

With Canaweld's innovative design, the TIG AC/DC 421 easily converts to MIG or Pulse MIG using a special wire feeder. The TIG AC/DC 421 Pulse is a powerful, heavy-duty, and portable Canadian-made welding machine designed for industrial use. Despite its robust performance, it remains easy to carry. Equipped with advanced pulse waveforms, full professional functions, and HF start, it delivers high-quality TIG welds on both thick and very thin materials, ensuring precision with minimal distortion.

Digital control of all welding parameters, combined with a 5-inch color display and smart automatic settings, provides unmatched accuracy, simplified setup, and customizable memory for quick access.

Weldable metals

- Aluminum
- Magnesium
- Steel
- Stainless Steel
- Chrome-moly
- Copper
- Nickel Alloys
- Silicon Bronze
- Brass

Key Features – TIG AC/DC 421 Pulse

AC Waveforms:

- **Advanced Square Wave** provides deeper penetration, higher torch speed, and rapid cooling of the weld pool.
- **Sine Wave** simulates a conventional power source and provides quieter arc sound.
- **Triangular Wave** minimizes heat input and distortion on thin aluminum, enabling faster travel speeds.

Advanced pulse features:

- Comprehensive pulse parameter adjustments: Pre-flow, Initial Amperage, Initial Slope, Peak Welding Amperage, Base Amperage, Pulse Frequency, Pulse Width, Final Slope, Final Amperage, and Post-flow, all easily accessible via the LCD screen.



PROCESSES

- GTAW (AC/DC) , HF and no HF
- TIG
- PULSED
- SMAW
- STICK
- Gouge



The Power of Pulse:

Clean, Strong, and Precise Welding

- **Heat control** – minimizes distortion and burn-through.
- **Thin metal capability** – precise control for very thin materials, even aluminum.
- **Arc stability** – smooth, consistent arc in all positions.
- **Penetration** – strong welds on thicker metals.
- **Flexibility** – adapts to different joints, positions, and thicknesses.
- **Electrode life** – extends tungsten durability.
- **Weld quality** – clean, spatter free welds.

TIG AC/DC 421 Pulse Technical Specification

Process	Unit	TIG		Stick Electrode	Gouge
		AC	DC	AC / DC	DC
Input Voltage, Single Phase, 50/60 Hz	V	575(-15%,+10%)			
Primary Current@ Rated Maximum Welding Current(@575V)	A	23	23	28	28
Maximum Primary Effective Current (I1 eff max)(@575V)	A	15.5	15.5	19	19
Programming and Saving Parameters					
Welding Current Range	A	10 - 420	10 - 420	10 - 420	10 - 420
Duty Cycle @ Rated Maximum Welding Current at 104° F (40°C)	A	35%@420A	40%@420A	35%@420A	35%@420A
Welding Current @ 100% Duty Cycle in 104° F (40°C)	A	305	315	305	305
Welding Current @ 60% Duty Cycle in 104° F (40°C)	A	350	360	350	350
Open Circuit Voltage	V	97			97(14.5)
Stick and Gouge Parameters					
Stick Modes					AC and DC
Arc Force					0 – 10
Hot Start					0 - 10
TIG Parameters					
TIG Process Types		TIG HF , TIG Lift			
TIG Process Modes		Pulse, No-Pulse, Tack, Cold Tack, Stitch(HF Mode), Cold Stitch (HF Mode)			
TIG Output Control		2T , 4T , Foot Pedal			
Adjustable parameters		Pre Flow, Initial Amperage, Initial slope, Welding Amperage, Base Amperage, Pulse Duty Cycle, Pulse frequency, Final slope, Final Amperage, Post Flow, tungsten electrode diameter			
Pre-flow	sec.	0.1 – 5			
Initial Amperage	A	10 – 420			
Initial Slope	sec.	0.0 – 20			
Peak Welding Amperage	A	10 – 420			
Final Slope	sec.	0.0 – 20			
Final Amperage	A	10 – 420			
Post flow	sec	0.1 – 25			
TIG Pulse Parameters					
Pulse Functions		Pre Flow, Initial Amperage, Initial slope, Welding Amperage, Base Amperage, Pulse Duty Cycle, Pulse frequency, Final slope, Final Amperage, Post Flow			
Base Amperage	A	10 – 420			
Pulses Frequency	pps	0.5 – 999			
Pulse Duty Cycle	%	5 – 95			
TIG AC Parameters					
AC Wave Shapes		Advanced Square Wave, Sine wave, Triangular wave			
AC Controls		Frequency , Balance			
Balance	%	30-90%			
Frequency	HZ	50 – 250			
TIG Sequence Control Parameters					
ON Time(Cold Tack, Cold Stitch, Tack ,Stitch)	sec.	0.1 – 10.0			
OFF Time(Stitch and Cold Stitch)	sec	0.1 – 10.0			
Maximum Material Thickness (TIG)		5/8 in. (15.9 mm)			
Maximum Electrode Diameter (Stick)		1/4 in. (6.4mm)			
Minimum Power of Generator	KVA	30 KVA			
Torch Cooling		Water			
Weight	lb. (Kg)	128 lb (58 kg)			
Dimensions Including Handle (D, W, H)	in. (mm)	28.7 x 12.6 x 21.2 inch (730 X 320X 540 mm)			

