

## Excellent Welding Performance

- Adjustable AC Frequency
- Expanded AC Balance Control
- Selectable AC Waveshapes
- High Speed DC TIG Pulsing



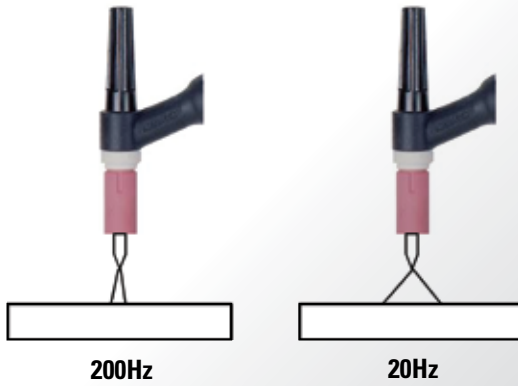
### Adjustable AC Output Frequency

**Higher Frequency** narrows or focuses the arc cone, allowing precise control of arc and access into tight joints.

**Lower Frequency** widens the arc cone, minimizing agitation of base metal.

Max Frequency (200Hz)

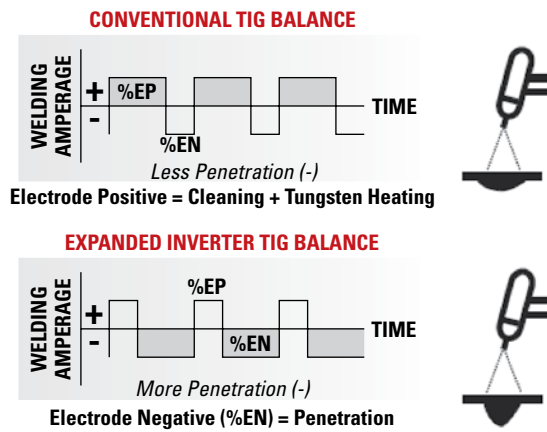
Min. Frequency (20Hz)



### Expanded AC Balance

Inverters can be set to a higher ratio of Electrode Negative (%EN) for:

- Better penetration with narrow bead profile
- Minimized tungsten erosion (Keep a sharp point)
- Minimize etching adjacent to the weld



### Selectable Half Wave Shapes

Not only can you choose Sine, Square or Triangular, the Positive vs. Negative half of the wave shape can be independently changed.

**Example:** Select a square positive wave to minimize high peak current that erodes the tungsten and select a triangular wave for the negative half to minimize heat input to the weld.

Maintain Sharp Tungsten → → Less Area Means Less Heat Into Weld

### Selectable AC Wave Shapes

Wave Type	Description	Result
	Responsive arc with fast zero crosses and reduced peak amperages	Stable arc with good puddle control and fast travel speed Minimizes tungsten superheating
	Traditional smooth shaped waveform	Soft sounding arc
	Minimized area (heat) under the curve shape with high peaks	Lower amperages can minimize heat input to the weld High peaks more forceful for anodized applications

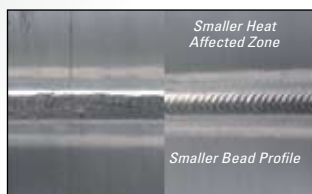
### High Speed DC TIG Pulsing

**Conventional TIG Pulsing (<10 Pulses per second pps)**

- Timed filler metal & consistent bead appearance
- Reduces heat input by alternating between peak current and background to minimize distortion

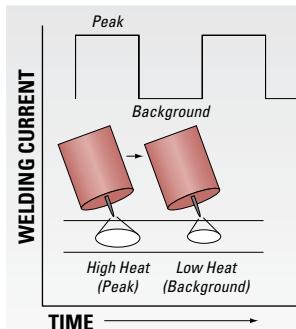
**High Speed TIG Pulsing (Up to 2500 pps)**

- Increased puddle agitation for improved weld microstructure
- Focused stable arc
- Increased travel speeds
- Reduced heat input



#### PULSE FREQUENCY:

Number of Pulses Per Second



## New Cart Makes a Complete Solution



Tool tray with rubber mat and storage compartment



Torch hanger



### New Cart – Makes a Complete System (K2694-1)

- Low cylinder platform - Holds a full size 160lb bottle
- Storage compartment with latch
- Open tool tray with rubber mat
- Torch hanger



### Cool Arc® 35 – The Smart Cooler (K2630-1)

- Shuts machine output off if loss of coolant is sensed.
- Speed adjusts based on coolant temperature for quiet operation and long life.
- Fits in a neat modular fashion below the Invertec® V310-T AC/DC
- Gets its power from the Invertec® V310-T AC/DC No extra outlets to plug into.

