

Exothermic Connection System



1. Scope

This standard identifies the appropriate handle clamp and weld metal capsule to use with a given exothermic mold. It also includes application notes specific to Seattle City Light (SCL). Operator instructions and other literature are cited in Section 5.

2. Application

This standard is directed at personnel who plan to install exothermic connections in the field. Design engineers may find this standard helpful when planning or specifying material usage.

To make a connection, the operator inserts the conductors into the appropriate mold, places a weld shot (a small conical cup of weld metal) into the mold receptacle, and attaches the control unit. The assembly is held together by the handle clamp. The operator presses a button on the control unit to initiate the welding operation. (The term "exothermic" means the process gives off heat.)

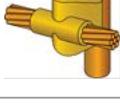
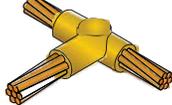
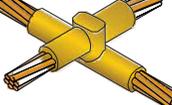
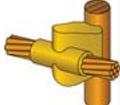
For copper conductor only.

3. Handle Clamp, Weld Metal, and Mold Cross Reference

All jobs will require at least one electronic control unit (ignition tool), Stock No. 013335. This battery-powered ignition tool is designed to make 600 connections on one set of eight standard AA batteries.

Each exothermic connection (mold) will require the use of one of two (reusable) handle clamps and one of a variety of color-coded, (one-shot) weld metal capsules. The appropriate handle clamp and weld metal capsule are identified in Table 3.

Table 3. Exothermic Connection System Components

Stock No.	Description	Mold	Clamp Handle Stock No.	Weld Shot	
				Stock No.	Color Code
013557	4/0 stranded wire butt splice		013336	013560	Gray
013339	250 kcmil wire butt splice		013336	013338	Orange
013401	500 kcmil wire butt splice		013336	013339	Yellow
013402	250 kcmil wire to 5/8-in ground rod		013336	013398	Dk Blue
013403	500 kcmil wire to 5/8-in ground rod		013397	013400	Brown
013441	250 kcmil wire to 3/4-in ground rod		013336	013399	Yellow
013442	500 kcmil wire to 3/4-in ground rod		013397	013440	Lt Brown
013558	4/0 stranded wire all way, horizontal Tee connection		013336	013398	Dk Blue
013559	4/0 stranded wire all way, lapped, horizontal X connection		013336	013561	Purple
013580	#2 AWG stranded wire to 5/8-in ground rod		013336	013560	Gray
013581	#4 AWG solid wire to 5/8-in ground rod		013336	013560	Gray
013585	2/0 stranded wire to 5/8-in ground rod		013336	013560	Gray

4. Application Notes

4.1 General Installation Notes

Exothermic connection systems are used to form permanent, low-resistance, high-reliability, welded electrical connections that may be direct buried or embedded in concrete.

Exothermic connection systems are commonly used to construct power station ground mats where it is not practical to inspect connections or repair failing connections.

Exothermic connection systems have long been referred to as Cadweld®, however Cadweld® is just one of many manufacturers of such systems.

Molds are available in many configurations for a wide variety of applications.

One mold should make about 50 connections, after which it should be replaced.

Reusable items may be obtained from the warehouse General Section or the Tool Room.

Operators must always wear approved gloves and safety glasses when working with exothermic materials.

4.2 Installation Notes Specific to Seattle City Light

Butt-splice molds are used to create water blocks where stranded ground cables enter vaults.

Most cable-to-cable or cable-to-ground rod connections in the Looped Radial and Network distribution systems use 250 kcmil, stranded copper conductors. Counterpoise ground conductors near substations are typically constructed with 500 kcmil, stranded copper. Contact the design engineer for questions regarding choice of conductor size.

Unless noted otherwise, butt splice, T-connection, and X-connection molds are for *horizontal*-lying cable.

5. References

SCL Material Standard 6762.90; "Exothermic Connection System"

6. Sources

CADWELD® Exothermic Welding Manual, E834I E1123LT08WWEN 0071M9
(Erico literature file name LT30323)

CADWELD® PLUS Control Unit (Erico literature file name LT31163)

CADWELD® PLUS Leading Technologies In Exothermic Welding (Erico literature file name LT0414)

CADWELD® PLUS Pictorial Instructions, ERICO P/N IPX B295WMPLUS E918IS05WW
(Erico literature file name LT0580)

CADWELD® PLUS Welding Material; MATERIAL SAFETY DATA SHEET (Erico literature file name LT1298)

CADWELD® Welded Electrical Connections Facility Electrical Protection Catalog, A1C E1068CT08NAEN 00610M8 (Erico literature file name LT0039)

CADWELD® Welded Electrical Connections Quick Reference Product Guide, E782C-NAEN E1820CT07NAEN 0045M8 (Erico literature file name LT1449)

Electric Railway Improvement Company (ERICO); www.erico.com

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