parweld

XTT 212Di

ENGLISH OPERATOR MANUAL
SVENSKA ANVÄNDARINSTRUKTIONER
FRANÇAIS MANUEL
DEUTSCH BETRIEBSANLEITUNG
ITALIANO MANUALE UTENTE
ESPAÑOL MANUAL DEL OPERADOR

ISSUE 2

Welcome

Thank you for choosing Parweld. This Owner's Manual is designed to help you get the most out of your Parweld products. Please take time to read the Safety Precautions. They will help you protect yourself against potential hazards in the workplace. With proper maintenance this equipment should provide years of reliable service. All our systems conform to ISO9001: 2015 and are independently audited by NQA.

The product range carries the CE and UKCA mark, and is constructed in accordance with European directives and the product specific standards where they apply.

Further Information

Parweld is the UK's leading supplier of welding equipment and accessories. For more information about Parweld's complete range visit:

www.parweld.com

Contents

1.0 Safety Precautions

ELECTRIC SHOCK can kill.
Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semi automatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

Do not touch live electrical parts.

Wear dry, sound insulating gloves and body protection.

Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work ground.

Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the work piece or ground. For these conditions, use the following equipment in order presented: 1) a semi automatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, And, do not work alone!

Disconnect input power before installing or servicing this equipment. Lockout/tagout input power according to Safety Standards.

Properly install and ground this equipment according to national and local standards.

Always verify the supply ground - check and ensure that input power cable ground wire is properly connected to ground terminal in the receptacle outlet.

When making input connections, attach proper grounding conductor first - double-check connections.

Frequently inspect input power cable for damage or bare wiring - replace cable immediately if damaged - bare wiring can kill.

Turn off all equipment when not in use.

Do not use worn, damaged, under sized, or poorly spliced cables.

Do not drape cables over your body.

If earth grounding of the work piece is required, ground it directly with a separate cable.

Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.

Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.

Wear a safety harness if working above floor level.

Keep all panels and covers securely in place.

Clamp work cable with good metal-to-metal contact to work piece or worktable as near the weld as practical.

Insulate work clamp when not connected to a work piece to prevent contact with any metal object.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

FUMES AND GASES can be hazardous.

Do not breathe the fumes.

Ensure local extraction is effective or use a personal filtration system. Welding fume can be carcinogenic.

Read and understand the Material Safety Data Sheets (MSDS's) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and de-greasers.

Work in a confined space only while wearing an air-supplied respirator. Always have a trained watch person nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.

Do not weld / cut in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.

Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ARC RAYS can burn eyes and skin.

Arc rays from the welding / cutting process produce intense, visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes when welding, cutting or watching.

Wear approved safety glasses with side shields under your helmet.

Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.

Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection. Welding / cutting on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of an electrode to metal objects can cause sparks, explosion, overheating or fire. Check and be sure the area is safe before doing any welding / cutting.

WELDING AND CUTTING can cause fire or explosion.
Remove all flammables within 10m of the welding / cutting arc. If this is not possible, tightly cover them with approved covers.

Do not weld or cut where flying sparks can strike flammable material.

Protect yourself and others from flying sparks and hot metal.

Be alert that welding / cutting sparks and hot materials from welding / cutting can easily go through small cracks and openings to adjacent areas.

Watch for fire, and keep a fire extinguisher nearby. Be aware that welding or cutting on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.

Do not weld or cut on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to local regulations

Connect work cable to the work as close to the welding / cutting area as practical to prevent current from travelling along possibly unknown paths and causing electric shock, sparks, and fire hazards.

Cut off welding wire at contact tip when not in use.

Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap. Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding / cutting.

FLYING METAL can injure eyes.
Welding, cutting, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool they can throw off slag. Wear approved safety glasses with side shields even under your welding helmet.

BUILDUP OF GAS can injure or kill.
Shut off shielding gas supply when not in use. Always ventilate confined spaces or use approved air-supplied respirator.

HOT PARTS can cause severe burns.
Do not touch hot parts with bare handed.

Allow cooling period before working on gun or torch.

To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

MAGNETIC FIELDS can affect pacemakers.
Pacemaker wearers keep away.

Wearers should consult their doctor before going near arc welding, cutting, gouging, or spot welding operations.

NOISE can damage hearing.
Noise from some processes or equipment can damage hearing.

Wear approved ear protection if noise level is high.

Shielding gas cylinders contain gas under high pressure.

CYLINDERS can explode if damaged.
Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.

Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping. Keep cylinders away from any welding or other electrical circuits. Never drape a welding torch over a gas cylinder. Never allow a welding electrode to touch any cylinder. Never weld or cut on a pressurized cylinder - explosion will result. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.

Turn face away from valve outlet when opening cylinder valve.

Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.

Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA)

WARNING

When using an open arc process, it is necessary to use correct eye, head, and body protection.

2.0 Product Description

The XTT 212Di is a multi-mode TIG welding machine using inverter technology. A micro controller allows the machine to be quickly and easily configured for TIG weling in DC or multiple AC modes . Within each welding mode there are features and functions which improve the welding performance and ease of use as detailed below.

TIG processes can be rapidly configured through the use of synergic programs where the base settings are already programmed into the machine and the user only needs to provide information on the material type and thickness.

TIG welding controls:- Synergic or manual parameter setting for Pre Gas, Upslope, Welding current, pulse parameters, AC frequency, downslope and post gas time.

MMA Controls:- Manual setting of welding Power. Adjustable Hotstart which assists electrode striking by boosting the start current.

Arc Force increases the current when the arc gets too short, to prevent the electrode sticking to the job; the level of arc force is user adjustable. You may wish to increase arc force so you can dig the electrode into the work piece for improved penetration; the level of arc force selected will depend upon the type of electrode and joint configuration.

3.0 Technical Specifications

The XTT 212Di, is a compact type machine with integrated wire feed unit for use with single phase 110/230V supply with smart input switching.

Process	Feature	XTT 212Di	
	Input Voltage	110V+/10%	230V+/-10%
	Hz	50/60	
	Phases	1	
	KVA	6.4	
	Generator Size	9 KVA	
	No-load Voltage (V)	45V	
	Fuse Rating (A)	32	16
	IP Rating	IP23S	
	Weight (Kg)	12.0	
TIG	DC Input Current (A)	29	23.3
	DC Input effective Current (A)	18.3	11.7
	AC Input Current (A)	30.3	23.7
	AC Input effective Current (A)	19.2	13
	DC Welding Current (A)	5~140	5~200
	AC Welding Current (A)	10~140	10~200
	Welding Voltage (V)	10.4~15.6	10.4~18.0
MMA	DC Input Current (A)	29.5	25.1
	DC Input effective Current (A)	17.5	13.7
	AC Input Current (A)	31.9	27.3
	AC Input effective Current (A)	20	16.2
	DC Welding Current (A)	5~100	5~170
	AC Welding Current (A)	10~100	10~170
	Welding Voltage (V)	20.4~24	20.4~26.8

Duty Cycle (DC)

	110V input			230V input		
TIG	40%	60%	100%	25%	60%	100%
	140A	110A	85A	200A	130A	100A
MMA	35%	60%	100%	30%	60%	100%
	100A	75A	60A	170A	120A	90A

Duty Cycle (AC)

	110V input			230V input		
TIG	40%	60%	100%	30%	60%	100%
	140A	110A	85A	200A	140A	110A
MMA	40%	60%	100%	35%	60%	100%
	100A	80A	60A	170A	130A	110A

4.0 Installation

Read entire installation section before starting installation.

SAFETY PRECAUTIONS

ELECTRIC SHOCK can kill.

Only qualified personnel should perform this installation.

Only personnel that have read and understood the Operating Manual should install and operate this equipment.

Machine must be grounded per any national, local or other applicable electrical regulations.

The machine power switch is to be in the OFF position when installing work cable and torch and when connecting other equipment.

4.1 Location

Position the power source so that its cooling air inlets and outlets are not obstructed.

