



WELD THE WORLD

# Cruiser 300

## Instruction manual





WELD THE WORLD

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**ENGLISH**

# 1 INTRODUCTION

 	<b>IMPORTANT!</b>
<p><i>This handbook must be consigned to the user prior to installation and commissioning of the unit. Read the "General prescriptions for use" handbook supplied separately from this handbook before installing and commissioning the unit.</i></p> <p><i>The meaning of the symbols in this manual and the associated precautionary information are given in the "General prescriptions for use".</i></p> <p><i>If the "General prescriptions for use" are not present, it is mandatory to request a replacement copy from the manufacturer or from your dealer.</i></p> <p><i>Retain these documents for future consultation.</i></p>	

## LEGEND

	<b>DANGER!</b>
<p><i>This pictogram warns of danger of death or serious injury.</i></p>	

	<b>WARNING!</b>
<p><i>This pictogram warns of a risk of injury or damage to property.</i></p>	

	<b>CAUTION!</b>
<p><i>This pictogram warns of a potentially hazardous situation.</i></p>	

	<b>INFORMATION</b>
<p><i>This pictogram gives important information concerning the execution of the relevant operations.</i></p>	

- ➔ This symbol identifies an action that occurs automatically as a result of a previous action.
- ① This symbol identifies additional information or a reference to a different section of the manual containing the associated information.
- § This symbol identifies a reference to a chapter of the manual.
- \*1 The symbol refers to the associated numbered note.

## NOTES

The figures in this manual are purely guideline and the images may contain differences with respect to the actual equipment to which they refer.

## 1.1 INTRODUCTION

This professional and rugged welding power source for DC MMA and TIG welding with exceptional arc characteristics is designed to operate in harsh environmental conditions in the fields of professional maintenance, shipyards and offshore, building construction and heavy fabrication.

The combination of digital control and excellent welding with cellulosic electrodes is ideal for hydraulic applications and welding work on oil pipelines and in the petrochemical industry.

Up to 4 mm diameter electrode welding is possible in MMA.

In MMA welding the Hot Start and Arc Force functions are adjustable and they allow improved arc striking, a flatter bead and more uniform weld.

The Anti Sticking function makes it possible to detach the electrode rapidly from the workpiece in the event of accidental sticking.

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:

- Manual remote controller for remote adjustment of the welding current.

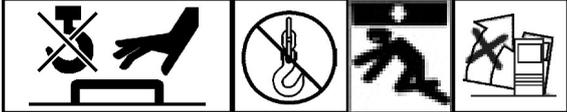
Consult your dealer for an updated list of accessories and the latest available new products.

## 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

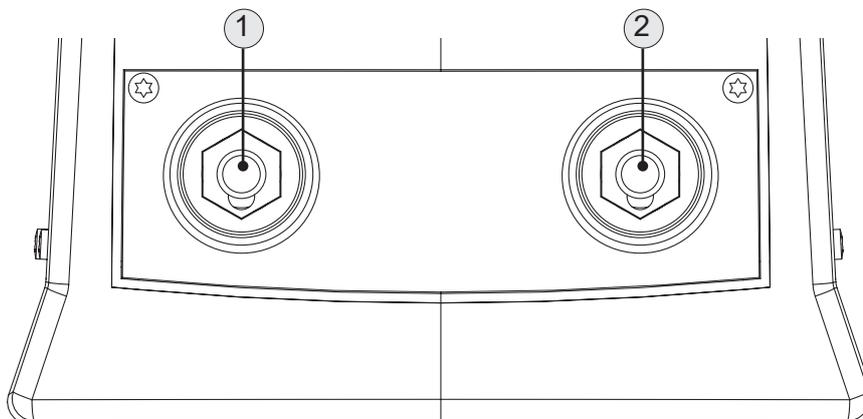
The mains power supply features to which the equipment should be connected are given in chapter “12 TECHNICAL DATA” at page 18.

The machine can be connected to motorgenerators provided their voltage is stabilised.

Connect/disconnect the various devices with the machine switched off.

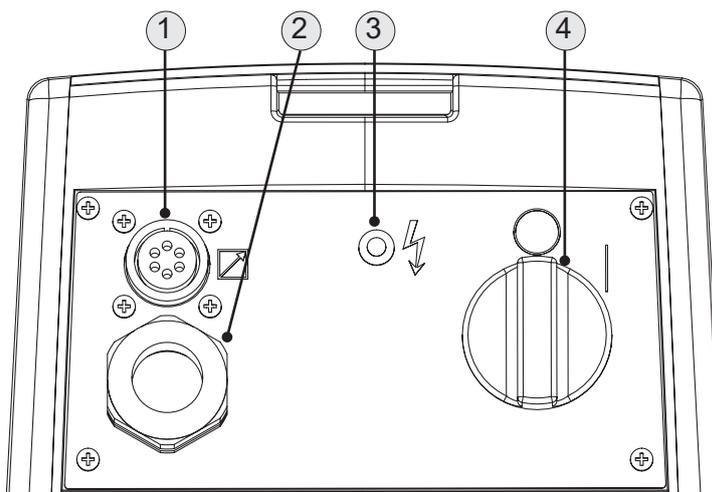
**ENGLISH**

**2.2 FRONT PANEL**



- Negative pole welding socket [Item 1].
- Positive pole welding socket [Item 2].

**2.3 REAR PANEL**



- Remote controller connector [Item 1].
- Power cable [Item 2].
  - Total length (including internal part): 5,0 m
  - Number and cross section of wires: 4 x 2.5 mm<sup>2</sup>
  - Power plug type: not supplied
- Mains protection ON LED [Item 3]. This LED illuminates if an incorrect operating condition occurs:
  - absence of a phase in the power supply line.
- Welding power source ON/OFF switch. Item 4].

