

LUBRICATION:

The following oils
are recommended for
all model 8 h.p.

ROVER CARS

ENGINE :

Wakefield Castrol 'C'

GEARBOX & REAR AXLE:

Wakefield Castrol 'D'



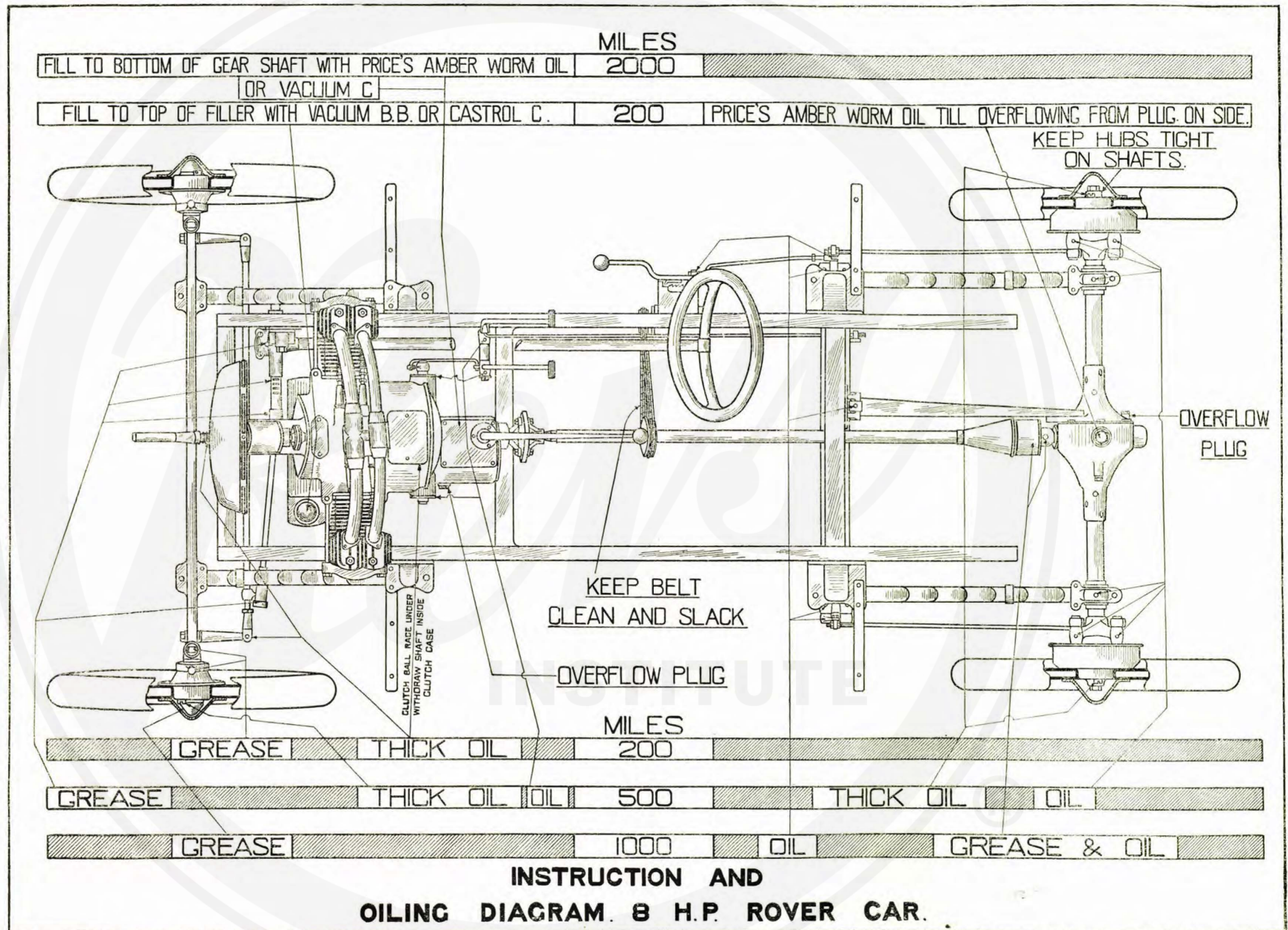
INSTRUCTIONS FOR THE UPKEEP AND MANAGEMENT of 8 h.p.

ROVER CARS

(All Models, 1921 to 1925)

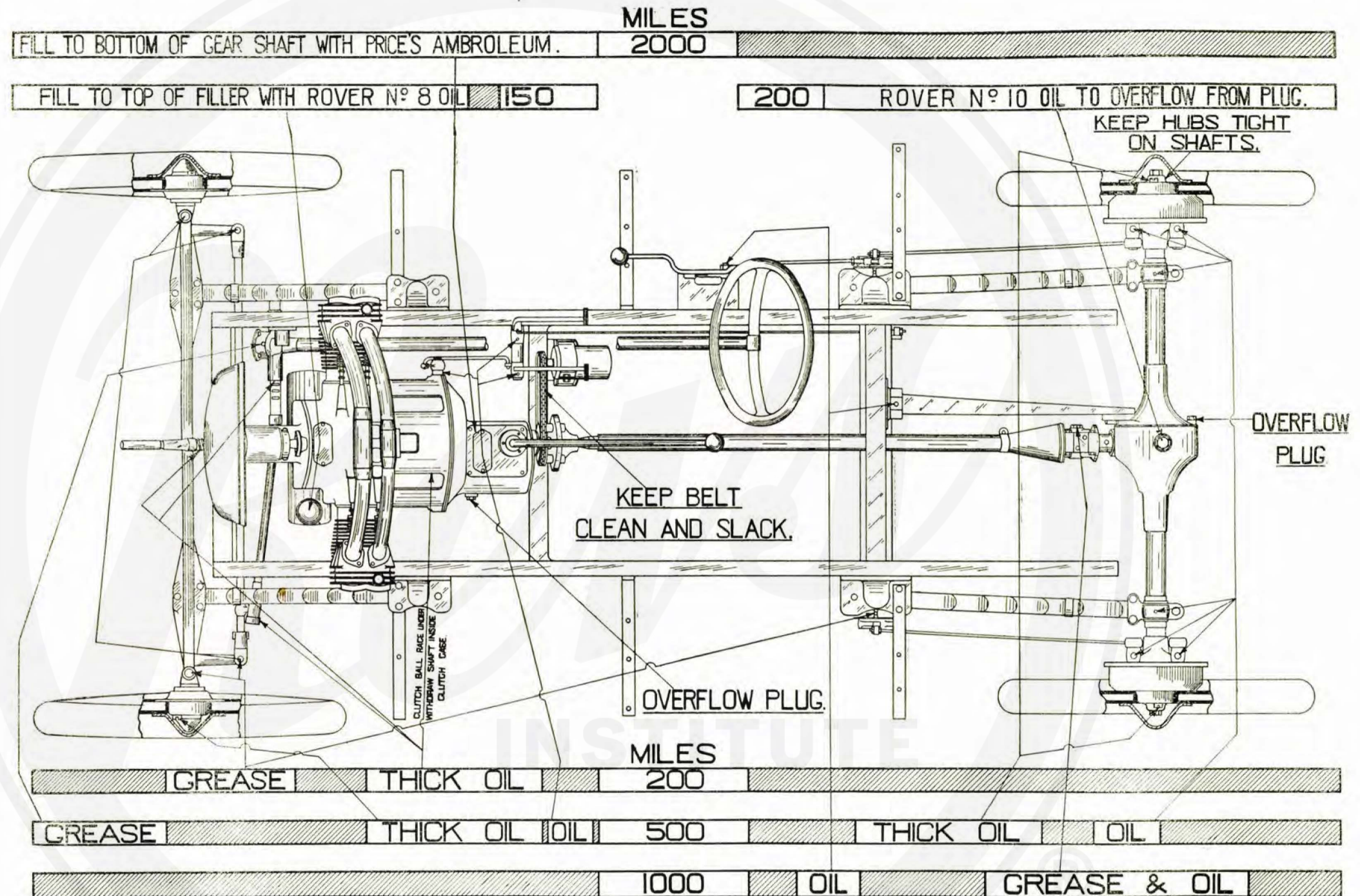
Price 2/-

LUBRICATION CHART FOR CARS — Nos. 80,001 to 85,000



NOTE—We recommend that Castrol C be used for engine lubrication, and Castrol D for gear box and back axle.

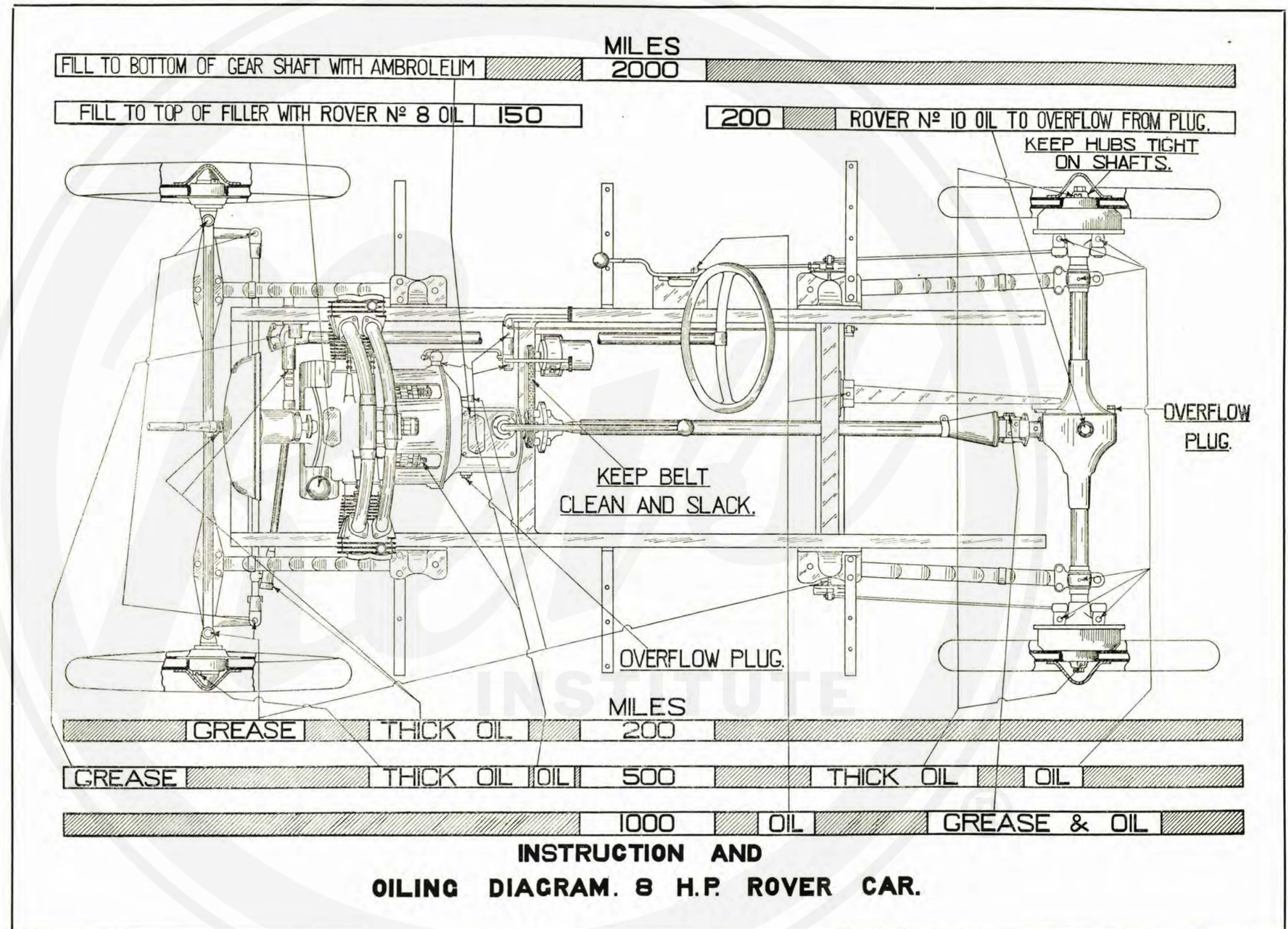
LUBRICATION CHART FOR CARS — Nos. 85,001 to 90,000



**INSTRUCTION AND
OILING DIAGRAM. 8 H.P. ROVER CAR.**

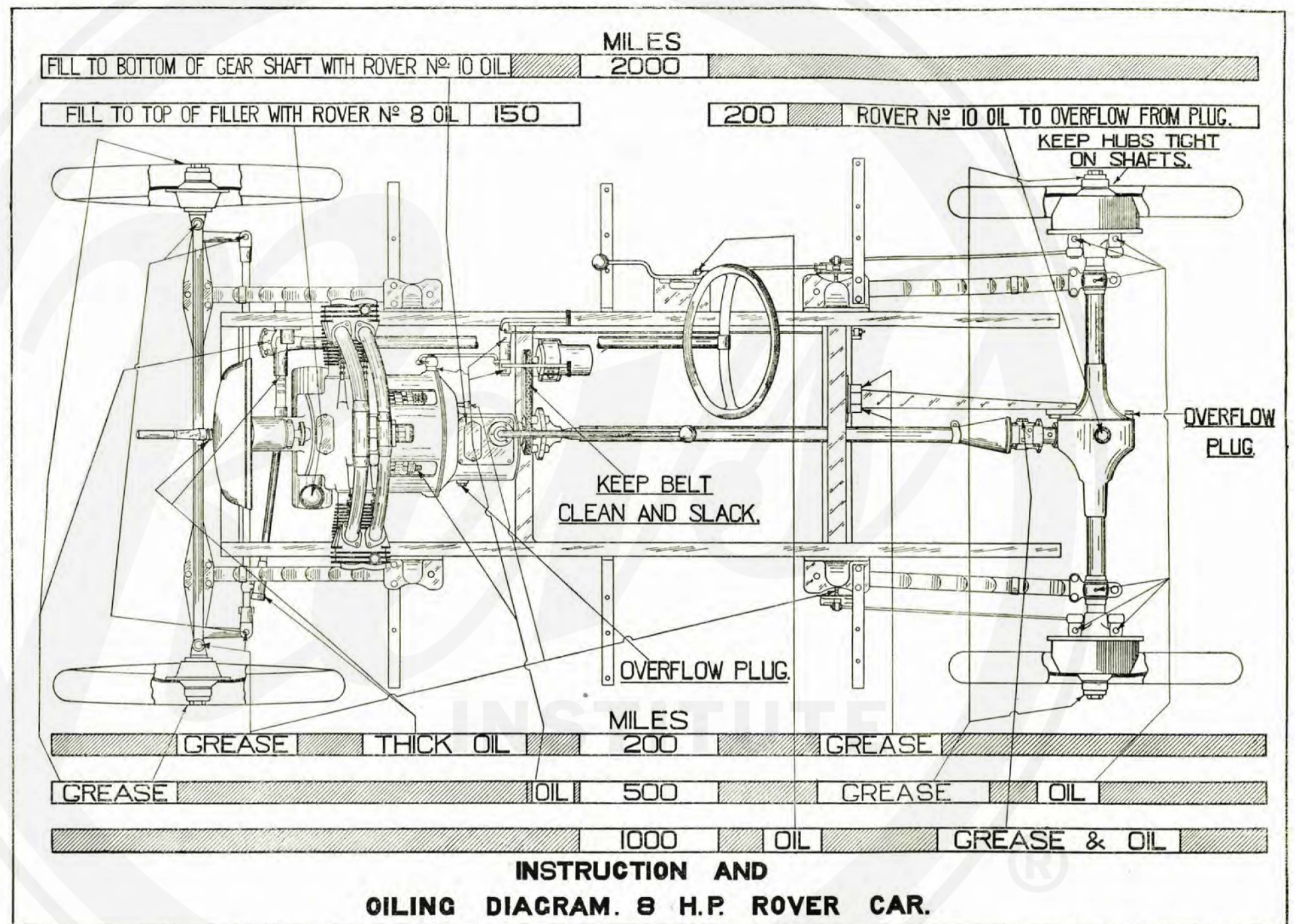
NOTE—We recommend that Castrol C be used for engine lubrication, and Castrol D for gear box and back axle.

