



The Contractors Choice



**thermOweld<sup>®</sup>**

Cathodic Protection

# ***High Quality Products***

# ***Fast Reliable Service***

**thermOweld®**



***“The Contractor’s Choice”***

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Continental Industries, Inc. is:  
***A Sales and Customer Driven Company***

***Founded in 1958 with locations in Tulsa and Broken Arrow Oklahoma.  
 thermOweld® is part of the Quality Brands of Continental Industries.  
 Continental is a World Class Manufacturing Company producing  
 Products for the Electrical, Gas & Water Industries.***

**thermOweld® Meets the following Standards:**

- Meets IEEE 837
- UL Listed 
- ISO9001 Listed

**Service**

- **The thermOweld® Engineering Team is capable of meeting all your design requirements**
- **Same Day Service (SDS) on Designated Catalog Items at *NO EXTRA COST***
- **The thermOweld® Sales Team provides quick response time, effective solutions to tough problems and technical support. This all adds up to *GREAT CUSTOMER SERVICE!***

# The thermOweld® Process

The thermOweld® cathodic connection process is a simple, efficient method of welding copper to copper or copper to steel. One advantage is that NO outside power is required when using the thermOweld® exothermic process. The thermOweld® process uses high temperature reaction of powdered copper oxide and aluminum. The reaction takes place in a semi-permanent graphite mold. These molds should last for approximately fifty or more welds if proper care is given. The reaction takes place very rapidly, therefore the total amount of heat applied to the conductors or surfaces is considerably less than that of brazing or soldering. This is important to remember when welding to insulated cable or thin wall pipe.

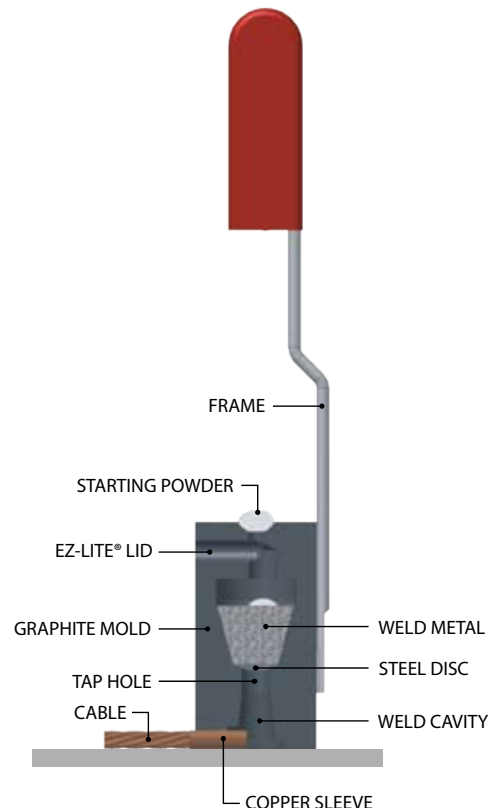
This system is very field friendly, since it is light and portable and requires no outside power source. It requires very little time or skill to obtain an efficient, maintenance free connection when using the thermOweld® process.

For more information visit our website @ [www.thermOweld.com](http://www.thermOweld.com)

The thermOweld® process has been used to weld materials other than copper for electrical purposes. Materials welded include:

Stainless Steel	Columbium	Brass
Copperweld®	Plain Steel	Bronze
Nichrome V	Everdur®	Niobium
Galvanized Steel	Kama	Chromax
Silicon Bronze	Steel Rail	Cast Iron
Copper Clad Steel	Cor-Ten®	Monel

When welding to galvanized steel it is recommended to resurface exposed bare steel.



The thermOweld® connection is a molecular weld. The weld has the same melting point as copper. This factor along with the increased cross sectional area of the connection and the following insure:

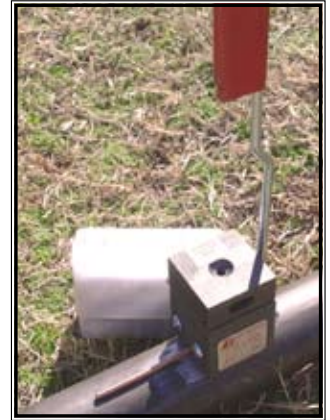
1. thermOweld® connections will not be affected by a high current surge. Tests have shown that the electrical conductor will melt before the thermOweld® connection when subjected to high short circuit current. Consult IEEE Standard 837.
2. thermOweld® connections will not loosen or corrode at the point of weld. There are no contact surfaces or mechanical pressures involved. A thermOweld® connection becomes an integral part of the conductor.
3. thermOweld® connections have a current-carrying capacity equal to or greater than that of the conductors.

# Making a thermOweld® Connection



1

Clean pipe before making weld.



2

Position conductor and mold onto cleaned pipe, after making sure mold is dry, by pre-heating or making a test joint.



3

Place metal disc in bottom of mold crucible



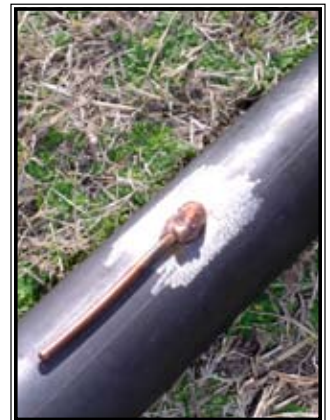
4

Dump powder into crucible, being careful not to loosen all the starting powder.



5

Close lid and place a small amount of starting powder in the ignition pocket. Ignite the starting powder with the Flint Ignitor.



6

Remove mold and clean mold before making next connection.

# How to Order thermOweld® Molds

The most common **exothermic connections** for concentric and solid copper conductors are listed in this thermOweld® catalog. Save Time and Money by using molds listed in this catalog. If you cannot find the necessary connection please contact thermOweld® at 1-800-558-1373 or visit our web site at [www.thermoweld.com](http://www.thermoweld.com) and go to the **Mold Selection Wizard** for assistance.

## 1. Determine the Weld Type required:

- a. Know the application to determine what materials are to be welded.
- b. Refer to Selector Chart for correct weld type on pages 10 & 11.
- c. Find the appropriate Weld Type.
- d. Go to the page or pages listed to determine the correct mold #.

*There are pictures of each weld type in the upper corners of the catalog pages for easy reference*

## 2. Determine the Correct Mold #:

- a. Determine the Conductor Size or Sizes, Ground Rod Size or surface to be welded.
- b. Locate each of the above to find the correct Mold #.

*The thermOweld® catalog lists molds that are designed for stranded AWG concentric and Solid cable, as well as ground rods, bus bar, lugs, steel, rebar, and other special grounding accessories. For sizes not listed please contact thermOweld® at 1-800-558-1373.*

## 3. After Determining the Correct Mold # Verify the Following:

- a. Price Key - Find the price of the mold by crossing it on the thermOweld® price lists.
- b. Weld Metal (size) needed to make weld.
- c. Handle Clamps required for the mold.
- d. Packing Materials (if needed).
- e. See Notes - for other accessories needed or suggested to make this connection.

