

## Every 2,000 Miles or Four Weeks.

## LUBRICATION.

1.—**Dynamo and Starter Motor Bearings.**—Inject only two or three drops of *engine oil* with the oil can into each lubricator—one on the starter motor and two on the dynamo. (See pages 96 and 109.)

2.—**Front Engine Support.**—Inject *gear oil* by means of the oil gun into lubricator just behind radiator until oil exudes.

*Do not attempt to do this when the engine is running.*

3.—**Battery Ignition Governor.**—Inject a few drops of *engine oil* with the oil can into spring-lid lubricator. (See page 105.)

4.—**Cam of Battery Ignition Contact Breaker.**—Smear a trace only of *engine oil* on cam surface.

5.—**Water Pump Bearing and Gland.**—Screw down lubricator two or three turns and refill with *grease* when empty. (See page 87.)

6.—**Steering Box.**—Remove plug and fill with *gear oil* to mouth of plug orifice. (See page 80.)

7.—**Universal Joints.**—Turn propeller shaft so that lubricators are at *bottom* and air release plugs at *top*. Remove plugs, then inject *gear oil* with oil gun until it commences to flow from plug hole. Carefully replace plugs. *On no account operate oil gun with vent plugs in position.* (See page 76.)

8.—**Sliding Joint of Propeller Shaft.**—Remove plug (*when provided, see page 78*) and inject about one tablespoonful of *gear oil* with the oil syringe.

9.—**Brake Connections, etc.**—Lubricate with *engine oil* by means of the oil can, the points listed hereunder, the figures indicating the number of points requiring attention :—

- Brake Connection Jaws under Rear Axle (8).
- Jaws of Brake Ropes (front and rear) (12).
- Ball Joints of Front Brake Pull Rods (4). (Remove leather stockings.)
- Jaws of Brake Rods between Balancing Lever and Equalisers (front and rear) (4).
- Jaws of Brake Rod from Servo to Equaliser (2).
- Joints of Coupling Rods from Servo to Balancing Lever (4).
- Joints of Links between Cross Shaft and Servo (2).
- Jaws of Rod from Pedal to Cross Shaft (2).
- Clutch Pedal Connection Jaws (2).
- Accelerator Pedal Bearing (1).
- Jaws of Rod from Hand Brake Lever to Equaliser (2).
- Hand Brake Pawl Connections (4).
- Reverse Catch of Gear Lever (3).

10.—**Control Mechanism** on Steering Wheel, Steering Column, Engine, Carburetter, Ignition Tower and Magneto; also Radiator Shutter Control, Starter Switch Control (if fitted) and Starting Carburetter Controls—Apply a drop of *engine oil* with the oil can to each bearing and joint. (Every 2,000 miles—continued on next page.)

**Also every 2,000 Miles or Four Weeks.**

- 1.—**Engine Oil.**—When engine is warm, remove drain plug (M, Fig. 7) in bottom of crankcase, drain out all the oil and refill with fresh oil to correct level.
- 2.—**Chassis Oil Pump.**—Inspect oil level and add more oil if necessary. (See page 21.)
- 3.—**Carburetter.**—Remove and clean air valve and chamber. Use no lubricant on these parts. (See page 52.)
- 4.—**Valve Tappet Clearances.**—These should be .003" *when engine is cold.* (See page 40.) Check and re-set if necessary.
- 5.—**Fan.**—Tension of belt should be such that one side, at a point equidistant from pulleys, may be moved transversely with the fingers through about  $\frac{3}{4}$ ".  
Check and adjust if necessary. (See page 93.)
- 6.—**Starter Motor Switch.**—Add *engine oil* if necessary (when oil-immersed switch is fitted, see page 110).
- 7.—**Brakes.**—Adjust if necessary. (See page 64 *et seq.*)
- 8.—**Wheels.**—Test hub nuts for tightness with the spanner.

**Every 5,000 Miles or Half-year.****LUBRICATION.**

1.—**Clutch Shaft and Levers.**—Remove clutch pit cover, turn withdrawal sleeve with fingers until slot (N1, Fig. 22) is at the top, then turn crankshaft until oil hole (N, Fig. 22) is visible. Inject a few drops of *engine oil*. Excess of oil will cause clutch trouble.

Also, lubricate fulcrum pins of clutch levers.

2.—**Gearbox.**—Inspect oil level when gearbox is warm and add oil if necessary as directed on page 76.

3.—**Rear Axle.**—Inspect oil level when axle is warm and add oil if necessary as directed on page 79.

4.—**Fan.**—Inject a few drops of *engine oil* into lubricator (A, Fig. 29).

5.—**Contact Breaker of Battery Ignition.**—Remove rocker arm and smear a trace of grease on pivot pin. (See page 104.)

6.—**Bonnet Ventilators, Fasteners, and Locks.**—Carefully lubricate with the oil can to avoid squeaks and rattles.

7.—**Servo Bearing.**—Inject one or two drops of *engine oil* with the can into spring-lid lubricator. (See page 70.)

(Every 5,000 miles—continued on next page.)

**Also every 5,000 Miles or Half-year.**

1.—**Engine Oil Strainer.**—When engine is warm, drain crankcase and remove and clean crankcase oil strainer. (See page 30.) Refill with fresh oil to correct level.

