

SECTION P

LUBRICATION

(1½ and 2½ LITRE)

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Section No. P.2 To change the oil filter (1½ litre). To change the oil filter element (2½ litre).	Section No. P.7 Rear axle lubrication.
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USE CORRECT LUBRICANTS

Correct lubrication of any piece of mechanism is of paramount importance, and in no instance is it of greater importance than in the correct choice of lubricant for a motor-car engine. Automobile engines have different characteristics, such as operating temperatures, oiling systems, size of oilways, clearances and similar technicalities, and the use of the correct oil is therefore essential.

Section P.1

ENGINE LUBRICATION (A)

New engines should have their oil drained after the first 500 miles (800 km.) and refilled with fresh oil. Subsequently the oil should be changed at intervals of 3,000 miles (5000 km.).

The engine should preferably be drained when warm and the oil is relatively fluid.

The oil level should be checked by the dipstick every 250 miles (400 km.) and replenished if necessary. The level should never be allowed to fall below the "normal" mark.

The sump capacity is 14 pints (8 litres) for the 2½ litre engine and 10 pints (5.7 litres) for the 1½ litre engine.

On the 2½ litre car a new element should be fitted every 6,000 miles (10000 km.). The element is easily withdrawn after the bolt securing the filter body to the head has been undone. On the 1½ litre car the sealed-type filter should be taken off after 6,000 miles (10000 km.) and replaced by a new one.

The filter element on the 2½ litre is a Tecalemit FG2306 and care must be taken to see that the filter casing is replaced properly, engaging the recessed seating, and that the seating gasket is undamaged. The filter on the 1½ litre is a Wilmot-Breedon type 22768.

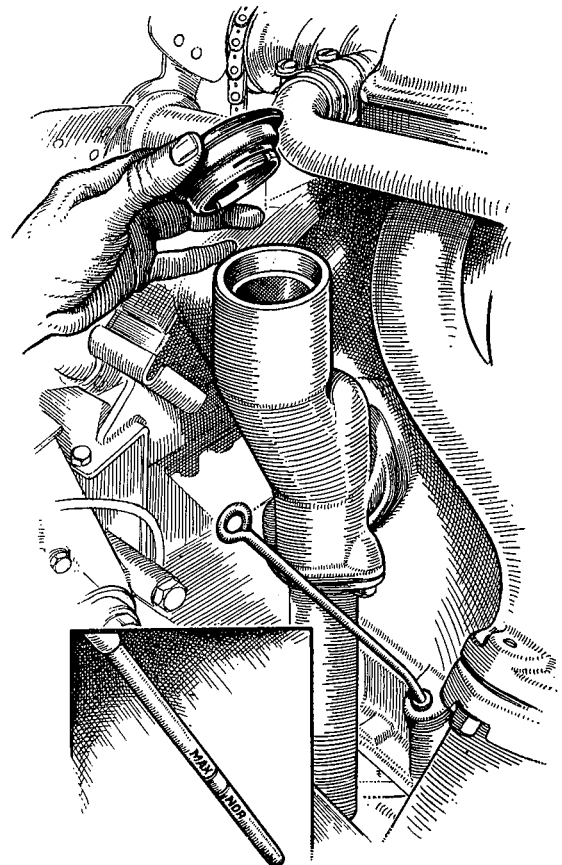


Fig. P.1.
The 2½ litre oil filler and dipstick.

The following is a list of lubricants recommended:
(EARLY CARS WITH SPIRAL BEVEL AXLES)

