

INSTRUCTION
MANUAL

FOR THE

WOLSELEY

11/22 H.P.

MODEL

FOURTH EDITION

WOLSELEY MOTORS LTD
BIRMINGHAM

1927 11/22 Wolschey

Chassis No. 1829

2988

Car No 49870

INSTITUTE



No. 763

Price 4 - net

INSTRUCTION MANUAL

FOR THE

WOLSELEY 11/22 H.P.

FOURTH EDITION

WOLSELEY MOTORS LIMITED

HEAD OFFICE

ADDERLEY PARK, BIRMINGHAM

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ADDERLEY PARK
WORKS

WARD END
WORKS

*The Birmingham Works of
WOLSELEY MOTORS LTD.
Total Area 100 acres.*

Makers' Car No.

*This is the No. to be quoted
in all correspondence
or when ordering re-
placements.*

Type of Car

Owner

Car Registration No.

License No.

Date Renewal Due

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THE "WOLSELEY" 11/22 H.P.

Introduction.

THIS book of reference has been compiled for the help and guidance of our clients in the care, adjustment, and maintenance of the "Wolseley" 11/22 h.p.

The design and construction of the car is such that all the mechanical details will be easily followed from the illustrations shown, even by those who do not possess any mechanical training.

We have endeavoured by careful selection of illustrations to enable our clients to give that care and attention to the lubrication systems and all parts of the car which are indispensable for its economical and satisfactory working, and we would particularly draw their attention to the instructions regarding the electrical equipment. As far as possible we have dealt with all difficulties which may arise, but at the same time realise that there will be occasions when it will be difficult to diagnose some fault. We are always pleased to give such cases our special attention, and to reply as fully as possible to any queries which our customers may raise.

WOLSELEY MOTORS LIMITED
ADDERLEY PARK, BIRMINGHAM



THE "WOLSELEY" 11-22 H.P. CHASSIS

How to take Care of Your Car.

Lubrication.—If the car is to be kept in the best condition, it is essential that all the working parts are regularly supplied with suitable lubricant. The lubricants we recommend have been selected only after careful and prolonged experiment, and are subjected to frequent tests in our laboratory in order that their quality and suitability may be constantly maintained.

It is no economy to use inferior oil or grease, as the damage caused to the working parts by lack of proper lubrication will entail expensive repairs, the cost of which will far exceed any apparent saving made.

The lubrication charts on pages 8 and 9 show how often each part should be lubricated, and also the correct lubricant.

You will be amply repaid by the service your car will give you if you diligently carry out the instructions as to lubrication which follow.

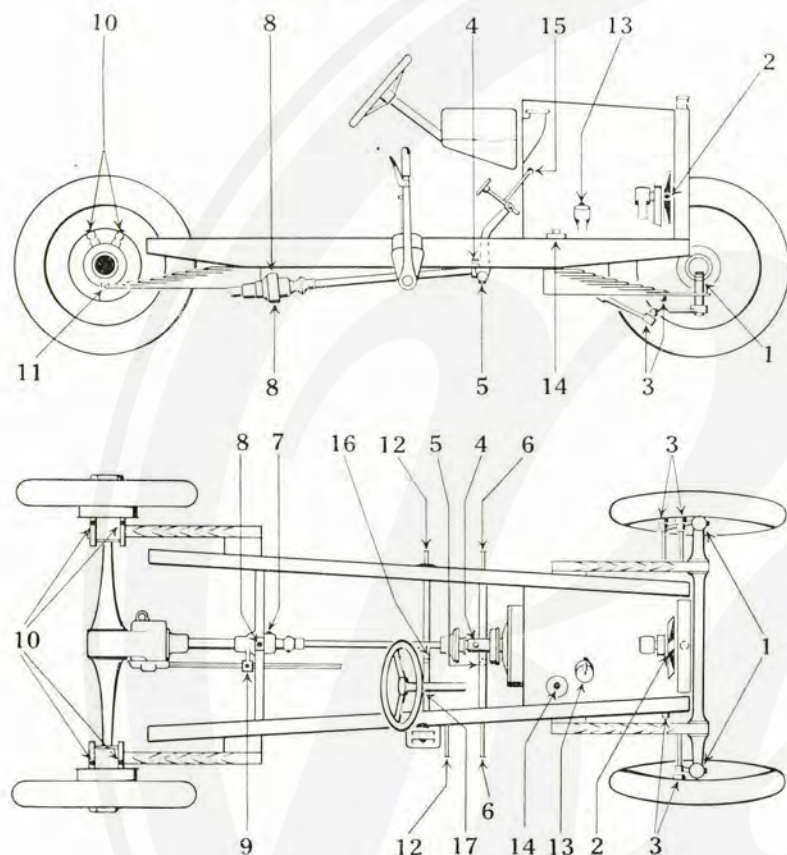


ENGINE OIL FILLER.

Engine.—For the engine we recommend "Wolseley" Extra-Heavy Filtrate Oil, which should be added as necessary through the oil filler on the crankcase. It is of vital importance that no foreign matter should find its way into the engine with the oil; the strainer provided in the filler orifice should therefore always be used.

The level of the oil in the crankcase sump is indicated by a dip stick and should lie between the marks engraved thereon. Never allow the oil level to fall below the lower mark, and never fill above the upper mark. This should be tested when the car is on level ground.

Lubrication Diagram.



EVERY 250 MILES

GREASE

(Use "Wolseley" Filtrate Solidified Oil)

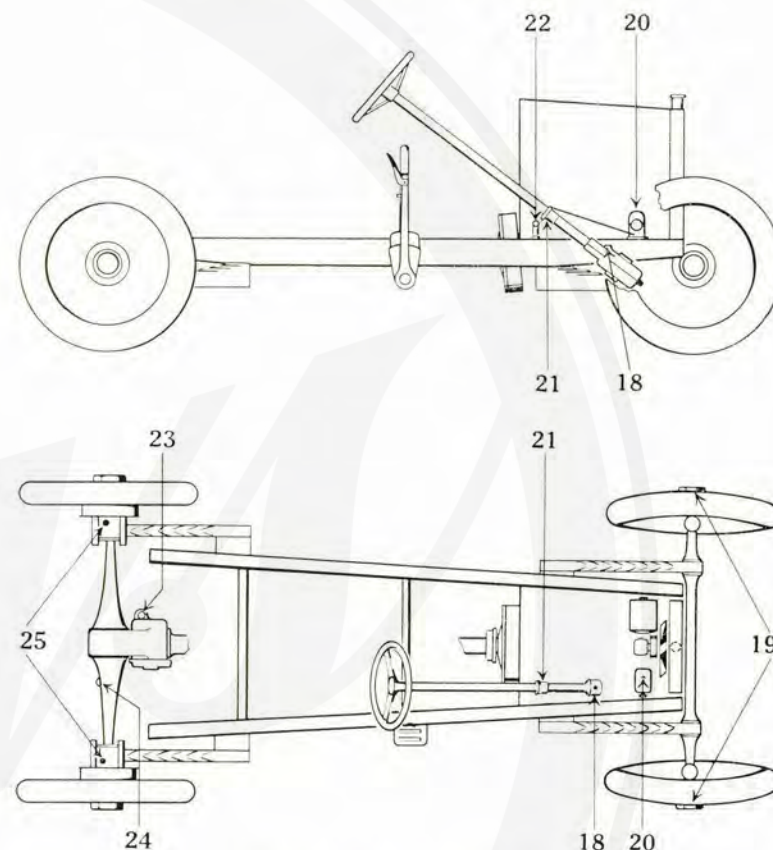
- 1—Swivel pins.
- 2—Fan bearing.
- 3—Steering joints (4).
- 4—Clutch shaft and thrust bearing.
- 5—Clutch pedal bearing.
- 6—Pedal shaft bearings (2).
- 7—Universal joint.
- 8—Torque tube ball socket and suspension pin (2).
- 9—Change speed rod bracket.
- 10—Brake cam spindles (4).
- 11—Spring pins (2).
- 12—Hand lever cross tube bearings.

OIL

(Use "Wolseley" Extra-heavy Filtrate)

- 13—Crank chamber oil filler.
- 14—Oil strainer (clean after first 200 miles).
- 15—Accelerator pedal bearing.
- 16—Change speed rod joints.
- 17—Change speed sliding shaft bearing.

Lubrication Diagram.



EVERY 1,000 MILES

GREASE

(Use "Wolseley" Filtrate Solidified Oil)

- 18—Steering worm box.
- 19—Front hubs.

OIL

(Use "Wolseley" Extra-heavy Filtrate)

- 20—Magneto (2 drops).
- 21—Control block on steering column.
- 22—Ignition control bearing.

OIL

(Use "Wolseley" Filtrate Gear Oil)

- 23—Gear-box and axle case.
- 24—Speedometer drive.
- 25—Rear wheel bearings (2), (replenish cups).

Until an owner or driver has become accustomed to his car it is perhaps advisable to add oil fairly frequently (say every 200 miles) in order to maintain it at the level of the upper mark on the dip stick.

After he has run the car about a thousand miles he will be familiar with the approximate oil consumption and should discontinue adding oil at frequent intervals, but instead should entirely drain out the old oil when the level has dropped to the lower mark on the dip stick, and replenish with fresh.

The adoption of this procedure will prevent the continuous circulation throughout the engine of abraded metal particles and carbon which gather in suspension in the oil, and will undoubtedly reduce the wear of the moving parts to the minimum.

After the first 200 miles, the oil strainer No. 14, page 8, should be removed and thoroughly washed out with paraffin, using a brush if necessary (**not rag or cotton waste**). Afterwards the strainer should be cleaned out every 500 miles.

After a new car has run about 500 miles, the oil sump should be drained and then replenished with fresh oil, as with a new engine the oil becomes dirty somewhat more quickly than afterwards.

Clutch.—The clutch itself does not require any lubrication, being of the dry plate type, but grease gun connections are provided for the clutch shaft and pedal, which should be replenished according to the instructions on page 48.

Gear-Box and Rear Axle.—As the live axle is combined with the gear-box, the lubrication arrangements are together, the inner bearings being automatically lubricated from the oil in the case.

The oil level should be checked every month and, if necessary, made up to the top of the filler hole (No. 23, page 9) with "Wolseley" Filtrate Gear Oil. After the first 1,000 miles, drain off the oil, and then fill up to the correct level with fresh oil. This should afterwards be done about every 2,000 miles.

Universal Joint.—The universal joint (No. 7, page 8) is lubricated with the grease gun through the connection nipple provided. "Wolseley" Filtrate Solidified Oil being used for this purpose. The universal joint needs careful attention to ensure that it is at all times adequately lubricated.

Front Hubs.—The front hubs should be kept full of "Wolseley" Filtrate Solidified Oil, which may be added by removing the hub cap. Before screwing the hub cap on again, empty out any grease it contains, to allow room for the grease in the hub to expand, so that it will not be forced out of the inner end of the hub. The hubs should be removed every six months and cleaned out.

The swivels should be frequently lubricated with "Wolseley" Filtrate Solidified Oil with the grease injector.

swivel

NOTE.—After completely changing the oil in the reservoir the engine should be started, and the oil circulation verified by seeing that the gauge is indicating pressure. If this is not the case the engine should be stopped at once and the pump primed by filling the oil filter, taking care to see that the cover of the filter is screwed down tight.

full of

The

lly the

General Lubrication.—The charts on pages 8 and 9 show the position of all lubricators. These should receive attention at the indicated periods. Oil all control rod joints and brake connections every week.

The Use of the Grease Gun.—Adaptor nipples are placed on all those parts of the chassis which require grease lubrication, and at all such points only "Wolseley" Filtrate Solidified Oil should be used.

It is a good plan at such parts as the rear spring pins to force in the grease until all the old grease and dirt has been expelled from the ends, the dirty grease then being cleaned off.

To charge the gun, unscrew the knurled cap from the barrel. The plunger should then be withdrawn; a strong pull is necessary as the act of withdrawal causes a partial vacuum in the barrel.

Spin the cap down the screw to its utmost limit, when it will encase the cup leather plunger, thereby eliminating the difficulty of fitting the leather into the barrel after charging.

"Wolseley" Filtrate Solidified Oil can be obtained in special one pound tins for use with the grease gun, a disc with a hole in the centre being provided to facilitate charging the gun. To fill the gun by this method, it is necessary to first unscrew the flexible tube from the other end of the gun. Place the open end of the gun over the hole in the disc and exert an even pressure, when the grease will enter the barrel. Do not obstruct the small hole in the end of the gun with the hand or the air will not be able to escape and will prevent the grease from entering the gun.

RADIATOR AND COOLING SYSTEM.

Filling the Cooling System.—The radiator is filled through a filler in the top, and the water should be replenished as may be found necessary. A gauze strainer is fitted in the filler, and is removable, but should always be used when filling up. It is important that the radiator should be filled only with clean rain water which has previously been thoroughly strained. On no account should hard tap water be used, as the use of such water results in a deposit of lime or magnesia, which lowers the efficiency of the cooling system.

Twice a year drain the cooling system by turning on the drain cock on bottom water pipe, close cock, and, while the engine is warm, fill up with a strong boiling solution of washing soda. Run engine to circulate, drain off, and then flush out the system with a hose. Do not allow the soda solution to get on the paintwork.

In frosty weather, unless the car is stored in a warm building, the system must be drained before leaving the car for the night, or for any period long enough for the water to be frozen. If the water freezes, there is great risk of the cylinder jackets and radiator being burst. When refilling, it is an advantage to use hot water, because not only is this more free from substances which cause furry deposits, but it also facilitates starting in cold weather.

While the engine is warming up, after filling the radiator with cold water, a certain quantity of water will run down the overflow pipe, but this overflow will cease as soon as the engine reaches its normal working temperature.