2.—**Carburettor Float Chamber.**—Unscrew float chamber cover, remove float, and wipe out chamber with a piece of *clean*, damp wash-leather. (See page 57.) Before replacing cover, carefully clean and oil threads. Screw up gently by hand only.

3.—**Fuel Strainers.**—Remove and clean strainer on vacuum tank and also fuel tank strainers, when fitted. (See pages 46 and 48.)

4.—**Fuel Tank.**—*Release* (but do not *remove*) drain plug at bottom of main tank to allow any accumulated water to escape. (See page 48.)

5.—**Water Cooling System.**—Drain water system by turning tap until slot is in line with pipe, and releasing radiator filler cap.

Refill with clean, *soft* water until level is half-way up return pipe. (See page 90.)

6.—**Battery Ignition Contact Breaker.**—Clean contact points by passing carborundum strip between them, afterwards carefully removing every trace of grit. Gap should be  $.017''$  to  $.021''$ . (See page 104.)

7.—**Dynamo and Starter Motor.**—Remove end covers, inspect brush gear and remove brush dust. (See pages 96 and 109.)

8.—**Spark Plugs.**—Remove and clean. Set gaps to  $.020''$ . (See page 108.)

9.—**Steering Arms.**—See that arms are tight on stub axles. (See page 80.)

10.—**Wheels.**—Remove, grease interiors and hubs, and replace.

### Every 10,000 Miles.

**Hydraulic Shock Dampers.**—Inspect oil level and add more oil if necessary. *Use only correct oil.* (See page 81.)

**Crankcase Breather Pipe to Carburetter.**—Remove and clean gauze between pipe flange and carburetter. (See page 58.)

### Every 20,000 Miles.

1.—**Gearbox and Rear Axle.**—Drain out all the oil when warm by removing drain plugs and filler plugs. (There are *two* drain plugs in gearbox.)

Refill with fresh oil to correct level. (See pages 76 and 79.)

*Use only warmed gear oil for cleaning out casings. Do not use petrol, paraffin or other oil solvents.*

2.—**Chassis Lubrication System.**—Remove and discard three felt strainer pads located, respectively, one at base of chassis oil pump (see page 23), and one at each end of front axle (see page 24). Replace with new pads.

3.—**Brake Servo.**—Test adjustment and readjust if necessary. (See page 68.)

### SECTION III.

---

#### **Storage and Recommissioning of Cars.**

1.—After jacking up both rear wheels, as directed in (3), run engine gently for a few minutes, with a gear engaged.

When engine is cold inject about two table-spoonfuls of engine oil through spark plug holes of each cylinder and turn crankshaft by hand a few times to distribute oil over cylinder walls.

2.—Crank engine over by hand once a week during storage. It must *not* be run under its own power.

3.—Jack up both axles to take all weight off tyres. Do not deflate latter, but cover up to exclude light.

4.—If any danger of freezing, drain water system. Otherwise leave water in.

5.—Drain all fuel from main tank, vacuum tank, dashboard filter and carburetter.

6.—Clean all bright parts and lightly smear with vaseline.

(*Note.*—In the case of parts having untarnishable finish, such vaselining is both unnecessary and undesirable.)

7.—Wash down and polish coachwork, extend hood in the case of an open touring car, and cover the whole with a light dust sheet.

8.—The storage place should be dry, well ventilated, and preferably heated.

9.—Remove battery and properly charge from an external source. Give a subsequent freshening charge from an external source every four or five weeks.

If the storage period is likely to exceed six months, the engine crankcase and also the gearbox and rear axle should be drained and

filled up to the correct level with a *pure mineral* oil, e.g. Vacuum "BB" or Wakefield's Aero "C." One of these oils should also be used for injecting into the cylinders under such circumstances.

Before putting the car into service again the following operations should be performed :—

- 1.—Drain engine crankcase and refill to correct level with *fresh* engine oil.
- 2.—Prime cylinders with engine oil.
- 3.—If previously drained, refill water system to correct level with clean, preferably soft water.
- 4.—If gearbox and rear axle have been filled up with a pure mineral oil, as directed for long period storage, drain and refill with correct oil.
- 5.—After filling main fuel tank, prime vacuum tank by disconnecting supply pipe and injecting about a dozen syringe-fulls of fuel.
- 6.—Run engine gently for a time after starting up.
- 7.—Remove and clean spark plugs.

