WWW.CABLEJOINTS.CO.UK
THORNE & DERRICK UK
TEL 0044 191 490 1547 FAX 0044 477 5371
TEL 0044 117 977 4647 FAX 0044 977 5582
WWW.THORNEANDDERRICK.CO.UK

Furseweld®

Exothermic Welding Equipment is used by some of the world's most demanding customers. By adding Furseweld to the Thomas & Betts product offering, T&B is now the only manufacturer that can offer exothermic welding, as well as compression and bolted connectors for grounding applications.

How to use this catalog

Refer to the pictorial index at the beginning of each catalog section to determine the type of connection that you wish to make. Turn to the relevant page, and study the table. There is an illustration for each connection type, and each table provides the following information:

- The Weld Powder size required - Unless otherwise stated, one weld powder is required for each connection made.
- The Mold required - The mold part number defines precisely what the mold can do, and indicates its cost. For example:

CC2 - 4 - 250K4/0

A 'Tee' connection for stranded/solid circular conductor.	Price Key 4	For a 250K strand run with a 4/0 strand tap.

- The Handle Clamp required - Handle clamps relate directly to mold price keys. For example, handle clamp HCPK4 is for use with price key 4 molds.
- Mold Price Key - This relates to the size of graphite block used to manufacture the mold, and determines its price. The simplest and smallest molds have the lowest price key numbers.
- Sleeves required - Stranded conductors of #6 AWG or less require sleeves, which prevent burning of the strands, and improve the mechanical strength of the connection.
- Packing - Molds for connecting stranded conductors to reinforcing bar (CRE type) require sealing with packing.
- Mold Sealing Compound - Required when making connections to steel surfaces and pipes. Requirement is indicated by a statement at the foot of the table.

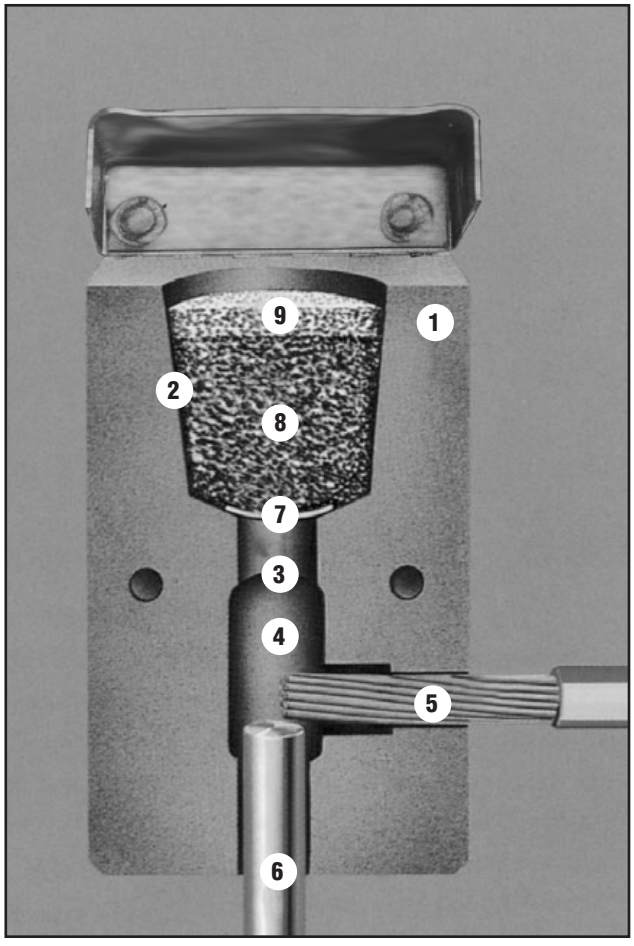
The Furseweld Process

The Furseweld Exothermic Welding process is a simple, self-contained method of forming high quality electrical connections. The compact process requires no external power or heat source, making it completely portable.

Connections are made inside a semi-permanent graphite mold using the high temperature reaction of powdered copper oxide and aluminium.

This is how it works:
The Mold (1) features a Crucible (2), a Tap Hole (3) and a Weld Cavity (4). The Conductors (5) and (6) to be joined, are located in the Weld Cavity as shown, and the Mold is closed. A steel Retaining Disc (7) is located in the bottom of the crucible, to retain the Weld Powder (8) and Starting Powder (9) which are poured in on top.

