Chapter 11

CURRENT TRANSFORMER, B.T.H., TYPE LTB, FORM Y1/1

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Transformer, Type LTB, Form Y1/1	*Ref. No. 5UB/7640*
Type of winding	*3-phase toroidal*
Input frequency	150–400 *c/s*
Output at 370 amp. a.c. per phase on primary	0·25*V d.c.*
Overall dimensions (in.)	$5\frac{7}{8} \times 2\frac{1}{8} \times 2\frac{1}{2}$
Weight	14 *oz.*

Introduction

1. The Type LTB, Form Y1/1 current transformer unit is designed to provide a d.c. supply for aircraft intrumentation purposes.

2. The current induced in the three secondary windings of this transformer are proportional to the a.c. line currents, hence the d.c. output current and the shunt voltage of the internal three-phase bridge rectifier are proportional to the d.c. output of a rectifier fed by these a.c. line currents.

3. If the total a.c. output of the a.c. generator were rectified, this current transformer could be used to measure the total rectified d.c. load; however, if some a.c. current is tapped off, e.g., for windscreen heating etc., this current transformer can be used to measure the equivalent d.c. load.

DESCRIPTION

4. A general view of the current transformer is shown in fig. 1 and a circuit diagram is given in fig. 2. It consists of three separate secondary windings, six silicon rectifiers connected as a three-phase bridge rectifier and a shunt connected across the d.c. output of the bridge. These components are fitted into a moulded case which is filled with an epoxy-resin compound to seal the assembly.

5. Each secondary winding is toroidally wound on a mu-metal strip core. The sides of the core are covered by moulded silicone compound end-cheeks to protect the winding. The three a.c. line cables which are used as the primary windings pass through the three $1\frac{3}{16}$ in. dia. holes in the transformer assembly.

6. External connections to the unit are made on two 2 B.A. terminals mounted on the base of the transformer.

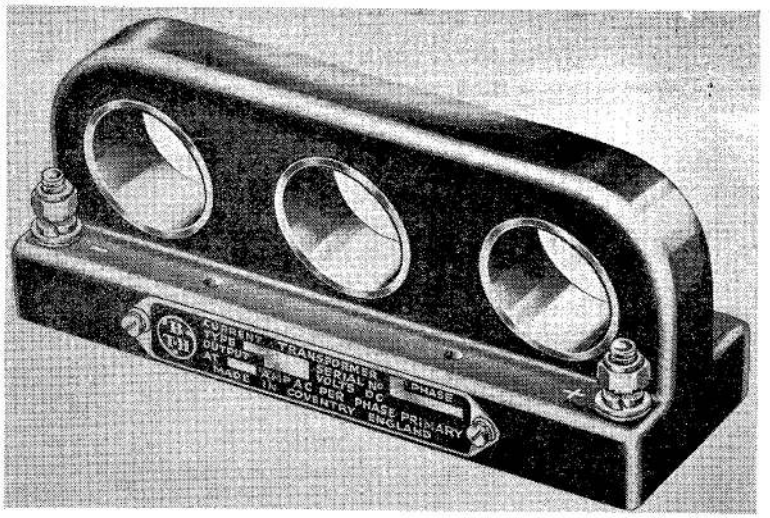

Fig. 1. Transformer, Type LTB, Form Y1/1

INSTALLATION

7. The transformer may be mounted in any position where the ambient temperature is not likely to exceed 55 deg. C. It is secured in position by four 4 B.A. screws passing through the moulded base.

SERVICING

8. As the transformer is a sealed assembly, little servicing can be done except to ensure that the unit is securely fixed and that the instrument lead connections are secure and sound.

TESTING

9. The transformer can be tested on the test rig used for checking the rectifier and a.c. control unit, Type LKB400, which is illustrated in A.P.4343B, Vol. 1, Book 2, Sect. 8. If this test rig is not available, a lower power test rig can be used and the primary turns should be increased to some convenient number N.

10. If the test rig for the rectifier and a.c. control unit, Type LKB 400 is available, the three cables connecting the a.c. generator, Type 3016–B, to the LKB 400 should be passed through the three holes in the current transformer under test. When using a lower power test rig, the transformer should be connected in a similar manner, i.e. between the a.c. generator and the three-phase rectifier as shown in fig. 3.

11. The output of the transformer under test should be 50·3 millivolts $\pm 1\frac{1}{2}\%$ per $\frac{100}{N}$ amp. d.c. The output should be checked at $\frac{100}{N}$, $\frac{200}{N}$ and $\frac{300}{N}$ amp. d.c.

Insulation resistance test

12. Using a 250-volt insulation resistance tester, measure the insulation resistance between the two output terminals and the three metal coil tubes through which the a.c. cables pass, a reading of at least 5 megohms should be obtained.

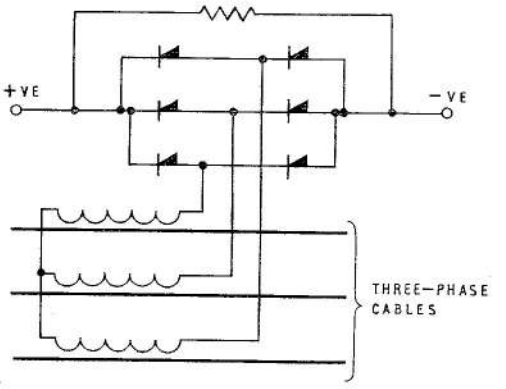

Fig. 2. Circuit diagram

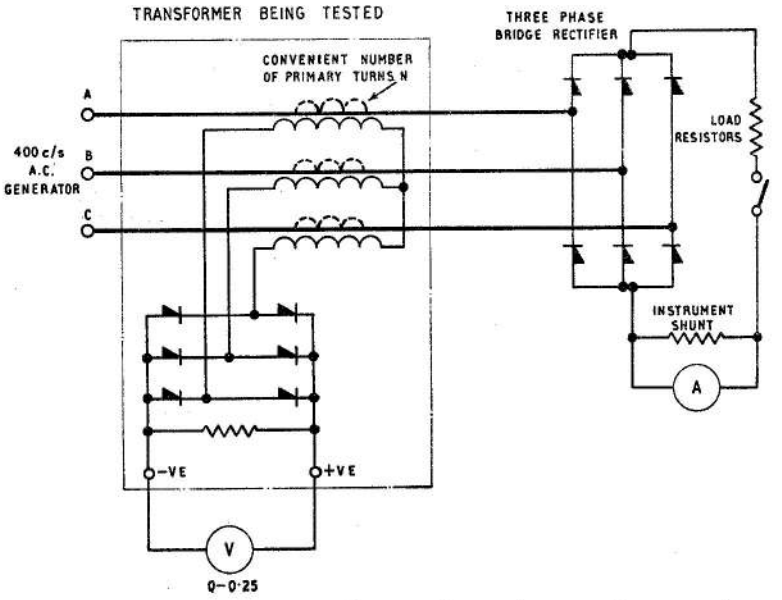

Fig. 3. Suggested circuit diagram for testing transformer unit

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