A. 100mm (4in.) minimum
B. 100mm (4in.) minimum

4.2 Input and Grounding Connection

WARNING

Before starting the installation, check that your power supply is adequate for the voltage, amperage, phase, and frequency specified on the Machine nameplate.

The 110/230 volt 50 Hz machine is supplied with a 3 m input cable and without plug, ensure that you connect a plug that is suitably rated for the power draw of the machine and the environmental location.

Have a qualified electrician connect the input plug.

5.0 Description of Controls and Torch Connections

1. Power Switch for Incoming Mains
2. QF Incoming Gas Connection TIG
3. Incoming power cable
4. TIG Torch / MMA work lead Socket
5. Work Lead Connector TIG /MMA Electrode holder.
6. TIG Torch Gas Connector

7. TIG Torch Trigger Connector
8. Advanced function selection button
9. Save button
10. Multifunction Control Knob
11. Digital Display

6.0 Operation

6.1 Use of Controls

Multifunction Control Knob.

Rotate and Select

Rotate left or right to highlight an option on the screen.
Press to select
Press and hold to step back in menu tree

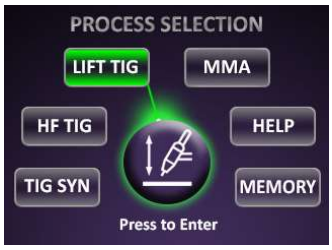
6.2 Language of Operation

6.3 Process Selection

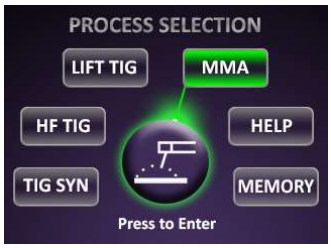
TIG Synergic TIG Welding Setup

HF Start TIG Welding Setup (Manual)

Lift Start TIG Welding Setup (Manual)



MMA Welding Setup (Manual)



7.0 TIG Welding Setting the Machine

7.1 TIG Torch Installation

Connect the torch as show below, ensure the torch power cable is connected to the Negative polarity connection, the gas nut should be connected the threaded gas outlet and the Trigger plug located into the trigger socket. this diagram can be viewed in the help menu under setup

Pure Argon gas should be used and the is connected to the rear of the machine using the hose supplied.

7.2 TIG Torch Trigger type

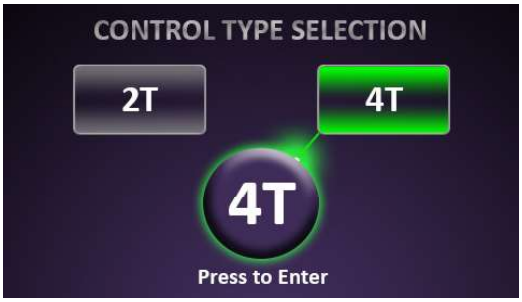
Check the correct trigger type is configured in the Help menu

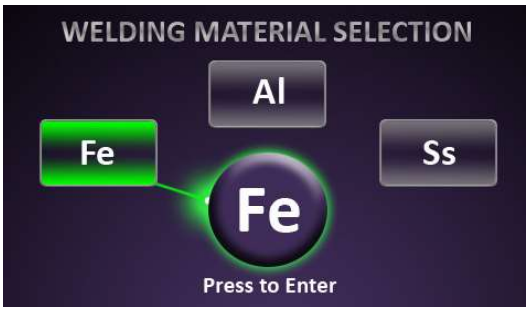
Select torch

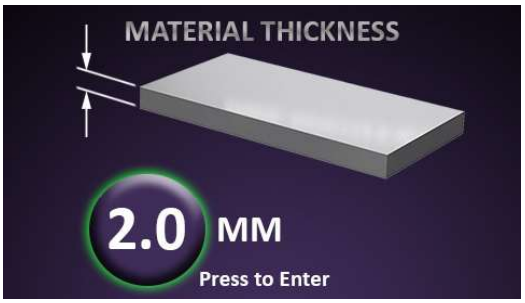
Select the correct trigger type,
For 1 or 3 button trigger select the left hand option.
For wheel type current control select the middle option.
For Foot control select the right hand option.

7.3 Synergic TIG Welding SetUp

Follow the screen prompts to complete the Synergic machine set up. Synergic Setting allows rapid setting of the machine based on material type and thickness, with HF starting.
Example:

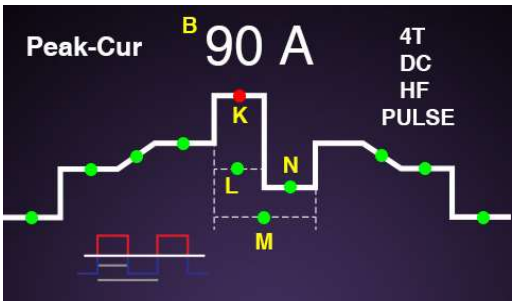






7.4 Manual TIG Welding Set Up

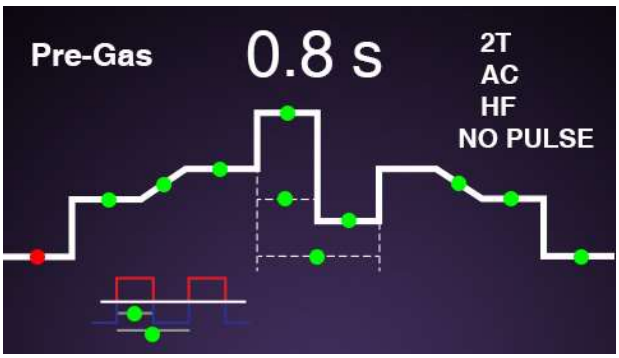
Follow the screen prompts to complete the machine set up. Manual Setting allows access to all the TIG parameters. Following is an example of menu navigating for manual setup.



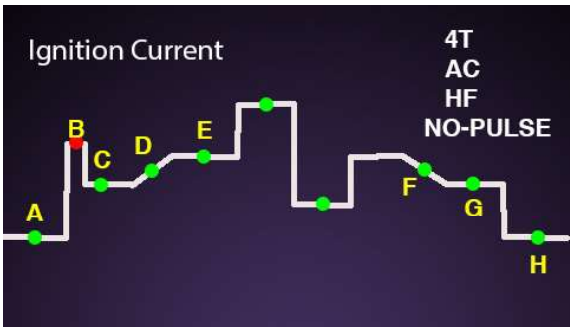
Rotate the selector knob to move the red dot up and down the graph. Press and release the selector knob to make the red dot flash, you can now adjust the selected parameter. Press and release the selector knob again to set and move on.

Note not all parameters will be available dependent upon the welding mode selected (AC or DC, 2T or 4T etc)

Pregas adjustable from 0.1 to 10.0 seconds. The value is displayed in the display

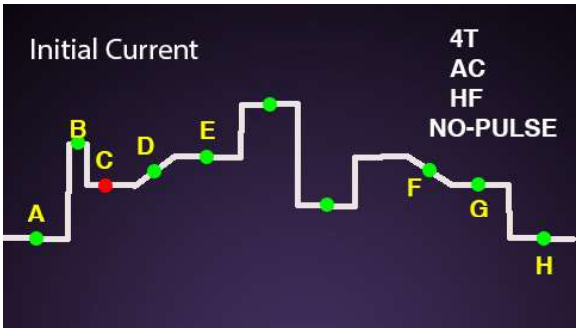


Ignition current. This is the power used to start the arc, it is present only during the starting of the arc. Larger tungstens perform better with a higher start current The minimum value is 40A.