Ignited with a spark gun, the starting powder sets off an exothermic reaction in the weld powder, reducing it to molten copper alloy. This instantaneously melts the retaining disc, and flows down the tap hole, to the weld cavity, where it partially melts the conductors, before cooling to leave a fusion weld of great mechanical and electrical integrity.



Thomas&Betts

WWW.CABLEJOINTS.CO.UK
THORNE & DERRICK UK
TEL 0044 191 490 1547 FAX 0044 477 5371
TEL 0044 117 977 4647 FAX 0044 977 5582
WWW.THORNEANDDERRICK.CO.UK

Furseweld®

The Furseweld Connection

The majority of Furseweld connections have at least twice the cross sectional area of the conductors being joined, and an equivalent or greater current carrying capacity.

Because the connection is a fusion of high conductivity, high copper content alloy, it will withstand repeated fault currents, and will not loosen in the way that mechanical connectors can.

Corrosion resistance too, is exceptional, due to the alloy's very high copper content (in excess of 90%).

Furseweld Equipment and Accessories

Weld Powders

Furseweld weld powders are contained in plastic cartridges, and are packed in plastic boxes of 10 or 20, depending on their size. Different joints require different powder sizes, and the size relates to the powder's nominal weight in grams.

The weld powder packaging also contains retaining discs and starting powder. The retaining discs are contained in a separate bag within the box. The starting powder is compacted into the bottom of the cartridge, underneath the weld powder, and is released by tapping the cartridge base firmly.

Furseweld weld powders are suitable for making connections from copper to copper and from copper to steel.

Molds

Furseweld graphite molds are dedicated to producing one type of connection. With care, they should be capable of producing up to 75 connections each. Mold size and complexity varies, and is denoted by a price key, from one upwards.

Each mold carries a tag which gives the mold part number, the weld powder size for use with the mold and the conductor sizes for which it is intended.

Handle Clamps

Handle clamps provide a means of both handling the mold, and also of clamping the mold halves together (or of clamping the mold to the surface to which a connection is to be made).

Standard Tools

A flint gun is required to start the reaction.

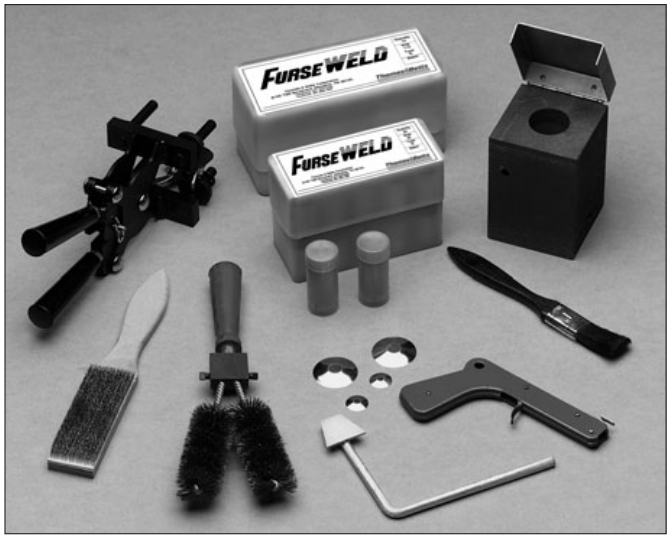
Cleaning tools for conductors, surfaces and molds include:

Cable Brush	-	for cleaning cables and other circular conductors such as rods.
Mold Scraper	-	for removing slag from the mold crucible, after firing.
Mold Brush	-	for final mold cleaning.
File Card Brush	-	for cleaning conductors and surfaces.

Standards Compliance

A representative range of Furseweld connections have been successfully tested in accordance with the requirements of IEEE 837-1989 - Standard for Qualifying Permanent Connections Used in Substation Grounding.

Testing in accordance with UL and CSA. Contact T&B Technical Services at 888-862-3289 for listings and certificates.



