TRIUMPH 1800

Instruction Book

FIVE SHILLINGS

INSTRUCTION BOOK

TRIUMPH
"1800"

1951

Second Edition
2nd printing

Manufactured by

THE STANDARD MOTOR CO. LTD.
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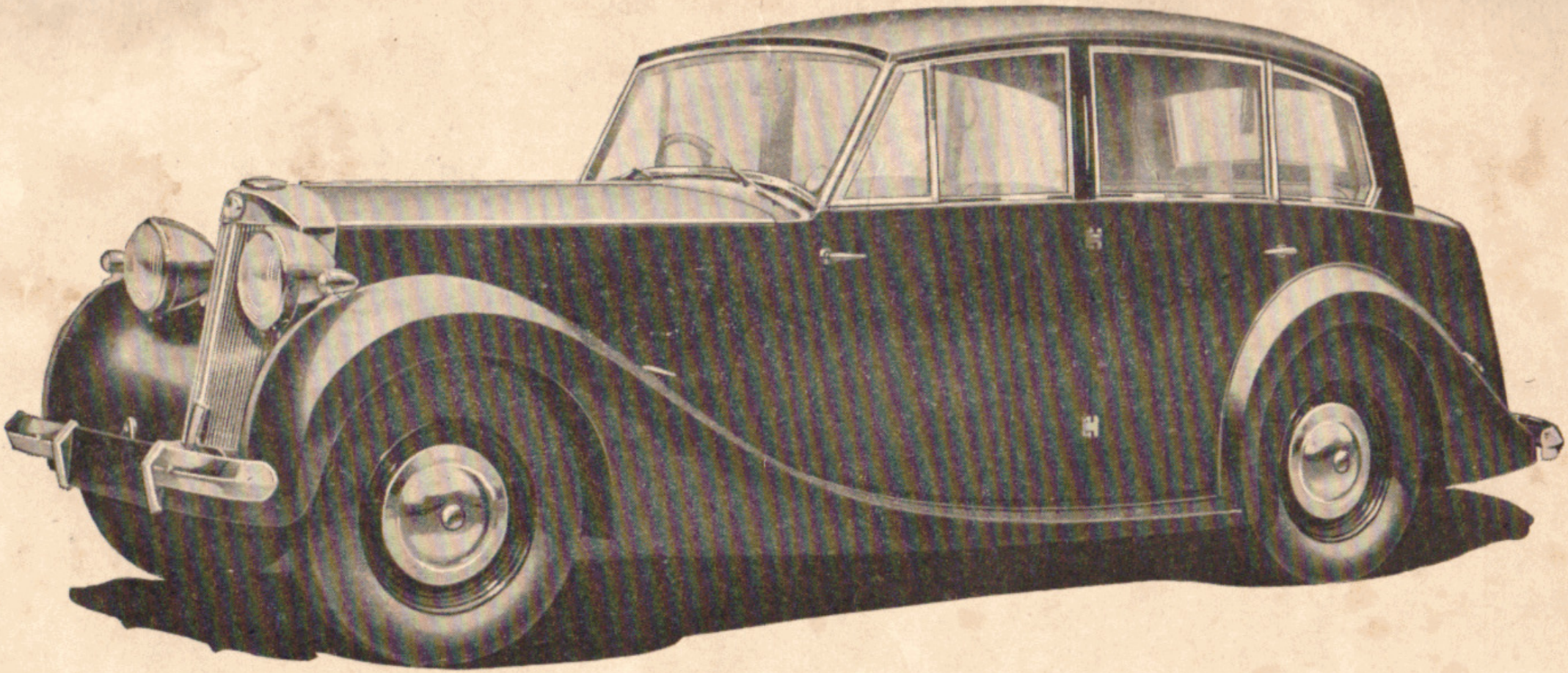


THE TRIUMPH "1800" SALOON

FOREWORD

The service, life and satisfaction which you derive from your new Triumph car depends upon the care and attention it receives, especially during the early life of the car. Every endeavour has been made in the design to limit the adjustments necessary and render them easy and accessible. We earnestly recommend that careful attention be paid to the following instructions, particularly to the section on general upkeep and lubrication.

The book is divided into a number of sections, each being indicated by page headings as follows :—

Management of Car.

General Upkeep, covering lubrication, care of tyres and bodywork.

Running Adjustments.

Electrical Wiring and Lighting System.

Service.

There is an index at the end of the book.

When reference is made to the left-hand or right-hand side of the car, this is as viewed from the driver's seat.

This instruction book does not in any way vary or extend the liability of the company, which is limited to the warranty provided with the car.

Spare parts booklets are available on application. Price 1/6 post free from Spares Department, Fletchamstead Highway, Coventry.

LICENCE DATA

Car number (Commission number)	Plate on dash
Engine number	On cylinder block

(Both numbers are to be seen by lifting the bonnet on the right-hand side).

R.A.C. rating	13.23
Cubic capacity	1776 c.c.

GENERAL SPECIFICATION

Number of cylinders	4
Bore of cylinders	73 mm.
Stroke of crank	106 mm.
Compression ratio	6.7
Firing order	1, 3, 4, 2
Brake H.P. at 1000 r.p.m.	16
2000 r.p.m.	35
3000 r.p.m.	53
4000 r.p.m.	62
Peak	63 at 4500 r.p.m.

OIL CAPACITY.

Engine	14 pints
Gearbox	2 pints
Rear axle	$2\frac{3}{4}$ pints

WATER CAPACITY of cooling system	19 pints
PETROL CAPACITY	10 galls.

CAR DIMENSIONS	Roadster	Saloon
Wheelbase	8′ 4″	9′ 0″
Track—Front	4′ $2\frac{1}{2}$″	
Rear	4′ $6\frac{3}{4}$″	
Ground clearance (under axle)	$6\frac{1}{2}$″	7″
Turning circle (between kerbs)	39′ 0″	40′ 0″
Tyre size	5.75″—16″	

OVERALL DIMENSIONS.

Length (locker closed)	14′ $0\frac{1}{2}$″	14′ 7″
Width	5′ 4″	5′ $3\frac{1}{2}$″
Height (unladen)	4′ 8″ (Hood up)	5′ 3″

CAR WEIGHT.

	ROADSTER cwt.	qr.	lb.	SALOON cwt.	qr.	lb.
Complete with tools and full tank of petrol	22	2	21	25	1	0
Shipping weight	21	2	7	24	0	14

VALVE TIMING (see Fig. 1)

Inlet valve opens 10° before top dead centre.
Inlet valve closes 50° after bottom dead centre.
Exhaust valve opens 50° before bottom dead centre.
Exhaust valve closes 10° after top dead centre.

The equivalent distances measured round the flywheel adjacent to the starter teeth :

10°	0.99″
50°	4.96″

IGNITION TIMING.

Set to fire at 8° before top dead centre (distributor contact points just opening). As the advance is entirely automatic, the setting is at full retard.

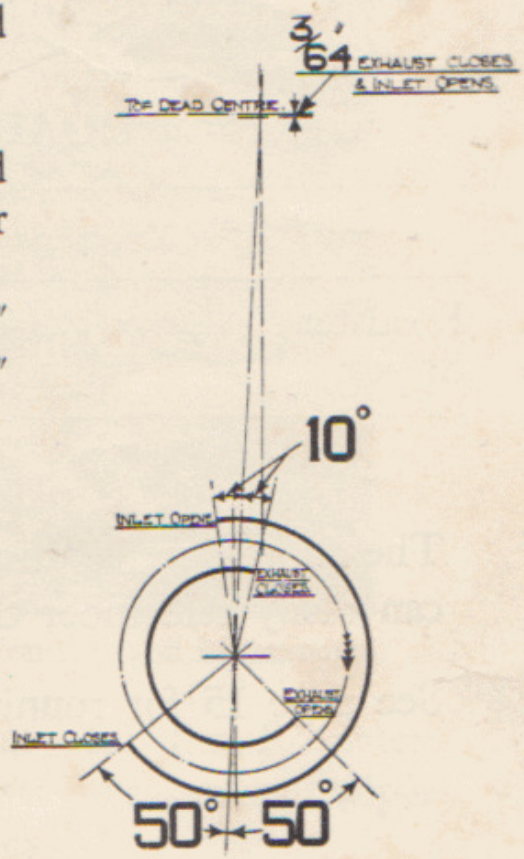


Fig. 1. Timing diagram.

ROAD SPEED DATA

MODEL	Gear Ratios (Overall)				Engine Speeds at 10 m.p.h. in Various Gears			
	Top (Synchro-Mesh and Silent Helical Gears)	3rd (Synchro-Mesh and Silent Helical Gears)	2nd (Synchro-Mesh and Silent Helical Gears)	1st and Reverse	Top	3rd	2nd	1st and Reverse
Roadster	4.56	5.686	9.513	15.445	582	726	1216	1974
Saloon	4.86	7.05	11.8	19.17	620	902	1508	2450

GEARBOX RATIOS : SALOON—1.....1.452, 2,429, 3.946 (1st and reverse).
ROADSTER—1.....1.248, 2.087, 3.39.

NOTE.—Engine speeds at other car speeds are, for all practical purposes, directly proportional to those given above.

DESIRABLE ENGINE SPEED LIMITS

(Particularly in gears lower than top)

Triumph engines are capable of " revving " very fast, yet the driver should avoid continued " over-revving," which is most likely to occur in the lower gears. We strongly recommend that the driver shall not **continually** exceed the car speeds given below which correspond to approximately 4,000 engine r.p.m.

ROAD SPEED IN M.P.H.

	Top	Third	Second	First
Roadster	70	55	35	20
Saloon	65	45	25	15

The above speeds are given in round figures so that the owner can easily remember them.

See page 15 for running-in speeds recommended.

CONTROLS AND INSTRUMENTS

The position of the controls and instruments will readily be understood by reference to Fig. 2.

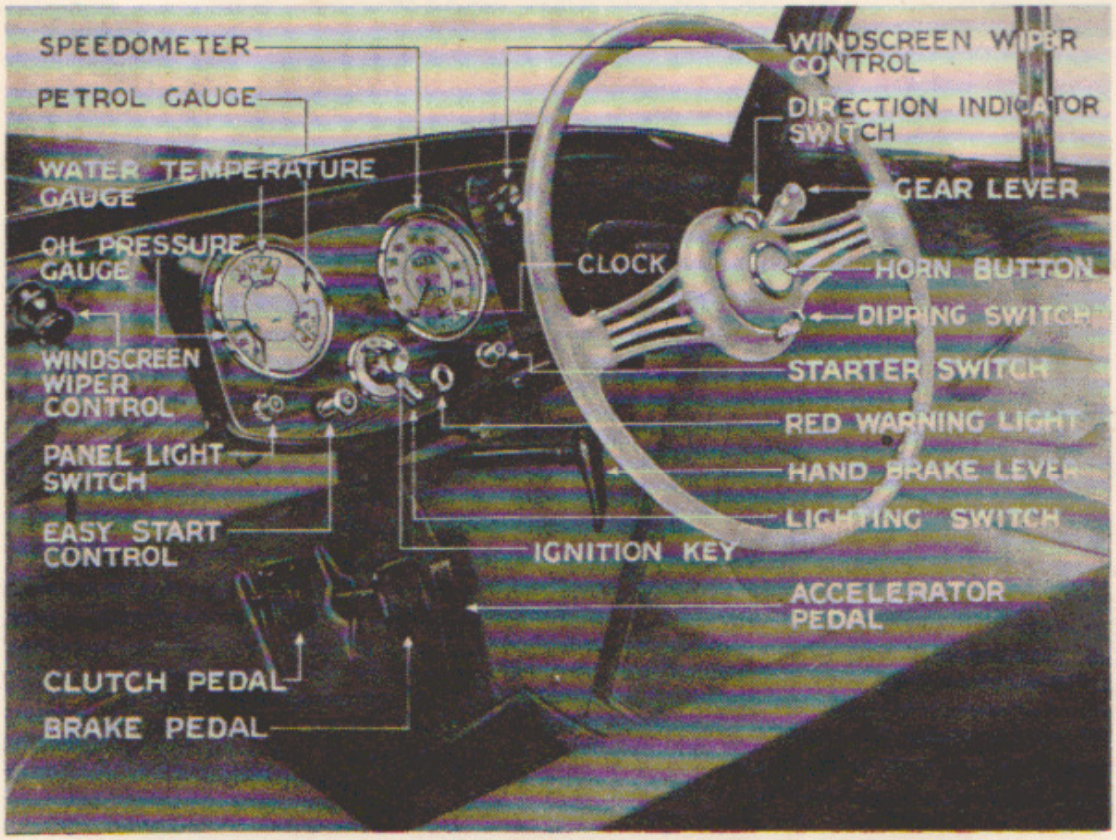


Fig. 2. Controls and instruments.

The controls and instruments shown are for the Roadster. The Saloon does not have the central windscreen wiper control as there are only two wiper blades.

FOOT OPERATED CONTROLS

Accelerator. The pedal is connected by a short Bowden cable to the carburettor throttle. Do not depress pedal when starting engine from cold.

Brake. Operating four wheel brakes.

Clutch. Press pedal to disengage drive from engine to gearbox. **Do not rest foot on pedal when driving, nor hold clutch out to free wheel, as this will cause unnecessary wear to the carbon thrust pad.**

HAND OPERATED CONTROLS

Hand Brake. Pull to operate rear wheel brakes only. The lever will be held in any position by the ratchet. To release ratchet, first pull lever and press catch button.

Gear Lever. For selecting the gears, see Fig. 3. To engage reverse gear, the lever must be pulled slightly away from the column, to allow the lever to move down over the reverse stop.

Always select neutral position before starting the engine.

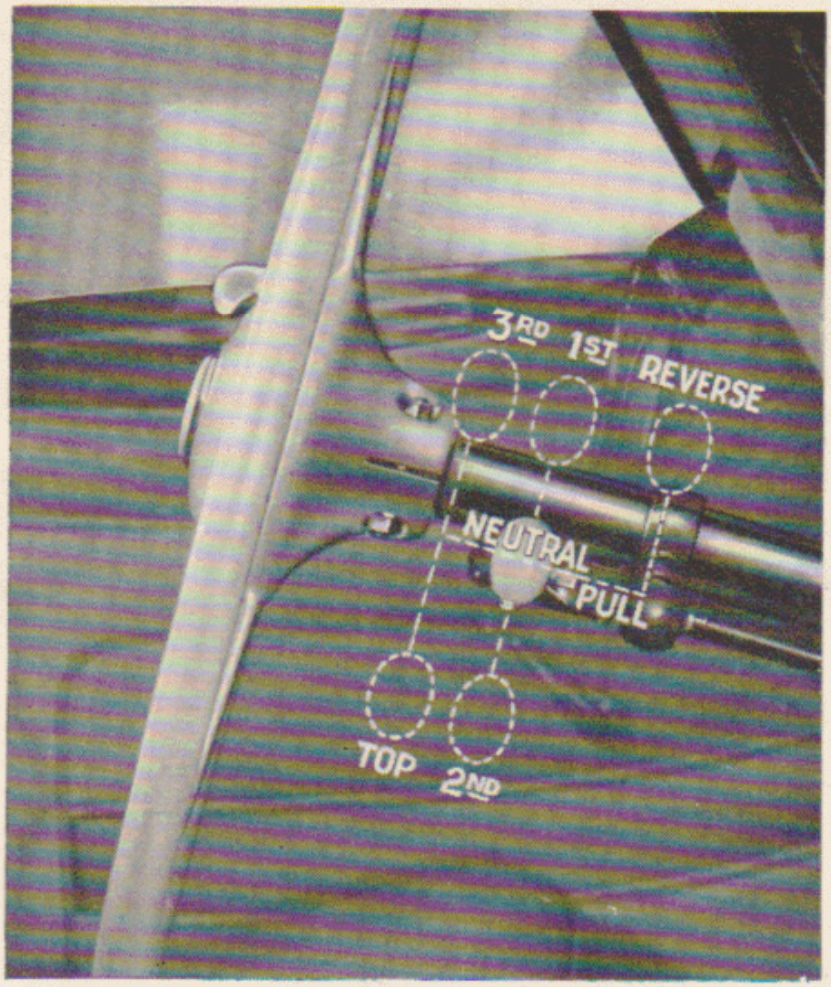


Fig. 3. Gear positions.

Windscreen Wiper Control. The switch is combined with the knob on the driver's side.

To Start. Push in knob and turn to bring wiper blade in vertical position on the screen. Release pressure on the knob and rotate it slowly until the driving dogs engage. This action on the driver's side also switches on the electric motor when the ignition is switched on.

To Switch off. Push in the knob and turn away from the centre of car until the arm lies horizontally on the scuttle. The central wiper on the roadster can be parked on either the left or right-hand side.

Choke Control (Carburettor easy start). Pull out when starting engine from cold, see page 11 for full instructions.

Ignition Switch. Key in centre of lighting switch. Half a turn clockwise to switch on. Do not leave switch on when engine is stationary, to avoid discharging the battery.

Lighting Switch. The switch has three positions :—
(OFF).
(S)—To light side and tail lamps.
(H)—To light head, side and tail lamps.

Dipping Switch. This switch dips the left-hand head lamp reflector, which, in turn, switches off the right-hand head light.

Direction Indicator Switch. This switch will automatically be returned to "off" as the steering wheel is being brought back to the straight ahead position. The indicator will only operate with the ignition switched on.

Reversing Light. The switch is actuated by the gear lever mechanism, and will operate when reverse gear is engaged, with the ignition switched on.

Brake Light. The switch is connected to the brake pedal mechanism, but will operate the red light only with the ignition switched on.

Panel Light Switch. Press to illuminate panel with lighting switch in either the (S) or (H) position. Press again to switch off.

Roof Light Switch (Saloon). The switch is integral with the lamp.

Starter Motor Switch. Press to operate starter (see page 11 for full instructions).

Horn Switch. Press button in centre of steering wheel to operate horn.

INSTRUMENTS

Warning Light. Glows red when ignition is switched on with the engine idling or stopped. It is an indication that current is being drawn from the battery for ignition or other purposes, that are controlled by the ignition switch.

Speedometer. Registers vehicle's speed and total mileage, and is fitted with a trip which is cancelled by pushing the serrated knob (which is situated under the dash, below dial) upwards and turning anti-clockwise.
If for any reason the speedometer is to be removed, **first disconnect one of the battery terminals,** to avoid risk of a short, as the clock is electrically operated and the terminals must be removed before the speedometer can be withdrawn.

Fuel Gauge. Registers the amount of petrol in the tank. It operates automatically when the ignition is switched on.

Oil Pressure Gauge. Indicates pressure of oil being pumped to the bearings. It does not show the amount of oil in the sump (excepting that if the oil level is very low the pressure usually falls due to overheating).
A habit should be made of occasionally reading the oil pressure during the course of a run, to see that the oil pump is functioning correctly. **The oil pressure gauge should read between 40 and 60 lbs. sq. in. when the car is travelling at normal speeds and the oil is hot.** Of course only a low oil pressure will be registered when the engine is idling or running at low speeds, this is quite normal.

Clock. The clock which is electrically operated, is adjusted by a small screw in the back of the clock casing. The regulating screw requires only a very slight part of a turn to produce appreciable regulation. The screw should be turned clockwise if the clock gains, and vice versa. If, for any reason, the battery connection becomes disconnected, then the action of setting the hands to the correct time will restart the clock. The serrated knob, for setting the hands, is situated under the dash.

Water Temperature Gauge. The gauge shows the temperature of the cooling water at the thermostat. With the engine warmed up the gauge should register a temperature of between 60° and 75° during normal running.

TO START THE ENGINE

Starting when Engine is cold

Place the gear lever in the neutral position and see that the hand brake is on. Pull the carburettor choke control (c) out to the stop, switch on the ignition and press the starter switch button. If the engine does not start on the first application of the starter **Do not re-operate until both engine and starter motor have come to rest.** This is to avoid damage to the starter pinion. When the engine has started push the control (c) back to the half-out position. *The driver can "feel" when the control is correctly in this position as there is a definite location.* After one or two minutes driving, as the engine warms up it will be possible to push the control right in without causing the engine to run with undue hesitation. Difficulty may be experienced in starting if the atmosphere is very damp, causing moisture to collect on the porcelain portions of the sparking plugs. This should be wiped off with a dry rag. If the battery has been allowed to get into a run-down condition it is best to use the starting handle. When the engine fails to start do not keep the choke control out too long or the sparking plugs will become wet with petrol and it will be necessary to remove and dry them. It is important that the accelerator pedal should not be depressed when starting the engine from cold as the effect of the carburettor choke device is upset when the throttle is open. It will usually be found possible to reverse out of the garage on the choke control alone, usually in the intermediate position, without using the accelerator.

Starting in very cold conditions

In very cold weather the oil in the engine and gearbox becomes thick when the car has been standing for some hours. Thick oil causes the engine to be "stiff" and an unusual effort is required to turn the crankshaft. This can be reduced to a minimum by using the recommended oils. It is advisable to free the engine, giving the crankshaft a few turns, using the starting handle. This relieves the load on the starter. Intelligent use of the starter, as described, will greatly prolong the life of the battery. Under these conditions

only, depress the clutch pedal when operating starter, which will relieve the starter motor of the considerable drag in the gearbox.

It is also advisable to add 1½% of engine oil to the petrol in very cold weather. This is at the rate of quarter of a pint of oil to each two gallons of petrol. However, this practice should not be continued excepting under these very cold conditions. The addition of oil to the petrol will improve the lubrication of the cylinder bores, which is desirable when the engine is working in exceptionally cold weather.

Starting with Engine warm or hot

If the engine is warm or hot, it can usually be started without the aid of the choke control If difficulty is experienced in starting when the engine is hot, due to the use of the choke, the mixture may momentarily be too rich, in which case depress the accelerator to the full extent whilst operating the starter with the choke control pushed right in.

When the car has been left standing for some considerable time, the petrol level in the carburettor float chamber may have become rather low due to evaporation. The hand primer on the petrol pump can be used under such circumstances, before the starter is operated, to conserve the electrical energy in the battery, see page 53.

Warming up

In order to minimise cylinder wear the engine should be warmed up quickly, when starting from cold in winter, the engine may be " idled " for a minute to let the oil circulate but it should not be allowed to idle for long periods, neither should the engine be raced up to high speeds.

To accomplish rapid warming up, the engine should not be started from cold until it is desired to drive the car away. After starting, the choke control should be pushed back to the half-way position. A speed of approx. 30 m.p.h. in top gear may be regarded as a desirable warming up speed. Do not forget to push the control right in as soon as the engine will allow, and do not give full throttle until the engine has warmed up. An automatic thermostat is fitted in the cooling system, incorporating a large bye-pass,

which greatly assists in quick warming up. The bye-pass is automatically shut off when the thermostat is fully open and so does not adversely affect the cooling efficiency.

COOLING SYSTEM

In frosty weather some steps must be taken to prevent the cooling water freezing, as water expands when freezing, it causes a great bursting pressure, with considerable risk of cracked cylinders or radiator and consequent leaks. If the garage is not heated the water may be drained, but it is usually more convenient to use an anti-freezing mixture in the cooling system. The cooling system is fitted with a thermostat and there is a risk of the radiator water freezing while the engine is running during the warming up period when the thermostat is shut, even though the car has been kept in a warm garage and water is not frozen at the start of the run.

Draining

For the purpose of draining, drain taps are provided in the radiator bottom tank, water pump body, and at the rear of the cylinder block on the right-hand side.
The drain tap in the water pump body releases a small but very important quantity of water. If the tap has not been operated when draining the system in very cold weather, a segment of ice will form in the pump. Then, when the engine is started, the pump spindle shear pin will break and there will be no drive to the pump impellor. This will result in the cooling water reaching a high temperature as indicated on the water temperature gauge. Should this occur, a repair is urgently required.

Anti-Freeze Mixtures

We recommend owners to use Smith's "Bluecol" non-corrosive anti-freeze in order to protect the cooling system during frosty weather and reduce corrosion to a minimum. Drain sufficient water away, and replace by "Bluecol." If this is attended to particularly when the car is new, corrosion will be checked and result in a clean cooling system. If the anti-freeze is added when the weather has already become cold, then it is advisable to drain all the water away and mix the anti-freeze with water in a watering can. If the anti-freeze is put directly into the

radiator it may take some time to mix with the cylinder jacket water, due to the thermostat preventing circulation until the jacket water is hot.

The recommended " Bluecol " proportions for your car are given below. With this anti-freeze in the cooling water it is unnecessary to drain the system, even in the coldest weather, and one filling lasts the whole winter. " Bluecol " does not evaporate ; therefore it is only necessary to top up with water in the usual manner.

Recommended " Bluecol " proportions for protection from various degrees of frost.

Degrees of Frost, °F	15	25	35
Proportion	10%	15%	20%
Amount of " Bluecol "	2 pints	3 pints	4 pints

Note.—

We recommend that you provide for the cooling system, ample protection against sudden fall in temperature, by using in your car the 20% proportion of " Bluecol."

Caution

Before adding the anti-freeze preparation make sure that the water hose-clips are securely fitted and the cylinder head nuts are tight. If the solution is able to escape through a leaking gasket into the cylinders it may be burnt into a tacky substance capable of doing harm to the engine. However, this could only happen in the rare event of a faulty gasket.

If the car is taken to a garage for any repair which involves draining the radiator it is advisable to state that the radiator contains an anti-freeze, so that the cooling water can be preserved and used again. In cold weather, if a number of short runs are regularly made in the day it is advisable to fit a radiator muff, as this will keep the engine warm and the choke control will not require such frequent use. The radiator muff saves the engine from wear and conserves fuel.

NEW ENGINES

When the car is new, the engine may seem to be somewhat lacking in power due to the working surfaces not having become fully bedded down. This will continue for the first 200 or 300 miles during which time the engine will become gradually " run-in " (with proper use). The power will then improve as the car is used for the first 1,000 miles, and this will be accompanied by a corresponding improvement in petrol consumption. At approximately this mileage, much benefit is gained by having the valves ground in as described on page 55. Although this involves some slight inconvenience in giving attention to a new engine, the trouble is well repaid by the results obtained. Also the engine sump should be drained and refilled with new oil, see page 20.

It is inadvisable to drive a new car fast or to run the engine at high speed in the low gears. The good and lasting bearing surfaces obtainable by careful running in are well worth the patience required to drive the car at only moderate speeds for at least the first 500 miles.

The following table gives the permissible speeds in top gear :—

During the first 250 miles	40 M.P.H.
During the following 150 miles	45 M.P.H.
During the following 100 miles	55 M.P.H.

During the first 500 miles it is inadvisable to exceed the following speeds in the gears :—

In first gear	10 M.P.H.
In second gear	20 M.P.H.
In third gear	35 M.P.H.

When new cars leave the works 3% of engine oil is added to the petrol. The owner could with advantage continue to add

1½% of engine oil (¼ pint to 2 gallons of petrol) during the running-in period. (First 500 miles).

Alternatively, we have found the use of an upper cylinder lubricant to be of advantage, particularly in new engines, and recommended the use of such a lubricant, particularly until the engine is thoroughly " run-in." The lubricant should be mixed with the petrol in the proportions given on the container, or in the case of " Adcoids " add one tablet for every 2 gallons of petrol. Such lubricants may be used with advantage throughout the life of the car particularly during wintry weather.

Running-in compounds containing Achesons Colloidal Graphite are available. They are prepared in a form suitable for addition to the oil in the engine sump. These should only be used during the running-in period for new and reconditioned engines. (First 500 miles.)

DRIVING THE CAR

To obtain a minimum of clutch wear, always start away in first or second gear unless facing down hill, in which case second or third gear may be engaged. If the driver engages a higher gear in order to save a gear change the clutch will have to be slipped unduly, resulting in unnecessary wear.

Gear Changing

The gear lever, situated on the steering column, operates through the system of a sliding rod, connecting rods and levers to the gearbox, and a minimum of effort is required to change from one gear to another. The position of the lever for selection of the various gears is given on page 8. The synchromesh gearbox provides a synchronised easy gear change for all conditions excepting changing down into first gear with the car in motion. This particular gear change is seldom required and changes into first or reverse are mostly made when the car is at rest. Thus 95% of the gear changes are made easily with the Triumph synchromesh gearbox.

When changing into a synchronised gear the movement should be slow and deliberate. **DO NOT HURRY.** Upon its first movement the gear lever will encounter a slight resistance from the synchronising cones. The continuance of a steady pressure will synchronise the gears and the resistance will be overcome as the driving dogs slide into engagement.

The gear lever must always be moved right home to secure full engagement.

Do not attempt to engage reverse gear whilst the car is travelling forward.

Using the Brakes

The four wheel hydraulic brakes are very powerful and require only a small effort to slow down the car. Do not apply the brakes harshly except in emergency as this only causes undue tyre wear and discomfort to passengers.

Engine as a brake

When travelling down-hill using the engine as a brake, *i.e.* with gear engaged, do not switch off the ignition. This would allow unburnt mixture to accumulate in the exhaust system, and when switching on again, there is a likelihood of an explosion with consequent damage to the system.

REGULAR INSPECTION

Maintain the oil level in the engine sump at the top mark on the dipstick. Wipe the stick before taking a reading (see Fig. 4).

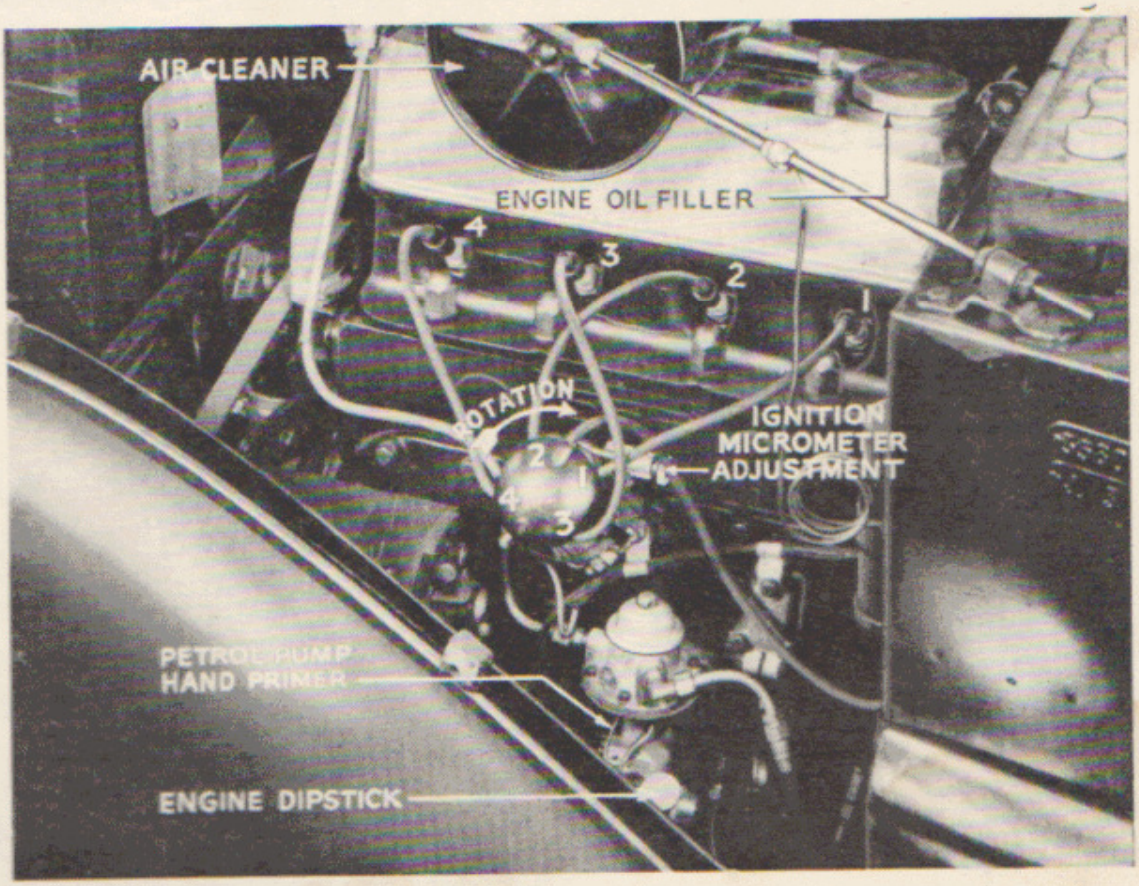


Fig. 4. View under bonnet (Saloon) L.H. side.

