



WELD THE WORLD

Voyager 75 Evo Voyager 105 Evo

Instruction Manual

ENGLISH

Translation of original instructions





ENGLISH

TABLE OF CONTENTS

GENERAL OVERVIEW	6
Explanation of symbols	6
INTRODUCTION	7
INSTALLATION AND ASSEMBLY	8
CONNECTIONS AND SOCKETS	10
PLASMA TORCH	11
PREPARATION FOR MANUAL CUTTING	12
PREPARATION FOR AUTOMATIC CUTTING	13
USER INTERFACE	15
MAIN SCREEN	16
SETTING THE CUTTING PARAMETERS	17
PRELIMINARY SETTINGS	19
Setting language	19
Firmware updating	20
Setting the date and time	21
GENERATOR SETUP	24
Setting the Pilot Arc.....	25
Setting the Power Limit	26
Setting the Divider	27
CUTTING PROGRAM	28
SETTING THE CUTTING PROGRAM	28
GAS FLOW REGULATION	29
CUTTING PROCESSES	31
SETTING THE SYNERGIC CUTTING PROCESS	31
SETTING THE MANUAL CUTTING PROCESS	33
SETTING THE GOUGING PROCESS	35
SETTING UP THE TORCH TRIGGER MODE	37
GRATING MATERIAL CUTTING SELECTION	38
IDENTIFICATION OF CONSUMABLES	40
How to identify consumables	40
RESET	42
Factory setting.....	42
SYSTEM INFO	43
SERVICE	44
EVENTS LIST	45
The screen displays the cutting data performed.	45
ALARM MANAGEMENT	46
The function is enabled when not in cutting mode.	46
USING THE TORCH FOR MANUAL CUTTING	49
Starting a cut from the edge of the metal sheet	49
Breaking through a metal sheet	49



ENGLISH

Gouging a metal sheet	49
Common manual cutting errors	51
USING THE TORCH FOR MECHANISED CUTTING	52
Breaking through a metal sheet using a machine torch	53
Common automatic cutting errors	53
MAINTENANCE	61
Checking consumables	61
TECHNICAL DATA	63
VOYAGER 75 Evo	63
VOYAGER 105 Evo	64



ENGLISH

1 GENERAL OVERVIEW



IMPORTANT! For your safety

This handbook must be handed over to the user prior to installation and commissioning of the unit.

 Read the “GENERAL PRESCRIPTIONS FOR USE” handbook supplied separately from this manual before installing and commissioning the unit.

The meaning of the symbols in this manual and the associated precautionary information are given in the “GENERAL PRESCRIPTIONS FOR USE”.

If the “GENERAL PRESCRIPTIONS FOR USE” handbook is not available, it is mandatory to request a replacement copy from the manufacturer or from your dealer.

Retain these documents for future consultation.

Explanation of symbols



DANGER!

This pictogram warns of danger of death or serious injury.



WARNING!

This pictogram warns of a risk of injury or damage to property.



CAUTION!

This pictogram warns of a potentially hazardous situation.



WARNING!




This pictogram gives important information concerning the execution of the relevant operations.






Information

This pictogram identifies additional information or a reference to a different section of the manual containing the associated information.

○ In the tables:

-  minimum value
-  default value
-  maximum value

○ In the illustrations:

-  press
-  turn the encoder
-  press the encoder

- **Note:** The figures in this manual are purely guidelines and the images may contain differences with respect to the actual units to which they refer.

1.1 INTRODUCTION

Voyager 75 Evo is an innovative and extremely high-performance plasma cutting generator. Cutting with a maximum definition of 25 mm and separation of 30 mm, maximum breakthrough of 16 mm. The high duty cycle of 55 Ampere at 100% (40°C) makes this generator very robust and suitable for use in extreme conditions.

Voyager 105 Evo is an innovative and extremely high-performance plasma cutting generator. Cutting with a maximum definition of 40 mm and separation of 50 mm, maximum breakthrough of 20 mm. The high duty cycle of 90 Ampere at 100% (40°C) makes this generator very robust and suitable for use in extreme conditions.

Its main features are:

- SYNERGIC CUTTING, MANUAL CUTTING and GOUGING processes.
- GRATING mode which facilitates the cutting of grid panels.
- the QUICK SETTING interface allows easy access to the adjustments and functions of the generator, also thanks to the TOUCH SCREEN display that facilitates any setting operation.
- the flexibility of the EASY FIT system of the supplied torch allows very easy management of the length of the torch cable and of the cutting or gouging geometry (maximum 12 metres).
- designed for interfacing with any automatic cutting management device such as pantographs, tables.
- POWER LIMIT function that enables the available nominal power to be set so as to optimise consumption to protect the generator and fully exploit available power.

Contact your local dealer for an up-to-date list of available accessories and the latest news.

ENGLISH

2 INSTALLATION AND ASSEMBLY

! DANGER!

Lifting and positioning

Read the warnings highlighted by the following symbols in the "General prescriptions for use".



! DANGER!

Handling and positioning cylinders

Read the warnings highlighted by the following symbols in the "General prescriptions for use".



! DANGER!

Disconnect the unit from the power mains before performing any assembly operation.
Shutting down the power switch does not guarantee disconnection from the mains.



Preparing the gas supply

Air can be supplied by a compressor or by high-pressure cylinders. A high-pressure regulator able to deliver gas to the filter on the generator must be used on both types of supply. If the quality of the gas supply is not good, the cutting speed decreases, the cutting quality deteriorates, the cutting thickness diminishes and the service life of consumables is reduced.

For optimal performance, the gas should comply with ISO 8573-1:2010, Class 1.2.2, i.e. it should have a maximum number of solid impurities per m³ of:

- < 20,000 for impurities sized between 0.1 and 0.5 microns
- < 400 for impurities sized between 0.5 - 1 micron
- < 10 for impurities sized between 1 - 5 microns
- The highest dew point of water vapour must be <-40 °C
- The maximum oil content (aerosols, liquids and vapours) must be less than 0.1 mg/m³



WARNING! DIRTY AND OILY AIR CAN DAMAGE THE AIR FILTER CUP

Lubricants containing synthetic esters that are used in some air compressors can damage the polycarbonates in the air filter cup. Add more gas filters if necessary.

The compressor must be able to provide a higher pressure and gas flow than that required by the torch used. The pressure and flow required by the torch according to the model is shown below.

Torch	Gas pressure	Gas flow
WEcut105	72-80 PSI (5.0-5.5 bar)	240 litres/minute at 105A
WEcut125	72-87 PSI (5.0-6.0 bar)	295 litres/minute at 125A

Connecting the gas supply



WARNING! Connect the gas supply to the generator using an inert gas hose with an internal diameter of 9.5 mm.

The recommended supply pressure while the gas is flowing is between 5.9 and 9.3 bar.

! WARNING! The machine must be supplied with compressed air with a maximum pressure of 9.3 bar (0.93 MPa); higher pressures can cause the pressure reducer to explode. If the air is supplied by a compressed air cylinder, it must be fitted with an additional pressure regulator.


Do not use hoses with an internal diameter smaller than 10 mm. Hoses that are too small can cause cutting quality and performance problems. Use a gas hose with the correct internal diameter:


- for gas supply hoses up to 15 m long, an internal diameter of at least 10 mm is recommended.
- for gas supply hoses from 15 m up to 30 m long, an internal diameter of at least 13 mm is recommended.

Connecting the earth clamp to the metal sheet

The earth clamp must be connected to the metal sheet while cutting. If a cutting table is used, the earth cable can be connected directly to the table instead of connecting the earth clamp to the metal sheet (see the table manufacturer's instructions).

- Make sure that the metal-to-metal contact between the earth clamp and the metal sheet is adequate.
- Remove rust, dirt, paint, coatings and other debris to ensure proper contact between the generator and the metal sheet.
- For the best cutting quality, connect the earth clamp as close as possible to the area to be cut.

 **WARNING!** Do not connect the earth clamp to the part of the metal sheet that will fall at the end of the cut.

 **WARNING!** Do not connect the earth clamp in the presence of water. If the generator is below the earth clamp, water can enter the generator by capillarity through the earth cable and cause serious damage.

Cutting cables

Cutting cables should be kept as short as possible and placed at or near floor level.

Noise levels

During operation, this plasma system can exceed the acceptable noise levels set by national and local regulations. Always wear appropriate hearing protection when cutting or gouging. All precautions taken against noise depend on the specific environment in which the system is used.

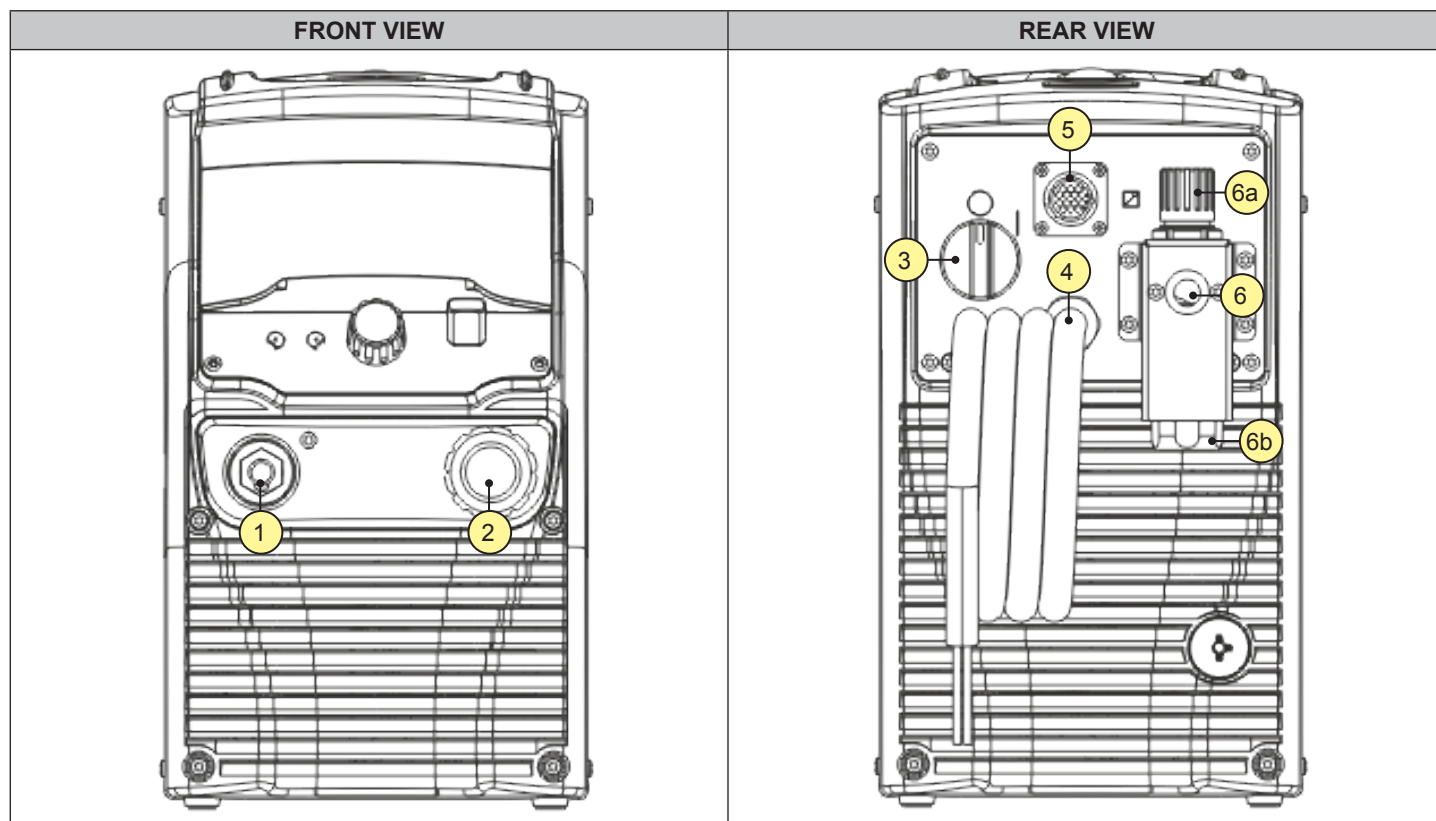
Earthing requirements

In order to ensure personal safety and smooth operation, and to reduce electromagnetic interference (EMI), the electrical connection of the generator must be earthed correctly.

- The generator must be electrically earthed with the power cable in accordance with national and local electrical regulations.
- The three-phase system must have 4 wires with a green or green/yellow cable for safety earthing and comply with national and local regulations.

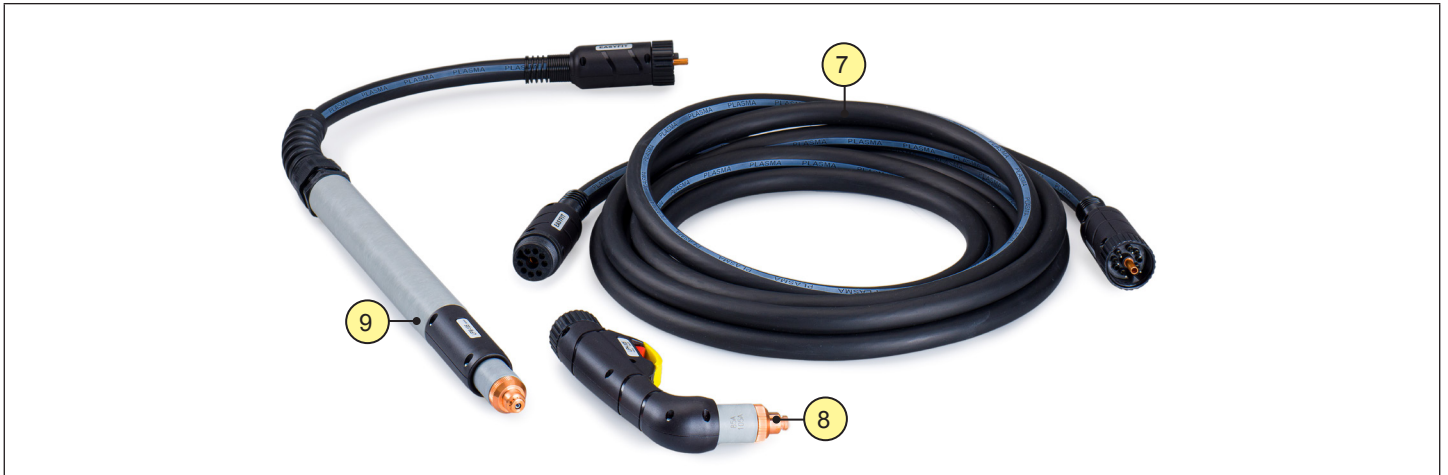
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2.1 CONNECTIONS AND SOCKETS



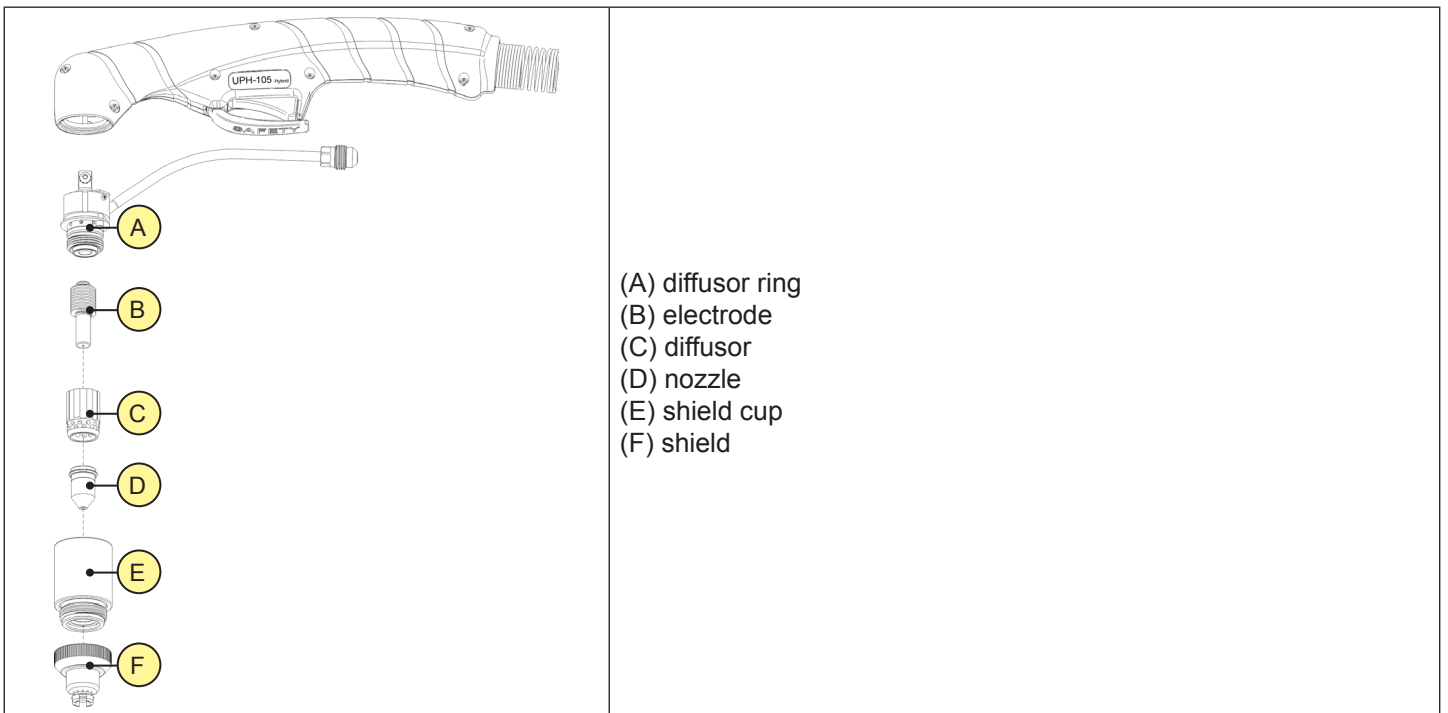
- [1] EARTH clamp socket.
- [2] PLASMA TORCH socket.
- [3] Welding power source ON/OFF switch.
- [4] Power cable.
 - Length: 4.4 m
 - Number and cross section of wires: 4 x 4 mm²
 - Power plug type: not supplied
- [5] Remote control connector.

The control cable for mechanised cutting with the pantograph must be connected to this connector.
- [6] Pressure reducer. The pressure reducer is supplied without a quick coupling; the end user must provide an air connection in accordance with system requirements.
- ⚠ **CAUTION!** Maintenance or repair of this part must only be carried out by trained and qualified technical staff. Tampering with or incorrect assembly of this part can cause personal injury or damage to property.
- [6a] Pressure reducer knob: used to adjust the compressed air pressure.
- [6b] Pressure reducer cup. It contains the air filter.
- ⓘ **Information** The condensate drain valve under the cup automatically drains the built-up condensate. However, drainage of said condensate can be stopped by pulling the knob downwards and turning it clockwise (until it clicks); in this position the condensate will build up inside the cup. Should condensate build up in the cup, check the valve to see if it is locked.



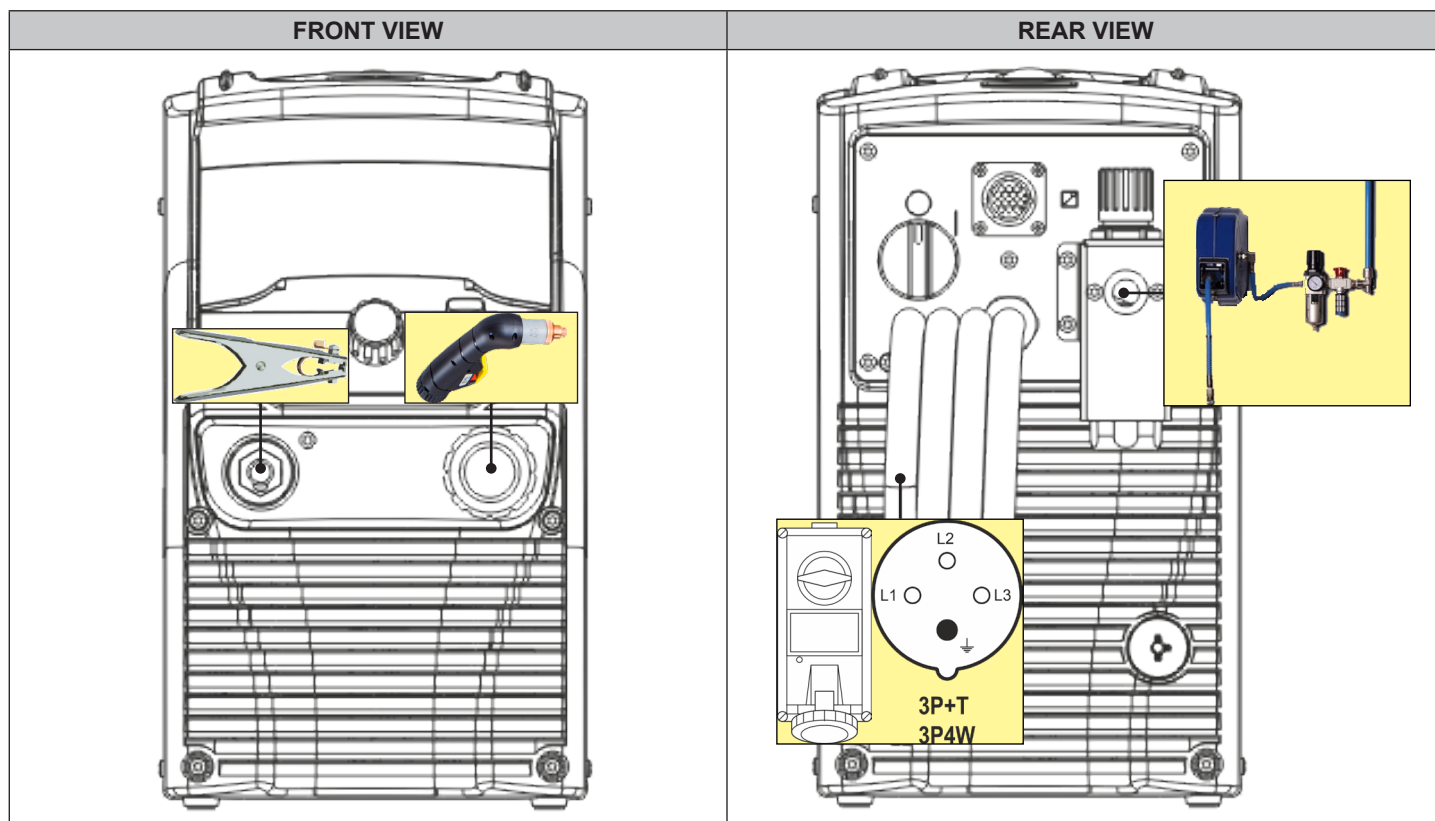
- [7] Plasma torch extension cable.
- [8] Plasma torch for manual cutting.
- [9] Plasma torch automatic cutting.



2.2 PLASMA TORCH



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2.3 PREPARATION FOR MANUAL CUTTING



1. Set the welding power source ON/OFF switch to "O" (unit switched off).
2. Connect the air hose from the cylinder or compressed air system to the pressure reducer connector.
 **WARNING!** Connect the gas supply to the generator using an inert gas hose with an internal diameter of 9.5 mm. The recommended supply pressure while the gas is flowing is between 5.9 and 9.3 bar.
-  **WARNING!** The machine must be supplied with compressed air with a maximum pressure of 9.3 bar (0.93 MPa); higher pressures can cause the pressure reducer to explode. If the air is supplied by a compressed air cylinder, it must be fitted with an additional pressure regulator.
3. Connect the PLASMA torch plug to the PLASMA TORCH socket.
The generator has a quick-release system for connecting and disconnecting machine or manual cutting torches. When connecting or disconnecting a torch, set the welding power source ON/OFF switch to "O" (unit switched off).
4. Connect the earth clamp plug to the EARTH socket.
5. Connect the earth clamp to the workpiece being processed.
6. Connect the power source mains supply cable to the mains socket outlet.



DANGER!

