

## NI-CAD BATTERY - REMOVAL/INSTALLATION

### 1. General

- A. The following removal and installation procedures are for the battery, quick-disconnect receptacle, intercell connector and individual battery cell.

### 2. Notes and Precautions

- A. Proper maintenance is essential if the battery is to achieve maximum life and performance. To ensure these goals, periodic inspection in the airplane and periodic maintenance is a must.

**WARNING: The electrolyte used in nickel-cadmium batteries is a caustic solution of potassium hydroxide. Serious burns will result if it comes in contact with any part of the body. Use rubber gloves, rubber apron and protective goggles when handling this solution. If electrolyte gets on skin, wash affected areas thoroughly with water, and neutralize with three-percent acetic acid, vinegar or lemon juice. If electrolyte gets into eyes, flush with water and get immediate medical attention.**

**WARNING: Rings, metal watchbands and other metallic jewelry should be removed before working around the battery. Should such metallic objects contact intercell connectors of opposing polarity, they may fuse themselves to the connectors and cause severe skin burns.**

**CAUTION: Tools or equipment used for servicing lead-acid batteries shall not be used for servicing ni-cad batteries. Ni-Cad batteries should be completely removed from lead-acid battery service area. The slightest acid contamination will deteriorate Ni-Cad batteries.**

### 3. Battery Removal/Installation

- A. Remove Battery (Refer to Figure 401).

- (1) Ensure battery switch is positioned to OFF.
- (2) Open right cowl door. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.
- (3) Disconnect battery connector and temperature connector from battery.
- (4) Pull lever to release battery tray from latch on firewall.
- (5) Swing battery tray away from firewall.
- (6) Remove vent lines from elbows.
- (7) Cut safety wire from wing nuts and remove cover from battery tray.
- (8) Remove battery from airplane.
- (9) If battery is to be replaced with a lead acid battery, perform the following steps. (Refer to Battery Overheat Warning - Description and Operation).
  - (a) Jumper pin A to pin B and pin C to pin D.
  - (b) Stow the heat sensor electrical connector.
  - (c) Replace the BATTERY OVERHEAT and BATTERY HOT annunciator lenses with blank ones (P/N 25-0890-89 or equivalent).
  - (d) Install lead acid battery in accordance with Sealed Lead-Acid Battery - Maintenance Practices.

- B. Install Battery (Refer to Figure 401).

- (1) Clean battery support and battery tray as necessary to ensure proper installation.
- (2) Install battery to battery tray. Secure with hold-down rods, washers and wing nuts as required. Safety wire wing nuts. Refer to Chapter 20, Safetying - Maintenance Practices.
- (3) Connect vent lines to elbows.
- (4) Connect battery connector and temperature connector to battery.
- (5) Swing battery aft until handle engages latch on firewall.
- (6) Close right cowl door. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.

### 4. Quick-Disconnect Receptacle Removal/Installation

- A. Remove Quick-Disconnect Receptacle (Refer to Figure 402).

**WARNING: Do not drop tools or other metallic objects onto the intercell connectors; severe arcing will occur, resulting in possible injury to personnel and damage to the battery. Only insulated tools should be**

**used for servicing ni-cad batteries.**

- (1) Remove positive and negative intercell connectors attached to quick-disconnect receptacle. Note position and placement of all hardware for later reinstallation.

**NOTE:** Care should be taken in removal of quick-disconnect receptacle to preserve all hardware and gaskets, if possible, so that new part may be installed properly.

- (2) Remove screws securing quick-disconnect receptacle to battery case.
- (3) Remove quick-disconnect receptacle and gasket from battery case.

**B. Install Quick-Disconnect Receptacle (Refer to Figure 402).**

- (1) Install quick-disconnect receptacle and gasket to battery case. Secure using screws.

**CAUTION:** Do not fabricate intercell connectors. Connectors are designed to carry particular electrical loads. If replacement parts are needed, contact marathon battery company for replacement parts.

- (2) Install positive and negative connectors to quick-disconnect receptacle.
- (3) Torque connectors. Refer to Ni-Cad Battery - Adjustment/Test, Table 501 for torque values.

