

MATRIX X 220 AC/DC

MATRIX X 300 AC/DC



**WELDING
TOGETHER**

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ENGLISH

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Introduction

Thank you for buying our product.

In order to get the best performance out of the plant and ensure the maximum lifespan of its parts, the use and maintenance instructions contained in this manual must be read and strictly complied with, as well as **the safety instructions contained in the relevant folder**. If repairs to the plant are required, we recommend that our clients contact our service centre workshops, as they have the necessary equipment and personnel that are specifically trained and constantly updated.

All our machines and equipment are constantly developed and so changes may be made in terms of their construction and features.

Description

MATRIX X220 AC/DC

Powerful, compact, and light weight, the **MATRIX X220 AC/DC** units represent the most innovative, high performance, and technically advanced single-phase inverter generators for TIG welding to be found.

The **PFC (Power Factor Correction)** device fitted optimises absorption of energy from the mains, means that these high power generators can be connected to power supply systems with 16A fuses without any problem.

The user friendly digital control and advanced functions ensure complete stability of all welding parameters, guaranteeing high quality TIG welding for all metals, aluminium, and its alloys, as well as MMA welding with any type of electrode.

The **MATRIX X220 AC/DC** units are the ideal solution for all professional welding applications and for maintenance work that calls for power and portability.

MATRIX X300 AC/DC

Using the most modern IGBT based inverter technology, the three-phase TIG generator with high frequency **MATRIX X300 AC/DC** ignition, comes with an innovative digital control for all welding parameters.

Technologically cutting-edge, robust, easy to use with both direct and alternating current, fitted with high potential digital control, this generator can be used for high quality TIG welding of all metals including aluminium and alloys. This means that the machine is particularly suitable for specific uses in industry and the maintenance sector.

It also guarantees excellent performance for MMA welding, even when using particularly difficult cellulosic and basic electrodes.

Features

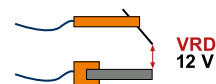
The characteristics found in all welding machines in the MATRIX X220 - X300 AC/DC range are:

- Innovative and compact design.
- Compact size and light weight for easy transportation.
- Metallic main structure with shock-proof plastic front panel.
- Protective visor on the control panel.
- Robust handle integrated into the chassis.
- Digital control, regulation and monitoring of all welding parameters.
- TFT colour display for pre-setting welding parameters.
- Digital ammeters and voltmeters are standard fittings, with pre-setting of welding current and saving of the latest value (Holdfunction).
- coldTACK welding function in TIG HF DC. Innovative device to achieve precise and safe spot with a minimal thermal input. This function makes it possible to do cold tack welds in rapid sequence, in order to further amplify the benefits of a single tack. "Perfect-Point" type of trigger, allows to obtain the most precise spot positioning.
- New welding mode in TIG RCT "RUNNING COLD TACK" that makes it possible to form very cold welding beads. This process allows you to benefit from all the advantages of the "coldTACK" welding mode, repeating a single tack in continuous mode, to achieve a perfect, cold welding bead. When "TIG RCT" is used, the welding bead is much colder than can be achieved using "Pulse TIG", which makes it the ideal solution for welding thin materials with very low heat transfer.
- Feature that makes it possible to save and call up personalised welding programs.
- It is possible to interface with various remote control systems for automation and robotics, including:
 - 1) Analogue "RoboMAT 1" interface.
 - 2) Analogue interface for "simple" automation / robotics.
 - 3) Possibility of interfacing with all the most common field buses (Profinet, EthernetIP, EtherCAT, etc.).
- Self-diagnosis device.
- Overheating thermostatic protection.
- Automatic compensation for mains voltage fluctuations within $\pm 20\%$.
- Safety barrier against excess voltage from mains.
- Electromagnetic disturbance is reduced due to high frequency being involved only during the arc ignition phase.
- "Energy Saving" function to operate the power source cooling fan and the torch water cooling only when necessary.
- Low absorbed current consumption.
- This generator also conforms to all the standards and directives in force in the European Community.
- **TIG**
 - Excellent TIG welding characteristics.
 - High frequency arc striking of TIG welding, precise and efficient even from long distance.
 - Using special TIG torches allows remote adjustment of welding current directly from the torch.
 - The diameter of the electrode used is set to allow greater control of the ignition and dynamics of the arc.
 - Standard built-in pulsation (from 0,5 to 2000 Hz) with provision for entering the SYN Pulse function.
 - Square, mixed, sinusoidal, or triangular wave shape selector.
 - Welding frequency balancing / regulation.



• MMA

- Option to choose between the MMA DC and MMAAC electrode welding.
- The VRD (Voltage Reduction Device) can be activated, which reduces voltages to below 12 V, which means that the welding machine can be used in ambient conditions in which there is a high electrical risk, thereby providing maximum operator safety.
- “Arc Force” adjustable to select the best dynamic characteristics for the welding arc.
- “Hot Start” adjustable to improve ignition with particularly difficult electrodes.
- Anti-sticking function to avoid the electrodes sticking.



MATRIX X220 AC/DC


The PFC device makes the wave form of the current absorbed sinusoidal, which results in no harmonic disturbance on the mains and optimisation of absorption, which allows you to use the generator’s full power with a 16 A fuse, as well as ensuring greater protection of the welding machine against fluctuations in the power supply voltage.

Usage limits (IEC 60974-1)

The use of a welder is typically discontinuous, in that it is made up of effective work periods (welding) and rest periods (for the positioning of parts, the replacement of wire and underflushing operations etc).

This welder is dimensioned to supply a I_2 max nominal current in complete safety for a period of work of X% of the total usage time. The regulations in force establish the total usage time to be 10 minutes.

The work cycle is considered to be X% of this period of time. If the permitted work cycle time is exceeded, an overheat cut-off occurs to protect the components around the welder from dangerous overheating.




Tripping of the trip switch is indicated by the  symbol on the display (see the manual for the XVision control panel).

After several minutes the overheat cut-off rearms automatically and the welder is ready for use again.

Technical data

The general technical data of the system are summarized in table 1.

Table 1

Model	MATRIX X220 AC/DC			MATRIX X300 AC/DC		
		TIG	MMA	TIG	MMA	
Power supply 50/60 Hz	V	1~ 230 ±20%			3~ 400 ±20%	
Power supply: Z_{max}	Ω	(*)			0,092	
Input power @ I_2 Max	kVA	6,5	7,0	9,6		
Delayed fuse (I_2 @ 100%)	A	16			10	
Power factor / $\cos\phi$		0,99 / 0,99			0,95 / 0,99	
Efficiency degree	η	0,80			0,82	
Input power at IDLE state	W	20			15	
Open circuit voltage	V	85			85	
Current range	A	1÷220 (TIG DC)	3÷220 (TIG AC)	10÷180	1÷300 (TIG DC)	3÷300 (TIG AC)
Duty cycle @ 100% (40°C)	A	140		120	210	
Duty cycle @ 60% (40°C)	A	180		150	250	
Duty cycle @ X% (40°C)	A	220 (30%)		180 (30%)	300 (35%)	
Usable electrodes	mm	1,2÷2,4		1,6÷4,0	1,2÷4,0	
Standards		IEC 60974-1 • IEC 60974-3 • IEC 60974-10 			IEC 60974-1 • IEC 60974-3 • IEC 60974-10 	
Protection class		IP 23 S			IP 23 S	
Insulation class		F			F	
Dimensions 	mm	530 - 410 - 215			530 - 410 - 215	
Weight	kg	19.8			21.4	

IMPORTANT:

These systems, tested in accordance with the requirements of the EN/IEC 61000-3-3 standard, satisfy the requirements laid down by the EN/IEC 61000-3-11 standard.

MATRIX X220 AC/DC

(*) This equipment meets the requirements laid down in the EN/IEC 61000-3-12 standard on harmonic currents.

MATRIX X300 AC/DC

This equipment complies with EN/IEC 61000-3-12 provided that the maximum permissible system impedance Z_{max} is less than or equal to 0,092 at the interface point between the user’s supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with maximum permissible system impedance Z_{max} less than or equal to 0,092.



How to lift up the machine

The weld machine has a strong handle all in one with the frame, used for transporting the machine manually only.



NOTE: *These hoisting and transportation devices conform to European standards. Do not use other hoisting and transportation systems.*

Open the packaging

The system essentially consists of:

- Weld unit.
- Separately as an option:
 - Welding torches.
 - Ground cable, complete with rapid coupling.
 - Coolant unit.
 - Trolley for transportation.
 - Interfaces for simple and advanced automation.
 - Generator - automation interface connection cables.

Upon receiving the system:

- Remove the welding generator and all relevant accessories-components from their packaging.
- Check that the weld machine is in good condition, if not report any problems immediately to the seller-distributor.
- Make sure all ventilation grilles are open and that no foreign bodies are blocking the air circulation.

Serial number

The welding machine's serial number is shown on the unit's data plate.

The serial number provides the key to tracing the production lot applicable to the product. The serial number may be essential with ordering spare parts or planning maintenance.

Installation

The installation site for the system must be carefully chosen in order to ensure its satisfactory and safe use. The user is responsible for the installation and use of the system in accordance with the producer's instructions contained in this manual. Before installing the system the user must take into consideration the potential electromagnetic problems in the work area. In particular, we suggest that you should avoid installing the system close to:

- Signalling, control and telephone cables.
- Radio and television transmitters and receivers.
- Computers and control and measurement instruments.
- Security and protection instruments.

Persons fitted with pace-makers, hearing aids and similar equipment must consult their doctor before going near a machine in operation. The environment in which the equipment is installed must be suitable for the casing's protection level. This system is cooled by means of the forced circulation of air, and must therefore be placed in such a way that the air may be easily sucked in and expelled through the apertures made in the frame.

The welding unit is characterised by the following levels:

- Protection level IP 23 S indicates that the equipment can be used both indoors and outdoors.
- Use class "S" means that the equipment can be used in conditions subject to heightened electrical shock.

Connection to the electrical supply



Connection of the machine to the user line (electrical current) must be performed by qualified personnel. Before connecting the welding machine to the mains power supply, make sure that rated voltage and frequency correspond to those provided by the mains power supply and that the welding machine's power switch is turned to "O".

MATRIX X220 AC/DC • Single-phase power supply

Use the welder's own plug to connect it up to the main power supply. Proceed as follows if you have to replace the plug:

- 2 conducting wires are needed for connecting the machine to the supply.
- The third, which is YELLOW GREEN in colour is used for making the "GROUND" connection.

MATRIX X300 AC/DC • Three-phase power supply

The four-pole cable supplied with the system must be used for the connection to the mains power supply. This cable is made up of:

- Three conductors that are used to connect the machine to the power supply.
- The fourth, which is YELLOW-GREEN, is used to form the "GROUND" connection.



Connect a suitable load of normalised plug (3p+t) to the power cable and provide for an electrical socket complete with fuses or an automatic switch. The ground terminal must be connected to the ground conducting wire (YELLOW-GREEN) of the supply.



Table 2 shows the capacity values that are recommended for fuses in the line with delays.



NOTE: Any extensions to the power cable must be of a suitable diameter, and absolutely not of a smaller diameter than the special cable supplied with the machine.

Table 2

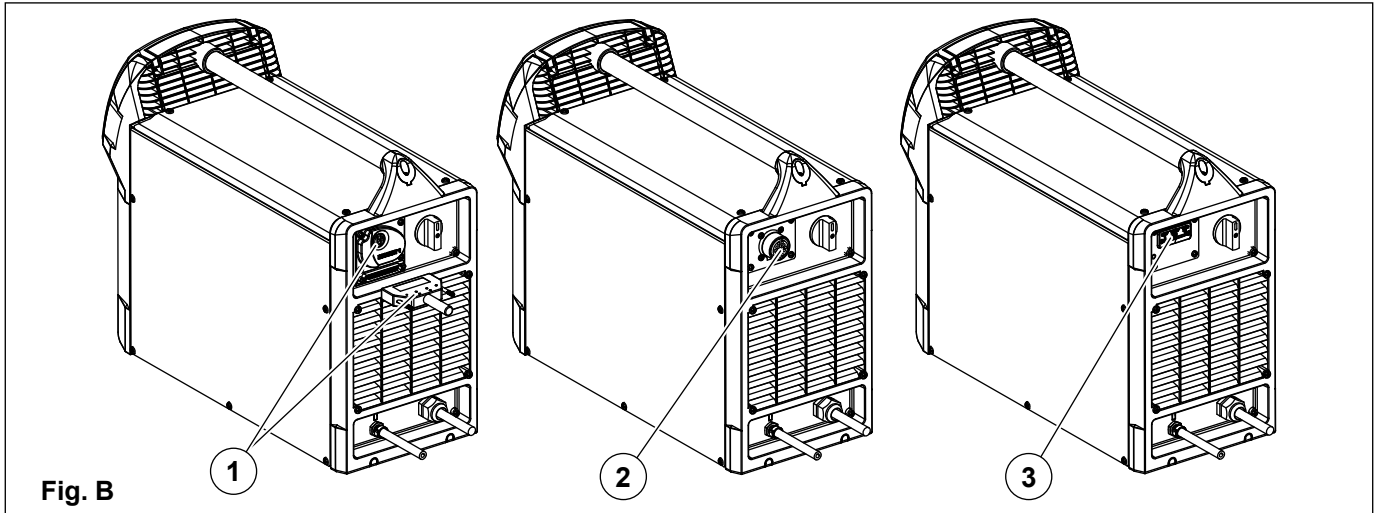
Model		MATRIX X220 AC/DC		MATRIX X300 AC/DC	
		TIG	MMA	TIG	MMA
Input power @ I ₂ Max	kVA	6,5	7,0	9,6	
Delayed fuse (I ₂ @ 100%)	A	16		10	
Duty cycle @ X% (40°C)	A	220 (30%)	180 (30%)	300 (35%)	250 (40%)
Mains cable					
Length	m	3,5		4	
Section	mm ²	2,5		2,5	
Ground cable					
Section	mm ²	25		35	

General description of welding machine commands and controls

- Pos. 1 XVISION command and control panel.
- Pos. 2 Positive pole quick connection.
- Pos. 3 Fast coupling TIG torch gas tube.
- Pos. 4 TIG weld auxiliary control connector (torch button, remote control pedal, etc.).
- Pos. 5 Negative pole quick connection.
- Pos. 6 USB Socket.
- Pos. 7 Power supply switch. In the "O" position the welder is off.
- Pos. 8 Mains cable.
- Pos. 9 Welding gas hose.
- Pos. 10 Housing for analogue and digital interfaces for automation and robotising plants.



Communication interfaces for automation and robotics



The machine can be interfaced with various remote control systems for automation and robotics, including:

1. “RoboMAT 1” analogue / digital robot interface.

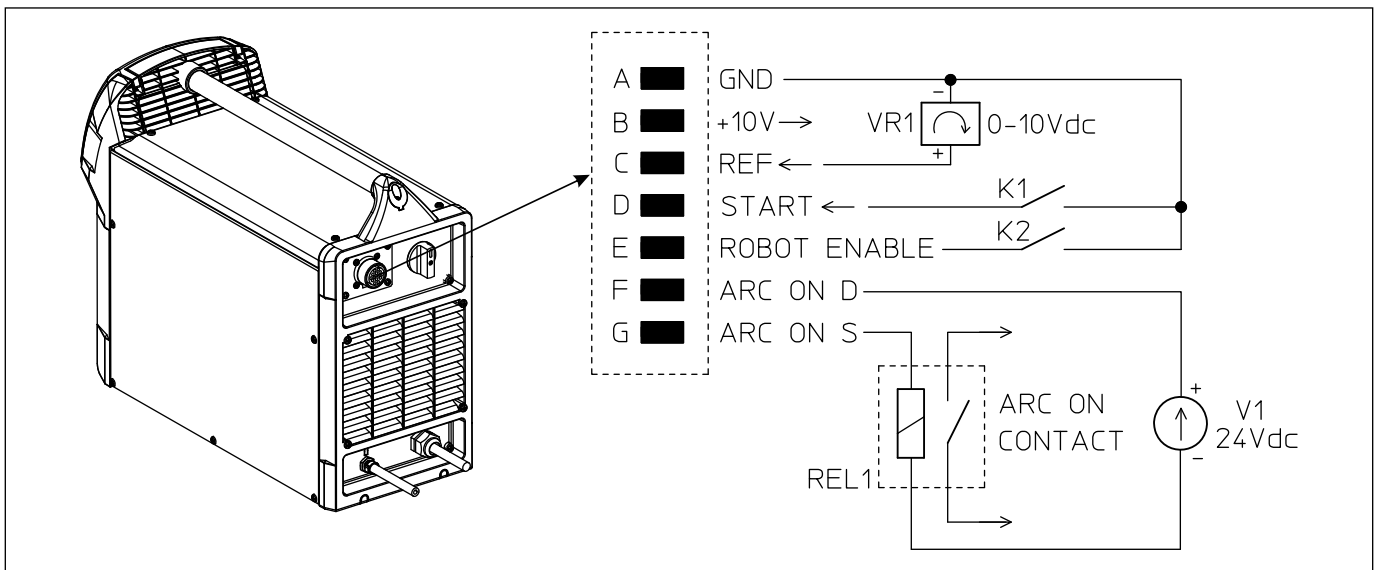
Connect the cable to the analogue / digital interface as shown in figure.

To connect the other end of this cable see the diagram in the manual for the “RoboMAT 1” analogue / digital robot interface.



IMPORTANT: Do not keep the “RoboMAT 1” analogue / digital robot interface connected to the generator, unless it is also powered by the automatic system.

2. Analogue interface for “simple” automation / robotics. A sample layout is shown below.



3. Anybus module to allow interfacing with all the most common field buses (Profinet, EthernetIP, EtherCAT, etc.).

The Anybus module is installed in the back of the machine and instantly offers support to the protocol selected.

For Ethernet based protocols, Anybus has a built-in switch so that it can be used natively with ring networks.

In addition it supports the rest APIs, which ensure complete compatibility with Industry 4.0 based systems.

TIG welding

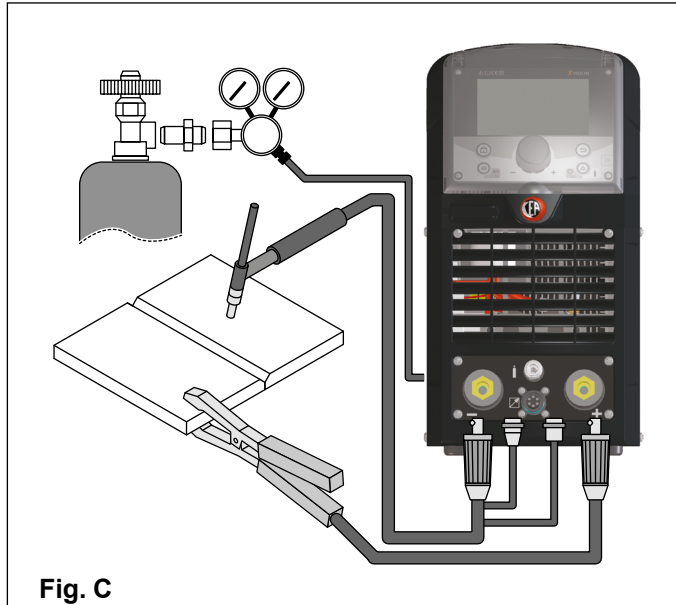
In the TIG process welding is achieved by melting the two metal pieces to be joined, with the possible addition of material from the outside, using an arc ignited by a tungsten electrode. The molten bath and the electrode are protected by and inert gas (for example, Argon). This type of welding is used to weld thin sheet metal or when elevated quality is required.