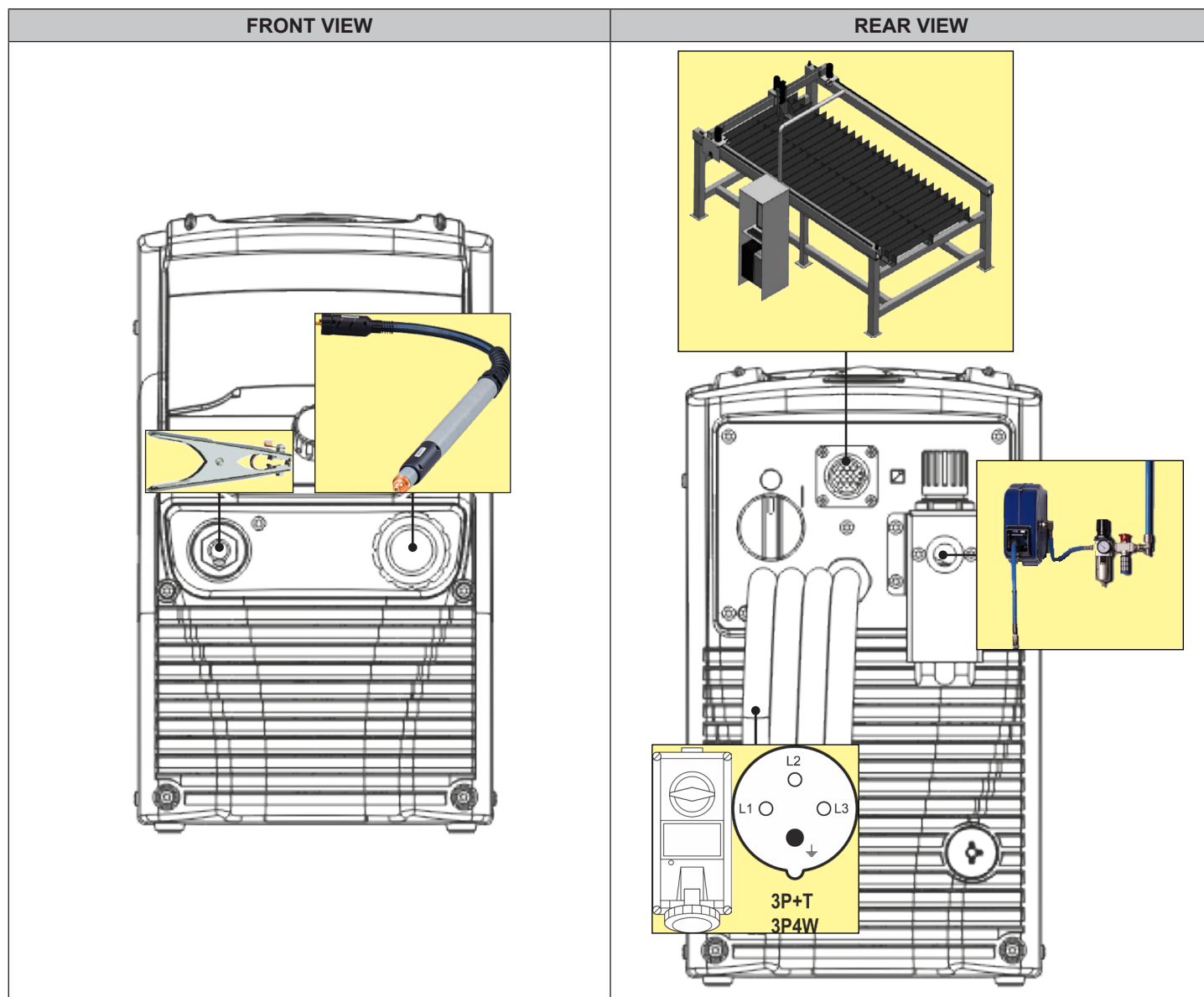
Electric shock hazard!

Read the warnings highlighted by the following symbols in the "General prescriptions for use".





7. Set the welding power source ON/OFF switch to "I" (unit switched on).
8. Set the required cutting parameter values on the user interface.

2.4 PREPARATION FOR AUTOMATIC CUTTING



1. Set the welding power source ON/OFF switch to "O" (unit switched off).
2. Connect the air hose from the cylinder or compressed air system to the pressure reducer connector.

 **WARNING!** Connect the gas supply to the generator using an inert gas hose with an internal diameter of 9.5 mm. The recommended supply pressure while the gas is flowing is between 5.9 and 9.3 bar.

 **WARNING!** The machine must be supplied with compressed air with a maximum pressure of 9.3 bar (0.93 MPa); higher pressures can cause the pressure reducer to explode. If the air is supplied by a compressed air cylinder, it must be fitted with an additional pressure regulator.
3. Connect the PLASMA torch plug to the PLASMA TORCH socket.
The generator has a quick-release system for connecting and disconnecting machine or manual cutting torches. When connecting or disconnecting a torch, set the welding power source ON/OFF switch to "O" (unit switched off).
4. Connect the earth clamp plug to the EARTH socket.
5. Connect the earth clamp to the workpiece being processed or to the cutting table.
6. Connect the interface cable of the automatic cutting table to the remote control connector.
7. Connect the power source mains supply cable to the mains socket outlet.

ENGLISH



DANGER!

Electric shock hazard!

Read the warnings highlighted by the following symbols in the “General prescriptions for use”.

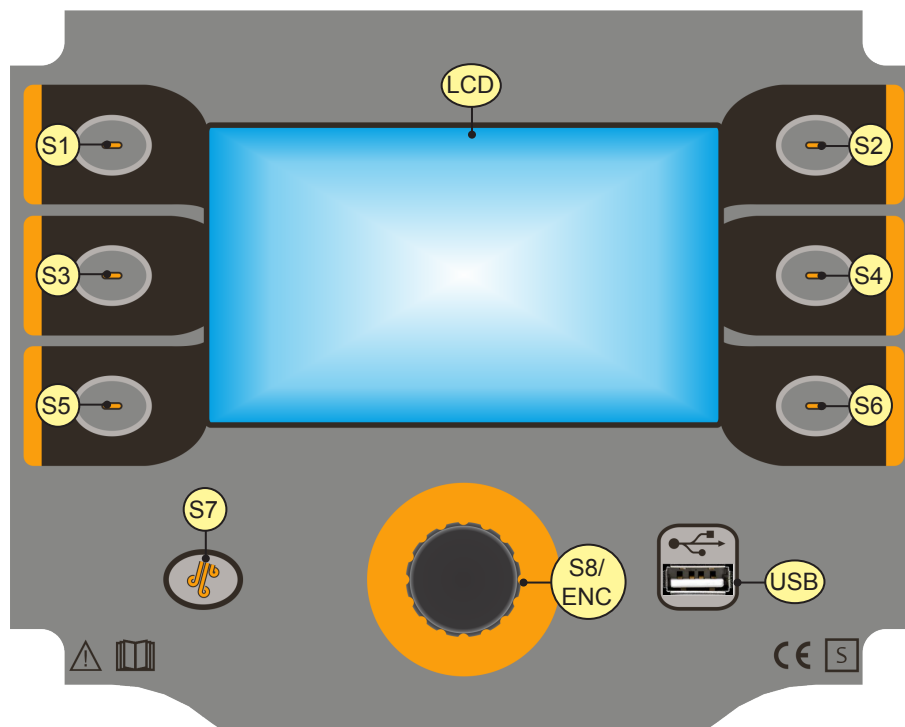







8. Set the welding power source ON/OFF switch to “I” (unit switched on).
9. Set the required cutting parameter values on the user interface.

3 USER INTERFACE

Voyager 75 Evo / Voyager 105 Evo

User interface

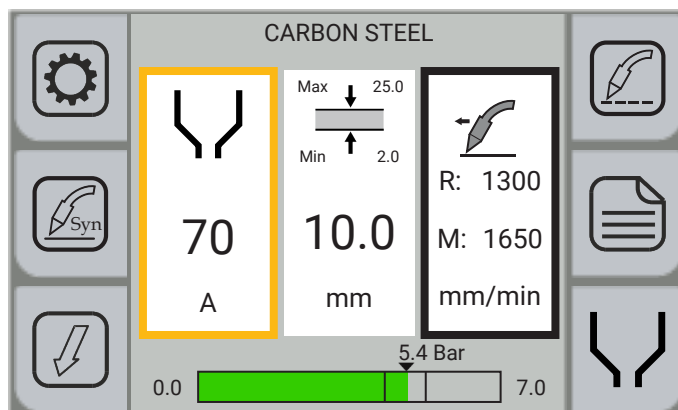


ELEMENT	FUNCTION
S1,S2,S3 S4,S5,S6 	Multi-function keys: these keys are associated with specific functions, which vary according to the currently viewed menu screens and to the currently used settings. The function assigned to each key is shown by the icon that appears next to it.
S7 	The key enables the air solenoid valve so that the flow pressure can be adjusted with the regulator on the back of the generator.
S8/ENC 	ENCODER WITH BUILT-IN KEY In the menu screens: By using the encoder, the parameters/settings list can be scrolled. By pressing the encoder (ENCODER KEY) the highlighted settings can be selected. During the cutting operation: the encoder changes the value of the active parameter.
USB 	By using the USB port, the welder system firmware can be updated.
LCD 	The display shows the menus available to set up the generator and its functions. During the cutting operation: The display shows the set cutting parameters.







i Information The touchscreen panel allows the user to set up the functions through the mechanical keys or by touching the icons displayed on the screen.

ENGLISH

3.1 MAIN SCREEN

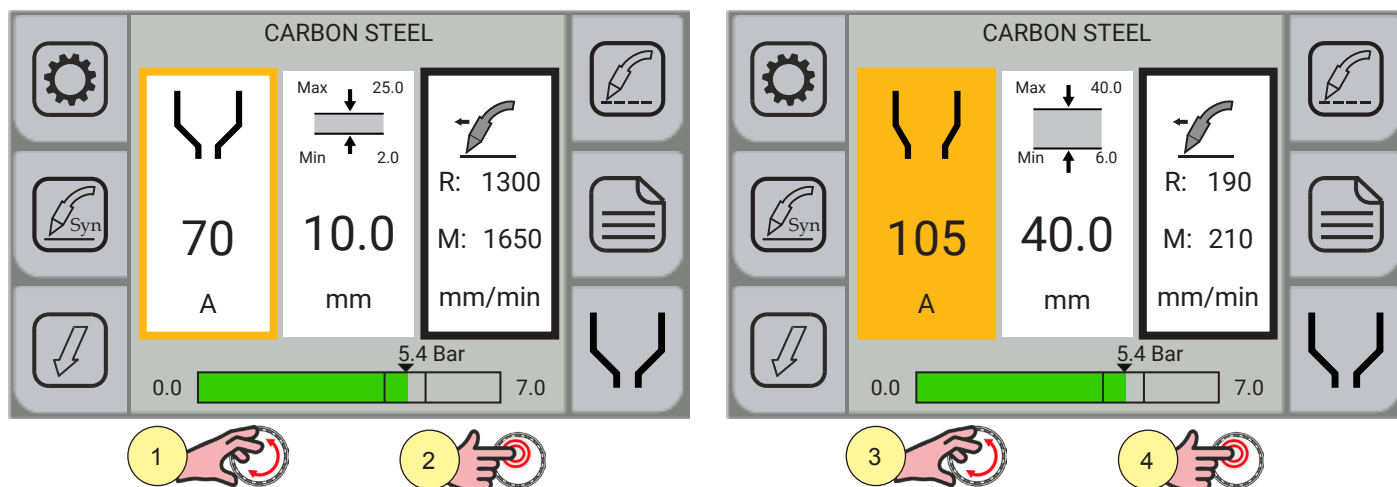


KEYS WITH SYMBOLS

	Press the [PROGRAM] key to select the type of material to be cut with the plasma.
	The [GRID] key, which can only be enabled if the SYNERGIC CUTTING or MANUAL CUTTING process with torch in 2 STROKES work mode is set, allows the user to select the GRATING work mode, which facilitates the cutting of grid panels.
	Press the [PROCESS] key to select the plasma cutting process. The following processes can be selected: SYNERGIC CUTTING, MANUAL CUTTING, GOUGING.
	The [PARAMETERS MENU] allows the user to access the: <ul style="list-style-type: none"> - SYSTEM menu used to set up the generator; - SETUP menu used to set certain generator functions.
	The [MODE] key allows the user to access the menu used to select the torch trigger mode.
	The [SPARE PARTS] key allows the user to access the menu used to find torch component codes for the selected arc current and the active process.




3.2 SETTING THE CUTTING PARAMETERS

This area of the screen displays the cutting parameters that can be directly set from the main screen.



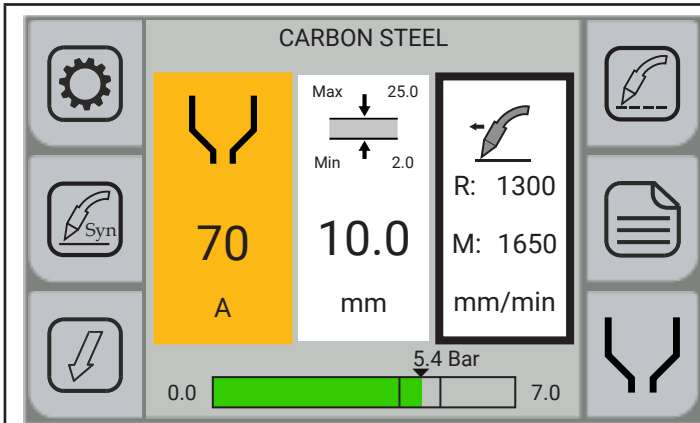
1. Select the parameter to be changed by touching the display or turning the encoder; the selection made is highlighted by the thicker edge around the box.
2. Press the encoder key or the box of the selected parameter to confirm; the background of the box will change colour.
3. Turn the encoder to set the desired value.
4. Press the encoder key again to confirm the value set and return to the parameter selection mode.

The following parameters can be set:

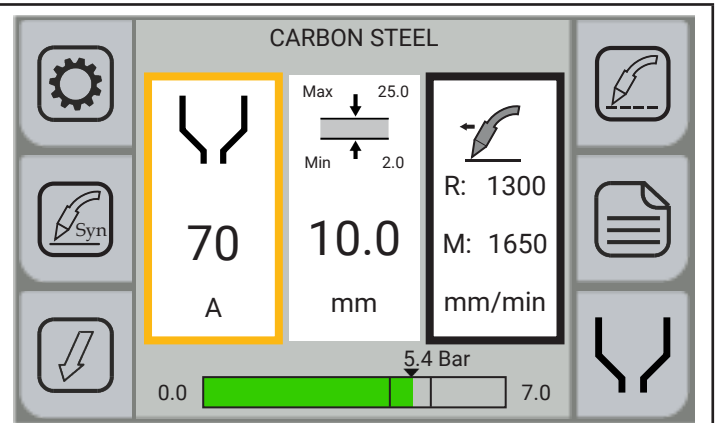
 70 A	(SYNERGIC CUTTING, MANUAL CUTTING, GOUGING) Maximum cutting current. Sets the maximum arc current for cutting. To be set according to the size of the spare parts fitted on the torch.
 10.0 mm	(SYNERGIC CUTTING) Material thickness. Sets the thickness of the material to be cut, in order to calculate the required cutting speed (R) and the maximum permissible cutting speed (M) using the synergy.
 40 A	(MANUAL CUTTING, GOUGING) Cutting current. Sets the arc current for cutting.

ENGLISH

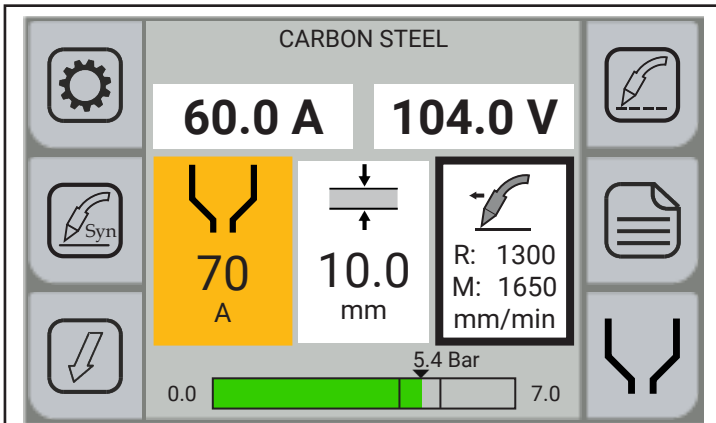
VIEWING ADDITIONAL INFORMATION



The required cutting speed (R) and the maximum permissible cutting speed (M) are shown on the right side of the display (black box).



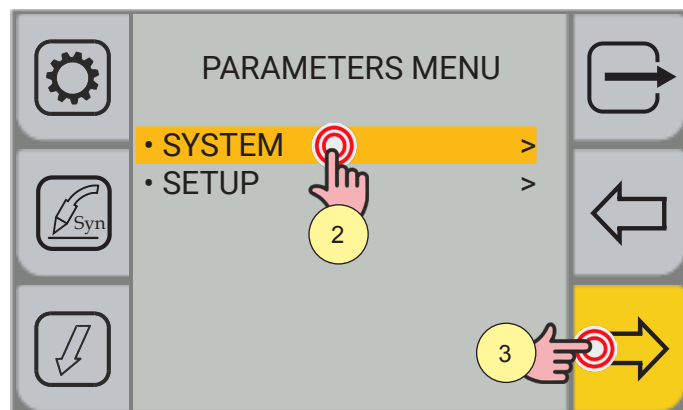
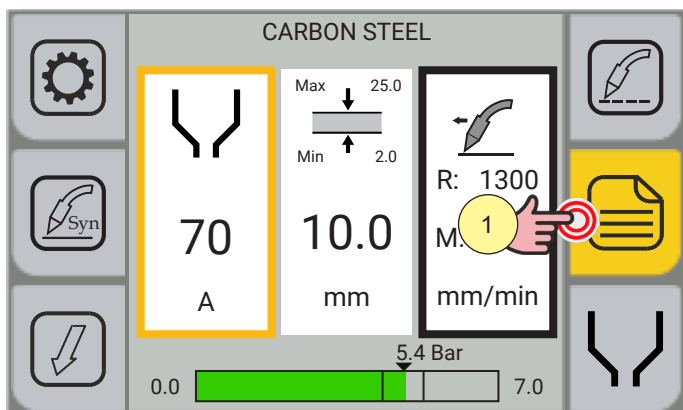
The bar indicating the gas pressure set with the pressure regulator is displayed at the bottom of the display. When the bar is green, it means that the gas pressure is within the permissible limits for the cutting type set. When the bar is red, it means that the gas pressure is outside the permissible limits for the cutting type set.



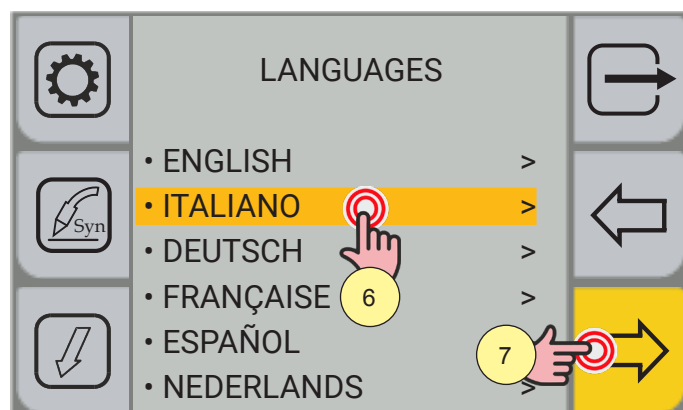
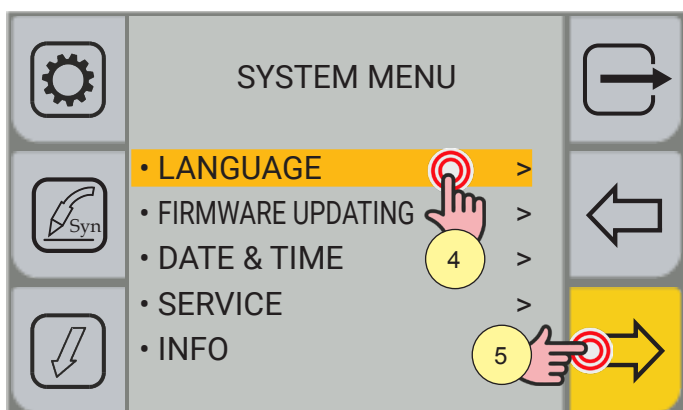
When cutting or gouging, the real cutting current and voltage are shown in a box at the top of the display

4 PRELIMINARY SETTINGS

Setting language



1. Press the [MENU] key.
2. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: SYSTEM>
3. Press the encoder key or the [NEXT] key to confirm.

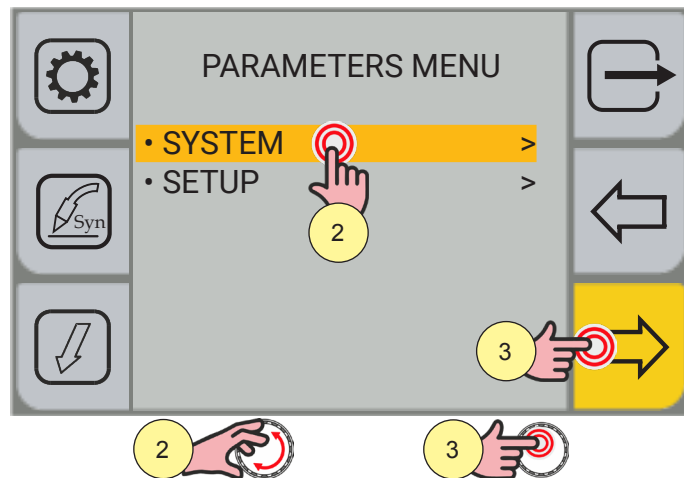
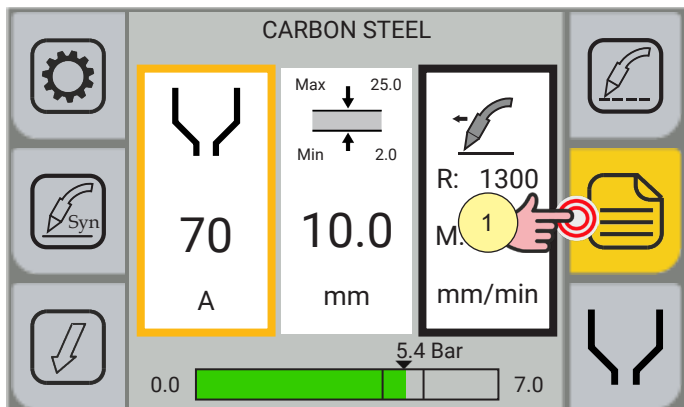


4. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: LANGUAGE
5. Press the encoder key or the [NEXT] key to confirm.
6. Turn the encoder to select the desired language.
 - o (ENGLISH, ITALIANO, DEUTSCH, FRANÇAISE, ESPAÑOL, NEDERLANDS, POLSKI, HRVATSKI, DANSK, ČEŠTINA)
7. Press the encoder key or the [NEXT] key to confirm.

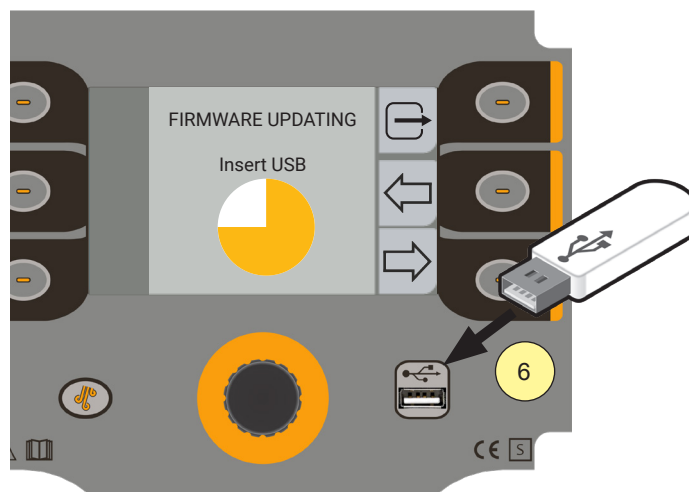
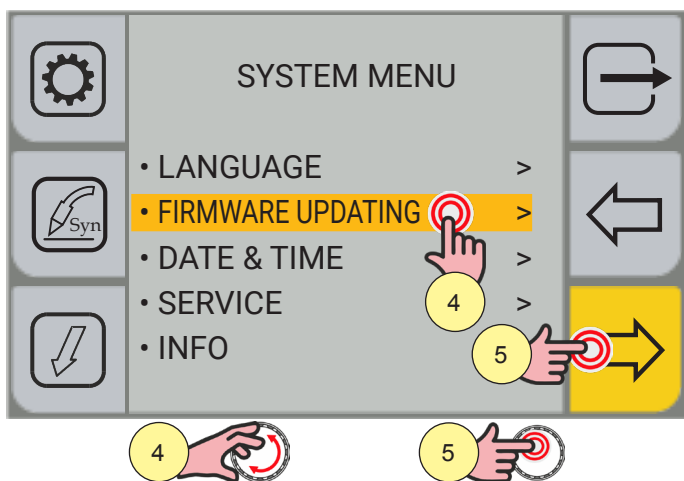
Press the  [EXIT] key to exit the screen.

