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R-TECH TIG401 TFT DIGITAL AC/DC TIG WELDER

OPERATION INSTRUCTIONS



Version 2023-12-V1

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Thank you for selecting the R-Tech TIG401-TFT Digital Inverter AC/DC Tig Welder.

The TIG401-TFT Digital has many benefits over traditional TIG welders, including EASY SETUP, 20 memory stores, advanced AC waveforms, pulse welding, slope up/down, remote foot pedal option and an industrial 60% duty cycle.

We want you to take as much pride in operating our TIG401-TFT Digital as much pride as we have in making this product for you. Please read all information in this manual before operation

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt from the courier. Consequently all claims for material damaged in shipment must be made by purchaser against the transportation company used.

Please record your equipment identification below for future reference. This information can be found on data plate at rear of machine.

Product: TIG401-TFT DIGITAL AC/DC TIG Welder

Serial No. _____

Date of Purchase _____

Where Purchased _____

Whenever you request replacement parts or information on this equipment please always supply information you have recorded above

Pay particular attention to the safety instructions we have provided you for your protection The level of seriousness to be applied to each section is explained below



This statement appears where the information must be followed exactly to avoid serious personal injury.

CAUTION

This statement appears where the information must be following to avoid a minor personal injury or damage to this equipment.

Introduction

The R-Tech TIG401-TFT digital TIG welder is a member of our field acclaimed family of welding machines.

Premium features include

Large 5.1" HD TFT Screen

60% Industrial duty cycle

Inverter power source - more efficient

Fan on demand and water cooler control - silent running and power saving

5 x AC Waveforms

Electronic HF for fast arc starting and low interference

EASY SETUP DC & AC TIG

Professional weld settings built in

Over 300 AC/DC settings from 1.0 to 6mm for all weld joint types. Lap, Butt, Tee, Corner, Edge

Simple to use easy navigation - no complicated menus - all settings on single screen.

MANUAL MODE DC & AC TIG

Full control of every weld parameter you could ever need

Pre-flow gas, start amps, slope up time, main amps, slope down time, end amps and post flow gas

5 AC Waveforms - Square, Soft Square, Triangular, Sine, Sine-T and Trapezoidal wave forms - Giving the

ultimate control of weld pool and bead

AC Frequency to 20-400Hz - Increased arc focus

3 Start modes - HF Fast start, LIFT and LIVE

2T, 4T, foot pedal & torch switch control modes

4TS trigger mode, Ideal for pipe welding, switch from start to main amps as required

DC Pulse up to 999Hz

AC Pulse up to 400Hz

AC Advanced pulse - Mixed AC/DC pulse, greatly increases penetration up to 10Hz

Amplitude control in AC - Improvement of arc stability, quality and tungsten life and sharpness - more

focused arc (EN and EP amperage control in AC)

20 professional memory stores

Spot welding - Spot weld feature with stitch function

Fast Tack welding - Tack weld feature with stitch function

Welding Capability – Duty Cycle

The R-Tech TIG401-TFT Digital is rated at 400 Amps at 60% duty cycle on a ten minute basis. If the duty cycle is exceeded a thermal protector will shut machine off until the machine cools.

Safety Precautions

Read entire section before starting installation.

Warning!



Electric Shock can kill – Only qualified personnel should perform this installation. Turn off input power at the fuse box before working on this equipment. Do not touch electrically live parts. Always connect the machine to an earthed mains supply as per national recommended standards.

Select suitable location

Place the welder where clean cooling air can freely circulate in and out of the front & rear louvre vents. Dirt, dust or any foreign material that can be drawn through vents into welder must be kept to a minimum. Failure to observe these precautions can result in excessive operating temperatures which can lead to plant failure.

Grinding

Do not direct grinding particles towards the welder.
An abundance of conductive material can cause plant failure.

Transport & unloading

Never underestimate the weight of equipment, never move or leave suspended in the air above people.
Use recommended lifting/handling equipment at all times.

Electrical installation

WARNING ELECTRIC SHOCK CAN KILL



Electric Shock can kill – Only qualified personnel should perform this installation. Turn off input power at the fuse box before working on this equipment. Do not touch electrically live parts. Always connect the machine to an earthed mains supply as per national recommended standards.

Machine grounding and High Frequency Interference Protection

This welder must be grounded to earth. See national electrical codes for proper grounding methods.

The high frequency generator being similar to a radio transmitter may cause interference to radio, TV and other electronic equipment. These problems may be the result of radiated interference.

Proper grounding methods can reduce or eliminate this.

Radiated interference can develop in the following ways

1. Direct interference from welder power source
2. Direct interference from the welding leads
3. Direct interference radiated from feedback into power lines
4. Interference from re-radiation by un-grounded metallic objects.

Keeping these contributing factors in mind, installing equipment as per following instructions should minimize problems.

1. Keep the welder input power lines as short as possible and enclose as much of them as possible in metal conduit or equivalent shielding. There should be a good electrical contact between this conduit and ground (Earth).
2. Keep the work and electrode leads as short as possible. Tape the leads together where practical.
3. Be sure the torch and earth leads rubber coverings are free from cuts and cracks that allow welding power leakage
4. Keep earth lead connection to work in good condition – Clean area on workbench where earth clamp is situated on a regular basis.

Electrical installation cont.

Input Connections

Make sure the voltage, phase and frequency of input power is as specified on machine rating plate located at rear of machine.

Have a qualified electrician provide suitable input power as per national electrical codes. Make sure machine is earthed / grounded.

Make sure fuse or circuit breaker is correct rating for machine. Using fuses or circuit breakers smaller than recommended will result in 'nuisance' shut off from welder inrush currents even if welding at low amperages.

Failure to follow these instructions can cause immediate failure within the welder and void machines warranty.

Turn the input power OFF at the mains switch & fuse box before working on this equipment. Have a qualified electrician install & service this equipment.

Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment. Do not touch electrically live parts

The TIG401-TFT DIGITAL Inverter Tig Welder requires a 240V 50/60Hz supply. It requires a 22A Supply. It comes with a 2.5 metre mains cable attached.

Connect wires according to national coding.

Brown wire – Live

Blue wire – Neutral

Green/Yellow Wire – Earth (Ground)

Connecting to an Engine Driven Generator

If connecting this machine to an engine driven generator please ensure the following

Minimum Generator KVA Output – 12 KVA continuous Generator to be fitted with AVR (automatic voltage regulation) DO NOT USE ON A GENERATOR WITHOUT AVR

Connecting to a generator without the above minimum requirements will invalidate your warranty.

Technical specifications

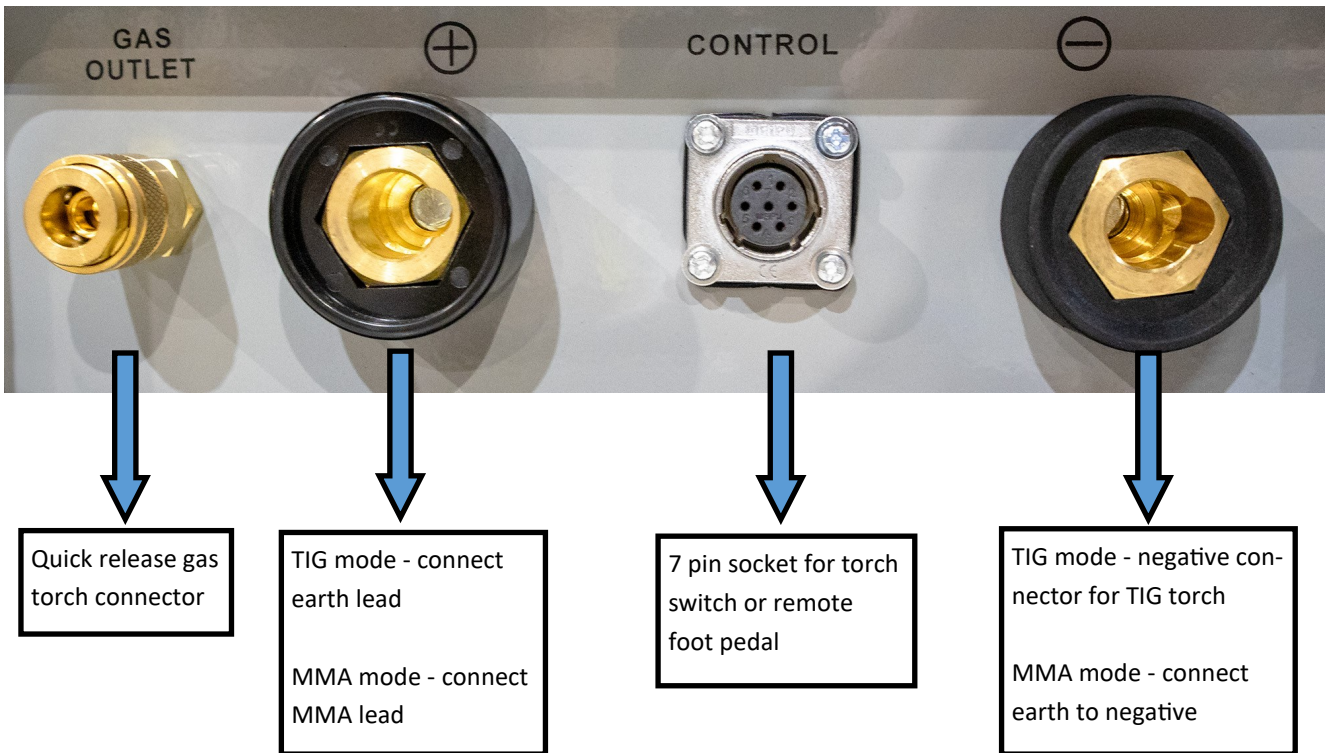
Input	415V AC 50/60Hz 3- Phase	Input amperage 22A
Gross weight	32 KG	
Dimensions	438H x 232W x 550L (mm)	
Insulation	IP21S	
TIG	Current range AC	10A - 400A
	Current range DC	5A - 400A
	No load voltage	95V
	Duty cycle	60% @ 400A
	Arc starting modes	HF, Lift and Live
	Trigger modes Manual mode	2T,4T,4TS, REMOTE PEDAL,2T+F, 4T+F
	Trigger modes EASY SETUP	2T,4T, REMOTE PEDAL, 2T+F, 4T+F
TIG Manual	Pre-flow gas	0 - 60 seconds
	Up-slope time	0 - 30 seconds
	Start amps	5A DC, 10A AC to 400A
	Down-slope time	0 - 60 seconds
	End amps	5A DC, 10A AC to 400A
	Post-flow gas time	0 - 60 seconds
	DC Pulse amps	3 - 100%
	DC Pulse width (time)	5 - 95%
	DC Pulse Hz	0.1 - 999.9 Hz
	AC Pulse amps	3 - 100%
	AC Pulse width (time)	5 - 95%
	AC Pulse frequency (standard)	0.1 - 500 Hz
	AC Pulse frequency (advanced)	0.1 - 10 Hz
	AC Balance (cleaning)	5 - 70 %
	Spot weld time	0.1 - 10 seconds
	Spot weld stitch time	0 - 5 seconds
	Tack weld time	10ms - 250ms
	Tack weld stich time	10ms - 250ms
	Memory settings	YES - 20

Technical specifications cont..

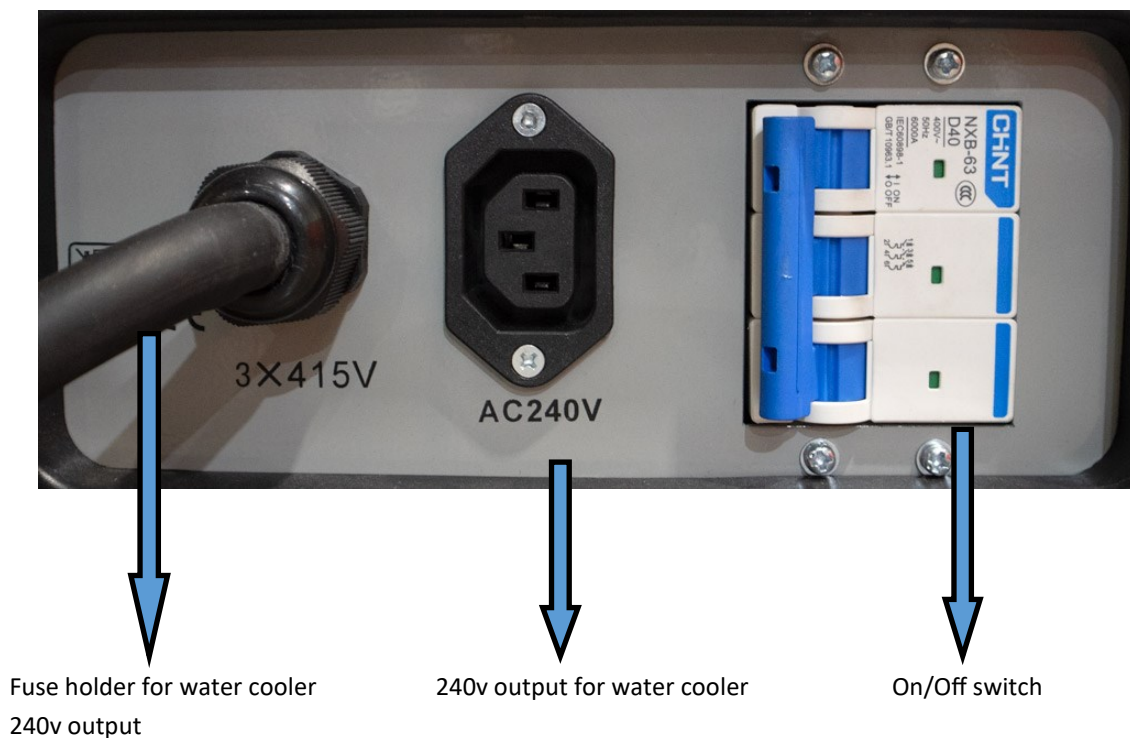
TIG EASY SETUP DC - Programs for	Metal type	Mild & stainless steel
	Metal thickness programs	1, 1.2, 1.5, 2, 3, 4, 5, 6mm
	Joint type programs	Tee, Lap, Butt, Corner, Edge
	Pulse level programs	.05Hz, 1Hz, 2Hz, 50Hz & 200Hz
	Pulse amps Stainless	65 %
	Pulse Width Stainless	50 %
	Pulse amps mild steel	75 %
	Pulse width mild steel	50 %
	Trigger types	2T,4T,REMOTE PEDAL, 2T+F, 4T+F
TIG EASY SETUP AC - Programs for	Filler Type	ALSI 4043A & ALMG 5356
	Metal thickness programs	1, 1.2, 1.5, 2, 3, 4, 5, 6mm
	Joint type programs	Tee, Lap, Butt, Corner, Edge
	Pulse level programs	.05Hz, 1Hz, 2Hz, 50Hz & 200Hz
	Pulse amps	75 %
	Pulse Width	50 %
	AC Frequency	100 Hz
	AC balance	25 - 35 %
	Trigger types	2T,4T,REMOTE PEDAL, 2T+F, 4T+F
MMA EASY DC - Programs for	Rod type mild steel	6010, 6011, 6013, 7018
	Rod type stainless steel	308, 309, 316
	Rod diameter	2.4, 3.2, 4.0mm
	Weld position	Flat, Overhead, Vertical, Horizontal
	V.R.D Voltage	Off / On
MMA EASY AC - Programs for	Rod type mild steel	6010, 6011, 6013, 7018
	Rod diameter	2.4, 3.2, 4.0mm
	Weld position	Flat, Overhead, Vertical, Horizontal
	V.R.D Voltage	Off / On

Connections

Front panel connections



Rear panel connections



Rear panel connections cont..

Gas connector & Extra earth connection



Extra earth connection, used if you experience local interference (not normally used)

3/8 BSP male connector for gas input

Water cooler connections.



