THE 3-LITRE

SUNBEAM

SUPER-SPORTS CAR

HANDBOOK of INSTRUCTIONS

Handbook of Instructions

for the

3-Litre SUNBEAM Car.

This Handbook is Published for the use and assistance of owners of 3-Litre SUNBEAM Cars. It embodies in a concise form the advice and suggestions of the Company's Technical Staff in regard to lubrication and the general care and maintenance of this Super Sports Model, together with supplementary information regarding the necessary adjustments which may be required from time to time.

Price 5/- Nett.

Compiled and Published by

THE SUNBEAM MOTOR CAR CO. LTD.,

Moorfield Works, Wolverhampton.

TELEPHONE: WOLVERHAMPTON 985.

TELEGRAMS: "MOORFIELD, WOLVERHAMPTON."

LONDON SHOWROOMS AND EXPORT DEPARTMENT:

12 PRINCES STREET, HANOVER SQUARE, W.1.

SHOWROOMS — TELEPHONE: MAYFAIR 6280/1. TELEGRAMS: "SUNOSALES, WESDO, LONDON."

EXPORT DEPARTMENT — TELEPHONE: MAYFAIR 2919. CABLEGRAMS: "SUBEAMOCO, LONDON."

CODES USED: A.B.C. 5TH EDITION, MARCONI INTERNATIONAL, MOTOR TRADE AND BENTLEY'S.

MANCHESTER SHOWROOMS: 106 DEANSGATE.

TELEPHONE: CITY 8638. TELEGRAMS: "SUMOCAR, MANCHESTER."

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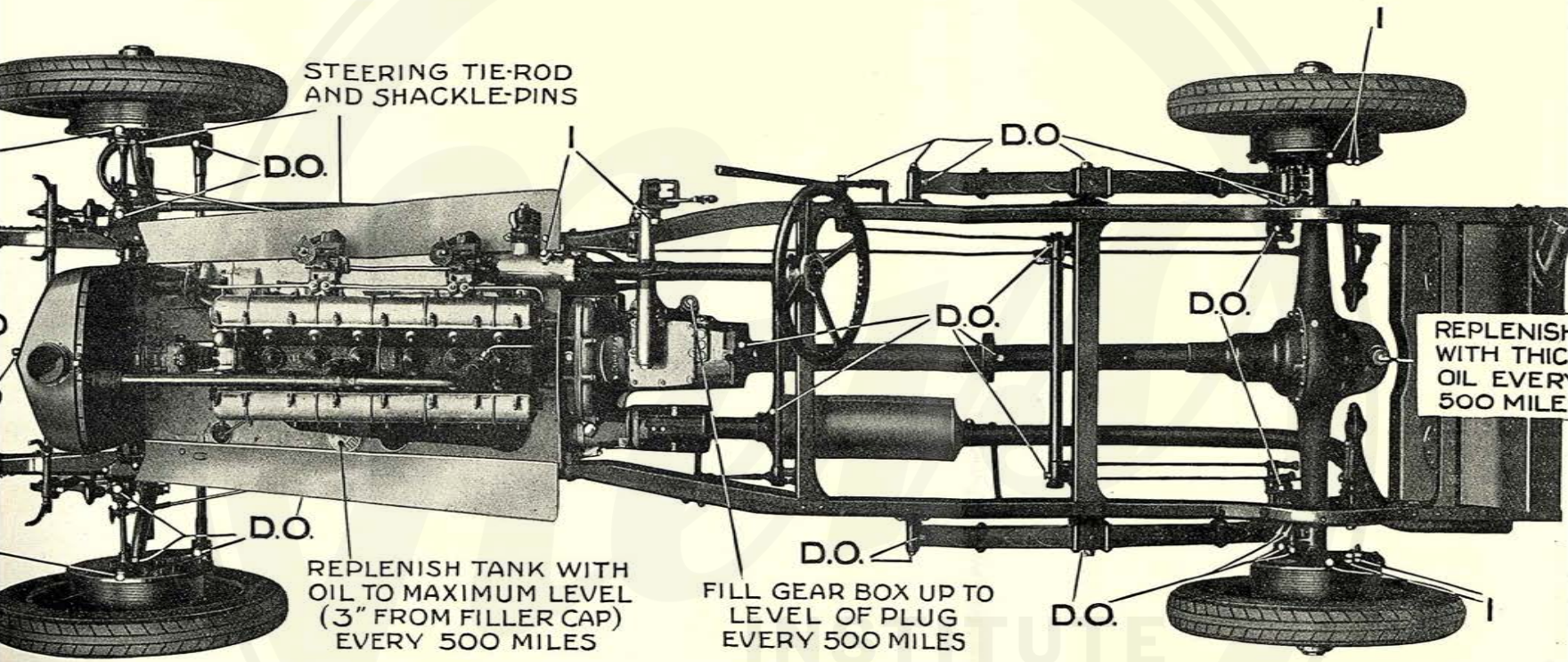
LUBRICATION DIAGRAM FOR THE 3-LITRE SUPER SPORTS SUNBEAM ENGINE AND CHASSIS.



D.O. INJECT OIL EVERY 500 MILES.
I. INJECT OIL EVERY 1000 MILES.
O. INJECT OIL OCCASIONALLY.

OILS RECOMMENDED.

ENGINE.—Use Wakefield's "Castrol R." This is suitable for both Summer and Winter use.

GEAR BOX and TRANSMISSION.—Wakefield's "Castrol S," Shell-Mex Gear Oil, or Vacuum "Mobiloil C."

CHASSIS.—We recommend oil instead of grease for Chassis lubrication, as the latter is apt to solidify in cold weather. Oil recommended:—Wakefield's "Castrol S," Shell-Mex Gear Oil, or Vacuum "Mobiloil C."

N.B. ALTHOUGH WE GIVE A CHOICE OF OILS IN THE ABOVE RECOMMENDATIONS, ON NO ACCOUNT MUST DIFFERENT BRANDS BE MIXED.

ENGINE LUBRICAT

If any difficulty is experie obtaining "Castrol R" u Pharmaceutical Castor Oil.

PRINCIPAL CHASSIS DIMENSIONS

OF THE

3-LITRE SIX-CYLINDER SUNBEAM.

	English.	Metric.
Bore	2.95″	75 m/m
Stroke	4.33″	110 m/m
Cubic capacity of cylinders ...	178.12 cu. in.	2920 c.c.
Wheel base	10′ 10½″	331.4 c/m
Track	4′ 7″	140 c/m
Ground clearance	8″	20 c/m
Length overall	15′ 11″	485 c/m
Width overall	5′ 5″	165 c/m
Front of dash to centre of rear axle	6′ 11⅜″	211.6 c/m
Chassis width at rear	2′ 9½″	85 c/m

	4th.	3rd.	2nd.	1st.	Reverse.
Gear ratios	4.5	6	7.43	14.32	10.65

Tyre sizes	820 × 120 m/m
R.A.C. rating	20.9 h.p.
Tax payable	£21
Capacity of petrol tank	18 gallons.
Capacity of oil tank	5⅜ gallons.
Chassis weight (including petrol, oil and water)	1 ton 6 cwt.

FOREWORD

This handbook is not intended to be a complete manual of motoring, or a treatise on the principles governing automobile practice. It has been compiled solely with a view to providing owners of 3-litre Super-Sports Sunbeam Cars with the information necessary for their proper care and maintenance.

This model has been evolved from the wide experience gained in designing and building the famous Sunbeam racing cars. The valve timing, carburetter setting, etc., have been arrived at after very exhaustive tests and experiments carried out under every conceivable condition, and the Company cannot be held responsible for trouble which may be incurred through altered valve timing or unnecessary experimenting after the car has left their hands.

In the rare event of any unforeseen defect or unusual trouble developing, it is especially requested that the matter should be **at once** brought to the notice of the Company, either at their Head Office or at any of their Depots, a list of which appears on page 1.

Brief instructions as regards the various accessories not of our manufacture, such as electrical equipment, carburetters, etc., are included in this book, but in the event of difficulty we strongly recommend our clients to consult the makers themselves. Most of them issue their own instruction pamphlets, which are generally supplied gratuitously on request.

The Sunbeam Motor Car Co. Ltd.

January, 1926.

READ THIS CAREFULLY.

The 3-litre Super-sports Sunbeam is a car of remarkable efficiency and performance. It must be borne in mind, however, that this model more closely resembles racing car design than any of our other standard products. For this reason it is very necessary that the information given in this book should be closely studied, and the instructions and advice carefully followed out.

The chapters dealing with Lubrication call for special mention. On all cars lubrication is a matter of the utmost importance, and particularly with such a high speed engine as the 3-litre.. Always use the correct brand and grade of oil (see our recommendations on page 14) and observe that the oil pressure is regularly maintained. Lack of proper lubricant is responsible for most of the repair bills in the motor trade.

Treat the new car with consideration. Although the engine, gear box, back axle, etc., of every Sunbeam car are "run-in" before being assembled in the chassis, and the complete car exhaustively tested on the road, after the car is delivered the first few hundred miles should be done at moderate speed, and no attempt should be made to attain very high speed during this initial period.

These matters are important. Do not overlook them!

GENERAL DESCRIPTION.

The 3-litre model incorporates many features in its design similar to the other Sunbeam models; thus, the four-wheel braking system, the method of suspension, the rear axle assembly, etc. The engine is a distinct design, based on the experience accumulated in building successful racing cars over a period of many years. It is, therefore, desirable to describe the 3-litre engine more fully than the other types are dealt with in the respective handbooks we publish for them, and the following description will be of interest to the owner who desires more than a superficial acquaintance with the engine of his car.

LAYOUT OF ENGINE, etc.

The engine, clutch and gearbox are combined in a single unit, and mounted in the chassis by three point suspension. The clutch and brake pedals are mounted on the unit and the torque and thrust are also taken on the unit via the sphere at the rear of the gearbox. This method of construction gives greatly increased efficiency, due to elimination of joints and to accurate alignment, the bearings also being more rigid.

DYNAMO. The dynamo is driven direct from the front end of the crankshaft. The magneto is mounted on a bracket at the front of the engine. See illustrations on pages 6 and 7.

CYLINDERS. The six cylinders form a one-piece casting of "Y" pattern, the casting including supports for the two overhead camshafts. The combustion chamber is spherical in shape and carefully machined. The valve mechanism is enclosed by two aluminium covers, which are easily removable.

CRANKCASE. Both upper and lower portions are of cast aluminium, the upper portion having a tray extending completely round the engine and preventing dirt and grit from reaching the engine and its accessories. The oil tank is supported from the tray on the nearside, the filler being very accessible. The lower portion of the crankcase contains a filter tray.

(Continued on page 8).

