

HANDBOOK
OF
*The Austin
Seven*



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13th EDITION

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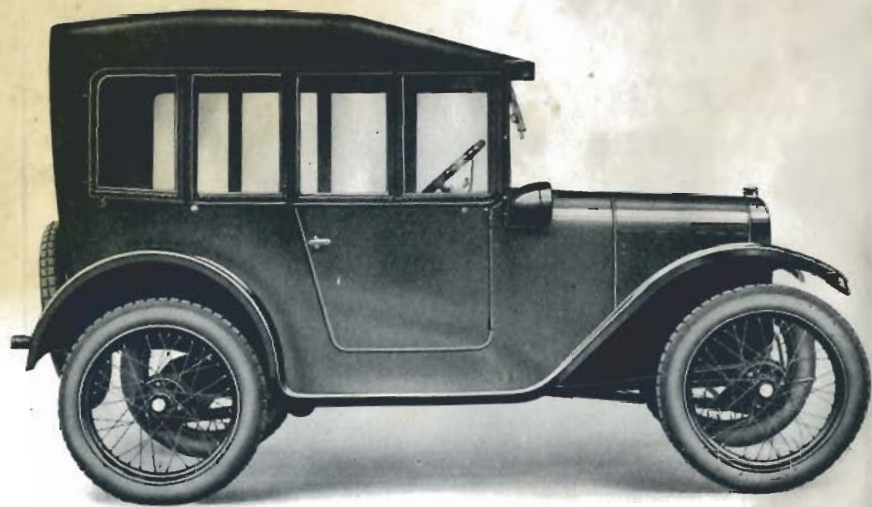
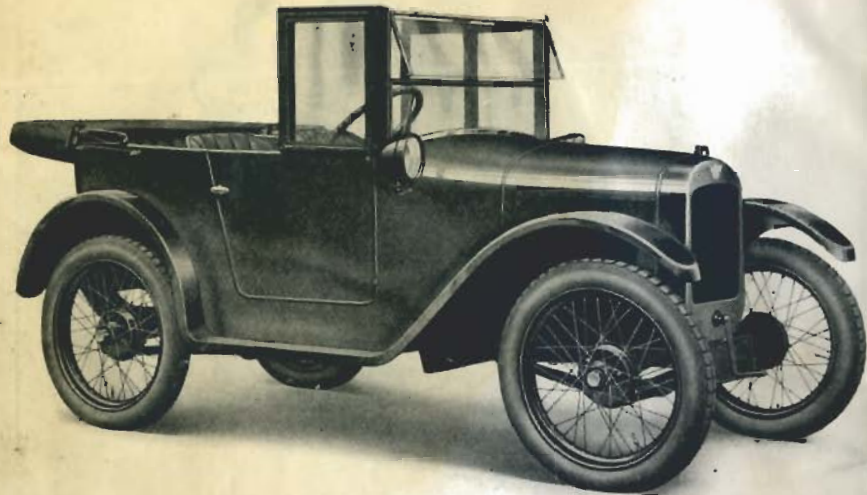
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The "AUSTIN SEVEN"



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THE "AUSTIN SEVEN"

THE "AUSTIN SEVEN" seats two adults and three small children, or if children are not carried, a large space is available for luggage. It is not intended to carry four adults, or weight over 30-32 stone. Everyone is brought within the hood, while the car is fitted with a double-windscreen, and side screens opening with the doors. It has a 4-cylinder, water-cooled engine, three-speed gearbox, and bevel drive through differential. Lubrication is by pump, and cooling on the thermo-syphon system and a fan. There is an electric starter. Electric light is fitted, and spare wheel and tyre and shock absorbers are included in the equipment. Brakes are fitted on all wheels, which are fitted with 26×3½ in. Dunlop balloon cord tyres. As the body is stove enamelled, the car is extremely easy to keep clean.

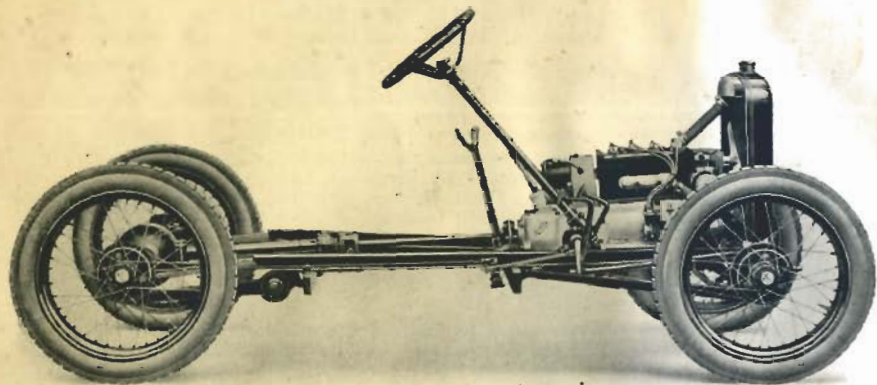
This little car, which can be run for about a penny a mile, is an ideal car for a woman to use herself, enabling her to do the shopping without fatigue, to visit her friends more frequently and attend social and recreative functions. Another appeal is to the business man as it enables the executive to make the utmost use of his time, while his expenditure is no more than it would be on tram or bus fares, and there is no need to point out the value of such a car for the commercial traveller, who can penetrate into districts which poor train services would make it hardly worth his while to cover otherwise.

The "Austin Seven" also serves as a tender for the country house, enabling a servant to go down to the village or post, or to the doctor at any time of the day or night, without the expense and trouble of getting out a big car. The speed, economy and road holding qualities of this small car place it beyond all comparison with the sidecar combination, and it is in addition, a thoroughly good job, planned and made with the car instead of the motorcycle aspect in mind.

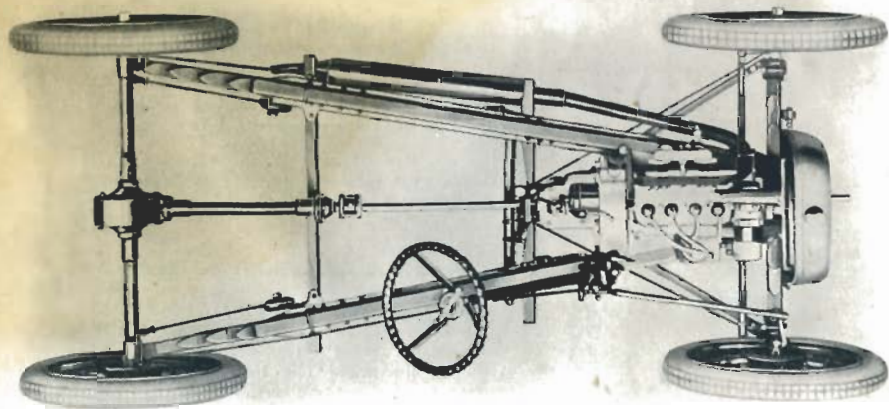
Its Leading Features

- DIMENSIONS** . Full car length, 9 ft. 2 in. (2,796 mm.); Full car width 3 ft. 10 in. (1,169 mm.); Wheelbase, 6 ft. 3 in. (1,905 mm.); Track, 3 ft. 4 in. (1,016 mm.); Weight, approx. 8½ cwt. (425 kg.). Ground clearance 8½ in. (220 mm.)
- ENGINE** . . . Four-cylinder water-cooled detachable head.
Bore 2.2 in. (56 mm.) } 747.5 c.c.. R.A.C. rating, 7.8 h.p.
Stroke, 3 in. (76 mm.) }
Brake horse-power: 10.5 at 2,400 rev.
Ignition: Magneto.
Oil circulation: by pump.
Cooling: Thermo-syphon with film radiator and fan.
Roller crankshaft bearings.
- STARTER** . . . Electrical.
- CLUTCH** . . . Single-plate.
- GEARBOX** . . . Three speeds forward, and reverse; ratios: 4.9 to 1, 9 to 1, and 16 to 1; reverse, 21 to 1; Ball bearings throughout.
- REAR AXLE** . . . Semi-floating, with differential and torque tube.
Ball bearings and thrusts throughout. Final drive by shaft and helical bevel.
- SPRINGS** . . . Semi-elliptic cross spring in front.
Quarter elliptics at rear.
Shock absorbers are fitted to front and rear.
- STEERING** . . . Worm and wheel, having provision for taking up wear.
- FRONT AXLE** . Forged, "H" section.
- BRAKES** . . . On all four wheels; compensated and easily adjustable.
Hand brake to the front wheels. Foot brake to the rear wheels.
- WHEELS** . . . Special wire detachable, fitted with 26 in. × 3½ in. Dunlop balloon cord tyres. One spare wheel with tyre.
- CONTROLS** . . . Gear lever, in gate, and brake lever, mounted centrally.
Throttle and magneto control levers mounted on the steering wheel. Foot accelerator is also provided.
- PETROL TANK** . 4 gallons.
- LIGHTING** . . . By gear-driven dynamo, with accumulators and dimmer.
- BODYWORK** . Two bucket seats for driver and passenger, that for the driver being adjustable and that for the passenger being hinged to allow entrance to the rear seat. Rear seat to carry two or three children. Ample tool accommodation under seats. Spare wheel and tyre carried on back of car. Hood, double screen, and full side screens (those over the doors open with them). Electric horn, and speedometer. The panels are stove-enamelled for durability of finish and ease of cleaning.
- WORKMANSHIP AND MATERIALS** . . Austin quality.
- INSURANCE** . Special Insurance has been arranged at £8 10s. 0d. per annum.