**5. Intercell Connector Replacement**

**CAUTION:** Do not fabricate intercell connectors. Intercell connectors are designed to carry specific electrical loads and should be replaced using only marathon battery parts.

- A.** Battery cells are connected to each other using (intercell) connectors. Refer to Figure 402 for an illustration of typical connectors and their hardware. Torque intercell connectors to one another using torque values found in Ni-Cad Battery - Adjustment/Test, Table 501.

**6. Battery Cell Removal/Installation**

**A. Remove Cells.**

- (1) Remove battery from airplane. Refer to Battery Removal/Installation.
- (2) Clean battery. Refer to Ni-Cad Battery - Cleaning/Painting.
- (3) Remove (intercell) connectors. Save all hardware for reinstallation.
- (4) Remove all vent plugs using vent wrench. Refer to Electrical Power - General for vent wrench part number.
- (5) Remove enough intercell connectors to permit individual cells to be withdrawn from battery case.

**CAUTION:** Do not withdraw cell from battery unless replacement cell is available immediately.

- (6) Withdraw cell(s) using cell puller tool. Refer to Figure 403 for fabrication details.

**B. Install Cells (Refer to Figure 402).**

- (1) Replace cell, ensuring that cell polarity symbols are oriented correctly.

**NOTE:** All cells are connected plus to minus.

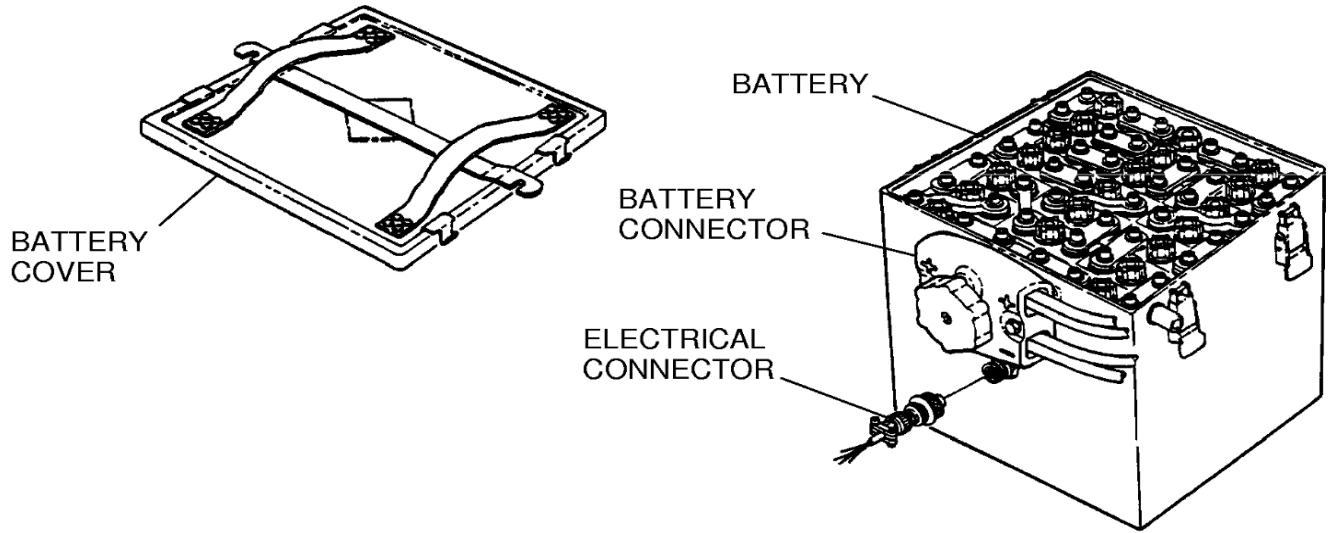
**NOTE:** If cell is difficult to insert, apply a light coat of petroleum jelly or silicone grease to sides of cell case before assembly.

**CAUTION:** Do not fabricate intercell connectors. Connectors are designed to carry particular electrical loads. If replacement parts are needed, contact marathon battery company for replacement parts.