## 2.4 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.



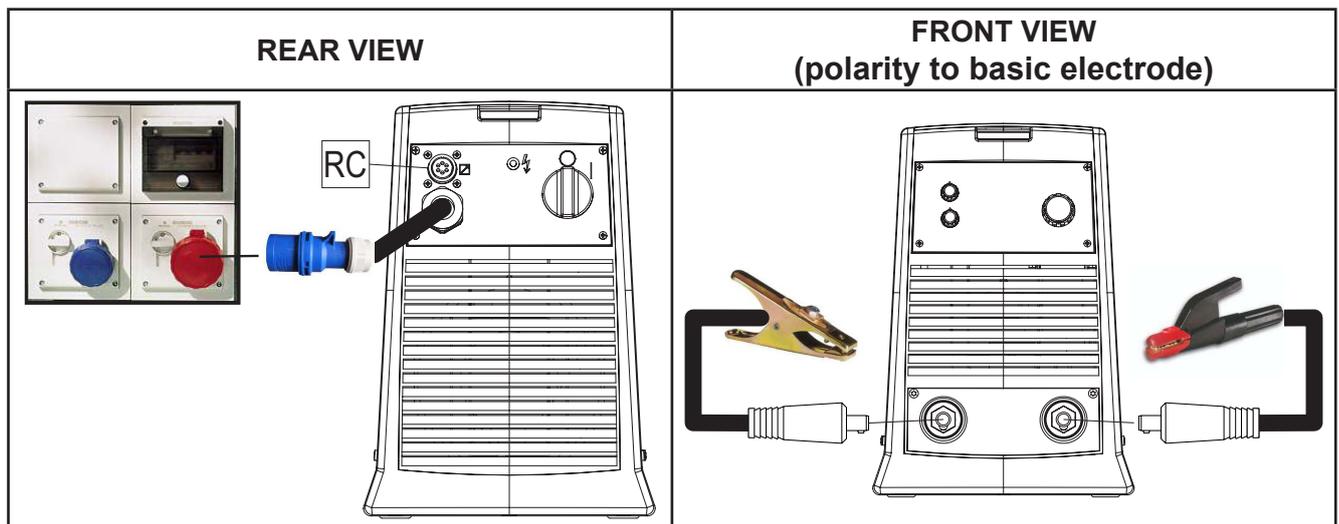
**DANGER!**

*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 powered).
  9. Select the following welding mode on the user interface: MMA
  10. Set the required welding parameter values on the user interface.
- ⚠ When the remote controller [RC] is connected and the relative locking screw is tightened, welding current can be adjusted using the remote controller.
- The system is ready to start welding.



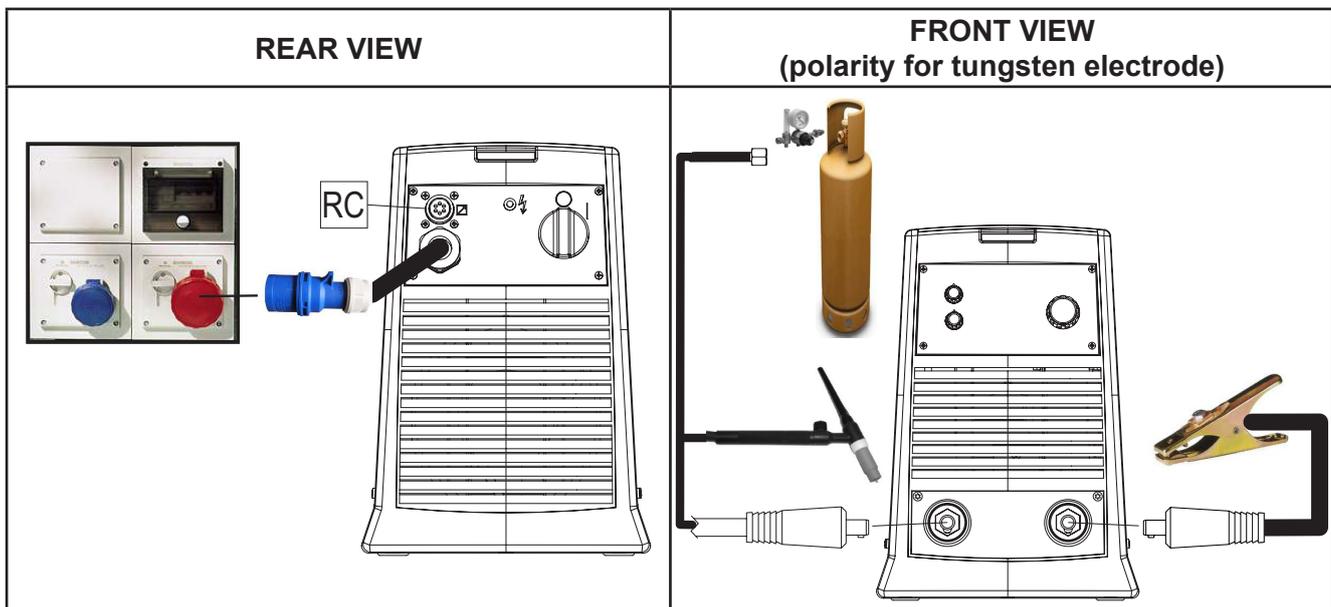
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## 2.5 PREPARING FOR TIG WELDING

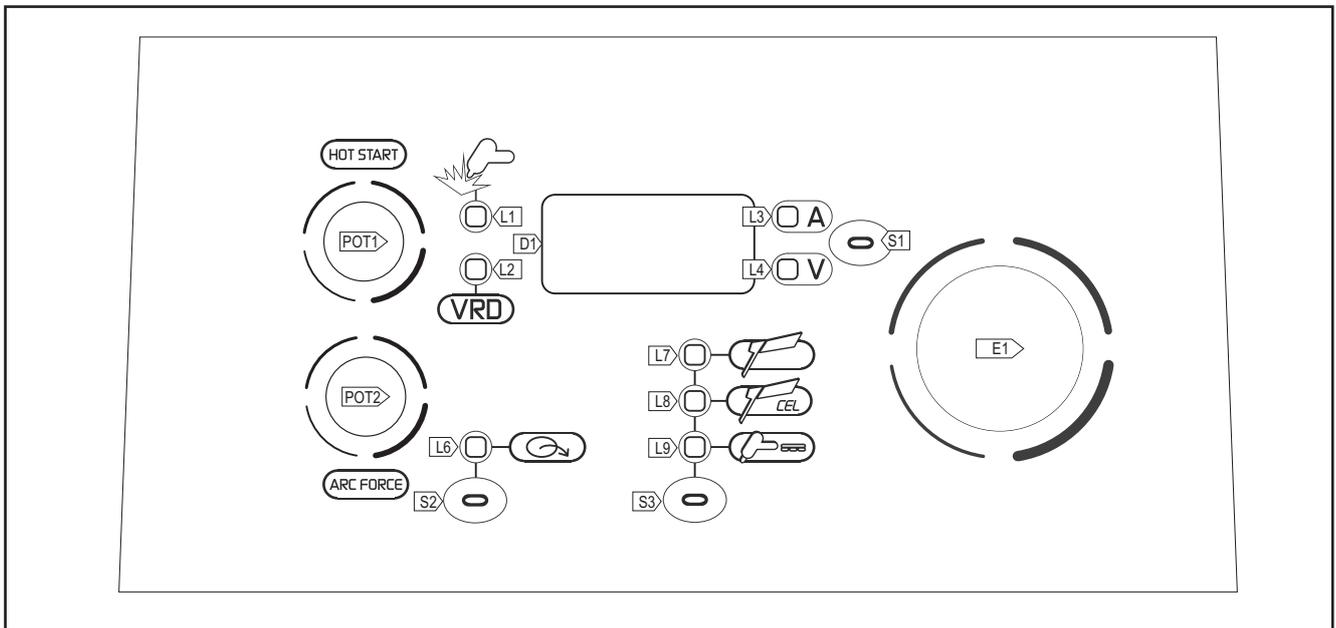
1. Set the welding power source ON/OFF switch to “O” (unit de-energized).
2. Plug the power cable plug into a mains socket outlet.
3. Choose the electrode based on the type of material and thickness of the workpiece to be welded.
4. Insert the electrode in the TIG torch.
5. Connect the torch plug to the welding socket on the basis of the polarity required by the type of electrode in question.
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.
8. Set the welding power source ON/OFF switch to “I” (unit powered).
9. Select the following welding mode on the user interface: DC TIG
- ① This model of welding machine has not been provided either with the control for gas flow (solenoid valve) or with the torch trigger.  
The system is ready to start welding.

