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**TRIUMPH**

**TR 250**

**handbook**



**IMPORTANT**

IN THE INTERESTS OF SAFETY, THE IMPORTANCE OF MAINTAINING CORRECT TIRE PRESSURES CANNOT BE OVER EMPHASISED. PRESSURES SHOULD BE CHECKED AT LEAST EVERY TWO WEEKS OR 1000 MILES, AND MAINTAINED IN ACCORDANCE WITH RECOMMENDATIONS GIVEN ON PAGE 26



**TRIUMPH**

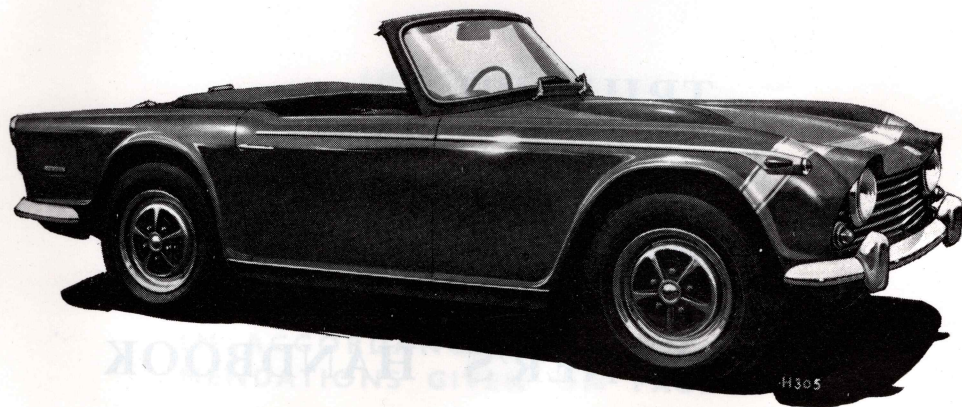
**TR250**

**OWNER'S HANDBOOK**

*Issued by*  
**STANDARD-TRIUMPH SALES LTD.**  
**COVENTRY, ENGLAND**

*A member of the Leyland Motors Corporation*





TRIUMPH TR250

A member of the Leyland Motors Corporation  
STANDARD-TRIUMPH SALES LTD.  
COVENTRY, ENGLAND  
Issued by



# Introduction

**D**ESIGNED AND BUILT to give long and consistent trouble-free service, your TR.250 incorporates an emission control system for limiting crankcase and exhaust emissions to acceptable limits in accordance with Federal Regulations. The TR.250 also embodies many new safety features, the very presence of which will add to your confidence.

Read carefully the contents of this book which gives, in the simplest possible terms, information vital to the proper operation, care and regular maintenance of the car.

Because of the stringent Federal Regulations relating to emissions, owners are strongly urged to make use of the Maintenance Voucher Scheme operated by Triumph Dealers and described in a separate booklet supplied with the car. This will ensure that the emission control system is correctly serviced by trained personnel.



## ***Important***

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

## **LOCATION OF COMMISSION AND UNIT NUMBERS**

**Note.** L.H. and R.H. refer to Left-hand and Right-hand side of the vehicle viewed from the driving position.

**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 Hypoid Housing Flange

## **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



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## CONTROLS, INSTRUMENTS AND INDICATORS

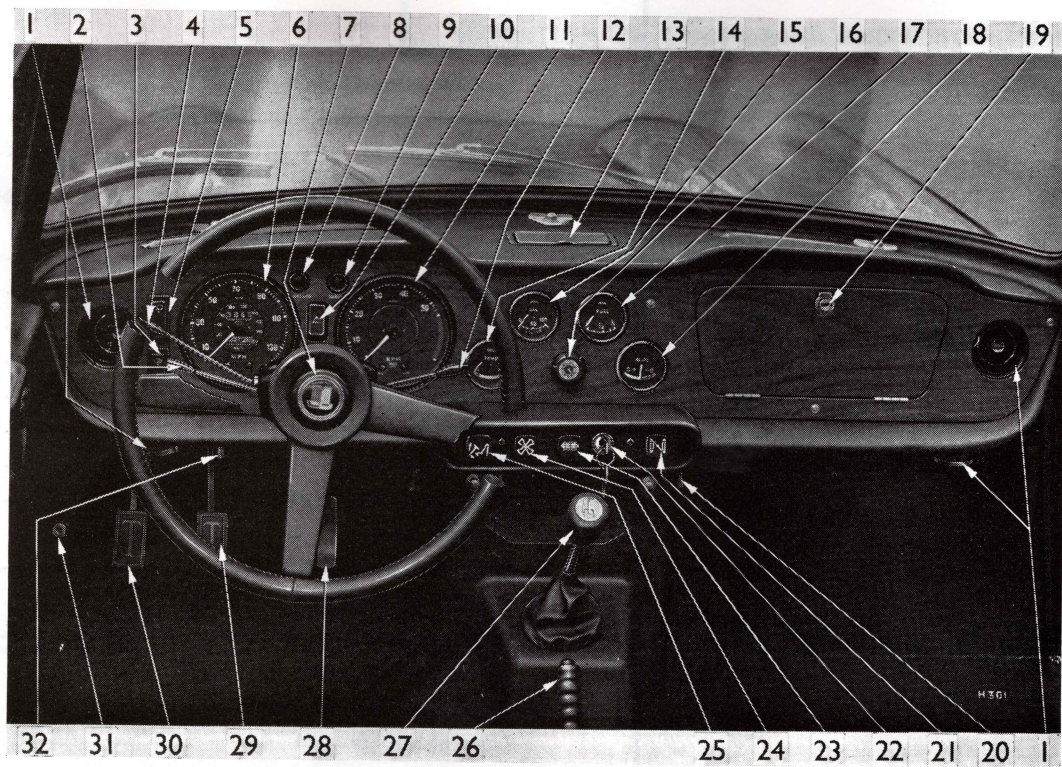


Fig. 2



## KEY TO FIG. 2

- |                                 |                                      |                                |
|---------------------------------|--------------------------------------|--------------------------------|
| 1. Fresh-air vent               | 14. Temperature gauge                | 27. Gear-shift lever           |
| 2. Turn-signal control          | 15. Oil pressure gauge               | 28. Throttle pedal             |
| 3. Windscreen washer switch     | 16. Instrument illumination rheostat | 29. Brake pedal                |
| 4. Overdrive switch (optional)  | 17. Fuel gauge                       | 30. Clutch pedal               |
| 5. Windscreen wiper switch      | 18. Ammeter                          | 31. Headlight dipper           |
| 6. Speedometer                  | 19. Glove-box lock                   | 32. Trip release control       |
| 7. Horn-push                    | 20. Scuttle-vent control             | 33. High-beam indicator        |
| 8. Hazard warning indicator     | 21. Cold-start mixture control       | 34. Turn-signal indicator      |
| 9. Brake-line failure indicator | 22. Ignition/starter switch          | 35. Low oil pressure indicator |
| 10. Hazard warning switch       | 23. Heat control                     | 36. No-charge indicator        |
| 11. Tachometer                  | 24. Blower switch                    | 37. Odometer                   |
| 12. Lighting switch             | 25. Air distribution control         | 38. Trip odometer              |
| 13. Ashtray                     | 26. Parking-brake lever              |                                |

*Refer  
to  
Fig. 7*

## **CONTROLS, INSTRUMENTS AND INDICATORS**

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### **CONTROLS, INSTRUMENTS AND INDICATORS**

The controls, instruments and indicators shown on Figs. 2 to 7 and described in the following pages are positioned within easy reach of the driver to afford maximum ease of operation and minimum distraction. The bracketed figures in the text cross-refer with the key on page 7.

#### **Fresh-Air Vents (1)**

The swivelling vents can be adjusted to admit cold air only in any chosen direction within the limits of movement. Each vent incorporates a valve, operated by a knob in the center of the vent. To diminish or shut off the supply of air, turn the knob clockwise. The air flow may be boosted by use of the blower motor (See item 24).

#### **Turn Signal Control (2)**

Move the control lever upwards to operate the right-hand turn-signal lights or downwards to operate the left-hand turn-signal lights.

#### **Windshield Washer Switch (3)**

Depress the upper portion of the switch to spray clean fluid onto the windshield and switch on the wipers to disperse the mud. The washer switch will operate only when the ignition switch is turned 'ON'.

#### **Overdrive Switch (4) (Optional)**

When an overdrive unit is fitted to the vehicle the operating switch is mounted on the left-hand side of the steering column. Move the lever up to engage the overdrive and down to release it. Before using the control, refer to page 41.

#### **Windshield Wiper Switch (5)**

Depress the upper portion of the switch to operate the wipers at slow speed, or depress the lower portion to operate them at high speed. Select the mid-position to switch off, when the wipers will automatically return to the parked position at the base of the windshield. The wipers will operate only when the ignition switch is turned 'ON'.

#### **Speedometer (6)**

Additional to indicating the road speed of the vehicle in miles and kilometres per hour, the instrument also combines the indicators and warning devices (33, 34, 37, 38. See Fig. 7).

## CONTROLS, INSTRUMENTS AND INDICATORS

### Horn Push (7)

Press to operate the horns.

### Hazard Warning Indicator (8)

When the 'hazard warning switch' (10) is operated the indicator will flash in unison with the exterior warning lights.

### Brake-line Failure Indicator (9)

When the ignition switch is turned on the "brake line failure" and "low oil pressure" indicator lights glow faintly and are extinguished when the engine is running. Should failure of the front or rear brake lines occur, the indicator (9) will glow brightly.

A broken bulb filament is indicated by the warning light failing to glow when the ignition is turned on, before starting the engine.

### Hazard Warning Switch (10)

If the vehicle is immobilised and constitutes a hazard to other vehicles, warning may be given by using the "hazard warning system". To operate, depress the lower portion of the switch (10) when all turn-signal lights will flash intermittently.

### Tachometer (11)

The tachometer indicates the engine speed in revolutions per minute and combines two warning indicators (35, 36, See Fig. 7). The speed range within the colored segments is subject to the "Recommended Speed Limits" mentioned on page 41.

### Lighting Switch (12)

Move the lever downwards to the first position to illuminate the rear tail, license plate, parking lights and side marker lights. Move the lever down to the second position to illuminate the headlights. (See "Headlight Dipper" 31).

Lifting the lever towards the steering wheel flashes the headlight high beams.

### Ashtray (13)

An ashtray is provided in the center of the fascia top. To empty, lift the assembly from the surround.

### Temperature Gauge (14)

When the ignition switch is turned 'ON' the pointer moves slowly across the dial taking up to one minute to reach a true reading.

Normal operating temperature is reached when the pointer registers in the central sector of the dial. Should the pointer reach the highest mark, stop the engine immediately and check the level of coolant in the radiator. Refer to page 44.

### Oil Pressure Gauge (15)

Oil pressure at 2,000 r.p.m. under normal operating conditions, should be 45-65 lbs./sq. in. Severe operating conditions, such as competition work, may cause the oil pressure to drop below 25 lb./sq. in., indicating that the oil temperature is excessive. Under these circumstances fitment of an oil cooler may be necessary.



## CONTROLS, INSTRUMENTS AND INDICATORS

### Instrument Illumination Rheostat (16)

Turn the knob clockwise to illuminate the instruments. Further rotation of the knob diminishes the light intensity - operates only when the lighting switch is 'ON'.

### Fuel Gauge (17)

The fuel gauge indicates the approximate contents of the fuel tank. When the ignition switch is turned 'ON' the pointer moves slowly across the dial taking up to one minute to reach a steady reading which it will maintain regardless of vehicle movement, until the ignition is switched 'OFF'.

### Ammeter (18)

The ammeter indicates the rate of battery charge or discharge.

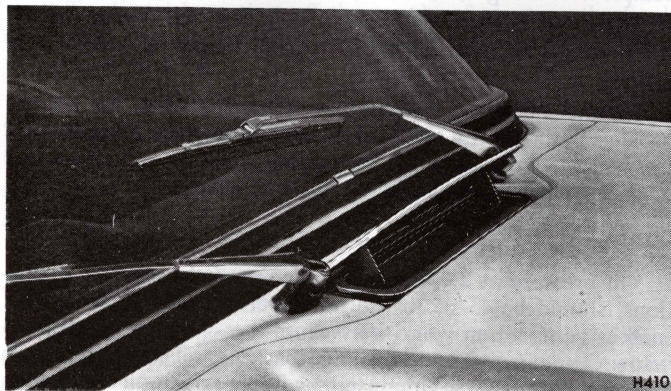


Fig. 3

The charging rate is indicated when the pointer moves to the left-hand side of 'Zero' and discharge, by movement to the right.

### Glove Box Lock (19)

The glove-box may be unlocked by turning the key a quarter turn clockwise and opened by depressing the locking barrel.

### Scuttle Vent Control (20)

Fresh air is admitted to the heater duct through the open scuttle ventilator (Fig. 3). This is opened by pulling the lever (20) rearwards and closed by pushing it forwards. When the ventilator is closed, the heater unit recirculates air already in the vehicle.

### Cold Start Mixture Control (21)

This control is used to enrich the fuel mixture for easy starting from cold. The control should not be used if the engine is warm, and may not be necessary in warm climates. Full instructions for use are given on page 40.

### Ignition/Starter Switch (22)

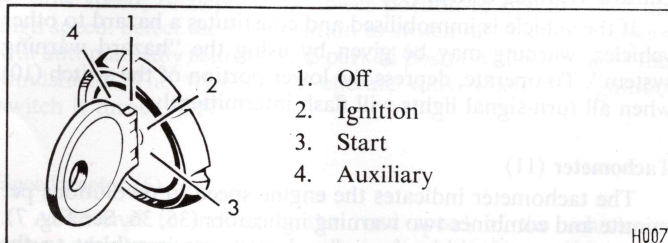


Fig. 4

## CONTROLS, INSTRUMENTS AND INDICATORS

The combined ignition and starter switch, Fig. 4 is operated by the key used for locking the driver's door. The switch has four positions: 4, auxiliary; 1, off (in which position the key may be withdrawn); 2, ignition; 3, start.

With the key in the 'off' position, turn the key clockwise to switch on the ignition and auxiliary circuits.

To operate the starter motor turn the key clockwise against spring pressure and when the engine fires release the key which will return to the ignition position. If the engine fails to start, wait until the starter motor comes to rest before returning the key, to the start position.

Turning the key anti-clockwise to the auxiliary position permits the use of a radio when the vehicle is stationary and the ignition is switched off.

### Heat Control (23)

The heat control operates a water valve which regulates the flow of water through the heater unit. The control may be set at any intermediate position as required. The water valve is closed when the control is pushed in; maximum heat is available when the control is pulled out.

### Blower Switch (24)

The blower motor, operated by a switch (24) boosts the flow of air through the heater unit. Pull the switch to its first position to operate the blower motor at slow speed or to its second position for high speed operation. The blower will operate only when the ignition switch is turned 'ON'.

### Air Distribution Control (25)

The air distribution control operates a 'flap' valve which directs air from the heater unit to the windshield or to the windshield and interior. The maximum volume of air is directed to the windshield (for de-misting and de-frosting) when the control is pulled halfway out. When the control is pulled fully out, air is distributed to the interior and to the windshield. The 'flap' valve is closed when the control is pushed fully in.

### Parking Brake Lever (26)

To apply the rear wheel brakes pull the parking brake lever upwards. To release the brakes, pull the lever slightly upwards, depress the button (arrowed, Fig. 5) and lower the lever while the button is depressed.



Fig. 5



## CONTROLS, INSTRUMENTS AND INDICATORS

### Gear Shift Lever (27)

Moving the gear shift lever from neutral, the gear positions are as follows (Fig. 6):

1st	..	..	Move the lever left and forward
2nd	..	..	Move the lever left and rearward
3rd	..	..	Move the lever right and forward
4th (top)	..	..	Move the lever right and rearward
Reverse	..	..	Lift the lever, move it to the extreme right and rearward. Engage only when the vehicle is stationary

Always select neutral before starting the engine.

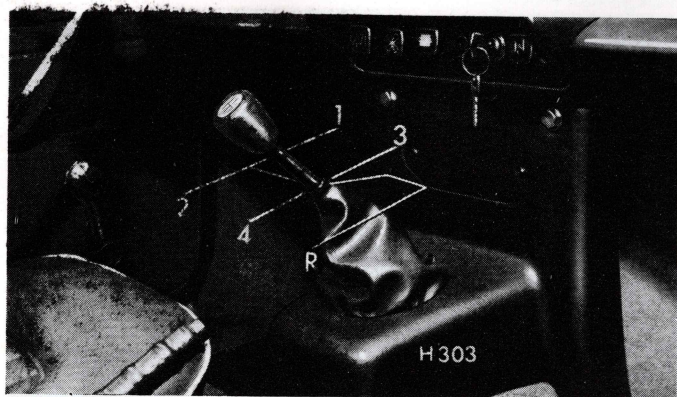


Fig. 6

### Throttle, Brake and Clutch Pedals (28, 29 and 30)

These are conventional items which should require no further explanation

### Headlight Dipper (31)

When the headlights are illuminated (see 'Lighting Switch' on page 9), the high beams may be lowered by pressing the dipper switch and releasing it. To return to the high beam position, again press the dipper switch and release it. The high beam position is indicated by a blue warning light (33) near the bottom of the speedometer dial.

### Trip Release Control (32)

The trip odometer (38) may be reset to zero by pushing the knob (32) upwards and turning clockwise.

### High Beam Indicator (33, Fig. 7)

The indicator glows blue when the headlight high beams are selected and is extinguished when the headlights are 'dipped'.

### Turn Signal Indicator (34, Fig. 7)

Should the light fail to function when the control lever is operated, a broken bulb filament is indicated in the front or rear turn-signal lights at the side corresponding to non-operation of the indicator, or a broken filament in the indicator bulb.



## CONTROLS, INSTRUMENTS AND INDICATORS

### Low Oil Pressure Indicator (35, Fig. 7)

The center indicator glows green when the ignition is switched on and is extinguished when the engine runs in excess of idling speed. Should the light remain on at normal running speeds, stop the engine and check the level of oil in the engine oil pan. If this is satisfactory, have the lubrication system checked immediately.

