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THE  
**BRISTOL TYPE 410 CAR**

**INSTRUCTION  
MANUAL**

BRISTOL CARS  
 FILTON, BRISTOL, ENGLAND

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YOUR BRISTOL car has been built and tested with every possible care.

We urge you, or the person responsible for the upkeep and maintenance of your car, to read this instruction book thoroughly and to carry out the servicing and inspection procedure as and when advised.

This will ensure the best running results and reliability.

Negligence can result in unnecessary troubles and eventual cost or, in extreme cases, even the safety of yourself and your passengers.

## GENERAL DATA

### Dimensions

Track, front	4 ft. 6 ins.
Track, rear	4 ft. 7 ins.
Toe-in	$\frac{1}{8}$ ins.
Wheelbase	9 ft. 6 ins.
Length	16 ft. $1\frac{1}{2}$ ins.
Width	5 ft. 8 ins.
Height	4 ft. 11 ins.
Unladen weight	3,528 lb.
Wheel camber (front)	Zero at kerb weight
Castor angle	+ $\frac{1}{2}^{\circ}$ at kerb weight, Manual Steering + $1^{\circ}$ at kerb weight, Power Steering

### Tyres

Size	6.70 x 15
Normal pressure f & r.	30 lb/sq.in. (2.109 kg/sq.cm.)
High speed pressure f & r.	34 lb/sq.in. (2.42 kg/sq.cm.)
Ground clearance (unladen)	$6\frac{1}{2}$ ins.

### Capacities

Petrol tank	18 gallons (Imp.) (82 litres) incl. $2\frac{1}{2}$ gall. reserve (11 litres)
*Engine sump	$8\frac{1}{2}$ pints (4.83 litres)
Automatic transmission	$15\frac{1}{2}$ pints (8.80 litres)
Rear Axle	3 pints (1.7 litres)
Steering box, manual	$\frac{1}{2}$ pint (0.28 litres)
Steering box, power-assisted	$2\frac{1}{2}$ -3 pints (1.7 litres) approx.
Water	$32\frac{1}{2}$ pints (18.5 litres)

### Engine

Cylinders	V - 8
Bore	99.31 m/m (3.91 in.)
Stroke	84.07 m/m (3.312 in.)
Cubic Capacity	5,211 c.c. (318 cu.in.)
Firing Order	1, 8, 4, 3, 6, 5, 7, 2
Tappet clearance, hot (with engine running)	Inlet                      Exhaust .010 in.                      .018 in.
Spark Plugs (Autolite A.32) (Prestolite 1432)	Gap .035 ins.
Contact Breaker gap	.014 ins. - .019 ins.
Ignition timing	$7\frac{1}{2}^{\circ}$ before t.d.c. at 500 r.p.m. (on crankshaft pulley)

### Valve timing

Inlet	
Opens	$13^{\circ}$ b.t.d.c.
Closes	$55^{\circ}$ a.b.d.c.
Exhaust	
Opens	$51^{\circ}$ b.b.d.c.
Closes	$17^{\circ}$ a.t.d.c.
5-Star	100 Octane

### Recommended Fuel

\* If Chassis Number has suffix "L" the sump capacity is  $10\frac{1}{2}$  pints (5.96 litres).

MAINTENANCE CHART - TYPE 410

	PERIODIC MAINTENANCE ROUTINE																		
	1000	2000	4000	5000	6000	8000	10000	12000	14000	15000	16000	18000	20000	22000	24000	25000	26000	28000	30000
CHANGE ENGINE OIL	•	•	•		•	•	•	•	•		•	•	•	•	•		•	•	•
CLEAN AND ADJUST SPARK PLUGS	•				•		•				•		•				•		•
CLEAN AND ADJUST DISTRIBUTOR POINTS	•				•		•				•		•				•		•
CHECK AND ADJUST BELT TENSION	•				•		•				•		•				•		•
CHECK FOR OIL AND WATER LEAKS	•				•		•				•		•				•		•
WASH OIL FILLER CAP	•	•	•		•	•	•	•	•		•	•	•	•	•		•	•	•
AUTOMATIC TRANSMISSION MAINTENANCE SERVICE																			
CHECK LEVEL OF TRANSMISSION FLUID	•				•		•				•		•				•		•
REAR AXLE OIL CHECK	•				•		•				•		•				•		•
BRAKE PEDAL - CHECK AND ADJUST	•				•		•				•		•				•		•
STEERING BOX - CHECK OIL LEVEL (Manual Box)	•				•		•				•		•				•		•
CHANGE OIL FILTER ELEMENT (Engine)		•			•		•		•		•		•		•		•		•
DISTRIBUTOR CAM LUBRICATION					•		•				•		•				•		•
MANIFOLD HEAT CONTROL VALVE APPLY SOLVENT		•	•		•	•	•	•	•		•	•	•	•	•		•	•	•
TOP UP SCREEN WASHER JAR		•	•		•	•	•	•	•		•	•	•	•	•		•	•	•
CHECK BRAKE FLUID LEVEL INDICATOR		•	•		•	•	•	•	•		•	•	•	•	•		•	•	•
CLEAN AIR FILTER					•		•				•		•				•		•
CHECK CONDITION OF SPARK PLUG LEADS					•		•				•		•				•		•
CLEAN AND GREASE BATTERY TERMINALS					•		•				•		•				•		•
CHECK TIGHTNESS OF PROPELLER SHAFT BOLTS					•		•				•		•				•		•
REAR AXLE OIL CHANGE (or annually if less)	•																		
GREASE REAR HUBS (or annually if less)					•		•				•		•				•		•
INSPECT BRAKE PADS					•		•				•		•				•		•
LUBRICATE PETROL FILLER MECHANISM					•		•				•		•				•		•
LUBRICATE DOOR LOCKS AND HINGES					•		•				•		•				•		•
CHECK AND ADJUST TAPPETS	•																		
CHECK COMPRESSION																			
CLEAN CARBURETTORS AND JETS																			
CHECK CARBURETTOR SETTINGS																			
CLEAN ENGINE																			
CHECK FRONT AND REAR ENGINE MOUNTINGS																			
CHECK AND ADJUST ENGINE CONTROLS																			
LUBRICATE DISTRIBUTOR WICK AND CUP																			
CHANGE FUEL FILTER ELEMENT UNIT																			
CHANGE TRANSMISSION FLUID AND FILTER																			
FRONT HUBS - CLEAN AND RE-PACK (or annually if less)																			
GREASE PROPELLOR SHAFT - FRONT AND REAR JOINT																			
STEERING BOX - ADJUST IF NECESSARY (Manual Box)					•		•				•		•				•		•
TOE-IN - CHECK AND ADJUST																			
TEST HEAD, SIDE AND TAIL LAMPS																			
CHECK PANEL LIGHTS																			
CLEAN SEAT RUNNERS																			
CHECK CONDITION OF WIPER BLADES																			
CHECK CABLE CONNECTORS AND LOOM																			
CHECK REAR AXLE ALIGNMENT	•																		
CHECK CONDITION OF ALL BRAKE PIPES AND CONNECTIONS					•		•				•		•				•		•
CHECK TORSION BAR HEIGHTS																			
CHANGE AIR FILTER ELEMENT																			
CHECK EXHAUST MOUNTINGS																			
CLEAN ALTERNATOR																			
CHECK RUBBER SEAL AT GEARBOX REAR																			
CHECK RUBBER SEALS ON STEERING AND SUSPENSION JOINTS (or annually if less)																			
INSPECT BREATHER VALVE ON ROCKER COVER					•		•				•		•				•		•
CHANGE BREATHER VALVE ON ROCKER COVER																			
CHECK BRAKE VACUUM HOSES					•		•				•		•				•		•
UNIVERSAL JOINT ON STEERING COLUMN (Check)																			
PROPELLER SHAFT JOINTS - GREASE																			
CHECK FUEL PIPE CONNECTIONS - FRONT & REAR																			
SERVICE POWER STEERING SYSTEM																			
CHECK POWER STEERING HOSES & CONNECTIONS					•		•				•		•				•		•

MAINTENANCE AND SERVICING

WEEKLY

- BATTERY Check level and top up if necessary
- TYRES Check pressures and wear
- ENGINE Check oil level
- TRANSMISSION Check oil level

PERIODICALLY

- Check disc brake friction pads for wear -  $\frac{1}{8}$  inch minimum permissible.
- Inspect water system hoses for condition.
- Check water level in radiator, WHEN COLD.
- Check water system joints for leakage.
- Check and rectify oil leaks.
- Check battery for condition.
- At 6,000 mile intervals, or every 6 months, whichever occurs first, check the condition of the brake vacuum hoses, and all brake pipes.

NOTE. Checking Front Suspension and Steering Joints

The rubber seals on all suspension and steering joints should be checked at intervals of 10,000 miles to ensure that the seals are intact and waterproof. A damaged seal, if neglected, can lead to rapid wear of the joint.

Whilst examining the condition of the seals a check should be made to ensure that the ingress of dirt or water has not caused wear, particularly at the top and bottom joints of the stub axle carrier.

This can best be done by jacking up each front wheel in turn under its spring pan, using a box suitably placed under the diagonally opposite rear corner of the chassis frame or rear bumper to react against the weight transfer and allow the front wheel to lift free from the floor.

With the main spring load removed from the lower suspension joint and with the wheel removed, the stub axle assembly can be shaken to determine if slackness is present.

Should the check indicate slackness at either top or bottom joint, a strip examination of the suspect joint should be made to determine its condition.

**FACTORY**  
**SERVICE AND SPARES**

BRISTOL CARS FILTON BRISTOL ENGLAND

TELEPHONE ... .. BRISTOL 693831,  
TELEGRAMS ... .. AVIATION, BRISTOL,  
TELEX ... .. 44163

FOR SERVICING ... TELEPHONE EXTENSIONS 45 and 112

FOR SPARES ... .. TELEPHONE EXTENSIONS 84 and 117

TO SAVE TIME AND DELAY IN CORRESPONDENCE OR  
WHEN ORDERING PARTS ALWAYS QUOTE THE CHASSIS  
NUMBER e.g. 410/7401.

THE CHASSIS IDENTIFICATION PLATE IS ATTACHED TO THE  
TOP RADIATOR SHROUD WITHIN THE ENGINE BAY.

FOR CONVENIENCE FILL IN THE FOLLOWING PARTICULARS:

CAR CHASSIS NUMBER 410/

IGNITION AND DOOR KEY NUMBER

PETROL FILLER KEY NUMBER

BOOT DOOR KEY NUMBER

Electrical Wiring Diagram  
may be obtained from  
Bristol Cars  
on request.

## ENGINE AND CHASSIS RECOMMENDED

### LUBRICANTS AND CAPACITIES

#### ENGINE CAPACITY                      ENGINE LUBRICATION

##### Above 10°F

Including the Oil Filter 8½ pints (Imp.) (4.83 Litres)	Mobil Special	10W/30 or
	Mobil Super	10W/40
Excluding the Oil Filter 6½ pints (Imp.) (3.69 Litres)	Esso Extra	10W/30 or
	Esso Extra	20W/50
	BP Energol Super	
	Viscostatic	10W/40 or
If the Chassis No. has the suffix "L", e.g. 410/7401L add 2 pints.	BP Energol Super	
	Viscostatic	20W/50
	Shell Super	10W/40 or
	Shell Super	20W/50
	Castrolite	10W/30 or
	Castrol XL	20W/50
	Regent Havoline	10W/30 or
	Regent Havoline	20W/50

##### Below 10°F

Mobil Special	10W/30
Esso Extra Motor Oil	10W/30
Energol Visco Static	
Super	10W/40
Shell Super Motor Oil	10W/40
Castrolite	10W/30
Havoline	10W/30

## COACHWORK

The exterior of the car is painted with a cellulose paint of a high gloss finish. To maintain this finish some care is necessary.

The car should be washed at least once a week and a protective coat of wax polish is desirable to prevent contamination of the surface from weathering.

If rainspots are allowed to dry on the car any residuary dirt left will etch into the cellulose if not removed within a reasonable time, particularly in areas with high atmosphere pollution.

When using wax polish it is essential to wash the car thoroughly first to remove road haze, spots, grit etc.

Dependent on the type of polish used and the conditions in which the car is operating waxing should be renewed every 3 to 6 months. The old wax must be removed first with a cleaner, the application of new polish to a surface of old, dirty polish will lead to a dull mottled finish.

The leather upholstery can be cleaned with warm water and good toilet soap, drying carefully after, especially between the flutes.

Occasional treatment with hide food will keep the leather supple and preserve the surface.

Chromium plated parts may be cleaned with clean water and dried off with a duster.

Door locks, hinges, safety catches etc., should be lubricated regularly to prevent binding and undue wear.

Window channels should be lubricated to ensure free movement of the glasses. The "aerosol" lubricants sold for this purpose are suitable and easy to use. Wipe of any surplus falling on the paint or interior woodwork.

## BOOT

The boot lid is self supporting and is externally locked with its own key. Turning the button of the lock will release the lid.

A light, in circuit with the side lamps, is provided beneath the tool shelf for loading and unloading at night.

## Front Seat Adjustment

Both front seats are adjustable for leg reach and backrest.

To adjust for leg reach, move outwards the lever at the front of the inner seat slide. This will release the seat from its location slot and the required position can then be selected.

The squab or backrest of the seat is fairly heavily spring loaded forwards. To select a position, lift the small knobbed lever on the inner seat hinge and press firmly backwards to the requirement. To bring forward, lift the lever, and hold the backrest firmly against the spring pressure until the desired position is obtained.

AUTOMATIC TRANSMISSION CAPACITY	AUTOMATIC TRANSMISSION LUBRICATION
------------------------------------	---------------------------------------

15½ pints (Imp.)  
(8.80 Litres)

Mobil ATF 200  
Esso Automatic Transmission  
Fluid  
BP Automatic Tran. Fluid Type A  
Shell Donax T6  
Castrol TQ  
Regent Texamatic Fluid.

REAR AXLE CAPACITY	REAR AXLE LUBRICATION
--------------------	-----------------------

3 pints (Imp.)  
(1.7 Litres)

Mobilube GX.90  
Esso Gear Oil GP.90/140  
BP Gear oil SAE 90 EP  
Shell Spirax 90 EP  
Castrol Hypoy  
Regent Multigear Lubricant EP90

STEERING BOX CAPACITY	STEERING BOX. LUBRICATION.
--------------------------	-------------------------------

Power-assisted Steering  
2½-3 pints (Imp.)  
(1.4-1.7 Litres)

Veedol ATF  
Special 3433

Manual Steering.  
½ pint (Imp.)  
(0.28 Litres)

As for Rear Axle

## PROPELLOR SHAFT

Sliding Spline NOT to be greased  
Front & Rear Joints  
Regent Marfak 0.



#### DISTRIBUTOR LUBRICATION

Mobil - As engine  
Esso - As engine  
B.P. - As engine  
Shell - As engine  
Castrol Everyman Oil  
Regent - As engine

#### EXHAUST MANIFOLD HEAT CONTROL VALVE LUBRICATION

Mopar Manifold Heat Control Valve Solvent.

