.

Operation	Exhaust emission test required
Carburetters – Remove and refit	1. Engine and ignition diagnostic check 2. Carburetters tuned and balanced 3. Exhaust gas CO content analysed
Red emission pack – Fitting	As 1, 2, and 3 above
Air delivery pump – Remove and refit	1. Check that pump delivers air
Carburetters – Tune and adjust	1. Engine and ignition diagnostic check 2. Exhaust gas CO content analysed
Crankcase breather and/or pipe	1. Check thimble filter for obstruction 2. Check gauze for obstruction 3. Exhaust gas CO content analysed

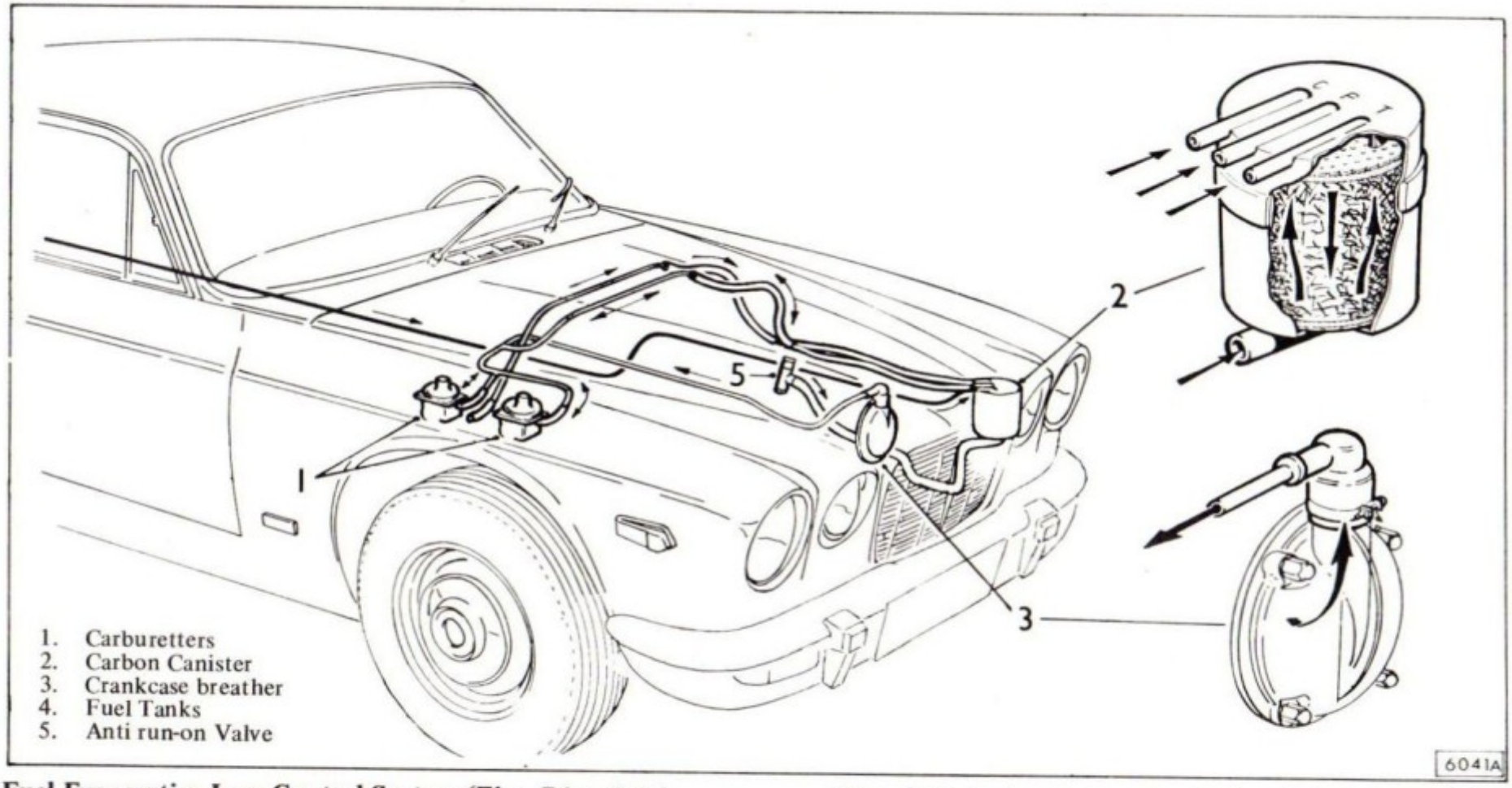
FAULT FINDING

CAUTION: The checks and procedures covered in the fault finding chart must be carried out on both carburetters if satisfactory results are to be obtained.

SYMPTOM	CAUSE	CURE
Erratic or poor idling; excessively high idle speed	1. Float height incorrect	1. Check float height; rectify if necessary
	2. Dirty or worn needle valve	2a. Wash valve in petrol; check filter gauze is clean
		2b. Renew needle valve if sticking or worn
	3. Piston sticking	3. Clean piston and rod, lubricate with clean engine oil. Top up piston rod to correct level
	4. Carburetter inlet obstructed	4. Check that air cleaner and case are correctly fitted and that gaskets are not causing obstruction
	5. Diaphragm damaged	5. Check for splits in diaphragm; renew if necessary
	6. Temperature compensator not operating correctly	6. Refer to page 74, items 22 and 23
	7. Leakage at induction manifold joints	7. Check all joints for leakage and renew gaskets as necessary
	8. Leakage from vacuum pipe connections	8. Check all vacuum pipe connections for security and rectify as necessary
	9. Carburetters not tuned correctly	9. Tune and adjust carburetters
Hesitation or flat spot	1. Check items 1 to 9 enumerated above	1. If trouble still persists proceed to 2 below
		2. Check that piston return spring is not broken

SYMPTOM	CAUSE	CURE
Air delivery pump inoperative or amount of air pump delivers is low	1. Driving belt tension 2. Poor hose connections 3. Symptoms persist after checking 1 and 2	1. Check/adjust air pump drive belt tension 2. Check all connections for tightness; rectify as necessary 3. Replace pump
Engine will not start	1. Anti run-on valve sticking	1. Change anti run-on valve
Flat battery or burnt out anti run-on valve	1. Pressure switch short circuited	1. Check pressure switch and wiring. Change pressure switch if necessary

Fig. 76



1. Carburetters
2. Carbon Canister
3. Crankcase breather
4. Fuel Tanks
5. Anti run-on Valve

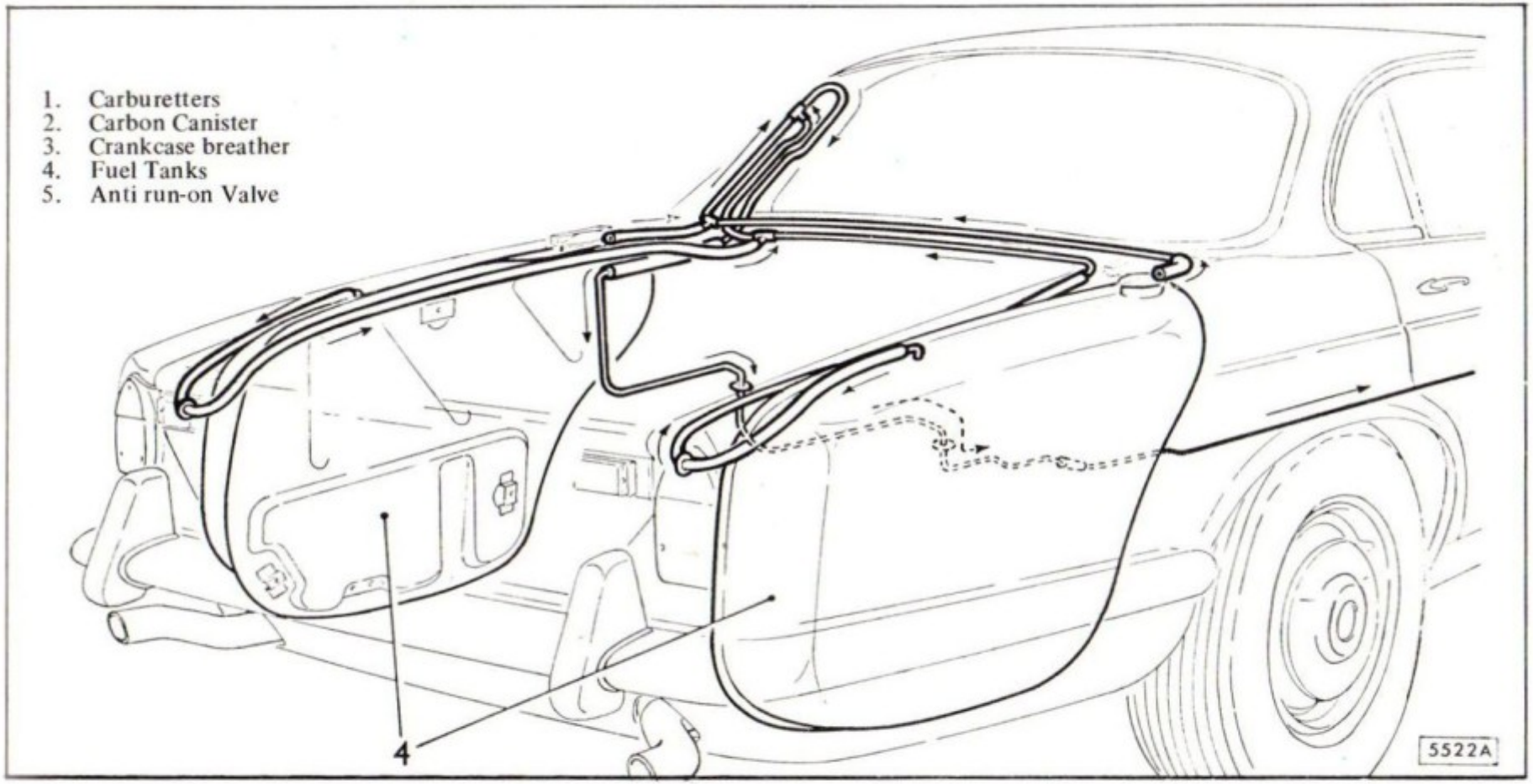
Fuel Evaporative Loss Control System (Figs. 76 and 77)

To prevent air pollution by vapours from the fuel tank and carburetter vents, the evaporative loss control equipment stores the vapour in a charcoal-filled canister while the engine is stopped and disposes of it via the engine crankcase emission control system when the engine is running.

The fuel tank venting is designed to ensure that vapours are vented through the control system even when the car is parked on an inclined surface.

A capacity-limiting device in the fuel tank ensures sufficient free capacity is available after filling to accommodate fuel which would otherwise be displaced as a result of high temperature.