## Please Check to make sure you have the following to make a proper weld:

- 1) Mold that fits your application.
- 2) Weld Metal required by the mold.
- 3) Handle Clamps or frame.
- 4) Flint Igniter - (Low emission molds require a battery pack in place of the flint igniter).
- 5) Sleeves, packing or other accessories required or suggested.

## Mold Availability:

The mold availability is listed under the lead-time column in the catalog.

- SDS – Same Day Service (*Orders placed by 12:00 (Noon) Central time can ship Same Day*)
- 2 – Can ship the following day (*Orders placed by 12:00 (Noon) Central time will ship the next day*)
- 4 – Will ship 4 days ARO (*Design molds will take up to ship 4 days to ship after receipt of order*)

thermOweld® Weld Metal is packaged in moisture-resistant plastic cartridges that have tight fitting caps. These cartridges and the necessary steel discs are then packaged in boxes that are shrink-wrapped. This insures the weld metal arriving in good condition, always dry, and ready for a positive ignition every time.

thermOweld® Weld Metal comes in four types; one for welding copper to copper or copper to steel, copper to rail, copper to cast iron and one for welding copper to steel for cathodic protection. The size and weight (in grams) of the cartridge are marked on each individual cartridge. thermOweld® Weld Metal is available to be shipped via ground, air or ocean freight.

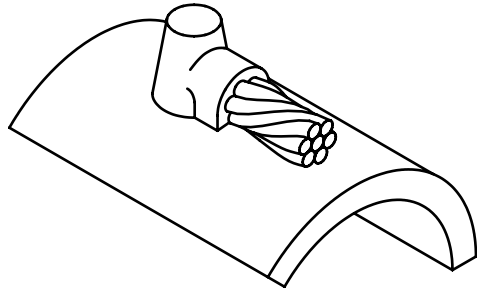
# WELD METAL



STANDARD CARTRIDGE SIZE	CAST IRON CARTRIDGE SIZE	CATHODIC PROTECTION CARTRIDGE SIZE	RAIL CARTRIDGE SIZE	PACKED PER BOX
#15	#15CI	#15CP	#15R	20
#25	#25CI	#25CP	#25R	20
#32	#32CI	#32CP	#32R	10
#45	#45CI	#45CP	#45R	20
#65	#65CI	#65CP	#65R	20
#90	#90CI	~	#90R	10
#115	#115CI	~	#115R	10
#150	~	~	#150R	10
#200	~	~	#200R	10
#250	~	~	#250R	10
#500	~	~	#500R	10

thermOweld® Weld Metal is sold in box quantities only

# CS-32



## CS-32 TYPE MOLDS

### Horizontal Cable to Horizontal Steel Surface

CS-32 Type Molds are for connecting copper cable to horizontal steel surfaces. When welding to steel pipe, each mold fits a wide range of pipe sizes. When welding to pipe, the cable runs parallel to the pipe. For welding to ductile iron pipe, see note below.

CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (4" & Larger pipe)	M-100	2	15CP
	3/4" to 3 1/2" pipe	M-101	3	15CP
#6 Str	Flat (4" & Larger pipe)	M-102	2	15CP
	3/4" to 3 1/2" pipe	M-103	3	15CP
#4 Sol	Flat (6" & Larger pipe)	M-104	2	15CP
	3/4" to 3 1/2" pipe	M-105	3	15CP
	4" to 5" pipe	M-130	3	15CP
#4 Str	Flat (6" & Larger pipe)	M-106	2	15CP
	3/4" to 3 1/2" pipe	M-107	3	15CP
	4" to 5" pipe	M-108	3	15CP
#2 Sol	Flat (10" & Larger pipe)	M-109	3	25CP
	1" to 3 1/2" pipe	M-110	3	25CP
	4" to 8" pipe	M-111	3	25CP
#2 Str	Flat (10" & Larger pipe)	M-112	3	32CP
	1" to 3 1/2" pipe	M-113	3	32CP
	4" to 8" pipe	M-114	3	32CP
	10" to 14" pipe	M-115	3	32CP
#1 Str	Flat (16" & Larger pipe)	M-116	3	45CP
	1 1/2" to 3 1/2" pipe	M-117	3	45CP
	4" to 8" pipe	M-118	3	45CP
	10" to 14" pipe	M-119	3	45CP
1/0 Str	Flat (20" & Larger pipe)	M-120	3	65CP
	2 1/2" to 3 1/2" pipe	M-121	3	65CP
	4" to 8" pipe	M-122	3	65CP
	10" to 18" pipe	M-123	3	65CP
2/0 Str	Flat (20" & Larger pipe)	M-124	3	65CP
	2 1/2" to 3 1/2" pipe	M-125	3	65CP
	4" to 8" pipe	M-126	3	65CP
	10" to 18" pipe	M-127	3	65CP

- For sizes not listed, contact thermOweld®.
- Sold complete with frame. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (1) 38-0200-00 sleeves per weld.
- Required Tools;
  - 38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  - 38-3922-00 ~ Mold Cleaning Brush (pg 18)
  - 38-0135-00 ~ Cable Cleaning Brush (pg 18)
  - 38-0101-00 ~ Rasp (pg 19)
  - 38-4129-00 ~ Packing Material for 1/0 & Larger Molds (pg 19)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

### CATHODIC HANDY PACKS

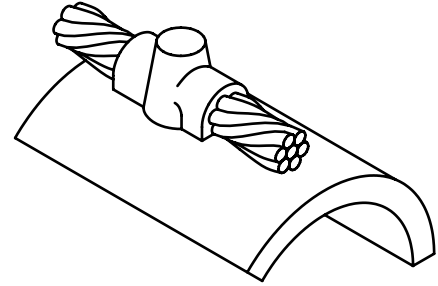
Each Cathodic Handy Pack Contains	
Flat to 4" & Larger Pipe	3/4" to 3 1/2" & Larger Pipe
(1) M-100 Mold	(1) M-101 Mold
(80) 15PS Cartridges	(80) 15PS Cartridges
(80) Sleeves	(80) Sleeves
Flint Gun	Flint Gun
Mold Cleaner	Mold Cleaner
Part #	Part #
38-4350-00	38-4351-00

# CS-34 TYPE MOLDS

## Horizontal Thru Cable to Horizontal Steel Surface

# CS-34

CS-34 Type Molds are for connecting copper cable to horizontal steel surfaces. When welding to steel pipe, each mold fits a wide range of pipe sizes. When welding to pipe, the cable runs parallel to the pipe. For welding to ductile iron pipe, see note below.