FUEL SUPPLY.

When filling the fuel tank, always tip the tin with the spout at the top to avoid injury to the varnish.

A strainer is combined with the fuel cock, and the cup should be removed occasionally for cleaning.

When replaced the cup should be screwed on tight to prevent leakage of petrol, but care must be taken not to strain the pipe connections by using undue force.

ELECTRICAL SYSTEM.

The electrical system is dealt with fully in Chapter III., which should be studied carefully. Most of the electrical troubles on cars are due to faulty contacts and loose connections in the wiring. All electrical connections should be examined occasionally, as the vibration of the car sometimes loosens them.

BRAKES.

In the interests of safety the brakes should always be kept properly adjusted. Full instructions for adjusting the brakes will be found on page 53.

TYRES.

The tyres are such an important item in the upkeep of a car that they should receive very careful attention, in order that the best service shall be secured from them. In the first place, it is very necessary to see that all tyres are fully inflated to their correct pressure. The following are the average pressures for our 11.22 h.p. cars.

AMENDED TYRE PRESSURES.

	Two-seaters fitted with 27 x 4.40 Tyres	Four-seaters fitted with 28 x 4.95 Tyres	Saloons fitted with 28 x 4.95 Tyres
Front	24 lb. per sq. in.	24 lb. per sq. in.	24 lb. per sq. in.
Rear	25 lb. per sq. in.	30 lb. per sq. in.	32 lb. per sq. in.

To Remove Tyre.—First completely deflate by removing all valve parts, and push the tyre edges into the base of rim at part diametrically opposite valve, then lift the cover edges near the valve over the rim edge. The small lever which is supplied with the car may be used, but it is not essential. No force is required to do this but the edges of the cover opposite the valve must be in the base of the rim.



You cannot pull the tyre edge at "A" over the rim edge until the tyre edge at "B" is pushed off the rim shoulder "C" down into the well "D," then tyre edge at "A" comes over the rim easily.

Remember, the tyre edges are inextensible—force will only damage the tyre and cannot stretch the edge.

To Fit Tyre.—Push one edge of the cover over the edge of the rim. It will go quite easily if you see that the part of the edge first put on is pushed right down into the rim base.

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

Commence to fit second edge of cover at a point diametrically opposite the valve, by placing it over the rim and pushing down into the base of the rim.

The small lever may be used for the last few inches but it is not essential. On no account use large levers. Force is unnecessary and may damage the cover edges.

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

Do not let oil or grease get on the tyres, as they have a destructive effect on rubber.

We always recommend clients to carry, in addition to the spare wheel, one or two spare inner tubes for replacement in case of

more than one puncture, as it is not always possible to effect a satisfactory repair to a punctured tube at the roadside.

BATTERY.

Inspect the level of the electrolyte or acid solution every month, and if necessary make up the level to the bottom of the filling tube with **pure distilled water** (see notes on battery, page 40).

WASHING THE CAR.

Never put the car away in a dirty state if you desire to keep the varnish and paintwork in new condition for the longest possible period. Full instructions are given on page 59 on the care of coachwork.

INSTITUTE



The Engine and its Adjustment.

LUBRICATION SYSTEM.

The engine oil base forms a reservoir, from which the oil is drawn through a detachable strainer to the oil pump. Oil is delivered by the pump to the crankshaft bearings and the troughs which span the oil base. In addition, a pipe is fitted by which oil is taken to the cams and the bearings of the camshaft and rockers, and also to the cross shaft bearings, the surplus oil being returned to the oil base.

After a new car has run about 500 miles, the oil base should be drained by removing the drain plug (see page 17), and any deposit which may have collected in the sump should be washed out with paraffin. If the oil base is removed it is necessary to refill the troughs with oil before replacing it. It is preferable to use a brush for cleaning purposes, but on no account must fluffy material be used, as particles are certain to remain in the oil base, and eventually choke the strainer.

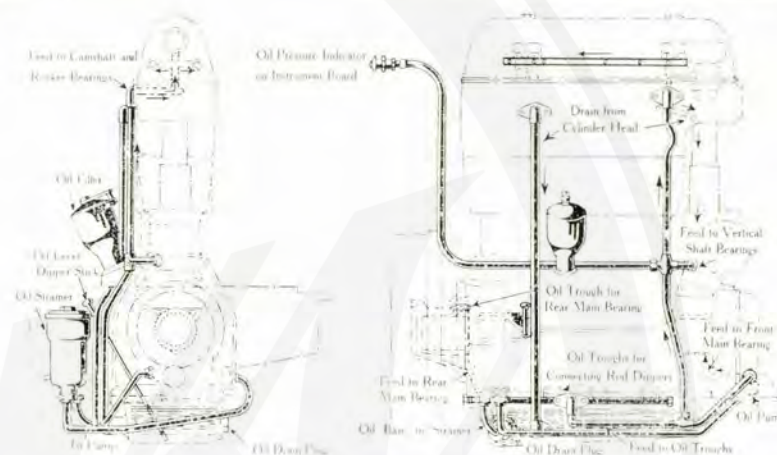
The oil pipes should be taken off and washed out after the first 500 miles and afterwards every 1,000 miles. In the oil hole in the cylinder head leading to the camshaft bearings is a small red to restrict the oil supply, which should be withdrawn at the above intervals and cleaned.

The diagram on next page illustrates the circulation of the oil through the engine.

Oil Pressure Indicator.—The pressure indicator on the instrument board is in the form of a press button (or in the case of the de luxe models, a pressure gauge), and when the engine is running the button should be out. If the indicator fails to show pressure in the system, within one minute of starting from cold, the engine should be stopped at once and the cause investigated. Loss of pressure may be due to lack of oil in the sump, a choked strainer, or a leaking union, or perhaps the strainer cover is not making an airtight joint.

CARBON DEPOSIT.

After running a considerable mileage, a deposit of carbon is formed in the combustion chambers of the cylinders, and this has to be removed. The presence of excessive carbon deposit is usually indicated by falling off in power, and "pinking" when the engine is labouring on a hill or picking up on one of the high gears, but this must not be confused with the similar noise made



ENGINE LUBRICATION DIAGRAM.

The normal running oil pressure at 30 m.p.h. is 5 to 7 lb., but should never be less than 2 lb.

when the ignition is too far advanced. To remove the carbon deposit, take off the cylinder head as follows—

Removing the Cylinder Head.—Remove the bonnet. Empty the radiator and detach the water connection from the cylinder head. Detach the carburetter from the inlet pipe. Disconnect the ignition wires from the sparking plugs and take out the sparking plugs. Remove exhaust branch from cylinder head. Disconnect the oil feed and drain pipe from cylinder head. Loosen the clip and telescope the upper half of the vertical shaft cover tube into the lower half. This will expose the upper coupling sleeve of the vertical shaft. If the tube is tight, do not use gas pliers or the tube may be distorted and cause oil leaks. Instead, push the clip up the tube and retighten. The clip can then be gripped by the hand and used to twist the tube down into the lower half. Take out the split pin from the clamping bolt, remove the bolt,

and slide down the coupling sleeve on to the middle section of the vertical shaft. It is not necessary to release the lower coupling. Take off the camshaft cover and undo the nuts securing the cylinder head to the cylinder block, and the cylinder head will be ready for lifting off. With a mallet, or a hammer and a piece of hard wood, smartly rap the cylinder head in several places, and when it is loose withdraw it, taking great care not to damage the copper asbestos joint.

The surface of the combustion chamber and the top of the pistons, and the joint faces of the cylinder and head, must be thoroughly scraped and cleaned. Do not use a file for this purpose. While the cylinder head is off, examine the valves and seats. If these exhibit a pitted surface they should be ground in, according to the instructions on page 19.

Replacing the Cylinder Head.—If the old joint has not been damaged it may be used again, but it is advisable to have a new one ready in case of accident. Dress the joint on both sides with gold-size or thick boiled linseed oil and replace it carefully on the studs. Then put on the cylinder head. Before tightening down, the vertical shaft must be in proper alignment, and to assist lining up three chisel marks are made on the cylinder block and head. First of all set the head with these marks opposite. Try for alignment of the vertical shaft (with the wide slots in the two sections of the shaft opposite) by sliding up the coupling to connect the top portion of the shaft. If the coupling slides up easily the shafts are in line, but if not, adjust the position of the head slightly until this can be done. This should be tried in three different positions by turning the crankshaft (with the coupling disconnected), and also turning the upper shaft to correspond. The coupling should slide up quite freely in every position. The head should then be fastened down evenly by tightening each nut a little at a time. Screw on all nuts finger tight, and then, starting with the middle ones, and going from corner to corner, tighten each nut a sixth of a turn successively until they are all tight. Repeated tightening of the nuts is necessary to ensure a perfect joint.

After a new cylinder joint has been fitted and the head tightened down, the engine should be run and the nuts followed up as the temperature rises. This procedure should be repeated at increasing intervals of time until no further tightening with the

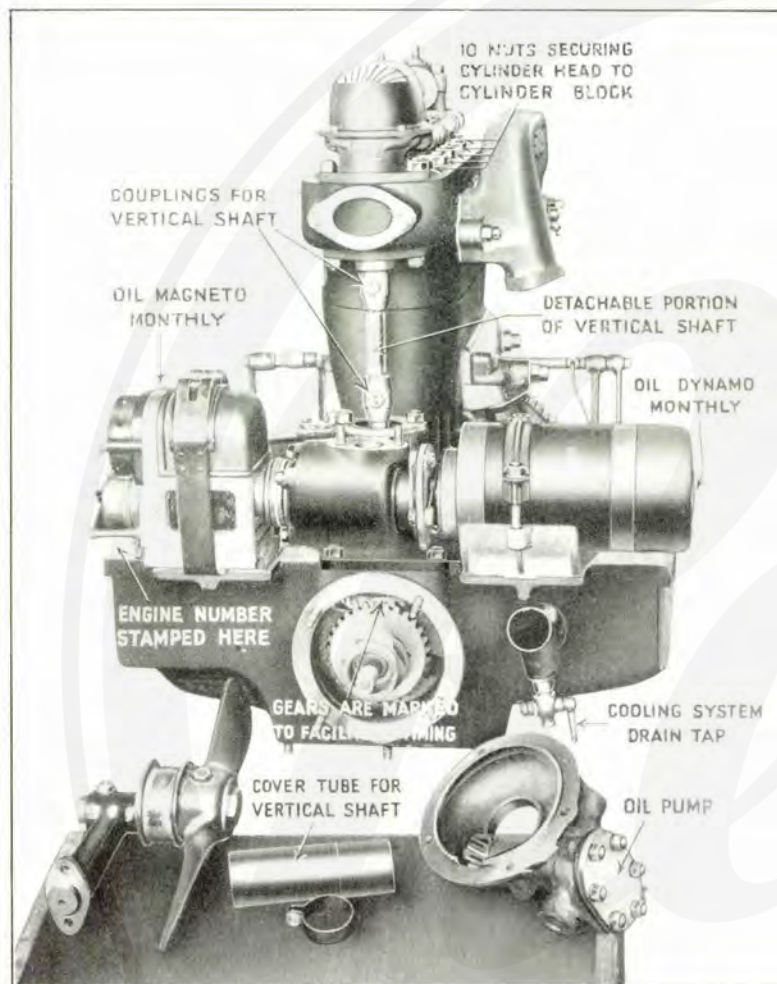
tools provided in the kit can be effected. It is well to note, if a new copper asbestos joint is used, that it does not burr up around the stud holes and that it is clear of the cylinder bores. It has been mentioned that one of the slots in the vertical shaft is wider than the others, and this makes it an easy matter to reassemble in the right position for correct valve timing, although as the two to one gearing is at the top of the vertical shaft, care must be taken to see that the camshaft is not half a revolution out of phase with the crankshaft. To make certain of correct reassembly, presuming the ignition timing has not been upset, proceed as follows—Set the crankshaft so that the front piston is at top dead centre and the drilled hole in the distributor gear wheel of the magneto with the ignition retarded coincides with a similar hole behind the gear wheel in the aluminium housing. Then turn the crankshaft one complete revolution to bring the No. 1 piston to the top of the stroke again. Set the camshaft so that it would require to be turned $4\frac{1}{2}$ deg. in a clockwise direction to allow the exhaust valve (i.e., the left-hand valve looking from the front of the engine) of the front cylinder to close. The wide slot in the vertical shaft will then be opposite the wide key in the coupling, and the connection can be made.

Before finally tightening the coupling it should be explained that the function of the spring washer "A" (page 23) is to provide for the relative expansion between the cylinder block and the vertical shaft, and not to force the bevel pinion into deeper engagement with the crown wheel on the camshaft. It is necessary, therefore, to slightly relieve the upward pressure of the bevel pinion before finally tightening the upper vertical shaft coupling, and this is most conveniently done in the following manner—

The upper coupling should be pulled up nearly tight with the clamping bolt and a sharp tap given to the centre of the bevel pinion in order to knock it downwards about .005 in. against the pressure of the spring washer "A." The upper coupling should then be pulled up quite tight and the split pin replaced.

Valve Grinding and Adjustment.—Should the valves require grinding in, this operation should be carried out as follows—

Remove the cylinder head (see page 17). Remove the camshaft and rockers entire after taking off the holding down nuts. Release the valve springs by removing the cotters from above the



ENGINE WITH CAMSHAFT COVER AND GEAR COVER REMOVED.

spring cups, and lift out the valves. The valves should then be smeared with a suitable grinding paste, and ground to their seats by means of a screwdriver or brace and bit. When "grinding-in" only slight pressure is necessary. A suitable paste is put up in convenient tins, and can be supplied on application.

While "grinding-in," the valve should be frequently lifted and moved round at the same time, so that the seating may be ground quite true all over. A light spring under the valve head will be found to be of some assistance.