LUBRICATION CHART FOR CARS — Nos. 90,001 to 93,700 (Approx.)



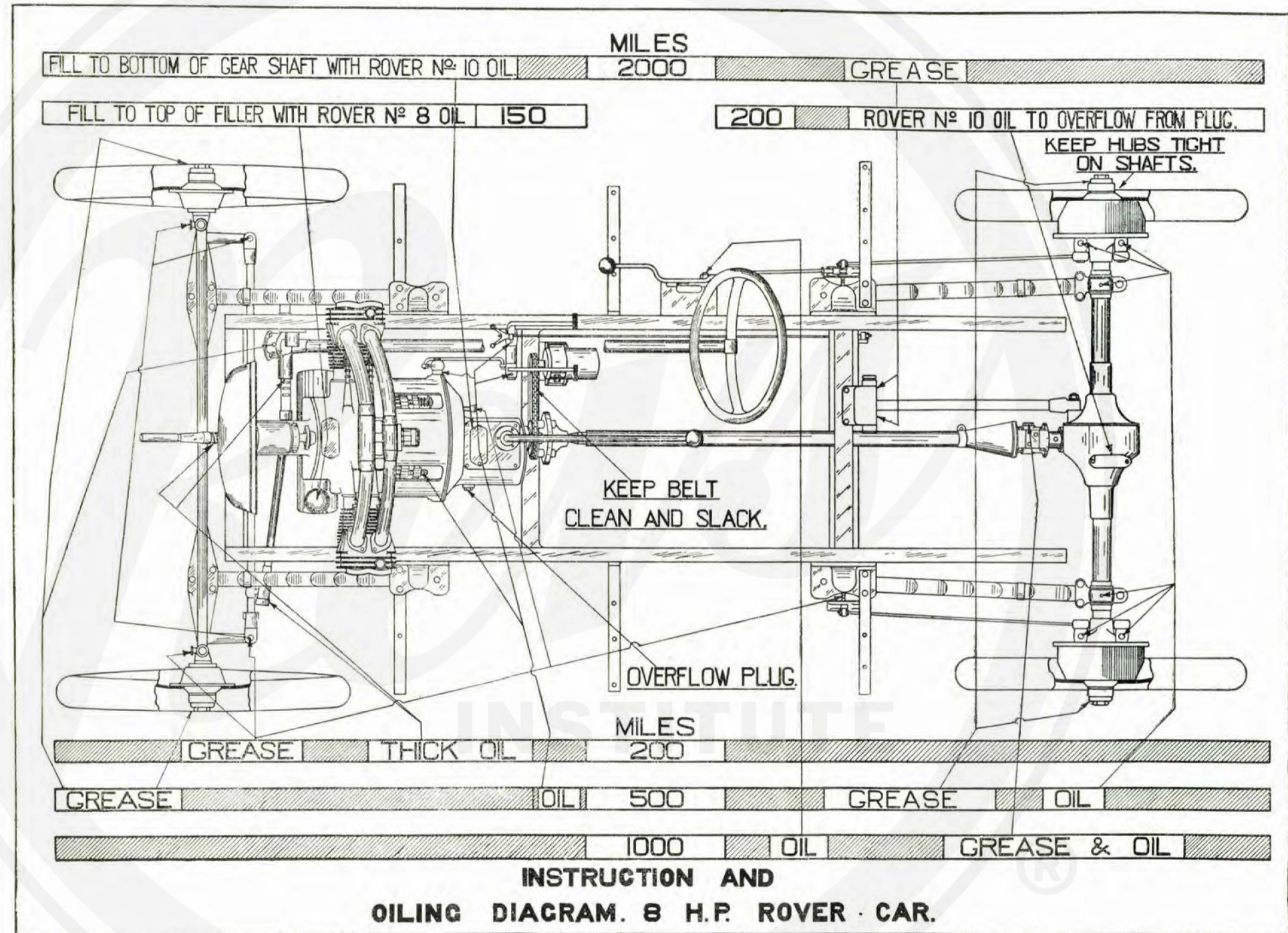
NOTE—We recommend that Castrol C be used for engine lubrication, and Castrol D for gear box and back axle.

LUBRICATION CHART FOR CARS — Nos. 93,701 (approx.) onwards of Narrow Track Type



NOTE—We recommend that Castrol C be used for engine lubrication, and Castrol D for gear box and back axle.

LUBRICATION CHART FOR CARS — Nos. 95,058 onwards of Wide Track Type



NOTE—We recommend that Castrol C be used for engine lubrication, and Castrol D for gear box and back axle.

Instructions
for the
Upkeep and
Management
of 8 h.p.

Twin-cylinder • Air-cooled
ROVER CARS

(All Models, 1921 to 1925)

Price - 2/-



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Instructions for the Upkeep and Management of 8 h.p. Rover Cars (ALL MODELS 1921 to 1925)

The following list shows the principal variations that were made in 8 h.p. Rover Cars during the several years that they were manufactured. The numbers quoted refer to the car numbers, i.e., as stamped on the plate affixed to the dash-board of the car. Always mention this number when writing to us for information or for

spare parts, and address such communications to The Rover Company Ltd., Hay Hall Road, Tyseley, Birmingham, or to The Rover Company Ltd., Seagrave Road, Fulham, London, S.W.6. At both of these addresses spare parts for all models of 8 h.p. Rover cars are available.

Principal Variations in 8 h.p. Rover Cars

Car Nos.	Description	Car Nos.	Description
ENGINE, CLUTCH AND GEARBOX.		FRONT AXLE.	
80,001—85,000	Cylinder heads and barrels secured by holding-down straps; drip-feed lubricator oil-system.	80,001—84,000	Cup and cone bearings to stub axles.
85,001—90,000	Cylinder heads and barrels secured by studs (three studs holding head to barrel).	84,001 onwards	Timken (or Skefko interchangeable) tapered roller type to stub axles.
90,001 onwards	Cylinder heads secured to barrels by five studs.	80,001—95,057	Narrow Track (3' 10").
91,501 onwards	Stroke of engine increased from 88 m/m. to 100 m/m. (NOTE.—This has no effect on the British Treasury rating for taxation purposes, which is based on cylinder bore only. All models have Treasury rating of 8.9 h.p.).	95,501—95,570	
	Central feed oiling (i.e., with pressure gauge on dash of car).	96,504—96,547	
		96,551—96,700	
		95,058—95,500	Wide Track (4').
		95,571—96,503	
		96,548—96,550	
		96,701 onwards	
91,001 onwards		BACK AXLE.	
		As above	
		TORQUE MEMBERS.	
		80,001—91,500	Plate type.
		91,501 onwards	Tubular type.
		MISCELLANEOUS.	
		80,001—89,250	Wheel size 28" x 3".
		*89,251 onwards	Wheel size 26" x 3".
		80,001—93,700	Wheels of double-disc type.
		*93,701 onwards	Wheels of single-disc type.
		80,001—92,500	Short Wheelbase (7' 4").
		92,501 onwards	Long Wheelbase (7' 10").
		*96,720 onwards	Balloon tyres.
		86,261 onwards	Flywheel geared for starter.
			(NOTE.—Starters can be supplied where not originally fitted for cars of this type, but for earlier cars without geared flywheel the fitting of a starter is impracticable).
OIL PUMP.			
80,001—95,750	Vane type pump.		
95,751 onwards	Gear type pump, fitted with pressure release.		
PISTONS.			
80,001—92,500	Gudgeon Pins $\frac{5}{8}$ " diameter.		
92,501 onwards	Gudgeon Pins $\frac{13}{16}$ " diameter.		
GEARBOX.			
94,501 onwards	Case-hardened steel gears (gears marked "F.N."). Spares must be specified.		

NOTE.—It will be seen that, in the foregoing list, we mention Car Numbers, and not year of manufacture. When corresponding with us regarding your car, there-

* Approximate only.

fore, please follow the same procedure, as otherwise mistakes are apt to arise. The number is stamped on a plate on the dashboard.

Blue Prints for Special Operations

When further information not contained in this booklet is desired in connection with any special operations that may be in hand, we are always pleased to assist with advice. We have compiled a number of Blue Prints dealing with the majority of operations, and the following

is a list of those most frequently called for. Please enclose a stamped addressed envelope with your request, and mention the reference number shown against the description. If the print you require is not shown below, it is nevertheless probable that we can supply it.

Blue Print No.	Description
5	Diagram of "non-return valve" of sight-feed lubricator.
10	Diagram of vane type oil pump, with adjustment instructions.
29	Conversion of drip-feed to central-feed oiling system.
31	Method of removing piston.
48	Method of fitting valve guides.
49	Diagram of valve and magneto timing.
69	Fitting of "scraper" piston rings to reduce oil consumption.

NOTE.—Applications for any of the above blue prints should be addressed to The Rover Company Ltd., Hay Hall Road, Tyseley, Birmingham. Please mention the

Blue Print No.	Description
45	Adjustment of springs on torque member
56	Method of removing Universal Joint body.
20	Application of rear wheel hub extractor.
9	Adjustment of front wheel bearings.
15	Setting of front wheels (track).
17	Method of greasing road springs.
59	Steering and ball-joint assembly.
76	Grease gun instructions.
81	Fitting of speedometer belt.

number stamped on the plate on the dash of your car, and enclose a stamped addressed envelope. We make no charge for the blue prints.

ALWAYS MENTION CAR NO. WHEN COMMUNICATING RE YOUR CAR

Section 1

THE ENGINE

Part 1 — Cars Numbers 80,001 to 85,000

The engine is 85 m/m. x 88 m/m. bore and stroke, two cylinders, and the Treasury rating 8.9 h.p.

The illustration (Fig. 1) depicts the front view of the engine in part section. The oil sump E should be filled with Castrol C to the bottom of the filler F. The oil is pumped through the pipe D into the oil indicator J, and the adjusting nut H should be set to deliver about 30 spots per minute when the engine is 'ticking over' but change into an almost continuous stream upon acceleration.

The nuts G on holding down bolts should be inspected occasionally to see that they are tight. The valve tappet is shown at K, and this may be adjusted in relation to the end of the valve by means of adjusting nut M after slackening locking nut L. Do not forget to tighten up locking nut L after any adjustment, as it is extremely important, if it is desired to escape valve troubles, that the clearance between the valve tappets and the end of the valve stems should be eight-thousandths of an inch when the engine and valves are cold. These clearances should be frequently checked over.

In order to remove the gudgeon pin it is only necessary to slack back the bolt at the top end of the connecting rod with the special spanner supplied. It should not be completely removed, and is in fact prevented by means of a split pin from falling out should it ever become slack. The gudgeon pin may then be pushed through with the fingers. Great care should be taken in replacing this to get it dead central. There are brass pieces at each end to prevent it scoring the cylinder should it become loose. This bolt locking the gudgeon pin should be tightened up as tightly as possible every time the cylinder has been taken down, care being taken not to twist the connecting rod in tightening the bolt.

LUBRICATION.

The oil circulation is maintained by a sliding vane rotary pump, driven by worm gear from intermediate timing wheel. It is very important that the lubricating system is kept working correctly, otherwise serious damage may be caused to the engine.

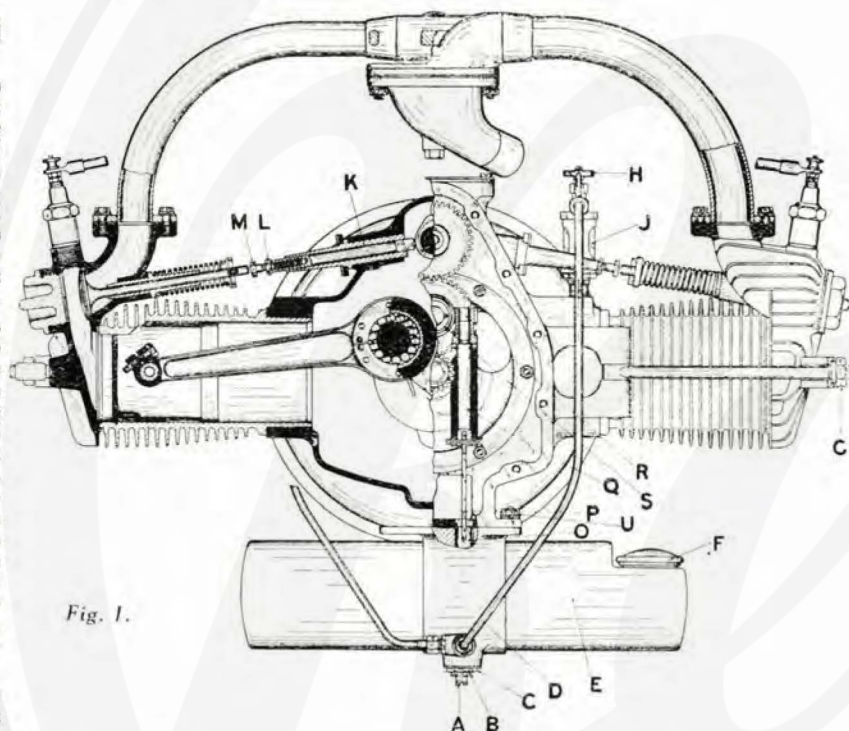


Fig. 1.

