Chapter 7

TRANSFORMER, B.T.H. TYPE LTC, FORM B4

LIST OF CONTENTS

	Para.		Para.
Introduction	1	**Installation**	8
Description	4	**Servicing**	
Operation	5	*General*	9
		Testing	11

LIST OF ILLUSTRATIONS

	Fig.		Fig.
Sectional view of transformer	1	*Circuit diagram for Form B4/2*	3
Circuit diagram for Form B4/1	2		

LEADING PARTICULARS

Transformer, BTH., Type LTC Form B4	*Ref. No. 5UB/7639*
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 (Form B4/2 only) ...	15 *ohm*
Weight	5 *lb.* 8 *oz.*
Voltage regulators directly concerned	
Pilot regulator, Type 22/56534	*Ref. No. 5UC/7096*
Main regulator, Type 50/51858*E*	*Ref. No. 5UC/7094*

Introduction

1. The B.T.H. Type LTC, Form B4 stabilizing transformer operates in conjunction with the pilot regulator, Type 22/56534, and the stabilizing transformer fitted in the base of the main regulator, Type 50/51858E.

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.

3. The only difference between the Type LTC, Form B4/1 and the Type LTC, Form B4/2 is that the Form B4/2 incorporates a 15-ohm resistor connected in series with the primary winding.

DESCRIPTION

4. The B4 transformer, which is designed for a particular application, comprises a laminated former, on which is wound a primary and secondary winding. The B4/2 has a 15 ohm resistor, fitted on a tag board, connected in series with the primary winding. 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

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

6. 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 initial disturbances, thus damping out any variations of voltage.

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

INSTALLATION

8. 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.

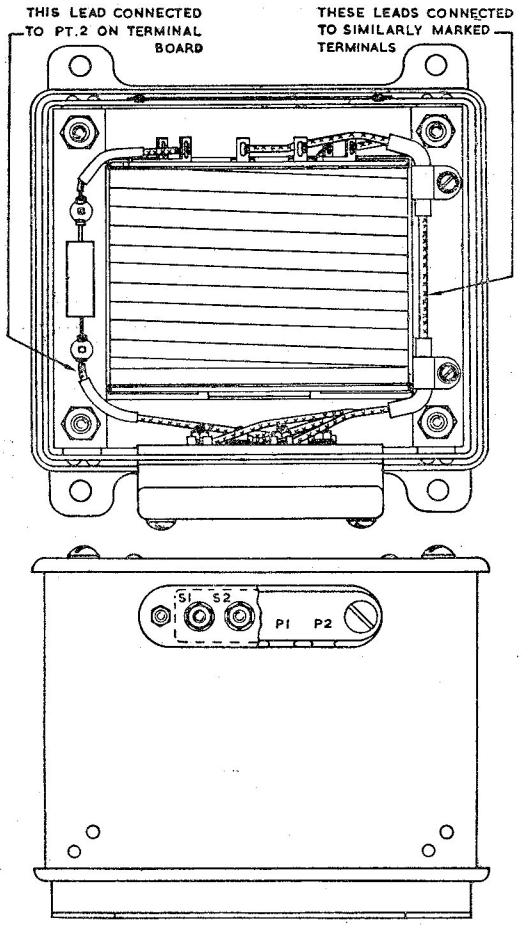

Fig. 1. Sectional view of transformer

SERVICING

General

9. 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.

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

Testing

11. Ensure that the resistance of the windings are within ± 10 per cent of the values given in Leading Particulars. The resistance values are measured at 20 deg. C.

Note . . .

With the Form B4/2 the resistance of the primary should be measured between terminal P1 and the other end of the primary winding, i.e., not including the 15-ohm resistor.

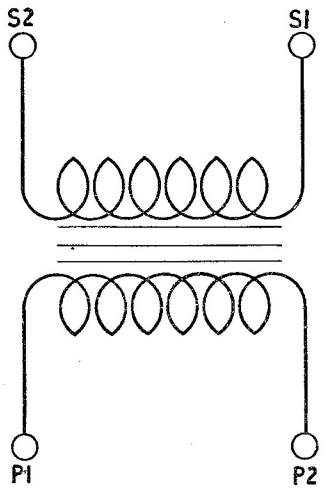

Fig. 2. Circuit diagram for Form B4/1

12. Measure the inductance of the primary winding on 1,000 cycles per second bridge. The inductance value must be between 465 and 515 millihenries.

13. Apply a voltage of 75 volts, 50 c/s a.c. to the secondary winding with the primary winding open-circuited. The secondary current should be within the limits of 0·165 and 0·21 amp. The induced voltage in the primary should be 50±1 volts.

14. 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.

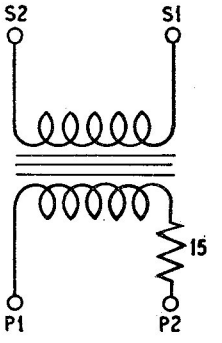

Fig. 3. Circuit diagram for Form B4/2

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