

Fig. 37.

[Illustration by courtesy of the Standard Car Review

Engine and Gear Box Section

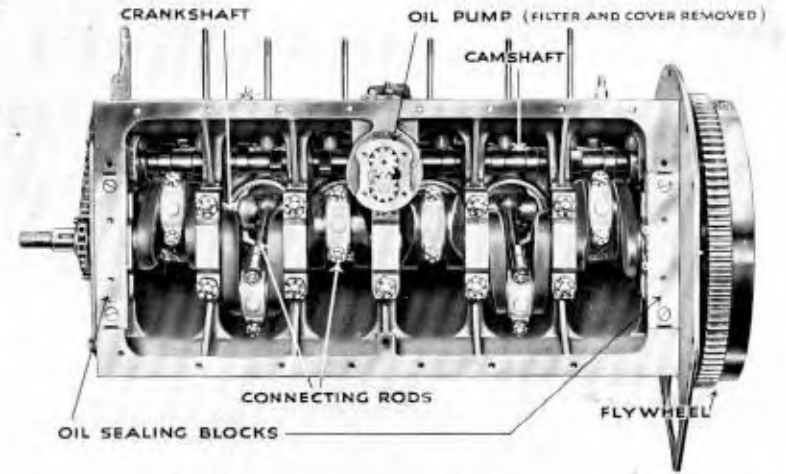


Fig. 38. S.S. I.

Engine Details, View Inside Crankcase.

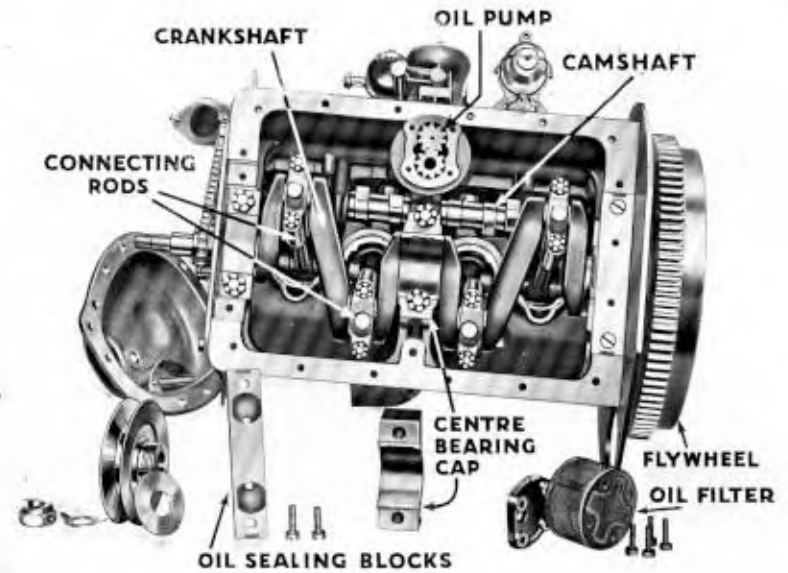
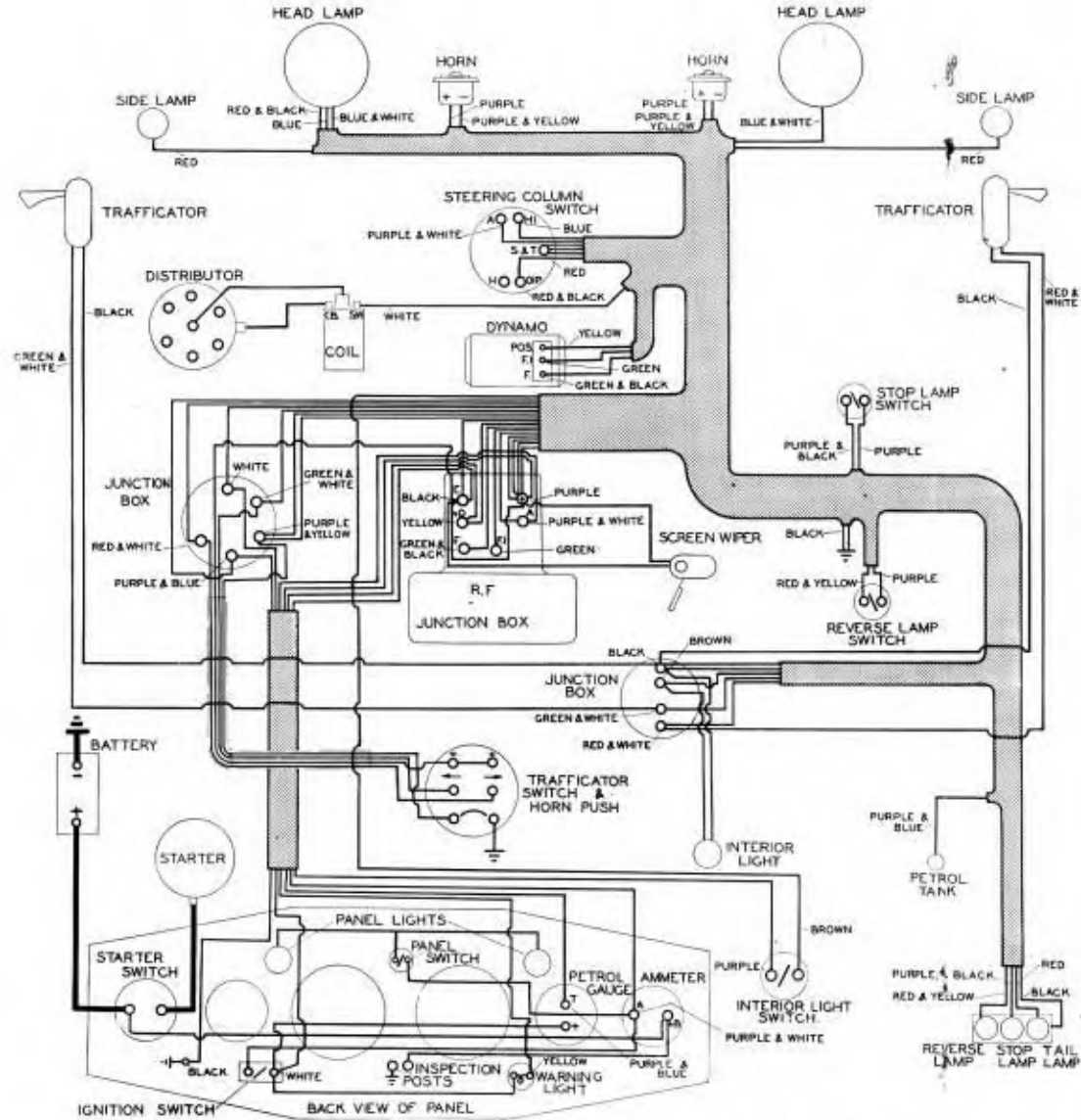


Fig. 39. S.S. II.

Engine Details, View Inside Crankcase.



Shaded portions show where cables are braided together in a protective sheathing.

Colours indicate coloured sleeveings on ends of leads.

NOTE.—S.S. 1. Open 4-Seater Model. The panel arrangement is slightly different from that shown above, but the wiring is the same.

Fig. 40.

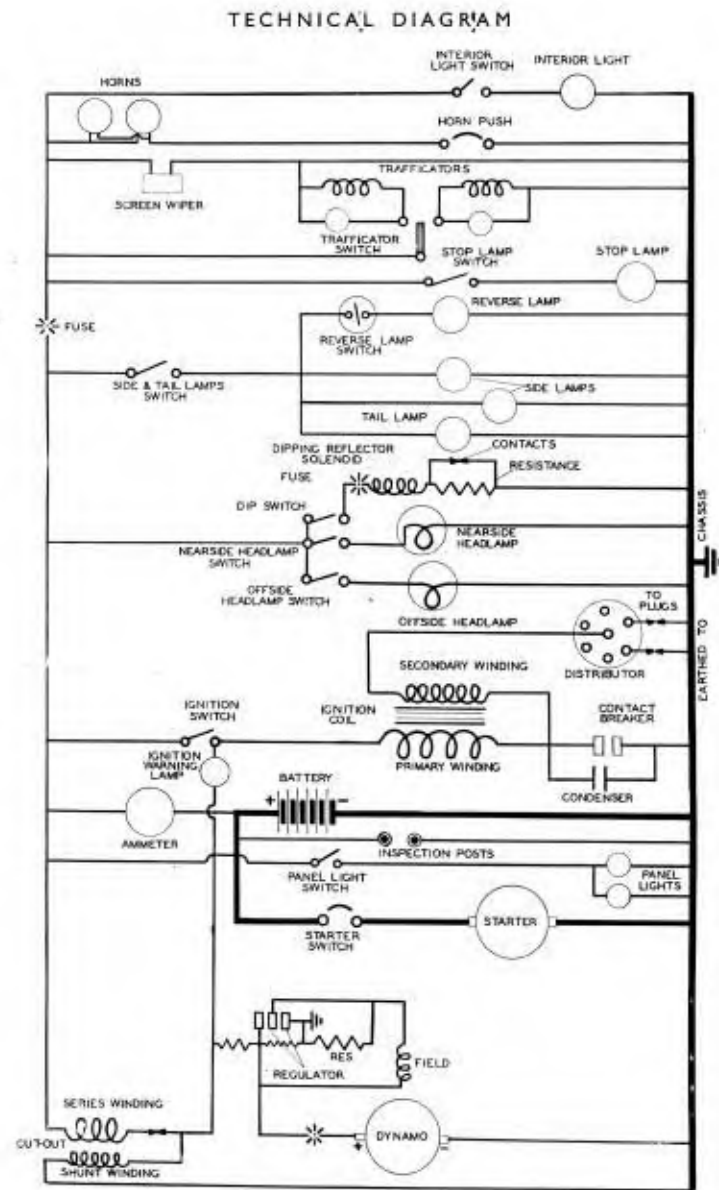


Fig. 41.

WIRING DIAGRAMS

Engine. The side valve engine has a detachable cylinder head and is built in unit construction with the gearbox, the whole unit being insulated from the frame by a rubber mounting for the purpose of absorbing vibration.

Crankcase and cylinders are cast in one piece and made of a special wear-resisting cast iron. The cylinder bores of Standard engines are notable for accuracy and fine finish.

Pistons are made of Aluminium alloy and each has three compression rings in the head, the lower one also acting as an oil scraper ring. The skirts fit closely on the pressure faces, preventing piston slap, but have a clearance at right angles to these faces, so allowing the skirt to accommodate itself to the cylinder bore when the engine warms up.

The light alloy connecting rods are of "I" section in the shank and have bronze bushes pressed into the little ends. The big end bearings are made of bronze and are lined with white metal cast directly on the inner bearing surfaces.

Tubular case hardened steel gudgeon pins link the pistons and connecting rods together and have pastilles fitted in the ends to provide end location.

The alloy steel crankshaft is supported in seven main bearings on the S.S. I., and in three on the S.S. II., the whole being designed in rigid proportion. Clutch thrust is taken by the rear bearing, which is provided with an ample surface for the purpose.

Case hardened harmonic cams are formed integrally with the camshaft and operate tappets, the flat cast iron faces of which are chilled to produce a hard wearing surface. The tappets are located in detachable guide blocks. The camshaft is mounted in four bearings, three on the S.S. II., and embodies a helical gear drive to the spur gear type oil pump mounted in the sump.

The camshaft and distributor are driven by roller chain provided with automatic chain tensioner, and the dynamo is mounted on a cradle; this allows the driving belt to be adjusted to correct tension.

Heat-resisting Silico-chrome steel is used for the valves, which are provided with renewable guides made of special wear-resisting iron.

The oil sump is of aluminium (pressed steel on S.S. II.), and embodies a separate anti-splash guard.

An aluminium housing encloses the flywheel and clutch and also forms the connection between the gearbox and engine.

Cooling System. Water circulation on all models is provided by a centrifugal pump, and the cooling is assisted by a six-blade fan in the case of the S.S. I. (four-blade on S.S. II.) mounted on an extension of the water pump shaft, which is driven by a belt from the crankshaft pulley. This belt also drives the dynamo, which is mounted at the side of the cylinder block.

Exhaust System. Exhaust gases are led away at the front of the engine near to the radiator, thus avoiding heat transmission to the interior of the car.

Although the silencer is particularly effective, it absorbs only a minimum of energy.

Carburettor. After exhaustive bench and road tests, we have found the R.A.G. Carburettor to be most suitable to this engine. The exhaust pipe is cast separately and provides a suitable hot spot for the induction pipe.

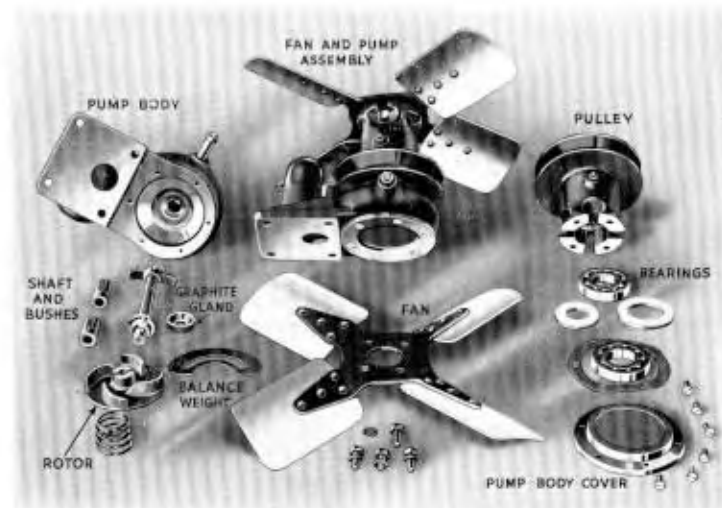


Fig. 42.

