HANDBOOK

OF THE

Austin

"BIG SEVEN"

PUBLICATION No. 1523B

PRICE - ONE SHILLING

THE
AUSTIN MOTOR CO. LTD.
LONGBRIDGE : BIRMINGHAM

£6 Aug 84

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"BIG SEVEN"

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THE AUSTIN MOTOR CO. LTD.

:: G.P.O. BOX 41 ::

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In reference to this Book please quote the number. **1523B**

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A FOREWORD

THE information contained in this Handbook is intended only to guide and assist the owner or driver of an Austin car to preserve the car in its proper satisfactory running condition. The publication must not be considered as a complete manual.

The handbook does not in any manner vary or extend the liability of the Company, which is limited to the Warranty issued with the car. Where no information is given for a particular adjustment it may be regarded as one which the average owner would entrust to a garage. When the occasion for adjustments of this character arises the owner should seek the aid of the local Austin dealer.

Both owner and dealer are encouraged to call upon the Service Department of the Company for advice, whether upon the management of the car, the effecting of adjustment, or methods of repair. Owners need not suppose that they will have to apply all the attentions given in this book, but careful notice should be taken of the chapters dealing with maintenance.

CAUTION

PARTS of genuine Austin manufacture only should be used when a replacement is made, to ensure that the service given by the original shall be maintained by the replacement. Imitations cannot be relied upon to do this.

If imitations are used, the Company's guarantee is infringed and becomes null and void.

Always get your replacements from authorized Austin Dealers, as they stock only genuine Austin Spare Parts.

Should repairs be executed by other than an authorised Austin Dealer, for safety's sake always obtain a guarantee that genuine Austin Spare Parts are used.

See the statement at the end of this book with reference to Accessories.

In correspondence always quote your car number, which will be found on the scuttle under the bonnet and, in reply to letters received from the works, also quote the department concerned and its reference

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AFTER SALES SERVICE

Every Austin Dealer is under agreement to give to Austin Cars purchased from him "After Sales Service" during the period of the first 1,000 miles running of such cars. (See page 62).

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CHASSIS SPECIFICATION

Dimensions Overall length 11ft. 2 in. (3,404 mm.); Width 4ft. 6in. (1,371 mm.); Height 5ft. 4 in. (1,625 mm.); Wheelbase, 7ft. 3½in. (2,223 mm); Track, front, 3ft. 7in. (1,095 mm.), rear, 3ft. 9in. (1,143 mm.). Ground clearance 5¾in. Turning circle 36ft. 0in. (10,973 mm.).

Engine ... Four-cylinders, water-cooled, with detachable head.
Bore, 2.235in. (56.77 mm.); Stroke, 3.5in. (88.9 mm.)
Cubic capacity, 900 cc., R.A.C. rating 7.99.
Brake horse-power: 25 at 4,000 r.p.m.
Ignition: Coil.
Oil circulation: By full pressure gear pump.
Cooling: Thermo-syphon, with film radiator and fan. Cooling system, capacity 13 pints.
Crankshaft bearings: Three, steel-backed white metal.
Sump capacity: 5 pints.

Starter ... Electrical with cable control to switch.

Clutch ... Flexible single-plate, spring loaded, the plate carrying the friction rings.

Gearbox ... Four speeds forward, and a reverse; The top, third and second gears have synchromesh engagement, which ensures smooth, noiseless gear changes to suit varying speeds. First gear is a low one to be used in starting with a full load, up an incline, or manoeuvring the car in an awkward place. The ratios of engine to road wheels are: top, 5.125 to 1; third, 8.51 to 1; second, 13.53 to 1, and first, 22.4 to 1; reverse 28.8 to 1. Ball bearings throughout. Central control. Oil capacity 1½ pints.

Rear Axle Three-quarter-floating, with differential and torque tube. Ball bearings and thrusts throughout. Final drive by shaft and spiral bevel. Oil capacity ⅞ pint.

Springs ... Semi-elliptic transverse spring in front.
Quarter elliptics at rear.
Friction shock absorbers are fitted to front and rear.

Brakes ... Girling wedge and roller on all four wheels with individual adjustment.

Wheels ... Pressed steel spoke. One spare wheel with tyre. Tyres 4.75—16, (E.L.P.) Dunlop.

Controls ... Ball change-speed gear-lever, and brake-lever, mounted centrally. Foot control for dip-and-switch headlights. Foot accelerator.

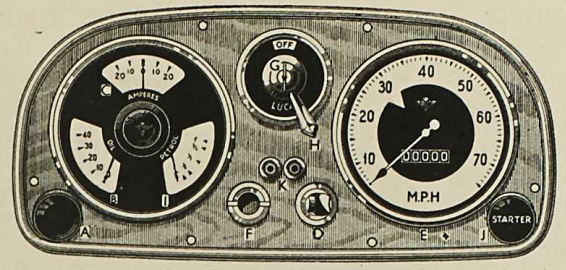
Fuel Feed... Six gallon (26½ litres) tank at rear. Fuel supply by A.C. pump.

Lighting ... By belt-driven dynamo, with 6-volt battery and compensated voltage control.

Bodywork Two separate front seats for driver and passenger with easy individual adjustment. Rear seat to carry two adults or three children. Ample tool accommodation. Spare wheel and tyre. Equipment includes illuminated instruments, electric horn, speedometer, automatic return direction indicators, electric windscreen wiper, driving mirror and licence holder.

Luggage Platform Maximum permissible load, 56 lbs.

INSTRUMENTS AND CONTROLS



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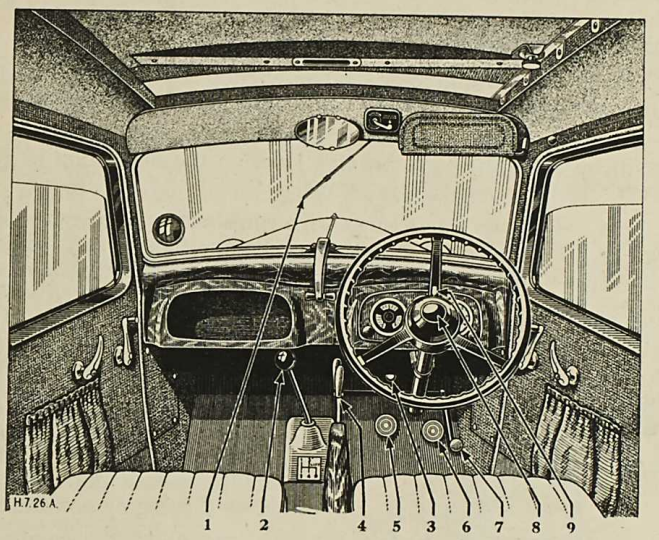
The Instrument Panel.

A—Throttle and Strangler.
B—Oil Pressure Gauge.
C—Ammeter.
D—Panel Light Switch.
E—Speedometer.
F—Ignition Warning Light.
G—Ignition Key.
H—Switch Box
I—Petrol Gauge.
J—Starter.
K—Inspection Lamp Points.



Austin "Big Seven" Controls.

1—Windscreen Wiper.
2—Change Speed Lever.
3—Dip-and-Switch Control.
4—Handbrake Lever.
5—Clutch Pedal.
6—Brake Pedal.
7—Accelerator Pedal.
8—Horn Button.
9—Direction Indicator Switch.

THE NEW CAR

It will Repay You to Read these Notes Carefully

IF you are not familiar with Austin cars, please read this Handbook carefully.

On taking delivery of the new car give it a careful general examination to see that all is complete and in order. Check the equipment and the tools and see that any special requirements have been carried out to order.

Before running, see the car is supplied with fuel and water, that the engine and gearbox have the necessary quantities of oil and that the battery contains the proper amount of acid.

Have the battery certificate signed by your local Austin Dealer or Lucas Depot.

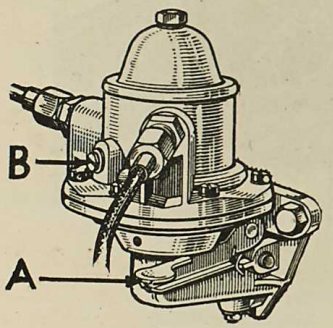
Cars delivered by road are ready for running. There is no oil, fuel or water in cars crated for overseas and the batteries are empty and uncharged.

Starting the Engine.

Before attempting to start the engine, make sure that the change speed lever is in the neutral position and the hand brake on.

If the car has been standing for some time, starting should be assisted by using the hand priming lever on the fuel pump to give the carburetter a full supply of fuel.

Give the engine a few turns with the starting handle to make sure that the crankshaft is free (pushing the handle in to engage fully with the starting dog, before turning it). The ignition key is turned to the right to switch on the ignition.



The Fuel Pump.
A—Priming Lever.
B—Drain Plug

Pull the combined strangler and throttle control knob on the instrument board to close the carburetter air inlet, and pull out the switch to operate the starter. Be sure to release the strangler wire after the engine has started.

Do not allow the engine to race when first starting up, as time must be allowed for the oil to circulate and lubricate various bearings. The engine should be run at a fast idling speed.

Never leave the ignition switch on for any lengthy period while the engine is not running. The warning lamp on the switch board will remind you of this.

Difficulty in Starting.

Difficulty in starting may be caused either through drawing too much petrol into the cylinders, or too little. When starting with the throttle all but closed, a strong suction takes effect on the pilot jet.

If the engine fails to start quickly and it is thought that the mixture getting into the cylinders may be too rich, the throttle should be opened half-way to clear the excess fuel. On firing, the engine will race, and the throttle should be almost closed. 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 a too rich mixture than one too lean.

Depress the clutch pedal before switching on. This will lessen the starting load and enable the starter to turn the engine at higher speed.

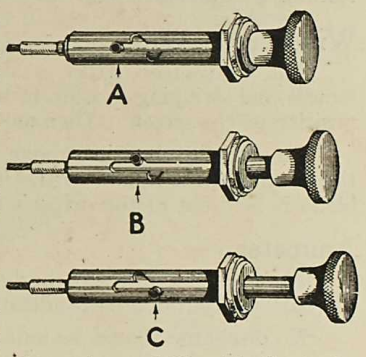
If, after the foregoing measures have been carried out the engine fails to start, the reason will probably be faulty ignition or carburation.

If faulty ignition is suspected, first examine the wiring and see that the sparking plugs are connected. Then test the gap of the plug points by means of the gauge provided in the tool kit. If the points are dirty, clean them.

If the trouble is carburation, the slow running jet may be stopped up or the main jet choked. Blow them out with the mouth or with a tyre pump. Never attempt to clean them by passing a wire or other object through them. This will definitely affect the jet calibration.

The engine should never be allowed to run at high speeds for the first 500 miles.

Maximum desirable road speeds for the first 500 miles are: First gear, 8 m.p.h.; second, 12 m.p.h.; third, 20 m.p.h.; and top gear 30 m.p.h



Strangler and Throttle Control
A—Normal Position. B—Fast Idling.
C—Warming Up.

THE INSTRUMENTS

Fuel and Oil Gauges, Speedometer, Windscreen Wiper, etc.

A FULL range of instruments is provided on all Austin Cars. They are of the highest quality and the following notes explain their uses.

Fuel Gauge.

The fuel gauge is electrically operated and automatically indicates the contents of the tank when the ignition control is switched on.

When the tank is being refilled, switch off and stop the engine and then switch on again and the needle will record the amount of spirit entering the tank. The capacity is six gallons (26½ litres).

The gauge requires no attention.

Oil Gauge.

The oil gauge indicates that oil is being pumped through the engine lubrication system and it should be looked at frequently when the engine is running to ascertain that sufficient pressure is registered.

When the engine is cold a high pressure will be recorded, but this is likely to drop as the oil becomes warmer. If no pressure is registered the engine should be stopped and the cause of the fault ascertained, otherwise serious damage may be caused.

Flickering of the needle may indicate serious shortage of oil or a damaged pipe line.

The gauge may indicate a pressure of 35 lbs. or more when the engine is cold or from 20 to 30 lbs. when hot. With the engine running at constant speed the needle should be quite steady.

Windscreen Wiper.

The windscreen wiper is started by pulling out the curved handle and swinging it aside to bring the wiper blade into working position on the screen. Then move the switch to the left.

On stopping the wiper move the switch to the right and replace the handle in the hollow in the top of the switch knob so that the blade is held out of the driver's line of vision.

Ammeter.

The ammeter indicates the dynamo rate of charge, or discharge of the batteries, but does not indicate current used by the starter motor.

No discharge should be indicated with no electrical equipment in use or with headlamps on when the car is running at about 20 miles an hour (30kms.), or faster.

Switch Box.

When the engine is not in use the ignition key should be withdrawn from the switch box. The red warning light indicates when the ignition is "on" and the battery is discharging through the coil.

The dynamo has compensated voltage control and the main switch only operates the lighting of the head and side lamps.

Speedometer.

The figures on the speedometer record up to 100,000 miles or kilometres and they automatically return to zero.

The speedometer requires no attention but the cable should be greased occasionally.

Traffic Signals.

The direction indicators are controlled from the steering wheel. Normally, after the car has turned a corner they automatically return, but when a slight turn has been made it may be necessary to switch off by hand.

Panel Lights.

The instruments are illuminated by two lamps controlled by the same switch. The holders can be pulled from the back of the instruments to facilitate removal of the bulbs.

Dip Switch.

The headlamp dipping switch has two functions, one to give the normal driving light and one to dip the near-side head-lamp beam and at the same time switch off the offside headlamp.

If the headlights are on full, a touch of the foot on the switch alters the lamps to the "dip-and-switch" position and they remain so until another touch returns them to the "full on" position.

Continental headlamps have dual filament bulbs operated in the same manner.

CONTROL OF THE CAR

Hints on Driving and Gear Changing.

THE driving seat of all Austin Cars is adjustable for position and this convenience should be taken advantage of in order to obtain the most comfortable driving position.

To engage first gear, push out the clutch and move the gear lever into the first speed position.

Sometimes it may happen that when the clutch is let in, there is no apparent drive from the engine. That is because there has been no proper engagement of the gears. Therefore, push out the clutch again, and it will almost certainly be found that the lever can then be moved so as to give the proper gear engagement without using any force.

Start on first speed, accelerate to about 8 m.p.h., push out the clutch, move the lever to neutral, and continue the movement of the lever steadily to the second speed position and let in the clutch gently.

In moving from second to third speed, a similar action takes place. Accelerate to about 18 m.p.h., declutch, release the accelerator pedal, move the lever to neutral and continue the movement of the lever steadily into the third speed.

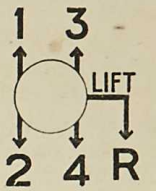
To move from third to top, declutch, and move the lever steadily into the position desired.

It assists the synchronising mechanism when changing from top to third, and third to second, if the accelerator is used while the change is made.

Change Early.

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. Do not persist in attempting to drive the car uphill in top gear when the speed falls below 20 m.p.h.—change down early.

If the car has been driven back by the reverse gear, wait until it is stationary before engaging a forward speed. Do not attempt to engage the reverse gear when the car is travelling forward. Serious damage to the gears will be the result.



The Gear Positions

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, or before commencing a steep descent, engage one of the lower gears, and do not accelerate. The engine will then help to retard the speed of the car. When using the brake, keep the clutch in, disengaging it at the last moment if stopping the car.

Skidding.

Skidding is sometimes due to sudden braking on a greasy or loose surface and unduly slack tyres contribute to it. If the rear wheels skid, release the brakes and turn the front wheels towards the direction of the skid.

