

THE 30 H.P. AND 35 H.P.

SUNBEAM

EIGHT CYLINDER CARS

HANDBOOK of INSTRUCTIONS

Date.....192

Dear Sirs,

Kindly enter my name and address in your records, and send me from time to time any printed matter or revised instructions you may issue for my.....h.p. eight-cylinder Sunbeam No.....*

Name.....

Address.....

From whom car purchased (through agent or direct)

Date car received.....192

**The car number will be found (a) on a brass plate on the dash, under the bonnet, (b) stamped on the second cross member of the frame.*

Handbook of Instructions for the 30 h.p. & 35 h.p. Eight-cylinder SUNBEAM CARS.

This Handbook is Published for the use and assistance of owners of 30 & 35 h.p. 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 these Models, 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 (SIX LINES).

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

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

MANCHESTER SHOWROOMS : 106 DEANS GATE.

TELEPHONE : CITY 8638.

TELEGRAMS : " SUMOCAR, MANCHESTER."

SOUTHERN SERVICE & REPAIR WORKS :

177 THE VALE, ACTON,
LONDON, W.3.

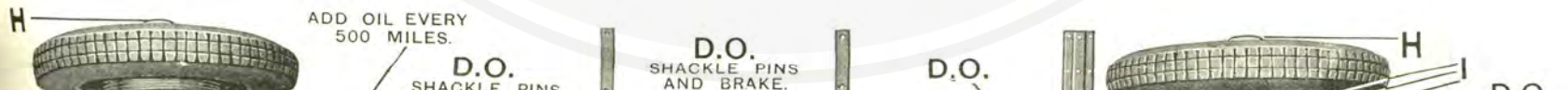
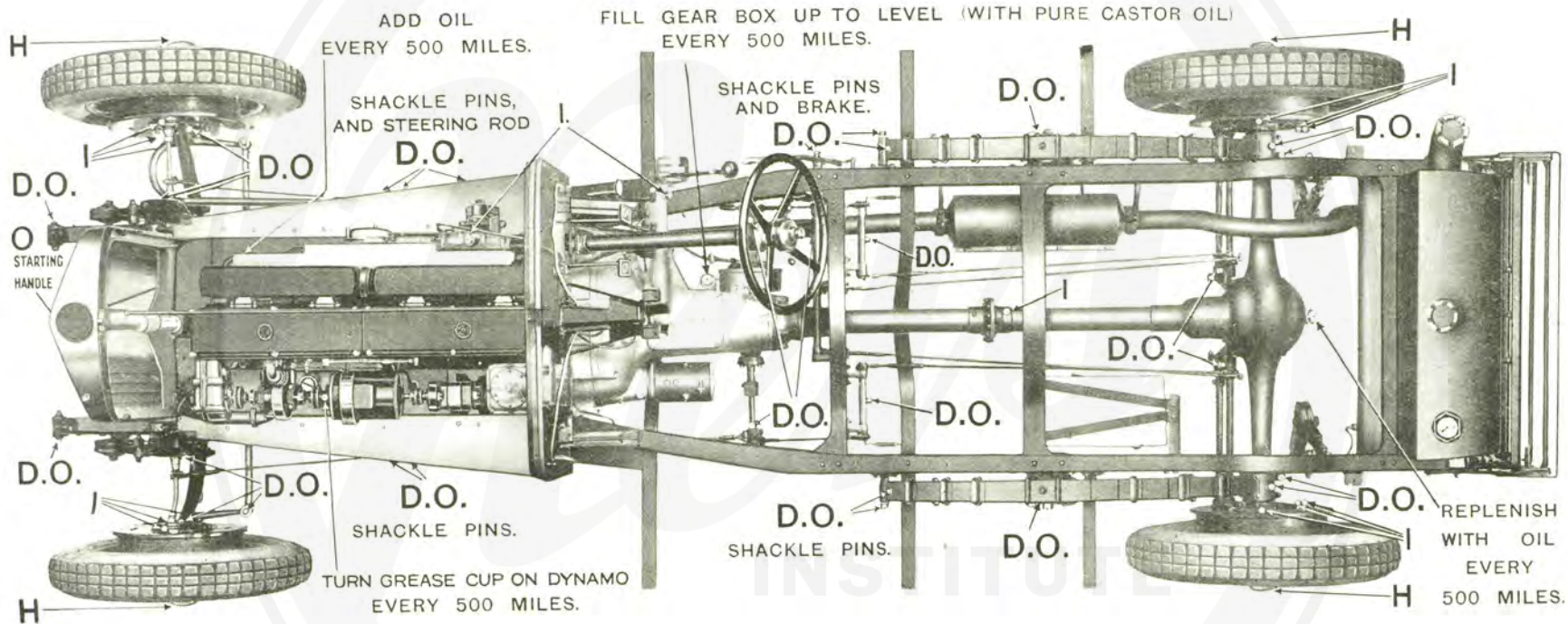
TELEPHONE : CHISWICK 0800
TELEGRAMS : " SUNOSERV, ACT, LONDON."

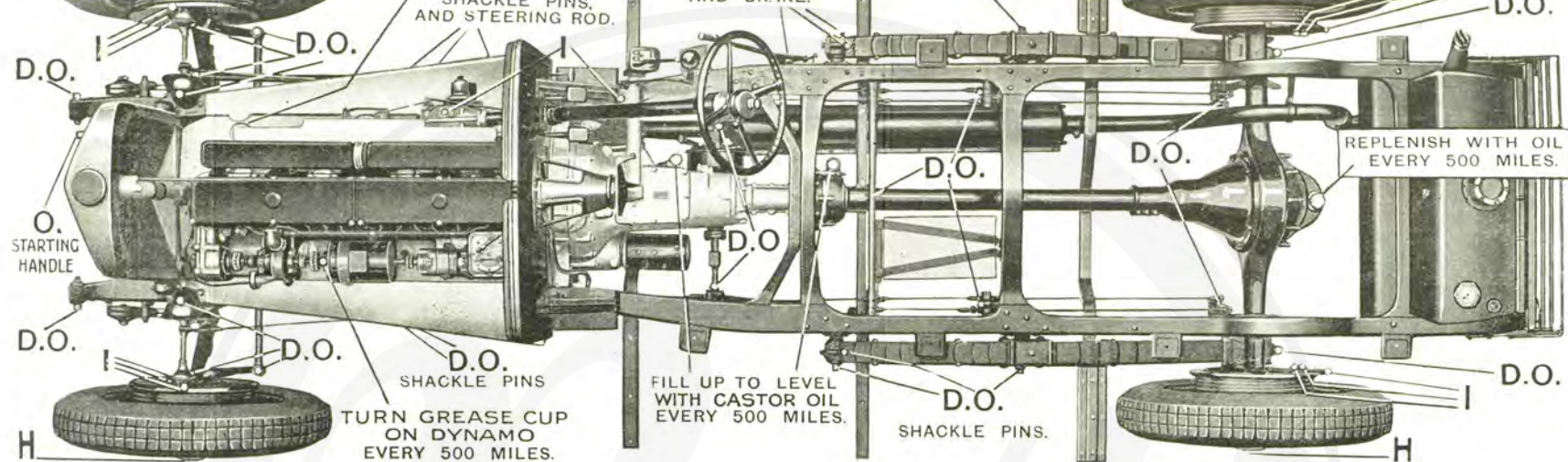
NORTHERN SERVICE & REPAIR WORKS :

288/294 ECCLES NEW ROAD,
WEASTE, MANCHESTER.

TELEPHONE : PENDLETON 507/8.
TELEGRAMS : " SUMOREP, MANCHESTER."

LUBRICATION DIAGRAM FOR THE 35 H.P. SUNBEAM ENGINE AND CHASSIS.





D.O. INJECT OIL EVERY 500 MILES, except lubricators on springs and spring shackles. Oil should be injected through these every 250 miles.

I. INJECT OIL EVERY 1,000 MILES.

O. INJECT OIL OCCASIONALLY.

H. LUBRICATE HUBS PERIODICALLY.

OILS RECOMMENDED.

ENGINE.—Wakefield's "Castrol A," Vacuum "Mobiloil A" or "Double Shell."

GEAR BOX.—Pure Castor Oil only. This is important.

REAR AXLE TRANSMISSION.—Wakefield's "Castrol S," Shell-Mex Gear Oil, or Vacuum "Mobiloil C."

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

IMPORTANT.—DIFFERENT BRANDS OF ENGINE LUBRICATING OIL MUST NOT BE MIXED. IF IT IS DESIRED TO CHANGE OVER TO A DIFFERENT BRAND THE ENGINE AND SUMP MUST BE COMPLETELY EMPTIED, AS EXPLAINED IN THIS HANDBOOK, BEFORE THE NEW OIL IS USED.

THIS INSTRUCTION MUST BE OBSERVED.

PRINCIPAL CHASSIS DIMENSIONS.