1) Connecting the welding cables (Fig. C):

- Connect the gas hose to the Argon cylinder.
- With the machine switched off:
 - Connect the ground cable to the snap-on connector marked + (positive).
 - Connect the relative ground clamp to the workpiece or to the workpiece support in an area free of rust, paint, grease, etc..
 - Connect the TIG torch power cable to the snap-on connector marked - (negative).
 - Connect the torch gas tube to the connection (Pos. 3, Fig. A).
 - Insert the torch button connector in the 6 poles holder (Pos. 4, Fig. A).

2) Switch the welding machine on by moving the power supply switch to I (Pos. 7, Fig. A).

3) Make the adjustments and select the parameters on the control panel (for further information see the control panel manual).



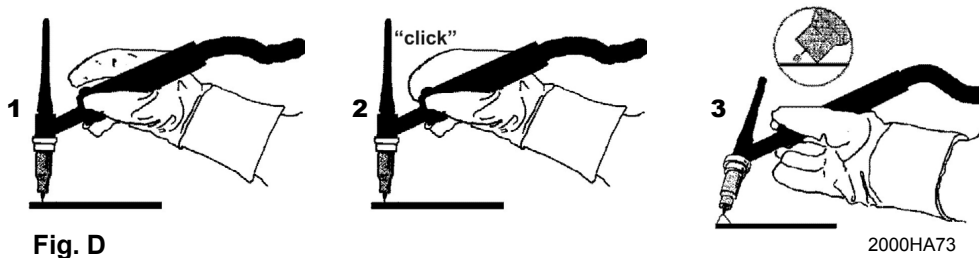
TIG welding with "lift" type striking

4a) Open the gas cylinder and flow regulator.

5a) Put the electrode at the point at which welding is to begin, put the TIG torch at an angle so that the edge of the gas nozzle is not on top of the piece to be welded, keeping contact between the point of the electrode and the piece to be welded (Fig. D-1).

6a) Press the torch button.

7a) The "Lift" function strikes the arc when the TIG torch electrode comes into contact with the workpiece and is then removed (Fig. D-2)



8a) Carry out TIG welding (Fig. D-3).

To end welding:

- Lift the torch slowly, at a certain point the welding current decreases, and then stop.
- The welding machine follows an automatic down slope along with extinguishing of the arc.

9a) When finished welding remember to shut off the gas cylinder.

TIG welding with high frequency striking (HF)

4b) Open the gas cylinder and flow regulator.

5b) Put the electrode at the point at which welding is to begin, put the TIG torch at an angle so that the edge of the gas nozzle is not on top of the piece to be welded, keeping a 2-3 mm gap between the point of the electrode and the piece to be welded (Fig. E-1).

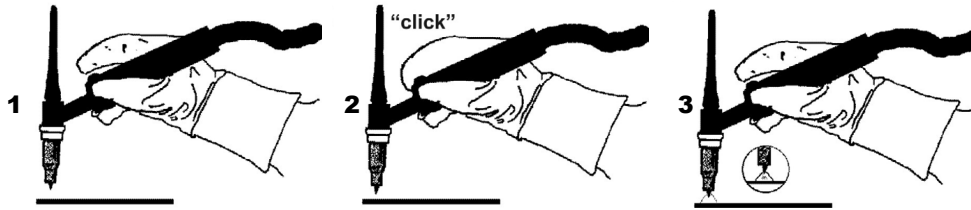


Fig. E

2000HA72

6b) Press the torch button.

7b) The voltaic arc strikes even without contact between the TIG torch electrode and the workpiece (Fig. E-2).

8b) To continue welding put the torch back in its normal position (Fig. E-3).



IMPORTANT: The high frequency switches off automatically after switching on.

Part to be welded

The part to be welded must always be connected to ground in order to reduce electromagnetic emission.

Much attention must be afforded so that the ground connection of the part to be welded does not increase the risk of accident to the user or the risk of damage to other electric equipment.

When it is necessary to connect the part to be welded to ground, you should make a direct connection between the part and the ground shaft.

In those countries in which such a connection is not allowed, connect the part to be welded to ground using suitable capacitors, in compliance with the national regulations.

Welding parameters

Table 3 shows the currents to use with the respective electrodes for TIG welding. This input is not absolute but is for your guidance only; read the electrode manufacturers' instructions for a specific choice. The diameter of the electrode to use is directly proportional to the current being used for welding.

Table 3

Ø ELECTRODE (mm)	ELECTRODE TYPE - Current adjustment field (A)			
	TIG DC		TIG AC	
	Tungsten Ce 1% Grey	Tungsten Rare ground 2% Turquoise	Tungsten Pure Green	Tungsten Rare ground 2% Turquoise
1	10-50	10-50	-	-
1,6	50-80	50-80	30-60	30-60
2,4	80-150	80-150	60-120	60-120
3,2	150-250	150-250	80-160	80-160
4	200-400	200-400	100-240	100-240
4,8	-	-	200-300	200-300
6,4	-	-	275-400	275-400

Protective gas quantity setting

To set the quantity of gas for TIG welding, proceed as follows:

- 1) Slowly open the valve on the gas cylinder.
- 2) Start the welding machine by selecting position "I" on the power supply switch (Pos. 7, Fig. A).

Press the SET key, the default setting for which is "TEST GAS FLOW" to check the welding gas for a period of 15 sec. If this key is pushed again, the process stops before time.

- 3) Regulate the quantity of gas using the pressure reducer.

If the setting is too low or too high air can get into the welding puddle, resulting in the formation of porosity or oxidation.

At Ar gas 100% the internal diameter of the gas nozzle in mm generally corresponds to the gas flow in l/min.

Helium rich gas mixtures calls for a greater quantity of gas.

If necessary the quantity of gas used must be corrected, based on the table below:

Protective gas	Correction factor
Argon 100%	l/min = Ø mm internal diameter of the gas nozzle
75% Ar / 25% He	1,15
50% Ar / 50% He	1,40
25% Ar / 75% He	1,80
100% He	> 2,50

Electrode welding (MMA)

The welding electrode is used to weld most metals (various types steel, etc.), for which rutilic and basic electrodes are used.

- 1) Connecting the welding cables (Fig. F):
Disconnect the machine from the mains power supply and connect the welding cables to the output terminals (Positive and Negative) of the welding machine, attaching them to the clamp and ground with the polarity specified for the type of electrode being used (Fig.F). Always follow the electrode manufacturer's instructions. The welding cables must be as short as possible, they must be near to one another, positioned at or near floor level. Do not touch the electrode clamp and the ground clamp simultaneously.
- 2) Switch the welding machine on by moving the power supply switch to I (Pos. 7, Fig. A).
- 3) Make the adjustments and select the parameters on the control panel (for further information see the control panel manual).
- 4) Carry out welding by moving the torch to the workpiece. Strike the arc (press the electrode quickly against the metal and then lift it) to melt the electrode, the coating of which forms a protective residue. Then continue welding by moving the electrode from left to right, inclining it by about 60° compared with the metal in relation to the direction of welding.

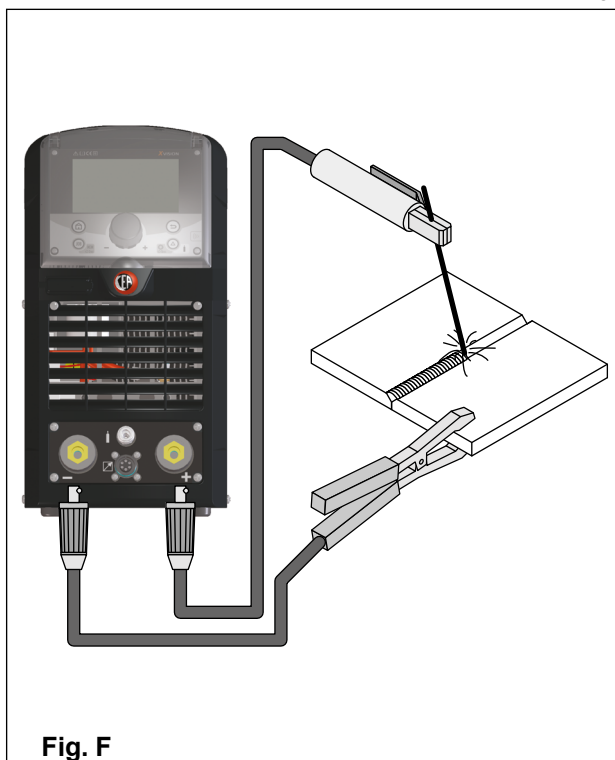


Fig. F



Part to be welded

The part to be welded must always be connected to ground in order to reduce electromagnetic emission.

Much attention must be afforded so that the ground connection of the part to be welded does not increase the risk of accident to the user or the risk of damage to other electric equipment.

When it is necessary to connect the part to be welded to ground, you should make a direct connection between the part and the ground shaft.

In those countries in which such a connection is not allowed, connect the part to be welded to ground using suitable capacitors, in compliance with the national regulations.

Welding parameters

Table 4 shows the values of current to use with the respective electrodes for the welding of common steels and low-grade alloys. These data have no absolute value and are indicative data only.

For a precise choice follow the instructions provided by the electrode manufacturer.

Table 4

Ø ELECTRODE (mm)	ELECTRODE TYPE - Current adjustment field (A)									WELDING THICKNESS (mm)
	6010 6011	6012	6013	6020	6027	7014	7015 7016	7018	7024 7028	
1,6	-	20-40	20-40	-	-	-	-	-	-	≤ 5
2	-	25-60	25-60	-	-	-	-	-	-	
2,4	40-80	35-85	45-90	-	-	80-125	65-110	70-100	100-145	≤ 6,5
3,2	75-125	80-140	80-130	100-150	125-185	110-160	100-150	115-165	140-190	> 3,5
4	110-170	110-190	105-180	130-190	160-240	150-210	140-200	150-220	180-250	> 6,5
4,8	140-215	140-240	150-230	175-250	210-300	200-275	180-255	200-275	230-305	
5,6	170-250	200-320	310-300	225-310	250-350	260-340	240-320	260-340	275-365	> 9,5
6,4	210-320	250-400	250-350	275-375	300-420	330-415	300-390	315-400	335-430	
8	275-425	300-500	320-430	340-450	375-475	390-500	375-475	375-470	400-525	> 13

The current to be used depends on the welding positions and the type of joint, and it increases according to the thickness and dimensions of the part.

The current intensity to be used for the different types of welding, within the field of regulation shown in table 4 is:

- High for plane, frontal plane and vertical upwards welding.
- Medium for overhead welding.
- Low for vertical downwards welding and for joining small pre-heated pieces.

A fairly approximate indication of the average current to use in the welding of electrodes for ordinary steel is given by the following formula:

$$I = 50 \times (\varnothing e - 1)$$

Where:

I = intensity of the welding current

Øe = electrode diameter

Example:

For electrode diameter 4 mm

$$I = 50 \times (4 - 1) = 50 \times 3 = 150A$$

Maintenance



ATTENTION: Before carrying out any inspection of the inside of the generator, disconnect the system from the supply.

SPARE PARTS

Original spare parts have been specially designed for our equipment. The use of non-original spare parts may cause variations in performance or reduce the foreseen level of safety.

We decline all responsibility for the use of non-original spare parts.

GENERATOR

As these systems are completely static, proceed as follow:

- Periodic removal of accumulated dirt and dust from the inside of the generator, using compressed air. Do not aim the air jet directly onto the electrical components, in order to avoid damaging them.
- Make periodical inspections in order to individuate worn cables or loose connections that are the cause of overheating.



Remote control

Various remote controls can be connected via the connector on the front of the welding machine. The welding machine's display will show a specific menu, requesting you to select which control has been connected. The machine changes some welding parameters automatically, based on the type of remote control set. For example, if the pedal is connected, the ramps are deactivated automatically. Obviously there is an item in the menu that allows you to change the choice made. See the manual for the control panel for further details.

MANUAL REMOTE CONTROL



WARNING: When using the machine for TIG welding it is **OBLIGATORY** to use the kit for simultaneous use – CEA code n° 460056.

When this control is activated, the welding current can be regulated remotely. The display will show the welding current regulated using the manual remote control. The remote control regulates the welding current between the minimum and maximum value set using the encoder on the welding machine (for further information see the manual for the control panel). To change the maximum supply value, rotate the regulating encoder on the welding machine.



FOOT SWITCH

This control replaces the button and the regulating knob for the welding current. When the pedal control is activated, the welding current can be regulated remotely. The pedal will regulate the welding current between the minimum and maximum value set using the encoder on the welding machine (for further information see the manual for the control panel).

To change the maximum supply value, rotate the regulating encoder on the welding machine.



NOTE:

- To use the pedal control correctly, set the "welding mode" to 2-stroke and then the welding parameters slope up time to 0 sec., slope down time to 0 sec.
- When only the pedal control is used, the torch button is activated by the microswitch inside the pedal, and the welding current will be regulated by the potentiometer inside the pedal.
- The simultaneous use kit, code CEA n° 460056, can be used to activate welding via the torch button and regulate the welding current using the pedal.



TORCH WITH POTENTIOMETER

This torch includes a torch button and welding current regulating potentiometer.

When this torch is activated, the welding current can be regulated remotely. The torch will regulate the welding current between the minimum and maximum value set using the encoder on the welding machine (for further information see the manual for the control panel). To change the maximum supply value, rotate the regulating encoder on the welding machine.



AIR AND/OR WATER-COOLED TORCH UP/ DOWN

The up/down torch acts as the current setting knob on the front of the welder.

Press right (+) and left (-) button to adjust the active parameter.

With this kind of torch, it is also possible to scroll the saved programmes by pressing the two (+) and (-) buttons.

Turn the knob to scroll the programmes until an empty and unused programme is found.

NOTE: Programme sequences can be created by placing an empty programme between saved ones.

NOTE: The value shown on the display during welding represents the effective current output with all types of control.

The digital control unit of the generator is fitted with a control recognition device which allows it to identify which device is connected and take action accordingly. To allow the command recognition device to work correctly, connect (with the machine switched off) the required accessory to the relative connector and then switch on the welding machine with the on/off switch.

NOTE: It is not possible to memorize or open programmes when the remote controls are connected (except for the torch with UP/DOWN commands).

If a remote control is connected (followed by self-acknowledgement procedure) the machine will automatically return to the manual-welding phase if it has been pre-set for automatic welding.



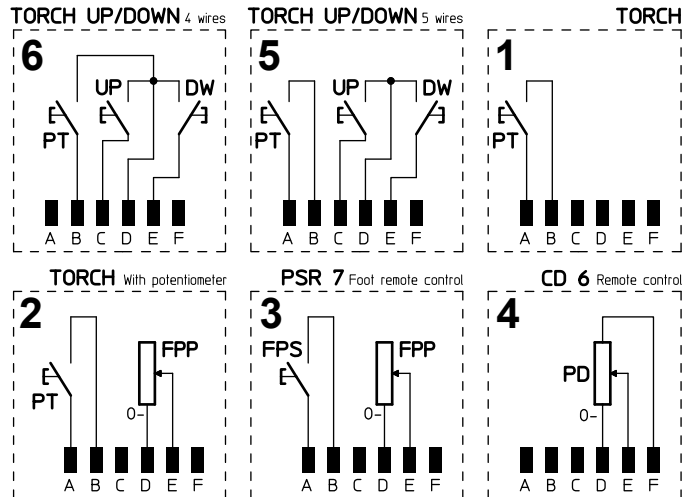


A6 kit for connecting non-standard CEA torches

To connect non-standard CEA TIG torches, use kit code 46005.



Wiring diagram for 6-pole connector connection



SYMBOL	DESCRIPTION
1	Torch with single button
2	Torch with potentiometer
3	PSR7 Pedal control
4	CD 6 remote control
5	Torch UP / DOWN with no.5 wires
6	Torch UP / DOWN with no.4 wires
DW	Pulsante Down
FPP	Potenziometro 10 kΩ
FPS	Pulsante Start
PD	Potenziometro 10 kΩ
PT	Pulsante torcia
UP	Pulsante Up

The pointing out of any difficulties and their elimination

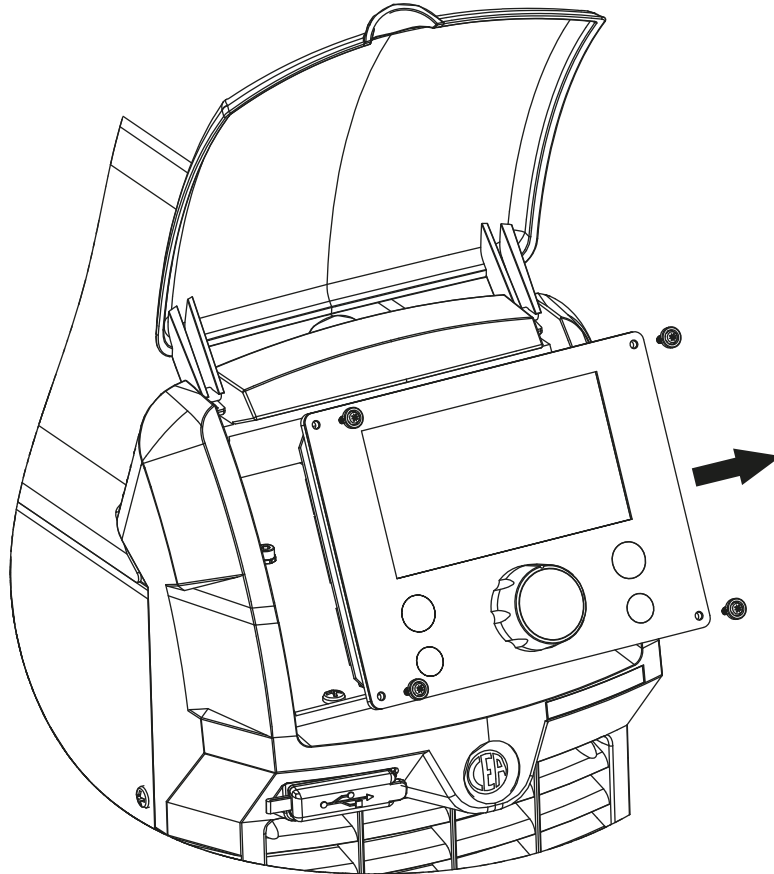
The supply line is attributed with the cause of the most common difficulties. In the case of breakdown, proceed as follows:

- 1) Check the value of the supply voltage
- 2) Check that the power cable is perfectly connected to the plug and the supply switch
- 3) Check that the power fuses are not burned out or loose
- 4) Check whether the following are defective:
 - The switch that supplies the machine.
 - The plug socket in the wall.
 - The generator switch.

NOTE: Given the required technical skills necessary for the repair of the generator, in case of breakdown we advise you to contact skilled personnel or our technical service department.
















Digital interface PCB replacement

- Unscrew the 4 screws fastening the front rack panel.
- Remove the adjustment knob.
- Extract wiring connectors from digital interface PCB.
- Unscrew small supporting columns.
- Remove digital interface PCB by lifting it out of its supports.
- Proceed vice versa to assemble new digital interface PCB.