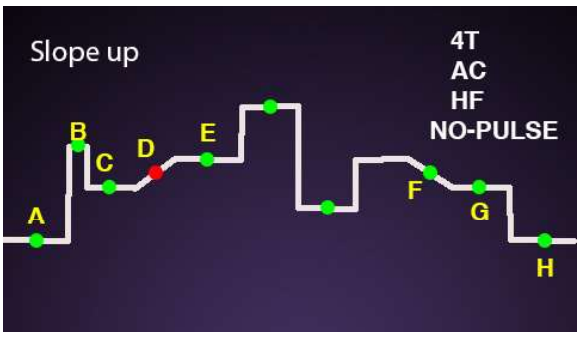
Initial current . This can be adjusted from 5 to 200A (10-200A in AC) The value is displayed on the display. Setting the initial current lower than the main welding current gives a slow start to the weld. Setting the value higher than the main welding means you can pre-heat the job quickly before welding.

Note this function only operates in 4T switch mode.

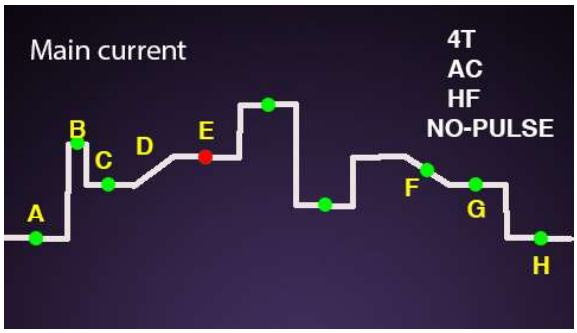


Slope up time This can be adjusted from 0 to 10s. The value is displayed on the display This is the time taken for the welding current to adjust to the main current.

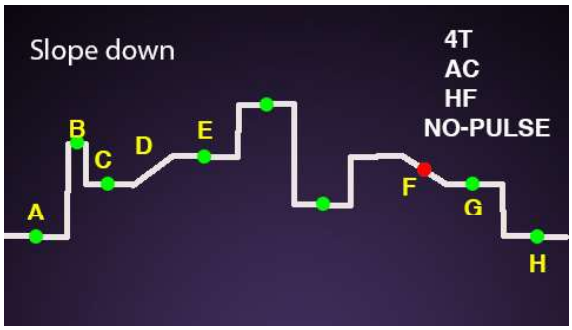
Note this function only operates in 4T switch mode.



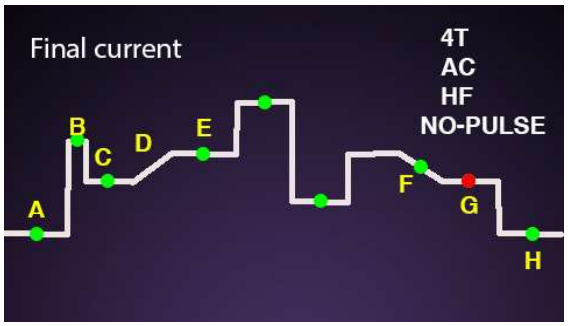
Main welding current ,This can be adjusted from 5 to 200A (10-200A in AC). The value is displayed on the display. Refer to the TIG welding guide for a recommended welding current.



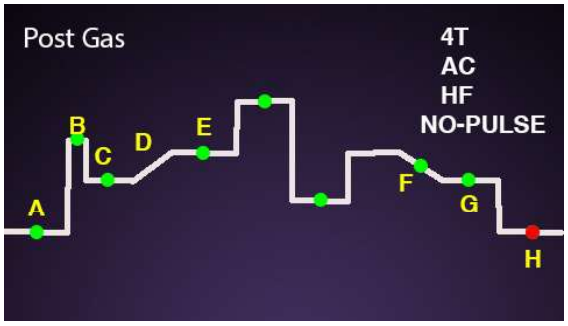
Slope down time This can be adjusted from 0 to 10s. The value is displayed on the display 1s is a good initial setting.



Final current. This can be adjusted from 5 to 200A. (10-200A in AC) Final current allows for crater filling or welding to a open edge. **Note this function only operates in 4T switch mode.**



Post Gas time This can be adjusted from 0.1 to 10s. The value is displayed on the display Post gas ensures weld protection until the weld has cooled.



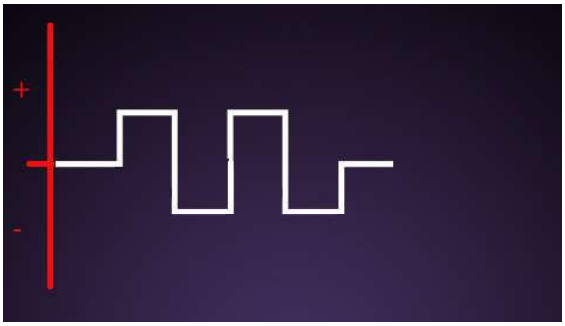
7.5 TIG Advanced functions

Note functions in the advanced menu are relative to the main selection and some or all may be greyed out.

7.5.1 AC Wave form,

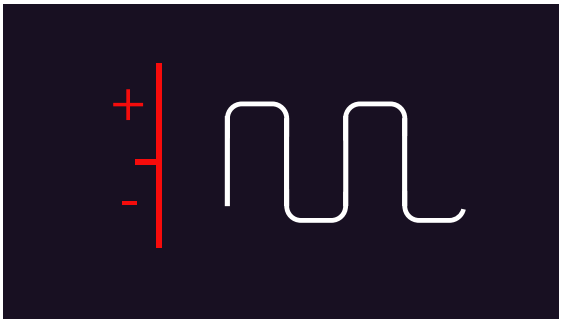
Available if AC TIG is selected

Off- Defaults to standard Square wave. Gives a stable arc and maximises the time in heating and cleaning modes. The arc develops a buzzing noise due to the rapid switching from positive to negative

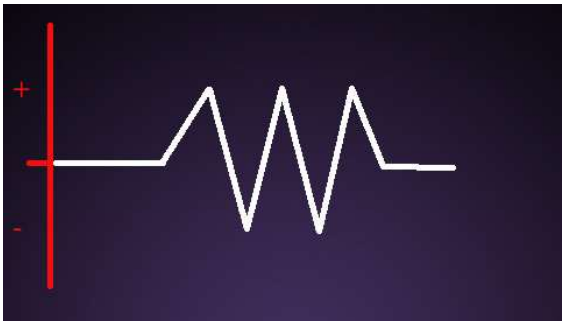


On Switches to wave form selected in the Right window

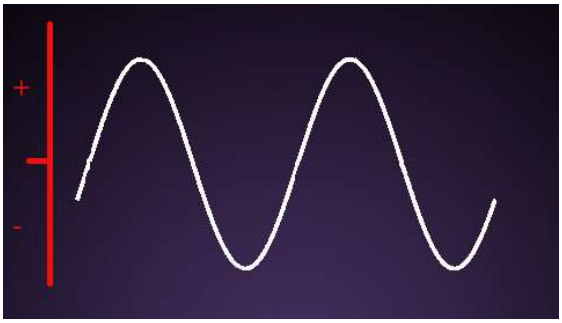
Soft square, gives a slightly softer arc than square wave with slightly more fluidity in the weld pool



Triangle Wave, Low heat input wave is ideal for thin section materials using a higher AC frequency,

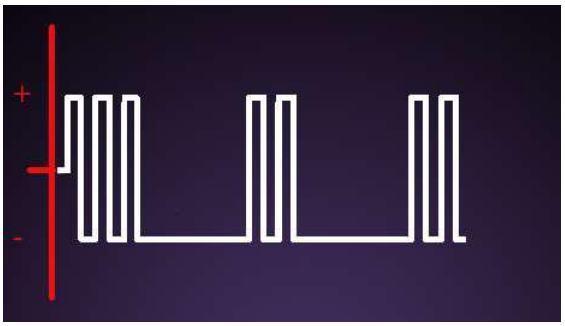


Sine Wave , Gives a soft smooth arc with reduced noise levels. Heat input is between square wave and Triangle wave with a slower welding speed.



7.5.2 AC MIX

This combines AC welding with DC current to increase welding speed and controls the arc spread. the duration setting sets the percentage of time spent in AC mode and the remainder is in DC. The time period for this is dependant upon the AC frequency.



