Chapter 21

ROTARY INVERTER, TYPE 206

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Rotary inverter, Type 206	Stores Ref. 5UB/6442
Used with control panel, Type 38	Stores Ref. 5UC/6164
Input voltage	25 to 28 V, d.c.
Output	115V, a.c. 350 watts at 1600 c/s (nominal) single-phase
Brushes, grade	... K.C.E.G.11 (Stores Ref. 5UB/5818)
Brush spring pressure	$8\frac{1}{2}$ to $9\frac{1}{2}$ oz.
Rotation (viewed from commutator end)	Clockwise
Overall length	$10\frac{1}{32}$ in.
Overall width	$4\frac{27}{32}$ in.
Overall height	$5\frac{11}{16}$ in.
Weight	10 lb. (approx.)

Introduction

1. The inverter Type 206 when used with a control panel Type 38 supplied at 25 to 28V, d.c. will give an output of 115V, a.c. ($\pm 2\frac{1}{2}$ per cent) R.M.S. 1600 c/s, single-phase at a speed of 8000 r.p.m.

2. This inverter is the same in all respects to the inverter Type 200 except that for space saving considerations the control box has been removed. The control box therefore becomes a separate unit known as the control panel Type 38 described in A.P. 4343B, Vol. 1, Sect. 7, Chap. 19.

(A.L.1, Sep. 57)

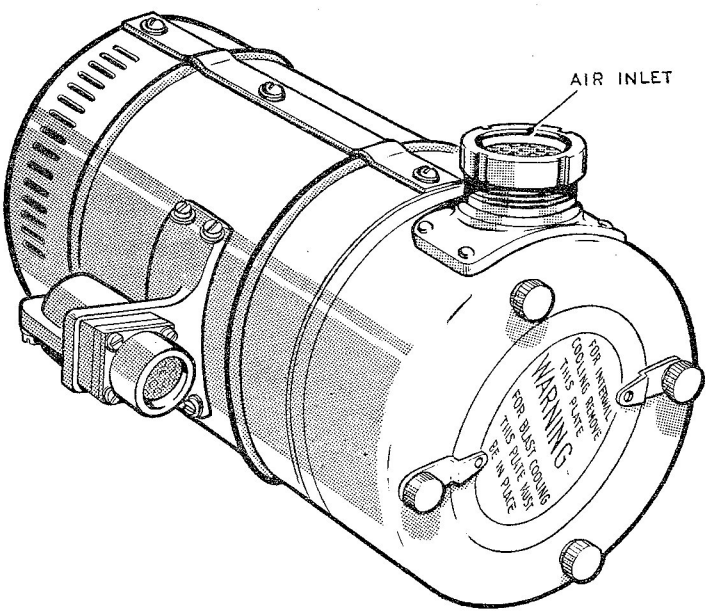

Fig. 1. General view, inverter Type 206

DESCRIPTION

2. The inverter, Type 206 (*fig. 1*) consists of a 25 to 28V, d.c. motor driving a 115V, 1600 c/s inductor type a.c. generator both mounted on a common shaft.

Main frame

3. Referring to fig. 2, the main frame is a casting which houses the windings for the d.c. field system and the a.c. stator; the various leads are taken out through the main frame in a rubber grommet and terminate at a 9-pole plug situated on the outer cover.

Field system

4. The d.c. field system incorporates four forged pole-pieces carrying the main field winding (A-AA) and the shunt field winding (Z-ZZ). The a.c. stator is laminated, with slots carrying the d.c. exciting winding (XX-X) and the main a.c. output winding (A1-A2). The motor armature is wave wound. The rotor of the a.c. generator is the laminated toothed type carrying no windings.

General

5. The main shaft is carried in ball bearings at both the a.c. and d.c. ends. The commutator end plate carries the brush gear and is enclosed by the end cover. The bearing at the commutator end is protected by its own bearing cap. A pressure of 8½ to 9 oz. is maintained on the four brushes by flat coiled springs and access to the brush gear is obtained by removing the commutator end cover. The brush springs are not adjustable.

Cooling

6. For altitudes up to 20,000 ft., cooling is effected by a six-bladed fan mounted on the shaft at the a.c. end of the machine. Air is drawn in through a perforated plate in the commutator end cover, passes through the d.c. and a.c. machines, and is expelled radially through perforations in the cover at the a.c. end.

Note . . .

For this type of cooling (i.e. when blast cooling is NOT *being employed) the small cover plate carrying the warning notice (fig. 1)* MUST *be removed.*

7. For altitudes above 20,000 ft. blast cooling is employed. The small cover plate, mentioned in the note to para. 6, must be in position. Cooling air enters through the special air pipe union (carried on the commutator end cover) passes through the