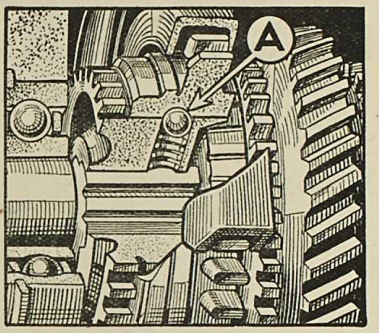
Synchromesh Gears.

The gearbox has four forward speeds and a reverse and the second, third and top gears have synchromesh engagement, which ensures silent, positive changes.

Gear changing may be slightly stiff in a new car until the moving parts have eased in use. Changing should not be done hurriedly and no attempt should be made to force the gear lever if engagement is not made at the first attempt. Should difficulty be experienced in engaging a gear when the car is standing, release the clutch for a moment and then try again.

The synchromesh mechanism is governed by a series of spring loaded balls as illustrated.

The internal cone on the synchronising member makes contact with the gear cone to synchronise the speeds of both members before the dog member, overcoming the resistance of the ball A, moves on to give positive gear engagement.



Second Speed Synchronising Mechanism.

What Not to Do.

Please do not make the following mistakes :—

Do not forget the ignition switch when starting up.
Do not forget to release the strangler control after starting the engine.
Do not make a fast run with the radiator muff closed.
Do not continue pulling the starter switch if the engine will not fire
Do not touch the starter switch while a gear is engaged.
Do not leave the car in gear with the handbrake off.
Do not coast with the engine running and the clutch held out.
Do not fill the radiator with cold water when the engine is hot.
Do not leave the ignition switched on when the car is not running.
On no account run the engine in a closed garage. The exhaust gases are highly toxic and a very small amount in a restricted atmosphere will produce grave, if not fatal results.

REGULAR ATTENTIONS

A Summary of Daily, Weekly and Monthly Maintenance Work.

ON this and the opposite page is a handy summary of all the attentions described in this handbook. The attentions under the daily, weekly and monthly headings are based on the assumption that the maximum mileage per week does not exceed 500 (800 km).

Under more strenuous conditions, *i.e.*, very dusty or very muddy roads, long distances at high speeds or with heavy loads, it will be advisable to attend to the lubrication of chassis parts more frequently.

After the first few days' use tighten all nuts, particularly those on the engine cylinder head. These may become slack because of the heat generated, but if they are retightened the cylinder head will remain secure against gas or water leaks.

Warning.—After the car has been washed, or driven through water, the brake linings may be wet. Apply the brakes a number of times for some distance in order to dry them. Wet brakes are dangerous. Keep the handbrake hard on when the car is being washed.

Daily Attentions.

1. Examine water level in radiator and fill up to within one inch of the top.
2. Fill the petrol tank if necessary. The capacity is six gallons (26½ litres).

Weekly Attentions.

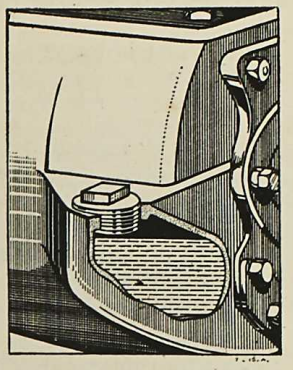
1. Examine oil level in the crankcase and add more oil if necessary.
   The dip rod indicates the level of the oil. Change the oil first at 500 miles (800 km.), then every 2,000 to 3,000 miles (3,200 to 4,800 km.) when the oil reservoir gauze shall be cleaned. The sump capacity is 5 pints.

Use only Recommended Oils.

2. With the grease gun charge—
   Front spring shackle pins (4).
   Front axle swivel pins (2).
   Steering cross tube (2).
   Steering side tube joints (2).
   Rear spring pins (2).
3. Oil the following—
   Foot brake pedal shaft (below steering box).
   Brake cross shaft bearings (use a brush).
4. Examine the brakes, and adjust if necessary.
5. Test the tyres for correct pressure and examine them for cuts, flints and nails.

Monthly Attentions.

1. Examine the oil level in the gearbox. It should be level with the filler plug. Capacity, approximately 1½ pints.
   Change at first 1,000 and then every 6,000 miles.
2. Charge the back axle case with special lubricant, using the adaptor on the grease gun. Capacity ⅞ pint.
   Change at first 1,000 and then every 6,000 miles.
3. Grease all the hubs, as described later.



The Gearbox Oil Filler.

4. Charge the steering box with special lubricant
5. Oil handbrake gear, pedal gear and joints, engine control joints, and top of steering column.
6. Examine the battery, top up if necessary, and see that the connections are tight. (More frequently in hot weather).
7. Give a few drops of oil to the distributor spindle bearing.
8. Grease the front end of the torque tube (behind and beneath the front seats).
9. Grease brake balance lever and swivels, and also the splined end of the propeller shaft (behind the gearbox). Turn the shaft to expose the nipple.

Occasional Attention.

Clean the sparking plugs and check the gap settings.

Examine all bolts and nuts, such as road spring clips, cylinder head nuts, wheel nuts, these three especially when the car is new.

Examine other parts, such as steering connections, the radius rod and torque tube anchorages, neglect of which might be followed by an expensive repair and inability to use the car for a lengthy period.

Occasionally clean the pump and carburetter fuel filters and every 2,000 to 3,000 miles (3,200 to 4,800 km.) the oil reservoir filter (when the engine oil is changed).

Flush the radiator with plenty of clean water until it runs through clear. Clean the ignition distributor, and the contact breaker points (adjust the latter), the dynamo and starter commutators. Clean the shock absorbers, adjust the tappets, and the fan belt, decarbonize the engine and grind-in the valves. Check the alignment of the front wheels.

CARE OF THE TYRES

Correct Inflation Pressures; How to Use the Jack.

THE key to economical and efficient tyre service is to maintain the correct pressures and test the tyres, including the spare, at least weekly. Any loss of air pressure can then be made up with very little effort.

A gauge applied to the valve must be used, for it is seldom possible to detect under-inflation from appearance. A special tool is supplied for tightening or removing the valve "insides."

Dunlop Extra Low Pressure tyres of 16 in. diameter have tubes with rubber valves, *i.e.*, the valve mechanism is housed in a rubber stem. A small valve cap screws on the end of the valve and forms a secondary air seal. A nip is provided between the valve stem and the valve hole in the rim and no other extraneous valve parts are necessary.

Shorter tread life, less resistance to accidental damage, and disintegration of the cord foundation are possible results of under-inflation. Tyres in this condition are also conducive to front wheel wobble and skidding.

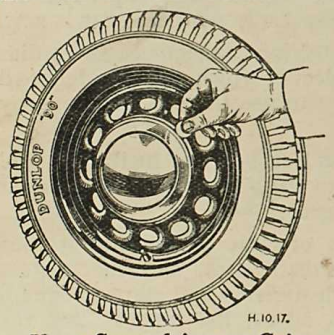
Minimum pressures are :

TYRE SIZE.	FRONT TYRES.	REAR TYRES.
4.75—16 E.L.P. ...	20 ...	20

Pounds per square inch.

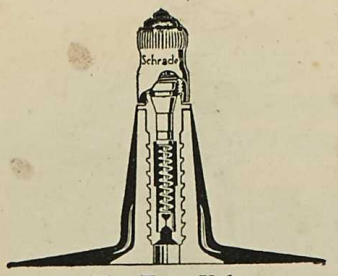
These are minimum pressures. With full loads or under strenuous conditions pressure in rear tyres should be increased.

A tyre that loses more than three to four pounds per square inch in a week should be regarded as a "suspect." First make sure that a new valve "inside" is not required. If the tube is punctured, ascertain before refitting that the puncturing object is not still embedded in the cover.



Use a Screwdriver or Coin to Remove Wheel Centre.

It is important that both the front tyres should be kept at the same pressure. If, because of wear or other causes, the steering develops a tendency to wander or show signs of wobble, the front tyre pressures may be adjusted.



The Tyre Valve.

Dirt and Damage.

Oil, paraffin and grease are injurious to rubber, and should be removed from the tyres as soon as possible by the use of a clean cloth and a very little petrol.

Damage affecting only the rubber tread and walls may be plugged with a good tread-cut filling. If this is done promptly an extension of the injury will be prevented.

Damage of a more serious nature affecting the cotton structure should be entrusted only to an expert tyre repairer or tyre manufacturer.

It is essential that the tyre should be removed immediately damage is sustained.

Fitting Hints.

When refitting a tyre attention is called to the following points.

To avoid trapping the tube between the edge of the cover and the rim, always inflate the tube very slightly before placing it in the cover.

During the final inflation see that the edges of the cover are seated evenly round the edge of the rim. Check this by the moulded line on the cover, which should be about a quarter of an inch from the rim all the way round.

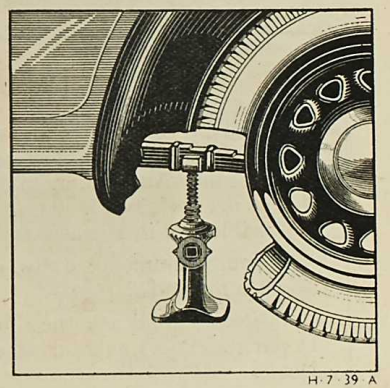
Covers are marked with a red spot near the wire edge. This indicates the lightest part, which should be fitted immediately over the valve.

Uneven Wear.

Because the front wheels are "cambered" or lean outwards, the outer side of the tyre tread wears more rapidly than the inner. To minimise the effect of such wear, turn the tyres periodically, say every 3,000 to 4,000 miles (5,000 to 6,000 km.) so that the more worn sides are next to the car.

At the same time exchange the near and offside tyres so that unequal weight distribution and consequent wear caused by road camber are shared. The spare tyre should be used in turn with the others.

If the front tyres begin to wear rapidly, have the track of the front wheels checked and, if necessary, adjusted.

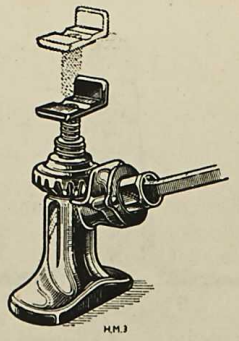


How to use the Jack on the Rear Wheels.

Changing a Wheel.

The jack handle is in two parts and is held in the jack by a spring-loaded ball. The head of the bar should be pushed home firmly.

Before removing a wheel see that the handbrake is on firmly and if on a hill scotch one or two of the wheels. Check the spare tyre for correct pressure and adjust the jack extension nearly to the height required by turning the head.



The Jack, Showing Extension.

On fitting the spare wheel, tighten the nuts alternately and securely before removing the jack and test the nuts again when the wheel is on the ground.

When a front wheel is to be taken off, place the jack below the front axle but not under the big nut at the end.

At the rear, the jack should be put in from the side, between the mud wing and the forward edge of the tyre, and should be placed under the rear spring between two clips which embrace the spring leaves. Care should be taken to see that the jack is properly placed.

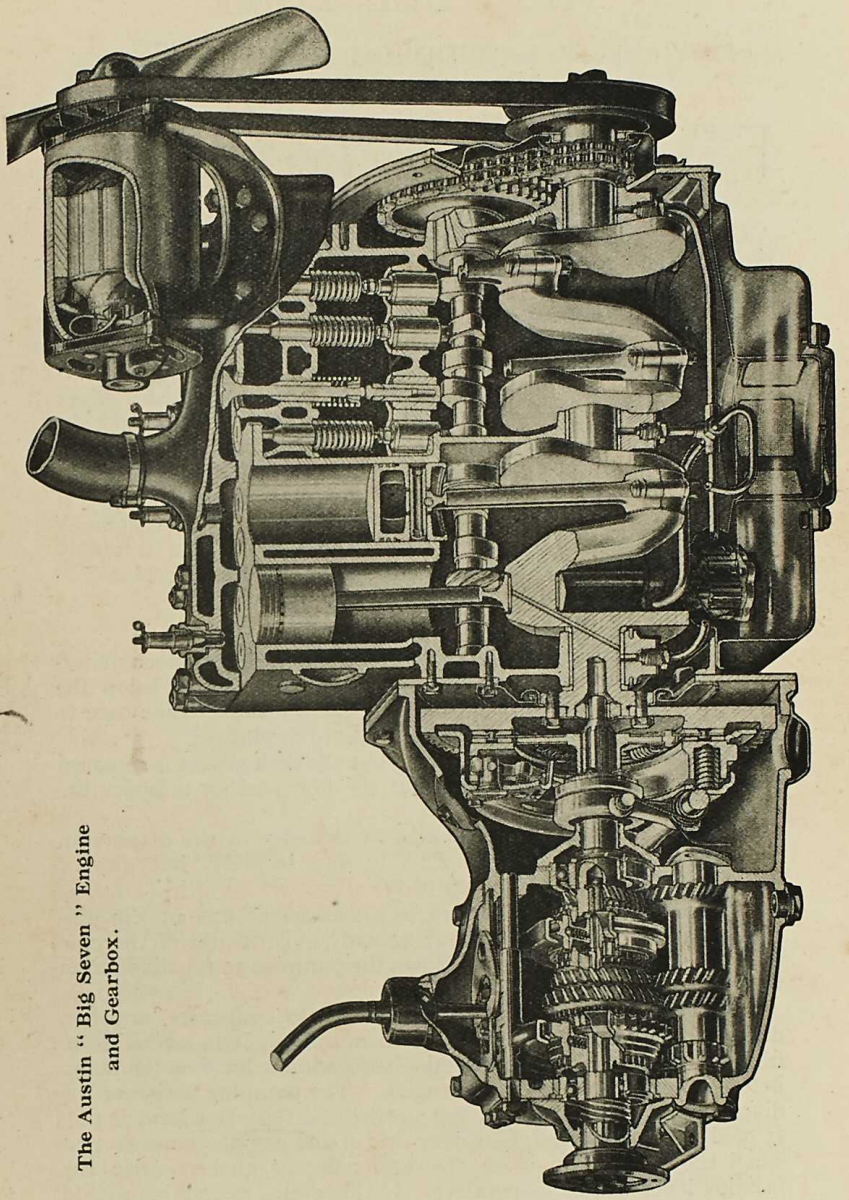
The chromium-plated wheel centre can be removed by means of a coin or screwdriver inserted in one of the slots under the rim.

AN INVITATION

AUSTIN OWNERS, and others interested are invited to visit Britain's largest self-contained motor works and see how Austin Cars are made. The normal tour of the Works occupies two hours, and appointments should be made if possible and in all cases for parties in excess of ten.

Tours commence daily, except Saturdays and Sundays, at 10 a.m. and 2 p.m.

Visitors should ask the Commissionaire for the Reception Department, or make arrangements through a local Austin Dealer.



The Austin "Big Seven" Engine and Gearbox.

THE FUEL PUMP

How Spirit is supplied from the Tank to the Carburetter

FUEL is drawn from the tank at the rear by means of an A.C. pump which advances the spirit in the correct quantity demanded by the carburetter.

Service on the pump is available at all Austin Dealers and at all A.C. service stations, which are prepared with parts and fixtures for repairing and adjusting all pumps if any trouble is experienced with the fuel supply.

Make sure that any difficulty is not due to causes apart from the pump before attempting to do anything to the pump.

If there appears to be lack of fuel at the carburetter, first ascertain if there is any fuel in the tank, and if not, replenish. Make sure that the piping and connections between the tank and the pump, and between the pump and the carburetter, are not leaking. In case of broken or damaged piping replacement should be made.