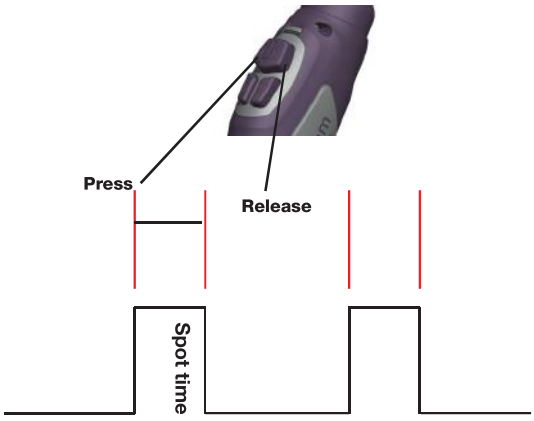
7.5.3 Advanced switch mode **Spot welding**

Spot welding the spot welding function needs to be switched on in the trigger menu for the functions to be active.

Spot welding shows as ON and can only be disabled in the main menu.

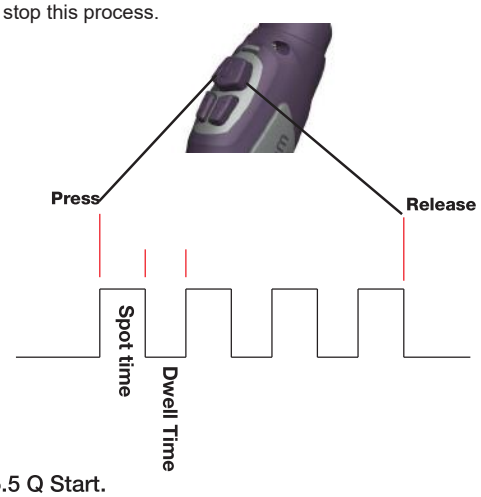
SW Time is the duration of the welding time and can be selected and adjusted so the spot weld is of the required size.

In operation press and hold the trigger the arc will start and extinguish when the timer has elapsed. Release the trigger and press and hold again to start another spot weld.



7.5.4 Advanced switch mode **Stitch welding**

Stitch welding, available as a secondary function to spot welding. When enabled the dwell time can be adjusted and it works to automate the process of making repeated spot welds. Press and hold the trigger down, the arc will start and go out once the spot weld time has elapsed. The dwell time will start and the arc will restart once the dwell time has elapsed. In this way multiple spot welds can be created without releasing the trigger, simply moving the torch position during the dwell time. Releasing the torch trigger will stop this process.

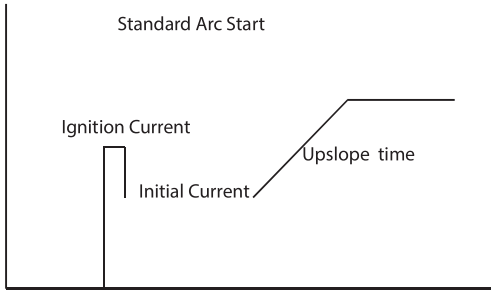


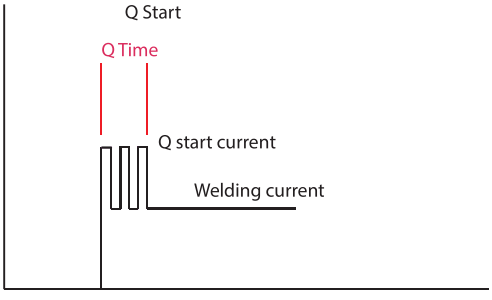
7.5.5 Q Start.

Used to give a good start for low current applications. Ideal for thin plate so that you can have a reliable starting arc,without burning through the plate. It works during the arc ignition mode for DC welding only.

Q Time is the time setting for the duration of the start mode.

With QStart on, returning to the welding screen you can set the level of the ignition current (Q start) 20A or above. The Arc ignition will be pulsed to assist starting without damaging the tungsten tip.

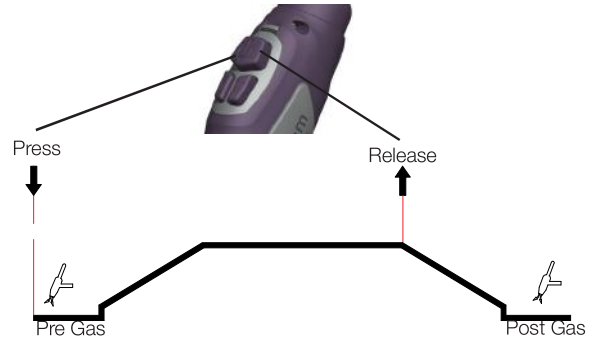


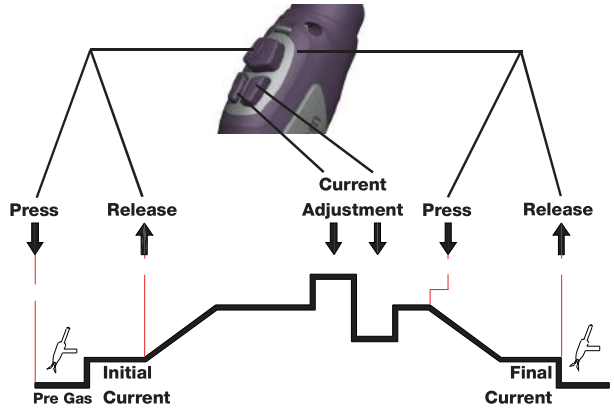


7.6 Standard Trigger modes

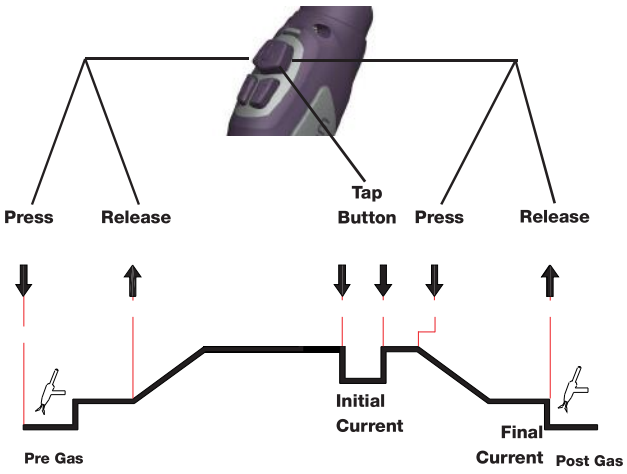
7.6.1 2T mode

7.6.2 4T mode





Step Current, 4T mode



8.0 Memory

8.1 Saving to memory

In any welding screen apart from TIG SYN, press the memory button. If in TIG SYN mode, press the Advanced menu button first, then the memory button.

The current parameter will be displayed and the option to save

Select yes and then , select the memory location to use (the current contents of that location will be displayed)

8.2 Recall from memory

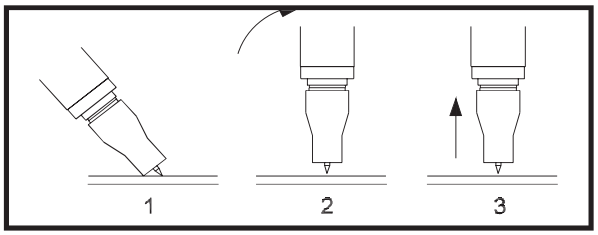
From the main menu , select memory

Highlight the desired memory location and press to load.

9.0 TIG Welding Guide

Torch starting in Lift TIG mode

Ensure the gas supply is switched on to the machine. Briefly contact the tip of the tungsten electrode down onto the work piece with the torch at around 70^0 from vertical. Depress the trigger to start the gas flow and switch on the power, lift the torch up from the work piece to draw out an arc. To prevent melting of the end of the tungsten the machine will increase the output current when it detects the rise in arc voltage as the tungsten is lifted from the work piece. At the end of the weld release the torch trigger and the power will slope down and switch off.



