

LUCAS WORKSHOP INSTRUCTIONS

IGNITION CONDENSERS

The question of the serviceability of ignition condensers is one on which members of the trade seem to hold conflicting opinions, and many condensers have been returned as unserviceable when, in fact, the opposite is the case. From time to time, various condenser testing sets have been marketed, and our experience has been that such devices produce a great diversity of results, so that condensers which would pass as serviceable on one test set might be rejected by another. Moreover, the results obtained in many cases require careful interpretation to enable a definite decision to be reached as to the serviceability of the condenser.

The tests usually provided on such sets are for capacity and leakage (or insulation) resistance. Now the capacity of a condenser is determined by its physical construction and, to all intents and purposes, will remain constant throughout the life of the condenser. Here, a warning must be given regarding the accuracy of capacity measurements obtained on the test set. Most meters graduated in "capacity" actually measure the impedance of the condenser, but since the impedance is a function of both capacity and insulation resistance the effect of a decrease in the latter will be to indicate, on the meter, an apparent increase in the capacity of the condenser.

The second factor, namely insulation resistance, is the one which provides an indication of the length of service to be expected from the condenser. Insulation resistance is reduced during service due to the absorption of moisture by the wax with which the condenser is impregnated, but it must be stressed that the value of this resistance can fall to a value of *considerably less than one megohm* before the performance of the ignition equipment is affected, and this will occur only when the condenser reaches a temperature of 80°C. or above. Indication of ab-

normally low insulation resistance will be given by a falling off in high speed performance with coil ignition equipment or a general deterioration in magneto performance, particularly at slow speeds, after the engine has been running for some time and the condenser has become heated.

It is suggested therefore that condenser testing as a *routine matter* is unnecessary and may be misleading. The possible causes of condenser trouble, with the symptoms by which each can be recognised, are —

- (a) Open circuit, indicated by excessive burning at the contacts.
- (b) Short circuit, indicated by no interruption of primary current when the contacts are opened.
- (c) Abnormally low insulation resistance, indicated by poor high speed performance in the case of coil ignition equipment or poor low speed performance of the magneto after a period of running when the condenser has become heated to 80°C.

In the case of (a) and (b), the condenser must be checked by substitution, but in the event of the symptoms in (c) being observed, an insulation resistance test should be carried out using a 500 or 250 volt megger. The condenser should be rejected if a reading is given of less than 3 megohms, since this indicates that, even if not the cause of the trouble, the potential life of the condenser has decreased and a replacement may be advisable.

It cannot be too strongly emphasised that only in the event of the insulation resistance falling to an *exceptionally low value* will the ignition performance be adversely affected.