Fig. 77



Fuel Evaporative Loss Control System (Figs. 76 and 77)

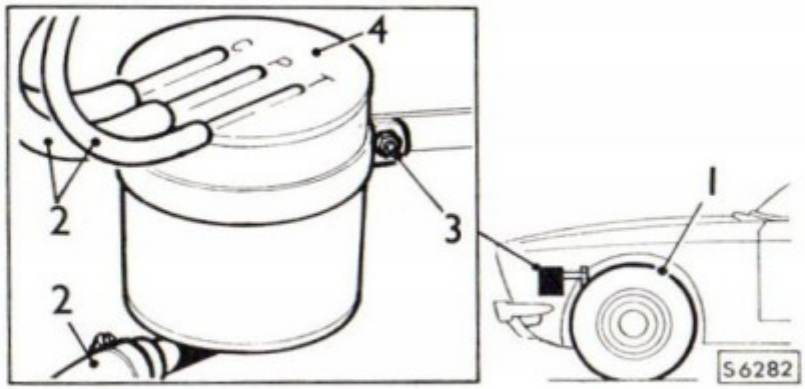
Cars have a fuel tank evaporative loss control system fitted as standard equipment to meet U.S. Federal requirements.

The system operates as follows:–

Interconnected tubing attached to the air vents in both fuel tanks conveys petrol vapour via a sealed storage canister to the carburetters.

The system is completely sealed and no routine maintenance is necessary with the exception of the carbon canister which should be renewed at the recommended periods.

Fig. 78



Charcoal Adsorption Canister–Renew (Fig. 78)

1. Remove front left-hand road wheel.
2. Detach pipes from canister.
3. Remove nut, spring washer, plain washer and bolt securing canister clamp to mounting strap.
4. Withdraw canister.
5. Position replacement canister in clamp.
6. Reverse operations 1 to 3.

Air Cleaner

Remove and refit (Fig. 79)

Removing

1. Slacken nut securing inner end of stay to mounting bracket.
2. Remove nut, bolt and washer securing outer end of stay to mounting bracket; swing stay clear of top of air cleaner.
3. Slacken clip and disconnect flexible inlet pipe.
4. Slacken clip and disconnect air duct flexible pipe.
5. Disconnect vacuum pipe from servo motor.
6. Release toggle clips and withdraw air cleaner cover.
7. Lift out filter element.
8. Carefully prise gulp valve hose from backplate.
9. Remove bolts and spring washers securing backplate to carburetter flanges.
10. Move backplate away from carburetters and disconnect vacuum pipe from thermal sensing switch.
11. Lift out backplate; remove and discard gaskets.

Refitting

Reverse operations 1 to 11; use new gasket between air cleaner and carburetters. Ensure air cleaner cover is correctly fitted.

Fig. 79

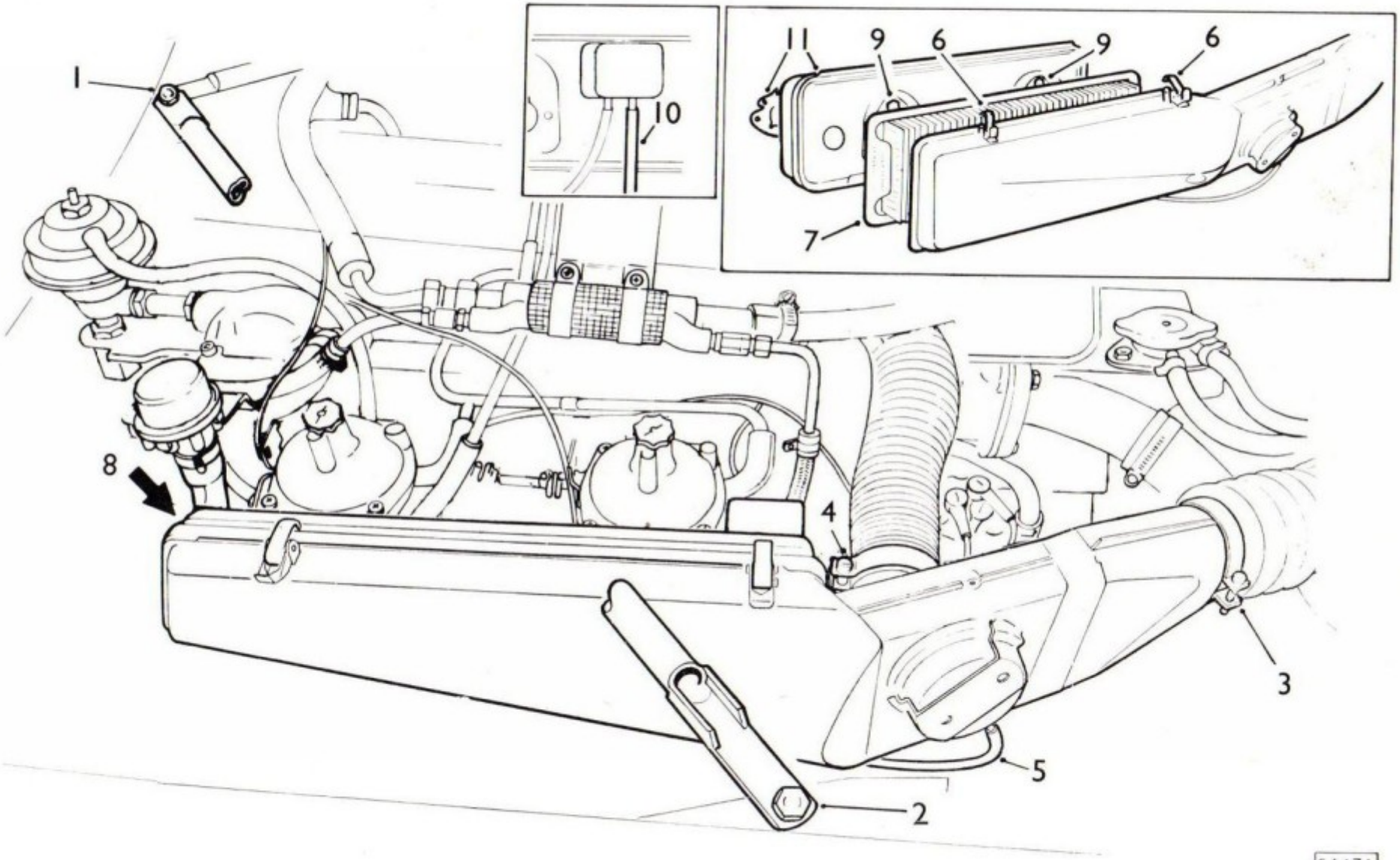
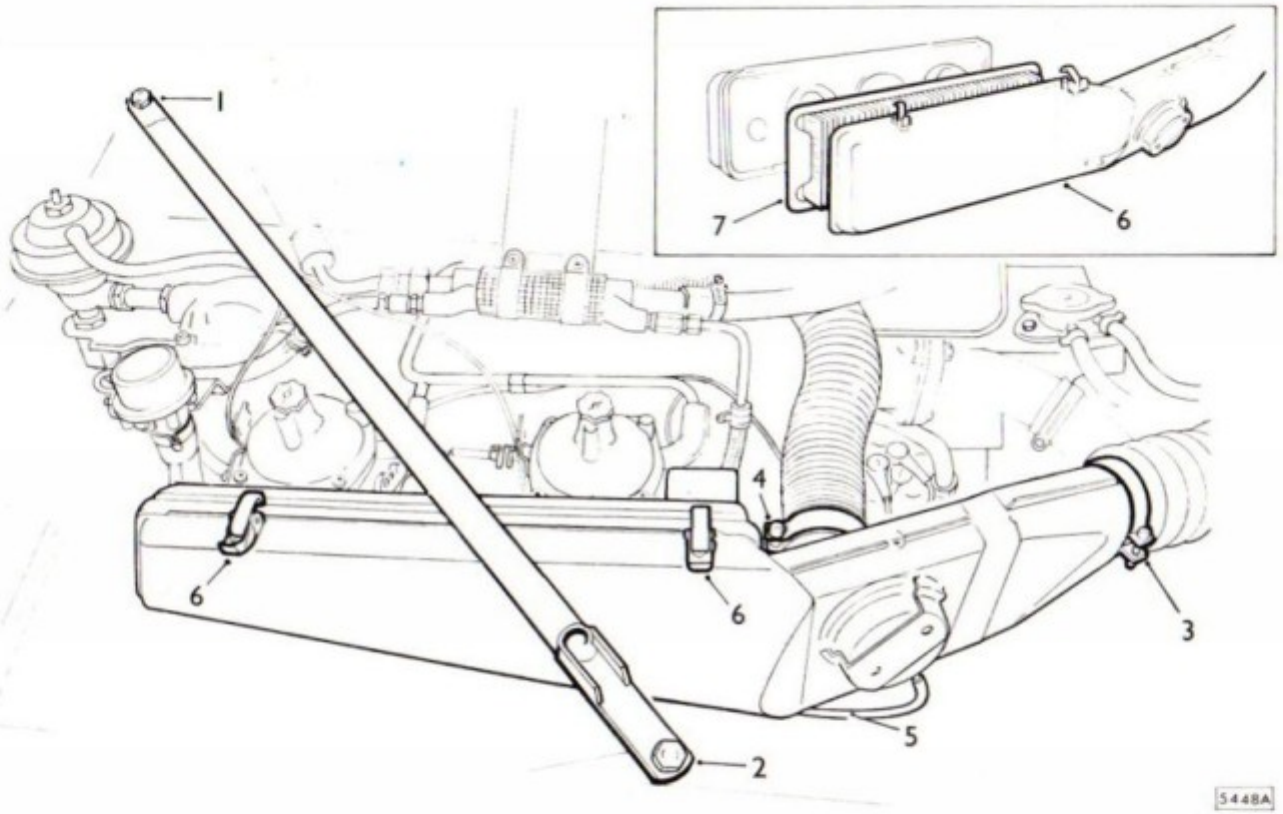


Fig. 80



Air Cleaner Filter Element

Remove and refit (Fig. 80)

Removing

1. Slacken nut securing inner end of stay to mounting bracket.
2. Remove nut, bolt and washer securing outer end of stay to mounting bracket; swing stay clear of top of air cleaner.
3. Slacken clip and disconnect flexible inlet pipe.
4. Slacken clip and disconnet air duct flexible pipe.
5. Pull vacuum pipe from servo motor.
6. Release toggle clips and withdraw air cleaner cover.
7. Lift out filter element.

Refitting

Reverse operations 1 to 7; ensure air cleaner cover is correctly fitted.