1 - On/Off Switch

2 - Hot water in, fit RED quick release fitting from water cooled torch

3 - Cold water out, fit BLUE quick release fitting from water cooled torch

4 - Water reservoir, fill to maximum level with water/antifreeze mix.

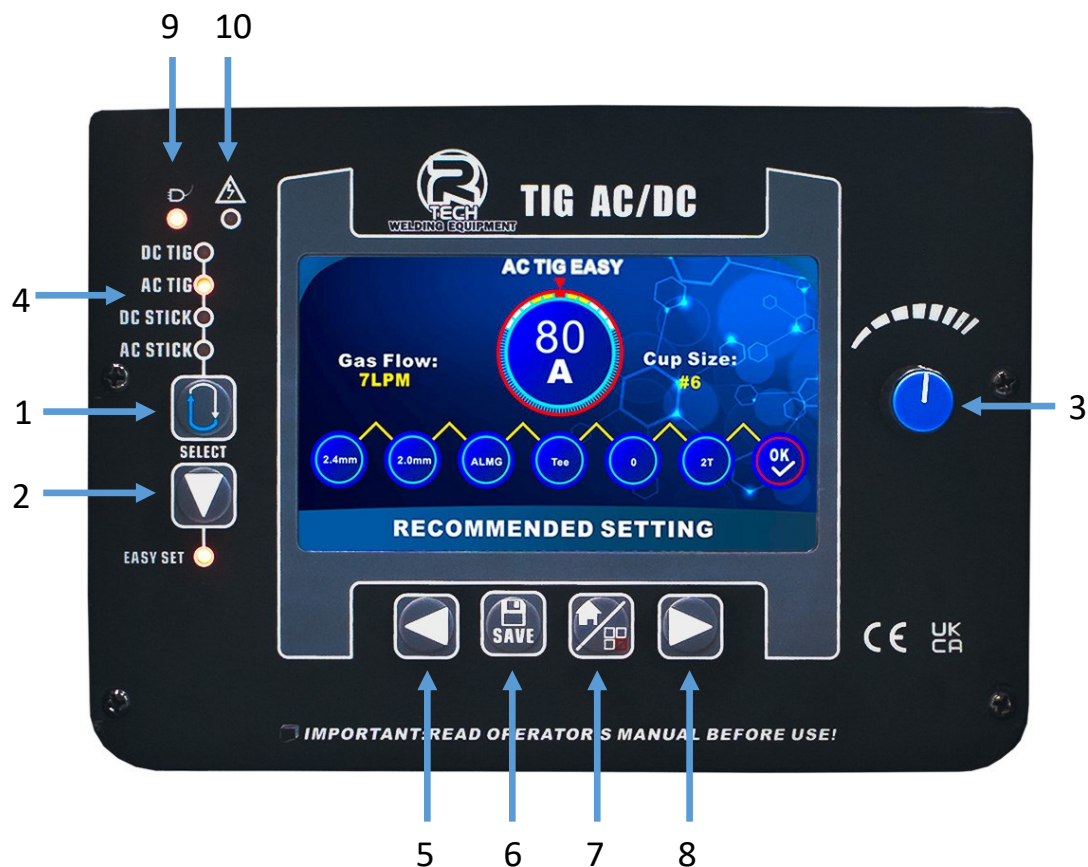
Unit is self bleeding as long as reservoir is filled to the top level.

Front panel

HD 5" Digital Colour Screen

Easy to navigate menu system

EASY SET mode - 100's of pre-programmed weld settings AC,DC TIG & MMA



1 - SELECT button - Press to cycle through welding modes
DC TIG, AC TIG, DC STICK, AC STICK

2 - EASY SET button - press to enable / disable EASY SET mode

3 - Control knob - Turn to change setting in small amounts, press and turn to change in larger steps

4 - LED indicator for weld mode selected

5 - Left arrow button - use to scroll left in menus

6 - SAVE / LOAD button - For saving and loading manual mode memory settings

7 - HOME button - Press to switch between home and 2nd level menu's

8 - Right arrow button - use to scroll right in menus

9 - POWER LED - Shows machines is turned on when lit

10 - FAULT LED - Will light when machine senses problem and will show error in main display.

Controls and settings

The TIG401-TFT features 6 main operating modes

- AC TIG in EASY mode
- AC TIG in Manual mode
- DC TIG in EASY mode
- DC TIG in Manual mode
- MMA (STICK) in EASY mode
- MMA (STICK) in Manual mode

AC & DC EASY MODE

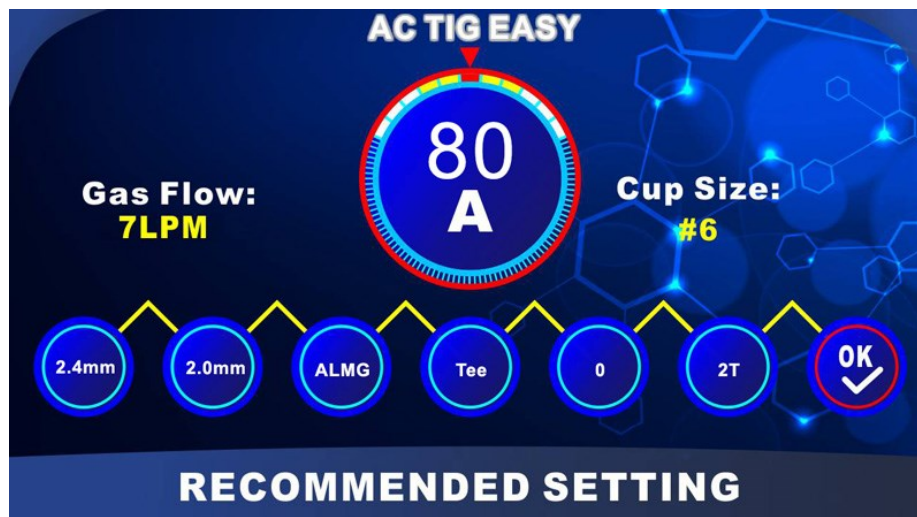
R-Tech Easy mode takes the guesswork out of TIG welding. You normally had to enter all weld settings before beginning to weld on manual welders, we have done this for you.

You simply select the following from easy to understand screen.

- Tungsten size
- Material thickness
- Filler rod material in AC
- Material type in DC
- Type of joint
- Pulse Off/On
- Trigger / Pedal mode

The machine will set main amperage power , post flow gas time required and also advise on recommended gas flow in LPM and ceramic cup size for torch.

TO ENTER EASY MODE - PRESS EASY BUTTON ON FRONT PANEL - EASY HOME SCREEN WILL SHOW

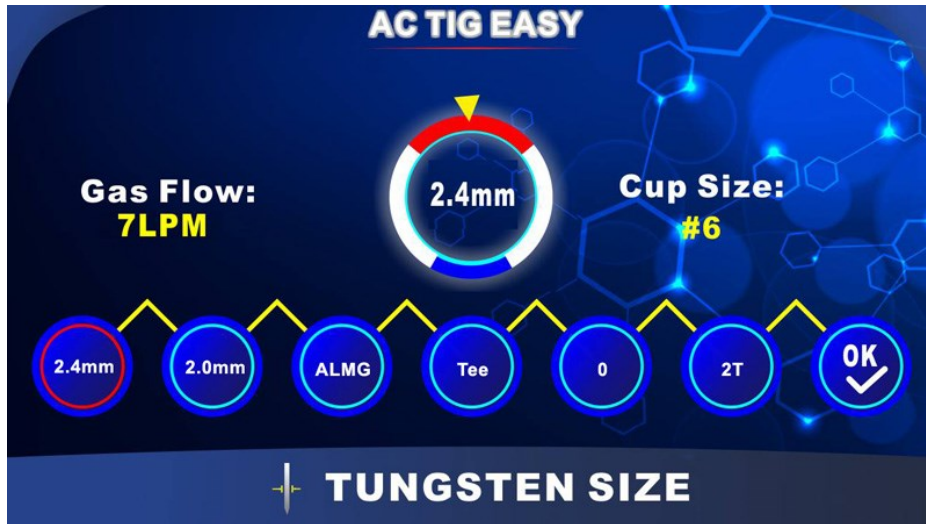


AC EASY MODE

6 easy steps are required to setup weld.

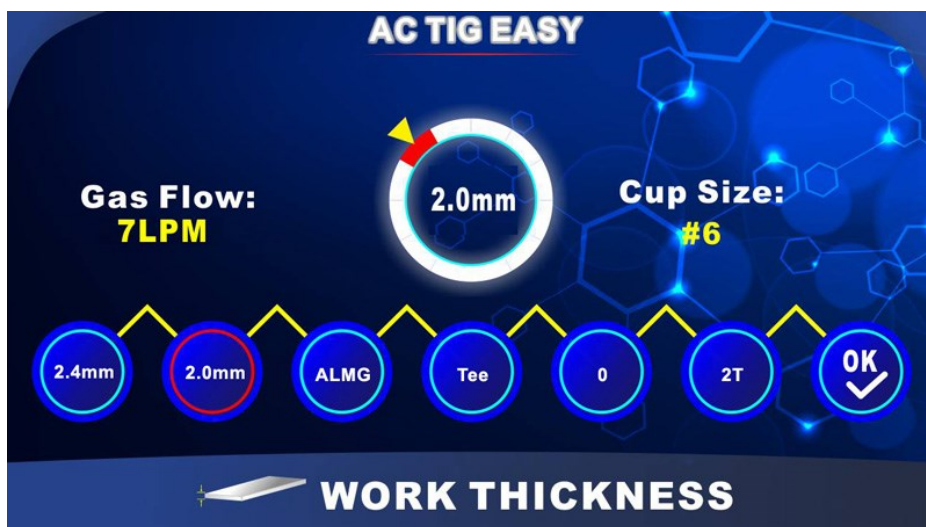
Press left / right arrows to select setting which will be highlighted in red circle and description shown in bottom of screen. Then use control knob to select value required.

In image below you can see TUNGSTEN SIZE is shown at bottom of screen and circle is highlighted in RED and showing 2.4mm size selected.



Once correct tungsten size has been selected, press right arrow to move to next setting.

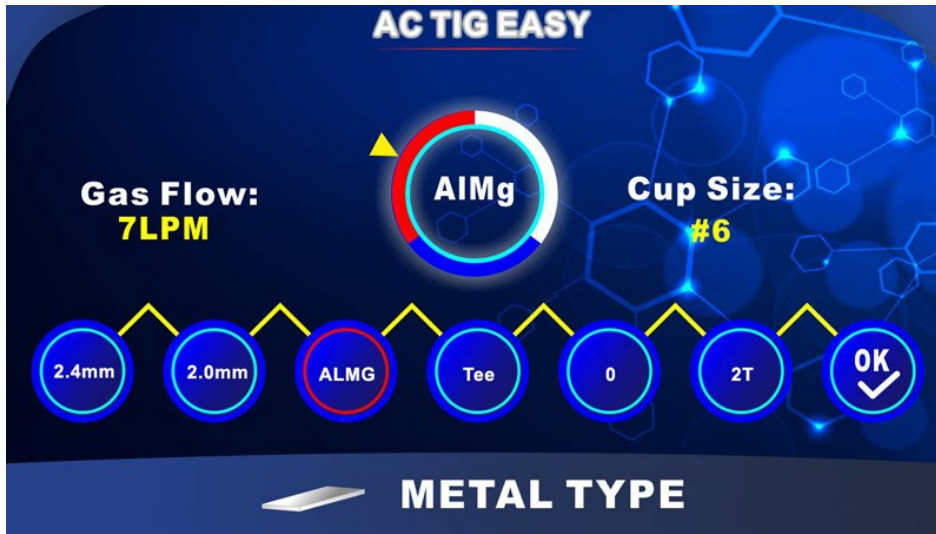
MATERIAL THICKNESS



Then use control knob to select work thickness required.

1.0mm, 1.2mm, 1.5mm, 2.0mm, 3.0mm, 4.0mm

METAL TYPE (FILLER ROD TYPE USED)



Then use control knob to select filler rod used.
ALMG = 5356 Filler Rod, ALSI = 4043A Filler Rod

Once correct material work thickness has been selected, press right arrow to move to next setting.

JOINT TYPE

Select from 5 joint types as below.



Once correct material work thickness has been selected, press right arrow to move to next setting.

PULSE SETTING

This is where you select pulse off, or settings as below by turning control knob



Pulse welding was designed mainly for stainless steel and other exotic materials to control heat input to the metal and decrease heat deformation.

It can be used on all materials including aluminium in AC.

Base amps is set to 75% in AC EASY mode. I.E if main amps is 80A, then base amps will be 60A

At 0.5Hz the machine will switch between main amps selected and base amps every half a second.

At 50Hz the machine will switch between main and base amps 50 times a second.

Pulse can also be useful if you are unable to use a foot pedal and want to have more control over heat input into weld if not welding at bench.

Pulse speed is a personal preference - as the pulse Hz increases you will notice the weld noise is more higher pitched, this is normal.

Once correct pulse type has been selected, press right arrow to move to next setting.

REMOTE

This is where you select how machine is triggered to start and remote control of amperage if required.



2T - Press trigger to start weld, release to finish weld.



4T - Press and hold trigger to start weld at start amps, release trigger to go to main amps. To finish weld - Press and hold trigger to go to end amps, release and weld will stop.



PEDAL - Press foot pedal to start weld, fully depress pedal to get 100% of amps shown in recommended settings.

I.E If recommended setting was 120A, on a full depress of pedal you will get 120A, if pedal only pressed halfway you will get 60A



2T+F - Torch trigger operation for on/off with amperage control by slider / rotary knob on torch handle.



4T+F - Torch trigger latch operation same as 4T but with amperage control by slider / rotary knob on torch handle.



Once required remote setting is selected, press right arrow to move to OK
(You can also press the HOME button)

RECOMMENDED SETTINGS

OK will now turn RED, RECOMMENDED SETTINGS will now be loaded for you.



Welding amps - shown in middle of display
Post flow gas time - not shown

The display will also show recommended

Gas flow in LPM (set this on regulator or gas flow meter)

Torch cup ceramic size (If not to hand, you can use a larger size)

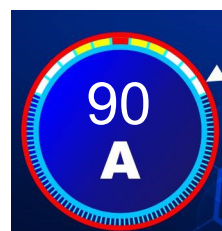
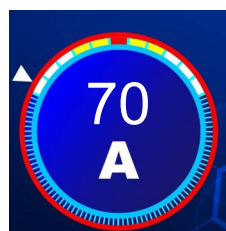
You are now ready to weld! Press trigger or foot pedal to weld.

If you want to change any settings, just simply use left / right arrows to highlight setting in red and use control knob to change - then use arrows to move to OK to update.

AMPERAGE TRIM

You have 10A trim +/- of recommended amperage, simply turn knob to decrease / increase amperage.

This is to allow fine tuning to personal preferences like travel speed, weld bead appearance.

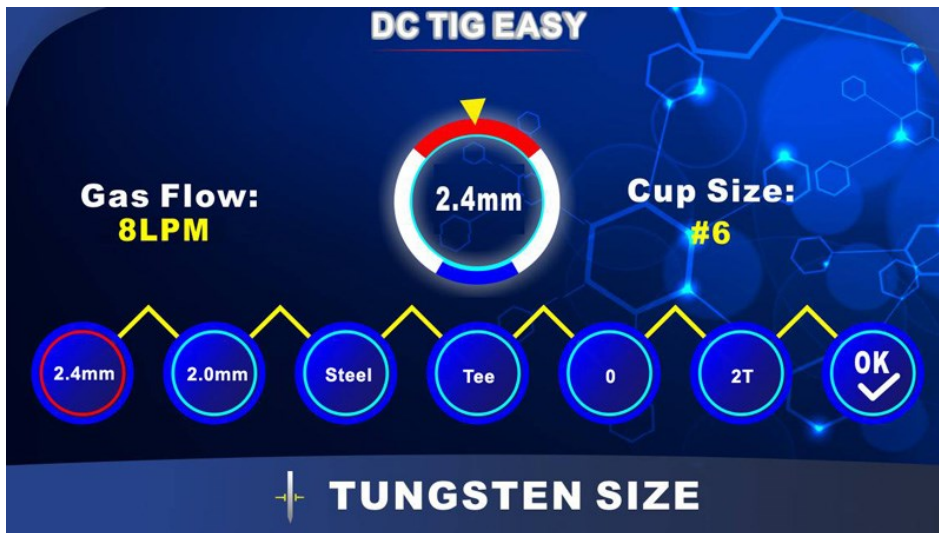


DC EASY MODE

6 easy steps are required to setup weld.