It may be that the filter cover of the petrol pump is loose. If this is the case, tighten the main nut at the top, first ascertaining that the cork gasket lies flat in its seat and is not broken or unduly compressed. A gasket compressed hard may need to be replaced.

Clean the Filter.

Occasionally remove the cover and clean the filter screen underneath it. Also remove any sediment from the chamber below the filter by taking out the drain plug (X) at the side. Take care to replace the fibre washer under the head of the plug.

When re-assembling, take care that the cork gasket is replaced correctly under the cover, and that the fibre washer is under the head of the screw.

If petrol appears to be leaking at the edge of the diaphragm tighten the cover screws alternately and securely, but do not attempt to dismantle the pump body.

Sometimes there appears to be a leakage of fuel at the diaphragm joint. The leakage may actually exist at one of the pipe fittings, causing the fuel to run down the pump on to the diaphragm flange.

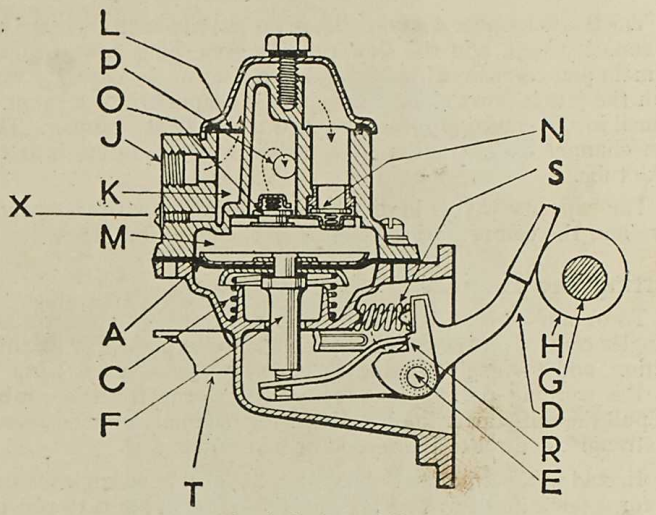
In hot weather when petrol is likely to evaporate, or when difficulty might be expected on cold mornings, it is advisable to fill the carburetter by operating the hand priming lever on the pump before attempting to start the engine. The pumping action of the diaphragm can be distinctly felt until the carburetter bowl is full. It will be appreciated, however, that if the engine comes to rest when the rocker arm is on the high point of the eccentric the priming lever will be inoperative. In this event, the engine should be turned over by hand or starter.

After removal of the upper casting on any type of A.C. fuel pump it is important that the cover should only be replaced while the pump pull rod is at the top of its stroke. This is to ensure sufficient flexing of the diaphragm to allow its normal working movement.

How it Works.

By revolving shaft (G) the eccentric (H) will lift rocker arm (D) which is pivoted at (E) and which pulls the pull rod (F), together with the diaphragm (A), downward against the spring pressure (C), thus creating a vacuum in the pump chamber (M).

Fuel from the rear tank will enter at (J) into sediment chamber (K) and through the filter gauze (L) and suction valve (N) into



The A.C. Petrol Pump.
X. Drain Plug. T—Priming Lever.

pump chamber (M). On the return stroke spring pressure (C) pushes the diaphragm (A) upward, forcing the fuel from chamber (M) through pressure valve (O) and opening (P) into the carburetter.

When the carburetter bowl is filled the float in the float chamber will shut off the inlet needle valve, thus creating a pressure in pump chamber (M). This pressure will hold diaphragm (A) downward against the spring pressure (C) and it will remain in this position until the carburetter requires further fuel and the needle valve opens.

The rocker arm (D) is in two pieces, the outer one operating the inner by making contact at (R) and the movement of the eccentric (H) is absorbed by the " break " when fuel is not required.

Spring (S) is merely for the purpose of keeping the rocker arm (D) in constant contact with the eccentric (H) to eliminate noise.

ZENITH CARBURETTER

Cleaning and Adjustment for Good Performance

THE carburetter fitted to the Austin Big Seven is the Zenith downdraught type, embodying the well known principles of main and compensating jets.

Fuel from the pump passes through the union, the filter and the needle seating into the float chamber. As the float rises it will close the needle on its seating, thus regulating the flow of the fuel.

The float chamber contains the main jet, the compensating jet, the capacity well, and the slow running jet. Fuel flows through the main and compensating jets and also rises in the capacity well From the jets it flows along two separate channels into a common channel in the emulsion block attached to the float chamber. This main channel has its outlet in a nozzle which projects into the choke tube.

The capacity well is in direct communication with the atmosphere and the compensating channel in the emulsion block.

Starting the Engine.

To obtain an easy start from cold the combined throttle and strangler control on the dashboard should be extended to its third position, and the engine should be given, by hand, a few turns to free the working parts. Then fully extend the throttle control and pull the self-starter knob. When the engine is running release the strangler control to the second or first notch.

In cold weather it may be necessary to hold the strangler control out for a few minutes while the engine warms up, and to run the car for the first few minutes with the knob in the first or second notch. As soon as the engine is warm, however, the control knob should be pushed right in, otherwise the mixture will be too rich.

If difficulty in starting the engine is experienced, ascertain that the strangler flap is closing properly and if necessary adjust the wire.

A choked slow running jet will also cause difficulty. The jet should be cleaned only by blowing through it, or with a tyre pump. On no account may wire be used.

Trouble can also be experienced if the throttle is not open sufficiently when the strangler knob on the dash is in the first notch. In this case turn the adjusting screw (E) a little to the right to open the throttle wider.

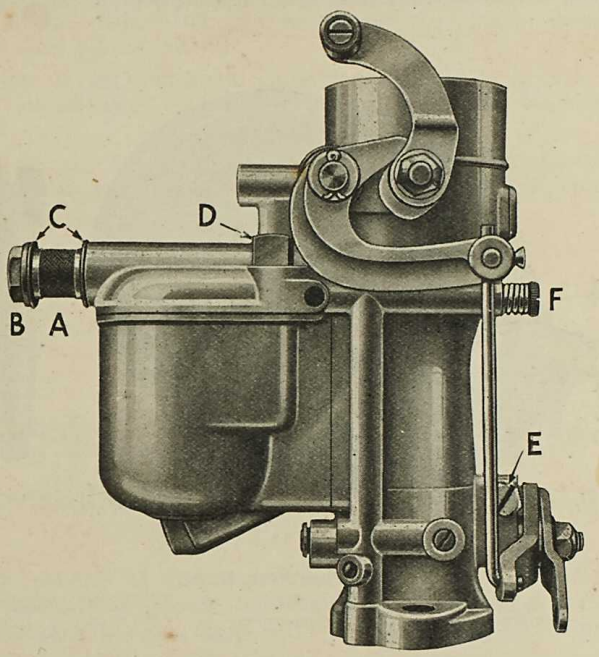
If the engine does not idle as slowly as desired, turn the screw to the left to close the throttle slightly.

A weak mixture may cause difficulty in slow running and this may be adjusted by turning the air regulating screw (F) clockwise to enrich the mixture. Do not make the mixture to rich or the engine will "hunt," or will tend to choke when slow running while warm.

Adjustments.

No adjustments should be carried out unless absolutely necessary.

If the engine is positively poor in accelerating when it is running at a sufficiently warm temperature, and the adjustments described will not remedy the trouble, it may be desirable to fit a larger compensating jet



Downdraught Type Zenith Carburetter.

A—Fuel Filter.
B—Union Nut.
C—Fibre Washers.
D—Retaining Bolt.
E—Stop Screw (slow running).
F—Air Regulating Screw.

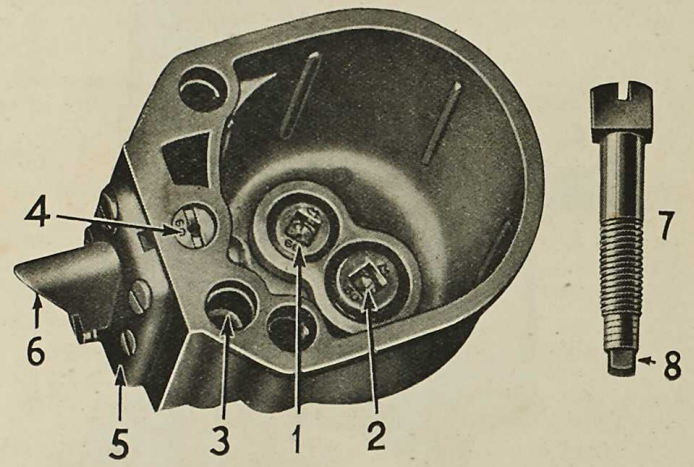
If there is a lack of power and speed, this may be due to the main jet being partially choked, or if greater power is desired a larger size main jet may be fitted

Do not, however, alter the jets unless you are quite sure tha other parts of the engine, including sparking plugs, ignition and valves are in order, and that compression is good. There are no moving parts in the Zenith carburetter, so that nothing can get out of adjustment when once set.

Make sure that the strangler flap opens fully, for if this sticks in a partially closed position it will restrict the speed of the car and increase fuel consumption.

Cleaning.

The bowl of the carburetter should be removed occasionally for cleaning. Take out the two retaining bolts and the bowl will drop into the hand. On turning the bowl upside down the float will fall out and reveal the main and compensating jets at the bottom of the bowl.



The Carburetter Bowl.

1—Main Jet. 3—Capacity Well. 5—Emulsion Block.
2—Compensating Jet. 4—Slow-running Jet. 6—Nozzle.
7—Retaining Bolt. 8—Squared end to form jet key.

The jets are removed by fitting the squared end of one of the retaining bolts into them and using a spanner on the other end. To clean the jets wash them in petrol, and blow through them to remove obstruction. Do not use wire.

The connection from the fuel pump should be dismantled and the filter thoroughly cleaned. When reassembling take care that the washers on either side of the union are replaced correctly

Standard Settings.

Sizes of Zenith jets normally run in 5's—the higher the number the larger the jet.

Settings are likely to be varied to suit certain markets. Standard settings are :—

Choke	23	Slow-running Jet	60
Main Jet	90	Needle Seating ...	1.5 mm.
Compensating Jet	50		

Intake Silencer.

An A.C. oil-wetted carburetter Intake Silencer and Air Cleaner is fitted.

At frequent intervals, say weekly, where dust is constantly experienced, the silencer needs cleaning and re-oiling. It is pulled off from the carburetter and the top of the cleaner is swilled in a shallow pan of petrol.

After drying, the metal gauze mesh should be re-oiled with engine oil, allowing the surplus to drain off before refitting the cleaner.

If the air cleaner is neglected it becomes choked with dirt, so that the cleaning efficiency of the device and its valuable protection against engine wear are not maintained.

THE COOLING SYSTEM

Precautions to take against Freezing and Overheating

THE cooling of the engine is maintained by a capacious radiator which should be filled with rain water, if available, or clean soft water, up to within about one inch of the filler.

The capacity of the radiator, pipes and cylinder jacket is approximately 13 pints.

Fan Belt Adjustment.

The fan belt should be adjusted so that it is not too taut but will not slip. To make the adjustment slacken the link locking nut at the front of the cylinder head and raise or lower the dynamo until the desired tension of the belt is obtained. Then securely lock the dynamo in position again.

When the belt is properly adjusted it should be possible to move it about one inch each way.

Overheating may be caused by a slack fan belt, excessive carbon deposit in the engine, running with the ignition too far retarded, using oil of poor quality, improper carburetter adjustment, failure of the water to circulate, or loss of water.

Flushing.

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. Soft rain water, syphoned from the top of the barrel where it is clean, or, failing that, soft water or water that has been boiled, should be used.

Occasionally flush out the cooling system by opening the drain cock at the bottom water connection and allow water to run through until it comes out clear.

Winter Precautions.

In winter an anti-freezing mixture should be added to the cooling water, because in very severe weather the water may freeze and damage the cylinder block or the radiator.

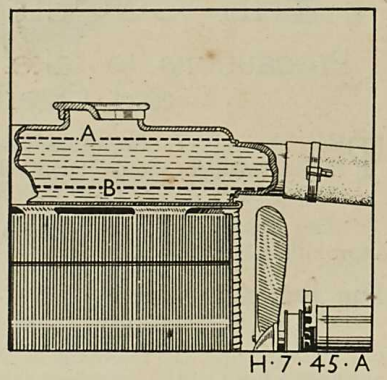
Smith's "Bluecol," Price's "Zero" and County Chemical "Stop-it-Freezing" are suitable. Follow the instructions of the makers.

Before using anti-freezing mixture tighten the cylinder-head nuts to make sure that none of the mixture gets into the cylinders. The mixture may do considerable damage if it contaminates the engine oil.

If such a mixture is not used, care should be taken to see that the water is drained off completely, for fracture of the cylinder block may result from freezing.

Freezing may occur first at the bottom of the radiator or in the lower hose connection. It is sometimes possible to feel ice in the hose and break it by squeezing. Ice in the hose will stop water circulation and may cause boiling.

A muff can be used to advantage but care must be taken not to run with the muff fully closed or boiling will result.



A—Maximum Water Level.
B—Danger Low Level.

THE IGNITION SYSTEM

Cleaning the Distributor; Lubrication; Fault Finding

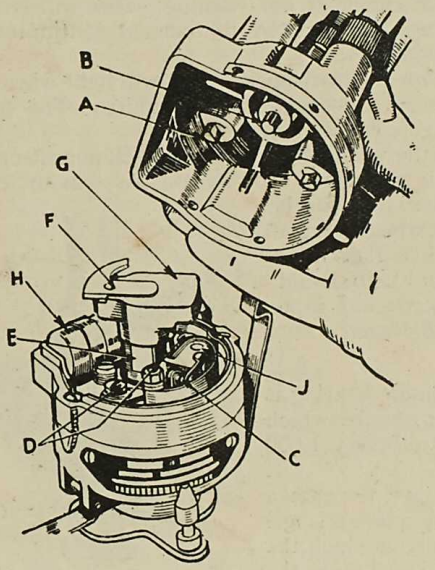
THE coil ignition equipment is provided with an automatic advance mechanism. Its advantages are particularly evident when accelerating and during hill climbing, the danger of pre-ignition, knocking or "pinking" being very much reduced.

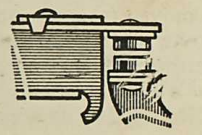
The device is housed in the distributor body and it consists of a centrifugally operated mechanism by means of which the ignition is advanced in proportion to the engine speed.

Very little attention is needed to keep the ignition equipment in first-class condition; we advise that it is inspected occasionally and the following instructions on lubrication, cleaning and adjustment carried out.

The Distributor.

The distributor cover can be removed on springing aside its two securing clips. The electrodes and the inside of the cover are then accessible for cleaning with a dry duster. See that the carbon brush is clean and moves freely in its holder.





The Contacts.

Distributor and Contact Breaker.

A—Electrode.
B—Carbon Brush.
C—Contacts.
D—Locking Screws.
E—Rotating Cam.
F—Metal Electrode.
G—Rotating distributor arm.
H—Condenser.
J—Contact breaker pivot.

After the first 500 miles running it is usual for the car to be taken to a service station to have various minor adjustments made to the engine. As most of the bedding down of the contact breaker heel occurs during this period the gap between the contacts must be checked and if necessary re-set to give a maximum opening of .012 ins. At the same time the cam should be given a smear of engine oil.

After this, the gap between the contacts will not require adjustment until a considerable mileage has been covered, unless the contacts have burned. The work of re-setting the contacts when this has occurred, should be left to a skilled mechanic.

