Thermal Arc 186 AC/DC Setup Guide

Thermal Arc 186 AC/DC Complete System Overview

System Contents

- 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 230 AC Plug
- Operators Manual & CD
- General Purpose Stick Electrodes (E6013)
- Shoulder Strap

QUICK SPECIFICATIONS

PROCESSES :
HF TIG (GTAW) Lift TIG (GTAW)
STICK (SMAW)

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)

186 AC/DC Front Panel Overview

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.

AC/DC Mode, Pulse and Purge Buttons

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

Trigger Control Button

Programming Parameter Indicator Lights

Multi Function Control Knob

TIG Torch and Control Modules Overview

TIG Torch Contents:

- 26 TIG Torch with Long Back Cap
- 12.5 ft lead length
- 10. 5 in gas hose length
- 9.5 in control lead with 8 pin plug and Rigid Head.
- Remote Control Cartridge, Potentiometer with integrated on/off switch (installed).

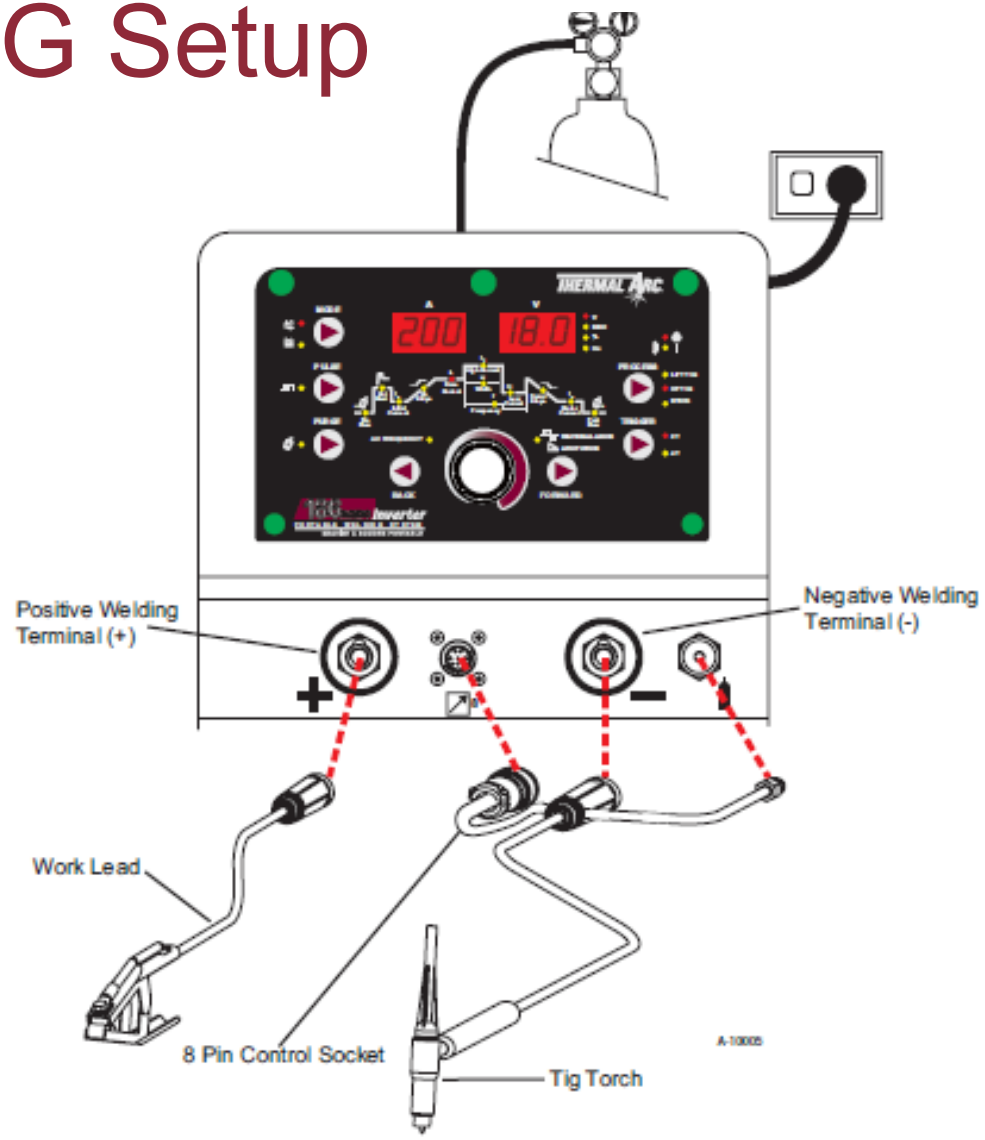
Additional switches/controls are interchangeable with the installed control in the TIG torch.

