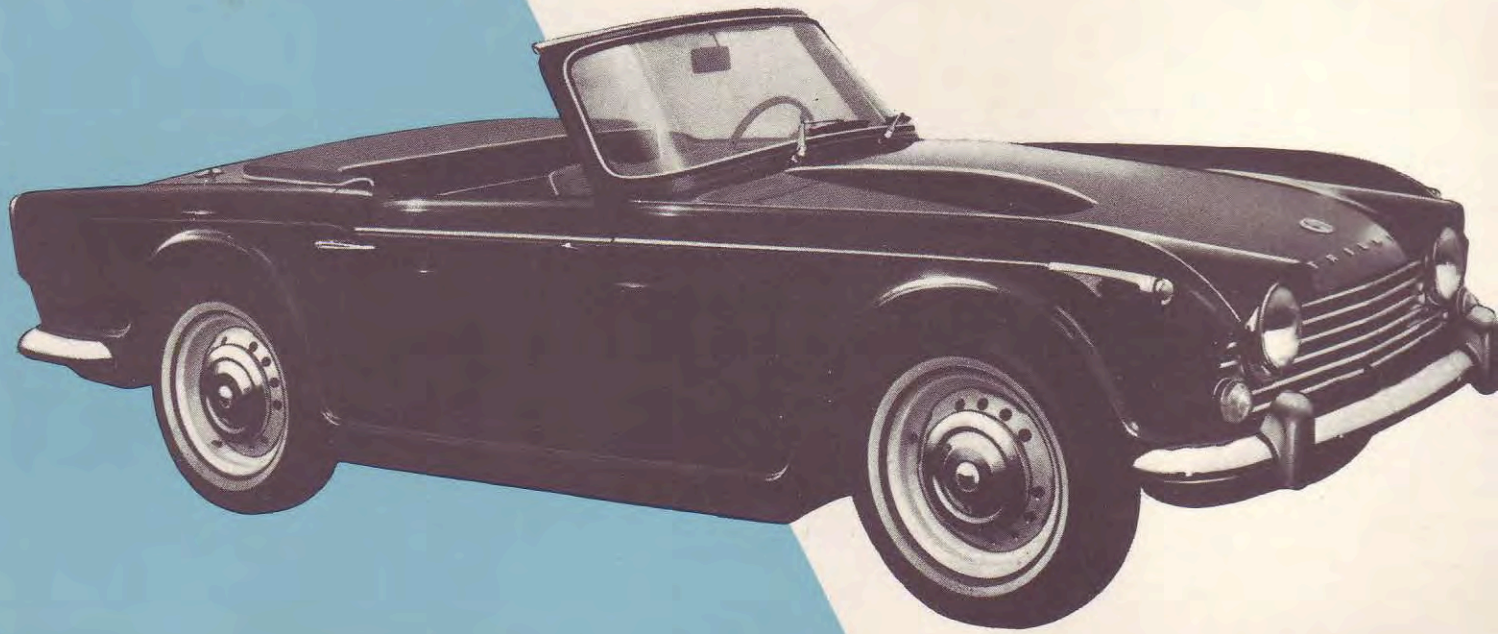
OWNERS HANDBOOK TRIUMPH TR4A



IMPORTANT

IN THE INTERESTS OF SAFETY, THE IMPORTANCE OF MAINTAINING CORRECT TYRE PRESSURES CANNOT BE OVER EMPHASISED. PRESSURES SHOULD BE CHECKED AT LEAST EVERY TWO WEEKS OR 1,000 MILES (1600 KMS.) AND MAINTAINED IN ACCORDANCE WITH RECOMMENDATIONS GIVEN ON PAGE 58.

TRIUMPH TR4A

OWNERS HANDBOOK

Issued by

STANDARD-TRIUMPH SALES LTD.
COVENTRY, ENGLAND

A member of the Leyland Motors Corporation

FOREWORD

Success, the aspiration of all human pursuits, has, in the world of motor sport, become synonymous with the name of Triumph. The many laurels obtained by T.R.'s in international and local competitions have gained them an enviable reputation of which every owner is justifiably proud.

The newest of the Triumph thoroughbreds, the T.R.4A, combines new developments with the well proven rally tested features of its predecessors. We welcome owners to an ever widening circle of enthusiasts and wish them many pleasant hours of motoring in adding new honours to a name already renowned.

To ensure a continuance of the superb performance which a T.R.4A is capable of giving, coupled with reliability and economy, regular care and attention are necessary. All essential information and the periods after which attention is recommended, are contained in the following pages. Owners are advised to read them carefully and note particularly the advice on lubrication.

New parts or accessories, when needed, are obtainable only through authorised Triumph dealers, who in addition to being trained to give expert advice and attention, are also equipped to undertake repairs and overhauls which are beyond the scope of most owners.

STANPART

Spare Parts Service

Replacement parts are not supplied from the factory direct to the general public, but are directed through Distributors who, in turn, supply their Dealers.

Genuine spare parts are marketed under the trade mark "Stanpart" and carry the same guarantee as the original part. The same high quality material is used and the strictest accuracy maintained during manufacture. You are advised, therefore, to insist on the use of these parts should replacements be necessary. Remember, parts which do not carry the trade mark "Stanpart" will invalidate the guarantee if fitted to your vehicle.

The descriptions and illustrations appearing in this book are not binding. The MANUFACTURER, therefore, reserves the right — whilst retaining the basic features of the Models herein described and illustrated — to make at any time, without necessarily bringing this book up-to-date, any alteration to units, parts or accessories deemed convenient for improvement or for any manufacturing or commercial reason.

CONTENTS

IMPORTANT

In all communications relating to Service or Spares please quote the Commission Number (Chassis Number), and Paint and Trim Numbers

LOCATION OF COMMISSION AND UNIT NUMBERS

Commission, Paint and Trim Numbers—On Scuttle Panel. (May be seen by lifting the bonnet.)

Engine Number—On L.H. side of Cylinder Block.

Gearbox Number—On L.H. side of housing.

Rear Axle Number—On face of Hypoid Housing Flange.

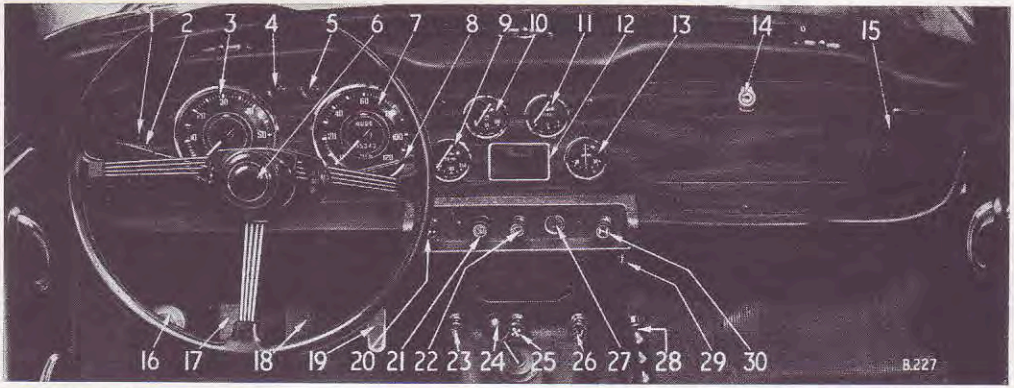


Fig. 1 (above)

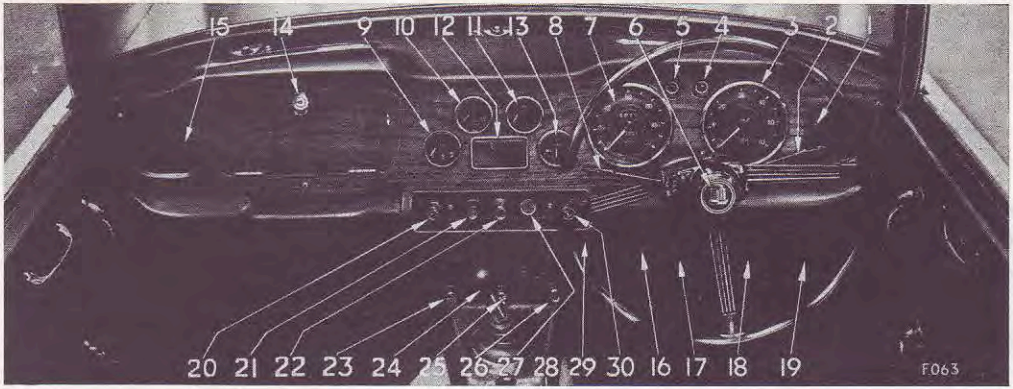


Fig. 2 (below)

1. Fresh Air Vent Controls.
2. Turn Signal Control.
3. Tachometer.
4. Turn Signal Indicator.
5. Ignition Warning Light.
6. Horn Button.
7. Speedometer.
8. Lighting switch.
9. Water Temperature Gauge.
10. Oil Pressure Gauge.
11. Fuel Gauge.
12. Ash Tray.
13. Ammeter.
14. Facia Locker.
15. Fresh Air Vent Control.
16. Headlamp Dipper Switch.
17. Clutch Pedal.
18. Brake Pedal.
19. Accelerator Pedal.
20. Panel Rheostat Switch.
21. Windscreen Washer Control.
22. Windscreen Wiper Switch.
23. Heat Control.
24. Gear Shift Lever.
25. Heater Blower Switch.
26. Heat Distribution Control.
27. Ignition/Starter Switch.
28. Handbrake Lever.
29. Scuttle Ventilator Control.
30. Choke Control.

INSTRUMENTS AND INDICATORS

The instruments, indicators and controls shown on Figs. 1 and 2, and indicated in brackets within the text, perform the following functions:—

Tachometer (3)

The tachometer, indicates the engine speed in revolutions per minute and is calibrated in divisions of 100, extending to 6,000. The speed range within the red segment is subject to special precautions. These are given on page 14.

Turn Signal Indicator (4)

The green flashing indicator monitor light, glows intermittently when the direction control is operated and the ignition is switched on. See "Turn Signal Control" on page 9.

Fresh Air Vents (1 and 15). Refer to page 10.

Ignition Warning Light (5)

The small red warning light glows when the ignition is switched on and is extinguished when the engine is accelerated. Should the indicator continue to glow when the engine is running above idling speed an electrical fault is indicated which should be traced and rectified immediately.

Speedometer (7)

The speedometer indicates the road speed of the vehicle in miles per hour and is calibrated in divisions of 2, extending to 120.

The figures within the aperture above the centre of the dial may be used to record individual journeys, provided that the figures are re-set to zero at the beginning. This is achieved by pushing up and turning clockwise the knob which extends downwards from behind the instrument.

The figures within the aperture below the centre of the dial show the total mileage of the vehicle and may be used as a guide for periodic lubrication and maintenance.

The High Beam indicator near the bottom of the dial glows only when the headlamp main beams are in use. When the dipper switch is operated the indicator is extinguished.

Water Temperature Gauge (9)

Normal operating temperature is reached when the needle registers in the central sector of the dial. Should the needle reach the highest mark, stop the engine immediately, allow it to cool and check the level of the coolant in the radiator. When the ignition is switched on the needle moves slowly across its scale, taking up to one minute to reach a true reading.

Oil Pressure Gauge (10)

The oil pressure relief valve is set to control the pressure at 65-75 lb. per sq. in. at 2,000 r.p.m. with normal oil temperatures,

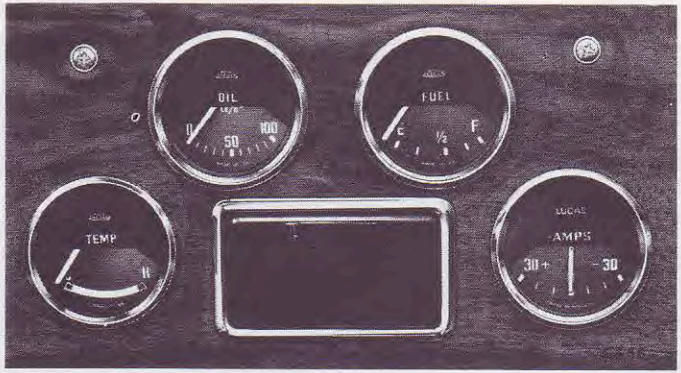


Fig. 3

i.e., about 70°C. During sustained high speed operation, th resulting increase in oil temperature may cause the oil pressur to drop. This will have no detrimental effects providing it doe not fall below 30 lb. per sq. in.

Severe operating conditions, such as competition work, ma cause the oil pressure to fall below 30 p.s.i., indicating that the o temperature is excessive. Under these circumstances, an o cooler kit is recommended to ensure that a maximum sump o temperature of 125°C. is not exceeded.

Fuel Gauge (11)

The fuel gauge indicates the approximate contents of th fuel tank. When the ignition is switched on, the needle move slowly across its scale taking up to one minute to reach a stead reading which it will maintain, regardless of vehicle movemen until the ignition is switched off.

Ammeter (13)

The ammeter is calibrated in amperes and indicates the rat of battery charge and discharge. The charging rate is indicate when the pointer moves to the left-hand side of "zero", an discharge, by movement to the right.

Fig. 4

Panel Rheostat Switch (20)

Turn the knob clockwise to illuminate the instruments. Further rotation of the knob diminishes the light intensity. Operate only when the lighting switch is "on".

Lighting Switch (8)

Move the column switch lever downwards to the first position to illuminate the side, rear, number plate and centre instrument panel lights. Move the lever down to the second position to illuminate the headlamps. See "Dipper Switch", page 8.

Windscreen Washer Control (21)

Use the windscreen washer control in conjunction with the windscreen wiper. Operate by pushing the control to spray clean fluid on to the screen as the wiper blades disperse the mud. If the washer has remained unused for some time, depress the control a few times to charge the system.

Windscreen Wiper Switch (22)

Pull the switch knob to its first position to operate the wipers at fast speed and to its second position to operate them at slow speed. Push the knob fully home to switch off, when the wipers will automatically return to the parked position at the base of the windscreen. The wipers can only be operated when the ignition switch is turned to the "ignition" or auxiliary positions.

Ignition/Starter Switch (27)

Operated by a separate key, the combined ignition and starter switch has four positions. These are : 1, "Off", in which

1. OFF
2. IGNITION
3. START
4. AUXILIARY

Fig. 5

position the key may be withdrawn ; 2, "Ignition" ; 3, Start ; 4, Auxiliary. (See Fig. 5.)

With the key in the "Off" position (vertical), turn the key clockwise to switch on the ignition and auxiliary circuits.

To operate the starter motor, turn the key further clockwise against spring pressure and when the engine fires, release the key, which will return to the "Ignition" position. If the engine has failed to start, wait until the starter motor has come to rest before returning the key to the "Start" position.

To select "Auxiliary" turn the key anti-clockwise from the vertical position. This will enable, for example, the radio to be used with the ignition switched off and, since the key must be withdrawn from the switch to lock the vehicle, accessories cannot continue to function.

Choke Control (30)

The choke control is used to enrich the fuel mixture for easier starting from cold. The control should not be used if the engine is warm, and may not be necessary in warm climates. Full in structions for its use are given under "Starting" on page 13

Headlamp Dipper Switch (16)

A foot operated dipper switch, located on the toe-board to th left of the clutch pedal, enables the driver to quickly lower hi headlamp beams whilst maintaining full control of the steerin and other hand controls.

When the headlamps are illuminated, see lighting switch o page 7, the main beams may be lowered by pressing the dippe switch and releasing it. To return to the main beam positior again press the dipper switch and release it. The main bear position is indicated by a red warning light near the bottom c the speedometer dial.

Horn Button (6)

Operate the horns by pressing the button in the centre of th steering wheel.

Overdrive Control (Special Accessory)

When an overdrive is fitted, the control is mounted on the sic of the steering column cowl that houses the turn signal contro Move the lever up to engage overdrive and down to release i Before using the control, see page 14.

Turn Signal Control (2)

The turn signal lamps are controlled by a lever mounted on the outboard side of the steering column cowl. Before making a right-hand turn, move the lever clockwise. Move it anti-clockwise before turning left. When either left- or right-hand turn signal lamps are operating, a green indicator light on the facia, flashes intermittently.

Clutch, Brake and Accelerator Pedals (17, 18 and 19)

These are conventional items which do not need further explanation.

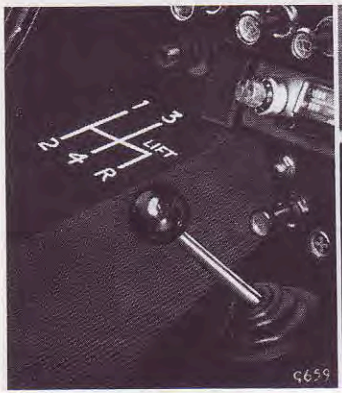


Fig. 6

Fig. 7

Gear Shift Lever (24)

All forward gears have synchromesh engagement. See Fig. 6 for the gear shift positions. Reverse is engaged by moving the gear shift lever to the right, lifting it and then moving it rearwards.