### No-Charge Indicator (36, Fig. 7)

The indicator glows red when the ignition is switched on and is extinguished when the engine is running. Should the red light remain on whilst driving, a fault is indicated in the battery charging system which should be rectified without delay.

### Odometer (37, Fig. 7)

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

### Trip Odometer (38, Fig. 7)

The figures within the aperture above the center of the speedometer dial may be used to record the distance of each journey, provided that the figures are initially set at zero. (See 'Trip Release Control', 32).

### Radio Controls

For operating instructions see the radio leaflet provided with the set.

### Sun Visors

Two adjustable sun visors, padded to reduce the risk of impact injury, may be unclipped from the rear view mirror bracket and swung to eliminate side glare. The passenger's sun visor incorporates a vanity mirror.

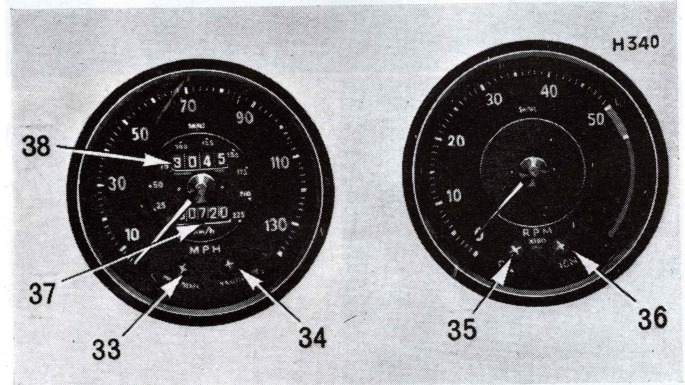


Fig. 7

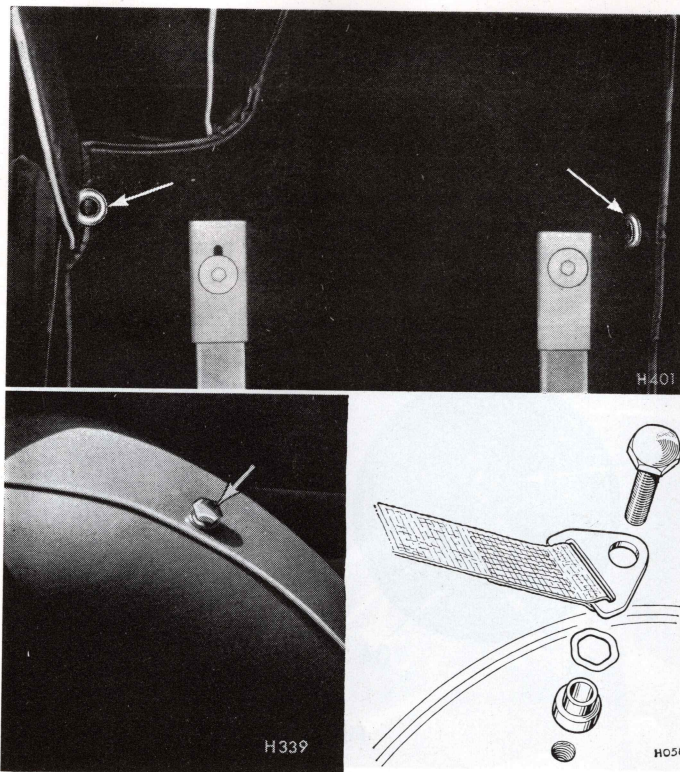


Fig. 8 (left)

Fig. 9 (upper)

Fig. 10 (right)

## SAFETY HARNESS

Safety harness anchorage points built into the vehicle are shown on Figs. 8 and 9.

### Fitting the Harness

Remove the shoulder strap anchor bolt, crimped washer and collar from each wheelarch; pass the bolt through the strap attachment, fit the crimped washer and collar, as shown on Fig. 10, and refit to the vehicle. Fit the latched hook of the lap strap to the eye bolt (Fig. 9), and note that the shoulder strap will have a half twist when fitted to the wheelarch.

### Using the Harness

Pass the buckle end of the belt around the hips and the shoulder strap over the shoulder adjacent to the door. Fasten the belt by pushing the locking plate into positive engagement with the buckle. This is denoted by a 'click'. To release the harness depress the center panel.

### Harness Adjustment

The belt should be adjusted so that the hand will pass between the strap and the chest. The lap strap should be reasonably tight with the buckle resting on the hip nearer the center of the vehicle.



### *Adjustment to lower half of belt :*

Relieve any tension on the belt and pull the belt over the roller in the buckle, the roller has a self-locking action which, once adjusted, will retain its position.

### *Adjustment to upper half of belt :*

Pull the grey slide on the lower part of the lap strap upwards to shorten and downwards to lengthen.

### **Cleaning**

Badly stained safety belts can be dry cleaned. The cleaner should be advised of the nature of staining. Belts subjected to normal soiling can be cleaned with soap, or proprietary brand detergents dissolved in hot water.

## SEATS

### **Seat Adjustment (Fig. 11)**

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. Allow the lever to re-engage in the nearest adjustment notch. Both seats will tilt forward to provide access to the rear compartment, when the lever at the outboard side of the seat back is depressed (Fig. 12).

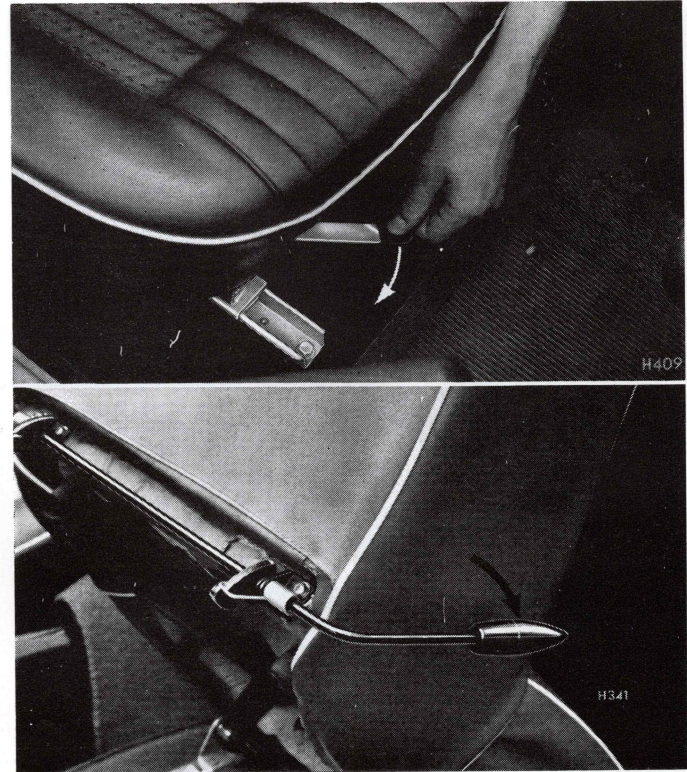


Fig. 11 (upper)      Fig. 12 (lower)



### LOCKS AND KEYS

The vehicle is provided with two sets of keys, the spare set being obtained from the selling dealer. One key is used to operate the ignition and door locks; the other is used for the trunk locker and glove box.

#### Door Locks (Fig. 14)

"Anti-burst" locks are fitted to both doors and are operated by a pushbutton on the outside or by pulling the remote-control lever on the inside. To lock the door from the inside, push the lever forwards; to lock the door from the outside, insert the key and turn it a quarter turn away from the shut face. The key will return under the influence of spring loading to a vertical position when it may be withdrawn.

#### Lubrication

Once a month, particularly during freezing weather, apply a few drops of thin machine oil into the latch and key slots.

**IMPORTANT:** Do not apply grease to the lock cylinders.

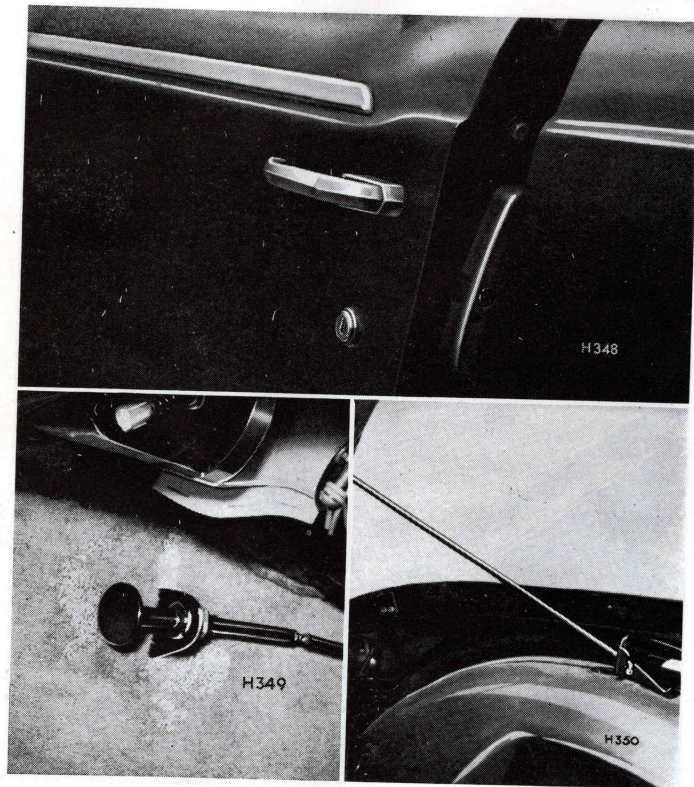


Fig. 13 (left)

Fig. 14 (upper)

Fig. 15 (right)

## Hood Release (Fig. 13)

To open the hood pull the control situated below the left-hand side of the fascia. The hood will rise sufficiently to enable the fingers to be inserted under the rear edge to give access to the safety catch. The hood can then be released and raised to a near vertical position, where it will be supported by a stay. Disengage the stay from its recess before closing the hood.

## Trunk Locker (Fig. 17)

To open the deck lid, turn the unlocked handle counter-clockwise to a vertical position and raise the lid to its limit before lowering it on to the telescopic support.

Close the lid by raising it slightly to release the catch (arrowed, Fig. 16) in the telescopic support, lower, and turn the handle which may be locked, by turning the key a half turn counter-clockwise.

## Fuel Filler Cap (Fig. 18)

The fuel filler cap, located forward of the trunk lid, is opened by lifting the side of the cap. Press the cap to close.

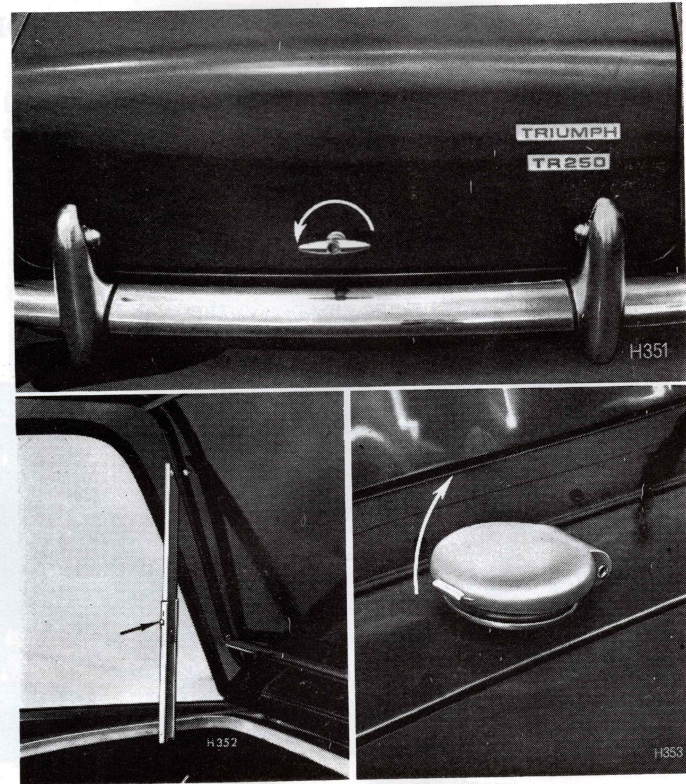


Fig. 16 (left)

Fig. 17 (upper)

Fig. 18 (right)



### SOFT TOP

The soft top is made from P.V.C. material, and is supported by a hinged frame. The assembly folds down into the rear of the car and is protected by a soft top cover.

#### Lowering the Soft Top

Release the soft top header rail from the windshield frame by turning the catch levers in the direction as shown in Fig. 19.

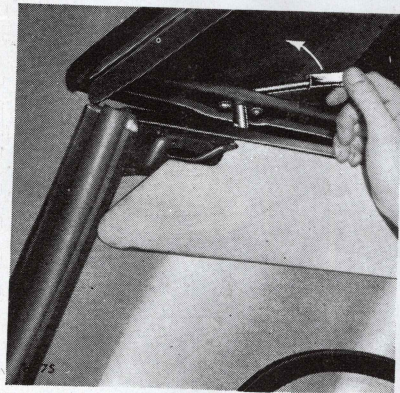


Fig. 19

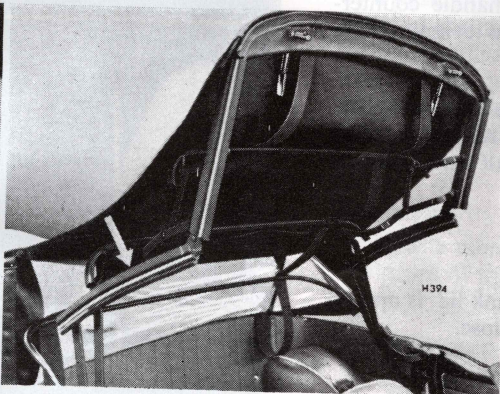


Fig. 20

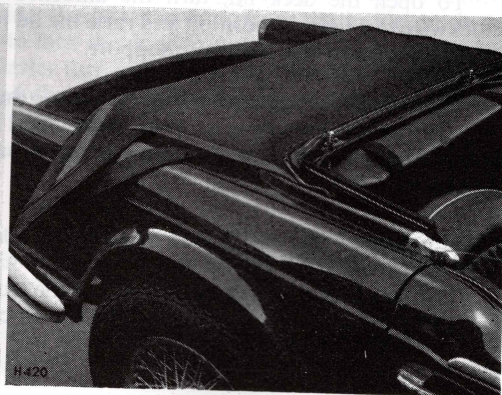


Fig. 21

Push the header rail, rearwards and slightly upwards, while knocking the soft top side support (arrowed Fig. 20) downwards, until the assembly begins to fold. Continue lowering the frame and pull the fabric flat over the deck lid (Fig. 21).

Fold the fabric forwards over the soft top frame and turn the ends of the fabric inwards (Fig. 22). Ensure, that the Vybak windows are free from distortion and that the fabric is clear of the frame.



### Soft Top in the Down Position

Retain the soft top in position by fitting the cover (Fig. 23) as follows:

Attach the cover to the outer fasteners and continue working towards the center. Attach each strap to its respective fastener on the back wall of the floor well.

### Raise the Soft Top

Unfasten and remove the soft top cover. Fold the sides of the fabric outwards and pull rearwards over the deck lid. Lifting the front header rail, raise the assembly sufficiently to allow the fabric to lie evenly over the soft top frame (Fig. 24). Secure the fasteners (three each side, Fig. 24) to the body.

Secure the soft top header rail on the windshield frame, by turning the catch levers inwards towards the center of the car.

### Tonneau Cover (Optional) (Fig. 25)

The tonneau cover provides weather protection for the vehicle interior when the soft top is lowered. It incorporates press-studs for securing to the car and a zip fastener which permits access to either or both of the front seats.

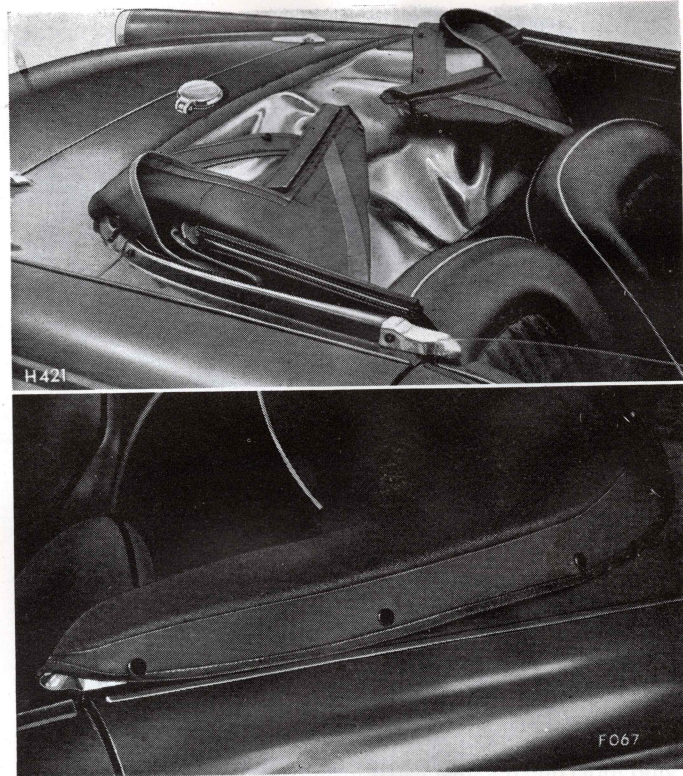


Fig. 22 (upper)

Fig. 23 (lower)

## SOFT TOP

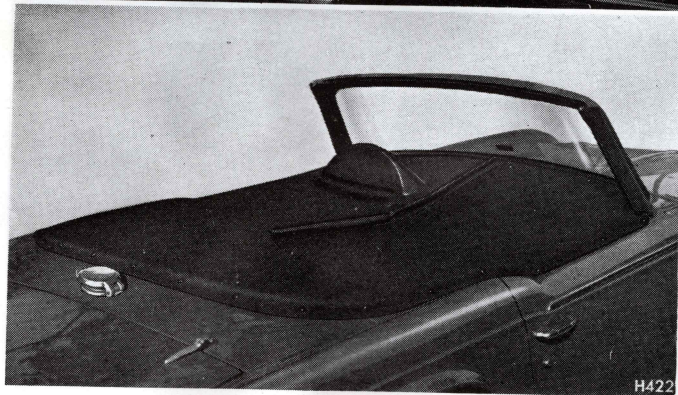
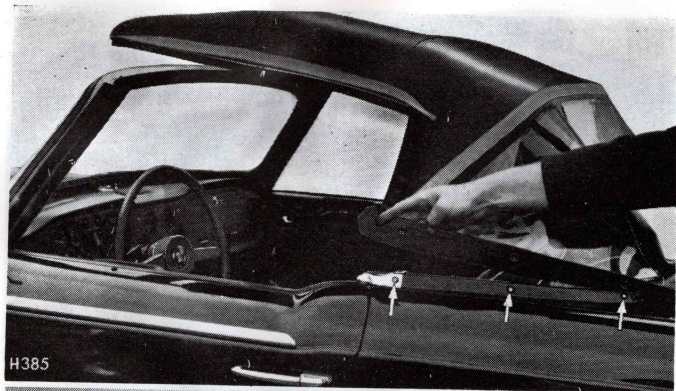


Fig. 24 (upper)      Fig. 25 (lower)

### Surrey Top (Optional) (Fig. 26)

A 'surrey top' is available for use with hard top models. The 'surrey top' provides weather protection for vehicle interior when the hard top is removed.

