



Lasting Connections

# URANOS 2700 MTE

## SERVICE MANUAL





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*Before performing any operation on the machine, make sure that you have thoroughly read and understood the contents of this booklet. Do not perform modifications or maintenance operations which are not prescribed. Please consult qualified personnel if you have any doubts or difficulties in using the equipment.*

*This booklet is an integral part of the equipment and must accompany it when it changes location or is sold to third parties.*

*The user shall be responsible for keeping this booklet intact and legible.*

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1. WARNING .....	6
1.1 Safety warnings.....	6
2. TERMS AND CONVENTIONS USED.....	8
3. MEASURING INSTRUMENTS AND DEVICES .....	9
3.1 Measurement tools .....	9
3.2 Repair tools.....	9
3.3 Variac .....	10
3.4 Static load.....	10
4. SYSTEM REPAIR.....	11
4.1 Troubleshooting and system repair.....	11
4.1.1 Preliminary operations. ....	11
4.1.2 Visual inspection.....	11
4.1.3 Passive component control .....	12
4.1.4 Safety start .....	12
4.1.5 Active component control .....	15
4.1.6 Faulty part replacement .....	15
4.1.7 Functional checks.....	15
4.2 System calibration .....	16
4.3 Periodic inspection and testing .....	16
5. TROUBLESHOOTING AND SPARE PARTS REPLACEMENT .....	17
5.1 Foreword.....	17
5.2 Safety warnings .....	17
5.3 Tripolar switch code : 09.01.006 .....	18
5.4 Input filter board code : 15.14.50741 .....	20
5.5 Power boards spare kit code : 15.18.052 .....	25
5.6 Output rectifier diodes 14.05.098.....	35
5.7 Duplicator board code : 15.14.5682 .....	37
5.8 NTC cable 49.07.447 .....	40
5.9 Hall effect current sensor code : 11.19.014.....	42
5.10 Wired fan 40x40x15 code : 14.70.050 .....	44
5.11 Wired fan code : 14.70.052 .....	46
5.12 DSP board code : 15.14.53333 .....	48
5.13 H.F. BOARD 15.14.5035 .....	54
5.14 Output filter board code : 15.14.5652 .....	57
5.15 Connectors board 15.14.5663.....	59
5.16 Gas solenoid valve 09.05.001 .....	62
5.17 Gearmotor 120 W code 07.01.099 .....	64
5.18 Encoder 150 pulses code 07.01.015.....	66
5.19 Control panel code 15.22.353 .....	68
5.20 Push-pull torch power supply 15.14.5153 .....	70
6. USE OF THE PRODUCT.....	72
6.1 Parameter set up and setting .....	72
6.2 Parameter description .....	73
6.2.1 List of set up parameters (MMA).....	73
6.2.2 List of set up parameters (TIG-DC) .....	78
6.2.3 List of set up parameters (Standard MIG/MAG).....	84
6.2.4 List of set up parameters (Pulsed MIG/MAG).....	90
6.3 Specific procedures parameters .....	97
6.3.1 7 segment display personalisation .....	97
6.3.2 VRD Voltage Reduction Device (Set up 201).....	98
6.3.3 INFO screen (Set up 501).....	99
6.3.4 Lock/unlock (Set up 551) .....	100
6.3.5 External controls management (Set up 602).....	101
6.3.6 WU operation management (Set up 656).....	102
6.3.7 Offset calibration (Set up 704) .....	104
6.3.8 Voltage calibration (Set up 702) .....	106
6.3.9 Current calibration (Set up 701) .....	108
6.3.10 Circuit resistance calibration (set up 705) .....	110
6.3.11 Guard limits (Set up 801) .....	111
7. ALARMS .....	113
8. TROUBLESHOOTING .....	116
9. TECHNICAL SPECIFICATIONS .....	122
9.1 Electrical characteristics.....	122
9.2 Duty factor .....	123
9.3 Physical characteristics.....	123
10. Targa dati, Rating plate, Leistungsschild .....	124
11. Significato targa dati, Meaning rating plate, Bedeutung der Angaben auf dem Leistungsschild .....	125
12. Schema avanzato, Advanced diagram, Erweitertes Diagramm .....	126
13. Schema, Diagram, Schaltplan .....	127
14. Connitori, Connectors, Verbinder .....	128
15. Lista ricambi, Spare parts list, Ersatzteilverzeichnis.....	129
16. Installazione kit/accessori, Installation kit/accessories, Installation kits/zubehör .....	135

## SYMBOLS



Imminent danger of serious body harm and dangerous behaviours that may lead to serious body harm.



Important advice to be followed in order to avoid minor injuries or damage to property.



Technical notes to facilitate operations.

# 1. WARNING



*This manual is intended to provide the authorized technical service centers with the basic information necessary to carry out repairs on the voestalpine Böhler Welding Selco welding systems.*



*Before carrying out the repair, it is advisable that the contents of this manual have been read and understood, in particular the safety requirements.*



*Before performing any operation on the machine, make sure that you have thoroughly read and understood the contents of this booklet.*

*Do not perform modifications or maintenance operations which are not prescribed.*

*The manufacturer cannot be held responsible for damages to persons or property caused by misuse or non-application of the contents of this booklet by the user.*



*To perform the operations described in this manual you need:*

- Basic machine knowledge.
- Basic electronic knowledge.



*For a detailed description of the operation, use and ordinary maintenance of the machine, refer to the "Instruction manual for use and maintenance" which must always accompany the machine.*



*voestalpine Böhler Welding Selco s.r.l. does not assume responsibility for any damage to persons or things that may occur during repairs, even after reading or putting into practice what is written in this manual.*



*The purchaser is expressly obliged to comply with the provisions of this manual.  
Otherwise voestalpine Böhler Welding Selco s.r.l. disclaims any responsibility.*



*Please consult qualified personnel if you have any doubts or difficulties in using the equipment.*



*If the problem cannot be solved by following the instructions described in this manual, please contact voestalpine Böhler Welding Selco s.r.l. technical assistance.*

*Or send the machine to Service voestalpine Böhler Welding Selco s.r.l. for the appropriate interventions.*



*The system being repaired can consist of several parts, therefore also refer to the repair manuals of the other components*

## 1.1 Safety warnings



### **WARNING!**

*Improperly performed work can cause serious injury or damage.*

*All activities described in the service manual must only be carried out by service technicians trained by voestalpine Böhler Welding Selco.*



### **WARNING!**

*An electric shock can be fatal.*

*Before opening the device:*

- Move the mains switch to the "O" position.
- Disconnect the device from the mains.
- Check that the device cannot be turned on again.
- Using a suitable measuring device, ensure that any electrically charged components (e.g. capacitors) are fully discharged.



### **WARNING!**

*An electric shock can be fatal.*

*If the device needs to be turned on briefly to test while the housing is open:*

- Do not touch any part inside the housing.
- Only touch parts using suitable measuring or test probes.



When TIG operation with HF start is selected, the generators generate a series of high voltage pulses (about 10,000 V) to start the welding arc.  
When a TIG arc ignition test with H.F. disconnect the terminals of the HF board.  
Reconnect the terminals only after repairs have been made before definitively closing the machine.



## WARNING!

*Improper connection of the ground conductor can cause serious injury or damage.*

*The housing screws provide a suitable ground conductor connection for the housing ground and should NOT be replaced by any other screws that do not provide a reliable ground conductor connection.*



*The repair must only be carried out by trained personnel.  
(refer to Standard EN IEC 60974-4 par. 4.1).*



*In order to avoid serious damage to people or things, it is essential that this manual is used only by trained personnel  
(with reference to the legislation EN IEC 60974-4 par. 4.1).*



*Welding equipment tests can be dangerous and should be performed by a person educated or experienced in the field of electrical repair, preferably also familiar with the welding, cutting and allied processes.  
Instructed persons must be considered qualified for simple periodic tests and maintenance provided that it is not necessary to open the housing of the equipment.*



*The repair of an equipment requires access to the internal parts of the machine and consequently the removal of some protective panels.  
Additional precautions are necessary with respect to the simple use of the welding machine in order to prevent possible damage caused by contact with :  
• Under voltage parts.  
• Moving parts.  
• Parts at a high temperature.*



*DO NOT make changes and do not carry out maintenance not provided for in this manual.*



*The replacement of the faulty electronic component on the board is NOT foreseen.*



*When handling machine parts, be aware that some may be at a high temperature.  
In particular, avoid contact with heat dissipating radiators.*



*Avoid carrying out a repair without the presence of another person able to provide assistance in the event of an accident.*

## 2. TERMS AND CONVENTIONS USED

By convention, when a measurement is required between two points : A  B

The arrowhead indicates where to apply the multimeter's red test lead (A), the black tip is applied to the other end (B).

When instead a double arrow appears between two measuring points : C  D

The voltage to be measured is alternating (usually 50Hz or 60Hz) and the order of application of the multimeter terminals is indifferent.

In drawings and tables, when a voltage measurement appears referring to the terminals of components such as:

DIODI, BJT, MOSFET, IGBT

it refers to the use of the multimeter in "diode test" mode

(these measurements are always carried out with the machine off and normally give values in the range +0.10... + 0.90Vdc).

In this case, next to the value to be measured there is a box titled "Type of Measurement" where the symbol is placed :



Junction measure (multimeter in "diode test" mode)

Similarly, the following symbols will be used :



AC or CD voltage measurement (multimeter in voltmeter mode)



Resistance measurement (multimeter in ohmmeter mode)



Current measurement (current clamp or shunt + multimeter in millivoltmeter mode)



Frequency measurement (multimeter in frequency meter mode)



The measurement conditions (generator on / off, MMA / TIG operating mode, etc.) are always clearly indicated next to the values to be measured.



Connector terminals are indicated by the connector name followed by a slash and the terminal number.  
For example: CN1/2 indicates terminal 2 of connector CN1.



Unless otherwise specified, all measurements must be carried out with the boards inserted in their place, with the relative connections.

## 3. MEASURING INSTRUMENTS AND DEVICES

### 3.1 Measurement tools

To perform the operations described in this manual are required:



- Multimeter



- AC/DC current clamp



Some measurements with the multimeter must be made on the connectors.  
Pay particular attention not to mistakenly short-circuit the various pins and possibly use thin leads.



It is advisable to use an automatic scale instrument as, with a faulty machine, it is not theoretically possible to predict the level of the electrical quantity that one is about to measure.



The tools must comply with the Standard: *EN IEC 60974-4 par. 4.1*.

### 3.2 Repair tools

To perform the operations described in this manual are required :

- Complete set of open ended spanners.
- Complete set of socket wrenches for hex nuts.
- Complete set of screwdrivers for slotted screws.
- Complete set of screwdrivers for cross head screws.
- Complete set of Allen keys.
- A cross dynamometric screwdriver for M3 screws with the possibility of setting the tightening torque from 1 to 3Nxm.
- One crimping pliers for insulated cable lugs (blue, red and yellow).
- A clamp for AMP contacts.
- A tweezers and a nippers commonly used with electronic components.
- A pincer (dimensions suitable for closing gas hose clamps).
- A soldering iron for electronic components with a minimum power of 50 W.
- A portable electric drill for hobby.

## 3.3 Variac

During the diagnostic phases or after the replacement of faulty parts, it is preferable to power the system via a simple Variac from the desktop.

By powering the system through this type of device which can supply an alternating voltage variable from 0V to 230Vac at 50Hz and a maximum current of a few amperes, it is possible:

- check that the system is switched on correctly
- measure and check the no-load voltage value
- test the operation of the VRD function



Minimum recommended features:

- Power supply : 220Vac 50Hz
- Output voltage : 0-220Vac
- Output protected with protection fuse

An example in the following photo:



## 3.4 Static load



Using a static load can facilitate troubleshooting and testing of the generator.

A fixed resistance applied to the generator output is roughly equivalent to an electric arc as long as it remains within a narrow voltage range.

This central value can be determined with formulas:

Process	Formula	Examples
TIG	$V_{out} \approx 10 + 0.04 \times I_{out}$	12Vdc @ 50A 14Vdc @ 100A 18Vdc @ 200A
MMA	$V_{out} \approx 20 + 0.04 \times I_{out}$	22Vdc @ 50A 24Vdc @ 100A 28Vdc @ 200A
MIG/MAG	$V_{out} \approx 14 + 0.05 \times I_{out}$	16Vdc @ 50A 19Vdc @ 100A 24Vdc @ 200A



If the output voltage is too high or too low compared to the expected value, the generator could saturate or some particular functions could intervene (es.: antiflash).



In both cases the actual current could be very different from the expected value and the generator could also show intermittent operation (flashing of the "output power" LED).



When using a static load, pay attention to both the current and the output voltage of the generator and use resistors of the correct value and with adequate power!

## 4. SYSTEM REPAIR

### 4.1 Troubleshooting and system repair

The repair consists of:

- Identification of the faulty part.
- Replacement of the part with the specific spare part available in the appropriate "Spare parts list".



*The replacement of the faulty electronic component on the board is NOT ALLOWED.*



*DO NOT make changes and do not carry out maintenance not provided for in this manual.*



*If the problem cannot be solved by following the instructions described in this manual, please contact voestalpine Böhler Welding Selco s.r.l. technical assistance.  
Or send the machine to Service voestalpine Böhler Welding Selco s.r.l. for the appropriate interventions.*

in general we can divide the analysis activity into the following phases

#### 4.1.1 Preliminary operations.

##### PROCEDURE

- ▶ Remove the side panels.
- ▶ Remove the rear plastic plug to access the fans.
- ▶ Carry out a thorough cleaning of the system by carefully removing the dust inside the machine, in the area of the heat sink and the rear fans with the aid of soft bristle brushes and low intensity compressed air.



*The operations must be performed in a suitable environment.*

#### 4.1.2 Visual inspection



*Remember the first test to be performed is the visual check*

*The visual check reduces the troubleshooting time and directs any subsequent tests towards the damaged part*

##### PROCEDURE

- ▶ Look for any traces of combustion or damaged components.

In general, points to check visually are:

- Inlet filter area.
- Leveling electrolytic capacitors.
- Smoke traces detectable on the inside of the hood.
- Power and signal connections.
- Overall status of the pc boards.