After this operation the valves and seats must be thoroughly cleaned with a material which does not leave fluff. Do not swill with petrol or paraffin, as it is liable to wash the grinding material into the working parts.

In the event of a new valve being fitted, it will, of course, be necessary to grind it to its seat.

Valve Tappet Adjustment.—The rockers which actuate the valves are provided with set-screws, by which the clearance between the rockers and valves may be adjusted. The correct clearance between the valves and tappets is .003 in. (three-thousandths of an inch) when the engine is cold, and this should be checked over occasionally and readjusted if necessary. If the clearance is too much, the valve gear is noisy; if too little, the valves cannot close.

A small feeler gauge of correct thickness is supplied for setting the clearance.

Do not overstrain the locking screw, although it should be pulled quite tight.

The engine should be turned by hand when it is hot, two or three times a week, to check compressions; if these are unequal perhaps one or more of the tappets are too close. If an exhaust valve is allowed to "blow" the head will rapidly burn away.

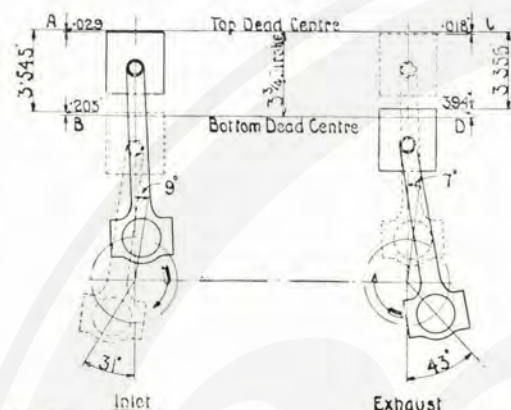
The correct timing of the valves depends solely on the form of the cam and relation of the engine gear wheels, and cannot be altered by the user unless gears are dismantled.

VALVE TIMING GEAR.

The valve timing gear is designed to permit of easy dismantling without disturbing other parts. The method of disconnecting the vertical shaft for the removal of the cylinder head has been described on page 18.

If it is desired to remove the gear case which contains the drive for the dynamo and magneto, proceed as follows—

Remove the dynamo and magneto from their respective mountings. (Do not remove the dynamo cradle or difficulty may be experienced in obtaining the correct alignment again.) Loosen

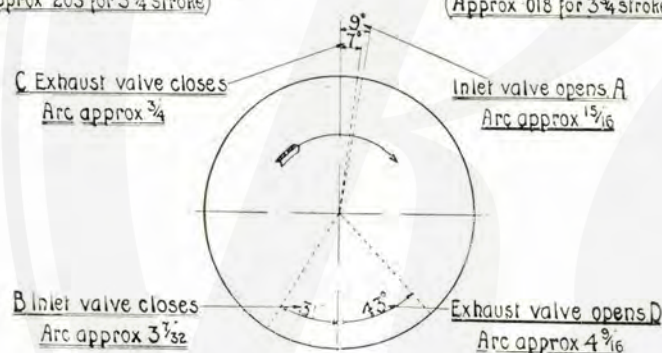


A Valve opens after completion of exhaust stroke (Approx .029 for $3\frac{3}{4}$ stroke)

B Valve closes after completion of suction stroke (Approx .205 for $3\frac{3}{4}$ stroke)

Exhaust
D Valve opens before completion of working stroke (Approx .394 for $3\frac{3}{4}$ stroke)

C Valve closes after completion of exhaust stroke (Approx .018 for $3\frac{3}{4}$ stroke)



Arc lengths are measured on outside diameter of flywheel

DIAGRAM OF VALVE SETTING.

To find the top dead centre of cylinders Nos. 1 and 4, rotate the engine until the mark on the flywheel comes opposite the mark on the rear cylinder.

the clip and telescope the cover tubes of the vertical shaft. Take out the upper clamping bolt and slide the coupling down on to the middle section of the vertical shaft. Now move the cover tubes to the top and remove the lower clamping bolt, afterwards sliding the lower coupling up on to the middle section of the vertical shaft. The middle piece of the shaft can now be taken away, together

with the cover tubes. The way is now clear for the removal of the gear case by taking off the four nuts which secure it to the crankcase. To dismantle gears see illustrations, page 24.

If it is required to remove the bevel gears at the front end of the camshaft, this can be done without removing the cylinder head.

Take off the sheet metal cover, undo the nuts securing the camshaft bearing caps and lift off the camshaft.

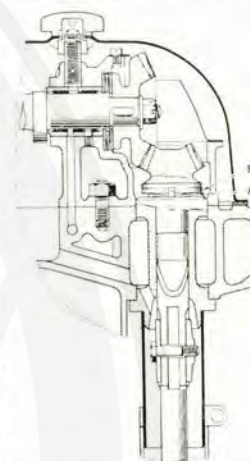
Disconnect the vertical shaft at its upper connection, as described previously, and this will allow the upper part of the vertical shaft to be lifted out.

When reassembling the vertical shaft, special care must be taken to see that the slots in the hardened steel thrust washer engage with the two pegs which project from the bearing bush when the shaft is home against the pressure of the spring washer. First put into position the spring washer "A" and then the thrust washer "B" on top of it with the pegs opposite the slots; now carefully replace the vertical shaft combined with the bevel pinion without moving the thrust washer. When the camshaft is replaced and the bearing caps are fastened down with the nuts, the camshaft bevel wheel will exert pressure on the vertical shaft, and unless the pegs are in engagement with the slots the parts will be damaged.

It is not necessary to remove the camshaft if it is only desired to inspect the upper part of the vertical shaft or its bearing. The bearing, together with the shaft, can be removed after taking out the middle section of the vertical shaft and removing the two nuts which secure the bearing to the underside of the cylinder head casting. Precaution to ensure that the two pegs engage with the thrust washer must also be taken before tightening up again.

Note—The teeth of the valve timing gears are marked to facilitate correct reassembly.

Particular care must be taken when reassembling the timing gear to see that all packing shims are replaced in their correct positions.



ENLARGED SECTION OF TOP END OF VERTICAL SHAFT.
Before refitting read p. 10.



FIG. 1

Fig. 1. Withdraw the bevel wheel "A" after taking out the taper pin "B." It is necessary to use a tool as shown to prevent damage to the bevel wheel.

The shaft upon which the bevel wheel is mounted may then be lifted out from the other side of the gear case.

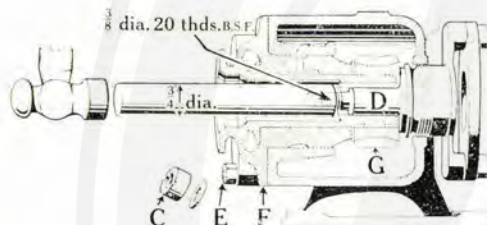


FIG. 2

Fig. 2. Take off the nut "C" with the special spanner provided and knock out the dynamo driving spindle "D." A tool similar to that illustrated is recommended to prevent damage to the threads on the spindle.

Take off the nuts "E" and withdraw the bearing "F" complete with worm wheel "G."

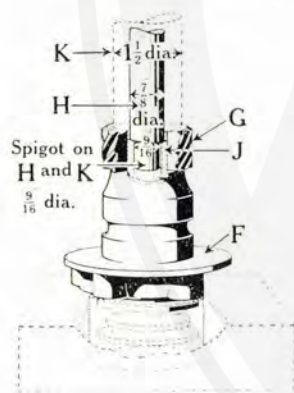


FIG. 3

Fig. 3. With a mandrel "H" knock out the magneto driving spindle "J" from the worm wheel "G," the bearing "F" being placed on a suitable slab as shown.

To assemble the worm wheel "G" on to the spindle again, a mandrel "K" should be used, in conjunction with a hand press if available.

We can supply the above tools to order.

ILLUSTRATIONS SHOWING THE METHOD OF DISMANTLING THE DYNAMO AND MAGNETO DRIVING GEARS.

FAN BELT ADJUSTMENT.

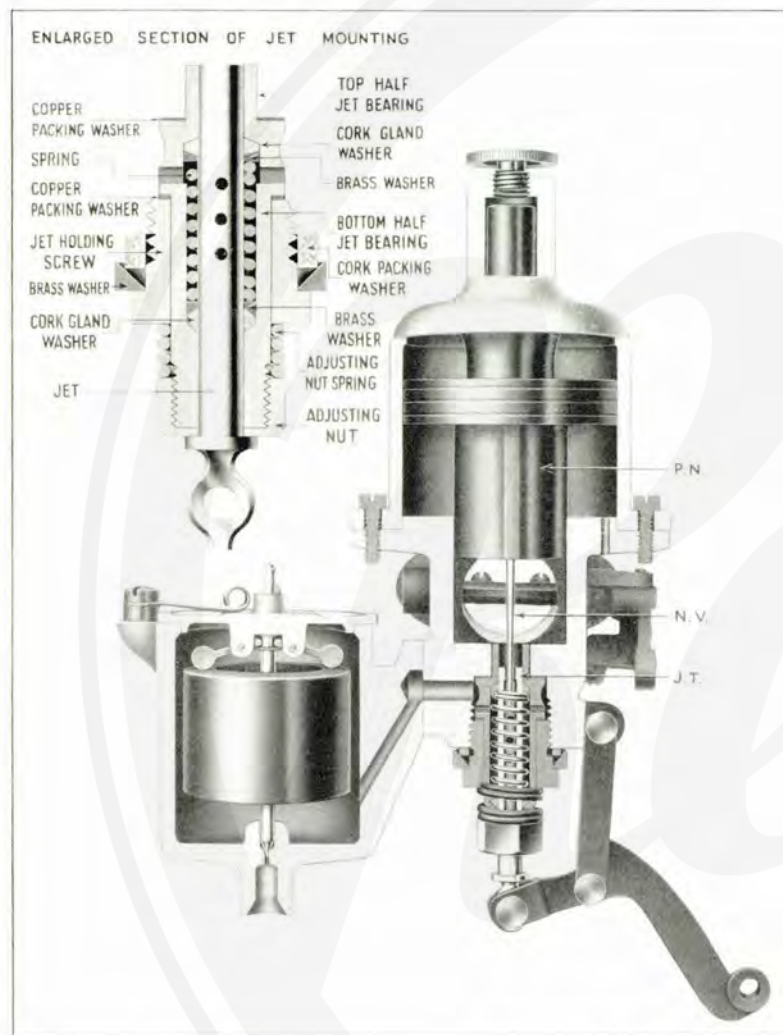
To adjust the fan belt, loosen the clamping nut and turn the projecting part of the fan spindle until the belt is just tight. The belt should not be adjusted too tightly, or excessive load will be put on the bearings. It should be possible to turn the fan easily by hand when the belt is correctly adjusted.

Carburetter.

The carburetter is of the S.U. controllable jet type, and the method of working is as follows—The area of the air passage or choke and the orifice of the fuel jet (see page 26) are automatically varied by means of a sliding piston (P.N.) and a tapered needle valve (N.V.) attached thereto. The piston is raised under the influence of the motor suction, its movement increasing as the engine accelerates, until it reaches its upper limit of travel at maximum engine speed. It will be seen, from Figs. 1 and 2, that as the piston is raised, a larger space is available for the passage of air, and at the same time the tapered needle is withdrawn from the jet to allow more fuel to pass. The piston and tapered needle in conjunction with a controllable jet (J.T.) are so proportioned as to provide the correct mixture at all speeds and loads.

We would draw the attention of owners to the fact that the carburetter is very carefully adjusted to each individual engine before the car leaves the works, and it is therefore extremely unlikely that any further adjustment by the owner will be necessary. To provide for exceptional conditions of climate or weather, however, the setting of the jet for normal running may be varied by the adjustment of the jet adjusting screw (see illustration page 26). Instructions for this adjustment are given on a subsequent page.

The Controllable Jet.—It is well known that a somewhat richer mixture is required when starting and while the engine is warming up, than is required when the engine is hot. Provision is therefore made for controlling the effective orifice of the jet in relation to the tapered needle, by means of a control lever on the instrument board (see page 28).



SECTIONAL VIEW OF CARBURETTER.

The following are the main objects of the controllable jet—

- (1) To place in the hands of the driver an easy means of controlling the strength of the mixture, either on the road or when the car is stationary.
- (2) To facilitate starting.
- (3) To give the greatest economy of fuel.
- (4) To give good running, even when the engine is cold.

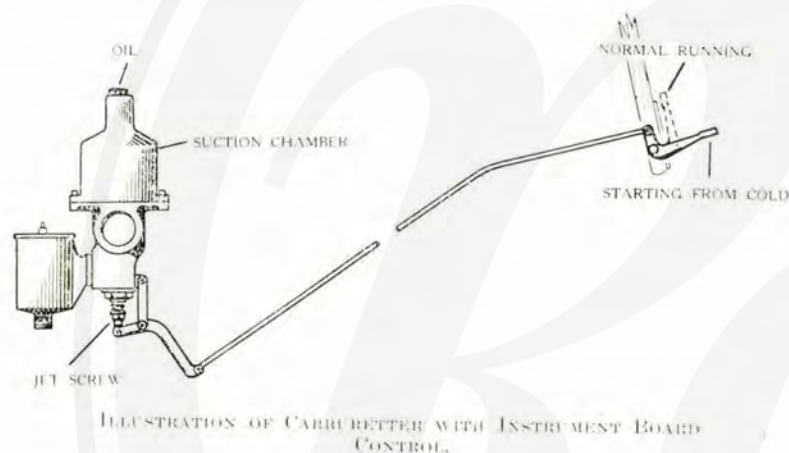
Starting from Cold.—To start the engine pull out the jet control lever on the dash and open the throttle slightly more than the normal slow running position when the engine is hot. **Do not flood the carburettor** as this may give an excess of fuel and starting will then be very difficult until this excess has been cleared, and **do not open the throttle too wide.** As soon as the engine starts, push in the jet control lever to such a position that the engine will continue to fire evenly, and as soon as possible push in the lever to its full extent, which is the normal running position when hot.

