# ELECTRICAL, IGNITION AND RADIO

M

ADDENDUM

FOR INFORMATION

## CHANGE IN CATEGORY OF BULLETIN CB-4

The category of Bulletin CB-4 has been changed from category 2 to category 3A as the numbers of charging circuit complaints are so few that category 2 action is no longer warranted.

The modified regulator and dynamo, therefore are to be fitted only in instances of actual complaint.

CATEGORY 1 MODIFICATION.

## DYNAMO AND CURRENT VOLTAGE REGULATOR.

Complaints have been received of failure of the dynamo to charge the battery on these cars.

The brushes of the dynamo were impregnated with a lubricant to prevent squeaking, and in some cases this lubricant has been exuded, thus causing the brushes to stick in the brush boxes. This has resulted in excessive arcing giving rise to burnt brushes, and also burnt commutator surface. In consequence, the dynamo either failed to charge or gave intermittent charging.

The regulator incorporated a bi-metal strip, which was found to over compensate the voltage control unit, thus causing the charge rate to fall off much too quickly. This could give rise to a condition in which the battery was only half charged, and the regulator was only passing a trickle charge from the dynamo.

Any one of the above faults could give rise to a flat battery condition, without any obvious indication from the instruments that anything was amiss.

The fault in the dynamo has been corrected by the fitment of a non-impregnated softer brush and a general attention to detail finish. The modified dynamo is identified by the letter 'E' stamped on the carcass immediately following the Lucas Part Number.

The regulator has been corrected by special annealing treatment of the armature cores, and by the fitment of a thinner bi-metal strip for better temperature correction. The modified regulator is identified by the letter 'M' stamped on the base and in a position to be visible when affixed to the bulkhead of the car.

Corrective action is required as soon as possible, consistent with supplies of the modified dynamo and new regulator being available.

When the dynamo and/or regulator is changed, the condition of the battery should be checked, and if necessary, the battery should be charged.

Continued/-...

The new Regulator (Part No. UD.2583) is in use on production, but action is required on the following chassis:-

Bentley 'S' Type.

| | | |
|---|---|---|
| B.AN; B.AP; B.BA Series | Chassis Nos. | All cars. |
| B.BC Series | Chassis Nos. up to | B-53-BC. |
| | but excluding: | B-29-BC. |
| | | B-41-BC. |
| | | B-43-BC. |

Bentley 'S' Type Continental.

| | | |
|---|---|---|
| BC.AF Series | Chassis Nos. | All cars. |
| BC.BG Series | Chassis Nos. up to | BC-20-BG. |
| | but excluding: | BC-3-BG. |
| | | BC-6-BG. |
| | | BC-15-BG. |

Rolls-Royce 'Silver Cloud'.

| | | |
|---|---|---|
| SWA Series | Chassis Nos. | All cars. |
| SXA Series | Chassis Nos. up to | SXA-185. |
| | but excluding: | |
| | SXA-87. | SXA-163. |
| | SXA-131. | SXA-167. |
| | SXA-135. | SXA-169. |
| | SXA-137. | SXA-171. |
| | SXA-139. | SXA-173. |
| | SXA-149. | SXA-177. |
| | SXA-159. | SXA-179. |
| | SXA-161. | SXA-181. |

The new Dynamo (Part No.UD.2584) is in use on production, but action is required on the following chassis:-

Bentley 'S' Type.

| | | |
|---|---|---|
| B.AN; B.AP; B.BA; B.BC Series | Chassis Nos. | All cars. |

Continued/-...

Bentley 'S' Type (Continued)

| | | |
|---|---|---|
| B.CK Series | Chassis Nos. up to | B-90-CK. |
| | but excluding: | B-68-CK. |
| | B-56-CK. | B-70-CK. |
| | B-58-CK. | B-72-CK. |
| | B-60-CK. | B-74-CK. |
| | B-62-CK. | B-76-CK. |
| | B-64-CK. | B-84-CK. |
| | B-66-CK. | B-88-CK. |

Rolls-Royce 'Silver Cloud'.

| | | |
|---|---|---|
| SWA; SXA Series | Chassis Nos. | All cars. |
| SYB Series | Chassis Nos. up to | SYB-118. |
| | but excluding: | |
| | SYB-90. | SYB-102. |
| | SYB-92. | SYB-106. |
| | SYB-96. | LSYB-112. |
| | SYB-98. | SYB-114. |
| | SYB-100. | SYB-116. |

Immediate retrospective action is requested, and Retailers are asked to modify all cars in their areas.