### LIFT-ARC WELDING

1. Open the torch valve to let the gas out.
2. Touch the workpiece with the torch electrode.
3. Slowly lift the torch to strike the arc.
- ➡ The WELDING CURRENT reaches the preset value.
4. Quickly distance the torch from the workpiece to extinguish the welding arc.
5. Close the torch valve to interrupt the gas flow.



### 3 USER INTERFACE



CODE	SYMBOL	DESCRIPTION
L1		This LED illuminates to confirm the presence of power on the output sockets.
L2		Illumination shows that the following function has been activated: VRD (reduced output voltage). The no-load voltage between the welding sockets is switched from $U_0$ to $U_r$ (see technical data).
L3		Illuminates to indicate a value in the following unit of measurement: AMPERES (A)
L4		Illuminates to indicate a value in the following unit of measurement: VOLTS (V)
L6		This LED indicates that the current reference setting is imposed by the remote controller.
L7		This LED illuminates to show that the following welding mode is selected: MMA
L8		This LED illuminates to show that the following welding mode is selected: DESEAMING MODE
L9		This LED illuminates to show that the following welding mode is selected: CONTINUOUS DC TIG
D1		Data setting: The display shows the acronym of the parameter to be set. Welding: The display shows the effective amperes or volts value during welding.
S1		Welding: This button selects the parameter to be shown on the following display: D1 Possible choices: (A) Effective welding current - (V) Effective welding voltage Parameters/functions setting: This button selects the parameter to be shown on the following display: D1 Possible choices: (A) Effective welding current - (V) Effective welding voltage
S2		Press and release: the button enables the device to receive the welding current control signal from a remote controller. Hold down for 3 seconds: the button activates a connected remote controller, if available, which is then used to manage all functions of the welding power source from a distance.

CODE	SYMBOL	DESCRIPTION
S3		This button selects the welding mode.
POT1		MMA: The potentiometer sets the value of the following parameter: HOT START
POT2		MMA: The potentiometer sets the value of the following parameter: ARC FORCE
E1		Data setting: The encoder sets the value of the selected parameter. Welding: The encoder sets the value of the following parameter: WELDING CURRENT

#### 4 UNIT POWER-UP

Set the welding power source ON/OFF switch to “I” to switch on the unit.  
AL.H. The message appears on the following display: **D1**.

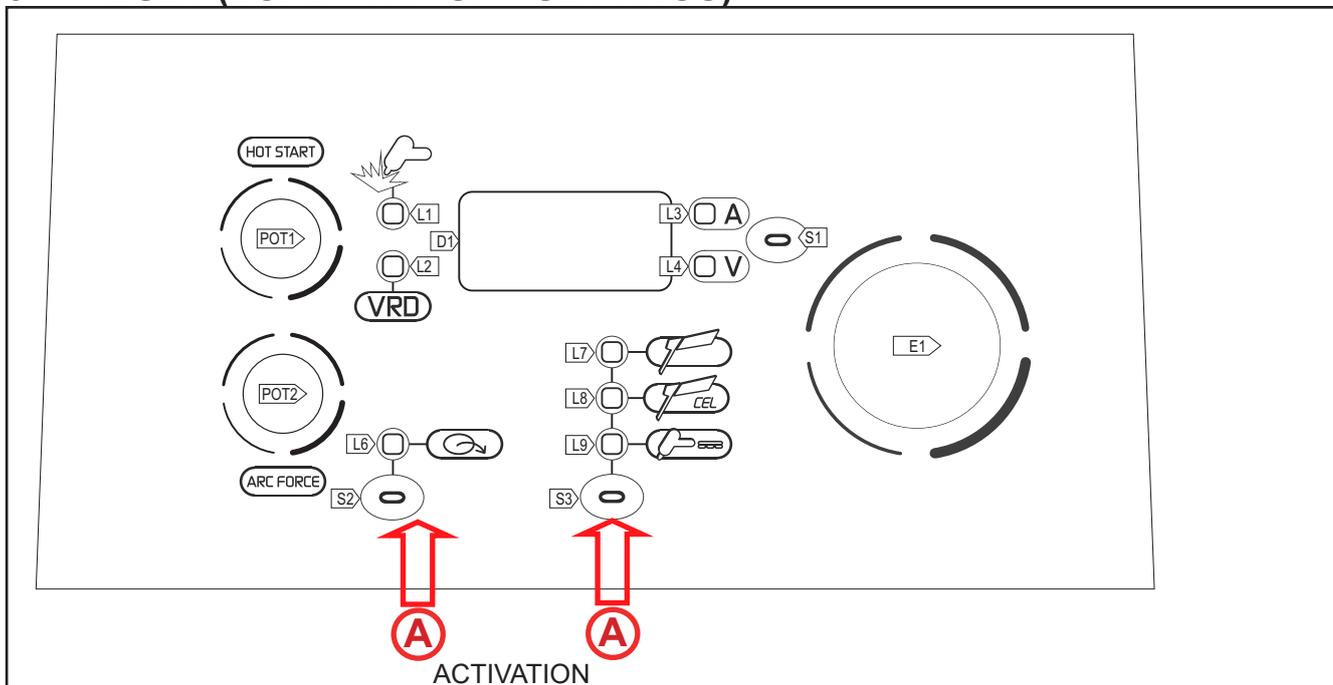
First power-up or power-ups following a RESET procedure

The welding power source sets up for welding with the factory pre-sets.

