

# 186 AC/DC

## PORTABLE AC/DC HF TIG SYSTEM



### Thermal Arc® 186 AC/DC Part No. W1006301

#### Comes Complete with:

- \* Thermal Arc 186 AC/DC Power Supply
- \* TIG Torch & Accessories, 26 Style with integrated controls (3 control modules included), 13 ft (4 m)
- \* Tweco 200 Amp Electrode Holder with 13 ft (4 m) Lead
- \* Tweco 200 Amp Ground Clamp with 10 ft (3 m) Lead
- \* Victor Argon Flow Gauge & 12.5 ft (3.8 m) Hose
- \* 9 ft (2.75 m) Power Cord and NEMA 6-50P 230V AC Plug
- \* Operators Manual & CD
- \* General Purpose Stick Electrodes (E6013)
- \* Shoulder Strap

#### 186 AC/DC Overview

- \* **Multi-Process, complete Stick & TIG system solution ready for any application**
- \* **Fully featured professional performance capability made easy to use**
- \* **High output duty cycle, ready to perform**



Complies with Canadian and US Standards

#### QUICK SPECIFICATIONS

##### PROCESSES

HF TIG (GTAW)

Lift TIG (GTAW)

STICK (SMAW)

##### APPLICATIONS

Aluminum Fabricators  
Training Institutions  
Maintenance & Repair  
On-Site & Portable Welding Applications  
Automotive, Boats & Trailers

##### RATED OUTPUT

200A / 18V @ 20% Duty Cycle  
180A / 17.2V @ 25% Duty Cycle  
150A / 16V @ 35% Duty Cycle

##### MAX. OPEN CIRCUIT VOLTAGE

70.3V DC / 50 VAC

##### AMPERAGE RANGE

10-200 A

##### WEIGHT

48.4 lbs (22 kg)

##### ORDER INFORMATION

Part No: W1006301

Description: Thermal Arc 186 AC/DC System

Part No: W1006303

Description: Thermal Arc 186 AC/DC System  
with Foot Pedal

Part No: W1006304

Description: Thermal Arc 186 AC/DC System  
with Foot Pedal & Cart

#### Three Process Capability: HF TIG (GTAW), LIFT TIG (GTAW), STICK (SMAW).

##### TIG:

- \* **AC and DC output** for aluminum and non-ferrous alloys, stainless, mild steel & chrome molys.
- \* **AC Frequency:** Adjustable frequency of the AC square wave when welding on aluminum for optimized set up (15 Hz - 150Hz).
- \* **Wave Balance:** Adjustable for optimized penetration or cleaning action when welding on aluminum.
- \* **HF Arc Start:** Provides non-contact arc starting that eliminates tungsten or material contamination.
- \* **Lift TIG Start:** Provides optimized TIG arc starting without the use of high frequency.
- \* **Pulse:** Changes the weld current from high to low at a specified frequency, reduces heat input on thin material (0.5 Hz - 200 Hz).
- \* **Preflow & Postflow:** Enables independent control over shielding gas before and after the weld.
- \* **Upslope / Downslope & Crater modes:** Eliminates cracking at the end of the weld.
- \* **Hot Start:** Ensures fusion at arc starts for both TIG and Stick processes.

##### STICK:

- \* **Adjustable Arc Force & Hot Start Control** for optimum Stick electrode performance.

##### Other Features:

- \* **Digital Meters:** Voltage and Amperage; Preview and Hold Capability for easy set up
- \* **Trigger Control:** 4T (Latch) eliminates operator fatigue
- \* **Comprehensive Setup Chart:** Weld set up guide for optimum welding performance over a wide range of materials
- \* **Remote Receptacle:** Enables connection of remote control devices like a foot pedal and torch slide control
- \* **Excellent Portability:** Lightweight at 48.4 lbs
- \* **Overload Protection:** Shuts down the power source to protect the internal electrical components from overheating
- \* **IP23S:** Suitable for outdoor use.



# THERMAL ARC® 186 AC/DC FEATURES



**Digital Meters** - Displays both the pre-set and actual output current and voltage of the power source. Also used to display parameters in programming mode.

Easy to use **welding setup chart** with comprehensive process parameters.



