

Chapter 26

GENERATOR, ROTAX, TYPE B2901

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LEADING PARTICULARS

<b>Generator, Rotax Type B2901</b> .. .. .	<i>Ref. No. 5UA/</i>
<i>Output</i> .. .. .	30 volts, 116 amp., 3.5 kW
<i>Speed range</i> .. .. .	8,750—13,100 r.p.m.
<i>Rotation (viewed from drive end)</i> .. .. .	Clockwise
<i>Mounting</i> .. .. .	spigot (with manacle ring fixing)
<i>Brush grade</i> .. .. .	P.E.G. 14
<i>Brush spring pressure</i> 22 to 26 oz. (trigger level with top of brush box)	
<i>Lubricant</i> .. .. .	Grease XG-271 (Ref. No. 34B/9100510)
<i>Length overall</i> .. .. .	11.375 in.
<i>Width overall (over nozzles)</i> .. .. .	11.250 in.
<i>Diameter of D.E. frame</i> .. .. .	6.468 in.
<i>Length of spigot</i> .. .. .	0.650 in.
<i>Weight</i> .. .. .	25 lb. (estimated)

### Introduction

1. The Type B2901 generator (*fig. 1*) is a four pole shunt wound machine designed for use in aircraft, and provides power supply at 28 volts. (nominal). Blast cooling is necessary.

### Voltage regulation

2. The shunt field may be controlled by a carbon pile regulator (Newton Type B/52760/E) which will maintain the output voltage at 28 volts  $\pm$  0.5 volt. A trimming resistance is provided for voltage level adjustment.

### DESCRIPTION

3. The armature is carried in a ball bearing at the commutator end and in a roller bearing at the drive end. The commutator connections are brazed. An inlet duct for blast air is situated at the commutator end of the machine and an outlet duct at the drive end.

A suppression assembly and a main terminal block are housed within the commutator end cover which is fitted to the commutator end bracket.

### Cooling

4. Blast air cooling is employed within the rated output at any speed within the specified range and at altitudes up to 60,000 ft.

5. Cooling requirements for various inlet temperatures are as follows:— A static pressure head of at least 6 in. water gauge must be maintained.

Inlet temperatures	Weight of air
+70 deg. C.	8.1
+45 deg. C.	6.0 estimated static hd. 8 in. W.G.
+30 deg. C.	5.2
+10 deg. C.	4.4
-10 deg. C.	3.8
-30 deg. C.	3.3

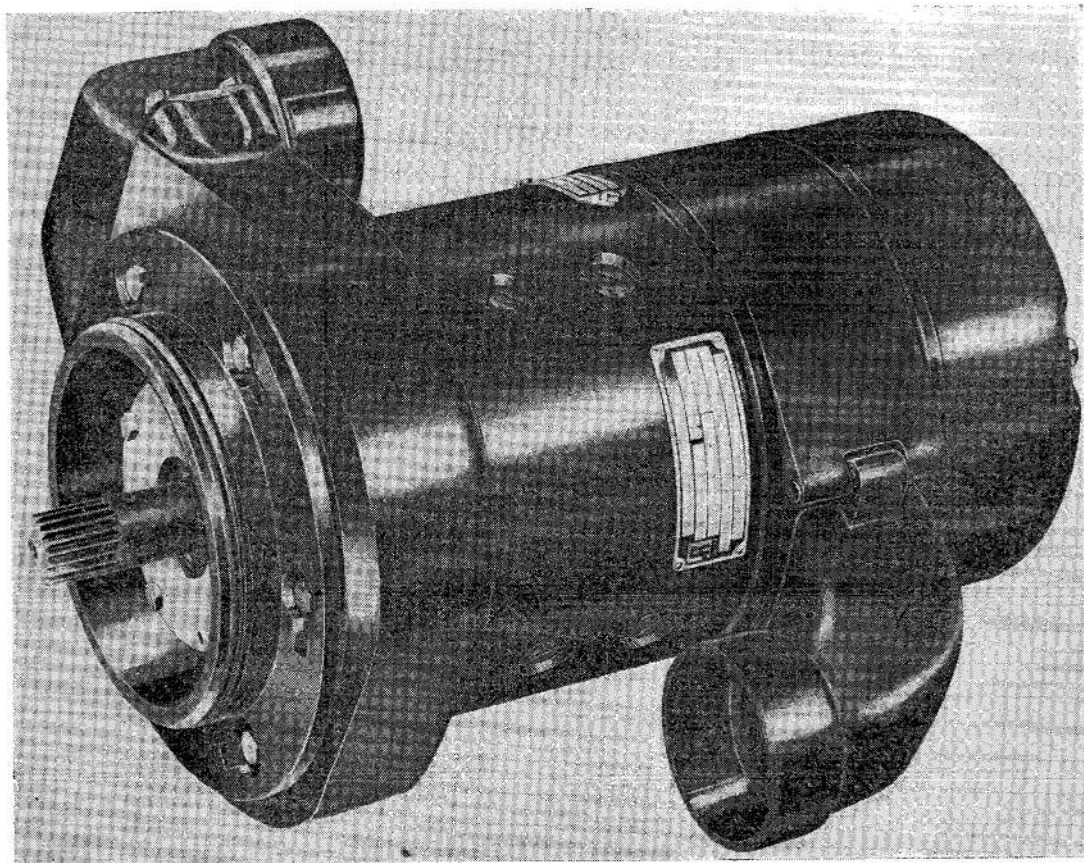


Fig 1. General view of Generator

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### Suppression

6. An assembly of 5 capacitors and 2 inductance coils is situated within the commutator end cover, and connected to the associated terminals as shown in fig. 2.