Below we give the principal dimensions, with their metric equivalents, of the 30 h.p. and 35 h.p. eight-cylinder Sunbeams. The shorter wheelbase chassis is that on which open touring and Weymann Saloon bodies are mounted, the bodies of the limousine and landaulette types being mounted on the longer chassis.

			English.	Metric.	
Bore, 30 h.p.	.....	.....	3.149"	80 ^{mm} ₁₁	
35 h.p.	.....	.....	3.346"	85 ^{mm} ₁₁	
Stroke, 30 and 35 h.p.	.....	.....	4.72"	120 ^{mm} ₁₁	
Cubic capacity of cylinders, 30 h.p.	.....	.....	295.97 cu.in.	4826 c.c.	
35 h.p.	.....	.....	331.1 cu.in.	5447 c.c.	
Wheelbase, 30 h.p.	.....	.....	11' 5 ¹ / ₂ "	348.9 ^{cm} ₁₁	
35 h.p.	.....	.....	12' 3"	373.4 ^{cm} ₁₁	
Track, 30 h.p.	.....	.....	4' 9"	145 ^{cm} ₁₁	
35 h.p.	.....	.....	4' 11"	149.8 ^{cm} ₁₁	
Ground clearance, 30 h.p.	.....	.....	8"	20 ^{cm} ₁₁	
35 h.p.	.....	.....	7 ¹ / ₂ "	19 ^{cm} ₁₁	
Length overall, 30 h.p.	.....	.....	15' 7 ¹ / ₂ "	475.2 ^{cm} ₁₁	
35 h.p.	.....	.....	16' 9"	510.3 ^{cm} ₁₁	
Width overall, 30 h.p.	.....	.....	6' 3"	191 ^{cm} ₁₁	
35 h.p.	.....	.....	6' 4"	193.5 ^{cm} ₁₁	
Gear Ratios —	4th.	3rd.	2nd.	1st.	Reverse.
30 h.p.	4 to 1	6.05 to 1	9 to 1	15.01 to 1	15.01 to 1
35 h.p.	4.77 to 1	7.2 to 1	10.725 to 1	17.9 to 1	17.9 to 1
Tyre sizes, 30 h.p.					6" for 21" rims.
35 h.p.					35" x 6 ³ / ₄ "
R.A.C. rating, 30 h.p.					31.7 h.p.
35 h.p.					35.9 h.p.
Tax payable, 30 h.p.					£32
35 h.p.					£36

FOREWORD.

This handbook of instructions has been compiled for the use of owners and drivers of 30 h.p. and 35 h.p. eight-cylinder Sunbeam cars, with a view to providing in a simple and handy form useful and necessary information in regard to the general care, lubrication and maintenance of these models. In its preparation it has been assumed that the reader is conversant with the general principles of the modern motor car.

The illustrations appearing in this book, apart from the wiring and timing diagrams, etc., are from actual photographs. In one or two instances, parts (such as wings, running boards, etc.), adjacent to the particular portion of the chassis referred to have been removed. This, however, has been done merely to give an uninterrupted view for the camera, and does not necessarily imply that in practice such parts need to be removed before the adjustment, or lubrication of such parts, can be effected.

All Sunbeam cars are guaranteed in accordance with the terms of guarantee printed in full in our catalogue. 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.

With regard to the various accessories not of our own manufacture, such as electrical equipment, carburetter, etc., brief instructions on their care, based on information supplied by the respective makers, are included in this handbook, but in the event of difficulty clients are strongly recommended 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.

May, 1928.

READ THIS CAREFULLY.

The instructions embodied in the early chapters of this handbook give all the information re starting up and driving necessary for the motorist who has had some experience in handling a car.

Later chapters deal with the all-important question of Lubrication, the necessary adjustments which may be required from time to time, and the general points to be observed in maintaining the car in a condition which will ensure satisfaction to its owner. The best of cars will suffer under neglect.

Study the chapters on Lubrication. Lack of proper lubrication—of chassis parts as well as the engine—is responsible for most of the repair bills in the motor trade. Use the brand of oil recommended on page 10.

**On no account must different brands of Oil be mixed.
THIS INSTRUCTION MUST BE OBSERVED.**

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 both the chassis and complete car exhaustively tested on the road, the first few hundred miles should be done at moderate speed. The owner who treats his car considerably during this initial period, instead of immediately attempting to attain very high speed, will make doubly sure of getting the utmost satisfaction from his car, and add appreciably to its life.

GENERAL RUNNING HINTS.

It has been remarked on an earlier page that this book is not intended as a manual on the art of driving a car. The following information may therefore be regarded more as general hints for the driver rather than as an instruction in driving.

The illustrations upon this and the following page show the position of the magneto and carburetter controls, the instrument board, the clutch, brake and accelerator pedals, the gear lever and the gate through which the gear lever operates.

Assuming that the car is ready for its first trip on the road after reaching its owner, the following points should be borne in mind. See that the oil level is correct (see page 12), the radiator filled, and the petrol turned on and reaching the carburetter. Always see that the gear lever is in the neutral position before attempting to start up the engine.



Fig. 1. View showing Ignition and Carburetter controls.

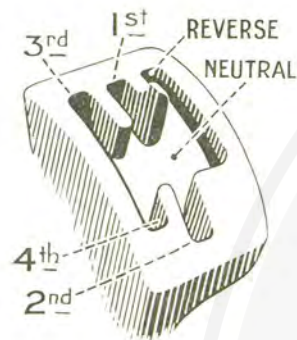


Fig. 1a.

Diagram showing Gear Lever positions in Gate.

Before attempting to start the engine by means of the electric starter the plunger of the Ki-Gass injector should be unscrewed and pulled back to its full extent. Pump the Ki-Gass injector three times and then screw up tightly. Then press the electric starter switch and the engine should fire in the first few revolutions as the action of the pump forces a fine spray of petrol through the open valve ports. It is important that the Ki-Gass injector is not used beyond the three times recommended, otherwise the excess of petrol drawn in will tend to dry the pistons.

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, it can be moved backwards or forwards until the most comfortable position is obtained. This applies to all 30 and 35 h.p. models.

To facilitate easy starting the Ki-Gass Injector is fitted to the 30 h.p. and 35 h.p. models. This device consists of a force pump mounted on the fascia board and connected by copper pipes to unions fitted on the Induction pipe and Autovac pipe. For starting up the engine the magneto should be advanced midway between the advance and retard positions. The throttle should be opened very slightly.

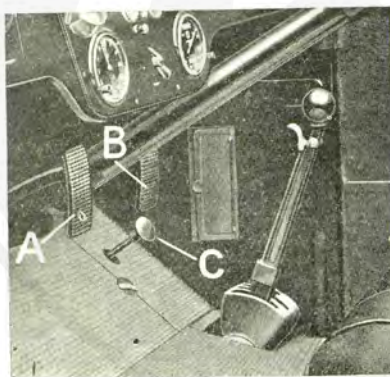


Fig. 2.

6 Showing Clutch (A), Brake (B) and Accelerator (C) Pedals.

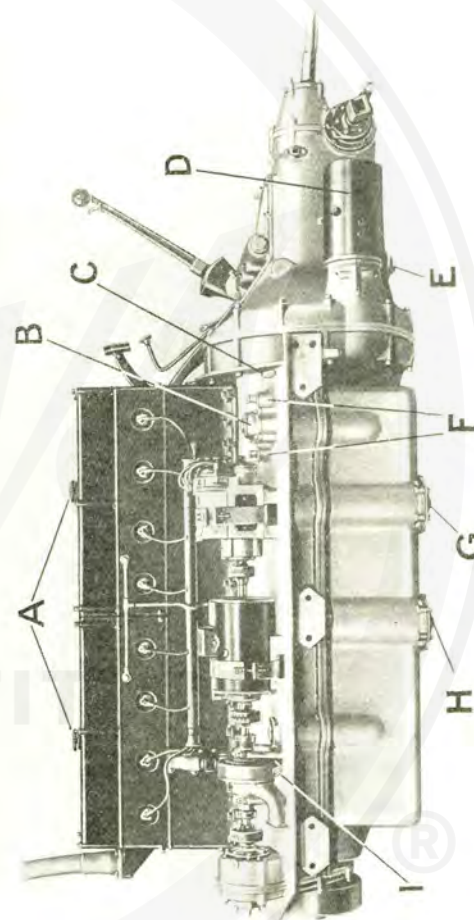


Fig. 3.
A—Breathers ; B—Oil Pressure Filter ; C—Breathers ; D—Electric Starter ; E—Gear Box Drain Plug ; F—Oil Pressure Relief Valves ; G—Chamber for Suction Pump ; H—Drain Plug ; I—Drain Cock for Water Pump.