In the visual check remember to also include the check of the state of:

- Electrode holder.
- Welding torches.
- Ground cables and clamps.
- Adhesive and warning data plate.
- Coolant circuit.
- Connections and gas circuit.
- Connections to the mains supply line.
- Welding circuit.
- Hoods and plastic covers.
- Readability of signaling led.
- Readability of displays.

## 4.1.3 Passive component control

### PROCEDURE

With generator off and disconnected from the mains:

- ▶ Perform all passive tests on the various parts of the plant involved in the analysis.



*For each component under analysis, refer to the tests described in the specific repair sheet.*

## 4.1.4 Safety start

The following procedure is recommended to power the generator in relative safety.

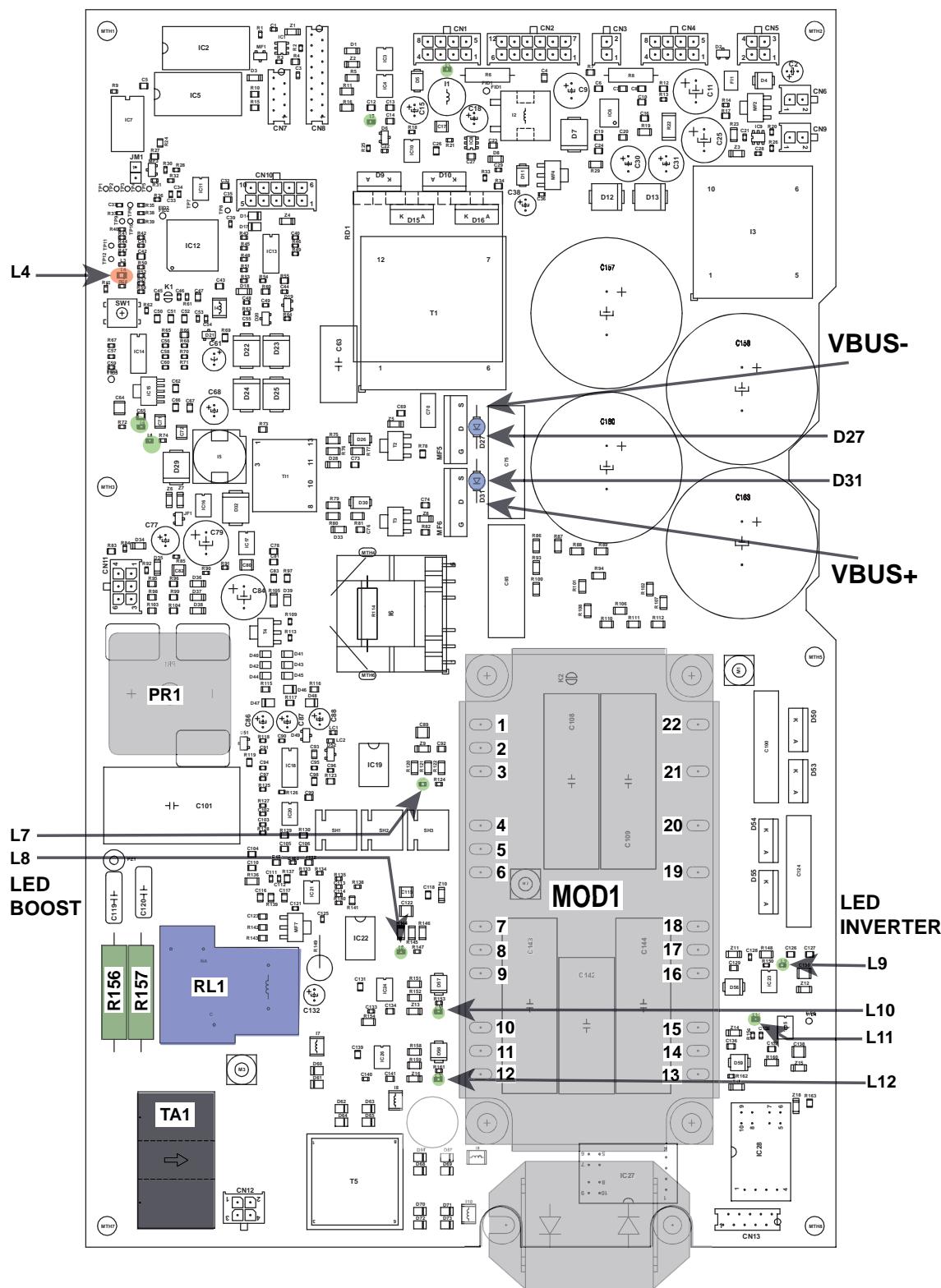
Both during the diagnosis phase and after the replacement of the faulty parts it is preferable to turn on the generator with this procedure in order to limit any damage due to the presence of faults not detected or not detectable with the generator off.

It basically involves powering the generator through a variable autotransformer (Variac) equipped with a protection fuse.



*Before turning on the generator in any mode, carry out a visual inspection of the system and carry out all the diagnostic tests that can be performed with the generator off, described in the repair sheets for each part of the system.*

## Board layout



The following sections refer to the board layout.

## Generator setting

### PROCEDURE

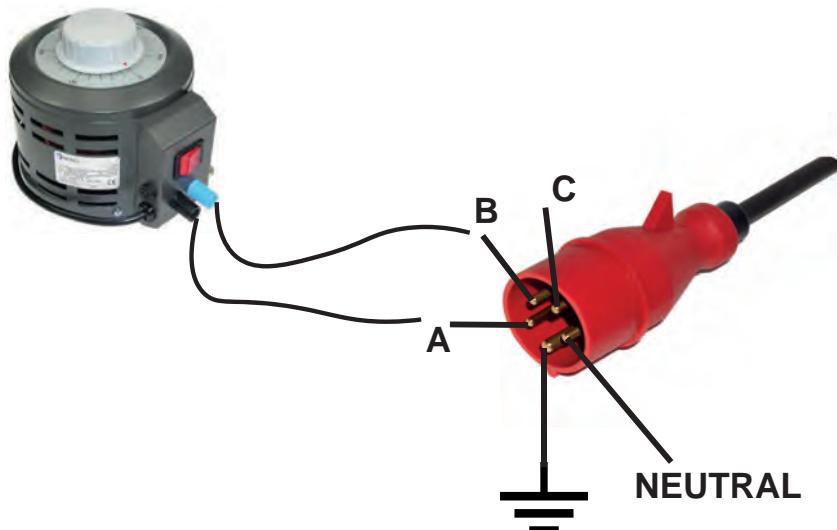
- ▶ Set the multimeter in mode for reading the DC voltage.
- ▶ Connect the red test lead of the multimeter to the measurement point marked VBUS +.
- ▶ Connect the black test lead of the multimeter to the measurement point marked VBUS -.
- ▶ Connect the Variac between two phases of the generator power socket.

A ↔ B or,

A ↔ C or,

B ↔ C

(See reference figure).



*Be careful not to use the ground pole or the neutral pole.*

## Safety start procedure

### PROCEDURE

- ▶ Gradually power up via the variac and check that the VBUS voltage gradually increases
- ▶ (with variac delivering 50Vac, the Vbus voltage is about 73Vdc).
- ▶ Power up to 220Vac and check that the Vbus rises to  $320 \pm 3$ Vdc and the generator turns on correctly.



*After a few seconds the "E40" alarm will be triggered, as the generator does not detect the other phases.  
Led L4 will light up.*

- ▶ Lower the voltage from the variac down to 0Vdc and wait for the generator to switch off.
- ▶ Repeat the procedure on all possible phase combinations.

A ↔ B or,

A ↔ C or,

B ↔ C

(See reference figure).

- ▶ Check the VBUS voltage for all combinations.

*Before switching to mains power:*

- ▶ Set the generator in mode: MIG/MAG

- ▶ Turn off the generator by setting the toggle switch "0".

## Power On via Main Network

### PROCEDURE

- ▶ With the generator off, turn off the Variac and unplug it from the generator power outlet.
- ▶ Maintain the connection of the multimeter for the reading of the VBUS.
- ▶ Connect the generator to the mains.
- ▶ Turn on the generator.
- ▶ Check that the VBUS voltage rises to  $320 \pm 3\text{Vdc}$  and then rises further to  $730 \pm 3\text{Vdc}$  when the Boost starts.
- ▶ Check the LED diagnostics of the power board.
- ▶ Set the generator in mode: MIG/MAG
- ▶ Start empty with the torch and check the correct lighting of the inverter driver control LED diodes.

## 4.1.5 Active component control

### PROCEDURE

With generator on (see safety start procedure):

- ▶ Check for the presence of no-load voltage in the various ignition configurations.
- ▶ Check for alarms on the screen or on the alarm list.
- ▶ Perform all tests with the system in ON mode on the various parts of the system involved in the analysis.



*For the tests to be carried out, refer to the relative technical data sheets of each component.*

## 4.1.6 Faulty part replacement

### PROCEDURE

When a faulty part is detected:

- ▶ Replace the component with the corresponding spare part.
- ▶  Repeat the control operations also on the parts linked to the same chain.

## 4.1.7 Functional checks

### PROCEDURE

After the repair, perform functional tests of the system.

Example:

- ▶ Check that the main switch properly sections each phase conductor.
- ▶ Check the correct functioning of the Vrd device (See section "VRD Voltage Reduction Device (Set up 201)").
- ▶ Check the correct functioning of the gas solenoid valves and the passage of gas in the circuit.
- ▶ Check the correct operation of the compressed air solenoid valves and the passage of air in the circuit.
- ▶ Check the operation of the fans.
- ▶ Check the cooling circuit.
- ▶ Check the status of the signaling LEDs and the display.
- ▶ Check the condition of the thread trimmer and the thread load.
- ▶ Perform appropriate welding tests in all modes.



*The operations must be carried out by suitably trained personnel*

## 4.2 System calibration

### PROCEDURE

Calibrate the system using the parameters in the following order:



#### Offset calibration

Refer to section "Offset calibration (Set up 704)" of the generator repair manual.



#### Voltage calibration

Refer to section "Voltage calibration (Set up 702)" of the generator repair manual.



#### Current calibration

Refer to section "Current calibration (Set up 701)" of the generator repair manual.

---

## 4.3 Periodic inspection and testing



*Once the repair has been completed, a check and validation of the system must be carried out according to the Standard: EN IEC 60974-4 par. 4.1*

## 5. TROUBLESHOOTING AND SPARE PARTS REPLACEMENT

### 5.1 Foreword

The following sections illustrate the normal working conditions of the boards making up the device and provide the standard values of the electrical quantities that can be detected in the main measuring points of the parts themselves.



*Remember the first test to be performed is the visual check*

*The visual check reduces the troubleshooting time and directs any subsequent tests towards the damaged part*



*The repair consists of:*

- *Identification of the faulty part.*
- *Replacement of the part with the specific spare part available in the appropriate "Spare parts list".*

### 5.2 Safety warnings



#### **WARNING!**

*Improperly performed work can cause serious injury or damage.*

*All activities described in the service manual must only be carried out by service technicians trained by voestalpine Böhler Welding Selco.*



*Welding equipment tests can be dangerous and should be performed by a person educated or experienced in the field of electrical repair, preferably also familiar with the welding, cutting and allied processes.*

*Instructed persons must be considered qualified for simple periodic tests and maintenance provided that it is not necessary to open the housing of the equipment.*



*In order to avoid serious damage to people or things, it is essential that this manual is used only by trained personnel (with reference to the legislation EN IEC 60974-4 par. 4.1).*



#### **WARNING!**

*An electric shock can be fatal.*

*Before opening the device:*

- *Move the mains switch to the "O" position.*
- *Disconnect the device from the mains.*
- *Check that the device cannot be turned on again.*
- *Using a suitable measuring device, ensure that any electrically charged components (e.g. capacitors) are fully discharged.*



#### **WARNING!**

*An electric shock can be fatal.*

*If the device needs to be turned on briefly to test while the housing is open:*

- *Do not touch any part inside the housing.*
- *Only touch parts using suitable measuring or test probes.*



#### **WARNING!**

*Improper connection of the ground conductor can cause serious injury or damage.*

*The housing screws provide a suitable ground conductor connection for the housing ground and should NOT be replaced by any other screws that do not provide a reliable ground conductor connection.*



*The repair of an equipment requires access to the internal parts of the machine and consequently the removal of some protective panels.*

*Additional precautions are necessary with respect to the simple use of the welding machine in order to prevent possible damage caused by contact with:*

- *Undervoltage parts.*
- *Moving parts.*
- *Parts at a high temperature.*



*DO NOT make changes and do not carry out maintenance not provided for in this manual.*



*The replacement of the faulty electronic component on the board is NOT ALLOWED.*

## 5.3 Tripolar switch code : 09.01.006

### Spare Part Code

- 09.01.006

### Description and functionality

- Three-pole power switch.

### Position

- Part reachable from the right side panel.