Fitting instructions for the 'surrey top' are supplied with the kit, which may be purchased from any Triumph Dealer.



Fig. 26



## **CARE OF BODYWORK**

### **Washing**

Avoid using a dry cloth to wipe dust from the paintwork and plated surfaces. Dust is an abrasive and if removed in this way it will scratch the polished surfaces. Wash the vehicle frequently with plenty of running water and a clean soft sponge. Soften and, if possible, remove the mud with water before using the sponge. When all dirt is removed, sponge off and dry with a clean damp chamois leather. Never wash or polish the vehicle under a hot sun.

### **Removing Grease and Tar**

Remove grease or tar by sparing use of white spirit, but do not apply this to rubber, particularly windshield wiper blades.

### **Glass Surfaces**

Glass is easily scratched. This can be avoided by always using a damp chamois leather which is specially reserved for use on glass only. If silicone polishes have been used on the body, take care that the polish does not come in contact with the glass. It is extremely difficult to remove and causes the windshield wipers to smear.

### **Chromium Plating**

Frequent washing and thorough drying is recommended, especially during the winter months when there is likelihood of corrosion through contamination with road salt.

### **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 has been carefully and regularly washed. The original brilliance may be restored after washing by using a reputable non-abrasive cleaner and polish.

Being the most durable, wax preparations are preferable, but where these are 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 will depend upon local conditions of air pollution.

### **Care of Interior, Soft Top and Tonneau Cover**

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 (and exterior fabric) 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.



### WHEELS AND TIRES

#### Spare Wheel and Lifting Jack (Fig 27)

The tools and spare wheel are housed in the luggage compartment.

To remove the spare wheel, unclip the straps (arrowed, Fig. 27), lift the cover and unscrew the retaining nut.

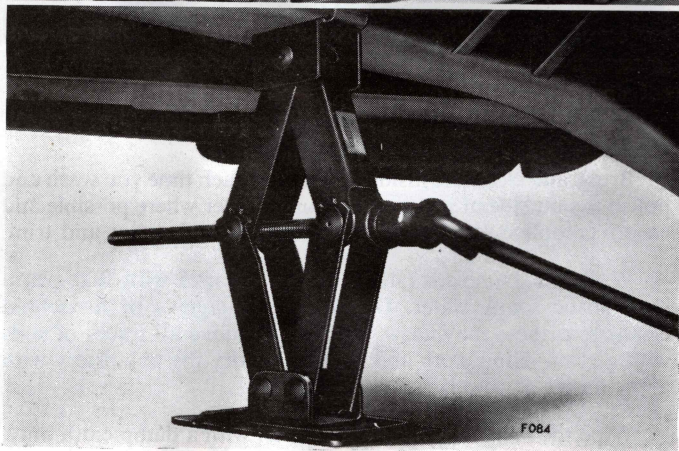
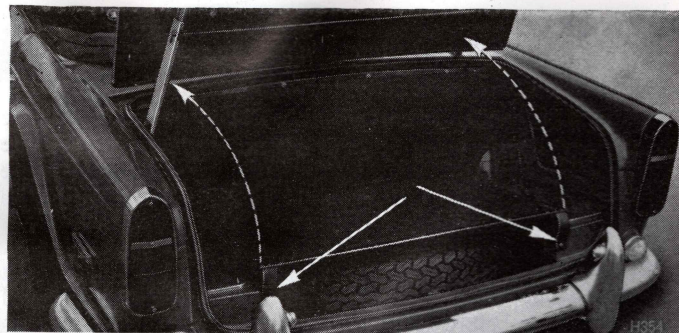


Fig. 27 (upper) Fig. 28 (lower)

#### The Jack (Fig. 28)

Locate the head of the jack under a chassis member (rearwards of the front wheel or forwards of the rear wheel).

Assemble the handle into the jack and turn it to lift the required wheel from the ground.

### Wheel Changing Procedure (Pressed Steel Wheels)

1. Firmly apply the handbrake and chock the wheel diagonally opposite the one being lifted.
2. Remove the spare wheel from the luggage compartment and make sure that its tire pressure is correct.
3. Using the special lever provided in the tool kit, lever off the wheel trim as shown and slightly loosen the wheel nuts.
4. Place the jack in position and lift the wheel clear of the ground. Should it be necessary to lift the vehicle whilst it is on sloping ground, exercise the greatest care.
5. Completely remove the wheel nuts, exchange the road wheels and replace the nuts.
6. Lower the jack, give the wheel nuts a final tighten and refit the nave plate by placing its edge over the wheel projections and giving the plate a sharp tap with the hand to spring it into position.

**NOTE:** Occasionally apply a smear of grease or oil to the threads and inner faces of the wheel nuts.

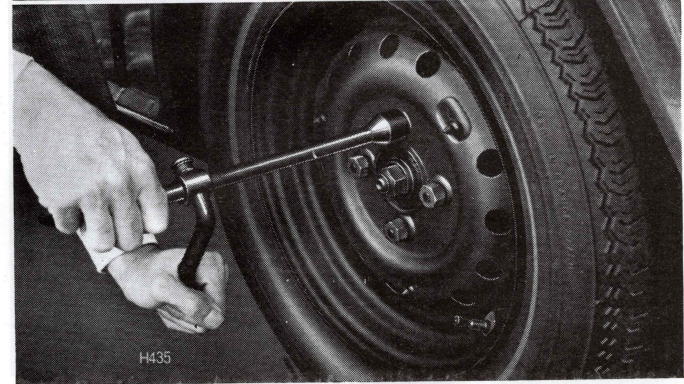
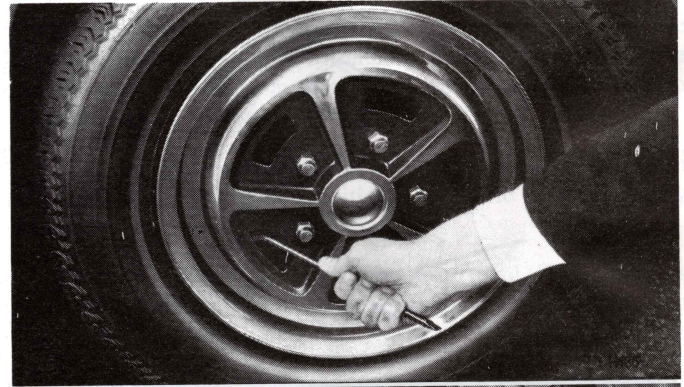


Fig. 29 (upper)

Fig. 30 (lower)



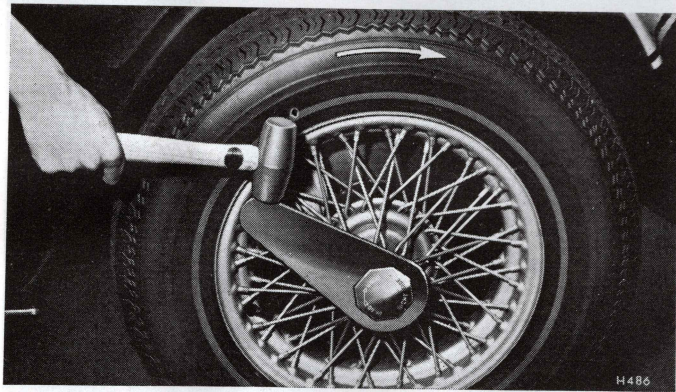
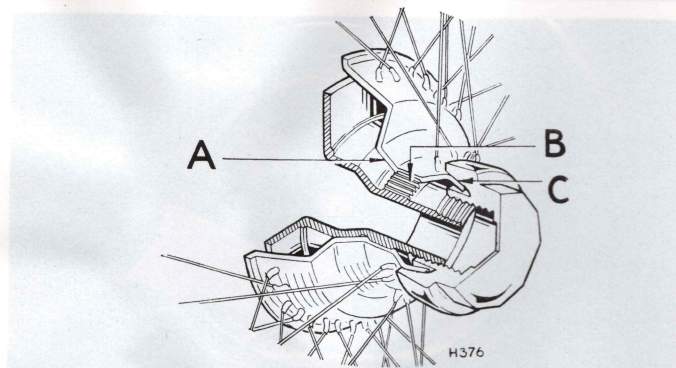


Fig. 31 (upper)

Fig. 32 (lower)

### Wire Spoke Wheels (Optional) (Fig. 31)

Before fitting a wheel, check that the adaptor taper (A) and its mating wheel hub taper are undamaged and that each presents a clean painted surface. **DO NOT GREASE THESE SURFACES.** Ensure that the following are undamaged, cleaned and coated with grease: splines (B), screw threads, wheel hub outer taper (C) and the large wheel nut tapers.

Slide the wheel on to the adaptor and while pushing against the wheel hub center to maintain concentric location, simultaneously screw on the retaining nut by hand until the wheel is felt to seat on the adaptor taper.

Restraining the wheel with one hand, continue tightening, using the spanner. Lower the wheel to the ground and finally tighten (Fig. 32).

Check that each wheel retaining nut tightens in the opposite direction to the wheel rotation. The foregoing instructions apply each time a wheel is removed and replaced.

**IMPORTANT:** Splined adaptors must be fitted to the correct side of the vehicle—left-hand threaded adaptors to the right-hand side and right-hand threaded adaptors to the left-hand side (as viewed from the driver's seat).

**NOTE:** Tubed Tires must be used with wire wheels.

### Wheel Alignment

The correct front and rear wheel alignment is  $\frac{1}{16}$ " (1.6 mm.) to  $\frac{1}{8}$ " (3.2 mm.) toe-in (kerb condition). Excessive misalignment caused by kerb impact or other accidental damage will result in severe tire wear and faulty steering.

### Tire Wear

The characteristics of tires vary considerably and, therefore when new tires are fitted, all four tires must be of the same type and rating (SR).

Occasionally remove flints and other road matter from the treads and examine the tires for sharp fins, flats and other irregularities. An upstanding sharp fin on the edge of each pattern rib is a sure sign of road wheel misalignment (Fig. 33).

Fins on the inside of the pattern ribs indicate toe-in. Fins on the outside edges indicate toe-out. Sharp pattern edges may also be caused by road camber, even when wheel alignment is correct. In such cases, it is better to make sure by having the track checked with an alignment gauge.

"Spotty" tread wear or flats, can result from grabbing brakes or unbalanced wheel assemblies. Your Triumph Dealer will check the action of the brakes and re-balance the tires if required. The original degree of balance is not necessarily maintained, and

it may be affected by uneven tread wear, by repairs, by tire removal and refitting, or by wheel damage and eccentricities. The vehicle may also become more sensitive to unbalance due to normal wear of moving parts.

Excessive wear in the center of the tread (Fig. 34) results from over-inflation, in which condition the fabric is more easily damaged.

Excessive wear at the outer edges of the tread (Fig. 35) results from under-inflation, a condition which causes excessive heating and premature tire failure.

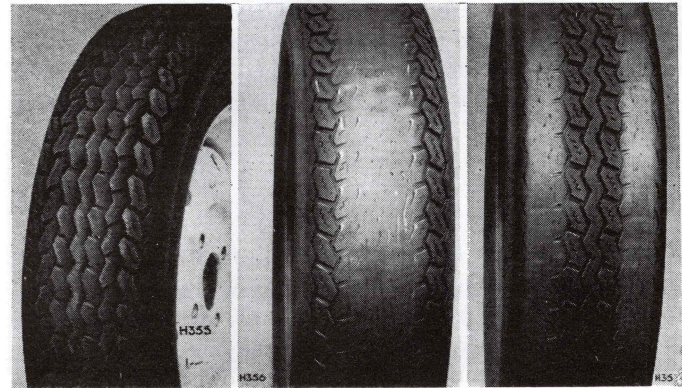


Fig. 33

Fig. 34

Fig. 35



## WHEELS AND TIRES

### Tires

Adjust tire pressures in accordance with the recommendations given below.

NOTE. Maintenance of the pressure differential between front and rear tires is essential for correct steering behaviour.

Never bleed a warm tire but always adjust the pressure whilst the tires are cold, i.e. before a run. As the tires warm up their pressures will increase.

To prolong tire life, avoid severe braking, sudden changes of direction at speed, and driving over or against high kerbstones, as this can result in severe damage to the tire walls. Examine the tires occasionally and remove flints or other road matter which may have become embedded in the treads. Clean off any oil or grease which may be on the tires by using a cloth moistened in petrol.

### Repairs to Tubeless Tires (Pressed steel wheels)

Air will not normally leak from a tire which has been penetrated providing the penetrating object is not removed. Some loss of air will take place, however, when the object is withdrawn. Providing the puncturing hole is small, the owner may repair the tire in situ by using a special outfit.

Should the tire bead become unseated from the wheel rim, a tourniquet applied to the centre of the tire tread will be necessary to re-seal the beads against the rim, before inflating.

NOTE. Whenever a tubeless tire is removed or replaced, a new valve assembly should be fitted to the wheel rim.

### Cleaning

The red band on TR.250 tire equipment can be cleaned with soap and water.

### RECOMMENDED TIRE PRESSURES

(All Conditions)

Tires	Front		Rear	
	lb/in <sup>2</sup>	kg/cm <sup>2</sup>	lb/in <sup>2</sup>	kg/cm <sup>2</sup>
185 HR-15 G800	20	1.41	24	1.69
185 SR-15X ..	20	1.41	24	1.69

## COOLING SYSTEM

The pressurised “no loss” cooling system incorporates a translucent plastic overflow reservoir (Fig. 39) which collects excess coolant from the radiator as the coolant in the system expands with heat. Depression created as the system cools, causes the coolant to flow back from the reservoir into the radiator. The fluid level, which is visible through the translucent reservoir, should be maintained at least half full when cold.

### Draining

To drain the system, move the heat control (23) Fig. 2, to the hot position, remove the radiator filler cap (Fig. 37) and open the tap at the rear right-hand side of the cylinder block (Fig. 38) and the tap at the bottom of the radiator (Fig. 36).

**Note.** See “Caution”, page 44.

### 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.

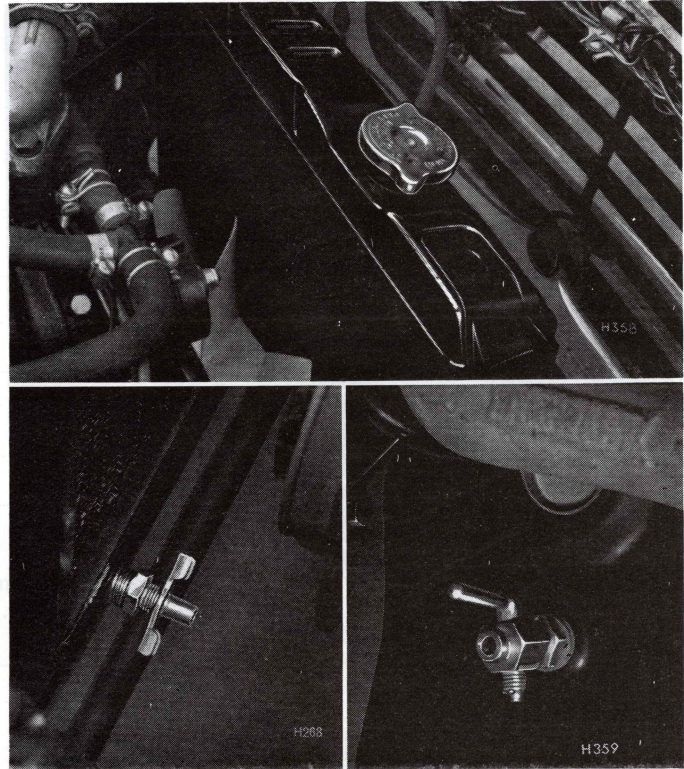


Fig. 36 (left)      Fig. 37 (upper)      Fig. 38 (right)



## COOLING SYSTEM

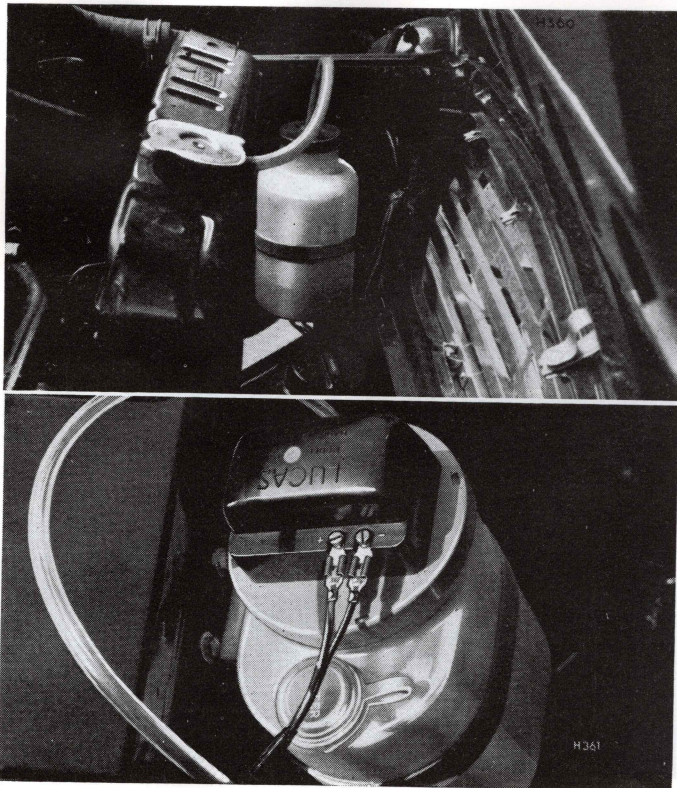


Fig. 39 (upper) Fig. 40 (lower)

### Filling

Close both drain taps, open the heater control fully and remove the radiator filler cap. Fill the cooling system with clean (soft) water and run the engine at approximately 1,500 r.p.m. for 1 or 2 minutes. Top-up the radiator and replace the filler cap. Completely fill the plastic overflow reservoir with clean water.