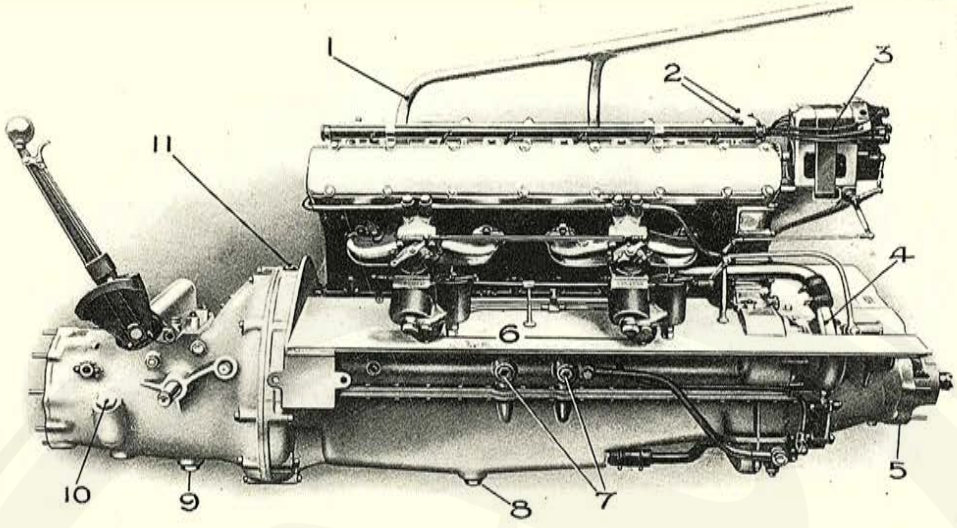


Fig. 1.

View of off side of 3-litre Engine, shown out of chassis to illustrate more clearly the following parts:—1—Water outlet pipe; 2—Air vents (do not put oil in here); 3—Magneto; 4—Water pump; 5—Dynamo; 6—Carburetters; 7—Oil relief valves; 8—Drain plug for sump; 9—Drain plug for gearbox; 10—Oil filler plug for gearbox; 11—Air vent (do not put oil in here).

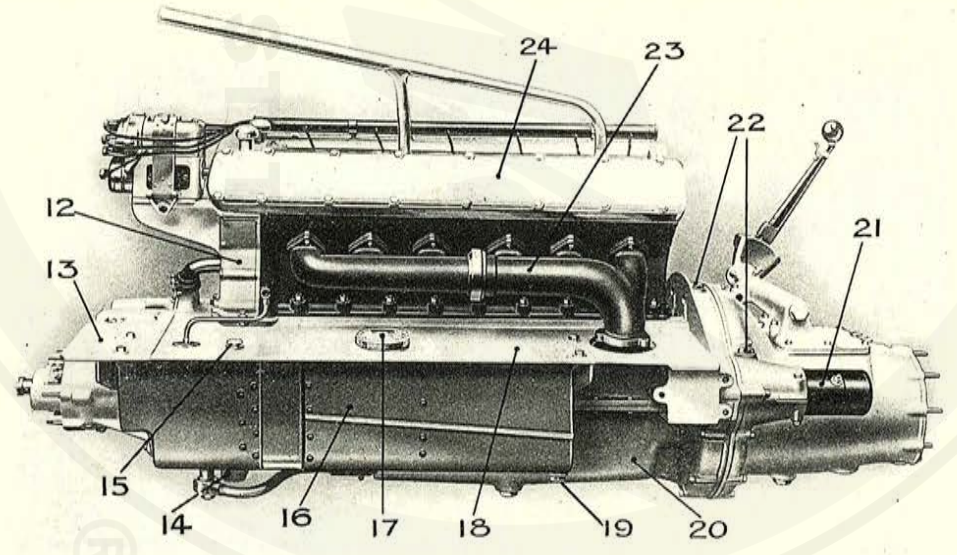


Fig. 2.

View of near side of 3-litre Engine, shown out of chassis to illustrate more clearly the following parts:—12—Timing gear cover; 13—Support cover; 14—Oil pumps; 15—Dip stick; 16—Oil tank; 17—Oil filler cap (gauze inside); 18—Crankcase (top half); 19—Oil tank drain plug; 20—Crankcase (bottom half); 21—Self starter (electric); 22—Air vents (do not put oil in here); 23—Exhaust Manifold; 24—Valve Cover.

VALVES. There is one inlet and one exhaust valve to each cylinder, operated from the overhead camshafts through tappet levers which are mounted to provide adjustment for clearance. Instructions in regard to tappet adjustment are given on page 18. The valves are set at an angle and two springs are fitted to each valve.

PISTONS. The aluminium alloy pistons, although light, are of a particularly strong design, fitted with four rings, the lower ring acting as an oil scraper.

CAMSHAFTS. The two overhead camshafts run in seven bearings, being driven by a train of helical spur wheels. The camshafts are hollow and the bearings and cams lubricated by oil supplied to the centre of each shaft. An important feature of this engine is the spring balancing device, consisting of three double cams placed on each shaft, these working on a spring, ensuring a steady torque on the camshaft and timing wheels and preventing snatching.

CONNECTING RODS. The connecting rods are steel forgings of " H " section machined all over and accurately weighed and balanced. The crankshaft is a very robust steel forging drilled for the passage of oil and running on eight die cast white metal bearings, one of which is a steady bearing. Exceptionally fine quality metal is used for the main bearings. The flywheel is bolted to the flange on the end of the crankshaft, which also carries the spigot ball bearing for the front end of the primary gear shaft.

LUBRICATION SYSTEM. Lubrication is on the dry sump principle, and is fully dealt with on pages 13 to 17.

CARBURATION. Two Claudel Hobson carburetters are fitted, these being of the A.Z.P. inclined type, choke 30. The inlet pipe is heated by a hot water jacket. See also page 22.

IGNITION. High tension B.T.H. CE 6 type magneto. Spark controlled from steering wheel.

GENERAL RUNNING HINTS.

Every endeavour has been used to avoid making this handbook a highly technical description of the 3-litre car. It is assumed that the reader has, at least, a fair knowledge of a motor car and of the art of driving, therefore the information given in the following pages should be easily understood. Careful attention to the instructions will assist in maintaining the car in the best condition and in obtaining the maximum efficiency from it.

The illustrations on this and the following pages show the instrument board, the clutch, brake and accelerator pedals, the gear lever and its respective positions in the gate.

Before commencing the first trip after delivery of the car, observe the following points. See that there is an ample supply of water in the radiator, sufficient oil in the tank (see page 15), a supply of petrol in the fuel tank, and that the petrol tap at the base of the Autovac is turned on and the petrol reaching the carburetters. Always see that the gear lever is in neutral position (see Fig. 5) before attempting to start up the engine.

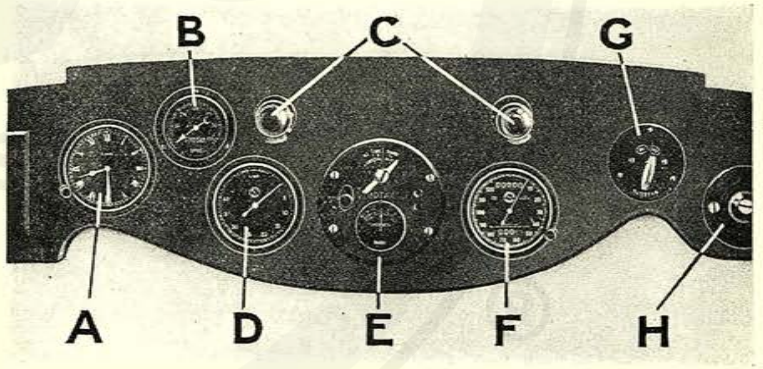


Fig. 3.
The above illustration shows the instrument board, the respective instruments being as follows :—A. Clock ; B. Oil pressure gauge ; C. Dash lamps ; D. Revolution counter ; E. Ammeter ; F. Speedometer ; G. Magneto switch ; H. Electric starter.

STARTING THE ENGINE.

Before starting the engine with the electric starter, switch off the magneto, close the carburetter air strangler (this is fitted on the steering column below the steering wheel) and open the throttle about one-third of the full range of movement by means of the control knob or lever. Then swing the engine over for a few seconds with the starting handle. This eases the pistons and ensures gas entering the cylinders and as the ignition is switched off there is no danger of backfire. Switch on the magneto, open the throttle slightly, advance the magneto to midway between the advance and retard positions (the magneto control is fitted on the steering wheel) depress the starter, and the engine should fire without trouble. If no explosion takes place, release the air strangler and again depress the starter.

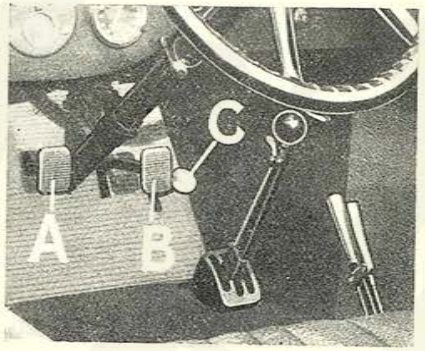


Fig. 4.
This illustration shows the position of the Clutch pedal (A); Brake pedal (B); and Accelerator pedal (C).

If any difficulty is experienced in starting, and with a high compression engine such as this is a little difficulty may be encountered during extremely cold weather, the following points should be carefully considered.

As explained above the positions of the control levers should be (1) Throttle—slightly open; (2) Magneto—advanced half-way; (3) Air shutters, or "strangler"—closed. The reasons for this setting are given on the opposite page.

(1) THROTTLE—As the carburetters are fitted with large choke tubes to obtain maximum output at high speeds, it is very necessary that the throttle should only be slightly open, so that the slow running and starting jet is in full action.

(2) MAGNETO—It is advisable to advance the ignition as far as possible without actually obtaining back fires. It is found that as a general thing about half way is right.

(3) AIR SHUTTERS—The act of closing the air shutters strangles the in-going air and causes a flow of petrol through the jets. This operation must be carried out with a certain amount of restraint. It must be clearly understood that if the air shutters remain closed for too long while the engine is running, whether firing or not, an excessive quantity of petrol will be drawn into the carburation system and cylinders, *i.e.*, the engine will be "flooded," under which circumstances, owing to the mixture being too rich, the engine will not start. If this has inadvertently occurred, the air shutter must be opened, the throttle opened wide, and the engine turned for a few revolutions to clear out the excess of petrol.

In addition, it may be advisable slightly to flood the carburetters before making any attempt to start. This does in some circumstances facilitate the starting.

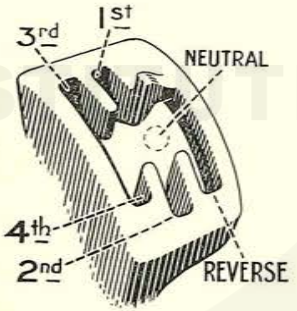


Fig. 5.
Diagram showing Gear Lever Positions in gate.

The lubricating oil used very largely determines the ease of starting of these engines, because if the oil is too thick the engine will not be turned fast enough by the electric starter to obtain a proper explosive mixture and a hot enough spark from the magneto. We recommend Wakefield's "Castrol R" or pure pharmaceutical castor oil. This is referred to in the chapters on Lubrication on pages 13 and 14.

CONDENSATION IN PLUGS.

All high compression engines are inclined to suffer from moisture condensing inside the sparking plugs when first attempting to start the engine, particularly on a cold, humid morning, or if the car has been stored over-night in an unheated garage. If it is found that, after all the previous instructions have been carried out, the engine still does not start, it will be advisable to examine the sparking plugs for condensation. If they are wet they must be exchanged for a dry set of plugs or thoroughly dried before any further attempt is made to start the engine.