"AUSTIN SEVEN" CHASSIS



SIDE VIEW



PLAN VIEW

The NEW CAR

ON taking possession of a new car it is advisable to give it a general examination to see that all is complete and in order.

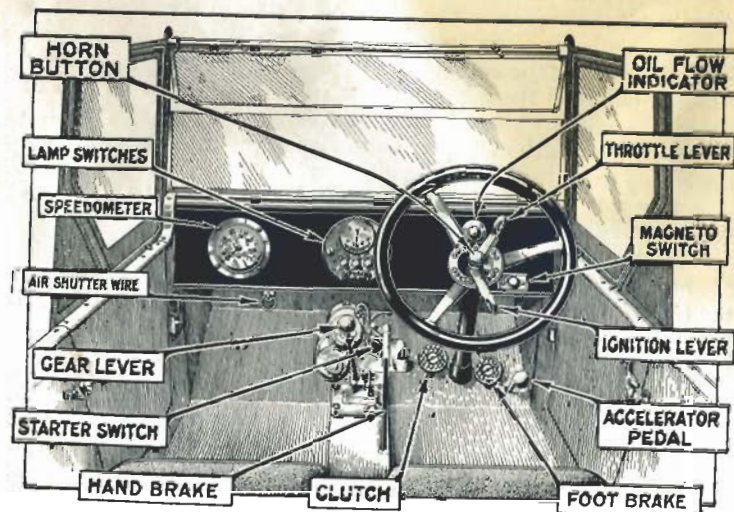
Before running see that the car is supplied with fuel and water, and that the engine and gearbox have the necessary quantities of oil. The battery should contain the required amount of acid. For quantities of oil and acid see sections "Lubrication" and "Electrical Equipment."

Make sure that the tool-kit is complete, check it over according to the list given on page 39.

If you are not already familiar with Austin cars, we strongly recommend that the handbook be carefully studied.

Should the car be delivered by road it will be ready for running but if it has been transported by rail or overseas, the engine may have become stiff through the gumming of the oil on the pistons. They may be freed by the injection of a little petrol into the cylinders, through the compression plugs, and then turning the engine a few revolutions with the starting handle.

When a car is crated for dispatch overseas, water, fuel, and oil are removed and the battery left empty and uncharged.



Starting the Engine

Make sure that the change speed lever is in neutral position, and the hand brake on if the car is not on level ground.

Turn on petrol tap at the bottom of the petrol tank (this will be found under the bonnet).

Set the engine control levers at the top of the steering wheel as follows: Throttle—open about $\frac{1}{2}$ in. Ignition—almost fully advanced.

Give the engine a few turns with the starting handle to make sure that the crankshaft is free, then switch on. Pull out the wire on the instrument board to close the carburetter air inlet, and again give the crankshaft a few sharp turns by means of the starting handle, making sure to pull the handle upwards to commence with. *Be sure to release the air shutter wire after the engine has started.*

Do not try to start the engine when cold by the electric starter.

It is most important that the engine be not allowed to race when first starting up, as time must be allowed for the oil to circulate and lubricate various bearings.

Difficulty in starting may be caused either through sucking too much petrol into the cylinder, or too little. If one starts with the throttle all but closed, a strong suction takes effect on the pilot jet, and it is seldom necessary to flood the carburetter, and in any case it should only be flooded slightly. If petrol is passing through the carburetter the suction can generally be heard. If the engine fails to start and there is a good deal of petrol overflowing from the carburetter it is almost certain that the mixture getting into the cylinder is too rich. In this case open throttle about half way. This reduces the suction effect by allowing a greater proportion of air to enter the engine. On firing, the engine may race away, but will soon settle down to steady running. If the engine does not fire, close the throttle entirely and try again. After a stop in hot weather, failure of the engine to start is more likely to be due to too rich a mixture than one too lean, and one should stop the engine by the switch only after quite closing the throttle. Re-start the engine with the throttle closed.

The car itself should never be allowed to run at high speeds for the first 300 miles.

If after the foregoing instructions have been carried out under the heading of "Starting the Engine," but the engine fails to start the reason will probably be due to faulty ignition or carburation.

Ignition: First examine the wires and see that the sparking plugs are connected. Then test the gap of the plug points by means of the thick end of the gauge provided in the tool kit. If the points are dirty, clean them before replacing the plug. For fuller details on the ignition system see page 16.

Carburation: The slow running jet may be stopped up or a main jet choked. Blow them out with a tyre pump. For fuller details about the carburetter see page 14.

CONTROL OF THE CAR

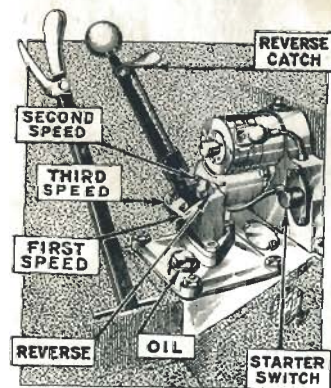
Setting of Control Levers

AFTER having started the engine, keep the ignition lever in the advanced position; should the engine commence to "rumble" or run roughly, retard the lever, but advance it again as soon as the load on the engine is lessened. The "gas" lever should be set generally for slow running and the speed of the car controlled by the accelerator pedal.

Changing Gear

Double declutching will be found the best method of gear changing on the "Austin Seven" and should be adopted straight away. It will be understood that when changing up the foot should be taken off the accelerator pedal, and that when changing to a lower gear it should be held down. The car should be well accelerated on each speed when changing up, and a deliberate pause should be made with the gear lever in neutral position and with the clutch in whether changing up or down. The catch below the knob of the gear lever must be raised to allow the reverse gear to be engaged.

Always change gear early on a hill; never allow the engine to labour in any gear and expect it to pick up speed on changing into a lower one when the car has nearly stopped.



Keep the foot off the clutch pedal except in heavy traffic. Even then, do not allow the weight of the foot to be taken by the pedal. The slipping of the clutch caused by this practice heats and wears it badly.

When descending a long hill, supplement the action of the foot-brake at intervals by the use of the hand-brake for brief periods. It is often advisable to engage one of the

lower gears before commencing a steep descent, with throttle closed. When using the brake, keep the clutch in, disengaging it at the last moment if stopping the car.

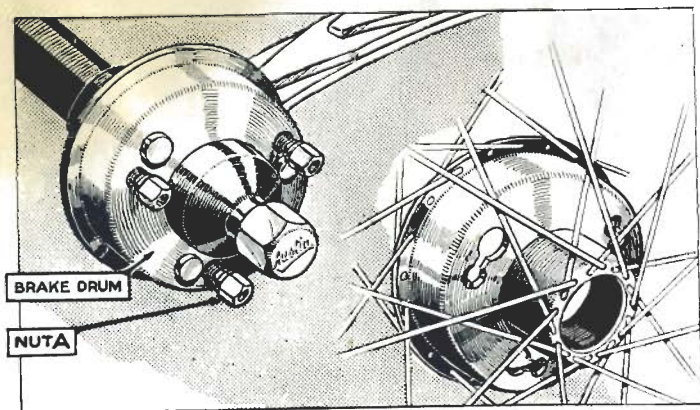
The driving seat of the "Austin Seven" is adjustable for position and this convenience should be taken advantage of so as to obtain the greatest comfort.

HOW TO CHANGE A WHEEL

WHEN it becomes necessary to change a wheel because of a puncture or for any other cause, it will be necessary first to remove the number plate. The spare wheel is fastened on a bracket with three screws, in a similar manner to its fixing on the hub.

To detach a road wheel from the hub loosen the three right-hand threaded nuts A which are in the hub of the wheel, by means of the brace: it is not necessary to remove them entirely. Now pull the wheel outwards about $\frac{1}{2}$ in. and turn it so that the large hole will pass over the nut. The wheel can now be pulled off the hub. When replacing make sure that the large hole in the hub is properly fitted over its peg.

Should difficulty be experienced upon the first occasion of removing the wheel from the hub, the wheel nuts may be screwed right off. The brake drum will then come away with the wheel. To free this from the wheel, insert a screwdriver between the two flanges. Before replacing, wipe the outside of the brake drum and the inside of the hub with an oily rag. Great care is necessary in order that no damage is done to the flanges.



PERIODICAL ATTENTIONS

THE importance of giving careful attention and regular inspection to the modern automobile cannot be over-estimated. If this is done systematically considerably greater pleasure will be derived from motoring as the car will always be kept in tune and will not require adjusting at inopportune moments.

Further, by following out the instructions given in this book, expensive repairs may even be avoided, as much of the trouble experienced by motorists could have been avoided if attention had been given to details at the proper time.

The following instructions are arranged on a daily, weekly, or monthly basis. The estimated needs of the car for such periodical attention is based on the assumption that the maximum mileage for a week will not exceed 300 miles.

Daily Attentions—See also Lubrication Chart, page 23.

1. Examine water level in radiator and fill up to within 2 in. of the top. Always use the strainer when re-filling as dirty water will cause the radiator film to become choked.
2. Examine oil level in the crankcase and add more oil if necessary. The tell-tale dipper rod indicates the level of the oil (see illustration, page 21).
3. Fill up the petrol tank if necessary. Care should be exercised when filling the tank not to spill the petrol over the engine.