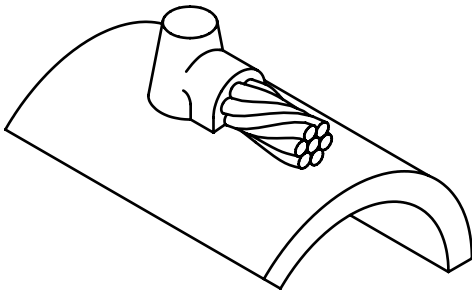


CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (12" & Larger pipe)	M-1955	3	25CP
	3/4" to 2" pipe	M-5666	3	25CP
	2 1/2" to 5" pipe	M-3097	3	25CP
	6" to 10" pipe	M-3141	3	25CP
#6 Str	Flat (12" & Larger pipe)	M-5661	3	25CP
	3/4" to 2" pipe	M-5662	3	25CP
	2 1/2" to 5" pipe	M-5663	3	25CP
	6" to 10" pipe	M-5664	3	25CP
#4 Sol	Flat (12" & Larger pipe)	M-1956	3	25CP
	3/4" to 2" pipe	M-1957	3	25CP
	2 1/2" to 5" pipe	M-1958	3	25CP
	6" to 10" pipe	M-1966	3	25CP
#4 Str	Flat (12" & Larger pipe)	M-6000	3	25CP
	3/4" to 2" pipe	M-1967	3	25CP
	2 1/2" to 5" pipe	M-5501	3	25CP
	6" to 10" pipe	M-5503	3	25CP
#2 Sol	Flat (14" & Larger pipe)	M-5505	3	32CP
	2" to 3 1/2" pipe	M-5507	3	32CP
	4" to 8" pipe	M-5510	3	32CP
	10" to 16" pipe	M-5514	3	32CP
#2 Str	Flat (14" & Larger pipe)	M-5518	3	45CP
	2" to 3 1/2" pipe	M-5986	3	45CP
	4" to 8" pipe	M-5605	3	45CP
	10" to 16" pipe	M-5988	3	45CP
#1 Str	Flat (18" & Larger pipe)	M-5519	3	45CP
	2" to 3 1/2" pipe	M-5520	3	45CP
	4" to 8" pipe	M-5521	3	45CP
	10" to 16" pipe	M-5523	3	45CP
1/0 Str	Flat (30" & Larger pipe)	M-5524	3	65CP
	3" to 4" pipe	M-5525	3	65CP
	5" to 6" pipe	M-5526	3	65CP
	8" to 10" pipe	M-5527	3	65CP
	12" to 28" pipe	M-5529	3	65CP
2/0 Str	Flat (30" & Larger pipe)	M-6251	3	65CP
	3" to 4" pipe	M-5530	3	65CP
	5" to 6" pipe	M-5531	3	65CP
	8" to 10" pipe	M-5532	3	65CP
	12" to 28" pipe	M-5533	3	65CP



- For sizes not listed, contact thermOweld®.
- Sold complete with frame. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (2) 38-0200-00 sleeves per weld.
- Required Tools;
  - 38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  - 38-3922-00 ~ Mold Cleaning Brush (pg 18)
  - 38-0135-00 ~ Cable Cleaning Brush (pg 18)
  - 38-0101-00 ~ Rasp (pg 19)
  - 38-4129-00 ~ Packing Material for 1/0 & Larger Molds (pg 19)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

# CS-33



## CS-33 TYPE MOLDS

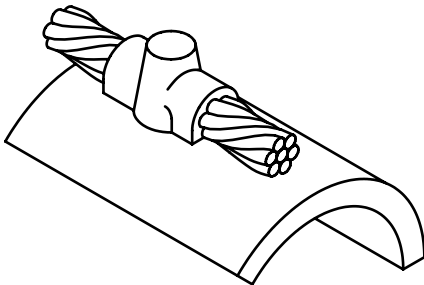
### Horizontal Cable to Horizontal Cast Iron Surface

CS-33 Type Molds are for connecting copper cable to horizontal cast iron surfaces. When welding to cast iron pipe, each mold fits a specified pipe size. When welding to pipe, the cable runs parallel to the pipe. For welding to ductile iron pipe, see note below.

CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (30" & larger pipe)	M-156	3	25CI
#6 Str	Flat (30" & larger pipe)	M-157	3	25CI
#4 Sol	Flat (30" & larger pipe)	M-158	3	45CI
#4 Str	Flat (30" & larger pipe)	M-159	3	45CI
#2 Sol	Flat (30" & larger pipe)	M-160	3	45CI
#2 Str	Flat (30" & larger pipe)	M-161	3	45CI
#1 Str	Flat (30" & larger pipe)	M-163	3	65CI

- **For sizes not listed, contact thermOweld®.**
- Sold complete with frame. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (1) 38-0200-00 sleeve per weld.
- **Welding To Horizontal Pipe:** To weld to 4" to 24" horizontal pipe, add pipe size to mold number. To weld #1 str cable to 6" horizontal pipe, the mold number would be M-163-6. To weld to pipe 30" and larger, use flat surface mold.
- Required Tools;
  - 38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  - 38-3922-00 ~ Mold Cleaning Brush (pg 18)
  - 38-0135-00 ~ Cable Cleaning Brush (pg 18)
  - 38-0101-00 ~ Rasp (pg 19)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

# CS-35



## CS-35 TYPE MOLDS

### Horizontal Thru Cable to Horizontal Cast Iron Surface

CS-35 Type Molds are for connecting copper cable to horizontal cast iron surfaces. When welding to cast iron pipe, each mold fits a specific pipe size. When welding to pipe, the cable runs parallel to the pipe. For welding to ductile iron pipe, see note below.

CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (30" & larger pipe)	M-5316	3	32CI
#6 Str	Flat (30" & larger pipe)	M-5535	3	32CI
#4 Sol	Flat (30" & larger pipe)	M-5536	3	45CI
#4 Str	Flat (30" & larger pipe)	M-5537	3	45CI
#2 Sol	Flat (30" & larger pipe)	M-5538	3	45CI
#2 Str	Flat (30" & larger pipe)	M-5540	3	45CI
#1 Str	Flat (30" & larger pipe)	M-5542	3	65CI

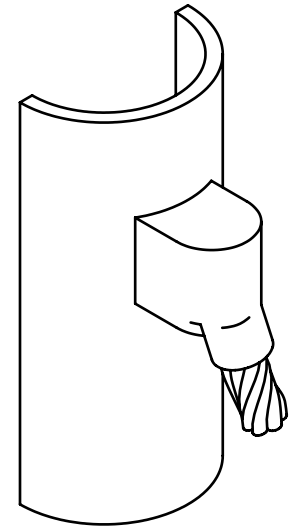
- **For sizes not listed, contact thermOweld®.**
- Sold complete with frame. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (2) 38-0200-00 sleeves per weld.
- **Welding To Horizontal Pipe:** To weld to 4" to 24" horizontal pipe, add pipe size to mold number. To weld #1 str cable to 6" horizontal pipe, the mold number would be M-5542-6. To weld to pipe 30" and larger, use flat surface mold.
- Required Tools;
  - 38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  - 38-3922-00 ~ Mold Cleaning Brush (pg 18)
  - 38-0135-00 ~ Cable Cleaning Brush (pg 18)
  - 38-0101-00 ~ Rasp (pg 19)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

**DO NOT use Type CS-33 or CS-35 molds on Soil Pipe (ASTM A74-82). A test weld should be made on a section of the pipe being used to determine the possibility of detrimental metallurgical effects.**

**CS-36 TYPE MOLDS**  
Cable to Vertical Steel Surface

**CS-36**

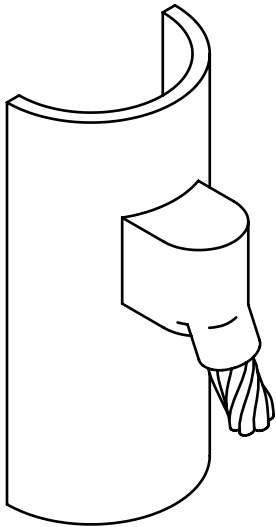
CS-36 Type Molds are used for connecting copper cable to a vertical steel surface. When welding to steel pipe, each mold fits a wide range of pipe sizes. For welding to ductile iron pipe, see note below.



CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (12" & Larger pipe)	M-142	18	15CP
	3/4" to 3 1/2" pipe	M-150	18	15CP
	4" to 10" pipe	M-151	18	15CP
#6 Str	Flat (12" & Larger pipe)	M-144	18	15CP
	3/4" to 3 1/2" pipe	M-152	18	15CP
	4" to 10" pipe	M-153	18	15CP
#4 Sol	Flat (12" & Larger pipe)	M-145	18	25CP
	3/4" to 1 1/2" pipe	M-186	18	25CP
	2" to 4" pipe	M-187	18	25CP
	5" to 10" pipe	M-188	18	25CP
#4 Str	Flat (12" & Larger pipe)	M-146	18	25CP
	3/4" to 1 1/2" pipe	M-189	18	25CP
	2" to 4" pipe	M-190	18	25CP
	5" to 10" pipe	M-191	18	25CP
#2 Sol	Flat (14" & Larger pipe)	M-147	18	25CP
	1" to 1 1/2" pipe	M-192	18	25CP
	2" to 4" pipe	M-193	18	25CP
	5" to 12" pipe	M-194	18	25CP
#2 Str	Flat (14" & Larger pipe)	M-148	18	32CP
	1" to 1 1/2" pipe	M-195	18	32CP
	2" to 3" pipe	M-196	18	32CP
	4" to 6" pipe	M-197	18	32CP
	8" to 12" pipe	M-198	18	32CP
#1 Str	Flat (18" & Larger pipe)	M-6117	19	45CP
	1 1/2" to 2 1/2" pipe	M-6118	19	45CP
	3" to 4" pipe	M-6119	19	45CP
	5" to 10" pipe	M-6120	19	45CP
	12" to 16" pipe	M-6121	19	45CP
1/0 Str	Flat (18" & Larger pipe)	M-2586	19	65CP
	2 1/2" to 4" pipe	M-2587	19	65CP
	5" to 10" pipe	M-2588	19	65CP
	12" to 16" pipe	M-2589	19	65CP
2/0 Str	Flat (18" & Larger pipe)	M-2590	19	65CP
	3" to 4" pipe	M-2591	19	65CP
	5" to 10" pipe	M-2592	19	65CP
	12" to 16" pipe	M-2953	19	65CP

- **For sizes not listed, contact thermOweld®.**
- Sold with handle clamps. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (1) 38-0200-00 sleeve per weld.
- Required Tools;
  - 38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  - 38-3922-00 ~ Mold Cleaning Brush (pg 18)
  - 38-0135-00 ~ Cable Cleaning Brush (pg 18)
  - 38-0101-00 ~ Rasp (pg 19)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

# CS-37



**DO NOT use Type CS-37 molds on Soil Pipe (ASTM A74-82). A test weld should be made on a section of the pipe being used to determine the possibility of detrimental metallurgical effects.**

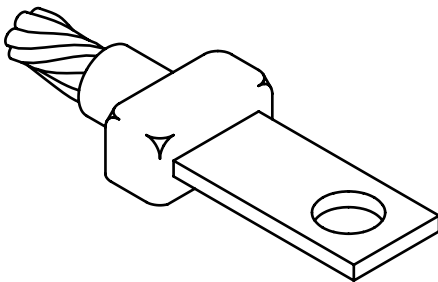
## CS-37 TYPE MOLDS Cable to Vertical Cast Iron

CS-37 Type Molds are for connecting copper cable to vertical cast iron surfaces. When welding to cast iron pipe, each mold is made to fit the specified pipe size. When welding to ductile iron pipe, see note below.

CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (30" & larger pipe)	M-2594-S	18	25CI
#6 Str	Flat (30" & larger pipe)	M-2594	18	25CI
#4 Sol	Flat (30" & larger pipe)	M-2595-S	18	32CI
#4 Str	Flat (30" & larger pipe)	M-2595	18	32CI
#2 Sol	Flat (30" & larger pipe)	M-2596-S	19	45CI
#2 Str	Flat (30" & larger pipe)	M-2596	19	45CI
#1 Str	Flat (30" & larger pipe)	M-2597	19	65CI

- **For sizes not listed, contact thermOweld®.**
- Sold with handle clamps. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (2) 38-0200-00 sleeves per weld.
- **Welding To Horizontal Pipe:** To weld to 4" to 24" horizontal pipe, add pipe size to mold number. To weld #1 str cable to 6" horizontal pipe, the mold number would be M-2597-6. To weld to pipe 30" and larger, use flat surface mold.
- Required Tools;
  - 38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  - 38-3922-00 ~ Mold Cleaning Brush (pg 18)
  - 38-0135-00 ~ Cable Cleaning Brush (pg 18)
  - 38-0101-00 ~ Rasp (pg 19)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

# CB-1



## CB-1 TYPE MOLDS Cable to Lug

CB-1 Type Molds are for connecting copper cable to copper lugs.

CABLE SIZE	LUG SIZE	LUG PART #	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	1/16" x 1/2"	38-4709-00	M-8391-S	18	25
#6 Str	1/16" x 1/2"		M-8391	18	25
#4 Sol	1/16" x 1/2"		M-8393-S	18	25
#4 Str	1/16" x 1/2"		M-8393	18	25
#2 Sol	1/16" x 1/2"		M-8395-S	18	32
#2 Str	1/16" x 1/2"		M-8395	18	32
#1 Str	1/16" x 1/2"		M-8397	18	32
1/0 Str	1/16" x 1/2"	M-8398	19	45	
2/0 Str	1/8" x 1"	38-4200-00	M-8399	19	45