It is most important that when first starting up in cold weather the work of turning over the engine should not devolve wholly upon the electric starter. Assistance should be given with the starting handle in order to free the pistons.

Do not " race " the engine when cold, as this will damage the oil pressure gauge. Leave it running slowly for a few minutes until the oil is warm and circulating freely.

REVOLUTION COUNTER.

The revolution counter fitted on the instrument board see Fig. 3 is provided to show at a glance the speed at which the engine is working. It is advisable to watch this occasionally. The normal maximum working speed is 3,500 revolutions per minute, but for short bursts of high speed the engine may be " revved " up slightly beyond this figure.

DRIVING SEAT POSITION.

It may be pointed out that if the position of the front seat is not just suitable for the individual driver as regards leg reach, etc., when the car is first delivered, on all 3-litre Sunbeam cars the front seat is adjustable within a variation of about eight inches, and it can be moved backwards or forwards until the most comfortable position is obtained.

LUBRICATION.

The lubrication system of the 3-litre engine is on the dry sump principle. By this method oil is not allowed to accumulate in the sump. Three pumps are provided, these being housed in the bottom half of the crankcase at the front end of the engine. The oil is forced by one pump from the oil tank to the main crankshaft bearings, and thence to the big ends of the connecting rods. The second pump, which is also a feed pump, supplies oil to the camshafts and valve gear and timing gears. As the surplus oil drains back into the sump it is pumped into the oil tank by the third pump. This is designed to work at greater pressure than the other two pumps and ensures that the sump is kept practically dry.

The surplus oil from the crankshaft is thrown by centrifugal force on to the cylinder walls and into the interior of the pistons, and this effectively lubricates the bearings of the small ends of the connecting rods. The oil drains back through a filter into a large sump in the base of the crankcase. See Fig. 1, page 6.

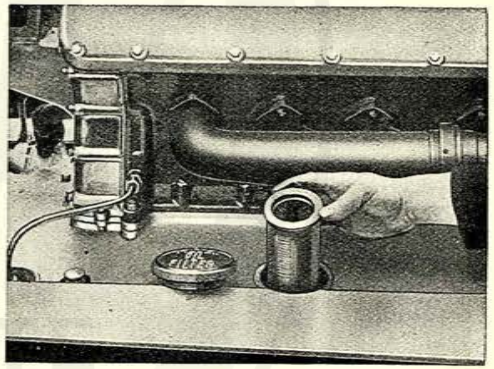


Fig. 6.
Showing Oil Filler Cap removed and Gauze Filter withdrawn.

LUBRICATING OIL.

As regards lubricating oil, only the oils recommended by us should be used. It is false economy to buy a low-priced oil, which is sure to be deficient in those properties necessary in a good lubricant. For the 3-litre model we recommend the following oils, which we have found from our own

experience to be most suitable for the engine, Wakefield's "Castrol R." This is suitable for both Summer and Winter use. On no account must different brands of oil be mixed.

Engine lubricating oil is not suitable for the gear box or back axle. See pages 31 and 32 *re* oil recommended for the lubrication of these parts.

KEEP FILTERS AND SUMP CLEAN.

After every 5,000 miles the oil should be drained from the crankcase sump and also from the oil tank. The drain plugs for the sump and tank are shown in Figs. 1 and 2. The oil should be drained off while the engine is warm, as the oil will then flow more freely. When the engine is cold there is a tendency for the oil to adhere to the sides of the crankcase, and it takes considerable time for it to drain completely away.

After the oil has been withdrawn, replace the drain plugs and pour three or four pints of paraffin through the oil filler. Then, with the sparking plugs removed, turn the starting

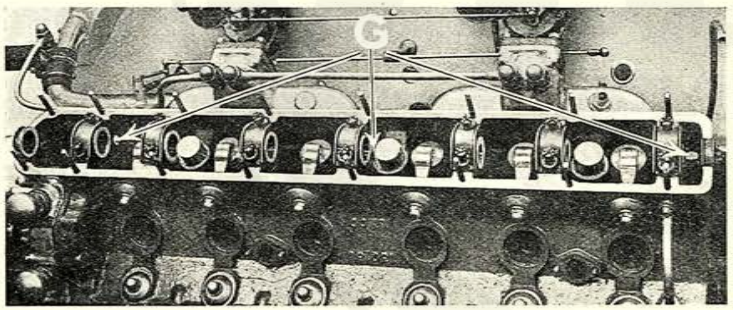


Fig. 7.
Showing positions of Gauzes in Cylinder Head. These must be cleaned periodically.

handle vigorously for a few minutes. This will thoroughly circulate the paraffin through the oil ways and cleanse the system. The drain plugs should then be withdrawn and the starting handle again turned until all the paraffin has passed through the engine and drained out. It is most important that no paraffin should be left in to dilute the fresh supply of oil. When it has been completely drained out replace the drain plugs—see that they are screwed up securely—and fill the oil tank with fresh oil to the correct level. This is three inches from the top of the "dip stick," (see illustration on page 16). The starting handle should again be turned before the engine is run under its own power, to ensure the fresh oil reaching the oil passages. When the sparking plugs are replaced and the engine started up do not "race" it for the first few minutes; and when the car is on the road again, and speed attained, observe the oil pressure gauge to see that this is working properly.

The gauze filter under the oil filler cap (see Fig. 6) should be withdrawn about once a month, washed in clean paraffin and thoroughly dried before replacing. The camshaft covers should be removed at the same time and the six small gauzes in the cylinder head examined and any accumulation of foreign matter removed. The position of these gauzes is shown in the illustration on page 14, and it is important that they should be kept clean.

The sump cover should be removed after about every 5,000 miles and the gauze removed and thoroughly cleaned.

It is most important that all these filters should receive periodical attention—the gauze in the oil filler: the six small gauzes in the cylinder head; and the gauze in the sump.

FILLING OIL TANK.

The position of the oil tank is shown in Fig. 2. The filler, which is fitted with a deep gauze filter, is on the near side of the engine (see Fig 6). As mentioned above a "dip stick"

(see Fig. 8) is provided for testing the oil level. After every 500 to 600 miles the level should be tested by means of this stick. If the oil has dropped to any appreciable extent below three inches from the top of the "dip stick" the supply must be replenished until the proper level is regained.

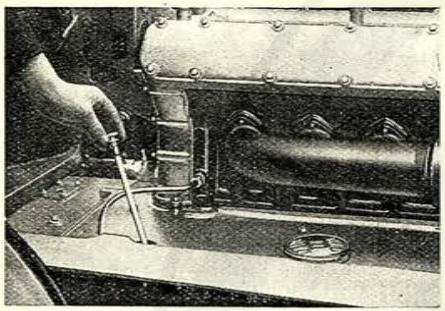


Fig. 8.
Showing "dip stick" for indicating oil level.

OIL PRESSURE.

With the supply of lubricating oil properly maintained, and the filters and sump cleaned out periodically, it is almost impossible for the lubrication system of Sunbeam cars to fail. One point to note carefully is the maintenance of the correct oil pressure. The pressure gauge is fitted on the instrument board as shown in Fig. 3. For all average purposes the oil pressure should be 35-lbs. per square inch at 30 m.p.h. Two relief valves of the usual ball type are fitted in the crankcase and deal with any excess pressure of oil, the surplus oil being returned to the sump The position of the relief valves is shown in Fig. 1. To remove either of these unscrew the large hexagon nut in centre. The relief valve can then be withdrawn.

N.B.—When first starting up the engine should never be "raced" while the oil is cold, as this will damage the oil pipes and pressure gauge. Leave it running slowly for a few minutes until the oil is warm and circulating freely.

FAILURE OF OIL PRESSURE.

Although it is practically impossible for the lubrication system to fail, the following instructions are given to provide for the rare occurrence when trouble may be experienced. When the system is not working, the needle of the oil gauge will either move erratically to and fro across the dial or not register at all. The trouble may be due to one, or a combination of several, of the causes given below.

(1) Lack of oil supply, *i.e.*, an empty oil tank.
(2) A broken or choked oil gauge pipe.
(3) A blocked system, due to not keeping the sump clean, or inferior or dirty oil being used.
(4) Dirt under the ball of oil relief valve.
(5) Not cleaning out oil filters periodically.
(6) Damage to oil pump or oil gauge.

When failure of oil pressure is indicated, the engine should be immediately stopped. First ascertain if there is the correct quantity of oil in the tank by testing with the "dip stick" (see pages 15 and 16). This should be measured with the car standing on level ground. When the engine is re-started, if the gauge still fails to register any pressure, test for the other causes of trouble enumerated above. Before examining the oil pump, detach the pipes which connect to the gauge and thoroughly clean these. This may remedy the trouble.

CHASSIS LUBRICATION.

The Tecalemit oil gun is described on page 43. We recommend oil instead of grease for the lubrication of the chassis parts as grease is apt to solidify in cold weather. We would point out that it is most important that all parts such as the steering tube, springs and shackles, etc., which are continually exposed to road dust, mud and water, should be kept clean and well lubricated.

AIR VENTS.

There are two air vents on the engine (see Fig. 1), two on the gear box and one ball valve vent or "breather" on the rear axle (see Fig. 26.) As these are provided merely as release vents, do not inject lubricating oil through them.

TAPPET ADJUSTMENT.

Correct tappet adjustment is very important if the maximum power is to be obtained from the engine.

Before commencing to adjust the tappet for the inlet valve of each cylinder make sure that the exhaust valve of the same cylinder is fully open. In dealing with each exhaust valve the corresponding inlet valve should be fully open. If all the tappets are to be adjusted, the quickest method is to start with No. 1 cylinder and follow with Nos. 5, 3, 6, 2, 4, *i.e.* the firing order.

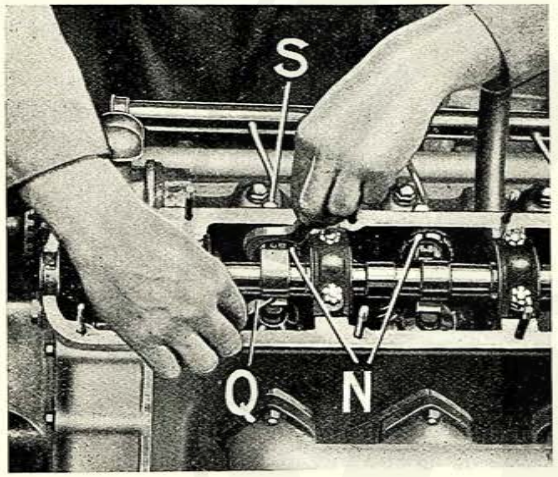


Fig. 9.
Showing method of adjusting Valve Tappets.

To adjust the clearance, release the locknut "S" then by turning the eccentric nut "N" the tappet lever "Q" can be inserted further or withdrawn from between the cam and the valve thimble. This nut should be turned until the correct clearance is obtained, care being taken to keep the tappet lever square with the valve thimble. The correct clearance is tested by inserting a "feeler" between the tappet lever and the valve thimble. The correct clearance for the inlet valve tappet is ten thousandths of an inch (.010″.) For the exhaust valve tappet the clearance is fifteen thousandths of an inch (.015″.) These clearances should be measured when the engine is at normal running temperature. A set of "feelers" can be obtained from most dealers in motor tools.