Weekly Attentions

1. With the grease gun charge—
Front spring shackle pins (4).
Rear spring pins (2).
Front wheel swivel pins (2).
Steering cross tube (2).
Fan bearing.
2. Oil the following—
Handbrake gear.
Pedal gear and jaw joints.
Engine control and ball joints.
Clutch release ring.
Rear Brake cam spindles (2).
3. Examine both sets of brakes, and adjust if necessary. For method of doing this see page 34.
4. Inject high speed grease such as Messrs. Stern's "Diamol" into the universal joint at the rear end of the propeller shaft, and yellow grease into the front end of the torque tube.
5. Oil the joints of the steering side tube.

Monthly Attentions

1. Examine the oil level in the gearbox which should contain two-thirds of a pint, or measure 2-2½ in. deep.
2. Charge the back axle case with a gunfull of grease and oil mixed half and half.
3. Fill all the hubs with grease, as instructed on page 27.
4. Charge with grease the steering worm case through the connection.
5. Examine the battery and see that the connections are tight.

Occasionally

Examine all bolts and nuts, and any other parts such as steering connections, neglect of which might lead to failure and breakdown which would be followed by an expensive repair and the inability to use the car for a lengthy period.

Spring clips and cylinder head nuts should be tightened up occasionally when the car is new, and the nuts whenever the cylinder head has been recently replaced.

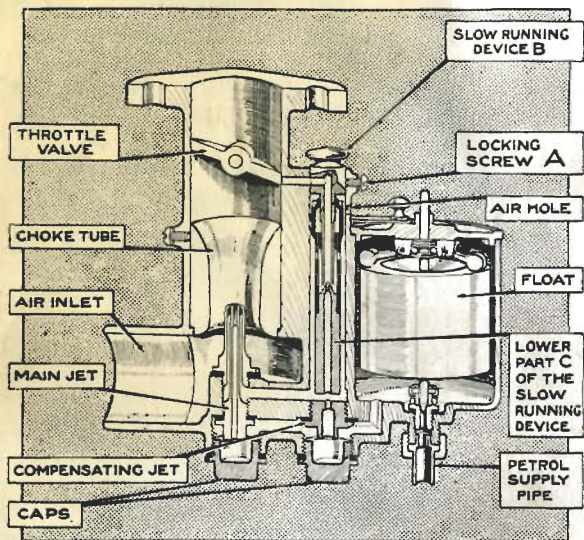
It is advisable occasionally to remove all the road wheels and clean inside the hub and wipe with an oily rag.

This ensures the rapid removal of a wheel in case of a puncture when on the road.

"Little, but often" should be the motto in lubrication.

The CARBURETTER

THE following instructions have reference to the Zenith carburetter, adjusted by determining the correct sizes of the choke tube, main jet and compensator. The purpose of the choke tube is to obtain the correct velocity of air around the jet in order to get the best mixture at all speeds. The main jet



has most influence at high speeds. The compensator, which corrects the irregularities of the main jet flow due to differences in engine speed, has the greatest influence at slow speeds. Besides these three parts there is a special device to provide for slow running. The carburetter is tuned and set at the works to give the best results under ordinary conditions; should the car be taken to districts where the atmospheric conditions vary considerably, or a different fuel be used, it may be advisable to adjust the carburetter accordingly. Before making alterations to the carburetter, make quite sure that the engine is in good running order, particularly the ignition. The standard carburetter setting is:—

Choke	15 mm.
Main Jet	·70 mm.
Compensating Jet	·75 mm.

Method of Adjustment

Before altering the carburetter setting, turn off the petrol by means of the tap underneath the tank. A jet key is sent out with each car for the purpose of taking out the main and compensating jets. The caps below the jets must be removed by means of the adjustable spanner, when the jets can be unscrewed with the special key. When replacing either, make sure that they have washers on them, and are well down on the shoulder.

Slow Running

Too much petrol for slow running causes choking and hesitation in the pick-up. Although the engine may start easily and keep running, it commences to run jerkily. A want of petrol, on the other hand, causes a loss of power and misfiring at the same time. It is, therefore, necessary to regulate the slow running as carefully as possible. First release the small locking screw A and then withdraw the tube B, as illustrated. To reduce the quantity of petrol unscrew the lower part C of the tube B, one notch at a time. Reverse the operation to increase the flow of petrol. The jet can be unscrewed from the lower part of the tube. There are other factors quite apart from the carburetter which have a great influence on slow running (slow running when the engine is out of gear and the car is stationary). These factors are:—

Cylinder head and induction pipe joints not air-tight.

Valve guides worn. Valves not seating tight.

Ignition too much advanced.

These points must always be taken into consideration, and one should not blame the carburetter only if slow running is not satisfactory.

Leakage from the Carburetter

The cause is that the float control is out of adjustment—the float perforated—or there is dirt on the needle seating, which should be cleaned. The two defects first mentioned should be remedied by an expert.



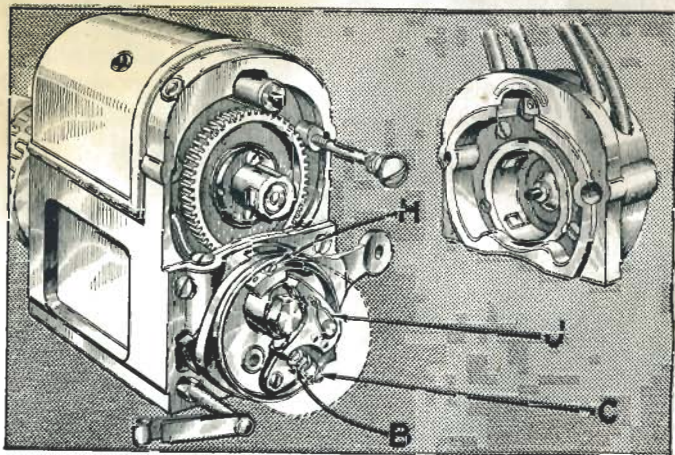
The B.L.I.C. Magneto

IN the B.L.I.C. magneto the magnet rotates while the armature, with its low and high tension windings, remains stationary. Slip rings, long rotating brush holders, collector brush holders and so on, have been replaced by a short stationary connector piece leading the high tension current from the stationary armature to the stationary distributor terminal. The contact-breaker is also stationary, the cam being revolved instead.

The Contact-breaker

This may be with-drawn after removing the end cap. To adjust the gap between the points, slacken the lock-nut (C) and rotate the long screw (B): be sure to re-lock it after adjustment. When the gap is measured, care should be taken that the contact-breaker base is bedding on its seating, otherwise the gap setting will be incorrect when the cap and retaining spring are replaced. A special spanner, with gap gauge attached, is provided.

When the contact-breaker is removed, the brass contact block at the back, against which the laminated copper spring blades press, should also be examined; any oil or metal dust should be wiped off. The bush on which the bell-crank works has a lubrication groove in the centre filled with sufficient grease to enable it to run without attention for upwards of 10,000 miles. After that it is advisable to remove the lever, and add a very slight amount of fresh grease.



The distributor is of the jump-spark type and requires very little cleaning, since there is no rubbing contact. See that the central carbon brush moves freely in its socket.

Lubrication

One lubricator only is provided. Two or three drops of engine oil every thousand miles is ample. The two main rotor bearings are packed with grease and will run indefinitely without further lubrication.

DETECTION OF MAGNETO FAULTS

Defective insulation, or a loose or broken wire in one of the high tension cables leading from distributor to plugs, may occasionally be responsible for misfiring. It is extremely unlikely that any trouble will be caused by sticking of the bell-crank. Should it occur it may be cured by removing the screw (H) fixing the two springs displacing the hair-pin spring (J) from its groove, and pulling off the crank. If it is found, for instance, that the pin has rusted, it should be cleaned, and, if necessary, the bush should be reamed out to a slightly larger diameter. When the crank is detached, make sure that the ends of the springs are clean and free from rust. This is essential, as the low tension current passes through both the spring and the pillar.

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

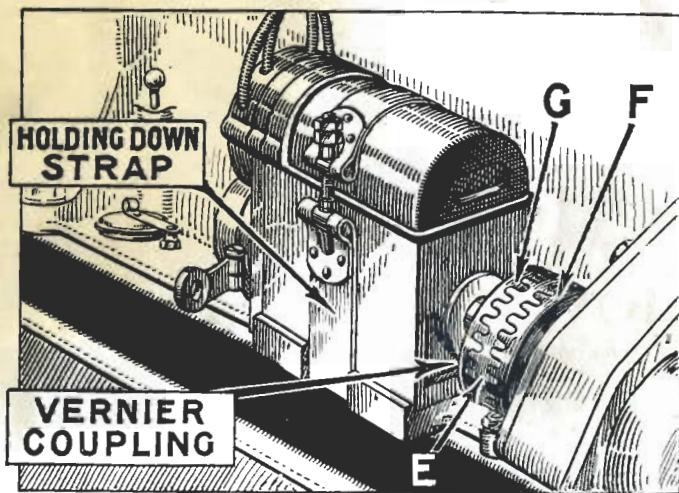
Re-timing

Turn the engine until the piston of No. 1 cylinder is at the top of the compression stroke. The spindle of the magneto should then be turned until the hole which is drilled in the distributor gear wheel coincides with a similar hole behind the gear wheel in the aluminium housing. A peg should next be inserted into these holes; this will lock the magneto in the correct position for connecting to its drive, and the coupling may then be tightened up. The lead from No. 1 sparking plug should be connected to the bottom left hand distributor segment; the cable socket which corresponds to this segment is marked with a dash (—), on the top of the distributor, and will be found to be the opening furthest on the left-hand side when the magneto is viewed from the contact-breaker end.

