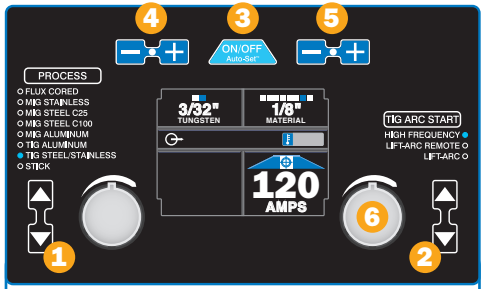
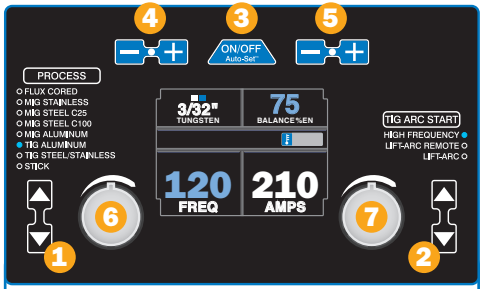
Multimatic® 220 AC/DC Quick Reference (TIG and Stick)

TIG/Stick Auto-Set™ Elite
(TIG Steel/Stainless screen shown)



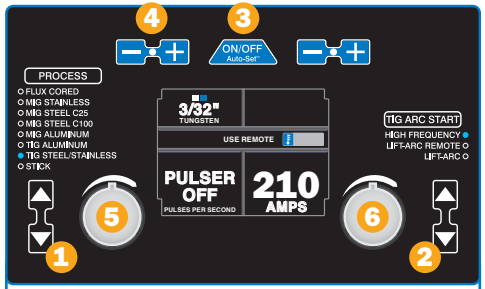
1. **Select Process**
   Use up/down buttons to select.
2. **Select TIG Arc Start** (TIG only)
   Use up/down buttons to select.
3. **Turn Auto-Set ON**
   Button will illuminate.
4. **Select Tungsten or Rod Diameter**
   Use –/+ buttons to select.
5. **Select Material Thickness**
   Use –/+ buttons to select.
6. **Adjust Amperage**
   Use right knob to fine-tune.

TIG Manual Mode (Aluminum)



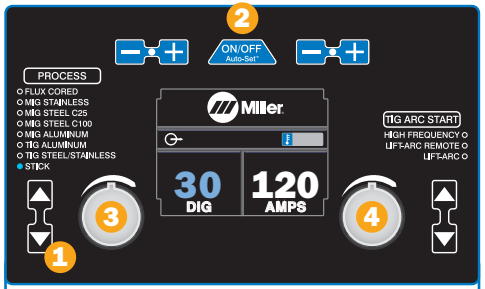
1. **Select Process**
   Use up/down buttons to select.
2. **Select TIG Arc Start**
   Use up/down buttons to select.
   Note: Lift-Arc not available in TIG Aluminum
3. **Turn Auto-Set OFF**
   Button will not be illuminated.
4. **Select Tungsten Diameter**
   Use –/+ buttons to select.
5. **Adjust AC Balance (%EN)**
   Use –/+ buttons to adjust.
6. **Adjust AC Frequency**
   Use left knob to adjust.
7. **Adjust Amperage**
   Use right knob to adjust.

TIG Manual Mode (Steel/Stainless)



1. **Select Process**
   Use up/down buttons to select.
2. **Select TIG Arc Start**
   Use up/down buttons to select.
3. **Turn Auto-Set OFF**
   Button will not be illuminated.
4. **Select Tungsten Diameter**
   Use –/+ buttons to select.
5. **Adjust DC Pulse**
   Use left knob to adjust.
6. **Adjust Amperage**
   Use right knob to adjust.

Stick Manual Mode



1. **Select Process**
   Use up/down buttons to select.
2. **Turn Auto-Set OFF**
   Button will not be illuminated.
3. **Adjust DIG (Arc Force)**
   Use left knob to adjust.
4. **Adjust Amperage**
   Use right knob to adjust.