Control module with push button on/off switch only.

Control module with push button on/off switch with roller potentiometer.

Control module with roller potentiometer and integrated on/off switch.

TIG Setup



1. Connect the TIG Torch to the negative welding terminal (-). Welding current flows from the power source is heavy duty bayonet type terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

2. Connect the work lead to the positive welding terminal (+). Welding current flows from the Power Source is heavy duty bayonet type terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

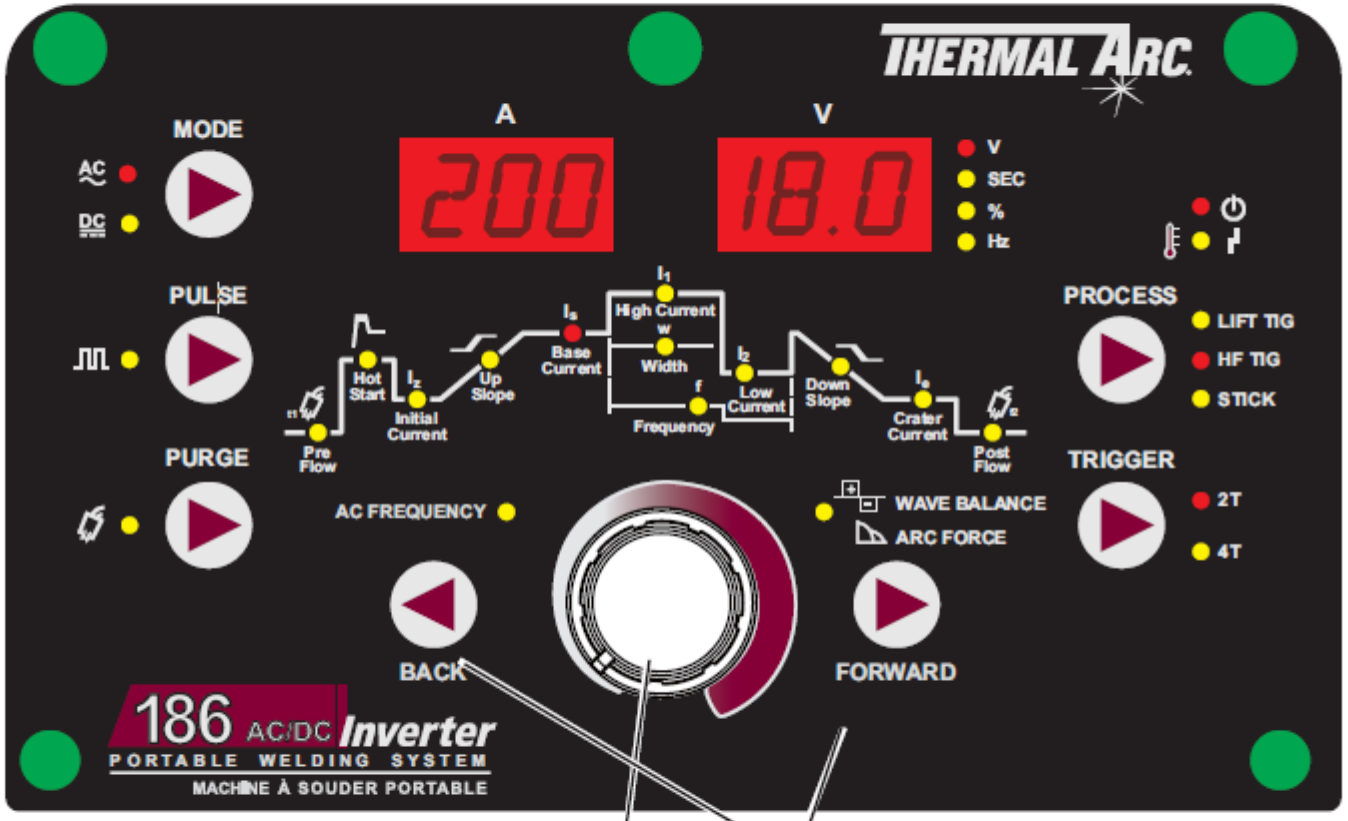
3. Fit the welding grade shielding gas regulator/flowmeter to the shielding gas cylinder, then connect the shielding gas hose from the regulator/flow meter outlet gas INLET on the rear of the 186 AC/DC Power Source. Connect the gas hose from the TIG torch to the gas OUTLET on the front of the 186 AC/DC Power Source.