Handbrake Lever (28)

To apply the rear wheel brakes, pull the handbrake lever and retain it in position by pressing the button on top of the lever. Release the handbrake by pulling it slightly rearwards to free the pawl, then allow the lever to move forward to the "OFF" position.

Seat Adjustment (Fig. 7)

The driver's and passenger's seats are adjustable for leg reach by moving the lever at the front of each seat and sliding the seat to the desired position, allowing the lever to re-engage in the nearest adjustment notch. The passenger's seat backrest hinges forward to provide access to the rear compartment.

Radio Controls

For operating instructions see the radio leaflet provided with the set. This is protected against electrical damage by a 5 amp. fuse housed in the main lead union. **See page 40—WARNING.**

HEATING AND VENTILATION

The heater is designed to heat and distribute incoming fresh air, or if dust and exhaust fumes are being admitted, the intake duct may be closed and the heater used to recirculate air already in the vehicle.

Fresh air is admitted to the heater duct through the open scuttle ventilator. This is opened by pulling the ventilator lever rearwards and closed by pushing it forwards.

When the scuttle ventilator is closed, air is drawn in through the open facia vents and recirculated by the heater unit. The facia vents are opened by turning the handwheel, at the side of each vent, forward.

When the scuttle ventilator is open, cool fresh air is blown out of the open facia vents and may be directed up or down, or may be cut-off by adjusting the handwheel. There is no provision for heating the air blown from the facia vents.

The degree of heat given out by the heater unit is controlle by the left-hand control on the heater control panel. Pull th control fully out for maximum heat, or push it fully in for colc Intermediate positions give varying degrees of heat.

The blower switch on the centre of the panel controls motor-driven fan which stimulates the flow of fresh air fror outside when the vehicle is stationary, and boosts the air circula tion when the vehicle is moving. The blower is operated b pulling the control to switch on, and pushing it to switch of

The distribution of warmed air is effected by the right-han control. Pulling the control fully out directs air to the interic of the vehicle. With the control pushed to the half way positior air is directed to the screen for demisting or defrosting. Inter mediate positions direct air to the screen and interior in varyin proportions. With the control pushed fully home the system inoperative.

Fig. 8

LOCKS AND KEYS

Locks and Keys

Two sets of keys are provided. One key is used for operating the ignition switch and door locks, and the other for locking the facia locker and luggage compartment. **The spare set of keys is housed inside the rear lamp at the passenger side.** You are advised to record the key number for future reference, so that in the event of loss, replacement keys may be obtained without difficulty.

Facia Locker (Fig. 9)

The facia cubby box may be unlocked by turning the key a quarter turn clockwise and opened by depressing the locking barrel and pulling on the lipped plate.

Luggage Compartment (Fig. 11)

To open the luggage compartment lid, turn the unlocked handle counter-clockwise to a vertical position and raise the lid to its limit before engaging the stay in the slot provided.

To close the lid, raise it slightly to release the stay which can then be engaged in its rubber retainer on the boot lid support assembly. Lower the lid and turn the handle, which may be locked by turning the key a half turn counter-clockwise.

Fuel Filler Cap (Fig. 10)

The fuel filler cap, located forward of the luggage locker lid, is opened by depressing a small lever at the side of the cap. Press the cap to close.

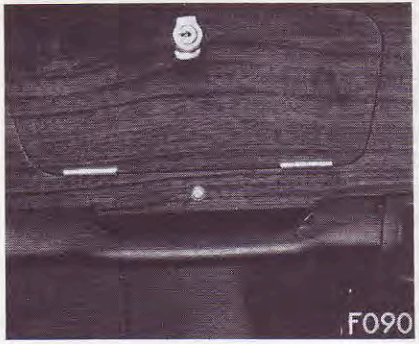


Fig. 9

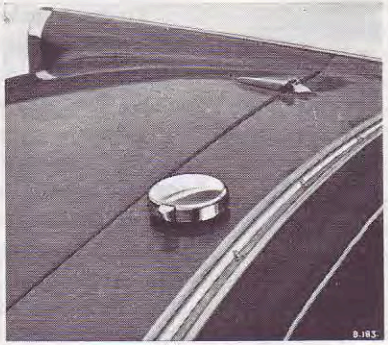


Fig. 10

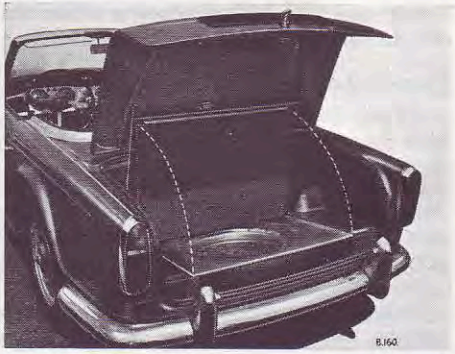


Fig. 11

Door Locks

Either door may be locked from inside or outside irrespective of which door was last used as an exit. The mechanism automatically prevents the inside handle being set in the locked position whilst the door is open. This eliminates the possibility of being locked out of the car in the event of the key being inadvertently left inside.

Interior Locking

To lock the door it must be closed first. Only then will the mechanism permit the inside handle to be moved forwards. The handle will automatically return to the normal position as soon as it is released.

IMPORTANT. Do not attempt to force the handle into the locked position whilst the door is open.

Exterior Locking

When leaving the car, move the door handle forward and leave the vehicle by the other door, which may then be locked by using the key as follows :—

Insert the key in the lock and turn it approximately a quarter turn towards the shut-face. The key will automatically return to the horizontal position from where it may be withdrawn.

When the doors are locked, pressure on the outside push buttons, which may be fully depressed, cannot force or damage the lock.

To Unlock

Re-enter from either door by inserting the key in the loc and turning it approximately a quarter turn away from th shut-face. The key will again automatically return to the hor zontal position to enable it to be removed.

Lubrication

It will be beneficial, particularly during freezing weather, t introduce a few drops of thin machine oil into the latch slot an the lock key slots at intervals of not more than once a mont

IMPORTANT. Under no circumstances should grease b applied to the lock cylinders or keys.

Bonnet Release

To open the bonnet pull the control situated below the right-hand side of the facia. The bonnet will rise sufficiently to enable the fingers to be inserted under the rear edge to raise it to a near vertical position, where it will be supported by a stay. Disengage the stay from its recess before closing the bonnet.

Fig. 12

DRIVING RECOMMENDATIONS

Running-in

The importance of correct running-in cannot be too strongly emphasized, for during the first 500 miles of motoring, the working surfaces of a new engine are bedding down.

During this period the valve seats stabilise, causing in some instances, slight distortion and preventing proper seating of a valve. Avoid possible damage resulting from such a condition, by having the compression pressures checked early in the life of the engine after "running-in" is completed. If the pressures are unequal, valve grinding is recommended.

Further attention to the valves should not then be required for a considerable mileage, or until the pressures have again become unequal.

Whilst no specific speeds are recommended during the running-in period, avoid placing heavy loads upon the engine, such as using full throttle at low speeds or when the engine is cold. Running-in should be progressive and no harm will result from the engine being allowed to "rev." fairly fast provided that it is thoroughly warm and not pulling hard. Always select a lower gear if necessary to relieve the engine of load.

Full power should not be used until at least 500 miles have been covered and even then, it should be used only for short periods at a time. These periods can be extended as the engine becomes more responsive. After 1,000 miles running, the engine can be considered as fully run-in.

Starting the Engine from Cold

Check, and if necessary top up, the radiator water level and the engine oil level. If the car has not been used for several days and fuel has evaporated from the carburettors, refill them by operating the priming lever on the fuel pump. The slight resistance ceases when the float chambers are full.

Apply the handbrake and ensure that the gear lever is in "Neutral". Pull the choke control out to its stop and turn the key to the "ignition" position. The ignition warning light should then glow and the fuel gauge should register the contents of the fuel tank.

From the "ignition" position, turn the key clockwise against spring pressure to operate the starter motor. Immediately the engine fires, release the key, which will return to the "ignition" position. Should the engine fail to start at the first attempt, do not re-operate the starter switch until the starter motor has come to rest.

As soon as it starts, push the choke to the "half-in" position and warm the engine at a fairly fast idling speed of approximately 1,500 r.p.m. This will cause the ignition warning light to be extinguished, thus indicating that the generator is charging. The oil gauge should indicate the pressure of oil circulating. If the gauge remains at zero, stop the engine immediately and establish the cause. Failure to do so may result in serious damage to the engine.

Cylinder wear is minimized if the engine is warmed up quickly by driving away as soon as oil is circulating after starting the engine. Do not race the engine to speed up the process but, if possible, maintain a speed of approximately 25 m.p.h. until the choke can be pushed fully in. In warm climates, use of the choke may be unnecessary. Avoid the use of full throttle during the warming-up period. A thermostat incorporated in the cooling system enables the engine to be warmed up quickly from cold.

Starting with the Engine Warm or Hot

When re-starting a hot engine, depress the accelerator pedal to about one-third of its travel before operating the starter switch. The choke control should not be used.

Recommended Speed Limits

Avoid over-revving, particularly in the lower gears. The driver is advised not to drive the car continuously at engine speeds above 5,000 r.p.m. in any gear. However, whilst accelerating through the gears it is permissible to attain 5,500 r.p.m. for short periods, these speeds being indicated by the beginning and the end of the red segment on the tachometer.

When an overdrive is fitted, do not change from overdrive to normal 3rd or 2nd gears at engine speed exceeding 4,500 r.p.m., otherwise damage may result from "over-revving".

Overdrive Unit (when fitted)

An overdrive unit serves as a convenient method of providing, at will, a numerically lower overall gear ratio to reduce engine speed and wear, and to effect fuel economy.

The Laycock de Normanville overdrive unit incorporat an epicyclic gear train which is engaged, to give overdri condition, by a cone clutch moving under the influence of t hydraulic pressure generated by a small piston pump. Wh pressure is released, via a control valve, the clutch is return and held in direct drive by compression springs. A u directional roller clutch enables the change into, or out overdrive to be made when transmitting full power, without lo of road speed.

The hydraulic control valve is linked to an electro-magne solenoid which is operated, via a relay, by a two-position swit mounted on the steering column.

Greatest benefit will accrue from judicious use of the ov drive, the governing factor being that the vehicle continues run easily without sign of engine labouring, combined wi the minimum amount of throttle opening necessary to mainta this condition.

Suggested minimum engagement speeds are:—

Top gear	40 m.p.h.
Third gear	30 m.p.h.

Do not change from overdrive to normal drive at engi speeds in excess of 4,400 r.p.m.

The above disengagement speed corresponds approximat to peak revs. in normal gears. Disengagement of the O/D a speed higher than that stated may cause damage fr "over-revving".

ROUTINE SERVICING

This section describes the lubrication and servicing requirements which are necessary to maintain the vehicle in good order and ensure trouble-free motoring. All points described should receive attention at the prescribed intervals.

Engine

When a new car is delivered, the engine sump contains a special running-in oil which should be retained until the completion of 1,000 miles. Although the level may not reach the high mark on the dipstick, the quantity of oil is sufficient for the running-in period. Provided the level is maintained between the low and high marks on the dipstick, during this period, topping-up is unnecessary.

At the "Free Service", the running-in oil is drained and the sump replenished to the level of the high mark on the dipstick, with one of the approved oils recommended on pages 52 and 53.

Gearbox, Overdrive and Rear Axle

Rear axles, gearboxes and overdrive units fitted to new cars are filled with a special oil, formulated to give all necessary protection to new gears. **This oil should not be drained** but may be topped up with any of the approved oils listed on pages 52 and 53 against the appropriate unit.

Lubrication

When carrying out the following maintenance work, the importance of using only high grade lubricants is vitally important and cannot be over emphasised

These lubricants have maintained a high standard of quality over many years and are recommended only after extensive tests in collaboration with the oil companies concerned. In countries where these oils are unobtainable, use similar high grade oils having the same characteristics.

Preventive Maintenance

To ensure continued efficiency and prolonged vehicle life, the maintenance voucher scheme, produced by Standard-Triumph engineers, offers a carefully designed plan of lubrication requirements and adjustment checks at predetermined periods.

Operated by all Standard-Triumph dealers, and specifically recommended to owners wishing to obtain the greatest pleasure from their motoring, the scheme involves the use of a series of Maintenance Vouchers contained in a booklet supplied with the car. Service Operations appropriate to mileage or periods of time are listed on pages preceding the vouchers.

The space provided on the counterfoil of each voucher should be filled in by the owner and dealer to constitute proof of regular servicing, should this be required when making a claim under the warranty, or when selling the vehicle.

FREE SERVICE OPERATIONS—

Radiator Level	Check
Engine Sump	Drain/refill
Cylinder Head	Check tightness
Fuel Pump	Clean filter and sediment chamber
Carburettors	Top up dashpots Adjust slow running
Accelerator controls, linkage, pedal, fulcrum	Oil
Fan Belt	Adjust tension
Valves	Adjust clearances
Manifolds	Check tightness
Oil Filter	Examine for leaks
Clutch Pedal Pivot	Lubricate
Master Cylinder	Check; top up
Hydraulic Pipes	Check leakage
Gearbox Overdrive	Check level—top up
Rear Axle	Check level—top up
Universal Joints	Check tightness
Lower Steering Swivel	Lubricate
Wheel Alignment	Check by condition of tyre treads
Steering Unit Attachments and "U" bolts	Check tightness
Tie Rods and Levers	Check tightness
Handbrake Cable Linkage	Lubricate
Hydraulic Pipes	Check for leakage
Master Cylinder	Check/top up
Pedal Pivot	Lubricate
Brakes	Adjust if necessary
Handbrake Cable	Adjust if necessary
Battery	Check/top up
Generator	Lubricate rear bearing Check charging rate
Generator and Starter	Check fixing bolts for tightness
Distributor	Lubricate and adjust points
Sparking Plugs	Clean and reset
Headlamps	Check alignment/adjust
Lights, Heater, Screen Washer, Wiper and Warning Equipment	Check operation
Wheel Nuts	Check tightness
Tyre Pressures	Check/adjust
Door Strikers, Locks, Hinges	Check operation/oil
Body Mounting Bolts	Check tightness
Door Handles, Controls and Windshield	Wipe clean

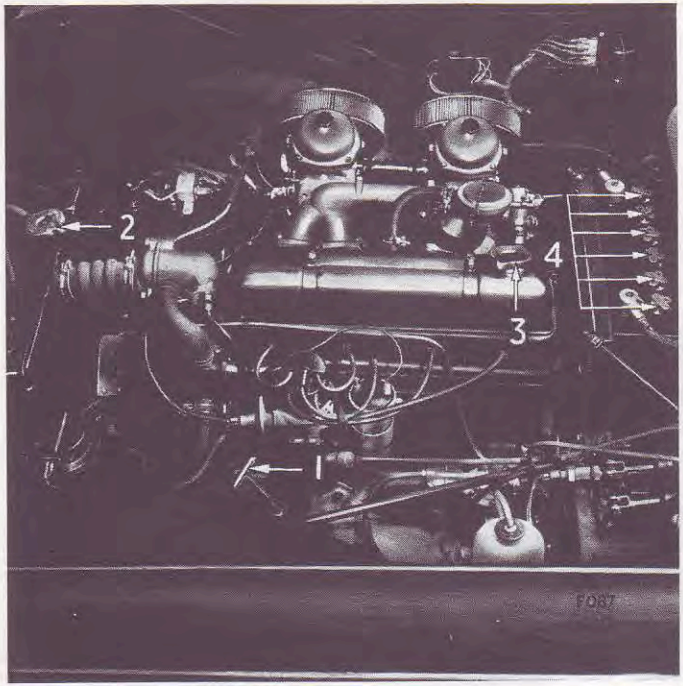


Fig. 13

PERIODICAL ATTENTION

Engine

Prior to starting out on a long run, or every 250 miles, check the level of oil in the engine sump, first making sure that the car is standing on level ground. If the engine has been running, wait a few minutes to allow the oil to drain back into the sump.

Before checking the level, make sure that the car is standing on level ground. The dipstick (1) may then be withdrawn, wiped clean and pushed fully home before withdrawing it for reading. Should the level be at the lower mark on the dipstick, 4 pints (4·8 U.S.A.) (2·3 litres) will be required for topping up via the cap (3).

Radiator Water Level

The level of water, visible through the translucent plastic reservoir mounted forward of the radiator, should be maintained at least "half full" by adding soft water, when required, via the screwed cap.

Should the reservoir be allowed to empty, remove the radiator filler cap, (2) Fig. 13, completely fill the radiator, replace the cap and fill the plastic reservoir.

CAUTION. If the engine is hot, avoid danger from scalding by exercising extreme care when removing the radiator filler cap. Turn it a half-turn and allow pressure to be fully released before completely removing the cap.

Tyres

The maintenance of correct tyre pressure is an important factor governing tyre life, steering behaviour and suspension. It is, therefore, important that a check on tyre pressure is made regularly at periods not exceeding one month, and the losses, due to diffusion, are made good. Correct tyre pressures are given on page 58.