Retailers in the United Kingdon will receive from the London Service Station small supplies of the dynamo and regulator in pairs, for fitment to cars in their areas. It is essential that the displaced units be returned expeditiously in order that continuous supplies of modified units will be available.

The Overseas areas are being dealt with by Messrs Joseph Lucas Limited, and our Overseas Retailers have been contacted by letter from the London Technical Service Department, detailing the arrangements which have been made, in order to bring this modification campaign to a successful conclusion.

It is essential that these modified units be fitted at the earliest opportunity, and that the displaced units be returned to the London Service Station as rapidly as possible.

Retailers are requested to inform this Depot of all chassis numbers on which this modification is incorporated.

Continued/-...

ON NO ACCOUNT MAY UNMODIFIED UNITS BE USED IN THE FUTURE, AND ANY SUCH UNITS THAT MAY BE HELD IN STOCK, MUST BE RETURNED TO LONDON FOR CREDIT.

Modified stock units will be available at the conclusion of this campaign.

Time allowance..... 4 hours.

CATEGORY 1 MODIFICATION.

## DYNAMO AND CURRENT VOLTAGE REGULATOR.

## ADDENDUM.

At the time of going to press with the original Bulletin the information regarding chassis numbers affected concerning the Bentley "S" Type Continental was not complete. These are now given below and applies to both Regulator and Dynamo.

Bentley "S" Type Continental.

| | | |
|---|---|---|
| BC-AF Series | Chassis Nos. | All cars. |
| BC-BG Series | Chassis Nos. | BC-1-BG to BC-8-BG.<br>BC-11-BG to BC-20-BG. |

CATEGORY 2 MODIFICATION.

Supersedes Addendum to CB-4 Dated 18.9.56.

# DYNAMO AND CURRENT VOLTAGE REGULATOR.

This addendum is issued to alter the instructions contained in the original Bulletin CB-4, and since it is desirable that confusion should be avoided on the subject of dynamos and regulators, it is considered that a brief explanation of the sequence of events should make the position clear.

There were instances on early "S" type cars of flat batteries without any corresponding evidence of failure either of the dynamo or regulator to explain the condition of the battery. It was subsequently found that the temperature control characteristics of the regulator were such that the dynamo output was reduced before the battery was fully charged.

In conditions where the starter is frequently used as well as other heavy consumers, the effect was that the input to the battery was not sufficient to balance the output, with the result that the battery became gradually discharged over a period of time. The original Bulletin CB-4. provided for a new regulator with changed temperature control characteristics enabling a high dynamo output to be maintained for a very much longer period. This regulator was stamped with an "M" on the base. At the same time blackened commutators and burnt brushes were being experienced on the dynamos, these were attributed to an insufficiently high degree of finish of the commutator and, therefore, new dynamos with an improved commutator finish and "Link B" brushes were provided as part of the modification.

In spite of these modifications there were further instances of cars with fully discharged batteries, but, in these cases, there was evidence of incipient failure because the ignition warning light came on showing that the dynamo or regulator had ceased to function. It will be observed that these cases were slightly different to the earlier examples in which there was no such evidence.

A further investigation has shown that considerable arcing of the regulator points takes place at certain engine speeds, and over a period of time, the regulator points surface becomes coated with an insulating layer of oxide, and the regulator ceases to function. This arcing at the regulator points, is also largely responsible for commutator blackening and brush burning.

To correct these conditions a further modification has been made to the regulator and to the dynamo. In the regulator the 150 Ohm resistor has been changed to a 63 Ohm resistor, an additional 40 Ohm "swamp" resistor has been fitted and the palette resistor deleted.