Fig. 81

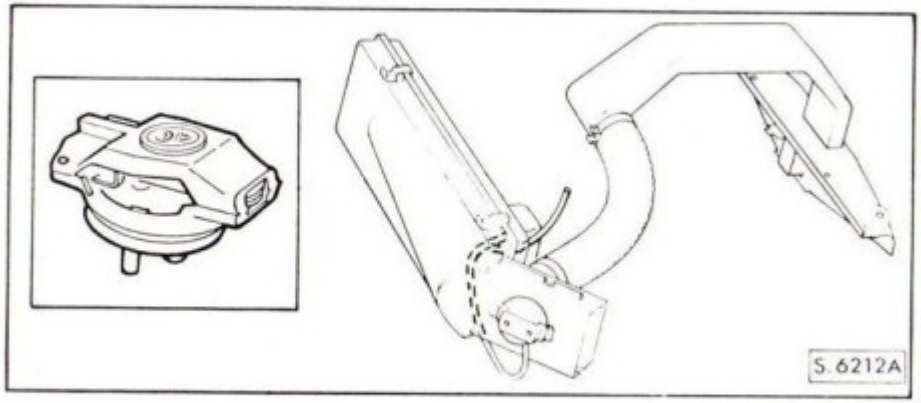
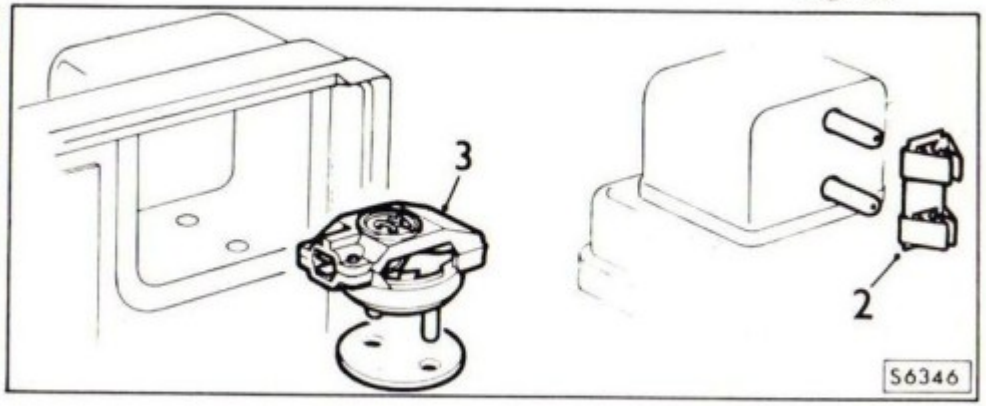


Fig. 82



Air Intake Temperature Control (Fig. 81)

The carburetters are adjusted to operate most efficiently when the air intake temperature is approximately 40° C (105° F).

To maintain the induction air temperature at this level, a temperature sensor unit is incorporated in the air cleaner backplate, and a flap valve fitted in the intake system tuned stage.

Manifold pressure to operate the flap valve servo motor is sensed at the induction manifold.

The temperature sensor varies the manifold pressure applied to the flap valve vacuum motor and therefore varies the position of the flap valve. The flap valve then mixes cold air—from the induction ram pipe and hot air—from cowls around the exhaust manifolds—in the proportions required by the temperature sensor to maintain the correct intake air temperature.

Air Intake Temperature Control

Testing

1. With engine cold and NOT running, flap valve must be in a position parallel to intake ram pipe.
2. With engine cold and running, with choke lever fully off, flap valve must move to "hot air" position, i.e. closing ram pipe and opening hot air duct.
3. With engine hot and running, under bonnet temperature approximately 50°C, flap valve must be in "cold air" position, i.e. parallel to ram pipe and closing hot air duct.

Temperature Sensor Unit

Remove and refit (Fig. 82)

Removing

1. Remove air cleaner as detailed on page 66.
2. Carefully prise spring clip off vacuum pipes.
3. Lift out temperature sensor unit.

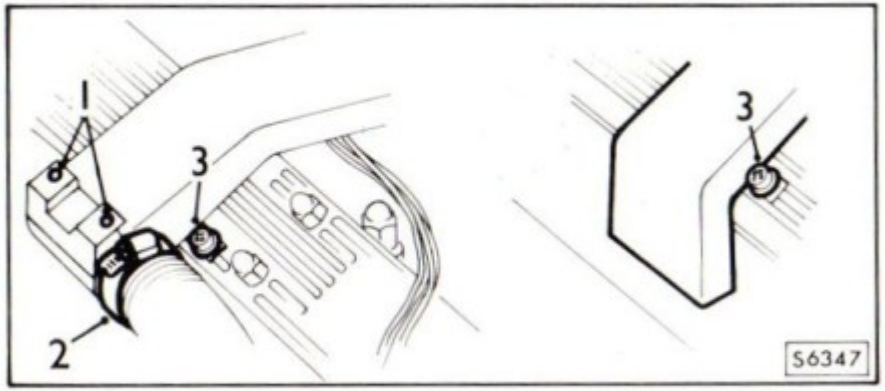
Refitting

Reverse operations 1 to 3, renewing washer if necessary.

Flap Valve Servo Motor

It is not possible to remove or repair this component. Failure therefore necessitates renewal of the air cleaner cover.

Fig. 83



Air Duct

Remove and refit (Fig. 83)

Removing

1. Remove screws and spire nuts securing heat exchanger to air duct.
2. Slacken clip securing air delivery pipe to air duct.
3. Remove screws, spring washers and plain washers securing air duct to camshaft covers; withdraw air duct.

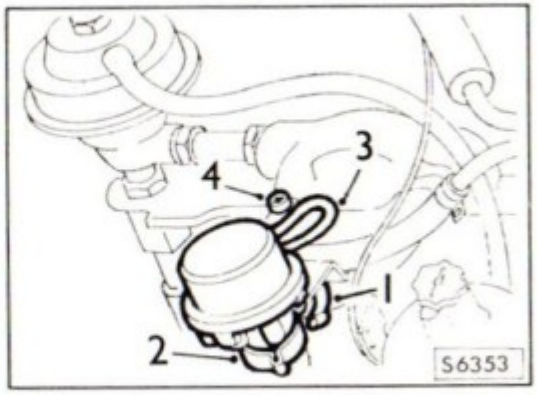
Refitting

Reverse operations 1 to 3.

Gulp Valve

The gulp valve operates in response to an abrupt fall in manifold pressure, i.e. sudden closure of the throttle, and provides a quantity of air to the inlet manifold. This additional air compensates for the evaporation of residual fuel from the induction tract walls by forming a weaker mixture that will burn in the cylinders. The gulp valve is actuated by manifold pressure via rubber pipe connected to the rear of the left hand front manifold.

Fig. 84



Remove and refit (Fig. 84)

Removing

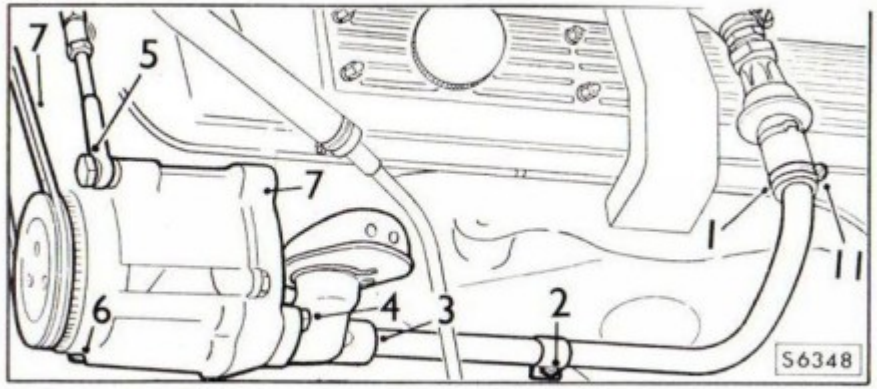
1. Remove clip securing throttle housing air delivery hose to gulp valve outlet.
2. Remove clip securing air delivery hose to gulp valve inlet.
3. Detach operating sensor tube, at gulp valve.
4. Remove two Philips head screws and plain washers securing gulp valve mounting bracket and manifold top cover to manifold.
5. Lift off gulp valve and bracket.

Refitting

Reverse operations 1 to 5.

NOTE: Use new hose clips.

Fig. 85



Air Delivery Pump

The air delivery pump supplies air under pressure, via a check valve, to the exhaust ports just above the exhaust valve heads. This air combines with the exhaust gases to continue the oxidisation process in the exhaust system. The check valve prevents reverse flow in the injection rails when exhaust gas pressure exceeds air supply pressure.

Remove and refit (Fig. 85)

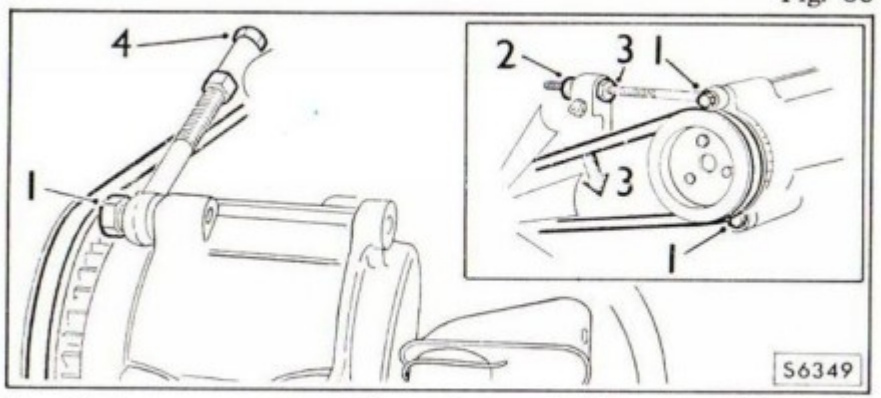
Removing

1. Slacken jubilee clip on air pump delivery pipe.
2. Remove nut, washer, spacer and bolt securing air delivery pipe to exhaust manifold heat shield.
3. Extract air delivery pipe from pump outlet elbow.

WARNING: ON NO ACCOUNT MUST THE OUTLET PIPE FROM THE AIR CONDITIONING COMPRESSOR PUMP BE DISCONNECTED AS THE GAS CONTAINED WITHIN THE SYSTEM CAN CAUSE BLINDNESS.

4. Remove bolts and washers securing outlet elbow to pump; lift off elbow.
5. Remove bolts, washers and spacers from trunnion.
6. Remove retaining nut and washer on pump mounting bolt.

Fig. 86



7. Swing pump towards engine and disengage drive belt.
8. Withdraw pump mounting bolt, collecting spacers and washers; lift out pump.

Refitting

9. Reverse operations 1 to 8, use new gasket on pump outlet elbow and 'O' ring inside outlet elbow.
10. Adjust drive belt, see page 69.
11. Slacken clip securing air delivery pipe to check valve inlet.
12. Start engine and check that pump delivers air.
13. Tighten clip.

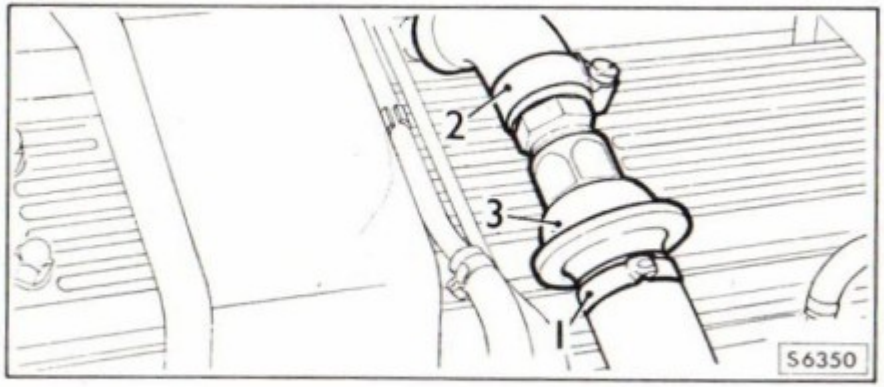
CAUTION: No servicing or overhaul of the air delivery pump is possible. In the event of failure, service exchange unit MUST be fitted.