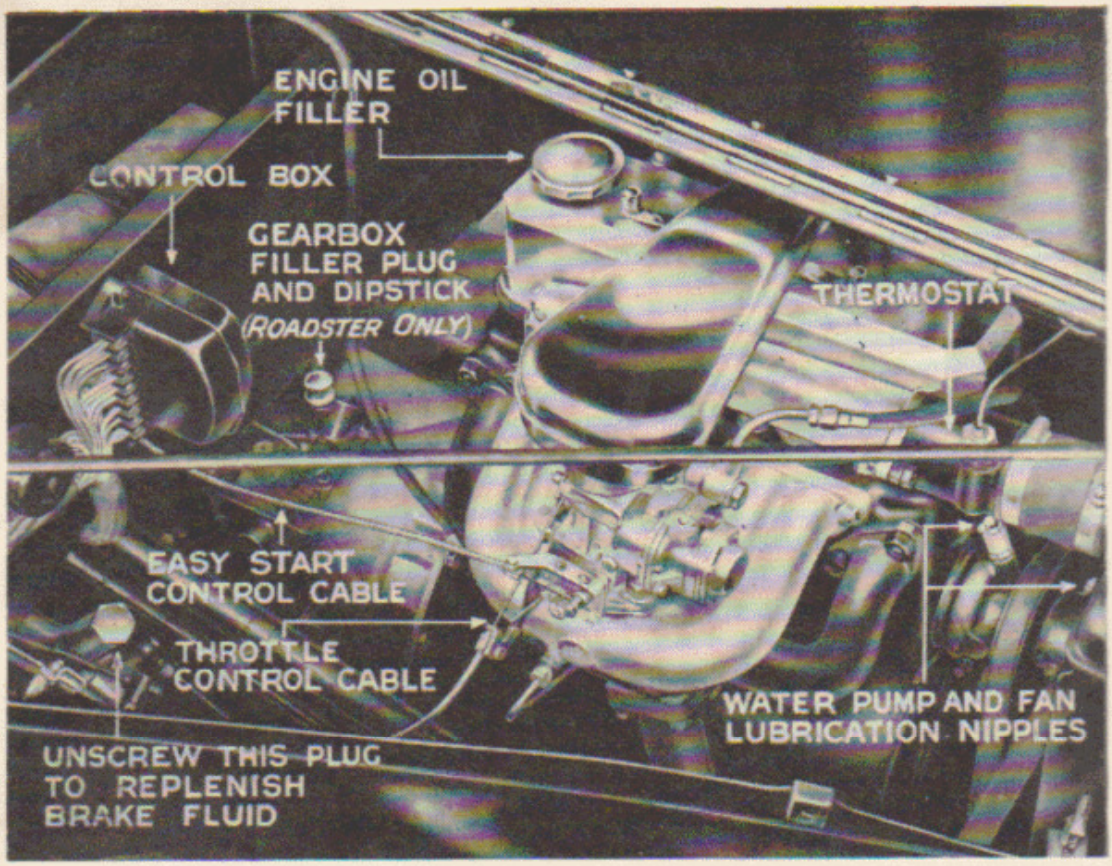


Fig. 5. View under bonnet (Roadster) R.H. side.

The water level in the radiator should occasionally be examined, and if necessary replenished. It is advisable to use clean rain water when replenishing the radiator as the use of hard water results in a deposit on the inner side of the cooling surfaces, thus reducing efficiency.

Tyre pressures should be checked weekly by application of a gauge directly to the valve. The correct pressures are given on page 32.

The acid level in the battery should be examined monthly. The battery is accessible on lifting the bonnet on the left-hand side.

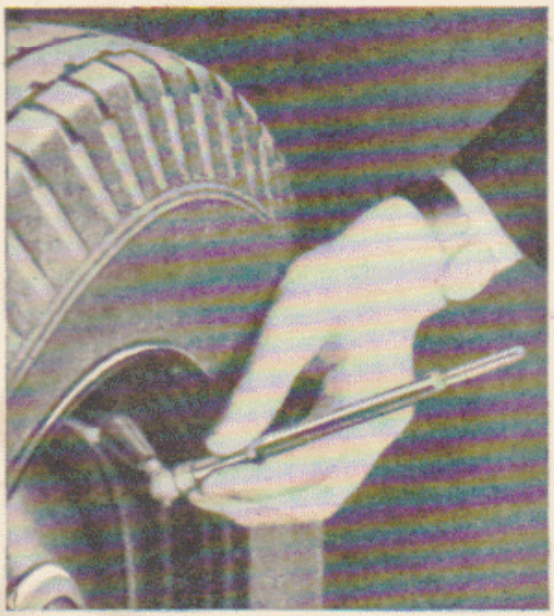


Fig. 6. Using tyre pressure gauge.

The acid level should be maintained so that it just covers the top of the separators.

Use only distilled water when replenishing (obtainable from the local chemist or garage). Do not overfill or the acid may splash out and do damage.

Keep the filler plugs screwed tight to prevent leakage of acid.

LUBRICATION

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

For the recommended periods of lubrication see the lubrication chart folded inside rear cover of this book. The correct lubricants to be used are given in the adjacent table.

Grease Gun

One grease gun is supplied in the tool kit and should be filled with the grease recommended on page 94 for wheel hubs. This grease can be used for general chassis lubrication as well as for hub bearings. We also specify an alternative grease which is recommended as being superior for general chassis lubrication but is unsuitable for wheel hub lubrication, because, due to its oily nature, it may escape from the hub bearing on to the brake linings. Thus any car owner desiring to use this type of lubricant would require an additional grease gun for general chassis lubrication, retaining the other gun for wheel hub lubrication only.

The steering box is lubricated through an oil nipple requiring the application of an oil gun filled with one of the recommended steering box oils. This requires a third gun to complete the kit and so avoid the inconvenience of interchanging lubricants in one gun.

Whilst the above applies to the owner desiring to attend to the lubrication of his car personally, most owners will prefer to have these operations carried out by a Triumph Agent.

THE NECESSITY FOR HIGH QUALITY OIL.

There are many reputable oils on the market and many more " cheap " oils of indifferent quality. The use of high quality lubricant is an essential safeguard. It has to be sufficiently fluid to give immediate lubrication when starting from cold and to maintain sufficient body during a fast run on a hot day. A first class oil can withstand the combustion flames playing on the cylinder walls and it will not form an undue amount of carbon in the combustion heads. It will keep down the rate of cylinder and bearing wear so that the engine will maintain its performance over many

years. In this way, the money spent on high quality oil represents a valuable insurance against premature old age and unnecessary breakdowns. The lubricants which we recommend are obtainable everywhere and have maintained a uniform high standard of quality over many years. They can be trusted to withstand all demands made upon them and possess a margin of safety which is completely adequate.

Obtaining the correct Grade

In ordering your oil be careful to state the make as well as the grade. For example, never ask for XL, A, " Double," '30,' or 'M,' but always ask for **Castrol XL, Mobiloil A, Double Shell, Essolube '30' or Price's Motorine 'M'** according to the brand chosen and see that the oil is drawn from a container bearing the well known trade mark. For correct lubrication see page 94.

Draining

To drain the engine, gearbox or 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 warm after a run of at least 10 miles. Under these conditions impurities in the oil will be well mixed and will flow away with the oil during the draining process.

ENGINE

We recommend low viscosity oils for use in the engine sump. These oils, whilst maintaining sufficient body when hot, also are fluid enough to give early lubrication to cylinder walls, etc., when starting the engine from " cold," a quality not possessed by the " heavier " oils in sufficient degree for use in modern engines. They are each of the correct viscosity and character to afford complete lubrication protection. Additives which dilute the oil or otherwise impair this protection must NOT be used.

We therefore stress the value of using only the recommended oils. After many thousands of miles running the rate of oil consumption will increase. When the rate becomes higher than one gallon per 1,000 miles, it will be desirable to use the next heavier grade of the brand of oil you normally employ.

The working parts of the engine are lubricated by oil contained in the sump, drawn through a filter by the gear type pump and delivered under pressure to the crankshaft journals,

crankpins, connecting rod little ends, camshaft bearings, tappet guides and rocker shaft. The spray from the bearings is ample for efficient lubrication of the pistons, cams, valves and timing chain. Suitable oil return worms are embodied at the front and rear ends of the crankshaft which effectively prevent oil leaking along the shaft.

The regular addition of oil not only maintains the correct level, but also tends to keep up the quality of the lubricant, however, gradual deterioration takes place until it becomes advisable occasionally to drain the sump and refill with fresh oil. If the engine is found to require very little oil for replenishment, then it is desirable to drain the oil every 5,000 miles and refill with fresh oil.

Once every year it is advisable to remove the sump and thoroughly clean out with petrol. Dry off with a smooth rag or good quality brush taking care not to let any fluff or hairs remain, and leave for a quarter of an hour whilst the remaining film evaporates before replacing the sump. In the meantime, brush with petrol the gauze intake filter.

Do not forget to refill with clean oil when the sump is replaced.

Caution

Don't remove the oil gauze which surrounds the pump as the set screws also hold the pump cover in place. Do not attempt to clean out the sump with paraffin or petrol unless it is previously removed as any remaining will tend to dilute the oil.

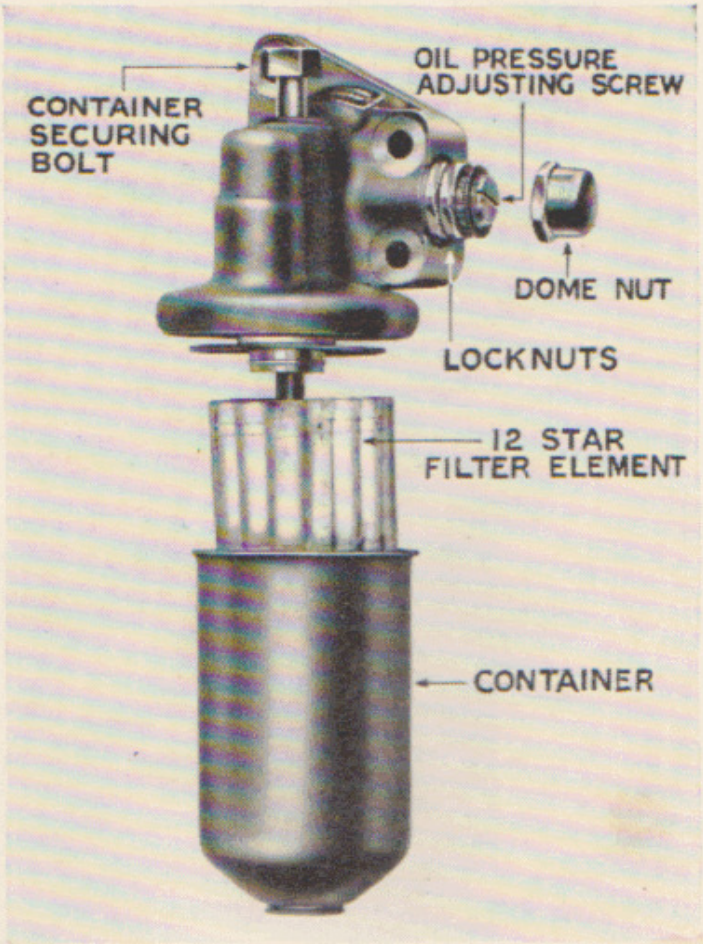


Fig. 7. Tecalemit oil cleaner.

The Tecalemit Oil Cleaner

The Tecalemit Oil Cleaner has been designed to filter to a very fine degree all the oil before it reaches the bearings. The only attention required of the car owner is to see that the special felt filtering element is removed and that a new 12 star element is fitted every 10,000 miles.

It is essential that these simple operations be carried out at the specified periods to ensure the full filtration of the oil. If the filter is neglected an emergency balance valve comes into operation allowing unfiltered oil to pass the filter.

To renew the filter element unscrew the bolt at the top, when the container and element will come away from the body. Wipe out the container to remove foreign matter trapped by the filter, using a non-fluffy cloth and inspect afterwards to make certain that no cloth fibres remain behind.

It is desirable to discard the old container washer, replacing it with a new one, everytime the element is renewed. When replacing do not tighten the bolt more than is necessary to obtain an oil tight joint.

Approximately one pint of oil will be lost due to the removal of the container and the sump should be topped up with new oil after assembly.

The filter container should not be disturbed once a new element has been fitted, until element renewal is required; to do so invites the hazard that the accumulated dirt on the outside of the element may be allowed to contaminate the inside of the element and thus be carried into the bearings when the engine is re-started.

Ignition Distributor, see Fig. 8.

To be carried out every 5,000 miles. The cam should occasionally be smeared lightly with engine oil. A pronounced squeak occurs when the cam is quite dry. Withdraw the

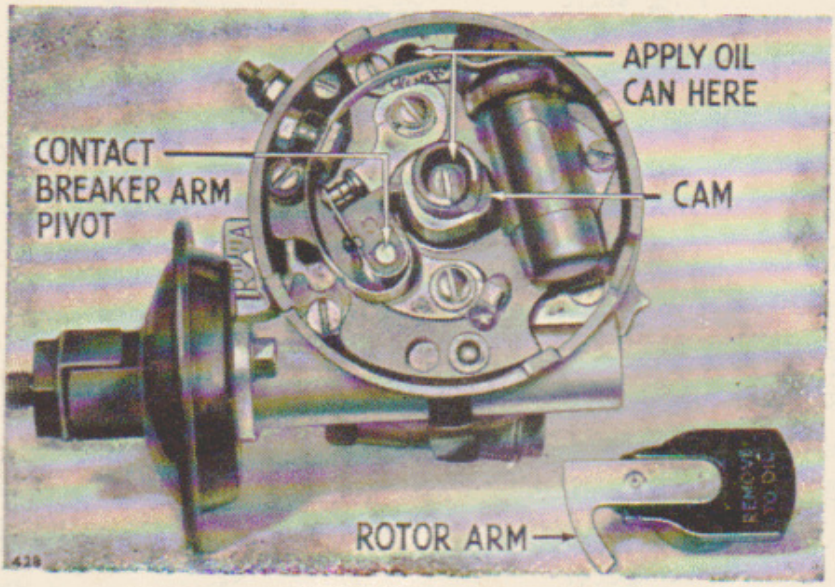


Fig. 8. Ignition distributor.

moulded rotating arm from the top of the spindle (care should be taken because this part is made of a brittle material) but do not remove the hollow screw exposed to view. Apply, by means of oil can, a few drops of oil down the hole in the screw, this will lubricate the distributor spindle. Also add a few drops of oil around the edge of the screw to lubricate the cam bearing. At the same time, place a single drop of oil on the contact breaker arm pivot. When replacing the rotor arm make sure that it is pushed on as far as possible. The moving parts of the automatic advance mechanism should be lubricated with winter grade engine oil. This can be squirted through the gap between the cam and the base plate.

Water Pump and Fan

There are two nipples, one on the water pump and one on the fan which should receive attention every 1,000 miles. Apply the gun to the nipple and give **two strokes only.**

Dynamo and Starter

The bearings at the driving end of the dynamo are packed with grease before leaving the works. Once very 10,000 miles unscrew the cap of the lubricator at the commutator end, see Fig. 50. If the lubricating wick is dry, the cap should be refilled with vaseline. After a considerable mileage the dynamo should be removed for cleaning, adjustment and repacking of the bearings with grease. This should be done preferably by the nearest Lucas Service depot.

If, for any reason, the pinion of the starter motor does not engage with the flywheel teeth, examine the screwed sleeve on the armature spindle to see that it is free from dirt ; if necessary wash over with paraffin. Occasionally squirt a few drops of thin oil through the starter spring which protrudes through the clutch housing. The starter is fitted with special bearings which require no lubrication.

Air Cleaner and Silencer

The air cleaner gauze should be re-oiled with engine oil in order to ensure effective filtering of the air. Every 5,000 miles it is advisable to remove the air cleaner and wash in petrol, particularly the gauze, after which soak the gauze in oil and allow to drain before finally wiping over and refitting. Air entering the carburettor passes through the central tube. Sound waves passing out of the carburettor would also ordinarily return through this tube and become audible in the car.

In the Triumph Silencer however, they pass into the resonating chambers and through passages, thus setting up counter waves which eliminate or considerably damp the original waves. Consequently no sound waves return through the air intake tube. Dust from the incoming air adheres to the oil wetted woven mesh.

CLUTCH SHAFT BEARINGS

The oil-can may occasionally be applied to the clutch shaft bearings (one at each side of the clutch housing). This operation requires a pump type of oil-can.

CLUTCH PEDAL BEARING

A single nipple provides lubrication for the pedal bearings, see Fig. 9, it is accessible from underneath.

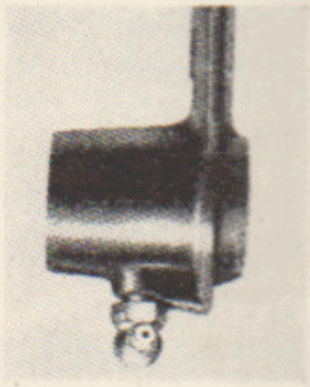


Fig. 9. Pedal bearings.

GEARBOX

The correct oil only should be used in the gearbox as the use of very thick oil or grease will spoil the operation of gear changing.

To check the oil level first remove and wipe clean the dipstick, see Fig. 5 for the roadster and Fig. 10 for the saloon. Then insert the stick and push it fully home before withdrawal for reading. The correct level is to the top mark. The dipstick orifice is also the gearbox oil filler.

Fig. 10. Gearbox dipstick and filler plug (Saloon).

REAR AXLE

Special care is necessary when using "Extreme Pressure" Oils

This type of oil is required only for rear axles and steering boxes. The continued increase in power output obtained from modern Triumph engines, has raised the tooth pressure of the spiral bevel final drive to a point where the use of "extreme pressure" lubricants becomes advisable.

While such oils will withstand two or three times the load compared with ordinary gear oils, yet special care is necessary, due to the compounding agents which must be used in order to obtain the extreme pressure characteristic.

Different oils are compounded in various ways, and so, **these oils must not be mixed,** or they may form undesirable deposits. Further, after some time, the oil may lose its ability to withstand extreme pressures. For these reasons, **we recommend complete draining and refilling every 5,000** miles.

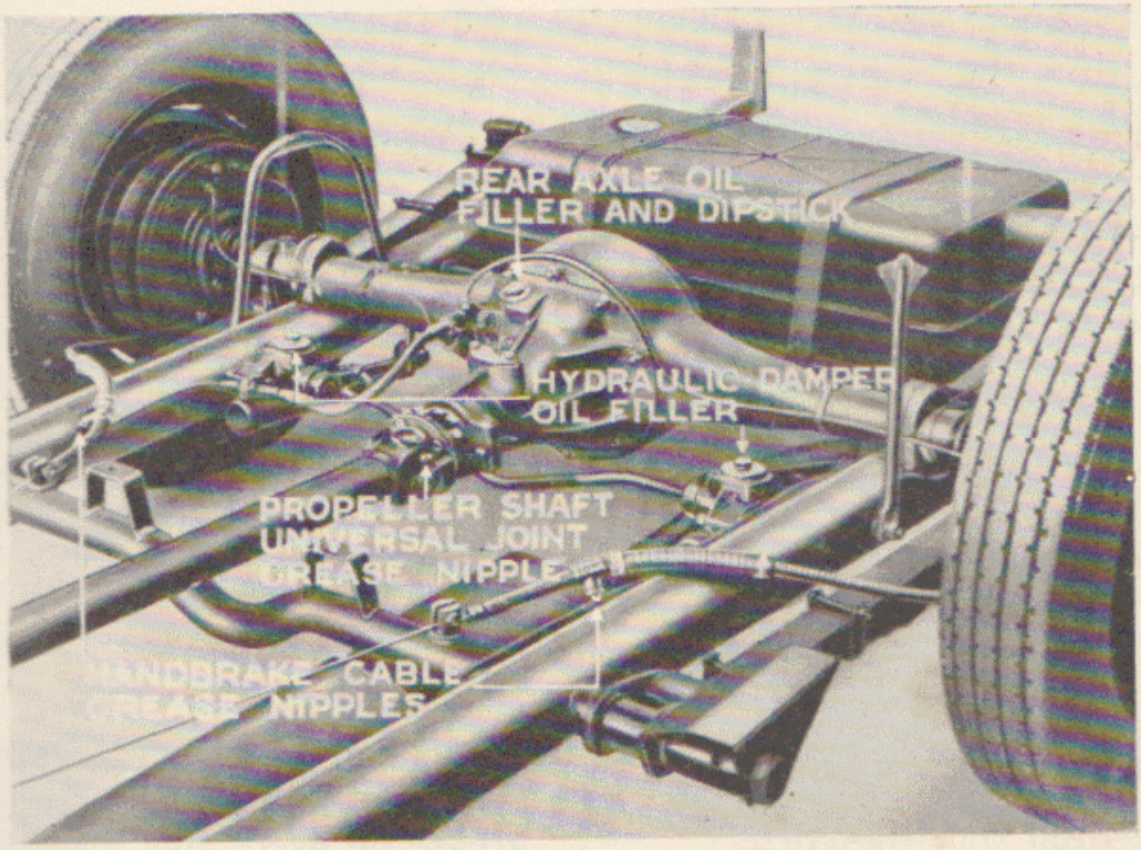


Fig. 11. Rear of chassis.

It is desirable to check the oil level once or twice during this period to guard against loss of oil in the rare event of an oil leak.

The filler is accessible by removing the cover below the seat cushion, on the saloon only. In the case of the roadster remove the domed axle cover in the rear compartment. Clean away mud before unscrewing the filler plug to avoid grit falling into the axle. A dipstick is provided to indicate the oil level (see Fig. 11) and should not be screwed in when testing the oil level, but rested on top of the threads. The correct level is to the mark on the dipstick.

BRAKES

It is important that the filler cap on the brake fluid reservoir, integral with the master cylinder (see Fig. 44, page 63), should be removed every 1,000 miles and the fluid level checked and topped up if necessary. The reservoir should be kept almost full, and never less than half full. See page 94 for the correct fluid.

HAND BRAKE CABLES AND CONDUITS

To assure free, efficient action, it is essential that the hand-brake cables be kept well lubricated, particularly where they are enclosed by the conduit.

A grease nipple is fitted about midway in the length of each conduit, to which the grease gun should be applied every 5,000 miles. It is important for satisfactory service to use only the recommended lubricant for this purpose.

During the winter months it is very important to keep the cables regularly lubricated as this prevents the entry of water which on cold nights will freeze, thus locking the brake cables.

During the lubrication of the cables, grease is forced both ways and the gun should be pumped until grease exudes at the end of the conduit.

Brake Cross Shaft and Brake Connections

The plates which carry the cross shaft should receive occasional attention with the oil can (see lubrication chart). Similar attention should also be given to the various connections in the operating linkage.

WHEEL HUBS

The front and rear hubs require a small but regular supply of grease as specified on page 94, every 5,000 miles. It is essential that the correct type of grease be used, this has a high melting point. Five strokes of the hand grease gun will normally be sufficient, as it is inadvisable to overload the hubs with grease.

The grease should not be used from a machine, as the quantity of grease supplied is not measured, also it is unlikely that the machine reservoir contains the correct grade of grease.

Front Hubs

To grease the hub bearings, remove hub cap and small plug in hub, screw in the spare nipple provided in kit (see Fig. 12). Do not forget to replace the plug after greasing.

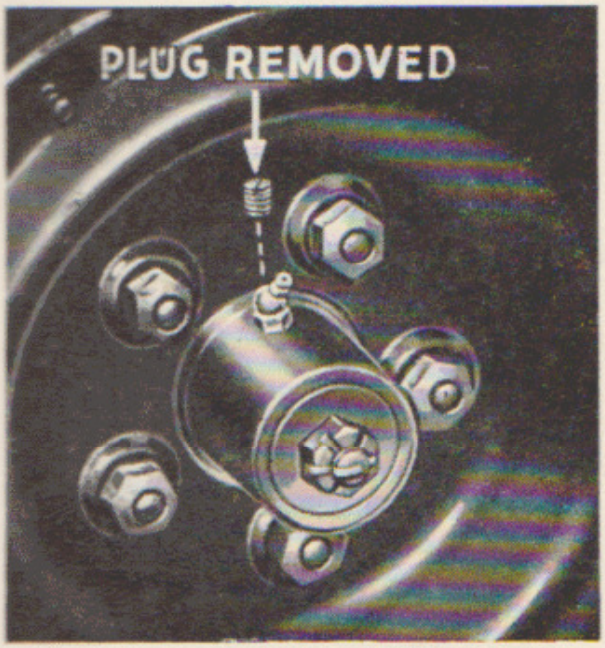


Fig. 12. Front hub lubrication.

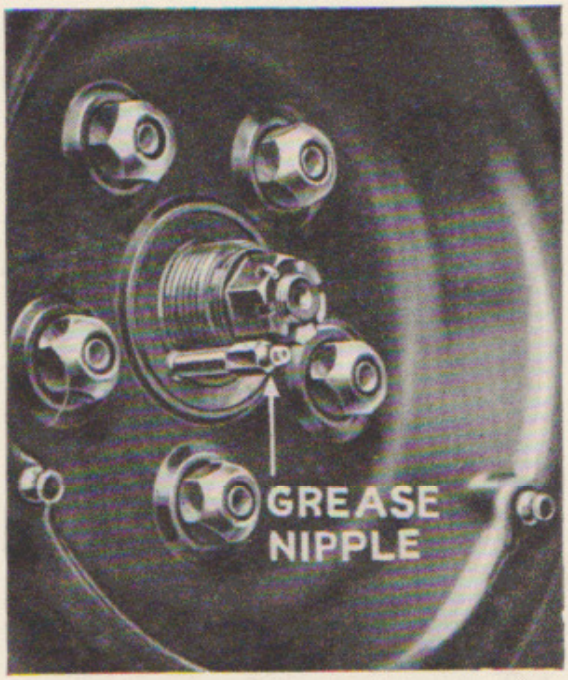


Fig. 13. Rear hub lubrication.

Rear Hubs

These bearings are lubricated via nipples (see Fig. 13) accessible on removal of the hub caps.

Hub Cap Removal and Refitting

Engage the special lever provided in kit, in one of the wheel depressions (see Fig. 14), and lever off the hub cap.

To refit cap, place the cap edge over two of the securing studs and give a sharp tap with the hand to the cap, towards the third. This will spring the cap into the correct position.

Fig. 14. Hub cap removal.

PROPELLER SHAFT

The universal joints are of the needle roller bearing type and each is fitted with a nipple for greasing. A nipple is also fitted to the front end of the shaft for lubrication of the sliding

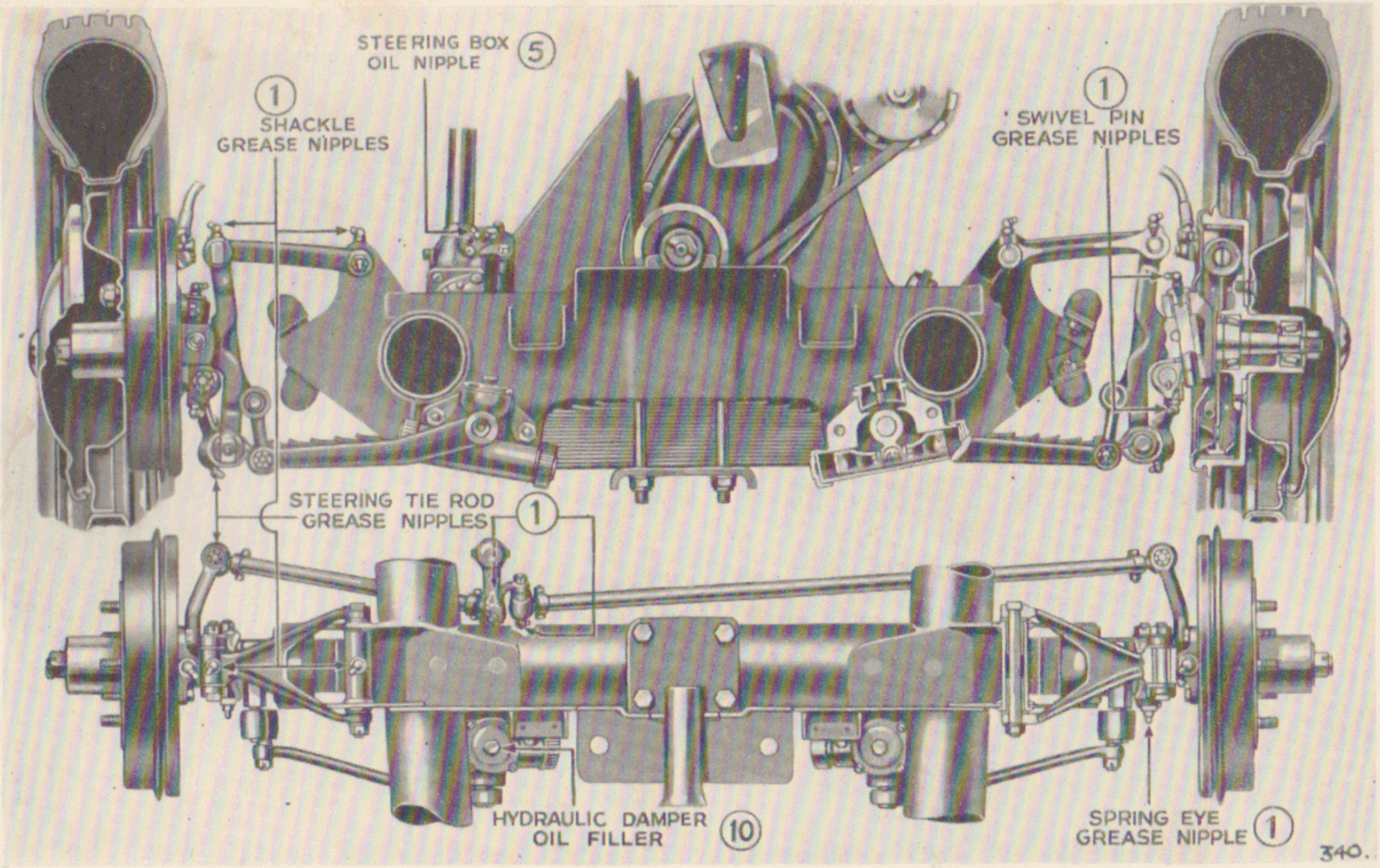


Fig. 15. Front suspension lubrication (*The numerals indicate the attention periods in thousands of miles*).

splines (see Fig. 16). The three nipples should receive attention with the grease gun every 5,000 miles, using grease recommended on page 94.

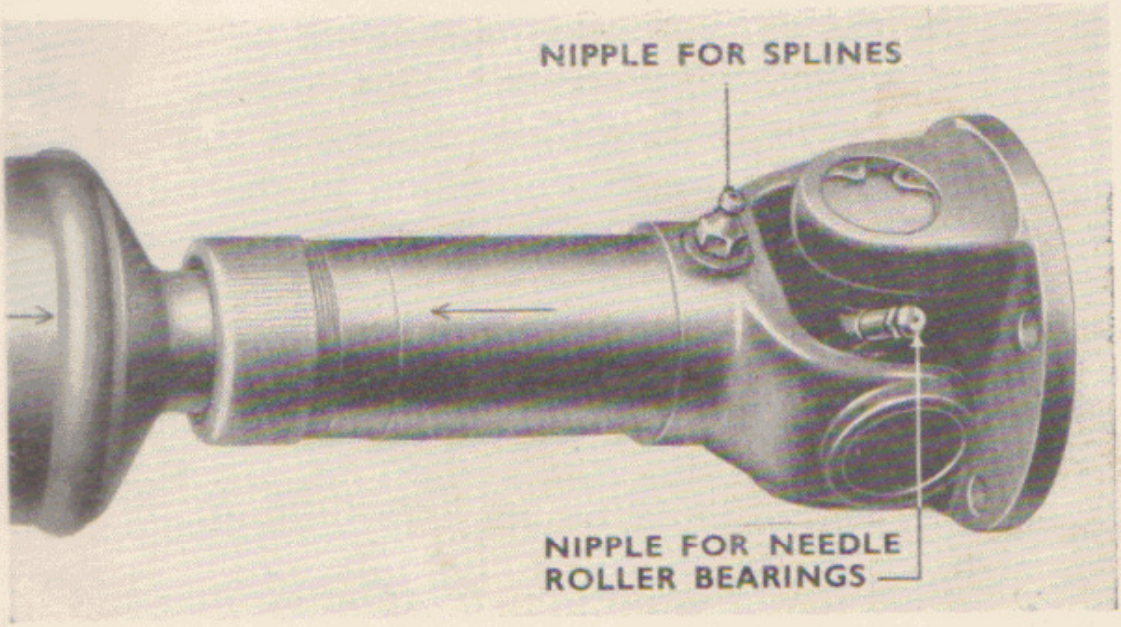


Fig. 16. Propeller shaft lubrication.

FRONT SUSPENSION

Nipples are provided for the lubrication of the swivel pin bearings, suspension pivots, ball joints and wish-bone shackles (see Fig. 15). To maintain the best riding qualities of the independent suspension it is essential that it is properly and regularly lubricated. The distance of 1,000 miles between lubrication of the suspension pivots should be regarded as a maximum.