The changes in the dynamo require a brief explanation. As soon as it became apparent that "Link B" brushes were unsatisfactory it was decided to change to PM.50.P material, but since it was not entirely certain that even this material would be trouble free the final decision was that brushes of PM.50 material would be used. In addition to this it was necessary to introduce two or three minor modifications not connected with the electrical problem. In consequence there have been three types of dynamo subsequent to those which were stamped with the letter "E".

These are:-

(1) The initial change from "Link B" brushes to PM.50.P or PM.50 was indicated by the suffix "H".

(2) Dynamos fitted with PM.50 brushes and embodying in addition one or more of the minor modifications are marked with the suffix J or K.

All these dynamos are satisfactory.

ACTION.

All cars, whether they have been modified with "M" type regulators and "E" type dynamos or whether they are still in their original unmodified condition, are to have "H" type regulators and H, J or K type dynamos fitted on a Category 2 basis. Certain Lucas Overseas Agents will be in a position to supply Rolls-Royce Retailers with the new material on an exchange basis as was arranged when the original Service Bulletin CB-4 dated 18.9.56. was issued. If the Lucas Agent is unable to supply, the parts should be ordered from the Rolls-Royce Service Department in London.

| MATERIALS. | PART NO. | NO.OFF. |
|---|---|---|
| "H" Type Regulator | UD.~~2583~~ 3172 | 1 |
| "H", "J" or "K" Type Dynamo | UD.2584. | 1 |

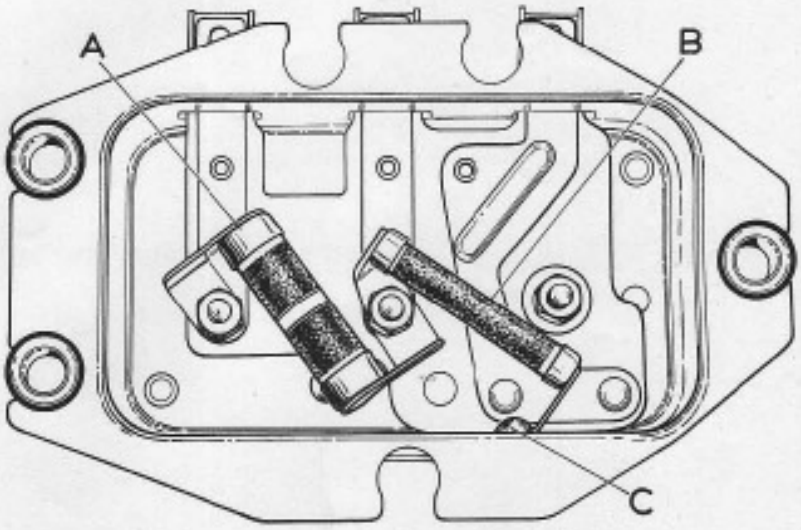



FIG. 1.

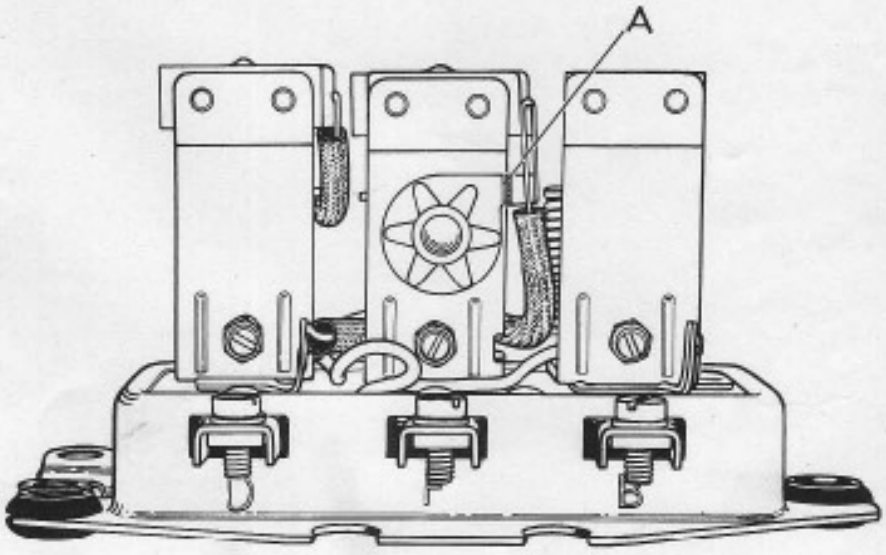



FIG. 2.