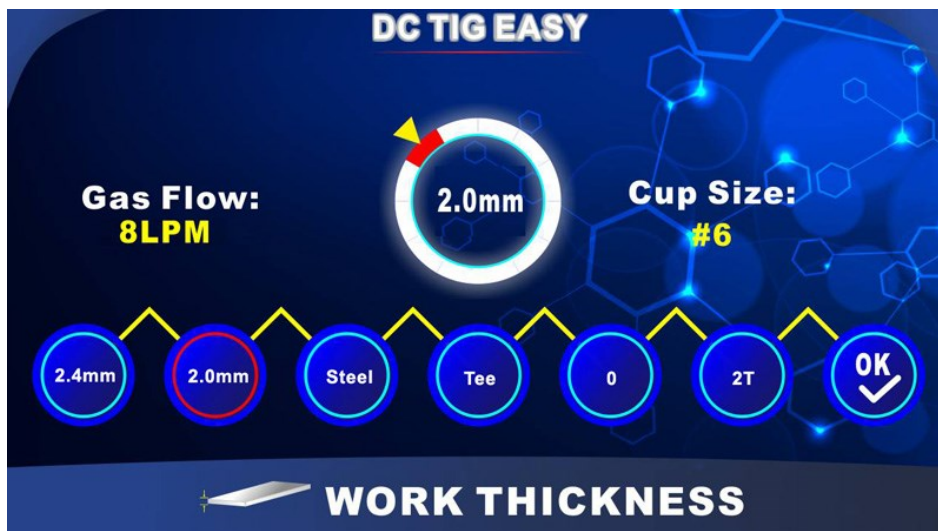
Press left / right arrows to select setting which will be highlighted in red circle and description shown in bottom of screen. Then use control knob to select value required.

In image below you can see TUNGSTEN SIZE is shown at bottom of screen and circle is highlighted in RED and showing 2.4mm size selected.



Once correct tungsten size has been selected, press right arrow to move to next setting.

MATERIAL THICKNESS

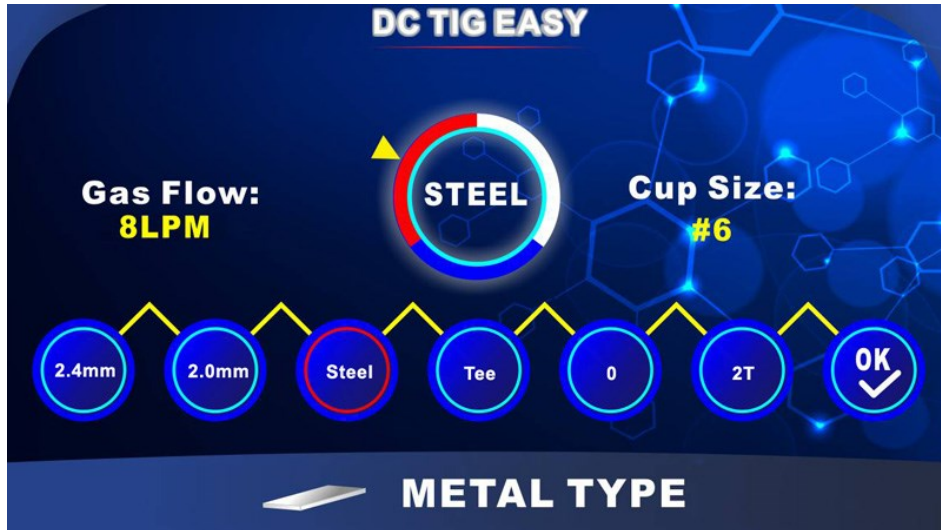


Then use control knob to select work thickness required.

1.0mm, 1.2mm, 1.5mm, 2.0mm, 3.0mm, 4.0mm

Once correct thickness has been selected, press right arrow to move to next setting.

METAL TYPE (BASE METAL)



Then use control knob to select metal being welded
STEEL = Mild Steel, SS = Stainless Steel

Once correct metal type has been selected, press right arrow to move to next setting.

JOINT TYPE

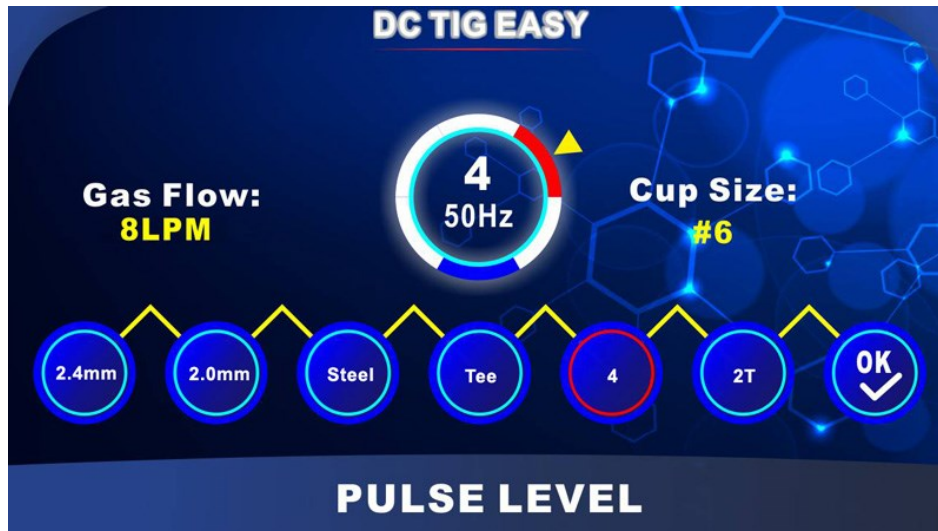
Select from 5 joint types as below.



Once correct joint type has been selected, press right arrow to move to next setting.

PULSE SETTING

This is where you select pulse off, or settings as below by turning control knob



Pulse welding was designed mainly for stainless steel and other exotic materials to control heat input to the metal and decrease heat deformation.

Base amps is set to 75% in DC EASY mode for mild steel.
Base amps is set to 65% in DC EASY mode for stainless steel.

I.E if main amps is 80A, then base amps will be 60A.

At 0.5Hz the machine will switch between main amps selected and base amps every half a second.

At 50Hz the machine will switch between main and base amps 50 times a second.

Pulse can also be useful if you are unable to use a foot pedal and want to have more control over heat input into weld if not welding at bench.

Pulse speed is a personal preference - as the pulse Hz increases you will notice the weld noise is more higher pitched, this is normal.

Once the desired pulse level has been selected, press right arrow to move to next setting.

REMOTE

This is where you select how machine is triggered to start and remote control of amperage if required.



2T - Press trigger to start weld, release to finish weld.



4T - Press and hold trigger to start weld at start amps, release trigger to go to main amps. To finish weld - Press and hold trigger to go to end amps, release and weld will stop.



PEDAL - Press foot pedal to start weld, fully depress pedal to get 100% of amps shown in recommended settings.
I.E If recommended setting was 120A, on a full depress of pedal you will get 120A, if pedal only pressed halfway you will get 60A



2T+F - Torch trigger operation for on/off with amperage control by slider / rotary knob on torch handle.



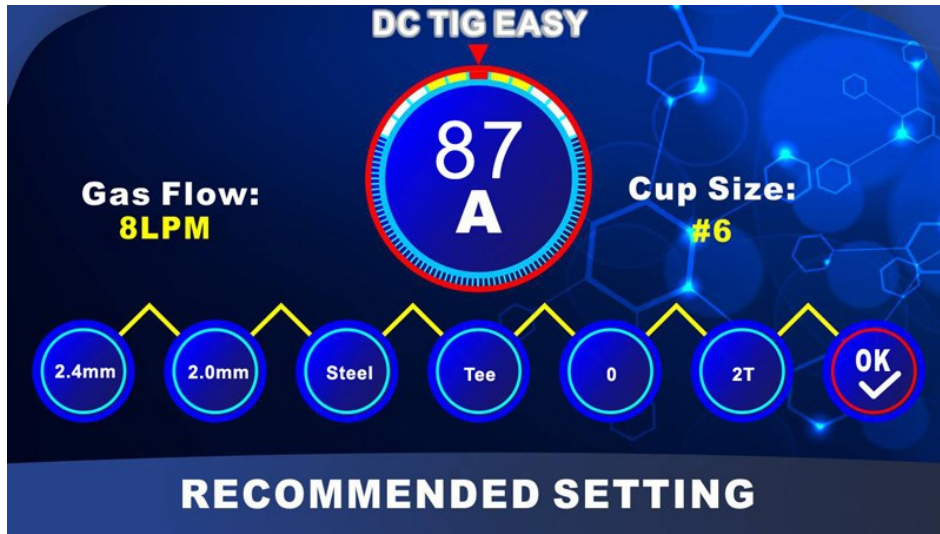
4T+F - Torch trigger latch operation same as 4T but with amperage control by slider / rotary knob on torch handle.



Once required remote setting is selected, press right arrow to move to OK
(You can also press the HOME button)

RECOMMENDED SETTINGS SCREEN

OK will now turn RED, RECOMMENDED SETTINGS will now be loaded for you.



Welding amps - shown in middle of display
Post flow gas time - not shown

The display will also show recommended

Gas flow in LPM (set this on regulator or gas flow meter)

Torch cup ceramic size (If not to hand, you can use a larger size)

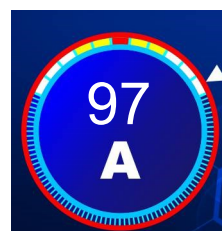
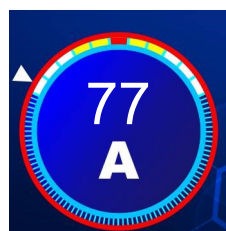
You are now ready to weld! Press trigger or foot pedal to weld.

If you want to change any settings, just simply use left / right arrows to highlight setting in red and use control knob to change - then use arrows to move to OK to update.

AMPERAGE TRIM

You have 10A trim +/- of recommended amperage, simply turn knob to decrease / increase amperage.

This is to allow fine tuning to personal preferences like travel speed, weld bead appearance.



DC MANUAL MODE

R-Tech DC TIG manual mode gives you full control over every weld parameter available.

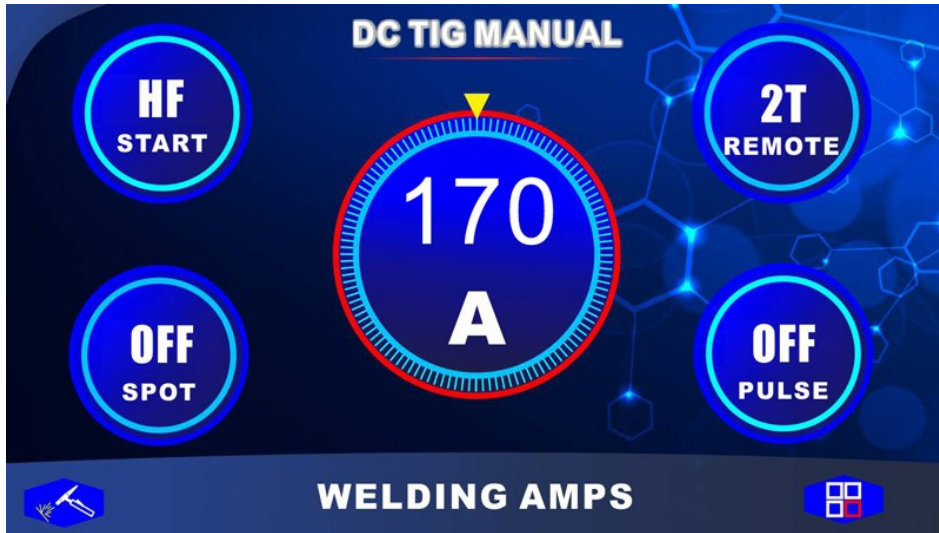
DC Modes available

DC Standard (No pulse)

DC Pulse

DC Tack weld

DC Spot weld



DC MANUAL - HOME SCREEN

The above image shows the home page for DC manual mode.

From this menu press the arrow button to highlight in red setting to be changed, then use control knob to select desired setting.

HF Options

HF start - normal auto arc starting.

LIFT - Lift start for welding without HF when working on vehicles to protect electronics.

LIVE - Tungsten is live constantly - Gas flow will start when arc struck.

SPOT Options

Off - normal DC welding

SPOT - Spot welding with optional stitch time function

TACK - TACK welding with optional stitch time function

DC MANUAL - HOME SCREEN cont..

REMOTE Options



2T - Press trigger to start weld, release to finish weld.



4T - Press and hold trigger to start weld at start amps, release trigger to go to main amps. To finish weld - Press and hold trigger to go to end amps, release and weld will stop. If you wish to abort weld during main amps, quickly tap trigger and main arc will stop and post flow gas will run.



PEDAL - Press foot pedal to start weld, fully depress pedal to get 100% of amps shown in recommended settings.

I.E If main amperage setting was 120A, on a full depress of pedal you will get 120A, if pedal only pressed halfway you will get 60A



2T+F - Torch trigger operation for on/off with amperage control by slider / rotary knob on torch handle.



4T+F - Torch trigger latch operation same as 4T but with amperage control by slider / rotary knob on torch handle.



4TS - Torch trigger latch operation same as 4T with the function to switch between start and main amperage by quickly tapping trigger during main amps - Ideal for pipe welding where you want to switch to start amps to get continuous weld bead whilst repositioning or getting new filler rod.

PULSE Options

Off - No pulse settings in main weld settings screen

On - Pulse settings shown in main weld settings screen, These being:-

Pulse time % - Sets pulse time (width) as a percentage of total pulse

Pulse frequency - from 0.1Hz to 999.9Hz

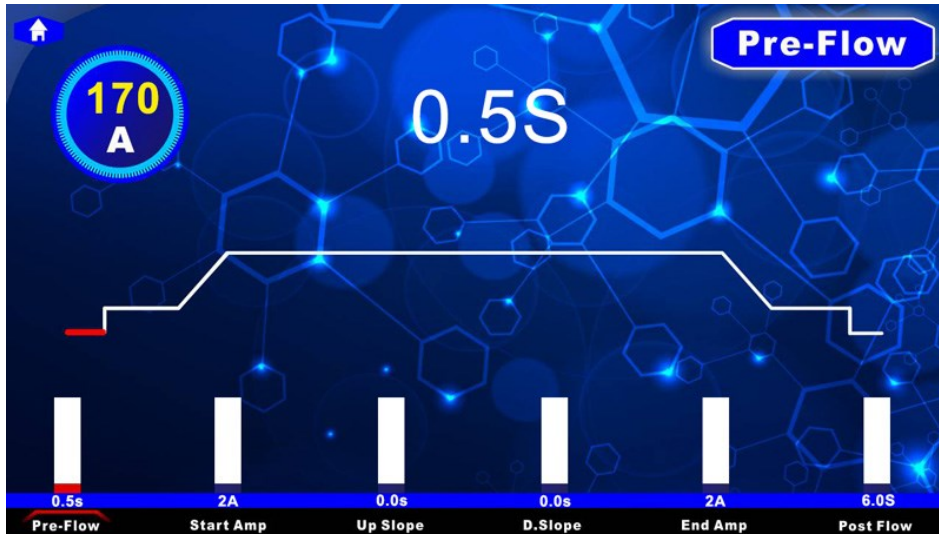
Pulse Amps % - Sets base amps as a percentage of main amps.