Lift TIG and HF TIG Programming Modes

(Corresponding diagram on following page)

1. **Turn ON the ON/OFF switch located on the rear panel of the power source.**
2. **Press the PROCESS button to select LIFT TIG or HF TIG mode.**
3. **Press the MODE switch to toggle between AC and DC welding output.**
4. **The Programming LED's are always active. Press FORWARD or BACK to cycle through available programming functions.**
5. **Use the Multi Function Control to adjust the parameter selected.**

Lift TIG and HF TIG Programming Modes



Adjust programming parameter using the Multi Function Control knob

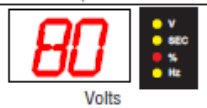
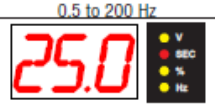
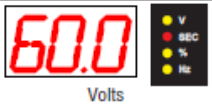
Press to go forward / go back between programming status LED's

A-10004

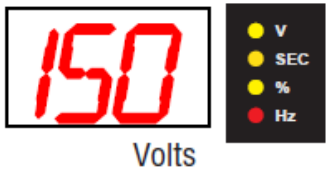
Lift TIG and HF TIG Programming Modes Cont.

Programming Parameter	Adjustment Device	Display
Pre-Flow This parameter operates in TIG modes only and is used to provide gas to the weld zone prior to striking the arc, once the torch trigger switch has been pressed. This control is used to dramatically reduce weld porosity at the start of a weld.		 Volts Range: 0.0 to 1.0 second
Initial Current This parameter operates in (4T) TIG modes only and is used to set the start current for TIG. The Start Current remains on until the torch trigger switch is released after it has been depressed. Note: The maximum initial current available will be limited to the set value of the base current.		 Amps Range: 5 to 200 Amps (DC TIG mode) 30 to 200 Amps (AC LIFT TIG mode) 10 to 200A (AC HF TIG mode)
Up Slope This parameter operates in (4T) TIG modes only and is used to set the time for the weld current to ramp up, after the torch trigger switch has been pressed then released, from Initial Current to High or BASE current.		 Volts Range: 0.0 to 15.0 seconds
Base Current This parameter sets the TIG WELD current when PULSE is OFF. This parameter also sets the STICK weld current.		 Amps Range: 5 to 200A (DC TIG mode) 30 to 200A (AC LIFT TIG mode) 10 to 200A (AC HF TIG mode)
High Current This parameter sets the High weld current when in PULSE mode.		 Amps Range: 10 to 200A (DC TIG mode) 30 to 200A (AC TIG mode)

Lift TIG and HF TIG Programming Modes Cont.