At the end of the weld release the trigger and allow the power and gas to switch off before moving the torch from the weld.

Torch starting in HF mode

Ensure the gas supply is switched on to the machine. Hold the torch with the tip of the tungsten approx 2-3 mm from the job. Depress the trigger to start the gas flow and switch on the power. At the end of the weld release the torch trigger and the power will slope down and switch off.

TIG welding guide ranges

Electrode diameter	AC current (amps)	DC current (amps)
0.040” (1.0mm)	15-30	20-60
1/16” (1.6mm)	60-120	75-150
3/32” (2.4mm)	100-180	150-250

Tungsten electrode types

Type	Application	Colour
Thoriated 2%	DC welding of mild steel, Stainless steel and Copper	Red

Type	Application	Colour
Ceriated 2%	DC welding of mild steel, Stainless steel, Copper AC welding of aluminium, magnesium and their alloys	Grey
Zirconiated	AC welding of aluminium, magnesium and their alloys	White

Guide for selecting filler wire diameter

Filler wire diameter	Current range
1/16” (1.6 mm)	20 - 90
3/32” (2.4 mm)	65 - 115
1/8” (3.2 mm)	100 - 165
3/16” (4.8 mm)	200-350

The filler wire diameter specified is a guide only, other diameter wires may be used according to the welding application.

Shielding gas selection

Alloy	Shielding gas
Aluminium & alloys	Pure Argon
Carbon steel	Pure Argon
Stainless steel	Pure Argon

Nickel alloy	Pure Argon
Copper	Pure Argon
Titanium	Pure Argon

9.1 DC TIG welding (No Pulse) Manual setting

Note:- shorting or dipping the electrode into the weld pool for more than 1 second will cause the machine to reduce the welding power to zero in order to protect the tungsten and minimise contamination.

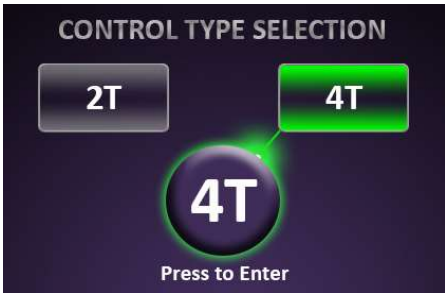
1) Connect the torch to the Negative socket and the gas hose to the gas outlet.

2) Connect the trigger control plug on the torch to the trigger socket.

3) Connect the work lead to the Positive socket.

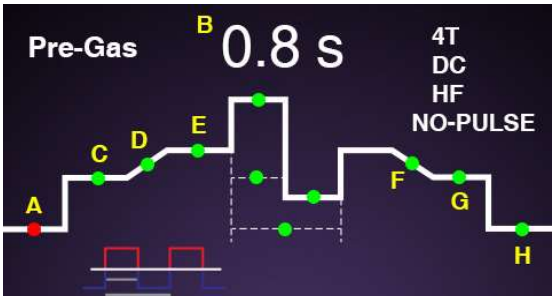
4) Select DC output.

5) Set the control mode to 2T or 4T if you prefer a latching trigger action. (Note in 4T position you must press and release to start the process and press and release again to stop the process)



6) Select No Pulse

7) Rotate the control knob to move the illuminated LED to the gas pre-flow position (A)



8) Press the control knob to select the parameter. The red LED will now flash**.** Adjust the value by rotating the control knob**.** This can be adjusted from 0.1 to 0.3 seconds. The value is displayed on the digital display (B) Press the control knob again to accept the setting.

9) Rotate the control knob to move the LED to the initial current (C) This can be adjusted from 5 to 100% of the main welding current. The value is displayed on the digital display (B). 50% is a good initial setting. **Note this function only operates in 4T switch mode.**

10) Rotate the control knob to move the LED to the slope up time (D) This can be adjusted from 0 to 10s. The value is displayed on the digital display (B). 2s is a good initial setting.

11) Rotate the control knob to move the LED to the main welding current (E) This can be adjusted from 5 to 200A. The value is displayed on the digital (B). Refer to the TIG welding guide for a recommended welding current.

12) Rotate the control knob to move the LED to the slope down time (F) This can be adjusted from 0 to 10s. The value is displayed on the digital display (B). 2s is a good initial setting.

13) Rotate the control knob to move the LED to the final current (G) This can be adjusted from 5 to 100% of the main welding current. The value is displayed on the digital display (B). 10% is a good initial setting. **Note this function only operates in 4T switch mode**

14) Rotate the control knob to move the LED to the Post Gas time (H). This can be adjusted from 0.1 to 10s. The value is displayed on the digital display (B). 3s is a good initial setting.

You are now ready to weld. These settings are a guide and you should adjust to suit the job you are welding. If you are unfamiliar with the machine try to adjust only one parameter at a time so you become familiar with its effect.

9.2 AC TIG welding (No Pulse)

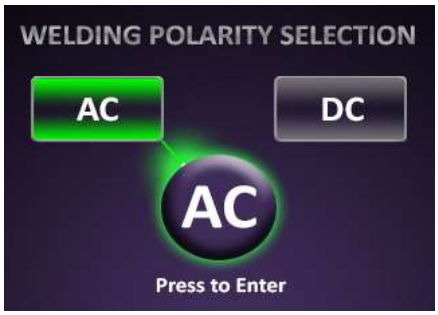
Note:- shorting or dipping the electrode into the weld pool for more than 1 second will cause the machine to reduce the welding power to zero in order to protect the tungsten and minimise contamination.

1) Connect the torch to the Negative torch socket and the gas hose to the gas outlet.

2) Connect the trigger control plug on the torch to the trigger socket.

3) Connect the Work lead to the positive socket.

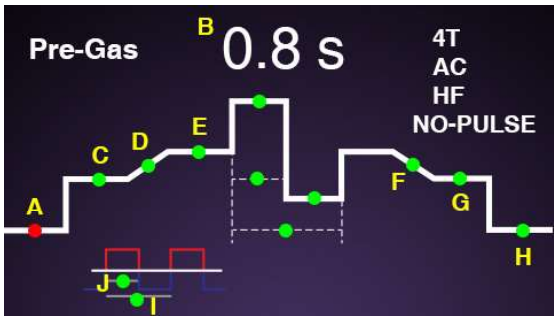
4) Select AC output.



5) Set the control mode to 2T or 4T if you prefer a latching trigger action. (Note in 4T position you must press and release to start the process and press and release again to stop the process)

6) Select No Pulse

7) Rotate the control knob to move the illuminated LED to the gas pre-flow position (A).



8) Press the control knob to select the parameter. The red LED will now flash. Adjust the value by rotating the control knob. This can be adjusted from 0.1 to 0.3 seconds. The value is displayed on the digital display (B) Press the control knob again to accept the setting.

9) Rotate the control knob to move the LED to the initial current (C) This can be adjusted from 5 to 100% of the main welding current. The value is displayed on the digital display (B). 50% is a good initial setting. **Note this function only operates in 4T switch mode.**

10) Rotate the control knob to move the LED to the slope up time (D) This can be adjusted from 0 to 10s. The value is displayed on the digital display (B). 2s is a good initial setting.

11) Rotate the control knob to move the LED to the main welding current (E) This can be adjusted from 5 to 200A. The value is displayed on the digital (B). Refer to the TIG welding guide for a recommended welding current.

12) Rotate the control knob to move the LED to the slope down time (F) This can be adjusted from 0 to 10s. The value is displayed on the digital display (B). 2s is a good initial setting.

13) Rotate the control knob to move the LED to the final current (G) This can be adjusted from 5 to 100% of the main welding current. The value is displayed on the digital display (B). 10% is a good initial setting. **Note this function only operates in 4T switch mode.**

14) Rotate the control knob to move the LED to the Post Gas time (H). This can be adjusted from 0.1 to 10s. The value is displayed on the digital display (B). 3s is a good initial setting.