ENGLISH

Firmware updating

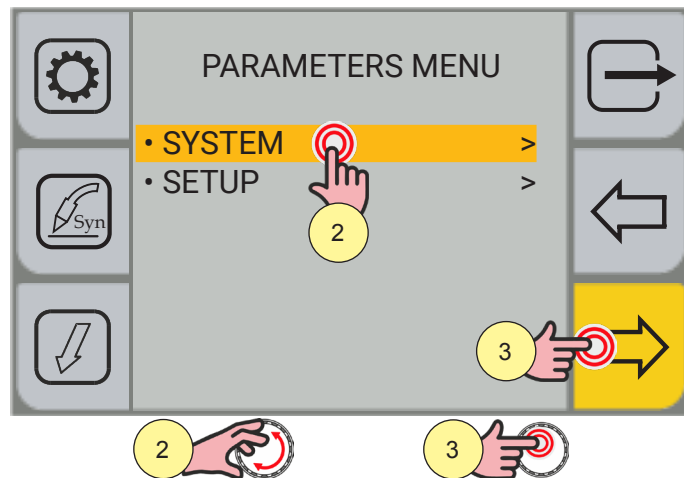
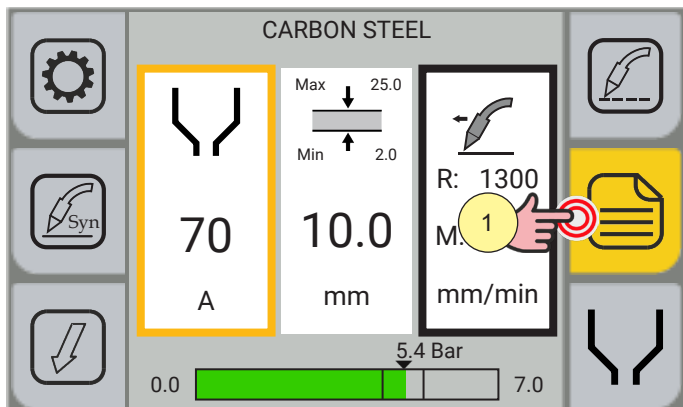


1. Press the [MENU] key.
2. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: SYSTEM>
3. Press the encoder key or the [NEXT] key to confirm.

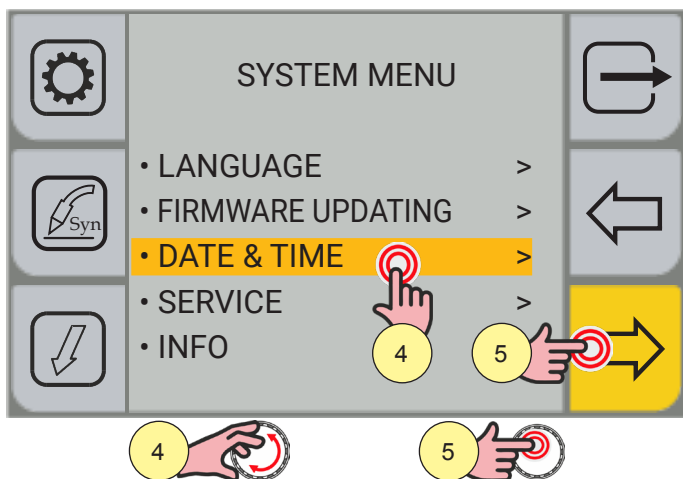


4. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: FIRMWARE UPDATING>
5. Press the encoder key or the [NEXT] key to confirm.
6. Insert the USB memory stick containing the firmware into the USB port.
Wait for the update procedure to be completed.

Setting the date and time



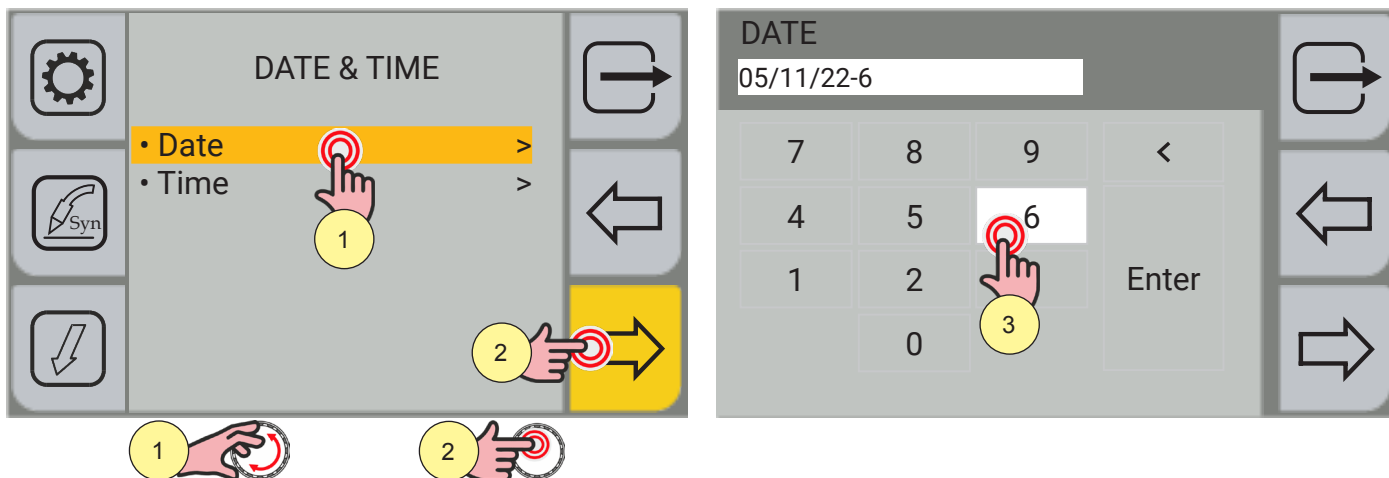
1. Press the [MENU] key.
2. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: SYSTEM>
3. Press the encoder key or the [NEXT] key to confirm.



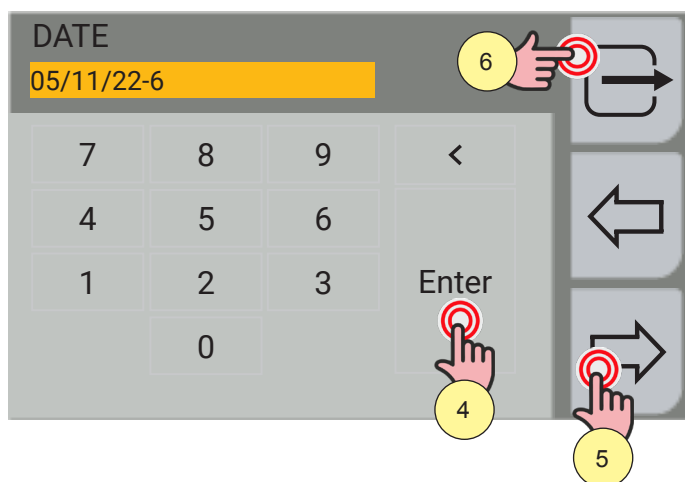
4. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: DATE & TIME>
5. Press the encoder key or the [NEXT] key to confirm.


ENGLISH

Setting the date

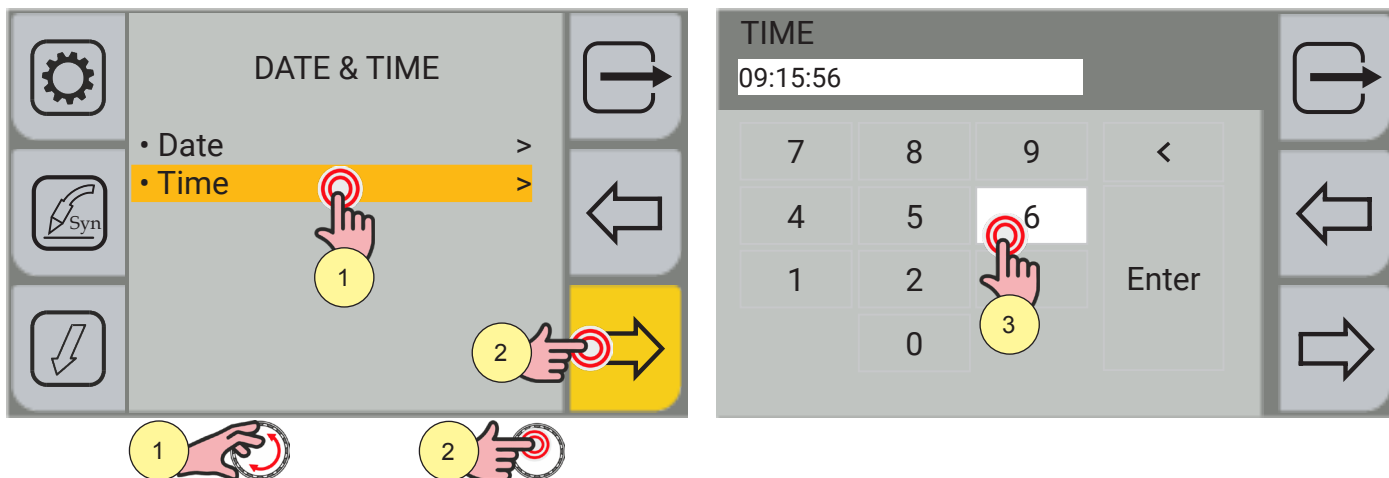


1. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: DATE>
2. Press the encoder key or the [NEXT] key to confirm.
3. Enter the current date and week number on the screen following the dd/mm/yy-weekday(1-7) sequence.

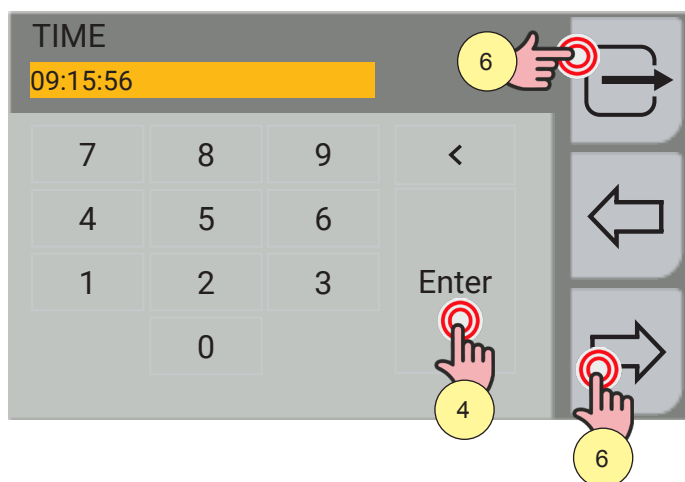



4. Press the [ENTER] key to confirm the parameters entered.
5. Press the [NEXT] key to switch to the time setting screen.
6. Press the  [EXIT] key to quit the screen.

Setting the time



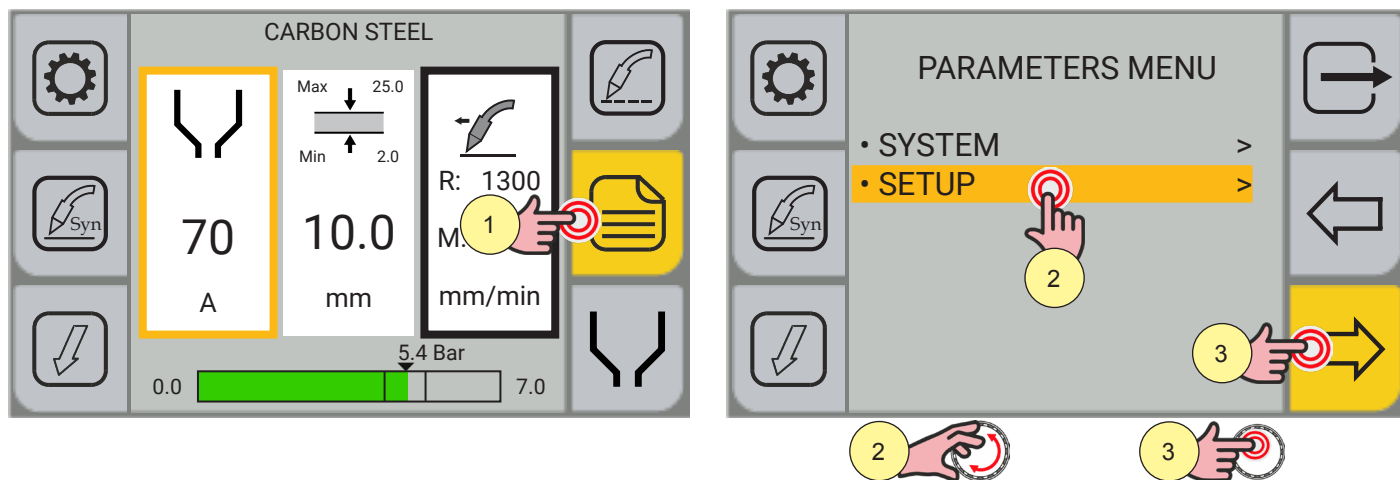
1. Select the desired setting by touching it on the display or turning the encoder.
Select the following path: TIME>
2. Press the encoder key or the [NEXT] key to confirm.
3. Enter the current time on the screen following the hh/mm/ss sequence.



4. Press the [ENTER] key to confirm the parameters entered.
5. Press the  [EXIT] key to quit the screen.

ENGLISH

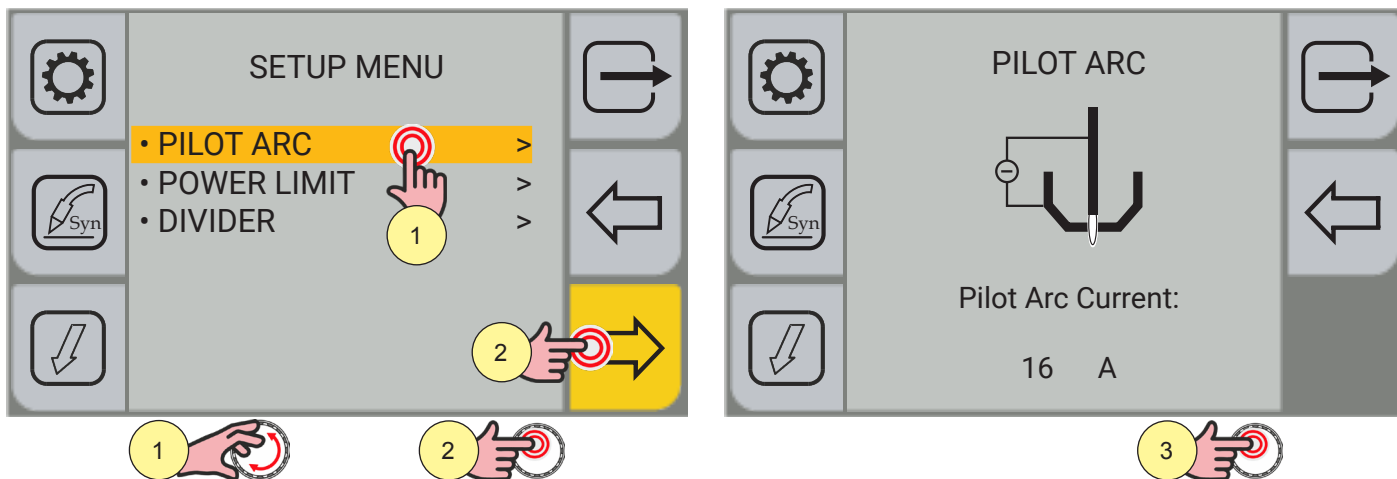
4.1 GENERATOR SETUP



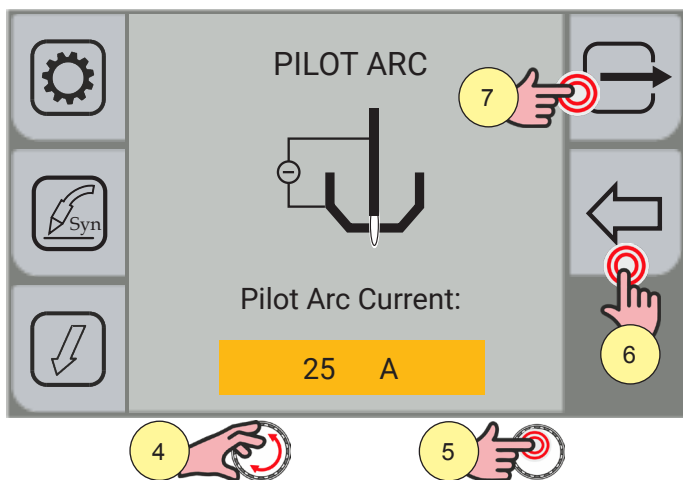
1. Press the [MENU] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: SETUP>
3. Press the encoder key or the [NEXT] key to confirm.

Setting the Pilot Arc

A higher pilot arc current makes it easier to transfer the arc onto the workpiece, but it increases wear of torch spare parts. Only change this parameter if it needs to be transferred from further away.



1. Select the desired item by touching it on the display or turning the encoder. Select the following path: PILOT ARC>
2. Press the encoder key or the [NEXT] key to confirm.
3. Press the encoder key to enable the parameter change.

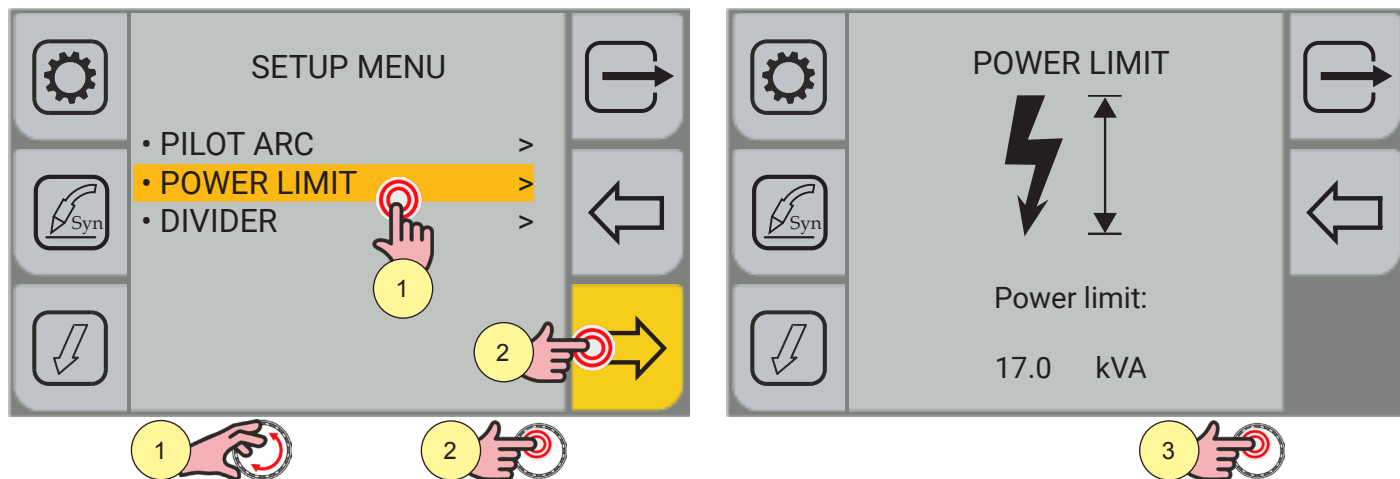


4. Turn the encoder to set the desired value.
5. Press the encoder key to confirm.
6. Press the [BACK] key to return to the SETUP MENU page.
7. Press the [EXIT] key to quit the screen.

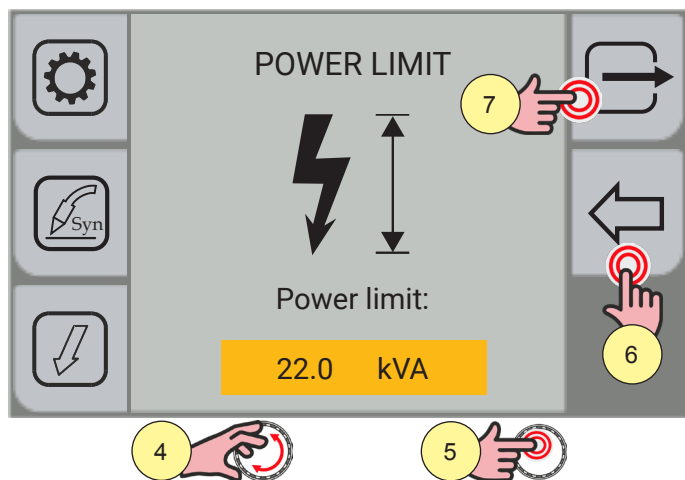
ENGLISH

Setting the Power Limit

The generator power limit is used to protect the mains from overloads due to the input power. Be aware that a reduced power limit compromises peak cutting performance. Leave this limit at its highest to exploit peak performance.



1. Select the desired item by touching it on the display or turning the encoder. Select the following path: POWER LIMIT>
2. Press the encoder key or the [NEXT] key to confirm.
3. Press the encoder key to enable the parameter change.

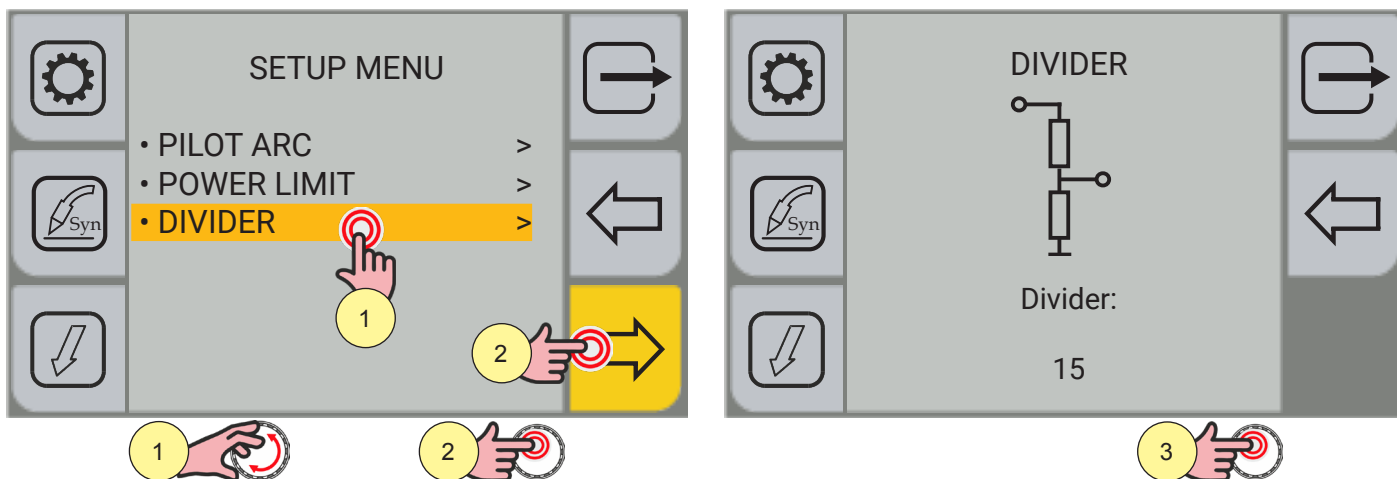


4. Turn the encoder to set the desired value.
5. Press the encoder key to confirm.
6. Press the [BACK] key to return to the SETUP MENU page.
7. Press the [EXIT] key to quit the screen.

