

Chapter 27

AUTO TRANSFORMER UNIT, ROTAX, TYPE P11701

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LEADING PARTICULARS

Auto transformer, Type P11701	Ref. No. 5UB/7626
<i>Input</i>	208V, 1-phase, 275-400 c/s
<i>Output</i>	1 kVA at 320 or 380V (reduced heat at 250V)
<i>Rating</i>	continuous
<i>Cooling</i>	natural
<i>Primary terminals</i>	B and A
<i>Secondary terminals</i>	B to A1-A2-A3
<i>Primary and secondary winding resistance—</i>	
<i>Terminal B to A</i>	0.66 ohms \pm 0.06 ohms
<i>Terminal A to A1</i>	0.15 ohms \pm 0.015 ohms
<i>Terminal A to A2</i>	0.36 ohms \pm 0.04 ohms
<i>Terminal A to A3</i>	0.58 ohms \pm 0.055 ohms
<i>Temperature range</i>	−55 deg. C. to +50 deg. C.
<i>Altitude</i>	30,000 ft.
<i>Overall dimensions—</i>	
<i>Length</i>	6.325 in.
<i>Width (including feet)</i>	5.062 in.
<i>Height</i>	3.218 in.
<i>Weight</i>	3 lb. 3 oz.

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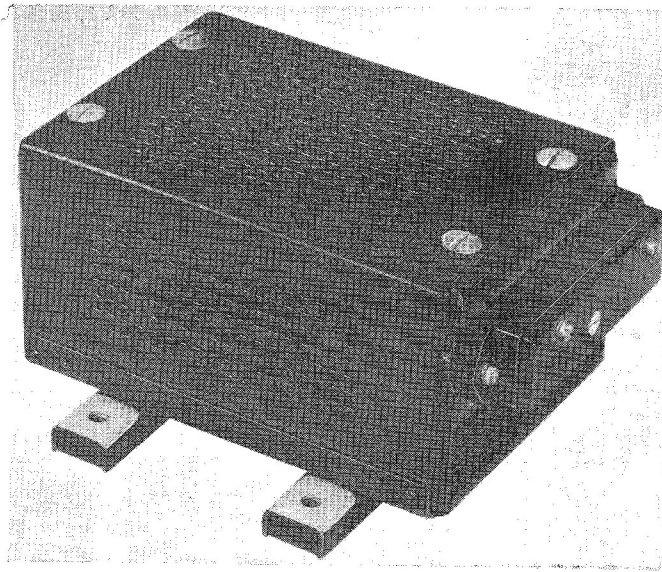


Fig. 1. Auto transformer, Type P11701

Introduction

1. The transformer is designed for aircraft de-icing circuits utilizing a 208 volt 400 c/s supply, and provides an output of 1 kVA at 380 volts with tapings at 320 volts and 250 volts nominal.

DESCRIPTION

2. The unit comprises a single phase auto-transformer in an aluminium-alloy case. The core of the transformer is clamped between alloy brackets and secured by bolts passing through the feet at the bottom of the case. The coil assembly is situated on the centre limb of the three-limbed core which is comprised of "Permendur" laminations. The whole assembly is enclosed and the cover is secured by four quick-release fasteners. A five-way bakelite terminal moulding is fixed externally on the case. The windings are of "Lewkanex M" and comprises a primary of 252 turns and a secondary of 208 turns with tapings at 58 and 135 turns.

Rating

3. The unit is continuously rated as follows:—

Input: 208 volts, 275-400 c/s

Output: 1 kVA at 380 volts, 320 volts or 250 volts (nominal)

Electrical connections

4. Electrical connections are made via five 4 B.A. screw and washer terminations on a 6-way terminal block, which are suitable for AMP cable lugs.

Primary terminals B and A are for the 208V input

Secondary terminals B and A1 are for 250V output

Secondary terminals B and A2 are for 320V output

Secondary terminals B and A3 are for 380V output

INSTALLATION

5. The overall dimensions are given under Leading Particulars. Four 0.218 in. diameter

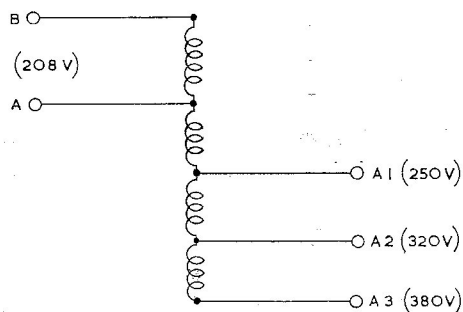


Fig. 2. Circuit diagram

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fixing holes are provided in the channels at 4.312 in. and 2.750 in. centres respectively. The unit may be mounted in any attitude, though mounting with the base inverted is not recommended.

Cooling

6. Care should be taken not to obstruct the ventilation of the unit, as the cooling is by means of natural convection. The air flow thus produced passes through the ventilating holes provided in the unit and across the heating surfaces.

SERVICING

7. Little servicing is possible apart from an examination of the unit for freedom from damage and security of connections. Should the operation of the transformer be suspect, it should be removed from the aircraft and tested as follows.

Testing

8. (1) *Open circuit* — Connect a 208V 400 c/s supply across terminals B and A with the other windings on open circuit.

The input current should not be greater than 0.3 amp. and the voltage measured across the following points should be as follows:—

Terminals B to A1	...	257 \pm 2.5V
Terminals B to A2	...	320 \pm 2.5V
Terminals B to A3	...	380 \pm 2.5V

(2) *Short circuit* — Short circuit terminals B and A3 through a moving iron ammeter. Connect a 400 c/s supply (less than 3 volts) across terminals B and A. Gradually increase the supply voltage until the short circuit current is 2.7 amp. The input current should be 4.9 \pm 0.25 amp.

(3) *Insulation resistance test* — The insulation resistance when measured with a 250-volt insulation resistance tester between the following points should not be less than 5 megohms.

Terminal A and iron core.

Terminal A to frame.

All tests to the frame should be made with the lid in position.

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