For the normal adjustment, first turn the engine by the starting handle until the contacts are seen to be fully open. Then, using the ignition screwdriver, slacken the two screws in the contact plate, and move the plate until the gap is set to the thickness of the gauge. After making the adjustment care must be taken to tighten the locking screws.

The Coil.

The coil needs no attention apart from keeping the terminals tight and the top clean.

Ignition Switch and Warning Lamp.

The key by means of which the ignition is switched on should be withdrawn when the engine is not running. This will ensure that the battery does not discharge by the current continuing to flow through the coil windings.

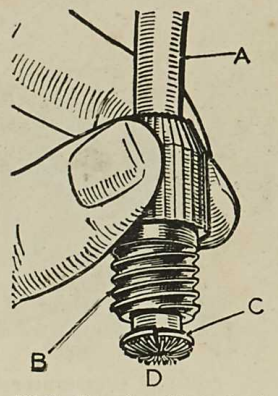
The warning lamp on the instrument panel will light when the ignition is switched on and the engine is not running. This lamp also lights when the engine is only idling.

Should the bulb of the warning lamp fail this will not affect the ignition, but it should be replaced as soon as possible so as to act as a safeguard to the battery. It can be removed from its socket when the small cover plate holding the red glass is unscrewed. The replacement bulb should be a 2.5 volt .2 amp. screw cap type (No. C252A) as originally fitted.

Lubrication.

The distributor spindle bearing is lubricated by means of an oiler which needs a few drops of oil every 1,000 miles.

Every 3,000 miles give the cam a smear of engine oil and place a single drop of oil on the pivot on which the contact breaker works. Withdraw the rotating arm from the top of the spindle



High Tension Terminal.
A—H.T. Cable. B—Moulded Terminal.
C—Washer. D—Cable Strands.

by lifting it off and add a few drops of thin oil to the top of the spindle. Do not remove the screw exposed to view, as there is a clearance between the screw and the inner face of the spindle through which the oil passes to lubricate the cam bearing. Take care to refit the arm correctly and to push it on to the shaft as far as possible.

About once every year the moving parts of the automatic timing control must be lubricated with a good grade engine oil. To render the control accessible, remove the top of the distributor and lift off the rotating arm. Then remove the contact breaker moulding by withdrawing its two securing screws.

High Tension Leads.

When the high tension cables show signs of perishing or cracking, they should be replaced. Use only 7 m.m. rubber covered ignition cable for all high tension leads.

To make a connection to the distributor or coil terminals, thread the knurled insulating nut over the lead, bare the end of the cable for about a quarter of an inch, thread the wire through the brass washer provided, and bend back the strands. When the moulded nut is screwed home, the cable will be securely clamped, and the nut will support the cable, and prevent vibration and fracture

Ignition Faults.

When the engine will not fire, or fires erratically, the trouble may arise from the carburetter, or fuel supply and not the ignition. A partially choked jet, an incorrect fuel level, or air leaks into the induction system may be the faults. Equally, sooted plugs can be suspected, when dismantling and cleaning them will remedy the trouble. If the battery has run down, or its terminals have worked loose, quite obviously there will be no spark, and the same results can be expected if the distributor electrodes and contact breaker have been neglected and are dirty.

The coil can be tested by removing the cable from the centre socket on the distributor cover, and holding the end of this cable about a quarter of an inch from some metal part of the car while the ignition switch is on and the engine is turned. A strong and regular spark will result if the coil is in order. Clean the top of the coil, and ensure that its terminals are tight before making this test.

Ignition Screwdriver and Gauge.

Short Circuits.

To test for short circuits in the low tension wiring (the cables from the switchboard to the coil, and coil to distributor) which would equally cause irregular running, have the engine turned while the ignition is switched on, and watch the ammeter reading. It should rise and fall as the contact breaker points close and open This test will also indicate if the contact breaker is functioning correctly. If the contacts do not fully close, the reading will not fluctuate.

If the high tension cables from the distributor to the plugs are not securely attached to the distributor, misfiring may occur. Or, if the rubber insulation on these cables shows signs of perishing and cracking, there may be leakage of the current giving rise to the same symptoms. Renewing the cables is then the remedy.

If, after verifying these points, the trouble remains undiscovered, the equipment should be examined and tested by the nearest Austin dealer or Lucas Depot.

Timing the Ignition.

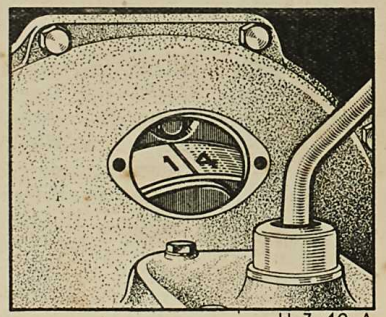
As it is essential that a spark should occur at the plug points as each piston reaches the top of its compression stroke, re-timing after dismantling needs care but should present no difficulty.

In order to reset the ignition timing remove all sparking plugs except No. 1 and, using the starting handle, turn the crankshaft until No. 1 piston is at top dead centre before a firing stroke. The compression felt at the handle will denote the correct stroke. Watch the valves, too, as on the firing stroke both inlet and exhaust valves will be firmly seated. Top dead centre of No. 1 piston is also marked on the flywheel (1/4), which can be seen after removing the clutch pit cover, but actually it is necessary for the ignition to occur somewhat earlier. Therefore turn the flywheel back about ½ in. (12 m.m.). Remove the distributor cover, slacken the screw in the clip of the distributor casing and turn the casing until the contact breaker points just begin to open, with the rotating centre arm pointing to the position of No. 1 electrode in the Bakelite distributor cover. The spark is then correctly timed for No. 1 cylinder, and of course for No's. 2, 3 and 4.

As the distributor cover carries the electrodes for the four cylinders it will be realised that it is imperative the rotating arm can pass the spark to the correct sparking plug lead when compression is reached by each piston.

Finally tighten the adjusting screw, refit the distributor cover and test the car on the road. If the ignition seems too far advanced or retarded it can be re-adjusted at the distributor. There is a considerable amount of latitude for adustment but only extremely small movement should be made at one time.

If the leads from the distributor to the sparking plugs have been disconnected they must be replaced in the firing sequence marked on the cover, 1, 3, 4, 2.



H·7·40·A

THE SPARKING PLUGS

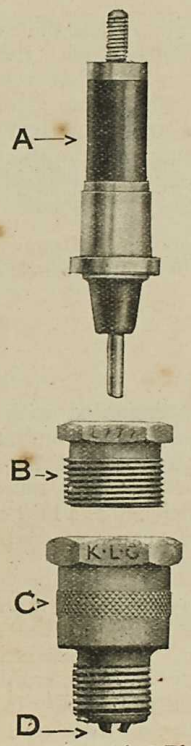
THE sparking plugs with which the "Big Seven" is fitted are 14 m.m. K.L.G. type, L777.

The gaps between the firing point of the central electrode and the earth points are set at .015 to .018 of an inch. Too wide a gap would cause misfiring, especially at high speeds and under heavy pulling at low speeds with an open throttle.

After about every thousand miles it will be necessary to clean the plugs to remove carbon deposit from the interior insulation.

Type L777 is a three-piece plug and the gland nut is a separate component. To clean the plug, the insulated centre must be removed from the plug body by unscrewing the gland nut. When the gland nut is unscrewed the central electrode may be withdrawn

Wipe the lower mica insulation carefully with a petrol soaked rag. If the carbon deposit is hard, soak the electrode in petrol for an hour or so to soften the carbon. The mica insulation should be thoroughly cleaned and polished, and the central electrode scraped clean.



Type L777 Sparking Plug.
A—Insulated Centre. B—Gland Nut. C—Plug Body. D—Earth Points.

Scrape out the inside of the body and clean the earth points. Wash the plug body in petrol and dry it.

To reassemble, see that the internal washer is in place before inserting the electrode. Tighten the gland nut to secure gas tightness and re-set the earth points to between .015 in. and .018in.

To do this it may be necessary to bend each earth point toward the central electrode. The central electrode must not be levered toward the earth points.

If the sparking plug washer has been completely flattened, replace it with a new one.

Poor grade oil, improper carburetter adjustment, low grade petrol, excessive use of choke, faulty cables or distribution points out of adjustment may cause fouled sparking plugs.

Sparking plugs should be renewed every 10,000 miles (15,000 km.).

CORRECT LUBRICATION

Use only the Recommended Oils and Greases

THE correct lubrication of any piece of machinery is of the utmost importance, but for the modern high-speed automobile engine, which operates at sustained high temperatures and speeds, it is absolutely essential that only oils of the highest quality and correct grade be used. Inferior oils, or unsuitable oils, will almost inevitably cause excessive wear in an unduly short time.

We cannot over emphasise the folly of using so-called " cheap " lubricants.

Modern cars use comparatively little oil, so that the extra cost of using a good lubricant is negligible compared with the cost of using inferior oil. Good lubricating oil ensures that you always get out of your car the best performance that it can give. It reduces carbon deposit, making frequent decarbonising unnecessary. It makes starting easier, thereby avoiding deterioration of the battery. It reduces engine wear and eliminates avoidable causes of mechanical breakdown with possible heavy repair bills.

Lubricants represent the smallest proportion of your expenditure on the upkeep of a car, so that it is obviously false economy to use other than the best.

Impurities.

But even the best oil becomes contaminated with certain impurities during use. In the engine, these may be unburnt fuel, carbon, metallic particles, moisture, etc., and although the oil itself does not deteriorate the presence of these impurities must reduce its efficiency as a lubricant and in time cause avoidable wear.

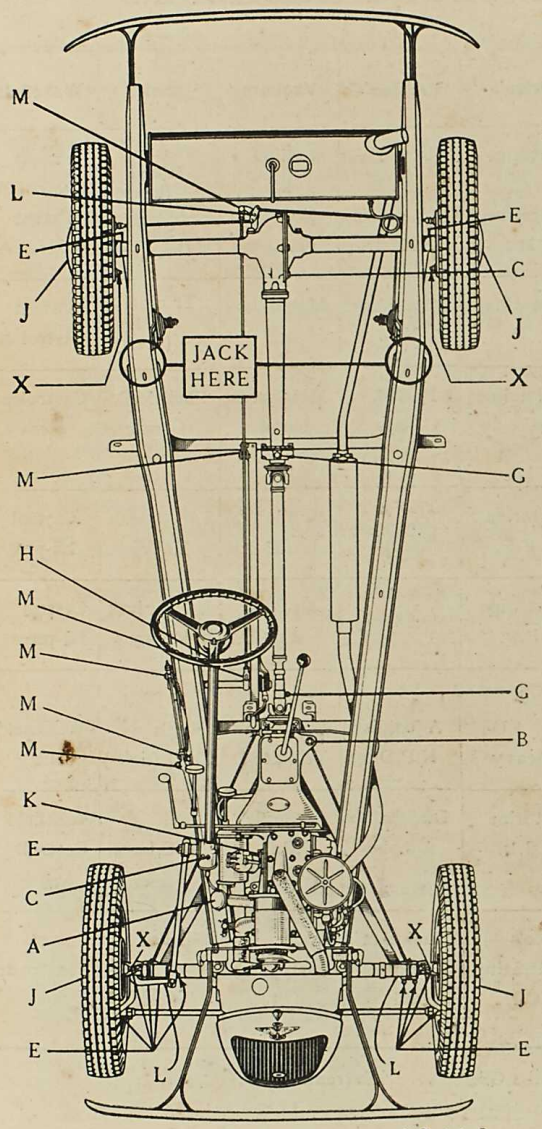
Oils of the best quality resist contamination, and consequent wear, to the greatest extent. Nevertheless it is imperative that the crankcase be drained periodically to remove foreign matter, and subsequently refilled with fresh clean oil.

Recommended Lubricants

	" Essolube "	" Price's "	"Duckham's"	"Vacuum"	" Shell "	"Wakefield"
Engine : Summer ...	Essolube 50	Motorine C	Adcoidised NP3	Mobiloil BB	Triple Shell (heavy)	Patent Castrol XL
Winter ...	Essolube 40	Motorine M	Adcoidised NP3†	Mobiloil A	Double Shell (medium)	Patent Castrol AA
Gearbox ...	Essolube 50	Motorine C	Adcoidised NP3	Mobiloil BB	Triple Shell (heavy)	Patent Castrol XL
Wheel Hubs and Grease Gun	Esso Grease	Belmoline C	H.B.B. Grease	Mobilgrease No. 4	Shell R.B. Grease	Castrolease Heavy
Steering Box	Essoleum Expee. 110	Motorine E.P.	Q.2600	Mobiloil E.P.	E.P. Spirax Heavy	Castrol Hi-press
***Rear Axle**	Essoleum Expee. 110	Motorine E.P.	Q.2600	Mobiloil E.P.	E.P. Spirax Heavy	Castrol Hi-press
Distributor, Dynamo & Oil Can.	Essolube 30	Hand-1-Oil Heavy	Adcoidised N.P.O	Gargoyle Velocite D	Single Shell (light)	Wakefield Oilit
Upper Cylinder Lubrication	Petmix	Motorine U.C.L.	Duckham's Adcoids	Gargoyle U.C.L.	Shell U.C.L.	Wakefield Castrollo
Springs, Rusted Parts or Squeaks	Essolube 30	Price's Penetrating Oil	Duckham's Easing Oil	Voco Penetrating Oil	Shell Penetrating Oil	Castrol Penetrating Oil

*Also Jaba Oil. †Extreme Cold NP2

Austin "Big Seven" Lubrication Chart



A. Crankcase—Replenish to full mark on dip-stick weekly.

B. Gearbox — Replenish MONTHLY.

C. Rear Axle and Steering Box—Replenish MONTHLY—Special Oil.

E. Steering Cross Tube (2) Steering Side Tube (2), Swivel axles (2), Spring bushes (6) Grease WEEKLY.

G. Torque tube, front end, Propeller shaft, splined end.—Grease MONTHLY.

H. Top of steering column—Oil MONTHLY.

J. Hubs—Grease MONTHLY.

K. Distributor—Oil sparingly every 1,000 miles.

L. Brake Balance Lever (1) and Front Brake Swivels (2)—Grease MONTHLY.

M. Brake and throttle control joints, Oil WEEKLY.

X. Brake Adjusters.

Rinse the gauze filter in petrol and allow to drain before refitting. Do not wipe with fluffy rags.

Oil in the gearbox and back axle becomes contaminated with metallic particles from the gear teeth and these will cause unnecessary wear of the bearings unless removed. These units should also be drained periodically and may be flushed with a thin oil. This should be allowed to drain thoroughly, after which the unit should be filled to the correct level with fresh oil.

Choice of Lubricants.

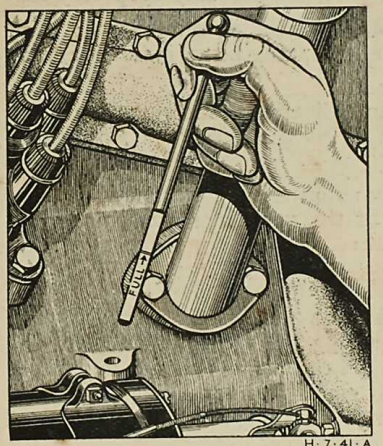
Some lubricants are lighter in colour and appear thinner than others. However, the colour of an oil or its appearance at atmospheric temperatures give no indication as to its efficiency under operating conditions and temperatures. Oil should never be judged by colour or apparent consistency.

The lubricants we officially recommend, each of them having the high grade standard of quality required by our Research Department, and all of them having proved entirely satisfactory in extended service are listed on another page. All have adequate distribution at garages and filling stations.

The Engine.