#### FRONT WHEEL HUBS. REAR SUSPENSION UNITS. REAR AXLE HUBS.

Mobilgrease M.P.  
Esso Multi-purpose Grease H.  
Energrelax L.2.  
Shell Retinax A  
Castrol LM  
Regent Marfak All-purpose

#### BRAKE FLUID

Castrol/Girling Crimson Disc Brake Fluid.  
Specification SAE 70R1 and SAE 70R3

#### POINTS NOT REQUIRING LUBRICATION SERVICE.

#### ENGINE

Water Pump.  
Starter Motor Bearings.  
Automatic Choke Linkage.

Maintain the pressures as a regular routine check, using a pressure gauge of known accuracy when the tyres are cold. Pressures can increase considerably in heat and with hard driving, but this normally needs no adjustment.

Replace worn tyres in pairs, and arrange the wheels so that both front tyres are evenly paired. Oddly worn tyres on the front can affect steering accuracy, while one new and one well worn tyre at the rear tends to keep the differential in constant action.

Investigate immediately any uneven wear on either front tyre, since this may be caused by some misalignment or slackness in the front suspension, front hubs or steering.

#### Fitting new Tyres

When new tyres and/or tubes are to be fitted, correctly align any manufacturers markings and see that the complete wheel and tyre is correctly balanced. The recommended tyres to fit are:-

Avon Turbospeed .. .. Mk.4 .. .. 6.70 x 15

#### Tyre Pressures

Normal Cruising .. .. Front and Rear.. .. 30 p.s.i.  
Sustained High Speed.. .. Front and Rear.. .. 34 p.s.i.

#### BONNET

The Bonnet has spring balanced hinges at the rear edge and can be released by pulling the knob located beneath the dashboard see Fig.4, when it will open sufficiently at the front for the fingers to be inserted and the safety catch released. It can then be raised partially or to its full extent and is self supporting in any position.

To close, lower the bonnet and press the front to lock.

engage the lip of the jack body beneath the lifting pin on the chassis bracket.

#### To fit the Spare Wheel

To fit the spare wheel in the shortest time, use the following procedure. If possible, set the car on level ground and apply the handbrake securely.

Remove the spare wheel, wheel brace and jack from the L.H. wing valance.

With the end of the wheel brace, prise off the snap-on-cap from the wheel to be changed, and loosen the five wheel nuts with the wheel brace.

Remove the relevant jacking point cover, insert the jack and raise the side of the car.

Remove the wheel nuts and take off the wheel. Fit the spare wheel and screw on the five wheel nuts firmly but not tight.

Lower the car to the ground then tighten alternate wheel nuts with the brace until they are all secure.

Replace the snap-on-cap.

Remove the jack and replace the cover plate.

Stow the jack first into the wing compartment, then stow the removed wheel, secure with the clamp, fit the wheel brace into the clips and lock the compartment.

#### Tyres

The correct maintenance of tyres is an extremely important factor in a car of high performance. Incorrect pressure, odd pressures and wheels out of balance, greatly impair the safety of high speed travel and seriously affect tyre life, steering accuracy and general road worthiness. To obtain the most efficient road performance from the Type 410 car the recommended tyres and pressures should be used wherever possible.

#### CHASSIS

- \* Steering Joints.
- \* Front Suspension Top and Bottom Joints.  
Wishbone Bushes.  
Steering Idler Box Bushes.  
Brake Pedal Bushes.  
Steering Column Bushes.  
Rear Suspension Arms.  
Watts Linkage-Rear Suspension.  
Throttle Control Bushes.  
Handbrake Cable.
  
- \* See Maintenance Chart

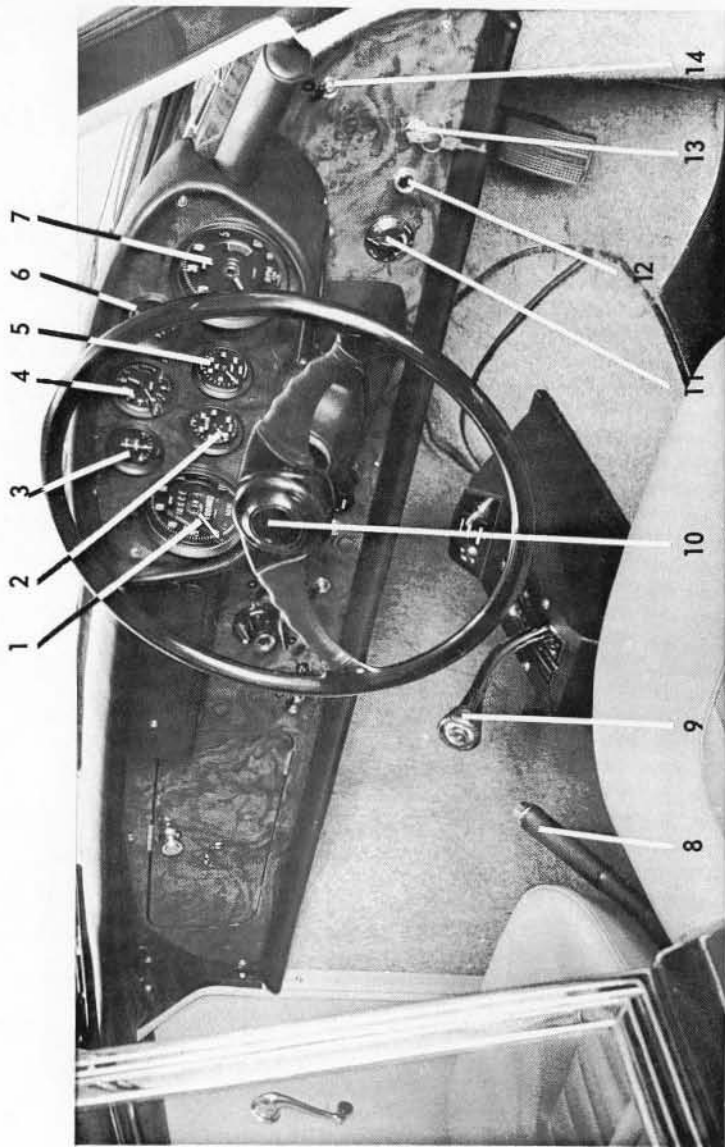


Fig. 3. Instruments and Controls - R.H. View.

wheel clamp and remove the spare wheel. Take out the jack which is stowed behind the spare wheel.

#### Jacking

A jacking point is provided in a central position on each side of the car.

Referring to Fig.30 lift the carpet at the side of the front seat, and this will expose a circular dished plate with a cross



Fig.30 Car Jacking Position

handle release spring. Pull on the spring, which will release the plate. Insert the base of the jack through the aperture, then

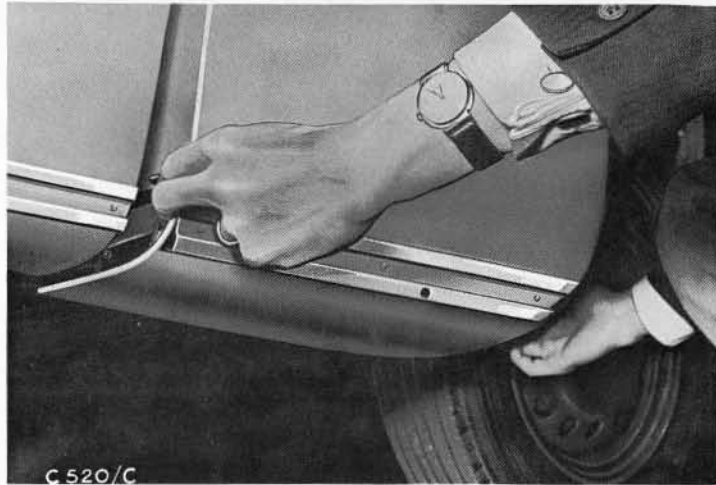
## ROAD WHEELS AND TYRES

### Changing a Wheel

The spare wheel, jack and wheelbrace are all housed in the L.H. Wing Bay.

To open, insert the squared 'T' key, supplied with the car tool kit, into the escutcheon on the lower edge of the wing valance and turn it to release the lock. The door will only open as far as the safety catch.

Insert the fingers through the lower rear end of the slightly raised door, see Fig.29, and lift the catch allowing the door to be raised to its full extent.



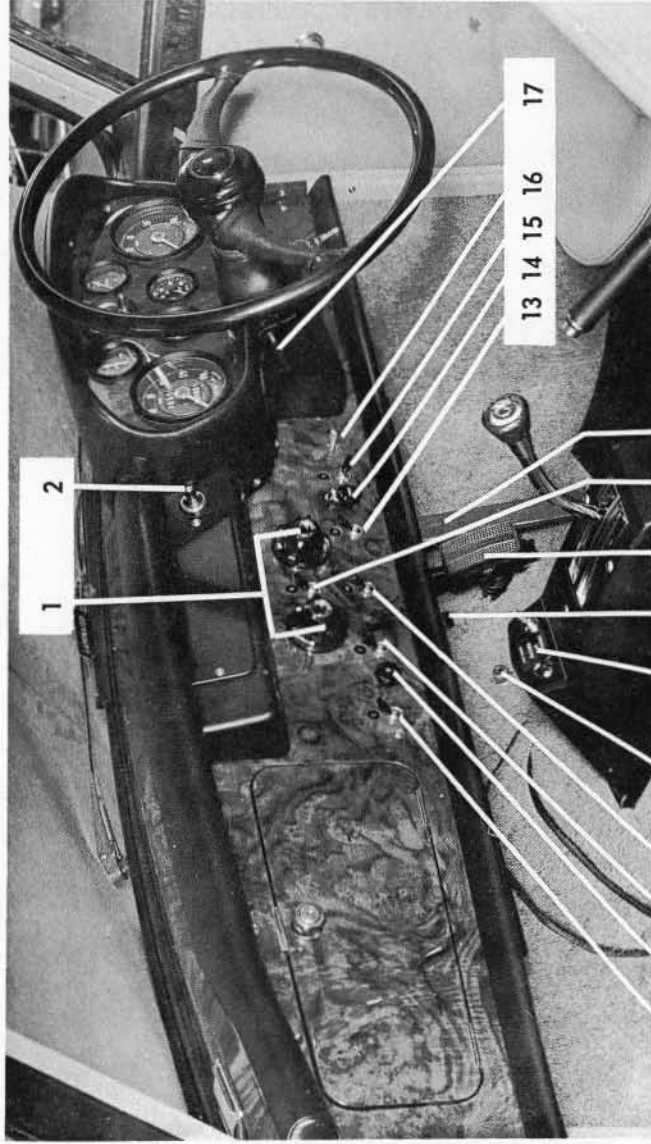
**Fig.29 Opening the Wing Bay**

Remove the wheel brace from its clip on the face of the wheel stowage compartment, unscrew the bolt retaining the

## INSTRUMENTS & CONTROLS

### R.H. VIEW

1. Speedometer
2. Water Temperature Gauge.
3. Ammeter.
4. Clock.
5. Oil Pressure Gauge.
6. Fuel Gauge.
7. Engine Revolution Counter.
8. Handbrake Lever.
9. Gearlever.
10. Horn Push.
11. "Selectaride" Switch, for rear Shock Absorbers.
12. Brake Fluid Warning Light.
13. Ignition and Starter (Key) Switch.
14. Main Lighting Switch.



3 4 5 6 7 8 9 10 11 12

Fig. 4. Instruments and Controls - L.H. View

## HAZARD WARNING LIGHTS

Should the car be stopped for any reason in such a place that it presents a danger to other road users the Hazard Warning Light Switch on the gearchange console can be used to operate all Direction Indicators simultaneously, giving a clearly visible warning to approaching drivers that the road is obstructed.

Boot Lamp Lucas Model 474 Part No.052477  
Bulb - Rival 12v.6w.  
Switch - Lucas Model 94 Part No.035436D

This lamp is mounted centrally beneath the tool compartments and is wired in circuit with the side lamps. A switch situated under the hinge on the R.H. side operates the light automatically when the boot door is opened and the side lamps are on.

#### Direction Indicator & Headlamp Flasher

Flasher Unit - Lucas Model FL.5 Part No.35020L.

The Flasher lamps are controlled by the indicator switch positioned on the left hand side of the steering column, the flasher unit being housed inside the car behind the dashboard.

When the indicator switch is in operation - UP for right turn, DOWN for left turn - a warning light AMBER embodied into the revolution counter will continue to flash until the lever automatically returns to its neutral position. A fore and aft movement of the lever will flash all four headlamps.

Glove Box Lamp Lucas Model L.550 Part No.52325B  
Lucas Bulb 987 12v. 2.2w.

This light embodied into the top front of the glove box is operated by its own push button switch adjacent to the light. It is wired in circuit with the side lamps.

#### Radio

The radio installation is classed as an optional extra. The front speaker is situated in the roof over the dashboard and the second speaker is fitted into the rear squab shelf.

The balancing of the speakers is controlled by a rotary switch, See Fig.4, to the right of the radio controls. By rotating the switch fully clockwise the rear speaker becomes non-operative, and similarly by rotating the switch fully anti-clockwise the front speaker becomes non-operative.

If a radio is not installed at the Works a dummy panel takes its place on the dashboard, the speaker grille in the roof and rear squab are fitted but not the speakers.

## INSTRUMENTS & CONTROLS

### L.H. VIEW

1. Heater Controls.
2. Cigar Lighter.
3. Courtesy Light Switch (interior).
4. Panel Light (rheostat) Switch.
5. Extra Switch (for Foglamp, if fitted).
6. Switch for Engine Fans (overriding).
7. Headlamp Dipper Switch.
8. Hazard Warning Light Switch.
9. Cold Air Ventilation Lever Control.
10. Footbrake Pedal.
11. Heater & Ventilation Blower Switch.
12. Accelerator Pedal.
13. Rear Window Demist Switch.
14. Windscreen Wiper and Screenwash Switch.
15. Petrol Reserve Switch.
16. Speedometer Trip Reset Knob.
17. Direction Indicator and Headlamp Flashing Switch.

## STANDARD TOOL KIT & STOWAGE

TOOL ROLL Containing:-

SPANNER 1/8" x 3/16" WHIT.

SPANNER 1/4" x 5/16" WHIT.

SPANNER 3/8" x 7/16" WHIT.

SPANNER 3/8" x 7/16" A/F.

SPANNER 1/2" x 9/16" A/F.

SPANNER 5/8" x 3/4" A/F.

PLIERS.

SCREWDRIVER.

SOCKET 14 m/m with RUBBER INSERT.

SOCKET HANDLE.

RUBBER BLEEDER TUBE (IN TIN).

BLEEDER WRENCH.

SET OF FEELER GAUGES.

IN BOOT

BEVELIFT JACK

L.H. WING BAY.

WHEELBRACE

CLIPPED IN L.H. WING BAY.

SQUARED TEE KEY  
FOR WING BAY

IN DRIVERS DOOR POCKET.

Reverse Lamp

Lucas Model 595 Part No.52567.  
Lucas Bulb No.382.

Rear Number  
Plate Lamp.

Lucas Model 534. Part No.53518.  
Osram Bulb. 12v. 4w.

### Instrument Panel Illumination

The instruments are illuminated as follows:- one bulb in the speedometer, one bulb in the revolution counter, and two bulbs behind the panel serve to light the fuel gauge, ammeter, water temperature gauge and oil pressure gauge.

