Chapter 6

TRANSFORMER, B.T.H., TYPE LTC, FORM B3/1

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Transformer, B.T.H., Type LTC, Form B3/1	*Ref. No.* 5UB/6342
Operating voltage range	24 *to* 28 *volt*
Ampere turns ratio, primary to secondary	2 : 3
Primary winding resistance	24 *ohm*
Secondary winding resistance	10·7 *ohm*
Resistor in series with primary winding	60 *ohm*
Voltage regulators directly concerned	
Pilot regulator, Type 22/50836	*Ref. No.* 5UC/6138
Main regulator, Type 50/42909*E*	*Ref. No.* 5UC/6137

Introduction

1. The B.T.H. Type LTC, Form B3/1 stabilizing transformer operates in conjunction with the 28-volt pilot regulator, Type 22/50836, and the stabilizing transformer fitted in the base of the main regulator, Type 50/42909E (24·5 volt).

2. The two primary windings of the stabilizing transformers are connected in parallel with each other, and also in parallel connection with the alternator field. The transformer secondary windings are connected in series with the relevant voltage regulator coils.

DESCRIPTION

3. The B3/1 transformer, which is designed for a particular application, comprises a laminated former, on which is wound a primary and secondary winding. A 60-ohm resistor (comprising two 120-ohm resistors in parallel), is connected in series with the primary winding, between terminals P1 and P2 (*fig.* 2). The cable ends of each winding are brought to P1, P2, S1 and S2 terminals, fitted to a common, separately insulated block on the outside of the case (*fig.* 1).

OPERATION

4. Under normal stabilized conditions, a small direct leakage current flows through the primary windings and therefore no secondary e.m.f. is induced.

5. Any instability in the voltage regulation will appear as an oscillatory current in the carbon pile field regulator, and also across the primary winding. This rate of change of current, induces an e.m.f. in the secondary winding, but, in phase opposition to the

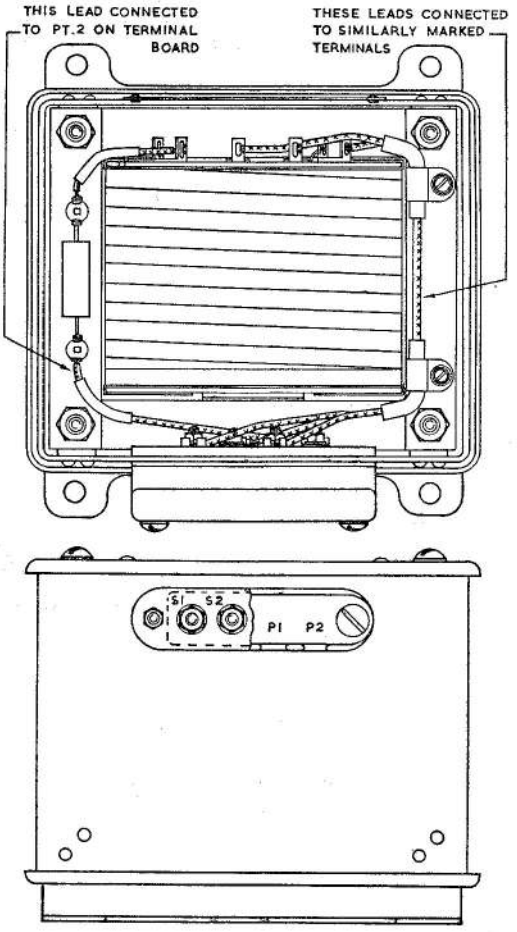

Fig. 1. Sectional view of transformer

initial disturbances, thus damping out any variations of voltage.

6. The transformer thus provides a stabilizing influence, with the added advantage of extreme simplicity, and no moving parts.

INSTALLATION

7. The transformer can be fitted in any position. Four mounting lugs, drilled with 0·201 in. clearance holes are provided for installation in the aircraft.

SERVICING

General

8. The minimum of servicing is necessary with this type of transformer, except to ensure that the primary and secondary terminals are tight, and free from corrosion, also that the installation fittings are secure.

9. To avoid the possibility of low insulation, the transformer cover should not be removed, except for testing, or for examination, if defective.

Testing

10. Ensure that the resistance of the windings are within ± 10 per cent of the values given in Leading Particulars. This will entail removing the cover, as the resistance of the primary should be measured between terminal P1 and the other end of the primary winding, i.e., the reading should not include the 60-ohm resistor. The resistance values are measured at 20 deg. C.

11. Measure the inductance of the primary winding on a 1,000 cycles per second bridge, again without the 60-ohm resistance, which is in series with it. The inductance value must be between 465 and 515 millihenries.

12. Using a 250-volt insulation resistance tester, measure the insulation resistance between:—

(1) Primary winding and the case.

(2) Secondary winding and the case.

(3) Primary and secondary windings.

A reading of at least 5 megohms should be obtained for each test.

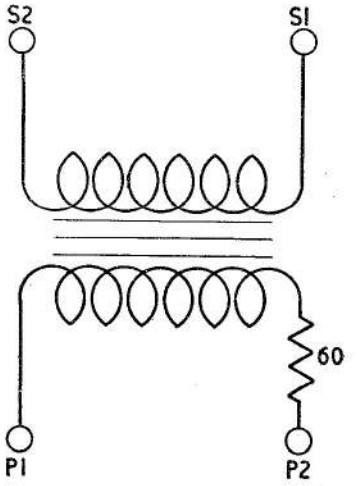

Fig. 2. Circuit diagram