The recommended lubricants are of the correct quality and viscosity for our engine units. The matter of the proper grade of oil is very important both in relation to the pump used to circulate the oil, and the gauge to register the pressure.

If a very thick oil were used on a very cold day, the pump might be strained or the gauge broken. It is partly for this reason that the oil gauge will register 40 lbs. pressure whereas normally 20 lbs. is sufficient at ordinary speeds, or 20-30 lbs. when the car is new or the engine is first started.



The Dip-Stick.

After the first 500 miles running, drain the original oil from the reservoir by removing the plug in the bottom while the engine is hot.

On this occasion also remove the cylindrical gauze strainer by unfastening the six nuts which hold the strainer cover to the base of the oil reservoir. Take care that this work is not done where dust or other foreign matter is likely to be blown into the crankcase. Clean the strainer with paraffin, afterwards washing it with petrol. Replace the strainer.

Fill the crankcase with oil to the maximum level indicated on the " dip-stick." Approximately 5 pints will be required.

After the first change at 500 miles the oil should be changed after every 2,000 to 3,000 miles (3,200 to 4,800 km.) and the oil reservoir gauze cleaned.

Under no circumstances should petrol or paraffin be poured through the oil filler to clean the engine.

After refilling with fresh oil to the correct level, run the engine for a few moments to check the oil circulation and that the oil pressure gauge reading is correct.

The oil level should not be allowed to go below $\frac{1}{4}$ in. on the bottom of the dip rod. It is advisable to wipe the dip rod before taking the reading of the level and the reading should only be taken when the engine is not running and the car is on level ground.

Oil Pressure Gauge.

The oil pressure gauge indicates whether the oiling system is working properly and it should be looked at frequently while the engine is running.

Should the gauge fail to register a normal pressure, it may be due to lack of oil in the crankcase. If not, verify the adjustment of the relief valve at the rear end of the crankcase on the nearside, and see that the ball seats properly. Should the gauge register no pressure, stop the engine immediately and look for a broken pipe or other cause of failure.

When the engine is started on a chilly morning the pressure may rise to 35 lbs. or more (the gauge is strong enough to allow this), but after the oil has circulated for a little while and becomes warm the pressure should gradually drop to 20-30 lbs., the lower figure when running at moderate speeds When the car is standing and the engine is running slowly pressure will probably drop very low.

A sudden rise to a higher pressure reading than normal, while the car is running with a warm engine, may be an indication of an obstruction in the oiling system.

A flickering finger may be an indication of a serious deficiency of oil in the crankcase, a damaged oil pipe line or a loose gauge pipe connection.

Any unusual difference from normal registration should be quickly noticed and the cause of the variations ascertained and set right.

Oil Pressure Regulation.

If for any reason the pressure in the system should require regulation, which is made by varying the spring pressure on the relief valve, it should be made when the engine is hot in order that the oil may be at its normal consistency. While making the adjustment it is advisable to have the engine running at a speed equivalent to a car speed of about 25 m.p.h. on top gear.

The relief valve should, however, only be adjusted for some special reason, as the original setting is very carefully made, and should be marked, if any alteration is intended, so that if it is found subsequently that it is desirable to revert to the original setting, this can be done accurately.

To increase the pressure of the oil, loosen the lock nut and tighten the regulating screw. To reduce, slacken the screw. Great care should afterwards be taken to ensure that the locknut is securely tightened.

The regulating screw is close to the exhaust pipe and care should be exercised by the operator to avoid burning his hands.

Upper Cylinder Lubrication.

The use of an upper cylinder lubricant is beneficial to the running of the engine. It is used by adding it to the fuel when refilling the tank. Follow the instructions given with the various brands.

The Gearbox.

The same grade of oil used for the engine is most suitable for the gearbox. Do not use thick gear oil or seizure of bearings may result.

To replenish the gearbox, first remove the screws holding down the rubber cover over the left of the gearbox. This permits the cover to be raised and the plug of the oil hole is then accessible. Remove the plug and fill up to the bottom of the plug hole. This is the correct level.

The gearbox should be drained, flushed with thin oil and refilled to the correct level after the first 1,000 miles and every 6,000 miles subsequently. Allow time for all the thin oil to drain away before refilling with new oil.

The capacity is approximately $1\frac{1}{2}$ pints.

Propeller Shaft.

The front, splined end of the propeller shaft is lubricated through a hole in the floor tunnel just behind the gearbox.

A small leather flap covers the hole. Grease should be applied through the grease nipple monthly. It may be necessary to move the car in order to turn the shaft and expose the nipple.

Torque Tube.

There is a raised casing in the centre of the floor. Behind the front seats, on this casing, is a detachable panel, which is removed to give access to the greasing point on the front end of the torque tube, which requires grease monthly. The hole is plugged with a short bolt, which must first be removed with a spanner (actually the wheel-brace will remove the bolt very effectively).

Use the grease gun adaptor.

Rear Axle.

For the rear axle, attention every 1,000 miles should be sufficient. A special oil is used and is injected into the axle casing from the near side, using the special adaptor on the grease gunbarrel. First remove the plug, then place the end of the adaptor into the oil hole, and grasping the barrel of the grease gun, push.

The plug also serves as an oil level indicator. Therefore do not replace the plug at once, but give time for the superfluous oil to run out, if too much lubricant has been injected. This is most important, because if the back axle is overfilled the lubricant may leak through on to the brakes and render them ineffective.

Drain the rear axle after the first 1,000 miles and then every 6,000 miles, and replenish to the correct level. The oil should be drained while warm.

The rear axle oil capacity is about $\frac{7}{8}$ pint. It is important to use only the oils recommended and not to mix them. Always use the same brand of oil for topping up or else drain the axle and refill.

Brake Gear.

All the moving parts of the brake gear, joints, etc., should be oiled once a month, including the brake pedal shaft. Use a brush dipped in oil to lubricate the cross shaft bearings.

The nipple on the rear brake balance lever and also the front brake swivel joints should be greased monthly.

Front Axle.

The swivel pins are lubricated with the grease gun and should receive attention once a week.

Road Springs.

The rear ends of the rear road springs where they are attached to the axle are provided with greasing points, and should be given a charge once a week if the car is continually used. The nipple is fitted in the spring pin housing.

To ensure the best results it is essential that the road springs should be lubricated. Engine oil or a penetrating oil should be used, either sprayed from the container or applied with a brush. If the rear wheels are removed the springs are fully accessible.

The front spring should be similarly lubricated, and the shackles greased at the four nipples provided.

The Hubs.

Both front and rear hubs require occasional greasing. Remove the road wheel. Turn the hub until the grease plug is at the top. Screw out the plug, apply the adaptor of the grease gun and inject about a quarter of a gun full.

It is important that the hubs are not given too much grease otherwise it will penetrate to the brakes to render them ineffective.

Once a month, or every 2,000 miles is often enough for this attention.

Steering Gear.

To obtain easy steering it is important to give regular attention as regards lubrication. The oil plug is on the top of the steering box, and if a charge of E.P. lubricant is given once a month it is sufficient to lubricate the bearings of the worm and sector and also lubricate the worm. If too much is injected at this point, it will get up the column and exude round the steering wheel.

The bearing at the top of the column, just under the steering wheel can be given a little oil from the oil-can.

Nipples at each end of the steering side tube, at each swivel axle and at each end of the steering cross tube, should be given a charge of grease once a week.

Speedometer Drive.

The flexible shaft of the speedometer drive from the gearbox should be lubricated by oiling from the speedometer end every 2,000 miles. To do this uncouple the union nut behind the speedometer.

The shafting should also be taken down and thoroughly cleaned about every 6,000 miles. It should then be lubricated along its whole length by applying thin grease, so that when the shaft is replaced in its tubing there will be a good supply of lubricant.

Grease should also be smeared round the flange where it rubs the washer of the key piece which connects to the speedometer.

Grease Nipples.

If a grease nipple becomes choked, unscrew and remove it. It can usually be cleared by soaking it in paraffin or petrol, and syringeing either of these through it, but should it be found impossible to clear it, fit a new nipple in its place.

Always carefully wipe each grease nipple before applying the gun.

Other Points.

Instruction regarding the lubrication of the ignition and electrical equipment will be found under appropriate headings.

No lubrication is required at the clutch.

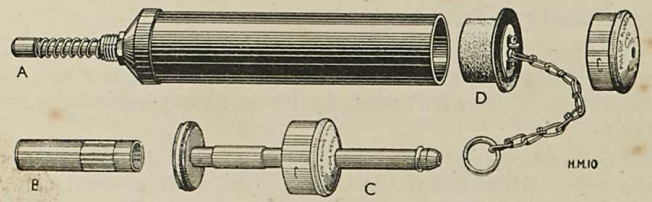
THE GREASE GUN

Special Adaptor for Rear Axle and Steering Box Lubricant.

THE type of grease gun supplied in the tool kit of all Austin cars is known as the Enots "Autolub" gun, and it incorporates features by which the chassis lubrication of the car is greatly simplified.

Once the gun has been charged all that is necessary is to keep pushing the ram of the gun against the nipple until the contents are exhausted.

The ram is automatically returned to its extended position by a spring. This action creates a vacuum in the gun by means of a valve, and thus refills the high pressure chamber contained in the ram. Three or four strokes of the gun for each nipple are sufficient.



The Grease Gun.

A—Ram. B—Cover. C—Adaptor. D—Cork Plunger.

The ram is used for forcing grease through nipples, and the adaptor for lubricating the back axle and steering box with oil. For this operation, first replace the screw-on cover of the ram, then remove the end cap from the barrel of the gun, pull out the cork plunger by means of the chain, and charge the gun to about three-quarters of its capacity. Put the cap of the adaptor on the open end of the gun, and after removing the plug from the back axle or steering box, place the end of the adaptor into the greasing hole, and, grasping the barrel, push. This will inject a large quantity of lubricant quickly.

When charging the gun with grease or oil, it should be filled with lubricant to about three-quarters of its capacity.

ELECTRICAL EQUIPMENT

Cleaning the Commutators and Brushes; Battery Attention

THE lighting and starting units on Austin cars are arranged for wiring on the single wire system, the return path of the current being provided by the frame. It is essential that all units are in good metallic contact with the frame.

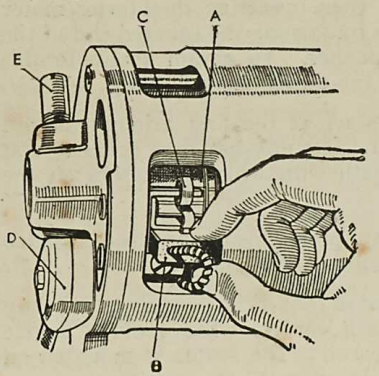
The electrical system on the Austin " Big Seven " is six volt and the positive pole of the batteries is earthed.

Should difficulties arise that cannot be understood or remedied from the information given below application should be made to the Austin Service Department, an Austin Dealer, or the nearest service depot of the makers of the equipment.

The Dynamo.

The dynamo is air ventilated by means of a small fan, and is specially designed to work in conjunction with a compensated voltage regulator unit, mounted on the engine side of the dash, which automatically controls the dynamo output to meet the varying requirements of the batteries and load.

When the batteries are discharged the dynamo gives a high output so as to bring the batteries back to their normal fully charged state in the minimum time. When the batteries are fully charged, the dynamo only gives a trickle charge, which is sufficient to keep the batteries in good condition without possibility of damage through over-charging.



The Dynamo.

A—Commutator. B—Brush.
C—Brush Spring. D—Terminal Box.
E—Lubricator.

The dynamo gives an increase of output to balance the current taken by the lamps or other accessories when these are switched on.

The control of the dynamo output is entirely automatic. Hence there is no charging switch.

The only parts calling for any attention are the commutator and brushes, which are readily accessible when the cover is removed.

See that the brushes move freely in their holders and that there is sufficient spring tension in the springs to keep the brushes firmly pressed against the commutator. Dirty brushes may be cleaned with a cloth moistened with petrol.

The surface of the commutator should be kept clean and free of oil and brush dust. The best way to clean the commutator is to insert a fine duster, held by means of a suitably shaped piece of wood, against the commutator surface, slowly rotating the armature at the same time.

The dynamo bearings are packed with grease during assembly and this will last for a considerable time. Once a year unscrew the wick-type lubricator, with slotted end, and if the wick is dry refill the cup with vaseline.

When the car is undergoing a general overhaul the dynamo should be dismantled for cleaning, adjustment and repacking the bearings with grease. This should be done by a Lucas Service Depot.

Starter Motor.

The starter motor requires very little attention beyond keeping the commutator clean and free of oil and brush dust, as with the dynamo.

Before starting from cold do not neglect the preliminary precautions that you should observe if starting by hand. Although the starter will turn the engine, however stiff, it is advisable to crank the engine by hand for two or three revolutions as this will considerably diminish the load for starting, especially in cold weather.

If the starter pinion jams when operating the starter motor switch it can be released usually by turning the squared end of the starter shaft by means of a spanner. To obtain access to this squared end withdraw the metal cap protecting it, if fitted.

Should the engine fail to start at the first attempt, do not operate the starter switch until the crankshaft has come to rest or the starter pinion, or the teeth with which it meshes on the flywheel, may be damaged.

Never use the starter motor to propel the car as this throws too great a strain upon the battery and starting motor.

The starter switch is arranged so that it can be operated directly by hand without using the dash control when making engine adjustments or for any other reason. The switch is mounted on the starter end bracket and can be operated by pressing the lever. The control must be operated firmly to prevent burning of the switch contacts—press smartly and release smartly.

Ammeter Readings.

The centre zero ammeter indicates the rate at which the battery is being charged or discharged. For instance, suppose 2 amperes are consumed when the side and tail lamps are switched on, and that the ignition coil takes 2 amperes, then if the dynamo is generating 7 amperes the meter will show 3 amperes on the charge side of the scale. This is the current in excess of the lamp and ignition load that is available for charging purposes, if necessary.

Normally, during daytime running, when the batteries are in good condition, the dynamo only gives a trickle charge, so that the charge reading will seldom be more than a few amperes.

The ammeter does not indicate the amount of current used by the starter.

Cut-out and Regulator.

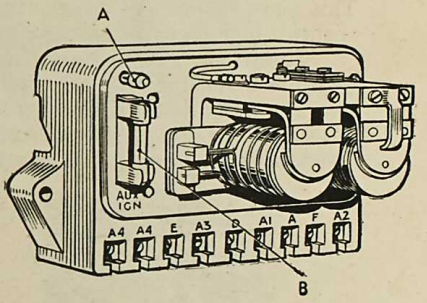
The cut-out and regulator are mounted with two fuses as one unit, which also forms a junction box.

The working of the regulator in conjunction with the dynamo has already been described.

The function of the cut-out is to close the charging circuit as increasing engine speed causes the dynamo voltage to rise above that of the batteries. When the engine slows down the dynamo voltage falls below that of the battery and the reverse action takes place; the cut-out opens and prevents the battery discharging through the dynamo.

The cut-out and regulator are set before leaving the works and do not need adjustment. The cover protecting them is sealed.

One fuse protects the accessories which are operative only when the ignition is switched on, (*e.g.*, fuel, gauge, horn, stop lamp and direction indicators). The other fuse protects those accessories which can be operated irrespective of whether the ignition is on or off, including the interior light and the screen wiper.



Regulator and Fuses.

A—Spare Fuse. B—Accessories Fuse.

If any of the units fail, inspect the fuse protecting them and if it has blown examine the wiring for a short circuit and remedy. If the new fuse blows the cause of the trouble must be found and we advise that the equipment is examined by an Austin Dealer or a Lucas Service Depot.

