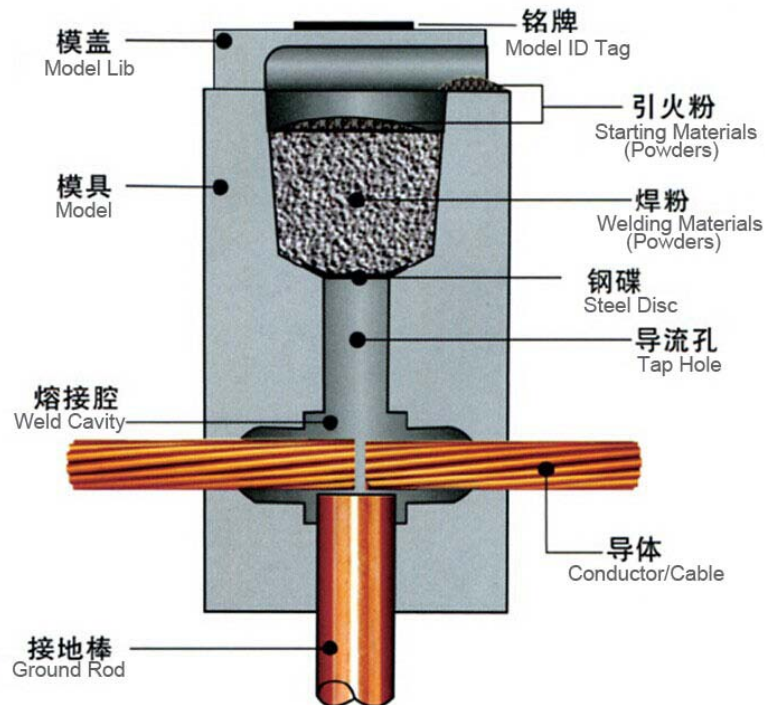




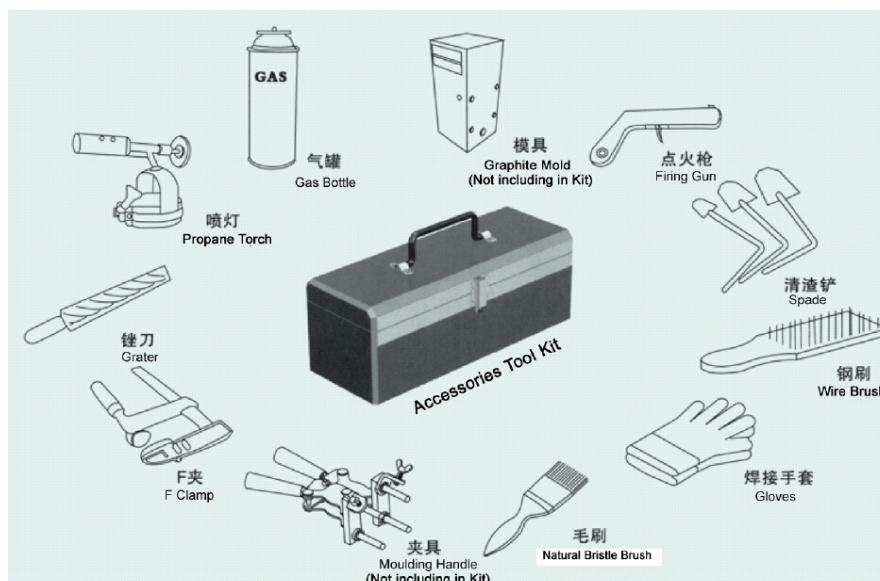
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## Exothermic Welding Manual



The EXOTHERMIC WELDING process is a method of making electrical connections of copper-to-copper or copper-to-steel in which no outside source of heat or power is required. In this process, conductors are prepared, placed in a purpose-designed graphite mold, and exothermically welded to produce a permanent electrical connection.