The bulbs are Lucas 987 12v. 2.2w.

The clock has its own bulb, Philips 12829 12v. 2w.

The switches on the panel are illuminated by three lights, two in the centre and one on the driver's side. Lucas 987.

The panel lights are controlled, in unison, by the rheostat control knob, marked 'P', on the dashboard and are wired in circuit with the side lamps.

In addition the speedometer and revolution counter have two bulbs each for the WARNING LIGHTS.

The bulbs are Lucas 987 12v. 2.2w.

The gearlever indicator is lit by a Lucas 989 bulb, 12v. 6w. This is controlled by the sidelamp switch.

### Courtesy (Interior) Roof Lamp

Festoon Bulb 12v. 6w.

Door Shut Switch - Lucas Model 94 Part No.31175F.

This light is controlled by a switch in both front door pillars and the light comes on when a door is opened, and automatically switches off when the doors are closed.

A switch marked 'C' on the dashboard operates the light when the doors are closed.

The push button in the centre of the steering wheel operates a solenoid relay switch Lucas 6.RA.Part No.33188A situated in the vicinity of the right hand horn.

The horns should give a long period of service without attention, but should they become unsatisfactory, check for any loose connections or loose attachment bolts before rejecting the horn itself.

## LAMPS

### Headlamps

Outer 7 inch dia. Lucas Model F700 MK,X. Part No.58618  
Light Unit. Lucas 7002 60/45W. Part No.54521060.

Inner 5 $\frac{3}{4}$  dia. Lucas Model 5 $\frac{3}{4}$  dia. 1A Part No.58990.  
Light Unit. Lucas Part No.54520172.

These are sealed beam units and in the event of a lamp failure the complete light unit must be changed. A high beam warning light - RED - is incorporated into the speedometer. When the foot operated headlamp DIPPER SWITCH, See Fig.4, is depressed, it alternatively switches the outer headlamp light from the lower power filament to the higher power filament, the inner lamps come into operation and the RED warning light is ON. In the dipped position the inner lamps are out, the outer lamps are on the lower power filament, and the warning light is OUT.

Fog Lamp. ) Lamps optional. Switches provided on  
Spot Light. ) dashboard.

Front Side Lamp Lucas Model 584 R.H. Part No.52506.  
& Flasher L.H. Part No.52507.  
(Clear). Lucas Bulb No.222 (Side).  
Lucas Bulb No.382 (Flasher).

Flasher Repeater. Mazda Bulb No.501 12v, 5w.

Rear Lamp Lucas Model L684 Part No.53283.  
Cluster. (Stop, Lucas Bulb No.380 (Stop & Tail).  
Tail & Flasher). Lucas Bulb No.382 (Flasher).

## ENGINE SPECIFICATION

Canadian manufacture by Chrysler, special for Bristol Cars. Eight cylinder 90° Vee with overhead push rod operated valves and mechanical tappets.

Bore 3.91 inch (99.31 m/m). Stroke 3.31 in. (84.07 m/m).  
Capacity 318 cu.in. (5211 cc.). Compression Ratio 9.0 to 1.  
Power Output 250 BHP at 4400 rpm.  
Maximum Torque 340 lb.ft. at 2800 rpm.

Cast iron cylinder block and cylinder heads. Special high lift camshaft, chain driven, and supported in five main bearings.

Aluminium pistons and forged steel connecting rods. Forged steel crankshaft, statically and dynamically balanced, supported in five main bearings.

Lubrication system by rotary type oil pump with integral relief valve and full flow type oil filter.

Carter 4 choke downdraught carburettor with automatic choke for cold starting and manifold heat control valve for rapid warm up.

Pressurised sealed cooling system 13 p.s.i. by centrifugal water pump circulation thermostatically controlled. There is no engine fan. Twin electric fans are mounted in front of the engine, operated by thermostat control, to ensure maximum cooling irrespective of engine speeds.

S.U. electric Fuel Pump.

Battery and coil, negative earth 12 volt ignition system. Centrifugally and vacuum controlled advance and retard. 14 m/m sparking plugs, coil and distributor.



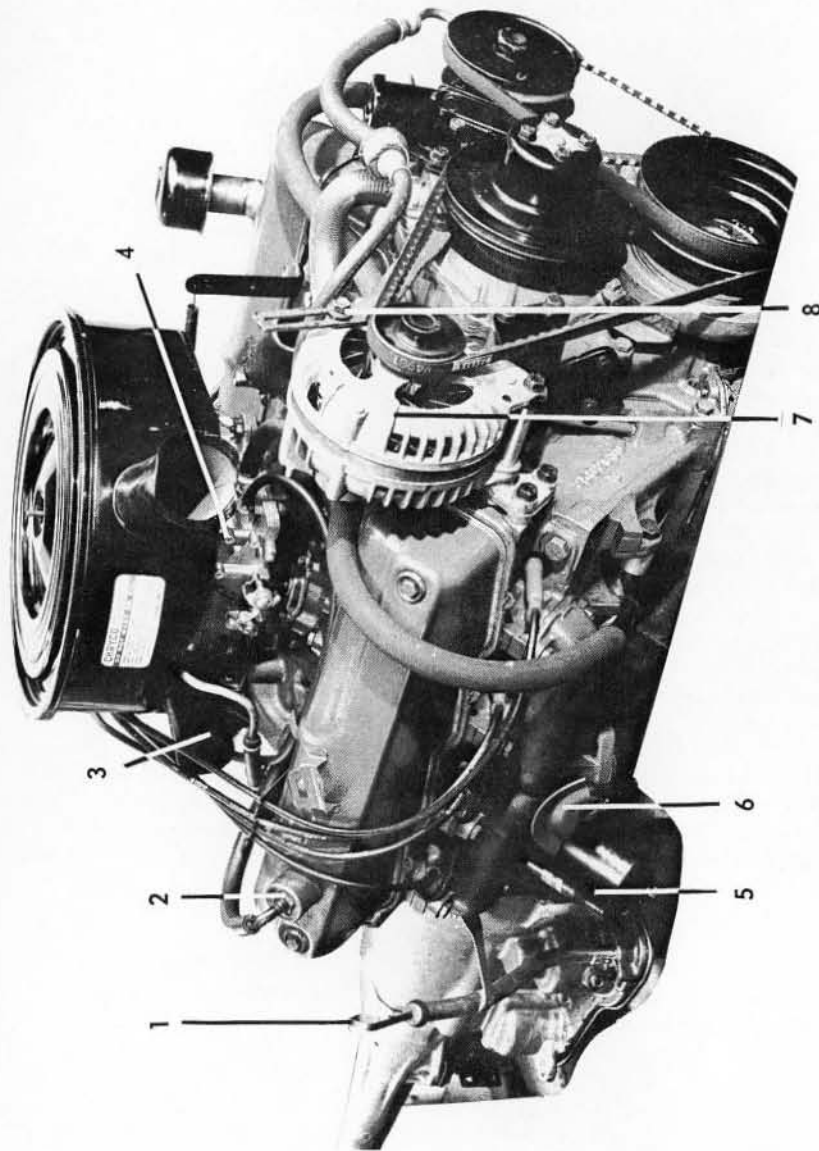


Fig. 5. R.H. View of Engine and Transmission

All accessories protected by a fuse will be inoperative if that fuse is blown.

**CAUTION:** Never replace a blown fuse with one of higher value, as this will only result in damage to accessories if a short circuit occurs.

The voltage regulator controls the output of the alternator according to the load on the battery and its state of charge. When the battery is in a low state of charge the alternator output is high, and this is shown on the ammeter.

#### WINDSCREEN WIPERS

WIPER ARM - Lucas Part No.54711438

WIPER BLADE - Lucas Part No.54711283

The windscreen wiper motor is mounted in the right hand wing bay. The cable transmits motion to the two wheel-boxes beneath the windscreen, which operate the wiper arms and blades.

No adjustment or lubrication is normally necessary as all parts are packed with lubricant on assembly.

The windscreen wiper control knob, marked WIPER, on the dashboard has three operating positions as given on page 63.

A thermostatic cut-out switch is built into the wiper motor to prevent overheating. However, in order to avoid excessive load, the fast speed should only be used in heavy rain. Never use it in snow or on a drying windscreen without the use of the screenwash.

#### HORNS

High Note ... ..	Lucas WT.618	Part No. 69090
Low Note ... ..	Lucas WT.618	Part No. 69087

Dual Windtone horns are mounted behind the grille.

for the running time to permit a fully maintained charge (e.g. short runs in winter months using lamps, starter etc.)

VOLTAGE REGULATOR - Chrysler 2098300

FUSE BOX - LUCAS MODEL 4FJ. PART NO.033283L.

The voltage/current regulator and cut-out are housed in the right hand wing bay.

Two fuses are contained in the fuse block positioned immediately below the regulator. The positions of the fuses are clearly marked A1,A2. (Auxiliary fuse) and A3,A4 (Auxiliary ignition) and they protect certain accessories as follows:

	Independent of the ignition switch	Controlled by the ignition switch
	Head, Side, Tail, Boot and Number Plate Lamps. Headlamp Warning Light. Panel Lights. Ammeter. Horns. Radio. Clock.	Ignition. Selectaride Shock Absorbers (own fuse) Heated Rear Window (own fuse)
Protected by A1,A2 Fuse 60 Amp.	Trickle Charger Socket. Cigar Lighter. Interior Light. Horns. Radio. Clock. Headlamp Flasher.	
Protected by A3,A4 Fuse 35 Amp.		Stop Lamp. Petrol Gauge. Flasher Indicators. Blower Unit. Reverse Lamp. Petrol Reserve Warning Light. Windscreen Wiper Motor. Brake Fluid Warning Light. Manual Control Switch for Fans.

## R.H. VIEW OF ENGINE & TRANSMISSION

### KEY TO FIG. 5

1. Transmission (gearbox) Dipstick and Filler Tube.
2. Crankcase Breather (smog pack).
3. Coil.
4. Carburettor and Air Cleaner.
5. Oil Filter.
6. Exhaust Manifold Heat Control Valve.
7. Alternator (generator).
8. Alternator Belt Adjustment Strap.

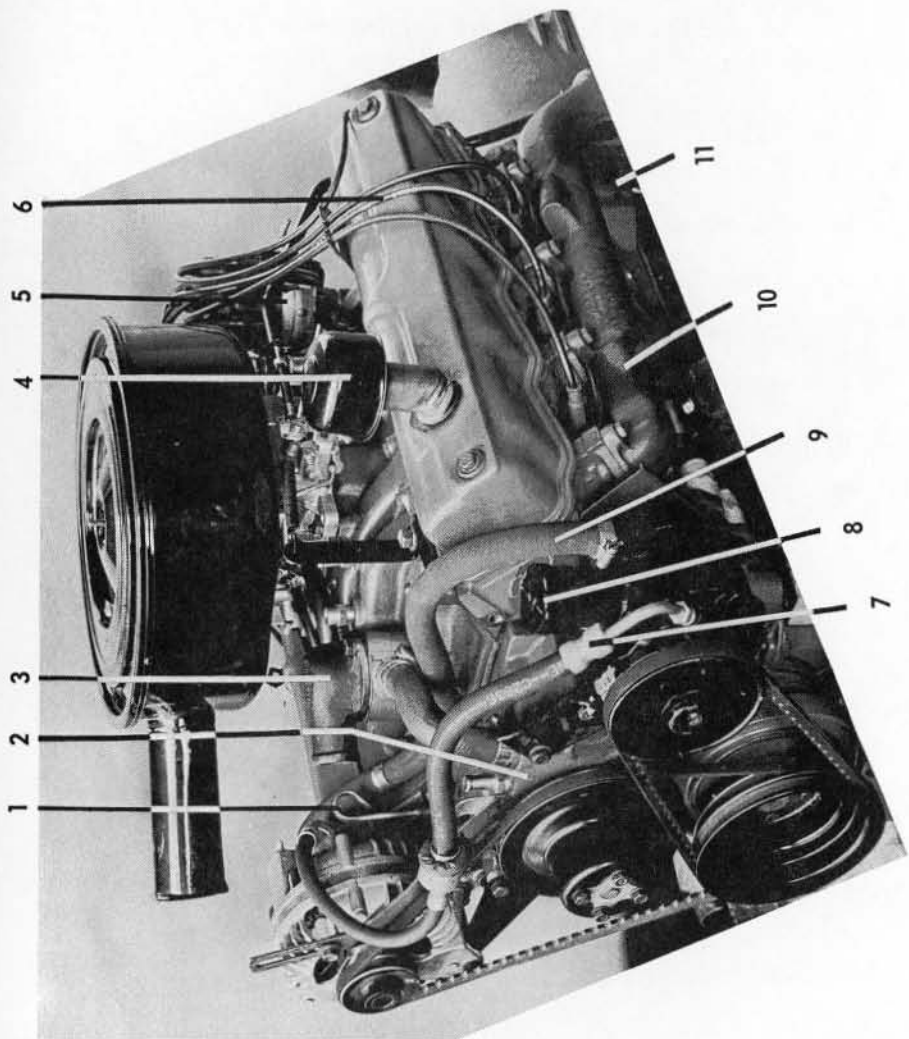


Fig. 6. L.H. View of Engine

## ELECTRICAL SYSTEM

N.B. The system is negative earth.

This is a 12 volt system. Current is supplied by an alternator in conjunction with a voltage regulator with automatic cut-out and a 12 volt 64 ampere battery.

### BATTERY, Dagenite RQ11 Easifil

The battery is housed in the offside wing bay. To open see page 74.

Always keep the top of the battery clean and dry and maintain the fluid level correctly.

When one or more of the float indicators lie flush with the base of the filler trough and no white is visible the battery requires topping with distilled water.

Fill the trough and replace the cover. The water automatically fills the cells to the correct level.

See that the battery is level and firmly clamped into position. The positive and negative connections are of different sizes and it is not normally possible incorrectly to attach them. Keep the battery connections clean, and smear the terminals with vaseline or petroleum jelly before attaching the leads, to prevent corrosion.

### Trickle Charger Socket

An electric supply/feed socket is mounted on the right hand valance, in the engine bay, beneath the bonnet. Since it is direct electrical contact with the battery, this socket may be used for an inspection lamp or for a trickle charger.

The object of the trickle charger is to maintain the battery in a fully charged state when the car is not in use for lengthy periods, or when the output from the battery is too great

## BLOWER SWITCH

UP... .. OFF position.

HORIZONTAL ... .. BLOWER HALF SPEED

DOWN ... .. BLOWER FULL SPEED

Thus, the system can be used normally, with the blower switch OFF, boosted to a second stage with the blower switch horizontal, and boosted further to a third stage with the blower switch down.

## COLD AIR SUPPLY

A lever situated centrally below the dashboard, see pages 6 & 7, controls the supply of cold fresh air into the car. This is a direct air stream which enters the car at the grille just forward of the windscreen. It is completely independent of the heater system and blower.

Any position from shut, lever fully LEFT, to open, lever fully RIGHT, can be used depending on the flow of air required.

The use of the opening rear quarter lights in conjunction with the heater and ventilating system is recommended, wherever possible, for air circulation.