Fuel Gauge.

The electric fuel gauge is automatic and registers the contents of the fuel tank. It is active only when the ignition is switched on.

Consequently when the tank is being replenished, first switch off the ignition to stop the engine, then switch on again and the needle on the dial will record the amount of spirit which is poured into the tank.

The gauge is very unlikely to fail, but in this eventuality, Messrs. S. Smith and Sons (M.A.), Cricklewood Works, London, N.W.2. (the makers) or their depots will give prompt service.

Electric Horn.

If the horn becomes uncertain in its action, giving only a choking sound or does not vibrate, it does not follow that the horn has broken down or is out of adjustment. First ascertain that the trouble is not due to some outside source, for instance, discharged battery, a loose connection or short circuit in the wiring of the horn, or a blown fuse.

It is also possible that the performance of the horn may be upset by the horn becoming loose on its mounting.

If the cause of trouble cannot be located, do not attempt to dismantle the horn, but return it to your Austin Dealer or a Lucas Service Depot for examination.

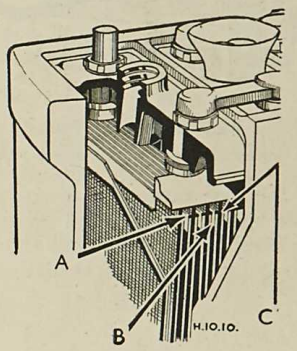
Electric Windscreen Wiper.

To start, pull out the curved handle and swing it aside so as to move the cleaning arm into position on the screen. Then move the control switch to the left. To stop the wiper, move the switch to the right. Then pull out the curved handle to disengage the wiper from the gears, and turn it into the top of the switch knob. This locks the arm out of the line of vision of the driver and also ensures that the wiper is switched off.

The wiper requires no attention ; all moving parts are packed with grease during assembly and no lubrication is required.

The wiper motor normally runs fairly hot but this is not a fault.

When cleaning the windscreen, the wiper arm can be easily lifted from the screen, but care must be taken that it is not forced from side to side.



The Battery.
A—Top of Separaters. B—Top of Plates. C—Acid Level.

The Battery.

Once a month, or more frequently in hot weather, unscrew the filler caps of the battery and pour a small quantity of distilled water into each of the cells to bring the acid just level with the tops of the separaters.

Do not use tap water as is contains impurities detrimental to the battery. If any acid is accidentally spilled from the battery it must be replaced by a dilute sulphuric acid solution of the same specific gravity as the acid in the cell.

Keep the terminals clean and tight, and well-smeared with vaseline. A liberal smearing of vaseline protects the terminals from the corrosive action of the acid, which, if allowed to continue unchecked, may eventually result in a break in the battery wiring.

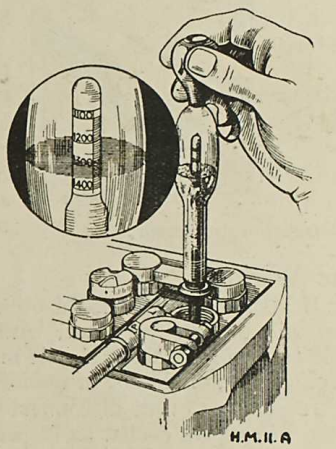
Keep the outside of the batteries clean and dry, particularly the tops of the cells. Dirt and moisture will form a conductor of electricity and if such a path is allowed to form between the positive and negative terminals of the battery, or between the negative terminal and the chassis, there will be a leakage of the current which will cause the battery to run down. Wipe the cell tops regularly to avoid this.

When examining the battery do not hold naked lights near the vent plugs as there is a possible danger of igniting the gas coming from the plates.

Once a month examine the battery by taking hydrometer readings. There is no better way of ascertaining their state.

The specific gravity readings are :—1,285 - 1,300 battery fully charged, 1,210 about half discharged, and 1,150 completely discharged. These figures are at an assumed temperature of the solution of about 60 degs. F.

Do not leave the battery in a discharged condition. If the car is to be out of use for any length of time have the battery charged about every fortnight. In no circumstance must the electrolyte be removed from the battery and the plates allowed to dry as certain changes take place which result in loss of capacity



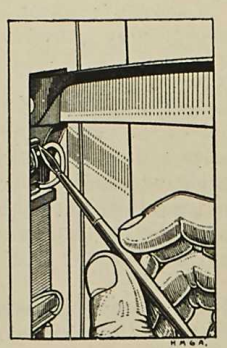
Test the Specific Gravity of Battery.

When the battery arrives empty, as in the case of cars sent abroad, instructions for charging are given on a special leaflet. If mixing the acid, filling the cells and charging the battery is done by the owner, the manufacturer's instructions must be followed very carefully.

Direction Indicators.

Every two or three months raise each direction indicator arm and apply a drop of thin oil, by means of a brush or other suitable article, to the hinge between the arm and the operating mechanism.

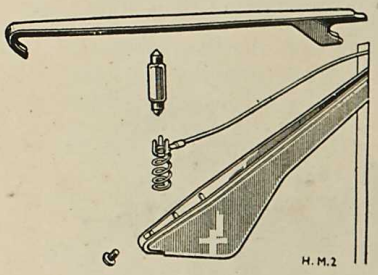
If the arm fails to light up when in operation examine the bulb. To remove the bulb, switch the indicator on and, holding the arm horizontally, switch off again. Withdraw the screw on the underside of the arm and slide off the metal plate, when the bulb can be replaced. To replace the metal plate, slide it in an upward direction so that the slide plate engages with the slots on the underside of the spindle bearing.



Direction Indicator.
Apply thin oil to the hinge.

The bulbs are Lucas No. 255 3-watt festoon type.

If the direction indicators fail examine the fuse protecting them. If it has blown inspect the wiring for a short circuit. If the new fuse blows the cause of the trouble must be found and we advise that the equipment be examined by a Lucas Service Depot.



Direction Indicator.

The Wiring.

If a short circuit should occur in the wiring at any time the wires will become very hot, with a result that the insulation is liable to burn. A short circuit may be due to a loose connection, a broken wire, or chafing of the insulation.

In such an event disconnect the battery terminals. As soon as the wires have cooled an inspection can be made and the cause of the trouble traced, but we strongly recommend that the car be taken to a service station if possible.

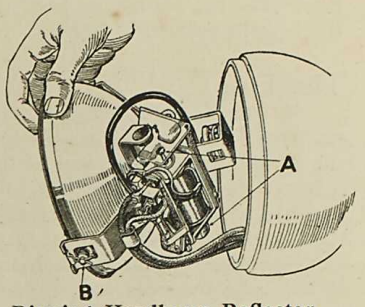
Provided the battery is not completely run down it may be possible in an emergency to reach home by connecting the ignition system directly across the battery terminals. Disconnect the lead from the coil terminal and connect a temporary insulated lead from this terminal to the battery terminal. The other terminal of the battery should be earthed as before, the main lead being left disconnected.

The engine, of course, must be started by hand

THE LAMPS

Dip and Switch Mechanism and How to Replace Fuses.

THE head lamps are provided with an electrically operated anti-dazzle device for operation by the foot switch. When the switch is moved to the " dip" position, the near-side headlamp beam is dipped and turned to the nearside of the road, while at the same time, the offside headlamp is switched off, thus causing no discomfort to drivers of approaching traffic.



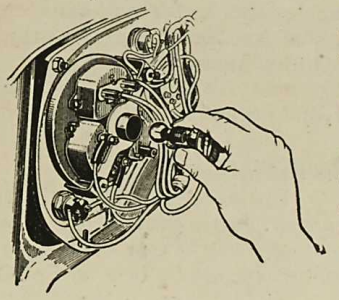
Dipping Headlamp Reflector.
By easing the solenoid plunger A, or oiling the pivots B, of the dipping reflector, fuse troubles can sometimes be overcome.

The dipping of the head-lamp beam is effected by a movement of the reflector, which is made in two parts. The centre portion is pivotted in a fixed rim which is in turn secured to the body. Movement of the reflector is controlled by means of a solenoid and plunger which, when the current is switched on, tilts the reflector to give the dipped beam.

To remove the lamp front, slacken the fixing screw at the bottom of the lamp and swing it aside from the slot. The front can then be withdrawn. When replacing, press the front on to the lamp body, locating the top of the rim first. Finally swing the screw into the slot and tighten it to lock the front into position.

To remove the nearside reflector, withdraw the fixing screw at the back of the lamp. The reflector can then be withdrawn by dislocating the tongues of the two fixing brackets rivetted to the reflector rim from the slots in the lamp body. The offside reflector can be removed together with the front.

To replace a bulb in this lamp, it is first necessary to remove the bulb holder from the rear of the reflector by springing back the two securing spring clips.

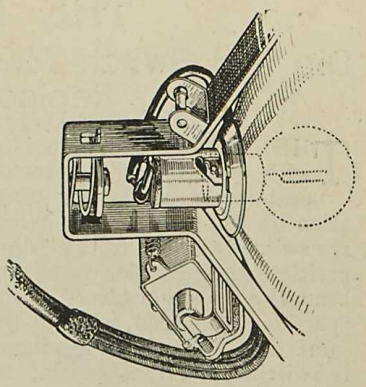


Instrument Panel Lamp.
How the Holder pulls out for Bulb Replacement.

Correct Focussing.

It is of the utmost importance that the lamps should be set correctly in relation to the road and we recommend that they be aligned so that the normal driving beams are projected straight ahead, that is, the beams should be parallel to the road and to each other.

To obtain the best results from the lamps it is essential that the bulbs are focussed correctly. Three positions are provided for the head lamp bulb in its holder. Each position should be tried for the best projection of light.



Headlamp Focussing.
The bulb has three focussing positions in the bayonet holder.

The Fuse.

A fuse is provided with the electrical dipper unit to protect the equipment in the event of the reflector failing to function properly. The fuse is of the cartridge type, and is carried in spring clips alongside the dipping mechanism. If the reflector fails to function, remove the fuse from its holder and see whether there is a break in the fuse wire. A spare fuse is clipped to the reflector bracket.

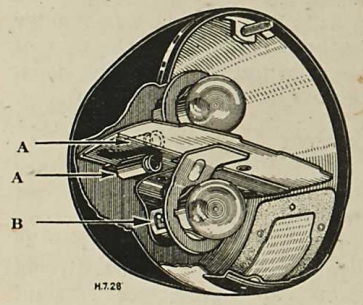
If the fuse should blow repeatedly, and the cause cannot be found, have the reflector examined at the nearest Service Depot.

Side Lamps.

The lamp front can be removed when the screw at the top of the lamp is slackened

Stop and Tail Lamp.

The front of the combined stop and tail lamp can be removed for bulb replacement when the fixing screw is slackened sufficiently.



Combined stop and tail lamp.
A—Cable Sockets.
B—Bulb Contact.

Bulb Sizes.

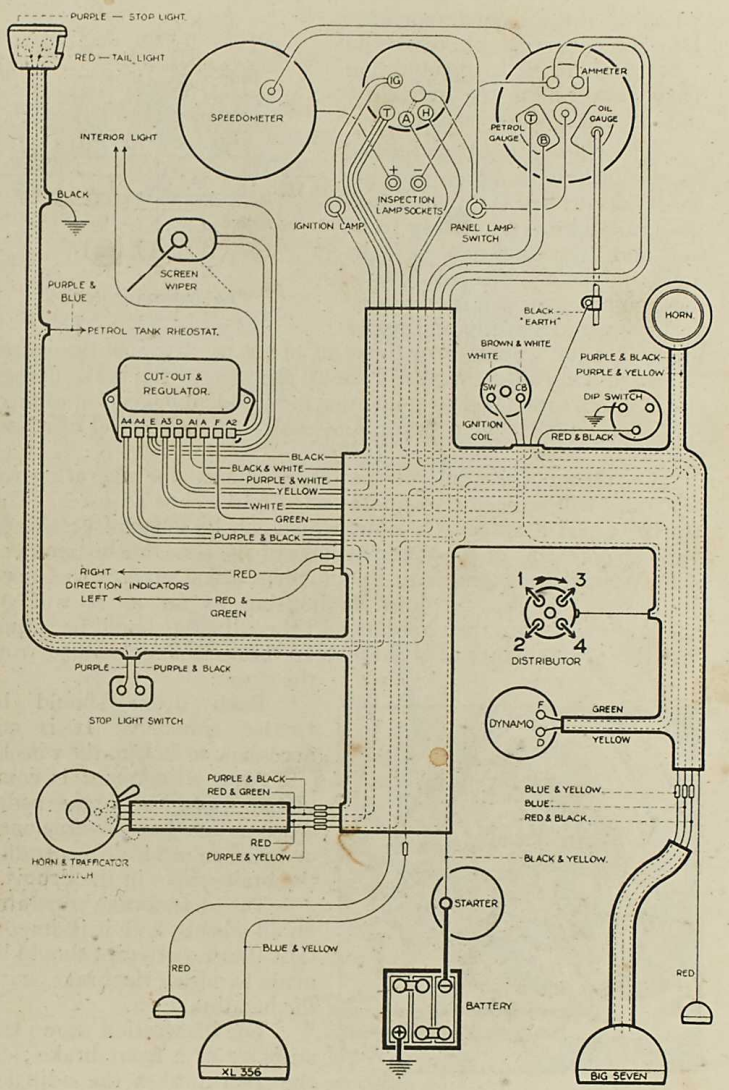
The sizes of bulbs used are :—
Head, Lucas No. 106. 6 volt, 24 watts.
Side, Stop and Tail Lamps, Lucas No. 200. 6 volt, 3 watts.
Ignition Warning Lamp, Lucas No. C252A. 2·5 volt, ·2 amp
Panel Lights, 6 volt, 3 watts.

Reflectors.

The reflectors of the lamps are covered with a protective coating, and any marks can be easily removed by means of a soft cloth.

On no account use metal polish.

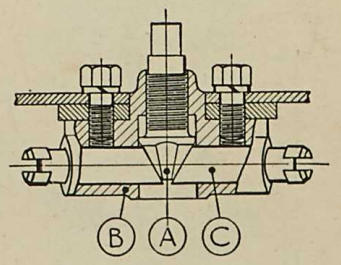
Austin "Big Seven" Wiring Diagram



CARE OF THE BRAKES

Operation, Adjustment, Maintenance and Assembly

IT is of the utmost importance for safety that the brakes should be maintained in good order. They should be tested frequently and adjusted when necessary.



The Adjuster Unit.
A—Cone. B—Housing. C—Plunger.

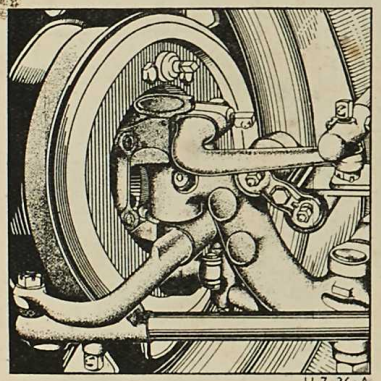
After the car has been washed (particularly with a high pressure hose), or driven through water, the brake linings are likely to be wet and the efficiency of the brakes adversely affected. Under these circumstances it is advisable to drive very carefully and apply the brakes for a number of times in order to dry out the water.

In making adjustment to take up the wear of the brake linings, under no circumstances should the rods and linkages be altered.

There is only one operation necessary at each wheel to adjust the brake shoes. This is as follows :—

On the opposite side of the drum whence the operating rod protrudes will be seen the square-ended brake shoe adjuster. This can be turned a notch at a time, which can be felt and heard and is the engagement of the four flat sides of the cone on the inner end of the adjuster engaging with the plungers which support the shoes.

