

## Chapter 4

## ROTARY INVERTER, TYPE 158 (ROTAX S3102/1D)

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## LEADING PARTICULARS

<b>Inverter, Type 158</b>	...	...	Ref. No. 5UB/6676
<b>Input</b>	...	...	110 to 116V, d.c.
<b>Output</b>	...	115V, 3-phase, a.c., 750 watt, 4.7 amp., at 0.9 leading, to 0.8 lagging power factor, frequency 400 cycles per second	
<b>Rating</b>	...	...	continuous
<b>Speed</b>	...	...	8,000 r.p.m.
<b>Rotation (viewed from commutator end)</b>	...	...	clockwise
<b>Maximum operational altitude</b>	...	...	50,000 ft. (fan and blast cooling)
<b>Operative temperature range</b>	...	...	-55 to +50 deg. C.
<b>Electrical connections</b>	...	...	
<b>Input</b>	...	...	2 split terminals
<b>Output (3-pole miniature Mk. 4 plug)</b>	...	...	Ref. No. 10H/9560060
<b>Control panel interconnection</b>	...	...	
(12-pole miniature Mk. 4 plug)	...	...	Ref. No. 10H/9560150
<b>Brush grade</b>	...	...	
d.c.	...	...	P.E.G. 14
a.c.	...	...	K.C. CM6
<b>Brush spring pressure</b>	...	...	
d.c.	...	...	15.5 to 17 oz.
a.c.	...	...	4 to 5 oz.
<b>Minimum brush length</b>	...	...	
d.c.	...	...	0.400 in.
a.c.	...	...	0.375 in.
<b>Weight</b>	...	...	30 lb.

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## Introduction

1. This machine is a modified version of the Type 153 inverter, which has been designed to provide (in conjunction with a control panel or panels) certain aircraft instruments and equipment with an a.c. supply at controlled voltage and frequency. With 110 to 116 volts applied to the d.c. end of the machine, the rotor speed is maintained at  $8,000 \pm 2$  per cent r.p.m. and the a.c. output maintained at  $400 \pm 2$  per cent cycles per second.

## DESCRIPTION

2. The machine is continuously rated, giving a 3-phase, 115-volt, 750-watt, output at 0.9 leading to 0.8 lagging power factor when supplied with a d.c. input of 110 to 116 volts. The design of the machine is, however, such as to meet a 1 kilowatt pulsating load requirement for radar equipment.

3. A general description of inverters in the S3100 series will be found in A.P.4343, Vol. 1, Sect. 8, Chap. 2. The Type 158 inverter (*fig. 1*) follows the same general construction but has two shunt field ballast resistors mounted on the brush-gear and four rotor circuit resistors mounted in the a.c. housing. Electrical connections are made via two split terminal lugs having cable holes 0.25 in. diameter for the d.c. input, and a three-pole plug for the a.c. output. Interconnection between the inverter and its associated control panel(s) is made via a 12-pole plug and its associated mating socket. All the above-mentioned connections, applying to the inverter, are located on the suppressor unit mounted on the top of the inverter.

## SERVICING

4. Servicing of this machine will normally be in accordance with A.P.4343, Vol. 1, Sect. 8, Chap. 2. Details of brush spring pressure and minimum brush lengths are given under Leading Particulars.

