

Practical hints  
for the maintenance  
of the

**Triumph**

**T.R.3**

# INSTRUCTION BOOK

Part No. 501528

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# TRIUMPH SPORTS CAR

## TR3

***SIXTH EDITION***

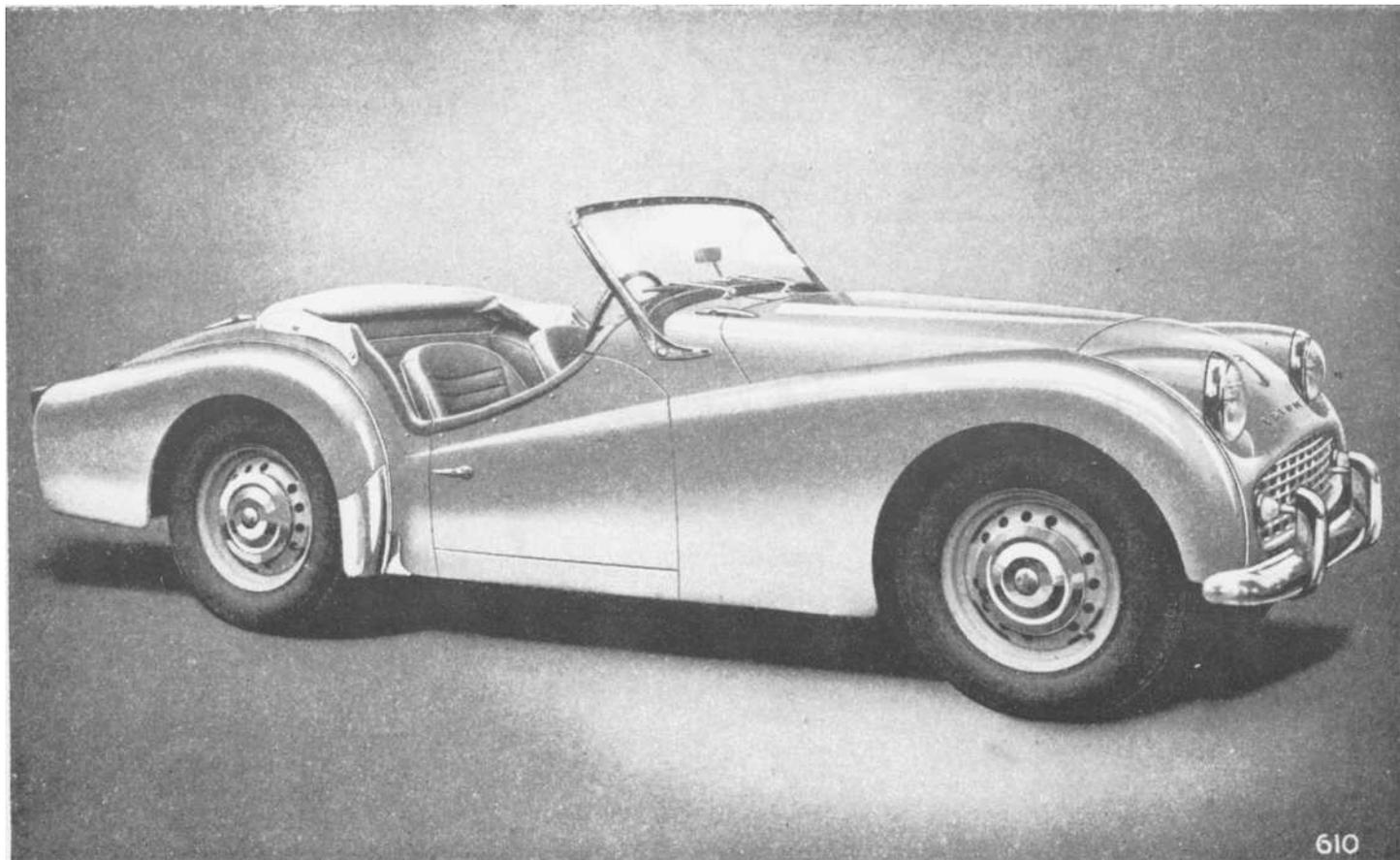
**Third Printing**

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*Issued by*

**STANDARD-TRIUMPH SALES LIMITED**

**COVENTRY, ENGLAND**



**Fig. 1.** THE TRIUMPH TR3 SPORTS CAR

## FOREWORD

Triumph vehicles are so designed that a minimum of attention is required to keep them in satisfactory running order. There are, however, certain maintenance operations which must be undertaken regularly. The object of this instruction book is to assist the owner to understand the various operations required, and so ensure that the vehicle receives regular and correct attention.

If in doubt about the vehicle's performance the owner should at once consult a Triumph dealer, preferably the one from whom the car was purchased. Triumph dealers are very carefully selected and are suitably equipped to give satisfactory and expert after-sales service.

There is a Training organisation at the factory at which our dealers' representatives acquire a first hand knowledge of up-to-date service procedure. Valuable information is given regarding special technique and equipment which ensures that all maintenance operations are carried out economically.

## THE STANDARD-TRIUMPH REVIEW

The *Standard-Triumph Review* is a journal published monthly which gives authentic information regarding the activities and products of The Standard & Triumph Motor Co. Ltd. It is obtainable from most Triumph dealers. Please write to the Publicity Department **for a free specimen copy.**

The Company reserves the right, on the sale of any vehicle, to make before delivery, without notice, alterations to or departures from the specification, design or equipment, detailed, described or illustrated in this or other Company publications.

**IMPORTANT**—In all **communications** relating to Service or Spares please quote the Commission Number (Chassis Number).

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

**Commission** Number—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 upper face of Hypoid Housing Flange.

### **SPARE PARTS SERVICE**

To ensure the best possible service on replacement parts it is important to note the following points :

- (a) Spare parts are not supplied direct to the general public. All supplies are directed through Distributors who, in turn, will supply their Dealers. The name and address of the Distributors and Dealers may be obtained from the Service and Spares Directory included with each motor vehicle.
- (b) It is recommended that only " **Stanparts** " (*i.e.*, genuine Standard/Triumph spare parts) are used, only these carry a guarantee. Experience gained by the manufacturers ensures that only highest quality material is used and the strictest accuracy maintained in manufacture.
- (c) If in doubt about a particular part required, it is always advisable to give the vehicle commission number and engine number, in addition to the fullest description possible.

Owners of this model who wish to be kept informed of modifications and competition tuning hints should register as a member of the Triumph Sports Owners' Association ; details are given in the booklet enclosed with this literature, or apply to the Publicity Dept., Standard-Triumph Sales Limited, Coventry, England, for a copy of the book, together with enrolment form.

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## GENERAL SPECIFICATION

### Engine

Number of cylinders	4
Bore of cylinders	3.386 in. (86 mm.)
(Special Order) ...	3.268 in. (83 mm.)
Stroke of crankshaft	3.622 in. (92 mm.)
Piston area ...	36 sq. in. (232 sq. cm.)
(Special Order)	33.5 sq. in. (216 sq. cm.)
Cubic capacity	130.5 cu. in. (2138 c.c.)
(Special Order) ...	121.5 cu. in. (1991 c.c.)
Compression ratio ...	9 or 7
Brake H.P. (gross) ...	105 at 4750 r.p.m.
(Special Order) ...	100 at 5000 r.p.m.

### Oil Capacity

		Imperial Pints	U.S. Pints	
Engine	From Dry (see page 14)	11	13.2	(6.25 litres)
	Drain and Refill ...	10	12	(5.7 litres)
Gearbox		1	1.8	(0.8 litres)
	with overdrive—From dry ...	3½	4.2	(2.0 litres)
	Drain and Refill ...	2¾	3.3	(1.6 litres)
Rear Axle		1	1.8	(0.8 litres)

<b>Water Capacity</b> of cooling system ...	13	15.7	(7.4 litres)
with heater fitted ...	14	16.8	(8.0 litres)

### Fuel Capacity

	12	14.4	(54.5 litres)
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### Dimensions:

Wheelbase		7' 4"	(224 cm.)
Track—Front and Rear (Disc Wheels) ...		3' 9"	(114 cm.)
	Front and Rear (Wire Wheels) ...	3' 10"	(117 cm.)
Ground clearance (under axle) ...		6"	(15.2 cm.)
Turning circle (between kerbs) ...		35' 0"	(10.6 metres)
Tyre size			5.50"/5.90"—15

### Overall Dimensions:

Length		12' 7"	(384 cm.)
Width ...		4' 7½"	(141 cm.)
Height (unladen)—Hood erect ...		4' 2"	(127 cm.)
	Top of screen ...	3' 10"	(117 cm.)
	Hood down and screen removed ...	3' 4'	(102 cm.)

### Weights (excluding extra equipment)

Complete, tank full of petrol	19 cwts. 0 qrs. 7 lbs. (2135 lb.) (970 kg.)
Shipping weight	17 cwts. 3 qrs. 21 lbs. (2009 lb.) (910 kg.)

## GENERAL SPECIFICATION

VALVE TIMING. [With valve-rocker clearance set at 0.0165" (0.42 mm.).]

Inlet and exhaust valves to be equally open at T.D.C. on the exhaust stroke.

VALVE-ROCKER CLEARANCES (see page 31).

IGNITION TIMING (see page 31).

Set to fire at 4° before top dead centre (distributor contact points just opening). As the advance is fully automatic, the setting is at full retard.

Contact breaker gap should be set at 0.015" (0.4 mm.).

### ROAD SPEED DATA

	O.D. Top	Top	O.D. 3rd	3rd	O.D. 2nd	2nd	1st	Rev.
<b>Engine Speeds (3.7 axle)</b>								
Using Dunlop Textile Tyres:								
at 10 m.p.h.	412	501	545	664	825	1007	1573	1615
at 10 km./hr.	250	310	340	410	510	620	970	1005
Using Michelin X Tyres:								
at 10 m.p.h.	409	498	541	660	820	1001	1563	1605
at 10 km./hr. ...	254	309	336	410	509	622	971	997
<b>Engine Speeds (4.1 axle)</b>								
Using Dunlop Textile Tyres:								
at 10 m.p.h.	455	556	604	736	916	1170	1744	1790
at 10 km./hr. ...	283	345	375	467	579	694	1083	1112
Using Michelin X Tyres:								
at 10 m.p.h. ...	452	552	601	731	910	1110	1733	1779
at 10 km./hr.	281	343	373	454	565	691	1077	1105

### GEAR RATIOS

	O.D. Top	Top	O.D. 3rd	3rd	O.D. 2nd	2nd	1st	Rev.
Gearbox Ratios ...	0.82	1	1.09	1.325	1.65	2.01	3.139	3.223
<b>3.7 : 1 Axle</b>								
Overall Ratios ...	3.034	3.7	4.02	4.9	6.1	7.44	11.61	11.93
<b>4.1:1 Axle</b>								
Overall Ratios ...	3.36	4.17	4.46	5.44	6.76	8.24	12.87	13.21

## INSTRUMENTS, SWITCHES AND CONTROLS

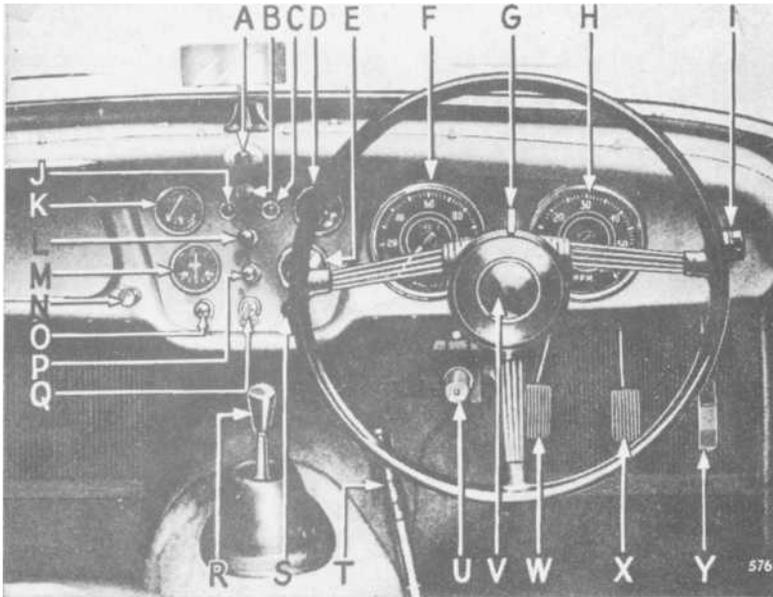


Fig. 2. Instruments, switches and controls.

NOTE :—In left-hand drive cars D changes with K, E with M, and F with H.

- A Scuttle Ventilator Control.** To open ventilator pull control knob.
- B Windscreen Wiper Switch.** Pull knob to operate ; they will only function when the ignition is switched on. They will return automatically to the parked position when switched off.
- C Direction Indicator Warning Light.** Will flash when the switch G is operated and the ignition is switched on.
- D Oil Pressure Gauge.** Indicates pressure of oil at the bearings. The gauge should read 70 lb./sq. in. minimum when the car is travelling at normal speeds and the oil is hot. Low pressure may be registered when the engine is idling or running at low speeds ; this is quite normal.
- E Water Temperature Gauge.** The gauge shows the temperature of the cooling water at the thermostat. Under normal motoring conditions the water temperature should not exceed 185°F.
- F Speedometer.** Registers vehicle's speed and total distance covered, and is fitted with a trip which is cancelled by pushing up the serrated knob (situated under the instrument) and turning anti-clockwise.
- G Direction Indicator Switch.** These self-cancelling indicators will only operate with the ignition switched on, and a warning light (C) will flash on the dash panel when the switch is operated.