### Electrical connections

7. The moulded terminal block accommodates the following terminal studs and lugs:—  
Terminals 1 and 2:  $\frac{1}{4}$  B.S.F. (for use with aluminium crimping lugs Ref. No. 5X/6556).  
Terminal 4 (shunt): 2 B.A. (for use with copper crimping lug Ref. No. 5X/6669).

### Brushes and brushgear

8. The brushgear consists of a moulded ring having four brush boxes mounted on it, each box carrying a brush which is held under a spring tension of 22 to 26 oz. by flat coiled springs. The brush ring mounting flange contains elongated slots which enable the brushgear to be adjusted to obtain relatively sparkless commutation. (i.e., slight intermittent sparking.)

## INSTALLATION

9. The generator is coupled to its associated equipment by manacle ring clamping, and located by a spigot 4.124 in. diameter. The driving shaft is 0.750 in. nominal diameter with serrations machined to B.S.2059 (1953) fit 3. The machine may be mounted in any attitude. Rotation is clockwise viewed from the drive end.

10. The internal diameters of the inlet and outlet nozzles are 1.8 in. and 2.1 in. respectively.

11. For complete details of installation instructions refer to the relevant Aircraft Handbook for the aircraft in which the generator is fitted.

## OPERATION

12. The generator will give a d.c. output of 30 volts, 116 amp. at 8,750 to 13,100 r.p.m. It is fully tropicalised and designed for operation in ambient air temperatures between +70 deg. C. and -65 deg. C. at altitudes up to 60,000 ft.

## SERVICING

13. The following instructions should be read in conjunction with the chapter on

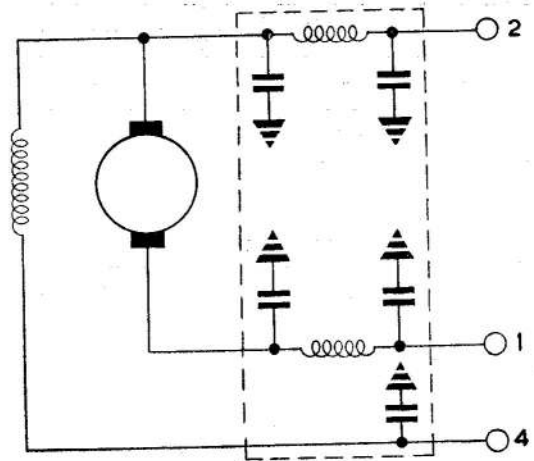


Fig. 2. Circuit diagram

the servicing of d.c. generators to be found in A.P.4343, Vol. 1, Sect. 2, Chap. 1. The machines should be inspected as laid down in the relevant servicing schedule. Commutator covers should be removed and the brushes, commutator, internal connections, etc., should be examined. The external connections must also be inspected and all the nuts, union caps and fixing screws checked, and, if necessary, tightened. When an inspection is being made on an aircraft dispersed in the open, care must be taken to prevent the ingress of moisture into the generator or terminal box.

14. Remove the commutator end cover by releasing the locking tab washers and withdrawing the four securing screws. Examine all the terminals for cleanliness and see that all nuts are tight.

Inspect the leads for frayed or damaged insulation.

15. Disconnect the air blast pipe and window strap from the commutator end. Inspect all the brushes, if they tend to bind in their boxes, wipe over both the box and the brush with a cloth moistened with pure benzine, taking care that no benzine gets on the commutator.

### Note . . .

*Cleaning of the commutator must be undertaken strictly in accordance with the relevant servicing schedule and in addition the operator is to refer to A.P.4343, Vol. 1, Sect. 1, Chap. 1.*

16. If the brushes are worn to below the stated limits, the generator must be removed from the aircraft for new brushes to be fitted and properly bedded to the commutator. The minimum brush length is 0.438 in., but care should be taken not to allow the brushes to reach this limit in service. Normally there will be no need for brushes to be changed between servicing periods.

17. With a suitable spring balance, test the brush spring tension at the point where the heel of the spring leaves the top of the brush

box. The tension should be 22 to 26 oz.

18. Check the security of all terminal connections and ensure that the generator is securely clamped to the engine by the associated manacle ring assembly.

19. On completion of the inspection, replace the air blast pipe and window strap assembly, and finally lock in position with tie wire through the respective holes in the wing nuts. Replace the end cover and screws using new tab washers to finally lock in position.

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