

# DESCRIPTION AND MAINTENANCE INSTRUCTIONS

## AIRCRAFT LEAD ACID BATTERIES

### WILLARD AR TYPE

(This EO replaces EO 40-5AAA-2 dated 25 May 54)

#### GENERAL

1 Willard AR type batteries are manufactured and stored with the plates dry charged. No electrolyte is added until the battery is required for use. The batteries incorporate a safety-fill filling method and are of the non-spill type.

#### SAFETY-FILL FILLING METHOD

2 The safety-fill filling method provides the correct level of electrolyte for the battery. This method is to be used for the initial filling and for all electrolyte level restoration. Each battery cell of safety fill construction has a filler hole and vent hole. The vent hole is directly under the manifold button corresponding to each cell. Figure 1 illustrates the principle of the safety-fill method.

#### NON-SPILL CONSTRUCTION

3 The battery is designed to prevent spillage during aircraft operation, provided the correct electrolyte level is maintained, see Figure 2.

#### PREPARATION FOR SERVICE

4 Prepare battery for service as follows:-

- (a) Inspect the battery for signs of damage and remove filler plugs.
- (b) Fill each cell, by the Safety-Fill method with electrolyte prepared as described in EO 40-5A-2 Part 7, to a specific gravity of 1.275. The temperature of the filling electrolyte should never exceed 32.2°C (90°F).
- (c) Allow the battery to stand for at least 3 hours and not more than 16 hours after filling.
- (d) If necessary, restore the level of electrolyte in each cell with electrolyte of 1.275 specific gravity before placing the battery on charge.
- (e) Connect the POSITIVE terminal of the battery to the positive (+) of the charging source and the NEGATIVE terminal to negative (-) of the charging source.
- (f) Charge AR-12-25 batteries at 1.5 amperes, AR-12-36 at 2.5 amperes until the specific gravity stops rising (approximately 20 hours). Reduce charging rate and increase time proportionately if electrolyte temperature exceeds 43°C (110°F).
- (g) After 16 hours of charge, restore the electrolyte level with distilled water. Continue charging and take specific gravity readings every 2 hours until the gravity stops rising.

# WILLARD AIR TYPE AIRCRAFT LEAD ACID BATTERIES DESCRIPTION AND MAINTENANCE INSTRUCTIONS

(This EO replaces EO 40-5AAA-2 dated 22 May 54)