Water pump and fan.

A six-blade fan is fitted on the S.S. I.

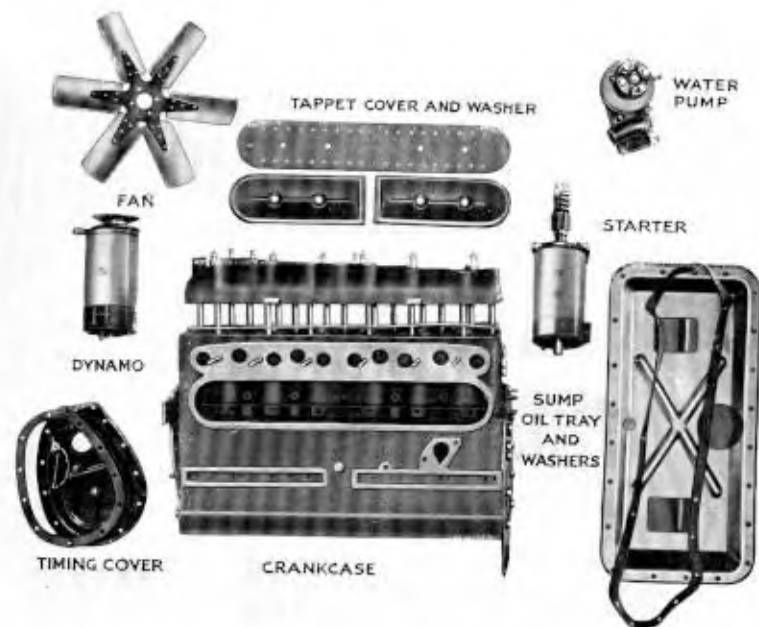


Fig. 43. S.S. I.

Engine details: Water pump and fan, etc.

GENERAL DESCRIPTION OF CHASSIS.

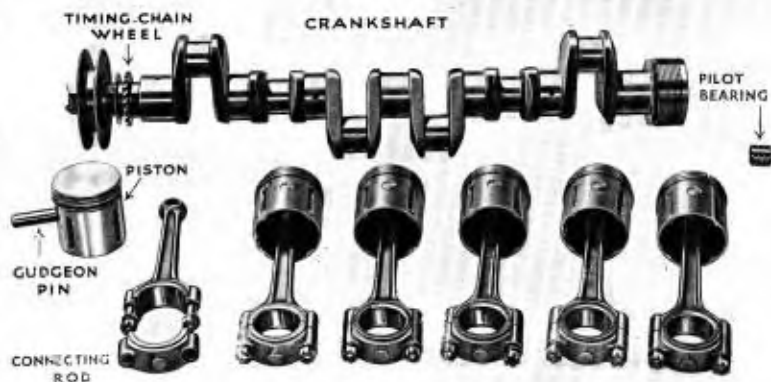


Fig. 44. S.S. I. Engine Details: Crankshaft, Pistons, Connecting Rods, etc.

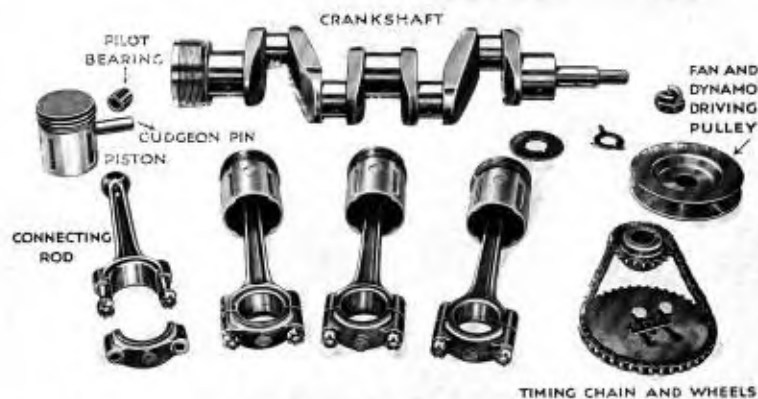


Fig. 45. S.S. II. Engine Details: Piston, Connecting Rods, Camshaft, Crankshaft, etc.

Empire Electric Clock. The hands can be set to time by turning the milled headed knob provided at the back of the clock.

As long as the battery remains in a charged condition the clock will continue to wind about once every four minutes, but in the event of the battery becoming discharged or very weak, a fuse fitted through an aperture in the back of the case will come into operation and cut the clock out of circuit, but it will never happen so long as the condition of the battery remains normal.

If a new fuse is required it is desirable when ordering to state :—

Type of Car.
Model.
Year.

The clock is sealed before leaving the Factory and guaranteed for 12 months provided the seals are not broken.

GENERAL DESCRIPTION OF CHASSIS.

ELECTRICAL SYSTEM.

A Lucas 12-volt earth return (or one wire) lighting and starting set is fitted, consisting of dynamo, automatic cut-out, starter, distributor and coil, switches, lamps, ammeter, screen wiper, horn, trafficators, fuses and accumulator.

In the "earth return" or "single pole" system the positive battery terminal is connected to the starter switch and the negative terminal to the frame. A single cable leads the current from the starter switch to the starter, which is "earthed" to the frame. In like manner, a single wire leads current from the "live" terminal of the starter switch through the ammeter and switches to the various points, which are also "earthed" to the frame. Thus when current flows along a wire it returns through the metal portions of the chassis to complete the circuit.

As the frame parts are not insulated, one cable should be disconnected from the battery terminal before removing any electrical unit, otherwise there is risk of a serious "short."

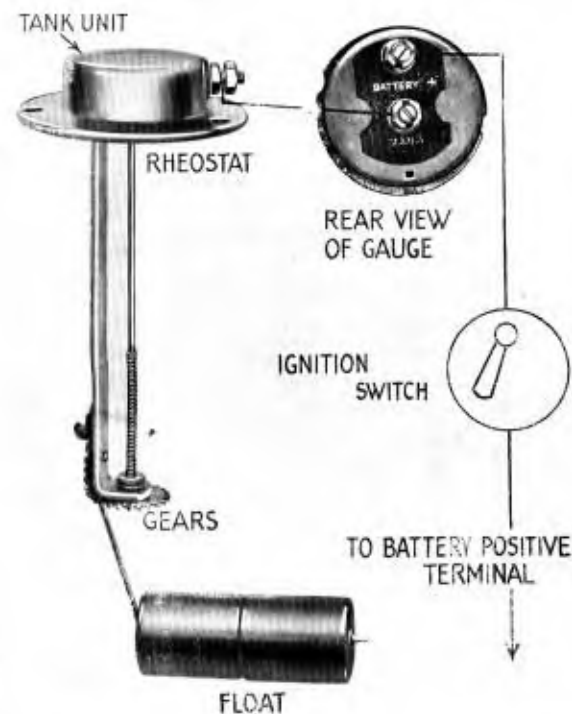


Fig. 46

Petrol Gauge Units.

Petrol Gauge. An electrical gauge fitted on the instrument panel indicates the amount of fuel in the tank and is brought into operation when the ignition is switched on. A rheostat is fitted in the top of the petrol tank and connected by an arm to the float which indicates the fuel level by setting the rheostat resistance in a corresponding manner. Thus each level has a different electrical resistance which is suitably indicated on the gauge.

ELECTRICAL SYSTEM.

The petrol tank is mounted at the rear of the frame and a fuel pump mounted on the engine draws petrol from the rear tank and supplies it to the carburettor at constant pressure.

The tank capacity is 12 gallons on the S.S. I., and 8 gallons on the S.S. II.

The dash unit, mounted on the instrument panel, consists of two coils spaced at 90 degrees and wound so that they will have like polarity in the faces exposed to the armature which is integral with the pointer. The face or dial has a scale graduated in degrees between "Empty" and "Full."

The tank unit, assembled in the petrol tank, consists of a housing enclosing a rheostat or resistance unit with a moving arm which is actuated through a pair of gears by a float arm assembly immersed in the fuel of the tank. All steel parts of the tank unit are Cadmium plated, the rheostat or resistance coil is Chromel wire wound on a Celeron core and the remaining parts are brass, thus making the entire assembly completely corrosion proof.

The outer terminal of the dash unit marked "Battery+" is connected by a wire to the ignition switch so that the petrol gauge is operated only when the ignition is turned "On." The centre terminal marked "Tank" is connected by a single wire to the terminal on the Tank Unit. The return circuit is accomplished through a "ground," as both the dash unit and tank unit are "grounded" in their respective locations.

When the petrol tank is empty, the float is at its lowest position and the rheostat in the tank unit is completely grounded. All of the current through the dash unit then flows through the coil at the "Empty" side of the indicator and the pointer is then moved to the "Empty" position.

As the tank is filled with fuel, the float rises. This moves the brush in the rheostat, and resistance is introduced into the circuit which grounds the "Full" coil in the dash unit, so that part of the current flows through this coil and the pointer is attracted away from the "Empty" to a position of balance between the two coils, its point of rest depending on the level of the fuel. The movement of the pointer is reversed, of course, as the fuel level goes down.

Owing to the design of the AC Petrol Gauge, current consumption is very low, between 1/6th to 1/10th ampere. As far as car operation is concerned, this amount of current is negligible and can be entirely disregarded.

The operation of this Gauge does not depend upon the strength of the magnetic field, therefore fluctuations in the battery voltage will not cause any error in the gauge reading.

The indicator or pointer remains steady at all times, due to a carefully calibrated friction damper incorporated in the tank unit to prevent moderate surging affecting the reading of the dash instrument. Also the dash unit has an inertia damper to prevent vibration of the pointer on rough roads.

Electric Starter. The starter pinion automatically engages with teeth on the flywheel when operated. When the engine fires the flywheel over-runs the starter pinion and automatically throws it out of engagement.

A spring loaded shock absorber is incorporated for the purpose of reducing the initial shock of pinion engagement.

The spindle is extended at the front of the starter and has a square end so that should the pinion ever jam it can easily be freed by turning the shaft with a spanner.

ELECTRICAL SYSTEM.

Ignition. The coil ignition set consists of a coil mounted close to the combined distributor and contact breaker, the latter being driven by an extension of the oil pump shaft. The red warning light incorporated in the instrument panel serves as a reminder that the ignition has not been switched off when the engine is at rest. If the ignition is left on under these circumstances, there is danger of current flowing through the coil and distributor and so discharging the battery. Although the red light may show when the engine is running slowly, it is not then a danger signal, but simply indicates that the dynamo is not generating sufficient voltage to actuate the cut-out.

After long service the warning lamp bulb may burn out and although this will not affect the ignition, the bulb should be replaced at the earliest opportunity by one of the same size and type.

Dynamo and Combined Cut-Out and Regulator Unit. The equipment consists of a specially designed dynamo and a regulator unit which enables the dynamo to give an output which varies according to the state of charge or discharge of the battery. When the battery is discharged the dynamo gives a high output, so that the battery receives a quick recharge, which brings it back to its normal state in the minimum possible time. On the other hand, if the battery is fully charged, the dynamo is arranged to give only a trickle charge which is sufficient to keep it in good condition without any possibility of causing damage to the battery by overcharging.

In addition to controlling the dynamo output according to the state of charge of the battery, the regulator provides for an increase of output to balance the current taken by the lamps or other accessories when they are switched on.

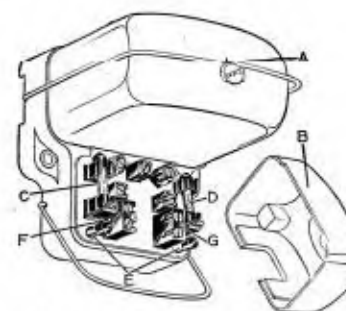


Fig. 47. Combined Cut-out and Regulator Unit.

Regulator and Fuse Unit type R.F.

- A Regulator and cut-out cover.
- B Fuse cover.
- C Auxiliary accessories fuse.
- D Main dynamo fuse.
- E Spare fuses.
- F Supply terminals for auxiliary accessories.
- G Earthing terminals.

As the car speed increases to 20 m.p.h. the dynamo output rises to a value which is most suitable for the particular conditions of the battery, and it will remain constant at all speeds higher than this.

ELECTRICAL SYSTEM.

The cut-out is operated by the dynamo voltage, and when due to increasing speed, the dynamo develops sufficient voltage to actuate the cut-out, the points make contact and so allow current to flow from the dynamo to the battery. When the engine slows down, the dynamo voltage falls below that of the battery and the reverse action takes place, i.e., the cut-out opens and thereby prevents the battery from discharging itself through the dynamo. Both the regulator and the cut-out are accurately set before leaving the Works, and do not need any adjustment; therefore the cover protecting them is sealed.

There are two fuses in this unit, which protect the circuits of the auxiliary accessories and also the main battery circuit. If all the accessories fail, or the dynamo ceases entirely to charge, inspect the fuse. If the fuse has blown, examine for faulty wiring and replace by one of the spare fuses provided. If the new fuse blows, the cause of the trouble must be found, and we advise that the equipment is examined by one of our Service Depots.

Never fit any fuse other than the standard Lucas fuse as originally fitted.

Battery. The battery forms a six cell single unit carried under the bonnet.