The other leads should be connected to the remaining distributor segments in the correct firing order, as already ascertained—the distributor brush revolves in the opposite direction to the rotor. Remove the peg before starting the engine. As a final check, the timing lever may be fully retarded, when, if the piston of No. 1 cylinder is still at the top of its compression stroke, it will be found that the contacts are on the point of separating, and the distributor brush is just beginning to point at distributor segment No. 1.

Re-timing—continued.

Very fine timing of the magneto can be secured by means of the vernier coupling. Having obtained position of lever, piston, distributor brush and contact-breaker as described, push the magneto coupling together, turning the rubber disc E till it accommodates itself. If it is then thought well to advance the timing a little, it can be done by gradations smaller than the degrees of a circle. On the front coupling F are 20 round teeth, and on the armature coupling G, 19. Therefore, if the rubber disc is moved towards the operator one tooth on the front coupling ($1/20$ of a revolution), and the magneto coupling one tooth over the rubber disc away from the operator ($1/19$), the net movement towards one (advance) will be $1/19$ minus $1/20$ of a revolution, or $1/380$.



Timing can be retarded by moving the magneto coupling G a tooth away from one, while holding the rubber disc stationary, and then moving the disc a tooth towards one at its front end. The order in which the cylinders fire is (from the front) 1, 3, 4, 2. Note that this is not the order of the numbers on the magneto, which are in regular order. The magneto leads are marked at the plug ends for attachment to the proper plugs.

Faults in Ignition

Faulty ignition will cause difficulty in getting the engine to "fire" or fire regularly. First examine the wires and see that the sparking plugs are connected. Then test the gap of the plug points by the thick blade of the combined tappet and sparking plug gauge supplied. If the points are dirty, clean them before replacing. A sudden stoppage of the ignition may result from the short circuiting of the switch cable attached to the top of the magneto. This can be readily detected by disconnecting the cable from the terminal H, when the engine should fire properly.

Irregular firing may result from the contact-breaker not being in proper adjustment or from carbon dust lying on the track of the distributor brush, and these should be given the attention previously described. No attempt should be made to dismantle the magneto further than necessary, and if additional difficulties arise, or repairs become necessary, it should be returned to the magneto manufacturers or to us.

HOW TO USE THE GREASE GUN

Screw the handle right out. Unscrew the extension piece by the knurled nut at the base of the barrel and fill the barrel with grease; then replace. Give the handle one complete turn: this fills the telescopic extension piece at the end of the gun which will project. Now place the end of the gun on the nipple attached to that part of the car which it is desired to grease, and push. The extension piece closes and discharges the grease into the nipple.

Give the handle another turn and the gun is once more charged. Continue until the barrel is empty and then refill.

The COOLING SYSTEM

THE cooling of the engine is maintained by a capacious radiator which should be filled, with rain water, if available, up to within 2 in. of the top of the filler. The capacity of the radiator, pipes and cylinder jackets is 9 pints.

In Cold Weather

Care should be taken to see that the water is drained off completely, for, in case of freezing, it will do harm by lodging in small spaces and fracture of cylinder and pipes will result. In Great Britain, the climate does not very often call for the cooling system to be drained, but it is well to err on the right side and take due precaution against damage if frost be threatened.

Glycerine mixed with the water will reduce its freezing point by several degrees. It should be added in the proportion of 15% or 20%.

In order to prevent the gradual formation of deposits in the cooling system, with consequent impeding of the circulation, the use of hard water should be avoided. Rain-water, syphoned from the top of the barrel where it is clean, should be used, or, failing that, water that has been boiled.

Causes of Overheating

Overheating may be attributed to one or more of the following :

Slack fan belt: the belt can be tightened by turning the fan spindle in its bracket after loosening the clamping-nuts.

Excessive carbon deposit in cylinders. See "Running Adjustments."

Running with ignition too far retarded.

Using oil of poor quality, or lack of oil in the reservoir. See "Engine Lubrication."

Partial choking of the oil jets.

Improper carburettor adjustment, giving a mixture too rich or too weak. See "The Carburettor."

Failure of water to circulate, because of choked radiator tubes, water level below the tops of the radiator tubes, or loss of water through leakage from connections.

Trouble arising from a damaged radiator generally necessitates its dismantling and despatch to a repair depot. The entire circulating system should be thoroughly flushed out occasionally. To do this open drain tap at bottom, place a hose in the filler, and run fresh water through.

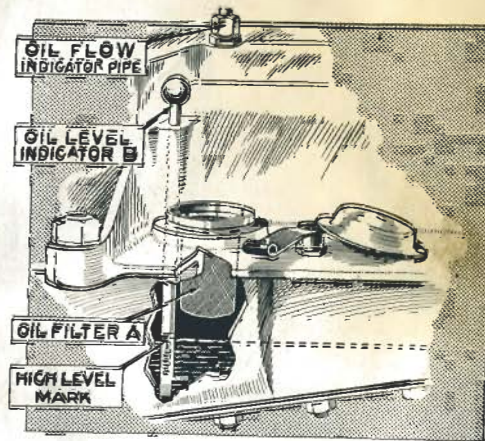
LUBRICATION

The Engine

ONE of the following oils is recommended: Stern's Sternol WW., Frice's Motorine C., Speedwell Sans Egal Zero.

If the oil is too thick it will tend to clog and carbonise, and if too thin it might lead to scoring of the pistons and bearings. Assurance that oil is continuously circulating is given to the driver by means of the tell-tale button on the instrument board which protrudes when the oil is circulating.

It is essential that all receptacles for oil be kept perfectly clean. Dirty oil leads to undue wear of all bearings, or might even clog up the oiling system and prevent it working, thus causing an engine seizure and much trouble and expense. The oil filler strainer (A) is reachable for cleaning. Add fresh oil from time to time as may be required. Never pour oil into the engine except through the strainer.

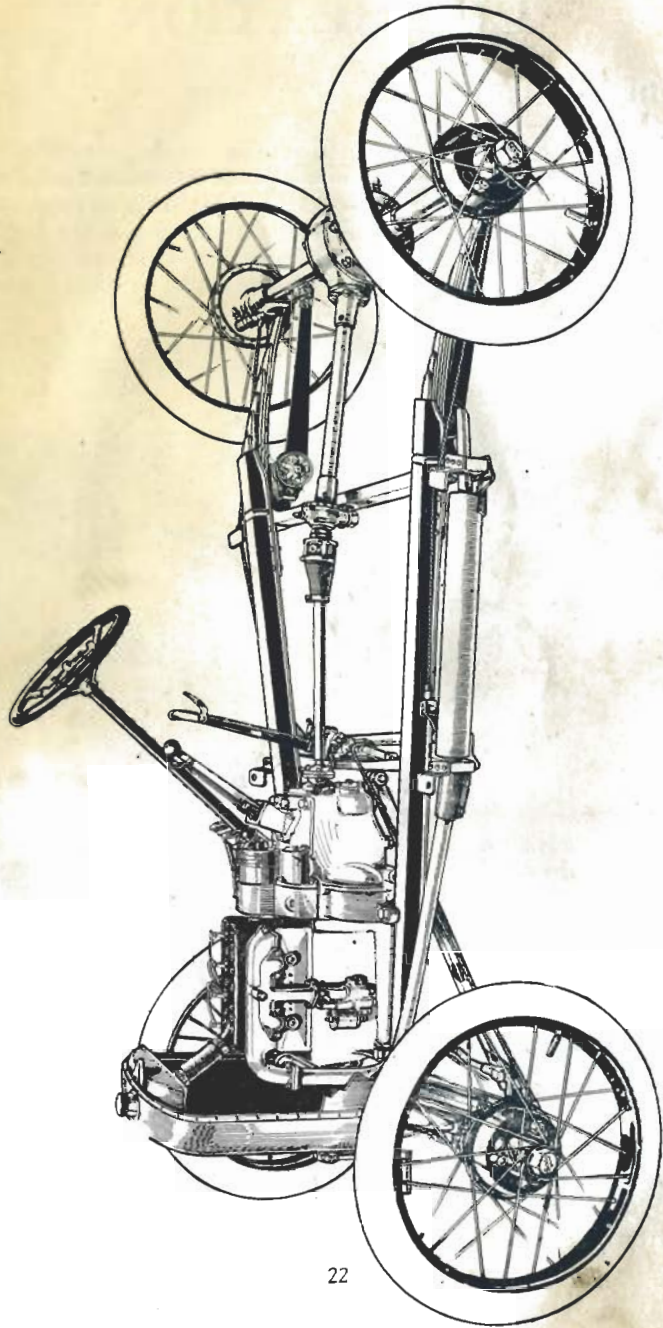


It is advisable to change the oil in the engine entirely after every 1,200 to 1,500 miles running or sooner. To drain the dirty oil from the crankcase remove the plug underneath the reservoir. This should be done while the oil is hot and sufficient time allowed for all of it to drain completely.

