1. Always wear protective safety glasses and gloves while working with CADWELD® exothermic welding products.

2. Gather the proper materials and equipment for the type of connection you are making. The typical CADWELD system requires a graphite mold, handle clamp, welding material, natural bristle brush for mold cleaning, wire brush for cleaning/preparing conductors, flight igniter and propane torch.

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

3. Check to ensure the graphite mold is not worn or damaged, which could cause a leakage of molten weld metal during the reaction.
4. Inspect the mold ID tag to ensure it corresponds to the application, indicated by the:
   - Mold part number
   - Conductor size
   - Welding materials required
   - Other materials required.

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

5. Remove the small wire bracket which is used to temporarily hold the mold together before using. Set the bracket aside.

6. Slide the handle clamp into the pre-drilled holes with the proper orientation for the thumbscrews.

7. Tighten the clamp thumbscrews onto the mold.
8. Close the grips to tightly lock the mold. Check for an appropriate seal on the mold.

9. If the mold does not seal properly, make adjustments to tighten/loosen the handle clamp.

10. Graphite absorbs moisture. Ignite the propane torch and dry out the inside of the mold thoroughly on both sides, heating the mold to approximately 250 degrees Fahrenheit (120 degrees Celsius).

11. 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 CADWELD® connection.
12. 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 colour change.

13. Insert the conductors and position them for the connection.

14. Close the clamp tightly once the conductors are properly positioned.

15. Steel disk found inside the packaging box of welding material.
16. Insert the steel disk (concave slide up) into the mold. Hold the steel disk on the side of the mold and let it slide into place.

17. Ensure that the steel disk is properly seated.

18. Next, take a tube of properly sized welding material (as identified on the mold ID tag) out of the box.

19. Remove the lid of the mold crucible.
20. Quickly pour the loose welding material powder into the mold.

21. The bottom the tube contains compressed material [starting material]. Tap the bottom of the tube a couple of times to loosen this material.

22. Pour 1/4 to 1/3 of the starting material over the welding material in the mold crucible.

23. 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 2500 degrees Fahrenheit (1400 degrees Celsius) and localised release of smoke. Avoid looking directly at the ‘flash’ of light from ignition of starting material. Avoid inhalation of smoke and fumes.
24. 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 recreation and solidification of the molten material.

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

26. A completed CADWELD® connection.

27. CADWELD graphite molds will last approximately 50 connections. Use a soft cotton cloth or a soft bristle brush to clean inside the mold cavity and cover.
28. You are ready to make another CADWELD connection.