Lamps. An electrically operated dipping reflector is incorporated in the near-side lamp. The switch is conveniently mounted at the centre of the steering wheel, and when operated, causes the offside lamp to "go out" and the nearside lamp to "dip." The switch at the centre of the steering wheel gives either side and tail lamps or head, side and tail lamps, as required.

The dipper unit in the near side headlamp is protected by a fuse which is mounted alongside the unit. If the equipment fails, this fuse can be examined by removing the reflector unit. To remove the unit, first remove the lamp front, then take off the cork washer. This will leave a screw-head exposed. Remove this screw and turn the reflector unit in a clockwise direction to remove it.

There is also a switch connected to the brake pedal which operates the stop light, and on the S.S. I. a reversing light is operated on engaging reverse gear when the sidelamps are on.

"Trafficators." These are operated by a switch at the centre of the steering column. Movement of the switch to right or left raises the corresponding signal and at the same time lifts a cam fitted underneath the switch, so when the steering wheel is returned to the straight ahead position, it pulls back the switch to the "off" position and the signal falls. Further reference to these indicators on pages 38 and 91.

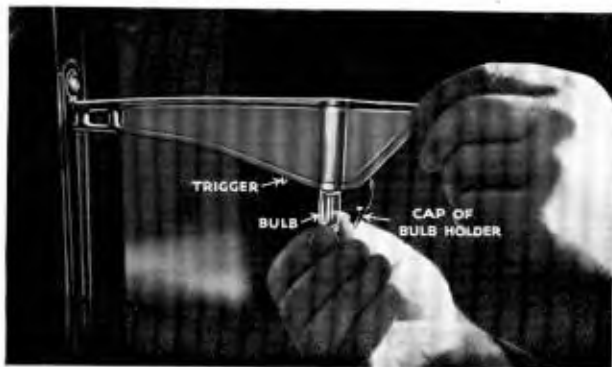


Fig. 48.
Removal of bulb
from "Trafficator"
arm.

HOW TO OBTAIN THE BEST SERVICE FROM
THE ELECTRICAL SYSTEM.**Battery.**

1. Once a month inspect the acid level in each of the cells, and if necessary add sufficient distilled water to bring the level to the top of the separators.
2. Keep the terminals tight and smeared liberally with vaseline to prevent corrosion.
3. Keep the tops of the cells clean and dry.
4. Never leave the battery in a discharged condition for any length of time.

Coil Ignition Equipment.

1. Keep distributor clean inside and out.
2. Test contact breaker gap (fully opened) occasionally with gauge provided on ignition spanner. Re-set if it varies appreciably from the gauge.
3. Add one or two drops of oil through oiler provided about every 1000 miles.
4. Smear cam lightly with vaseline every 3000 miles, or whenever it appears to be dry.
5. Every 3000 miles, remove moulded arm from top of distributor shaft and, without removing screw exposed to view, add one or two drops of oil to lubricate the automatic advance mechanism.
6. Replace high tension cables showing signs of perishing or cracking with 7 mm. rubber covered ignition cable.

Dynamo.

1. Keep brushgear and commutator clean. See that the brushes bear properly on the commutator. Replace badly worn brushes.
2. S.S. I. Model only. Add a few drops of oil through lubricator at drive end of machine every 1000 miles.
S.S. II. Model only. Give greaser at drive end of machine one turn every 500 miles. Repack with a good quality high melting point grease when empty.
3. Periodically, say, when the engine is being decarbonised, move aside flap marked "GREASE" at commutator end of machine and add a very small quantity of high melting point grease.
4. When car is taken down for a general overhaul, have dynamo dismantled for cleaning, adjustment and repacking bearings with grease. This should be done preferably by a Service Depot.

Lamps.

1. Keep reflectors clean. Finger marks can be removed with a soft dry cloth without injury to the highly polished surface. Do not use metal polish.
2. Use only the correct Lucas replacement bulbs. See table.
3. Focus head lamps after fitting new bulbs. The bulb holder can be moved backwards and forwards when the clamping clip at the back of the reflector is slackened.
4. Keep lamps in proper alignment.

Particulars of Bulbs.

Lamp	Bulb	Volts	Watts
Head Lamps	B.A.S. No. 4S	12	36
Side, Tail and Panel Lamps	B.A.S. No. 10S	12	6
Ignition Warning Lamp ..	No. 252 M.E.S.	2.5	5
"Trafficators"	No. T126F	12	6
Stop, Reverse and Tail Light	B.A.S. 3S	12	24

TRANSMISSION.

Clutch. The single dry plate clutch is toggle operated, the toggles having a ratio which reduces the end thrust on the clutch throw-out ball race and crankshaft bearings when declutching, to only a fraction of the total clutch spring load.

Power is transmitted from the clutch driven plate to the splined centre through a rubber loaded driver for the purpose of ensuring a smooth engagement.

The presser plate is loaded by six helical springs, so designed that no adjustment is required.

Gearbox. The gearbox is built in unit with the engine and has silent second and third gears in the four-speed box. Synchronised engagement is provided for second, third, and top gears. The constant wheels which transmit motion from the clutch primary shaft to the layshaft have double helical teeth. Similar teeth are also used on the silent intermediate gears which are also in constant mesh and ensure silent transmission.

The double helical gear consists of two lines of gear teeth cut to the same helical angle, but of opposite spiral. Each gear is in one solid piece, and end thrusts consequent on the use of helical teeth are balanced in the structure of the gear, thus no thrusts are transmitted to the shaft bearings.

Direct drive or top gear is obtained by coupling the mainshaft and primary shaft together by means of a special dog clutch which incorporates a synchronising cone. This cone engages firstly and brings the speeds equal, ready for direct engagement of the dogs. Thus the first part of the change speed lever movement produces synchronisation, and the latter part engages the direct dog drive. When the dog clutch is moved in the opposite direction it synchronises and engages third speed in the same manner.

The dog clutch for second speed engagement is incorporated in the mainshaft first speed wheel. When moved forward by the change speed lever it synchronises and engages the second speed dogs; and when moved backwards the first speed gear teeth slide into mesh in the conventional manner. A locking plunger is incorporated which prevents a too forcible engagement of the second speed cone.

Reverse is obtained by sliding an idler wheel into mesh with both first speed wheels, when they are locked in the neutral position. The selector lock is incorporated in the gearbox lid, and prevents simultaneous engagement of two speeds at one time.



Fig. 49.

View of Universal Joint dismantled. M—Gearbox mainshaft.

GENERAL DESCRIPTION OF CHASSIS.

All the gear wheels on the layshaft revolve as one, but the mainshaft second and third speed wheels run free on bushes, when not engaged in driving. There is no gate, but the gear selector forks are designed to limit the lever motion in a suitable manner.

The primary shaft is supported by a roller bearing in the gear case and by a roller spigot bearing in the crankshaft. The mainshaft has a roller bearing in the gear case and a plain bush spigot bearing in the primary shaft. Plain bushes carry the layshaft and reverse wheel which are supported by fixed shafts passing through their hollow centres.

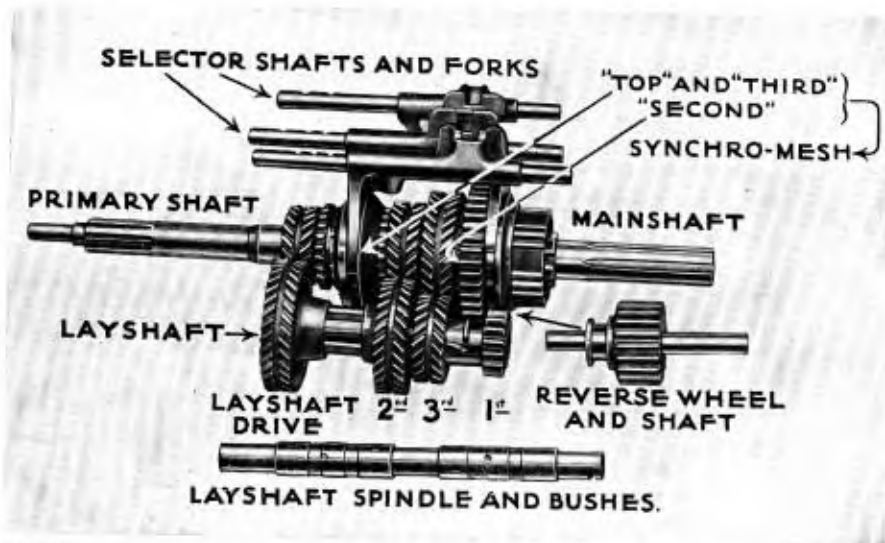


Fig. 50.

Part Assembly of Gear Wheels and Shafts.



Fig. 51

Gearbox details.

GENERAL DESCRIPTION OF CHASSIS.

Propeller Shaft. This is an open type shaft of ample diameter and has mechanical universal joints at each end. Endways motion is allowed for by a sliding spline connection at the gearbox end. Both joints are oil tight and are provided with metal water and grit excluding covers.

Spline Engagement. The splines must be engaged with the arrows opposite to each other, so that the propeller shaft will transmit uniform motion.

A single universal joint does not transmit uniform motion when the driving and driven shafts are out of line, but when two joints are used and set in correct relation one to the other, the errors of one are corrected by the errors of the other and uniform motion is then transmitted. Hence the importance of re-engaging the splines correctly when they have been taken apart.



Fig. 52.

(A more accessible Oil Filler Plug is provided at the rear.)

Rear Axle.

Rear Axle. The rear axle is of the semi-floating type in which the car weight is transmitted from the springs through the steel casing to the single taper roller bearings in each hub housing and from thence to the road wheels.

The four-pinion differential is contained in a forged steel balance box to which the spiral bevel crown wheel is bolted, the whole differential assembly being mounted between two taper roller bearings in the housing.

A roller bearing supports the spiral bevel pinion at the inner end, and a combined radial and thrust bearing at the outer end, the whole being assembled together with the differential in a malleable cast iron housing bolted to the axle case.

The bearings fitted in the hubs are capable of taking both radial loads and end thrusts.

Rear axle shafts are secured to the hubs by taper, key and nut. The inner ends are splined into the differential wheels and butt together for the purpose of transmitting wheel thrusts to the bearings. This is necessary because a taper roller bearing can only take thrust in one direction.

The object of the differential is equally to divide the motive effort between the two axle shafts, yet still allow the shafts to turn at unequal speeds when "cornering."

FURTHER CHASSIS PARTS.

Front Axle. The front axle beam is of "H" Section between the springs for the purpose of carrying the weight, but the overhanging ends of the beam are of round section for the purpose of withstanding the torsional stresses due to braking in addition to those due to weight.

Stub axles are of the "Reversed Elliott" type, in which the jaw fits over the end boss of the axle beam and is secured by the swivel pin held in position by a cotter. This provides a robust construction without undue weight. The car weight is transmitted to each stub axle through a hardened steel washer in contact with a bronze bush.

Taper roller bearings are fitted to the stub axles and carry the hubs, brake drums and road wheels, and dust excluding grease retaining washers are fitted at the inner ends of the hub to protect these bearings.

The steering arms are secured to the stubs by taper, key and nut, this being a strong type of fixing.

Wheels. Rudge Whitworth or Dunlop wire wheels with well-base rims which provide easy tyre fitting.

Steering. The gear is of the cam and lever type, in which a worm type cam actuates a lever engaging with it. The lever is formed in one piece with a shaft to which the steering arm is secured by taper serrations, and the whole is mounted in two widely spread bearings giving a firm support.

A trunnion located in the lever end forms the engaging means between the cam and lever, and sets itself automatically to the helix angle of the cam. The trunnion end has four semi-spherical hardened steel inserts set in it, two on each side, which make the actual contact with the cam and due to their spherical location, are self-accommodating to the cam surface.

The cam is secured to the end of the steering column shaft and mounted between two ball bearings of the cup and cone type.

A feature of this steering gear is the freedom with which it works due to the low-friction contact of the hardened steel inserts with the steel cam.

The steering arm is coupled to the stub axle arms by a spring loaded tube. The track rod tube is also spring loaded to the ball pins at both ends, and the system in general consists of a low friction gear operating a linkage of the "Ackermann" type in which a small turning circle and effortless steering are obtained.

A felt bush is fitted at the top end of the steering column and locates the tubular column shaft. The lighting hand control at the centre of the steering wheel operates a tubular extension which passes down the centre of the column to operate a pair of gear sectors at the bottom end. This provides the connection between the hand control and switchbox mounted above the steering box.

Horn and "Trafficator" wires pass down the centre of the control. The steering wheel is keyed to the top end of the column shaft.