THE FOLLOWING CARS REQUIRE MODIFICATION.

"S" Type Bentley Chassis Nos.

| | | | |
|---|---|---|---|
| B-2-AN | - | B-500-AN | |
| B-1-AP | - | B-501-AP | |
| B-2-BA | - | B-250-BA | |
| B-1-BC | - | B-251-BC | |
| B-2-CK | - | B-500-CK | |
| B-1-CM | - | B-501-CM | |
| B-2-DB | - | B-500-DB | |
| B-1-DE | - | B-77- DE | inclusive. |

Rolls-Royce Silver Cloud Chassis Nos.

| | | | |
|---|---|---|---|
| SWA-2 | - | SWA-250 | |
| SXA-1 | - | SXA-251 | |
| SYB-2 | - | SYB-250 | |
| SZB-1 | - | SZB-251 | |
| SBC-2 | - | SBC-250 | |
| SCC-1 | - | SCC-59 | inclusive. |

"S" Type Bentley Continental Chassis Nos.

| | | | |
|---|---|---|---|
| BC-1-AF | - | BC-101-AF | |
| BC-1-BG | - | BC-78-BG | inclusive. |

Generally speaking, it is preferable to obtain the dynamo and regulator already modified, but in certain cases where for one reason or another supplies may not be readily available instructions are given in this Bulletin on the method of modifying the dynamo and regulator already fitted to the car. These instructions apply to all dynamos but are not applicable to the original regulator prior to the "M" type.

MODIFICATION TO REGULATOR.

To modify a regulator stamped "M" to the "H" specification, the existing 150 Ohm resistor in the base is to be replaced with one of identical appearance but with a resistance of 63 Ohms. (A. Fig.1). Great care must obviously be taken not to confuse the two together. An additional "swamp" resistor (B.Fig.1) is to be fitted to the 2 BA terminal on the base of the centre coil assembly and soldered to earth

on the casing (C.Fig.1).

Care must be exercised when removing the 2 BA nuts on the base of the coil assemblies as this leaves the assemblies free to move out of position and possibly become damaged. Ensure that on re-tightening the nuts again that the coil assemblies are fitting square.

The palette resistor on the centre coil assembly is to be disconnected by cutting the connecting bridge to the coil terminal where indicated (A.Fig.2).

Regulators thus modified are to be marked with a yellow spot next to the letter "M" or, preferably, the letter "M" should be deleted and replaced with an "H".

## MODIFICATION TO DYNAMO.

1. Remove the dynamo from the car, and discard the existing brushes. Note the order of dismantling the 2 BA field terminal and demount the end casing by removing the two long screws.

2. Clean off any discolouration of the commutator with a clean lint-free cloth soaked in methylated spirit.

3. If this is inadequate, insert a strip of aluminium oxide abrasive cloth (grit 320) through one of the brush apertures in the dynamo casing, around the commutator and back through the same aperture. Grip the cloth with one hand and rotate the pulley with the other in a clockwise direction, until all the blackening has been removed. Never rub black patches locally, as it deforms the commutator contour and will give rise to subsequent failure.

NOTE:

If the commutator is too badly burned for it to respond to this treatment, the dynamo is to be replaced as it is considered not possible for adequate attention to be given without specialised factory equipment.

4. When the commutator is clean, wrap a 1.125" wide strip of aluminium oxide abrasive cloth around it, abrasive

side outermost, allowing a slight overlap. One end of the cloth is to be fixed to the commutator with a small tab of "Sellotape" or similar adhesive strip and the other fixed also with "Sellotape" over the full width of the joint so that the commutator is completely circumscribed with adhesive cloth.

5. Take care to re-fit the fibre washer to take up end float between the commutator and end cover and temporarily secure the end cover with the two long screws.

6. Fit the new PM.50 brushes.

7. Rotate the dynamo pulley clockwise for about twenty revolutions.

8. Carefully remove the brushes and inspect for bedding - continue this treatment until the bedding is 100%.

9. When the bedding appears satisfactory remove the brushes from the brush boxes, and allow them to come through the brush apertures in the dynamo casing.