Main welding settings screen.

After setting home screen settings as required, now press the HOME button and the 2nd level screen will show as below.

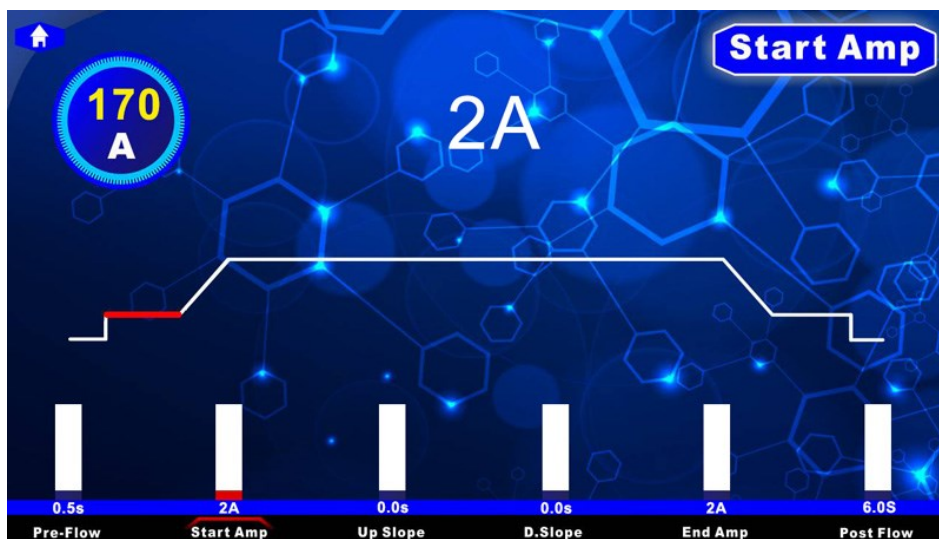
Pre-flow Gas

Use control knob to adjust required Pre-flow gas time, then press arrow button to move to next setting.
Adjustable between 0.0 - 60 seconds



Start amps

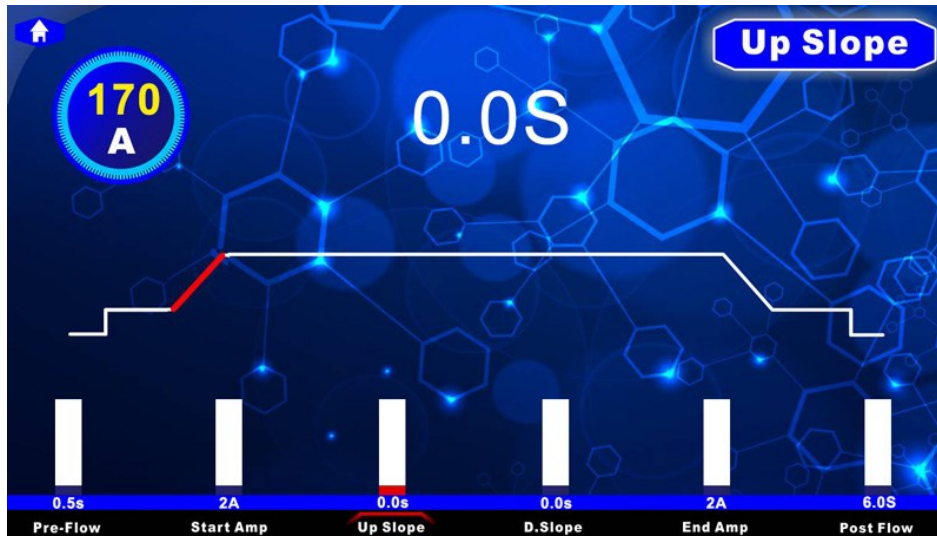
Use control knob to adjust required start amps then press arrow button to move to next setting.
Adjustable from 5A - 400A



Up slope

Use control knob to adjust Up-slope time, then press arrow button to move to next setting.

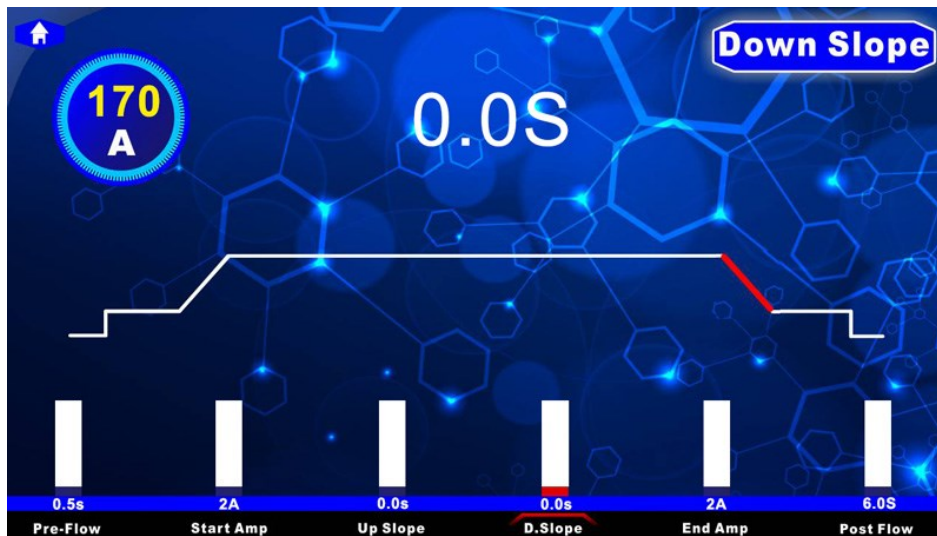
Adjustable between 0.0 - 30 seconds



Down slope

Use control knob to adjust Downslope time then press arrow button to move to next setting.

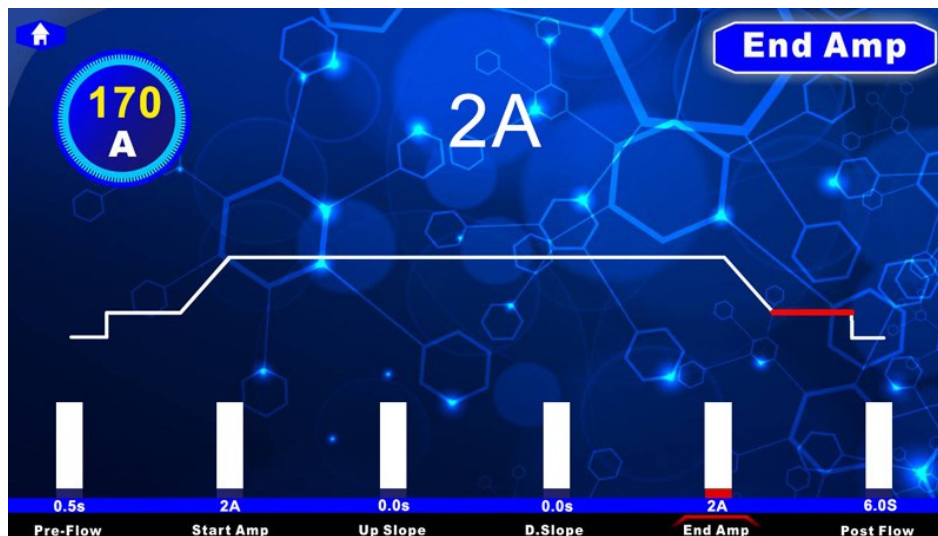
Adjustable between 0.0 - 60 seconds



End amps

Use control knob to adjust end amps, then press arrow button to move to next setting.

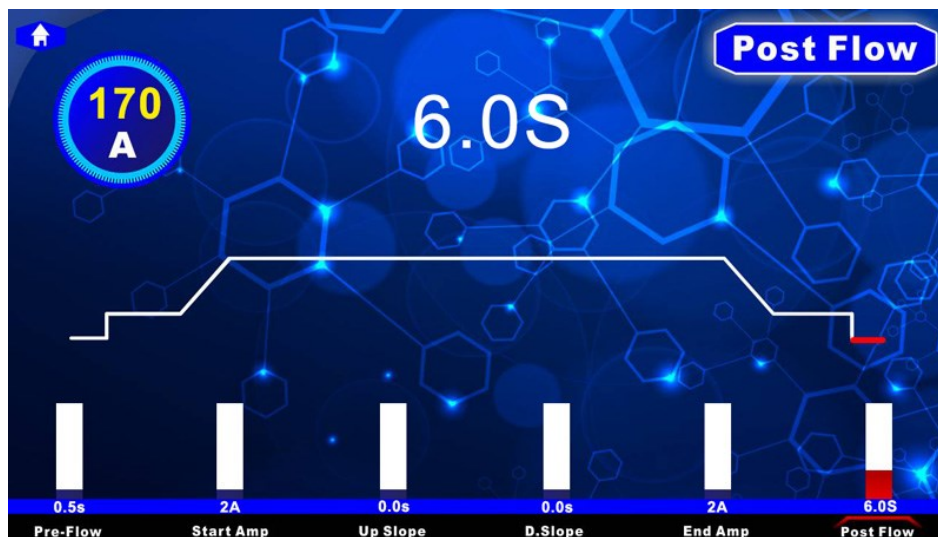
Adjustable between 5A - 400A



Post flow gas time

Use control knob to adjust post flow gas time then press arrow button to move to next setting.

Adjustable between 0.0 - 60 seconds



Once all settings have been set, you can start welding immediately or return to home screen by pressing home button and then you can adjust amperage or other settings if required.

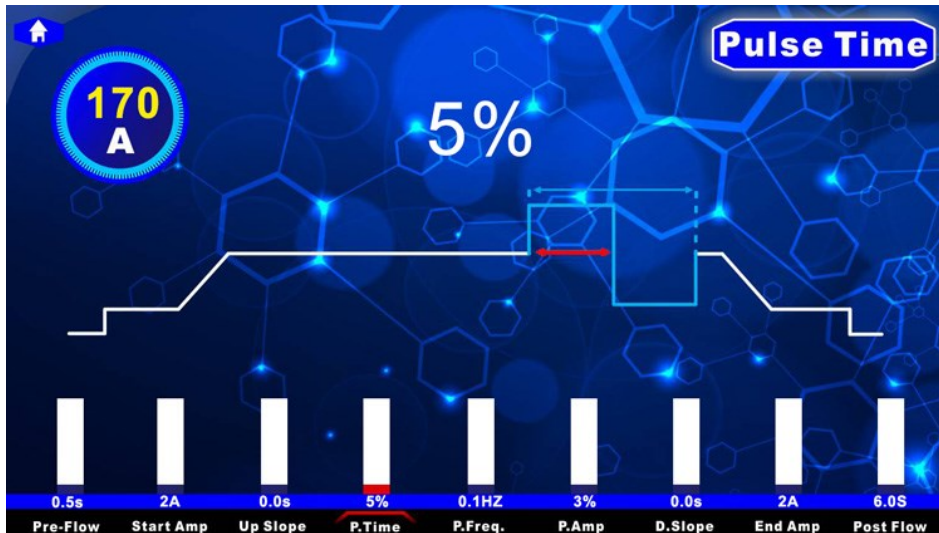
DC Manual with PULSE ON

After selecting PULSE on home screen you will now see 3 further options in DC manual 2nd screen.

Pulse Time

Use control knob to adjust required pulse time, then press arrow button to move to next setting.

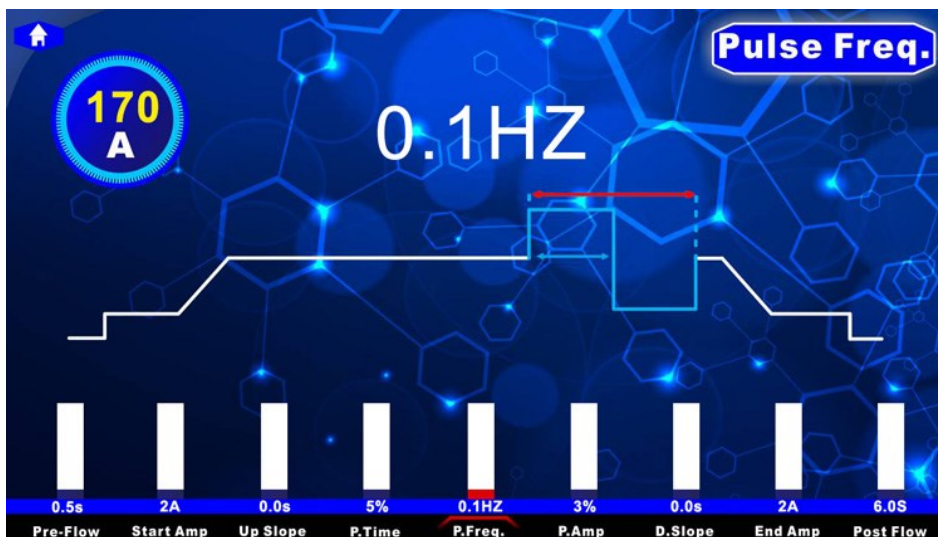
Adjustable between 5 - 95%



Pulse Frequency

Use control knob to adjust pulse frequency then press arrow button to move to next setting.

Adjustable between 0.1Hz - 999 Hz

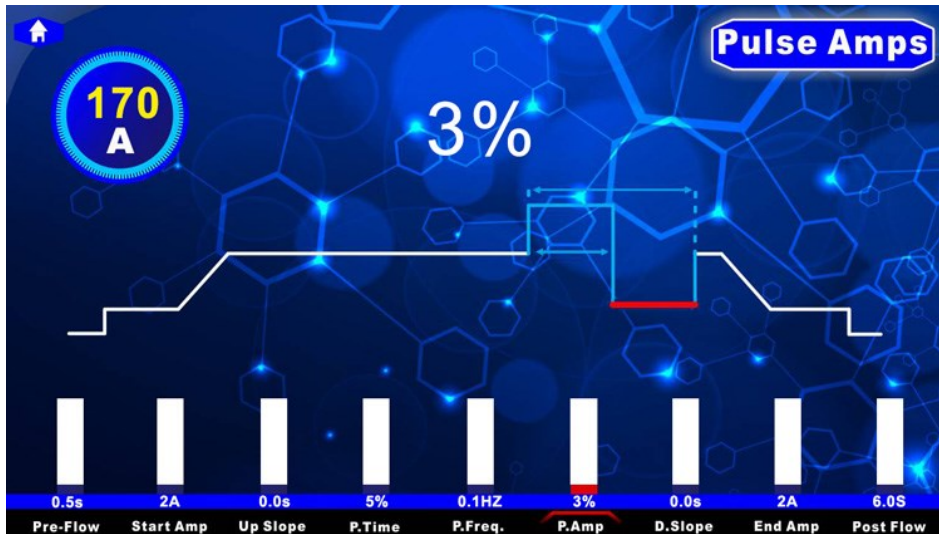


DC Manual with PULSE ON cont..

Pulse Amps

Use control knob to adjust required pulse amperage, then press arrow button to move to next setting.

Adjustable between 3 - 100%



Now you have set the 3 required pulse settings you can start your weld.

Brief explanation of pulse settings

Pulse time

When pulse welding you have the main (peak) and base (background) amperage. By adjusting the pulse time % you determine which one will be more prominent, the pulse or base. At a low % the base current will be on longer so you will reduce heat input. At a high % the peak current will be on longer so you increase heat input.

Pulse Frequency

This adjusts how often the pulse will happen per second, at 0.5Hz it will be a very slow pulse and you will be able to see the change, when welding at high frequency the sound of arc will change to a higher pitch and you hardly see the change in amperage as it is so fast.

