

HANDBOOK
OF
The Austin
12 h.p. TAXI



PUBLICATION No. 1384A.

PRICE ONE SHILLING.

THE
AUSTIN MOTOR CO. LTD.
LONGBRIDGE :: BIRMINGHAM

HANDBOOK
OF
The Austin
12 h.p. TAXI



PRICE 1/-

THE AUSTIN MOTOR CO. LTD.
LONGBRIDGE - BIRMINGHAM

G.P.O. BOX 41.

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A FOREWORD

THE information contained in this Handbook is intended only to assist the owner or driver of an Austin to preserve the car in its proper satisfactory running condition. This 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 whose address will be found in the list of dealers supplied with the car.

Both owner and agent 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 given to the chapters dealing with maintenance.

Two additional publications give lists and illustrations of all the parts, and their prices, respectively, and the owner should find in these books helpful references.

CAUTION.

Parts of genuine Austin manufacture only should be used when a replacement is made, to ensure that the service given by the original high quality of the car parts 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.

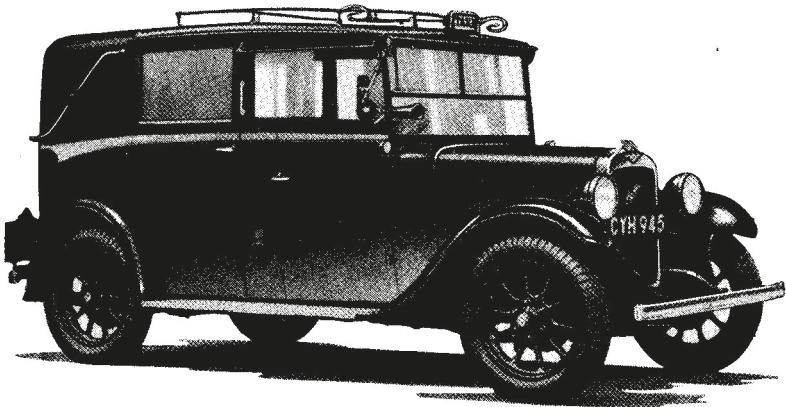
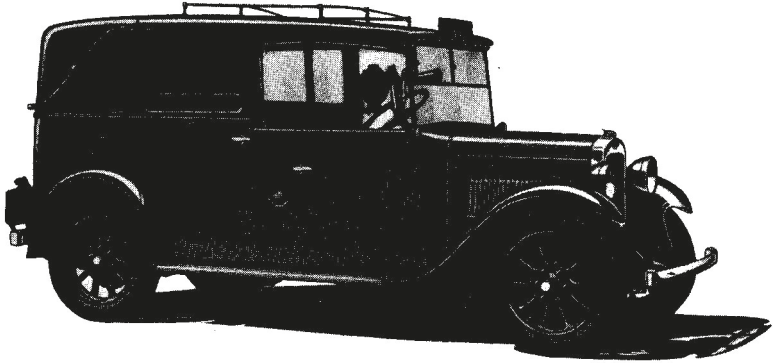
Should repairs be executed by other than an authorized Austin Dealer, for safety's sake, always obtain a guarantee that genuine Austin Spare Parts are used.

NOTE.—See statement with reference to Accessories, etc., at end of book.

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AUSTIN TAXIS



Sole Concessionaires for the London Metropolitan Police Area :—

MANN AND OVERTON, LTD.,
177, Battersea Bridge Road, S.W.11.

Telephone: Battersea 0177.

Telegrams: "Soupape Batt, London."

CHASSIS SPECIFICATIONS

- General Dimensions.** Wheelbase, 9ft. 4ins. ; Track, 4ft. 8ins. ; Full car width, 5ft. 6½ins.
- Engine** .. 4-cylinder monobloc ; bore 2 ¼ in. (72 mm.) ; stroke 4½ins. (114.5 mm.). Total capacity, 1861 c.c. ; R.A.C. rating, 12.8 h.p. ; b.h.p. at 2,000 r.p.m., 27. The cylinder head is detachable and the valves are all on the left-hand side. The crankshaft is carried on five bearings of large diameter.
- Petrol Tank** .. The tank has a capacity of 8 gallons and the supply to the engine is by a vacuum system.
- Ignition** .. Coil ignition with controlled voltage dynamo.
- Cooling** .. By fan and thermo-syphon.
- Lubrication** .. Lubrication is by means of a gear pump, forcing oil to all bearings of the crankshaft and camshaft. A large gauze filter in the oil reservoir is easily removed for cleaning. Chassis lubrication by grease gun.
- Transmission** .. The clutch is of the single-plate type. The gearbox has four speeds forward (incorporating synchromesh third and top), and reverse.
- The ratios of engine to road wheels are :—1st speed, 20 to 1 ; 2nd speed, 12 to 1 ; 3rd speed, 8 to 1 ; top speed, 5.12 to 1. Gear changes are easily effected by a lever mounted centrally. Final drive is by worm drive mounted on ball bearings. The rear axle is of the three-quarter floating type, with underslung worm drive.
- Brakes** .. Four wheel expanding brakes operated either by hand or foot. All brakes are easily adjusted.
- Steering** .. Steering is of the worm and sector type with provision for taking up wear.
- Suspension** .. Road springs are semi-elliptic. Those at the rear are underslung and of exceptional length and are mounted with "Silentbloc" spring shackles. All springs are fitted with zinc interleaves and do not require lubrication. Shock absorbers are fitted to the front and rear of the car.
- Wheels and Tyres.** Steel spoke wheels, with Dunlop Taxi-cord 5.00 in. x 20in. tyres.
- Equipment** .. 12-volts electric starting and lighting, magnetically operated dip and switch headlamps ; carburetter air strangler, spare wheel and tyre
- All exterior fittings are Chromium Plated.

THE AUSTIN TAXI

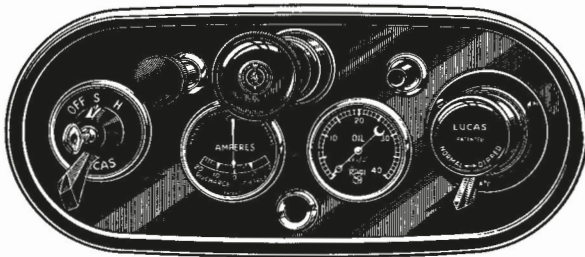
It will repay you to read these notes carefully.

SINCE its introduction in June, 1930, the Austin Taxi has become the most popular cab in London.

Sixty per cent. of taxi cabs registered in the London area are Austins.

The Austin Taxi is based on the famous Austin Twelve chassis, which has earned a wonderful reputation for dependability under all sorts of conditions in all parts of the world. The chassis has been modified to meet the stringent regulations of Scotland Yard and the bodies are made by coachbuilders specialising in taxi work.

Messrs. Mann and Overton Ltd., are the sole concessionaires for the London area.



A B C D E F G H

Austin Taxi Instruments.

- | | |
|----------------------|----------------------------|
| A.—Switchboard. | E.—Ignition light. |
| B.—Strangler Control | F.—Oil gauge. |
| C.—Ammeter. | G.—Starter button. |
| D.—Dash light. | H.—Dip and switch control. |

Taking Delivery.

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

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

Starting the Engine.

Prior to starting the engine see that both petrol taps are turned on—one on the offside of the car and one at the base of the Autovac under the bonnet. In cold weather it is advisable to turn the crankshaft by hand several times in order to free the pistons before using the starter motor. This saves the batteries a lot of heavy work.

Make sure that the gear lever is in "Neutral" and that the hand brake is on. Switch on the ignition, pull out the strangler control knob and press the starter button firmly.

If the engine does not start immediately do not press the starter button again until the crankshaft has come to rest, otherwise the starter pinion and the flywheel gear ring teeth are likely to be damaged.

Do not run the car with the choke out more than absolutely necessary for warming. Too much choke will lead to increased petrol consumption and excessive carbon deposit and may also cause valve trouble and, by dilution of the crankcase oil with petrol, excessive cylinder wear.

As soon as the engine has started, ascertain by looking at the oil gauge that oil is circulating. The gauge will give a high reading when the engine is cold and should show a fairly constant pressure when the engine is warm and running steadily.

Do not race the engine when cold, especially when it is new.

Do not drive at more than 20 or 25 miles an hour for the first 500 miles when the car is new or 30 to 35 miles per hour during the first 1,000 miles.

Do not leave the ignition switched "On" when the engine has stopped, or the battery will run down. The red light is a reminder of this danger.

Starting Difficulties.

If the engine fails to start, the cause will come under one of the items below.

If upon operating the starter switch the motor does not revolve, the starting system is out of order. See "Electrical Equipment." The engine may be started by hand.

If the starter does not turn the engine over readily, depress the clutch before switching on. This will lessen the load for starting and so help the starter to turn the engine at higher speed.

If the engine revolves and the petrol supply is satisfactory and the engine does not fire the ignition system may be at fault. See "The Ignition System."

If the items already mentioned are in order, but the engine does not start, or runs very erratically, it is probable that the engine is too cold and requires a richer mixture. Keep the air strangler knob out until the engine "picks up."

The carburetter may be out of adjustment. See "The Carburetter."

An aid to easy starting is to refill the radiator with warm water.

In winter the period of battery charging is generally shorter, and the period of lighting use longer. In view of this greater tax upon the capacity of the battery it is desirable with the switch off, to turn the engine by hand before switching on the ignition and then to start by hand.

The Speedometer.

The speedometer requires no lubrication or attention, but the cable should be oiled and greased as described later.

The bulb of the speedometer lamp is 12/14 volt, 3 watt, S.C.C., Lucas No. 207 or Osram BA 15s/17.

Windscreen Wiper.

The Trico-Folberth Visionall windscreen wiper is operated by vacuum from the engine and assisted during slow running by a vacuum tank under the bonnet.

Pull the knob of the control valve, on the dashboard, outward one notch to start the Visionall and the twin blades will operate together. By pulling the knob further to the second notch the blades will separate, one working on each side of the screen.

Push the knob into the first notch and the blades will operate together again. Push the knob right home to stop the wiper.

A little experimenting with this control will demonstrate how simply and effectively it works.

About every three or four weeks the general packing on the wiper should be oiled by removing the knurled oil cap on the right end of the motor. While the Visionall is in operation insert the nozzle of an oil can and inject from one to three teaspoonfuls of oil.

Use Trico oil or light machine oil. Do **not** use heavy oil or grease as this clogs the mechanism and retards the running speed.

Occasionally it will be necessary to have the Visionall dismantled and cleaned and the leather washers renewed. The job should not be attempted without experience.



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.

Details of this service are enclosed in a separate envelope with every car.

CARE OF COACHWORK

FOR a car to look well and to keep its beauty and smart appearance, careful attention must be given to the coachwork. It must not be neglected.

The cellulose finish of the car is easily cleaned and polished. In summer weather, when the car is only dusty, the dust can be removed without water, and there is no risk of damaging the finish. When the car is muddy wash off well with clean running water. Remove any grease or tar splashes with petrol. Don't wipe the mud off—wash it off. Don't use the same sponge and cleaning cloths for the chassis and springs and other greasy parts, as you do for the coachwork.

Polishing.