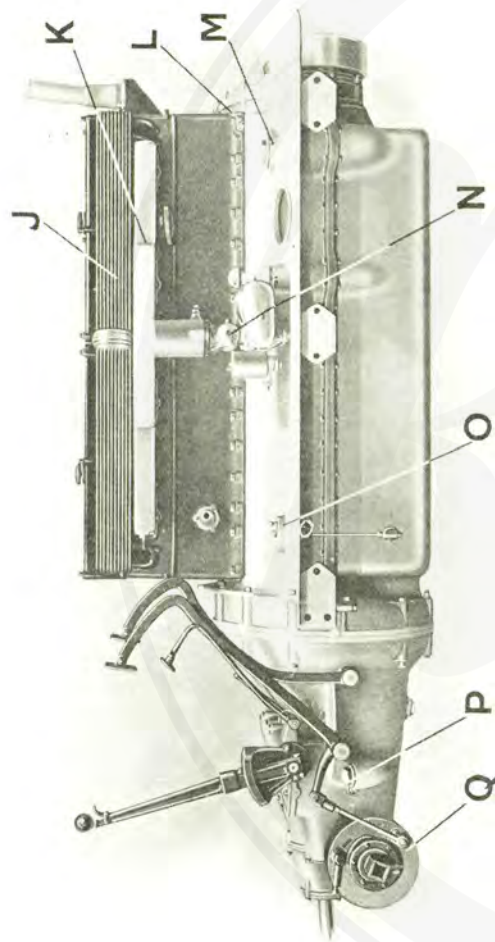


Fig. 4.
J—Exhaust Manifold ; K—Inlet Manifold ; L—Drain Cock for Cylinder Block ; M—Oil Filler ; N—Servo Motor for operating brakes, O—Oil Level Cock ; P—Oil Filler for Gear Box ; Q—Carburettor.

CARE AND MAINTENANCE.

The 30 h.p. and 35 h.p. eight-cylinder Sunbeams are built with the engine, clutch and gear box combined in a single unit suspended directly from the main frame. A glance at the chassis plan on the Lubrication Diagram at the front of this book will show that the design is on very clean lines, and all accessories are placed in convenient positions. The various chassis lubricators and oil fillers for the engine, gear box and back axle, are all accessibly placed. It is only necessary to treat the car with regular care and follow out the instructions given on the Lubrication Diagram and in these pages regarding lubrication to obtain and, what is equally important, MAINTAIN the best possible service.

Lubrication is the most important matter for the motorist who wishes to get the best out of his car. Most of the troubles with which motor repairers have to deal are directly traceable to lack of proper lubrication. The absence of oil will damage any bearing and may necessitate costly repairs.

All Sunbeam engines are designed to provide perfect lubrication automatically and yet have a clear exhaust. An oil level cock (See Fig. 5) is fitted in the crankcase so that the correct level for the oil in the sump can always be maintained. The oil filler is shown in the illustration on next page.

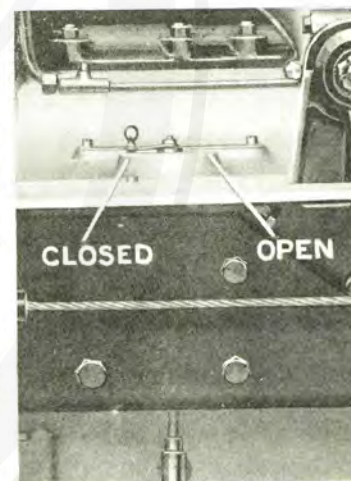


Fig. 5.
Oil Level Cock in Crankcase. Always turn to "closed" position when the crankcase has been filled with oil to the correct level.

:: LUBRICATION—THE SUNBEAM SYSTEM. ::

LUBRICATION.

As regards lubricating oil, only the best quality oil should be used. For the 30 h.p. and 35 h.p. Sunbeam models we recommend the following oil, which we have found from our own experience to be most suitable:—for the engine, Wakefield's "Castrol A," Vacuum "Mobiloil A" or "Double-Shell"; and for the transmission, Wakefield's "Castrol S," "Mobiloil C" or "Shell-Mex Gear Oil." See page 29 re lubrication of Gear Box.

Never buy oil of unknown name or brand: or buy oil in bulk from a barrel, which may contain anything.

IMPORTANT NOTICE RE LUBRICATING OIL.

Different brands of lubricating oil must not be mixed. If it is desired to change over to a different brand, the engine and sump must be completely emptied, as explained in this handbook, before the new oil is used. This instruction must be observed.



Fig. 6.

Crankcase Oil Filler at front of engine on off-side, with detachable gauze filter. Unscrew cap, and filter can be withdrawn by the fingers for cleaning.

The Sunbeam engine lubrication system consists of a gear driven pressure pump placed in the lower half of the crankcase. This forces oil through a pressure filter to the main crankshaft bearings and through the hollow crankshaft to the big-end bearings of the connecting rods. 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 is returned to

:: LUBRICATION SYSTEM—OIL PRESSURE. ::

the large reservoir in the base of the crankcase by another pump and passes through a filter, so that it is cleansed before being again circulated by the pump.

The rocker shafts, rockers and push rods are also lubricated from the main oiling system. An oil lead carries oil to the overhead shaft and effectively lubricates each rocker, the surplus oil passing to the push rods and falling by gravity on to the tappets and camshaft bearings.

The oil pressure filter which is shown in Fig. 3. should be cleaned out every 1,000 miles. Remove the cap and the gauze is readily detachable for cleaning.

OIL PRESSURE.

With the supply of lubricating oil properly maintained, and the crankcase 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 Figure 1. For all average purposes the oil pressure should be 20-lbs. per square inch. Two relief valves of the usual ball type are fitted in the crankcase and deal with any excess pressure of oil which is returned to the sump. The positions of the relief valves are shown in Figure 3. To remove a valve first unscrew the large hexagon nut in centre and the two smaller nuts afterwards. 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 pressure gauge.

FAILURE OF OIL PRESSURE.

Although, as mentioned above, it is practically impossible for the lubrication system to fail, the following instructions are given to provide for the rare occurrence when trouble may

OIL PRESSURE. CLEANING OUT CRANKCASE.

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 reservoir.
- (2.) Not cleaning out oil pressure filter periodically.
- (3.) A broken or choked oil gauge pipe.
- (4.) A blocked system, due to not keeping the crankcase clean, or inferior or dirty oil being used.
- (5.) Dirt under the ball of oil relief valve.
- (6.) Not cleaning out oil filter periodically.
- (7.) Damage to oil pump or oil gauge.

When failure of pressure is indicated on the gauge, the engine should immediately be stopped. First ascertain if there is the correct quantity of oil in the crankcase by opening the oil level cock and adding oil through the filler (see Figure 6) until the tap overflows (see Figure 5). Leave this tap open for a few minutes to allow the oil to distribute itself evenly throughout the length of the crankcase. Then pour in a further slight quantity, and if it drips again the correct level has been reached. After doing this, make quite sure that the oil cock is turned to the "closed" position.

When the engine is restarted, if the gauge still fails to register any pressure, clean out the oil pressure filter. This failing, 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.

CLEANING AND REFILLING CRANKCASE.

It is important that attention should be regularly given to the oil level. After about every 500 miles the oil level should be maintained by replenishing with oil through the filler (see Figure 6), until it drips from

CLEANING OUT CRANKCASE, REFILLING, Etc.

the overflow tap. Under normal running conditions the crankcase should be thoroughly emptied and cleaned after about every 2,000 miles.

To empty and clean out the crankcase, remove the drain plug underneath (see Figure 3). Drain off all the oil, which will drip more readily if the engine is warm when this operation is commenced. The drain plug should then be reinserted and properly screwed up, and three or four pints of paraffin, **not petrol**, poured into the crankcase through the crankcase oil filler (see Figure 6). With the sparking plugs removed, turn the starting handle vigorously for a few minutes so as to circulate the paraffin through the oilways, which will thoroughly cleanse the lubricating system. The drain plug should be again removed and the paraffin drained away, care being taken to see that no paraffin is left inside the engine.

The filter in the base of the crankcase can be cleaned at the same time and the starting handle again turned for about a minute to ensure that neither old oil nor paraffin remains.

Do not run the engine under power until the supply of oil in the crankcase has been renewed.

After allowing ample time for the paraffin to drip from the crankcase, insert the drain plug and carefully screw up so that it is perfectly tight. Open the overflow oil tap, or oil level cock (see Figure 5) by moving the lever to the "open" position. Pour in the lubricating oil through the filler (see Figure 6) until it drips from the overflow tap. Leave this tap open for a few minutes to allow the oil to distribute itself evenly, and pour in a further slight quantity if necessary (see previous instructions on opposite page). Turn the lever to the "closed" position. **Do not forget this.**

Note. When refilling the crankcase with oil see that the car is standing on level ground. If the crankcase is tilted, even at a slight angle, it is impossible to gauge exactly whether the correct amount of oil has been poured in.

TAPPET ADJUSTMENT.

Grinding in the valves slightly reduces the distance or clearance which should be maintained between the push rods and tappet heads.

The clearance can be corrected and any slight wear counteracted by means of the separate hardened steel pin which is screwed into the split end of each rocker arm. 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, of course, be fully open.

To adjust, loosen the lock-nut (see Figure 7) and with a screw-driver turn the pin until the correct clearance is obtained. Then securely tighten the locknut again.