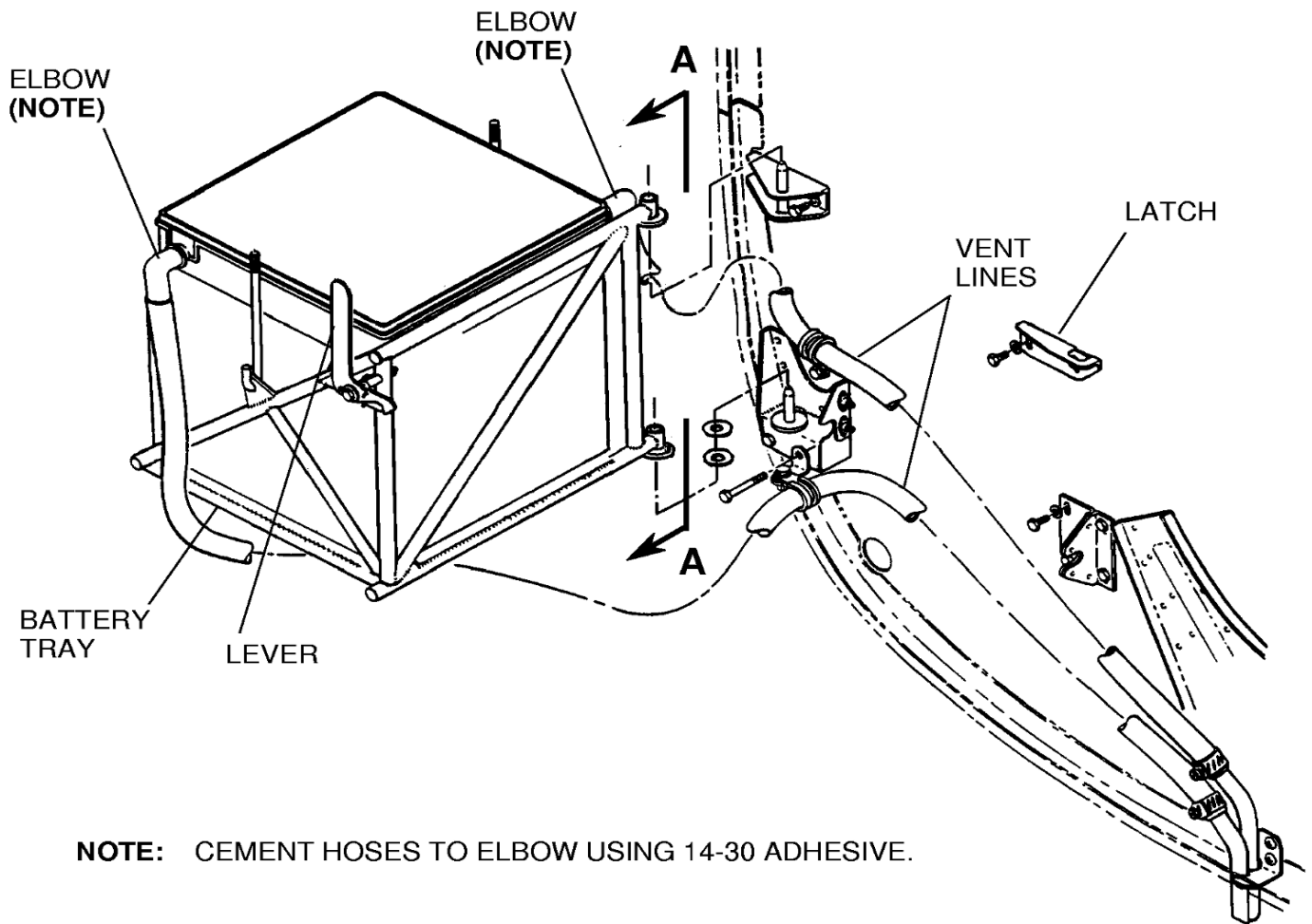
- (2) Install intercell connectors between cells. Tighten finger tight.
- (3) Torque intercell connectors. Refer to Ni-Cad Battery - Adjustment/Test, Table 501 for torque values.
- (4) Recharge and test the battery. Refer to Ni-Cad Battery - Adjustment/Test, Battery Reconditioning.
- (5) The battery is ready to be returned to service.