Dry off, and then polish with a good brand of polish. Such preparations impart a brilliant surface, and preserve and beautify the coachwork. On no account should metal polishes be used.

It has been found that the more the surface of the cellulose finish is rubbed by the polishing cloth, the smoother and more lasting is the lustre imparted.

Doors.

The doors should receive attention from time to time. Locks and hinges need oiling to keep them in good working order. The window regulators need oiling occasionally and it is important to dress the head leather from time to time.

Storage.

If the car is laid up in garage for long periods, the fuel, water, and oil, should be drained off, and the batteries removed for fortnightly charging.

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.

If the car is left with an agent for any repair that is likely to occupy some time, it is advisable to ask the agent to remove the battery and keep it in good condition.



CARE OF THE TYRES

Correct Inflation Pressures; How to use the Jack.

IT IS IMPORTANT that tyres should be run at the correct pressures ; otherwise rapid wear may occur and also the tyre casing be disintegrated by excessive flexing. Steering efficiency may be impaired by under-inflation, which also reduces the resistance put up by the tyres to skidding.

Correct rear tyre pressure is insisted upon by the Police for accurate taximeter readings.

The tyres fitted are of the Dunlop Super Taxicord type, size 5.00—20, and the correct pressures are :—

Front	...	32 lbs. per square inch.
Rear	...	35 lbs. per square inch.

It is important that both tyres on the same axle should be kept at the same pressure. There is no reason why the front tyre pressure should not be more than the minimum figure given : some drivers prefer their tyres harder than others do.

Pressures should be checked at least weekly with a suitable gauge and any loss of air pressure restored.

Steering.

Should the steering at any time develop a tendency to wander or show signs of wobble, due to wear or other causes, the front tyre pressures may be increased.

Occasionally examine the tyre treads for cuts. Cuts affecting only the rubber portion may be filled up with a Tread Cut Filling or vulcanised, but any that damage the cotton casing should be thoroughly repaired, a proper vulcanising process being employed.

Rapid Wear.

If the front tyres at any time show signs of rapid wear, suspect misalignment of the front wheels. Small errors in front wheel alignment may result in very rapid wear.

Periodically change the wheels round from the front to the back and vice versa, and also from the nearside to the offside. Also use the spare wheel in turn with the others. This equalises the wear on all tyres.

Fitting Hints.

When re-fitting tyres, make quite sure that the tube is not nipped under the cover bead. To avoid this, inflate the tube until it is just rounded out before fitting is commenced; then before complete inflation, press the cover away from the edge of the bead and afterwards check the seating of the bead by seeing that the fine moulded line round the walls of the tyres is level with the rim for the whole circumference.

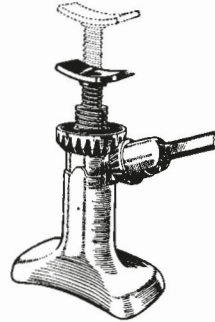
Jacking a Wheel.

The jack supplied is of a special pattern and possesses a secondary lift within the main threaded pillar.

When lifting a front wheel, the jack is used in the ordinary way.

When it is required to lift a back wheel, the inner pillar is unscrewed (left hand thread) sufficiently to enable it to reach the axle.

The jack is then operated by the shaft in the ordinary way and will provide ample wheel clearance.



REGULAR ATTENTIONS

ON this and the following page is a handy summary of all the attentions described in this handbook.

Those under the weekly and monthly headings are based on the assumption that the maximum mileage per week does not exceed 500.

The occasional attentions should not be neglected if the car is to continue to run efficiently.

It is important to see that all points receive plenty of lubricant, and to verify the adjustments.

See centre pages for list of recommended oils and greases.

Under more strenuous conditions, for instance, 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.

Every Day:—

Examine water level in radiator and fill up to within one inch of the top.

Examine the petrol level and fill up the tank if necessary.

Examine oil level in crankcase and replenish if necessary.

Every Week:—

With the grease gun give a charge of grease at each of the sixteen points mentioned below.

Steering cross tube—one each end.

Steering side-tube—one each end.

Taxi-meter drive—one.

***Swivel axle pins—two on each.**

Front Brake Rods—two each side.

Rear Brake Cam Spindle—one each side.

Also door hinges.

Give a few drops of oil to the

Clutch Withdrawal Sleeve.

Hand-brake gear.

Top of steering column.

Foot-brake gear and throttle control joints.

Clutch and brake pedal levers.

Engine control joints.

Ignition distributor.

Oil the brake connections.

Test the tyres for correct pressure and examine them for cuts.

Front tyres 32 lbs., Rear 35 lbs.

Examine the battery, ignition leads, plug terminals and all electric cables.

***It is advisable to jack up the front axle for this job.**



Use only Recommended Oils

Every Month:—

Examine the oil level in gear box, and if necessary fill up to the level of the bottom of the plug hole on the near side of the gearbox.

Check oil level in rear axle and fill to level of plug if necessary.

Inject grease into the front splined end of the Hardy Spicer propellor shaft.

Fill the two front hub-caps with grease, only if required. If too much grease is used, some will exude and cause trouble with the brakes. (All hub caps have right-hand threads).

Inject special oil into steering box. Use grease gun adapter and, if possible, jack up the front axle and operate the steering wheel.

Grease the fan bearing through the plug on the boss behind the fan and check the tension of the fan-belt.

Lubricate the ignition distributor according to the instructions of the makers.

Occasionally:—

Examine all screws, nuts, bolts and road spring clips, including cylinder head nuts, road wheel nuts and door hinges. Adjust if necessary.

Examine all steering and brake connections. Neglect is dangerous and might cause an expensive breakdown or accident.

Change the engine oil after the first 500 miles running and then after every 2,000 miles. **Oil is cheaper than bearings.**

Every 2,000 or 4,000 miles clean the gauze strainer at the base of the sump.

Flush the radiator with plenty of clean water, rocking the car and running through water until it comes out clean.

Clean distributors and contact breaker points, adjusting the points if necessary. Clean the dynamo and starter commutators.

Adjust tappets and fan belt and check alignment of the front wheels.

Decarbonise and grind-in the valves after the first 2,000 miles and then every 6,000 or 8,000 miles.

Clean petrol filters and rinse away sediment in the carburettor bowl.

Oil the speedometer drive every 2,000 miles and thoroughly grease it every 6,000 miles.

Warning.—After the car has been washed, or driven through the 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.

GOOD DRIVING

Bad Driving and Cheap Supplies are False Economy

CAREFUL driving is also economical driving, and the driver who has consideration for his car will save a lot of money.

Always turn the engine by hand to start it when cold and let it warm up to thoroughly circulate the oil before driving away. When using the starter motor it saves the batteries if the clutch pedal is depressed fully.

A good driver lets his clutch in gently and always changes gear early on hills, at corners or in dense traffic. He does not try to accelerate too quickly—that wastes petrol and oil and wears the tyres. Neither does he have to brake violently.

A Good Driver—

Is never flurried.

Does not skid his tyres, either in starting or stopping.

Uses clutch and brakes as little as possible.

Does not keep his foot on the clutch pedal.

Has small bills for tyres, petrol and repairs.

Please—

Don't keep your foot on the clutch pedal.

Don't leave the car in gear and with the handbrake off.

Don't make a fast run with the radiator muff down.

Don't fill the radiator with cold water when the engine is hot.

Don't be cruel to the starter if the engine will not fire.

Don't touch the starter switch while the car is in gear.

Don't lift the gear lever when changing gear for forward speeds.

Don't put an excessive quantity of lubricant in the gear box.

Don't forget the ignition switch when starting up.

Don't coast with the clutch held out.

Don't run the engine in a closed garage. The exhaust gases are highly poisonous, a very small amount in a restricted atmosphere will produce grave, if not fatal, results.

Buy the Best.

It is false economy to buy anything but the best petrols, oils and greases.

At the best you can only save a few pence by using cheap fuel, but you may easily get valve trouble.

Poor petrol may be more difficult to start on and thus cause extra strain on the battery. It will cause rusty, sticky or pitted valves and will call for more frequent decarbonisation. It will dilute the engine oil and thereby cause more rapid cylinder wear.

A taxi is often used with a cold engine and first-grade fuel is essential.

Also use the best oils, the brands recommended, for they will save wear and save repairs. Oil is cheaper than bearings.

When your exhaust becomes smoky and smelly, decarbonise the engine and if the trouble is not cured fit new piston rings. After a considerable mileage the cylinders will need reboring. Worn pistons, rings and cylinders mean greater consumption of fuel and oil, and lower power.

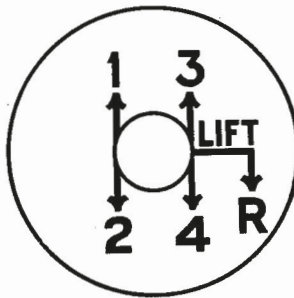
Changing Gear.

In order to change speed from first to second gear or from second to third, depress the clutch, move the change speed lever steadily to the next position and let in the clutch smoothly.

The synchromesh engagement of third and top gears ensures positive, noiseless gear changes. Changing down from top to third is done by merely pushing out the clutch and moving the lever smoothly into the lower speed position and then letting in the clutch steadily.

In changing down the accelerator pedal should be depressed and the engine "speeded up."

To change down from third to second and second to first it is necessary to "double declutch."



Austin Gear Positions.

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

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

It is often advisable to engage one of the lower gears before commencing a steep descent.

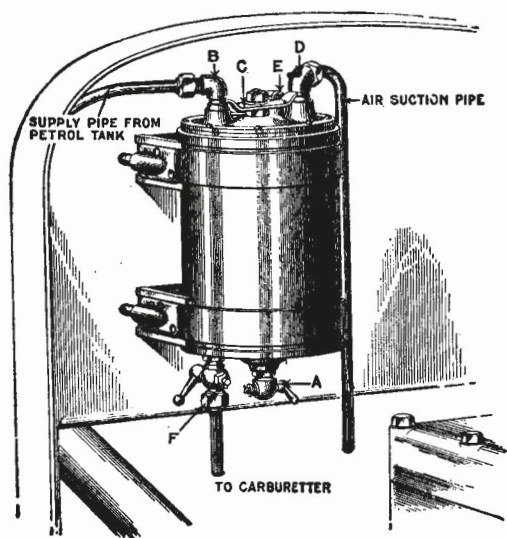
Remember that the ball must be lifted up and over to the right before being moved back for engagement of reverse. This feature of the Austin gear change makes for safety, in that it is impossible to engage reverse without making this lifting motion, and therefore impossible to engage it accidentally.

THE FUEL FEED

How Petrol is drawn from the Tank to the Carburetter.

THE petrol is fed to the carburetter by means of the patent Autovac system. The main petrol tank is below the level of the carburetter and the suction of the engine is utilised to draw petrol from the main tank into the Autovac tank, mounted high up on the dashboard, whence it flows to the carburetter by gravity.

If the engine has not been run for some time and the Autovac tank has become empty, it is not necessary to prime it. Close the carburetter throttle and turn the engine by hand, or with the starter, to draw in a charge of petrol. The engine can then be started and run for a short time to fill the Autovac.



Clean Occasionally.

Occasionally clean the Autovac tank by opening drain tap A and allowing any sediment or water which may have collected to drain away.

