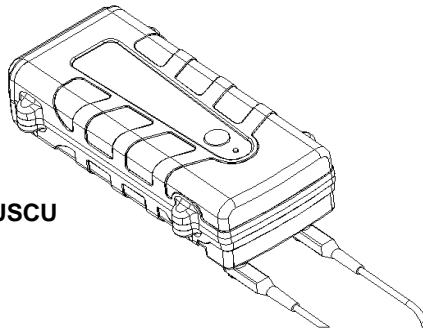


ERICO CADWELD PLUS Control Unit



Model Number: PBPLUSCU

GENERAL SAFETY RULES



WARNING! READ AND UNDERSTAND ALL INSTRUCTIONS.



SAVE THESE INSTRUCTIONS.

Work area. Keep your work area clean and well lit. Do not operate in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.

Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enable better control in unexpected situations.

Personal safety. Stay alert, watch what you are doing and use common sense when operating this tool.

Use safety equipment. Always wear protective eyewear and gloves during operation.

WARNING

1. PENTAIR products shall be installed and used only as indicated in PENTAIR product instruction sheets and training materials. Instruction sheets are available at www.pentair.com and from your PENTAIR customer service representative.
2. PENTAIR products must never be used for a purpose other than the purpose for which they were designed or in a manner that exceeds specified load ratings.
3. All instructions must be completely followed to ensure proper and safe installation and performance.
4. Improper installation, misuse, misapplication or other failure to completely follow PENTAIR's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death.

GENERAL AND SAFETY INSTRUCTIONS:

- A. Only PENTAIR manufactured equipment and materials should be used to make ERICO CADWELD PLUS connections.
- B. Do not connect items except as detailed in instruction sheets. Failure to comply with these instructions may result in improper and unsafe connections, damage to items being connected, bodily injury and property damage.
- C. Do not use worn or broken equipment which could cause leakage.
- D. Do not alter equipment or material without PENTAIR authorization.
- E. When using ERICO CADWELD PLUS do not use welding material package if damaged or not fully intact. When using ERICO CADWELD PLUS, do not tamper with or disassemble the welding material unit.
- F. Make connections in conformance with ERICO CADWELD PLUS instructions and all governing codes.
 1. Personnel should be properly trained in the use of this product and must wear safety glasses and gloves.
 2. Avoid contact with hot materials.
 3. Advise nearby personnel of welding operations in the area.
 4. Remove or protect fire hazards in the immediate area.
 5. Provide adequate ventilation to the work area.
 6. Do not smoke when handling starting material
 7. Avoid direct eye contact with "flash" of light from ignition of starting material.
- G. Welding material is an exothermic mixture and reacts to produce hot molten material with temperatures in excess of 1400°C (2500°F) and a localized release of smoke. These materials are not explosive. Ignition temperatures are in excess of 900°C (1650°F) for welding material.
- H. Adhering to the ERICO CADWELD PLUS welding procedures will minimize risk of burns and fire caused by hot molten material spillage. In case of fire, use of water or CO₂ will aid in control of burning containers. Large quantities of water will aid in controlling a fire should the exothermic materials become involved. Water should be applied from a distance.
 1. Make sure there is proper mold fit and assembly of equipment.
 2. Avoid moisture and contaminants in mold and materials being welded. Contact between hot molten metal and moisture or contaminants may result in spewing of hot material.
 3. Base material thickness must be sufficient for the size and type of connection being made to prevent melt-through and leakage of hot molten metal.
- I. Applications or conditions may exist which require special considerations. The following are examples, but are not intended to be a complete listing of applications/conditions.

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Operation Instructions

CONNECTIONS TO PIPE/VESSELS

For use with cast iron pipe or heavy casting meeting ASTM A47-84, A48-83, A126-84, A278-85, or A377-89. DO NOT USE ON CAST IRON SOIL PIPE (ASTM A74-93). Evaluate possible effects of ERICO CADWELD PLUS connections to structural members and thin-wall materials; vessels/piping systems that are pressurized, closed or containing (or having contained) flammable / explosive / hazardous materials. Evaluation should be made prior to use, based on conditions of use and applicable codes, and should incorporate as a minimum, effects of melt-through of hot material; structural/metallurgical effects of ERICO CADWELD PLUS connections, pressure (temperature) build-up and fire/chemical decomposition hazards.