## INSTRUMENTS, SWITCHES AND CONTROLS

- H Tachometer.** Indicates the engine speed in revolutions per minute. (See page 12).
- I Overdrive Control Switch.** See page 51.
- J Ignition Warning Light.** Glows red when the ignition is switched on with the engine idling or stopped. It is an indication that current is being drawn from the battery for the ignition circuit, or other purposes that are controlled by the ignition switch.
- K Fuel Contents Gauge.** Registers the approximate amount of fuel in the tank. It operates automatically when the ignition is switched on.
- L Instrument Panel Light Switch.** Turn knob clockwise to switch on panel lights, further clockwise movement will progressively dim the illumination.  
These lights will only operate when the parking lights are switched on.
- M Ammeter.** Indicates the flow of current into or out of the battery.
- N Screen Wash Control** (where fitted). To operate push the control knob.
- O Starter Switch.** Press to operate engine starter (see page 11 for full instructions).
- P Head, Tail and Parking Lamp Switch.** Pull knob to switch on parking lights. Turn slightly clockwise and pull again to switch on the head lights. Press foot operated switch (U) to dip head lights, press again for " full on " position, in which position a small red light appears at the bottom of the speedometer dial.
- Q Ignition Switch.** Insert key and turn clockwise to switch on. Do not leave the switch " on " when engine is stationary.
- R Gear Change Lever.** See Fig. 3 for gear positions.
- S Choke Control.** See page 11 for full instructions.
- T Handbrake.** Pull to operate rear wheel brakes, the handbrake lever can be retained in any position by pressing the button on the top of the lever. To release the handbrake lever, first pull it, this will cause the pawl to be automatically disengaged from the ratchet, the lever is then free to move forwards and release the brakes.
- U Headlamp Dipper Switch.** Press foot operated switch to dip headlamps; press again for high beam position. A small red indicator light in the speedometer glows when the headlamps are operating in this position.
- V Horn Button.** Press button in centre of steering wheel to operate horns.

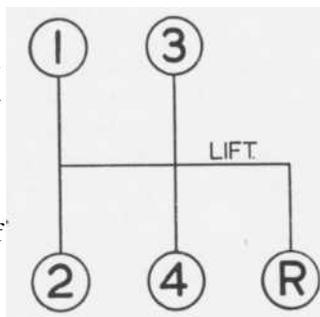


Fig. 3. Gear lever positions.

## INSTRUMENTS, SWITCHES AND CONTROLS

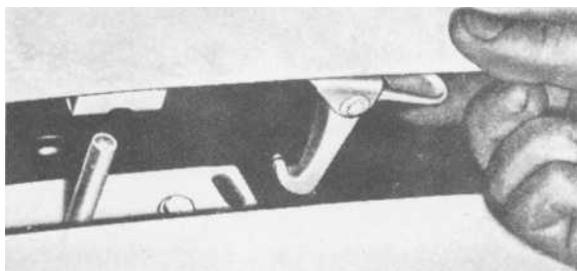
- W **Clutch Pedal.** Press pedal to disengage drive from engine to gearbox. Do not rest your foot on the pedal when driving, or hold clutch out to free wheel.
- X **Brake Pedal.** Press to operate all wheel brakes hydraulically.
- Y **Accelerator Pedal.** Press to accelerate the vehicle.

**Radio Controls.** See page 51.

**Seat Adjustment.** The seats are adjustable for " leg length " after operating the lever which is situated at the side of the seat.

**Heater Switch.** See page 51.

**Bonnet Locks.** The fasteners at each side of the bonnet can be released by turning them anti-clockwise with the special key provided. The safety catch is situated under the front of the bonnet, in line with the " H " of TRIUMPH and may be released with the fingers. (Fig. 4).



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Fig. 4. Releasing bonnet safety catch.

# **DRIVING THE CAR**

## **TO START THE ENGINE**

### **IMPORTANT**

If the engine does not start when the starter is first operated, **do not operate the starter again until both starter motor and engine have come to rest.** This will avoid damage to the starter pinion.

### **Starting when Engine is Cold**

Place the gear lever in the neutral position and apply the handbrake. Pull the carburettor choke control out to its stop, switch on the ignition and press the starter switch button. When the engine has warmed up, turn the choke control and allow it to return to the **half-out** position and turn to lock in this position. When the engine is sufficiently hot to run without undue hesitation, push the control fully home. If the battery is low use the starting handle. Should difficulty be experienced when starting the engine, do not keep the choke control out for too long or the sparking plugs will become wet with petrol. This will necessitate removing and drying them. When the car has been left standing for some time, the fuel in the carburettor float chambers may have evaporated. Under such circumstances, operate the hand primer on the fuel pump before the starter is operated. (See page 37).

When operating the starter in very cold conditions, depress the clutch pedal to relieve the motor of the considerable drag in the gearbox.

### **Starting with Engine Warm or Hot**

When restarting a hot engine, depress the accelerator pedal to about one-third of its travel before pressing the starter button, the choke control should not be used.

### **Warming up**

In order to minimise cylinder wear when starting from cold in winter, the engine should be warmed up quickly. Idle the engine until the oil circulates and then speed it up. It should not be allowed to idle for long periods and must not be raced up to high speeds when cold. An engine speed of approximately 1,500 r.p.m. may be regarded as a desirable warming up speed.

## DRIVING THE CAR

### DRIVING

#### **Gear Changing**

Use a slow and deliberate movement to change gear, and always move the gear lever fully home. Do not engage first gear at speeds in excess of 15 m.p.h. Reverse gear must not be engaged whilst the car is moving forward.

#### **Desirable Speed Limits (Particularly in gears lower than top)**

Avoid over-revving, particularly in the lower gears. **The driver is advised not to drive the car continuously at engine speeds above 4,500 r.p.m. in any gear. However, whilst accelerating through the gears it is permissible to attain 5,000 r.p.m. for short periods. this speed being indicated by a red mark on the tachometer.**

#### **New Engines (see "Running Adjustments ")**

For at least the first 500 miles, the working surfaces of the engine will be bedding down. The power and performance will improve only if the vehicle is carefully driven at moderate speeds during the running-in period.

The engine should not be driven at speeds exceeding 3,500 r.p.m. during this period, and the " running-in " should be progressive. The engine may " rev." fairly fast so long as it is thoroughly warm and provided it is not **pulling hard**. Do not let the engine pull hard at low speeds, always select a lower gear.

## GENERAL UPKEEP

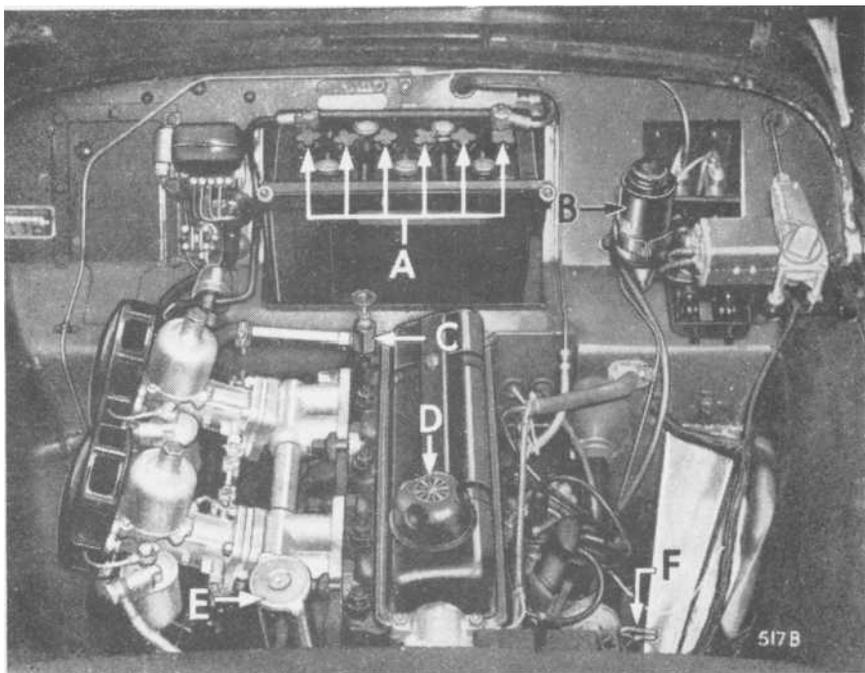
### REGULAR INSPECTION

**Every 250 miles** check the oil level when the engine is cold, and top up if necessary. Withdraw dipstick (F) (Fig. 5) and wipe clean, then insert and push fully home before withdrawing for reading. The lower mark on the dipstick indicates that 4 pints (Imperial) of oil will be required for topping up. The regular addition of oil not only maintains the correct level, but also tends to keep up the quality of the lubricant. Replenishment is via the cap (D) which must be lifted straight off.

#### Weekly,

**Check :** The water level in the radiator and replenish if necessary. Use clean rain water and keep the neck of the filler at least half full of water. Re-check after the engine has been warmed. The use of hard water results in a deposit on the inner side of the cooling surfaces, thus reducing efficiency. Tyre pressures. The correct pressures are given on page 23. Keep the spare tyre inflated to a slightly higher pressure than that recommended, and reduce its pressure when the tyre is required for use.

Maintain the electrolyte level in the battery **level** with the top of the separators. **Overfilling will cause electrolyte spillage which will subsequently attack the surrounding metal panels.** Use only distilled water when replenishing. Keep the filler plugs (A) (Fig. 5) screwed tight to prevent leakage. **Never use a naked light when checking the electrolyte level.**



**Fig. 5.** View under bonnet.

## GENERAL UPKEEP

### COOLING SYSTEM

**Filling** (see page 13).

#### **Draining**

Taps are provided in the bottom tank of the radiator and at the rear of the cylinder block on the right-hand side. As the cooling system is pressurised it will be necessary, when draining, to remove the radiator cap (E) (Fig. 5).

If a heater is fitted, ensure that the tap (C) (Fig. 5) is open before draining.

#### **Anti-Freeze Mixtures**

Protect the cooling system during frosty weather and reduce corrosion to a minimum, by use of an inhibited anti-freeze. The use of Smith's "Bluecol", Duckham's Anti-freeze, Esso Anti-freeze, Castrol Anti-freeze, Shell " Snowflake " or Mobil Permazone Anti-freeze (inhibited Glycol base compound) is recommended. The cooling system is fitted with a thermostat and there is a risk of the radiator block freezing while the engine is running during the warming up period when the thermostat is shut, even though the car has been left in a warm garage and water is not frozen at the start of the run.

Provide ample protection for the cooling system against a sudden fall in temperature down to 0°F. (-18°C.) during frosty weather by using 3 pints (Imperial) of anti-freeze.

In countries where sub-zero temperatures prevail, consult your Triumph dealer regarding the quantity of anti-freeze required.

**Do not use the same anti-freeze for more than one season since the inhibitor becomes exhausted and the components in contact with the cooling water may corrode.**

## LUBRICATION

This is one of the most important subjects in connection with the upkeep of a car, and careful attention to the following instructions will be amply repaid by the results obtained.

**For the recommended periods of lubrication, see the lubrication chart (page 54). The correct lubricants to be used are given on pages 52 and 53.**

## GENERAL UPKEEP

### **Draining**

To drain the engine, gearbox and rear axle, remove the plug provided beneath each unit. This process is assisted by opening the filler to allow ingress of air and by draining when the oil is hot, i.e., immediately after a run.

## ENGINE

Only first quality oils are recommended for use in the engine sump. These are of correct viscosity and character to afford complete lubrication protection for normal driving. Additives which dilute the oil or otherwise impair this protection must **not** be used.

### **Engine Oil Drain Period**

The frequency of the drain period should be related to the driving conditions to which the vehicle is subjected. 3,000 mile intervals are recommended for average driving conditions as defined below. This should be reduced for unfavourable conditions and may be extended for those more favourable.

#### **Favourable**

Long distance journeys, with little or no engine idling, on well surfaced roads, reasonably free from dust.

#### **Average**

Medium length journeys on well surfaced roads with a small proportion of stop/start operation.

#### **Unfavourable**

Any of the following:

- (a) Frequent stop/start driving.
- (b) Operation during cold weather, especially when appreciable engine idling is involved.
- (c) Where much driving is done under dusty conditions.

An upper cylinder lubricant may be used to advantage, during the running-in period of a new engine. The lubricant should be mixed with the fuel in the proportions given on the container. Such lubricants may be used with advantage throughout the life of the vehicle, particularly during wintry weather.

## GENERAL UPKEEP

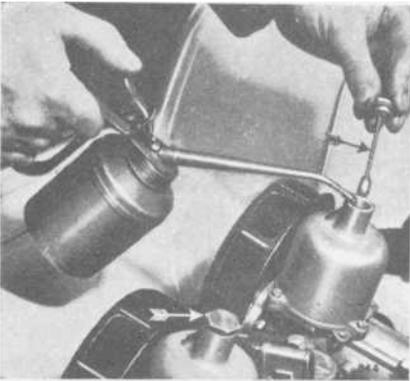


Fig. 6. Replenishing dashpots.

Every 3,000 miles remove the dampers (indicated by arrows) and replenish the dashpots with oil. The oil level is correct when, utilizing the damper as a dipstick its threaded plug is approximately  $\frac{1}{4}$ " above the dashpots, when resistance is felt. Apply oil to the throttle linkage but do not oil the bearings of the transverse rod attached to the bulkhead as this will seriously deteriorate the sealing compound.

### The Oil Filter

The oil filter is designed to filter the oil to a very fine degree. It will continue to do this provided that the old cartridge (B) is removed and a new replacement cartridge is fitted at periods not exceeding 6,000 miles. Should this operation be neglected, the cartridge will become choked and unfiltered oil will then be passed to the engine via the balance valve in the filter. To renew the cartridge, unscrew the securing bolt (C), remove the container and withdraw the cartridge.

Wash out the container to remove foreign matter trapped by the filter, and discard the old container washer (A), replacing it with a new one each time the cartridge is renewed. When re-assembling the container, ensure that the washer is correctly positioned in the groove in the filter body. Do not tighten the bolt (C) more than is necessary to obtain an oil-tight joint. Drain the engine oil and refill with fresh oil before re-starting the engine.

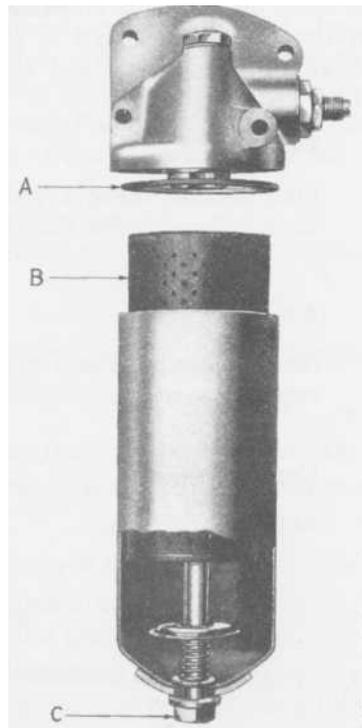
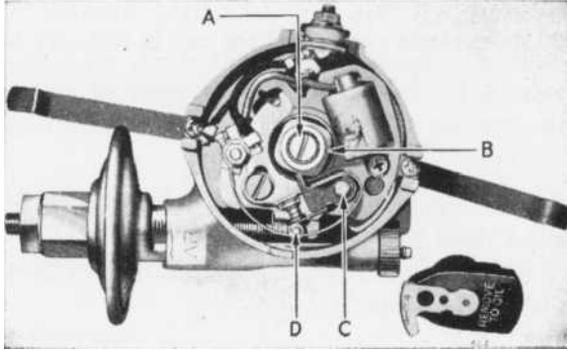


Fig. 7. Oil Filter "full-flow" type.