10. Remove the end casing once more, taking care not to damage the brushes.

11. Remove the abrasive tape and blow out all traces of carbon and copper dust.

12. When thoroughly clean, refit the end plate and secure finally.

13. Carefully refit the brushes.

14. The dynamo is then to be "motored" by connecting the positive terminal of a 12 volt battery to the brush terminal, the negative battery terminal to earth on the dynamo casing and the field terminal to the 6 volt section of the battery. <u>This must be continued for eight hours or until the brushes are 75% bedded overall but with 100% bedding at the trailing edges</u>.

NOTE: This "motoring" is regarded as essential to prevent any further brush and commutator burning.

15. Slide the dust cover in position and refit the dynamo to the car.

The time considered adequate for this work is:

To change a dynamo and regulator - 4 hours.
To modify a regulator - ½ an hour.
To overhaul a dynamo - 2 hours.
(This includes 1 hour labour allowance for 8 hours "motoring").

| MATERIALS. | Rolls-Royce Part No. | No.Off. |
|---|---|---|
| 63 Ohm Resistor | CD.712 | 1 |
| 40 Ohm Swamp Resistor | CD.713 | 1 |
| PM.50 Dynamo Brushes | | 2 |

FOR INFORMATION.

## WINDSCREEN WIPER ASSEMBLIES.

There is, at present, a number of windscreen wiper motor assemblies which differ only in respect of the length of rack attached to the motor.

In order to simplify the ordering of spares, and to reduce the number of assemblies stocked, it has been decided to list the motors and racks separately.

The part numbers of the motors and racks are as follows:-

| Description. | Lucas Part No. | Rolls-Royce Part No. |
|---|---|---|
| Motor | 75186, 75249. (Used where both wiper blades operate in unison). | CD. 572. |
| Motor | 75181, 75250. (Used where wiper blades operate counter-phase). | CD. 573. |
| Rack (Length 51.25") | - | CD. 224. |
| Rack (Length 55.25") | - | CD. 574. |
| Rack (Length 47. 9") | - | CD. 575. |
| Rack (Length 61.00") | - | CD. 576. |

The rack length is measured from the eye of the rack crosshead to the extreme end.

These parts, which can be identified by examination, should in future be ordered separately.

CATEGORY 3.

## IMPROVED HORN CABLE AND BUSH TO OVERCOME THE POSSIBILITY OF HORN CABLE FATIGUE FAILURE.

The movement of the steering wheel twists and untwists the horn cable, which runs from the horn button assembly, through the centre of the steering column, and out at the base to a snap connector.

At the top of the steering column the horn cable terminal screw, into which the horn cable is soldered, moves with the steering wheel, whereas the horn cable tends to remain stationary; this action places a torsional load on the cable close to the terminal screw and may cause fatigue failure of the cable at that point.

To overcome this possibility the horn cable assembly is to be replaced with one having a cable more resistant to fatigue failure, and a horn cable bush (which fits next to the terminal screw), that will clamp the cable within the horn contact housing so that rotation of the steering wheel does not tend to twist the terminal screw relative to the cable but twists the whole cable.

The modified assembly was introduced on production as follows:-

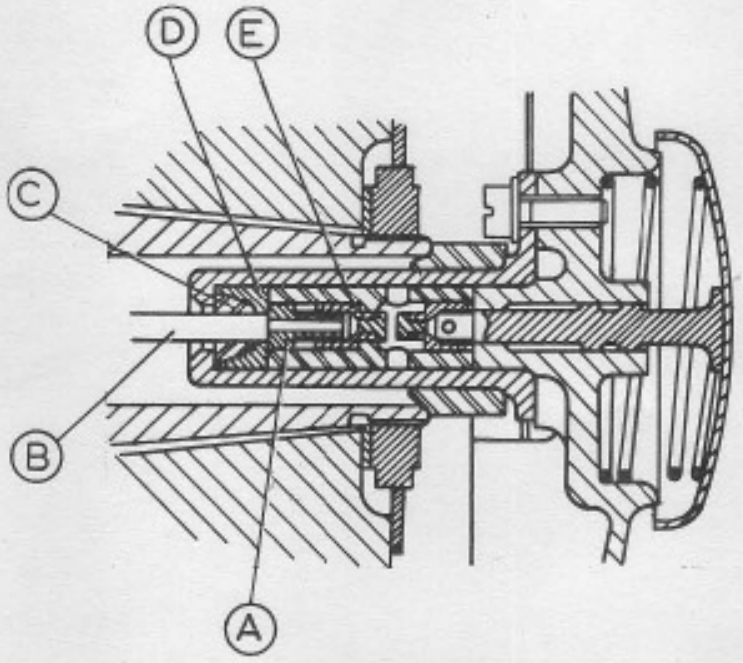
| | | |
|---|---|---|
| Silver Cloud | - | SWA-200. |
| Bentley "S" Type | - | B-375-AP. |
| Bentley "S" Type Continental | - | BC-1-BG. |