A ENGINE AND AIR CLEANER								
Climatic Conditions	Mobiloil	Shell	B.P. Energol	Filtrate	Sternol	Duckham's	Castrol	Essolube
Tropical and Temperate down to 32° F. (0° C.)	Mobiloil "A"	"Shell" X-100 30	"Energol" S.A.E. 30	Medium "Filtrate" 30	"Sternol" W.W. 30	Duckham's N.O.L. "Thirty"	"Castrol" X.L.	"Essolube" 30
Cold and extreme cold down to 0° F. (-18° C.)	Mobiloil "Arctic"	"Shell" X-100 20/20 W	"Energol" S.A.E. 20 W	Zero "Filtrate" 20	"Sternol" W.W. 20	Duckham's N.O.L. "Twenty"	"Castrolite"	"Essolube" 20
Arctic—below 0° F. (-18° C.)	Mobiloil 10 W	"Shell" X-100 10 W	"Energol" S.A.E. 10 W	Sub-Zero "Filtrate" 10	"Sternol" W.W. 10	Duckham's N.O.L. "Ten"	"Castrol" Z	"Essolube" 10
B GEARBOX AND REAR AXLE								
Tropical and Temperate down to 10° F. (-12° C.)	Mobilube "G.X." 140	"Shell" Spirax 140 E.P.	"Energol" E.P. S.A.E. 140	E.P. "Filtrate" 140	Ambroleum E.P. 140	Duckham's N.O.L. 'E.P.' Transmission 140	"Castrol" Hi-Press	"Esso" Expee Compound 140
Extreme cold below 10° F. (-12° C.)	Mobilube "G.X." 80	"Shell" Spirax 80 E.P.	"Energol" E.P. S.A.E. 80	E.P. "Filtrate" 80	Ambroleum E.P. 80	Duckham's N.O.L. 'E.P.' Transmission 80	"Castrol" Hypoy 80	"Esso" Expee Compound 80
C WHEEL HUBS AND FAN AND WATER PUMP BEARINGS								
All conditions	Home—Mobil Hub Grease Export—Mobilgrease No. 5	"Shell" Retinax A.	"Energol" C.3	Super Lithium "Filtrate" Grease	"Ambroline" L.H.T. Grease	Duckham's L.B. 10 Grease or H.B.B. Grease	"Castrolite" Heavy	Home—"Esso" Grease Export—Hubs: "Esso" Bearing Grease Fan: "Esso" Chassis Grease
D STEERING GEARBOX, STEERING CONNECTIONS, KING-PINS, PROPELLER SHAFT, CLEVIS PINS AND LEVER FULCRUMS								
All conditions	Mobilgrease No. 2 or 4	"Shell" Retinax A	"Energol" C.1	Super Lithium "Filtrate" Grease	"Ambroline" L.H.T. Grease	Duckham's L.B. 10 Grease or H.P.G. Grease	"Castrolite" Medium	Home—"Esso" Pressure Gun Grease Export—"Esso" Chassis Grease
E CABLES AND VITAL CONTROL JOINTS								
All conditions	Mobilgrease No. 2 or 4	"Shell" Retinax A	"Energol" C.1	Super Lithium "Filtrate" Grease	"Ambroline" L.H.T. Grease	Duckham's L.B. 10 Grease or "Keenol" K.G. 16 Grease	"Castrolite" Brake Cable Grease	Home—"Esso" Pressure Gun Grease Export—"Esso" Chassis Grease
F UTILITY LUBRICANT, S.U. CARBURETTER DASHPOT, OILCAN POINTS, ETC.								
All conditions	Mobiloil "Arctic"	"Shell" X-100 20/20 W	"Energol" S.A.E. 20 W	Zero "Filtrate" 20	"Sternol" W.W. 20	Duckham's N.O.L. "Twenty"	"Castrolite"	"Essolube" 20

EXTREME COLD CONDITIONS

Where a car is operated in temperatures which are consistently below 0° F. (-18° C.) the use of an oil of lower viscosity than that recommended for normal use is desirable, and under such conditions the use of engine oil of the grades indicated in the appropriate temperature range is recommended.

Similar considerations apply in the case of the gearbox, rear axle and steering gearbox.

MIXING LUBRICANTS

It is a bad practice to mix lubricants, particularly the high-pressure types now in use for rear axles, as they differ considerably in their composition. It is therefore dangerous to replenish the axle with a different make of oil from that in use without first draining off the axle. It is also advisable to carry out a similar procedure in the case of other components.