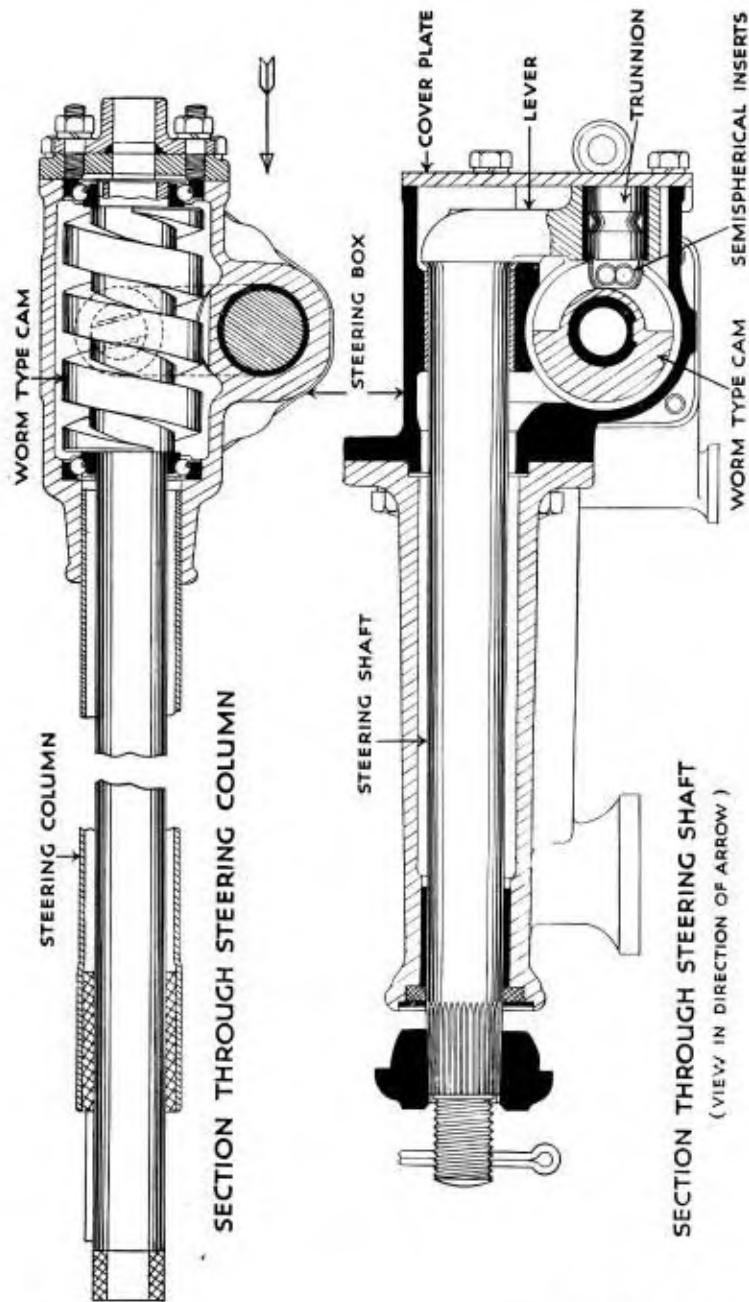


Fig. 53.

Steering Sections.

GENERAL DESCRIPTION OF CHASSIS.

Frame. The steel frame is of stout pressed channel section, the side members each being provided with wide flanges, and is braced by a X-type cross member at the centre; the four ends of the cross are extended within the frame side members and embrace the spring brackets. Exceptionally rigid front and rear cross members are provided in addition to two tubular members.

The frame is upswept at the front, and passes under the axle at the rear, thus obtaining a low centre of gravity, giving exceptional road holding performance, and at the same time lending itself to unique body design. This construction is very strong to resist torsion as well as bending, and provides a rigid support for the body.

Chassis Suspension. Semi-elliptic laminated springs are fitted at both front and rear, the rear springs being slung under the axle, and the front springs on top.

Each spring has a single shackle pin at the forward end and shackle plates with two shackle pins at the rear end to allow for the motion of the spring.

"Silentbloc" bushes are fitted in all the spring eyes, except the front spring front eyes, which have bronze bushes, and are lubricated by grease gun. No lubrication is necessary or desirable for the "Silentblocs," as they contain rubber.

Each "Silentbloc" is formed of two steel tubes, one within the other, the annular space between being filled with tough rubber under great radial pressure. This construction enables them to carry heavy loads without distortion, and yet remain relatively free to twist. All the twist is by elastic motion in the rubber, there being no slip between the rubber and the steel tubes.

Both front and rear springs are of special design, the result of extensive experiment and provide comfortable riding under varying speed and road conditions.

No suspension can be perfect without the addition of a correct amount of damping which prevents the accumulation of spring energy as succeeding shocks are met. The shock absorbers fitted have been carefully chosen to suit the springs and are mounted to the outer ends of the axles, thus reducing "roll" on corners and generally contributing to good road holding qualities.

DOUBLE SPRING TYPE JOINT ON AXLE END OF DRAG LINK ONLY.



STEERING BALL AND SOCKET
TWO ON TRACK ROD
ONE ON STEERING END OF DRAG LINK.

Fig. 54. S.S. I. G, Greaser; 1, Socket; 2, Steering Ball; 3, Ball Socket Cups; 4, Spring; 5, Packing Washers; 6, Adjusting Ball Socket Plug Screw. The axle end socket has double springs.

CORRECT ADJUSTMENTS.

If the car is taken to an S.S. Agent, the mechanics who will do the work will be familiar with the adjustments necessary during a major overhaul, but in case this is not convenient, we give below a brief list of the correct adjustments for the benefit of any mechanic to whom the car is strange.

Crankshaft end play in rear bearing	0.006"
Connecting rod end play at big end	0.004"
Camshaft end play	0.006"
Gearbox mainshaft end play	0.006"

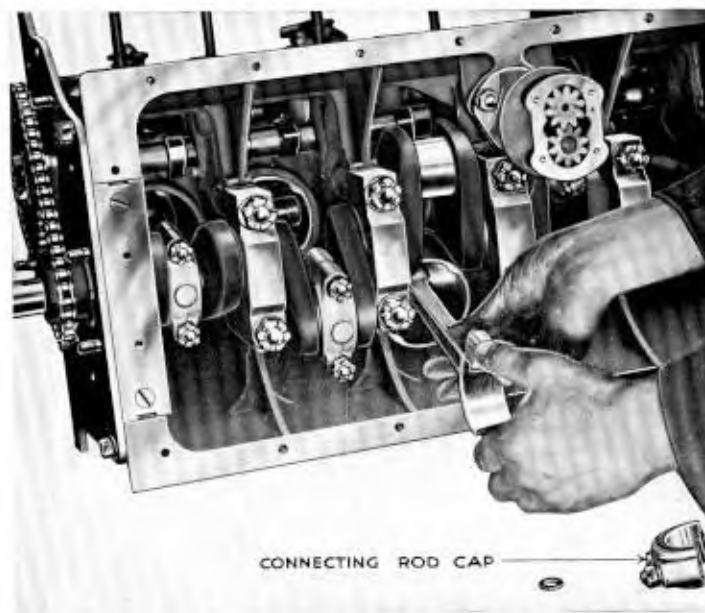


Fig. 55. S.S. I.

Removal of Connecting Rod and Piston.

Steering Ball Joints. Screw up solid and then back to the first slot, excepting the joint on the axle end of the steering drag link, which should be screwed back one complete turn.

Front Hubs. Jack up the axle and remove road wheels. Screw up the stub nut until tight and then screw back for two or three slots until there is the least perceptible shake.

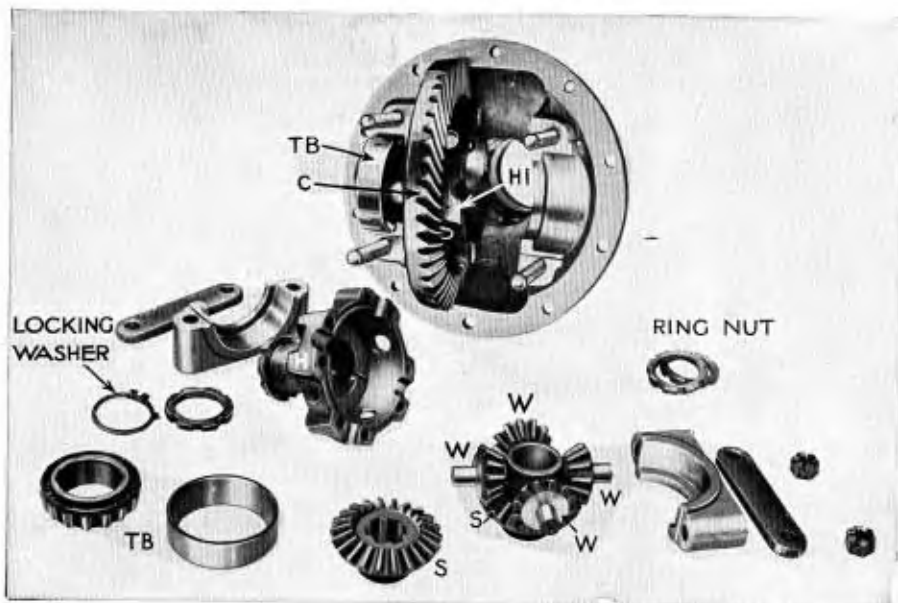


Fig. 56. Differential dismantled.

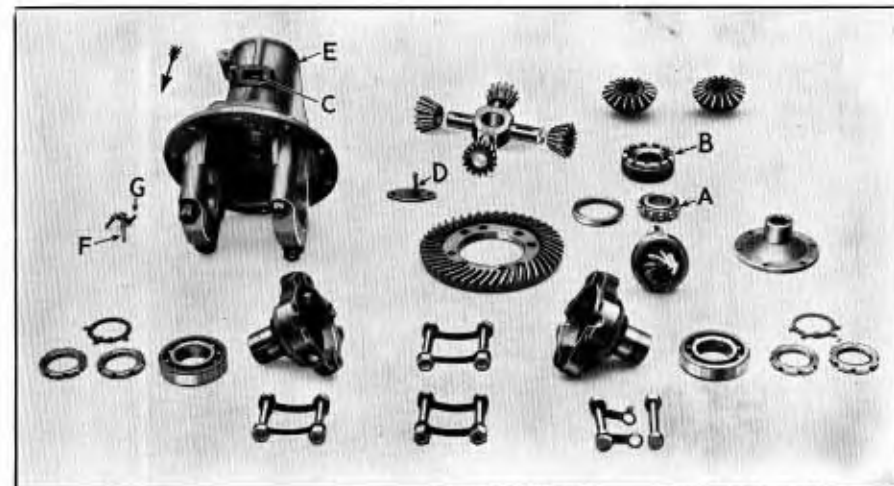


Fig. 57. S.S. 11.

Rear Axle Drive Details.

Rear Hubs. These bearings are adjustable by shims to just take out the "slack" in the bearings, and are fitted between the drum cover and the bearing housing.

The correct backlash in the hub bearings is 0.006" and it is only necessary to adjust one bearing as the backlash becomes automatically the same in both bearings.

S.S. 1. Rear Axle Spiral Bevel Pinion. The spiral bevel pinion and crown wheel are correctly meshed before the car leaves the Works, and the adjustment is unlikely to require further attention for some considerable time. Eventually, excessive backlash may develop due to wear, although it is unlikely to make the gears noisy. We recommend a backlash of 0.005" between the pinion and crown wheel teeth. The backlash may be adjusted as follows, referring to Illustration No. 56A.

1. Clean the pinion housing on the surfaces adjacent to the cover "P" which fits over the hole.
2. Remove the cover "P" and the pin "N" and withdraw locking plate "L."
3. The two castellated adjusters are screwed with a right-hand thread and are located one on each side of the bearing "B."

Slacken the inner adjuster by inserting a lever into the hole and turning the adjuster in a clockwise direction looking from front of car.

4. Now turn the outer adjuster "HI" in a clockwise direction until the locking plate "L" can be inserted in the next castellation and then lock in position.
5. Finally, retighten the inner adjuster and lock in position by re-fitting the cover plate "P" which has the locking dowel "D" integral with it.

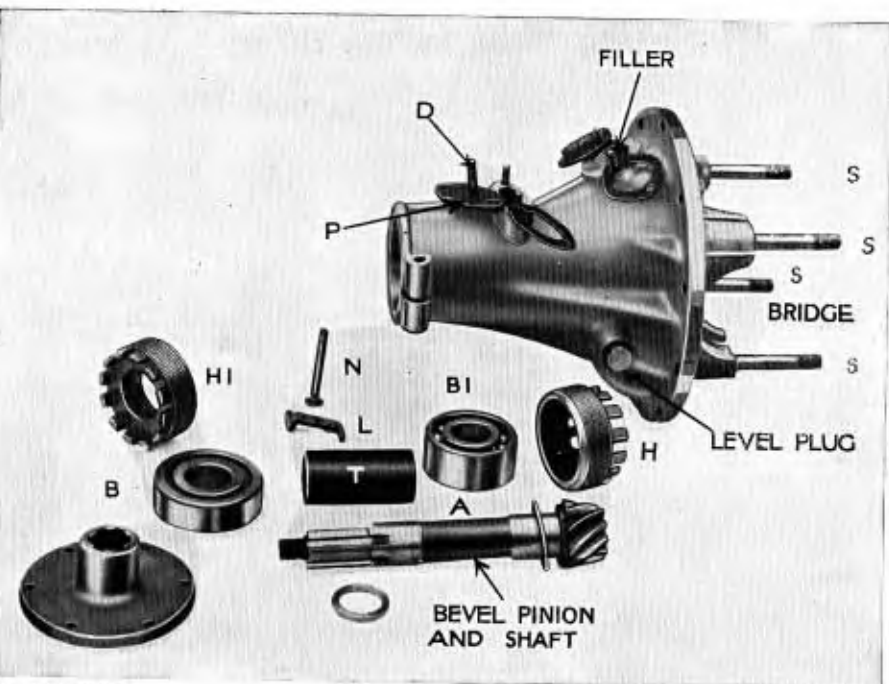


Fig. 56A. S.S. 1. Rear axle details.
Note.—A more accessible filler is provided at the rear of the axle casing on both models.

CORRECT ADJUSTMENTS.

S.S. II. Rear Axle Spiral Bevel Pinion. The backlash may be adjusted as follows, referring to Illustration No. 57.