## GENERAL UPKEEP

### Ignition Distributor (Fig. 8)

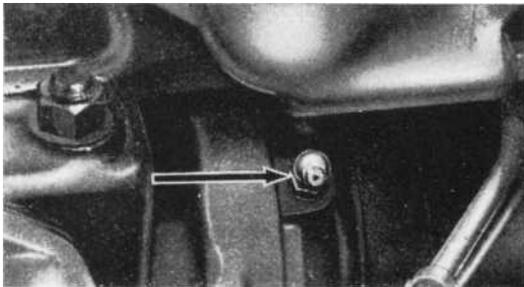
Every 6,000 miles smear the cam (B) with engine oil. A pronounced squeak occurs when the cam is dry. Withdraw the moulded rotor arm from the top of the spindle and apply a few drops of thin machine oil around the edge of the screw (A) to lubricate the cam bearings and distributor spindle. At the same time, place a single drop of clean engine oil on the pivots (C) and (D).



**Fig. 8.** Ignition distributor.

### Water Pump

One nipple is provided (see arrow Fig. 9) to which the grease gun should be applied every 6,000 miles. Give five strokes only with the gun.



**Fig. 9.** Water pump. Grease nipple arrowed.

### Generator

After completing 20,000—30,000 miles, remove the generator for cleaning, adjustment and repacking the front bearing with grease. This should be done preferably by the nearest Triumph or Lucas Service Depot. Every 6,000 miles pour a few drops of engine oil through the hole in the centre of the rear end cap.

## GENERAL UPKEEP

### Air Cleaners

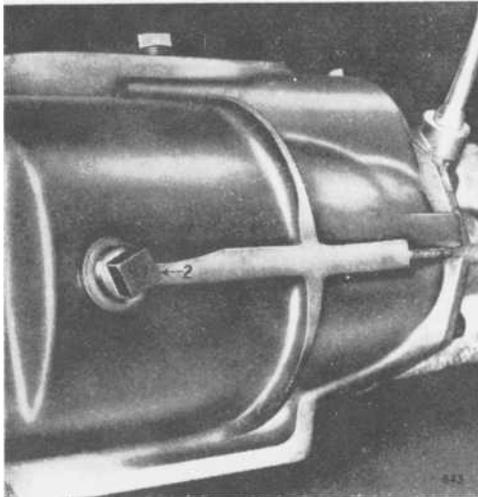
Every 6,000 miles, remove the air cleaners and wash them in petrol, particularly the gauzes, which must then be soaked in oil and allowed to drain before finally wiping them over and refitting. It is very important when refitting the air cleaners that the holes immediately above the setscrew holes in the carburettor are aligned with similarly positioned holes in the cleaner.

### Oil Filler Cap

Every 6,000 miles remove and rinse the cap in fuel, dry off and re-fit.

## GEARBOX

Every 6,000 miles check, and if necessary, top up the oil level via the plug (1). Every 12,000 miles drain the gearbox by removing the plugs (1) and (2). Replace the plug (2), replenish via plug hole (1) and finally tighten both plugs. If an overdrive is fitted, see page 51.



**Fig. 10.** Gearbox oil filler level plug (1) and drain plug (2).

## REAR AXLE

To ensure efficient operation and long life of the hypoid bevel gears, use only those special lubricants recommended on pages 52 and 53. Drain the axle and replenish with new "Hypoid" oil every 6,000 miles.

## GENERAL UPKEEP

Check the oil level during this period, especially after the first 1,000 miles, and replenish if necessary to level with bottom of the threads in the filler orifice. Should a top-up be necessary, investigate the cause of oil loss. The filler plug fitted to the rear axle cover is accessible from underneath the car (see arrow A, Fig. 11). Clean away mud before unscrewing the filler plug to avoid grit falling into the axle.

## BRAKE AND CLUTCH OPERATION

The hydraulic fluid for clutch and brake operation is contained in a single reservoir which has an inner and outer chamber. The inner chamber is connected to the clutch withdrawal mechanism and the outer chamber to the brakes.

Check the fluid level every 1,000 miles. The fluid must be maintained level with the top of the inner chamber. When filling or topping up the reservoir, use only the special fluid recommended. **Any other fluid may be dangerous.**

### Clutch Shaft Bearings

Apply the grease gun to the clutch shaft bearing grease nipples (one at each side of the clutch housing) every 6,000 miles. One shot is sufficient. The nipples are accessible from underneath the car. (See arrow (3), Fig 32, page 38).

### Clutch and Brake Pedal Bearings

Apply the oil can to the various pivots, etc., of the pedal linkages, both under the bonnet and in the driving compartment.

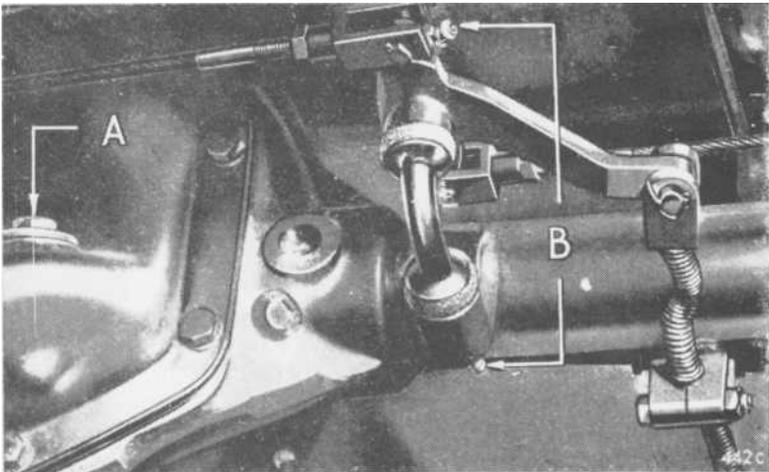


Fig. II . Rear axle oil filler and handbrake compensator.

## GENERAL UPKEEP

### Handbrake Cable Conduit

Every 6,000 miles, apply the grease gun to a grease nipple fitted in the conduit, as shown on the lubrication chart.

During the winter months it is important to keep the cable regularly lubricated. This will prevent the entry of water and the possibility of freezing which would lock the brake cable.

When lubricating the cable, pump the gun until grease exudes from the end of the conduit.

### Handbrake Compensator.

Lubricate the handbrake compensator via the two grease nipples (B) (Fig. 11) every 6,000 miles.

## ROAD WHEEL HUBS

### Front

Every 12,000 miles (if the vehicle is used for competition work every 6,000 miles) repack the hubs with grease. This involves removing the hubs and washing the bearings to remove all traces of the old grease before packing the rollers and races with new grease. Do not disturb the pipe unions but unbolt and move the complete caliper to allow the hub and disc to be removed. Take care not to lose shims which may be fitted between the caliper and the vertical link.

When replacing, ensure that the inner race is tight against its shoulder. Tighten the hub nut until resistance is felt to hub rotation, then slacken off the nut by one half flat and insert the split pin through one of the two holes provided.

### Rear

Every 6,000 miles, give five strokes of the grease gun to a nipple (2) (Fig. 12), situated behind the rear backing plate and facing downwards.

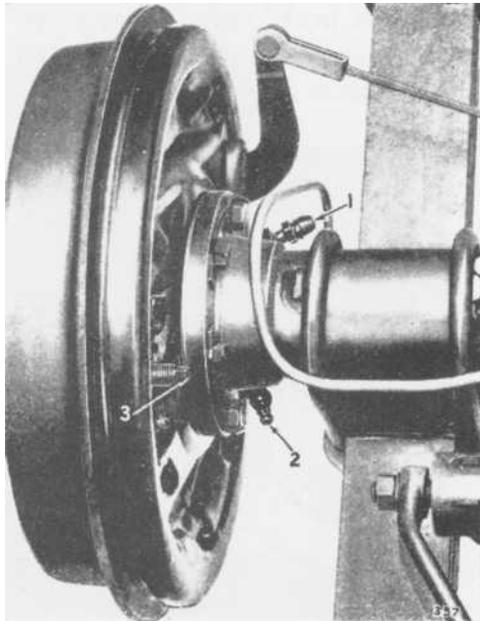


Fig. 12 . Brake Backing plate Details.

## GENERAL UPKEEP

### FRONT SUSPENSION AND STEERING

Nipples are provided for lubricating the steering swivels (A), outer tie rod, ball joints, outer bushes of the lower wish-bones (B) (Fig. 13), and the steering slave drop arm pivot. Do not lubricate the joints attached to the drop arms as they contain rubber. Lubricate the inner nylon wish-bone bushes with oil occasionally. A pronounced squeak develops when these bushes become dry. When greasing the lower suspension swivels it is an advantage to jack up under the road spring pan until the front wheel is free of the ground. This allows grease to cover the thrust faces. Grease these points every 1,000 miles.

After greasing the steering swivels, wipe away all surplus grease. This will prevent it from contaminating the disc brakes.

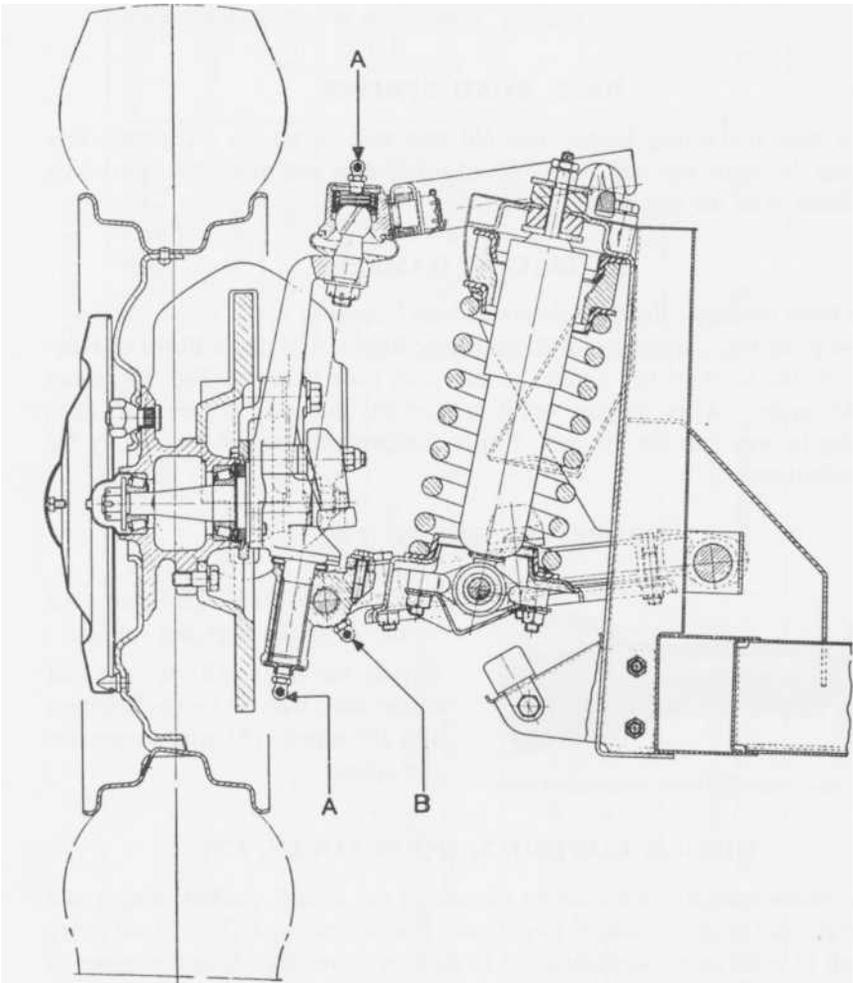


Fig. 13. Front suspension lubrication.

## GENERAL UPKEEP

Every 6,000 miles, lubricate the steering box after removing the rubber plug situated on the steering column and top up with oil to the level of the orifice.

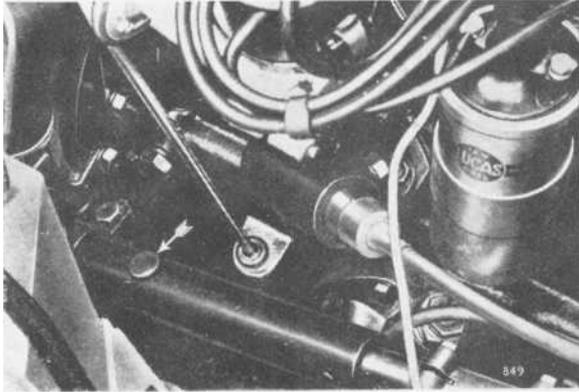


Fig. 14. Steering box filler/level plug (arrowed).

## REAR ROAD SPRINGS

Paint over the spring blades with old rear axle or engine oil, particularly around the blade tips and clips. Avoid lubricating the rubber bushes which are fitted in all the rear spring eyes.

## HYDRAULIC DAMPERS

The front telescopic dampers do not require "topping up." Top-up the rear dampers with **Armstrong Shock Absorber Fluid (Crimson)** to the level of the bottom of the hole (arrowed Fig. 35), every 12,000 miles. When topping up, it is essential that dirt is prevented from finding its way into the interior. Faulty dampers can only be serviced by the manufacturers.

## PROPELLER SHAFT (Fig. 15)

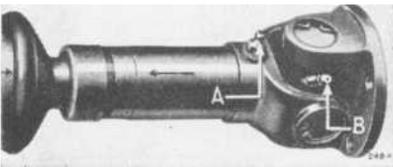


Fig. 15. Propeller shaft lubrication points.

Every 1,000 miles, lubricate the needle roller bearings and splines.

Supply the nipple (B) at each end of the shaft with oil for the bearings, and the nipple (A) with grease for the splines.

## HINGES, CONTROLS, DOOR LOCKS, ETC.

Give occasional attention with an oil can to the bonnet catches, hinges and several small control joints. Door locks should receive a drop of oil every month to ensure easy operation and to prevent corrosion. Attention given to the connections on the handbrake and ratchet mechanism, etc., will enable the controls to work freely and prevent unnecessary wear.