Meaning of graphic symbols on machine

SYMBOL	DESCRIPTION
	Power supply switch
	System for use in environments with increased risk of electroshock
	Product suitable for free circulation in the European Community
	Product suitable for free circulation in the UK
	Danger! High voltage
	Grounding
	Positive pole snap-in connector
	Negative pole snap-in connector
	Connector for the remote control
	Warning!
	Fast coupling TIG torch gas tube
	Before using the equipment you should carefully read the instructions included in this manual
	MMA welding
	TIG welding
	Special disposal



MATRIX X220 AC/DC wiring diagram

Wiring diagram legend

CA	Power supply connector 230V 50/60Hz
CD 6	Manual remote control
CP	EMC capacitors
CR	Power supply connector for the cooling system
CRS	14-pole connector for simple automation
CT	6-pole connector
D	Secondary diode
DB	"Dual Boost Chopper" IGBT
DW	"DOWN" button
EVG	Gas solenoid valve
F	Fuse
FCTA	Torch button filter board
FE	Primary circuit EMC filter
FHF	HF filter
FPP	Torch / PEDAL potentiometer
FPS	Pedal "ON" switch
HR	Water cooling system
IL	Power supply switch
L	Inductor
L1-L2	PFC inductances
M	Electric pump
MI	"Full Bridge" IGBT
MIS	Secondary IGBT circuit
MV	Fan motor
PD	Remote control potentiometer
PSR7	Pedal
PT	Torch button
RF	Membrane keyboard
RP	Primary rectifier
S-AI	ROBOMAT-1 board
S-ANY	ANY-BUS board
SD	Secondary circuit diodes PCB
SHF	High frequency (HF) PCB
SI	Secondary circuit IGBT board
S-INT DIG	Digital interface PCB
S-INV	Inverter PCB
S-ISR	Automation interface isolation board
S-NFC	NFC communication card
S-TFT	TFT display card
TC	Current transducer
TF	Toroidal ferrite
TH	Secondary circuit diode thermostat
TH20	Coolant thermistor
THA	Ambient thermistor
THD	Heatsink thermistor
THF	HF transformer
TORCH	TIG torch
TORCH UP/DOWN 4 wires	TIG UP / DOWN 4-wire version torch
TORCH UP/DOWN 5 wires	TIG UP / DOWN 5-wire version torch
TORCH with potentiometer	TIG torch with potentiometer
TP	Transformer
UP	"UP" button
USB	USB socket
W	Pressure switch



Colour key

AN	Orange Black
Ar	Orange
Az	Sky blue
Bc	White
Bl	Blue
BN	White Black
BR	White Red
Gg	Grey
Gl	Yellow
GV	Yellow Green
Mr	Brown
NB	Black Blue
Nr	Black
RB	Red Blue
RN	Red Black
Ro	Pink
Rs	Red
Vd	Green
VI	Violet



Matrix X300 AC/DC wiring diagram

Legenda schema elettrico

CD 6	Manual remote control
CP	EMC capacitors
CR	Power supply connector for the cooling system
CRS	14-pole connector for simple automation
CT	6-pole connector
D	Secondary diode
DS	Secondary diode discharger
DW	"DOWN" button
EVG	Gas solenoid valve
F	Fuse
FCTA	Torch button filter board
FE	Primary circuit EMC filter
FHF	HF filter
FPP	Torch / PEDAL potentiometer
FPS	Pedal "ON" switch
HR	Water cooling system
IL	Power supply switch
M	Electric pump
MI	IGBT "Full Bridge"
MIS	Secondary IGBT circuit
MV	Fan motor
PD	Remote control potentiometer
PSR7	Pedal
PT	Torch button
RC	Secondary R-C diode
RF	Membrane keyboard
RP	Primary rectifier
RSP	Secondary IGBT protection board resistance
S-AI	ROBOMAT-1 board
S-AL	PCB
S-ANY	ANY-BUS board
SDRV	Secondary circuit PCB
SHF	High frequency (HF) PCB
S-INT DIG	Digital interface PCB
S-INV	Inverter PCB
S-ISR	Automation interface isolation board
S-NFC	NFC communication card
SP	Secondary IGBT protection board
SR	Cooling system relay board
S-TFT	TFT display card
TA	Auxiliary transformer
TC	Current transducer
TH20	Coolant thermistor
THA	Ambient thermistor
THD	Heatsink thermistor
THF	HF transformer
THP	Primary circuit thermistor
THS	Secondary circuit thermostat
TORCH	TIG torch
TORCH UP/DOWN 4 wires	TIG UP / DOWN 4-wire version torch
TORCH UP/DOWN 5 wires	TIG UP / DOWN 5-wire version torch
TORCH with potentiometer	TIG torch with potentiometer
TP	Transformer
UP	"UP" button
USB	USB socket
W	Pressure switch



Colour key

AN	Orange Black
Ar	Orange
Az	Sky blue
Bc	White
Bl	Blue
BN	White Black
BR	White Red
Gg	Grey
Gl	Yellow
GV	Yellow Green
Mr	Brown
NB	Black Blue
Nr	Black
RB	Red Blue
RN	Red Black
Ro	Pink
Rs	Red
Vd	Green
VI	Violet

MATRIX X 220 AC/DC MATRIX X 300 AC/DC

IT	<i>Lista ricambi</i>	LEGGERE ATTENTAMENTE
EN	<i>Spare parts list</i>	READ CAREFULLY
FR	<i>Liste pièce de rechange</i>	LIRE ATTENTIVEMENT
DE	<i>Ersatzteilliste</i>	SORGFÄLTIG LESEN
ES	<i>Lista repuestos</i>	LEER ATENTAMENTE
NL	<i>Onderdelenlijst</i>	EERST GOED DOORLEZEN
PT	<i>Lista de peças de substituição</i>	LER ATENTEMENTE
DA	<i>Liste over reservedele</i>	LÆS OMHYGGELIGT
SV	<i>Reservdelslista</i>	LÄS NOGAS
FI	<i>Varaosaluettelo</i>	LUE HUOLELLISESTI
N	<i>Reservedelliste</i>	LES NØYE
RU	<i>Список запасных частей</i>	ПЕРЕД НАЧАЛОМ РАБОТЫ ВНИМАТЕЛЬНО ПРОЧИТАЙТЕ ИНСТРУКЦИЮ



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TOGETHER**

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IT Ordinazione dei pezzi di ricambio

Per la richiesta di pezzi di ricambio indicare chiaramente:

- 1) Il numero di codice del particolare
- 2) Il tipo di impianto
- 3) La tensione e la frequenza che rileverete dalla targhetta dei dati posta sull'impianto
- 4) Il numero di matricola

ESEMPIO

N° 2 pezzi, codice n. 352582 - per l'impianto MATRIX X300 AC/DC - 400 V - 50/60 Hz - Matricola n°

EN Ordering spare parts

To ask for spare parts clearly state:

- 1) The code number of the piece
- 2) The type of device
- 3) The voltage and frequency read on the rating plate
- 4) The serial number of the same

EXAMPLE

N. 2 pieces code n. 352582 - for MATRIX X300 AC/DC - 400 V - 50/60 Hz - Serial number

FR Commande des pièces de rechange

Pour commander des pièces de rechange indiquer clairement:

- 1) Le numéro de code de la pièce
- 2) Le type d'installation
- 3) La tension et la fréquence que vous trouverez sur la petite plaque de données placée sur l'installation
- 4) Le numéro de matricule de la même

EXEMPLE

N. 2 pièces code 352582 - pour l'installation MATRIX X300 AC/DC - 400 V - 50/60 Hz - Matr. Numéro

DE Bestellung Ersatzteile

Für die Anforderung von Ersatzteilen geben Sie bitte deutlich an:

- 1) Die Artikelnummer des Teiles
- 2) Den Anlagentyp
- 3) Die Spannung und Frequenz, die Sie auf dem Datenschild der Anlage finden
- 4) Die Seriennummer der Schweißmaschine

BEISPIEL

2 Stück Artikelnummer 352582 - für Anlage MATRIX X300 AC/DC - 400 V - 50/60 Hz - Seriennummer

ES Pedido de las piezas de repuesto

Para pedir piezas de repuesto indiquen claramente:

- 1) El número de código del particular
- 2) El tipo de instalación
- 3) La tensión y la frecuencia que se obtiene de la chapa datos colocada sobre la instalación
- 4) El número de matrícula de la soldadora misma

EJEMPLO

N. 2 piezas código 352582 - para instalación MATRIX X300 AC/DC - 400 V - 50/60 Hz - Matrícula N.

NL Bestelling van reserveonderdelen

Voor het bestellen van onderdelen duidelijk aangeven:

- 1) Het codenummer van het onderdeel
- 2) Soort apparaat
- 3) Spanning en frequentie op het gegevensplaatje te vinden
- 4) Het serienummer van het lasapparaat

VOORBEELD

N. 2 stuks code 352582 - voor apparaat MATRIX X300 AC/DC - 400 V - 50/60 Hz - Serie Nummer

PT Requisição de peças sobressalentes

Ao pedir as peças de substituição indique claramente:

- 1) O número de código da peça
- 2) O tipo de equipamento
- 3) A tensão e a frequência indicadas na la placa de dados do equipamento
- 4) O número de matrícula da própria máquina de soldar

EXEMPLO

N° 2 peças código n. 352582 - para o equipamento MATRIX X300 AC/DC - 400 V - 50/60 Hz
Matrícula n.

DA Bestilling af reservedele

For at bestille reservedele skal man nøjagtigt angive:

- 1) Reservedelens kodenummer
- 2) Anlæggets type
- 3) Spænding og frekvens, som står på anlæggets typeskylt
- 4) Selve svejsemaskinens registreringsnummer

EKSEMPEL

2 stk. nummer 352582 - til anlæg model MATRIX X300 AC/DC - 400 V - 50/60 Hz - Registreringsnummer Nr.

SV Beställning af reservdelar

Vid förfrågan av reservdelar ange tydligt:

- 1) Detaljens kodnummer
- 2) Typ av apparat
- 3) Spänning och frekvens - den står bland tekniska data på apparatens märkplåt
- 4) Svetsens serienummer

EXEMPEL

2 st. detaljer kod 352582 - för apparat MATRIX X300 AC/DC - 400 V - 50/60 Hz - Serienummer

FI Varaosien tilaus

Tiedustellessanne varaosia, ilmoittakaa selvästi:

- 1) Osan koodinnumero
- 2) Laitteiston tyyppi
- 3) jännite ja taajuus, jotka on ilmoitettu laitteistolle sijoitetusta tietokyltistä
- 4) Hitsauskoneen sarjanumero

ESIMERKKI

2 osaa, koodi 352582 - laitteistoon MATRIX X300 AC/DC - 400 V - 50/60 Hz - Sarjanumero

N Bestilling av reservedeler

Ved bestilling av reservedeler må du oppgi:

- 1) Delenes kodenummer
- 2) Type apparat
- 3) Apparatets spenning og frekvens som finnes på merkeplaten for data på apparatet
- 4) Sveiseapparatets serienummer

EKSEMPEL

2 stk. kode 352582 - for apparat MATRIX X300 AC/DC - 400 V - 50/60 Hz - Serienummer

RU Заказ запасных частей

Для запроса запасных частей укажите точно:

- 1) код запчасти,
- 2) модель машины,
- 3) напряжение и частоту, написанные на пластине,
- 4) ее серийный номер.

ПРИМЕР

2 шт., код № 352582 п - штук деталей - для сварочной машины MATRIX X300 AC/DC - 400 В - 50/60 Hz
Серийный номер

XVISION



**WELDING
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ENGLISH

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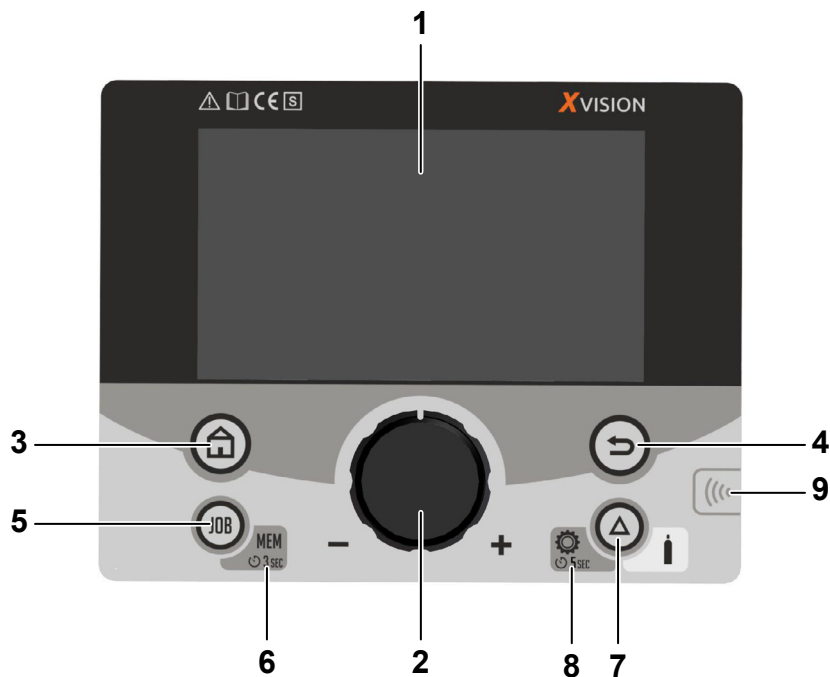


Introduction

This manual describes the functions on and how to use the following control panels:

- **XVISION** for MATRIX X220 AC/DC.
- **XVISION** for MATRIX X300 AC/DC.


Control panel



POSITION	SYMBOL	FUNCTION
1		TFT colour display.
2		Knob / key for regulating, selecting, and confirming parameters
3		HOME Key From any screen, this key takes you back to the welding page. If you are already in the welding page, it provides access to the process configuration menu.
4		BACK Key Used to go back to the previous screen.
5		JOB Key Used to manage all parameters for recurring welding tasks, and to retrieve them quickly and simply whenever they are needed. Push once to access the job list. The knob can be used to select and load a job.
6		3 sec. JOB MEM Symbol When the JOB key is held down for 3 seconds on the welding panel, the welding settings can be saved in one of the JOBS.
7		Programmable SET Key This programmable key can be used to facilitate the user in carrying out some tasks that are more frequent than others. Its default programming is as "GAS FLOW TEST" for checking the welding gas for 15 seconds (this time can be programmed in the configuration menu). When this key is pushed again the process is stopped early.
8		Hold the key down for 5 seconds to enter the welding machine configuration menu.
9		NFC area for managing users and locking / unlocking the generator with an NFC card (optional).



Switching on the welding machine

Move the power switch on the generator to "I" to switch the welding machine on .

The welcome page shown below appears for a few seconds.





SWITCHING ON FOR THE FIRST TIME OR AFTER A COMPLETE RESET PROCEDURE

GENERAL


LANGUAGE	ENGLISH
SOUND	ON
SET BUTTON	GAS FLOW TEST
FULL RESET	NO

LANGUAGE Choose the language - ENGLISH / ITALIANO / ...

ACTION	RESULT
Push the HOME key 	WELD page
Push the HOME key again 	Welding PROCESS configuration page


SWITCHING ON SUBSEQUENTLY

The welding machine sets itself up on the weld page, with the last configuration prior to being switched off.

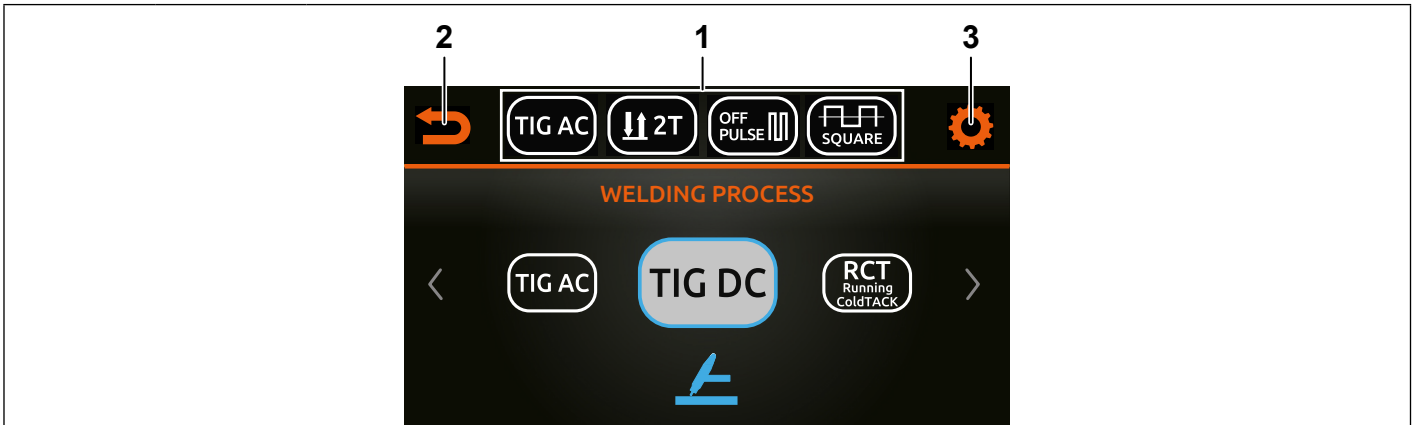
ACTION	RESULT
Push the HOME key 	Welding PROCESS configuration page









Welding process configuration menu











WELDING PROCESS CONFIGURATION MENU	
ACTION	RESULT
Push the HOME key  from the WELD page.	Welding PROCESS configuration page.

Configuring the welding process follows a logical path. Each choice made in the previous step changes the options available in the next step.



POSITION	SYMBOL	DESCRIPTION
1	   	Area for selecting the welding process parameters: <ul style="list-style-type: none"> • Welding process. • Type of ignition. • Welding mode. • Type of pulsation. • Type of AC welding wave.
2		Go back to the previous screen.
3		Go to the CONFIGURATION menu.

The welding process parameter selection area is divided into the following sections:

WELDING PROCESS	DESCRIPTION
 	TIG AC - TIG AC welding with HF ignition.
 	TIG DC - TIG DC welding with various types of HF ignition.
 	RCT RCT Running Cold TACK - TIG DC welding with a RCT Running Cold TACK process that makes it possible to form very cold weld seams.
 	MMA AC - ELECTRODE welding in AC.
 	MMA DC - ELECTRODE welding in DC.



TYPE OF IGNITION	DESCRIPTION
	HF - High frequency arc ignition.
	LIFT TIG - "Lift" type arc ignition without high frequency.
	HF PERFECT POINT - High frequency arc ignition in "Perfect-Point" mode, which guarantees perfect centring of the welding point.