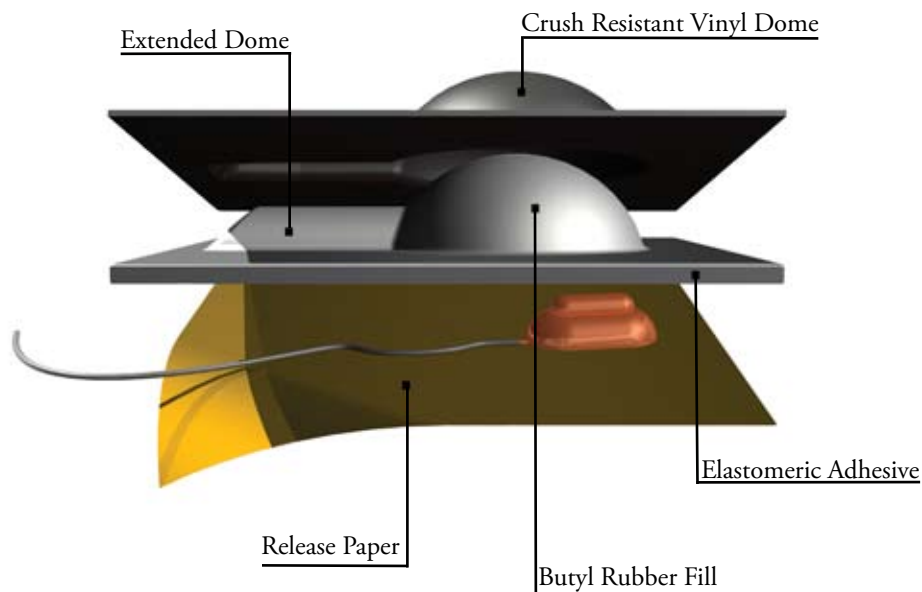
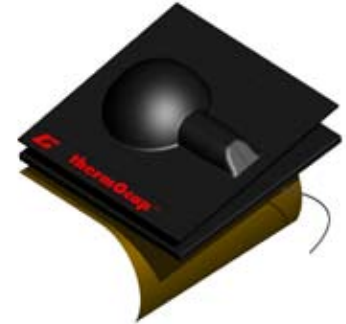
- **For sizes not listed, contact thermOweld®.**
- Sold with handle clamps. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (1) 38-0200-00 sleeve per weld.
- Required Tools;
  - 38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  - 38-3922-00 ~ Mold Cleaning Brush (pg 18)
  - 38-0135-00 ~ Cable Cleaning Brush (pg 18)

# THERMOCAP

## THERMOCAP

thermOwelds® NEW thermOcap is designed to cover your exothermically welded connections.

- Elongated wire inlet allows the cap to conform easier to the pipe.
- Outer shell designed to prevent crushing.
- Butyl rubber filled dome.
- Easier field application.
- Packaged in boxes of 20 with immediate delivery available.



## Properties:

**Construction** - Molded plastic dome filled with corrosion resistant compound on a base of thick elastomeric tape.

**Dimensions:** Overall: 4" x 4"  
 Sheet Thickness: 21mils  
 Plastic Dome: 1 5/8" x 5/8"  
 Wire Way: 3/8" x 1 3/8"

**Application Temperature:** 35° F to 170° F  
**Service Temperature:** -20° F to 225° F  
**Height:** 2 3/4"  
**Adhesive Thickness:** 1/8"



➤ **NO EXTRA CHARGES or FEES**

➤ **SDS** – Same Day Service–Orders placed by 1:00pm(Central) ship Same Day

➤ 80% of commonly used Molds are on the SDS list

➤ Visit [www.thermoweld.com](http://www.thermoweld.com) for a current list of available SDS Molds

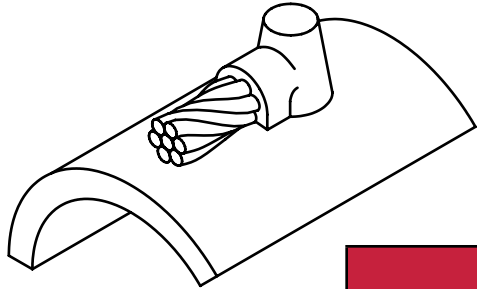
➤ Weld Metal – All Sizes

➤ Accessories – Flint Igniter, Handle Clamps, Brushes, Sleeves, etc



# CS-48

# CS-49



## CS-48 / CS-49 TYPE MOLDS

### Field Made Bond to Horizontal Steel or Cast Iron Surface

CS-48/CS-49 Type Molds are for connecting field made terminal bonds to horizontal steel or cast iron pipe. See below for hammer die and sleeve part numbers. When welding to steel pipe, each mold fits a wide range of pipe sizes. When welding to cast iron pipe, each mold fits a specified pipe size. For welding to ductile iron pipe, see note below.

MOLD INFORMATION FOR STEEL PIPE				BOND SIZE	MOLD INFORMATION FOR CAST IRON PIPE			
SURFACE	MOLD #	PRICE KEY	WELD METAL		SURFACE	MOLD #	PRICE KEY	WELD METAL
4" pipe	M-7343	3	15CP	#6 Str	4" to 24" pipe	M-7352-P.S.	3	25CI
6" to 8" pipe	M-7344	3	15CP		30" & Larger pipe	M-7352	3	25CI
10" & Larger pipe	M-7342	3	15CP		Replace P.S. with Pipe Size (Ex. M-7352-4 for 4" Pipe)			
4" pipe	M-7346	3	25CP	#4 Str	4" to 24" pipe	M-154-P.S.	3	32CI
6" to 8" pipe	M-7347	3	25CP		30" & Larger pipe	M-154	3	32CI
10" & Larger pipe	M-7345	3	25CP		Replace P.S. with Pipe Size (Ex. M-154-4 for 4" Pipe)			
4" pipe	M-7336	3	25CP	#2 Str	4" to 24" pipe	M-175-P.S.	3	32CI
6" to 8" pipe	M-131	3	25CP		30" & Larger pipe	M-175	3	32CI
10" & Larger pipe	M-129	3	25CP		Replace P.S. with Pipe Size (Ex. M-175-4 for 4" Pipe)			
4" pipe	M-7349	3	32CP	#1 Str	4" to 24" pipe	M-7354-P.S.	3	45CI
6" to 8" pipe	M-7350	3	32CP		30" & Larger pipe	M-7354	3	45CI
10" & Larger pipe	M-7348	3	32CP		Replace P.S. with Pipe Size (Ex. M-7354-4 for 4" Pipe)			
4" pipe	M-7337	3	32CP	1/0 Str	4" to 24" pipe	M-5809-P.S.	3	45CI
6" to 8" pipe	M-134	3	32CP		30" & Larger pipe	M-5809	3	45CI
10" & Larger pipe	M-132	3	32CP		Replace P.S. with Pipe Size (Ex. M-5809-4 for 4" Pipe)			
4" pipe	M-7338	3	45CP	2/0 Str	4" to 24" pipe	M-7355-P.S.	3	45CI
6" to 8" pipe	M-137	3	45CP		30" & Larger pipe	M-7355	3	45CI
10" & Larger pipe	M-135	3	45CP		Replace P.S. with Pipe Size (Ex. M-7355-4 for 4" Pipe)			

• For sizes not listed, contact thermOweld®.