## TYRE PRESSURES

OPERATING CONDITIONS	Goodyear Allweather Rib and Dunlop Gold Seal		Goodyear Allweather Rib Nylon and Dunlop Gold Seal Nylon		Goodyear Motorway Special and Dunlop Road Speed R.S.5		Goodyear D.F.S. (165—380) and Michelin (165/15X)	
	5.50/5.90-15		5.50/5.90-15		5.50/5.90-15		(165/15X)	
	Lbs. per sq. in.		Lbs. per sq. in.		Lbs. per sq. in.		Lbs. per sq. in.	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Normal motoring with sustained speeds limited to 85 m.p.h. ...	20	24	20	24	20	24	24	32
Fast motoring on Motorways and similar roads with sustained speeds up to 100 m.p.h. ...	26	30	20	24	20	24	24	32
High speed tuning with speeds regularly in excess of 100 m.p.h.	Not recommended		26	30	20	24	24	32

## GENERAL UPKEEP

### TYRES

The maintenance of correct tyre pressures is important to the life of the tyres and behaviour of the steering and suspension.

Examine the tyres occasionally for flints or other road matter which may have become embedded in the tread. By using fuel sparingly, clean off any oil which may have got on the tyres. Driving into or over sharp edged kerbs is liable to fracture the walls of the tyres and should be avoided where possible.

#### **Changing Position of Tyres**

Every 3,000 miles interchange the front tyres with rear tyres. Diagonal interchanging between left front and right rear and between right front and left rear provides the most satisfactory first change. This reverses the direction of rotation and keeps the wear of the tyres even and uniform.

### FRONT WHEEL ALIGNMENT

Alignment of the front wheels is most important in its effect on tyre wear and good steering. Excessive toe-in will lead to severe tyre wear, particularly on the "kerb side" front tyre.

The front wheel alignment should be parallel to  $\frac{1}{8}$ " toe-in when the following tyres are fitted :

Dunlop Gold Seal, Dunlop Gold Seal Nylon, Dunlop Road Speed, Goodyear Allweather Rib, Goodyear Allweather Nylon, Motorway Special.

When Goodyear D.F.S. and Michelin X tyres are fitted the front wheel alignment should be parallel to  $\frac{1}{16}$ " toe-in.

#### **To Check and Adjust Wheel Alignment**

If adjustment is found necessary it should be carried out equally on the two outer tie-rods. When adjustment is complete ensure that the ball joints are in the centre of "swing" before securely tightening the tie-rod locking nuts.

### THE JACK

A screw-jack is provided which is adapted to lift either side of the car as required. Apply the handbrake, or chock the wheels which will remain on the ground, before operating the jack. To fit the jack in position (Fig. 16), turn up the carpet and remove the rubber plug situated just in front of the seat. Engage the lower lip of the jack boss with the bottom edge of the rectangular hole, then swing the jack into a vertical position and lift, make sure that it is right

## GENERAL UPKEEP



**Fig. 16.** Jacking the car.

home in its socket before operating the jack handle.

If a jack is used under the rear axle case, ensure that the jack pad does not touch the rear cover plate when lifting, otherwise there is a risk of damage and consequent oil leakage.

### WHEEL ATTACHMENT

Before removing a road wheel ensure that the wheel is clear of the ground and the vehicle is safely supported.

#### Pressed Steel Wheels

After removing the nave plate (Fig. 17), the wheel nuts (R.H. thread) can be detached with the wheel brace (2) (Fig. 20).

#### Wire Wheels

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

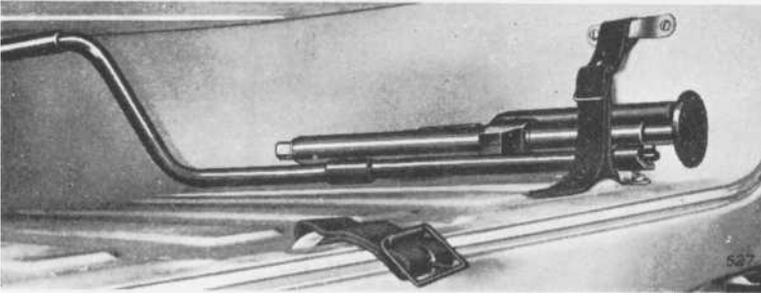


**Fig. 17.** Removing nave plate.



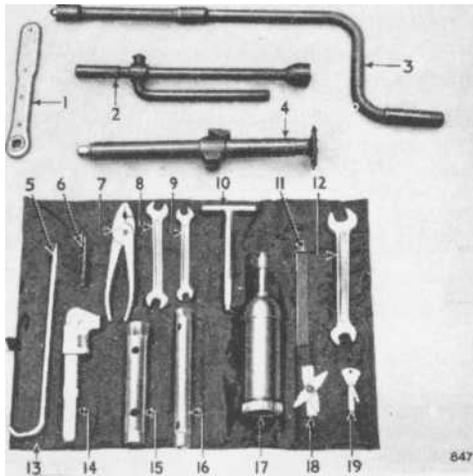
**Fig. i8.** Removing L.H. front hub cap.

## TOOLS



**Fig. 19.** Tools stowed in spare wheel compartment.

The jack and wheel brace are situated in the spare wheel compartment (Fig. 19). The remaining tools are placed in the tool roll and stowed in the luggage compartment. If the vehicle has wire wheels, then the wheel brace (2), combination tool (5) (Fig 20), are omitted from the tool kit and a screwdriver, tommy bar and copper-faced hammer are included.



**Fig. 20.** Tools.

- |   |  |
|---|--|
| 1. Jack handle.   | 10. Coach key.   |
| 2. Wheel brace.   | 11. Headlamp rim remover.                                  |
| 3. Starting handle. (Special Order)   | 12. Spanner. ( $\frac{9}{16}$ " x $\frac{3}{16}$ " A.F.)   |
| 4. Jack.  | 13. Tool roll.   |
| 5. Combination tool<br>(Screwdriver, tommy bar,<br>and nave plate remover). | 14. Adjustable spanner.                                    |
| 6. Valve core remover/replacer.   | 15. Box spanner.   |
| 7. Pliers.  | 16. Box spanner.   |
| 8. Spanner. ( $\frac{1}{8}$ " x $\frac{3}{16}$ " A.F.)                      | 17. Grease gun.  |
| 9. Spanner. ( $\frac{1}{8}$ " x $\frac{7}{16}$ " A.F.)                      | 18. Feeler gauges.   |
|   | 19. Screwdriver and feeler gauges<br>(distributor points). |

## **BODYWORK**

Dust may be removed from the exterior by using a soft cloth only, but if it has been wet at any time it is advisable to use a sponge and water. Always use water when removing mud and when the car is clean finally wipe over with an almost dry chamois leather. Washing alone will not keep up the brilliance of the paintwork over an indefinite period and it may become necessary to use a cleaner to remove all grease and dirt. It is advisable to acquire the cleaner from a reputable dealer who will be able to supply you with the best cleaner to suit the particular paintwork of your car. A non-abrasive polish may be used to advantage.

Special cleaners are available for removing traffic film and tar. Chromium plated parts need cleaning with soap and water, and wax polishing is beneficial. If, due to neglect, the plate becomes spotted, it may be necessary to use a chromium plate cleaner.

Dust interior of the car occasionally and brush the carpet with a stiff brush. The upholstery may be cleaned by the application of a little soap and damp cloth, followed by a final wipe down with an almost dry sponge or chamois leather. Never use detergents as these may affect the surface of the material. When a vacuum cleaner is available it can be used with advantage to help clean the interior.

## **DOOR ADJUSTMENT**

The doors are provided with special locks which, when correctly adjusted, prevent any movement of the closed door. Only the striking plate requires repositioning when adjustment becomes necessary. This adjustment is best carried out by a coach fitter.

## **SOFT TOP MAINTENANCE**

The top should be washed with the same regularity as the rest of the car. With the exception of warm water and non-caustic soap, the use of all cleansing agents, detergents and wax polishes must be avoided.

Never leave the top folded when it is wet or damp.

Occasionally oil the hinge points of the hood sticks (support frame) with engine oil, work the moving parts, and wipe all surplus oil away.

### **Removal and Stowage of Side Screens**

The key provided for opening the bonnet also releases the special catches which secure the side screens to the door panel.

Release the fastener securing the short strap on the centre of the screen to the door.

Turn the key in an anti-clockwise direction to release the catches and lift the screen clear of the door. The side screens may be completely removed from the car or stowed away in the luggage locker.

## BODYWORK



**Fig. 21.** Soft top details.

- |                                      |   |
|--------------------------------------|---|
| A. Soft top rear attachment points.  | D. Hood support sticks lowered.                       |
| B. Hood support sticks raised.       | E. Hood support stick cover.                          |
| C. Soft top front attachment points. | F. Utilizing key 10 (Fig. 20) to detach side screens. |

## BODYWORK

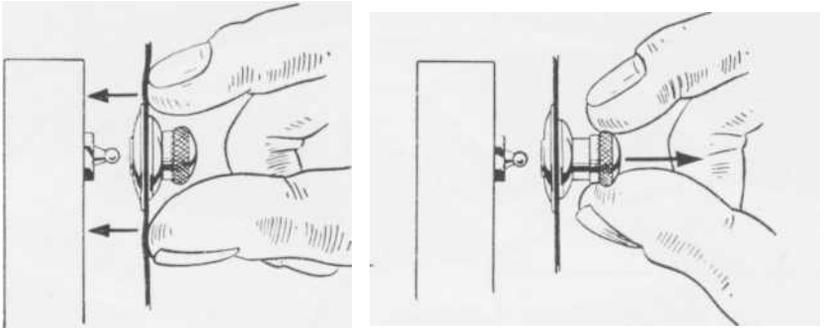


Fig. 22. " Tenax " soft top fasteners.

### **Removal and Stowage of Soft Top**

Two types of fasteners are used. They are " Lift the Dot " and " Tenax ". When fitting either type it is only necessary to push fasteners over the securing stud as shown in Fig. 22. With the " Tenax " type (as illustrated) do not press or pull the small knob before engagement as there will be risk of damage to the inner prongs.

After fitting, the knob may be pressed to ensure correct engagement. To remove the fasteners, either pull the small knob, or in the case of the " Lift the Dot ", do as its title suggests, lift the outer edge.

When removing the fasteners from the screen, relieve the tension on the fasteners by applying a slight hand pressure, in the forward direction, to the corner of the soft top where it passes over its supports.

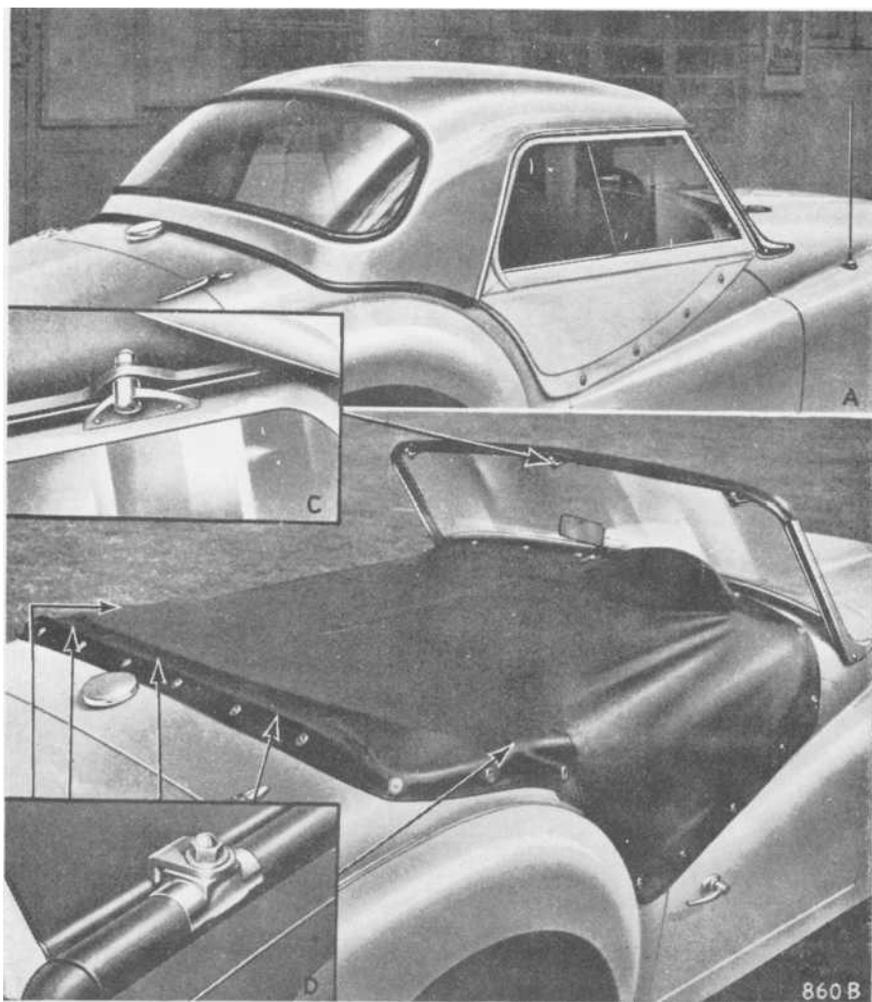
Release the fasteners at the top of the windscreen, allow the material to hang down on the seats and release the fasteners from rear waist moulding.

Fold the top material taking care not to crease the rear windows and stow it away in the locker.

Press the hood sticks downwards into the back of the car. The lower hinge must be pushed below centre and then forward to enable the sticks to fold down into line with the rear of the body.

Fit and secure the hood stick cover utilising the pegs on the waist line and the rear of the seats.

## BODYWORK



**Fig. 23.** Hard top and tonneau cover.

- A. Hard top fitted.
- B. Tonneau cover fitted.
- C. Front hard top fixings (3 off)
- D. Rear hard top fixings (5 off)

## RUNNING ADJUSTMENTS

Various adjustments are necessary from time to time in order to maintain the mechanism in good running order. No definite period can be stated for carrying out these adjustments since this is dependent upon the manner in which the vehicle is used. The most important adjustments and the recommended intervals between, are as follows.

### ENGINE

#### Cylinder Head Nuts

After the first 1,000 miles check the cylinder head nuts for tightness whilst the engine is hot, in the order shown on Fig. 24.

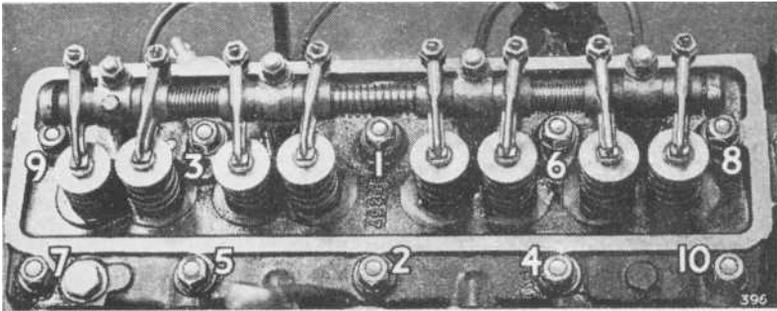


Fig. 24. Order of tightening cylinder head nuts.