### Windshield Washer (Fig. 40)

Examine the water level in the plastic windshield washer container. If required, lift off the cap and replenish the container with clean water. Under freezing conditions, fill the container with a mixture of methylated spirits (alcohol) and water, the recommended proportions being 1 part alcohol to 2 parts water. This may then be used to disperse ice and snow from the windshield. Do not use anti-freeze solution in the windshield washer as this may discolour the paintwork and damage the wiper blades and sealing rubber.

## COOLING SYSTEM

### 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 protection during freezing weather, an approved anti-freeze solution should be added to the coolant in the radiator.

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 adopt a "mushy" state with a viscosity which impairs circulation and can immobilise or damage the water pump. Therefore, consult the following chart before adding anti-freeze, for the degree of frost protection required.

ANTI-FREEZE CONCENTRATION .. .. .	25%	30%	35%
<i>Complete Protection</i> Vehicle may be driven away immediately from cold .. ..	10°F. (-12°C.)	3°F. (-16°C.)	-4°F. (-20°C.)
<i>Safe Limit</i> Coolant in mushy state. Engine may be started and vehicle driven away after short warm-up period .. .. .	0°F. (-17°C.)	-8°F. (-22°C.)	-18°F. (-28°C.)
<i>Lower Protection Limit</i> Prevents frost damage to cylinder head, block and radiator .. Engine should NOT be started until thawed out.	-14°F. (-26°C.)	-22°F. (-30°C.)	-28°F. (-33°C.)



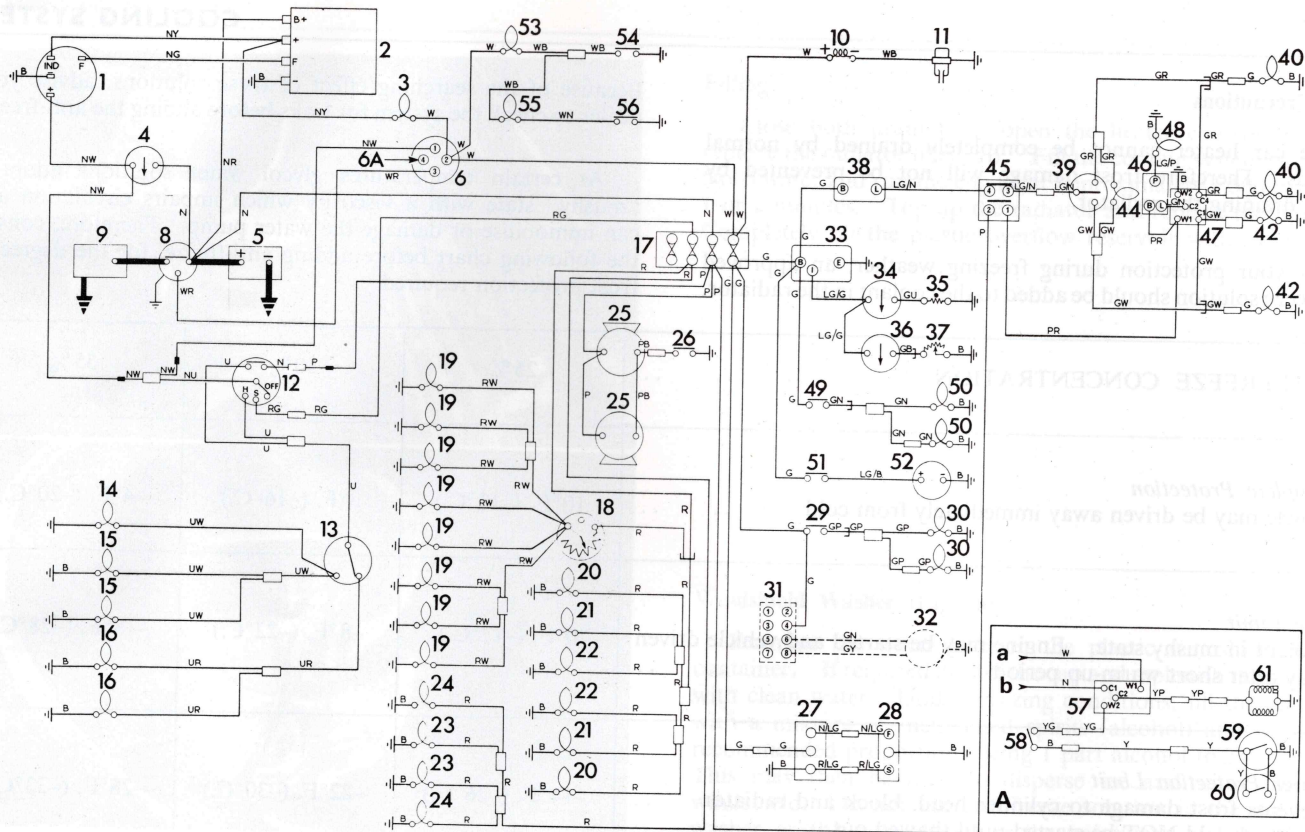


Fig. 41 Wiring Diagram

H240

## KEY TO FIG. 41

**CAUTION :** THIS VEHICLE IS FITTED WITH A NEGATIVE EARTH ELECTRICAL SYSTEM. ENSURE THAT THE BATTERY EARTH LEAD IS ALWAYS CONNECTED TO THE BATTERY NEGATIVE TERMINAL. THE ALTERNATOR AND ALTERNATOR CONTROL UNIT — AND POSSIBLY SOME ACCESSORIES — CONTAIN POLARITY SENSITIVE COMPONENTS THAT MAY BE IRREPARABLY DAMAGED IF SUBJECTED TO INCORRECT POLARITY.

- |                                                        |                               |                                                      |
|--------------------------------------------------------|-------------------------------|------------------------------------------------------|
| 1. Alternator                                          | 25. Horn                      | 51. Windshield washer switch                         |
| 2. Alternator control unit                             | 26. Horn push                 | 52. Windshield washer motor                          |
| 3. 'No charge' warning light                           | 27. Windshield wiper motor    | 53. Brake pressure differential warning light        |
| 4. Ammeter                                             | 28. Windshield wiper switch   | 54. Brake pressure differential switch               |
| 5. Battery                                             | 29. Stop light switch         | 55. Oil pressure warning light                       |
| 6. Ignition/starter switch                             | 30. Stop light                | 56. Oil pressure switch                              |
| 6A. Ignition/starter switch—<br>radio supply connector | 31. Heater switch             |                                                      |
| 8. Starter solenoid                                    | 32. Heater motor              | <b>A. Overdrive (optional extra)</b>                 |
| 9. Starter motor                                       | 33. Voltage stabilizer        | 57. Overdrive relay                                  |
| 10. Ignition coil                                      | 34. Temperature gauge         | 58. Overdrive column switch                          |
| 11. Ignition distributor                               | 35. Temperature transmitter   | 59. Overdrive gearbox switch—<br>2nd gear ON         |
| 12. Column light switch                                | 36. Fuel gauge                | 60. Overdrive gearbox switch—<br>3rd and 4th gear ON |
| 13. Dip switch                                         | 37. Fuel tank unit            | 61. Overdrive solenoid                               |
| 14. Main beam warning light                            | 38. Flasher unit              | a. From fuse box                                     |
| 15. Main beam                                          | 39. Turn signal switch        | b. From fuse box                                     |
| 16. Dip beam                                           | 40. L.H.-turn signal light    |                                                      |
| 17. Fuse box                                           | 42. R.H.-turn signal light    |                                                      |
| 18. Panel rheostat                                     | 44. Turn signal warning light |                                                      |
| 19. Instrument illumination                            | 45. Hazard switch             |                                                      |
| 20. Rear marker light                                  | 46. Hazard flasher unit       |                                                      |
| 21. Tail light                                         | 47. Hazard relay              |                                                      |
| 22. License plate light                                | 48. Hazard warning light      |                                                      |
| 23. Front parking light                                | 49. Reverse light switch      |                                                      |
| 24. Front marker light                                 | 50. Reverse light             |                                                      |

### COLOUR CODE

N.	Brown	L/G	Light Green
U.	Blue	W.	White
R.	Red	Y.	Yellow
P.	Purple	S.	Slate
G.	Green	B.	Black



## ELECTRICAL SYSTEM

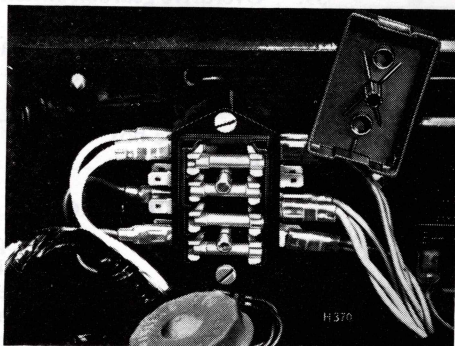
### FUSE BOX

The fuse box is mounted on the left-hand side of the engine bay. The unit contains three operational fuses, one fuse available for use to protect an accessory circuit and has provision to house two spares. The fuses are protected by a pull-off cover.

Failure of a particular fuse is indicated when all the circuits protected by it become inoperative. If a new fuse fails establish the cause and rectify the fault before fitting a second replacement.

#### Fuse

Manufacturer	..	..	Lucas
Rating	..	..	35 amp.
Lucas Part No.	..	..	188218
Stanpart No.	..	..	58465



#### Circuits

The top fuse is not used on a standard production vehicle. It may be employed in service to protect an accessory circuit.

The fuse fed by a white cable from the ignition/starter switch protects the following circuits:

- Turn signal light circuit
- Stop light circuit
- Reverse light circuit
- Heater circuit
- Windshield washer circuit
- Windshield wiper circuit
- Fuel indication circuit
- Temperature indication circuit.

The fuse fed by a brown cable from the battery protects the following circuits:

- Headlight flasher circuit
- Hazard warning circuit
- Horn circuit.

The fuse fed by a red/green cable from the column light switch protects the following circuits:

- Front parking light circuit
- Front marker light circuit
- Rear marker light circuit
- Tail light circuit
- License plate light circuit
- Instrument illumination circuit.

## BULB CHART

Light	Watts	Lucas Part No.	Stanpart No.	
Headlights				
R.H. Dip — U.S.A. . . . .	50/40	54522231	—	*
France . . . . .	45/40	411	510219	
Other R.H. Dip markets	45/40	410	510218	
L.H. Dip . . . . .	60/45	54521872	512231	*
Front turn-signal lights . . . . .	21	382	502379	
Front parking lights . . . . .	6	989	59467	
Front marker lights . . . . .	5	501	514797	
Rear marker lights . . . . .	5	501	514797	
Rear turn-signal lights . . . . .	21	382	502379	
Tail/stop lights . . . . .	6/21	380	502287	
Reverse lights . . . . .	21	382	502379	
License plate illumination lights . . . . .	6	207	511029	
Instrument illumination . . . . .	2·2	987	59492	
Warning lights . . . . .	2·2	987	59492	

\* Sealed beam light unit



### CHARGING SYSTEM

**CAUTION :** THE ALTERNATOR AND ALTERNATOR CONTROL UNIT CONTAIN POLARITY SENSITIVE COMPONENTS. REFER TO "CAUTION" ON PAGE 31.

BATTERY LEADS MUST NOT BE DISCONNECTED WHILE THE ENGINE IS RUNNING OR DAMAGE TO COMPONENTS MAY OCCUR. IT IS ALSO ADVISABLE NOT TO BREAK OR MAKE ANY OTHER CONNECTIONS IN THE CHARGING CIRCUIT WHILE THE ENGINE IS RUNNING.

HIGH VOLTAGES MAY DAMAGE SEMI-CONDUCTOR DEVICES. REMOVE BOTH ALTERNATOR AND CONTROL UNIT MULTI-SOCKET CONNECTORS BEFORE BOOST CHARGING THE BATTERY OR PERFORMING ANY ELECTRIC ARC WELDING ON THE VEHICLE.

#### Alternator (Fig. 43)

The Lucas 15AC unit is driven by a vee belt which should be adjusted as detailed on page 52. A fan mounted at the drive end draws cooling air through the unit. The field winding rotor runs on two "lubricated for life" ball bearings. (No routine lubrication is required).

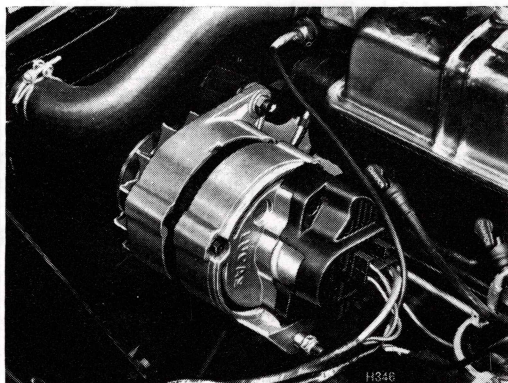


Fig. 43

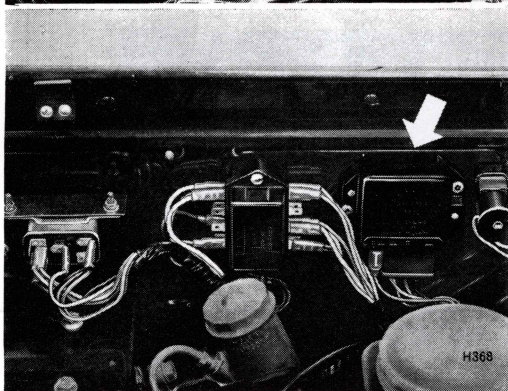


Fig. 44

An alternating current is produced in the static stator windings. This is partly rectified by six diodes to supply direct current to the vehicle electrical circuits and battery. Three additional diodes rectify part of the stator output to energise the field winding via a pair of brushes and slip rings.

### Alternator Control Unit (Fig. 44)

The Lucas 4TR unit adjusts the current flow through the alternator field winding to control the alternator output to suit the electrical requirements of the vehicle and the state of charge of the battery. Maximum output is 28 amps. Control is achieved by a voltage sensitive electronic circuit. (No current regulator is required as the inherent self-regulating properties of the alternator limit the output current. No cut out is required since the diodes incorporated in the alternator prevent reverse currents from flowing).

### 'No charge' Warning Light

The three "field winding supply" diodes enable a circuit similar to a conventional generator warning light circuit to be employed. If the warning light remains illuminated during normal running a fault is indicated.

## BATTERY

**CAUTION :** REFER TO "CAUTIONS" ON PAGES 31 and 34

A conventional battery is located on the bulkhead. Battery data is given on page 66.

Ensure that the battery top and terminals remain clean and dry. Coat terminals with petroleum jelly (Vaseline) to prevent corrosion.

Check electrolyte level monthly and if required replenish with pure water as detailed on page 45. If electrolyte has been spilled clean the affected area with a cloth moistened with ammonia to neutralize the acid and prevent acid corrosion.

Ensure that the battery is always firmly clamped in position by the retaining assembly. When fitting battery leads do not hammer terminals to terminal posts. Such action may damage battery.



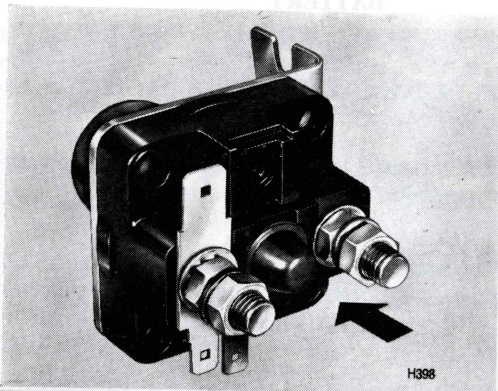


Fig. 45

### STARTER SOLENOID AND STARTER MOTOR

The starter solenoid is normally solenoid operated by remote control from the ignition/starter switch. It may also be actuated manually from the engine compartment by depressing the rubber cap shown arrowed on Fig. 45.

**WARNING :** BEFORE ACTUATING THE STARTER SOLENOID ENSURE THAT THE GEAR LEVER IS IN NEUTRAL AND THE HANDBRAKE IS FIRMLY APPLIED.

If the starter motor fails to operate when selected the starter drive may be jammed in mesh with the engine flywheel ring gear. This condition can normally be freed by turning the squared extension of the shaft shown arrowed on Fig. 46 using a spanner.

If when selected the starter motor runs at high speed but fails to crank the engine the starter drive pinion may not be meshing with the engine flywheel ring gear. This condition can normally be cured by removing the starter motor and washing the starter drive in petrol or paraffin and lubricating lightly with thin engine oil.

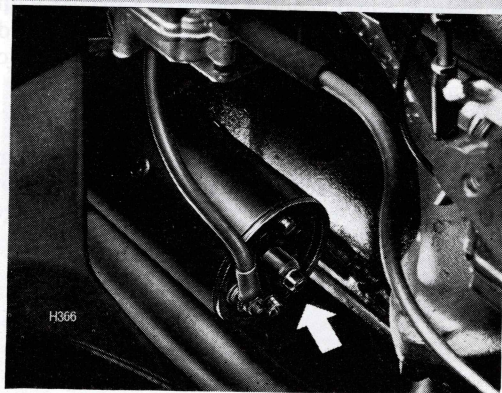


Fig. 46

# Emission Control System Warranty for 1975 models



British Leyland Motors Inc.  
600 Willow Tree Road, Leonia, New Jersey 07605



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## Warranty Applicable to the Emission Control System

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

Like any other piece of complicated machinery, the car will need regular attention and service to make sure that the Emission Control Systems continue to function properly. This is the owner's responsibility. The manufacturer cannot guarantee that emissions will not rise to unacceptable levels if maintenance of the Systems is not carefully and regularly carried out.

