WELD THE WORLD

Power Pulse DIGITAL 405dms
Power Pulse DIGITAL 505dms

Instruction manual

ENGLISH

Translation of original instructions

CODE 006.0001.2210
22/02/2023 V.1.7

INDEX

1 INTRODUCTION

IMPORTANT!

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" are not present, it is mandatory to request a replacement copy from the manufacturer or from your dealer.
Retain these documents for future consultation.

KEY

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.

INFORMATION!

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

NOTE
The figures in this manual are simply provided to depict the operations and may contain differences with respect to the actual equipment to which they refer.

1.1 PRESENTATION

Power Pulse 405dms-505dms is a power source for welding.
When combined with a wire feeder it can be used for MIG/MAG welding.

The version with an interface for ROBOT applications enables the generator to be connected to the company LAN network by an Ethernet port or Wi-Fi connection and to the ROBOT system by a field bus module. Different types of module can be installed in the generator according to the type of communication protocol to which the robot system is connected.

Fan. The fan is turned on only during welding, at the end of the welding process it remains on for a fixed period of time according to welding conditions.
The fan is nonetheless controlled by specific thermal sensors that guarantee a correct cooling of the machine.

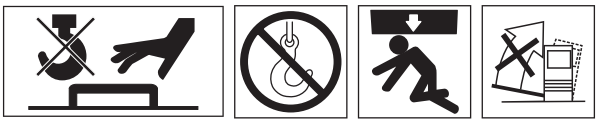
Accessories/ancillary devices that can be connected to the unit:
- Power source trolley for multi-function configuration (MIG/MAG).
- Liquid cooler for MIG/MAG torches.
- Wire feeder.

Consult your dealer for an updated list of accessories and the latest new products available.

2 INSTALLATION

DANGER!
Lifting and positioning

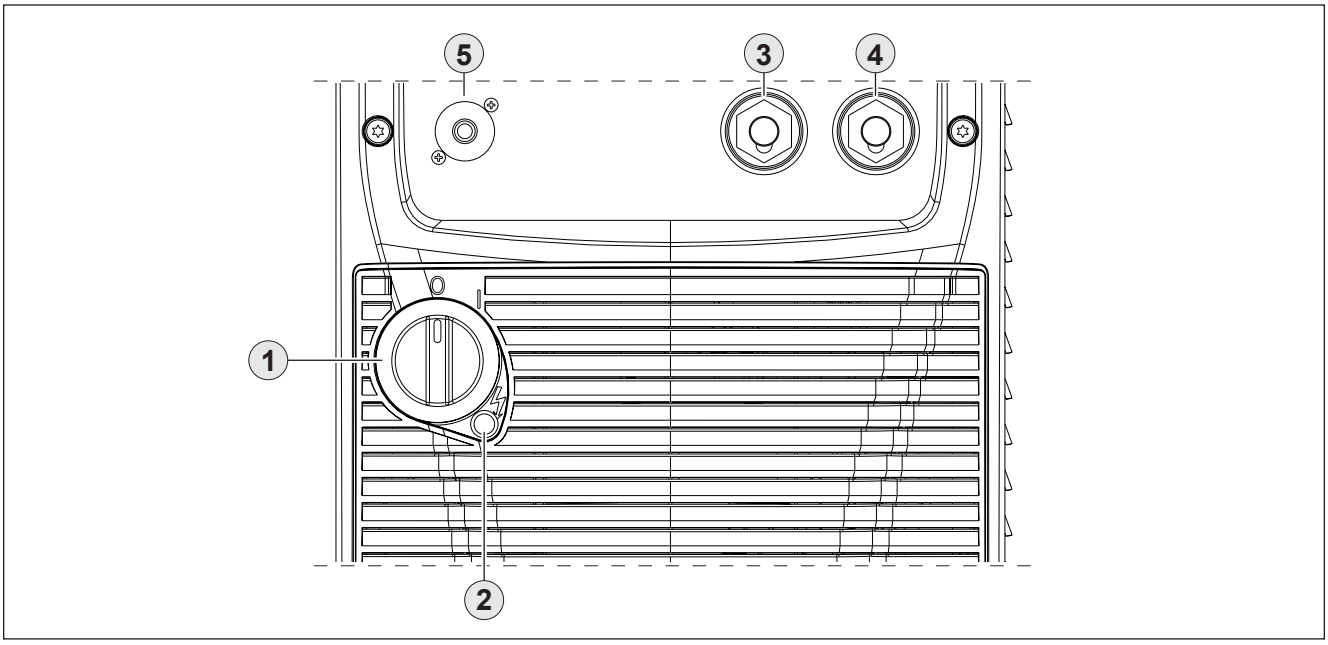
Read the warnings highlighted by the following symbols in the "General prescriptions for use".



2.1 CONNECTIONS TO THE ELECTRICAL MAINS NETWORK

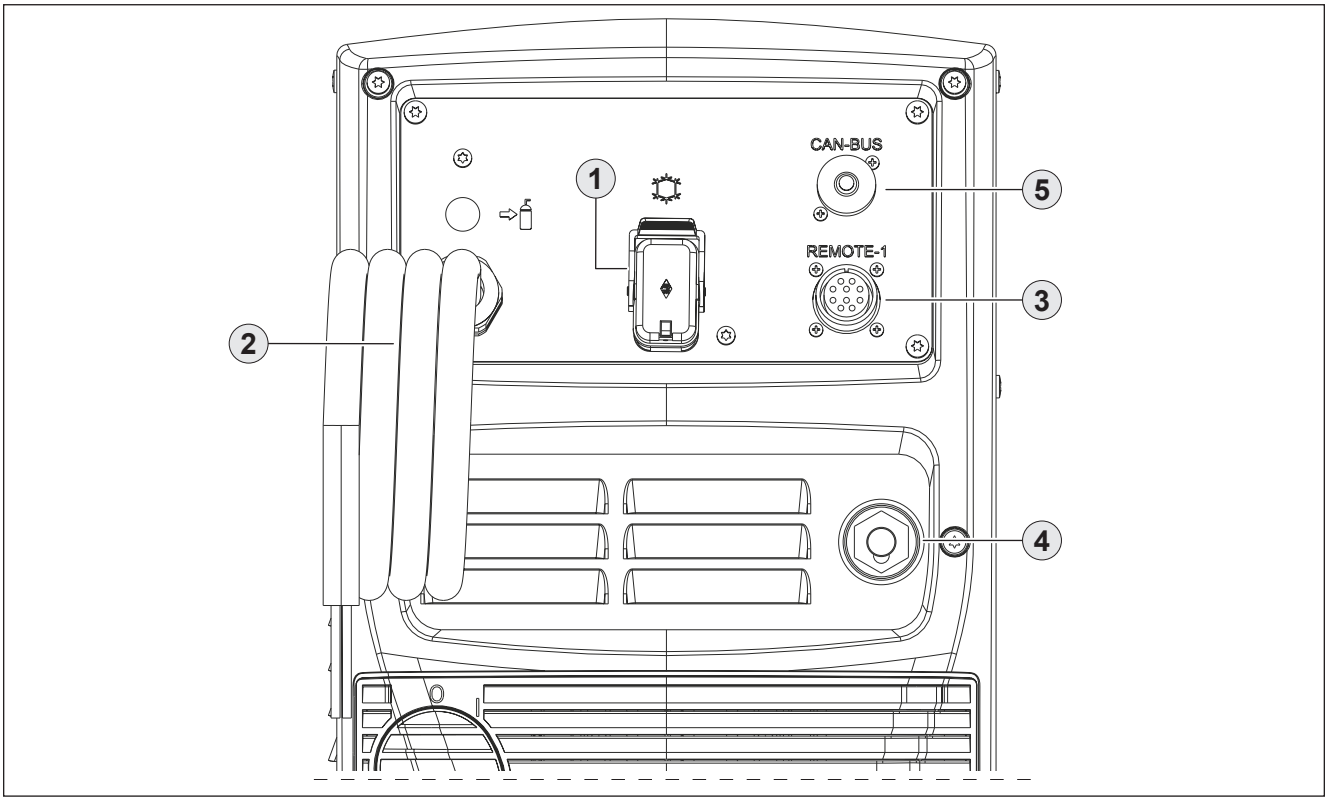
The mains power supply features to which the equipment should be connected are given in chapter "17 TECHNICAL DATA".
The machine can be connected to motorgenerators provided their voltage is stabilised.
Connect/disconnect the various devices with the machine switched off.

2.2 FRONT PANEL



- Welding power source ON/OFF switch. [Item 1].
- Mains protection ON LED [Item 2].
- Negative pole welding socket [Item 3].
- Positive pole welding socket [Item 4].
- Remote controller connector [Item 5].

2.3 REAR PANEL



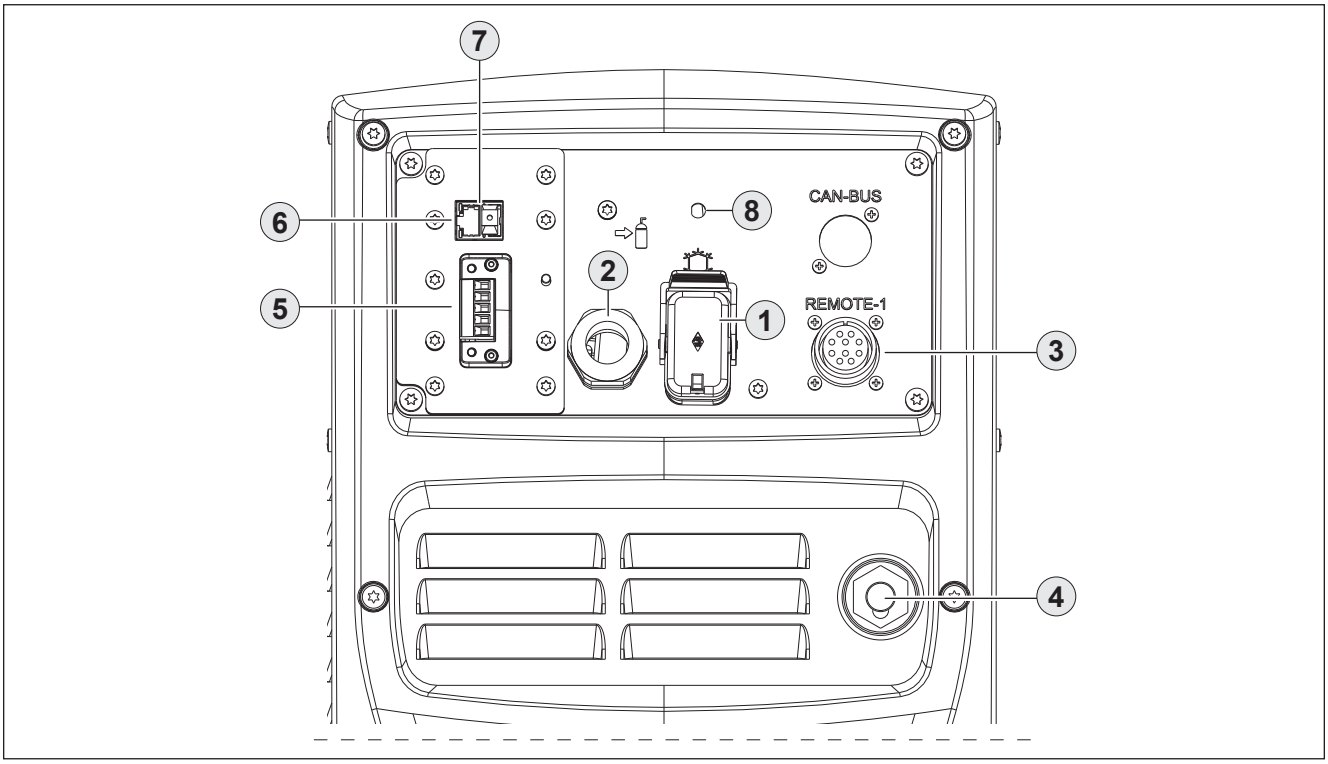
- Cooler group power feeding connector [Item 1].
  - Voltage: 400 V a.c.
  - Current output: 1.0 A
  - IP protection rating: IP20 (cap open) / IP66 (cap closed)

DANGER!
High voltage!

If the socket is not connected to any devices always close cap.

- Power cable [Item 2].
  - Total length (external part): 4,3 m
  - Number and cross section of wires: 4 x 4 mm^2
  - Power plug type: not supplied
- Connector of the bundle of cables for connecting the power source to the remote control device [Item 3].
- Socket for connecting the power cable between the power source and the remote control device [Item 4].
- Connector for CAN-BUS devices: devices that communicate via CAN-BUS (remote control, data manager, IR (robot interface), etc. can be connected to this connector [Item 5].

2.4 REAR PANEL (version for ROBOT applications)



○ Cooling unit power feeding connector [Item 1].
- Voltage: 400 VAC
- Current output: 1.2 A
- IP protection rating: IP20 (cap open) / IP66 (cap closed)

DANGER!
High voltage!

If the socket is not connected to any devices always close cap 1.

○ Power cable. [Item 2].
- Total length (outer side): 4.3 m
- Number and cross section of wires: 4 x 4 mm^2
- Power plug type: not supplied

○ Connector of the bundle of cables for connecting the power source to the remote control device. [Item 3].
○ Socket for connecting the power cable between the power source and the remote control device.[Item 4].
○ Slot for the FIELD BUS connector: a module for communicating with other devices (ROBOTS) can be inserted into this slot. [Item 5].
The module changes according to the type of protocol used to communicate between the devices.
○ Port for the Ethernet cable. [Item 6]
○ USB Port [Item 7]. This port enables:
- the welding reports to be saved to a USB stick. Saving the reports to a USB memory stick must be preset by Data Manager software.
- the ROBOT interface board software to be updated
- a barcode reader to be connected.

○ Connector for Wi-Fi antenna (optional) [Item 8].

2.5 MIG/MAG INSTALLATION

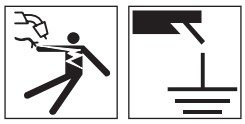
INFORMATION!

The version for ROBOT applications has a specific manual for installing the generator in the ROBOT system, the generator varying according to the ROBOT system brand. See the specific manual for this type of installation.
The instructions for installing the version for manual applications follow.

The pictures show the model WF-205 but also apply to model WF-204.

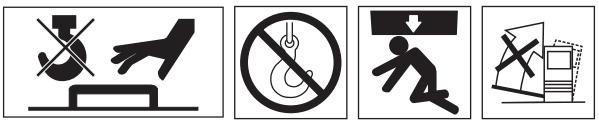
DANGER!
Electric shock hazard!

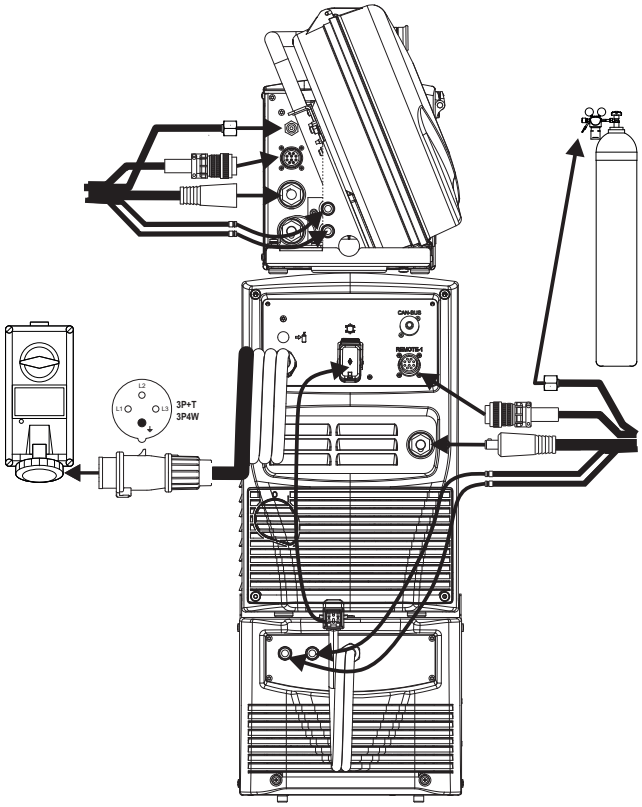
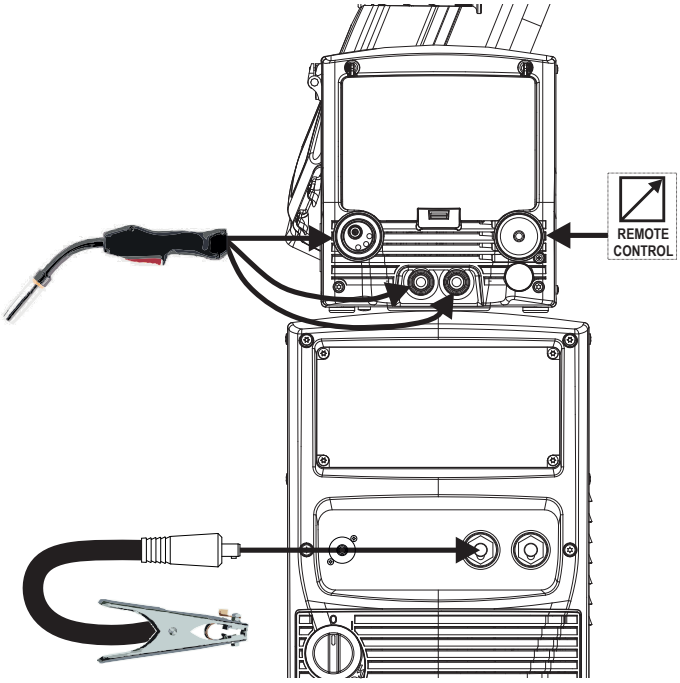
Read the warnings highlighted by the following symbols in the "General prescriptions for use".



DANGER!
Lifting and positioning

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



REAR VIEW	FRONT VIEW
	

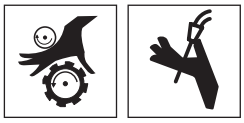
1. Assemble the various units as described in the instruction manual of the power source trolley.
2. Set the welding power source ON/OFF switch to “O” (unit switched off).
3. Connect the power source mains supply cable to the mains socket outlet.
4. Secure the cable harness connectors to the wire feeder.
5. Secure the cable harness connectors to the generator.
6. Connect the power supply cable for the cooling unit to the auxiliary power socket on the power generator.
7. Connect the MIG/MAG torch coolant delivery and return hoses to the coolant fittings located in the wire feeder.
8. Connect the MIG/MAG torch coolant delivery and return hoses of the cable harness to the fittings on the cooling unit and on the wire feeder.
9. Secure the cable harness by fastening the locking device.
10. Connect the earth clamp plug to the power generator earth socket.
11. Connect the earth clamp to the workpiece being processed.
12. Connect the MIG/MAG torch plug to the EURO TORCH welding socket.

2.6 POSITIONING THE SPOOL AND THE WIRE IN THE WIRE FEEDER

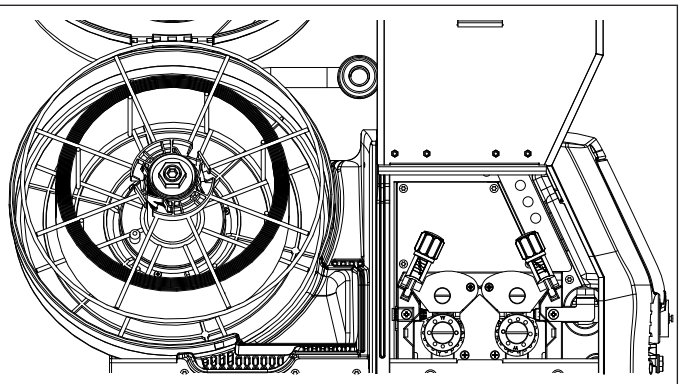
The pictures show the model WF-205 but also apply to model WF-204.

WARNING!
Mechanical Hazards

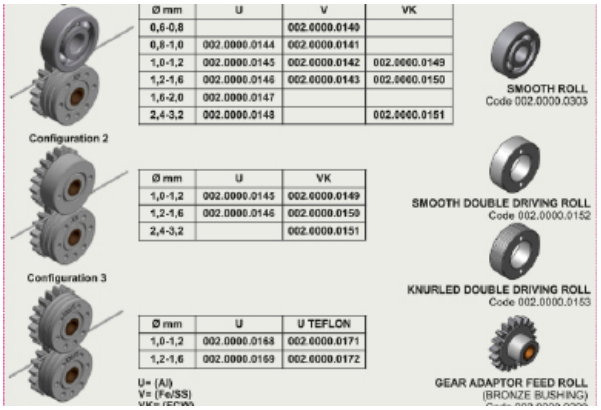
Read the warnings highlighted by the following symbols in the "General prescriptions for use".



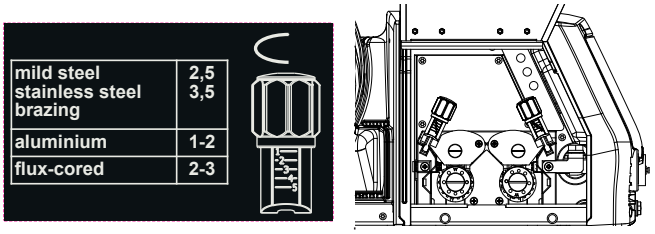
1. Fit the spool in the spool holder, ensuring it is located correctly.
2. Secure the spool with the ferrule.
3. Adjust the spool holder braking system by tightening/loosening the screw in such a way that the wire feed force is not excessive and when the spool stops rotating no excess wire is released.



4. Check that the feed rolls are suitable for the wire gauge.
   - The diameter of the roll groove must be compatible with the diameter of the welding wire.
   - The roll must be of suitable shape in relation to the composition of the wire material.
5. Feed the wire between the wire feeder rolls and insert it into the MIG/MAG TORCH connector plug.
6. Make sure the wire is located correctly in the roll grooves.



7. Adjust the pressure system so that the arms press the wire with a force that does not deform it while also ensuring constant feed rate without slipping.



8. Press the key to feed the wire until it protrudes from the torch tip.

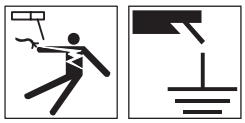
The wire feed can also be activated by the torch trigger in this manner: ○ press the key  and the torch trigger at the same time, ○ release the key  but keep the torch trigger pressed. The wire will continue to be fed; ○ release the torch trigger to stop wire feeding.	

2.7 PREPARING FOR MMA WELDING

1. Set the welding power source ON/OFF switch to “O” (unit switched off).
2. Plug the power cable plug into a mains socket outlet.
3. Choose the electrode based on the type of material and thickness of the workpiece to be welded.
4. Insert the electrode in the electrode holder.
5. Connect the electrode holder cable to the welding socket based on the polarity requested by the type of electrode used.
6. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
7. Connect the earth clamp to the workpiece being processed.

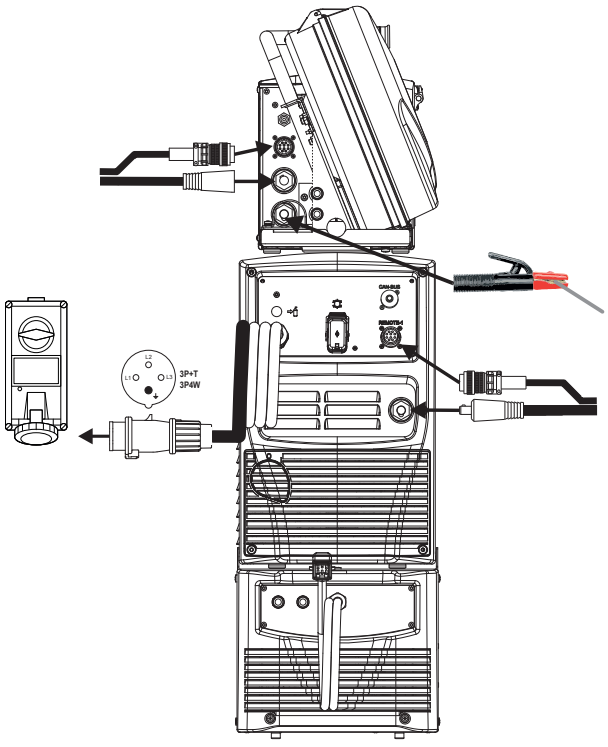
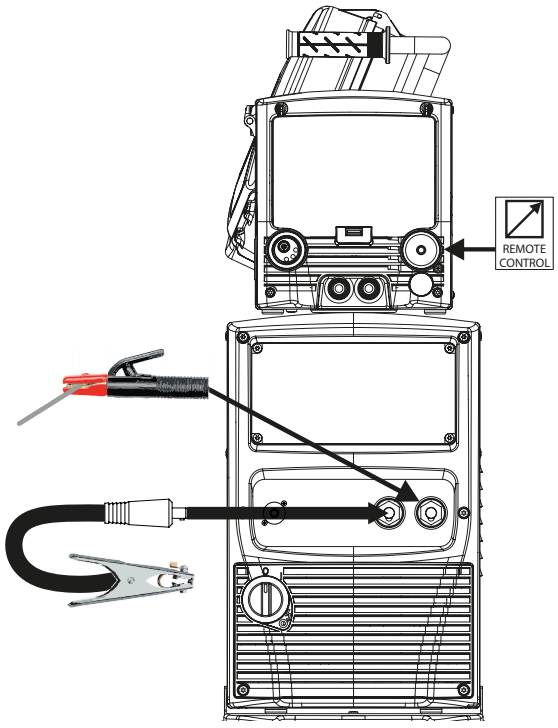
DANGER!

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. Select the following welding mode on the user interface: MMA
10. Set the required welding parameter values on the user interface.

The system is ready to start welding.

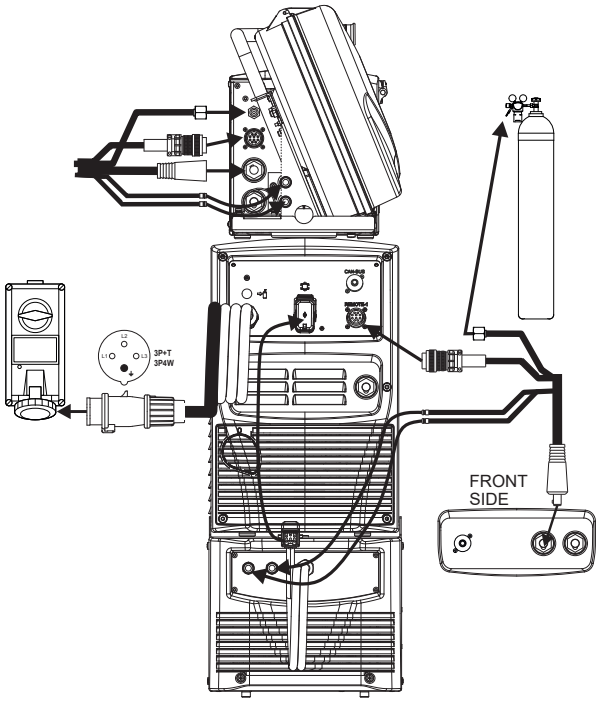
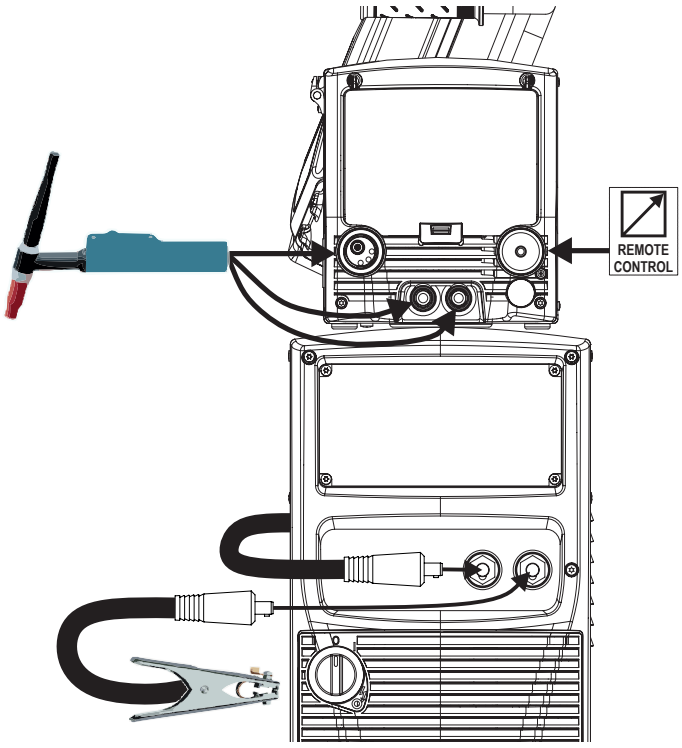
REAR VIEW	FRONT VIEW (polarity to basic electrode)
	

2.8 PREPARING FOR TIG WELDING

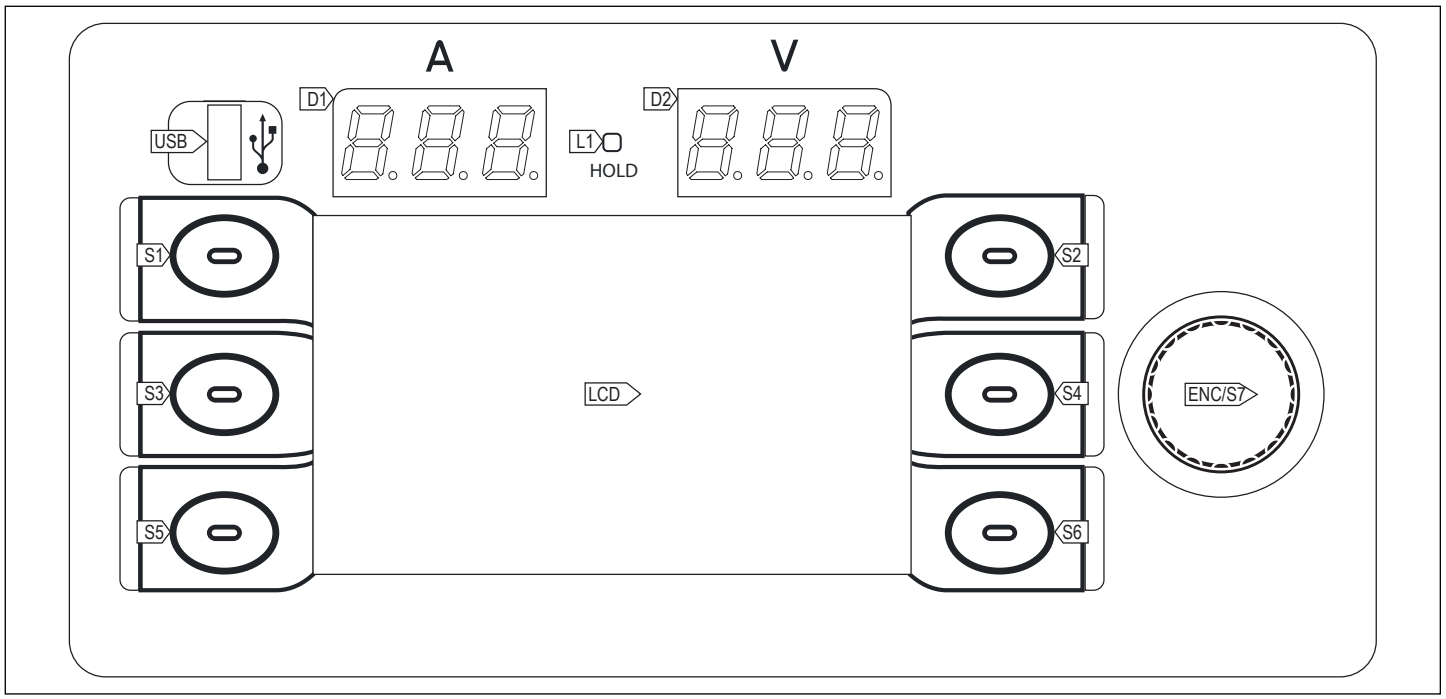
NOTE: Refer to the cooling unit instruction manual for the cooling unit to power source assembly procedure.

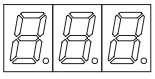
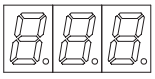
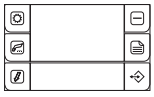
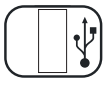
1. Set the welding power source ON/OFF switch to “O” (unit switched off).
2. Plug the power cable plug into a mains socket outlet.
3. Connect the gas hose from the welding gas cylinder to the rear gas connection.
4. Open the cylinder gas valve.
5. Choose the electrode based on the type of material and thickness of the workpiece to be welded.
6. Insert the electrode in the TIG torch.
7. Connect the torch plug to the welding socket on the basis of the polarity required by the type of electrode in question.
8. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
9. Connect the earth clamp to the workpiece being processed.
10. Set the welding power source ON/OFF switch to “I” (unit switched on).
11. Select the following welding mode on the user interface: DC TIG
12. Press the torch trigger with the torch well clear of any metal parts. This serves to open the gas solenoid valve without striking the welding arc.
13. Use the flow control valve to adjust the flow of gas as required while the gas is flowing out.
14. Set the required welding parameter values on the user interface.

The system is ready to start welding.

REAR VIEW	FRONT VIEW (polarity for tungsten electrode)
	

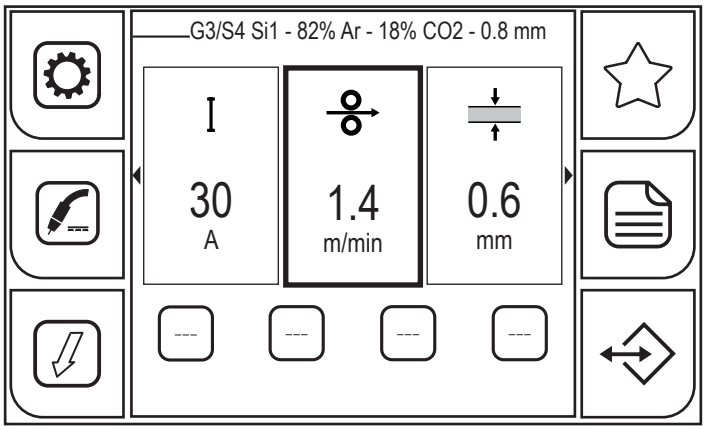
3 USER INTERFACE



CODE	SYMBOL	DESCRIPTION
L1	HOLD	When the indicator light goes on, it shows the last voltage and current value measured during the welding operation on displays D1 and D2. The LED is switched off when a new welding procedure is started, or when any of the welding settings is changed.
D1		**During the welding operation:** The display shows the effective amperes used when welding. **With HOLD led on:** The display shows the last measured current value.
D2		**During the welding operation:** The display shows the effective voltage used when welding. **With HOLD led on:** The display shows the last measured voltage value.
LCD		The display shows the menus available to set up the welder and its functions. **During the welding operation:** The display shows the welding parameters set.
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.
ENC/S7		**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 welding operation:** the encoder changes the value of the active parameter.
USB		Porta per connettere una chiavetta USB per l'esportazione/importazione dei JOB. Tramite la porta USB è possibile aggiornare il firmware di sistema dell'impianto

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

3.1 MAIN SCREEN

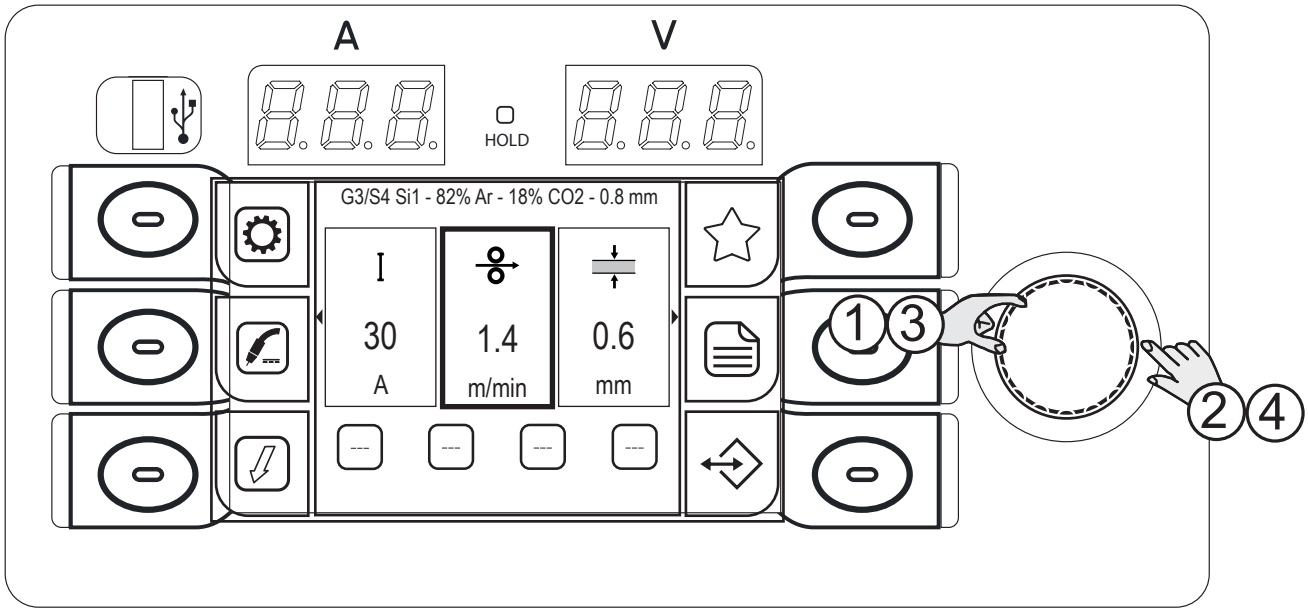


KEYS WITH SYMBOLS

	- (MIG/MAG): The (PROGRAM) key allows the user to access a sequence of screens to be used to program the parameters required to specify a welding curve. - (MMA): Press the (PROGRAM) key to select the type (material) of electrode.
	The (FAVORITE) key allows the user to access the SHORTCUT menu, which allows the --- (SHORTCUT) keys to be associated to a specific function selected from the available functions.
	Press the (PROCESS) key to select the welding process. The following processes can be selected: PULSED MIG/MAG, MIG/MAG SHORT/SPRAY, MMA, ARC AIR, TIG LIFT. In MIG/MAG mode the user can select through a sequence of screens the welding processes compatible with the material, wire diameter and gas values which have been previously set through the program key.
	The (PARAMETERS MENU) allows the user to access the menu used to set up the main welding features. This menu also contains special functions, such as the welding circuit calibration and the system menu. It also contains special functions, such as: the welding circuit calibration, the system menu, import/export.
	The (MODE) key allows the user to access the menu used to select the torch trigger mode.
	The (JOB) key allows the JOB management menu to be accessed.
---	The (SHORTCUT) key allows the associated function to be directly accessed. By pressing this key, the function is enabled (yellow background); by pressing it again, the function is disabled. This key only works with the touch screen. Keep the --- (SHORTCUT) key pressed for 3 seconds to access the functions screen.

3.2 SETTING UP THE WELDING PARAMETERS

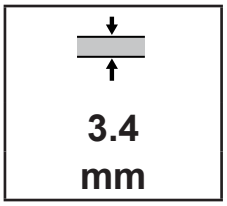
This area of the screen displays the welding parameters that can be directly set from the main screen.



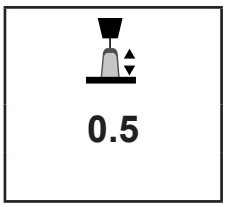
1. Turn the encoder to select the parameter to be changed; the selection made is highlighted by the thicker edge around the box.
2. Press the (ENCODER) key; the background of the box will change colour.
3. Turn the encoder to set the desired value.
4. Press the (ENCODER) key again to return to the parameter selection mode.

The following parameters can be set:

U **20.0** **V**	(MIG/MAG) Welding voltage Sets the welding voltage.
I **140** **A**	(MIG/MAG, MMA, ARC AIR, TIG LIFT) Welding current Sets the welding current.
 10.4 **m/min**	(MIG/MAG) Wire speed Sets the wire speed for welding.

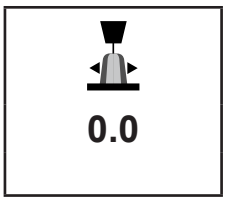


(MIG/MAG)
Material thickness
Sets the thickness of the material to be welded.

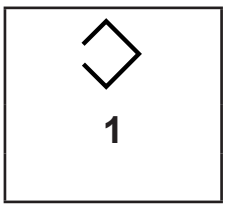


(MIG/MAG)
Arc length correction
Sets up the welding arc length correction in relation to the preset value from the synergic curve.

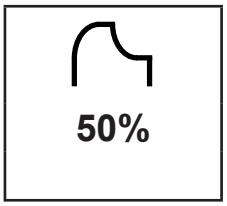
(MIG/MAG)
Inductance (in the short-spray process)
Changes the energy when a short circuit occurs.



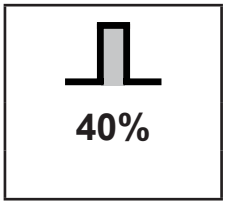
(MIG/MAG)
Dynamic (in the pulsed process)
Corrects the energy of the pulsed arc pulses.



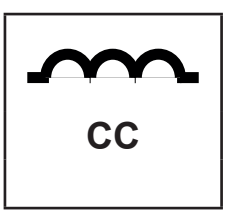
(MIG/MAG, MMA, ARC AIR, TIG LIFT)
Selected JOB
Displays the currently loaded JOB.
The icon is displayed only if a JOB is loaded.



(MMA)
Hot-start
Set the HOT-START peak current value to allow the electrode welding to be easily triggered.

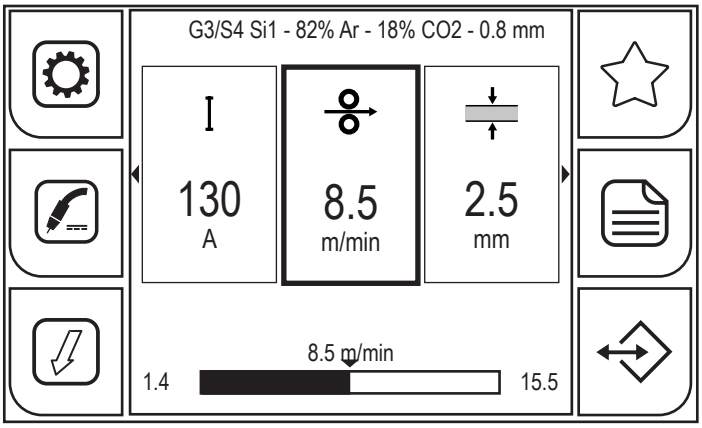


(MMA)
Arc-Force
Set the ARC-FORCE peak current value to allow the electrode to slide during the welding process and to prevent electrode sticking.

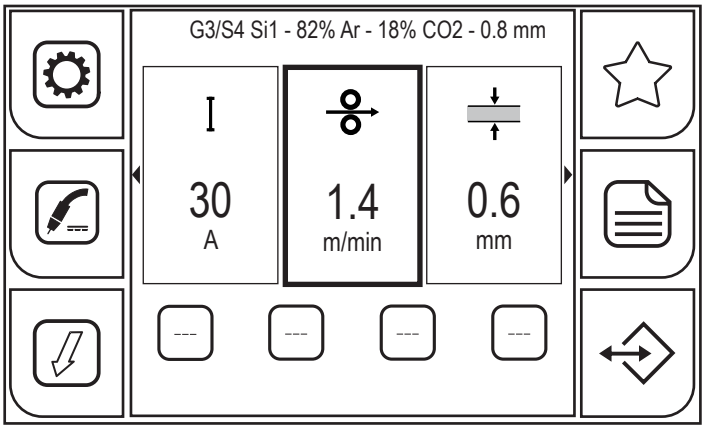


(MMA)
Dynamic (in the electrode welding process)
Changes the short-circuit energy when the drop is detached

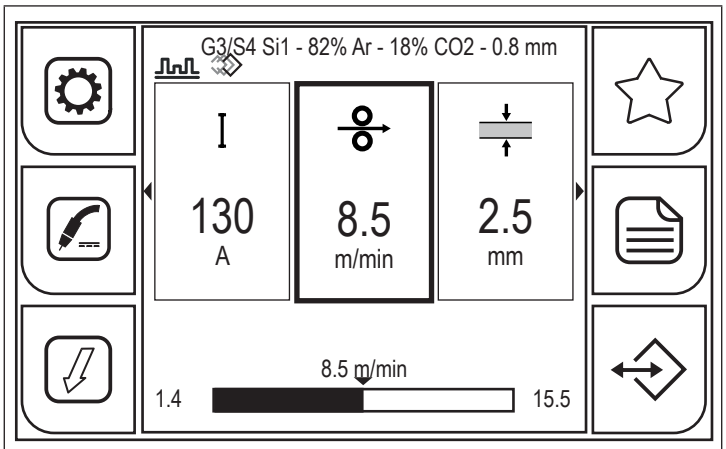
VIEWING ADDITIONAL INFORMATION



During a parameter setting operation
The bar displays the minimum value, the currently set value and the selected parameter maximum value.



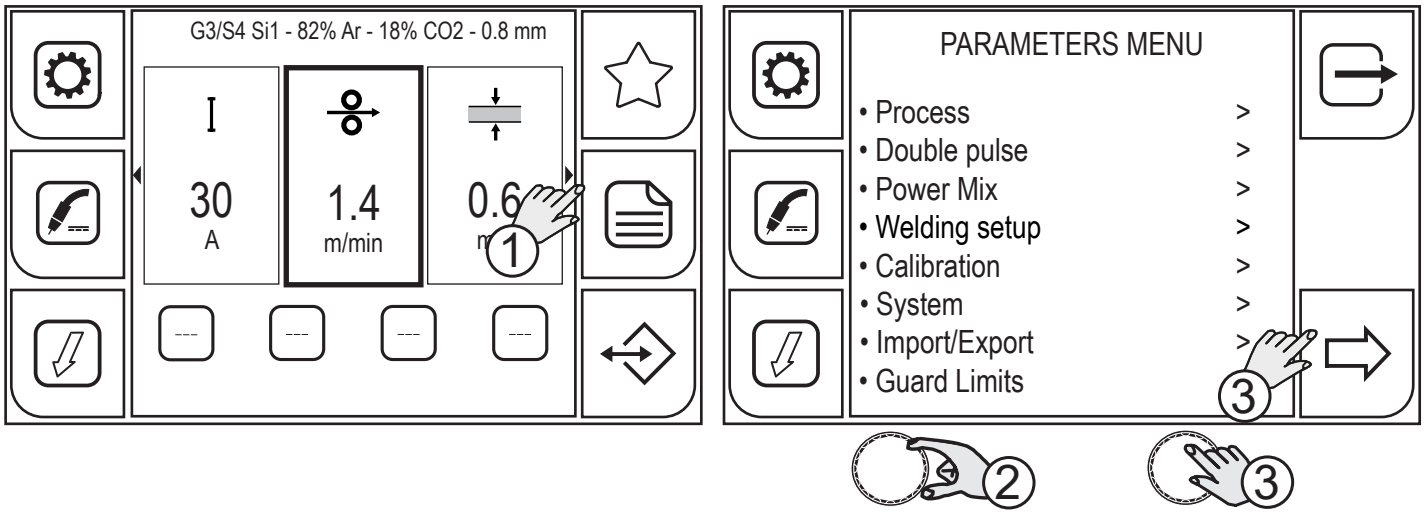
Outside a parameter setting operation
The active welding settings are displayed (filler wire material, gas, thickness of the material to be welded, b-level activation, double pulse mode activation, loaded JOB).



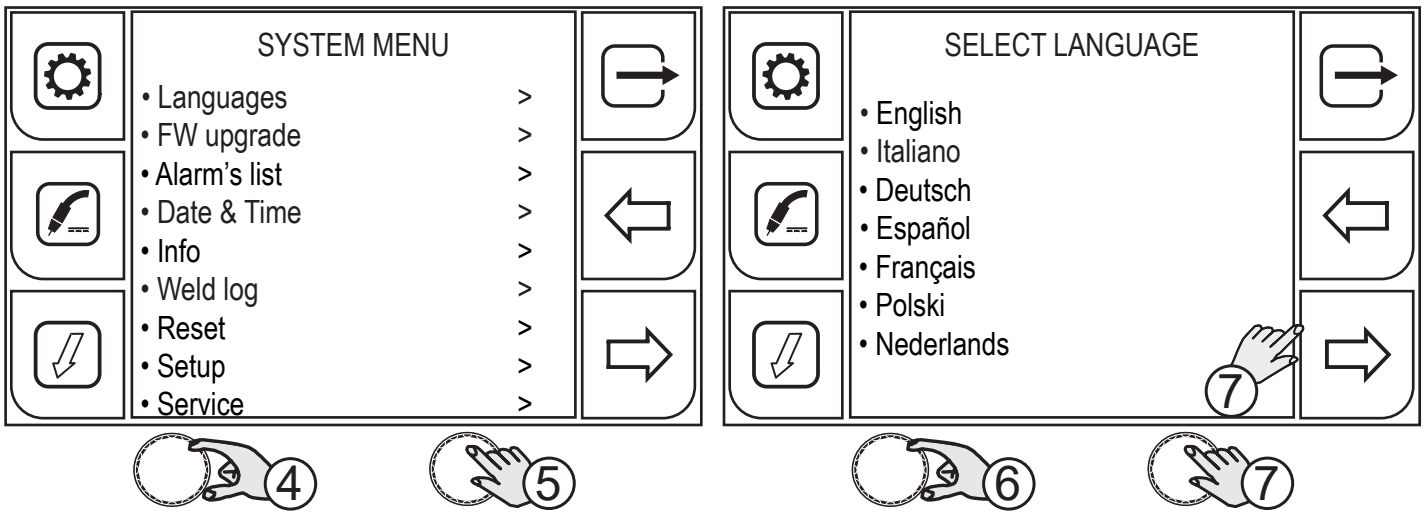
After activating a function
Below the active synergic curve wording, the icons of the active functions will appear.

4 PRELIMINARY SETTINGS

4.1 SETTING THE LANGUAGE



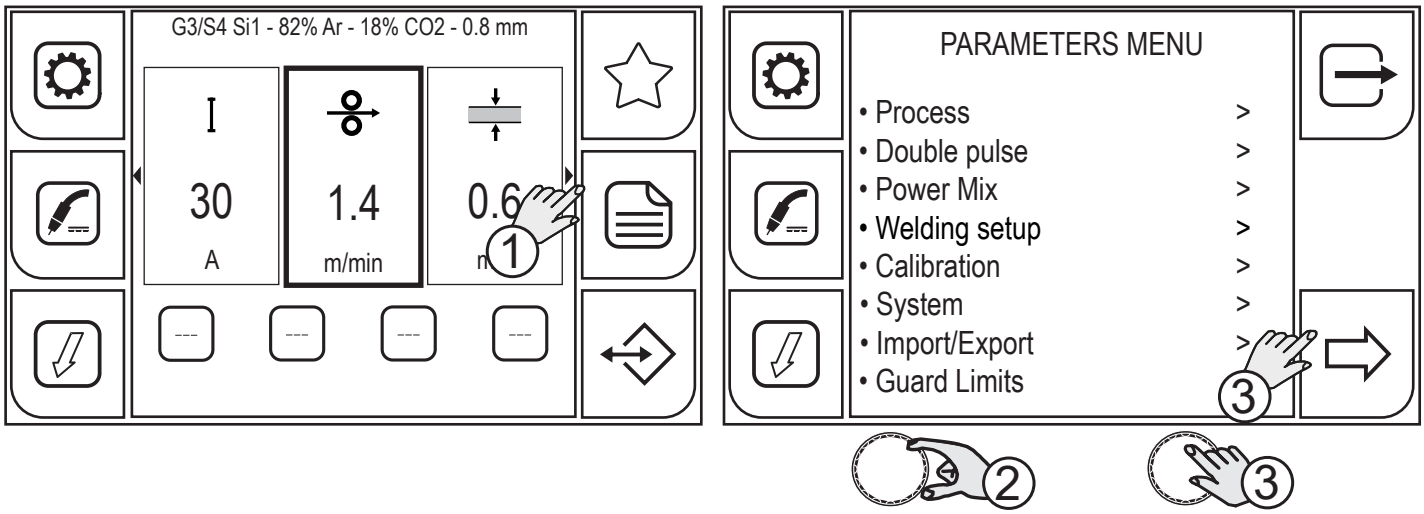
1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key to confirm.



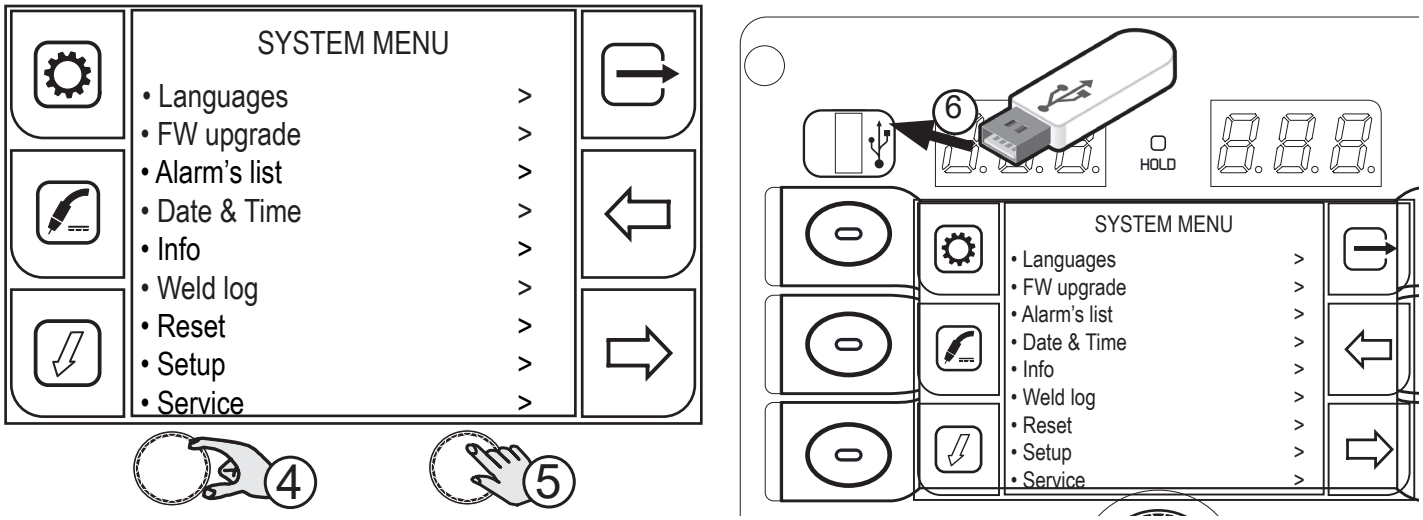
4. Turn the encoder to select the desired setting. Select the following path: Languages>
5. Press the (ENCODER) key or the (NEXT) key to confirm.
6. Turn the encoder to select the desired language.
   - (English, Italiano, Deutsch, Espanol, Francais, Polski, Nederlands, Romana)
7. Press the (ENCODER) key or the (NEXT) key to confirm.

Press the ⮕ key to exit the screen.

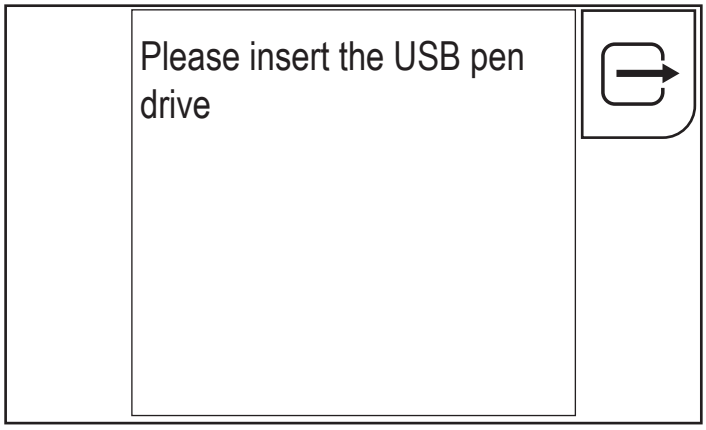
4.2 FIRMWARE UPGRADE

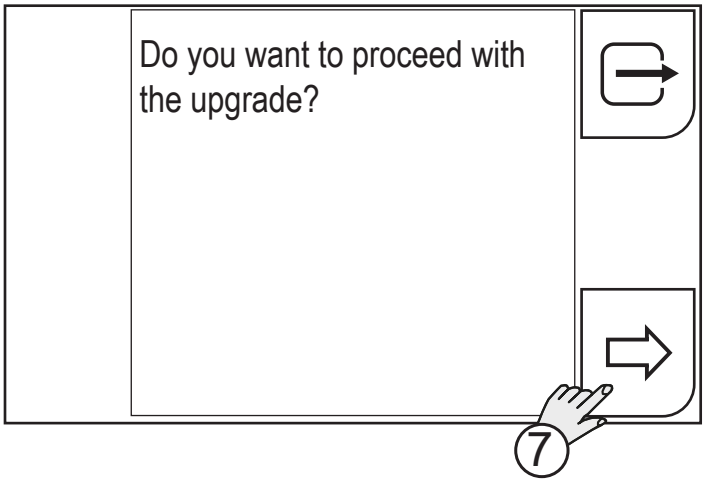


1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key to confirm.