Adjust the pressures whilst the tyres are cold, *i.e.*, before a run. As the tyres warm up their pressures may increase as much as 5 to 6 lbs. per sq. in. depending upon the type of tyre and the severity of driving.

CAUTION. Never bleed a warm tyre to the recommended pressure.

Battery (Monthly)

Examine the level of the electrolyte in the cells and, if necessary, add distilled water via the plugs (4) Fig. 13, to bring the level up to the top of the separators.

The use of a Lucas Battery Filler will be found helpful when topping-up. Ensure that the Battery Filler is filled with distilled water and insert it into a filler plug orifice until it rests gently on the separators. Sufficient water will pour into the cell to bring the electrolyte to its correct level. Check each cell in turn.

IMPORTANT.

Never use a naked light when examining the battery, as the mixture of oxygen and hydrogen given off by the battery can be dangerously explosive.

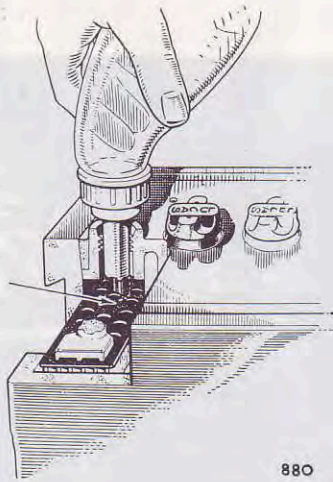


Fig. 14

Examine the battery terminals and, if necessary, clean and coat them with petroleum jelly. Wipe away any foreign matter or moisture from the top of the battery and ensure that the connections and fixings are clean and tight.

Brake and Clutch Master Cylinders (Fig. 15) (Monthly)

Wipe the master cylinder caps clean, remove them and check the fluid level in the clutch and brake master cylinder reservoirs. If necessary, top up the fluid until it is level with the arrow on the side of the reservoirs.

NOTE. As the brake pads wear, the level of fluid in the master cylinder falls. The addition of fluid to compensate for pad wear is unnecessary. Should the level have fallen appreciably, check the condition of the pads. If their condition is satisfactory establish the cause of loss and rectify the defect immediately. Refer to Page 38, "Bleeding the Brake and Clutch Hydraulic System".

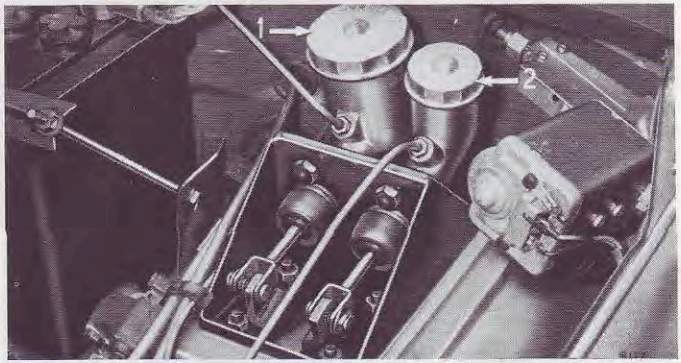


Fig. 15

6,000 MILES

At 6,000 mile intervals, carry out the work listed under Periodical Attention, and the following additional work.

Chassis Attachments

Check the tightness of all bolts and nuts, particularly the front and rear suspension, the steering and the wheel nuts.

Equipment

Check the operation of the lights, heater, wipers, screen washer and warning equipment.

Wheel Alignment

Check the front wheel track alignment (front and rear, independent rear suspension model) if tyre wear is uneven.

Inner Drive Shaft Joints

Lubricate if nipples are provided.

Propeller Shaft (Fig. 16)

Lubricate the splines and the bearing assembly at each end of the propeller shaft by forcing grease through the nipples "A" and "B" if these are provided.

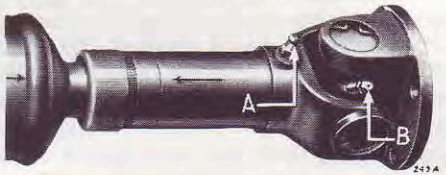


Fig. 16

Change Engine Oil

For average driving conditions drain and refill the oil sump with the appropriate grade of oil at the end of each 6,000 mile period. Reduce this period for the following unfavourable conditions:

(a) Frequent stop/start driving.
(b) Short journeys during cold weather, especially when appreciable engine idling is involved.
(c) Regular use of roads producing extreme dust.

If the vehicle is used for competition or sustained high speed work, use of higher viscosity oils is advised because of the increased oil temperature. Additives which dilute the oil or impair its efficiency must not be used. The sump drain plug is shown arrowed, Fig. 17.

Brake Pipes

Check for leakage and for clearance to prevent their chafing.

Front Brake Adjustment

The disc brakes, fitted to the front wheels are self-adjusting and need replacement shoe pads when the linings are reduced to approximately $\frac{1}{8}$" thickness.

Rear Brake Adjustment (Fig. 18)

Each rear brake is provided with a small adjuster, (1), which is accessible when the road wheel is removed. To adjust the shoes, turn the adjuster clockwise until the shoes are hard against the drum; then slacken the adjuster by one notch increments until the drum is free to rotate.

Handbrake Adjustment

Adjustment of the rear brake shoes automatically re-adjusts the handbrake mechanism.

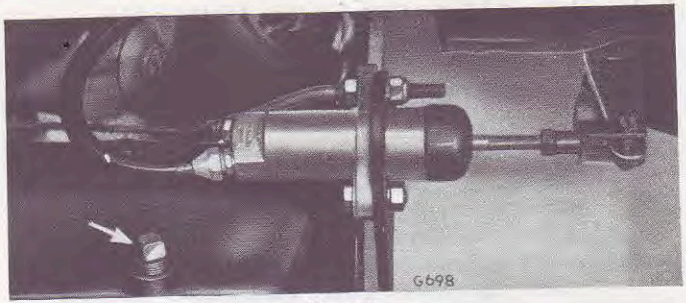


Fig. 17

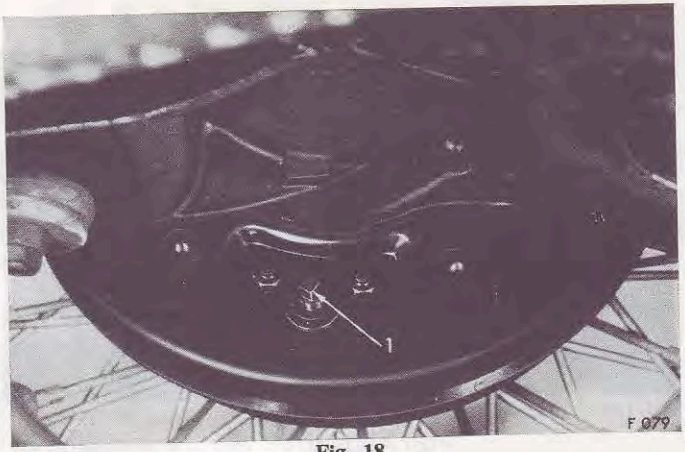


Fig. 18

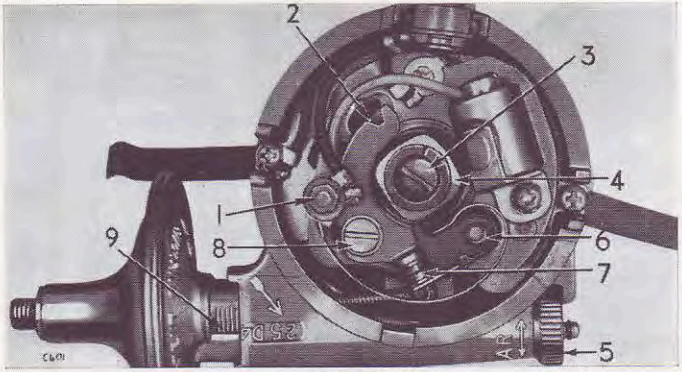


Fig. 19

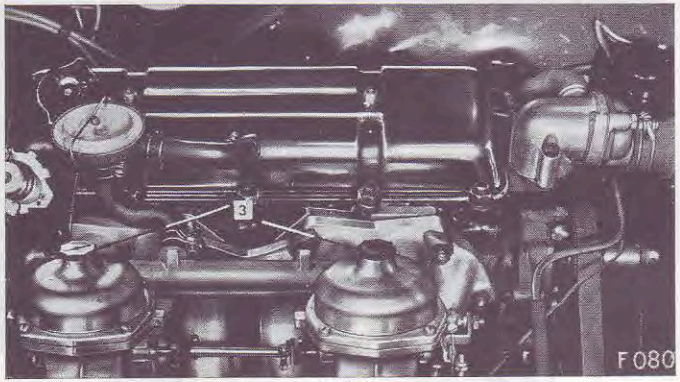


Fig. 20

Ignition Distributor (Fig. 19)

Release the clips and remove the distributor cap and rotor arm. Detach the contact breaker points and clean their contact faces with a fine carborundum stone. If all trace of pitting cannot be removed, fit new contacts. Using a small screwdriver in the slot (2), adjust the moving contact so that when the contact heel is on the peak of the cam a 0·015″ feeler gauge may be inserted between the contact faces (7) ; then tighten the screw (8).

Apply a few drops of thin oil around the edge of the screw (3) to lubricate the cam bearings and distributor spindle. Place a single drop of clean engine oil on the pivot (6). Smear the cam (4) with engine oil. A squeak may occur when the cam is dry.

Refit the rotor arm and ensure that the distributor cap is clean and the central carbon brush is free in its housing. Refit the cap and secure it to the distributor.

Carburettor Dash Pots (Fig. 20)

Unscrew the plug from the top of each carburettor and withdraw the plug and damper assembly. Top up the damper chambers with the current grade of engine oil. The oil level is correct when, utilizing the damper as a dipstick, its threaded plug is ¼″ above the dash-pots when resistance is felt. Refit the damper and plug. Using an oil can, apply oil to the throttle and choke control linkages. Check and if necessary adjust the slow running (page 34).

Fan Belt Tension (Fig. 21)

The fan belt should be sufficiently tight to drive the generator without unduly loading the bearings.

Adjust the belt by slackening the adjusting bolt (5) and the generator pivots (3 and 4). Pivot the generator until the belt can be moved $\frac{3}{4}$″ to 1″ at its longest run (6). Maintaining the generator in this position, securely tighten the adjusting bolt and the two pivots.

Lower Steering Swivel (Fig. 22)

Remove the plug (arrowed). Fit a screwed grease nipple and apply a grease gun filled with Hypoid oil. Pump the gun until oil exudes from the swivel. Remove the nipple and refit the plug.

Upper Ball Joint (Fig. 23)

Apply a grease gun filled with a recommended grease to the nipple (arrowed). Pump the gun until grease exudes from the underside of the nylon washer retained by the grease nipple.

Sparking Plugs

Remove the sparking plugs for cleaning and re-set the gaps to 0·025″. Clean the ceramic insulators and examine them for cracks or other damage likely to cause "H.T." tracking. Test the plugs before re-fitting and renew those which are suspect.

Hinges, Catches and Controls

Oil can lubricate pedal pivot bushes, door strikers, door and boot lid locks and hinges and the accelerator pedal controls and linkages.

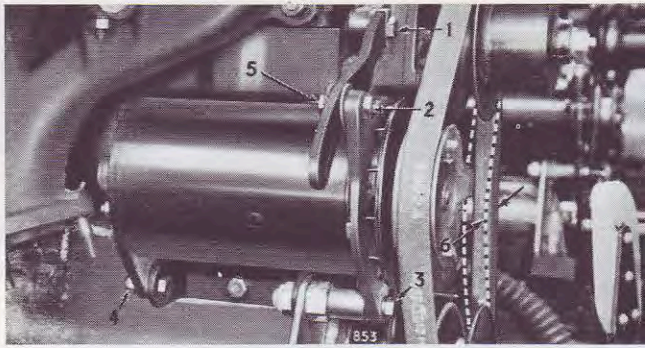


Fig. 21

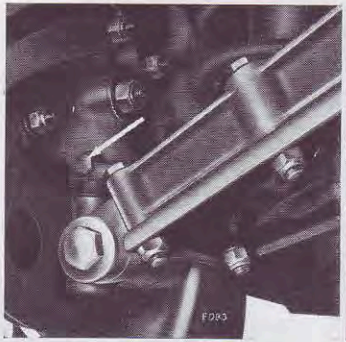


Fig. 22

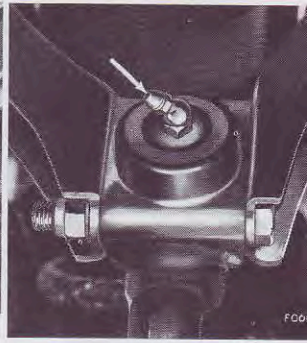


Fig. 23

Air Cleaners

Remove the air cleaners and use an air line to remove dust from between the element folds. When refitting the cleaners, ensure that the holes above the carburettor flange setscrew holes are correctly aligned with corresponding holes in the air cleaner and gaskets. (See Figs. 24 and 25).

If the engine is operating under dusty conditions, clean the filters more frequently.

Valve Rocker Clearances (Fig. 33)

Check and, if necessary, adjust the inlet and exhaust valve clearances to 0·010″ when cold. These settings, which are correct for all operating conditions, are obtained as follows :—

1. Turn the crankshaft until No. 1 pushrod reaches its highest point; then rotate the crankshaft a further complete revolution.
2. Slacken the locknut and insert a 0·010″ feeler gauge between No. 1 rocker and valve stem. Turn the adjuster with a screwdriver until slight resistance is felt as the gauge is moved across the valve stem. Tighten the locknut, re-check the clearance re-adjusting it if necessary. Deal with the remaining rockers in a similar manner, ensuring that each rocker is correctly positioned before attempting to adjust it.

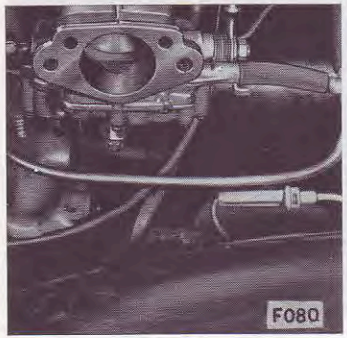


Fig. 24

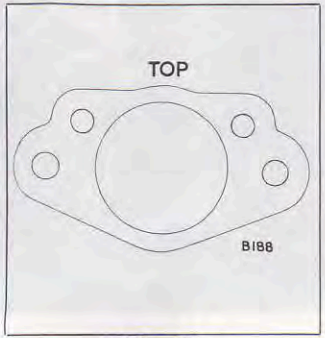


Fig. 25

12,000 MILES

At 12,000 mile intervals, carry out the work listed under 6,000 miles, and the following additional work.

Crankcase Breather Valve (Fig. 26)

Slacken the pipe clips and remove the breather pipes. Remove the nut and bolt retaining the valve and remove the valve. Disengage the clip from the valve body and lift out the diaphragm

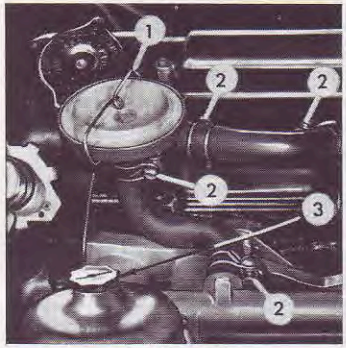


Fig. 26

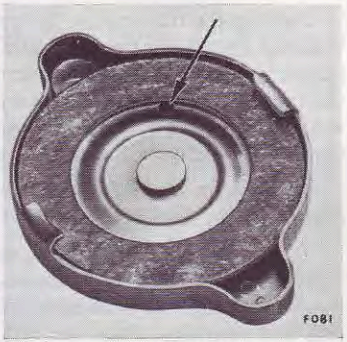


Fig. 27

and spring. Clean the components by swilling them in methylated spirits (denatured alcohol). Ensure that the breather pipes are clean and serviceable. Reverse the dismantling sequence to re-assemble.

NOTE. When the breather valve is cleaned, remove the oil filler cap and check that the breather hole (arrowed, Fig. 27) is unobstructed and that the joint washer is serviceable.

Front Hub Lubrication and Adjustment

Check and if necessary adjust the front hubs every 12,000 miles.

If the car is being used for competition work, re-pack the front hubs with grease every 12,000 miles. This period may be extended to 24,000 miles for normal use.

To pack the hubs with grease :—

Jack up the front of the car and remove one front road wheel. Without disturbing the hydraulic pipe unions, unscrew two bolts securing the caliper to a plate screwed to the vertical link and lift the caliper from the disc, tying it to a convenient point to prevent it hanging by the attached hydraulic pipe. Note the number of shims fitted between the caliper and vertical link.

When wire-spoked wheels are fitted, remove the splined hub extensions by detaching the nuts shown on Fig. 28.

Remove the hub grease cap, withdraw the split pin and remove the slotted nut and "D" washer. Detach the hub assembly and outer race from the stub axle. Wash all trace of grease from the hub and bearings. Pack the hub and bearings with new grease, working it well into the rollers.