1. Clean the piston housing "E" on the surfaces adjacent to the cover "D" which fits over the hole "C."
2. Remove the cover "D" and the pin "F" and withdraw locking plate "G."
3. The two castellated adjusters are screwed with a right-hand thread and are located one on each side of the bearing "A."
Slacken the inner adjuster by inserting a lever into the hole "C" and turning the adjuster in a clockwise direction looking in direction of arrow.
4. Now turn the outer adjuster "B" in a clockwise direction until the locking plate "G" can be inserted in the next castellation and then lock in position.
5. Finally, retighten the inner adjuster and lock in position by re-fitting the cover plate "D" which has the locking dowel integral with it.

Brake Linings. The brake linings are of a hard moulded type which has exceptional wearing properties and they will not require replacing until a considerable mileage has been accomplished.

When re-lining does eventually become necessary, we strongly advise the owner to have fitted new shoes complete with linings, which can be obtained from the Service Department. These shoes have the correct lining properly fitted and ground to fine limits, ensuring efficient braking and long life.

An allowance is made for the value of the old shoes.

Valve Timing. When any part affecting the valve timing is removed, take particular note of the markings on the chain wheel teeth; if these are indistinct, scribe marks on the faces of the wheels before removing the timing chain. This will save the work of re-timing the engine when the parts are re-assembled, as they can simply be set to the marks.

If the marking operation has been neglected, the camshaft can be set to the timing diagram shown on page 4. It is only necessary to time one cylinder, as all the cams are integral with the shaft. The flywheel is $11\frac{1}{4}$ inches in diameter near to the starter teeth, therefore, 10 degrees is equivalent to 0.99 inches measured on the flywheel, and 50 degrees is equivalent to 4.96 inches.

When checking the valve timing, the tappets should be set to the correct clearance of 0.004 inches.

Ignition Timing. The ignition advance is mostly automatic and the distributor should be set to fire 14 degrees before top dead centre on the S.S. I., and 17 degrees before top dead centre on the S.S. II. These are the starting points, which may require slight alteration when tested on the road.

Turn the engine until No. 1 inlet valve closes and continue turning until No. 1 piston reaches top dead centre. This position is indicated by a mark on the flywheel, but if the clutch housing is in position this mark will not be visible, in which case remove the timing plug over No. 1 piston and insert a small diameter rod to indicate the piston position. Let the rod be about seven or eight inches long so that it will be long enough not to fall into the cylinder.

Then slacken the clamp bolt and turn the distributor body until the contact breaker points are just separating when the distributor arm is opposite No. 1 segment in the cover, then re-tighten the bolt.

CORRECT ADJUSTMENTS.

To obtain the correct firing point, turn the crankshaft in an anti-clockwise direction, viewed from the front of the engine, by pulling on the fan belt or applying a spanner to the starting-handle nut on the front end of the crankshaft, until the top of the rod has moved $\frac{5}{16}$ " on S.S. I., $\frac{7}{16}$ " on S.S. II., from the top dead centre position.

The terminal positions are clearly marked in Figs. 34 and 35. It will be seen that No. 1 cylinder is adjacent to the dash.

Propeller Shaft Assembly. If the propeller shaft has been removed, it is essential when re-assembling the front end splines to see that the arrows on the universal joint and propeller shaft end are in line. If these are not in line, it is possible that the propeller shaft will not transmit uniform motion.

Timing Cover. Whenever the timing cover is removed it should be replaced in the following manner, to ensure correct oil retention and quiet running.

First replace the timing cover with the securing screws just "holding," then place a drop of oil on the inside of crankshaft pulley and fit pulley on crank, but with the driving key removed. The pulley will not rotate freely if it rubs on the hole in the timing cover, in which case tap the sides of the cover until it is possible to "spin" the pulley, and then tighten the securing screws.

It is advisable to re-check for pulley freedom after tightening the screws, to make sure that the cover has not moved in the process. Finally, fit the pulley key and tighten up the crankshaft nut.

Fan Balance Weight (only fitted when required). If it should ever be necessary to remove the fan from the pulley, first mark the position of the semi-annular balance weight, which is secured by two of the four set pins, the weight can then be re-assembled in correct position.

POSSIBLE TROUBLES AND THEIR REMEDIES.

CERTAIN TROUBLES may occur in connection with motoring, and we give an analysis in the following pages which will help the owner to correct any fault which may arise.

If the fault cannot be corrected, the owner is strongly advised to take the car to the distributor or dealer from whom the car was purchased. If the car is on tour, it is advisable to take it to the nearest S.S. Agent.

It will probably be found that the Agent who is familiar with the car will quickly be able to rectify any trouble which may occur.

A list of Agents is given on pages 78 to 81.

LOCATION AND CORRECTION OF FAULTS.

Make sure of the cause of the trouble before attempting to make any adjustments. If in doubt, do nothing, but carefully—

ANALYSE THE FAULT.

Engine will not start.

1. **Lack of Petrol.** See that the tank contains petrol and lift the carburetter float spindle to see if the petrol is flowing to the carburetter when the crank is rotated or the hand primer operated.

If the petrol pump is at fault, refer to page 38. Make sure that the petrol pipes and filters are not stopped up or air locked.

2. **Sparking Plugs.** These may be dirty, due to long use without cleaning, or the points may be burnt causing the gaps to be too wide. Remove, clean and re-set the points, as described on page 32. If there is no spark at the plug, it may be due to a disconnected or broken wire or a fault in the distributor or coil, in which case refer to the Lucas Coil Ignition Booklet.

3. **Ignition Distributor.** See that the contact breaker points are clean and in correct adjustment (page 33). See also that the contact breaker arm moves freely. If the spark is incorrectly timed, the distributor control lever may have slipped. Re-set the ignition as indicated on page 68.

4. **General.** If the starter does not turn the engine over quickly enough due to the accumulators being run down, use the starting handle.

If the carburetter jet is stopped up, clean jet, taking care not to enlarge the hole. See that there is no air leak in the induction pipe which would cause the mixture to be weak. Use the correct grade of oil in the engine.

A too heavy oil causes stickiness in the working parts, thus putting an overload on the starter.

Engine runs imperfectly.

Lacks Power. Make sure that the throttle opens fully when the accelerator is depressed. If black smoke comes from the exhaust the mixture is too rich, probably due to the choke not opening fully when the control is pushed in.

If the mixture is too weak, resulting in "spitting back" in the carburetter or explosions in the silencer, there may be a partial stoppage in the petrol system or dirt in the main jet.

The lack of power may be due to overheating caused by driving with a retarded spark or the distributor may have become incorrectly set.

Examine the water and oil levels and see that the oil pressure is correct.

The engine may lack power if the valve clearances are insufficient—these should be re-set, as instructed on page 32.

Examine the sparking plugs and do not fit the wrong type of plug. See page 32.

Test temperature of brake drums. If the drums get hot when the brakes are not applied, it is a sign that the shoes are binding.

Engine Fires Irregularly. If due to faulty sparking plugs, detect by short-circuiting each plug in turn, using a screwdriver or similar tool having an insulated handle. Let the metal tool first make contact with the cylinder metal and then bring it also into contact with the plug terminal. When a plug is found which when "shorted" does not affect the running of the engine, remove and clean this plug and see that the gaps are correctly set. An alternative method is to use a spark tester which shows the intensity of the spark by the intensity of light in the tester.

LOCATION AND CORRECTION OF FAULTS.

Examine the porcelain insulation for cracks. If a crack is discovered a new plug will be required.

Lack of compression in any one cylinder may cause uneven running and this may happen if a valve stem becomes sticky or if dirt under the valve seat prevents proper closing with possibly ultimate burning of the valve. The cylinder in which the compression is weak may be found by turning the engine by hand and testing each cylinder separately. If the above items are not at fault, the cause of low compression may be worn piston rings.

Water may reach the distributor or plug terminals when the car is being washed and so cause short-circuiting of the current. Examine the connections and remove the distributor cover to make certain there is no water inside.

Engine Knocks. This may be due to the combustion chambers having become carboned up, in which case the engine will require decarbonizing. Pre-ignition may be a cause when unsuitable plugs are fitted or when the ignition has become too far retarded, thus causing overheating. Knocking may also occur if the ignition has become too far advanced, or if the water has boiled away.

Engine Overheats.

This may occur if there is insufficient oil in the engine or insufficient water in the radiator, or if the ignition has slipped and become too far retarded. It may also be caused by carbon deposit in the combustion chambers or a lime deposit in the radiator. In the latter case, as described on page 13. If hard water has been used in the cooling system, impurities will be deposited on the cooling surfaces and thus require cleaning as described.

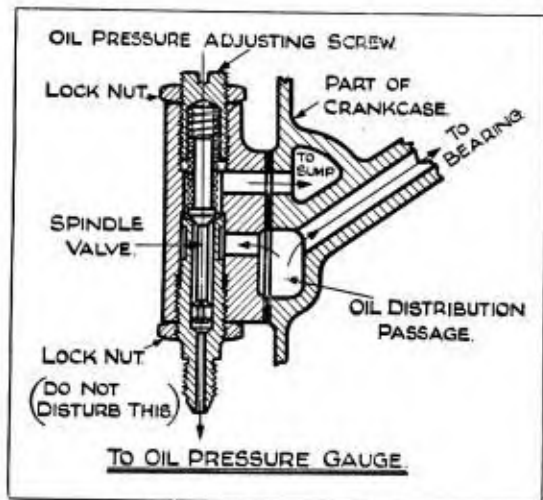


Fig. 58. Oil Pressure Relief Valve.

Important. Do not use any cleaning solution containing washing soda or potash, as these substances would attack the aluminium head.

Engine runs erratically. If by any chance the condenser in the distributor has broken down, the engine will show symptoms similar to both carburettor and ignition troubles. When the carburettor is found to be in order, it is well to examine the distributor points which will be dirty if the condenser is at fault. Clean the points and if they rapidly become dirty again on running, have the condenser examined. See page 32. Make sure that the contact breaker arm is not sticking. The engine will run erratically when the actual wire has broken inside the insulation. This is then a difficult matter to trace.

Engine stops after a few revs. May be due to faulty ignition or weak mixture. See 1 or 3, page 71. Also if the mixture is too rich, the engine may stop. If the level in the float chamber is too high due to the needle seating badly, tap lightly.

A high petrol level may be caused by a punctured float, and in this case it will be necessary to empty it and have it re-soldered, taking care not to increase its weight.

LOCATION AND CORRECTION OF FAULTS.

Insufficient Oil Pressure. Check the oil level in the sump. If the oil has been in the engine for too great a mileage it should be renewed. If necessary, remove the engine oil sump and clean the suction filter, at the same time cleaning out the sump. If the above points are in order, the pressure relief valve may need re-setting or cleaning if dirt has got under the ball seat. To increase pressure release locknut on top of relief valve and tighten adjusting screw. After a great mileage the oil pressure will become low due to wear in the bearings, particularly the connecting rod big ends. The engine then requires a general overhaul to regain the correct oil pressure.

Starting Motor Fails to Start Engine.

Turns Engine Slowly. The battery may be run down due to leaving the ignition switched on or leaving the car standing with the head lamps on.

The grade of oil in the sump may be too heavy. See page 23.

Will not move Engine. May be due to a broken connection between the starter and battery or to a bad contact. In this case, refer to the Lucas Electrical Instruction Booklet.

Will not Disengage. Starter spindle is extended at the front of the starter and has a square end, shown in Illustration No. 43, so that it may be turned with a spanner in a direction opposite to the normal rotation. This will draw the pinion out of mesh.

A loose cover is fitted over the square end of the spindle.

Dynamo does not Generate. See that the dynamo revolves. If this is in order, examine the fuse and refer to the Electrical Instruction Book.

Lamps burn out. When the brilliance of the light increases with the speed of the car it is probably due to a bad connection between the battery and terminals or a bad earth connection on the frame. Examine the connections, clean, tighten, and smear with vaseline. When the bulbs show a cloudy appearance, they are damaged and should be replaced.

Clutch. If the clutch slips it is probably due to the wear on the friction surfaces which has taken up all the free travel. Re-adjust as described on page 29. If the clutch spins causing difficult gear changing, it is probably due to an excessive free pedal travel which prevents the clutch from being fully disengaged, in which case re-adjust.

Steering. Should the steering become imperfect, check the tyre pressures and see that the wheel nuts are tight. See that there is no undue shake in the hub bearings and inspect the steering joints for slackness. All this work should be done with the front axle jacked up. It is also advisable to examine the front spring to axle connecting bolts to see if these are properly tight. If necessary have the castor angle of the front axle and the toe-in of the wheels checked by our local agent.

The steering may be "heavy" if lubrication of front axle swivels steering joints and steering box has been neglected.

Brakes. If the car does not pull up quickly when desired, the brakes require adjustment, and if there is a tendency for the car to pull to one side when the brakes are applied, the brakes require balancing. See page 27.

Suspension. Should the springing become too hard, lubricate the spring blades and clips, as indicated on page 21. If the car "bounces" unduly, the shock absorbers require tightening. See page 7.

LOCATION AND CORRECTION OF FAULTS.

Exhaust Fumes. If exhaust fumes enter the car it may be due to a leaky exhaust gasket. Tighten the bolts and if necessary replace the gasket.