CONNECTIONS TO REBAR

Application of the ERICO CADWELD PLUS connection may have an effect on the rebar's structural integrity. The rebar's chemistry and the location of the weld should be considered before making any welds to the rebar. For lapped rebar splices, it is recommended that the connections be made near the bar end at an area of minimum stress. If ERICO CADWELD PLUS Rebar Splices are used, the grounding connection can be made to the splice sleeve with minimal effect on the structural characteristics of the splice.

SAFETY INSTRUCTIONS: All governing codes and regulations and those required by the job site must be observed. Always use appropriate safety equipment such as eye protection, hard hat, and gloves as appropriate to the application.

SPECIFIC SAFETY RULES



DANGER! High voltage electrical shock hazard. Keep hands and body clear of the conductors while operating. Failure to do so can result in death or serious injury.



WARNING! Operation and maintenance of the ERICO CADWELD PLUS Control Unit should only be performed by qualified personnel.



CAUTION! Read, understand and follow all safety instructions prior to performing any ERICO CADWELD PLUS connection. Refer to the ERICO CADWELD PLUS WELDING PROCEDURE, Instructions (IPX) prior to making any ERICO CADWELD PLUS connection.

Electrical Safety. Do not abuse the lead. Never use the lead to carry the Control Unit. Keep the lead away from sharp edges or moving parts. Replace damaged leads immediately. Damaged leads may create a safety hazard.

Control Unit Use and Care. If damaged, have the Control Unit serviced before using. The Control Unit service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel may result in a risk of injury. Follow the instructions in the Maintenance section of this manual. Use of unauthorized

parts or failure to follow Maintenance Instructions may create a risk of shock or injury.

Storage. The Control Unit lead should be wrapped around the case prior to storage. When storing Control Unit, store the Control Unit in such a manner as to prevent accidental push button OPERATE switch activation.

Avoid accidental activation. Be sure OPERATE switch is not being pressed during insertion of ignition strip into Control Unit termination clip.

FUNCTIONAL DESCRIPTION

The ERICO CADWELD PLUS welding system replaces the conventional method of using starting material and a flint gun to ignite welding material to initiate the ERICO CADWELD PLUS process. This is accomplished by using pre-sealed, drop-in welding material crucible cup packages which are placed into existing molds and using the ERICO CADWELD PLUS Control Unit to discharge current into a pre-installed crucible cup ignitor strip.

The ERICO CADWELD PBPLUSCU Control Unit uses 8 AA lithium batteries, a charging circuit, an output capacitor

and an electronic switch to initiate the discharge. The charging commences once the OPERATE membrane push button is pressed and held. The READY light flashes to indicate charging is in process. If the pushbutton is released, the charging ceases and the capacitor discharges internally. In the event the lead is not connected to the ERICO CADWELD PLUS crucible cup ignitor strip, the capacitor discharges internally. Once the output capacitor is fully charged the READY light changes to steady state and then goes out when the capacitor discharges into the crucible cup ignitor strip to initiate the ERICO CADWELD PLUS process.

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OPERATION

User must be familiar with and follow all applicable statutes, codes and regulations governing the workplace and personnel. Also refer to AWS Z49.1 *Safety In Welding And Cutting And Allied Processes*.

NOTICE. Only ERICO CADWELD PLUS products should be used to make ERICO CADWELD PLUS connections. Follow details in these instructions as well as the *ERICO CADWELD PLUS WELDING PROCEDURE Instructions (IPX)*. Only properly trained personnel should use this product. Failure to comply with ERICO procedures can result in inferior connections or damage to conductors.

- 1. Dry Control Unit Termination Clip, case and hands.**
If the ERICO CADWELD PLUS Control Unit case has moisture on it, dry the case with a clean, dry towel prior to operation.
- 2. Place the ERICO CADWELD PLUS Steel Cup into the mold.**
The ignition strip and termination clip should be positioned perpendicular to the opening in the mold cover to minimize exposure to the reaction.
- 3. Connect the Control Unit Termination Clip to the ERICO CADWELD PLUS Ignition Strip.** Push the Control Unit Termination Clip onto the ERICO CADWELD PLUS Ignition Strip until the end of the clip stop. (must push a little past the initial resistance felt).