Figure 401 : Sheet 1 : Ni-Cad Battery Installation

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VIEW A-A

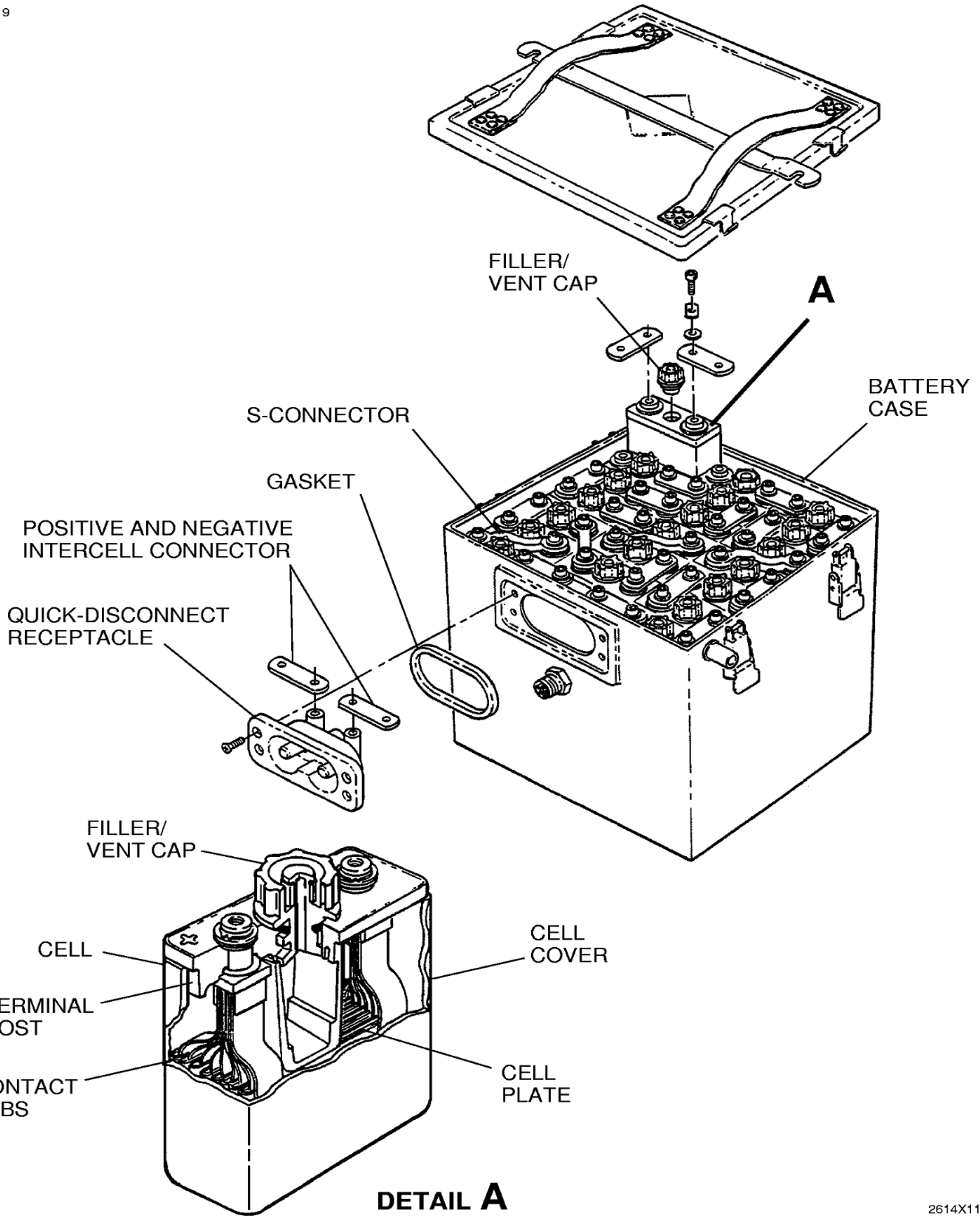


**NOTE:** CEMENT HOSES TO ELBOW USING 14-30 ADHESIVE.

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Figure 402 : Sheet 1 : Ni-Cad Connector Installation