Erratic Running.—There is a number of causes of bad running of the engine, the more common being enumerated below, but if the carburettor is at fault it can only be due to one of the following—

- (1) Piston sticking.
- (2) Dirt or water in the carburettor.
- (3) Float chamber flooding.

(1) **Piston Sticking.**—The piston should at all times rise and fall quite freely. Test this by inserting a finger in the air intake and lifting the piston to its full extent when, on being released, it should fall rapidly to its seat. If it does not, remove the oil cap from the top of the suction chamber and pour a little paraffin into the orifice at the top, at the same time work the piston, P.N., up and down; when perfectly free put a little thin oil, such as sewing machine or bicycle oil, into the orifice and replace the cap.

(2) **Dirt or Water in the Carburetter.**—When this is suspected, flood the carburetter by holding up the float chamber needle, raise the piston to its fullest extent and watch the jet, if the fuel does not flow freely there is a blockage. To remedy this, start the engine, open the throttle wide and block up the air inlet **momentarily**, without shutting the throttle—keep the throttle open until the engine starts to race. It is most important not to block up the air inlet for more than one or two seconds.



This diagram is simplified to show the principle of the controllable jet.

This trouble seldom arises with the S.U. Carburetter, owing to the large size of the jet and fuel passage. If it happens the above method will nearly always clear it. Should it not do so, however, it may be necessary to remove the jet, but as the reassembling of this is a delicate operation, every other possible cause of shortage of fuel should be carefully investigated and the jet only removed absolutely as a last resort.

First remove the fuel strainer cup and clean the strainer. Take off the petrol pipes and blow through them to make sure there is no obstruction. See that there is no sediment in the float chamber,

and no obstruction in the form of fluff or other foreign matter in the passage between the float chamber and the jet.

If all this fails to remedy the trouble, the only alternative is, of course, to remove the jet, which is done by unscrewing the large hexagon nut at the bottom of the body of the carburetter. The jet consists of several parts and care must be taken to reassemble in the correct order (refer to the diagram of the jet parts). When the jet has been refitted into the carburetter, make sure that the piston is perfectly free, if it is not, slacken off the large nut and retighten. It may be necessary to do this several times before the piston is free.

(3) **Float Chamber Flooding.**—This can be seen by the fuel flowing over the float chamber and dripping from the air inlet, and is generally caused by grit between the float chamber needle and its seating. To remedy this, turn off the fuel, remove the float chamber lid and carefully clean out the chamber, paying special attention to the needle seat. After replacing the lid turn on the fuel, twist the needle round a few times on its seating. Do not grind needle or its seating.

Other causes of erratic running are as follows—

Plug Points—being too far apart, causing misting and popping in the carburetter when the engine is at full throttle, pulling hard on hills, also difficult starting from cold.

Oily Plugs—causing bad starting and misfiring.

Sticky Valves or Faulty Tappet Adjustment—causing misfiring and popping in exhaust and through carburetter.

Bad Joint—between the carburetter and the engine.

Worn Inlet Valves or Guides—causing bad starting and engine will not idle well.

Blockage or Air Lock in Petrol Pipe—causing carburetter to give symptoms of weak mixture, i.e., lack of power and popping back through air inlet. This can be tested by removing float chamber

lid and float from carburetter to see if there is free flow through the fuel passage in the bottom of the float chamber. If air bubbles come through an air lock is the trouble and it is generally due to shortage of fuel in the tank.

Adjustment for Idling.—The correct needle is fitted before the car leaves the Works, and the suction chamber is sealed, the only adjustment left in the hands of the owner is the setting for idling.

No adjustment should be attempted before the engine has attained its normal running temperature.

Adjust in the following manner—First screw up as far as possible the jet adjusting screw which will be found at the base of the jet, in which position the mixture will probably be found to be too weak. It should be enriched gradually by pulling out the jet control lever on the dash until the correct idling mixture has been obtained. The jet adjusting screw should then be unscrewed until the base of this nut comes into contact with the jet head.

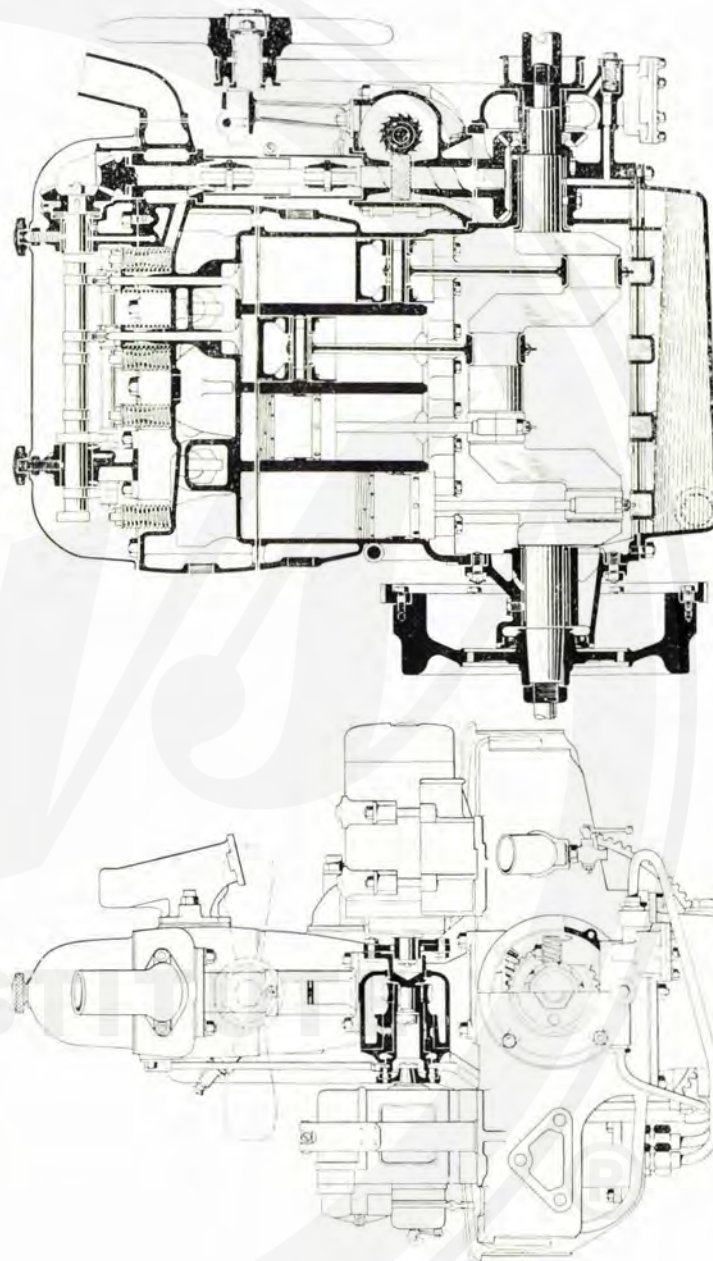
As previously pointed out, this is the one possible adjustment and it is of no use whatever trying to adjust the carburetter in any other manner.

The jet itself is a standard size and never varies; therefore on no account alter its size.

The correct adjustment having been found, the carburetter will continue to function indefinitely without alteration, but if after a period of satisfactory running the engine runs badly, do not make alterations to the adjustment of the carburetter on the chance of putting the matter right, but seek the cause by the methods indicated on an earlier page.

Fuel.—No readjustment of the carburetter is necessary with different fuels, and it will function equally well with petrol, benzole, or mixtures of these in any proportions.

The fuel we recommend for these engines is a mixture of benzole and petrol in equal proportions.



LONGITUDINAL SECTION.
SECTIONS OF THE "WOLSELEY" 11.22 ENGINE.
TRANSVERSE SECTION.

Guarantee and Seal.—As previously mentioned, the carburettor is correctly set and afterwards sealed. If the carburettor fails to function satisfactorily, during the period covered by our Official Guarantee, and it is returned to us carriage paid, and with the seal intact, we undertake to replace it free of charge by a new one. We take no responsibility whatsoever if the seal has been broken, and in this connection we would warn owners not to allow any unauthorised person to interfere with the seal.

"Pinking."—"Pinking" is due to the spontaneous ignition of the residue of the charge after primary ignition has occurred round the sparking plug points, caused by the pressure rising to such an extent that the spontaneous ignition temperature of the mixture is attained.

As this pressure depends upon the initial compression, it follows that a high efficiency engine is more liable to "pink" than one having a relatively low compression.

The liquid fuels at present available vary considerably in their spontaneous ignition temperatures, and some of them have a comparatively low spontaneous ignition temperature, consequently the tendency to "pinking" is greater when using these fuels in a modern high efficiency engine.

A ready means of preventing "pinking" is, however, available. Benzol has a spontaneous ignition temperature several hundred degrees above that of any petroleum spirit, and if mixed with any type of petrol in equal proportions, practically eliminates the tendency to "pinking."

III

Electrical Equipment.

Magneto—The magneto is worm driven from the vertical driving shaft. It requires only occasional lubrication, about two drops of engine oil in the lubricator every 1,000 miles. The machine must be kept clean and free from damp.

The contact points should be kept clean and free from oil, and if they become rough they may be smoothed by means of a very fine flat file, care being taken to remove as little platinum as possible. The distance that the contacts open should be checked, and, if necessary, adjusted from time to time. The maximum opening of the contact points should not exceed 0.5 mm or 0.02 in. To adjust this gap, the locking nut should be slackened and the long contact screw rotated, until the correct gap is obtained. Be sure to relock the screw before running the engine. The whole operation can be done with the help of the small spanner provided for the purpose, to which a gauge for checking the maximum break is attached.

Timing the Magneto to the Engine.—If the magneto has been removed, or it becomes necessary for any other reason to check the timing of the magneto, it may be carried out in the following manner—The engine should be cranked until the piston in No. 1 cylinder is at the top dead centre of compression stroke, i.e., with both valves closed.

The spindle of the magneto should be turned until the hole which is drilled in the distributor gear wheel coincides with a similar hole behind the gear wheel in the aluminium housing. A peg should next be inserted in these holes; this will lock the magneto in the correct position for connecting to its drive, and the middle piece of the coupling may then be inserted. The lead from No. 1 sparking plug should be connected to the bottom left-hand distributor segment. The cable socket which corresponds with this segment is on the extreme left-hand side when looking on the outside of the distributor, and is marked with a dash on the top of the distributor.

Lastly, the other leads should be connected to the remaining distributor segments in the correct firing order, namely, 1, 3, 4, 2. In this connection it will, of course, be noticed that the distributor brush arm revolves in the opposite direction to the spindle, so that as the magneto runs in a clockwise direction, the sequence of firing is anti-clockwise. Do not forget to remove the peg before starting the engine. As a final check, the timing lever may be placed in the fully-retarded position, when if the piston in No. 1 cylinder is still at the top of its compression stroke, it will be found that the platinum points are at the point of breaking, and that the distributor brush is just beginning to point at No. 1 segment.

Fault Location in the Ignition System.—In the event of the ignition proving defective, the cause should be sought in the following manner—

- (1) Missing fire in one cylinder only may be due to a faulty plug or a defective or loose high tension wire from distributor to plug. To discover which cylinder is missing fire, with the engine running, the plugs may be cut out one at a time by short-circuiting the current with a screwdriver laid on the terminal of the plug and the end of the screwdriver touching the cylinder. If the defective cylinder is thus cut out, the engine will, of course, go on firing as before, but if one of the working cylinders is cut out, the engine will further decelerate. Having discovered which cylinder is missing fire, try another sparking plug. If this is not effective, stop the engine and disconnect the wire from the plug in the defective cylinder. After starting the engine again, hold the disconnected wire so that the terminal is almost touching the cylinder, and observe whether a spark occurs. If no spark appears, examine the connection of the wire to the magneto distributor and also see that the insulation is not defective.

If the sparking plug is at fault, the points may be short-circuited, the gap too wide, or the insulation weak through excessive sooting. The gap should be about 0.4 m/m

(0.015 inch); bad insulation may sometimes be remedied by washing the plug out with petrol.

- (2) Complete failure of the ignition may mean that the wire leading from the magneto to the switch has been accidentally earthed. This may be tested immediately by disconnecting the wire at the magneto, when it should again operate normally if this has been the cause.
- (3) Another possible cause of the complete failure of the ignition is the sticking of the contact breaker arm. To remedy this, the lever should be removed by taking off the screw fixing the two springs to the pillar, displacing the hairpin spring from its groove, and pulling off the lever. The pin and bush should now be cleaned and a very small quantity of grease added to the groove in the bush.

See that the ends of the springs are clean and free from rust, as the low tension current passes through the spring and pillar.

- (4) Intermittent misfiring which appears to be due to none of the above causes may prove to be brought about by oil or dirt on the contacts, incorrect adjustment of the points, or the laminated spring behind the contact breaker may not be making good contact with the brass segment owing to oil or dirt on the latter.

LUCAS ELECTRICAL EQUIPMENT.

Dynamo.—The dynamo requires very little attention to keep it in good order. The commutator cover should be removed occasionally by unscrewing the nut in the end, for the purpose of inspecting the brush gear and commutator. The brushes should slide quite freely in their holders, but if they do not it is probably due to the accumulation of dust or oil, and in these circumstances they should be removed and cleaned. The brushes should have sufficient tension to be firmly pressed against the surface of the commutator when running, and present a smooth highly

polished surface over the whole area where they rub on the commutator.