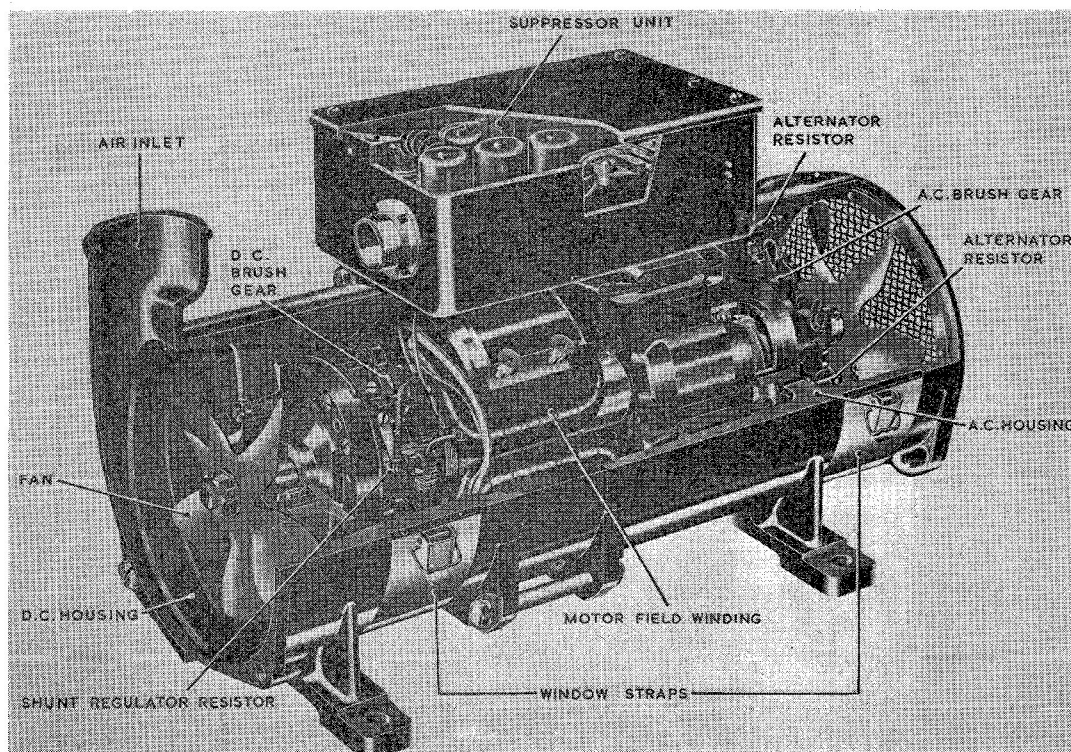


Fig. 1. Part sectioned 158 inverter

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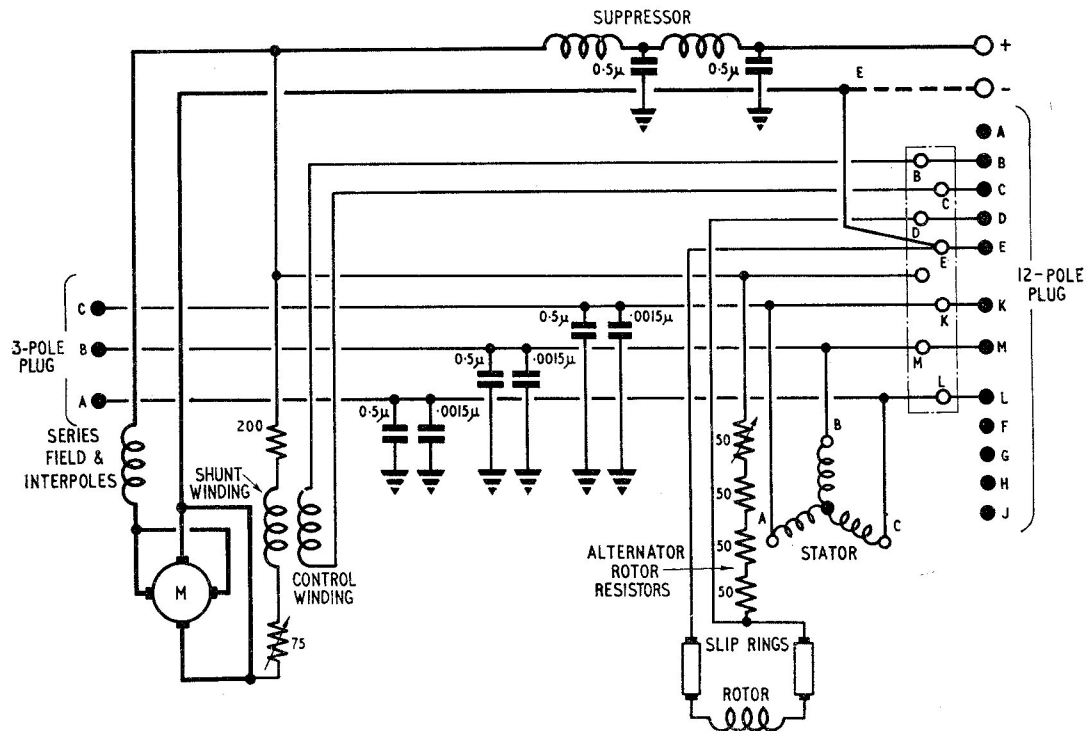


Fig. 2. Diagram of internal connections

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