15) Rotate the control knob to move the LED to the AC frequency (I) This can be adjusted from 25 to 200Hz dependant on the welding amperage. The value is displayed on the digital display (B). 60hz is a good initial setting. Increaseing the frequency has the effect of stiffening and focussing the arc making it good for welding close to threads or for crater filling.

Note the maximum frequency available depends upon the welding amperage selected.

<100A	25 to 250Hz
100-124A	Max 210Hz
125-149A	Max 160Hz
150-174A	Max 110Hz
175-200A	Max 75Hz

16) Rotate the control knob to move the LED to the AC balance (J) This can be adjusted from 15 to 50% . The value is displayed on the digital display (B). 15% is a good initial setting. Increasing the percentage has the effect of increasing the time the arc spends in the electrode positive state which gives a greater cleaning effect on the material but will reduce weld speed. For good clean material you should be able to keep the cleaning percentage set at 15 to 20%

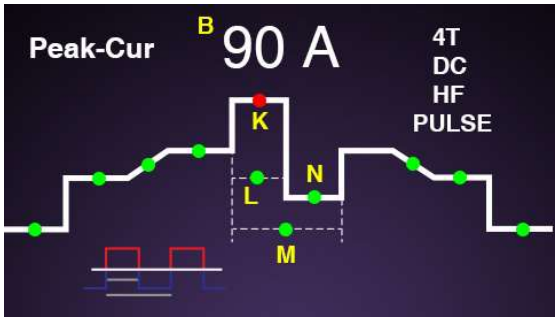
You are now ready to weld. The above settings are a guide and you should adjust to suit the job you are welding. If you are unfamiliar with the machine try to adjust only one parameter at a time so you become familiar with its effect.

9.3 TIG welding (With Pulse)

It is possible to use the pulse function with both AC and DC TIG welding. Power Pulsing can give significant advantages on thinner material to control heat and penetration.

1) Follow the setup as previously described for AC or DC TIG welding. At the Pulse Selection menu select Pulse.

2) Press the control knob to move the LED to the Peak current (K) This can be adjusted from 5 to 200A (10-200A for AC welding) dependant on the welding amperage. The value is displayed on the digital display (B). Peak current is the maximum amperage that will be output.



3) Rotate the control knob to move the LED to the Peak duration (L) This can be adjusted from 5 to 100% Peak duration is the percentage of time the peak current is on relative to the background current. 30% is a good starting point.

4) Rotate the control knob to move the LED to the Background current (N) This can be adjusted from 5 to 200A (10-200A for AC welding). The value is displayed on the digital display (B). Background current is the minimum amperage that will be output. It cannot be higher than the peak current and generally will be set withing 50 to 70% Amps of the peak current.

5) Rotate the control knob to move the LED to the Pulse Frequency (M) This can be adjusted from 0.5 to 200Hz. The value is displayed on the digital display (B). Pulse Frequency is the number of pulses per second generally a range of 50 to 150 hz will be used with 100Hz being a good base setting.

30-40Hz will help agitate the weld puddle and allow you to weld at a lower amperage than without pulse.

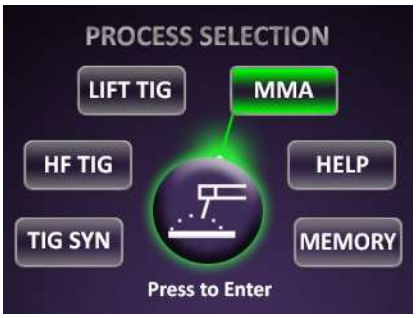
50-150Hz really stiffen the arc and let you pinpoint the arc more than without pulse.

0.5-10Hz reduces heat input the most.

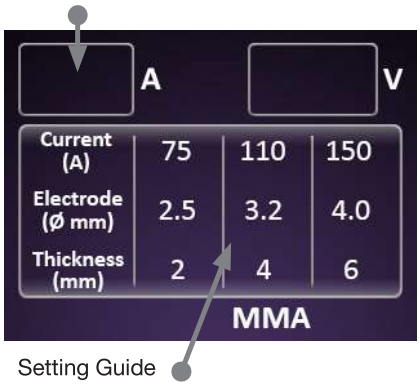
The selected amperage and the consistency of travel speed can negate some of the effects of Power pulsing.

10.0 MMA Welding

Follow the screen prompts to complete the machine setup. Example setting.



Adjust Amperage Value



Setting Guide

11.0 Fault Finding

- **If error message is displayed allow machine to cool with power off for 10 minutes.**
- **If error remains switch off and on again.**
- **Reduce welding current to prevent over current condition.**
- **If error remains contact your local service centre.**

11.1 MMA Welding Problems

Description	Possible cause	Remedy
Gas pockets or voids in weld metal (porosity)	(a) Electrodes are damp (b) Welding current is too high. (c) Surface impurities such as oil, grease, paint, etc	(a) Dry electrodes before use (b) Reduce welding current (c) Clean joint before welding
Crack occurring in weld metal soon after solidification.	(a) Rigidity of joint. (b) Insufficient throat thickness. (c) Cooling rate is too high.	(a) Redesign to relieve weld joint of severe stresses or use crack resistance electrodes. (b) Travel slightly slower to allow greater build up in throat. (c) Preheat plate and cool slowly.
A gap is left by failure of the weld metal to fill the root of the weld	(a) Welding current is too low. (b) Electrode too large for joint. (c) Insufficient gap (d) Incorrect sequence	(a) Increase welding current (b) Use smaller diameter electrode. (c) Allow wider gap (d) Use correct build-up sequence
Portions of the weld run do not fuse to the surface of the metal or edge of the joint.	(a) Small electrodes used on heavy cold plate (b) Welding current is too low (c) Wrong electrode angle (d) Travel speed of electrode is too high (e) Scale or dirt on joint surface	(a) Use larger electrodes and preheat the plate (b) Increase welding current (c) Adjust angle so the welding arc is directed more into the base metal (d) Reduce travel speed of electrode (e) Clean surface before welding.

Description	Possible cause	Remedy
Non-metallic particles are trapped in the weld metal (slag inclusion).	(a) Non-metallic particles may be trapped in undercut from previous run (b) Joint preparation too restricted (c) Irregular deposits allow slag to be trapped. (d) Lack of penetration with slag trapped beneath weld bead. (e) Rust or mill scale is preventing full fusion. (f) Wrong electrode for position in which welding is done.	(a) If bad undercut is present, clean slag out and cover with a run from a smaller diameter electrode. (b) Allow for adequate penetration and room for cleaning out the slag (c) If very bad, chip or grind out Irregularities (d) Use smaller electrode with sufficient current to give adequate penetration. adequate penetration. Use suitable tools to remove all slag from corners (f) Use electrodes designed for position in which welding is done, otherwise proper control of slag is difficult.

11.2 TIG Welding Problems

Weld quality is dependent on the selection of the correct consumable, maintenance of equipment and proper welding technique.