DECARBONISATION.

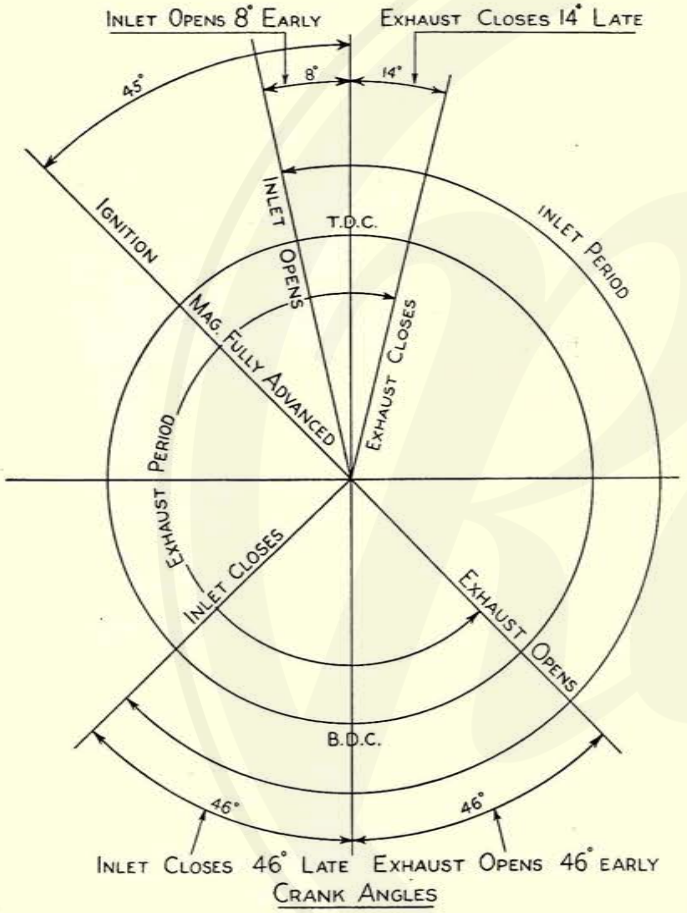
It cannot be too strongly emphasised that as the design and construction of the 3-litre engine closely follows racing car practice, the utmost care must be taken when any adjustment or replacements are made. This applies to such matters as decarbonisation, valve replacement, etc., as well as a complete overhaul. The work should be carried out only by skilled mechanics. Naturally, our own repair and service depots are best fitted to deal with repairs and overhauls to this car, but if these are not within convenient reach the work should be entrusted only to a thoroughly competent motor repairer.

ELECTRICAL EQUIPMENT.

The electrical equipment fitted to the 3-litre model is described on pages 21 (magneto and sparking plugs) and 26 and 27 (wiring diagram and details of dynamo, battery, etc.) Both the magneto and dynamo are mounted at the front of the engine. The electric starter is contained in a housing cast integrally with the gear box and clutch casing It has a Bendix type engagement. See illustrations on pages 6 and 7.

ENGINE AND MAGNETO TIMING.

On the following page a diagram is given which shows the timing for the engine and magneto of the 3-litre Super sports Sunbeam. This diagram should be followed whenever it is necessary to re-time the engine or magneto. When timing the magneto the contact breaker should be in the fully advanced position. For correct timing the points should be just breaking when the dead centre line of the flywheel is 45 degrees BEFORE the top centre.



TIMING DIAGRAM FOR 3 LITRE ENGINE

Fig. 10.
Engine and Magneto Timing for 3-litre Six-cylinder Sunbeam.
Firing order of Cylinders: 1, 5, 3, 6, 2, 4.

MAGNETO.

The magneto is such a specialised machine that it is not advisable to attempt to take it apart or to make adjustments other than those of a simple nature. If trouble should arise, it should be sent to the actual makers for expert attention.

The platinum points of the contact breaker must be kept absolutely free from oil. This is of the utmost importance. The contact breaker is intended to operate with a gap of ·012″, and this should be checked periodically by the aid of the feeler gauge on the magneto spanner.

Whenever the magneto is lubricated this must be done with care and excessive lubrication avoided. The distributor gear wheel bearing and the main bearing at the contact breaker end are lubricated by means of the oil well on the distributor end plate. A few drops of special magneto oil introduced into the oil well after about every 3,000 miles is all that is necessary.

Examine the bell crank lever bearing bush occasionally, and if this is dry smear with a little magneto oil. After refitting the lever on the bush any excess of oil should be wiped away.

The distributor should be removed after every 4,000 to 5,000 miles and the internal surfaces cleaned with a cloth soaked in petrol. The surface of the brush holder should be similarly treated.

Although the instructions above are based on information supplied by the magneto manufacturers the special instruction book issued by them should be consulted on all matters appertaining to the magneto.

SPARKING PLUGS.

Keep the sparking plugs free from carbon deposit by occasionally brushing the points with a file card and afterwards washing them in petrol. The gap between the points should be .018″ to .020″.

CARBURETTER.

There are two Claudel Hobson A.Z.P. inclined carburetters fitted to the 3-litre Super sports Sunbeam. This carburetter is of the diffuser type, provided with an arrangement which gives a high degree of atomisation. This is effected by using a diffuser jet in combination with the usual main jet. The function of the diffuser jet is to ensure the provision of correct mixture at all speeds, and its action is perfectly automatic.

From experience it has been found that a 280 c.c. main jet is the most satisfactory for this engine, and this size is fitted. The pilot jet used is 95 c.c. and a power jet of 70 c.c. is installed. Except in very rare instances, and then only on our advice and recommendation, it is inadvisable to make any alteration in the jet sizes. Do not experiment.

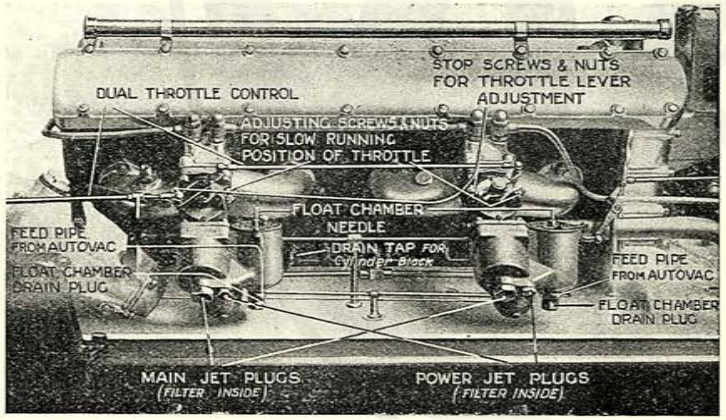


Fig. 11. Showing Carburetters and Controls.

Obviously the jet sizes have been standardised only after exhaustive tests, and for all round running cannot be improved upon.

Under no circumstances should the diffuser be tampered with, and in the rare event of adjustment being necessary it should be confined to the following points:—

(*a*) Main jet.
(*b*) Slow running jet.
(*c*) Air screw.
(*d*) Throttle stop.
(*e*) By-pass screw.
(*f*) Heating.

The petrol level is set by the makers at from $4\frac{m}{m}$ to $5\frac{m}{m}$ below the top of the guard tube, and variations between these limits are not highly important.

Before attempting any adjustment of the carburetter, all the induction pipe joints must be rendered air tight, and the engine should be warmed up to its normal working temperature.

A full explanation of the working of the carburetter, together with hints on diagnosing faults, is given in the booklet issued by the carburetter manufacturers.

KEEP THE FILTERS CLEAN.

There are two filters on each carburetter which should be periodically withdrawn and cleaned. If a weak mixture is experienced with corresponding drop in power, this may be caused by the filters being clogged. These can be cleaned by withdrawing the main jet plug and the power jet plug. (See illustration on opposite page). The filter in the Autovac at the end of the main supply pipe from the fuel tank should also be kept clean. (See Fig. 12, page 25). Read carefully the instructions in the Autovac booklet.

AUTOVAC FUEL SUPPLY SYSTEM.

The fuel is fed to the carburetters from the tank carried at the rear of the chassis by means of the Autovac fuel supply system. The Autovac is of simple and durable construction. Full instructions for its care and maintenance are given in the booklet issued by the makers.

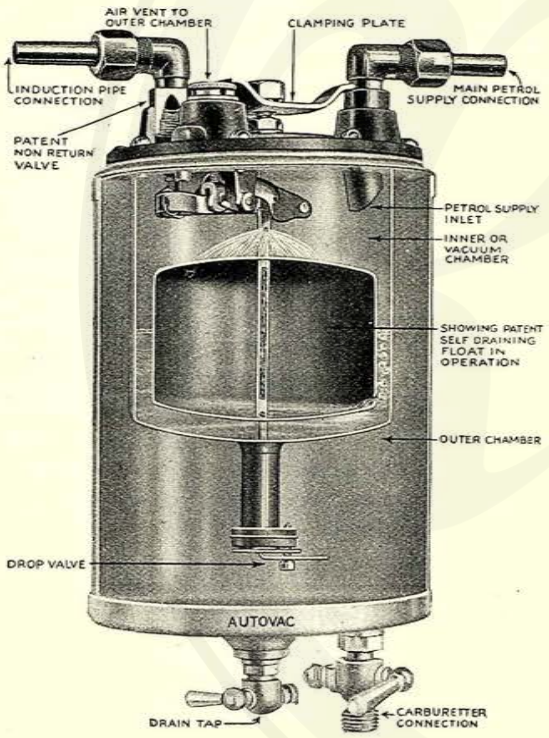


Fig. 12.
Sectional view of Autovac.

KEEP THE AUTOVAC STRAINER CLEAN.

Although full information is contained in the book issued by the makers, we would emphasise that the strainer in the Autovac, at the end of the main supply pipe from the fuel tank, should be removed and cleaned **every three weeks.** Note exact position when removing to ensure replacement being properly made.

Every three months, whether it seems to need it or not, flush the Autovac through the fuel connection. At the same time open the drain tap in the bottom of the tank, and let out any sediment or water which may have collected. Also look over the suction and petrol pipe connections to see that they are absolutely tight.

FILLING UP WITH FUEL.

When filling the fuel tank, it is advisable to use a tundish fitted with a fine gauze strainer. A gauze filter is fitted inside the filler of the tank but the tundish provides a second filter and should almost entirely prevent particles of grit reaching the tank and eventually finding their way to the carburetters. Avoid using a tundish with a long funnel as this will damage the gauze in the tank filler.

Keep the fuel system clean. The filters provided should be regularly cleaned out. Despite the care taken in using a tundish with gauze bottom and the assistance of the gauze in the tank filler, minute particles of dirt are liable to get into the pipe and in the course of time may cause an accumulation. This is not due to any lack of cleanliness in the pipe system when the car is new but to the fact that some of the present day fuels are not entirely free from particles of foreign matter. If the Autovac is to receive a perfectly regular supply of fuel, the pipe system **must** be kept clean.

Any dirt which may accumulate on the carburetter casing should also be removed immediately it is noticed.

The importance of cleanliness in regard to the whole system of fuel supply cannot be too strongly emphasised.