WELDING MODE	DESCRIPTION
	<p>2T - TIG 2 touch welding mode.</p> <p>TIG welding takes place as follows:</p> <p>When the torch button is pushed welding begins starting with the INITIAL CURRENT (if SLOPE UP is selected), while when it is released welding ends when the FINAL CURRENT is reached (if SLOPE DOWN is set).</p>
	<p>4T - TIG 4 touch welding mode - STANDARD.</p> <p>TIG welding takes place as follows:</p> <ul style="list-style-type: none"> • When the torch button is pushed welding begins at the INITIAL current. • When the torch button is released the SLOPE UP process is carried out (if applicable) and the current returns to the PRINCIPAL value I1. • When the torch button is pushed the SLOPE DOWN process is carried out (if applicable) and the current returns to the FINAL value. • When the button is released the welding cycle ends.
	<p>4T AUTO- TIG 4 touch welding mode - AUTO.</p> <p>TIG welding takes place as follows:</p> <ul style="list-style-type: none"> • Pressing and releasing the torch button, after the arc has ignited, starts the welding until the MAIN current I1 is reached (if a SLOPE UP is set, this will be carried out). • Pressing and releasing the torch button carries out the SLOPE DOWN (if set) and welding stops.
	<p>CYCLE - TIG welding mode with a cycle function between 2 current levels.</p> <p>When this function has been activated, TIG welding takes place as follows:</p> <ul style="list-style-type: none"> • When the torch button is pushed welding begins at the INITIAL current. • When the torch button is released the SLOPE UP process is carried out (if applicable) and the current returns to the PRINCIPAL value I1. • When the torch button is pressed and released within less than 1 second the welding current goes to the CYCLE value (I2), and by repeating this operating you can move between the two current levels (I1), (I2) an infinite number of times. • When the torch button is pushed and held down (for longer than 1 second) you exit the cycle, the SLOPE DOWN process is carried out (if applicable) and the current returns to the FINAL value. When the torch button is released the welding cycle ends.
	<p>SPOT - TIG spot welding that can be used for precise, safe seams with low heat applied.</p> <p>This can be used by pushing the torch button to spot weld for a pre-set period of time (in seconds) at the end of which the arc switches off automatically.</p>
	<p>Cold TACK - This mode makes it possible to do cold tack welds in rapid sequence, in order to further amplify the benefits of a single spot.</p>
	<p>TIG VALVE TORCH - The welding mode for TIG torch welding with a manual gas valve.</p>





The following welding modes can be activated as indicated below:






- CONFIGURATION menu
- WELDING section
- 2T-4T AUTO ADV line
- Choose ACTIVE



	<p>2T ADVANCE - 2-touch ADVANCE welding mode, with the option of setting the initial and final welding current.</p>
	<p>4T AUTO ADVANCE - 4-touch AUTO welding mode, with the option of setting the initial and final welding current.</p>



PULSATION TYPE	DESCRIPTION
	OFF pulse - Pulsation off.
	SYN PULSE - Synergic pulsation. TIG pulse welding with synergic setting of parameters. This function, which is good for less skilled operators, makes it possible to change the pulsation parameter (for example, the peak current I_p) and the other values for the corresponding pulsation parameters (Base current I_b - Pulsation frequency f) vary automatically.
	FAST PULSE - Fast pulsation (0,5-500Hz).
	ULTRA FAST PULSE - Ultra fast pulsation (550-2000Hz). The possibility of using pulsation frequencies that are not as high, up to 2000 Hz, ideal for welding minor thicknesses, makes it possible to achieve a great reduction in the arc cone and the area thermally altered, with a more stable, concentrated arc and an increase in weld penetration and speed.
	SLOW PULSE - Slow pulsation, with setting of the duration of the PEAK current and of the BASIC current.

TYPE OF TIG AC WAVE	DESCRIPTION
	DYNAMIC TIG - Square wave: highly dynamic arc for all applications.
	SPEED TIG: Mixed wave: excellent penetration with high welding speed and low electrode consumption. Ideal for average / thick thicknesses and vertical welds. Increases penetration, thermal control of the arc, and lifespan of the electrode.
	COLD TIG - Triangular wave: low heat generation with reduced distortion, ideal for minor thicknesses.
	SOFT TIG - Sinusoidal wave: gentle, soft arc with low noise, ideal for average thicknesses.

MMA ELECTRODES	DESCRIPTION
	Basic electrode
	Rutile electrode
	Electrode for stainless steel
	Cellulose electrode
	Special electrodes

TYPE OF MMA DC PULSATION	DESCRIPTION
	OFF pulse - Pulsation off
	SLOW PULSE - Slow MMA Pulsation



The possible parameter combinations based on the welding process chosen, are as follows:

WELDING PROCESS	WELDING MODE		PULSED MODE		TYPE OF AC WAVE			
			SLOW PULSE	OFF PULSE	SQUARE	MIX	TRIANGULAR	SINUSOIDAL
	DEFAULT	ADVANCE						
TIG AC	2T	2T ADVANCE (*)	X	X	X	X	X	X
	4T		X	X	X	X	X	X
	4T AUTO	4T AUTO ADVANCE (*)	X	X	X	X	X	X
	CYCLE		X	X	X	X	X	X
	SPOT				X	X	X	X



WELDING PROCESS	TYPE OF IGNITION	WELDING MODE		PULSED MODE				
				OFF PULSE	SYN PULSE	FAST PULSE	ULTRA FAST PULSE	SLOW PULSE
		DEFAULT	ADVANCE					
TIG DC	HF	2T	2T ADVANCE (*)	X	X	X	X	X
		4T		X	X	X	X	X
		4T AUTO	4T AUTO ADVANCE (*)	X	X	X	X	X
	HF PERFECT POINT	CYCLE		X	X	X	X	X
		SPOT						
		COLD TACK						

WELDING PROCESS	TYPE OF IGNITION	WELDING MODE		PULSED MODE				
				OFF PULSE	SYN PULSE	FAST PULSE	ULTRA FAST PULSE	SLOW PULSE
		DEFAULT	ADVANCE					
TIG DC	LIFT TIG	2T	2T ADVANCE (*)	X	X	X	X	X
		4T		X	X	X	X	X
		4T AUTO	4T AUTO ADVANCE (*)	X	X	X	X	X
		CYCLE		X	X	X	X	X
		SPOT						
		TIG VALVE TORCH						



WELDING PROCESS	TYPE OF IGNITION	WELDING MODE	
		DEFAULT	ADVANCE
RCT Running Cold TACK	HF HF PERFECT POINT	2T	2T ADVANCE (*)
		4T	
		4T AUTO	4T AUTO ADVANCE (*)
		CYCLE	
		SPOT	
		COLD TACK	

(*) Advance welding mode can be activated as follows:

- CONFIGURATION menu  
- WELDING section
- 2T-4T AUTO ADV line
- Choose ACTIVE

WELDING PROCESS	TYPE OF ELECTRODE				
	BASIC	RUTILE	CrNi	CELL	SPECIAL
MMA AC	X	X	X	X	X

WELDING PROCESS	TYPE OF ELECTRODE	PULSED MODE	
		OFF PULSE	SLOW PULSE
MMA DC	BASIC	X	X
	RUTILE	X	X
	CrNi	X	X
	CELL	X	X
	SPECIAL	X	X



TIG “AC” Welding



Via the welding process configuration menu, set:


- TIG AC welding process with HF ignition.
- Welding mode.
- Type of pulsation.
- Type of AC wave shape.

The possible parameter combinations are as follows:

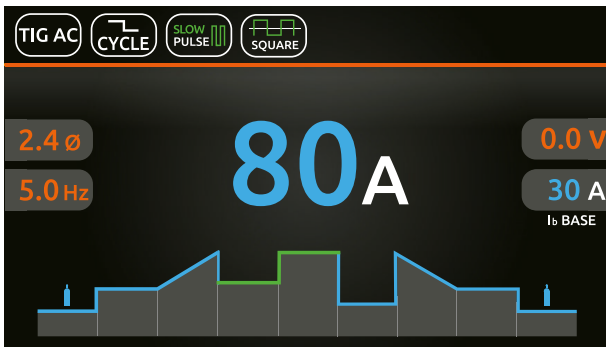
WELDING PROCESS	WELDING MODE		PULSED MODE		TYPE OF AC WAVE			
	DEFAULT	ADVANCE	SLOW PULSE	OFF PULSE	SQUARE	MIX	TRIANGULAR	SINUSOIDAL
TIG AC	2T	2T ADVANCE (*)	X	X	X	X	X	X
	4T		X	X	X	X	X	X
	4T AUTO	4T AUTO ADVANCE (*)	X	X	X	X	X	X
	CYCLE		X	X	X	X	X	X
	SPOT				X	X	X	X

(*) Advance welding mode can be activated as follows:

- CONFIGURATION menu  
- WELDING section
- 2T-4T AUTO ADV line
- Choose ACTIVE

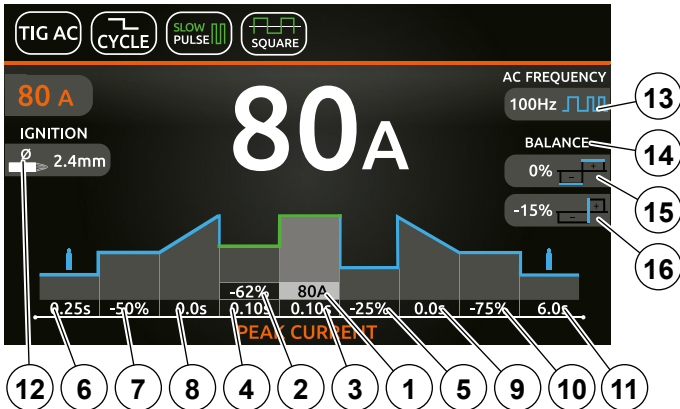
When the  key is pushed, the welding page opens:


An example of complete configuration of all the parameters is shown below:



Push the knob to enter the SET page.

Push and rotate the knob to set the following parameters:







NOTE: If the BACK  key is held down for 2 seconds, the parameter goes back to its default setting.



1. Main **I1** welding current (if OFF PULSE is set).
Peak current (if SLOW PULSE is set).



Depending in the type of AC wave shape selected, for pre-setting and welding, the display will indicate the following current value:

TYPE OF TIG AC WAVE		WELDING CURRENT VALUE
 SQUARE	DYNAMIC TIG	Peak current
 MIX	SPEED TIG	Peak current
 TRIANGULAR	COLD TIG	RMS Current
 SINUSOIDAL	SOFT TIG	RMS Current

2. "Absolute" basic current value in Ampere (default) or as % of the peak current (if SLOW PULSE is set).
3. Duration of the peak current (if SLOW PULSE is set).
4. Duration of the basic current (if SLOW PULSE is set).
5. (When CYCLE is set) "Absolute" **I2** cycle current value in Ampere (default) or as % of the main current for **I1** welding, or of the peak current when pulsation is set.

When the CYCLE function is active, when the torch button is pressed and released within less than 1 second the welding current goes to the **I2** CYCLE. value, and by repeating this operating you can switch between the **I1** and **I2**. current levels an infinite number of times. When the torch button is held down for more than 1 second, you exit the cycle.

This welding mode is especially indicated for welding profiles with different thickness, where continuous current variation is required. Also, when welding aluminium, it allows you to have a higher initial current, thereby facilitating pre-heating of the workpiece.

6. PRE-GAS duration.
7. "Absolute" initial welding current value in Ampere (default) or as % of the main current for **I1** welding, or of the peak current when pulsation is set.
8. SLOPE UP duration.
9. SLOPE DOWN duration.
10. "Absolute" final welding current value in Ampere (default) or as % of the main current for **I1** welding, or of the peak current when pulsation is set.
11. POST-GAS duration.
12. Select the diameter of the electrode to achieve the best control of ignition in synergic mode (default).
If the "CONFIGURATION"   menu is used to select manual ignition, you can set:

 Ignition current

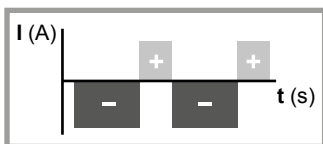
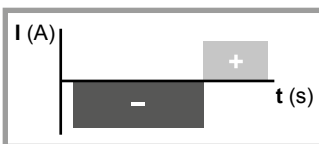
 Duration of the ignition time

NOTE: If the value of these 2 parameters is too low, this could prejudice ignition.

13. Frequency of the AC welding current.
This controls the frequency for the various wave shapes, for better directional control, reducing the thermally altered area, with greater penetration and lower electrode consumption. The high frequency makes it possible to weld very small thicknesses with excellent results, while the low frequency is ideal for welding average thicknesses, or where edge preparation is poor.

MIN 40 Hz

MAX 250 Hz



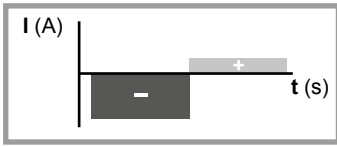


14. Balancing.

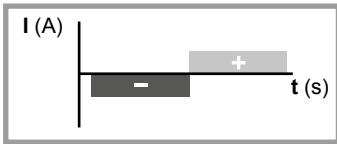
It is possible to adjust the time (t) and amplitude of the current (I) while the electrode stays in place simultaneously and independently, using positive or negative values, guaranteeing perfect control of penetration and cleanliness, drastically reducing side incisions.

15. Balancing the welding current amplitude.

It is possible to adjust the amplitude of the current (I) while the electrode stays in place independently, using positive or negative values, guaranteeing perfect control of penetration and cleanliness, drastically reducing side incisions.



Display	-	+
-50	150%	50%



Display	-	+
0	100%	100%



Display	-	+
+20	80%	120%

16. Balancing the welding current time.

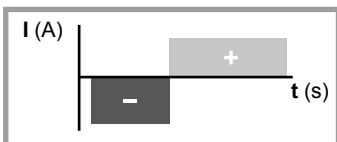
It allows you to adjust the time (t) the positive or negative electrode stays in place independently, guaranteeing perfect control of penetration and cleanliness, drastically reducing side incisions.



Display	-	+
-35	85%	15%



Display	-	+
0	50%	50%



Display	-	+
+10	40%	60%

Once the all the selections/settings indicated above have been made, welding can begin.

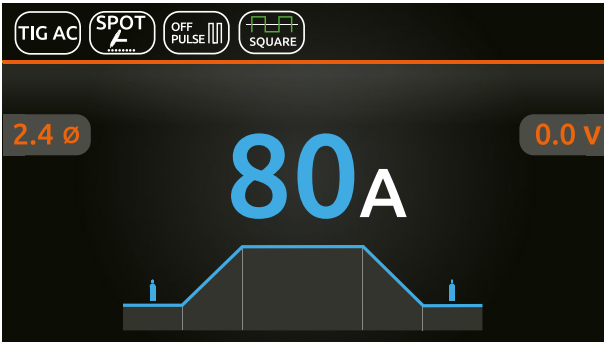
During the welding process the display shows the current and the real voltage at which the operator is actually welding.



SPOT welding mode

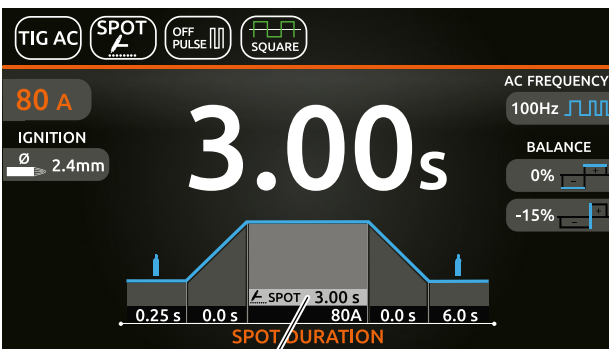
An example of the configuration of parameters with SPOT welding mode active is shown below.

This can be used by pushing the torch button to spot weld for a pre-set period of time (in seconds) at the end of which the arc switches off automatically.



Push the knob to enter the SET page.

By pushing and rotating the knob, besides the parameters described above, you can set:



1. Spot time.

NOTE: If the BACK key is held down for 2 seconds, the parameter goes back to its default setting.

Once all the selections/settings indicated above have been made, welding can begin.

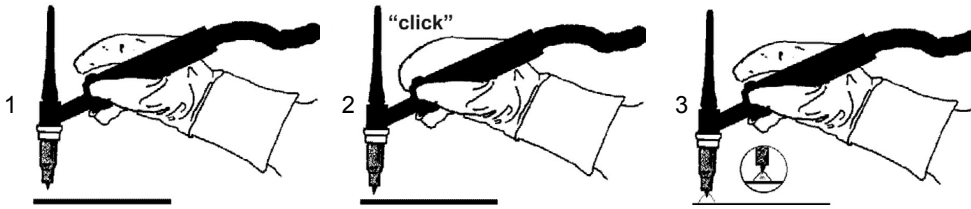
During the welding process the display shows the current and the real voltage at which the operator is actually welding.



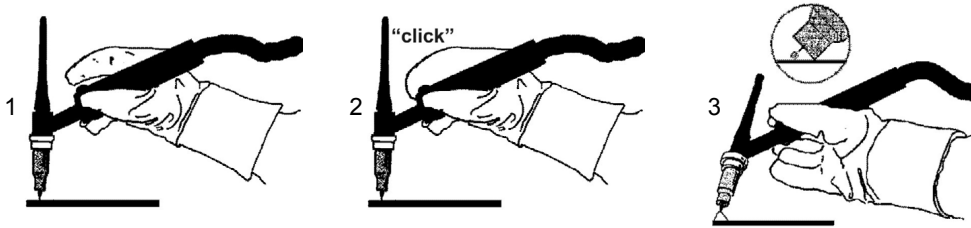
TIG “DC” welding with “HF”, “LIFT TIG” and “HF PERFECT POINT” welding

Via the welding process configuration menu, set:

- TIG “DC” welding process.
- TYPE OF IGNITION:
 1. “HF” for welding with high frequency ignition.



2. “LIFT TIG” for “Lift type welding without high frequency.



WARNING: The “Lift” ignition current is created by pushing the torch button only after having touched the workpiece with the electrode.

3. “HF PERFECT POINT” for welding with high frequency ignition.

With this type of ignition you can begin welding by igniting the arc at a “distance” or by touching the piece to be welded with the tungsten tip, thereby automatically activating “HF PERFECT POINT” ignition.

The “HF Perfect POINT” type of ignition ensures perfect centring of the welding point. “Perfect-Point” mode comes about by touching the workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required.

- Welding mode.
- PULSATION TYPE.



The possible parameter combinations are as follows:

WELDING PROCESS	TYPE OF IGNITION	WELDING MODE		PULSED MODE				
		DEFAULT	ADVANCE	OFF PULSE	SYN PULSE	FAST PULSE	ULTRA FAST PULSE	SLOW PULSE
TIG DC	HF	2T	2T ADVANCE (*)	X	X	X	X	X
		4T		X	X	X	X	X
		4T AUTO	4T AUTO ADVANCE (*)	X	X	X	X	X
	HF PERFECT POINT	CYCLE		X	X	X	X	X
		SPOT						
		COLD TACK						



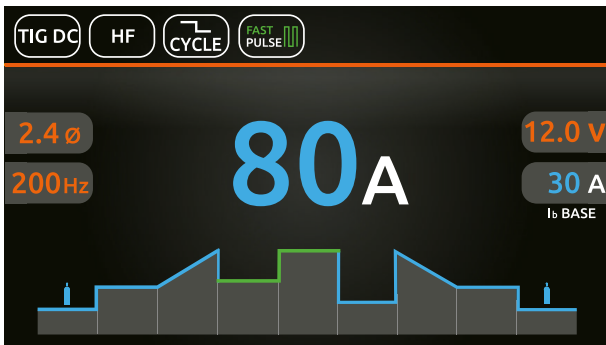
WELDING PROCESS	TYPE OF IGNITION	WELDING MODE		PULSED MODE				
				OFF PULSE	SYN PULSE	FAST PULSE	ULTRA FAST PULSE	SLOW PULSE
		DEFAULT	ADVANCE					
TIG DC	LIFT TIG	2T	2T ADVANCE (*)	X	X	X	X	X
		4T		X	X	X	X	X
		4T AUTO	4T AUTO ADVANCE (*)	X	X	X	X	X
		CYCLE		X	X	X	X	X
		SPOT						
		TIG VALVE TORCH						

(*) Advance welding mode can be activated as follows:

- CONFIGURATION menu  
- WELDING section
- 2T-4T AUTO ADV line
- Choose ACTIVE

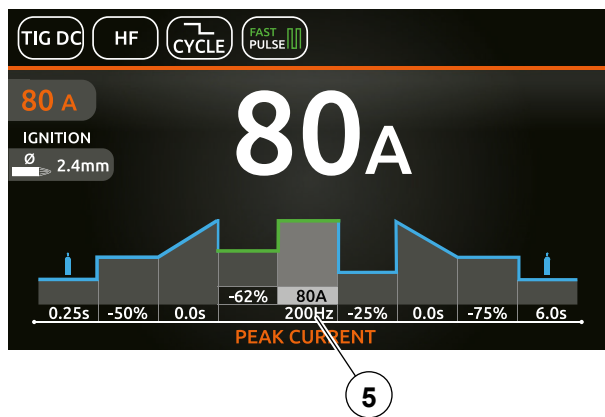
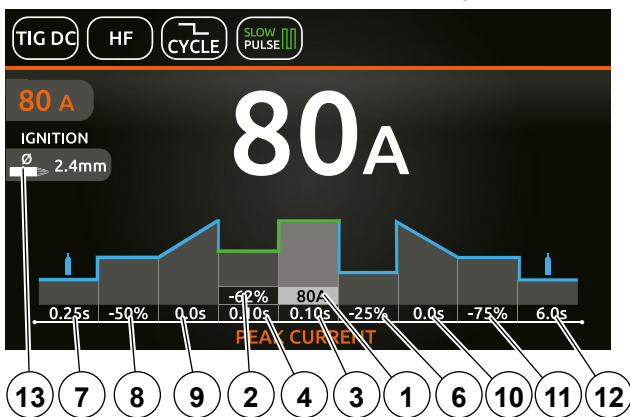
When the  key is pushed, the welding page opens:


An example of complete configuration of all the parameters is shown below:






Push the knob to enter the SET page.