Amperage Adjustment
Controls the welding amperage output. Limits the maximum output of a remote amperage device.

TIG Arc Start Select
Determines the method used to initiate the arc. Choose the appropriate start by using the TIG Arc Start up/down buttons. Lift-Arc (no remote) is only available in TIG Steel/Stainless process. Quick termination of the arc is not advisable in the TIG Aluminum process.

Tungsten Size
Each tungsten diameter requires specific preset parameters for optimized starting. Choose the correct tungsten electrode size you are welding with using the left-side –/+ buttons. Select from 1/16" or 3/32" diameters. (See tips on back.)

AC Frequency Adjustment*
Controls the width of the arc cone. Increasing the AC Frequency provides a more focused arc and increased directional control. Range is 60–150 Hz. Pro-Set value is 120 Hz. (See tips on back.)

AC Balance Adjustment (%EN)*
Controls oxide cleaning. Increasing setting reduces oxide cleaning. Range is 60–80%. Pro-Set value is 75%. (See tips on back.)

DC Pulse Adjustment*
Reduces heat input to minimize distortion and increase travel speed. Set PPS (pulses per second). The range is OFF–150 PPS. Pro-Set value is 100 PPS. The background amperage and peak amperage are not adjustable. Background amperage = 25% of peak amperage. Peak amperage time = 40%. (See tips on back.)

DIG Adjustment (Arc Force Control)*
Controls the amount of additional amperage at low voltage (short arc length) conditions. Adjust the force of the arc for different joint configurations and electrodes. Range is OFF–99%. Pro-Set value is 30% for 7018 electrodes.

TIG Post Flow Control *(shown on back page)*
Controls the length of time gas flows after welding stops. Range is AUTO–25 seconds. AUTO calculates the time based on the maximum amperage of each welding cycle. The minimum time is 8 seconds. AUTO = maximum amperage/10.

*****Indicates **Pro-Set™ selectable parameter** available. Provides **professional settings** developed for the weld process. To use Pro-Set, adjust the button or knob until Pro-Set flashes on the display and the number is blue indicating the professional setting for the parameter.*

Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit.
Read the safety information at the beginning of the manual and in each section.

Note: These settings are intended to be a starting point for control panel setup — this is not a welding procedure specification nor a substitute for procedure qualification.

Tungsten Selection and Prep

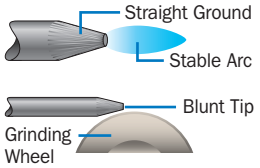
Tungsten Type	Application Notes	Diameter	Amp Range
2% Cerium	Good all-around tungsten for both AC and DC welding.	0.020" 0.040" **1/16"** **3/32"** 1/8" 5/32" 3/16" 1/4"	5–20 10–80 10–150 60–250 100–400 160–500 190–750 325–1100
1.5/2% Lanthanum	Excellent low-amp starts for AC and DC welding.		
2% Thorium	Commonly used for DC welding, not ideal for AC.		

PURE TUNGSTEN (green) is NOT recommended for inverters!
For best results in most applications use a sharpened cerium or lanthanum electrode for AC and DC welding.

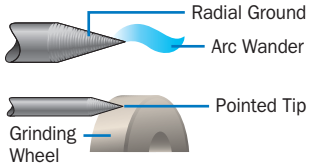
Note: Only 1/16" or 3/32" tungsten can be selected when using Auto-Set.

Tungsten Preparation: Sharpen tungsten for AC and DC welding.

CORRECT
Ideal Preparation—Stable Arc



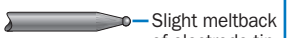
INCORRECT
Wrong Preparation—Wandering Arc



Note: Do not use wheel for other jobs or tungsten can become contaminated.