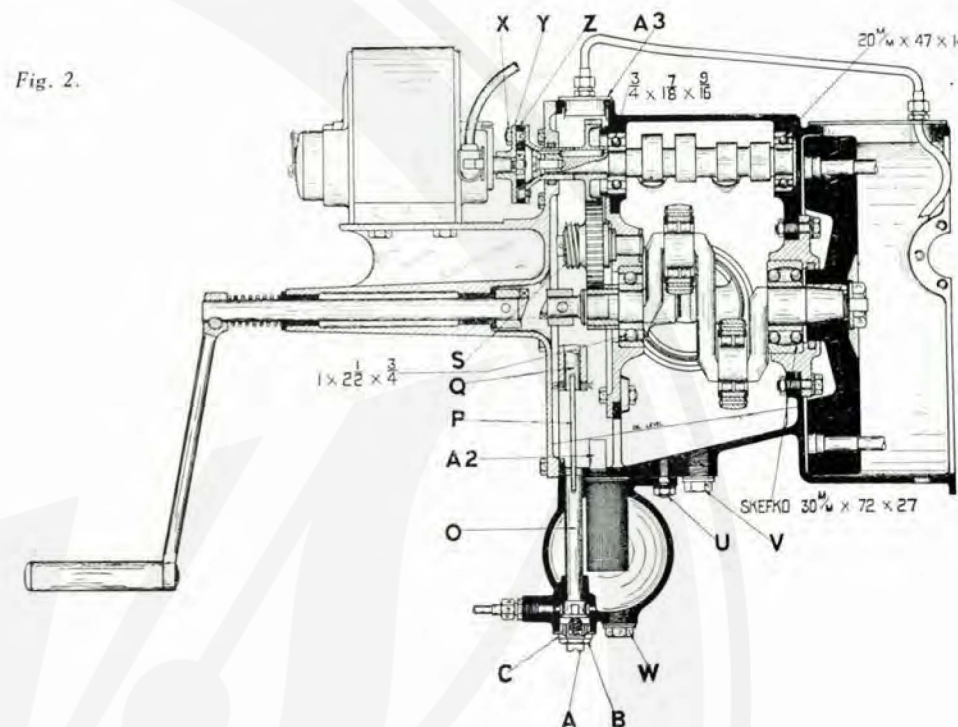
Oil is drawn by pump from the oil tank E and delivered by pipes to the drip indicator on near side cylinder and to the off side of the timing gear case. The greater portion of the oil passes to the latter point and is collected in the main engine case to form an oil bath for the big-ends of the connecting rods.

The level of the oil in the crank case is kept constant by means of the pipe shown at "A2" in Fig. 2. Any excess of oil collected in crank case overflows through strainer back into oil tank, where it is cooled for further use.

The second illustration of the 8 h.p. Rover engine shows the stiff crankshaft carried on a single-row ball bearing at back. It will be noticed that the large ends of the connecting rods are fitted with roller bearings. The camshaft driving the magneto through the adjustable coupling X, Y, Z, is clearly indicated, as also the oil level in the engine draining through the filter into the sump, which may be emptied and cleaned through nut W at the bottom.

SECTION 1.—ENGINE (continued).

Fig. 2.



The accessibility of the oil pump is illustrated at A, B, C. The oil is pumped through the pipe to the oil indicator shown in first illustration. It is never necessary to take off the pump unless the oil tank is removed by undoing nut U and two bolts (not shown).

It will be noticed that the engine is set in the frame at an angle to keep the whole of the transmission to the back axle as nearly as possible in line when in use so that very little work is thrown on the universal joints.

The cylinder heads will require removing every 800—1,000 miles for the purpose of decarbonising. When replacing be careful that all faces are clean and that even pressure is given by each holding down bolt. This can be checked by seeing that the yoke is square and the nuts on each side an equal distance or number of threads down the rods. After bolting down the cylinder head, run the engine slowly for a few minutes, and then give each nut a final turn. After doing this it is exceedingly important to see that the clearance between the valves tappets is correct.

TO CLEAR OILING SYSTEM.

Every 1,000 miles.—Take out plug W at bottom of oil tank (shown in diagram) and drain all oil out. Replace plug, put half pint of paraffin in tank, rock car from side to side, re-drain, replace plug tightly, refill tank with new oil.

Every 4,000 miles.—Remove oil tank completely by nuts U (shown in both illustrations). Take plug V out of engine. Unscrew oil level pipe A2. Replace both

plug and oil level pipe, put in one pint of paraffin, roll car from side to side, remove both plug and pipe again, allow paraffin to drain out, replace plug and pipe, and be sure both are tight.

Unscrew cap of pump, withdraw spring and plate and spindle complete with vane. Take care not to lose any of these pieces, and replace in same order after clearing tank and strainer as described below. Make sure that oil joints at bottom of pump are tight before replacing tank.

Clean oil strainer thoroughly in petrol, and do NOT wipe with cloth. Wash inside of tank with paraffin.

After re-assembling pump into tank, re-fit tank to engine case, care being taken to get driving tongue "P" into slot in top of pump spindle before tightening up nuts "U." A tight joint must be made between oil tank and engine case. If brown paper joint is torn, another should be cut and steeped in oil before fitting.

SIGHT FEED INDICATOR.

To clean sight feed indicator remove from engine and strip. Care should be taken not to lose any of the small parts. In re-fitting to engine make sure the leather washer between lock nut and case is in position.

NOTE.—Service Print No. 5 (see p. 2) deals with the "non-return" valve of the Sight Feed Indicators.

When re-oiling engine after clearing oiling system as described, put 1/2-pint of oil through timing gear case cover (A3) and 2 1/2 to 3 pints of oil into tank at F.

SECTION 1.—ENGINE (continued).

Part 2

Cars Numbers 85,001 to 90,000

The alterations in this series over those dealt with in Part 1 are as follow: (1) The cylinder heads and barrels are secured by means of studs instead of the holding down straps G (Fig. 1); (2) A sight-feed lubricator is fitted to each cylinder instead of to one only, and (3) the rear bearing on crankshaft is of larger size. Otherwise the instructions already given for the engines of cars Nos. 80,001 to 85,000 apply in their entirety to this series.

An adjustable gland is provided at the front end of the camshaft and oil leaks at this point may be cured by screwing up gland nut 6 (Fig. 4).

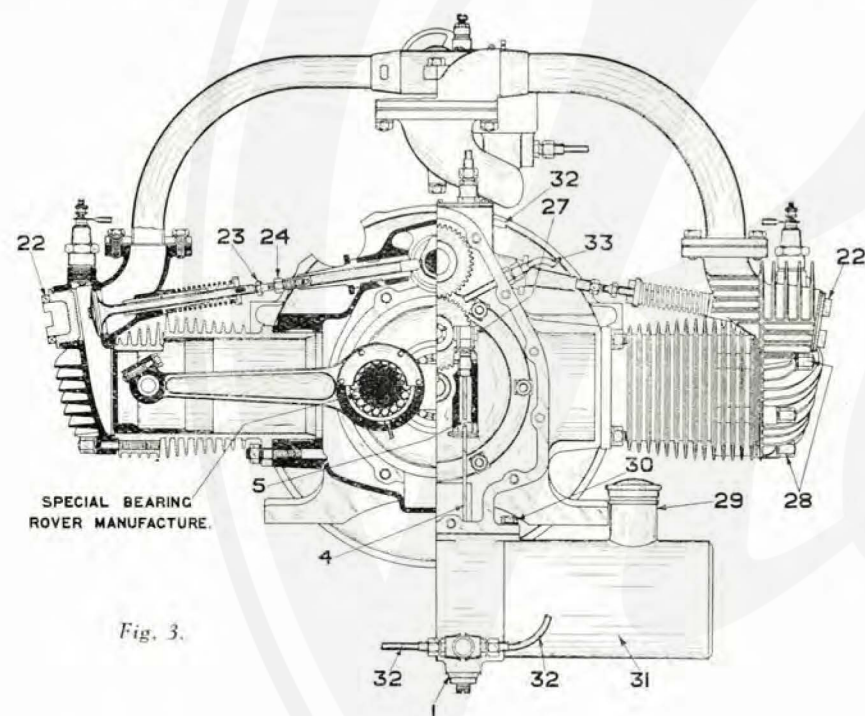


Fig. 3.

Part 3

Cars Numbers 90,001 to 91,000

The only difference between the engines of these cars and those referred to in Part 2 is that the cylinder head is secured to the barrel by five studs instead of three. The instructions given in Part 1 apply, and Part 2 should be read in conjunction.

Part 4

Cars Numbers 91,001 to 95,750 (approx.)

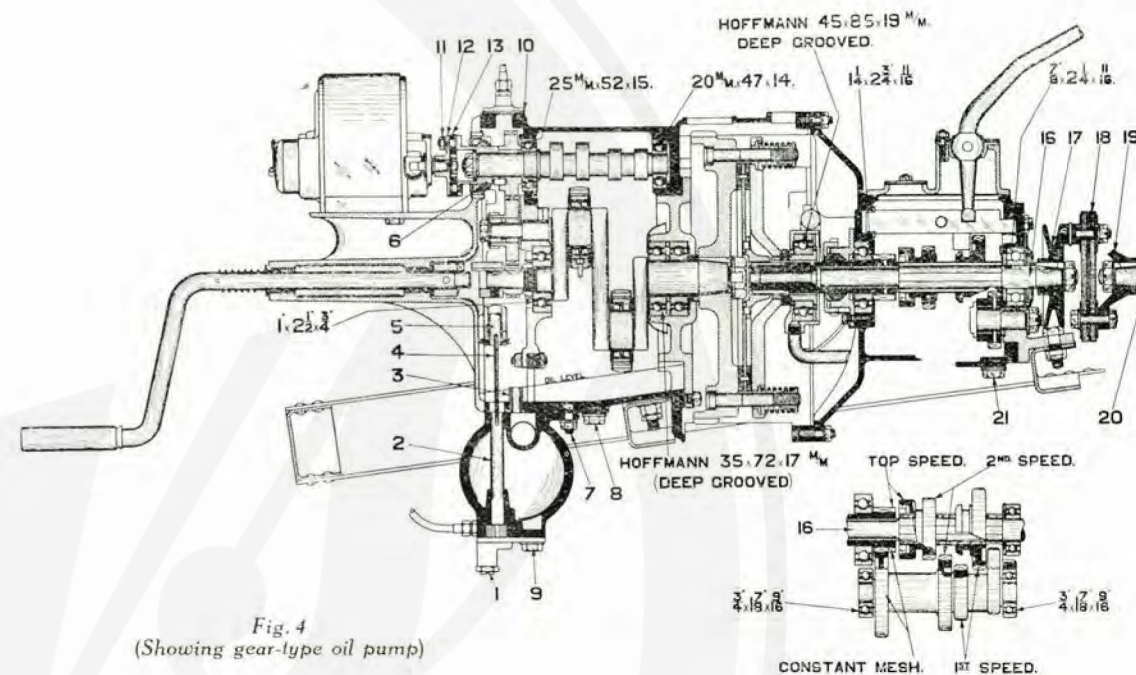
The "long" (100 m/m.) stroke engine came in during this series, cars Nos. 91,001 to 91,500 having the "short" (88 m/m.) stroke, the remainder of the cars being of long-stroke type.

The general principle of the engine is the same as the previous types, but oil circulation is on "central feed" system. The sliding-vane pump is driven from the intermediate timing wheel by worm gearing (27, Fig. 3). Oil is drawn from the tank 31 and delivered by pipe 32 through the crankcase at the top directly over the centre web of the crankshaft (and also by a branch pipe 33 to the side of the crankcase). The oil is thus picked

up at the top of the crankcase and thrown to No. 2 (or near-side) cylinder by reason of the rotation of the crankshaft. Surplus oil collects in the sump, the level of which just allows the dipper on No. 1 connecting rod to pick up oil and lubricate No. 1 cylinder. By this means both cylinders receive an equal amount of oil. The level of oil in crankcase is kept constant by means of a pipe (as at A2, Fig. 2). Any excess of oil collected in crankcase overflows through strainer back into oil tank. It is never necessary to take off the pump unless the oil tank is being removed for cleaning (see corresponding instructions under Part 1).

SECTION 1.—ENGINE (continued).

Part 5—Cars Numbered 95,751 (approx.) onwards

Fig. 4
(Showing gear-type oil pump)

So far as general instructions are concerned, the foregoing Parts apply, the only alteration being that the type of oil pump is changed from sliding-vane to gear as shown driven by the shaft 2 (Fig. 4). To remove oil tank, take off nuts 7 (Fig. 4) and 30 (Fig. 3). Unscrew cap of pump and take out gearwheels. Replace in same order after cleaning tank and strainer as described below. Make sure that oil joints at bottom of pump are tight before replacing tank. Clean oil filter thoroughly with petrol and do not wipe with cloth. Wash inside of tank with paraffin. After re-assembling pump into tank re-fit tank to engine case, taking care to fit driving tongue 4 (Fig. 4) into slot at top of pump spindle before tightening up tank holding nuts. When re-oiling engine after cleaning out, put 1/2 pint Castrol C through gear case cover 10 (Fig. 4) as well as filling tank in usual way.

THE OIL PRESSURE RELEASE VALVE.

To prevent damage to the oil pressure gauge when first starting from cold, a "pressure-release" valve is fitted to the gear type oil pump. The adjustment is by means of screw 1, Figs. 3 and 4, and should be carried out when the engine is COLD, so that a pressure of 15-20 lbs. per sq. inch will be indicated when the engine is running fast.

The pressure will drop to 2-4 lbs. when the oil becomes warm but this is quite in order and indicates ample circulation.

Care should be taken to tighten the lock nut securely after adjustment.

Please bear in mind that, if the information you require should not be in this booklet, we are at all times only too pleased to furnish any advice that may be helpful. Please always mention number of your car, and address letter to the Rover Company Ltd., Tyseley, near Birmingham.

Section 2

MAGNETO TIMING

The correct magneto timing for all 8 h.p. Rover cars is for the spark to occur at full advance when the piston is 12 m/m. ($\frac{1}{16}$ in.) before top dead centre. Small variations can be obtained by adjusting the relative positions of the steel flanges on the magneto and camshaft, between which is interposed a fibre disc 13 (see Fig. 4). By slackening the nut 11 it will be found that the pin may be slid sideways in a slot in the flange 12. This can be adjusted to suit any special requirements.

If the magneto is removed for any reason, it is important to keep the fibre coupling in position on either of the steel flanges. This is important, as if the fibre coupling for any reason is turned the opposite way round, then, when re-assembling, the cylinders will be firing in the wrong order and at the wrong time.

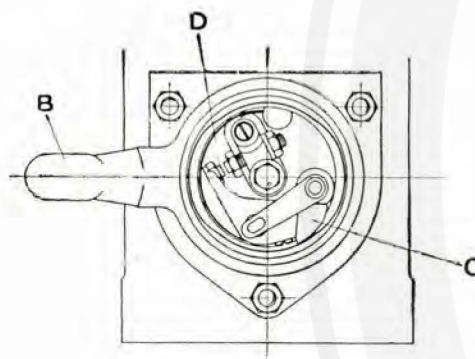


Fig. 5. Magneto contact-breaker.

If necessary to re-time the magneto, set the flywheel with the mark SFA, which is stamped on the flywheel of all except the very earliest models, in line with the top centre line of the crankcase. The engine is now in correct position for firing on whichever cylinder has both valves closed. Remove the carbon brush holder on that side of magneto and see that brass segment of slip ring is visible: if not, rotate magneto by means of fibre disc one half turn until brass segment comes into view. Set ignition control lever to fully advanced position, and the magneto timing will be correct if, with fly wheel in the position stated, the contact breaker points are just breaking (as at D, Fig. 5).

