

SECTION P

LUBRICATION

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| Section No. P.1 | Engine lubrication. Alternative oils. Extreme cold conditions. |
| Section No. P.2 | Gearbox lubrication. |
| Section No. P.3 | Rear axle lubrication. |
| Section No. P.4 | Carburettor dashpot lubrication. |
| Section No. P.5 | Distributor lubrication. |
| Section No. P.6 | Dynamo lubrication. |
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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.

Section P.1

ENGINE LUBRICATION A

New engines should have their oil changed after the first 500 miles (800 km.) and subsequently at intervals of 3,000 miles (5000 km.). Drain the engine when warm and the oil is relatively fluid.

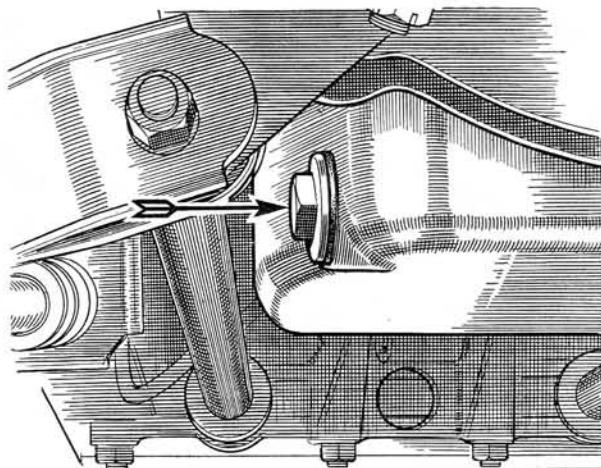


Fig. P.1.
The engine drain plug.

The oil supply should be checked by the dipstick every 250 miles (400 km.) and replenished if necessary.

Capacity : $12\frac{1}{2}$ pints (15 U.S. pints ; 7 litres) excluding filter.

The oil filter is of the renewable element type mounted at the rear right-hand side of the cylinder block and should be renewed every 6,000 miles (10000 km.), Release the element and bowl by removing the bolt indicated by the arrow in Fig. P.2.

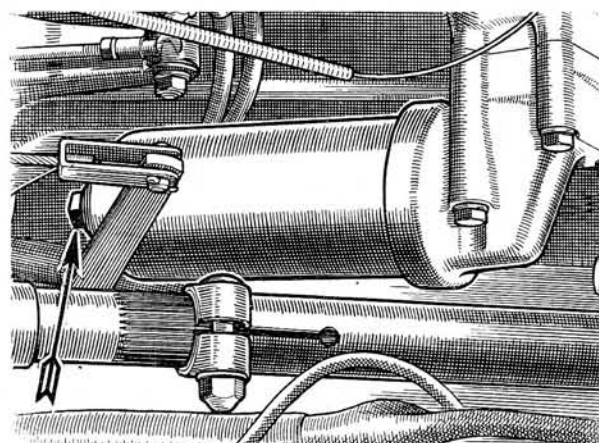


Fig. P.2.
The oil filter securing bolt.

The following is a list of recommended lubricants (for cars up to Car No. 3675)