Series RME and RMF MODELS

The following is a list of lubricants recommended for use on the above models, which are fitted with a hypoid axle. **Only Hypoid oils must be used in the rear axle. Never mix lubricants.**

A ENGINE AND AIR CLEANER								
<i>Climatic Conditions</i>	Mobiloil	Shell	B.P. Energol	Filtrate	Sternol	Duckham's	Castrol	Essolube
Tropical and Temperate down to 32° F. (0° C.)	Mobiloil "A"	"Shell" X-100 30	"Energol" S.A.E. 30	Medium "Filtrate" 30	"Sternol" W.W. 30	Duckham's N.O.L. "Thirty"	"Castrol" X.L.	"Essolube" 30
Cold and extreme cold down to 0° F. (-18° C.)	Mobiloil "Arctic"	"Shell" X-100 20/20 W	"Energol" S.A.E. 20 W	Zero "Filtrate" 20	"Sternol" W.W. 20	Duckham's N.O.L. "Twenty"	"Castrolite"	"Essolube" 20
Arctic below 0° F. (-18° C.)	Mobiloil 10 W	"Shell" X-100 10 W	"Energol" S.A.E. 10 W	Sub-Zero "Filtrate" 10	"Sternol" W.W. 10	Duckham's N.O.L. "Ten"	"Castrol" Z	"Essolube" 10
B GEARBOX, STEERING GEARBOX AND REAR AXLE (HYPOID GEARS)								
Tropical and Temperate down to 10° F. (-12° C.)	Mobilube "G.X." 90	"Shell" Spirax 90 E.P.	"Energol" E.P. S.A.E. 90	Hypoid "Filtrate" 90	Ambroleum E.P. 90	Duckham's Hypoid 90	"Castrol" Hypoy	"Esso" Expee Compound 90
Extreme cold below 10° F. (-12° C.)	Mobilube "G.X." 80	"Shell" Spirax 80 E.P.	"Energol" E.P. S.A.E. 80	Hypoid "Filtrate" 80	Ambroleum E.P. 80	Duckham's Hypoid 80	"Castrol" Hypoy 80	"Esso" Expee Compound 80
C WHEEL HUBS, FAN AND WATER PUMP BEARINGS								
All conditions	Home—Mobil Hub Grease Export—Mobilgrease No. 5	"Shell" Retinax A	"Energrease" C.3	Super Lithium "Filtrate" Grease	"Ambroline" L.H.T. Grease	Duckham's L.B. 10 Grease or H.B.B. Grease	"Castrolease" Heavy	Home— "Esso" Grease Export— Hubs : "Esso" Bearing Grease Fan : "Esso" Chassis Grease
D STEERING CONNECTIONS, KING-PINS, PROPELLER SHAFT, CLEVIS PINS AND LEVER FULCRUMS								
All conditions	Mobilgrease No. 2 or 4	"Shell" Retinax A	"Energrease" C.1	Super Lithium "Filtrate" Grease	"Ambroline" L.H.T. Grease	Duckham's L.B. 10 Grease or H.P.G. Grease	"Castrolease" Medium	Home— "Esso" Pressure Gun Grease Export— "Esso" Chassis Grease
E CABLES AND VITAL CONTROL JOINTS								
All conditions	Mobilgrease No. 2 or 4	"Shell" Retinax A	"Energrease" C.1	Super Lithium "Filtrate" Grease	"Ambroline" L.H.T. Grease	Duckham's L.B. 10 Grease or "Keenol" K.G. 16 Grease	"Castrolease" Brake Cable Grease	Home— "Esso" Pressure Gun Grease Export— "Esso" Chassis Grease
F UTILITY LUBRICANT, S.U. CARBURETTER DASHPOT, OILCAN POINTS, ETC.								
All conditions	Mobiloil "Arctic"	"Shell" X-100 20/20 W	"Energol" S.A.E. 20 W	Zero "Filtrate" 20	"Sternol" W.W. 20	Duckham's N.O.L. "Twenty"	"Castrolite"	"Essolube" 20

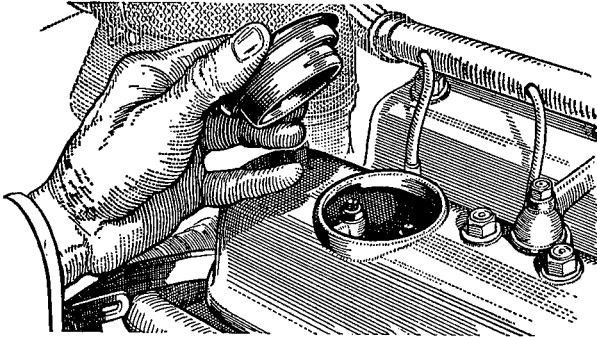


Fig. P.2.

The 1½ litre oil filler is located on the left-hand side rocker cover at the front.