Purge, Pulse and Mode Buttons



Carry Handle and Shoulder Strap



**Process Selection Button** - Three modes are available, GTAW (LIFT TIG), GTAW (HF TIG) & SMAW (Stick) modes.



Trigger Control



Heavy Duty 50 mm Dinse Terminals



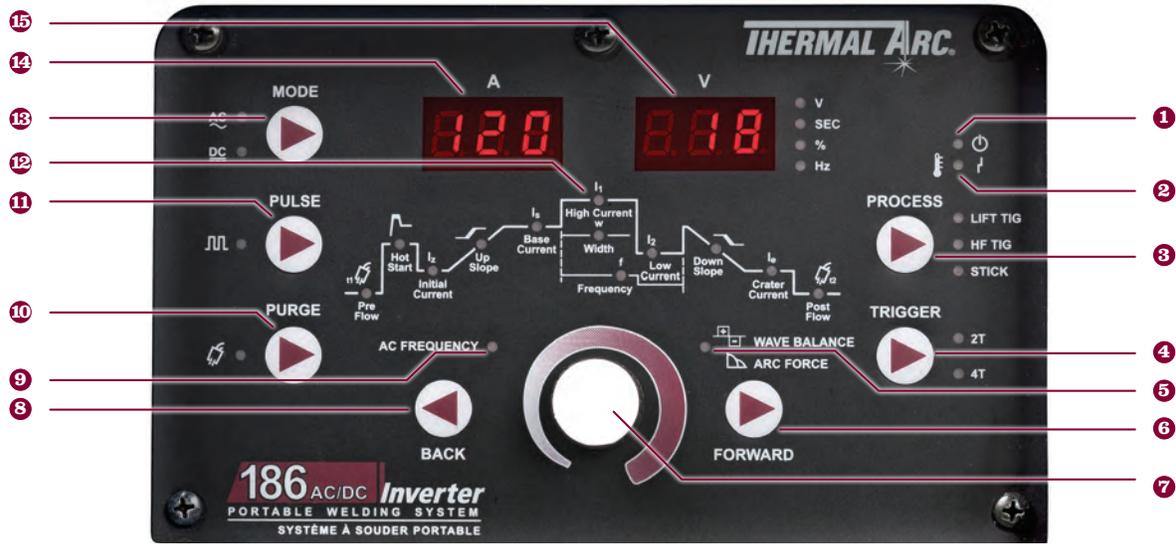
8 Pin Remote Receptacle



Shielding Gas Outlet

**U.S. Customer Care: 800-426-1888 / FAX 800-535-0557**  
**Canada Customer Care: 905-827-4515 / FAX 800-588-1714**

## SIMPLE TO USE OPERATOR INTERFACE

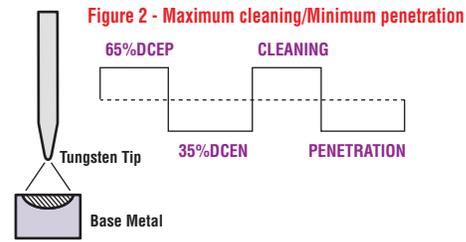
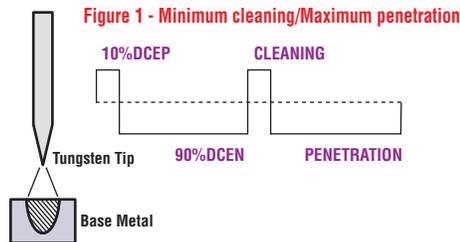


- |  |                                   |   |
|--|-----------------------------------|---|
| 1 Power ON Indicator Light               | 6 Forward Programming Button      | 11 Pulse Button                           |
| 2 Thermal Overload Indicator Light       | 7 Multifunction Control Knob/Dial | 12 Programming Parameter Indicator Lights |
| 3 Process Selection Button               | 8 Back Programming Button         | 13 Mode Button, AC/DC                     |
| 4 Trigger Mode Control Button            | 9 AC Frequency Indicator Light    | 14 Digital Ammeter                        |
| 5 Wave Balance/Arc Force Indicator Light | 10 Gas Purge Button               | 15 Digital Voltmeter/Parameter Meter      |

### Effect of Wave Balance Adjustment on AC/GTAW

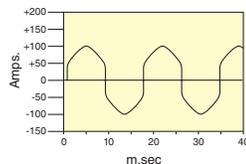
The 186 AC/DC controls the wave form changes on the amount of time spent on DCEP (cleaning) and DCEN (penetration) parts of each cycle, increasing arc stability. The DCEP cycle insures that the aluminum oxide is thoroughly removed, allowing the DCEN cycle a thorough penetration of the base metal. Both cycles enhance weld quality and significantly improve performance.

When a conventional system changes its wave balance, there can be as much as a 50% increase in amperage draw. Thermal Arc® 186 AC/DC amperage draw is unaffected by any adjustments. The 186 AC/DC increases efficiency and eliminates tungsten spitting and enables the use of a smaller diameter tungsten electrode to operate at a higher current levels. Figures 1 & 2 show the difference in TIG torch electrode and heat and cleaning variations.