ROAD SPRINGS

The spring blades should not be allowed to get rusty as this will prevent the correct working of the springs and provide a hard suspension.

The easiest procedure is first to clean the springs, and then preferably paint with new or used rear axle or engine oil, or failing this use a special penetrating oil which may be obtained for the purpose. Service stations are often equipped to spray the springs with penetrating oil.

It is the area around the tips of the blades which most requires the lubricant, as it is at these points that one blade presses upon the next. The blade clips should also be oiled. Lubrication of the blades is particularly important for the front spring.

The front spring has bronze bushes which are lubricated via grease nipples. " Silentbloc " bushes are fitted in all the rear

spring eyes. Don't lubricate the " Silentblocs " as they contain rubber.

Each " Silentbloc " is formed of two steel tubes, one within the other, the annular space between being filled with tough rubber under great radial pressure. This construction enables them to carry heavy loads without distortion and yet remain relatively free to twist by elastic motion in the rubber, there being no slip between the rubber and the steel tubes.

STEERING

An **oil** nipple is provided for lubrication of the steering box (see Fig. 15). The grease gun is used for the steering ball joints. These joints should be given regular attention as the duty is high.

HYDRAULIC DAMPERS

The hydraulic dampers fitted are of the piston type and require replenishing occasionally. Use only the special fluid recommended, as it is blended to give the requisite viscosity.

Always clean the area around the plug before removing it, this will lessen the risk of grit falling into the chamber after removal of the plug.

The filler plug is situated in the centre of the chamber cover. Top up until the fluid is level with the top of the orifice, then replace plug.

It is essential that the recuperator chamber must not be allowed to become empty, otherwise air will enter the working chamber and impair the action of the damper.

GEAR CHANGE MECHANISM

The only attention necessary is to ensure that the mechanism is regularly lubricated. For this purpose a grease nipple is provided in the bearing on the side of the control column and an oil hole is provided in the bell crank levers, situated lower down on the inside of the chassis frame.

The oil can should be applied to the other working joints to ensure quiet and easy functioning.

HINGES, CONTROLS, DOOR LOCKS, ETC.

There are several small control joints which should be given occasional attention with the oil can. Bonnet catches, hinges and door locks should be smeared with oil occasionally.
The connections on the hand brake and ratchet mechanism, the clutch operating links, etc., all require attention to allow the controls to work freely and prevent unnecessary wear.

ACCELERATOR CONTROLS

Apply oil to cable at each end of the casing and work the pedal to spread the oil inside casing.

DIRECTION INDICATORS

A little thin oil should be applied by means of a small brush to the catch pin between the arm and the operating mechanism. This can be done when the indicator is switched up.
Also withdraw the screw on the underside of the arm end and slide off the arm cover. Place the connecting wire to the bulb on one side and apply a drop of thin machine oil to the lubricating pad at the top of the arm. To replace the arm cover, slide it in an upward direction so that the side plates engage with the slots on the underside of the spindle bearing and secure with the screw.

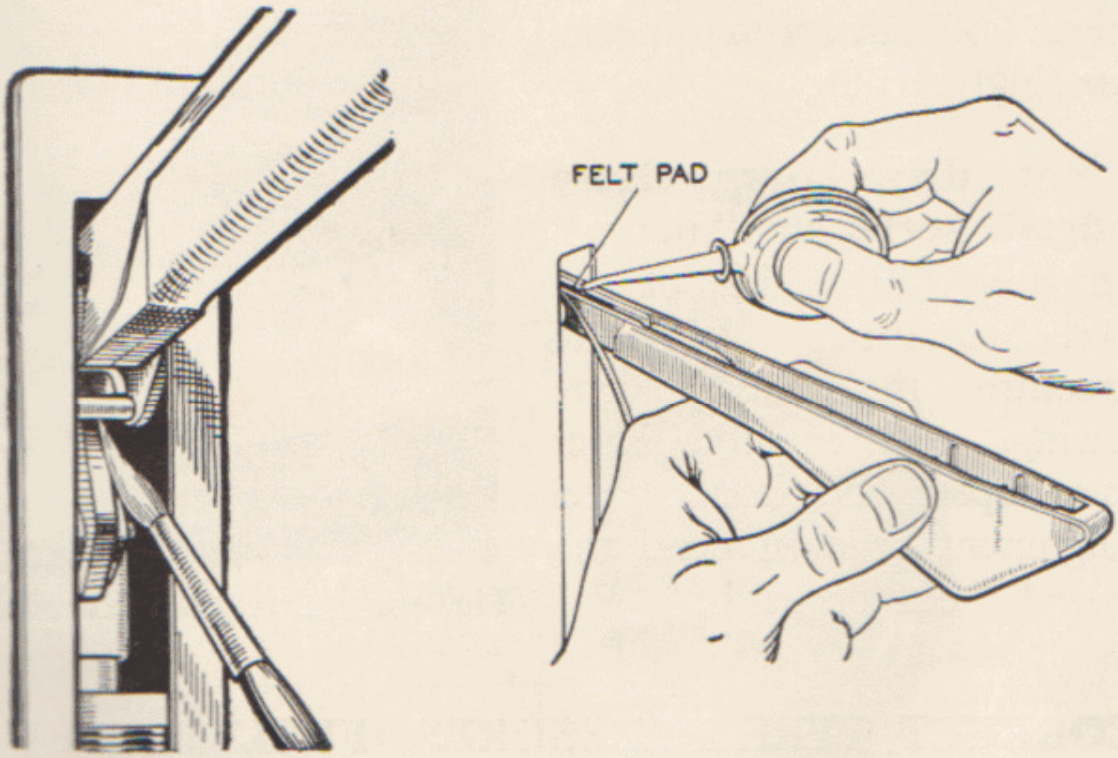


Fig. 18. Lubrication of direction indicator mechanism.

WINDSCREEN WIPER MOTOR

The windscreen wiper motor is adjusted and packed with grease before leaving the works and therefore requires no additional attention.

Maintain the correct inflation pressure by weekly tests with a gauge applied directly to the valve. The maintenance of correct tyre pressure is a large factor in tyre life and the steering of the car.

Tyres loose their pressure due to diffusion, even though there is no porosity or leakage due to a puncture or faulty valve. The loss varies from 1 to 3 lbs. per sq. in. per week and must be made up if the tyre is to give proper service.

Examine the tyres occasionally for flints or other road matter which may have become embedded in the tread. If the car is driven where tacks or short nails may be picked up, these also may be found buried in the tread. If these are left in they may eventually work through the cover and puncture the tube. Fill up any large holes with a suitable compound, obtainable for the purpose.

Oil should not be allowed to get on the tyres. If any should accidentally do so, clean off by using petrol sparingly.

Do not drive over sharp edged kerbs or "bump" them with the side of the tyre, as this is liable to fracture the cotton tyre casing, and in the latter case upset the front wheel alignment or even bend the wheel "out of truth."

Fig. 19. Tyre tread examination.

CORRECT TYRE PRESSURES (FULLY LADEN)

	Front	Rear
Roadster	**22 lb./sq. in.**	**24 lb./sq. in.**
Saloon	**22** „ „	**26** „ „

It is assumed that the above pressures are maintained by weekly attention. If the owner is able to check the pressures only

every two or three weeks, then it is advisable to inflate the tyres by an additional 2 lb./sq. in.
On the other hand, it is permissible for a more comfortable ride, when habitually carrying only two persons, to run with the rear tyre pressures 2 lb./sq. in. lower than the "fully laden" recommendation providing these are checked weekly.

STEERING VIBRATION

This can occur due to uneven tread wear. If the tread is found to be worn unevenly, change the front wheels to the rear and vice versa.

WHY TYRE RESULTS VARY

Speed. Car owners vary greatly in the speed at which they habitually drive. The rate of tread wear at 50 m.p.h. is double that at 30 m.p.h.

Rapid Acceleration and Cornering. During wheel slippage caused by rapid acceleration or severe cornering, excessive tread wear takes place due to the abrasion of the tyre against the road surface.

Braking. Some owners "drive on the brakes." It is established that where this practice is adopted, and especially if stops are frequent, the rate of tyre wear increases considerably.

TYRE FITTING AND REMOVAL

To remove tyre. Remove all valve parts and push both cover edges into the base of the rim at the part diametrically opposite the valve, then lever the cover edge near the valve over the rim edge. When this operation is correctly carried out the cover edge comes easily over the rim.
Inextensible wires are incorporated in the edges of wired type tyres. Therefore do not attempt to stretch over the rim the wire edges of the tyre cover.

Fig. 20. Tyre removal.

To fit tyre. Push one edge of the cover over the edge of the rim. It will go quite easily if the part first put on is pushed right down into the rim base.

Very slightly inflate the inner tube—do not distend it—place it in the cover with the valve through the hole in the rim. (**Take care that the valve which is fitted in the side of the tube is on the correct side of the rim.**)

Fit the second edge of the cover, commencing at a point diametrically opposite the valve, and push the edge down into the base of the rim.

Small levers may be gently used to ease the last few inches over the rim edge. Be careful not to nip the tube.
Whilst inflating, see that the edges of the cover are seated evenly round the rim ; check by the line on the cover.

FRONT WHEEL ALIGNMENT

The 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.

" **Toe-in** " or " **toe-out** " is the amount by which the front wheels are inclined from parallel.

The tie-rod tubes are threaded at both ends, that at the steering drop-arm end having a right-hand thread and at the steering lever end a left-hand thread. Revolving the tube will, therefore, either shorten or increase the ball joint centres, thus altering the wheel alignment.

Each tie-rod tube is prevented from rotation by a bolted clamp at each end.

CORRECT WHEEL ALIGNMENT

Wheels set parallel.

To Check and Adjust Wheel Alignment

Jack up each front wheel in turn until just clear of "ground." Spin wheel to test for run-out. Set wheel so that maximum run-out is at the top. Lower and remove the jack.

This operation will tend to correct for errors which might otherwise occur due to wheel run-out.

Set the steering in the "straight ahead" position and measure the distance between the two front wheel rims at a height

above the ground approximately equal to that of the wheel hubs. Take this measurement both in front of and behind the hub centres. The amount by which the front measurement is more than the rear is termed "toe-out." When the wheels are parallel, the measurements are equal.

Saloon. If adjustment is found necessary proceed as follows :
Slacken the clamp bolts on the left-hand tie-rod tube. Revolve the tie-rod tube clockwise to "toe-in" or anti-clockwise to "toe-out" the wheels, the direction of rotation being viewed from left-hand road wheel.

Roadster. Slacken the clamp bolts on the right-hand tie-rod tube. Revolve the tie-rod tube clockwise to "toe-in" or anti-clockwise to "toe-out" the wheels, the direction of rotation being viewed from the right-hand road wheel.

One complete turn of the tie-rod tube will alter alignment by approximately $\frac{3}{8}$" measured at the wheel rims.

When adjustment is complete ensure that the ball joints are in the centre of "swing" before securely tightening tie-rod tube clamps. The clamps must of course be positioned as shown in Fig. 15 to avoid any interference.

THE JACK

A screw jack is provided which is adapted to lift any wheel of the car as required.

Remove the plug and fit the jack in position as shown, making sure that it is right home in its socket, before operating the handle. Apply the handbrake or chock the wheels which will remain on the ground, before using the jack.

To remove hub cap for wheel removal, see page 27.

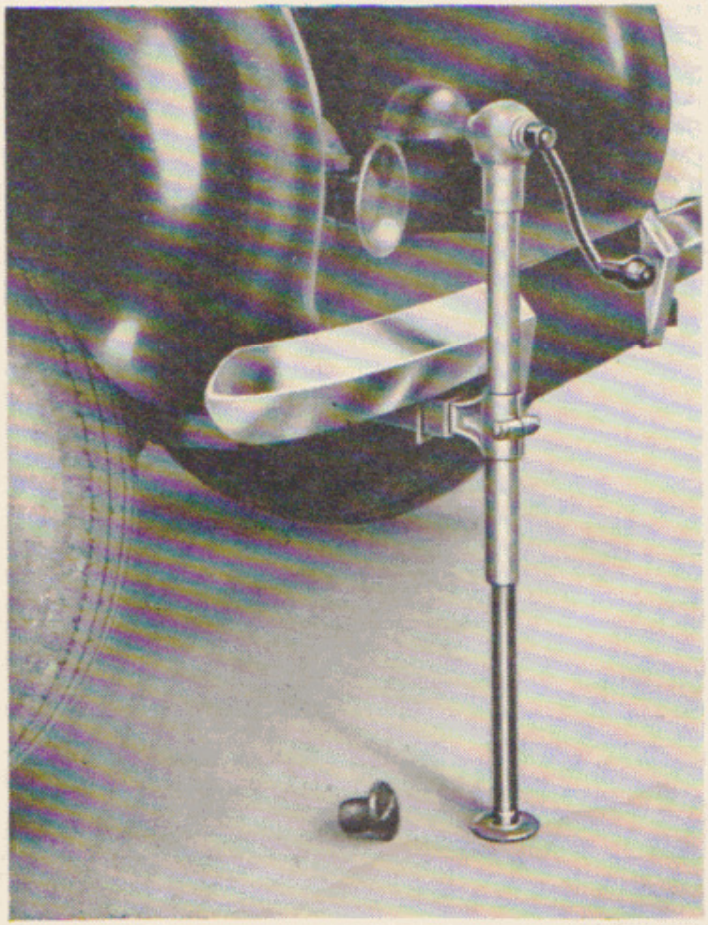


Fig. 21. Jacking the car.

CARE OF BODYWORK

The " finish " used for Triumph coachwork is remarkably durable but in order to retain the lustre of the finish, it is necessary to take a little trouble in cleaning and polishing it occasionally.

Although dust may be removed with a duster, yet if it has been wet, it is advisable to clean off with 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. All chromium parts should be cleaned frequently with a little soap and water, finished off with a damp chamois leather, and then be polished with a soft dry rag. If, due to neglect, the plate becomes spotted it is necessary to use a chromium plate cleaner. The radiator grilles should be kept smart in appearance in the same manner.

Washing alone will not keep up the brilliance of the paintwork and polishing with a suitable polish, specially prepared for this purpose, is advisable. Occasional removal of the " traffic film " which accumulates over the finish is well worth while, and special cleaners for the purpose are available. The finish will improve in appearance if properly looked after.

Tar is best removed before it has had time to set. This may be done by the aid of a little paraffin or petrol. However, it often happens that tar becomes firmly attached, and attempts to remove it are made when the car is being cleaned. Special tar removers are available for this purpose which are designed to dissolve tar without damage to the parts.

For parts requiring lubrication, see Page 31.

For example, if the door hinges are left unlubricated they will eventually wear and cause the door to fall out of proper location with the door catch and dovetail. This leads to door rattles which can be avoided by careful attention to proper lubrication.

The interior of the body should be dusted occasionally, and the carpets be taken out, shaken and brushed. Grime may be removed from the leather upholstery by the application of a little soap and a damp cloth, followed by a final wipe down with an almost dry sponge or wash-leather. When a vacuum cleaner is available it can be used with advantage to help clean the interior of the car.

DOOR ADJUSTMENT

Saloon

The doors are provided with rubber buffers and dovetails, for the purpose of preventing rattle and governing the pressure on the door lock bolt when the door is closed. The buffer and combined dovetail lock plates are adjustable so that when wear eventually takes place they can be repositioned. This adjustment should preferably be carried out by a coach fitter.

Roadster

The doors are prevented from rattling by buffers and rubber mounted dovetails. The lock plates are non-adjustable but the dovetail rubber mounting may be tightened upon removal, if wear eventually takes place.

FRONT SEAT ADJUSTMENT

The front seat is adjustable for the leg length by lifting the knob (which is situated below the front of the seat) and sliding the seat to the desired position. Release the knob to engage dog in slot provided.

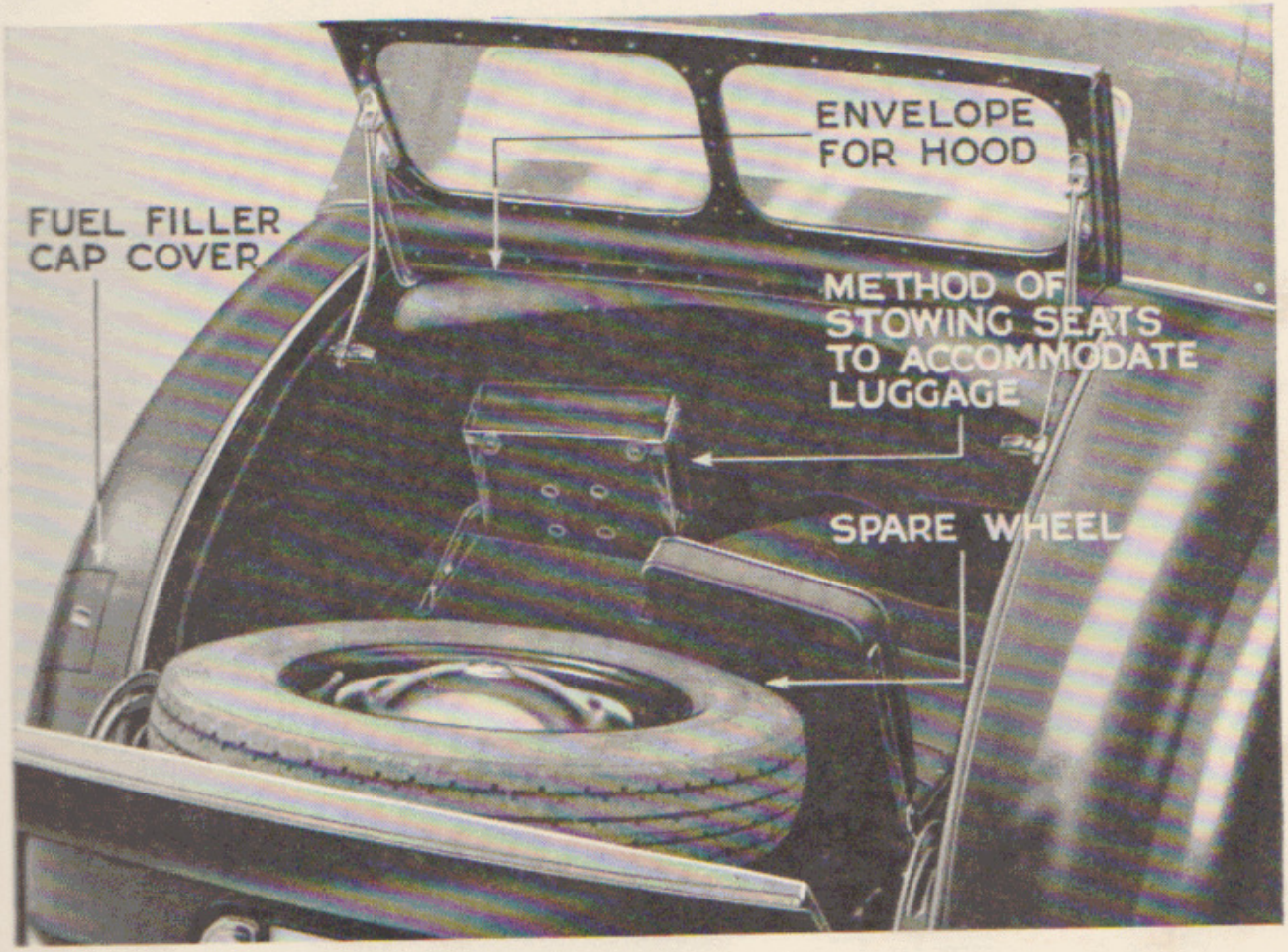


Fig. 22. Rear view, roadster.

SPARE WHEEL AND TOOL COMPARTMENT

Roadster

The spare wheel, complete with hub cap, is located on the inside face of the rear hinged panel. The wheel is secured

by three nuts and the cap may be levered off as described on page 27, with the tool provided. The tools are located in clips on the front of the dash and are accessible on lifting the bonnet (see Fig. 23).

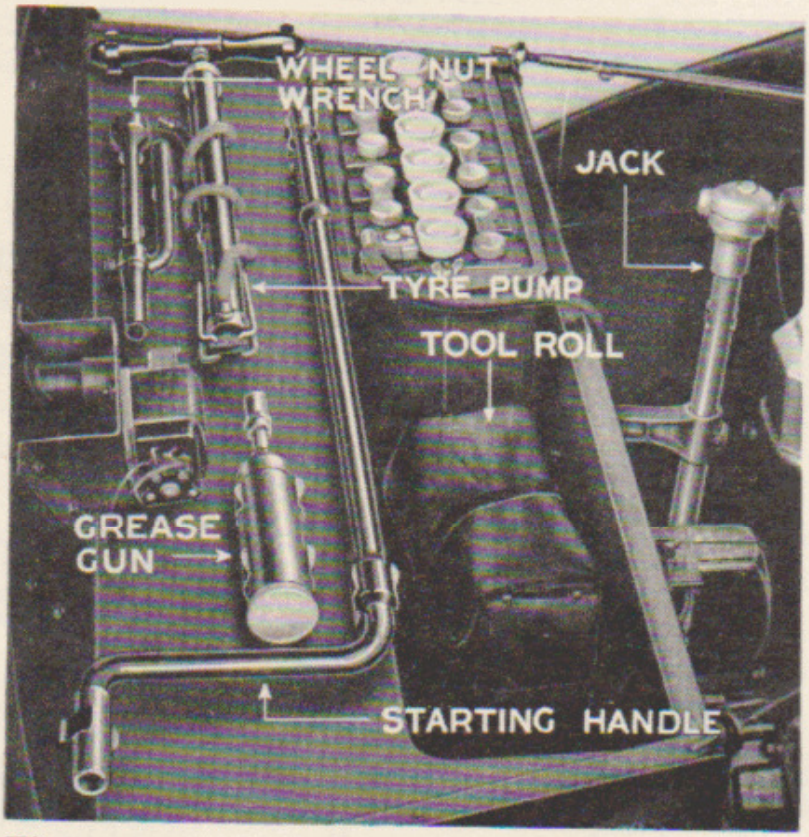


Fig. 23. Tool layout, roadster.

Saloon

The spare wheel and tools are housed in the luggage boot lid. A key is provided for the panel locks and to open, insert the key and give a half turn towards the centre of the car to release each catch. The panel can then be lifted. The spare wheel is secured by a single strap and the tools located in spring clips as shown in Fig. 24.

The tool roll is usually kept in the stowage in the front of the dash, accessible on

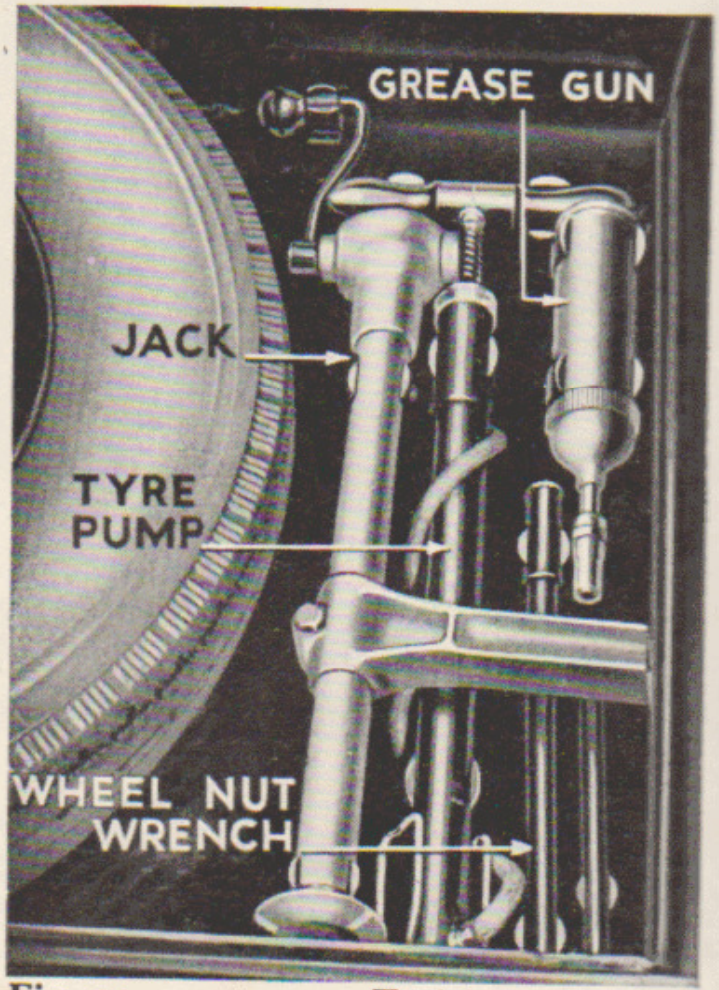


Fig. 24. Tool layout, saloon.

lifting the bonnet. The boot can be locked in the down position when required (see Fig. 25).

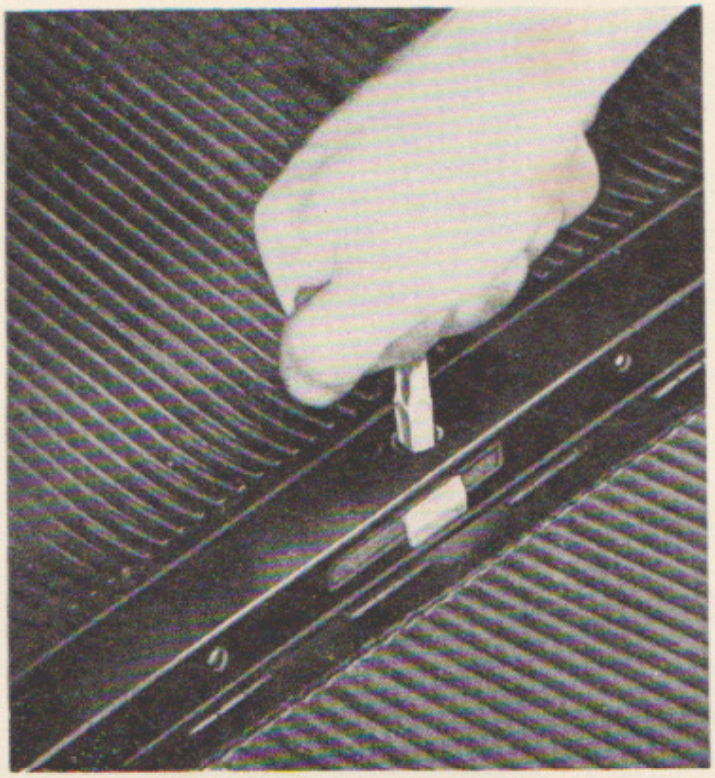


Fig. 24. Locking boot in down position.

PETROL TANK FILLER CAP (Roadster)

The petrol tank filler cap is mounted on a telescopic spout and is concealed by a door in the left-hand rear body quarter wing.

When replenishing the tank, unfasten the door, turn the cap and tube anti-clockwise to release bayonet fixing, and pull up. The cap can then be removed in the normal manner.

RAISING AND LOWERING OF HOOD ON ROADSTER MODEL

Lowering the Hood

To lower the hood the following instructions must be followed to avoid damage to the hood.

1. Lower side windows.
2. Unscrew knurled knobs on inside of screen top rail. Hood is now ready for lowering.
3. Push hood back and down (see Fig. 27).
4. An envelope is provided which can be slipped over the hood when folded and fastened with press studs (see Fig. 28).

Raising the Hood

Raising the hood is merely a reversal of the above instructions but take care to engage the dowel peg on each hood pillar with the locating hole provided.

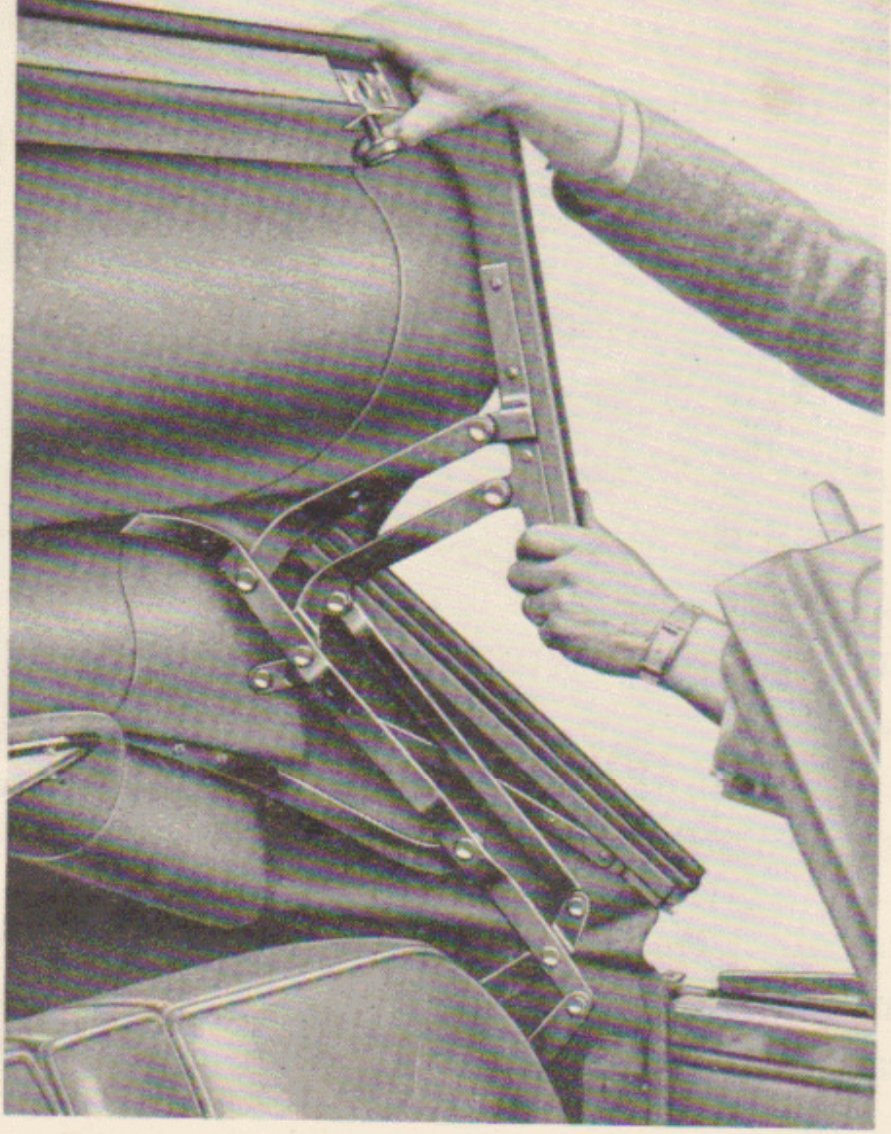


Fig. 26. Hood partly folded.

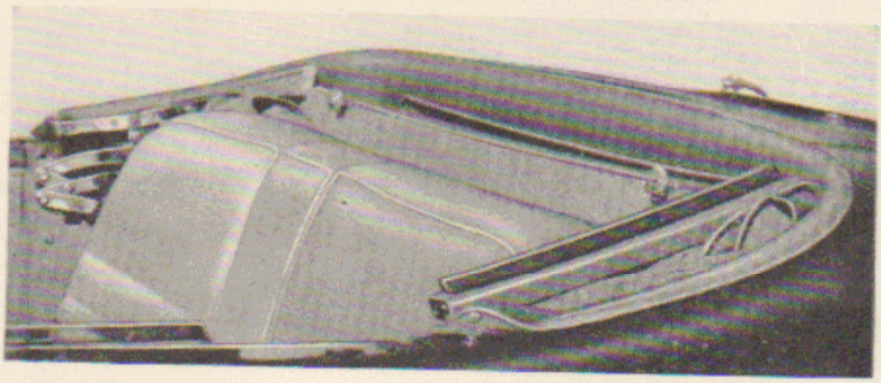


Fig. 27. Hood folded.

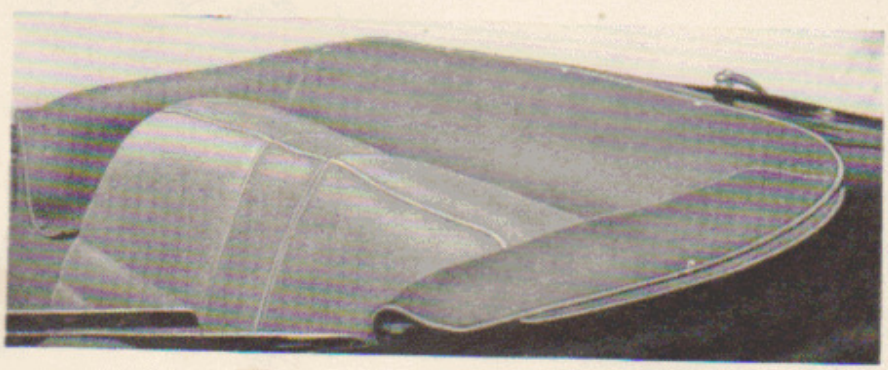


Fig. 28. Hood folded, envelope fitted.