First push a wire through tap to remove any sediment which may have solidified. Then, if very dirty, loosen clip bar C, disconnect the petrol supply pipe at B, remove elbow B and flush through with petrol. Clean the strainer below elbow B.

Fault Finding.

The Autovac system gives practically no trouble and in the case of an engine stoppage it can be readily ascertained whether the trouble is in the vacuum system or not.

If there is a shortage of petrol at the carburetter, open the drain tap at the base of the Autovac. If petrol flows out inspect the pipe and fittings to the carburetter for stoppage.

If there is no petrol in the Autovac, this may be due to one of the following causes :—

The main petrol pipe from the Autovac to the main tank may be wholly or partially choked with foreign matter.

The vent in the tank filler cap may be choked.

The filter cone underneath the Autovac inlet elbow may be dirty.

The same remark also applies to any additional filter fitted in the main fuel supply line.

There may be a leak at the Autovac top joint through perished or broken gaskets, or slack cover screws. Tighten the screws or renew the joint if damaged.

A petrol or suction pipe may be fractured.

Petrol or suction unions may not be tight.

If a suction operated windscreen wiper is connected to the Autovac Suction Elbow the rubber connection may be perished.

The air vent E at the top of the Autovac may be choked.

Grit may be under air valve head. Loosen clip bar C remove air vent E and squirt a little petrol through the valve to wash away the obstruction.

If trouble is still experienced after checking over all these items, it is advisable to consult a skilled mechanic or return the Autovac to the makers, the Autovac Manufacturing Company, Ltd., Heaton Norris, Stockport.

“Leaded Fuels.”

Provided that the same reasonable attention is given to valves and adjustments as with ordinary petrols there will be no trouble when using “leaded” fuels (petrols containing a small proportion of tetraethyl lead).

The appearance of the valves when running on “leaded” fuel differs from that associated with ordinary petrol, but this is a well recognised fact to which no significance should be attached.

The deposit from such fuels can be removed by “scrubbing” the valves and their seats with a stiff wire brush, of the type used for cleaning files (a file card), after which the valves can then be “ground in” in the normal manner.

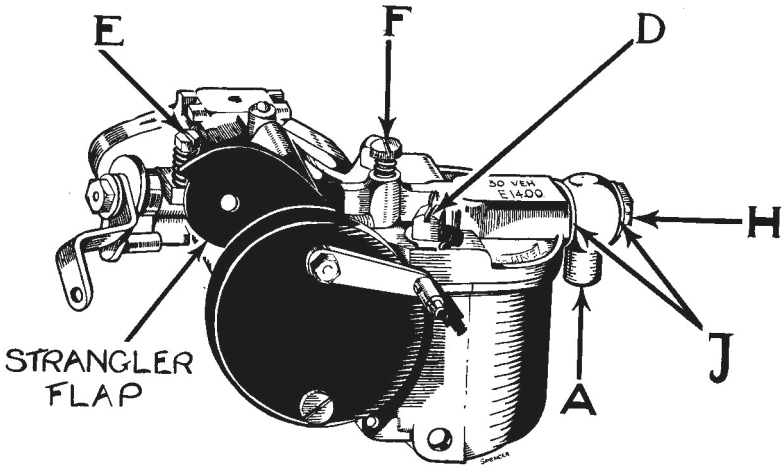
We would recommend this method of cleaning for all valves whether they have operated with “leaded” or ordinary fuels as it eliminates the possibility of leaving small amounts of deposit on the valve seats which tend to cause damage, or prolong the “grinding in” process.

THE CARBURETTER.

Cleaning and Adjustments for Good Performance.

THE Carburetter is the Zenith "V" type, embodying the well-known principles of main and compensating jets. It is fed by gravity from the Autovac.

Petrol passes through the gauze filter, which should be cleaned occasionally, and the needle seating to the float chamber. Here it causes the float to rise and at a pre-determined height to close the needle on its seating, thus regulating the supply.



The Carburetter.

- | | |
|----------------------|------------------------|
| A Pipe Union | F Air Regulating Screw |
| D Holding-down Screw | H Union Nut |
| E Stop Screw | J Union Washers |

The float chamber contains the main jet, compensating jet, compensating well, and slow running jet.

From the jets, the petrol flows along two separate channels into a common channel in the emulsion block which is attached to the float chamber.

The petrol in the compensating well is in direct communication with the air and with the emulsion block. Consequently, all the petrol from the jets and well is centred in one channel in the emulsion block. This channel leads to a nozzle which projects directly into the choke tube.

Starting the Engine.

Before starting the engine pull out the air strangler control and crank the engine by hand several times in order to free the pistons and prime the cylinders.

It is quite in order to run the engine for a minute or two with the strangler partially closed, to assist in warming up, but do not drive with the control knob out or petrol will be wasted and excessive carbon deposit formed on the cylinder head.

Difficulty in starting can be caused by the strangler flap not closing properly. The control wire should be examined and if necessary shortened to permit the flap fully closing.

A choked slow running jet will also cause difficulty. The jet should be taken out of the carburetter and carefully cleaned by washing it in petrol and blowing through it.

If the mixture for slow running is weak, this can also cause difficulty in starting. In this case turn the regulating screw in a clockwise direction, which will enrich the mixture for starting and slow running. Do not overdo this as if the mixture is too rich, the engine will "hunt" and tend to choke when slow running while warm.

Adjustments.

The carburetter is delivered with most suitable setting and consequently very little adjustment is needed. The user will find that a greater service will be obtained if the various screws and other parts are only moved when absolutely necessary.

On those occasions, however, when an adjustment is advisable (after a car has been "run in" an adjustment of the slow running is sometimes necessary) or when the carburetter requires cleaning, the following procedure should be observed.

Slow running is adjusted by means of the stop screw and the air regulating screw. To increase the slow running speed the stop screw must be turned in a clockwise direction. A turn in the opposite direction will give a slower tick over.

The richness of the slow running mixture is adjusted by the air regulating screw. Should the engine refuse to tick over for any length of time, or stall on deceleration, it is a sign that the slow running mixture is weak. To overcome this the mixture should be made richer by turning the regulating screw in a clockwise direction.

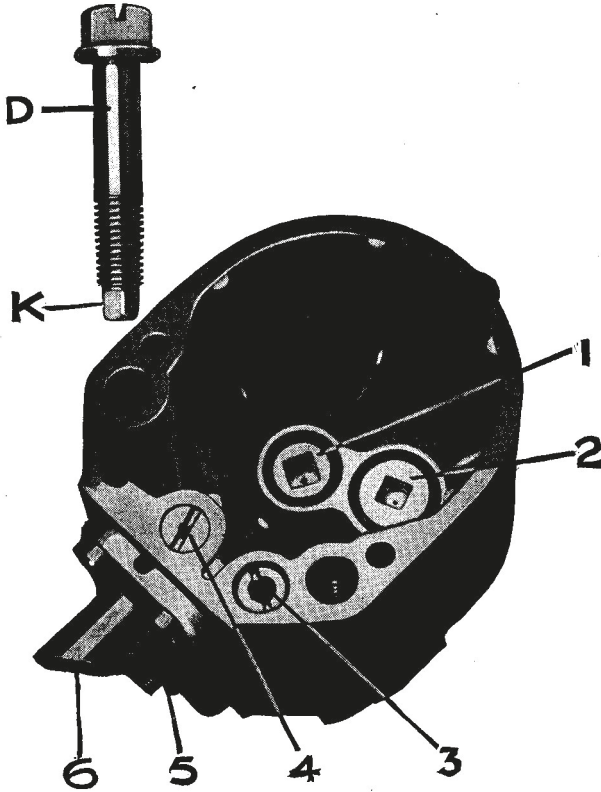
If the engine is inclined to "hunt" when running slowly the mixture is too rich and must be weakened by turning the air regulating screw in an anti-clockwise direction.

In the Winter time poor acceleration can be due to the engine not getting sufficiently hot, If in spite of the engine being thoroughly hot, the acceleration is bad then see to the following points.

Slow running adjustments is too weak—Try the screw in a richer position.

The compensating jet is too small—Try one size larger.

If lack of power and speed is due to the carburetter it is probably owing to the main jet being partially choked or a little too small. If the jet is thought to be a little too small a larger may be tried.



Carburetter Bowl.

- | | |
|----------------------|--------------------|
| D Holding-down Screw | K Jet Key |
| 1 Main Jet | 4 Slow Running Jet |
| 2 Compensating Jet | 5 Emulsion Block |
| 3 Compensating Well | 6 Nozzle |

Care should be taken to make sure that the lack of speed is not due to the ignition being retarded or to an insufficient supply of petrol from the tank, faulty ignition, or to poor compression due to leaking valves or wrong tappet adjustment.

Make sure also that the strangler valve opens fully, as if this sticks in a partially closed position it will restrict the speed of the car and increase petrol consumption.

Dismantling.

The bowl of the carburetter can be removed by taking out the holding-down screws. One hand should be placed underneath the bowl during this operation and when the screws are removed the bowl will drop into the hand. On turning the bowl upside down the float will slide out and reveal the main and compensating jets.

The jets should be removed occasionally and be thoroughly cleaned. One of the holding down screws is milled to fit into the jets. When the bottom end is placed into the jets a spanner applied to the head of the screw will enable the jets to be removed.

When cleaning the jets it is not advisable to pass anything through them that will damage them. The most satisfactory and effective method is to blow through the jets and wash them in petrol. This will remove any obstruction and leave the jets undamaged.

Standard settings are :—

Choke Tube	...	...	21
Main Jet	...	...	75
Compensating Jet	...	...	75
Slow Running Jet	...	...	45
Progression Jet	...	...	100
Needle seating	...	...	2.5 mm.

The sizes of all jets in the Zenith carburetter run in fives, the higher the number the larger the jet.

The petrol is filtered on entering the carburetter, and the filter should be cleaned from time to time. To remove the filter unscrew the petrol connection and pull the filter out of its chamber. The filter gauze can then be thoroughly cleaned with petrol.

When reassembling the filter care must be taken to see that all the washers are correctly replaced.

Air Cleaner.

The gauze of the air cleaner, if fitted, needs to be removed for cleaning occasionally. Wash it well in petrol and allow it to dry. Dip it into thick oil, allow the surplus oil to drain off, and replace it.



THE IGNITION SYSTEM

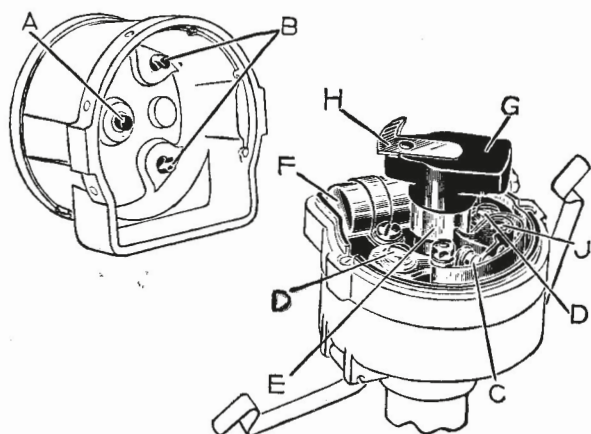
Cleaning the Distributor; Lubrication; Fault Finding.