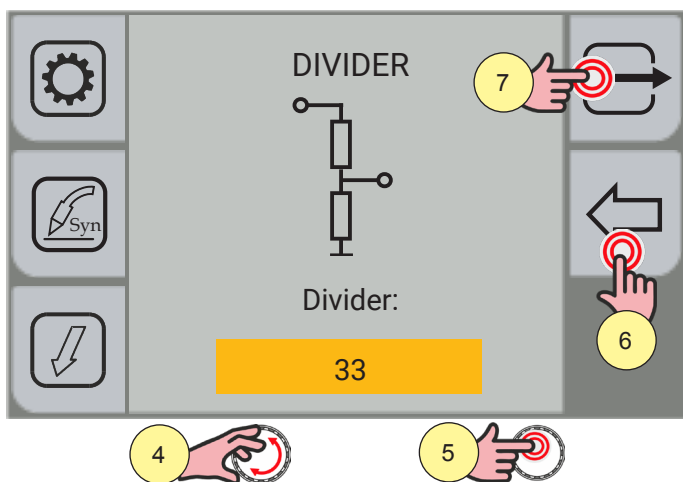
Setting the Divider

The digital divider that can be set on the panel enables a portion of the cutting voltage (according to the cutting / divider voltage formula) to be output on the rear connector set up for remote connection.

For example, assuming a divider set at 50, if the arc voltage during the cutting operation is 150V, the voltage available on the rear connector between pins 5 and 6 will be 3V.



1. Select the desired item by touching it on the display or turning the encoder.
Select the following path: DIVIDER>
2. Press the encoder key or the [NEXT] key to confirm.
3. Press the encoder key to enable the parameter change.



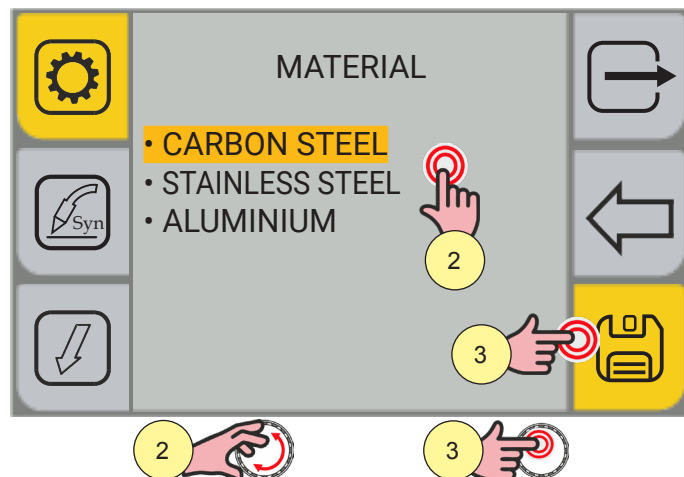
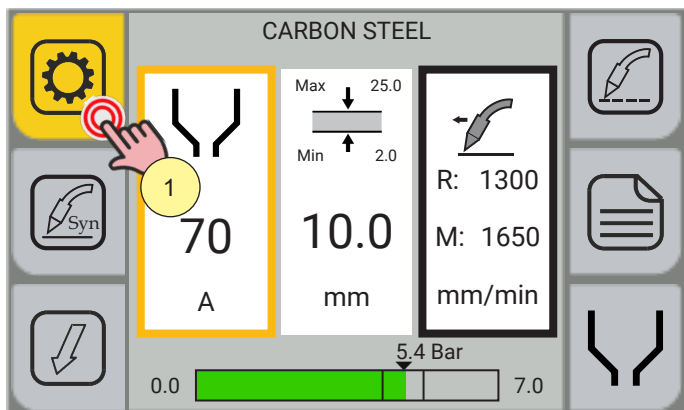
4. Turn the encoder to set the desired value.
5. Press the encoder key to confirm.
6. Press the [BACK] key to return to the "SETUP MENU" page
7. Press the [EXIT] key to quit the screen.

ENGLISH

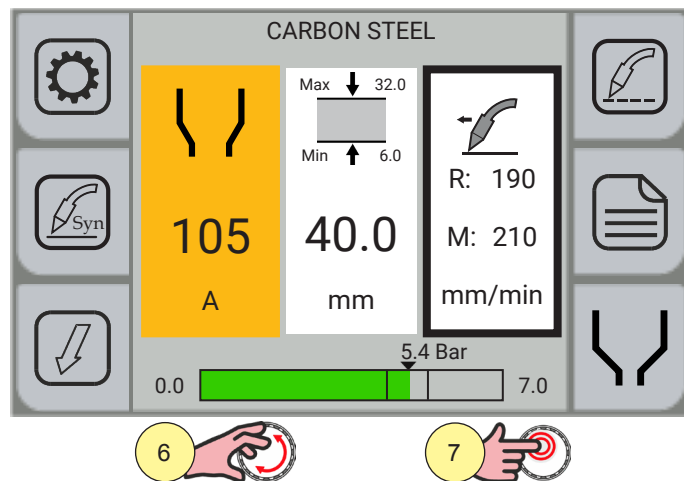
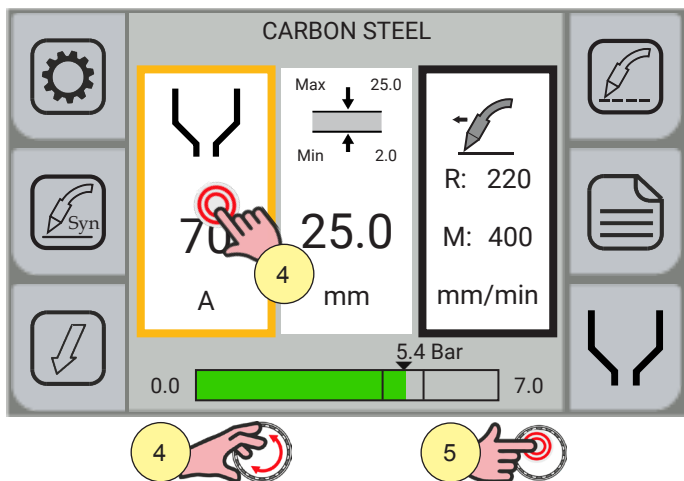
5 CUTTING PROGRAM

5.1 SETTING THE CUTTING PROGRAM

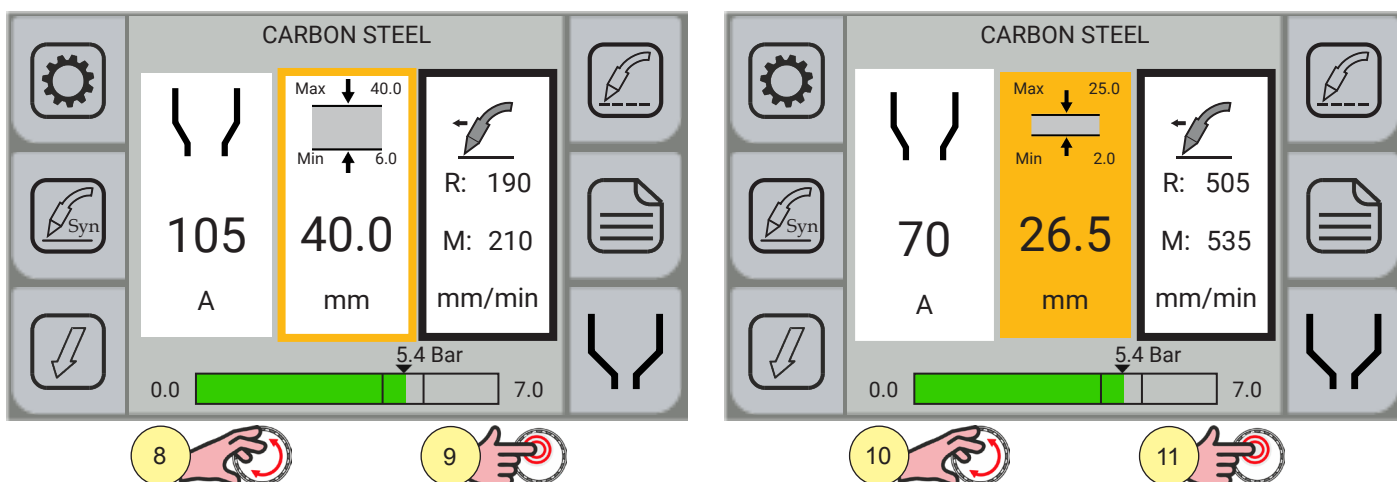
The [PROGRAM] key allows the user to access a sequence of screens on which the work parameters can be set according to the type and thickness of the material to be cut.



1. Press the [PROGRAM] key.
2. Select the material to be processed by touching the item on the display or turning the encoder.
 - (Carbon steel, Stainless steel, Aluminium)
3. Press the encoder key or the [SAVE] key to confirm.



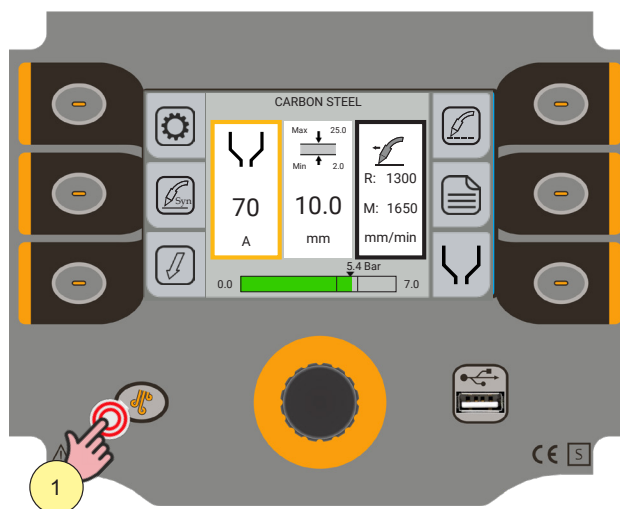
4. Select the "Maximum cutting current" parameter by touching the item on the display or turning the encoder.
5. Press the encoder key to confirm.
6. Turn the encoder to set the desired value.
7. Press the encoder key again to confirm the value set and return to the parameter selection mode.



8. Select the “Material thickness” parameter by touching the item on the display or turning the encoder.
9. Press the encoder key to confirm.
10. Turn the encoder to set the desired value.
11. Press the encoder key again to confirm the value set and return to the parameter selection mode.

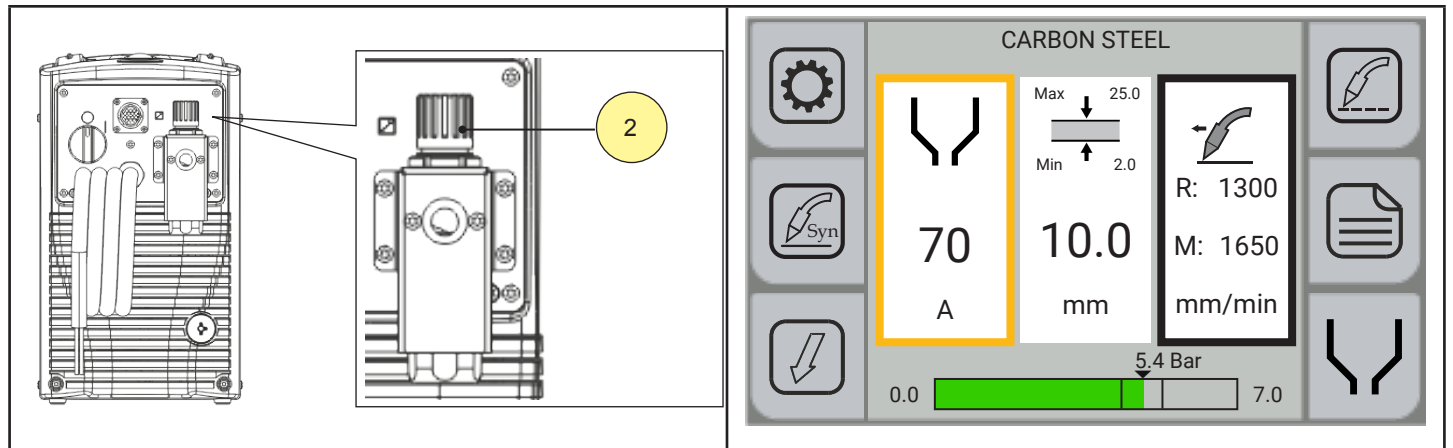
i Information Similar to that described above, the parameters can be set for the cutting programs of the other two types of material (Stainless steel, Aluminium).

5.2 GAS FLOW REGULATION

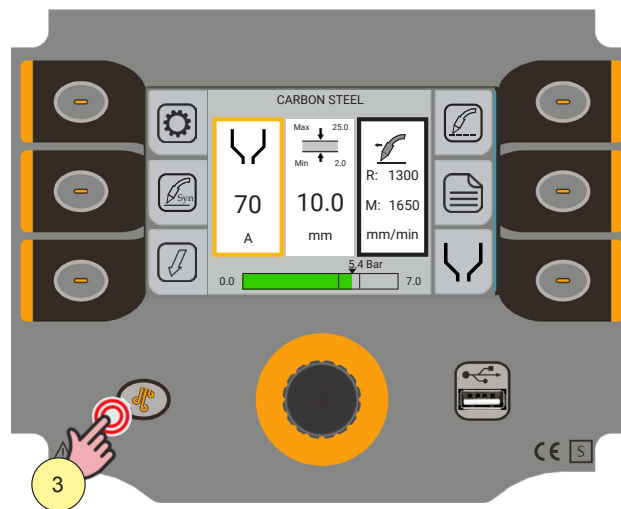


1. Open the gas solenoid valve by pressing and releasing the (BLOW) key.

ENGLISH



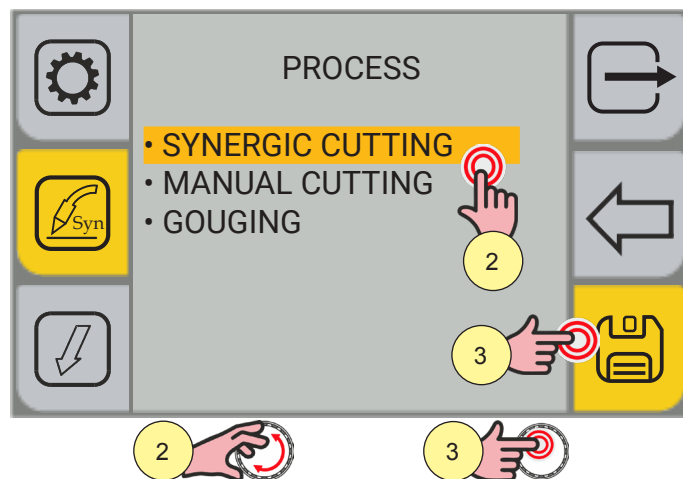
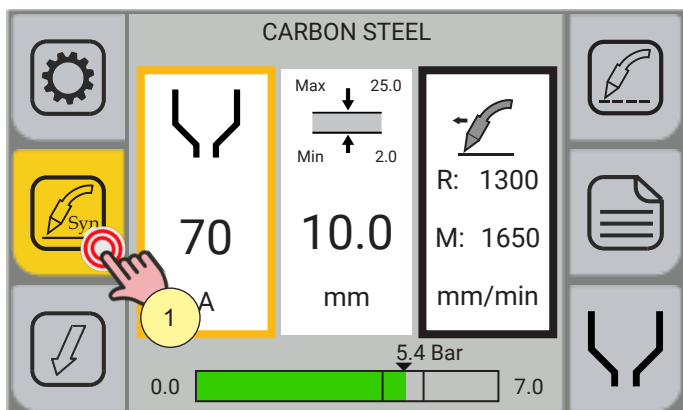
2. Adjust the pressure of the gas flowing from the torch with the pressure regulator on the back of the machine. The set pressure value must be between the minimum and maximum limits marked on the pressure bar on the generator display (the bar must be green).



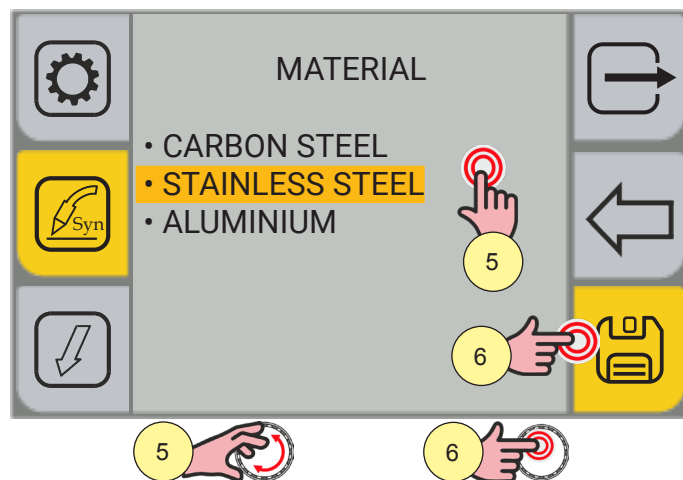
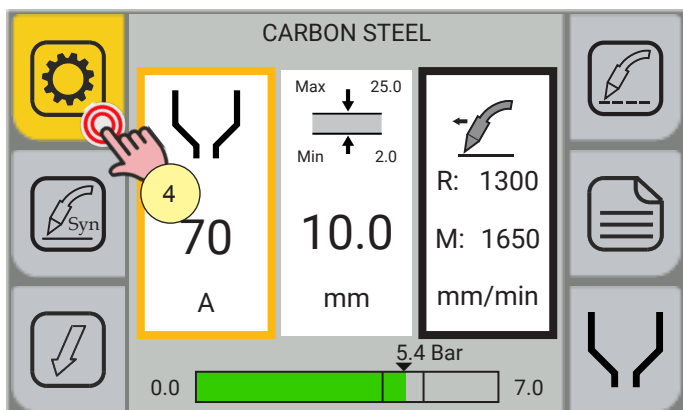
3. Close the gas solenoid valve by pressing and releasing the (BLOW) key. The solenoid valve is automatically closed after 10 seconds.

6 CUTTING PROCESSES


6.1 SETTING THE SYNERGIC CUTTING PROCESS



1. Press the [PROCESS] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: SYNERGIC CUTTING
3. Press the encoder key or the [SAVE] key to confirm.

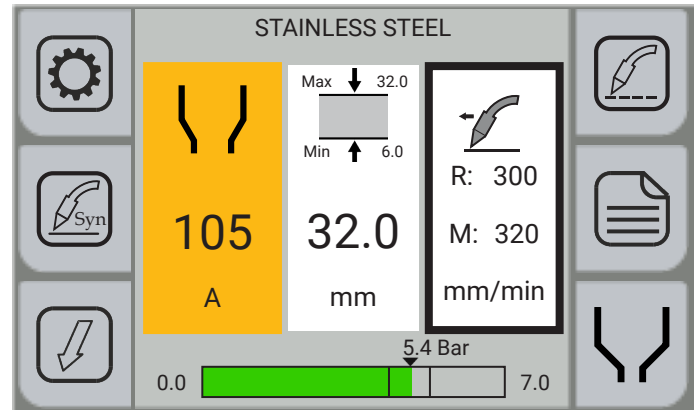
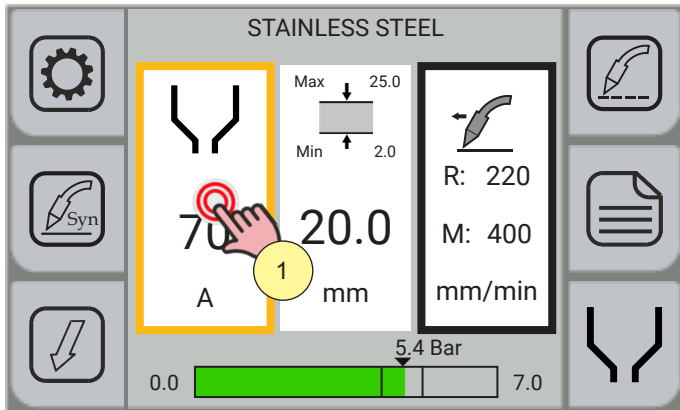


4. Press the [PROGRAM] key.
5. Select the material to be processed by turning the encoder or touching the item on the display.
o (CARBON STEEL, STAINLESS STEEL, ALUMINIUM)
6. Press the encoder key or the [SAVE] key to confirm.

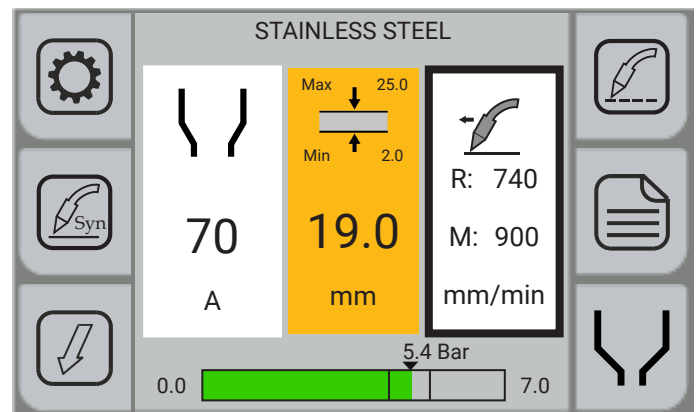
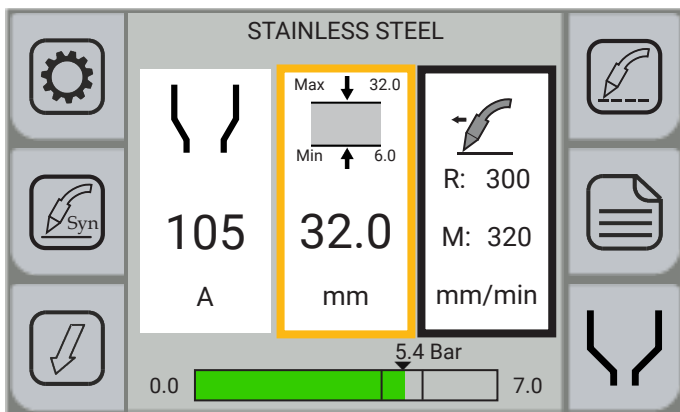
Press the  [EXIT] key to exit the screen.

ENGLISH

Setting the process parameters

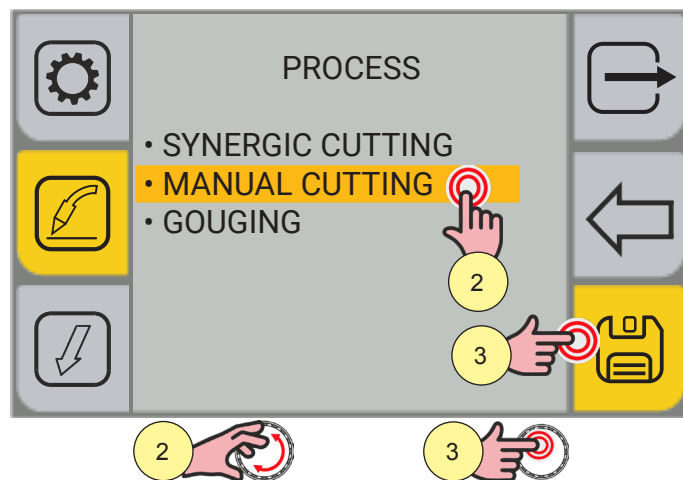
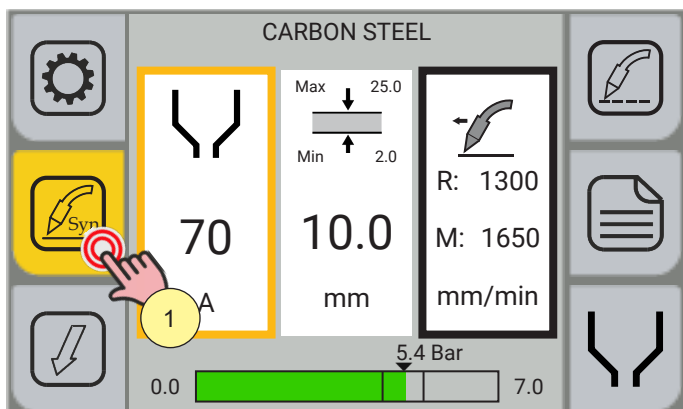


1. Select the “Maximum cutting current” parameter by touching the item on the display or turning the encoder. The maximum current that can be set is limited to the size of the spare part entered.
2. Press the encoder key to confirm.
3. Turn the encoder to set the desired value.
4. Press the encoder key again to confirm the value set and return to the parameter selection mode.