Section P.2

TO CHANGE THE OIL FILTER (1½ litre)

Undo both banjo unions, and note the positions of the fibre washers, as they are not the same size on both sides of the unions. If their condition is doubtful they should be renewed before fitting the new filter.

Slacken back the clamping bolt of the attachment strap and pull the old filter away. Fit the new filter.

The correct oil filter is Wilmot-Breedon 22768.

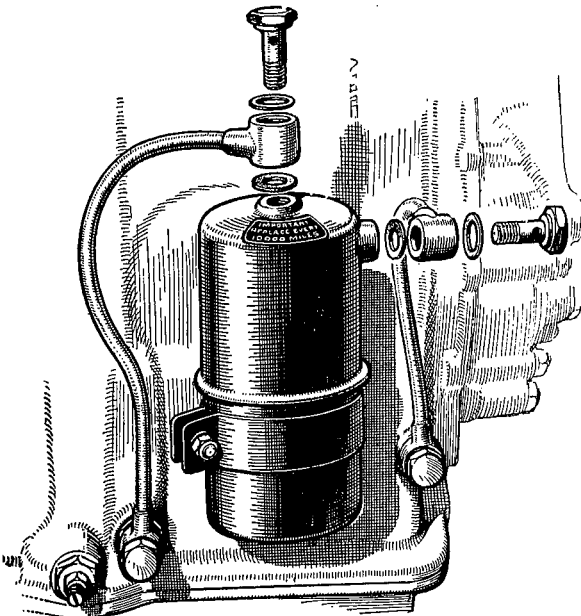


Fig. P.3.

The 1½ litre oil filter is of the "throw-away" type.

TO CHANGE THE OIL FILTER ELEMENT (2½ litre)

The filter body on the 2½ litre cars can be withdrawn to enable the element to be removed for cleaning or renewal by unscrewing the central attachment bolt at the bottom of the filter. When reassembling the

filter, make sure that the seating in the filter head for the filter body is in good condition and able to make an airtight seal.

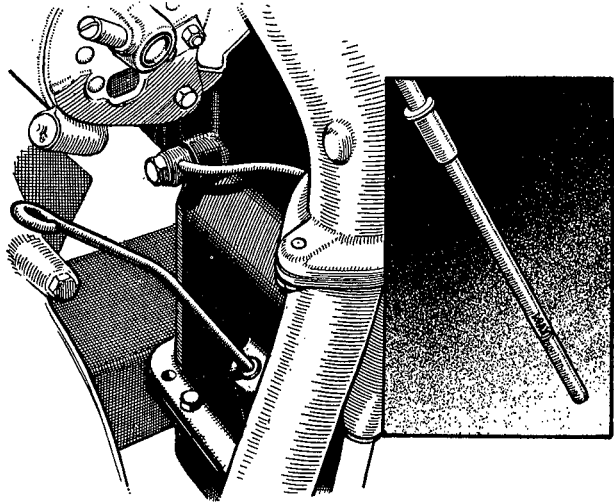


Fig. P.4.

The 1½ litre dipstick is just forward of the exhaust pipe on the left-hand side of the engine.

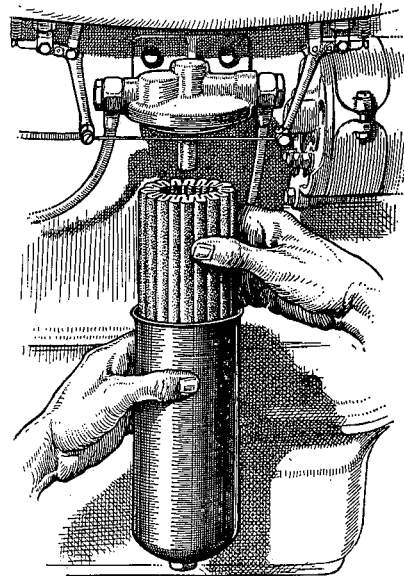


Fig. P.5.

The 2½ litre oil filter in the process of being removed.

Section P.3

GEARBOX LUBRICATION

The gearbox oil level should be checked by the dipstick every 1,000 miles (1600 km.) and replenished if necessary.

Access to the dipstick is obtained by removing the gearbox cowl.

The oil should never be allowed to fall below the "low" mark.