THE ignition equipment consists of a coil and a distributor, which are mounted together as one unit.

The equipment is provided with an automatic advance mechanism which relieves the driver of the necessity of constant adjustment of a hand ignition control. 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 unit, and it consists of a centrifugally operated mechanism by means of which the ignition is advanced in proportion to 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 should be carried out.



Distributor and Contact Breaker.

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

Distributor Unit.

Occasionally remove the distributor moulding by pushing aside its two securing springs.

See that the electrodes are clean and free from deposit. If necessary wipe out the distributor with a dry duster and clean the electrodes with a cloth moistened with petrol. Also see that the carbon brush in the centre of the moulding is clean and moves freely in its holder.

Next examine the contact breaker. It is important that the contacts are kept free of grease or oil. If they are burned or blackened, they may be rubbed down with fine carborundum stone, or if this is not available, fine emery cloth may be used.

Afterwards polish with a cloth moistened with petrol. Care must be taken that all particles of dirt and metal dust are wiped away.

It is possible that misfiring may be caused if the contacts are not kept clean.

Contact Breaker.

The contact breaker gap is carefully set before leaving the Works, and will probably only need adjustment at very long intervals.

It is not advisable to alter the setting unless the gap varies considerably from the gauge.

If adjustment is necessary, proceed as follows:—Turn the engine until the contacts are seen to be fully opened, then, using the ignition screw-driver, slacken the two screws securing the contact breaker plate and move the plate until the contacts are set to the thickness of the gauge. Finally, tighten the screws.

Do not attempt to clean up the contacts if they become rugged, but have them attended to by a skilled mechanic.



The Contacts.

Lubrication.

The distributor spindle bearing is lubricated by means of an oiler through which one or two drops of thin machine oil should be added 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 by lifting it off, and add a few drops of thin machine 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.

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 distributor moulding and lift off the rotating distributor arm, then remove the contact breaker base moulding by withdrawing its two securing screws.

Coil

The coil unit requires no attention beyond seeing that the terminal connections are kept tight, and the moulded coil top is kept clean.

H.T. Cables.

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.

The cables are held in position by a moulded cover which is secured by means of two screws. The cables, which are cut off flush to the required length, are located in recesses in the distributor moulding and are pressed on to pointed terminal studs which pierce the insulation to make good contact with the cable core.

Ignition Lamp.

When the engine is stopped, unless only momentarily, the ignition switch should always be turned to the "OFF" position so as to prevent the battery being discharged by current flowing through the coil winding. To ensure that this does not happen, a warning lamp is provided in the switch box, which gives a red light when the ignition is "on" and the engine is stationary.

Should the bulb of the warning lamp fail, it can be unscrewed from its socket when the small cover plate, holding the red glass, is removed. The replacement bulb should be a 2.5 volt, .2 amp. screw cap type (No. C252A).

Ignition Faults.

When the engine will not fire, or fires erratically, the trouble may arise from the carburetter or petrol supply, and not the ignition. A partially choked jet, an incorrect petrol 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 $\frac{1}{4}$ -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 the terminals are tight before making this test.

To test for short circuits in the low tension wiring (the cables from the switch to coil, and from 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 remain open, or 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. If the rubber insulation on the cables shows signs of perishing or cracking, there may be a 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 service depot of the makers.

Timing the Ignition.

In order to reset the ignition, turn the engine until numbers one and four pistons are at top-dead centre. A line marked $1/4$ on the back of the flywheel clearly indicates this. Turn the flywheel back until this line is about $1\frac{1}{2}$ ins. before top dead centre.

Remove the cover of the distributor by springing back the two securing springs and then loosen the clamping screw of the distributor fixing clip. Move the distributor casing until the contact breaker points just begin to open, which is the position at which the spark occurs.

Tighten the distributor clamping screw and test the car on the road. Final adjustment can be made, if necessary, by turning the distributor casing to the left to advance the timing or to the right to retard it.

Only a very small amount of movement is necessary.

The timing is automatically advanced and retarded, according to the speed of the engine, by a governor control which is lubricated from the distributor spindle. If this lubrication is neglected the governor may seize.



THE SPARKING PLUGS

THE sparking plugs are K.L.G. type K.1.

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

After the first thousand miles it may be necessary to clean the plugs, because an excessive amount of oil is sometimes used and this causes a deposit of carbon on the interior insulation of the plugs.

Type K.1 is a two piece plug. The central electrode, insulator and gland nut are integral. **On no account must any attempt be made to separate the gland nut from the insulator.**

To clean a plug, the insulated centre must be removed from the plug body by unscrewing the gland nut.

Wipe the lower mica insulation carefully with a rag soaked in petrol. If the carbon deposit is hard, soak the electrode in petrol for an hour or so, this will soften the carbon.

The mica insulation should be thoroughly cleaned and polished, and the central electrode scraped clean.

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

To re-assemble, make sure that the internal washer is in place, before inserting the electrode. Tighten the gland nut to secure gas tightness. Reset the earth points to .015 to .018 inch. 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, distributor points out of adjustment—all these may cause fouled sparking plugs.

Sparking plugs should be renewed every 10,000 miles.



THE COOLING SYSTEM

THE cooling of the engine is on the thermo-syphon principle, in conjunction with a fan-cooled radiator.

The radiator should be filled with soft water, boiled water, or rain-water, if possible, to within one inch of the top. Do not fill right up to the top with water, as it will overflow and possibly leak through the cap, owing to expansion when the engine becomes hot.

Do not use hard water, which causes "furring" in the engine and radiator waterways and may lead to overheating troubles.

In frosty weather, it is well to make use of the radiator muff during the day and a lamp at night, or else drain the Cooling System.

When the car is laid up the water should be drained from the circulating system by means of the tap at the bottom of the radiator and the cylinder block drain tap behind the carburetter, which will empty the remainder of the water from the cylinder water jackets.

Care should be taken to see that the water is drained off completely for in case of freezing it will do harm by lodging in small spaces and expanding.

An anti-freezing mixture may be added to the water.

Vacuum Voco "Anti-Freeze," Smith's "Bluecol," Price's "Zero" and County Chemical "Stop it Freezing" are suitable.

The capacity of the system is about 21 pints.

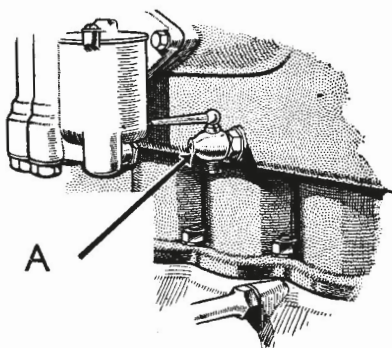
The efficiency of the cooling system depends to a noticeable degree on the fan. Keep the fan belt adjusted just taut, so that it will not slip. The adjustment, which is effected with the "C" spanner is fully described under "Running Adjustments."

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

Carbonized cylinders. Ignition retarded too far. Not enough, or poor grade oil. Incorrect carburetter adjustment. Failure of Fan. Failure of water to circulate, because of clogging or leaking of radiator tubes or loss of water from leaking connections.

Trouble arising from a damaged radiator generally necessitates its dismantling and despatch to a repair depot.

The entire circulating system should be thoroughly flushed out occasionally. To do this, open drain tap, place a hose in the radiator filler and run fresh water through until it comes out clear.



Cylinder Block Drain Tap (A).

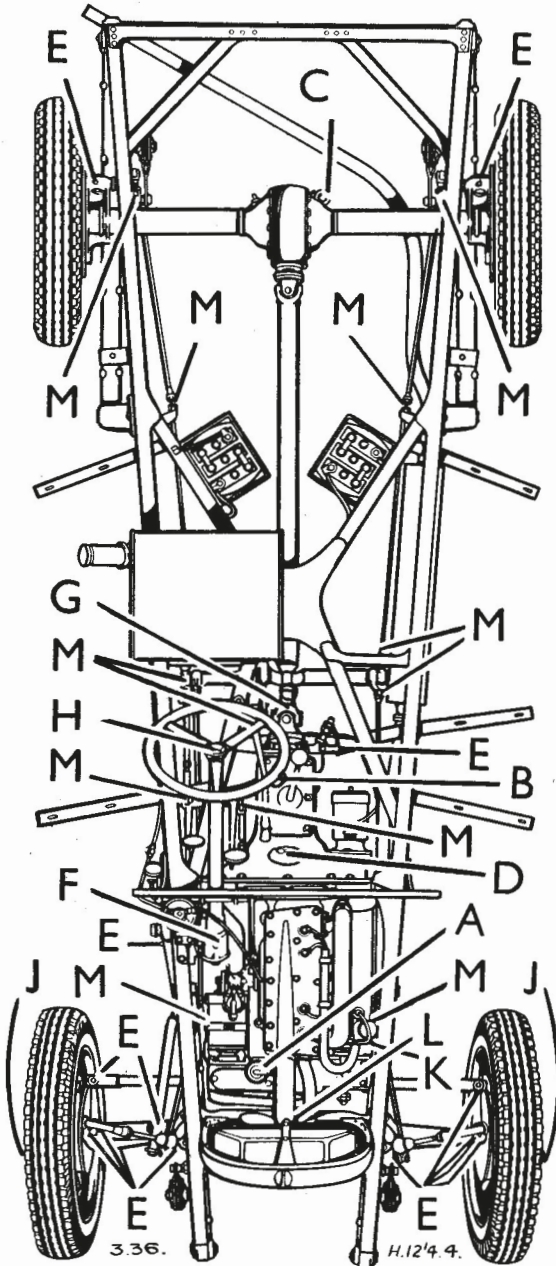
Recommended Lubricants

	"Shell"	"Wakefield"	"Essolube"	"Prices"	'Duckham's'	"Vacuum"
Engine :						
Summer ..	Triple Shell	Patent Castrol XL	Essolube 50	Motorine C	Aero NP3	Mobiloil BB
Winter ..	Double Shell	Patent Castrol AA	Essolube 40	Motorine M	Aero NP3 †	Mobiloil A
Gear Box ..	Triple Shell	Patent Castrol XL	Essolube 50	Motorine C	Aero NP3	Mobiloil BB
Wheel Hubs and Grease Gun	Shell R.B. Grease	Castrolase Heavy	Esso Grease	Belmoline C	H.B.B. Grease	Mobilgrease No. 4
Rear* Axle and Steering Box	Shell Spirax	Castrol D	Gear Oil Heavy	Motorine Battersea A	Duckham's N.4.	Mobiloil C
Distributor, Dynamo and Oil Can	Shell Household	Wakefield Oilit	Essolube 30	Cycle Lubricating Oil	Aero N.P.O.	Gargoyle Velocite D
Upper Cylinder Lubrication.	Shell U.C.L.	Wakefield Castrollo	Petmix	Motorine U.C.L.	Duckham's Tablets	Gargoyle U.C.L.
Springs, Rusted Parts or Squeaks.	Shell Penetrating Oil	Castrol Penetrating Oil	Essolube 30	Price's Penetrating Oil	Duckham's Easing Oil	Voco Penetrating Oil

*Also Jaba Oil C.

† Extreme Cold NP2.