| A ENGINE AND AIR CLEANER | | | | | | | | |
|---|--------------------------|------------------------|---------------------------------|---------------------------|---------------------------|--------------------|-------------------------------|--------------------|
| <i>Climatic Conditions</i> | B.P. Energol | Shell | Filtrate | Sternol | Duckham's | Castrol | Esso | Mobil |
| Tropical and temperate down to 32° F. (0° C.) | "Energol" S.A.E. 30 | "Shell" X-100 30 | Medium "Filtrate" 30 | "Sternol" W.W. 30 | Duckham's N.O.L. "Thirty" | "Castrol" X.L. | "Esso" Extra Motor Oil 20W/30 | Mobiloil "A" |
| Cold and extreme cold down to 0° F. (-18° C.) | "Energol" S.A.E. 20W | "Shell" X-100 20/20W | Zero "Filtrate" 20 | "Sternol" W.W. 20 | Duckham's N.O.L. "Twenty" | "Castrolite" | "Esso" Extra Motor Oil 20W/30 | Mobiloil "Arctic" |
| Arctic—below 0° F. (-18° C.) | "Energol" S.A.E. 10W | "Shell" X-100 10W | Sub-Zero "Filtrate" 10 | "Sternol" W.W. 10 | Duckham's N.O.L. "Ten" | "Castrol" Z | "Essolube" 10 | Mobiloil 10W |
| B GEARBOX (See also page P.5), STEERING GEARBOX AND REAR AXLE (HYPOID GEARS) | | | | | | | | |
| Tropical and Temperate down to 10° F. (-12° C.) | "Energol" E.P. S.A.E. 90 | "Shell" Spirax 90 E.P. | Hypoid "Filtrate" Gear 90 | Ambroleum E.P. 90 | Duckham's Hypoid 90 | "Castrol" Hypoy | "Esso" Expee Compound 90 | Mobiloil "G.X." 90 |
| Extreme cold below 10° F. (-12° C.) | "Energol" E.P. S.A.E. 80 | "Shell" Spirax 80 E.P. | Hypoid "Filtrate" Gear 80 | Ambroleum E.P. 80 | Duckham's Hypoid 80 | "Castrol" Hypoy 80 | "Esso" Expee Compound 80 | Mobiloil "G.X." 80 |
| C WHEEL HUBS AND FAN BEARINGS | | | | | | | | |
| All conditions | "Energrease" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrolase" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| D CHASSIS GREASING NIPPLES, ETC. | | | | | | | | |
| All conditions | "Energrease" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrolase" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| E CABLES AND CONTROL JOINTS | | | | | | | | |
| All conditions | "Energrease" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrolase" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| F OILCAN AND CARBURETTER | | | | | | | | |
| All conditions | "Energol" S.A.E. 20W | "Shell" X-100 20/20W | Zero "Filtrate" 20 | "Sternol" W.W. 20 | Duckham's N.O.L. "Twenty" | "Castrolite" | "Esso" Extra Motor Oil 20W/30 | Mobiloil "Arctic" |

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.

MIXTURE 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.

Section P.2

GEARBOX LUBRICATION **B**

Check the gearbox oil level by the dipstick every 1,000 miles (1600 km.) and top up if necessary.

Drain the gearbox after the first 500 miles and refill with fresh oil. This procedure should be repeated afterwards every 6,000 miles (10000 km.).

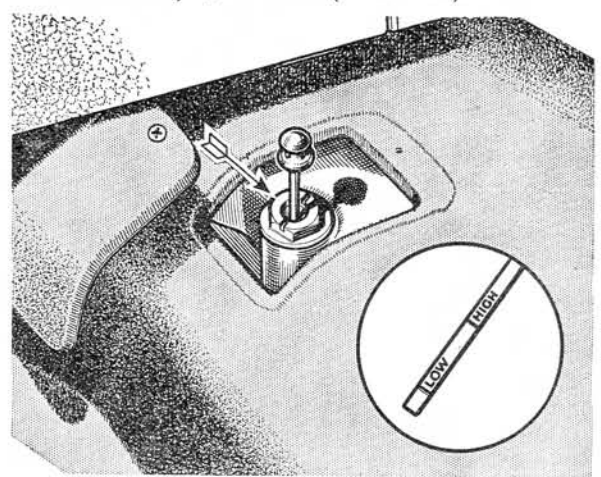


Fig. P.3.
The gearbox dip-stick.

Ensure that the hollow centre of the drain plug is kept clean.

Capacity : 2½ pints (2.7 U.S. pints ; 1.3 litres).

Section P.3

REAR AXLE LUBRICATION **B**

It is important that only hypoid oils of the approved grades be used in the rear axle if damage to the gears is to be avoided.

After the first 500 miles (800 km.) the rear axle should be drained and refilled with fresh oil. This

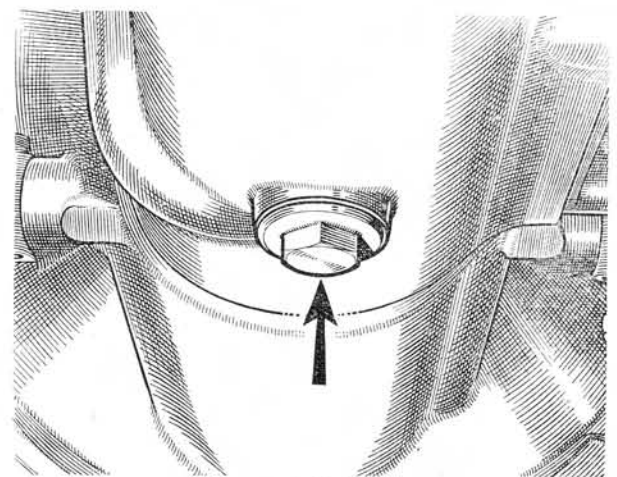


Fig. P.4.
The gearbox drain plug.

procedure should subsequently be repeated every 6,000 miles (10000 km.).