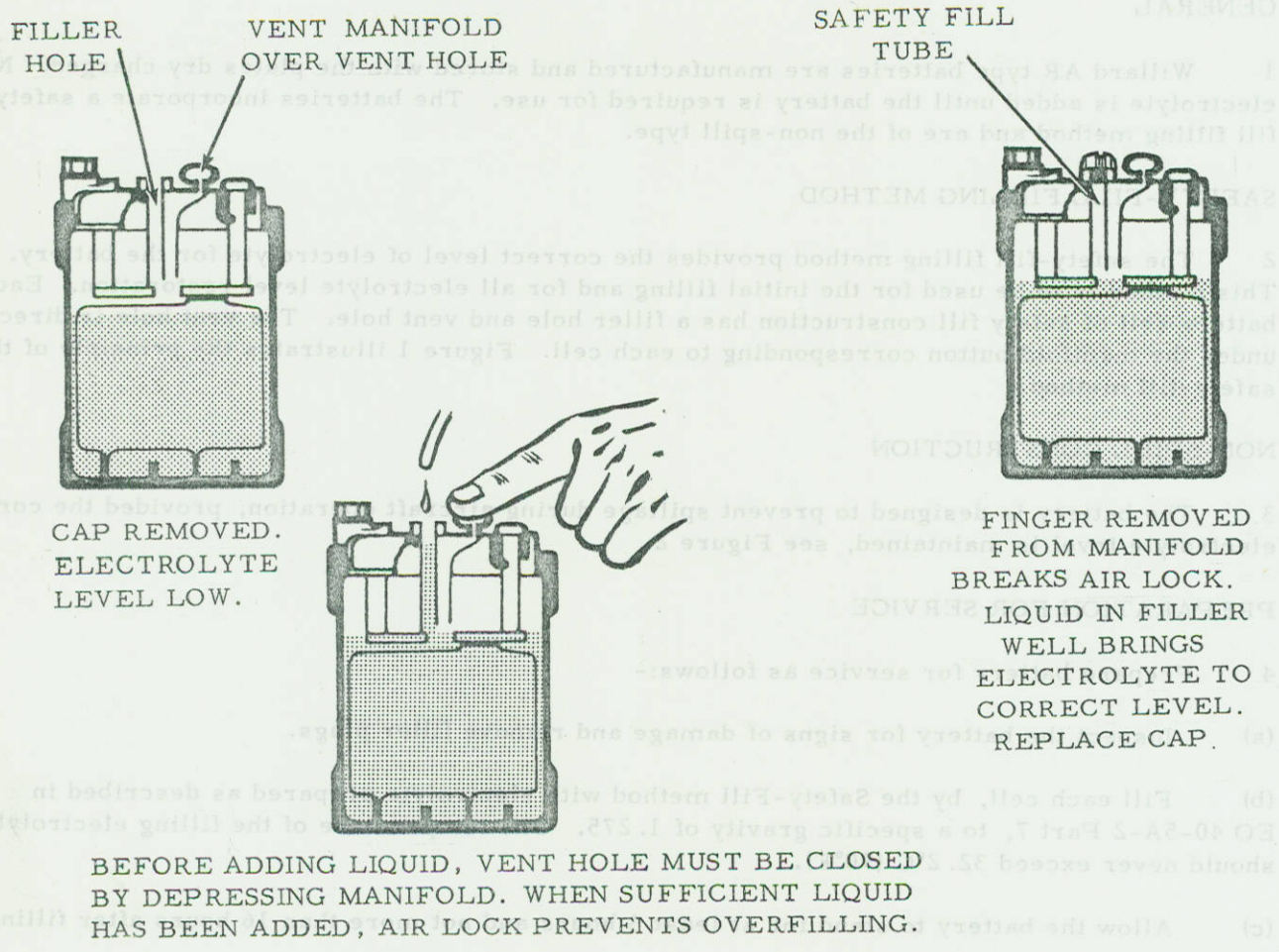


Figure 1



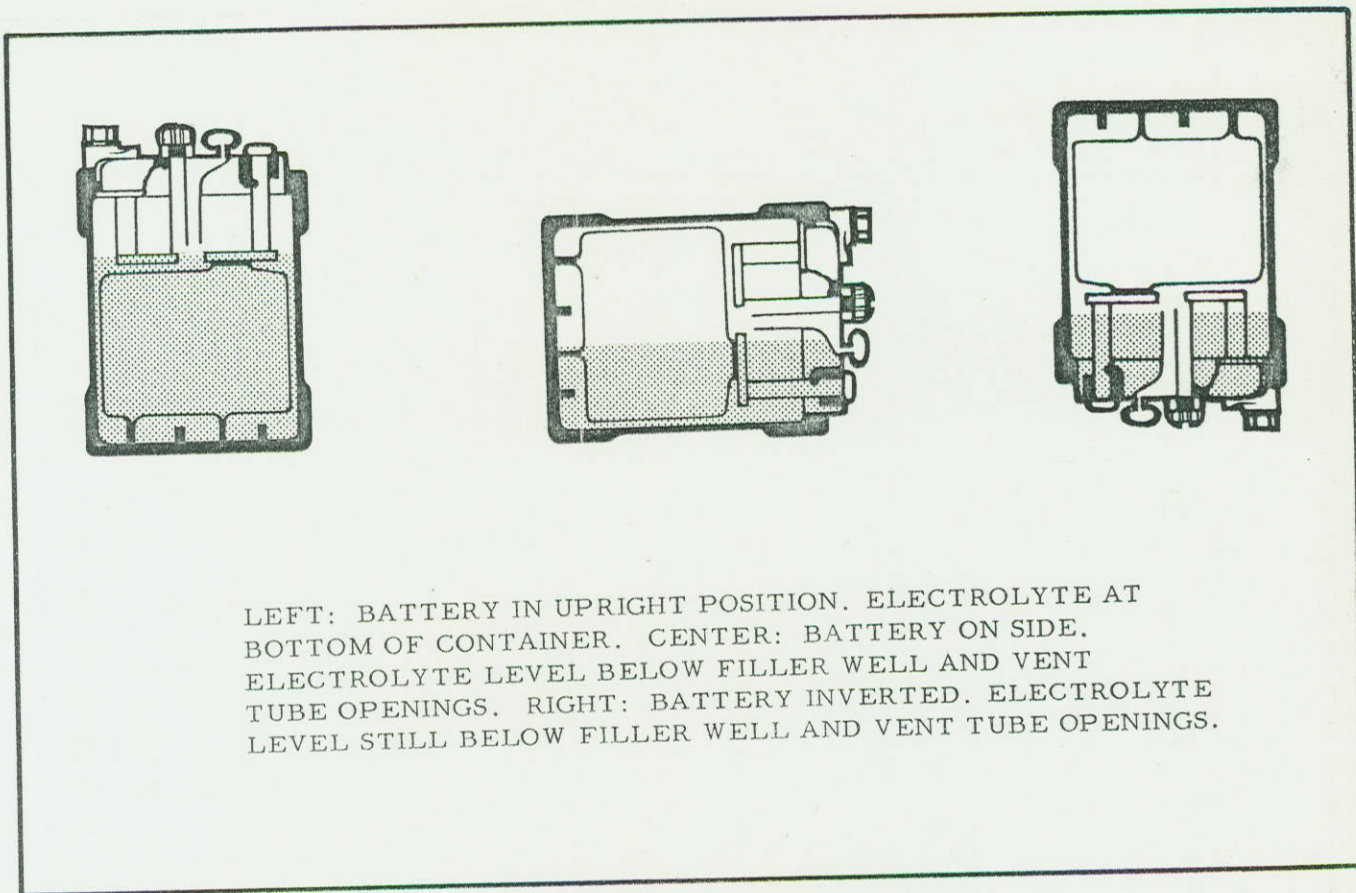


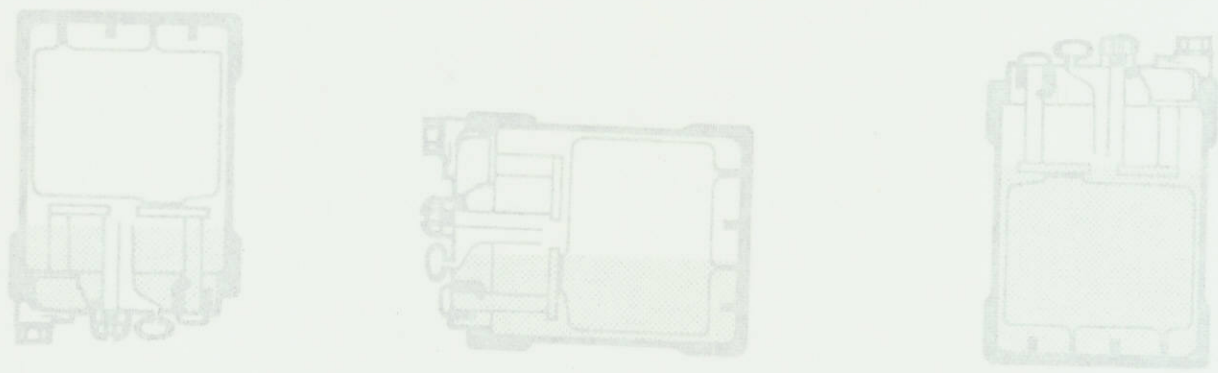
Figure 2

## PREPARATION FOR SERVICE (Cont'd)

(h) At the completion of the charge the specific gravity of the electrolyte, temperature corrected in accordance with EO 40-5A-2, Part 6, para. 4, should be between 1.270 and 1.290. If not adjust by removing some solution and replacing with either distilled water or electrolyte, see EO 40-5A-2, Part 7 para 14. Charge in order to mix the solution and check specific gravity again.

(j) Replace and tighten filler plugs. Wash off top of battery to remove any spilled electrolyte. Dry thoroughly.

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LEFT: BATTERY IN UPRIGHT POSITION, ELECTROLYTE AT BOTTOM OF CONTAINER. CENTER: BATTERY ON SIDE, ELECTROLYTE LEVEL BELOW FILLER WELL AND VENT TUBE OPENINGS. RIGHT: BATTERY INVERTED, ELECTROLYTE LEVEL STILL BELOW FILLER WELL AND VENT TUBE OPENINGS.

Figure 2

PREPARATION FOR SERVICE (Cont'd)

- (b) At the completion of the charge the specific gravity of the electrolyte, temperature corrected in accordance with EO 40-2A-5, Part 6, para. 4, should be between 1.270 and 1.290. If not adjust by removing some solution and replacing with either distilled water or electrolyte, see EO 40-2A-5, Part 7 para 14. Charge in order to mix the solution and check specific gravity again.
- (f) Replace and tighten filler plugs. Wash off top of battery to remove any spilled electrolyte. Dry thoroughly.

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