Subsequent power-ups

The welding power source sets up for welding in the latest stable welding configuration that was active at the time of power-off.

#### 5 RESET (LOAD FACTORY SETTINGS)



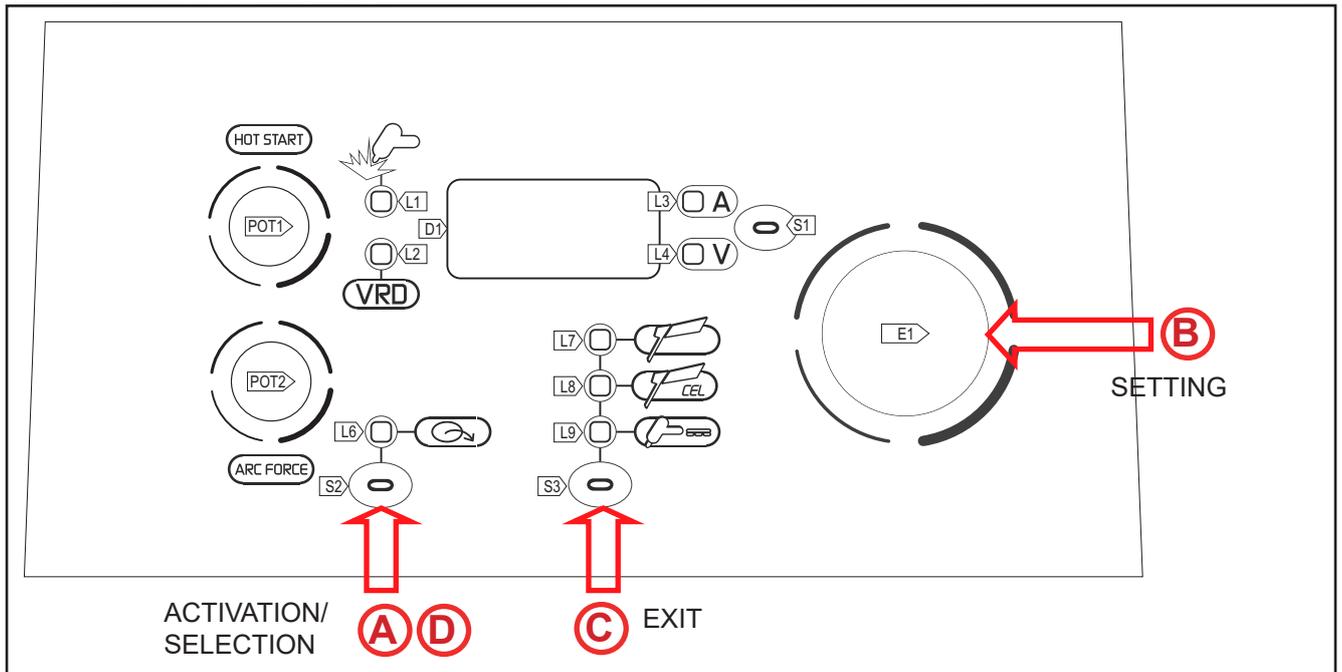
The reset procedure involves complete restoration of the default values, parameters and memory settings set in the factory.

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 welding power source from functioning correctly.

- (A)**
- Set the welding power source ON/OFF switch to “O” to switch the unit off.
  - Keeping both the **S2**  and **S3**  buttons pressed, set the generator power source switch to “I” to turn on the equipment [  **SIMULTANEOUS ACTIONS** ]
    - **rEC** : The message appears on the following displays: **D1**.
    - Wait for the memory clear procedure to terminate.

## 6 SET-UP (INITIAL SET-UP OF THE WELDING POWER SOURCE)



- (A)**
- Set the welding power source ON/OFF switch to “O” to switch the unit off.
  - Holding the **S2**  button down, turn the power source switch to “I” to start the equipment. [  **SIMULTANEOUS ACTIONS** ]
    - **Vrd**: The message appears on the following displays: **D1**.
- (B)**
- Using the **encoder E1** , edit the value of the selected setting.
- (C)**
- **Exit with confirmation**
    - Press any button (**except S2**).
    - This action will automatically close the menu.
- (D)**
- **Exit without confirmation**
    - Press the **S2** button .
    - This action will automatically close the menu.

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Tab. 1 - Parameters of the 2nd level menu: MMA mode

SETTING	MIN	DEFAULT	MAX	NOTES
OUTPUT VOLTAGE REDUCTION	OFF	OFF	ON	
LONG ARC VOLTAGE	37	*SYN	65	Only MMA

**\*SYN:** This code indicates that parameter control is synergic. The optimal value of this parameter is set automatically by the microprocessor on the basis of the pre-set welding current value.

- When SYN is installed, to display the synergic value press the following button: **S1**.
- This value can be displayed but it is not user-adjustable.

**- OUTPUT VOLTAGE REDUCTION (VRD)**

- This parameter reduces the potential across the welding sockets when welding is not in progress.
- The arc strike procedure is as follows:
  - Touch the workpiece with the electrode tip.
  - Raise the electrode.
  - Power is released for several seconds.
  - Touch the workpiece with the electrode tip.
  - The welding arc will strike.

**- LONG ARC VOLTAGE**

- This parameter inhibits power output when the potential between electrode and workpiece exceeds the pre-set threshold level.
- Consequences of a higher value:
  - The welding arc is kept triggered also with the electrode detached from the workpiece being soldered.
- Consequences of a lower value:
  - Faster exit from weld.