## L.H. VIEW OF ENGINE

### KEY TO FIG. 6

1. Engine Dipstick.
2. Water Pump.
3. Water Outlet Elbow (thermostat inside).
4. Engine Oil Filler Cap.
5. Distributor.
6. Spark Plug Leads.
7. High Pressure Hose for Power-assisted Steering.
8. Oil Pump Filler for Power-assisted Steering.
9. Low Pressure Hose for Power-assisted Steering.
10. Exhaust Manifold.
11. Starter Motor.

## STARTING THE ENGINE

An automatic choke provides the proper fuel mixture for starting, regardless of the season of the year.

The following starting procedure is recommended irrespective of whether the engine is hot or cold.

- (a) Put gearlever to Neutral or Park (N. or P.). The starter motor will not operate if any of the other gears are already engaged. This is a safety feature to prevent the car from being started in gear.

N.B. As a safety precaution keep the handbrake ON when starting the engine.

- (b) Depress the accelerator pedal slowly to approximately  $\frac{1}{4}$  of its full travel and hold it in this position. Do not pump the accelerator pedal (see 'e').
- (c) Turn the ignition switch key to the right (clockwise) to the ignition 'on' position.
- (d) Turn the ignition key further to the extreme right (clockwise) to operate the starter motor. When the engine starts, release the key and it will automatically return to the 'on' or driving position.
- (e) Pumping the accelerator pedal will 'flood' the engine and a strong smell of petrol will be noticeable.

If the engine is flooded with petrol, depress the accelerator pedal slowly to the car floor so that the throttle will be wide open. Holding this position, operate the starter at intervals of about 15 seconds until the engine starts, and release the accelerator pedal to prevent the engine racing.

It is important that the accelerator pedal is depressed  $\frac{1}{4}$  of its travel in order to obtain the fast idling speed, which readjusts itself as the engine warms up. If the accelerator pedal is not depressed the engine will not automatically 'fast' idle.

## HEATER - VENTILATING SYSTEM

This built in system is controlled by two rotating control knobs on the dashboard, see Fig.4, with a blower switch positioned centrally between them.

Air enters the heater through the grille, rear of the bonnet, and below the windscreen.

The various positions of the rotary knobs are given in Fig.28 and they can be used as follows:

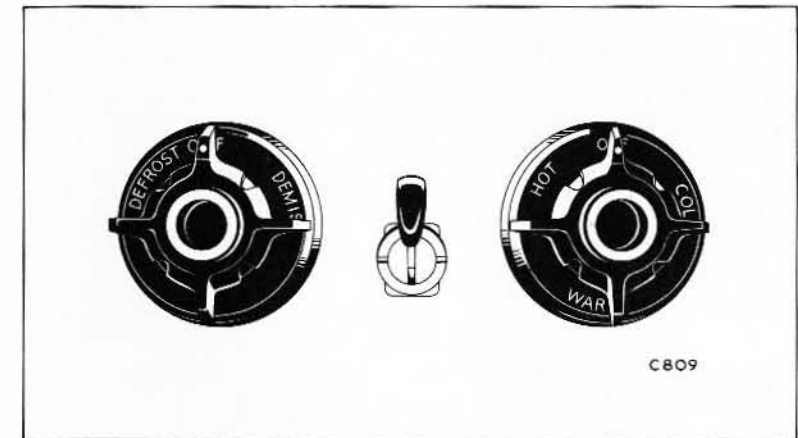


Fig. 28. Heater Controls

### HEAT and VENTILATION CONTROL KNOB

From OFF position, turn clockwise progressively to COLD, WARM and HOT.

### WINDSCREEN DE-MIST CONTROL

From OFF position, turn clockwise progressively to DEMIST AND DEFROST.

Do not operate the Washer for more than 10 seconds at a time, nor when the container is dry, otherwise the motor may be damaged.

The positive connection on the motor should be connected to the live wire from the battery, (green wire).

To adjust the jets insert the end of a pin into the jet holes and turn the jets as desired.

Filling the container is done through the hole covered by the triangular cap in one corner of the container lid. See Fig.27.

NOTE: The car cannot be started by towing, pushing or running downhill. In case of a flat battery use an auxiliary battery and jumper leads connected to the car battery.

#### Cooling Fans

The two cooling fans in front of the engine are electrically operated and thermostatically controlled by a switch embodied into the radiator header tank. They will automatically switch on and off but in the event of failure to do so a manual control push-pull switch to operate the fans has been fitted below the dashboard in the vicinity of the ignition key, See Pages 6 & 7. Note that this switch should only be used if the fans fail to operate automatically. A red warning light shows in the Speedometer dial when the manual control switch is operating.

#### Running in

Avoid high engine revolutions and limit them to 1250 r.p.m. in any gear until the engine is warmed up. This is equivalent to 33 m.p.h. in top gear.

The oil which is added to the engine at the time of assembly should only be used for the first 1000 miles of operation, at which time the engine should be drained and re-filled with an oil as recommended and listed in this book. This may be carried out by the Agent, who sold the car, at the 1000 mile Free Service.

During the first 300 miles stopping and starting the engine should also be kept to a minimum. The maximum speed for running in is 50 m.p.h. and this is best carried out on a road giving variations in speed rather than maintaining a steady speed. After 300 miles the speeds should be increased gradually until a 1000 miles have been covered.

Under all conditions, whether the engine is run in or otherwise, full throttle acceleration and high speeds should be avoided until the engine is thoroughly warmed up.

## ENGINE LUBRICATION AND ADJUSTMENT

As previously stated the oil added to the engine at the factory should only be retained for the first 1000 miles, topping up if and when necessary. From then onwards, oil should be changed regularly for best engine operation and life. The oil change period can vary widely on the type of operation, weather conditions and other operating variables, but as a general rule the average driver would be recommended to change the oil every 2000 miles, with an absolute limit of 4000 miles between changes if the car is operating under good conditions, i.e. mainly long runs.

### Checking the Oil Level

The oil filler and the dipstick positions are shown in Fig. 5.

Never check the oil level with the engine running, if the engine has been running allow time for the oil to drain to the sump. When taking a dipstick reading see that the car is reasonably level, wipe the dipstick and make certain that it is fully inserted.

Oil need not be added until the level drops to the 'add oil' mark on the dipstick, at which time only 2 pints should be added.

### Oil Filter

This unit is positioned as shown in Fig. 5.

The oil filter element should be replaced after the first 2000 miles and thereafter every 4000 miles, preferably to coincide with an engine oil change. Operations in dusty areas will require more frequent filter changes.

To replace the filter element proceed as follows:

From beneath the car, unscrew the centre tube bolt and lift away the complete shell which is partially filled with oil. At the same time, take away the rubber joint ring situated between the filter shell and the cylinder block. Drain the oil,

## TRICO ELECTRIC WINDSCREEN WASHER

The purpose of this system is to allow the wipers to give a clear vision when the windscreen is otherwise dry.

The system is operated by an electric pump, and therefore can be operated for any length of time by pushing the switch.

It is operated by the scalloped knob on the dashboard marked WIPER. See Fig. 4.

TO OPERATE THE SPRAY	Press the knob WIPER and release. If further spraying is required press again and release.
SLOW WINDSCREEN WIPE	Turn WIPER knob clockwise into first position.
FAST WINDSCREEN WIPE	Turn WIPER knob further clockwise into second position.
TO PARK WIPERS	Return the knob to its original position.

The water supply is contained in a container on the left side, rear of the engine, beneath the bonnet, and a swing cover on the lid of the jar allows filling to take place in situ.

It is recommended that Trico Windscreen Washer Solvent XAW-30 is used in the water supply, as it:

- (1) Protects the water from freezing in cold weather.
- (2) It can be used in Summer and Winter and helps to clean the Windscreen.

Do not use Anti-Freeze in the jar.

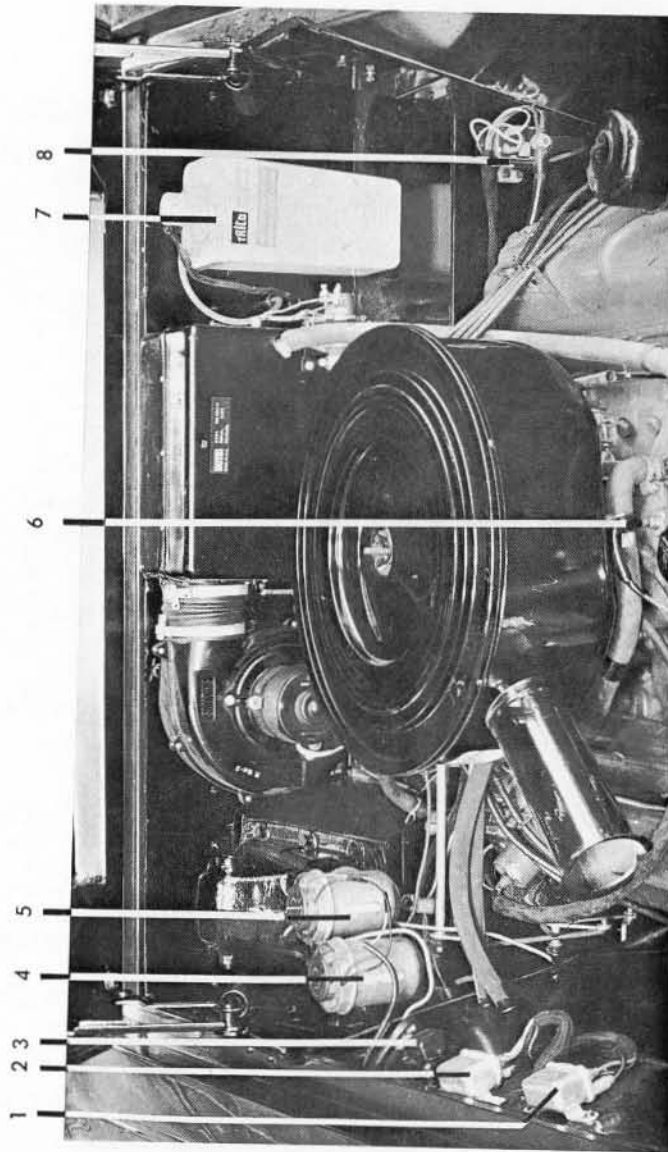


Fig. 27. Rear Part of Engine Bay.

1. Fan Relay.
2. Horn Relay.
3. Inspection Lamp and Charging Socket.
4. Master Cylinder for Rear Brakes.
5. Master Cylinder for Front Brakes.
6. Water Thermometer Connection.
7. Screenwash Water Jar.
8. Starter Relay Switch.

then lift out and discard the element. Take the rubber washer off of the centre tube bolt and lift out the combined spring and rubber washer seating. Take out the centre tube bolt. Clean the parts and the shell thoroughly. Fit a new fibre washer (supplied with element) beneath the head of the centre tube bolt, fit the bolt, spring and seating and new rubber washer (supplied with the element) to the shell.

Fit a new element, either way up, lightly grease a new filter to cylinder block gasket (supplied with element) and fit it into the recess in the cylinder block. Replace the shell assembly, check that it is seating correctly and tighten centre bolt securely. (Torque loading 30ft/lbs.) Run the engine to fill the oil filter. Check for oil leaks. Allow oil to settle, check oil level and replenish if necessary.

#### Oil Filler Pipe Cap Air Cleaner. Fig.6

This cleaner should be washed in kerosene, drained and re-oiled with SAE 30 at each engine oil change.

#### Oil Pressure Gauge

Oil pressure is taken from the rear top face of the cylinder block to an instrument on the dashboard, and the normal oil pressure is 45 to 65 p.s.i. at 2000 engine r.p.m.

No oil temperature gauge is fitted.

#### Tappet Adjustment

Correct valve clearances are important. All adjustments should be made with the engine at normal operating temperature, 80°C or more and should be made with the engine running at idling speed.

To adjust, insert a feeler gauge of appropriate thickness between the end of the valve stem and the rocker arm, set the adjusting screw down until the feeler is just pinched at each valve closing.

Inlet	.010 ins.
Exhaust	.018 ins.

It is strongly advised that both leads to the Alternator are disconnected before commencing tappet adjustment.



## TORQUE-FLITE TRANSMISSION

With the Torque-Flite transmission the clutch pedal has been eliminated and control of the gears is obtained solely by use of the gear-lever in the centre of the front passenger compartment. See Fig.7.

It is only necessary to engage the correct gear, release the handbrake and depress the accelerator pedal to drive the car.

There are six positions to the gear-lever:-

- P Parking Lock
- R Reverse Gear
- N Neutral
- D Drive (Normal driving position)
- 2 Second Gear
- 1 First Gear

For normal driving it is only necessary to move the gear-lever to "D", when the transmission will be fully automatic throughout the whole speed range of the car.

When the gear-lever is in "2" the operation of the transmission is still automatic but is limited to 1st and 2nd gears. When in "1" only 1st gear is obtainable.

The gearlever moves freely when changing from Reverse to Neutral and to Drive. It is also free when changing from Drive to Neutral.

A lock on the lever prevents engagement of Reverse gear from Neutral unless it is released by pressing the button in the top of the gearlever.

Changes down from Drive to Second or to First gear are also prevented by the lock unless it is released by use of the button but changes up from First or Second are free.

The Parking Lock position can only be entered or disengaged if the button is depressed.

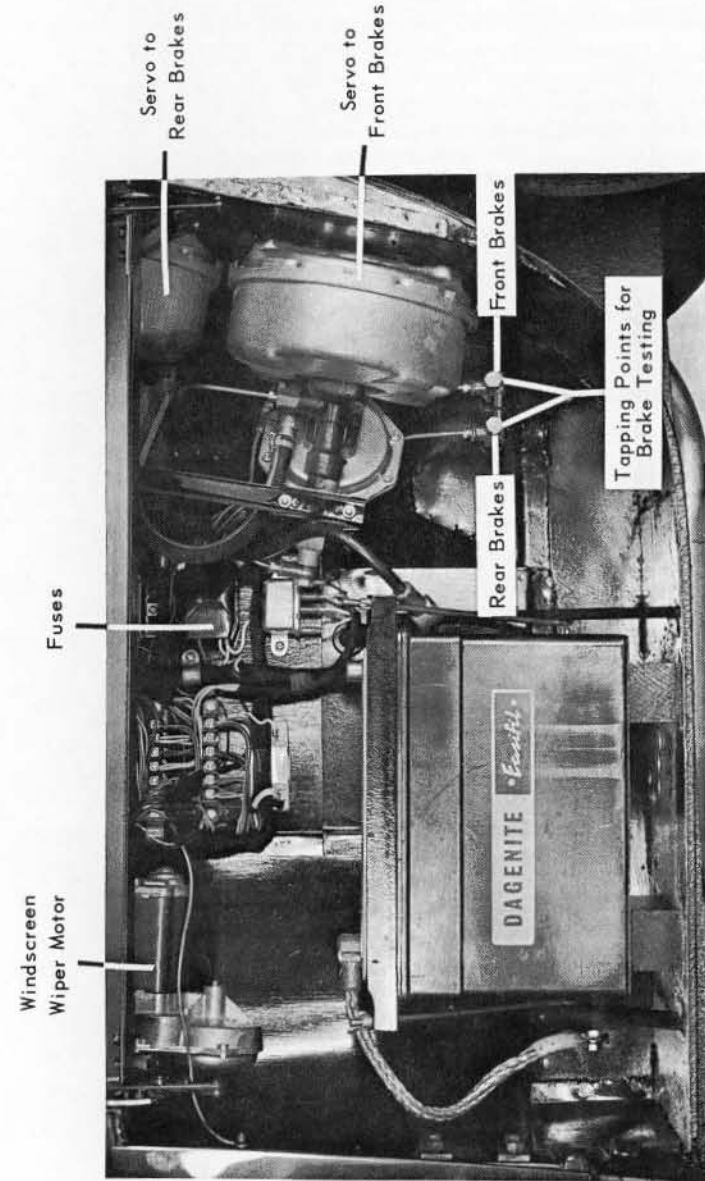


Fig. 26. R.H. Accessory Bay (showing part of Brake System)

Loosen the self-locking nut, 5/16 inch BSF, in the centre of the compensating lever, see Fig. 25, just enough to permit the lever to be moved sideways.