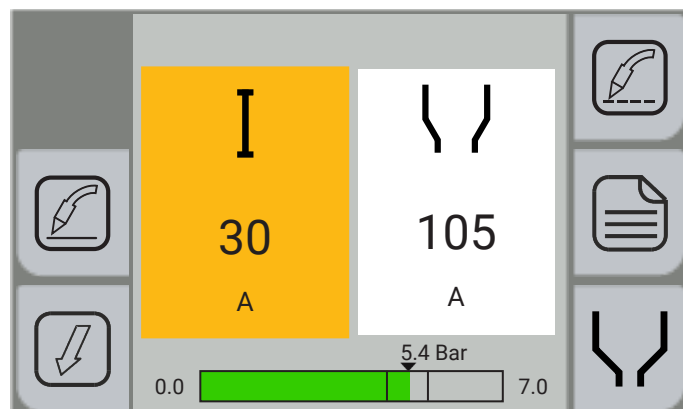
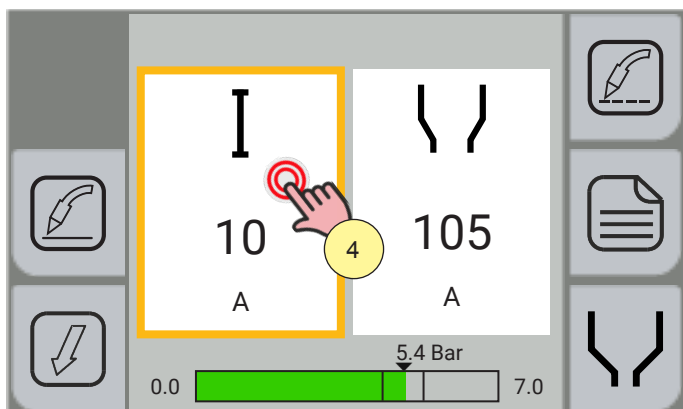


5. Select the “Material thickness” parameter by touching the item on the display or turning the encoder.
 6. Press the encoder key to confirm.
 7. Turn the encoder to set the desired value.
 8. Press the encoder key again to confirm the value set and return to the parameter selection mode.
9. Select the “Maximum cutting current” parameter by touching the item on the display or turning the encoder.
 10. Press the encoder key to confirm.
 11. Turn the encoder to set the desired value.
 12. Press the encoder key again to confirm the value set and return to the parameter selection mode.

6.2 SETTING THE MANUAL CUTTING PROCESS

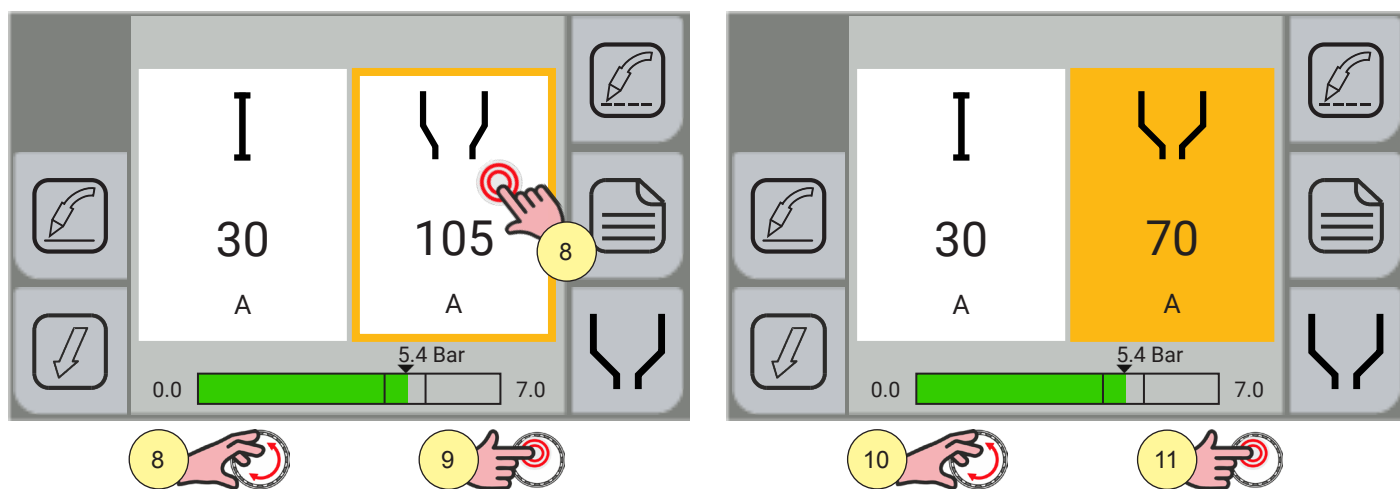


1. Press the [PROCESS] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: MANUAL CUTTING
3. Press the encoder key or the [SAVE] key to confirm.



4. Select the "Cutting current" parameter by touching the item on the display or turning the encoder.
5. Press the encoder key to confirm.
6. Turn the encoder to set the desired value.
7. Press the encoder key again to confirm the value set and return to the parameter selection mode.

ENGLISH



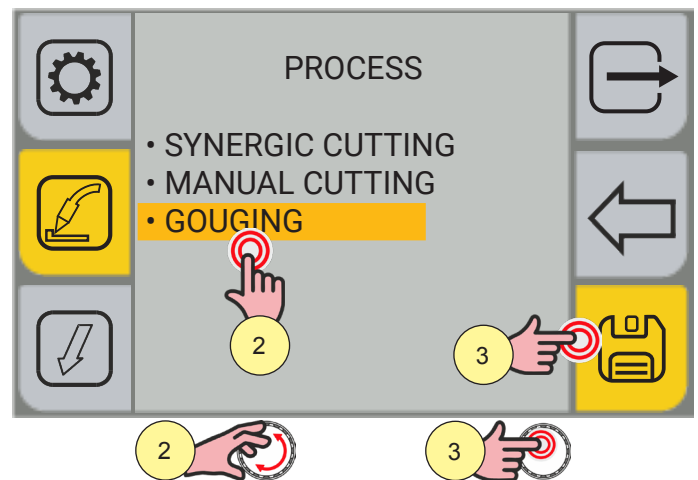
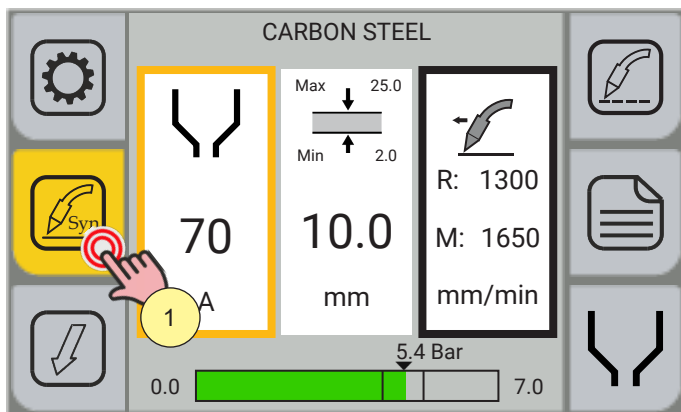
8. Select the "Maximum cutting current" parameter by touching the item on the display or turning the encoder.
9. Press the encoder key to confirm.
10. Turn the encoder to set the desired value.
11. Press the encoder key again to confirm the value set and return to the parameter selection mode.

6.3 SETTING THE GOUGING PROCESS

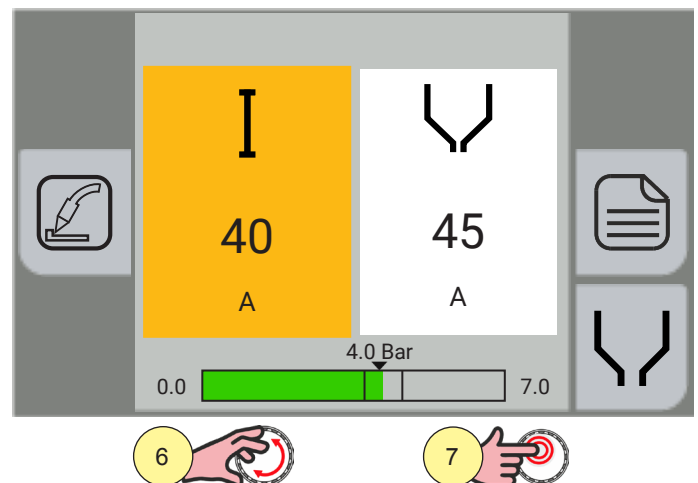
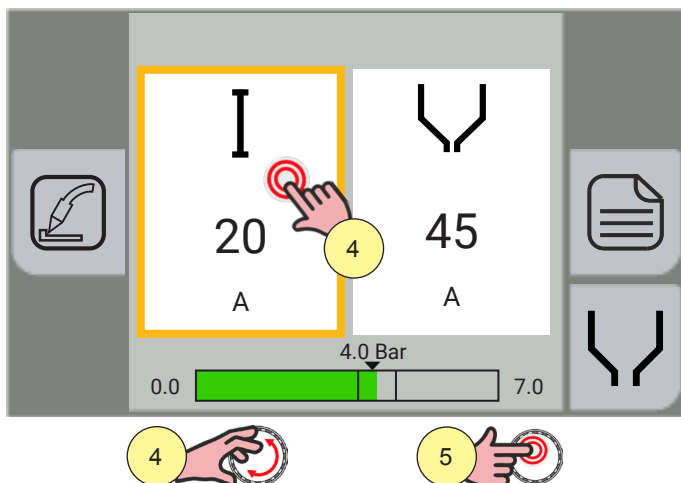
Plasma gouging is a process of melting and then removing material using a plasma beam; it is the same cutting machine that performs this function, but in this case, it uses a different torch setup to avoid cutting the material. The torch nozzles and gas diffusers are usually different. They are kept much further away from the workpiece to facilitate the removal of metal to be eliminated. In order to perform this type of processing, thereby ejecting the material easily, the torch must be held at an angle. Furthermore, the gas pressure is usually lower than that used for cutting to prevent the incandescent material from flying too far.

! WARNING! Gouging is a process that generates different sparks; it is essential for the operator to be equipped with hand, arm and face protection or stand at a safe distance.

! DANGER! Make sure that the flying molten material does not reach flammable or explosive substances. Use protective shields.

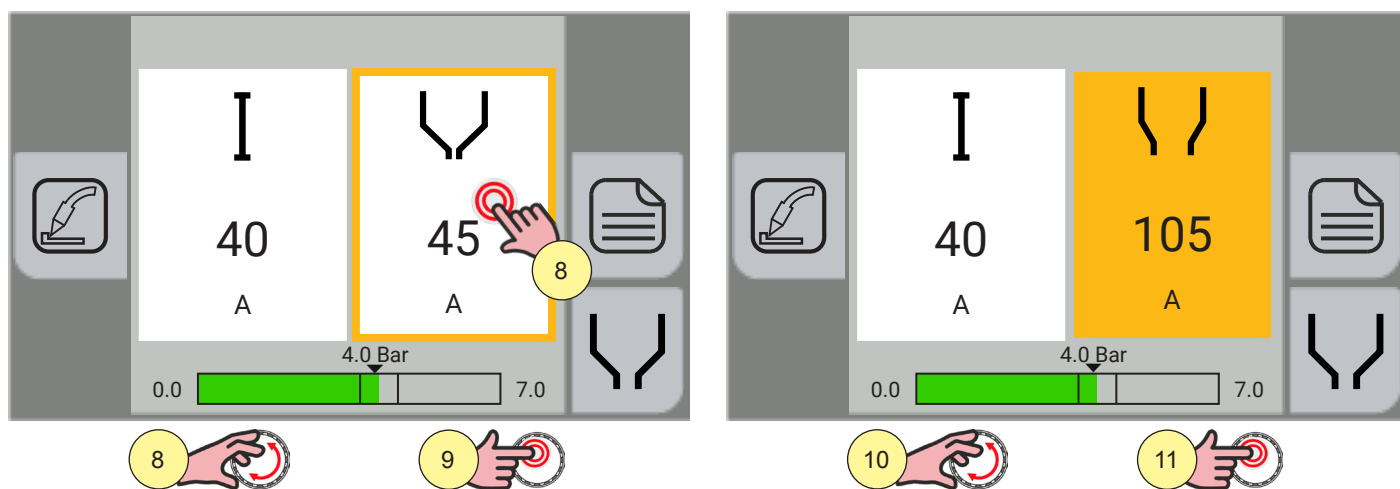


1. Press the [PROCESS] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: GOUGING
3. Press the encoder key or the [SAVE] key to confirm.



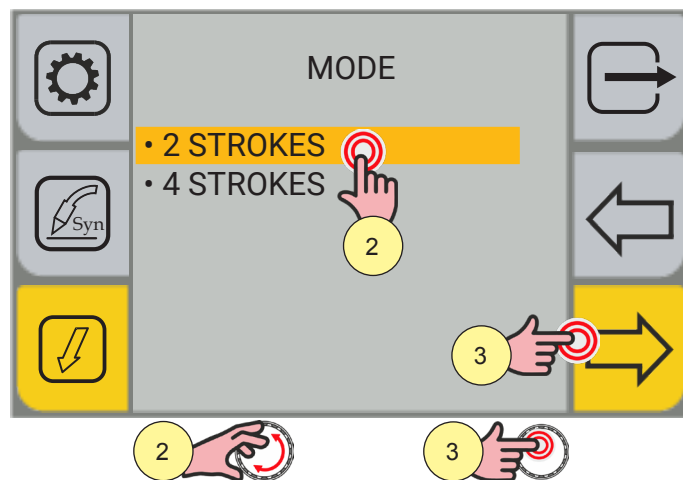
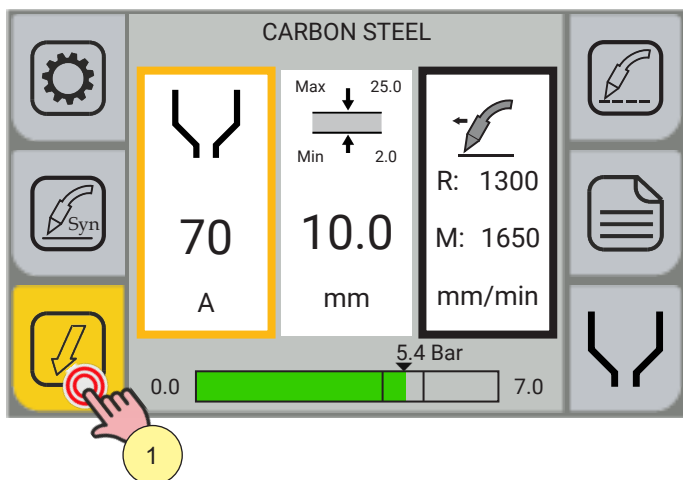
4. Select the "Cutting current" parameter by touching the item on the display or turning the encoder.
5. Press the encoder key to confirm.
6. Turn the encoder to set the desired value.
7. Press the encoder key again to confirm the value set and return to the parameter selection mode.

ENGLISH

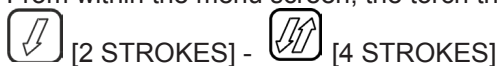


8. Select the "Maximum cutting current" parameter by touching the item on the display or turning the encoder.
9. Press the encoder key to confirm.
10. Turn the encoder to set the desired value.
11. Press the encoder key again to confirm the value set and return to the parameter selection mode.

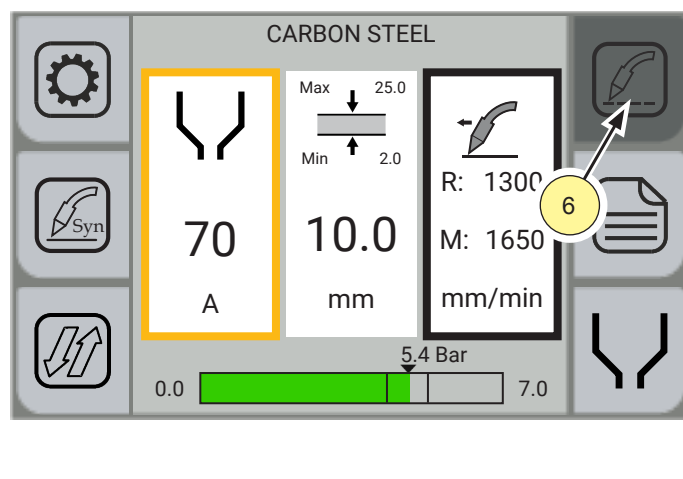
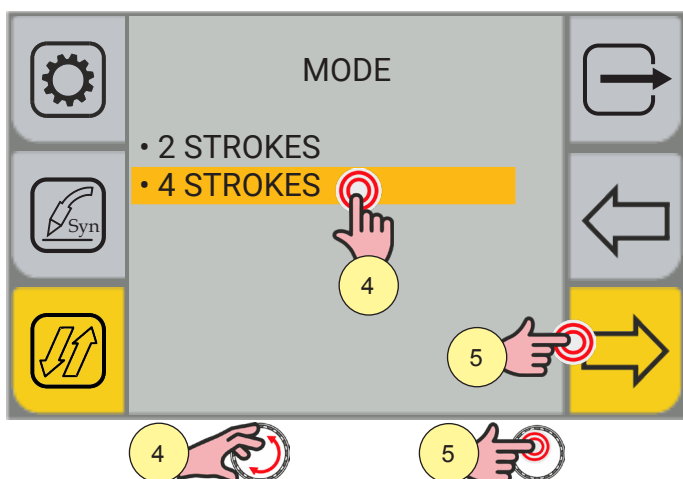
6.4 SETTING UP THE TORCH TRIGGER MODE



1. Press the [MODE] key.
- o From within the menu screen, the torch trigger mode can be selected:



2. Select the desired mode by turning the encoder or touching the item on the display.
3. Press the encoder key or the [NEXT] key to confirm.



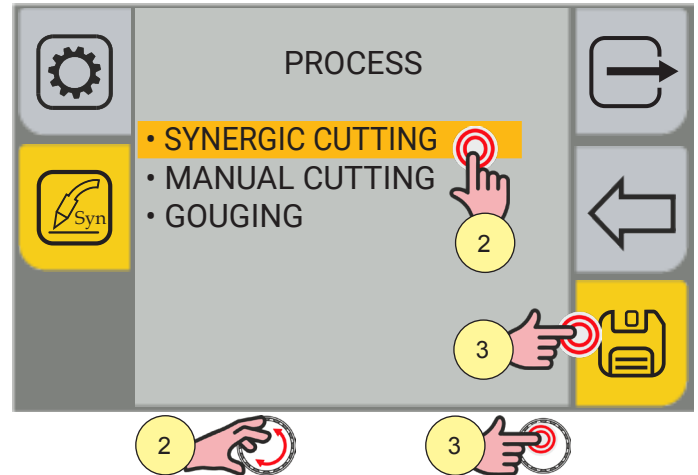
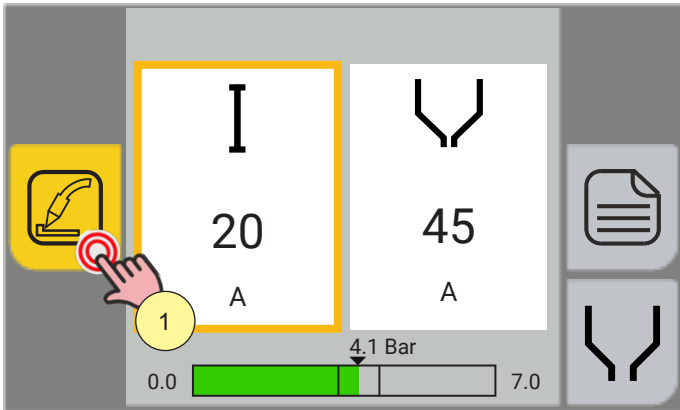
i Information Selecting and enabling 4 STROKES mode (see details 4 and 5) automatically disables the [GRID] button (detail 6) as the function is not available in this torch trigger mode.

ENGLISH

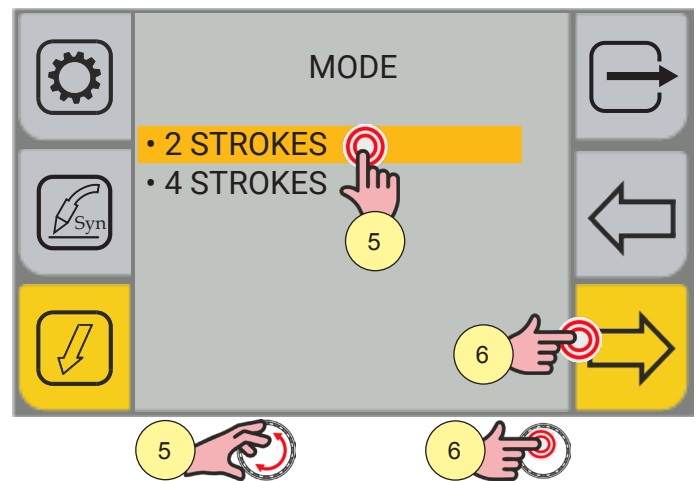
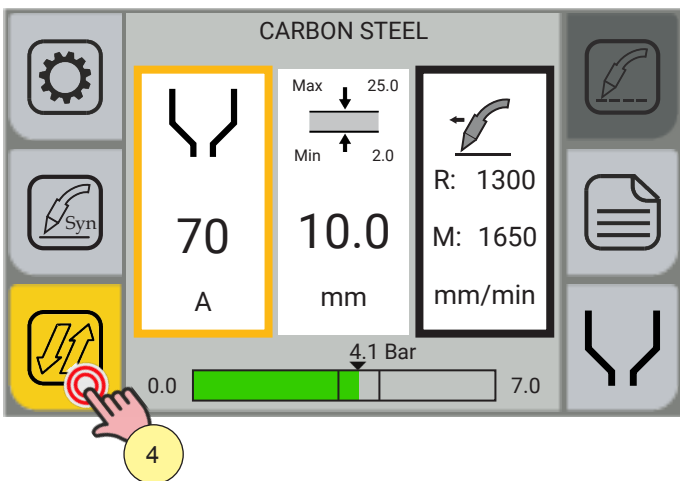
6.5 GRATING MATERIAL CUTTING SELECTION

The GRATING work mode can be selected on the machine to make it easier to cut grating material.

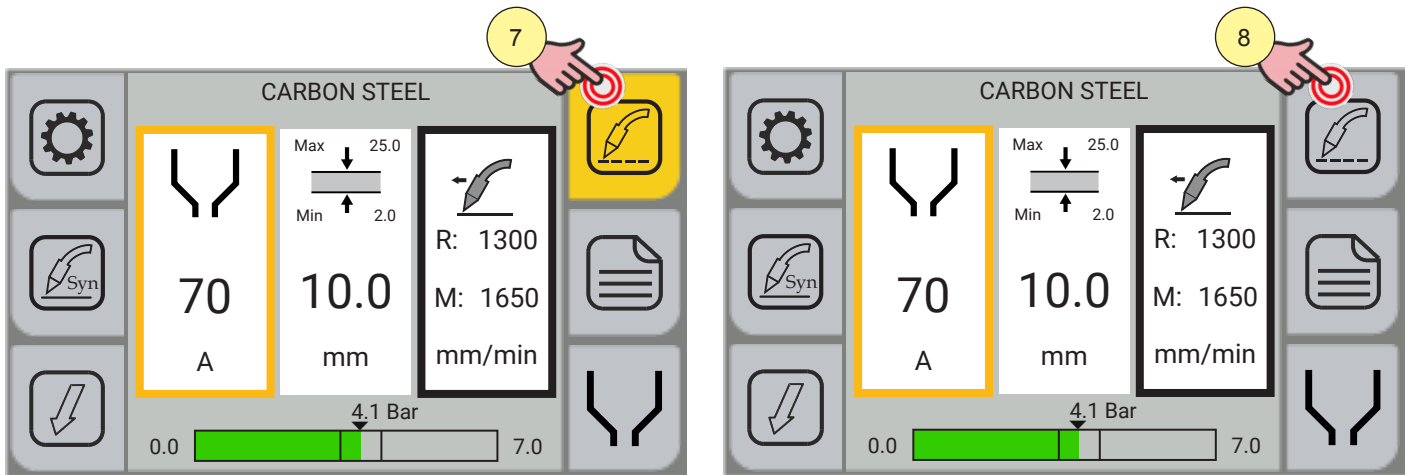
i Information The GRATING work mode can only be enabled if the SYNERGIC CUTTING or MANUAL CUTTING process has previously been selected on the machine and the torch trigger mode is set on 2 STROKES. In all other machine setup cases, the [GRID] button is automatically disabled, making the “GRATING” function unavailable.



1. Press the [PROCESS] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: SYNERGIC CUTTING or MANUAL CUTTING.
(The example sequence shows SYNERGIC CUTTING being selected).
3. Press the encoder key or the [SAVE] key to confirm.



4. Press the [MODE] key.
5. Select 2 STROKES by touching it on the display or turning the encoder.
6. Press the encoder key or the [NEXT] key to confirm.




7. Press the [GRID] key once to enable the GRATING function and make cutting the material easier.
8. Press the [GRID] key again to disable the GRATING function.