The correct clearance for the inlet valve tappets is .006" (6 thousandths of an inch). The correct clearance for the exhaust valve tappets is .008" (8 thousandths of an inch). These clearances should be measured when the engine is at normal running temperature. The measurements may be accurately determined by the use of "feelers."

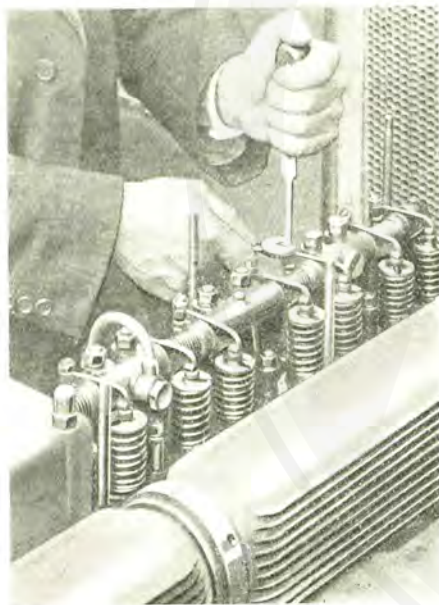


Fig. 7.

Showing method of adjusting the clearances for the valve tappets.

DECARBONISATION.

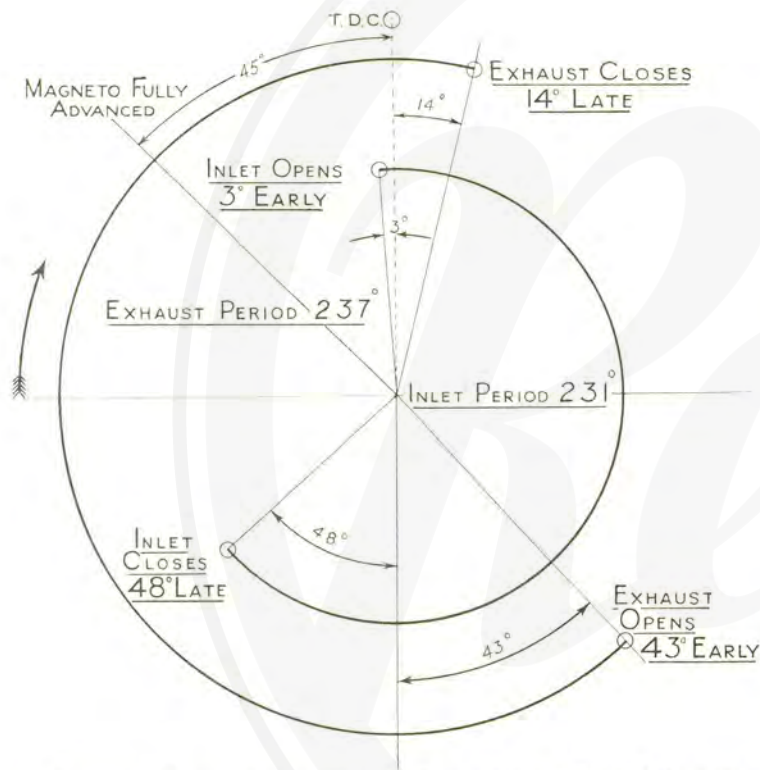
The utmost care should be taken when any adjustments or replacements are made and this applies particularly to such matters as decarbonisation and periodical overhaul. The work should be carried out only by skilled mechanics. Naturally our own repair and service depots are best fitted to deal with repairs and overhauls to these cars, but if these are not within convenient reach the work should only be entrusted to a thoroughly competent motor repairer.

ELECTRICAL EQUIPMENT.

The electrical equipment fitted to the 30 h.p. and 35 h.p. models is described on page 17 (magneto and sparking plugs) and pages 23 and 24 (wiring diagram and details of dynamo, battery, etc.) Both the magneto and dynamo are mounted on the near side of the engine. The electric starter is contained in a housing cast integrally with the gearbox and clutch casing. It has a Bendix type engagement. See illustration on page 7.

ENGINE AND MAGNETO TIMING.

On the following page a diagram is given which shows the timing for the engine and magneto of the 30 and 35 h.p. eight-cylinder Sunbeams. 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 30 H.P. AND 35 H.P. ENGINE.

Fig. 8.

Engine and Magneto Timing Diagram for 30 h.p. and 35 h.p. eight-cylinder Sunbeams.
Firing Order of Cylinders, 1, 3, 7, 4, 8, 6, 2, 5.

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" to .015", 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 special magneto oil and the quantities given here should not be exceeded. The following points should be lubricated every 3,000 miles; 2 drops on the contact breaker cam pad, 1 drop on the wick in the contact breaker pivot pin, 6 drops in the driving end cup and 12 drops in the distributor end cup.

These instructions with regard to lubrication are given on a plate affixed to the magneto itself.

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.

The special instruction book issued by the magneto manufacturers 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 not exceed .02".

CARBURETTER.

The Claudel-Hobson model M.M.Z. is fitted to the 30 h.p. and 35 h.p. models. This is of the diffuser type, being 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 225 c.c. main jet is the most satisfactory size for use on the standard 30 h.p. and a 210 c.c. jet on the 35 h.p. model and these sizes are fitted. Except in very rare instances it is inadvisable to make any alteration or to spend needless time in experimenting. Obviously the size of jet fitted has been standardised only after exhaustive tests, and for all round running cannot be improved upon.

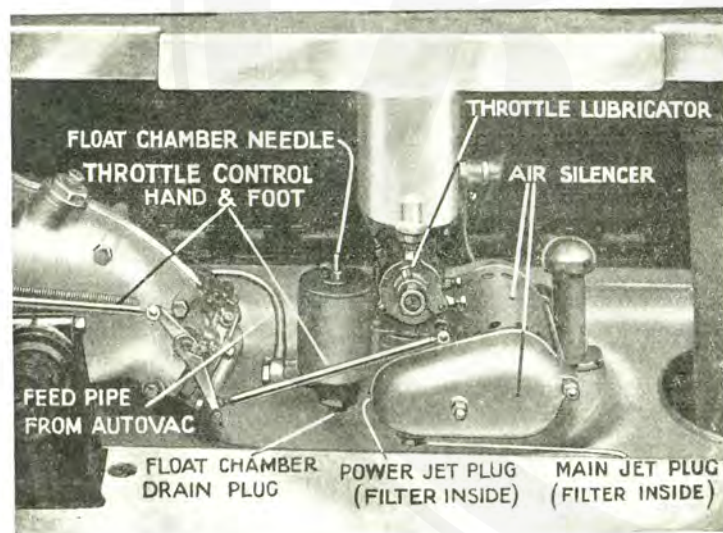


Fig. 9. Showing Carburetter and Controls.

If adjustment should be necessary, the following points must be borne in mind. Under no circumstances should the diffuser be tampered with, and adjustment should be confined to the following points:—

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

The petrol level is set by the makers at from 3 $\frac{m}{m}$ to 6 $\frac{m}{m}$ 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.

The main jet, see Figure 9, can be taken out by removing the centre plug at the base of the carburetter and then unscrewing the jet with the special key provided with the tool kit. The "pilot" or slow running jet is screwed into this. At the back of the plug through which the main jet is extracted is a second hexagonal plug. By removing this the power jet can be withdrawn. There is a filter inside each plug which should be cleaned periodically.

A full explanation of the working of the carburetter is given in the booklet issued by the carburetter manufacturers.

ADJUSTMENTS FOR BENZOLE, Etc.

Benzole and petrol require slightly different settings to obtain the best results, but an adjustment can be found which will serve equally well when running with either fuel.

Generally speaking, the best results with benzole are obtained by having one size smaller jet, though if the carburetter has been in use with petrol with the air screw screwed well in, the necessary extra supply of air for benzole may possibly be obtained by withdrawing this screw. Further adjustments may then be made in the usual way.

Very good results can be obtained from a mixture of petrol and benzole of good quality in equal quantities, the standard carburetter setting being used.

AUTOVAC FUEL SUPPLY SYSTEM.

The fuel is fed to the carburettor 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.

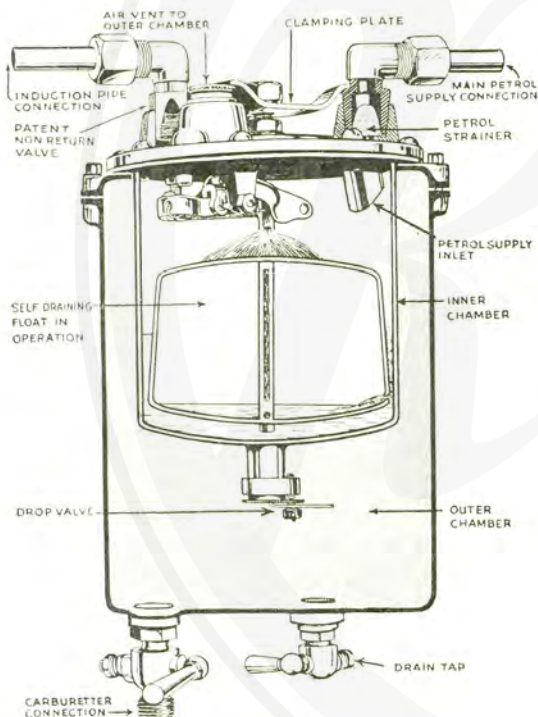


Fig. 10.
Sectional view of Autovac.