Chassis Lubrication.



- A. Crankcase — Replenish **Weekly.**
- B. Gearbox — Replenish **Monthly.**
- C. Rear Axle — Replenish **Monthly.**
- D. Clutch Withdrawal Sleeve — **Grease Weekly.**
- E. Cross Tube (2), Swivel Axle (4), Side Tube (2), Front Brake Rods (4), Rear Brake Cams (2), Taximeter Drive (1) — **Grease Weekly.**
- F. Steering Box — Replenish **Monthly.**
- G. Propeller Shaft — **Grease Monthly.**
- H. Steering Column Top — **Oil Weekly**
- J. Hubs — **Grease Monthly.**
- K. Distributor — Oil every 1,000 miles.
- L. Fan Bearing — **Grease Monthly.**
- M. Brake and Throttle Control Joints — **Oil Weekly.**

3.36.

H.12'4.4.

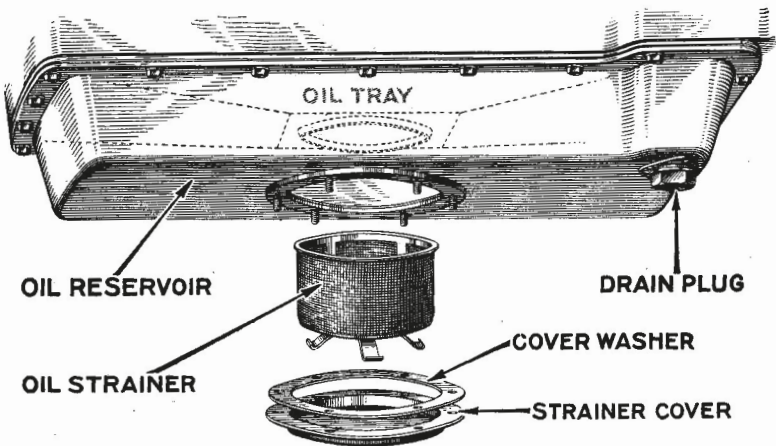
LUBRICATION ECONOMY

Use Only 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 and the extra cost of a good lubricant is negligible compared with the cost of inferior oil. Good lubricating oil ensures that you always get the best performance; 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.

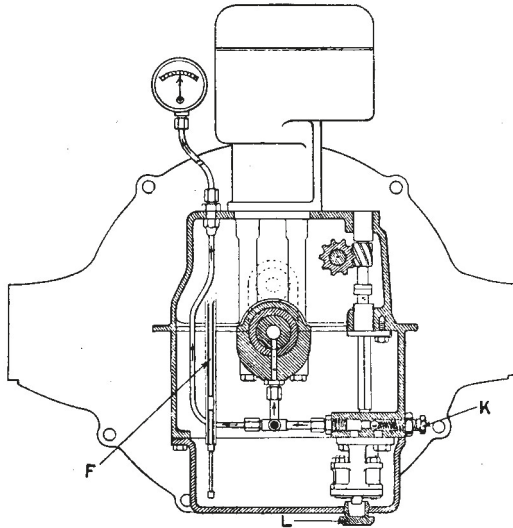
Lubricants represent the smallest proportion of your expenditure on the upkeep of a car, so that it is obviously false economy to use other than the best.

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.

Drain the crankcase immediately after a run, when the oil is warm and therefore fluid and thoroughly agitated. It will then carry away as much of the contamination as possible. Never flush the crankcase with paraffin—some will remain in the sump to contaminate the fresh oil, and in addition it may loosen, but not entirely remove, certain deposits which are best left undisturbed until the engine is overhauled.



Engine Lubrication System.

F—Oil level dip rod.

K—Oil pressure adjusting screw, with lock-nut.

L—Drain plug.

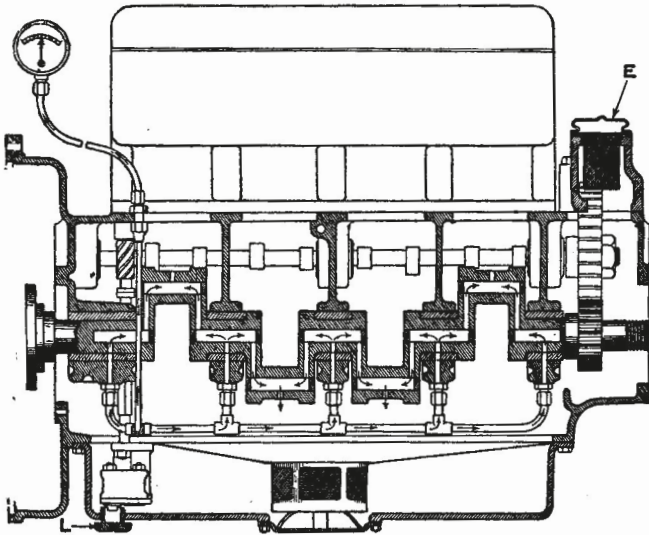
Rinse gauze filters in petrol and allow to drain before refitting. Do not wipe with fluffy rags.

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. Therefore, oil should never be judged by colour or apparent consistency.

Lubricants we officially recommend are tabulated in the centre pages. Each has the high grade standard of quality required by our Research Department, and all of them have proved entirely satisfactory in extended service. Further, they all have adequate distribution at garages and filling stations.



Engine Lubrication System.

E—Oil Filler L—Drain Plug

Power Unit.

The recommended lubricants are of the correct quality and viscosity for our units. The matter of the proper grade of oil is very important both in relating to the pump used to circulate the oil, and the gauge to register the pressure; if a very thick oil were used on a 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 first started.

After the first 500 miles' running, drain the oil from the reservoir by removing the plug in the bottom, while the engine is hot, and refill with new oil. On this occasion remove the cylindrical gauze strainer by

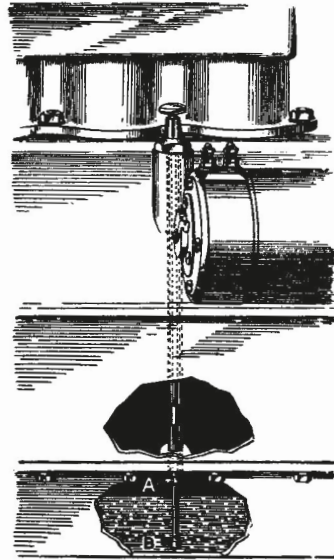
unfastening the six nuts which hold the strainer cover to the base of the oil reservoir. Take care that this work is not done where dust or other foreign matter is likely to be blown into the crankcase. Clean the strainer with paraffin, afterwards washing it with petrol. Replace the strainer and fill up the crankcase with oil to the maximum level indicated on the "dip stick." Approximately one gallon will be required.

After the first change the oil in the crankcase should be changed after every 2,000 miles.

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

After refilling with fresh oil to the correct level run the engine for a few moments to check that the oil is circulating 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 dipper rod. It is advisable to wipe the dipper 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 the level ground.



The Oil Dip Rod.

A—Maximum level.

B—Minimum level.

Watch the Gauge.

The oil pressure gauge on the instrument board indicates whether the oiling system is working properly, and should therefore 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, to be found at the rear of the crankcase on the near side, 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 lb. or more. The gauge is strong enough to allow for this, but after the oil has circulated for a while and becomes warm the pressure should gradually drop to 20 when running at moderate speeds, increasing with acceleration. When the car is standing and the engine is running slowly the pressure will probably drop very low.

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 not be made until after the engine has run for about twenty minutes, in order that the oil may have reached its normal consistency.

While making the adjustment it is advisable to have the engine running at a speed sufficient to drive the car at about 25 m.p.h. on top gear.

Adjustment of the relief valve by means of screw K, however, should only be varied for some special reason, as the original setting is very carefully made.

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

Gear Box.

The same grade of oil as is used for the engine is most suitable for the gearbox. **Do not use thick gear oil, otherwise seizure of bearings and speedometer drive will result.**

Maintain the oil at the correct level, i.e., bottom of the plug hole on the nearside of the gearbox.

The gearbox should be drained and refilled to the correct level after the first 1,000 miles and every 5,000 miles subsequently. The quantity required is approximately 4 pints.

Rear Axle.

Keep the oil level up to the plug hole and filling orifice. Replenish every 2,000 miles.

Do not exceed correct oil level. An outlet for excess lubricant is provided in the dust shield over the brake drums.

Drain the rear axle every 5,000 miles and replenish to the correct level.

Brake and Pedal Gear.

Oil holes are provided in the hand-brake, foot-brake and clutch pedal gear and cross shafts. Oil weekly.

Some of the moving parts are not provided with grease nipples because they have zinc bushes, but if for any reason they are dismantled the rubbing surfaces should be smeared with grease before reassembling.

Propeller Shaft.

Every 2,000 miles inject grease to lubricate the splines at the forward end of the Hardy Spicer propeller shaft.

Fan Bearings.

The fan spindle bearing should be given a charge of grease monthly.

Clutch.

To lubricate the clutch withdrawal thrust race and sleeve, lift the floor boards, slide aside the plate on the clutch pit cover, and inject grease through the nipple on the top of the tube situated in the opening over the clutch. Once a week is often enough. Do not allow any lubricant to get between the clutch plates.

Wheels.

Only the front wheel hub caps require filling with grease once a month. **Do not overload them with grease.** The rear hub bearings obtain sufficient lubricant from the axle. All hub caps have right-hand threads.

Steering Gear.

The steering box requires a charge of special lubricant monthly and the column requires oiling weekly at the top by the steering wheel.

Ignition and Electrical Equipment.

For lubrication of the distributor see page 23. For dynamo lubrication, see page 38.

Upper Cylinder Lubrication.

The use of an upper cylinder lubricant has been found to be beneficial to the running of the engine, especially during the first 10,000 miles. Use one of the lubricants recommended and follow the instructions with each brand.

Road Springs.

Penetrating oil, as recommended, should be used to lubricate the road springs, both to prevent squeaks and to make for better riding comfort.

Speedometer Drive.

The flexible shaft of the speedometer drive from the gearbox should be lubricated by oiling from the speedometer end about 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.

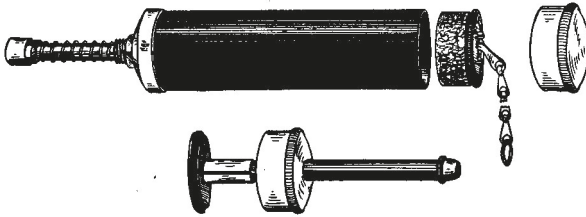
Grease should also be smeared round the flange where it rubs the washer of the key piece which connects to the Speedometer.



THE GREASE GUN

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

An old table knife is a useful implement with which to fill the gun with grease—oil is simply poured in—and once the gun is filled all that is necessary is to keep pushing the ram of the gun against the nipple. Three or four strokes for each nipple are sufficient.



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.

The ram is used for forcing grease through nipples. To use the gun as an oiler, 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 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 rapidly.

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



ELECTRICAL EQUIPMENT

Cleaning Commutators and Brushes; Battery Attention

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

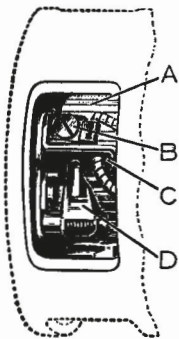
Should difficulties arise that cannot be understood or remedied from the information given below, application should at once be made to the Austin Service Department or the nearest service depot of the makers of the equipment. See addresses at the end of this book.