Belt adjustment (Fig. 86)

1. Slacken air pump mounting bolts.
2. Slacken off adjuster locknut.
3. Tighten adjusting nut to obtain a belt tension as follows:–

   A load of 3.2 lbs. (1,45 kg.) applied on upper and midway portion of belt will give a deflection of .18 in. (4,6 mm.).
4. Retighten adjuster locknut and mounting bolts.

Fig. 87



Check Valve

Remove and refit (Fig. 87)

Removing

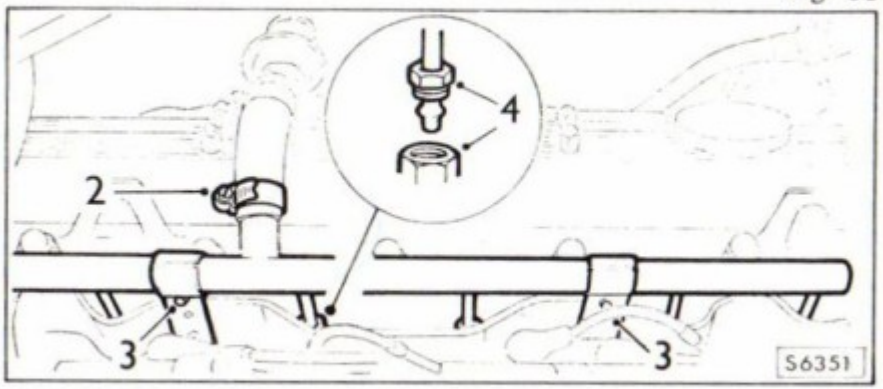
1. Remove clip securing air delivery pipe hose to check valve inlet.
2. Slacken jubilee clip securing check valve outlet to air delivery pipe rail.
3. Lift out check valve.

Refitting

Reverse operations 1 to 3 inclusive.

NOTE: Use new clips to secure air delivery pipe hose.

Fig. 88



Air Rail

Remove and refit (Fig. 88)

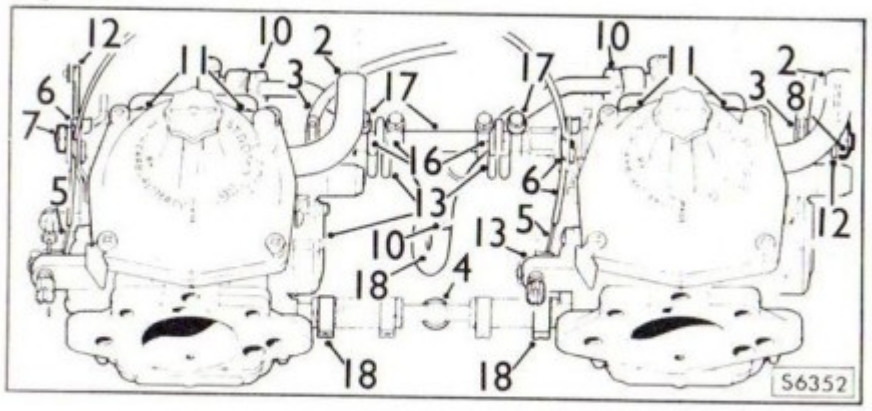
Removing

1. Remove air duct as detailed on page 68.
2. Slacken clip securing check valve hose to air rail.
3. Remove nuts and spring washers securing air delivery pipe to steady brackets.
4. Unscrew union nuts securing air pipe to cylinder head; disengage air rail from steady brackets and withdraw.

Refitting

Reverse operations 1 to 4.

Fig. 89



Carburetters

Remove and refit (Fig. 89)

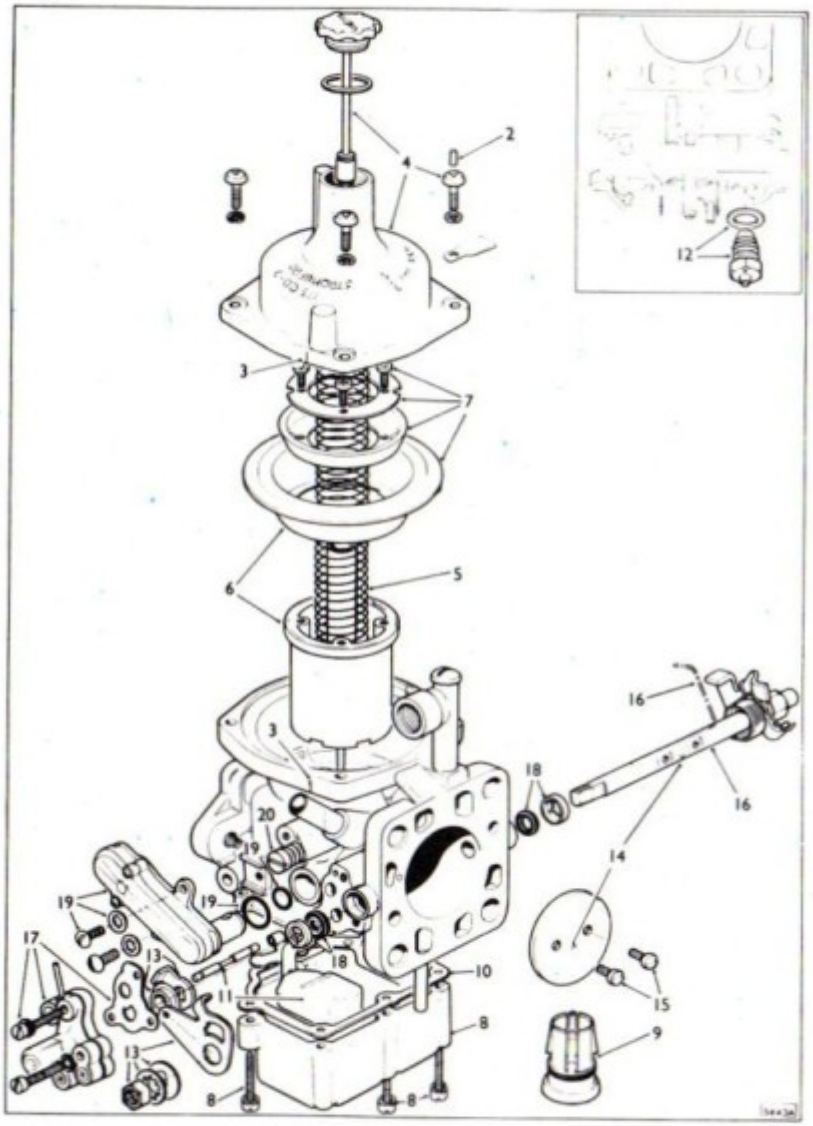
Removing

1. Remove air cleaner as detailed on page 64.
2. Disconnect crankcase breather pipe from each carburetter.
3. Disconnect vacuum pipe from each by-pass valve.
4. Slacken clip and disconnect fuel inlet pipe from tee-piece. Plug fuel inlet pipe.
5. Slacken clamp bolts securing inner choke cables.
6. Disconnect outer choke cables from clips.
7. Remove nut at rear of throttle spindle and recover shakeproof washer, plain washer and brass bushes from both levers. Note fitting of bushes.
8. Remove nut at forward end of throttle spindle and recover shakeproof washer, plain washer and brass bush from secondary throttle lever. Recover operating arm.
9. Cars fitted with automatic transmission only—release spring clip and disconnect kickdown rod from throttle lever (Model 65 gearbox only).
10. Release nut securing exhaust gas recirculation pipe to 'Y' piece—fixed orifice system—or—pull throttle edge tapping from rear carburetter—variable orifice system.
11. Remove nuts and spring washers securing carburetters to secondary throttle housing.
12. Withdraw carburetters slightly and disconnect front and rear throttle levers from connecting links.
13. Lift off carburetters taking care not to bend throttle spindle connecting clamps.
14. Remove and discard carburetter flange gaskets.
15. Place carburetters on a flat surface.
16. Mark relative position of throttle spindles to connecting rod.
17. Slacken bolts on each connecting clamp and remove coupling rod.
18. Remove clips securing tee-piece to carburetters, remove petrol pipe. Release union nuts securing 'Y' piece to pipes—fixed orifice system only. Carburetters may now be separated.

Refitting

19. Reverse operations 1 to 18; use new carburetter flange gaskets and tee-piece clips.
20. Check choke and accelerator controls for correct operation.
21. Carry out an engine and ignition diagnostic check.
22. Adjust carburetters as detailed on page 76.
23. Carry out an exhaust gas CO content analysis check.

Fig. 90



Fitting Red Emission Pack (Fig. 90)

NOTE: Two red emission packs, part number JS.478 will be required for this operation. As each carburetter has its own individually matched components, it is advisable to deal with one carburetter at a time.

Dismantling

1. Remove carburetters from car as detailed on page 71.
2. Remove lead plug from cover securing screw.
3. Mark relative position of cover to carburetter body.
4. Remove cover securing screws; lift off cover.
5. Remove piston return spring.
6. Withdraw piston and diaphragm assembly.
7. Remove screws securing diaphragm retaining ring to piston. Lift off ring, remove and discard diaphragm.

CAUTION: It is not necessary to remove needle retaining screw or needle. The size of needle is determined during manufacture and on no account may it be altered.

8. Remove screws and washers securing float chamber to carburetter body; lift off float chamber.

CAUTION: No attempt should be made to remove jet cover unless there is evidence of leakage. In the event of leakage having occurred, jet cover and 'O' ring assembly must be renewed. To remove cover, carry out item 9.

9. Bend back plastic retaining lugs, withdraw jet cover together with 'O' ring. Discard both cover and 'O' ring.
10. Remove and discard float chamber gasket.
11. Disengage float hinge pin from spring clip; lift out float.
12. Unscrew needle valve; discard valve and alloy seating washer.
13. Remove nut, serrated washer and plain washer securing throttle lever to throttle spindle; withdraw throttle lever followed by bush and actuating link.