If this setting cannot be obtained by means of the adjustment mentioned in the first paragraph of this section, it will be necessary to remove the flange 12 (Fig. 4) from the magneto and turn it upon the taper shaft until the correct position is found. The easiest way to do this is to remove the magneto, loosen the flange on

shaft (this is generally most easily done, after loosening the nut, by driving two screwdrivers, one each side of the boss, between it and the body of the magneto), replacing the magneto in position, setting the flywheel to the mark referred to, and then turning the contact breaker of the magneto in the normal direction of rotation (i.e., clockwise) until the points are just breaking. Carefully remove the magneto with its flange, seeing that the position of the contact breaker does not slip while doing so, and tighten up the nut on the end of the shaft. Then re-assemble and check the position of firing by turning the engine over slowly until the points are just breaking. The measurement then from the top of the cylinder to the top of the piston should be 12 m/m. ($\frac{1}{16}$ in.). It is at this point that it is generally found necessary to make adjustments by means of the nut 11, in order to correct any slight error.

In fixing the magneto to the base, it is very necessary to see that the two flanges and the fibre disc are all running concentrically. Unless this is done the magneto shaft will not be in a straight line with the camshaft, and the result will be uneven firing on the two cylinders. This hint should be specially noticed in carrying out the timing operation described above. Do not forget that the timing lever on the magneto must be set, and held, as far down as possible during the whole of this operation, otherwise the final result will give a spark which is too far advanced.

NOTE.—On very early type engines, the letters SFA referred to in the foregoing were not stamped on the flywheels. On these, the letters TC are stamped, and when this line is set to coincide with line on clutch case opening, the pistons are on top dead centre, NOT in the firing position indicated by the letters SFA on later models. Service blue print No. 49 will be found helpful for timing these early type engines. (See p. 2).

CABLE CONNECTIONS.

Care must be taken that the cables are correctly connected to the two cylinders. When the cylinder which has both valves closed is approaching the top of its stroke, it is reaching the firing point, and by removing the carbon brush holder on the side of the magneto the brass segment in the slip ring should be visible. If not so, the magneto is then firing on the wrong cylinder, and presuming that it has been correctly timed with regard to piston position, this error can be corrected by turning round the fibre disc 13 (Fig. 4) and rotating the magneto through half a turn.

LUBRICATION.

The ball bearings require only the least possible amount of oil. A few drops at each of the provided places, once or twice a month when in regular use, is all that is required.

SECTION 2.—MAGNETO TIMING (continued).

ADJUSTMENTS.

The only adjustments necessary are at the platinum points of the contact breaker. The proper distance of the gap is 0.5 millimetres, or roughly $\frac{1}{4}$ in. full. Too great a gap will advance the timing.

The whole contact breaker can easily be removed, if necessary, but, owing to the arrangement of the contact breaker, the adjustment can usually be effected in position. A special small spanner was provided with each machine, and the gauge on this is the correct distance for the break of the points.

These points only need adjustment at very long intervals, and we warn users against unnecessarily interfering with the setting. *Points must only be dressed with a dead-smooth file, and the least possible taken off.*

IN CASE OF IGNITION TROUBLE.

Before interfering with the magneto, verify that the sparking plug, the cable and the connections are correct.

If these are in order, turn the engine slowly by hand and watch if the contact breaker lever works properly. This is bedded in a fibre insulating bush, and in moist weather there is an occasional danger of the material swelling. If this happens ease it out very slightly. *Do not apply oil to this bush.* This is the most common fault with all magnetos, and should be watched.

Do not take the magneto to pieces needlessly. It is easily possible to damage it. It is always advisable to return it to the works if for any reason it is to be overhauled.

MOST IMPORTANT.

If it is necessary to take out the armature, first see that the carbon collectors and safety gap screw are removed, or the collector ring will be broken during the removal.

Keep all parts clean and free from oil, particularly the contact breaker. Oil or dirt between the points will give instant trouble.

To Start Engine

- 1.—See that gear lever is in neutral (i.e., able to move sideways).
- 2.—See there is petrol in the tank. (This holds five gallons. Any good brand of petrol or benzole mixture may be used).
- 3.—Turn on petrol. (Tap is inside driving compartment, beneath tank).
- 4.—Retard ignition about halfway (ignition lever is right-hand lever below steering wheel. It is fully advanced when drawn towards driver).
- 5.—Open throttle about four notches (throttle lever is left-hand lever below steering wheel. Throttle is closed when lever is drawn towards driver).
- 6.—With ignition switch "off," rotate engine by hand about three or four times, pulling out air-strangler knob which protrudes through front of "radiator."
- 7.—Switch ignition "on," and give starting handle a smart pull-up with a movement which disengages the handle when top of stroke is reached. NEVER "SWING" THE ENGINE WHEN IGNITION SWITCH IS "ON."
- 8.—When engine has started, it may be run for a few moments with air-strangler knob pulled out until it has warmed up somewhat.

When Restarting with Hot Engine

- 1.—Do not make use of air-strangler.
- 2.—If difficult to start, mixture is probably too "rich." With ignition switch "off," open throttle fully, rotate engine several times, then close throttle, switch "on," and pull handle smartly up.
- 3.—Do NOT open the throttle too wide when starting a hot engine. Two or three notches is usually ample.

When using Self-Starter

- 1.—Do not exhaust battery needlessly.
- 2.—Swing engine once or twice by hand in very cold weather before switching "on" and using self-starter.
- 3.—Keep throttle closed when bringing starter into action, opening it to the necessary degree when the starter has the engine turning. This procedure reduces the load on the starter motor and battery.

Section 3

THE CARBURETTER

All 8 h.p. Rover cars were fitted with Smith carburetters manufactured by Messrs. S. Smith & Sons (M.A.) Ltd., Cricklewood Works, London, N.W. Cars numbered from 80,001 to 95,100 (approx.) had the two-jet type of carburetter, and later models the single-jet type.

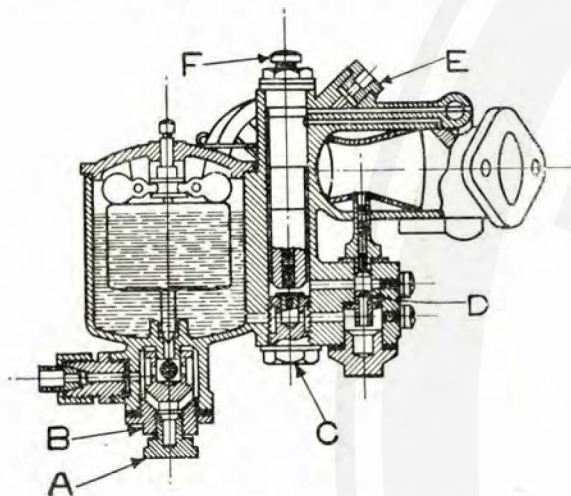


Fig. 6. The Smith Two-jet Carburetter.

TWO-JET SMITH CARBURETTER.

There being no moving parts in the carburetter, it is extremely unlikely that anything will go wrong with it, the most important point being to see that it is kept perfectly clean.

Great care should always be taken when replenishing the fuel tank, either with petrol or benzole, to see that a funnel with a fine gauze is used to prevent water and dirt entering the tank and so on to the carburetter. It is a fact that however careful one may be some water or fine particles of dirt are bound to get through, and it is advisable to remove the small plug A, say once a month, and by turning the petrol tap on momentarily flush out any foreign matter that may have collected. If this precaution should have been neglected and a stoppage occur, the whole filter body should be removed by means of nut B and thoroughly cleaned.

The recommended jet sizes are as follow: Auxiliary jet (C) size 40; Main jet (D) size 45. When using a mixture of half benzole and half petrol or all benzole, it is very important that a smaller main jet is used. The size found most suitable is No. 40; this can be obtained through any of our depots or agents. It should be noted that in tuning up it is not necessary to alter the small auxiliary jet, this being a fixed size.

To obtain the best slow running or "Ticking Over" when the engine is running idle, the adjusting screw on the throttle control lever should be set so that the engine will run as slowly as possible without fear of stopping, and after locking this screw securely by means of the small lock nut, the best mixture to enable the engine to run evenly can be obtained by turning the slow running adjusting screw F either up or down according to whether a weaker or richer mixture is desired. A very small movement of this screw makes a big difference; usually one complete turn either way is all that is necessary. When the best position has been found, securely lock the screw in position by means of the lock nut.

Should the engine refuse to run slowly, it may be due to the slow running tube having become blocked up. To ascertain if this is so, remove slow running device bodily by slacking the small screw at side, then blow through the bottom, which should be sufficient to remove any obstruction. As the petrol orifice in this tube is very small, considerable resistance will be felt when blowing through this with the mouth, but on no account must anything metallic be forced through this hole which would tend to enlarge it. It should be borne in mind that a large number of other things affect the slow running, such as plugs, valves, air leaks, etc., etc.

SINGLE-JET SMITH CARBURETTER.

Fig. 7 shows the single-jet type carburetter fitted to late model 8 h.p. cars.



Fig. 7. The Smith Single-jet Carburetter.

SECTION 3.—THE CARBURETTER (continued).

TO CLEAN OUT CARBURETTER.

To remove the main jet, should dirt have caused a stoppage, unscrew plug "B." The jet will come away with the plug, and can be detached therefrom in the manner shown in Fig. 9, using the special screwdriver supplied (Fig. 8). This screwdriver is also made to fit the slot in the diffuser, which lies immediately above the jet when the latter is in its normal position, being reached by thrusting the blade of the screwdriver upwards through the orifice from which the plug "B" has been removed. It is very important that no other small screwdriver is used to detach the diffuser, as it is almost certain to be damaged by a pointed tool.

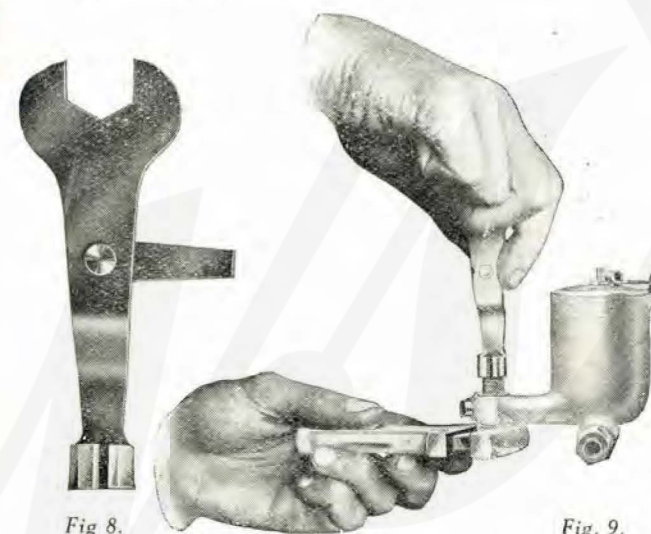


Fig. 8.

Fig. 9.

When the diffuser is withdrawn, it will be seen that the slow-running tube has come away with it; it is unnecessary to remove this tube from the diffuser for cleaning purposes, as an inspection will quickly reveal the presence of dirt. Should any be present, wash the slow-running tube with petrol and blow through the small holes in the centre of the diffuser; on no account must any instrument be used which might enlarge the holes, as they are of a certain fixed size and must not be altered.

The slow-running jet is accessible for cleaning, without removing the main jet, by detaching screw "C" and inserting a piece of fine wire through the jet, which is immediately below. The size of this jet, also, must not be altered. It is advisable to verify the cleanliness of this jet if the engine should refuse to "tick over."

STANDARD JET SIZES.

As sent out from the works, the jet fitted was size 135 and the choke tube size 19. This combination we have found to give best all-round results on petrol. In addition the slow-running jet supplied as standard is size 35, and the air plug "Z" .062.

It may be found desirable to use a smaller jet, say 125, if a big percentage of benzole is used, or the car is habitually in use at high altitudes.

SLOW RUNNING.

To obtain best slow running or "Ticking Over" when engine is running idle: with throttle nearly closed, adjust screw A by screwing up or down very slightly (a quarter turn is usually sufficient)—upwards gives weaker and downwards richer mixture—until engine is obviously running well and evenly, then adjust screw on throttle control lever X until arriving at the position where the engine is running as slowly as possible without giving indications of stopping, then lock screw X with locking nut provided on same.

General Instructions

(applicable to both types of Carburetter)

DIFFICULT STARTING WITH HOT ENGINE.

After a long run, when the engine has got particularly hot and then a short stop made, it is sometimes found difficult to restart the engine. In this event the engine should be switched OFF and the throttle fully opened, then turn the engine round slowly a few times, after which close the throttle, switch "ON," and with one smart pull up of the starting handle the engine should immediately start. In this case, when the engine is hot, do not make use of the small knob protruding through the radiator; only use this when the engine is cold.

STARTING FROM COLD.

When starting the engine from cold and using the air shutter (by pulling out knob in radiator or on dash when a starter is fitted); directly the engine is warm make certain to push the rod in as far as it will go, otherwise if the car is run with the rod out the petrol consumption will be excessive and there is a risk of damaging the engine by getting pure petrol into the cylinders.

NEVER ATTEMPT TO "SWING" THE STARTING HANDLE WITH STARTING SWITCH "ON," OWING TO RISK OF BACK FIRING, WHICH MAY CAUSE SERIOUS INJURY TO THE WRIST. The best procedure is to turn the engine over a few times with switch "off," and then, having switched on, to give the starting handle smart pulls up until engine starts.

GENERAL CARBURATION HINTS.

It is advisable to remove frequently the filter (A, Fig. 6 and Y, Fig. 7) to let out any dirt that may have accumulated. If this precaution has been neglected, take out filter and thoroughly clean, also remove jets and see that they are clear.

Don't set the slow running mixture too weak when the engine is hot. You gain nothing in consumption, and the engine will be difficult to start when cold.

Don't fill up petrol tank without an efficient funnel.

Don't reamer out or hammer up jets.

Don't forget to write us for any information you may require.

Don't suspect the carburetter directly anything appears to be wrong; it has no working parts, and if kept clean is never likely to give any trouble.

Section 4 THE CLUTCH

All 8 h.p. Rover cars are fitted with clutch of dry-plate type, i.e., no lubrication of the clutch surfaces is required. It is, however, necessary to lubricate the bearing (see Oiling Charts) which takes the clutch thrust load when the clutch pedal is depressed, and it is also desirable to give a few drops of oil occasionally to the four pins on which the outer clutch plate moves when the pedal is pressed. This gives the clutch a sweeter action, and is effected via the aperture in clutch housing, the engine being slowly turned (by hand) in order to bring each clutch pin in turn into a suitable position.

The action of the clutch is as follows:—between the flywheel and the outer clutch plate is a single plate lined with friction material. When "in" the outer clutch plate is pressed hard against the lined plate and the

flywheel by means of four coil springs. The central (lined) plate is keyed to the shaft which drives, through the gearbox, to the rear wheels; thus, as the clutch is "let in," the spring pressure causes friction and the engine flywheel sets the centre plate revolving. It is not desirable to "slip" the clutch more than absolutely necessary. On a hill, always change down to second speed rather than "slip" the clutch on top gear.