#### Valve-Rocker Clearances (measured cold)

Set the inlet and exhaust valve-rocker clearances at 0.010". These settings are correct for both normal and high speed running.

#### Ignition Timing

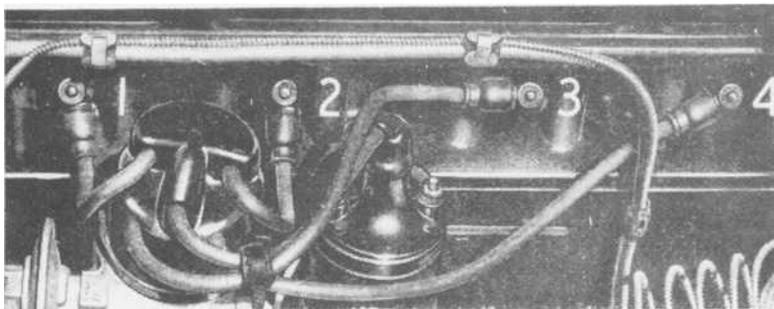
4° before Top Dead Centre (crankshaft angle).

Use only Premium grade fuels of 95 octane or higher and so long as the engine is free from carbon, it will not pink. A substantial carbon build-up may cause " pinking ". This will necessitate retarding the ignition slightly so that " pinking " is just audible when pulling hard when the engine speed is in excess of 1,500 r.p.m.

To advance ignition, rotate the knurled screw on the distributor. Each division on the distributor vernier scale represents 2° on the distributor, *i.e.*, 4° on the crankshaft.

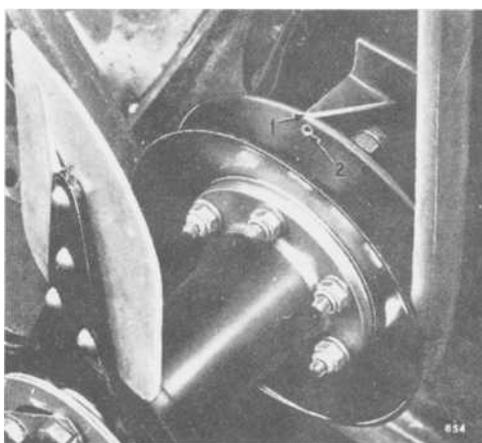
The firing order is 1, 3, 4, 2.

## RUNNING ADJUSTMENTS



*Fig. 25.* Ignition leads.

To obtain TDC rotate the crankshaft until the inlet valve of No. 1 cylinder is open then slowly turn the crankshaft until the small hole in the crankshaft belt pulley aligns with the timing cover pointer (Fig. 26).



*Fig. 26.* TDC indication.

### Sparking Plugs

It is important that the correct type of sparking plugs are fitted when making replacements, and that the electrode gaps are set to 0.025" (0.65 mm.).

For normal road work use	...	LODGE, CNY
For high-speed touring use	...	LODGE, HN
For competition work use	...	LODGE, 2HN

In certain cases when a lower compression ratio is used due to the non-availability of high octane fuel, it may be necessary to use softer plugs, *i.e.*, Lodge CN.

Incorrect gap settings may cause misfiring or erratic slow running. Clean and adjust the sparking plugs at 3,000 miles (5,000 km.). Renew all sparking plugs at 12,000 miles (20,000 km.).

## RUNNING ADJUSTMENTS

### TWIN S.U. CARBURETTORS (Type H6)

#### Tuning

Multi-carburettor installations cannot be successfully tuned unless the general engine conditions (such items as tappet clearance compressions) and the ignition system are in a satisfactory state. With regard to the carburettors themselves the cleanliness of the suction piston units, the position of the needles, the jet centring and oil level in dampers, etc., should be checked. With the aforementioned in a satisfactory state, refer to Fig. 27 and proceed as follows :-

1. Remove air cleaners from carburettors.
2. Slacken clamping bolt on throttle connecting rod (4) so that throttles may be set independently. Ensure that the throttle adjusting screws (3) are holding the throttles open and that the jet adjusting nuts are not screwed right up. Disconnect the mixture control rod (5).
3. Ensure that the screw (2) is clear of its abutment and that the choke cable is not likely to hamper jet adjustment. If necessary, disconnect choke cable.
4. With the engine at normal running temperature and the idling speed approximately 500 r.p.m., check the hiss of air at carburettor intakes with a piece of tubing approx.  $\frac{3}{8}$ " (9.5 mm.) bore.

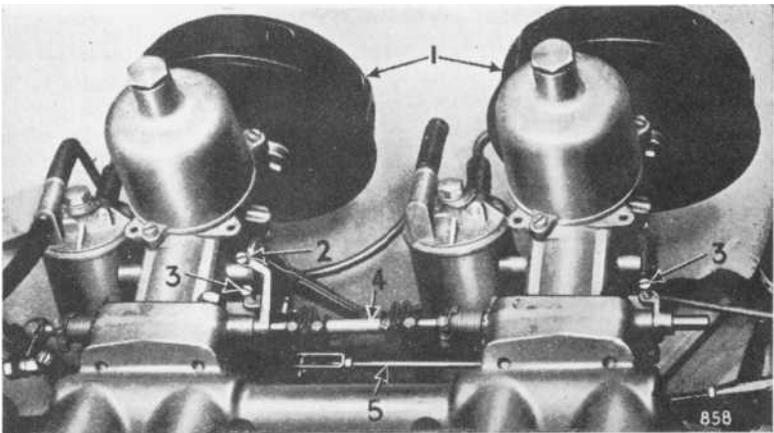


Fig. 27. Carburettors.

- |                         |                               |
|-------------------------|-------------------------------|
| 1. Air cleaners.        | 3. Throttle adjusting screws. |
| 2. Choke control screw. | 4. Throttle connecting rod.   |
| 5. Mixture control rod. |                               |

## RUNNING ADJUSTMENTS

5. With a downwards pressure on the throttle adjusting screw (3), adjust the appropriate screw until the level of hiss is similar at both carburettor intakes and the idling speed approximately 500 r.p.m.  
To reduce hiss at carburettor intake, UNSCREW the adjusting screw.
6. When level of hiss is similar, stop engine and with a downward pressure on the rear throttle arm, tighten the throttle spindle clamping bolt and re-check hiss.
7. Start the engine and allow it to idle at approximately 500 r.p.m.
8. Check mixture on each carburettor in turn by lifting the piston approximately  $\frac{1}{8}$ " (3 mm.) with a pen-knife blade or lifting pin (3) (Fig. 28).
9. If when the piston is lifted the engine speed increases the mixture is too rich and the nut (7) should be screwed up one flat. If the engine speed decreases unscrew nut (7) one flat.
10. Continue adjustment on each carburettor until when the piston is lifted, no increase, or a very slight increase followed by a fall in engine speed is noticed. The mixture is then satisfactory and the exhaust note should be regular and even.
11. Attach choke cable (if previously disconnected). Reconnect the mixture control rod, ensuring that the jet levers are pressed forward and the control rod is adjusted correctly for length.
12. Replace air cleaners.
13. Re-check idling speed and mixture.

### **Jet Centralizing** (Fig. 28)

When the suction piston is lifted by hand (engine not running), it should fall freely and hit the jet bridge with a soft metallic click—that is, with the jet adjusting nut (7) in its topmost position.

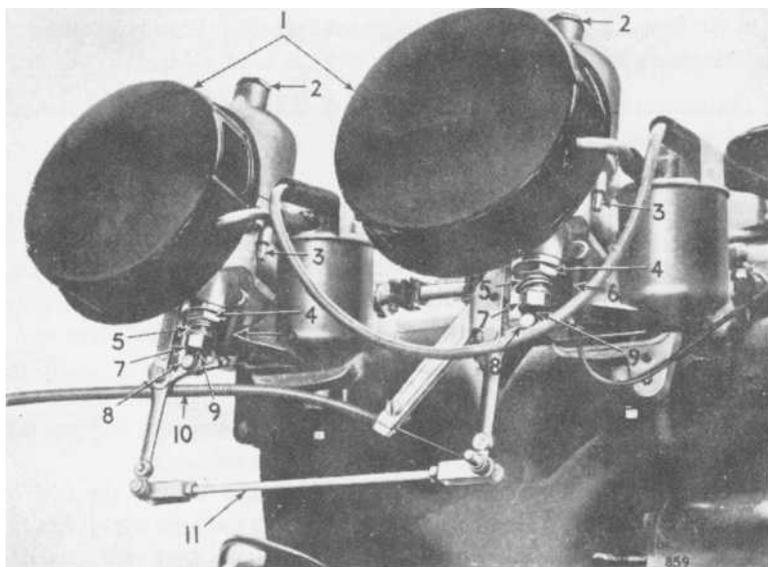
If this click is not audible, but is so when the test is repeated with the jet in the fully lowered position, then the jet unit requires re-centralising on the needle, as described below.

It may be helpful to understand that the complete jet unit, clamped in position by the gland nut (4), is held in a clearance bore that permits a limited amount of radial float, prior to being locked. Therefore, if the gland nut is slackened, the jet assembly can be moved until it is concentric with the needle, thus enabling the piston to move freely to its lower position.

The procedure for re-centralising is as follows :

1. Remove air cleaners.
2. Remove return spring (6), pivot pins (8), and swing linkage to one side (disconnect the choke cable if necessary).
3. Withdraw jet (9), unscrew adjusting nut (7) and remove spring (5).
4. Remove damper assembly (2).
5. Replace adjusting nut (7), screwing it to its upper position.
6. Slacken gland nut (4) and insert jet (9).

## RUNNING ADJUSTMENTS



**Fig. 28.** Carburetors.

- |                          |                        |
|--------------------------|------------------------|
| 1. Air cleaners.         | 6. Return spring.      |
| 2. Dampers.              | 7. Jet adjusting nuts. |
| 3. Piston lifting pin.   | 8. Pivot pins.         |
| 4. Gland nut.            | 9. Jets.               |
| 5. Jet spring.           | 10. Choke cable.       |
| 11. Mixture control rod. |                        |

7. Whilst holding the jet (9) in its upper position, move the jet assembly laterally until the jet is concentric with the needle, then tighten gland nut (4). This condition has been achieved when the piston assembly will fall freely and evenly, hitting the jet bridge with a soft metallic click.

Withdraw the jet and re-check to see if there is any difference in the sound of the impact, if there is and the second test produces a sharper impact sound, the centralising operation will have to be repeated until successful.

8. In the occasional obstinate case the jet adjusting nut (7) as well as the spring (5) should be temporarily removed to enable the jet to reach a higher position and make the centralising effect more positive. Replace the spring (5), adjusting nut (7), jet (9), pivot pins (8) and secure with new split pins after the successful conclusion of the operation. Before replacing the air cleaners, replenish the dampers and tune the carburetors, see pages 16 and 33.

## RUNNING ADJUSTMENTS

### Float Chamber Fuel Level

The level of the fuel in the float chamber is adjusted by setting the fork lever in the float chamber lid. It is suggested that the following procedure for its adjustment is adopted,

1. Disconnect the fuel feed pipe from the float chamber lid, then remove the lid securing nut, washers and overflow pipe.
2. Lift the lid off the float chamber.
3. The set of the forked lever is correct, when, with the lid of the float chamber inverted and the shank of the forked lever resting on the needle of the delivery valve, it is possible to pass a 7/16" (11 mm.) diameter rod, see " A " Fig. 29, between the inside radius of the forked lever and the flange of the lower face of the float chamber lid.

If the forked lever fails to conform within 1/32" (.8 mm.) of the check figure, it must be carefully bent, at the start of the fork section, taking care to keep both prongs of the fork level with each other.

It must be emphasised that it is not advisable to alter the fuel level unless there is trouble with flooding. Although too high a level can cause slow flooding, particularly when a car is left ticking over on a steep drive, it should be remembered that flooding can also be caused by grit in the fuel jamming open the needle valve, undue friction in the float mechanism, excessive engine vibration, or a porous float.

4. Re-assemble the carburettor and connect fuel pipe.

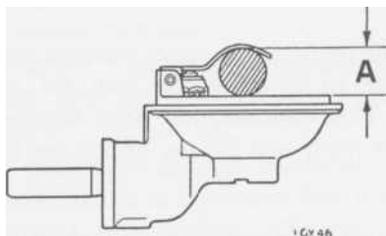


Fig. 29. Adjusting the fuel level.

### Cleaning Suction Chamber and Piston

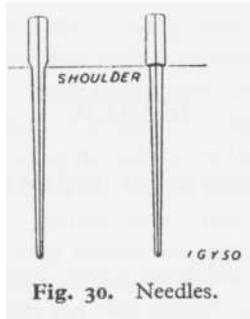
This should be done at approximate intervals of twelve months. After detaching the unit, clean the main inside bore of the suction chamber, and the two outside diameters of the piston with a rag moistened in petrol and then re-assemble in a dry and clean condition with a few spots of thin oil on the piston rod only. Do not forget to replenish the damper reservoir after this operation.

## RUNNING ADJUSTMENTS

### Needles

The correct needle for normal and competition work is S.M. When the carburetors are fitted with oil bath air cleaners use CIW needles.

The needle should be fitted with its shoulder flush with the under face of the piston (Fig. 30). It is retained in position with a screw.



### FUEL PUMP

The mechanically operated fuel pump, mounted on the left-hand side of the crankcase, provides a constant pressure of fuel to the carburetors. A hand primer is fitted, which can be used to pump fuel to the carburetors if the float chambers are not already full, under which condition a slight pumping resistance is felt before the lever reaches its stop. This resistance ceases when the chambers are full.

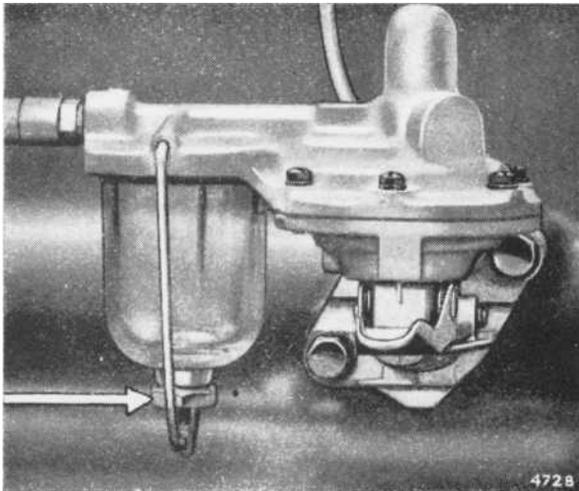


Fig. 31. Fuel pump.