## 7 ALARM MANAGEMENT

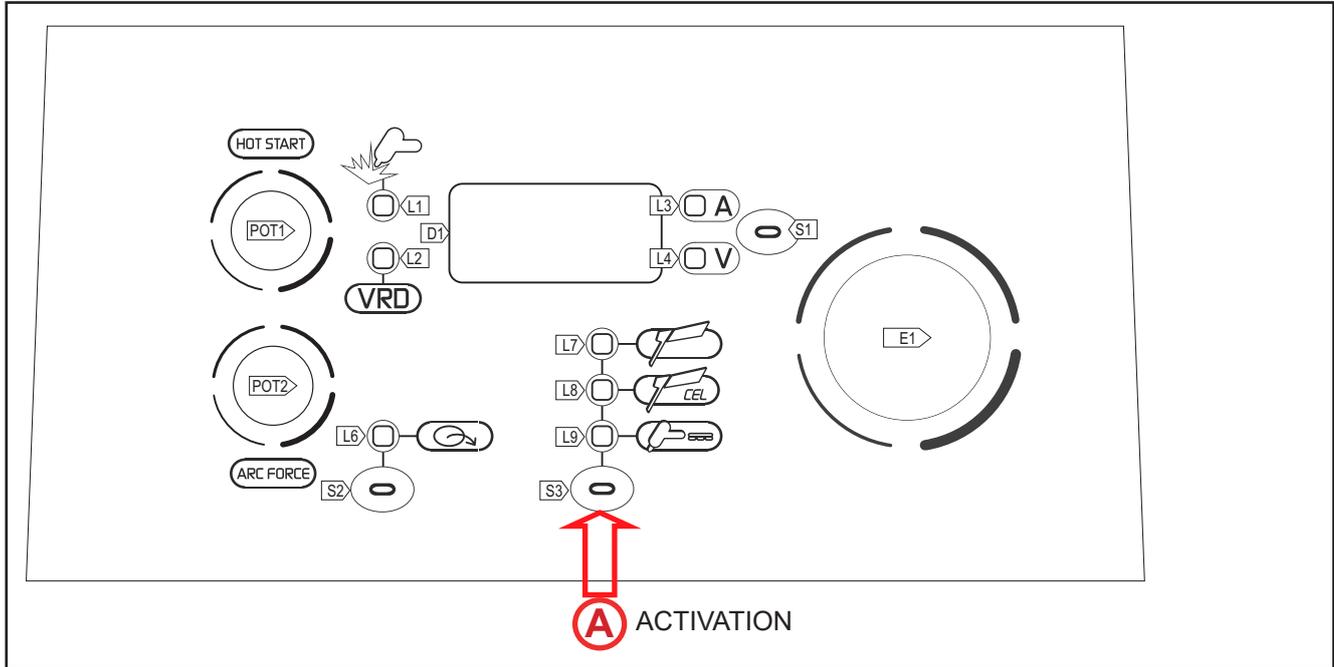
An alarm message appears on the following display: **D1**.

Tab. 2 - Alarm messages

MESSAGE	MEANING	EVENT	CHECKS
AL. HEA.	<b>In start-up phase</b>	Appears for 2-3 seconds	
	<b>Overheating alarm</b> Indicates tripping of the welding power source thermal protection. Leave the unit running so that the overheated components cool as rapidly as possible. When the unit has cooled, the welding power source will reset automatically.	All functions disabled. <u>Exceptions:</u> <ul style="list-style-type: none"> <li>Cooling fan.</li> <li>Cooler (if switched on).</li> </ul>	<ul style="list-style-type: none"> <li>Make sure that the power required by the welding process is lower than the maximum rated power output.</li> <li>Check that the operating conditions are in compliance with the welding power source data plate specifications.</li> <li>Check for the presence of adequate air circulation around the welding power source.</li> </ul>
	<b>Phase missing alarm</b> Indicates the absence of a phase in the power supply line. The message appears at the same time as the mains protection activation LED switches on.	All functions disabled. <u>Exceptions:</u> <ul style="list-style-type: none"> <li>Cooling fan.</li> </ul>	<ul style="list-style-type: none"> <li>Check if the equipment power supply line has all the phases.</li> </ul> <u>If the problem persists:</u> <ul style="list-style-type: none"> <li>qualified technical personnel are required for repair/maintenance jobs.</li> </ul>

## 8 WELDING

### 8.1 MMA WELDING/MMA CEL



o Press the **S3** button to activate the MMA or MMA CEL mode.

**(A)**

L 7 MMA  
L 8 MMA CEL

Tab. 3 - Parameters of the 1st level menu: MMA/MMA CEL mode

SETTING	MIN	DEFAULT	MAX	NOTES
WELDING CURRENT MAXIMUM CURRENT WITH REMOTE CONTROLLER	10 A	80 A	300 A	MAX: Maximum value of welding current
HOT-START	0 %	-	100 %	The value is calculated as a percentage of the preset welding current.
ARC FORCE	0 %	-	200 % (MMA)	The value is calculated as a percentage of the preset welding current. The value is limited to 300A max.
			400 % (CEL)	

**- WELDING CURRENT**

- This parameter regulates the primary welding current value.

**- MAXIMUM CURRENT WITH REMOTE CONTROLLER**

- The maximum output current value that can be achieved with foot pedal controller external reference.

**- HOT-START**

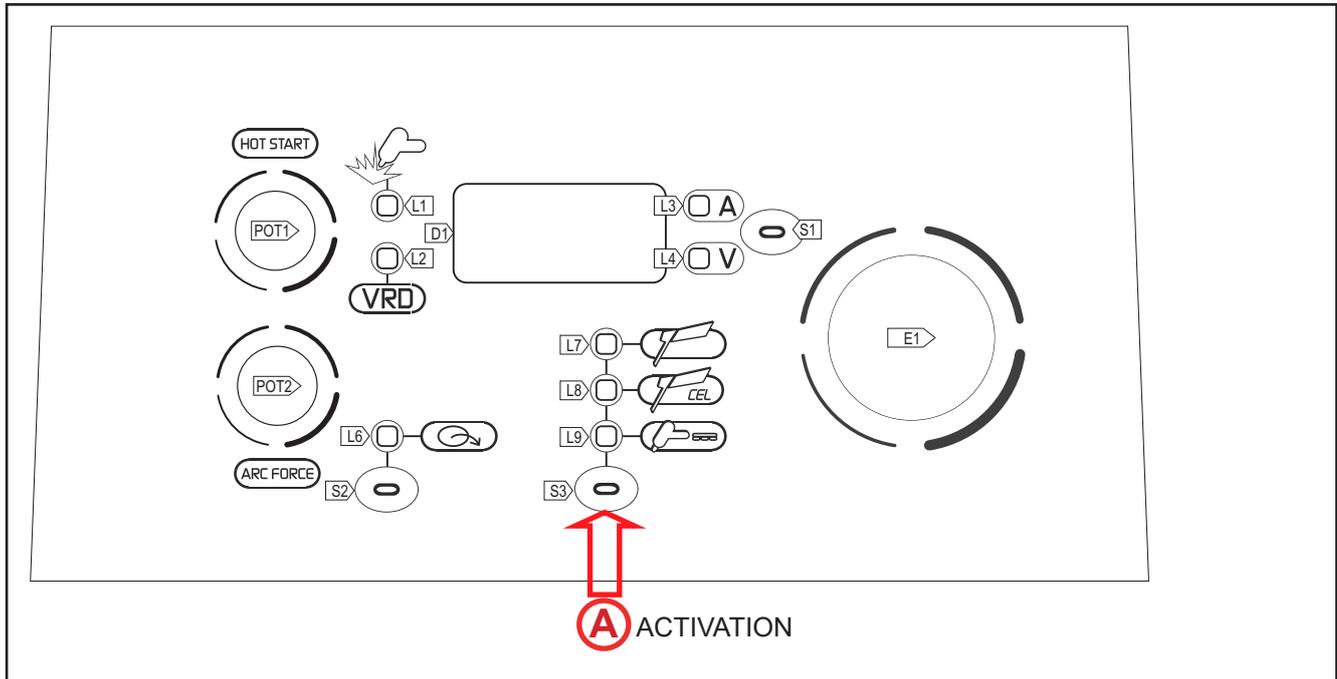
- This parameter aids electrode melting at the time of arc striking. It is set as a percentage referred to the value of the following parameter: **WELDING CURRENT**.
- Consequences of a higher value:
  - Ease of activation; Greater starting spatter; increase in the activation area.
- Consequences of a lower value:
  - Difficulty of activation; Less starting splatter; Reduction in the activation area.