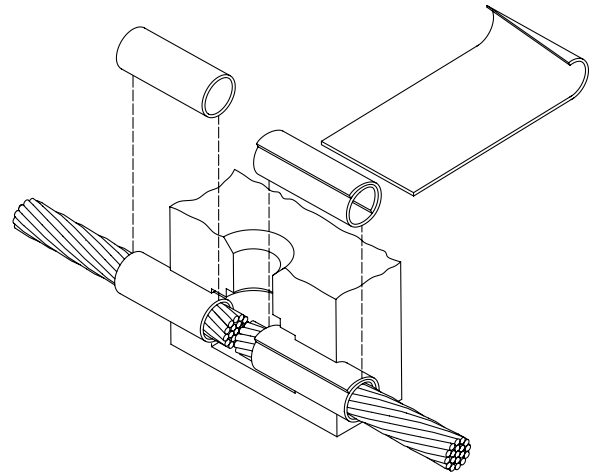
**DO NOT use Type CS-48 molds on Soil Pipe (ASTM A74-82). A test weld should be made on a section of the pipe being used to determine the possibility of detrimental metallurgical effects.**

# ADAPTER SLEEVES

## SHIM STOCK AND ADAPTER SLEEVES

thermOweld® molds designed for larger cable sizes can be used on smaller diameter cables if copper adapter sleeves or shim stock are utilized. The copper shim stock, .0108" x 1-1/2" x 3", is normally wrapped around cable until the diameter is about equal to the cable opening. A tight fit is not necessary as the shim stock will unwrap slightly and prevent leakage of weld metal.

To order shim stock use part # 38-0329-00. Shim stock comes 100 pieces per box.



FOR USE ON CABLE SIZE		PART NO.	USE IN MOLD SIZE	SLEEVE DIMENSIONS		
STRANDED	SOLID			O.D.	I.D.	LENGTH
#12, #14	#10, #12, #14	38-0200-00	#6 STR & Sol	.156	.111	1.00
#9, #10	#8, #9, #10	38-0208-00	#4 Sol	.203	.140	1.00
#7, #8, #10	#6, #8	38-0201-00	#4	.227	.177	1.00
#6	#5	38-0202-00	#2	.292	.198	1.00
#4, #5	#3, #4	38-0207-00	#2	.287	.246	1.00
#4	#2	38-0204-00	#1	.340	.246	1.00
#2	#1	38-0203-00	1/0	.370	.307	1.00
#1	1/0	38-0209-00	2/0	.420	.359	1.00
1/0, #1	2/0	38-0205-00	3/0 & 4/0 Sol	.452	.389	1.00
2/0, 1/0	3/0	38-0240-00	4/0	.524	.437	1.50

# HAMMER DIES

Bonds can be made in the field using your own cable, a copper adapter sleeve and a hammer die.

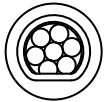


PART #	WIRE SIZE	SLEEVE
38-6020-00	#6 Str	38-0202-00
38-4859-00	#4 Str	38-0204-00
38-0310-00	#2 Str	38-0203-00
38-0392-00	#1 Str	38-0209-00
38-0311-00	1/0 Str	38-0205-00
38-0312-00	2/0 Str	38-0240-00

# JUMPER BONDS

Factory made jumper bonds have copper sleeves formed on each end. These bonds are most commonly used for bonding pipe joints. Formed ends allow the use of smaller weld metal size.

BOND INFORMATION		
SIZE	LENGTH	CATALOG #
#4 Str	18"	27-6623-18
	24"	27-6623-24
#2 Str	18"	27-6378-18
	24"	27-6378-24



End View of Bond

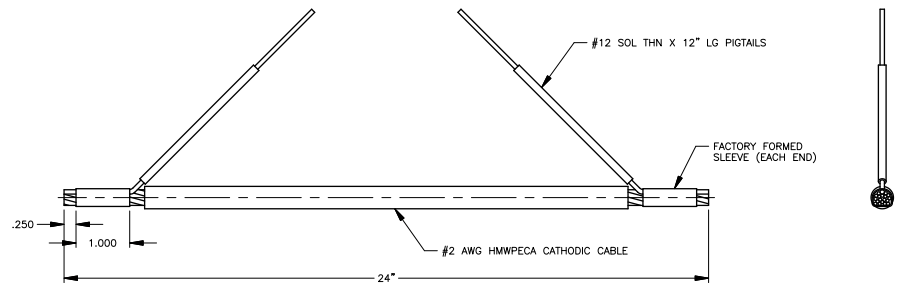
MOLD INFORMATION FOR STEEL PIPE				BOND SIZE	MOLD INFORMATION FOR CAST IRON PIPE			
SURFACE	MOLD #	PRICE KEY	WELD METAL		SURFACE	MOLD #	PRICE KEY	WELD METAL
4" pipe	M-7346	3	25CP	#4 Str	4" to 24" pipe	M-154-P.S.	3	32CI
6" to 8" pipe	M-7347	3	25CP		30" & Larger pipe	M-154	3	32CI
10" & Larger pipe	M-7345	3	25CP		Replace P.S. with Pipe Size (Ex. M-156-4 for 4" Pipe)			
4" pipe	M-7336	3	25CP	#2 Str	4" to 24" pipe	M-175-P.S.	3	32CI
6" to 8" pipe	M-131	3	25CP		30" & Larger pipe	M-175	3	32CI
10" & Larger pipe	M-129	3	25CP		Replace P.S. with Pipe Size (Ex. M-156-4 for 4" Pipe)			

• For sizes not listed, contact thermOweld®.

Factory made jumper bonds with pigtails are used bonding across Dresser Style Couplings.



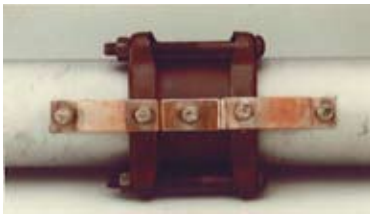
BOND INFORMATION			
BOND SIZE	PIGTAIL SIZE	LENGTH	CATALOG #
#2 Str	#12 Sol	24"	27-6412-00



MOLD INFORMATION FOR STEEL PIPE				MOLD FOR PIGTAIL TO STEEL PIPE			BOND SIZE	MOLD INFORMATION FOR CAST IRON PIPE				MOLD FOR PIGTAIL TO CAST IRON PIPE		
SURFACE	MOLD #	PRICE KEY	WELD METAL	MOLD #	PRICE KEY	WELD METAL		SURFACE	MOLD #	PRICE KEY	WELD METAL	MOLD #	PRICE KEY	WELD METAL
4" pipe	M-7336	3	25CP	M-100	2	15CP	#2 Str	4" to 24" pipe	M-175-P.S.	3	32CI	M-156-P.S.	3	25CI
6" to 8" pipe	M-131	3	25CP	M-100	2	15CP		30" & Larger pipe	M-175	3	32CI	M-156	3	25CI
10" & Larger pipe	M-129	3	25CP	M-100	2	15CP		Replace P.S. with Pipe Size (Ex. M-156-4 for 4" Pipe)						