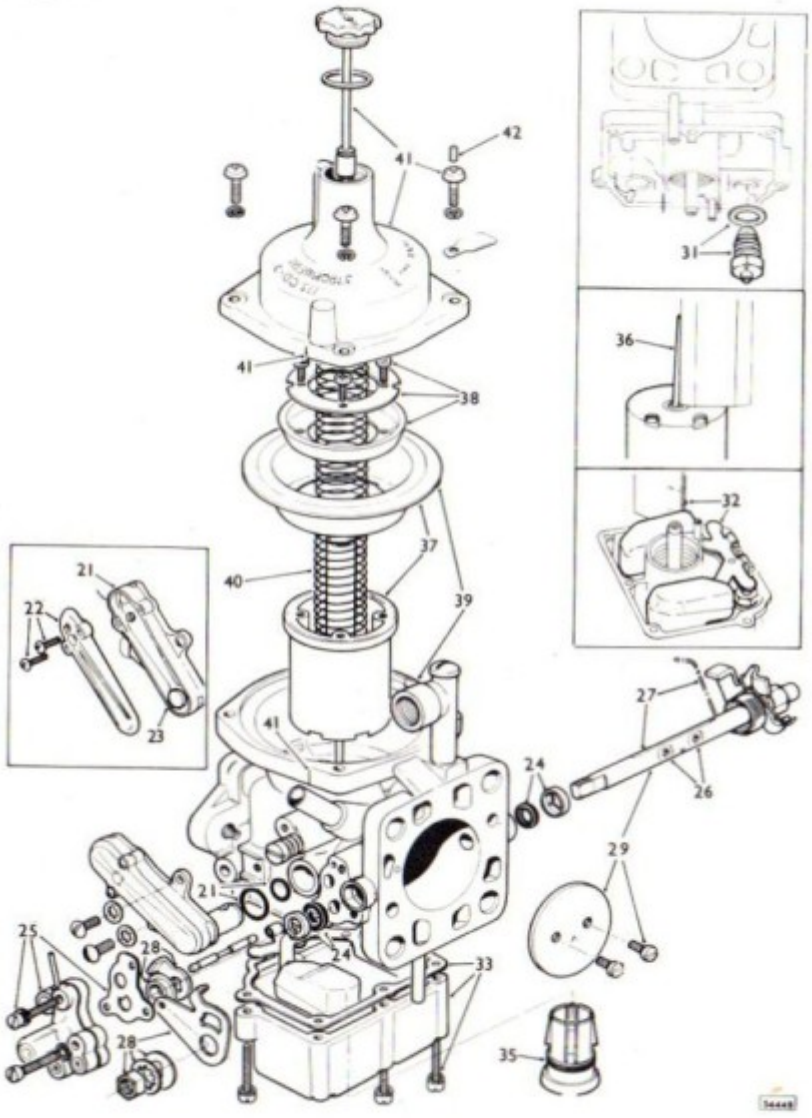
14. Mark relative position of throttle disc to spindle.
15. Remove screws securing throttle disc; slide disc out of throttle spindle.
16. Note position of spindle return spring; withdraw throttle spindle.
17. Remove screws and lockwashers securing by-pass valve and cover to carburetter body, remove gasket and discard.

CAUTION: The by-pass valve is correctly adjusted during manufacture and this adjustment will be lost if any attempt is made to separate by-pass valve cover from body. If it is suspected that diaphragm is damaged, complete by-pass valve assembly must be replaced.

18. Prise spindle seals out of carburetter body; discard seal.
19. Remove screws securing temperature compensator to carburetter body; withdraw compensator, remove and discard seals.

CAUTION: Some carburetters may have a spring loaded brass screw, 20 in illustration, fitted adjacent to the temperature compensator. The function of this screw is merely to blank off a hole drilled to facilitate machining of the carburetter body. Mixture strength cannot be altered by means of this screw which should be fully tightened.

Fig. 91



Reassembling (Fig. 91)

21. Fit new seals to temperature compensator assembly; fit compensator to carburetter body.
22. Remove screws securing compensator; lift off cover.
23. Check that tapered plug is free to move in housing. If plug movement is satisfactory, refit cover. Should plug stick in housing, temperature compensator assembly must be renewed.
24. Press new spindle seals into carburetter body.
25. Position new gasket on by-pass valve body; fit by-pass valve and secure with screws and lockwashers.
26. Check tapped holes in throttle spindle for burrs which should be removed by light stoning.
27. Fit throttle spindle ensuring that return spring is correctly positioned.
28. Fit actuating link, bush, throttle lever, plain washer, serrated washer and nut; DO NOT overtighten.

NOTE: Any bush showing signs of ovality or excess wear should be renewed.

29. Slide throttle disc into spindle, fit securing screws, but do not tighten at this stage.
30. Adjust position of disc until it closes fully, tighten securing screws.
31. Fit new needle valve, use new alloy seating washer, DO NOT overtighten.
32. Refit float; invert carburetter body, ensure needle valve is closed and measure distance from face of carburetter body to highest point of float. Dimension obtained should be 16,5 mm. + ,5 mm. If this dimension is not obtained, bend float arm slightly and recheck.
33. Fit new gasket to float chamber, fit chamber and tighten securing screws by diagonal selection to avoid distortion.

34. If jet cover was removed, proceed with item 35; if not, proceed with item 36.
35. Fit 'O' ring to jet cover, smear periphery of 'O' ring with petroleum jelly and press jet cover into float chamber. Ensure jet cover is correctly seated.
36. Check by means of a straight edge that needle is not bent or distorted in any way.

CAUTION: Needle is permanently biased to one side and this must not be confused with damage to needle. If needle is found to be damaged, a new needle assembly must be fitted.

37. Fit new diaphragm to piston ensuring that lip on underside of diaphragm is seated in recess in piston.
38. Fit diaphragm retaining ring, tighten securing screws evenly.
39. Fit piston assembly in carburetter body ensuring that lip on outer periphery of diaphragm is seated in recess in body.
40. Position piston return spring on piston.
41. Fit cover in position marked during dismantling, tighten securing screws by diagonal selection to avoid distorting cover.
42. Drive new lead plug into cover securing screw.
43. Carry out operations 2 to 42 on remaining carburetter.
44. Decarbonize EGR inlet drilling–fixed orifice system only.
45. Refit carburetter to car.
46. Carry out an engine and ignition diagnostic check.
47. Tune carburetters as detailed on page 76.
48. Carry out an exhaust gas CO content check.

CAUTION: To ensure that engine exhaust emissions are kept at the required level, the following items must not be changed.

1. The jet assembly.
2. The air valve.
3. The depression chamber cover.

The following items must not be adjusted.

4. The temperature compensator.
5. The piston return spring–correct spring has NG colour coding.
6. The by-pass valve spring loading.

Throttle By-Pass Valve

A throttle by-pass valve is incorporated in each carburetter. The valve is operated by a specific range of manifold pressures. The valves open to provide a mixture that will ensure complete combustion under conditions of closed throttle over-run. The valves in both carburetters are interconnected by a small bore rubber tube to ensure balanced performance.

Fig. 92

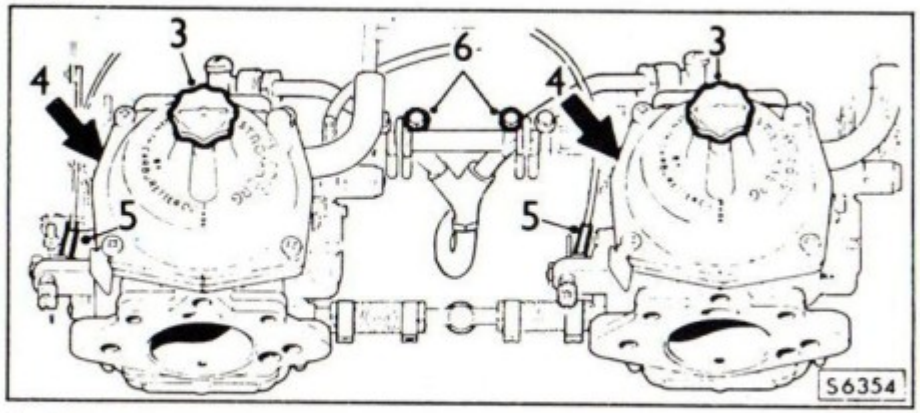
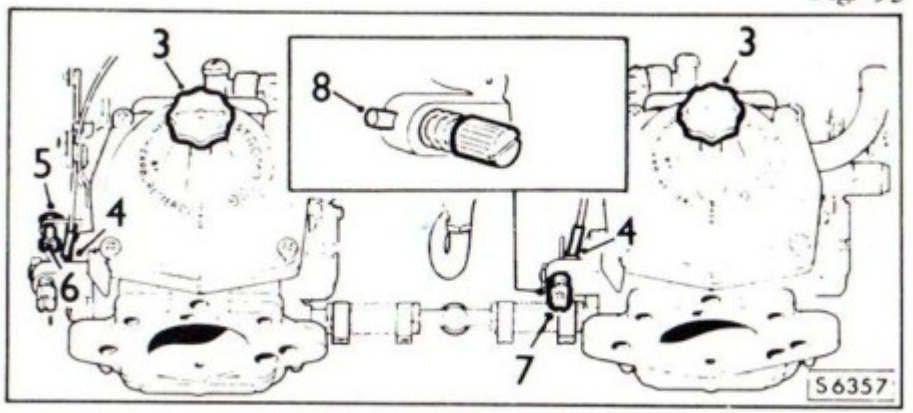


Fig. 93



Carburetters

Tune and adjust (Fig. 92)

CAUTION: It is impossible to tune carburetters correctly unless engine timing, contact breaker and sparking plug gaps and tappet clearances are correctly set.

Slow idle setting

1. Remove air cleaner cover and filter element as detailed on page 66.
2. Run engine until it reaches normal operating temperature.
3. Top up carburetter piston dampers with clean engine oil.
4. Slacken off idle trim screw on each carburetter until it no longer contacts throttle lever.
5. Slacken off choke inner cable clamping bolts; ensure each choke is fully closed; re-tighten clamping bolts.
6. Slacken throttle spindle clamping bolts, ensure throttles are fully closed.
7. Screw in idle trim screw on rear carburetter until contact is just made with throttle lever.
8. Start engine and adjust idle screw on rear carburetter to give an idle speed of 750 r.p.m.
   NOTE: Selector lever MUST be in 'P' position.
9. Screw in idle trim screw on front carburetter until contact is just made with throttle lever, then further 1½ turns.
10. Check synchronisation of carburetters by means of a balance meter. Tighten clamping bolts.
11. If necessary, check and adjust engine fast idle speed.
12. Refit air cleaner filter element and cover.
13. Carry out an exhaust gas CO content analysis.

Fast idle setting (Fig. 93)

1. Remove air cleaner cover and filter element as detailed on page 66.
2. Run engine until it reaches normal operating temperature.
3. Top up carburetter piston dampers with clean engine oil.
4. Slacken off choke inner cable clamping bolts, push choke control knob fully closed, ensure each choke is fully closed and retighten clamping bolts.

5. Slacken locknut on rear carburetter fast idle adjusting screw.
6. Turn fast idle adjustment screw until gap between head of screw and choke cam is 0.067 in. (1,6 mm.).
7. Tighten locknut and recheck gap.
8. Refit air cleaner filter element and cover.

NOTE: A control on both front and rear carburetters enables the choke to be varied for summer and winter operation.

To adjust for summer and winter operation (Fig. 93)

1. Note position of pin; if lying in horizontal slot (Fig. 93/8) in casting, choke is set for winter running.
2. Depress plunger and turn through 90° for summer running (Fig. 93/7).
3. Repeat operations 1 and 2 on other carburetter.

Secondary Throttle Housing

The secondary throttle housing contains two additional throttle butterfly valves operated by linkage from the carburetter butterflies.

While the throttle is closed the ingoing mixture is directed through the water heated throttle housing to ensure good atomisation. When the throttle is opened the secondary butterfly valves open at a preset rate relative to the carburetter valves until, at full throttle the full mixture flow is passing directly into the engine.