## SECTION IV.

---

### **Rolls-Royce School of Instruction.**

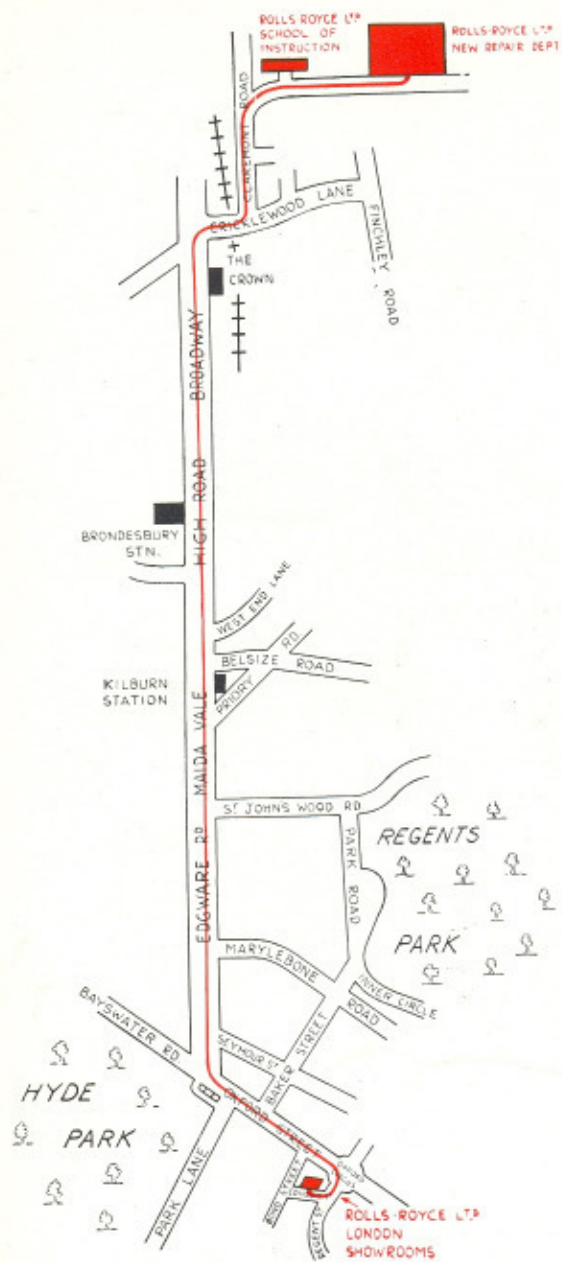
A Drivers' School of Instruction is maintained by Messrs. Rolls-Royce Ltd. for the benefit of drivers of Rolls-Royce cars.

Only those who are engaged to drive Rolls-Royce cars can be accepted for instruction.

The School is intended for men who are experienced drivers, but who require tuition in Rolls-Royce methods to ensure that the car in their charge be kept in the best possible manner.

Forms giving the conditions under which men are received in the School of Instruction will be forwarded to customers on application to Rolls-Royce Ltd., 14-15, Conduit Street, London.





**MAP SHOWING LOCATION OF ROLLS-ROYCE LONDON REPAIR AND SERVICE DEPOT.**

**BUS ROUTES**—Services 16a, 60, 81, Marble Arch to "The Crown"; Service 60, Oxford Circus to "The Crown."  
**TUBE ROUTES**—Hampstead and Highgate Line to Golders Green, thence by tram to Cricklewood Broadway.

INSTRUCTIONS  
FOR THE CARE OF  
DUNLOP  
WHEELS AND TYRES  
ON THE  
ROLLS-ROYCE  
20/25 H.P. CAR

---

For the convenience of Rolls-Royce owners who use their cars on the Continent, the Dunlop Rubber Co., Ltd., supplies lists giving names of all Continental firms which carry stocks of Dunlop Tyres. Application should be made to the Dunlop Rubber Co., Ltd., Fort Dunlop, Erdington, Birmingham.

## Care of Dunlop Wheels and Tyres.

*Removal of Wheel—Care of Wheels—Lubrication of Wheel Bearings—Tyre Equipment—Wired Tyres—Replacement Tyres—Spare Tyre—Handling of Wired Tyres on Well-base Rims—Fitting and Removal—Instructions for Wired Type Tyres on Well-base Rims—Special Note—To Remove Tyre—To Fit Tyre—Care of Tyres—Inflation of Tyres—Cuts—Mileage and the Modern Tyre—Speed—Acceleration—Braking—Tyre Wear and Noise—Balancing the Road Wheels—Dunlop Service—Dunlop Service Depots.*

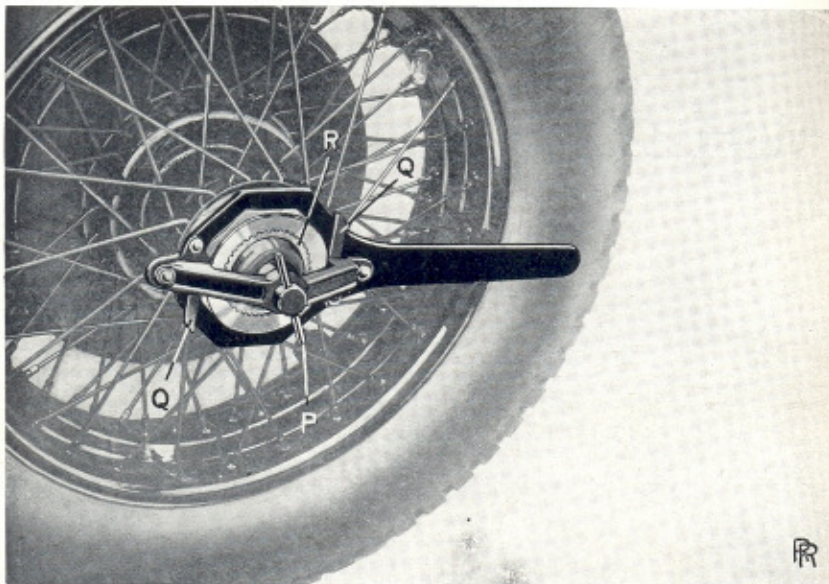


FIG. 1. REMOVING DETACHABLE WHEEL.

**Removal of Wheel.** Dunlop detachable wire wheels are fitted, and a special spanner is provided in the tool-kit for removing and replacing them.