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**. This strainer is provided as a screen to collect all foreign matter which might otherwise get into the Autovac and be carried through to the carburettor. Note exact position when removing the strainer to ensure replacement being properly made.

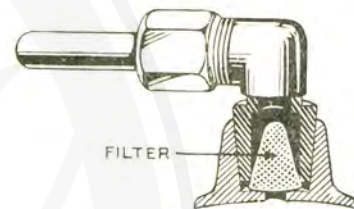


Fig. 11.
Showing Filter or Strainer at end of main supply pipe to Autovac.

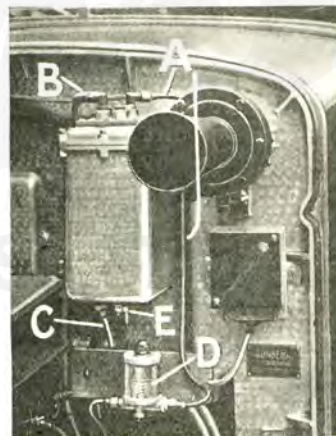


Fig. 12.
Showing position of Autovac. A is the Pipe to main Fuel Tank; B the Suction Pipe; C the Pipe to Carburettor; D Filter; E Drain Tap.

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.

AIR VENT CAP.

In the air vent cap of the Autovac four holes are drilled, which allow an

FUEL SUPPLY--IMPORTANCE OF CLEANLINESS.

atmospheric condition to be maintained in the outer or emptying chamber, and these must always be kept clear of paint, dirt or other kindred substances. If the cover has been removed for inspection, when replacing care should be taken to see that the air port corresponds with the port leading to the outer chamber.

A filter (see D, figure 12) is fitted between the Autovac and the carburetter. This can easily be dismantled for cleaning.

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 carburetter. 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. These comprise the filter in the filler of the fuel tank, the filter or strainer on the Autovac (see figure 11), the filter underneath the Autovac (see D, figure 12), and the two filters in the carburetter. 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 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.

If the carburetter jet tube becomes choked through the presence of grit or dirt, unscrew the plug at the base of the carburetter casing and the jet can then be unscrewed from its seating and the obstruction removed. See pages 18 and 19, which deal more fully with the carburetter.

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

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

ELECTRIC LIGHTING & STARTING EQUIPMENT

ELECTRICAL EQUIPMENT.

Rotax electrical equipment is fitted to the 30 h.p. and 35 h.p. Sunbeam models. For information as to the general care and maintenance of this equipment we recommend owners to consult the comprehensive instruction book published by Rotax Ltd. This is supplied gratis.

DYNAMO.

The Dynamo fitted is the Rotax model B.T. 8, this being driven in tandem with the water pump and magneto. The normal charging rate is 10 amps. at 20 m.p.h., and the speed of "cutting in" 12 m.p.h. on top gear.

STARTING MOTOR.

The Starting Motor is the Rotax M.T. 65, 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 ampere-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 70 candle power, the side lamps 6 candle power, and the tail lamp 6 candle power.

WIRING DIAGRAM.

A complete wiring diagram is given on page 24. On all points affecting the general maintenance of equipment, see the Rotax instruction book.

ELECTRICAL EQUIPMENT. WIRING DIAGRAM.

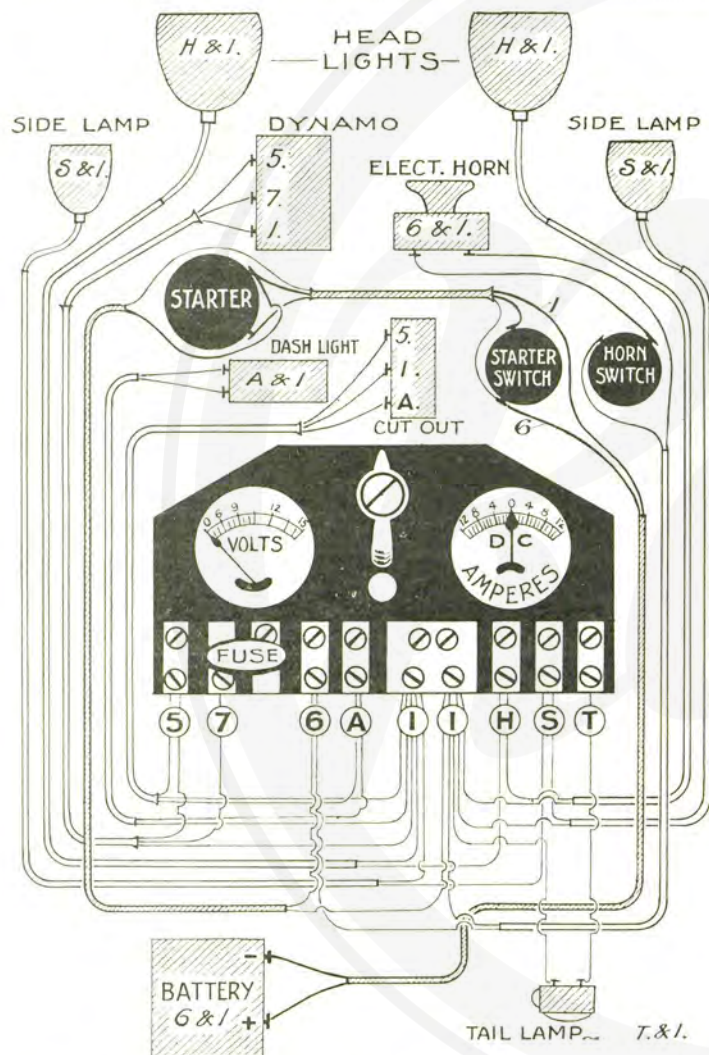


Fig. 13.

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

FOCUSSING HEAD LAMPS

The Rotax head lamps fitted to the 30 and 35 h.p. Sunbeam models are internally wired and fitted with an externally operated arrangement for focussing.

From the sectional view, Figure 14, it will be seen that a screw head is placed in a recess at the back of the lamp body. This may be turned by using a coin or screw-driver and the bulb moved backwards or forwards until the desired position is obtained. If the light is reflected on to a white object, a sheet for instance, the correct adjustment may easily be arrived at, *i.e.*, when the light reaches the highest point of brilliancy with a total absence of shadows.



Fig. 14.
Sectional view of Head Lamp.

It is seldom necessary to re-adjust the bulb when once it is set, but it is always advisable to do this when fitting new bulbs.

To remove front of head lamp, the round-headed screw which passes through the tag of the name-plate should first be removed, and the front turned to the left as indicated by the arrow stamped on the rim of each lamp.



Fig. 15.
Side view of Head Lamp.

WATER PUMP.

As shown in Figure 16, two glands are provided to prevent leakage from the water pump. These must be kept well packed with any standard gland packing. If any leakage is noticeable, first tighten up the gland nuts. Should the leakage persist, drain all the water from the radiator and cylinder block, as explained below.

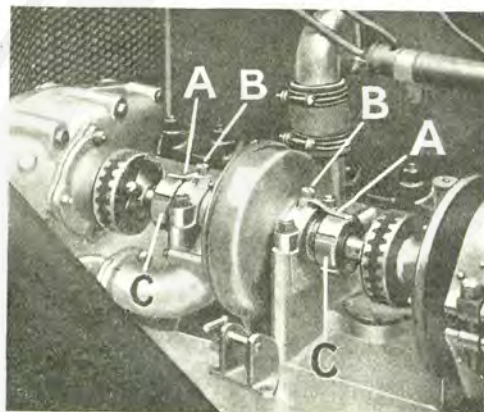


Fig. 16.
Showing the Water Pump and Glands which should be packed when required to prevent leakage.

Unscrew the small pins "B" which retain the springs "A" to allow the gland nuts "C" being 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 nuts and tighten the locking nut and pin.

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; also from the small cock on the water pump. 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, between the first and second holding down studs (see "L", Figure 4). The position of the water pump cock is shown at "I," Figure 3 (page 7).

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

STEERING GEAR.

The steering fitted on the 30 and 35 h.p. Sunbeams is of the screw and nut type. This method has been found very efficient. The surfaces in contact are of large area, the steering being very easy in operation, and there is an absence of all backlash. Owing to the simple design no adjustment is necessary.

A lubricator is fitted in the plug on the steering box (see Figure 17), and the box should be regularly filled with oil.