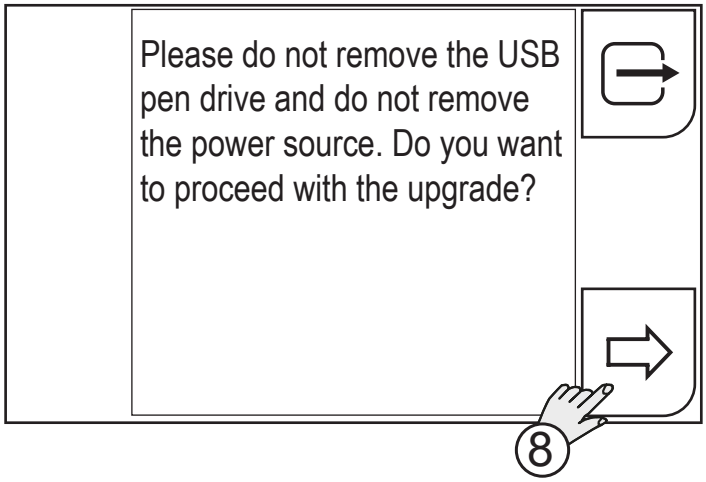


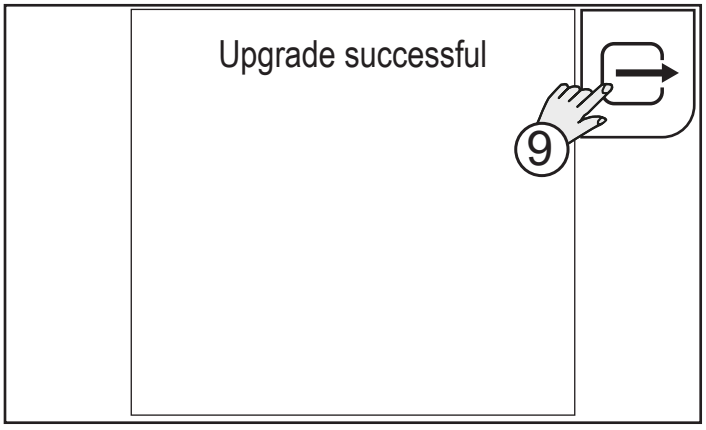
4. Turn the encoder to select the desired setting. Select the following path: FW upgrade>
5. Press the (ENCODER) key or the (NEXT) key to confirm.
6. Insert the USB pen drive loaded with the firmware in the relevant port.





7. Press the (YES) key



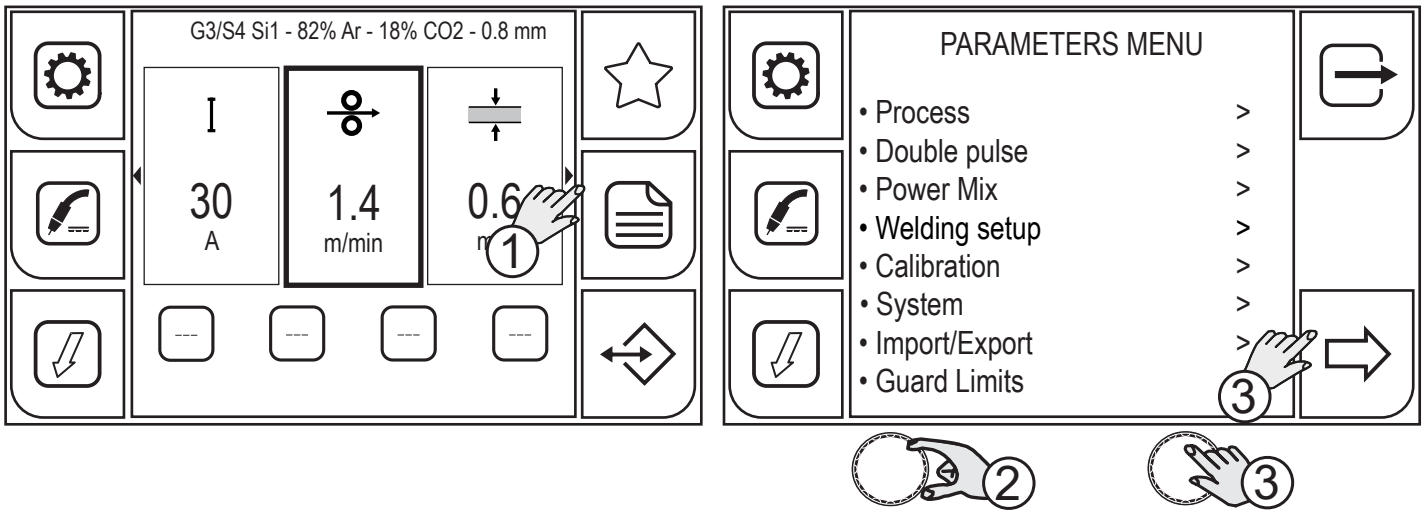


8. Press the (OK) key

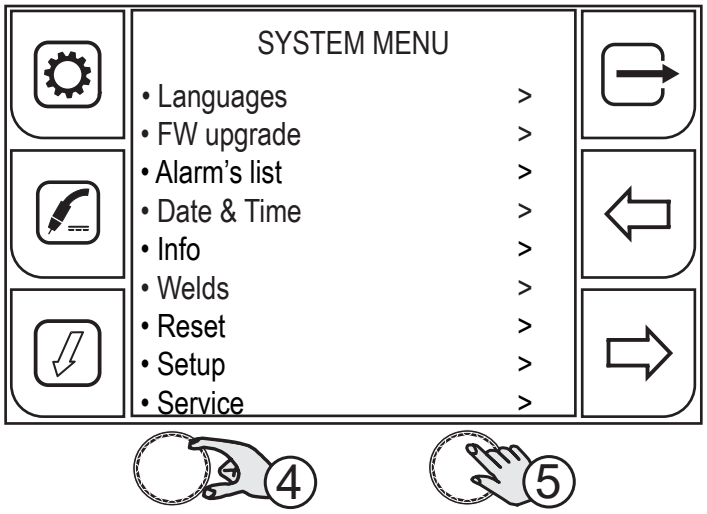
Press the (EXIT) key to go back to the home page.
Wait for the upgrading procedure to be completed.
9. Press the (OK) key
Any problems encountered during the upgrade will be shown on the display.

WARNING	MEANING
Release file not found	File not found in the USB pen drive.
No USB/SD card found	USB pen drive not recognised (missing or incorrectly inserted). - Make sure that the USB pen drive has been inserted correctly. - Use a different USB pen drive.
Could not decrypt release file	Corrupted file or edited file name (**never rename the upgrade file supplied**).
Could not inflate release file	Corrupted file or edited file name (**never rename the upgrade file supplied**).
Update directory and/or script not found	Corrupted file or edited file name (**never rename the upgrade file supplied**).
Update procedure failed	Contact our technical service.
Upgrade package is not for this board	The file loaded on the USB pen drive is not compatible with the electronic board.
Could not find readme file in upgrade package	Contact our technical service.
Installed version and upgrade package version do not match	The installed software cannot be downgraded.
Could not upgrade generator	Contact our technical service.
Could not upgrade wf	Contact our technical service.
Could not upgrade boost	Contact our technical service.

4.3 SETTING THE DATE AND TIME

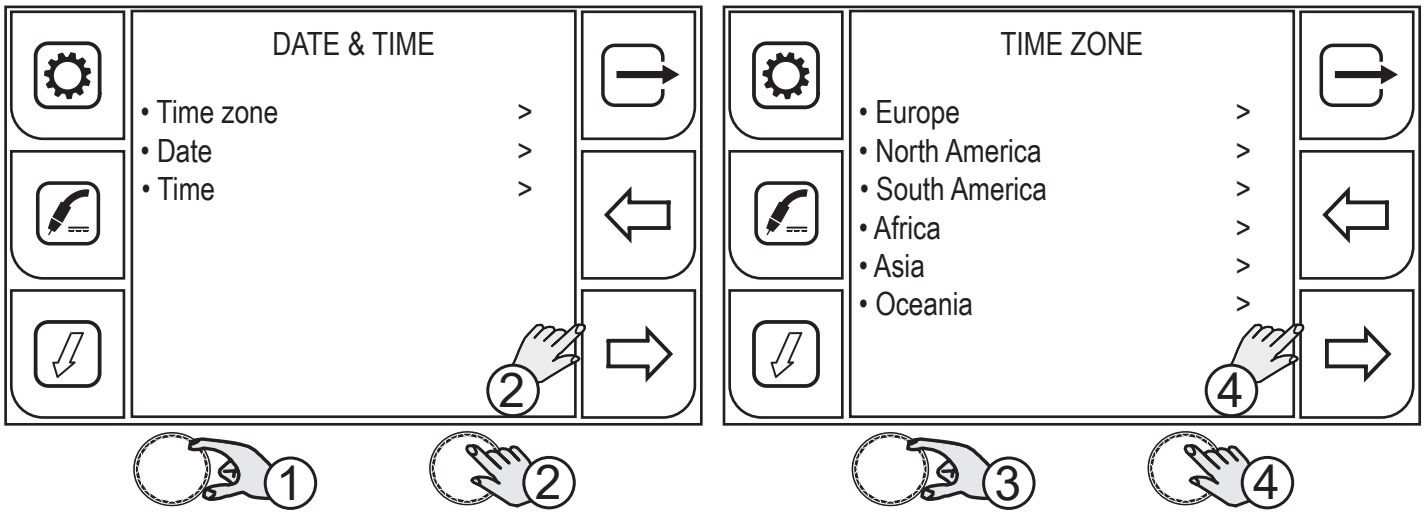


1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key to confirm.

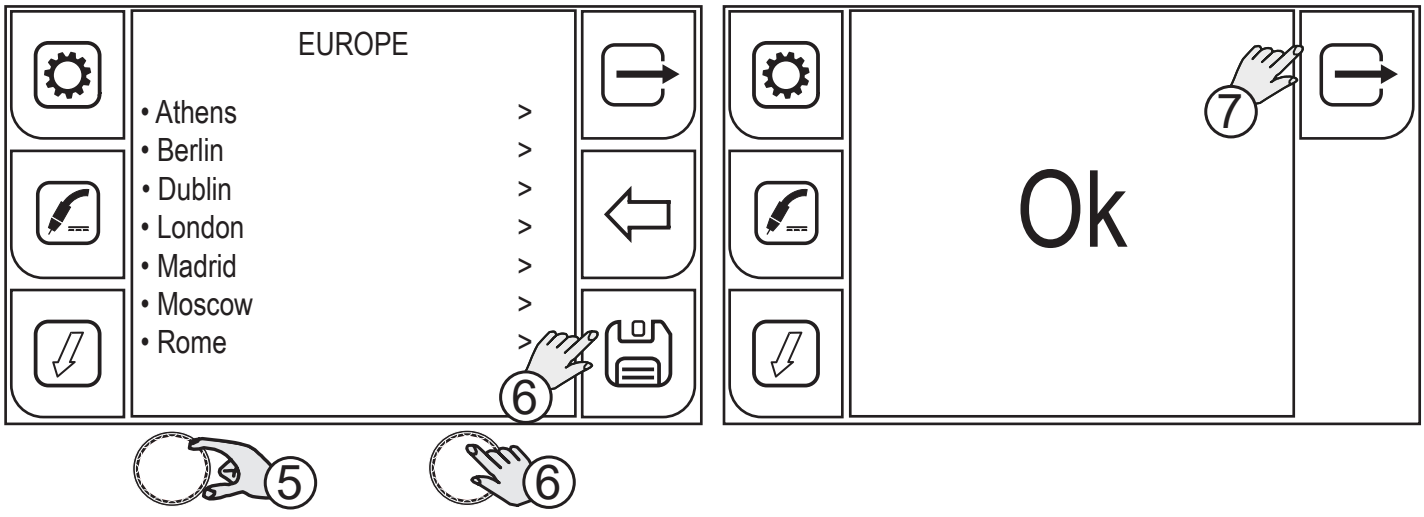


4. Turn the encoder to select the desired setting. Select the following path: Date & Time>
5. Press the (ENCODER) key or the (NEXT) key to confirm.

4.3.1 SETTING THE TIME ZONE



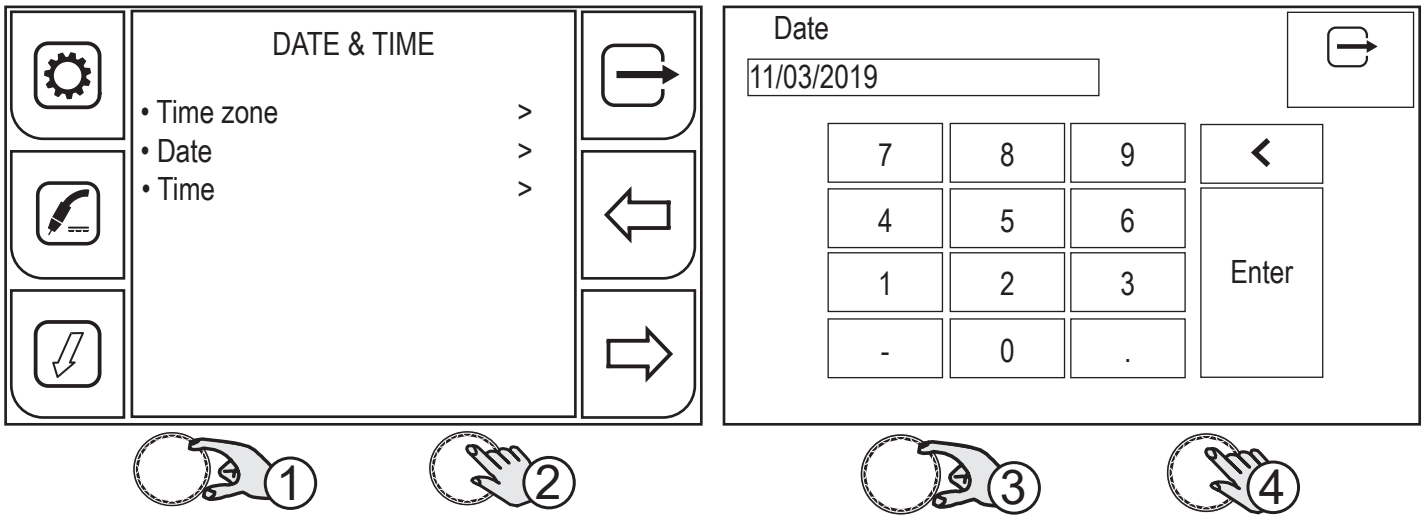
1. Turn the encoder to select the desired setting. Select the following path: Time zone>
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Turn the encoder to select the desired time zone.
4. Press the (ENCODER) key or the (NEXT) key to confirm.



5. Turn the encoder to select the desired city.
6. Press the (ENCODER) key or the (NEXT) key to confirm.
7. Press the (OK) key to confirm your selection.

To exit the screen, press the key.

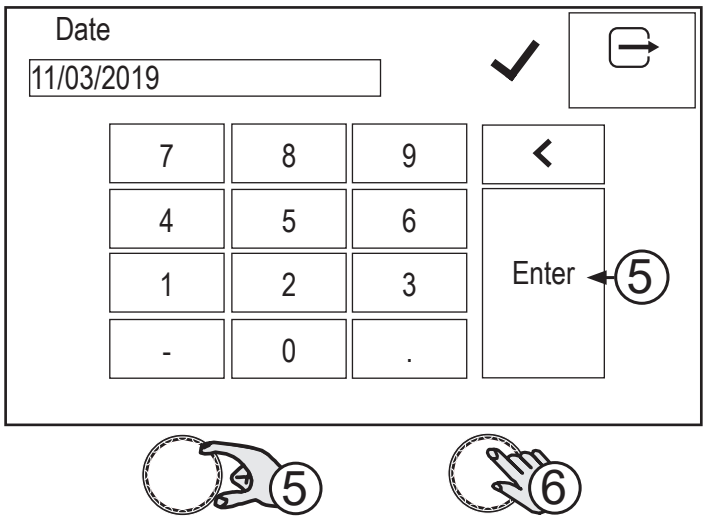
4.3.2 SETTING THE DATE



1. Turn the encoder to select the desired setting. Select the following path: Date>
2. Press the (ENCODER) key or the (NEXT) key to confirm.

The touchscreen panel allows the user to set up the functions through the mechanical keys or the icons appearing on the screen.

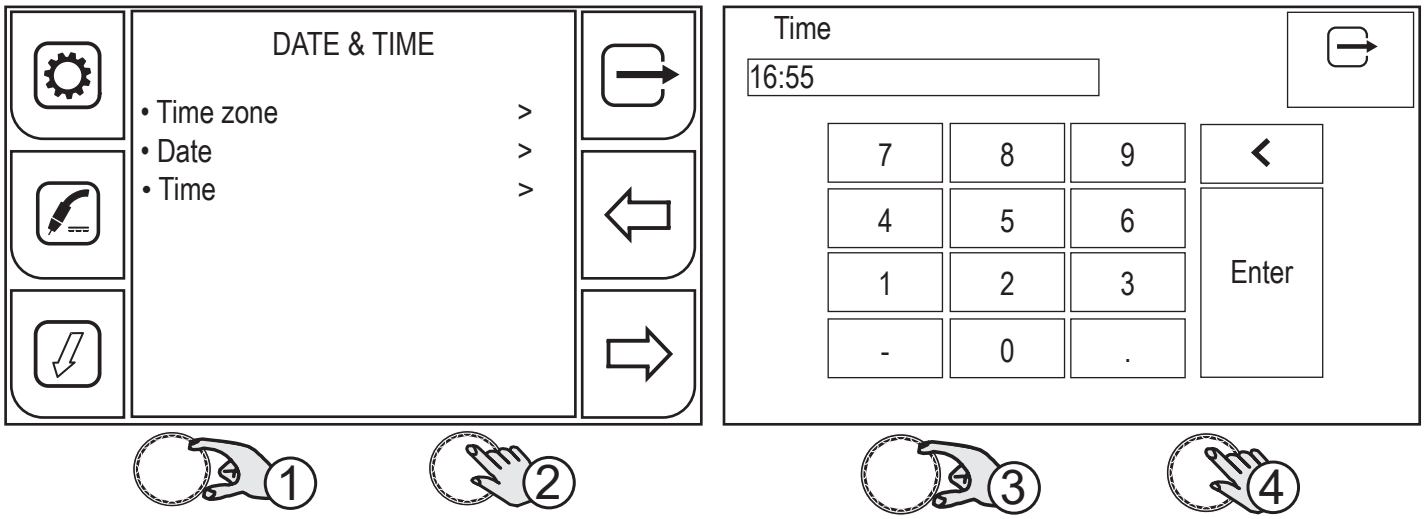
3. Turn the encoder to select the number on the keyboard.
4. Press the key (ENCODER) to confirm your selection.



5. Turn the encoder to select the (ENTER) symbol on the keyboard.
6. Press the (ENCODER) key to confirm your selection. A green tick will appear to indicate that the operation has been confirmed.

To exit the screen, press the key.

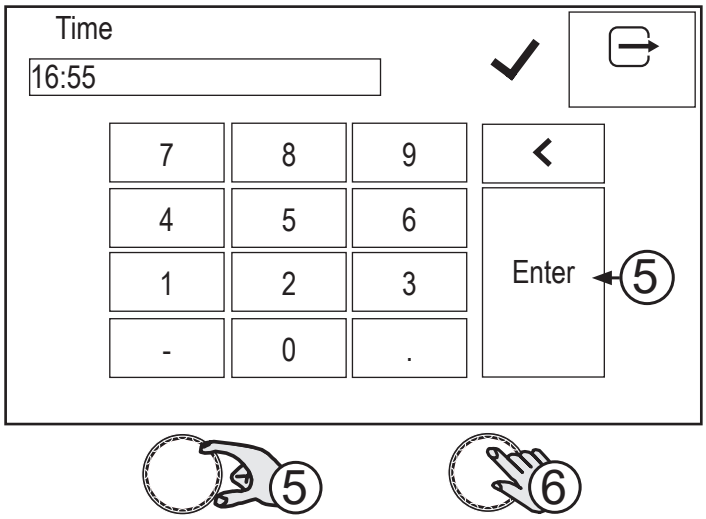
4.3.3 SETTING THE TIME



1. Turn the encoder to select the desired setting. Select the following path: Time>
2. Press the (ENCODER) key or the (NEXT) key to confirm.

The touchscreen panel allows the user to set up the functions through the mechanical keys or the icons appearing on the screen.

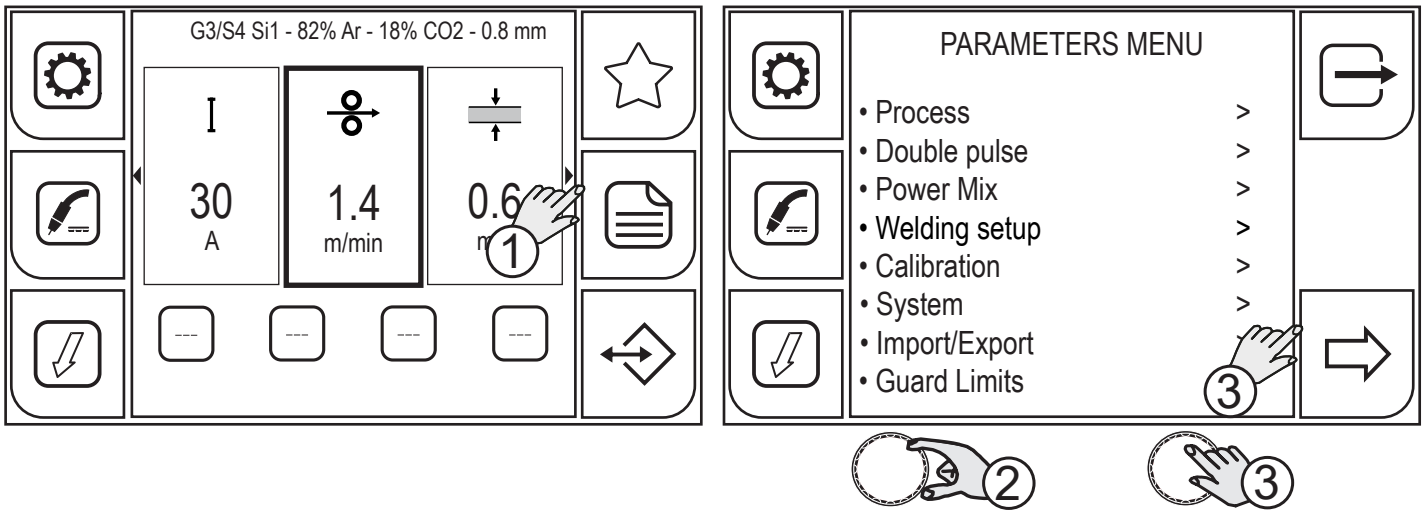
3. Turn the encoder to select the number on the keyboard.
4. Press the (ENCODER) key to confirm your selection.



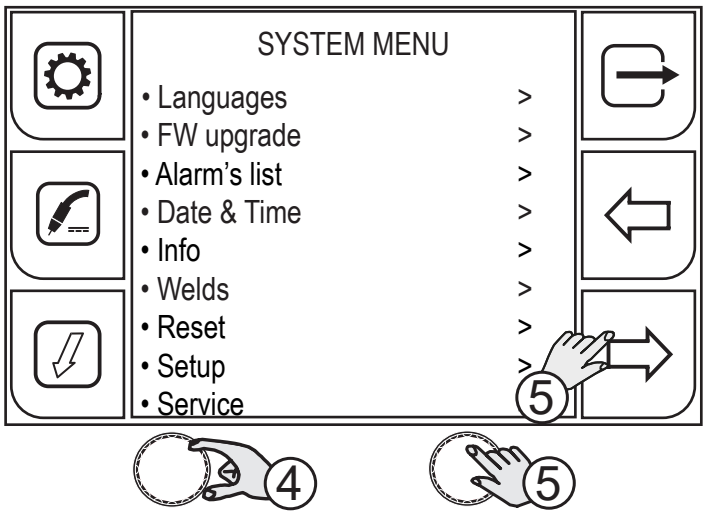
5. Turn the encoder to select the (ENTER) symbol on the keyboard.
6. Press the (ENCODER) key to confirm your selection. A green tick will appear to indicate that the operation has been confirmed.

To exit the screen, press the key.

4.4 SETTING UP THE WELDER



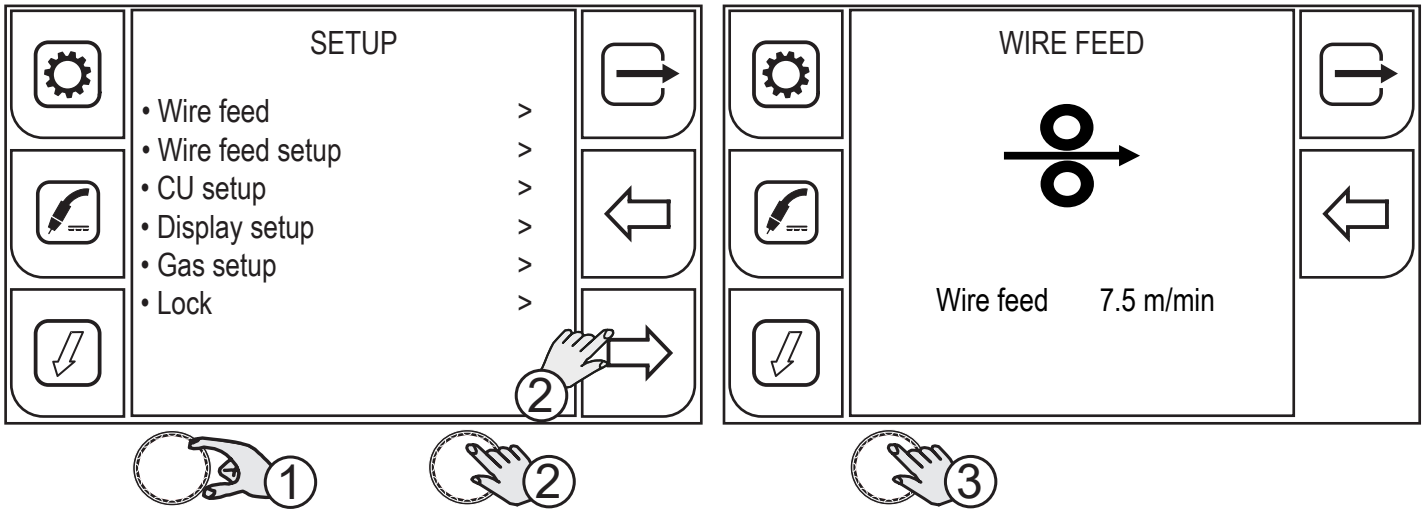
1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key to confirm.



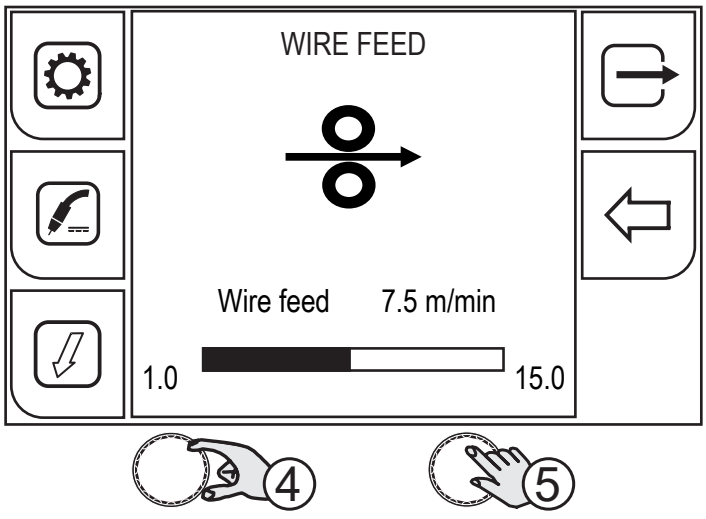
4. Turn the encoder to select the desired setting. Select the following path: Setup>
5. Press the (ENCODER) key or the (NEXT) key to confirm.

4.4.1 SETTING UP THE WIRE FEED

The WIRE FEED parameter allows the user to set up the wire insertion speed to be applied when the (INSERTION) key is pressed.



1. Turn the encoder to select the desired setting. Select the following path: Wire feed>
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Press the (ENCODER) key to apply the parameter change.



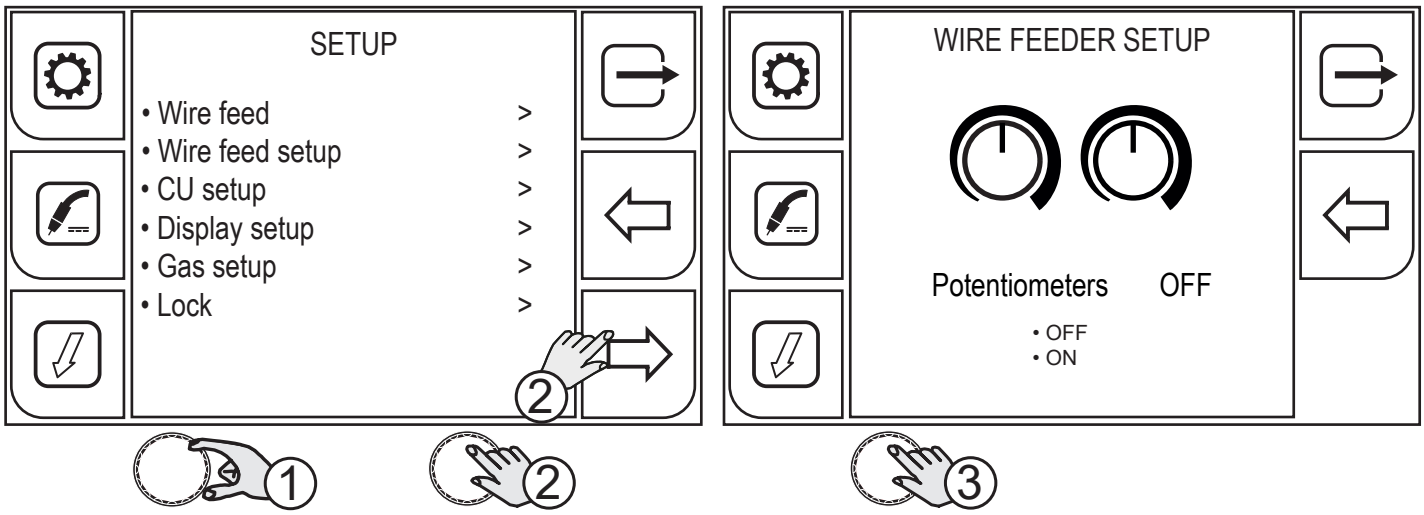
4. Turn the encoder to set the desired value.
5. Press the (ENCODER) key or the (NEXT) key to confirm.

To exit the screen, press the key.

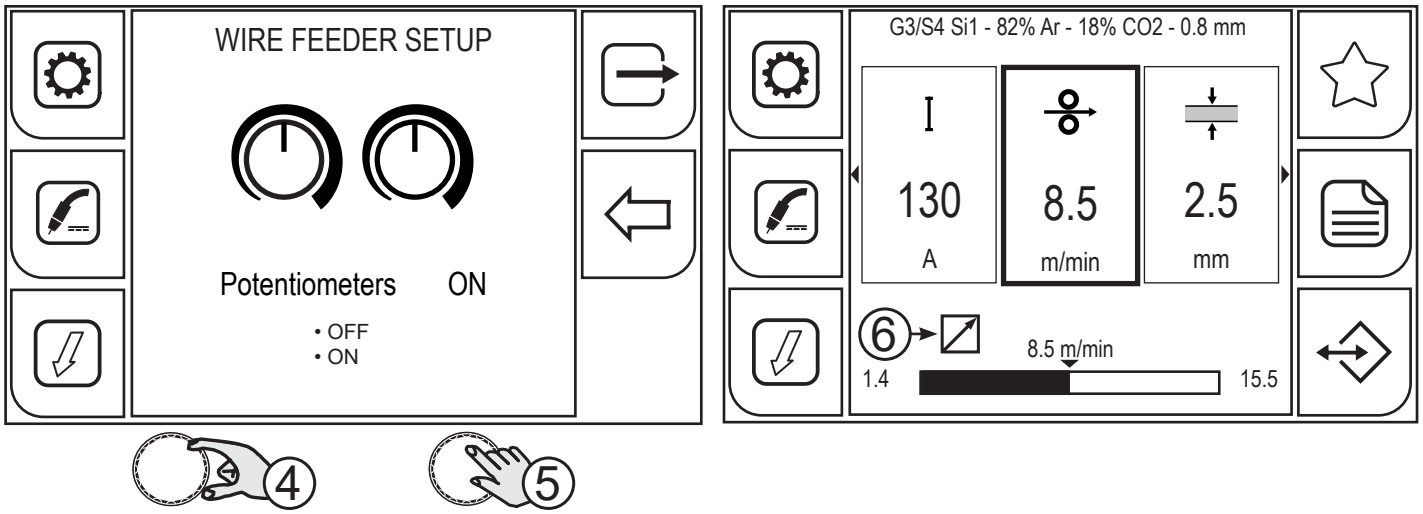
4.4.2 WIRE FEEDER SETUP

Enable when a WF-205p wire feeder is installed on a 405dms-505dms generator.

WIRE FEEDER SET UP enables the reception of commands from potentiometers of an external wire feeder unit.



1. Turn the encoder to select the desired setting. Select the following path: Wire Feeder setup>
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Press the (ENCODER) key to apply the parameter change.



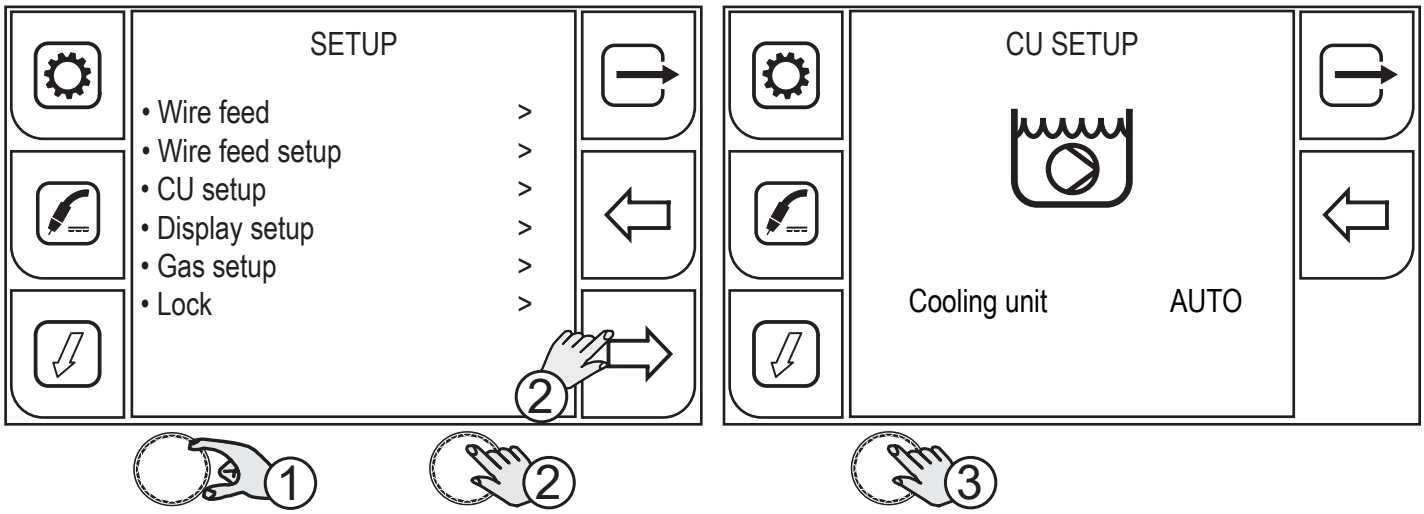
4. Turn the encoder to set the desired value.
5. Press the (ENCODER) key or the (NEXT) key to confirm.

To exit the screen, press the key.

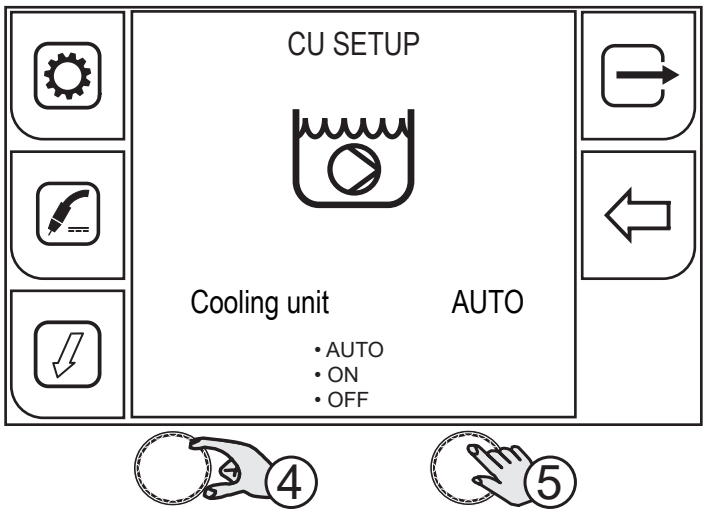
6. The symbol (REMOTE) appears on the main screen when parameters which can be set by the wire feeder potentiometers are selected.

POT1 regulates the adjustment of parameters (wire speed/ampere/tension/material thickness) with respect to values preset from the synergic curve.
POT2 regulates the welding arc length correction in relation to the preset value from the synergic curve.

4.4.3 COOLING UNIT SETUP



1. Turn the encoder to select the desired setting. Select the following path: CU setup>
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Press the (ENCODER) key to apply the parameter change.



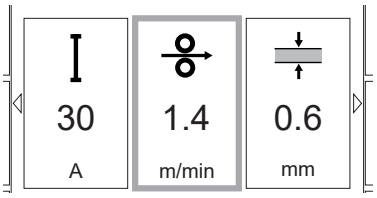
4. Turn the encoder to select the desired setting.
5. Press the (ENCODER) key to confirm your selection.

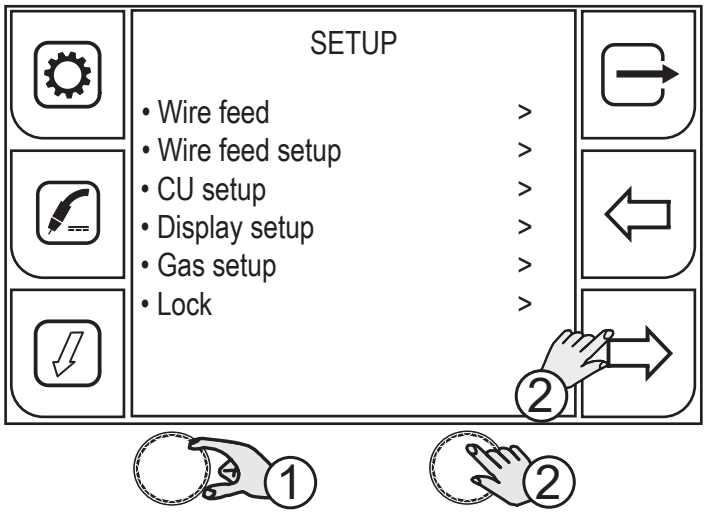
To exit the screen, press the key.

- **AUTO:** When the welder is switched on, the unit is switched on for 30 s. During the welding operations, the unit runs continuously. When the welding operation is completed, the unit will stay on for 90 s plus a number of seconds related to the welding average current value.
- **ON:** The cooling unit is always on when the current generator is also switched on. This mode is preferable for heavy duty and automatic welding procedures.
- **OFF:** The cooling unit is always off; this function must be selected if an air cooled torch is used.

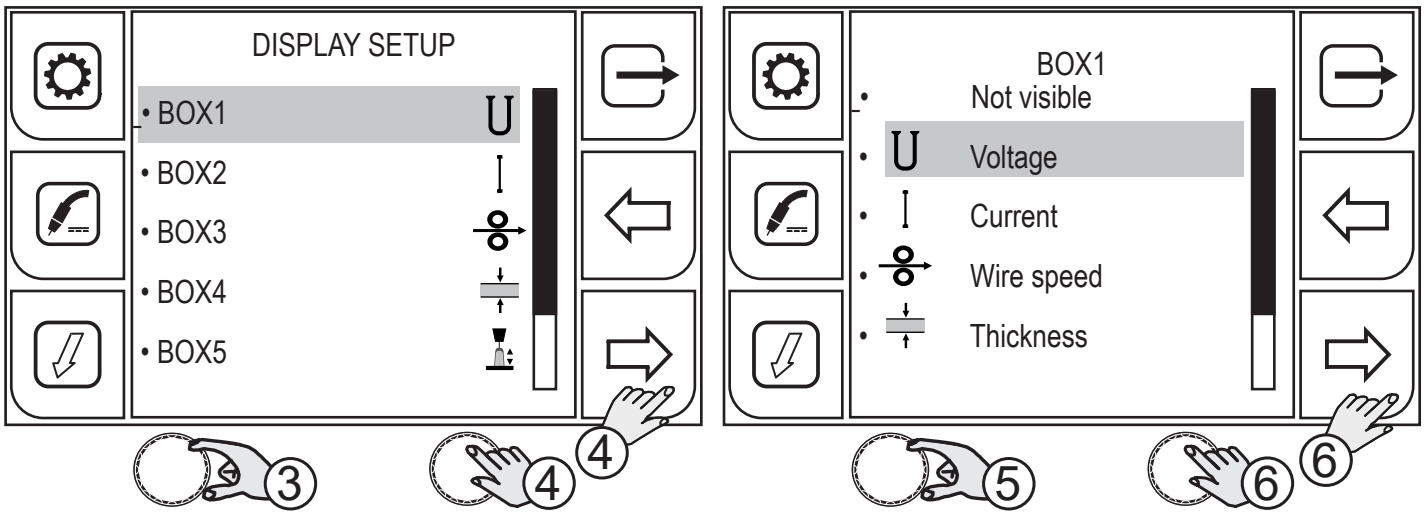
4.4.4 DISPLAY SETUP

The display setup option allows the user to select the parameters to be displayed in the main screen and the order in which they are displayed.



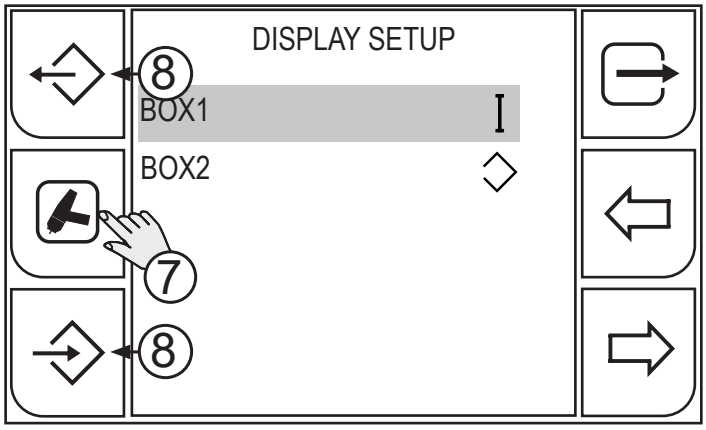


1. Turn the encoder to select the desired setting. Select the following path: Display setup>
2. Press the (ENCODER) key or the (NEXT) key to confirm.



3. Turn the encoder to select the desired box.
4. Press the (ENCODER) key or the (NEXT) key to confirm.
5. Turn the encoder to select the desired parameter.
6. Press the (ENCODER) key or the (SAVE) key to confirm.

To exit the screen, press the key.

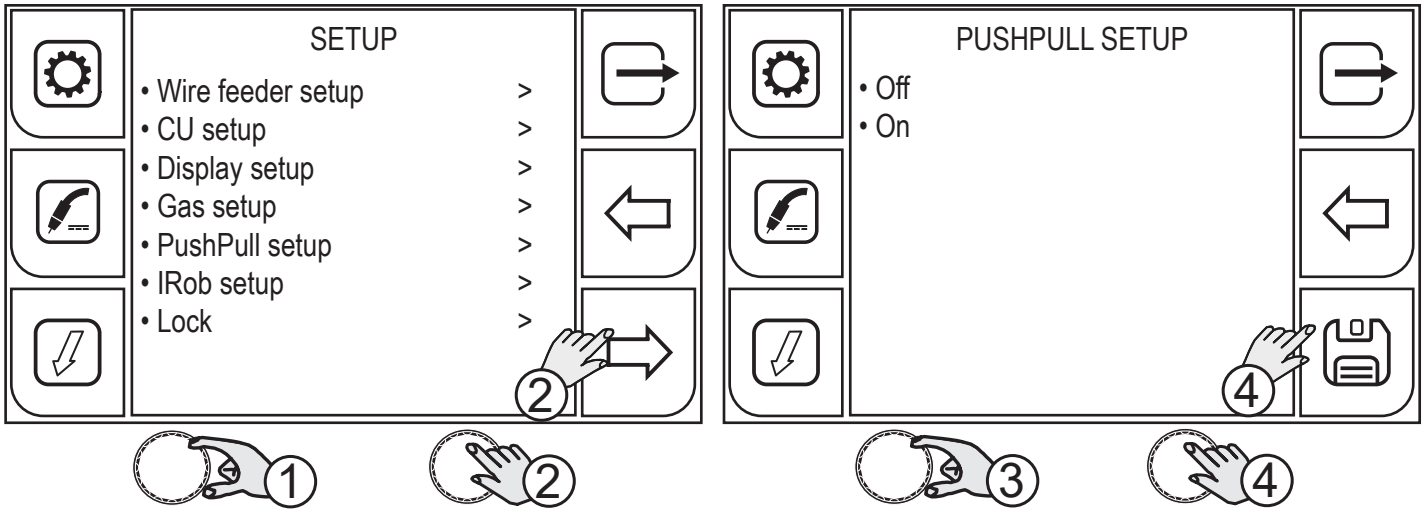


7. The display setup screen is associated with the welding process. Press repeatedly the process key to scroll the various welding process setup screens.
8. Personalised display setups can be exported o imported by means of the export/import keys. (See chapter “4.4.8 IMPORT / EXPORT” on page 43).

4.4.5 PUSHPULL SETUP

	INFORMATION!
This menu item is always present. Nevertheless, in order to use the PushPull torch, you must first install the PushPull kit in the wire feeder).	

You can install a PushPull torch. When you want to enable the PushPull torch motor command, you must enable this function.



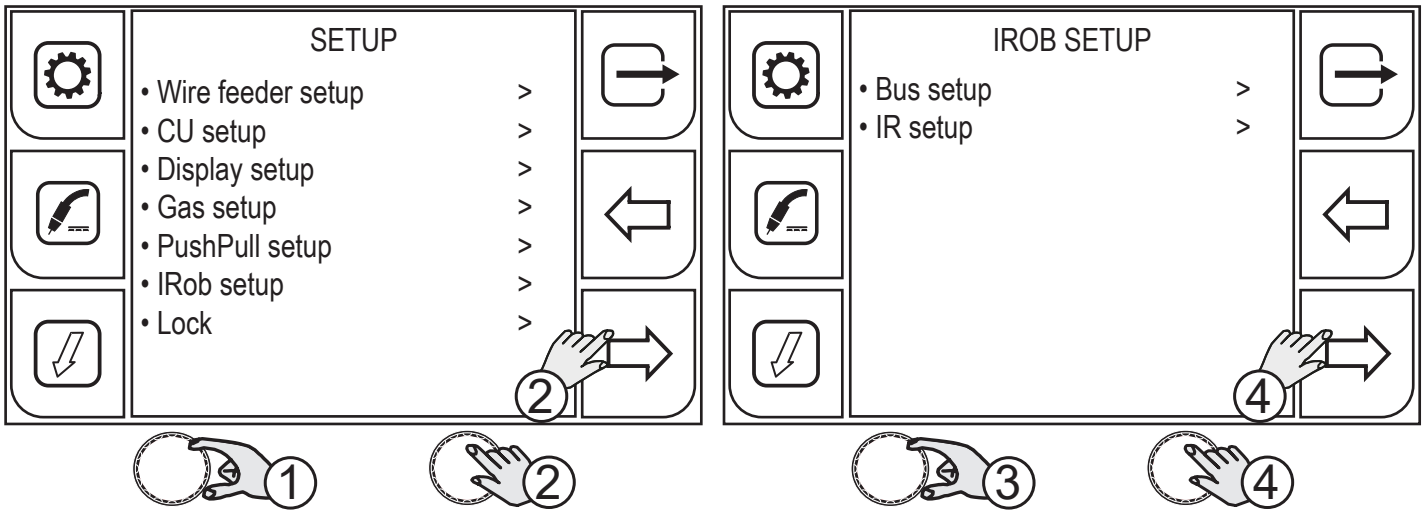
1. Turn the encoder to select the desired setting. Select the following path: PushPull> setup
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Turn the encoder to select the desired setting.
4. Press the (ENCODER) key or the (SAVE) key to confirm.

Press the key to exit the screen.

4.4.6 ROBOT INTERFACE SETUP

	INFORMATION!
This menu item appears only in the generators set up to connect to a system for ROBOT applications.	

The IROB SETUP menu lists the available communication interface types. This menu is used to configure the parameters for communication between the generator and the ROBOT. On the basis of the type of communication used, different types of setting are necessary that can be actuated via the various submenus.

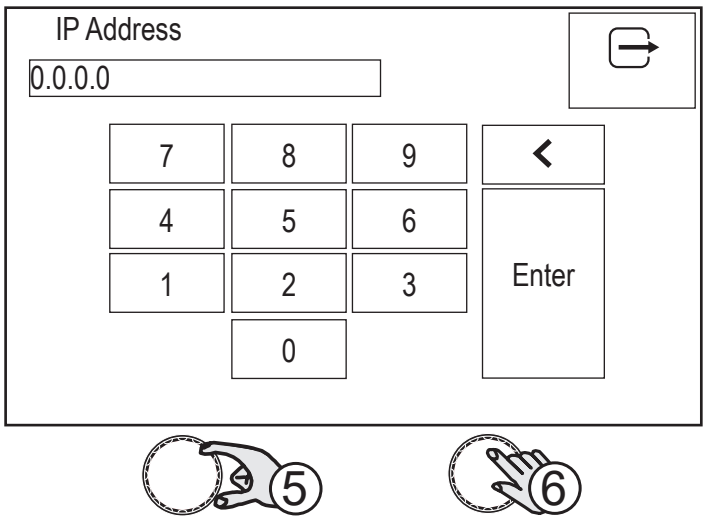


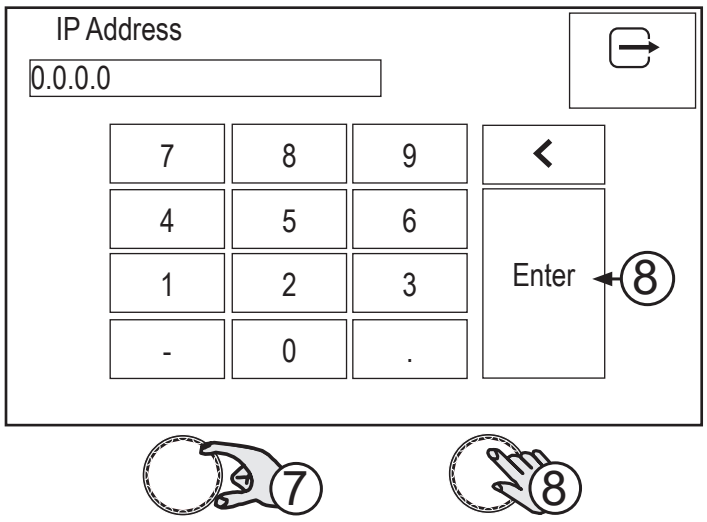
1. Turn the encoder to select the desired setting. Select the following path: IRob Setup>
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Turn the encoder to select the desired setting.
4. Press the (ENCODER) key or the (NEXT) key to confirm.

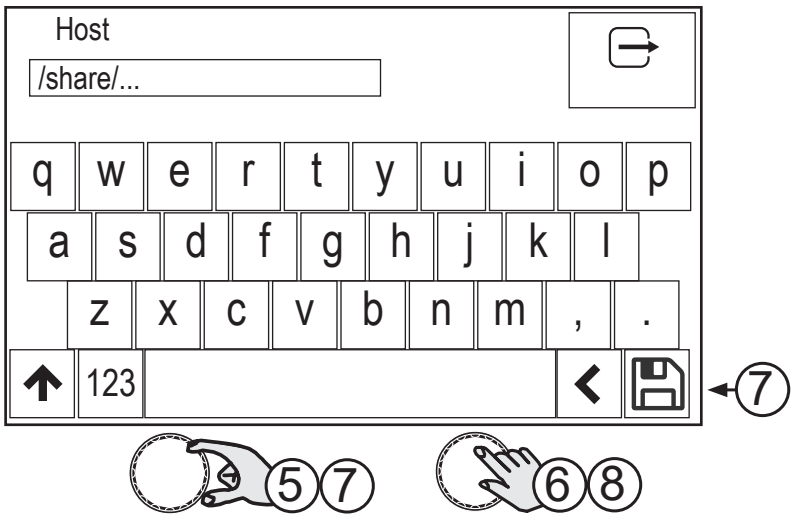
Press the key to exit the screen.

The data for configuring the network interface must be keyed in on the alphanumeric keypad.

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







5. Turn the encoder to select the letter on the keyboard.
6. Press the (ENCODER) key to confirm your selection.
7. Turn the encoder to select the (SAVE)/(ENTER) symbol on the keyboard
8. Press the (ENCODER) key to save and exit.

Press the key to exit without saving.

○ **BUS SETUP**

- Enter manually the parameters for communicating with field bus network. The parameters change according to the communication module used.
  Set the following values for the bus bars that communicate via IP: (Host, Dhcp, Ip, Sub. mask, Gateway, Dsn1, Dsn2).
  Set the following values for the serial bus bars: (address, baud rate).

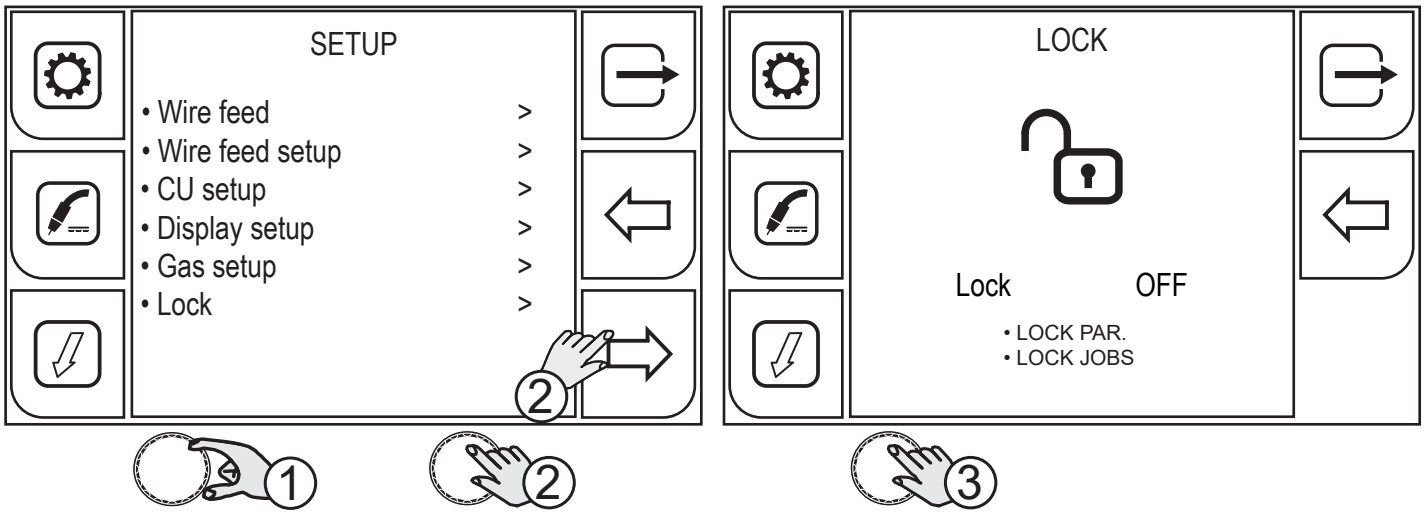
○ **IR SETUP**

- Link info. Show the set and currently active values.
- Lan setup. Enter manually the parameters for communicating with LAN network. Set the values for the following parameters: (Dhcp, Ip, Sub. mask, Gateway, Dsn1, Dsn2).
- Wi-Fi setup scan: scans for Wi-Fi networks and shows the list of those present that can be associated with the device.

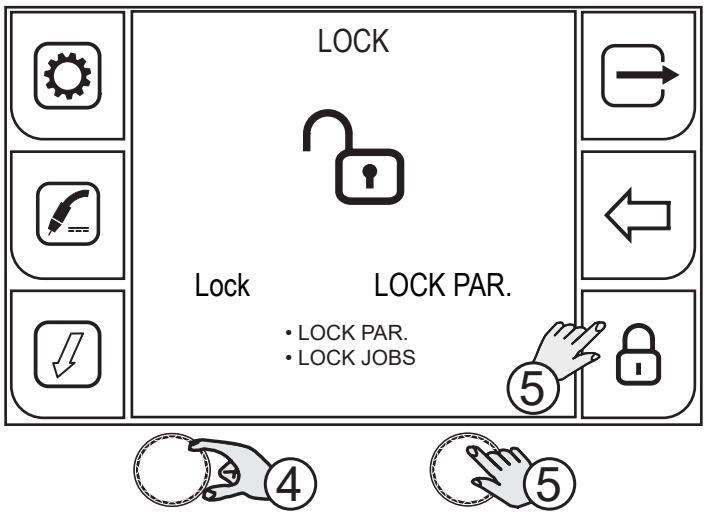
- Settings: enter manually the parameters for communicating by Wi-Fi. Set the values for the following parameters: (Dhcp, Ip, Sub. mask, Gateway, Dsn1, Dsn2).

	***INFORMATION!***
Dynamic Host Configuration Protocol (DHCP), indicates a protocol that enables the devices of a local network to automatically receive the IP setup needed to establish a connection. ***Set menu item "DHCP" to "On" to detect and automatically set the network connection values.***	

4.4.7 LOCK (LOCK/UNLOCK THE CHANGES)



1. Turn the encoder to select the desired setting. Select the following path: Lock>
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Press the (ENCODER) key to apply the parameter change.