Re-assemble the hub and races to the stub axle, securing them with the "D" washer and slotted nut. Spin the hub and tighten the nut until resistance is felt to hub rotation, then slacken off the nut one half flat and fit a new split pin. Re-assemble the brake caliper unit to the vertical link, refitting any shims removed during dismantling. Re-assemble the splined hub extension (if fitted). Refit the road wheel and lower the jack. See "Warning" on page 32.

Repeat the above operations with the opposite wheel hub

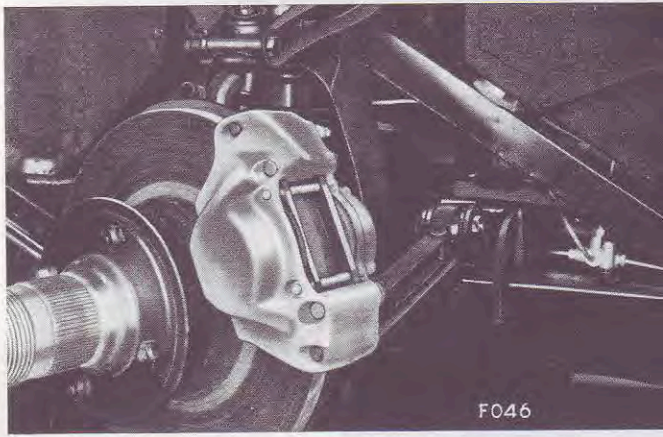


Fig. 28

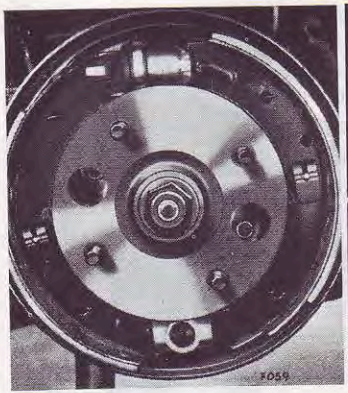


Fig. 29

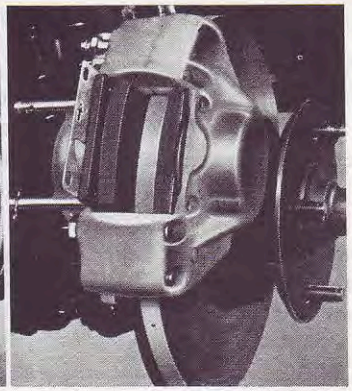


Fig. 30

Fig. 31

De-dust Rear Brake Linings (Fig. 29)

Jack up the rear of the car and remove both road wheels and brake drums. Examine the brake linings for wear and freedom from oil or grease. Renew worn or contaminated linings.

Using a high pressure air line, or a foot pump, blow all loose dust from the mechanism and, using a clean dry cloth, wipe the dust from the inside of the drums. Avoid touching the braking surfaces with greasy hands.

Refit the brake drums and road wheels, re-adjust the brakes (see page 20) and remove the jack.

Generator (Fig. 31)

Use an oil can to pour a few drops of engine oil through the hole in the centre of the rear end cap.

Sparking Plugs (Fig. 32)

Renew the sparking plugs. Make sure that new plugs are of the correct type and that the gaps are set to 0·025″.

Re-connect the plug leads as shown below.

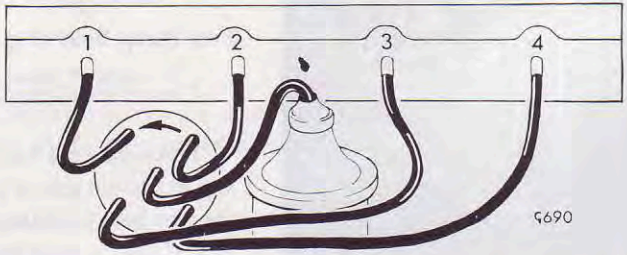
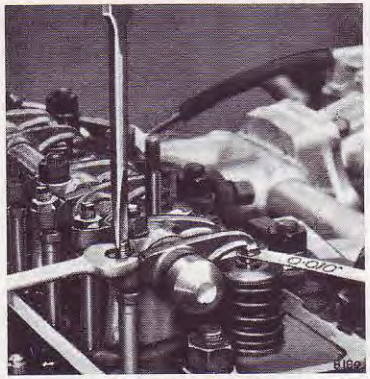


Fig. 32



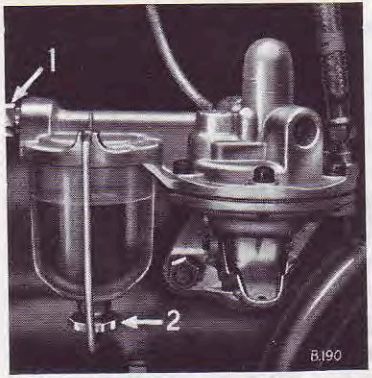


Fig. 33 (*top*) **Fig. 34** (*bottom*)

Oil Filter Element (Fig. 35)

To renew the element, unscrew the securing bolt "C", remove the container and withdraw the element. Wash the container to remove foreign matter trapped by the filter and discard the old washer "A", replacing it by a new one each time the element is renewed.

When re-assembling the container and a new element, ensure that the washer "A" is correctly positioned in its groove in the filter body. Do not tighten the bolt "C" more than is necessary to effect an oil-tight joint.

Before re-starting the engine make sure that the sump is filled to the correct level with clean fresh oil.

Fuel Pump Bowl (Fig. 34)

Clean the sediment bowl as follows:—

Disconnect the fuel pipe (1) from the suction side of the pump and to prevent loss of fuel, fit a tapered rubber or wood plug into the pipe bore ($\frac{1}{4}$" I.D.). Alternatively, attach one end of a length of rubber tube over the end of the fuel pipe and tie the opposite end of the tube above fuel tank level.

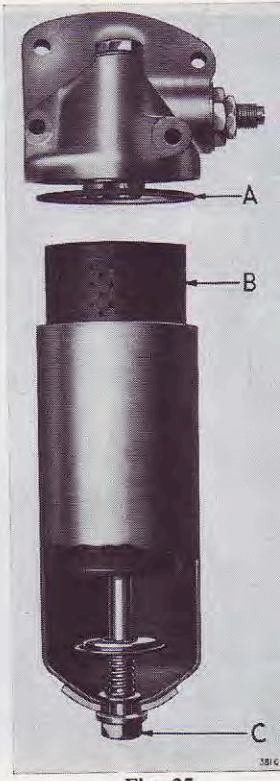


Fig. 35

Unscrew the stirrup nut (2) under the bowl, swing the stirrup to one side and remove the bowl. Swill out the sediment bowl and wipe it clean.

To avoid damaging the glass sediment bowl when refitting it, tighten the stirrup nut only sufficiently to ensure a fuel-tight joint. Re-connect the fuel pipe and prime the carburettors.

Top-up Gearbox (Overdrive if fitted)

The gearbox and overdrive units share a common filler orifice, an internal transfer hole, permitting the units to attain a common oil level.

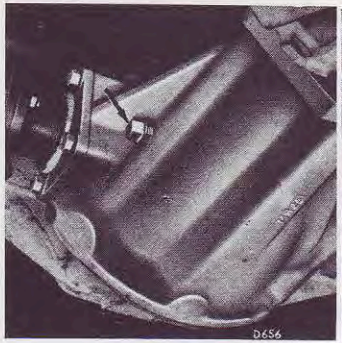


Fig. 36

Fig. 37

With the vehicle standing on level ground, remove the oil level plug (shown arrowed) and, using a suitable dispenser such as a pump type oil can with flexible nozzle filled with an extreme pressure (Hypoid) lubricant, top up the gearbox until the oil is level with the bottom of the filler plug threads.

Allow surplus oil to drain away before refitting the level plug and wiping clean.

Top-up Rear Axle (Fig. 36)

Remove the oil level plug (shown arrowed) and, using the dispenser used for topping-up the gearbox, and the same oil, *i.e.*, extreme pressure (Hypoid) lubricant, top up the rear axle until the oil is level with the bottom of the filler plug threads.

Allow surplus oil to drain away before refitting the level plug and wiping clean.

Exhaust System

Exhaust fumes are detrimental to health. Therefore, carefully check the system for leaks and immediately rectify defects.

Tightness Check

Check and if necessary tighten the universal joints, steering unit attachments and "U" bolts, steering tie rods and levers.

Steering Unit (Fig. 38)

Remove a sealing plug from the top of the steering unit and replace it by a grease nipple. Apply the grease gun and give 5 strokes only. Remove the nipple and refit the plug. Over greasing can cause damage to the rubber bellows.

Water Pump (Fig. 39)

Apply a grease gun to the grease nipple and inject grease until it exudes from a hole in the side of the pump.

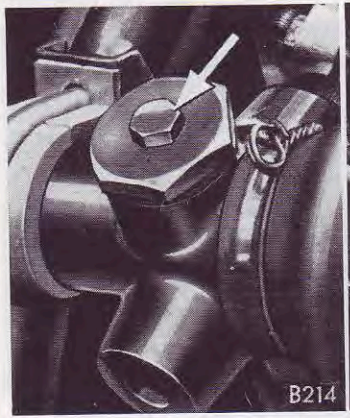


Fig. 38

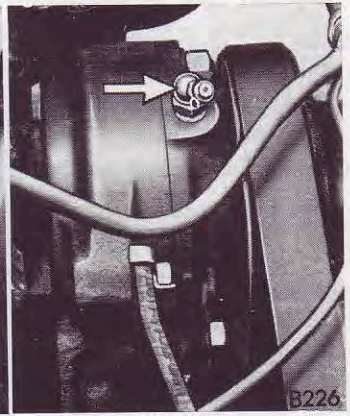


Fig. 39

FUEL OCTANE REQUIREMENT

Fuel octane requirements are related to compression pressur thus the higher the compression ratio, the higher the fuel octa requirement for maximum operating efficiency. The fuel octa requirement (research method) for the TR4A is as follows:

9 : 1 compression ratio Research Octane Number 97 minimu

Fuels commercially available are generally designated Mixture, Premium and Super, the octane ratings of which v between Oil Companies and between countries. In gene however, the octane rating corresponds as follows:—

Premium	Research Octane Number	97 to 99
Super . .	Research Octane Number	101

Detonation resulting from the use of fuels of a lower oct rating than specified will, if allowed to continue, cause seri damage to an engine. Therefore, if a suitable high octane is not available, the ignition setting must be retarded tempora to suit. (See "Ignition", page 41).

COOLING SYSTEM

Draining

Pull the heater control knob to the fully open position. Remove the radiator filler cap; open the tap in the bottom of the radiator (Fig. 40) and the tap at the rear right-hand side of the cylinder block (Fig. 41).

Flushing

Efficient cooling is maintained by thoroughly flushing the system once each year before adding anti-freeze. When carrying this out, it is advantageous to remove the drain tap completely and to use plenty of clean running water.

Allowing anti-freeze solution to remain in the system throughout the summer period affords anti-corrosion protection. The solution, however, should be changed at the beginning of each winter period as the inhibitor becomes exhausted.

Screen Washer (Fig. 42)

Examine the water level in the plastic windscreen washer container shown arrowed. If required, unscrew the cap and replenish the container with clean water. Under freezing conditions, fill the screenwasher container with a mixture of methylated spirits (alcohol) and water. This may then be used to disperse ice and snow from the windscreen. Do not use anti-freeze solution in the windscreen washer, as this may discolour the paintwork and damage the wiper blades and sealing rubber.

Fig. 40

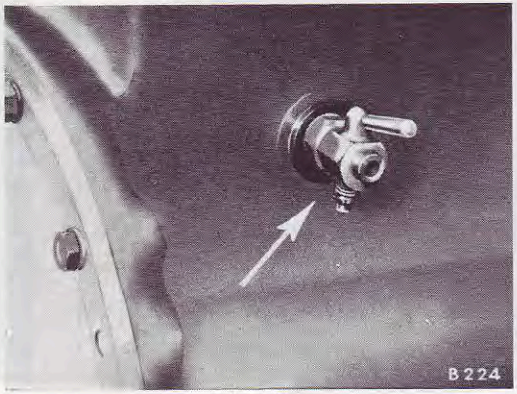


Fig. 41

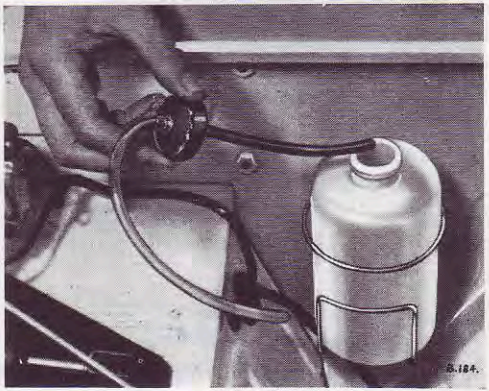


Fig. 42

Frost Precautions

The car heater cannot be completely drained by normal methods. Therefore frost damage will not be prevented by merely draining the radiator.

For your safeguard during freezing weather, an approved anti-freeze solution should be added to the coolant in the radiator, pages 52 and 53. Because of the searching effect of these solutions, advise your Dealer to check the system for leaks before adding the anti-freeze.

At certain temperatures glycol water solutions ad "mushy" state with a viscosity which impairs circulatio can immobilise or damage the water pump. Therefore, c the following chart before adding anti-freeze, for the deg frost protection required.

It is not advisable to use the same anti-freeze mixtu more than one season because the inhibitor becomes exha Its continued use may cause the corrosion of compone contact with the old solution.

ANTI-FREEZE CONCENTRATION	25%	30%	35%
Complete Protection:— Vehicle may be driven away immediately from cold	10°F (−12°C) (22 degrees of frost)	3°F (−16°C) (29 degrees of frost)	−4°F (−20 (36 degree of frost)
Safe Limit:— Coolant in mushy state. Engine may be started and vehicle driven away after short warm-up period.	1°F (−17°C) (31 degrees of frost)	−8°F. (−22°C) (40 degrees of frost)	−18°F. (−2 (50 degree of frost)
Lower Protection Limit:— Prevents frost damage to cylinder head, block and radiator. Engine should **NOT** be started until thawed out.	−14°F. (−26°C) (46 degrees of frost)	−22°F. (−30°C) (54 degrees of frost)	−28°F. (−3 (60 degree of frost)

ROAD WHEELS AND TYRES

Pressed Steel Wheels (Fig. 43)

Using the combination tool supplied in the kit, remove the nave plate (hub cap) by levering at a point adjacent to one of the attachment studs.

Progressively slacken and detach the wheel nuts (R.H. thread) with the wheel brace, then remove the road wheel.

To refit the wheel, smear the attachment studs with oil or grease to prevent corrosion, fit the wheel and secure it by fitting and progressively tightening the nuts. Refit the nave plate by engaging its rim over two of the attachment studs and springing it over the third stud, by giving it a sharp blow with the palm of the hand.

Wire Spoked Wheels (Fig. 44)

A copper-faced hammer is provided with cars fitted with wire spoked (knock-on) wheels to facilitate hub cap removal. Turn the hub caps, on the right-hand side of the car, clockwise

Fig. 43

Fig. 44

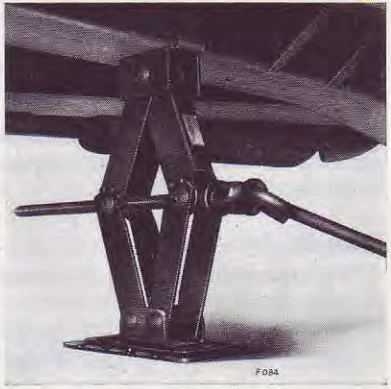


Fig. 45

and the hub caps on the left-hand side of the car, anti-clockwise, to remove them. Detach the wheel by pulling it straight off the splined hub. When refitting the road wheels, smear the hub splines with oil or grease to prevent corrosion and possible difficulty with wheel removal. Ensure that the hub caps are fully tightened by striking the "ears" in the appropriate direction with the copper-faced hammer.

WARNING. If the vehicle is fitted with wire-spoked wheels, the splined hubs, when removed, must be re-fitted to the correct side of the vehicle, *i.e.*, the knock-on hub caps must tighten in the opposite direction to road wheel rotation. Failure to ensure this may result in a road wheel coming off its splined hub.

Always ensure that the hub splines are protected during re-painting operations. Contamination of the splines by paint may result in difficult wheel removal or inefficient tightening.

Every 6,000 miles, check the tightness of all bolts and nuts, particularly the front and rear suspension, the steering and the wheel nuts.

Using the Jack (Fig. 45)

To raise either side of the vehicle for road wheel removal, proceed as follows :—

1. Ensure that the handbrake is applied and one of the wheels remaining on the ground is chocked.
2. Turn the jack screw anti-clockwise to release tension withdraw jack from its retaining strap.
3. Place the jack below the chassis (rearward of the front and forward of the rear wheel) and engage the hook o handle with the screw eye.
4. Rotate the jack handle clockwise to raise the vehicle anti-clockwise to lower.
5. To lower the jack, reverse the position of the ratchet ha and turn it counter-clockwise.