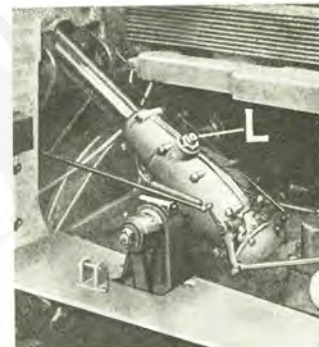


Fig. 17.
Keep the Steering Box well lubricated through the lubricator shown above.

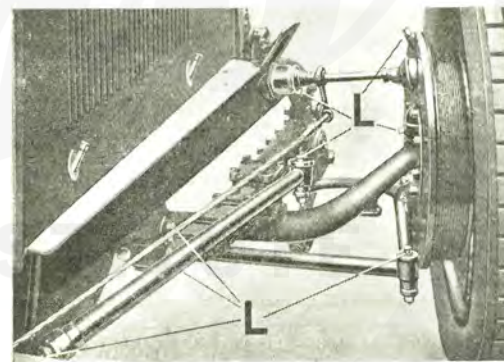


Fig. 18.
Showing Lubricators on steering rods.

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 when the car is standing, they should be assisted by hand, and not turned by the steering wheel alone.

The lubricators on the steering side rod, etc., are shown in Figure 18. Inject oil regularly in accordance with the instructions given on the lubrication diagram at the front of this book.

CLUTCH.

The clutch is of the two-plate type in which two spring steel discs, to which are riveted the Ferodo frictional media, act as driven plates. These are mounted upon a hub of large diameter, the outer circumference of which is serrated to provide for the sliding of the plates mounted thereon, and to receive their drive. The driven hub is mounted upon the splined forward end of the gear box stem wheel. The driving plates are three in number; these are of ground steel, and actuated by operating pins. Withdrawal is by three levers of normal design so proportioned that there is a reduction of pressure at the withdrawal ball bearing. The clutch stop is brought into action automatically when the clutch pedal is pressed down sufficiently. Twelve clutch springs are provided to give the necessary spring pressure for clutch action. Although rarely required the clutch may be adjusted by means of the three levers which are fitted at equal distances round the clutch plate. One of these is shown in Figure 19. To increase the pressure, loosen the locknut and screw the pin "A", Figure 19, until any existing slackness is taken up. The clearance between the pin "A" and the operating pins should be .020". This is important.

Fig. 19. Showing one of the Clutch Adjusting Pins.

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. This is more easily effected if the oil is first warmed. Usually this operation will be required about once every three months.

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. Do not forget to screw the plug up tightly after filling with oil. Use only Castor Oil.



Fig. 20. Showing Oil Filler in Gear Box.

SPECIAL NOTE.

As the Servo motor mechanism is lubricated through the gear box **CASTOR OIL** must be used. Castor Oil should also be used for the lubrication of the large joint at the front end of the torque tube on the 35 h.p. model (see Figure 21).

On the change speed lever shaft is an oiler. Inject oil periodically to ensure the shaft sliding easily.

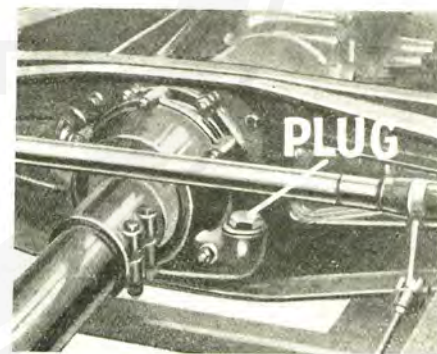


Fig. 21. Use Castor Oil in Filler shown above.

LUBRICATING REAR AXLE.

At the back of the axle casing, as shown in Figure 22, 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 the bottom screw thread in the plug hole through which it is filled. This lubrication MUST NOT BE NEGLECTED.

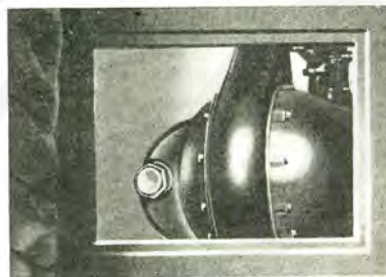


Fig. 22.

Unscrew plug to replenish oil supply in rear axle. The oil plug is reached through the opening under the rear seat as shown.

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 on lubrication diagram.



Fig. 23.

When jacking up the rear axle make sure that the jack is placed beneath one of the special seats or pads provided

THE BRAKING SYSTEM.

With a large and powerful type of car such as the eight-cylinder Sunbeam, a reliable and thoroughly effective braking system is most necessary. Our wide experience in connection with four-wheel braking has enabled us to devise a braking system giving exceptional stopping powers with extreme smoothness of application.

Brakes on all four wheels are applied by pressure on the brake pedal. The braking is assisted by a Servo motor, thus providing the requisite braking power without undue physical exertion on the part of the driver. The braking power is applied progressively and the steering is not affected in any way by the action of the front wheel brakes. The Servo motor is driven by worm gear from the main shaft of the gear box and consists of a revolving drum, inside which are placed two brake shoes connected with the brake shoes in the drums on the road wheels. A differential of the bevel type is incorporated in the mechanism and this acts as a compensating gear between the inner and outer brake connections. When pressure is applied to the brake pedal the brake shoes in the Servo motor drum are caused to expand and come in contact with the interior periphery of the drum, the constant rotary motion of which increases the braking effort of the road wheel shoes by pulling these still tighter on their drums. An important feature of this braking system is that directly the road wheels tend to become locked and cease rotating, the Servo motor drum automatically ceases to revolve and the braking pressure is released so that the road wheels are again free to rotate. Thus, with this system, it is impossible for the road wheels to remain locked no matter what amount of pressure is exerted on the brake pedal by the driver.

The front wheel brakes are actuated by cables from the Servo cross shaft, the front brake shoes being of equal size, as shown in Fig. 29.

The rear brakes are actuated by rods, the movement being carried from the Servo brake by a rod to the cross shaft carried in the bearings on the adjacent cross member of the frame, and thence by rods on either side of the frame to the rear wheel shoes.

The handbrake operates separate shoes in the rear wheel drums and is quite independent of the Servo motor and the four wheel brakes operated from the pedal.

This four-wheel braking system, both as regards design and operation, is thoroughly reliable, and enables high average road speeds to be maintained with perfect safety.

LUBRICATION OF SERVO MOTOR.

It is important that only pure Castor oil should be used for gear box lubrication on the 30 h.p. and 35 h.p. Sunbeam models. This is dealt with fully on page 29. The gear box should not be filled with oil beyond the point specified as the correct level. The bearings and bushes of the Servo motor mechanism are lubricated by oil supplied by gravity from the gear box itself, and any surplus in the Servo mechanism automatically drains back again.

FOUR WHEEL BRAKE ADJUSTMENT. SERVO MOTOR SHOES.

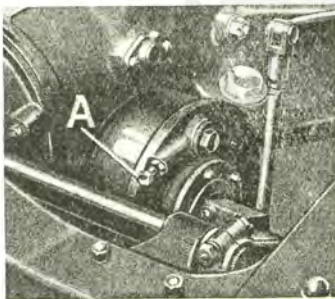


Fig. 24.
Showing adjusting nut "A" for
Servo motor shoes.

When any adjustment is required to the Servo motor shoes it is effected by means of the nut "A," Fig. 24, which should be turned in a clockwise direction until the required clearance is obtained. In practice this clearance should be as little as possible, as the wear on the Servo motor shoes is very slight and any unnecessary clearance represents a loss of motion and power in the whole braking system. It is strongly recommended that

this adjustment, or any adjustments to the Servo motor, should be carried out only by someone with experience of the principles of the Servo motor mechanism and its application to four-wheel brakes.

If adjustment is necessary to take up slackness on the rod connecting the brake pedal with the Servo motor, this can be effected through the jaw on the rod itself.

MAIN BRAKE ADJUSTMENT.

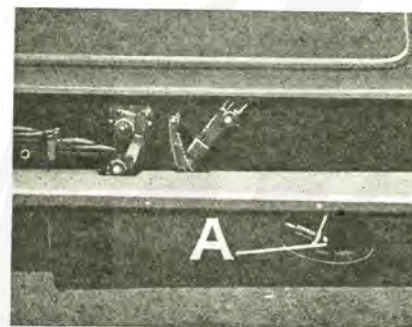


Fig. 25.
Showing one of the main brake adjusting nuts "A."

can then be adjusted independently as described later.

The 30 h.p. model has a slightly different method of adjustment, inasmuch as four adjusting points are provided for the four-wheel brakes. The main adjusting nuts are in similar positions to those on the 35 h.p. model, as shown in Fig. 25. There are also further adjusting points on the rods which lead from the cross shaft on the frame member to the rear wheels. These adjusting nuts are shown in Fig. 28 and in the same illustration will be seen the adjusting nuts for the rear wheel brake shoes, which are operated by the hand lever.

FRONT WHEEL BRAKE ADJUSTMENT.

