

Welding Method	Stick (SMAW)		TIG (GTAW)		Plasma Cutting	Notes
	AC	DC	AC	DC		
Process	Process used for	Steel, Aluminum	Steels	Aluminum	Steel, Stainless Steel	AC TIG preferred for Aluminum, DC TIG/Stick preferred for Steels
	Gas used	N/A	N/A	Argon	Argon	purge hose with Argon using trigger on gun before beginning TIG welding
	Torch used	Electrode Clamp	Electrode Clamp	TIG	TIG	Ground cable and clamp used for all. Plasma and TIG Torch share connections welding unit.
	tungsten	N/A	N/A	pure tungsten, ball/flat end	thoriated, sharp tip	N/A Green is typically pure tungsten for aluminum. Red usually indicates 2% thoriated for steel and stainless steel. Sharpen to point grinding axially with taper with length of taper = 2.5 x Diameter
Switch Settings	Gas pressure/flow	N/A	N/A	10-25 cu-ft/hr start at 20	10-25 cu-ft/hr start at 20	40-70 PSI start at 65 psi
	ARC/TIG/Plasma	ARC	ARC	TIG	TIG	Plasma
	AC/DC	AC	DC	AC	DC	DC
	4T/2T	N/A	N/A	2T see note	2T see note	2T see note
Dial Settings	DC/Pulse	N/A	N/A	N/A	select as appropriate	N/A
	Gas Preweld	N/A	N/A	Set 0-1 sec	Set 0-1 sec	N/A set to 0
	Current (Amps)	0-200 Amps as appropriate for workpiece/ electrode	0-200 Amps as appropriate for workpiece/ electrode	0-200 Amps as appropriate zero for foot switch	0-200 Amps as appropriate zero for foot switch	0-50 Amps as appropriate for workpiece/ electrode
	Base Current	N/A	N/A	N/A	set 20-90%	N/A
	Slope Down Control	N/A	N/A	set 0-10 sec	set 0-10 sec	N/A
	Arc Force	set 0-100%	set 0-100%	N/A set to max	N/A set to max	N/A set to max
	Pulse Frequency	N/A	N/A	N/A	Set from 0.3 to 300 pulses/sec	N/A
	Pulse Duty	N/A	N/A	N/A	set 10-90%	N/A
Notes	Clear Width	Set 20-80%, neutral set to 50%	N/A	Set 20-80%	N/A	N/A
	Gas Post Flow	N/A	N/A	Set 1-10 sec	Set 1-10 sec	Set 1-10 sec
Notes	requires slag removal with chipping hammer, use AC for less spatter (depends on electrode chosen)	requires slag removal with chipping hammer	Distance between tungsten and workpiece should be 2-4 mm, either set current or use foot pedal recommend 5356 filler rod, remember to allow post flow	Distance between tungsten and workpiece should be 2-4 mm, either set current or use foot pedal remember to allow post flow	lower current if cut is too wide. Air flow is critical to prevent damage to tip. Tilt nozzle to start hole in thicker materials.	<b>Strength</b> Electrode Chart Example: E 60 1 3 60--60,000 psi 70--70,000 psi <b>Weld Position</b> 1--All positions: Flat, Vertical, Horizontal, & Overhead 2--Flat Position or Horizontal Fillets Only 3--Flat Position Only <b>Weld Characteristics</b> 0--Non-low hydrogen, DC Reverse polarity 1--Non-low hydrogen, AC or DC Reverse polarity 2--Non-low hydrogen, AC or DC Straight polarity 3--Non-low hydrogen, AC or DC Either polarity 4--Non-low hydrogen, iron powder coating, AC or DC Reverse polarity 5--Low-hydrogen, DC Reverse polarity 6--Low-hydrogen, AC or DC Reverse polarity 7--Non-low hydrogen, iron powder coating, AC or DC Reverse polarity 8--Low hydrogen, iron powder coating, AC or DC Reverse polarity <b>Polarity Definition</b> electrode negative =straight polarity (typical stock machine setup) electrode positive =reverse polarity