TYRES

The tyre pressures should be adjusted in accordance wit recommendations contained on the chart, page 58.

Where cars are to be used for racing, consult the respe tyre company regarding the need for tyres of full ra construction.

When new tyres are required it is essential to fit those o same type. The characteristics of tyres vary considerably therefore the four tyres must be of the same type.

ZENITH-STROMBERG CARBURETTORS (SERIES 175.CD)

Starting from Cold (Fig. 51)

The mixture is enriched for cold starting when the choke control is pulled. This operates a lever (6) which rotates the starter bar (20) to lift the air valve (18) and needle (29), thus increasing the area of the annulus between needle and jet orifice. Simultaneously, a cam on the lever (6) opens the throttle beyond its normal idle position to provide increased idling speed, according to the setting of the screw (4).

When the motor fires the increased depression will lift the air valve (18) to weaken the initial starting mixture and prevent the engine stalling through over richness.

While the choke remains in action the car may be driven away but the control knob should be released or pushed in gradually as the engine attains normal working temperature. This will progressively decrease the extent of enrichment and the degree of throttle opening for fast-idle to the point where the screw (4) is out of contact with the cam on the choke lever and the throttle is permitted to return to the normal idle position as determined by the setting of the throttle stop screw (3).

NOTE : The accelerator pedal should not be depressed when starting from cold.

Normal Running

With the opening of the butterfly throttle, manifold depression is transferred, via a drilling (25) in the air valve, to the chamber (24) which is sealed from the main body by the diaphragm (16).

The pressure difference between chamber (24) and that existing in the bore (26) causes the air valve to lift, thus any increase in engine speed or load will enlarge the effective choke area since the air valve lift is proportional to the weight of air passing the throttle (27). By this means air velocity and pressure drop across the jet orifice remain approximately constant at all speeds.

As the air valve (18) rises it withdraws a tapered metering needle (29), held in the base of the air valve by the screw (10), from the jet orifice (19) so that fuel flow is increased relative to the greater air flow.

Acceleration

At any point in the throttle range a temporarily richer mixture is needed at the moment of further throttle opening. To provide this, a dashpot or hydraulic damper is arranged inside the hollow guide rod (17) of the air valve.

The rod is filled with S.A.E.20 oil to within a $\frac{1}{4}$" of the end of the rod in which the damper (14) operates. When the throttle is opened, the immediate upward motion of the air valve is resisted by this plunger during which time the suction or depression at the jet orifice is increased to enrich the mixture.

The downward movement of the air valve (18) is assisted by the coil spring (15).

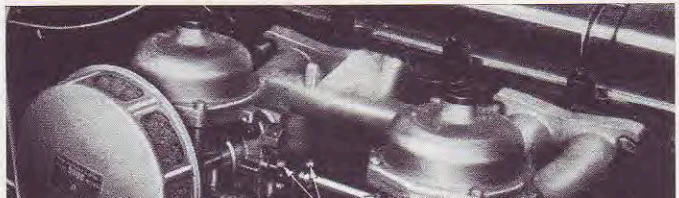


Fig. 46 (*top*)

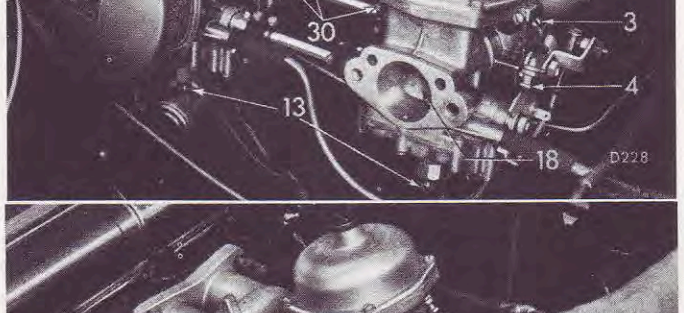


Fig. 47 (*bottom*)

ADJUSTMENT

Setting the Idle

NOTE. Although gauze filters are shown on Figs. 46 and paper element filters are fitted to production vehi

Two adjustment screws are used to regulate the idle speed mixture. The throttle stop screw (3) controls the speed, and th adjusting screw (13) determines the quality of air-fuel mix entering the cylinders. Turning the jet adjusting screw **clock** decreases the mixture strength; **anti-clockwise** will enrich.

With the engine at normal working temperature, ren the air cleaner and hold the air valve (18) down on to bridge (28) in the throttle bore. Screw up the jet adjustn screw (13)—a coin is ideal for this purpose—until the contacts the underside of the air valve. From this pos turn down the jet adjusting screw three turns. This establi an approximate jet position from which to work.

Run the engine until it is thoroughly warm and adjust stop screw (3) to give an idle speed of 600/650 r.p.m.

The idle mixture is correct when the engine beat is sm and regular and the air intake "hiss" is equal on both carburet

As a check, lift the air valve a very small amount ($\frac{1}{32}$") a long thin screwdriver and listen to the effect on the en If the engine speed rises appreciably, the mixture is too and, conversely, if the engine stops, the mixture is too w Properly adjusted, the engine speed will either remain cons or fall slightly on lifting the air valve.

Adjusting and Synchronising Twin Carburettor Installation

Loosen the clamping bolts on the throttle spindle couplings between the two instruments. Next, unscrew the throttle stop screw to permit the throttle in each carburettor to close completely, and tighten the clamping bolts on the couplings between the spindles of the two carburettors.

Screw in the throttle stop screws (3) to the point where the end of the screw is just contacting the stop lever attached to each throttle spindle. From this point rotate the stop screw in each carburettor one complete turn to open the throttles an equal amount to provide a basis from which final speed of idle can be set.

Having reconnected the throttles and set each open an equal amount, regulate the jet adjusting screws (13) in the instruments as detailed under the heading "Setting the Idle", *i.e.*, three turns down from the point where the jet orifice comes into contact with the base of the air valve (18).

NOTE : Remember that the idle quality depends to a large extent upon the general engine condition and such points as tappet adjustment, spark plugs, and ignition timing should be inspected if idling is not stable. It is also important to eliminate any leaks in the induction system.

Float Chamber Fuel Level (Fig. 48)

To check the float level, remove the carburettor from the engine and remove the float chamber. Invert the carburettor. Check that the highest point of the float, when the needle is against its seating, is 0·73″ (18·5 mm.) above the face of the main body. Re-set the level by carefully bending the tag which contacts the end of the needle. The addition of a thin fibre washer under the needle valve seat will effectively lower the fuel level.

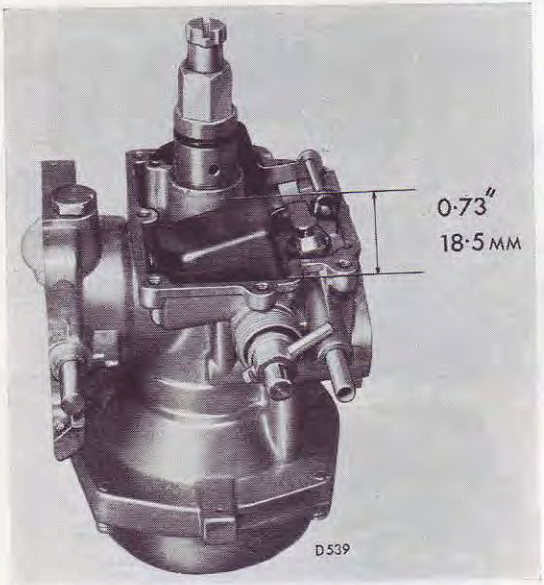


Fig. 48

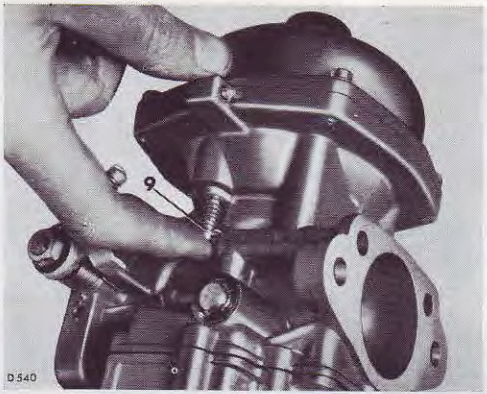


Fig. 49

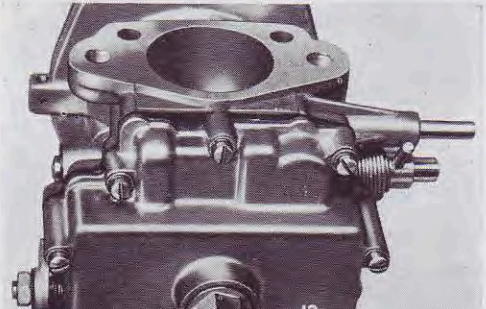


Fig. 50

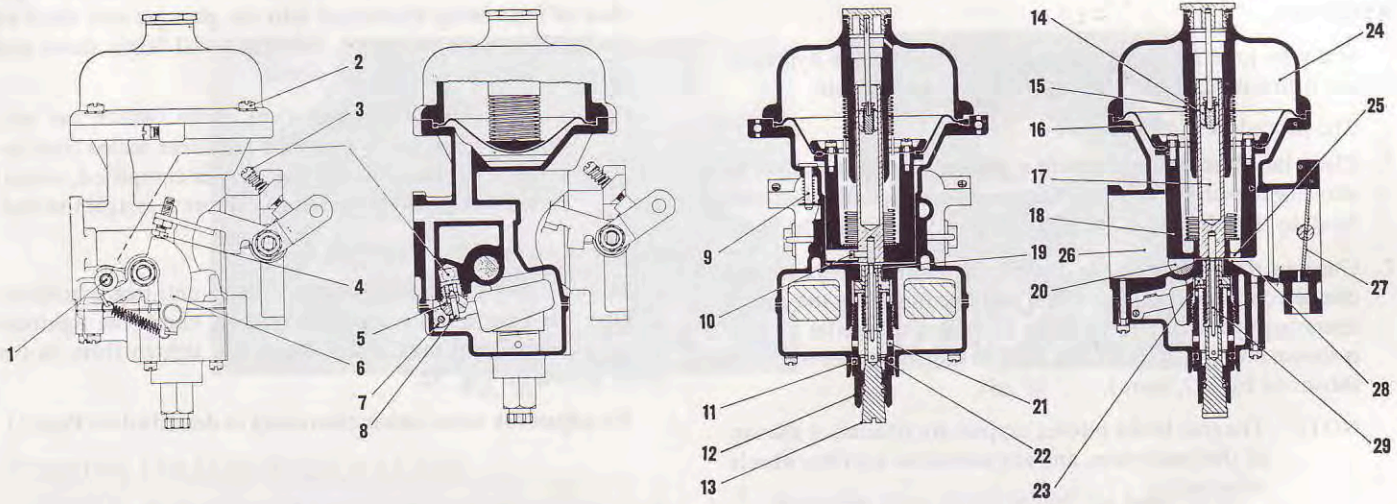
Jet Centralisation

Efficient operation of the carburettor depends upon freely moving air valve and a correctly centred needle in t jet orifice. The air valve may be checked for freedom by lifti the valve with the spring loaded pin (9). A valve failing fall freely indicates a sticking valve, or an off-centred jet, and/ the needle (29) fouling the jet orifice. Rectify by removing a cleaning the valve and bore in paraffin, or by re-centralising t needle in the jet.

NOTE : When required, the jet needle must be renewed one bearing the same code number. The shoulder of t needle must be fitted flush with the lower face of the valve.

Procedure

1. Lift the air valve (18) and fully tighten the jet assembly (12
2. Screw up the orifice adjuster until the top of the orifice (1 is just above the bridge (28).
3. Slacken off the jet assembly (12) approximately one ha turn to release the orifice bush (23).
4. Allow the air valve (18) to fall; the needle will then ent the orifice and thus centralise it.
5. Slowly tighten the assembly (12), checking frequently th the needle remains free in the orifice. Check by raising t air valve approximately $\frac{1}{4}$" and allowing it to fall freel The piston should then stop firmly on the bridge.
6. Re-set the engine idling.



1. Petrol inlet
2. Screws
3. Throttle stop screw
4. Screw
5. Needle seating
6. Lever
7. Float arm
8. Needle
9. Spring loaded pin
10. Locking screw
11. "O" ring
12. Jet assembly
13. Jet adjusting screw
14. Damper
15. Coil spring
16. Diaphragm
17. Guide rod
18. Air valve
19. Jet orifice
20. Starter bar
21. Inlet hole
22. Inlet hole
23. Orifice bush
24. Chamber
25. Air valve drilling
26. Bore
27. Throttle
28. Bridge
29. Metering needle

Fig. 51

BLEEDING THE BRAKE AND CLUTCH HYDRAULIC SYSTEMS

If a pipe joint has been uncoupled, or part of the hydraulic system dismantled, the system must be bled to expel air.

The procedure is as follows:—

1. Clean the bleeder nipple and fit a piece of rubber tube over it, allowing the tube to hang in a clean container partially filled with fluid, so that the end of the pipe is below the level of the fluid.

2. Unscrew the bleeder nipple one complete turn. There is only one bleeder nipple to each wheel and one nipple on the clutch operating cylinder. The position of the brake bleeder nipples is shown on Figs. 30 (FRONT). The clutch bleeder nipple is shown on Fig. 17, item 1.

   NOTE. The rear brake bleeder nipples are situated at the top of the back plate, and are accessible with the wheels removed.

3. Fill the fluid reservoir before commencing the bleeding operation, and keep it at least half-filled during the whole operation, otherwise air will be drawn into the system via the master cylinder. Do not use fluid that has been expelled from the system for maintaining the level. Always clean the area around the filler cap before removing it.

4. Depress the pedal quickly and allow it to return without assistance. Repeat this pumping operation with a slight pause between each depression of the pedal. Observe flow of fluid being discharged into the glass jar and when air bubbles cease to appear, hold the pedal firmly down a securely tighten the bleeder nipple.

NOTE. For bleeding or replenishment of the system, use o fluid that has been stored in a container sealed from mosphere. Immediately bleeding is completed, re-s residual fluid in the container, before it is again stor

Engine

Before filling the cooling system with an anti-freeze mixtu or after the engine has been decarbonised, check the tightn of the cylinder head nuts and if necessary, tighten them in order shown on Fig. 52.

Re-adjust the valve rocker clearances as described on Page

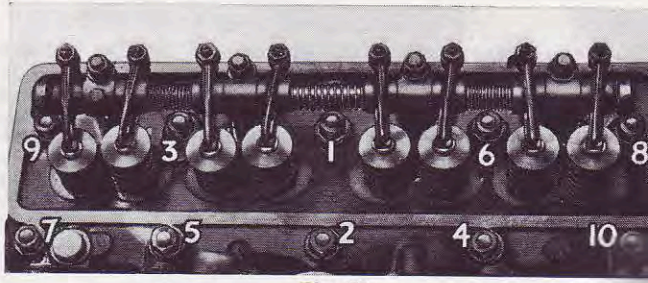


Fig. 52

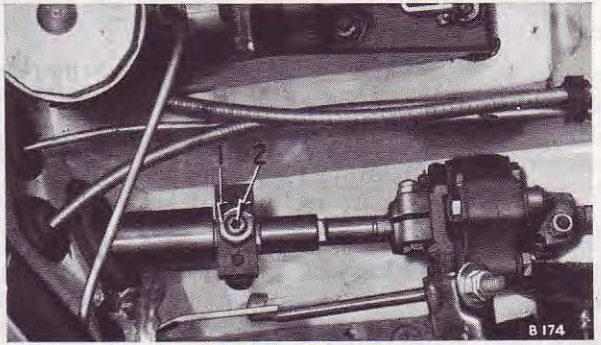


Fig. 53

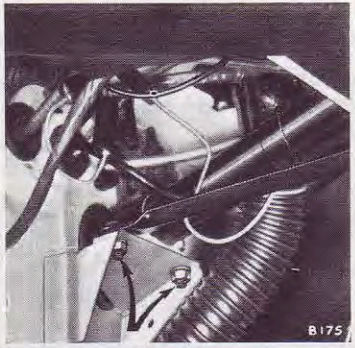


Fig. 54

STEERING COLUMN IMPACT CLAMP

The T.R.4A incorporates a telescopic steering column which provides adjustment for column length and protection for the driver in the event of a collision.

To adjust the column length :—

1. Slacken the impact clamp lock nut, (1) Fig. 53, and unscrew the socket head screw (2) with a $\frac{1}{8}$" A.F. socket key.
2. Working inside the vehicle, slacken the clamp nuts shown arrowed on Fig. 54.
3. Slacken a third clamp behind the facia panel.
4. Move the column to the desired position and re-tighten the two upper clamps.
5. Using only finger pressure on the socket key, tighten the screw (2) and secure the locknut (1).

NOTE. The steering column will be unable to telescope if adjusted to its lowest position.

ELECTRICAL SYSTEM

A 12 volt negative earth system is employed in all circuits.