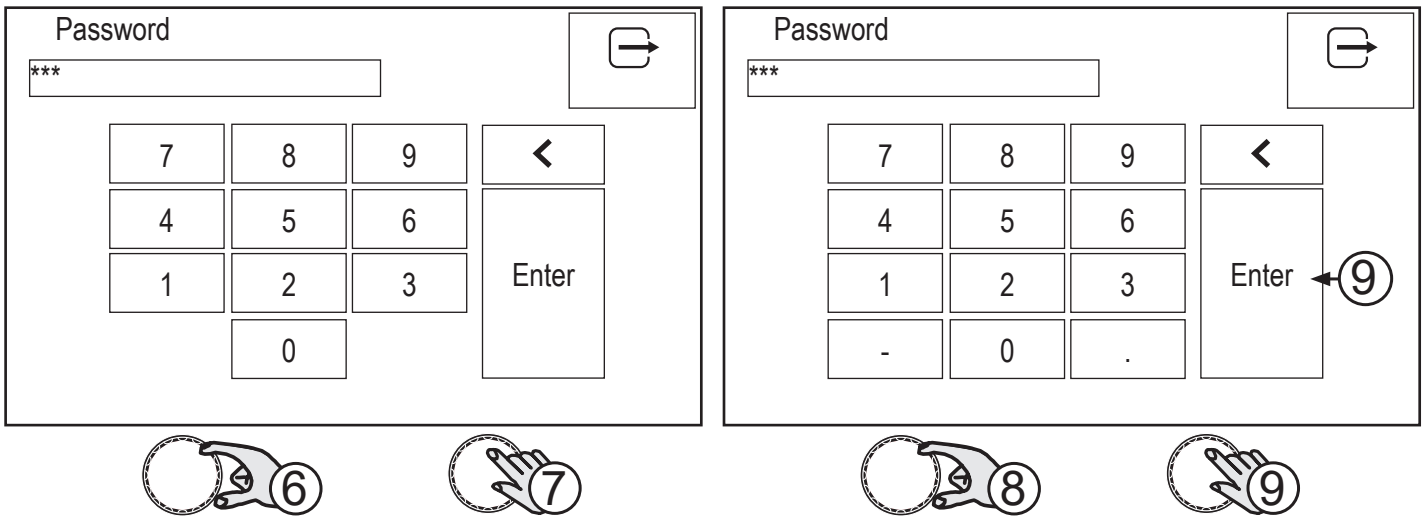


4. Turn the encoder to select the desired setting.

○ **LOCK PAR.:** lock all parameters change with the exclusion of arc correction, torch button mode.
○ **LOCK JOBS:** lock the jobs parameter change; it is possible to scroll and load saved jobs.

5. Press the (ENCODER) key to confirm or the (NEXT) key.

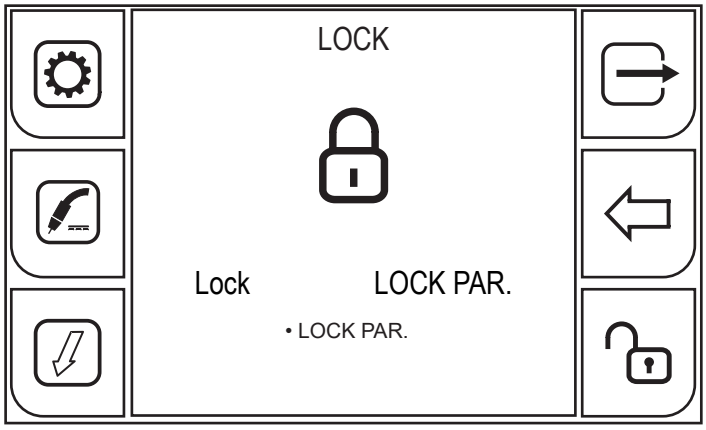
To exit the screen, press the key.



Enter a 3-digit password. Make a note of the saved password as it can't be deleted prior to delete the stored settings and jobs.

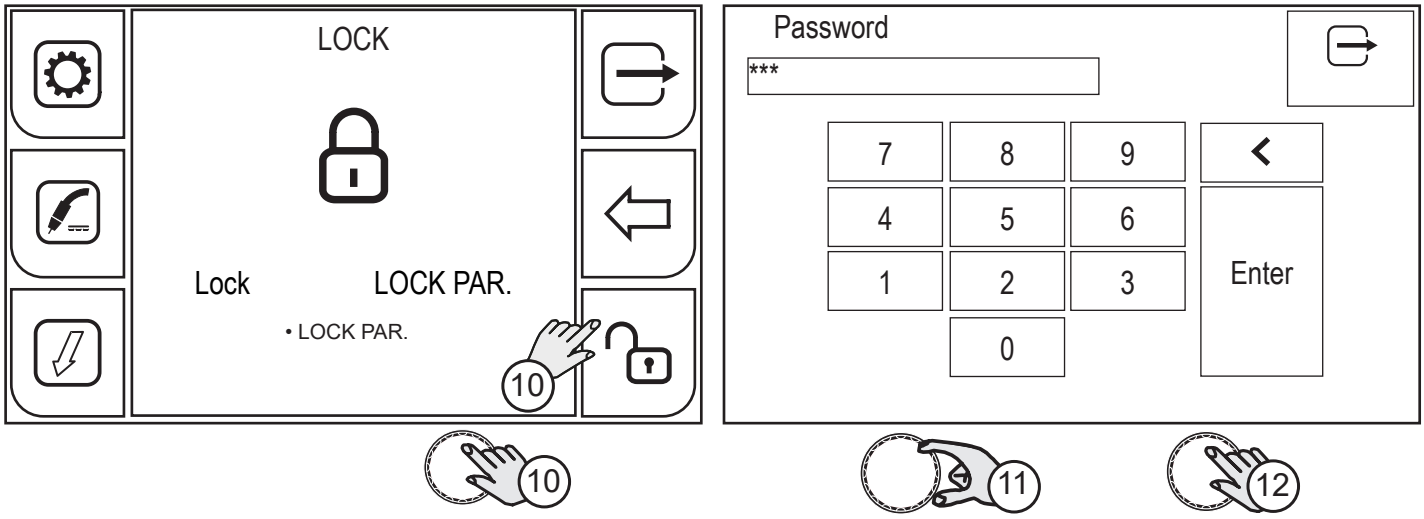
The touchscreen panel allows the user to set up the functions through the mechanical keys or by touching the icons displayed on the screen.

6. Turn the encoder to select the number on the keyboard.
7. Press the (ENCODER) key to confirm your selection.
8. Turn the encoder to select the (ENTER) symbol on the keyboard.
9. Press the (ENCODER) key to confirm your selection. To exit the screen, press the key.



The closed padlock symbol means changes lock is activated for the chosen setting.

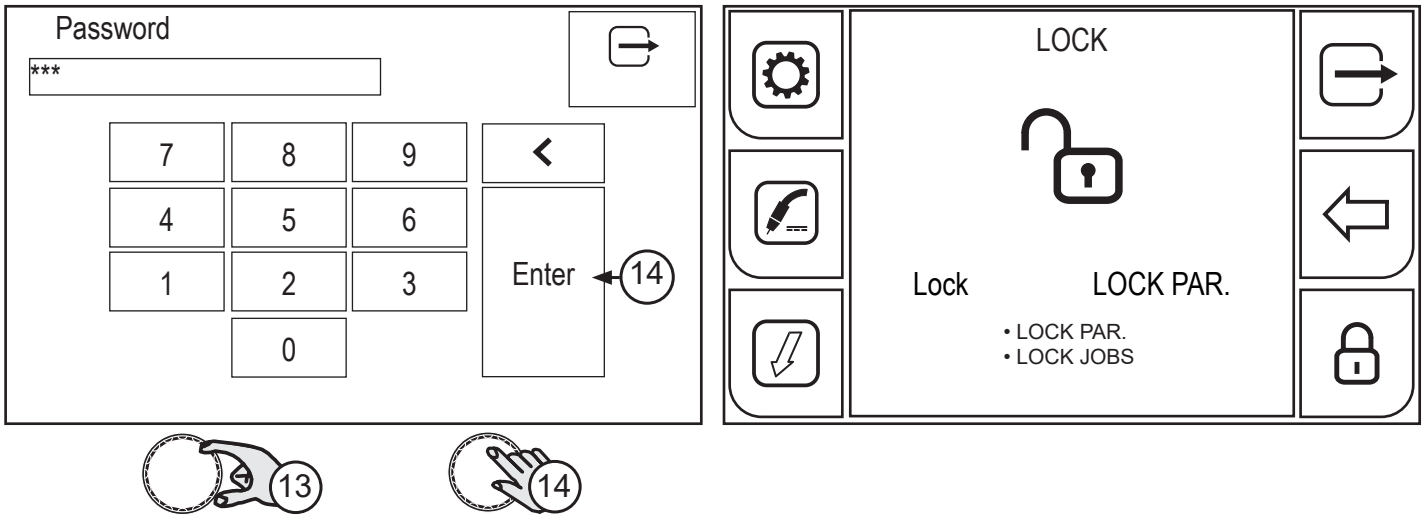
To unlock the changes, enter the LOCK screen.



10. Press the (ENCODER) key to confirm or the (NEXT) key.
Enter the 3-digit password.

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

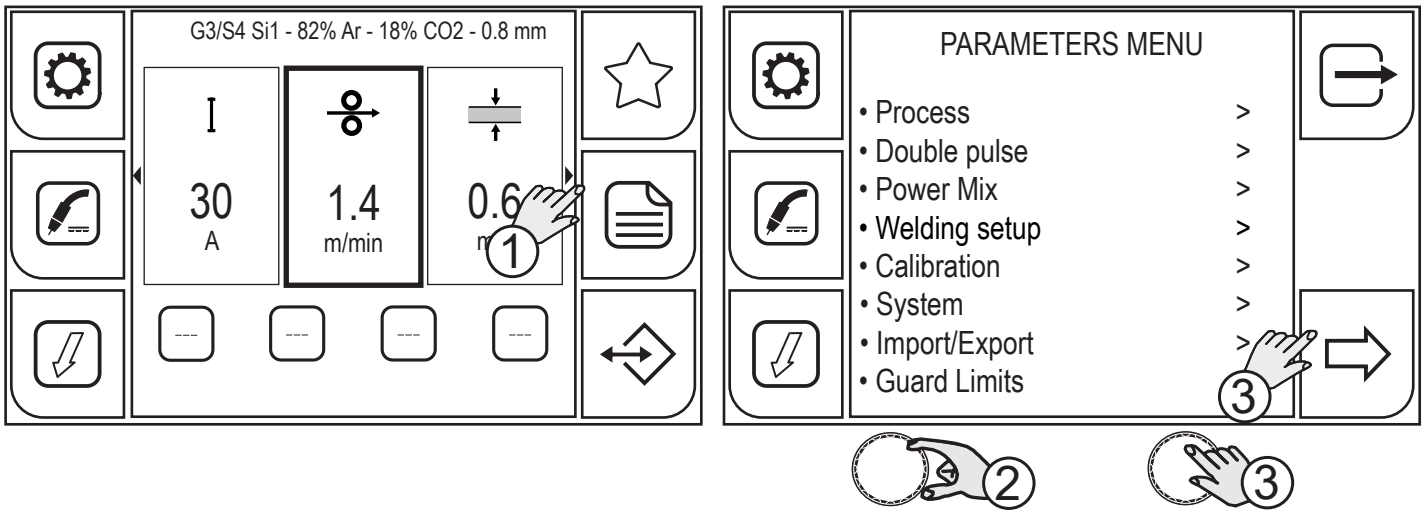
11. Turn the encoder to select the number on the keyboard.
12. Press the (ENCODER) key to confirm your selection.



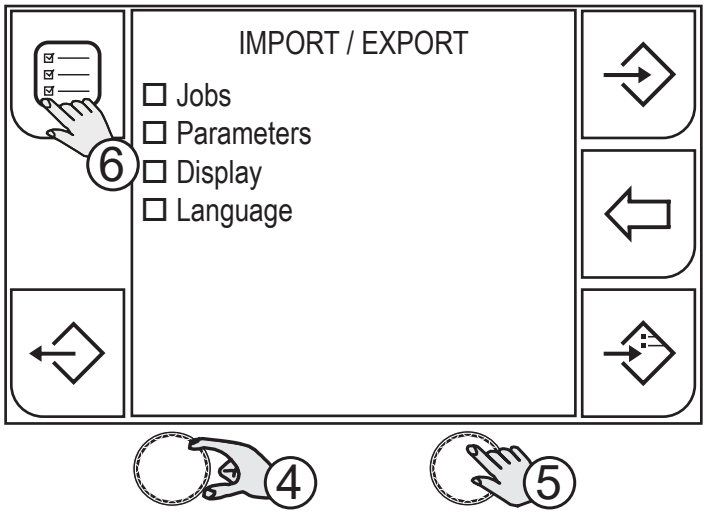
13. Turn the encoder to select the (ENTER) symbol on the keyboard.

14. Press the (ENCODER) key to confirm your selection. To exit the screen, press the key.
The open padlock symbol means changes lock is deactivated.

4.4.8 IMPORT / EXPORT



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Import/Export>
3. Press the (ENCODER) key or the (NEXT) key to confirm.

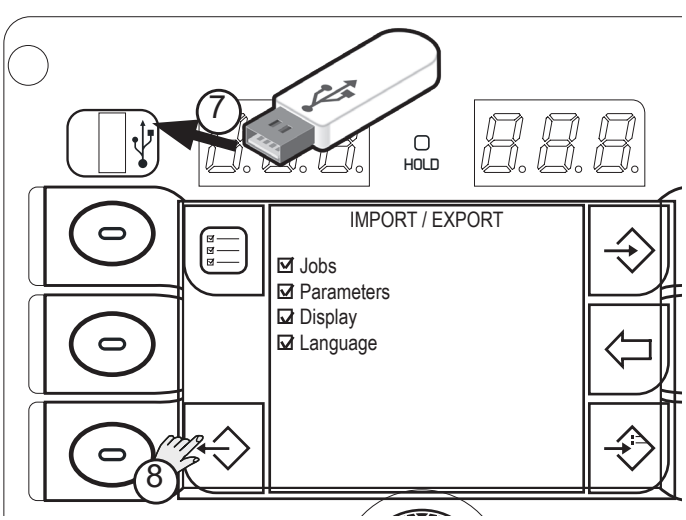


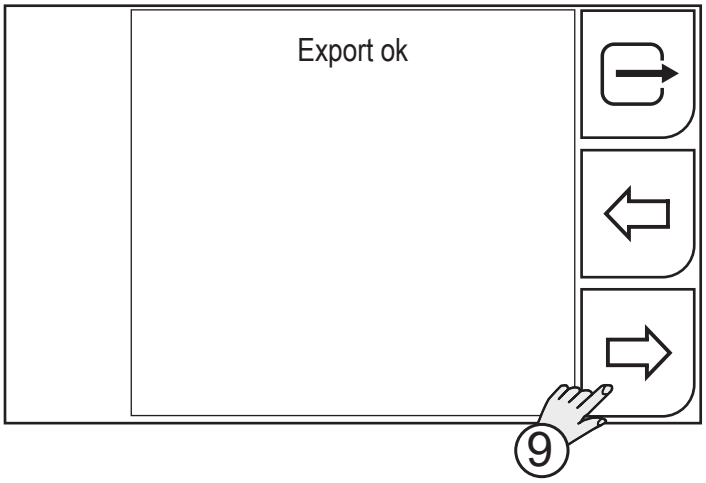
4. Turn the encoder to select the desired setting.

- ○ Jobs: jobs are imported/exported, only
- ○ Parameters: unit operating parameters are imported/exported, only
- ○ Display: display setup is imported/exported, only
- ○ Language

5. Press the (ENCODER) key to confirm.
6. If you wish to select/deselect all the boxes, press the (SELECT ALL) / (DESELECT ALL) key.

EXPORT





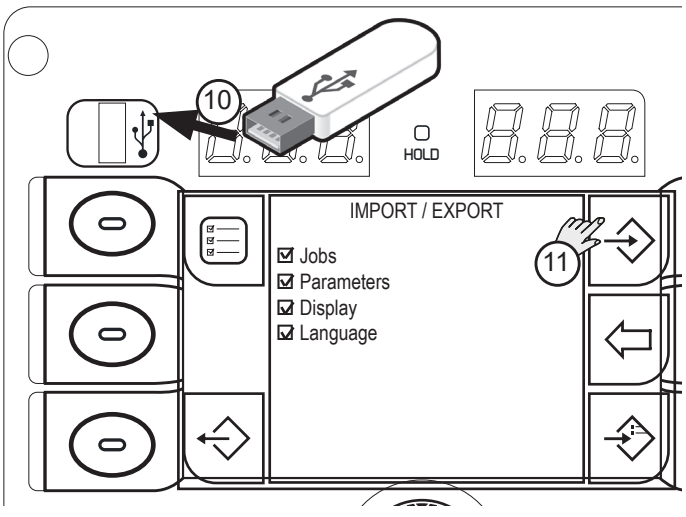
7. Insert the USB memory stick in the port provided.
8. Press the (EXPORT) key to export the files to the USB memory stick. If the exporting operation is successful, the message “Export OK” will appear.
9. Press the (SI) key

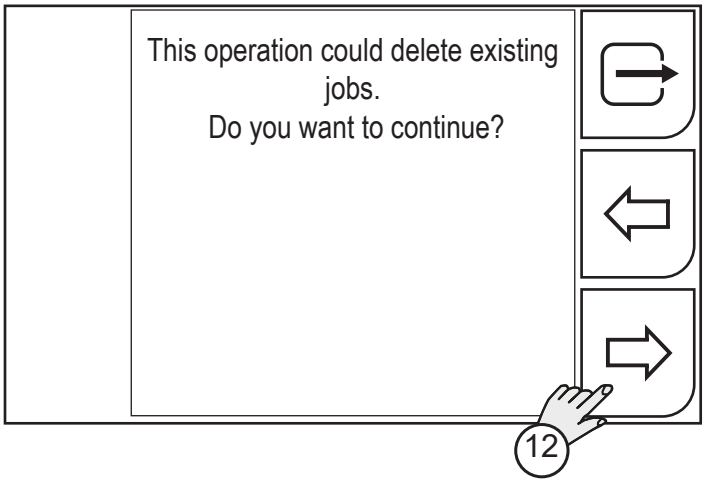
Press the ⇦ (NO) key to return to the previous screen.

To return to the main screen, press the ⇨ (EXIT) key.

IMPORT

Press the (IMPORT) key to import the files and jobs saved onto the USB memory stick.
If the JOB files are stored on the USB memory stick in the same position (number before name) as the files located in the WF-205, the latter will be overwritten by the files saved on the memory stick.





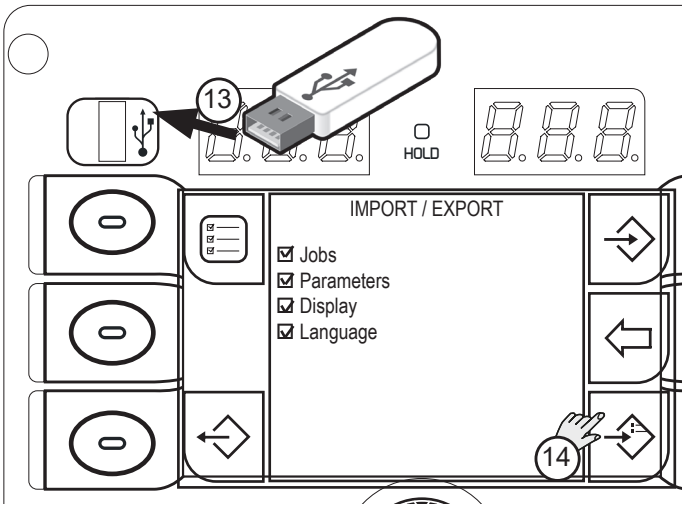
10. Insert the USB memory stick in the port provided.
11. Press the (IMPORT) key to import the files to the USB memory stick.
12. Press the (SI) key to confirm.

Press the ⇦ (NO) key to return to the previous screen.

To return to the main screen, press the ⇨ (EXIT) key.

ADD

Pressthe (ADD) key to add to the JOBs located on the WF-205 the files saved on the USB memory stick.
The files located on the USB memory stick will be added to the files located on the WF-205, renumbering and adding them at the bottom of the list.



13. Insert the USB memory stick in the port provided.
14. Press the (ADD) key to import the files to the USB memory stick.

Press the ⇦ (PREC) key to return to the previous screen.

4.4.9 WIRE FEEDER SET UP

☞ Enable when a WF-205p wire feeder is installed on a 405dms-505dms generator.

WIRE FEEDER SET UP enables the reception of commands from potentiometers of an external wire feeder unit.
Wire feeder set up is not requested for this equipment.

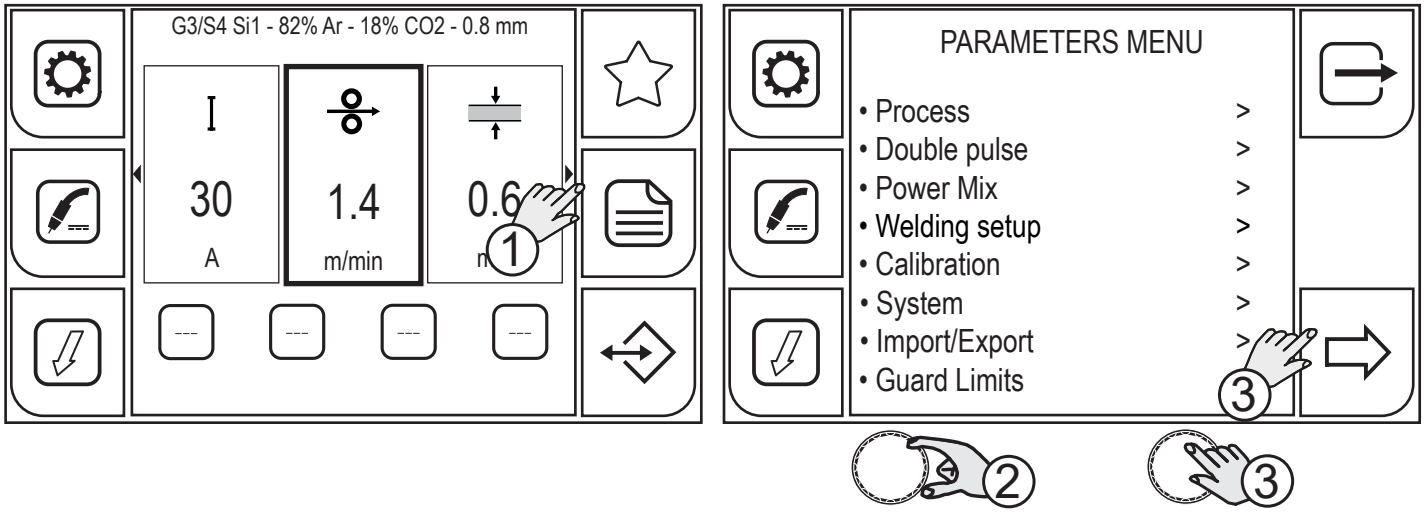
4.4.10 SETTING UP THE GUARD LIMITS

Some guard limits for specific parameters may be set up; when reached, the generator will:
- give a WARNING and continue to carry out the welding operations;
- give an ALARM and stop all welding operations.

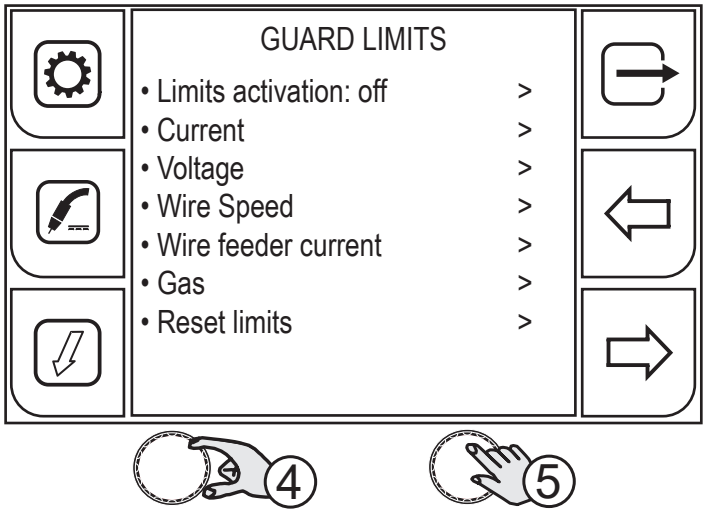
The warnings may be reset directly from the warning screen by pressing OK.

The screen displays a message showing the type of limit exceeded. If these limits are exceeded, the log screen will be displayed.

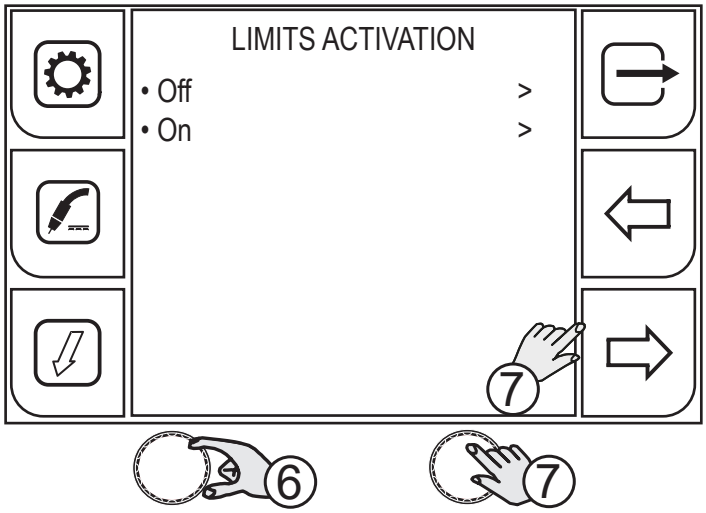
ENABLING THE GUARD LIMITS

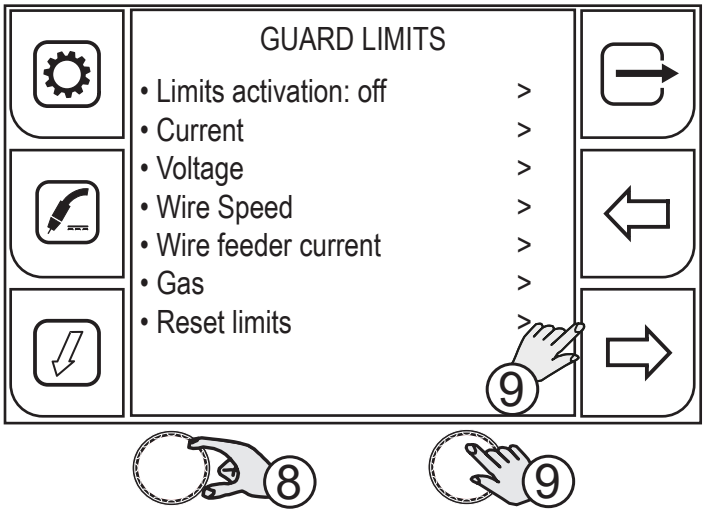


1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Guard limits>
3. Press the (ENCODER) key or the (NEXT) key to confirm.



4. Turn the encoder to select the desired setting. Select the following path: Limits activation>
5. Press the (ENCODER) key or the (NEXT) key to confirm.





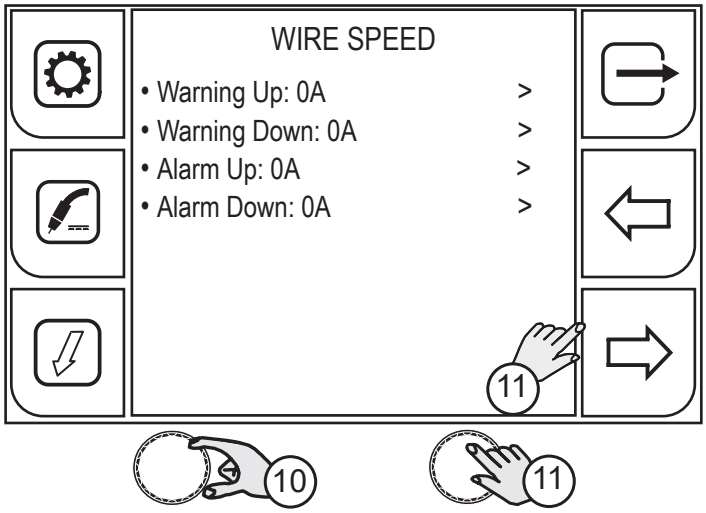
6. Turn the encoder to select the desired setting. Select the following path: On
7. Press the (ENCODER) key or the (NEXT) key to confirm.
8. Turn the encoder to select the parameter to be enabled.

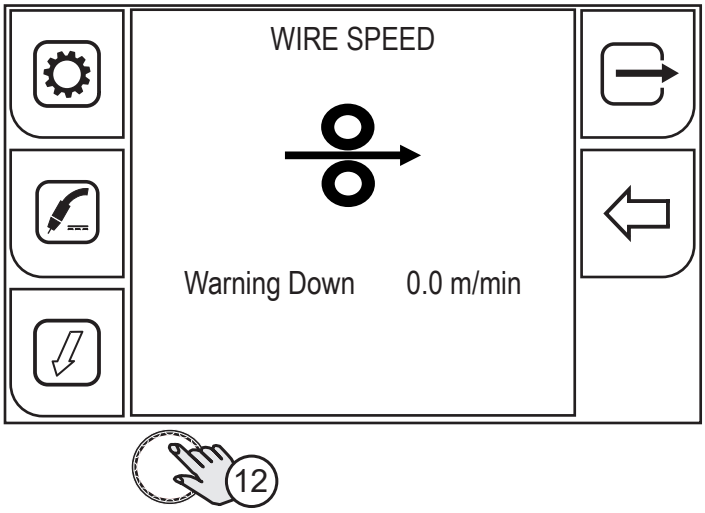
(GUARD LIMITS: Current, Voltage, Wire speed, Wire feeder current, Gas)

9. Press the (ENCODER) key or the (NEXT) key to confirm.

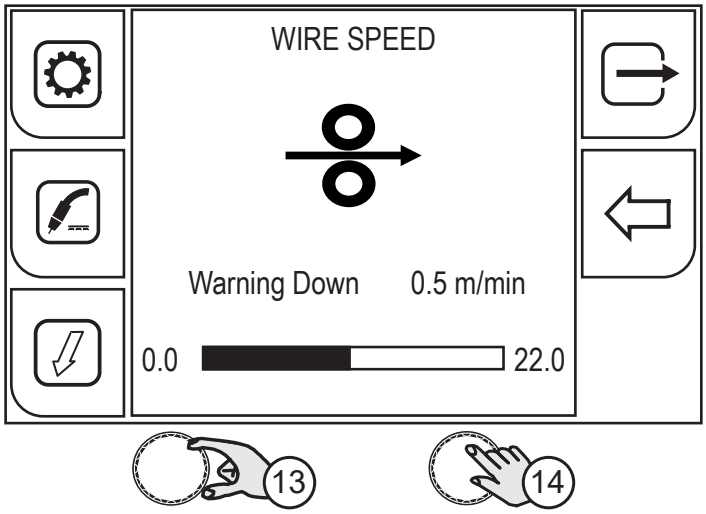
Settable thresholds for each parameter:

- Warning Up: upper warning threshold (a warning is displayed on the screen)
- Warning Down: lower warning threshold (a warning is displayed on the screen)
- Alarm Up: upper alarm threshold (the welding operation is stopped)
- Alarm Down: lower alarm threshold (the welding operation is stopped)





10. Turn the encoder to select the type of threshold.
11. Press the (ENCODER) key or the (NEXT) key to confirm.
12. Press the (ENCODER) key to apply the parameter change. When the threshold is set to 0, the parameter is disabled.



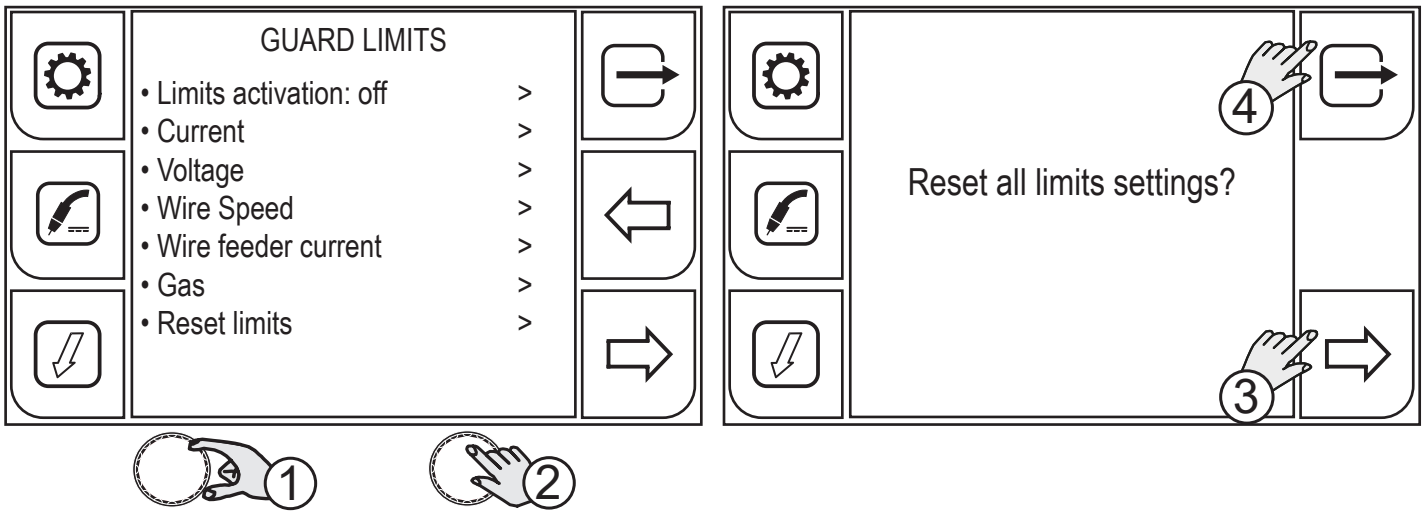
13. Turn the encoder to set the desired value.
14. Press the (ENCODER) key to confirm your selection.

Press the ⇦ (PREV) key to return to the previous screen.

Press the ⇨ (EXIT) key to go back to the home page.

RESETTING THE GUARD LIMITS

This function sets to 0 the thresholds of all the guard limits set.
The LIMITS ACTIVATION parameter status is not reset.

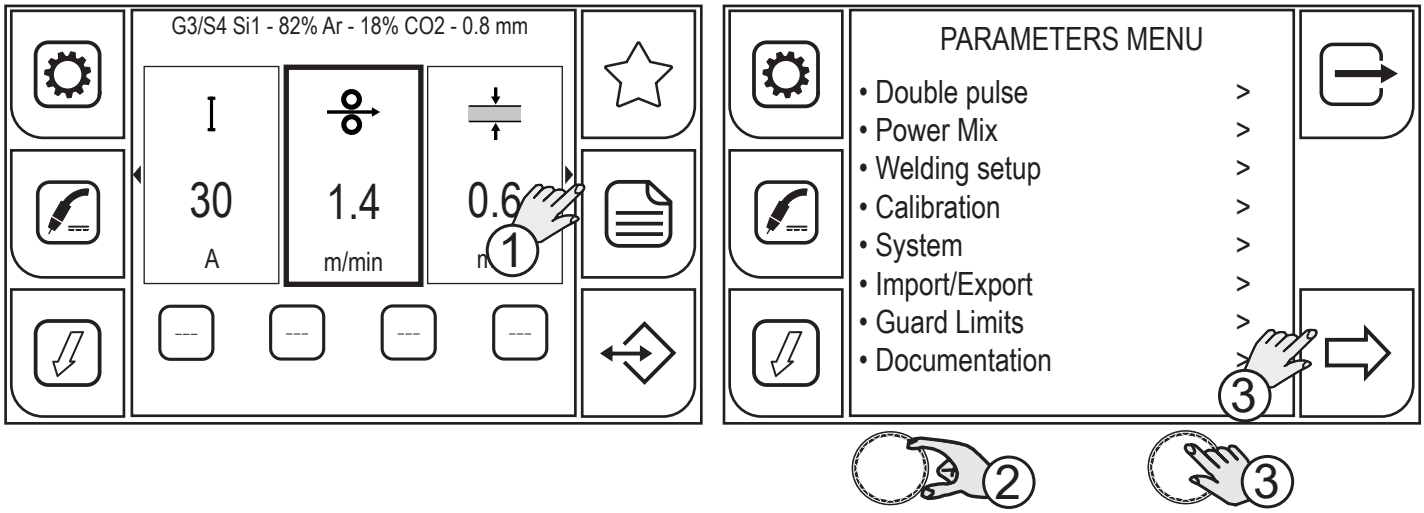


1. Turn the encoder to select the desired setting. Select the following path: Reset limits>
2. Press the (ENCODER) key or the (NEXT) key to confirm.
3. Press the (YES) key to confirm your selection.
4. Press the (NO) key to cancel your selection.

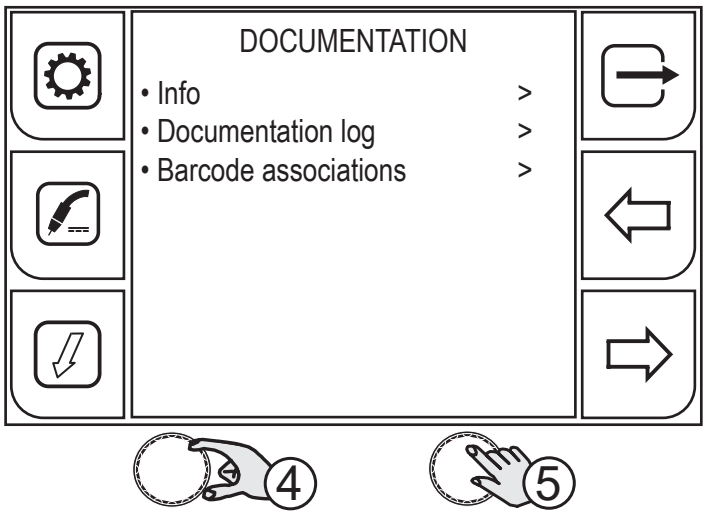
4.4.11 DOCUMENTATION

	INFORMATION!
This menu item appears only in the generators set up to connect to a ROBOT system and if the "Industria 4.0" licence is active.	

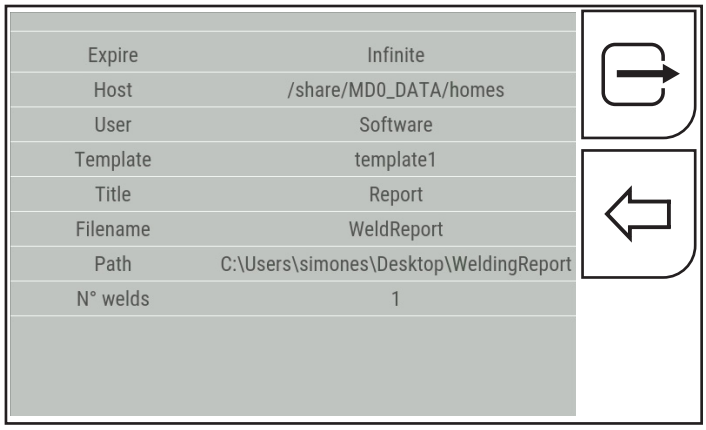
Use this menu to access the information screens relating to generator status.



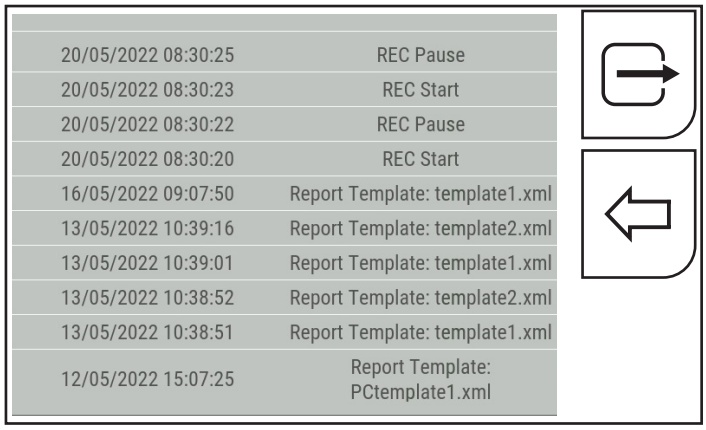
1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Documentation>
3. Press the (ENCODER) key or the (NEXT) key to confirm.



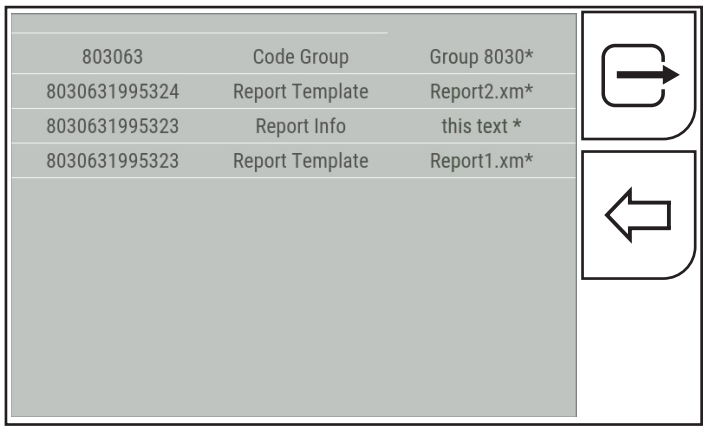
4. Turn the encoder to select the desired setting.
5. Press the (ENCODER) key or the (NEXT) key to confirm.



Info: the information is shown on recording welding data by Data Manager software (licence, save path on server and computer, activated template, name of report, etc).



Documentation log: shows the list of the tasks involved in creating the documentation (uploading templates, starting data recording, pausing data recording, etc ...) using Data Manager software.

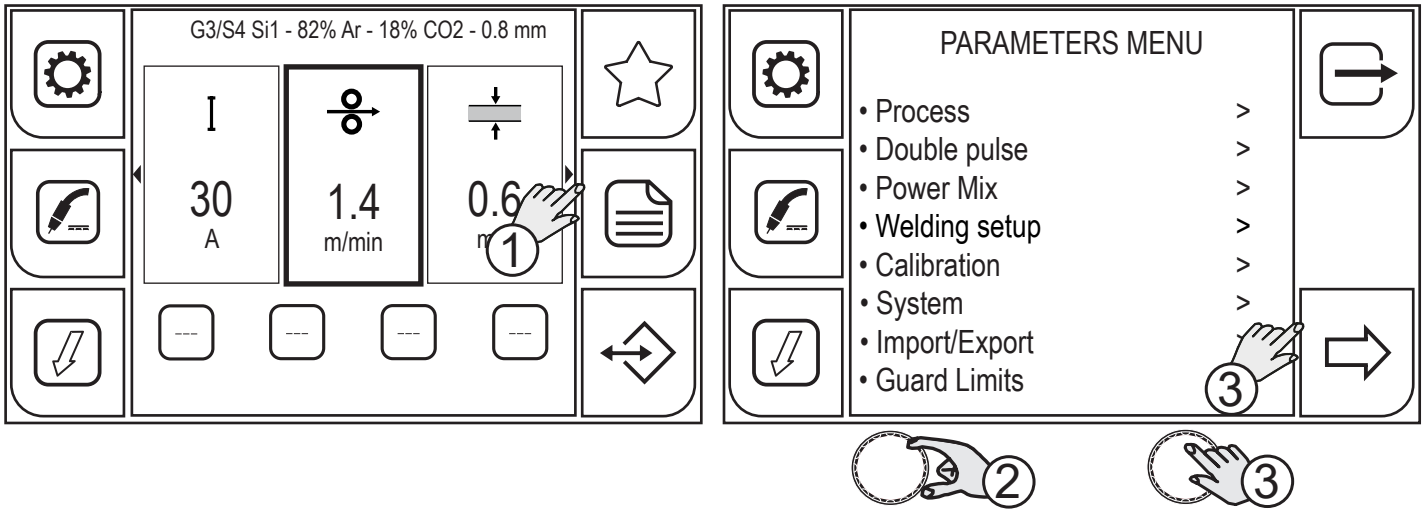


Barcode associations: shows the list of the barcodes and what the barcodes are associated with. The associations are made by Data Manager software.

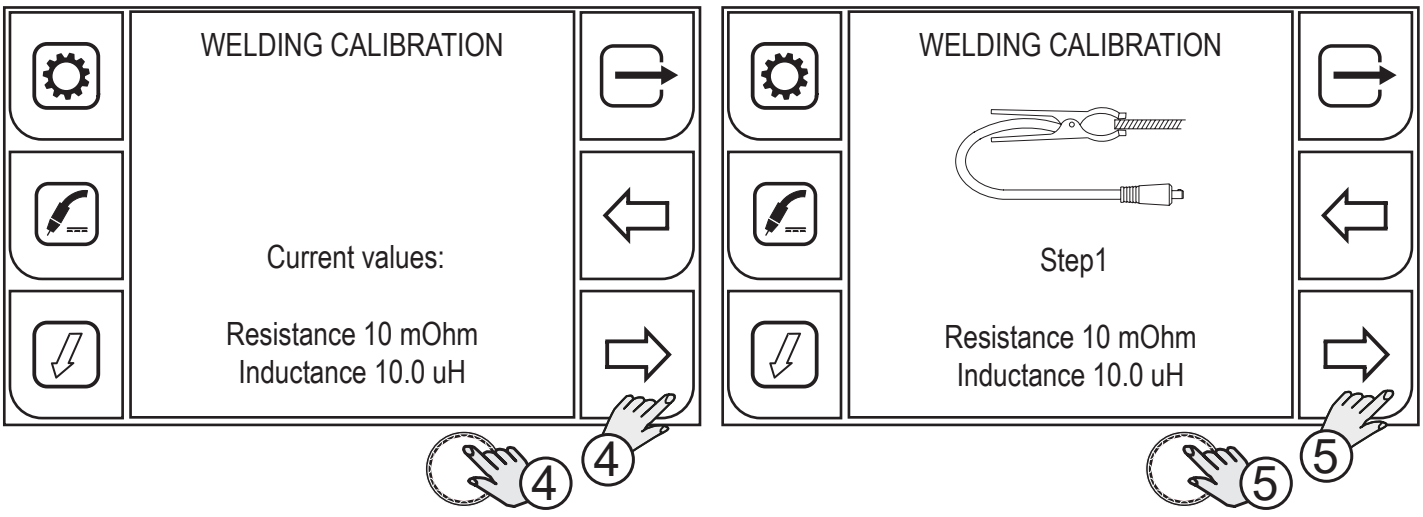
5 MIG/MAG WELDING

5.1 WELDING CIRCUIT CALIBRATION

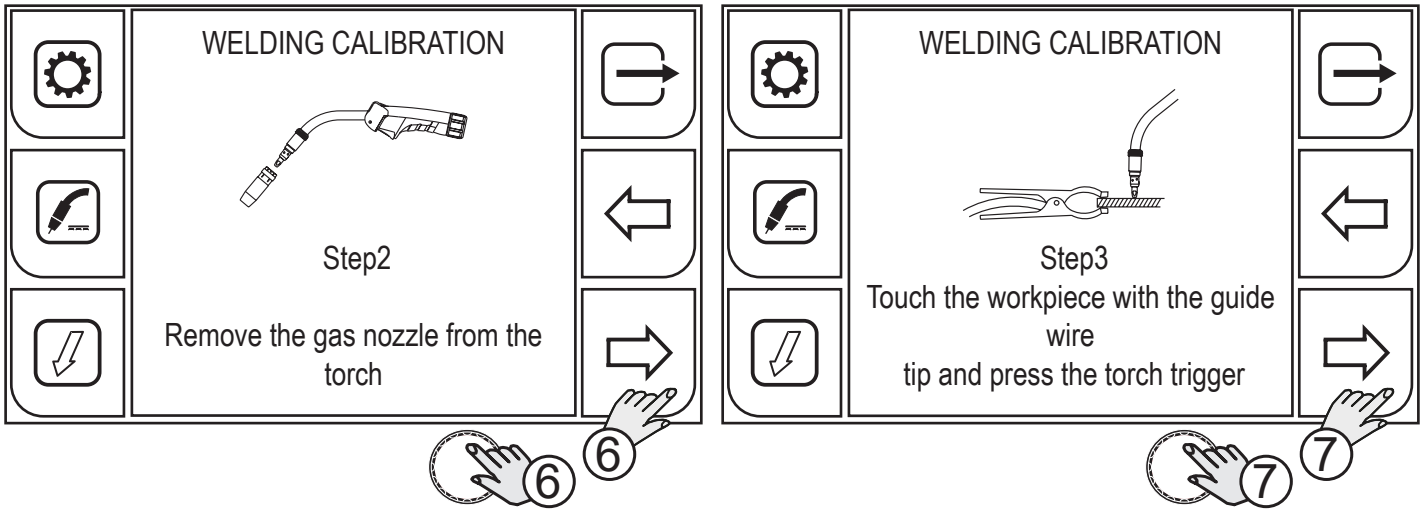
By using the WELDING CIRCUIT CALIBRATION guided procedure, the resistance and inductance values of the welding circuit are measured. When the wire feeder is used with its cable harness, the welding circuit “r” resistance can be measured by using the calibration function. This allows to achieve a consistent welding quality when the cable harness length and the torch is changed. The welding circuit resistance depends on the cable harness and on the torch used; we therefore recommend that the calibration procedure is repeated when these components are changed. If a generator full RESET procedure is carried out, the default calibration value will be restored. If a partial RESET is carried out, the measured value will be stored. The calibration is not compulsory therefore, if the user decides not to carry it out, the machine will use the default value.
The generator must be on and not set up for welding.



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Calibration>
3. Press the (ENCODER) key or the (NEXT) key.



4. Press the (ENCODER) key or the (NEXT) key or the torch trigger to confirm.
5. Press the (ENCODER) key or the (NEXT) key or the torch trigger to confirm.



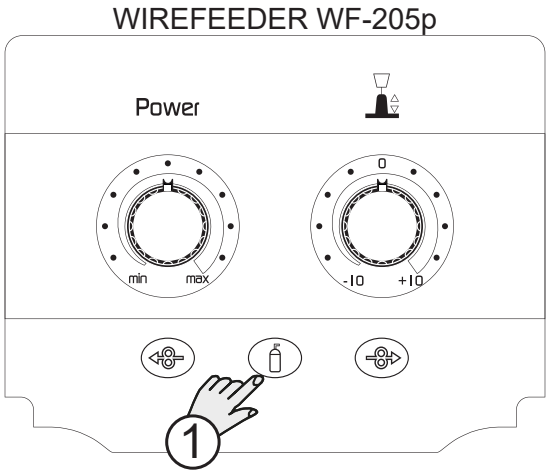
6. Press the (ENCODER) key or the (NEXT) key or the torch trigger to confirm.
7. Press the (ENCODER) key or the (NEXT) key or the torch trigger to confirm.

At the end of the procedure, the measured welding circuit resistance and inductance values will be displayed. By doing so, a consistent welding quality can be achieved when the length of the cable harness, of the earth cable and of the torch changes.
Should the measurement be unsuccessful, the “CALIBRATION ERROR” message will be displayed.

5.2 GAS FLOW REGULATION

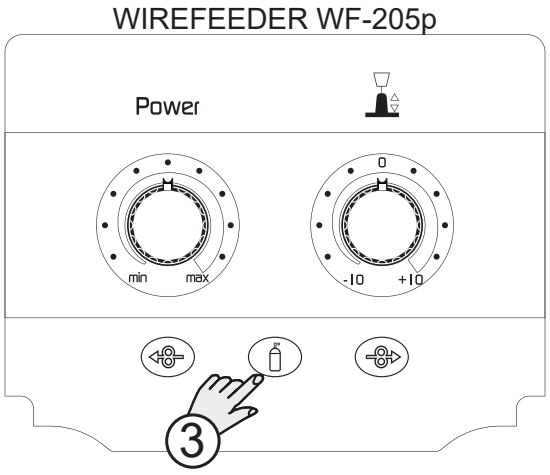
5.2.1 VERSION WITHOUT FLOWMETER

When the unit is powered on, the solenoid valve is enabled for 1 second.
This fills the gas circuit.



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

2. Regulate the pressure of the gas flowing from the torch by means of the flow meter connected to the gas cylinder.



3. Close the gas solenoid valve by pressing and releasing the (GAS) key.

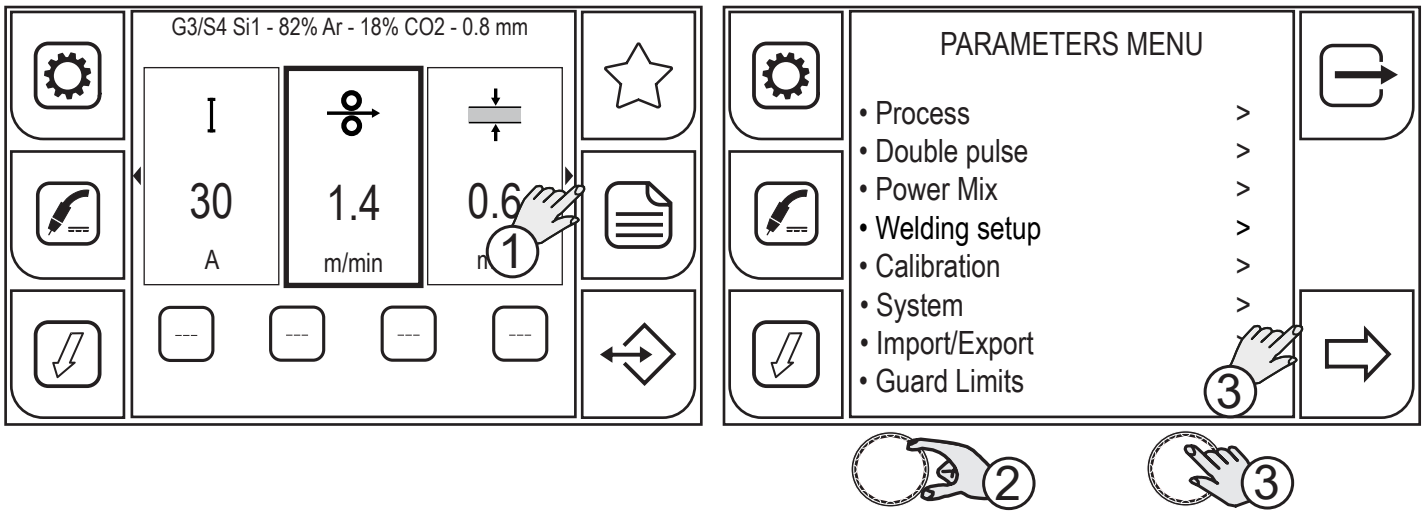
The solenoid valve is automatically closed after 30 seconds.

5.2.2 VERSION WITH FLOWMETER

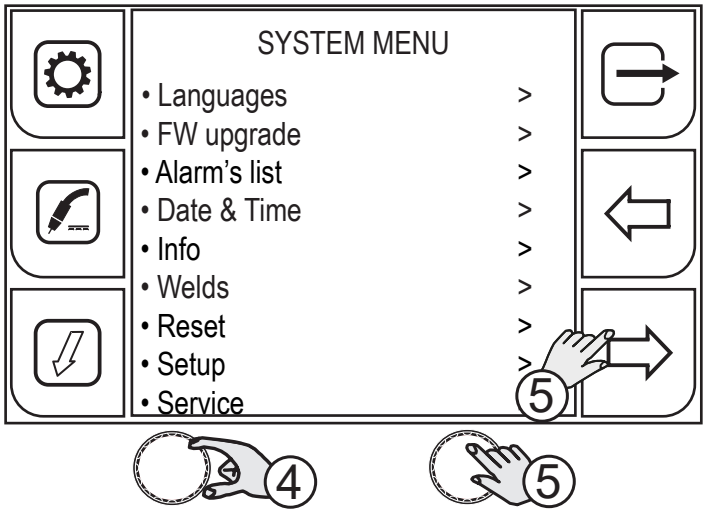
An external flowmeter can be installed (gas kit) to measure the flow rate (litre/minute) of gas used. When the flowmeter is installed, the gas measurement can be corrected by adjusting a coefficient.
The flow rate of gas used is automatically calculated according to the welding curve selected. If a specific gas is used (for example, a ternary gas or special mixtures) not included in the GAS MENU list, it may be necessary to correct the measurement by using the GAS SETUP parameter. The flow rate of the gas in the external flow meter must be read and the GAS SETUP must be adjusted so that the value displayed on the screen matches the value read in the gas flow meter.

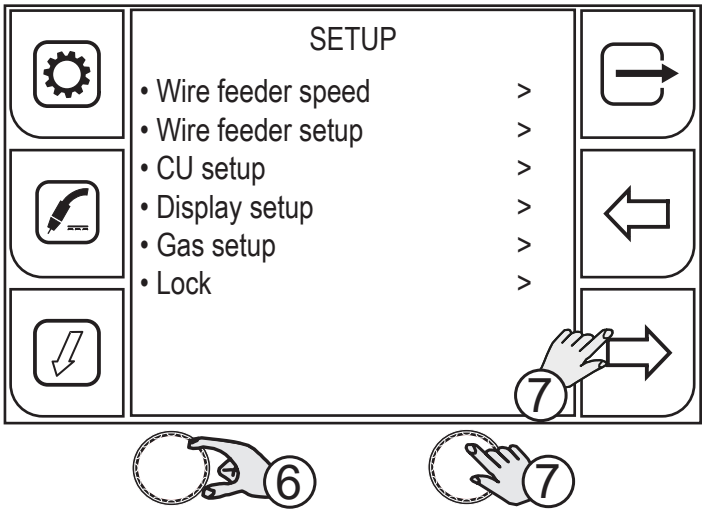
To correctly measure the gas flow rate exiting the torch, we recommend that a gas flow meter is used, to be applied directly to the torch outlet.

- Open the gas solenoid valve by pressing and releasing the (GAS) key.
- Read the gas flow rate detected by the gas flow meter.
- Follow the procedure described below to set up the gas flow meter correction.