If any of the brushes become so badly worn that it is necessary to replace them, it can easily be done as follows—Release the eyelet on the brush lead by withdrawing the split pin at the back of the spring terminal; then, holding the brush tension arm back out of the way, withdraw the brush from its holder.

It is unwise to insert brushes of a grade other than that supplied with the machine, or to change the tension springs. The arrangement provided has been made only after many years' experience, and will be found to give the best results and the longest life.

The commutator should be wiped free of dust occasionally, and should at all times present a perfectly smooth surface. A slight deposit of carbon from the brushes is unobjectionable provided the commutator is not rough or oxidised.

A dirty commutator, or one burned by over-lubrication, will cause the output of the dynamo to be reduced. The best way to clean the commutator is to insert a fine duster, held by means of a suitably shaped piece of wood against the commutator surface, causing the armature to be rotated at the same time. If the commutator has been neglected for long periods, it may need cleaning with fine glass paper, but this is more difficult to do and should not be necessary if it has received regular attention. Petrol or other inflammable spirit should on no account be used owing to the danger of fire when the machine starts working.

The armature is mounted on ball bearings, which are packed with grease before leaving the works. After the car has run, say, 10,000 miles, the machine should preferably be sent back to the nearest Lucas repair depot for cleaning, adjustment and repacking with fresh grease.

Do not allow any oil or grease to get on to the commutator.

The angular position of the shunt brush must not be altered, as its exact position controls the output of the dynamo.

Starter.—To start the engine, push down the switch plunger smartly as far as it will go, and release immediately the engine fires.

The starter drives the engine by means of a sliding pinion which works upon a screw thread on the starter shaft, the pinion engaging with the gear ring on the flywheel. When the switch plunger is depressed and the starter shaft commences to turn, the inertia of the pinion causes it to slide along the shaft and engage with the flywheel gear. Conversely, when the engine fires, the pinion overruns the starter shaft and slides out of engagement.

If the starter races out of engagement with the flywheel, as may sometimes happen—for instance, when the engine fires and then stops—switch off and allow the starter to come to rest before restarting. **Before attempting to start**, make all the carburetter and ignition settings as described on page 65, as omissions in this respect cause needless discharge of the battery. If the engine does not fire within a reasonable time, do not keep starter running and so exhaust the battery, but look for ordinary engine faults.

The starter requires practically no attention save an occasional cleaning.

The bearings are packed with grease, and as the total running time is relatively very small, this lubricant will last a very long time.

The engaging gear should receive a few drops of engine oil once a fortnight, and if the sleeve gets dirty, causing the pinion to hang back, it may be washed with paraffin.

The commutator and brushes seldom require attention during the life of the car, but they may be examined occasionally, the same remarks applying in this respect as for the dynamo.

It should be remembered that the power of the starting motor is derived entirely from the battery, and that the condition of the battery depends to a great extent upon receiving ample and regular

charging; thus, if the starter becomes gradually weaker in action, the fault may really be due to the battery being run down for some reason, or else to dirty battery terminals.

Starter Pinion Jammed in Gear Ring.—It sometimes happens that the pinion becomes stuck in engagement with the gear ring. To release it, first try turning the engine with the starting handle. If this does not suffice, lift the bonnet and tap the pinion backwards with a piece of thin brass or a similar tool, when it will be immediately released.

Switchbox.—The switchbox is mounted on the instrument panel, and contains all the parts necessary for controlling the various circuits.

The cover of the switchbox is held in position under spring tension by the switch levers, which in turn are secured by their centre screws.

The functions of the various parts are as follows—

Switches.—The left-hand switch has three positions—

- (1) "Off" position—dynamo off and magneto off.
- (2) "M" position. Magneto switched on, from which position the engine can be started; the dynamo, however, is still switched off.
- (3) "D" position—dynamo charging and magneto on.

Right-hand switch "H" position—all lamps switched on.

"S" position—side and tail lamps only.

"Off" position—all lamps off.

It is difficult to lay down any rigid rules as to the period for which the battery should be charged, as the conditions under which cars are used vary considerably, and obviously the amount of charging the battery will require is directly dependent on the number of starts made, and the extent to which the lamps are used.

The following remarks are given as a guide—

- (1) Under normal conditions, providing that the lamps and starter are used a fair amount, the battery should be kept on charge

all the time during the winter, and about half the daytime running in the summer.

- (2) Always keep the battery charging switch on when the headlamps are in use.

- (3) If the car is used for long tours in the daytime, it is quite unnecessary to keep the charging switch on all the time, as it will cause overcharging of the battery and consequent reduction of the acid level.

Automatic Cut-out.—This is mounted inside the switchbox, and is provided for automatically closing the generator to battery circuit as soon as the dynamo is driven at sufficient speed to cause its voltage to rise above that of the battery. The reverse action breaks the circuit when the generator voltage falls below that of the battery, thereby preventing the battery discharging through the dynamo windings.

The cut-out is carefully adjusted by the makers, and as it is unlikely to get out of order it should not be tampered with or adjusted.

The cut-out does not switch off the dynamo when the battery is fully charged, and no such automatic device is provided.

Ammeter.—A centre zero instrument is provided, so that the driver can see at a glance whether the dynamo is giving sufficient output to keep the battery charging when the different circuits which are consuming current are switched on. In other words, this type of meter shows the actual current flowing into or from the battery; thus, if the lamps are switched on and take 6 amps., and the dynamo is charging at 8 amps., the ammeter shows 2 amps., this being the current in excess of the lamp load which is available for charging purposes.

Fuse.—Only one fuse is provided; it prevents damage being done in the case of accidental short circuits.

Occasionally examine the switchbox in order to ascertain that the fuse is held tightly in its position in the holder. A loose fuse in its holder, or a loose fuse clip will cause intermittent or no output from the dynamo.

If it becomes necessary to replace the fuse wire, it is essential that it is pushed down the fuse clip as far as possible, as otherwise it may not be gripped tightly when replaced in position. A carton of spare fuse wire cut to the correct length will be found above the left-hand switch.

Should it be found that the fuse is continually blowing, do not add two or three strands to prevent this occurring, but have the equipment thoroughly overhauled to find out the cause.

Battery.—It is absolutely essential, for the efficient working of the electrical equipment, that the battery is kept in good condition. The care of the battery may be summed up in the following rules—

- (1) Add nothing but pure distilled water to the cells, and do this often enough to keep the plates always covered.
- (2) Take frequent specific gravity readings with the hydrometer (see below).
- (3) Give the battery a special charge whenever the gravity readings are below 1.150.
- (4) Keep the battery clean, and the filling plugs and connections tight.

Adding Water.—The electrolyte consists of pure sulphuric acid diluted to the correct specific gravity with pure distilled water. The water evaporates from the electrolyte, and it is necessary therefore to add water from time to time to make up the level to $\frac{1}{4}$ in. above the top of the plates. This should be done once a month, because if the plates are exposed for any length of time they may be very seriously damaged.

The cells need replenishing with water more frequently in the summer than in the winter.

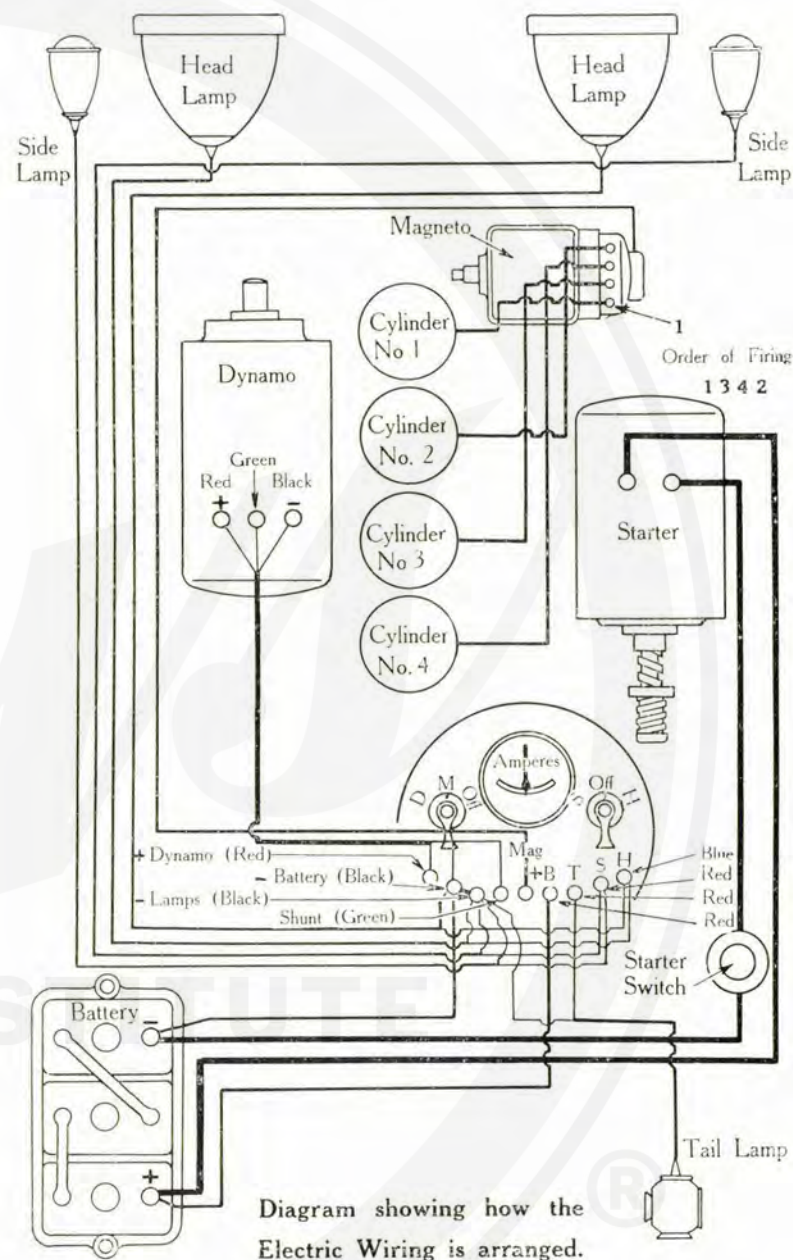


Diagram showing how the Electric Wiring is arranged.

Testing the Specific Gravity.—The specific gravity of the electrolyte is ascertained by means of a hydrometer of the syringe type. To use this instrument enough electrolyte is drawn up into the glass tube to lift the hydrometer float about $\frac{1}{2}$ in., thus enabling the readings to be taken. After the reading has been observed, the electrolyte must be returned to the cell from which it was taken, as otherwise the specific gravity and the level of the electrolyte will be affected.

Hydrometer readings should be taken after a run on the car, when the electrolyte is thoroughly mixed.

When the cells are in good condition and the electrolyte is at its correct level, the specific gravity will be about 1.250 (1.235 in tropical climates) in each cell. If these specific gravities are about 1.200 (1.185 in tropical climates), the cells are approximately half discharged. Such condition may be due to excessive use of lights or starter, or running without the dynamo switched on for a sufficient length of time, or it may be due to leakage in the system. The remedy is to keep the dynamo switched on and to use the lights and starter sparingly until the gravity rises. If the gravity does not rise in a reasonable time, look for defects in the system.

If the gravity falls to 1.150 (1.135 in tropical climates), the battery is exhausted, and should be removed at once from the car and given a long steady charge from an external source.

If the gravity of one cell is much lower than the others, the cause should be investigated. It may be due to a leakage of electrolyte, or a short circuit in that cell.

A "tropical climate" is defined as one in which water never freezes.

Battery Hints.—Never add acid except to compensate for spillage.

Keep the battery clean, and if any water or acid has been spilt, it must be dried off at once.

Keep the connections tight. Any corrosion of the metal should be removed and the parts smeared with vaseline. This is very

important, as corroded terminals are often responsible for trouble with the starter.

Never bring a naked light near the battery.

Keep the vent holes clear.

See that the battery is held firmly in position to prevent jolting, or the connections will be broken.

Batteries Shipped Abroad.—On cars despatched abroad, the battery is sent dry and uncharged, and before being put into service the cells must be filled with electrolyte and given a long charge. The results obtained from the battery depend largely upon this initial charge, and it is therefore necessary that the following instructions are carried out in detail—

- (1) Remove the filling plugs and fill the cells to about $\frac{3}{8}$ in. above the top edge of the plates with pure brimstone sulphuric acid which has been previously diluted with pure distilled water to the specific gravity of 1.225 at 60° F. (1.215 in tropical climates).

The proportion is roughly one part of acid to four parts of water by volume.

It is important in mixing to pour the water into the vessel first, adding the acid slowly and stirring thoroughly to assist diffusion. A mixing vessel made of glass, glazed earthenware or lead should be employed, and a glass rod used for stirring the solution.

The mixture must be allowed to cool to approximately atmospheric temperature before use (should not exceed 90° F. as a maximum).

After filling, the battery may, with advantage, be allowed to stand for a period not exceeding 12 hours before charging. It is not essential, however, to soak the plates in this way, and no harm will result if the battery is put on charge immediately after being filled with acid, provided that the temperature does not rise above 100° F. In tropical

climates the temperature of cells can be kept down by lowering the charging rate by 25 per cent., and allowing a period of rest after 12 hours' charging.

No dry or uncharged accumulator should be filled with acid solution unless the charge can be commenced within the period of time indicated above.

- (2) For charging, direct current only must be used, and not alternating current. Connect the positive (+) terminal of the battery to the positive terminal of the charging source, and the negative (—) terminal of the battery to the negative of the charging source.

Arrange resistance in the form of lamps, or otherwise, in series with the battery so that the charging rate will be 7 amperes.

The maximum rate of charge for the first charge is 7 amperes and should be continued for 32 hours. At the end of this period it will be found that gas is being produced at the surfaces of all the plates and the density of the electrolyte is at its maximum.