Pulse Amps

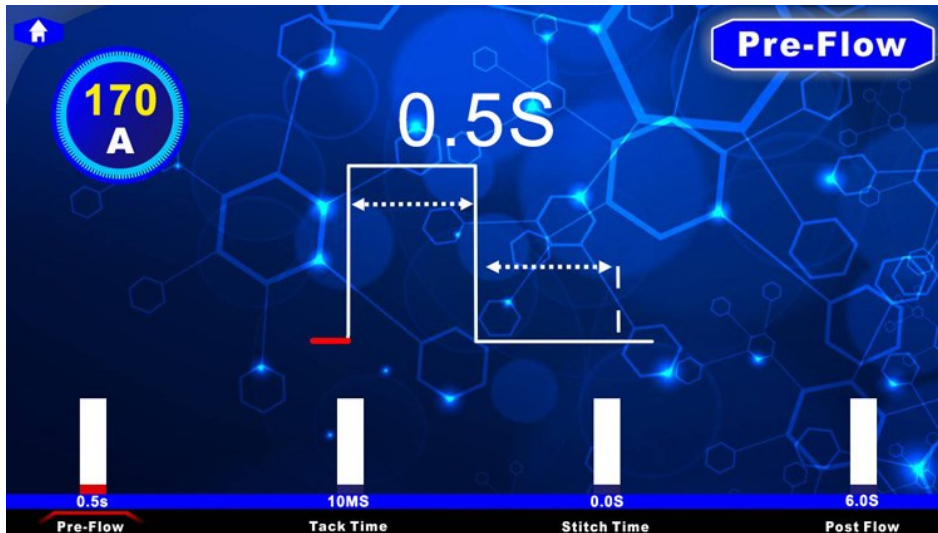
This sets the % of pulse vs base amps. I.E If main amperage (peak) is set to 120amps and you set at 50%, the base amps will be 60amps. Generally a setting of 50-75% base amps suits most jobs.

DC TACK Mode

Tack welding allows you to product one single fast tack weld for a selected time when trigger is pressed. You can also set a stitch time which will then set a delay time after first tack and then another tack weld will be started and this will be repeated for as long as trigger is pressed.

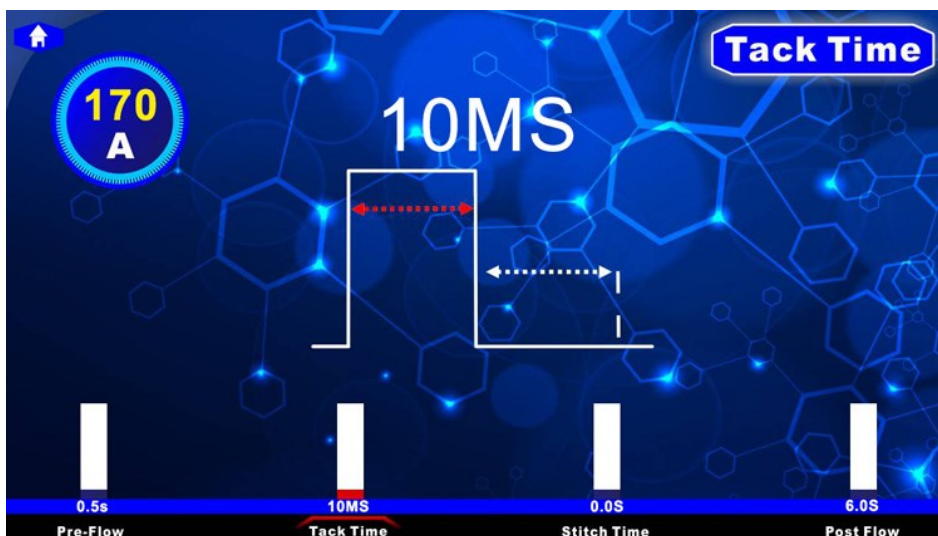
Pre-flow Gas

Use control knob to adjust required pre-flow gas, then press arrow button to move to next setting.
Adjustable between 0.0 - 60 seconds



Tack time

Use control knob to adjust required tack time then press arrow button to move to next setting.
Adjustable between 10ms - 250ms



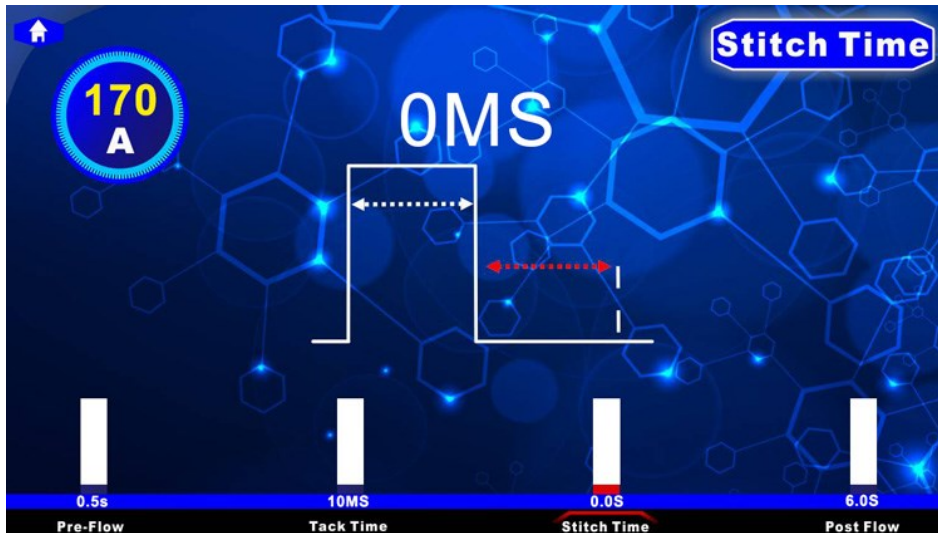
DC TACK Mode cont..

Stitch time

Use control knob to adjust required stitch time, then press arrow button to move to next setting.

If a stitch time of 0.0s is selected, then only one tack will happen on trigger press, once stitch time is above 0.0s then after first tack you will have this delay time and then another weld will be produced.

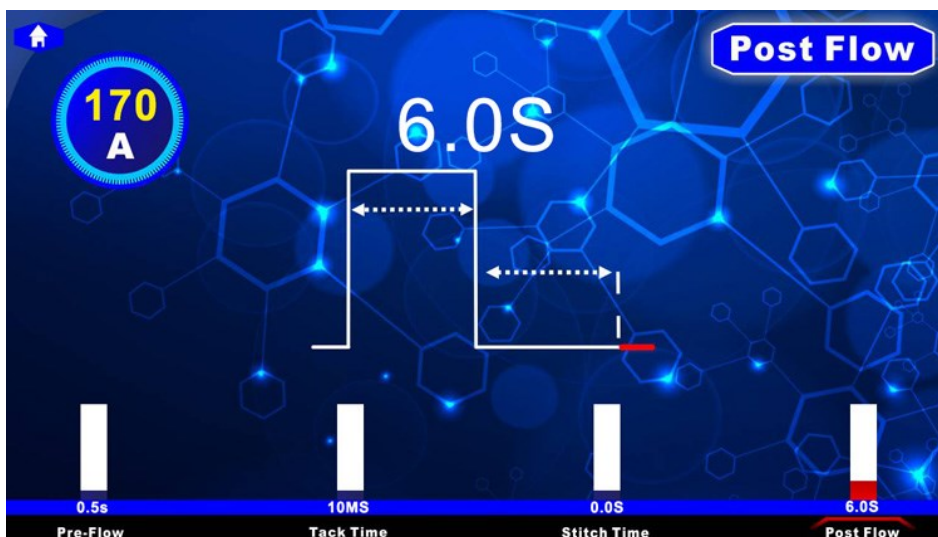
Adjustable between 10ms - 250ms



Post flow gas

Use control knob to adjust required post flow gas time.

Adjustable between 0.0 - 60 seconds



DC SPOT MODE

SPOT welding allows you to produce one single spot weld for a selected time when trigger is pressed.

You can also set a stitch time which will then set a delay time after first spot and then another spot weld will be started and this will be repeated for as long as trigger is pressed.

This is setup in same way as tack weld screen, however spot time is between 0.1s and 10s and the stitch time is 0 - 5s.

AC MANUAL MODE

R-Tech AC TIG manual mode gives you full control over every weld parameter available.

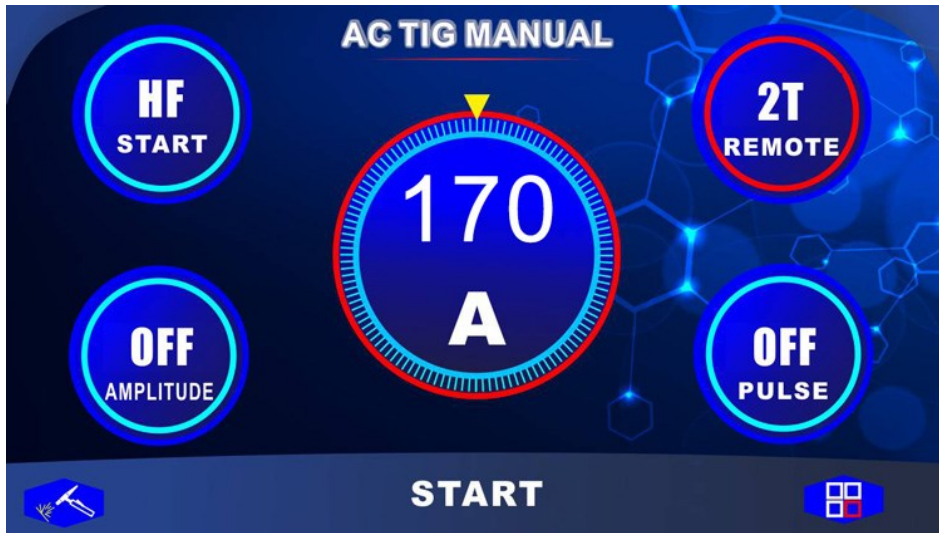
AC Modes available

AC Standard (No pulse)

AC Pulse

AC Advanced Pulse

AC SPOT weld



AC MANUAL - HOME SCREEN

The above image shows the home page for AC manual mode.

From this menu press the arrow button to highlight in red setting to be changed, then use control knob to select desired setting.

HF Options

HF start - normal auto arc starting.

LIFT - Lift start for welding without HF when working on vehicles to protect electronics.

LIVE - Tungsten is live constantly - Gas flow will start when arc struck.

AC MANUAL - HOME SCREEN cont..

REMOTE Options



2T - Press trigger to start weld, release to finish weld.



4T - Press and hold trigger to start weld at start amps, release trigger to go to main amps. To finish weld - Press and hold trigger to go to end amps, release and weld will stop. If you wish to abort weld during main amps, quickly tap trigger and main arc will stop and post flow gas will run.



PEDAL - Press foot pedal to start weld, fully depress pedal to get 100% of amps shown in recommended settings.

I.E If main amperage setting was 120A, on a full depress of pedal you will get 120A, if pedal only pressed halfway you will get 60A



2T+F - Torch trigger operation for on/off with amperage control by slider / rotary knob on torch handle.



4T+F - Torch trigger latch operation same as 4T but with amperage control by slider / rotary knob on torch handle.



4TS - Torch trigger latch operation same as 4T with the function to switch between start and main amperage by quickly tapping trigger during main amps - Ideal for pipe welding where you want to switch to start amps to get continuous weld bead whilst repositioning or getting new filler rod.



SPOT - Spot welding with optional stitch time function

AC PULSE Options

Off - No pulse settings in main weld settings screen

On - Pulse settings shown in main weld settings screen

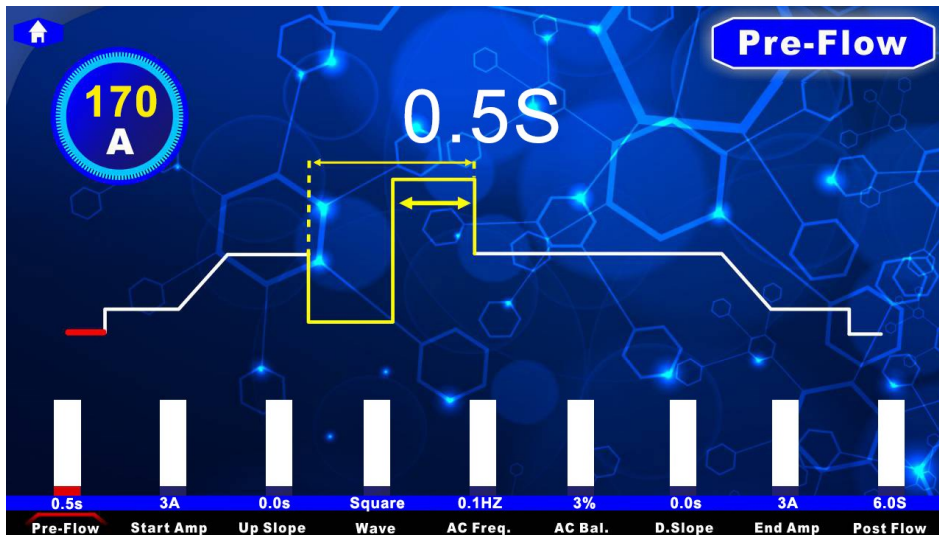
ADV - Advanced mixed mode pulse AC & DC

Main welding settings screen.

After setting home screen settings as required, now press the HOME button and the 2nd level screen will show as below.

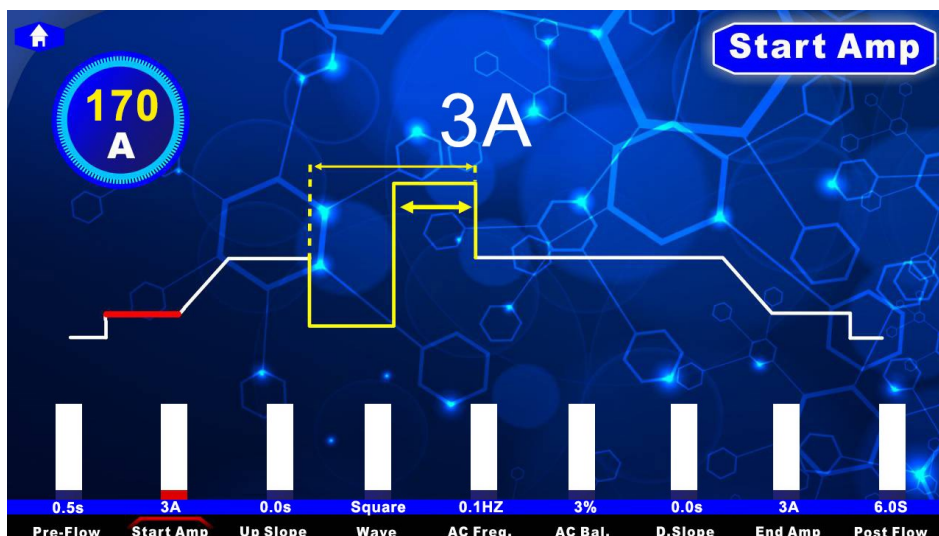
Pre-flow Gas

Use control knob to adjust required Pre-flow gas time, then press arrow button to move to next setting.
Adjustable between 0.0 - 60 seconds



Start amps

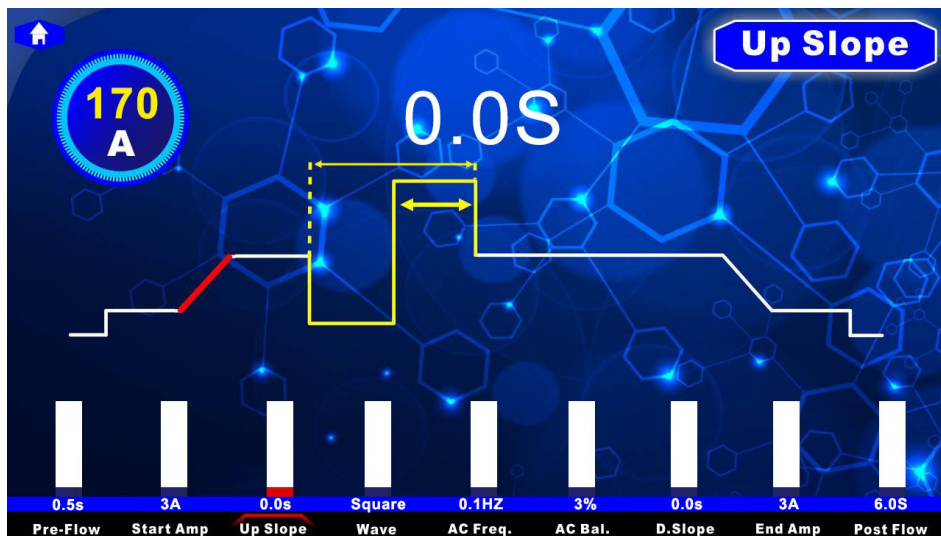
Use control knob to adjust required start amps then press arrow button to move to next setting.
Adjustable between 10A - 400A



Up slope

Use control knob to adjust Up-slope time, then press arrow button to move to next setting.