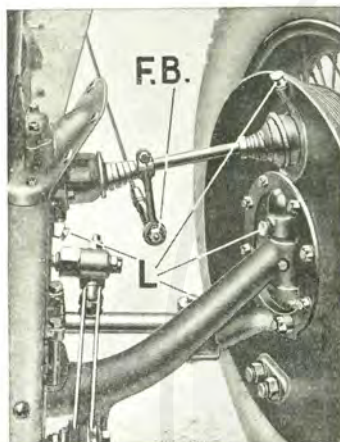


Fig. 26.

Showing front wheel brake adjusting nut, F.B.

The adjustment for the front wheel brakes is the same on both the 30 h.p. and 35 h.p. models. The brakes are operated by cables. At the end of each cable is an adjusting nut, marked F.B., Fig. 26, and any adjustment necessary is effected through these nuts. 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.

HANDBRAKE RE-ADJUSTMENT.

Both on the 30 h.p. and 35 h.p. models twin brake shoes are fitted on the rear wheels, the hand brake operating separate shoes to those actuated by the brake pedal through the Servo motor, as shown in Fig. 30. Adjustment for the handbrake shoes on the 30 h.p. model is made by means of the nuts "A" shown in Fig. 28.

Adjustment for the handbrake on the 35 h.p. model is by means of two nuts one of which is shown in Fig. 27.

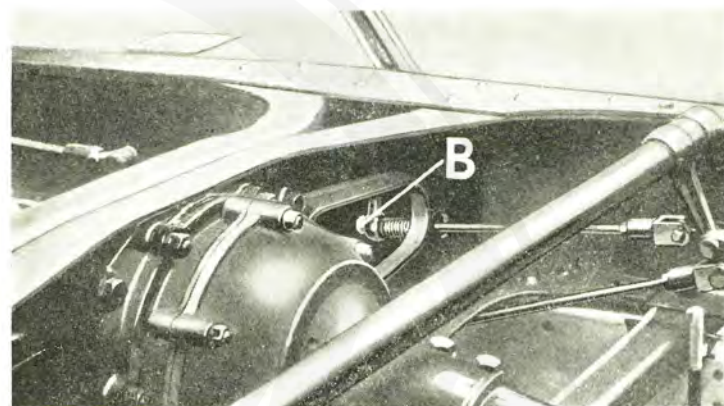


Fig. 27.

Showing independent adjusting nut for handbrake for 35 h.p. model. Adjusting nut is marked "B." There is a similar nut on the opposite side of chassis.

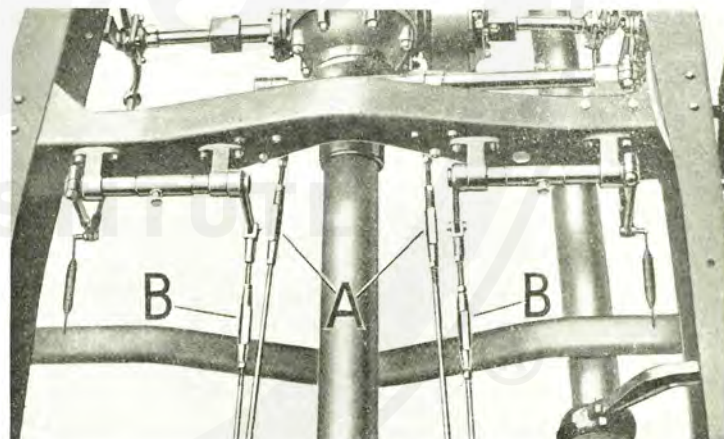


Fig. 28.

Independent adjustment for rear brakes for 30 h.p. Handbrake adjusting nuts marked "A," footbrake adjusting nuts marked "B."

REMOVING FRONT BRAKE DRUM.

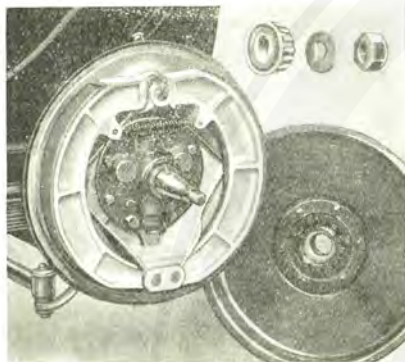


Fig. 29.
Front wheel brake with hub and brake drum removed.

and nut, are also detached during the operation.

REMOVING REAR BRAKE DRUM.

To remove a rear brake drum it is necessary only to unscrew the six nuts which retain this on the hub, see Fig. 30. If the drum should be too tight to pull off after the nuts have been unscrewed, tap it lightly round its outer edge with a mallet or raw hide hammer. Do

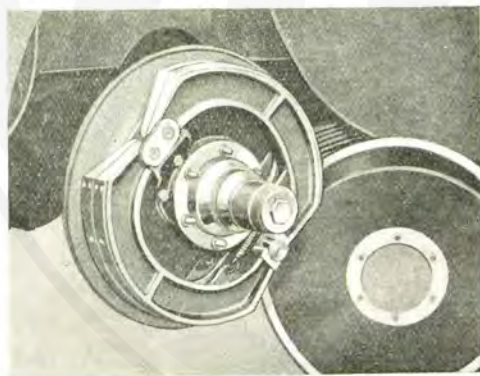


Fig. 30.
Rear wheel brake with brake drum removed.

not use an ordinary steel hammer, or the drum will be damaged. Figure 30 also shows clearly the twin brake shoes, the inner pair being those operated by the handbrake.

In the various illustrations referred to on this and the preceding pages the lubricators are marked "L". See pages 42 and 43 for further information regarding chassis lubrication. Instructions for lubrication of front and rear hubs are given on page 42.

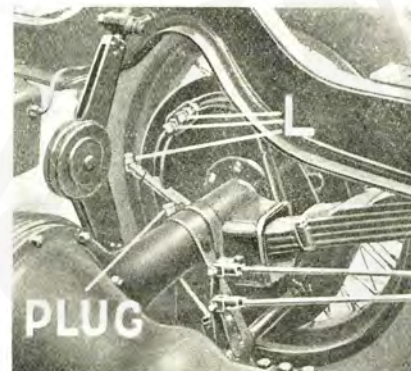


Fig. 31.
Showing Lubricators on rear brakes. The plug is for lubrication of Springs (see page 38).

Lubrication of the Servo motor is effected through the gear box, and as emphasised on pages 29 and 32 only pure Castor oil should be used.

SPRINGS.

The springing of the 30 h.p. and 35 h.p. Sunbeam Cars is designed to give the fullest comfort at all road speeds. 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

THE SPRINGS—LUBRICATION IS IMPORTANT.

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.

The lubricator which is on the cantilever spring seat underneath the spring, is a very important point and this must not be neglected. At the back of the rear spring shackle which is attached to the rear axle of the 35 h.p. model, a plug is fitted. See Figure 31. This should be unscrewed and the oil supply replenished every 250 miles. Oil should be injected regularly through the lubricators marked L. See also spring lubricators marked on Figure 32. 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.

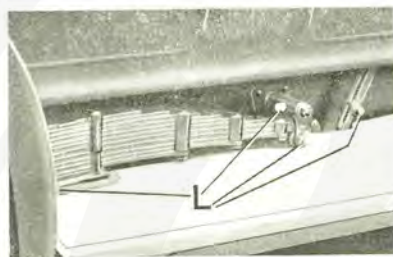


Fig. 32.
Showing Lubricators on Cantilever Spring Seat (on left of photograph) and Shackle.

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 33 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

THE SPRINGS—LUBRICATION IS IMPORTANT.

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 33). As the illustration clearly shows, this takes the weight of the car off the springs. Special clips are fitted on the springs as a self-shock absorbing device.

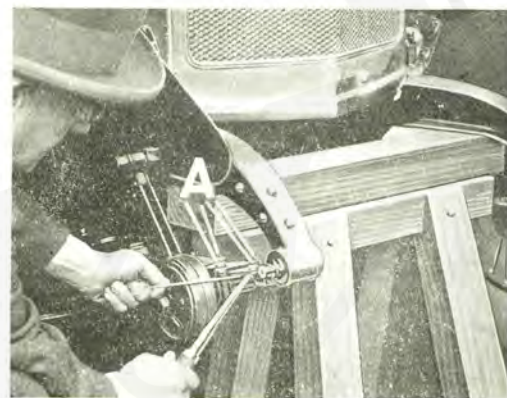


Fig. 33.
Showing method of Greasing Leaves of Front Springs. The Rear Spring Leaves should be similarly treated.

The nuts which secure these clips to the springs, some of which are marked "A" in Figure 33, should be slacked off before lubricating the leaves.

The leaves can then be easily separated by means of a screwdriver or similar tool, and the graphite grease inserted between the leaves with a thin bladed knife.

Before the front corners can be raised, as shown in Figure 33, the front shield must first be detached, otherwise there is insufficient room to insert a strong baulk of timber. Removing this shield will also prevent it being damaged.

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.

SPECIAL NOTE. It is most important when jacking up the rear axle of the 35 h.p. model to make sure that the jack is placed beneath one of the special seats or pads provided. Jacking up at any other point may damage the axle. The off-side pad is shown in the illustration on page 30.