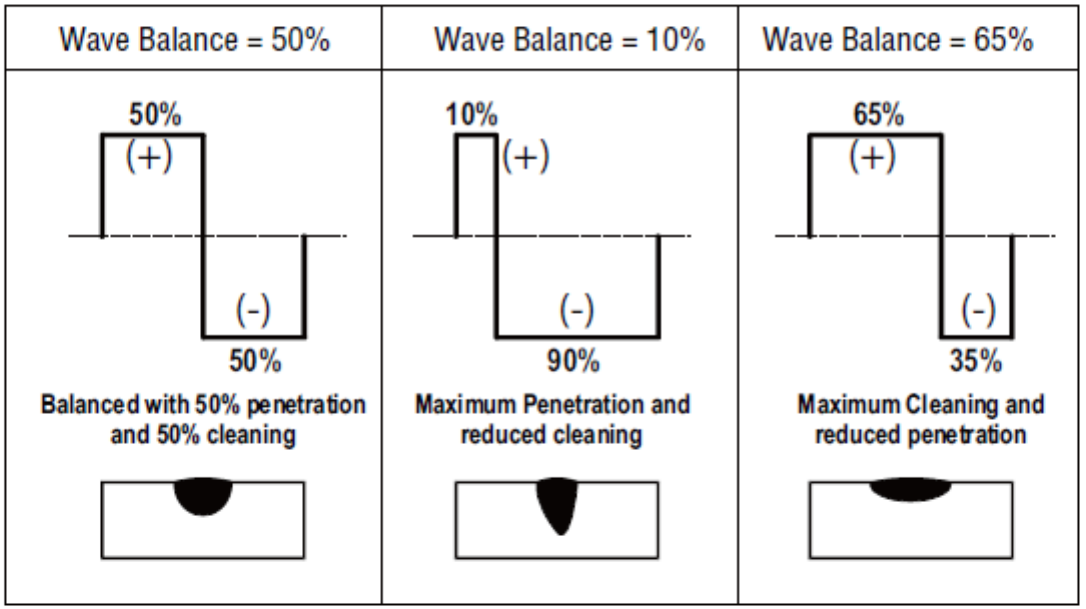
Programming Parameter	Adjustment Device	Display
Low Current The lowest point in the pulse is called the Low Current.		 Amps Range: 5 to 200A (DC HF TIG mode) 30 to 200A (AC LIFT TIG mode) 10 to 200A (AC HF TIG mode)
Pulse Width This parameter sets the percentage on time of the PULSE FREQUENCY for High weld current when the PULSE is ON.		 Volts Range: 15 to 80%
Pulse Frequency This parameter sets the PULSE FREQUENCY when the PULSE is ON.		 Volts 0.5 to 200 Hz
Down Slope This parameter operates in TIG modes only and is used to set the time for the weld current to ramp down, after the torch trigger switch has been pressed, to crater current. This control is used to eliminate the crater that can form at the completion of a weld.		 Volts Range: 0.0 to 25.0 seconds
Crater Current This parameter operates in (4T) TIG modes only and is used to set the finish current for TIG. The CRATER Current remains ON until the torch trigger switch is released after it has been depressed. Note: The maximum crater current available will be limited to the set value of the base current.		 Amps Range: 5 to 200A (DC TIG mode) 30 to 200A (AC TIG mode) 10 to 200A (AC HF TIG mode)
Post Flow This parameter operates in TIG modes only and is used to adjust the post gas flow time once the arc has extinguished. This control is used to dramatically reduce oxidation of the tungsten electrode.		 Volts Range: 0.0 to 60.0 seconds

Lift TIG and HF TIG Programming Modes Cont.