Push and rotate the knob to set the following parameters:



NOTE: If the BACK  key is held down for 2 seconds, the parameter goes back to its default setting.



1. Main  welding current (if OFF PULSE is set).
Peak current (if a pulse is set).
2. "Absolute" basic current value in Ampere (default) or as % of the peak current (if SLOW PULSE is set).
3. Duration of the peak current (if SLOW PULSE is set).
4. Duration of the basic current (if SLOW PULSE is set).
5. Pulsation frequency (if SYN-FAST-ULTRA FAST PULSE is set).
6. (When CYCLE is set) "Absolute"  cycle current value in Ampere (default) or as % of the main current for  welding, or of the peak current when pulsation is set.



When the CYCLE function is active, when the torch button is pressed and released within less than 1 second the welding current goes to the **I2** CYCLE. value, and by repeating this operating you can switch between the **I1** and **I2**. current levels an infinite number of times. When the torch button is held down for more than 1 second, you exit the cycle.

This welding mode is especially indicated for welding profiles with different thickness, where continuous current variation is required. Also, when welding aluminium, it allows you to have a higher initial current, thereby facilitating pre-heating of the workpiece.

7. PRE-GAS duration.
8. "Absolute" initial welding current value in Ampere (default) or as % of the main current for **I1** welding, or of the peak current when pulsation is set.
9. SLOPE UP duration.
10. SLOPE DOWN duration.
11. "Absolute" final welding current value in Ampere (default) or as % of the main current for **I1** welding, or of the peak current when pulsation is set.
12. POST-GAS duration.
13. Select the diameter of the electrode to achieve the best control of ignition in synergic mode (Default and settable function only for "HF" / "HF PERFECT POINT" types of ignition).

If the "CONFIGURATION"   menu is used to select manual ignition, you can set:

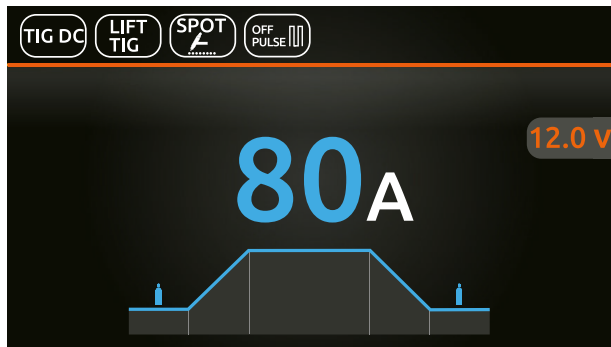
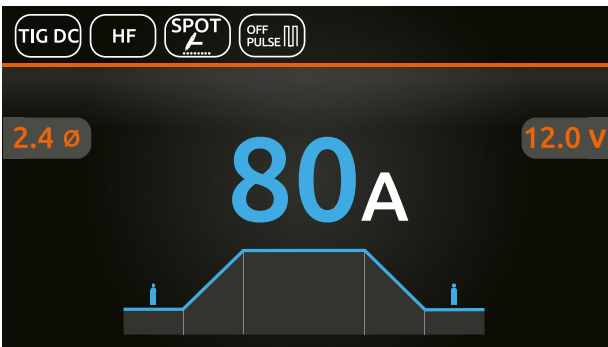


NOTE: If the value of these 2 parameters is too low, this could prejudice ignition.

SPOT welding mode

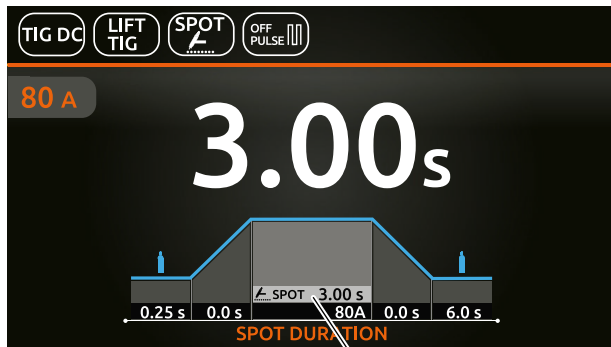
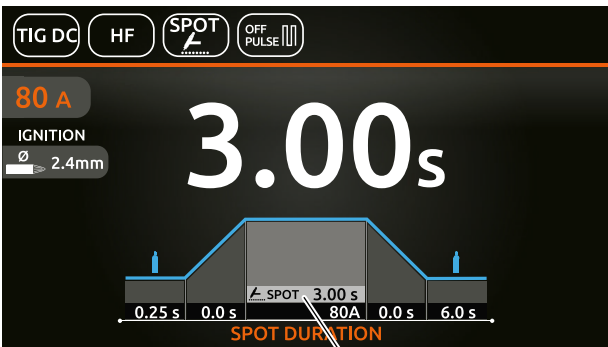
An example of the configuration of parameters with SPOT welding mode active is shown below.

This can be used by pushing the torch button to spot weld for a pre-set period of time (in seconds) at the end of which the arc switches off automatically.




Push the knob to enter the SET page.

By pushing and rotating the knob, besides the parameters described above, you can set:



1. Spot time.

NOTE: If the BACK  key is held down for 2 seconds, the parameter goes back to its default setting.

Once the all the selections/settings indicated above have been made, welding can begin.

During the welding process the display shows the current and the real voltage at which the operator is actually welding.

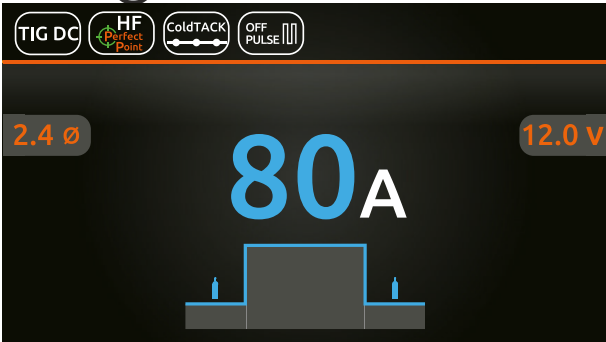
COLD TACK welding mode (TIG DC welding with “HF” / “HF PERFECT POINT” ignition)

The “ColdTack” mode can be used for cold tacking in quick succession, to further extend the benefits of an individual point.

Via the welding process configuration menu, set:

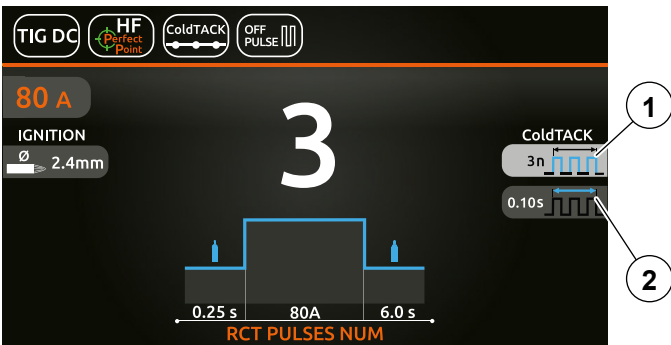
- TIG DC welding process.
- TYPE OF IGNITION:
 1. “HF PERFECT POINT” (recommended trigger).
 2. “HF”.
- Cold TACK welding mode.

When the key is pushed, the welding page opens:



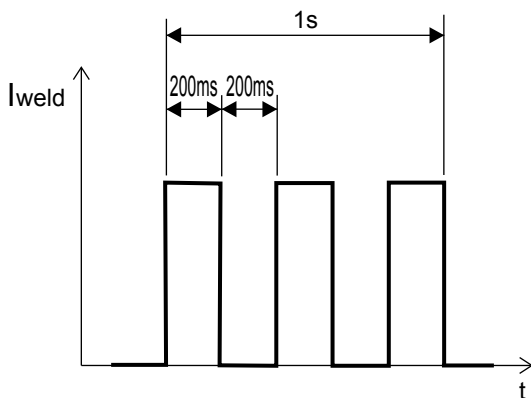
Push the knob to enter the SET page.

By pushing and rotating the knob, besides the parameters described above, you can set:



1. Number of consecutive impulses in the sequence at the individual points “n” (1 - 10) generated at a duty cycle of 50% .
2. Time during which the pulses are generated.

One example of configuration could be $t=1\text{sec}$ and $n=3$: this will generate 3 impulses each lasting 200 msec, separated by a 200 msec pause.






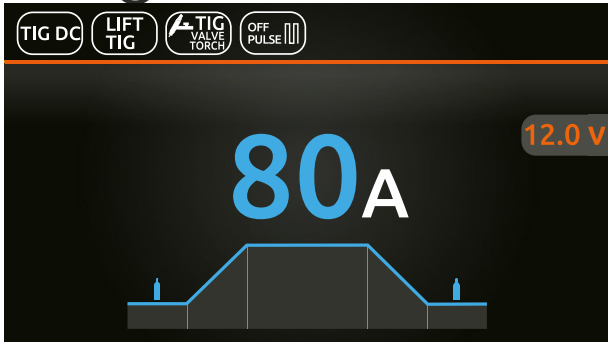
TIG DC welding mode with TIG LIFT ignition for TIG torches with a manual gas valve.

This process involves starting the arc without needing to use the torch button. In this process the gas is not delivered automatically but the operator must manage the gas. To start a weld, simply rest the tip of the electrode on the piece to be welded and lift the torch. Once the welding is complete, moving the torch away from the piece starts the slope down ramp (if applicable) and the generator turns off. The parameters that can be set are those required in 2-stroke mode with the exception of the pre-gas and post-gas time.

Via the welding process configuration menu, set:

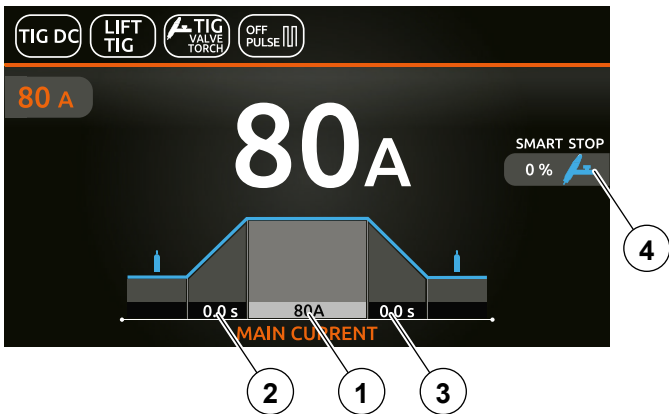
- TIG "DC" welding process.
- TYPE OF IGNITION LIFT TIG.
- TIG VALVE TORCH welding mode.


When the  key is pushed, the welding page opens:




Push the knob to enter the SET page.

By pushing and rotating the knob, besides the parameters described above, you can set:



NOTE: If the BACK  key is held down for 2 seconds, the parameter goes back to its default setting.

1.  main welding current.
2. SLOPE UP duration.
3. SLOPE DOWN duration.
4. SMART STOP function. Setting the start threshold for the "SmartStop" function for TIG torch welding using a manual gas valve.

NOTE: "SmartStop" function - once welding is complete, when the torch is moved away from the workpiece the slope down ramp begins (if provided for), and the generator switches off. This parameter can be set in relation to the start threshold for the "SmartStop" function, with a percentage increment of between **-50 and +100** compared to the typical value.



TIG RCT “RUNNING COLD TACK” Process

New welding process that makes it possible to form very cold welding beads. This welding process makes it possible to benefit from all the advantages of “coldTACK” welding, repeating a single spot in continuous mode, to achieve a perfect, cold welding bead. When “TIG RCT” is used, the welding bead is much colder than can be achieved using “Pulse TIG”, which makes it the ideal solution for welding thin materials with very low heat transfer.

In addition, it makes it possible to stay at the initial and final current for an arbitrary length of time.

During the initial and final current phases, the power supply is constant and not intermittent, making it possible to heat the workpiece up sufficiently before beginning to weld.

Another difference from spot welding, is the option to configure slope-up and slope-down ramps. During these ramps, the current is as applied in the settings.

Via the welding process configuration menu, set:

- RCT Running ColdTACK welding process.

- TYPE OF IGNITION:

1. “HF” for welding with high frequency ignition.

2. “HF PERFECT POINT” for welding with high frequency ignition.

With this type of ignition you can begin welding by igniting the arc at a “distance” or by touching the piece to be welded with the tungsten tip, thereby automatically activating “HF PERFECT POINT” ignition.



The “HF Perfect POINT” type of ignition ensures perfect centring of the welding point. “Perfect-Point” mode comes about by touching the workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required.

- Welding mode.

The possible parameter combinations are as follows:

WELDING PROCESS	TYPE OF IGNITION	WELDING MODE	
		DEFAULT	ADVANCE
RCT Running Cold TACK	HF HF PERFECT POINT	2T	2T ADVANCE (*)
		4T	
		4T AUTO	4T AUTO ADVANCE (*)
		CYCLE	
		SPOT	
		COLD TACK	

(*) Advance welding mode can be activated as follows:

- CONFIGURATION menu  
- WELDING section
- 2T-4T AUTO ADV line
- Choose ACTIVE

For the TIG RCT “RUNNING COLD TACK” process, besides the parameters described in the previous “TIG DC Welding” chapter, you can set:



Number of consecutive impulses in the sequence at the individual points “n” (1 - 10) generated at a duty cycle of 50%.



Time within which the impulses are generated.



Switch-off time.

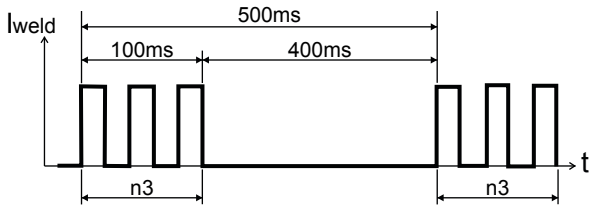
One example of configuration is as follows:

«Tp» pulse generation time = 100ms

«n» n° impulses = 3

«Tb» switch-off time = 400ms

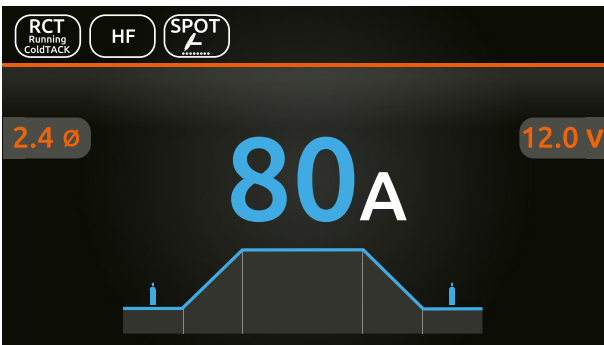
In this way, within 100 msec, 3 impulses will be generated, followed by a 400 msec pause.



SPOT welding mode

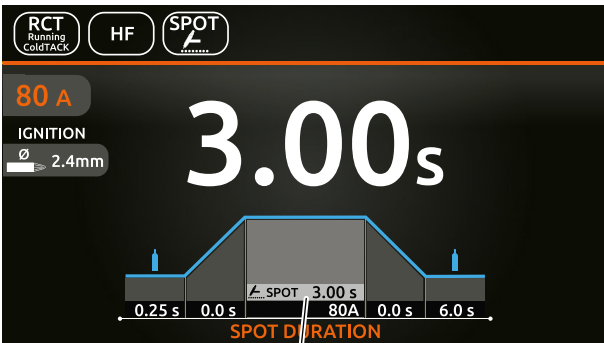
An example of the configuration of parameters with SPOT welding mode active is shown below.

This can be used by pushing the torch button to spot weld for a pre-set period of time (in seconds) at the end of which the arc switches off automatically.



Push the knob to enter the SET page.

By pushing and rotating the knob, besides the parameters described above, you can set:



1

1. Spot time.

NOTE: If the BACK key is held down for 2 seconds, the parameter goes back to its default setting.

Once the all the selections/settings indicated above have been made, welding can begin.

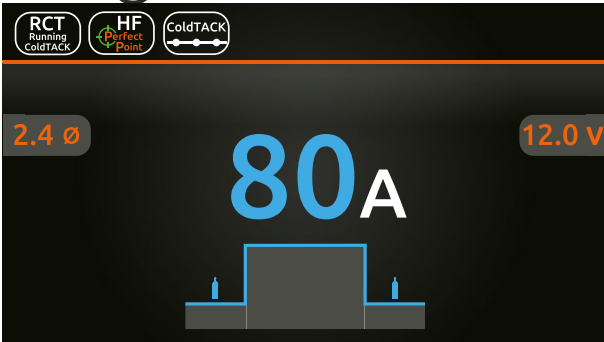
During the welding process the display shows the current and the real voltage at which the operator is actually welding.

COLD TACK welding mode (TIG DC welding with “HF” / “HF PERFECT POINT” ignition)

The “ColdTack” mode can be used for cold tacking in quick succession, to further extend the benefits of an individual point.

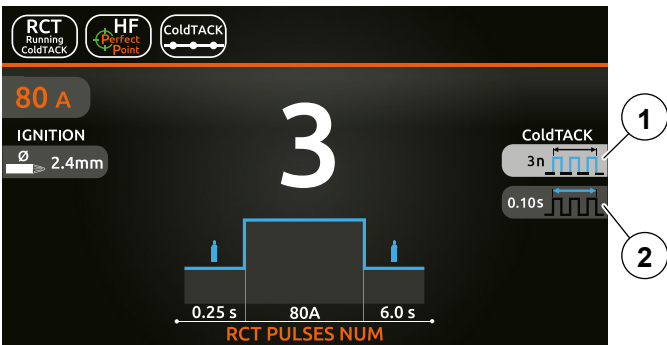
- Via the welding process configuration menu, set:
- “RUNNING COLD TACK” TIG RCT welding process.
 - TYPE OF IGNITION:
 1. “HF PERFECT POINT” (recommended trigger).
 2. “HF”.
 - Cold TACK welding mode.

