

## Stick Welding

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### Tips to Improve your Welding

READING ELECTRIC, a leading supplier of electro-mechanical equipment, services, and problem solver for Industrial and Commercial customers for over 50 years provides technical information to the Region's Residential, Commercial and Industrial Community. This Bulletin provides information on tips to improve your Stick Welding.

Before beginning the welding project, take a minute to review the following tips, especially if you've never struck an arc or are still debating which machine to use.

**Question: What type of Stick welder works best for all-around use?**

Answer: A welder with an AC/DC output. DC welding offers advantages over AC for most Stick applications, including: easier starts; fewer arc outages and sticking; less spatter/better looking welds; easier vertical up and overhead welding; easier to learn "how to weld" and a smoother arc. DC reverse polarity (electrode positive) provides about 10 percent more penetration at a given amperage than AC, while DC straight polarity (electrode negative) welds thinner metals better.

**Question: Does an AC output have any advantages?**

Answer: Yes, if you need to weld on material that's become magnetized from friction, such as when hay, feed or water constantly rub against a steel part. A DC output won't work because of "arc blow," where the magnetic field blows the molten filler metal out of the weld puddle. Because an AC output alternates between polarities, it enables you to weld magnetized parts.

**Question: How big of machine do I need?**

Answer: A 225 to 300 amp machine handles almost anything the average person will encounter; as most Stick welding procedures require 200 amps or less. To weld material thicker than 3/8 in., simply make multiple passes - this is what professionals do, even when welding on 1 in. structural steel.

**Question: I see the word "duty cycle" on product spec sheets? What does that mean?**

Answer: Duty cycle is the number of minutes out of a 10-minute cycle a welder can operate. For example, a welder that creates a 200 amp DC output at 20 percent duty cycle can weld continuously at 200 amps for two minutes, and then must cool for eight minutes to prevent overheating. Duty cycle and amperage are inversely proportional. Operating at 90 amps, a welder that has a 100 percent duty cycle means you can weld without stopping. This inversely proportional rule is true of most welding machines but does not apply to all machines.

**Question: What type of rod should I use for general work on steel?**

Answer: Common electrodes used for general work include 6010, 6011, 6013, 7018 and 7024, each of which has specific properties: 6010 electrodes penetrate deeply, while 6013 electrodes penetrate less. For much better bead appearance and work on higher strength steels (say for a hitch), use a 7018 rod. For better penetration on thick material, grind the joint to a 30 degree bevel (leave a nickel-width land on the bottom of the groove) and make multiple passes. Alternatively, make the first pass with a 6010 rod, then make a "cap" with a 7018. The 7024 rod is perhaps the easiest to use. Also known as a "drag rod," this electrode's thick flux automatically maintains the correct arc length, which allows you to drag the rod directly along the work piece.

[Information contributed by Miller Electric]

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