CANAWELD RESERVES THE RIGHTS OF CHANGING THE SPECIFICATION WITHOUT NOTICE

Professional Features for welding:

- TIG AC Welding, with Pulse
- TIG AC Welding without Pulse
- TIG DC Welding, with Pulse
- TIG DC Welding without Pulse

Tack, TIG Welding

Produces very short, low-heat tacks during fit-up to keep parts aligned before the final weld. Helps prevent burn-through or warping of material and minimizes the need for clamping.

Cold Tack, TIG Welding

Produces very short, low-heat pulsed tacks during fit-up to keep thin parts aligned before the final weld. Prevents burn-through or warping of thin material and reduces the need for clamping.

Stitch TIG Welding

Creates short weld segments with small gaps that allow the joint to cool between passes, reducing heat input and distortion on long seams and sheet. Ideal for edge and lap joints.

Cold Stitch, TIG Welding

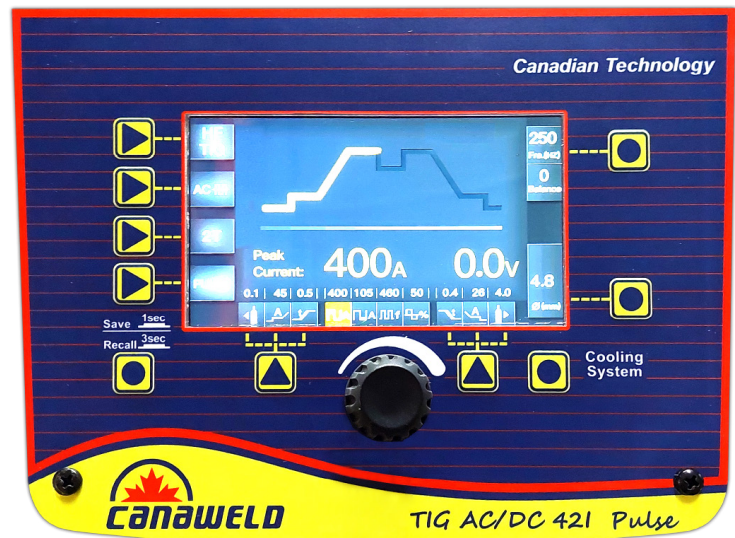
Uses low-heat pulsed TIG to place small beads in sequence, allowing each to cool before the next. Produces strong, low-distortion, and clean joints on thin stainless steel, aluminum, and other heat-sensitive alloys.

Gouging

Gouging function delivers fast and efficient removal of defective welded parts.

