

# Ultima<sup>®</sup> 150

PAW 1/3 PHASE 50 Hz 60 INVERTER 208 V 230 V 400 V 460 V 575 V DC CC 150 AMP

*Repeatable welds again, and again, and again*



**Ultima<sup>®</sup> 150 comes with:**

- Ultima 150 unit
- Quick Change Torch\*\*
- Torch spare parts kit
- Coolant

**Quick Specifications<sup>#</sup>**

**Processes**

Plasma Arc Welding (PAW)

**Industrial Applications**

Automation  
Appliance Manufacturing  
Metal Furniture Manufacturing  
Electrical Manufacturing  
Aerospace/Aircraft  
Computer/Office Equipment  
Medical Services  
Fabrication

**Input Voltage**

208-460 VAC 1/3 Phase  
575 VAC 3 Phase w/optional module

**Rated Output**

100A@18V 100% Duty Cycle  
150A@25V 50% Duty Cycle

**Amperage Range**

0.5 – 15 Amps  
5 – 150 Amps

**Weight**

130 lb (59 kg)

**Order Information**

See ordering information page for details.



**Quick Change Torch!**

No tools required.

**Cost Savings!** The Ultima 150 is priced competitively with automated TIG systems. Plasma welding is measurably the lower cost process with savings gained through increased productivity, reduced scrap, reduced down time and fewer electrode changes.

**Wide Current Range!**

0.5 – 150amp current range for quality performance over a wide variety of applications.

**Very Smooth Arc!** Ultra smooth DC arc for repetitive, high quality welds.

**Repeatable Arc Starting!** Pilot arc allows for repeatable arc starts, reducing defects and rework.

**Multiple Voltage!** 208-460 VAC in 1 or 3 phase power at 50 or 60 Hz with 575 VAC optional module.

**Simple to Set-Up!** The Ultima 150 is a self contained unit, which requires attaching input power and gasses, then mounting the torch.

**Smart Logic<sup>®</sup>!** Prevents damage to the internal components if installed to improper voltage.

**Current Limiter!** Limits power source output to torch capability to avoid torch damage.

**Preview Set Current!** Allows you to display actual current/voltage and avoid costly test set-ups.

**Easy to Use!** Simple interface for automated or manual control.

\* Limited warranty. Refer to warranty schedule.

\*\*Refer to ordering information for torch selection.

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Ultima 150

Form No.: 84-2659

## What is Plasma Welding?#

**Plasma Welding is a superior variation of the TIG process that offers many advantages over TIG:**

- Increases productivity by reducing down time
- Reduces scrap by providing consistent arc starting every time
- Improved process control for repeatable, high quality welds
- Reduces interference (noise) with computers, phone systems, CNC controllers

Simply stated, plasma welding is a variation to GTAW (TIG) that encloses the tungsten electrode in a protected environment (Fig. 1) and delivers the arc through a cooled copper tip. Enclosing the electrode protects it from contamination, thus substantially extending electrode life. The consistent arc shape of plasma results in consistent welds for 8 hours or more of operation as compared to automated TIG welding, where deterioration of the exposed TIG electrode (Fig. 2) can result in weld arc variations (Fig. 3) in one hour or less of operation. Plasma welding uses a pilot arc (Fig. 4) to consistently transfer the arc to the work without the repeated use of high frequency current. The Ultima 150 pilot arc circuit results in repetitive starting and reduces problems of high frequency interference with CNC controls, phones and computers which are common with the TIG process.

Protected Electrode



Figure 1

Used Tig Electrode



New Electrode



Used Plasma Electrode



Figure 2

Tig Weld Sample



Figure 3

Pilot



Figure 4

## Typical Plasma/TIG Welding Productivity Benefit Analysis

Time	Total Parts at 100% Cap.	TIG			PLASMA		
		Tig Electrode Changes	Minutes to Change Electrode	Parts Lost with TIG	Plasma Electrode Changes	Parts Lost with Plasma	Net Gain Plasma over TIG
Hour	208	1	5	17	0	0	17
Day	4,992	24	120	416	3	52	364
Week	24,960	120	600	2,080	15	260	1,820
Month	108,160	520	2,600	9,013	65	1,127	7,887
Year	1,297,920	6,240	31,200	108,160	780	13,520	94,640

Shift Hours per Day 24

Value Per Part: 1

Days worked per Week 5

Production Parts/Dollars Gained with Plasma: **94,640**

Application: Outside corner welds home appliance

**Note:** 4 welds required on each part. For more information, contact Thermal Arc or your Authorized Thermal Arc Distributor.