PROCEDURE.

Disconnect the cable from the snap connector at the base of the steering column and demount the horn button housing by removing the three retaining setscrews in the underside of the steering wheel boss. This will allow the horn button housing and the contact housing to be removed complete with cable. Remove the insulator bush and unscrew the horn cable contact point noting the number of turns taken to unscrew it, so that on re-assembly the horn contact can be screwed onto the new cable the same number of turns which will approximately give the correct horn contact gap.

Discard the existing horn cable assembly and fit the modified one, re-screwing the horn contact as mentioned previously.

Remount the whole assembly and check the horn button movement before the horn operates; this should be approximately .040" and is measured by placing feeler gauges under the rim of the horn button and noting the clearance between the under surface of the horn button and the horn button housing, then reducing the feeler gauge thickness to .040" and pressing the horn button; the horn should sound just as the feeler gauges are gripped.




A. Horn Cable Terminal Screw.
B. Horn Cable.
C. Rubber Gland Washer.
D. "Tufnol" Bush.
E. Horn Contact.

Horn Button and Horn Contact Assembly.

If the clearance is incorrect the necessary adjustment is made by demounting the complete assembly and screwing or unscrewing the horn cable terminal screw, a turn at a time.

The part number of the new assembly is given below, and Retailers are asked to order from The London Service Station as required:-

F.58688 S/A - Horn cable assembly.

The time allowed for this work is two hours.

FOR INFORMATION.

## SPEEDOMETER AND TACHOMETER CABLES.

Noise from speedometer and tachometer cables is frequently due to their being kinked after being wound too tightly during storage.

All cables are hung vertically in store, but are despatched to Special Retailers and Agents rolled. The radius at which they are rolled is the absolute minimum permissable, and the are not to be wound tighter under any circumstances.

Special Retailers and Agents are urgently requested that whenever possible all speedometer and tachometer cables are to be stored by hanging vertically. This may be done simply by tying a piece of cord around the adaptor at one end and suspending the cable on a hook.

FOR INFORMATION.

## THE LUCAS IGNITION COIL AS AN ALTERNATIVE REPLACEMENT.

It has been decided to introduce a Lucas ignition coil as an alternative to the Delco-Remy coil. It is important that this is correctly connected, as otherwise, due to the fixed polarity of the coil, loss of efficiency and consequent misfiring will occur. It is also essential that the cable eye is locked to the terminal block to obviate the "spannering" effect of the stiff cable, which will otherwise result in the nut loosening and eventually falling off.

### CONNECTING THE LUCAS COIL.

The blue cable from the loom on the wing valance is connected to the "SW" terminal, and the brown cable, which comes through the ignition harness tube, is connected to the "CB" terminal. As both of these cables are covered with a protective P.V.C. sleeving, it will be necessary to displace the rubber insulating sleeve on the cable eye to ascertain the correct colour. The suppressor condensor is to be connected to the "SW" terminal.

With the coil inverted (as fitted), the CB terminal is situated on the left hand side of the coil, i.e. to the front of the vehicle. This will necessitate drawing the slack cable situated behind the distributor tower, through the harness tube, to allow for the transposition of the cable eye to that side of the coil.