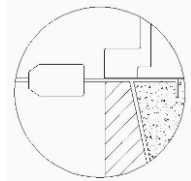


Figure 1

- 4. Keep hands and body clear of the leads and ERICO CADWELD PLUS Ignitor Strip and mold while making a connection.** Press the OPERATE pushbutton switch and hold down with constant pressure. The READY light flashes for 5 to 7 seconds
- 5. Internal Discharge.** The ERICO CADWELD PLUS Control Unit has an internal discharge feature. Releasing the OPERATE pushbutton switch prior to completing the full charge cycle discharges the unit within 5 seconds.
- 6. Batteries.** The ERICO CADWELD PLUS Control Unit must have sufficient battery charge for operation. As the end of battery life approaches, the 5 to 7 second charge time will increase. Once this charge time increases (and the READY light flashes) to 15 seconds or more, the batteries may need to be replaced. At 20 seconds, the Control Unit circuit automatically times out and will not operate until the batteries are replaced. Fully charged batteries should provide approximately 400 operations.
- 7. Disconnect Lead.** Allow 30 seconds for the completion of the reaction and the solidification of the molten metal. Remove used Control Unit Ignitor Strip from Control Unit Termination Clip.

as the ERICO CADWELD PLUS Control Unit charges. Once the unit is fully charged, the READY light becomes steady. Initiation of the reaction occurs 1 second after the READY light is on steady. Maintain constant pressure on the OPERATE switch until the ERICO CADWELD PLUS reaction has been initiated. Letting go of the switch before prior to reaction initiation will result in an internal discharge without ignition of the welding material.

MAINTENANCE



WARNING! Operation and maintenance of the ERICO CADWELD PLUS Control Unit should only be performed by qualified personnel.

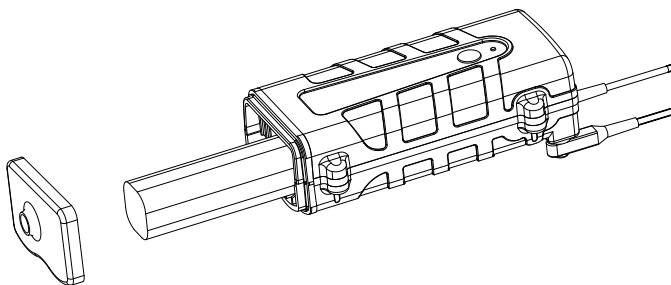


CAUTION! Batteries should be removed prior to maintenance of the ERICO CADWELD PLUS Control Unit.

NOTICE: Use AA lithium batteries only. Do not use NiCAD or NiMH rechargeable batteries in the Control Unit.

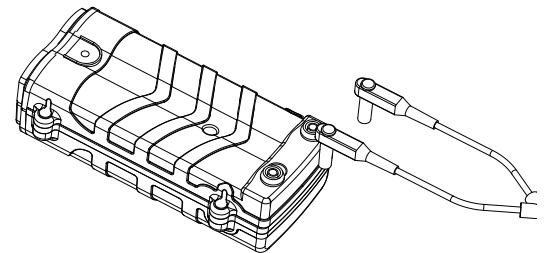
1. **Battery Replacement (Figure 2).** To replace the batteries, loosen the battery lid screw at the end of the Control Unit case to remove the battery compartment lid. Remove the battery cell holder and replace the batteries with 8 AA lithium batteries aligning the polarities as indicated on the battery holder. Place the battery case back into the Control Unit case such that the battery case contacts align with the contacts in the case and secure the battery lid to the case.

Figure 2



2. **Control Unit Lead Replacement.** Should the Control Unit lead or termination clip become damaged or worn, Replace with ERICO part number PLUSCULDQC or PLUSCULD15QC (contact factory for replacement lead). To replace the lead, disconnect the plugs for the damaged or worn lead (Figure 3). Properly dispose of the worn Control Unit lead.

Figure 3



Insert the plugs for the replacement lead (Figure 4)

Figure 4

