

"The Lost Art of DC- Aluminum Welding"

Does your TIG machine not have enough amperage to weld that thick Aluminum? Are you tired of pre-heating only to find that your tungsten cannot withstand the constant AC arc? Well, perhaps you should try DC(-) welding on Aluminum. Be aware there are no short cuts and no forgiveness when it comes to thin material. This process is HOT!!! so get with the program "right now!". DC(-) does not work on all types of Aluminum, but fortunately, 6061 is one that can be. Also, beware that DC(-) provides no cleaning action whatsoever. A good wire brushing followed by an Acetone wipe is critical to being successful. Here are some of the Aluminum types that can be welded using DC(-): 6061; 1100; 2219; most A-356 and A-357 Casting (although you get a dirty weld). Do Not attempt any 5XXX series Aluminum nor use filler materials that are 5XXX series. Acceptable filler materials are: ER4043; 1100 and 2319.

Procedures for 1/4" to 1" 6061-T6 plate:

Torch: TIG Depot 20H rated at 300 amps - Amperage: 175 to 225 -
Tungsten: 2% Ceriated - Tungsten Diameter: 3/32" - Tungsten Tip:
Pointed - Pre-Heat: not required - Filler Material: ER4043 - Filler
Material Diameter: 1/16 to 3/32" - Shielding Gas: 100% Helium @
40-50 CFH - Back-up Gas: not required - Polarity: DC Negative

Technique:

Initiate arc and hold amperage at about 200 amps. Dwell at the beginning for about 7 to 10 seconds. A puddle will form UNDER the oxide layer. The puddle will not be shiny but when you add the filler, a better definition of the puddle will form. Do a bead-on-plate first, progressing to a fillet weld. Wire brush to improve appearance. Good Luck, Mister TIG