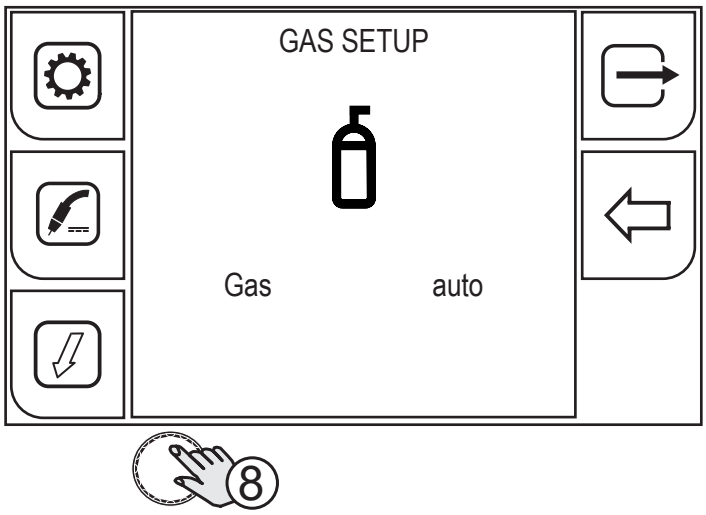


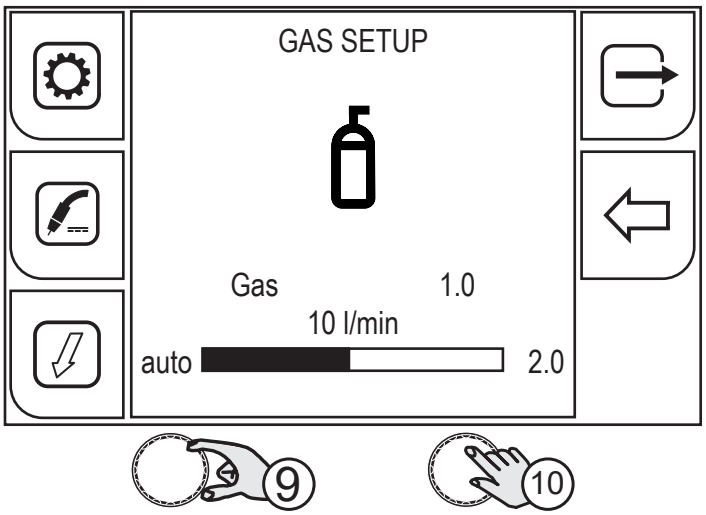
1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key to confirm.





4. Turn the encoder to select the desired setting. Select the following path: Setup>
5. Press the (ENCODER) key or the (NEXT) key to confirm.
6. Turn the encoder to select the desired setting. Select the following path: Gas setup>
7. Press the (ENCODER) key or the (NEXT) key to confirm.





8. Press the (ENCODER) key to apply the parameter change.
9. Turn the encoder to set the desired value. The gas flow value (litre/minute) displayed on the screen must match the value detected in the gas flow reader.
10. Press the (ENCODER) key or the (NEXT) key to confirm.

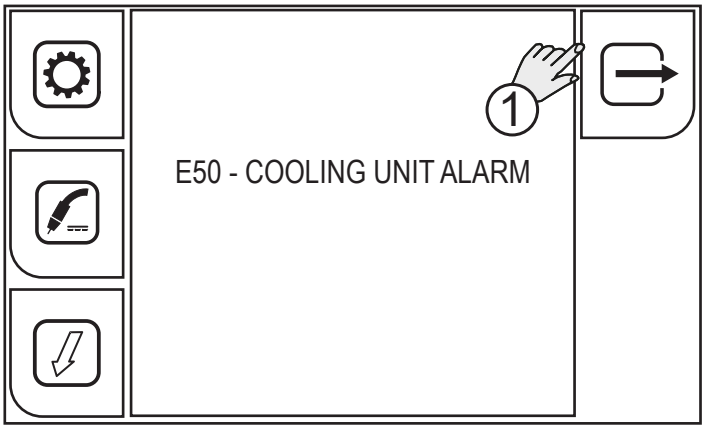
Press the key to exit the screen.

5.3 TORCH LOADING

WARNING!

Make sure the torch in use is correctly sized in relation to the welding current required and for the available and selected cooling type. This prevents the risk of burns to which the operator is potentially exposed, potential faults, and irreversible damage to the torch and the system.
If a torch is installed or replaced while the unit is running, the circuit of the newly installed must be filled with coolant to avoid the risk of damage to the torch in the case of high voltage arc strikes without any liquid in the circuit.

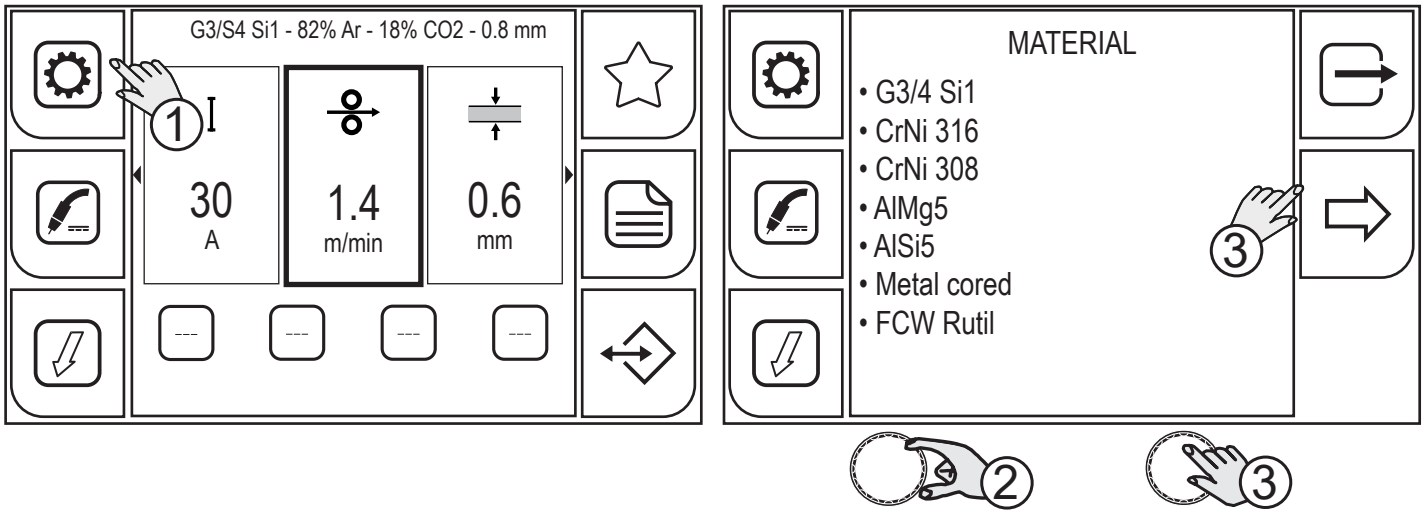
When the generator is switched on, the presence of coolant in the cooling circuit will be automatically checked and the cooling unit will be switched on for 30 seconds.
If the coolant circuit is full, the power generator restores the most recent stable welding setup.
If the coolant circuit is not full, all functions are inhibited and there will be no output power.
The following alarm message will be displayed: E50 - COOLING UNIT ALARM



1. Press the (EXIT) key to repeat the torch filling procedure until the alarm is no longer displayed.

5.4 SETTING UP THE WELDING PARAMETERS

The (PROGRAM) keys allows the user to access a screen sequence required to select the welding program.

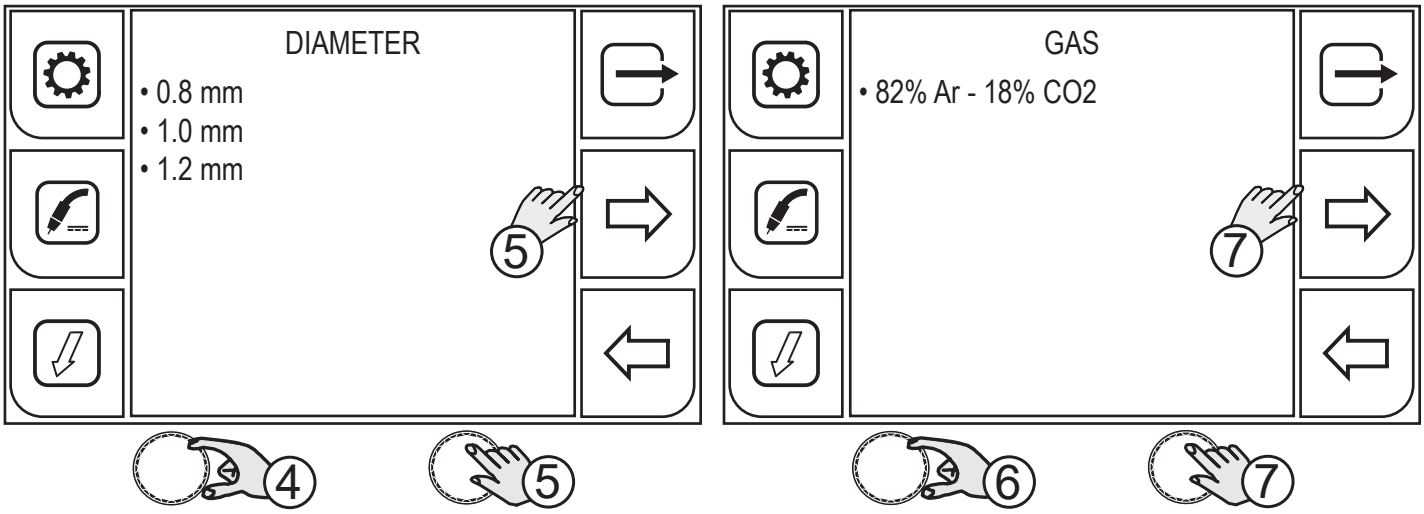


1. Press the (PROGRAM) key. Program all the sequentially displayed screens.

MATERIAL: allows the material of the feed wire used for welding to be selected.

○ (G3/4 Si1, CrNi 316, CrNi 309, CrNi 308, AlMg5, AlSi5, AlMg4.5MnZr, Metal Cored, FCW Rutil, FCW Basic, CuSi3, CuSn, Duplex, Super Duplex, NiCrMo3)

2. Turn the encoder to select the desired setting.
3. Press the (ENCODER) key or the (NEXT) key.

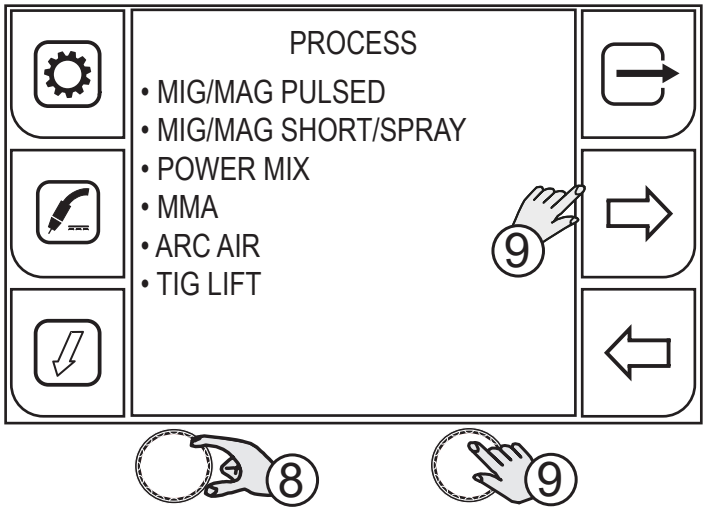


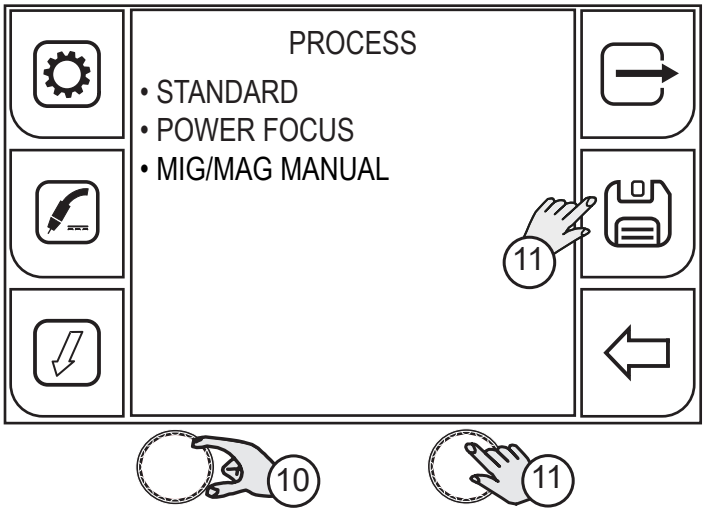
DIAMETER: allows the diameter of the feed wire used for welding to be selected. The wire diameters are available according to the selected material.

4. Turn the encoder to select the desired setting.
5. Press the (ENCODER) key or the (NEXT) key.

GAS: allows the type of welding gas to be selected. The gas mixtures are available according to the selected material.

6. Turn the encoder to select the desired setting.
7. Press the (ENCODER) key or the (NEXT) key.





PROCESS (1 LEVEL): allows only the welding processes compatible with the previously carried out settings to be selected.

8. Turn the encoder to select the desired setting.
9. Press the (ENCODER) key or the (NEXT) key.

PROCESS (2 LEVEL): Allows a specific mode of a previously selected welding process to be selected.

10. Turn the encoder to select the desired setting.
11. Press the (ENCODER) key or the (SAVE) key to confirm the program.

Press the ⇦ (PREC) key to return to the previous screen.

To return to the main screen without saving the changes, press the (EXIT) key.

5.4.1 MIG/MAG WELDING PROCESSES

MANUAL MIG/MAG WELDING

Welding is of the Short/Spray type.
- short arc: the drop is detached after a low amperage short-circuit.
- globular: this is the phase occurring between the short arc and the spray arc.
- spray arc: the material is deposited when high amperages occur without short-circuits.

The main welding parameters, the wire speed, the voltage and inductance values are adjusted by the operator. The optimal work point must be identified for the required welding type.

 **SYNERGIC MIG/MAG WELDING**

Welding is of the Short/Spray type.
- short arc: the drop is detached after a low amperage short-circuit.
- globular: this is the phase occurring between the short arc and the spray arc.
- spray arc: the material is deposited with high amperages without short-circuits occurring.

The welding related data (material, wire diameter, gas type) must be set up, as well as a single welding parameter amongst wire speed, amperage, material thickness and voltage.
The generator automatically adjusts the other secondary parameters that affect the welding quality.

 **PULSED MIG/MAG WELDING**

The pulsed process is a welding process where material deposition is controlled by carrying out an accurate regulation of the current pulse.
The welding related data (material, wire diameter, gas type) must be set up, as well as a single welding parameter amongst wire speed, amperage, material thickness and voltage.
The generator automatically adjusts the other secondary parameters affecting the welding quality.

 **SYNERGIC MIG/MAG WELDING (POWER MIX)**

The process combines the short/spray process and the pulsed process and aims at reducing the average heat input in order to be able to perform vertical up or corner welds in all positions with an excellent aesthetic quality of joints and no defects.
The benefits in welding are:
- Quality of vertical up and corner welds
- Simple and fast set-up thanks to the synergic programs
- Good speed of execution
- Low heat input and less deformation
- High aesthetic quality of joints
- Low risk of typical defects especially in critical positions such as vertical up welds
- Applicable on different types of steel and thicknesses

5.4.2 MIG/MAG WELDING FUNCTIONS

DOUBLE PULSE SYNERGIC MIG/MAG WELDING

The DOUBLE PULSE is a function available in the synergic MIG/MAG and in the pulsed MIG/MAG welding process. This function allows the two wire feed speeds to be controlled.
The welding related data (material, wire diameter, gas type) must be set up, as well as a single welding parameter amongst wire speed, amperage, material thickness and voltage.
The generator automatically adjusts the other secondary parameters that affect the welding quality.

HC (HIGH CONTROL) SYNERGIC MIG/MAG WELDING

The HC ((High Control) function is provided to quickly control the arc in order to optimise the drop detachment with a greatly reduced energy.
The welding benefits are:

- Increased arc stability
- Very reactive arc to the torch movement
- Reduced energy transmitted to the welded workpiece
- Very linear transfer and optimal edge wettability
- Very fast operation
- Spatters and micro projections almost entirely absent.

PF (POWER FOCUS) SYNERGIC MIG/MAG WELDING

The difference between a standard MIG MAG and Power Focus is its concentration and pressure. The POWER FOCUS arc concentration allows the welder to focus the high temperature of the arc in the central section of the deposition, thus avoiding to overheat the sides of the welding. The thermally changed area with the Power Focus arc is less widespread.
The welding benefits are:

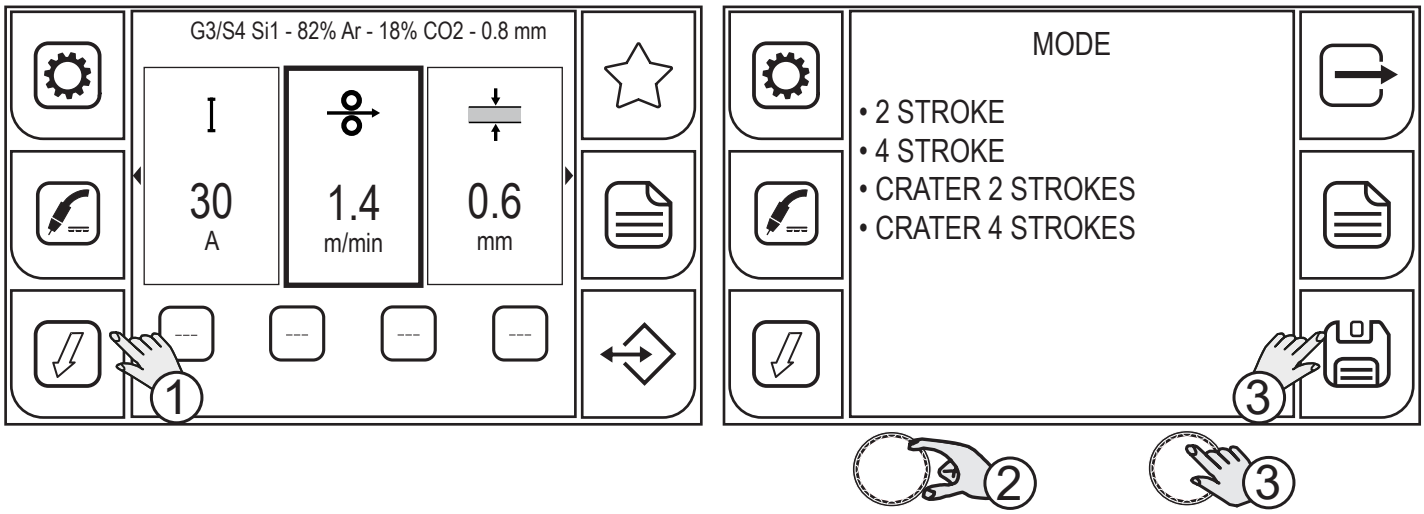
- higher penetration and lower risk of sticking
- increased welding speed
- higher arc stability even with long stick-outs
- lower costs of joint preparation
- reduced volumes of bevels to be filled

PR (POWER ROOT) SYNERGIC MIG/MAG WELDING

Power Root is an optimised short arc transfer with the feature of having a cold drop transfer. Power Root allows to achieve a very high quality in root passes.
The welding benefits are:

- optimal first pass
- quality of descending vertical welding
- excellent operability
- cold transfer of welding drop
- perfectly jointed thin metal sheets
- ideal for welding joints with large gaps

5.5 SETTING UP THE MIG/MAG TORCH TRIGGER MODE

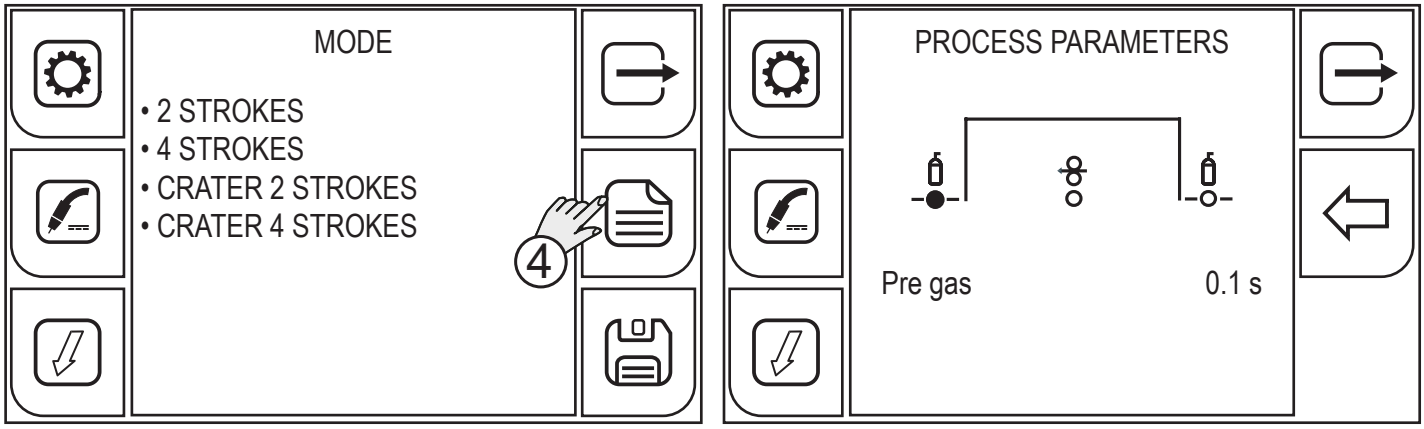


1. Press the (MODE) key.

From within the menu screen, the torch trigger mode can be selected.

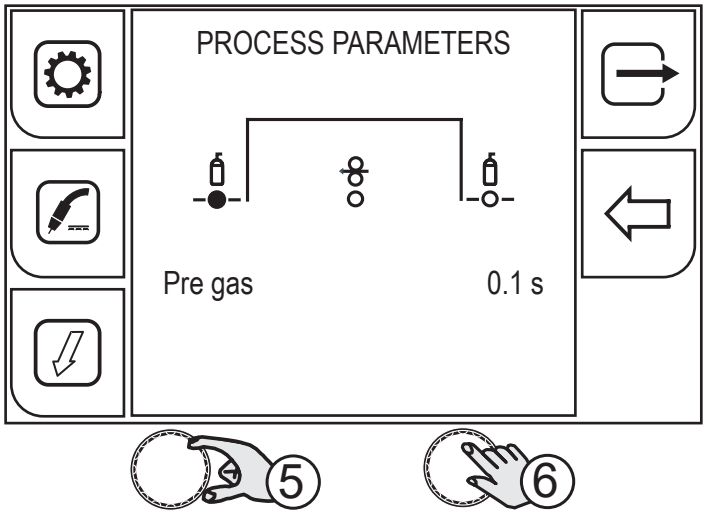
(2 STROKES) - (4 STROKES) - (CRATER 2 STROKES) - (CRATER 4 STROKES)

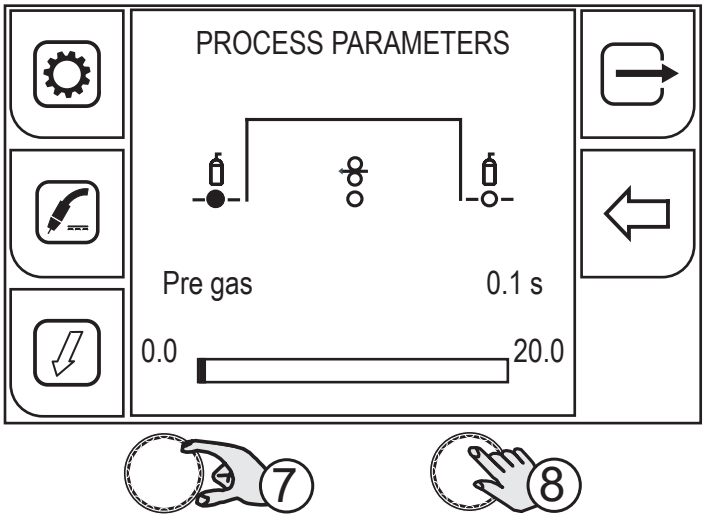
2. Turn the encoder to select the desired setting.
3. Press the (ENCODER) key or the (SAVE) key to only set up the torch trigger mode, otherwise carry out the procedure shown in paragraph (4).



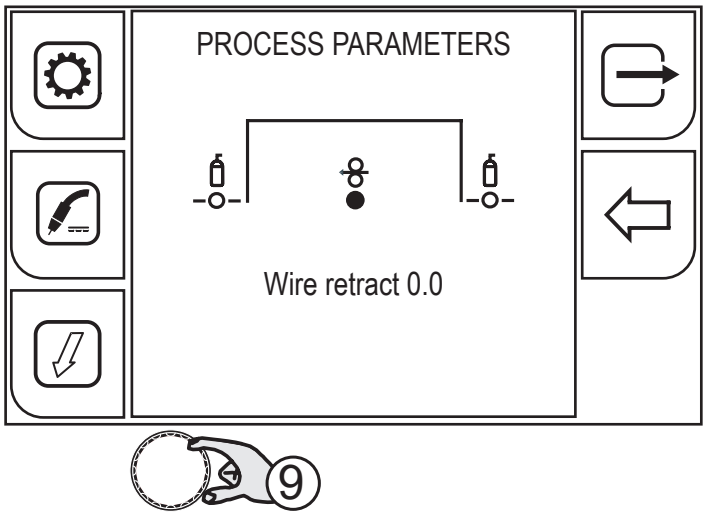
4. Press the (MENU) key.

According to the torch trigger mode selected, different process parameters to be set are available.





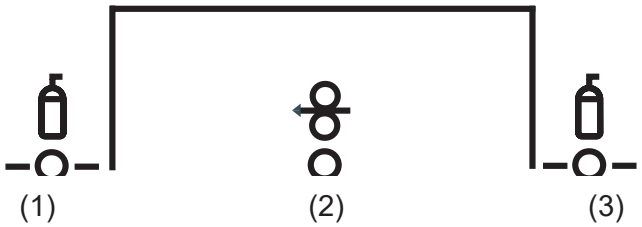
5. Turn the encoder to select the parameter to be changed.
6. Press the (ENCODER) key to confirm.
7. Turn the encoder to set the desired value.
8. Press the (ENCODER) key to confirm.



9. Turn the encoder again to select other parameters.

To return to the main screen, press the (EXIT) key.

5.5.1 PROCESS PARAMETERS WITH TORCH TRIGGER IN 2 STROKE AND 4 STROKE MODE



1. **PRE GAS**

Time of gas delivery before the arc strike.
NOTE: if too long, it will slow down the welding procedure. Other than in the presence of special requirements the value should generally be kept at 0.0 s or anyway very low.

Available range: minimum (0.0 s) - default (0.1 s) - maximum (20.0 s)

2. **WIRE RETRACT**

The value is associated with the amount of wire to be retracted at the end of the welding operation.

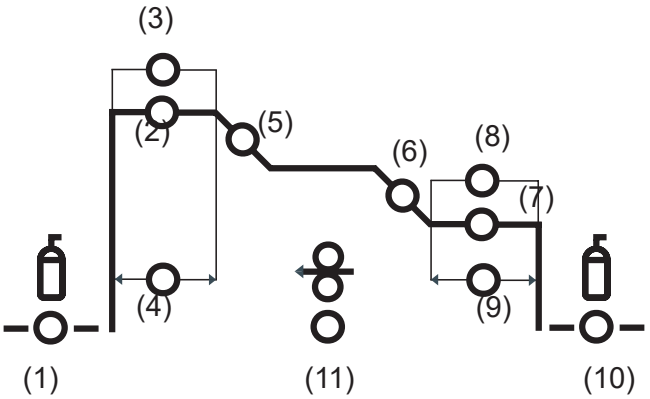
Available range: minimum (0.0 s) - default (0.0 s) - maximum (10.0 s)

3. **POST GAS**

Time of post gas delivery when the welding arc is extinguished.

Available range: minimum (0.0 s) - default (2.0 s) - maximum (20.0 s)

5.5.2 PROCESS PARAMETERS WITH TORCH TRIGGER IN CRATER 2 STROKE MODE



1. **PRE GAS**

Time of gas delivery before the arc strike.
NOTE: if too long, it will slow down the welding procedure. Other than in the presence of special requirements the value should generally be kept at 0.0 s or anyway very low.

Available range: minimum (0.0 s) - default (0.1 s) - maximum (20.0 s)

2. **STARTING CURRENT**
The parameter adjusts the 1st level wire feed rate as a percentage of the wire feed rate set for welding (2nd level).

Available range: minimum (10 %) - default (130 %) - maximum (200 %)

3. **INITIAL ARC CORRECTION**
This parameter corrects the synergic voltage value relative to the synergic point of the synergic and pulsed MIG/MAG processes, while it manages correction of the voltage of the high value in the MIG/MAG double pulsed process.

Available range: minimum (-10) - default (0.0) - maximum (10)

4. **INITIAL CURRENT TIME**
This parameter specifies for how long the initial current is maintained.

Available range: minimum (0.0 s) - default (0.5 s) - maximum (10.0 s)

5. **SLOPE1**
This parameter controls the slope time connecting the HOT START level and the welding level.

Available range: minimum (0.1 s) - default (0.5 s) - maximum (10.0 s)

6. **SLOPE2**
This parameter controls the slope time connecting the welding level and the crater filler level.

Available range: minimum (0.0 s) - default (0.5 s) - maximum (10.0 s)

7. **FINAL CURRENT**
This parameter adjusts the crater filling wire feed rate as a percentage of the wire feed rate set for welding (2nd level).

Available range: minimum (10 %) - default (80 %) - maximum (200 %)

8. **FINAL ARC CORRECTION**
This parameter corrects the synergic voltage value relative to the synergic point of the synergic and pulsed MIG/MAG processes, while it manages correction of the voltage of the high value in the MIG/MAG double pulsed process.

Available range: minimum (-10.0) - default (0) - maximum (10.0)

9. **FINAL CURRENT TIME**
This parameter specifies for how long the final current is maintained.

Available range: minimum (0.0 s) - default (0.5 s) - maximum (10.0 s)

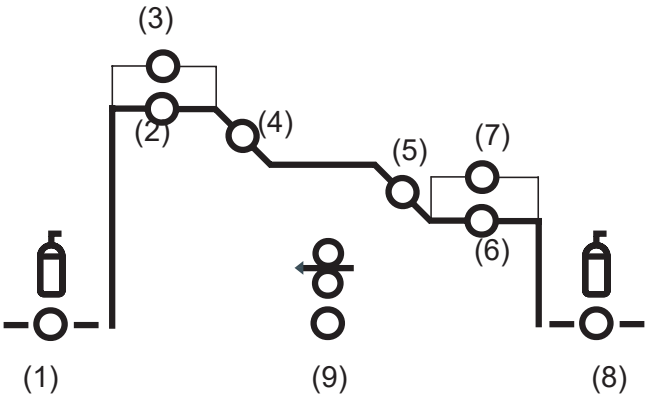
10. **POST GAS**
Time of post gas delivery when the welding arc is extinguished.

Available range: minimum (0.0 s) - default (2.0 s) - maximum (20.0 s)

11. **WIRE WITHDRAWAL**
The value is associated with the amount of wire to be withdrawn at the end of the welding operation.

Available range: minimum (0.0) - default (0.0) - maximum (10.0)

5.5.3 PROCESS PARAMETERS WITH TORCH TRIGGER IN CRATER 4 STROKE MODE



1. **PRE GAS**

Time of gas delivery before the arc strike.
NOTE: if too long, it will slow down the welding procedure. Other than in the presence of special requirements the value should generally be kept at 0.0 s or anyway very low.

Available range: minimum (0.0 s) - default (0.1 s) - maximum (20.0 s)

2. **STARTING CURRENT**

The parameter adjusts the 1st level wire feed rate as a percentage of the wire feed rate set for welding (2nd level).

Available range: minimum (10 %) - default (130 %) - maximum (200 %)

3. **INITIAL ARC CORRECTION**

This parameter corrects the synergic voltage value relative to the synergic point of the synergic and pulsed MIG/MAG processes, while it manages correction of the voltage of the high value in the MIG/MAG double pulsed process.

Available range: minimum (-10) - default (0.0) - maximum (10)

4. **SLOPE1**

The parameter controls the slope time connecting the HOT START level and the welding level.

Adjustment range: minimum (0.1 s) - default (0.5 s) - maximum (10.0 s)

5. **SLOPE2**

The parameter controls the slope time connecting the welding level and the crater filler level.

Adjustment range: minimum (0.0 s) - default (0.5 s) - maximum (10.0 s)

6. **FINAL CURRENT**

This parameter adjusts the crater filling wire feed rate as a percentage of the wire feed rate set for welding (2nd level).
Adjustment range: minimum (10 %) - default (80 %) - maximum (200 %)

7. **FINAL ARC CORRECTION**
This parameter corrects the synergic voltage value relative to the synergic point of the synergic and pulsed MIG/MAG processes, while it manages correction of the voltage of the high value in the MIG/MAG double pulsed process.

Available range: minimum (-10.0) - default (0) - maximum (10.0)

8. **POST GAS**
Time of post gas delivery when the welding arc is extinguished.

Available range: minimum (0.0 s) - default (2.0 s) - maximum (20.0 s)

9. **WIRE WITHDRAWAL**
The value is associated with the amount of wire to be withdrawn at the end of the welding operation.

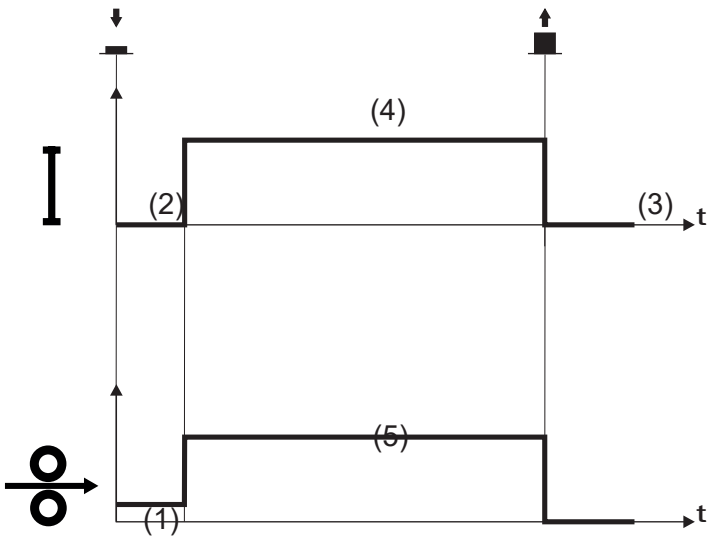
Available range: minimum (0.0) - default (0.0) - maximum (10.0)

5.5.4 MIG/MAG 2S OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. approach speed
2. pre gas
3. post gas
4. welding current
5. wire speed

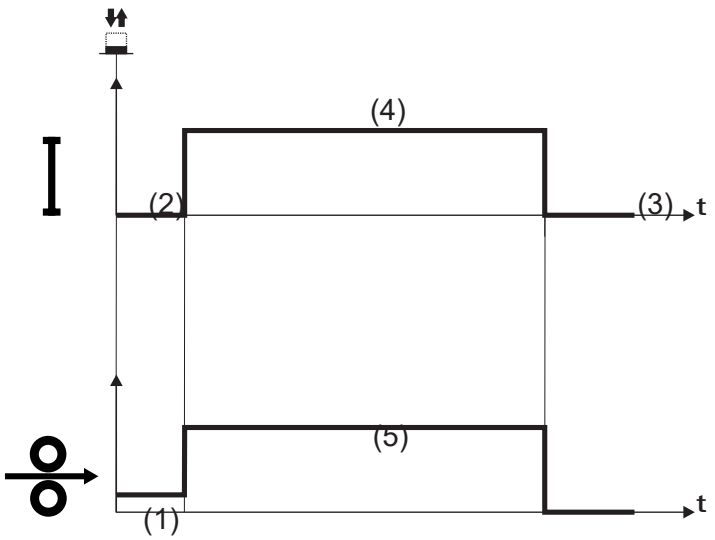
○ Bring the torch up to the workpiece to be welded.
○ Press (1S) and keep the torch trigger pressed.
- The wire advances at the approach speed until making contact with the workpiece. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The arc strikes and the wire feeder accelerates to the set feed rate value.
○ Release (2S) the trigger to complete the welding operation.
- Gas flow continues for the time set in the post gas parameter (adjustable time).

5.5.5 MIG/MAG 2S SPOT OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. approach speed
2. pre gas
3. post gas
4. welding current (STOP time)
5. wire speed

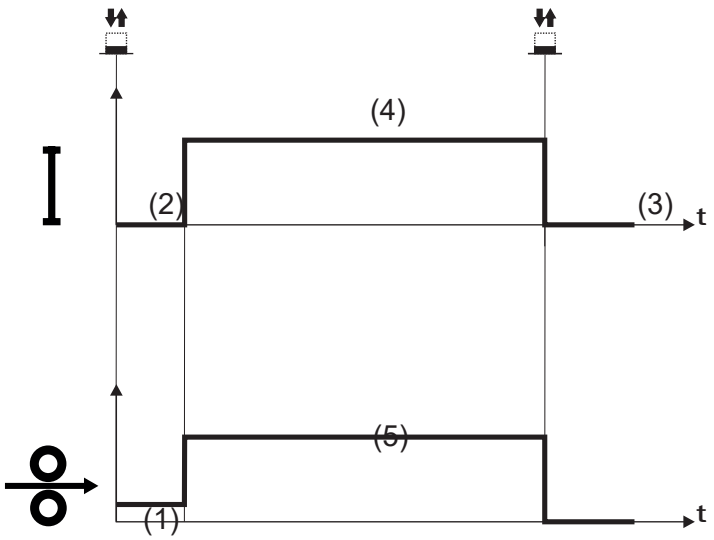
○ Bring the torch up to the workpiece to be welded.
○ Press (1S) and keep the torch trigger pressed.
- The wire advances at the approach speed until making contact with the work. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The arc strikes and the wire feeder accelerates to the set feed rate value.
- The welding procedure continues, at the preset current, for the time set with the spot time parameter.
- When the SPOT time has expired, the welding operation will be automatically stopped.
- Gas flow continues for the time set in the post gas parameter (adjustable time).

5.5.6 MIG/MAG 4S OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. approach speed
2. pre gas
3. post gas
4. welding current
5. wire speed

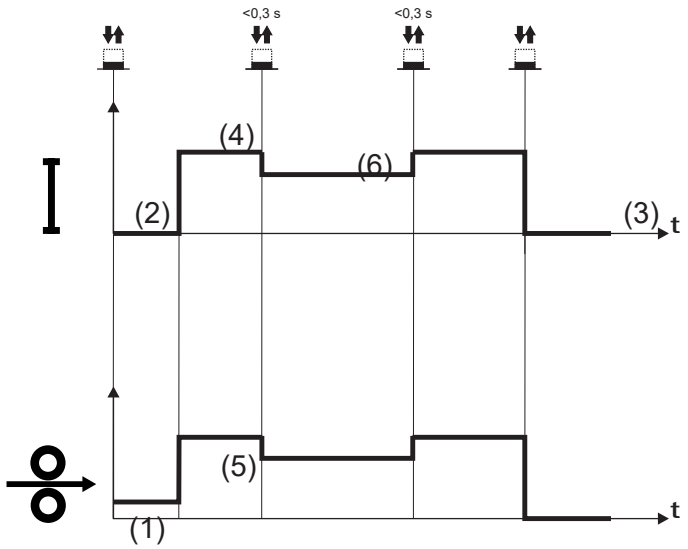
○ Bring the torch up to the workpiece to be welded.
○ Press (1S) and release (2S) the torch trigger.
- The wire advances at the approach speed until making contact with the work. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The arc strikes and the wire feeder accelerates to the set feed rate value.
○ Press (3S) the trigger to start the weld completion procedure.
- Gas flow continues until the torch trigger is released.
○ Release (4S) torch trigger to start the post gas procedure (adjustable time).

5.5.7 MIG/MAG 4S B-LEVEL OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. approach speed
2. pre gas
3. post gas
4. welding current
5. wire speed
6. B-level current

○ Bring the torch up to the workpiece to be welded.
○ Press (1S) and release (2S) the torch trigger.
- The wire advances at the approach speed until making contact with the work. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The arc strikes and the wire feeder accelerates to the set feed rate value.
- During normal speed welding, press and immediately release the torch trigger to switch to the second welding current.
- The trigger must not be pressed for more than 0.3 seconds; otherwise, the weld completion stage will start.
- When the trigger is pressed and released immediately, the system returns to the welding current.

○ Press (3S) trigger and keep it pressed to start the weld completion procedure.
- Gas flow continues until the torch trigger is released.

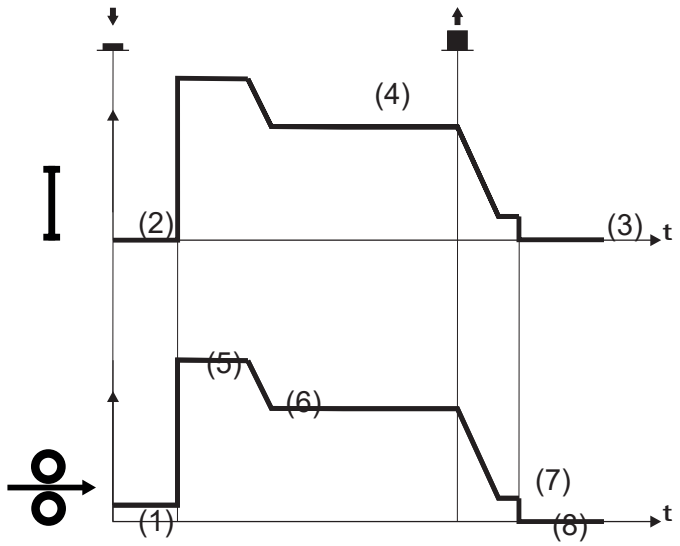
○ Release (4S) torch trigger to start the post gas procedure (adjustable time).

5.5.8 MMIG/MAG CRATER 2S OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. approach speed
2. pre gas
3. post gas
4. welding current
5. hot start
6. start slope
7. crater filling slope
8. crater filling time

○ Bring the torch up to the workpiece to be welded.
○ Press (1S) torch trigger.
- The wire advances at the approach speed until making contact with the work. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The welding arc strikes and the wire feed rate changes to the first welding level (hot start), which is set as a percentage of the normal welding feed rate.
- This first level is used to create the weld pool: for example, when welding aluminium a value of 130 % is recommended.
- The hot start level continues for the start time, which is settable in seconds; then switch to normal welding speed is performed in accordance with the start slope, which can be set in seconds.

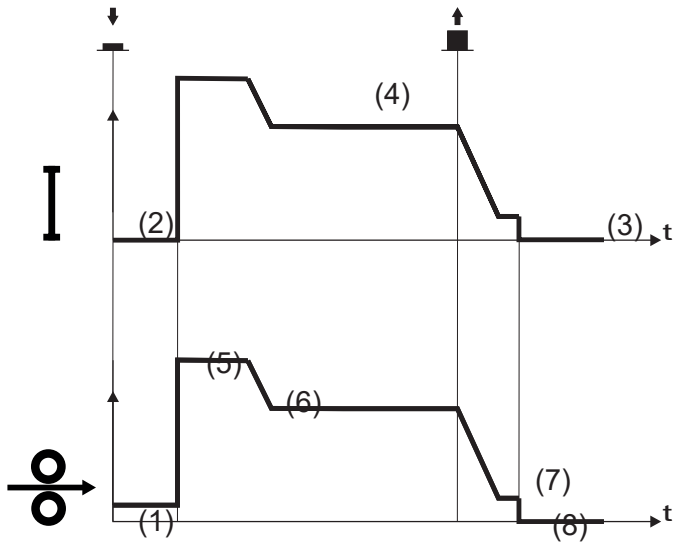
○ Release (2S) the torch trigger to switch to the third welding level (crater filler), which is set as a percentage of the normal welding feed rate.
- The switch of welding current level in terms of crater filling is performed in accordance with the crater ramp, which can be set in seconds.
- This third level is used to complete the weld and fill the final crater (crater filler) in the weld pool: for example, when welding aluminium a value of 80 % is recommended.
- The crater filler level continues for the crater filling time, which is settable in seconds; at the end of this time welding is interrupted and the post gas stage is performed.

5.5.9 MMIG/MAG CRATER 2S OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. approach speed
2. pre gas
3. post gas
4. welding current (SPOT time)
5. hot start
6. start slope
7. crater filling slope
8. crater filling time

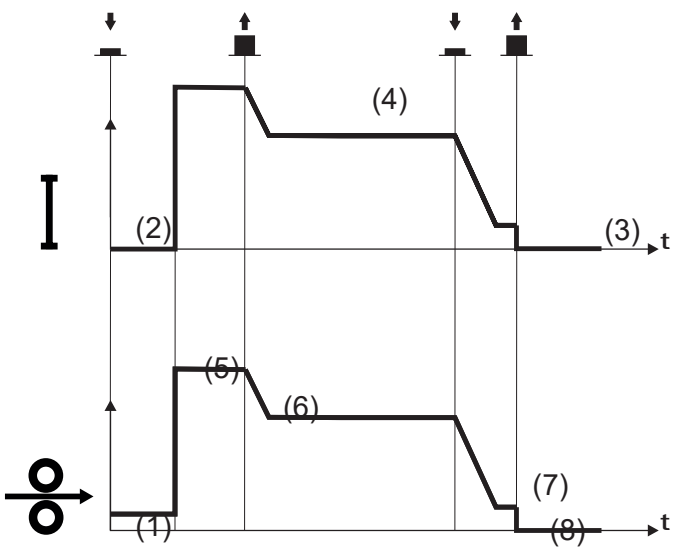
The welding process is the same as the CRATER 2S process, except that the welding procedure continues, at the preset current, for the time set with the spot time parameter.
The weld is closed in the same way as with the CRATER 2S process.

5.5.10 MMIG/MAG CRATER 4S OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. approach speed
2. pre gas
3. post gas
4. welding current
5. hot start
6. start slope
7. crater filling slope
8. crater filling time

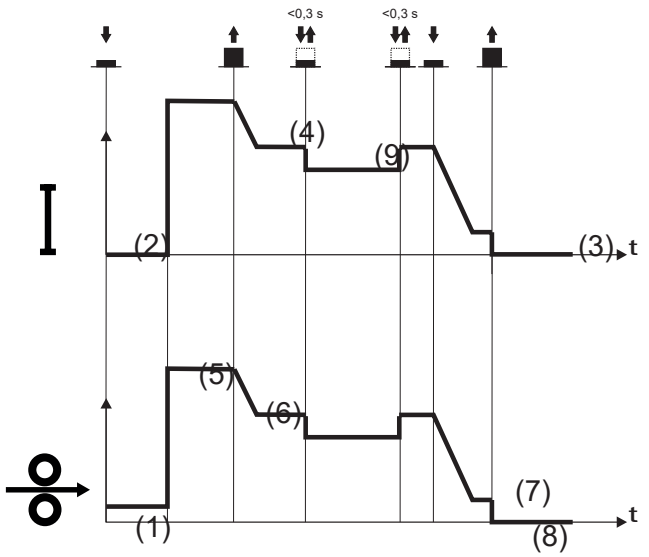
○ Bring the torch up to the workpiece to be welded.
○ Press (1S) torch trigger.
- The wire advances at the approach speed until making contact with the work. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The welding arc strikes and the wire feed rate changes to the first welding level (hot start), which is set as a percentage of the normal welding feed rate.
- This first level is used to create the weld pool: for example, when welding aluminium a value of 130 % is recommended.
○ Release (2S) trigger to switch to normal welding speed; then switch to normal welding speed is performed in accordance with the start slope, which can be set in seconds.
○ Press the torch trigger again (3S) to switch to the third welding level (crater filling), which is set as a percentage of the normal welding feed rate.
- The welding level is changed from the crater filling mode by using the crater slope that can be specified in seconds.
- This third level is used to complete the weld and fill the final crater (crater filler) in the weld pool: for example, when welding aluminium a value of 80 % is recommended.
○ Release the torch trigger a second time (4S) to close the weld and run the post gas procedure.

5.5.11 MIG/MAG CRATER 4S B-LEVEL OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger

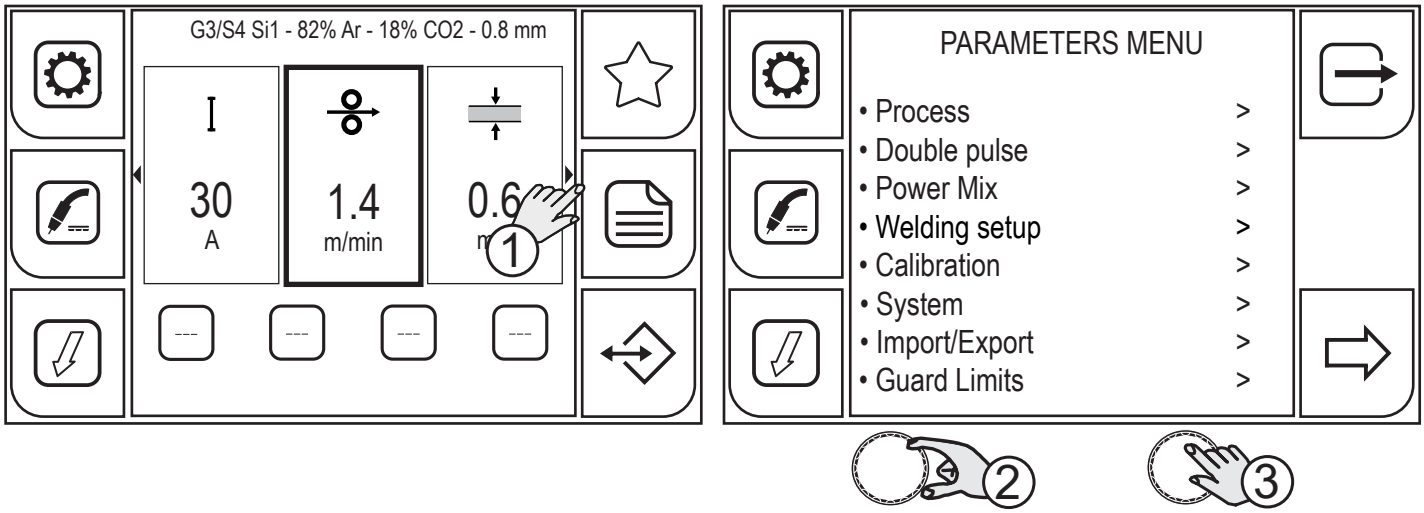


1. approach speed
2. pre gas
3. post gas
4. welding current
5. hot start
6. start slope
7. crater filling slope
8. crater filling time

The welding process is the same as the crater 4S process; however, in this case, during the normal welding speed, if the torch trigger is pressed and released, the second welding current is applied.
The trigger must not be pressed for more than 0.3 seconds; otherwise, the weld completion stage will start.
When the trigger is pressed and released immediately, the system returns to the welding current.
Press (3S) and keep it pressed to start the crater filling procedure.
The weld is closed in the same way as with the crater 4S process.

6 PARAMETERS SETTING

The (PARAMETERS MENU) key allows the user to access the menu used to set the main welding features. This key also features special functions such as the welding circuit calibration and the system menu.



Press the (MENU) key.

1. Turn the encoder to select the desired setting.
2. Press the (ENCODER) key or the (NEXT) key.

Use this method to program all the sequentially displayed screens:

- PROCESS
  By using the PROCESS PARAMETERS menu, the values of the parameters associated with the set torch trigger mode can be set.

- DOUBLE PULSE
  by using the DOUBLE PULSE PARAMETERS menu, the values of the parameters associated with the DOUBLE PULSE welding process can be set.

- POWER MIX
  The POWER MIX PARAMETERS menu can be used to set the parameter values for the POWER MIX welding process.

- WELDING SETUP
  by using the WELDING SETUP menu, the available operating modes for the torch trigger can be enabled and the torch trigger parameters can be set.

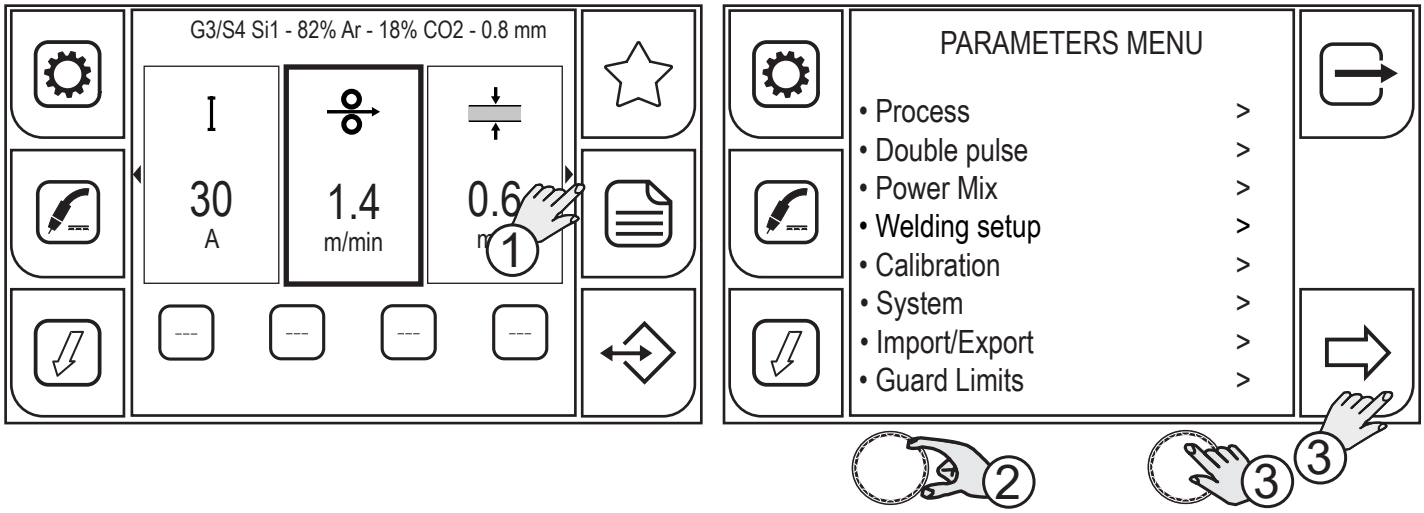
- CALIBRATION
  by using the WELDING CIRCUIT CALIBRATION guided procedure, the resistance and inductance values of the welding circuit are measured.

- SYSTEM
  the SYSTEM menu includes several submenus:
  - LANGUAGES: to set the language used to display the messages
  - FW UPGRADE: to update the equipment software by using the USB memory stick.
  - ALARM LIST: allows the user to view a list of the alarms detected.
  - DATE & TIME: sets the time zone, the date and the time.

- INFO: provides information related to using the equipment (hours of operation, hours of welding)
- RESET: the reset procedure allows the user to delete the data stored.
- SETUP: sets the wire feed speed when the S8 (WIRE FORWARD) key is pressed.
- SERVICE: to be used by service staff only.

- IMPORT/EXPORT
  Some equipment configurations (Jobs, parameters, display setups, language) can be exported or imported onto/from an USB memory stick

6.1 SETTING THE PROCESS PARAMETERS

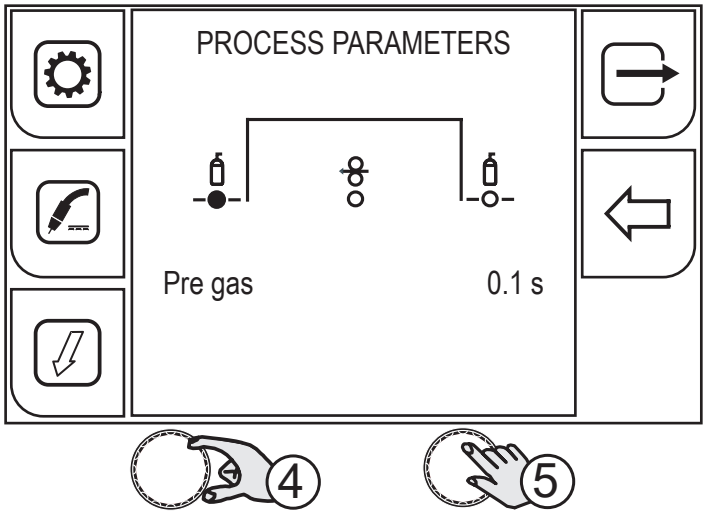


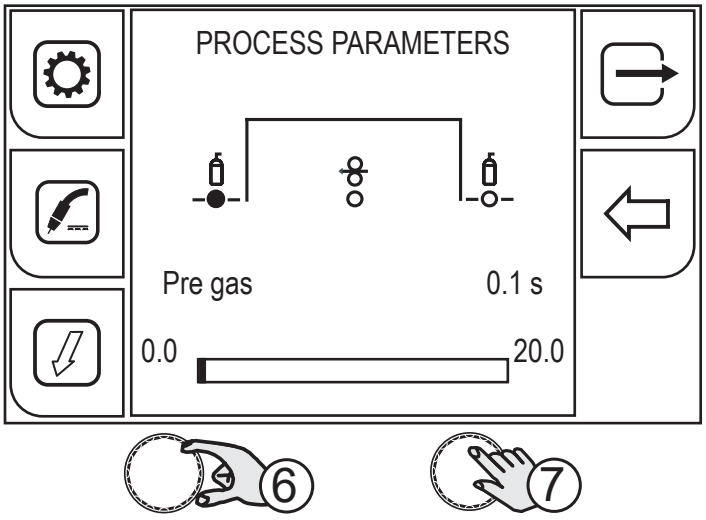
1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Process>
3. Press the (ENCODER) key or the (NEXT) key to confirm.

According to the torch trigger mode selected, some process parameters to be set are available.