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# Ultima<sup>®</sup> 150

PAW 1/3 PHASE 50/60 Hz INVERTER 208 V 230 V 400 V 460 V 575 V DC CC 150 AMP

## Specifications#



### Ultima 150

**Rated Output @ Duty Cycle** 150A/25V @ 50%  
208-460V, 1/3 Phase

100A/18V @ 100%  
208-460V, 1/3 Phase

575V 3 Phase  
w/optional module

**Output Ranges** Low .5-15 A  
High 5-150A

**Load Volts** 12-25 V

**OCV** 60 V DC

**Input Hz** 50/60 Hz

**Flow Meters** Plasma  
.5-3.0 SCFH (.25-1.5 lpm)  
Shield  
5-30 SCFH (2.5-15 lpm)

**Contractor Control** Remote Input

**Current Control** Remote or Panel

**Analog Control** 0-10 Volts DC Input

**Shipping Weight** 154 lbs/72 kg

Input Voltages	208-575 Volt 1/3 Phase						
	208	230	380	415	460	575	
Power (KVA)	1 ph		8				
	3 ph		6				
Current (Amps)	1 ph	37	34	—	—	—	
	3 ph	20	19	12	12	11	

### Dimensions & Weight

**Dimensions** HxWxD 18 x 15 x 28.5 in (457 x 381 x 724 mm)  
**Weight** 130 lb (59 kg)

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**THERMAL ARC**  
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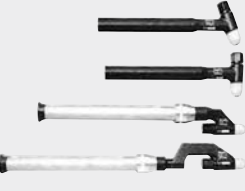
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Ultima 150

Form No.: 84-2659

## Torch Specifications#

	Type	Part No.	Torch Lead Length	Current Rating	Coolant Requirements	Torch Dimensions					
						A	B	C	D	E	
	PWH-2A 70°	2-2100 (H)	12.5 ft.	75 Amps (DCSP)	2,000 BTU/hr (504 K/Cal/hr) 1/4 gpm coolant flow @ 50 PSI (0.9 lpm @ 3.7 kg/cm <sup>2</sup> )	7-15/16" (202 mm)	1-11/16" (43 mm)	5/8" (16 mm)	7/8" (22 mm)		
		2-2104 (H)	25 ft.								
	PWH-2A 90°	2-2101 (H)	12.5 ft.			7-3/4" (196 mm)	1-11/16" (43 mm)	5/8" (16 mm)	7/8" (22 mm)		
		2-2105 (H)	25 ft.								
	PWM-2A 180° Offset	2-2102 (H)	12.5 ft.			18-1/4" (463 mm)	13/16" (21 mm)	Min. 7-1/8" (181 mm)	Max. 15" (381 mm)	1-3/8" (35 mm)	
		2-2103 (M) 2-2106 (H) 2-2107 (M)	25 ft.								
	PWH-3A 70°	2-2110 (H)	12.5 ft.	150 Amps (DCSP)	6,000 BTU/hr (1513 K/Cal/hr) 1/3 gpm coolant flow @ 50 PSI (1.25 lpm @ 3.7 kg/cm <sup>2</sup> )	8-3/4" (222 mm)	2-5/8" (67 mm)	7/8" (22 mm)	1-1/16" (27 mm)		
		2-2114 (H)	25 ft.								
	PWH-3A 90°	2-2111 (H)	12.5 ft.			8-1/2" (216 mm)	2-5/8" (67 mm)	7/8" (22 mm)	1-1/16" (27 mm)		
		2-2115 (H)	25 ft.								
	PWM-3A 180° Offset	2-2112 (H)	12.5 ft.			19-1/4" (489 mm)	1" (25 mm)	Min. 9-1/4" (235 mm)	Max. 16-3/4" (425 mm)	1-3/8" (35 mm)	
		2-2113 (M) 2-2116 (H) 2-2117 (M)	25 ft.								
	PWH-4A 70°	2-2120 (H)	12.5 ft.	200 Amps (DCSP)	8,000 BTU/hr (2017 K/Cal/hr) 1/2 gpm coolant flow @ 50 PSI (1.9 lpm @ 3.7 kg/cm <sup>2</sup> )	12-1/2" (318 mm)	3-3/16" (81 mm)	1-1/4" (32 mm)	1-3/8" (35 mm)		
		2-2125 (H)	25 ft.								
	PWH-4A 90°	2-2119 (H)	12.5 ft.			12-1/4" (311 mm)	3-3/16" (81 mm)	1-1/4" (32 mm)	1-3/8" (35 mm)		
		2-2126 (H)	25 ft.								
	PWM-4A 180° Offset	2-2121 (H)	12.5 ft.			18" (457 mm)	1-3/4" (44 mm)	Min. 8-1/4" (209 mm)	Max. 16" (406 mm)	1-3/8" (35 mm)	1-1/4" (32 mm)
		2-2122 (M) 2-2127 (H) 2-2128 (M)	25 ft.								
	PWM-4A1 180° Inline	2-2123 (H)	12.5 ft.			21" (53 mm)	1-3/4" (44 mm)	Min. 11-1/4" (286 mm)	Max. 19" (483 mm)	1-3/8" (35 mm)	1-1/4" (32 mm)
		2-2124 (M) 2-2129 (H) 2-2130 (M)	25 ft.								