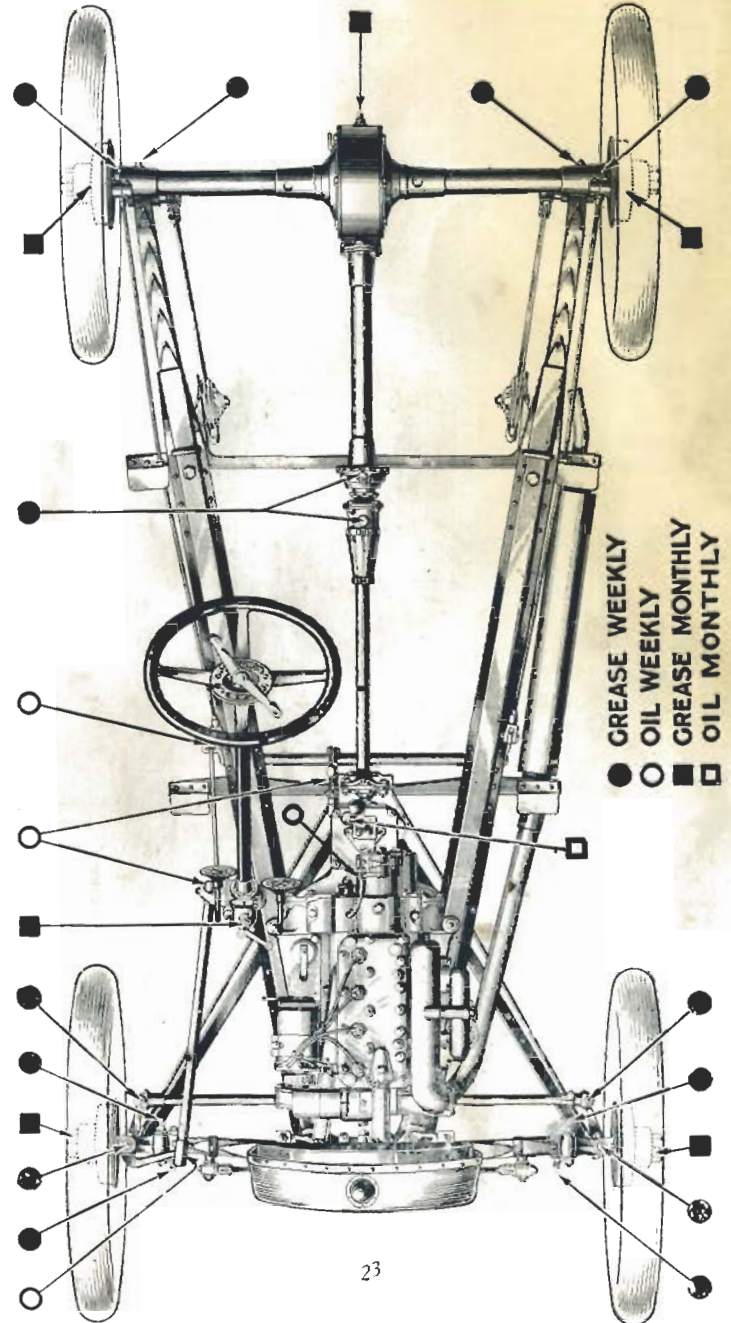
Every 2,400—3,000 miles remove the oil reservoir and tray containing the strainer, carefully clean the gauze and remove all dirt from inside the reservoir and replace it. Carefully remake the joint with the packing washer, covering both sides of it with gold size. See that the drainplug is screwed up tight, then fill the crankcase with oil to the maximum level as shown on the dipper rod, B. About three pints will be required.

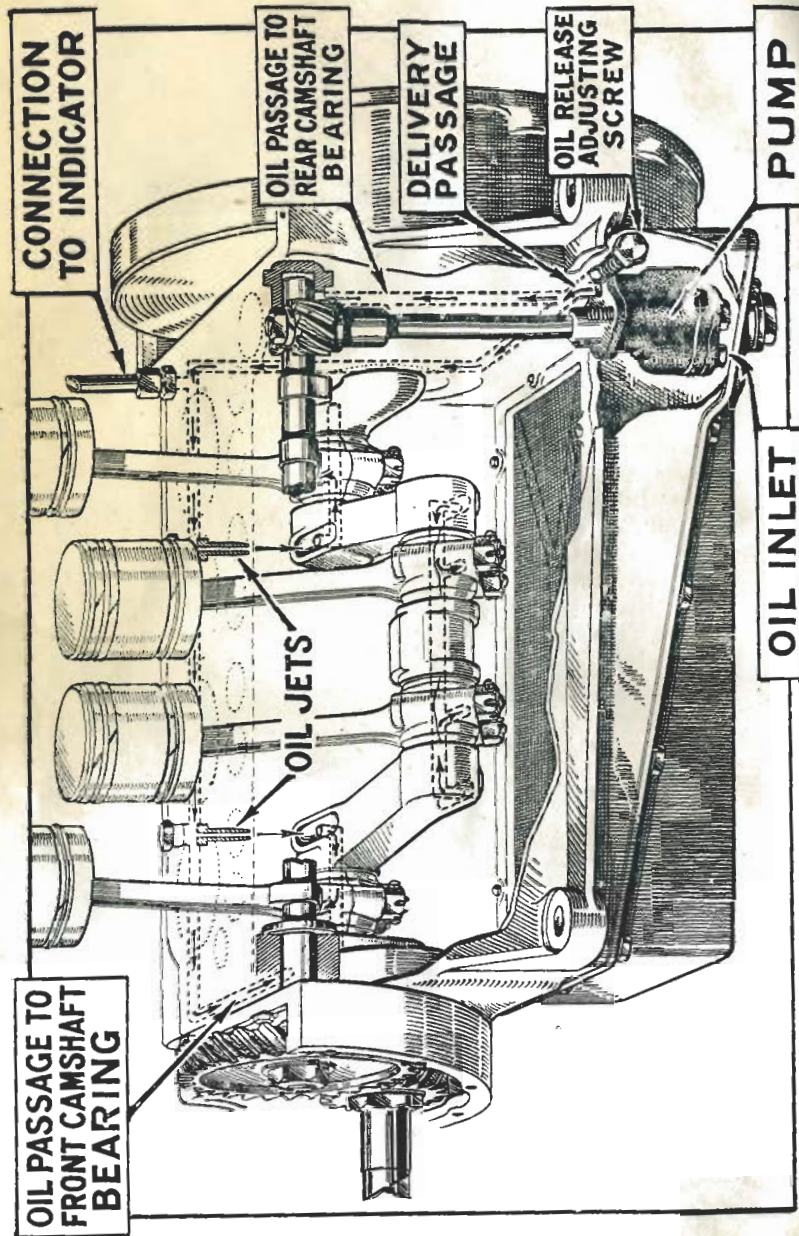
Always inspect the level of the oil and add, if necessary, to the correct level before starting on a journey.

THE CHASSIS



LUBRICATION CHART





The main bearings of the engine are of the roller type, and the oily vapour in the crankcase is quite sufficient to lubricate these.

The pistons are also lubricated by the oily vapour.

Lubrication of the big-ends is effected by catching oil from the pump-fed jets in pockets on the crankshaft webs.

It is advisable to make sure these jets are always clear and to do so the plugs over the jets (see illustration on page 24) should be occasionally removed and a piece of stiff wire inserted through the jets. This prevents foreign matter accumulating in the jets and choking them.

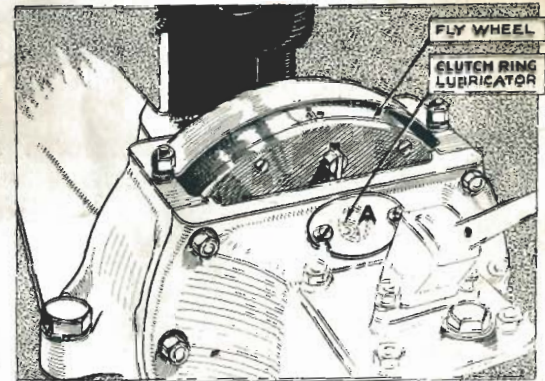
Gearbox

A suitable oil for the gearbox is the same as that used in the engine; but if for any reason another brand of oil is used it should be of about the same consistency and no thicker, otherwise it will not reach all the bearings. The depth of the oil should never be less than 1 in. or more than 2½ in. It can be measured by a rod inserted through the filler plug hole. The maximum quantity is approximately ⅔ pint. The correct oil level should be maintained; excess of oil will leak from the bearings and seriously affect the clutch, causing it to slip; on the other hand there must be sufficient oil to prevent wear.

The gearbox should be drained entirely after the first 500-800 miles, and then after every 4,000 or 5,000 miles, when any grit, etc., which may have collected will drain away through the plug hole in the sump.

Clutch

The clutch surfaces being of a fabric material must be kept free from oil and grease, or the clutch will fail to grip. It is necessary to lubricate the operating ring at point A, as shown on the sketch, once a week.