## RUNNING ADJUSTMENTS

The glass bowl acts as a sediment chamber for the petrol passing to the pump. This foreign matter collects on the underside of the gauze and, being washed off by petrol, sinks to the bottom of the bowl. To remove the sediment, detach the bowl by unscrewing the nut (arrowed Fig. 31) at its base and wash out the bowl with the fuel that will be in it. When refitting the bowl, tighten the nut sufficiently to ensure a fuel-tight joint. Over-tightening may result in damage.

## CLUTCH

The clutch reservoir is the same as that used for the brake system. (See (B) Fig 5, page 13).

There is a partition in the container which separates the two systems and ensures that any defect in one system does not affect the other.

Adjustment of the mechanism is checked at the connecting rod between the operating cylinder and the shaft operating lever end (see Fig. 32). The correct setting is when there is 0.1" end float of the rod between operating cylinder and lever, in the "foot off" condition. To achieve this setting, measure the total movement of the operating lever by hand and if different from the specified amount release the locknut (2, Fig. 32) and adjust the length of the connecting rod to the correct figure. The adjustable connection between pedal and master cylinder is set on initial assembly and **MUST NOT** be altered. If a pipe has been disconnected, it will be necessary to bleed the system. A bleeder nipple is shown by the arrow (1, Fig. 32). For instruction on bleeding the system see page 40.

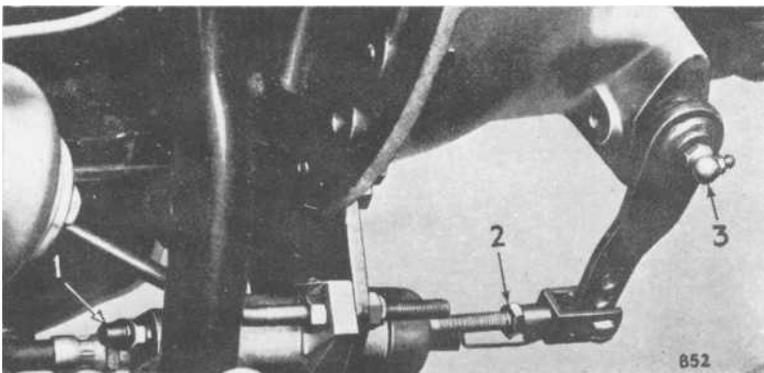


Fig. 32. Clutch slave cylinder.

## RUNNING ADJUSTMENTS

### BRAKES

The pedal operates the brakes on all four wheels hydraulically, whilst the handbrake operates the brakes on the rear wheels by means of cables. See page 19 for checking level of fluid in reservoir. If the level of fluid is particularly low, this indicates that a leak has developed in the system. This must be traced and rectified without delay.

It must be remembered that the presence of oil, grease or similar foreign matter on a drum brake shoe will seriously affect retarding effect of that particular brake, in spite of the fact that it is being applied with the same force as the others. In such cases thoroughly clean the brake drum with fuel and fit new replacement shoes. Cleaning the brake shoes is not satisfactory. Do not re-line the shoes but fit genuine Girling replacement shoes. These have the right type of lining machined to the correct radii.

Should the shoes be removed, exercise care when replacing them to ensure that the pull-off springs are located behind the shoes and hooked through the correct holes, as shown.

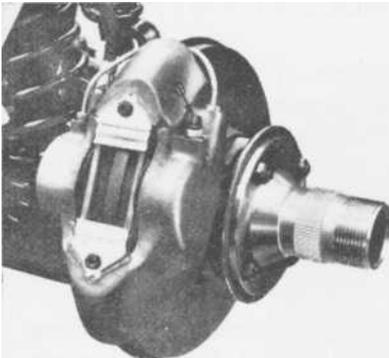


Fig. 33. R.H. front disc brake assembly.

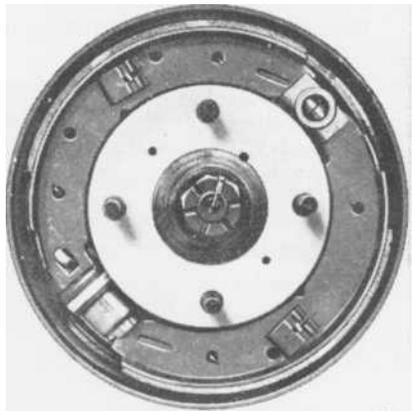


Fig. 34. R.H. rear brake assembly.

#### Front Brakes

The disc brakes, fitted to the front axles, are self-adjusting and should only need replacing when the shoe pads are reduced to approximately thickness.

#### Rear Brakes

The rear brakes are provided with a small adjuster (3) Fig. 12 which is positioned on the backing plate, above the axle case, and easily accessible with the road wheel removed. To correctly adjust the shoes, turn the adjuster clockwise until the shoes are hard against the drum, then slacken off adjuster by one notch. If the drum is then not free to rotate slacken adjuster still further.

## RUNNING ADJUSTMENTS

### **Handbrake Adjustment**

Adjustment of the rear brake shoes as previously described automatically readjusts the handbrake mechanism. The cables are correctly set before leaving the works, and only maladjustment will result from tampering with the mechanism.

### **Bleeding the Brake and Clutch Hydraulic System**

If a pipe joint is uncoupled, the wheel cylinder cups or clutch operating cylinder are inspected or replaced, the system must be bled in order to expel any air which may have been admitted.

Air is compressible, and its presence in the system will affect the working of the brakes and clutch.

Whilst the majority of owners will prefer to have these operations carried out by a Triumph Agent, for the benefit of those desiring to carry out their own running adjustments, the procedure is as follows :

1. Clean the bleeder nipple and fit a piece of rubber tube over it, allowing the tube to hang in a clean container partially filled with fluid, so that the end of the pipe is below the level of the fluid.
2. Unscrew the bleeder nipple one complete turn. There is only one bleeder nipple to each wheel and one nipple on the clutch operating cylinder.
3. The fluid reservoir should be filled before commencing the bleeding operation, and must be kept at least half-filled during the whole operation, otherwise air will be drawn into the system via the master cylinder. Do not use fluid that has been expelled from the system for maintaining the level. Always clean the area around the filler cap before removing it.
4. Depress the pedal quickly and allow it to return without assistance. Repeat this pumping operation with a slight pause between each depression of the pedal. Observe the flow of fluid being discharged into the glass jar and when all air bubbles cease to appear, hold the pedal firmly down and securely tighten the bleeder nipple.

NOTE.—Depending upon the position at which a pipe joint in the brake system has been uncoupled, it will be necessary to bleed the system at either both front or both rear wheels. If the pipe was uncoupled at the master cylinder, then the system must be bled at all four wheels.

## RUNNING ADJUSTMENTS

### PROPELLER SHAFT

If the propeller shaft has been taken apart it is essential to ensure that the arrows on the universal joint and propeller shaft are aligned during re-assembly (see Fig. 15, page 22).

### HYDRAULIC DAMPERS

The front telescopic dampers cannot be adjusted or topped-up. If they have been removed, hold them the right way up and pump the pistons to each end of the stroke before refitting them.

Check the level of the fluid in the rear dampers and replenish if necessary, then pump the pistons to each end of the stroke. This pumping action dispels any air which may have entered the chambers. After this operation, keep the dampers the right way up until they are fitted into place.

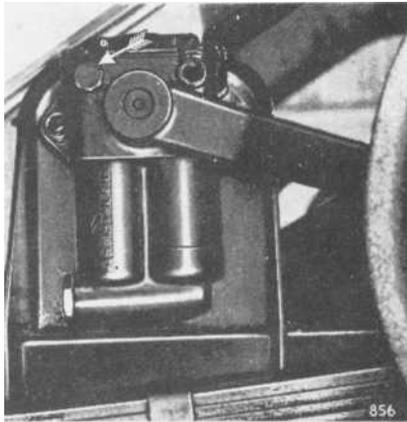


Fig. 35. L.H. rear damper.

### LOOSE BOLTS AND NUTS

All the vital nuts are locked in position by split pins, locking wire, or by an additional locknut or lock washer. It is, however, desirable that the car be examined every 6,000 miles and a check made for nuts which may require attention. The wheel nuts can periodically be checked by the owner himself and occasionally removed, oiled and refitted.

The general examination of the chassis is a mechanic's job.

## ELECTRICAL SYSTEM

A 12 volt earth return lighting and starting set is fitted. **One cable should be disconnected from the battery terminal before removing any electrical unit, otherwise there is risk of a serious " short ".**

A list of the maker's numbers and descriptions of electrical equipment will be found on page 50.

### IGNITION

Failure of the red warning light will not affect the ignition system, but the bulb should be replaced at the earliest opportunity. The high tension leads should be examined occasionally and if they are perished or worn through, replace with the correct ignition cable, which should be obtained only from your dealer, and should be of the correct length.

The moulded distributor cover should be removed occasionally and wiped all over with a soft cloth. See that the carbon brush on the inside of the moulding works freely in its holder. Clean away any trace of dirt or dust around the contact breaker points. The points should be adjusted to the setting recommended on page 7. The distributor has the radio suppressor built into the distributor head. This, of course, means that on outward inspection of the ignition and coil leads a suppressor will not be apparent. **If a replacement or spare distributor head is required, take care to ensure that it is of the correct type with the long carbon pick-up, which is, in fact, the suppressor.**

### THE BATTERY

Keep the terminals clean and well covered with petroleum jelly. If they are corroded, scrape them clean, assemble and cover with petroleum jelly. Wipe away all dirt and moisture from the top of the battery, and make sure that the connections are clean. Do not over-tighten the nyloc nuts securing the battery as this may result in the case becoming cracked.

### THE GENERATOR

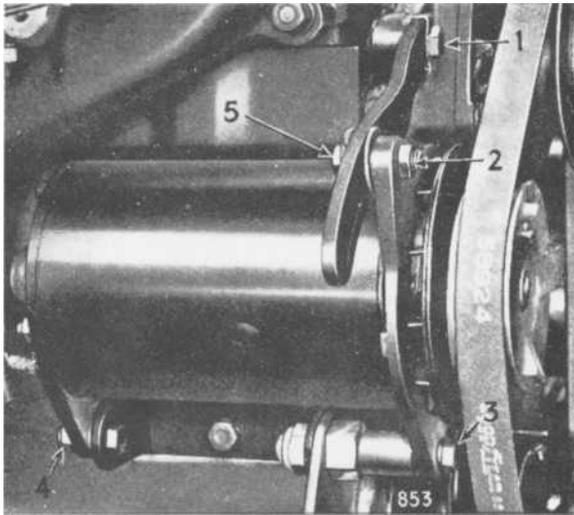
The generator operates in conjunction with the regulator unit which is housed alongside the cut-out in the control box. The regulator unit ensures that the generator charges the battery at the rate best suited to its condition. It automatically provides a large charging current for a discharged battery

## ELECTRICAL SYSTEM

and a low trickle charge for a battery in the fully charged state. The cut-out, operated by generator voltage, prevents discharge of the battery through the generator when the generator is not charging, in which condition the ignition warning light will be glowing.

### **Belt Tightness**

It is important that the belt is sufficiently tight to drive the generator, but not too tight as would put undue load on the generator and water pump bearings. The correct tension is achieved when the belt can be pressed inwards  $\frac{1}{2}$ "— $\frac{3}{4}$ " on the longest run, i.e., from the dynamo pulley to the crankshaft pulley. **It is essential after adjustment has been made to securely tighten the attachment nuts and bolts (2), (3), (4) and (5), Fig. 36.**



**Fig. 36. Generator.**

## THE STARTER MOTOR

### **Cleaning and Lubrication**

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

## ELECTRICAL SYSTEM

Should the starter pinion become jammed in mesh with the flywheel, then it may be released by turning the crankshaft with the starting handle, or by selecting top gear and rocking the car backwards and forwards, or by removing the metal cap on the end of the starter motor and turning the end of the shaft with a spanner, Fig. 37.

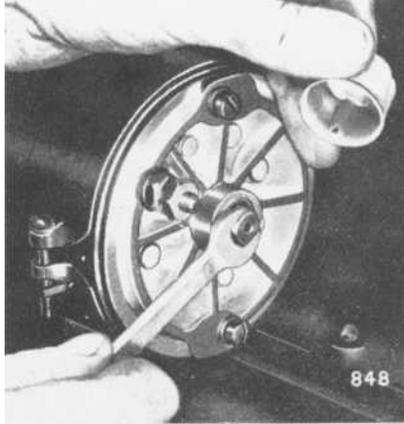


Fig. 37. Releasing pinion from flywheel.

## CONTROL BOX

The control box, mounted on the bulkhead, houses the voltage regulator and cut-out. These units are carefully and accurately set before leaving the works and must not be tampered with.

## FUSES

The fuse carrier is located forward of the control box and houses two operating and two spare fuses. The L.H. fuse (35 amp.) protects the horn, while the other fuse (35 amp.) protects those items which can only operate when the ignition is switched on, i.e., direction indicators, windscreen wipers, brake light, petrol gauge and heater (if fitted). A 25 amp. line fuse housed in a container is situated behind the centre instrument panel on U.S.A. vehicles. This fuse protects the side, tail and panel lamps. When replacing a fuse, it is important to use the correct replacement ; the fusing value is marked on a coloured paper slip inside the tube.

A blown fuse will be indicated by the failure of all the units protected by it and is confirmed by examination of the fuse. If it is not possible to locate the cause of the trouble and the new fuse blows immediately, the equipment should be examined by a Triumph or Lucas Agent or Service Depot.

## ELECTRICAL SYSTEM

### LAMPS

#### Headlamps

The lamps have the reflector and glass sealed as a unit. The bulb has a " pre-focus " cap accurately located and correctly positioned relative to the reflector, thus no adjustment to focusing is required when a replacement bulb is fitted..

It is not possible with these types of lamps to alter the direction of dip entirely by fitting bulbs of the opposite dipping characteristics, as some of the dip effect is produced by the shape of the glass in the lens.

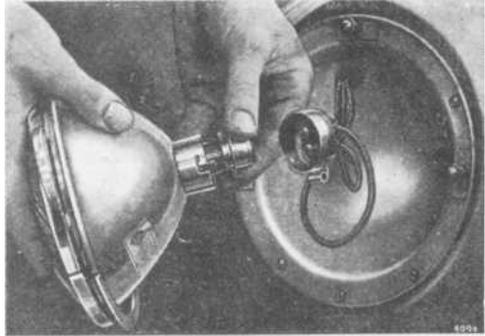


Fig. 38. Headlamp unit with adaptor removed.