Adjustable between 0.0 - 60 seconds



Waveform AC

Use control knob to select AC waveform required then press arrow button to move to next setting.

AC Wave modes available

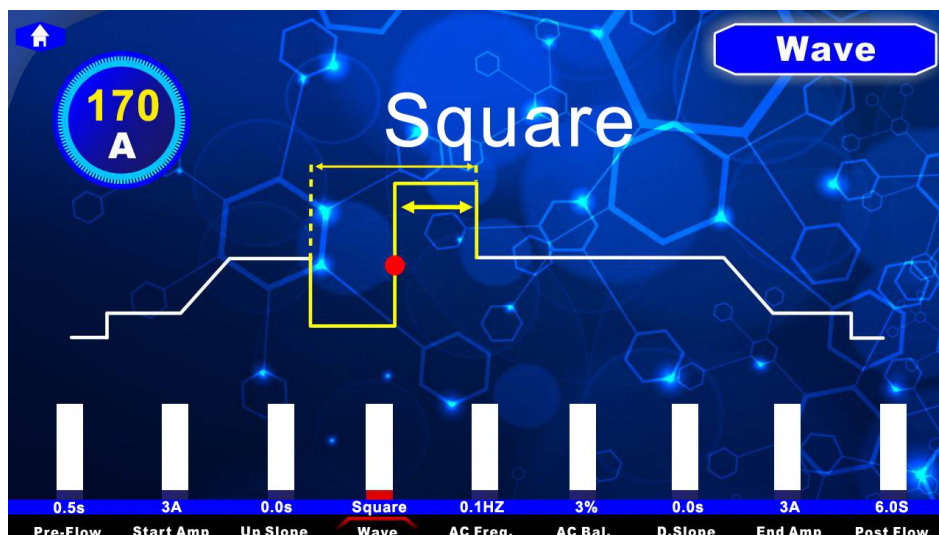
Squarewave - Most commonly used

Sine

Sine-T

Trapezoidal

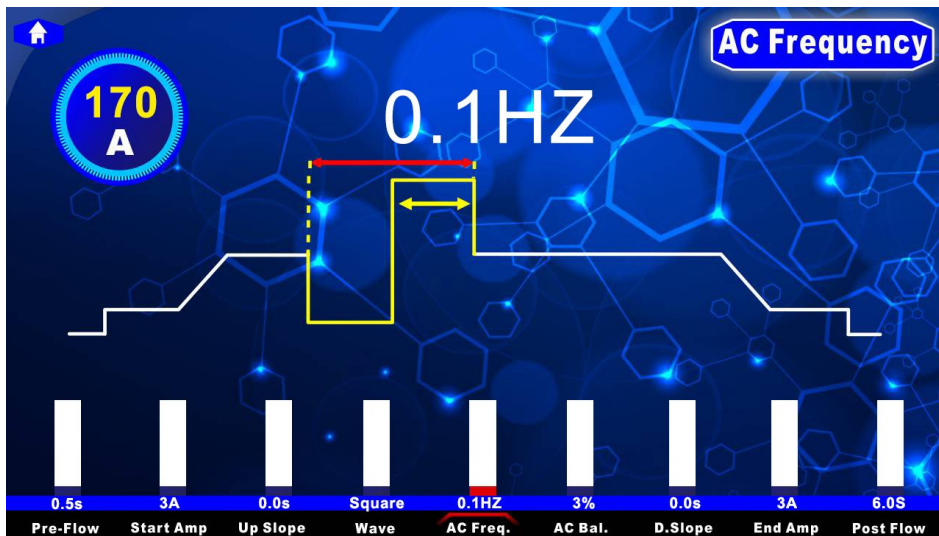
Triangular



AC Frequency

Use control knob to adjust AC Frequency, then press arrow button to move to next setting.

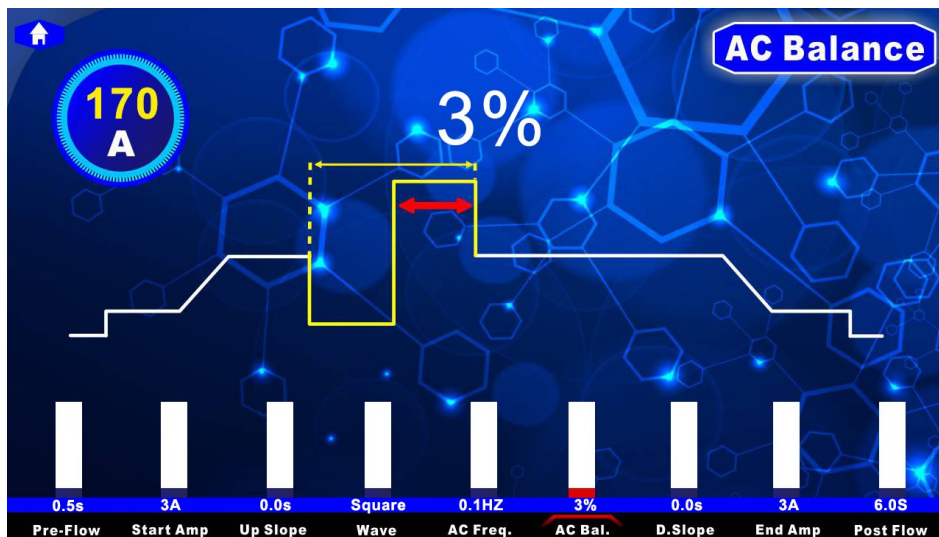
Adjustable between 20Hz - 400Hz



AC Balance

Use control knob to adjust AC balance %, then press arrow button to move to next setting.

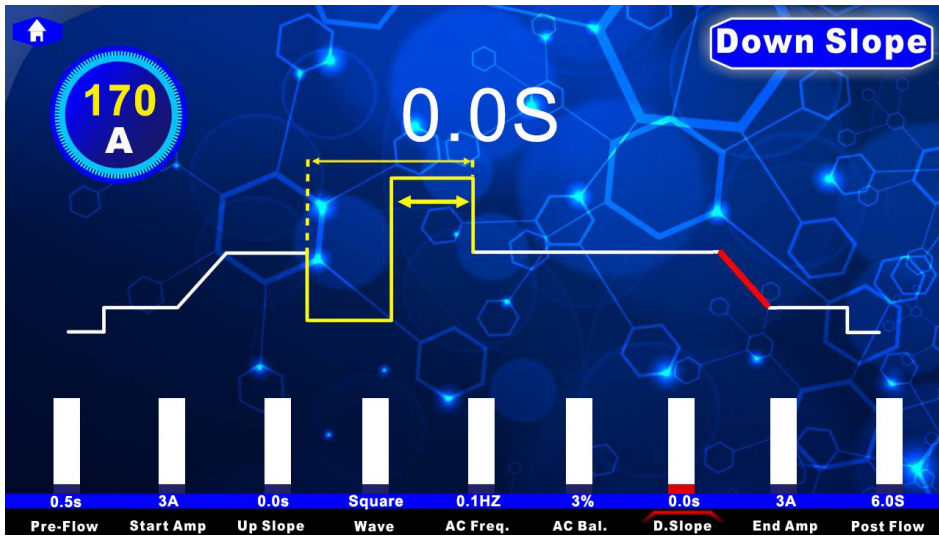
Adjustable between 5 - 70%



Down slope

Use control knob to adjust Downslope time then press arrow button to move to next setting.

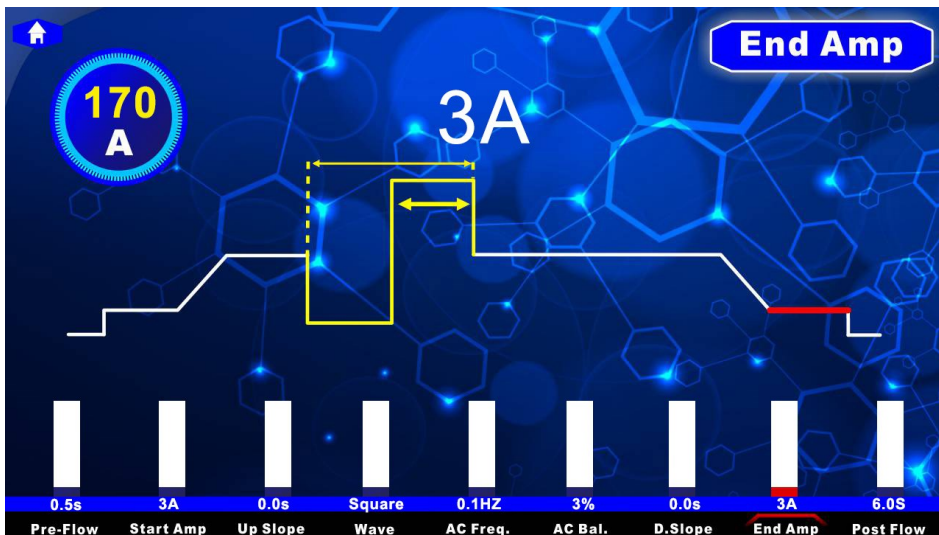
Adjustable between 0.0 - 60 seconds



End amps

Use control knob to adjust end amps, then press arrow button to move to next setting.

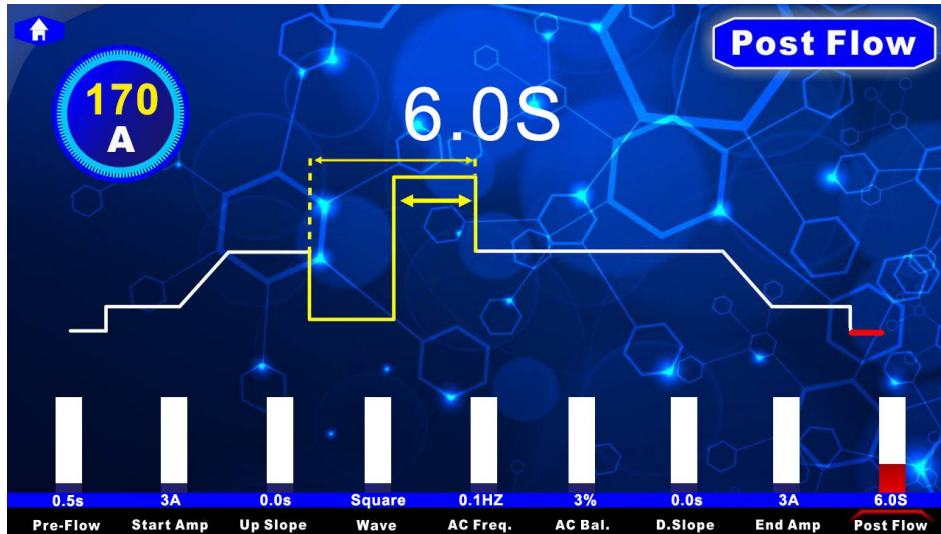
Adjustable between 10 - 400A



Post flow gas time

Use control knob to adjust post flow gas time then press arrow button to move to next setting.

Adjustable between 0.0 - 60 seconds



Once all settings have been set, you can start welding immediately or return to home screen by pressing home button and then you can adjust amperage or other settings if required.

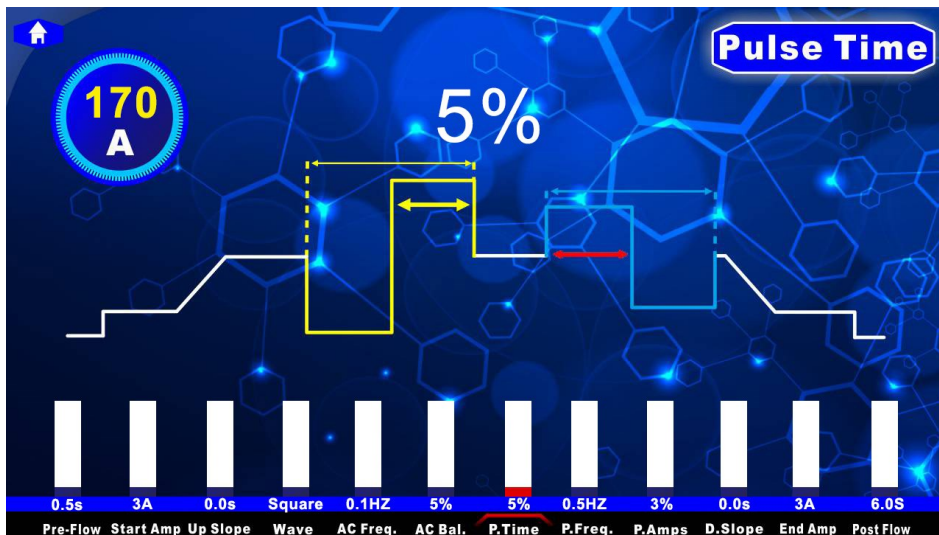
AC Manual with PULSE ON

After selecting PULSE ON in home screen you will now see 3 further options in AC manual 2nd screen.

Pulse Time

Use control knob to adjust required pulse time, then press arrow button to move to next setting.

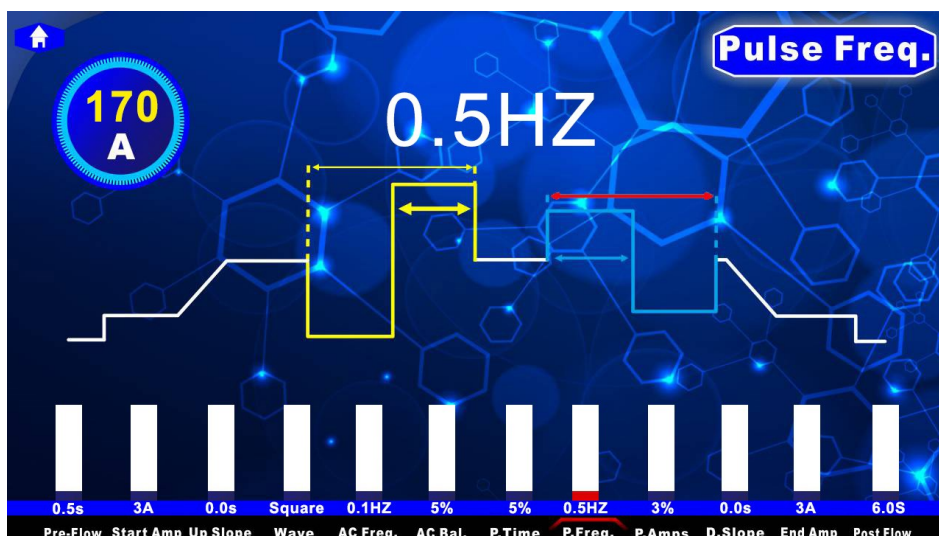
Adjustable between 5 - 95%



Pulse Frequency

Use control knob to adjust pulse frequency then press arrow button to move to next setting.