Various adjustments are necessary from time to time in order to keep the mechanism in efficient running order. The periods between depend largely upon the manner in which the car is used and no definite time can be given here for carrying out these corrections. The car should be examined, however, every 5,000 miles and any adjustments which appear necessary can then be made, see page 67.

ENGINE

Cylinder Head Nuts

After the first 1,000 miles the cylinder head nuts should be checked, with engine warm, for tightness in the order shown in Fig. 29. However we recommend that the valves should be ground-in after the first 1,000 miles, see pages 15 and 55, in which event the nuts are tightened after refitting the head.

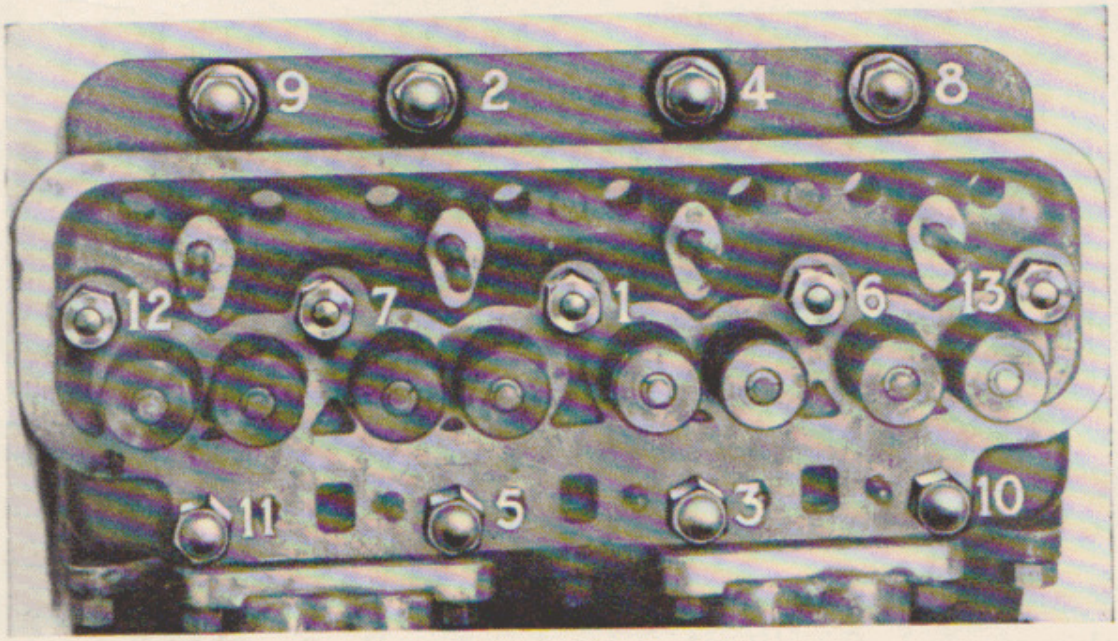


Fig. 29. Order of tightening cylinder head nuts.

Valve-Rocker Clearances

A clearance between the valve stem and the rocker face is necessary to ensure correct closing of the valves and efficient running of the engine.

The correct running clearances, measured with engine cold, are Inlet 0.012", Exhaust 0.015". Metal strips of the above thickness are provided in the tool kit for the purpose of setting this clearance in the manner described below. These are the thinnest of the three gauge strips supplied.

If a rocker becomes noisy, it may be silenced by adjusting the clearance to the correct amount. Do not set the valve clearances too small or the engine will not maintain good tune.

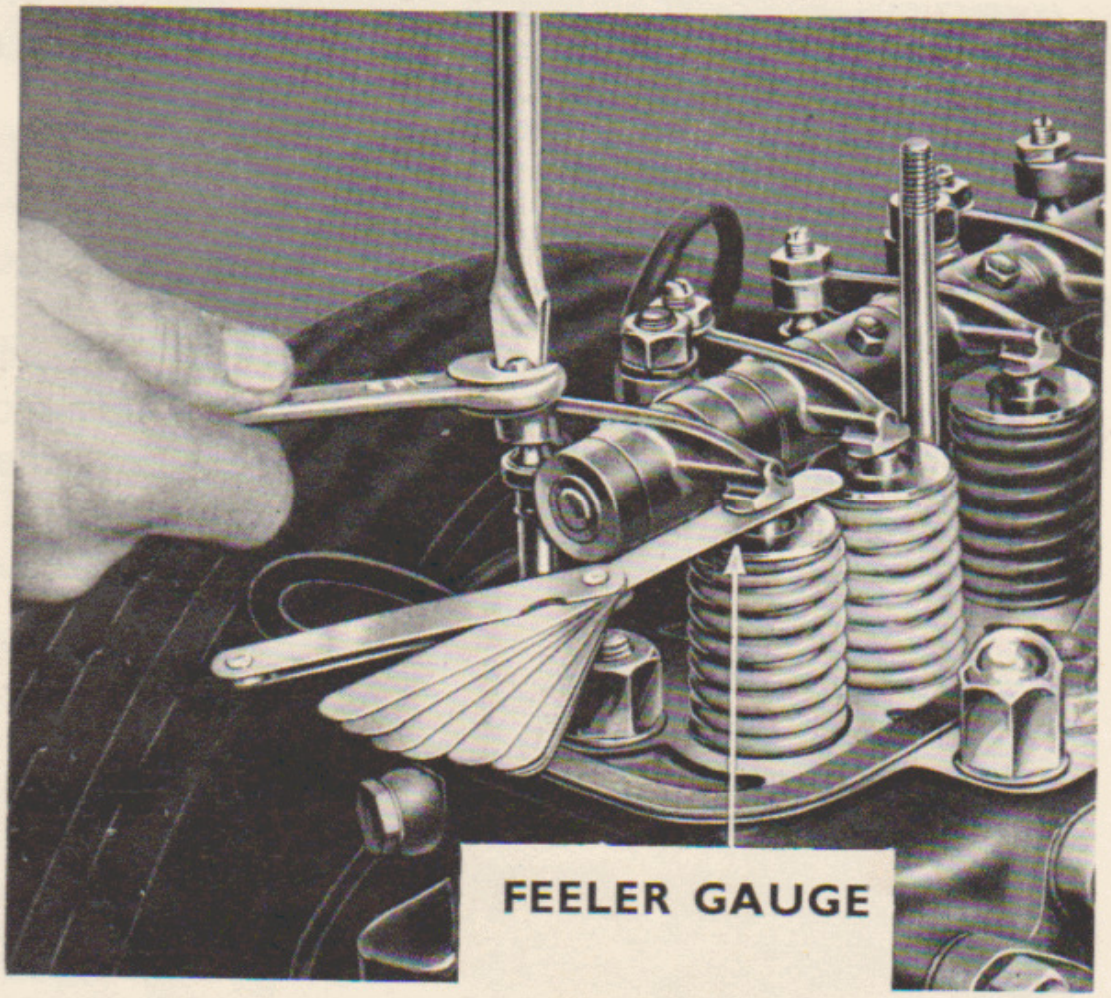


Fig. 30. Valve-Rocker clearance.

Adjustment of Valve-Rocker Clearance

Remove the air silencer duct and the rocker cover and turn the crankshaft with the starting handle for half a revolution after the valve to be adjusted has closed. Slacken the lock nut and adjust the rocker screw with a screwdriver, until the gauge is a close sliding fit between the valve stem and the rocker face, as shown in Fig. 30. Now tighten the lock nut and re-check, as tightening the lock nut will occasionally alter the clearance.

NOTE

When refitting rocker cover take care that the cork washer is fitting correctly and do not over-tighten or the cover will be buckled.

Ignition Timing

The ignition is correctly set at the works and should not normally be adjusted, excepting as described on page 55. If the ignition setting has been disturbed it may be re-set as described below.

The ignition advance is automatic and should be set to fire 8 degrees before top dead centre and will automatically be at full retard when the engine is at rest. We would emphasise the advantage of setting the distributor correctly, so that the automatic range can function as designed.

Turn the crankshaft until No. 1 inlet valve closes and continue turning until No. 1 piston reaches top dead centre.

This position is indicated by a mark on the flywheel, but if the clutch housing is in position this mark will not be visible.

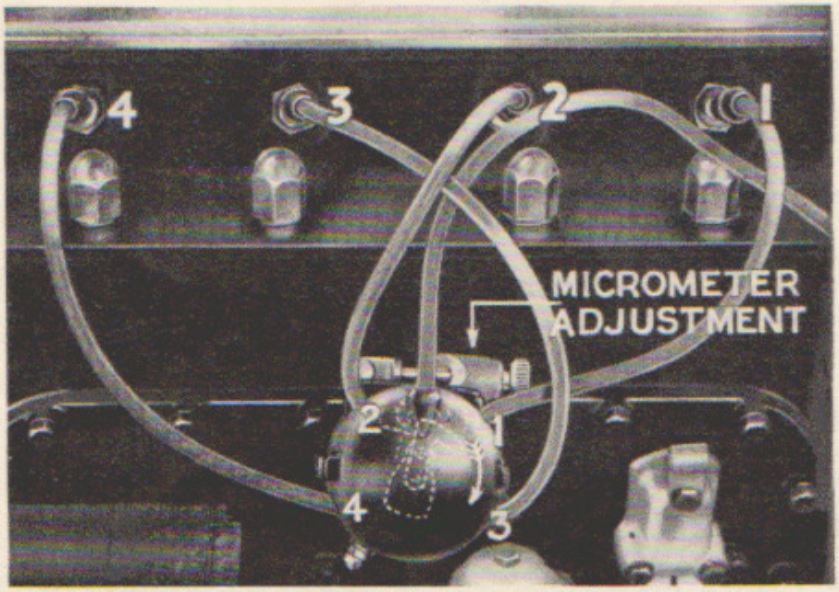


Fig. 31. Firing order.

Remove the sparking plug and insert a small diameter rod to indicate the piston position. The rod should be approximately 7″ long so that it will be long enough not to fall into the cylinder.

To obtain the correct firing point, turn the crankshaft slowly, with the starting handle, until the rod makes contact with the top of the piston, and continue turning until the piston reaches its highest position.

Turn the micrometer adjuster knob until the No. 4 mark on the scale is in line with the groove in the spindle. Slacken the clamp bolt below distributor body (see Fig. 4) and turn the distributor body until the contact breaker points are just separating on the opening flank of the cam when the distributor arm is opposite No. 1 segment in the cover,

then re-tighten the bolt. Now turn the micrometer adjuster knob clockwise until O on the scale is in line with groove in spindle.

The setting recommended above should be regarded as a starting point, as individual engines may require more or less advance than this. Maximum power is obtained by giving the greatest possible advance without causing pinking. Minor adjustments can readily be made on the road.

To advance ignition turn micrometer adjuster knob clockwise, this will turn the distributor body anti-clockwise, and vice versa. Do not alter the ignition more than 1° at a time (2° on flywheel).

The firing orders are given in Fig. 31. The distributor is shown marked corresponding to the cylinder numbers to which the high tension cables should go. The cylinder numbers are counted in sequence, No. 1 being the cylinder furthest from the radiator.

Valve Timing

The valve timing diagram, see Fig. 1, is only correct if the valve-rocker clearance is set at 0.022″, this gives 0.020″ clearance at the cam. Don't forget to rest the clearance when timing is complete.

Sparking Plugs

The sparking plugs with which the Triumph is fitted were adopted for original equipment after lengthy tests. Sparking plug types vary in suitability for different engines. It is important that the correct type of plug be fitted when making replacements.

This is Champion No. L10—$\frac{1}{2}$″ reach.

The gaps (i.e., the width between the firing point of the centre electrode and the earth point) are originally set at twenty-five thousands of an inch—and they should be maintained between .024″ and 0.028″ to ensure even running of the engine. A piece of 0.024″ metal strip is supplied in the tool kit for use as a plug point gauge. This is the thickest of the three strips supplied. The gauge should be a close fit between the points when they are correctly adjusted.

NOTE :—Gaps should always be adjusted by bending the electrode attached to the plug body. Never bend the central electrode, as this would probably crack the insulator.

Misfiring, especially at high speeds and under heavy pulling at low speeds, invariably indicates that the gap setting of the plugs is too wide, whilst erratic slow running can be accounted for by too narrow a gap setting. If the porcelain insulation is cracked, either inside or outside, the plug will behave erratically and should be replaced. Care should be taken when removing plugs for examination not to damage the porcelain.

Faulty high tension cables from the distributor to the sparking plug terminals, and the distributor points being out of adjustment can also account for the sparking plugs misfiring. Sparking plug trouble frequently reflects some other fault or failure of the ignition or carburation system.

CLEANLINESS. The portion of the insulator projecting above the body of the sparking plug should be kept clean by means of regular attention with a dry, clean rag. When the vehicle is left standing with the engine cold and the atmosphere is damp, it is possible for moisture to condense on to the exposed surface of the insulator. This results in difficult starting, because there is a wet path from the plug terminal to the plug body, through which the high tension current can pass to earth instead of jumping the gap at the plug points. If, under these conditions, the engine fails to start in the normal manner, do not continue operating the electric starter, but lift the bonnet and wipe dry the exposed sparking plug insulators. The engine should then start readily.

The danger present if this advice is ignored is that starting may be made impossible for the following reasons :—

1. Due to continuous use of the electric starter without the engine firing, the interior of the combustion chamber will become very wet with petrol. This will wet the interior portion of the sparking plug insulator and so prevent a spark occurring at the plug points. In this case remove the plug and dry it, or

2. If the battery happens to be in a low state of charge it will not give a sufficient current to the ignition circuit during the period when the starter is operated, this, combined with (1), will prevent starting.

PLUG CLEANING AND TESTING MACHINE.

Oily, dirty, worn-out plugs mean weak sparks. Combustion is slower and "incomplete," causing hard starting, loss of power, poor performance and petrol wastage. Unburned petrol is lost through the exhaust or seeps past the pistons diluting the crankcase oil, thus impairing lubrication. Current practice is to clean plugs by means of a jet of fine abrasive material forced under air pressure on to the lower part of the insulator and shell, effectively removing *in a few seconds* all carbon or other deposit. This should be done every 5,000 miles, preferably by a Triumph agent.

Fig. 32.
Sparking plug cleaning and testing machine.

The type of plug serving equipment illustrated comprises both cleaner and tester mounted on one stand. The cleaner is operated by air pressure at 100-120 lbs. per sq. in. from a compressor storage tank, provision being made for "blowing out" after cleaning to ensure that no loose particles of carbon or abrasive remain on the working surfaces. It is advisable to dip badly oiled plugs in petrol and dry them out on the blow-out jet before cleaning.

Testing under pressure comparable to engine compression enables the operator to verify that cleaning has been carried out thoroughly, and to single out plugs that have ended their

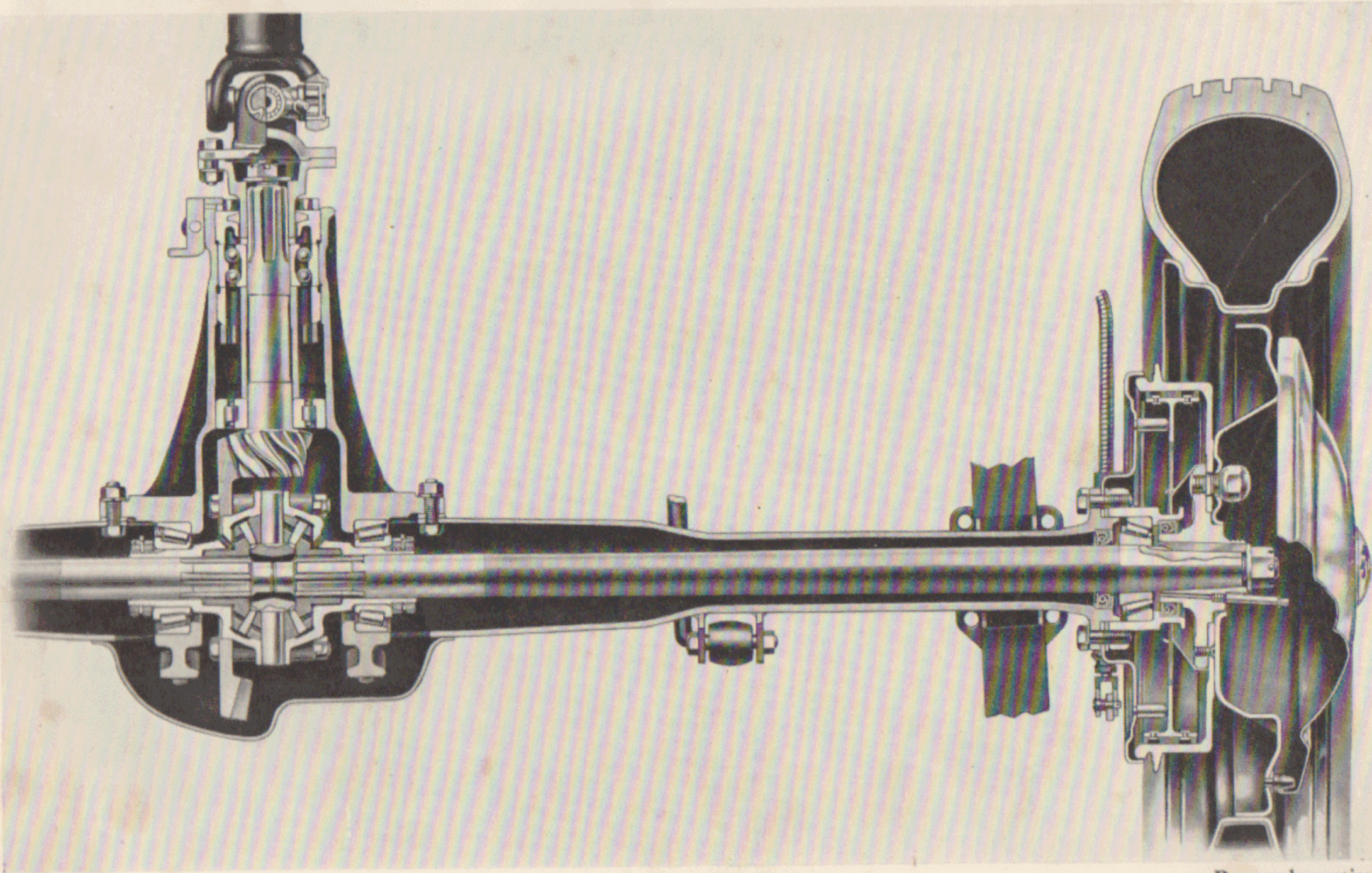


Fig. 33. Rear axle section

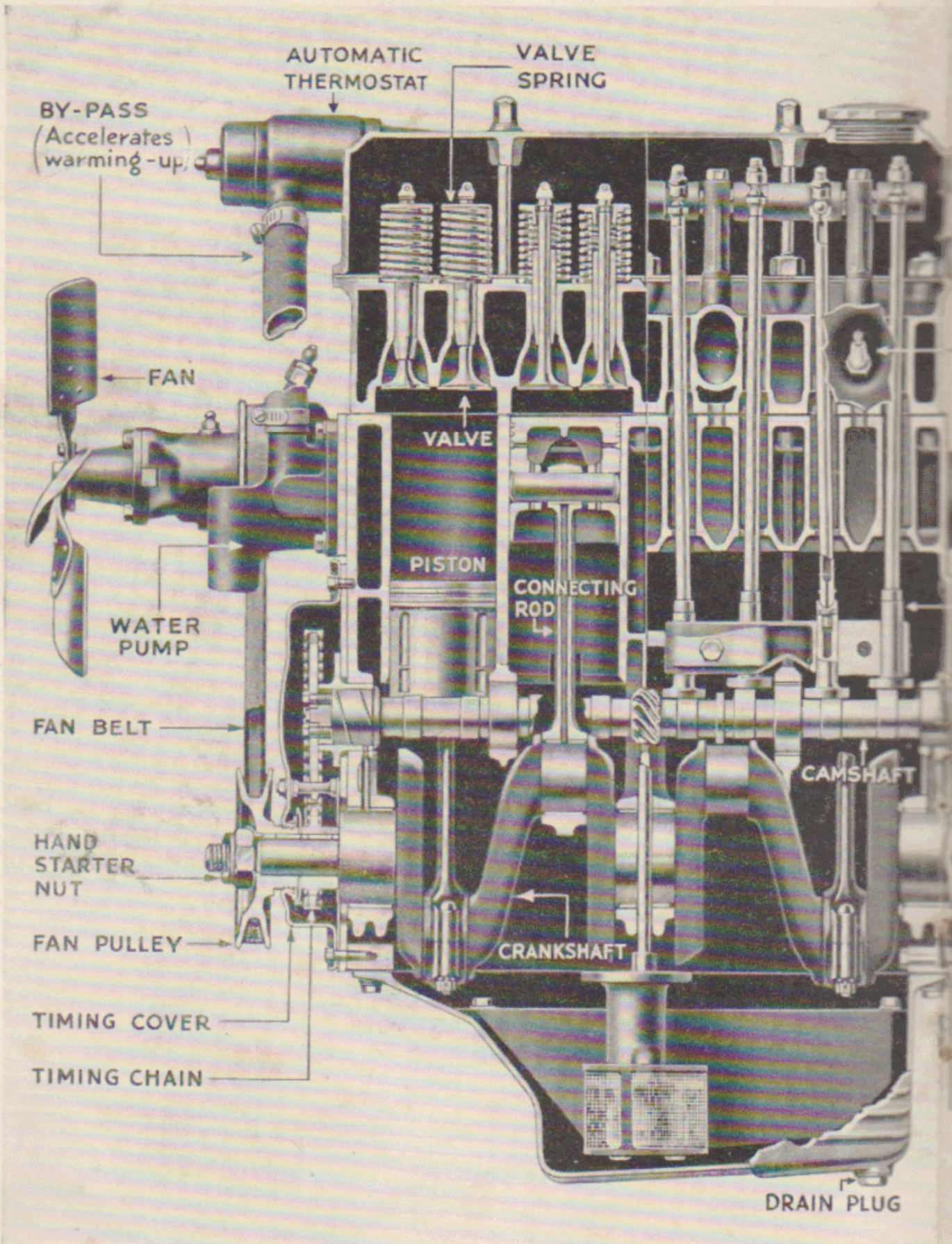
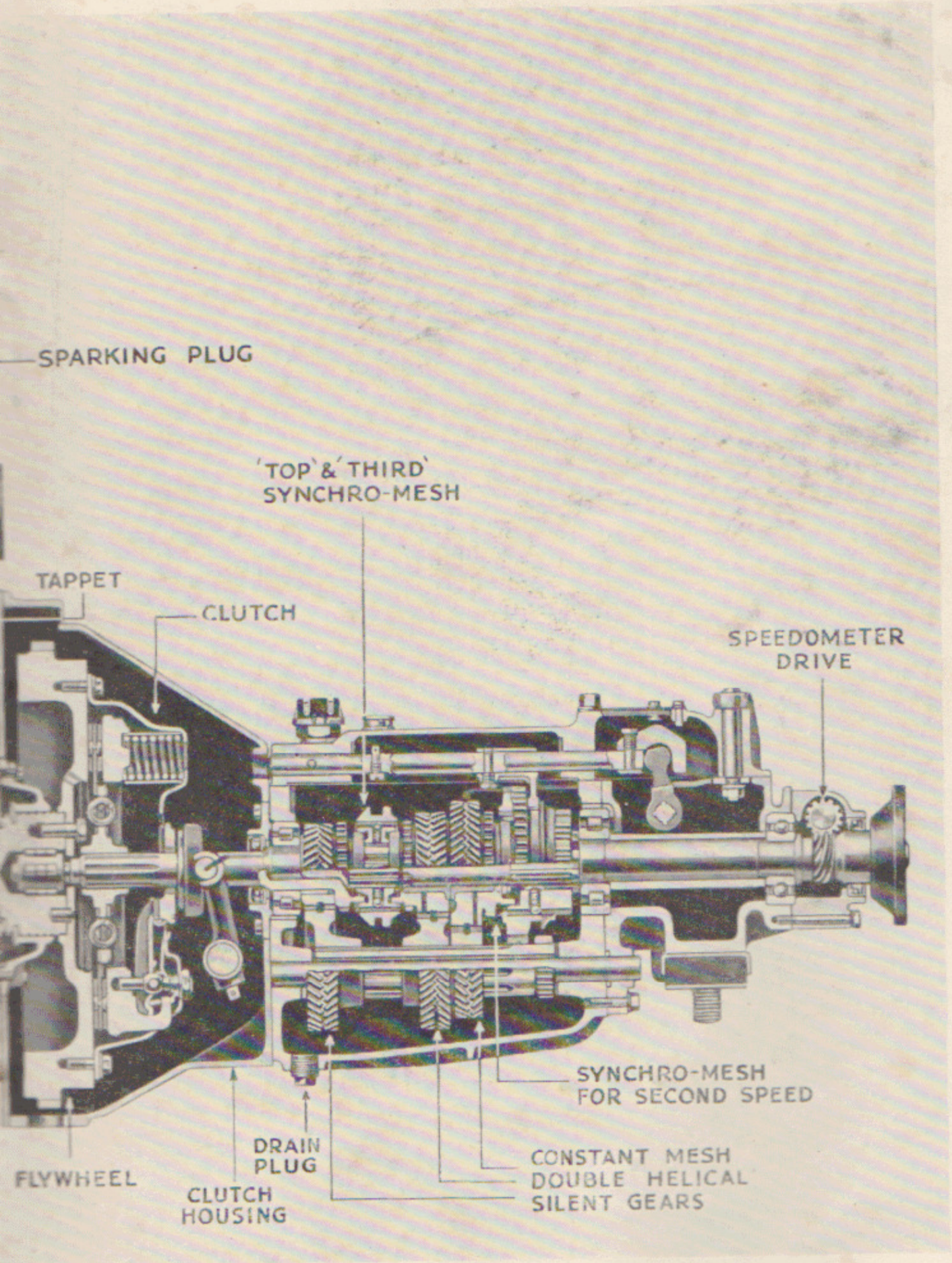
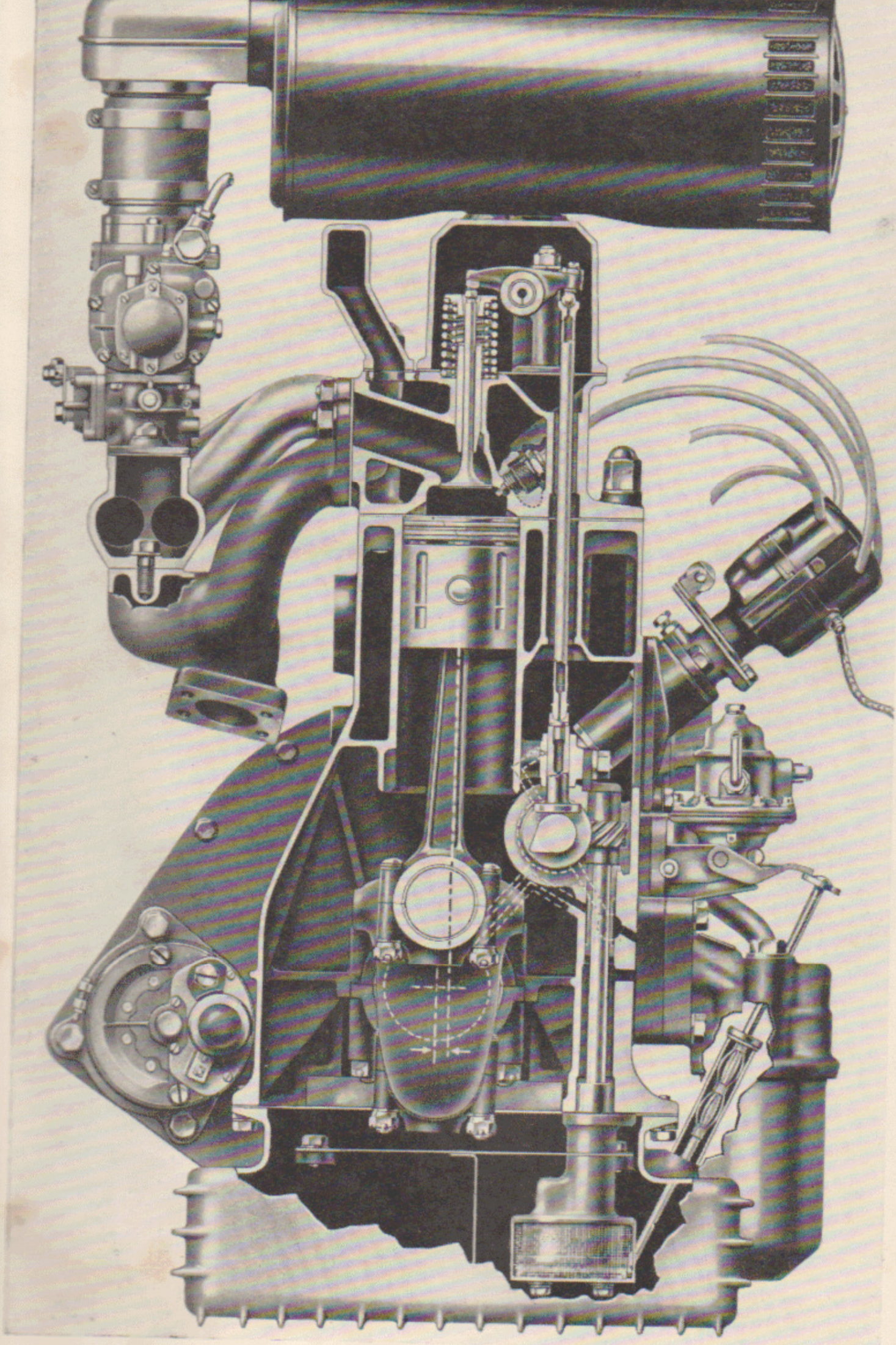

AUTOMATIC THERMOSTAT
VALVE SPRING
BY-PASS (Accelerates warming-up)
FAN
VALVE
PISTON
CONNECTING ROD
WATER PUMP
FAN BELT
CAMSHAFT
HAND STARTER NUT
FAN PULLEY
CRANKSHAFT
TIMING COVER
TIMING CHAIN
DRAIN PLUG

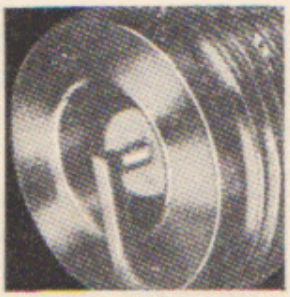
Fig. 34.



Engine longitudinal section.



Oily, dirty, worn out plugs — a sluggish, wasteful, hard starting engine.



New, clean, efficient plugs — a quick starting, responsive engine.

Fig. 36. Plug before and after cleaning.

useful life. The plug is screwed into a compression chamber, air applied, and regulated by reference to the gauge provided, and high tension current being passed across the firing point the intensity and colour of the sparking is observed in a mirror.

Carburettor

The correct sizes of choke and jet are fitted to the carburettor and it is inadvisable to alter them as they are the result of exhaustive bench and road tests.

Slow running adjustments are provided and these are the only points that may require attention after the engine has become run-in. Two adjusting screws are shown in Fig. 37, one for limiting the closing of the throttle and thus the idling speed. The other screw regulates the strength of the idling mixture. There is also a screw which sets the full open position. Don't interfere with this.

CHOKE AND JET SIZES

Component	Size of Jet	
Choke tube	35—40—25	
Main jet	125	
Air correction jet	Saloon 230	Roadster 250
Pilot jet (slow running)	50	
Speed jet	50	
Needle valve assembly	1.5	
Starter jet	125	

SLOW RUNNING ADJUSTMENT. We recommend that the carburettor be adjusted to run at a fairly fast idling speed, because an engine which is regulated to a minimum speed when hot, is apt to stall when cold.

Commence with the regulator screw screwed out 1½ complete turns and the throttle screw set to the lowest possible idle, and under these circumstances the engine should have a tendency to "hunt." Now screw in the regulator screw until the engine runs evenly. This may cause the engine speed to increase, in which case the throttle screw should again be rotated until the engine idles slowly.

"EASY START" DEVICE. This consists of an auxiliary carburettor designed for starting only, and is embodied in the main carburettor. The control of this is described on page 11.

CLEANING THE JETS AND FILTER. It may happen that foreign matter enters the float chamber and is sucked into the jets, so preventing the flow of petrol and causing the engine to falter. Fig. 37 shows the jets which may be removed for cleaning purposes. Care should be taken not to enlarge the jet orifice. The filter incorporated in the petrol pipe union can be removed for cleaning after the union bolt has been removed.