NOTE: All torches listed incorporate a quick disconnect connector specifically for operation with the Ultima 150.

(H) designates torch with molded handle

(M) designates torch with rack and pinion assembly

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# Ultima<sup>®</sup> 150

PAW

1/3  
PHASE

50  
60  
Hz

INVERTER

208  
V

230  
V

400  
V

460  
V

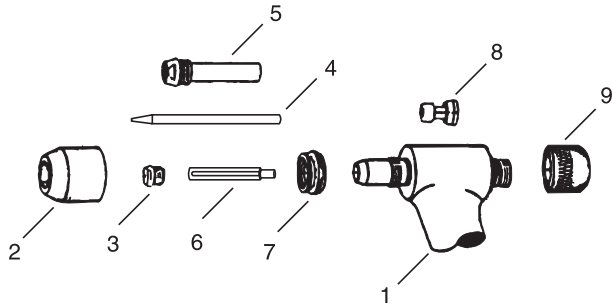
575  
V

DC

CC

150  
AMP

## Torch Parts#



ITEM NO.	PART DESCRIPTION	2A TORCH	SPARE PARTS KIT 5-2984	3A TORCH	SPARE PARTS KIT 5-2985	4A TORCH	SPARE PARTS KIT 5-2986
1	Torch Head Assembly	8-2027 (70°) 8-2028 (90°) 8-2097 (180° offset)		8-3030 (70°) 8-3031 (90°) 8-3032 (180° offset)		8-4014 (70°) 8-4015 (90°) 8-4016 (180° offset) 8-4054 (180° inline)	
2	Shield Cup	8-3236 (use w/ext. tip) 8-2071 (use w/std. tip)	2	8-3040	1	8-4088	1
3	Tip	8-2023 (.045) 35A-std 8-2024 (.062) 55A-std 8-2025 (.081) 75A-std 8-2079 (.031) 15A-lg 8-2080 (.045) 25A-lg 8-2082 (.062) 35A-lg 8-2083 (.081) 50A-lg	5 5	9-1788 (.031) 35A-lg 9-1789 (.046) 50A-lg 9-1790 (.062) 75A-lg 9-1791 (.081) 100A-lg 9-1811 (-.093) 130A-lg	5 5 5	9-1890 (.062) 100A-lg 9-1891 (.093) 125A-lg 9-1892 (.125) 150A-lg*	5 5 5
4	Electrode	8-2033 (.093) std 8-2006 (.093) ext. 8-2044 (.040) std. 8-2046 (.040) ext.		8-2007 (.093) std. 9-1775 (.093) ext.	2	9-1827 (.187) std. 9-1834 (.187) ext.	2
5	Liner	N/A		N/A		8-4011	2
6	Gas Distributor (insulating sleeve)	8-2040 (.093-electrode) 8-2042 (.040-electrode)	1	9-2240	1	9-2204	1
7	Gas Diffuser	N/A		8-3059		8-4087	
8	Collet Assembly	8-2039 (.093-electrode) 8-2041 (.040-electrode)		9-1780	1	9-1876	
9	Back Cap	8-2032 (std-electrode) 8-2030 (ext-electrode)		9-1779 (std-electrode) 9-1803 (ext-electrode)		8-4158 (std-electrode) 9-1877 (ext-electrode)	
N/S	Collar	N/A		N/A		8-4024	
N/S	O-ring (liner)	N/A		N/A		8-0560	
N/S	O-ring (internal)	N/A		N/A		8-0528	
N/S	O-ring (back-cap)	8-2035		8-0527		8-0530	