The rear axle oil level should be checked every 1,000 miles (1600 km.) and topped up if necessary with oil to Ref. B, page P.2.

The first type rear axle capacity is 3 pints (3.6 U.S. pints ; 1.7 litres). The second type rear axle capacity is 3½ pints (4.5 U.S. pints ; 2.13 litres).

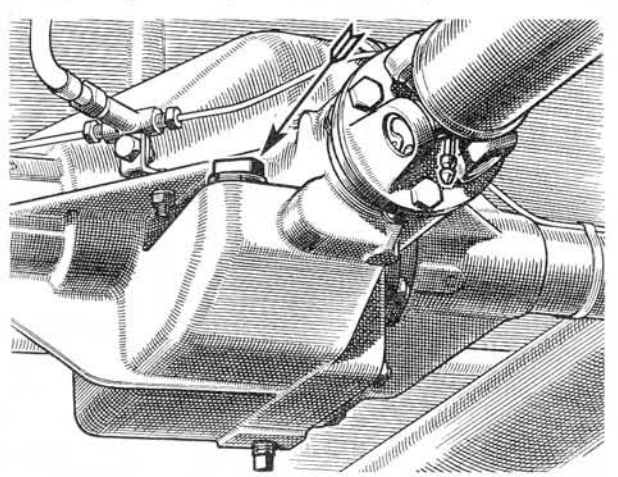


Fig. P.5.
The arrow indicates the first type rear axle oil filler plug. The drain plug and rear universal joint grease nipple are also shown.

Section P.4

CARBURETTOR DASHPOT LUBRICATION **F**

Every 1,000 miles (1600 km.) the brass cap of the carburettor suction chambers should be unscrewed and withdrawn sufficiently to enable the dashpot chambers to be replenished with thin engine oil to Ref. F (page P.2). A teaspoonful is usually sufficient.

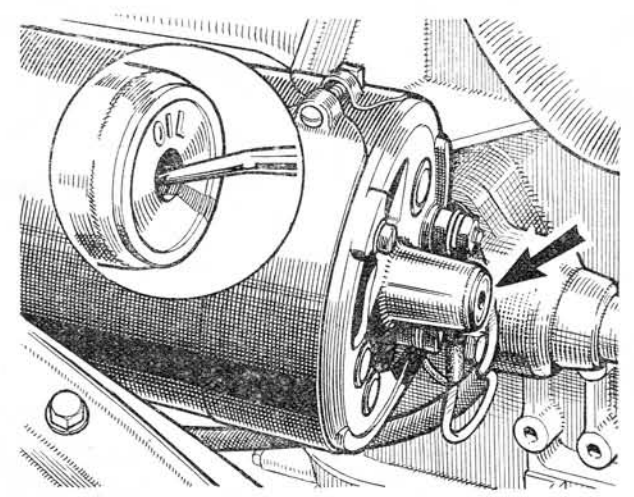


Fig. P.6.
Lubricating the dynamo bearing.

Section P.5

DISTRIBUTOR LUBRICATION D & F

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) or engine oil to Ref. F.

A few drops of thin machine oil should be added to the spindle centre at the same time after removing the rotor arm.

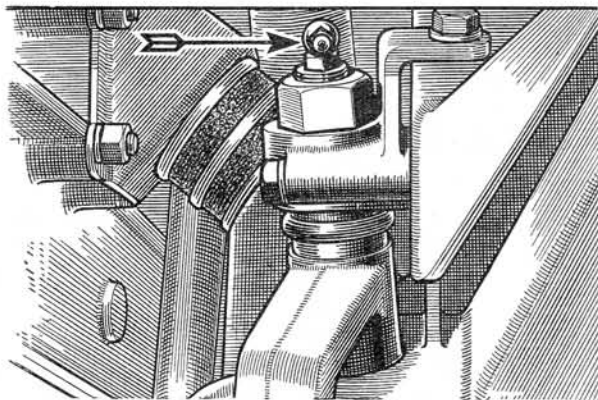


Fig. P.7.

