

## INSTALLING STORAGE BATTERIES

### CONNECTING

#### 1. GENERAL

##### 1.1 Scope

1.11 This section contains connecting requirements for interconnecting storage battery cells. It is to be used with the other sections of the 17 series.

1.12 Connections of solder type lugs and punchings to wire ends are covered in Section 7C. Connections of solderless type lugs to wire ends are covered in Section 7D. Connections of solder type and solderless type lugs to battery posts are covered in Section 7E.

##### 1.2 Job Information

1.21 KS-5499 lead plated connectors and details are used to interconnect cells with capacities over 200 ampere hours. Rubber covered leads with alloy terminals lugs are used for cells or cell assemblies of 200 ampere-hour capacities or less. These items are supplied by the battery manufacturer and assembled in accordance with job drawings.

#### 2. INSTALLING EQUIPMENT

2.1 The required tools and supplies are shown in Section 17A.

#### 3. CLEANING

3.1 Cells were cleaned thoroughly to neutralize any spilled electrolyte when they arrived on the job. (Section 17A) Any evidence of electrolyte creepage around the post seal or on the posts was neutralized and rinsed, however, should it reappear, repeat the cleaning, neutralizing and rinsing procedure.

3.2 All battery posts should be factory coated with NO-OX-ID compound when received. This coating is satisfactory protection against oxidation and need not be removed as part of general cleaning. However, should a collection of dust or dirt accumulate on the outside of the compound, remove it by wiping lightly with a cloth.

3.3 Any contact surfaces on battery posts not factory coated shall be wire brushed with an R-2628 brush or its equivalent. Under no circumstances shall a power operated wire brush or sander be used. Neutralize with a strong soda solution and rinse with plain water and allow to dry. The cleaned surfaces shall then be covered with a thin film of R-3266 NO-OX-ID "A" compound. Apply the compound without heating. Use a finger or a stiff brush; a clean paint brush with the bristles cut short will suffice.

3.4 The contacting surfaces of intercell connectors and terminal details (all used for connecting directly to battery posts) shall be wiped with a clean KS-14666 cloth and shall be coated with a thin film of NO-OX-ID "A" compound as covered in Paragraph 3.3. If the contacting surfaces of the intercell connectors are oxidized appreciably brush lightly with a suede shoe brush. Exercise care so as not to remove lead plating. Under no circumstances shall a power operated wire brush or sander be used. Cover contacting surfaces with a light coat of NO-OX-ID "A" compound. Apply the compound as covered in Paragraph 3.3.

3.5 When lugs terminate on intermediate details instead of on battery posts they are cleaned and coated with a protective compound as covered in Section 7E.

#### 4. ASSEMBLY

##### 4.1 Warning

4.11 As described in Section 17A, storage battery cells are electrically alive with the ability of producing very high currents across the terminals if accidentally short circuited. This current is sufficient to cause heavy arcing and can easily melt the battery post and shorting medium. When connecting, disconnecting or working near battery cell posts, taped tools are necessary to prevent accidental short circuits.

4.12 Do not install the final link which would connect the battery to the power plant until the battery is ready to be charged.

##### 4.2 General

4.21 Interconnection of battery cells before installation of accessories such as filling funnels, level indicators, etc., will facilitate the work by avoiding the interference of such accessories with the use of wrenches. With such order of procedure, the shipping plugs shall be left in place while the cells are being interconnected. This is to reduce the chance of an explosion. If, on the other hand, the plugs are removed and the accessories installed before the work of interconnecting the cells, the electrolyte in the cells shall be at least at minimum level. These devices depend on an electrolyte seal before the explosion control feature becomes effective.

4.22 Coat threads of battery cell connector bolts and studs with NO-OX-ID "A" compound unless previously coated by the factory. Partially fill (1/8 to 1/4 full) the bolt hole in the ter-

minimal post before inserting the bolt or stud. Determine that a quantity of compound is carried by the ends of the stud or bolt into the nut when assembling; otherwise place a small quantity of compound in the nut before assembly. If the cross hole in the post is broken through to the hole being used, the cross hole shall be filled with NO-OX-ID "A" compound. Apply the compound as covered in Paragraph 3.3.

4.23 Intercell connections on Lists 310 and 311 units are made up with protective compound at the factory and need not be disturbed by the installer

4.24 When electrolyte withdrawal tubes interfere with "U" shaped intercell connectors the connector may be turned in toward the center of the cell; i.e., 180°. There are remote instances where the "U" shaped intercell connector cannot be turned either way (one way it interferes with the electrolyte withdrawal tube and the other way it interferes with the fitting funnel or hold-down clamps on hardened sites). Under these circumstances the "U" shaped connector may be turned upwards with the opening of the "U" facing downward.

#### 4.3 Floor Mounted Jars

4.31 When making connections at the cell posts of KS-5562 cells, the longest bolts are used for securing the terminal details to the cell terminals and the shortest bolts are used for securing the risers to the terminal details.

4.32 Allow jars to stand overnight in their final position before attempting to assemble any intercell connector or detail. There is a slight settling due to the soft rubber pads on the bottom of the jars adjusting themselves to the surface of the floor. Any settling would place a mechanical strain at posts connected by tightened solid connectors.

#### 4.4 Rack Mounted Cells

4.41 Place the bolt through the connector and post and assemble the nut. Place stud through connectors and posts and assemble nuts so that each nut has approximately equal thread engagement.

➔ Arrowed lines indicate new or changed information.

[Vertical lines at side of paragraph indicates requirements.

### 5. TIGHTENING

5.1 All battery connections shall be tight. Use a correctly fitted socket or 6-point box wrench having a short handle to make the final tightening operation.

5.2 Make certain that the square head bolt for KS-5361 cells fits snugly into the recess of the cell post designed to receive the bolt. Hold the bolt in place by hand while loosely assembling the connection.

5.3 Using two wrenches tighten the connections of lead covered connectors slowly until a "spongy" feeling of tightness indicates that the lead coating is being compressed. Do not exert pressure to the extent as to cause loosening of the brass insert in the outer lead covering of the nut. Lead coated connections should never be overtightened due to the cold flow of lead. Exercise care so as to apply equal pressure on each wrench to prevent injury to the assembly. Keep the handle of the two wrenches nearly adjacent to each other. This is important to maintain near static equilibrium and reduce the stress on the battery post. Some posts are made of pure lead and distort very easily.

5.4 Tighten the phosphor bronze bolts and nuts for the floor mounted cell (KS-5562) connections with either open end or box type wrenches. Use two wrenches and set up tightly.

5.5 After tightening all battery connections recoat any exposed surfaces of the battery post. Remove excess NO-OX-ID "A" compound but retain a thin film.

### 6. VERIFICATION

6.1 After several days check and examine for tightness all connections. Retighten where necessary. A period of three or four days is desirable between the initial tightening and rechecking operation if time permits. Otherwise the length of the interval is optional.

Manager, Product Engineering

#### Reason for Reissue:

- (1) To delay installation of final link until batteries are ready to charge. (Par. 4.12).

Replaces Section 17E dated 11-19-64.