Towards the end of the first charge, take careful hydrometer readings of the electrolyte in each cell.

If, in any cell, the reading is above 1.250 (1.235 in tropical climates), after correction for temperature (see below) withdraw some of the electrolyte and add distilled water, continuing the charge meantime. If the reading is below 1.250 (1.235 in tropical climates) empty out the electrolyte and replace with fresh electrolyte of specific gravity 1.250 (1.235 in tropical climates).

The temperature correction referred to above is as follows— for each $2\frac{1}{2}^{\circ}$ F. above 60° F. add .001 to the hydrometer reading, and subtract .001 for each $2\frac{1}{2}^{\circ}$ F. below 60° F.

Subsequent Charge.—On completion of the first cycle (i.e., charge and discharge), the battery will be put into regular working condition by charging at 8 amperes for 12 hours.

Discharge.—The discharge of the battery should not be carried beyond the lower limit of the voltage, which is fixed for electro-chemical reasons at 1.8 volts per cell.

Lamps.—In order to obtain the most effective light, it is necessary for the headlamps to be properly focussed. For this purpose the bulb holder is provided with three notches, so that by trying the bulb in the alternative positions, it can be placed as near as possible to the correct focus.

The lamps are adjustable on their mountings, and this adjustment is obtained by the slackening of the centre bolt securing the lamp.

The best way of carrying out focussing and setting is to take the car on to a straight level road, try the bulb in each of the three notches, and then move the lamp on its adjustable mounting until the best illumination is obtained.

The front rim of the lamp is secured by means of a bayonet fixing, and to remove, hold the sides of the lamp with the fingers, press the rim evenly with the thumb and palms of the hands, then rotate to the left as far as possible, when the front can be withdrawn. This method prevents undue strain on the lamp mounting.

The reflectors should not be touched unless tarnished. Then clean carefully with a fine chamois leather and rouge wet with petrol, as the highly polished surface is easily damaged.

Fault Location.—The following tables will assist owners to trace any faults in the electrical equipment.

Dynamo Fault Finding Table.

Dynamo not Charging		Broken or loose connections.
		Charging switch off.
		Switchbox fuse blown.
		Loose terminal nuts.
		Greasy or dirty.
		Worn.
	Brushes	Tight in holders.
		No spring tension.
		Shunt brush position altered.
		Greasy or dirty.
	Commutator	Worn or rough.
		Copper dust between segments.
Charging Intermittently or Low Output	Switchbox	Loose fuse or connection.
		Loose or broken connections.
	Battery	Acid level low.
		Brush position altered.
Dynamo charging with excessive output	Shunt Circuit	Brush not bedding.

Starter Motor Fault Finding Table.

Motor sluggish or fails to move engine		Engine partially or entirely seized.
		Oil too thick for winter use.
		Loose terminal nuts.
		Greasy or dirty.
	Brushes	Worn.
		Tight in holders.
		No spring tension.
		Greasy or dirty.
	Commutator	Worn.
Engine turns freely and fires when cranked by hand		Loose terminal connections.
	Operating switch	Exhausted.
		Bad connections.
	Battery	Acid level low.

Lights Fault Finding Table.

	Lamp badly set on bracket.
	Bulb discoloured through use.
Insufficient illumination	Out of focus.
	Dirty reflector or bulb.
	Battery exhausted.
Light when switched on, but gradually diminishes	Battery exhausted.
	Battery exhausted.
Brilliance varies with speed of the car	Acid level low.
	Battery connection loose or broken.
Lights flicker	Loose connection.
	Lamp adaptor contacts faulty.
	Battery exhausted.
Lights out	Broken or loose connections.
	Lamp filament broken.

IV

Chassis Details.

CLUTCH.

The clutch is of the single dry plate type, having a light steel driven member which is gripped between two fabric facings.

One grease gun connection is provided, which by means of drilled holes supplies lubricant to the thrust bearing and clutch shaft. Do not force in an excessive amount of grease—add a little often. One complete turn of the grease gun is sufficient for 500 miles.

The fulcrum pins of the three clutch operating levers should be oiled about once a week, as if these become dry or rusty they are liable to stick and cause the clutch to slip.

Stiffness in the pedal bearing may also cause the clutch to slip, but this will not occur if the grease gun connection under the pedal shaft is recharged regularly.

Do not put any oil or grease on the clutch facings. The three holes shown at "A" in the drawing should be kept clear. Their function is to allow any excess grease from the clutch shaft to escape, and so prevent it from getting on the clutch facings.

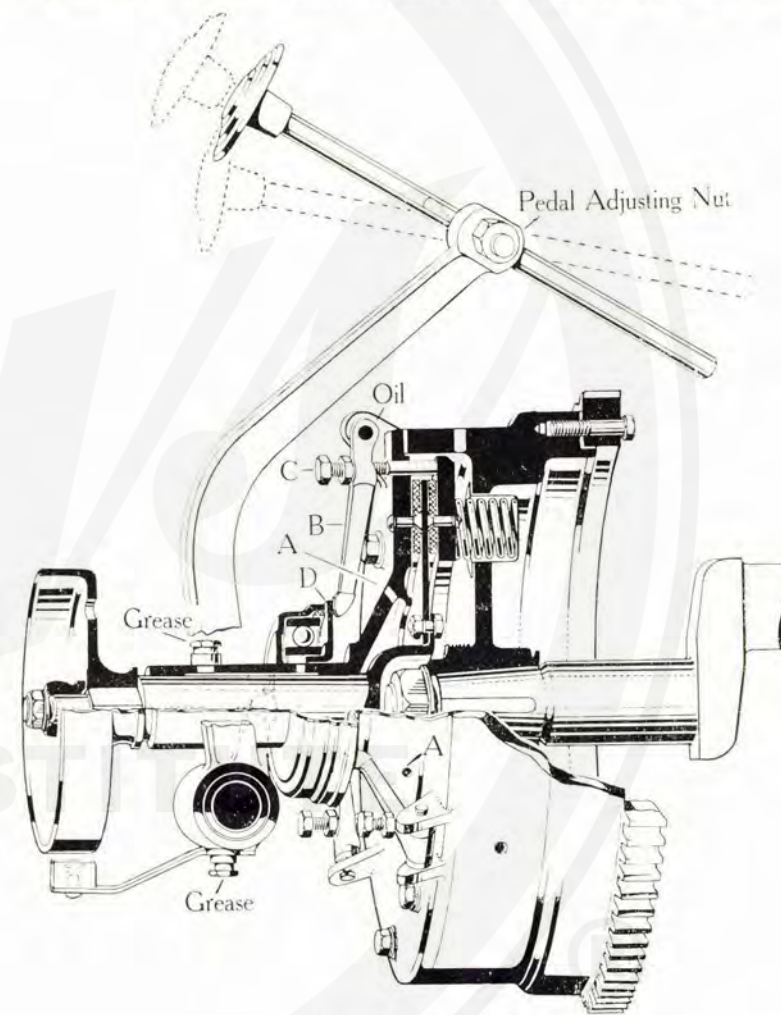
When the car is new there may be a slight emission of smoke from the clutch if it is slipped unduly, but this need cause no apprehension, as it is due to the dressing of the clutch fabric, and will cease as soon as the clutch is run in.

In course of time, due to the inevitable wear of the clutch fabric facings, the pedal will come further back, and may touch the underside of the floorboard. Under these conditions the clutch will slip as it will not be able to enter into complete engagement. To prevent this, the three clutch operating levers "B" must be adjusted by means of the screws marked "C," which should be screwed out towards you to allow the pedal to go down the required amount to clear the floor board. Lock the screws with the lock nut after adjustment. Great care must be taken to see that all three levers bear with equal pressure on the thrust collar "D" after adjustment.

The feeler gauge supplied for checking the tappet adjustment will be found useful for testing this.

Note.—The boss of the flywheel is screwed $2\frac{3}{8}$ dia. by 16 threads per inch for the purpose of screwing on an extractor when it is desired to remove the flywheel.

Pedal Adjustment.—The clutch and brake pedals may be adjusted to suit individual requirements, both as to reach and



SECTION OF CLUTCH

height. This adjustment is easily made; the only operation necessary is to loosen the adjusting nut and slide the pedal in or out, or up or down, as required. This is illustrated on the diagram of the clutch.

The accelerator pedal is also adjustable for reach, and to do this loosen the lock nut on the pedal shank and screw the latter in or out to the position desired.

Propeller Shaft.—The drive is taken from the clutch to the gear-box first-motion shaft by a propeller shaft, which is provided with universal joints at each end.

The joint enclosed in the torque tube ball should be lubricated every 250 miles with the grease gun.

The fabric universal joint should not require any attention other than seeing that the nuts are tight on the bolts.

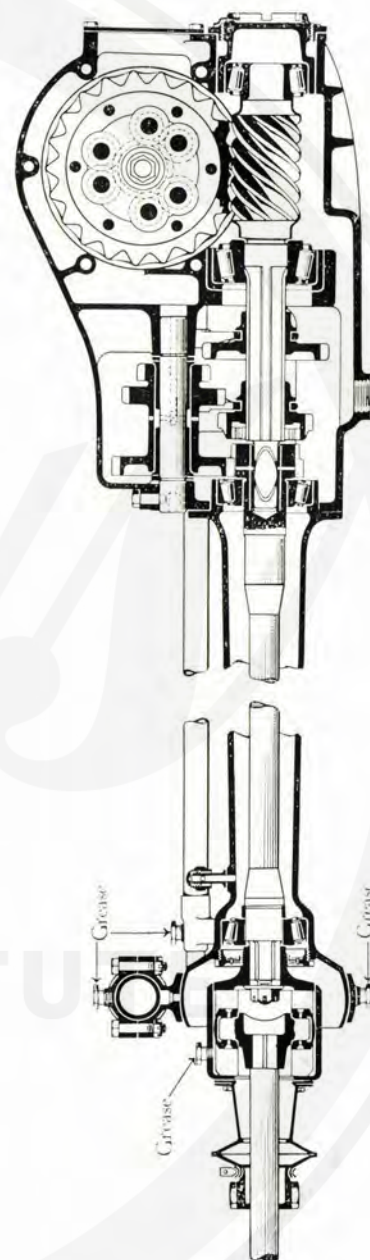
Torque Tube.—This is rigidly bolted to the axle casing at the rear end, and is carried by a swinging ball socket at the front end. Greasers are provided for the lubrication of the ball socket and suspension pin (No. 8, page 8). Use "Wolseley" Filtrate Solidified Oil.

Combined Gear-box and Live Axle.—The gear-box is of the three-speed type with direct drive on top. The bearings in the gear-box supporting the worm and first motion shaft are Timken tapered roller bearings. These bearings are adjustable, but adjustment should not be required except after long service.

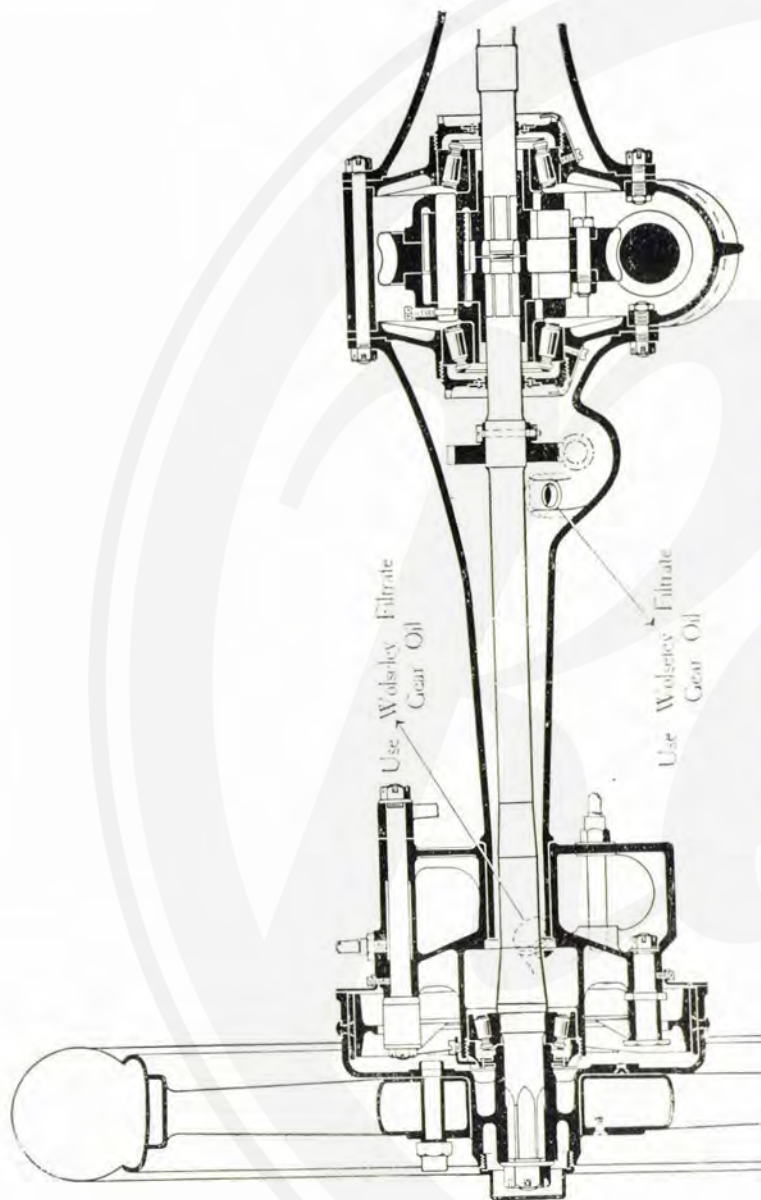
The rear axle is fitted with worm gearing, end play in the worm shaft being taken up by adjustment of the Timken bearings. The thrust on the worm shaft and worm wheel is taken by Timken tapered roller bearings. The differential shaft bearings near the road wheels are enclosed in the ends of the axle tubes, and "Wolseley" Filtrate Gear Oil must be added through the plugs provided (No. 25, page 9) to the level of the plug hole every 1,000 miles.