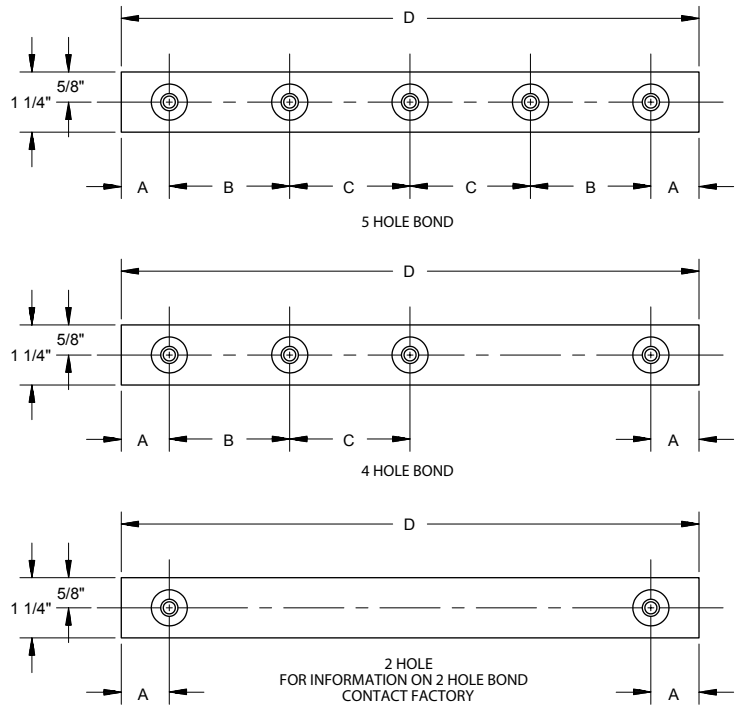
• For sizes not listed, contact thermOweld®.

DO NOT use Type CS-48 molds on Soil Pipe (ASTM A74-82). A test weld should be made on a section of the pipe being used to determine the possibility of detrimental metallurgical effects.



# STRAP BONDS

The strap bond is a method of bonding across joints. It is particularly suited for providing electrical contact across Dresser® Couplers. The strap is made of soft copper strip available in size equivalent to 1/0 str. copper and supplied to desired length. The soft copper allows easy hand forming of the strap to the coupler contour. Normal application requires 5 welds, 2 on the pipe and 3 on the coupler. Welds are made with mold M-128 sold complete with handle, cleaning tool and flint gun. Requires #15CP cartridge for each weld.



COPPER STRAP BONDS						
COUPLING SIZE	CATALOG NO.	# OF HOLES	A	B	C	D
5" & LARGER PIPE STYLE 38	27-0180-00	4	1"	3 3/4"	5 1/4"	20"
5" & LARGER PIPE STYLE 38	27-0181-00	4	1"	3 3/4"	6 1/4"	22"
5" & LARGER PIPE STYLE 38	27-0182-00	5	1"	3 3/4"	5 1/4"	20"
5" & LARGER PIPE STYLE 38	27-0183-00	5	1"	3 3/4"	6 1/4"	22"
UNDER 5" & LIGHT PATTERN STYLE 38	27-0184-00	4	1"	3 1/4"	4 1/4"	17"
UNDER 5" & LIGHT PATTERN STYLE 38	27-0185-00	4	1"	3 1/4"	5 1/4"	19"
UNDER 5" & LIGHT PATTERN STYLE 38	27-0186-00	5	1"	3 1/4"	4 1/4"	17"
UNDER 5" & LIGHT PATTERN STYLE 38	27-0187-00	5	1"	3 1/4"	5 1/4"	19"
FOR ALL STYLE 40 COUPLINGS USE (2) 27-0188-00 BONDS	27-0188-00	3	1"	3 3/4"	—	9 1/2"

- For sizes not listed, contact thermOweld®.
- Current capacity of the copper strap bonds is equivalent to 1/0 Str copper cable.
- Use Mold M-128 to attach bonds with #15 cartridge.

# ACCESSORIES



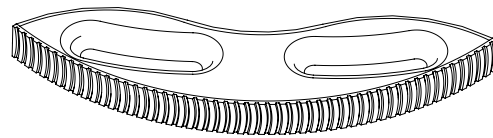
## TOOLS

- 38-0304-00 ~ 8" File
- 38-0305-00 ~ Wire Brush
- 38-0306-00 ~ Card Cloth Brush
- 38-0307-00 ~ Crimping Tool
- 38-0308-00 ~ 6" Screwdriver
- 38-0309-00 ~ Flint Ignitor
- 38-3922-00 ~ Mold Cleaning Brush



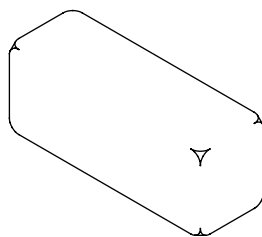
## TOOL KIT

- 38-0302-00 ~ Tool Kit with Tools Shown except Rasp
- 38-0302-02 ~ Tool Kit with Tools Shown and Rasp
- 38-0303-00 ~ Tool Box Only



## 38-0101-00 RASP

This tempered steel, curved rasp is recommended for removing rust and mill scale from steel and cast iron surfaces. The blade is replaceable. Specify part # 38-0101-01. Not recommended for use on galvanized surfaces.



## PACKING MATERIAL

Packing material is used to prevent the molten weld metal from leaking out of the mold. When cable opening becomes worn from heavy use, the packing material may be used to prolong mold use. It is also used around 7 strand cable to prevent leaking. Packing material comes in a 1 lb or a 5 lb package.

**Note: This packing material to be used on outside of mold only. If packing gets into weld cavity, gassy welds will result.**



## 38-0904-00 Flint Ignitor Extension

The 38-0904-00 Flint Ignitor Extension allows the installer to stand 36" from the mold. Flint Ignitor not included.



## 38-0309-00 Flint Ignitor

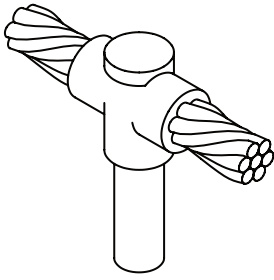
The 38-0309-00 Flint Ignitor is used to ignite the starting powder. Each mold that is sold with a frame has a Flint Ignitor included. Replacement flints are available upon request. Part #38-0309-01.