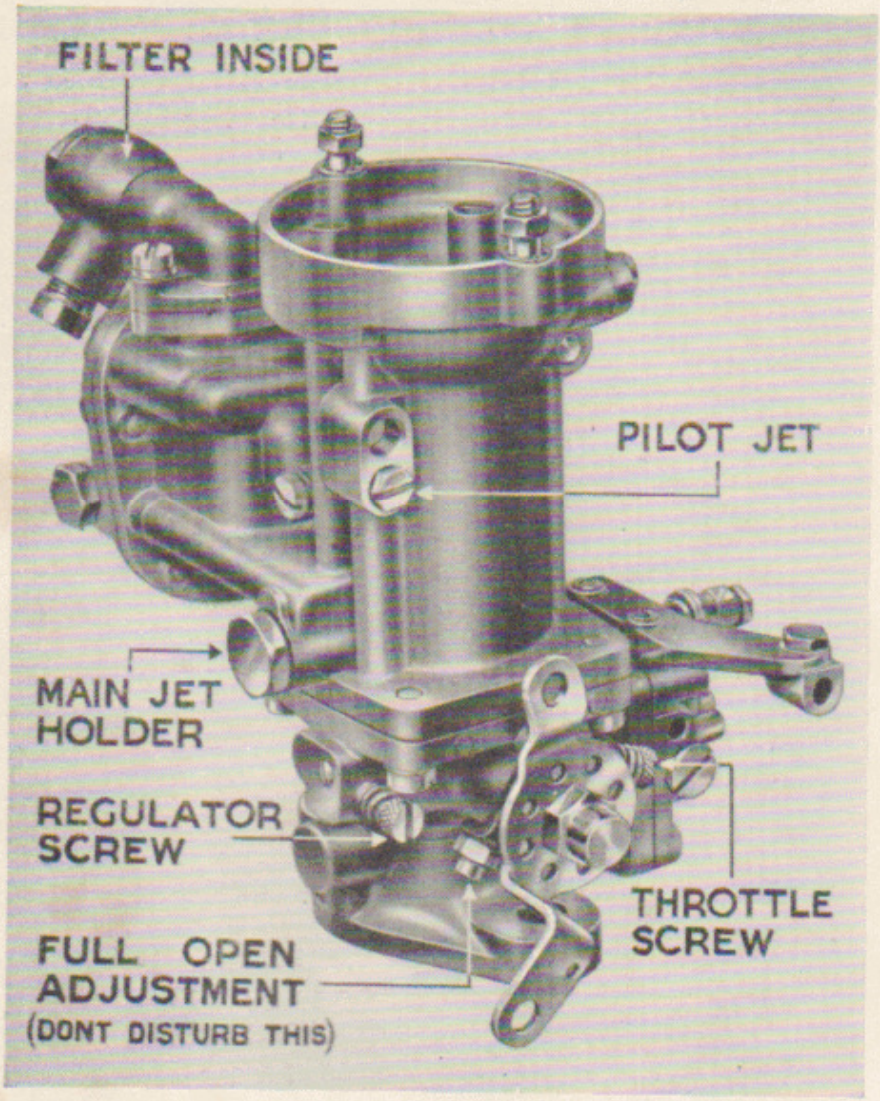


Fig. 37. Carburettor.

NOTE :—A fully comprehensive booklet on each type of Solex carburettor can be obtained post paid on remittance of 1/- to Solex Ltd., 223/231 Marylebone Road, London, N.W.1.

Besides giving full instructions on tuning the carburettor, the booklet contains a helpful chart on engine and carburettor fault diagnosis, many useful general hints and tips, a complete price list of spare parts, a list of Solex Service Stations throughout the country, and a non-technical survey of the importance of good carburation and how to maintain it.

Petrol Pump

The petrol pump is mounted on the left-hand side of the crank-case and provides a constant pressure of fuel to the carburettor float chamber when the engine is running.

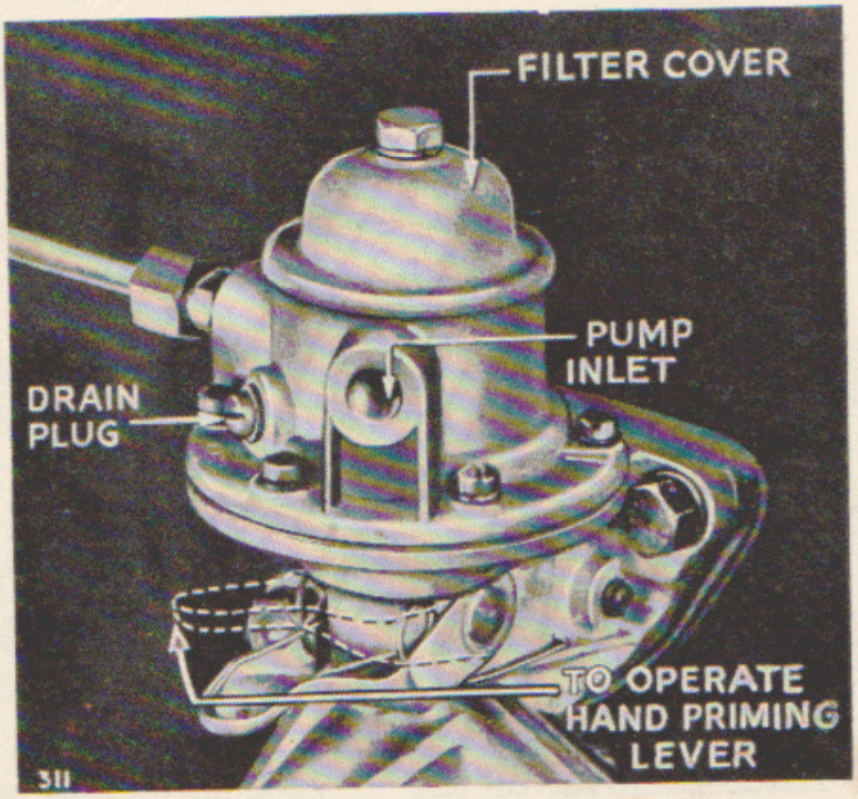


Fig. 38. Petrol Pump.

A hand primer is fitted to the pump which can be used to pump petrol to the carburettor if the float chamber is not already full, under which condition a slight pumping resistance is felt before the lever reaches the stop. When the float chamber is full the lever can be pulled up to its stop, without any resistance being felt along its travel. This is also the case if the engine has come to rest in such a position that the pump diaphragm is fully depressed ; in which case give the crankshaft one complete turn with the starting handle then operate the hand primer.

PUMP FAILURE. If the pump is suspected of not delivering petrol to the carburettor, slacken the carburettor union, then

turn the crankshaft with the starting handle. It is not sufficient to test by operating the hand primer. If the pump is delivering, petrol will leak at this slack connection. **If the pump fails to supply petrol to the carburettor, attend to the following points.**

1. Ensure that there is petrol in the tank.

2. *Clean the filter.*
   Remove the filter cover and gauze, clean out the sediment chamber, swill the gauze in petrol and replace. Make certain that the cork washer lies flat on its seat and makes an air-tight joint, and that the fibre washer is under the head of the cover screw. Tighten the screw just sufficiently to ensure a petrol-tight joint. Over-tightening will either destroy the cork or fibre washers, crack the cover, or fracture the main casting.

3. *Inspect Joints.*
   Examine the pipes and connections for possible leakage. If petrol leaks at the diaphragm, tighten the screws alternatively to ensure a good joint.

If the pump should fail to work after attending to the above points, it should be renewed and the old pump sent to the nearest A.C. Service Station or Triumph Service Depot.

NOTE TO SERVICE STATIONS AND GARAGES. After removal of the valve chamber of any type of A.C. Fuel Pump, it is important that the chamber should only be replaced whilst the pump diaphragm is at the top of its stroke. This is to ensure sufficient flexing of the diaphragm to allow of its normal working movement.

It is recommended that the cylinder head be removed for decarbonising and valve grinding after the first thousand miles. This is chiefly to give attention to the valve seats, the metal of which becomes stabilised during this period. Thereafter it will be found that decarbonisation will be required only after a period of about 20,000 miles. Providing that the engine is running satisfactorily after this period and that each cylinder gives a normal compression, showing that the valves are seating reasonably well, it is much better to leave it alone and delay decarbonising for as long as the engine continues to run satisfactorily.

After the car has covered a considerable mileage it may be necessary, due to the increased carbon deposit, to set back slightly the ignition (see page 43), to prevent a metallic sounding noise termed " pinking." It is evident when pulling hard up-hill or when accelerating from low speed in top gear. In spite of all precautions the time will come when the cylinder head must be removed for decarbonising and attention to the valve seats. This is necessary when there is a lack of compression in one or more cylinders or through loss of power resulting from the need for excessive retarding of the ignition to prevent " pinking."

The grinding of the valves becomes necessary in order not only to increase the efficiency of the engine, but to prevent a badly seating valve becoming worse and getting burnt.

PROCEDURE

Many owners would prefer to have these operations carried out by a competent mechanic and we recommend that the work should be done by a Triumph Agent; but for those desiring to do this work themselves, the method is outlined below :—

Dismatling.

1. Remove Bonnet.
2. Remove one terminal from battery to prevent the possibility of a "short" (see page 68).
3. Drain the cooling system (see page 13). If anti-freeze solution is present it may be preserved and used again on assembly.
4. Remove air silencer from carburettor and rocker cover.
5. Disconnect top water hose and the bye-pass pipe at the thermostat.

6. Remove thermometer bulb from thermostat after unscrewing gland nut. Flats are provided on bulb extension so that a spanner may be used to prevent twisting of the pipe when gland nut is being turned.
7. Disconnect carburettor controls and petrol pipe.
8. Disconnect inlet manifold drain pipe.
9. Remove sparking plug leads.
10. Disconnect the oil pipe from rear of cylinder head.
11. Remove rocker cover and withdraw its securing studs.
12. Remove rocker shaft complete with standards, each standard being secured by a single nut to the cylinder
13. Disconnect exhaust manifold from exhaust pipe.
14. To remove cylinder head, first remove all nuts with the exception of the two dome nuts immediately under the sparking plug holes in number 1 and 4 cylinders, these nuts should be slackened off two or three turns. This will allow a lever to be used in order to " break " the joint between the cylinder head and the block, should there be a tendency to stick. Insert one end of the lever (Fig. 40) in the recess for the plug, *not in the plug hole or the threads will be damaged*, and using the dome nut as a fulcrum, " break " the joint between the head and the block.
The cylinder head can now be removed, complete with manifolds and carburettor.
Do not insert any tool such as a screwdriver between the cylinder head and cylinder face, as this would damage the gasket and head surfaces. If any water should find its way into the bores, wipe it away immediately.
If the gasket is in good condition, preserve it carefully for refitting.
15. Remove inlet and exhaust manifold as a unit from cylinder head. The securing nuts are bronze to avoid rusting on the studs.
16. Remove valves. A special tool is required to compress the valve springs in order that the valve cotters can be removed (see Figs. 39 and 40). A wooden block approximately $2\frac{1}{2}$" x $1\frac{1}{2}$" x $\frac{3}{4}$" thick should be placed in the combustion chamber to prevent the valve lifting off its seat when the springs are compressed. With block in position give the valve collar a slight downward tap to ease the cotters, before compressing the spring for cotter removal.

Care should be taken not to mix the valves and to ensure this they are numbered accordingly from the rear.

Decarbonising

Before starting to clean off the carbon from the piston crowns, first turn the crankshaft until any two pistons are near the top dead centre position, then fill the remaining cylinder bores with clean rag to prevent any chips of carbon falling into the cylinders.

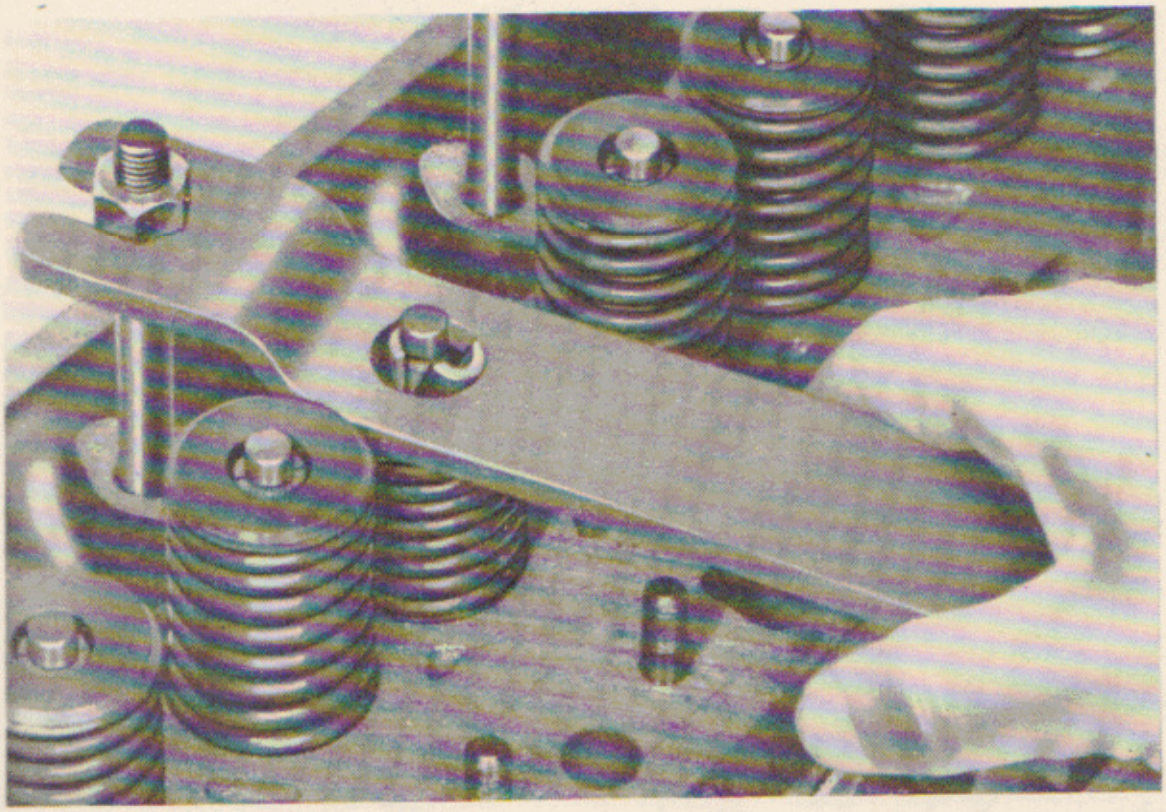


Fig. 39. Valve spring removal.

We recommend that the carbon inside the top edge of the cylinder be left intact, together with a $\frac{1}{8}$" wide band at the edge of the piston, otherwise its removal may adversely affect oil consumption.

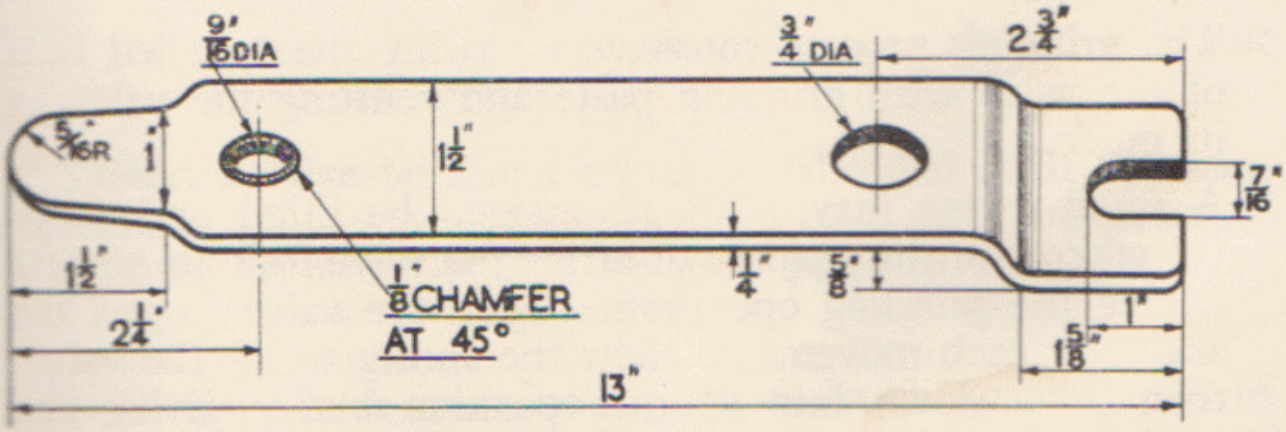


Fig. 40. Valve spring compressor and lever for cylinder head removal.

Scrape the piston crown and the carboned portions of the cylinder face, using an old screwdriver or similar blunt tool in a " chiselling " manner. Care should be taken to avoid carbon chips dropping into the cooling water holes.

Then give the starting handle a part turn and treat the two other pistons in the same way.

The cylinder head should now be scraped, but first remove the sparking plugs, and when the operation is complete wipe the chambers clean. Scrape clean the valve ports, but be careful not to scratch the valve seats, and when completed, wipe clean with a petrol-damped rag. Do not polish the parts with emery cloth or other abrasive, for the particles may, on assembly, get into the cylinder bores and do serious harm. The sparking plugs should be cleaned and the points reset (see page 44) before replacing them in the cylinder head.

When finally cleaning the head see that the stud holes are also clean to avoid particles of loose carbon dropping on to the gasket when refitting the head.

Clean the carbon off the underside of the valve heads as well as off the top, using a blunt knife and finishing with a petrol-damped rag. Carefully remove carbon from both sides of cylinder head gasket.

Valve Grinding

In order that the valves shall be gas tight, it is necessary for the bevelled sufaces of the valve and cylinder seat to make perfect contact when fitted together. This is achieved by grinding the two surfaces together, but each valve must be ground into the correct seat as indicated by the numbers stamped on the valves (*No.* 1 *valve is furthest from the radiator*).

A small tim of special grinding paste may be obtained containing both fine and coarse grades.

The grinding process consists in coating the bevelled face of the valve with grinding paste and refitting the valve in its guide.

A small spring may, with advantage, be fitted under the valve head for the purpose of lifting the valve from its seating during the grinding operation. Turn the valve to and fro and after each movement, allow the spring to lift the valve, then press down into another position before giving the next turn. This will keep the grinding even.

Continue these operations until the surfaces assume an even matt appearance, then wipe away all traces of paste from the valve seats and ports as any paste finding its way into the cylinder bores or valve guides would do serious harm.

If the valve seats are in fairly good condition it will only be necessary to use the fine paste, but if this is insufficient to

Fig. 41. Showing badly pitted valve.

produce a clean surface, a little coarse paste must be used, finishing off with fine grade. When the valves are badly pitted (see Fig. 41) they should either be renewed or refaced. Do not attempt to grind them in, or you will remove an undue amount of metal from the cylinder head seats. It should be remembered that the steel valves are much harder than the cast iron seats with which they engage.

When refacing valves remove the least amount necessary to give a clean face, and reject those valves whose head thickness above seat edge is less than $\frac{1}{32}$". If the head is too thin the edges are apt to curl when the valve becomes hot. The valve face has an included angle of 120°.

If the seats are badly worn or pitted they should be recut with a valve seat cutter.

Should a valve be found to have embedded itself by wear, into the cylinder head face, leaving a step, a shallow cutter of approximately 15° should be used prior to using the 120° cutter.

The cutter pilot must be a good fit in the valve guide to ensure a concentric seat. The normal width of seat is $\frac{1}{16}$".

When a valve or seat is recut, the valve must be lightly ground in to ensure perfect contact.

Assembling

The valves may now be assembled, so smear the stems with oil before fitting. The valve springs are close-coiled at one end and when fitting, the close coiled end should be against the cylinder head. When the cotters have been placed in position, ensure that, on releasing the springs, they engage correctly in the valve stem groove.

Before replacing the gasket on the cylinder face it is advisable to smear it with clean grease, which will prevent the gasket sticking when the head is next removed. If the gasket has been damaged, it is advisable to procure a new one, as the damaged gasket is likely to leak. Ensure that the gasket is fitted correctly, the uppermost surface is marked TOP.

When replacing the cylinder head nuts tighten them gradually in the sequence shown on page 41. This will produce an even pressure on the gasket and prevent undue strain in the cylinder head casting. If a new gasket has been fitted it will be necessary later to go over the nuts again and give them a further tightening. This should be done when the engine has been thoroughly warmed through.

Valve-Rocker Clearances

These should be checked and reset if necessary as described on page 41.

When replacing rocker cover ensure that the cork gasket is in its correct position and undamaged, otherwise oil will leak around the edge of the cover.

Gaskets which may require renewal when Decarbonising.

Detail No.	No. off	Description.
56586	1	Cylinder head Gasket.
54786B	1	Carburettor Gasket.
46639	1	Exhaust pipe Gasket.
46461	1	Manifold Gaskets.
46462	2	
46463	2	

CLUTCH

A Borg & Beck single dry plate clutch is fitted, having a six-spring flexible centre. This carries friction facings and is gripped between the flywheel and clutch pressure plate by the action of helical springs. By this means the drive is transmitted from the flywheel to the gearbox primary shaft on which the clutch plate is mounted. Three toggles are incorporated with the clutch cover and when the clutch pedal is depressed these toggles lift the pressure plate away from the clutch plate and so release the drive between the engine and gearbox. This type of clutch is particularly sweet in action and takes up the drive in a smooth manner. The clutch is correctly set before leaving the works and it will be some considerable time before it requires re-adjustment.

Adjustment

Indication that adjustment is required is given when :—

1. The free pedal movement is reduced to about $\frac{1}{4}$", or
2. The free pedal jovement increases until the clutch will not be fully released when the pedal is fully depressed.

It is then necessary to adjust the clearance until there is backlash or free movement of about $\frac{5}{8}$" measured at the pedal pad. This will provide the $\frac{1}{16}$" clearance required at the toggle ring.

It is unnecessary to remove the floorboards to carry out this adjustment as the nuts are accessible from beneath (see Fig. 42).

CAUTION

Do not disturb the adjustment of the clutch pedal linkage, which is for setting the relative positions of the pedal and control levers. This adjustment is correctly set before the car leaves the works.

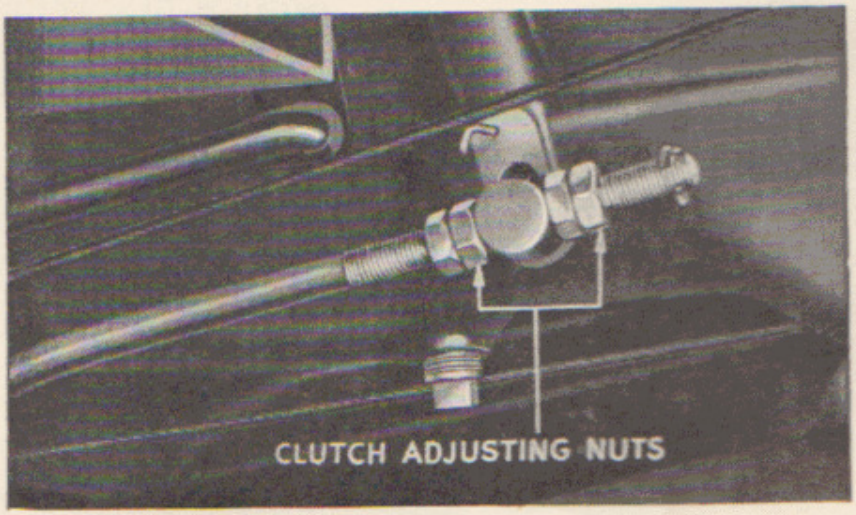


Fig. 42. Clutch adjustment.

BRAKES

Girling hydrastatic brakes are fitted to all four wheels. The pedal operates the brakes on all four wheels hydraulically, whilst the handbrake control operates the brakes on the rear wheels only, by means of cables.

WEAR ON THE BRAKE SHOES IS TAKEN UP AUTOMATICALLY AND NO ADJUSTMENT IS NECESSARY EXCEPT TO REPLACE THE SHOES WHEN THE LININGS ARE WORN DOWN TO THE RIVETS.

It must be remembered, however, that the presence of oil, grease or similar foreign matter on a brake shoe will seriously affect the coefficient of friction and in consequence the 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, the brake drum should be thoroughly cleaned with petrol and the brake shoes replaced by new replacement shoes. Cleaning the brake shoe is not satisfactory.

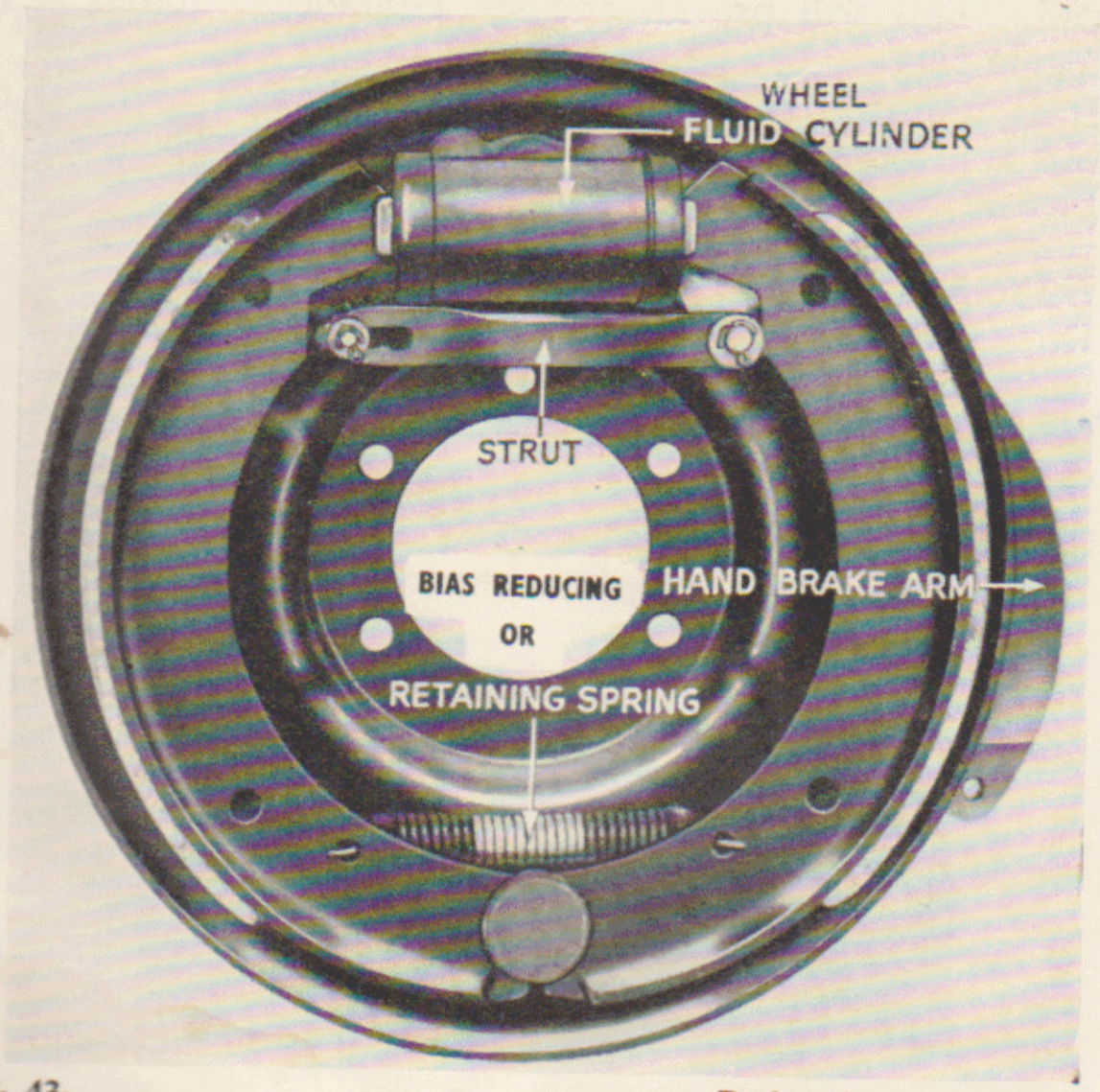


Fig. 43. Brake shoe assembly.

See page 26 for checking level of fluid in reservoir. If it is found to be particularly low it is an indication that a leak has developed somewhere in the system and it should be traced and rectified without delay.

Do not reline the shoes, but fit genuine Girling replacement shoes. These shoes have the right type of lining and are ground to the correct radii. They can be obtained from all Girling Service Agents, Triumph Distributors and Dealers, or direct from Girling Limited.

Handbrake Adjustment

Adjustment of the handbrake cables is carried out at the cross-shaft as follows :

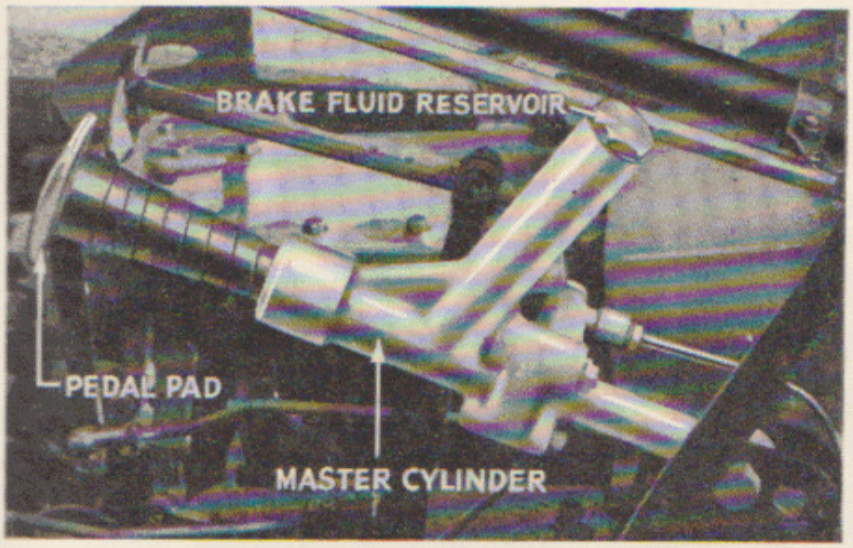


Fig. 44. Brake master cylinder and reservoir.

Chock the front wheels, jack up rear wheels and pull the hand brake on to the position indicated by the *first* click of the ratchet. Adjust the handbrake cables by means of the nuts as shown in Fig. 45 until the brake shoes can be felt to be just rubbing on the drums when the rear wheels are turned. New shoes, when bedding down expand, so that a slight allowance has to be made for this increase. When adjusting the cables with new replacement shoes fitted, the handbrake ratchet should be set on the "*second*" click.

Do not confuse the constant drag on the rear wheels due to the action of the differential and the axle oil with brake drag. Do not forget to tighten the lock after adjustment.

Flats are provided at the screwed end of the cable so that a spanner may be used to prevent the cable turning while adjusting the nuts.

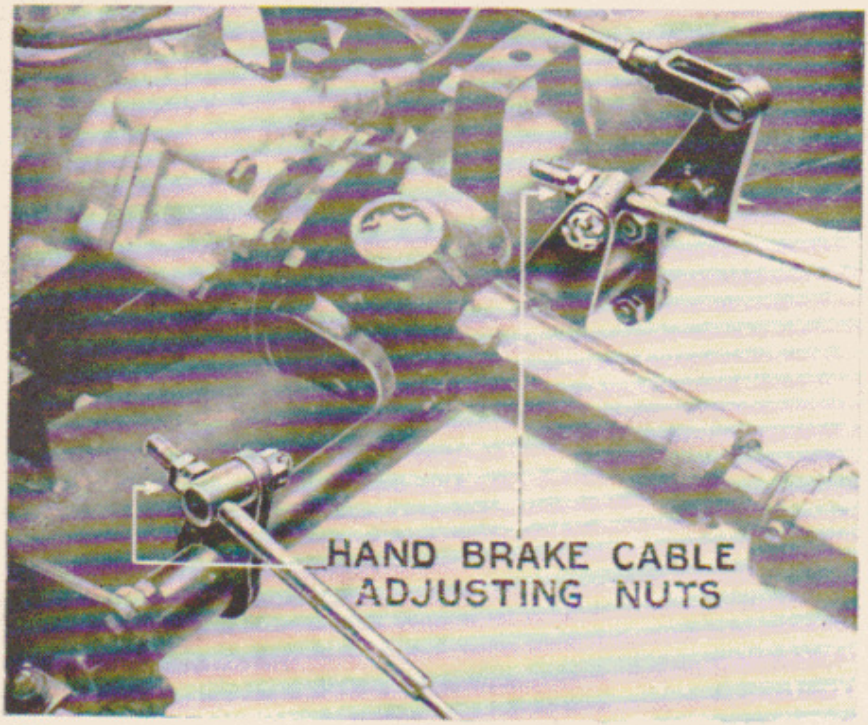


Fig. 45. Handbrake adjusting nuts.