Should the clutch start to slip of its own accord, wash the plate with petrol. The clutch springs can be tightened up, but care must be taken to tighten each one equally. In the event of difficulty in engaging gear through clutch "spinning," squirt petrol between plates, keeping pedal depressed while this is being done.

NOTE.—It is bad practice to descend hills "on the clutch," as this causes undue wear on the withdrawal mechanism.

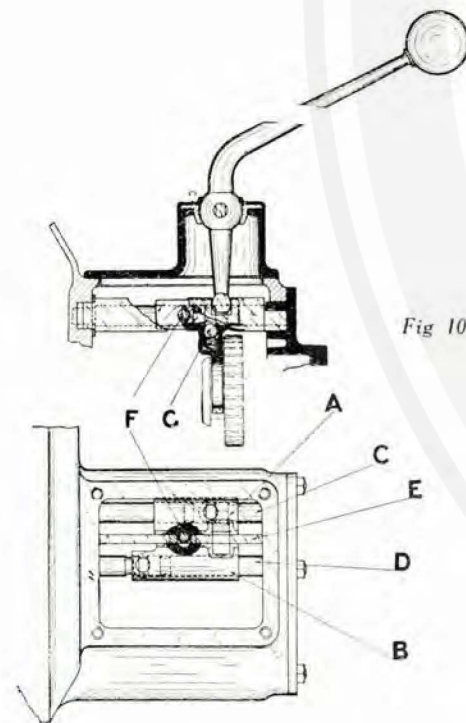


Fig. 10.

Section 5 THE GEAR CONTROL (All Models)

The illustration shows the sliding forks A and B, which move on the fixed shafts C and D. In the middle of these is the locking bar E, which contains the ball F. This ball moves over into the opposite fork whenever either fork is moved so as to engage a gear, and so positively locks the fork which is not in use. There are also spring-loaded balls G in each fork which position the forks for any gear, or for neutral position, by dropping into the grooves machined into the shafts C and D.

When removing the lid of the gear box for any purpose, the change speed lever comes away with the lid. It is therefore very important, before removing the lid, to see that the gears are in neutral and that the gears are not moved until the lid is replaced, otherwise there will be difficulty in getting the lever back correctly.

Lubricate the gear box with Castrol D; and fill to the level of the layshaft, NOT to top of gears.

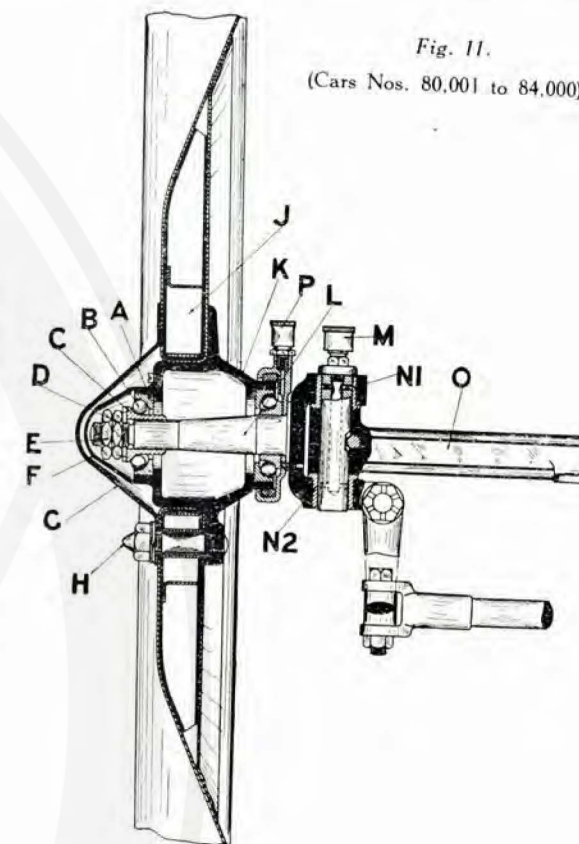
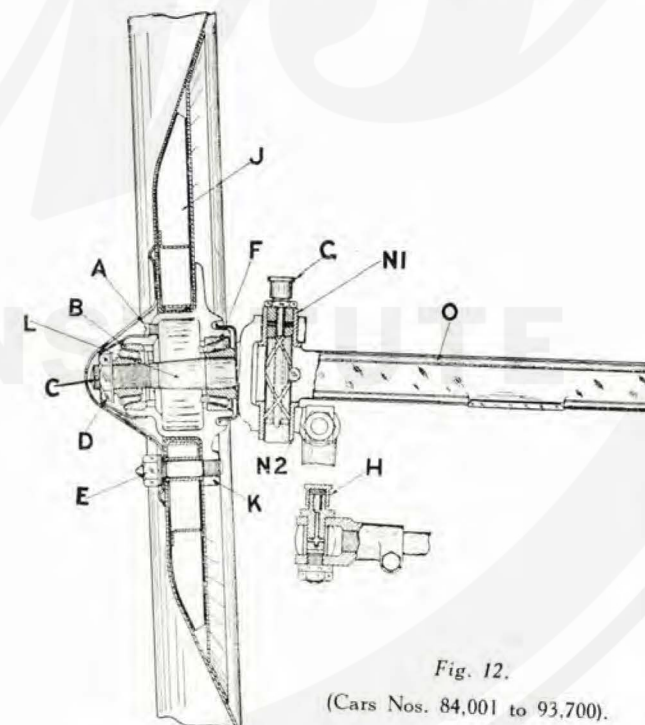
ALWAYS MENTION CAR NO. WHEN COMMUNICATING RE YOUR CAR

Section 6 FRONT AXLE

Part 1 Cars Nos. 80,001 to 84,000

The illustration (Fig. 11) shows the axle O and phosphor bronze bearings N1 and N2 which carry the stub axle L. The hub K revolves on cup and cone bearings, which can be reached by pulling or tapping off the small conical cap F, and adjusted by slacking back the lock-nut E and nut D, when any excessive wear in bearing can be taken up by adjusting cone C. This cone is adjusted by the nut D, but care should be taken not to tighten the cone too much, as when the lock-nut E is screwed home it tends to tighten it still more, and no room is left for expansion when the hub warms up after running. There should be slight play when the wheel is cool.

The inside bearing is lubricated by means of grease through greaser P. The outside bearing B is lubricated by removing the conical cap F (which is only a push-on fit) and filling it with grease, afterwards replacing it. Occasionally, also, the small grub screw shown in illustration (Fig. 11) just above conical cap F should be withdrawn and the inside of the hub filled with grease from a grease gun.

Fig. 11.
(Cars Nos. 80,001 to 84,000).Fig. 12.
(Cars Nos. 84,001 to 93,700).

The swivel pins are to be lubricated by means of the grease cap M. The wheels are removed by undoing the three nuts on studs H and removing hub cap G, when the wheel can be pulled off the studs.

Part 2 Cars Nos. 84,001 to 93,700

The hubs here run on taper roller bearings B and F, and these bearings can be reached by pulling or tapping off the conical cap which is disclosed on removing the hub cap proper.

To lubricate the bearings, remove the small screw A and inject gear oil, which has been warmed to a liquid state, through the screw hole.

Keep the nut D tight on the stub axle (NOTE.—Off-side (driver's side) is left-hand thread; near-side is right-hand thread), and be careful to replace split pin C. Detach wheel by removing the three nuts E and taking off hub cap.

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SECTION 6.—FRONT AXLE (continued).

Part 3

Car Nos. 93,701 (approx.) onwards

Cars to which this Part applies have the wide track (4 ft.) and single disc wheels (compare J, Figs. 12 and 13). Otherwise the instructions contained in Part 2 apply, with the exception that the hub cap is of different type. To lubricate the hub bearings, unscrew hub cap, fill with grease, and replace. The action of screwing up the hub cap forces grease into the wheel bearings. Swivel pins are lubricated by two greasers (G, Fig. 13).

Section 7
REAR AXLE

Part 1

Cars Nos. 80,001 to 93,700 (approx.)

The illustration shows a sectional view of the back axle, from which it will be seen that the axle is made up of two castings F1 and F2, carrying steel tubes A, which are forced into F1 and F2 and rivetted in position. This system provides a particularly strong construction without undue weight or size.

The weight of the car is received by these axle castings, or tubes A, through the spring caps C; the tube is supported by the road wheels through the ball race O. This ball race is received by the hub casting Q, which also forms the brake drum, in which both brakes N also forms the brake drum, in which both brakes N (Ferodo lining D) act. Each internal-expanding type

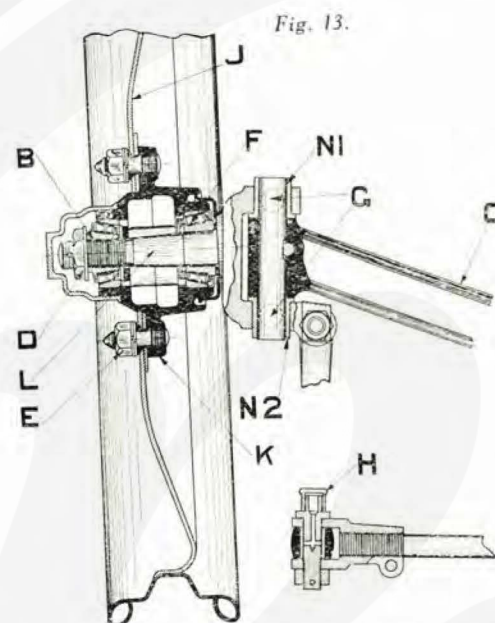


Fig. 13.

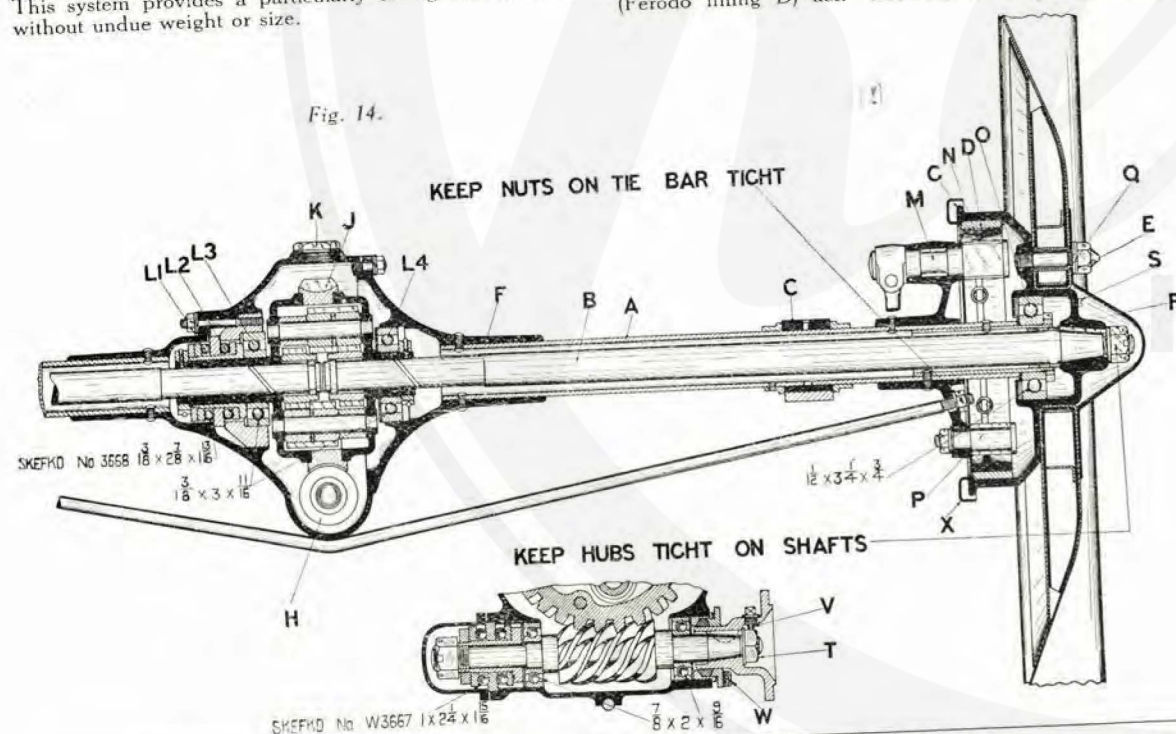


Fig. 14.

KEEP NUTS ON TIE BAR TIGHT

KEEP HUBS TIGHT ON SHAFTS

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SECTION 7.—REAR AXLE (continued).

brake shoe covers half the circumference of the brake drum, being suspended on fulcrum pin P and expanded by means of the cam on the end of spindle M. The brake shoes are lined with Ferodo D or other suitable lining.

The nuts and spring washers E, when removed, enable the wheel to be immediately detached in case of tyre trouble, or by removing the hub cap allow access to screw S, which should be removed every 500 miles and thick oil forced through to the bearing O by means of an oil-gun.

The spring ends at C should be oiled every few hundred miles, as unless these are kept free springing will be upset.

The main drive is through the worm H driving a worm wheel J, and the power is then distributed through the differential gearing to the shafts B, thence to the road wheels through the hub Q. Ball bearings of ample dimensions are provided at L3 and 4, as well as double thrust race L1 and 2 which accommodates any side

thrust in either direction. Oil retaining glands are provided in the ends of axle tubes, at R. The cap K should be removed every 200 miles and the casing filled up to the plug shown on oiling diagram with Castrol D oil. Avoid a surplus of oil in axle, or it may work out on to brakes.

At V is shown a small locking screw for locking nut T, which holds the flange of the universal joint of the worm shaft. This locking screw V should NOT be removed. The universal joint should be lubricated as per oiling diagram and instructions, and the leather cover maintained in good condition to prevent the entry of grit and other foreign matter.

W shows one of three nuts for the purpose of adjusting the gland should oil leak from the front end of the worm shaft. Later cars were fitted with a screw gland at this point. (NOTE.—A small lock plate is fitted under one of the three nuts W; and should be removed during adjustment, but care must be taken to replace it securely).

Part 2—Cars Nos. 93,701 onwards

The illustration (Fig. 15) refers to cars fitted with single disc wheels and wide track (4 ft.) axle. The information contained in Part 1 applies with the exception of instructions for lubricating axle, for which the following is the procedure: open up the lid Z every 200 miles, and replenish the axle with Castrol D if necessary. (NOTE.—Avoid a surplus of oil in axle, or brake may be affected). The action of unscrewing wing nut S (It should be unscrewed three or four turns only. On no account remove it completely otherwise the spring will

fall into the worm drive and do serious damage) opens the overflow plug K, and oil should be poured in through aperture Z until drips appear from point K. When axle has been replenished, run car for a few miles on road until axle is well warmed up, and then unscrew S to open plug K and let any surplus oil escape. This will avoid trouble through excess of oil in axle reaching brakes. Be careful to inspect oil level in axle every 200 miles, and to replenish if necessary.