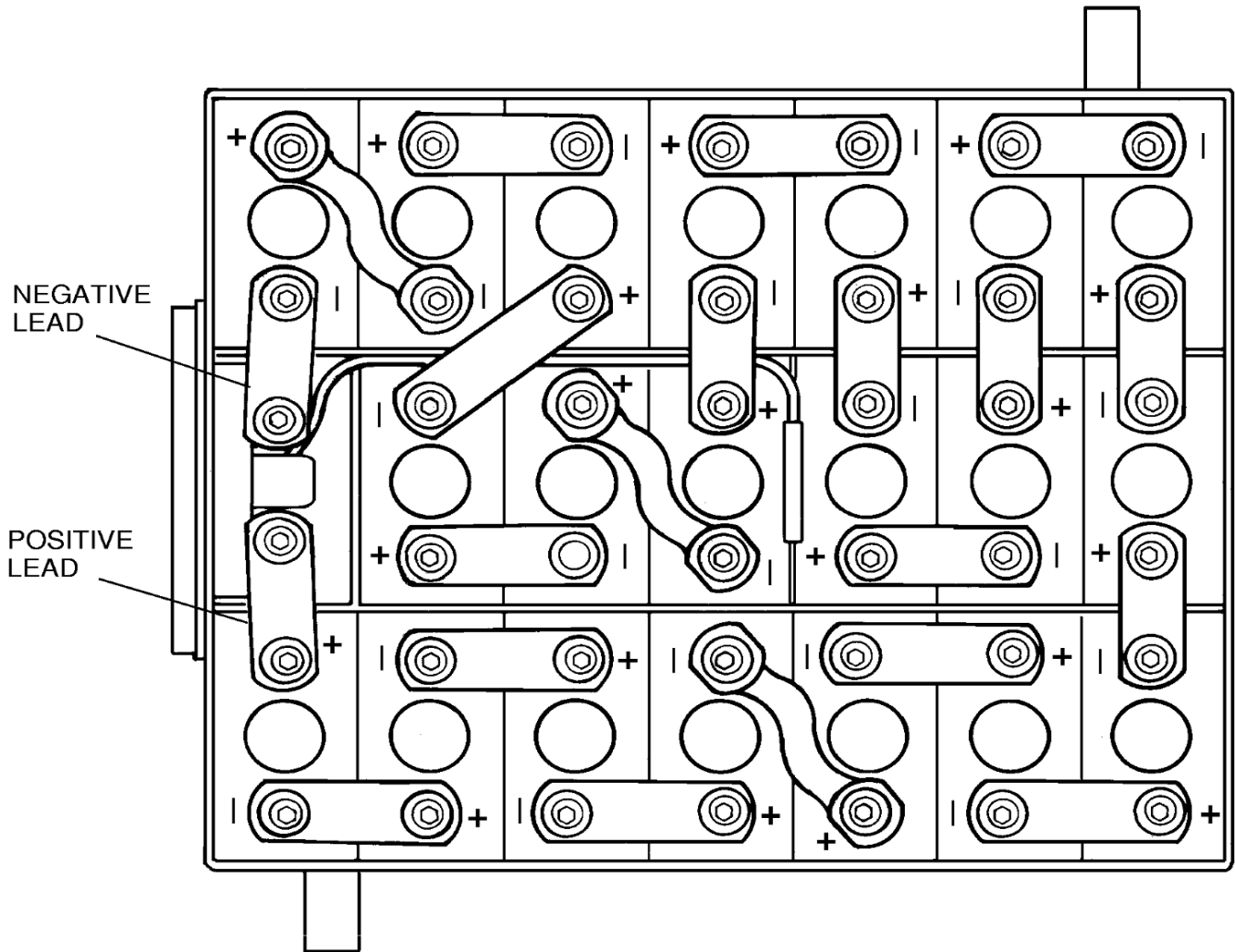
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Figure 402 : Sheet 2 : Ni-Cad Connector Installation