Petrol Gauge. Should the pointer not move when the ignition is switched on, there may be a break in the wire between dash unit and ignition switch. If the gauge shows "Full" under all conditions, there may be a break between dash unit and tank unit. Should the gauge show "Empty" under all conditions, the wires may be reversed on dash unit, or dash unit may not be "grounded." Alternatively, tank unit may not be "grounded." This calls for replacement of the unit involved. In general, service is by replacement of the inoperative unit. Do not attempt to lubricate either unit.

EXTRAS.

	Price.	Fitting charge.
Ace wheel discs polished aluminium, S.S. I.	£9. 7. 6.	£1. 5. 0.
" " " " S.S. II.	£7. 10. 0.	£1. 5. 0.
If cellulose finish to match, per set extra	£1. 5. 0.	
Spot lamp, chromium plated	£1. 5. 0.	7/6
Desmo Senior "Safebeam" Chromium Plated Fog Lamp ..	£3. 10. 0.	
" Junior " " " " ..	£2. 17. 6.	
Lucas Type F.T.37 " " " " ..	£2. 10. 0.	
Wiring and Fitting, 7/6 extra.		
Interior Visors with Amber Safety Glass	£1. 1. 0.	5/-
S.S. Fabric Brushing Polish in Black or colour	2/6	
S.S. Cellulose Cleaner and Burnisher	2/6	
Chrome Shine Large size	1/9	
" " Small size	7d.	
"Kyrac" for the Cooling System	2/6	
(Postage extra)		

State colour required when ordering any of the following :-

Wheel Discs (cellulose finish).

Fabric Brushing Polish.

Customers who have not a credit account with us will facilitate expeditious execution of their orders if accompanied by remittance. Address orders to :-

**SPARES DEPARTMENT,
S.S. CARS LTD.,
FOLESHILL,
COVENTRY.**

ACCESSORIES AND EQUIPMENT.

Proprietary equipment as fitted to S.S. Cars can either be obtained direct from the manufacturers, whose addresses are given below, or will be supplied by the Spares Department, S.S. Cars Ltd., at list prices current from time to time.

All Claims for replacement or alleged defective parts must be referred direct to the respective manufacturers to be dealt with under the terms of their guarantee.

Component.	Manufacturers.
Lighting, Ignition, and Starting Equipment	Joseph Lucas, Ltd., Great King St., Birmingham
Windscreen Wiper	Joseph Lucas, Ltd., Great King St., Birmingham.
Trafficators	Joseph Lucas, Ltd., Great King St., Birmingham.
Electric Horn	Joseph Lucas, Ltd., Great King St., Birmingham.
Shock Absorbers	Messrs. T. B. Andre & Co., Ltd., Victoria Gardens, Ladbroke Road, Notting Hill Gate, London, W.11.
Speedometer, Coupe and Saloon	British Jaeger Instruments, Ltd., Chronos Works, North Circular Road, London, N.W.2.
" " Open Four-seater	S. Smith & Sons (M.A.), Ltd., Cricklewood Works, London, N.W.2.
Carburetter	Messrs. R.A.G., Ltd., 121, Victoria Street, London, S.W.1. Service Station, 187, High Street, Tooting, London, S.W.17
Tyres	Dunlop Rubber Co., Ltd., Fort Dunlop, Erdington, Birmingham.
Road Wheels	Rudge Whitworth Ltd., Bearing Works, Reddings Lane, Sparkhill, Birmingham.
" " " " " "	Dunlop Rim and Wheel Co., Ltd., Holbrook Lane, Coventry.
Brakes	Bendix, Ltd., King's Road, Tysley, Birmingham.
Safety Glass	Lancegay Safety Glass Ltd., Palace of Industry, Wembley.
Screen and Back Light Glass	Triplex Safety Glass Co., Ltd., Farnham Road, Slough, Bucks.
S.S. I. Oil Pressure and Water Temperature Gauge	S. Smith & Sons (M.A.), Ltd., Cricklewood Works, London, N.W.2.
Thermostat	S. Smith & Sons (M.A.), Ltd., Cricklewood Works, London, N.W.2.
Clock	S. Smith & Sons (M.A.), Ltd., Cricklewood Works, London, N.W.2.
Petrol Pump	A.C. Sphinx Sparking Plug Co., Ltd., Bradford Street, Birmingham.
Petrol Gauge	A.C. Sphinx Sparking Plug Co., Ltd., Bradford Street, Birmingham.
Sparking Plugs	Messrs. Champion Sparking Plug Co., Ltd., 88, Pall Mall, London, S.W.1.
Oil Cleaner	A.C. Sphinx Sparking Plug Co., Ltd., Bradford Street, Birmingham.

Proprietary articles which are considered to be defective returned to our works will be forwarded to the component manufacturer concerned. Should immediate replacement be required the parts will be charged for, but will be credited if the component manufacturer accepts responsibility under the terms of guarantee. Should responsibility not be accepted, the component manufacturer's reasons for non-supply under guarantee will be submitted.

SERVICE.

ADDRESS YOUR ENQUIRIES TO
SERVICE DEPOT
S.S. CARS LTD.
COVENTRY

Where your requirements will receive the most earnest consideration.

Your Car has a distinguishing No. stamped on a plate at off side of the Engine; this is known as the Car Commission No.

This should be quoted whenever Spares are ordered, together with the Engine No., stamped on off side of cylinder block and a description of the part required.

A list of S.S. Agents
will be found on pages 78 to 81.

Should your car give trouble see the Agent.
If you are on tour apply to the nearest S.S. Agent.

Should the owner obtain the instruction book without having first obtained a guarantee form, he should apply to the Agent, who will supply the necessary form. When this is obtained, fill in the bottom paragraph and send the whole document to the Guarantee Department as soon after purchase of car as possible.

COPY OF GUARANTEE.

On the sale or supply of all motor cars and goods by S.S. Cars Ltd. (called "the Company") and on the carrying out of all repairs and work by them all guarantees, warranties or conditions (including any condition as to quality or fitness for any particular purpose) whether express, or implied by Statute, Common Law or otherwise, are excluded, and hereby expressly negatived.

In lieu of such express or implied conditions, warranties or guarantees the Company will give the following guarantee PROVIDED that the customer correctly fills up and signs the slip at the foot of this document and delivers this document with the attached slip so filled up and signed to the Company within seven days of the purchase by the customer of an S.S. Car or goods. On receipt of this document so completed and signed the Company will return the top portion hereof to the customer.

It must be clearly understood that if a customer fails to comply with this preliminary condition the Company will be under no liability whatsoever either upon the following guarantee or upon any express or implied condition, warranty or guarantee.

MANUFACTURERS' GUARANTEE.

In case of defect, breakage or breakdown of any motor car or goods supplied by the Company being discovered or occurring within SIX CALENDAR MONTHS from the date of sale, caused by defective workmanship or material (proved to the satisfaction of the Company) the defective part will be repaired or the Company will supply free of charge a new part in place thereof. Such period of six months is from the date of the supply by the Company of the motor car or goods, but if the motor car or goods are sold by a motor dealer and have not been previously used, the period starts from the date of supply by such dealer to the customer.

The Company's responsibility is limited to the conditions of this guarantee and the Company will not be liable for any damages or contingent or resulting liability or other loss arising through any breakdown, breakage or defect. The Company does not acknowledge any claim in respect of labour expenses including labour expended in dismantling or fitting arising from repairs, nor does it accept any responsibility for repairs or the fitting of replacement parts executed by Agents, or other repairers. The Company also will not be responsible for defect, breakage or breakdown caused by wear or tear, misuse or neglect. The judgment of the Company in all cases of claims shall be final and conclusive and the customer agrees to accept its decision on all questions as to defects and to the exchange of part or parts. After the expiration of six months from the despatch of notification of the Company's decision the part or parts submitted for inspection may be scrapped by the Company or returned to the customer carriage forward. The Company accepts no responsibility for any goods which have been altered after leaving the Company's works, or which have been used for motor racing or let out on hire or on or from which the Company's identification numbers or marks have been altered or removed. The Company accepts no responsibility for tyres, speedometers, electrical equipment, glass (or Safety Glass) or any other parts or accessories (other than for engines or chassis) which are not the Company's own manufacture. All claims of alleged defect in such items must be referred to the respective manufacturers direct. The Company accepts no responsibility on the sale of second-hand motor cars.

This guarantee is subject to the following conditions :-

CONDITIONS.

1. This guarantee shall not be transferred to anyone unless the Company's consent in writing has first been obtained to such transfer.
2. The Company's guarantee shall not apply to any motor car or goods which have been purchased at any price other than the Company's current retail price at the time of sale.
3. Any motor car or goods alleged to be defective must be returned to the Guarantee Department of S.S. Cars Ltd., at Foleshill, Coventry, carriage paid, and clearly labelled with the sender's name and address, within ten days of discovery of alleged defect. A letter under separate cover must at the same time be sent to the Guarantee Department giving the following details :-
 - (a) Commission Number of the car.
 - (b) The nature of the defect, breakage or breakdown which is alleged.
 - (c) A brief description of all circumstances which will facilitate a quick and satisfactory settlement.
 - (d) If there has been any correspondence or an invoice rendered the Company's reference number should be quoted.
4. Delivery of all goods supplied by the Company under this guarantee will be made at the Company's Works.
5. The term "Agent" where used is in a complimentary sense only and those persons or firms who are styled the Company's "Agents" are not authorised to advertise, incur any debts, transact any business, or incur any liabilities whatsoever on the Company's behalf, nor are they authorised to give any guarantee or warranty nor make any representations on the Company's part other than those contained in this document.

GUARANTEE AS TO REPAIRS AND OVERHAULS.

The Guarantee and Conditions set forth above cover, and are applicable to, repairs executed by the Company, with the exception that the period of Guarantee is for three calendar months from the date of completion of repairs.

Cars which are sent for repair will be driven by the Company's employees and/or Agents at the risk and responsibility of the owners only. Repairs of cars are undertaken only on the assumption that the owners give the Company authority to drive the vehicles on their behalf.

This is to Certify that Car number _____ has this day been registered as the property of _____ of _____ and is covered by the guarantee above set forth.

Dated _____

For and on behalf of S.S. CARS, LTD.,
FOLESHILL, COVENTRY, ENGLAND.

S.S. DEALERS.

31st January, 1934.

LONDON :

Henlys, Ltd., Henly House, 385 Euston Road, N.W.1.
Frank Austin Cars (London), Ltd., 68 Great Portland Street, W.1.
Bruton Garages, Ltd., 32 Bruton Place, W.1.
Newnham Motor Co., Newnham House, Hammersmith Road, W.6.
" " " 136-8 Streatham Hill, S.W.2.
" " " 40-41 Berkeley Street, W.1.
" " " 1 and 2 Willifield Parade, Golders Green, N.W.11.
" " " 164-6 Fulham Palace Road, W.6.
Geo. Newman & Co., 369 Euston Road, W.1.
Jack Olding & Co., Ltd., North Audley Street, W.1.
Standard Cars, 37 Davis Street, Grosvenor Square, W.1.
Wimbledon Car Co., 20 Worple Road, Wimbledon.

SURREY :

H. Beart & Co., Ltd., London Road, Kingston-on-Thames.
Hunts, Guildford, Ltd., Woodbridge Road, Guildford.
Page Motors, Ltd., High Street, Epsom.
Whites (Camberley), Ltd., 42 London Road, Camberley.

SUSSEX :

Moore of Brighton (1924) Ltd., Russell Square, Brighton.
Willetts (Eastbourne), Ltd., South Street, Eastbourne.
E. W. Briggs, 79 Chapel Road, Worthing.

ESSEX :

Eastern Automobiles, Ltd., London Road, Chelmsford.

KENT :

Martin, Walter, Ltd., Sandgate Road, Folkestone.

HAMPSHIRE :

Aldershot Motor Mart, Ltd., High Street, Aldershot.
Wadham Bros., Waterlooville.
Henlys, Ltd., Old Christchurch Road, Bournemouth.

BERKSHIRE :

Great Western Motors, Station Road, Reading.

WILTSHIRE :

Burrige's Motor Works, Station Hill, Chippenham.

OXFORDSHIRE :

Laytons of Oxford, New Road, Oxford.

GLOUCESTERSHIRE :

Imperial Motor Mart, Royal Crescent, Cheltenham.
H. V. Phippen, Berkeley Avenue, Bristol.
Haines & Strange, 99 High Street, Cheltenham.

SOMERSETSHIRE :

Brown's Motor Mart, Montpelier Garage, Julian Road, Bath.

S.S. DEALERS—Continued.

DEVONSHIRE :

Gould Bros., Ltd., Southernhay, Exeter.
P. Pike & Co., Ltd., 166 Union Street, Plymouth.
Perry's Zomba Garage, Torquay Road, Preston, Paignton.

HERTFORDSHIRE :

Stannard Motor Services, High Street, Barnet.

BEDFORDSHIRE :

Wilson Bros. & Humphreys, Ltd., 23 St. Mary's, Bedford.

CAMBRIDGESHIRE :

Crisswell's Garage, High Street, Newmarket.

SUFFOLK :

Mann Egerton & Co., Ltd., Majors Corner, Ipswich.

NORFOLK :

Mann Egerton & Co., Ltd., 5 Prince of Wales Road, Norwich.

NORTHAMPTONSHIRE :

Imperial Autocar Co., Market Square Garage, Northampton.
Reed's Garage, Ltd., Broadway, Peterborough.

BUCKINGHAMSHIRE :

Fullbrook & Co. (Slough), Ltd., Slough Motor Works, 40 High Street, Slough.