### Parts replacement



*Warning high voltage!*

*With the generator connected to the mains, the voltage across U, V and W of the circuit-breaker is present regardless of the ON/OFF condition of the input selector*

*Always disconnect the generator from the Grid.*

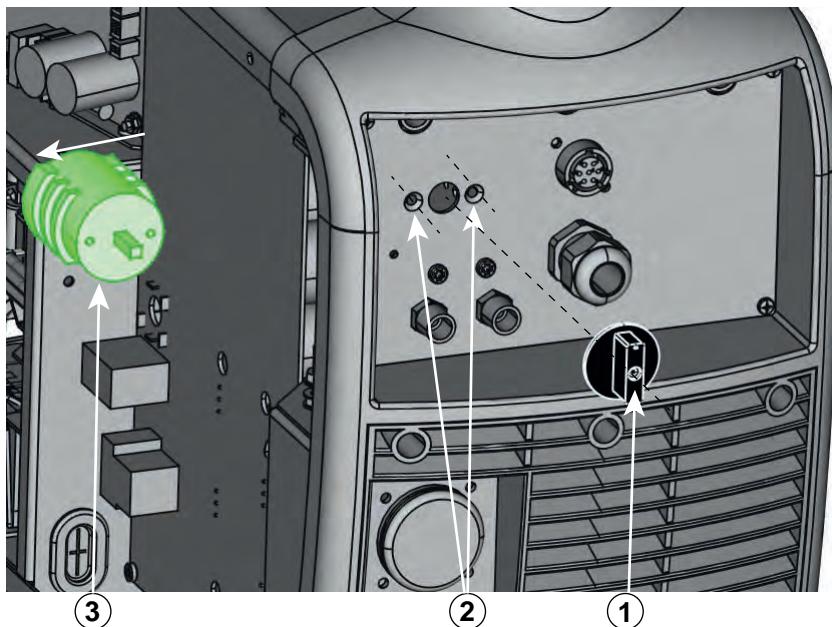


*A cables marking is recommended to an easily machine reassembly.*

*Always refer to the wiring diagram.*

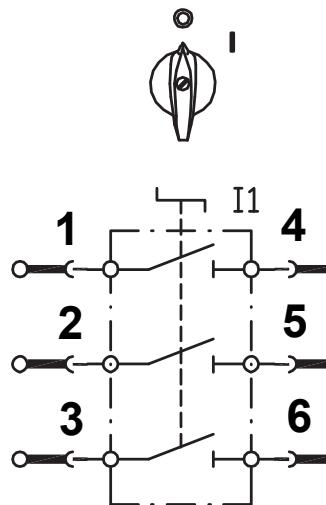
### Faulty part removal instructions

#### PROCEDURE



- ▶ Remove right side panel.
- ▶ Remove the screw that connects the knob to the switch. **①**
- ▶ Remove the screws that secure the switch to the rear panel. **②**
- ▶ Remove the component and disconnect the phase terminals. **③**

## Diagnostics



### Diagnostic tests

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



*Warning high voltage!  
Always refer to the wiring diagram.*



#### Switch integrity test

*Measurements to be carried out with the generator off and disconnected from any power source.*

*Visually check the integrity of the components.*

*Check that there is no short-circuit between the phases of the switch both with the lever set to "0" and with the lever set to "1".*

*Check the correct electrical continuity between the input and output of the circuit breaker phases both with the lever set to "0" and with the lever set to "1".*



#### Three-phase switch I1

*Measurements to be made with the generator on.*

*Test to be carried out with generator powered on three-phase line.*

*The measured value depends on the line voltage used.*

Mode	Test Point	Value	Unit of measure
(V)	I1/1 ↔ I1/2	230/400±15%	Vac
(V)	I1/1 ↔ I1/3	230/400±15%	Vac
(V)	I1/2 ↔ I1/3	230/400±15%	Vac
(V)	I1/4 ↔ I1/5	230/400±15%	Vac
(V)	I1/4 ↔ I1/6	230/400±15%	Vac
(V)	I1/5 ↔ I1/6	230/400±15%	Vac

## 5.4 Input filter board code : 15.14.50741

### Spare Part Code

- 15.14.50741

### Description and functionality

The board is equipped with:

- R.F. circuitry
- Varistors for protection against overvoltages from the power supply network.

The board manages:

- Realize the input filter stage.
- It guarantees the protection of the generator from overvoltages coming from the grid.
- Provides the cooling group main power.
- It realizes the mains voltages presence feedback for checking.

### Position

- This part can be reached by pulling out the front panel.

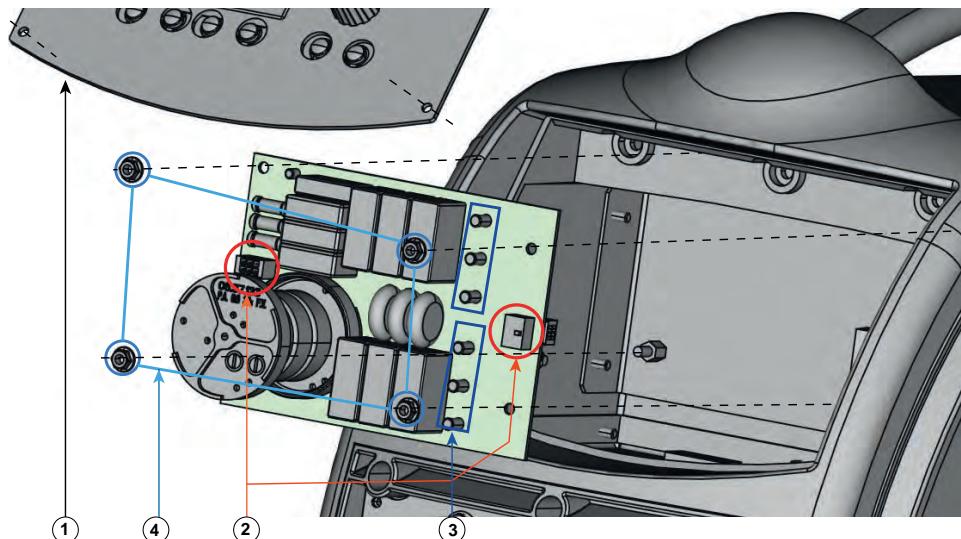
### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

#### Faulty part removal instructions

##### PROCEDURE



- ▶ Remove frontal panel. ①
- ▶ Disconnect the connectors from the board. ②
- ▶ Remove the fixing nuts. ③
- ▶ Remove the fixing nuts. ④

#### Spare part installation instructions

##### PROCEDURE



Make sure that the brass bridge of the ground connection is inserted present and inserted correctly.

## Diagnostics

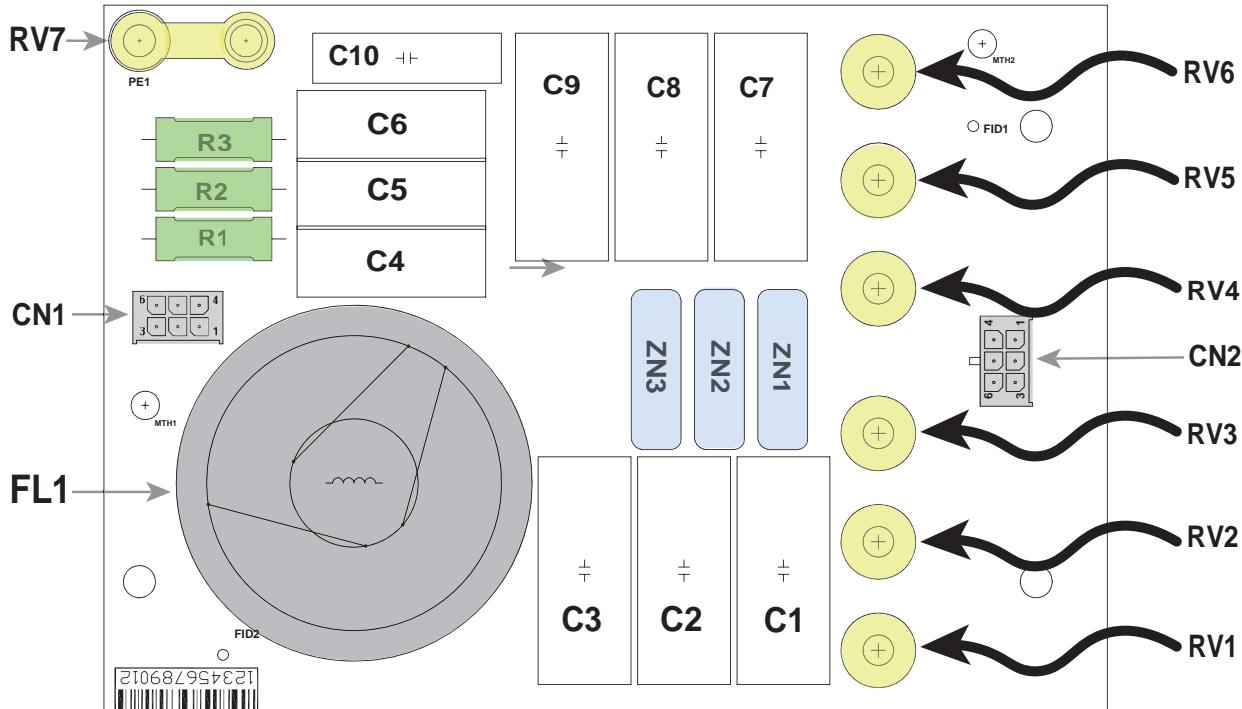
### Board layout

In the board layout are showed:

- Position and color of signaling led.
- Location and name of components.
- Location and name of connectors.
- Connections.
- Position of the measurement points.



*The following sections refer to the board layout.*



### Connectors and connections

The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.



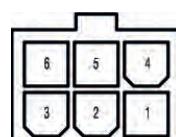
*Warning high voltage!  
Always refer to the wiring diagram.*

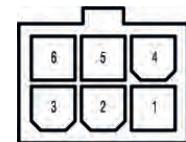
**CN1** Phase reference

Pin	Function	Value	Unit of measure
CN1/1	Network phase voltage reference R1	230/400	Vac
CN1/3	Network phase voltage reference R2	230/400	Vac
CN1/5	Network phase voltage reference R3	230/400	Vac



*The measured value depends on the line voltage used.*





**CN2** Cooling unit power supply

Pin	Function	Value	Unit of measure
CN2/3	Cooling unit power supply	230/400	Vac
CN2/4	Cooling unit power supply	230/400	Vac



*The measured value depends on the line voltage used.*

**RV1-RV2-RV3** Connections to the main switch.

Pin	Function	Value	Unit of measure
RV1	Connection to the three-phase switch	230/400	Vac
RV2	Connection to the three-phase switch	230/400	Vac
RV3	Connection to the three-phase switch	230/400	Vac



*The measured value depends on the line voltage used.*

**RV4-RV5-RV6** Power connections to the power board.

Pin	Function	Value	Unit of measure
RV4	Connection to the power board.	230/400	Vac
RV5	Connection to the power board.	230/400	Vac
RV6	Connection to the power board.	230/400	Vac



*The measured value depends on the line voltage used.*

**RV7** Earth safety connection.



*Make sure that the brass bridge of the ground connection is inserted present and inserted correctly.*

## Diagnostic tests

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



*Warning high voltage!  
Always refer to the wiring diagram.*



### Resistors EMI input filter R1, R2, R3

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*

Mode	Test Point	Value	Unit of measure
(Ω)	R1/1 ↔ R1/2	3K9	Ω
(Ω)	R2/1 ↔ R2/2	3K9	Ω
(Ω)	R3/1 ↔ R3/2	3K9	Ω



### Capacitors C1,C2,C3,C4,C5,C6,C7,C8,C9,C10

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*



### Protection varistors ZN1,ZN2,ZN3

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*



### Ground connection brass bridge RV7

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*

*Make sure that the brass bridge of the ground connection is inserted present and inserted correctly.*



### Input power supply voltage Connections RV1,RV2,RV3

*Measurements to be made with the generator on.*

*Test to be carried out with generator powered on three-phase line.*

Mode	Test Point	Value	Unit of measure
(V)	RV1 ↔ RV2	230/400±15%	Vac
(V)	RV1 ↔ RV3	230/400±15%	Vac
(V)	RV2 ↔ RV3	230/400±15%	Vac



### EMI filter output power voltage Connections RV4,RV5,RV6

*Measurements to be made with the generator on.*

*Test to be carried out with generator powered on three-phase line.*

*The measured value depends on the line voltage used.*

Mode	Test Point	Value	Unit of measure
(V)	RV4 ↔ RV5	230/400±15%	Vac
(V)	RV4 ↔ RV6	230/400±15%	Vac
(V)	RV5 ↔ RV6	230/400±15%	Vac



### Phase reference Connector CN1

*Measurements to be made with the generator on.*

*Test to be carried out with generator powered on three-phase line.*

*The measured value depends on the line voltage used.*

Mode	Test Point	Value	Unit of measure
(V)	CN1/1 ↔ CN1/5	230/400±15%	Vac
(V)	CN1/3 ↔ CN1/1	230/400±15%	Vac
(V)	CN1/5 ↔ CN1/3	230/400±15%	Vac



### Cooling unit power line Connector CN2

*Measurements to be made with the generator on.*

*Test to be carried out with generator powered on three-phase line.*

*The measured value depends on the line voltage used.*

Mode	Test Point	Value	Unit of measure
(V)	CN2/3 ↔ CN2/4	230/400±15%	Vac

## 5.5 Power boards spare kit code : 15.18.052

### Spare Part Code

- 15.18.052

### Description and functionality

The board is equipped with:

- The power stage.
- Boost stage at 30kHz.
- 60kHz Trilevel inverter stage.

The board manages:

- Parallel resonant power stage control by means of a DSP mounted on board.
- The management of the power stage of the machine.
- The recognition of the 230Vac three-phase or 400Vac three-phase mains power supply.
- The rear fans.
- The internal fan.
- The cooling unit.
- H.F. power supply
- Forward to H.F. the start signal coming from the control board.