Dynamo.

The dynamo output is automatically varied according to the state of charge of the battery by the compensated voltage control system. The dynamo is of special design and is automatically controlled by a vibrating regulator which is housed with the cut-out on the engine side of the dash.

When the battery is discharged the dynamo gives a high output so that the battery receives a quick recharge which brings it back to its normal state in the minimum possible time. On the other hand, if the battery is fully charged, the dynamo is arranged to give only a trickle charge, which is sufficient to keep it in good condition, without any possibility of causing damage to the battery by overcharging.

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



Dynamo Brushgear.

- A, Commutator.
- B, Screw securing brush lead eyelet.
- C, Carbon Brush.
- D, Brush Spring Lever

When starting the car, the dynamo output will rise to a value which is most suitable for the particular condition of the battery, at the comparatively low speed of 20 m.p.h., and it will remain constant at all speeds higher than this.

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

The commutator surface must be kept clean and free from any oil or brush dust. It may be cleaned with ordinary soft rag held against the

commutator while the engine is slowly turned. Blow away any carbon dust, and see that the carbon brushes are wearing evenly and move freely in their holders. To fit a new brush it is only necessary to release the brush tag, hold back the brush trigger and then withdraw the worn brush from its holder. The new brush can then be fitted by reversing the above operations. The dynamo bearings are packed with grease before leaving the works and need very little attention. Add a few drops of oil through the lubricator provided at the drive end, every 1,000 miles. When the car is undergoing a general overhaul, move aside the flap marked "Grease" at the commutator end of the machine, and add a very small quantity of high melting point grease.

After a considerable mileage, the dynamo should be dismantled for cleaning and repacking the bearing with grease. This work is carried out preferably by a Lucas Service Depot.

Starting Motor.

The unit requires very little attention beyond keeping the commutator clean and free from oil, brush dust, etc., as for the dynamo. Before starting from cold do not neglect the preliminary precautions that you would observe if starting by hand.

Remember that although the starter will turn the engine over however stiff, it is advisable to crank the engine over 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 in mesh with the flywheel ring when operating the starting motor switch it can be released by turning the squared end of the starter shaft with a spanner. Access is obtained to this squared end by withdrawing the small metal cap protecting it.

Do not rock the car in gear to try and disengage the starter.

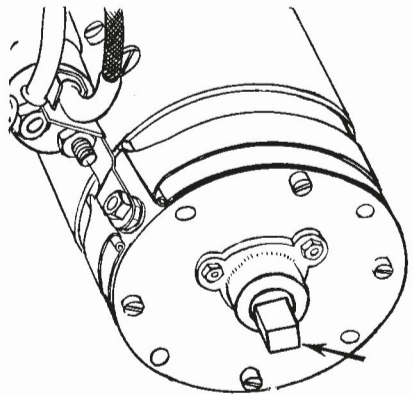
Never use the starting motor to propel the car, as it throws too severe a strain on the battery and the motor itself. Also should the engine fail to start at the first attempt, do not press the starter switch until the engine is still, or the starter pinion or the teeth with which it meshes on the flywheel, may be damaged.

Switchbox.

The ignition switch takes the form of a key which fits in a slot in the centre of the lighting switch. The key can be withdrawn when the ignition is switched off, and the car cannot be driven until the key is again inserted and turned.

The lighting switch has three positions. "Off"—all lamps off. "Side"—side and tail lamps on. "Head"—head, side and tail lamps on.

A separate switch on the instrument board operates the headlamp dipping mechanism.



Ammeter Readings.

The ammeter indicates the current passing into or out of the battery. For instance, suppose the dynamo is generating 6 amperes, and that the side and tail lamps are in use, the lamps and ignition coil will take say $2\frac{1}{2}$ amperes, leaving $3\frac{1}{2}$ amperes for charging the battery. This will be the figure shown on the ammeter.

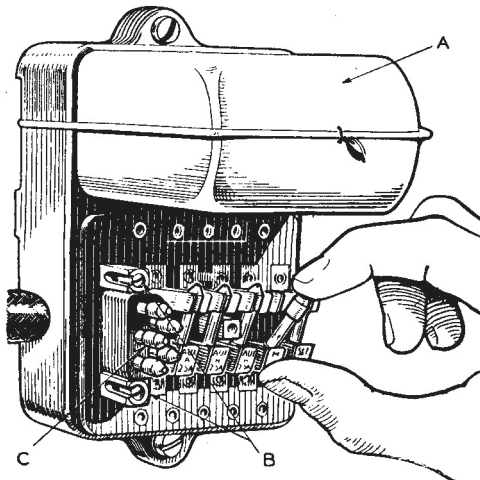
It must be remembered, when noting ammeter readings, that, normally, during daytime running, when the battery is in good condition the dynamo only gives a trickle charge, so that the charge reading will seldom be more than a few amperes.

A discharge reading may be shown sometimes immediately after switching on the lamps. This usually happens after a long run when the voltage of the battery is high. After a short time the voltage of the battery will fall and the regulator will respond, causing the dynamo output to balance the load.

When starting from cold, the driver will notice the rise of charging current until it reaches a steady maximum at a speed of, say, 20 miles per hour, after which it will remain fairly high for perhaps 10 minutes or so, then fall to a steady charge which is most suitable for the particular condition of the battery.

Regulator Unit.

This unit houses the cut-out regulator and fuses on its one side, while its other side forms a junction box.



Regulator and Fuse Unit

- A Cut-out and Regulator Cover
- B Accessories Terminals
- C Spare Fuses

The function of the cut-out is to close the charging circuit as the increasing engine speed when the car is starting causes the dynamo voltage to rise above that of the battery. When the engine slows down the dynamo voltage falls below that of the battery, and the reverse action takes place, i.e., the cut-out opens and thereby prevents the battery from discharging itself through the dynamo.

The cut-out and regulator are accurately set before leaving the Works and do not need any adjustment, and therefore the cover protecting them is sealed. The regulator should never be touched except by an experienced electrician.

Two fuses protect the auxiliary accessories which are operative only when the ignition is switched on. Another fuse protects those accessories which can be operated irrespective of whether the ignition is on or off while two more fuses are provided which protect the headlamps and the side and tail lamps.

If it is suspected that one of the fuses has blown, remove the fuse from its holder and see whether there is a break in the fuse wire. Before replacing the fuse, inspect the wiring of the units that have failed for evidence of short circuits or faults that may have caused the fuse to blow, and remedy.

If the fuse blows repeatedly and the cause cannot be traced, have the equipment examined by a Lucas Service Depot.

Petrol Gauge.

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

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. Mann & Overton, Ltd., Messrs. S. Smith and Sons (M.A.) Cricklewood Works, London, N.W.2. (the makers) or their depots will give prompt service.

The Wiring.

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

In such an event, lift the rear floor board and immediately disconnect the battery. 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 should be put into the hands of a capable electrician as soon as possible.

The Battery.

The battery is the reservoir of the energy generated by the dynamo, and upon its satisfactory functioning depends the starting and running of the car.

The amount of attention needed is small and need take only a few minutes. Follow the directions given here and your battery will last longer and give better service.

Once a week unscrew the filler caps and pour a small quantity of distilled water into each of the cells to bring the acid just level with the tops of the separators.

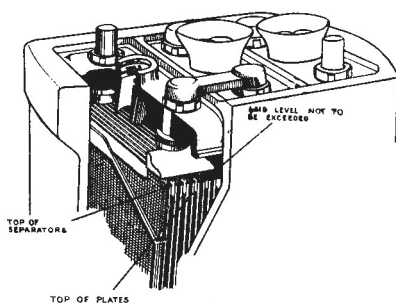
Distilled water can be obtained from any chemist and most garages.

Do not use tap water, as it contains impurities detrimental to the battery.

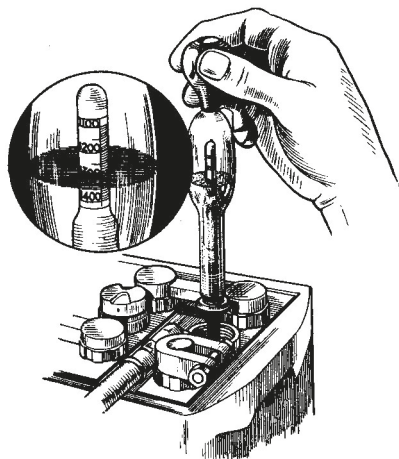
If any acid is accidentally spilled from the battery, it must be replaced by a dilute sulphuric acid solution of the same specific gravity as the acid in the cell. This is measured by a hydrometer.

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 breakage of the battery wiring.

Keep the outside of the battery 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 there will be a leakage of current which will cause the battery to run down. Give the cell tops a regular wipe over and you will avoid this.



The Battery.



Test the specific gravity of battery electrolyte with an hydrometer.

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, make a point of examining the health of the battery by taking hydrometer readings.

The operation is quite simple and need not take long. There is no better way of ascertaining the state of charge of the battery.

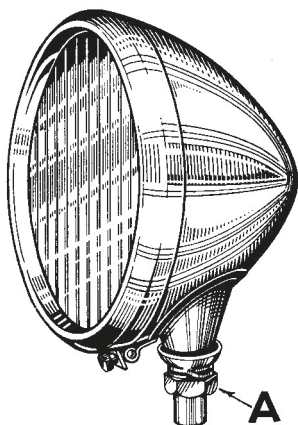
The specific gravity readings are:—1.285—1.300 battery fully charged; 1.210 about half discharged and 1.150 completely discharged. These figures are given assuming the temperature of the solution is about 60 degrees F.

CARE OF THE LAMPS

Dip and Switch Mechanism; How to replace Blown Fuses.

IN order to remove the headlamp front, release the fixing screw at the bottom of the lamp. The front can then be withdrawn.

To remove the reflector, turn back the two ends of the cork washer at the top of the rim and withdraw the screw exposed to view.



Headlamp Universal Mounting (A).

Chromium plated finishes will not tarnish, and only need wiping over with a damp cloth to remove dust or dirt.

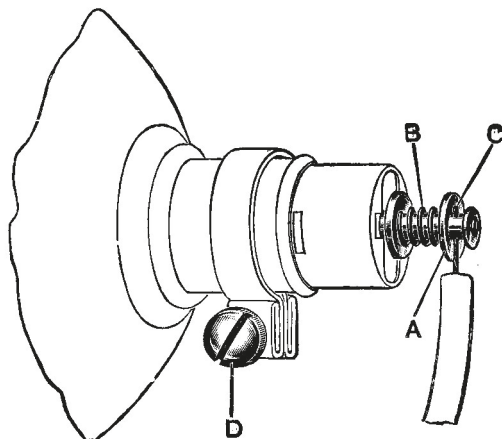
The sidelamp front can be removed for bulb replacement when the screw at the bottom of the lamp is removed.

To remove the front of the tail lamp, turn it to the left and withdraw.

Bulb sizes are: Headlamps, Lucas No. 2; Side, Tail and Dash, Lucas No. 207.