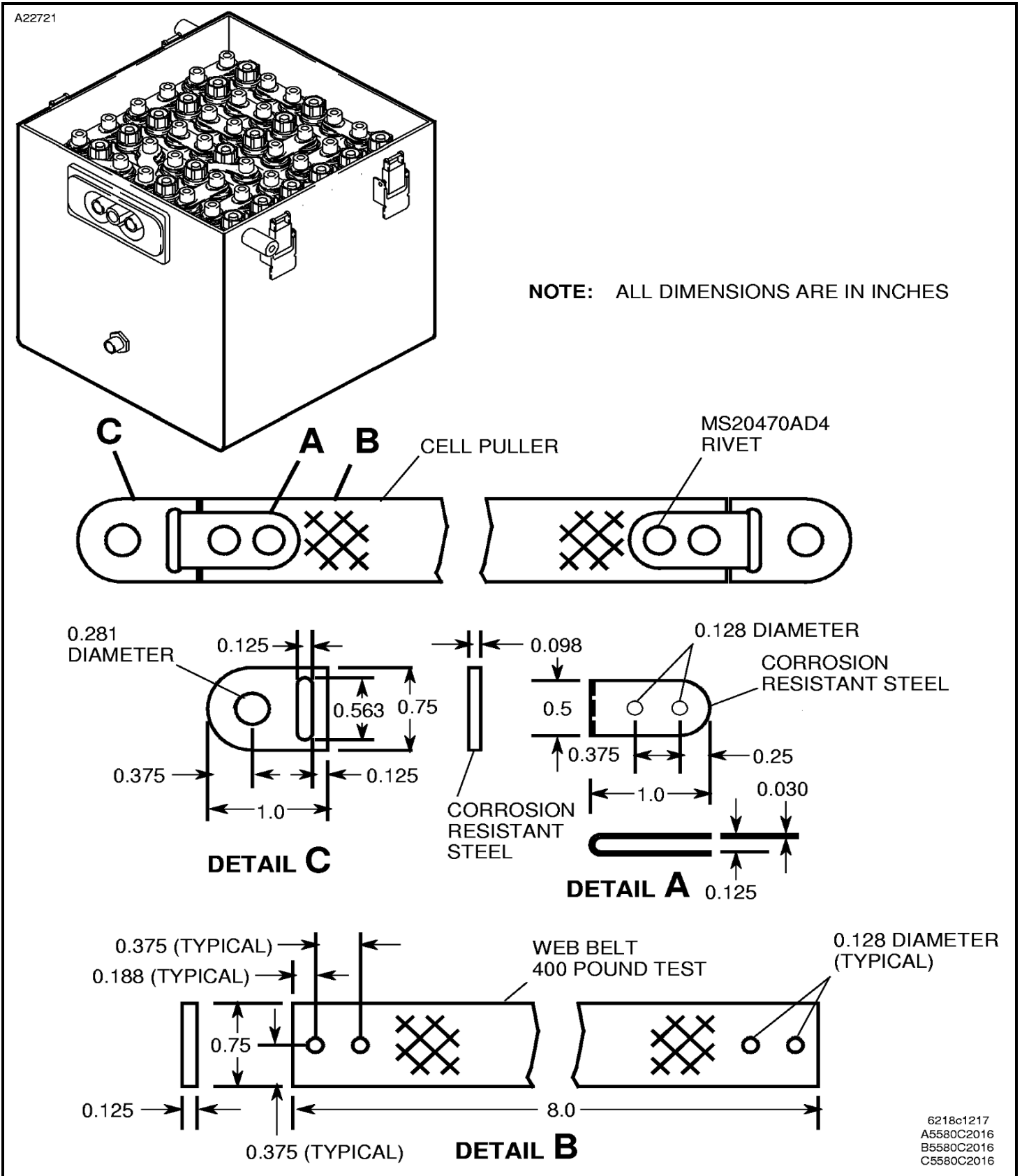
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20 CELL CONNECTOR  
LOCATION AND POLARITY  
DIAGRAM

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Figure 403 : Sheet 1 : Ni-Cad Battery Strap Fabrication



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