When adjustment of Timken bearings is necessary we recommend that it should be done by an accredited repairer.

Oil the change speed rod joints occasionally.



SECTION OF TORQUE TUBE, GEAR-BOX, AND REAR AXLE.



CROSS SECTION THROUGH REAR AXLE.

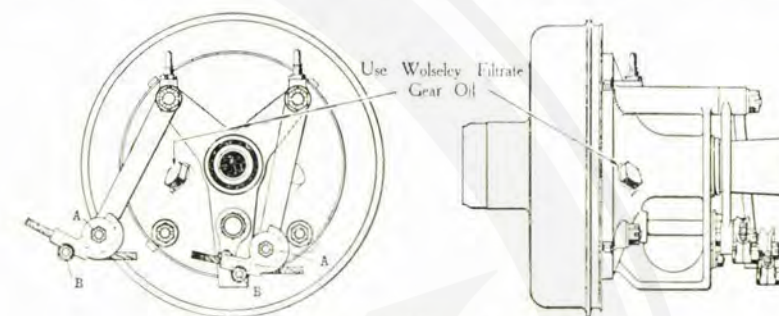


DIAGRAM SHOWING BRAKE ADJUSTMENT.

Brakes.—The normal equipment consists of two sets of brakes on the rear wheels. These are of the internal expanding type, there being two pairs of shoes operating inside each brake drum.

One pair of shoes is actuated quite independently of the other pair in the same drum, each pair being operated by the hand lever and pedal respectively. They are specially designed for the car and are fully protected by letters patent.

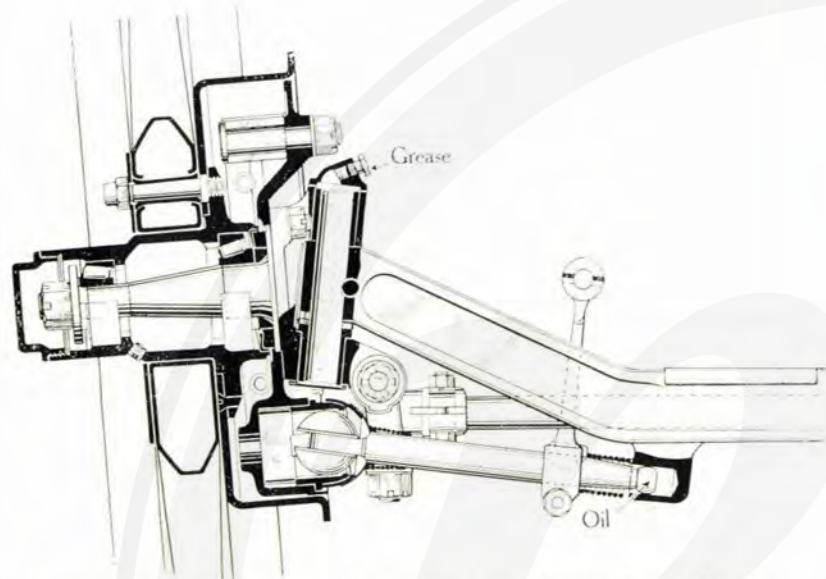
Front wheel brakes are fitted in addition when specially ordered.

The brakes are fitted with renewable fabric linings.

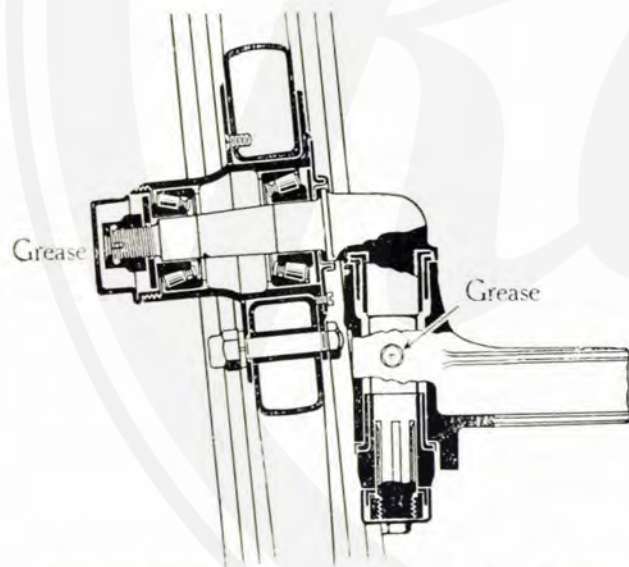
To readjust the cables for the rear wheel brakes undo the nut ("A") in the centre of the adjusting disc on the brake lever until the ratchet is disengaged, then turn the disc until the slack in the cable is taken up, and tighten the nut again. When the full range of adjustment has been taken up in this way, set back the ratchet and undo the nut ("B") which secures the cable in the clip. Draw the cable through and tighten up the nuts again.

Front Wheel Brakes.—The front wheel brakes are operated by the pedal simultaneously with one pair of rear wheel brakes, and it is therefore necessary to adjust the front and rear foot brakes at the same time. This is carried out as follows—Jack up all four wheels and rest the axles upon wooden blocks.

Starting with the front wheel brakes, screw up the adjusting nuts on each brake lever the same number of turns each until the wheels can only just be turned by hand against the pressure of the



SECTIONAL VIEW OF FRONT HUB FITTED WITH FRONT WHEEL BRAKES.



SECTIONAL VIEW OF FRONT HUB AND SWIVEL AXLE.

brake shoes; then turn back each nut an equal amount, just sufficient to allow the brake shoes to clear the drums.

Adjust the rear foot brakes with the ratchet device in the same way.

At this stage the assistance of another person should be obtained to depress the brake pedal whilst the wheels are tested to see that the pressure is distributed equally to all four. If necessary readjust until the brakes operate simultaneously.

Front Axle.—The front axle is a steel drop forging, carrying the swivel axles in plain bearings. These bearings are lubricated through the grease gun adaptors (No. 1, page 8). "Wolseley" Filtrate Solidified Oil should be used for this purpose.

The front wheels run on Timken taper roller bearings, which are adjustable, but require little attention beyond ensuring adequate lubrication.

It is important, however, that the car should not be run when the wheels have excessive end play. In this case the bearings should be adjusted until the end play becomes only just perceptible. The bearings must not be over-tightened, and it will be found necessary, if adjustment is required, to remove a little metal from the end of the axle with a file or by other means, on cars not fitted with front wheel brakes.

The internal cones are a good sliding fit on the axle, so that they can be adjusted easily.

The external cups are a tight fit in the housing.

Carriage Springs.—In all cars the springs are standardised, and are made to various specifications to suit different types of bodies, and it is essential that the load on the chassis should be approximately what is provided for in the spring specification.

If modifications or additions are made to the body after leaving our works, the suspension of the car may require modification to give the best results.

If after lengthy service the springs should squeak, it will be necessary to lubricate between the leaves. The easiest way to

do this is to jack up the car so that the springs are entirely relieved of weight, and separate the leaves by inserting a screwdriver or chisel. A thin strip of metal dipped in a mixture of graphite and grease can then be passed between the parted leaves.

The de-Luxe models are provided with spring gaiters. These have oil gun connections and the lubricant should be replenished by means of the syringe supplied with the tool kit. Use Wolseley Disc Clutch Oil for this purpose.

The bolts securing the springs to the spring brackets should be examined weekly during the first few weeks' driving of the car, and then periodically, to ensure that they are kept tight, as the spring plates may "settle" slightly, and thus cause the bolts to become slack, with the result that the bracket might fracture if the slackness is not taken up. The bolts holding the spring brackets to the frame should also be examined periodically, and tightened if necessary, as a slack bolt allows hammering and consequent fracture of the bracket.

It is most necessary that the rear spring pins should be kept lubricated (No. 11, page 8), as even if they do not squeak they rapidly wear if allowed to become dry. Grease gun adaptors are provided for this purpose.

Detachable Steel Wheels.—These should be removed periodically and the parts well greased, otherwise they may be difficult to detach. The photographs on page 58 illustrate the method of jacking-up the car for this purpose. After the car has been jacked-up, the wheel can be easily taken off after unscrewing the five hub nuts.

Steering.—The steering is of the worm and wheel type, the worm being adjusted for end play by the screw in the bottom of the casing.

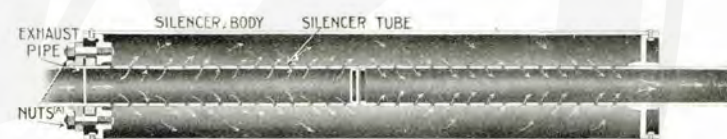
The steering lever is rigidly fixed to the worm wheel, and is connected to the axle by means of a ball-jointed steering tube which passes across the chassis to the steering arm on the near side swivel axle. The joints of the steering tube, and also those of the steering cross rod behind the axle (see No. 3, page 8), must

be frequently lubricated. The steering column bearing should be oiled, and it is important that the steering worm box is kept full of "Wolseley" Filtrate Solidified Oil.

The nuts securing the steering arms to the axle swivels should be periodically examined and tightened up if necessary, as if they are at all slack the excessive strain caused by the consequent hammering is liable to cause fracture by fatigue, and may result in a serious accident.

It is important, to prevent undue strain on the steering gear and wear of front tyres, that the front wheels should be correctly set. The correct setting is that the measurement from centre to centre of the tyre, at lines passing through the centre of the wheels, should be $\frac{1}{8}$ inch less at the front than at the back.

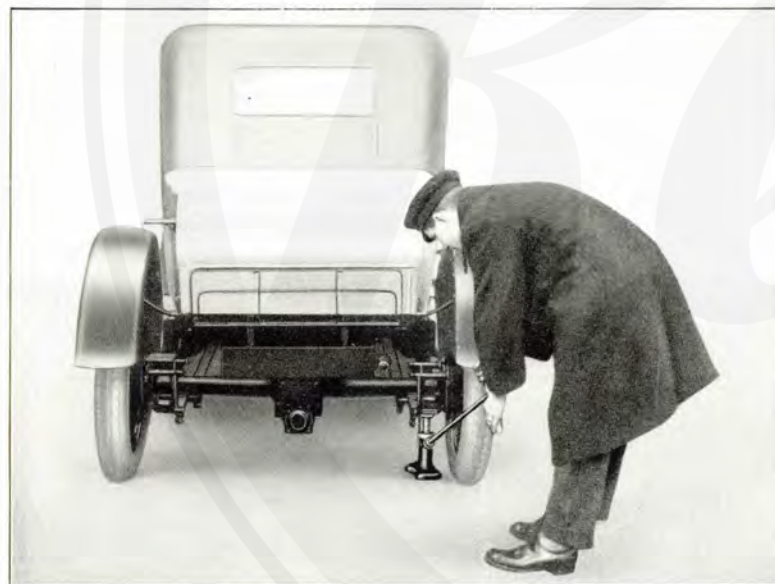
When a car is stationary, the wheels should never be forced round by the steering wheel. This causes unnecessary strain to be placed on the steering gear unless assistance is rendered by someone also pulling the road wheels in the direction required. When manoeuvring, the slightest movement of the car is sufficient to prevent this strain.



SECTIONAL VIEW OF SILENCER.

Silencer.—After the car has run a considerable distance the holes in the silencer centre tube may require cleaning, as they gradually become choked with soot. Unscrew the nuts A, detach the exhaust pipe, and draw out the tube. A choked silencer results in loss of power.

Bonnet.—Bonnet catches and hinges should be oiled occasionally.



THE ABOVE PHOTOGRAPHS ILLUSTRATE THE CORRECT POSITION FOR PLACING THE JACK UNDER THE FRONT AND REAR AXLES FOR RAISING THE CAR.

V

Care of Coachwork.

Care of Varnish and Paintwork.—To ensure the varnish and paintwork keeping its appearance for the longest possible period, it is most important that the car is never put away in a dirty condition. When the car is washed down a plentiful drenching with the hose should be given before attempting to sponge down. This removes most of the mud and grit, leaving very little for the sponge to gather. If the sponge and water is used without this preliminary, the sponge picks up a lot of grit, which, after a few washings, will scratch the surface and render it dull.

After the car has been washed down, it should be wiped over with a chamois leather to remove the beads of water, which, if left on (especially in sunlight) may cause spottings, and in extreme heat blistering.

When a car is at rest it is an advantage for it to be kept in the shade, as the heat of the sun has an injurious effect on the paintwork and tyres.

If the varnish becomes spotted, the application of a little linseed oil by means of a soft rag or lint may have a beneficial effect. The oil should be polished off thoroughly after application.

Spots of tar should be removed by rubbing with a little pure vaseline, which can be removed with a soft leather as soon as it has softened the tar.

The use of so-called cleaning compounds is not recommended, plenty of cold water being all that is required.

Do not use petrol, benzol, or paraffin in the water for cleaning, it will crack the varnish.

Hoods.—When cleaning hoods use only soap and water.

The hood should never be lowered when it is wet, and neither should it be left folded when the car is not in use.

When the hood is lowered, the fabric should be folded neatly and not be allowed to lie bunched up. The hood should be securely strapped down to prevent chafing.

All the joints should be oiled occasionally to ensure easy operation and prevent rusting.

Celluloid Rigid Side Curtains.—When it is found necessary to remove the side curtains, they should be detached and packed away behind the rear seat squab. Linen sheets are provided to protect the celluloid against scratching, and one of these sheets should be interposed between each curtain when packing.

Ordinary liquid metal polish will be found very effective in removing light scratches or places which have been dulled by friction when curtains are stowed away.