Screw the adjuster into its housing as far as it will go. The brake shoes are then hard on and the adjuster should be turned back three full notches to give the shoes the necessary clearance from the drum.



The Brake Assembly.

Each drum should be treated similarly. It is not necessary to jack up the wheels.

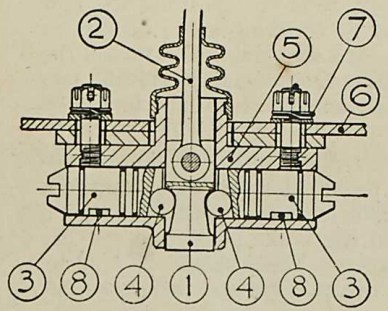
After adjustment is completed, press the brake pedal down as hard as possible once or twice in order to centralise the brake shoes in the drums.

The handbrake operates on all wheels, and it is important that no attempt should be made to adjust the brakes with the handbrake on.

The illustration shows the adjuster of a front brake ; on the rear brakes the adjuster will be found immediately in front of the axle

Lubrication.

It is important that the nipple on the brake balance lever near the centre of the rear axle and also the swivels on the front axle be lubricated at least once a month. All brake joints should be oiled occasionally either by high pressure or with a brush.



The Expander Unit.

Brake Operation.

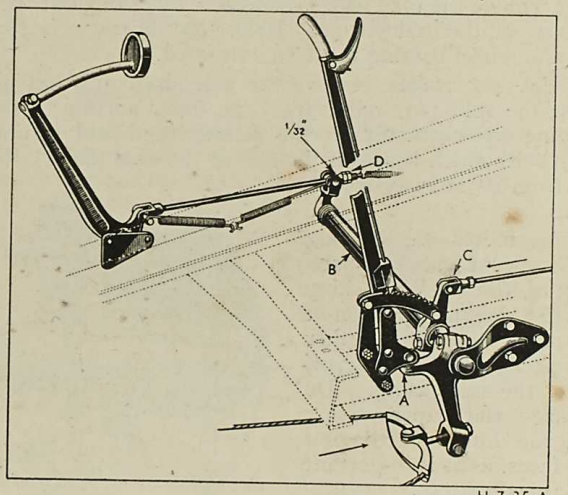
The brakes are actuated by the expander unit. The cone (1) when pulled by the rod (2) forces apart the plungers (3) by means of the rollers (4). The plungers engage with the webs of the brake shoes.

The housing (5) is lightly held on the back plate (6) by nuts and spring washers (7) so that it floats between the brake shoes, which are thus self-centering. When the brake shoes are removed the pins (8) hold the plungers (3) in the housing.

The adjuster unit, which is held firmly on the back plate by its housing (B) has two somewhat similar plungers (C) held apart by the adjuster (A), a conical ended screw, which provides adjustment to the shoes.

Brake Assembly.

In the event of the brake cross shaft assembly or rear brake



The Brake Controls.
A—Handbrake operating lever. B—Brake cross shaft. C—Rear brake connection. D—Foot brake connection.

rods being dismantled, before re-assembly the shoes on each brake should be adjusted, as already described. Then connect the cross rods on the rear axle to the brake balance lever.

The handbrake lever should be placed fully "off" and the brake cross shaft turned until the projecting pad on it is against the handbrake roller. With the cross shaft in this position the rear brake pull rods should be adjusted by screwing on or off one or both of the fork ends, as required. The swinging link between the rods should be just clear of the frame cross member and the two fork ends should show approximately an equal length of thread on the rods.

The front brake cable should be adjusted until it is almost taut.

Next ascertain that the brake pedal has about a quarter of an inch free movement. If it has more, or less, adjustment should be made by slackening the nuts on the brake pedal pull rod (by the side member of the chassis frame). There should be 1/32 in. clearance between the inner nut on this pull rod and the cross shaft trunnion pin.

The centre one of the three springs is to hold the brake rods in light tension and prevent rattle.

It is strongly advised that the brake operating mechanism be adjusted only by authorised Austin Dealers.

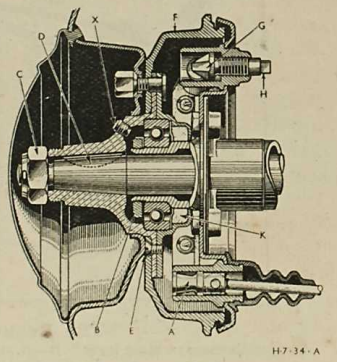
Rear Hubs.

A special hub extractor is necessary in order to gain access to the brake shoes for inspection or re-lining.

First remove the road wheels and then, by taking out the three small setscrews, the brake drum. Before the shoes can be removed the hub and wheel bearing must be extracted.

For the rear brakes, remove the axle shaft nut, having first taken out the split pin, and extract the outer portion of the hub by screwing the extractor on the screwed end and turning the extractor bolt, which bears on the end of the axle shaft. Remove the key from its keyway in the axle shaft.

Next remove the bearing nut, having first knocked back the tang of the washer locking it, and prise the inner portion of the hub or felt housing, together with felt packing and bearing, off the end of the axle casing. Do not damage the paper washer between the hub and the felt housing faces, as it is important to make a good joint on reassembling to prevent the hub lubricant penetrating to the brake.



The Rear Hub.

If this inner portion of the hub does not come off the axle casing easily, the outer half should be refitted as closely as possible, using the wheel nuts to draw the two halves together.

Then use the hub extractor a second time, and so remove the hub together with bearing and packing. The springs can now be unhooked and the brake shoes lifted off the plungers.

To reassemble, replace the shoes, with their springs, in position on the plungers. Replace the inner portion of the hub or felt housing with the bearing and packing on the axle casing end, and push up home by tightening the bearing nut, which must be locked by the locking washer in the same way as before dismantling. Replace the paper joint washer on the felt housing face, insert the key in the shaft, push the hub over the axle shaft, on the key, and draw it up to the felt housing by the wheel nuts on their studs.

When the joint faces of the hub and the felt housing are together, replace the axle nut and tighten securely up to the hub boss. *Remember to insert the split pin through the nut.* Then remove the wheel nuts from the hub, fit the brake drum, and insert and tighten the three countersunk screws.

Front Hubs.

For the front brakes, the operation is somewhat different. Having removed the wheel, the hub cap and the axle nut, screw on the extractor and draw off the hub complete with brake drum. The brake shoes are then clear for removal.

On reassembling remember to fit a new split pin through the axle and nut. There is a hole in the end of the hub through which the pin can be inserted.

Relining the Shoes.

It is always necessary to re-line all four brake shoes on the one axle at the same time, and before or after the re-lining it may be necessary to slack off the brake adjustment before the brake drum can be removed or replaced.

The brake linings should be clamped to the shoes while the rivetting is in progress, as it is essential that they should bed down on the shoes over their whole area. When the linings have been rivetted in position, bevel off at each end for about $\frac{1}{4}$ inch with a coarse file.

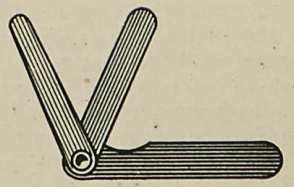
After re-lining the brakes, make sure that the hubs contain sufficient lubricant, and re-adjust the brakes.

RUNNING ADJUSTMENTS

Decarbonising ; Valve Grinding ; Tappet Adjustments

THE adjustments set out below are all that the owner will find it necessary to make to keep the car in good running order.

Unless the work is thoroughly understood, however, it is strongly recommended that the car be taken to an Austin Dealer



Tappet Clearance Gauge.

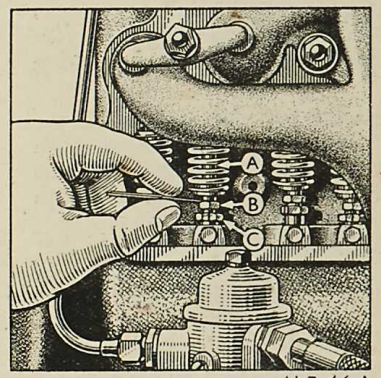
Valve Tappets.

Check this adjustment when the engine is hot.

To ensure that the full power of the engine is obtained, and to maintain silent valve operation, it is essential to keep the tappets correctly adjusted. To make this adjustment, first remove the valve cover and have the engine slowly turned with the starting handle. Watch each valve open in turn and note the point at which it stops descending.

From that point until the valve begins to lift again there should be between the valve stem and the tappet screw a clearance of .004 ins. ; 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 locknut and raising or lowering the tappet screw, being careful to tighten the locknut when the adjustment is completed

A special spanner is provided in the tool kit for this operation.



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Tappet Adjustment.
A—Valve Stem. B—Tappet Screw.
C—Locknut.

Decarbonising.

To secure the maximum efficiency from the engine it is necessary to remove the carbon deposit that forms on the surfaces of the combustion chamber. This should be done after about 2,000 miles, (3,000 km.) running, and then every 5,000 to 6,000 miles (8,000 to 10,000 km.), as necessary according to conditions. At the same time it is advisable to grind in the valves.

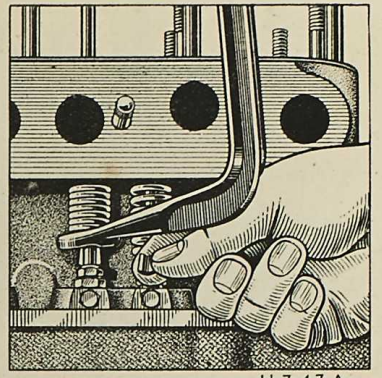
First drain off the water through the drain tap. Detach the top water hose from the head. Disconnect the high tension wires

from the sparking plugs. Disconnect the dynamo wires, slacken the belt adjustment and remove the belt. Unfasten the nuts holding the dynamo bracket and remove the dynamo, with bracket and fan.

Remove the remainder of the nuts holding the cylinder head. Holding the water outlet pipe, gently rock the head until the joint is broken.

The cylinder head may now be removed.

The cylinder head gasket, if care is used. may be in sufficiently good condition to be used again. Otherwise a new one should be obtained.



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Valve Lifter and Cotters.

All dirt or deposit should be removed by careful use of a scraper, care being taken not to damage the piston crowns and not to allow dirt to enter the cylinder barrels or the valve chambers. Stuff a rag down the open cylinders while cleaning the two exposed piston crowns.

Valve Grinding.

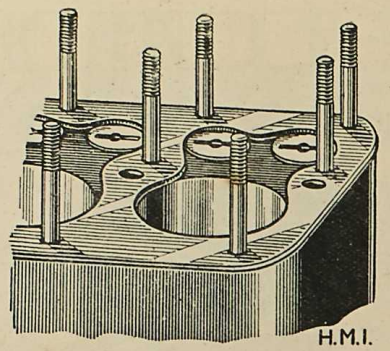
Before grinding in the valves it will be necessary to remove the carburetter and exhaust manifold and connections complete. The valve cover, with washer, can be removed on undoing the two milled nuts. Each valve spring must be lifted by means of the special tool provided, to allow the split taper cotters to be withdrawn.

The valve is now free to be rotated on its seat when the tappet screw has been lowered clear of the stem.

After it is cleaned, a little grinding compound should be smeared evenly on the valve face and the valve rotated backwards and forwards by means of a screwdriver, advancing it a step at short intervals until the pitting is removed. Lift each valve a little from its seating at the end of each step to allow some of the grinding compound to enter between the two faces and facilitate the cutting action.

Care should be taken that none of the compound enters the cylinders or the valve guides. The valve and seating should be wiped clean after the operation.

It is essential for each valve to be ground in and refitted on its own seating as indicated by the number on the valve head. The valves are numbered from 1 to 8, starting from the front.



Place the Gasket Beaded Edges Downwards.

It is also desirable to clean the valve guides. This can be done by dipping the valve stem in petrol or paraffin and moving it up and down and round in the guide until all gummy deposits are removed.

Then the valve should be cleaned and the stem smeared with graphite grease and reinserted in the guide, the valve spring and cup being fitted round it. The valve lifter is then used as before to compress the spring.

See that the split cotters are replaced accurately so that the cup fits evenly over them. It is easier if the end valves are fitted first.

The Gasket.

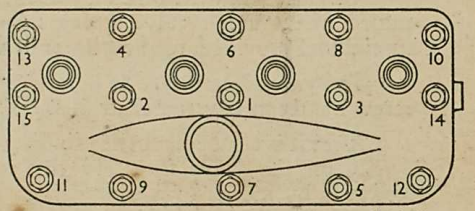
When refitting the manifolds ensure that the joints are good. The cylinder head joint washer, or gasket, should be replaced with the side showing the beaded or turned-up edges facing downwards. A little grease should be smeared over each side to make a good joint and to prevent it sticking when the head is next to be lifted.

When replacing the head take care to tighten the nuts gradually in turn and evenly, commencing at the centre and working to the outside. Do not tighten any one right home while the others are loose and make sure the centre nuts are tight first.

Take care to replace the dynamo leads on the correct terminals. It is advisable to mark them before removal

Do not forget to refill the radiator.

When the engine is warm go over the cylinder head nuts again making sure they are all absolutely tight. Check the tappet adjustment again after the car has run about 100 miles as the valves have a tendency to "bed down" again.



Tighten Cylinder Head Nuts from the Centre and Work Outwards.

Fan Belt Adjustment.

The fan belt should be adjusted so that it is not too taut but will not slip. To make the adjustment slacken the link locking nut at the front of the cylinder head and raise or lower the dynamo until the desired tension of the belt is obtained. Then securely lock the dynamo in position again.

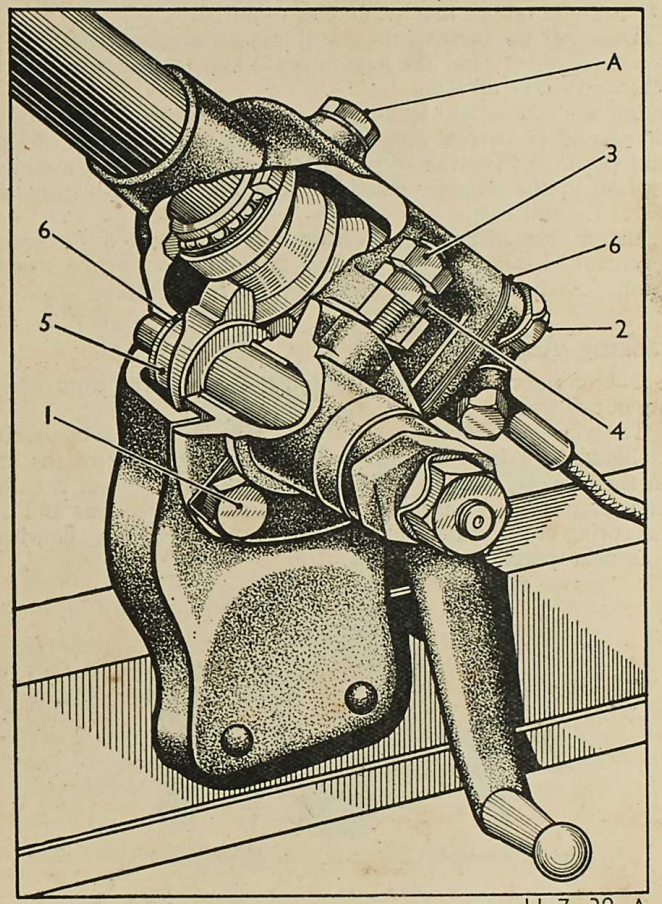
When the belt is properly adjusted it should be possible to move it about one inch each way

THE STEERING

Adjustments of the Track Rod and Steering Box.