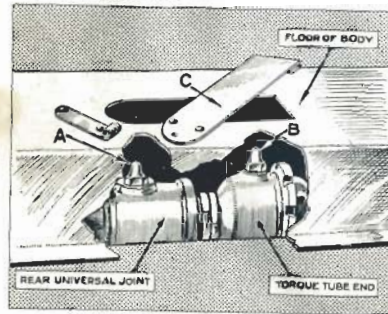
Rear Axle

For the rear axle attention: every 1,200 to 1,500 miles should be sufficient. A mixture of yellow grease and engine oil of equal parts should be used and injected with the grease gun supplied with the car. Do not inject too much grease at any one time as the felt rings will fail to hold this grease in the axle case, and it will then leak through on to the brake drums and prevent them from being effective.

Rear Universal Joint

The makers recommend that a good quality "high-speed" grease be used. This is of a dark brown colour, and will remain in the joint longer than the ordinary yellow grease.

The rear universal joint being of metal, must be kept well lubricated at A on account of the movement of the rear axle. It should be one of the points to have strict attention. Access for greasing this, together with the grease connection B on the end of the torque tube, is obtained through a cover C in the floor of the body, as shown on the illustration adjoining.



Brake Gear

On each of the rear brakes there is a lubricator for oiling the cam spindle bearing. These and all other joints, etc., should be oiled once a week.

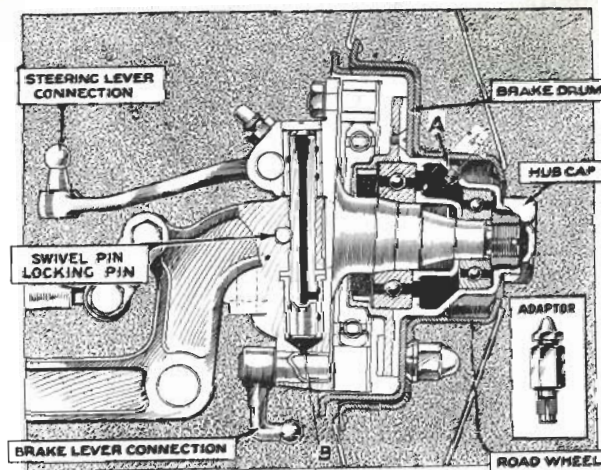
The front brake cam spindle is lubricated from the swivel pin as shown at B, on illustration

Front Axle

The swivel pins are lubricated with the grease gun.

Hubs (front)

Remove the road wheel. Turn the hub until the plug "A" is at the top. Screw out the plug and screw in the adaptor illustrated which is provided in the kit.

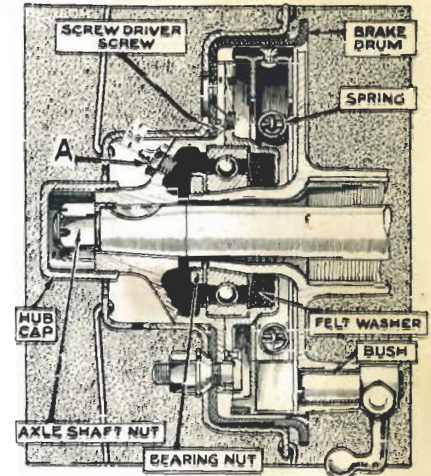


Hubs (front)—continued.

Fill the hub with grease until it is seen to exude from the flutes, or slots, at the base of the adaptor. It is important that the hubs are not given too much grease, otherwise the brakes will not be effective.

Hubs (rear)

Remove the road wheel. Turn the wheel until the nipple "A" is at the top. Inject grease into the hub; one push down of the telescopic extension piece is sufficient for ordinary maintenance purposes, but when it is desired to give extra attention to the lubrication of the rear hubs the nipple can be extracted and the adaptor already referred to, inserted in its stead, the same procedure being adopted as that described for the front.



Steering Gear

To obtain easy steering it is important to give it regular attention as regards lubrication. The grease gun connection is on the top of the worm case, and if a charge is given once a month it is sufficient to lubricate the bearings of the worm and worm wheel, and also lubricate the worm itself. The bearing at the top of the column, just under the steering wheel, can be given a little oil from the oil-can. The steering connections on the side rod and the nipples at the end of the cross rod given a charge of grease once a week.

Road Springs

The ends of the road springs where they are attached to the axles are provided with grease gun connections, and should be given a charge once a week if the car is continually used. After a long period of use it is advisable to lubricate the leaves of the spring with a warm mixture of white lead and tallow in equal parts. This can best be applied with a stiff brush, the leaves being eased apart by a screwdriver; first jack up the car (not under the axles) to take the weight off the springs.

ELECTRICAL EQUIPMENT

THE lighting equipment is a C.A.V. 6-volt system. Very little attention is required to keep this in satisfactory working order.

Should difficulties arise that cannot be understood or remedied from the information given below, the difficulty should at once be referred to the Austin Service Department or the nearest depot.

Dynamo

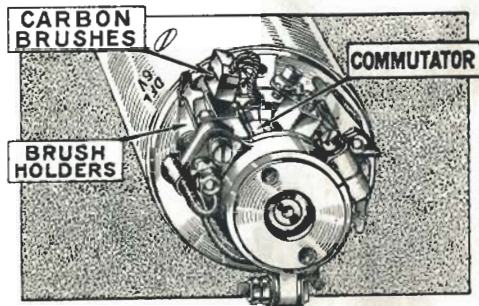
The dynamo should be kept "on" as a rule. It is designed to be self-regulating, and the only parts which call for any attention are the commutator and brushes. To examine the commutator and brushes all that is necessary is to remove the cover. The commutator should be kept clean using a piece of ordinary soft rag. To clean a dirty or neglected commutator, use very fine glass paper, but this should only be done in extreme cases. Blow away any carbon dust, see that the carbon brushes are wearing evenly, and that they run freely in their slots, also that the flexible leads to the brushes are not caught in any part of the brush gear. There is a lubricator at each end of the machine.

A drop or two of engine oil in each, every thousand miles or so, is sufficient. The best oil to use is ordinary engine oil. When the machines are first assembled the bearings are packed with grease which lasts for a long time.

Ammeter Readings

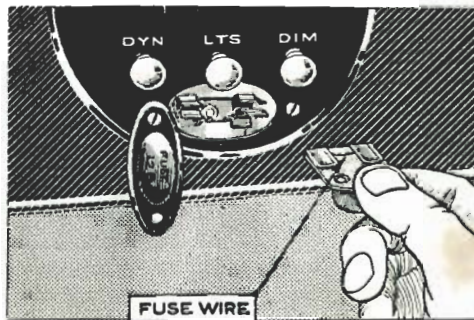
When the engine is running fairly fast and no lamps are in use, the ammeter pointer should give a "charge" reading of 7 or 8 amp., or with the lamps full on a small reading, to right or left of "0," but when the engine is stopped and lamps are on, the ammeter will indicate "discharge" 4-5 amp. The dimmer switch should be used when the car is standing, even for a short time. It reduces the discharge to a negligible figure.

If the ammeter pointer remains at 0 when the engine is running and no lamps are on, see that all connections are tight, particularly those on the dynamo, switchboard (F, D, CB and CD), and cut-out, that the fuse is intact, and that the battery connections to switchboard are tight at both ends and unbroken. Should the reading be but a small one, see if it is necessary to clean the commutator of the dynamo.



Action of the Fuse

A fuse is fitted in the switch to protect the dynamo in the event of its battery connection being broken or the battery removed.



If this fuse melts look carefully over all the battery connections, including those between the cells, and see that no terminal is loose. Don't replace the fuse wire until you have found the fault which caused it to "blow" and remedied it.

Always replace with the proper fuse wire, never using any makeshift. Reserve fuses are carried inside the cavity in the fuse cover.

Starting Motor.

This unit should never require any adjustment or attention. If for any reason it should fail to function when the battery is well charged, it will be necessary to remove it from the engine and send it to the works. The armature shaft runs in self-lubricating bushes and therefore does not require any further lubrication.

THE BATTERY

The battery is an item of the equipment that is often neglected or receives insufficient attention. It is most important that it be kept in the best condition and the following instructions should be carefully noted.

During the winter months, when the periods of discharge are long and heavy the switch on the switchboard should always be in the out, or charging position, especially when the lights are on, and the car is running.

During the summer months, however, when the periods of discharge are comparatively light, over-charging the battery must be guarded against, as harm will result. If the car is used every day, charging for about an hour should be sufficient to compensate for the discharge required to operate the horn and occasionally the self-starter. It is desirable to test the specific gravity of the liquid, known as electrolyte monthly, and we strongly advise all owners to procure a suitable hydrometer, which can be obtained from practically all good accessory dealers—and pay particular attention to the battery to obviate the possibility of bad results from over-charging.

Should the state of the battery be continually bad, see that all its connections to the switchboard are tight and unbroken, and that no wire has a chafed covering allowing leakage of current to frame.

During periods when the car is unused inspect the battery occasionally and give it a charge if required.