### Position

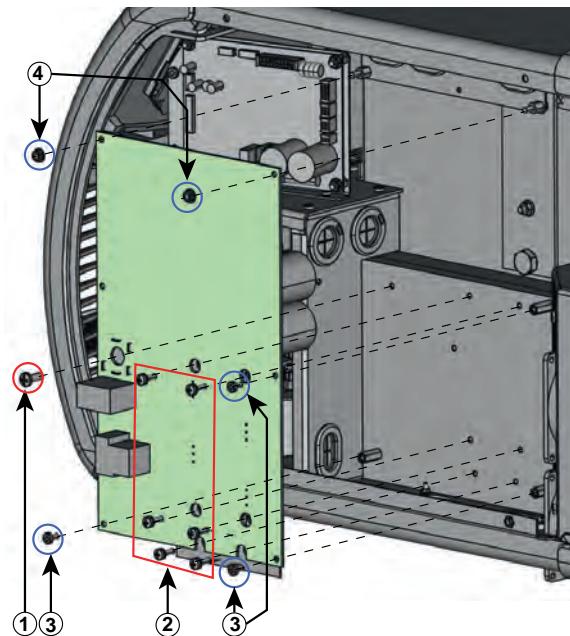
- Part reachable from the right side panel.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



## PROCEDURE

- ▶ Remove right side panel.
- ▶ Disconnect the connectors from the board.
- ▶ Remove the fixing screw. **1**
- ▶ Remove the fixing screws. **2**



*Attention, remove carefully.  
Screws for anchoring power components to the heat sink.*

- ▶ Remove the fixing screws. **3**
- ▶ Remove the fixing nuts. **4**



*Remove thermal paste with paper or cloth (also with the addition of alcohol).  
Do not use abrasive or mechanical tools to remove thermal paste from the aluminum heatsink*

## Spare part installation instructions

### PROCEDURE



*Spread evenly on the bottom of the component a sufficient amount of thermal paste to allow a slight spill along the edges of the same after fixing the component.  
However, it is important not to exceed as well as to be scarce in the quantity to use.*



*Tighten the screws that lock the components to the aluminum heat sink with a tightening torque: 2,2N/m*

## Diagnostics

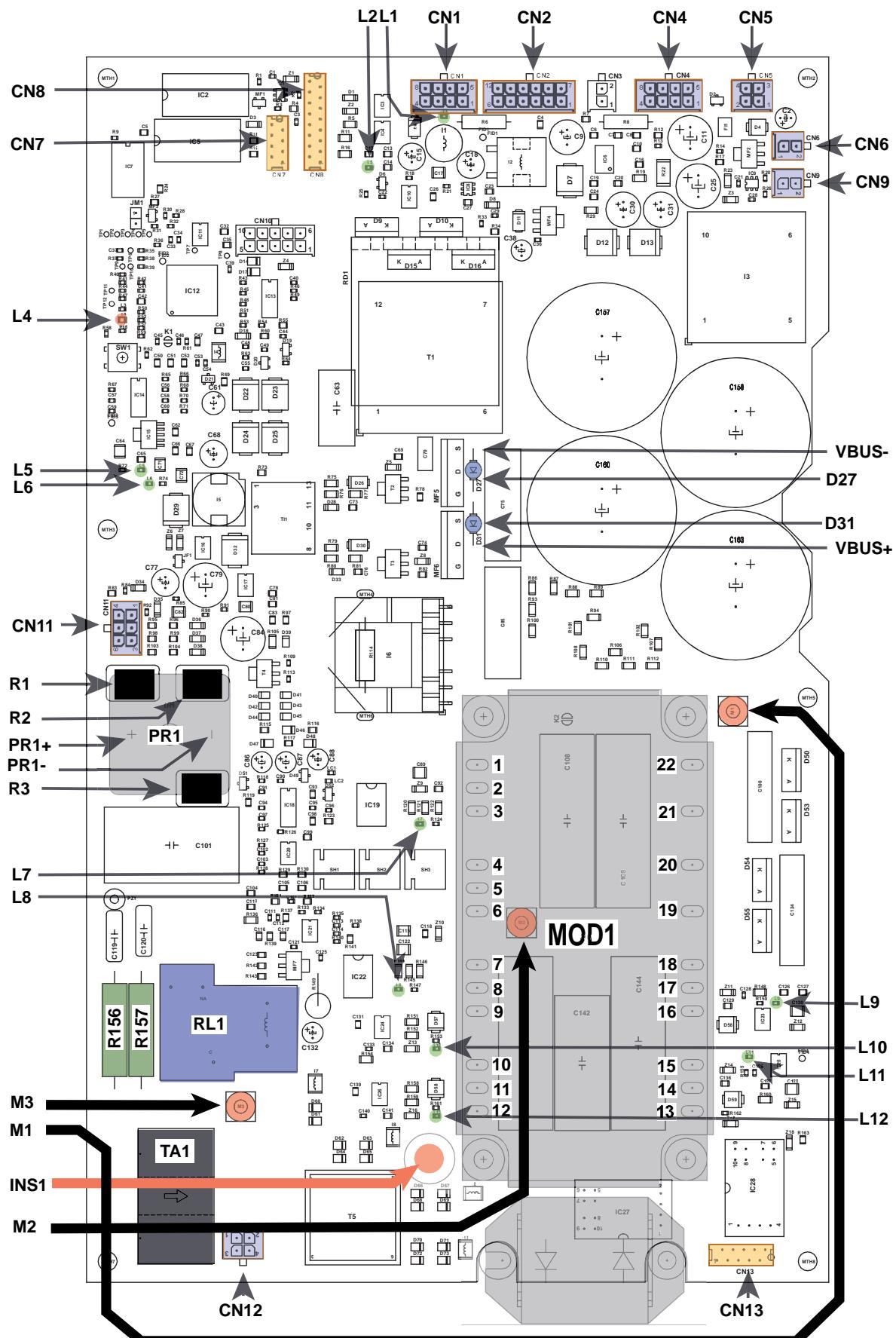
### Board layout

In the board layout are showed:

- Position and color of signaling led.
- Location and name of components.
- Location and name of connectors.
- Connections.
- Position of the measurement points.



*The following sections refer to the board layout.*



## Connectors and connections

The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

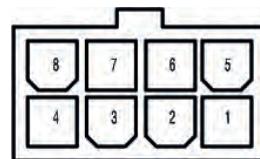
The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.



*Warning high voltage!  
Always refer to the wiring diagram.*

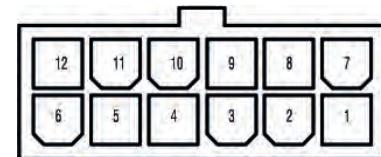
**CN1** Board management H.F. 15.14.5035

Pin	Function
CN1/1	H.F. board power output
CN1/2	Gnd
CN1/3	Pulse train output H.F. discharge activation coming from DSP board
CN1/4	Input H.F. board recognition



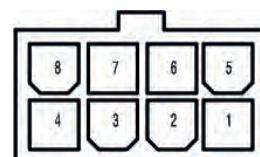
**CN2** Auxiliary power supplies

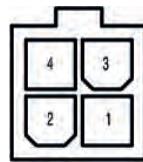
Pin	Function
CN2/1	ELV1 solenoid valve closing command
CN2/2	ELV2 solenoid valve closing command
CN2/3	Cooling unit ignition control
CN2/4	M3 fan control
CN2/5	Cooling unit pressure sensor reading input
CN2/7	ELV1 power supply output
CN2/8	ELV2 power supply output
CN2/9	CAN-BUS power supply output Cooling unit
CN2/10	Gnd
CN2/11	Gnd
CN2/12	Gnd



**CN4** Power supply

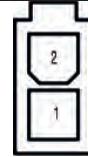
Pin	Function	Value	Unit of measure
CN4/1	Auxiliary power output	+48	Vdc
CN4/2	Gnd	0	Vdc
CN4/5	Auxiliary power output	+48	Vdc
CN4/6	Gnd	0	Vdc





**CN5** External CAN BUS connection J24

Pin	Function	Value	Unit of measure
CN5/1	Power output	+15	Vdc
CN5/2	CAN bus signal	CAN-H	
CN5/3	Gnd	0	Vdc
CN5/4	CAN bus signal	CAN-L	

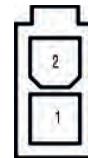


**CN6** Fan power supply M1

Pin	Function
CN6/1	Power output
CN6/2	Fan ignition control

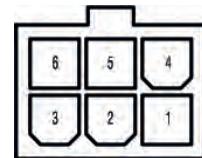
**CN7** Connection to control board 15.14.53333

**CN8** Connection to control board 15.14.53333



**CN9** Fan power supply M2

Pin	Function
CN9-1	Power output
CN9-2	M1 fan ignition control



**CN11** Filter board connection

*The measured value depends on the line voltage used.*

Pin	Function	Value	Unit of measure
CN11/1	Network phase voltage reference R1	230/400	Vac
CN11/3	Network phase voltage reference R2	230/400	Vac
CN11/5	Network phase voltage reference R3	230/400	Vac

**CN12** Current sensor signal on board TA1.

**CN13** Connection to control board 15.14.53333

**PR1** Connection with input filter board.

*The measured value depends on the line voltage used.*

Pin	Function	Value	Unit of measure
PR1/R1	Phase R1 mains power supply	230/400	Vac
PR1/R2	Phase R2 mains power supply	230/400	Vac
PR1/R3	Phase R3 mains power supply	230/400	Vac

**L2** Connection with Inductance

Pin	Function
M1	L2 inductor connection cable
M3	L2 inductor connection cable

**T1** Connection with power transformer

Pin	Function
INS1	RED connection cable
M2	BLACK connection cable



*INS1: the red wiring must pass through component TA1.*

## Led checklist

The following section describes:

- Signaling LEDs present and meaning

### Power supply +15 Vdc

L1	Color: Green	State: Steady on	Description: Power supply present
----	--------------	------------------	-----------------------------------

### Power supply -12 Vdc

L2	Color: Green	State: Steady on	Description: Power supply present
----	--------------	------------------	-----------------------------------

### Phase failure alarm

L4	Color: Red	State: Steady on	Description: Phase failure alarm (E40)
----	------------	------------------	--

### Power supply +3,3 Vdc

L5	Color: Green	State: Steady on	Description: Power supply present
----	--------------	------------------	-----------------------------------

### Power supply +5 Vdc

L6	Color: Green	State: Steady on	Description: Power supply present
----	--------------	------------------	-----------------------------------

### BOOST modulation

L7	Color: Green	State: Fast blink	Description: Boost stage modulates correctly
----	--------------	-------------------	--

L8	Color: Green	State: Fast blink	Description: Boost stage modulates correctly
----	--------------	-------------------	--



*The LEDs in rapid blink mode indicate that the boost modulates correctly.*

### Primary inverter

L9	Color: Green	State: Steady on	Description: Led on during power release
----	--------------	------------------	--

L10	Color: Green	State: Steady on	Description: Led on during power release
-----	--------------	------------------	--

L11	Color: Green	State: Steady on	Description: Led on during power release
-----	--------------	------------------	--

L12	Color: Green	State: Steady on	Description: Led on during power release
-----	--------------	------------------	--



*The LEDs lit when the generator supplies power indicate that the inverter is working.*

## Diagnostic tests

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



*Warning high voltage!  
Always refer to the wiring diagram.*



### Inverter and PFC power module

*Measurements to be carried out with the generator off and disconnected from any power source.*

Mode	Test Point	Value	Unit of measure
(A)	MOD1/3 ← MOD1/2	0,4	Vdc
(Ω)	MOD1/3 ← MOD1/1	10K	Ω
(A)	MOD1/6 ← MOD1/5	0,4	Vdc
(Ω)	MOD1/6 ↔ MOD1/4	10K	Ω
(A)	MOD1/9 ← MOD1/8	0,4	Vdc
(Ω)	MOD1/9 ↔ MOD1/7	10K	Ω
(A)	MOD1/12 ← MOD1/11	0,4	Vdc
(Ω)	MOD1/12 ↔ MOD1/10	10K	Ω
(A)	MOD1/15 ← MOD1/14	0,4	Vdc
(Ω)	MOD1/15 ↔ MOD1/13	10K	Ω
(A)	MOD1/18 ← MOD1/17	0,4	Vdc
(Ω)	MOD1/18 ↔ MOD1/16	10K	Ω
(A)	MOD1/20 ← MOD1/19	0,4	Vdc
(A)	MOD1/22 ← MOD1/21	0,4	Vdc



### Precharge resistors R156, R157

*Measurements to be carried out with the generator off and disconnected from any power source.*

*Visually check the integrity of the components.*

Mode	Test Point	Value	Unit of measure
(Ω)	R156/1 ↔ R156/2	15	Ω
(Ω)	R157/1 ↔ R157/2	15	Ω



### Diode bridge PR1

*Measurements to be carried out with the generator off and disconnected from any power source.*

*Visually check the integrity of the components.*

Mode	Test Point	Value	Unit of measure
(A)	PR1- ← R1	0,456	Vdc
(A)	PR1- ← R2	0,456	Vdc
(A)	PR1- ← R3	0,456	Vdc
(A)	R1 ← PR1+	0,456	Vdc
(A)	R2 ← PR1+	0,456	Vdc
(A)	R3 ← PR1+	0,456	Vdc



## DC BUS voltage Test on connectors D27, D31

*Measures to be taken during the "Safe ignition" test phase.  
Generator powered on one phase only by Variac.*

Mode	Test Point	Value	Unit of measure
(V)	D27/VBUS- ← D31/VBUS+	320±5	Vdc



## DC BUS voltage Test on connectors D27, D31

*Measurements to be made with the generator on.  
Test to be carried out with generator powered on three-phase line.*

Mode	Test Point	Value	Unit of measure
(V)	D27/VBUS- ← D31/VBUS+	730±5	Vdc



## Fan power supply M1 Connector test CN6

*Measurements to be made with the generator on.  
In TIG mode, the fan is activated by pressing the torch button, the speed is modulated by the temperature.  
In MIG/MAG mode, the fan is activated by pressing the torch button, the speed is modulated by the temperature.  
In MMA mode, the fan is always active at maximum speed.  
In shutdown, the fan is forced to maximum speed.*

Mode	Test Point	Value	Unit of measure	Notes
(V)	CN6/1 ← CN6/2	19÷24	Vdc	MMA mode
(V)	CN6/1 ← CN6/2	0÷24	Vdc	MIG/MAG mode
(V)	CN6/1 ← CN6/2	0÷24	Vdc	TIG mode
(V)	CN6/1 ← CN6/2	24	Vdc	Shutdown



## Fan power supply M2 Connector test CN9

*Measurements to be made with the generator on.  
In TIG mode, the fan is activated by pressing the torch button, the speed is modulated by the temperature.  
In MIG/MAG mode, the fan is activated by pressing the torch button, the speed is modulated by the temperature.  
In MMA mode, the fan is always active at maximum speed.  
In shutdown, the fan is forced to maximum speed.*

Mode	Test Point	Value	Unit of measure	Notes
(V)	CN9/1 ← CN9/2	19÷24	Vdc	MMA mode
(V)	CN9/1 ← CN9/2	0÷24	Vdc	MIG/MAG mode
(V)	CN9/1 ← CN9/2	0÷24	Vdc	TIG mode
(V)	CN9/1 ← CN9/2	24	Vdc	Shutdown



## Fan power supply M3 Connector test CN2

*Measurements to be made with the generator on.  
The fan is always active.*

Mode	Test Point	Value	Unit of measure
(V)	CN2/4 ← CN2/10	12	Vdc



## Board power supply H.F. Connector test CN1

*Measurements to be made with the generator on.*

Mode	Test Point	Value	Unit of measure
(V)	CN1/1 ← CN1/2	+24	Vdc

**Activation discharge H.F. Connector test CN1**

*Measurements to be made with the generator on.*

*If the generator does not recognize the presence of the H.F. it is automatically configured in TIG LIFT.*

*With the torch button pressed on the DSP 15.14.53333 board, the lighting of Led 1 indicates the unloaded start.*

**Solenoid valve power supply ELV1, ELV2 Connector test CN2**

*Measurements to be made with the generator on.*

*The solenoid valve is current controlled.*

To perform the test:

- Disconnect the solenoid valves.
- With the torch trigger pressed.
- Measure the presence of no-load voltage.