# TROUBLING SHOOTING TIPS

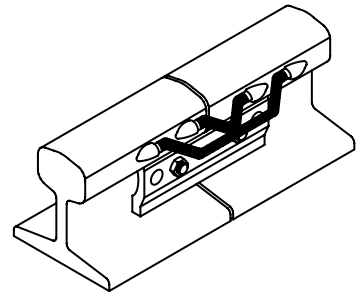
PROBLEM	PROBABLE CAUSE	CORRECTION TO MAKE
Insufficient metal to make weld.	Worn mold resulting in leaking weld metal.	Replace mold or if only worn around conductor opening, use duct seal around conductor. Do not get duct seal into mold cavity.
	Wrong size cartridge for mold.	Check ID plate for mold and compare with number on bottom of cartridge.
	Too much spillage when dumping powder.	Carefully open lid while holding over crucible and dump.
	Wrong mold for conductor being used.	Replace with correct mold. In some applications, shim stock or adapter sleeves can be used to enlarge cable to fit mold.
Mold does not close tightly causing weld metal to leak out.	Handle clamps not properly adjusted.	Remove set screw between the handles of the mold and adjust handle tension by backing out the eye bolt.
	Dirt or slag stuck in parting line of mold.	Clean mold thoroughly between connections.
	Bent or out-of-round cable.	Straighten or cut out bad section of cable.
Handle clamps will not lock closed.	Handle clamps not properly adjusted.	Remove set screw between the handles of the mold and adjust handle tension by backing out the eye bolt.
Excessively high weld, bubbly or gassy appearance, poor weld.	Moisture in mold.	Pre-heat mold to above 220° F with a propane torch.
	Oil, grease, moisture or foreign material on conductors.	Pre-heat conductors with propane torch then use a clean wire brush on conductor to remove any residue left on conductors. If welding to cast iron or steel surface, weld area must be cleaned down to bright metal.
	Duct seal in weld cavity.	Take special precautions to keep duct seal out of weld cavity.
	Weld powder has gotten wet.	Replace with fresh, dry weld powder.
Weld metal blows out top of mold.	Mold worn or chipped around disc seal allowing powder to leak into mold cavity.	Replace mold.
	Forgot to use steel disc or did not seat it properly at bottom of crucible.	Make sure disc is seated at bottom of crucible before pouring the powder into crucible.

# TROUBLING SHOOTING TIPS

PROBLEM	PROBABLE CAUSE	CORRECTION TO MAKE
Cannot ignite powder.	Insufficient starting powder in ignition pocket on mold lid.	Place at least half of starting powder in ignition pocket of mold lid.
	Flint ignitor not shooting enough spark.	Clean flint ignitor according to directions on box or replace flint ignitor.
	Starting powder lumped together.	Break up starting powder on lid with edge of powder tube.
Mold wearing out to fast.	Improper cleaning of mold.	Use mold cleaner, soft natural bristle brush or clean rag to clean mold between shots. Do not use wire brush or screwdriver on molds.
	Bent or out of round cable causes chipping and premature wear of the mold.	Use caution when closing mold. Do not force mold shut around bent, twisted or out of round conductors.
Poor weld to ground rod.	Weight of mold not supported during reaction causing mold to slip when cable melts.	Use locking pliers on ground rod under mold to support the weight of the mold during the reaction.
	Moisture or contaminant on cable or ground rod.	Pre-heat conductors with propane torch then use a clean wire brush on conductors to remove any residue left on conductors.
Weld will not stick to steel surface.	Improperly cleaned area on steel.	An area larger than the weld area should be cleaned down to bright clean metal.
	Moisture or contaminant on cable or steel surface.	Pre-heat conductors with propane torch then use a clean wire brush on conductors to remove any residue left on conductors.
	Cable is improperly positioned in mold, blocking the flow of weld metal.	Position cable in mold in accordance with directions for mold. If directions are not available, position top of cable in the center of where the liquid weld metal hits the steel.
Weld will not stick to cast iron surface.	All of the causes listed under welding to steel surface also apply to this section.	
	Not using CI (Cast Iron) powder.	Specify "CI" behind cartridge when order powder (i.e. 25 CI).
Cable pulls out of mold when it is fired.	Cables are either twisted or under tension.	Use 38-0330-00 cable clamp or other method to remove tension. Cut out severely twisted cable.

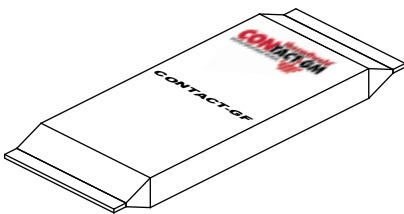


GROUNDING

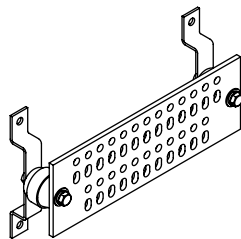


GROUND RAIL

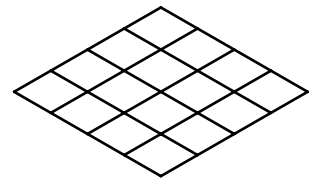
# “Whatever your grounding needs, **thermOweld®** has you covered”



**CONTACT  
GROUND  
ENHANCEMENT  
MATERIAL**



**EQUIPMENT  
GROUNDING**



A/C MITIGATING

# OTHER thermOweld® CATALOGS



## EXOTHERMIC PRODUCTS CATALOG

thermOweld® has been providing high quality exothermic products to Electric, Utility, Telecom, Cathodic, and Rail Markets since 1958.

thermOweld® services the grounding and power market domestically and internationally through Electrical Distributors. This is an all-encompassing field that includes Commercial and Industrial Buildings and Equipment, Telecom, Lightning Protection, Grounding Products, Government Projects (FAA, Waste Water Treatment Facilities), as well as many other grounding needs.

Regardless of the requirements, thermOweld® provides a long list of products for your grounding needs. thermOweld® has the quickest lead-time in the industry. We have a wide variety of grounding products and accessories listed in our Catalog.

thermOweld® is also quickly becoming recognized in the industry for not only providing Great Customer Service but being engaged in Problem Solving, Providing Fast Response Time and Effective Solutions. We now offer "Same Day Service" (SDS) to allow us to respond to your needs quicker. Contact your Inside Sales person to learn more about all of our products and services!

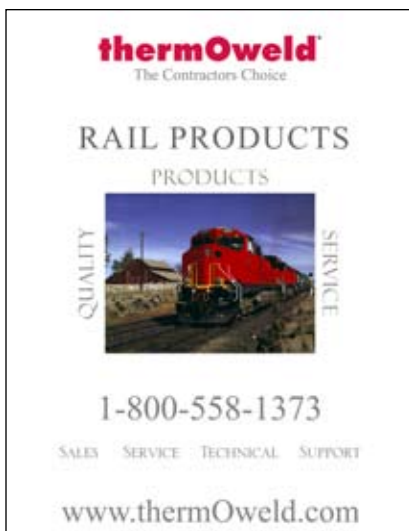


## GROUNDING PRODUCTS CATALOG

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## RAIL PRODUCTS CATALOG

Regardless of the requirements, thermOweld® can provide the exothermic products to connect and bond a wide range of cable sizes to a variety of rail types. thermOweld® has the best mold design engineering in the industry, as well as the quickest lead time in the industry. We now offer "Same Day Service" (SDS) to allow us to respond to your needs quicker. We have a wide variety of Rail products and accessories listed in our Rail Catalog.

Contact your Inside Sales person to learn about all of our products and services!

**thermOweld®**

4102 South 74th East Ave, Tulsa OK 74145

P: 800.558.1373 • F: 800.788.1668

0000-99-5044-00 ECN 2147 REV"B" 09/07