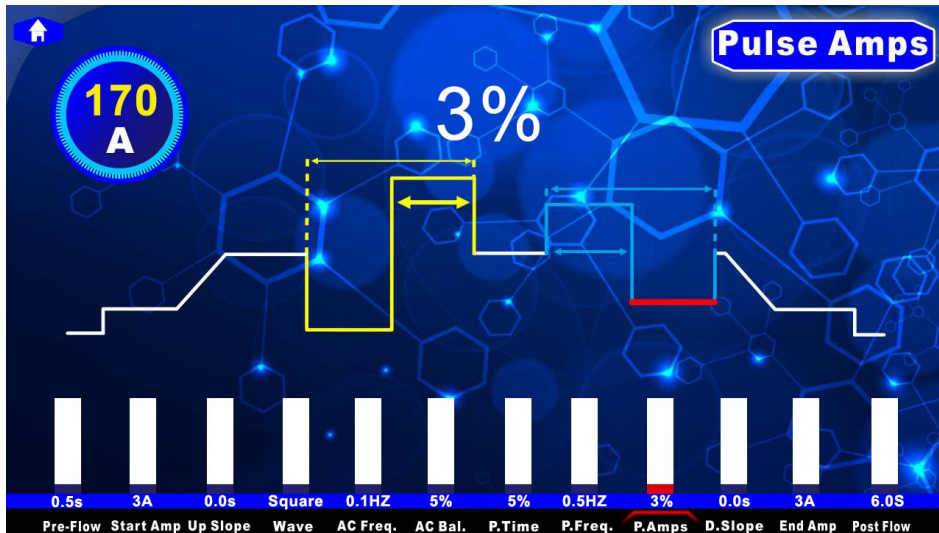
Adjustable between 0.1Hz - 500Hz



AC Manual with PULSE ON cont..

Pulse Amps

Use control knob to adjust required pulse amperage, then press arrow button to move to next setting.
Adjustable between 3 - 100%



Now you have set the 3 required pulse settings you can start your weld.

Brief explanation of pulse settings

Pulse time

When pulse welding you have the main (peak) and base (background) amperage. By adjusting the pulse time % you determine which one will be more prominent, the pulse or base. At a low % the base current will be on longer so you will reduce heat input. At a high % the peak current will be on longer so you increase heat input.

Pulse Frequency

This adjusts how often the pulse will happen per second, at 0.5Hz it will be a very slow pulse and you will be able to see the change, when welding at high frequency the sound of arc will change to a higher pitch and you hardly see the change in amperage as it is so fast.

Pulse Amps

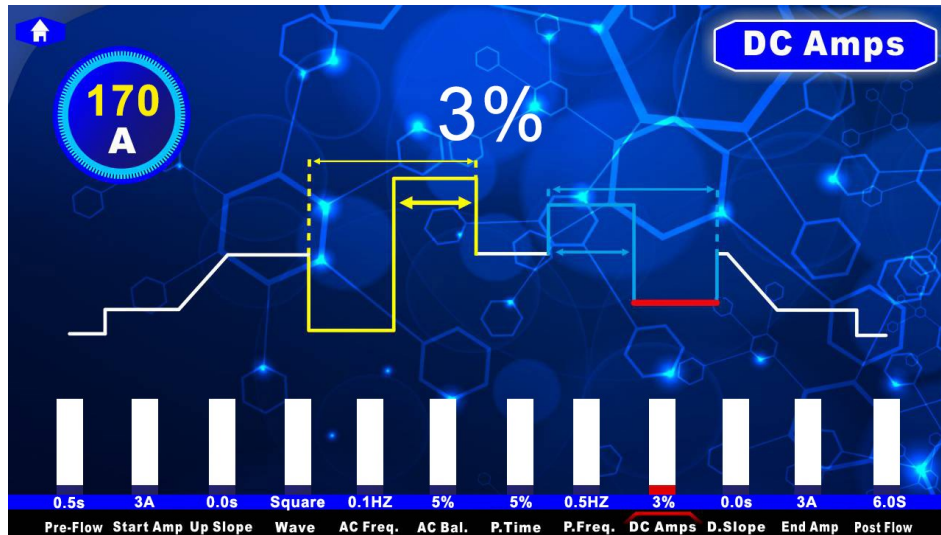
This sets the % of pulse vs base amps. I.E If main amperage (peak) is set to 120amps and you set at 50%, the base amps will be 60amps. Generally a setting of 50-75% base amps suits most jobs.

AC Manual with ADVANCED PULSE ON - MIXED AC/DC PULSE

After selecting ADVANCED PULSE ON in home screen you will now see 1 changed option in AC manual
2nd screen - DC AMPS

DC AMPS

Use control knob to adjust required DC Amps, then press arrow button to move to next setting.
Adjustable between 3 - 100%



AC AMPLITUDE CONTROL

Independent amplitude control is a very advanced feature and has many benefits, this allows the EN and EP amperage to be set independently allowing the user to direct more or less power into the workpiece and also take power / heat away from the tungsten.

Increasing EN amperage while maintaining or reducing EP amperage narrows the arc allowing narrower welds and use of a smaller tungsten.

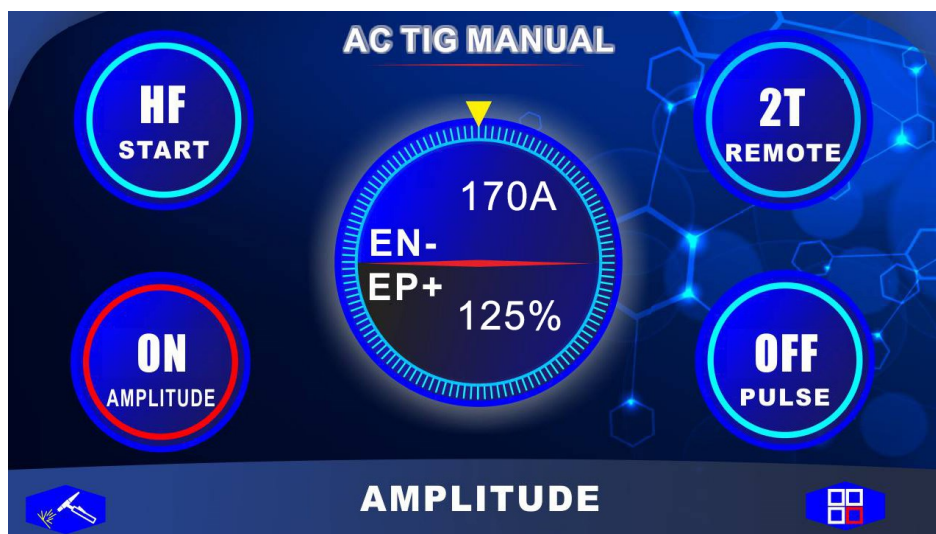
A good example is welding thicker aluminium, you can enter a high EN amps and a much lower EP into the tungsten. This will provide faster travel speeds, better penetration and faster filler rod insertion.

How to setup

AC Mode - Manual Home screen

Use arrow buttons to highlight amplitude in red, then use control knob to switch between off/on.

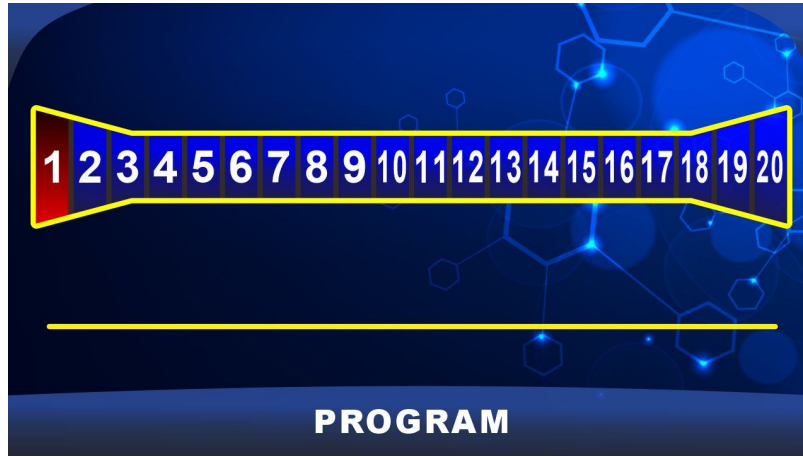
Once switched on, you will see EN- and EP+ appear in middle of display, you can now use arrow buttons to highlight these in red and use the control knob to adjust accordingly.



Memory store save and load function

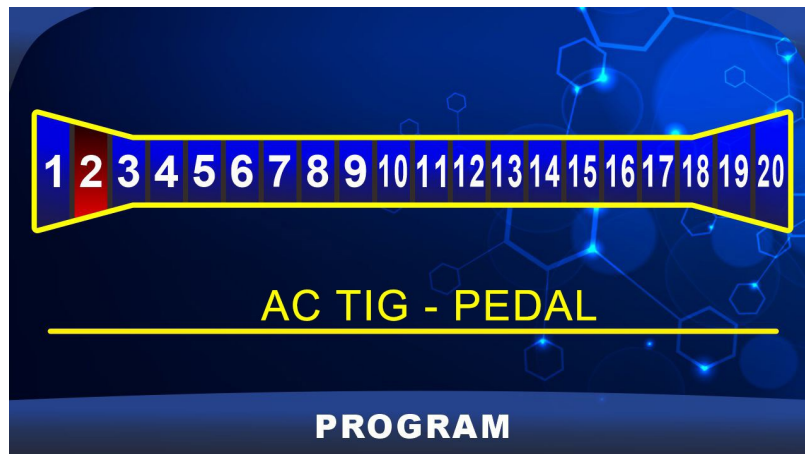
20 memory stores are available so you can save your preferred weld settings.

To access program save menu, press the SAVE/LOAD button, the following screen will appear.



Use the arrow buttons to move to required save slot.

Now press and hold the SAVE button for 3 seconds, the saved program will turn YELLOW signalling the program has now been saved.



To load a program, scroll to program required and press SAVE/LOAD button

MMA - STICK WELDING

The TIG401-TFT features 4 main MMA STICK operating modes

- DC STICK in EASY mode
- AC STICK in EASY mode
- DC STICK in MANUAL mode
- DC STICK in MANUAL mode

DC & AC EASY MODE

R-Tech EASY SET mode takes the guesswork out of MMA welding. You normally had to enter all weld settings before beginning to weld on manual welders, we have done this for you.

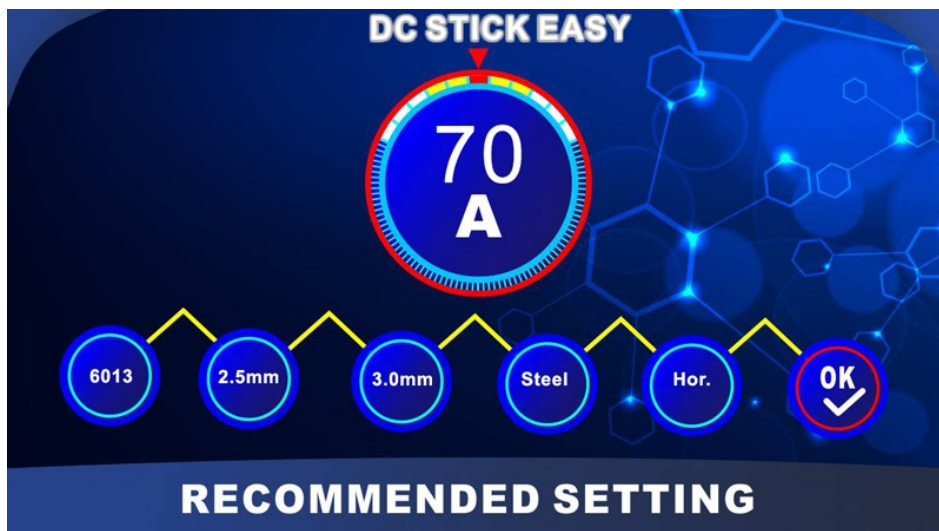
You simply select the following from easy to understand screen.

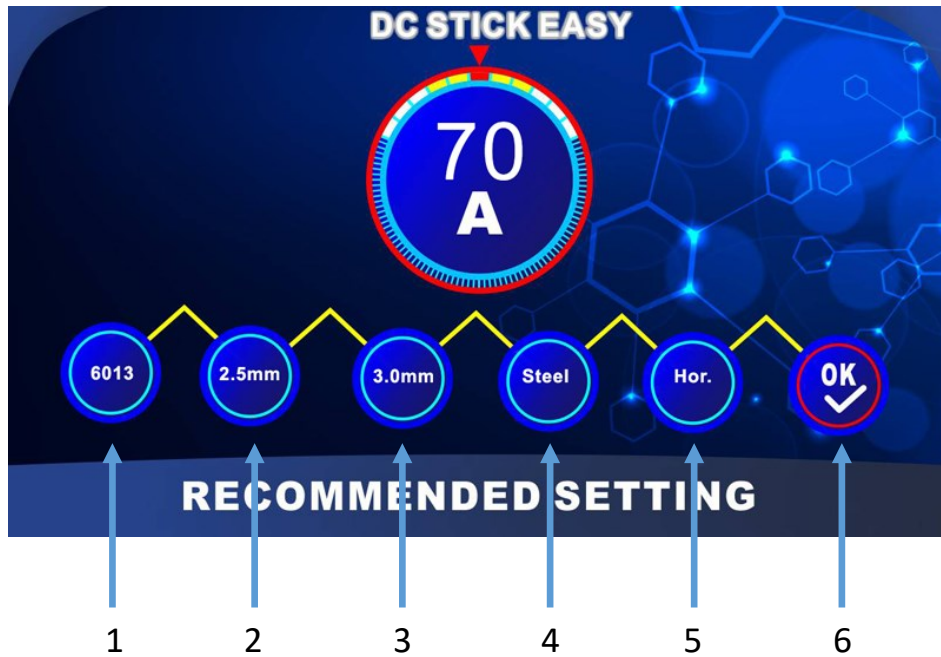
- Electrode type
- Electrode size
- Material thickness
- Material type
- Welding position

Once above settings have been selected, the machine will set main amperage power.

Select DC STICK or AC STICK using SELECT button.

NOTE: In MMA EASY SET MODE, VRD is turned off, welding terminals are LIVE - ensure welding electrode holder / electrode are not in contact with earth / workpiece.





Selecting EASY SET parameters

Use the left and right arrow buttons to move between each setting - once setting is highlighted in RED you use the control knob to change. Once you have entered all 5 parameters for weld, move onto OK so it goes RED (You can also press home button), the recommended welding amperage will be shown in middle of display.

You can trim this amperage using control knob + / - 10 amps to suit you personal preference of travel speed / weld bead characteristics.

1. ELECTRODE TYPE

DC - 6010, 6011, 6013, 7018, 308, 309, 316
 AC - 6011, 6013, 7018

2. ELECTRODE SIZE

2.4mm, 3.2mm, 4.0mm - Note: Rods shown depending on machine maximum amperage.

3. MATERIAL THICKNESS

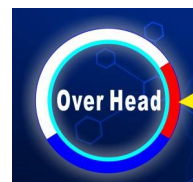
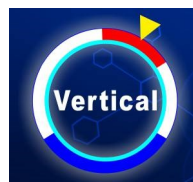
1.5mm, 2.0mm up to 8mm depending on machine maximum amperage.