ENGLISH

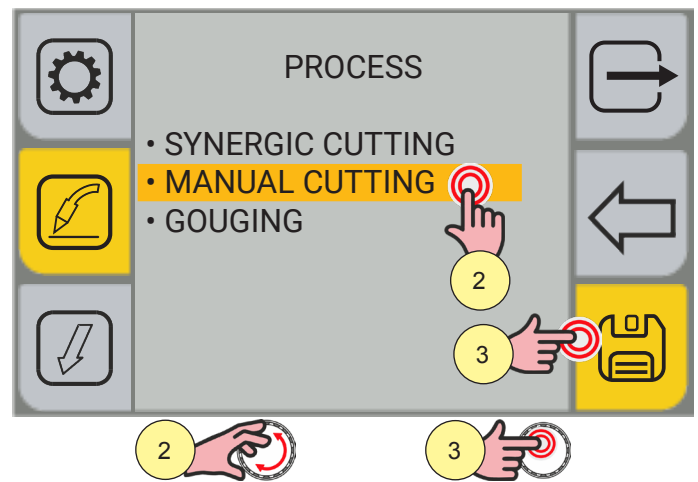
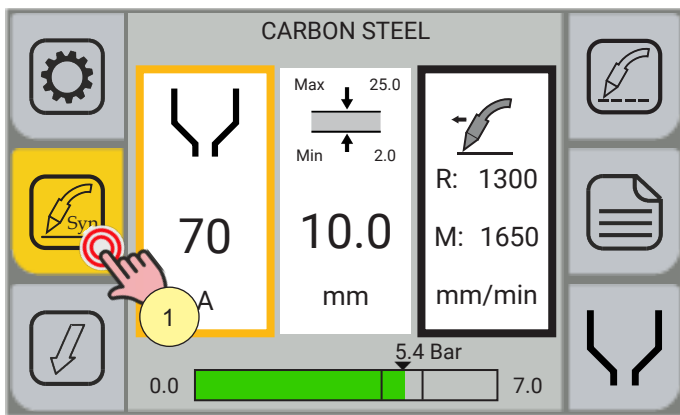
7 IDENTIFICATION OF CONSUMABLES

Consumables, by their definition, have a limited service life and must be replaced at the end of it. Chapter “15 MAINTENANCE” contains information on how to check their condition of wear and how often they should generally be replaced. The type of consumables (electrodes and nozzles) vary according to the “Maximum cutting current” set (45A, 70A, 85A or 105A).

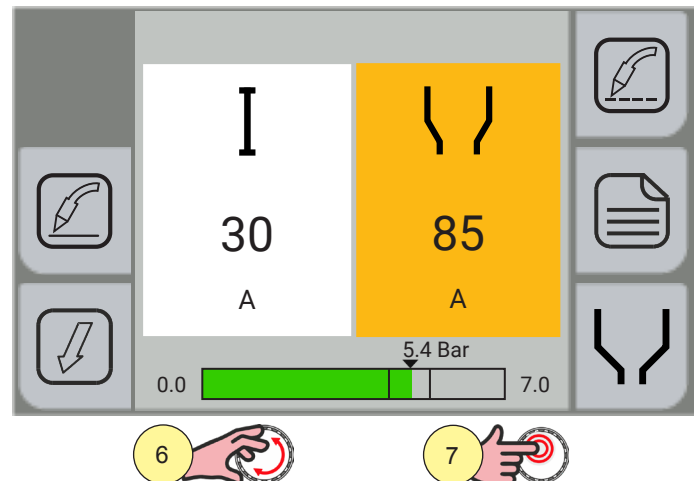
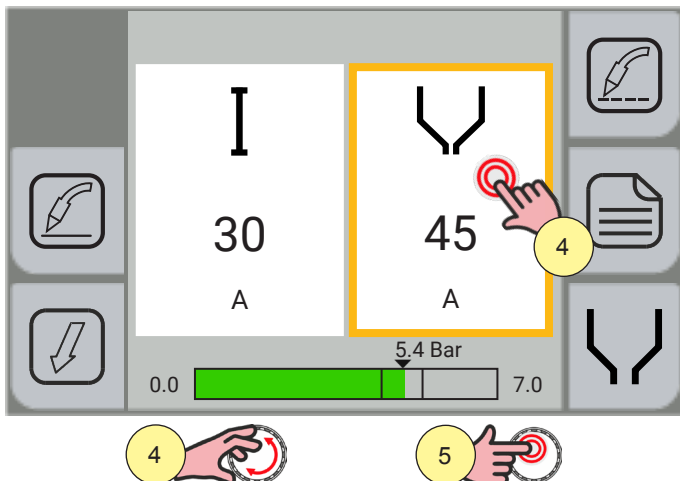
In order to help identify the code of the consumable to be replaced, there is a special  [SPARE PARTS] key on the machine display which, when pressed, displays the picture and codes of the consumables suitable for the “Maximum cutting current” presently running on the machine.

How to identify consumables

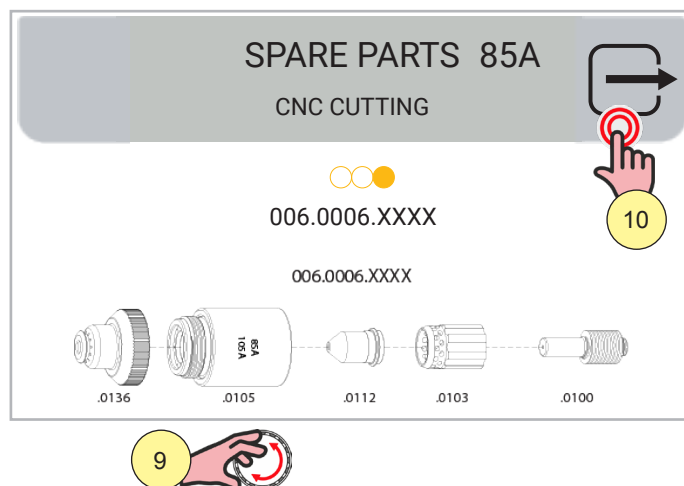
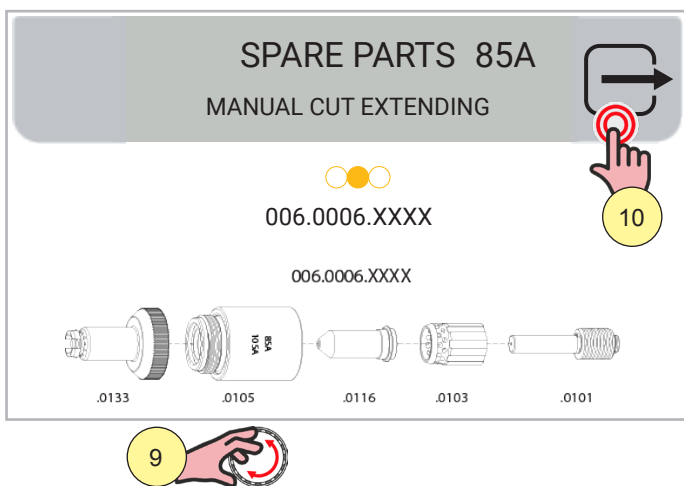
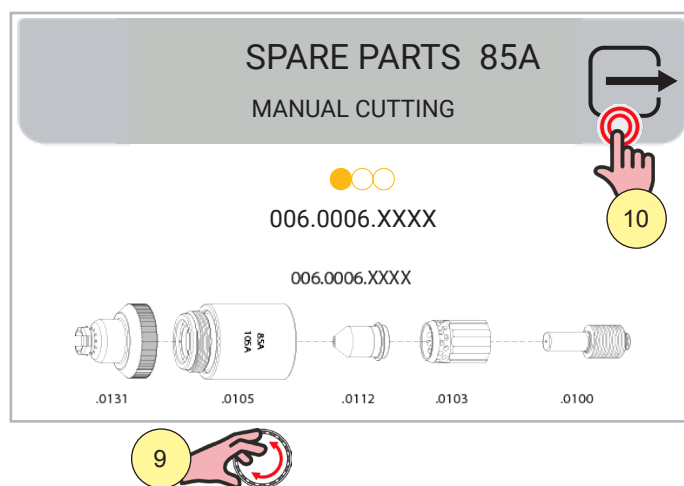
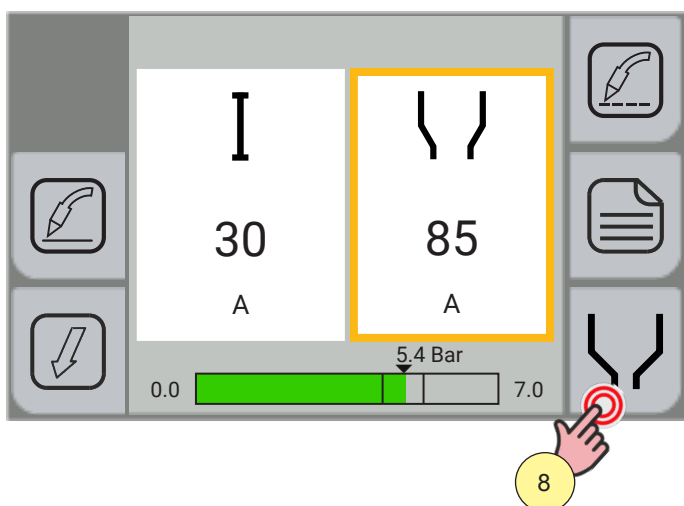
Below is a graphic example of how to find the correct codes for the consumables and components to be fitted on the torch if the machine is to perform MANUAL CUTTING of the material with a “Maximum cutting current” of 85A.



1. Press the [PROCESS] key.
2. Select MANUAL CUTTING by touching it on the display or turning the encoder.
3. Press the encoder key or the [SAVE] key to confirm.



4. Select the “Maximum cutting current” parameter by touching the item on the display or turning the encoder.
5. Press the encoder key to confirm.
6. Turn the encoder to set the desired value (85A).
7. Press the encoder key again to confirm the value set.



8. Press the [SPARE PARTS] key. The first page of consumable spare parts sized to work with a “Maximum cutting current” of 85A will be displayed.
9. Turn the encoder to scroll through the pages until the consumables/components suitable for the cutting type are displayed:
 - MANUAL CUTTING, MANUAL CUT EXTENDING or CNC CUTTING.
10. Press the [EXIT] key to quit the screen.

i Information : Following this procedure, the correct codes can be identified for the consumables and components to be fitted on the torch so that the machine can be used in any other setting.

ENGLISH

8 RESET

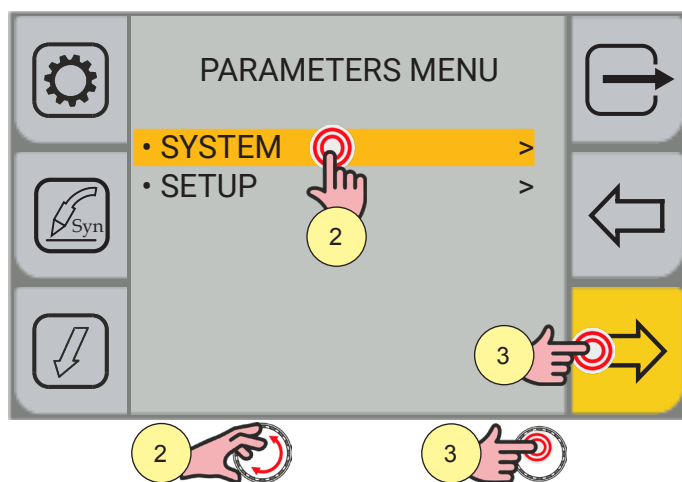
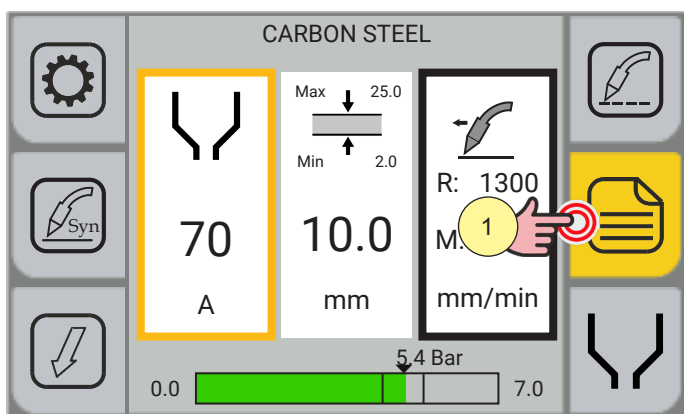
Factory setting

This procedure is useful in the following cases:

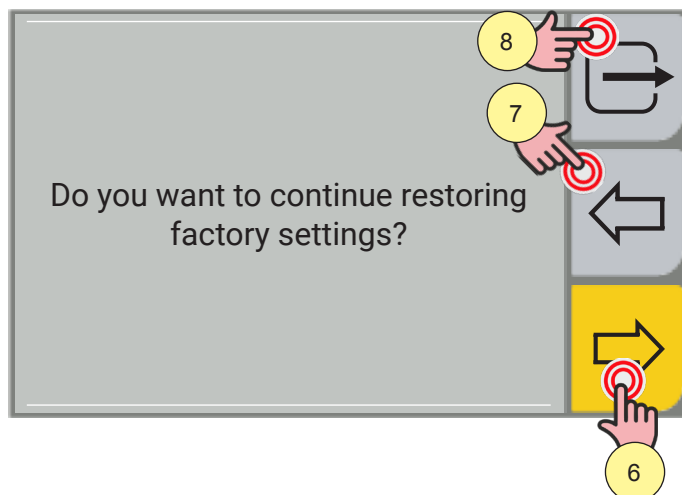
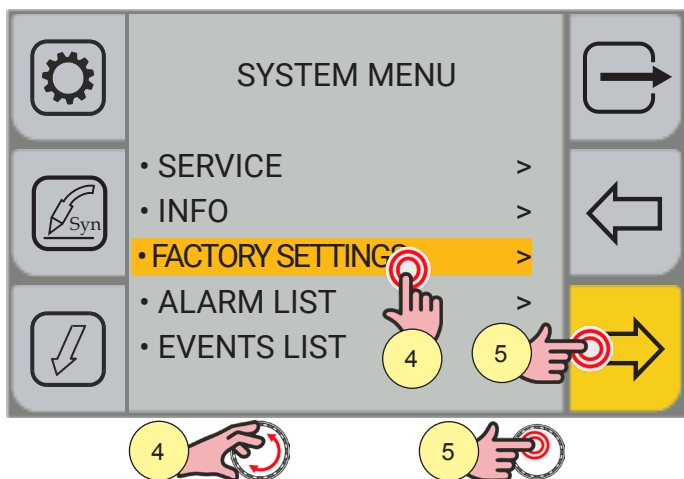
- Too many changes to the welding parameters and difficulty in re-establishing the factory parameters.
- Unidentified software problems preventing the power generator from functioning correctly.

The reset procedure involves restoration of the parameter values and settings, except for the following settings:

- Alarm list
- Events list
- Date/Time

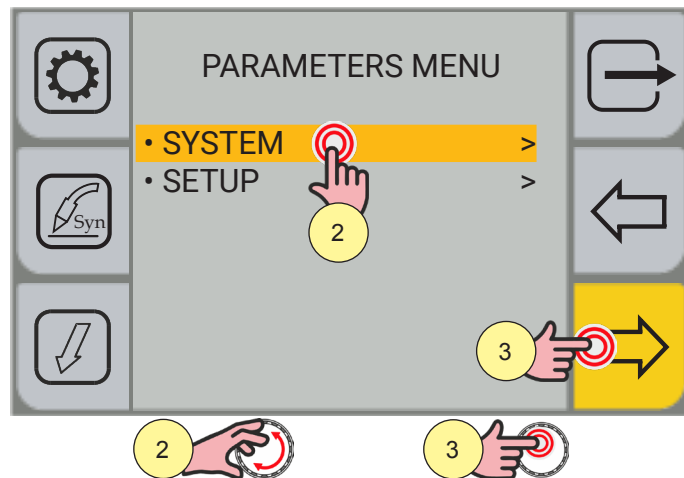
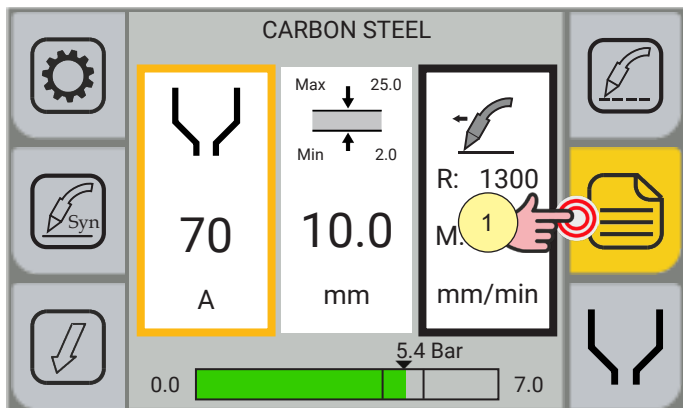


1. Press the [MENU] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: SYSTEM>
3. Press the encoder key or the [NEXT] key to confirm.

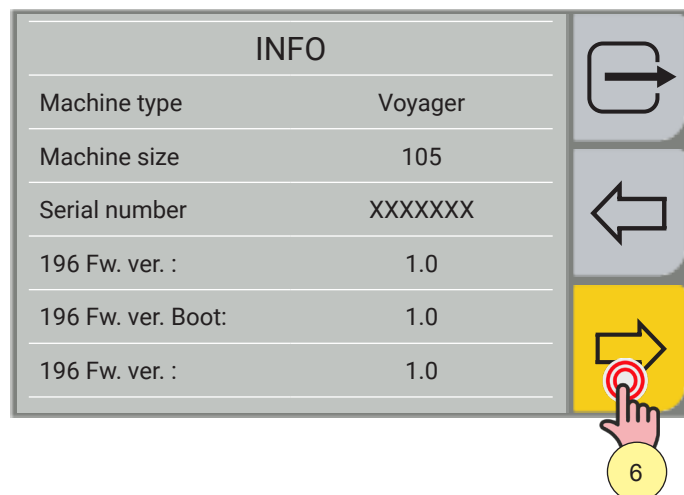
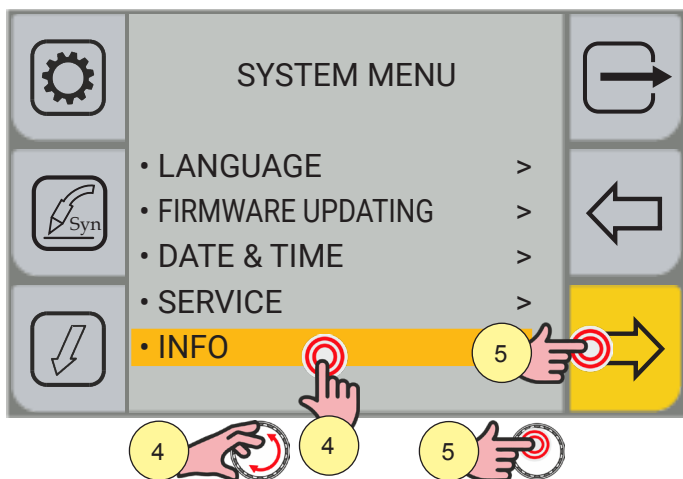



4. Select the desired item by touching it on the display or turning the encoder.
Select the following path: FACTORY SETTINGS>
5. Press the encoder key or the [NEXT] key to confirm.
6. Press the encoder key or the [NEXT] key to confirm.
7. Press the [BACK] key to return to the SYSTEM MENU page.
8. Press the [EXIT] key to quit the screen.

9 SYSTEM INFO



1. Press the [MENU] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: SYSTEM>
3. Press the encoder key or the [NEXT] key to confirm.

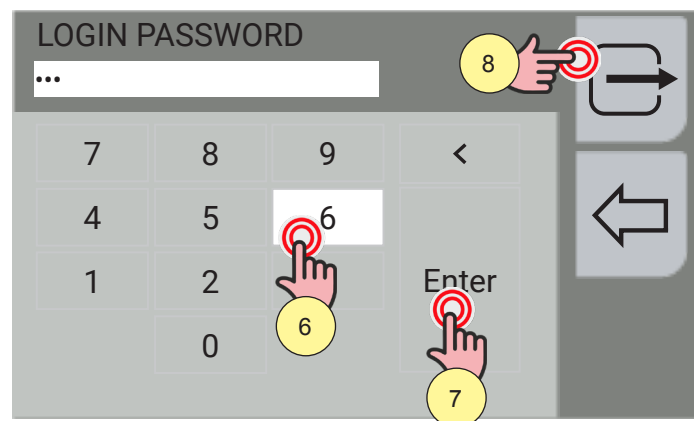
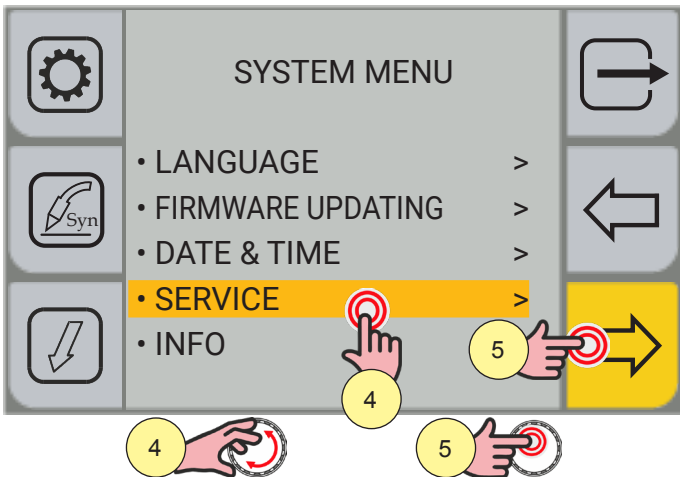
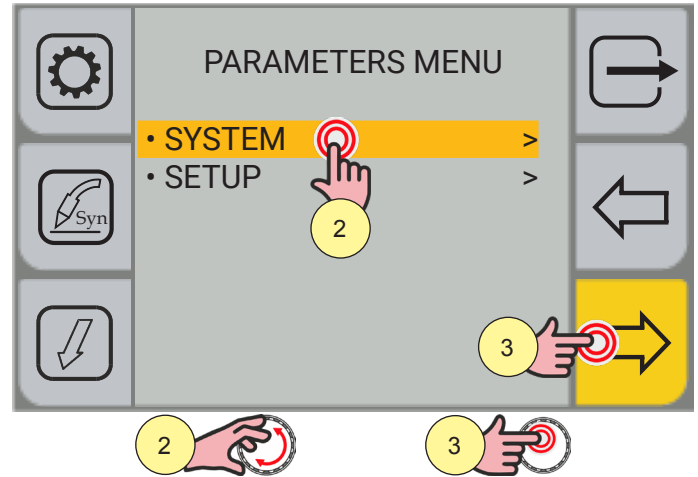
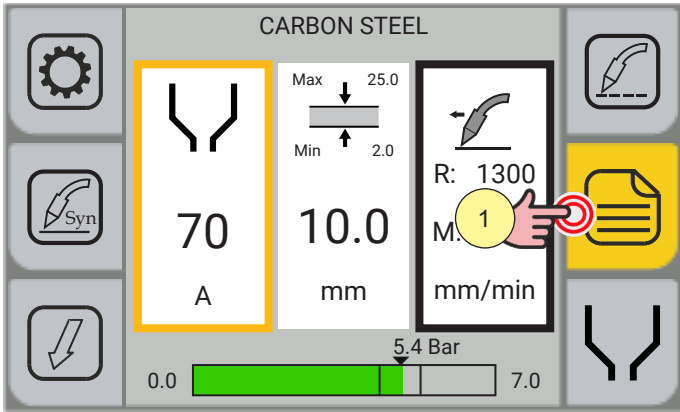


4. Select the desired item by touching it on the display or turning the encoder.
Select the following path: INFO>
5. Press the encoder key or the [NEXT] key to confirm.
6. Turn the encoder to display all system information.
The INFO screen displayed gives the following information:
 - Machine type
 - Machine size
 - Serial number
 - The list of microcontroller boards and their firmware version
 - The cutting timer
 - The power on timer
 - The Pilot Arc timer
7. Press the [BACK] key to return to the SYSTEM MENU page.
8. Press the  [EXIT] key to quit the screen.