Mode	Test Point	Value	Unit of measure
(V)	CN2-1 ← CN2-2	+24	Vdc
(V)	CN2-7 ← CN2-8	+24	Vdc

## 5.6 Output rectifier diodes 14.05.098

### Spare Part Code

- 14.05.098

#### Notes

- The spare part code refers to a single item.
- The article can be ordered individually.

### Description and functionality

The component realizes:

- The Output Rectifier stage.
- Through the parallel connection of the diodes, a half-bridge configuration is created connected to the two outputs of the power transformer.
- The diodes configuration allows the rectification of the positive part of the output current, while a socket is fixed to the middle of the secondary winding of the power transformer creating the negative current connection.

### Position

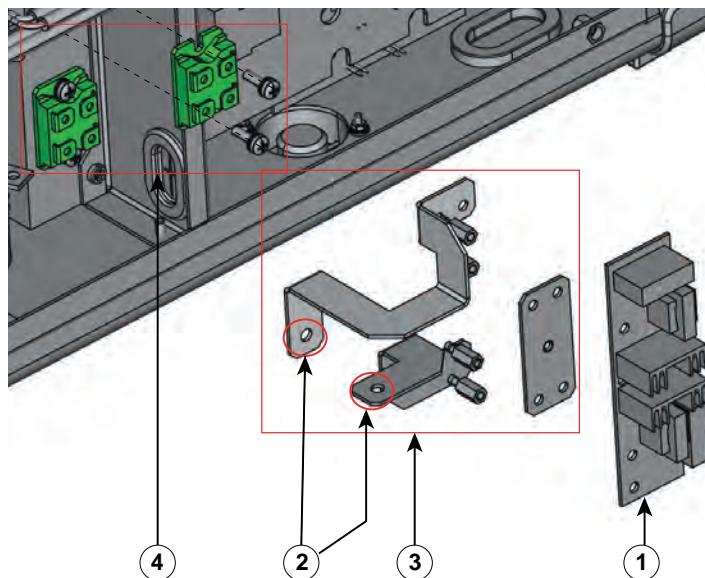
- Part reachable from the right side panel.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



### PROCEDURE

- ▶ Remove right side panel.
- ▶ Remove the duplicator board. (1)
- ▶ Remove the bolts that lock the bars to the transformer. (2)
- ▶ Remove the screws and turrets that lock the copper bars to the diodes. (3)
- ▶ Remove the screws that lock the diodes to the heat sink. (4)



Attention, remove carefully.  
Screws for anchoring power components to the heat sink.



Remove thermal paste with paper or cloth (also with the addition of alcohol).  
Do not use abrasive or mechanical tools to remove thermal paste from the aluminum heatsink

## Spare part installation instructions



Spread evenly on the bottom of the component a sufficient amount of thermal paste to allow a slight spill along the edges of the same after fixing the component.

However, it is important not to exceed as well as to be scarce in the quantity to use.



Tighten the screws that lock the components to the aluminum heat sink with a tightening torque: 2,2N/m

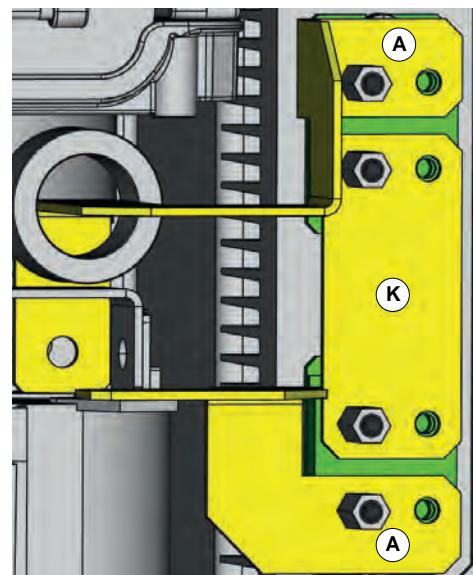
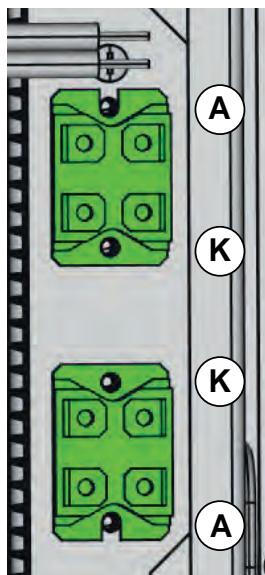


Tighten the screws that lock the components to the copper bars with a fixing torque: 2N/m



When mounting, pay attention to the polarity of the component.

## Diagnostics



### Diagnostic tests



**Warning high voltage!**  
Always refer to the wiring diagram.



#### Rectifier diodes

Measurements to be carried out with the generator off and disconnected from any power source.

Carry out the measurement without disconnecting the diodes from the copper bars.

Check that there is no short circuit between the common bar "K" and the bar connected to the diode's anode "A".

When a short circuit is detected, disconnect the copper bars and test the single diode.

The measured values can be different between different applications. In case of doubts test the single diode.

Mode	Test point	Value	Unit of measure
Ⓐ	A ← K	Check short-circuit presence	Vdc
Ⓐ	K ← A	Check short-circuit presence	Vdc



#### Rectifier diodes

Measurements to be carried out with the generator off and disconnected from any power source.

Visually check the integrity of the components.

Make the test after removing the copper bars.

Mode	Test point	Value	Unit of measure
Ⓐ	A ← K	0,35	Vdc
Ⓐ	K ← A	∞	Vdc

## 5.7 Duplicator board code : 15.14.5682

### Spare Part Code

- 15.14.5682

### Description and functionality

- It allows the simple duplication of the generator's open circuit voltage, improving the arc ignition characteristics.

### Position

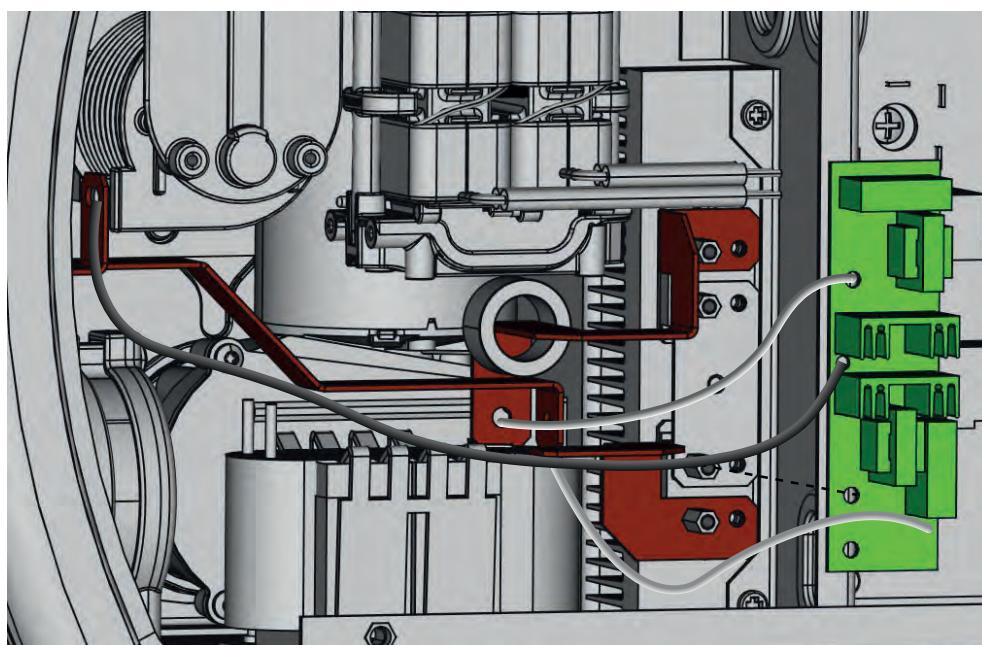
- Part reachable from the right side panel.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



#### PROCEDURE

- ▶ Remove right side panel.
- ▶ Disconnect the connectors from the board.
- ▶ Remove the fixing screws.

#### Spare part installation instructions



Tighten the screws that lock the components to the copper bars with a fixing torque: 2N/m



Connect the cables to the transformer outputs and to the negative socket.

## Diagnostics

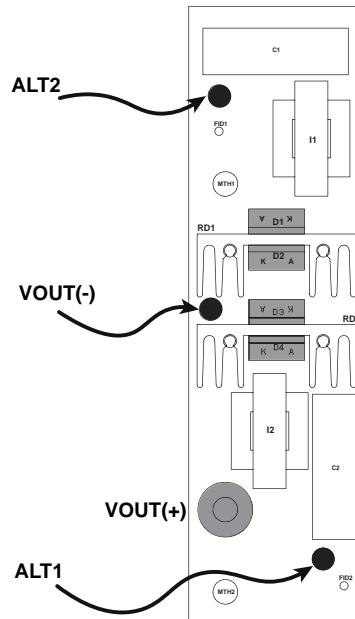
### Board layout

In the board layout are showed:

- Position and color of signaling led.
- Location and name of components.
- Location and name of connectors.
- Connections.
- Position of the measurement points.



*The following sections refer to the board layout.*



### Connectors and connections



*Warning high voltage!  
Always refer to the wiring diagram.*

The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.

**ALT1** Connection to the output of the power transformer.

**ALT2** Connection to the output of the power transformer.

**VOUT(+)** Connection to the positive welding voltage socket VOUT(+)

**VOUT(-)** Connection to the negative welding voltage socket VOUT(-)

## Diagnostic tests

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



*Warning high voltage!  
Always refer to the wiring diagram.*



## Components

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*

## 5.8 NTC cable 49.07.447

### Spare Part Code

- 49.07.447

### Description and functionality

- Thermal sensor connected to the aluminum heatsink.
- The intervention of this component is associated with the thermal alarm E03.

### Position

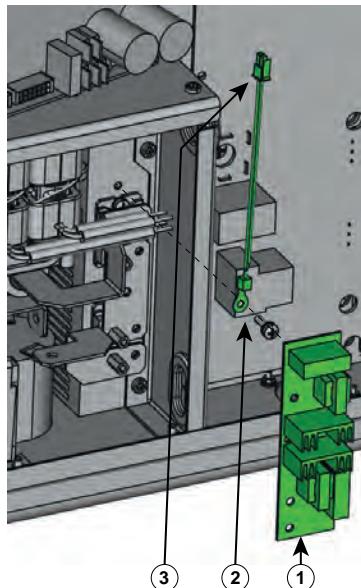
- Part reachable from the right side panel.
- The part is connected to the heatsink.

### Parts replacement



*A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.*

### Faulty part removal instructions



#### PROCEDURE

- ▶ Remove right side panel.
- ▶ Remove the duplicator board. ①
- ▶ Remove the fixing screw. ②
- ▶ Disconnect the connector. ③
- ▶ Remove the component.



*Remove thermal paste with paper or cloth (also with the addition of alcohol).  
Do not use abrasive or mechanical tools to remove thermal paste from the aluminum heatsink*

### Spare part installation instructions



*Spread evenly on the bottom of the component a sufficient amount of thermal paste to allow a slight spill along the edges of the same after fixing the component.  
However, it is important not to exceed as well as to be scarce in the quantity to use.*



## Diagnostic tests



### Thermal sensor NTC1

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*

*Temperature reference for performing the test:  $T=25^{\circ}\text{C}$*

*The component triggers the alarm E03.*

Mode	Test Point	Value	Unit of measure
$\Omega$	NTC1/1 $\longleftrightarrow$ NTC1/2	10k	$\Omega$

## 5.9 Hall effect current sensor code : 11.19.014

### Spare Part Code

- 11.19.014

### Description and functionality

- The sensor reads the value of the output current from the sockets and reports it to the feedback control devices.

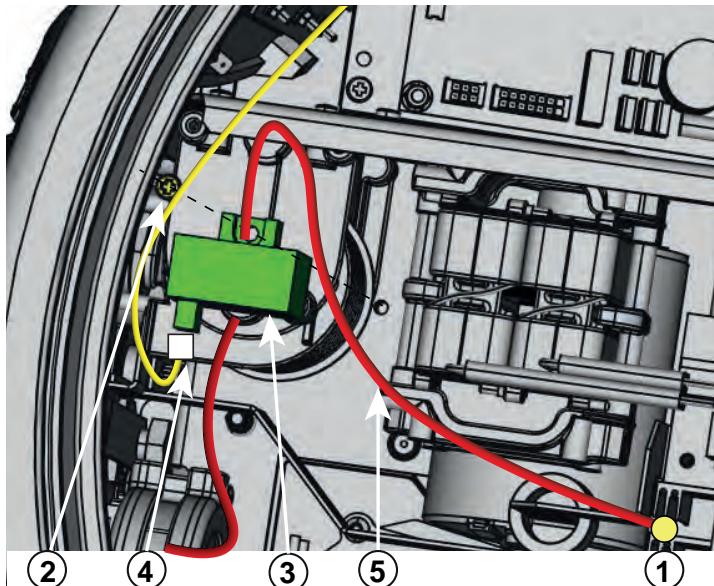
### Position

- Part reachable from the right side panel.
- Located in the lower front of the generator close to the output socket.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.



### Faulty part removal instructions

#### PROCEDURE

- ▶ Remove right side panel.
- ▶ Remove the fixing nuts. **1**
- ▶ Remove the fixing screw. **2**
- ▶ Remove the component. **3**
- ▶ Disconnect the connector. **4**
- ▶ Remove the copper braid. **5**

### Spare part installation instructions



When mounting, pay attention to the polarity of the component.

**Connector** Power supply and management of sensor signals.

Pin	Function
1	Power input (+)
2	Power input (-)
3	Current signal output
4	Gnd



### Sensor connector

*Measurements to be made with the generator on.*

To perform the test:

- Disconnect the sensor from the connector.
- Measure the presence of the power supply on the corresponding pins of the power connector.