When the key is pushed, the welding page opens:



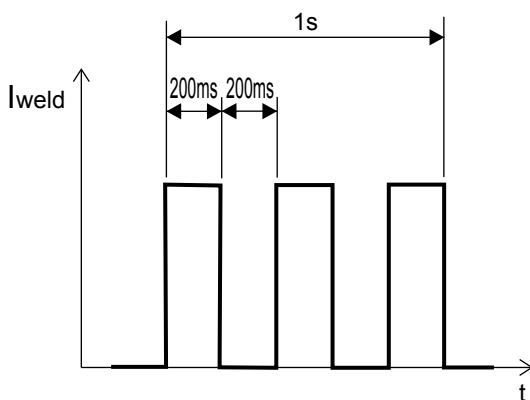
Push the knob to enter the SET page.

By pushing and rotating the knob, besides the parameters described above, you can set:



1. Number of consecutive impulses in the sequence at the individual points “n” (1 - 10) generated at a duty cycle of 50% .
2. Time during which the pulses are generated.

One example of configuration could be $t=1\text{sec}$ and $n=3$: this will generate 3 impulses each lasting 200 msec, separated by a 200 msec pause.




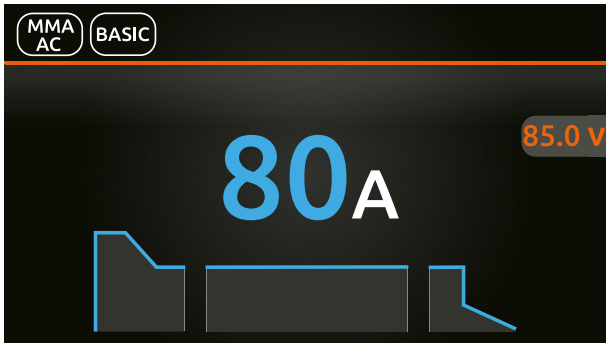


Electrode Welding (MMA AC)

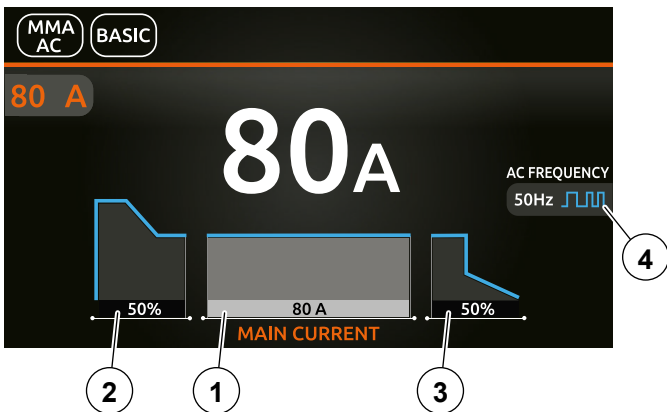
Via the welding process configuration menu, set MMA AC and the TYPE OF ELECTRODE.
The possible parameter combinations are as follows:

WELDING PROCESS	TYPE OF ELECTRODE				
	BASIC	RUTILE	CrNi	CELL	SPECIAL
MMA AC	X	X	X	X	X


When the  key is pushed, the welding page opens:



Push the knob to enter the SET page.
Push and rotate the knob to set the following parameters:



1. Main welding current.
2. HOT START – Increases the welding current, on a percentage basis, for a time interval that can be set at the start of the welding process, thereby reducing the risk of poor melting at the start of the joint.
3. ARC FORCE - Regulates the dynamic characteristics of the arc, in percentage terms.
4. MMAAC FREQUENCY - Regulates the welding current frequency.

NOTE: If the BACK  key is held down for 2 seconds, the parameter goes back to its default setting.

Once the all the selections/settings indicated above have been made, welding can begin.

During the welding process the display shows the current and the real voltage at which the operator is actually welding.

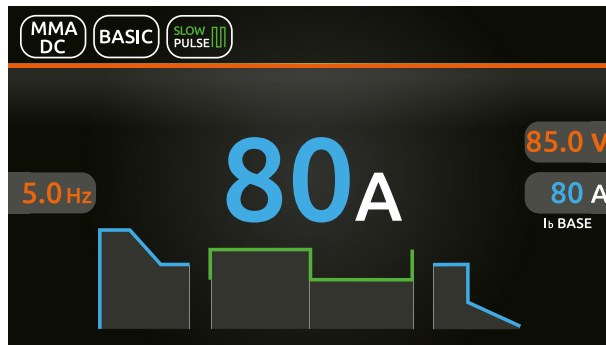
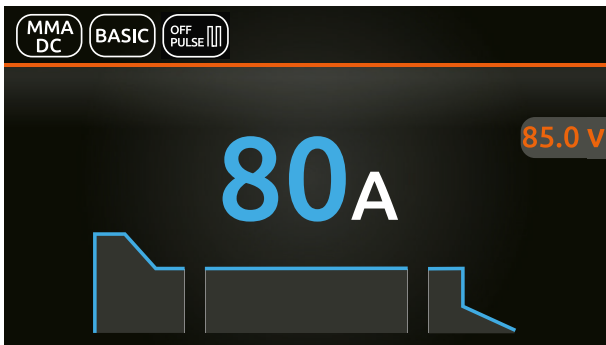


Electrode Welding (MMA DC)

Via the welding process configuration menu, set MMA DC, the TYPE OF ELECTRODE and the PULSATION TYPE.
The possible parameter combinations are as follows:

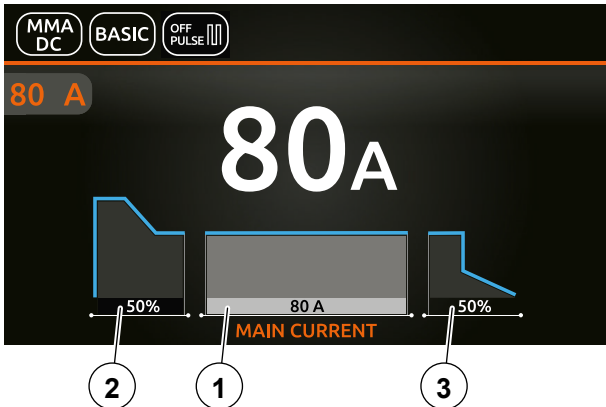
WELDING PROCESS	TYPE OF ELECTRODE	PULSED MODE	
		OFF PULSE	SLOW PULSE
MMA DC	BASIC	X	X
	RUTILE	X	X
	CrNi	X	X
	CELL	X	X
	SPECIAL	X	X

When the key is pushed, the welding page opens (a configuration is shown below with PULSE OFF and a SLOW PULSE configuration):



Push the knob to enter the SET page.
Push and rotate the knob to set the following parameters:

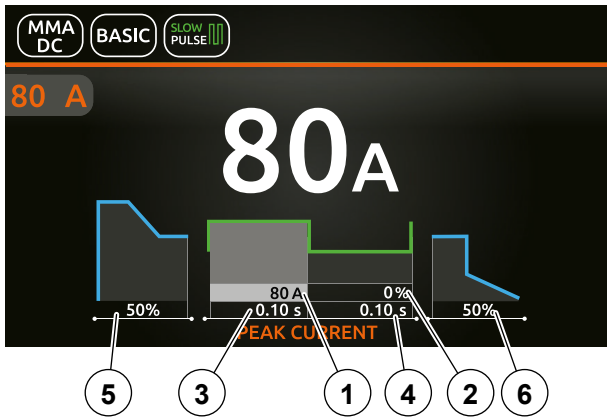
Configuration with PULSE OFF




1. Main welding current.
2. HOT START – Increases the welding current, on a percentage basis, for a time interval that can be set at the start of the welding process, thereby reducing the risk of poor melting at the start of the joint.
3. ARC FORCE - Regulates the dynamic characteristics of the arc, in percentage terms.



Configuration with SLOW PULSE



1. Peak current.
2. “Absolute” basic current value in Ampere (default) or as % of the peak current.
3. Duration of the peak current.
4. Duration of the basic current.
5. HOT START – Increases the welding current, on a percentage basis, for a time interval that can be set at the start of the welding process, thereby reducing the risk of poor melting at the start of the joint.
6. ARC FORCE - Regulates the dynamic characteristics of the arc, in percentage terms.

NOTE: If the BACK  key is held down for 2 seconds, the parameter goes back to its default setting.

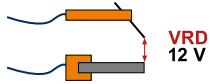
Once the all the selections/settings indicated above have been made, welding can begin.

During the welding process the display shows the current and the real voltage at which the operator is actually welding.



Activating the VRD device (MMA AC - MMA DC)

The VRD device can be activated for MMA AC and MMA DC electrode welding.

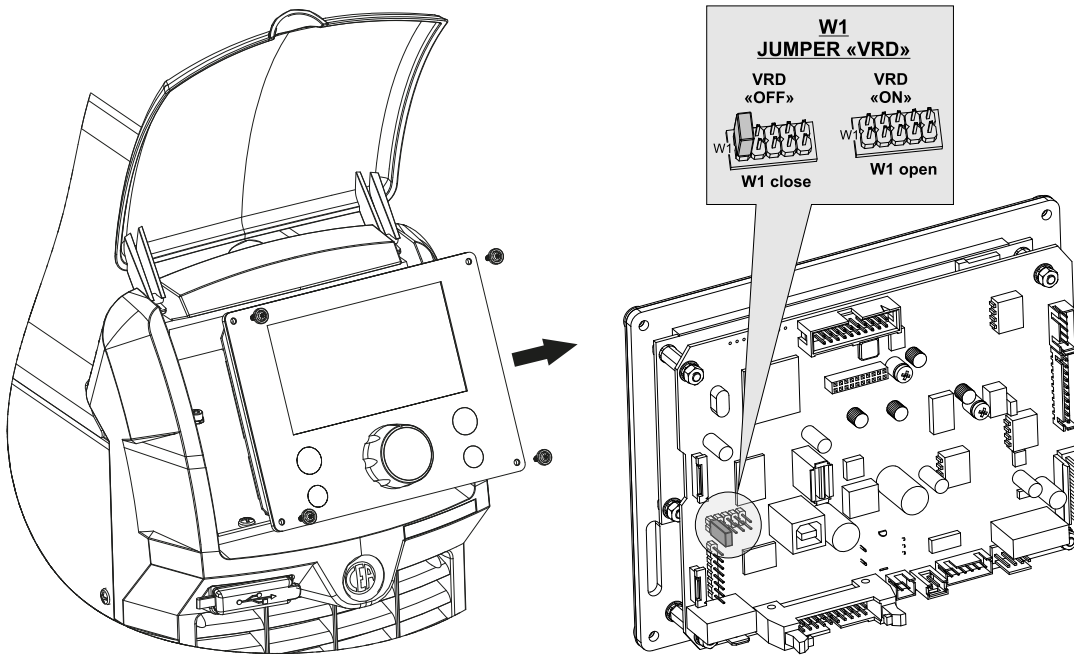


The Voltage Reduction Device (VRD) is a safety device that reduces the voltage. It prevents voltages forming on the output terminals that may pose a danger to people.

The standard, preset settings for the firm do not activate the VRD function on the welding machine.

To activate the VRD device, which must be done when the welding machine is switched off:

1. Use a suitable screwdriver to unscrew the 4 screws that fix the control panel to the welding machine.
2. Position JUMPER W1 on the DIGITAL INTERFACE BOARD in the correct position, following the instructions given in figure below.
3. Use a suitable screwdriver to tighten the 4 screws that fix the control panel to the welding machine.
4. Start the welding machine by pushing the switch on the rear panel to position I.



When switched on, the **VRD** symbol will appear on the display, and will be green to indicate that the VRD function is active.

To “deactivate” the VRD device and therefore start to weld, follow this simple procedure: First touch the workpiece with the electrode, then detach it and ignite the arc within a MAX of 0,3 seconds, otherwise if this time is exceeded the VRD device starts and prevents welding.

During welding, the VRD symbol turns red **VRD**, which does not indicate any malfunction on the welding machine, but that the VRD device has been deactivated to allow welding.

SYMBOL	DESCRIPTION
	VRD function active “ON”
	VRD function deactivated “OFF”



Changing general welding parameter limits

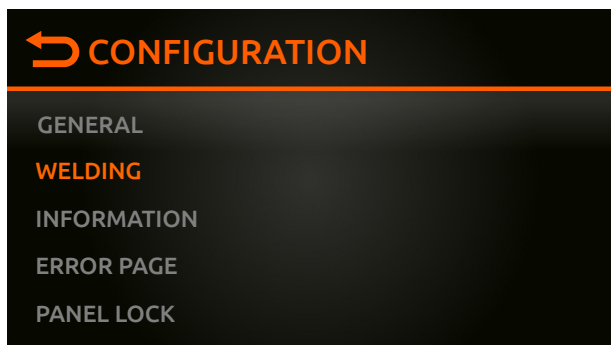
The welding machine allows you to change the maximum and minimum limits for some welding parameters. This makes the welding machine more expert and versatile.

To change the general welding parameter limits, go to the “CONFIGURATION” menu, and select the “WELDING” menu.

You can access the “CONFIGURATION” menu by:

- Holding down the SET key for 5 seconds.
- By selecting the icon from the process setting page.

- Select the “WELDING” menu.



The parameters that can be changed as shown below, with the current default value and the high and low limits.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	MAX PRE-GAS	1,0 s (1,0-2,50)	1,0 s	Maximum settable PRE-GAS time limit
	MAX SLOPE-UP	5,0 s (5,0-10,0)	5,0 s	Maximum settable SLOPE-UP time limit
	REMOTE FLOOR	5A (1-220) - MATRIX X220 5A (1-300) - MATRIX X300	5 A	Minimum settable remote control current limit. WARNING: If the minimum limit setting (for the remote control MINIMUM CURRENT) is greater than or equal to the value for the I1 , MAIN welding CURRENT, you will weld at the I1 , MAIN welding CURRENT, irrespective of the setting you have chosen on the remote control.
	MAX SLOPE-DOWN	8,0 s (8,0-15,0)	8,0 s	Maximum settable SLOPE-DOWN time limit
	MAX POST-GAS	25,0 s (10,0-25,0)	25,0 s	Maximum settable POST-GAS time limit
	MAX SPOT	25,0 s (10,0-25,0)	25,0 s	Maximum settable SPOT WELDING time limit
	GAS TEST DURATION	15 s (5-60)	15 s	Duration of the welding gas flow test.

The welding modes that can be started using the current default setting are shown below.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	ANTI-STICK	ACTIVE	X	Anti-sticking mode active or deactivated for all processes
		INACTIVE		
	AC START	POSITIVE	X	AC ignition mode with positive or negative polarity
		NEGATIVE		
	IGNITION	TIP-SIZE	X	Automatic TIG ignition current regulation, based on the electrode size chosen
		MANUAL		Manual setting of the current and duration of the ignition time
	2T/4T AUTO ADV	INACTIVE	X	Enabling 2/4 touch STANDARD or AUTO ADVANCE
		ACTIVE		
	REIGNITION	AT START UP	X	Automatic TIG arc reignition mode. It is possible to choose enabling of automatic reignition within the first 3 seconds of welding, automatic reignition enabled throughout welding, or to disable automatic reignition
		ALWAYS ON		
ALWAYS OFF				

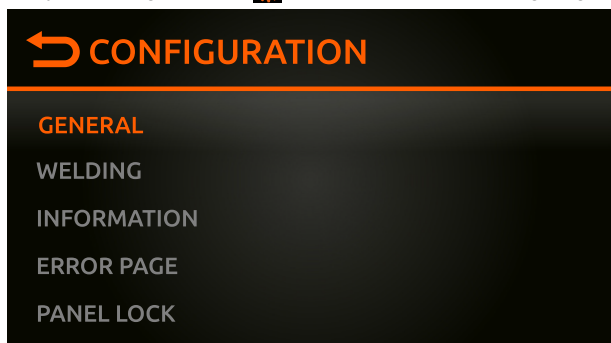


Configuration menu

All the welding machine configuration menus are shown below.



You can access the "CONFIGURATION" menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.



All the welding machine configuration items are shown below.



For the numerical parameters, the current default and high and low limits are shown.


MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
GENERAL	LANGUAGE	ENGLISH-ITALIANO FRANCAIS	ENGLISH	Set the language
	SOUND	ON	X	Set the sound when a key and the knob are pushed
		OFF		
	SET BUTTON	GAS FLOW TEST	X	Set the chosen option for the SET button  Push the SET key  a second time to exit the option chosen
		LOCK PANEL		
		LOAD JOB		
	FULL RESET	NO	X	Reset the welding machine to the default settings
YES				



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	REMOTE MODE	REMOTE DISABLED	X	Allow disabling / re-enabling of the remote control used
		MANUAL CONTROL		
		PEDAL CONTROL		
		POTENTIOMETER TORCH		
	MAX PRE-GAS	1,0 s (1,0-2,50)	1,0 s	Maximum settable PRE-GAS time limit
	MAX SLOPE-UP	5,0 s (5,0-10,0)	5,0 s	Maximum settable SLOPE-UP time limit
	REMOTE FLOOR	5A (1-220) - MATRIX X220 5A (1-300) - MATRIX X300	5 A	Minimum settable remote control current limit. WARNING: If the minimum limit setting (for the remote control MINIMUM CURRENT) is greater than or equal to the value for the I1 MAIN welding CURRENT, you will weld at the I1 MAIN welding CURRENT, irrespective of the setting you have chosen on the remote control.
	MAX SLOPE-DOWN	8,0 s (8,0-15,0)	8,0 s	Maximum settable SLOPE-DOWN time limit
	MAX POST-GAS	25,0 s (10,0-25,0)	25,0 s	Maximum settable POST-GAS time limit
	MAX SPOT	25,0 s (10,0-25,0)	25,0 s	Maximum settable SPOT WELDING time limit
	COOLING	ON DEMAND	X	ON DEMAND cooling on in automatic mode. During welding or for a certain period of time after this is finished.
		ALWAYS ON		Cooling always on
		ALWAYS OFF		Cooling always off
	ANTI-STICK	ACTIVE	X	Anti-sticking mode active or deactivated for all processes
		INACTIVE		
	AC START	POSITIVE	X	AC ignition mode with positive or negative polarity
		NEGATIVE		
	IGNITION	TIP-SIZE	X	Automatic TIG ignition current regulation, based on the electrode size chosen
		MANUAL		Manual setting of the current and duration of the ignition time
	2T-4T AUTO ADV	INACTIVE	X	Enabling 2/4 touch STANDARD or AUTO ADVANCE
		ACTIVE		
	OCV-R	INACTIVE	X	Enabling the OCV-R device for MMA welding Reduce the voltage without load between the output terminals (<35V) when the welding machine is not in the welding cycle Activation of this is indicated by the OCV-R indicator switching on, on the display.
		ACTIVE		
	REIGNITION	AT START UP	X	Automatic TIG arc reignition mode. It is possible to choose enabling of automatic reignition within the first 3 seconds of welding, automatic reignition enabled throughout welding, or to disable automatic reignition
		ALWAYS ON		
		ALWAYS OFF		
JOB SCAN	INACTIVE	X	When using a standard torch, a single button can be used to go to the next JOB by pushing and releasing the button within 1 second	
	ACTIVE			
GAS TEST DURATION	15 s (5-60)	15 s	Duration of the welding gas flow test	



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	CURRENT SET	ABSOLUTE	X	This function can be used to set the "ABSOLUTE" basic cycle, initial, and final current for pulsation value in Ampere or as a % of the main current for I welding or of the peak current when pulsation is set. The percentages range from -100% to +900%, where 0% indicates the same value as the I main welding current or as the peak current when pulsation is set.
		PERCENTAGE		
INFORMATION	SERIAL NUMBER	00000000 (example)		Firmware serial number
	FW VERSION	00.04-BETA11 SW0285 (example)		Control board firmware version
	DIS FW VERSION	01.03 220404 TIG (example)		TFT display firmware version
	QR CODE			This makes it possible to connect to the factory's WEBSITE to download the instruction manual
	UPDATE FW	NO YES	X	It activates the guided firmware updating procedure, using the USB port
	USER MANUAL	1020HE61/A (example)		Instruction manual number and version
ERROR PAGE				Shows current errors
PANEL LOCK	LOCK PANEL	NO	X	Locks the panel. To release, hold the SET key  down for 5 seconds
		YES		
	SET UNLOCK CODE			Used to set a personal panel release code
USB SAVE RESTORE DATA	USB SAVE JOBS			Activates the procedure for saving JOBS on a new "FAT32" USB stick, set aside for this purpose
	USB SAVE SETTINGS			Activates the procedure for saving the settings on a new "FAT32" USB stick, set aside for this purpose
	USB LOAD JOBS			Activates the procedure for uploading JOBS to a new "FAT32" USB stick, set aside for this purpose
	USB LOAD SETTINGS			Activates the procedure for uploading the settings to a new "FAT32" USB stick, set aside for this purpose
DIAGNOSTIC				Range of information for the service centre
HW TEST	GAS	OFF	X	Service centre test.
		ON		Activates / Deactivates the gas solenoid valve
	FAN	OFF	X	Service centre test.
		ON		Activates / Deactivates the fan
	COOLING	OFF	X	Service centre test.
		ON		Activates / Deactivates the cooling system

NOTE: If the BACK  key is held down for 2 seconds, the parameter goes back to its default setting.