To safeguard against fire from short circuits, always disconnect one cable from the battery before removing or disconnecting an electrical unit.

WARNING. If the vehicle is to be equipped with a radio, connected to the car electrical system, ensure that the radio is of NEGATIVE GROUND POLARITY, or serious damage will result.

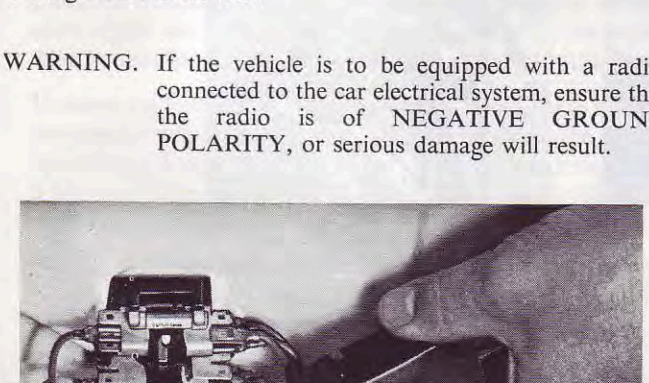


Fig. 55

Fuses (Fig. 55)

The fuse unit, which is located on the right-hand side vala houses 2 operating and 2 spare fuses. Fuse A2 protects instrument illumination, the parking and tail lamps and number plate illumination lamps. Fuse A4 protects the u controlled by the ignition switch, *i.e.*, flashing direction signals, t perature and fuel gauges, brake stop lamps and the wiper mo below the fuse unit adjacent to the horn relay main harness.

Failure of a fuse is indicated by all the units protected that fuse becoming inoperative. If the new fuse fails immedia the equipment and associated wiring must be examined and fault rectified.

BULB CHART

	Watts	Lucas
Parking	4	222
Repeater Flashing	21	382
Brake/Tail	21/6	380
Plate Illumination	6	207
Panel Illumination	2·2	987
Headlamp (Home Market)	60/45	545210

Ignition

Failure of the ignition warning light will not prevent the ignition system functioning but the fault should be rectified at the first opportunity.

All high tension cables fitted to the ignition system are made from carbon impregnated nylon or cotton cords encased in rubber or neoprene to form a high resistive conductor. Replacement cables must always be of the same type.

Keep the moulded cover of the distributor clean by wiping it inside and outside with a soft cloth. Check that the carbon brush on the inside moves freely. The contacts must be kept free from oil or dust, and a gap maintained at 0·015″.

Ignition Timing (Fig. 19)

The nominal ignition setting given on page 54 applies to an engine at rest. When the engine is running the ignition is advanced automatically to suit varying conditions. Maximum performance of an individual engine may require slight modification of the nominal setting to suit particular grades of fuel.

To set the ignition timing, rotate the crankshaft until the hole in the crankshaft pulley flange is aligned with the pointer on the timing cover. With the distributor point gap (7) set at 0·015″ (0·4 mm.), and the vernier adjustment set in the centre of its scale (9), slacken the distributor clamp bolt and adjust the distributor so that the contact breaker points are just commencing to open. Tighten the distributor clamp bolt and rotate the knurled vernier adjustment screw (5) anti-clockwise until one extra division appears on the scale.

Generator and Control Box

The generator operates in conjunction with the voltage regulator unit which is adjacent to the cut-out in the control box. A fully-charged battery receives a low charging current and a discharged battery a high charging current. Additionally the cut-out prevents the battery from being discharged through the generator, when the generator is not charging. In this event, the ignition warning light glows.

Maintenance of the coil is restricted to keeping the terminals clean and free from oil.

The Starter Motor

The starter brush gear and commutator do not normally require attention for a considerable period. After 48,000 miles, however, it is advisable to have the unit serviced at a Triumph or Lucas Service Depot.

If the starter pinion jams in mesh with the flywheel, it may be released by switching off the ignition, selecting top gear, and rocking the car to and fro, or by removing the end cover from the starter and turning the squared end of the exposed shaft in a clockwise direction,

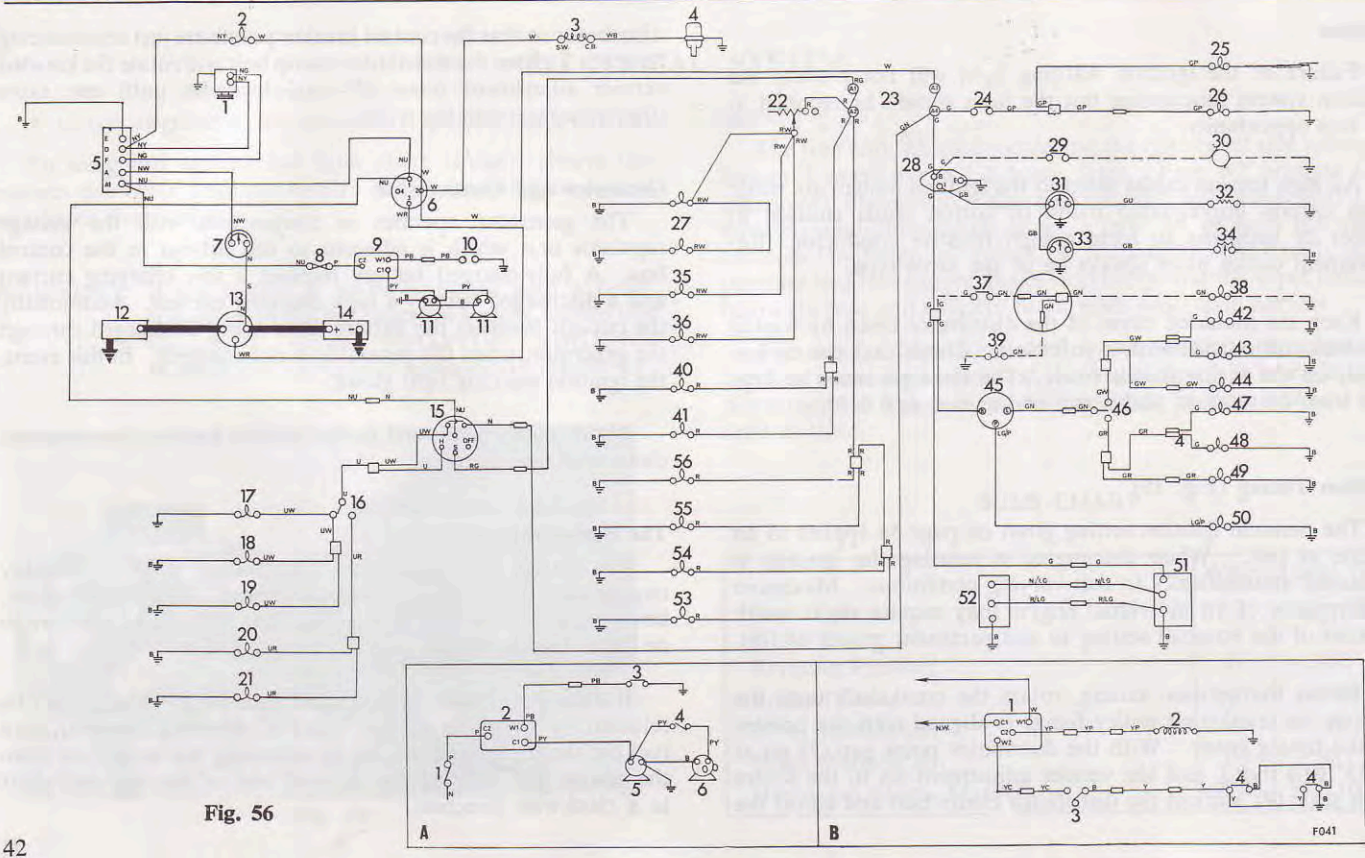


Fig. 56

KEY TO FIG. 56

1. Generator.
2. Ignition Warning Lamp.
3. Ignition Coil.
4. Distributor.
5. Control Box.
6. Ignition Switch.
7. Ammeter.
8. Horns Fuse.
9. Horn Relay.
10. Horn Push.
11. Horns.
12. Starter Motor.
13. Starter Solenoid.
14. Battery.
15. Lighting Switch.
16. Dip Switch.
17. High Beam Indicator Lamp.
18. Headlamp High Beam, R.H.
19. Headlamp High Beam, L.H.
20. Headlamp Dip Beam, R.H.
21. Headlamp Dip Beam, L.H.
22. Instrument Illumination Rheostat.
23. Fuse Unit.
24. Stop Lamp Switch
26. Stop Lamp, R.H.
26. Stop Lamp L.H.
27. Ammeter and Gauges Illumination.
28. Voltage Stabilizer.
29. Heater Blower Motor Switch } Optional extra
30. Heater Blower Motor } Optional extra
31. Temperature Indicator Gauge.
32. Temperature Transmitter.
33. Fuel Gauge.
34. Tank Unit.
35. Speedometer Illumination.
36. Tachometer Illumination.
37. Reversing Lamp Switch } Optional extra
38. Reversing Lamp } Optional extra
39. Reversing Lamp. } Optional extra
40. Parking Lamp R.H.
41. Parking Lamp L.H.
42. Direction Indicator R.H. Front.
43. Direction Indicator R.H. Front Repeater.
44. Direction Indicator R.H. Rear.
45. Flasher Unit.
46. Direction Indicator Switch.
47. Direction Indicator L.H. Front.
48. Direction Indicator L.H. Front Repeater.
49. Direction Indicator L.H. Rear.
50. Flasher Warning Lamp.
51. Windshield Wiper Motor.
52. Windshield Wiper Motor Switch.
53. Plate Illumination Lamp L.H.
54. Tail Lamp L.H.
55. Plate Illumination Lamp R.H.
56. Tail Lamp R.H.

FRANCE ONLY

A1. Fuse.
A2. Horn Relay.
A4. Switch.
A5. Horn low note.
B1. Relay. } Overdrive Optional Extras
B2. Solenoid. } Overdrive Optional Extras
B3. Column Control. } Overdrive Optional Extras
B4. Transmission Switches. } Overdrive Optional Extras

CABLE COLOUR CODE

B.	Black.	**K.**	Pink.
U.	Blue.	**P.**	Purple.
N.	Brown.	**R.**	Red.
G.	Green.	**W.**	White.
LG.	Light Green.	**Y.**	Yellow.

Headlamp Alignment

The sealed beam is aligned in the vertical plane by turning the screw at the top of the lamp and in the horizontal plane by turning the screw on the side. Alignment of the high beam on one lamp is best carried out with the other lamp covered.

Maximum illumination is obtained, and discomfort to other road users is prevented, by ensuring that the lamp beams do not project above the horizontal when the vehicle is fully laden. Adjustments, when necessary, should be entrusted to a Dealer having beam setting equipment.

Light Unit Replacement

The headlamps are fitted with sealed beam units. Fi failure necessitates light unit renewal. Remove the s rim by inserting the tool, provided in the kit, behind t and levering sideways (Fig. 57). Remove the screv Fig. 58, and withdraw the rim to release the light unit. disturb the beam aiming adjustment screws (2). Disc the plug, Fig. 59.

Fig. 57

Fig. 58

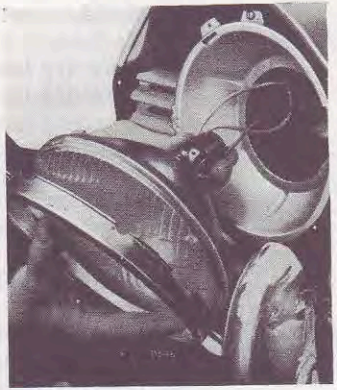


Fig. 59

Fig. 60

Front Direction Indicator Flashing Lamps (Fig. 61)

With the aid of a thin screwdriver turn back the rubber and remove the rim. This then permits the glass lens to be similarly removed. When re-assembling the components fit the glass lens first.

Repeater Lamp (Fig. 60)

Access to the bulb is gained by removing the retaining screw and disengaging the lens from the retaining lip. Pull out the bulb.

Tail/Brake Stop and Direction Indicator Flashing Lamps (Fig. 63)

Remove three screws and lift off the lens, which is in two sections, to gain access to the bulbs. The pins on the tail/brake stop lamp bulb are offset and cannot be fitted incorrectly.

Parking Lamps (Fig. 62)

Twist the lens counter-clockwise and withdraw the lamp front to gain access to the bulb.

Plate Illumination Lamps (Fig. 64)

Remove the two screws securing the rim and cowl to the over-rider, withdraw the lamp approximately 2″ and renew the bulb.

Battery

Keep the terminals clean and well covered with petroleum jelly to prevent corrosion. If the terminals become corroded scrape them clean and coat with petroleum jelly.

Fig. 61

Fig. 62

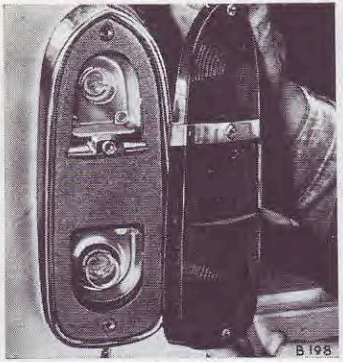


Fig. 63

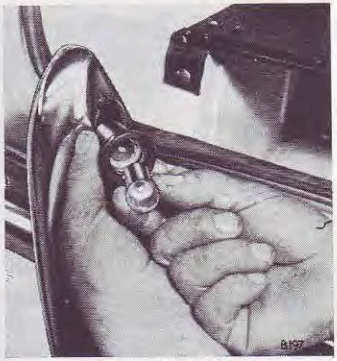


Fig. 64

SOFT TOP

The soft top, which is made from P.V.C. material, is supported by a hinged frame, which folds down into the back of the car and is retained in place by a cover.

Tonneau Cover (Fig. 70)

A tonneau cover is available as an optional extra. The cover provides weather protection for the vehicle interior when the soft top is removed. It incorporates press studs for securing to the car and has a zip fastener down the centre which permits access to either or both of the front seats. A strap on the underside of the cover engages a pillar fastener on the inboard side of the passenger seat frame.

Maintenance

Maintenance of the soft top is restricted to washing the fabric with warm water and a non-caustic soap. Always wipe the top dry.

Do not use detergents, polish or fuel-based cleaners as they may damage the fabric or affect the adhesive used in manufacture.

Obstinate grease marks may be removed by using a cloth moistened with carbon tetrachloride.

Apply engine oil sparingly to the joints of the frame with small brush. Work the oil well into the joints and then wi away all surplus oil.

Hood Lowering (Figs. 65 to 69)

Release the toggles retaining the top. Release the fasten (three each side, rearward of the doors) securing the edge of hood to the body. Push the header rail upwards and rearwa until the hoodstick assembly begins to fold. Pull the hood fab clear of the centre rail (arrowed Fig. 67). Pull the hood fab rearwards to lie flat over the boot lid, as the hoodsticks are mo to the fully folded position. Fold the hood forward over hoodsticks and turn the quarter lights inwards (Fig. 69). Ens that the Vybak rear window is free from distortion and that hood material is not trapped by the hoodsticks (arrowed (Fig.

Retain the hood in position with the cover provided (Fig. as follows:

Attach the cover initially to the outside pillar faste shown on Fig. 69 before engaging the remaining fasten Attach each strap to its respective fastener to the back of the well.