LEICESTERSHIRE :

H. A. Browett & Co., Ltd., 64-66 Granby Street, Leicester.

LINCOLNSHIRE :

Wests (Lincoln), Ltd., 115 High Street, Lincoln.
H. G. Betts, 397 Ashby Road, Scunthorpe.
R. C. Bellamy, Ltd., South St. Mary's Gate, Grimsby.

NOTTINGHAMSHIRE :

C. H. Truman & Co., Ltd., Mansfield Road, Nottingham.

WARWICKSHIRE :

P. J. Evans, Ltd., John Bright Street, Birmingham.
S. H. Newsome & Co., Ltd., Corporation Street, Coventry.
Leslie Matthews & Co., 147 Bristol Street, Birmingham.

WORCESTERSHIRE :

Stour Valley Motor Co., Ltd., Hagley Road, Stourbridge.

STAFFORDSHIRE :

Attwood's Garage, Stafford Street, Wolverhampton.
Attwood's Garage, Stafford.

DERBYSHIRE :

A. R. Atkey & Co., Ltd., Becket Street, Derby.

YORKSHIRE :

Glovers, of Ripon, 1 Leeds Road South, Harrogate.
E. W. Hatfield, Ltd., 147-151 Norfolk Street, Sheffield.
Pointings, Ltd., Albion House, Albion Street, Leeds.
Thornton Engineering Co., Ltd., Belle Vue Works, Manningham Lane, Bradford.
W. L. Thompson, Ltd., Anlaby Road, Hull.
Castlehouse Vasey & Co., Ltd., 26 Brook Street, Scarborough.
A. G. Boyes & Co., Ltd., Birchencliffe, Huddersfield.

LANCASHIRE :

Henly's, Ltd., 1, 3 and 5 Peter Street, Deansgate, Manchester.
 Loxham's Garages, Ltd., Corporation Street, Preston.
 Parker's, Ltd., Bradshawgate, Bolton.
 Alexander & Garner, Royal Exchange Arcade, Manchester.
 R. Bamber & Co., Ltd., near Birkdale Station, Southport.
 C. A. Britten & Co., 39-41 Renshaw Street, Liverpool.
 Brown & Mallalieu, Ltd., Winter Gardens Showrooms, Blackpool.
 Tom Mitchell, Drill Hall Motor Works, 50 King Street, Blackburn.
 William Monk, Ltd., Oldham Road, Ashton-under-Lyne.
 Newsham Motor Co., 27 Islington, Liverpool.

CHESHIRE :

Coventry Motors, 57 Argyll Street, Birkenhead.
 Coventry Motors, Market Street, Hoylake, Wirral.
 Drabble & Allen, Ltd., Victoria Road, Hale.

CUMBERLAND :

County Garage Co., Ltd., 14a Botchergate, Carlisle.

DURHAM :

Sherwood Bros., South End Garage, Grange Road, Darlington.

NORTHUMBERLAND :

Rossleigh, Ltd., Northumberland Road, Newcastle-on-Tyne.

SCOTLAND :

Ritchies, Ltd., 36-44 Renfrew Street, Glasgow.
 Rossleigh, Ltd., 32 Shandwick Place, Edinburgh.
 Bass Rock Motor Co., Shrub Place, Edinburgh.
 Rossleigh, Ltd., 383 Union Street, Aberdeen.
 Rossleigh, Ltd., 4 Park Place, Kirkcaldy.
 Rossleigh, Ltd., Allan Park, Stirling.
 Rossleigh, Ltd., 7-8 Nethergate, Dundee.
 The Scottish Automobile Co., Ltd., 7 and 8 Queensferry Street, Edinburgh.

WALES :

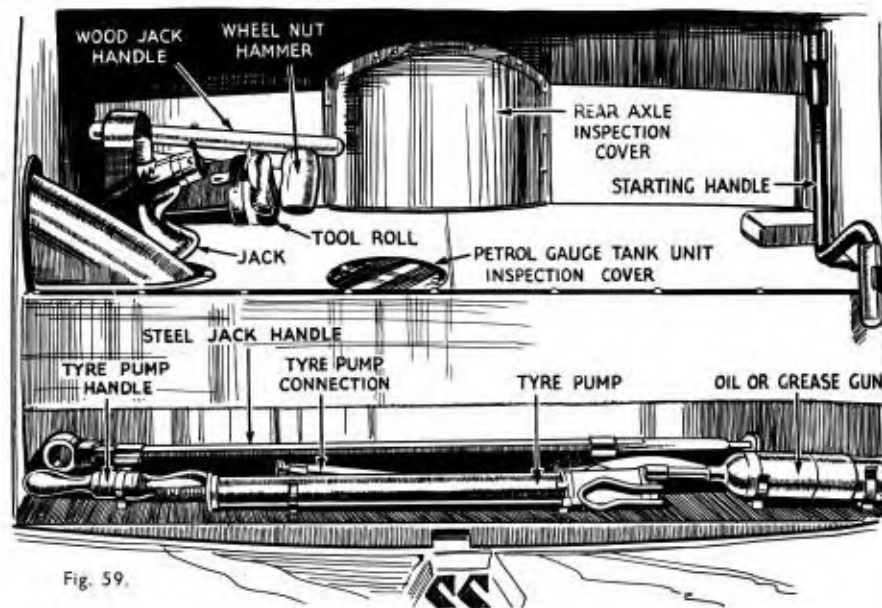
Tom Norton, Ltd., Penarth Road, Cardiff.
 Braid Bros., Abergele Road, Colwyn Bay.
 Jones Bros., Henblas Garage, Bala.
 Brookes Bros., White Rose Garage, East Parade, Rhyl.

IRELAND :

McEntagart Bros., Ltd., 22-23 Duke Street, Dublin.
 Victor, Ltd., 1 Bedford Street, Belfast.

AFRICA	Clarke's Garage, Johannesburg.
AUSTRIA	G. H. Koch, 11 Obere Donaustrasse 99, Vienna.
BELGIUM	Paul Kutsukian, 143 Avenue de Belgique, Antwerp.
CZECHOSLOVAKIA	Sporthaus Sieber, Zentral Garagen, Reichenberg.
DENMARK	Bohnstedt Petersen A/S Copenhagen, 1-3 Sundkrogsgade.
FRANCE	Soc. Industrielle Commercial Automobile (Chas. Delecroix), Marcq-en-Baroeul. Moto Comptoir, 167 Boulevard Periere, Paris XVII. Repair Depot : Grand Garage de Chicago, 25 Ruedes Belles Feuilles, Paris. Biarritz. M. Ponnier, Boulevard du Casino, Saint Jean- de-Luz. Nice. Bourse Automobile, Rue Desire Niel, Nice.
	Paris Sub-Agents:
HOLLAND	Automobilbedrijf Van Heel & Co., Ernst Casimirlaan 2-4, Arnhem.
INDIA	Volkart Bros., Bombay. French Motor Car Co., Ltd., 234 Lower Circular Road, Calcutta.
MOROCCO	Montie Alazrachi Moto Maroc, 6 Rue Gallieni 6, Casablanca.
PORTUGAL	Wilfred C. Ennor, 151 Rua 31 de Janeiro 2 Oporto.
PALESTINE	Maurice Tenenbaum, P.O.B. 875, Jerusalem.
SOUTH AMERICA	Ehlert Nash Motors, Bolivar 1599, Buenos Aires.
SPAIN	C. de Salamanca, Paseo de Recoletos, 12, Madrid.
SWITZERLAND	Emil Frey, Limmatstrasse 210, Zurich.
SWEDEN	Phillipsons Automobiles, Ltd., Stockholm.
EGYPT	Albert Benin, 15 Place Mohamed Aly, Alexandria.

OPEN FOUR-SEATER TOOL LAYOUT



TOOLS AND SPARES.

A Tool Kit is supplied with each car and consists of the following parts :-

1. Two Tyre Levers (supplied by Messrs. Dunlop).
2. Wheel Nut Hammer.
3. Set of Three Spanners (Two only in S.S. II).
4. Adjustable Spanner.
5. Two Tube Spanners and Tommy Bar.
6. Distributor Contact Breaker Spanner and Gauge.
7. Jack and Handle.
8. Starting Handle.
9. Tappet Adjusting Spanner.
10. Bearing Adjuster Spanner (Bevel Pinion).
11. Differential Bearing Adjusting Spanner.
12. Set Screws for Camshaft Wheel withdrawal.
13. Grease Gun.
14. Oil Can.
15. Screw Driver.
16. Tyre Pump.
17. Pliers.
18. Pin Punch (S.S. I. only).
19. Valve Clearance Gauge and Sparking Plug Gauge.
20. Tool Roll.
21. Valve Spring Removal Tool (See Illustrations Nos. 32 and 33).

The S.S.II. Tool Lay-out is similar to the S.S.I., but the Starting Handle is placed on the floor of the trunk.

The following Spares are supplied :-

22. Supply of Spare Nuts and Washers.
23. Valve Spring and Collar.

Literature. The following booklets will be found amongst the literature supplied with the Car. When items 1, and 2 are temporarily out of print and cannot be despatched with the car, the owner is requested to write to the respective manufacturers, the addresses being given on page 75.

- Instruction Books**—1. Electrical System.
2. Ignition System.

LAYOUT OF TOOLS, COUPE AND SALOON

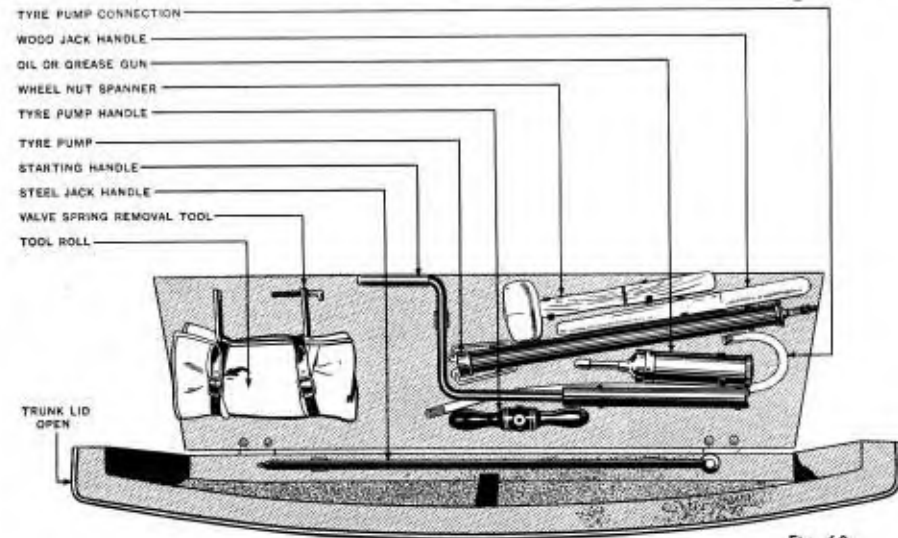
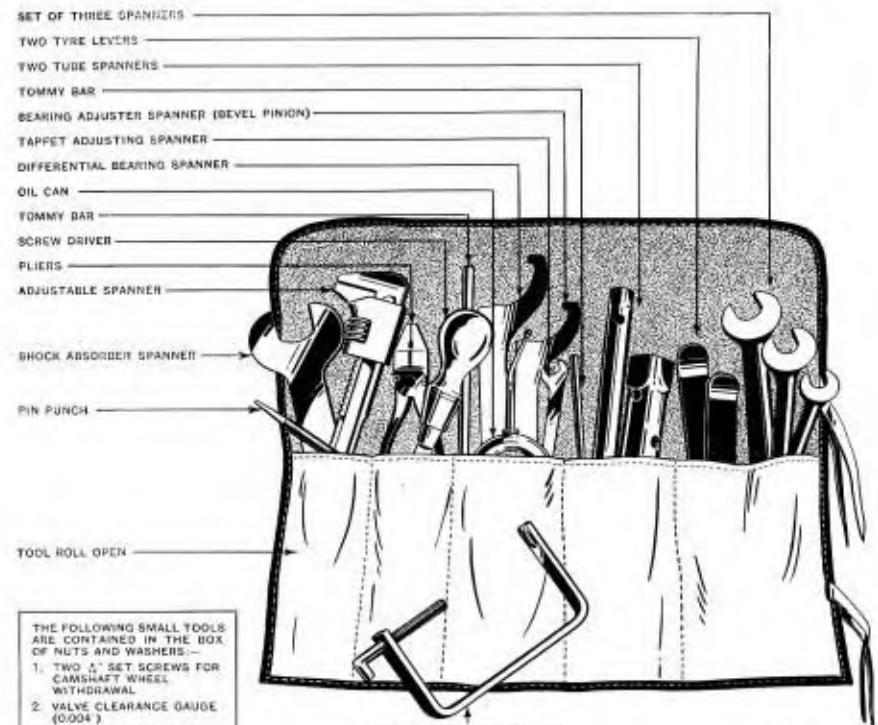


Fig. 60.



THE FOLLOWING SMALL TOOLS ARE CONTAINED IN THE BOX OF NUTS AND WASHERS.—

1. TWO 1/4" SET SCREWS FOR CAMSHAFT WHEEL WITHDRAWAL
2. VALVE CLEARANCE GAUGE (0.004")
3. SPARKING PLUG GAUGE (0.020")
4. DISTRIBUTOR CONTACT BREAKER SPANNER

VALVE SPRING REMOVAL TOOL

Fig. 60A.

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A FEW "DON'TS."