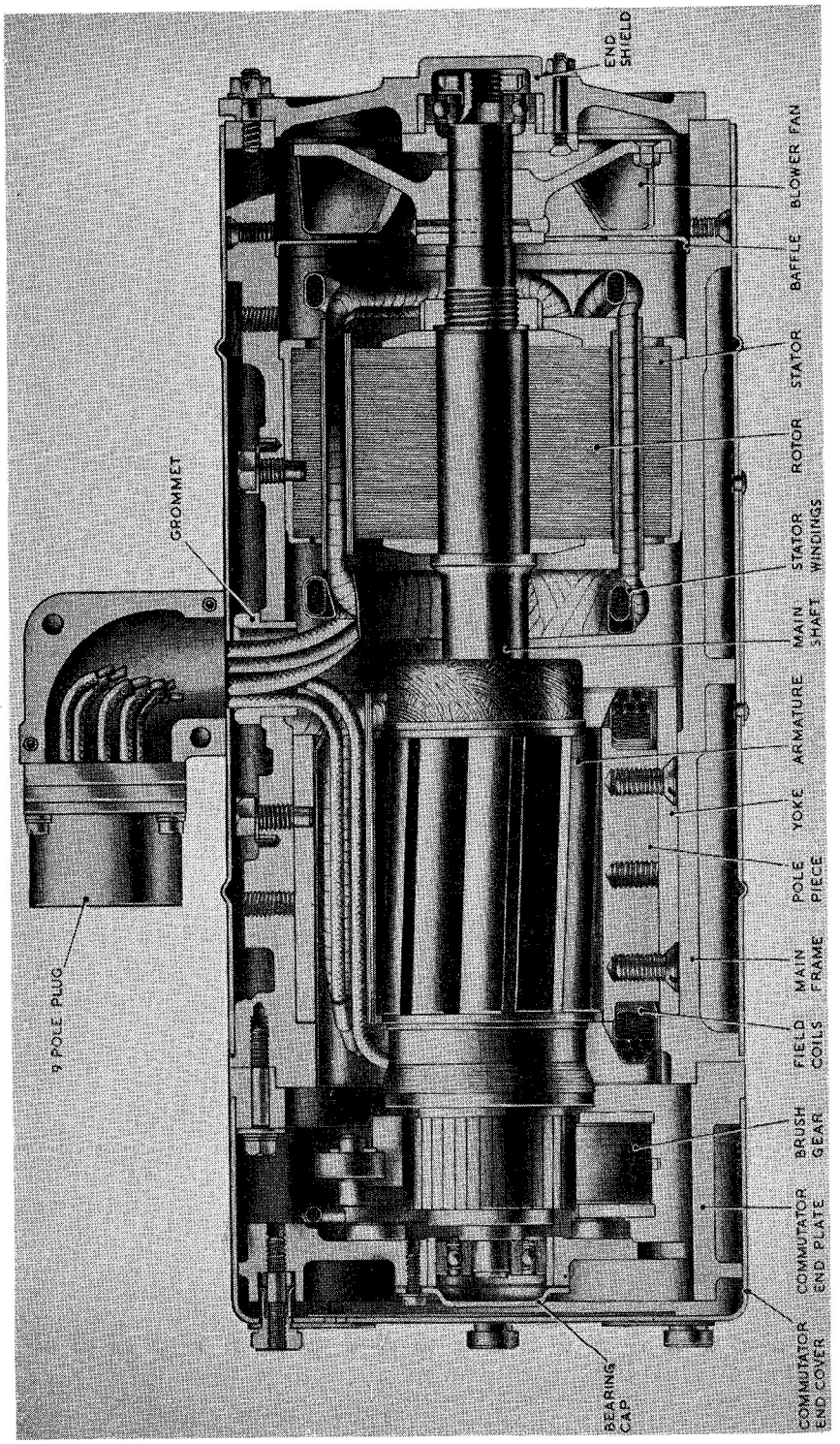

Fig. 2. Sectioned view

machine and is expelled radially through the perforations at the a.c. end. For convenience of mounting the air pipe union may be placed in either of two positions 90 deg. apart by unscrewing the commutator end cover and turning it through 90 deg. For blast cooling 20 cu. ft. per min. of air is required at a pressure of $3\frac{1}{2}$ in. water gauge at ground level.

INSTALLATION

8. No actual fixing devices are included on the inverter as it is intended to be held by two U-shaped straps. It is important that these fixing straps should not obstruct any of the cooling perforations. The clearance required for removing the commutator cover is 2 in. Adequate space must be left round the machine to connect the blast cooling pipe. The circuit diagram of the machine is given in fig. 3. The 9-pole plug used is a standard type (Stores Ref. 5X/4021).

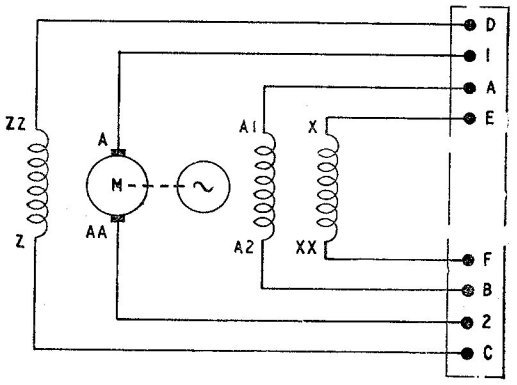

Fig. 3. Circuit diagram

SERVICING

9. General information on the servicing of inverters will be found in A.P.4343, Vol. 1, Sect. 8, to which reference should be made as required.

Brush gear

10. Brushes should not be allowed to wear down beyond the minimum permissible length of 11·5 mm. Brushes worn down to this limit should be replaced by new ones of the type given under Leading Particulars. Brush spring pressure is not adjustable; if the spring pressure should happen to fall below $8\frac{1}{2}$ oz., new springs should be fitted.

Bearings

11. The bearings are filled 25 per cent full with grease XG–275 (Stores Ref. 34B/9100512) during manufacture, and should not require attention between major servicing periods.

TESTING

12. The machine can only be satisfactorily tested in conjunction with a control panel Type 38 (Stores Ref. 5UC/6164). Run the inverter for 15 minutes on full load with an input of 25V, d.c. With the machine warm, check that the output voltage is within the limits of 112·1 and 117·9 volts:—

(1) With an input of 28-volts, when the load is switched from no load to full load, and back to no load.

(2) At three-quarters load, when the applied voltage is varied from 25 to 28-volts and back to 25-volts.

13. Check that with an input of 25 volts and full load applied, the input current does not exceed 30 amp.