Use soft cloth *only* for cleaning reflectors. On no account use any metal polishes.

If the ebony black becomes dull in service, the original finish can be restored by a good furniture or car polish.



Headlamp Focussing.

A Washer

B Spring

C Terminal

D Screw

Focussing and Aligning.

Unless the focus of the bulb in the reflector is correct, quite half the possible light may be lost. A correct focus is secured by unscrewing the clamping screw at the back of the reflector and sliding the lamp holder in or out as required.

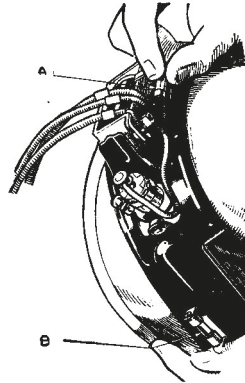
Aligning is carried out by slackening the lamp fixing nut and then moving the lamp on its universal mounting to the required position, finally locking the adjustment by tightening the locking nut.

The "Dip and Switch" Reflector Equipment enables the nearside, headlamp reflector to be dipped and turned to the nearside of the road by means of a solenoid and plunger, and the offside lamp is simultaneously switched off.

The control switch is on the instrument board and mechanism calls for no attention. There is nothing to adjust and no lubrication is required.

A cartridge type 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 carried in spring clips alongside the dipping mechanism. If the reflector fails to function, remove the fuse from its holder and see if 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 of the trouble cannot be found, have the reflector examined at the nearest Lucas Service Depot.

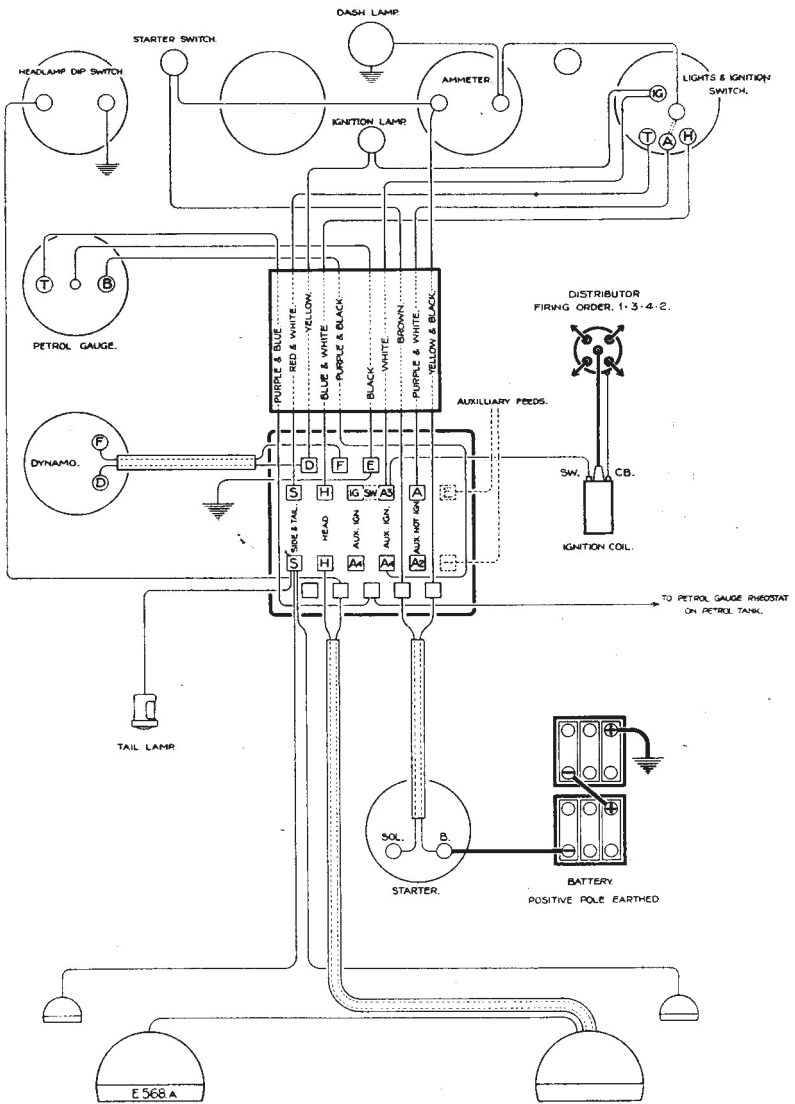


Dipping Headlamp Reflector.

A—Dipper Fuse.
B—Spare Fuse.



Austin Taxi Wiring Diagram.



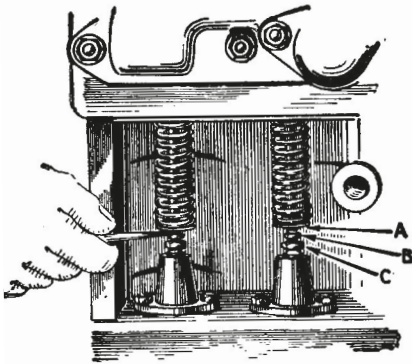
RUNNING ADJUSTMENTS

Decarbonising ; Valve Grinding ; Brakes and Steering.

THE adjustments described in the following pages are all that the owner will find necessary to keep the car in good running order.

Valve Tappets.

To ensure obtaining the full power of the engine, and to maintain silence in the valve operation, it is essential to keep the tappets correctly adjusted.



Adjustment of Valve Tappets.

Remove all sparking plugs, take off the valve covers and have the engine turned slowly round with the hand starting crank. Watch each valve open in turn and note the point at which it stops descending.

From this point until the valve lifts again there should now be between the valve stem A and tappet screw B, a clearance equal to the thickness of the "tappet clearance gauge." .004in.

This clearance is when the engine is hot and should be checked when it is in that state through running.

If the clearance is other than this, it can be adjusted by loosening the lock-nut C and raising or lowering screw B, being careful to tighten up the locknut when the adjustment is completed. Special spanners are provided in the tool kit for this operation.

Decarbonising.

After the first 2,000 miles running, it is advisable to remove the carbon deposited in the cylinder head and on the tops of the pistons, and to grind in the valves, and then after each 4,000 to 5,000 miles.

First drain off the water through the cock, at the bottom of the radiator. Remove the tube carrying the sparking plug leads from the cylinder head. Detach the top hose connection and take out the sparking plugs. Remove the nuts holding down the head.

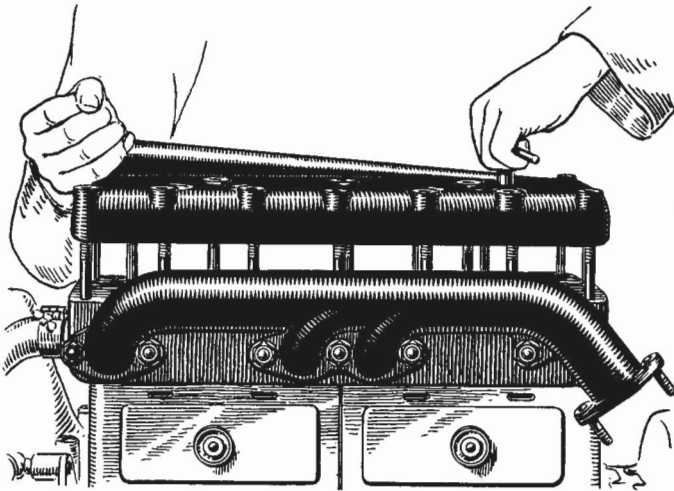
In the place of the rear sparking plug insert the cylinder head lifting-screw and then rock the head gently until the joint is broken without

damaging the joint washer. This washer may be in a condition to be used again. The head can then be lifted clear. When the washer is replaced, see that the side which shows the beaded edge faces upwards.

On no account use shellac or anything similar upon the gasket. It will make a tight joint without if it is lightly greased on both sides.

When the head has been removed the valves and tops of pistons will be exposed to view. All dirt or deposit should be removed by carefully scraping with a sharp tool, taking care not to injure the tops of the pistons by scratching them. The valve cover, with its washer, can be removed on undoing the two milled nuts.

Each valve spring must be lifted by means of the special tool provided and the cotter pin withdrawn. Then remove the cotter cup and the spring.



Lifting the cylinder head with lifting screw supplied.

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 its 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. This allows some of the grinding compound to enter between the two faces and facilitates the cutting action.

Care should be taken that none of the compound enters the cylinders and the valve and seatings 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.

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 the dirt is removed. Then the valve should be cleaned, and the stem smeared with graphite grease and re-inserted in the guide, the valve spring and cup being fitted up round it. The valve lifter is then used as before to compress the spring so that the cotter pin can be refitted.

See that all the slots in the heads of the valves are in line, because this indicates that the holes in the valve stems into which the cotter pins are inserted will all be facing the operator. See that the cotter pin is placed properly in the hole in the valve stem, so that the cup fits evenly over it, otherwise the pin may fly out.

It is easiest if the end valves are fitted first, working towards the centre ones. The cotter is inserted in the valve stem and then the lifter screw is slackened to allow the valve spring cup to come over the cotter pin.

Pliers will be found more convenient than the fingers for removing and replacing the valve cotter pins. Do not use emery paper for cleaning.

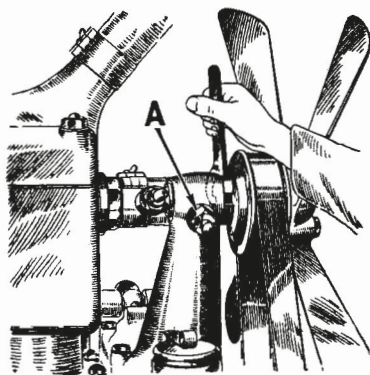
When replacing the cylinder head, it is most important that the nuts on the holding down studs be tightened evenly, commencing first at the centre and working to the outside. Do not tighten any one nut right home while others are loose, and make sure that the centre nuts are tight first. When the engine is warm after a few hours running go over the nuts again, making certain that all are absolutely tight.

Do not forget, the head and the hose connections, to fill after replacing the radiator.

Fan Belt

Adjustment.

To alter the tension of the fan driving belt, slacken the nut A. Then with the special Cee spanner provided, turn the collar in the direction which will slacken or tighten the belt as desired. The bearing of the pulley is eccentric to that of the spindle held in the casting.



Fan Belt Adjustment.

A—Locking Nut.

Track Adjustment.

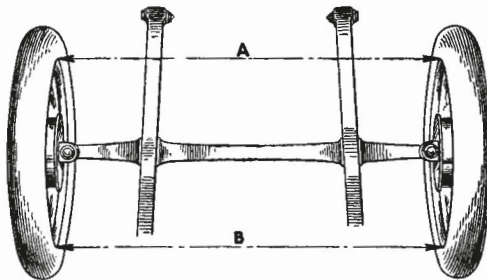
The track is adjusted by lengthening or shortening the cross-steering-tube by screwing the socket up or down as required. The best way to do this is not to remove the steering ball pin from the steering arm, but to remove the steering arm from the swivel axle without dismantling it from the cross tube assembly in any way.

The wheels should not be lined up parallel but should be $\frac{1}{8}$ in. closer between the rims in front of the axle, than behind. This is to allow for working clearances and slight spring of parts, and ensures that when actually running the wheels are as near parallel as possible.

