

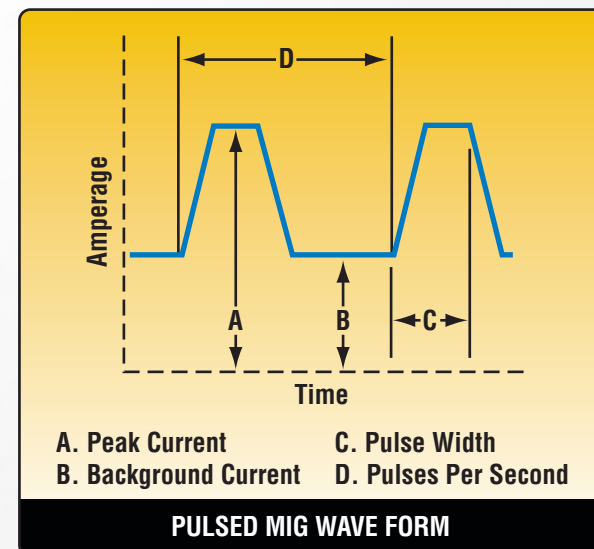
Pulsed MIG: The Easy and Profitable Way to Weld!

Q: How do I know if Pulsed MIG is the right process for me?

- A:** If you have any of the following issues, Pulsed MIG may provide a solution:
- Excess heat input leading to burn-through or warping on thin materials
 - Excess spatter, grinding or post-weld rework
 - Bleed-through on the back side of the weld
 - Poor bead appearance
 - Can only weld in the flat or horizontal position (e.g., unproductive time while repositioning weldments)
 - Poor fusion or over-welding
 - Cold arc starts
 - Difficulty training operators/finding good welders
 - Difficulty meeting production goals/customer deadlines

Q: What is Pulsed MIG?

A: Pulsed MIG is a modified spray transfer process. The welder switches between a high peak current and a low background current 30 to 400 times per second. The peak current pinches off a spray transfer droplet and propels it toward the weldment. The background current maintains the arc, but the heat input is too low for metal transfer to occur.



Q: How does the pulsing action benefit aluminum welding?

A: The peak current pulse ensures good fusion, overcoming concerns related to cold lap, a common issue with short circuit MIG on aluminum. It also provides faster travel speeds, which improves productivity. The background current lowers overall heat input, addressing the burn-through and warping issues commonly associated with spray transfer MIG. A cooler weld puddle also permits all-position welding (the puddle is less likely to sag or look excessively convex), and it helps bridge gaps when fit-up is less than optimal.

Process	Volts	Amps	Travel Speed	Heat Input
AC TIG	16.5 V	130 A	15 IPM	8.58 Kj/inch
Spray MIG*	18.0 V	94 A	24 IPM	4.23 Kj/inch
Pulsed MIG*	18.0 V	69 A (avg.)	19.5 IPM	3.82 Kj/inch

*Filler wire: 3/64-inch diameter 4043 aluminum, on 1/8-inch material

PROCESS COMPARISON

Q: How does Pulsed MIG compare to AC TIG?

A: Pulsed MIG increases travel speeds by 30% while reducing heat input by more than 50%. On long, continuous welds, Pulsed MIG is usually the more productive process, and because of good bead appearance, parts can go straight to paint or final inspection without the need for post-weld grinding. Further, becoming good at Pulsed MIG requires much less training as compared to AC TIG.

TIG ALTERNATIVE.

Pulsed MIG improves bead appearance and puddle control and can be considered a high production alternative to the TIG process for many applications.



Q: Will it be difficult and time-consuming to learn Pulsed MIG?

A: Not with the Millermatic® 350P/XR™-Aluma-Pro™ Aluminum Welding System. This system gives you excellent out-of-the-box performance and experienced operators can learn to use the system and start producing production-quality welds within minutes.

Q: Can the Millermatic 350P/XR-Aluma-Pro Aluminum Welding System adapt to different joint configurations?

A: Yes. This system lets operators adjust arc cone width (which controls bead width) by using a function called Arc Control. A wider bead can tie-in both sides of a joint or help with an outside corner; a narrow bead helps provide good fusion at the root of a joint.

Q: Why should I use a push-pull gun like the XR-Aluma-Pro instead of a spool gun?

A: To save money! Aluminum costs more in 1-lb spools than it does in 16-lb spools. You'll also weld 16 times longer before changing spools. Metal Shark, a manufacturer using 150 pounds of wire per week, reduces down time by about 11 hours each week—a savings that adds up to more than \$11,000 at the end of the year.

"I could immediately tell the difference. The wire fed much better. The arc was better, more consistent and made it much easier to get the penetration we wanted. There is now very little rewelding."

Jimmy Gravois
President, Metal Shark Aluminum Boats

Q: What differentiates the XR-Aluma-Pro from other push-pull guns?

A: The XR-Aluma-Pro features a two-position wire tension control—a lighter setting for the softer 4000 Series aluminum wire and a higher setting for the harder 5000 Series aluminum wire. The XR-Aluma-Pro push-pull gun is also individually calibrated with the Millermatic 350P to eliminate erratic feeding and arc fluctuation, improving productivity and decreasing downtime.