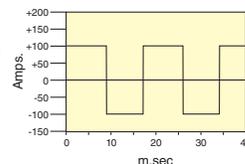


**SEE THE DIFFERENCE!**

Conventional Square  
AC Wave  
@ 100 amps Output



**Thermal Arc  
186 AC/DC True Square Wave**  
Inverter Power Supply  
@ 100 amps Output



## 3 COMPLETE SYSTEM OPTIONS

### Thermal Arc® 186 AC/DC Portable HF TIG System

#1 Part No. W1006301



**Comes Complete with:**

- 1 Thermal Arc 186 AC/DC Power Supply
- 2 Tweco 200 Amp Ground Clamp with 10 ft (3 m) Lead
- 3 Tweco 200 Amp Electrode Holder with 13 ft (4 m) Lead
- 4 4 General Purpose Stick Electrodes (E6013)
- 5 TIG Torch & Accessories, 26 Style with integrated controls (3 control modules included), 13 ft (4 m)
- 6 Victor Argon Flow Gauge & 12.5 ft (3.8 m) Hose
- 7 9 ft (2.75 m) Power Cord and NEMA 6-50P 230V AC Plug (not shown)
- 8 Operators Manual & CD (not shown)
- 9 Shoulder Strap

### Thermal Arc 186 AC/DC Portable HF TIG System with Foot Pedal

#2 Part No. W1006303



**Comes Complete with:**

- Thermal Arc 186 AC/DC Portable HF TIG System (Part No. W1006301), same as above plus foot control
- 10 Foot Pedal with 15 ft cable

### Thermal Arc 186 AC/DC Portable HF TIG System with Foot Pedal & Cart

#3 Part No. W1006304



**Comes Complete with:**

- Thermal Arc 186 AC/DC Portable HF TIG System (Part No. W1006301)
- 10 Foot Pedal with 15 ft cable
- 11 Basic Utility Cart



## SPECIFICATIONS

WELDING DC		PRIMARY POWER	
Maximum Output	200 Amp	Primary Voltage	Nominal 208/230 VAC
TIG (GTAW) Welding Output @104°F (40°C)	200A / 18V @ 20% Duty Cycle	Supply Voltage Range	187-276 VAC
	180A / 17.2V @ 25% Duty Cycle	Number of Phases	Single Phase
	150A / 16V @ 35% Duty Cycle	Supply Frequency	50/60 Hz
STICK (SMAW) Welding Output @104°F (40°C)	170A / 26.8V @ 15% Duty Cycle	Supply Plug	NEMA 6-50P
	100A / 24.0V @ 60% Duty Cycle	Rated kVA @ 200 Amps	9.5 kVA
	80A / 23.2V @ 100% Duty Cycle	Lead Cord Length	9 ft (2.75 m)
Current Range	10-200 A	Maximum Input Current	35.6 Amps
Maximum Open Circuit Voltage	70.3 VDC / 50 VAC	REPLACEMENT ACCESSORIES	
Warranty Period	3 Years*	TIG Torch & Accessories, 26 Style with integrated controls (3 control modules included), 13 ft (4 m)	W4013600
Approvals	CSA E60974-1-00 / UL60974-1 / IEC 60974-1	Tweco 200 Amp Electrode Holder w/Lead, 13 ft, 50 mm Dinse	WS200E13
Protection Class	IP23S	Tweco 200 Amp Ground Clamp w/Lead, 10 ft, 50 mm Dinse	WS200G10
DIMENSIONS AND WEIGHT		Victor Argon Regulator/Gauge	0781-4169
Dimensions H x W x D	H 15.75" x W 9.45" x D 18.7" (400 mm x 240 mm x 475 mm)	Gas Hose, 12.5 ft, Male 5/8-18UNF	W4013900
Weight	48.4 lbs (22 kg)	Foot Control, 15 ft	W4013200

\* Limited Warranty, refer to warranty schedule.

## ORDERING INFORMATION

Equipment Option	Part No.	Description
<b>Thermal Arc® 186 AC/DC Package</b>	<b>W1006301</b>	Includes Thermal Arc 186 AC/DC Inverter Power Source, Electrode holder with 13 ft (4 m) lead, Work Clamp with 10 ft (3.1 m) lead, 26 TIG Torch 12.5 ft (3.8 m) lead with Integrated Controls & Accessory, Input power cable/plug, 9 ft (2.75 m), Victor Argon Flow Gauge & 12.5 ft (3.8 m) Hose, Electrode Bonus, Shoulder Strap, and Operating Manual/CD
<b>Thermal Arc 186 AC/DC Package w/Foot Control</b>	<b>W1006303</b>	Includes contents of W1006301 with Foot Control (W4013200)
<b>Thermal Arc 186 AC/DC Package w/Foot Control &amp; Utility Cart</b>	<b>W1006304</b>	Includes contents of W1006301 with Foot Control (W4013200) & Cart (W4014700)

## ACCESSORIES

Basic Utility Cart		<b>W4014700</b>	Utility Cart, accommodates maximum 7" diameter cylinder
Foot Control		<b>W4013200</b>	Contacter On/Off and current control with 15 ft cable and 8-pin male plug
Helmet		<b>4100-1004</b>	TWECO Helmet (USA only)

# Welcome to the Family



*... Introducing*  
**The Thermal Arc®  
186 AC/DC Inverter**