- DON'T neglect to read this handbook and if any point is not clear ask for further instructions from our Service Department.
- DON'T neglect to change the engine oil and, if possible, clean the sump, after the first 500 miles and always use a good lubricant as recommended.
- DON'T rev. the engine immediately after starting up—give the oil time to circulate. Once the oil is circulating, it is an advantage to warm up the engine as quickly as possible. This is particularly important in winter weather.
- DON'T run the engine with too little oil in the sump, or too little water in the radiator.
- DON'T continue to run the engine if the oil pressure gauge indicates an abnormally low pressure but examine the engine to find the cause. The low pressure will probably be due to grit under the ball valve. Have the pump removed and the parts cleaned.
- DON'T allow the engine to exceed 2,500 r.p.m. during the first 500 miles. The equivalent road speeds are as follows.

Maximum Speeds for first 500 miles.	Top Gear Ratio.		
	S.S. I. 4.75	10 H.P. S.S. II. 5.29	12 H.P. S.S. II. 4.86
	m.p.h.	m.p.h.	m.p.h.
First Gear	12	9½	10
Second Gear	21	16	17
Third Gear	32	26	28
Top Gear	44	37	41

- DON'T at any time, even when the car is thoroughly run-in, continually exceed the speeds indicated on page 5.
- DON'T start off in a higher gear than is necessary, whilst this saves one change of gear, it is bad for the clutch.
- DON'T forget to make full use of the gear box when climbing hills.
- DON'T change "up" too soon.
- DON'T use your brakes harshly, it is bad for the passengers, tyres and the car as a whole.
- DON'T forget that rapid cornering not only is uncomfortable for your passengers, but also causes great strains on the chassis and high loads on the wheel bearings.
- DON'T continue to run the car if you feel that there is some slight defect or falling off in power. Investigate this and if you cannot trace the trouble get in touch with our Agent.
- DON'T neglect your tyre pressures and examine the covers for flints as well—this will save you money. See page 25.
- DON'T omit to re-adjust and focus your head lamps if they have become incorrectly adjusted. You will get more pleasure when driving at night and will not inconvenience other road users.
- DON'T forget to switch off the ignition and put the handbrake on when the car is at rest.
- DON'T neglect the level of the acid in the accumulator.

A systemised method applied to maintenance and lubrication, compiled to ensure the correct attention to adjustments relative to mileage, as considered necessary to maintain a high level of efficiency throughout the life of the car.

MILEAGE and MAINTENANCE

The following pages are set out in the form of a diary, showing the speedometer readings, the corresponding key letters, and a space reserved for the signature and address of the operator or agent responsible for the completion of the work required.

We have included the latter section of the diary to serve as a positive record showing that the car has been carefully maintained. The owner will realise that the use of this system will not only maintain efficiency, but will also give a superior second-hand value to the car if produced when exchanging for a new model.

The owner should, whenever possible, have the major operations completed by an S.S. Agent. A list of S.S. Agents will be found on pages 78 to 81.

MILEAGE AND MAINTENANCE.

Speedometer Reading.	Follow Instructions.	DATE COMPLETED.					Operator's Sig. and address. 1st 10,000.
		1st 1000	2nd 1000	3rd 1000	4th 1000	5th 1000	
500	A 1st 500 only						
	B						
1,000	B-D						
1,500	B						
2,000	B-D-E						
2,500	B						
3,000	B-D						
3,500	B						
4,000	B-D-E						
4,500	B						
5,000	B-D-F-K						
5,500	B						
6,000	B-D-E						
6,500	B						
7,000	B-D						
7,500	B						
8,000	B-D-E-H						
8,500	B						
9,000	B-D						
9,500	B						
10,000	B-D-E-G						

These instructions repeat every 10,000 miles, therefore the continuation will be taken from the 500 miles reading, when the equivalent will be 10,500.

MILEAGE AND MAINTENANCE.

Operator's Sig. and address. 2nd 10,000.	Operator's Sig. and address. 3rd 10,000.	Operator's Sig. and address. 4th 10,000.	Operator's Sig. and address. 5th 10,000.

A—FIRST 500 MILES.

Run the car for three or four miles to warm up the oil, drain the engine sump (and, if possible, remove and clean), drain gearbox and rear axle; now replace the drain plugs in the gearbox and rear axle and fill up with paraffin or petrol; the gearbox and rear axle should now be drained finally, when the paraffin will carry away any injurious matter which may have accumulated during the first few hundred miles.

Replenish the gearbox with fresh Castrol X.L., and the axle with Castrol D.

It may be necessary at this mileage to re-set the carburetter slow running adjustment. See pages 35 and 36.

Check over the tightness of cylinder head nuts in the correct sequence as given on pages 40 and 41. See Illustrations 30 and 31.

B—EVERY 500 MILES.

Check accumulator fluid and replenish with distilled water if required.

Access to the filler plugs is obtained by removing the two screws securing the battery lid; the securing rods will then drop sufficiently to allow the lid, and the battery when required, to be removed without obstruction.

Remove the detachable glass bowl from the petrol pump and clean out any foreign matter which may have accumulated in the glass.

Apply grease gun to the following nipples and give two or three strokes:—

- 4 Nipples on front axle swivel pins.
- 2 Front spring shackle pin nipples.
- 1 Nipple on fan.
- 1 Nipple on water pump (2 strokes only).
- 2 Steering track rod nipples.
- 2 Steering drag link nipples.

Coat bonnet rest with a graphite anti-squeak compound.

Apply oil can to bonnet hinges and fasteners, also to door locks (hold the bolt back and insert the oil in the opening exposed around the lock bolt); apply oil to the screen fittings and seat slides.

Apply grease gun to the nipples provided on the door hinges.

D—EVERY 1000 MILES.

Apply oil gun to brake cross shaft supports and brake cable connections, also to the clutch control and pedal shaft bearings (no nipples).

Apply oil can (thin oil) to controls under bonnet, also to ignition distributor oiler; the cam may be smeared with vaseline if it appears dry. The dynamo grease cap should be given one turn on the S.S. II. The reader is cautioned that far more trouble has been caused by excessive lubrication of the dynamo than by too little.

Apply oil gun to steering box nipple and give five strokes only, using Swanshot S.T.

Important. Don't remove the steering box cover plate for the purpose of filling with oil. The cover plate locates the trunnion, which may become disengaged if the plate is removed.

E—EVERY 2000 MILES.

Drain oil from engine sump, then replenish with fresh oil. Use Castrol A.A. in Winter, Castrol X.L. in Summer. (Alternative lubricants on page 23.)

Examine the oil level in gearbox and rear axle and replenish if necessary with the following lubricants. The level plug is shown in Fig. 8 and is accessible from underneath, this should be removed before filling:—

Gearbox—Castrol X.L.

Rear axle—Castrol D.

(Alternative lubricants on page 23.)

Apply grease gun to nipples on the remote control gear lever casing, giving two or three strokes only. (Accessible through transmission arch, Fig. 3.)

Remove road wheels and apply grease gun to the four hub bearings, giving two or three strokes; if too many strokes are given the grease will find its way into the brake drums and seriously reduce the braking power. Before replacing the wheels, smear the serrations and bare metal surfaces with grease to prevent rust and facilitate easy removal and replacement.

Give one or two drops of thin oil to the dynamo oiler on the S.S. I

Clean carburetter filter.

"Trafficators." A little vaseline should be applied by means of a match stick or feather, between the brass cam and the small copper leaf spring. This is situated near to the hinge and can be lubricated when the "Trafficator" is switched up.

F—EVERY 5000 MILES.

Apply grease gun to propeller shaft joints. (Use special grease recommended on page 23.) (The front nipple is accessible through transmission arch, Fig. 3, and the rear nipple from below.)

Lubricate ignition distributor, proceeding as follows:—Withdraw the moulded rotating arm from top of the spindle and add a few drops of thin machine oil. Do not remove the screw exposed to view, but drop the oil on top of it; the oil then passes through a clearance to lubricate the automatic timing control.

Give one drop of oil to the pivot on which the contact breaker arm works.

Check over all engine nuts, also the bolts and screws securing the wings, body and seat fittings, etc.

Lubricate the road spring leaves.

Remove the sparking plugs, clean and set the points to a clearance of 0.020 inches; this can be tested with the gauge supplied with the tool kit. It is advisable when replacing the plugs to inspect the washers and replace with new if necessary.

MILEAGE AND MAINTENANCE.

G—EVERY 10,000 MILES.

Drain oil from gearbox and rear axle and wash out with paraffin or petrol; give time to drain and refill with fresh oil. Use Castrol X.L. for the gearbox and Castrol D. for the rear axle.

Insert grease into rear bearing of dynamo through cover plate provided.

Renew oil cleaner. See page 19.

Engine Sump.

Drain oil and remove sump to thoroughly clean it out. At the same time, remove and clean the oil filter.

The sparking plugs have now completed a normal efficient life and should be replaced; we recommend Champion No. 16 for S.S. I., Champion J.9½ for S.S. II.

1. Complete Check and Adjustment of Brakes.

1. Jack up all four wheels.
2. Check and, if necessary, tighten spring "U" bolts, backing plate bolts, steering connections and wheel bearings.
3. Detach cables at cross shaft and thoroughly lubricate, in accordance with instructions given on page 22.
4. Lubricate bearings of cross shaft and make sure it works freely, also see that brake pedal and cross shaft levers return to their respective stops.
5. Examine brake linings. Loose linings should be re-riveted if wear is not excessive. When linings are worn to rivets, or through previous incorrect adjustment excessive uneven wear has taken place, new re-lined shoes should be fitted. Oil or grease-soaked shoes should invariably be replaced. Do not re-line Bendix shoes, but fit genuine Bendix factory-lined shoes. These shoes have the correct lining properly fitted, and ground to fine limits, and cost no more.

2. Re-setting of Anchor Pins.

The re-setting of anchor-pins is only necessary when new re-lined shoes are fitted, or when, having by means of the shoe adjuster (and eccentric adjuster on S.S. I.), obtained .008" shoe-to-drum clearance at the shoe adjuster end of the shoe, it is found that shoe-to-drum clearance at the anchor-pin end is greater or less than .007" to .010", then the following procedure should be carried out.

Having carried out procedure as detailed in Section 1, proceed as follows:—

1. Slacken off brake adjusters (Fig. 12). Slacken anchor-pin lock nuts. (Slacken off eccentric adjuster lock nut on S.S. I.)
2. Adjust position of anchor pin (Fig. 15) by tapping with a soft hammer towards or away from axle as necessary, until a clearance of approximately .008" is obtained between lining and drum at both ends of each shoe. (Clearances are checked by the insertion of a .008" feeler through slot in drum.) For S.S. I. turn eccentric adjuster in direction of forward rotation of wheel when adjusting anchor pin.
3. Tighten up anchor-pin lock nut as tightly as possible.
4. S.S. I. Tighten up eccentric adjuster lock nut.

MILEAGE AND MAINTENANCE.

3. Adjustment of Cables.

Cables being still detached from cross shaft levers, as per Section 1, proceed as follows:—

1. Expand shoes fully in drums by screwing up the shoe adjusters (Fig. 12).
2. Adjust yoke-end until pins can **just** be inserted through yoke-ends and cross shaft levers, meanwhile pulling on cables to remove back lash at shoe actuating lever. Attach cables to cross shaft levers and lock up yoke-ends.

4. Equalisation of Brakes.

Brake shoes being fully expanded in drums, gradually unscrew adjusters until all wheels are just free, taking care to slack off all brakes equally. Finally check balance on the road as described on page 27.

Bendix Exchange Brake Shoes. Bendix brake shoes should not be re-lined but genuine factory-lined shoes fitted. These shoes have the correct type of lining, correctly fitted and ground to fine limits, ensuring efficient braking and long life.

Bendix Exchange Shoes are obtainable from all Bendix Service Agents and S.S. Distributors and Dealers, or direct from Bendix Limited.

H—APPROX. EVERY 8000 MILES.

The engine may now require decarbonizing. On the other hand, if the 8,000 miles have accumulated in a series of long runs using a good quality petrol, the car will continue to give good service for several hundred miles, whereas if the runs have been short and interrupted such as would transpire in town work, and a poor quality petrol used, the carbon deposit in the combustion chambers will be excessive.

The necessity for decarbonizing will be indicated by the falling off in power, heavy petrol consumption, and over-heating. This condition will also produce a metallic tapping, usually referred to as pinking, and a knocking at slow speeds caused by pre-ignition.

Instructions for decarbonizing and valve grinding will be found on page 40.

K—FIRST 5000 MILES, THEN EVERY 10,000 MILES.

Inspect and adjust brakes if necessary.

1. Jack up all four wheels.
2. Detach the four operating cables from their respective levers on cross shaft.
3. Make sure that cables are free in their conduits, cross shaft works freely, and that when brakes are "off" brake pedal and operating levers return back against their stops.
4. (S.S. I. only.) Centralise shoes in drums. To do this, slack off locknut and turn eccentric adjuster in direction in which wheel revolves when car is moving forward, until a slight brake-drag is felt. Then slack off adjustment slightly until wheel is just free. Tighten locknut.
5. Expand shoes fully in drums by screwing up the shoe-adjusters.
6. Adjust cable lengths. Cables should be adjusted just tight enough, that while there is no slack, the joint pins can just be inserted through the yoke-ends and cross shaft levers.
7. Adjust and equalise brakes. To do this, unscrew shoe adjusters until each wheel is just free, taking care to slack off all brakes equally. If the brakes are not quite balanced, adjust them on the road as previously described.