N/S	Gasket (shield cup)	8-2036		8-3057		8-4069	
N/S	Gage/Wrench Assy	8-2021	1	9-1810	1	9-1873	1
N/S	Lubricant	8-4025	1	8-4025	1	8-4025	1
N/S	Tool Box	8-3141	1	8-3141	1	8-3141	1

**NOTE:** The use of extended electrode requires an extended back cap.  
Tip ratings @ minimum electrode setback.  
\*Tip maximum current rating not to exceed the maximum output of Ultima-150

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## Ordering Information

PRODUCT	PART NO.	DESCRIPTION	QTY	PRICE
Ultima 150	3-2770	Power source only inc. quick disconnect assembly		
	<b>PART NO.</b> w/12.5ft torch & leads	<b>PART NO.</b> w/25ft torch & leads	<b>SYSTEM</b> <b>DESCRIPTION</b>	
<b>Ultima 150 System Torch (rating)</b>				
2A (75 Amps)	1-1551-21	1-1552-21	PWH-2A, 70 degree	
	1-1551-22	1-1552-22	PWH-2A, 90 degree	
	1-1551-23	1-1552-23	PWH-2A, 180 degree	
	1-1553-23	1-1553-23	PWM-2A, 180 degree	
3A (150 Amps)	1-1551-31	1-1552-31	PWH-3A, 70 degree	
	1-1551-32	1-1552-32	PWH-3A, 90 degree	
	1-1551-33	1-1552-33	PWH-3A, 180 degree	
	1-1553-33	1-1553-33	PWM-3A, 180 degree	
4A (200 Amps)	1-1551-41	1-1552-41	PWH-4A, 70 degree	
	1-1551-42	1-1552-42	PWH-4A, 90 degree	
	1-1551-43	1-1552-43	PWH-4A, 180 degree	
	1-1551-53	1-1552-53	PWH-4A1, 180 degree	
	1-1553-43	1-1553-43	PWM-4A, 180 degree	
	1-1553-53	1-1553-53	PWM-4A1, 180 degree	
<b>ACCESSORIES</b>				
	<b>PART NO.</b>	<b>DESCRIPTION</b>		
Quick Disconnect Kit	5-2990	Allows existing torches to be converted for use with Ultima 150		
Regulator - Argon	9-2722			
Regulator - Argon/Hydrogen	9-3053			
Foot Control	7-3080			
Hand Pendant	10-2005	Requires 7-3316 adapter		
Remote Interface Cable 10ft.	9-4063			
Weld Process Controller - WC-1	600279			
Remote Hand Pendant 25ft.	600280			
Cable Assembly (required for WC-1)	9-4129			

**TOTAL QUOTE PRICE**

NOTE: PWH designates a torch with a molded handle; PWM designates a torch with rack and pinion.

Torch amperage rating based on minimum electrode set back.