The Warranty guarantees the Emission Control Systems to be free of "defects". Ordinary wear and tear on the vehicle and the engine, sufficient to require replacement of parts and

components at regular Maintenance Intervals as specified in the Handbook, is not evidence of a "defect". For example, spark plugs, catalytic converter and muffler will require replacement; engine valves, an important component of the Emission Control System, should be checked and adjusted where necessary as specified in the instructions. Full details are in the Handbook or Manual. The manufacturer cannot accept responsibility for any condition claimed to be a "defect" if it results from a failure to follow the manufacturer's service instructions.

Failure of the Emission Control Systems may also result from misuse or abuse. Operation of the car at excessive speeds, or overloaded, or under heavy dust condition, may adversely affect the functioning of the Emission Control Systems, as may racing the car, or fire or accident caused to the car. If the car is operated only on short trips, or is not, generally speaking, driven each day for at least several miles, some components of the Emission Control Systems may deteriorate more rapidly than would otherwise be expected, and this does not show a "defect".

---

When replacement parts are used, it is essential that they be of proper design and performance specifications. For example, use of the wrong spark plugs may seriously prejudice emission levels. British Leyland Dealers are fully trained and equipped to use proper parts, either manufactured by or approved by British Leyland. Any failure resulting from the use of non-approved replacement parts will not be considered a "defect", and the warranty will be void.

The "Passport to Service" contains blanks to be filled in as maintenance of the system is done at recommended intervals. It is extremely important that this record be kept up to date so that it may be consulted if any question arises about the continued validity of the Emission Control Warranty.

If replacement of any component at the manufacturer's cost is necessary under the Emission Control Warranty, the work (including parts and labour) should be performed by an authorised British Leyland Dealer, unless written approval has first been secured from British Leyland for use of another service facility.

Regular maintenance of the systems may be done by an authorized British Leyland Dealer or by other established and qualified service facilities. Authorized Dealers will, of course, be fully equipped and trained to keep the systems in proper running order, and will have approved spare parts that can be used. If service work is done by other service facilities, it is recommended that copies of the repair orders be kept to show that the services were properly performed and approved replacement parts were used.

Because of local legal requirements, or because of engine characteristics, some cars are equipped with catalytic converters as part of the Emission Control Systems. Catalytic converters are used to reduce carbon monoxide and hydrocarbon emissions through the exhaust system.

If you see a label reading "UNLEADED GASOLINE ONLY" OR "UNLEADED FUEL ONLY" on your fuel gauge or near it on the dashboard, you have a Catalytic converter equipped car. Damage caused by the use of leaded fuel or by driving the vehicle with a persistent misfiring of the engine will not be covered by this Warranty.



## HEADLIGHTS

On a vehicle fitted with sealed beam light units a filament failure necessitates replacement of the unit.

**Renew Sealed Beam Light Unit**

Insert a large screwdriver behind rim adjacent to clip as shown on Fig. 47. Twist screwdriver to release rim from clip. Lift rim from upper retainers.

**NOTE : TO AVOID BEAM AIMING DO NOT DISTURB BEAM AIMING SCREWS A AND B.**

Remove three screws 1, 2 and 3, to release retaining rim and sealed beam light unit. Pull connector from sealed beam light unit. Renew unit and secure in position.

Ensure clip projection on rim is not bent. Position rim so clip components are aligned. Locate rim behind upper retainers and push to engage clip.

**Beam Aiming**

Remove and install rim as detailed above. Screw A positions the beam in the horizontal plane. Screw B controls beam height.

Beam aiming can best be accomplished using equipment such as Lucas "Beamsetter" or "Lev-L-Lite". This service is available at Triumph distributors or dealers and will ensure maximum road illumination with minimum discomfort to other road users.

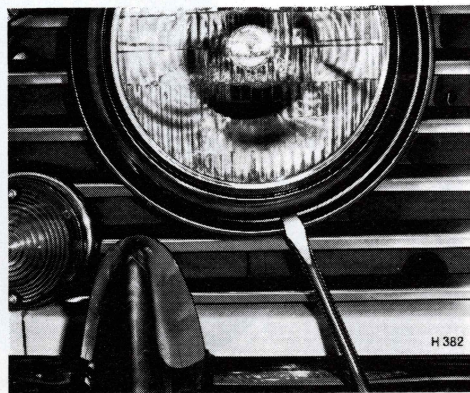


Fig. 47

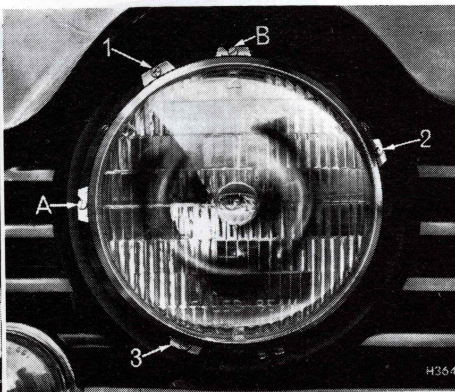


Fig. 48

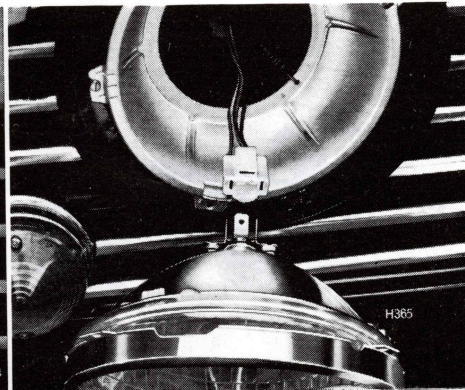


Fig. 49

## ELECTRICAL SYSTEM

### LIGHTS—BULB RENEWAL

#### Front Turn Signal Lights

Remove lens by unscrewing two screws. Renew bulb and reassemble.

#### Front Parking Lights (Fig. 50)

The rim and lens are secured by a bayonet fitting. Push in and turn anticlockwise to remove. Renew bulb and reassemble. Note that the wide flange and slot must be aligned.

#### Front Marker Lights (Fig. 50)

Remove lens by unscrewing single screw and withdrawing

rearwards to allow forward lug to release. Pull out bulb. Renew bulb and reassemble.

#### Rear Marker Lights (Fig. 51)

Remove lens by unscrewing single screw and withdrawing forwards to allow rear clip to release. Pull out bulb. Renew bulb and reassemble.

#### Rear Flasher and Tail/stop Lights

Remove "one-piece" lens by unscrewing three screws. Renew bulb and reassemble. Note that the tail/stop bulb must be located the correct way round.

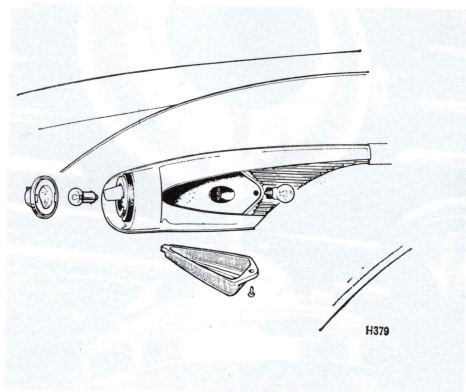


Fig. 50

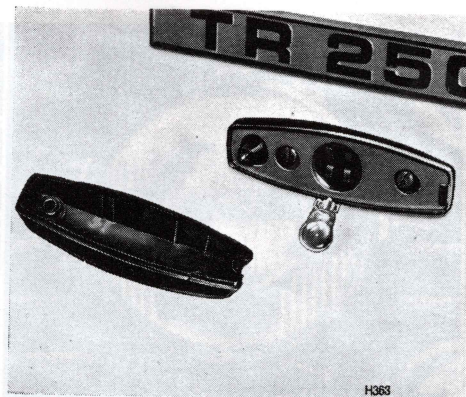


Fig. 51

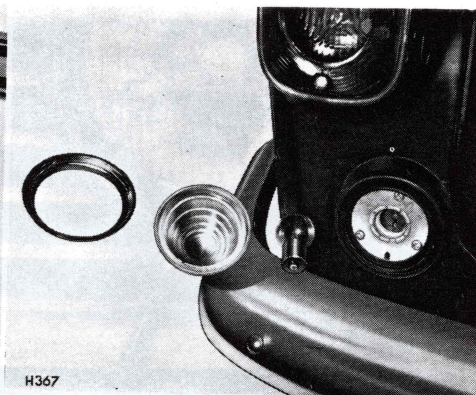


Fig. 52



### Reverse Lights (Fig. 52)

Use screwdriver to turn back lip to remove rim. Remove lens in a similar manner. Renew bulb. Locate lens to lip and "run round" with screwdriver to secure lens flange under lip. Fit rim in a similar manner.

### License Plate Illumination Lights (Fig. 53)

Remove cowled rim by unscrewing two screws. Use screwdriver to turn back lip to remove lens. Remove bayonet fitting bulb using screwdriver to carefully withdraw from close fitting socket. Renew bulb and reassemble. Note that the cowled rim must be positioned so light is directed towards plate.

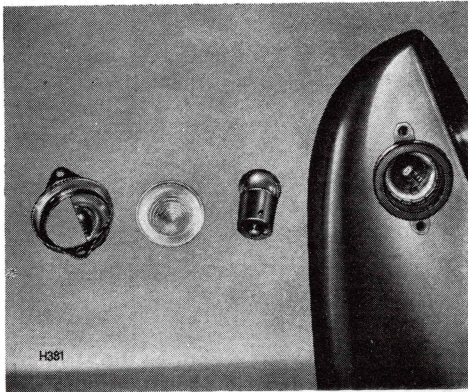


Fig. 53

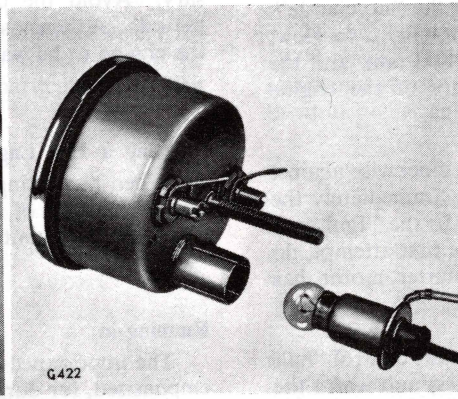


Fig. 54

### Instrument Illumination (Fig. 54)

Pull bulb holder — which is a component of the main harness — from instrument. Unscrew bulb from holder. Renew bulb and reassemble. Note speedometer and tachometer each contain two illumination bulbs.

### Warning Lights (Fig. 55)

Pull bulb holder — which is a component of the main harness — from instrument or housing. Unscrew bulb from holder. Renew bulb and reassemble.

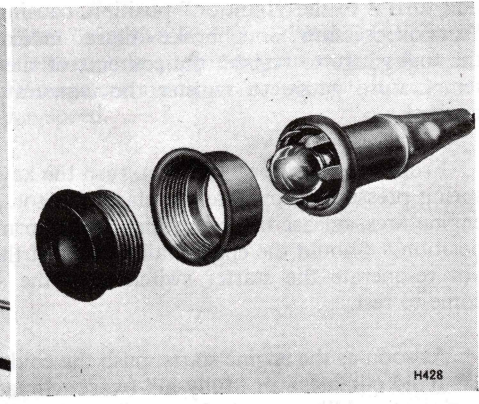


Fig. 55

### DRIVING FROM NEW

#### 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 carburetors, 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 shift lever is in the "Neutral" position. In cold weather pull the "cold start" control fully out; in warm weather pull to the mid-position. In hot climates, do not use the control. Insert the ignition key and turn it to the "Ignition" position, causing the "no charge", "low oil pressure" and "brake failure" indicator lights to glow, the fuel gauge to register the contents of the fuel tank and the temperature gauge to register the temperature of the engine coolant.

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 the engine starts, push the cold start control "half in" (cold climates), or "fully in" (warm climates) and warm the engine at an idling speed of approximately 1,500 r.p.m. This will

cause the "no charge", "low oil pressure" and "brake failure" indicator lights to be extinguished, thus indicating satisfactory performance of the generating, lubricating and braking systems. Should an indicator light remain on, stop the engine and establish the cause. Failure to do so may result in serious damage.

After starting the engine, cylinder wear is minimised if the engine is warmed up quickly by driving away when the indicator lights are extinguished. Maintain an engine speed of approximately 1,500 r.p.m. until the "cold start control" can be pushed fully in. In warm climates, use of the control 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 a Hot Engine

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

#### Running-in

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



### **Recommended Speed Limits**

When driving from new, 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 for short periods 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 1000 miles (1600 km.) 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.

Owners are advised not to drive the car at engine speeds over 5,500 r.p.m., indicated by the beginning of the red segment on the tachometer, and to avoid over-revving, particularly in the lower gears.

### **Recommended Fuel**

The "TR.250" engine is designed to operate on fuels having a minimum octane rating of 100 (Research Method).

### **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.

Greatest benefit will accrue from judicious use of the overdrive, the governing factor being that the vehicle continues to run easily without sign of engine laboring, combined with the minimum amount of throttle opening necessary to maintain this condition.

Do not change from overdrive at engine speeds in excess of 4,000 r.p.m. This corresponds approximately with peak revs. in normal gears. Damage can result from overdrive disengagement at higher engine speed.

### ROUTINE SERVICING

The lubricants listed on page 64, have maintained a high standard of quality over many years and are approved only after extensive tests in collaboration with the oil companies concerned. In countries where these oils are unobtainable, use similar oils having the same characteristics. The use of only high grade lubricants is vitally important and cannot be over-emphasised.

#### Engine

When a new car is delivered, the engine oil pan contains a quantity of special oil, sufficient for the running-in period. Should the level fall below the low mark on the dipstick, the oil pan may be topped-up with any of the approved lubricants.

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

#### Transmission, Overdrive and Rear Axle

Rear axles, transmission 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.

#### Braking System

In addition to adjustment and examination/renewal of shoes and pads at the intervals recommended in the following pages, it is strongly recommended that the brake fluid be renewed and

that the braking system be overhauled every 36,000 miles (60,000 km.) or 3 years (whichever is sooner).

Overhauling the brake system involves dismantling, examining and renewal of all seals and defective items.

Owners are urged to seek the assistance of any Triumph Distributor or Dealer who will be pleased to estimate for the work which is of such a nature that it should be entrusted only to skilled workshop personnel.

#### 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 pre-determined periods.

Operated by all 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 dealer to constitute proof of regular servicing, should this be required when making a claim under the warranty, or when selling the vehicle.



### EMISSION CONTROL SYSTEM

#### Emission Control System

Every Triumph TR.250 embodies an Emission Control System for limiting crankcase and exhaust emission to acceptable limits in accordance with Federal Regulations.

The system is designed to reduce the emission of partially burned hydro-carbon vapours which, combined with oxides of nitrogen in the presence of strong sunlight, form an unpleasant and eye irritating haze known as photo-chemical smog. To enforce the lessening of smog concentrations, and for health reasons, severe penalties can be exacted by the authorities where the amount of hydro-carbon vapours (unburned gasoline) emitted from the exhaust exceeds 275 parts per million, and the concentration of carbon monoxide exceeds 1.5% of the exhaust emission. Virtually no emission of hydro-carbon is allowed from the engine crankcase.

Whilst an owner can, if so desired, undertake some of the minor tasks required to maintain his vehicle in a roadworthy condition, he is reminded that specialised equipment and knowledge is required to correctly service and adjust the Emission Control System; the smallest maladjustment can seriously affect exhaust emission. Therefore, **owners are warned not to tamper**

**with, or allow any unauthorised person to alter the settings made by the manufacturer or authorised dealer.** An owner failing to heed this warning may be liable to the cost of such rectification as found necessary to conform with the law.

Owners are also reminded that passenger vehicles can at any time be stopped on the highway for inspection as part of the air pollution programme. It is, therefore, in the interest of all concerned to keep the emission control system in good working order by regular maintenance as suggested by the Manufacturer.

**The following emission control equipment and settings must not be disturbed by the owner:**

1. Carburetors, throttle linkage and vacuum valve.
2. Ignition timing.
3. Crankcase emission valve.

It is recommended that all service procedures, including those on the following pages, be carried out by an authorised dealer at the appropriate mileage intervals.

## PERIODIC CHECKS

### Engine—Daily

Prior to starting out on a long run, or every 250 miles (400 km.), check the engine oil level and, if necessary, add oil until the level reaches the high mark on the dipstick.

Before checking the level, make sure that the car is standing on level ground. The dipstick, located on the left-hand side of the crankcase (Fig. 56) 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, 2.4 pints (U.S.A.) (1.14 litres) will be required for topping up via the cap (Fig. 57).

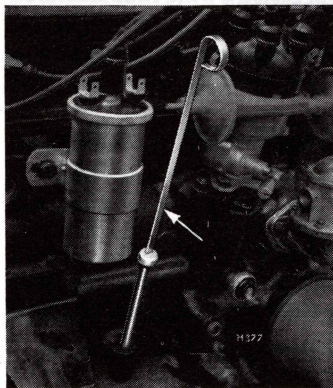


Fig. 56

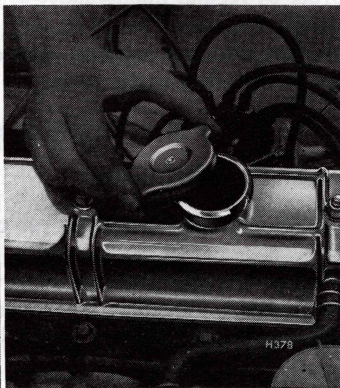


Fig. 57

### Radiator Water Level—Weekly (Fig. 39)

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, completely fill the radiator, as described on page 27.

**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.

### Brake Master Cylinder (1, Fig. 58)

Every week check the level of fluid in the brake master cylinder reservoir. The fluid level is visible through the translucent casing of the reservoir, **do not remove the cap.** A gradual lowering of the level over a long period is caused by brake pad wear and does not require topping-up. A sudden appreciable drop in the level must be investigated, the cause ascertained and rectified immediately.

**Do not allow the level to drop below the danger line on the side of the casing.** (See Fig. 84).

To avoid dirt entering the system ensure that the reservoir is clean externally before removing the cap. Use only new fluid taken from a sealed container and re-seal the container after use. Replace the reservoir cap immediately after filling.