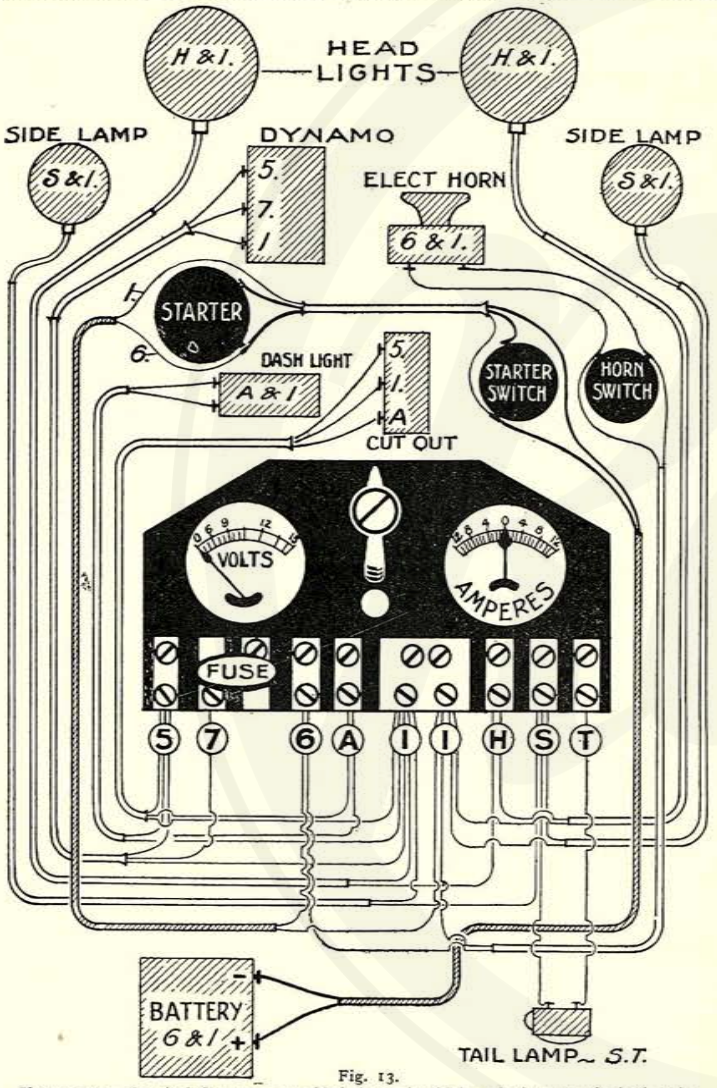


Fig. 13.
If any extra electrical fitments are added these should be wired to terminals 6 and 1.

ELECTRICAL EQUIPMENT.

Rotax electrical equipment is fitted. For information as to the general care and maintenance of this equipment consult the comprehensive instruction book published by Rotax, Ltd. This is supplied gratis.

DYNAMO.

Dynamo model A.T. 81 is fitted, this being driven from the front end of the crankshaft. The normal charging rate is 10 amps. at 44 m.p.h., and the speed of "cutting in" 22 m.p.h. on top gear. Rotax Starting Motor M.T. 65 is fitted, being contained in a housing cast integral with the gear box and clutch casing, and has Bendix type engagement.

BATTERY.

A 12 volt battery is clamped in a container within the chassis frame, and has a capacity of 75 ampère-hours.

LIGHTING EQUIPMENT.

A Rotax 12 volt set is fitted with internally wired lamps, and an externally operated arrangement for focussing. The head lamps are 24 candle power, the side lamps 6 candle power, and the tail lamp 4 candle power.

WIRING DIAGRAM.

See opposite page. On all points affecting the general maintenance of equipment, see the Rotax instruction book.

WATER PUMP.

As shown in Figure 14, one gland is provided to prevent leakage from the water pump. This must be kept well packed with any standard gland packing. If any leakage is noticeable, first tighten up the gland nut. Should the leakage persist drain all the water from the radiator and cylinder block, as explained below. Unscrew the locking nut "A," to allow the gland nut "B" to be unscrewed as far as possible. Remove the old packing and repack carefully by winding the new packing round the spindle and forcing it at the same time towards the pump to ensure water tightness. See that it is wound towards the engine so that the rotation of the spindle does not tend to unwind it. Then screw up the gland nut and tighten the locking nut and pin.

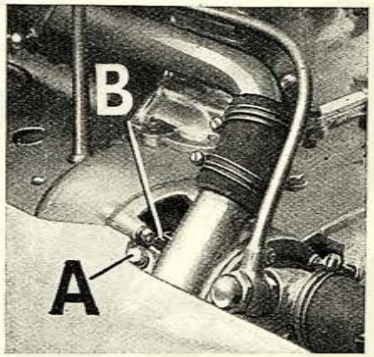


Fig. 14.
Showing the Water Pump and Gland which should be packed when required to prevent leakage.

RADIATOR—Special Note.

During cold and frosty weather, when the car is left standing overnight, it is advisable to drain the water out of the radiator and cylinder block. A plug for this purpose is fitted at the bottom of the radiator just above the starting handle, and a drain cock on the off-side of the cylinder block, close to the rear carburetter.

DO NOT FORGET TO REFILL THE RADIATOR BEFORE AGAIN STARTING THE ENGINE.

STEERING GEAR.

The steering fitted on the 3-litre Sunbeam is of the screw and nut type. The surfaces in contact are of large area, the steering very easy in operation, and there is an absence of all backlash. With this steering no adjustment is ever necessary.

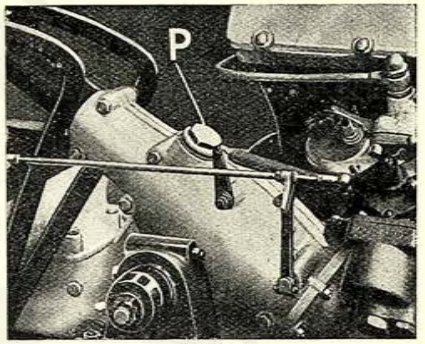


Fig. 15.
Keep the Steering Box well lubricated through the lubricator shown above.

A screw plug "P" is fitted on the steering box, and the box should be periodically filled with oil. Use oil as recommended for gear box.

Do not turn the road wheels entirely by the steering wheel when the car is stationary, as this practice strains the joints. If it is required to alter the position of the wheels they should be assisted by hand, and not turned by the steering wheel alone.

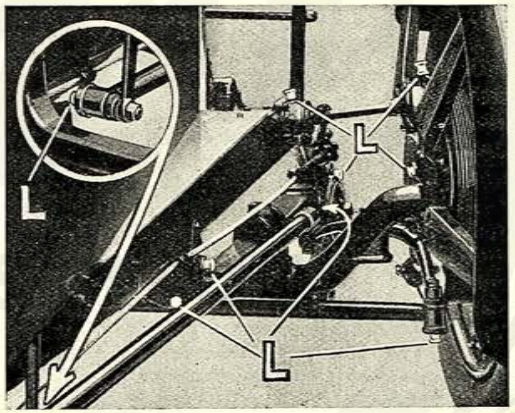


Fig. 16. Showing Lubricators on steering rods.

The lubricators on the steering side rod, etc., are shown in Figure 16. Inject oil regularly in accordance with the instructions given on the lubrication diagram in this book.

CLUTCH.

The clutch on the 3-litre Super-sports Car is of the single plate type; the clutch disc, which is lined with fabric, running on a splined shaft between the floating clutch plate and the flywheel. The clutch springs are carefully adjusted before the car leaves the factory, and no further adjustment is required. The clutch pit is covered by a removable cover which should be kept securely in position to prevent the ingress of grit and oil. If, after running for some considerable time any "play" should be apparent in the operation of the clutch pedal, this can easily be removed by adjusting the jaw "J" (see Fig. 17).

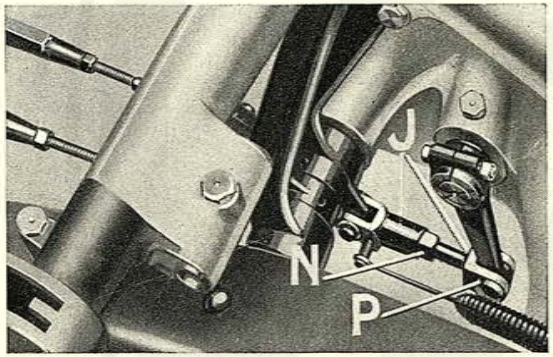


Fig. 17. Showing where Clutch Pedal adjustment is made.

After withdrawing the split pin, release the jaw "J" by removing the pin "P." Release the locknut "N" when the jaw "J" can be turned. One turn in an anti-clockwise direction will usually be found to give sufficient adjustment. The locknut "N" must then be tightened. When replacing the pin "P" do not forget to insert the split pin. The clutch being of the dry type, on no account must oil be applied to the friction surfaces. The clutch withdrawal race on the stemwheel is packed with grease when assembled and there is no need to attempt to lubricate this further.

GEAR BOX LUBRICATION.

In the gear box, as in the case of other units requiring regular lubrication, there is a correct level for the oil. The screw plug shown in the accompanying illustration should be unscrewed and the oil replenished every 500 miles. Although the consumption of oil is small, the level must be maintained. If the oil is poured in slowly it will drain down into the gear box and when it reaches the bottom screw thread in the plug hole the correct level has been reached. This level is marked by an arrow. Do not forget to screw the plug up tightly afterwards.

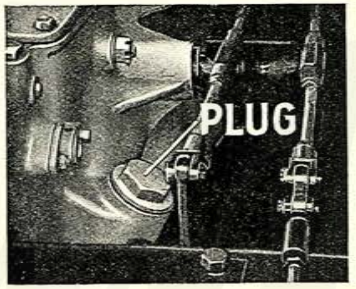


Fig. 18.
Showing Oil Filler in Gear Box.

If the supply of oil is not maintained at the correct level there will obviously be unnecessary wear on all the gears and their life will be shortened. It cannot be emphasised too strongly that proper lubrication is most important.

SPECIAL NOTE.—Engine lubricating oil is not suitable for the gear box. We specially recommend Wakefield's "Castrol S," Vacuum Mobiloil "C" or Shell-Mex Gear Oil.

On the change speed lever shaft is an oil gun adaptor, and oil should be injected every 1000 miles to ensure the shaft sliding easily (see lubrication diagram at front of book).

LUBRICATION OF THE SPEEDOMETER DRIVE.

If at any time the speedometer is not registering correctly, or is intermittent in action, it is possible that the drive may need lubrication. When required, inject a little oil at the speedometer end of the flexible coupling. Usually this operation will be required about once every three months.

LUBRICATING REAR AXLE.

At the back of the axle casing, as shown in Figure 19, is a screw plug through which the axle is supplied with oil. As a safeguard, and to ensure getting the longest life from the axle parts, the supply of oil should be replenished every 500 miles.

The consumption of oil is small, and only a very small quantity will be required every 500 miles to maintain the proper level. The correct level is indicated when the oil reaches a point about one inch below the top of the plug hole. This lubrication MUST NOT BE NEGLECTED.

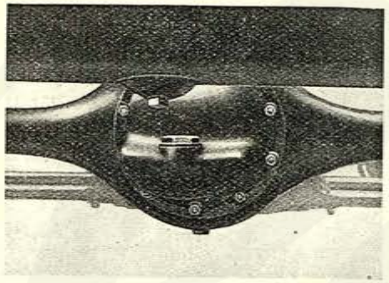


Fig. 19.