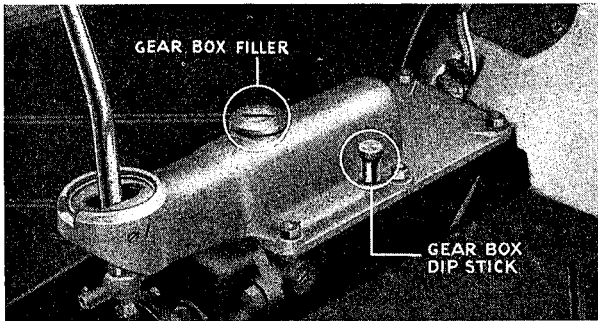


Fig. P.6.

The gearbox filler and dipstick on the 1½ and 2½ litre cars.

The gearbox should be drained and refilled with fresh oil after the first 500 miles (800 km.) with a new car and subsequently every 6,000 miles (10000 km.). It is recommended that the same oil is used in the rear axle and gearbox and attention is drawn to the special oils recommended for the gearbox of Series RME and RMF cars only on page P.3. Earlier cars must use the oils recommended on page P.2.

A drain plug is provided in the base of the box.

The capacity of the gearbox is 2½ pints (1.5 litres) on 2½ litre cars and 2 pints (1.14 litres) on 1½ litre cars.

Section P.4

DISTRIBUTOR LUBRICATION

Every 3,000 miles (5000 km.) the distributor cam and rocker-arm pivot should be given a slight smear of grease to Ref. D (page P.2).

A few drops of oil to Ref. F should be added to the spindle centre at the same time after removing the rotor arm. Do not disturb the central screw.

A few drops of oil to Ref. F should also be added through the aperture in the distributor base round the cam to lubricate the advance mechanism.

Section P.5

DYNAMO LUBRICATION

Every 3,000 miles (5000 km.) the wick-type greaser which lubricates the plain bush at the rear end of the dynamo should be half-filled with grease to Ref. D (page P.2).

Section P.6

THE AIR CLEANER

The wire mesh intake end of the filter should be cleaned with petrol every 6,000 miles (10000 km.) home, or 3,000 miles (5000 km.) overseas. After cleaning and drying, the element must be re-oiled

with engine oil and the surplus allowed to drain off before refitting the filter to the intake elbow.

Section P.7

REAR AXLE LUBRICATION

The rear axle oil level should be checked every 1,000 miles (1600 km.) and replenished if necessary.

The surface of the oil should be kept level with the bottom thread of the filler plug opening.

Access to the filler plug is obtained from underneath the car or alternatively by removing a wheel and

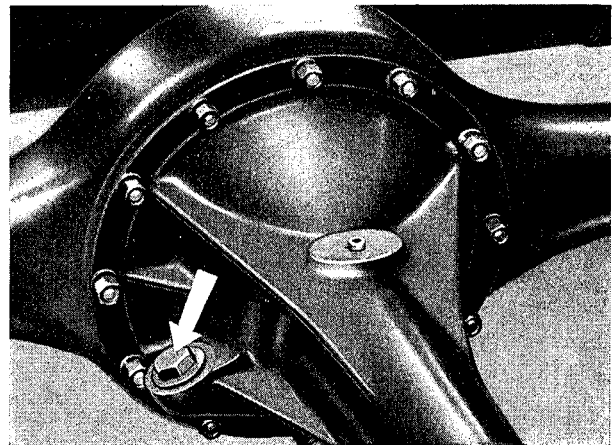


Fig. P.7.

The 2½ litre rear axle filler (early models).

reaching the filler plug in that manner. The area round the plug should be cleaned thoroughly before the plug is removed.

The rear axle should be drained, through the plug provided, after the first 500 miles (800 km.) with a new car and subsequently every 6,000 miles (10000 km.).

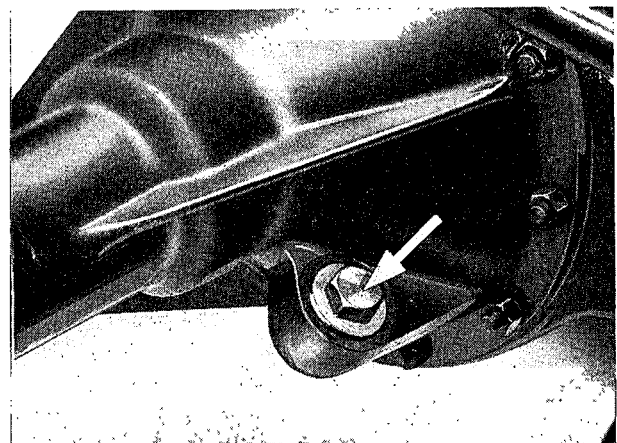


Fig. P.8.