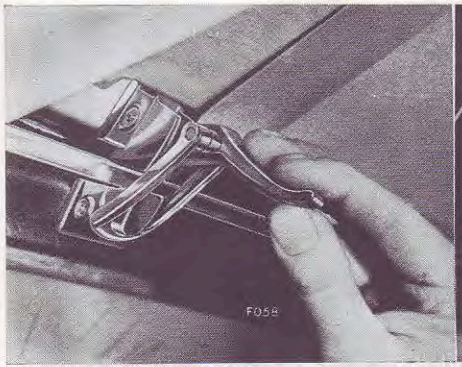


Fig. 65

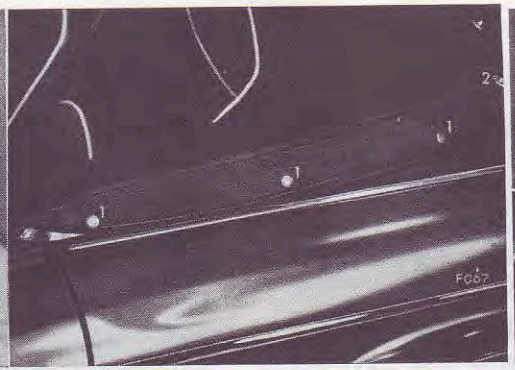


Fig. 66

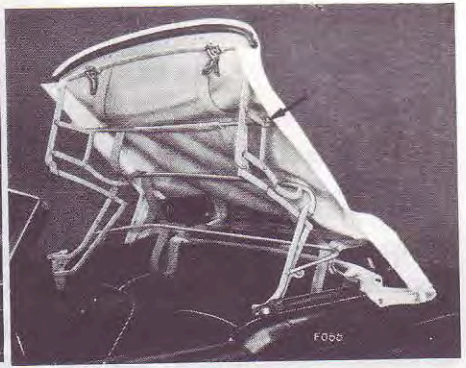


Fig. 67

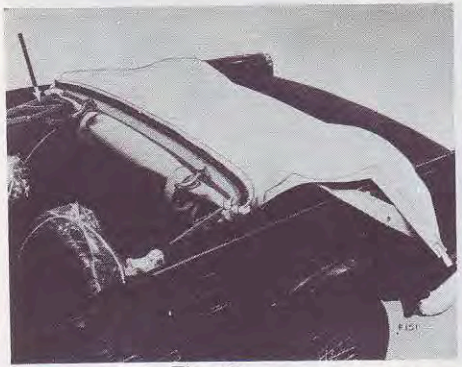


Fig. 68

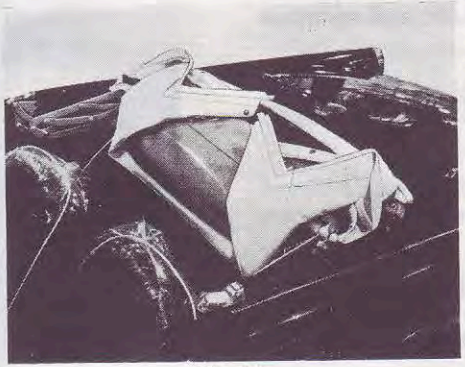


Fig. 69

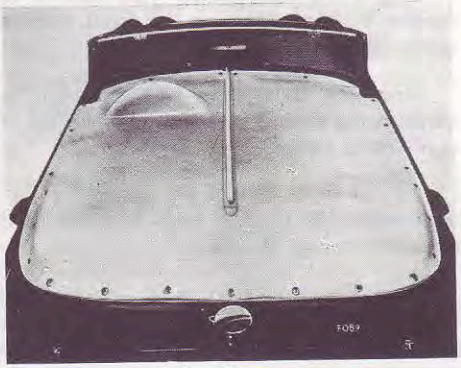


Fig. 70

SURREY TOP

To Fit (Fig. 75)

Remove the two bolts from the underside of the windscreen header rail, and the two bolts from the underside of the back light surround, and lift away the roof panel.

Open out the surrey top frame and enter the rear ends of the frame into the holes in the top back light surround.

Press the rubber covered studs, attached to the front end of the frame, into the holes in the screen header rail.

Adjust the nuts on the rear end of the frame to provide rigidity without stressing the front rubbers, or making frame removal difficult.

Once the nuts have been correctly adjusted, no further adjustments should be required when the frame is subsequently removed or refitted.

Fit the front end of the surrey top by folding its stiffened edge under the retainer strip attached to the top of the screen as shown in Fig. 71.

Enter the two nylon studs, attached to the rear edge of the surrey top, in to the top of the backlight frame as shown in Fig. 72 and secure them with the small wing nuts provided in the conversion kit.

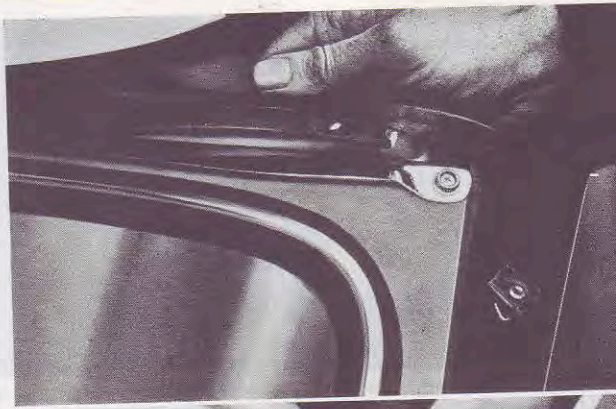


Fig. 71

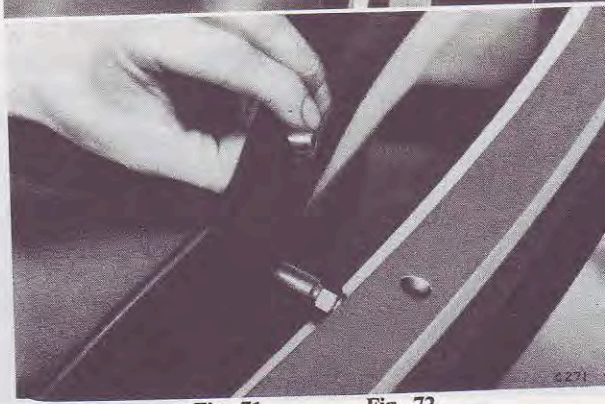


Fig. 72

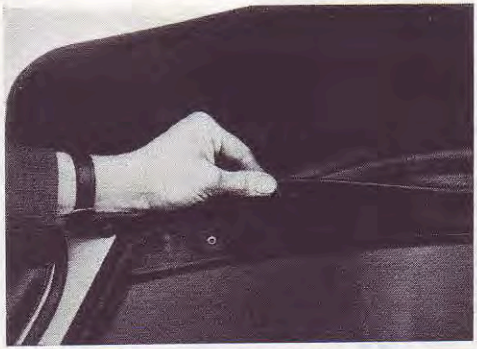


Fig. 73

Fig. 74

Surrey Top (cont'd.)

Fit one press stud, shown in Fig. 74. on each upper side of the backlight frame as follows:—

1. Apply marking blue to the press button, attached to the rear corner of the surrey top, pull the fabric taut and transfer the marking to the backlight frame.
2. Drill the frame and fit the press stud.
3. Engage each valance tensioner with a hook revealed by turning back the weatherstrip at each side of the door.
4. Secure the press studs.

When closing the door, ensure that the top edge of the cover shown held in Fig. 73 is to the outside, and the backing strip to the inside of the window in the raised position.

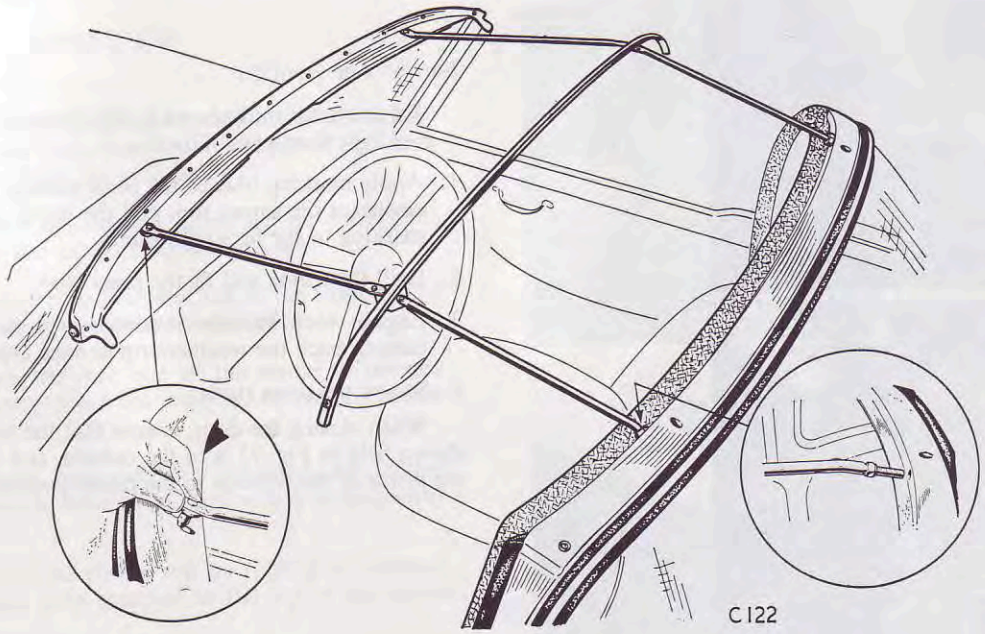


Fig. 75

CARE OF THE BODYWORK

To preserve the "new look" of the body, the following suggestions are offered.

Washing

Wash the vehicle frequently with plenty of running water and a clean sponge. Soften, and if possible remove, mud with water before using the sponge. To prevent scratches, do not use a dry cloth to remove dust from the body. When all dirt is removed, dry the vehicle with a clean damp chamois leather.

Chromium Plating

Maintain the attractive appearance of chromium plated parts by frequent washing and thorough drying, particularly in winter when contamination with road salts is likely. Occasionally apply a wax polish.

Removing Grease and Tar

Use denatured alcohol to remove grease and tar. White spirit is also effective, but it must not be applied to rubber.

Glass

To avoid scratching, clean the windows with a damp chamois leather kept especially for the purpose. Protect glass from contamination by any silicone preparations used in the vicinity. Silicone polishes are extremely difficult to remove and cause the windscreen wipers to smear.

Polishing

After a period of use, the formation of traffic film will cause the paintwork to lose some of its lustre, even though the vehicle may have been carefully and regularly washed. The original brilliance may be restored after washing by using a reputable non-abrasive cleaner and polish.

Wax preparations are recommended for their durability, but if used regularly the old wax must first be removed with a cleaner before further application of new wax. The frequency at which polishing is necessary depends upon local conditions of air pollution.

Interior Care

Brush and clean the inside of your car each time you wash and polish the outside of it. Use a vacuum cleaner where possible and ensure complete removal of all dust from the interior and trim.

Wash the upholstery with luke-warm, non-caustic, soapy water. Do not use detergents or household cleaners as these may cause damage. Remove all traces of suds with a clean damp cloth and thoroughly dry the upholstery with a dry duster or towel.

Wipe the facia and instrument panel with a damp cloth only. Wax or other polishes should not be used inside the car.

Safety Harness

Full provision is made for fitting a two- or three-point attachment type of safety harness to the car. Both types are available as special accessories from your Dealer. Belts may be cleaned with a cloth or sponge soaked in warm soapy water.

RECOMMENDED LUBRICANTS — HOME MARKETS (All Seasons)

COMPONENT	MOBIL	SHELL	ESSO	BP	CASTROL	DUCKHAM'S	REGE
ENGINE*	Mobiloil Special 10W/30	Shell Super Motor Oil	Esso Extra Motor Oil	Super Visco Static	Castrolite	Duckham's Q20/50	Havol 20/20W Havol 10W/
CARBURETTOR DASHPOTS	Mobiloil Arctic	X100- 20W	Esso Motor Oil 20W/30	Energol S.A.E. 20W	Castrolite	Nol "Twenty"	Havol 20/20
GEARBOX AND O/DRIVE REAR AXLE	Mobilube GX.90	Shell Spirax 90 EP	Esso Gear Oil GP.90/140	Gear Oil S.A.E. 90 EP	Castrol Hypoy	Duckham's Hypoid 90	Multi Lubrican
STEERING UNIT GREASE GUN FRONT WHEEL HUBS BRAKE CABLES	Mobilgrease MP	Shell Retinax A	Esso Multi-Purpose Grease H	Energrease L.2	Castrolease LM	Duckham's LB.10	Mar Allpur
OIL CAN	Mobil Handy Oil	Engine Oil	Engine Oil	Engine Oil	Everyman Oil	Duckham's General Purpose Oil	Havo 20/2
REAR ROAD SPRINGS	OLD REAR AXLE OR ENGINE OIL						
CLUTCH AND BRAKE RESERVOIR — GIRLING SYSTEM	CASTROL GIRLING BRAKE AND CLUTCH FLUID (CRIMSON).			WHERE THE PROPRIETARY BRAND IS NOT AVAILABLE, O FLUIDS WHICH MEET THE S.A.E. 70 R.3 SPECIFICATION BE USED.			

*Where circuit or other severe competitions are contemplated it is advisable to use oils of high viscosity in view of the increased oil temp encountered.

APPROVED ANTI-FREEZE SOLUTIONS — Regent PT Anti-freeze — BP Anti-frost — Mobil Permazone — Shell Anti-freeze — Esso Anti-freeze — Castrol Anti-freeze — Duckham's Anti-freeze —

Where these proprietary solutions are not available, others which meet B.S.I. 3151 or 3152 specification may be used.

RECOMMENDED LUBRICANTS — OVERSEAS COUNTRIES

Component	Air Temp. °C.	Air Temp. °F.	Mobil	Shell	Esso	BP	Castrol	Duckham's	Texaco Caltex	A.P.I. Designation
ENGINE*	Over 20°	Over 70°	Mobiloil Special 10W/30	Shell Super Motor Oil	Esso Extra Motor Oil 20W/40	VISCO-STATIC: Energol S.A.E. 40	LONGLIFE: Castrol 40 H.D.	Q20/50	Havoline 40	M.M. or M.S.
	0° to 20°	40° to 70°			Esso Extra Motor Oil 10W/30	VISCO-STATIC: Energol S.A.E. 30	CASTROLITE 10W/30: Castrol 30 H.D.		HAVOLINE 10W/30: Havoline 30	M.M. or M.S.
	−10° to 0°	10° to 40°				VISCO-STATIC: Energol S.A.E. 20W	CASTROL XL 20W/40: Castrol 20 H.D.	Q5500	HAVOLINE 20W/40: Havoline 20/20W	M.M. or M.S.
	Below −10°	Below 10°				VISCO-STATIC: Energol Motor Oil 10W	Castrol 10 H.D.		Havoline 10W	M.M. or M.S.
CARBURETTOR DASHPOTS	USE APPROPRIATE CURRENT SINGLE OR MULTIGRADE ENGINE OIL									
GEARBOX REAR AXLE	Over 0°	Over 30°	Mobilube GX.90	Shell Spirax 90 EP	Esso Gear Oil GP.90	Gear Oil S.A.E. 90 EP	Castrol Hypoy	Duckham's Hypoid 90	Universal Thuban 90	G.L.4 Hypoid 90
	Below 0°	Below 30°	Mobilube GX.80	Shell Spirax 80 EP	Esso Gear Oil GP.80	Gear Oil S.A.E. 80 EP	Castrol Hypoy Light	Duckham's Hypoid 80	Universal Thuban 80	G.L.4 Hypoid 80
STEERING UNIT GREASE GUN FRONT WHEEL HUBS BRAKE CABLES			Mobilgrease MP	Shell RetinaxA	Esso Multi-Purpose Grease H	Energrease L2	Castrolease L.M.	Duckham's L.B.10	Marfak Multipurpose 2	
OIL CAN			Mobil Handy Oil	Engine Oil	Engine Oil	Engine Oil	Everyman Oil	Duckham's General Purpose Oil	Engine Oil	
REAR ROAD SPRINGS	OLD REAR AXLE OR ENGINE OIL									
CLUTCH AND BRAKE GIRLING SYSTEM RESERVOIR	CASTROL GIRLING BRAKE AND CLUTCH FLUID (CRIMSON)		WHERE THE PROPRIETARY BRAND IS NOT AVAILABLE OTHER FLUIDS WHICH MEET THE S.A.E. 70 R3 SPECIFICATION MAY BE USED.							

*Where circuit or other severe competitions are contemplated it is advisable to use oils of high viscosity in view of the increased oil temperature encountered.

APPROVED ANTI-FREEZE SOLUTIONS	Regent P.T. Anti-freeze	BP Anti-frost	Mobil Permazone	Shell Anti-freeze	Esso Anti-freeze	Castrol Anti-freeze	Duckham's Anti-freeze	Smith Bluecol

Where these proprietary solutions are not available, others which meet B.S.I.3151 or 3152 specification may be used.

GENERAL SPECIFICATION

Engine		
Number of cylinders	4	
Bore of cylinders	3·386″	86 mm.
(Special Order)	3·268″	83 mm.
Stroke of crankshaft	3·622″	92 mm.
Piston area	36 sq. in.	232 sq. cm.
(Special Order)	33·5 sq. in.	216 sq. cm.
Cubic capacity	130·5 cu. ins.	2138 c.c.
(Special Order)	121·5 cu. ins.	1991 c.c.
Compression ratio	9 or 7 : 1	
Valve rocker clearances —inlet and exhaust	0·010″ (cold)	0·254 mm.
Valve timing (with valve rocker clearances set at 0·0165″) (0·42 mm.)	Inlet and exhaust valves to be equally open at T.D.C. on the exhaust stroke.	
Lubrication (Engine)		
Type of pump	Hobourn-Eaton.	
Oil filter	Purolator. A.C. Delco or Tecalemit full flow filter (replaceable element).	
Fuel System		
Fuel tank	Mounted over axle in front of luggage compartment.	
Carburettors	Stromberg 175 CD or SU HS6. Needle size 2 O or TW.	

Ignition System		
Contact breaker gap	0·015″	0·4 mm.
Spark plugs—Type	Champion L87Y.	
Gap	0·025″	0·64 mm.
Firing order	1 : 3 : 4 : 2	
Ignition timing	4° B.T.D.C. (basic setting).	
Electrical System		
Type—Battery	12 volt, 51 amps. hr.	
Type	Model BT. 9A.	
Control box	Model RB. 106-2.	
Generator	Model C40-1.	
Chassis Data		
Frame	Bored channel steel pressings bra with a cruciform member.	
Wheelbase	7′ 4″	2·236 metres
Track :		
Front (Disc Wheels)	4′ 1″	1·245 metres
Front (Wire Wheels)	4′ 1¾″	1·263 metres
Rear (Disc Wheels)	4′ 0″	1·220 metres
Rear (Wire Wheels)	4′ 0¾″	1·239 metres
Independent Rear Suspension:		
Rear (Disc Wheels)	4′ 0½″	1·232 metres
Rear (Wire Wheels)	4′ 1¼″	1·251 metres

Ground clearance (Static laden)	6″	15·2 cm.
Turning circle	33′ 0″	10 metres
Steering Unit	Rack and pinion.	