ENGLISH

10 SERVICE

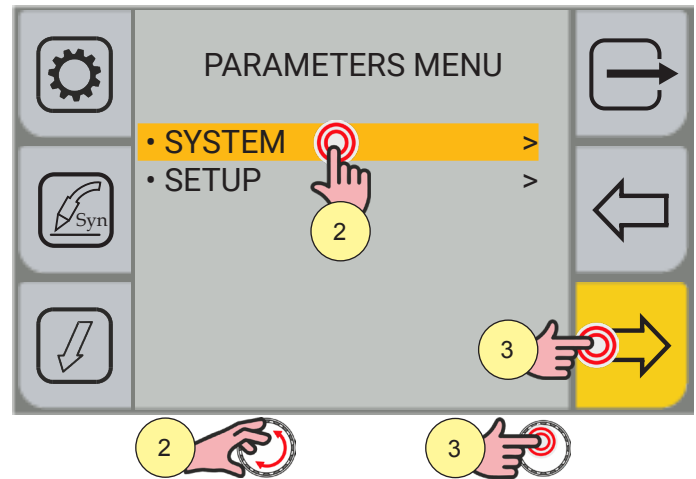
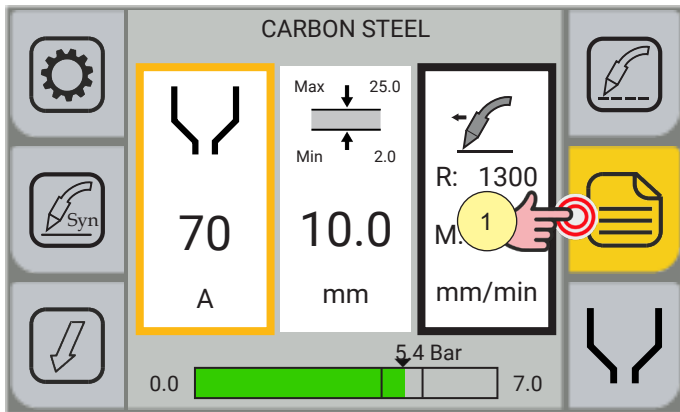
The “Service” menu is used to activate additional functions; the password is not provided to the end user as these functions are activated by qualified technical personnel, only authorised by the manufacturer to carry out maintenance and troubleshooting tasks.



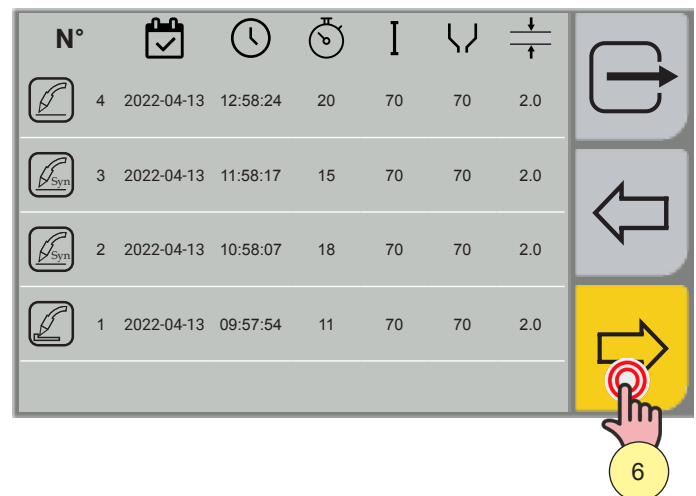
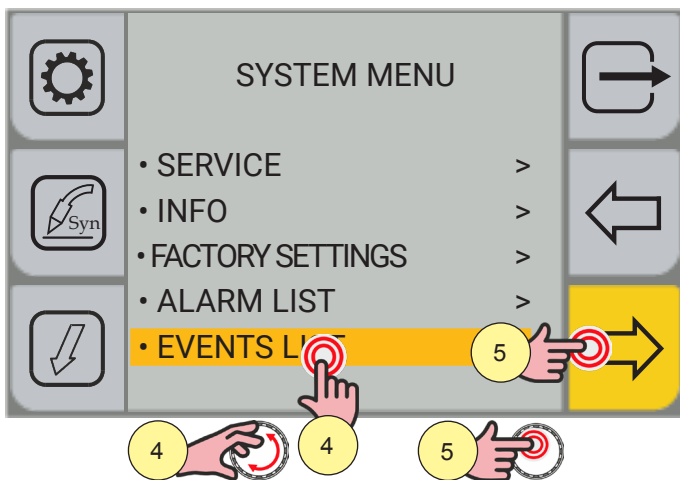
11 EVENTS LIST

The screen displays the cutting data performed.

Cutting data visualisation



1. Press the [MENU] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: SYSTEM>
3. Press the encoder key or the [NEXT] key to confirm.



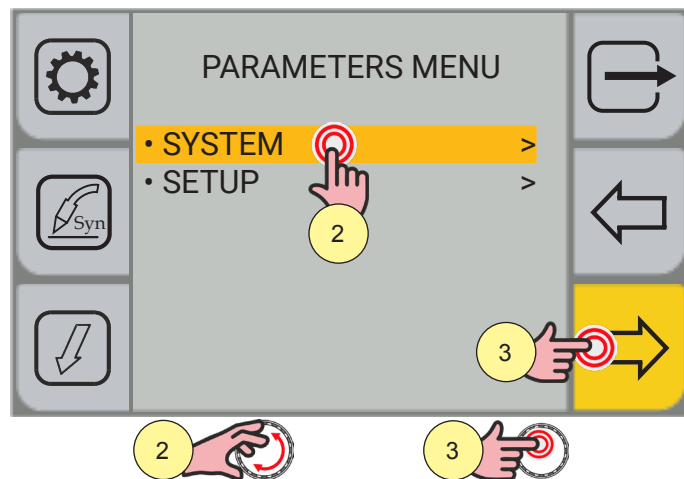
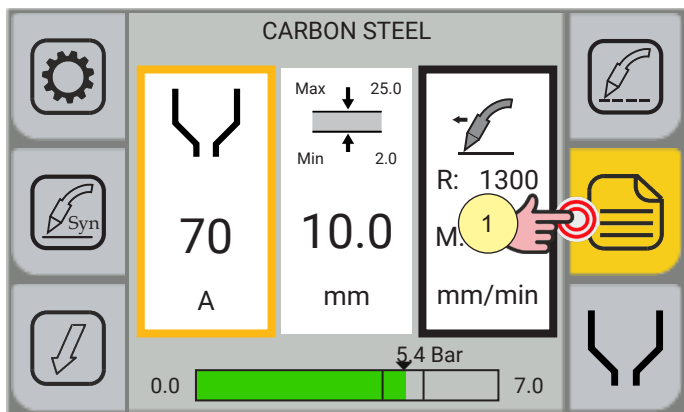
4. Select the desired item by touching it on the display or turning the encoder.
Select the following path: EVENTS LIST>
5. Press the encoder key or the [NEXT] key to confirm.
6. Turn the encoder to display all system information.
The EVENTS LIST screen displayed gives the following information:
 - Process type
 - consecutive number of cuts/gouging from moment of powering up of the generator (starts from 1 at each powering up)
 - date (day/month/year)
 - time (hours/minutes/seconds) of start of cutting
 - cutting/gouging duration in seconds
 - cutting current
 - maximum cutting current
 - cutting thickness
7. Press the [BACK] key to return to the SYSTEM MENU page.

ENGLISH

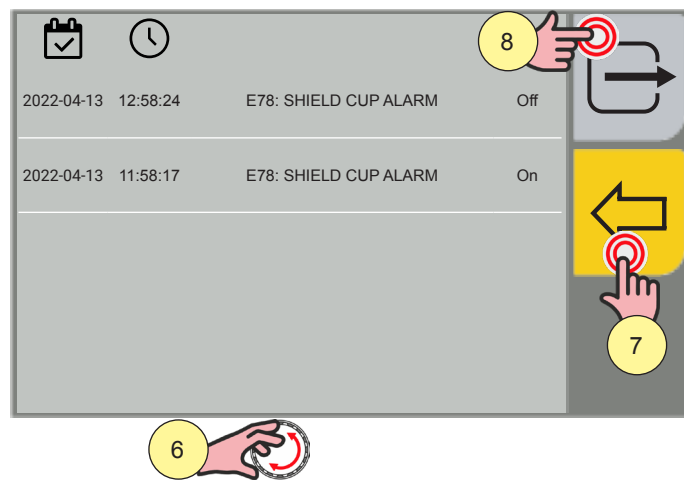
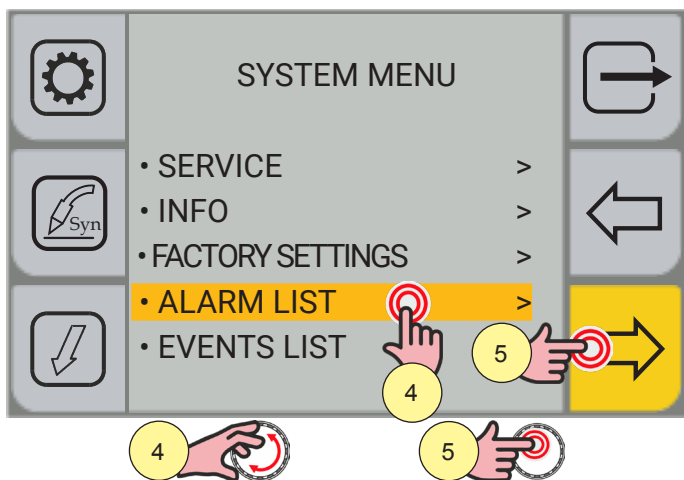
8. Press the [EXIT] key to quit the screen.

12 ALARM MANAGEMENT

The function is enabled when not in cutting mode.



1. Press the [MENU] key.
2. Select the desired item by touching it on the display or turning the encoder.
Select the following path: SYSTEM>
3. Press the encoder key or the [NEXT] key to confirm.



4. Select the desired item by touching it on the display or turning the encoder.
Select the following path: ALARM LIST>
5. Press the encoder key or the [NEXT] key to confirm.
6. Turn the encoder to display all the alarms in the list.
7. Press the [BACK] key to return to the SYSTEM MENU page.
8. Press the [EXIT] key to quit the screen.

E01: CALIBRATION ERROR

- ▶ The saved calibration parameters have been lost.
- ▶ Solution: qualified technical staff must be called to carry out the repairs/maintenance operations.

E05: WELD TORCH TRIGGER PRESSED ALARM

- ▶ This indicates that when the generator was switched on, the torch trigger was pressed.
- ▶ Solution:
When the problem is solved, the power source will be automatically reset.
 - Make sure the torch trigger is not pressed, jammed, or short circuiting.
 - Make sure the torch and torch connector are intact.

E28: OVERVOLTAGE ALARM

- ▶ High voltage.
- ▶ Solution:
 - Make sure the mains power does not exceed the maximum permitted values.

E29: PHASE MISSING ALARM

- ▶ A phase is missing.
- ▶ Solution:
 - Make sure that all three phases reach the equipment from the power mains.
 - Make sure that the line fuses on the power supply panel are intact.
 - If the problem persists qualified technical staff must be called to carry out the repairs/maintenance operations.

E31: INVERTER THERMAL ALARM

- ▶ Indicates that the welding power generator thermal cut-out switch has tripped.
- ▶ Solution:
 - Leave the unit running so that the overheated components cool as rapidly as possible. When the problem is solved, the generator will be automatically reset.
 - Make sure that the fans are working correctly.
 - Make sure that the power required by the cutting process is lower than the maximum rated power output.
 - Check that the operating conditions are in compliance with the welding power source data plate specifications.
 - Check for the presence of adequate air circulation around the welding power source.

E38: FAN ALARM

- ▶ This indicates a possible fault in ventilation or heat dissipation.
- ▶ Solution:
 - Make sure that both fans are working correctly.
 - If the problem persists qualified technical staff must be called to carry out the repairs/maintenance operations.

E40: CAN BUS COMMUNICATION ALARM

- ▶ This indicates a communication error between the front panel and the inverter.
- ▶ Solution:
 - qualified technical staff must be called to carry out the repairs/maintenance operations.

E48: GENERIC COMMUNICATION ALARM

- ▶ This indicates an internal communication error.
- ▶ Solution:
 - qualified technical staff must be called to carry out the repairs/maintenance operations.

ENGLISH

E49: DATA LOSS ALARM

- ▶ This indicates a loss of data saved in the memory.
- ▶ Solution:
 - qualified technical staff must be called to carry out the repairs/maintenance operations.

E70: NO GAS ALARM

- ▶ Indicates that no gas pressure is detected in the gas supply circuit.
- ▶ Solution:
 - Check that the gas in the system is connected to the device.
 - If the problem persists qualified technical staff must be called to carry out the repairs/maintenance operations.

E78: SHIELD CUP ALARM

- ▶ Indicates that the torch shield cup is open (which normally occurs when the consumables are being replaced/checked).
- ▶ Solution:
 - Reassemble the torch and check that the shield cup is fitted correctly.

E89: PILOT ARC ALARM

- ▶ This indicates a problem with the pilot arc that could cause abnormal wear of spare parts.
- ▶ Solution:
 - qualified technical staff must be called to carry out the repairs/maintenance operations.

E90: CONSUMABLE ERROR

- ▶ This indicates the detection of a possible spare parts wear problem.
- ▶ Solution:
 - Check worn parts and replace if necessary.

13 USING THE TORCH FOR MANUAL CUTTING

Manual cutting torches have a safety trigger to stop them from being ignited accidentally. When you are ready to use the torch, rotate the trigger's safety guard forward (towards the torch head) and press the torch trigger.

⚠ WARNING! INSTANT IGNITION TORCHES - A PLASMA ARC CAN CAUSE INJURIES AND BURNS. The plasma arc ignites immediately when the torch trigger is pressed. The plasma arc passes quickly through gloves and skin.

- Wear appropriate devices to protect your head, eyes, ears, hands and body.
- Keep away from the torch tip.
- Do not hold the metal sheet and keep hands away from the cutting path.
- Never point the torch at yourself or other people.

Tips for using the torch for manual cutting

- Drag the torch tip lightly along the metal sheet to ensure a fixed cut.
- When cutting, make sure that sparks escape from the underside of the metal sheet. The sparks must be slightly tilted behind the torch while cutting (15°–30° angle from the vertical position).
- If sparks escape from the top of the metal sheet, move the torch more slowly and set the output current to a higher value.
- With torches for manual cutting, hold the torch nozzle perpendicular to the metal sheet so that the nozzle forms a 90° angle with the cutting surface.
- If the torch is ignited unnecessarily, the service life of the nozzle and electrode will shorten.
- It is easier to pull or drag the torch along the cut than to push it.

Starting a cut from the edge of the metal sheet

1. With the earth clamp attached to the metal sheet, hold the torch nozzle perpendicular (90°) to the edge of the metal sheet.
2. Press the torch trigger to strike the arc. Hold the arc on the edge until it has completely cut the metal sheet.
3. Drag the torch tip lightly along the metal sheet to cut it.

Breaking through a metal sheet

⚠ WARNING! SPARKS AND HOT METAL CAN CAUSE INJURY TO EYES AND SKIN. When the torch is ignited at an angle, sparks and hot metal fly from the nozzle. Do not point the torch at yourself or people nearby.

1. With the earth clamp attached to the metal sheet, hold the torch at about 30° to the metal sheet with the torch tip within 1.5 mm from it before igniting the torch.
2. Ignite the torch while forming an angle with the metal sheet. Slowly turn the torch to a perpendicular position (90°).
3. Hold the torch in this position while simultaneously pressing the trigger. When sparks escape under the metal sheet, the arc has broken through the material.
4. When it has broken through, drag the nozzle lightly along the metal sheet to continue cutting.

Gouging a metal sheet

⚠ WARNING! SPARKS AND HOT METAL CAN CAUSE INJURY TO EYES AND SKIN. When the torch is ignited at an angle, sparks and hot metal fly from the nozzle. Do not point the torch at yourself or people nearby.

1. Hold the torch so that the torch tip is within 1.5 mm from the metal sheet before igniting the torch.
2. Hold the torch at an angle of 40° on the nozzle at about 6-12 mm from the workpiece. Press the trigger for the pilot arc. Transfer the arc to the workpiece.

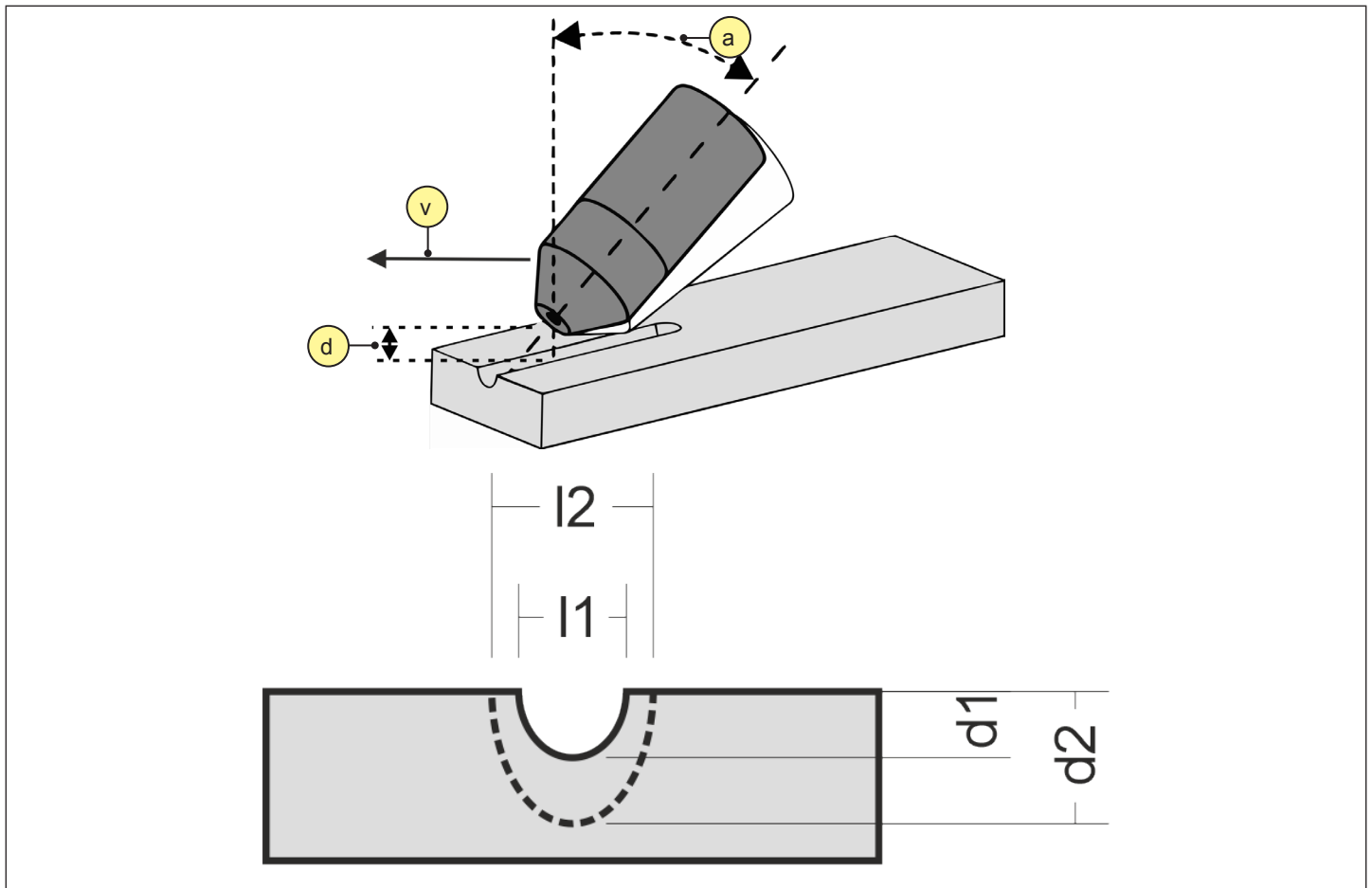
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3. Pull the torch back and extend the arc to 32 mm. Push the plasma arc in the direction of the gouge you wish to create. Increase the distance to create a deeper and wider gouge. Keep enough distance between the torch tip and the molten metal to avoid shortening the service life of the consumables or damaging the torch. If the torch angle is changed, the size of the gouge also changes.

The gouging profile can be changed by varying the speed (v) of the torch on the metal sheet, by varying the distance (d) between the torch and the metal sheet, by varying the angle (a) between the torch and the metal sheet, and by varying the generator output current.

- Increasing the torch speed reduces the width and depth.
- Reducing the torch speed increases the width and depth.
- Increasing the distance between the torch and the metal sheet increases the width and reduces the depth.
- Reducing the distance between the torch and the metal sheet reduces the width and increases the depth.
- Increasing the angle of the torch (more vertical) reduces the width and increases the depth.
- Reducing the angle of the torch (less vertical) increases the width and reduces the depth.
- Increasing the generator current increases the width and depth.
- Reducing the generator current reduces the width and depth.

Gouging operating parameters and profile



Common manual cutting errors

- ▶ The torch does not completely cut the metal sheet.
Possible causes:
 - The cutting speed is too high.
 - The consumables are worn.
 - The metal to be cut is too thick for the voltage selected.
 - The wrong consumables are used (e.g. gouging consumables are installed instead of drag cutting consumables).
 - The earth clamp is not connected properly to the metal sheet.
 - The gas pressure or flow rate is too low.

- ▶ The cutting quality is poor.
Possible causes:
 - The metal to be cut is too thick for the voltage.
 - The wrong consumables are used (e.g. gouging consumables are installed instead of drag cutting consumables).
 - The torch is moved too quickly or too slowly.

- ▶ The arc bursts and the service life of the consumables is shorter than expected.
Possible causes:
 - Moisture in the gas supply.
 - Incorrect gas pressure.
 - Incorrectly installed consumables.

ENGLISH

14 USING THE TORCH FOR MECHANISED CUTTING

The generator has a digital voltage divider. The voltage value set with the voltage divider must match that provided by the mechanised cutting table when the arc height calibration procedure is carried out. The remote connector (on the back of the generator) for interfacing with the cutting table provides the reduced arc voltage and the arc transfer and plasma start signals.

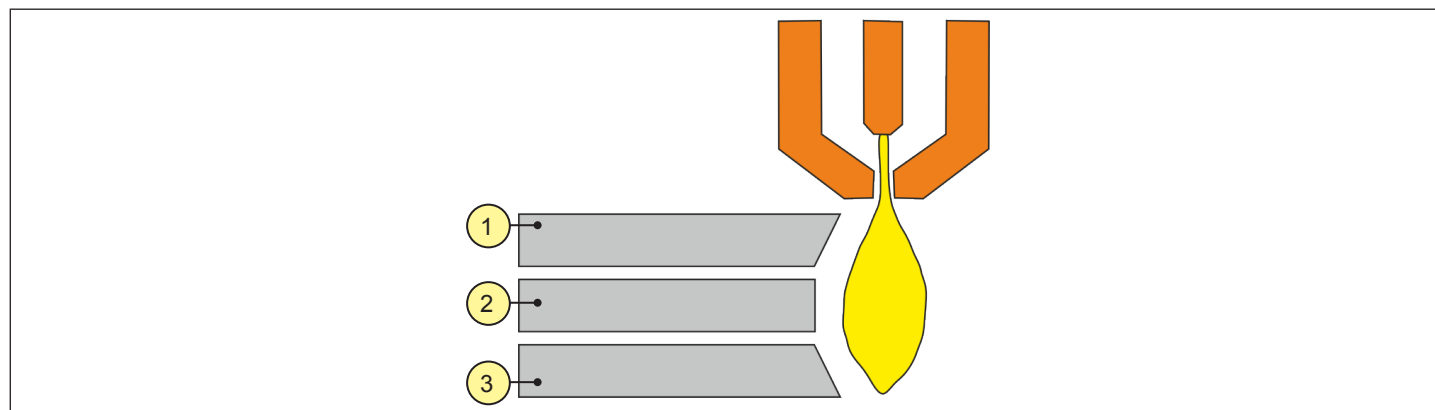
Signal	Type	Notes	Pin
Start (plasma)	Input	Normally open voltage-free contact. Closure of the voltage-free contact is required to start.	3
			4
Transfer (machine movement start)	Output	Normally open voltage-free contact that closes when the cutting arc is transferred to the workpiece. Contact features: 120 VAC/1 A	12
			14
Voltage divider	Output	Divided arc signal	5 (-)
Earth	Earth		6 (+)
			13

Several factors must be taken into account for quality of the cut:

- Cutting angle: the angle level of the cutting edge.
- Burr: the molten material that solidifies on the top or bottom of the metal sheet.
- Straightness of the cutting surface: the cutting surface can be concave or convex.

