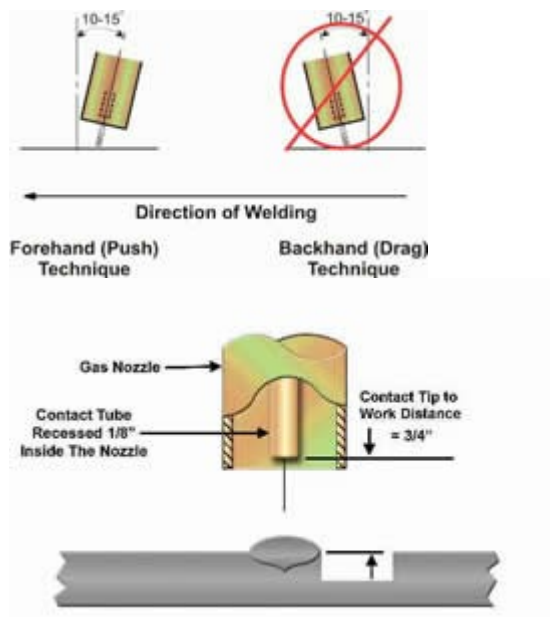


Mig Welding Aluminum



A continuous voltage control

1. Push dont Pull. Always Push the puddle when possible for a cleaner soot free weld.
2. Use a longer stickout. Mig welding Aluminum uses something called spray transfer. Thats a technical way of saying the wire never really reaches the puddle. So a longer stickout is needed to avoid burnbacks.
3. Use Argon and not an Argon C02 mix. Argon or Argon Helium is the ticket. Dont use argon/c02 unless you just want to do a lot of cussing

Now lets talk about some tips for machine and spool gun settings:

- You are not going to want to use a mig welder for anything thinner than around 1/8?. If you are really good at mig welding aluminum, you might be able to weld as thin as .070?. But I am guessing that you are not even reading this if that is the case.
- For thick aluminum like around 1/4?-5/16?, using 3/64 inch wire and 26-27 Volts and 400-425 ipm of wire feed speed will work . For thicknesses in between 1/8 and 5/16 , just try using a halfway point like 23 volts and 300 ipm. Nine times out of 10 you're going to want to use a 5356 grade aluminium mig wire. The 5356 ally wire is a little bit more firmer which makes it easier to feed through your mig welding gun. If you need to repair cast aluminum such as cylinder heads or engine water pumps you would want to use 4043 grade. Most welding shops will use 1.2mm diameter wire which is 0.045?. The larger the diameter of the wire, the more firmer that it becomes. Because ally wire is very soft it is better to use the larger diameter wire for feed ability. Our recommendation is that compact MIG welders should be limited to .035? diameter 4043 aluminum alloy filler metal. A 5356 aluminum alloy electrode may commonly be recommended by retailers and distributors, since it is a stiffer wire and can be easier to feed. However, with these types of wire feed welders, there is often not enough amperage to achieve a good weld with 5356.
- Start out with wire feed speed setting a bit higher than you think it needs so that you won't burn tips up.
- So how do you know ipm? (inches per minute) Just pull the trigger and count seconds...

thousand one , thousand two...until you get to 6. Measure the wire that came out of the gun to the nearest whole inch and add a zero. That's your ipm. For example, if you get 25 inches, that's 250 ipm.

- Mig Welder settings like this are a good place to start but since every machine is different, get some scrap and fine tune your settings until you get the results you want. It is so much better to make your mistakes on scrap aluminum.

What Type of Shielding Gas is Required?

MIG welding aluminum is different than welding steel when it comes to shielding gas requirements. For aluminum, 100 percent argon is the gas of choice, whereas steel welding calls for a mixed gas or 100 percent CO2 gas. The good news is that no special equipment is needed – your existing regulators (with the exception of CO2 regulators) and gas hoses can be used for both pure blends and mixed gases.

What Polarity Setting is Needed?

All MIG welding, including on aluminum materials, requires electrode positive polarity, while flux-cored processes typically use electrode negative. If you are switching your wire feed welder between processes, make sure to switch your polarity. This is a common mistake that many beginning welders make.

Welding Techniques

- Hook spoolgun to the positive stud on the power supply.
- For MIG welding aluminum you need to use a 10 to 15 degree push travel angle (tip and nozzle pointed in the direction of travel). (See Figure 1)

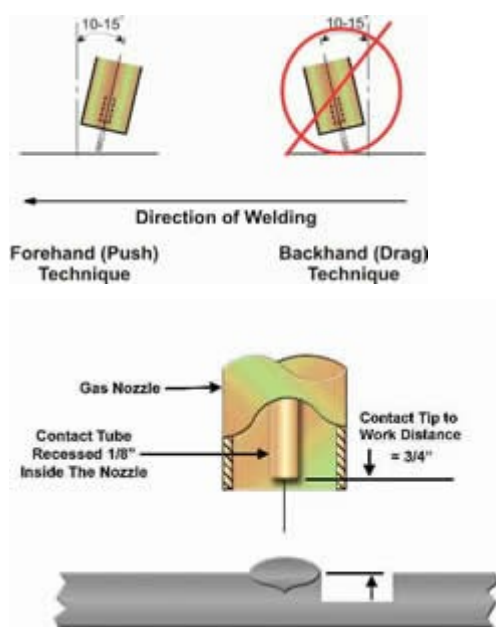


Figure 1: Gun Techniques

- Pulling or using a drag angle will produce porous, dirty welds because of lack of gas coverage.
- Spray transfer is the desired mode of metal transfer for welding aluminum. The spray transfer is a very smooth transfer of molten metal droplets from the end of the electrode to the molten pool. The droplets crossing the arc are smaller in diameter than the electrode. There is no short-circuiting in spray transfer. With spray transfer the deposition rate and efficiency is relatively high. The arc is very smooth, stable, and stiff and the weld bead has a nice appearance and a good wash into the sides. In the

spray transfer a large amount of heat is involved which creates a large weld pool with good penetration that can be difficult to control and can not be used on materials thinner than 14 Ga. This transfer will produce a hissing sound, and no spatter.

- The short arc transfer on aluminum produces poor cleaning action, poor tie in at the edges of the weld, and large amounts of spatter and smoke.

- Maintain a tip to work distance, and have the contact tip recessed approximately 1/8" inside the nozzle if possible. (See Figure 2)

Figure 2: Gun and Weld area

Common Problems/Troubleshooting

Dirty Welds

1. Use push angle instead of drag technique.
2. Increase voltage to get into spray transfer.
3. Use proper base metal cleaning techniques (Stainless Steel Brush).
4. Check for proper shielding gas and wire alloy type.



For All Your Collision Repair Equipment

305-793-9503

<http://prolinesystems.net>