## Screen Washer

Examine the water level in the plastic windshield washer container. If required, unscrew the cap and replenish the container with clean water. (Refer to page 28).

## Tires

The maintenance of correct tire pressures is an important factor governing tire life, steering behaviour, braking, and riding comfort. It is, therefore, important that tire pressures are checked regularly at periods not exceeding two weeks, and the losses, due to diffusion, are made good. Correct tire pressures are given on page 26.

Adjust the pressures whilst the tires are cold, i.e./before a run. As the tires warm up their pressures increase. A warm tire bled to the recommended pressure will be under-inflated when cold.

## Battery—monthly

Examine the level of the electrolyte in the cells and, if necessary, add distilled water via the filler orifices to bring the level up to the top of the separators.

**CAUTION.** Never use a naked light when examining the battery. The mixture of oxygen and hydrogen given off by the battery is dangerously explosive.

## Clutch Master Cylinder (2, Fig. 58)

Every month, check the level of fluid in the clutch master cylinder. To prevent dirt entering the system, clean the cap and surrounding area prior to removing the cap. Top-up the fluid until it is level with the line on the side of the reservoir.

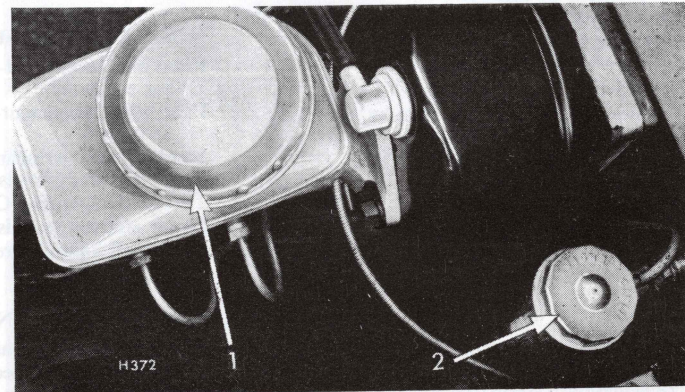


Fig. 58

## 1000 MILES — FREE SERVICE

### 1000 MILES — FREE SERVICE

The engine oil pan is initially filled at the factory with a special running-in oil which should be drained after completing the first 1,000 miles (1,600 km.) and refilled with one of the high grade oils recommended. During this period many of the components, including the brakes, fan belt, gaskets, studs and nuts, settle down, thus necessitating slight adjustment and an overall check.

The owner is, therefore, urged at the completion of this period to return the vehicle to the selling dealer who will perform the following operations free-of-charge, except for oil and grease.

#### ENGINE

**Coolant**—Check level  
**Oil pan**—Drain and refill  
**Throttle control linkage and pedal fulcrum**—Oil  
**Mounting bolts**—Check tightness  
**Cylinder head**—Check tightness  
**Manifold**—Check tightness  
**Valves**—Adjust rocker clearances  
**Fan belt**—Adjust tension  
**Oil filter**—Check for oil leaks  
**Fuel pump**—Clean filter  
**Distributor**—Lubricate. Adjust points and ignition timing at idling speed.  
**Carburetor**—Top-up dampers and adjust idle controls

#### TRANSMISSION

**Transmission, Overdrive**—Check level and top-up  
**Rear axle**—Check level and top-up  
**Universal joint coupling bolts**—Check tightness

**Propellor shaft**—Grease  
**Rear drive shafts**—Grease

#### STEERING AND SUSPENSION

**Front wheel alignment**—Check with aid of tracking equipment  
**Rear wheel alignment**—Check by condition of tire tread  
**Steering unit attachments and “U” bolts**—Check for tightness  
**Tie rods and levers**—Check for tightness  
**Lower steering swivels**—Oil  
**Upper ball joints**—Grease

#### BRAKES AND CONTROLS

**Parking brake cable and linkage**—Lubricate  
**Hydraulic pipes**—Check for leaks, chafing and for hose clearance  
**Master cylinder**—Check level and top-up  
**Brake shoes and handbrake cable**—Adjust as necessary

#### WHEELS

**Wheel nuts or wire wheel extension nuts**—Check tightness  
**Tires**—Check and adjust pressures

#### ELECTRICAL EQUIPMENT

**Battery**—Check and adjust electrolyte level. Check charging rate  
**Alternator and starter motor**—Check fixing bolts for tightness  
**Headlights**—Check alignment and adjust if required  
**Lights, heater, windshield washer, wipers and warning equipment**—Check operation

#### BODY

**Door strikers, locks and hinges**—Oil and check operation  
**Body mounting bolts**—Check tightness  
**Door handles, controls and windshield**—Wipe clean



## Engine Oil Pan (Fig. 59)

Every **6,000 miles (10,000 km.)**, remove the plug (arrowed), to drain the oil. Refit the plug and refill to the correct level, via the filler cap (Page 44, Fig. 57). Reduce this period according to the severity of the following unfavourable conditions.

1. Dusty roads.
2. Short journeys involving frequent stop/start driving, particularly during cold weather when greater use is made of the choke control.

If the vehicle is used for competition or sustained high speed work, the use of higher viscosity oil is recommended because of increased oil temperature.

## Oil Filter Element (Fig. 60)

Every **12,000 miles (20,000 km.)**, unscrew the securing bolt (1), remove the container (2) and discard the element (3). Wash out the container and insert a new element.

Renew the sealing ring (4), ensuring that it is correctly located in the cylinder block and re-attach the filter assembly by tightening the bolt (1) sufficiently to ensure an oil-tight joint.

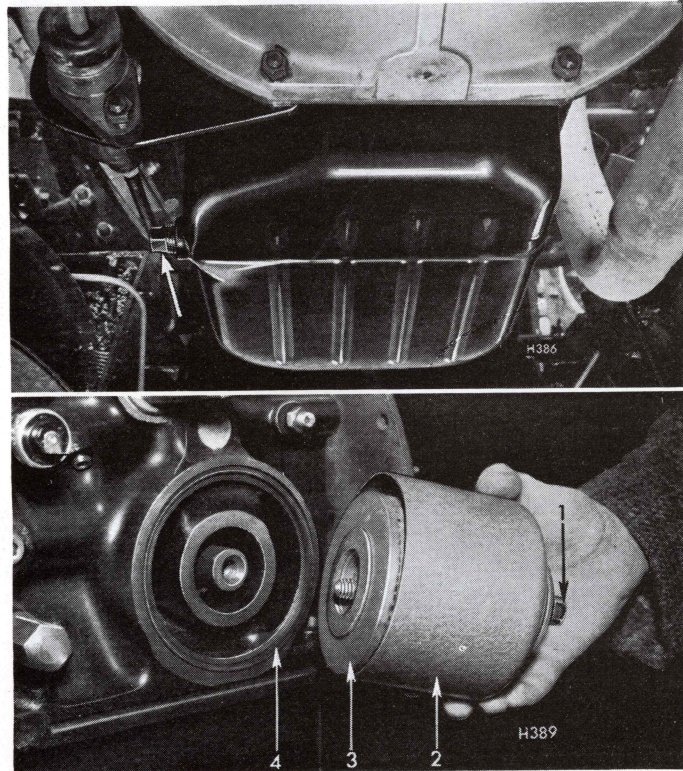


Fig. 59 (upper) Fig. 60 (lower)

## REGULAR MAINTENANCE

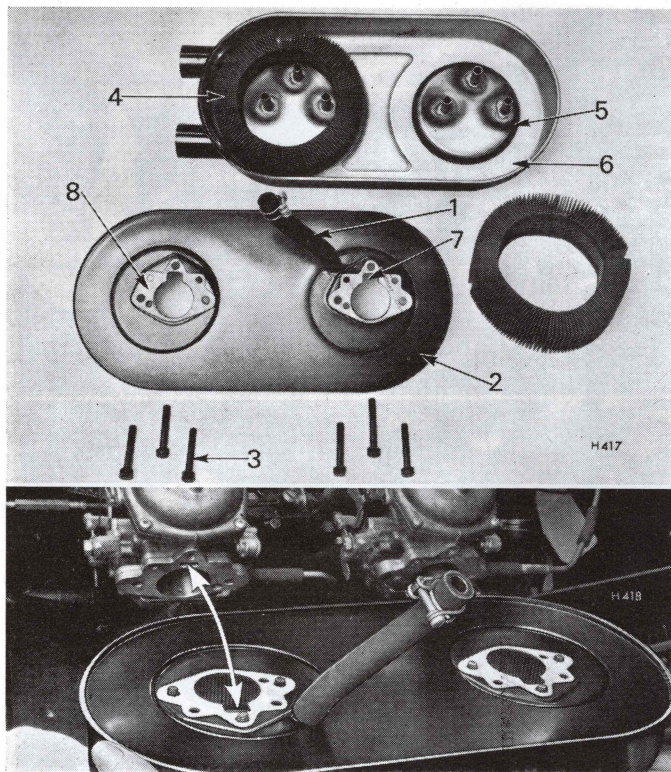


Fig. 61 (upper)      Fig. 62 (lower)

### Air Cleaner (Figs. 61 and 62)

Every **6,000 miles (10,000 km.)** or more frequently where conditions of extreme dust prevail, release the flexible hose (1) from the cover plate (2). Unscrew six bolts (3) securing the container to the carburetor flanges, take off the cover plate (2) and lift out the elements (4), noting the positions of the rubber ring seals (5).

Clean out the container (6) and use a high pressure air line, or foot pump, to remove dust from between the folds of the paper element (4).

Re-assemble the air cleaner, ensuring that the slot (7) in the cover plate (2) and gasket (8) and the vent and bolt holes, align with those in the carburetor flanges.

Every **12,000 miles (20,000 km.)** renew the paper elements.

### Valve Seat Attention

Every **6,000 miles (10,000 km.)** have the compression pressures checked by your Triumph Dealer. Providing that the engine is functioning satisfactorily, and the compression pressures of all the cylinders are equal, you are advised not to disturb the engine.



The need for decarbonising arises when the build-up of carbon, a product of combustion, becomes excessive. If premium grade fuels and high quality lubricants are used, carbon deposit is so minimised that frequent decarbonising is unnecessary. Carbon removal may, therefore, be restricted to occasions when the cylinder head is removed for attention to the valves and seats.

## Valve Clearances—Adjustment (Fig. 63)

Every 12,000 miles (20,000 km.), remove the rocker cover and, turning the engine clockwise, check and adjust the valve clearances to 0.010" (0.25 mm.) if required, in the following sequence while the engine is cold:

Adjust Nos. 1 and 3 valves with Nos. 10 and 12 valves open

„	„	8 and 11	„	„	„	2 and 5	„	„
„	„	4 and 6	„	„	„	7 and 9	„	„
„	„	10 and 12	„	„	„	1 and 3	„	„
„	„	2 and 5	„	„	„	8 and 11	„	„
„	„	7 and 9	„	„	„	4 and 6	„	„

Refit the rocker cover.

## Cylinder Head Nuts (Fig. 64)

When required, tighten the cylinder head nuts in the order shown. Slacken them by reversing the sequence.

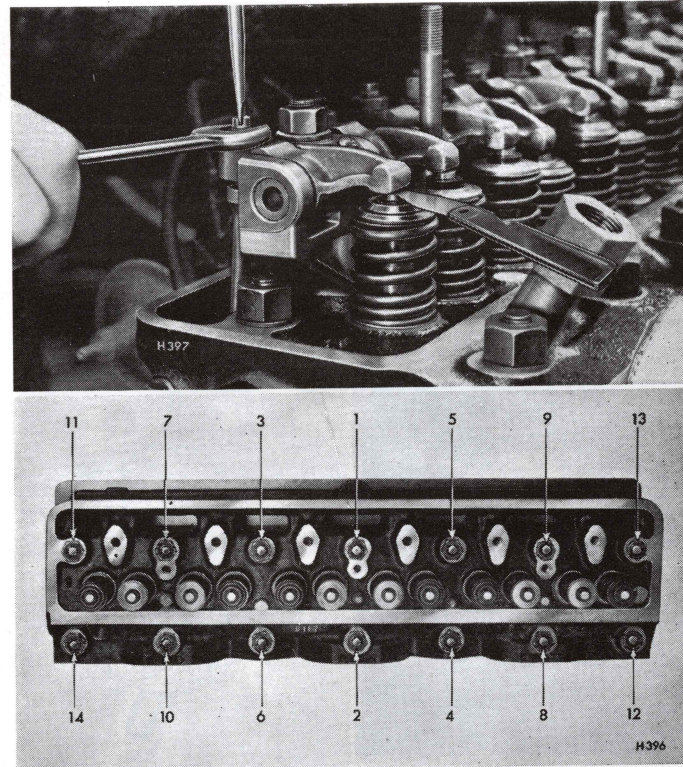
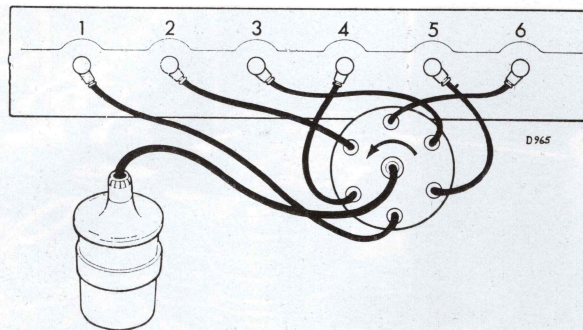


Fig. 63 (upper)

Fig. 64 (lower)

## REGULAR MAINTENANCE



### Sparking Plugs

Every 6,000 miles (10,000 km.) remove sparking plugs for cleaning and reset the gaps to 0.25" (0.63 mm.). Clean the ceramic insulators and examine them for cracks or other damage likely to cause "H.T." tracking. Test the plugs and renew those which are suspect.

Every 12,000 miles (20,000 km.) renew all the sparking plugs. Ensure that they are of the correct type (page 65) and that the gaps are set to 0.25" (0.63 mm.).

Replace sparking plug leads in the order shown (Fig. 66).

### Fuel Pump (Figs. 65 and 67)

Every 12,000 miles (20,000 km.) clean out the fuel pump. Access to the fuel pump bowl and filter is gained by unscrewing the bolt (1) and removing the domed cover (2). Lift the filter gauze (4) from its seating and wash it in petrol.

Renew the cork gasket (3) if this has hardened or is broken. Assemble the filter gauze (4) into its seating, taking care to place the gauze face downwards so that it can be removed easily when required.

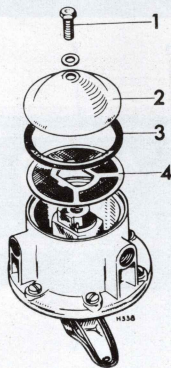
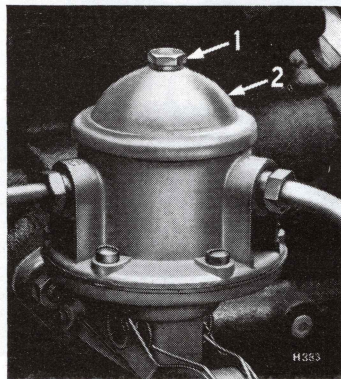


Fig. 65 (left) Fig. 66 (upper) Fig. 67 (right)



## Ignition Distributor (Fig. 69)

Every 6,000 miles (10,000 km.) release the clips and remove the distributor cap and rotor arm. Smear the cam (5) lightly with oil and apply a few drops of thin oil to the screw (4), in the center of the cam, and a single drop on the contact breaker pivot (6).

Turn the engine until the contact breaker lever is operating on the highest point of the cam lobe, i.e. gap at its widest. Slacken the fixed contact screw (2), insert a screwdriver into the "Vee"-shaped cut-out in the contact lever (1) and adjust the lever to obtain 0.015" (0.4 mm.) gap using a feeler gauge between the contacts (3), and retighten screw (2). Refit the rotor arm and cap.

Renew worn or damaged points when required.

## Carburetor Dampers (Fig. 68)

Every 6,000 miles (10,000 km.) unscrew and withdraw the plug and damper assembly from the top of each carburetor. Top-up the damper chambers with the seasonal grade of engine oil. The oil level is correct when utilising the damper as a dipstick its threaded plug is  $\frac{1}{4}$ " (6.3 mm.) above the dash pots, when resistance is felt. Refit the damper.

Using an oil can, apply oil to the throttle and choke control linkages.