IDEAL GRIND ANGLE RANGE

AC EFFECT



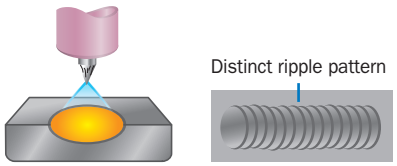
Tip: *Blunting the tip of the electrode is sometimes done to help maintain consistent geometry and resist tungsten erosion. This is especially helpful in AC when melt-back of the tungsten electrode is common.*

Pulsed TIG Controls

The Pulsed TIG function switches the amperage from a high (peak) to a low (background) at a set rate (PPS). Pulsing can reduce heat input by lowering the average amperage, increasing control of the weld puddle, penetration and distortion. The following parameters can be adjusted for desired results:

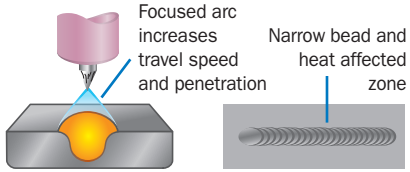
Low-Speed Pulse

1 to 10 pulses per second (PPS) will produce a distinct ripple pattern in the weld bead. Can be used to time filler addition, reduce distortion and improve control.



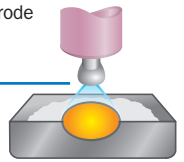
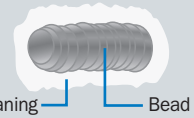
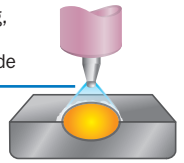
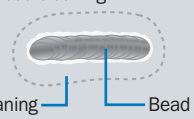
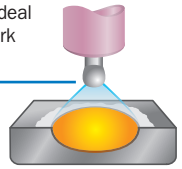
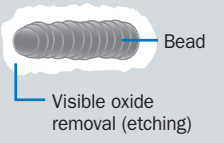
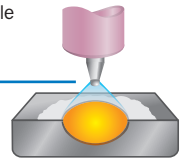
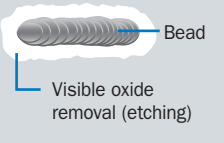
High-Speed Pulse

100 pulses per second (PPS) and higher helps to focus the arc for increased stability, penetration and travel speed. Increased puddle agitation improves weld microstructure.

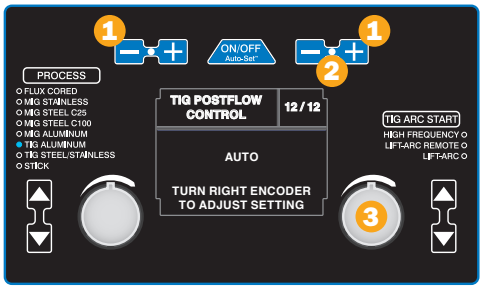


Tip: *Begin welding at factory default settings of 100 PPS, 40% peak and 25% background amps. Adjust the frequency (PPS) to change width and appearance.*

AC Waveshape Controls

Feature	Setting	Arc Effect	Weld Effect
AC Balance AC Balance controls arc cleaning action. If floating black spots appear in the puddle, the balance setting is too high. Turn the balance down until puddle becomes clear.	60%	Increases electrode balling action 	Wider bead and cleaning action 
	75%	Reduces balling, helps maintain point of electrode 	Narrow bead with reduced cleaning 
AC Frequency Controls the width of the arc cone. Increasing the AC Frequency provides a more focused arc and increased directional control. *Note: Decreasing the AC Frequency softens the arc and broadens the weld puddle for a wider weld.*	60 Hz	Wider profile ideal for buildup work 	
	120 Hz	Narrower profile for fillet welds 	

TIG Postflow Control (Menu 12 of 12)



1. **Access (and Exit) Setup Menus**
   Simultaneously press and release left-side – button and right-side + button.
2. **Navigate to TIG Postflow Control Menu**
   Use right-side –/+ buttons to select menu 12.
3. **Adjust TIG Postflow**
   Use right knob to adjust. The range is AUTO–25 seconds. After completing selection, exit setup menus (see step 1).

MillerWelds.com

Miller
The Power of Blue®