Unscrew plug to replenish oil supply in rear axle. The small plug shown above it is the drain plug in the fuel tank.

In cold weather the oil tends to form a film across the plug hole. This conveys the impression that the oil level is correct. The film should be pierced and it will then probably be found that a small quantity of oil is required to bring the supply up to the proper level. USE OIL AS RECOMMENDED FOR GEAR BOX. See page 31.

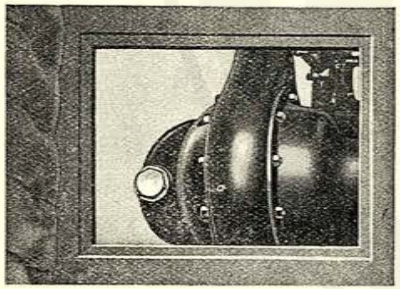


Fig. 20.

The oil plug is reached through the opening under the rear seat.

See that the plug is properly screwed up after the oil supply has been replenished.

THE BRAKING SYSTEM.

The four-wheel braking system fitted to the 3-Litre Sunbeam is the outcome of long practical experience with four-wheel brakes. The system is patented and complies with legal requirements. In use Sunbeam brakes are perfectly reliable. The braking power is applied progressively, the steering is not affected by the action of the front wheel brakes, whilst tyre wear is much more evenly distributed than when a car is braked through the rear wheels alone. The introduction of four-wheel brakes of such proved reliability as those incorporated in the Sunbeam system is a definitely progressive step in motor car design.

The relation between the braking effort on the front and rear of a car fitted with four wheel brakes necessitate a great amount of thought and experiment. The difficulties have been surmounted in the case of Sunbeam four-wheel brakes, and it will be found that in operation there is no tendency at all for the car to swing as the brakes are correctly balanced.

The Sunbeam front wheel brakes give considerably more than normal braking effort when pressure is applied to the pedal. This increased effectiveness is obtained by an internal arrangement in the drums themselves, the operating shoe forcing the main shoe against the drum and giving an increased effort of approximately 2 to 1. Both shoes actually come in contact with the drum and therefore are effective as brakes, but the second or main shoe, which has a larger area, has applied to it a greater pressure than would be obtained by direct pedal application alone. This arrangement, which entails no complications, and in no way can get out of order, is sometimes termed a " self-servo " brake.

The principle governing the Sunbeam front wheel brakes will be easily understood from the following brief description in conjunction with the accompanying diagram (Figure 21). The brake drum on each wheel contains two

shoes, C and D, one smaller than the other. The two shoes are connected together by a pivot B which is free in its housing. The other end of the smaller shoe is connected to the cam gear. E is the main anchor pin.

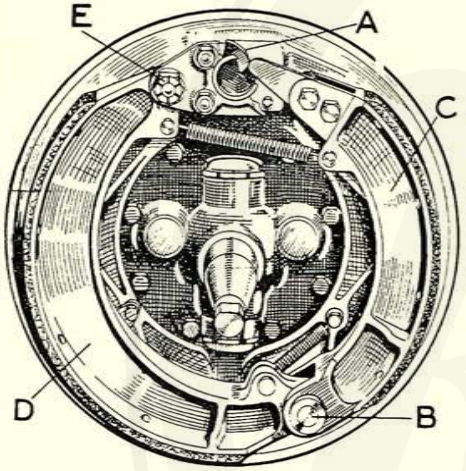


Fig. 21.

Showing lay-out of Sunbeam Front-wheel Brake. A portion of the plate has been cut away to show the cam A.

When the brake pedal is depressed the movement of the cam A, forces the smaller shoe into contact with the brake drum and the shoe thereupon tends to revolve with it. This alters the pivotal centre of the shoes, and in turn expands the larger or main shoe against the drum, both shoes thus exerting a retarding pressure on the drum.

In each rear brake drum two pairs of brake shoes are fitted. When the pedal is depressed one pair of shoes is expanded through the action of a cam. The second pair of shoes provides quite independent braking, being operated by the hand lever and not controlled in any way by the pedal.

It will be seen from this that the Sunbeam four-wheel braking system actually provides six brakes—four operated by the pedal, and the two separate rear wheel brakes operated by the hand lever.

FOUR WHEEL BRAKE ADJUSTMENT.

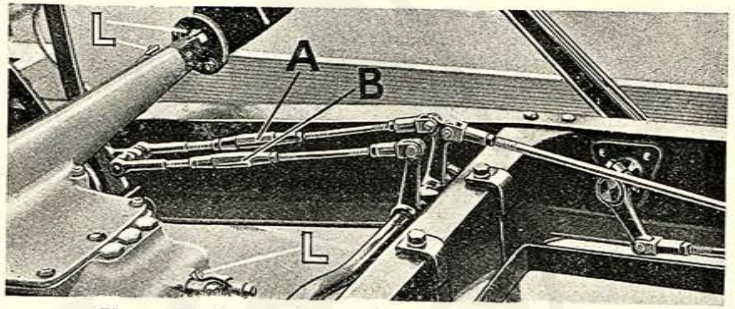


Fig. 22. Showing adjusting nuts between Pedal and Brake Rods.

When any adjustment of brakes becomes necessary the following instructions should be followed. The foot pedal operates two brake rods which are fitted with two adjusting nuts A and B (See Fig. 22). Thus the front and rear brakes operated by the pedal have separate adjusting nuts. If the balance of adjustment between all four brakes has been disturbed by the removal of the brake shoes, rods, etc., it can be restored as follows:— the main adjusting nuts A and B should be screwed well back leaving at least $\frac{3}{4}$-inch of each rod in engagement with the nuts. The car should then be jacked up from underneath each axle so that the weight is on the springs and all the wheels are off the ground. The front brakes should now

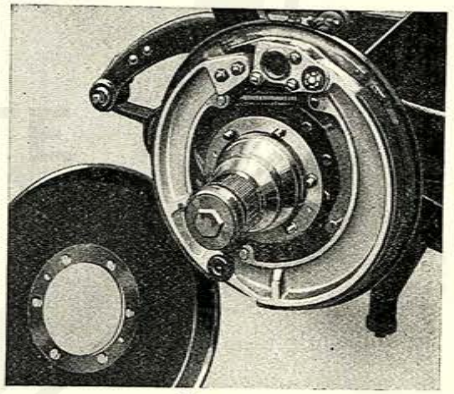


Fig. 23.

Front Wheel Brake with Wheel and Brake Drum removed.

be adjusted through their independent adjustments. The adjusting nuts " F.B." (See Fig. 25) on each side of the chassis should be tightened until both sets of front brake shoes are just touching the drums : THE NUTS AT THE END OF THE SPRING ON THE INSIDE OF THE BRAKE LEVER ARE NOT ADJUSTING NUTS AND NO ATTEMPT SHOULD BE MADE TO EFFECT ADJUSTMENT THROUGH THEM. Now by means of the adjusting nuts " K " shown in Fig. 24, tighten the rods until both the rear wheel brakes are just touching the drums. Now tighten " A " and " B " (see Fig. 22) until both the front and rear wheels require an appreciable and equal effort to turn them. Then slack " A " and " B " until all brakes just clear the drums. As a final test apply pressure to the foot pedal when the front and rear wheel brakes should all come into operation at the same time. This should be done with the wheels pulled round into full steering lock in each direction.

INDEPENDENT ADJUSTMENT OF BRAKES.

Independent adjustment is effected by means of the adjusting nuts " F.B." (See Fig. 25) for the front wheel brakes, and by the nuts " K " (See Fig. 24) for the rear wheel brakes. The hand brake is adjusted by the nuts " Q " shown in Fig. 24. In all cases care must be taken to see that the offside and nearside brakes exert the same braking power on application of the foot pedal and handbrake levers respectively.

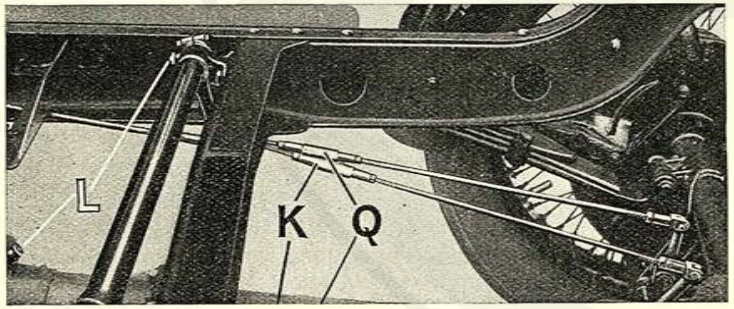


Fig. 24.—Showing Adjusting Nuts K & Q for Foot and Hand Brakes. Lubricators are marked L.

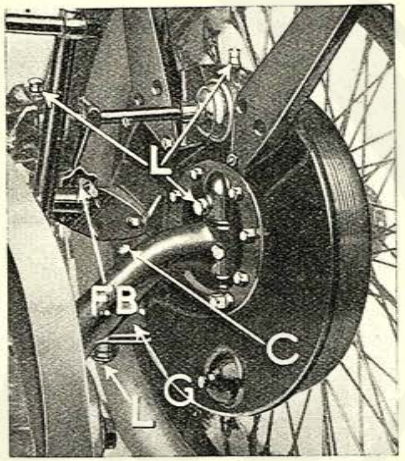


Fig. 25.

Showing near side Front Wheel. F.B. is the Front Wheel Brake Adjusting Nut. C is the eccentric or equalising stop for the brake shoes. G is one of the lugs for jacking up the Front Axle. The Lubricators are marked L.

An eccentric stop marked " C " Fig. 25 is fitted to hold the brake shoes in their proper position relative to the drum. It may be necessary after the car has been running for a considerable time to adjust this stop in order to counteract wear of the shoe linings. Such adjustment would only be slight, about $\frac{1}{8}$ of a turn of the screw (the nut is a lock nut) being sufficient. The screw must be held firmly with a screwdriver, both while unscrewing the lock nut, and also when tightening up again. After adjustment each wheel should spin freely. If it does not the adjustment has been overdone, and the screw will have to be screwed back slightly until the wheel spins freely. This should be tested with the wheels pulled round into full steering lock in each direction. The part marked " G " is a lug under which the jack should be placed when jacking up the car.

REMOVING BRAKE DRUMS.

To remove a brake drum unscrew the six nuts which hold this on the hub. See Figures 23 and 27. If the drum should be too tight to pull off after the nuts have been unscrewed, tap it lightly around its outer edge with a mallet or raw hide hammer. Do not use an ordinary steel hammer or the drum may be damaged.

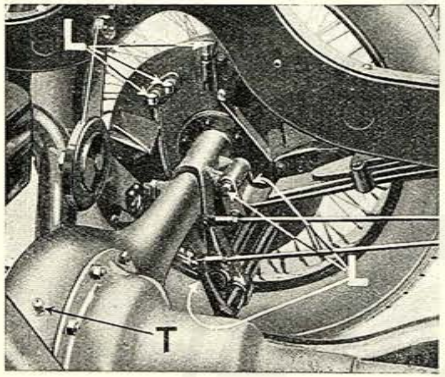


Fig. 26.