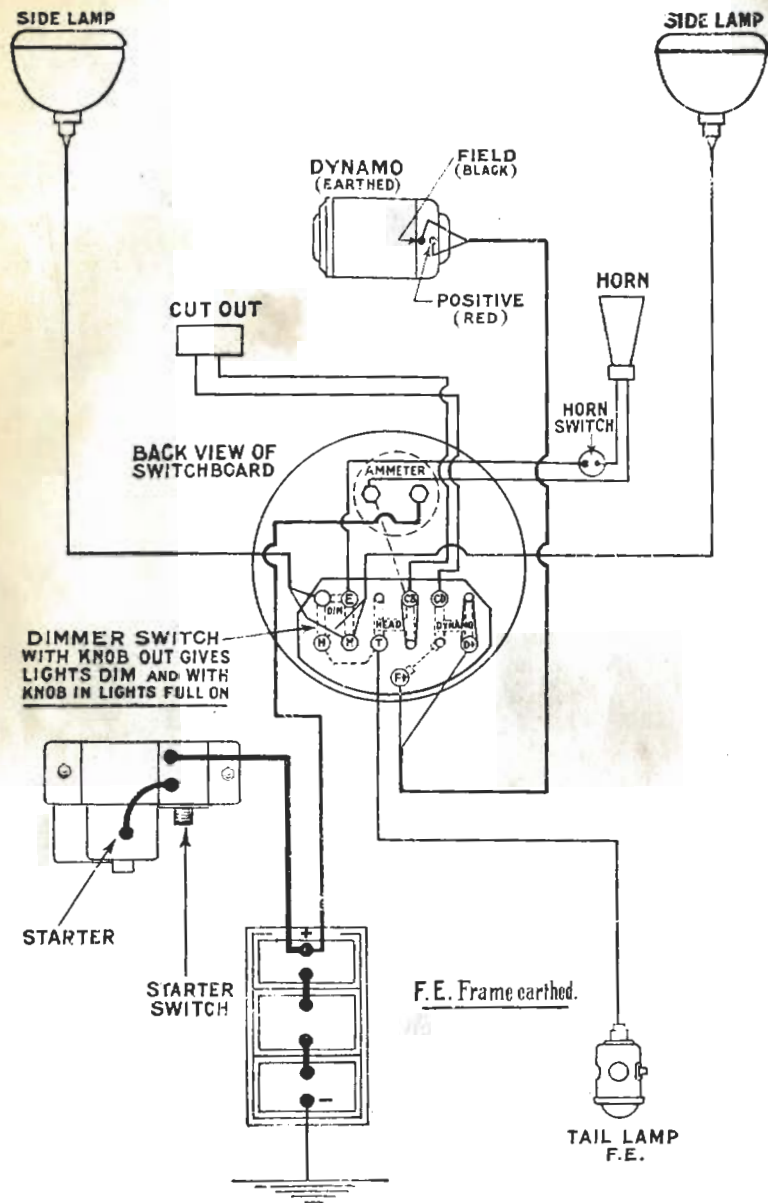
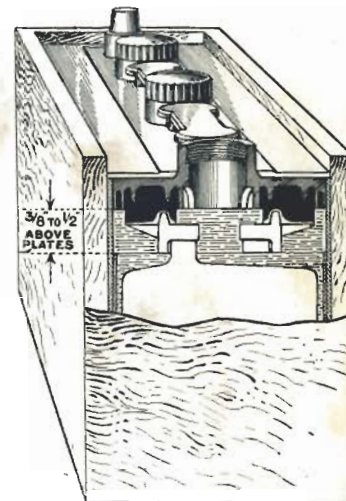


ILLUSTRATION OF WIRING

Battery—continued.

When the battery arrives empty (as in the case of cars sent abroad) the first thing to do is to fill and charge it.

The best indication of the state of the battery is the density of the liquid (known as the electrolyte). Its specific gravity should be 1.275 when the battery is fully charged and should never be discharged so as to bring the specific gravity below 1.170, otherwise sulphating will result and the life of the battery be shortened.



When the specific gravity is too high, that is to say when it exceeds 1.275, diluted acid or distilled water must be added. When the specific gravity falls appreciably below 1.275, add a little sulphuric acid diluted, one part to three of water.

If, after being in use for some time, the battery does not seem to hold its charge properly, and the lights go dim quickly when left on for awhile without the dynamo charging, test the acid. Should it be found too weak do not attempt to correct this by adding acid or water, but give a good charge and then refill with 1.275 solution as before. The tops of the cells should be kept clean and dry, and the terminals screwed up tightly.



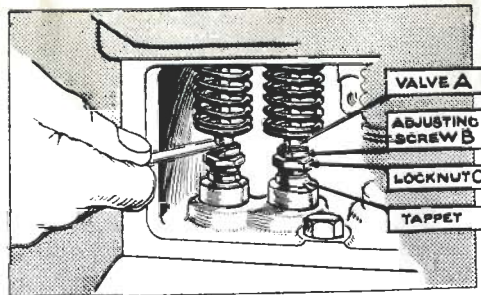
RUNNING ADJUSTMENTS

THE adjustments set out below are all that the amateur owner will find necessary to make to keep the car in good running order, and are fully described in the following pages.

- To keep correct clearance between tappets and valves.
- To remove and clean the cylinder head, clean tops of the pistons, and grind in the valves.
- To adjust and re-line the brakes.
- To adjust steering.
- To adjust shock absorbers.

Valve Tappet Adjustment

To ensure obtaining the full power of the engine, and to maintain silence in the valve operation, it is essential to keep the tappets correctly adjusted. Turn the engine slowly round with the hand starting crank. Watch each valve open in turn and note the point at which it stops descending. Now turn the engine half a revolution further to make sure that the cam is well away from the tappet. There should now be between the valve stem A and tappet

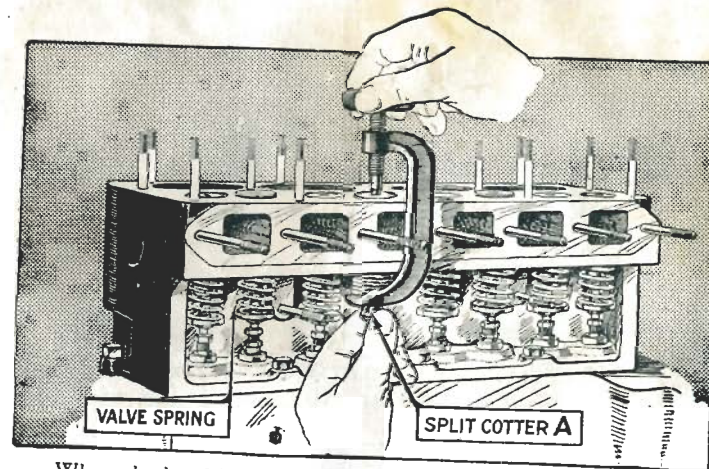


screw B a clearance equal to the thickness of the thin blade of the "tappet clearance gauge." If the clearance is other than this it can be adjusted by loosening the lock-nut C and raising or lowering screw B, being careful to tighten up the lock-nut when the adjustment is completed. A special spanner is provided in the tool kit for this operation.

Cleaning Combustion Chamber

To secure the maximum efficiency from the engine it is necessary to remove the carbon deposit that will have formed on the surfaces of the combustion chamber. This should be done after about 2,000 miles running. When the cylinder head is off it may be advisable to take this opportunity of grinding-in the valves, although this will need a longer time for the work to be carried out. In any case, it is recommended that after about 4,000 miles the work of grinding-in the valves should be undertaken.

First drain off the water through cock under the radiator. Detach the top water tube from the head. Disconnect the high tension wires from the sparking plugs. Remove the nuts holding down the head. Then take hold of the head at each end and lift it off. This should be fairly easy to do, and without damaging the joint washer, which should, in the ordinary course, be in a condition to be replaced. On no account use shellac or anything similar upon it: it will make a tight joint without. A little graphite grease on both sides is beneficial, to prevent it sticking when the head has next to be removed.



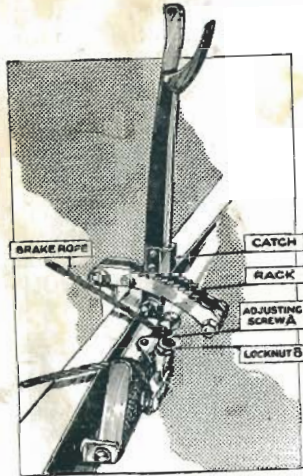
When the head has been removed the valves and tops of pistons will be exposed to view. All dirt or deposit should be removed by carefully scraping with a sharp tool. Before grinding-in the valves it will be necessary to remove the inlet pipe, and exhaust manifold, and carburetter, first turning off the petrol and uncoupling the pipe under the float chamber, then disconnecting the carburetter control rod by slipping the front end of the spring out of the hole. Each valve spring must be lifted by means of the special tool provided to allow the split cotter A to come out, see illustration; then remove the spring. The valve is now free to be rotated on its seat. A little grinding compound should be smeared evenly on its face,

Cleaning Combustion Chamber—continued.

and the valve rotated backwards and forwards, advancing it a step at short intervals until the pitting is removed. Care should be taken that none of the compound enters the cylinders, and the valve and seating should be wiped clean after the operation. When replacing the head take care to tighten the nuts evenly. Do not forget, after replacing the head, to refill the radiator.

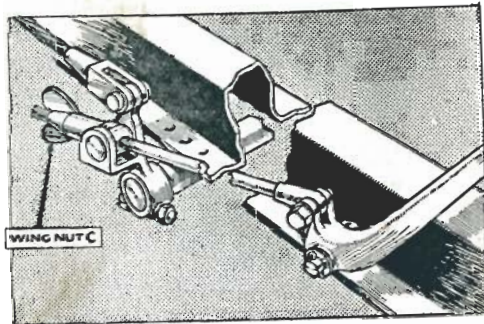
Adjusting the Brakes

The hand brake operates on the front wheels and the foot brake on the rear wheels. They require adjusting when the hand lever can be pulled right back to the full travel on the rack, and when the pedal can be pushed nearly to the floorboard without either brake holding the wheels. The car should never be taken out when in this condition, but attended to at once.