With a screwdriver between the central and one of the outer fork ends prise the compensating lever sideways to effect adjustment.

(To reduce pressure to either master cylinder lengthen the compensating lever on that side).

Tighten the locking nut and re-check the hydraulic pressures again.

Repeat the procedure if necessary until the correct setting is attained.



Fig. 7. Gear Change Lever

The intermediate gears, particularly 2nd, may be found useful for special conditions such as climbing very steep hills of considerable length (more than  $\frac{1}{2}$  mile) with a heavy load where continuous heavy throttle is necessary, in dense urban traffic or in conditions where engine braking is desired. 1st gear may be used for similar conditions of even greater severity or for deep mud or snow.

The lower ratios reduce the possibility of over-heating the transmission and torque converter under such conditions as those described above.

**IMPORTANT** The following maximum speed limits should be observed in the intermediate gears:-

1st	- 40 mph	- Maximum change-down speed	30 mph.
2nd	- 89 mph	- " " " "	60 mph.

(using the gear-lever)

#### **PARKING LOCK**

This provides a lock on the transmission to supplement the Handbrake when the car is parked.

The lock operates when the lever is pushed to "P" Park and it also automatically changes the transmission into Neutral.

**CAUTION** Never engage the parking lock with the car in motion as severe wear on the locking sprag will result.

#### Stall Tests

For safety reasons, and to prevent damage to the transmission, open throttle stall tests (i.e. with the engine pulling hard against the brakes) should not be attempted.

#### Driving the car

Keep the footbrake lightly applied when holding the car in gear on closed throttle and when changing to forward or reverse gears from a standing start. This is especially important when the engine is cold and the automatic choke increases the idling speed.

**IMPORTANT** Engage Neutral when it is necessary to idle the engine for an extended period. Operation of the torque converter coupling for a prolonged period when the car is stationary will cause excessive heat to develop.

Warm the engine so that it is running smoothly. Lightly apply the footbrake and release the handbrake. Move gear-lever to "D" which will give the drive range. To start the car in motion, release the footbrake and depress the accelerator pedal to whatever car speed desired. The automatic controls will take care of all gear changing when required, and the driver need only use the accelerator pedal to apply engine power or to maintain speed, and the brake pedal to retard speed or stop the car.

The Torque-Flite transmission is designed to provide trouble free motoring for many miles. However, as in any mechanical unit, various parts may require slight adjustment after several hundred miles of operation. If, for instance, the engine seems to run too fast in relation to the road speed of the car, the operating bands in the transmission may require adjustment. Do not continue to drive the car if this condition exists - have the matter attended to immediately, by an approved Agent.

#### Accelerating (using Throttle Kickdown)

Should quick acceleration be required for emergency passing while driving at speeds below approximately 29 m.p.h. with second gear or Drive engaged, press the accelerator to the

Remove the circlip and washer which secure the pushrod to the master cylinder.

Fit the pushrod to a new master cylinder and re-assemble to the pedal box.

If the locknut on the pushrod is only loosened sufficiently to allow the pushrod to be unscrewed from the fork end it may be possible to fit it again without disturbing the correct setting but a check should be made to ensure that the travel of the pushrod is set at  $1\frac{1}{8}$ ". See Fig.25.

Re-assemble the pedal box assembly to the scuttle, re-connect the brake pipes to the master cylinders first and then to the servos. Fill and bleed the systems with Castrol/Girling Disc Brake Fluid, Specfn. SAE 70R1 and 70R3. Replace the reservoir caps.

When the assembly, filling and bleeding is completed fit two pressure gauges at the pressure tapping points provided in the R.H. Accessory Compartment. See Fig. 26. The gauges should be of small size, less than 3" diameter and should be capable of measuring at least 2,000 lbs. pressure. They can be conveniently attached to the pressure tapping points by two spare flexible brake pipes and suitable adapters.

The forward tapping point is in the front brake line and the rearward point in the rear brake line.

Start the engine running to maintain vacuum in the servos and depress the footbrake pedal, checking the hydraulic pressures on the two gauges. They should not vary by more than 60 p.s.i.

Footbrake pedal pressure should be applied at approximately 50 lb.

If the comparable hydraulic pressures vary by more than 60 p.s.i. adjust as follows:-

Remove the small cover plate at the rear of the pedal box.

Protect the rear edge of the bonnet to obviate damaging the paintwork.

## MASTER CYLINDERS

The master cylinders are mechanically linked to the footbrake pedal. The pushrods for both front and rear brakes are linked to a compensating lever which, in turn, is attached to the brake pedal lever by a fork-end.

The position of the compensating lever governs the comparative ratios of braking power between the front and rear brakes.

This is set at the factory and will not normally require adjustment unless a master cylinder is changed.

To change a master cylinder the following procedure is recommended:-

Disconnect the wires of the brake fluid warning system from the caps of the master cylinder reservoirs.

Remove the brake pedal from the pedal lever.

Disconnect the brake pipes from the master cylinders, and from the servo slave cylinders to facilitate moving the pipes out of the way when removing the pedal box.

Plug up the holes in the master cylinders left open by removal of the pipes. This is important, to diminish the risk of spilling brake fluid on the car during the next operation.

Remove the 7 setbolts and 1 set screw securing the pedal box to the scuttle and withdraw the pedal box complete with footbrake lever and master cylinders upwards through the scuttle.

On a bench, remove the caps from the master cylinder reservoirs and drain out the brake fluid into a clean container.

Remove the nuts securing the defective master cylinder to the pedal box.

With the pedal box assembly turned upside down on a bench, slacken off the locknut on the pushrod actuating the defective master cylinder and unscrew the rod from the fork end pinned to the compensating lever. See Fig. 25, at the same time withdrawing the master cylinder from the pedal box.

floor stop. See Fig. 8. The transmission will automatically change down to a lower gear.

At speeds in excess of approximately 29 m.p.h. but not faster than approximately 60 m.p.h. in the drive range, the action of pressing the accelerator pedal to the floor stop will cause the transmission to change down into second gear and provide increased acceleration.

The transmission will change back into the higher gear if the accelerator pedal pressure is released, or the speeds shown in the GEARCHANGE PATTERN SUMMARY CHART are reached.

2nd gear may be selected when in Drive, or Drive may be selected when 2nd gear is engaged. These changes should be made at road speeds below 60 m.p.h. (see note on speed limits).

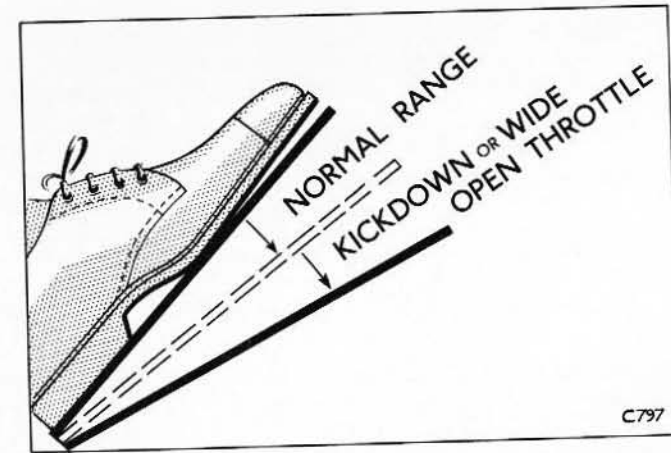


Fig.8 Accelerator Pedal

Changes can also be made from Drive to 1st or 1st to Drive when the car is operating at low speed. Do not make this change from Drive or 2nd to 1st when the car speed is above 30 m.p.h. (see note on speed limits).

### Reverse

To obtain reverse, lightly apply the footbrake pedal, move

gearlever to "R", release the brake and slowly accelerate the engine speed.

#### Rocking the car

To free the car from mud, soft sand or snow where it is desirable to obtain a forward and then a backward movement, this can be done by going from Reverse to 1st and from 1st to Reverse and accelerating the engine speed with each gear change.

#### Towing the car

- (i) With transmission inoperative.

When the transmission is not operating properly, the car should be towed with the rear wheels raised off the road or with the propellor shaft disconnected and secured.

- (ii) Transmission operating properly.

When the transmission is operating properly, the car may be towed safely in the neutral position for distances up to 10 miles at speeds not exceeding 30 m.p.h.

As the transmission is lubricated only when the engine is running it is better always to tow the car with a rear end pick-up or with the propellor shaft disconnected.

**NOTE** With a "dead" engine there will be no servo assistance to the brakes and, as much higher pressure on the footbrake pedal will be required to slow or stop the car, great care must be exercised if the car is being towed or is rolling downhill without the engine running.

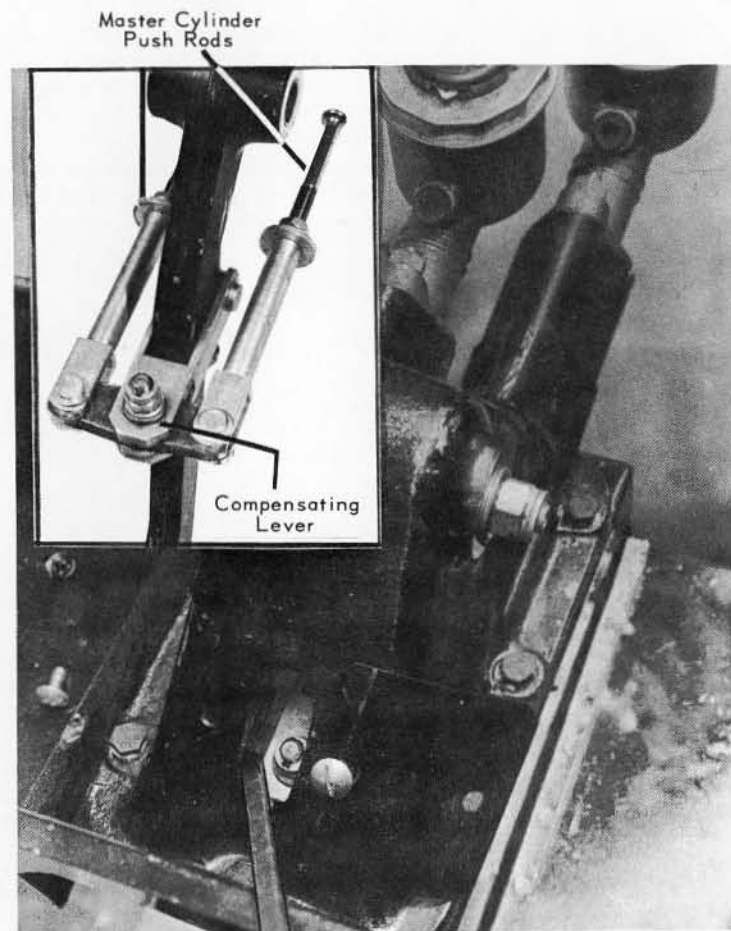
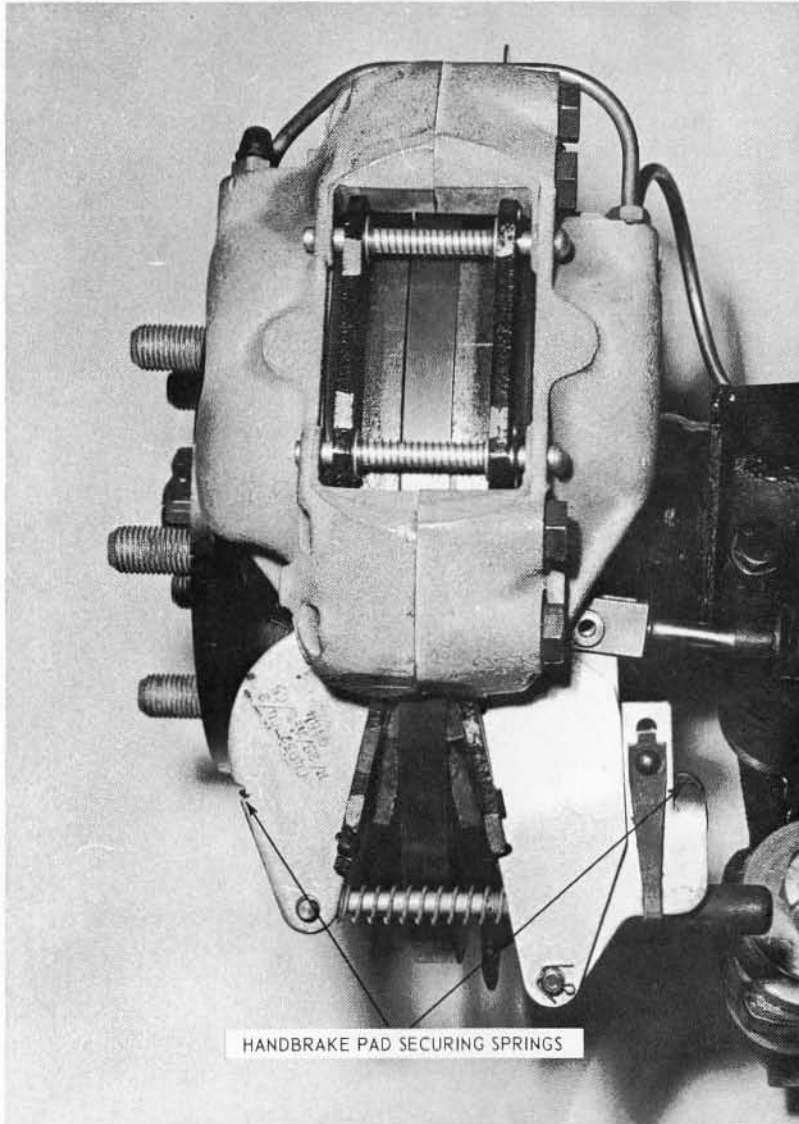


Fig. 25.