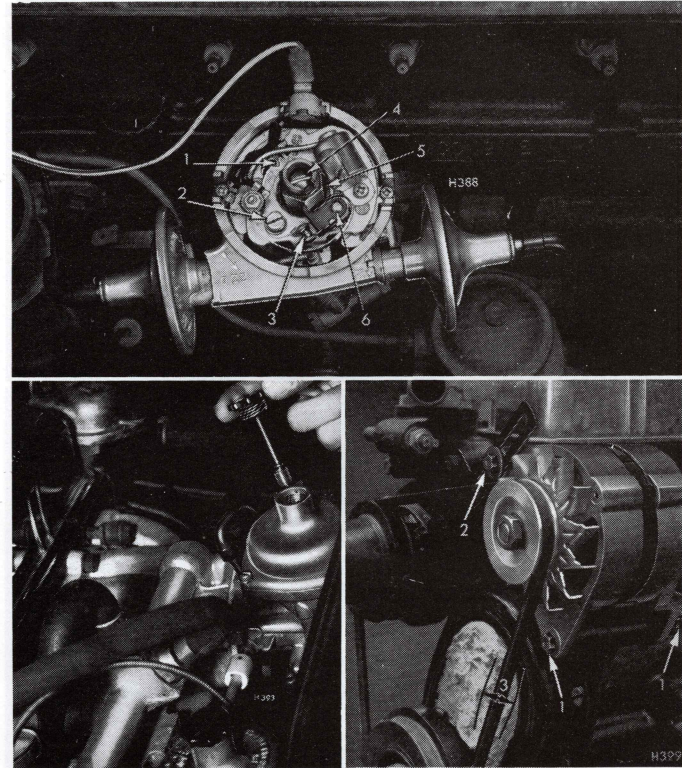


Fig. 68 (left)    Fig. 69 (upper)    Fig. 70 (right)

## REGULAR MAINTENANCE

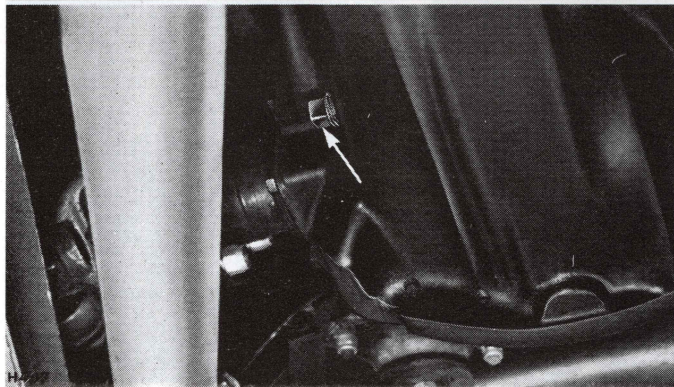
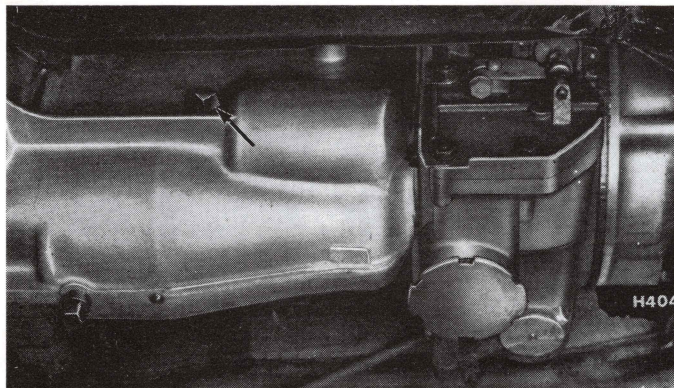


Fig. 71 (upper)      Fig. 72 (lower)

### Fan Belt Adjustment (Fig. 70)

Every 12,000 miles (20,000 km.) slacken the pivot bolt nut (1) and the adjustment bracket bolt (2). Pivot the alternator away from the engine until the belt can be moved  $\frac{3}{4}$ " — 1" (19 — 25 mm.) at the mid-point of its longest run. Maintaining the alternator in this position, tighten the bolt (2) and nut (1).

### Transmission (Fig. 71)

Every 6,000 miles (10,000 km.) with the vehicle standing on level ground, remove the oil filler plug (shown arrowed), and top up the transmission until the oil is level with the bottom of the filler plug threads. Allow surplus oil to drain away before refitting the plug and wiping clean. An oil transfer hole between the transmission and overdrive unit provides a common oil level. Maintenance of the overdrive unit is thus limited to ensuring that the correct oil level is maintained in the gearbox.

### Final Drive (Fig. 72)

Every 6,000 miles (10,000 km.) remove the oil level plug (shown arrowed), and top-up the rear axle until the oil is level with the bottom of the filler plug threads. Allow surplus oil to drain before refitting the plug and wiping clean.



## Water Pump (Fig. 74)

Every 12,000 miles (20,000 km.) remove the sealing plug from the water pump and replace it by a grease nipple ( $\frac{1}{8}$ " Briggs taper). Apply a grease gun until grease exudes from a pressure release hole in the side of the water pump. Replace the sealing plug.

## Propellor Shaft (Fig. 73)

Every 6,000 (10,000 km.) apply a grease gun filled with grease to the nipple (arrowed) and give 5 strokes only.

Every 12,000 (20,000 km.) check the coupling bolts for tightness.

## Inner Drive Shafts (Fig. 75)

Every 6,000 miles (10,000 km.) apply a grease gun filled with grease to the nipple (arrowed) and give 5 strokes only.

Every 12,000 miles (20,000 km.) check the coupling bolts for tightness.

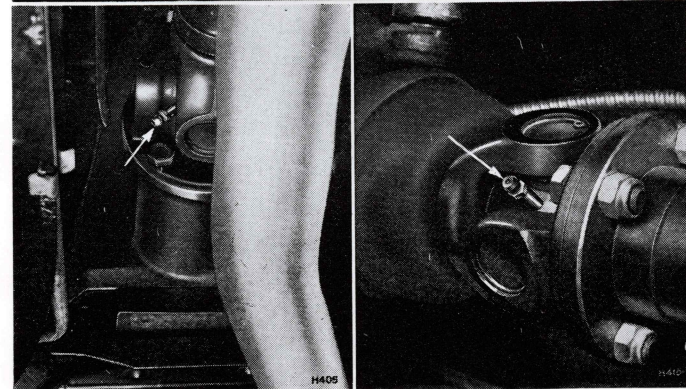
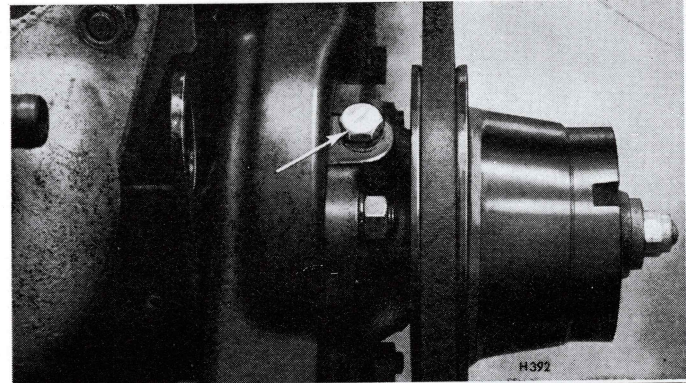


Fig. 73 (left)

Fig. 74 (upper)

Fig. 75 (right)

## REGULAR MAINTENANCE

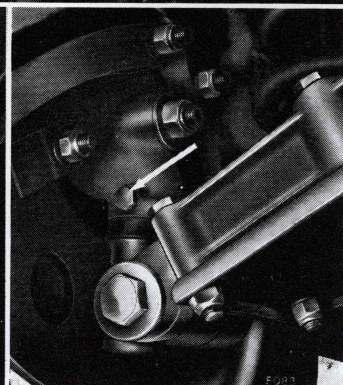
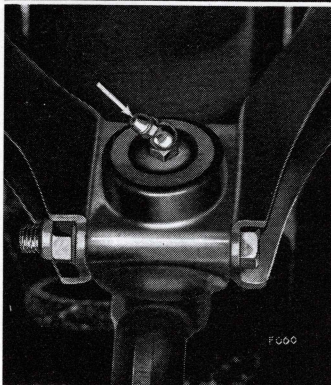
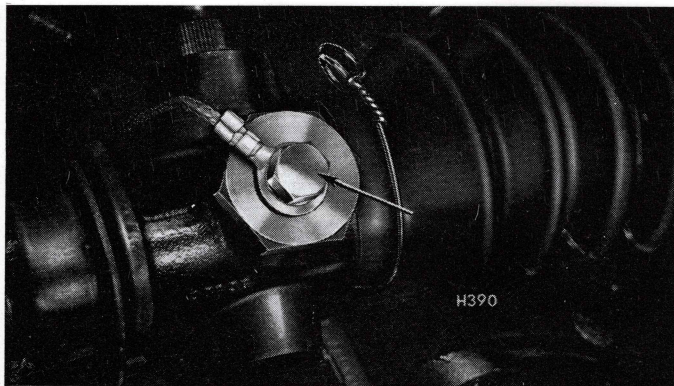


Fig. 76 (left)    Fig. 77 (upper)    Fig. 78 (right)

### Steering Unit (Fig. 77)

Every 12,000 (20,000 km.) remove a sealing plug from the top of the steering unit and replace it by a grease nipple ( $\frac{1}{8}$ " B.S.P. Parallel). Apply the grease gun and give 5 strokes only. Remove the nipple and refit the plug.

### Lower Steering Swivel (Fig. 78)

Every 6,000 miles (10,000 km.) remove the plug (arrowed). Apply an oil gun until oil exudes from the swivel. Remove the nipple and refit the plug.

### Upper Ball Joint (Fig. 76)

Every 6,000 miles (10,000 km.) apply a grease gun filled with grease to the nipple (arrowed). Pump the gun until grease exudes from the underside of the nylon washer retained by the grease nipple.

### Tightness Check

Every 12,000 miles (20,000 km.) check and if necessary, tighten the steering unit attachments and "U" bolts, steering tie rods and levers.



## Front Hub Adjustment and Lubrication (Figs. 79 and 80)

Every 12,000 miles (20,000 km.) check and if necessary adjust the front hubs.

At major overhaul periods, re-pack the front hubs with grease

Jack up the front of the car and remove one front road wheel. Unscrew two bolts (1) securing the caliper (2) to the disc mounting plate (3).

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 the vertical link.

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

Remove the hub grease cap (4), withdraw the split pin (5) and remove the slotted nut (6) and "D" washer (7). Detach the hub assembly from the stub axle. Remove outer (8) and inner (9) race from the hub (inset Fig. 80). Wash all trace of grease from the hub bearings. Pack the hub bearings with new grease, working it well into the rollers.

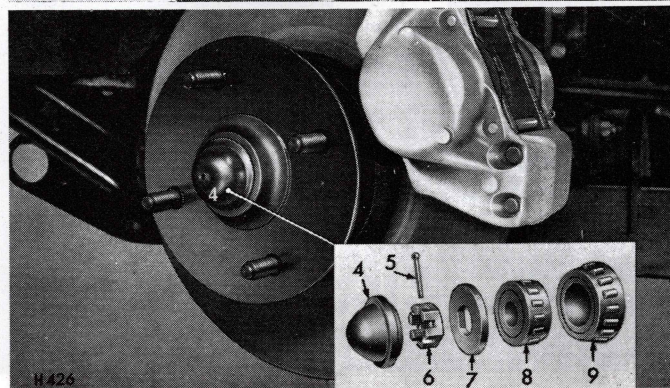
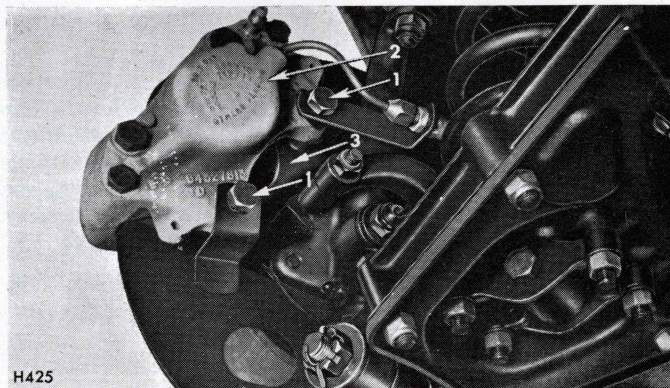


Fig. 79 (upper)

Fig. 80 (lower)

## REGULAR MAINTENANCE

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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.

Repeat the above operations with the opposite wheel hub.

### Exhaust System

Every 12, 000 miles (20,000 km.) check the complete exhaust system for leaks and immediately rectify defects.

### Wheel Alignment

Every 6,000 miles (10,000 km.) check the front and rear wheel track alignment if tire wear is uneven.

### Electrical

Every 6,000 miles (10,000 km.) check the operation of all electrical equipment and adjust, if necessary, the headlight settings.

### Brakes

The brakes are hydraulically operated and vacuum-servo assisted. Self-adjusting disc brakes are fitted to the front: leading and trailing shoe drum brakes are fitted at the rear of the car. The handbrake lever is connected to the rear brakes only, by twin cables.

Every 6,000 miles (10,000 km.) check and adjust the brakes as necessary.

Every 12,000 miles (20,000 km.) chock the front wheels, 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 compressed air, blow all dust from the mechanism and, using a dry clean 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 and remove the jack.



## Front Brakes—Renewing Friction Pads (Fig. 81)

When friction pads are reduced to  $\frac{1}{8}$ " (3 mm.) thickness, or if they are of insufficient thickness to ensure safe braking for a further 6,000 miles (10,000 km.) renew them as follows:

1. Apply the handbrake, jack up the front of the car and remove the front road wheels.
2. Release the retaining clips (1) and remove the pad retaining pins (2).
3. Lift the friction pads (3) and the anti-squeal plates (4) from the caliper.

**IMPORTANT.** Do not depress the brake pedal with the pads removed.

4. Clean the exposed faces of the pistons and the recesses into which the pads fit, then carefully push the pistons back into the calipers.

**NOTE.** This action will displace fluid back into the master cylinder reservoir. To prevent over-flowing, syphon off surplus fluid.

5. Fit the brake pads and anti-squeal plates, ensuring that the arrows on the plates are pointing in the direction of wheel rotation.

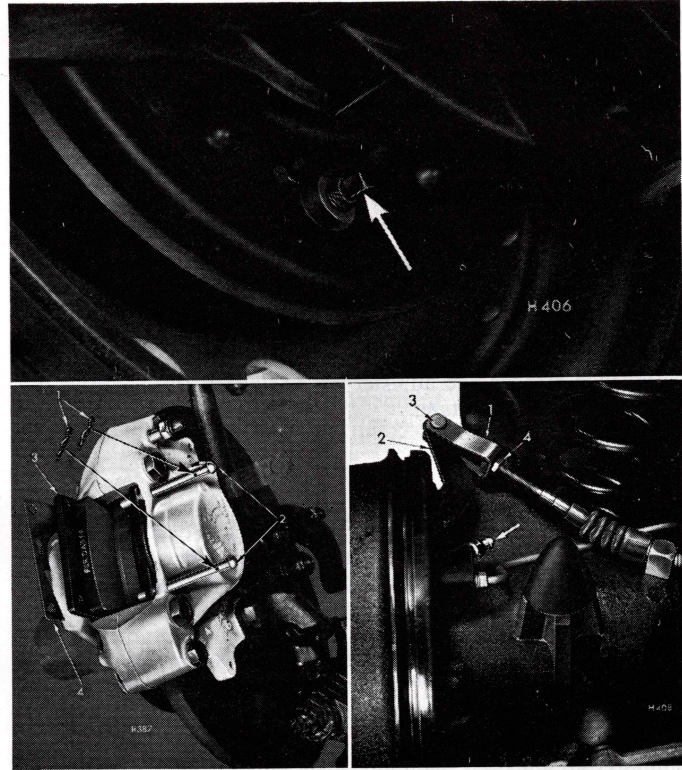


Fig. 81 (left)    Fig. 82 (upper)    Fig. 83 (right)

## REGULAR MAINTENANCE

6. Insert the pad retaining pins and secure them with the spring clips.
7. Pump the brake pedal several times to adjust the brakes and check the level of fluid in the reservoir.
8. Replace the front wheels and remove the jack.

### Rear Brakes—Adjusting (Fig. 82)

Each rear brake is provided with an adjuster which is accessible when the rear 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.

### Parking Brake—Adjusting (Fig. 83)

The parking brake is automatically adjusted when the rear drum brakes are adjusted; however, remove slackness, accruing in the cables by the following procedure:

1. Release the parking brake lever, chock the front wheels, jack up the rear of the car and remove the rear road wheels.
2. Detach the fork end (1) from the lever (2) by removing the clevis pin (3) which is secured by a split pin.
3. Adjust the brake shoes hard against the drum.

4. Slacken the locknut (4) and turn the fork end clockwise to reduce the effective length of the cable.
5. Adjust both cables equally until the clevis pins can be inserted without tension on the brake cables or the backplate levers.
6. Slacken the adjuster until the drums are free to rotate.
7. Tighten the locknut and replace the fork-end, clevis pin, split pin and washer. Apply a little grease around the fork ends, replace wheels and remove the jack.

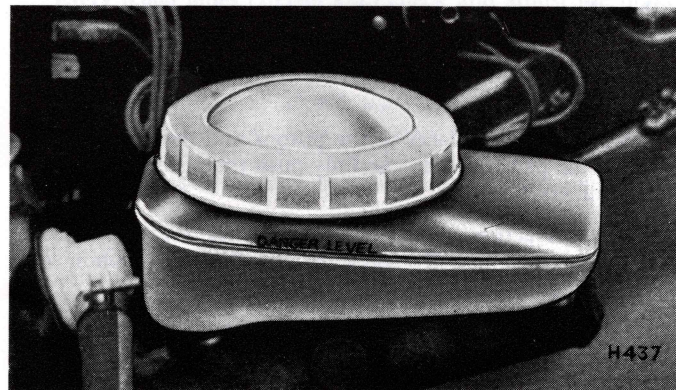


Fig. 84



### Vacuum Servo Unit

The TR.250 is fitted with a brake servo unit, which, utilising engine manifold depression multiplies the effort applied to the brake pedal.

The servo unit is in direct line between the pedal and the master cylinder. The system is arranged so that if, for any reason, the servo system is inoperative braking can still be effected, though requiring greatly increased pedal effort.

**CAUTION.** For reasons given above, it is extremely dangerous to "coast" or manoeuvre the car without the engine running.

## HYDRAULIC SYSTEM

### Description

The foot operated hydraulic braking system employs a tandem master cylinder for transmitting pressure to independent front and rear braking systems. Both systems are connected to opposing sides of a pressure differential warning actuator (P.D.W.A.) which operates an electrical switch when a pressure drop on one side of the valve causes a shuttle to move from its mid-position. The P.D.W.A. switch operates a warning light on the fascia (Fig. 2) which is series/parallel connected with the oil warning light. Thus when the brakes are working correctly, the brake warning light and the oil warning light are both

extinguished as the engine speed is increased from idle (giving regular assurance that the brake warning light is functioning). In the event of a partial brake failure the brake warning system is earthed directly, causing the warning light to glow brightly.

### Bleeding the Hydraulic Braking System General

If air has entered either of the hydraulic braking systems then only the system affected need be bled. During bleeding, exercise care, as described in the following procedure, to avoid moving the shuttle from its mid-position. However, if the shuttle has moved during bleeding or subsequent to a fault condition, centralise the shuttle by performing operations 5 — 9 overleaf.

### Preparation for Bleeding

Before commencing to bleed the brakes ensure that all the bleed nipples (Figs. 81 and 83) are clean and, taking care to avoid dirt entering the fluid reservoir, remove its filler cap and top-up with new hydraulic fluid. During the bleeding operation keep the level of fluid above the dividing partition in the reservoir. Do not use fluid bled from the system for topping-up.

Use new fluid from a sealed container, resealing the container after use.