Fig. 94

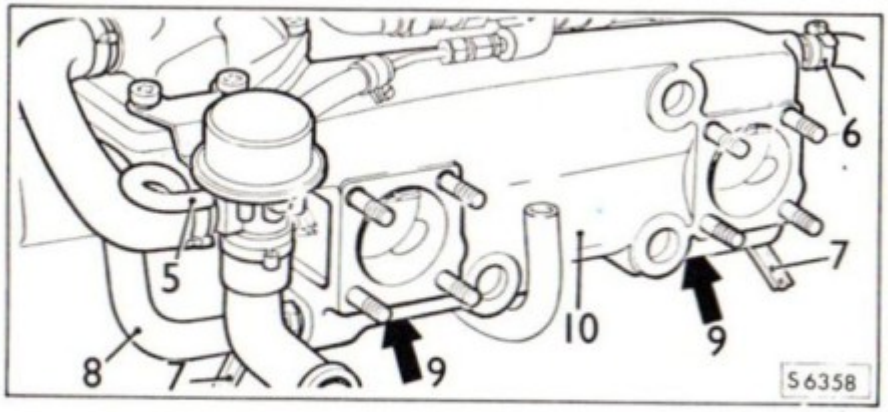
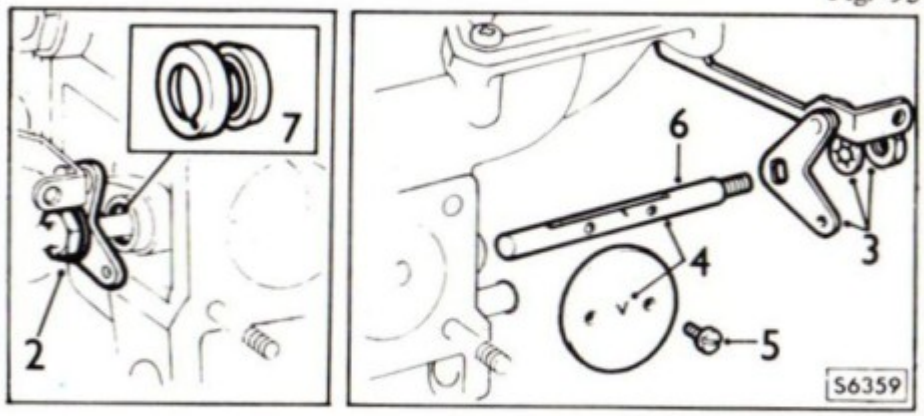


Fig. 95



Remove and refit (Fig. 94)

Removing

1. Remove the header tank cap.
2. Open radiator drain tap and drain off approximately 1 U.S. gallon of coolant.
   NOTE: Conserve coolant if anti-freeze is in use.
3. Remove EGR valve as detailed on page 86–variable orifice system only.
4. Remove carburetters as detailed on page 71 but omit operations 16 to 18 inclusive.
5. Disconnect operating sensor tube from gulp valve.
6. Slacken clip and disconnect water inlet hose.
7. Note which hole in spring anchor brackets secondary throttle return springs are secured; detach return springs.
8. Slacken clip and disconnect water outlet hose.
9. Remove nuts and spring washers securing secondary throttle housing and spring anchor brackets to inlet manifold.
10. Withdraw secondary throttle housing together with gulp valve and anchor brackets; remove and discard gaskets.

Refitting

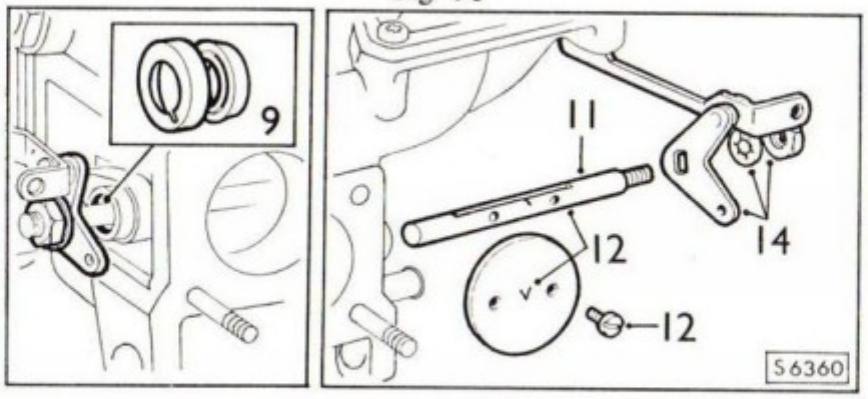
Reverse operations 1 to 10; use new gasket between secondary throttle housing and inlet manifold.

Overhaul (Fig. 95)

Dismantling

1. Remove secondary throttle housing as detailed on page 78.
2. Slacken nut on front throttle spindle then remove nut and washer securing bellcrank to front secondary throttle spindle; withdraw bellcrank.
3. Slacken nut on rear throttle spindle, then remove nut and washer securing bellcrank to rear secondary throttle spindle; withdraw bellcrank.
4. Mark relative position of each throttle disc to spindle and each spindle to secondary throttle housing.
5. Remove screws securing throttle discs to spindles, rotate spindles and withdraw discs.
6. Withdraw spindle from secondary throttle housing.
7. Prise throttle spindle seals out of spindle bush; discard seals.

Fig. 96



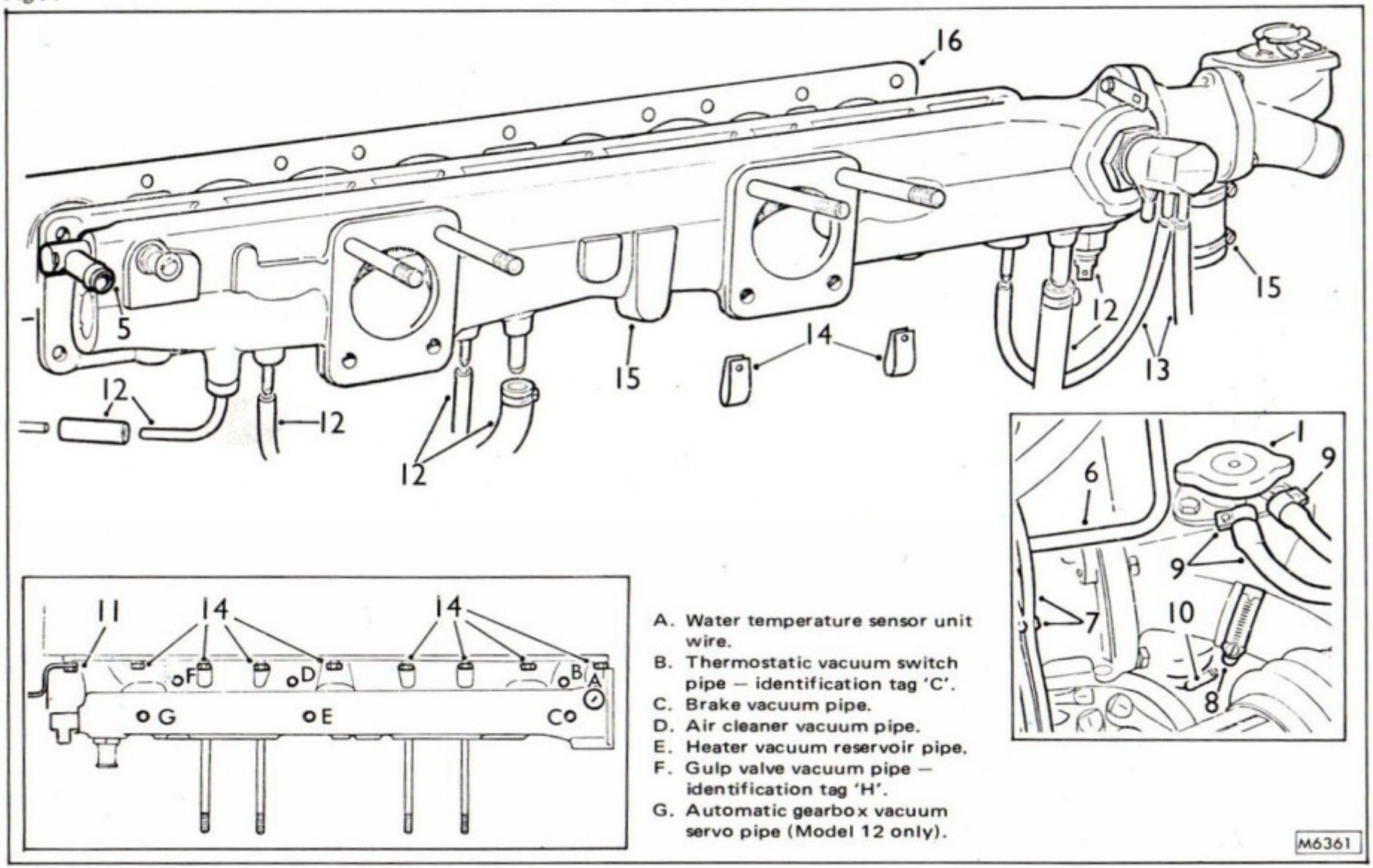
Inspection and Cleaning

8. Remove all deposits from inside top cover and delivery pipe–EGR variable orifice system only.

Reassembling (Fig. 96)

9. Press new throttle spindle seals into spindle bush.
10. Check by means of straight edge that throttle spindles are not bent or distorted; spindles found to be damaged in this way must be renewed.
11. Fit spindles into housing.
12. Position throttle discs in spindles, fit securing screws but do not tighten at this stage.
13. Adjust position of discs until they close fully; tighten securing screws.
14. Fit bellcranks to throttle spindle; do not overtighten securing nuts.
15. Refit secondary throttle housing.

Fig.97



A. Water temperature sensor unit wire.
B. Thermostatic vacuum switch pipe – identification tag 'C'.
C. Brake vacuum pipe.
D. Air cleaner vacuum pipe.
E. Heater vacuum reservoir pipe.
F. Gulp valve vacuum pipe – identification tag 'H'.
G. Automatic gearbox vacuum servo pipe (Model 12 only).

Inlet Manifold

Remove and refit (Fig. 97)

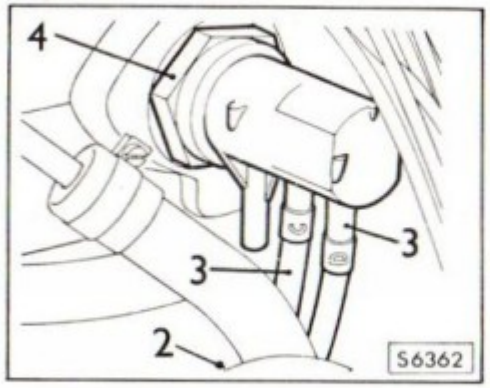
Removing

1. Remove radiator header tank cap.
2. Open radiator drain tap and drain off approximately 1 U.S. gallon of coolant.
   NOTE: Conserve coolant if anti-freeze is in use.
3. Remove secondary throttle housing as detailed on page 78.
4. Remove air duct as detailed on page 68.
5. Slacken clip and disconnect water outlet hose.
6. Spring crankcase breather pipe out of retaining clips; withdraw pipe from rubber elbow.
7. Disengage H/T leads from retaining clip.
8. Slacken clip and disconnect radiator top hose.
9. Slacken clips and disconnect hoses from header tank filler neck.
10. Slacken clip securing water pump hose to header tank.
11. Remove three nuts and spring washers securing throttle linkage; withdraw linkage and support in frame.
12. Disconnect pipes and water temperature transmitter wire from underside of inlet manifold.
13. Disconnect pipes from thermostatic switch.
14. Remove nuts and spring washers securing inlet manifold to cylinder head; note fitted positions of two pipe clips and remove.
15. Withdraw inlet manifold from studs, disconnect water pump hose from underside of header tank; lift out inlet manifold.
16. Remove gasket and discard.