Bleeding the System

Except for periodical inspection of the fluid level in the reservoir chamber and lubrication of the handbrake cables and connections (see page 26) no attention should be necessary. If, however, a pipe joint is uncoupled at any time, or

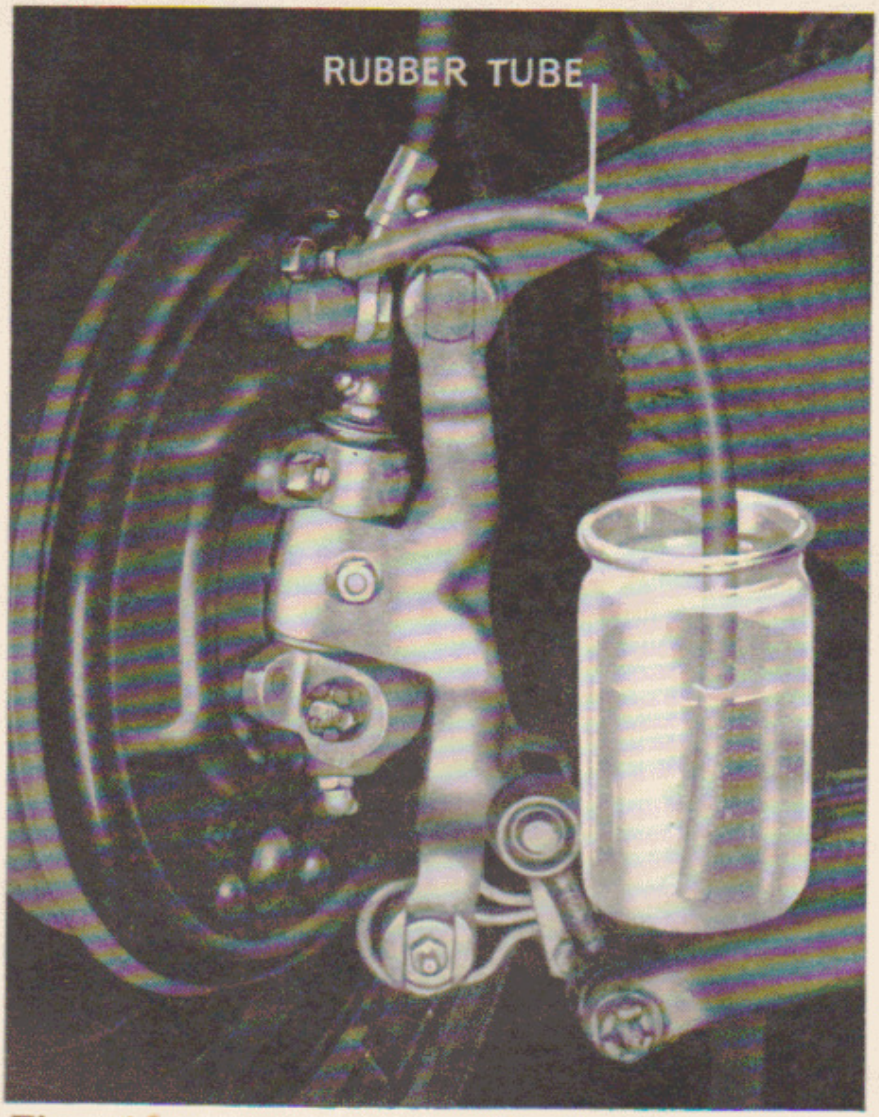


Fig. 46. Bleeding the brakes.

the wheel cylinder pressure seals 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 effect the working of the brakes.

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. Remove road wheel to allow access to cylinder.

2. Remove the rubber dust cover on the bleeder nipple of the brake cylinder concerned, and fit bleeder pipe in its place, allowing it to hang in a clean container partially filled with Girling Hydraulic Fluid, so that the end of the pipe is below the level of the fluid (see Fig. 46).

3. Unscrew the bleeder nipple about three-quarters of a turn with a suitable spanner.

4. The fluid reservoir of the master cylinder must be topped up before commencing the bleeding operation, and must be kept at least half-filled during the whole operation, otherwise more air will be drawn into the system via the master cylinder.
   Seven to eight strokes of the pedal will reduce the fluid level from full to half-full.

5. Depress the brake 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 jar and when all air bubbles cease to appear, hold the pedal firmly down and securely tighten the bleeder screw.

6. After completion of the bleeding operations, there should be approximately $\frac{1}{8}$" free movement at the pedal pad. Excessive movement denotes that air is still present in the system.

7. Remove the rubber tube and fit the dust cover.

NOTE. Depending upon the position at which a pipe joint has been uncoupled it may be necessary to bleed the system at two, or even the four, points.

Replacing the Brake Shoes

For the benefit of owners desirous of carrying out this operation themselves, the procedure is as follows :—

1. Remove road wheels.

2. Remove brake drums, these locate on a register and are secured by small countersunk screws.

3. Pull the shoes apart and remove them complete with the bias-reducing spring, care should be taken not to disturb the hydraulic pistons. To prevent excessive movement and a possibility of loss of fluid, a rubber band should be slipped over the pistons and cylinder as soon as the shoes are removed.

4. Clean the back plate and lightly smear the pivot with Girling Brake Grease.

5. Hook the bias-reducing spring into the holes of the new FACTORY LINED REPLACEMENT SHOES, nearest to the pivot as shown in Fig. 43.

6. Expand the spring and fit the shoes to the back-plate. The shoes are interchangeable and when fitted to the back-plate ensure that the retaining spring lies on the "inside," between the shoes and the back-plate, see Fig. 43.

7. Check that the handbrake arm bearing is frictionally tight in the back-plate. If it is found necessary to tighten this, then the two nuts securing the bearing to the back plate should be tightened up until effort is required to move the bearing.

8. Slacken off the adjusting nuts on the cross shaft to enable the rear brake drums to be fitted.

9. Replace brake drums and road wheels.

10. Apply the handbrake several time to centralise the handbrake arm bearing relative to the shoes.

11. Re-adjust handbrake cables as described on page 63.

NOTE. Do not press the brake pedal when any of the brakes are dismantled.

PROPELLER SHAFT

If the propeller shaft has been removed it is essential when re-assembling the front end splines to see that the arrows on the universal joint and propeller shaft end are in line (see Fig. 16, page 29) so that the propeller shaft will transmit uniform motion. A single universal joint does not transmit uniform motion when the driving and driven shafts are inclined to one another, but when two joints are used, one at each end of the propeller shaft, and set in correct relation one to the other, the errors of one are corrected by the errors of the other and uniform motion ensues. Hence the importance of re-engaging the splines correctly when they have been taken apart.

HYDRAULIC DAMPERS

If these are removed, or for some reason new ones are fitted, it is advisable to hold the hydraulic damper right way up in a vice, check level of fluid and replenish if necessary. Pump the pistons to each end of the stroke by moving the lever to its full extent. This will dispel any air which may have entered the chamber. After this operation, keep the hydraulic damper the right way up until it is fitted in place.

LOOSE BOLTS OR NUTS

All the vital nuts are locked in position by a split pin or by an additional lock nut or lock washer. It is, however, desirable that the car should be examined every 5,000 miles so that if any nut is found to be loose it may be tightened. 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.

A 12 volt earth return (or one wire) lighting and starting set is fitted, consisting of dynamo, control box, starter, distributor and coil, switches, lamps, screen wiper, horns, direction indicators, petrol gauge, fuses and battery.

As the frame parts are not insulated, one cable should be disconnected from the battery terminal before removing any electrical unit, otherwise there is a risk of a serious " short."

IGNITION

Misfiring, etc.

If misfiring occurs, check that the fault is not due to a defect in the carburettor, petrol supply, sparking plugs, etc.

The engine will run erratically in the rare occurrence of a wire having broken inside its insulated casing. The trouble is then difficult to trace.

Examine the high tension leads. If they are cracked and perished, replace with 7 mm. rubber covered ignition cable.

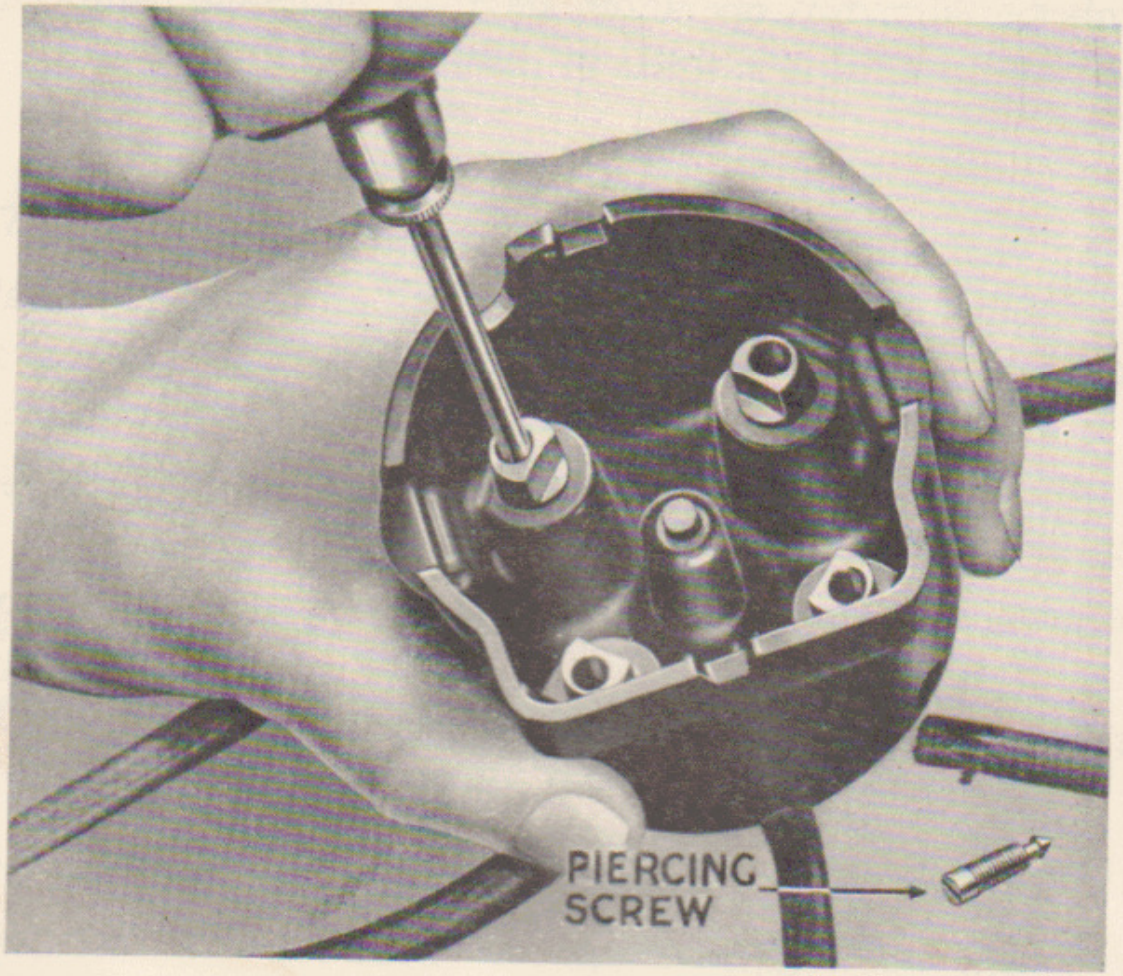


Fig. 47. Fitting high tension cable to distributor.

To fit new Cables to the Distributor

Remove the piercing screw (see Fig. 47). Cut the cable end flush and square, push cable well home into the distributor, and secure with piercing screw which will pierce the insulation, and make contact with the cable core. The screw securing the centre cable is accessible when the carbon brush and spring are removed.

To fit new Cable to Coil

Thread the knurled moulded nut over the lead, bare the cable for about $\frac{1}{4}$", thread the wire through the brass washer provided, and bend back the strands as shown in Fig. 48.

Cleaning and Adjustment of Distributor Contacts. Every 5,000 miles wipe the inside and outside of the moulded distributor cover with a soft dry cloth, paying particular attention to the space between the terminals. See that the small carbon brush on the inside of the moulding works freely on its holder.

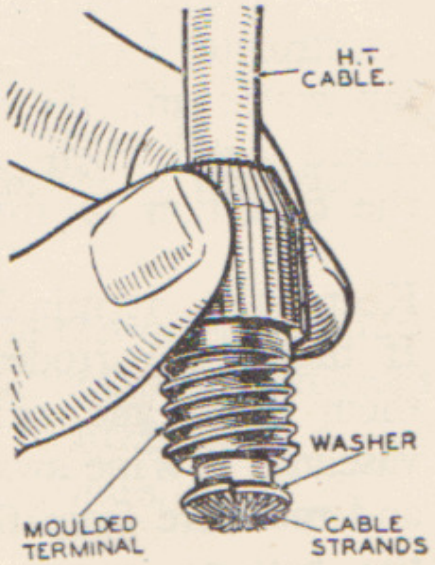


Fig. 49. Fitting high tension cable to coil.

Examine the contact breaker. The contacts must be free from grease or oil. If they are burned or blackened clean them with a fine carborundum stone or with very fine emery cloth. Afterwards wipe away any trace of dirt or metal dust with a cloth moistened in petrol. Cleaning of the contacts is made easier if the breaker arm carrying the moving contact is removed. To do this slacken both the nuts on the terminal post and lift off the end of the spring which is slotted to facilitate removal. Lift the contact breaker arm off its pivot pin. After cleaning replace arm in its original position, tighten up both nuts securely (see Fig. 8) and check the contact breaker setting.

To do this turn the crankshaft with the starting handle until the contacts are fully opened and insert the gauge (0.012″) provided on the ignition screwdriver, between the contacts.

If the setting is correct the gauge will be a sliding fit, but if the gap varies appreciably from the gauge the setting should be adjusted. Keep the engine in the position to give maximum opening of the contacts and slacken the two screws securing the plate carrying the fixed contact. Move the plate until the gap is to the thickness of the gauge, tighten the two screws and re-check the setting.

THE BATTERY

Lucas STXW11A. 12v. 63 amp. hr.

About once every month (more frequently in hot climates), top up each cell with distilled water to bring the acid solution (electrolyte) level with the top of the separators. Do not use tap water and do not use a naked light when examining the condition of the cells.

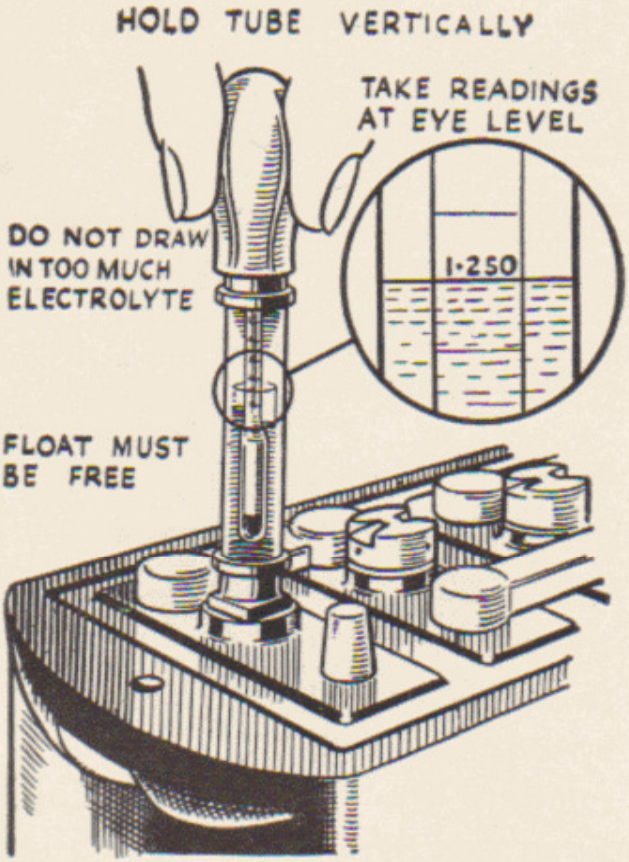


Fig. 49. Checking electrolyte specific gravity.

Keep the terminals clean. If they are corroded, scrape them clean and smear with vaseline. Wipe away all dirt and moisture from the top of the battery, and make sure that the connections and fixing bolts are clean and occasionally check the condition of the battery by taking hydrometer readings of the specific gravity of the electrolyte in each of the cells. Readings should not be taken immediately after topping up the cells. Specific gravity readings and their indications are as follows :—

1.280—1.300	....	Battery fully charged.
About 1.210	....	Battery about half discharged.
Below 1.150	....	Battery fully discharged.

These readings are given assuming the temperature of the solution is about 60°F. For particulars regarding temperature corrections see the Lucas " First charge instructions," a copy of which can be obtained on application.

The readings of all cells should be approximately the same. If one cell gives a reading very different from the rest, it may be that acid has been spilled or has leaked from this particular cell, or there may be a short circuit between the plates. In the latter case the battery should be examined by a Lucas Service Agent or Depot.

Never leave the battery in a discharged condition for any length of time. Have it fully charged, and every fortnight give it a short refreshing charge.

THE DYNAMO AND CUT-OUT

The dynamo has a compensated voltage control of the charge rate which is governed by the state of charge of the battery, and is not within the control of the driver.

The regulator unit ensures that the dynamo charges the battery at the rate best suited to its condition. It automatically provides a large charging current for a discharged battery and a low trickle charge for a battery in a fully charged state.

When the engine is at rest, or running slowly, the dynamo does not develop sufficient current to charge to battery, and under these circumstances, the battery would discharge itself through the dynamo if the cut-out were not fitted. The cut-out is operated by the dynamo voltage, and when, due to increasing speed, the dynamo develops sufficient voltage to actuate the cut-out, the points make contact and so allow current to flow from the dynamo to the battery. In this system, current cannot flow in the reverse direction. The cut-out requires no attention, it is correctly adjusted by the manufacturers and the sealed unit must not be tampered with.

About every 10,000 miles, or once a year, remove the dynamo cover band to inspect the brushes and commutator. Check that the brushes move freely in their holders by holding back the

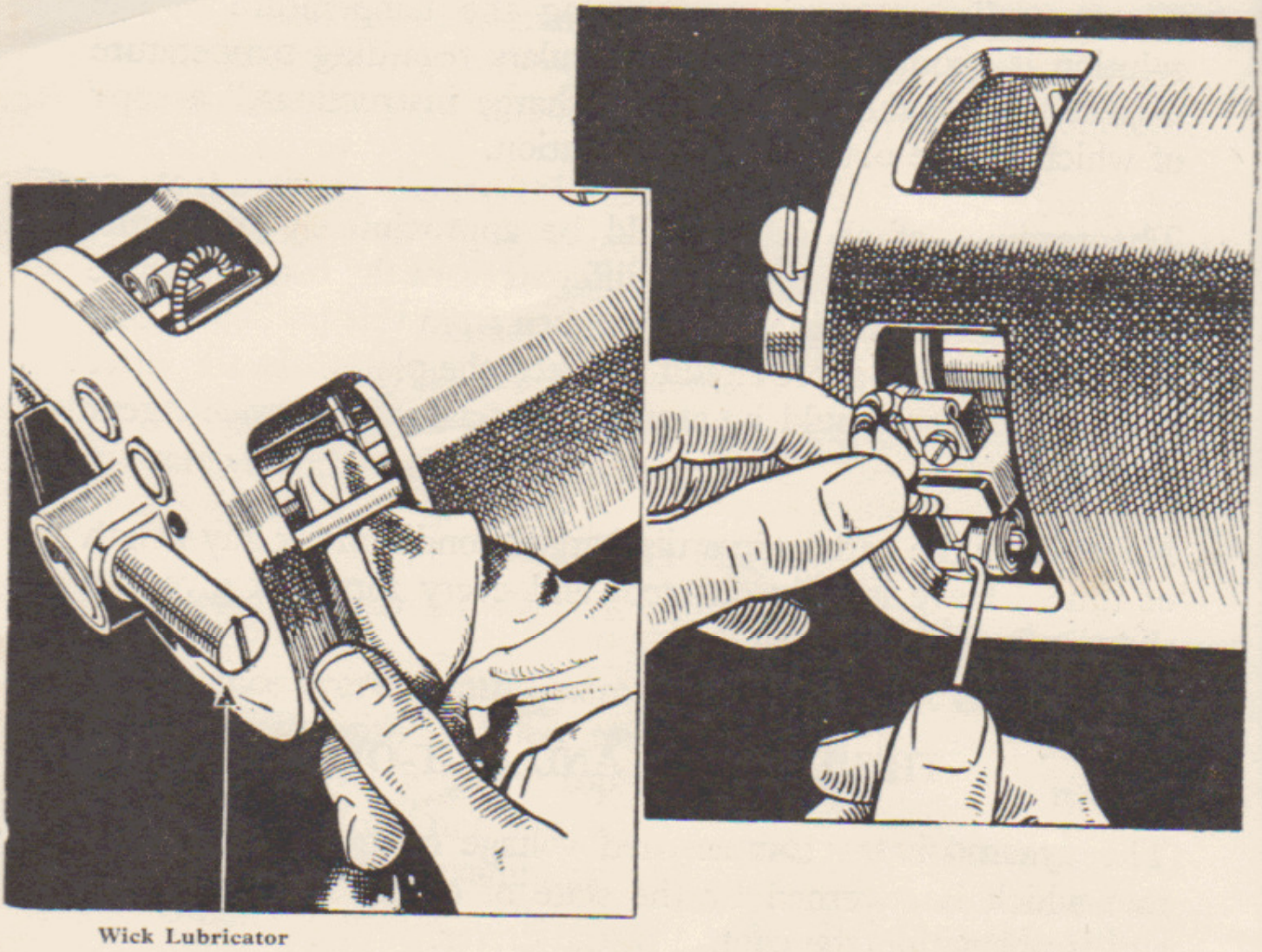


Fig. 50. Dynamo commutator cleaning and brush freeness.

brush springs and pulling gently on the flexible connectors (see Fig. 50). If a brush is inclined to stick, remove it from its holder and clean its sides with a petrol moistened cloth. Be careful to replace brushes in their original positions in order to retain the " bedding." Brushes which have worn so that they will not bear correctly on the commutator should be replaced and properly bedded at a Lucas Agent or Service Depot.

The commutator should be clean, free from oil or dirt and should have a polished appearance. If it is dirty, clean it by pressing against it a fine dry duster while the crankshaft is slowly turned. If the commutator is very dirty, moisten the cloth with petrol (see Fig. 50).

Belt Tightness

See that the belt is sufficiently tight to drive the dynamo. It can be adjusted by slackening the securing nuts and swinging the dynamo in the desired direction. Retighten the

nuts whilst holding the dynamo in the adjusted position. Don't over-tighten the belt as this would put an undue load on the dynamo and the water pump bearings.

THE STARTER MOTOR

To obtain the longest life from the starter and battery, the following points should be observed when starting :—

1. See that the controls are properly set.
2. Press the starter button, and, of course, release it as soon as the engine fires.
3. Never operate the starter while the engine is still running. If the engine will not fire at once, allow it to come to rest before pressing the button again.
4. Do not run the battery down by keeping the starter on, when the engine will not start.
5. In very cold weather, depress the clutch pedal when starting, to relieve the starter motor of the considerable drag in the gearbox.

Cleaning and Lubrication

About every 10,000 miles or once a year remove the starter cover band in order to examine the brushes and commutator. Check that the brushes move freely in their holders by holding back the brush springs and gently pulling the flexible connectors. If the movement is sluggish, remove the brush from its holder and clean its sides with a petrol moistened cloth. Replace brushes in their original positions in order to retain the correct "bedding."

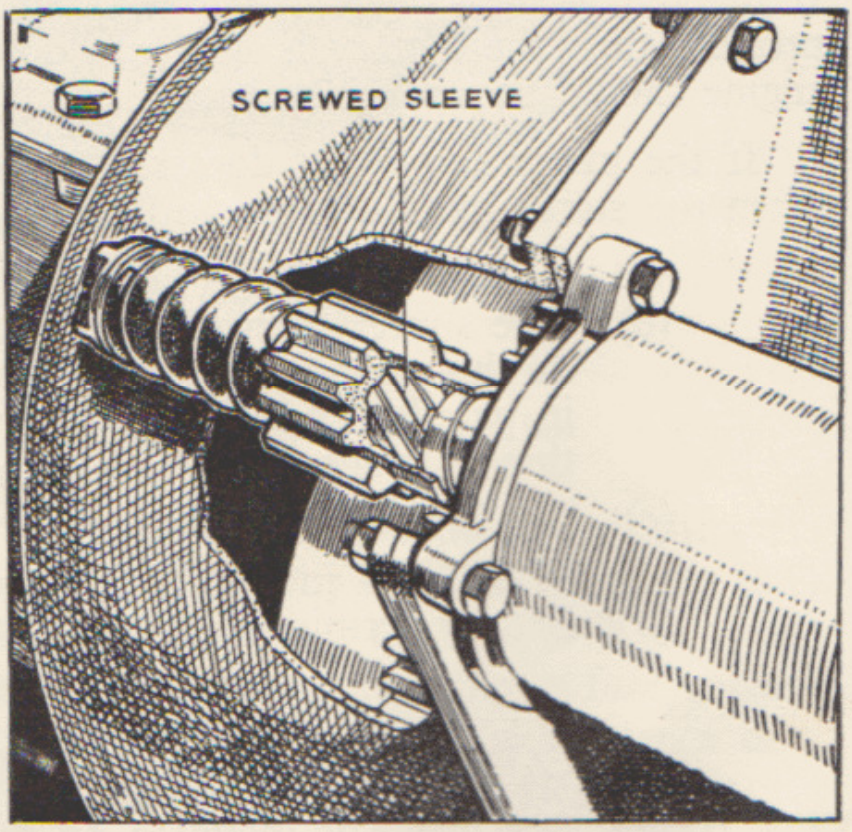


Fig. 51. Starter motor drive.

If the brushes are worn so that they do not bear

properly on the commutator, they should be replaced by a Lucas Agent or Service Depot and correctly "bedded" to the commutator.

The commutator should be clean, oil and dirt-free and should have a polished appearance. If it is dirty, clean it by pressing a soft, dry cloth against it while the starter motor shaft is turned by hand. If the commutator is very dirty the cloth should be moistened with petrol.

Should the starter pinion become jammed in mesh with the flywheel, it can be released by turning the crankshaft with the starting handle in the normal manner, or select top gear and rock the car backwards and forwards until the pinion releases itself.

Starter Motor only turns Crankshaft slowly

The battery may be run down due to leaving the ignition switch on, or leaving the car standing with the head lamps on. The grade of oil in the engine sump may be too heavy.

Starter Motor will not turn Crankshaft

This may be due to a broken connection between the starter and battery or a bad contact.

If the red warning light goes out when the starter button is pressed, then the battery is in a run down condition and the engine should be started by hand.

If the motor hums but does not engage with the flywheel when the starter button is pressed, then :—

(*a*) The battery may be in a run down condition.

(*b*) The starter screwed sleeve requires cleaning. To do this remove the starter, wash the screwed sleeve in paraffin and afterwards give it a mere trace of thin machine oil.

(*c*) The brushes are sticking or the commutator requires cleaning.

(*d*) Battery terminals are not clean or secure.

CONTROL BOX AND FUSES

The control box which is mounted on the engine side of the dash and on the right-hand side houses the voltage regulator and cut-out. The regulator and cut-out are protected by a moulded cover which is secured by a sealed spring clip. On no account should this unit be tampered with.

Fuses

The fuse holders are clearly marked (see figure 52) to show the circuits which the fuses protect and spare fuses are clipped to the side of the control box. When replacing a fuse, it is important to use the correct replacement (Lucas No. FA.25, 25 amperes capacity) the fusing value is marked on a coloured paper slip inside the tube.

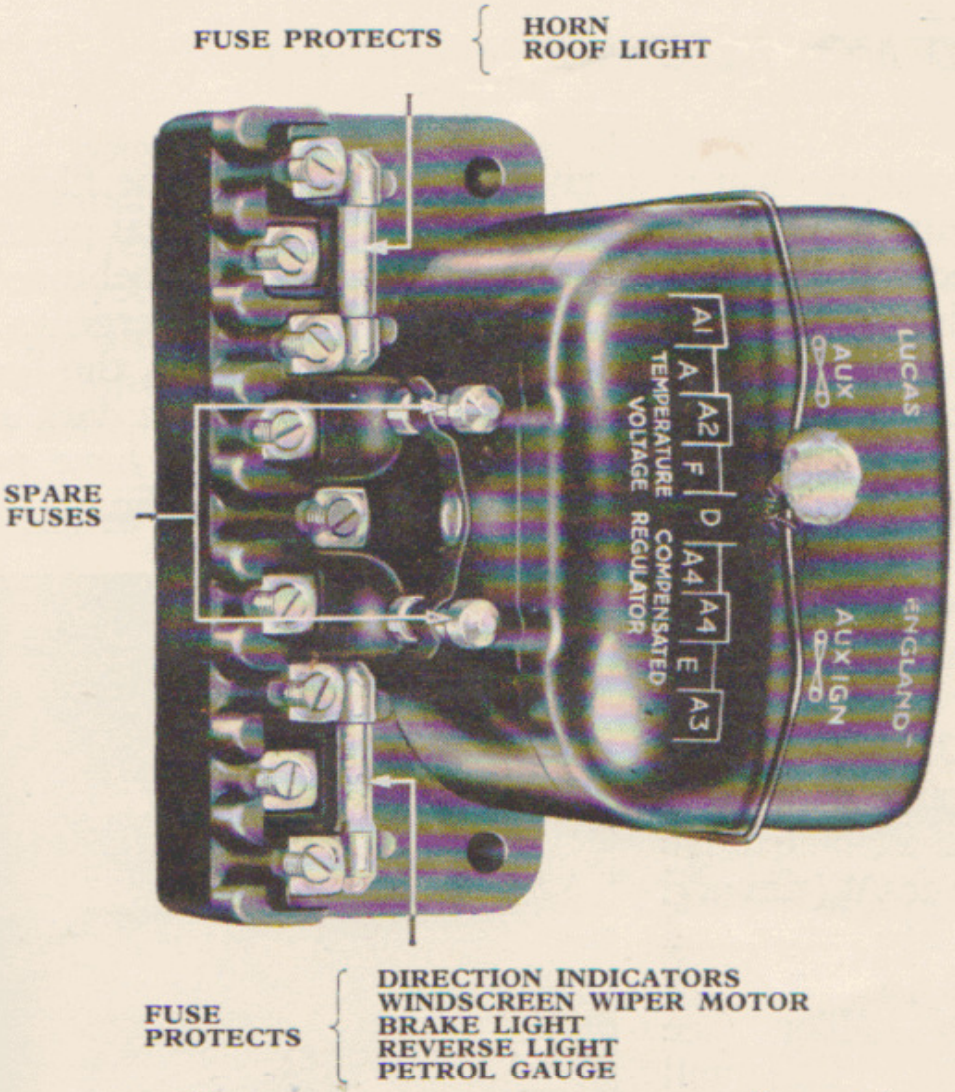


Fig. 52. Control box.

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 has blown, the broken ends of the wire will be visible inside the glass tube. Before replacing a blown fuse, inspect the wiring of the units that have failed for evidence of a short circuit or other fault which may have caused the fuse to blow and remedy the cause of the trouble. 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 Lucas Agent or Service Depot.

LAMPS

NOTE.—The information given in the following paragraphs referring to head lamp bulb types and head lamp dipper mechanism is for cars for home use only. Cars for export are fitted with double filament head lamp bulbs and fixed reflectors. (*See wiring diagrams on page* 83 *and* 84.)

HEAD LAMPS (Lucas No. 54. 12 volt, 36 watt single contact bulbs fitted).

FOCUSING AND ALIGNMENT

Focusing

In order for the lamps to give a parallel beam, the filament of the bulb must be as near as possible to the focal point of the reflector. If the bulb filament is situated behind the focal point of the reflector, the beam will be divergent. If the filament is situated in front of the focal point, the beam will be convergent. In either case there will be a dark area in the centre of the beam, thus the lamps will have poor range and will cause dazzle to approaching traffic.

To check the focus of the lamps, set the front of the car approximately 25 ft. from a wall or garage door and square to it. Remove the lamp front (rim and glass) and reflector, and slacken adjusting screw for bulb holder (see Fig. 56). This will allow bulb holder to be moved forwards or backwards as required for correct focus.