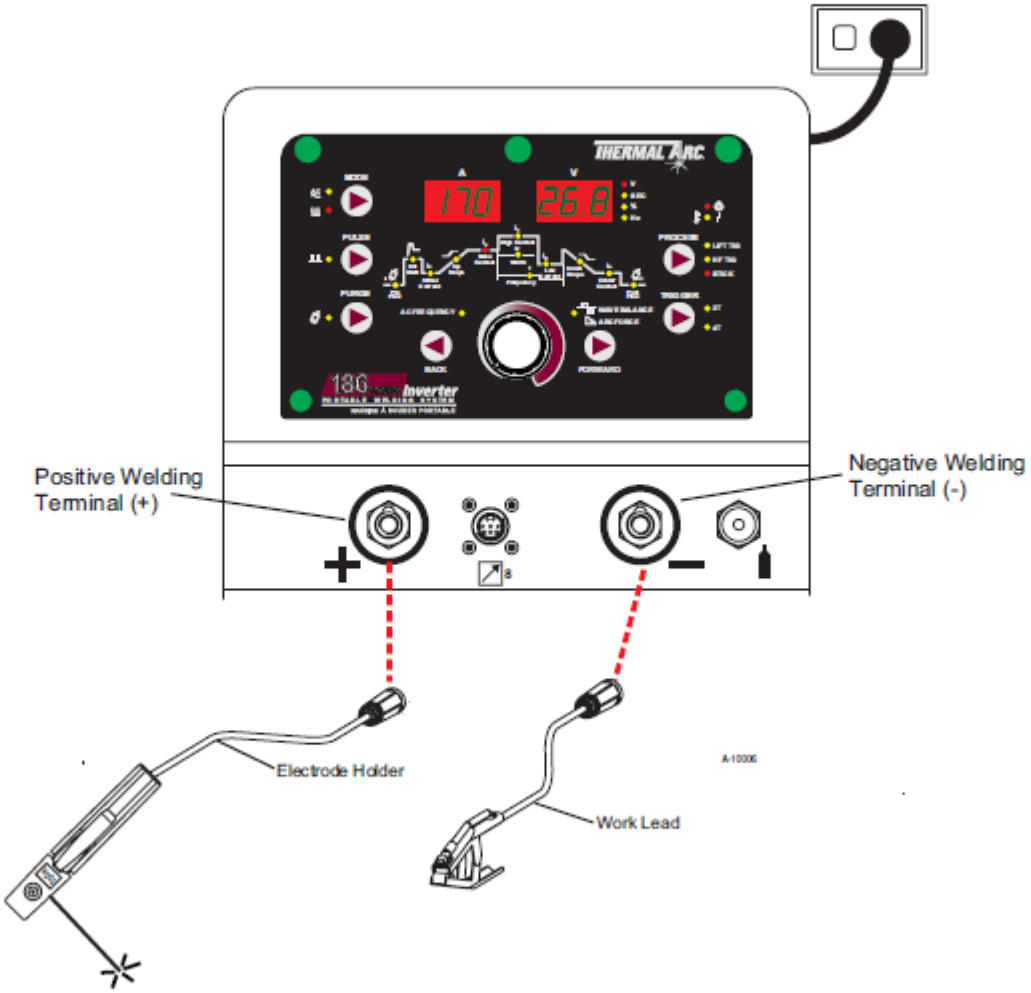
Programming Parameter	Adjustment Device	Display
AC Frequency This parameter operates in AC TIG mode only and is used to set the frequency for the AC weld current.		 Volts Range: 15 to 150 Hz
Wave Balance This parameter operates in AC TIG mode and is used to set the penetration to cleaning action ratio for the AC weld current. Generally WAVE BALANCE is set to 50% from the factory for AC TIG Welding. The WAVE BALANCE control changes the ratio of penetration to cleaning action of the AC TIG welding arc. Maximum weld penetration is achieved when the WAVE BALANCE control is set to 10%. Maximum cleaning of heavily oxidized aluminium or magnesium alloys is achieved when the WAVE BALANCE control is set to 65%.		 Volts Range: 10 to 65%

Lift TIG and HF TIG Programming Modes Cont.

- WAE BALANCE is used for aluminum welding in AC HF TIG or AC LIFT TIG mode
- It is used to set the ratio of penetration to cleaning action for the AC TIG welding arc.
- Maximum weld penetration is achieved when the WAE BALANCE is set to 10%.
- Maximum cleaning of heavily oxidized aluminum or magnesium alloys is achieved when the WAE BALANCE is set to 65%.



STICK Setup



1. Connect the Electrode Holder lead to the positive welding terminal (+). If in doubt, consult the electrode manufacturer. Welding current flows from the Power Source is heavy duty bayonet type terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

2. Connect the work lead to the negative welding terminal (-). If in doubt, consult the electrode manufacturer. Welding current flows from the power source is heavy duty bayonet type terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