### CORRECT SEQUENCE OF ASSEMBLY AT THE TERMINAL.

To ensure that the cables do not work loose, the cable eyes are to be locked to the body of the coil by assembling on the terminal first the shakeproof washer, next the cable eye, and where pertinent, the suppressor condensor cable eye, followed by the plain washer and finally the knurled nut.

### IDENTIFICATION.

The Lucas Ignition Coil Part No. UD.1983, can be identified by a transfer which states "For use with NEGATIVE Earth System only".

Lucas coils other than the ones bearing this transfer should not be used.

### CHASSIS NOS:

Rolls-Royce Silver Cloud.
Bentley "S" Type.
Rolls-Royce Silver Wraith "E" Series.

FOR INFORMATION.

## DISCHARGED BATTERIES.

The very small mileage which petrol rationing permits will probably give rise to complaints of flat batteries, particularly in urban areas where cars will be running at low speeds and the dynamo output will, in consequence, be low.

The consequences of periods of partial storage, frequent use of the starter and other consumers, and low charge rate, can be to some extent offset by precautions which it is reasonable that owners should take in the circumstances. Where necessary Retailers should advise owners as follows:-

1) Heavy consumers such as headlights, heater and demister blowers, radio and the rear window demister should be used as little as possible. The rear window demister which takes 7 amps is normally left switched on. This should be switched off and only used when really required.

2) A trickle charger can be used when the car cannot be run sufficiently to keep the battery charged and the owner cannot effectively reduce the use of consumers.

The charging circuit has recently been subject to modification action and it is understandable that discharged batteries which are, in fact, due solely to insufficient car mileage should be attributed to defective components. It is, therefore, important to make a careful diagnosis of the real cause if the removal of entirely satisfactory dynamos and regulators is to be avoided.

The dynamo and regulator, particularly the open circuit voltage, can be checked in position, and if these are operating normally and the owner does not report the ignition warning light showing intermittently when the car is in motion or any other symptoms, then it is reasonable to assume that the cause may be insufficient running and the owner should be advised accordingly.

INFORMATION

## REGULATOR ADJUSTMENT OF CLOCKS

Clocks have been returned to Rolls-Royce Ltd for the complaint of poor timekeeping which has not been substantiated when the clock has been correctly regulated on inspection.

There are two types of clocks fitted to Rolls-Royce and Bentley motor cars, one which is regulated from the rear (Fig.1) and is fitted to standard steel cars, and the other (Fig.2) which can be regulated from the front and is fitted to coachbuilt cars.

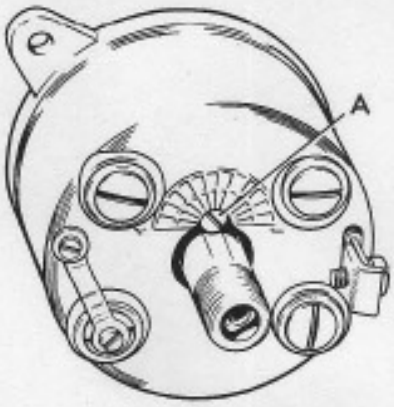



FIG.1.
A - REGULATING SCREW

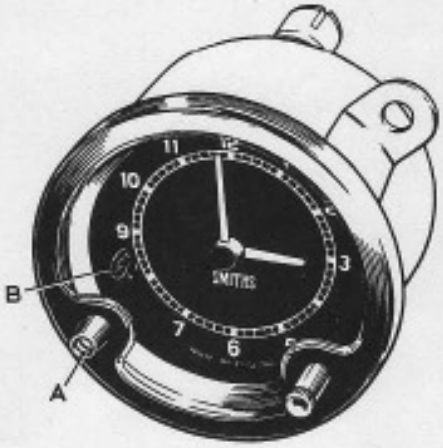



FIG.2.
A- REGULATING SCREW
B- INDICATOR DIAL

The standard clock is regulated by turning the adjustment screw at the rear to the right to lose time and left to gain time (A Fig.1). The other clock is regulated by turning the screw (A Fig.2) so that the indicator dial moves in the correct direction (B Fig.2). Clockwise rotation of the adjusting screw rotates the indicator face towards the "S" thus slowing the clock, and vice versa.

Movements of the adjusting screw must be very limited otherwise over regulation will result.