Refitting

Reverse operations 1 to 16; use new gaskets.

Fig. 98



Thermostatic Vacuum Switch

A thermostatic vacuum switch provides the overheating protection for the engine made necessary by the large degree of vacuum retard used. The switch isolates the distributor vacuum retard capsule from its reference point if the engine coolant temperature rises above a specific level; the capsule is then referenced to atmospheric pressure, leaving the distributor subject only to centrifugal advance.

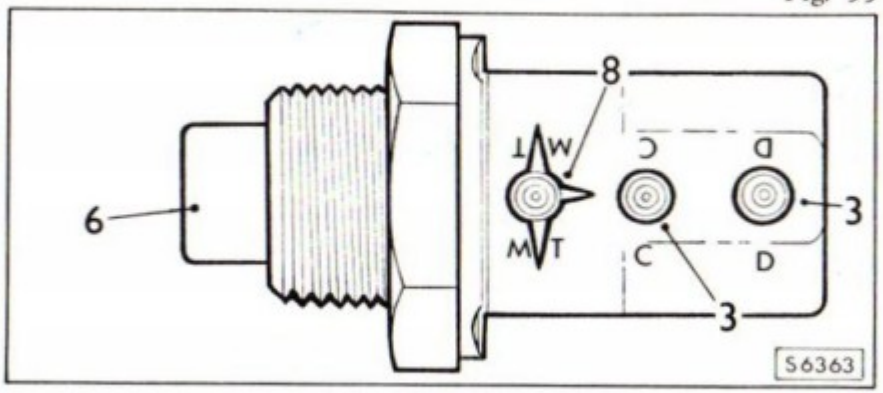
The thermostatic vacuum switch simultaneously inhibits operation of the throttle by-pass valves. These would otherwise open due to the change in manifold pressure resulting from the change in distributor retard angle.

Remove and refit (Fig. 98)

Removing

1. Open radiator drain tap and partially drain coolant.
2. Slacken clip and disconnect flexible hose from air cleaner.
3. Disconnect vacuum pipe from switch.
4. Slacken union nut and remove switch from inlet manifold.

Fig. 99



Refitting

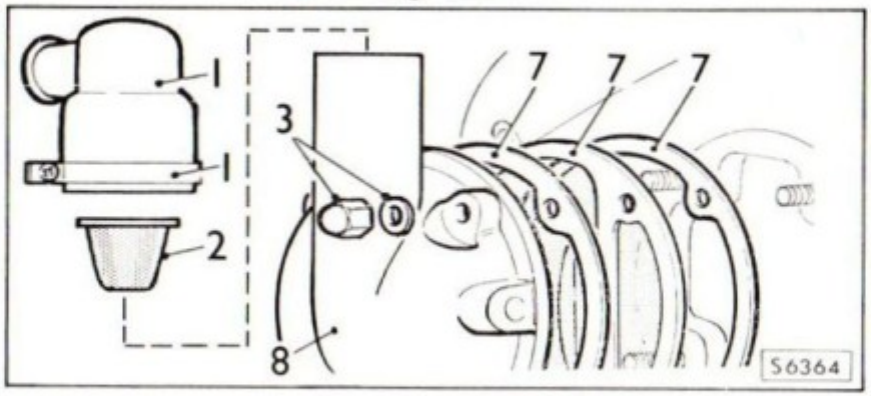
Reverse operations 1 to 3.

NOTE: Switch MUST be fitted in position shown and to enable this to be done, switch may be turned independently of union nut.

Testing (Fig. 99)

1. Remove switch as detailed on page 82.
2. Connect suitable lengths of tubing to tappings 'C' and 'D'.
3. Blow down pipe 'D', air should be ejected from pipe 'C'.
4. If air is not ejected from pipe 'C' switch must be renewed.
5. If, however, air is ejected from pipe 'C', proceed with items 6 to 9.
6. Immerse switch bulb in bath of oil.
7. Heat oil to a temperature of 220° F (104.4° C).
8. Blow down pipe 'D'; air should be ejected from tapping 'MT', this indicates that switch is satisfactory.
9. If, however, air is not ejected from tapping 'MT' or if it is ejected from pipe 'C', switch must be renewed.
10. Clean all traces of oil from switch before refitting.

Fig. 100



Positive Crankcase Ventilation

A positive crankcase ventilation system is fitted to all cars. Fumes from the crankcase breather are drawn into the engine by the carburetter balance pipe while the engine is running.

Engine Breather, Filter and Gauze
Remove and refit (Fig. 100)

Removing

1. Remove clip securing rubber elbow to breather housing; lift elbow.
2. Lift out filter.
3. Remove dome head nuts and washers securing breather housing.
4. Slacken nuts and release tension of air pump driving belt.
5. Pull tensioner bracket clear of studs.
6. Remove all traces of old gaskets and wash filter, gauze and housing in clean gasoline. Dry using clean, dry compressed air.

Refitting

7. Locate new gasket over studs, followed by gauze baffle and another new gasket.
8. Locate breather housing.
9. Locate air pump belt tensioner bracket.
10. Locate hose brackets—cars fitted with air conditioning only.
11. Secure breather housing using four dome head nuts and washers.
12. Fit filter into breather housing.
13. Locate rubber elbow and secure clip.

Fig. 101

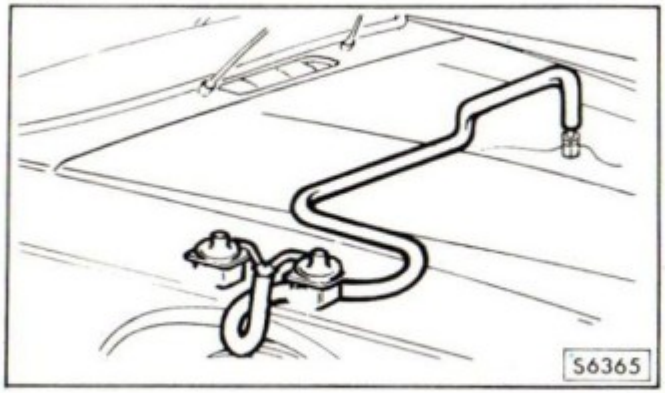
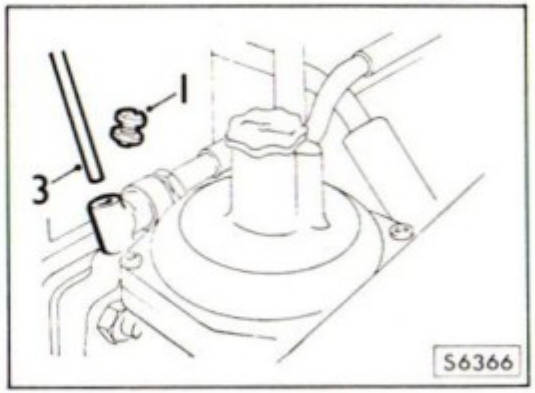


Fig. 102



Exhaust Gas Recirculation System (Fixed orifice)

This engine is fitted with an exhaust gas recirculation system (EGR) that taps off a specific proportion of exhaust gas and re-introduces it into the carburetter induction tract (Fig. 101).

The gas is drawn from a point between No. 1 and No. 2 cylinder exhaust pipes and led, via a heavily insulated stainless steel pipe, to a 'Y' piece between the two carburetters. The mixture of gasoline/air and exhaust gas is then burnt by the engine combustion process to further reduce the pollution level.

The proportion of exhaust gas drawn to the carburetters is determined by the orifice size of a fixed restrictor fitted within the exhaust manifold adaptor.

If it is required to remove the exhaust manifold heat shield, the union nut securing the EGR pipe must be released before the adaptor securing the heat shield is moved. Restrain the adaptor while loosening the union nut.

Exhaust Gas Recirculation Inlet Drilling

Decarbonize (Fig. 102)

1. Remove blanking screw from top of left-hand carburetter mounting flange.
2. Hold throttle fully open.
3. By means of a mild steel rod 8 in. (203 mm.) long x $\frac{1}{8}$ in. (3,2 mm.) diameter, carefully remove carbon deposits from inlet drilling.
4. Refit blanking screw.
5. Carry out operations 1 to 4 on remaining carburetter.

Fig. 103

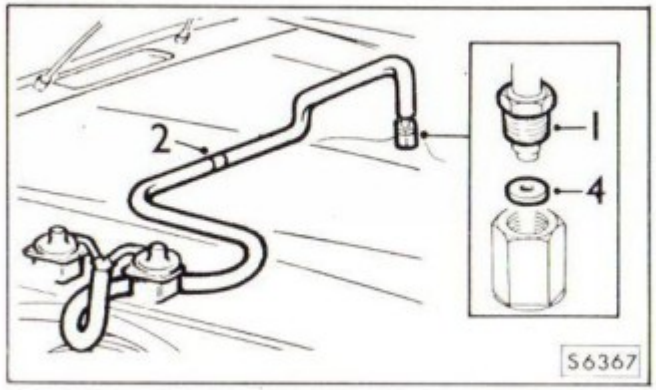
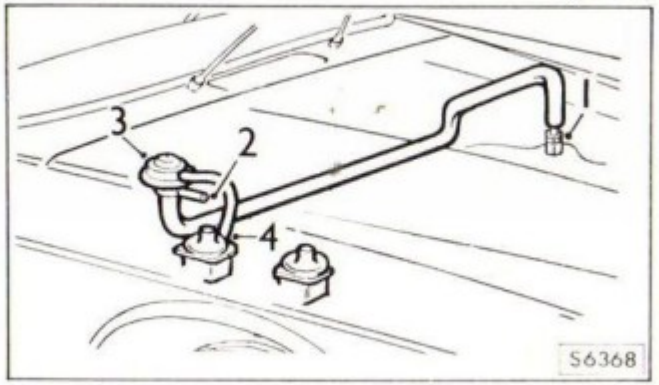


Fig. 104



Restrictor and 'Y' Piece

Decarbonise (Fig. 103)

1. Unscrew union nut securing outlet pipe to adaptor.
2. Release setscrew and clip at rear of cylinder block.
3. Remove carburetters.
4. Withdraw restrictor from adaptor.
5. Clean 'Y' piece, pipes and restrictor with a suitable wire brush; blow all pipes through with dry, clean compressed air.
6. Fit red emission pack to both carburetters.
7. Reverse operations 1 and 4.

NOTE: Should restrictor be inadvertently misplaced, replacements are available from your Dealer.

CAUTION: The engine MUST NOT, under any circumstances, be run with the restrictor not in position.

Exhaust Gas Recirculation System (Variable orifice)

This engine is fitted with an exhaust gas recirculation system (EGR) that taps off exhaust gas (Fig. 104/1) and re-introduces it into the carburetter induction tract at Fig. 104/2. The proportion of gas recirculated is metered by a valve (Fig. 104/3) controlled by manifold pressure. The manifold pressure is sensed at a throttle edge tapping (Fig. 104/4).