From left, counter-clockwise:

Handle Clamp
File Card Brush
Cable Brush
Mold Scraper
Retaining Discs
Flint Gun
Mold Brush
Mold
Powder Boxes
Cartridges

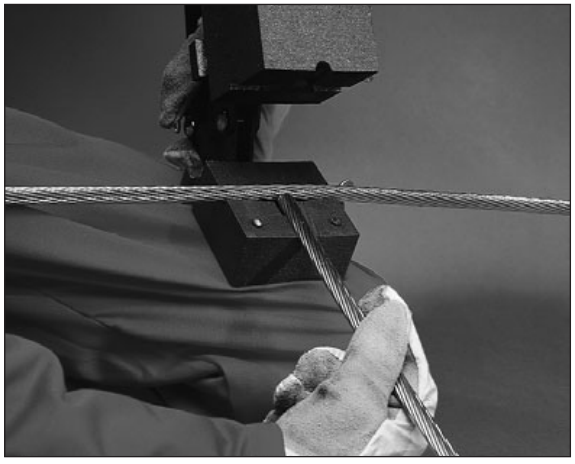
Thomas&Betts

WWW.CABLEJOINTS.CO.UK
THORNE & DERRICK UK
TEL 0044 191 490 1547 FAX 0044 477 5371
TEL 0044 117 977 4647 FAX 0044 977 5582
WWW.THORNEANDDERRICK.CO.UK

Furseweld®

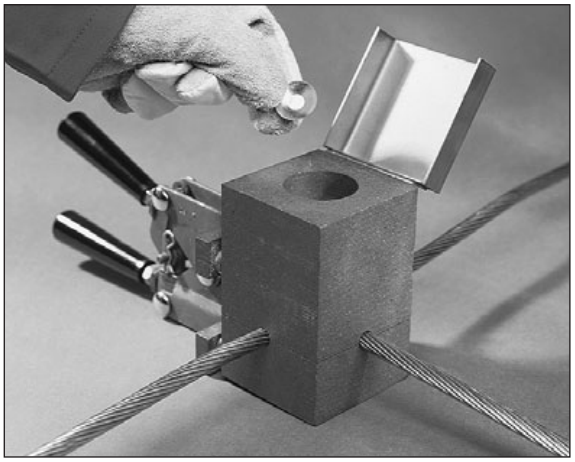
How to Make a Furseweld Connection

1



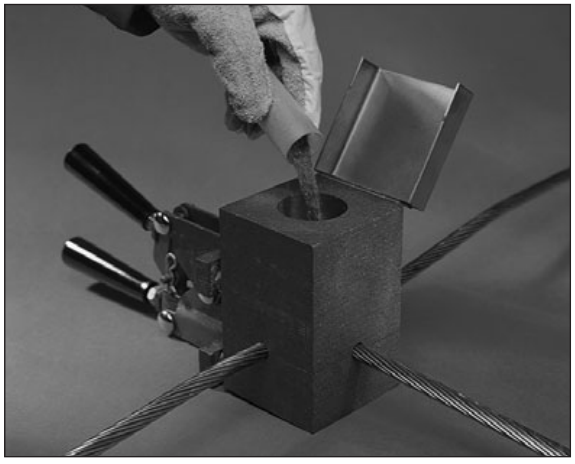
Position the clean conductors in the mold after making sure the mold is dry, by pre-heating or making a test joint.

2



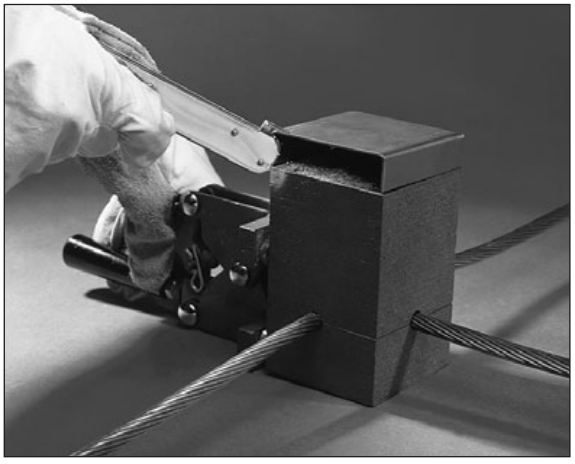
Place the metal retaining disc in the bottom of the mold crucible.

3



Pour the powder into the crucible, spreading some starting powder onto the mold edge.

4



Close the lid, and ignite with the flint gun from the side, firing the spark onto the starting powder.

5

The reaction takes place safely inside the mold.

6

Once the joint is finished, the mold should be cleaned using a mold scraper and brush ready for the next joint.

Thomas&Betts