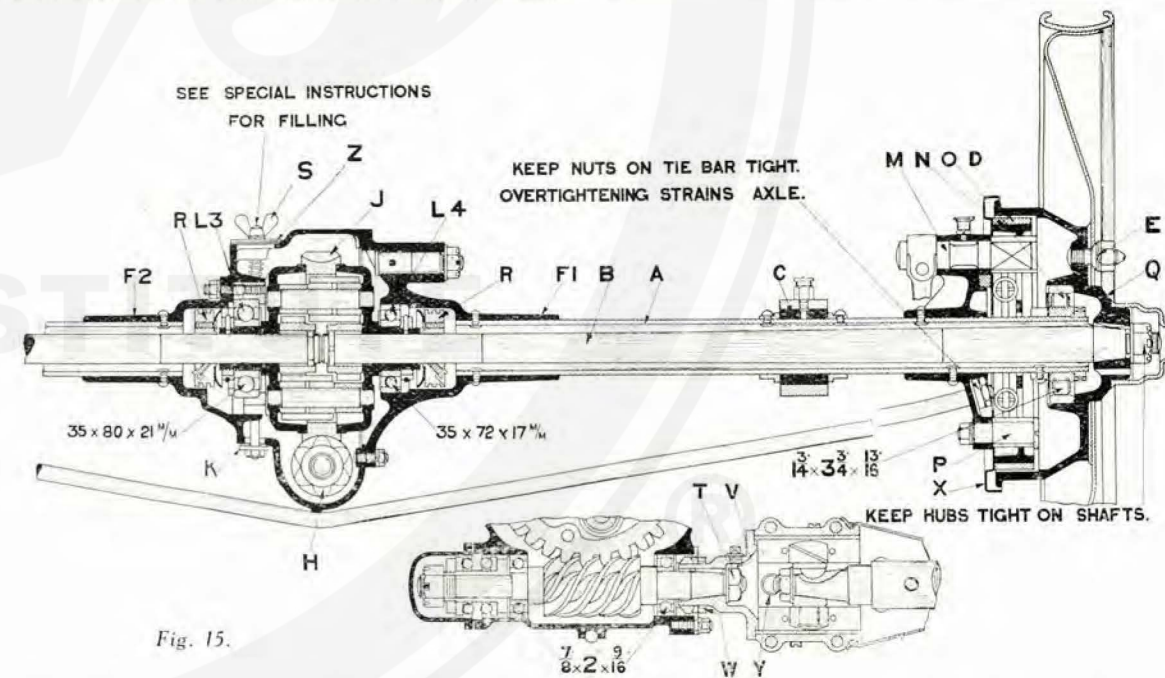


Fig. 15.

SEE SPECIAL INSTRUCTIONS
FOR FILLING

KEEP NUTS ON TIE BAR TIGHT.
OVERTIGHTENING STRAINS AXLE.

KEEP HUBS TIGHT ON SHAFTS.

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Section 8 THE BRAKES

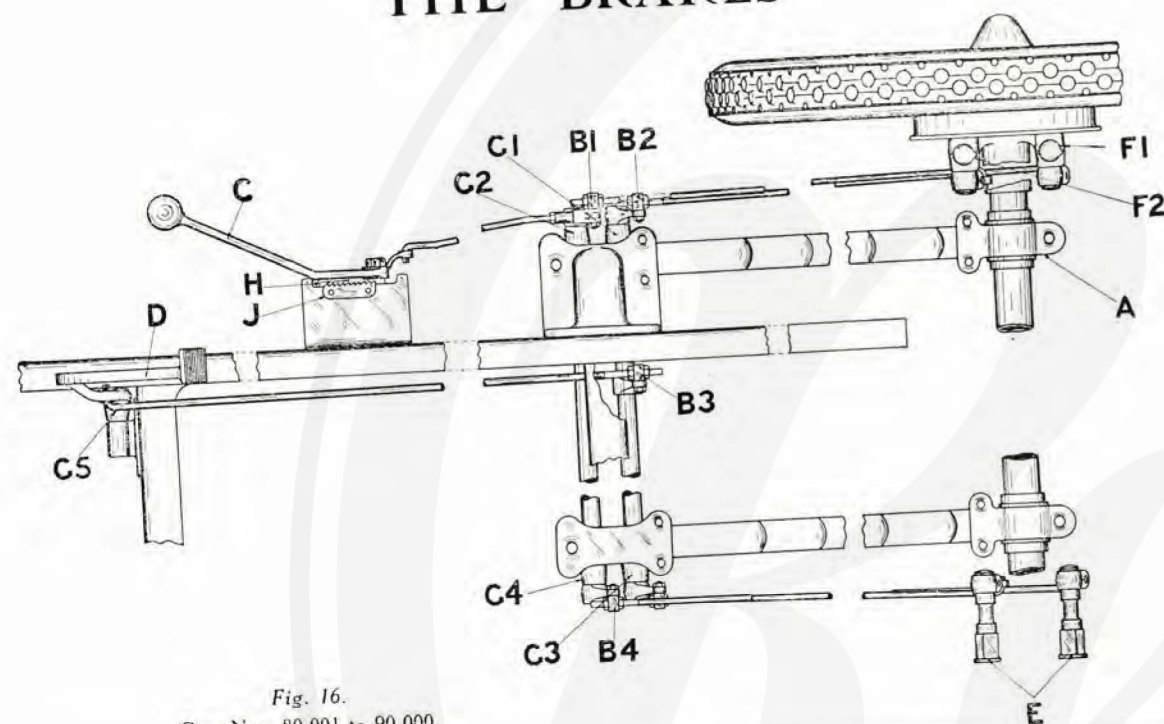


Fig. 16.
Cars Nos. 80,001 to 90,000.

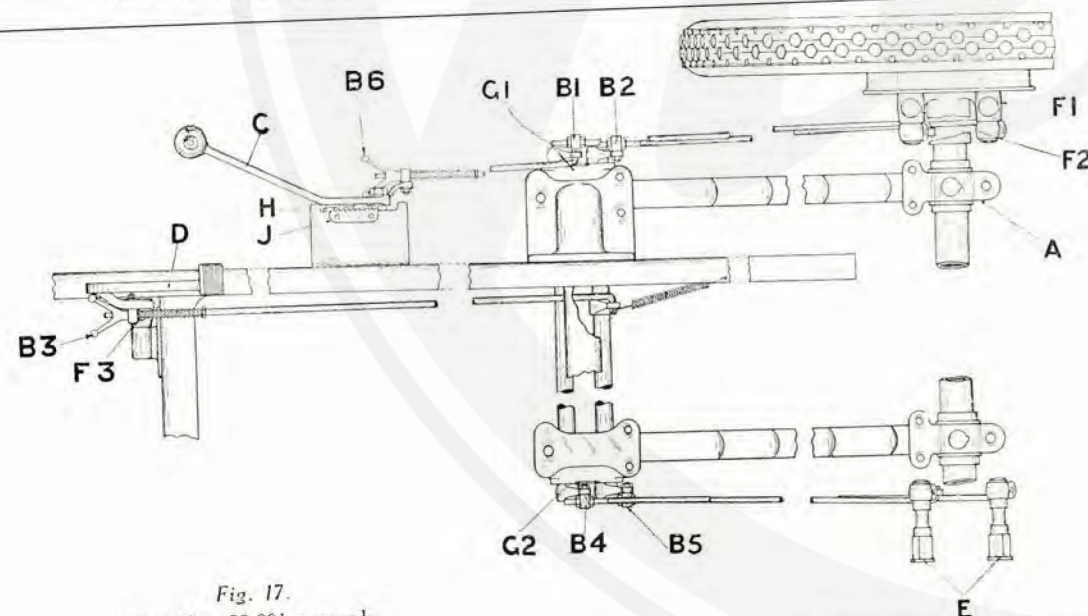


Fig. 17.
Cars Nos. 90,001 onwards.

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SECTION 8.—THE BRAKES (continued).

All 8 h.p. Rover cars are fitted with two independent sets of brake shoes acting on the rear wheels, one set actuated by the foot and the other by hand. Both sets are contained in the one drum on each wheel. These brakes are of the internal-expanding type, the shoes being lined with friction material, which should be renewed when seriously worn after considerable usage.

The brakes are not automatically compensated, and care must be taken to ensure that each set of shoes acts equally upon the rear wheels. To test this, jack up rear axle so that both wheels are clear of the ground. Now set the brake pedal or lever until the brake is partly "on" and turn each wheel by hand. Both wheels should require the same amount of effort: if not, adjust until such is the case. Unequal brake pressure will make the car prone to skid.

The adjustment for the footbrake is at B2 and the corresponding point on the opposite side of the car (Fig. 16), and at B2 and B5 on Fig. 17. The hand brake adjustment is at B1 and B4 on each illustration. A further adjustment for the footbrake is shown at B3 (Fig. 16), this affecting both sets of footbrake shoes together, but not balancing the action of each. The corresponding master adjustment on later models is the wing nut B3 (Fig. 17) on the brake pedal itself.

It is advisable to go over all brake joints with an oil can occasionally. If they become rusted where exposed to wet, they should be brushed with paraffin before the oil is applied. A rusted brake joint can prevent the brake releasing properly, and so causing the car to run stiffly.

Section 9 THE LIGHTING SET (and Self-Starter when fitted)

GENERAL INFORMATION.

On all models the dynamo is driven by belt from the propeller shaft. The dynamo is provided with an eccentrically-placed armature, so that the belt may be adjusted by loosening the fly nut of the strap holding the dynamo and turning the dynamo round in its cradle. Do not set the belt too tight, or it will break.

The output of the dynamo should be 4—5 amps. at all speeds above about 18 m.p.h., but cars fitted with self-starter have dynamo giving 8 amps. The output of the dynamo is kept constant at high speeds by the inter-brush method.

The cut-out is contained in the switchbox. This automatically connects the battery to the dynamo for charging when the dynamo commences to generate (provided the switch is set for charging), and disconnects the battery from the dynamo when the engine stops, thus preventing the battery discharging into the dynamo. The cut-out must not be tampered with, as it is a very delicate piece of mechanism.

On early type cars the switches are of the pull-out pattern. When the switch stamped "H" is pulled out, the front lamps should light brightly, and the tail lamp should also light. With switch "S" out and "H" in, the front lamps should light dimly, and the tail lamp should also light. When the switch "C" is out, the battery should be on charge, as indicated by the ampere meter on the switchbox. Later type cars have two switch levers: that on the right controls the lamps, while the other controls magneto and dynamo. With this type, the ignition is switched on when the lever is set at "M," and the battery is on charge, as well as ignition switched on, when lever is moved over to "D."

All model 8 h.p. Rover cars are fitted with 6 volt lighting sets manufactured by Messrs. Joseph Lucas Ltd., of Birmingham, from whom special information regarding the electrical equipment can be obtained. The following is a list of Messrs. Lucas's Service Stations:—

BELFAST .. 3/5, CALVIN STREET
Telephone: Belfast 7017

BIRMINGHAM .. GREAT HAMPTON STREET
Telephone: Northen 2201

BRISTOL .. 25, TEMPLE STREET
Telephone: Bristol 6661 and 7665

COVENTRY .. PRIORY STREET
Telephone: Coventry 3068

DUBLIN .. 41, MIDDLE ABBEY STREET
Telephone: Dublin 653

LEEDS .. ROSEVILLE ROAD
Telephone: Leeds 28591-2

GLASGOW .. 227/229, ST. GEORGE'S ROAD
Telephone: Douglas 3075-6-7

LONDON .. DORDRECHT RD., ACTON VALE, W.3
Telephone: Chiswick 3801 (Pvt. Bch. Ex.)

LONDON .. 759, HIGH ROAD, LEYTON, E.10
Telephone: Walthamstow 1838

LONDON .. 155, MERTON ROAD, WANDSWORTH, S.W.18
Telephone: Putney 5131-2-3

MANCHESTER .. TALBOT ROAD, STRETFORD
Telephone: Trafford Park 1410-1-2

NEWCASTLE-ON-TYNE .. 68, ST. MARY'S PLACE
Telephone: City 237-8

ALWAYS MENTION CAR NO. WHEN COMMUNICATING RE YOUR CAR

SECTION 9.—THE LIGHTING SET (continued).

Always keep battery on charge when lights are on. Do not leave lamps burning brightly when car is at rest, as the battery will quickly be exhausted.

Special lamp bulbs are necessary for these lighting sets, as there are two separate filaments in each bulb, one bright and the other dim. They are obtainable from most good garages. When bulbs are replaced in holders, care must be taken that both lamps are on "bright" or "dim" together: a half turn of bulb will effect this.

It should be noted that the metallic armoring of the cables forming the wiring is used as an "earth": not the frame of the car. In the case of the bulbs, the brass caps act as "earth" connections.

WIRING DIAGRAMS WILL BE FOUND AT THE END OF THIS BOOKLET.

The lamps repay careful focussing, and this should be carried out on the road at night, not in the garage. Early type cars have a movable bulb holder fixed by a set screw at back of reflector: later types have a special bulb holder with three sets of notches, allowing the bulb to be set in three different positions relative to the reflector.

The battery needs regular attention, or its capacity for holding current will be impaired. The electrolyte

(acid solution) must always cover the tops of the plates, and its specific gravity must be kept at 1.225. If electrolyte is found to be low, the loss may be due to either evaporation of water during charging, or else to leakage. If the former, the deficiency should be made good by adding pure distilled water: if the latter, by adding further electrolyte (made from 1 part pure brimstone sulphuric acid and 5 parts distilled water. When mixing always add acid to water, NOT water to acid). If you have no hydrometer to test specific gravity of electrolyte, get a garage to do this should battery show signs of loss of capacity.

Use of impure ("commercial") acid or tap water is harmful to the battery, one result being to cause undue frothing when charging.

The self-starter (when fitted) acts on the engine fly-wheel, which is specially toothed round its circumference, through Bendix gearing. Should the starter fail to engage when the switch is pressed, but merely set up a buzzing noise, it is probable that oil has congealed on the Bendix shaft and gummed up the small pinion. A little paraffin inserted, by means of a brush, on the Bendix shaft through the aperture in the clutch housing will usually remedy matters. See note on page 7 re use of starter.

GENERAL INFORMATION

GEAR CHANGE.—When in the driver's seat, the positions of the gears are as follows:—With lever in "neutral" (i.e., able to move sideways), 1st speed is obtained by moving the lever away from you and downwards; 2nd is then up to neutral, sideways towards you, and then upwards; top is next straight downwards. Reverse is opposite to first, i.e., away from you and upwards.

If you are not used to the gear-change, before driving the car on the road, practise in the garage getting from one gear to another until you are able to locate the various positions without looking down at the lever.

As no reverse stop is provided, be careful when changing up from 1st to 2nd to bring the lever sideways through neutral position before moving it upwards.

