

Chapter 5

BATTERY, 12-VOLT, 2.5 AMP. HR.

LIST OF CONTENTS

	<i>Para.</i>		<i>Para.</i>
<i>Introduction</i>	1	<i>Initial filling and charging</i>	5
Description	2	<i>Routine charging</i>	8
Servicing	4	<i>Insulation test</i>	10
		<i>Effect of high altitude flying</i>	11

LIST OF ILLUSTRATIONS

	<i>Fig.</i>
<i>Battery, 12-volt, 2.5 amp. hr.</i>	1

LIST OF APPENDICES

	<i>App.</i>
◀ <i>Standard serviceability test for battery, 12-volt, 2.5 amp. hr.</i> ...	A ▶

LEADING PARTICULARS

Battery, 12-volt, 2.5 amp. hr. Ref. No. 5J/9101543 (previously 5J/3307)

Capacity—

<i>At 10 hour rate</i>	4 amp. hr.
<i>At 1 hour rate</i>	2.5 amp. hr.
<i>Overall dimensions</i>	4.8 in × 3.85 in. × 4.50 in.
<i>Weight (filled)</i>	4.75 lb.

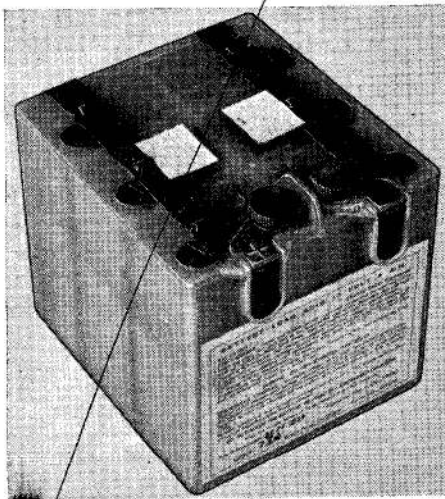


Fig. 1. Battery, 12-volt, 2.5 amp. hr.

Introduction

1. The battery, 12-volt, 2.5 amp. hr., is a lead-acid battery of conventional construction, as described in A.P.4343, Vol. 1, Sect. 3, Chap. 2. It is designed as a stand-by battery for canopy jettison and for emergency operation of V.H.F. equipment.

DESCRIPTION

2. This battery is illustrated in fig. 1. It consists of six cells housed in a polystyrene case. Each cell has nine plates, five negative and four positive, with separators of microporous P.V.C. and glass wool. The filling aperture of each cell is fitted with a solid stopper, with a vent alongside; fig. 1 shows the sealing tape in position, which must be removed from a new battery before initial filling.

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3. The cells of the battery are completely unspillable. Most of the electrolyte is absorbed in the separators, whilst the remainder is retained within the cell by means of the acid trap beneath the vent hole.

SERVICING

4. General servicing instructions for this type of battery are given in A.P.4343, Vol. 1, Sect. 3, Chap. 2. In addition, the following particular instructions apply.

Initial filling and charging

5. The S.G. of electrolyte for initial filling is 1.270. Break and remove all the seals, and ensure that the vent and filling holes are clear. Fill each cell to the level of the tops of the separators, stand for six hours, then add sufficient acid to restore the levels.

6. Charge at 0.4 amp. The charge is complete when cell voltages remain constant for five consecutive half-hourly readings. Should the temperature of the electrolyte reach 50 deg. C (122 deg. F), interrupt charging until the temperature falls below 43 deg. C (100 deg. F). The total time on charge will be approximately 24 hours.

7. If the electrolyte level is high, withdraw the excess. If the level is low, add acid of the same S.G. as before and charge for a further hour.

Note . . .

It is important that the cells should not be overfilled.

Routine charging

8. Recharge the battery without delay after termination of discharge. Charge at 0.4 amp. until the voltage rises to 2.5—2.6 volts per cell (15—15.6 volts over the battery), and remains constant for three consecutive half-hourly readings. It is not normally feasible to take S.G. readings, but the correct S.G. when the battery is fully charged is approximately 1.285.

9. Maintain the electrolyte level by the addition of approved water only. This should be done often enough to keep the plates always covered.

Note . . .

The battery should not be allowed to stand in a discharged condition. When not in use, it should be given a freshening charge at monthly intervals.

Insulation test

10. It is important that a insulation test, as laid down in A.P.4343, Vol. 1, Sect. 3, Chap. 2, should be made on the battery before it is issued from the charging room.

Effect of high altitude flying

11. The quantity of electrolyte in a battery of this type that has been in an aircraft flying at altitudes of more than 45,000 ft. will appear to have been reduced when the aircraft has returned to land. At these altitudes, gas, normally present in porous plates, will be reduced and electrolyte will take its place. The level of the electrolyte will not be restored until the battery has been given a freshening charge; if the level is still low after charging, the battery should be topped up as necessary.

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Appendix A
STANDARD SERVICEABILITY TEST
for
BATTERY, 12-VOLT, 2.5 AMP. HR.

Introduction

1. The tests detailed in this appendix may be applied to the battery before it is put into service, or at any time when serviceability is suspect.

TEST EQUIPMENT

2. The following test equipment is required:—

- (1) Battery capacity test set (Ref. No. 5G/2181), information on which will be found in A.P.4343S, Vol. 1, Book 3, Sect. 16.
- (2) 250 volt insulation tester (Ref. No. 5G/152).
- (3) Battery leakage tester (Ref. No. 5J/3323), information on which will be found in A.P.4343S, Vol. 1, Book 3, Sect. 16.

TEST PROCEDURE**General**

3. Examine visually for mechanical damage, particular attention should be paid to protruding parts such as terminals. Ensure that the battery is clean and dry.

Capacity test

4. At intervals of 3 months and whenever low capacity is suspected the following capacity test should be made. Fully charge the battery using the routine charging procedure, then connect the battery to the battery capacity test set and discharge at a constant current equal to one hour rate (2.5 amp.) until terminal voltage falls to

10.5 volts. If capacity is 75% or more (time 45 minutes or above) battery is fit for further use in aircraft, 60% or more (time 36 minutes or above) battery is fit for M.T. or ground use. All batteries whose capacity is below 60% are totally unserviceable. Batteries which are passed as fit for further use must be recharged immediately.

Insulation test

5. If a leak is suspected in a battery or when a capacity test is performed, an insulation test should be carried out. Place the battery on a metal plate and connect a 250 volt insulation resistance tester between one terminal of the battery and the metal plate. A clean dry battery should give a reading of at least 1 megohm, the minimum permissible reading is 0.5 megohm. Zero or a very low reading indicates a cell leak, in which case the battery is unserviceable. A low reading necessitates the battery to be washed, cleaned and dried and the test repeated.

Leakage test

6. If no apparent damage is visible the battery should be subjected to a leakage test using a battery leakage tester. Remove the filler plugs and hold the tester firmly in a vertical position over each filler hole in turn, at the same time sealing the adjacent hole by finger pressure. Apply a pressure of 1lb. per sq. in. by means of the hand pump, this pressure must not fall by more than 0.1lb. in 15 seconds.

Note . . .

General information on these tests will be found in A.P.4343, Vol. 1, Sect. 3, Chap. 2.

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