The arrow indicates the grease nipple on the steering transfer box.

Two drops of thin machine oil should be added through the opening round the spindle to lubricate the advance mechanism.

Section P.6

DYNAMO LUBRICATION D

Every 3,000 miles (5000 km.) half-fill the lubricator at the commutator end with grease to Ref. D, page P.3. On later models add one or two drops of oil through the hole in the armature end cover.

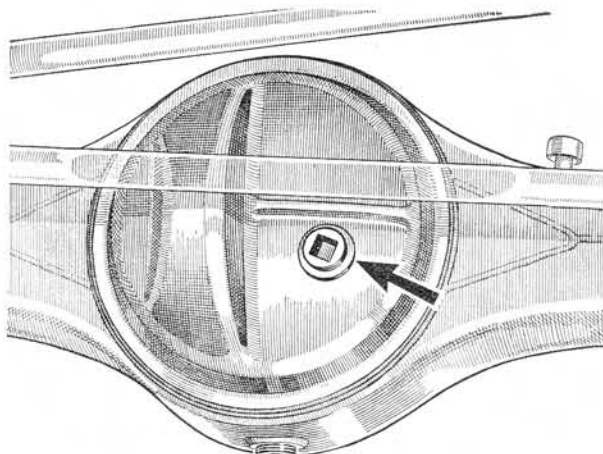


Fig. P.8.

The second type axle combined filler and level plug is indicated by the arrow. The larger drain plug may also be seen.

Section P.7

GREASE GUN LUBRICATION POINTS

Grease nipples are located at the following points, which should receive attention at intervals indicated:—

1. Steering knuckles (four nipples), every 1,000 miles (1600 km.) three or four strokes.

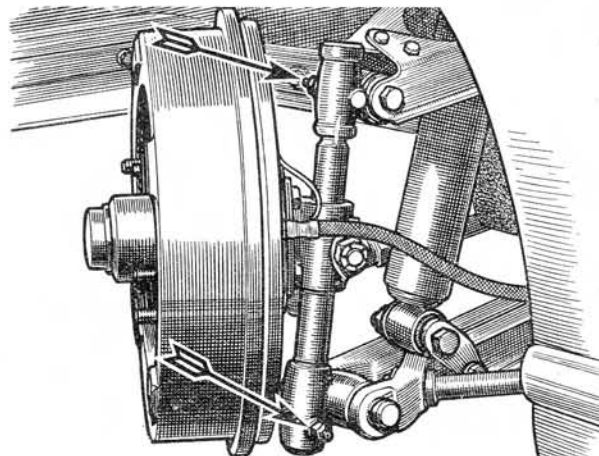


Fig. P.9.

Swivel pin lubrication points.

2. Steering tie-rod ball ends (two nipples), transfer-box (one nipple) and track-rod (two nipples), every 1,000 miles (1600 km.) three or four strokes.
3. Propeller shaft universal joint (two nipples), every 1,000 miles (1600 km.) three or four strokes.
4. Brake cable nipples, every 1,000 miles (1600 km.) three or four strokes (F).
5. Gear lever fulcrum, every 1,000 miles (1600 km.) three or four strokes (D).
6. Water pump and fan spindle (one nipple), every 1,000 miles (1600 km.) two strokes.

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

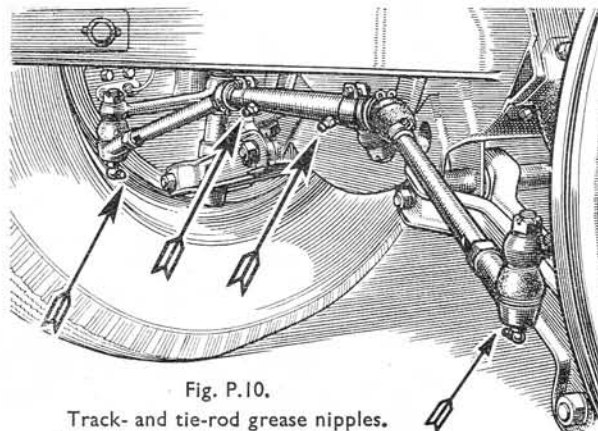


Fig. P.10.