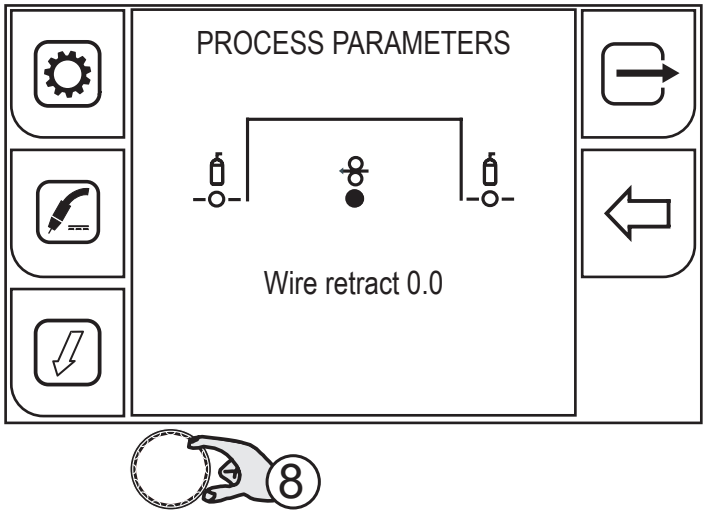
To view the full list of parameters, please see:

- “5.5.1 PROCESS PARAMETERS WITH TORCH TRIGGER IN 2 STROKE AND 4 STROKE MODE” on page 63
- “5.5.2 PROCESS PARAMETERS WITH TORCH TRIGGER IN CRATER 2 STROKE MODE” on page 63
- “5.5.3 PROCESS PARAMETERS WITH TORCH TRIGGER IN CRATER 4 STROKE MODE” on page 65





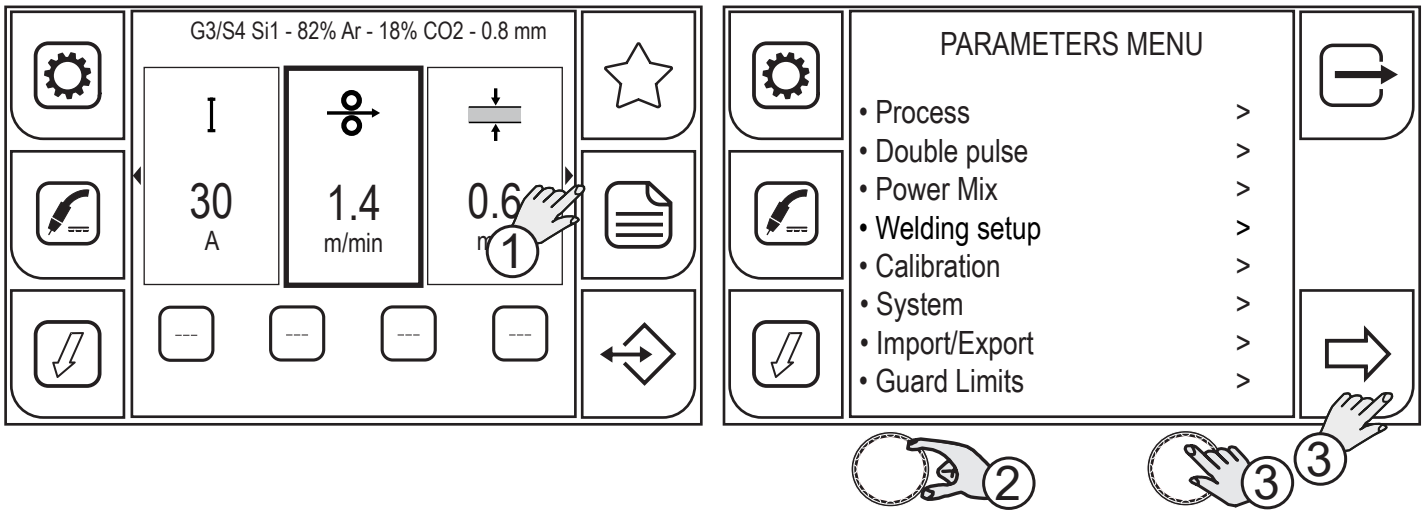
4. Turn the encoder to select the parameter to be changed.
5. Press the (ENCODER) key to confirm your selection.
6. Turn the encoder to set the desired value.
7. Press the (ENCODER) key to confirm.



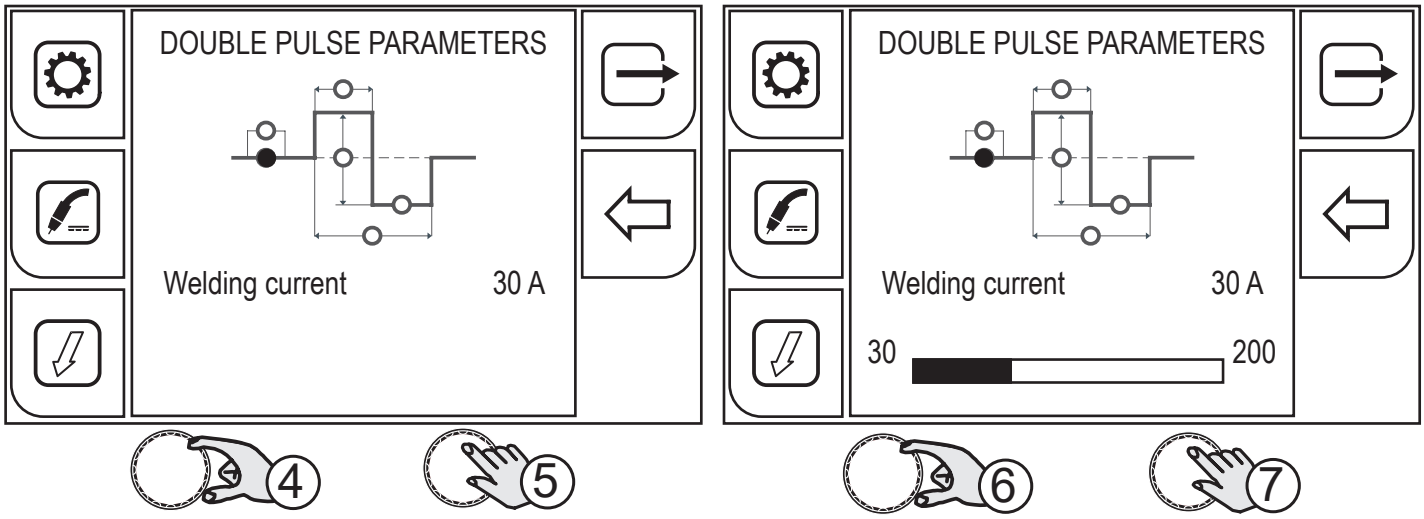
8. Turn the encoder again to select other parameters.

To return to the main screen, press the (EXIT) key.

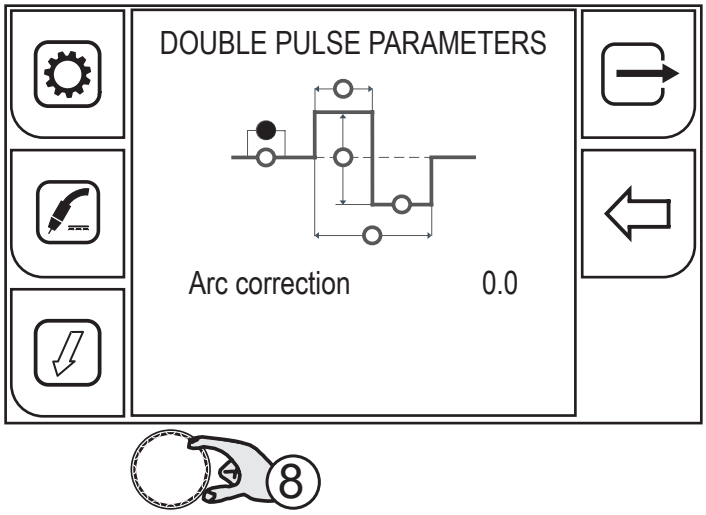
6.2 SETTING THE DOUBLE PULSE PARAMETERS



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Double pulse>
3. Press the (ENCODER) key or the (NEXT) key to confirm.



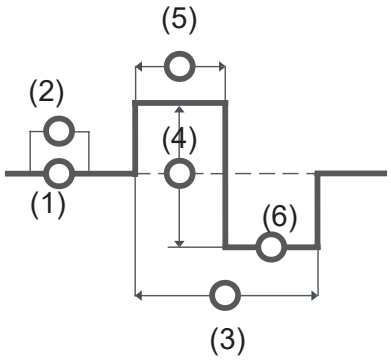
4. Turn the encoder to select the parameter to be changed.
5. Press the (ENCODER) key to confirm.
6. Turn the encoder to set the desired value.
7. Press the (ENCODER) key to confirm.



8. Turn the encoder again to select the parameters.

To return to the main screen, press the (EXIT) key.

6.2.1 DOUBLE PULSE PARAMETERS



DOUBLE SPEED ACTIVE
This parameter enables/disables the double pulse mode.

Available range: minimum (0.0 s) - default (0.1 s) - maximum (20.0 s)

1. **WELDING CURRENT**
This parameter regulates the average amperage of the welding arc.

Available range: minimum (30 A) - default (30 A) - maximum (200 A)

2. **ARC LENGTH**
This parameter corrects the synergic voltage value relative to the synergic point of the synergic and pulsed MIG/MAG processes, while it manages the correction of the voltage of the high value in the MIG/MAG double pulse process.

Available range: minimum (-10) - default (0.0) - maximum (10)

3. **DOUBLE SPEED FREQUENCY**
This parameter sets the frequency applied to the two wire speeds set with the DOUBLE SPEED AMPL. parameter.
Available range: minimum (0.0 Hz) - default (2.0 Hz) - maximum (5.0 Hz)

4. **DOUBLE SPEED AMPL.**
The parameter generates the two wire speeds (high and low) used in the double pulse mode, which are alternated with the frequency specified by the DOUBLE SPEED FREQUENCY parameter.

Available range: minimum (0 %) - default (50 %) - maximum (100 %)

5. **DOUBLE SPEED DUTY**
This parameter adjusts the high speed time.

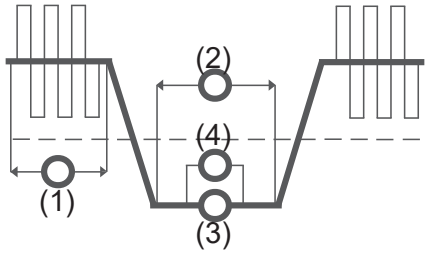
Available range: minimum (10 %) - default (50 %) - maximum (90 %)

6. **DOUBLE SPEED ARC LEN**
This parameter corrects the synergic voltage value relative to the synergic point of the synergic and pulse MIG/MAG processes, while it manages correction of the voltage of the low value in the MIG/MAG double pulse process.

Available range: minimum (-10) - default (0.0) - maximum (10)

6.2.2 POWER MIX PARAMETERS

The parameters that can be adjusted from this menu only affect the POWER MIX welding process and do not change the “Arc length correction” and “Dynamics” parameters displayed on the main page, which only refer to the pulsed arc welding process.



1. **PULSED ARC TIME CORRECTION**
The parameter corrects the synergic value of the pulsed arc time.

Adjustment range: minimum (-0.20s) - default (0.00s) - maximum (1.00s)

2. **SHORT ARC TIME CORRECTION**
The parameter corrects the synergic value of the short arc time.

Adjustment range: minimum (-0.20s) - default (0.00s) - maximum (1.00s)

3. **SHORT ARC WIRE SPEED CORRECTION**
The parameter corrects the synergic value of the wire speed during the short arc period.

Adjustment range: minimum (0.0m/min) - default (0.0m/min) - maximum (5.0m/min)

4. **SHORT ARC HEIGHT CORRECTION**
The parameter corrects the synergic value of the voltage.

Adjustment range: minimum (-10) - default (0.0) - maximum (+10)

6.3 SETTING THE JOB SELECTION

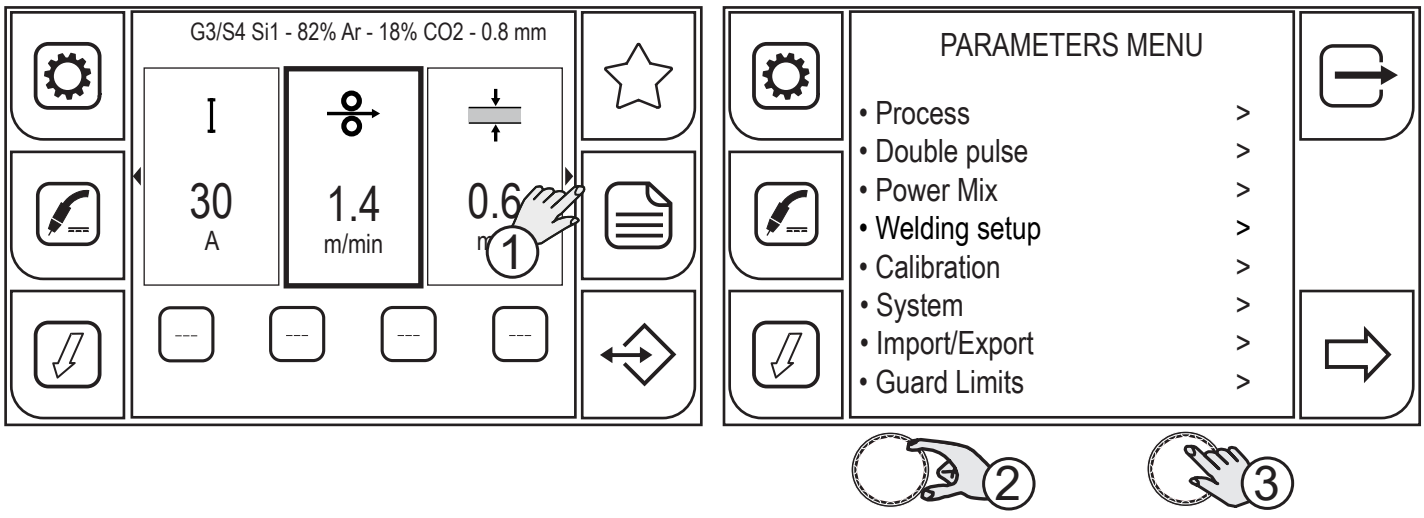
When the JOB SEL function is enabled, the torch trigger operates in 4 stroke or crater filling 4 stroke mode with the Bilevel functions disabled. Therefore, if jobs are saved with different modes, they are automatically shown according to these conditions (which are not saved).
The JOBs in a sequence can be scrolled through when welding is not taking place by quickly pressing and releasing the torch trigger.

Scrolling the JOBs with an UP/DOWN torch

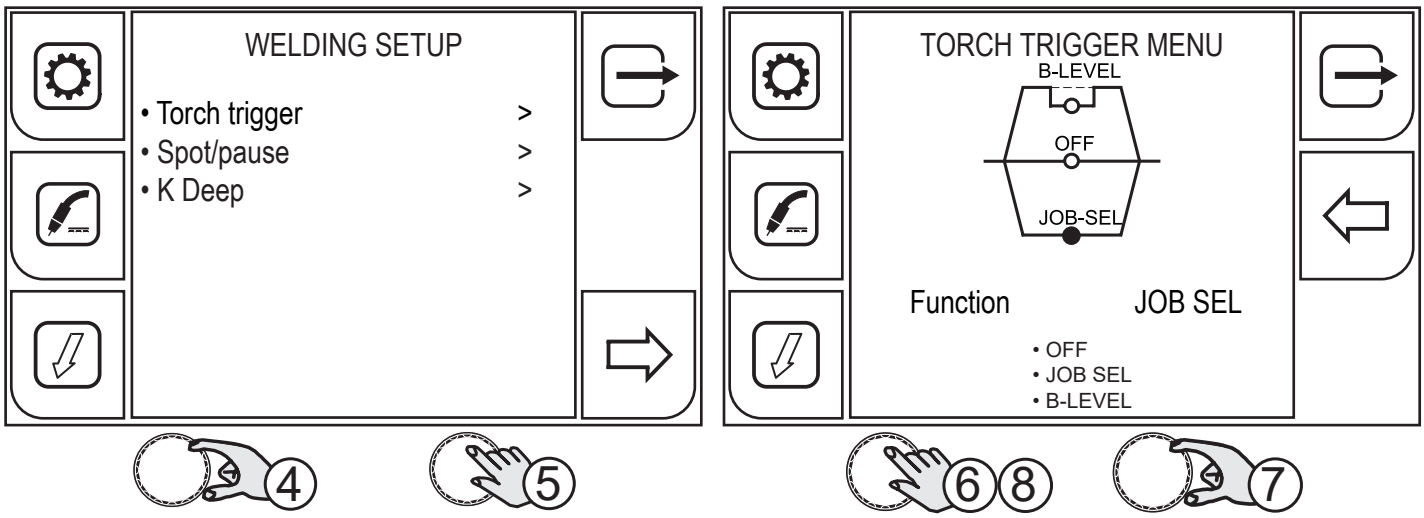
When an UP/DOWN torch is installed, JOBs can be selected in a JOB sequence using the triggers on the welding torch. To create the JOB sequence, leave a free memory slot before and after the group of JOBs to be included in the sequence.

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

Select and load one of the JOBs in the desired sequence (for example J.06).
By using the torch UP/DOWN keys, all the JOBs in sequence 2 can be scrolled (J.05,J.06,J.07).
When the torch UP/DOWN key is pressed again, the arc length can be changed.



1. Press the (MENU) key.
2. Turn the encoder to select the desired item. Select the following path: Welding setup>
3. Press the key (ENCODER) to confirm your selection.

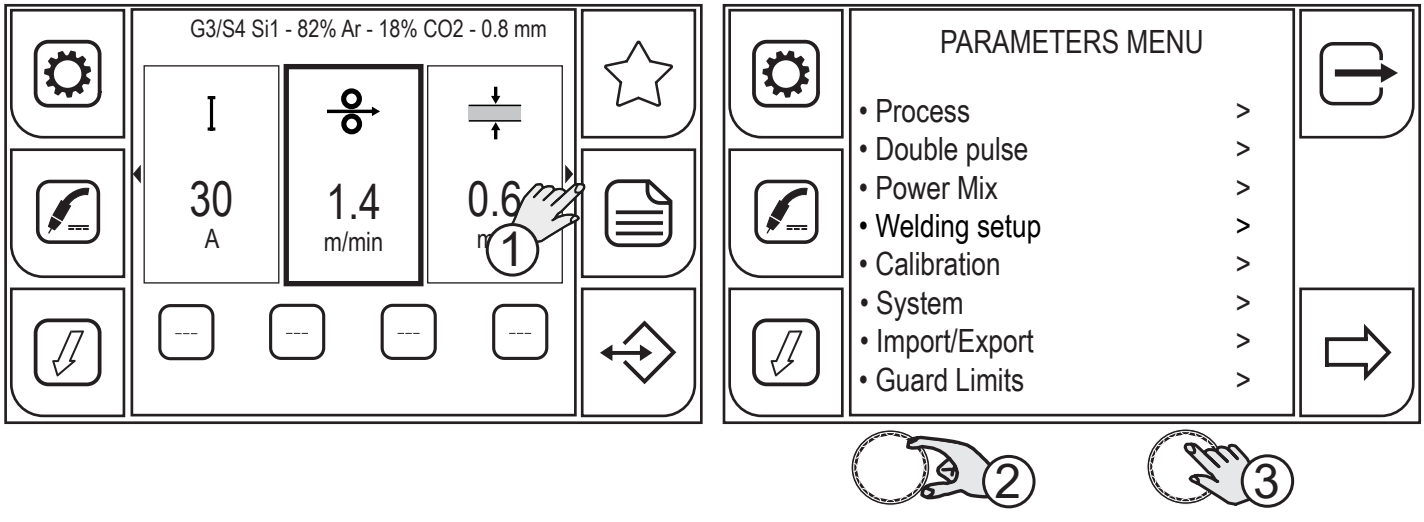


4. Turn the encoder to select the desired item. Select the following path: Torch trigger>
5. Press the (ENCODER) key to confirm your selection.
6. Press the (ENCODER) key to enable function selection.
7. Turn the encoder to select the JOB SEL function.
8. Press the (ENCODER) key to confirm your selection.

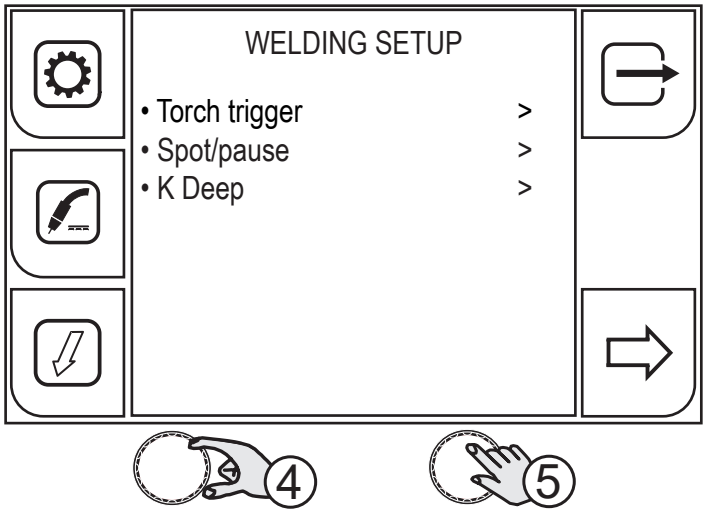
Press the ⇦ (PREC) key to return to the previous screen.

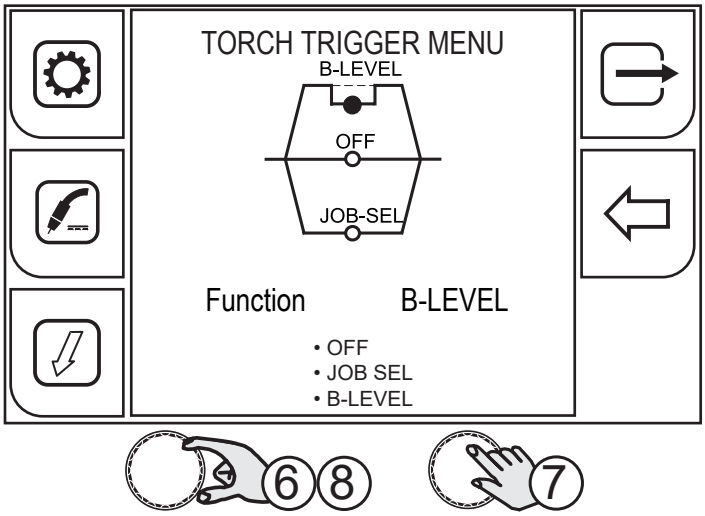
To return to the main screen, press the ⇨ (EXIT) key.

6.4 SETTING THE B-LEVEL

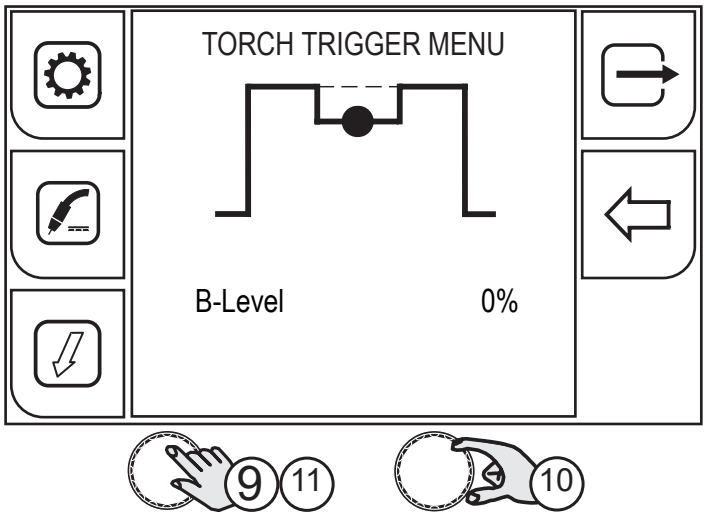


1. Press the (MENU) key.
2. Turn the encoder to select the desired item. Select the following path: Welding setup>
3. Press the (ENCODER) key to confirm your selection.





4. Turn the encoder to select the desired item. Select the following path: Torch trigger>
5. Press the (ENCODER) key to select the function.
6. Turn the encoder to select the B-LEVEL function.
7. Press the (ENCODER) key to confirm your selection.
8. Turn the encoder to view the B-level parameter symbol.



9. Press the (ENCODER) key enable the parameter change.
10. Turn the encoder to set the desired value.
11. Press the (ENCODER) key to confirm your selection.

Press the ⇦ (PREC) key to return to the previous screen.

To return to the main screen, press the ⇨ (EXIT) key.

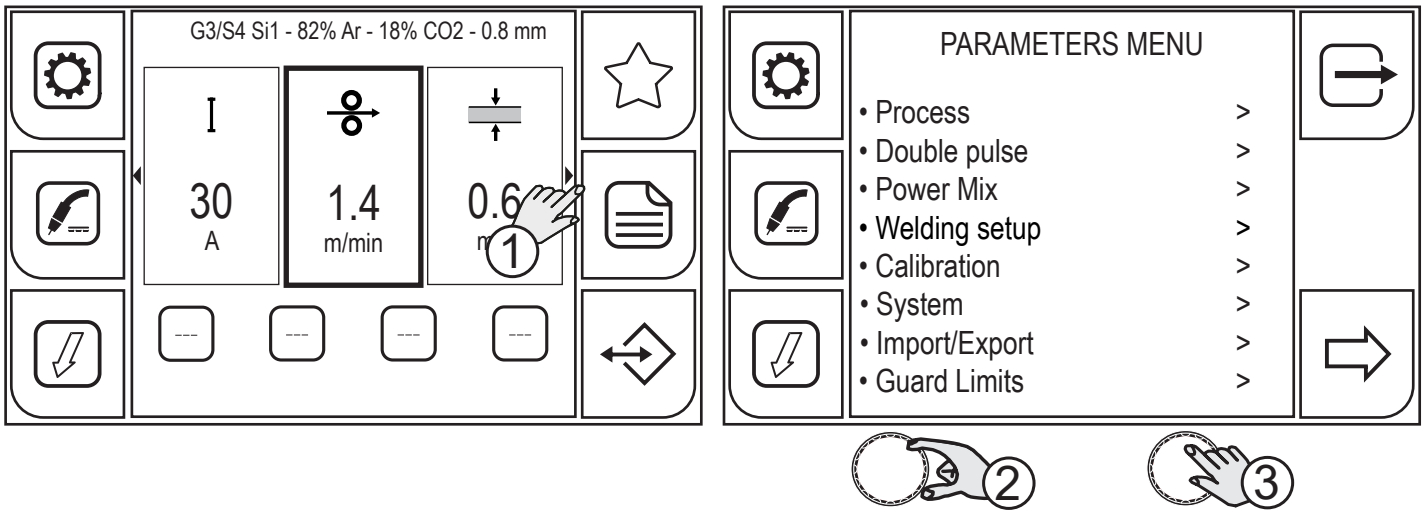
B-LEVEL CURRENT

- The parameter enables a special torch trigger function.
- Pressing and releasing the torch trigger rapidly in welding mode (in 2nd stroke) switches from the main welding current to a secondary current.

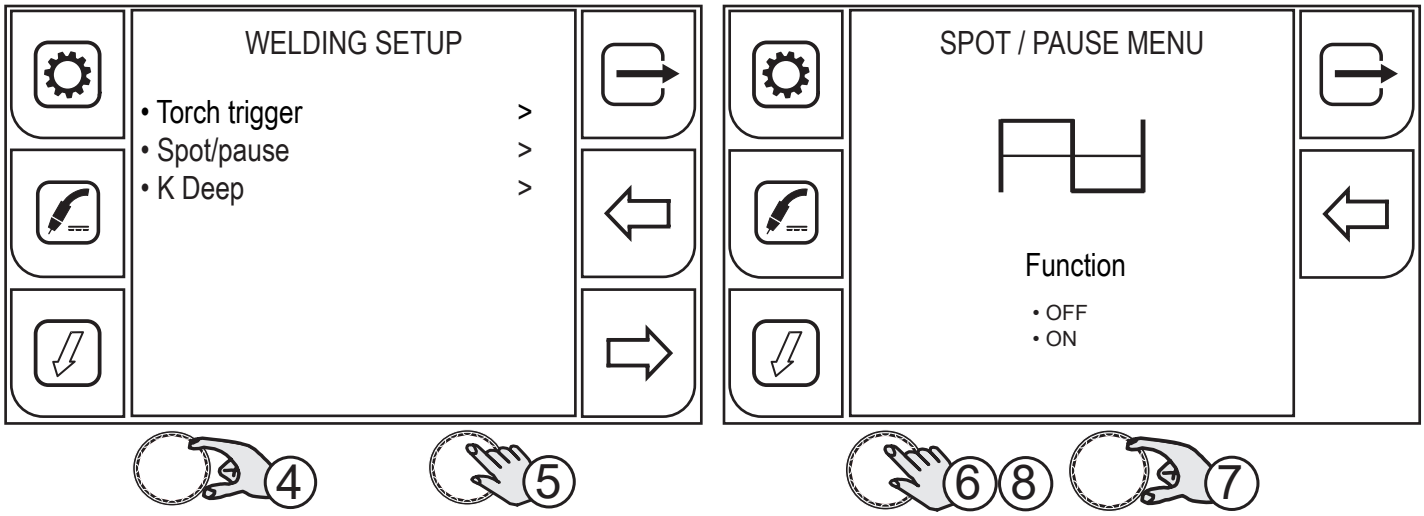
- Pressing and releasing the torch trigger again switches from the secondary current to the main current. This switching can be performed repeatedly at the discretion of the operator.
- To close the welding cycle (3rd stroke) press the torch trigger for a longer period of time. When the trigger is released the welding cycle will be closed (4th stroke).

Available range: minimum (0 %) - default (0 %) - maximum (100 %)

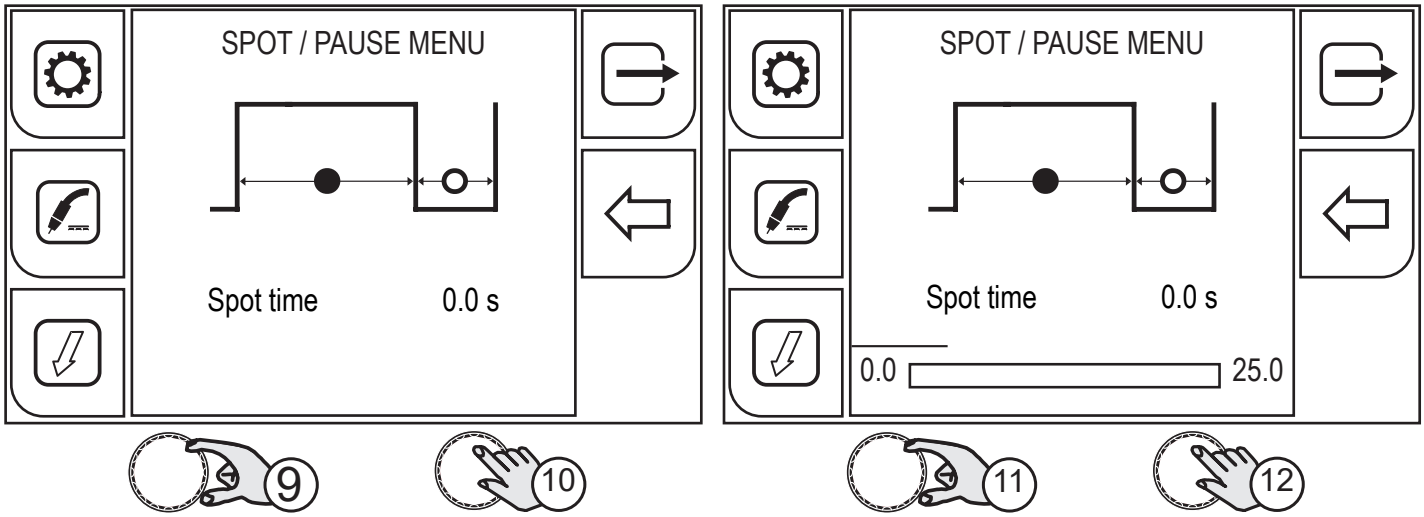
6.5 SETTING THE SPOT/PAUSE FUNCTION



1. Press the (MENU) key.
2. Turn the encoder to select the desired item. Select the following path: Welding setup>
3. Press the (ENCODER) key to confirm your selection.



4. Turn the encoder to select the desired item. Select the following path: Spot/pause>
5. Press the (ENCODER) key to confirm your selection.
6. Press the (ENCODER) key to select the function.
7. Turn the encoder to select the desired item. Select the following path: ON
8. Press the (ENCODER) key to confirm your selection.



9. Turn the encoder to select the desired parameter.
10. Press the (ENCODER) key to apply the parameter change.
11. Turn the encoder to set the desired value.
12. Press the (ENCODER) key to confirm your selection.

Press the ⇦ (PREC) key to return to the previous screen.

To return to the main screen, press the ⇨ (EXIT) key.

SPOT WELDING TIME
When the torch trigger is pressed the welding arc persists for the time set in the parameter.
Press the torch trigger again to resume the welding process.
The welding process cannot be interrupted once it has been started.
When the torch trigger is pressed, if the arc does not strike within 10 seconds, the process is deactivated.
The welding parameters can be modified during the welding process.

Adjustment range: minimum (0.0 s) - default (0.0 s) - maximum (25.0 s)

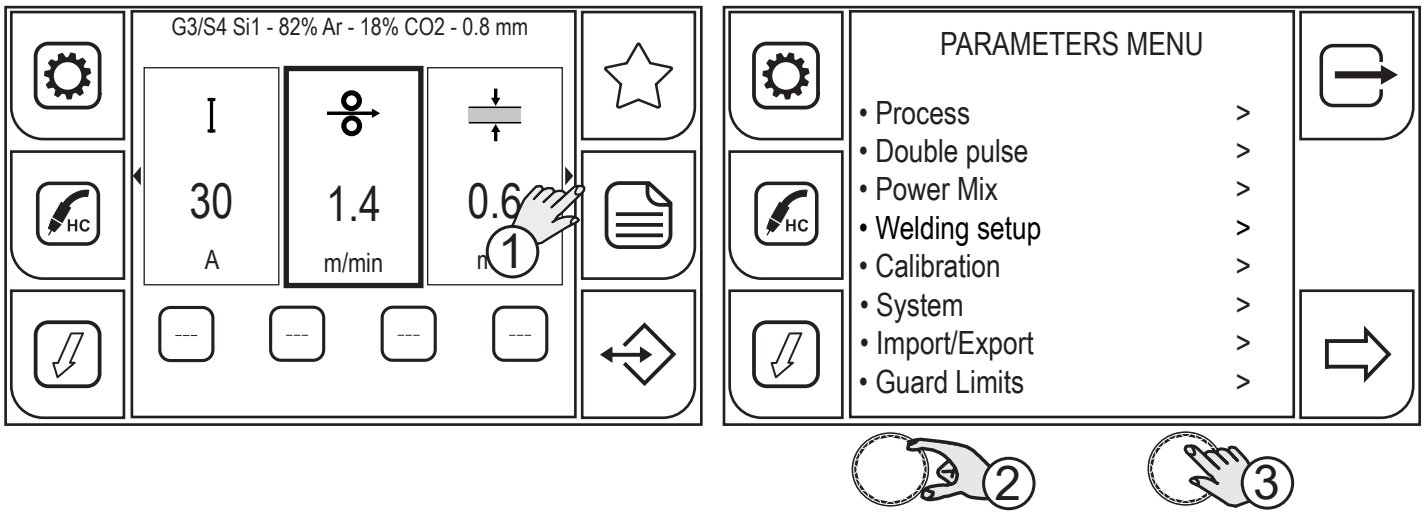
PAUSE TIME
The parameter sets the pause time after the spot pulse.

Adjustment range: minimum (0.0 s) - default (0.0 s) - maximum (25.0 s)

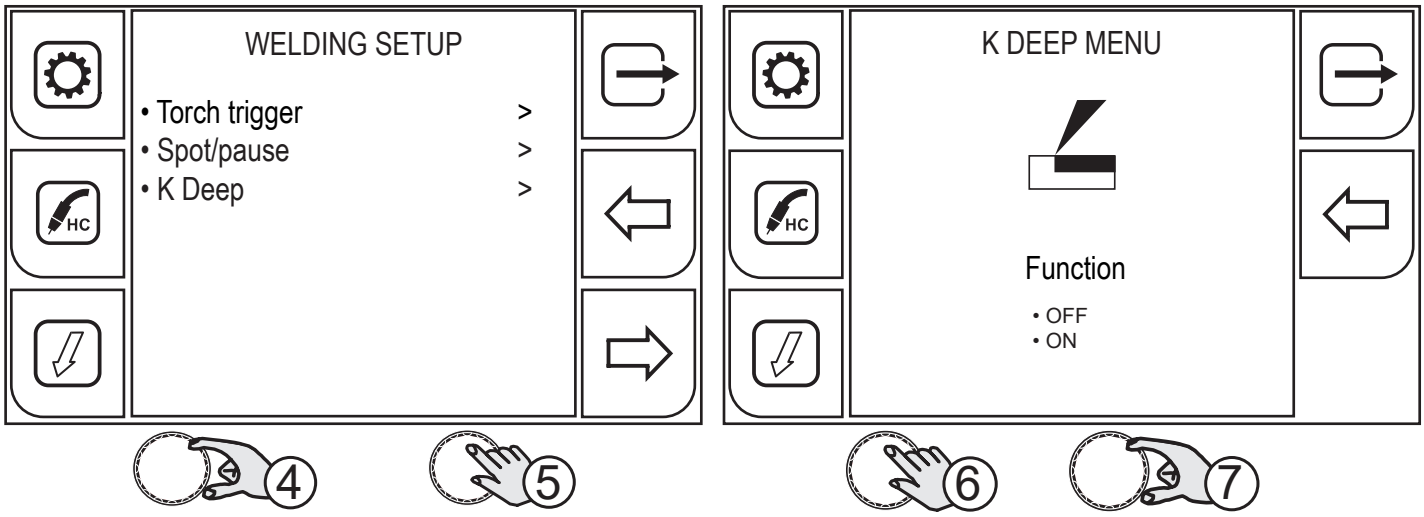
6.6 K DEEP PROCEDURE SETUP

The procedure can be enabled when an HC curve has been loaded.

K DEEP is a procedure aiming at stabilising penetration and uses the wire speed variation to keep the arch height constant and obtain a more uniform weld bead as regards width and depth.



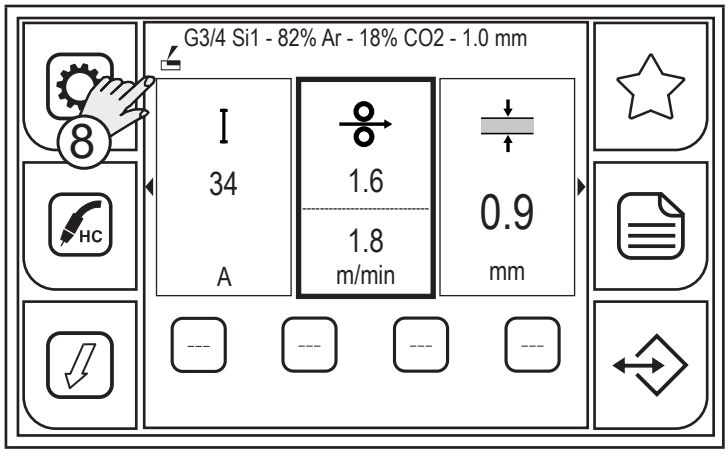
1. Press the (MENU) key.
2. Turn the encoder to select the desired item. Select the following path: Welding setup>
3. Press the (ENCODER) key to confirm your selection.



4. Turn the encoder to select the desired item. Select the following path: K Deep>
5. Press the (ENCODER) key to confirm your selection.
6. Press the (ENCODER) key to enable function selection.
7. Turn the encoder to select the desired item. Select the following path: ON

Press the ⇦ (PREC) key to return to the previous screen.

To return to the main screen, press the (EXIT) key.



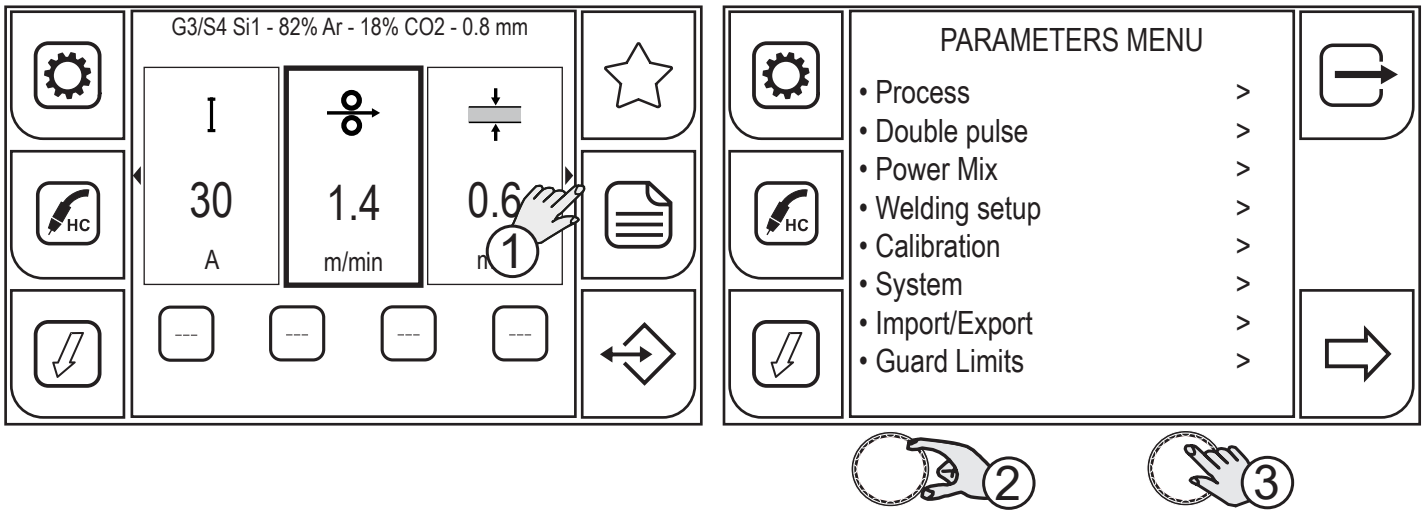
8. Below the active synergic curve wording, the icon of the active K DEEP procedure will appear.
The WIRE SPEED parameters window is divided into two sections; the value set by the user is displayed in the upper section, while the actual output value is displayed in the lower section.

6.7 SETTING DSI (Digital Sense Ignition) PROCEDURE

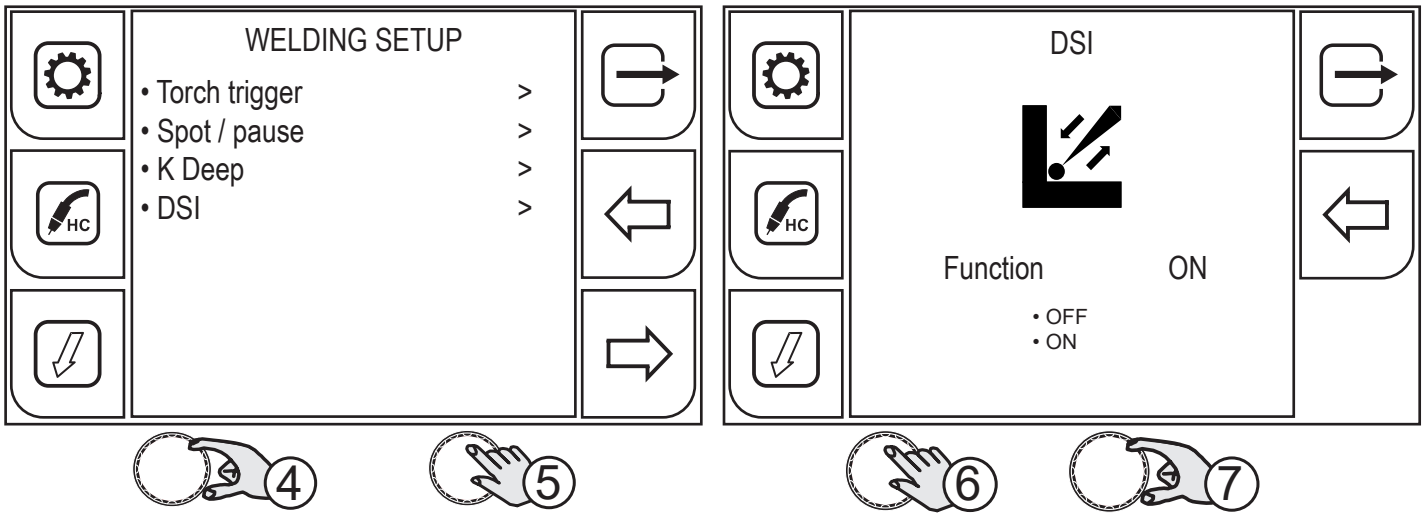
The procedure can be enabled when an HC curve has been loaded.

Digital Sense Ignition enables wire spatter and explosions to be almost totally eliminated during the cold ignition phase and during energy transmission to the workpiece. DSI enables:

- splashes onto stainless steel to be reduced by 60% during the ignition phase
- splashes onto carbon steel to be reduced by 30% during the ignition phase
- ignition with short-circuited wire to be optimized with significant reduction of splashes and explosions.



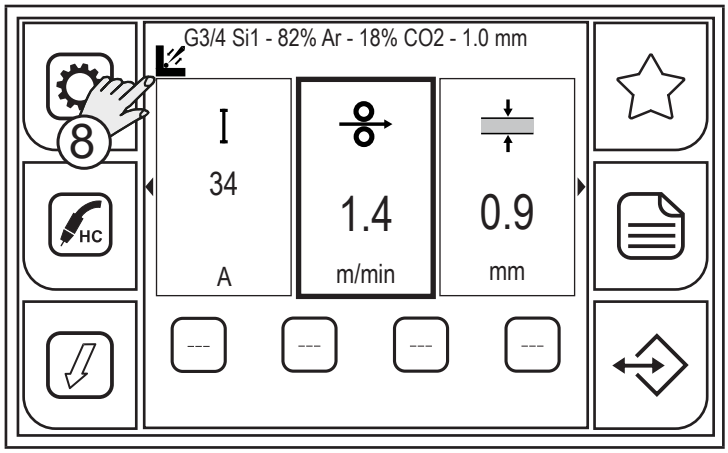
1. Press the (MENU) key.
2. Turn the encoder to select the desired item. Select the following path: Welding setup>
3. Press the (ENCODER) key to confirm your selection.



4. Turn the encoder to select the desired item. Select the following path: K Deep>
5. Press the (ENCODER) key to confirm your selection.
6. Press the (ENCODER) key to enable function selection.
7. Turn the encoder to select the desired item. Select the following path: ON

Press the ⇦ (PREC) key to return to the previous screen.

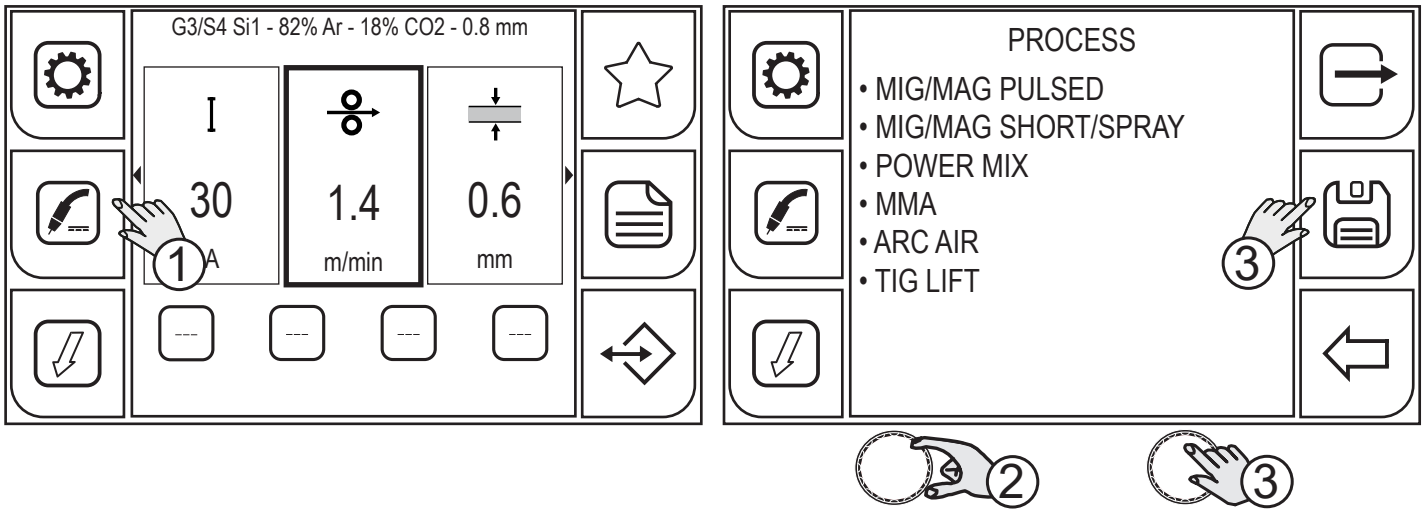
To return to the main screen, press the ⇨ (EXIT) key.



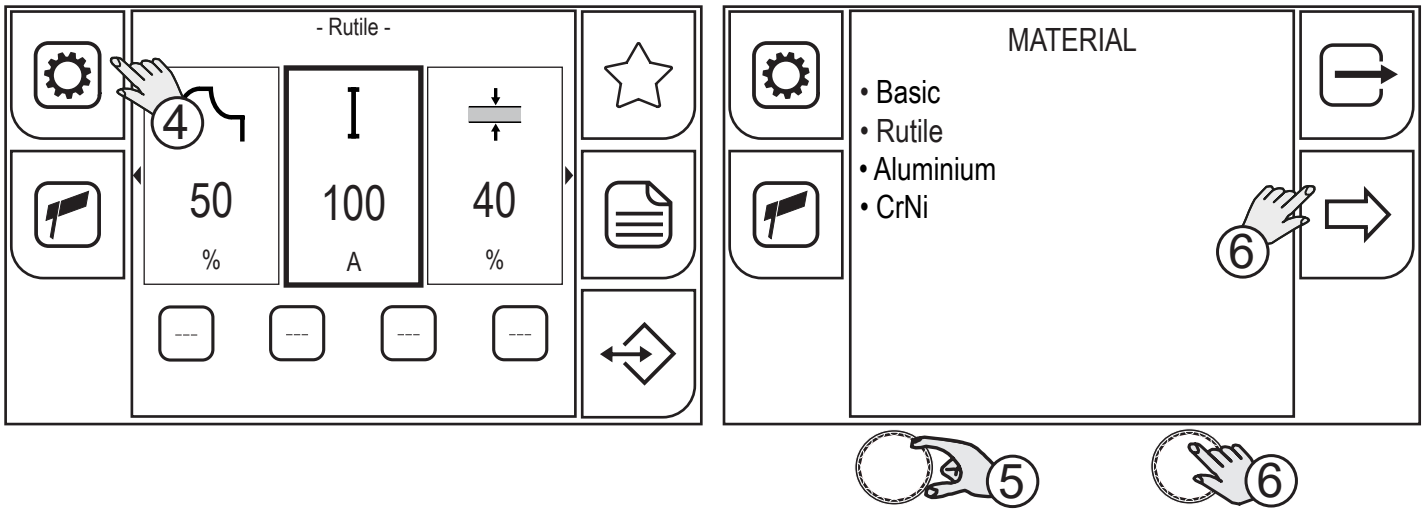
8. Below the active synergic curve wording, the icon of the active DSI procedure will appear.

7 MMA WELDING

7.1 SETTING THE MMA PROCESS



1. Press the (PROCESS) key.
2. Turn the encoder to select the desired setting. Select the following path: MMA
3. Press the (ENCODER) key or the (SAVE) key to confirm.



4. Press the (PROGRAM) key.
5. Turn the encoder to select the desired setting.

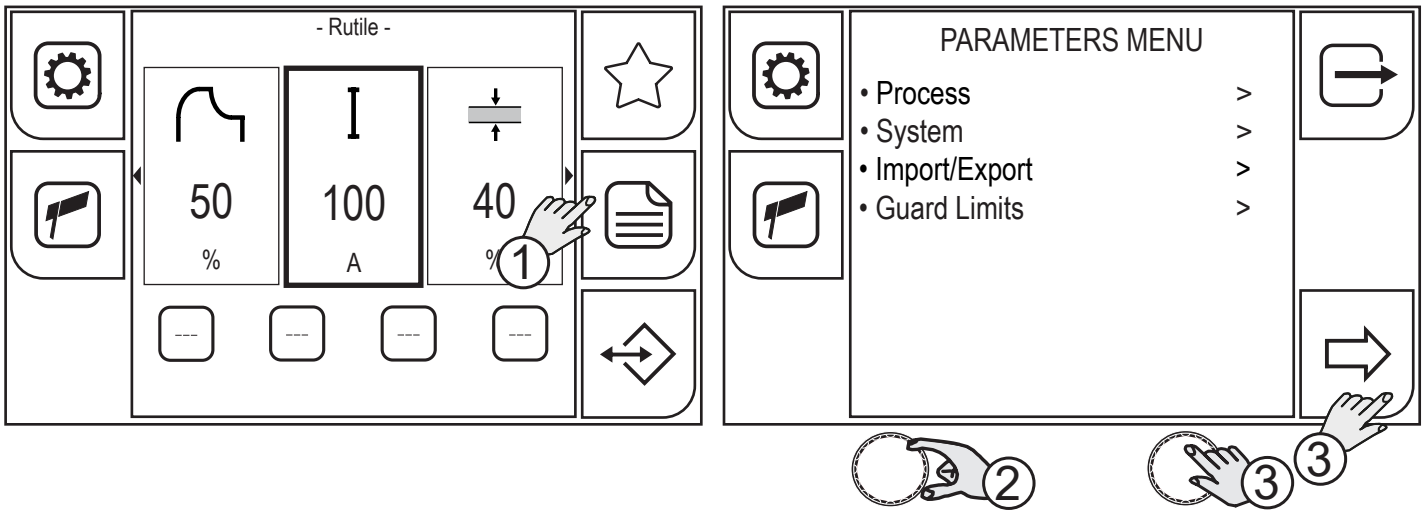
○ (Basic, Rutile, Aluminium, CrNi)

6. Press the (ENCODER) key or the (NEXT) key to confirm.

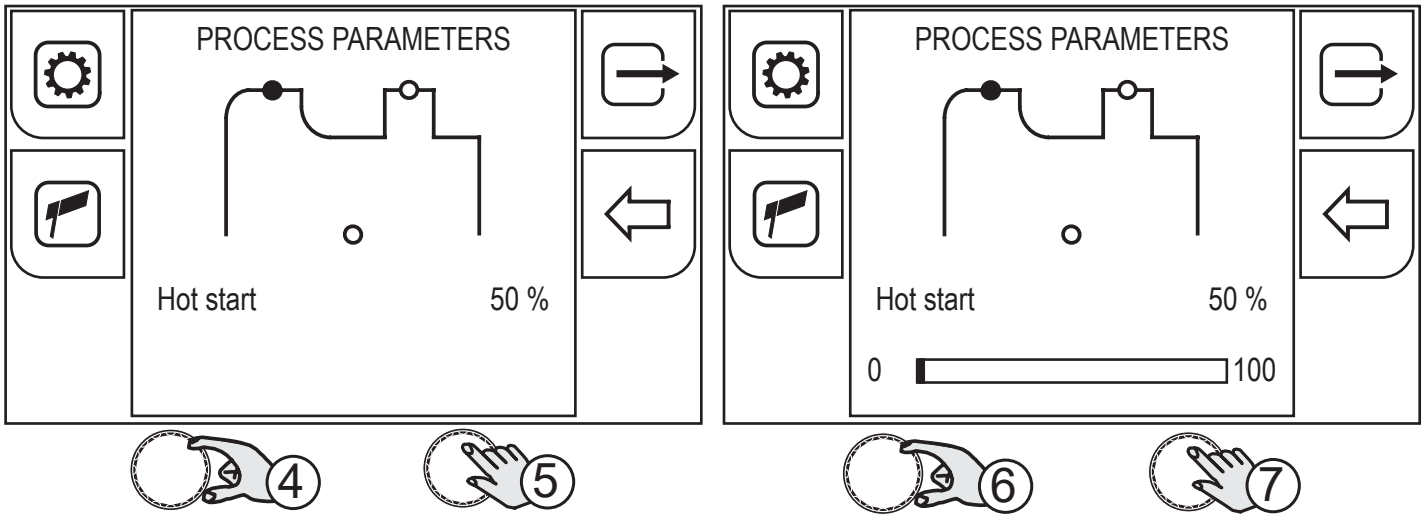
Press the  key to exit the screen.

7.2 SETTING THE PROCESS PARAMETERS

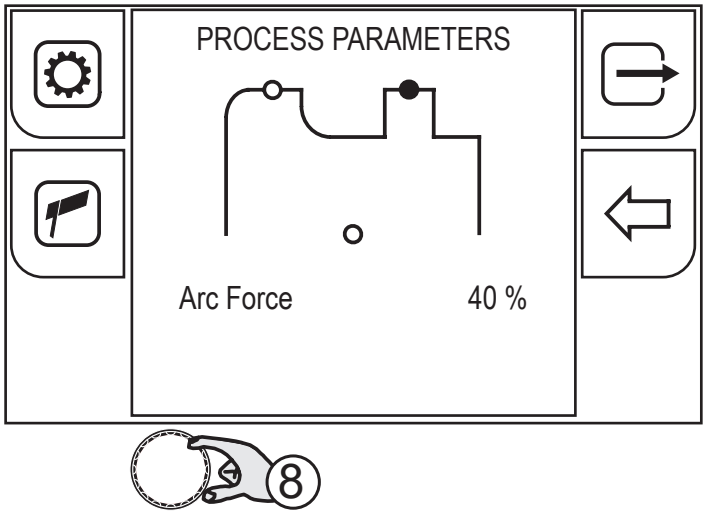
The (PARAMETERS MENU) key allows the user to access the menu used to set the main welding features.