Care of Leather Upholstery.—When cleaning the car, water should not be allowed to splash on to the upholstery. A soft dry cloth should always be sufficient to remove superficial dust, and a brush can be used in awkward places. On no account must oil or oily rags be allowed to come in contact with the leather. A small spot of oil will develop and spread to a surprising extent. If by any chance the leather becomes spotted with oil or grease, this can be usually removed by means of rectified benzine, applied with a wad of clean cotton wool, care being taken not to disturb the colour. Linseed oil is the worst offender, and we know nothing that will successfully deal with this. After the leather has been in use for some time, and the surface begins to look a little dull, it can be improved by sponging with a weak solution of egg albumen, and when thoroughly dry rubbing vigorously with a stiff brush.

To sum up—

Clean down as soon as possible.

Use plenty of water.

Use cold water.

Keep hoods up and covered bodies completely closed when the car is not in use.

Keep out of the sun when at rest.

Remove tar spots with vaseline.

Cleaning Fabric Bodies.—Soft soap and lukewarm water in the form of a lather should be applied with a sponge or soft rag. The lather should then be washed off with cold water and the fabric finally dried by rubbing with a clean soft rag.

Hints on the Care of a "Wolseley" 11/22 h.p.

Before starting a Journey make sure there is sufficient fuel in the tank to feed the engine at least as far as the next prearranged stopping place. Inconvenience is often caused to driver and passengers if the tank has to be replenished on the road side. Always carry a spare can.

Replenish the oil in the engine sump and see that the lubrication system is working properly, also see that the universal joint in the transmission is thoroughly lubricated.

Fill up the radiator.

The brakes should be examined to see that they are working freely and are properly adjusted, and also that the cam spindles are adequately lubricated.

The tyres should be pumped if necessary, not forgetting the spare. (For suitable pressures see page 13.) See that the detachable wheels are properly fixed, and are readily removable if found necessary.

Make sure the spares are sufficient and are reasonably accessible.

Hints on Driving.—Don't try to start the engine with the throttle too far open. (See page 65, item 2.)

Don't flood the carburetter.

Don't open the throttle too far or too quickly until engine is sufficiently warm, otherwise you may have a "pop back," and if the carburetter has been flooded a more or less serious fire.

Don't slip the clutch unduly.

Don't accelerate the engine after changing up until the clutch is home.

Don't hang on to the high gears too long when ascending hills. It is a good rule to change down when the engine speed has dropped to about 1,700 r.p.m. (See page 70.)

Hints on Care of Car.—Don't assume the car is at fault when trouble is experienced, as it may be due to omission on the part of the driver.

Don't neglect the tyres—see recommendations by tyre makers.

Don't allow a chipped place on the wheels or axle to get rusty, as the rust will eat under the surface of the surrounding enamel and blister it off. Use black japan to touch up any parts should the enamel chip. This should be laid on as thinly and evenly as possible.

Don't let the door hinges, dovetails, screen, hood and grille joints get rusty for want of a little oil.

Don't let screen joints remain loose; they soon wear and perhaps cannot then be tightened up.

Don't lean upon the doors of a car when open. Shut the doors with sufficient smartness to ensure that the slam lock engages fully.

When cushions get wet, remove and dry them as soon as possible, and don't put them back until the leather is thoroughly dry.

The car should not be left dirty longer than absolutely necessary. If mud is allowed to dry on, it quickly destroys the lustre of the varnish.

Hoods should be left up when the car is not in use.

If the car is kept standing for any length of time it should be covered by a large dry sheet, of sufficiently fine texture to keep the dust off without excluding the light.

To destroy or prevent moths in woollen upholstery, use paraffin and camphor. This mixture should be placed in a saucer, and if a closed body is fitted the carriage should be completely shut up.

Hints on Cleaning Car.—Don't have the car wiped with a dry cloth, even if only dusty. Use plenty of water, and soap if necessary, to remove grease. A vacuum cleaner is very useful for removing dust from the upholstery of a car. When washing the car with a hose don't let the water get in any joints of doors &c. This applies specially to covered bodies. If water is driven into the joints it may get behind the panels and cause the grain of the wood to rise, distort the panels, and spoil the appearance of the car.

Don't use petrol, benzol, or paraffin to assist in removing grease. Use a soapy lather and thoroughly rinse with clean water. Sand-blasted aluminium can best be cleaned with petrol or soap and water.

For cleaning nickel-plating the finest jewellers' rouge should be used, the ordinary polish being too abrasive.

Do not attempt to polish the lamp reflectors with metal polish. If it becomes necessary to clean them, use rouge and chamois leather with care, as the highly polished surface is easily damaged.

Use only soap and water for cleaning hoods, and ordinary liquid metal polish for celluloid lights.

Hints for Cars in Regular Service.—The following hints may be found useful where a car is in regular service, assuming a daily run of about 100 miles—

Daily. Fill up fuel tank.

Fill up radiator if necessary.

Check oil level in crankcase with dip stick.

Every Two Days Lubricate the chassis according to the diagram on page 8.

Weekly. Oil bonnet hinges, bonnet catches, door locks and hinges, and hood joints.

Remove and clean oil and petrol strainers.

Test compressions.

Monthly. Lubricate magneto and dynamo—two drops of oil in each hole.

Examine front hub to see if adjustment of bearings is required.

Examine and clean magneto contact breaker.

Remove rear hub and clean and oil brake joints.

Fill the front hubs with "Wolseley" Filtrate Solidified Oil.

Lubricate rear wheel bearing (25) (use "Wolseley" Filtrate Gear Oil).

Replenish oil in gear-box (23) (use "Wolseley" Filtrate Gear Oil).

Lubricate speedometer drive (24). Use "Wolseley" Filtrate Gear Oil.

Drain off engine oil and replenish with fresh supply.

Adjust tappets if necessary.

(Reference numbers apply to diagrams on pages 8 and 9.)

VII

Driving a "Wolseley" 11/22 h.p.

Driving.—Skilled driving of a car is only acquired by practice, and when a driver is able to manipulate without conscious effort the clutch, brakes, ignition and throttle levers, a car may be said to be safe in his charge.

Starting up the Engine.—Before starting for a run, make quite sure that there is plenty of fuel in the tank; that there is sufficient oil in the engine, and water in the radiator.

Proceed to start as follows—

- (1) See that the change-speed lever is in the neutral position.
- (2) Adjust the throttle control lever so that the throttle is just off its seat.
- (3) Turn on the fuel.
- (4) Pull out the carburettor jet control lever on the instrument board to the "starting from cold" position (see page 28).
- (5) In cold weather, when starting from cold, give the engine a few turns by hand.
- (6) To prevent damage to the starter, or jamming of the pinion, caused by back-firing, the ignition should be retarded when starting the engine. Magnetos, however, give a better spark when the ignition is advanced, and it is permissible, if starting is difficult with the ignition fully retarded, to advance the ignition slightly, but in no case more than half way.

The operation under item 5 may be omitted when the engine is warm, and in warm weather when starting from cold.

Moving from Rest.—The car can be driven away at once provided a gear is engaged. When the engine has reached its normal working temperature, the jet control lever should be set back to the normal running position.

Do not race the Engine as soon as it is started, for besides deriving no benefit from such a procedure, very serious damage can be done to the bearings and other moving parts.

Changing Speed.—Before changing up, the speed of the car should be increased until it is reasonably fast for the gear in use; then—

From First to Second—

(1) Release the accelerator pedal, declutch, and push the change-speed lever across the gate and pull it back into the second gear.



VIEW OF INSTRUMENT BOARD OF THE DE-LUXE MODEL.

From Second to Top—

(2) Accelerate the engine until its speed is reasonably fast for the gear on which the car is running.

(3) Release the accelerator pedal, declutch and push the change-speed lever forward into top gear.

Changing Speed (alternative method).—Accelerate to about 10 m.p.h., remove the foot from the accelerator pedal, momentarily

declutch, push the lever into neutral position, slowly pass the lever through the gate, momentarily declutch again, at the same time pushing the lever into second speed position. Accelerate until about 20 m.p.h. has been reached, then follow the same sequence of operations with the exception, of course, of passing the lever through the gate into top gear.

The above method of gear changing is recommended to any driver who is not quite familiar with his car, and is one which will enable him to make his upward changes smoothly and silently.

Changing Down—

When changing down from top to second speed, or from second to first speed, momentarily depress the clutch pedal, at the same time keeping the accelerator pedal down.

The gear lever should be moved into neutral position, and the clutch pedal released. After waiting a matter of half a second for the engine to gain speed, momentarily depress the pedal again, and move the lever into the next lower speed.

This procedure will enable downward changes to be made at the high and most efficient speeds of 25 miles per hour and 15 miles per hour, from the top to second and second to first gear respectively.

The steeper the hill on which the changes are made, the less time must be occupied in making the change.

Bear in mind that the engine speed should be increased when changing to a lower gear, and decreased when changing to a higher gear.

VIII

Storage, Overhauling &c.

Storage.—The motor-house should be a dry, well-ventilated building, and preferably arranged so that it can be heated during cold weather. It should be kept clean and free from dust and should be sufficiently large to allow a gangway around the car for convenience of inspection, and also because the car is liable to suffer from dampness if it is placed too close to the walls of the house. As a safeguard against fire, a chemical extinguisher should be kept handy. Fuel should be stored in a separate building. It is advisable to fill the tank when the car is outside the motor-house.

When filling with fuel, water, or oil, a gauze strainer should be used in order that no dirt may pass through.

Lubricating oil and grease may be stored in the motor-house, preferably in steel drums, so that supplies may be drawn off as required.

To keep the floor of the motor-house clean from any oil which may drop from the motor while standing, a sheet-iron tray should be kept under the motor and gear-box. Convenient dimensions for this tray are 5 ft. long by 2 ft. wide, with sides about 1 inch high.

To preserve the appearance of a car it should be washed down immediately it comes in from the road, and never left to stand dirty.

A dark garage is the best for the tyres. When the car is not in regular use it should be jacked up or put on blocks to take the weight off the tyres.

Overhauling.—It is convenient to have in the motor-house an engineer's bench fitted with a parallel vice, and provided with a few tools, so that adjustments and small repairs may be done at once, instead of being neglected, and only taken in hand when absolutely necessary.

By immediately attending to any adjustments or replacements that may be required, a car is not only kept in better order, but the cost of upkeep is also reduced to a minimum, as if one portion of the mechanism fails to do its work properly undue strain is thrown on other parts, with consequent risk of sudden breakdown.

The following special tools are recommended to clients for garage use—Wheel hub withdrawer and spring leaf lifter for greasing the springs.

Spare Parts.—When ordering spare parts, to avoid any possibility of error, it is essential that the **number of the car** should be given, also the chassis number which is stamped on a small plate attached to the dashboard under the bonnet, and, if possible, the number of the parts in our spare parts catalogue. If there is any doubt on these points, it is advisable to send the old part or a sketch of the part required. **The Car Number Plate will be found on the extreme front end of chassis frame, near side.**

We would remind clients when sending telegrams for parts to make them clear, as it is far better to put a few extra words in a telegram than risk having an incorrect part forwarded.

Guarantee.—We undertake, subject to the terms specified in our Official Guarantee, to repair or renew within the guarantee period from date of delivery of any chassis or autocar from our works, any part or parts which may be discovered within such period to be defective in material or workmanship.

When a claim is contemplated it is of the utmost importance that we should be immediately notified as to the reason for the claim, and also the car number, so that we may have the opportunity of advising how the matter should be dealt with.

Insurance.—For the convenience of their customers WOLSELEY MOTORS LTD. have made arrangements for the issue of LLOYDS POLICIES in accordance with the terms given in the catalogue. Policies can be obtained through our offices and depots, or through any of our agents.

In the event of accident, repairs up to any amount may be put in hand immediately, either with ourselves or with one of our authorised agents, without waiting for permission of the insurers, provided the repair permit is produced, which, together with a list of authorised repairers, is supplied with each policy. *Necessary temporary repairs, or permanent repairs up to £10, may be executed immediately by any competent repairer, without consent of the insurers.*

Table of Oil and Water Capacity

Capacity of Petrol Tank	...	...	...	...	...	5 galls.
Amount of water required when refilling system	...	...	...	...	...	19 pints
Amount of "Wolseley" Filtrate required when refilling lubricating system	...	...	...	...	...	4½ pints
Amount of "Wolseley" Filtrate Gear Oil to be put into Axle and Gear-box after draining	...	...	...	...	...	3 pints

Principal Chassis Dimensions

						English	Metric		
Bore	...	...	...	...	...	2 ⁹ / ₁₆ in.	65 mm.		
Stroke	...	...	...	...	...	3 ³ / ₄ in.	95 mm.		
Cubic capacity	...	...	...	...	...	77.36 cu. in.	1,267 c.c.		
Normal revolutions per minute...	...	...	...	...	...	1,700			
Wheelbase	...	...	...	...	...	8 ft. 9 in.	2,667 mm.		
Track	...	...	...	...	...	4 ft. 2 in.	1,270 mm.		
Overall length	...	...	...	...	...	11 ft. 1 in.	3,378 mm.		
Overall width	...	...	...	...	...	5 ft. 0 in.	1,524 mm.		
						1st	2nd	3rd	Reverse
Gear ratios	...	...	...	...	...	17.45	8.8	5.25	14.0 to 1
Road speeds (m.p.h.) at normal revs.	...	...	...	...	...	6 ³ / ₄	14 ³ / ₄	25	8 ¹ / ₂
Tyre sizes—Two-seaters				...	...	...	...	...	27 × 4.40
Four-seaters				...	...	...	...	...	28 × 4.95
Treasury rating	...	...	...	...	...	...	...	...	10.5 h.p.