## Options

Field Installed Options		TIG Torch Starter Kits		Torch Adapters		Magnum® TIG Torches	
Part #	Description	Part #	Description	Part #	Description	Part #	Description
K857	Remote Output Control 25 ft.	K2266-1	TIG-Mate™ 17	K1622-1	PTA-9/17 Twist-Mate® Adapter	K1781-1	PTA-9 w/ 12.5 ft. cable
K870	Foot Amptrol®					K1781-3	PTA-9 w/ 25 ft. cable
K963-3	Hand Amptrol®	K2267-1	TIG-Mate™ 20	K1622-3	PTA-26 Twist-Mate® Adapter	K1782-1	PTA-17 w/ 12.5 ft. cable
						K1782-3	PTA-17 w/ 25 ft. cable
K814	Arc Start Switch			K1622-3	PTA-26 Twist-Mate® Adapter	K1783-1	PTA-26 w/ 12.5 ft. cable
						K1783-3	PTA-26 w/ 25 ft. cable
K2694-1	Inverter Cart	K2413-1	TIG-Mate™ 9	K1622-4	Water Cooled Twist-Mate® Adapter	K1784-3	PTW-20 w/ 12.5 ft. cable
						K1784-4	PTW-20 w/ 25 ft. cable
						K1784-1	PTW-18 w/ 12.5 ft. cable
						K1784-2	PTW-18 w/ 25 ft. cable

# Invertec® V310-T AC/DC

The Invertec® V310-T AC/DC is the most technologically advanced AC/DC TIG welder in its class. It fits the bill for serious fabrication, maintenance, and production work. Its compact, lightweight size makes it ideal for field applications like advanced motorsports, aerospace, shipbuilding, and construction.

- Dynamic LCD Display (patent pending)
- Adjustable AC Frequency and Selectable Waveshapes
- Soft, Crisp and AC Stick Modes
- Optional Cool Arc® 35 "Smart" water cooler
- 208-460 1/3 phase auto-reconnect
- High efficiency inverter

#### PROCESSES

- Stick
- TIG

OUTPUT INPUT

#### ONE-PAK® PKG. (K2695-1) INCLUDES

- K2228-1 Invertec® V310-T AC/DC
- K2630-1 Cool Arc® 35 Water Cooler
- K2694-1 Inverter Cart
- K2267-1 TIG Mate™ 20 Torch Kit
- K870 Foot Amptrol®
- K918-1 Zippered Cable Cover

#### KEY OPTIONS

- K2630-1 Cool Arc® 35 Water Cooler
- K2694-1 Inverter Cart
- K2666-1 TIG Mate™ 17 Air Cooled TIG Torch Starter Pack
- K870 Foot Amptrol®
- K963-3 Hand Amptrol®
- More options at end of section

#### LITERATURE

E3.115

Shown:

K2228-1 Invertec® V310-T AC/DC  
with K2630-1 Cool Arc® 35 Water Cooler

Product Name	Product Number	Input Power Phase	Input Power Voltage/Hertz	Rated Output	Input Current @ Rated Output (1)	Output Range	H x W x D inches (mm)	Net Weight lbs.(kg)
Invertec® V310-T AC/DC	K2228-1	3-Phase	460/50/60	210A / 18.4V / 100%	7.3	5-310A Max. OCV: 80V	17.3 x 10.6 x 24 (439 x 269 x 609)	75 (34)
				230A / 19.2V / 60%	8.3			
				310A / 22.4V / 40%	12.3			
			230/50/60	210A / 18.4V / 100%	13.9			
				230A / 19.2V / 60%	15.8			
				310A / 22.4V / 30%	24.6			
		1-Phase	460/50/60	208/50/60	210A / 18.4V / 100%	15.3		
					230A / 19.2V / 60%	17.5		
					310A / 22.4V / 30%	27.3		
			230/50/60	200A / 18.0V / 100%	220A / 18.8V / 60%	13.6		
					310A / 22.4V / 35%	14.9		
					220A / 18.8V / 60%	21.9		
208/50/60	200A / 18.0V / 100%	220A / 18.8V / 60%	310A / 22.4V / 25%	24.6				
			220A / 18.8V / 60%	41.5				
			220A / 18.0V / 100%	24.2				
				220A / 18.8V / 60%	27.7			
				310A / 22.4V / 25%	47.3			

(1) Input current on 60 hertz input.