Track- and tie-rod grease nipples.

Key to Recommended Lubricants

For cars up to Car No. 3675

| A ENGINE AND AIR CLEANER | | | | | | | | |
|---|--------------------------|------------------------|---------------------------------|---------------------------|---------------------------|--------------------|-------------------------------|--------------------|
| <i>Climatic Conditions</i> | B.P. Energol | Shell | Filtrate | Sternol | Duckham's | Castrol | Esso | Mobiloil |
| Tropical and temperate down to 32° F. (0° C.) | "Energol" S.A.E. 30 | "Shell" X-100 30 | Medium "Filtrate" 30 | "Sternol" W.W. 30 | Duckham's N.O.L. "Thirty" | "Castrol" X.L. | "Esso" Extra Motor Oil 20W/30 | Mobiloil "A" |
| Cold and extreme cold down to 0° F. (-18° C.) | "Energol" S.A.E. 20W | "Shell" X-100 20/20W | Zero "Filtrate" 20 | "Sternol" W.W. 20 | Duckham's N.O.L. "Twenty" | "Castrolite" | "Esso" Extra Motor Oil 20W/30 | Mobiloil "Arctic" |
| Arctic—below 0° F. (-18° C.) | "Energol" S.A.E. 10W | "Shell" X-100 10W | Sub-Zero "Filtrate" 10 | "Sternol" W.W. 10 | Duckham's N.O.L. "Ten" | "Castrol" Z | "Essolube" 10 | Mobiloil 10 W |
| B GEARBOX (See also key for cars from Car No. 3676), STEERING GEARBOX AND REAR AXLE (HYPOID GEARS) | | | | | | | | |
| Tropical and Temperate down to 10° F. (-12° C.) | "Energol" E.P. S.A.E. 90 | "Shell" Spirax 90 E.P. | Hypoid "Filtrate" Gear 90 | Ambroleum E.P. 90 | Duckham's Hypoid 90 | "Castrol" Hypoy | "Esso" Expee Compound 90 | Mobiloil "G.X." 90 |
| Extreme cold below 10° F. (-12° C.) | "Energol" E.P. S.A.E. 80 | "Shell" Spirax 80 E.P. | Hypoid "Filtrate" Gear 80 | Ambroleum E.P. 80 | Duckham's Hypoid 80 | "Castrol" Hypoy 80 | "Esso" Expee Compound 80 | Mobiloil "G.X." 80 |
| C WHEEL HUBS AND FAN BEARINGS | | | | | | | | |
| All conditions | "Energol" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrol" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| D CHASSIS GREASING NIPPLES, ETC. | | | | | | | | |
| All conditions | "Energol" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrol" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| E CABLES AND CONTROL JOINTS | | | | | | | | |
| All conditions | "Energol" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrol" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| F OILCAN AND CARBURETTER | | | | | | | | |
| All conditions | "Energol" S.A.E. 20W | "Shell" X-100 20/20W | Zero "Filtrate" 20 | "Sternol" W.W. 20 | Duckham's N.O.L. "Twenty" | "Castrolite" | "Esso" Extra Motor Oil 20W/30 | Mobiloil "Arctic" |

EVERY 1,000 MILES (1600 Km.). Use oilcan on all control joints, door locks, hinges.

SPECIAL NOTE. Only Hypoid oils should be used in the rear axle.