4. MATERIAL TYPE

DC Mode - Steel or Stainless steel (SS), AC Mode - Steel

5. Welding position

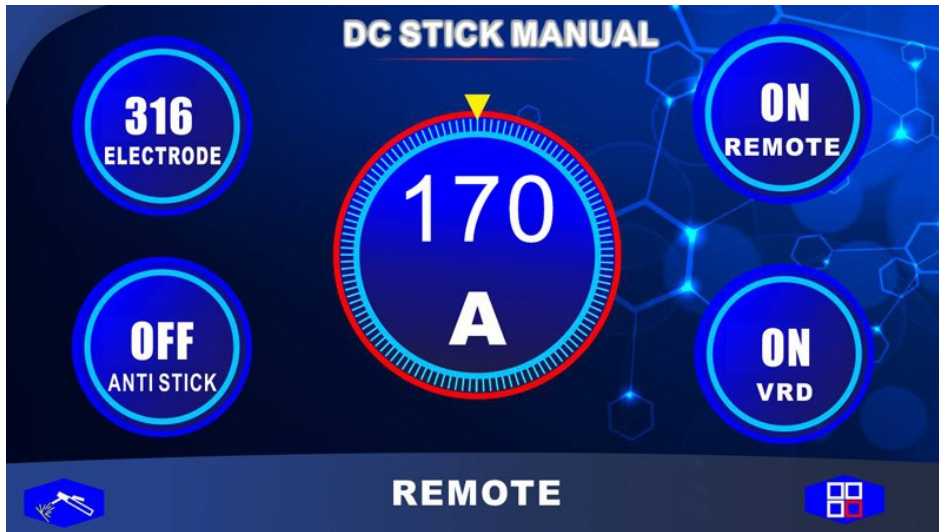
Flat, Horizontal, Vertical and Over head



MMA - STICK WELDING MANUAL MODE

DC STICK in MANUAL mode

AC STICK in MANUAL mode



DC & AC MANUAL - HOME SCREEN

The above image above shows the home page for STICK manual mode.

In this menu press the arrow buttons to highlight in red the setting to be changed, then use control knob to select desired setting.

ELECTRODE TYPE

DC - 6010, 6011, 6013, 7018, 308, 309, 316

AC - 6011, 6013, 7018

ANTI-STICK

OFF / ON

When switched on the machine will use inbuilt technology to stop electrode from sticking to material.

REMOTE

OFF / ON

When switched on, you can control the amperage remotely by foot pedal or other remote device.

V.R.D

OFF - Full OCV (80-90VDC) voltage at welding terminals.

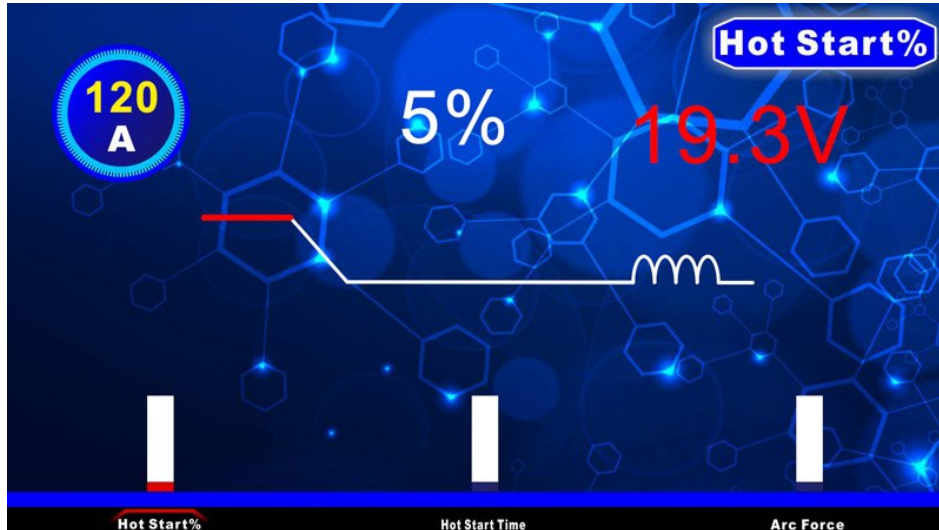
ON - Welding voltage at terminals is reduced to 20VDC (+/- 3V) for user safety. Once electrode touches workpiece the arc is established to full voltage, once arc is stopped, the machine returns to 20VDC

NOTE: In MMA MODE, welding terminals are LIVE - ensure welding electrode holder / electrode are not in contact with earth / workpiece.

MMA - STICK WELDING MANUAL MODE cont..

After setting home screen settings as required, now press the HOME button and the 2nd level screen will show as below.

DC MODE - STICK SETTINGS



You can now select the following 3 parameters.

User arrow buttons to highlight setting in red, then turn control knob to adjust.

Hot Start %

This controls the extra amount of amperage at beginning of weld to help stop rod sticking.
Adjustable from 0- 100%

Hot Start Time

This controls how long the hot start will operate when arc is struck
Adjustable from 0 - 5 seconds.

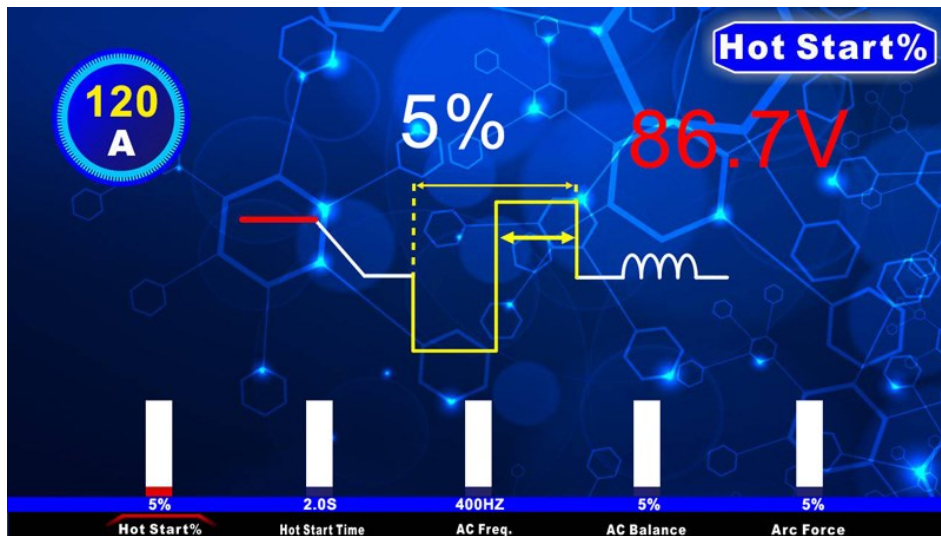
Arc Force %

This controls the arc response for when an electrode is held closer/away from workpiece.
The arc force automatically adjusts amperage / voltage to maintain stable arc.
Adjustable from 0- 100%

AC MODE - STICK SETTINGS

AC stick mode has 2 more settings when compared to DC mode.

AC Frequency & AC Balance



You can now select the following 2 parameters.

User arrow buttons to highlight setting in red, then turn control knob to adjust.

AC Frequency Hz

Use control knob to adjust AC Frequency, then press arrow button to move to next setting.

Adjustable between 20Hz - 400Hz

AC Balance %

Use control knob to adjust AC balance %, then press arrow button to move to next setting.

Adjustable between 5 - 70%

Fan control system

The machine has 3 intelligent fan control modes.

ON - Fan on all the time.

MODE1 - Fan by thermal sensor

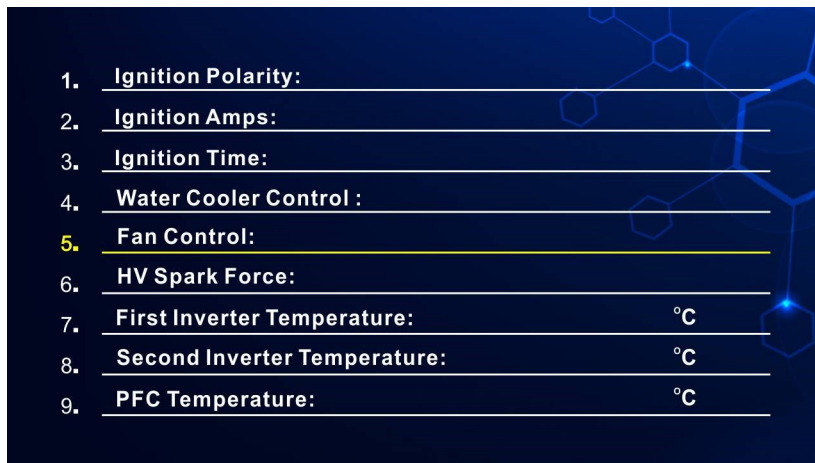
The machine has inbuilt inverter temperature monitoring and when a certain temperature is achieved the fan will switch on to cool machine down and stop when cooling has been sufficient.

This saves on power consumption and also gives a quieter working environment especially when working on thin material, so only using low amperage power.

MODE2 - Fan on arc ignition.

The machine will start the fan as soon as an arc has been established, it will continue to run for 1 minute after you have finished welding.

To access fan on demand menu, press and hold the RIGHT ARROW and HOME button for 3 seconds and release - the following screen will appear. Press arrow buttons to move to option 5 - Now use control knob to select desired mode - then press HOME button to return to main menu.



Water cooler control system

The machine has 3 water cooler control modes.

OFF - No power to rear 240V aux power outlet.

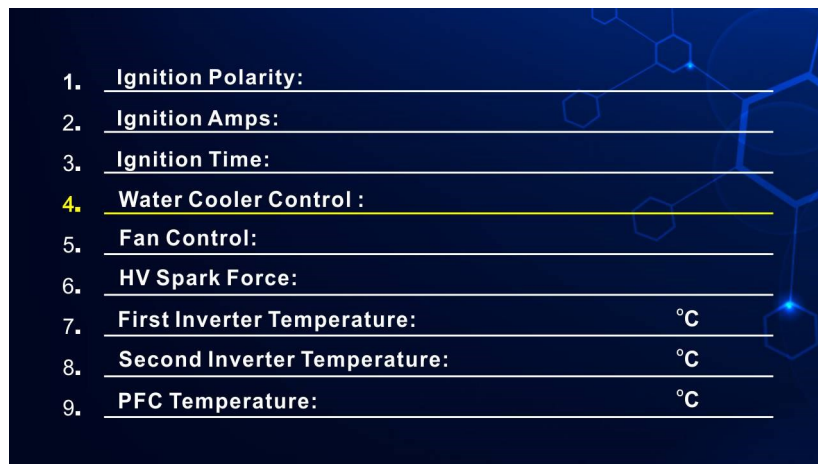
ON - Water cooler on all the time

The machine will give 240V continuous output to rear power outlet

MODE1 - Water cooler turned on once arc is struck

The machine will start the water cooler as soon as an arc has been established, it will continue to run for 1 minute after you have finished welding..

To access water cooler menu, press and hold the RIGHT ARROW and HOME button for 3 seconds and release - the following screen will appear. Press arrow buttons to move to option 4 - Now use control knob to select desired mode - then press HOME button to return to main menu.



Error codes

The machine will show an error code if a problem is detected.



E01 - Overheating

Allow machine to cool down and check fan vents for obstructions

E02 - Overcurrent

Reset machine and if problem persists contact R-Tech support team.

E05 - Shorted Trigger

This will show after the torch trigger or foot pedal has been pressed and the arc has not been established after 4 seconds.

This is to stop the HF start system being active if trigger / foot pedal is pressed in error or switch has gone closed circuit.

			
WARNING	<ul style="list-style-type: none"> Do not touch electrically live parts or electrode with skin or wet clothing. Insulate yourself from work and ground. 	<ul style="list-style-type: none"> Keep flammable materials away. 	<ul style="list-style-type: none"> Wear eye, ear and body protection.
Spanish AVISO DE PRECAUCION	<ul style="list-style-type: none"> No toque las partes o los electrodos bajo carga con la piel o ropa mojada. Aíslese del trabajo y de la tierra. 	<ul style="list-style-type: none"> Mantenga el material combustible fuera del área de trabajo. 	<ul style="list-style-type: none"> Protéjase los ojos, los oídos y el cuerpo.
French ATTENTION	<ul style="list-style-type: none"> Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. Isolez-vous du travail et de la terre. 	<ul style="list-style-type: none"> Gardez à l'écart de tout matériel inflammable. 	<ul style="list-style-type: none"> Protégez vos yeux, vos oreilles et votre corps.
German WARNUNG	<ul style="list-style-type: none"> Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! Isolieren Sie sich von den Elektroden und dem Erdboden! 	<ul style="list-style-type: none"> Entfernen Sie brennbares Material! 	<ul style="list-style-type: none"> Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese ATENÇÃO	<ul style="list-style-type: none"> Não toque partes elétricas e electrodos com a pele ou roupa molhada. Isole-se da peça e terra. 	<ul style="list-style-type: none"> Mantenha inflamáveis bem guardados. 	<ul style="list-style-type: none"> Use proteção para a vista, ouvido e corpo.
Japanese 注意事項	<ul style="list-style-type: none"> 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 施工物やアースから身体が絶縁されている様にして下さい。 	<ul style="list-style-type: none"> 燃えやすいものの側での溶接作業は絶対にしてはなりません。 	<ul style="list-style-type: none"> 目、耳及び身体に保護具をして下さい。
Chinese 警告	<ul style="list-style-type: none"> 皮肤或湿衣物切勿接触带电部件及焊缝。 使你自已离地面和工件绝缘。 	<ul style="list-style-type: none"> 把一切易燃物品移离工作场所。 	<ul style="list-style-type: none"> 佩戴眼、耳及身体劳动保护用具。
Korean 위험	<ul style="list-style-type: none"> 전도체나 용접봉을 젖은 행걸 또는 피부로 절대 접촉치 마십시오. 모재외 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> 인화성 물질을 접근 시키지 마십시오. 	<ul style="list-style-type: none"> 눈, 귀와 몸에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> لا تلمس الأجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجند الجسم أو بالمعالم المبللة بالماء. ضع عازلا على جسمك خلال العمل. 	<ul style="list-style-type: none"> ضع المواد القابلة للاشتعال في مكان بعيد. 	<ul style="list-style-type: none"> ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
<ul style="list-style-type: none"> ● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone. 	<ul style="list-style-type: none"> ● Turn power off before servicing. 	<ul style="list-style-type: none"> ● Do not operate with panel open or guards off. 	WARNING
<ul style="list-style-type: none"> ● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	<ul style="list-style-type: none"> ● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio. 	<ul style="list-style-type: none"> ● No operar con panel abierto o guardas quitadas. 	Spanish AVISO DE PRECAUCION
<ul style="list-style-type: none"> ● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	<ul style="list-style-type: none"> ● Débranchez le courant avant l'entretien. 	<ul style="list-style-type: none"> ● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	French ATTENTION
<ul style="list-style-type: none"> ● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	<ul style="list-style-type: none"> ● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!) 	<ul style="list-style-type: none"> ● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	German WARNUNG
<ul style="list-style-type: none"> ● Mantenha seu rosto da fumaça. ● Use ventilação e exaustão para remover fumo da zona respiratória. 	<ul style="list-style-type: none"> ● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas. 	<ul style="list-style-type: none"> ● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas. 	Portuguese ATENÇÃO
<ul style="list-style-type: none"> ● ヒュームから顔を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。 	<ul style="list-style-type: none"> ● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切ってください。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したまま機械操作をしないで下さい。 	Japanese 注意事項
<ul style="list-style-type: none"> ● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。 	<ul style="list-style-type: none"> ● 維修前切斷電源。 	<ul style="list-style-type: none"> ● 氣表板打開或沒有安全罩時不準作業。 	Chinese 警告
<ul style="list-style-type: none"> ● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 판넬이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● ابتعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	<ul style="list-style-type: none"> ● أقطع التيار الكهربائي قبل القيام بأية صيانة. 	<ul style="list-style-type: none"> ● لا تشغيل هذا الجهاز إذا كانت الإغطية الحديدية الواقية ليست عليه. 	Arabic تحذير

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.