The 1½ litre rear axle filler (early models).

P LUBRICATION

(1½ and 2½ LITRE)

The capacity of the axle is 4 pints (2.3 litres) on the 2½ litre car, and 2¾ pints (1.56 litres) on the 1½ litre car.

On later models (commencing at Chassis No. RME 20505 on the 1½ litre and at Chassis No. RMF 9911 on the 2½ litre) a Hypoid axle is fitted and care must be taken that only Hypoid oils as recommended on page P.3 are used in these axles. The capacity of the Hypoid axles is 2½ pints (1.42 litres).

Section P.8

GREASE GUN LUBRICATION POINTS

Extensive use of oil-less bearings has reduced the number of points requiring attention with the grease gun to a minimum.

Grease nipples are located at the following points, which should receive attention, at the intervals indicated, with the grease gun filled with grease to Ref. D :—

1. Steering swivel pins (four nipples), every 1,000 miles (1600 km.) two or three strokes. **Never use a high-pressure system at these points.**
2. Steering track-rod ends (four nipples), every 1,000 miles (1600 km.) two or three strokes.
3. Intermediate shaft universal joints (two nipples), or, on later models, one universal joint at the front end (one nipple), every 1,000 miles (1600 km.) two or three strokes.
4. Front end of torque tube (one nipple) or, on later models, propeller shaft universal joints and sliding joint (three nipples), every 1,000 miles (1600 km.) two or three strokes.
5. Steering gearbox, repack with grease each 30,000 miles (50000 km.).
6. Clutch cross-shaft, two or three strokes to Ref. D every 1,000 miles (1600 km.).

The grease gun should be filled with grease to Ref. C when attending to the following items :—

7. Water pump (one nipple), every 1,000 miles (1600 km.) two strokes.
8. Wheel hubs (four nipples), every 6,000 miles (10000 km.) one stroke. In the case of the rear hubs it is necessary to substitute a grease nipple for the plugs fitted. On later models the plugs and grease nipples are omitted. Periodic lubrication attention is no longer necessary to the rear wheels. The front wheel hub caps should be removed every 6,000 miles (10000 km.) and repacked with grease to Ref. C.

Be sure to use the correct grease for each purpose (see page P.2 and page P.3).

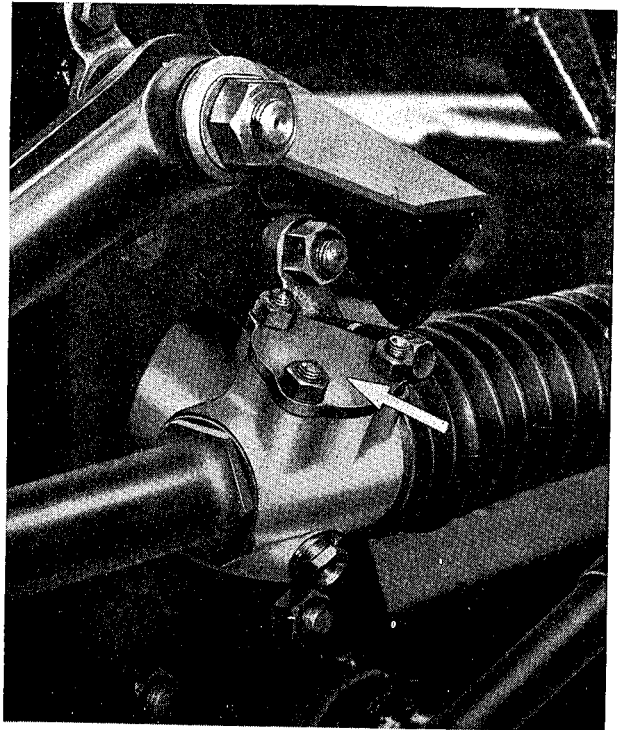


Fig. P.9.

The plunger housing greasing point. Later models are fitted with a greaser.