When changing UP, pause a moment in neutral. When changing DOWN, do not push the clutch right out, but merely slip it, keeping the throttle open somewhat, and engage the new gear smartly. (NOTE.—Of course, it is best to "double-declutch" in order to change down without noise from the gears, but the procedure outlined is a fair substitute).

SPRINGS.—It is advisable occasionally to jack up the body of the car so as to take the load off the springs and thus to separate the leaves slightly. A mixture of graphite and grease should then be worked between the leaves with the blade of a knife.

TYRE PRESSURES.—Tyre pressures should be checked by means of a gauge, and kept to the correct pressures, which are:—

	FRONT	BACK
High Pressure type ...	40 lbs.	50 lbs.
Balloon type ...	25 lbs.	27 lbs.

SPARE TUBES.—When buying new inner tubes, see that they have short valves, specially intended for disc wheels.

LOSS OF POWER.—A mysterious loss of power in an old car may often be traced to a choked silencer. Carbon and soot are apt to accumulate in this, and so strangle the exhaust.

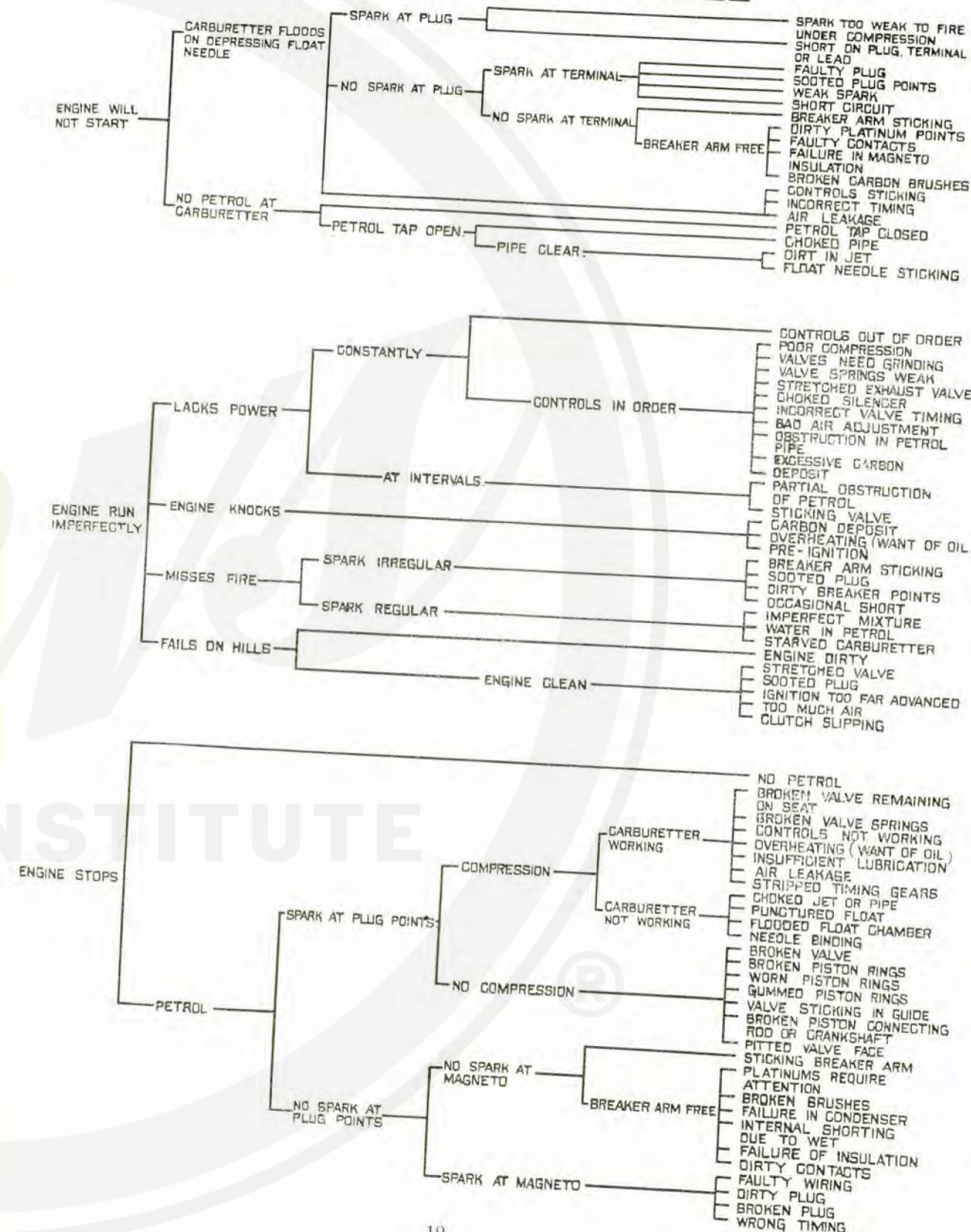
TURN OFF PETROL.—It is desirable to form the habit of turning off the petrol whenever the car is stopped for any length of time. The needle valve of the carburetter becomes badly worn after long usage, so allowing the petrol to "flood" through the jet. This petrol may accumulate in the induction pipe and render starting difficult.

TUNING UP.—To get best results from the engine: when decarbonizing, have the valves and valve seats properly trued (the valves on a lathe, the valve seats by means of an accurate cutter). Replace the valve springs if they seem in any way to have suffered through heat, or to have lost their proper tension. Replace the piston rings, also, if they show any discoloured patches. Remember, the engine should be reasonably compression tight if it is to develop its maximum power, especially on hills.

EXCESSIVE "PINKING."—If the engine is known to be fairly clean internally, and yet "pinks" badly, the fault may lie with the sparking plugs. Even if these appear in good condition, it is advisable to replace them with new ones for test. A proportion of benzole mixed with the petrol relieves "pinking" and is not harmful to the engine: it is desirable, however, to clean out the engine sump more frequently when benzole mixture is used.

BACK AXLE LUBRICATION.—Frequent attention to back axle lubrication is most desirable: by this we do not mean that it should be over-filled, as this is harmful to the brakes, but that the level of oil in the axle casing should be verified frequently and the supply replenished if necessary. More damage is caused to back axles by lack of proper lubrication than by any other cause.

FAULT FINDING TABLE



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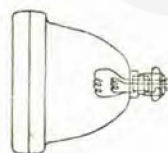
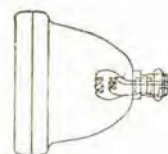


If your 8 h.p. Rover has
given you satisfaction
remember, when you are
thinking of buying a
new car, that the latest

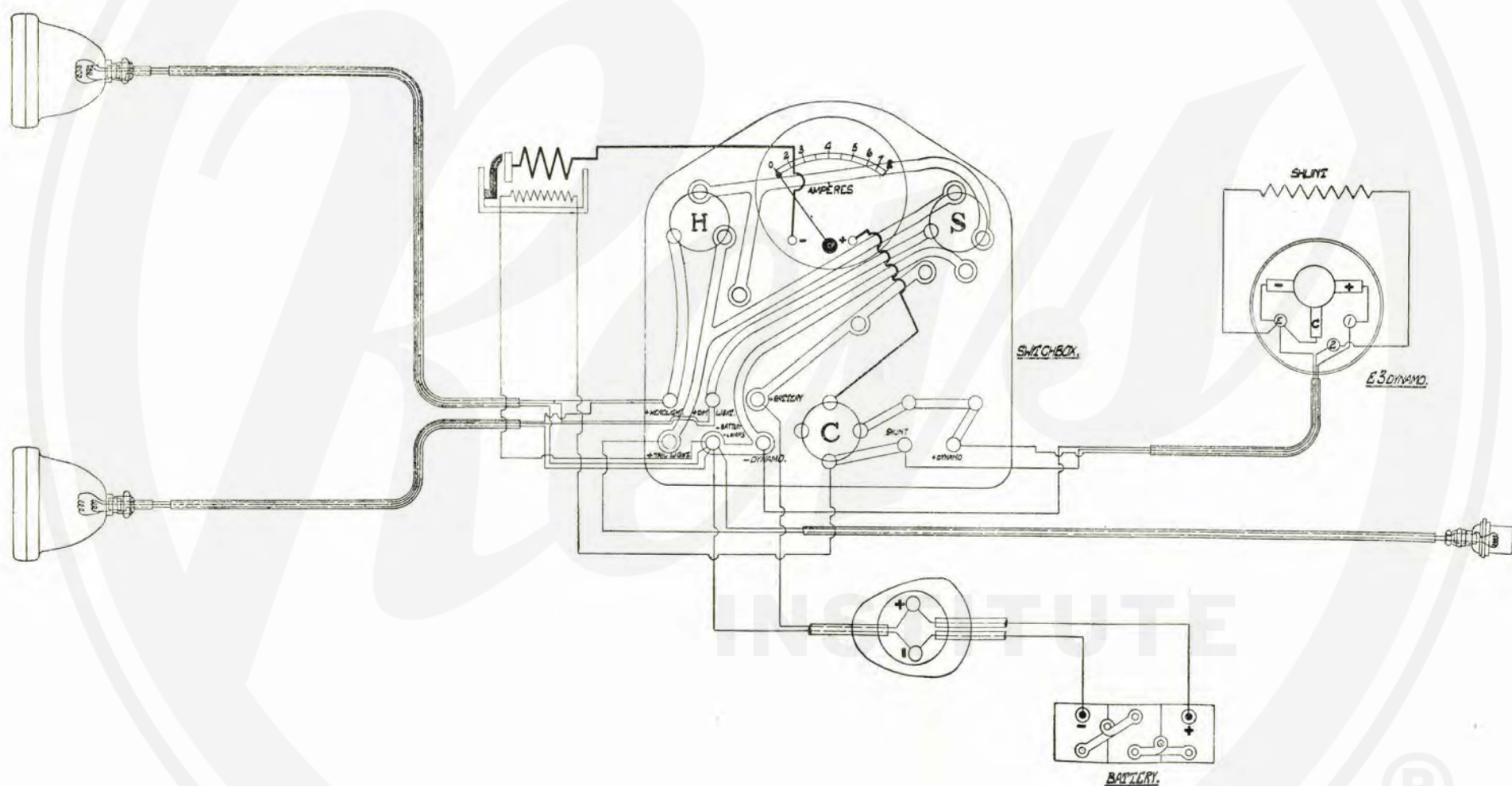
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6 VOLT



NOTE—It is not possible to quote actual Car Nos.

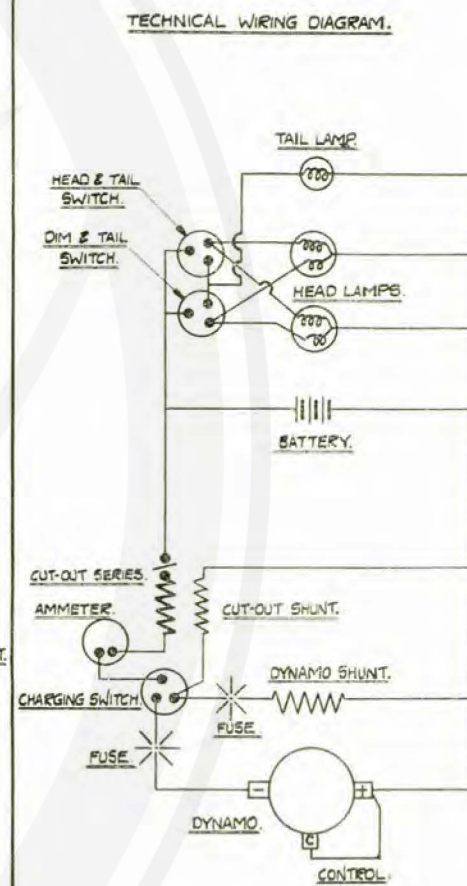
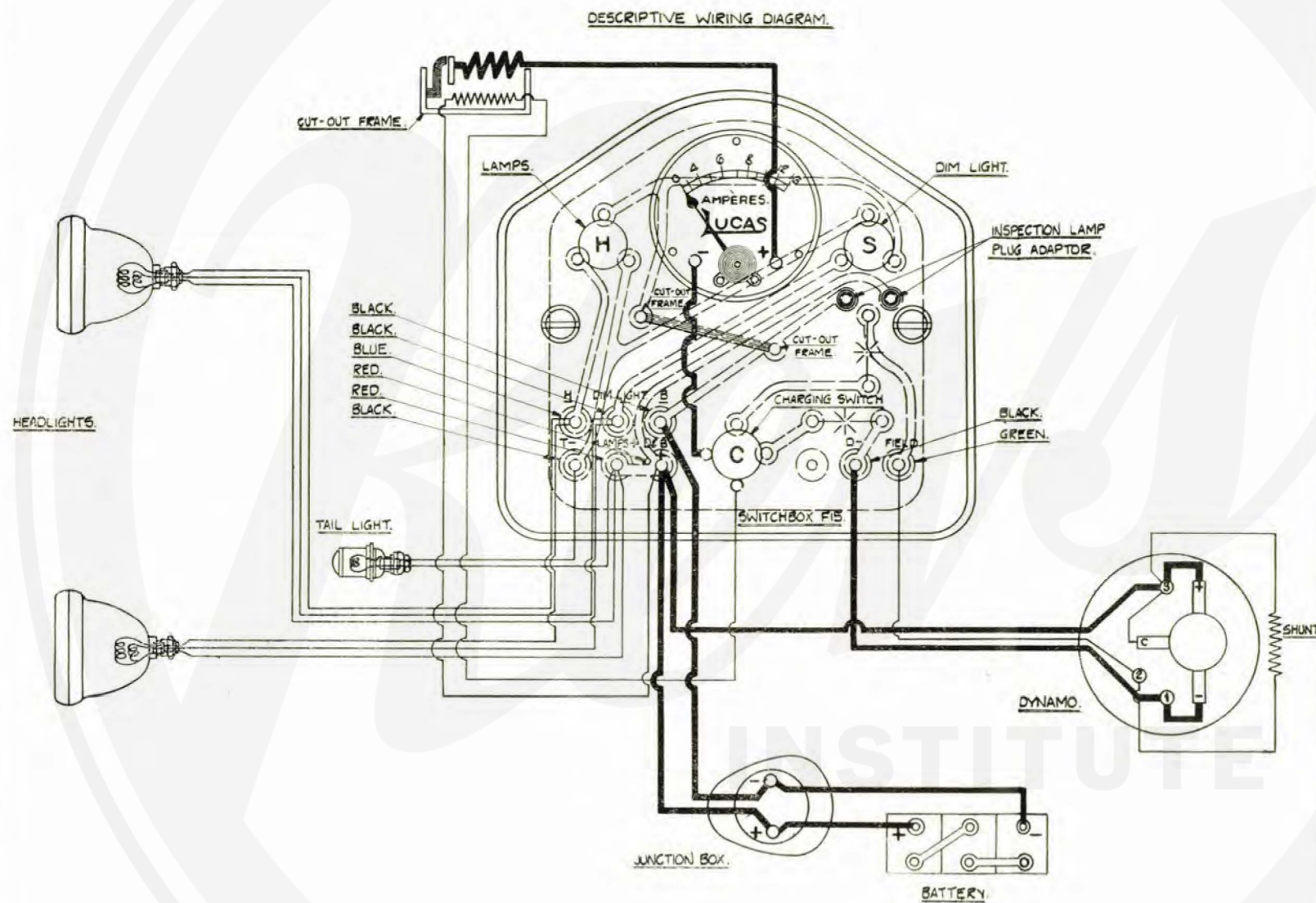
MARK.
8 H.P. ROVER