Displaying the software version installed

The **MATRIX X220 - X300** series comes with a digital control and TFT colour display, fitted with firmware defined in the factory. This firmware is subject to continuous evolution and improvement.

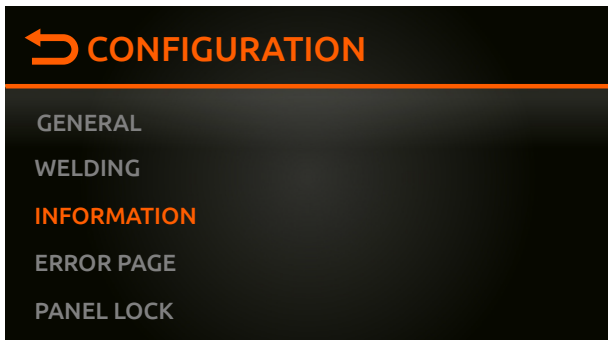
The firmware is identified by a serial number, version of the control board firmware, and version of the TFT display firmware.

To access this information go to the “CONFIGURATION” menu and select the “INFORMATION” menu.

You can access the “CONFIGURATION” menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the “INFORMATION” menu.



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
INFORMATION	SERIAL NUMBER	00000000 (example)		Firmware serial number
	FW VERSION	00.04-BETA11 SW0285 (example)		Control board firmware version
	DIS FW VERSION	01.03 220404 TIG (example)		TFT display firmware version

In the “INFORMATION” menu you can use a QR code to quickly access the user’s manual.



Firmware update

The welding machine's firmware can be updated, using a "FAT32" USB stick.

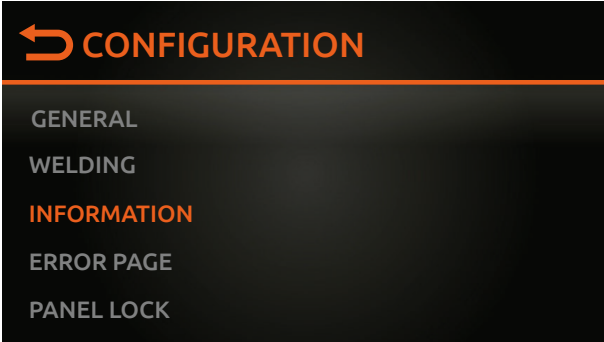
NOTE: Use a new, dedicated "FAT32" USB stick for this purpose.

To access this information go to the "CONFIGURATION" menu and select the "UPDATE FW" menu.

You can access the "CONFIGURATION" menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the "INFORMATION" menu.



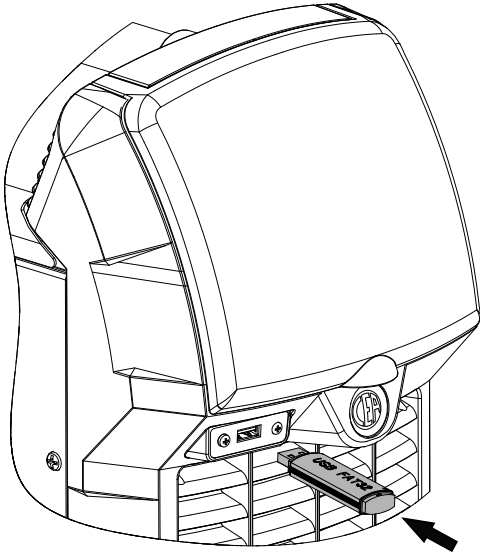
- Select the "UPDATE FW" sub-menu.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
INFORMATION	UPDATE FW	NO	X	It activates the guided firmware updating procedure, using the USB port
		YES		

- Select the guided procedure indicated on the display.

When the "CONNECT USB KEY" message appears.

- Insert a new "FAT32" USB stick into the USB socket on the welding machine's front panel.



- Once updating has been completed, switch the welding machine off and on again.

NOTE: Updating the entire system takes about 7 minutes and involves both the welding machine's and the display's software.





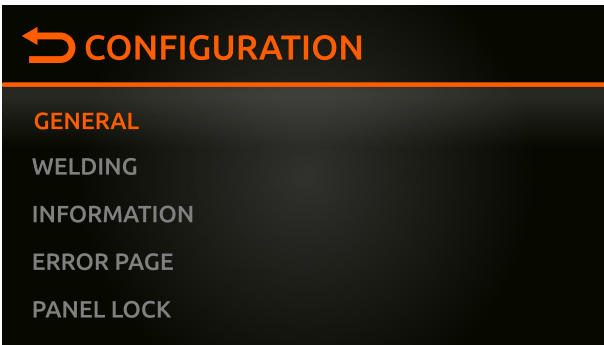
Factory default

WARNING: This operation results in complete resetting of all parameters to the factory settings. We recommend saving the JOBS and SETTINGS on a new "FAT32" USB stick, set aside for this purpose.

To do a total reset, go to the "CONFIGURATION" menu and select the "GENERAL" menu.

You can access the "CONFIGURATION" menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.
- Select the "GENERAL" menu.




MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
GENERAL	FULL RESET	NO	X	Reset the welding machine to the default settings
		YES		

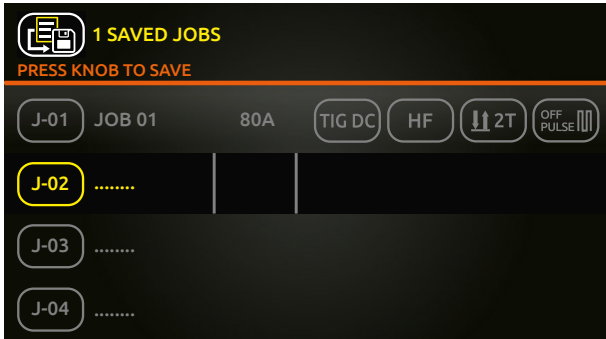


JOB - Creating and saving welding programs

The welding machine allows you to save up to 99 welding programs (JOBS).


Once you have defined the parameters the operator requires to do their work properly, you can save them by creating a welding program (JOB), by proceeding as follows:

1. Hold down the  key for at least 3 seconds, until the figure shown below appears on the display.




2. The software proposes saving as the first free welding program that is free (e.g. J-02...).
3. Push the knob to save.

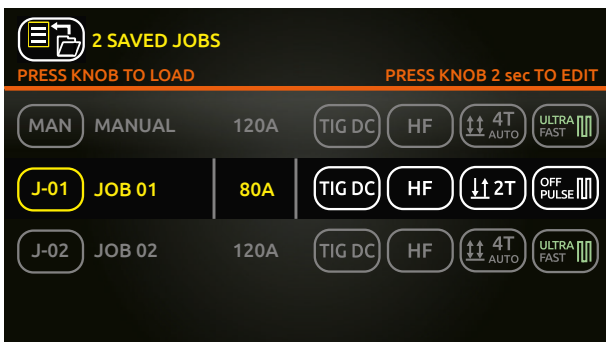
You can overwrite a program already saved (e.g. J-01 JOB 01 - see figure above). To do so, proceed as follows:


1. Rotate the knob to reach the program to be overwritten.
2. Push the knob to save.
3. Follow the guided procedure to confirm the overwriting .

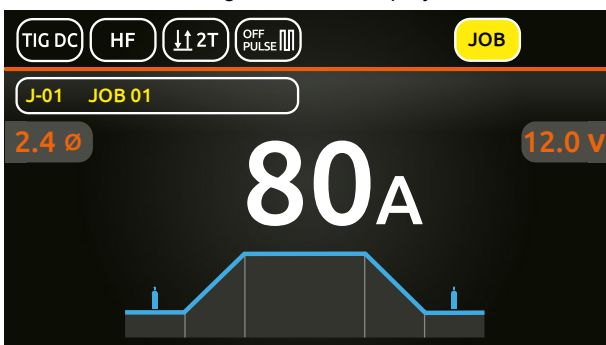
JOB - Viewing and loading a saved program

Proceed as follows:

1. When the  key is pushed the page that contains a list of the saved programs (JOBS) is displayed.



2. Rotate and push the knob to load the JOB required (e.g. J-01 JOB 01).
3. You can now weld using the parameters saved in the JOB saved.
4. The main welding screen will display the name of the JOB loaded and the  symbol.



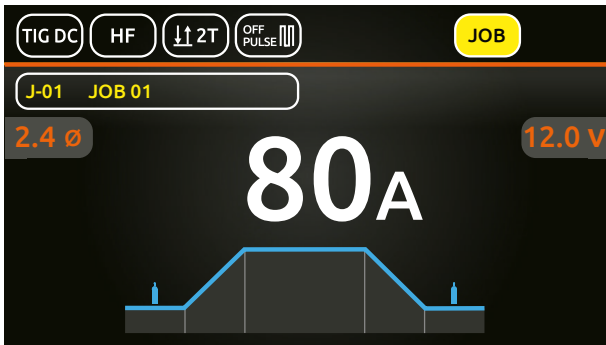
5. Rotate the knob to scroll the list of JOBS saved and enable them.



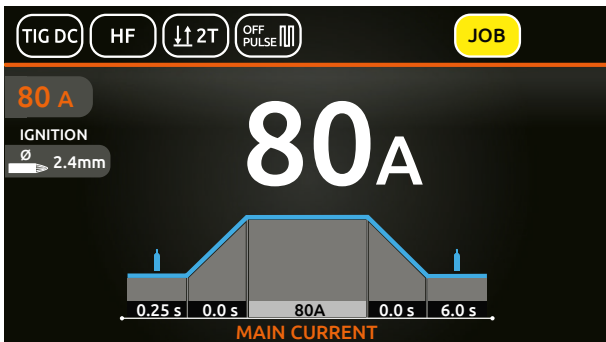
JOB - Viewing the parameters set for a saved program

Proceed as follows:

1. Load the program (JOB) saved, as described in the previous chapter.



2. Push the knob to enter the SET page. A graphic of the welding process for the JOB loaded will be displayed.



3. By rotating the knob you can view all the parameters of the JOB loaded.
4. By pushing the knob on a parameter of the JOB loaded, you can edit its value.

NOTE: If the parameters set are changed, you automatically exit the JOB loaded (the **JOB** symbol disappears from the display).



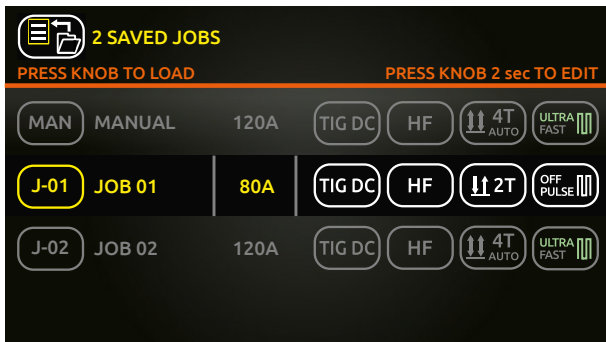
JOB - Naming, deleting, moving, and copying a program saved

On the page that contains a list of the saved programs (JOBS) you can carry out the following tasks:

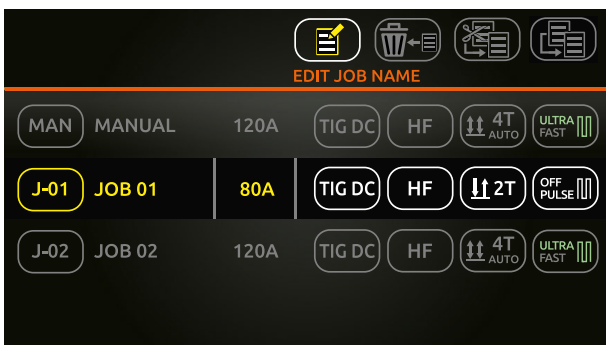
SYMBOL	DESCRIPTION
	Name or rename a JOB
	Delete a JOB
	Move a JOB
	Copy a JOB

Proceed as follows:

1. When the key is pushed the page that contains a list of the saved programs (JOBS) is displayed.



2. Hold the knob down for at least 2 seconds to access the page below, which allows you to name, delete, move, and copy a program saved (JOB).



3. Choose the option you want, and follow the guided instructions on the display.
4. The key can be used to annul the operation in progress.



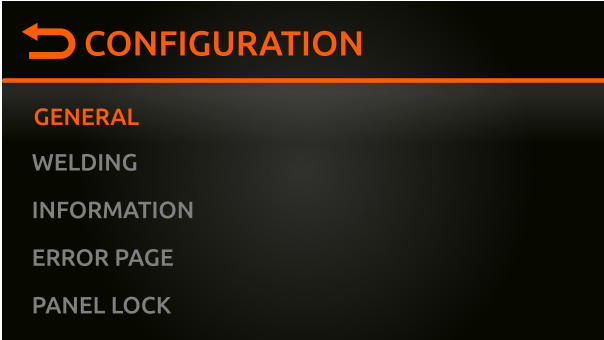
JOB - Setting the shortcut key to your preferred saved program

You can program the SET key to act as a shortcut to get to your preferred JOB quickly. To access this information go to the “CONFIGURATION” menu and select the “GENERAL” menu.

You can access the “CONFIGURATION” menu by:

- Holding down the SET for 5 seconds.
- By selecting the icon from the process setting page.

- Select the “GENERAL” menu.



Select the “LOAD JOB” option.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
GENERAL	SET BUTTON	GAS FLOW TEST		Set the chosen option for the SET button
		LOCK PANEL		
		LOAD JOB	X	Push the SET key a second time to exit the option chosen

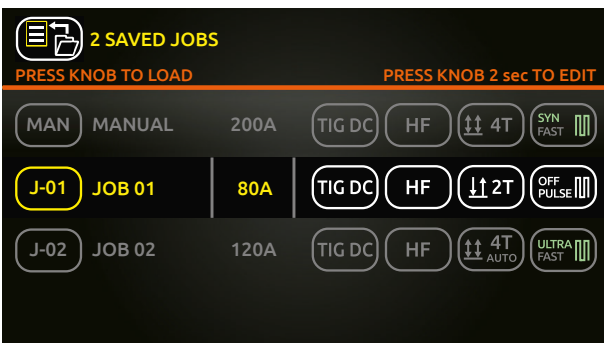
Now, from the “WELDING” page, push the SET key to access the preferred JOB quickly. Push the SET key again to exit the JOB selected, and return to “MANUAL” mode.

JOB - Manual welding

From programmed welding, to go back to setting new programs, go to “MANUAL” welding.

Proceed as follows:

1. When the key is pushed the page that contains a list of the saved programs (JOBS) is displayed.



2. Rotate and push the knob to load MANUAL
3. The machine returns to the “MANUAL” welding mode. You can now set new parameters or create new programs.





JOB - Saving and uploading saved programs to a USB stick

Saved programs can be saved on a USB stick so that they can be moved from one welding machine to another, or recovered if the machine is “reset”.

NOTE: Use a new, dedicated “FAT32” USB stick for this purpose.

To access this information go to the “CONFIGURATION” menu and select the “USB SAVE RESTORE DATA” menu.

You can access the “CONFIGURATION” menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the “USB SAVE RESTORE DATA” menu.



- Insert a new “FAT32” USB stick into the USB socket on the welding machine’s front panel.
- Select the “USB SAVE JOBS” or “USB LOAD JOBS” sub-menu.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
USB SAVE RESTORE DATA	USB SAVE JOBS			Activates the procedure for saving JOBS on a new “FAT32” USB stick, set aside for this purpose
	USB SAVE SETTINGS			Activates the procedure for saving the settings on a new “FAT32” USB stick, set aside for this purpose
	USB LOAD JOBS			Activates the procedure for uploading JOBS to a new “FAT32” USB stick, set aside for this purpose
	USB LOAD SETTINGS			Activates the procedure for uploading the settings to a new “FAT32” USB stick, set aside for this purpose

- Follow the guided procedure indicated on the display.


JOB - Selecting a JOB using the TIG torch’s “UP / DOWN” keys (sequences)

When a TIG “UP / DOWN” torch is installed, you can select JOBS in a sequence of JOBS, using the torch’s UP(+) / DOWN (-) keys. To create a JOB sequence, leave a memory slot open before and after the JOB group that you want to make into a sequence.

MAN	SEQUENCE 1			JOB not saved	SEQUENCE 2			JOB not saved	SEQUENCE 3		
	J-01	J-02	J-03		J-05	J-06	J-07		J-09	J-10	J-11

Once the required sequences have been created, select and load one of the JOBS in the required sequence (e.g. J-05).

Use the torch’s UP(+) / DOWN (-) keys to scroll the JOBS in the sequence (J-05 → J-06 → J-07 → J-05).

Push the torch button  to start the welding process using the JOB parameters shown on the display.



Since JOBS can be copied, moved, and deleted, from one position to another, the groups of work sequences required can easily be defined.

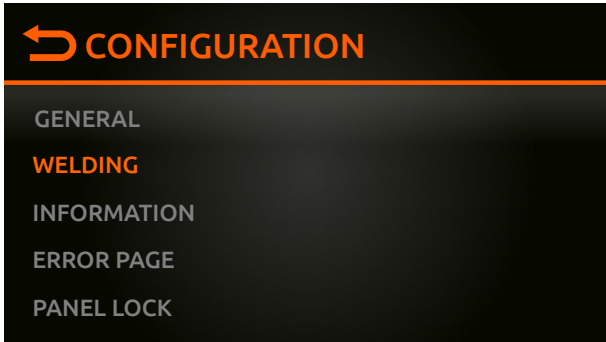


JOB SCAN - Selecting a sequence of JOBS while using a standard TIG torch with one button

When a standard TIG torch with one button is installed, the JOBS in a sequence can be selected using the “JOB SCAN” function. To enable the “JOB SCAN” function, proceed as follows, accessing the “CONFIGURATION” menu:

You can access the “CONFIGURATION” menu by:

- Holding down the SET key  for 5 seconds.
 - By selecting the icon  from the process setting page.
- Select the “WELDING” menu.