Type of test	Test point	Value	Unit of measure	Notes
(V)	1 ← 4	+12	Vdc	
(V)	2 ← 4	-12	Vdc	
(V)	3 ← 4	0.4	Vdc	Iout=50A
(V)	3 ← 4	0.85	Vdc	Iout=100A
(V)	3 ← 4	1.3	Vdc	Iout=150A
(V)	3 ← 4	1.75	Vdc	Iout=200A

## 5.10 Wired fan 40x40x15 code : 14.70.050

### Spare Part Code

- 14.70.050

### Description and functionality

- Wired fan positioned under the primary unit to ensure proper ventilation.

#### Features:

- Fan always on

#### Operation chain:

- Entirely managed by the power board that powers it.
- Supply voltage= 12Vdc

### Position

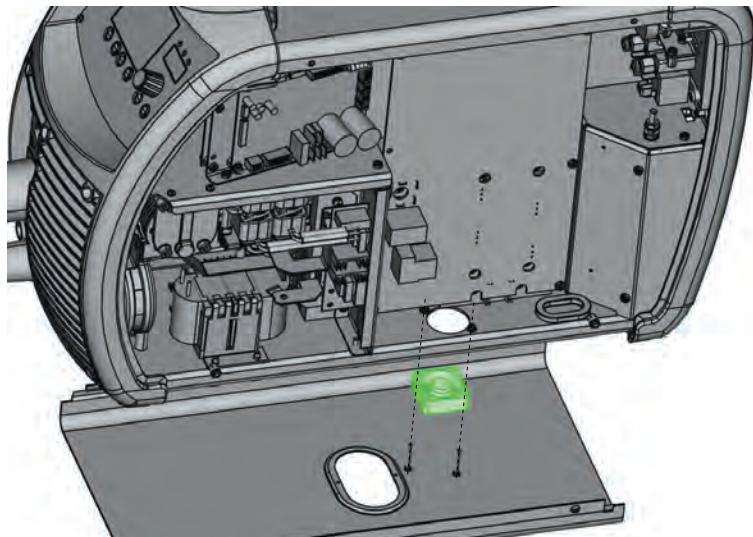
- Part can be reached by extracting the metal base.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



### PROCEDURE

- ▶ Disconnect the power connector.
- ▶ Remove the fixing screws.

### Spare part installation instructions



Install the fan with the ventilation arrow pointing as shown in the figure.

## Diagnostics



*Warning high voltage!  
Always refer to the wiring diagram.*

### Diagnostic tests



#### Cooling fan

*Measurements to be made with the generator on.  
The fan is always active.*

Mode	Test Point	Value	Unit of measure
(V)	Power connector	12	Vdc

## 5.11 Wired fan code : 14.70.052

### Spare Part Code

- 14.70.052

#### Notes

- The spare part code refers to a single item.
- The article can be ordered individually.

### Description and functionality

- Wired fan positioned at the rear of the generator to ensure correct ventilation.

#### Features:

- The fan speed is variable and is controlled by the control board with feedback on the internal temperature of the generator.
- In MMA mode it is always active.
- In TIG mode active after ignition.
- In MIG/MAG mode it activates after triggering.
- During the system shutdown, the fan is forced to run at maximum speed.

#### Operation chain:

- The trigger signal starts from the torch button and is received by the DSP control board.
- The control board generates the command signal which is forwarded to the power board.
- The power board powers the fan and modulates the speed.
- Supply voltage= 24Vdc

### Position

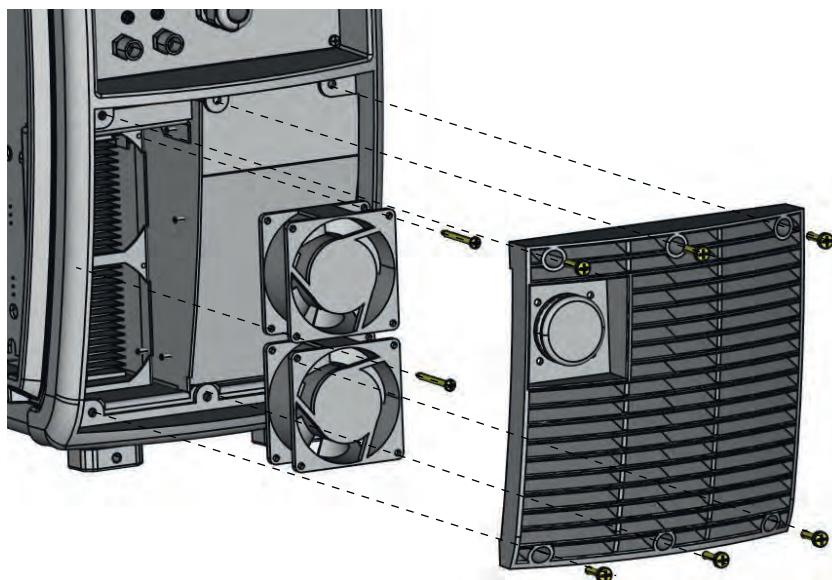
- Part can be reached by removing the plastic rear grid.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



#### PROCEDURE

- ▶ Remove the plastic rear grid.
- ▶ Disconnect the connector.
- ▶ Remove the fixing screws.

## Spare part installation instructions

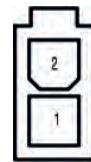


*Install the fan with the ventilation arrow pointing as shown in the figure.*

## Diagnostics



*Warning high voltage!  
Always refer to the wiring diagram.*



### Connector Power supply

Pin	Function
1	Power supply (+) Red
2	Power supply (-) Black



### Power supply Connector test

*Measurements to be made with the generator on.*

Mode	Test Point	Value	Unit of measure	Notes
(V)	1 ← 2	19÷24	Vdc	MMA mode
(V)	1 ← 2	0÷24	Vdc	MIG/MAG mode
(V)	1 ← 2	0÷24	Vdc	TIG mode
(V)	1 ← 2	24	Vdc	Shutdown

## 5.12 DSP board code : 15.14.53333

### Spare Part Code

- 15.14.53333

### Description and functionality

The board is equipped with:

- The DSP that manages the digital control of the generator.
- The motor control and power stage.

The board manages:

- The digital control of the inverter.
- The execution of the main program that controls the internal functions, menus and welding parameters.
- Can-bus communications with all peripherals (front panel, remote connectors, internal distribution network ...)
- The signals coming from the flashlight.
- The NTC signal.
- Motor control and power supply.
- The wire feeder door sensor.
- It receives the welding start signal from the TIG torch and enables the H.F.
- Hall probe power and signals.

### Position

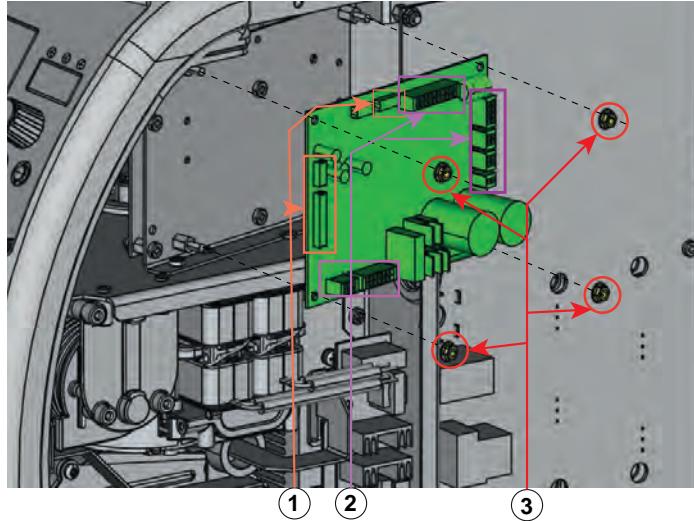
- Part reachable from the right side panel.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



#### PROCEDURE

- Remove right side panel.
- Disconnect the connectors from the board. (1)
 

Carefully remove the glue layer present on the connectors using a suitable pliers.  
Uniformly lift the connector from its seat.  
Do not tear the flat cables of the connector.
- Disconnect the connectors from the board. (2)
- Remove the fixing nuts. (3)

## Diagnostics

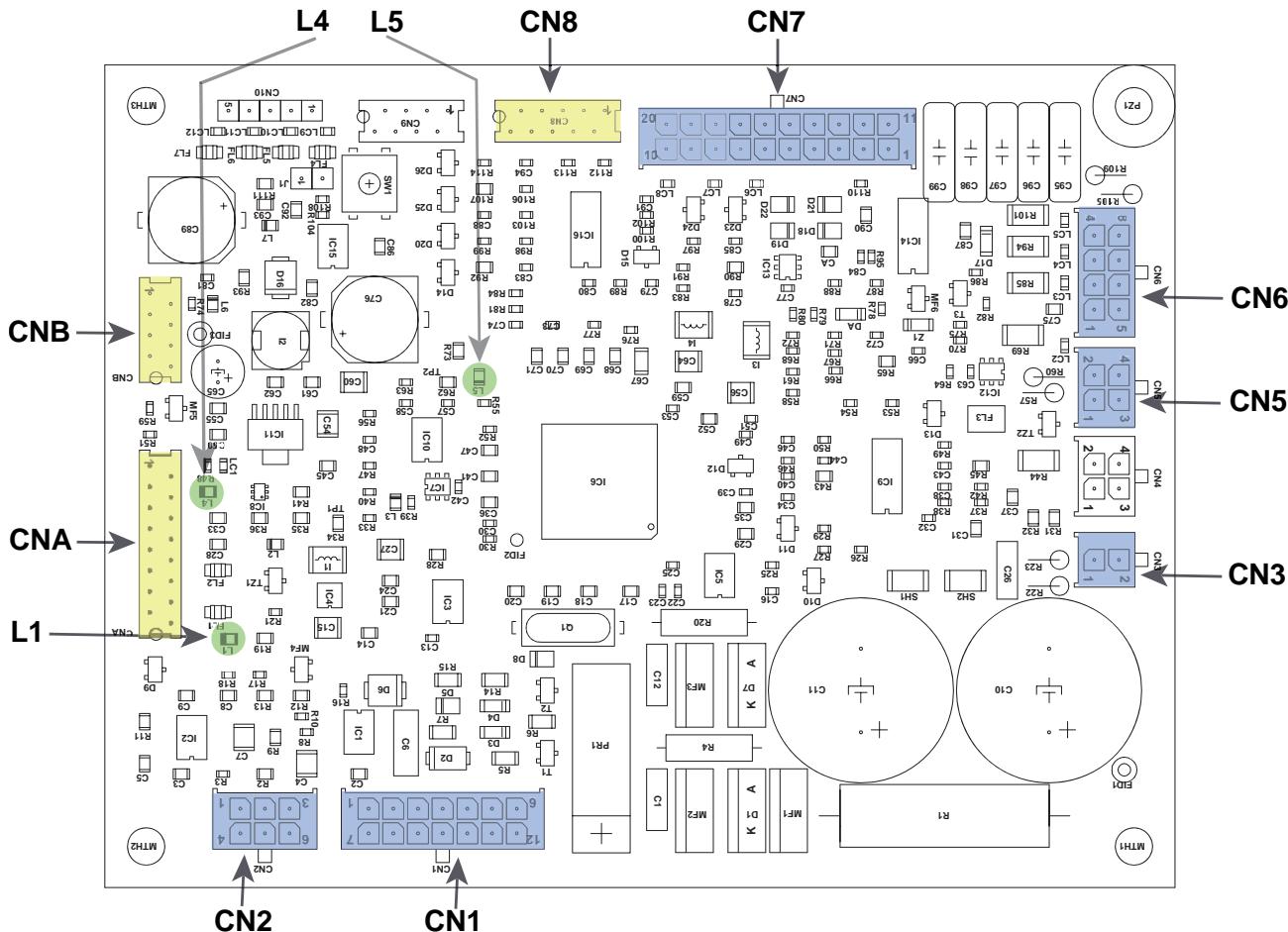
### Board layout

In the board layout are showed:

- Position and color of signaling led.
- Location and name of components.
- Location and name of connectors.
- Connections.
- Position of the measurement points.



*The following sections refer to the board layout.*



## Connectors and connections

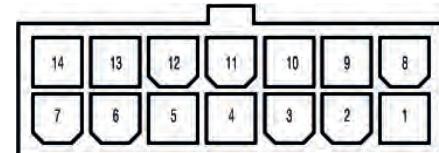
The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.



*Warning high voltage!  
Always refer to the wiring diagram.*



**CN1** Auxiliary signals

Pin	Function
-----	----------

CN1/1	Motor power output (+)
-------	------------------------

CN1/4	Push-pull command
-------	-------------------

CN1/5	Push-pull board power output
-------	------------------------------

CN1/6	+ 48Vdc power input
-------	---------------------

CN1/7	+ 48Vdc power input
-------	---------------------

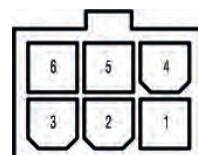
CN1/8	Motor power output (-)
-------	------------------------

CN1/11	Wire-feeder door open switch alarm
--------	------------------------------------

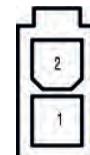
CN1/12	Gnd
--------	-----

CN1/13	Gnd
--------	-----

CN1/14	Gnd
--------	-----



**CN2** Wire feed motor encoder connection

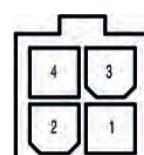


**CN3** Welding voltage reading VOUT

Pin	Function
-----	----------

CN3/1	Welding voltage reference VOUT (-)
-------	------------------------------------

CN3/2	Welding voltage reference VOUT (+)
-------	------------------------------------



**CN4** CAN bus connection

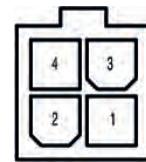
Pin	Function
-----	----------

CN/1	Power supply + 15Vdc
------	----------------------

CN/2	Gnd
------	-----

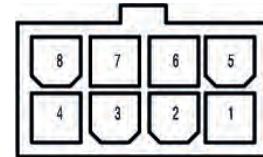
CN/5	CAN-H signal
------	--------------

CN/6	CAN-L signal
------	--------------


**CN5** CAN bus connection

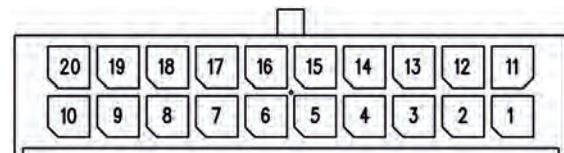
**Pin**      **Function**

CN/1	Power supply + 15Vdc
CN/2	Gnd
CN/5	CAN-H signal
CN/6	CAN-L signal


**CN6** Torch signals

**Pin**      **Function**

CN6/1	+ 15Vdc power output
CN6/2	Up torch control
CN6/3	Down torch command
CN6/4	CAN-H signal line
CN6/5	Gnd
CN6/6	Signal input Torch button power 1
CN6/7	Signal input Torch button power 2
CN6/8	CAN_L signal line


**CN7** Auxiliary signal collector

**Pin**      **Function**

CN7/1	HALL sensor power supply output (+ 12Vdc)
CN7/2	Current reading input output - HALL sensor
CN7/3	Power board TA reading input
CN7/7	NTC temperature sensor signal input
CN7/11	HALL sensor power supply output (-12Vdc)
CN7/12	Gnd
CN7/13	Power board TA reading input
CN7/14	Gnd
CN7/15	Gnd
CN7/16	Gnd
CN7/17	Gnd
CN7/18	Gnd
CN7/19	Gnd
CN7/20	Gnd

**CN8** Connection to the power board

**CNA** Connection to the power board

**CNB** Connection to the power board

### Led checklist

The following section describes:

- Signaling LEDs present and meaning

### High frequency trigger H.F.

L1	Color: Green	State: Steady on	Description: Lights up during ignition
----	--------------	------------------	--

### Power supply + 3,3 Vdc

L4	Color: Green	State: Steady on	Description: Power supply present
----	--------------	------------------	-----------------------------------

### Power supply + 5 Vdc

L5	Color: Green	State: Steady on	Description: Power supply present
----	--------------	------------------	-----------------------------------

## Diagnostic tests

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



### Motor power supply

*Measurements to be made with the generator on.*

*The voltage value is proportional to the set speed.*

To perform the test:

- Set a wire output speed.
- Keep the torch button pressed for at least 3s.