In Fig. 1, the spanner is shown in position on a wheel.

Before using the spanner, the central screw **P** must be unscrewed as far as possible. After jacking up the car, the spanner can be placed in position by pressing the levers **Q** to clear the shoulder on the hub nut. On releasing these levers, it should be noticed that they fit correctly into the groove provided for the purpose.

Screw **P** should then be turned until the serrations of the locking

plate **R** are seen to be clear of those on the hub nut. The latter can then be turned in an anti-clockwise direction and the wheel withdrawn, the hub nut remaining in the spanner.

The thread of the hub and nut is right-handed for all wheels.

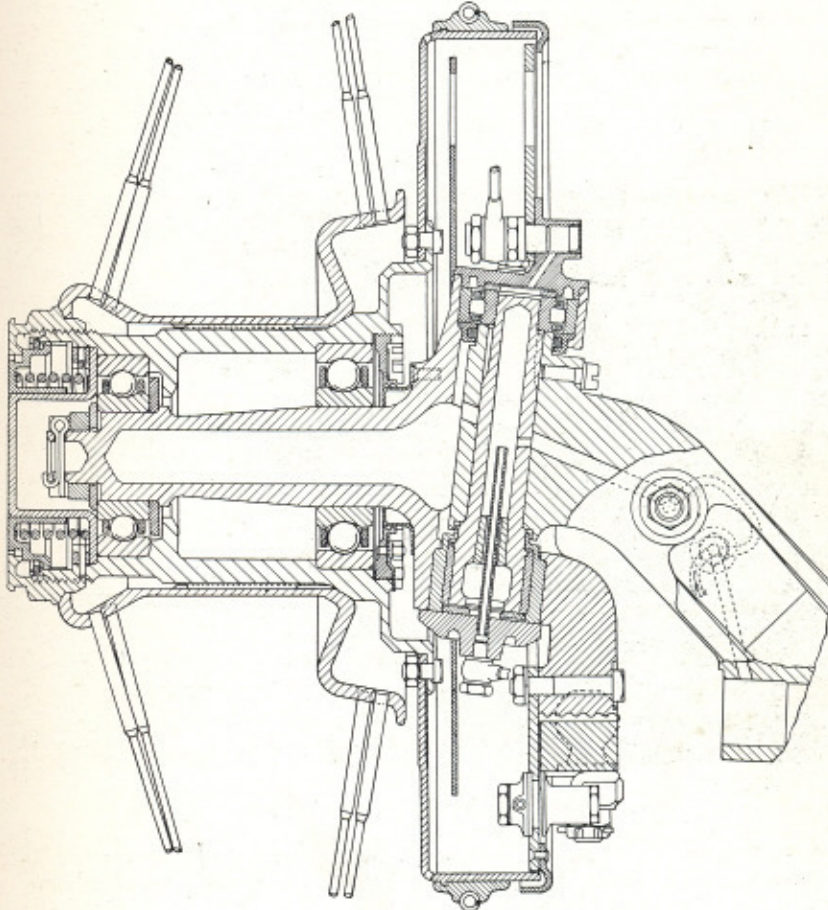


FIG. 2. SECTION OF FRONT HUB.

When replacing a wheel, care must be taken that the engaging surfaces, serrations and threads of both hub and wheel are free from road grit and other foreign matter. Preferably, they should be slightly greased.

The hub nuts must be tightly screwed up by means of the special spanner, and the use of the mallet in conjunction with it, to ensure absolute tightness.

The locking plate should now be allowed to come forward by turning the small lever **P** in an anti-clockwise direction, in order that its serrations shall engage those of the hub nut.

It should be observed that when jacking up a rear wheel care is necessary that the head of the jack is arranged in the proper position. It should be immediately beneath the axle, between the two "U" bolts which secure axle and spring together.

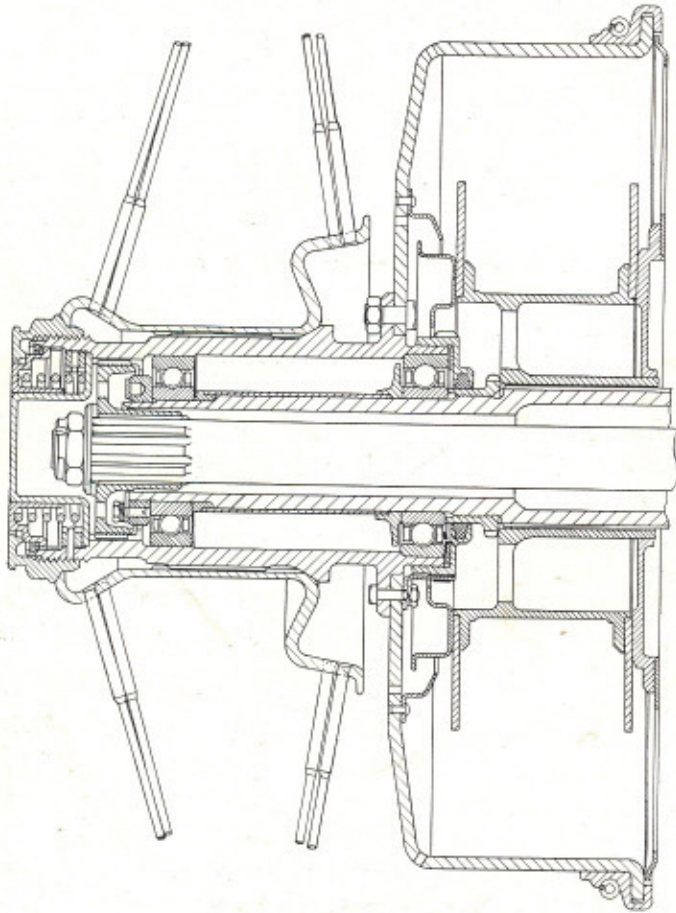


FIG. 3. SECTION OF REAR HUB.