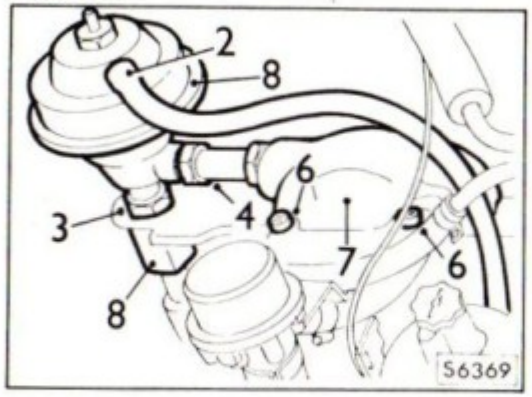
The valve is calibrated so that no gas is recirculated when the throttle butterfly valve is closed, or when the manifold pressure is below a specific figure.

The gas is drawn from a point between No. 1 and No. 2 cylinder exhaust pipes and led, via a heavily insulated stainless steel pipe, to the EGR valve. The mixture of gasoline/air and exhaust gas is then burnt by the engine combustion process to further reduce the pollution level.

If it is required to remove the exhaust manifold heat shield, the union securing the EGR pipe must be released before the adaptor securing the heat shield is moved. Restrain the adaptor while loosening the union nut.

The adjustment screw and locknut on top of the diaphragm unit **MUST NOT BE MOVED.**

Fig. 105



Exhaust Gas Recirculation Valve
Remove and refit (Fig. 105)

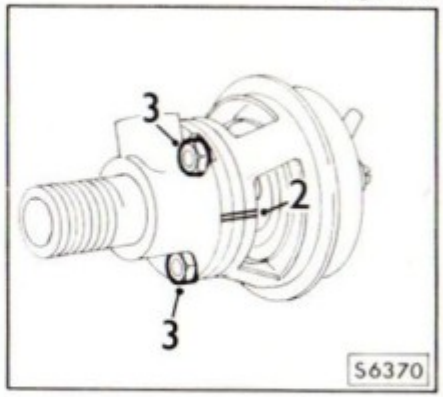
Removing

1. Disconnect battery.
2. Pull vacuum pipe from EGR valve.
3. Slacken locknut on top of EGR valve bracket.
4. Unscrew union nut at EGR valve delivery port.
5. Separate gulp valve inlet elbow from air cleaner backplate.
6. Remove four crosshead screws securing secondary throttle housing cover to housing.
7. Carefully separate cover from housing and move delivery pipe from EGR valve.
8. Restrain EGR pipe and screw valve from tube nut.
9. Check condition of housing cover gasket and, if necessary renew.

Refitting

10. Ensure locknut fitted to EGR valve at top of thread.
11. Locate bracket over thread and screw valve into EGR pipe tube nut; offer secondary throttle housing cover into position and screw valve into nut until delivery pipe lines up with delivery port.
12. Secure cover, gulp valve bracket and EGR valve bracket into position using four crosshead screws and spring washers.
13. Secure delivery pipe tube nut.
14. Restrain EGR pipe and tighten locknut.
15. Fit vacuum pipe to EGR valve.
16. Fit gulp valve intake elbow to air cleaner backplate.
17. Reconnect battery.

Fig. 106



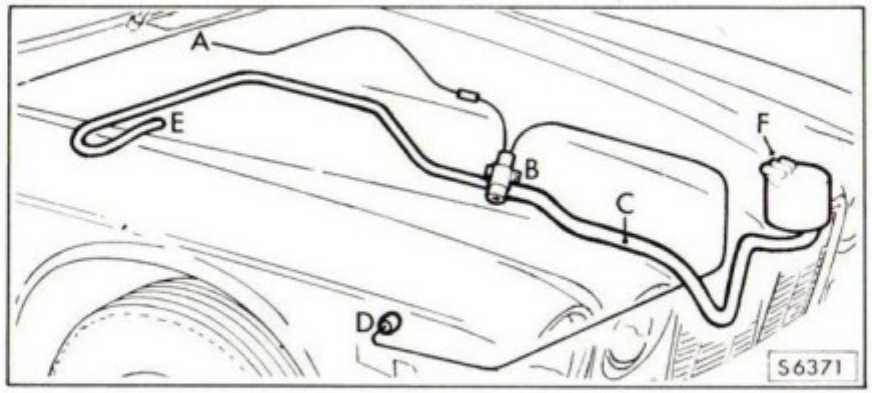
Exhaust Gas Recirculation Valve
Overhaul (Fig. 106)

Dismantling

1. Remove EGR valve (see page 86).
2. Mark across diaphragm unit/valve body joint to ensure correct reassembly.
3. Remove three nuts and separate diaphragm unit from body.

CAUTION: The adjustment screw and locknut on top of the diaphragm unit **MUST NOT BE MOVED**.

Fig. 107



Cleaning

4. Thoroughly clean diaphragm unit using stiff brush and gasoline. Dry with shop airline.
5. Scrape accumulated deposits from valve, valve seat and shaft, and body. Ensure all particles removed and wash body in gasoline. Dry with shop airline.

Inspection

6. Check valve head, shaft and seat for excessive wear or pitting.
7. Check diaphragm for signs of wear or damage.

NOTE: The EGR valve must be renewed if either of the above checks are not satisfactory.

Reassembling

8. Offer valve into body, and secure diaphragm unit orientated correctly, using three nuts.
9. Refit EGR valve.

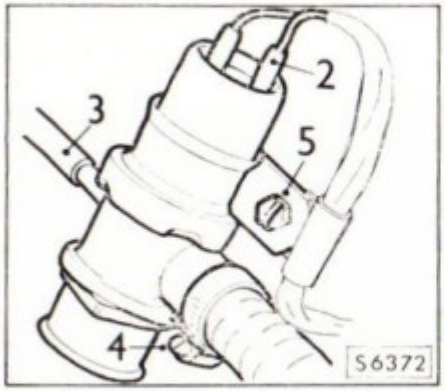
Anti run-on System (Fig. 107)

To prevent any tendency of the engine to run-on when the ignition is switched off, an anti run-on system is fitted. The system comprises a solenoid valve, an additional oil pressure switch and an extra contact in the ignition switch.

When the ignition switch 'A' is turned off, a voltage is applied to a solenoid valve 'B' in the evaporative loss canister purge pipe 'C'. The solenoid valve is connected electrically in series with an oil pressure switch 'D' that is closed while oil pressure exists, and therefore operates to close the purge pipe to atmosphere. The solenoid valve simultaneously applies manifold pressure, 'E', via the evaporative loss canister, to the interior of the carburetter float chambers via pipe 'F'. This equalizes pressures on both sides of the carburetter jets and prevents fuel flow past the metering needles.

When the engine stops, lubricating oil pressure falls and opens the pressure switch; this removes the electrical supply from the solenoid which relaxes and re-opens the purge pipe to atmospheric pressure.

Fig. 108



Anti run-on Valve
Remove and refit (Fig. 108)

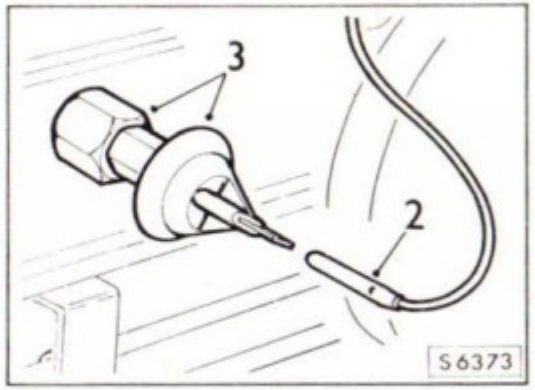
Removing

1. Disconnect battery.
2. Pull electrical connectors from solenoid.
3. Pull rubber manifold pressure tube from valve.
4. Release clip securing evaporative loss canister purge pipe to valve.
5. Slacken setscrews securing clip and remove valve downwards.

Refitting

Reverse operations 1 to 5; do not overtighten setscrews.

Fig. 109



Anti run-on Pressure Switch
Remove and refit (Fig. 109)

Removing

1. Disconnect battery.
2. Beneath car at right-hand side of engine to **rear** of oil filter housing, pull connector from pressure switch.
3. Restrain adaptor and unscrew pressure switch.

Refitting

4. Fit new pressure switch on new copper washer.
5. Fit connector.
6. Reconnect battery, start engine and check for leaks.
7. Switch off engine.

Fig. 110

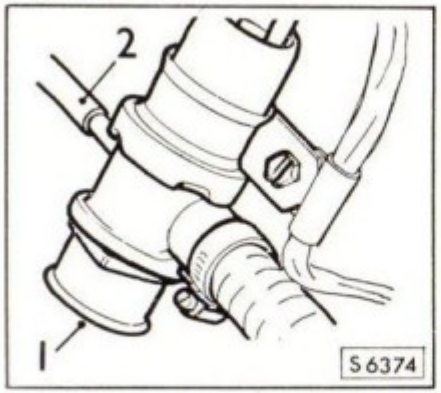
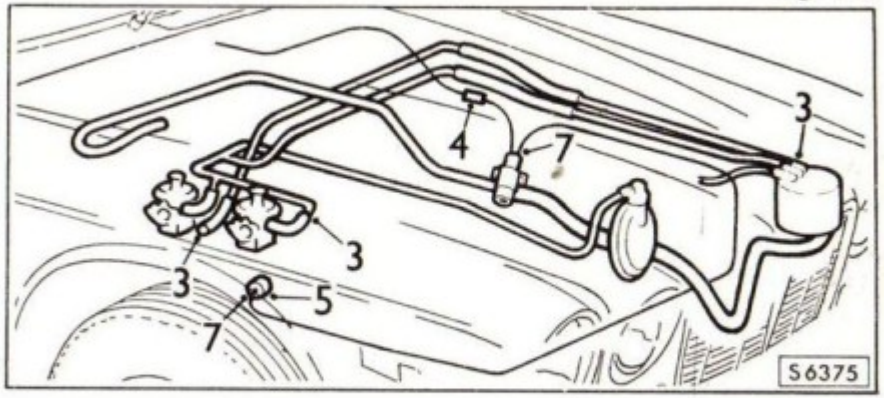


Fig. 111



Anti run-on System

Testing (Figs. 110 & 111)

If it is suspected that the anti run-on system is inoperative carry out the following tests in the order given.

1. With engine running at idle speed, use finger from beneath valve to raise plunger and hold. If engine does not stop, continue with operations 2 and 3. If engine does stop, continue with operations 4 to 8 inclusive.
2. Check vacuum tube between inlet manifold and anti run-on valve on wing valance. Resecure or renew as necessary.
3. Check security of float chamber vent pipe, fuel tank vent pipe, carburetter balance pipe and canister purge pipe at canister and engine. Check for splits. Resecure or renew as necessary.
4. Check in-line fuse adjacent to valve. If fuse is faulty fit replacement, if not, continue with operation 5.
5. Remove air cleaner cover and filter element and pull cable from oil pressure switch to **rear** of oil filter bowl.
6. Start engine. Short oil pressure switch cable to block and switch engine off. If engine does not run on, renew oil pressure switch, remake connections and replace air cleaner. If engine does run on, continue with operation 7.
7. Check security of all electrical connections in system, and ensure 12V present at anti run-on valve and pressure switch with ignition switch off. If all satisfactory, renew valve.
8. Refit all electrical connectors and air pipes. Refit air cleaner.

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