**- ARC FORCE**

- This parameter helps to avoid electrode sticking during welding. It is set as a percentage referred to the value of the following parameter: **WELDING CURRENT**
  - Consequences of a higher value:
    - Fluency factors in welding; Arc welding stability; Increased melting of the electrode within the workpiece; More weld spatter.
  - Consequences of a lower value:
    - The arc is extinguished more easily, less welding spatter.
-

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8.2 TIG DC WELDING



○ Press the **S3** button to activate the CONTINUOUS DC TIG mode.

**A**

**L 9 CONTINUOUS DC TIG**

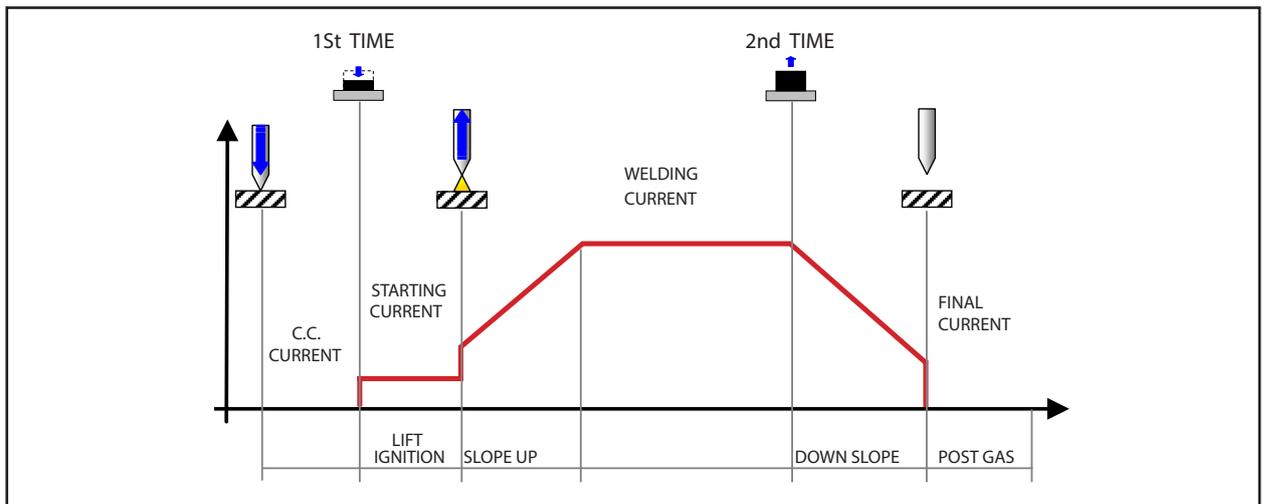
Tab. 4 - Parameters of the 1st level menu: CONTINUOUS DC TIG mode

SETTING	MIN	DEFAULT	MAX	NOTES
WELDING CURRENT	5 A	80 A	300 A	MAX: Maximum value of welding current

### 8.3 TORCH TRIGGER PROCEDURE

#### - 2 STROKE LIFT:

- 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 pre-set value, by way of an up slope time, if programmed.
- Release (2T) the 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.