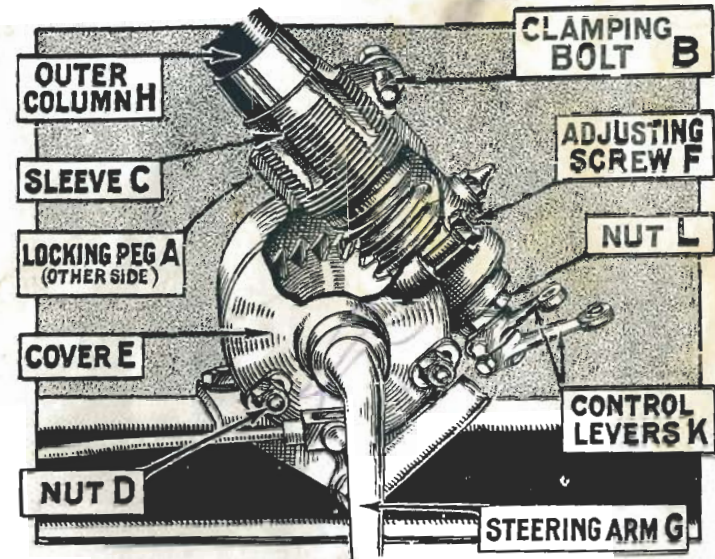
To adjust the hand brake pull the lever on about one-third (or to suit driver's reach) of the total travel provided by the rack. Now unlock the nut B and screw up the brake adjusting handle A until the shoes are hard on the drum. If the brake shoes do not then rub on the drum when the lever is right forward, the adjustment is correct. See that the handle is locked again by nut B.

To adjust the foot brake: Under the car and approximately under the foot controls is a wing nut C. This must be screwed towards the front of the engine until the brakes go full on when the pedal is depressed about 2 in. When the pedal is up, the brake shoes should not rub the rear wheel drums in which they operate.



Adjustment of Steering

If after continual use slackness should be felt in the steering, two adjustments are available:—To take up the play in the column, unscrew locking peg "A" and clamping bolt "B," then turn the sleeve "C" with the special spanner provided for the purpose, until the play has been removed. Do not screw the sleeve in too tight or the steering will then become stiff. Having adjusted the sleeve correctly, screw in the locking peg so that it enters one of the slots of the sleeve, and then tighten up the clamping bolt.

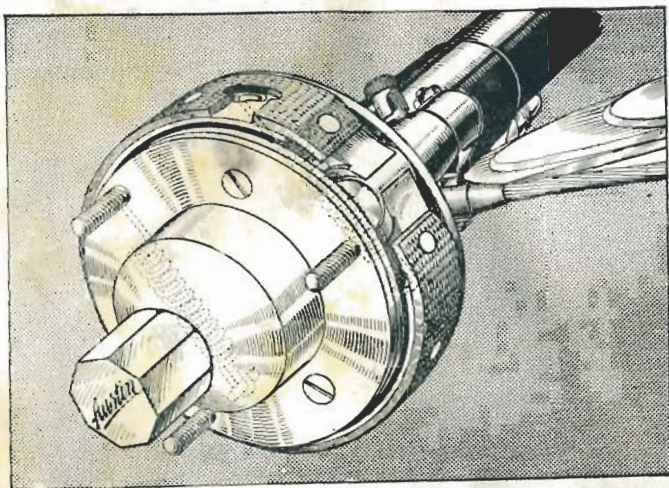


To take up the clearance between the worm and worm wheel, due to wear, slacken the three nuts "D" holding the cover "E" to the worm casing, then turn adjusting screw "F" so as to slightly draw the cover in the direction of the worm. Care must be taken that the worm wheel is not brought too tight into mesh with the worm or it will make the steering exceedingly hard and stiff. Having made the adjustment be sure and tighten up the three nuts "D."

Should it be desirable to remove the steering worm wheel from the casing, it is only necessary to slacken the adjusting screw F and remove the three nuts D when the cover E can be withdrawn together with the worm wheel and steering arm. The steering column H with control rods can be withdrawn by first removing control levers K and nut L, then slacken locking peg A and clamping bolt B and unscrew the sleeve C.

Re-lining Brakes

It is necessary first to remove the wheel and brake drum. To enable the ends of the springs to be released from the shoes, slots are provided in the brake linings. With a screw driver



or similar tool the hooked ends of the springs can be forced up the grooves till they become detached from the brake shoes, which can then be taken out for re-lining. When replacing the shoes the ends of the springs should be pulled into position by means of a piece of thin wire looped round the hooks, and threaded through the slots.

Adjusting Austin Front Shock Absorbers

The shock absorber is set to a certain initial tension before it leaves the factory, and no change in this adjustment should be necessary for a very considerable time.

Re-adjustment may only become necessary after several thousand miles of car travel, and should be made only when the spring movement seems too retarded or too free. It should be noted that the full benefit of the shock absorbers will not be felt when the car is travelling at low speeds, as under these conditions the spring movement is very limited, but as the speed increases their effect becomes more pronounced, especially over bad roads when the spring action is most severe. Testing should therefore be carried out at comparatively high average touring speeds and adjustment made to suit these conditions.

Adjusting Austin Front Shock Absorbers—continued.

The frictional resistance required to effectively control the action of the springs is comparatively small, and care should be taken not to decrease the pressure, when adjusting, more than is absolutely necessary in order to obtain the desired results.

In the case of fast sporting cars and for road and track racing, a considerable increase in pressure may, of course, be required.

When adjustment does become necessary, carefully note the riding qualities of the car, and if the spring action seems too retarded or stiff, reduce the frictional resistance of the shock absorbers by turning the centre adjusting nut to the left, or counter-clockwise, after slackening the lock nut. If the spring action seems too free, increase the frictional resistance by turning the adjusting nut to the right, or clockwise.

Careful adjustment in this manner will produce an ideal condition. The spring will still have the required amount of flexibility for easy riding, but spring vibration will be reduced to a minimum and violent rebound effectively eliminated.

Rear Shock Absorbers.

The rear Austin shock absorbers do not require adjustment.

Tyres

As tyres form such a large item in the running costs of a car it is advisable to give them periodical examination and attention.

If they have become badly cut, they should be removed and repaired as soon as possible.



CARE OF BODYWORK

TO preserve the good appearance of the car wash the exterior frequently. It is advisable to remove mud and dust from the bodywork directly the car returns from a run. This should always be done by the use of cold water, either through a hose or syringe, in conjunction with a wet sponge. On no account rub off the mud. Do not apply the water with too much force, and keep it away from the corners and joints, etc., so that it will not be forced inside the body. After thoroughly washing and rinsing, finish with a chamois leather. Do not use the same sponge and leather for the chassis parts.

Care should be taken in folding down the hood to see that the original folds are used. Should the car have been used in wet weather leave the hood up to dry. Never fold it when wet.

The metal plated parts can be cleaned with ordinary metal polish.

Should the car be laid up in the garage for long periods, the fuel and water should be drained off and the batteries removed, and weight taken off the tyres.

CARE OF LAMPS

See that the lamps are correctly set—that is, pointing slightly downwards. Much of the dazzle caused during night driving is due to carelessly set lamps and the offside lamp should so be set that its beam is not cast directly into the driver's eyes of any approaching vehicle.

Remember that the reflector is an optical instrument and not part of the metal work of the car, and should never be cleaned with patent metal polishes, or brick-dust and paraffin. If it is dull or scratched, its efficiency will go, and when a reflector is in this condition, it pays to return it to the makers to be replated or repolished. Special cleaning cloths should be kept for reflectors, and these should be used for nothing else. The efficiency of the lamps depends almost entirely on the reflectors. Special treatment is necessary to preserve the high optical finish. The lamps are themselves both dust-tight and water-tight; continued cleaning therefore, is not necessary.

The side lamp bulbs are C.A.V. No. 65 and the tail lamp bulb No. 74.

TOOLS SUPPLIED

$\frac{1}{2}$ in. and $\frac{3}{8}$ in. box spanner.	Tool wrap.
$\frac{3}{8}$ in. and $\frac{1}{2}$ in. box spanner.	Sparking-plug box spanner and tommy bar.
$\frac{3}{8}$ in. and $\frac{1}{2}$ in. double open-end spanner.	Brace for detachable wheels.
$\frac{3}{8}$ in. and $\frac{1}{2}$ in. double open-end spanner.	Tyre levers.
$\frac{3}{8}$ in. and $\frac{1}{2}$ in. double open-end spanner.	Tyre pump.
Adjustable spanner, 4 in.	Lifting jack, with handle.
Carburettor jet key.	Screwdriver.
Hub-cap and steering column sleeve spanner.	Sparking plug and tappet clearance gauge.
Magneto spanner.	Grease gun.
Tappet adjusting spanner.	Valve-spring lifter.
Spanner for dynamo casing nut.	Trade-mark cleaning plate.
	Adaptor for front and rear hub greaser.

A spare cylinder-head gasket is also supplied.

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