Description	Possible cause	Remedy
Excessive bead build up or poor penetration or poor fusion at edges of weld	Welding current is too low	Increase weld current and/or faulty joint preparation
Weld bead too wide and flat or undercut at edges of weld or excessive burn through	Welding current is too high	Decrease weld current
Weld bead too small or insufficient penetration or ripples in bead are widely spaced apart	Travel speed too fast	Reduce travel speed
Weld bead too wide or excessive bead build up or excessive penetration in butt joint	Travel speed too slow	Increase travel speed
Uneven leg length in fillet joint	Wrong placement of filler rod	Re-position filler rod
Electrode melts when arc is struck	Electrode is connected to the '+' terminal	Connect the electrode to the '-' terminal
Dirty weld pool	(a) Electrode contaminated through contact with work piece or filler rod material (b) Gas contaminated with air	(a) Clean the electrode by grinding off the contaminates (b) Check gas lines for cuts and loose fitting or change gas cylinder

Description	Possible cause	Remedy
Electrode melts or oxidizes when an arc is struck	(a) No gas flowing to welding region (b) Torch is clogged with dust (c) Gas hose is cut (d) Gas passage contains impurities (e) Gas regulator is turned off (f) Torch valve is turned off (g) The electrode is too small for the welding current	(a) Check the gas lines for kinks or breaks and gas cylinder contents (b) Clean torch (c) Replace gas hose (d) Disconnect gas hose from torch then raise gas pressure to blow out impurities. (e) Turn on (f) Turn on (g) Increase electrode diameter or reduce the welding current
Poor weld finish	Inadequate shielding gas	Increase gas flow or check gas line for gas flow problems

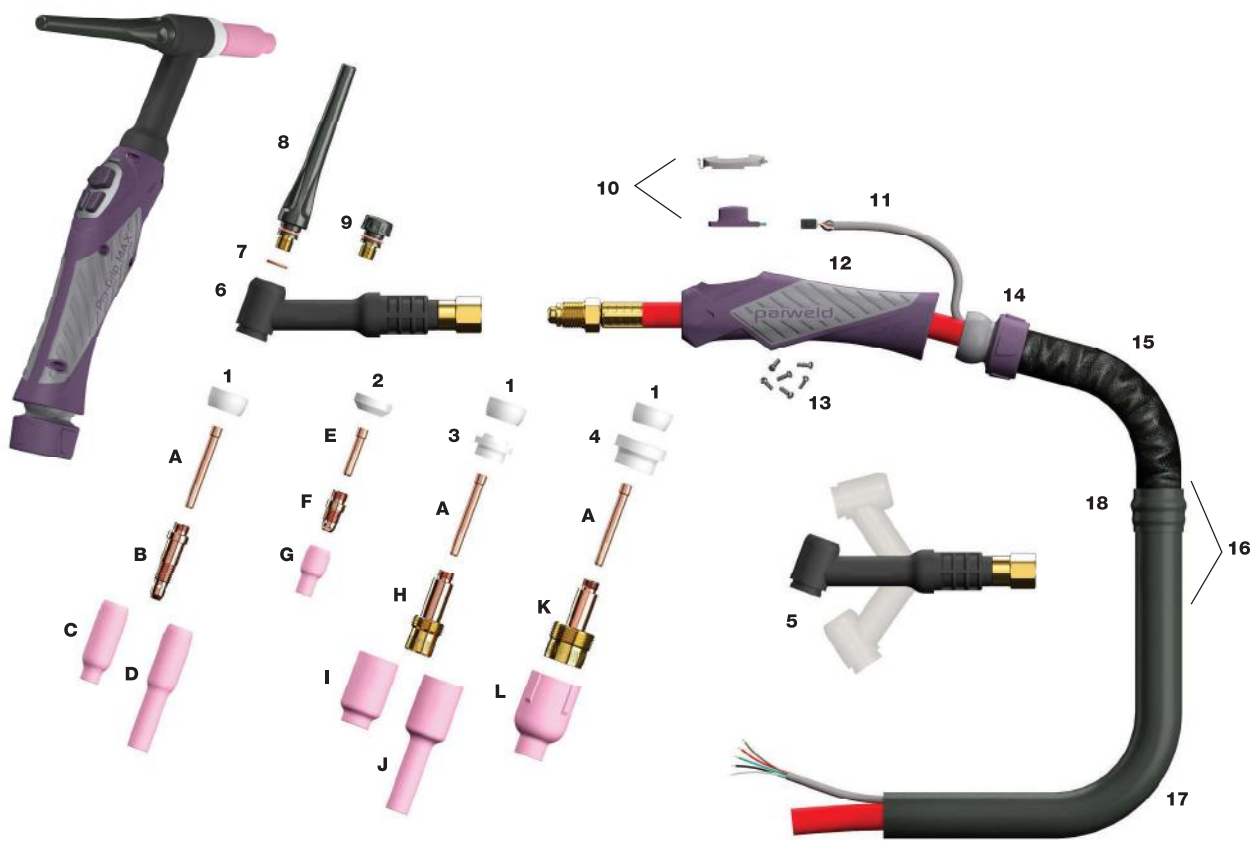
Description	Possible cause	Remedy
Arc flutters during TIG welding	(a) Tungsten electrode is too large for the welding current (b) Absence of oxides in the Weld pool.	(a) Select the right size electrode. Refer to basic TIG welding guide. (b) Refer basic TIG welding guide for ways to reduce arc flutter
Welding arc cannot be established	(a) Work clamp is not connected to the work piece or the work/torch leads are not connected to the machine (b) Torch lead is disconnected (c) Gas flow incorrectly set, cylinder empty or the torch valve is off	a) Connect the work clamp to the work piece or connect the work/torch leads to the right welding terminals. (b) Connect it to the '-' terminal. (c) Select the right flow rate, change cylinders or turn torch valve on.
Arc start is not smooth	(a) Tungsten electrode is too large for the welding current . (b) The wrong electrode is being used for the welding job. (c) Gas flow rate is too high. (d) Incorrect shielding gas is being used. (e) Poor work clamp connection to work piece	(a) Select the right size electrode (b) Select the right electrode type. Refer to basic TIG welding guide (c) Select the correct rate for the welding job. Refer to basic TIG welding guide (d) Select the right shielding gas. Refer to basic TIG welding guide (e) Improve connection to work piece

12.0 TIG Torch Schematic

PRO26 and PRO26FX

Air Cooled Pro-Grip® TIG Welding Torch

Rating: 200A DC, 150A AC @ 60% Duty Cycle,
EN60974-7 .020“to 5/32“/0.5mm-4.0mm Electrodes



Standard Collet

	Stock Code	Description
A	10N21	Standard Collet .020"/0.5mm Bore
	10N22	Standard Collet .040"/1.0mm Bore
	10N23	Standard Collet 1/16"/1.6mm Bore
	10N24	Standard Collet 3/32"/2.4mm Bore
	10N25	Standard Collet 1/8"/3.2mm Bore
	54N20	Standard Collet 5/32"/4.0mm Bore

Standard Collet Body

	Stock Code	Description
B	10N29	Standard Collet Body .020"/0.5mm Bore
	10N30	Standard Collet Body .040"/1.0mm Bore
	10N31	Standard Collet Body 1/16"/1.6mm Bore
	10N32	Standard Collet Body 3/32"/2.4mm Bore
	10N28	Standard Collet Body 1/8"/3.2mm Bore
	406488	Standard Collet Body 5/32"/4.0mm Bore

Standard Ceramic Cup

	Stock Code	Description
C	10N50	Standard Ceramic Cup 1/4"/6mm Bore
	10N49	Standard Ceramic Cup 5/16"/8mm Bore
	10N48	Standard Ceramic Cup 3/8"/10mm Bore
	10N47	Standard Ceramic Cup 7/16"/11mm Bore
	10N46	Standard Ceramic Cup 1/2"/13mm Bore
	10N45	Standard Ceramic Cup 5/8"/16mm Bore
	10N44	Standard Ceramic Cup 3/4"/19mm Bore

Standard Long Ceramic Cup

	Stock Code	Description
D	10N49L	Long Ceramic Cup 5/16"/8mm Bore
	10N48L	Long Ceramic Cup 3/8"/10mm Bore
	10N47L	Long Ceramic Cup 7/16"/11mm Bore

Stubby Series Collet

	Stock Code	Description
E	10N21S	Stubby Collet .020"/0.5mm Bore
	10N22S	Stubby Collet .040"/1.0mm Bore
	10N23S	Stubby Collet 1/16"/1.6mm Bore
	10N24S	Stubby Collet 3/32"/2.4mm Bore
	10N25S	Stubby Collet 1/8"/3.2mm Bore

Stubby Collet Body

	Stock Code	Description
F	17CB20	Stubby Collet Body .020"-1/8"/0.5mm-3.2mm Bore

Stubby Standard Ceramic Cup

	Stock Code	Description
G	13N08	Standard Ceramic Cup 1/4"/6mm Bore
	13N09	Standard Ceramic Cup 5/16"/8mm Bore
	13N10	Standard Ceramic Cup 3/8"/10mm Bore
	13N11	Standard Ceramic Cup 7/16"/11mm Bore
	13N12	Standard Ceramic Cup 1/2"/13mm Bore
	13N13	Standard Ceramic Cup 5/8"/16mm Bore