**Care of  
Wheels.**

*(Important.)*

Every 2,000 miles, hub nuts should be tested for tightness with the spanner.  
On no account should the car ever be run with a wheel even slightly loose, as this will cause irreparable damage to the serrations and screw threads.

It is necessary to try each hub nut periodically with the spanner, and tighten if necessary. In order to tighten the hub nut, it is necessary for the locking plate to be forced back by means of rotation of the small lever **P** until its serrations are disengaged from those of the hub nut.

Care must be taken when driving close to a high curb to avoid catching the projecting spokes of wire wheels. Very serious damage may thus be done to the wheel.

**Lubrication of Wheel Bearings.** The wheel bearings are filled with ball-bearing grease in the first instance, and should run a long period without attention.

Sections of the front and rear hubs are given in Figs. 2 and 3 respectively.

### Tyre Equipment.

**Wired Tyres.** Wheels with 19" well-base rims and Dunlop Fort Silent tyres, size 6.00-19, are fitted. No security bolts or bolt valve plates are provided.

As the Wired type of tyre retains its position on the rim quite independently of the inflation pressure, such devices are unnecessary, and indeed may be definitely harmful to the tyre under certain conditions.

**Replacement Tyres.** When ordering new outer covers, specify "Dunlop Fort Silent Tread Tyres." This will make quite certain that the new tyres supplied shall be of the Silent type. The noise produced by other tread patterns may be noticeable in the case of Rolls-Royce cars.

With regard to inner tubes, it is only necessary to state the size and to mention "well base." Tubes made for flat base rims should not be used.

**Spare Tyre.** Owing to the ease with which the wired tyres are removed and fitted, in combination with their large size and high quality, there is no necessity to carry more than one spare tyre, which will be fitted, of course, to the spare wheel. It is only necessary to carry as spares one or two inner tubes.

**Handling of Wired Tyres on Well-base Rims.** The wired tyre and well-base rim in conjunction with one another provide ease in the removal or fitting of a tyre not found in any other tyre and rim arrangement.

**Overheating.** On long ascents which call for full throttle it is often preferable to change into a lower gear and reduce the throttle opening, to prevent boiling of the water:

Adjustment of the fan-belt may be necessary, and this should receive attention.

**Slow Running.** Faulty slow running of the engine may be due to the low speed jet of the carburetter being choked. This can be cleared easily and quickly by raising the low speed jet needle valve with the fingers and simultaneously opening the throttle to race the engine momentarily, as explained on page 55.

**Water Level in Radiator.** The water level in the radiator should be inspected frequently and maintained at a point half-way across the upper water pipe outlet. Only clean, preferably soft, water should be used.

(When an anti-freeze mixture of the glycol type—see page 91—is being used the level should only just cover the upper tubes of the radiator core.)

**Frost.** When there is any possibility of the car being exposed to low, frosty temperatures, with the engine not running, it is of vital importance that the water system should be drained by opening the drain tap on the water pump inlet pipe. Also, after a frost and before attempting to start, or even move, the engine again, hot water should first be poured over the water pump, as otherwise damage may be caused to the pump rotor by the presence of particles of ice within the casing. Warm water can be used with advantage for re-filling the radiator. (See page 91 for particulars of anti-freeze mixtures. Glycerine must not be used.)

**Use of the Brakes.** The hand brake is released by pressing the thumb upon the button on top of the lever and simultaneously pulling the lever backwards to release the pawl; the lever should then be moved forwards.

When the car is left standing, the hand brake should be pulled on, and subsequently, when again preparing to drive the car, it is advisable to engage the gear *before* releasing the hand brake. Such

### Fitting and Removal Instructions for Wired Type Tyres on Well-base Rims.

**Special Note.** *Inextensible* wires are incorporated in the edges of wired type tyres. Therefore, do not attempt to stretch the wire edges of the tyre cover over the rim edge.

Force is entirely unnecessary and may be dangerous, as it merely tends to damage the cover edges and serves no helpful purpose.

Fitting or removing will be quite easy if the wire edges are carefully adjusted into the rim base; if it is not found to be easy, the operation is not being correctly performed.

**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 edges near the valve over the rim edge.

**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 pushing 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.

Whilst inflating, see that the edges of the cover are seated evenly round the rim.

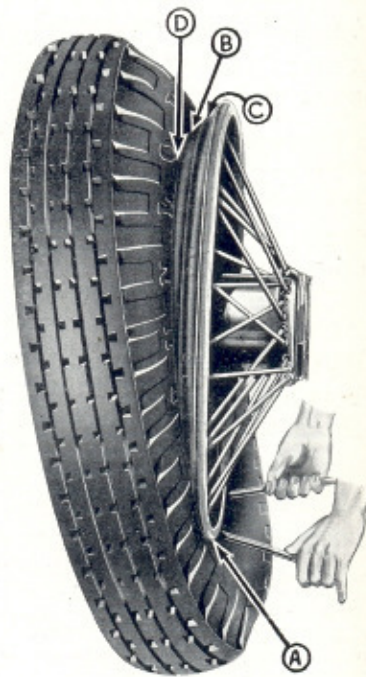


FIG. 4.