## REGULAR MAINTENANCE

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### Procedure

Commence with the brake, of the pair being bled, farthest from the master cylinder. If both systems are to be bled, bleed the rear brakes first. When bleeding the rear brakes, release the handbrake and turn the brake adjusters to lock the shoes against the drums. When the bleeding is completed adjust the brakes as detailed on page 58.

1. Attach a rubber tube of approx.  $\frac{1}{4}$ " (6 mm.) bore to the brake bleed nipple allowing the other end of the tube to hang submerged in a jar containing a quantity of clean brake fluid
2. Unscrew the bleed-screw enough to allow the fluid to be pumped out (half a turn is normally sufficient).
3. Depress the brake pedal and allow it to return slowly noting that only a LIGHT pedal effort is required and the pedal must NOT be pushed through at the end of the stroke. (In addition, never "try" the pedal until all air has been dispelled and the system is fully bled, as either action will cause the shuttle to move and actuate the switch). Pausing between each depression of the pedal, continue pumping until all air has been dispelled from the bleed-screw (denoted by the absence of bubbles in the fluid being pumped into the jar).

4. With the pedal depressed, close the bleed-screw nipple and repeat the operation on the other brake.

### Procedure for Re-centralising the P.D.W.A. Piston

If, for reasons described above, the P.D.W.A. shuttle requires to be re-centralised, adopt the following procedure.

5. Fit a rubber tube, as described in 1 above, to a brake bleed-screw at the opposite end of the car to that which has just been bled.
6. Open the bleed-screw.
7. Switch the ignition on but **DO NOT START THE ENGINE**. (The brake warning light will glow but the oil warning light will remain extinguished).
8. Exert a steady pressure on the brake pedal until the brake light dims and the oil light glows. (A click should be felt on the pedal as the shuttle returns to its mid-position).
9. Tighten the bleed-screw.

**NOTE.** If the pedal has been pushed too hard the shuttle will move to the other side of the valve, thus requiring the procedure to be repeated on a brake at the opposite end of the car.



### Clutch and Brake Pipe Hoses

Every 6,000 miles (10,000 km.) examine and renew defective hoses. Ensure that pipes and hoses have adequate clearance to prevent chafing against other components, particularly when the steering is turned to "full lock" in either direction.

### Bleeding the Clutch System (Figs. 58 and 85)

When a pipe joint has been disconnected, or part of the hydraulic clutch system dismantled, bleed all air from the system as follows:

1. Clean the neck and cap of the master cylinder.
2. Remove the cap and top-up with new hydraulic fluid. (At no time, during the subsequent operation, allow the level of fluid to fall below half full).
3. Clean the clutch cylinder nipple (Fig. 85) and attach to it a rubber tube of approx.  $\frac{1}{4}$ " (6 mm.) bore allowing the other end of the tube to hang submerged in a jar containing a quantity of clean hydraulic fluid.
4. Unscrew the bleed nipple enough to allow fluid to be pumped out (a half turn is normally sufficient).
5. Depress the clutch pedal firmly and allow it to return unassisted. Pausing between each depression continue pumping until all air has been expelled from the system (denoted by the absence of bubbles in the fluid being pumped into the jar).
6. With the pedal depressed, close the bleed nipple.

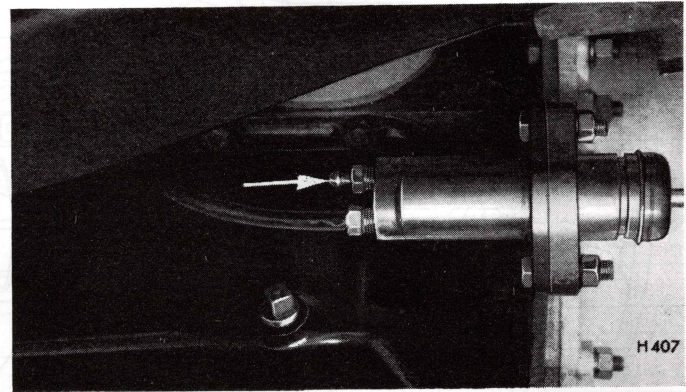


Fig. 85

# LUBRICATION CHART

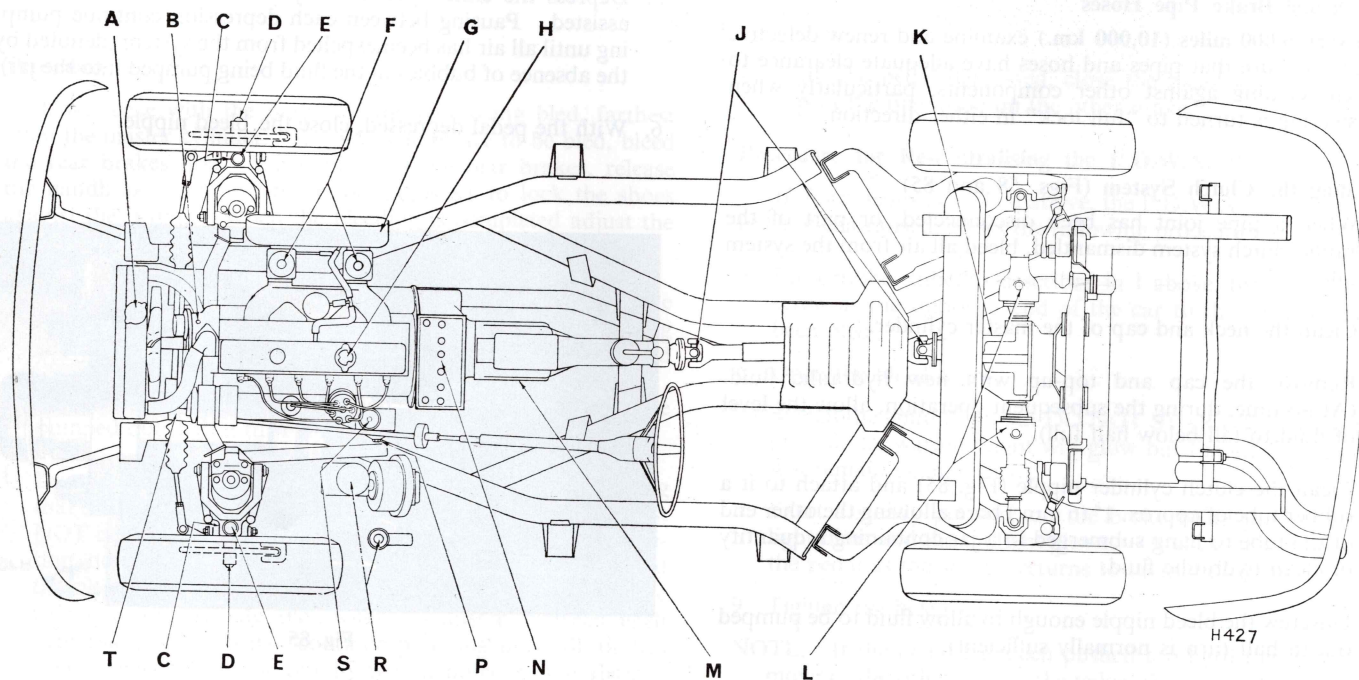


Fig. 86



# LUBRICATION SUMMARY

Chart Ref.	Items	Details	Page Ref.		Intervals × 1000			
					Miles	Kms.	Miles	Kms.
A	Radiator	Top up	44	Weekly				
B	Water Pump	Grease	53	—			12	20
C	Upper ball joints	Grease	54	—	6	10		
D	Front Hubs	Adjust	55	—			12	20
E	Lower Steering Swivels	Oil	54	—	6	10		
F	Carburettor Dampers	Top up	51	—	6	10		
G	Air Cleaners	Clean	48	—	6	10		
		Renew element	48	—			12	20
H	Engine Oil Pan	Top up	44	Daily				
		Drain and refill	47	—	6	10		
J	Propellor Shaft	Grease	53	—	6	10		
K	Final Drive	Top up	52	—	6	10		
L	Drive Shafts	Grease	53	—	6	10		
M	Transmission	Top up	52	—	6	10		
N	Battery	Top up	45	Monthly				
P	Oil Filter	Renew element	47	—			12	20
R	Master Cylinder—Brake Master Cylinder—Clutch	Check	44	Weekly				
		Top up	45	Monthly				
S	Fuel Pump	Clean	50	—			12	20
T	Steering Unit	Grease	54	—			12	20

# RECOMMENDED LUBRICANTS AND ANTI-FREEZE SOLUTIONS

(The products recommended are not listed in order of preference)

COMPO- NENT	AIR TEMP.		API DESIG- NATION	BP	CASTROL	DUCKHAM'S	ESSO	MOBIL	PETROFINA	SHELL	TEXACO CALTEX				
	°C.	°F.													
*ENGINE CARBU- RETOR DASHPOTS OIL CAN	over 20	over 70	MM or MS	Visco-Static Energol SAE40	Castrol 40 HD	Q20-50	Esso Extra Motor Oil 20W/40	Mobiloil Special 10W/30 or Mobiloil Super SAE 10W/40	Fina Multigrade SAE 20W/30	Shell Super Motor Oil	Havoline 40				
	0 to 20	30 to 70	MM or MS									Castrolite 10W/30	Castrol 30 HD	Castrolite XL 20W/40	
	—10 to 0	10 to 30	MM or MS												Castrol 20 HD
	below —10	below 10	MM or MS												
GEARBOX AND O/DRIVE REAR AXLE	over 0	over 30	GL 4	Gear Oil SAE 90 EP	Castrol Hypoy	Duckham's Hypoid 90	Esso Gear Oil GP 90	Mobilube GX 90	Fina Pontonic MP SAE 90	Shell Spirax 90 EP	Multigear Lubricant EP 90				
	below 0	below 30	GL 4	Gear Oil SAE 80 EP	Castrol Hypoy Light	Duckham's Hypoid 80	Esso Gear Oil GP 80	Mobilube GX 80	Fina Pontonic MP SAE 80	Shell Spirax 80 EP	Multigear Lubricant EP 80				
FRONT AND REAR HUBS BRAKE CABLES GREASE GUN				Energrease L2	Castrolase LM	Duckham's LB 10	Esso Multi-Purpose Grease H	Mobilgrease MP	Fina Marson HTL 2	Shell Retinax A	Marfak All Purpose				
*WHERE CIRCUIT RACING OR OTHER SEVERE COMPETITIVE EVENTS ARE CONTEMPLATED IT IS ADVISABLE, IN VIEW OF THE INCREASED OIL TEMPERATURE ENCOUNTERED, TO USE OILS OF HIGH VISCOSITY															
CLUTCH AND BRAKE RESERVOIRS				CASTROL GIRLING BRAKE AND CLUTCH FLUID CRIMSON. WHERE THIS PROPRIETARY BRAND IS NOT AVAILABLE, OTHER FLUIDS WHICH MEET SAE 70R3 SPECIFICATION MAY BE USED											
APPROVED ANTI-FREEZE SOLUTIONS	Smith's Bluecol		BP Anti-Frost	Castrol Anti-Freeze	Duckham's Anti-Freeze	Esso Anti-Freeze	Mobil Permazone	Fina Thermidor	Shell Anti-Freeze	Startex					
	WHERE THESE PROPRIETARY SOLUTIONS ARE NOT AVAILABLE, OTHERS WHICH MEET BSI 3151 or 3152 SPECIFICATION MAY BE USED														



## GENERAL SPECIFICATION

### GENERAL SPECIFICATION

#### Engine

Number of cylinders	6	
Bore of cylinders	74.7 mm.	2.94 in.
Stroke of crankshaft	95 mm.	3.74 in.
Cubic capacity	2498 c.c.	152 in. <sup>3</sup>
Piston area	263 cm. <sup>2</sup>	40.7 in. <sup>2</sup>
Compression ratio	8.5 : 1	
Valve rocker clearances (cold)	0.25 mm.	0.010 in.
Valve timing	Inlet and exhaust equally open at T.D.C.	

#### Lubrication (Engine)

Pump	High capacity eccentric lobe type
Filter	Replaceable flow type

#### Cooling System

	Pressurised "no loss" system incorporating a translucent plastic overflow bottle
Circulation	"Vee" belt driven pump
Fan	8 blades, 12.5 in. dia. (31.6 cm.)

#### Fuel System

Pump	A.C. mechanically operated diaphragm type
Carburetor	Twin sidedraught Stromberg 175 C.D.S.E.
Manifolds	Cast aluminium inlet and twin outlet exhaust manifolds
Air cleaners	Replaceable paper elements
Crankcase breathing	Closed circuit—controlled by emission valve between rocker cover and manifold

#### Ignition System

Coil	Lucas HA12
Distributor—type	Lucas 22D6
contact gap	0.015 in. (0.4 mm.)
rotation—viewed on rotor	Anticlockwise
Firing order	1 - 5 - 3 - 6 - 2 - 4
Sparking plugs—type	Champion UN — 12Y
gap	0.025 in. (0.63 mm.)
Ignition timing (static)	10 degrees B.T.D.C.
Ignition timing (idle)	4 degrees A.T.D.C.

## GENERAL SPECIFICATION

### Electrical System

Voltage	12
Polarity	Negative earth
Fuses—fuse box	35 amp.
Alternator—type	Lucas 15AC
—max. output	28 amps.
Alternator control unit	Lucas 4TR
Battery—type	Lucas BT9A
—capacity @ 20 hour rate	57 amp. hour
—plates per cell	9
—normal charge rate	5 amps.
Starter solenoid	Lucas 4ST
Starter motor	Lucas M35G
Flasher unit	Lucas 8FL 3·6A
Brake pressure differential switch	Lockheed
Hazard flasher unit	Signal—stat 180 (made in U.S.A.)
Hazard relay	Lucas 6RA
Fuel and temperature indication	Smiths bi-metal resistance 10 volt system
Oil pressure indication- switch operating pressure	4·7–7·5 lb in <sup>2</sup> . (0·33–0·52 kg/cm. <sup>2</sup> )

### Transmission

Clutch	Diaphragm type 8½ in. dia. (21·5 cms)				
Transmission	Four forward ratios and one reverse Synchronesh on all forward ratios				
	Top	3rd	2nd	1st	Rev.
Ratios	1·00	1·33	2·01	3·14	3·22
Overall ratios	3·70	4·92	7·44	11·62	11·9
Rear axle	Semi-floating axle shafts, three-piece casing. Hypoid bevel gears 3·7 : 1 ratio				

### Wheels

Steel disc type with simulated magnesium rims. Wire wheels—center locking nut type (optional) used with tubed tires. Rim section 4½J.

### Tires

Goodyear G800 185 SR-15  
Michelin 185 SR-15 "X" (optional)  
See page 26

### Pressures

### Brake System

Girling hydraulic centrally mounted handbrake coupled mechanically to rear wheels only



## GENERAL SPECIFICATION

Front	Caliper disc 10 $\frac{7}{8}$ in. dia. (27.62 cms.)	
Rear	Drums 9 in. dia. (22.9 cms.) 1 $\frac{3}{4}$ in. (4.45 cms.)	
Front lining area	20.7 in. <sup>2</sup>	174.2 cms. <sup>2</sup>
Front swept area	233 in. <sup>2</sup>	1483.8 cms. <sup>2</sup>
Rear lining area	60.5 in. <sup>2</sup>	419.3 cms. <sup>2</sup>
Rear swept area	99 in. <sup>2</sup>	638.7 cms. <sup>2</sup>
Total lining area	81.2 in. <sup>2</sup>	522.8 cms. <sup>2</sup>
Total swept area	332 in. <sup>2</sup>	2130.0 cms. <sup>2</sup>
Maximum retardation	.98 G	

### Wheel Alignment (Unladen)

Front	$\frac{1}{16}$ " to $\frac{1}{8}$ " (1.6 to 3.2 mm.) toe in
Rear	Parallel to $\frac{1}{16}$ " (1.6 mm.) toe in

### Suspension

Front	Low periodicity independent system. Patented bottom bush and top ball joint wheel swivels. Coil springs controlled by telescopic dampers. Taper roller hub bearings.
Rear	Semi-trailing arm independent suspension with coil springs controlled by piston dampers. Mounted on frame through rubber bushed pivots and with rubber insulation of the spring.

### Chassis Data

Frame	Channel steel pressing of box section side members braced by a cruciform member	
Wheelbase	7 ft. 4 in.	2240 mm.
Track—Front	4 ft. 1 $\frac{1}{4}$ in.	1251 mm.
—Rear	4 ft. $\frac{3}{4}$ in.	1239 mm.
Ground clearance	6 in.	152 mm.
Turning circle	33 ft.	10.1 m.
Steering unit	Rack and pinion 3 $\frac{1}{4}$ turns lock to lock	

### Capacities

	Imperial	Metric	U.S.A.
Fuel tank	11 $\frac{1}{4}$ galls.	51 litres	13.5 galls.
Engine sump	8 pints	4.52 litres	9.64 pints
Gearbox from dry	2 pints	1.13 litres	2.4 pints
Gearbox and overdrive	3 $\frac{1}{2}$ pints	2.0 litres	4.2 pints
Rear axle	1 $\frac{1}{2}$ pints	0.85 litres	1.8 pints
Cooling system (inc. water bottle) with heater	11 pints	6.2 litres	13.2 pints

## GENERAL SPECIFICATION

### Exterior Dimensions

Overall length	12 ft. 9 $\frac{1}{8}$ in.	3902 mm.
Width	4 ft. 10 in.	1470 mm.
Height with hood erected (unladen)	4 ft. 2 in.	1270 mm.
Height with hood folded (unladen)	3 ft. 10 in.	1170 mm.

### Weight (approx.)

Dry (excluding extra equipment)	2160 lbs.	983 kg.
Complete (including fuel, oil, water and tools)	2270 lbs.	1034 kg.
Maximum gross vehicle weight	2755 lbs.	1226 kg.
Vehicle capacity weight	412 lbs.	187 kg.

### Road Speed Data

Engine speed at a road speed of:	O/D	O/D	O/D	O/D	O/D	O/D	O/D
	Top	Top	3rd	3rd	2nd	2nd	1st
10 m.p.h.	395	482	525	641	794	969	1513
10 k.p.h.	248	303	330	402	498	608	950

Road speed at 1,000 r.p.m.	20.74 m.p.h.	33.04 k.p.h.
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Road speed at 2,500 ft/min. piston speed in top gear	83 m.p.h.	132 k.p.h.
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