**Brake Pedal Box and Master Cylinder Assembly showing (inset) Pushrods and Compensating Lever, also adjustment of Compensating Lever by screwdriver through access hole in pedal box.**



**Fig.24 Rear Disc Brake**

### GEARCHANGE PATTERN SUMMARY CHART

Light to moderate throttle change-up

GEARS	MPH
1st to 2nd ... .. .	7 - 13
2nd to Top... .. .	12 - 16

Wide open throttle (Kick-down) change up

1st to 2nd ... .. .	29 - 41
2nd to Top... .. .	62 - 73

Closed throttle change down

Top to 1st... .. .	4 - 12
--------------------	--------

Wide open throttle (Kick-down) limits

Top to 1st... .. .	27 - 34
Top to 2nd... .. .	54 - 67

NOTE: It must be accepted that gearchange points can vary somewhat due to production tolerances. However, the quality of the gearchange should be smooth, responsive, and without noticeable engine runaway.

### MAINTENANCE AND LUBRICATION OF TORQUE-FLITE TRANSMISSION TYPE A.727

The transmission fluid and filter should be satisfactory for a long period and, apart from periodic level checks and adjustment of the Kickdown Bands, little maintenance is required.

After the initial 1000 mile service the transmission fluid and internal filter should be changed and the scheduled maintenance carried out every 30,000 miles.

The fluid level should be checked every 6,000 miles or every 6 months, whichever is the shorter period.

## DIPSTICK/FILLER TUBE

This is located in the right hand side of the engine bay, close to the bulkhead, see Fig. 5.

**CHECKING FLUID LEVEL** (Always with a warm transmission).

- (1) With the handbrake on and the engine idling engage all gears in turn, pausing momentarily at each position and end in neutral. Leave the engine running at idling speed in neutral.
- (2) Check the fluid level on the Dipstick. The level should be between the "Full" mark and the "Add one Pint" mark when the transmission is at normal operating temperature.
- (3) If it is necessary to check the level when the transmission is cold the level should be slightly below the "Add one Pint" mark.

**CAUTION.** To prevent dirt entering the transmission make certain that the cap on the dipstick is fully seated on the filler tube.

**DRAINING AND REFILLING** (Normally every 30,000 miles).

### Drain

- (1) Place car on a hoist or over a pit. Put a drain tray or other container with a large mouth under the transmission sump.
- (2) Loosen the sump bolts at one corner, tap the sump to break it loose, allowing the fluid to drain out. Remove the sump.
- (3) Remove the flywheel access plate at the front end of the torque converter bell housing. Remove the drain plug, if visible, and drain the fluid in the converter. Should the drain plug not be visible turn the engine over until it can be seen - switching the starter/ignition key on and off will serve.
- (4) Replace the drain plug and tighten to 14 inch-pounds torque. Refit the access plate.

Pull out the pads.

Push the pistons back into the wheel cylinders to the limit of their travel and tighten the bleed screw.

Fit new pads. On the front brakes it is important to fit the backing shims exactly as removed, the shim with the large semi-circular cut-out being on the single piston side; with the arrows on both shims pointing in the direction of wheel rotation, i.e. pointing UP.

Fit pad retaining pins and "hairpin" clips, including springs and washers on rear brakes,

Repeat this operation on other brake calipers.

When new pads have been fitted as required, release the foot pedal, then pump the pedal until solid resistance is felt to bring all pads into correct operating position.

Top up the master cylinder with brake fluid, Castrol/Girling Crimson to Specfn. SAE 70R 3 (Extra Heavy Duty).

## Handbrake

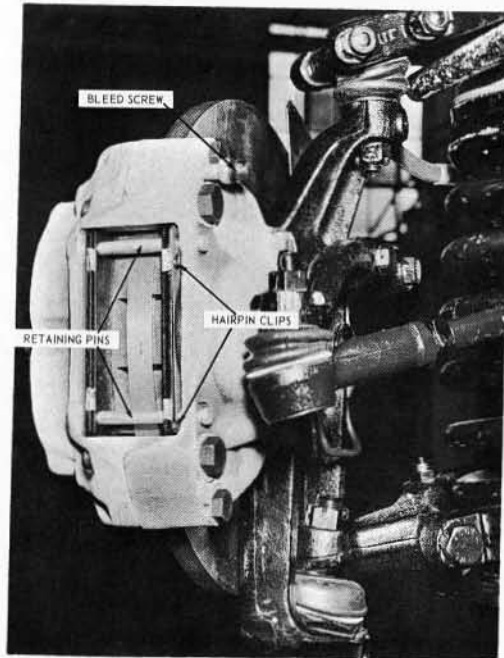
The handbrake is a normal push button release lever operating via 2 cables to the rear wheels only.

The handbrake is self-adjusting and no other provision is made for taking up pad wear.

While it is not normally necessary, slight cable stretch can be taken up by adjusting the link between the handbrake lever and the compensating arm connecting the forward ends of the two cables.

This is accessible when the aluminium guard immediately behind the handbrake lever, under the carpet, is removed.

Should it be necessary to change the handbrake pads this can be done by releasing the coil springs holding the pads in position, a large spring on the inboard pad and small spring on the outboard pad. The pads will then come out readily. See Fig.24.



**Fig.21 Front Disc Brake**

#### RENEWING THE FRICTION (BRAKE) PADS

Brake pads should be changed when the linings are worn down to  $\frac{1}{8}$  inch thick (3 m/m) and under no circumstances should they be allowed to wear below  $\frac{1}{16}$  inch (1.5 m/m) lest severe loss of efficiency and damage to the discs occurs.

To renew the pads, remove the road wheels.

Clean around the brake, open the bleed screw one turn and connect the bleed tube with the other end in a clean jar (as for bleeding the brakes).

Press the footbrake pedal to the floor and block in that position.

Remove the "hairpin" spring clips and pull out the pad retaining pins (see Fig.21). (Note the springs and washers on the pins securing the pads on the rear brakes and the backing shims behind the pads on the front brakes.

- (5) Fit a new oil filter on the bottom of the valve body of the transmission, with a new gasket. Tighten the retaining screws to 28 inch-pounds torque.
- (6) Clean out the transmission sump and refit, using a new gasket. Tighten the sump bolts to 150 inch-pounds torque.
- (7) Using a long funnel pour in 13 pints (7.4 litres) of recommended transmission fluid through the filler tube.
- (8) Start the engine and allow to idle for at least 2 minutes. With the handbrake on and the engine running engage each gear in turn, ending in neutral.
- (9) Add enough fluid to bring the level to the "Add one Pint" mark.
- (10) Run the car to bring the transmission up to normal operating temperature, say 10 miles or its equivalent on rollers, and recheck the level. It should be between the "Full" mark and the "Add one Pint" mark.

At this stage the adjustments recommended in the Maintenance Book for the Torque-Flite transmission should be made, if necessary.



## IGNITION SYSTEM

The ignition system is of the normal battery and coil type. The battery is charged by an alternator which generates A.C. current which, in turn, is converted into D.C. current before it reaches the Battery, by diodes or transistors.

### Coil

The coil requires no routine attention other than checking the terminal connections for tightness and cleaning around the terminals at intervals.

### Sparking Plugs 14 m/m, Autolite A32 or Prestolite 1432

At intervals not exceeding 4000 miles, after the initial 1000 miles service, the sparking plugs should be removed, cleaned and re-gapped, or if necessary, replaced by new.

To remove the plugs, first remove the leads by pulling them from the plugs BY GRIPPING THE RUBBER SHROUD. Pulling on the lead itself may impair the connection. Using the universal joint box spanner, supplied with the tool kit, remove the spark plugs.

If they are to be used again they should preferably be cleaned by a sand-blast type cleaner, but failing this they should have any deposits removed by scraping or brushing. In both instances they should afterwards be thoroughly cleaned by washing in petrol.

THE CORRECT GAP IS - .035 INCH and careful and accurate setting should be made by bending the side electrode and checking the gap with a feeler gauge. See Fig.9.

Jack up the front of the car. Use a flat piece of wood on a trolley jack to avoid damage to the front cross member.

Remove the front wheels.

Remove the rubber dust cap from one bleed screw and attach the rubber bleeder tube supplied with the tool kit to the screw.

Immerse the other end of the tube in a small quantity of brake fluid contained in a clean glass jar.

Slacken the bleed screw with the spanner provided and pump the foot pedal smartly until the jar is reasonably free of air bubbles. Tighten the bleed screws.

Repeat the operation on the other front brake, taking care to keep the master cylinder topped up with fluid.

**Rear Brakes.** If necessary repeat the operation with the rear brakes, jacking the car up at the rear by means of a trolley jack under the centre of the rear axle.

When these operations have been completed, the bleed screws tightened and dust caps refitted, top up the master cylinders to 1 inch from the top and refit the caps.

N.B. Brake fluid will damage paint-work. Wash off spots from spillage immediately.

### Brake Adjustment

Adjustment for wear of the brake pads is automatic but frequent visual checking of the pads is necessary to gauge the extent of wear. This can best be done with the road wheels removed.

When wear has reduced the pads to  $\frac{1}{8}$  inch they must be renewed, to maintain brake efficiency.

## BRAKE SYSTEM

The brake system comprises Girling caliper type disc brakes at the front and rear, working hydraulically from twin foot-operated Girling master cylinders and Lockheed servo units.

Front and rear brakes are thus completely independent of one another, the front brakes being operated by the inboard master cylinder and the lower servo while the rear brakes are operated by the outboard master cylinder and the upper servo.

The handbrake operates on the rear wheels only by means of a lever situated between the two front seats.

Apart from maintaining the levels of the brake fluid in the master cylinders little routine maintenance is required as the brakes are self-adjusting.

A fluid level warning light is fitted to the dashboard, Fig. 3, and a red light will show that the fluid level is low and that one or both master cylinders require refilling, with Castrol/Girling Crimson Disc Brake Fluid.

### Bleeding the Brake Systems

Air in the hydraulic system is indicated by sluggish response of the brakes and by spongy action of the brake foot pedal.

The inclusion of air may be due to a loose connection in the system or by too low a fluid level in the master cylinders.

Such a fault requires immediate correction and the system(s) must be bled as follows:-

**Front Brakes.** From the inboard master cylinder to the brake calipers check all connections and bleed screws to ensure that there are no leaks and tighten where necessary.

Remove the top cover of the master cylinder and top up with brake fluid, replace the cover.

When the gapping is correct, see that the seating is clean, and if necessary fit new washers. Fit the plugs into the special

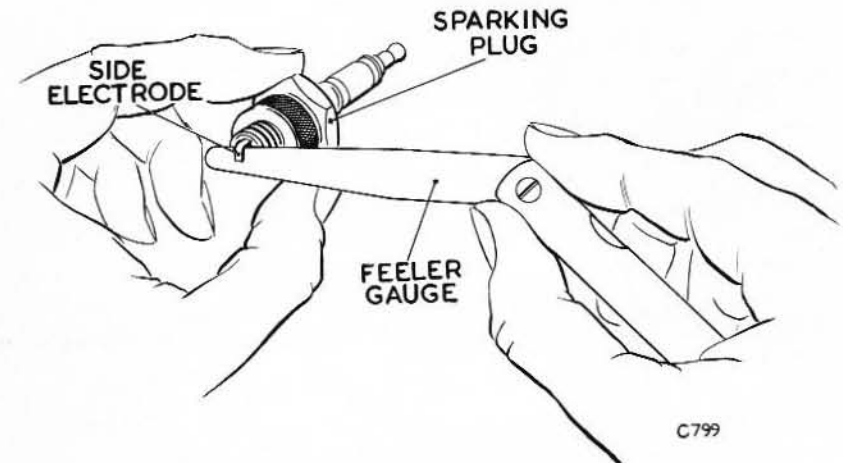


Fig.9 Setting Spark Plug Gap

spanner, insert them, but do not overtighten. Do not drop the plugs into their respective positions as this may alter the gapping.

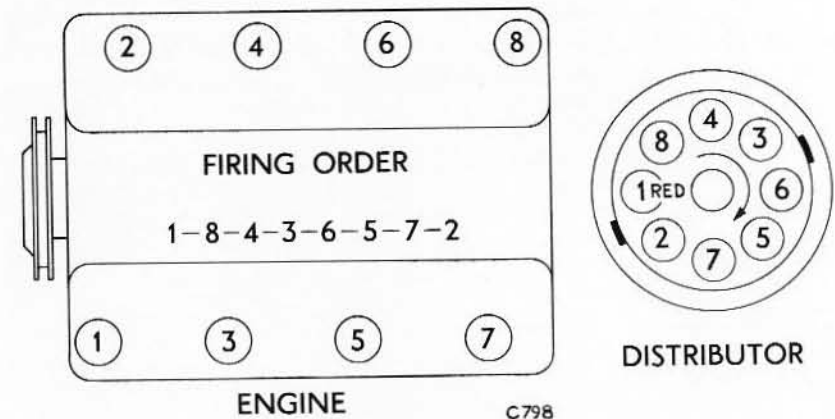


Fig.10 Firing Order

Should the plug leads become mixed refer to Fig.10. No.1 lead has a red cap attachment to the distributor for ready identification.

### Distributor

The distributor should be lubricated at regular intervals at the following points.

At every 2000 miles - Add 5 to 10 drops of oil (see recommended list) to the cap on the outside of the distributor base.

At every 10,000 miles - Lubricate the felt pad under the rotor with 2 to 3 drops of recommended oil. Take care to keep oil from the contact breaker points.

### Contact Breaker Points

It is vitally important, for efficient engine operation, to keep the distributor contact parts clean and parallel, and gapped correctly.

THE CORRECT GAP IS .014 TO .019 INCH and careful and accurate setting is recommended.

As the servicing of the contact points and the servicing of the spark plugs coincide, it considerably helps when setting the points to have the plugs removed.

To set the points, first unscrew the wing nut from the centre of the air cleaner, and lift this unit away.

Release the spring clips retaining the distributor cap, and lift away the cap complete with leads. Take off the rotor. See Fig.11.

Remove the screw and washer 'A' retaining the contacts, and slacken the low tension connecting nut 'B', and lift away the wire connection. The contact assembly will then lift away.

Examine the contact points, and if badly pitted, fit a new set.

4. Jack up the front suspension far enough to take the weight off the road wheels.
5. Start engine and turn steering wheel from lock to lock several times to expel air from the system. Replenish oil constantly during this operation to prevent the pump from exhausting the reservoir and drawing air.

Do not hold the steering wheel against full lock for more than a few seconds as this will overheat the oil and could result in pump seizure.

6. When the correct oil level has been achieved - i.e. 'cold' - bottom of filler neck; 'hot' - half-way up in filler neck, slacken bleeder screw on top of steering box to release trapped air. Tighten screw and recheck level.

Total capacity is approximately 2½ pints.