Cellulosic welding

Specially designed for superior results with cellulosic electrodes (E6010/E6011)



Welding Parameters

TIG Welding

- **Maximum output:** 420 A at 40% duty cycle (350 A at 60%). Capable of TIG welding aluminum and steel up to 11/16" (17 mm) thick.
- **5-inch LCD screen** for quick, intuitive setup. Ideal for both experts and beginners. Simplifies parameter selection, cuts set-up costs, prevents adjustment errors, and boosts productivity.
- **Adjustable balance settings** provide full control over the mix of cleaning and penetration during aluminum welding.
- **HF Start** provides reliable, contactless arc ignition, prevents tungsten contamination, extends tungsten life, stabilizes the arc, and supports smooth puddle formation for superior weld quality.
- **Hot Start** Improves ignition, enhances tungsten durability, stabilizes the arc, supports puddle formation, and increases overall weld quality at the start. Once the tungsten diameter is set on the panel, the hot start is automatically adjusted.

- **Stores up to 10 job memories** for quick recall of preferred weld settings.

- **Remote amperage control** via foot pedal, available in both wired and wireless options for maximum flexibility.

Stick Welding

- Excellent arc ignition with a stable and smooth arc.
- Compatible with E6013, E7014, E7018, and E7024 electrodes.
- Specially designed for superior results with cellulosic electrodes (E6010/E6011) and other electrode types.
- Arc Force and Soft Start functions optimize arc characteristics in Stick mode.
- VRD (Voltage Reduction Device) enhances safety by lowering idle open-circuit voltage in Stick mode without affecting performance.



TIG AC/DC 421 Pulse (Water Cooled-Silver Package)

(PLC2381162)

What Is Included

TIG AC/DC 421 Pulse (Water Cooled-Silver Package)

ITEM	PART NO.	
The TIG AC/DC 421 Pulse	PLC2381159	
400A Complete Ground Clamp Assembly set	CWGC400A-2/0-10-70D	
TIGTorch Water Cooled (18 SERIES)	CWSG18SC-S1-12-4M	
Flowmeter Regulator	CWFM-250-60CF-AR	
Gas Welding Hose	TLJ1080191	
TIG Tungsten Electrode MIX of 10	CTE500-RGBW-116332018	
TIG Consumable Kit	ALPTORCHCON18	
Cooling Unit CU-H1801	CWS.055RM.056-CN	



TIG AC/DC 421 Pulse (Water Cooled-Gold Package)

(PLC2381163)

What Is Included

TIG AC/DC 421 Pulse (Water Cooled-Gold Package)

ITEM	PART NO.	
The TIG AC/DC 421 Pulse	PLC2381159	
400A Complete Ground Clamp Assembly set	CWGC400A-2/0-10-70D	
400A Complete Electrode Holder Assembly set	CWEL400A-2/0-10-70D	
TIGTorch Water Cooled (18 SERIES)	CWSG18SC-S1-12-4M	
Flowmeter Regulator	CWFM-250-60CF-AR	
Gas Welding Hose	TLJ1080191	
TIG Tungsten Electrode MIX of 10	CTE500-RGBW-116332018	
Wired Foot pedal	TGJ2580472	
TIG Consumable Kit	ALPTORCHCON18	
Cooling Unit CU-H1801	CWS.055RM.056-CN	



TIG AC/DC 421 Pulse (Water Cooled-Gold Pluse Package)

(PLC2381164)



What Is Included

TIG AC/DC 421 Pulse (Water Cooled-Gold Pluse Package)

ITEM	PART NO.	
The TIG AC/DC 421 Pulse	PLC2381159	
400A Complete Ground Clamp Assembly set	CWGC400A-2/0-10-70D	
400A Complete Electrode Holder Assembly set	CWEL400A-2/0-10-70D	
TIGTorch Water Cooled (18 SERIES)	CWSG18SC-S1-12-4M	
Flowmeter Regulator	CWFM-250-60CF-AR	
Gas Welding Hose	TLJ1080191	
TIG Tungsten Electrode MIX of 10	CTE500-RGBW-116332018	
Wired Foot pedal	TGJ2580472	
TIG Consumable Kit	ALPTORCHCON18	
Cooling Unit CU-H1801	CWS.055RM.056-CN	
Welding Cart (Single Gas Bottle)	TR4-D1-1	