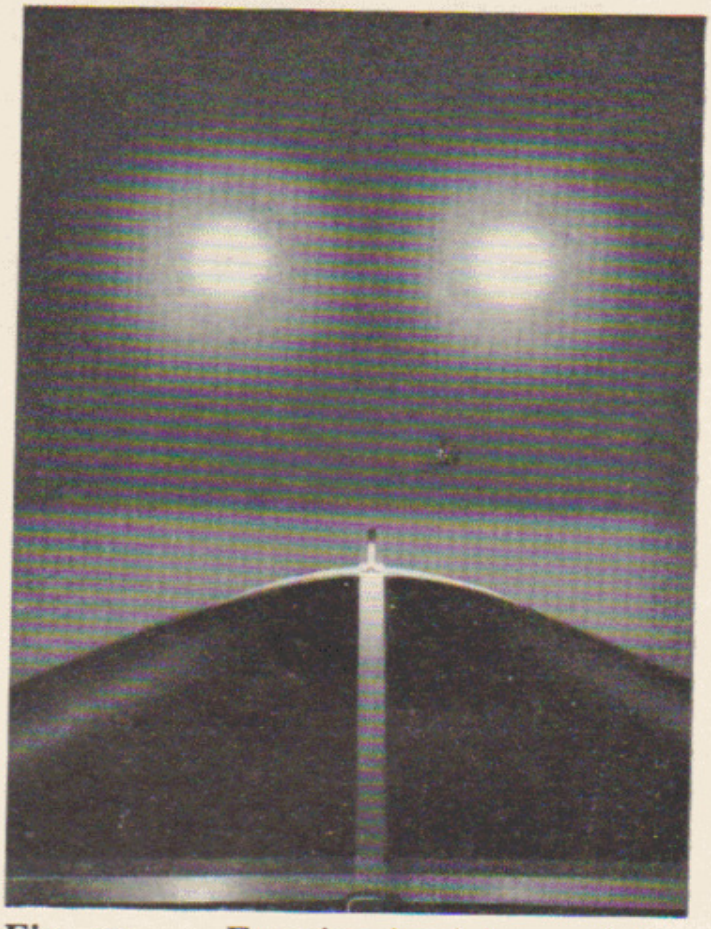


Fig. 53. Focusing head lamps (with lamp front removed).

The correct position for the bulb is indicated when the beam projected on the "screen" gives the greatest concentrated circle of light (see Fig. 53). Refit lamp front as described on page 78 and check for alignment of the beams of light.

Alignment

The lamp must be set to ensure that the beam is projected below the horizontal, taking into account that the lamp must be dipped slightly more to compensate for road inequalities and heavy loads in the rear of the vehicle.

To Check Alignment

Park the car in front of a garage door or wall and square to it. The car must stand on level ground. The front of the lamps should be approximately 25 ft. from the "screen." The car must be unladen and the tyres at the correct pressures. A point should be marked on the screen in line with the bonnet hinge, viewed either from inside the car or through the rear window. Two crosses should be drawn on the "screen" 28″ above the ground level and 21″ apart for the roadster, 33″ above the ground level and 26″ apart for the saloon, measured equally about the centre point (see Fig. 54). Switch on the head lamps 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, slacken the single fixing nut under the wing and set the head lamp in correct alignment. Tighten fixing nut and recheck the alignment.

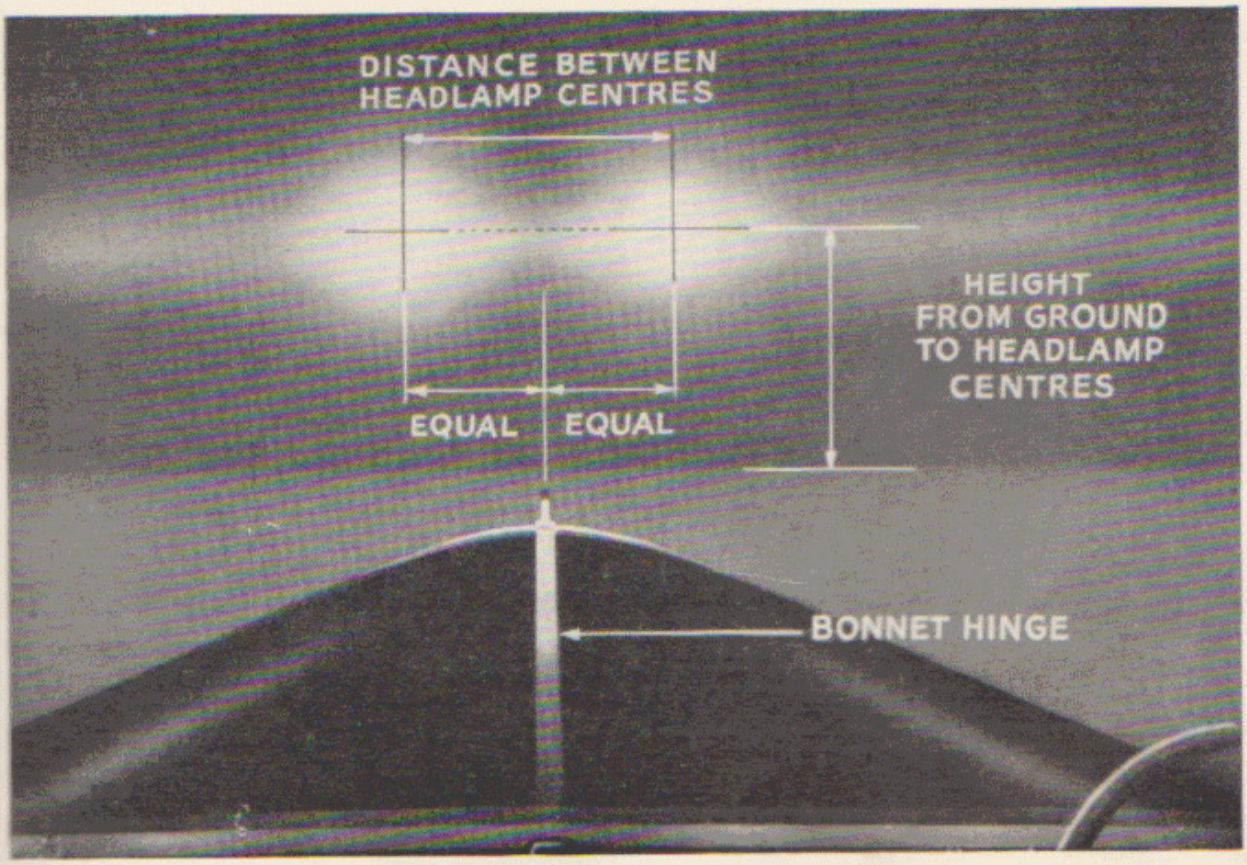


Fig. 54. Head lamps correctly aligned and focused (lamp fronts fitted).

Removal of Lamp Front

To remove the lamp front for cleaning or bulb replacement, place first and second finger around the securing clip at the bottom of the lamp, pull it towards you and swing it down out of engagement with the rim. Ease the rim from the bottom of the lamp first before completely removing. When replacing, locate the top of the rim first before pushing the bottom home.

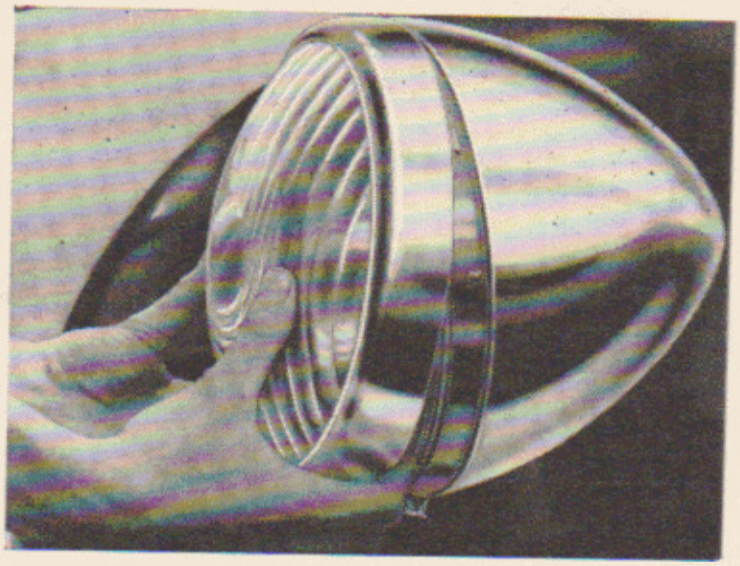


Fig. 55. Head lamp (front removal).

To Remove Reflectors

Remove lamp front, then remove the cork washer around the rim of the reflector. This will expose a screw which must be removed. Then turn the reflector until "O" stamped on the flange of the reflector lines up with the "O" stamped on the lamp body at the point where the top of the lamp front engages, this will disengage the clips. The reflector can now be removed. Replacement is a reversal of the above instructions. Ensure that the clips are engaged before replacing the screw.

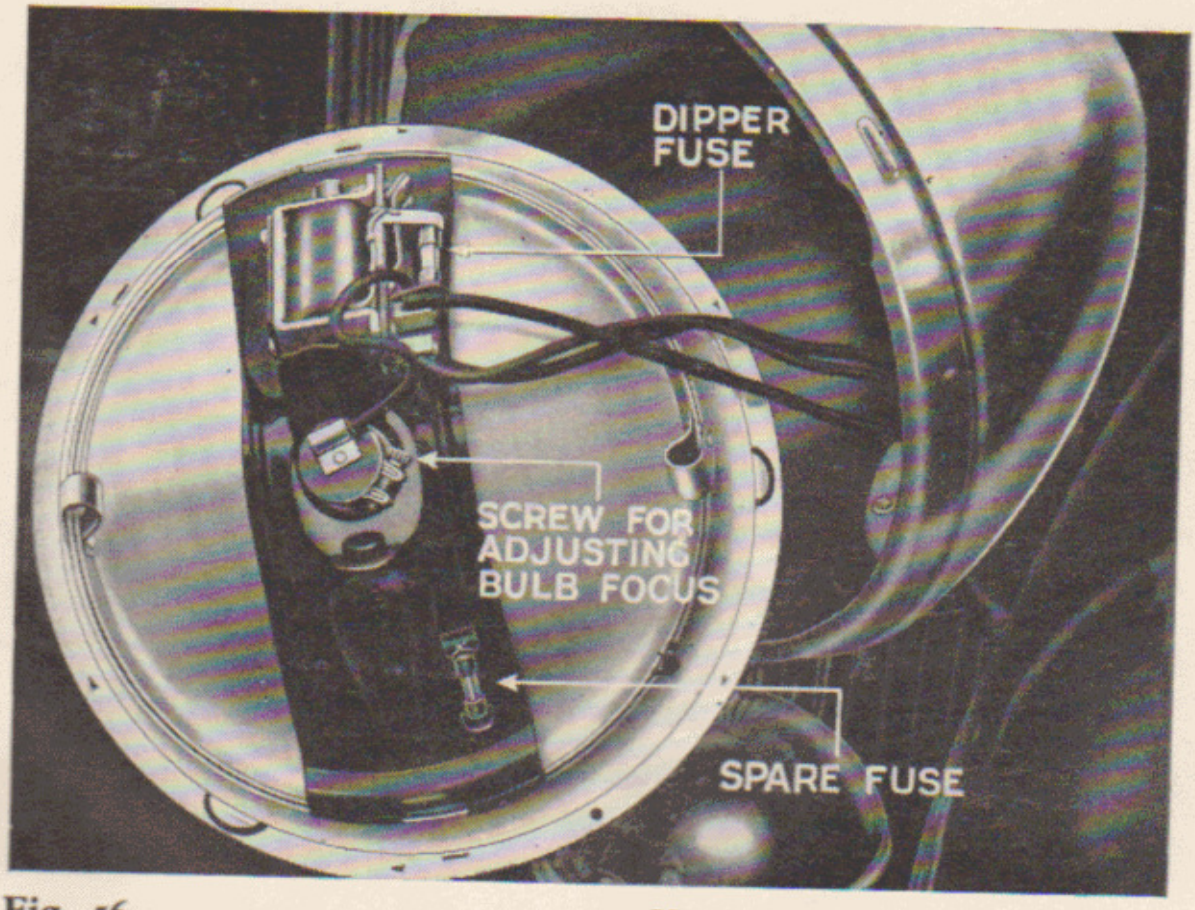


Fig. 56. Head lamp dipper mechanism.

Left-Hand Reflector, Dipper Mechanism and Fuse

With the lighting switch in the " H " position the dipping switch can be effectively operated. The left-hand head lamp reflector, controlled by a solenoid, hinges down causing the light to be directed towards the kerb. As the reflector tilts, it automatically switches out the right-hand head light. Should the reflector not tilt when the dipper switch is operated then the right-hand head light will not be extinguished. The trouble will be either a blown dipper fuse or faulty wiring from the dipper switch.

To inspect dipper fuse, remove the left-hand lamp front and reflector. Do not have the lighting switch in the " H " position while removing the reflector.

If the units in any of these circuits fail, inspect the particular fuse protecting them, and if it has blown, examine for faulty wiring and then replace it with the spare fuse provided. If the new fuse blows, the cause of the trouble must be found, and we advise that the equipment be examined by a Lucas Service Depot. Never fit any fuse other than the standard fuse as originally fitted (correct fuse, Lucas No. FA6, 6 amp. capacity).

Side Lamps

(Lucas No. 207, 12 volt, 6 watt single contact bulbs fitted.)

To replace bulb, release the fixing screw at the back of the lamp and pull the front complete with bulb-holder away from the lamp body. The bulb can then be withdrawn (see Fig. 57).

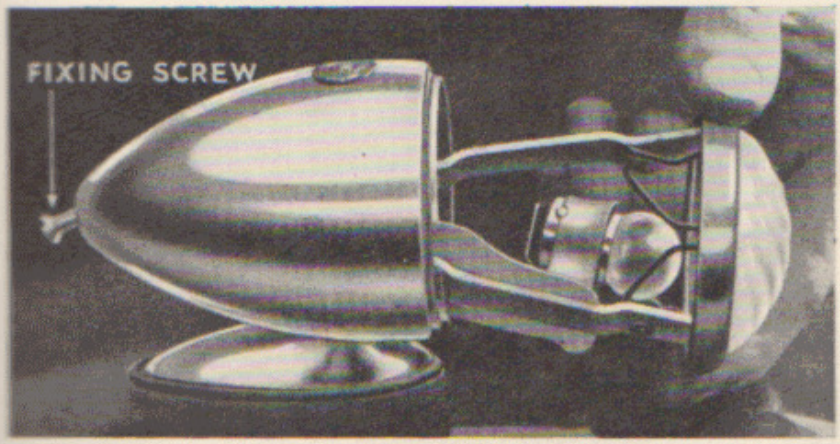


Fig. 57. Side lamp bulb removal.

Tail and Brake Lamps (Lucas No. 207, 12 volt, 6 watt single contact bulbs fitted).

To obtain access to the bulbs for replacement, unscrew the knurled screw at the edge of each glass cover. The covers can then be swung open (see Figs. 58 and 59).

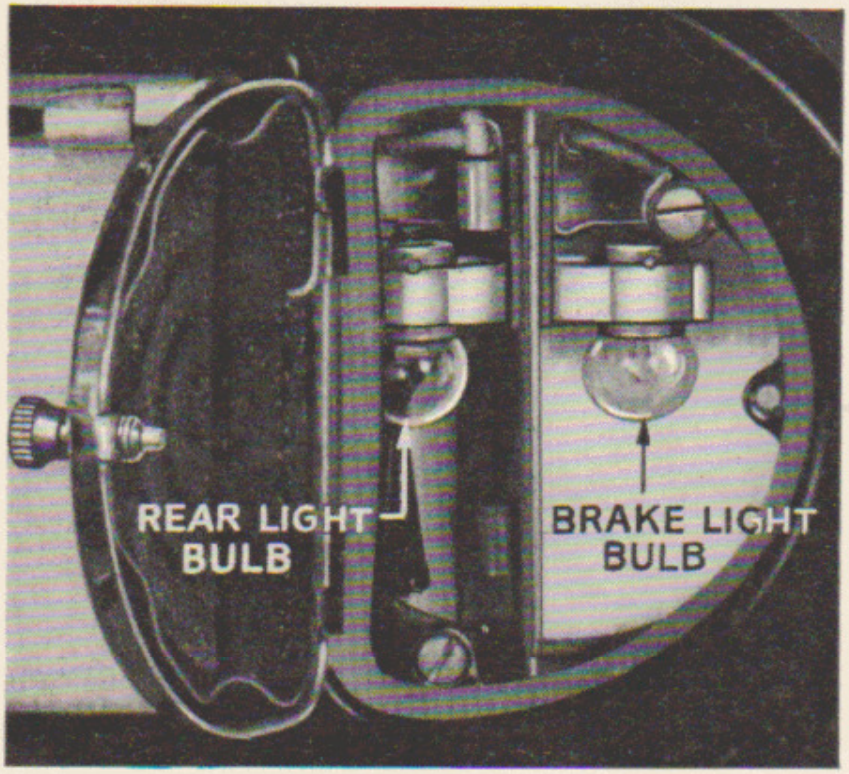


Fig. 58. Tail Lamp.

Reversing Lamp (Lucas No. 1, 12 volt, 24 watt single contact bulb fitted).

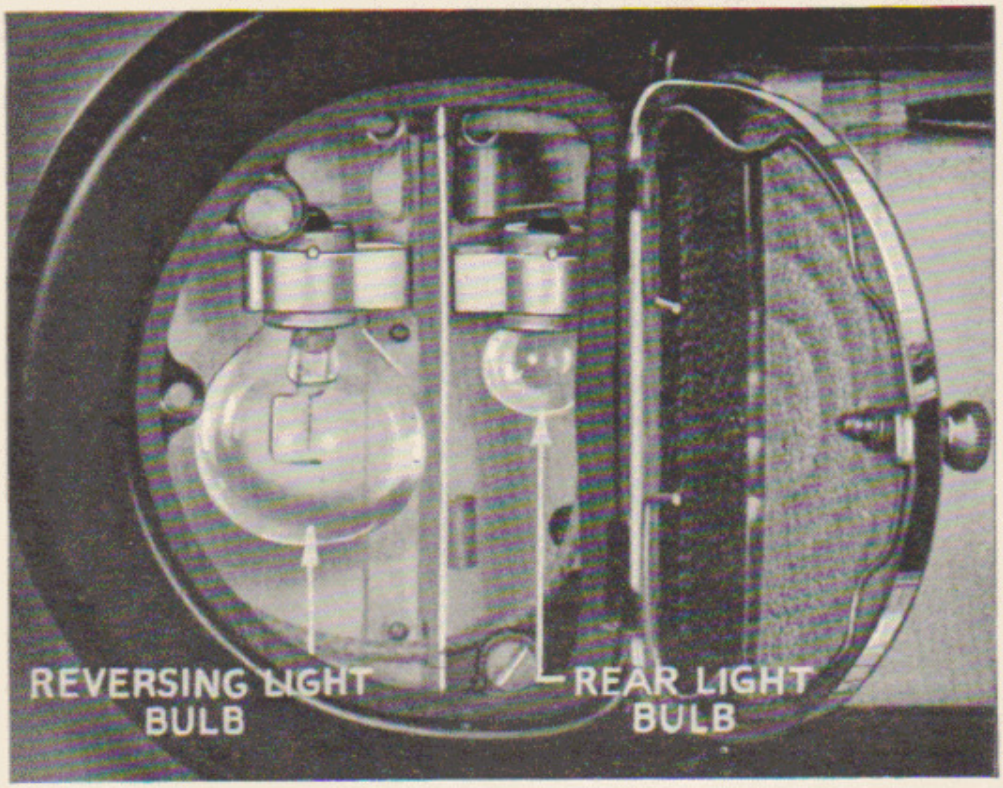


Fig. 59. Tail and reversing Lamp.

Roof Lamp

(Lucas No. 207, 12 volt, 6 watt single contact bulb fitted.) To gain access to the bulb, release clip and remove " glass." Ensure that tongue on one end of " glass " is inside holder before clipping it back into position.

Ignition Warning Light

(Lucas No. 1224M, 12 volt, 2.4 watt screw cap type bulb fitted.)

Should the bulb burn out, its failure will not affect the ignition system, but it should be replaced at the earliest opportunity.

Direction Indicators

(Lucas No. 256, 12 volt, 3 watt festoon type bulbs fitted.)

To replace bulb withdraw the cover as explained on page 31, fit new bulb and replace cover.

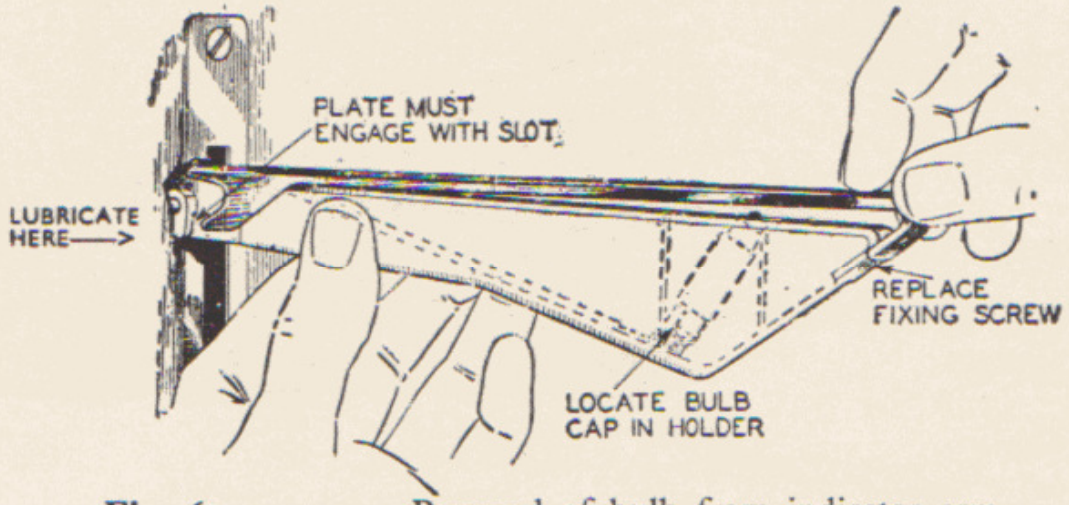


Fig. 60. Removal of bulb from indicator arm.

Instrument Panel Lights

(Lucas No. 1224M, 12 volt, 2.4 watt screw cap type bulb fitted.)

To replace bulb withdraw the small bulb holder from the panel, then the bulb can be screwed out. If the new bulb is screwed too tightly into the holder difficulty will be experienced when fitting the holder into the panel.

WINDSCREEN WIPER MOTOR

For operation see page 8.

WINDTONE HORNS

Each electric horn, before being passed out of the works, is adjusted to give its best performance, and will give long periods of service without any attention. No adjustment is required in service.

If a horn becomes uncertain in its action, giving only a choking sound, or does not vibrate, it does not follow that the horn has broken down. First ascertain that the trouble is not due to some outside source, *e.g.*, a discharged battery, a loose connection or short circuit in the wiring of the horn, or a blown fuse. If the note is still unsatisfactory do not attempt to dismantle the horn, but return it to a Lucas Service Depot for examination.

PETROL GAUGE

An electrical gauge fitted on the instrument panel indicates the amount of fuel in the tank and is brought into operation when

the ignition is switched on. A rheostat incorporated in the tank unit, is fitted in the top of the petrol tank and connected by an arm to the float which indicates the fuel level by setting the rheostat resistance in a corresponding manner. Thus each petrol level has a different electrical resistance which is suitably indicated on the gauge.

Important

1. On no account should the float arm be bent other than as supplied. The float arm provides both top and bottom stops which prevent the contact arm over-travelling the resistance.
2. Please give the following details in all communications with the makers dealing with petrol gauge units :—
   Year and model of car.
   Code numbers of meter and tank unit.

Localisation of Faults

Symptom.	Cause.	Remedy.
Meter reads full.	(1) Tank unit cable disconnected or broken.	Re-connect.
	(2) Tank unit not "earthed."	Clean body of tank unit and fixing ring.
Meter reads empty.	(1) Meter supply disconnected.	Re-connect.
	(2) Case of meter not "earthed."	Make connection with case of fixing stud to "earth."
	(3) Faulty meter.	Return for repair.
	(4) Tank unit cable "earthed."	Replace cable.
	(5) Terminal on tank unit "earthed."	Return for repair.

ELECTRICAL COMPONENT SPECIFICATION

SPECIFICATION OF EQUIPMENT			BULBS				FUSES
	Model	*Service No.*		*Volt*	*Wt.*	*Lucas No.*	
Dynamo	C45YV/3	228139	Head Lamps :-	12	36	54	
Starter	M418G-0	255986	Fog Lamp (when fitted) :-	12	60	90	
Switch	PLC6	34016A	Side, Stop, Tail & Roof Lamps:-	12	6	207	Accessories :- No. FA25 25 amperes
Regulator and fuse unit	RF91	37055A	Reverse Lamp :-	12	24	1	
Battery	STXW11A		Panel Lamps & Ignition Warn'g Light :-	12	2.4	1224 M	Dipping Reflect. No. FA6 6 amperes
Distribut'r	DKYH4A	40074A					
Coil	B12	402033	Trafficators :-	12	3	256	

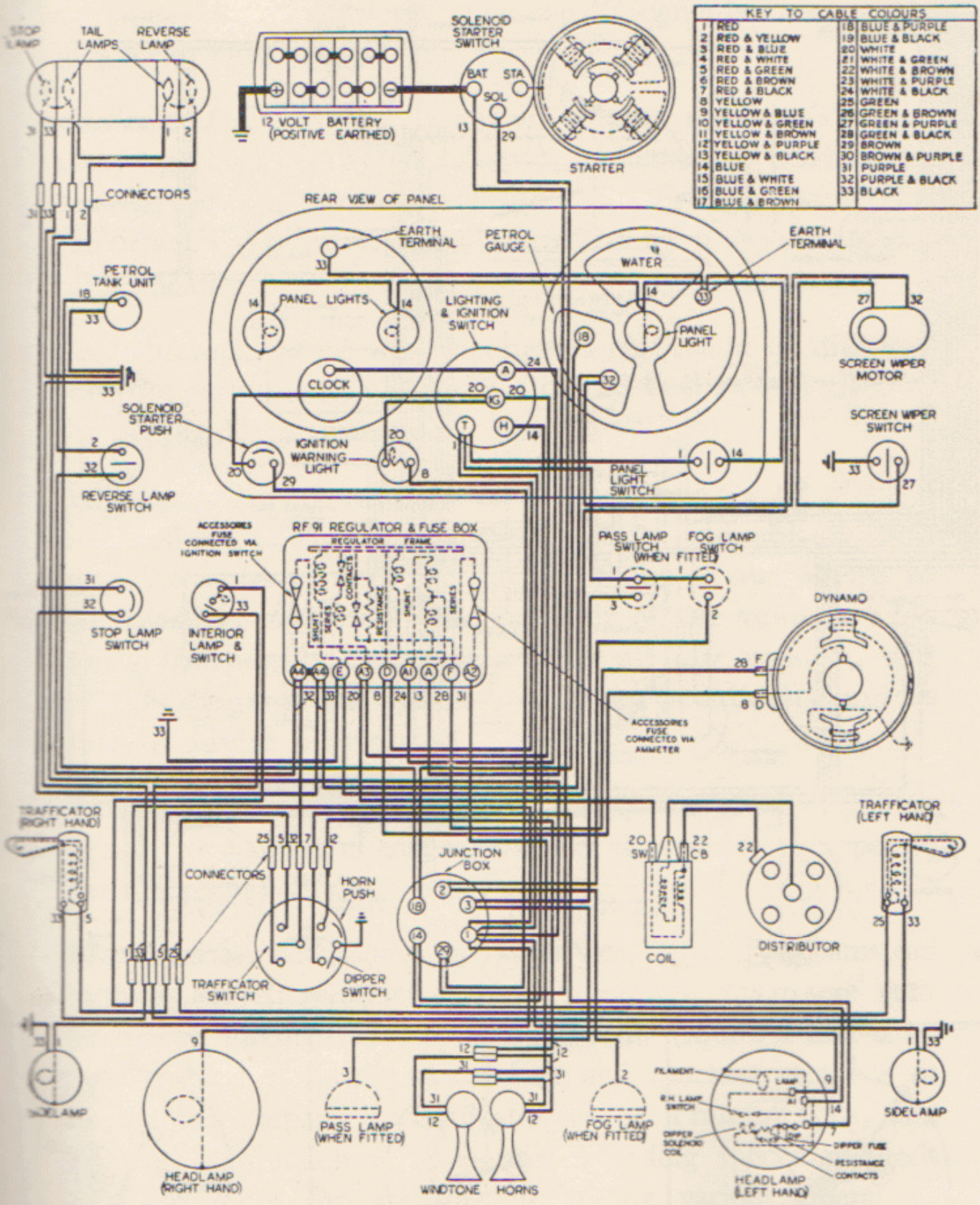


Fig. 61 Wiring diagram (Saloon)

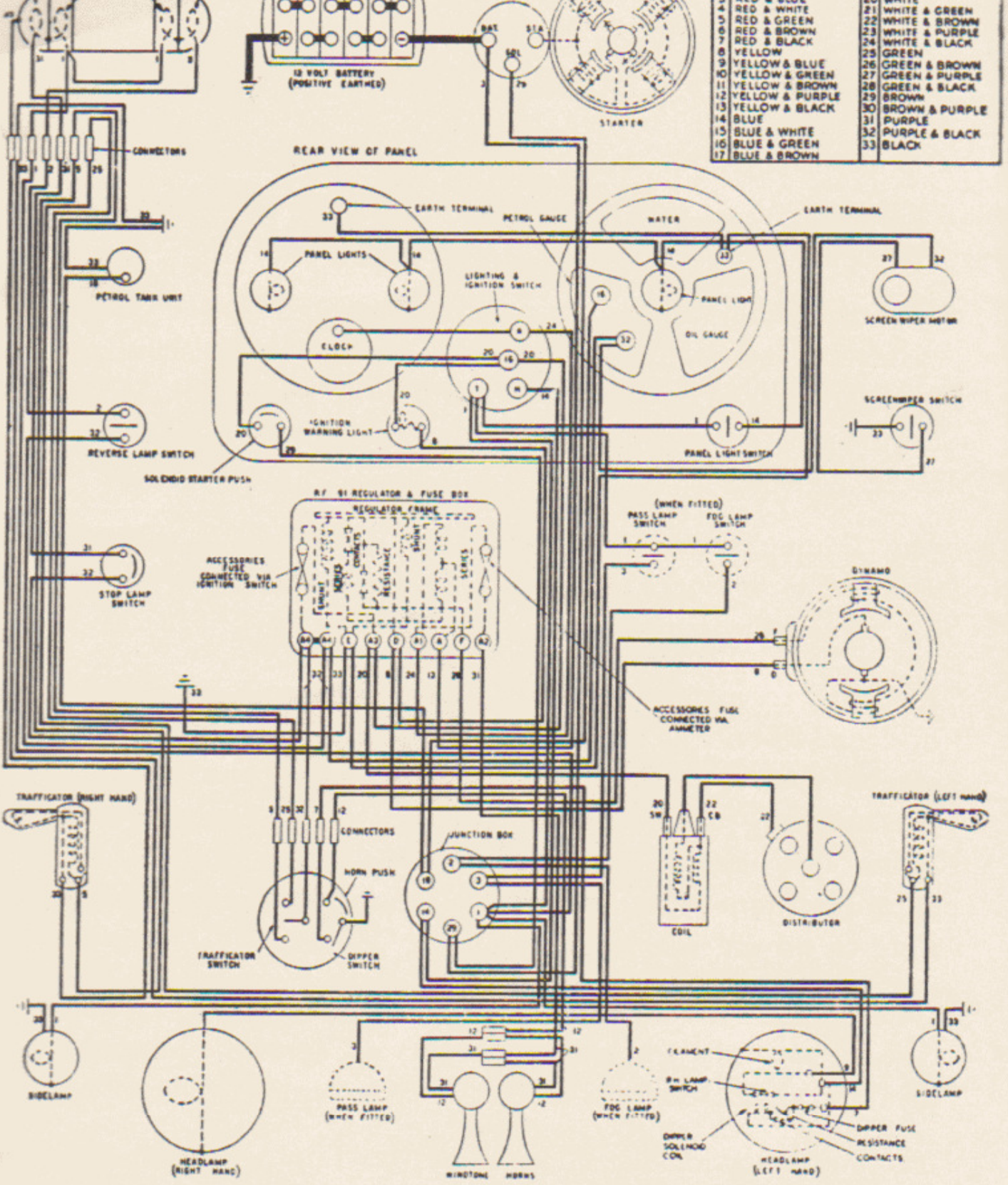


Fig. 62. Wiring Diagram (Roadster).