Mode	Test point	Value	Unit of measure
(V)	CN1/1 ← CN1/8	+3,70±10%@2m/s	Vdc
		+8,95±10%@5m/s	
		+16,8±10%@10m/s	
		+24,6±10%@15m/s	
		+35,8±10%@20m/s	



### Motor power supply

*Measurements to be carried out with the generator off and disconnected from any power source.*

Mode	Test Point	Value	Unit of measure
(Ω)	CN7/7 ↔ CN7/17	10k	Ω



### HALL sensor management

*Measurements to be made with the generator on.*

To perform the test:

- Disconnect the sensor from the connector.
- Measure the presence of the power supply on the corresponding pins of the power connector.

Type of test	Test point	Value	Unit of measure	Notes
(V)	CN2/10 ← CN2/4	+12	Vdc	
(V)	CN7/11 ← CN7/12	-12	Vdc	
(V)	CN7/2 ← CN7/12	0.4	Vdc	Iout=50A
(V)	CN7/2 ← CN7/12	0.85	Vdc	Iout=100A
(V)	CN7/2 ← CN7/12	1.3	Vdc	Iout=150A
(V)	CN7/2 ← CN7/12	1.75	Vdc	Iout=200A

## 5.13 H.F. BOARD 15.14.5035

### Spare Part Code

- 15.14.5035

### Description and functionality

- High frequency power supply board (H.F.) for TIG ignition.

Features:

- The voltage generated is capacitive.
- The relay allows polarity reversal, to ensure correct ignition in the different welding modes.

Operation chain:

- When correctly connected and powered, the board signals its presence by forcing pin 4 of connector CN1 to ground.
- The discharge trigger signal starts from the activation of the torch trigger.
- The signal is received by the control board.
- The control board generates the start signal which is forwarded to the power board.
- On board 15.14.53333 the lighting of the signaling LED L1 indicates the generation of the discharge signal.
- The power board that powers the H.F. enable download.
- Supply voltage: 24Vdc

### Position

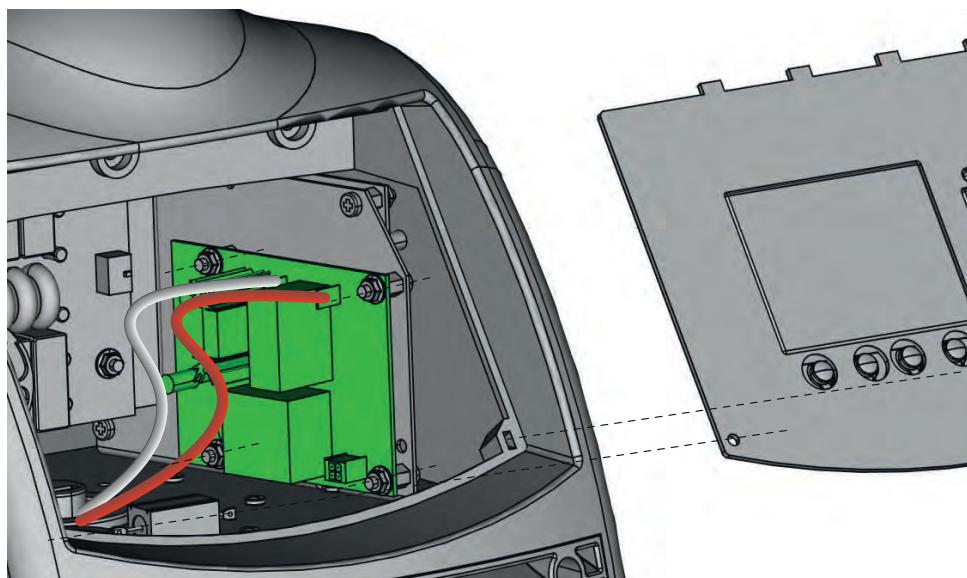
- This part can be reached by pulling out the front panel.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



### PROCEDURE

- ▶ Remove frontal panel.
- ▶ Disconnect the connectors from the board.
- ▶ Remove the fixing nuts.

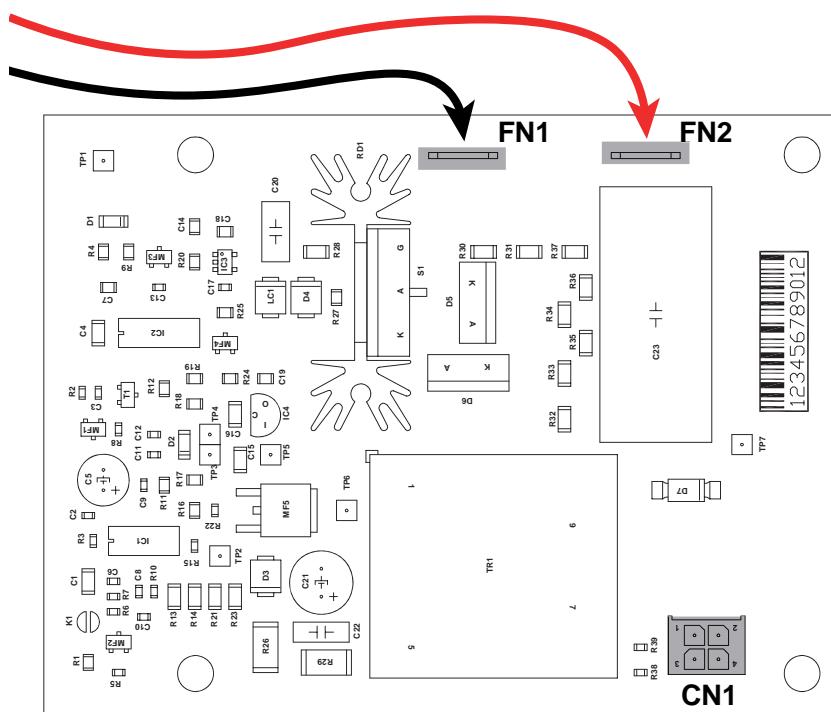
### Spare part installation instructions



The red cable and the white cable must be connected in the correct position.  
Reversed connection does not allow proper discharge.

## Diagnostics

### Board layout



### Connectors and connections



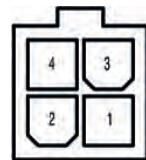
*Warning high voltage!*

*Always refer to the wiring diagram.*

The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.



**CN1** Board connection H.F. 15.14.5035

Pin	Function
CN1/1	Board power supply H.F + 24Vdc
CN1/2	Pulse train input H.F. discharge activation coming from DSP card
CN1/3	Gnd
CN1/4	H.F. card recognition output

CN1/1	Board power supply H.F + 24Vdc
CN1/2	Pulse train input H.F. discharge activation coming from DSP card
CN1/3	Gnd
CN1/4	H.F. card recognition output

**FN1** Connection to the H.F. transformer  
Connect the cable with White Faston.

**FN2** Connection to the H.F. transformer  
Connect the cable with red Faston.

## Diagnostic tests



*Warning high voltage!  
Always refer to the wiring diagram.*

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



### Components

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*



### Board power supply H.F. Connector test CN1

*Measurements to be made with the generator on.*

Mode	Test Point	Value	Unit of measure
(V)	CN1/1 ← CN1/3	+24	Vdc



### H.F. board operation

*Measurements to be made with the generator on.*

*If the generator does not recognize the presence of the H.F. it is automatically configured in TIG LIFT.  
With the torch button pressed on the DSP 15.14.53333 board, the lighting of Led 1 indicates the unloaded start.*

## 5.14 Output filter board code : 15.14.5652

### Spare Part Code

- 15.14.5652

### Description and functionality

- The board realizes the generator output filter stage.

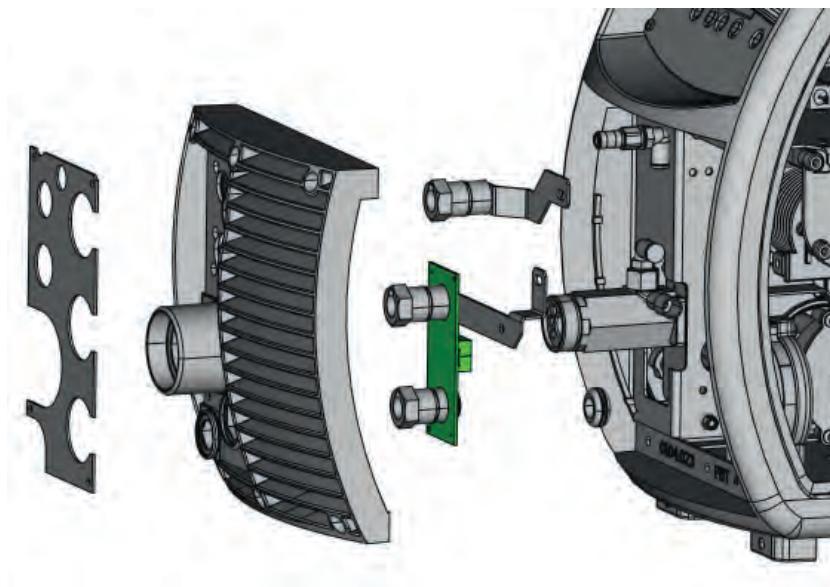
### Position

- Part reachable from the right side panel.
- It is mounted near the fixed power sockets.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.



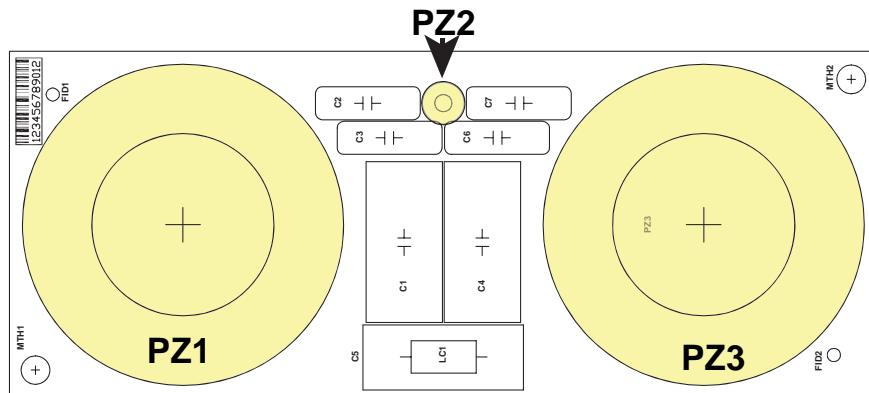
### Faulty part removal instructions

#### PROCEDURE

- ▶ Remove right side panel.
- ▶ Remove the frontal panel.
- ▶ Disconnect the cables connected to the fixed current sockets.
- ▶ Disconnect the connectors from the board.
- ▶ Disconnect the earth cable.

## Diagnostics

### Board layout



*The following sections refer to the board layout.*

### Connectors and connections

The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.



*Warning high voltage!  
Always refer to the wiring diagram.*

**PZ1** Welding voltage reading VOUT (-)

**PZ2** Connect to the "GND" earth socket.

**PZ3** Welding voltage reading VOUT (+)

### Diagnostic tests

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



*Warning high voltage!  
Always refer to the wiring diagram.*



### Components

*Measurements to be carried out with the generator off and disconnected from any power source.  
Visually check the integrity of the components.*

## 5.15 Connectors board 15.14.5663

### Spare Part Code

- 15.14.5663

### Description and functionality

- It receives the signals coming from the torches and transmits them to the control board via CAN-BUS.