Reliability and Convenience

- Ability to pre-set all parameters before welding.
- Compatible with Canaweld auxiliary cooling system.
- Innovative wind-tunnel cooling design for enhanced durability
- Fan-cooled & thermally protected against overheating.
- Auto-fan control reduces noise, minimizes dust intake, saves energy, and extends the life of both the fan and the machine.
- Canaweld's innovative cooling system extends machine life while reducing weight and volume.
- Durable metal face panel.
- Tested at 104°F (40°C) and built for tough industrial conditions.
- 4-Year Comprehensive Warranty.

Applications:

- Heavy aerospace and aluminum fabrication
- Shipbuilding and large boat/yacht structures
- Heavy and medium-duty fabrication shops
- Automotive and heavy equipment manufacturing
- Truck & trailer manufacturing (heavy sections)
- Railcar and rolling stock manufacturing
- Machinery, molds, and heavy components
- Electric Power generation (shop and outage work)
- Refineries and petrochemical plants
- Food industry & high-purity stainless piping
- Civil construction and infrastructure fabrication
- Mechanical contractors; installation, maintenance & repair
- Training schools (advanced/industrial programs)



OPTIONAL ACCESSORIES

PRODUCT	PART NO.	
Wireless Foot Control System	CW-FP-WR-01	
Wired Foot pedal	TGJ2580472	
Ground Clamp Set(400-500A, 20-50 ft)	CWGC*	
Electrode Holder Set (400-500A, 20-50 ft)	CWEL*	
TIG Tungsten Grinder	CWMJJ-STD-01	
C5 Black (Series Helmets)	CWELITE-550S-BLK	
C8 Black (Series Helmets)	CWPOWER-980S-BLK	
C8 Coal Fire (Series Helmets)	CWPOWER-980S-CO	

*Vary by model and cable size—please confirm the exact part number before ordering.

Advanced Cooling Systems for Welding and Cutting

Efficient cooling is essential when working with powerful MIG, TIG, and Plasma machines. High welding currents generate significant heat in the torch, which can reduce performance, cause premature wear, and limit operator comfort. Our integrated cooling systems are designed to address these challenges by ensuring stable torch temperatures, even under heavy-duty conditions.

By circulating coolant through the torch and cables, these systems dissipate excess heat and protect key components. This allows welders to use lighter and smaller torches, improving maneuverability and reducing fatigue during long shifts. With less overheating, torches last longer, consumables stay in better condition, and maintenance costs are reduced.

Canaweld Water Coolant Systems

Canaweld water coolant systems provide efficient, reliable cooling for TIG, MIG, and Plasma applications. Built with cutting-edge design and engineering, they are designed for both light- and heavy-duty use, feature a compact design, come in various power levels to match different torch capacities and cooling needs, and are compatible with most welding and cutting machines on the market.

Key Features:

- **Powerful fan** for effective heat dissipation.
- **High-efficiency heat exchanger** for maximum cooling performance.
- **Special filter** to absorb particles in the water circulation system.
- **Multiple protections**, including water circulation monitoring and pressure switch.
- **Brass regenerative turbine electric pump** provides reliable pressure and flow, even for long torches or high-altitude work.
- **Smart air-cooling design** ensures maximum efficiency with minimum volume and weight.
- **Special coolant liquid supplied** with the system, lubricating the pump and protecting against freezing in winter.
- **Available in different power levels**, depending on the required cooling capacity.

Key Advantages:

- Maintains consistent torch temperature at high currents
- Extends torch and consumable lifespan
- Allows use of compact, lightweight torches for better handling
- Increases operator comfort and productivity
- Supports reliable performance in demanding MIG, TIG, and Plasma applications. Whether in fabrication shops, heavy industry, or precision welding environments, a dependable cooling system ensures maximum efficiency, durability, and operator comfort.