Section P.9

THE WHEEL BEARINGS

Every 6,000 miles (10000 km.) the wheel hub caps should be removed and the grease gun filled with grease to Ref. C should be applied to the nipple on the wheel hub bearing cap and given one stroke only. In the case of the rear wheels the hexagon blanking plugs must be removed and a grease nipple substituted. On later models, no grease nipples or screwed blanking plugs are fitted and maintenance attention is not

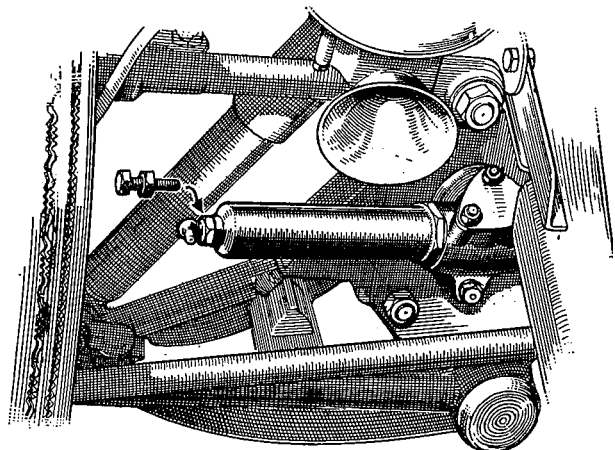


Fig. P.10.

Method of greasing the outer ends of the steering gearbox after removing the stop screws.

required to the rear wheels. The hub caps on the front wheels on RME and RMF models should be removed every 6,000 miles (10000 km.) and repacked with grease to Ref. C.

Section P.10

STEERING GEARBOX LUBRICATION

In earlier models no grease nipples are provided on the steering gearbox and maintenance should take the form of repacking with grease to Ref. D on page P.2 each 30,000 miles (50000 km.).

Greasing should take place at two points as follows :

- (a) Remove the small triangular plunger housing cover and insert grease while the steering is turned from lock to lock. Make sure that the spring-loaded plunger is replaced correctly and that the shims are not damaged.
- (b) Remove the steering lock stop-screw on each end of the rack housing and insert a grease nipple in its place.

When replacing the stop-screws make sure they are correctly set to give the correct amount of steering lock on both sides. (See Section K.14.)

Section P.11

CARBURETTER

On later 1½ litre cars a carburetter with dashpot controlled piston is fitted.

To ensure that the dashpot is functioning efficiently it is essential to maintain the level of the oil in the hollow piston of the suction disc.

Every 1,000 miles (1600 km.) the cap at the top of the suction chamber must be unscrewed and the dashpot replenished with thin engine oil to Ref. F (page P.2).

It is advisable to lubricate at the same time the control joints with the oilcan filled with oil to Ref. F (page P.2).

Section P.12

GENERAL

To maintain the moving parts of the body and chassis in good condition, working freely, and to avoid squeaks, periodical attention with the oilcan is essential to such items as door locks, door hinges, boot hinges, boot lock, bonnet hinges, control joints, seat adjustments, etc.

One of the oils recommended under Ref. F on page P.2 should be used for this purpose at intervals of 1,000 miles (1600 km.).

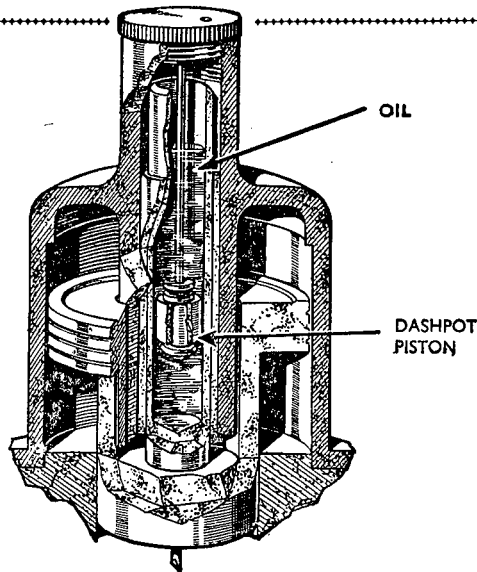


Fig. P.11.

The carburetter suction chamber, suction disc, piston and piston rod, partly sectioned to show the details of the oil dashpot fitted on later 1½ litre cars.