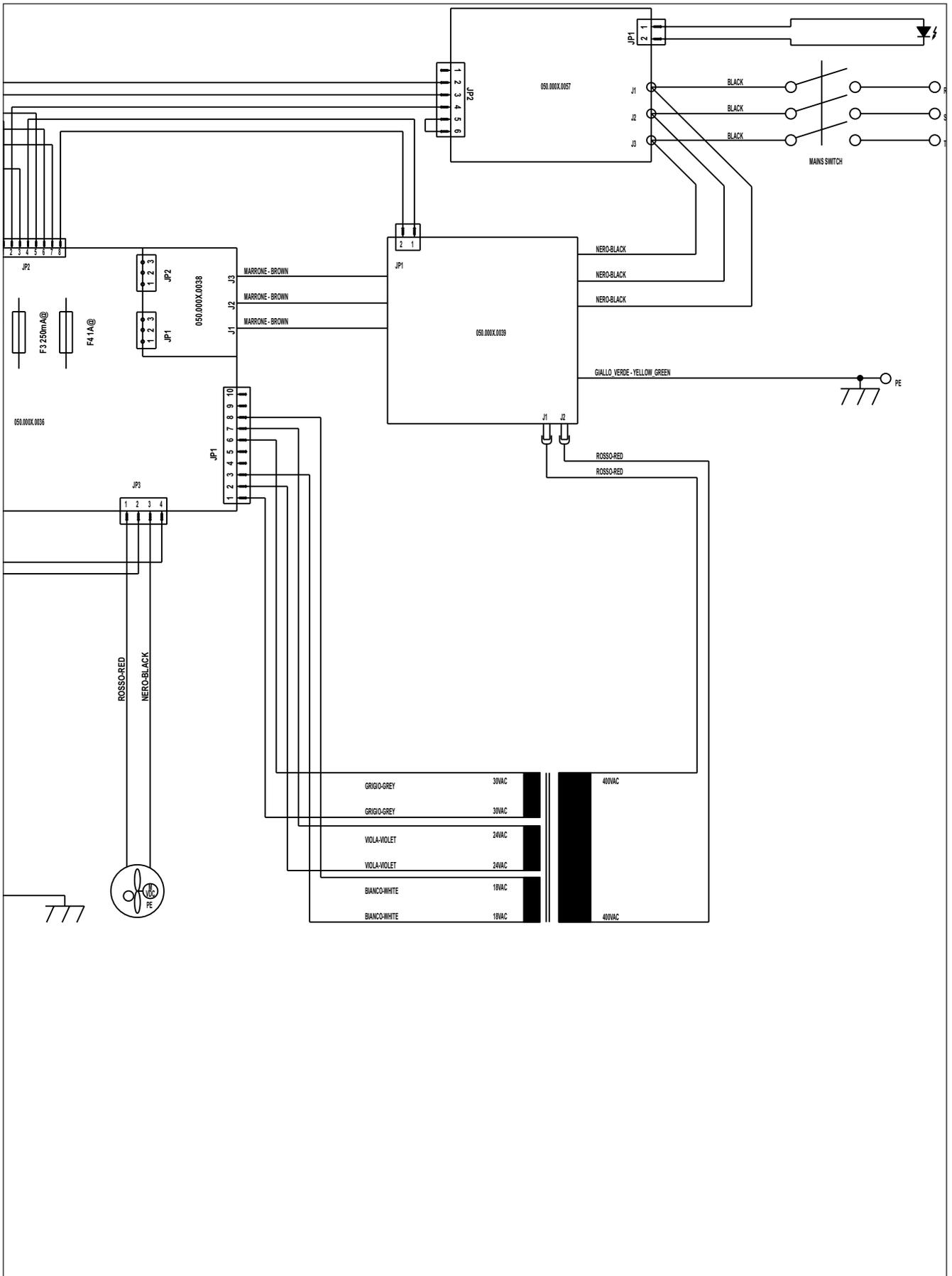


## 9 TECHNICAL DATA

<b>Directives applied</b>	Waste electrical and electronic equipment (WEEE)		
	Electromagnetic compatibility (EMC)		
	Low voltage (LVD)		
	Restriction of the use of certain hazardous substances (RoHS)		
<b>Construction standards</b>	EN 60974-1; EN 60974-10 Class A		
<b>Conformity markings</b>	 Equipment compliant with European directives in force		
	 Equipment suitable in an environment with increased hazard of electric shock		
	 Equipment compliant with WEEE directive		
	 Equipment compliant with RoHS directive		
<b>Supply voltage</b>	3 x 400 Va.c. ± 15 % / 50-60 Hz		
<b>Mains protection</b>	20 A 500 V Delayed		
<b>Zmax</b>	This equipment complies with IEC 61000-3-12 provided that the maximum permissible system impedance is less than or equal to 38 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 38 mΩ.		
<b>Dimensions ( L x D x H )</b>	460 x 230 x 325 mm		
<b>Weight</b>	20.8 kg		
<b>Insulation class</b>	H		
<b>Protection rating</b>	IP23		
<b>Cooling</b>	AF: Air-over cooling (fan assisted)		
<b>Maximum gas pressure</b>	0,5 MPa (5 bar)		
<b>Static characteristic</b>	MMA	 Falling characteristic	
	TIG	 Falling characteristic	
	MIG/MAG	 Flat characteristic	
<b>Welding mode</b>		MMA	TIG
<b>Current and voltage adjustment range</b>		10 A / 20.4 V 300 A / 32.0 V	5 A / 10.2 V 300 A / 22.0 V
<b>Welding current / Working voltage</b>	40% (40° C)	300 A / 32.0 V	---
	50% (40° C)	---	300 A / 22.0 V
	60% (40° C)	230 A / 29.2 V	250 A / 20.0 V
	100% (40° C)	200 A / 28.0 V	210 A / 18.4 V
<b>Maximum input power</b>	40% (40° C)	13.3 kVA – 10.7 kW	---
	50% (40° C)	---	10.3 kVA – 7.9 kW
	60% (40° C)	9.9 kVA – 7.9 kW	8.4 kVA – 6.2 kW
	100 % (40° C)	8.4 kVA – 6.6 kW	6.7 kVA – 4.8 kW
<b>Maximum supply current</b>	40% (40° C)	19.1 A	---
	50% (40° C)	---	14.8 A
	60% (40° C)	14.3 A	12.2 A
	100 % (40° C)	12.3 A	9.4 A

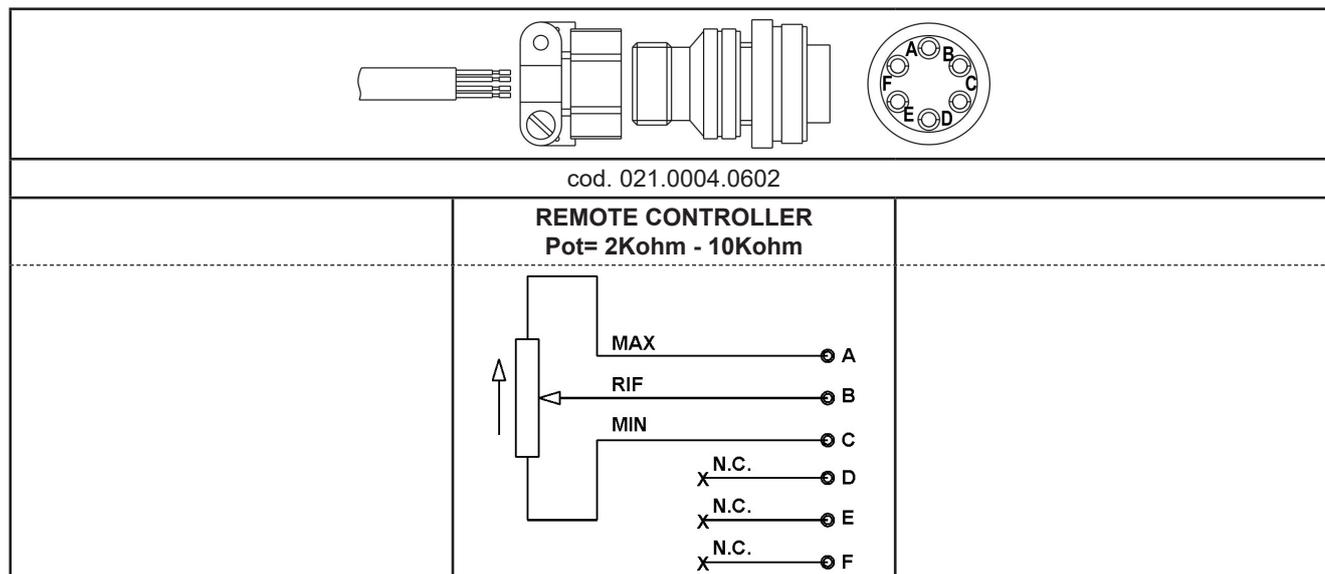
<b>Maximum Effective Supply Current</b>	40% (40° C)	12.1 A	---
	50% (40° C)	---	10.5 A
	60% (40° C)	11.1 A	9.5 A
	100 % (40° C)	12.3 A	9.4 A
<b>No-load voltage (U<sub>0</sub>)</b>		76 V	
<b>Reduced no-load voltage (U<sub>r</sub>)</b>		9 V	
<b>Power source efficiency</b>	Efficiency (300A / 32,0V): 85%		
	No-Load condition power consumption (U <sub>1</sub> = 400 Va.c.): 21,6 W		
<b>Essential raw materials</b>	According to the information provided by our suppliers, this product does not contain essential raw materials in quantities greater than 1g per component.		