As this adjustment may affect the engagement of the ball pins with the ball cups in the tube, which engagement is determined by shims, it is usually advisable for a mechanic to do this work.

The alignment should be regularly checked, and adjusted if necessary, otherwise excessive tyre wear will occur.

The ball joints, swivel axle pins and other parts must be kept well greased to assure easy steering and to prevent seizing.



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

Steering Adjustments.

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

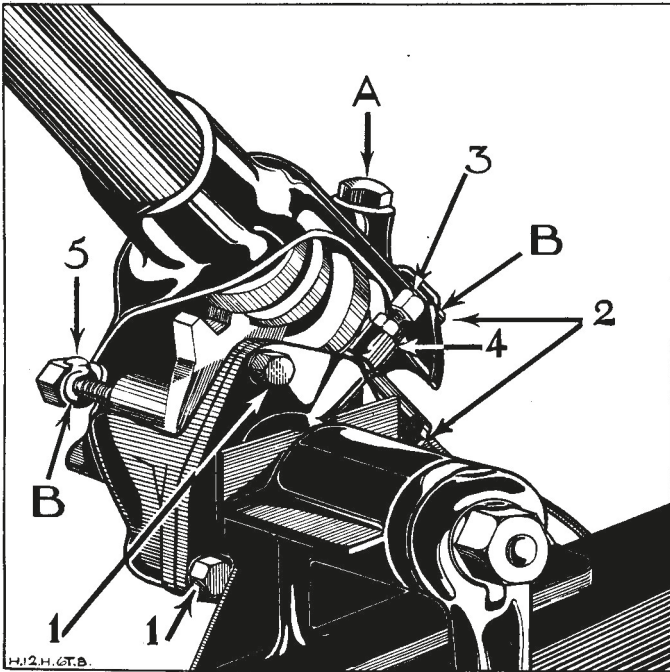
To take up end play at the worm, remove the end cover by taking out the screws (2). With a knife blade separate and remove one or more of the thin shims. Replace the end cover and test for end play, removing further shims if necessary.

To take up end play at the steering cross shaft, unbend the lock washer, unscrew the nut (5) and remove one or more shims, as required. Replace the nut, test for end play and turn up the lock washer.

To adjust the mesh of the worm and sector, slightly loosen the four nuts (1) and the locknut (4) and turn screw (3) clockwise to take up the slack. Tighten the screws and locknut and test for mesh. This adjustment should be carried out with the road wheels in the straight ahead position.

On this style of steering there is the minimum back-lash in the straight ahead position, the back-lash increasing to the full lock.

It is advisable to have these adjustments done by an Austin Dealer.



Austin Taxi Steering Box.

1, 3 and 4—Mesh Adjustments. 2—End Cover Nuts. 5—Cross Shaft Lock-nut.
A—Oil Plug. B—Shims.

Relining the Brakes.

For relining the front or rear brakes, first remove the wheel, the hub cap, and the axle nut under the cap. Extract the hubs with the hub extractor, screwed on in place of the cap, by turning the centre screw of the extractor so that the hub and bearings with the brake drum are pulled clear off the axle or keyed shaft, leaving the brake shoes accessible. Unhook the springs and remove the shoes from the cam and pivot pins.

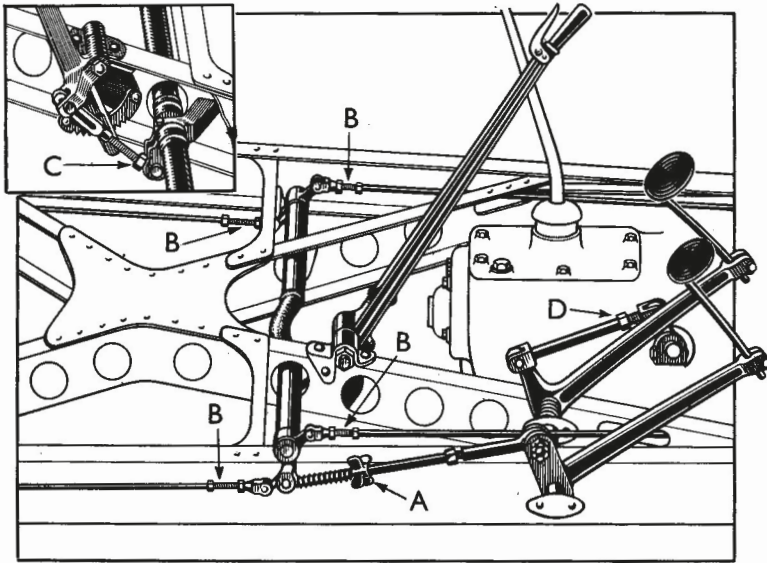
Remove the old linings by punching or drilling out the rivets. The new brake linings should be clamped to the shoes while the rivetting is in progress, as it is essential that they should bed down on the shoe over their whole area.

Chamfer the end of the new linings about $\frac{1}{4}$ in. each end. Replace each shoe in the same position as it was before removal, and, on the rear axle, do not forget to insert the key in the shaft if it has been removed.

It is necessary to reline all four brake shoes on the one axle at the same time. After the relining it will be necessary to slack off the brake adjustment before the hub and brake drum can be replaced.

When replacing the hub make sure that it is right home in position, then tighten the axle nut and lock it with a split pin.

Finally re-adjust the brakes.



H.12/4.T.5.

Brakes and Clutch Adjustment

A Brake Wing Nut
B Brake Rod Adjustment

C Handbrake Adjustment
(nearside view)
D Clutch Adjustment

Brake Adjustment.

The hand and the foot brake systems are interconnected so that when the handbrake is used the foot brake pedal is depressed. By means of a sliding link use of the footbrake does not interfere with the handbrake lever. Both brakes operate on all four wheels.

Main adjustment to make up for wear is made by turning a wing nut under the floor boards by the driver's seat. Adjustment is necessary when the foot pedal can be depressed nearly to the floorboard. The brakes should be on when the pedal is depressed about two inches.

When the pedal is up the brake shoes should be free of the drums. This can be tested by tapping the shoes with a spanner.

Individual adjustment at each wheel is provided on the brake rods at the connections to the cross shaft.

The handbrake lever should have a free movement of one notch on the quadrant before it commences to operate the brakes and should not be slack enough to be pulled back to the last notch. It is adjusted by turning, half a turn at the time, a self-locking hexagon nut on the rod between the handbrake and the cross shaft.

It is **most important** to keep all brake movements well lubricated. Do not neglect to grease the rear brake cam spindles at each end of the rear axle.

When either the clutch or the brake pedals become very loose on their shafts the bearings must be bored and re-bushed.

Clutch Adjustment.

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 $\frac{1}{2}$ in. free movement of the clutch pedal with the fingers. Lack of this free movement is serious and does not permit the clutch to engage fully, because the pedal lever will touch the underside of the floorboard, and so prevent full contact of the clutch discs.

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 made on the tie bar between the clutch pedal and the gear box. Undo the end fork and shorten the tie-bar to make up for wear.

Clutch Slip.

If the clutch slips when this adjustment has been made, it is almost certainly due to the clutch having been misused. Foot pressure if applied to the clutch creates a certain amount of slip. (See hints on "Good Driving.")

Clutch slip highly polishes the frictional surfaces and will eventually be the cause of persistent slip and finally, in addition to burning out the clutch rings, probably also distort the centre plate and make renewal of this also essential.

Sometimes clutch slip is due to oil penetrating to the clutch as a result of over-filling the gear-box. In such circumstances, petrol can be syringed on the clutch plate to wash off the oil, so that the clutch regains its frictional characteristics.

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. Also push the clutch in and out by the pedal so that the petrol is given a washing action.

The petrol and oil should have sufficient time to evaporate or drain off through the hole in the bottom of the clutch pit.

After this operation it is advisable to lubricate the clutch withdrawal collar and the points where the declutching levers pivot as the lubricant at these points may have been removed by the petrol.

Shock Absorbers.

Andre Silentbloc friction type shock absorbers are fitted and are easily adjustable to ensure comfortable riding. No lubrication is required.

After the car has run for 100 or 200 miles the shock absorbers should be adjusted if the road springing feels too free or too harsh.

Frictional resistance is increased by turning the centre nut of each shock absorber to the right and reduced by turning it to the left. The indicator should be moved only half a graduation at the time.



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 Works are at Longbridge, on the main Bristol Road, seven miles south from the centre of Birmingham.

The normal tour of the Works occupies two hours, and appointments should be made for parties in excess of ten.

Tours commence daily, except Saturday afternoons, at 10 a.m., and 2 p.m.

Visitors should ask the Commissionaire for the Reception Department.

TOOLS AND ACCESSORIES

Double-ended spanners—

$\frac{3}{16}$ in. \times $\frac{1}{4}$ in.

$\frac{5}{16}$ in. \times $\frac{3}{8}$ in.

$\frac{7}{16}$ in. \times $\frac{1}{2}$ in.

$\frac{5}{8}$ in. \times $\frac{3}{4}$ in.

Box spanners—

$\frac{3}{16}$ in. \times $\frac{1}{4}$ in.

$\frac{5}{16}$ in. \times $\frac{3}{8}$ in.

$\frac{7}{16}$ in. \times $\frac{1}{2}$ in.

$\frac{5}{8}$ in. \times $\frac{3}{4}$ in.

Sparking-plug box spanner.

Two tommy bars.

Fan and water-pump adjusting spanner.

1 in. box spanner for gear-box, filler and drain plug.

Tappet-adjusting spanner.

Screwdriver.

Ignition screwdriver with contact breaker points gap gauge.

Tappet clearance and sparking-plug gauge.

Wheel-nut brace.

Lifting jack, with handle.

Cylinder-head joint washer.

Cylinder-head lifting screw.

Tyre pump.

Dunlop tyre valve tool.

6 in. adjustable spanner.

Spanner for third motion shaft and starting nut.

Valve spring lifter.

Grease gun with adapter.

Tyre levers (2).

Combination pliers.

Two hose connecting clips.

Hub cap and gearbox top cover spanner.

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, or through Mann & Overton, Ltd., 177, Battersea Bridge Road, S.W.11.

For our clients' convenience, we give below the names and addresses of the manufacturers or suppliers of the goods in question.

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)	Dynamos { Starters Cutouts Switchboards Lamps Batteries	} Joseph Lucas, Ltd., Great Hampton Street, Birmingham. Dordrecht Road, Acton Vale, London, W.3. and Branches.
"LUCAS" ..		

GREASE GUNS AND OIL INJECTORS.

"ENOTS" Benton & Stone, Ltd., Bracebridge
Street, Birmingham.

INSTRUMENTS.

"SMITH" ..	{ Speedometers Petrol Gauges Oil Gauges.	} S. Smith & Sons (M.A.), Ltd., Crickle- wood Works, London, N.W.2.
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LIFTING JACKS.

.. .. . R. T. Shelley, Aston Brook Street,
Birmingham:

TYRES AND TUBES.

"DUNLOP" Dunlop Rubber Co., Ltd., Fort Dunlop,
Birmingham, or
Gillingham Street, London, S.W.1.

CARBURETTERS.

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

AUTOVACS

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