Gas Lens Body

	Stock Code	Description
H	45V29	Gas Lens Body .020"/0.5mm Bore
	45V24	Gas Lens Body .040"/1.0mm Bore
	45V25	Gas Lens Body 1/16"/1.6mm Bore
	45V26	Gas Lens Body 3/32"/2.4mm Bore
	45V27	Gas Lens Body 1/8"/3.2mm Bore

Standard Gas Lens Cup

	Stock Code	Description
I	54N18	Standard Gas Lens Cup 1/4"/6mm Bore
	54N17	Standard Gas Lens Cup 5/16"/8mm Bore
	54N16	Standard Gas Lens Cup 3/8"/10mm Bore
	54N15	Standard Gas Lens Cup 7/16"/11mm Bore
	54N14	Standard Gas Lens Cup 1/2"/13mm Bore
	54N19	Standard Gas Lens Cup 11/16"/17mm Bore

Long Gas Lens Cup

	Stock Code	Description
J	54N17L	Long Gas Lens Cup 5/16"/8mm Bore
	54N16L	Long Gas Lens Cup 3/8"/10mm Bore
	54N15L	Long Gas Lens Cup 7/16"/11mm Bore

Large Diameter Gas Lens Body

	Stock Code	Description
K	45V116	Large Dia Gas Lens Body 1/16"/1.6mm Bore
	45V64	Large Dia Gas Lens Body 3/32"/2.4mm Bore
	995795	Large Dia Gas Lens Body 1/8"/3.2mm Bore

Large Diameter Gas Lens Cup

	Stock Code	Description
L	57N75	Large Diameter Gas Lens Cup 3/8"/10mm Bore
	57N74	Large Diameter Gas Lens Cup 1/2"/15mm Bore
	53N88	Large Diameter Gas Lens Cup 5/8"/16mm Bore
	53N87	Large Diameter Gas Lens Cup 3/4"/19mm Bore

Components

	Stock Code	Description
1	18CG	Cup Gasket
2	18CG20	Cup Gasket for Stubby Collet Body
3	54N01	Gas Lens Insulator (use with 18CG)
4	54N63	Insulator Large Diameter Gas Lens (use with 18CG)
5	PRO26FX	Torch Head Flexible
6	PRO26	Torch Head including Cup Gasket
7	98W18	Back Cap O Ring
8	PRO57Y02	Back Cap Long
9	PRO57Y04	Back Cap Short
10	PRO3MS	Momentary Switch Kit 3 button
	PRO1MS	Momentary Switch Kit (optional)
11	PROSWL4	Connector + Leads x 4mt/13.2ft
	PROSWL8	Connector + Leads x 8mt/26.2ft
12	PROH200	Pro-Grip® Tig Handle Large
13	PROSP	Screw Pack
14	PROKJ200	Knuckle Joint c/w Lock Nut
15	PROLC200-08	Leather Cover x 0.8mt/2.6ft
16	PROCO200-40	Complete Cover Assembly x 4mt/13.2ft
	PROCO200-80	Complete Cover Assembly x 8mt/26.2ft
17	PRONCL-32	Neoprene Cover x 3.2mt/10.5ft
	PRONCL-72	Neoprene Cover x 7.2mt/23.6ft
18	PROJK200	Sheath Jointing Repair Kit

13.0 Accessories

13.1 MMA/TIG Torch Cables

Stock Code	Description
CKE403	Electrode Holder with 3m Lead
CKC403	Earth Lead 3m with Clamp
IV26-12S3BD18	Pro TIG Torch with 3 Button Switch
WP26AK	TIG Spares Kit in Plastic Case

13.2 Gas Equipment

Everyday Gas Regulators – 300 BAR

Single Stage

Features
Flow rate up to 96m³/h (3389 ft³/h)
- Full 300 bar capability
- Outlet pressure indicated on the bonnet
- Bottom entry design suited for top outlet cylinder valves

Fittings
- Fitted with standard 3/8" BSP outlet
- Fitted with 5/8" BSP inlet connections

Stock Code	Description	Maximum Outlet Pressure
700140	Argon Preset Regulator	3.0 Bar
700141	Argon Indicator Regulator	3.0 Bar
700113	1 Gauge Argon	30 lpm flow
700123	2 Gauge Argon	30 lpm flow

Flow Meters

Features
- Designed from brass bar whilst the tube and cover are moulded from high quality polycarbonate to ensure high impact resistance and clarity.
- Calibrated to operate at an inlet pressure of 30PSI.
- Sensitive needle valve provides easy adjustment and the downward facing outlet connection eliminates hose kinking.

Fittings
- Fitted with standard 3/8" BSP inlet and outlet connections.

Stock Code	Description
706100	Flow Meter Mixed Gas 15 lpm

13.3 Foot Controls

Stock Code	Description
XTI902D	Standard Foot Control
XTI903W	Wireless Foot Control

Standard Foot Control

The XTI902D foot control has a metal case with rubber feet. The side trimmer allows you to limit the maximum operating current.

Wireless Foot Control

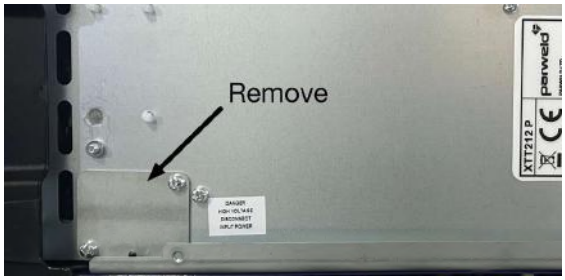
The XTI903W is a high-performance foot control that connects wirelessly to the power source using Bluetooth technology. It works seamlessly within 10 metres of the power source.

13.4 Water Cooler

Stock Code	Description
XTS908	Water Cooler 230V 5L

The XTT212Di can be fitted with an optional water cooler. In order to facilitate this follow the following procedure.
1) Disconnect the power source from the incoming power.

2) Lay the machine on its side, remove the connector cover on the base of the machine shown below, and pull out the connector.



3) Unpack the water cooler unit, 2 fixing brackets and 8 screws from the water cooler box. Assemble the 2 brackets to the underneath of the inverter using 4 of the screws as shown below.

4) Connect the plug and socket from the inverter and water cooler, lower the inverter onto the top of the water cooler, then secure in place with the 4 remaining screws as shown below.

14.0 EC Declaration of Conformity

Hereby we declare that the machines as stated below

Type: XTT 212Di

Conform to the EC Directives:
Low Voltage Directive 2014/35/EEC
EMC Directive 2014/35/EEC
Harmonised European standard: EN/IEC 60974-1

This is to certify that the tested sample is in conformity with all provisions of the above detailed EU directives and product standards.

UK CA CE

14.1 RoHS Compliance Declaration

Directive 2011/65/EU of the European Parliament
Amended 2015/863 and 2017/2102
Restriction of use of certain hazardous substances in electrical and electronic equipment

Type: XTT 212Di

The above listed products are certified to be compliant with the RoHS directive with all homogeneous component parts being controlled to ensure material contents as per the list below.

Cadmium 0.01% by weight
Lead 0.1% by weight
Mercury 0.1% by weight
Hexavalent chromium 0.1% by weight
Polybrominated biphenyl's (pbbs) 0.1% by weight
Polybrominated diphenyl ethers (pbdes) 0.1% by weight

It should be noted that under specific exempted applications, where lead is used as an alloying element the following limits are applied in accordance with the regulations.

Copper and copper alloy parts use less than 4% by weight of each homogeneous component.

Steel and steel alloy parts use less than 4% by weight of each homogeneous component.

Aluminium and aluminium alloy parts use less than 4% by weight of each homogeneous component.