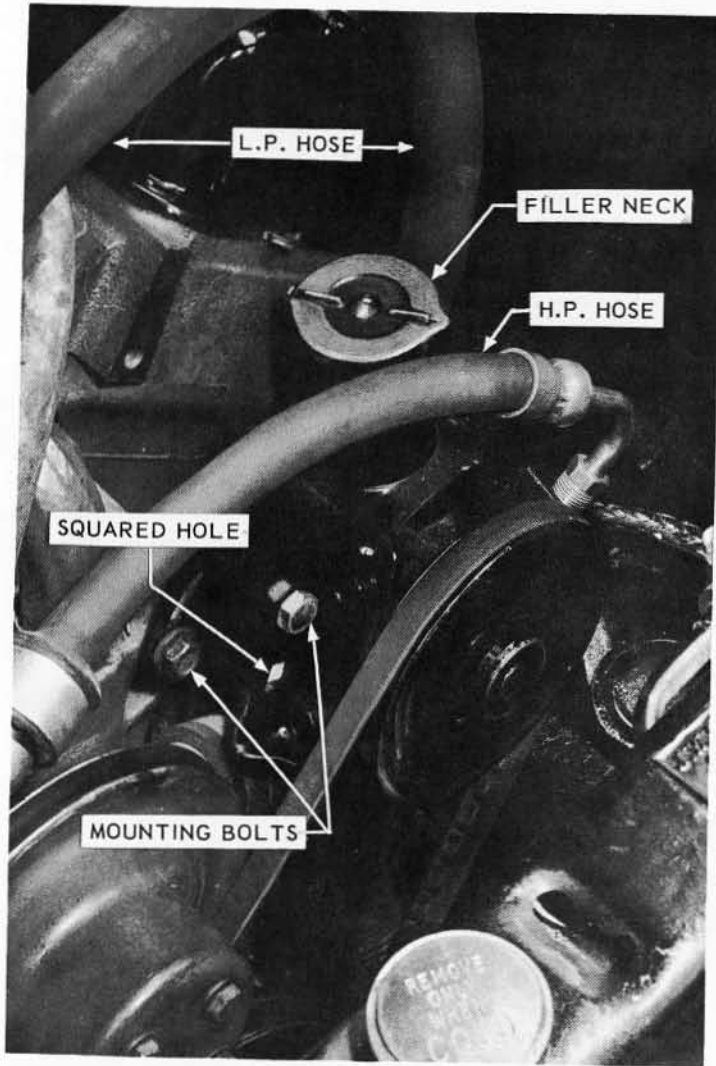
An oil drain plug is provided at the front of the steering box, but this need be used for repairs only. Oil once drained must never be used for refill.

Repairs of the units should be carried out only by Bristol Cars or approved Service Stations.

A functional test of the whole unit and necessary adjustments should be carried out every 30,000 miles.

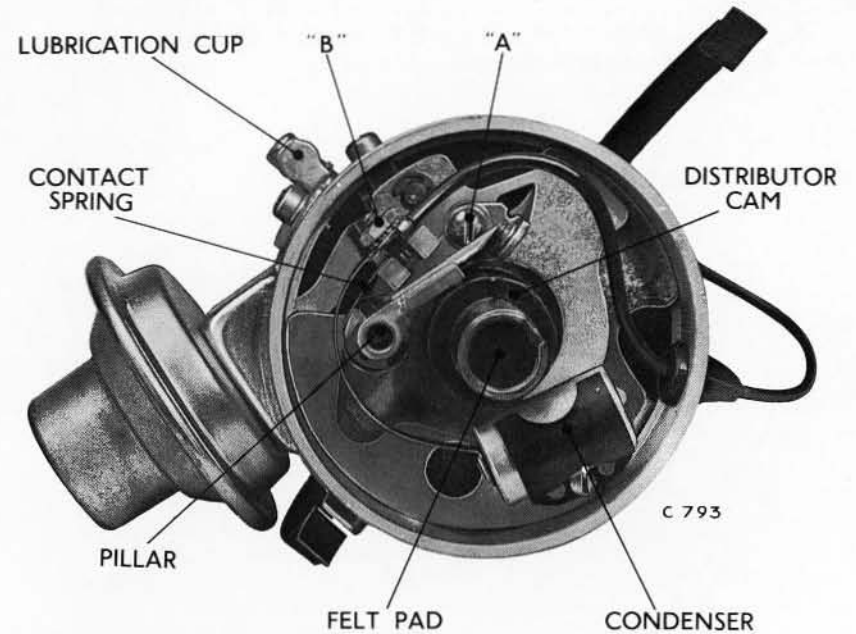
Steering track rods are fitted with nylon-lined ball joints and no lubrication maintenance is required, but examination every 10,000 miles as instructed in the Maintenance Chart should be made.

Every 6,000 miles check the tightness of the steering box attachments by turning the steering wheel from side to side far enough to move the front wheels slightly and look at the steering box from above. If the box is seen to move sideways under this load the four attachment bolts holding it to the front suspension sub-frame should be checked for tightness and tightened if necessary.



**POWER-ASSISTED STEERING PUMP**

To replace or fit a new set, see that the pillar is lightly greased, compress the spring of the contact, to fit into the low tension location, and push the assembly fully down on to the



**Fig.11 Distributor**

pillar. Replace the low tension wire connection and tighten the screw 'B'. Replace screw 'A' and tighten sufficiently for it to be moved accurately.

With the sparking plugs removed, turn the engine with the belts, or failing this, use a box spanner on the nut in the pulley on the front of the crankshaft, until the rubbing block of the points is on the high spot of the cam. With a screwdriver inserted between the two V cut-outs, adjust the points using feeler gauges to the recommended gap. The cam will move sufficiently in itself across the high point to ensure that the setting is made at the peak. Tighten screw 'A'. Turn the engine to another high spot and recheck.

When satisfactory, replace the rotor and the cap with its lead. No.1 red cap lead should position itself centrally forward. Replace the air cleaner.

Lightly grease the Distributor Cam every 10,000 miles with a petroleum-based grease.

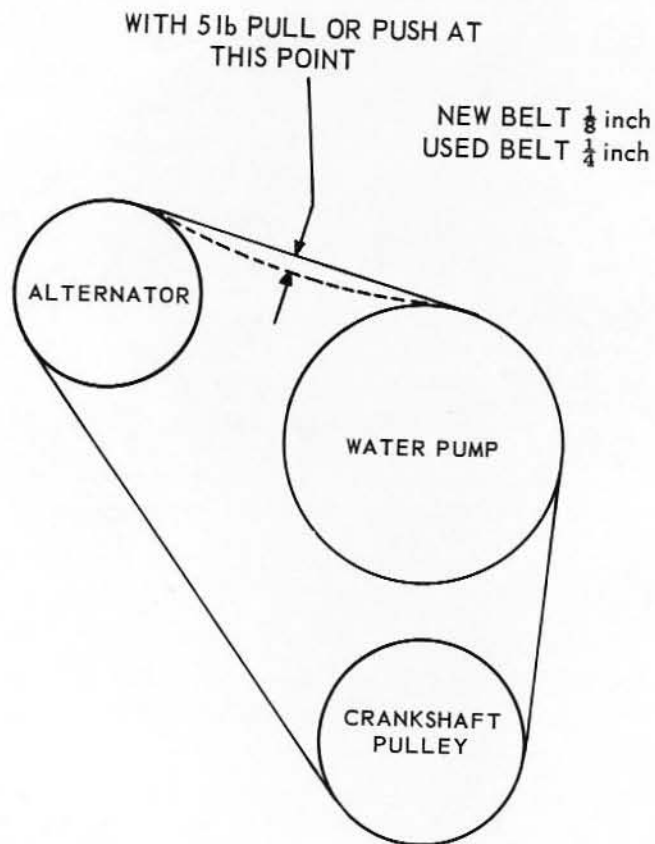


Fig. 12 Belt Tensioning

3. If necessary, add recommended lubricant to correct level. Do not overfill.

N.B. It is advisable to jack up the front of the car enough to take the weight off the front wheels before turning the steering from lock to lock.

(b) Checking Belt Tension

Proper belt tension for the pump drive is most important.

The belt should be tightened by the torque method. Loosen pump mounting bolts, then apply a torque of 70 lb. ft. about the square hole provided in the pump bracket. Tighten the mounting bolts while the torque is still applied. In the case of a new belt being fitted, this torque should be reset after approximately 100 miles service. See illustration.

(c) Checking Connections for Leaks

This refers to hose connections and all external joints between the pump and the steering unit.

The recommended lubricant is Veedol ATF Special 3433. Automatic transmission fluids to other specifications might lead to excessive wear on the slipper type pump and should, therefore, not be used.

If for any reason the oil is all drained, as on a repair, the following sequence of operations is to be followed to refill the system:-

1. Remove the belt driving the pump. Warm up the engine until the automatic choke and fast idle cuts out and the engine is idling at normal speed (500 r.p.m.).
2. Fit the belt to the pump and crankshaft pulley and tighten to the correct torque loading as mentioned above.
3. Wipe the reservoir filler cap free from dirt and fill with recommended lubricant to half-way up the filler neck.

## POWER-ASSISTED STEERING

The power steering gear is a ZF ball-nut high precision Hydrosteering unit, pressure for which is provided by a belt-driven, slipper type, constant displacement pump, which is mounted on the left side of the engine adjacent to the water pump of the engine cooling system.

Hydraulic power assistance comes into operation when required without any perceptible delay and the degree of assistance has been carefully arranged so as to maintain the "feel" of the road under all conditions.

Any play which might occur after long periods of operation as a result of natural wear can readily be taken up by a simple adjustment in the vehicle.

In the unlikely event of a fault in the hydraulic system, the steering is immediately fully operative as a manual steering gear without any adjustment on the part of the driver.

The engine driven oil pump is fitted with an integral oil tank and a relief valve is incorporated to restrict the maximum oil pressure to 950/1000 p.s.i. Oil flows from the pump to the steering box via a small diameter high pressure hose and returns via a large diameter low pressure hose.

## MAINTENANCE

This will normally consist of periodic checks on the oil level, belt tension and external connections for leaks.

### (a) Checking Fluid Level

1. Start engine and turn steering wheel from lock to lock several times to expel air from the system. Shut off engine. Do not hold the steering wheel against lock for more than a few seconds as this will overheat the oil and could result in pump seizure.
2. Wipe reservoir filler cap free from dirt and visually check oil level in reservoir. When the oil is cold, it should reach bottom of the filler neck; when hot it should be halfway up the filler neck. See illustration.

## Belt Adjustment

Belts adjusted too tightly will cause rapid wear of the alternator and water pump bearings, and a loose belt will slip and wear excessively, causing overheating and unsteady charging rate. A spring balance may be used to exert the pull on the belt when measuring deflection, see Fig.12.

NOTE: A 'used' belt is one which has operated for a minimum of  $\frac{1}{2}$  an hour.  
(See Page 50 for belt driving Power Steering Pump).

## Alternator Maintenance

The alternator has pre-lubricated bearings which do not require periodic lubrication.

The outside of the alternator should be wiped clean and the ventilating holes kept clear of accumulation of dirt which would obstruct the flow of air.

Care must be taken not to short the alternator either at the terminals or at the rectifiers in the heat sinks and it is advisable when working near the alternator, e.g. adjusting tappets, to disconnect both leads to the alternator.

Always connect the negative post at the battery to EARTH. Do not earth the alternator field circuit.

Belt.	Ferodo	V.4981 (notched)
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## ENGINE COOLING SYSTEM

A pressurised cooling system is used on this car and regular topping up should be unnecessary but periodic checks should be made to ensure that there has been no loss of coolant due to leakage, when the requisite amount of coolant may be added.

An expansion chamber, connected to the top tank of the radiator, receives the normal expansion resulting from heating up.

As the system cools down again a partial vacuum in the radiator top tank draws the expansion spillage from the expansion chamber back into the radiator again.

### Draining the System

The radiator is fitted with a drain tap, in the bottom tank.

The cylinder block has two drain plugs, one on each side adjacent to the front engine mountings.

To drain, remove the filler cap, open the radiator drain tap and remove the two drain plugs (only accessible from underneath the car). Retain anti-freeze mixture in a clean can.

The heater system, being higher, will drain itself.

### Filling the System

Fill the system to the top of the filler neck and replace the filler cap. Run the engine for a short period and then allow the engine to cool off. (Turn the heater ON before filling the radiator).

When the system is cool remove the filler cap and top up to the same level again.

NEVER REMOVE THE FILLER CAP WHEN THE SYSTEM IS HOT.

Inspection for external seal leakage at the universal joints should be made at every service and relubrication carried out when necessary, not exceeding intervals of 30,000 miles. Use Regent Marfak 0 grease for the joints, applying it to the bushings containing the needle rollers and filling the reservoirs in the four ends of the "cross" centre piece of the joint also.

## STEERING

### Steering Wheel

The two spoke 17 inch diameter steering wheel locates on a serrated shaft, and is made adjustable by a circular nut which is part of the steering wheel. Using a ring spanner this can be released and tightened when the desired position is obtained.

Circlips on the shaft determine the amount of travel and also prevent the steering wheel from sliding completely off the steering column.

### MANUAL STEERING GEAR.

This unit does not normally require periodical servicing except for inspection of the oil level and topping up when necessary. A squared filler plug is situated at the top of the steering box which can be readily removed to check the level.

Under no circumstances must grease or solidified oils be used in the steering box. The correct grade of oil is SAE.90.

A universal joint is fitted between the lower end of the steering column and the steering box. This is a pre-packed assembly and should not require attention between long periods of servicing, (30,000 miles).

Steering track rods are fitted with nylon lined ball joints and no lubrication maintenance is required, but examination every 10,000 miles as instructed in the Maintenance Chart should be made.

Should it be necessary, the mesh of the steering box can be adjusted by the adjusting screw on top of the steering box casing. This screw is covered by a hexagon cover nut.

## REAR AXLE

The rear axle and differential assembly is a combined unit of Salisbury manufacture. The ratio is 3.07 to 1.

The rear axle oil check and oil change should be in accordance with the Maintenance Schedule.

Two oil seals are fitted to each end of the axle casing, the inner seal retaining the oil for the differential assembly, and the outer seal which retains the bearing grease.

A grease nipple is fitted at each end of the axle, see Fig.19, and the hubs should be greased at the recommended intervals every 20,000 miles.



**Fig.19 Grease Nipple – Rear Axle Casing**

Axle location is by Watts linkage which is fitted through-out with rubber bushes and lubrication is not necessary.

## PROPELLER SHAFT

This unit should be serviced every 30,000 miles. To remove jack up the rear of the car, loosen the snubber strap holding the rear axle, on one side only, so that the axle can drop right down on that side.

Remove the four bolts holding the yokes coupling the propeller shaft to the rear axle. Slide the shaft out of the rear end of the gearbox, over the rear axle, until the front splined end is clear of the chassis frame. Take care not to damage the splines.

Do NOT lubricate the internal splines of the front yoke as these are oiled by the gearbox fluid.

## Expansion Chamber

The expansion chamber is mounted just in front of the radiator and requires no maintenance.

It is fitted with a cap which has a pressure release valve which operates at 13 p.s.i. The cap should be checked periodically, say once a year, for operation.

## Anti-Freeze

Use only anti-freeze of the Ethylene-Glycol type (see recommendations below).

Anti-freeze should be retained in the cooling system for one year, provided that the specific gravity of the mixture is checked periodically and the requisite amount of anti-freeze added as necessary. The inhibitors in the anti-freeze assist in combatting corrosion in the engine.

## Recommended Anti-Freeze

Mobil	...	...	...	...	...	...	...	"Permazone"
Esso	...	...	...	...	...	...	...	"Anti-Freeze"
Castrol	...	...	...	...	...	...	...	"Anti-Freeze"
Shell	...	...	...	...	...	...	...	"Anti-Freeze"
BP	...	...	...	...	...	...	...	"Anti-Frost"
Smiths	...	...	...	...	...	...	...	"Bluecol"
Regent	...	...	...	...	...	...	...	"P.T. Anti-Freeze"
Boots	...	...	...	...	...	...	...	"Anti-Freeze BS3151"

## Capacity

The total coolant capacity is 32½ Imperial Pints (18.5 litres).