You cannot pull the cover edge at "A" over the rim edge until the cover edge at "B" is pushed off the rim shoulder "C" down into the well "D," then the cover edge at "A" comes over the rim easily. Remember, the cover edges are inextensible—force will only damage the cover and cannot stretch the edge.



## Care of Tyres.

Tyres constitute one of the biggest items in car maintenance. No other justification is necessary for emphasizing the need for reasonable care in their selection and treatment.

It will be apparent, from the very nature of their service and constitution, that the influences governing their life are many and various—but almost invariably, be it noted, within the motorist's control, either wholly or in part.

The Dunlop Company will only be too happy to advise motorists on any problem or difficulty in connection with the use of tyres, and an enquiry addressed to any of the Company's Sales and Service depots, or direct to the General Service Manager, Fort Dunlop, Birmingham, will receive prompt and careful attention.

**Inflation of Tyres.** The pressures for the 6.00-19 Dunlop Fort Silent tyres should be as follows:—

Front and rear tyres, open and closed	
cars .. .. .	35 lbs. per sq. inch.

The nature of the materials used, and the method of manufacture, do not permit the production of tyres which are always perfectly balanced throughout the whole circumference.

Consequently, front tyre pressures must not be allowed to fall below 35 lbs. per sq. inch, because any reduction may spoil the steering at high speed and will certainly render it heavy for traffic work, while the resultant increase of comfort will not be very noticeable to passengers in the rear seats.

During the time the car is being used exclusively for town work, however, the rear tyre pressures may be reduced to 30 lbs., but must be restored to 35 lbs. for high speed touring, or tyre wear will be accelerated.

The pressure being comparatively low, it is important that it should be carefully maintained if maximum tyre life is to be secured. It is therefore recommended that the pressure be tested weekly by means of a gauge applied to the valve stem orifice.

The Dunlop pencil-type gauge and the Schrader pressure gauge No. 5050 are suitable types of testers.

It is a practice with some motorists to reduce the inflation pressure when the tyres get hot through running, or in hot weather.

This is wrong, and tends to create the very condition it is desired to avoid, since the lower the pressure the greater the internal friction, and consequently the greater the heat developed in the tyre itself.

An extremely hot tyre is generally evidence of too little air pressure, and should be the signal for testing the inflation with a view to remedying the deficiency. Atmospheric conditions are best disregarded entirely since their effect is negligible.

**Cuts.** Any cut sufficiently deep to penetrate one or more plies of casing material is a menace to the whole structure, and, if neglected, will inevitably develop into a burst, the severity of which is out of all apparent proportion to the extent of the original damage.

The destructive processes are, however, easily explained. Practically any material manufactured from cotton—which is the basis of all tyre fabrics, however described—only retains its strength so long as it remains unbroken; if but two or three strands are severed, the material can be torn through with little effort.

This is actually what occurs in the case of tyres, which are subjected not only to the strains of running, but to the pressure of the inflated inner tube.

The actual burst, however, is delayed owing to the resistance of the unbroken plies of the material, and in all probability, if these are protected by repairing the exterior of the cover and reinforced by strengthening the inside, serious effects would be avoided. Unfortunately, however, in many cases, water is allowed to penetrate through the cut to the casing, and rapid deterioration of the surrounding material, already weakened at this point, results in its eventually giving way.

Covers should be periodically examined, and all cuts, other than superficial ones, should be cleaned out and filled with Dunlop Low Temperature Vulcanizing Compound, or similar material.

Severe cuts, particularly those which penetrate the casing as well as rubber, will necessitate more extensive repairs, and such work should be placed in the hands of thoroughly competent repairers.

### Mileage and the Modern Tyre.

Scientific investigations of the actual effect of the following major factors have recently been made, and the results are surprising:—

**Speed.** Car-owners vary greatly in the speed at which they habitually drive. The rate of tread wear at 45 m.p.h. is double that at 35 m.p.h.

**Acceleration.** Many motorists like to make the most of the rapid acceleration of which modern cars are capable. The effect of this on tyre wear is not susceptible to accurate measurement, but it has been proved that wheel slippage is almost always set up, causing temporarily ultra-rapid tread wear due to abrasion against the road surface.

**Braking.** Some owners use their cars in far more congested districts than others, where constant braking is necessary; others are in the habit of using their brakes constantly—"driving on the brakes"—whereas yet others seldom use their brakes except in an emergency.

A test vehicle was run at 35 m.p.h. and stopped every quarter of a mile. This wore off half the tread rubber in 108 miles. The same car, driven at the same speed, but stopped every mile, wore off half the tread in 3,100 miles.

The rapid improvement in car performance during the past few years has brought these particular factors into prominence.

**Tyre Wear and Noise.** Covers which have been used on the rear wheels and subjected to violent braking should not be used on the front, because wear may have rendered the tread somewhat irregular.

If, when new tyres have been fitted to the front, and wheels and tyres have been properly balanced, and both tyres equally and correctly inflated, it is found that the steering then possesses certain undesirable characteristics, other covers should be tried if possible.

