

**JOINT PREPARATION FOR BOLTED AND COMPRESSION JOINTS
WITH COPPER AND/OR ALUMINUM
(PLUS STEEL to COPPER)**

I. BOLTED JOINTS**A. Aluminum to Aluminum**

1. Both surfaces must be flat. File off all burrs or irregularities and then vigorously clean all contact surfaces with a stiff stainless steel wire brush to remove oxides. A typically bright aluminum surface should be obtained. Do not wire-brush plated contact surfaces. *NOTE:* It is not necessary to wire brush aluminum lugs that are tin plated.
2. **Immediately coat these contact areas with a liberal amount of contact sealant, City Light Stock No. 726182**
3. Re-clean the surfaces with the stainless steel wire brush through the sealant. Do not remove the sealant.
4. Install fitting with bolts finger tight. If a generous bead of compound does not appear, open the joint and add more sealant.
5. Alternately (criss-cross) and evenly tighten bolts with a torque wrench to the values shown in Section IV.
6. Excess sealant squeezed out of joint can be left as is or can be lightly smoothed along contact line.
7. All excess sealant must be removed entirely from cable insulation.

B. Aluminum to Copper

1. Both surfaces must be flat. File off all burrs or irregularities and then vigorously clean all contact surfaces with a stiff stainless steel wire brush to remove oxides. A typically bright surface should be obtained. Do not wire-brush plated contact surfaces. *NOTE:* It is not necessary to wire brush aluminum lugs that are tin plated.
2. **Immediately coat these contact areas with a liberal amount of contact sealant, City Light Stock No. 726182**
3. Re-clean the aluminum surface with the stainless steel wire brush through the sealant. Do not remove the sealant.
4. Install fitting with bolts finger tight. If a generous bead of compound does not appear, open the joint and add more sealant.
5. Alternately (criss-cross) and evenly tighten bolts with a torque wrench to the values shown in Section IV.
6. Excess sealant squeezed out of joint can be left as is or can be lightly smoothed along contact line.
7. All excess sealant must be removed entirely from cable insulation.

NOTE: Do not position the aluminum member in such a way that would allow water to drain from the copper connector over (or into) the aluminum.

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CONSTRUCTION GUIDELINE

C. Copper to Copper

1. Vigorously clean the contact surfaces with sandpaper. Wipe clean with rag.
2. Alternately and evenly tighten bolts with a torque wrench to the values shown in Section IV.

NOTE: Contact sealants are not normally required in copper connections. However, the use of sealant in severe corrosive environments and direct burial applications is recommended. Use City Light Stock No. 725696.

D. Copper to Aluminum with Copper Liner

1. The use of a contact sealant in this type of joint is not absolutely necessary. However, for maximum corrosion protection of the joint, the steps given in A.1 to A.5 above should be followed. Use City Light Stock No. 726182.

E. Copper to Steel and Steel to Steel

1. Clean steel contact surface with sandpaper until clean, bright surface is obtained. Apply NO-OX-ID "A" (Stock No. 725696) to surface. Clean copper with sandpaper and bolt joint together. Torque to values in Section IV. Surfaces should be wiped clean with rag before applying sealant.

F. No electrical connection (including ground connections) shall have any form of gasket material sandwiched in them! Further, no ground connections shall depend on, or use, a Kwik-Bolt or Tampin or any concrete anchor as a bolted connection.

II. COMPRESSION JOINTS

A. Aluminum Connector to Aluminum Wire

1. Vigorously clean the conductor contact area with a stainless steel brush. Do not attempt to clean connector barrel. It is not necessary to apply sealant to the conductor. All connectors will have sealant applied at the factory, except full tension connectors with steel inner sleeves.
2. Fully insert the conductor into the barrel and crimp. Crimping should begin nearest the center of sleeve type connectors. For closed barrel type connectors crimping should begin at the closed end and work toward the open end. Excess sealant squeezed out of the joint may be smoothed out around the mouth of the barrel. All excess sealant must be removed from any cable insulation.
3. On all compression joints in Network areas, use tool and die referenced on NSV-10.
4. Do not use a copper connector on aluminum conductor!

B. Copper Connector to Copper Wire

1. Vigorously clean the conductor contact surfaces with a stainless steel wire brush. Do not attempt to clean connector barrel. In general it is not necessary to apply sealant to the conductor or connectors. The use of sealant in severe corrosive environments and direct burial applications is recommended. Use City Light Stock No. 725696.
2. Fully insert the conductor into the barrel and crimp. Crimping should begin nearest the center of sleeve type connectors. For closed barrel type connectors, crimping should begin at the closed end and work toward the open end.

CONSTRUCTION GUIDELINE**C. Aluminum Connector to Copper Wire**

1. Vigorously clean the conductor contact area with a stainless steel brush. Do not attempt to clean connector barrel. It is not necessary to apply sealant to the conductor. All connectors will have sealant applied at the factory, except full tension connectors with steel inner sleeves.
2. Fully insert the conductor into the barrel and crimp. Crimping should begin nearest the center of sleeve type connectors. For closed barrel type connectors, crimping should begin at the closed end and work toward the open end. Excess sealant squeezed out of the joint may be smoothed out around the mouth of the barrel. All excess sealant must be removed from any cable insulation.

III. CONTACT SEALANTS

Gritted sealants (City Light Stock No. 726180) are primarily used in aluminum compression connectors. Aluminum compression connectors have sealant applied at the factory, except full tension connectors with steel inner sleeves.

Non-gritted sealant, City Light Stock No. 726182, is recommended for flat connections. No. 726182 is a petroleum base inhibitor. Stock No. 725696 is used for copper to steel and copper to copper and steel to steel as a corrosion preventive.

NOTE: Care should be taken to prevent excess sealant from being applied to hardware since torque values will be affected if the hardware becomes over lubricated.

IV. TORQUE VALUES (FOOT-POUNDS)

Bolt Size	Aluminum NO-OX-ID Coated	Silicon-Bronze	Stainless Steel
3/8 x 16	11	20	20
1/2 x 13	25	40	40
5/8 x 11	55	55	55
3/4 x 10	70	70	70

Aluminum bolt setups that are to be torqued need a little No-Ox-Id (stock No. 726181) on the threads for proper torque.

When using Belleville washer/aluminum bolt assembly (City Light Stock Nos. 782050, 782051, and 782052), tighten until the Belleville washer is flat as determined by a sudden stop. Do not back off.

When using Belleville washers with steel bolts, tighten until the Belleville washer is flat.