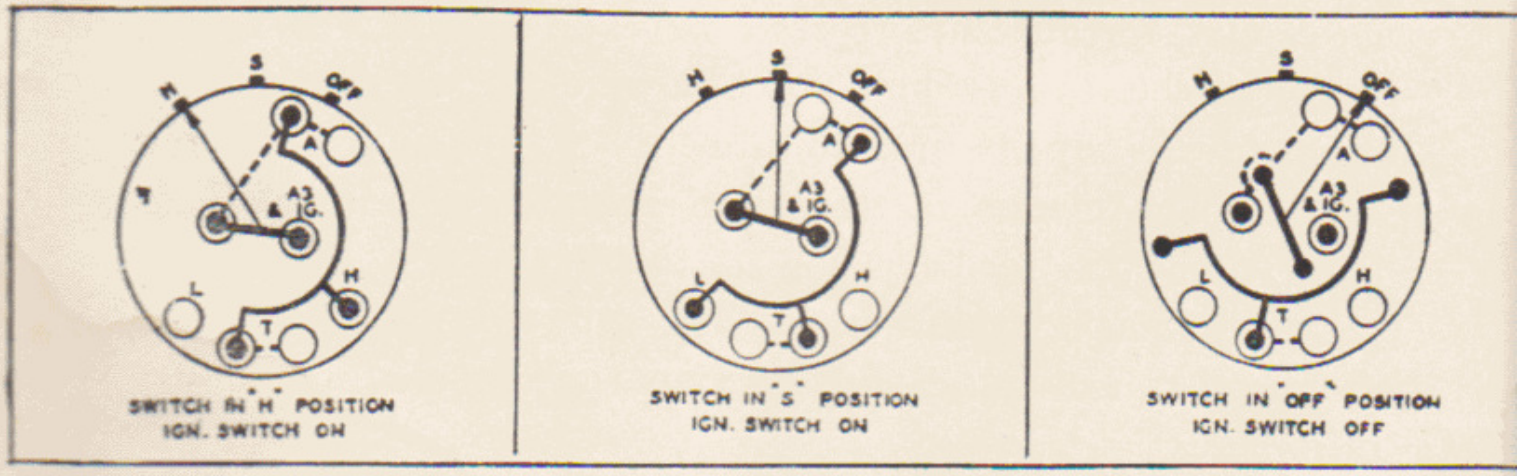


Fig. 63. Internal connections of lighting and ignition switch.

SERVICE

On despatch from our works every **TRIUMPH** car is equipped with an envelope containing a Guarantee and Ownership Registration Form.

We respectfully ask our customers to avail themselves of the advantages offered by our Service Scheme by making the necessary entries on the Form and returning it to the Service Department, Coventry, as soon after taking possession of the car as possible.

Any Triumph owner who experiences any doubt or difficulty with the performance of his car is invited to communicate with the Service Department.

As, however, many such matters can more readily be attended by actual test of the car, **it is particularly desirable in such circumstances to seek the advice of one of our agents in the locality, preferably the supplier of the vehicle, who, being thoroughly conversant with all our models, will rapidly diagnose the symptoms of any peculiarity and be able to advise a remedy.**

Considerable care is exercised in the choice of all Triumph Agents, particularly to ensure that they are suitably equipped to give after-sales service.

There is a Service School at the Service Dept., Fletchamstead Highway, Coventry, which enables Triumph Agents to send their mechanics, foremen and representatives to acquire a first-hand and complete insight into the best and quickest methods of dealing with repairs and adjustments of Triumph cars, and valuable information is also given regarding special methods and appliances for assisting in getting various operations performed more expeditiously. The course terminates with an examination and successful students are awarded certificates of merit.

A maintenance scheme is in operation which covers all cars of the Company's make, and is in force at both the Coventry and London Service Departments.

The scheme covers all the adjustments and operations required in the proper maintenance of a car and forms part of the scheme for " Service after Sale." For this reason, the subscription for enrolment into the scheme is quite moderate and shows a substantial saving over the usual charges made for having the work done separately.

The maintenance fee is £20 0s. 0d. for 1 year.

Full particulars of the scheme can be obtained from the Service Department.

SERVICE, REPAIR AND SPARE PARTS DEPOTS

Completely equipped Service and Repair Depots are to be found at our Head Office :—

COVENTRY :

Service and Spares Department, Fletchamstead Highway, Canley.

Telegrams : " Flywheel, Coventry," *Telephone : Coventry* 62471 (4 *lines*)

or

LONDON SERVICE DEPOT :

Standard Road, Chase Estate, Park Royal, N.W.10.

Telegrams : "Stantri, Norphone, London" *Telephone No. : Elgar* 6511 (11 *lines*)

All our principal Agents hold comprehensive stocks of spares for current models, but full stocks of spare parts for all vehicles are held in our two main depots.

Special arrangements are in force at Coventry and London whereby orders can be attended to with the utmost expedition. Complete lists of Triumph Agents are published from time to time in the motoring press.

Every TRIUMPH chassis has a distinguishing number. This is known as the car commission number, and should always be quoted, together with the engine number when spares or renewals are ordered.

When ordering spare parts it is always advisable to give, in addition to the car commission number, a brief description of the part required.

Proprietary equipment as fitted to Triumph cars can be obtained direct from the Spares Department, Standard Motor Co. Ltd.

All claims for replacement of alleged defective parts must be referred direct to the respective manufacturers to be dealt with under the terms of their guarantee. Only the clutch is serviced by our Service Departments.

Component	Manufacturer
Lighting, Ignition and Starting Equipment	Joseph Lucas Ltd., Great King Street, Birmingham 19
Windscreen Wiper	Joseph Lucas Ltd.
Direction Indicators	Joseph Lucas Ltd.
Electric Horns	Joseph Lucas Ltd.
Hydraulic Dampers	Girling Ltd., Luvax Works, Stanley Gardens, London, W.3.
Speedometer and Driving Cable	British Jaeger Ltd., Chronos Works, North Circular Road, London, N.W.2.
Electric Clock	British Jaeger Ltd.
Petrol Gauge	British Jaeger Ltd.
Thermometer	British Jaeger Ltd.
Oil Pressure Gauge	British Jaeger Ltd.
Fuel Pump	A. C. Sphinx Sparking Plug Co., Watling Street, Dunstable.
Carburettor	Solex Ltd., 223/231, Marylebone Road, London, N.W.1.
Tyres	Dunlop Rubber Co. Ltd., Fort Dunlop, Erdington, Birmingham.
Road Wheels	Dunlop Rim and Wheel Co. Ltd., Holbrooks Lane, Coventry.
Brakes	Girling Ltd., King's Road, Tyseley, Birmingham 11.
Safety Glass	Triplex Ltd., Kings Norton, Birmingham.
Sparking Plugs	Champion Sparking Plug Co., Fetham, Middlesex.
Easy Jacks	Smith's Jacking System, Edgeware Road, Cricklewood, London, N.W.2.
Fan Belt	British Tyre & Rubber, Herga House, Vincent Square, London, S.W.1.
Oil Cleaner	"Tecalemit," Ltd., Great West Road, Brentford, Middlesex.
Air Silencer and Cleaner	
(Saloon)	A. C. Sphinx Sparking Plug Co., Dunstable
(Roadster)	Burgess Products Co. Ltd., Brookfield Road, Hinckley, Leicestershire.
Clutch	Borg & Beck Ltd., Tachbrook Road, Leamington Spa.

LUCAS SERVICE DEPOTS

BELFAST ..... 51/55, Upper Library Street
Telephone : Belfast 25617 — *Telegrams : " Servdep, Belfast "*

BIRMINGHAM, 18 ..... Great Hampton Street
Telephone : Central 8401 — *Telegrams : " Lucas, Telex, Birmingham "*

BRIGHTON, 4 ..... 85, Old Shoreham Road, Hove
Telephone : Hove 1146 — *Telegrams : " Luserv, Brighton"*

BRISTOL, 4 ..... 345, Bath Road
Telephone : Bristol 76001 — *Telegrams : " Kingly, Bristol "*

CARDIFF ..... 54a, Penarth Road
Telephone : Cardiff 4603 — *Telegrams : " Lucas, Cardiff "*

DUBLIN ..... Portland Street North, North Circular Road
Telephone : Dublin 72601 — *Telegrams : " Luserv, Dublin "*

EDINBURGH, 11 ..... 60, Stevenson Road, Gorgie
Telephone : Edinburgh 62921 — *Telegrams : " Luserv, Edinburgh "*

GLASGOW, C.3 ..... 4/24, Grant Street (St. George's Road)
Telephone : Douglas 3075 — *Telegrams : " Lucas, Glasgow "*

LEEDS, 8 ..... 64, Roseville Road
Telephone : Leeds 28591 — *Telegrams : " Luserdep, Leeds "*

LIVERPOOL, 13 ..... 450/456, Edge Lane
Telephone : Stoneycroft 4721 — *Telegrams : " Luserv, Liverpool "*

LONDON ..... Dordrecht Road, Acton Vale, W.3.
Telephone : Shepherds Bush 3160 — *Telegrams : " Dynomagna, Ealux, London "*

LONDON ..... 757/759, High Road, Leyton, E.10
Telephone : Leytonstone 3361 — *Telegrams : " Luserdep, Leystone, London "*

MANCHESTER ..... Talbot Road, Stretford
Telephone : Longford 1101 — *Telegrams : " Lucas, Stretford "*

NEWCASTLE-ON-TYNE, 1 ..... 64/68, St. Mary's Place
Telephone : Newcastle 25571 — *Telegrams : " Motolite, Newcastle-on-Tyne "*

In addition there are Lucas official battery service agents, official spares stockists and dealers in important centres throughout the country.
Lists on application.

INDEX TO ILLUSTRATIONS

NOTES

RECOMMENDED LUBRICANTS—BRITISH ISLES

COMPONENT	PRICE'S	SHELL	ESSO	DUCKHAM'S	VACUUM	WAKEFIELD
ENGINE Summer	Energol S.A.E. 30	Double Shell	Essolube 30	Duckham's NOL "Thirty"	Mobiloil A	Castrol XL
Winter	Energol S.A.E. 20	Single Shell	Essolube 20	Duckham's NOL "Twenty"	Mobiloil Arctic	Castrolite
Upper Cylinder Lubricant	Energol U.C.L.	Shell Donax U	Essomix	Duckham's Adcoids	Mobil Upperlube	Castrollo
Flushing Oils	Price's Flushing Oil	Shell Flushing Oil	Esso Flushing Oil	Duckham's NOL "Ten"	Mobil Engine Flushing Oil	Wakefield Flushing Oil
GEARBOX	Energol S.A.E. 50	Triple Shell	Essolube 50	Duckham's NOL "Fifty"	Mobiloil BB	Castrol XXL
STEERING BOX AND REAR AXLE	Energol E.P. S.A.E. 140	Shell Spirax 140 E.P.	Esso Expee Compound 140	Duckham's NOL EP 140	Moilube G.X. 140	Castrol Hi-Press
WHEEL HUBS ENGINE WATER (*Hand Gun*) **PUMP**	Belmoline C	Shell Retinax A	Esso Grease	Duckham's H.B.B.	Mobil Hub Grease	Castrolease Heavy
CHASSIS. Grease Nipples (*Hand or Pressure Gun*)		Shell Retinax		Duckham's Laminoid Soft	Mobilgrease No. 4	Castrolease CL
Oil Points (*Oil Can*) Body and Chassis	Energol S.A.E. 20	Single Shell	Essolube 20	Duckham's NOL "Twenty"	Mobil Handy Oil	Oilit
REAR ROAD SPRINGS	Price's Penetrating Oil	Shell Donax P	Esso Penetrating Oil	Duckham's Laminoid Liauid	Mobil Spring Oil	Castrol Penetrating Oil
	ALTERNATIVELY USE REAR AXLE OR ENGINE OIL					
BRAKE CABLES	Belmoline C.G.	Shell Retinax C	Esso Graphite Grease	Duckham's Keenol KG 16	Mobil Graphited Grease	Castrolease Brake Cable Grease
BRAKE RESERVOIR	WAKEFIELD GIRLING BRAKE FLUID (CRIMSON)					

Steering Box	(1 nipple)	THREE STROKES WITH OIL GUN		30	5
Front Axle Swivel Pins	(4 nipples)	THREE OR FOUR STROKES	GREASE GUN	29	1
Front Spring Shackle Pins	(2 nipples)			29	1
Wishbone Shackle Pins	(4 nipples)			29	1
Steering Tie-rods	(4 nipples)			30	1
Propeller Shaft — Splines	(1 nipple)			27	5
Propeller Shaft — Universal Joints	(2 nipples)			27	5
Brake Cables (Hand)	(2 nipples)			26	5
Clutch Pedal Bearing	(1 nipple)			24	5
Fan, Water Pump	(2 nipples)	TWO STROKES		23	1
Wheel Hubs	(4 nipples)	FIVE STROKES		26	5
Gear Change Mechanism — Bracket	(1 nipple)	TWO STROKES		30	5
Gear Change Mechanism — All Connections		OIL CAN		30	5
Ignition Distributor — Cam and Spindle Bearings		OIL AS RECOM-MENDED	OIL CAN	22	5
Ignition Distributor — Automatic Advance Mechanism				22	5
Accelerator and Handbrake Lever				31	5
Controls (Clutch, etc.)				31	5
Clutch Shaft Bearings				24	5
Direction Indicators				31	10
Door Locks, Hinges and Bonnet Fasteners				31	5
Engine Sump — 200 MILES		TOP UP OIL LEVEL		17	
Engine Sump — 200 MILES		DRAIN & REFILL WITH NEW OIL		21	5
Gearbox		TOP UP OIL LEVEL		24	2
Gearbox		DRAIN AND REFILL WITH NEW OIL		24	10
Rear Axle				25	5
Hydraulic Dampers		TOP UP OIL LEVEL		30	10
Road Springs		CLEAN & OIL		29	5
Dynamo Wick		APPLY VASELINE		23	10
Air Cleaner		OIL AS RECOM-MENDED		23	5

Department.

DON'T run your engine for any considerable time whilst in an enclosed space, such as a garage with the doors closed. The dangers of carbon-monoxide poisoning from the exhaust gases are very real under such circumstances.

DON'T neglect to pay regular attention to lubrication and always use a good lubricant as recommended.

DON'T rev. the engine immediately after starting up, but give the oil time to circulate, see page 12.

DON'T continue to run the engine if the oil pressure gauge indicates an abnormally low pressure or if the needle fluctuates unduly, but examine the engine to find the cause. This may be lack of oil.

DON'T run the engine with too little water in the radiator.

DON'T allow the engine to run too fast during the first 500 miles, see page 15.

DON'T forget to make full use of the gearbox when climbing hills. Don't change " up " too soon.

DON'T apply your brakes suddenly except in emergency, it is bad for the passengers, the tyres, the car as a whole and the driver behind who may not be able to pull up as quickly as you.

DON'T forget that rapid cornering not only is uncomfortable for your passengers, but also causes great strains on the chassis and high loads on the wheel bearings, in addition to excessive tyre wear.

DON'T continue to run the car if you feel that there is some slight defect or falling off in power. Investigate this and if you cannot trace the trouble get in touch with our Agent.

DON'T neglect your tyre pressures and examine the covers for flints as well—this will save you money, see page 32.

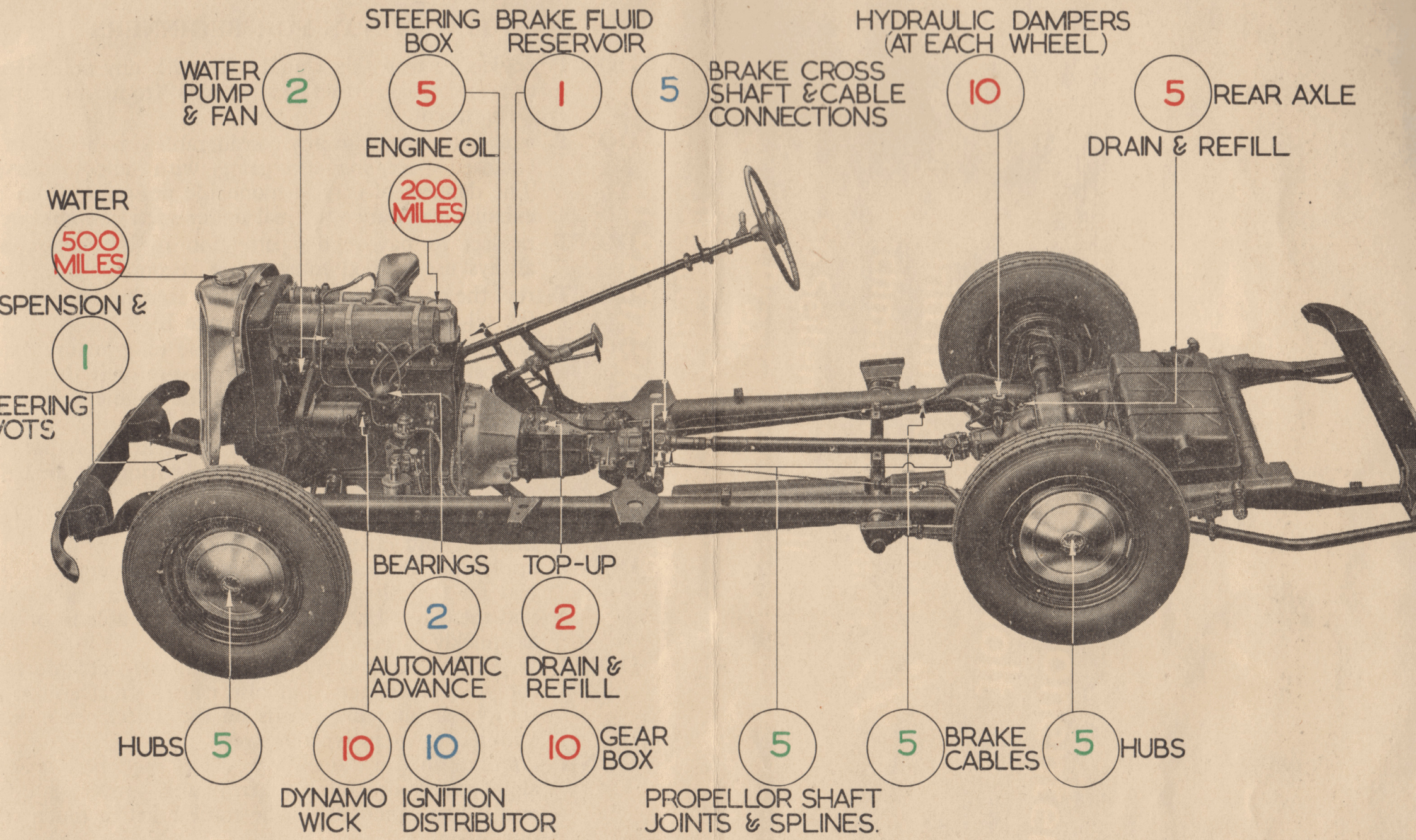
DON'T omit to readjust and focus your head lamps if they have become incorrectly adjusted. You will get more pleasure when driving at night and will not inconvenience other road users. See page 76.

DON'T forget to switch off the ignition and put the hand brake on when the car is at rest.

DON'T neglect the level of the acid in the battery—which is quite accessible by raising the bonnet.

DON'T forget to engage a lower gear when about to descend a very steep hill.

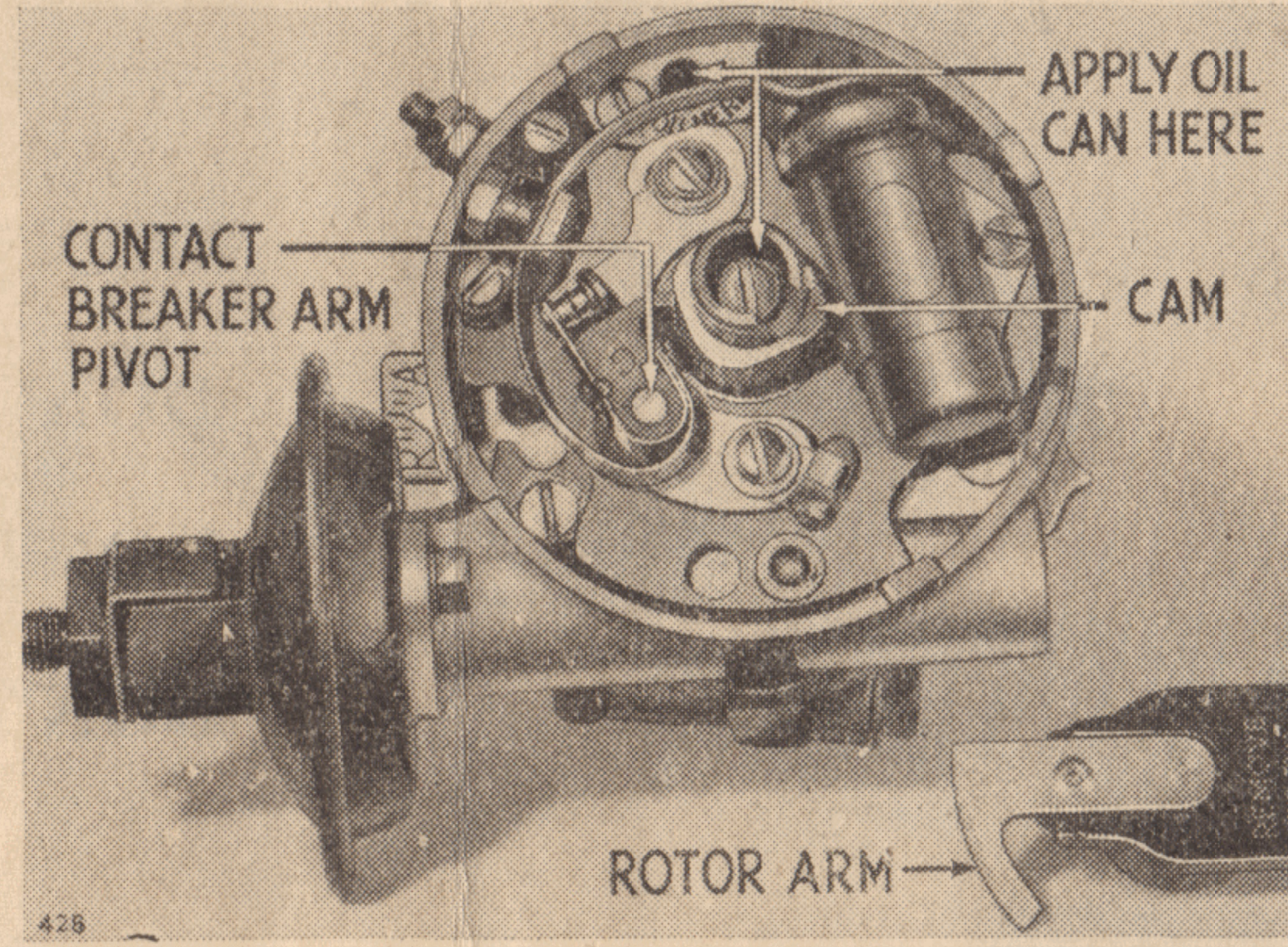
DON'T omit to read " The Highway Code," a copy of which



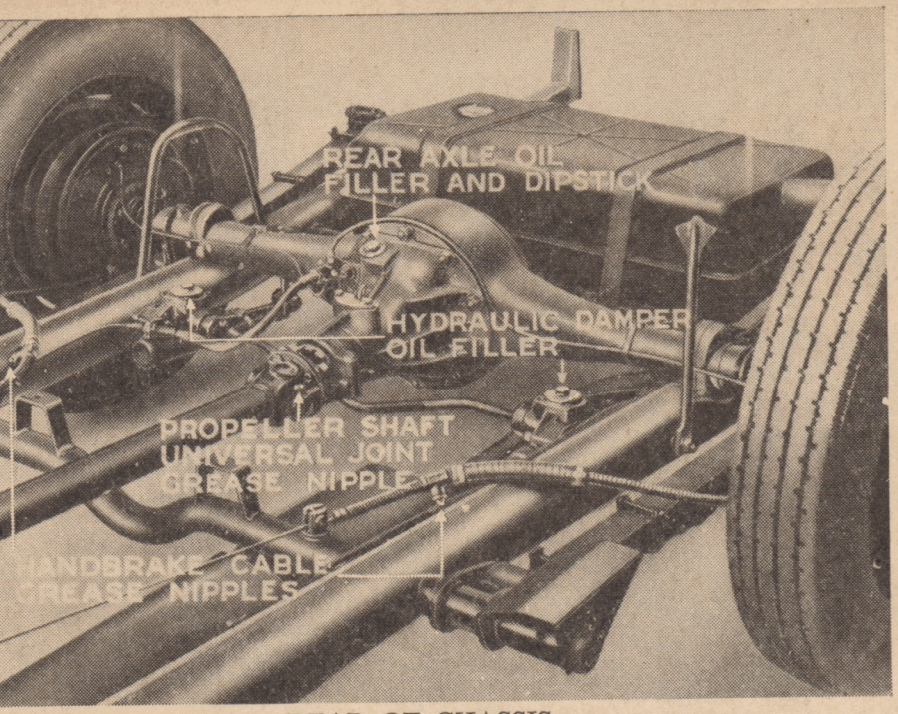
CHASSIS

This Chart is laid out to simplify lubrication, the items requiring similar attention being grouped in distinctive colours. If in doubt, turn to the page referred to in the respective column. The coloured numerals indicate the attention periods in thousands of miles.

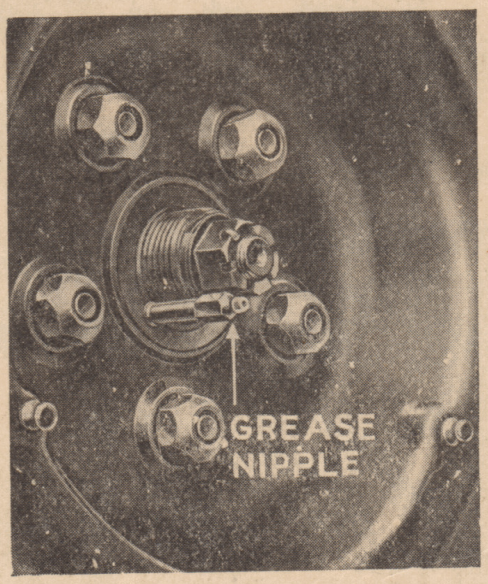
ON



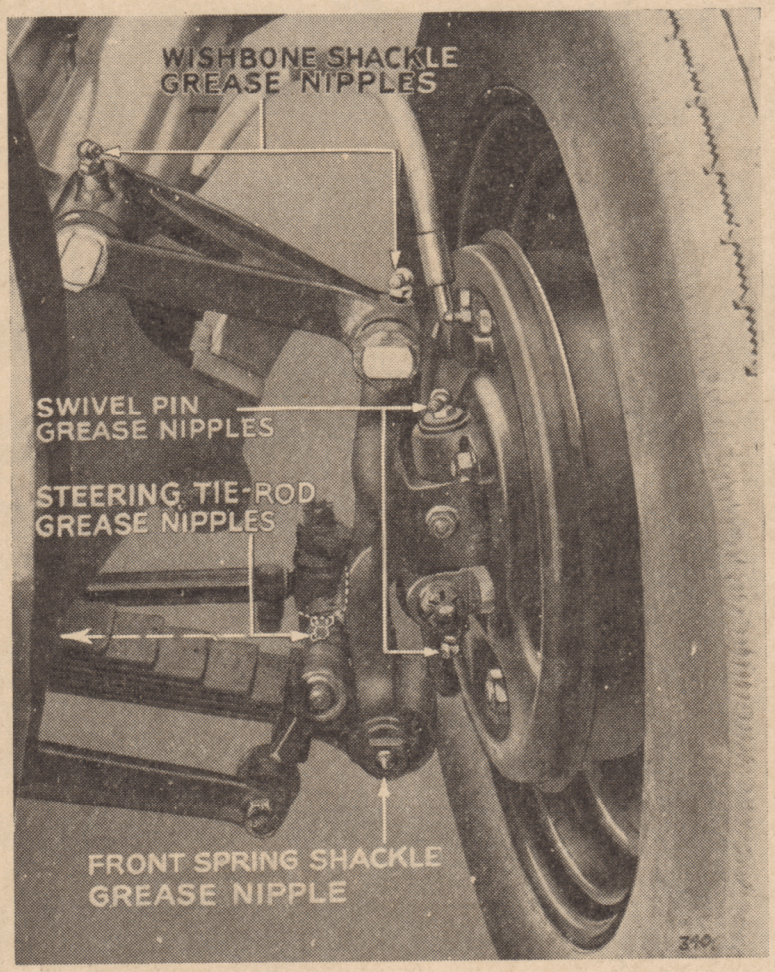
IGNITION DISTRIBUTOR LUBRICATION



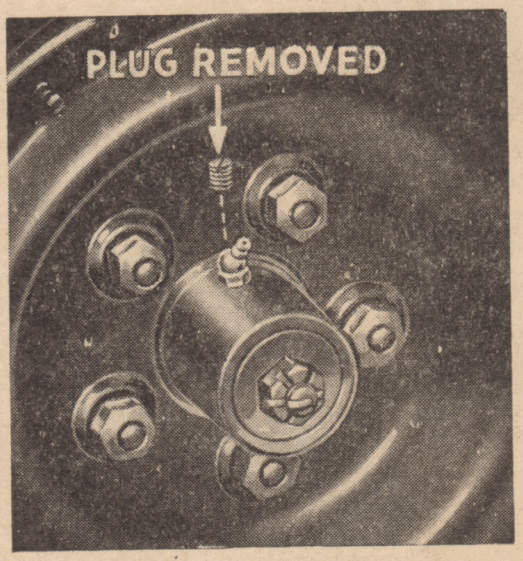
REAR OF CHASSIS



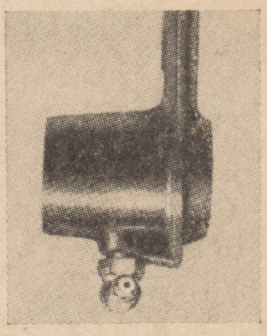
REAR HUB LUBRICATION



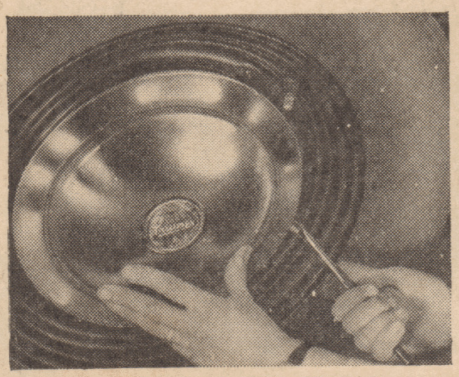
FRONT SUSPENSION



FRONT HUB LUBRICATION



PEDAL BEARING LUBRICATION



HUB CAP REMOVAL

clear ask for further instructions from our Service Department.

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DON'T allow the engine to run too fast during the first 500 miles, see page 15.

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DON'T apply your brakes suddenly except in emergency, it is bad for the passengers, the tyres, the car as a whole and the driver behind who may not be able to pull up as quickly as you.

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DON'T forget to switch off the ignition and put the hand brake on when the car is at rest.

DON'T neglect the level of the acid in the battery—which is quite accessible by raising the bonnet.

DON'T forget to engage a lower gear when about to descend a very steep hill.

DON'T omit to read "The Highway Code," a copy of which

AFTER SALES SERVICE

Arrangements have been made between the Retail Dealers and The Standard Motor Company to maintain workshops equipped to carry out efficient service.

In addition, to carry out free of charge, at the request of the Purchaser of each car, the work scheduled below. These attentions are scheduled to be carried out after the first one-thousand (1,000) miles or as soon as possible afterwards. It is the Retail Dealer's responsibility to advise the owner of the necessity for these adjustments, and to make alternative arrangements for them to be carried out elsewhere in the event of the car moving away from the area. Failures arising as a result of neglect of these initial servicing operations shall be considered to be the responsibility of the Retail Dealer selling the car.

SCHEDULE OF SERVICE OPERATIONS.

(All Materials, Oils and Greases chargeable to customer.)

1. Thoroughly lubricate and grease chassis.

2. Change engine oil.

3. Examine and correct if necessary :
   - (a) Oil level in gearbox.
   - (b) Oil level in rear axle.
   - (c) Water level in radiator.

4. Check and adjust if necessary :
   - (a) Ignition timing.
   - (b) Automatic advance and retard.
   - (c) Dynamo output.
   - (d) Water pump gland.
   - (e) Carburettor and controls.
   - (f) All steering connections.
   - (g) Front wheel track.
   - (h) Tyre pressures.
   - (i) Valve clearances.
   - (j) Distributor points.

5. Adjust brakes.

6. Top up battery and check working of all electrical equipment.

7. Examine and tighten all nuts, particularly cylinder head, body bolts, wheels and front spring securing bolts.

8. The Retail Dealer will investigate (including reasonable road testing), free of charge, any complaint relative to the running of a car sold by him, which may arise during the period of the guarantee.