

See AP. 113D - 0414-16 held 'C'

Chapter 3

TRANSFORMER-RECTIFIER UNITS, ROTAX, U1800 SERIES

LIST OF CONTENTS

	<i>Para.</i>		<i>Para.</i>
<i>Introduction</i>	1	<i>Servicing</i>	8
<i>Description</i>	2	<i>Insulation resistance tests</i>	9
<i>Installation</i>	7		

LIST OF ILLUSTRATIONS

	<i>Fig.</i>		<i>Fig.</i>
<i>Typical transformer-rectifier unit</i>	1	<i>Diagram of connections</i>	3
<i>View with cover removed</i>	2		

LIST OF APPENDICES

	<i>App.</i>		<i>App.</i>
<i>Transformer-rectifier unit, Rotax, Type U1801</i>	1	<i>Transformer-rectifier unit, Rotax, Type U1804</i>	3
<i>Transformer-rectifier unit, Type 2 (Rotax U1802)</i>	2		

Introduction

1. Transformer-rectifier units in the U1800 series are designed to operate in conjunction with various types of a.c. generator and voltage regulator to provide a 28-volt d.c. supply for the operating coil of the regulator.

DESCRIPTION

2. The components of the unit consist of a transformer, a rectifier, a resistor, and a terminal block. These are housed in an aluminium case (fig. 1), to the sides of which are riveted four steel mounting feet. The pressed cover is secured to small brackets at the top corners of the case by four ch/hd. screws. One end of the case is fitted with a gauze covered window, whilst the other end is provided with an aperture for cable entry. Additional ventilation holes are drilled in this end of the case.

3. The 400 c/s, 3-phase transformer is secured to the bottom of the case by four ch/hd. screws. A mounting plate on the transformer supports the moulded terminal block so that it is framed within the cable entry aperture. The terminal block mounts five sockets interspaced with insulating barriers.

4. Occupying the remaining space is a full-wave metal rectifier (fig. 2), supported by a pair of mounting brackets which are attached by ch/hd. screws to the bottom of the case. The ends of the rectifier spindle pass through holes in these brackets and are secured by hex/hd. nuts. Lying between the brackets

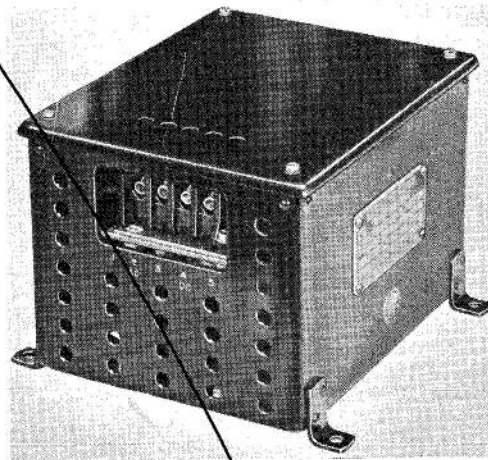


Fig. 1. Typical transformer-rectifier unit

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and beneath the rectifier is a plate of insulating material which is riveted to the case.

5. The resistor (fig. 2) is in the form of a wire-wound bobbin, secured by hex/hd. nuts between the arms of the bracket which is riveted to the side of the case. The bobbin is provided with an adjustable strap connection.

6. A diagram of connections is shown in fig. 3. Terminals No. 1, 2, and 3 are for the 3-phase input, whilst terminals No. 4 and 5 are for the d.c. output. No. 4 being the positive terminal. The 3-phase input is first stepped down in the transformer, and then rectified to give the required d.c. output. The tapping on the resistor is pre-set so that, with a resistive load of 2.1 amp. the output voltage is 28 volts when the input line voltage is 208 volts.

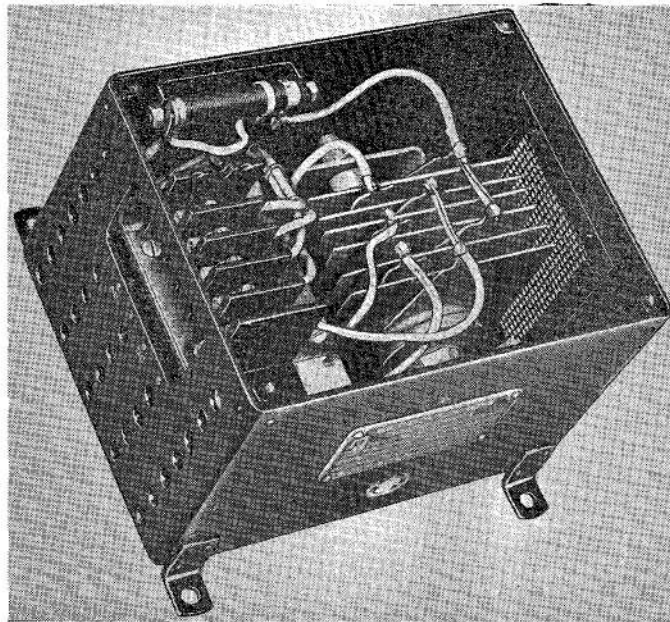


Fig. 2. View with cover removed

INSTALLATION

7. To ensure adequate cooling, the unit must be mounted with the terminals uppermost. To ensure that the flow of convected cooling air is not impeded, the unit must be sited so that there is no obstruction within 0.5 in. of the ventilation apertures.

SERVICING

8. Servicing is confined to ensuring that the unit is clean and free from damage. All screws, nuts, and rivets should be checked for tightness. The insulation of the connecting leads should be examined for signs of fraying or deterioration, and all connections should be checked to ensure that they are secure.