Normal anti-freeze additive should be 25%, 8 pints (4.5 litres). For atmospheric temperatures lower than 5°F, 30% is recommended, i.e. 9½ pints (5.5 litres).



### Oil Cooler (Transmission)

An oil cooler is fitted into the bottom tank of the radiator to cool the transmission fluid of the gearbox.

No maintenance is required for this.

### Radiator Cooling Fans

Two electric fans mounted in ducts are fitted in front of the radiator. They are operated by a thermostatic switch in the top tank of the radiator and control the temperature of the coolant within the normal running range of  $80^{\circ}\text{C}$  -  $94^{\circ}\text{C}$ .

Should the switch fail for any reason manual control of the fans may be obtained by the switch shown on page 6.

### Flushing

If the system is fitted with the correct mixture of water and anti-freeze there should be no reason to disturb it, except for periodic checks for loss due to leaks or weakening of the anti-freeze mixture, until it is necessary to replace all the coolant.

When this change is made run water through the system with all drains open until it flows out clear and free from sediment before refilling.

Flushing may be necessary if the car has been idle for a long period, particularly if the system has been drained for that period.

"Hard" water containing lime and other minerals may lead to corrosion and an inhibitor such as that in anti-freeze will assist in retarding this. It may, however, be necessary to drain and flush the system more frequently than otherwise specified under more favourable conditions, once a year should normally suffice.

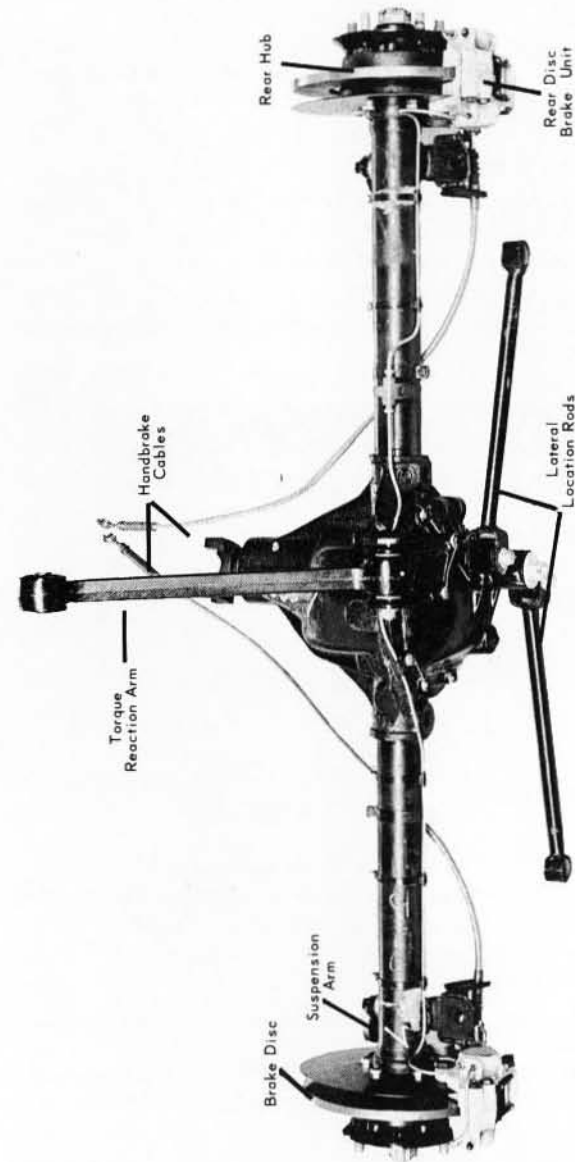


Fig. 18. Rear Axle Assembly

### Front Hub and Stub Axle. Fig.17

Each front wheel hub is mounted on two taper roller bearings, and has an oil seal at its inner end. No attention other than packing with grease as given in the Maintenance Schedule is necessary.

Packing with grease should be carried out by completely removing the hub and packing the grease between the bearings. The hexagon dust cap should not be loaded with grease.

N.B. ALL old grease must be removed before re-packing.

### REAR SUSPENSION. Fig.18

Torsion bars are fitted to the rear suspension. They are marked left and right hand (L and R) respectively, on the rear face and they are not interchangeable. The front serrations of the torsion bars are located in adjusters, while the rear serrations locate in the suspension unit main arm.

The suspension units are packed with grease and normally do not require attention.

The suspension arm assemblies fitted between the suspension units and the rear axle casing are rubber mounted, and do not need lubrication maintenance.

ARMSTRONG SELECTARIDE electrically controlled shock absorbers are fitted to the rear suspension and are operated by the switch on the dashboard. See Pages 6 & 7.

This switch must be turned clock-wise only, as indicated by the arrows on the bezel between the stations.

The 'SOFT' station is recommended for leisurely cruising while high speeds could demand the firm suspension provided for by Station 4. Intermediate degrees of damping are provided for by Stations 2 and 3. If, by any chance it is desired to go from a 'SOFT' ride to a firm ride (4) then the switch must be turned through the intermediate stations, as indicated by the arrows, in order to reach it. The switch must not be turned back (anti-clockwise).

**NOTE:** If the Selectaride switch is moved with the ignition off, turn the switch through one full revolution with the ignition on before selecting the desired setting. When operating the switch do not hold the pointer in a position between the marked stations into which it indexes.

### Water Pump Thermostat

This is fitted in the top of the water pump and restricts the circulation until the engine warms up.

It may be removed, if necessary, by partially draining the system and removing the water pump outlet elbow pipe.

If overheating leads to a suspicion that the thermostat is not operating correctly it can be checked by immersing in hot water sufficiently to cover the lower half. The valve should be fully open ( $\frac{1}{2}$  inch) at  $85^{\circ}\text{C}$ .

## FUEL SYSTEM

This consists of the petrol tank, housed behind the rear seat squab, a 4 Choke downdraught carburettor fitted with an air cleaner and an electric fuel pump in the boot.

The petrol tank is fitted with a float unit - Smiths FT.5301/17 and a Reserve Unit - Lucas 78037A.

A circular hinged door fitted with its own special key is situated on the left hand side of the car above the rear wheel. This gives access to the petrol filler.

THE PETROL CAPACITY IS 18 IMP. GALLONS (82 LITRES) INCLUDING 2½ IMP. GALLONS (11 LITRES) RESERVE.

A replaceable fuel filter shown in Fig.5 is fitted between the fuel pump and the carburettor.

### Fuel Gauge

This instrument records 15½ IMP. gallons leaving 2½ IMP gallons of unrecorded reserve. The switch marked 'R' on the dashboard brings the reserve into use, and a petrol reserve warning light (AMBER) embodied into the revolution counter indicates that the reserve supply is being used.

### Carburettor. Carter AFB.3131 S.

Servicing the carburettor should only be carried out by an experienced carburettor mechanic, and with the proper equipment.

Dirt, dust, water and gummy deposits are some of the main causes of poor carburettor operation, and careful cleaning of the carburettor and jets, and the renewal of parts where required, will return the carburettor to its originally designed performance.

## FRONT SUSPENSION

The front suspension is independent, with coil springs and telescopic shock absorbers to the general arrangement as shown in Fig.16.

A torsional anti roll bar is fitted and on manually steered cars a telescopic steering damper connects the steering box drop arm to the front cross member. (Not shown in sketch for clarity).

Inner wishbone joints are rubber mounted, while the outer are nylon lined ball joints and no lubrication maintenance is required, but examination every 10,000 miles as instructed in the Maintenance Chart at the back of this manual should be made.

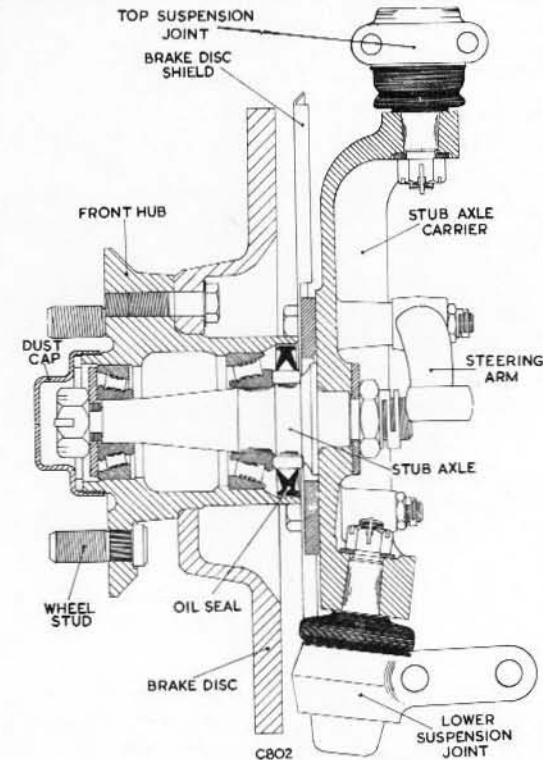


Fig. 17. Front Hub and Stub Axle  
(See also Front Brake illustration)

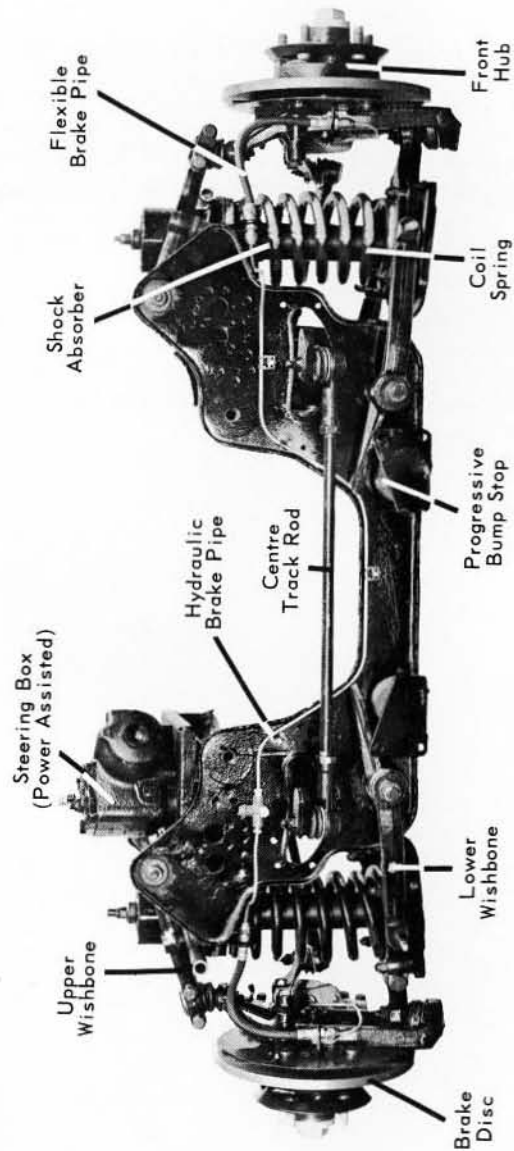


Fig. 16. Front Suspension

The carburettor is normally a very dependable unit, and if set correctly, should continue to function satisfactorily for long periods, without attention. THE IDLING SPEED IS 500 RPM.

Fuel Pump. SU Type AUF 404.

Service details are contained in S.U. Service Sheet No. AUA 226A.

Fuel Filter. Mopar 2084 258.

Foreign particles, which may be present in the fuel, will be collected by this unit and it should be discarded every 10,000 miles, or more often, if thought advisable, and replaced by a new filter.

#### Air Cleaner

The carburettor air cleaner is fitted with a renewable filter element which should receive regular attention.

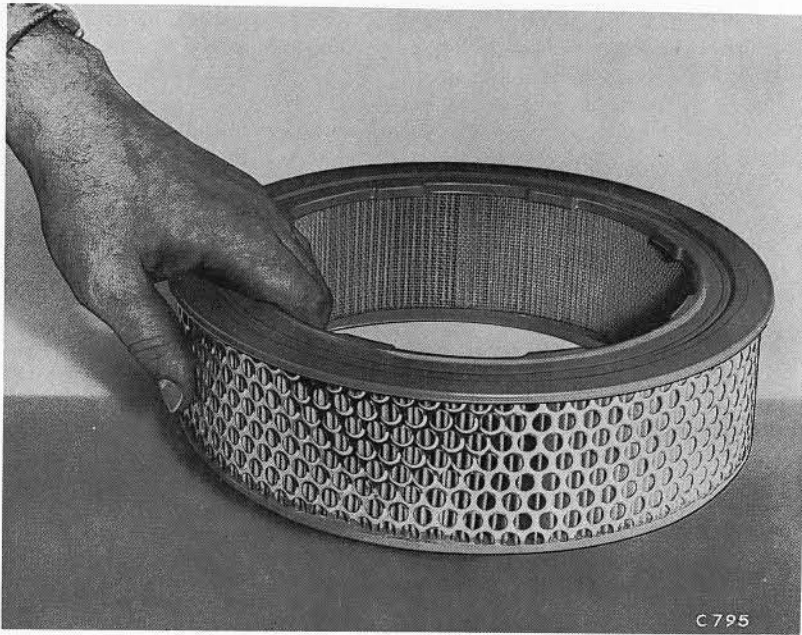
To obtain access to the element, remove the wing nut from the centre of the cleaner and lift off the cover. The element can then be lifted out.

Under normal operation, remove the filter element every 5000 miles and tap the face gently against the flat clean face of a floor or bench as shown in Fig.14 to remove any accumulation of dirt. If compressed air is used clean the element by blowing against the inside screen, take care not to damage the element. Hold the air nozzle at least 2 inches away.

**DO NOT WASH OR OIL THE AIR FILTER ELEMENT.**

Under severe driving conditions it is recommended that the element should be serviced more frequently.

Fit a new element every 20,000 miles.



**Fig.14 Filter Element**

#### Manifold Heat Control Valve

The heat control valve is located in the right hand exhaust manifold outlet. See Fig.5, and is controlled by a thermostatic coil spring and counterweight. This valve, by closing the right hand exhaust pipe, assists rapid warming up of the engine.

The coil spring should hold the valve in the closed (backward) position with the manifold cold. If the spring does not hold the valve in the closed (backward) position, but the valve operates freely, fit a new spring.

The counterweight of the valve is a quadrant-shaped plate on the outside of the r.h. exhaust manifold. The thermostatic coil spring is mounted on the opposite end of the valve spindle, underneath the manifold and can only be seen from beneath the car.

The valve should move freely when tested with a stick or a screwdriver pushed between the steering column (r.h. drive) and the exhaust manifold.

Every 2000 miles the valve spindle should be lubricated with a suitable lubricant when the manifold is cool.

This can be carried out beneath the car, by squirting the lubricant liberally into the spindle on both sides of the exhaust manifold and working the valve backwards and forwards a few times.

Mopar Manifold Heat Control Valve Solvent is recommended for this purpose, but kerosene containing graphite may be used as a temporary lubricant.

It is preferable, should the valve stick, to keep it in the open (forward) position, as a closed valve will affect engine performance adversely and may damage the engine.