#### Bulb Replacement

Remove the Snap-on rim by inserting the end of the special tool (provided in the kit) behind the lower edge of the rim and levering sideways as shown on Fig. 41. Press in the lamp unit against the tension of the three adjusting screw springs and turn in an anti-clockwise direction until the key-slot holes in the rim line up with the screw heads. The lamp unit can then be drawn off. Do not rotate any of the screws, as this will affect the alignment of the reflector when assembled.

Rotate the adaptor anti-clockwise and pull off, then the headlamp bulb can be removed. (See Fig. 38). Care should be taken to see that the .bulb does not drop out.

#### Lamp Alignment

The lamp must be set to ensure that the beam is not projected above the horizontal, taking into account road inequalities and the normal loading of the car.

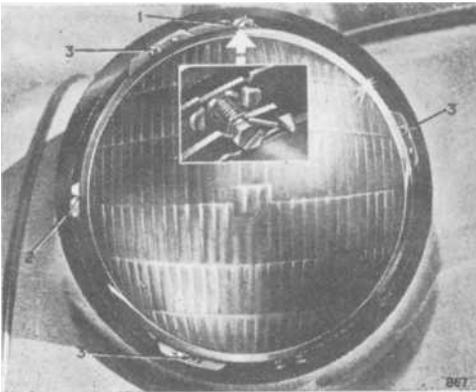


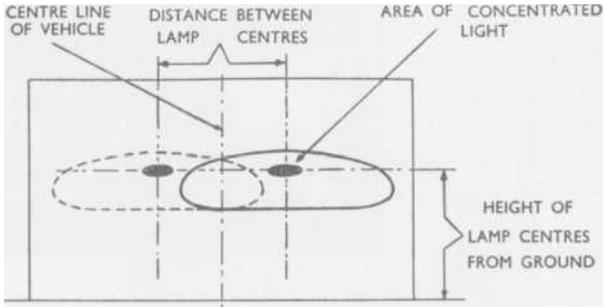
Fig. 39. Sealed beam head-lamp unit (special export)

1. Vertical adjusting screw.
2. Horizontal adjusting screw.
3. Unit retaining screws.

## ELECTRICAL SYSTEM

### To Check and Adjust Alignment

Park the car in front of a garage door or wall and square to it.



- (A) FRONT OF VEHICLE TO BE SQUARE WITH SCREEN
- (B) VEHICLE TO BE LOADED AND STANDING ON LEVEL GROUND
- (C) RECOMMENDED DISTANCE FOR SETTING IS AT LEAST 25FT.
- (D) FOR EASE OF SETTING ONE HEADLAMP SHOULD BE COVERED

Fig. 40. Headlamps correctly aligned.

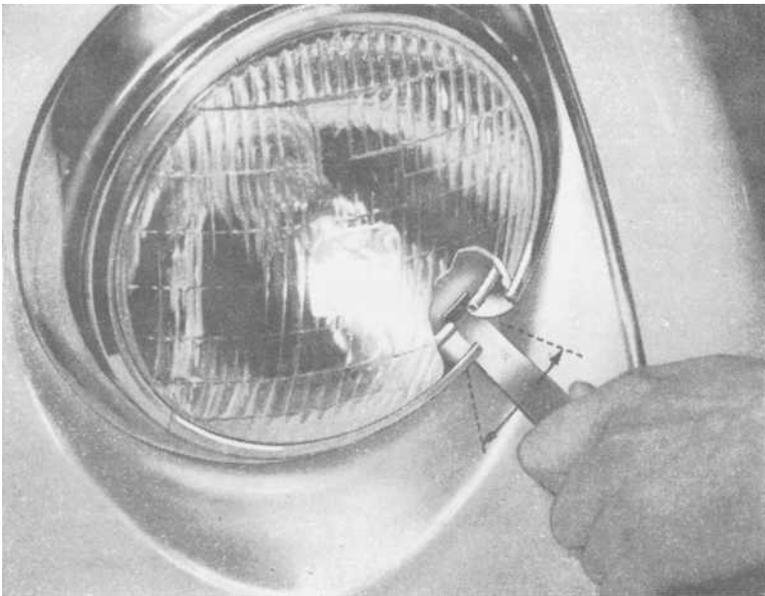


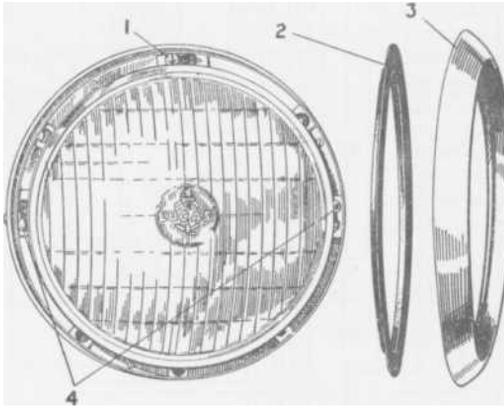
Fig. 41. Removing the rim.

## ELECTRICAL SYSTEM

Switch on the headlamps and adjust the lamps, if necessary, until the centre of each circle of light coincides with the centre of its respective cross. If adjustment is necessary, proceed as follows :

Withdraw the front rim as shown on Fig. 41. Remove the dust-excluding rubber. This will reveal three screws (see Fig. 42), which can be adjusted to align the reflector correctly. When the correct alignment has been obtained, replace the rubber and rim.

It is advisable to start adjustment with each screw screwed out half-way ; this will ensure correct fitting of the rim when assembled.



- |                              |                                 |
|------------------------------|---------------------------------|
| 1. Vertical adjusting screw. | 3. Front rim.                   |
| 2. Dust excluding rubber.    | 4. Horizontal adjusting screws. |

Fig. 42. Adjusting headlamp alignment.

### **Parking Lamps (Front) and Direction Indicator Flashing Lamps (front and rear)**

To remove bulb, peel back the rubber ring and remove rim, then the bulb can be withdrawn. When replacing rim, first slip the edge over the two small lugs, then peel back rubber as rim is fitted. Ensure that the rubber is located correctly over the rim edge, otherwise vibration may cause the rim to become detached.

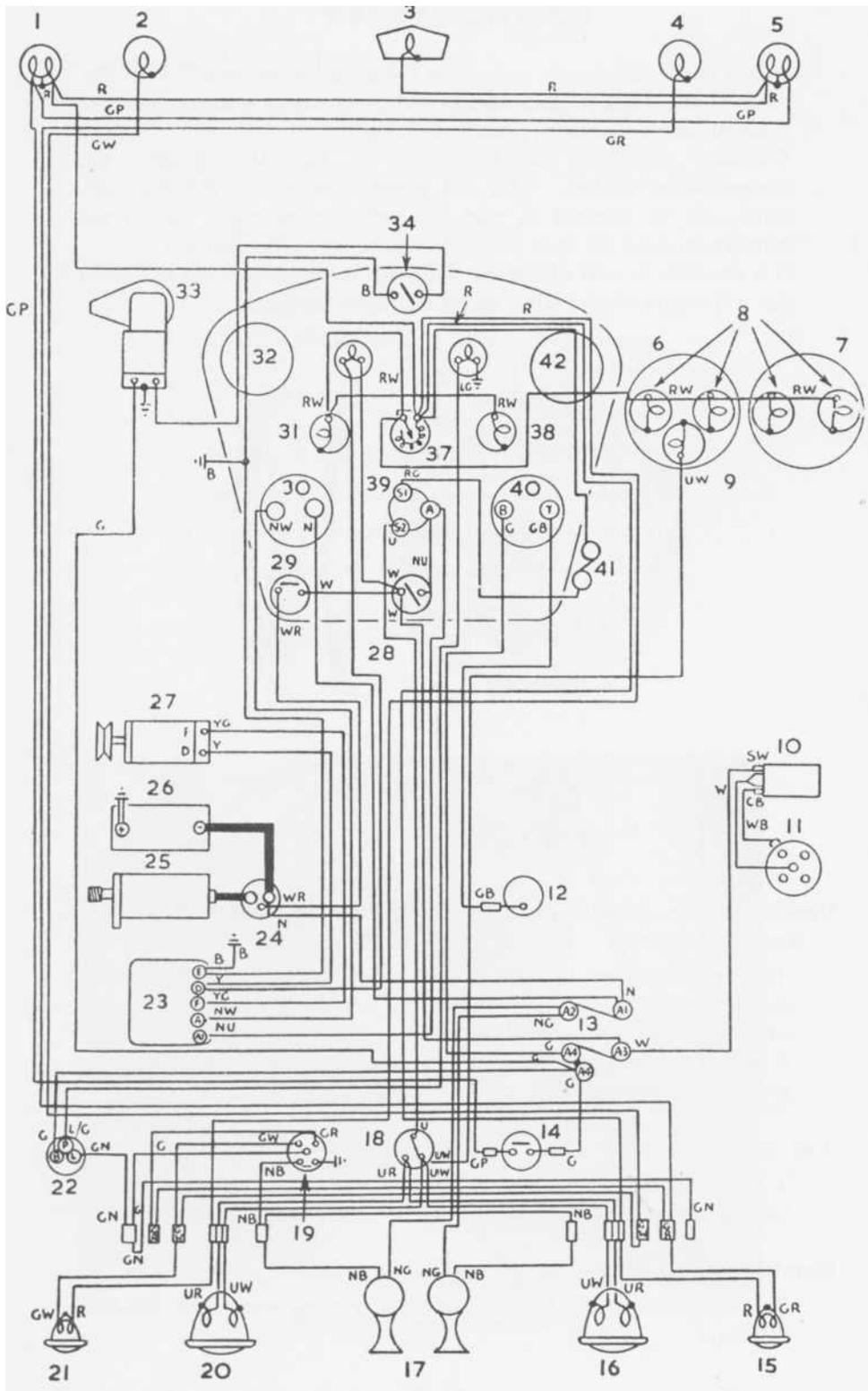
### **Tail and Stop Lamps**

To gain access to the bulb, remove the cover, which is secured by two screws.

### **Number Plate Lamp**

To gain access to the bulb, remove the securing screw and withdraw the cover.

# ELECTRICAL SYSTEM



**Fig. 43. Wiring Diagram.**

## ELECTRICAL SYSTEM

CABLE COLOUR CODE	
M	MEDIUM
L	LIGHT
D	DARK
Y	YELLOW
W	WHITE
S	SLATE
R	RED
P	PURPLE
G	GREEN
N	BROWN
U	BLUE
B	BLACK

### KEY TO COMPONENTS

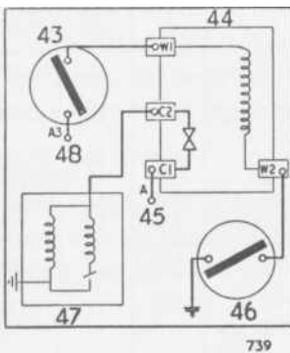
**Fig. 43.**

- I STOP/TAIL LAMP
- 2 FLASHER LAMP
- 3 NO. PLATE LAMP
- 4 FLASHER LAMP
- 5 STOP/TAIL LAMP
- 6 SPEEDOMETER
- 7 REVOLUTION COUNTER
- 8 PANEL LAMPS
- 9 HIGH BEAM INDICATOR LAMP
- 10 IGNITION COIL
- II DISTRIBUTOR
- 12 PETROL TANK UNIT
- 13 FUSE UNIT
- 14 STOP LAMP SWITCH
- 15 SIDE (PARKING) AND FLASHER LAMP
- 16 HEADLAMP
- 17 HORNS
- 18 DIPPER SWITCH
- 19 HORN PUSH AND DIRECTION INDICATOR SWITCH
- 20 HEADLAMP
- 21 SIDE (PARKING) AND FLASHER LAMP
- 22 FLASHER UNIT
- 23 CONTROL BOX
- 24 SOLENOID STARTER SWITCH
- 25 STARTER MOTOR
- 26 1 2V. BATTERY
- 27 GENERATOR
- 28 IGNITION SWITCH
- 29 STARTER SWITCH
- 30 AMMETER
- 31 PANEL LAMP
- 32 TEMPERATURE GAUGE
- 33 WINDSCREEN WIPER MOTOR
- 34 SCREEN WIPER SWITCH
- 35 IGNITION WARNING LAMP
- 36 FLASHER WARNING LAMP
- 37 PANEL LIGHTING SWITCH
- 38 PANEL LAMP
- 39 LIGHTING SWITCH
- 40 FUEL GAUGE
- 41 FUSE (FITTED U.S.A. ONLY)
- 4 2 OIL PRESSURE GAUGE

### OVERDRIVE ONLY :

**Fig. 44.**

- 43 STEERING COLUMN SWITCH
- 44 RELAY UNIT
- 45 TO A ON CONTROL BOX
- 46 GEARBOX SWITCH
- 47 OVERDRIVE SOLENOID
- 48 TO IGNITION VIA A3 ON FUSE UNIT



**Fig. 44.** Wiring Diagram for Overdrive Unit.

## ELECTRICAL SYSTEM

**Ignition Warning Light**  
**Direction Indicator Warning Light**  
**High Beam Warning Light**  
**Instrument Panel Lights**

Each bulb holder can easily be withdrawn from the rear of the panel for bulb renewal.

Replacing these bulbs is best left to the safe hands of a Service Station.

### DIRECTION INDICATORS

These are of the flashing type operating in the dual filament bulbs in the parking lamps at the front and the tail lights at the rear. The flasher unit is situated close to the control box underneath the bonnet.

### WINDTONE HORNS

Each electric horn is accurately adjusted before being passed out of the works and will give long periods of service without any attention. No adjustment is provided for in service.

### ELECTRICAL COMPONENT SPECIFICATION

SPECIFICATION OF EQUIPMENT			BULBS			
	Model	Service No.		Lucas No.	Voltage	Watt.
Battery ...	BT9A	4016417	Headlamps			
Control Box	RB106/2	37283	Left-hand dip, both lamps (home model)	404	12	60/36
Coil ...	HA12		Left-hand dip, both lamps (export model)	354	12	42/36
Generator ...	C40/1	22700	Right-hand dip "	301	12	36/36
Distributor	25D4	40795	" Vertical dip " "	370	12	45/40
Starter ...	M418G	25550	Front Parking Lamps	380	12	6/21
			Number plate Illumination Lamps	222	12	4
Fuse Box ..	4FJ	033283	Direction Indicator Lamps (rear)	382	12	21
Flasher Unit	F.L.5	35020	Tail/stop Lamps	380	12	6/21
Horns ...	WT618LN	69046E	Ignition and High Beam Warning Lights, Panel Lights and Direction Indicator Warning Lights	987	12	2.2
	HN	69047E				
Windscreen	DR 3A	2530120	Fuses ... ..	35 amp.		Service No. 188218
Wiper Motor	Jaeger No.	FT3331 /				
Petrol Gauge	Jaeger No.	02/MM2/				
Tank Unit ...		12V.				