ALTHOUGH adjustments to the steering mechanism are not difficult, considerable experience is necessary before they should be undertaken and we strongly recommend that such work should be done only by Austin Dealers.

The steering should be checked by an Austin Dealer once or twice a year.



Austin "Big Seven" Steering Box.

1, 3 and 4, Mesh Adjustments. 2—End Cover Nuts. 5—Thrust Button. 6—Shims. A—Oil Plug.

Steering Box.

The steering box is of the "hour-glass" worm and sector type.

Facilities are provided to adjust end play at the worm, end play in the steering sector shaft, and also the mesh of the worm and sector.

These adjustments should be made only by an Austin Dealer.

To take up end play at the worm, remove the end cover by taking out screws (2). With a knife blade separate and remove one or more of the thin shims. Replace the end cover and test for end play, removing further shims if necessary.

To take up end play at the steering cross shaft, remove the shaft and add one or more shims, as required.

To adjust the mesh of the worm and sector, slightly loosen the three setscrews (1) and the lock-nuts (3) and (4) and turn nut (4) clockwise to take up slack.

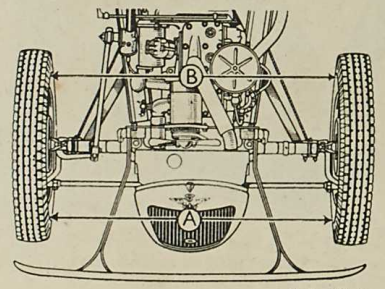
Tighten the screws and lock-nut and test for mesh. This adjustment should be carried out with the road wheels in the straight ahead position. On this type of steering there is the minimum back-lash in the straight-ahead position, the back-lash increasing towards the full lock.

Before dismantling the steering it is important to disconnect the control wires and loosen the clip at the bottom of the steering column. A special guide is necessary for re-assembly.

Tracking Adjustment.

One of the causes of premature tyre wear is the front wheels being out of track.

The wheels, if they are correctly tracking, should not be parallel, but should be $\frac{1}{8}$ in. closer between the rims in front of the axle than they are behind. This difference, or "toe-in" as it is called, allows for working clearances of the steering connections and any slight spring of the parts, so that when the car is running the wheels are as near parallel as possible.



Front Wheels should "toe-in."
A is $\frac{1}{8}$ in. shorter than B.

If this difference is greater or less than $\frac{1}{8}$ in. the tracking should be adjusted. This is not difficult to effect. It is necessary to remove the cross tube lever, on the near-side, from the swivel axle.

It is secured by a nut on the rear of the swivel axle, under which there is a spring washer. With this done, the steering cross tube is freed at the near side for the adjustment. On the clamping bolt of the steering arm jaw being slackened, the jaw can be screwed further on, or off, the cross tube, for so many complete turns as may be necessary. This movement will enable the correct adjustment to be attained. Then the clamping bolt is re-tightened. On refitting the cross tube lever to the axle, tighten the nut securely, with the spring washer under it.

This adjustment should be made only by an Austin agent who is properly equipped for the work.

THE CLUTCH

How to Avoid Misuse and to Adjust the Operating Pedal

SOME drivers are inclined to slip the clutch instead of changing down to a lower gear, particularly when they are almost at the top of a hill and it is only necessary to change down for a few yards.

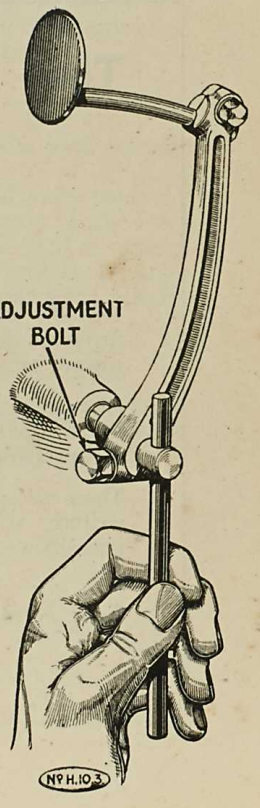
This is a bad habit. It highly polishes the frictional surfaces and will eventually be the cause of persistent slip, probably also burning out the fabric rings.

Removing Oil

Sometimes, however, clutch-slip is due to oil penetrating to the clutch. In such circumstances it will probably be necessary to renew the friction rings, but, as a temporary measure to enable the car to be driven, washing out with petrol may be resorted to.

When injecting the petrol have the engine turned so that the plate is properly washed and the petrol and oil are given an opportunity to drain away. Push the clutch in and out by the pedal so that the petrol gives a washing action.

The petrol and oil should have sufficient time to drain off before the car is used.



Clutch Wear Take-up.

After the clutch has been in use for some time the wear of the friction surfaces will give rise to a need for adjustment in order to ensure the continued full engagement of the clutch.

The adjustment should be such as to allow at least ⅜ in. free movement of the clutch pedal with one finger. After depressing the pedal to this extent the stronger resistance of the clutch springs will be obvious, so that it is easy to ascertain that the amount of free movement is correct. Lack of this free movement is serious, and does not permit the clutch to engage fully. It is of the utmost importance to maintain this free movement of the clutch pedal, and it should be inspected from time to time. Otherwise damage may be done to the clutch owing to the slipping of the plates.

The adjustment is obtained by **slightly** slackening the clamping screw at the bottom of the clutch pedal lever and depressing the pedal sufficiently to give the required free movement. The shaft may be held stationary by means of a "Tommy Bar" inserted in the hole near the end while making this adjustment. The clamping screw must now be securely tightened and the adjustment checked.

SHOCK ABSORBERS

Careful Adjustment to Promote Easy Riding

FRICTION shock absorbers are fitted and the front shock absorber can be adjusted to promote easy riding.

The front 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 become necessary after several thousand miles of car travel, and should be made only when the spring movement seems too free. It should be noted that normally 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.

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

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. After adjusting, tighten the lock-nut.

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

The rear shock absorbers do not require adjustment.

Cleaning the Shock Absorbers.

Periodically—especially in wet weather when much mud is thrown on to them—the large end of each shock absorber should be taken apart, by withdrawing the centre bolt, and thoroughly cleansed. The centre pin and washers should then be slightly smeared with grease.

If this precaution is not adopted, the shock absorbers are liable to become tight—when an excessive load is thrown on the pins and bushes at the end of the arms, which will cause rapid wear. In addition, great strain is imposed on the bracket holding the shock absorber to the frame. Reassemble to the original setting

CARE OF THE BODYWORK

Washing, Polishing and Storage of the Car

FOR the car to look and keep its beauty and smart appearance, the body must be given its share of attention.

The cellulose finish of the car is easily cleaned and polished. In the summer weather when the car is only dusty the dust can be lightly wiped off without water and there is no risk of damaging the finish. When the car is muddy, wash off well with clean running water. Wash the mud off, do not rub it off. Remove any grease or tar splashes with petrol.

Do not use the same sponge and cleaning rags for the chassis and springs and other greasy parts, as are used for the coachwork.

Polishing.

After washing and drying use a good cellulose polish. Such a preparation imparts a brilliant surface and preserves and beautifies the body. On no account should metal polishes be used.

The more the surface of the cellulose finish is rubbed by the polishing cloth the smoother and the more lasting is the lustre imparted.

Wash chromium plating with soap and warm water. Do not use metal polish on it.

Leather upholstery should be polished with a little saddle soap of good quality and a vacuum cleaner, or a stiff brush, should be run over it occasionally.

Remove grease spots with a rag dipped in petrol and do not allow grease or oil to remain on rubber parts such as mats and running board covers.

Door locks, hinges and other small working parts should be given a drop of oil occasionally. Door rattles can be cured by adjusting the rubber stops. Occasionally tighten the screws of hinges, locks and stops and the bolts holding the body to the chassis.

Sliding seat runners should be greased occasionally but not the runners of the sliding roof. When closed the sliding roof must fit tight ; otherwise wind whistle may occur

Storage of the Car.

If the car is to be laid up for a long period the fuel, oil and water should be drained off and the batteries removed. The weight of the car should not be allowed to remain on the tyres, but both axles should be jacked up and supported on blocks.

Before storage, the car should be thoroughly cleaned and dried, and it should be left with dust sheets over it.

Have the battery charged fortnightly.

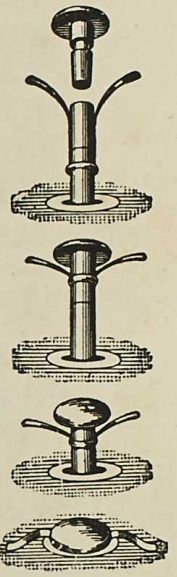
Float-on-Air Seat Interiors.

The essence of comfort with " Moseley Float-on-Air " upholstery is low pressure—to inflate the cushions at all hard is to destroy their powers of absorbing vibration. The seat should be quite soft to the touch, the hand pressed on the surface sinking well in.

If the seats do not give perfect results release air from the valve, as the usual fault is over inflation. The butt ended portion running round the sides and front of each interior is separately inflated and should be moderately well blown up. The centre portion of each interior is also separately inflated, and the pressure should be such that the base of the seat can be felt when pressed with the closed fist. This gives the ideal pressure and support when sat upon.

To adjust the air pressure open the flap at the rear of the cushions exposing the valves. The valve at the side inflates the butt ended portions above referred to ; the other valve (or valves in the rear cushion) inflates the centre section. Draw gently on the tabs till the rubber valve protrudes about one inch, do not pull hard otherwise the valve may be damaged. Roll back the rubber ring towards the cushion when the plug can be readily removed from the tube. Blow with the mouth or release air as required.

Moisten plug and re-insert as far as it will go, roll back the ring until it engages in the depression caused by slot in plug. Push back the valve till the cap is flush with the surface and refasten the flap.



The Air Cushion Valve.

AFTER SALES SERVICE

AUSTIN DEALERS are under agreement to give "After Sales Service." During the period of the first thousand miles running of Austin cars purchased from them, they will without charge :—

Adjust brakes.
Oil and grease all points of the car.
Check and correct carburetter mixture and reset slow running adjustment.
Check and correct ignition timing and tappet clearances.
Drain crankcase at 500 miles and the gearbox and back axle at 1,000 miles and refill.
Tighten cylinder head nuts.
Check front wheel alignment.
Examine battery and bring up to proper level with distilled water or diluted acid as may be required.
Examine all wires and terminals.
Tighten all nuts and bolts on the body, steering, springs, etc.
Adjust clutch and brake pedals.
Adjust fan belt.
Test the tyres for correct pressure.
Clean dynamo commutator.

All materials will be charged for.

TOOLS AND ACCESSORIES

Double End Open Spanners : $\frac{3}{16}\times\frac{1}{4}$; $\frac{5}{16}\times\frac{3}{8}$; $\frac{7}{16}\times\frac{1}{2}$.
Box Spanners : $\frac{3}{16}\times\frac{1}{4}$; $\frac{5}{16}\times\frac{3}{8}$; $\frac{5}{8}\times\frac{3}{4}$; and tommy bar.
Adjustable Spanner—(4 ins.).
Spanner for tappet screw.
Combination Pliers.
Sparking Plug and Tappet Clearance Gauge.
Ignition Gauge and Screwdriver.
Ignition Key.
Screwdriver.
Lifting Jack, shaft and handle
Tyre Lever
Tyre Pump.
Wheel Brace.
Starting Handle.
Hub cap spanner.
Valve Spring Lifter.
Grease Gun with adaptor.
Radiator Hose Clips (2)
Cylinder Head Gasket.

This list is subject to modification from time to time.

EQUIPMENT

THE AUSTIN MOTOR CO., LTD., accept no liability under the terms of their Warranty for Tyres, Speedometers, or the Electrical Equipment, or other Goods, including Coachwork, not of their own manufacture.

All claims relating to any of these parts or fittings or orders for repairs to them should be addressed to their manufacturers.

For our clients' convenience, we give below the names and addresses of the manufacturers or suppliers of the goods in question. Further information may be obtained on application to them.

IMPORTANT.—When claims under guarantee are being made, it is absolutely necessary to quote the type and number of car, and also the commissioning date.

ELECTRICAL.

(Also Mirrors)	Horns, Dynamos, Starters, Cut-outs	
"LUCAS"	Trafficators, Switchboards, Lamps, Batteries, Windscreen wipers	Joseph Lucas, Ltd., Great Hampton Street, Birmingham, 18. Dordrecht Road, Acton Vale, London, W.3., and Branches.

GREASE GUNS AND OIL INJECTORS.

"ENOTS" ... ... Benton and Stone, Ltd., Bracebridge Street, Birmingham, 6.

INSTRUMENTS, OIL GAUGES.

"SMITH"	Speedometers	S. Smith and Sons (M.A.), Ltd.,
	Petrol Gauges	Cricklewood Works, London, N.W.2

LIFTING JACKS ... ... R. T. Shelley. Aston Brook Street Birmingham,6.

TYRES AND TUBES.

"DUNLOP" ... ... Dunlop Rubber Co., Ltd., Fort Dunlop, Birmingham. 1, Albany St., N.W.1. 24-28, Gillingham St., S.W.1.

CARBURETTERS.

"ZENITH" ... ... Zenith Carburetter Co., Ltd., Honeypot Lane, Stanmore, Middlesex.

PETROL PUMPS AND AIR CLEANERS

"A.C." Sphinx Sparking Plug Co., Ltd., Dunstable, Beds.
Delco-Remy & Hyatt, Ltd., 111, Grosvenor Road, S.W.1

SPARKING PLUGS.

"K.L.G." ... ... K.L.G. Sparking Plug Co., Ltd., Putney Vale, S.W.15

DRIVING MIRRORS.

Interior and Exterior ... ... Desmo, Ltd., 31, Stafford Street, Birmingham, 4.

Interior only ... ... Pennant Manufacturing Co., 350, Reddings Lane, Acocks Green, Birmingham, 11.

Also ... ... Joseph Lucas, Ltd. (some models).

LUCAS SERVICE DEPOTS

	Telephone.	Telegrams.
BELFAST		
Upper Library Street	57291	Servdep
BIRMINGHAM, 18.		
Great Hampton Street	Central 8401	Lucas
BRIGHTON, 4		
85, Old Shoreham Road, Hove ...	Hove 1146/49	Luserv, Brighton
BRISTOL.		
345, Bath Road	76001	Kingly
CARDIFF.		
54a, Penarth Road	4603	Lucas
COVENTRY.		
Priory Street	3068	Lucas
DUBLIN.		
Portland Street North, North Circular Road	Dublin 72601	Luserv
EDINBURGH, 11.		
60, Stevenson Road, Gorgie ...	62921	Luserv
GLASGOW.		
Corner of Grant St. and St. George's Road	Douglas 3075	Lucas
LEEDS.		
64, Roseville Road	28591	Luserdep
LIVERPOOL, 13		
450-456, Edge Lane	Old Swan 1408	Luserv
LONDON.		
Dordrecht Road, Action Vale, W.3.	Shepherds Bush 3160.	Dynomagna, Ealux, London.
757-759, High Road, Leyton, E.10	Leytonstone 3361	Luserdep, Leystone, London.
155, Merton Road, Wandsworth, S.W.18	Putney 5131	Luserv, Put., London
MANCHESTER.		
Talbot Road, Stretford	Longford 1101	Lucas, Stretford
NEWCASTLE-ON-TYNE, 2		
64-68, St. Mary's Place	25571	Motolite