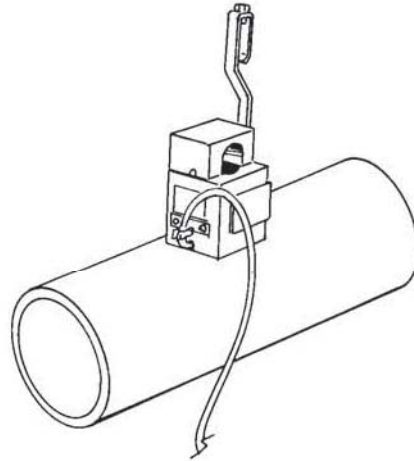
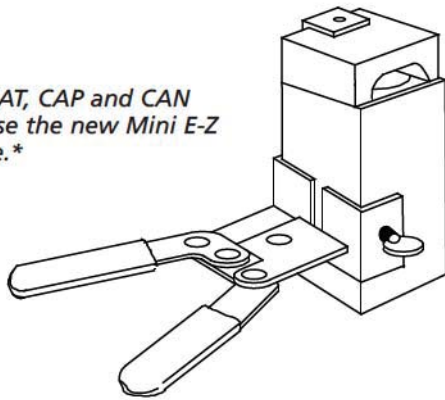


Welders and Molds

CADWELD WELDERS AND MOLDS

When making a CADWELD connection, an accurate control of the CADWELD process is accomplished by using a semi-permanent graphite mold. Control is exercised over the direction and speed of the molten CADWELD weld metal flow and final shape. The graphite used in a CADWELD mold is a high temperature type that lasts for an average of 50 to 100 CADWELD connections under normal usage.

Welder Price CAT, CAP and CAN are split and use the new Mini E-Z Change handle.*



Welder Price CAA is a solid block with a hold-down handle.*

* Welder Part No. includes mold frame.
If mold only (less frame) is required, order - Welder Part No. - "M".

Weld Metal

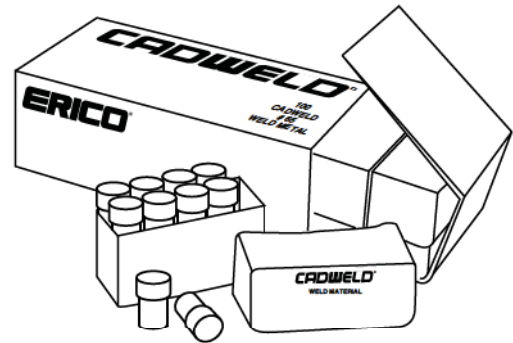
CADWELD WELD METAL

CADWELD weld metal is a mixture of copper oxide and aluminum, packaged by size in plastic tubes. Each tube contains the starting material at the bottom of the plastic tube, with the Weld Metal on top. These materials are not explosive and not subject to spontaneous ignition. These containers are packaged in boxes along with metal disks. Each weld uses one disk.

Two types of CADWELD weld metal are used for Cathodic protection connections:

1. F-33 alloy is used for all connections of cable to cable and cable to steel or stainless steel pipe. The F-33 weld metal containers have green caps.
2. XF-19 alloy is used for all connections to cast iron. XF-19 weld metal containers have orange caps.

NOTE: For DUCTILE IRON, see page 17.



Size	PACKED PER	
	Box**	Std. Pkg.
CA15	20	100
CA25	20	100
CA32	20	100
CA45	20	100
CA65	20	100

* XF-19 Alloy packed in same quantities.
XF-19 Alloy not available in 15 size.
**Disks are included.



CADWELD Connections and Pipe Wall Thickness

The following is a discussion of the minimum pipe size required for safe installation of CADWELD Cathodic Connections considering of the service conditions and without special factory testing. Several things must be considered as outlined below.

For a particular wall thickness:

- a. The hoop stress in the pipe will increase as the pipe diameter increases.
- b. The heat dissipation will be affected by the thermal characteristics of the material in the pipe.
- c. The heat dissipation will be affected by the rate of flow of the material through the pipe while making the weld.
- d. The pipe strength will be affected by the temperature of the pipe (material temperature).
- e. Any internal coating of the pipe must be checked to find if the temperature of the pipe directly under the weld will adversely affect it.

Based on a minimum wall thickness of 0.109 inches* (2.769 mm) and using a CA15 Weld Metal (the maximum allowed to oil or gas piping systems per ANSI/ASME B31.4 and B31.8), the minimum recommended pipe size and schedule is:

<u>Nominal Pipe Size</u>	<u>Schedule</u>	<u>Wall Thickness</u>
1/2"	40	0.109
3/4"	40	0.113
1 to 2"	10	.0109
2-1/2 to 4"	10	1.120
5 to 8"	5	0.109
10" and larger	5	>0.109

Tests made by operating gas companies indicate no damage to a 4" Grade 52 pipe having a 0.109" wall when making a weld to the pipe at 500 psig using a CA15. Welds made to a steel plate 0.109" thick had a maximum copper penetration depth of less than 0.010". Other tests on tubes with a 0.125" or 0.150" wall showed a copper penetration of 0.005' maximum.

Ductile Iron

Tests by ERICO, Inc. indicate that connections to DUCTILE IRON pipe can be made using the CADWELD molds and weld metal designated to be used on steel pipe.

However, some reports from the field suggest that all ductile iron is not the same. In some cases the material for steel will not work. In such cases, the molds and weld material for cast iron do work.

We therefore, suggest:

1. Whenever possible, make tests on the ductile iron pipe being used to determine if the material for steel can be used.

-OR-

2. Use the material for cast iron. It will make satisfactory connections on all ductile iron.