## Invertec® V310-T AC/DC Offers the Best in Inverter Technology

### Why Upgrade to Inverter Technology?

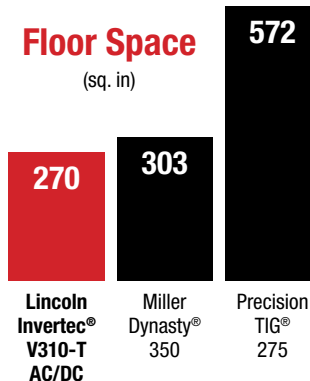
- More Portability
- Lighter Weight
- Less Space
- Auto Reconnect
- Simplified Installation
- Lower Operating Costs & Infrastructure
- Lower Power Consumption
- Higher Power Factor
- Lower Current Draw
- "Smart" Water Cooler System
- Optional Integrated Cooler for a Complete Welding Package
- Patented Dynamic Display makes Full Featured Control Simpler to Use
- Less Radiated High Frequency Noise & Interference



### Lower Operating Cost & More Portability

#### Floor Space

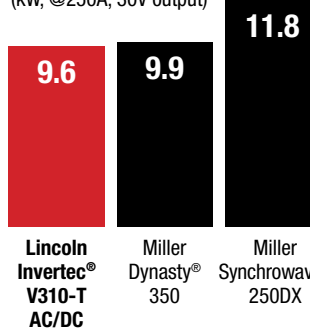
(sq. in.)



- 50% less than a conventional TIG machine
- 11% less than a Dynasty® 350

#### Input Power<sup>1</sup>

(kW, @250A, 30V output)

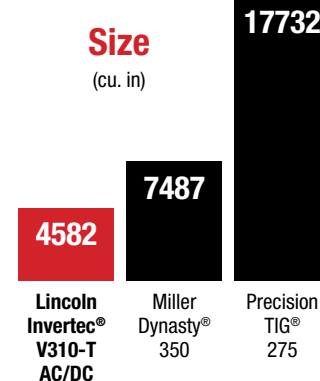


- Higher efficiency inverter consumes nearly 20% less input power for lower energy costs.

<sup>1</sup> Miller data based on published literature. Miller, Dynasty and Synchronwave are not registered trademarks of the Lincoln Electric Company.

#### Size

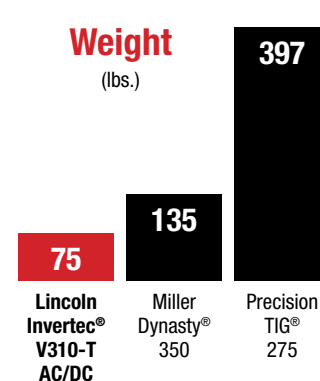
(cu. in.)



- 75% smaller than a conventional TIG machine
- 40% smaller than a Dynasty® 350

#### Weight

(lbs.)



- 80% lighter than a conventional TIG machine
- Over 40% lighter than the Dynasty® 350

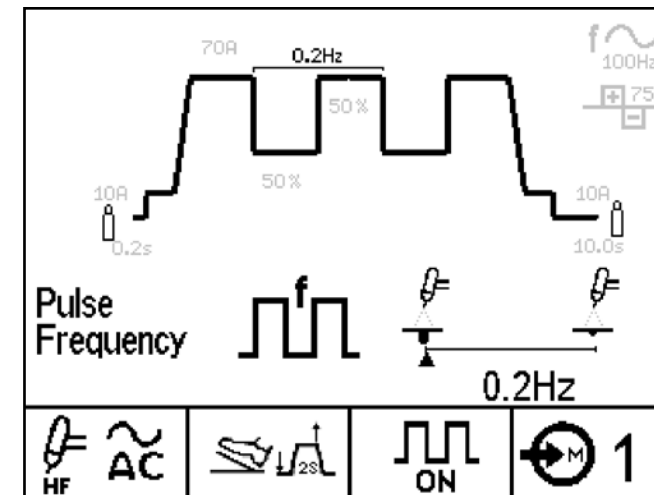
### Less High Frequency

- Patented Super Imposition Circuit provides an energy pulse to keep the arc lit during Zero Cross.
- High Frequency is required only to start the arc in AC.
- Results in Lower Radiated Interference
- No HF etching for Better quality welds