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Process>
3. Press the (ENCODER) key or the (NEXT) key.



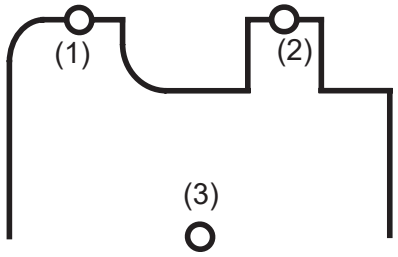
4. Turn the encoder to select the parameter to be changed.
5. Press the (ENCODER) key to confirm your selection.
6. Turn the encoder to set the desired value.
7. Press the (ENCODER) key to confirm your selection.



8. Turn the encoder again to select other parameters.

To return to the main screen, press the (EXIT) key.

7.2.1 MMA PARAMETERS (PARAMETRESMENU)



1. **HOT START**

This parameter aids electrode melting at the time of arc striking. It is set as a percentage referred to the value of the WELDING CURRENT. The value is limited to 250A max.

Adjustment range: minimum (0 %) - default (50 %) - maximum (100 %)

2. **ARC FORCE**

This parameter helps to avoid electrode sticking during welding. It is set as a percentage referred to the value of the WELDING CURRENT.

Adjustment range: minimum (0 %) - default (40 %) - maximum (200 %)

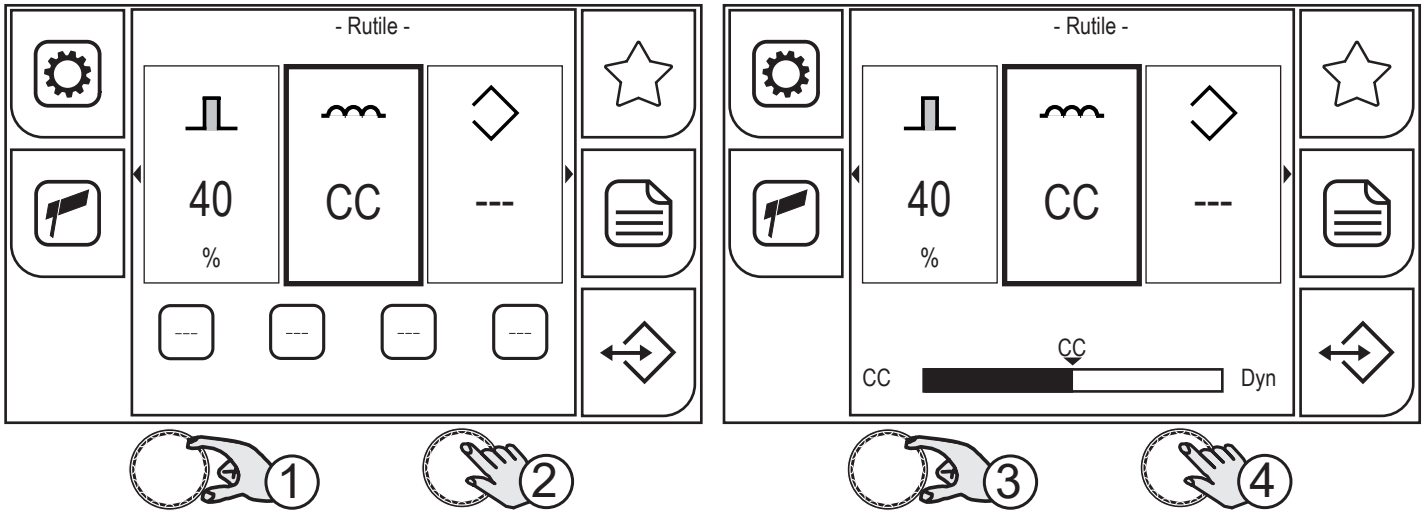
3. **VOLT END**

The parameter sets the voltage value once the welding process is exited by lifting the electrode To exit the MMA welding process the electrode must be lifted considerably; set the parameter at a low value to stop the welding process by slightly lifting the electrode. In this way, less welding spatters are produced and the workpiece is cleaner.
Be careful when setting the parameter because a too low value can lead to frequent welding interruptions.

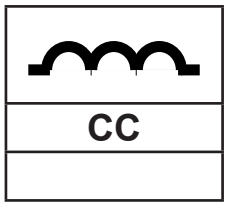
Adjustment range: minimum (20 V) - default (50 V) - maximum (70 V)

7.2.2 MMA PARAMETERS (MAIN SCREEN)

The following welding parameters can be set on the main screen in addition to the parameters menu.



1. Turn the encoder to select the parameter to be changed.
2. Press the (ENCODER) key to confirm your selection.
3. Turn the encoder to set the desired value.
4. Press the (ENCODER) key to confirm your selection.



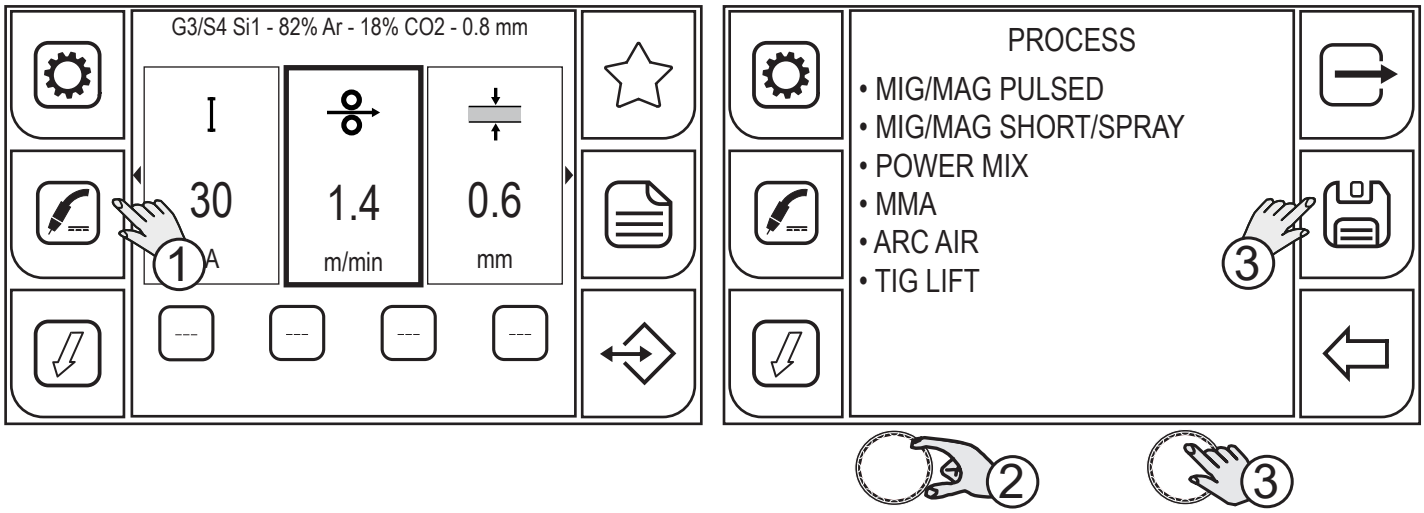
INDUCTANCE
A low-value parameter allows to obtain a softer arc and fewer spatters while a higher value allows to obtain an harder and more stable arc.
With “CC” (constant current) setting, preset welding current is constantly output. This setting is recommended for welding processes with basic, rutile and stainless steel electrodes.
With “Dyn” setting, the current output remains constant (the arc tension increases and the current output decreases when the electrode is lifted).
This setting is recommended for welding processes with cellulose electrodes to carry out route passes onto pipes and with aluminium electrodes to improve arc stability especially at reduced current values.

Adjustment range: minimum (CC constant current) - default (CC) - maximum (Dyn)

Turn the encoder again to select other parameters.

8 ARC AIR WELDING

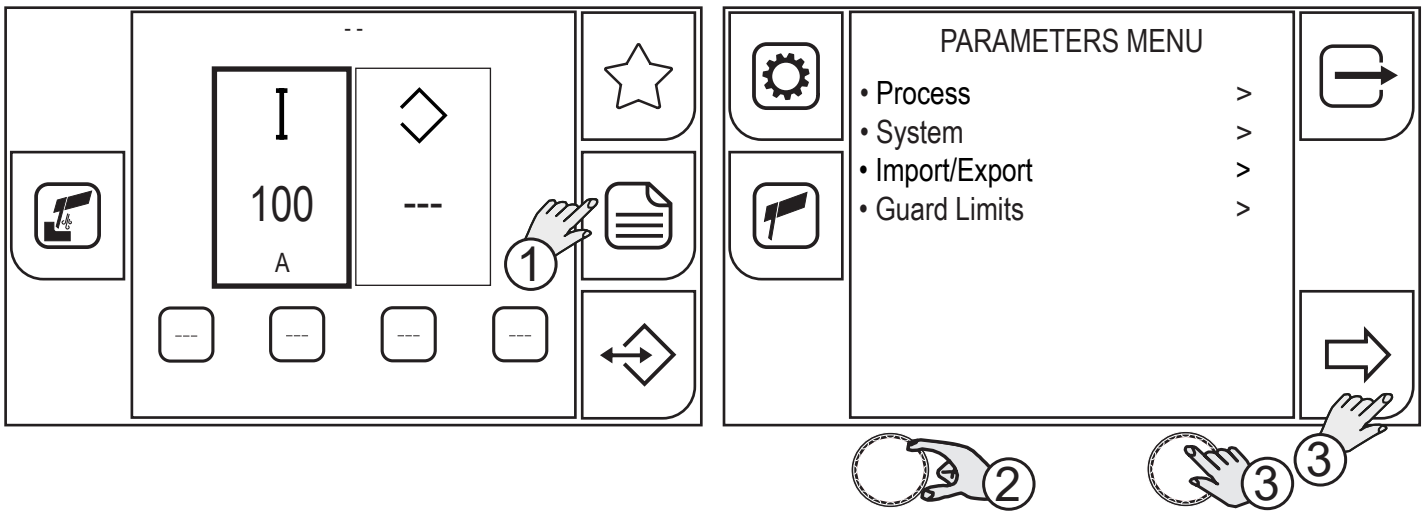
8.1 SETTING THE ARC AIR PROCESS



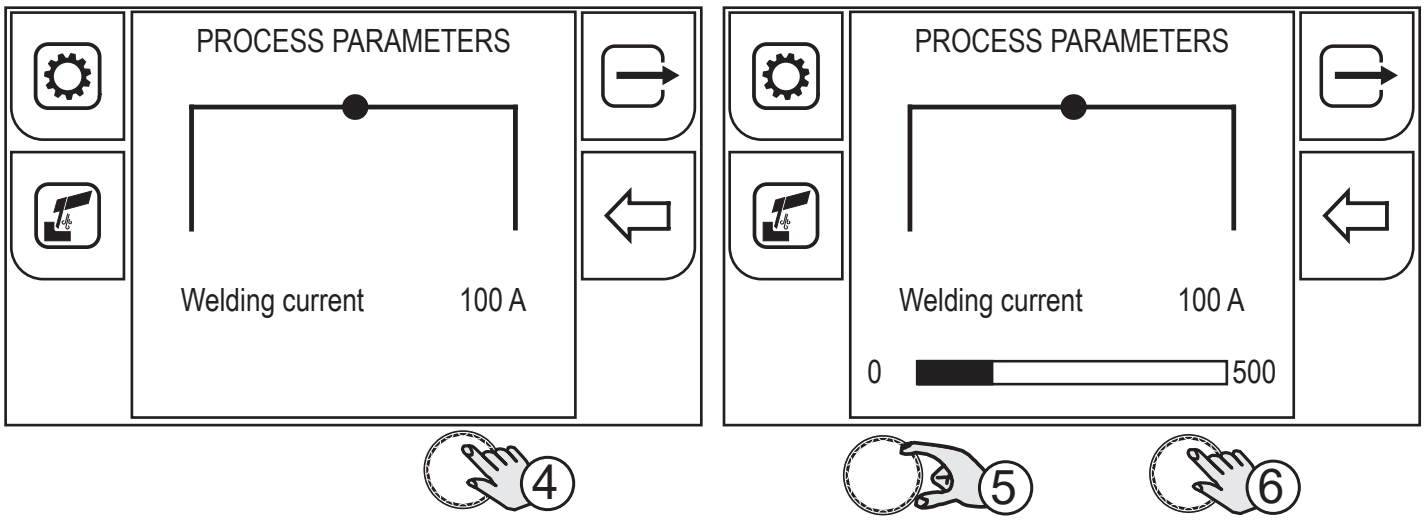
1. Press the (PROCESS) key.
2. Turn the encoder to select the desired setting. Select the following path: ARC AIR
3. Press the (ENCODER) key or the (SAVE) key to confirm.

8.2 SETTING THE PROCESS PARAMETERS

The  (PARAMETERS MENU) key allows the user to access the menu used to set the main welding features.



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: Process>
3. Press the (ENCODER) key or the (NEXT) key.

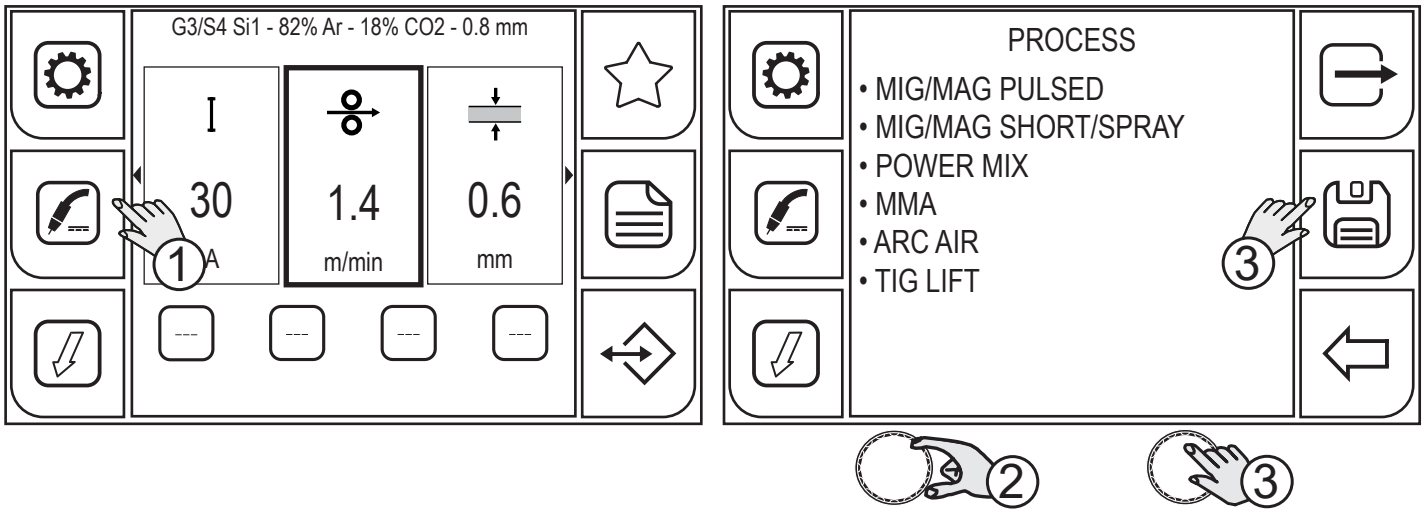


4. Press the (ENCODER) key to confirm your selection.
5. Turn the encoder to set the desired value.
6. Press the (ENCODER) key to confirm your selection.

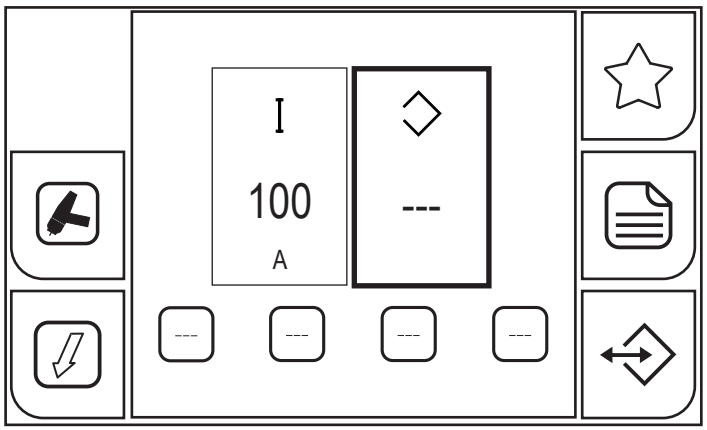
To return to the main screen, press the (EXIT) key.

9 TIG LIFT WELDING

9.1 SETTING THE TIG LIFT PROCESS

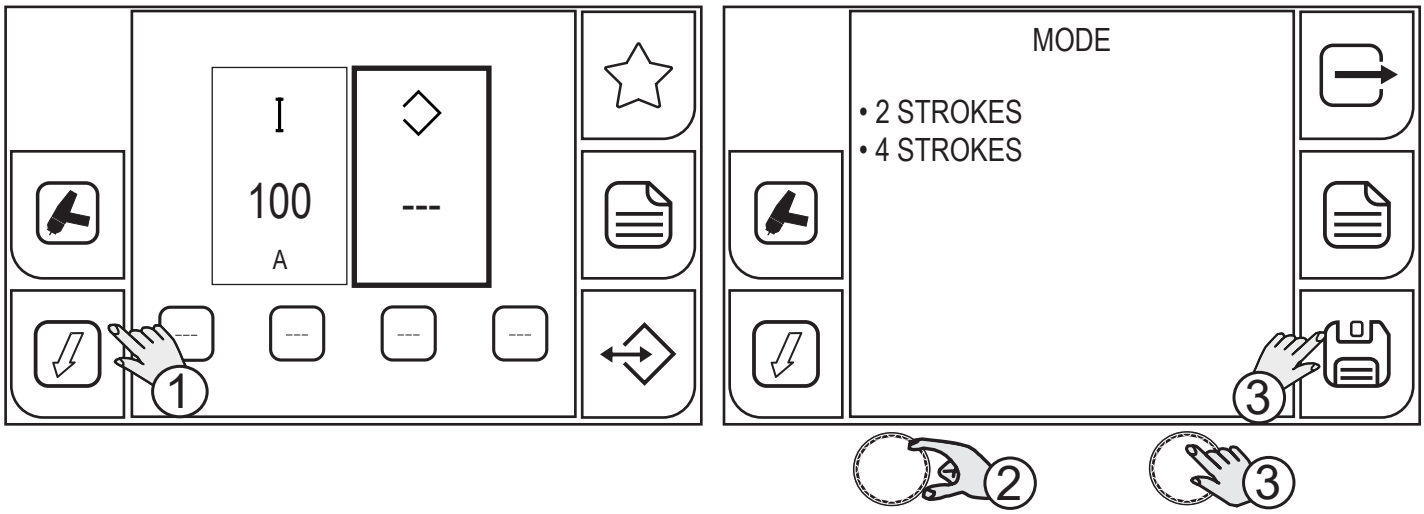


1. Press the (PROCESS) key.
2. Turn the encoder to select the desired setting. Select the following path: TIG LIFT
3. Press the (ENCODER) key or the (SAVE) key to confirm.



Press the key to exit the screen.

9.2 SETTING UP THE TIG TORCH TRIGGER MODE

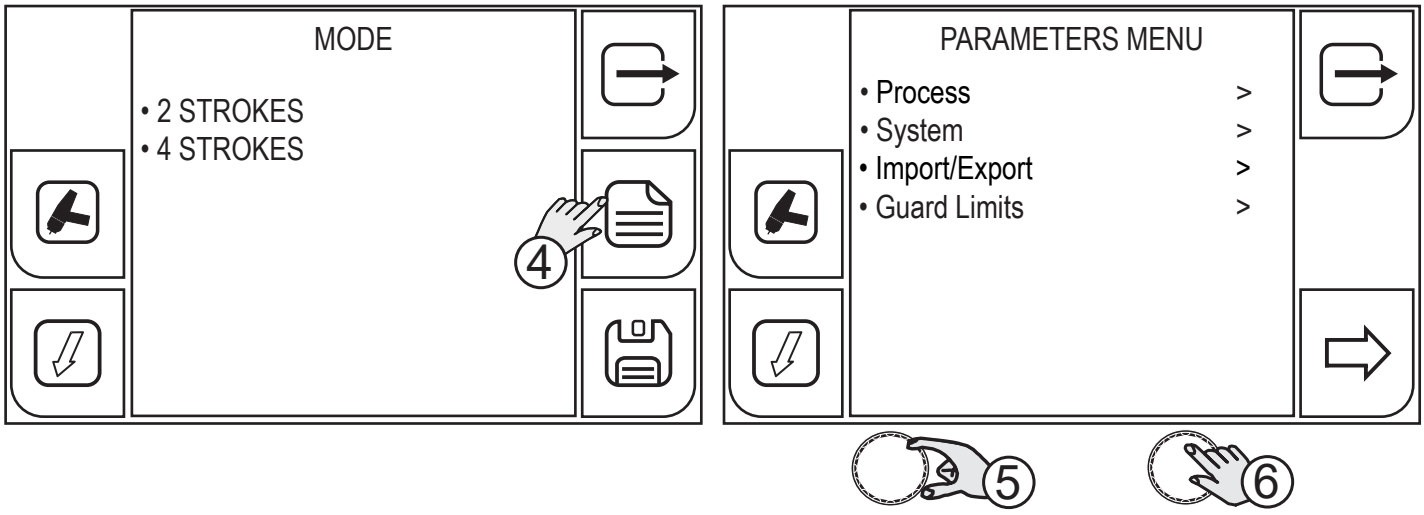


1. Press the (MODE) key.

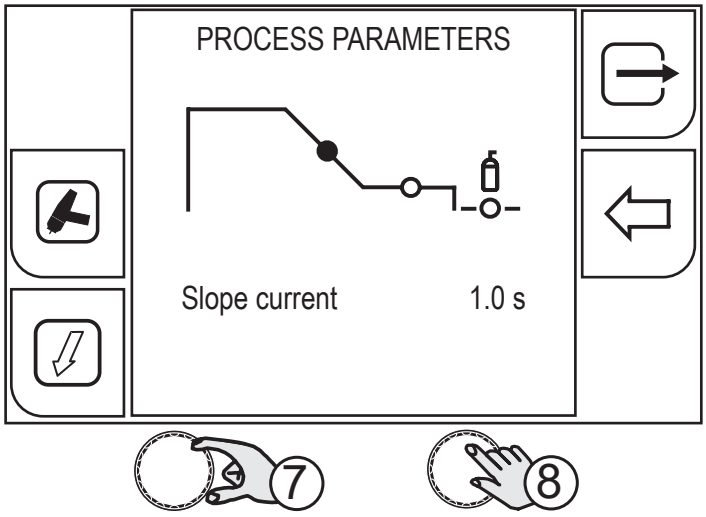
○ From within the menu screen, the torch trigger mode can be selected.

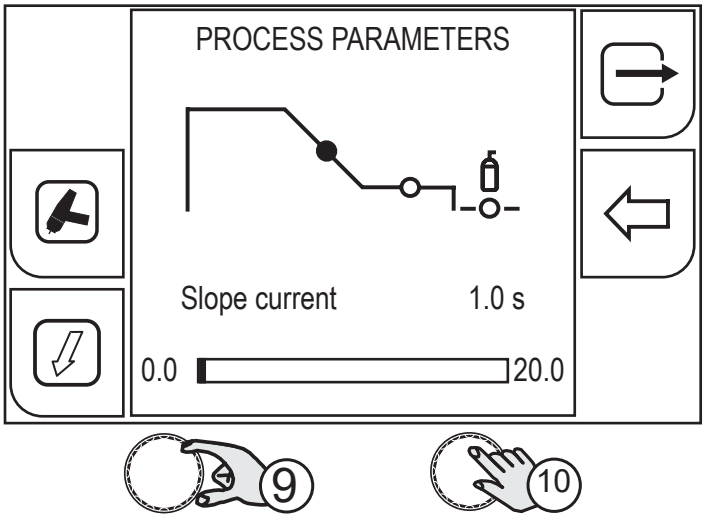
(2 STROKES) - (4 STROKES)

2. Turn the encoder to select the desired setting.
3. Press the (ENCODER) key or the (SAVE) key to only set up the torch trigger mode, otherwise carry out the procedure shown in paragraph (4).

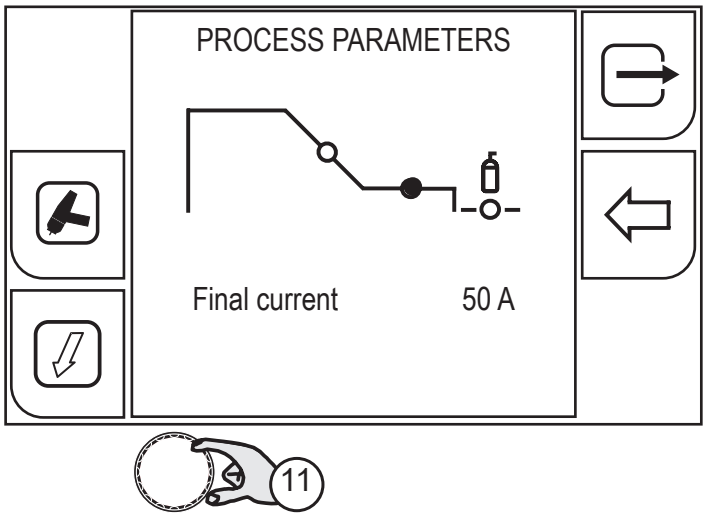


4. Press the (MENU) key.
5. Turn the encoder to select the desired setting. Select the following path: Process>
6. Press the (ENCODER) key or the (NEXT) key.





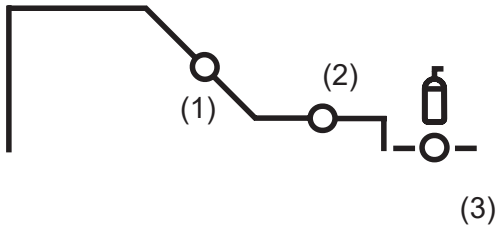
7. Turn the encoder to select the parameter to be changed.
8. Press the (ENCODER) key to confirm your selection.
9. Turn the encoder to set the desired value.
10. Press the (ENCODER) key to confirm your selection.



11. Turn the encoder again to select other parameters.

To return to the main screen, press the (EXIT) key.

9.2.1 PROCESS PARAMETERS WITH TORCH TRIGGER IN 2 STROKE AND 4 STROKE MODE



1. **SLOPE CURRENT**

The parameter sets the time during which the current changes from the welding value to the end value by means of a slope. Prevents the formation of craters in the process of turning off the arc.

Adjustment range: minimum (0.0 s) - default (1.0 s) - maximum (20.0 s)

2. **FINAL CURRENT**

The parameter sets the final current value. During electrode welding the parameter makes it possible to obtain a uniform deposit of filler material from the start to the end of the welding process, closing the deposition crater with a current such as to deposit a final droplet of filler material.

Adjustment range: minimum (0 A) - default (50 A) - maximum (500 A)

3. **POST GAS**

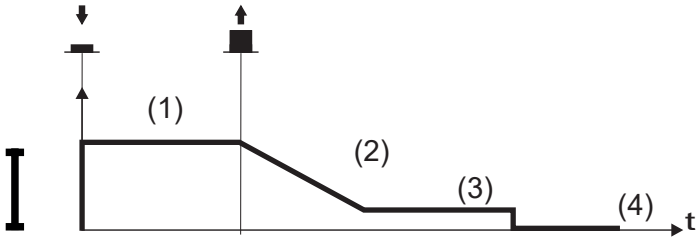
Time of post gas delivery when the welding arc is extinguished.

Adjustment range: minimum (0.0 s) - default (2.0 s) - maximum (20.0 s)

9.2.2 TIG LIFT 2T OPERATION

: press the torch trigger

: release the torch trigger



1. welding current
2. Slope current
3. FINAL CURRENT
4. post gas

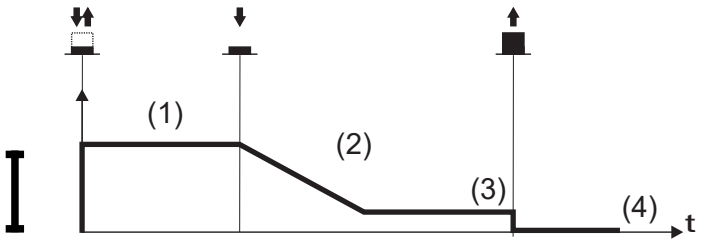
- Touch the workpiece with the torch electrode.
- Press (1T) and keep the torch trigger pressed.
- Slowly lift the torch to strike the arc.
- The welding current reaches the preset value.
- Release (2T) trigger to start the weld completion procedure.
- The current reaches the end current value in the time set in the down slope time parameter.
- The arc is extinguished.
- Gas delivery continues for the time set in the post gas parameter.

9.2.3 TIG LIFT 4T OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger

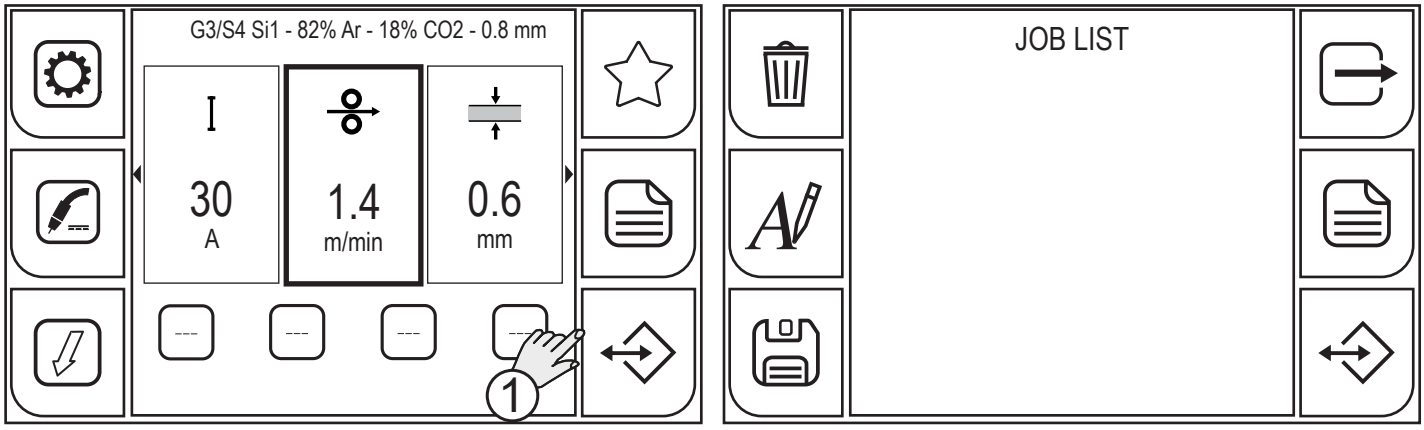


1. welding current
2. Slope current
3. FINAL CURRENT
4. post gas

- Touch the workpiece with the torch electrode.
- Press (1T) and release (2T) the torch trigger.
- Slowly lift the torch to strike the arc.
- The welding current reaches the preset value.
- Press (3T) trigger and keep it pressed to start the weld completion procedure.
- The current reaches the end current value in the time set in the down slope time parameter.
- The arc continues and the current output will be the value set in the end current parameter.
- In these conditions the weld pool can be closed (crater filler current).
- Release (4T) trigger to extinguish the arc.
- Gas delivery continues for the time set in the post gas parameter.

10 JOBS MANAGEMENT

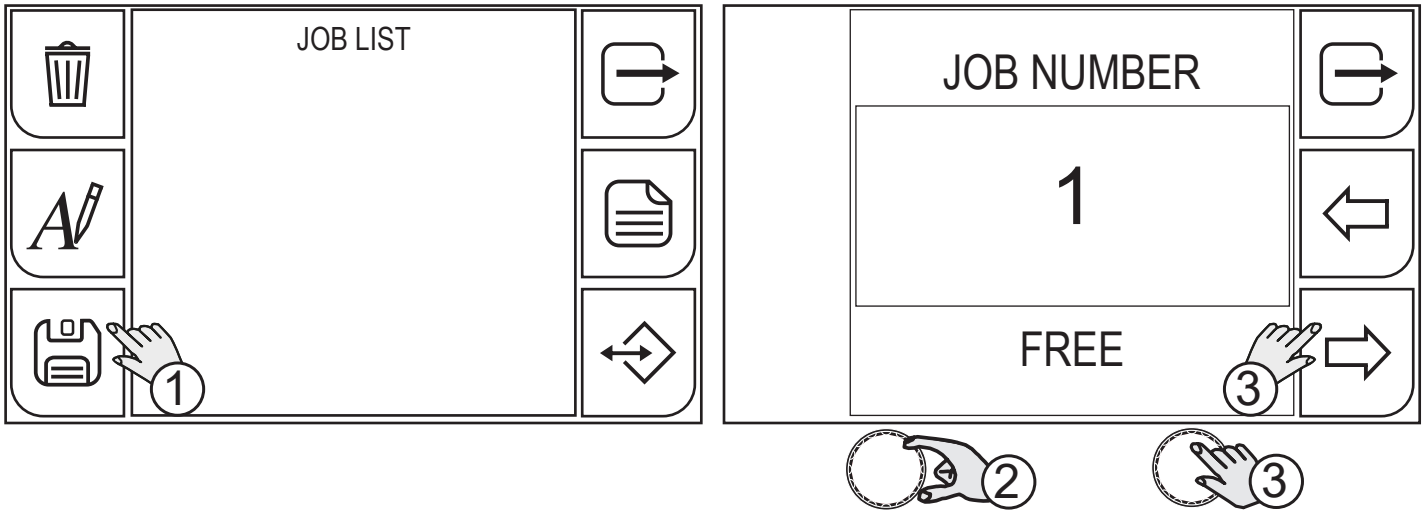
Personalised welding settings, or JOBs, can be saved in memory locations and subsequently uploaded.
The Job entails saving the image of all the parameters set in the device. The device parameters are: wire speed, welding arc correction, inductance/dynamic, slopes, torch button mode, process, program used, special functions, guard limits etc...
The settings of the SETUP menu are not saved.
100 JOBs are available.
This function is available when welding mode is not active.



1. To enter the JOB menu, press the (JOB) key.

10.1 CREATING A JOB

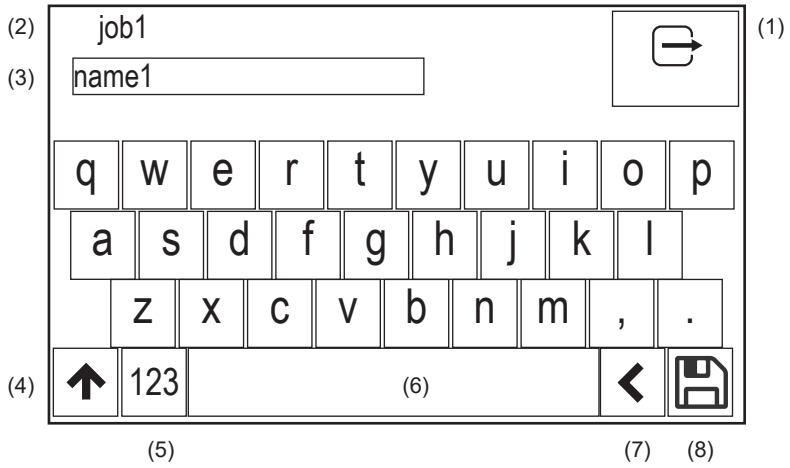
Enter the JOB screen.



1. Press the (CREATE JOB) key. The JOB position selection screen will appear.
2. By using the encoder select the JOB position.
3. Press the (ENCODER) key or the (NEXT) key. The keyboard will appear to write the name of the job.

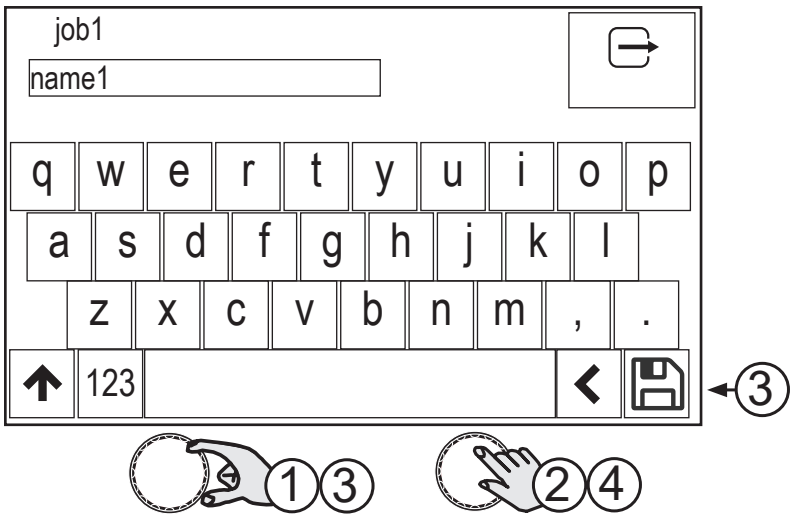
10.1.1 KEYBOARD FUNCTIONS

1. exiting without saving changes
2. JOB position
3. JOB name
4. upper-case
5. numbers/special characters
6. space bar
7. delete text
8. save



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

10.1.2 NAMING A JOB

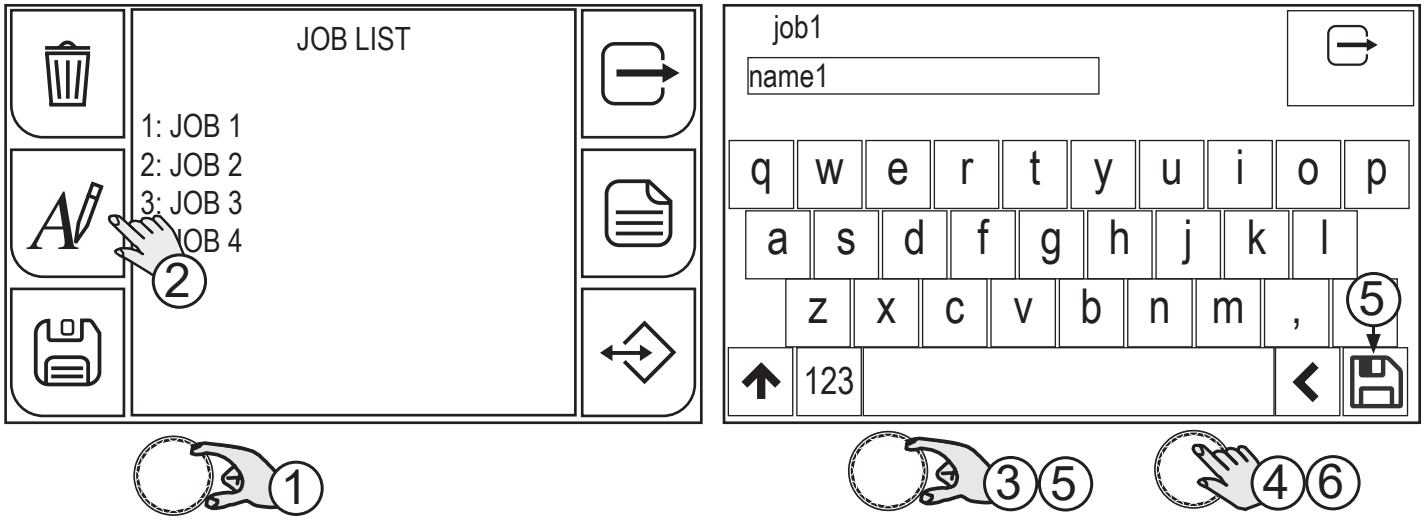


1. Turn the encoder to select the letter on the keyboard.
2. Press the (ENCODER) key to confirm your selection.
3. Turn the encoder to select the (SAVE) symbol on the keyboard
4. Press the (ENCODER) key to save and exit.

Press the key to exit without saving.

10.2 RENAMING A JOB

Enter the JOB screen, which contains the list of stored JOBS.



1. Select the JOB to be renamed by using the encoder.
2. Press the (RENAME) key. The keyboard will appear to write the name of the job.

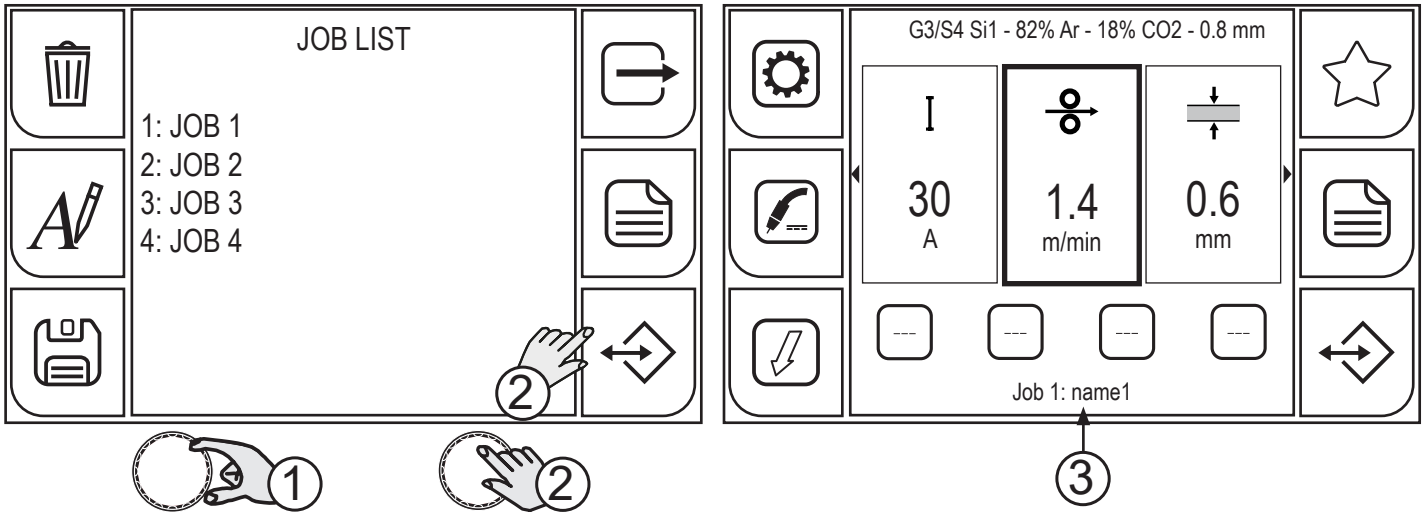
The touchscreen panel allows the user to set up the functions through the mechanical keys or by touching the icons displayed on the screen.

3. Turn the encoder to select the letter on the keyboard.
4. Press the (ENCODER) key to confirm your selection.
5. Turn the encoder to select the (SAVE) symbol on the keyboard.
6. Press the (ENCODER) key to save and exit.

Press the key to exit without saving.

10.3 LOADING A JOB

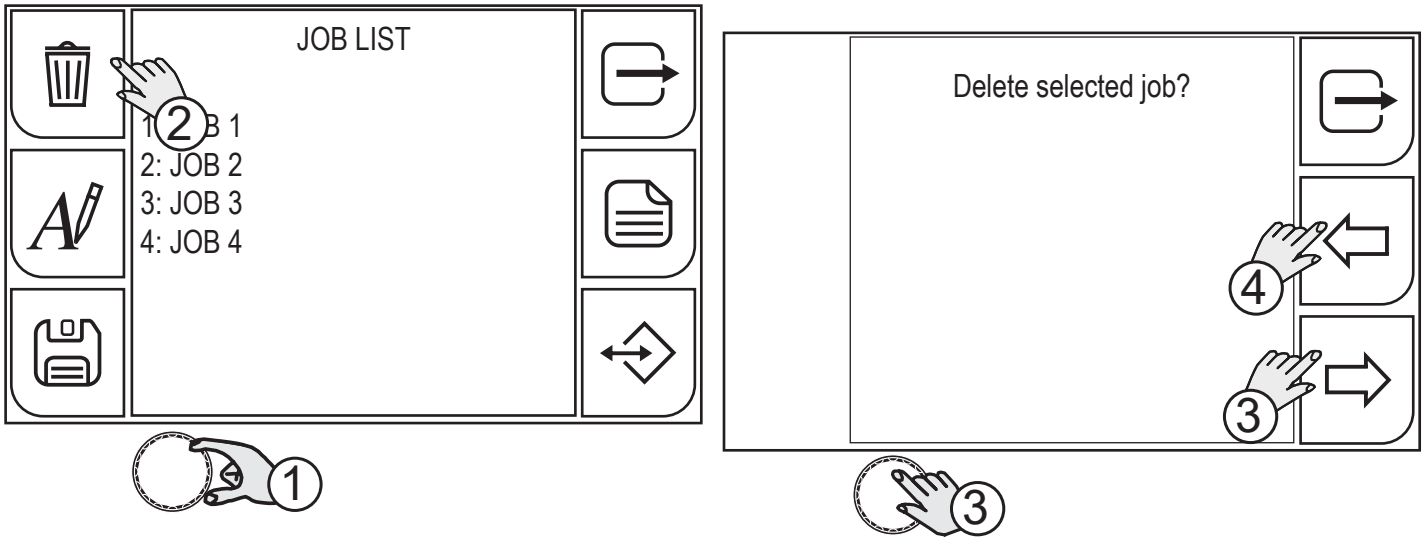
Enter the JOB screen, which contains the list of stored JOBS.



1. Select the JOB to be loaded by using the encoder.
2. Press the (ENCODER) key or the (LOAD) key.
3. The main screen appears with the name of the loaded job.
4.

10.4 DELETING A JOB

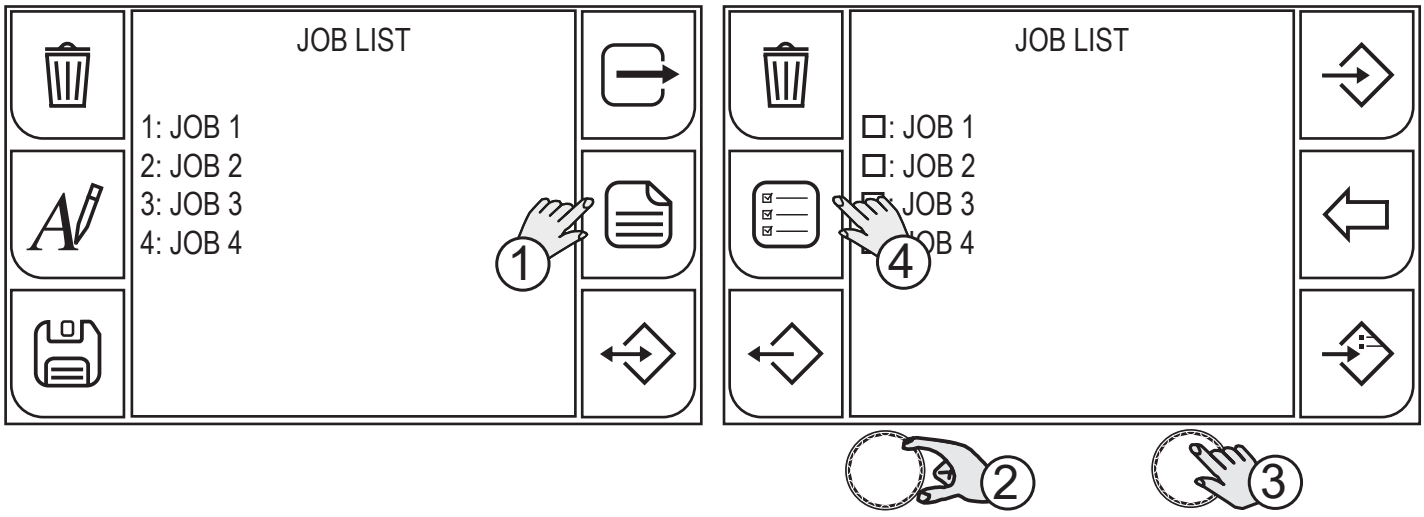
Enter the JOB screen, which contains the list of stored JOBS.



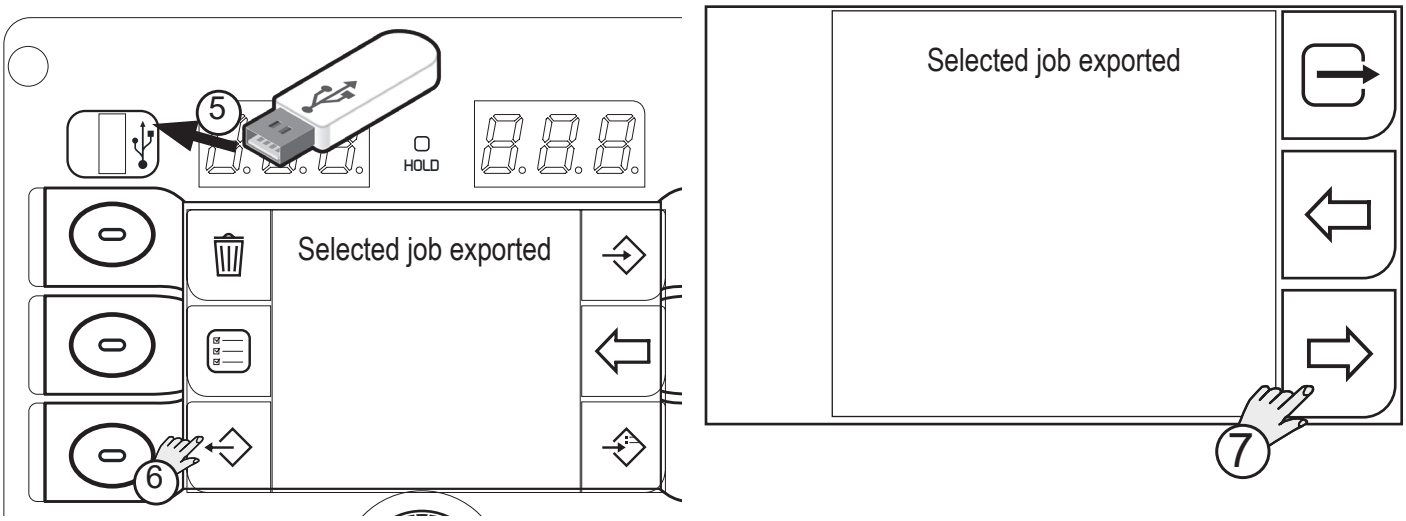
1. Select the JOB to be deleted by using the encoder.
2. Press the (DELETE) key.
3. Press the (ENCODER) key or the (YES) key to confirm,
4. or the (NO) key to return to the previous screen.

10.5 EXPORTING JOBS

Enter the JOB screen.



1. Press the (MENU) key.
2. Select the JOB to be exported by using the encoder.
3. Press the (ENCODER) key to confirm your selection.
4. If you wish to select/deselect all the JOBS, press the (SELECT ALL) / (DESELECT ALL) key.



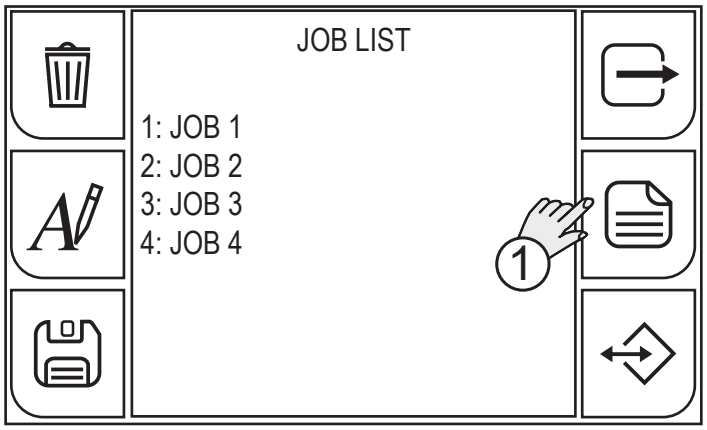
5. Insert the USB memory stick in the port provided.
6. Press the (EXPORT) key to export the files to the USB memory stick. If the exporting operation is successful, the message “Selected jobs exported” will appear.
7. Press the (OK) key

Press the ⇦ (NO) key to return to the previous screen.

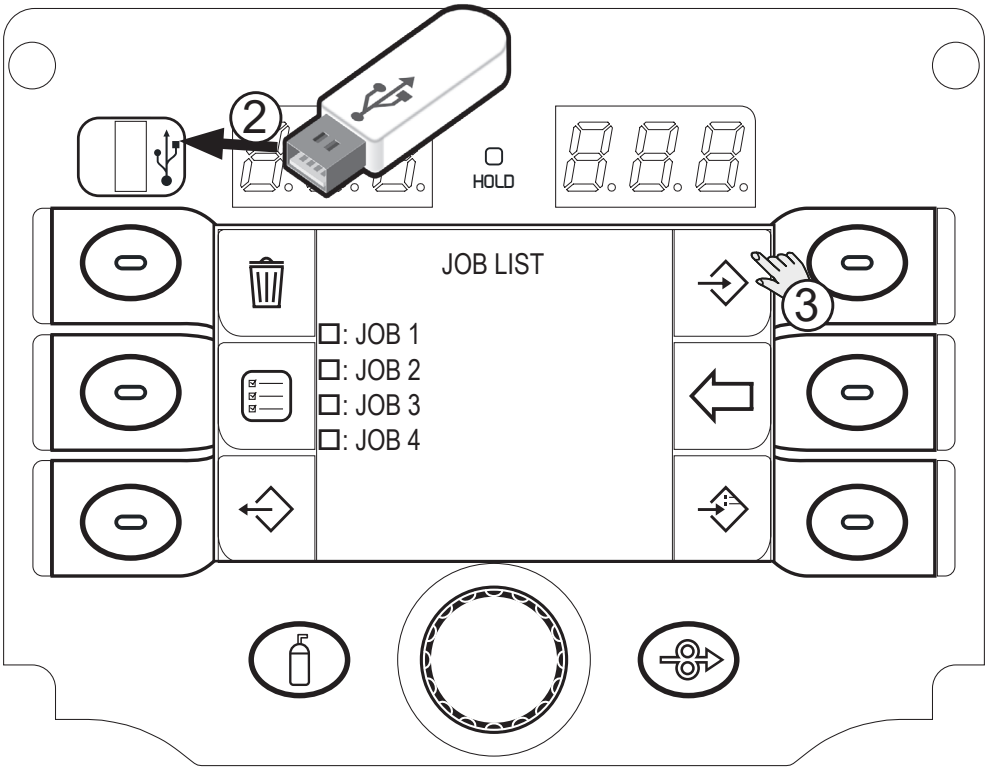
To return to the main screen, press the ⇨ (EXIT) key.

10.6 IMPORTING JOBS

Enter the JOB screen.

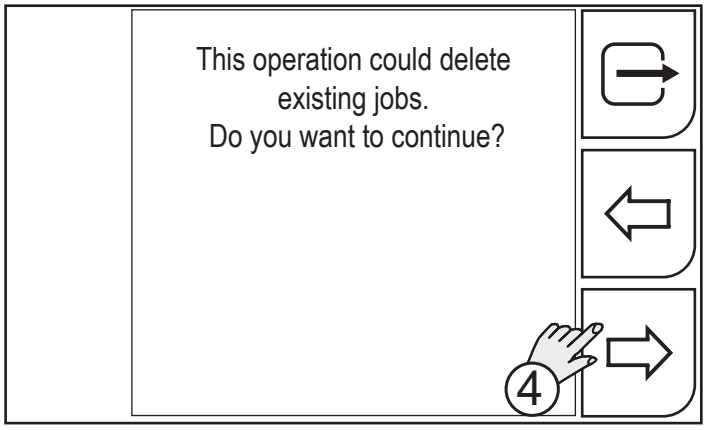


1. Press the (MENU) key.



2. Insert the USB memory stick in the port provided.
3. Press the (IMPORT) key to import the files saved onto the USB memory stick.

If the files are stored on the USB memory stick in the same position (number before name) as the files located in the WF-205, the latter will be overwritten by the files saved on the memory stick.



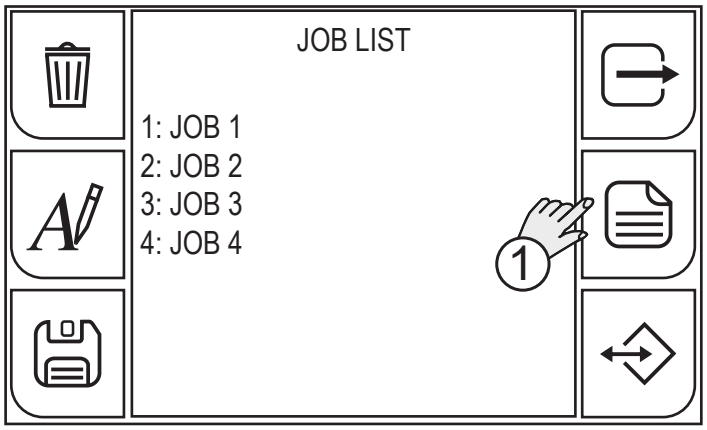
4. Press the (YES) key.

Press the ⇦ (NO) key to return to the previous screen.