Showing Lubricators, marked L, on Rear Axle, etc. T is not a Lubricator but a "breather" for the Differential Casing.

In all the illustrations on this and the preceding pages the lubricators are marked L. Regular lubrication is most important.

The axle casing, which is retained by the nuts "Z," is NOT an inspection cover. It cannot be taken down until the hubs and shafts have been withdrawn. See page 42 for instructions on removal of hubs.

As shown in Fig. 27 twin brake shoes are fitted on the rear wheels, the hand brake operating separate shoes to those actuated by the four-wheel brake pedal. This braking system actually provides six brakes in all.

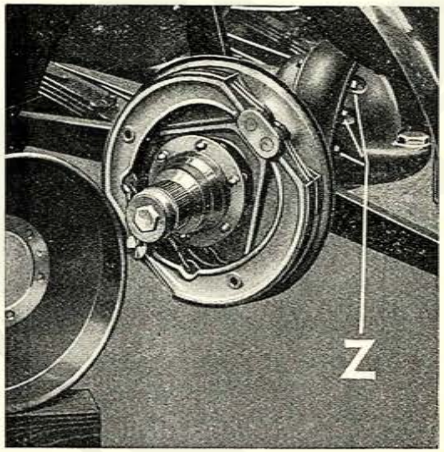


Fig. 27.

Rear Wheel Brake with Wheel and Brake Drum removed, showing Twin Brake Shoes.

SPRINGS.

The springing of the 3-Litre Sunbeam is one of the most delightful features of this super sports car. Full cantilever springs are fitted at the rear and semi-elliptic springs at the front, the latter being considerably offset.

The springs and their attachments need regular attention as they are such highly important features of the car. The principal points for lubrication are indicated on the lubrication chart at the front of the book, and also on the accompanying illustration.

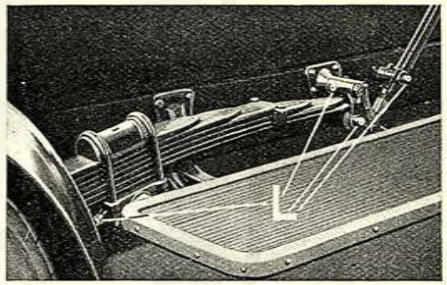


Fig. 28.

Showing Lubricators on Cantilever Spring Seat (on right of photograph) and Shackle.

The lubricator which is on the cantilever spring seat underneath the spring, is a very important point and this must not be neglected. Oil should be injected regularly through the lubricators marked L. See also spring lubricators marked on Figure 26. There is considerable frictional movement on the springs and shackles and it is highly important that they should be regularly lubricated, both front and rear springs being given proper attention in this respect.

On cars which are fitted with spring gaiters provision is made for lubrication on the gaiters themselves, a grease gun being supplied which fits the nipple on each gaiter. Lubrication is advisable after about every 1,000 miles.

Whether gaiters are fitted or not it is necessary periodically to separate the springs as shown in the illustration Figure 29 and apply a mixture of Russian tallow and graphite. The leaves of the spring are the ONLY PARTS OF THE CAR TO WHICH GRAPHITE SHOULD BE APPLIED. The illustration shows the method of lubricating the leaves. The

corners of the frame—not the axles—must be supported, the two corners of the back of the car when dealing with the rear springs, and the two corners of the front for the front springs. A strong trestle with a baulk of timber across the top and under the dumb irons of the frame is the simplest method of supporting the car at the front end see Figure 29). As the illustration clearly shows this takes the weight of the car off the springs, the leaves of which can then be easily separated by means of a screwdriver or similar tool, and the graphite grease inserted between the leaves with a thin knife.

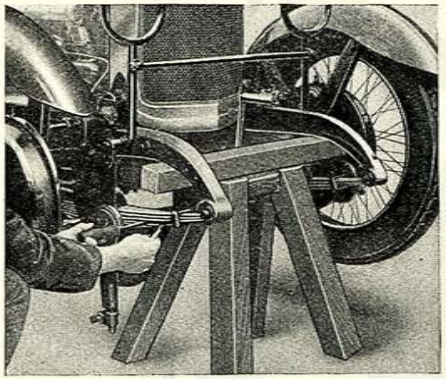


Fig. 29.
Showing method of Greasing Leaves of front Springs. Note the Shock Absorbers are released.

In order to insert the baulk of timber the front shock absorbers must be released as shown. care being taken to replace these after the operation. The casing over the dynamo at the front is a cover to prevent the ingress of dust and dirt, etc., and on no account must the weight of the car be supported on this. When jacking up the front of the car the jack should be placed under one of the lugs which are cast on each side of the front axle. (See " G " on Fig. 25).

To apply the grease to the leaves of the rear springs the weight of the car must be taken off them by raising the frame at the rear. The leaves should then be separated in a similar manner to that described in connection with the front springs, and the grease inserted between the leaves with a thin bladed knife.

DETACHABLE WHEELS.

The wire wheels fitted to the 3-Litre model are easily detached whenever removal is necessary.

To remove a wheel, the car should be jacked up and the lock nut on the wheel unscrewed by turning it in the direction in which the wheel revolves when the car goes forward. A special wheel spanner is provided with the tool kit. The lock nuts on the off, or right hand, side of the car have a left hand thread. Each lock nut is marked (e.g. " Left side, near side " or " Right side, off side") and arrows are stamped on showing the direction in which the lock nut should be turned.

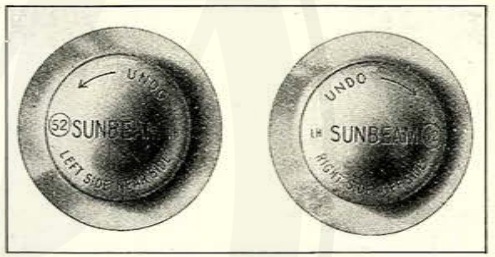


Fig. 30.
Showing lock nuts of Detachable Wheels.

In fitting a spare wheel the inside of the wheel hub and the outside of the permanent hub should be quite clean except for lubricant. Push the wheel right home on the inner hub, fill the inside of the lock nut with oil and screw up the lock nut, while the car is jacked up, until it is quite tight.

After changing a wheel it is advisable to test the lock nut after the wheel has been running fifteen or twenty miles to see if there is any slackness. This will be noticeable if the wheel is rocked backwards and forwards, and any tendency to movement should be removed by again tightening up the nut. This slackness is sometimes wrongly attributed to the lock nut unscrewing, a thing which never happens if it has been correctly put on.

REMOVING REAR HUBS.

The rear hubs are very easily removed. After detaching the wheel and brake drum (see Fig. 27), six small nuts marked "A" will be seen at the rear of the flange plate. If these are removed the hub and axle shaft can easily be withdrawn. To release the hub from the axle, AFTER THESE HAVE BEEN WITHDRAWN BODILY, unscrew the cover "D" and a castle nut and split pin will be seen. If these are removed the hub can be withdrawn from the axle shaft. When replacing the hubs and shafts the nuts "A" must be screwed up tightly.

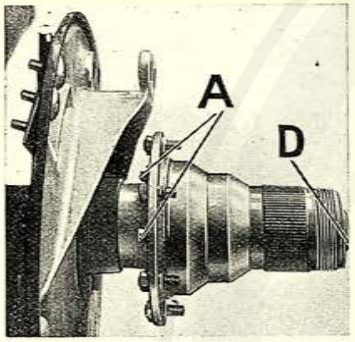


Fig. 31.
Unscrew Nuts "A" to remove Hub.

For the sake of convenience the brake shoes and anchor pins have been removed in order to show the six nuts "A" clearly. It is not necessary, however, to do this in order to remove the hub and axle shaft.

To lubricate hub, remove cover "D." We recommend Price's Hub Lubricant, soft for winter use, stiff for summer.

SHOCK ABSORBERS.

Hartford shock absorbers are fitted to the springs both front and rear on the 3-litre Sunbeam. The shock absorbers are set to the proper initial tension and no adjustment should be made until the spring action seems too free or not free enough. If the spring action is too free, the frictional resistance can be increased by tightening the centre adjusting nut, turning it in a clockwise direction. On the other hand, should the spring action seem too stiff, this can be relieved by turning the centre adjusting nut in an anti-clockwise direction. The full benefit of shock absorbers is felt when the car is travelling at speed over bad roads, and when adjusted they should be tested under these conditions.

IMPORTANT.—When adjusting the pressure should not be increased more than is absolutely necessary to obtain the desired results.

OIL GUN.

The shackle pins of the springs, control gear and steering connections, and the other principal chassis parts requiring regular lubrication, are fitted with special ball lubricators through which thick oil can be forced by means of the gun supplied with each car.

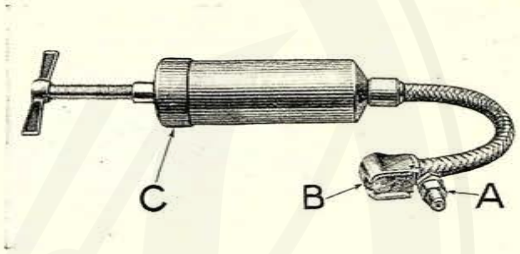


Fig. 32. The Oil Gun.

We recommend the use of "Shell-Mex" Gear Oil for chassis lubrication instead of grease, as the latter is apt to solidify in cold weather. The "Tecalemit" gun is suitable for use with oil. To fill this gun the cap of the plunger, marked C, Figure 32, is unscrewed, which brings away the plunger. The oil is then poured into the barrel, the plunger and cap replaced and the cap screwed tightly on to the barrel. In operation the grooved end piece of the nozzle B is pulled on to the lubricator as far as it will go. The plunger handle is then screwed in the usual rotary direction and oil is forced through the lubricator as long as the handle is turned. Screw back the plunger about one turn before detaching from the lubricator to prevent oil exuding wastefully. One of the ball lubricators as fitted to the chassis is shown at A, Figure 32.

The only parts of a car where graphite lubricant should be used is between the leaves of both front and rear springs. Lubrication of the springs and leaves is fully dealt with on pages 9 and 40.

Complete list of the tools provided with each 3-litre Car :—

1 double ended spanner, $\frac{1}{4}$"—$\frac{5}{16}$".
1 " " " $\frac{3}{8}$"—$\frac{7}{16}$".
1 " " " $\frac{5}{8}$"—$\frac{1}{2}$".
1 " " " 6 m/m—8 m/m.
1 " " " 10 m/m—12 m/m.
1 " " box spanner, 6 m/m—8 m/m.
1 " " " " 10 m/m—12 m/m.
2 box spanners, $\frac{3}{16}$"—$\frac{1}{4}$", $\frac{3}{8}$"—$\frac{7}{16}$".

A. Hub cap spanner.
B. 3 Water pump adjusting spanners.
C. Box spanner for differential shaft nut.
D. Spanner for Hub grease cover.
F. Box spanner for back axle oil plug.
G. Spanner for camshaft nut.
H. Spanner for inlet and exhaust pipe.
K. Spanner for oil pump locknut.
M. Spanner for cylinder crankcase nuts.
N. Magneto spanner.
P. Petrol tank cap spanner.
Q. Carburetter jet key.
S. Large and small spare valve springs.

(These special tools are lettered and indicated in the illustration below).