**The following is a list of recommended lubricants for cars with the later type gearbox
(Commencing Car No. 3676)**

| A ENGINE AND AIR CLEANER | | | | | | | | |
|---|--------------------------|------------------------|---------------------------------|---------------------------|---------------------------|--------------------|-------------------------------|--------------------|
| <i>Climatic Conditions</i> | B.P. Energol | Shell | Filtrate | Sternol | Duckham's | Castrol | Esso | Mobil |
| Tropical and temperate down to 32° F. (0° C.) | "Energol" S.A.E. 30 | "Shell" X-100 30 | Medium "Filtrate" 30 | "Sternol" W.W. 30 | Duckham's N.O.L. "Thirty" | "Castrol" X.L. | "Esso" Extra Motor Oil 20W/30 | Mobiloil "A" |
| Cold and extreme cold down to 0° F. (-18° C.) | "Energol" S.A.E. 20W | "Shell" X-100 20/20W | Zero "Filtrate" 20 | "Sternol" W.W. 20 | Duckham's N.O.L. "Twenty" | "Castrolite" | "Esso" Extra Motor Oil 20W/30 | Mobiloil "Arctic" |
| Arctic—below 0° F. (-18° C.) | "Energol" S.A.E. 10W | "Shell" X-100 10W | Sub-Zero "Filtrate" 10 | "Sternol" W.W. 10 | Duckham's N.O.L. "Ten" | "Castrol" Z | "Essolube" 10 | Mobiloil 10 W |
| GEARBOX FROM CAR No. 3676 AND OVERDRIVE. (For earlier cars see page P.2) | | | | | | | | |
| All temperatures | "Energol" S.A.E. 30 | "Shell" X-100 30 | Medium "Filtrate" 30 | "Sternol" W.W. 30 | Duckham's N.O.L. "Thirty" | "Castrol" X.L. | "Essolube" 30 | Mobiloil "A" |
| B STEERING GEARBOX AND REAR AXLE (HYPOID GEARS) | | | | | | | | |
| Tropical and Temperate down to 10° F. (-12° C.) | "Energol" E.P. S.A.E. 90 | "Shell" Spirax 90 E.P. | Hypoid "Filtrate" Gear 90 | Ambroline E.P. 90 | Duckham's Hypoid 90 | "Castrol" Hypoy | "Esso" Expee Compound 90 | Mobiloil "G.X." 90 |
| Extreme cold below 10° F. (-12° C.) | "Energol" E.P. S.A.E. 80 | "Shell" Spirax 80 E.P. | Hypoid "Filtrate" Gear 80 | Ambroline E.P. 80 | Duckham's Hypoid 80 | "Castrol" Hypoy 80 | "Esso" Expee Compound 80 | Mobiloil "G.X." 80 |
| C WHEEL HUBS AND FAN BEARINGS | | | | | | | | |
| All conditions | "Energol" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrol" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| D CHASSIS GREASING NIPPLES, ETC. | | | | | | | | |
| All conditions | "Energol" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrol" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| E CABLES AND CONTROL JOINTS | | | | | | | | |
| All conditions | "Energol" L.3 | "Shell" Retinax A | "Filtrate" Super Lithium Grease | "Ambroline" L.H.T. Grease | Duckham's L.B. 10 Grease | "Castrol" L.M. | "Esso" Multi-purpose Grease H | Mobilgrease M.P. |
| F OILCAN AND CARBURETTER | | | | | | | | |
| All conditions | "Energol" S.A.E. 20W | "Shell" X-100 20/20W | Zero "Filtrate" 20 | "Sternol" W.W. 20 | Duckham's N.O.L. "Twenty" | "Castrolite" | "Esso" Extra Motor Oil 20W/30 | Mobiloil "Arctic" |

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.

MIXTURE 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.

Section P.8

LATER-TYPE GEARBOX LUBRICATION **A**

Check the gearbox oil level by the dipstick every 1,000 miles (1600 km.) and top up if necessary.

Drain the gearbox after the first 500 miles (800 km.) and refill with fresh oil. This procedure should be repeated afterwards every 6,000 miles (10000 km.).

Capacity: $4\frac{1}{2}$ pints ($5\frac{1}{8}$ U.S. pints; 2.41 litres).



Fig. P.11.
The gearbox dipstick.

Section P.9

OVERDRIVE LUBRICATION (**A**)

The gearbox and overdrive are interconnected with oil passages, so that the same lubricant is used for both units.

However, certain precautions must be taken during the initial filling in order that the correct quantity of oil may be carried.

First fill the overdrive unit with the same grade of oil as that recommended for the gearbox, until oil runs out of the filler hole; then replace the plug. Next fill the gearbox with the correct grade of oil up to the level indicated on the combined dipstick and filler plug.

Subsequently it is only necessary to check the gearbox level every 1,000 miles (1600 km.) and top up if necessary with oil to Ref. A, page P.2.

Oil changing

Every 6,000 miles (9600 km.) drain both overdrive and gearbox, preferably when hot, and refill both units to the correct levels.

Under no circumstances must a lubricant of the Hypoid Axle type be used.

The capacity of the overdrive is $1\frac{1}{8}$ pints (1.6 U.S. pints, 0.76 litre).