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	JOB SCAN	INACTIVE		When using a standard torch, a single button can be used to go to the next JOB by pushing and releasing the button within 1 second
		ACTIVE	X	


In the “JOB SCAN” sub-menu, select “ACTIVE”.

To create a JOB sequence, leave a memory slot open before and after the JOB group that you want to make into a sequence.

MAN	SEQUENCE 1			JOB not saved	SEQUENCE 2			JOB not saved	SEQUENCE 3		
	J-01	J-02	J-03		J-05	J-06	J-07		J-09	J-10	J-11

Once the required sequences have been created, select and load one of the JOBS in the required sequence (e.g. J-05).

Now, by pushing and releasing the torch button within 1 second you can scroll the JOBS in the sequence (J-05 → J-06 → J-07 → J-05).

If you hold the torch button  down you start the welding process using the JOB parameters shown on the display.



Saving and uploading the welding machine's welding settings and parameters onto a USB stick

The welding settings and parameters can be saved on a "FAT32" USB stick so that they can be moved from one welding machine to another, or recovered if the machine is "reset".

NOTE: Use a new, dedicated "FAT32" USB stick for this purpose.

To access this information go to the "CONFIGURATION" menu and select the "USB SAVE RESTORE DATA" menu.

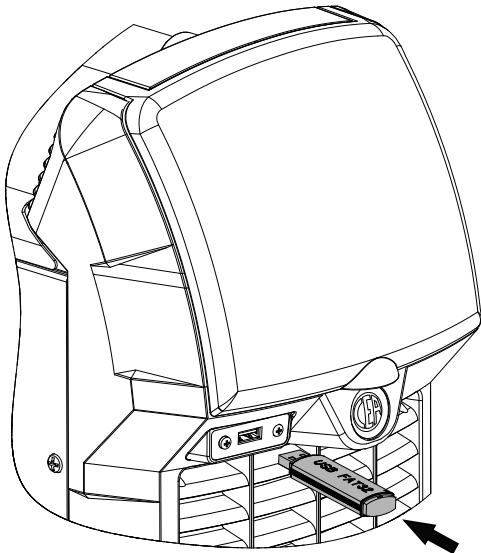
You can access the "CONFIGURATION" menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the "USB SAVE RESTORE DATA" menu.



- Insert a new "FAT32" USB stick into the USB socket on the welding machine's front panel.



- Select the "USB SAVE SETTINGS" or "USB LOAD SETTINGS" sub-menu.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
USB SAVE RESTORE DATA	USB SAVE JOBS			Activates the procedure for saving JOBS on a new "FAT32" USB stick, set aside for this purpose
	USB SAVE SETTINGS			Activates the procedure for saving the settings on a new "FAT32" USB stick, set aside for this purpose
	USB LOAD JOBS			Activates the procedure for uploading JOBS to a new "FAT32" USB stick, set aside for this purpose
	USB LOAD SETTINGS			Activates the procedure for uploading the settings to a new "FAT32" USB stick, set aside for this purpose

- Follow the guided procedure indicated on the display.

Remote control connection

The welding machine has provision for connecting the following remote controls:

- Manual remote control



WARNING: When using the machine for TIG welding it is **OBLIGATORY** to use the kit for simultaneously use – CEA code n° 460056.

- Foot switch



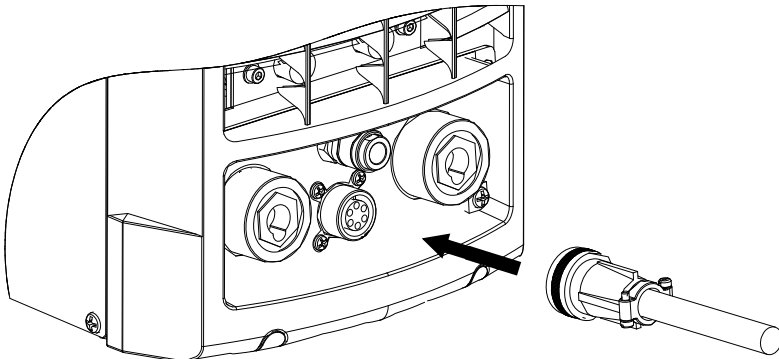
- Torch with potentiometer for regulating the welding current



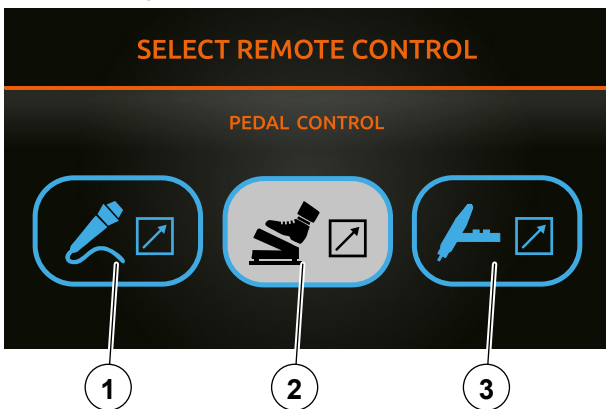
The digital control unit of the generator is fitted with a control recognition device which allows it to identify which device is connected and take action accordingly. To allow the command recognition device to work correctly, connect (with the machine switched off) the required accessory to the relative connector and then switch on the welding machine with the on/off switch.

To connect these, proceed as follows:

- Switch off the welding machine "0".
- Connect the remote control connector to the corresponding connector on the welding machine.



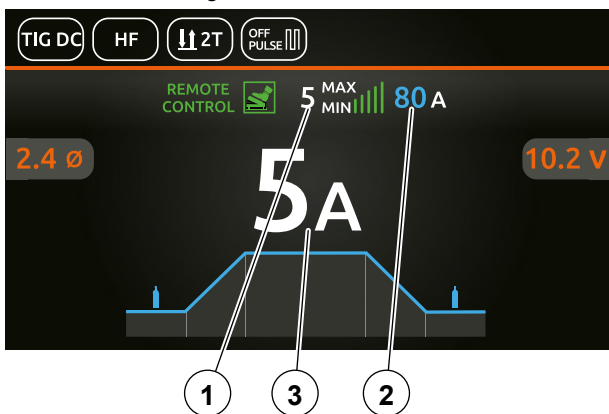
- Switch the welding machine on again "1".
- Select the type of remote control used.





1. Manual remote control.
2. Pedal control.
3. Torch with potentiometer.



- Rotate the knob to set the maximum welding current. The remote control will regulate the welding current from the minimum to the maximum welding current set.



1. Minimum welding current.

NOTE: You can edit the value for the minimum welding current by accessing the   “CONFIGURATION” menu, the “WELDING” menu, and the “REMOTE FLOOR” sub-menu.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	REMOTE FLOOR	5A (1-220) - MATRIX X220	5 A	Minimum settable remote control current limit. WARNING: If the minimum limit setting (for the remote control MINIMUM CURRENT) is greater than or equal to the value for the 11 MAIN welding CURRENT, you will weld at the 11 MAIN welding CURRENT, irrespective of the setting you have chosen on the remote control.
		5A (1-300) - MATRIX X300		

2. Maximum welding current.
3. Welding current.

If you want to change the type of remote control, proceed as follows:

1. Switch off the welding machine “0”.
2. Disconnect the remote control currently being used.
3. Switch the welding machine on “1” and, after a few seconds switch the welding machine off again “0” to cancel automatic recognition of the remote control in use previously.
4. Connect the new remote control.
5. Switch on the welding machine “1”.
6. The welding machine recognises the new remote control.
7. Select the type of new remote control used, and proceed as described previously.

Alternatively, proceed as follows:

1. Switch off the welding machine “0”.
2. Disconnect the remote control currently being used.
3. Connect the new remote control.
4. Switch on the welding machine “1”.
5. Go to the “CONFIGURATION” menu, then the “WELDING” section, and then the “REMOTE MODE” row.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	REMOTE MODE	REMOTE DISABLED	X	Allow disabling / re-enabling of the remote control used
		MANUAL CONTROL		
		PEDAL CONTROL		
		POTENTIOMETER TORCH		

6. Select the type of new remote control used, and proceed as described previously.



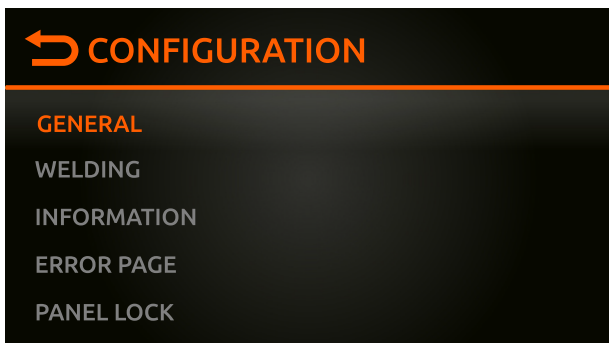
Locking the display panel

The SET key can be programmed to act as a shortcut to access the “LOCK PANEL” function. To access this information go to the “CONFIGURATION” menu and select the “GENERAL” menu.

You can access the “CONFIGURATION” menu by:

- Holding down the SET key for 5 seconds.
- By selecting the icon from the process setting page.

- Select the “GENERAL” menu.



Select the “SET BUTTON” and “LOCK PANEL” option.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
GENERAL	SET BUTTON	GAS FLOW TEST	X	Set the chosen option for the SET button
		LOCK PANEL		
		LOAD JOB		Push the SET key a second time to exit the option chosen

Now, from the “WELDING” page, push the SET key to access the “LOCK PANEL” function quickly.

The icon appears on the display, meaning that the display is locked, and the operator cannot change any welding parameter.

Push the SET key again to exit this function, and the display panel will be unlocked.



Locking / unlocking the display panel using a password

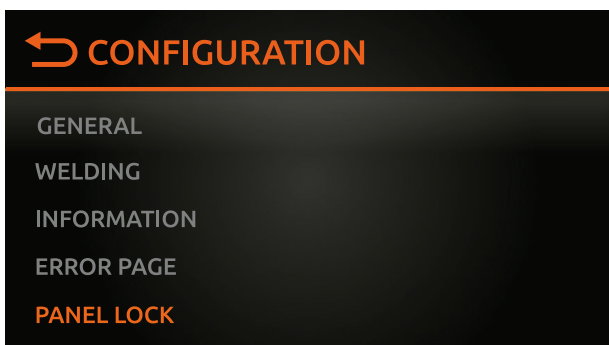
A password can be set for unlocking the display panel.

To access this information go to the "CONFIGURATION" menu and select the "PANEL LOCK" menu.


You can access the "CONFIGURATION" menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.


- Select the "UPANEL LOCK" menu.



Select the "PANEL LOCK" option.

MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
PANEL LOCK	LOCK PANEL	NO	X	Locks the panel. To release, hold the SET key  down for 5 seconds
		YES		
	SET UNLOCK CODE			Used to set a personal panel release code

Set the required password for unlocking, and activate the "LOCK PANEL" function.


The  icon appears on the display, meaning that the display is locked, and the operator cannot change any welding parameter.

Push the SET  key again to exit this function, and the display panel will be unlocked.



Energy saving menu

This function manages correct functioning of the cooling fan and cooling equipment that only run when strictly necessary.

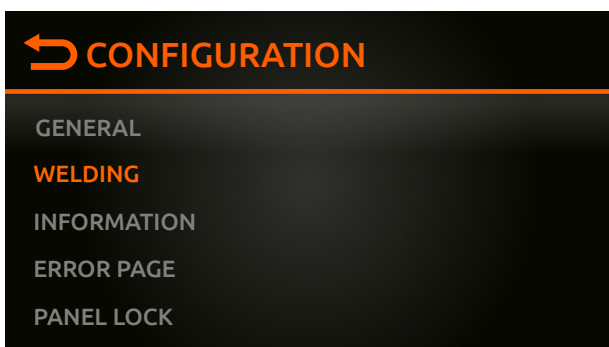
FAN MOTOR	<p>The fan motor is started when:</p> <ul style="list-style-type: none"> • The welding phase is in progress or for a certain period of time after this is finished. • The thermostat intervenes or for a certain period of time after it has just been reset.
COOLING UNIT	<p>With the "ON DEMAND" default setting, the cooling system is activated:</p> <ul style="list-style-type: none"> • For a few seconds when the machine switches on. This operation is used to make the cooling liquid circulate through the plant at the correct pressure. Call the technical service department if, when the cooling system is switched off, the  error message does not disappear from the TFT display. • While the welding phase is in progress or for a certain period of time after this is finished.

To change the cooling unit operating mode, go to the "CONFIGURATION" menu, and select the "WELDING" menu.

You can access the "CONFIGURATION" menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the "WELDING" menu.



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
WELDING	COOLING	ON DEMAND	X	ON DEMAND cooling on in automatic mode. During welding or for a certain period of time after this is finished.
		ALWAYS ON		Cooling always on
		ALWAYS OFF		Cooling always off



Error conditions and protections

The welding machine is protected against problems and, as soon as they arise, the display shows a symbol with a short description of the error that has occurred.

The table provides a summary of all the error conditions that may arise on the equipment and, if possible, what the operator must do to attempt to resolve the problem.

SYMBOL	TEXT	DESCRIPTION	MATRIX X220	MATRIX X300
	T C - TEMPERATURE	THERMAL PROTECTION The welding stops due to an excessively high temperature (thermostat activated). Automatic reset error.	•	•
	H2O - LOW PRESSURE ERR	PRESSURE-SWITCH This message appears when the cooling plant is connected to the machine and its pressure switch does not close due to a lack of pressure in the hydraulic circuit. Automatic reset error.	•	•
	E0.1 - ERR HW	VOLTAGE READING ERROR This is activated when an anomalous simultaneous Over Voltage and Under Voltage indication is detected.		•
	E0.2 - OVER VOLTAGE ERR	OVER VOLTAGE This message appears when the power supply voltage exceeds 500V. If the fault persists look for the cause of the fault and contact our technical assistance department if necessary. Automatic reset error.		•
	E0.3 - UNDER VOLTAGE ERR	UNDER VOLTAGE This message appears when the power supply voltage drops below 280V. If the fault persists look for the cause of the fault and contact our technical assistance department if necessary. Automatic reset error.		•
	E1.0 - USER DATA ERR	NO USER DATA User data corrupted, the predefined default values will be loaded. Automatic reset error.	•	•
	E1.0 - CONFIG DATA ERR	CONFIGURATION DATA ERROR Welding machine's configuration data corrupted. Non automatically reset error. Call the technical assistance department immediately.	•	•
	E1.2 - EEPROM ERR	INTERNAL EEPROM ERROR Non automatically reset error. Call the technical assistance department immediately.	•	•
	E1.3 - HW DATA ERR	CALIBRATION DATA ERROR The calibration data is corrupted, the predefined default values will be loaded. Automatic reset error and contact the technical assistance department immediately.	•	•

WARNING: Inside the MATRIX X220 AC/DC welding machine there is electronic protection against mains voltage fluctuations that automatically switch off the machine (voltage > 300 V), without giving any type of error message or warning for the operator, and then re-sets functioning, also automatically, when the voltage drops below the value indicated previously.

Most of the errors are reset automatically. For these types of error, once the alarm condition has been resolved the welding machine starts working again and the operator can weld again.

If the fault persists, look for the cause of the fault and contact our technical assistance department if necessary.

All of this is necessary so that our technical assistance department (**that must be contacted each time the error messages appear on the plant's interface**) is able to resolve the problems more easily and as quickly as possible, also because, in the meantime the welding machine does not allow the operator to do their work.



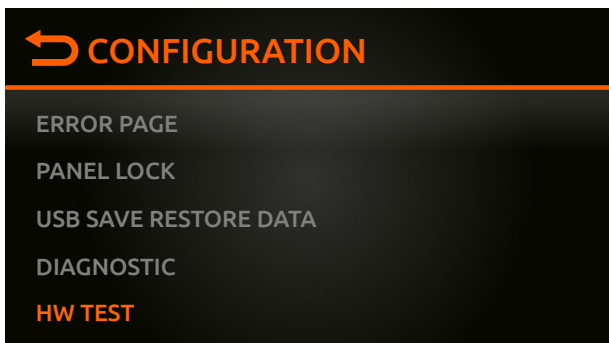
Hardware test menu

The hardware test menu allows you to test functioning of the gas solenoid valve, the fan, and the cooling unit. To access this information go to the "CONFIGURATION" menu and select the "HW TEST" menu.

You can access the "CONFIGURATION" menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the "HW TEST" menu.



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
HW TEST	GAS	OFF	X	Service centre test.
		ON		Activates / Deactivates the gas solenoid valve
	FAN	OFF	X	Service centre test.
		ON		Activates / Deactivates the fan
	COOLING	OFF	X	Service centre test.
		ON		Activates / Deactivates the cooling system



Errors page menu

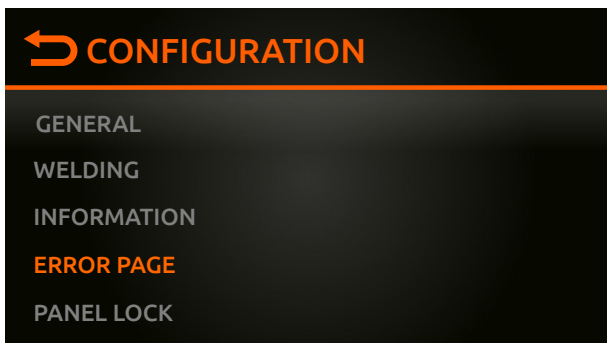
The errors page menu shows the errors currently active on the welding machine.

To access this information go to the “CONFIGURATION” menu and select the “UERROR PAGE” menu.

You can access the “CONFIGURATION” menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the “ERROR PAGE” menu.



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
ERROR PAGE				Shows current errors





Diagnostics menu

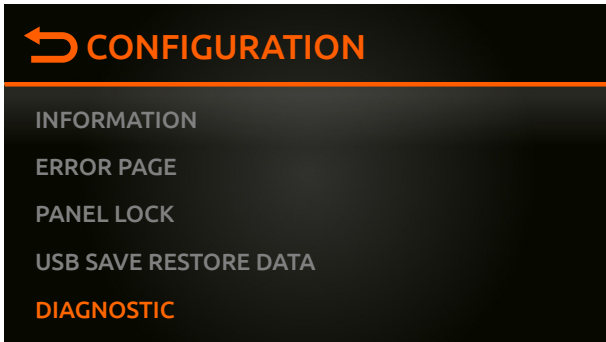
The diagnostics menu provides the service centre with a range of information, of use for detecting any technical problems on the welding machine.

To access this information go to the “CONFIGURATION” menu and select the “DIAGNOSTIC” menu.

You can access the “CONFIGURATION” menu by:

- Holding down the SET key  for 5 seconds.
- By selecting the icon  from the process setting page.

- Select the “DIAGNOSTIC” menu.



MAIN MENU	MAIN SUB-MENU	PARAMETERS / HIGH - LOW LIMIT	DEFAULT VALUE	NOTE
DIAGNOSTIC				Range of information for the service centre