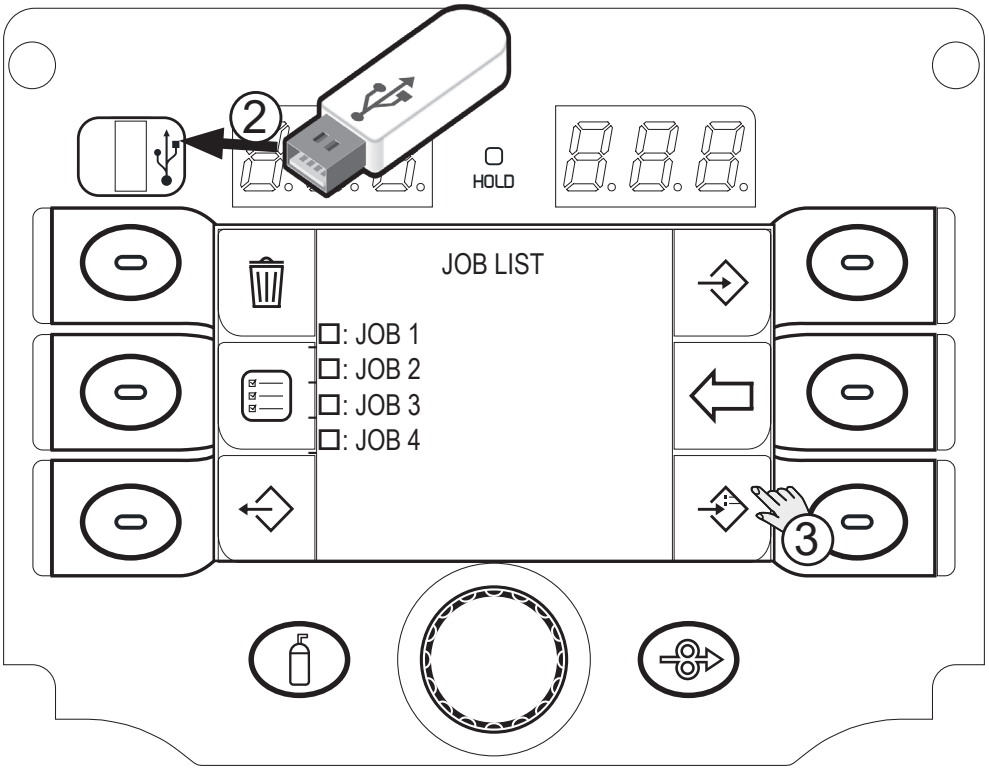
To return to the main screen, press the ⊏→ (EXIT) key.

10.7 ADDING JOBS

Enter the JOB screen.



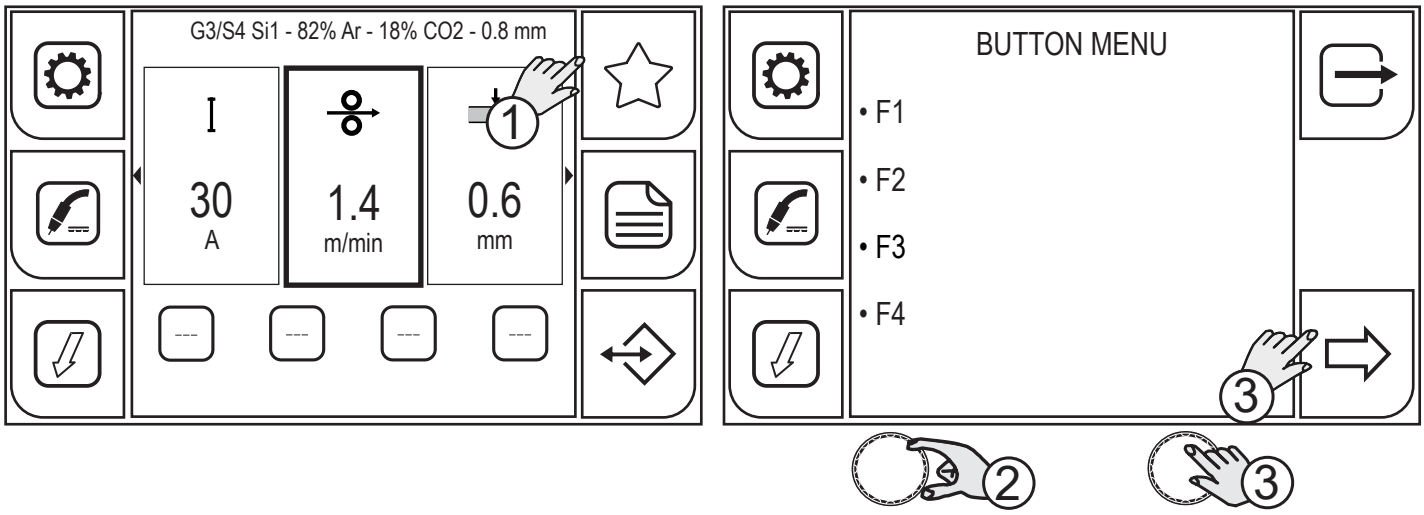
1. Press the (MENU) key.



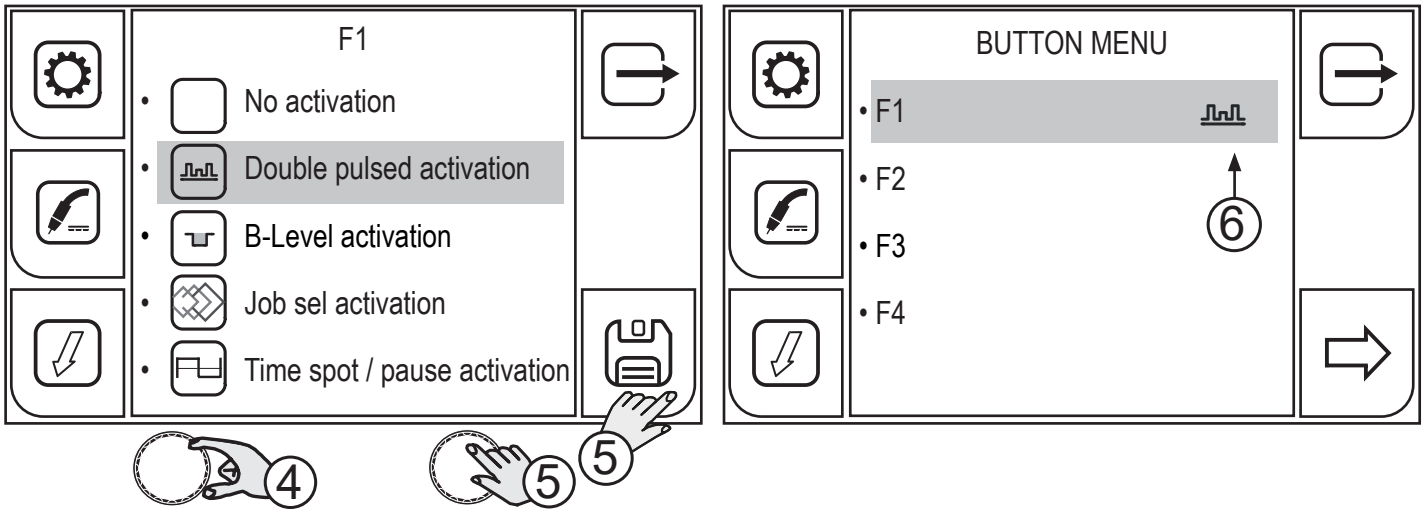
2. Insert the USB memory stick in the port provided.
3. Press the (ADD) key to add to the JOBs located on the WF-205 the files saved on the USB memory stick. The files located on the USB memory stick will be added to the files located on the WF-205, renumbering and adding them at the bottom of the list.

11 SETTING THE FAVOURITE KEY

The --- (SHORTCUT) keys can be associated to a specific function amongst those available from a preset list.



1. Press the (FAVOURITE) key; The BUTTON MENU will be displayed. From the menu screen, the (Fn) key can be selected to associate it to a specific function. Keep the --- (SHORTCUT) key pressed for 3 seconds to access the functions screen.
2. Turn the encoder to select the desired key.
3. Press the (ENCODER) key again or the (NEXT) key.

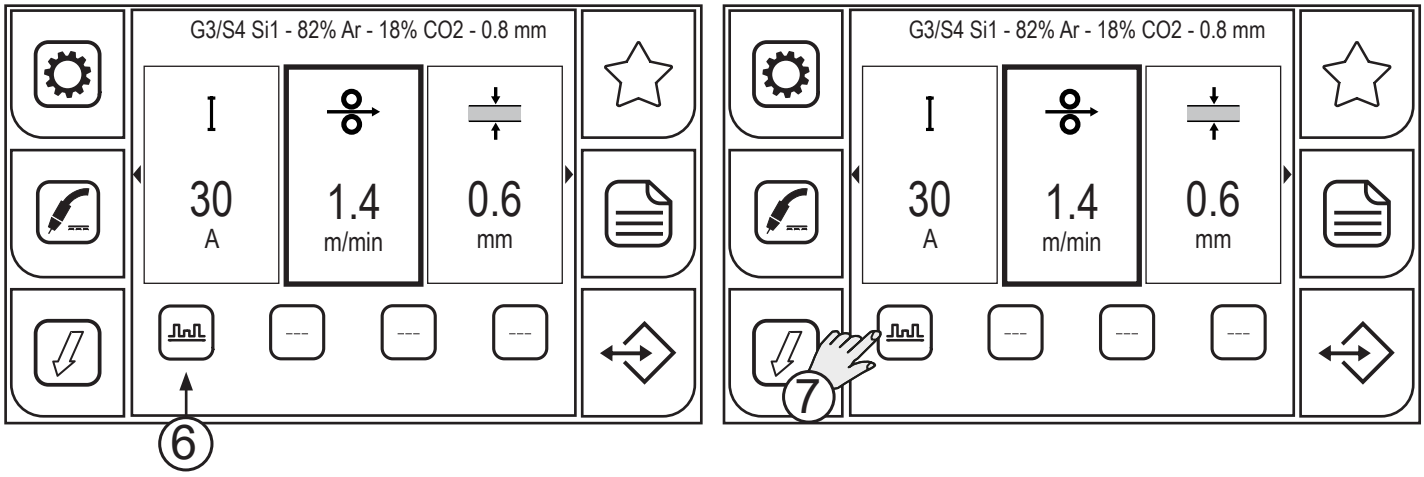


4. Turn the encoder to select the desired function.

○ (No activation, Double pulse activation, B-Level activation, Job sel activation, Time spot / pause activation, K Deep activation, Job load activation).

5. Press the (ENCODER) key again or the (SAVE) key.

To exit the screen, press the key.



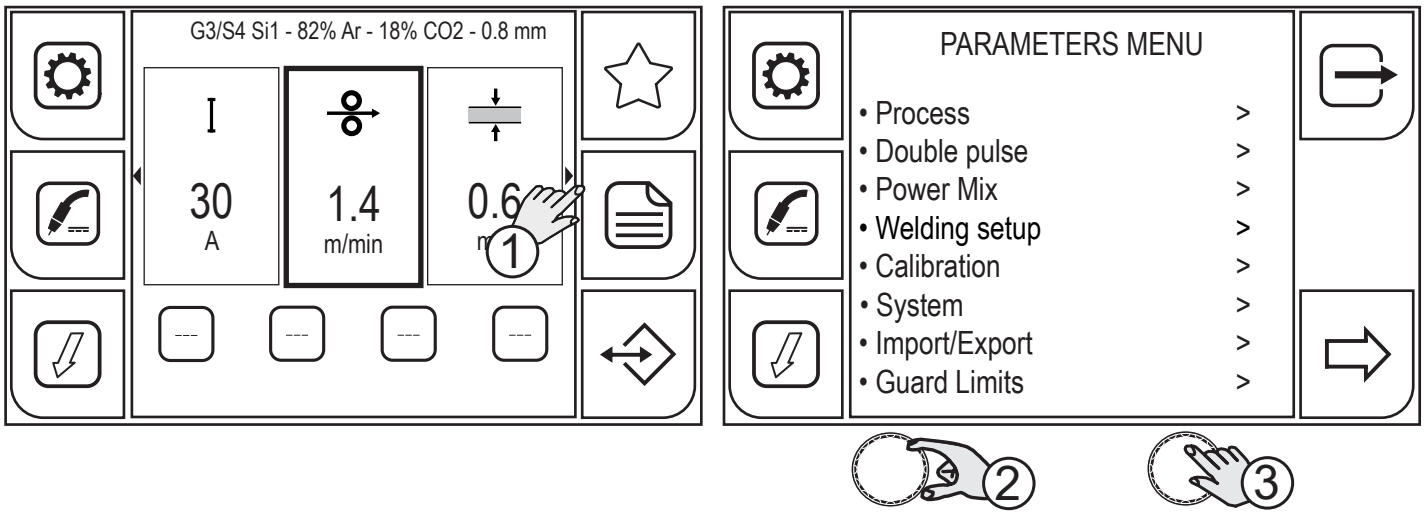
6. After associating the desired function to the SHORTCUT key, the function icon will be displayed both in the BUTTON menu and on the key displayed in the main screen.
7. Press the key with the associated function to enable/disable the function. When the function is enabled, the key will be highlighted in yellow.

12 RESET

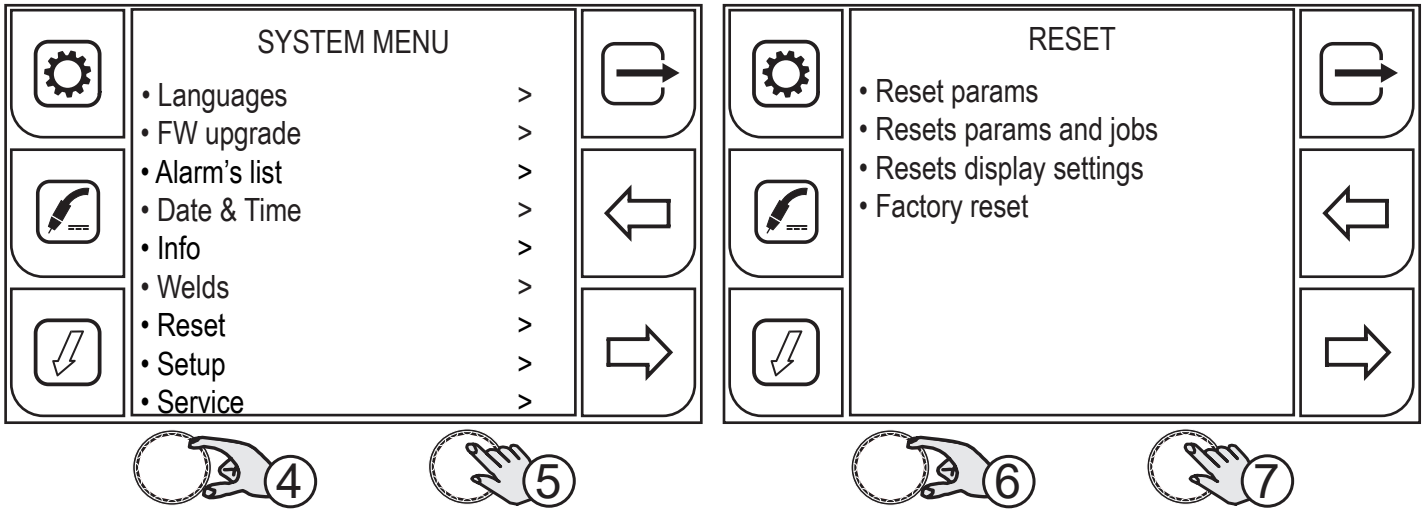
The reset procedure is useful in the following cases:
- Too many changes made to the welding parameters so user finds it difficult to restore defaults.
- Unidentified software problems that prevent the current generator from functioning correctly.

12.1 RESET PARAMETERS

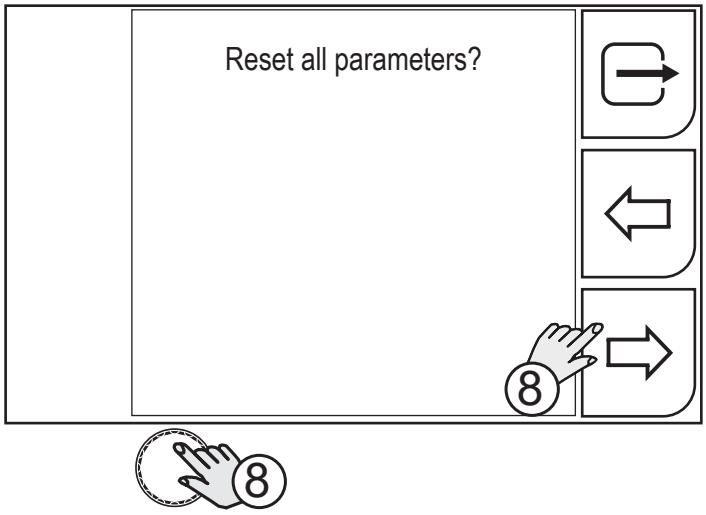
The reset procedure involves restoring the parameter values and settings, except the following settings:
- System menu settings.
- Saved JOBs.



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key to confirm.



4. Turn the encoder to select the desired setting. Select the following path: Reset>
5. Press the (ENCODER) key to confirm.
6. Turn the encoder to select the desired setting. Select the following path: Reset params
7. Press the (ENCODER) key to confirm.



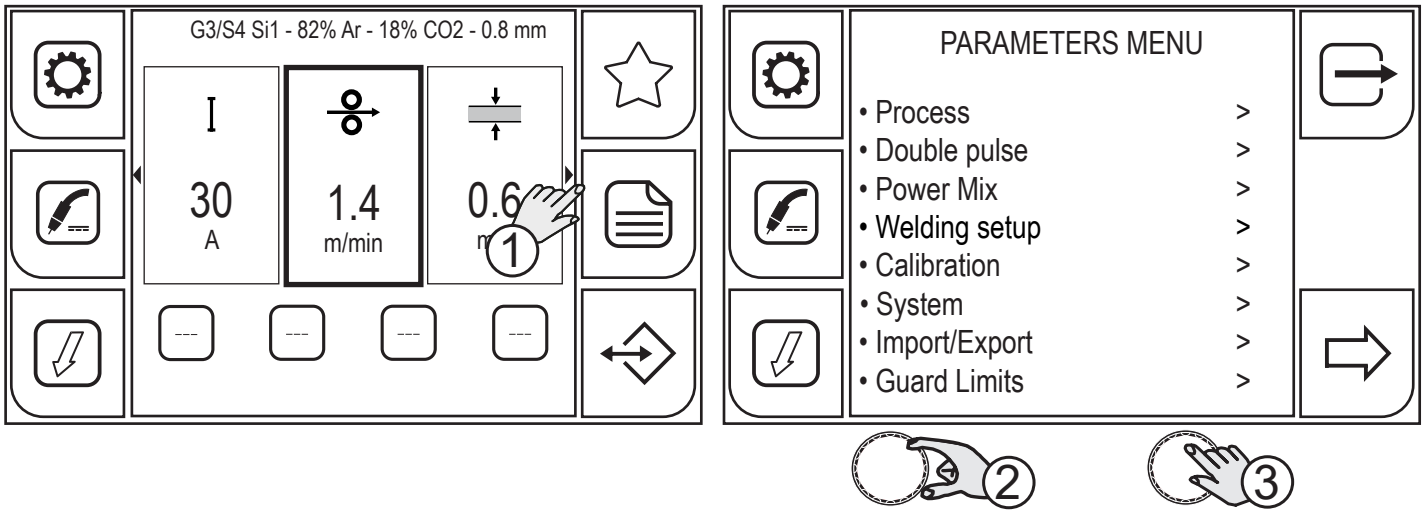
8. Press the (ENCODER) key or the (YES) key.

Press the ⇦ (NO) key to return to the previous screen.

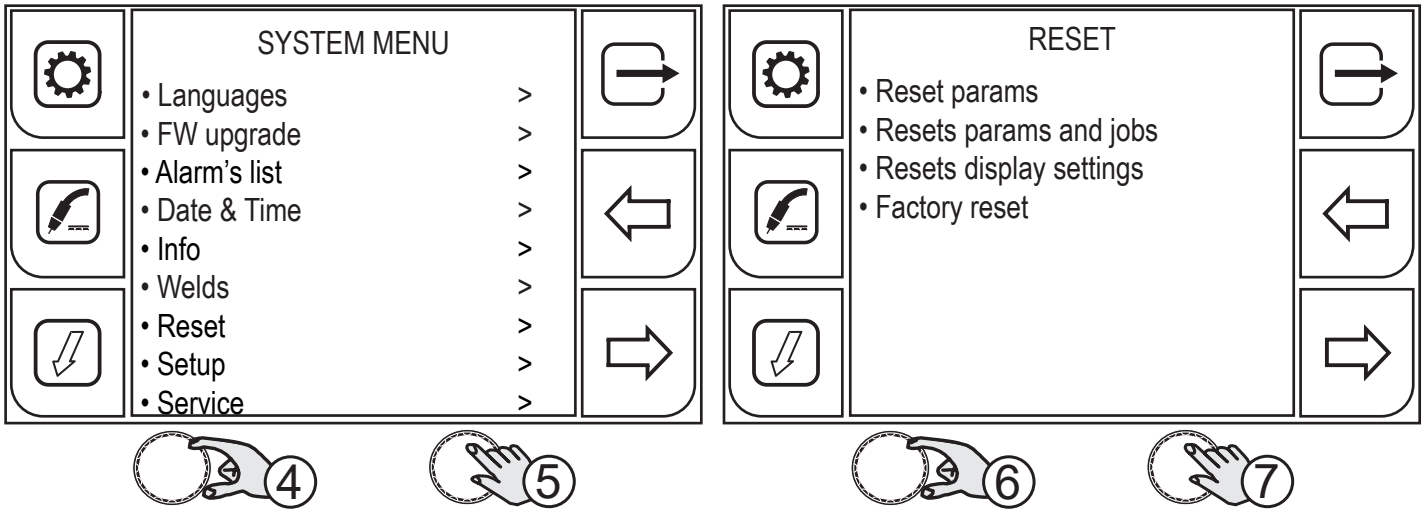
To return to the main screen, press the ⇨ (EXIT) key.

12.2 RESET PARAMETERS AND JOBS

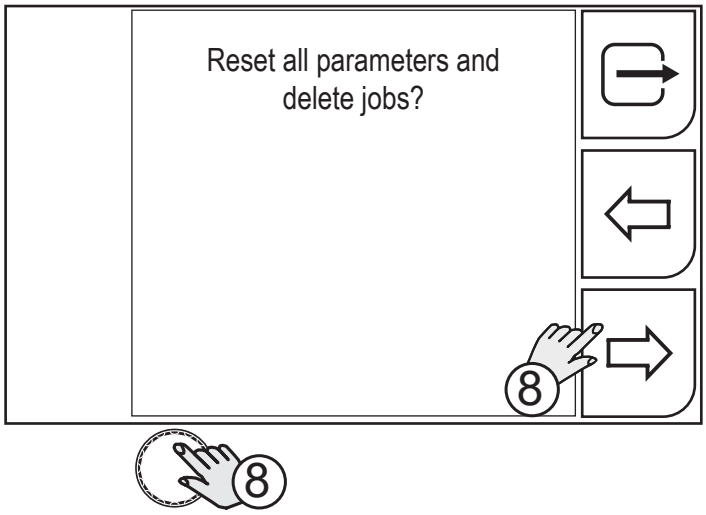
The reset procedure involves fully restoring the default settings for values, parameters and memories.
All memory locations will be reset and hence all your personal welding settings will be lost!



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key to confirm.



4. Turn the encoder to select the desired setting. Select the following path: Reset>
5. Press the (ENCODER) key to confirm.
6. Turn the encoder to select the desired setting. Select the following path: Resets params and jobs.
7. Press the (ENCODER) key to confirm.



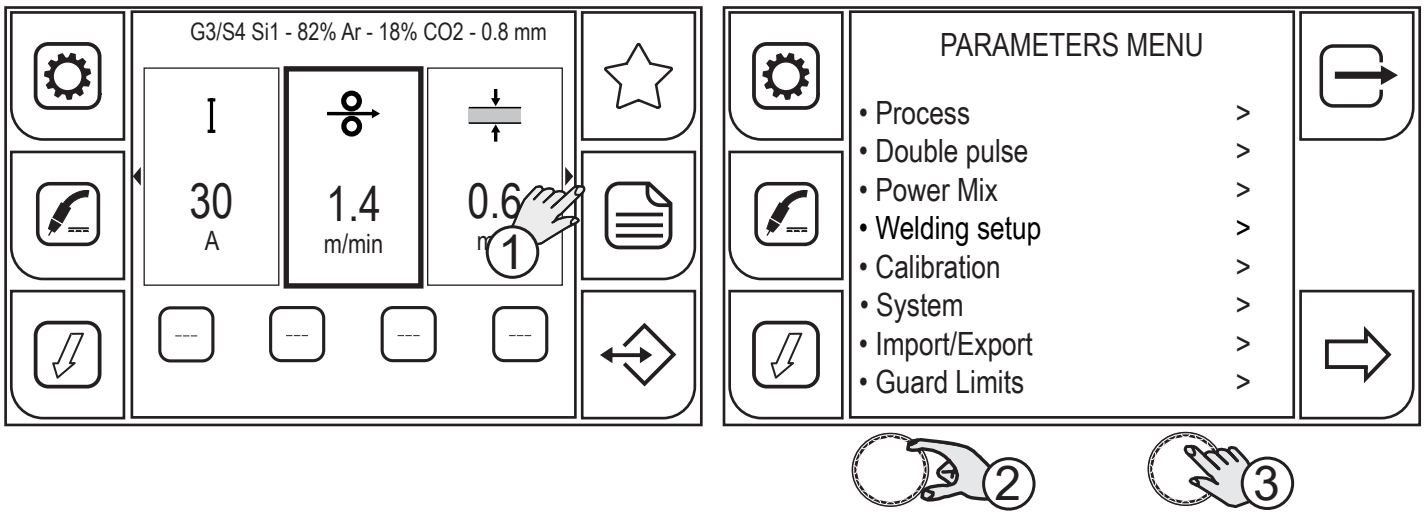
8. Press the (ENCODER) key or the (YES) key.

Press the ⇦ (NO) key to return to the previous screen.

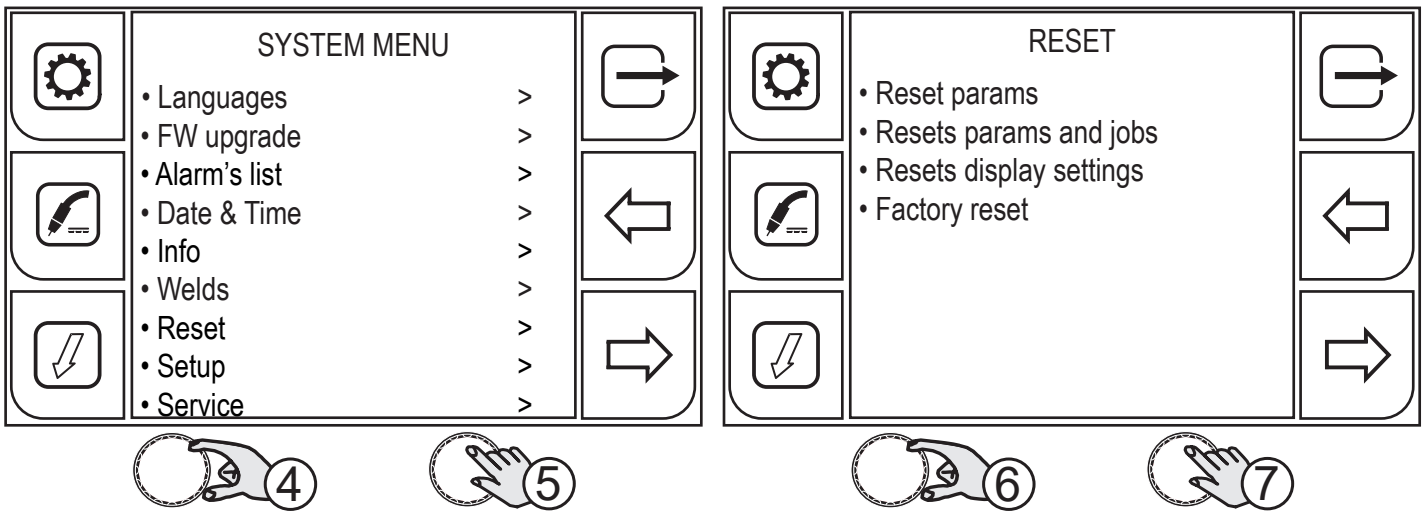
To return to the main screen, press the (EXIT) key.

12.3 RESET DISPLAY SETTINGS

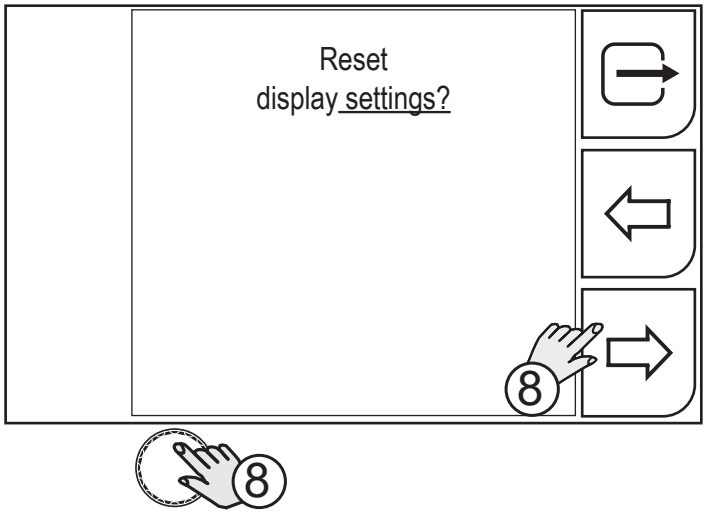
The reset display settings procedure restores the display preset settings. The default language (English) is restored; the shortcut keys are reset; the default parameter display settings are restored.



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key to confirm.



4. Turn the encoder to select the desired setting. Select the following path: Reset>
5. Press the (ENCODER) key to confirm.
6. Turn the encoder to select the desired setting. Select the following path: Resets display settings.
7. Press the (ENCODER) key to confirm.



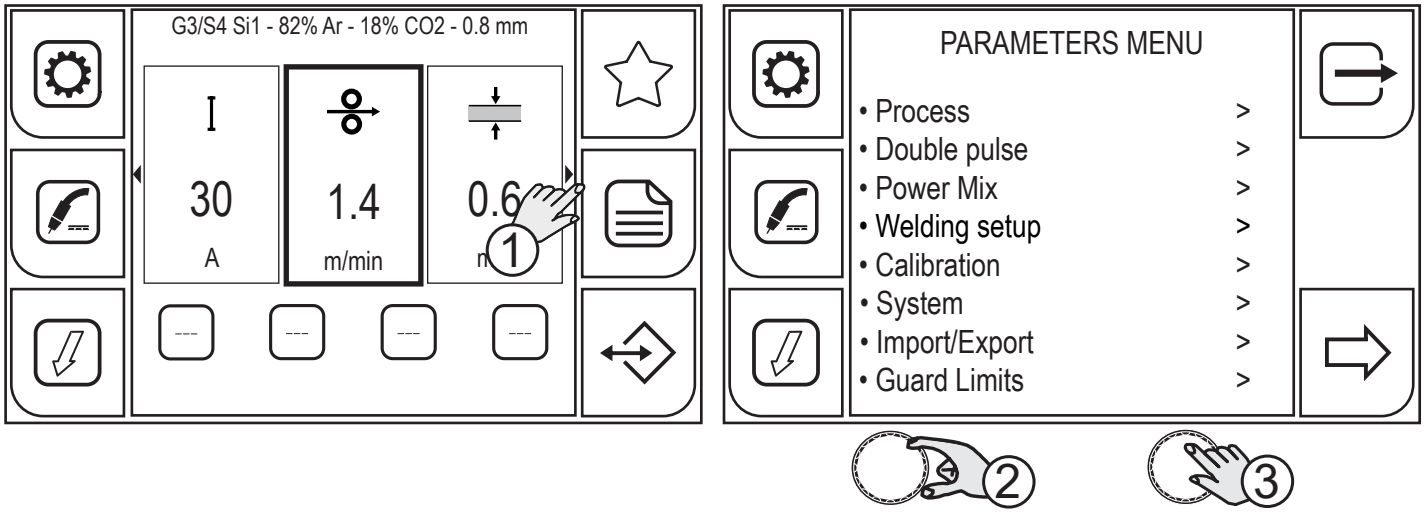
8. Press the (ENCODER) key or the (YES) key.

Press the ⇦ (NO) key to return to the previous screen.

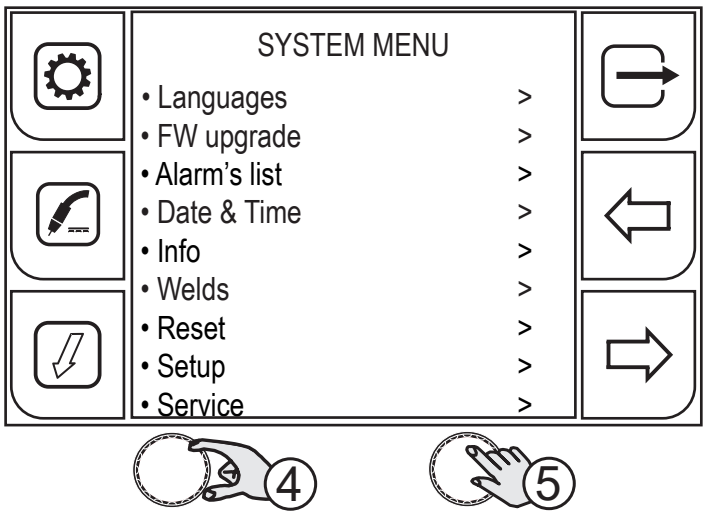
To return to the main screen, press the ⇨ (EXIT) key.

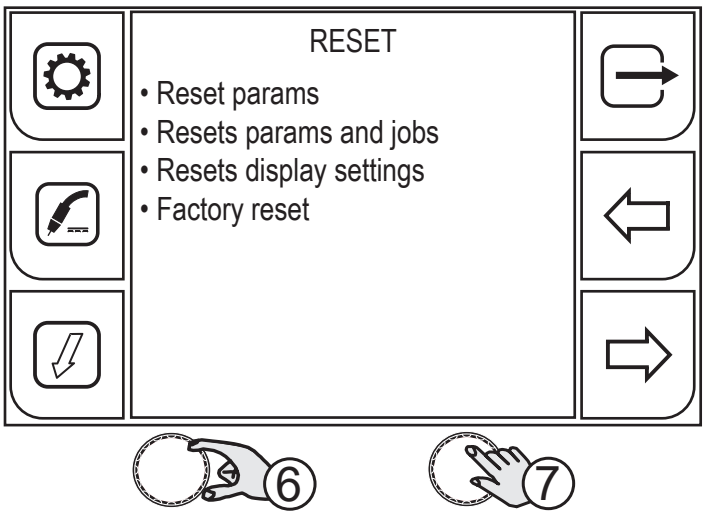
12.4 FACTORY SETTINGS

The factory settings reset procedure involves fully restoring the default settings for values, parameters and memories.
All memory locations will be reset and hence all your personal welding settings will be lost!
Date and time settings remain saved, only.

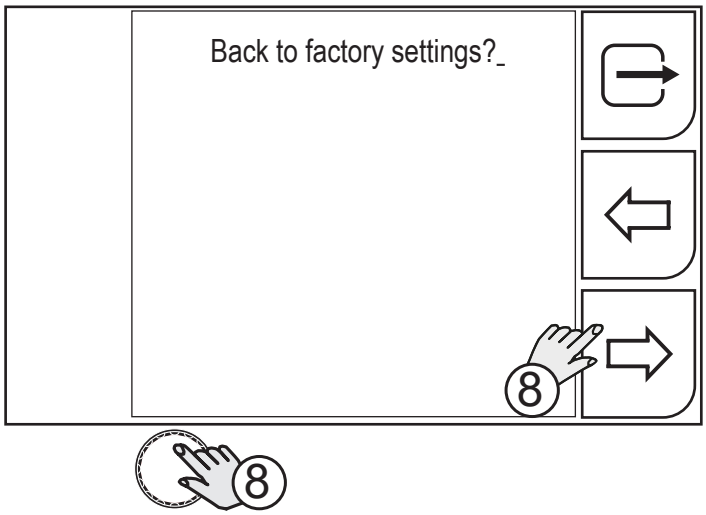


1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key to confirm.





4. Turn the encoder to select the desired setting. Select the following path: Reset>
5. Press the (ENCODER) key to confirm.
6. Turn the encoder to select the desired setting. Select the following path: Factory reset.
7. Press the (ENCODER) key to confirm.



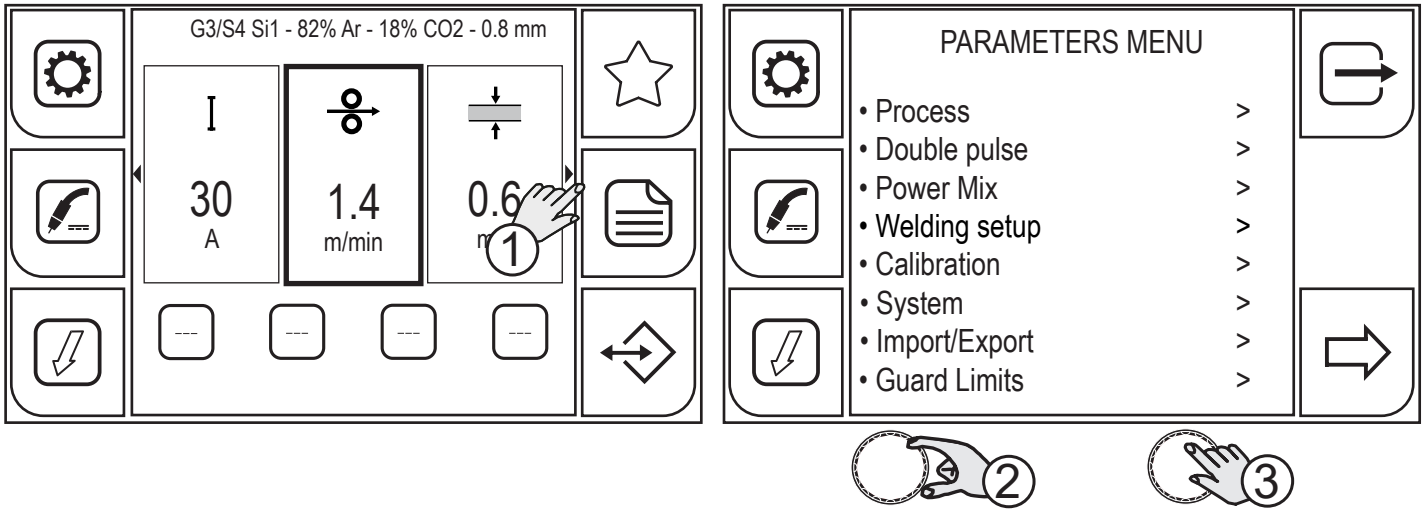
8. Press the (ENCODER) key or the (YES) key.

Press the ⇦ (NO) key to return to the previous screen.

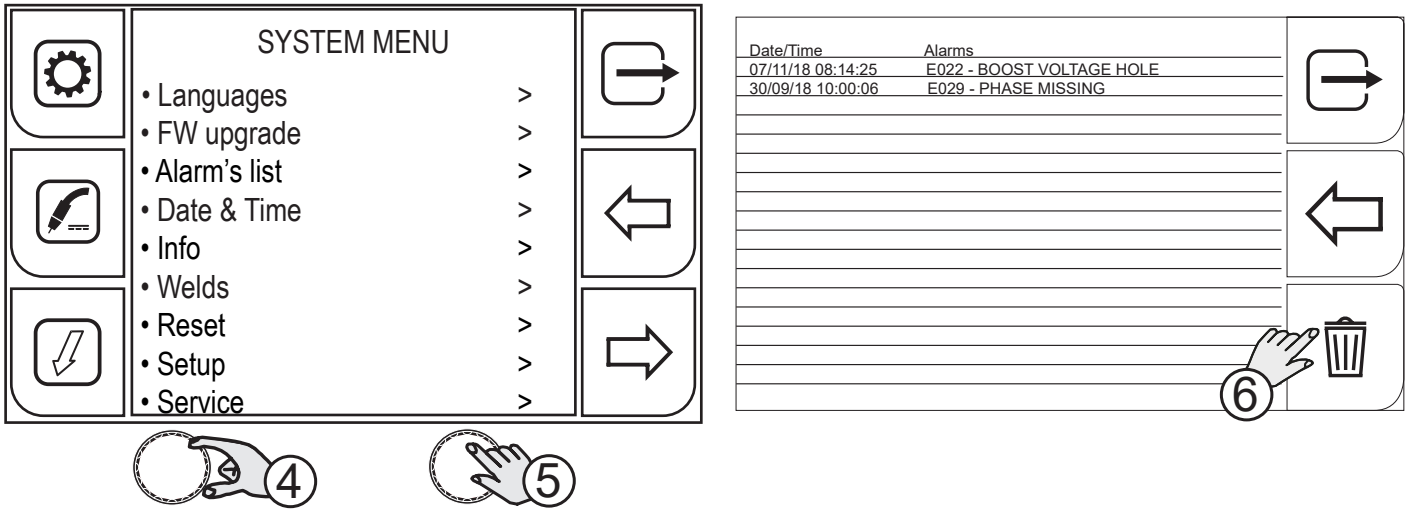
To return to the main screen, press the (EXIT) key.

13 ALARM MANAGEMENT

This function is available when the welding mode is disabled.



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key.



4. Turn the encoder to select the desired setting. Select the following path: Alarm's list>
5. Press the (ENCODER) key or the (NEXT) key. The list of alarms stored is displayed.
6. Press the (RESET ALARMS) key to delete the list.

When an alarm condition occurs, all functions are disabled, with the exception of:
- the cooling fan
- the cooling unit (if enabled)

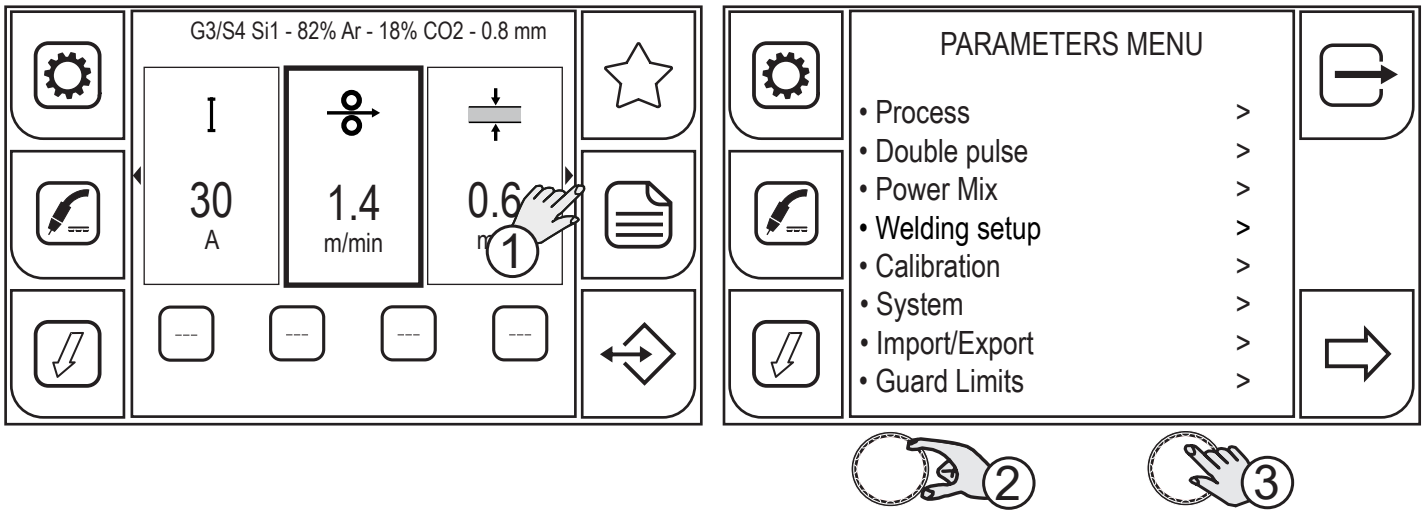
CODE	MEANING	SOLUTION
E02	**NTC DISCONNECTED** This indicates that the information between the NTC and the monitoring system is no longer being sent.	Qualified technical staff must be called out to carry out the repairs/maintenance operations.
E04	**VOUT DISCONNECTED** This indicates that there is a short-circuit between the welding sockets (+) and (-).	- Make sure that the welding torch is not touching the earthed workpiece to be welded. - Make sure that, when the generator is switched on, there is no short-circuit between the sockets (the voltage must be higher than/equal to the Ur). - If the problem persists, qualified technical staff must be called out to carry out the repairs/maintenance operations.
E05	**WELD TORCH TRIGGER PRESSED** This indicates that, when the generator is switched on, a short-circuit has been detected on the torch trigger input. When the problem is sorted out, the current generator will be automatically reset.	- Make sure that the torch trigger is not pressed, stuck or short-circuited. - Make sure that the torch and the torch connector are in good conditions.
E22	**BOOST VOLTAGE HOLE** This alarm indicates that a sudden power outage in the power mains has occurred.	- If the problem occurs frequently, check the stability of the mains power. When the problem is solved, the power generator will be automatically reset.
E23	**BOOST CURRENT LIMIT ALARM** Mains power boost overcurrent	Qualified technical staff must be called out to carry out the repairs/maintenance operations.
E25	**BOOST CURRENT NOT CALIBRATED ALARM** Current phases input is unbalanced	Qualified technical staff must be called out to carry out the repairs/maintenance operations.
E26	**ALARM GROUND CURRENT** Current is re-circulated on the ground circuit	Qualified technical staff must be called out to carry out the repairs/maintenance operations.
E27	**ALARM UNDERVOLTAGE** Low power supply voltage	- Make sure the mains power does not go below the minimum permitted values.
E28	**ALARM OVERVOLTAGE** High power supply voltage	- Make sure the mains power does not exceed the maximum permitted values.
E29	**ALARM PHASE MISSING** A phase is missing	- Make sure that all the 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 out to carry out the repairs/maintenance operations.

CODE	MEANING	SOLUTION
E30	**ALARM OVERCURRENT** The main current threshold has been exceeded	- The welding currents are close to the maximum threshold: reduce the welding parameter values. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
E31	**INVERTER THERMAL ALARM** Indicates that the welding power generator thermal cut-out switch has tripped.	- Leave the equipment switched on to ensure a faster cooling of the overheated components. When the problem is solved, the power generator will be automatically reset. - Make sure that the fans are working correctly. - Make sure that the power required by the current welding process is lower than the maximum specified power. - Make sure that the operating condition complies with the power generator nameplate. - Make sure that the air flowing around the power generator is adequate.
E32	**SECONDARY THERMAL ALARM** Indicates that the welding power generator thermal cut-out switch has tripped.	
E50	**WARNING COOLING SYSTEM** Indicates insufficient pressure in the torch cooling circuit.	- Make sure that the cooling unit is correctly connected. - Make sure that the O/I switch is set to “I” and that its led goes on when the pump is enabled. - Make sure that there is enough coolant in the cooling unit. - Make sure that the pump delivers the coolant (external bypass present) - Make sure that the cooling circuit is in good conditions, specially the torch hoses and the internal connections of the cooling unit. - Make sure that the fans are working correctly. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
E51	**COOLING UNIT ALARM** The coolant temperature exceeds the threshold	
E52	**COOLING UNIT NTC ALARM** NTC on the CU disconnected	Qualified technical staff must be called out to carry out the repairs/maintenance operations.
E60	**MOTOR CURRENT ALARM WF** High motor input current	- Make sure that the motor is not mechanically blocked by an object. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.

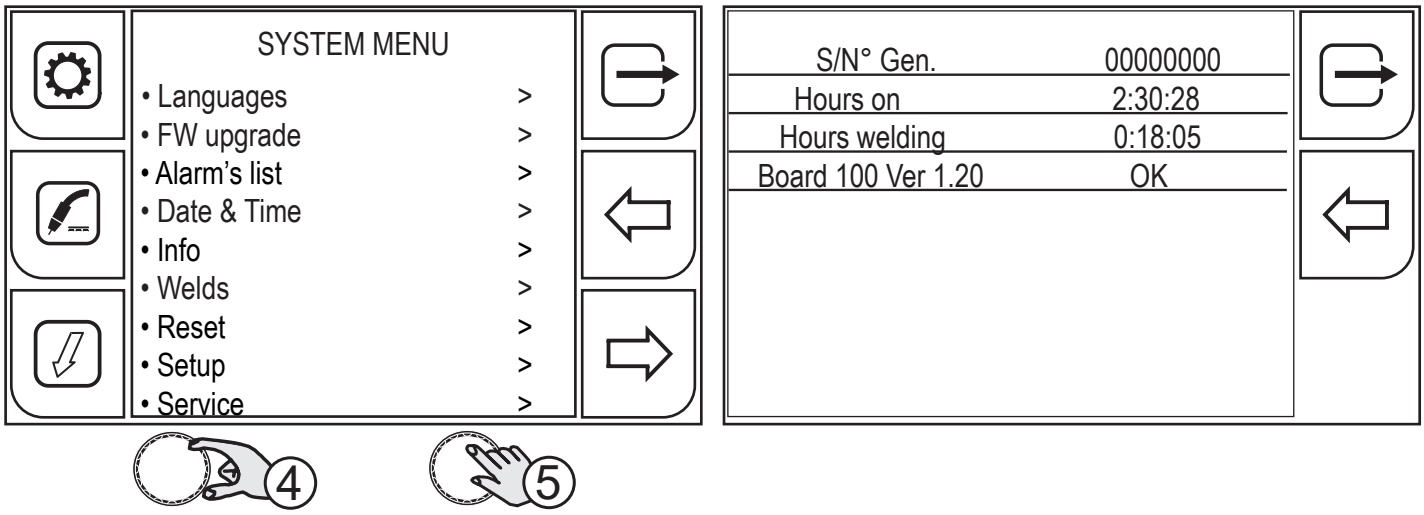
CODE	MEANING	SOLUTION
E70	**NO GAS ALARM** Gas flow not detected	- Check the gas flow rate in the system connected to the device. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
E81	**ALARM HIGH CURRENT LIMIT EXCEEDED**	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that that are no welding problems associated with the consumable, gas used, welding position, earth, torch, wire feeder, special functions enabled (K-Deep).
E82	**ALARM LOW CURRENT LIMIT EXCEEDED**	
E83	**ALARM HIGH VOLTAGE LIMIT EXCEEDED**	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that there are no welding problems associated with the consumable, gas used, welding position, ground terminal, torch, wire feeder, special functions enabled.
E84	**ALARM LOW VOLTAGE LIMIT EXCEEDED**	
E85	**ALARM HIGH WIRE SPEED LIMIT EXCEEDED**	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that that are no welding problems associated with the consumable, gas used, welding position, ground terminal, torch, wire feeder, special functions enabled (K-Deep).
E86	**ALARM LOW WIRE SPEED LIMIT EXCEEDED**	
E87	**ALARM HIGH GAS FLOW LIMIT EXCEEDED**	- Check the gas flow rate in the system connected to the device. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
E88	**ALARM LOW GAS FLOW LIMIT EXCEEDED**	- Check the gas flow rate in the system connected to the device. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
E89	**MOTOR HIGH CURRENT LIMIT EXCEEDED ALARM**	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that that are no welding problems associated with the consumable, the welding position, the torch, the wire feeder. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.

CODE	MEANING	SOLUTION
W81	WARNING HIGH CURRENT LIMIT EXCEEDED	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that that are no welding problems associated with the consumable, gas used, welding position, earth, torch, wire feeder, special functions enabled (K-Deep).
W82	WARNING LOW CURRENT LIMIT EXCEEDED	
W83	WARNING HIGH VOLTAGE LIMIT EXCEEDED	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that there are no welding problems associated with the consumable, gas used, welding position, ground terminal, torch, wire feeder, special functions enabled.
W84	WARNING LOW VOLTAGE LIMIT EXCEEDED	
W85	WARNING HIGH WIRE SPEED LIMIT EXCEEDED	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that that are no welding problems associated with the consumable, gas used, welding position, ground terminal, torch, wire feeder, special functions enabled (K-Deep).
W86	WARNING LOW WIRE SPEED LIMIT EXCEEDED	
W87	WARNING HIGH GAS FLOW LIMIT EXCEEDED	- Check the gas flow rate in the system connected to the device. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
W88	WARNING LOW GAS FLOW LIMIT EXCEEDED	- Check the gas flow rate in the system connected to the device. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
W89	MOTOR HIGH CURRENT LIMIT EXCEEDED WARNING	- Make sure that the guard limit parameter is correct according to the preset welding parameter. - Make sure that that are no welding problems associated with the consumable, the welding position, the torch, the wire feeder. - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.
E99	GENERAL ALARM This indicates that the generator has not been identified.	Check the connections between the generator and the remote devices (wire feeders, remote controls, other devices). - If the problem persists, qualified technical staff must be called out to carry out the repairs/ maintenance operations.

14 SYSTEM INFO



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key to confirm.



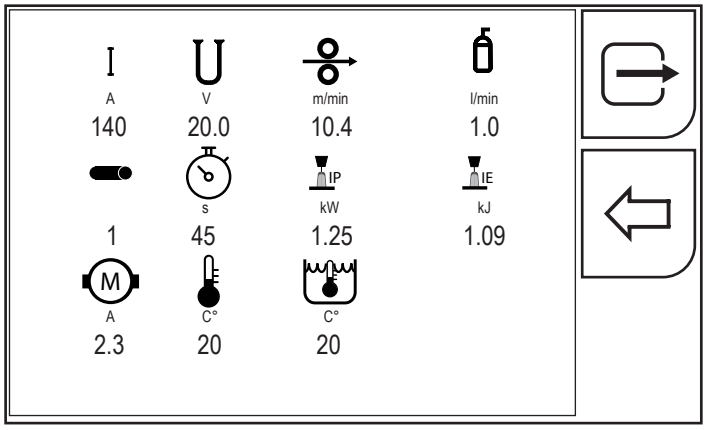
4. Turn the encoder to select the desired setting. Select the following path: Info>
5. Press the (ENCODER) key or the (NEXT) key to confirm.

The screen shows:
- the serial number of the generator
- the number of hours of operation of the machine
- the number of hours with the arc on

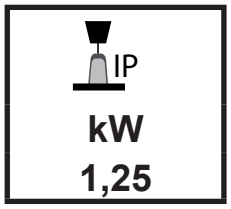
After 10 seconds, the screen will show:
- the list of boards with microprocessor and their firmware version.

6. Press the (DATI) key.

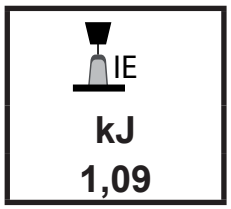
This key allows the screen showing real time data to be displayed.



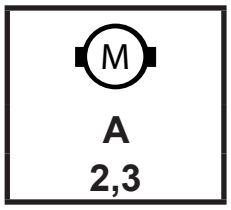
I **A** **140**	Instantaneous value of welding current.
U **V** **20.0**	Instantaneous value of welding voltage.
m/min **10.4**	Instantaneous value of wire speed.
l/min **1.0**	Gas flow value in litres/minute (only if the sensor is fitted).
1	Sequential number of the weld bead from the time the generator is switched on (it starts from 1 each time it is switched on).
s **45**	Welding duration of single weld bead,



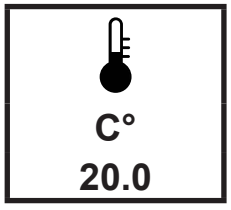
Instantaneous power of welding arc in KW.
INSTANTANEOUS POWER: Average value of the instantaneous power, calculated by multiplying VOLTAGE by CURRENT, sampled every 100 microseconds.



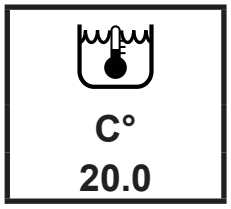
Welding arc energy in KJ.
INSTANTANEOUS ENERGY: Average value of the instantaneous power, calculate by multiplying VOLTAGE by CURRENT in the TIME UNIT sampled every 100 microseconds.



Value of the wire feeder motor current.
It measures the wire feeder motor input current during the welding operation. Excessive values indicate problems with the wire feeder (wire jammed, dirty sheath, worn or obstructed current supply pipe etc.)



Temperature of the power heat sink in the generator



Cooling unit water temperature.

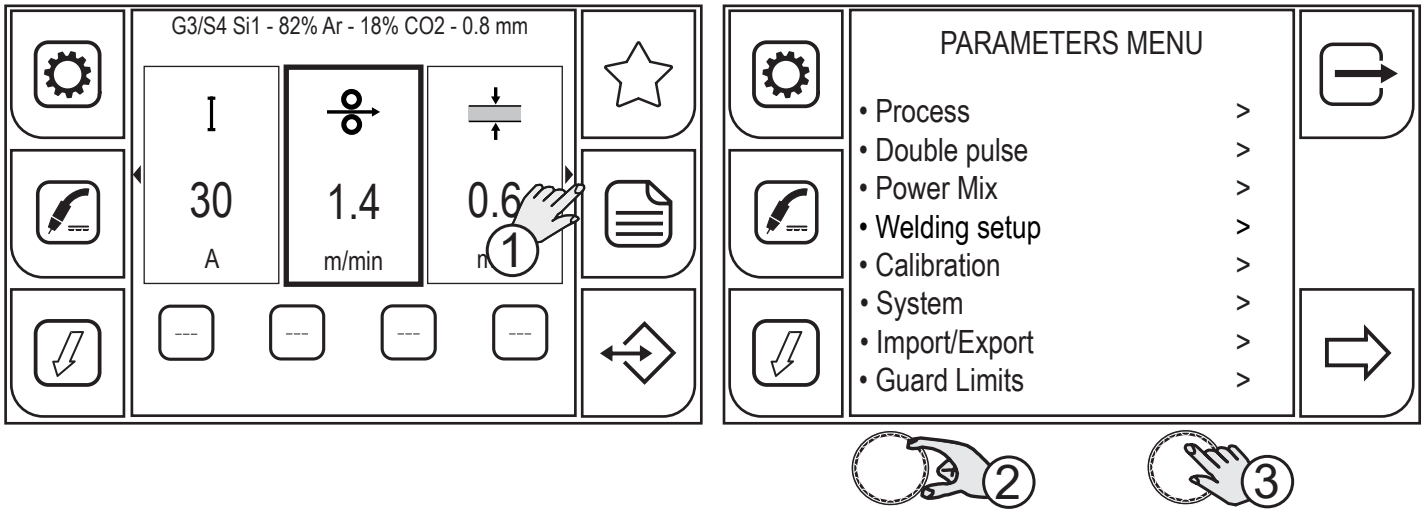
Press the ⇦ (PREV) key to return to the previous screen.