## **OPTIONAL EXTRAS**

### **RADIO**

For operating instructions, see the radio leaflet provided with the set. The set is protected against electrical damage by a 5 amp. fuse housed in the main lead union. The aerial mast should always be lowered when the set is not operating.

### **HEATER**

The heater is of the re-circulating type, with a combined rheostat and ON/OFF switch on the dash panel to regulate the speed of the fan. At the right-hand rear end of the cylinder head, under the bonnet, a screwed cock can be turned to vary the amount of hot water which is supplied to the heater unit. Shutters on the underside of the heater unit control the downward flow of air from the heater into the car. Closing the shutters will not affect the air flow to the demister slots.

### **OVERDRIVE**

#### **Operation**

The Laycock de Normanville overdrive unit effects a reduction in overall gear ratio by means of a train of epicyclic gears which are brought into action by a hydraulically operated cone clutch. Movement of the electrical switch mounted on the outside of the fascia panel will bring the overdrive into operation. To take the overdrive out of operation, return the switch to its original position. The electrical circuit is only complete when the gear lever is in the position of top, 3rd or 2nd gears. It should be remembered that if the overdrive switch is made, returning the gear lever from third to top gear will automatically re-engage the overdrive unit.

#### **Lubrication**

The oil used for both lubrication and for the hydraulic pump is the same as and connected with that of the gearbox. The two units also having a common filler orifice in the gearbox.

#### **Draining**

There is a drain plug fitted to the overdrive unit, and when draining the gearbox it is necessary to remove both the drain plug on the gearbox and the drain plug on the overdrive unit.

### **WIRE WHEELS**

Cars fitted with wire wheels have detachable hub extensions each secured by four nuts. These should be checked occasionally for tightness and especially after the first 500 miles from new or when replacement parts are fitted. The correct tightness is 60-65 ft. lb.

## BRITISH ISLES (All Seasons)

COMPONENT	REGENT	MOBIL	SHELL	ESSO	B.P.	CASTROL	DUCKHAM'S	
ENGINE SUMP	Havoline 20/20W or Havoline Special 10W/30	Mobiloil Arctic or Mobiloil Special	Shell X-100 20W or X-100 Multigrade 10W/30	Esso Extra Motor Oil 20W/30	Energol Motor Oil 20W or Visco Static	Castrolite	Duckham's Nol Twenty or Duckham's Q5500	
UPPER CYLINDER LUBRICANT	Regent U.C.L.	Mobil Upperlube	Shell U.C.L.	Esso U.C.L.	Energol U.C.L.	Castrollo	Duckham's Adcoids	
CARBURETOR DASHPOTS	SUMMER	Havoline 30	Mobiloil A	X-100 30	Essolube 30	Energol Motor Oil 30*	Castrol XL	Nol "Thirty"
	WINTER	Havoline 20/20W	Mobiloil Arctic	X-100 20W	Essolube 30	Energol Motor Oil 20W	Castrolite	Nol "Twenty"
GEARBOX AND O/DRIVE REAR AXLE	Universal Thuban 90	Mobilube GX.90	Shell Spirax 90 E.P.	Esso Gear Oil GP.90	Energol E.P. S.A.E. 90	Castrol Hypoy	Duckham's Hypoid 90	
STEERING UNIT GREASE GUN	Marfak Multipurpose 2	Mobilgrease M.P.	Shell Retinax A	Esso Multi-Purpose Grease H	Energrease L.2	Castrolase L.M.	Duckham's LB.10	
OIL CAN	Havoline 20/20W	Mobil Handy Oil	Shell X-100 20W	Esso Handy Oil	Energol S.A.E. 20W	Everyman Oil	Duckham's General Purpose Oil	
REAR ROAD SPRINGS	OLD REAR AXLE OR ENGINE OIL							
BRAKE CABLES	Marfak Multipurpose 2	Mobilgrease M.P.	Shell Retinax A	Esso Multi-Purpose Grease H	Energrease L.2	Castrolase Brake Cable Grease	Duckham's Keenol K.G.16	
CLUTCH AND BRAKE RESERVOIRS	CASTROL GIRLING BRAKE AND CLUTCH FLUID			WHERE THE PROPRIETARY BRAND IS NOT AVAILABLE, OTHER FLUIDS WHICH MEET THE S.A.E. 70 R.3 SPECIFICATION MAY BE USED.				

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

### ANTI-FREEZE SOLUTIONS

Mobil Permazone

Shell Anti-freeze

Esso Anti-freeze

B.P. Anti-frost

Castrol Anti-freeze

Duckham's Anti-freeze

Smith's Bluecol

## OVERSEAS COUNTRIES

COMPONENT		CALTEX	TEXACO	MOBIL	SHELL	Esso	B.P.	CASTROL	DUCKHAM'S	S.A.E. & A.P.I. DESIGNATION						
<b>ENGINE* SUMP</b>	Air Temp. °F.	Havoline 40 or Havoline Special 20W/40		MOBIL OIL SPECIAL	X-100 Multigrade 20W/40 or X-100 40		Esso Extra Motor Oil 20W/40 or Esso Motor Oil 40		VISCO STATIC	Energol Motor Oil 40	Castrol XXL	Q20-50	Duckham's Nol "Forty"	S.A.E. 40 MM		
	Over 70°	HAVOLINE SPECIAL 10W/30	Mobiloil A		X-100 MULTIGRADE 10W/30	Shell X-100 30		Esso Motor Oil 30		Energol Motor Oil 30	Castrol XL		Q5500	Duckham's Nol "Thirty"	S.A.E. 30 MM	
	40° to 70°		Mobiloil Arctic			Shell X-100 20W		Esso Motor Oil 20		Energol Motor Oil 20W	Castrolite	Duckham's Nol "Twenty"		S.A.E. 20W MM		
	10° to 40°		Mobiloil 10W			Shell X-100 10W		Esso Motor Oil 10W		Energol Motor Oil 10W	Castrol Z	Duckham's Nol "Ten"		S.A.E. 10W MM.		
Below 10°	Upper Cylinder Lubricant		Mobil Upperlube	Shell Donax U		Esso Upper Motor Lubricant	Energol U.C.L.	Castrollo	Duckham's Adcoids							
<b>UPPER CYLINDER LUBRICANT</b>		USE APPROPRIATE CURRENT SINGLE GRADE ENGINE OIL														
<b>CARBURETTOR DASHPOTS</b>																
<b>GEARBOX REAR AXLE</b>	Over 30°	Universal Thuban 90	Mobilube GX.90	Shell Spirax 90 E.P.	Esso Gear Oil G.P. 90	Energol E.P. S.A.E. 90	Castrol Hypoy	Duckham's Hypoid 90	G.L.4 Hypoid 90							
	Below 30°	Universal Thuban 80	Mobilube GX.80	Shell Spirax 80 E.P.	Esso Gear Oil GP.80	Energol E.P. S.A.E. 80	Castrol Hypoy Light	Duckham's Hypoid 80	G.L.4 Hypoid 80							
<b>STEERING UNIT GREASE GUN</b>		Marfak Multipurpose 2	Mobilgrease M.P.	Shell Retinax A	Esso Multi-Purpose Grease H	Energrease L.2	Castrolase L.M.	Duckham's L.B. 10								
<b>OIL CAN</b>		Home Lubricant	Mobil Handy Oil	Shell X-100 20W	Esso Handy Oil	Energol Motor Oil S.A.E. 20W	Everyman Oil	Duckham's General Purpose Oil								
<b>REAR ROAD SPRINGS</b>		OLD REAR AXLE OR ENGINE OIL														
<b>BRAKE CABLES</b>		Marfak Multipurpose 2	Mobilgrease M.P.	Shell Retinax A	Esso Multi-Purpose Grease H	Energrease L2.	Castrolase Brake Cable Grease	Duckham's Keenol KG 16								
<b>CLUTCH AND BRAKE RESERVOIRS</b>		CASTROL GIRLING BRAKE AND CLUTCH FLUID				WHERE THE PROPRIETARY BRAND IS NOT AVAILABLE OTHER FLUIDS WHICH MEET THE S.A.E.70 R3 SPECIFICATION MAY BE USED.										
		*Where circuit or other severe competitions are contemplated it is advisable to use oils of high viscosity in view of the increased oil temperature encountered.														
<b>ANTI-FREEZE SOLUTIONS</b>		B.P. Anti-Frost	Mobil Permazone	Shell Anti-freeze	Esso Anti-freeze	Castrol Anti-freeze	Duckham's Anti-freeze	Smith's Bluecol								

# SUMMARY OF LUBRICATION POINTS

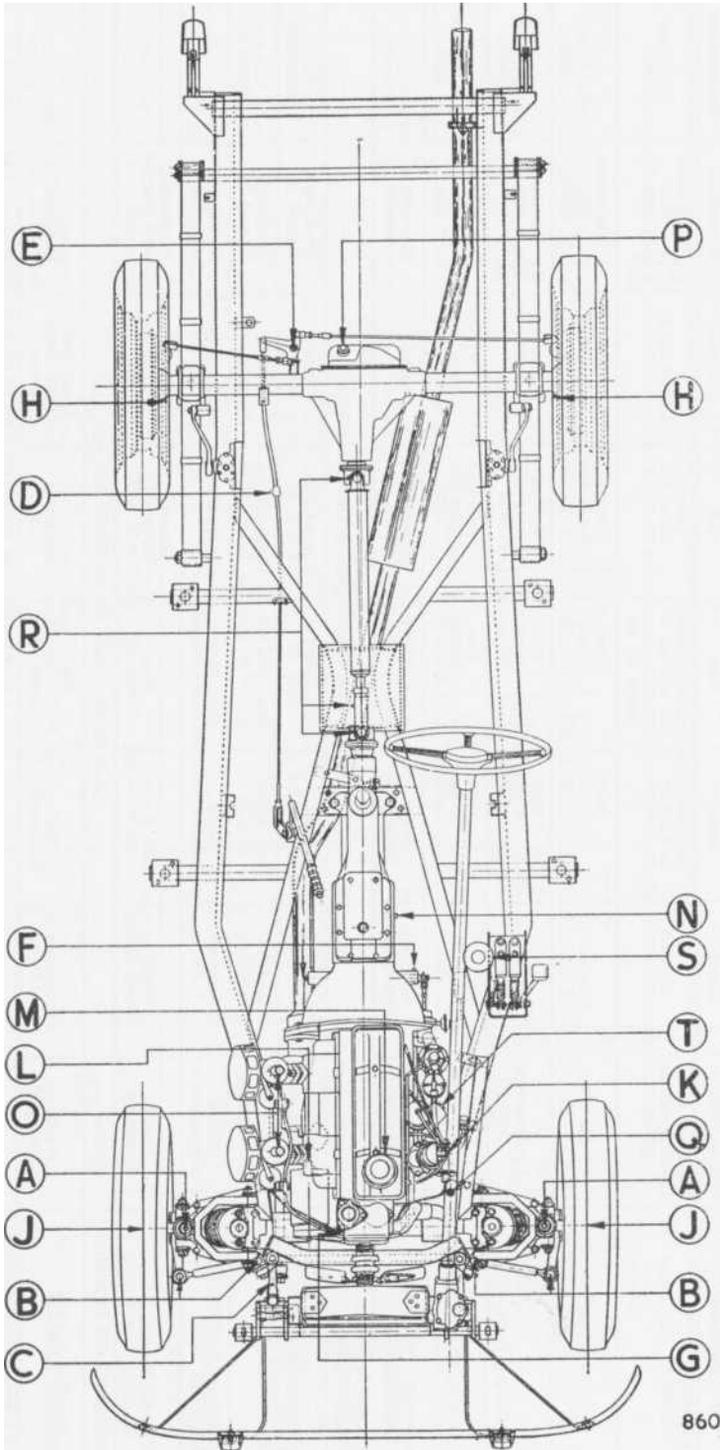


Fig. 48.

## LUBRICATION

Ref.	ITEMS	DETAILS	PAGE REF.	MILEAGE INTERVALS IN THOUSANDS	
A	Steering Swivels ... (4 nipples)	THREE OR FOUR STROKES	GREASE GUN	I	
B	Outer Tie Rod Ball Joints ... (4 nipples)				
C	Steering Slave Drop Arm Pivot ... (1 nipple)				
	Lower Wishbone Outer Bushes ... (4 nipples)				
D	Cable ... (1 nipple)				
E	Handbrake Compensator ... (2 nipples)	FIVE STROKES	GREASE GUN	6	
F	Clutch Shaft Bearings ... (2 nipples)				
G	Engine Water Pump ... (1 nipple)				
H	Rear Hubs ... (2 nipples)				
J	Front Hubs ... (see page 20)				
K	Ignition Distributor	REMOVE AND REPACK	20	6 or 12	
	Handbrake Lever	OIL AS RECOMMENDED	OIL CAN	6	
	Door Locks, Hinges, Bonnet Safety Catch, Boot and Spare Wheel Locks				
L	Generator				
M	Engine	TOP UP OIL LEVEL	13	3	
	250 MILES	DRAIN & REFILL WITH NEW OIL	15		
	Oil Filler Cap	WASH	18		
N	Gearbox	TOP UP OIL LEVEL	18	6	
		DRAIN & REFILL WITH NEW OIL	18		
O	Carburettor Dashpots and Control Linkages	OIL AS RECOMMENDED	16	3	
P	Rear Axle	DRAIN & REFILL WITH NEW OIL	18	6	
Q	Steering Gearbox	TOP UP OIL LEVEL	22	6	
R	Propeller Shaft Splines ... (1 nipple)	THREE OR FOUR STROKES	GREASE GUN	22	I
	Universal Joints ... (2 nipples)		OIL GUN	22	I
	Road Springs	CLEAN AND OIL	22	6	
	Air Cleaners	OIL AS RECOMMENDED	18	6	
S	Hydraulic Brake and Clutch Reservoir	TOP UP FLUID LEVEL	19	I	
T	Oil Filter	RENEW CARTRIDGE	16	6	