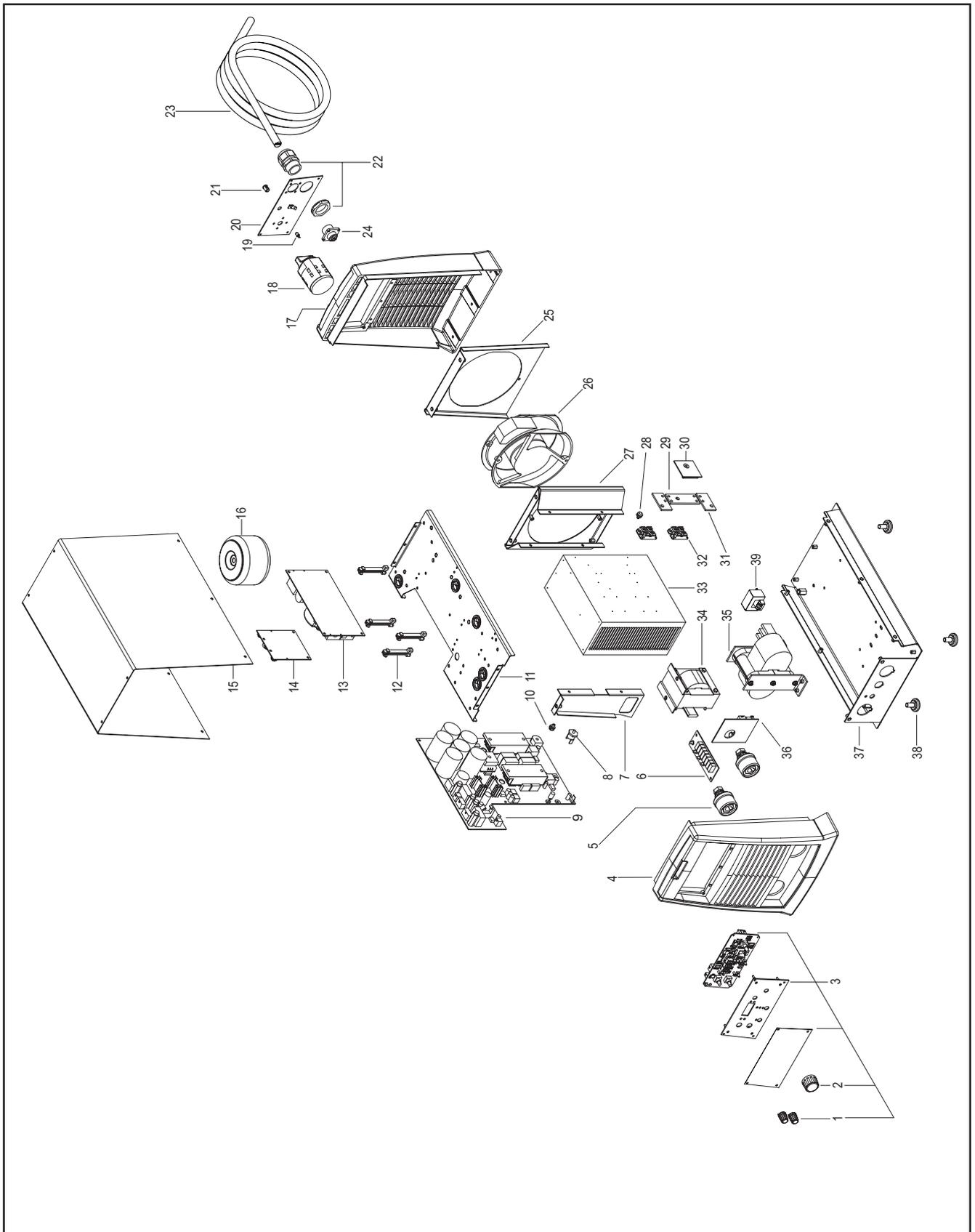


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10.1 REMOTE CONTROL CONNECTOR (back panel)



## 11 SPARE PARTS



**ENGLISH**

N°	CODE	DESCRIPTION
1	014.0002.0012	KNOB WITH CAP + INDICATOR
2	014.0002.0010	KNOB WITH CAP + INDICATOR
3	050.5046.0000	FRONT PANEL
4	010.0006.0038	FRONT PLASTIC PANEL
5	021.0001.0259	FIXED SOCKET
6	050.0002.0119	PRIMARY CAPACITOR BOARD
7	011.0008.0029	LATERAL PLATE
8	040.0003.0061	THERMAL SWITCH
9	050.0003.0036	POWER BOARD
10	040.0003.1270	THERMAL CUT-OUT 70°C L=200mm
11	011.0008.0021	UPPER PLATE
12	016.0010.0001	BOARDS SUPPORT GUIDE
13	050.0002.0039	MAINS FILTER BOARD
14	050.0002.0057	POWER SUPPLY CONTROL BOARD
15	011.0000.0161	COVER PLATE
16	041.0006.0004	AUXILIARY TRANSFORMER
17	010.0006.0034	REAR PLASTIC PANEL
18	040.0001.0017	THREE-POLE SWITCH
19	022.0002.0190	LED WIRING
20	013.0012.0002	REAR PANEL
21	016.4107.0001	LED HOLDER
22	045.0000.0050	CABLE CLAMP
23	045.0002.0019	NEOPRENE CABLE
24	022.0002.0005	REMOTE LOGIC BOARD WIRING
25	011.0008.0010	EXTERNAL FAN SUPPORT
26	003.0002.0003	FAN
27	011.0008.0011	INTERNAL FAN SUPPORT
28	040.0003.1170	THERMAL CUT-OUT 70°C L=300mm
29	045.0006.0058	DIODE-DIODE BRACKET
30	050.0003.0044	SNUBBER BOARD
31	045.0006.0061	DIODES-TRANSFORMER COPPER BRACKET
32	032.0002.2403	ISOTOP DIODE
33	015.0001.0006	HEAT SINK
34	044.0004.0025	OUTPUT INDUCTOR
35	010.0007.0002	POWER TRANSFORMER
36	050.0001.0031	OUTPUT FILTER BOARD
37	011.0008.0001	LOWER COVER
38	016.0009.0003	RUBBER FOOT
39	041.0004.0300	HALL EFFECT SENSOR





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