To return to the main screen, press the (EXIT) key.

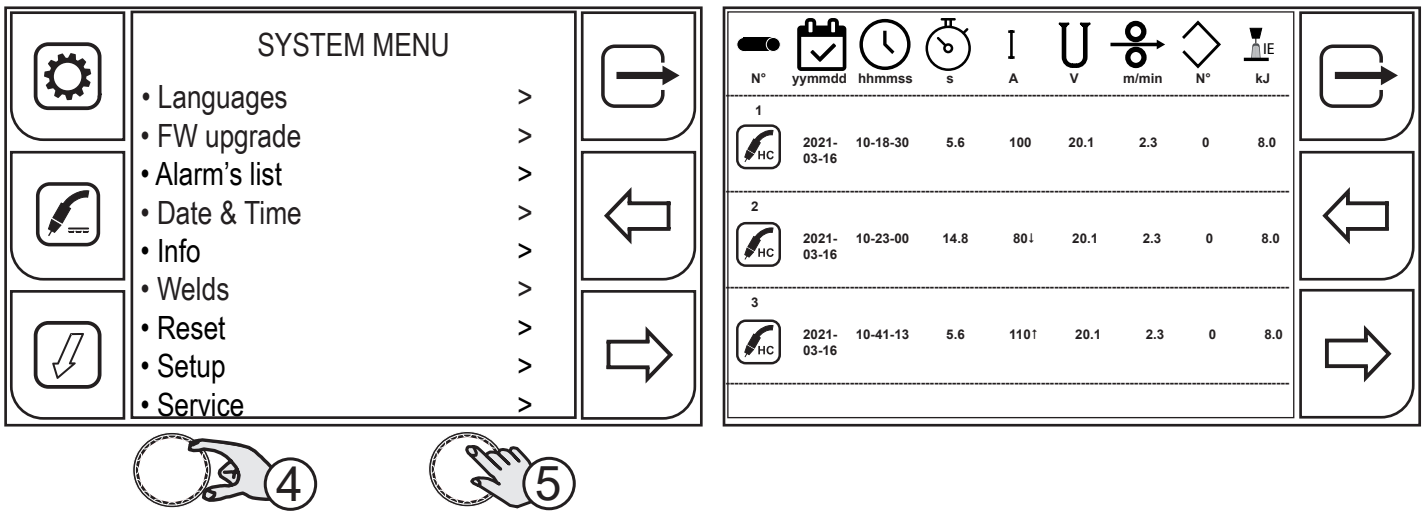
15 WELDING LOG

This display shows the welding data of the last 500 welding operations carried out.
The data can be exported in the .CSV file format onto a USB pen drive.

DISPLAYING THE WELDING LOG



1. Press the (MENU) key.
2. Turn the encoder to select the desired setting. Select the following path: System>
3. Press the (ENCODER) key or the (NEXT) key to confirm.



4. Turn the encoder to select the desired setting. Select the following path: Welds>
5. Press the (ENCODER) key or the (NEXT) key to confirm.

The screen shows:

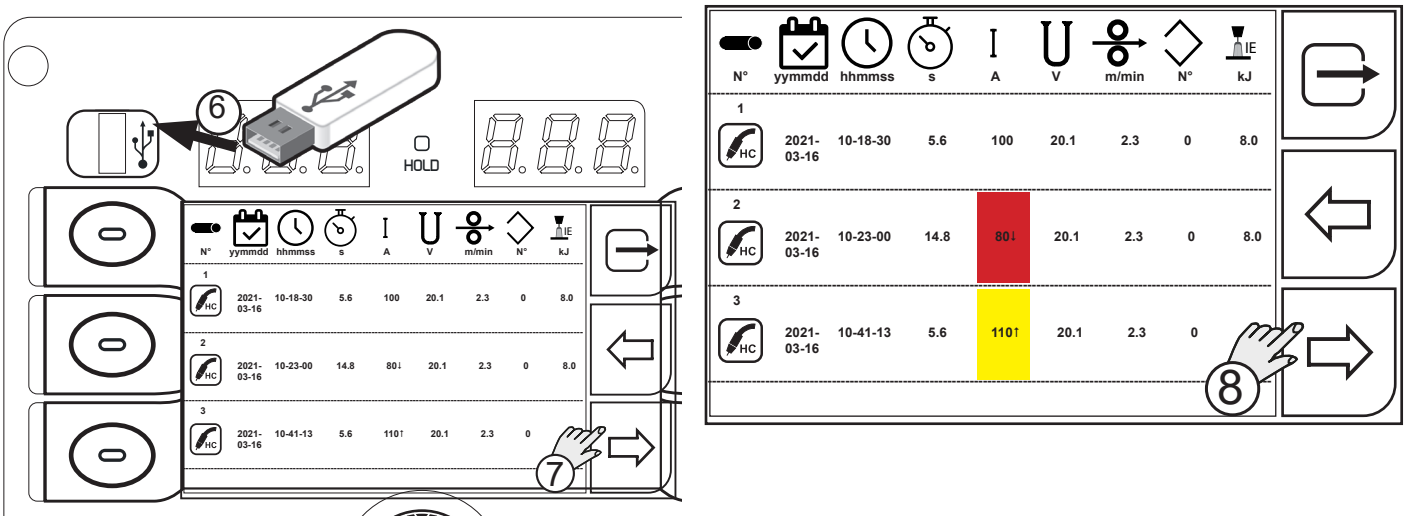
- sequential number of the weld bead from the time the generator is switched on (it starts from 1 each time it is switched on).
- date (day/month/year)
- welding start-up time (time/minutes/seconds)
- welding duration in seconds (single bead)
- average welding current (bead made)
- average welding voltage (bead made)

- average wire speed (only changes if with k-deep)
- job number (if loaded)
- instantaneous energy of welding arc in kJ

If the GUARD LIMITS are enabled, when an alarm/warning condition occurs, the box associated with the monitored parameter will change colour:

- set alarm limit value exceeded (red box + symbol ↓ because the lower limit has been reached or symbol↑ because the upper limit has been reached)
- set warning limit value exceeded (red box + symbol ↓ because the lower limit has been reached or symbol ↑ because the upper limit has been reached)

EXPORTING THE WELDING LOG



6. Insert the USB memory stick in the port provided.
7. Press the (EXPORT) key.
8. Press the (csv) key.

The data is saved in the CSV format, which can be imported with Excel, for example.

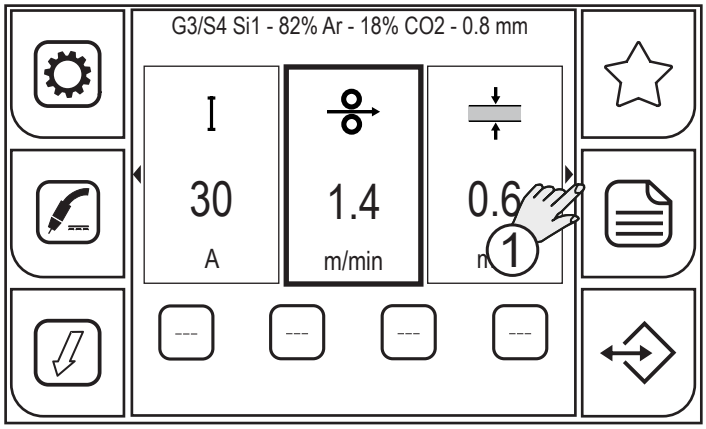
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Type : weldlogs												
2	Date : 2021/04/01 12:49:43												
3	Machine : 257												
4	NumSer : 180027												
5	Seam	Date	Start	Arc time	Current	Voltage	Speed	Power	Energy	Gas	Job	Alarm	
6				s	A	V	m/min	W	kJ	l/min			
7	6	16/03/2021	10:01:49	5,6	100	20,1	2,3	1435	8	0	0	0	
8	5	16/03/2021	10:00:40	10,2	104	16,2	2,3	1499	15,3	0	0	0	
9	4	16/03/2021	09:57:49	5,6	110	15,2	2,4	895	5	0	0	0	
10	3	16/03/2021	09:52:22	3,4	133	15,8	2,3	887	3	0	0	0	
11	2	16/03/2021	09:27:07	6,8	116	17	2,3	1627	11,1	0	0	0	
12	1	16/03/2021	09:25:56	22,8	114	15,7	2,3	1616	36,8	0	0	0	
13	3	15/03/2021	14:44:55	1,6	110	21,1	2,2	1430	2,3	0	0	0	
14	2	15/03/2021	14:43:58	1,4	114	18,1	2,1	1560	2,2	0	0	0	
15	1	15/03/2021	14:43:01	4,2	113	16,4	2,2	1571	6,6	0	0	0	
16	2	15/03/2021	14:29:50	5,8	113	15,3	2,2	1539	8,9	0	0	0	
17	1	15/03/2021	14:24:43	4,2	107	16,6	2,3	1434	6	0	0	0	
18	3	15/03/2021	14:13:52	1,2	99	22,7	2,1	1407	1,7	0	0	0	
19	2	15/03/2021	14:13:00	2	104	20,7	2,3	1386	2,8	0	0	0	
20	1	15/03/2021	14:11:14	3,2	100	21,7	411,7	1311	4,2	0	0	0	
21	4	15/03/2021	13:52:07	2,6	107	18	2,2	1492	3,9	0	0	0	
22	3	15/03/2021	13:50:49	3	113	16,7	2,3	1438	4,3	0	0	0	
23	2	15/03/2021	13:49:49	3,4	107	18	2,3	1443	4,9	0	0	0	
24	1	15/03/2021	13:48:04	5,8	106	18,2	2,3	1390	8,1	0	0	0	
25	2	15/03/2021	13:35:37	4,6	117	14,8	2,3	1400	6,4	0	0	0	
26	1	15/03/2021	13:07:38	5,8	111	16,2	2,3	1332	7,7	0	0	0	
27	1	15/03/2021	12:49:19	5,6	109	15,6	2,3	1302	7,3	0	0	0	
28	1	15/03/2021	12:28:24	6	110	16,2	2,3	1319	7,9	0	0	0	
29	3	15/03/2021	12:15:24	4,4	108	16,9	2,3	1308	5,8	0	0	0	
30	2	15/03/2021	12:12:25	8	113	14,6	2,3	1314	10,5	0	0	0	
31	1	15/03/2021	12:12:01	0,6	84	25,8	1,3	946	0,6	0	0	1	
32	1	15/03/2021	11:49:47	1,4	100	17,7	2	1310	1,8	0	0	0	
33	1	15/03/2021	11:29:07	7	103	18,8	2,3	1417	9,9	0	0	0	
34	1	15/03/2021	10:45:44	9,4	110	16,2	2,3	1479	13,9	0	0	0	
35	3	15/03/2021	10:19:20	14,8	107	16,8	2,3	1517	22,5	0	0	0	
36	1	15/03/2021	10:18:30	1	80	27	1,7	1173	1,2	0	0	1	

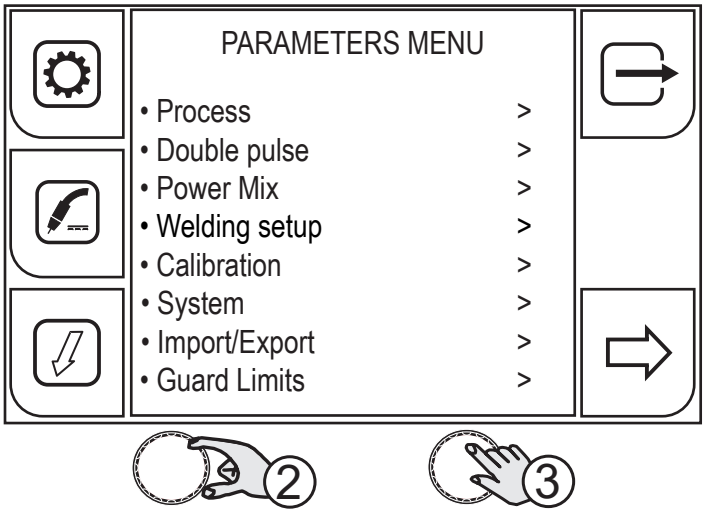
Press the ⇦ (PREV) key to return to the previous screen.

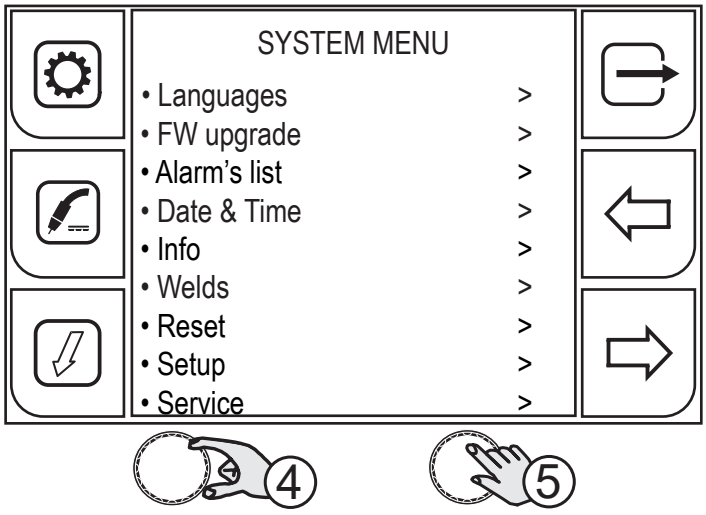
Press the ⇨ (EXIT) key to go back to the home page.

16 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.







17 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)
Construction standards	EN 60974-1; EN 60974-10 Class A
Conformity markings	CE Equipment compliant with European directives in force
	S Equipment suitable in an environment with increased hazard of electric shock
	Equipment compliant with WEEE directive
	RoHS Equipment compliant with RoHS directive
Supply voltage	3 x 400 Va.c. ± 15 % / 50-60 Hz 3 x 230 Va.c. ± 15 % / 50-60 Hz
Mains protection	30 A 500 V Delayed
Zmax	This equipment complies with IEC 61000-3-12 provided that the maximum permissible system impedance is less than or equal to 25 mΩ 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 less than or equal to 25 mΩ.
Dimensions (D x W x H)	712 x 301 x 465 mm
Weight	42.8 kg
Insulation class	H
Protection rating	IP23
Cooling	AF: Air-over cooling (fan assisted)

Power Pulse DIGITAL 405dms

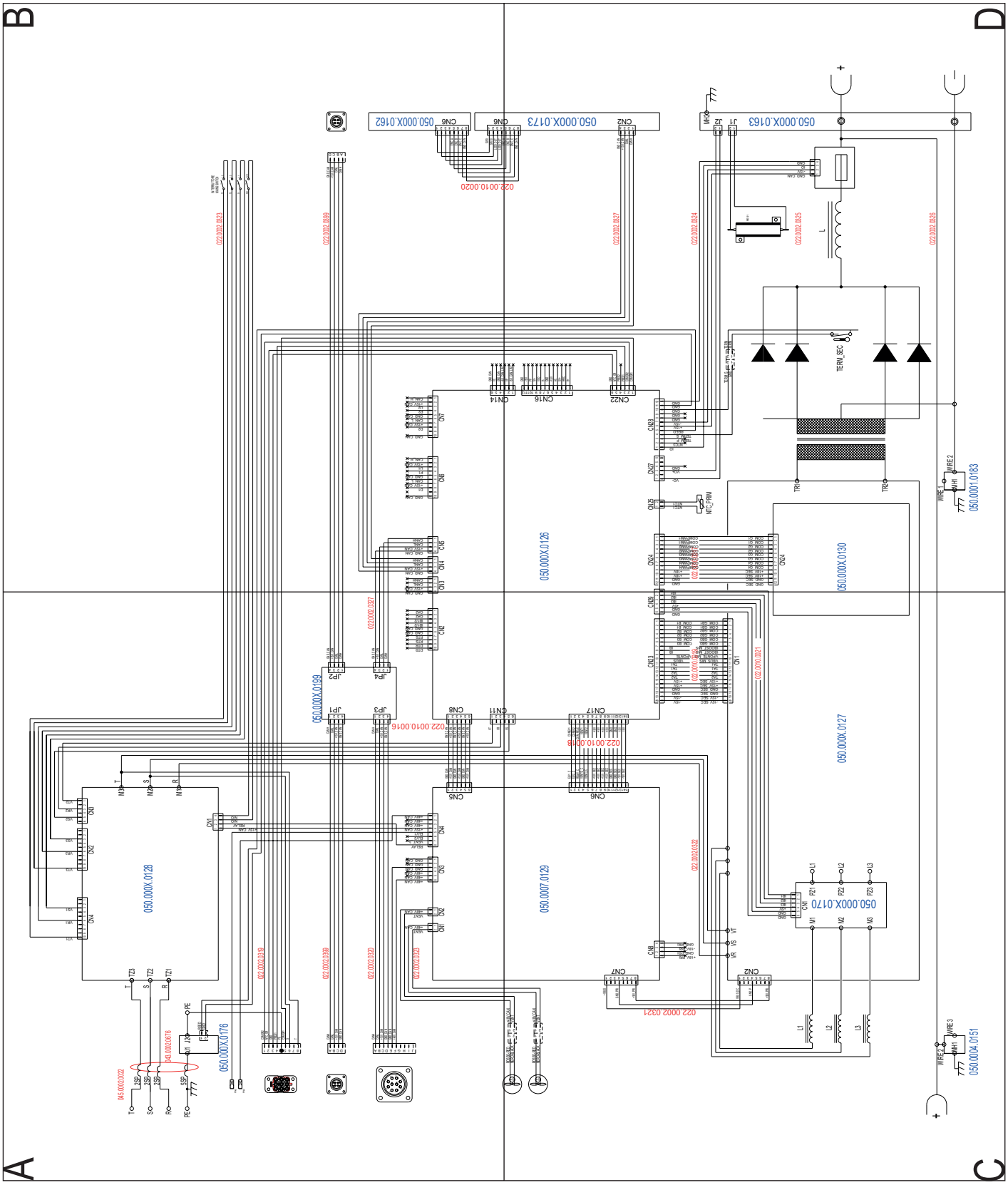
Static characteristic	MMA ⌞ Falling characteristic			
	TIG ⌞ Falling characteristic			
	MIG/MAG ⌞ Flat characteristic			
Welding mode		MMA 400 Va.c. (230 Va.c.)	TIG 400 Va.c. (230 Va.c.)	MIG/MAG 400 Va.c. (230 Va.c.)
Current and voltage adjustment range		--- (10 A / 20.4 V - 350 A / 34.0 V)	--- (5A / 10.2 V - 400 A / 26.0 V)	--- (10 A / 15.0 V - 350 A / 31.5 V)
Welding current / Working voltage	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100% (40° C)	400 A - 36.0 V (350 A / 34.0 V)	400 A - 26.0 V (400 A / 26.0 V)	400 A - 34.0 V (350 A / 31.5 V)
Maximum input power	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100 % (40° C)	16.8 kVA – 16.0 kW (14.3 kVA – 13.7 kW)	12.5 kVA – 11.9 kW (12.7 kVA – 12.2 kW)	16.0 kVA – 15.2 kW (13.3 kVA – 12.7 kW)
Maximum input current	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
Actual input current	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
No-load voltage (U0)		70 V	70 V	70 V
Reduced no-load voltage (Ur)		19 V	0 V	0 V
Power source efficiency	Efficiency (400A / 36,0V): 88,4%			
	No-Load condition power consumption (U1= 400 Va.c.): 29 W			
Essential raw materials	According to the information provided by our suppliers, this product does not contain essential raw materials in quantities greater than 1g per component.			

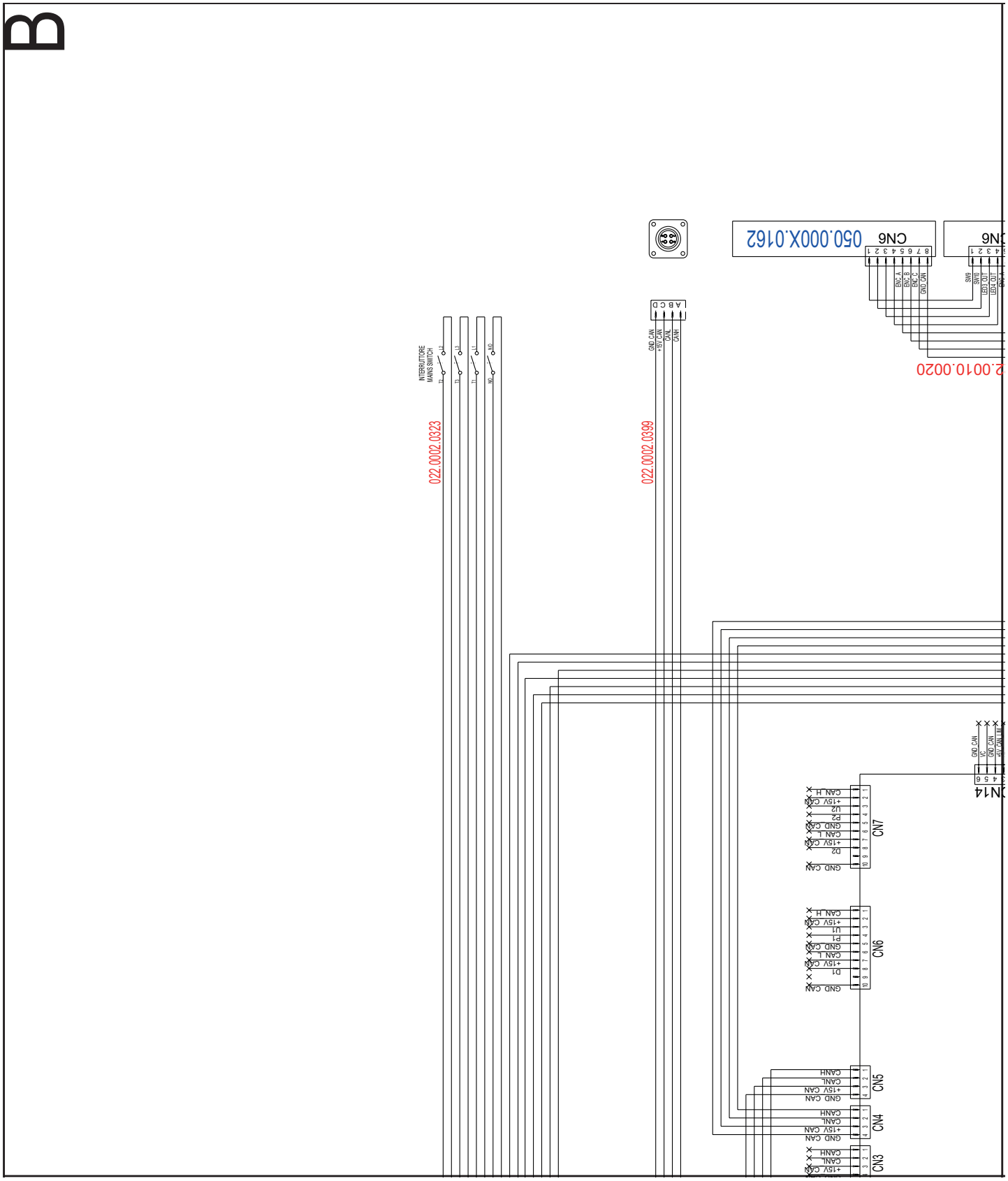
Power Pulse DIGITAL 505dms

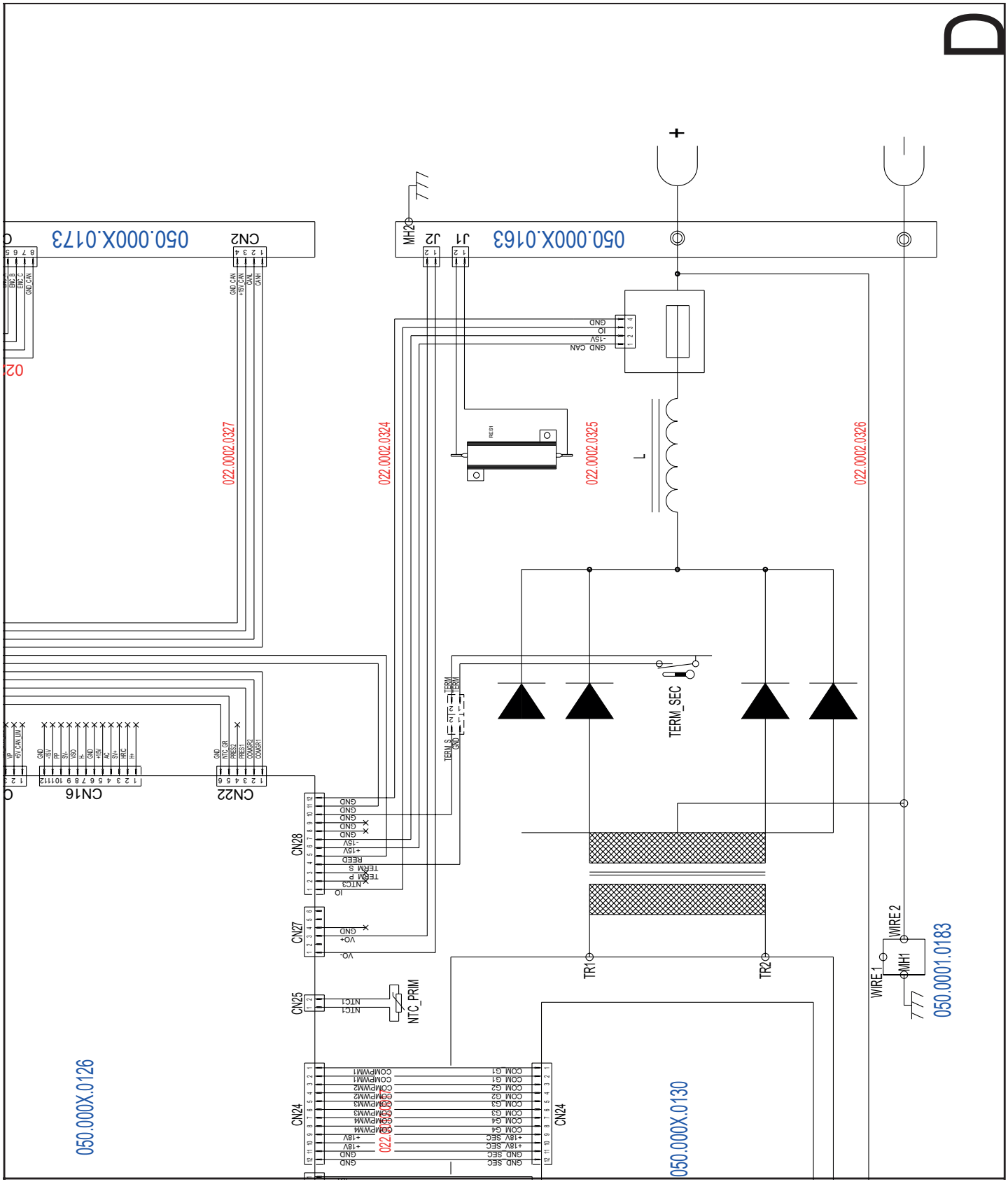
Static characteristic	MMA ⌞ Falling characteristic			
	TIG ⌞ Falling characteristic			
	MIG/MAG ⌞ Flat characteristic			
Welding mode		MMA 400 Va.c. (230 Va.c.)	TIG 400 Va.c. (230 Va.c.)	MIG/MAG 400 Va.c. (230 Va.c.)
Current and voltage adjustment range		10 A / 20.4 V - 500 A / 40.0 V (10 A / 20.4 V - 350 A / 34.0 V)	5A / 10.2 V - 500 A / 30.0 V (5A / 10.2 V - 400 A / 26.0 V)	10 A / 15.0 V - 500 A / 39.0 V (10 A / 15.0 V - 350 A / 31.5 V)
Welding current / Working voltage	50% (40° C)	500 A / 40.0 V (---)	500 A / 30.0 V (---)	500 A / 39.0 V (---)
	60% (40° C)	450 A - 38.0 V (---)	450 A - 28.0 V (---)	450 A - 36.5 V (---)
	100% (40° C)	400 A - 36.0 V (350 A / 34.0 V)	400 A - 26.0 V (400 A / 26.0 V)	400 A - 34.0 V (350 A / 31.5 V)
Maximum input power	50% (40° C)	23.7 kVA – 22.6 kW (---)	18.0 kVA – 17.1 kW (---)	23.1 kVA – 22.0 kW (---)
	60% (40° C)	20.2 kVA – 19.2 kW (---)	15.1 kVA – 14.4 kW (---)	19.6 kVA – 18.6 kW (---)
	100 % (40° C)	16.8 kVA – 16.0 kW (14.3 kVA – 13.7 kW)	12.5 kVA – 11.9 kW (12.7 kVA – 12.2 kW)	16.0 kVA – 15.2 kW (13.3 kVA – 12.7 kW)
Maximum input current	50% (40° C)	34.3 A (---)	26.0 A (---)	33.0 A (---)
	60% (40° C)	29.1 A (---)	21.8 A (---)	28.2 A (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
Actual input current	50% (40° C)	24.3 A (---)	18.4 A (---)	23.3 A (---)
	60% (40° C)	22.5 A (---)	16.9 A (---)	21.8 A (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
No-load voltage (U0)		70 V	70 V	70 V
Reduced no-load voltage (Ur)		19 V	0 V	0 V
Power source efficiency	Efficiency (500A / 40,0V): 88,2%			
	No-Load condition power consumption (U1= 400 Va.c.): 29 W			
Essential raw materials	According to the information provided by our suppliers, this product does not contain essential raw materials in quantities greater than 1g per component.			

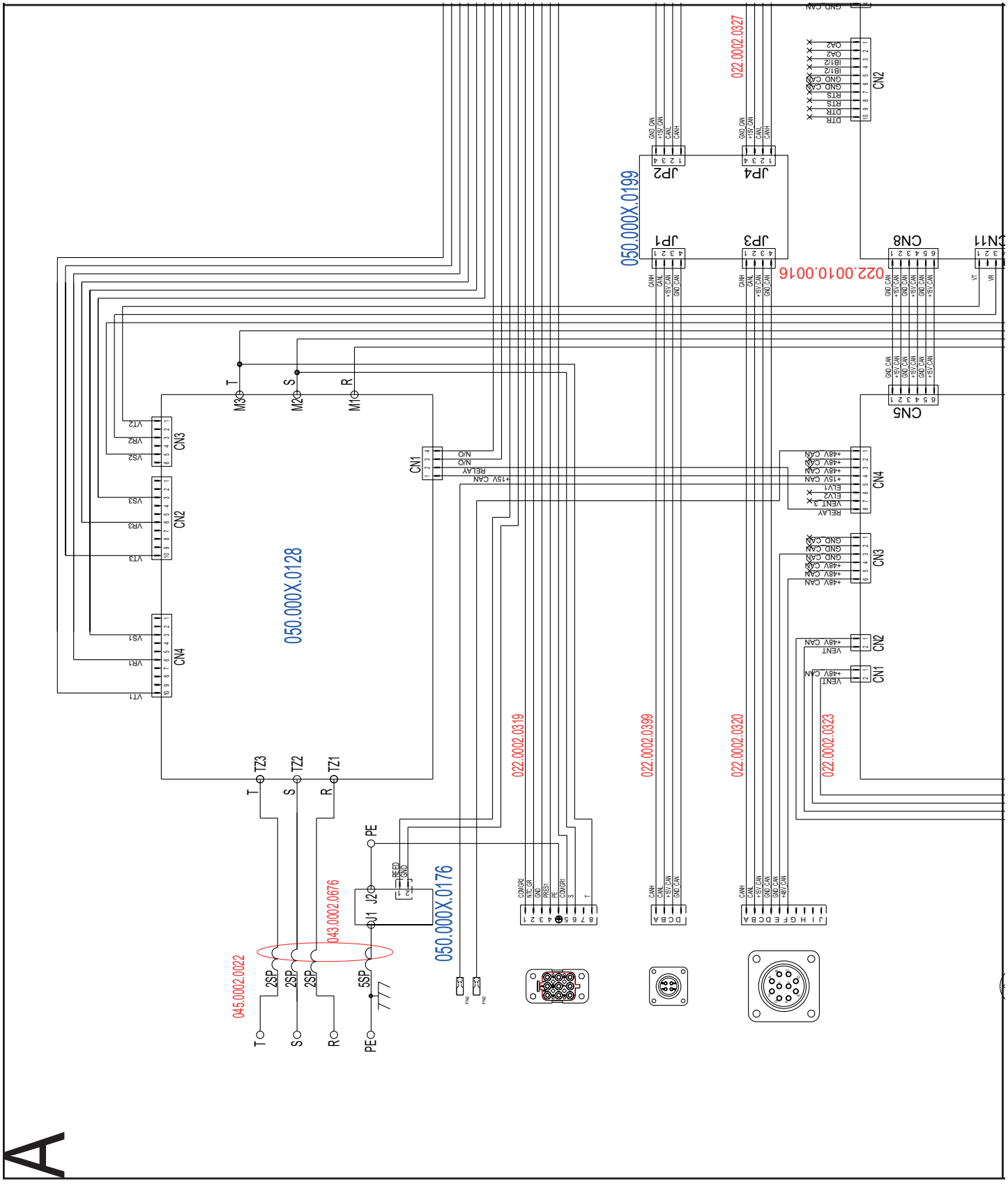
18 WIRING DIAGRAM

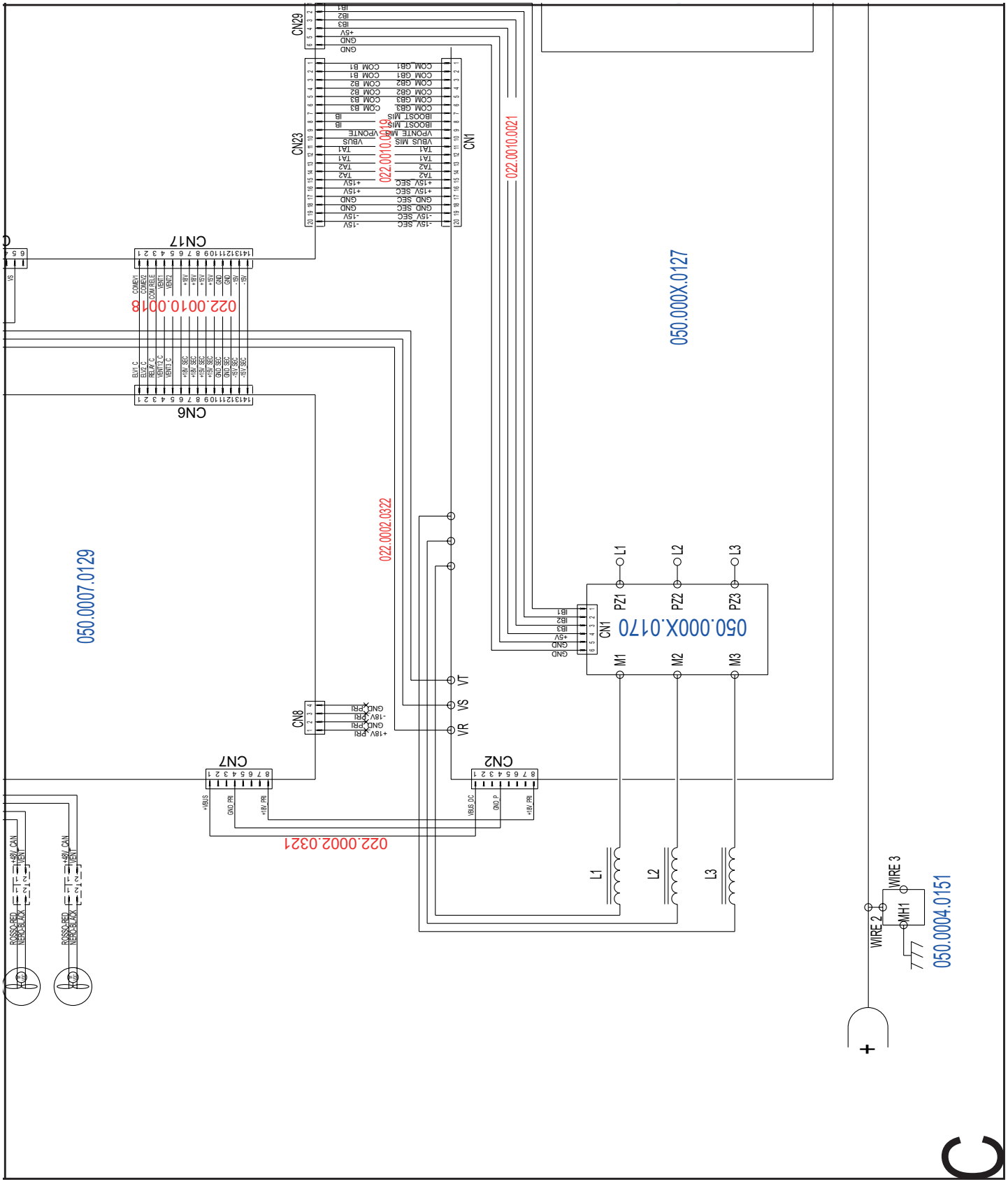
18.1 Power Pulse DIGITAL 405dms - 505dms WIRING DIAGRAM



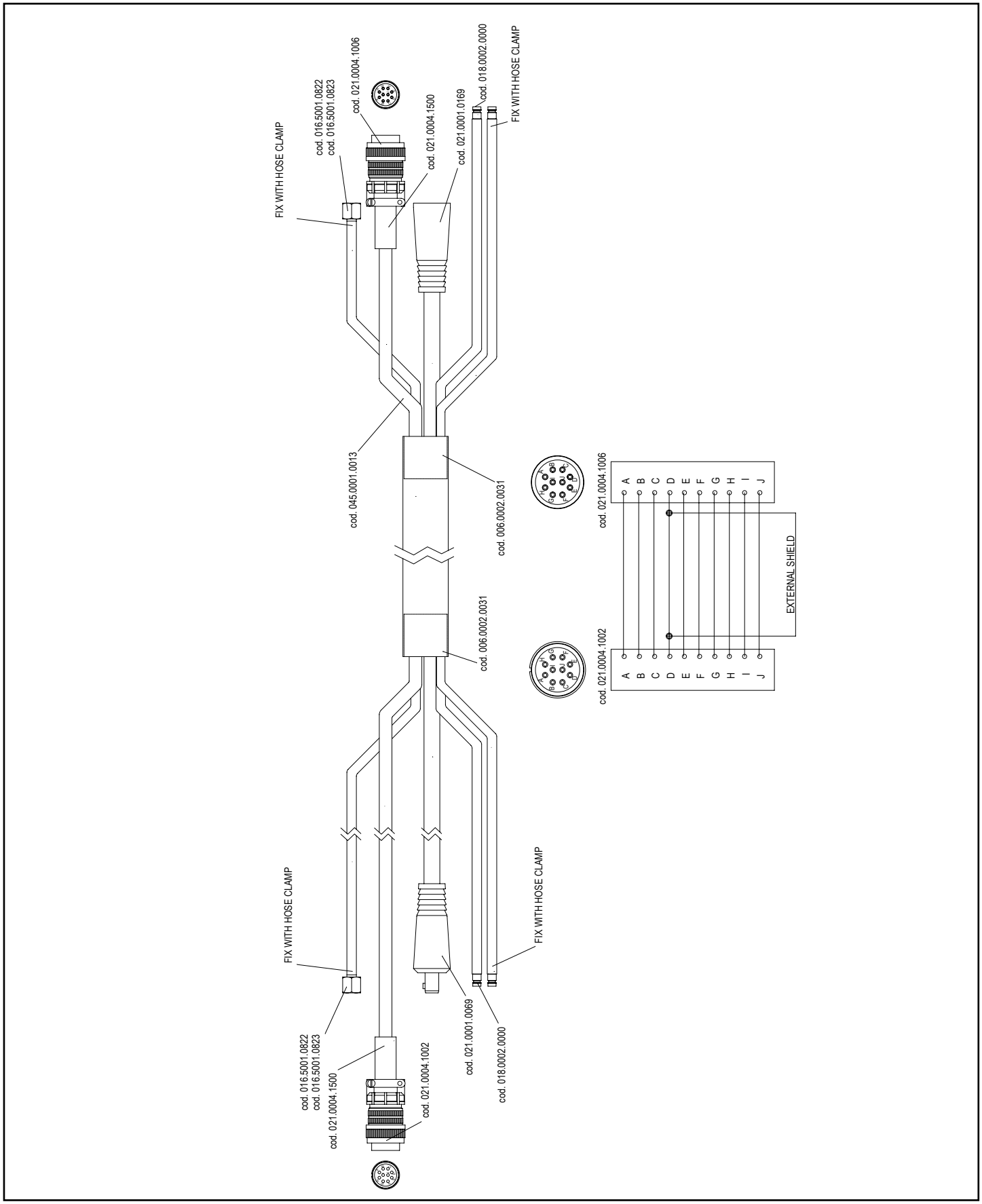

B
050.000X.0162
CN6
022.0002.0323
022.0002.0399
INTERRUTTORE
MAINS SWITCH
GND CAN
+15V CAN
CANL
CANH
CN7
CN6
CN5
CN4
CN3
CN14


D
+
050.000X.0163
050.000X.0173
CN2
MH2
J1
J2
022.0002.0324
022.0002.0325
022.0002.0326
022.0002.0327
L
TERM_SEC
TR1
TR2
WIRE 1
WIRE 2
MH1
050.0001.0183
050.000X.0126
050.000X.0130
CN16
CN22
CN28
CN27
CN25
CN24
NTC_PRIM


050.000X.0199
050.000X.0128
050.000X.0176
022.0002.0327
022.0010.0016
022.0002.0319
022.0002.0399
022.0002.0320
022.0002.0323
043.0002.0676
045.0002.0022
CN1
CN2
CN3
CN4
CN5
CN8
CN11
JP1
JP2
JP3
JP4
M1
M2
M3
TZ1
TZ2
TZ3
J1
J2
REED
2SP
5SP
A

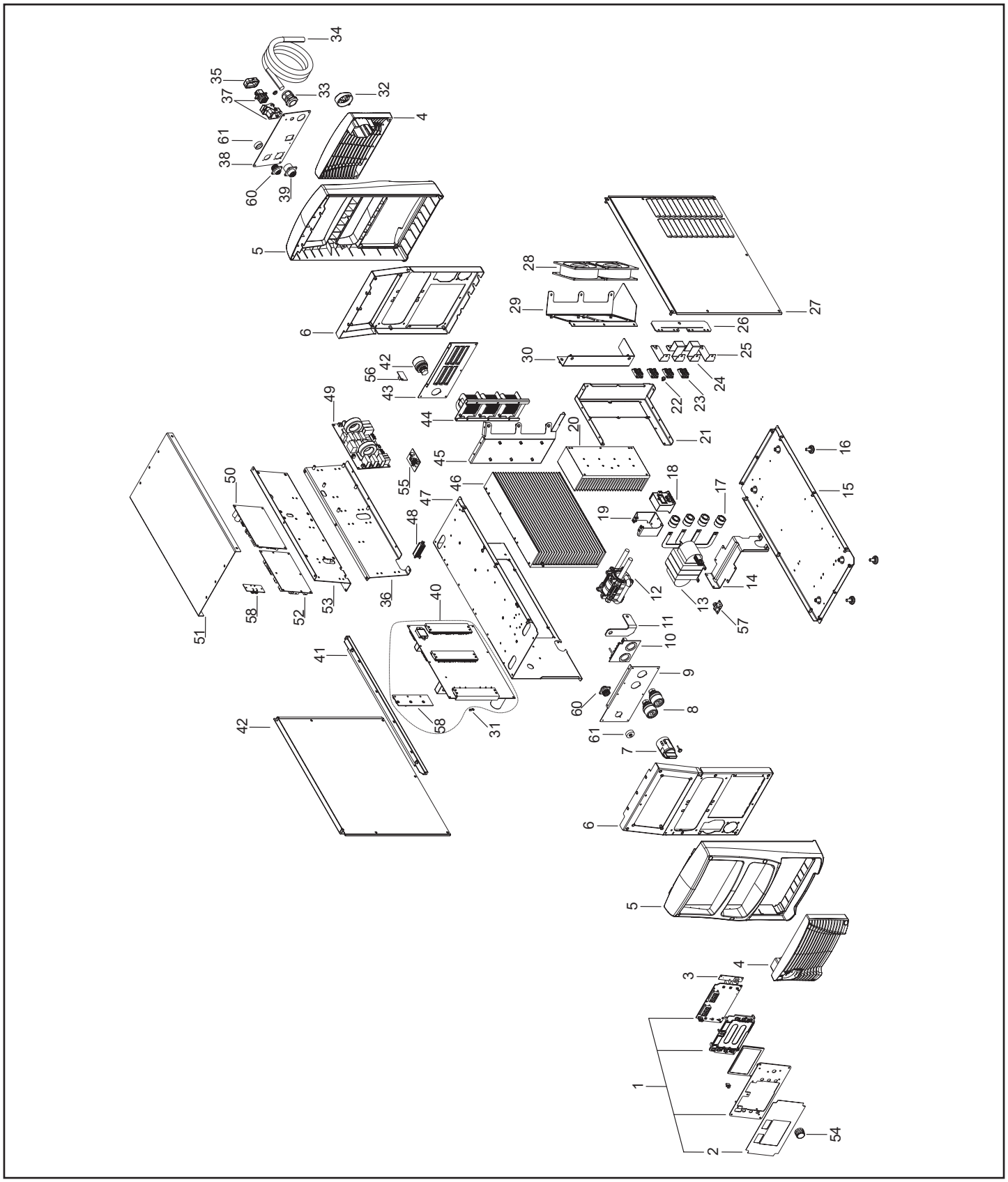

CN29
CN23
CN1
CN17
CN6
CN8
CN7
CN2
022.0010.0021
022.0010.0018
022.0002.0322
022.0002.0321
050.000X.0127
050.0007.0129
050.000X.0170
050.0004.0151
L1
L2
L3
M1
M2
M3
PZ1
PZ2
PZ3
VT
VS
VR
WIRE 2
WIRE 3
MH1

18.2 CABLE HARNESS: GENERATOR - WIRE FEEDER



19 SPARES

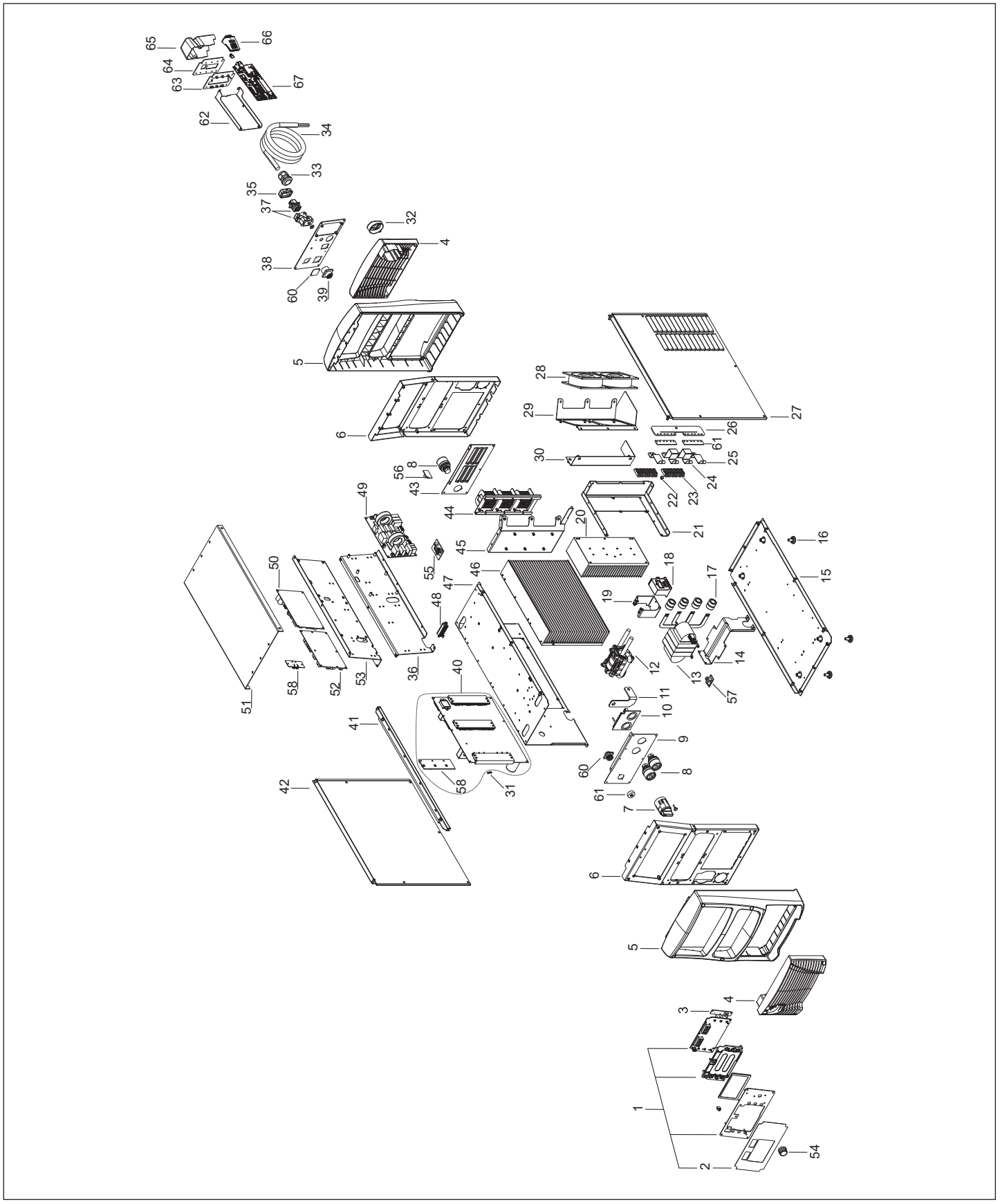
19.1 Power Pulse DIGITAL 405dms - 505dms



No.	CODE	DESCRIPTION
1	050.5403.0000	COMPLETE FRONT PANEL
2	013.0023.1002	FRONT PANEL LABEL
3	050.0001.0162	ENCODER BOARD
4	012.0007.0020	PLASTIC LOUVRE
5	012.0007.0010	FRONT PLASTIC
6	011.0013.0021	FRONT PLATE
7	040.0001.0016	THREE-POLE SWITCH
8	021.0001.0279	OUTPUT SOCKET
9	011.0013.0163	FRONT SOCKETS PANEL
10	050.0001.0163	OUTPUT FILTER BOARD
11	045.0006.0113	TRASF/SOCKET COPPER BRACKET
12	044.0004.0029	OUTPUT INDUCTOR
13	042.0003.0051	POWER TRANSFORMER
14	011.0013.0159	POWER TRANSFORMER SUPPORT PLATE
15	011.0013.0150	LOWER COVER
16	016.0009.0003	RUBBER FOOT
17	043.0002.0542	EMI TOROID
18	041.0004.0052	HALL EFFECT SENSOR
19	011.0013.0161	HALL SUPPORT PLATE
20	015.0001.0023	HEAT SINK 19X36X162
21	011.0013.0153	SEPARATION PLATE (1)
22	040.0003.1007	THERMAL CUT-OUT
23	032.0002.2403	ISOTOP DIODE
24	045.0006.0112	LONG COPPER BRACKET
25	045.0006.0111	SHORT COPPER BRACKET
26	045.0006.0110	OUTPUT COPPER BRACKET
27	011.0001.1141	RIGHT COVER
28	003.0002.0017	FAN
29	011.0013.0157	INTERNAL FAN SUPPORT
30	011.0013.0156	SEPARATION PLATE (2)
31	040.0003.1010	THERMAL CUT-OUT
32	012.0007.0040	CAP
33	045.0000.0017	CABLE CLAMP
34	045.0002.0022	SUPPLY CABLE
35	021.0013.0014	ILME CONNECTOR CAP
36	011.0013.0160	RIGHT SUPPORT BOARD PLATE
37	022.0002.0319	CU SUPPLY CABLE
38	013.0000.7010	REAR PANEL
39	022.0002.0320	10 PIN CONNECTOR CABLE
40	050.0004.0127	COMPLETE POWER BOARD
41	011.0013.0037	COVER PANEL SUPPORT PLATE
42	011.0001.0911	LEFT COVER
43	011.0013.0162	REAR SOCKETS PANEL
44	044.0004.0030	INPUT INDUCTOR

No.	CODE	DESCRIPTION
45	011.0013.0152	TUNNEL SUPPORT PLATE
46	015.0001.0022	HEAT SINK 17X37.3X162
47	011.0013.0151	TUNEL PLATE
48	030.0017.2200	RESISTOR
49	050.0004.0128	MAINS FILTER BOARD
50	050.0007.0129	SUPPLIES BOARD
51	011.0001.0901	UPPER COVER
52	050.0001.0126	405dms CONTROL BOARD
	050.0002.0126	505dms CONTROL BOARD
53	011.0013.0158	LEFT SUPPORT BOARD PLATE
54	014.0002.0025	KNOB WITH CAP
55	050.0001.0176	CURRENT SENSOR BOARD
56	050.0004.0151	EMI CAPACITORS BOARD (0151)
57	050.0001.0183	EMI CAPACITORS BOARD (0183)
58	050.0001.0199	CONNECTORS BOARDS
59	050.0001.0170	BOOST CURRENT SENSOR BOARD
60	022.0002.0399	CAN-BUS COMUNICATION CABLE
61	021.0004.2992	4 PIN CONNECTOR CAP

19.2 Power Pulse DIGITAL 405dms - 505dms ROBOT



No.	CODE	DESCRIPTION
1	050.5403.0000	COMPLETE FRONT PANEL
2	013.0023.1002	FRONT PANEL LABEL
3	050.0001.0162	ENCODER BOARD
4	012.0007.0020	PLASTIC LOUVRE
5	012.0007.0010	FRONT PLASTIC
6	011.0013.0021	FRONT PLATE
7	040.0001.0016	THREE-POLE SWITCH
8	021.0001.0279	OUTPUT SOCKET
9	011.0013.0163	FRONT SOCKETS PANEL
10	050.0001.0163	OUTPUT FILTER BOARD
11	045.0006.0113	TRASF/SOCKET COPPER BRACKET
12	044.0004.0029	OUTPUT INDUCTOR
13	042.0003.0051	POWER TRANSFORMER
14	011.0013.0159	POWER TRANSFORMER SUPPORT PLATE
15	011.0013.0150	LOWER COVER
16	016.0009.0003	RUBBER FOOT
17	043.0002.0542	EMI TOROID
18	041.0004.0052	HALL EFFECT SENSOR
19	011.0013.0161	HALL SUPPORT PLATE
20	015.0001.0023	HEAT SINK 19X36X162
21	011.0013.0153	SEPARATION PLATE (1)
22	040.0003.1007	THERMAL CUT-OUT
23	032.0002.2403	ISOTOP DIODE
24	045.0006.0112	LONG COPPER BRACKET
25	045.0006.0111	SHORT COPPER BRACKET
26	045.0006.0110	OUTPUT COPPER BRACKET
27	011.0001.1141	RIGHT COVER
28	003.0002.0017	FAN
29	011.0013.0157	INTERNAL FAN SUPPORT
30	011.0013.0156	SEPARATION PLATE (2)
31	040.0003.1010	THERMAL CUT-OUT
32	012.0007.0040	CAP
33	045.0000.0017	CABLE CLAMP
34	045.0002.0022	SUPPLY CABLE
35	021.0013.0014	ILME CONNECTOR CAP
36	011.0013.0160	RIGHT SUPPORT BOARD PLATE
37	022.0002.0319	CU SUPPLY CABLE
38	013.0000.7010	REAR PANEL
39	022.0002.0320	10 PIN CONNECTOR CABLE
40	050.0004.0127	COMPLETE POWER BOARD
41	011.0013.0037	COVER PANEL SUPPORT PLATE
42	011.0001.0911	LEFT COVER
43	011.0013.0162	REAR SOCKETS PANEL
44	044.0004.0030	INPUT INDUCTOR

No.	CODE	DESCRIPTION
45	011.0013.0152	TUNNEL SUPPORT PLATE
46	015.0001.0022	HEAT SINK 17X37.3X162
47	011.0013.0151	TUNEL PLATE
48	030.0017.2200	RESISTOR
49	050.0004.0128	MAINS FILTER BOARD
50	050.0007.0129	SUPPLIES BOARD
51	011.0001.0901	UPPER COVER
52	050.0001.0126	405dms CONTROL BOARD
	050.0002.0126	505dms CONTROL BOARD
53	011.0013.0158	LEFT SUPPORT BOARD PLATE
54	014.0002.0025	KNOB WITH CAP
55	050.0001.0176	CURRENT SENSOR BOARD
56	050.0004.0151	EMI CAPACITORS BOARD (0151)
57	050.0001.0183	EMI CAPACITORS BOARD (0183)
58	050.0001.0199	CONNECTORS BOARDS
59	050.0001.0170	BOOST CURRENT SENSOR BOARD
60	011.0014.0130	HOLE COVER PLATE
61	045.0006.0134	ISOTOP COPPER BRACKET
62	011.0013.0164	ROBOT INTERFACE SUPPORT PLATE
63	011.0013.0166	ROBOT - SOM FIXING PLATE
64	046.0004.0033	ROBOT INTERFACE FIXING PLASTIC INSULATION
65	012.0000.0024	IR PLEXIGLASS GUARD
66	050.0001.0180	Anybus-CompactCom M40 PROFIBUS DPV1
	050.0001.0181	Anybus-CompactCom M40 DeviceNet
	050.0001.0182	Anybus-CompactCom M40 EtherNet/IP
	050.0001.0200	Anybus-CompactCom M40 Profinet
	050.0001.0204	Anybus-CompactCom M40 CANopen
	050.0001.0205	Anybus-CompactCom M40 EtherCAT
	050.0001.0206	Anybus-CompactCom M40 Modbus TCP
67	050.0001.0192	IR-SOM INTERFACE BOARD

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22/02/2023 V.1.7