Dunlop Fort Silent tyres have, as their name implies, been specially designed to give silence in running, while every effort has been made to retain the non-skidding properties of the tread to the fullest extent.

## IMPORTANT.

### **Balancing the Road Wheels.**

It is most important, in view of the high speeds attainable, that the front road wheels should be properly balanced. Therefore it is necessary to have all wheels balanced and to re-balance a wheel after changing its tyre.

An out-of-balance effect is usually present in the complete wheel and tyre due to:—

- (a) the valve and its patch on the inner tube;
- (b) the joint of the inner tube; and
- (c) unavoidable irregularities in the outer cover due to movement of the material during vulcanizing.

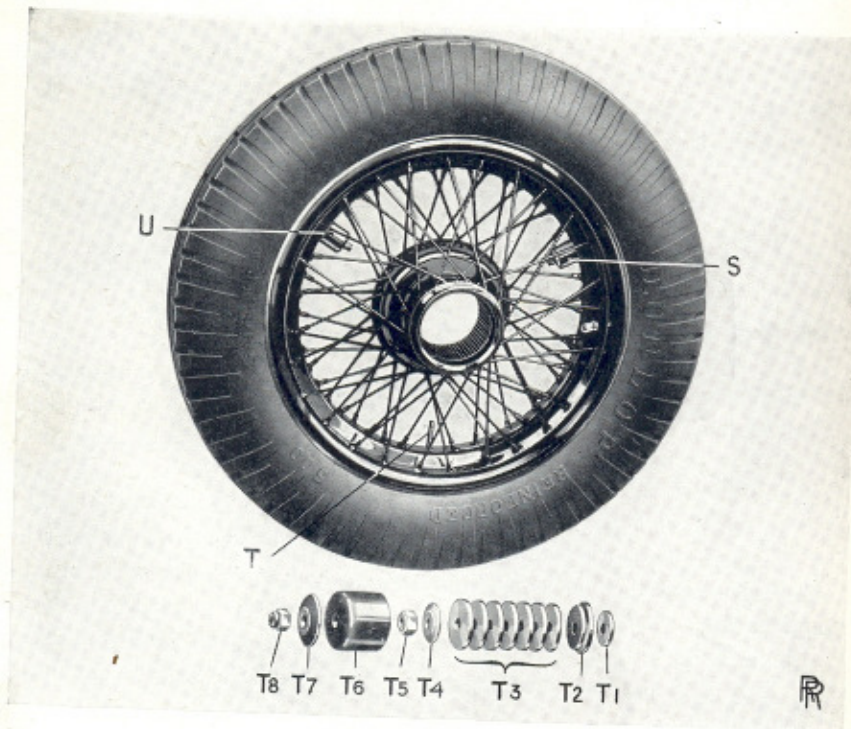


FIG. 5. WIRE WHEEL WITH BALANCE WEIGHTS.

A red spot on the outer cover wall indicates its lightest part, and the cover should be fitted so that the red spot is at the valve position.

To correct such out-of-balance, three bolts are provided, spaced at equal intervals around the wheel rim, as shown at **S**, **T** and **U** in Fig. 5, and each carries a number of lead washers, enclosed by a metal cover.

One of the bolts, **T**, is shown with its cover and washers dismantled. The parts are assembled on the bolt in the following order :—

1. Rubber washer, **T1**, which acts as a seal against the ingress of water.
2. Special steel washer **T2**, which forms a firm base for the cover and the lead washers.
3. Lead balancing washers, **T3**, up to seven in number on any one bolt.
4. Steel washer **T4**.
5. Nut **T5** for retaining lead washers.
6. Cover **T6**.
7. Steel washer **T7**.
8. Cap nut **T8**, for retaining cover.

To balance a wheel, all the lead washers should first be removed from each bolt, the other parts being fitted as indicated above.

The front axle being jacked up, the wheel must be turned gently and allowed to come to rest.

The lowest point of the tyre should then be marked.

The operation should be repeated, and if the original mark returns to the bottom position, one or more lead washers should be added to the bolt on the opposite side of the wheel.

If the mark made on the tyre is adjacent to the bolt, then one lead washer should be fitted on each of the other two bolts.

On the other hand, if no bolt should lie on the vertical centre line through the marked point on the tyre, the washers of the two bolts furthest from the mark must be altered, for instance, if the distance of one bolt from the centre line is approximately twice that of the other, two lead washers should be fitted on the bolt nearer to the centre line and one lead washer on the other bolt.

This process should be continued until the wheel will remain in any position in which it may be brought to rest, the number of lead washers being kept down to a minimum consistent with good balance of the wheel.

### **Dunlop Service.**

It is the constant endeavour of the Dunlop Company to market mileage, not tyres.

The design of Dunlop Tyres is the result of years of scientific research by Dunlop technical experts in half a dozen Dunlop factories throughout the world; the raw materials are drawn mainly from Dunlop Rubber Estates and Dunlop Cotton Mills, and their quality is rigidly controlled at every stage; lastly, the equipment of the Dunlop factories is the last word in modern and efficient labour-saving machinery.