SHOCK ABSORBERS.

Hartford Shock Absorbers are fitted to the springs, both front and rear, on the 30 h.p. and 35 h.p. Sunbeams.

The shock absorbers are set to the proper initial tension when each car leaves our works, and no change should be made in this adjustment until the car has been driven at least 100 miles, and not even then unless the spring action seems too free or not free enough. The frictional resistance can be increased by turning the centre adjusting nut to the right (clockwise movement) by not more than one graduation at a time. If the spring action feels stiff, the frictional resistance can be reduced by turning the adjusting nut to the left (anti-clockwise movement).

Further adjustment may only become necessary after the car has run several thousands of miles, and even then the adjustment should not be altered unless the spring movement seems very free. In this case the indicator should be moved not more than half a graduation at a time. The full benefit of Hartford Shock Absorbers is felt when the car is travelling at high speed, and especially over bad roads when the springing action is most severe. When testing as to the correctness of the adjustment, the observation should be made when the car is travelling at a comparatively high touring speed.

IMPORTANT. The frictional resistance required to control the action of the springs is comparatively slight, and when adjustment is made the pressure should not be increased more than is absolutely necessary to obtain the desired results.



Fig. 34.
Showing Shock Absorbers in position and Adjustment Indicator.

DETACHABLE WHEELS.

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.

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. Slackness will not occur if the lock nut has been correctly put on.

TYRE PRESSURES.

The following are the minimum tyre pressures recommended for the 30 h.p. and 35 h.p. models, and it is important that the pressures should not be allowed to fall below these figures:

	30 h.p. Model.	35 h.p. Model.
Front Tyres	40 lbs. per sq. inch.	35 lbs. per sq. inch.
Rear Tyres	35 lbs. per sq. inch.	35 lbs. per sq. inch.



Fig. 35.
Showing lock nuts of Detachable Wheels.

REAR HUBS.

The rear hubs are very simply removed, no special tools being necessary. When the wheel and brake drum have been removed, see Figure 36, a castellated circular nut will be seen, in the position shown in the accompanying illustration. "B" is the castellated nut, "A" is a locking plate held in position by a small set screw. If this locking plate is removed and the circular nut "B" unscrewed, the rear hub, complete with the shaft, can easily be withdrawn. The nut "B" remains on the axle.

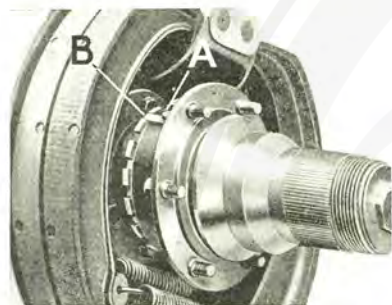


Fig. 36.
Showing Locking Plate and Screw (A)
and Castellated Nut (B).

When replacing it is very important that care should be taken to screw up tightly the nut "B" and make sure that the locking plate "A" is firmly in position and the set screw properly screwed up. A spanner is provided to facilitate removal of the locking plate on the 35 h.p. model. (See "A," Fig. 38.)

We recommend Gargoyle Mobilubricant Soft Grease for the lubrication of front and rear hubs.

THE OIL GUN.

Again it cannot be too strongly emphasised that lubrication must be thoroughly and regularly carried out. No manufacturer can accept responsibility for wear or damage caused through neglect to pay proper attention to lubrication.

The lubricating diagram in the front of this book should be carefully followed. In addition, lubrication is referred to in most chapters dealing with the engine and chassis parts, so that no lubricating points can possibly be missed by the reader of this book.

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. 37.
The "Tecalemit" Oil Gun.

We recommend the use of "Shell-Mex" Gear Oil, or one of the other oils specified on the lubrication diagram, 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 37, 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 pushed on to the lubricator as far as it will go by a forward movement, and lubricant can then be forced in at very high pressure. One of the ball lubricators as fitted to the chassis is shown at A, Figure 37.

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 38 and 39.

∴ THE 30 H.P. AND 35 H.P. TOOL KIT. ∴



Fig. 38.

Complete Kit of Tools supplied with the 30 h.p. and 35 h.p. Sunbeam Cars.
The "C" type Spanner (marked "A") for removing Rear Hub Locking Plate is supplied with 35 h.p. model only.

∴ THE 30 H.P. AND 35 H.P. TOOL KIT. ∴

Complete list of the tools provided with each 30 h.p. and 35 h.p. Car :—

- 1 Double ended spanner, $\frac{1}{2}$ " and $\frac{5}{8}$ ".
- 1 Double ended spanner, $\frac{3}{8}$ " and $\frac{7}{16}$ ".
- 1 Double ended spanner, $\frac{1}{2}$ " and $\frac{5}{16}$ ".
- 1 Double ended spanner, 6 m.m. and 8 m.m.
- 1 Double ended spanner, 10 m.m. and 12 m.m.
- 1 Double ended box spanner, 6 m.m. and 8 m.m.
- 1 Double ended box spanner, 10 m.m. and 12 m.m.
- 2 Box spanners, $\frac{3}{16}$ ", $\frac{1}{4}$ " and $\frac{3}{8}$ ", $\frac{7}{16}$ ".
- Box Spanner for differential shaft nut.
- Box Spanner for sparking plugs.
- Spanner for hub grease cover.
- Spanner for valve tappet adjustment.
- Spanner for removing plug in carburetter.
- Spanner for removing hub caps.
- Spanner for removing fuel tank cap.
- Spanner for adjusting water pump gland.
- Spanner for magneto.
- 1 small adjustable spanner.
- 1 large adjustable spanner.
- 2 tommy bars for use with all box spanners.
- Lifting Jack.
- Oil can.
- Set of valve thimbles.
- Valve lifting tool.
- Carburetter jet key.
- Tyre pump.
- Oil gun.
- Set of valve springs.
- 1 hammer, 2 screwdrivers, pair of pliers, punch, chisel, sponge cloth, tool bag.
- "C" Type Spanner for Rear Hub Locking Plate (supplied with 35 h.p. model only. See "A," Fig. 38.)

SUNBEAM COACHWORK.

To preserve the fine paintwork and finish of Sunbeam cars the following suggestions are made as a result of our own wide experience. These apply to painted and varnished cars. On cars finished in Cellulose, mud and dirt can be removed with a damp sponge without the necessity for hosing down with water, and the car afterwards polished with one of the special polishes recommended for Cellulose finish.

WASHING THE CAR. The most important thing in regard to washing the car is that whenever mud and dirt has been accumulated it should be removed at the earliest opportunity. With the prevalence of tar surfaced roads, nearly all mud contains particles of tar, and if these are allowed to remain in contact with the varnish the lustre will quickly suffer.

Mud and dust should never be removed except by washing with **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.

Cleaning materials 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 they are used too frequently.

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 on leather upholstery as there is often a risk that the leather may be adversely affected by some ingredient in the polish itself. An occasional application of a little Neats foot oil will tend to improve the appearance, but the oil must be applied sparingly and none left on the surface to damage or mark the passenger's clothing.

N.B.—Neats foot oil—or oil of any kind—must not be used on cars upholstered in Furniture Hide.

Cars upholstered in cloth also require only occasional 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.

Landaulette models should always be garaged with the folding rear portion raised. When the rear portion is lowered care must be taken to see that the leather is folded neatly in position. The rear window lights must **always** be dropped before the rear portion is raised or lowered.

INDEX.

	PAGE.
Autovac	20 to 22
Brakes	31 to 37
Carburetter	18 & 19
Chassis dimensions	2
Cleaning out Crank Case	12 & 13
Clutch	28
Coachwork, care of	46 & 47
Decarbonising	15
Driving, general hints	5 & 6
Engine, nearside illustration of	7
Engine, offside illustration of	8
Electric Lighting— Equipment	15 & 23 to 25
Battery	23
Focussing Headlamps	25
Starting Motor	23
Wiring Diagram	24
Engine Timing Diagram	16
Four Wheel Brakes	31 to 37
Do. Adjustment	32 to 35
Fuel, Filling up	22
Gear Box	29
Lubricating Oil	10

	PAGE.
Lubrication— Axle, Rear	30
Brakes	37
Engine	10
Gear Box	29
Hubs	42
Speedometer Drive	28
Springs	37 to 39
Steering Gear	27
Magneto	17
Magneto Timing	15 & 16
Oil Gun, use of	42 & 43
Oil Pressure System	11 & 12
Radiator	26
Rear Axle	30
Rear Hubs	42
Running Hints	5 & 6
Shock Absorbers	40
Sparking Plugs	17
Speedometer Drive	28
Springs, Front	37 to 39
“ Rear	37 to 39
Steering Gear	27
Steering Wheel, illustration of	5
Tool Kit	44 & 45
Tyre Pressures	41
Upholstery, care of	47
Valve Tappet Adjustment	14
Water Pump	26
Wheels	41

This Handbook of Instructions
for the Eight-cylinder
SUNBEAM CAR
is the property of

*In the event of loss, will finder kindly
return this book to above address.*