Suspension

Front	Independent suspension with wishbones top and bottom. Patented bottom bush and top ball joint swivels. Coil springs controlled by telescopic dampers. Taper roller hub bearings.
Rear	Semi-trailing independent suspension with coil springs and hydraulic damper, Lever type.
Alternative Rear	Wide semi-elliptic springs, controlled by piston type dampers.

Rear Axle

Type	Semi-floating axle shafts, three-piece casing.
Drive	Hypoid bevel gears.
Ratio	3·7 or 4·1 : 1

Gearbox

Type	4 forward speeds and reverse. Synchromesh on all forward gears.
Control	Centre floor mounted remote control.

Wheels and Tyres

Tyre Size and Pressure	Refer to page 57.
Front Wheel Alignment	Parallel to $\frac{1}{16}$ in. toe-in
Wheels	15″ × 4J.

Brake System

Make	Girling.
Type	Front—Caliper disc. Rear—Leading and trailing shoe drums.
Dimensions	Rear : 9″ × 1¾″ (22·86 × 4·45 cms.).
Operation	Pedal operates hydraulically on all four wheels. Handbrake operates mechanically on rear wheels only.

Capacities	Imperial	U.S. Pints	Metric
Engine—from dry	11½ pints	13·8 pints	6·56 litres
Drain and refill	10 pints	12 pints	5·7 litres
Gearbox	1½ pints	1·8 pints	0·8 litres
With overdrive from dry	3½ pints	4·2 pints	2·0 litres
Drain and refill	2¾ pints	3·3 pints	1·6 litres
Rear Axle	1½ pints	1·8 pints	0·8 litres
Water Capacity of cooling system			
With heater fitted	11 pints	13·2 pints	6·2 litres
Fuel Capacity	11¾ gals.	14 gals.	53·5 litres

GENERAL SPECIFICATION

Exterior Dimensions

Overall length	13′ 0″	396 cms.
Overall width	4′ 9½″	146 cms.
Overall height	4′ 2″	127 cms.

Weight

Complete (including fuel, oil, water and tools)

Independent Rear Suspension Models	20 cwts.
Live Rear Axle Models	19¾ cwts.

Performance Data — **Nett**

Engine

104 B.H.P. at 4,700 r.p.m.

Torque 1,590 lb/in. at 3,000 r.p.m. (Equivalent to 154 lb/sq. in B.M.E.P.)

Piston speed at 100 m.p.h. in top gear, 2,898 ft/min. at 4,800 r.p.m. (3·7 : 1 axle).

Gear Ratios

	O/drive Top	Top	O/drive 3rd	3rd	O/drive 2nd	2nd	1st	R
Gearbox Ratios	0·82	1·0	1·09	1·325	1·65	2·01	3·139	3

3·7 : 1 Axle

Overall Ratios	3·034	3·7	4·02	4·9	6·1	7·43	11·61	11

4·1 : 1 Axle

Overall Ratios	3·36	4·1	4·46	5·44	6·76	8·24	12·87	13

ROAD SPEED DATA

	O.D. Top	Top	O.D. 3rd	3rd	O.D. 2nd	2nd	1st	Reverse
Engine Speeds (3·7 axle)								
Using 6·95 — 15 G.P. Tyres *or* 165 — 15 S.P. Tyres								
at 10 m.p.h.	415	506	551	669	833	1016	1588	1629
at 10 km./hr.	258	315	342	415	517	631	986	1012
Using Michelin 165 — 15 X Tyres:								
at 10 m.p.h.	409	498	541	660	820	1001	1563	1605
at 10 km./hr.	254	309	336	410	509	622	971	997
Engine Speeds (4·1 axle)								
Using 6·95 — 15 G.P. Tyres *or* 165 — 15 S.P. Tyres:								
at 10 m.p.h.	458	560	611	742	924	1126	1759	1807
at 10 km./hr.	284	348	380	461	573	699	1091	1121
Using Michelin 165 — 15 X Tyres:								
at 10 m.p.h.	452	552	601	731	910	1110	1733	1779
at 10 km./hr.	281	343	373	454	565	691	1077	1105

TYRE PRESSURES

TYRE	Revs/Mile at 30 m.p.h.	ROLLING RADIUS Inches	Independent rear suspension vehicles		Live rear axle vehicles	
			PRESSURE — lbs/sq. in. (Kgs/sq. cm.)		PRESSURE — lbs/sq. in. (Kgs/sq. cm	
			Front	Rear	Front	Rear
Goodyear						
6·95 — 15 G.P.	820	12·3	17 (1·2)	21 (1·48)	19 (1·34)	23 (1·6
165 — 15 G800	—	—	24 (1·69)	28 (1·97)	24 (1·69)	28 (1·9
5·90 — 15 G8S	—	—	17 (1·2)	21 (1·48)	19 (1·34)	23 (1·6
Dunlop						
165 — 15 S.P.	820	12·3	24 (1·69)	28 (1·97)	24 (1·69)	28 (1·9
590 — 14 C.41	—	—	26 (1·83)	30 (2·1)	26 (1·83)	30 (2·1
Michelin						
165 — 15 'X'	808	12·48	17 (1·2)	21 (1·48)	17 (1·2)	25 (1·7

NOTE : The tyre pressures given in the above table are suitable for speeds up to 110 m.p.h. Where cars are to be used for racing, consult the respective Tyre Company regarding the need for tyres of full racing construction.

SUPPLEMENT

S.U. CARBURETTORS—TYPE H.S.

Cold Starting (Figs. 1 and 2)

Pulling out the choke control knob on the instrument panel operates a lever to rotate the choke bar (1). The movement is transferred through a cam plate (2) to rotate the throttle interconnecting bar (3) and open the throttles beyond the normal idle position, depending upon the setting of the screws (6). Simultaneously the jets (5) are lowered by a link rod, connected between the jet head and the cam plate linkage, to provide a rich mixture for initial cold starting. The accelerator pedal should not be depressed when starting a cold engine.

Hot Starting

Depress the accelerator pedal to about one third of its travel before operating the starter switch. Do not use the choke control.

Acceleration

To provide for the requisite degree of mixture enrichment, at the moment of increased throttle opening for acceleration, a hydraulic damper operates in the hollow, oil-filled piston rod of each carburettor. The piston rods should be replenished with SAE 20 grade engine oil at 6,000 mile intervals.

Float Chamber Fuel Level (Fig. 3)

The fuel level in the float chamber is adjusted by setting the float lever on the float chamber lid, as follows:

1. Push off the fuel delivery pipe from its connection and remove the float chamber lid.

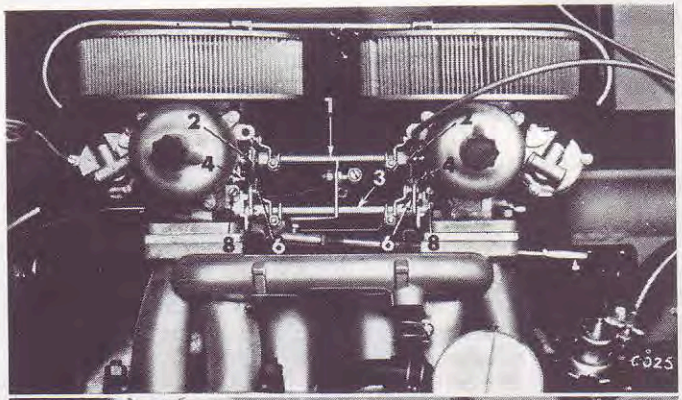


Fig. 1. *(upper)*

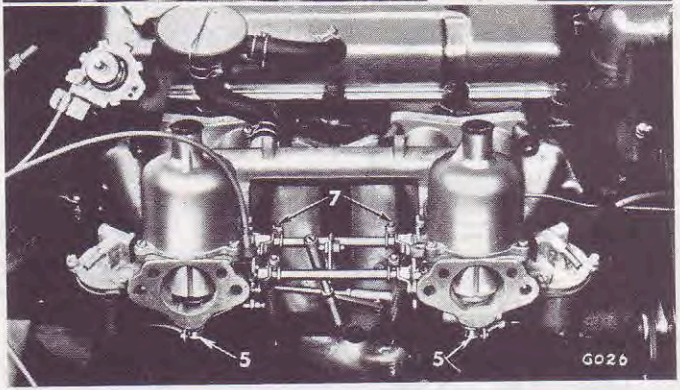


Fig. 2. *(lower)*

2. Invert the lid, and with the float lever resting on the base of the needle valve, held in the shut position by the weight of the float only, there should be $\frac{1}{8}$" to $\frac{3}{16}$" (3·2 to 4·8 mm.) gap between the float lever and the rim of the float chamber lid.

3. If necessary, carefully bend the lever at the crank, in the required direction until the correct setting is obtained.

Cleaning

Periodically, push off the fuel inlet connection, remove the float chamber lid assemblies, remove all sediment from the float chambers and re-assemble the carburettors.

Suction Chamber and Piston (Fig. 5)

Periodically, remove the suction chamber and piston unit for cleaning. Use a cloth moistened in petrol, to clean the inside of the suction chamber, and the external surface of the piston. Lightly oil the piston rod, before re-assembling the carburettor, and refill the piston damper.

NOTE. Before dismantling, mark the suction chamber and carburettor body to facilitate identical re-assembly.

Needles (Fig. 4)

The needle is carried in the lower face of the piston. To gain access to the needle, remove the piston/suction chamber unit. Remove the needle by slackening the needle securing screw and withdrawing the needle.

Fig. 3

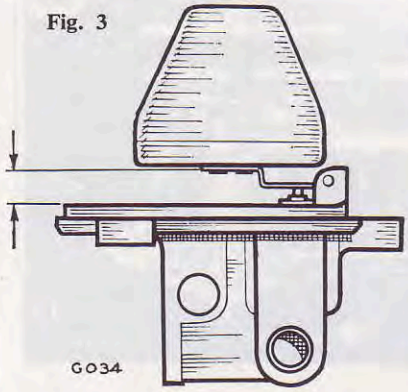
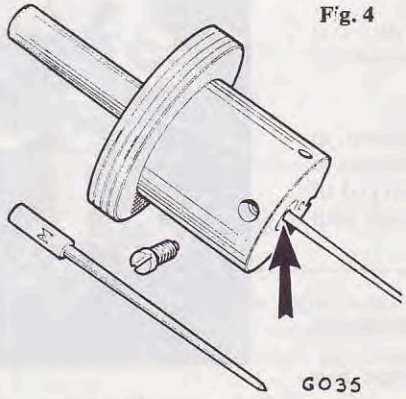


Fig. 4



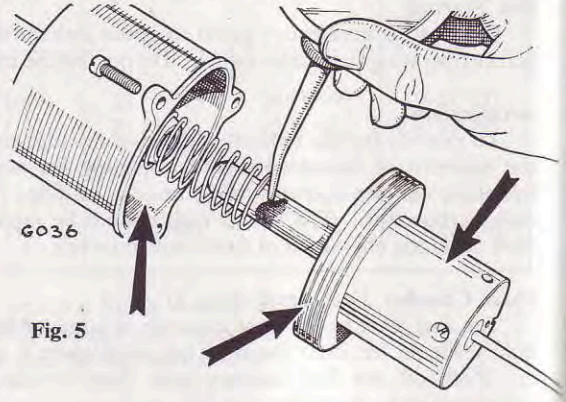


Fig. 5

The needle size is engraved on the shoulder of the needle, which should be fitted with the shoulder flush with the under face of the piston and retained by tightening the screw.

Jet Centralising

The jet unit, clamped in position by a nut, is held in a clearance bore that permits a limited amount of radial float prior to being locked.

When the suction piston is lifted by hand (air cleaner removed and engine still), it should fall freely and hit the jet bridge with a soft metallic click — that is, with the jet adjusting nut (5) Fig. 2, in its topmost position. If this test is inaudible, but audible when repeated with the jet in the fully lowered position, re-centralise the jet as follows:

1. Disconnect the rod between the jet lever and jet head.
2. Unscrew the union holding the nylon feed tube into the base of the float chamber and withdraw the tube and the jet together. Unscrew the jet adjusting nut and remove the lock spring. Replace the adjusting nut and screw it to its topmost position, then replace the jet and feed tube.
3. Slacken off the large jet locking screw until the jet bearing is just free to rotate by finger pressure.
4. With the piston damper removed, and using a pencil on top of the piston rod, gently press the piston assembly down onto the jet bridge.
5. Tighten the jet locking screw, observing that the jet head is still in its correct angular position.
6. Lift the piston and check that it falls freely and evenly, hitting the jet bridge with a soft, metallic click; then fully lower the jet and re-check the sound of the impact; if the second test produces a sharper impact sound, repeat the operation until correct.
7. Refill the damper reservoir.

Tuning Carburettors

Twin carburettor installations cannot be successfully tuned unless the general condition of the engine, ignition and the fuel system is satisfactory.

Remove the air cleaners and run the engine until it reaches normal operating temperature. Slacken the clamping bolts (7) on the throttle spindle connections (Fig. 2). Close the throttles fully by unscrewing the idling adjustment screws (8) and then open by screwing down the screws one and a half turns.

Remove the suction chambers and pistons. Screw the jet adjusting nuts (5) until each jet is flush with the bridge of its carburettor, or as near to this as possible. Replace the pistons and suction chamber assemblies and check that the pistons fall freely. Screw down the jet adjusting nuts two complete turns.

Re-start the engine and adjust the throttle adjusting screws by an equal amount to give the desired idling speed. Using a length of 0·3″ (7·5 mm.) approx. bore tubing, listen to the hiss in the intakes and adjust the throttle adjusting screws until the intensity of the hiss is similar at both intakes. This will synchronize the throttles.

Adjust the mixture by screwing both jet adjusting nuts up or down by the same amount to give the fastest idling speed consistent with even firing. Press the jets upwards during adjustment to ensure continual contact with the adjusting nuts (5) (Fig. 2). Should the engine speed increase as the jets are adjusted,

unscrew the throttle adjusting screws a little, each by the same amount to reduce the speed.

Using the lifting pin below the suction chamber, lift the piston of the front carburettor approximately $\frac{1}{32}$″ (·75 mm.):

(a) If the engine speed increases, the mixture strength of the front carburettor is too rich;

(b) If the engine speed immediately decreases, the mixture strength of the front carburettor is too weak;

(c) If the engine speed momentarily increases very slightly, the mixture strength of the front carburettor is correct.

Repeat the operation at the rear carburettor and, after adjustment, re-check the front carburettor, since the two carburettors are interdependent.

When the mixture is correct the exhaust note should be regular and even. If it is irregular with a splashy type of misfire and with a colourless exhaust, the mixture is too weak. If there is a rhythmical type of misfire in the exhaust beat together with a blackish exhaust the mixture is too rich (Fig. 6).

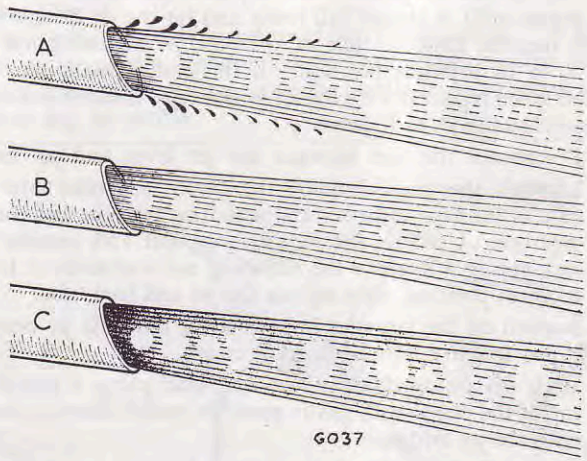
(d) Set the clamping levers so that each link pin is 0·006″ (0·15 mm.) away from the lower edge of its fork, when the lever welded to the centre of the throttle rod is in contact with the underside of the choke bar. Re-tighten the bolts (7), Fig. 2.

Jet and Throttle Interconnection Adjustment

Slacken the jet link-rod bolts. Adjust the link rod assemblies to their lowest position and re-tighten the bolts, thus ensuring simultaneous movement when the choke bar is rotated.

Check and if necessary adjust the setting of the choke control wire. This should permit 0·0625″ (1·6 mm.) free movement, before starting to pull on the jet levers.

Pull out the choke control knob until the free movement is eliminated and the jets are just about to move. Adjust the fast idle screws (6) Fig. 1, to attain an engine speed of 1,000 to 1,100 r.p.m. when hot. Re-fit the air cleaners.



A. Weak B. Correct C. Rich

Fig. 6

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