LUCAS LIGHT CAR ELECTRIC LIGHTING SYSTEM

WIRING DIAGRAM

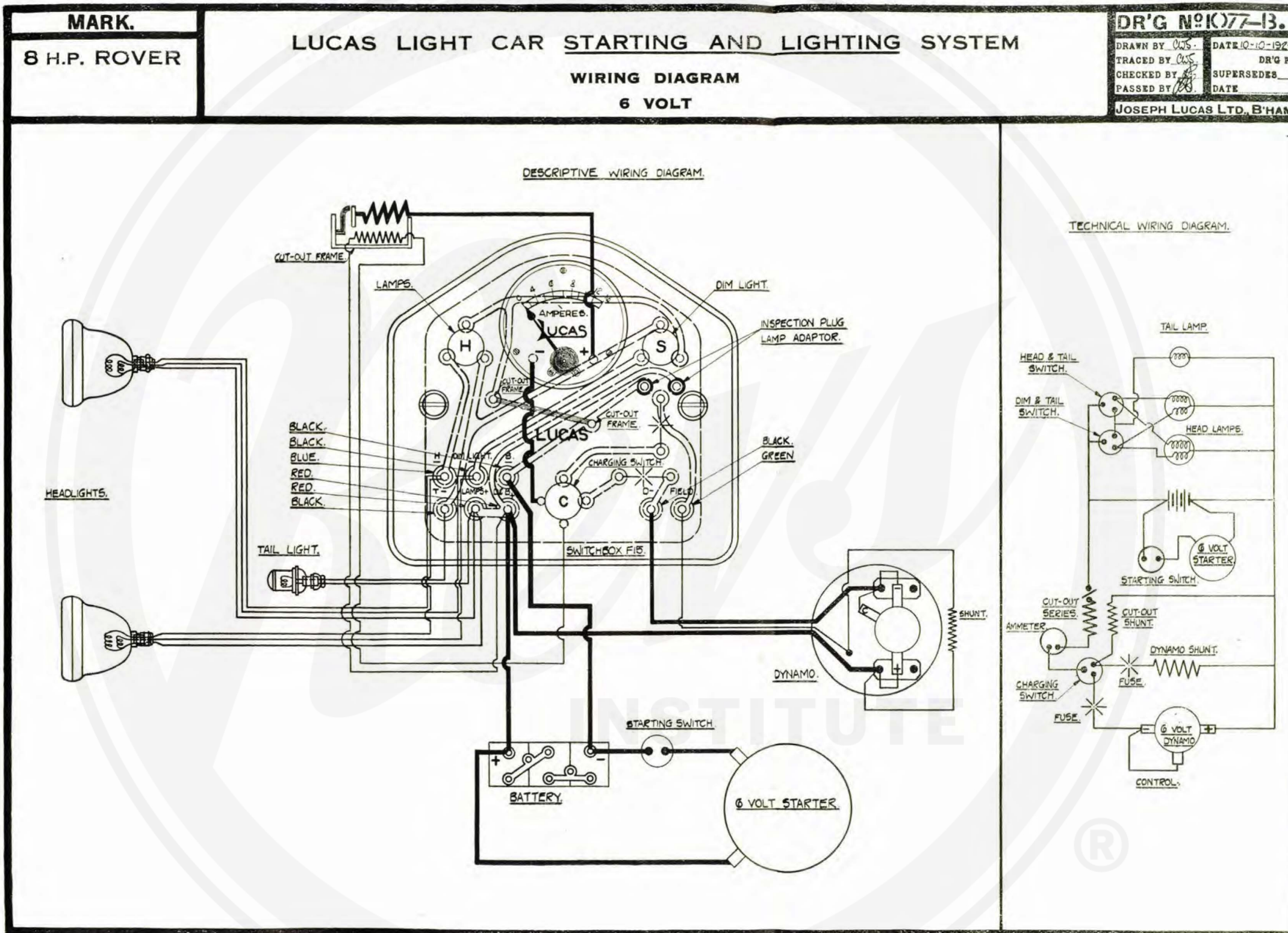
6 VOLT

DR'G N^o K1077-A.
DRAWN BY C.S. DATE 10-10-1922
TRACED BY C.S. DR'G No
CHECKED BY J.B. SUPERSEDES
PASSED BY J.B. DATE
JOSEPH LUCAS LTD., B'HAM.



The above Chart applies to LATE 1922 and EARLY 1923 models WITHOUT starter.

NOTE—It is not possible to quote actual Car Nos.

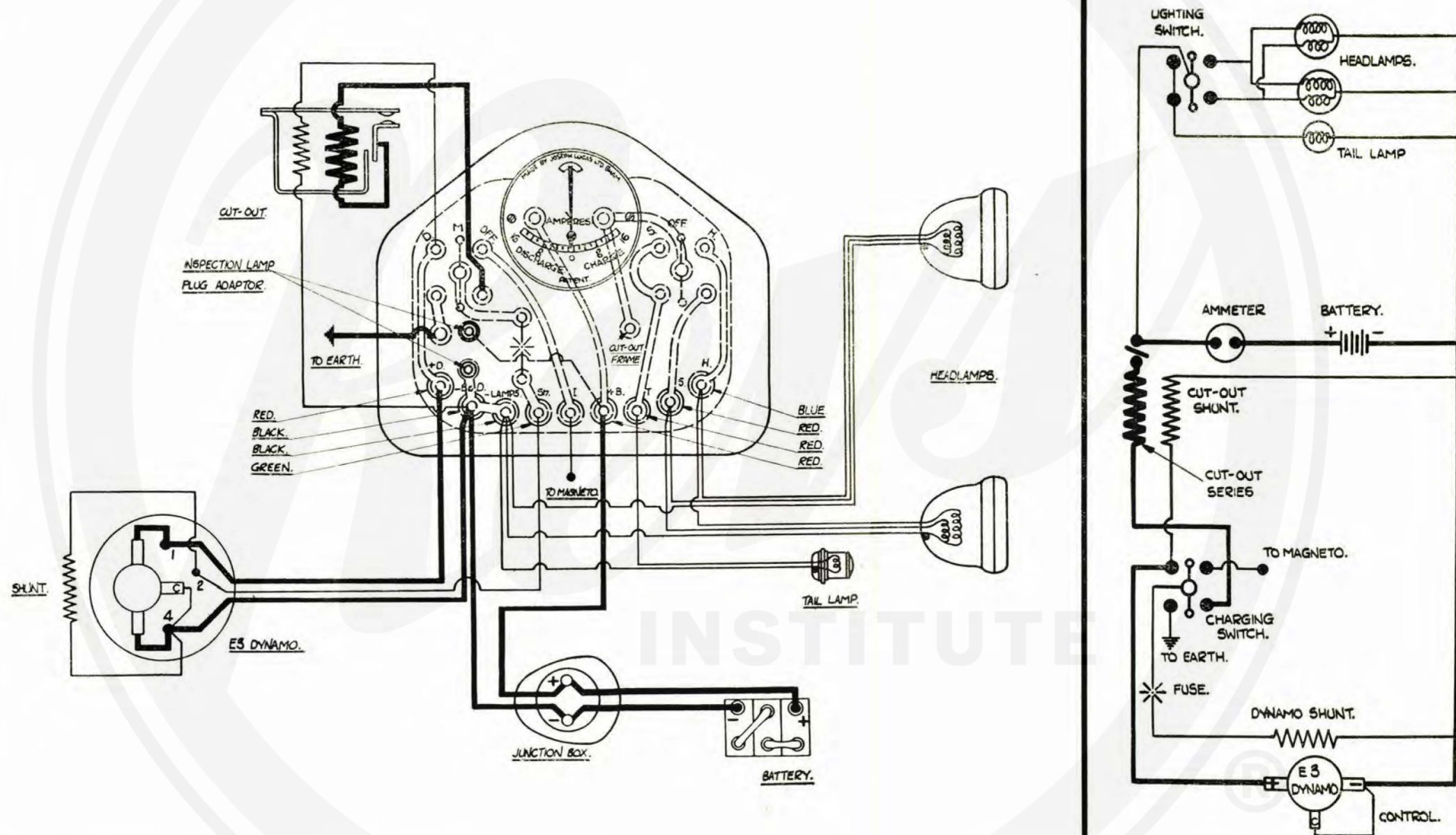


The above Chart applies to LATE 1922 and EARLY 1923 models WITH starter.
 NOTE—It is not possible to quote actual Car Nos.

LUCAS LIGHT CAR ELECTRIC LIGHTING SYSTEM

WIRING DIAGRAM

6 VOLT

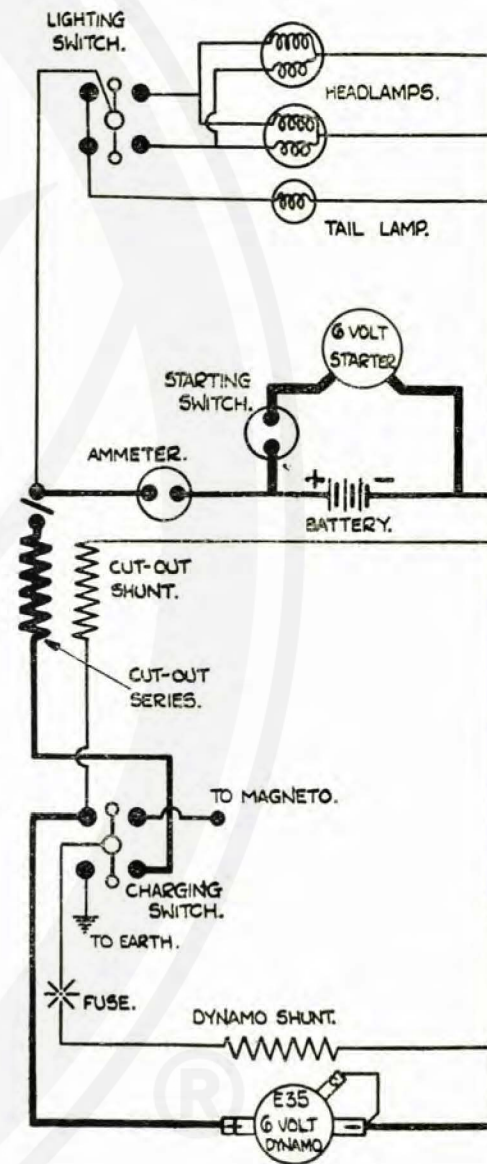
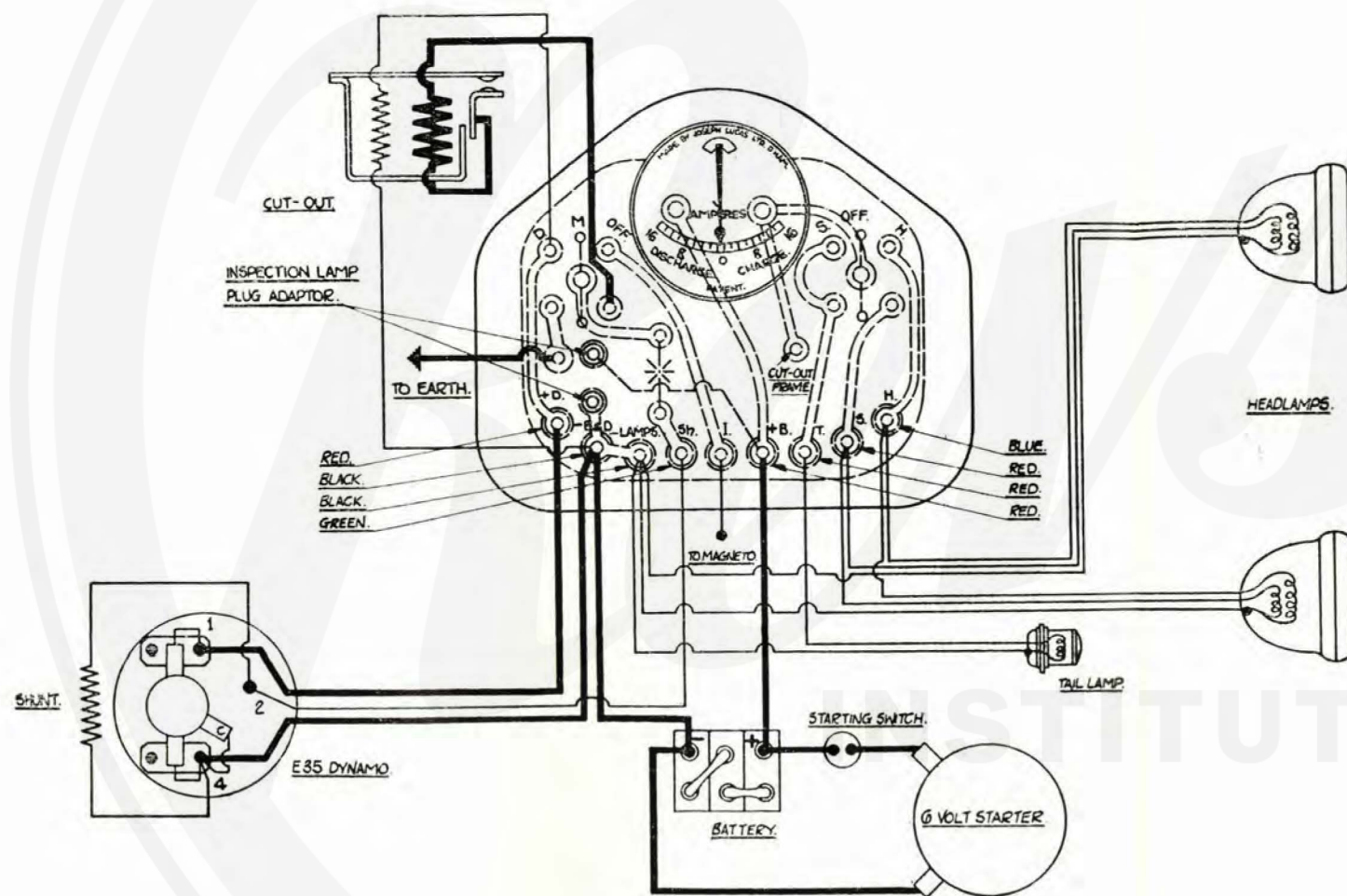


The above Chart applies to LATE 1923, 1924 and 1925 models WITHOUT starter.

NOTE—It is not possible to quote actual Car Nos.

LUCAS LIGHT CAR STARTING AND LIGHTING SYSTEM

WIRING DIAGRAM 6 VOLT



The above Chart applies to LATE 1923, 1924 and 1925 models WITH starter.

NOTE—It is not possible to quote actual Car Nos.