

Exothermic Connection System



1. Scope

This standard covers the requirements of an exothermic connection system consisting of weld metal, molds, tools, and accessories.

This standard applies to the following Seattle City Light (SCL) stock numbers:

Stock No.	Description
013335	Electronic Control Unit (ignition tool) with 6-foot lead
013336	Handle Clamp for type "C" "E," "Q," and "R" molds
013397	Handle Clamp for type "D," "F," "J," and "Z" molds
013560	Weld Metal, gray color code
013338	Weld Metal, orange color code
013398	Weld Metal, dark-blue color code
013399	Weld Metal, yellow color code
013561	Weld Metal, purple color code
013400	Weld Metal, brown color code
013440	Weld Metal, light brown color code
013557	Mold for 4/0 stranded wire butt splice
013339	Mold for 250 kcmil stranded wire butt splice
013401	Mold for 500 kcmil stranded wire butt splice
013402	Mold for 250 kcmil stranded wire to 5/8-inch ground rod
013403	Mold for 500 kcmil stranded wire to 5/8-inch ground rod
013441	Mold for 250 kcmil stranded wire to 3/4-in ground rod
013442	Mold for 500 kcmil stranded wire to 3/4-in ground rod
013558	Mold for 4/0 stranded wire all way, horizontal T-connection
013559	Mold for 4/0 stranded wire all way, lapped horizontal X-connection
013580	Mold for #2 AWG stranded wire to 5/8-in ground rod
013581	Mold for #4 AWG solid wire to 5/8-in ground rod
013585	Mold for 2/0 stranded wire to 5/8-in ground rod

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2. Application

Exothermic connection systems are used to form permanent, low resistance; highly reliable, welded electrical connections that may be direct buried or embedded in concrete. The term “exothermic” means the process gives off heat.

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

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

Exothermic connection systems have long been referred to as Cadweld®, however Cadweld® is just one of many manufacturers of such systems. Components from different suppliers may or may not be interchangeable.

For copper conductor only.

For more information, refer to SCL 0468.90.

3. Industry Standards

Connection system shall meet the applicable requirements of the following industry standards:

IEEE 80-2000 – Guide for Safety in AC Substation Grounding

IEEE 837-2002 – Standard for Qualifying Permanent Connections Used in Substation Grounding

4. Requirements

Molds shall bear permanent marking indicating the name of the manufacturer, the mold part number, the type and size of welding mixture compatible with the welding process and the size of the cable or bus connection.

Figure 4. Mold, Example



Molds shall have a minimum average life of 50 separate weld operations.

Each mold shall be provided with instructions detailing general safety information, connection preparation, and welding procedures.

Weld metal packages shall be identified as to the part number (size) and type of metals to be connected, such as copper to copper or copper to steel, cast iron, etc.

5. Testing

Test data that establishes compliance with the requirements of IEEE 80, IEEE 837, and this standard shall be provided upon request.

6. Packaging

Weld metal, molds, tools, and accessories shall be packaged to prevent damage during shipping, handling, and inside storage.

Weld metal containers shall be moisture resistant.

Shipping containers shall be legibly marked with:

- Manufacturer's name
- Product description
- Seattle City Light's purchase order number.

7. Issuance

Stock unit: EA

8. Approved Manufacturers

Stock No.	013335
Description	Electronic Control Unit (ignition tool) with 6-ft lead
Manufacturer	Erico/Cadweld
Catalog No.	PLUSCU



Stock No.	013336
Description	Handle Clamp, for type "C" "E," "Q," and "R" molds
Manufacturer	Erico/Cadweld
Catalog No.	L160



Stock No.	013397
Description	Handle Clamp for type "D," F," "J," and "Z" molds
Manufacturer	Erico/Cadweld
Catalog No.	L159

Stock No.	013560
Description	Weld Metal, gray color code
Manufacturer	Erico/Cadweld
Catalog No.	90PLUSF20



Stock No.	013338
Description	Weld Metal, orange color code
Manufacturer	Erico/Cadweld
Catalog No.	115PLUSF20