## Dynamic Display™ Visible and Simple to Use

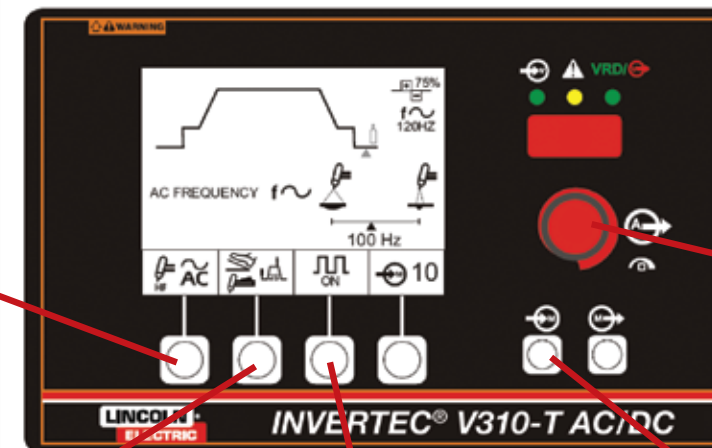
### LCD Display

- Bright display
- Preset parameters are visible at a glance
- Select & adjust the highlighted parameter



### Simple Controls

- Logically organized controls
- 10 memories save frequently used settings



Step 1  
Select Weld Process

Step 2  
Select Trigger Mode

Step 3  
Turn Pulse On or Off

Step 4  
Select & Adjust Weld Parameters

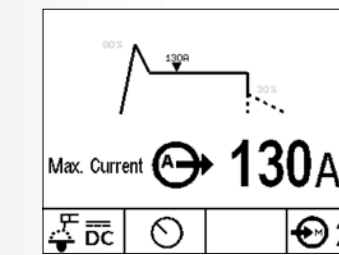
Step 5  
Save to Memory For Easy Recall

## Dynamic Display™ Offers Easy Set-up, Configuration and Operation

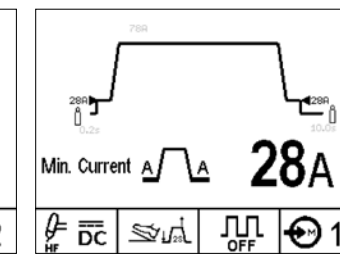
### Process Specific Diagrams

- Shows only the parameters relevant to the selected process.

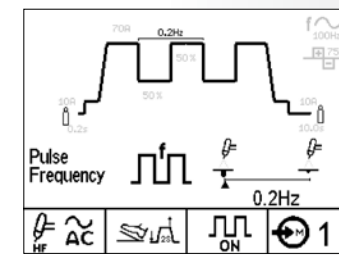
#### Stick Mode



#### Basic TIG Mode

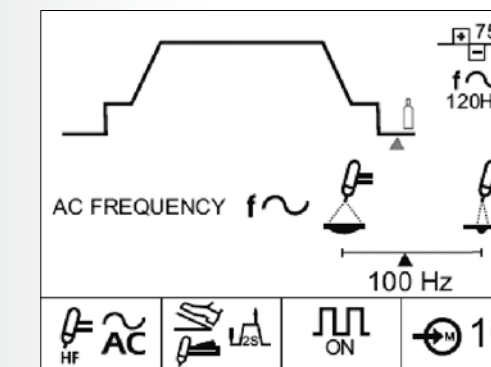


#### Pulse TIG Mode



### Dynamic Display™ Icons

- Simplifies complicated parameters by showing the affect on the arc and the weld.



Parameter	SYMBOL	
	MINIMUM	MAXIMUM
AC FREQUENCY		
AC BALANCE		
PULSE FREQUENCY		
HOT START		
ARC FORCE		

### Set-Up Menu

#### Customize Your Machine

- Select your language:



English

Spanish

French

#### Hides Less Frequently Adjusted Parameters

- Select strike current for different tungsten sizes
- Select start power for AC starting
- Enable other trigger modes like spot time, or Bi-Level