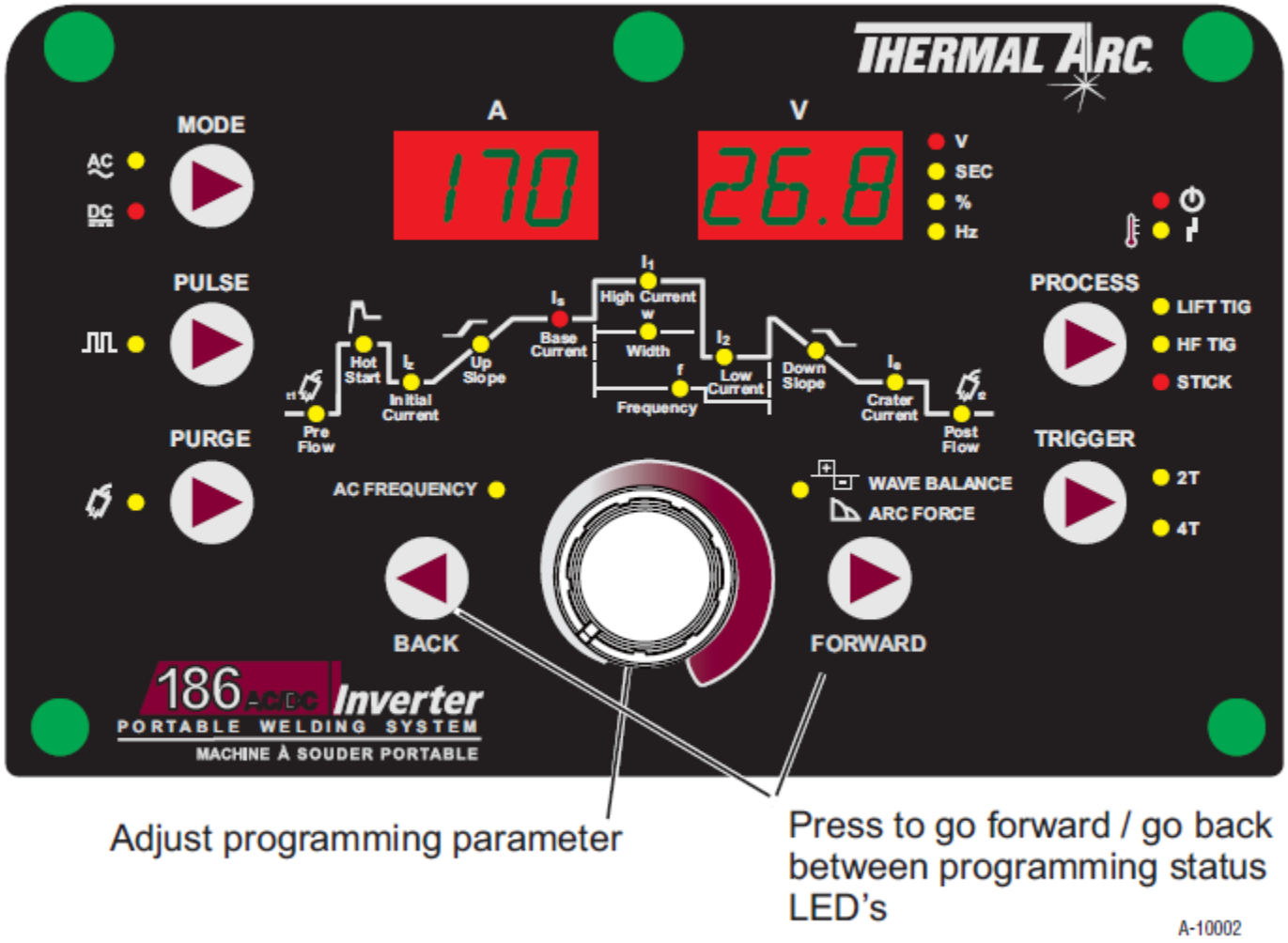
3. Select STICK mode with the process selection control.

STICK Programming Modes

(Corresponding diagram on following page)

1. Turn ON the ON/OFF switch located on the rear panel of the power source.
2. Press the PROCESS button to select STICK mode.
3. Press the MODE switch to toggle between AC and DC welding output.
4. The Programming LED's are always actie. Press FORWARD or BACK to cycle through aailable programming functions.
5. Use the Multi Function Control to adjust the Parameter selected.
6. While welding the Multi Function Control directly controls the BASE CURRENT

STICK Programming Modes



STICK Programming Modes Cont.

Programming Parameter	Adjustment Device	Display
Hot Start This parameter operates in all weld modes except LIFT TIG mode and is used to heat up the weld zone in TIG modes or improve the start characteristics for stick electrodes the peak start current on top of the BASE (WELD) current. e.g. HOT START current = 130 amps when BASE (WELD) = 100 amps & HOT START = 30 amps		 Amps Range: 0 to 70A (max 170A weld current)
Base Current This parameter sets the TIG WELD current when PULSE is OFF. This parameter also sets the STICK weld current.		 Amps Range: 5 to 170A (DC STICK mode) 10 to 170A (AC STICK mode)
Arc Force (STICK Mode only) Arc Force is effective when in Manual Arc Mode only. Arc Force control provides and adjustable amount of Arc Force (or "dig") control. This feature can be particularly beneficial in providing the operator the ability to compensate for variability in joint fit-up in certain situations with particular electrodes. In general increasing the Arc Force control toward 100% (maximum Arc Force) allows greater penetration control to be achieved.		 Volts Range: 0 to 100%

Setup Chart

Refer to Setup Chart on top of machine for weld parameters and guidelines