The steps outlined below are a general demonstration of a typical welded connection. These basic steps are used for all EXOTHERMIC WELDING electrical connections. Be sure to read and follow the instructions included with every mold before making a connection.



**STEP-01:** Gather the proper materials and equipment for the type of connection you are making. The typical EXOTHERMIC WELDING system requires, safety gloves a graphite mold, handle clamp, welding



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material, natural bristle brush for mold cleaning, wire brush for cleaning/preparing conductors, flint igniter, and propane torch.

NOTE: Additional materials may be required for your specific application. Refer to your mold instructions. Advise nearby personnel of welding operations in the area prior to ignition.



**Step-02:** Check to ensure the graphite mold is not worn or broken, which could cause leakage of molten weld metal during the reaction.

Inspect the mold ID tag to ensure that it corresponds to the application, indicated by the:

1. mold part number
2. conductor size
3. welding material required
4. other materials required

The mold must be correct for the conductor size and application. DO NOT MODIFY MOLDS.



**Step-03:** Slide the handle clamp into the pre-drilled holes with the proper orientation for the thumbscrews. Tighten the clamp thumbscrews onto the mold. Close the grips to tightly lock the mold.

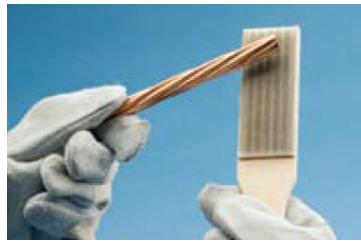
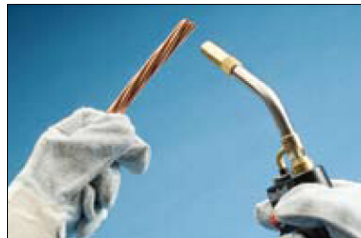




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Check for an appropriate seal on the mold. If the mold does not seal properly, make adjustments to tighten/loosen the handle clamp.



**Step-04:** Graphite absorbs moisture. Ignite the propane torch and dry out the inside of the mold thoroughly on both sides, heating the mold to approximately 120 degrees Celsius. The conductors should be clean and dry before the connection is made. Use a propane torch to dry wire conductors and remove remaining cleaning residue, solvent, or water before making the EXOTHERMIC WELDING connection.

Next, use a wire brush to further prepare the surface of the conductors. Scrape the outer surface to remove dirt and oxidation. You will notice a slight color change.



**Step-05:** Close the clamp tightly once the conductors are properly positioned.



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**Step-06:** Steel disk found inside the packaging box of welding material. Insert the steel disk (concave side up) into the mold. Hold the steel disk on the side of the mold and let it slide into place. Ensure that the steel disk is properly seated.



**Step-07:** Next, take a bag of properly sized welding material (as identified on the mold ID tag) out of the box. Remove the lid over the mold crucible. Quickly pour the loose welding material powder into the mold. Pour 1/4 to 1/3 of the starting material over the welding material in the mold crucible. Close the lid and pour the remaining 3/4 to 2/3 of the starting material into the slot on the mold cover.

**NOTE:** Welding material is an exothermic mixture and reacts to produce hot molten material with temperatures in excess of 1400 degrees Celsius and a localized release of smoke. Avoid looking directly at the “flash” of light from ignition of starting material. Avoid inhalation of smoke/fumes.



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**Step-08:** Aiming the flint igniter from the side, ignite the starting material on the mold cover. Withdraw the igniter quickly to prevent fouling. Allow approximately 30 seconds for completion of the reaction and solidification of the molten material.



Open the mold and remove the connection. Use care to prevent chipping the mold. Avoid contact with hot materials. Completed EXOTHERMIC WELDING connection.

**Note:** Use a soft cotton cloth or a soft bristle brush to clean inside the mold cavity and cover. You are ready to make another EXOTHERMIC WELDING connection.

EXOTHERMIC WELDING graphite molds will last approximately 50 connections.