

Lesson 2: Welding With Oxyacetylene

Running a Continuous Weld Pool With and Without Welding Rod

Objective: Students will run a continuous weld pool with and without welding rod using the oxyacetylene outfit.

Directions: Students will use an oxyacetylene outfit to run a continuous weld pool with and without welding rod.

Materials and Equipment:

Oxyacetylene outfit and accessories
Welding goggles with appropriate shaded lens*
Safety glasses or goggles
Leather gloves and any other protective clothing recommended by instructor
Spark lighter

Soapstone or chalk
Straightedge
Wire brush
Pliers
Steel plate(s), selected by instructor
Welding rod(s), selected by instructor

* Everyone participating in or observing the demonstration should wear appropriate protective eyewear.

Procedure:

Run a continuous weld pool without welding rod.

1. Wear appropriate face protection and protective clothing.
2. Inspect equipment, materials, and work area to ensure safe and correct operation.
3. Prepare the metal for welding using the wire brush.
4. Position the plate on the worktable and mark a line using the soapstone and straightedge. Lay out additional lines if instructed to do so.
5. Set up the oxyacetylene outfit following assigned procedure.
6. Light the torch using the spark lighter.
7. Adjust the flame to a neutral flame.
8. Position the torch so that the flame is just inside the edge of the metal and turned toward the plate.
9. Hold the torch at a 45-degree angle, with the inner cone approximately 1/8 in. from the work. Refer to Figures 1 and 2.

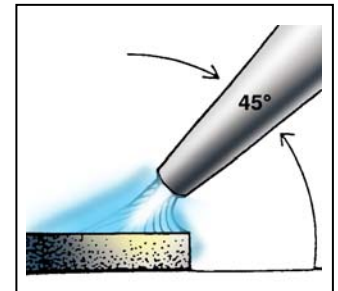


Figure 1

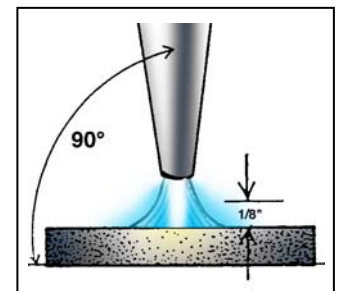


Figure 2

10. Move the torch in a small circular pattern to form a weld pool that is about 1/4 in. in diameter.
11. Continue moving the torch in the circular pattern and also move it forward at a speed that will keep the weld pool a uniform size and shape. Be sure to keep the tip of the inner flame cone inside the boundary of the weld pool but not touching the surface. Refer to Figure 3.
12. At the end of the weld, lift the tip slowly so that the weld pool solidifies before the flame is removed. This helps keep the weld pool from cracking.
13. Run other beads, if instructed to do so.
14. Shut off the outfit if the torch must be set down.
15. Turn the metal over when it is safe to do so and inspect the underside of the weld or welds. With a properly run weld pool, there is a continuous, uniform deformation on the underside of the metal and no holes burned through the piece.
16. Steps follow for running a continuous weld pool using welding rod. If this portion of the activity has not been demonstrated or assigned, shut down the outfit according to the assigned procedure, return equipment and materials to their proper places, and turn in work to be graded by the instructor. If the second part of the activity is performed at a different time, set up the outfit according to the instructor's directions before continuing with step 17.

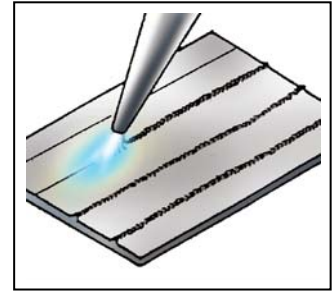


Figure 3



Figure 4

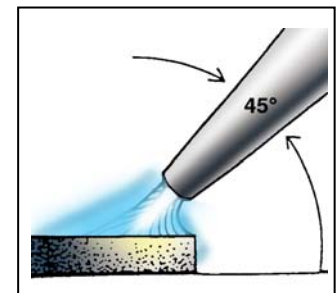


Figure 5

Run a continuous weld pool using welding rod.

17. Use pliers to bend one end of the welding rod into a hook. Refer to Figure 4. This is to distinguish the cool back end of the rod from the end that may be hot and also to avoid injuring anyone nearby with the end of the wire. It is standard procedure to leave rods full-length rather than cut them down.
18. Prepare the metal to be welded.
19. Position the plate on the worktable and mark a line using the soapstone and straightedge. Lay out additional lines if instructed to do so.
20. Set up the outfit, if needed, and light and adjust the torch.
21. Position the torch so that the flame is just inside the edge of the metal and turned toward the plate.
22. Hold the torch at a 45-degree angle, with the inner cone approximately 1/8 in. from the work. Refer to Figures 5 and 6.
23. Move the torch in a small circular pattern to form a weld pool that is about 1/4 in. in diameter.

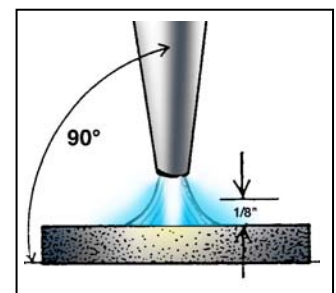


Figure 6

24. At the same time, use the other hand to bring the welding rod close to the flame for preheating. The end of the rod should be approximately $\frac{3}{8}$ in. from the flame and $\frac{1}{16}$ to $\frac{1}{8}$ in. from the pool surface. The rod is held at an angle to the work, usually about 45 degrees.
25. When the weld pool needs additional material, dip the end of the rod in the front edge of the weld pool. This melts the rod and fills the pool. When enough filler is added to make the desired bead, move forward. Refer to Figure 7.
26. Carry the bead forward by moving the torch and adding filler with a smooth, uniform motion. Refer to Figure 8.
 - a. Keep the end of the welding rod inside the flame so that it stays preheated and does not become oxidized by contact with the air.
 - b. If the welding rod becomes too cool, it can freeze the weld pool. If it is too hot, drops of filler can be blown around by the flame, resulting in an uneven bead and poor fusion.
27. Continue moving forward until the weld is complete.
28. Run additional beads if instructed to do so.
29. Shut off the outfit if the torch must be set down.
30. Shut down the outfit according to the assigned procedure. Materials and equipment should be returned to their proper places.
31. Turn in work to be graded by the instructor.

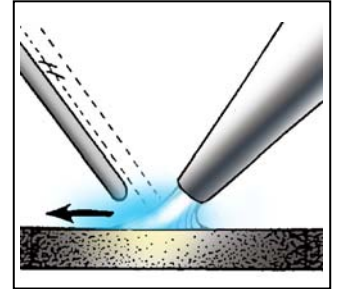


Figure 7

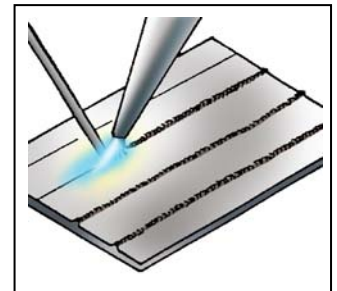


Figure 8