Cutting or tilting angle

- ▶ A positive cutting angle (1), or tilting angle, is achieved when more material is removed from the top of the cut than from the bottom.
 - Cause: The torch is too low.
 - Solution: Raise the torch or, if using torch height control, increase the arc voltage.
- ▶ A negative cutting angle (3) is achieved when more material is removed from the bottom of the cut.
 - Cause: The torch is too high.
 - Solution: Lower the torch or, if using torch height control, reduce the arc voltage.
- ▶ The cutting angle closest to the right angle (2) will be on the right side when the torch is moved forward. The left side will always have a certain tilting level.



To find out whether a cutting angle problem is caused by the plasma system or by the drive system, perform a test cut and measure the angle of each side. Then turn the torch 90° in its holder and repeat the process. If the angles are the

same in both tests, the problem is in the drive system. If the cutting angle problem persists even after rectifying the “mechanical causes”, check the distance of the torch from the metal sheet, especially if the cutting angles are all positive or all negative. Also consider the material to be cut: if it is magnetised or hardened, cutting angle problems are more likely to occur.

Burr

When air plasma cutting, some burr will always form. However, the amount and type of burr can be minimised by correctly adjusting the system to the application.

- Excess burrs appear on the top edge of both pieces of metal sheet when the torch is too low (or the voltage is too low, if torch height control is used). Adjust the torch or voltage in small increments (5 V or less) until the burr is reduced.
- Low-speed burr is formed when the torch cutting speed is too low and the arc curves forward. It forms a heavy deposit with bubbles at the bottom of the cut and can easily be removed. Increase the speed to reduce this type of burr.
- High-speed burr is formed when the cutting speed is too high and the arc curves backward. It forms a thin, linear bubble of solid metal attached very close to the cut. It is more firmly stuck to the bottom of the cut than the low-speed burr and is difficult to remove.
To reduce high-speed burr:
 - Reduce the cutting speed.
 - Reduce the distance between the torch and the metal sheet.

Breaking through a metal sheet using a machine torch

Like with the torch for manual cutting, a cut can be started on the edge of the metal sheet or by breaking through the metal sheet with the machine torch. Breaking through can lead to a shorter service life of consumables compared to starting from the edge. The cutting charts contain a column for the recommended cutting height when starting a breakthrough; the breakthrough height is usually 2.5 times the cutting height. For technical information, see the cutting charts.

The breakthrough delay must be long enough to allow the arc to break through the material before the torch moves. As consumables wear out, it may be necessary to increase this delay. The breakthrough delay times given in the cutting charts are based on average delays recorded over the entire service life of the consumables.

When breaking through materials close to the maximum thickness for a specific process, the following important factors should be considered:

- To avoid damage to the guard caused by the build-up of molten material created by the breakthrough, do not let the torch drop to the cutting height until the molten metal residues have been removed.
- The chemical properties of different materials can have an adverse effect on the breakthrough capacity of the system. In particular, high-strength steel with a high manganese or silicon content can reduce the maximum breakthrough capacity.

Common automatic cutting errors

- The torch’s pilot arc is ignited, but does not transfer.

Possible causes:

- The work cable is not providing good contact with the cutting table or the cutting table is not providing good contact with the metal sheet.
- The torch is too far from the metal sheet.

- The metal sheet has not been penetrated completely and there is too much sparking on top of the metal sheet.

Possible causes:

- The metal surface contains rust or paint.
- The consumables are worn and must be replaced. For optimised performance in a mechanised application, replace both the nozzle and the electrode.
- The work cable is not providing good contact with the cutting table or the cutting table is not providing good contact with the metal sheet.
- The voltage is too low.
- The cutting speed is too high.
- The metal being cut exceeds the maximum cutting thickness for the voltage selected.

ENGLISH

► Burr formation at the base of the cut.

Possible causes:

- The gas settings are incorrect.
- The consumables are worn and must be replaced. For optimised performance in a mechanised application, replace both the nozzle and the electrode.
- The cutting speed is incorrect.
- The voltage is too low.

► The cutting angle is not perpendicular.

Possible causes:

- The torch is not perpendicular to the metal sheet.
- The gas settings are incorrect.
- The consumables are worn and must be replaced. For optimised performance in a mechanised application, replace both the nozzle and the electrode.
- The torch is moving in the wrong direction. The high-quality cut is always on the right side when the torch is moved forward.
- The distance between the torch and the metal sheet is incorrect.
- The cutting speed is incorrect.

► The service life of consumables is shortened.

Possible causes:

- The gas settings are incorrect.
- The arc current, arc voltage, cutting speed and other variables are not set up as recommended.
- Unnecessarily striking the pilot arc in the air.
- Starting a breakthrough with an incorrect torch height.
- The breakthrough time is incorrect.
- Air quality is poor (oil or water in the air).
- The pilot arc could be defective and could shorten the life of the nozzle.

CARBON STEEL						
KIT OF CONSUMABLES					45A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
0.5	1.5	3.8	250	0	9000	12500
1	1.5	3.8	250	0	9000	10800
1.5	1.5	3.8	250	0.1	9000	10200
2	1.5	3.8	250	0.3	6600	7800
3	1.5	3.8	250	0.4	3850	4900
4	1.5	3.8	250	0.4	2200	3560
6	1.5	3.8	250	0.5	1350	2050

STAINLESS STEEL						
KIT OF CONSUMABLES					45A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
0.5	1.5	3.8	250	0	9000	12500
1	1.5	3.8	250	0	9000	10800
1.5	1.5	3.8	250	0.1	9000	10200
2	1.5	3.8	250	0.3	6000	8660
3	1.5	3.8	250	0.4	3100	4400
4	1.5	3.8	250	0.4	2000	2600
6	1.5	3.8	250	0.5	900	1020



ENGLISH

ALUMINIUM						
KIT OF CONSUMABLES					45A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
1	1.5	3.8	250	0	8250	11000
2	1.5	3.8	250	0.1	6600	9200
3	1.5	3.8	250	0.2	3100	6250
4	1.5	3.8	250	0.4	2200	4850
6	1.5	3.8	250	0.5	1500	2800

CARBON STEEL						
KIT OF CONSUMABLES					70A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
2	1.5	3.8	250	0.1	5900	10450
3	1.5	3.8	250	0.2	5550	8800
4	1.5	3.8	250	0.5	5375	6800
6	1.5	3.8	250	0.5	2850	3900
8	1.5	3.8	250	0.5	2050	2575
10	1.5	4.5	300	0.7	1300	1650
12	1.5	4.5	300	1.2	1040	1250
16	1.5	6	400	2	625	800
20	1.5	STARTING FROM THE EDGE			380	500
25	1.5				220	400

STAINLESS STEEL						
KIT OF CONSUMABLES					70A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
2	1.5	3.8	250	0.1	8450	10650
3	1.5	3.8	250	0.2	6900	9225
4	1.5	3.8	250	0.5	6000	7050
6	1.5	3.8	250	0.5	2270	2850
8	1.5	3.8	250	0.7	1740	2150
10	1.5	4.5	300	0.7	1050	1300
12	1.5	4.5	300	1.2	925	1025
16	1.5	STARTING FROM THE EDGE			638	725
20	1.5				350	390

ALUMINIUM						
KIT OF CONSUMABLES					70A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
2	1.5	3.8	250	0.1	9325	10555
3	1.5	3.8	250	0.2	8455	9450
4	1.5	3.8	250	0.5	6945	7945
6	1.5	3.8	250	0.5	2933	3913
8	1.5	3.8	250	0.7	2225	3025
10	1.5	4.5	300	0.7	1300	1800
12	1.5	4.5	300	1.2	1100	1450
16	1.5	STARTING FROM THE EDGE			750	1025
20	1.5				400	600



ENGLISH

CARBON STEEL						
KIT OF CONSUMABLES					85A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
3	1.5	3.8	250	0.1	6800	9200
4	1.5	3.8	250	0.2	5650	7300
6	1.5	3.8	250	0.5	3600	4400
8	1.5	3.8	250	0.5	2500	3100
10	1.5	3.8	250	0.5	1680	2070
12	1.5	4.5	300	0.7	1280	1600
16	1.5	4.5	300	1	870	930
20	1.5	6	400	1.5	570	680
25	1.5	STARTING FROM THE EDGE			350	450
30	1.5				200	300

STAINLESS STEEL						
KIT OF CONSUMABLES					85A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
3	1.5	3.8	250	0.1	7500	9200
4	1.5	3.8	250	0.2	6100	7500
6	1.5	3.8	250	0.5	3700	4600
8	1.5	3.8	250	0.5	2450	3050
10	1.5	4.5	300	0.5	1550	1900
12	1.5	4.5	300	0.7	1100	1400
16	1.5	4.5	300	1	700	760
20	1.5	STARTING FROM THE EDGE			480	570
25	1.5				300	370

ALUMINIUM						
KIT OF CONSUMABLES					85A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
3	1.5	3.8	250	0.1	8000	9400
4	1.5	3.8	250	0.2	6500	8000
6	1.5	3.8	250	0.5	3800	4900
8	1.5	3.8	250	0.5	2650	3470
10	1.5	3.8	250	0.5	1920	2500
12	1.5	4.5	300	0.7	1450	1930
16	1.5	4.5	300	1	950	1200
20	1.5	STARTING FROM THE EDGE			600	880
25	1.5				380	540

CARBON STEEL						
KIT OF CONSUMABLES					105A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
6	3.2	6.4	200	0.5	4140	5090
8	3.2	6.4	200	0.8	3140	3870
10	3.2	6.4	200	0.8	2260	2790
12	3.2	6.4	200	0.8	1690	2060
16	3.2	6.4	200	1	1060	1310
20	3.2	6.4	200	1	780	940
25	3.2	STARTING FROM THE EDGE			550	580
30	3.2				370	410
32	3.2				350	370
35	3.2				290	320
40	3.2				190	210

ENGLISH

STAINLESS STEEL						
KIT OF CONSUMABLES					105A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
6	3.2	6.4	200	0.5	4870	6000
8	3.2	6.4	200	0.5	3460	4210
10	3.2	6.4	200	0.5	2240	2670
12	3.2	6.4	200	0.6	1490	1860
16	3.2	6.4	200	0.8	950	1080
20	3.2	8	250	1.3	660	810
25	3.2	STARTING FROM THE EDGE			440	530
30	3.2				340	360
32	3.2				300	320

ALUMINIUM						
KIT OF CONSUMABLES					105A	
COMPRESSED AIR PRESSURE					5.3 Bar	
MATERIAL THICKNESS	CUTTING HEIGHT	INITIAL HEIGHT		BREAKTHROUGH DELAY	RECOMMENDED CUTTING SPEED	SEPARATION SPEED
mm	mm	mm	%	seconds	mm/min	mm/min
6	3.2	6.4	200	0.5	5980	7090
8	3.2	6.4	200	0.8	4170	5020
10	3.2	6.4	200	0.8	2640	3280
12	3.2	6.4	200	1	1910	2450
16	3.2	6.4	200	1	1290	1660
20	3.2	6.4	200	1.3	1020	1190
25	3.2	STARTING FROM THE EDGE			660	790
30	3.2				430	570
32	3.2				340	490

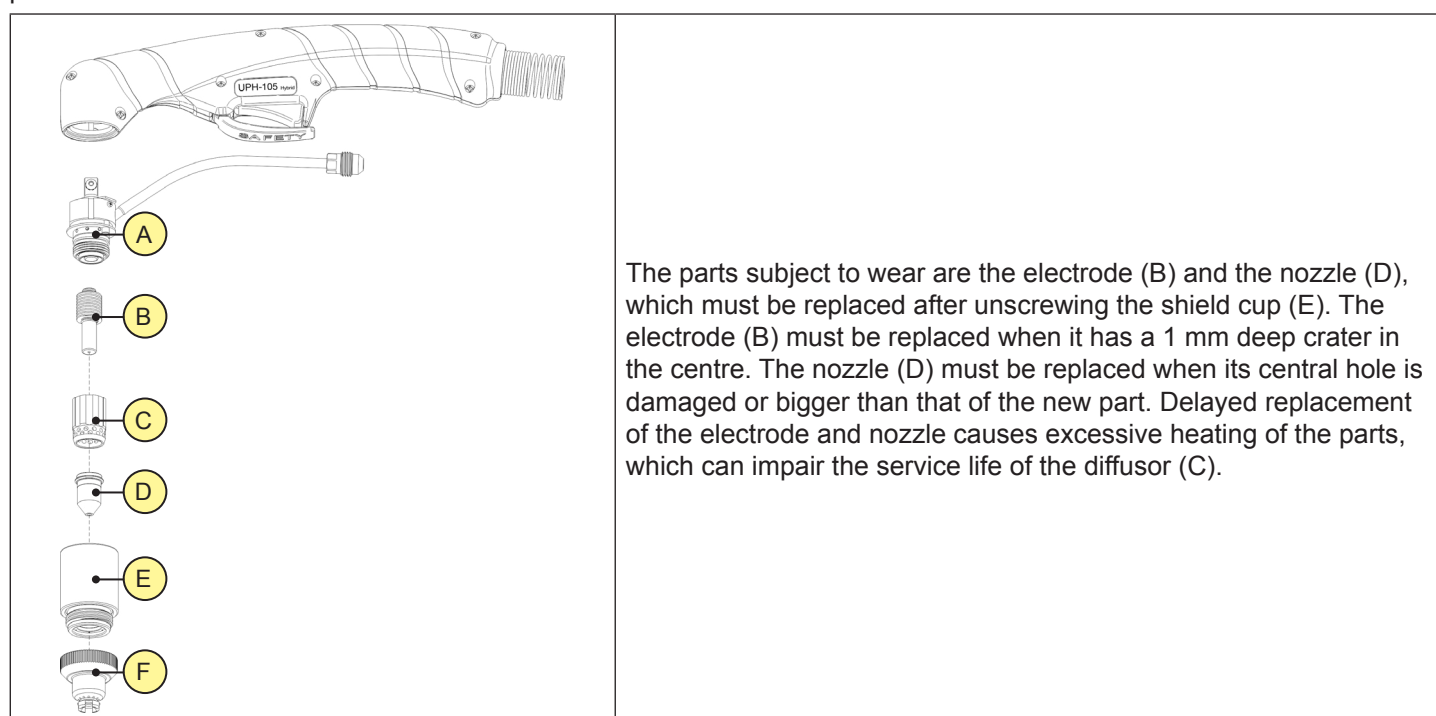
15 MAINTENANCE

Maintenance of the cutting unit

The cutting unit must be serviced periodically following the manufacturer's recommendations. During operation of the cutting unit, all service and access doors and covers must be closed and secured properly. The cutting unit must not be modified in any way, except for the changes indicated and in accordance with the manufacturer's written instructions. Cutting torches have a quick-release system for removing the torch easily for transport or for switching it should applications require the use of different torches. The torches are cooled by the surrounding air and do not require any special cooling procedures.

Checking consumables

The electrodes' end-of-life detection function protects the torch and workpiece from damage by automatically shutting off power to the torch when the electrode reaches the end of its service life.



The frequency with which consumables on the torch need to be changed depends on several factors:

- Cut metal thickness.
- Average cut length.
- Air quality (presence of oil, moisture or other contaminants).
- Breaking through or cutting metal starting from the edge.
- Correct distance between the torch and metal sheet when gouging or cutting with unshielded consumables.
- Correct breakthrough height.

Under normal conditions, the nozzle will wear out first during manual cutting. Torches for manual cutting use shielded consumables. So the torch tip can be dragged along the metal. For the best cutting quality of thin materials (about 4 mm or less), it is preferable to use a 45 A nozzle.


Inspection of consumables

- ▶ Torch O-ring (A)
 - Inspection: Make sure that the surface is not damaged, worn or not lubricated.
 - Action: If the O-ring is dry, lubricate it and the threads with a thin coat of silicone lubricant. If the O-ring is worn or damaged, replace it.
- ▶ Electrode (B)
 - Inspection: Electrode tip.





ENGLISH

- Action: Replace the electrode if the surface is worn or the crater is deeper than 1.6 mm.
- ▶ Diffusor ring (C)
 - Inspection: Make sure that the inner surface of the diffusor ring is not damaged or worn and the gas holes are not clogged.
 - Action: Replace the diffusor ring if the surface is damaged or worn or if the gas holes are clogged.
- ▶ Nozzle (D)
 - Inspection: Roundness of central hole.
 - Action: Replace the nozzle if the central hole is not round.
- ▶ Shield cup (E):
 - Assess the integrity of the part. Replace if there are evident signs of burns, cracks or other mechanical or heat damage.
- ▶ Shield or deflector (F)
 - Inspection: Roundness of central hole.
 - Action: Replace the shield if the hole is no longer round.
 - Inspection: Build-up of debris in the space between the shield and the nozzle.
 - Action: Remove the shield and clean off any debris.

Installation of consumables

 **WARNING!** INSTANT IGNITION TORCHES - A PLASMA ARC CAN CAUSE INJURIES AND BURNS. The plasma arc ignites immediately when the torch trigger is pressed. The plasma arc passes quickly through gloves and skin. With the power switch on "O" (off), install the torch consumables. To use the torch for manual cutting, a full set of consumables must be installed: shield, shield cup, nozzle, electrode and diffusor ring. The type of consumables available can be consulted directly on the generator's user interface. Depending on the cutting parameters set in the generator, pressing the appropriate key will display the spare parts and their order code.

16 TECHNICAL DATA

Directives applied	Waste electrical and electronic equipment (WEEE)
	Electromagnetic compatibility (EMC)
	Low voltage (LVD)
	Restriction of the use of certain hazardous substances (RoHS)
	Ecodesign of energy-related products (Eco Design)
Construction standards	EN 60974-1; EN 60974-10 Class A
Conformity markings	 Equipment compliant with European directives in force
	 Equipment suitable in an environment with increased hazard of electric shock
	 Equipment compliant with WEEE directive
	 Equipment compliant with RoHS directive

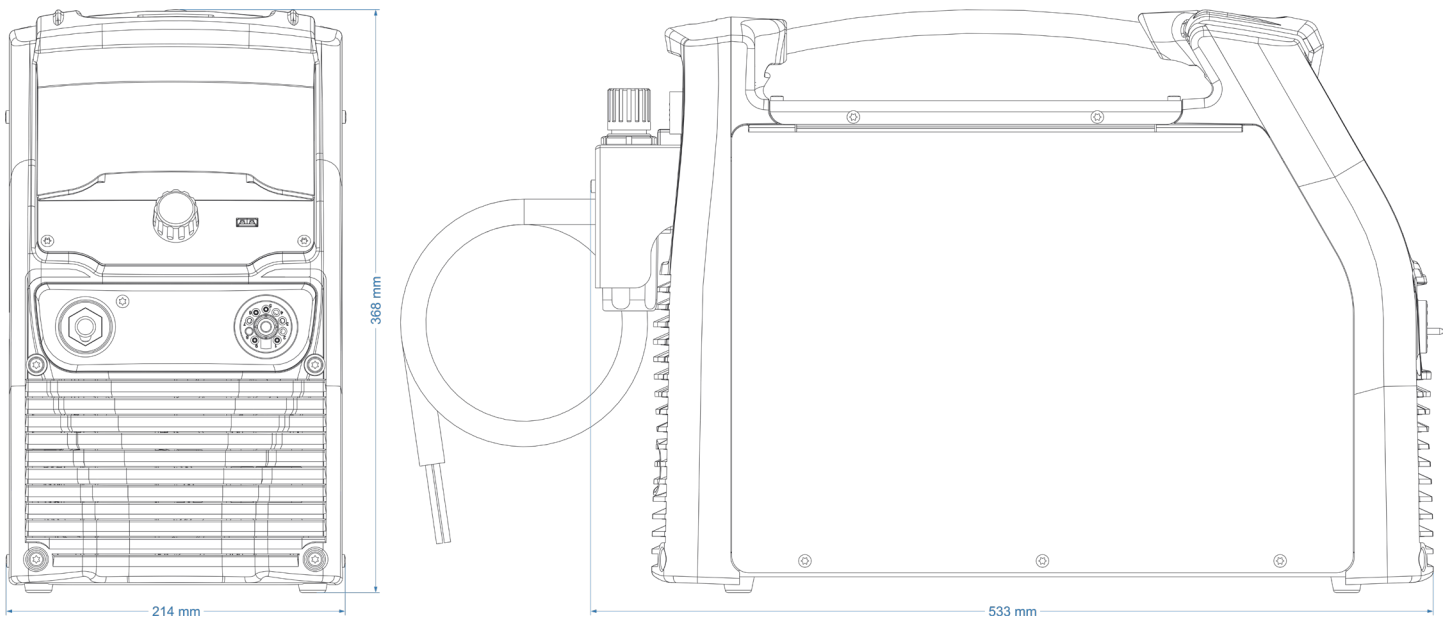
16.1 VOYAGER 75 Evo

Supply voltage	3 x 400 Va.c. ± 15% 50/60 Hz		
Mains protection	16 A Delayed		
Zmax	-		
Dimensions	height: 368 mm / width: 214 mm / depth: 533 mm		
Weight	17.8 kg		
Insulation class	H		
Protection rating	IP23S		
Cooling	AF: Forced-air cooling (with fan)		
Maximum gas pressure	0.93 MPa (9.3 bar)		
Cutting mode		CUTTING	GOUGING
Current and voltage adjustment range		10 A - 80.4 V 70 A - 108.0 V	10 A - 100.4 V 70 A - 128.0 V
Cutting current / Work voltage	50% (40° C)	70 A - 108.0 V	70 A - 128.0 V
	60% (40° C)	65 A - 106.0 V	65 A - 126.0 V
	100% (40° C)	55 A - 102.0 V	55 A - 122.0 V
Maximum input power	50% (40° C)	9.3 KVA - 8.7 KW	10.8 KVA - 10.2 KW
	60% (40° C)	8.5 KVA - 7.9 KW	10.0 KVA - 9.3 KW
	100% (40° C)	7.1 KVA - 6.4 KW	8.2 KVA - 7.6 KW
Maximum input current	50% (40° C)	13.4 A	15.6 A
	60% (40° C)	12.3 A	14.4 A
	100% (40° C)	10.3 A	11.8 A
Actual input current	50% (40° C)	9.5 A	11.0 A
	60% (40° C)	8.7 A	10.2 A
	100% (40° C)	7.3 A	8.3 A
No-load voltage (U0)	270 V		
Efficiency of the source of energy	Efficiency (GOUGING @ 70 A / 128 V): 88 %		
	Energy consumption in no-load conditions (U1= 400 VAC): 18.7 W		
Essential raw materials	According to information provided by our suppliers. this product contains no essential raw materials in quantities exceeding 1 g per component.		

ENGLISH

16.2 VOYAGER 105 Evo

Supply voltage	3 x 400 Va.c. ± 15% 50/60 Hz		
Mains protection	25 A Delayed		
Zmax	-		
Dimensions	height: 368 mm / width: 214 mm / depth: 533 mm		
Weight	22.0 kg		
Insulation class	H		
Protection rating	IP23S		
Cooling	AF: Forced-air cooling (with fan)		
Maximum gas pressure	0.93 MPa (9.3 bar)		
Cutting mode		CUTTING	GOUGING
Current and voltage adjustment range		10 A - 80.4 V 105 A - 122.0 V	10 A - 100.4 V 105 A - 142.0 V
Cutting current / Work voltage	-	-	-
	60% (40° C)	105 A - 122.0 V	105 A - 142.0 V
	100% (40° C)	90 A - 116.0 V	90 A - 136.0 V
Maximum input power	-	-	-
	60% (40° C)	15.3 KVA - 14.3 KW	17.5 KVA - 16.5 KW
	100% (40° C)	12.4 KVA - 11.6 KW	14.3 KVA - 13.5 KW
Maximum input current	-	-	-
	60% (40° C)	22.0 A	25.3 A
	100% (40° C)	17.9 A	20.7 A
Actual input current	-	-	-
	60% (40° C)	17.0 A	19.6 A
	100% (40° C)	17.9 A	20.7 A
No-load voltage (U0)	315 V		
Efficiency of the source of energy	Efficiency (GOUGING @ 105 A / 142 V): 90.3 %		
	Energy consumption in no-load conditions (U1= 400 VAC): 19.6 W		
Essential raw materials	According to information provided by our suppliers. this product contains no essential raw materials in quantities exceeding 1 g per component.		





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