3 tyre levers.
Peg punch.
Chisel.
1 large movable spanner.
1 King Dick spanner
Pliers.
2 Screwdrivers.

Box spanner for sparking plug.
Jack.
Tyre pump.
3 Tommy bars.
Hammer.
Oil can.

Grease gun, sponge cloth, tool bag and valve thimbles.

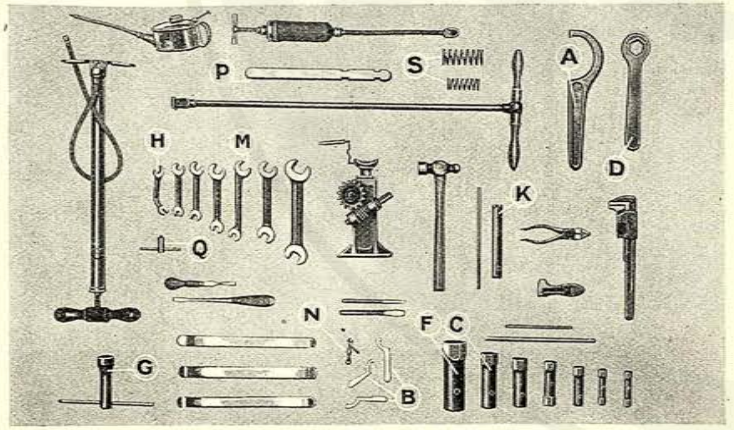


Fig. 33. Showing Tool Kit supplied with 3-litre Car.

CARE OF THE COACHWORK.

To preserve the fine paintwork and finish of Sunbeam cars the following suggestions are made as a result of our own wide experience.

WASHING THE CAR. Mud and dirt must be removed AT THE EARLIEST OPPORTUNITY. This should be carried out by using only CLEAN COLD WATER. Nothing should be mixed with it—certainly not petrol or paraffin, which act detrimentally on the varnish.

To remove accumulated mud well soak all over the body with the water just trickling from the hose pipe. Water applied at pressure direct on to the mud only tends to fix it rather than to soften it, especially in the case of a newly finished car. If water is used with any force then the nozzle of the hose should be held at an angle pointing downwards so that the water slides down the body instead of reaching it at a right angle.

A sponge and leather should be kept specially for the chassis and under-work where oil and grease are likely to be picked up. The sponge and leather for the body of the car SHOULD NEVER BE USED FOR ANYTHING ELSE. A honeycomb sponge is the best kind. When drying off after washing, always use the smooth side of the chamois leather. The rough or " flesh " side may cause minute scratches.

Stains can be removed with the aid of a good Varnish Reviver. This should be a really good preparation, as some revivers contain ingredients which may ultimately prove harmful to the varnish if used too frequently.

Cars fitted with Weymann bodies should be washed down with CLEAN COLD WATER and the surface of the fabric afterwards dried in the same way as a coachbuilt body would be treated.

It is advisable to oil the door locks and hinges, also the bonnet hinges, occasionally. Use the oil sparingly and keep it off the paintwork.

CARE OF THE UPHOLSTERY.

The leather selected for the upholstery of Sunbeam cars is of the best possible quality, only first-grade hand-buffed hides being used. The result is that the leather work retains its appearance and wears for a very long period. Very little attention is needed beyond an occasional brushing to remove dust from around the buttons and from the folds.

We do not recommend the use of creams, polishes or other similar preparations. Leather of the quality we use has a finish which needs no reviving assistance of this kind, and there is often a risk that the leather may be adversely affected by some ingredient in the polish itself.

To clean leather upholstery the use of soap and water is strongly advised, but on no account should this be used on cloth upholstery or furniture hide.

Cars upholstered in cloth require only occasional light brushing to remove dust. A brush should be kept specially for this purpose, and washed periodically, so that there is no likelihood of grease or oil getting on to it. If grease marks accidentally get on to the cloth, they can usually be removed with petrol applied with a piece of clean rag. The important thing is to remove them at the earliest opportunity, before the grease has had time to penetrate deeply into the cloth.

When cars are standing in the garage for any length of time the hood should be raised and left in this position.

RAISING THE HOOD.

Having removed the cover, or hood envelope, unfasten the leather straps (see " A " on Fig. 35) holding the frame irons in position on each side of the car, and release straps " B," shown on Fig. 34. The hood can then easily be raised. The front end of the hood consists of a flap, and care should be taken when raising that the cross bar at the front of this does not fall and injure the paintwork. The holes at each end of the cross bar must now be brought in line with the rounded tops of the windscreen pillars. The cross bar is then pulled down on to the windscreen and the wing nuts holding the hood in position tightened (see Fig. 38).

LOWERING THE HOOD.

The hood should never be folded down in a wet condition ; it should be kept up for a short time to dry before lowering and fixing the hood cover. Before lowering the hood it is advisable to close the doors to prevent any likelihood of damage to paintwork. Unscrew the wing nuts inside the hood frame so that the front cross bar can be detached from the windscreen pillars. The hood should be lowered to the position shown in Fig. 34, all the hood material being pulled out in folds. The front end of the " flap " should then be fastened by the straps " B " as shown in Fig. 34. Fig. 35 shows the flap being folded into position before affixing the hood cover. If the corner of the hood cover is turned back as shown in Fig. 36, no difficulty should be experienced in fitting this, but care must be taken to pull out the folds of the hood in the first place as mentioned above.

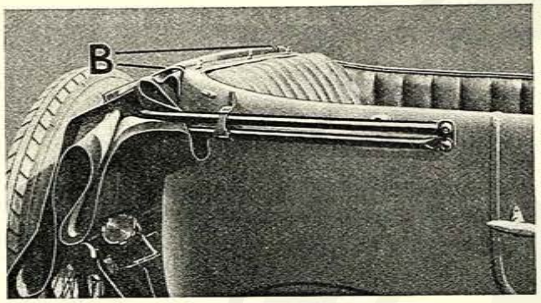


Fig. 34.

When the Hood is lowered all the folds of material must be pulled clear of the frame. Note the straps "B" for fastening the flap.

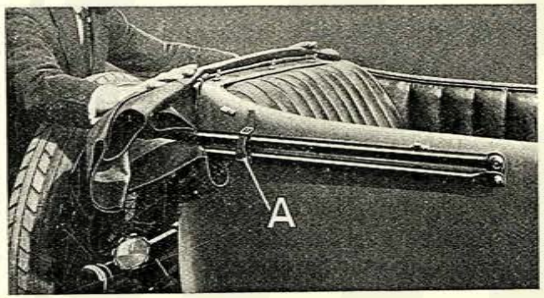


Fig. 35.

The "flap" should be folded as shown. Note the fastening straps "A" for the frame irons.

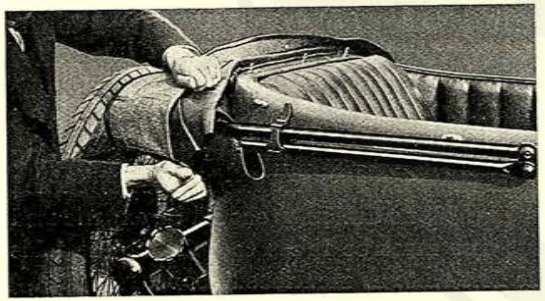


Fig. 36.

When placing the cover on the Hood turn back the corner as shown. It will slip on more easily.

SIDE-CURTAINS.

The side curtains supplied with the 3-litre super-sports car are easily erected in position. There are two curtains and each is marked with its respective position (left front, etc.) to facilitate correct fixing. The side curtains can be used without the hood as a protection against the wind.

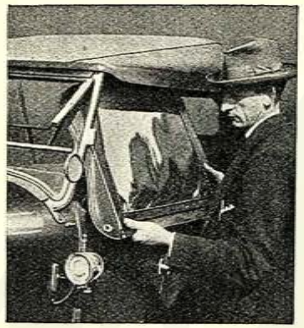


Fig. 37. Fixing Side Curtain.

In erecting the curtains notice the instructions for position. They are fixed by placing the pivot on the curtain frame in the socket on the wind-screen pillar. A spring allows this to be pushed upwards until the cup on the frame at the bottom edge of the curtain slides on to the ball top of the door hinge below (see Fig. 37). The spring then holds the curtain in position and this is made secure by means of a strap and turn button on the inside of the door.

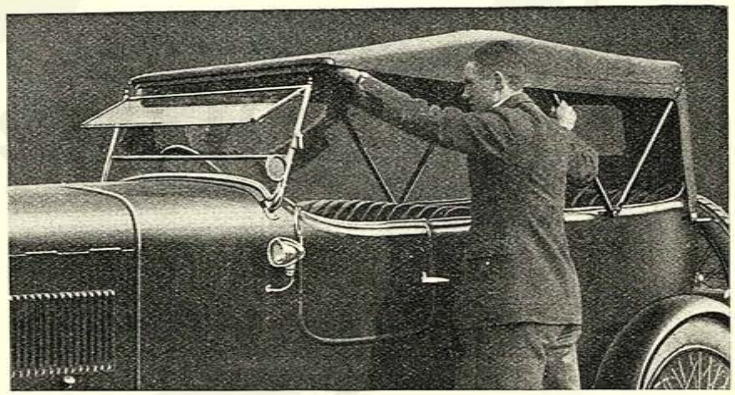


Fig 38. The Hood extended ready for fixing to the Wind Screen.

MOORFIELD WORKS.

The best testimony to the success achieved by Sunbeam cars, since the inception of the first model over a quarter of a century ago, is the size of the present Sunbeam works. As the years have passed by development and extension have proceeded apace. To-day, Moorfield Works possesses every conceivable facility for the production of motor cars of the high quality associated with the Sunbeam name.

MOORFIELD WORKS, WOLVERHAMPTON,
where Sunbeam Motor Cars are manufactured.

The factory, offices, playing fields, and other property and land of the Company cover an area of over 60 acres, the total floor space of the various shops is nearly 30 acres, and the employees number nearly 4,000. The Sunbeam Company gladly welcomes visits from owners or potential owners of Sunbeam cars, so that they may personally see the extent of the works and the thoroughness of the manufacturing methods employed in the production of Britain's Supreme Car.

SOUTHERN SERVICE AND REPAIR DEPOT.

For the convenience of Sunbeam car owners in London and the South Western Counties, large and well-equipped repair shops are available at 177, The Vale, Acton, W 3. ('Phone: Chiswick 800.) Here necessary repairs and complete overhauls can be efficiently dealt with by skilled Sunbeam mechanics. Stocks of spare parts are maintained of all Sunbeam models, including those of the Company's early manufacture.

A VIEW IN THE
SOUTHERN SERVICE DEPOT

NORTHERN SERVICE AND REPAIR DEPOT.

Similar facilities are available for Sunbeam car owners in the Northern Counties, a service and repair depot being provided at 288, Eccles New Road, Weaste, Manchester ('Phone, Pendleton 507/8), on the main road to Liverpool. Stocks of spare parts are carried, and clients may rely upon receiving efficient service, whether in the case of repairs or overhauls.

FINISHING BAY
NORTHERN SERVICE DEPOT

INDEX.

This Handbook of Instructions for the 3-Litre Super Sports

SUNBEAM

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