Stock No.	013398
Description	Weld Metal, dark-blue color code
Manufacturer	Erico/Cadweld
Catalog No.	150PLUSF20



Stock No.	013399
Description	Weld Metal, yellow color code
Manufacturer	Erico/Cadweld
Catalog No.	200PLUSF20



Stock No.	013561
Description	Weld Metal, purple color code
Manufacturer	Erico/Cadweld
Catalog No.	250PLUSF20



Stock No.	013400
Description	Weld Metal, brown color code
Manufacturer	Erico/Cadweld
Catalog No.	400PLUSF20



Stock No.	013440
Description	Weld Metal, light brown color code
Manufacturer	Erico/Cadweld
Catalog No.	500PLUSF20



Stock No.	013557
Description	Mold for 4/0 stranded wire butt splice
Manufacturer	Erico/Cadweld
Catalog No.	SSC-2Q



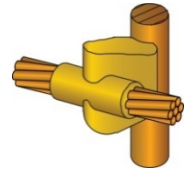
Stock No.	013339
Description	Mold for 250 kcmil stranded wire butt splice
Manufacturer	Erico/Cadweld
Catalog No.	SSC-2V



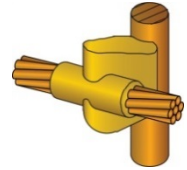
Stock No.	013401
Description	Mold for 500 kcmil stranded wire butt splice
Manufacturer	Erico/Cadweld
Catalog No.	SSC3Q



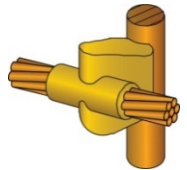
Stock No.	013402
Description	Mold for 250 kcmil stranded wire to 5/8-inch ground rod
Manufacturer	Erico/Cadweld
Catalog No.	GYR162V



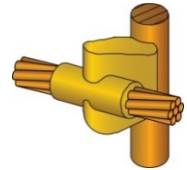
Stock No.	013403
Description	Mold for 500 kcmil stranded wire to 5/8-inch ground rod
Manufacturer	Erico/Cadweld
Catalog No.	GYR163Q



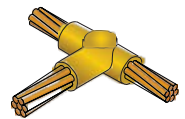
Stock No.	013441
Description	Mold for 250 kcmil stranded wire to 3/4-in ground rod
Manufacturer	Erico/Cadweld
Catalog No.	GYR182V



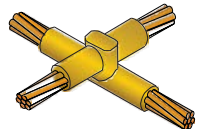
Stock No.	013442
Description	Mold for 500 kcmil stranded wire to 3/4-in ground rod
Manufacturer	Erico/Cadweld
Catalog No.	GYF183Q



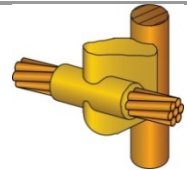
Stock No.	013558
Description	Mold for 4/0 stranded wire all way, horizontal T-connection
Manufacturer	Erico/Cadweld
Catalog No.	TAC2Q2Q



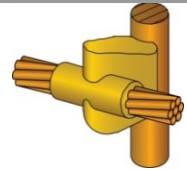
Stock No.	013559
Description	Mold for 4/0 stranded wire all way, horizontal X-connection
Manufacturer	Erico/Cadweld
Catalog No.	XBQ2Q2Q



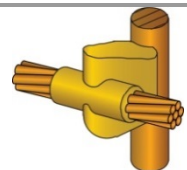
Stock No.	013580
Description	Mold for #2 AWG stranded to 5/8-in ground rod
Manufacturer	Erico/Cadweld
Catalog No.	GYE161V



Stock No.	013581
Description	Mold for #4 AWG solid wire to 5/8-in ground rod
Manufacturer	Erico/Cadweld
Catalog No.	GYE161K



Stock No.	013585
Description	Mold for 2/0 stranded wire to 5/8-in ground rod
Manufacturer	Erico/Cadweld
Catalog No.	GYE162G



9. References

SCL Construction Standard 0468.90; “Exothermic Connection System”

10. Sources

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

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 Quick Reference Product Guide, E782C-NAEN E1820CT07NAEN 0045M8 (Erico literature file name LT1449)

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

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

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

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