Insulation resistance

9. Using a 250-volt insulation resistance tester, the insulation resistance should be measured, firstly between all terminals and the case, and secondly between the a.c. input terminals and the d.c. output terminals. In each case the reading obtained should not be less than 0.5 megohm (for R.N.) or 5 megohms (for R.A.F.).

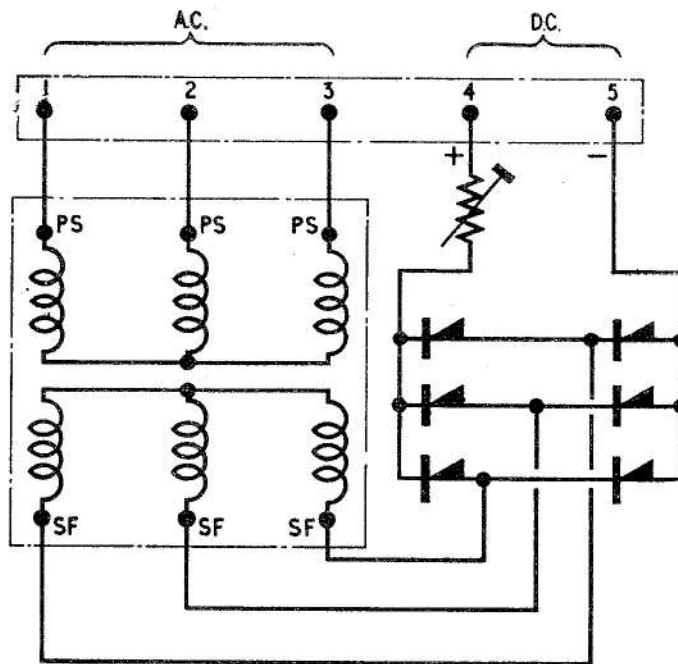


Fig. 3. Diagram of connections

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Appendix 1

TRANSFORMER-RECTIFIER UNIT, ROTAX, TYPE U 1801

LEADING PARTICULARS

Transformer-rectifier unit, Type U1801	<i>Ref. No. 5UC/6674</i>
<i>Regulated input</i>	208V, 400 c/s, 3-phase
<i>Input current</i>	0.16 amp.
<i>Output voltage</i>	29.9V.
<i>Output current</i>	1.5 amp.
<i>Rating</i>	continuous
<i>Associated equipment—</i>	
<i>Voltage regulator, Type 23/47848E</i>	<i>Ref. No. 5UC/6673</i>
<i>Alternator, Type N0504</i>	<i>Ref. No. 5UA/7020</i>
<i>Overall dimensions—</i>	
<i>Length</i>	6.0 in.
<i>Width (including mounting feet)</i>	6.0 in.
<i>Height</i>	4.406 in.
<i>Weight</i>	3 lb. 10 oz.

The transformer-rectifier unit, Type U1801 is similar to Type 2 (Rotax U1802) but differs from it in the output and associated equipments: Type U1801 is used with alternator, Type N0504 and Newton regulator unit, Type 23/47848E. The output is given with the other main characteristics under Leading Particulars.

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Appendix 2

TRANSFORMER-RECTIFIER UNIT, TYPE 2 (ROTAX U1802)

LEADING PARTICULARS

Transformer-rectifier unit, Type 2	...	...	...	...	...	Ref. No. 5UB/5722
Regulated input	...	...	...	...	...	208V, 400 c/s, 3-phase
Input current	...	...	...	...	...	0.16 amp.
Output	...	...	...	...	...	2.1 amp. at $28 \pm 0.25V$
Rating	...	...	...	...	...	Continuous
<i>Associated equipment—</i>						
Voltage regulator, Type 92	...	...	...	...	...	Ref. No. 5UC/5721
Alternator, Type 155 (Rotax N0306)	...	...	...	...	...	Ref. No. 5UA/5720
or Voltage regulator, Type 96	...	...	...	...	...	Ref. No. 5UC/6031
Alternator, Type 157 (Rotax N0404)	...	...	...	...	...	Ref. No. 5UA/6120
<i>Overall dimensions—</i>						
Length	...	...	...	...	...	6.0 in.
Width (including mounting feet)	...	...	...	...	...	6.0 in.
Height	...	...	...	...	...	4.406 in.
Weight	...	...	...	...	...	3 lb. 10 oz.

The transformer-rectifier unit, Type 2 (Rotax U1802) is identical to that described and illustrated in the main chapter.

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Appendix 3

TRANSFORMER-RECTIFIER UNIT, ROTAX, TYPE U1804

LEADING PARTICULARS

Transformer-rectifier unit, Type U1804	<i>Ref. No. 5UC/6889</i>
<i>Regulated input</i>	208V, 400 c/s, 3-phase
<i>Input current</i>	0.16 amp.
<i>Output</i>	2.1 amp. at $28 \pm 0.25V$
<i>Rating</i>	Continuous
<i>Associated equipment—</i>	
<i>Voltage regulator, Type 92</i>	<i>Ref. No. 5UC/5721</i>
<i>Alternator, Type 155 (Rotax N0306)</i>	<i>Ref. No. 5UA/5720</i>
<i>or Voltage regulator, Type 96</i>	<i>Ref. No. 5UC/6031</i>
<i>Alternator, Type 157 (Rotax N0404)</i>	<i>Ref. No. 5UA/6120</i>
<i>Overall dimensions—</i>	
<i>Length</i>	6.0 in.
<i>Width (including mounting feet)</i>	6.0 in.
<i>Height</i>	4.406 in.
<i>Weight</i>	3 lb. 10 oz.

The transformer-rectifier unit, Type U 1804 is similar to Type 2 (Rotax U 1802) but incorporates Lohys laminations in the transformer to increase the flux density. The main characteristics are given under Leading Particulars.

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