Users of Dunlop Tyres have, therefore, a right to expect every satisfaction from the Company's products; any user who considers that he has not obtained the utmost value for his money, is earnestly requested in his own interests to inform the Company, so that an investigation can be made. It is the universal experience of all tyre manufacturers that a considerable proportion of premature failures is due in some way to the conditions of use and not to the tyres themselves; thus it is necessary to discover and remove the cause of the unsatisfactory service, otherwise the trouble is likely to continue with other tyres.

A fully equipped Service Department is maintained at all Dunlop Depots, staffed by tyre experts who have at the same time an intimate knowledge of the user's requirements. Through this organization, the wide experience of the Dunlop Company on tyre and wheel problems of all kinds is always at the disposal of motorists entirely without cost or obligation. Application can be made personally or by letter to the General Service Manager, Fort Dunlop, or to any of the Service Depots detailed on opposite page, and all motorists can rely on receiving courteous attention and practical help on any matter they care to raise.

## DUNLOP RUBBER CO. LTD.

## Service Depots.

## FORT DUNLOP.

ADDRESS.	TELEGRAMS.	TELEPHONE.
Erdington, Birmingham.	<i>Dunlops Phone Birmingham.</i>	Central 4108 (P.B.X.)

## BRANCH DEPOTS.

ABERDEEN : 52-60, Leadside Road.	<i>Pneumatic Phone Aberdeen.</i>	Central 3474
BELFAST : Dunlop House, Upper Arthur St.	<i>Pneumatic Phone Belfast.</i>	24866
BIRMINGHAM : Dunlop House, Livery Street.	<i>Dunlopsdum Phone Birmingham.</i>	Central 8585
BRISTOL : 150, Temple Street, 1.	<i>Pneumatic Phone Bristol.</i>	22366
CARDIFF : Penarth Road.	<i>Pneumatic Phone Cardiff.</i>	8241
COVENTRY : 15, Queen Victoria Road.	<i>Pneumatic Phone Coventry.</i>	2166
EDINBURGH : 4/8, Canning Street.	<i>Inflator Phone Edinburgh.</i>	23232
GLASGOW : 46/60, North Wallace Street, C.4.	<i>Pneumatic Phone Glasgow.</i>	Bell 1412
LEEDS : York Place, 1.	<i>Pneumatic Phone Leeds.</i>	29701
LEICESTER : St. Mary's Mills.	<i>Pneumatic Phone Leicester.</i>	Westcotes 34231
LIVERPOOL : 24, Cornhill, Park Lane, 1.	<i>Inflator Phone Liverpool.</i>	Royal 6140
LONDON : (North) Dunlop House, 1, Albany Street, N.W.1.	<i>Inflator Phone Norwest London.</i>	Euston 3434
MANCHESTER : 12, Ardwick Green South, Ardwick.	<i>Inflator Phone Manchester.</i>	Ardwick 3361
NEWCASTLE-UPON-TYNE : College Avenue, near Armstrong College.	<i>Inflator Phone Newcastle.</i>	21041
NORWICH : Chapel Field Road.	<i>Pneumatic Phone Norwich.</i>	2430
NOTTINGHAM : Dunlop House, 221-225, Lower Parliament Street.	<i>Pneumatic Phone Nottingham.</i>	40034
PLYMOUTH : 14/17, Manor Street.	<i>Dunlop Phone Plymouth.</i>	4146
SHEFFIELD : 21, Hollis Croft, Broad Lane, 1.	<i>Pneumatic Phone Sheffield.</i>	22192
SOUTHAMPTON : 9 & 10, St. Mary Street.	<i>Pneumatic Phone Southampton.</i>	3111
<hr/>		
DUNLOP RUBBER CO. (IRELAND) LTD. : Dunlop House, Lower Abbey Street, Dublin, C. 8.	<i>Pneumatic Dublin</i>	62723
CORK : Dunlop House, Lower Glanmire Road.	<i>Pneumatic Cork.</i>	613

# INSTRUCTIONS

FOR THE CARE & MAINTENANCE OF

## The Smith Electric Petrol Gauge

AS FITTED ON THE

20/25 h.p. Rolls-Royce Car



## The Smith Electric Petrol Gauge.

**T**HE gauge has been developed with a view to meeting the demand for a petrol gauge reading direct on the instrument board and free from the disadvantages attendant on gauges which depend on air pressure and metal tubing for their operation. The instrument itself is divided into two parts:—

1. The Dashboard Meter.
2. The Tank Attachment.

**Dashboard Meter.** This consists of a neat circular case with a pointer and dial marked in gallons and containing two coils wound on special low hysteresis iron formers. These coils are placed so as to exert a magnetic force on a soft iron armature carried by the same spindle to which is attached the indicating pointer. One of these coils, known as the "Control Coil," tends to make the pointer remain in a mid-position, and the other coil, known as the "Deflecting Coil," causes the pointer to be deflected in accordance with the amount of petrol in the tank. The control coil is connected directly across the battery when the instrument is in operation, while the deflecting coil has a pressure applied to its terminals from the potentiometer according to the position of the float. The advantage of using two coils in this way is that the instrument is practically independent of fluctuations in battery voltage.

**Tank Attachment.** This consists of a float carried on an arm, which is connected by a pair of light gears to a vertical spindle. The top end of this spindle is attached to a contact arm travelling over a resistance, which is connected as a potentiometer. By means of this device, varying pressures are applied to the deflecting coil in the dashboard meter, thus causing the pointer in the meter to deflect in accordance with the height of the petrol in the tank.