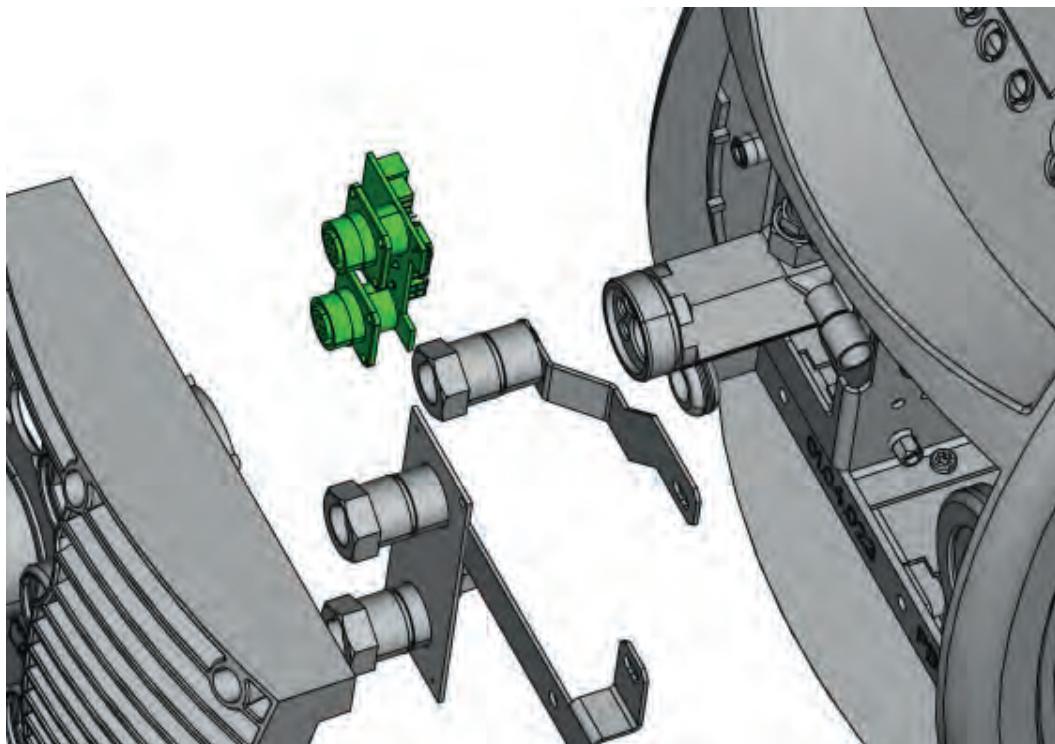
### Position

- Part reachable from the right side panel.
- Part located behind the front gusset.

### Parts replacement

*A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.*

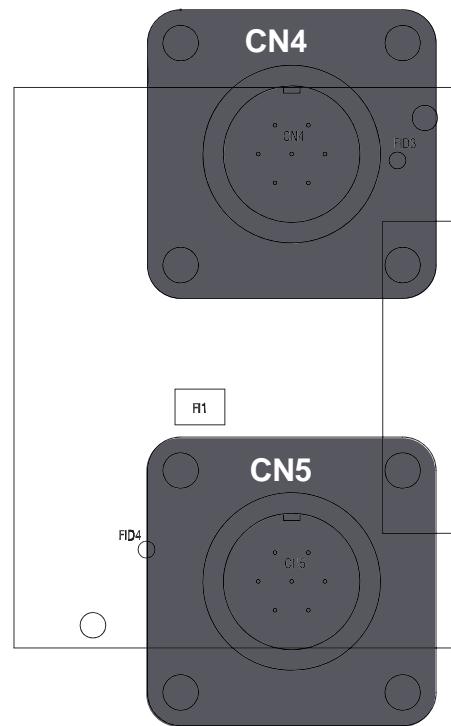
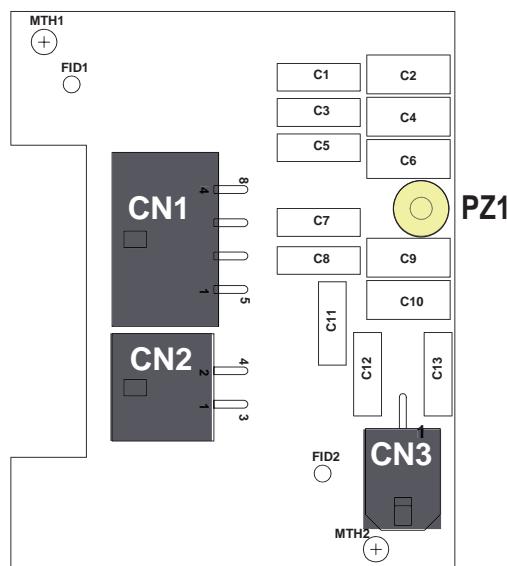
### Faulty part removal instructions



#### PROCEDURE

- ▶ Remove right side panel.
- ▶ Remove the frontal panel.
- ▶ Remove the fixing screws.
- ▶ Disconnect the connectors from the board.

## Diagnostics



## Connectors and connections

The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

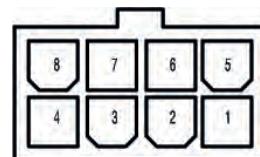
The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.

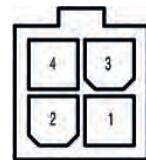
*Warning high voltage!  
Always refer to the wiring diagram.*

**CN1** Auxiliary signals

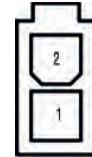
**Pin**      **Function**

CN1/1	+ 15Vdc power input
CN1/2	UP torch control output
CN1/3	Torch control output DOWN
CN1/4	CAN-H signal output
CN1/5	Gnd
CN1/6	POWER torch signal output
CN1/7	Torch signal output TIG POWER
CN1/8	CAN-L signal output

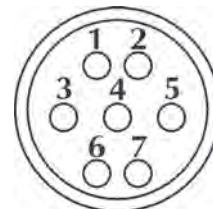



**CN2** Auxiliary signals

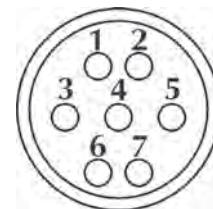
Pin	Function	Value	Unit of measure
CN2/3	Push-Pull power input	+48	Vdc
CN2/4	Gnd Push-Pull	0	Vdc


**CN3** Auxiliary signals

Pin	Function	Value	Unit of measure
CN3/1	Torch POWER signal input		
CN3/2	Gnd		


**CN4** TIG torch signal connector

Pin	Function
CN4/1	CAN-H signal
CN4/2	CAN-L signal
CN4/3	Torch Signal Input UP
CN4/4	+ 15Vdc power output
CN4/5	Torch POWER signal input
CN4/6	Gnd
CN4/7	Torch DOWN signal input


**CN5** MIG/MAG torch signal connector

Pin	Function
CN5/1	CAN-H signal
CN5/2	CAN-L signal
CN5/3	Push-Pull power output
CN5/4	+ 15Vdc power output
CN5/5	POWER torch signal input
CN5/6	Gnd
CN5/7	Gnd Push-Pull

## 5.16 Gas solenoid valve 09.05.001

### Spare Part Code

- 09.05.001

### Description and functionality

- 1/8" Gas Solenoid Valve.

Features:

- 24V 50Hz power supply.
- Manages the torch gas flow.

Operation chain:

- The trigger signal that starts from the torch button when it is received by the DSP control board.
- The control board generates the command signal which is forwarded to the power board.
- The power board powers the solenoid valve.

### Position

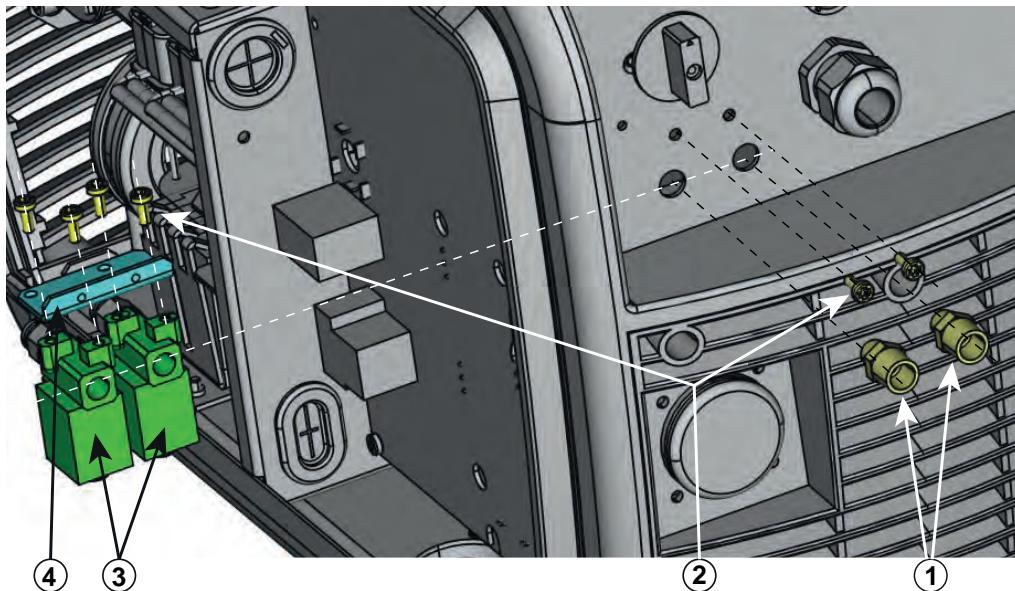
- Part can be reached by removing the rear panel.
- Part reachable from the right side panel.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



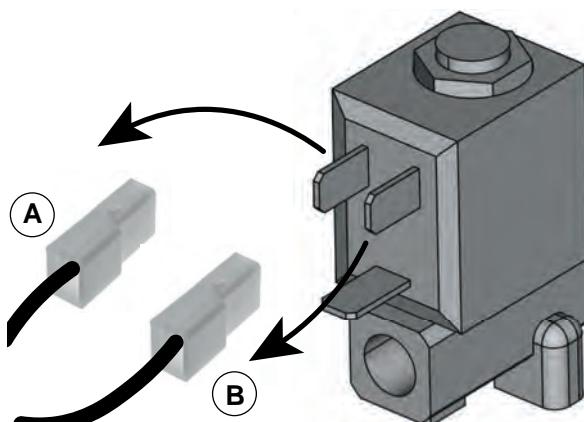
### PROCEDURE

- ▶ Remove right side panel.
- ▶ Remove the fitting for the gas pipe. (1)
- ▶ Remove the fixing screws. (2)
- ▶ Disconnect the gas pipe and the power cables. (3)
- ▶ The solenoid valve is fixed to a metal bracket which must be recovered. (4)

### Spare part installation instructions



Use a special sealing product to connect the external gas pipe fitting to the solenoid valve.



#### Gas solenoid valve

*Measurements to be made with the generator on.*

*Make the test in open circuit.*

*The solenoid valve is driven by a current modulated signal.*

*To check the correct presence of the supply voltage:*

- Disconnect the connectors connected to points A and B of the solenoid valve.
- Insert the test leads of the tester on the disconnected cables.
- Ignite with the torch.
- Measure the value of the open circuit voltage during triggering.

Mode	Test point	Value	Unit of measure
(V)	A ↔ B	24	Vdc

## 5.17 Garmotor 120 W code 07.01.099

### Spare Part Code

- 07.01.099

### Description and functionality

- Specific motor for MIG welding applications.
- The motor is associated with a three-channel 150-pulse encoder keyed on the motor shaft.

#### Features:

- Aluminum body
- Speed =  $225 \pm 10\%$  rpm
- Power supply = 42 Vdc

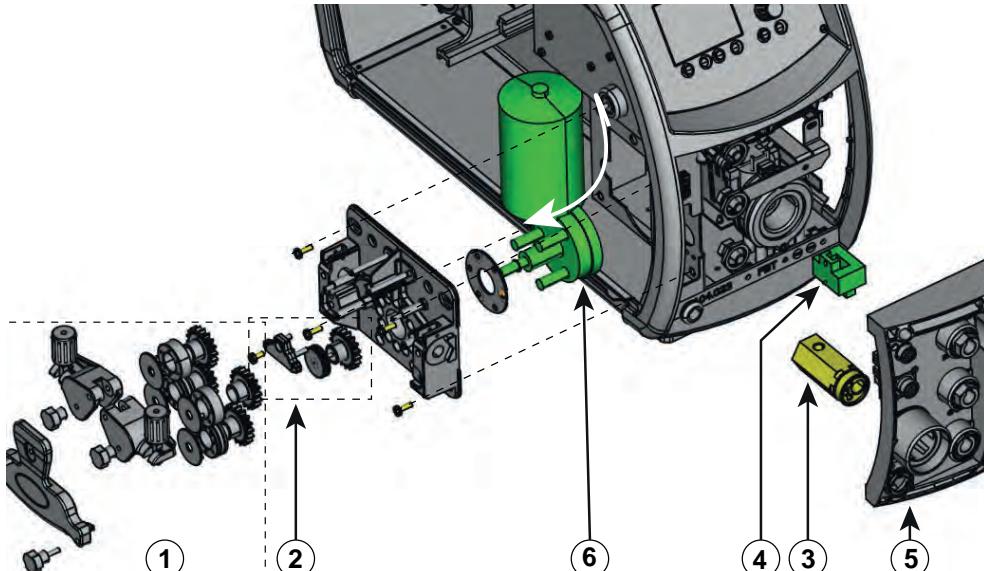
### Position

- Part reachable from the right side panel.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.



### Faulty part removal instructions

#### PROCEDURE

- ▶ Remove right side panel.
- ▶ Remove drive rollers. (1)
- ▶ Remove motor gear handwheel. (2)
- ▶ Remove the central adaptor system. (3)
- ▶ Remove the current sensor. (4)
- ▶ Remove the frame and front dowel. (5)
- ▶ Remove the screws that secure the motor. (6)
- ▶ Rotate the motor and remove it.



*Pay attention to the encoder wiring.*

## Spare part installation instructions



*Pay attention to the encoder wiring.*



*Be careful to correctly position the motor flange.*

---

## Diagnostics



### Motor power supply

*Measurements to be made with the generator on.  
The voltage value is proportional to the set speed.*

To perform the test:

- Set a wire output speed.
- Keep the torch button pressed for at least 3s.

Mode	Test point	Value	Unit of measure
(V)	Power connector	+3,70±10%@2m/s	
		+8,95±10%@5m/s	
		+16,8±10%@10m/s	
		+24,6±10%@15m/s	Vdc
		+35,8±10%@20m/s	

## 5.18 Encoder 150 pulses code 07.01.015

### Spare Part Code

- 07.01.015

### Description and functionality

- 150 pulse three-channel optical encoder

Features:

- Power supply = 5 Vdc

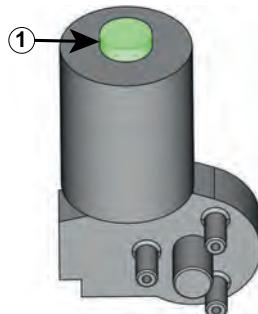
### Position

- Part reachable from the right side panel.
- Keyed on the motor shaft.

### Parts replacement

#### Faulty part removal instructions

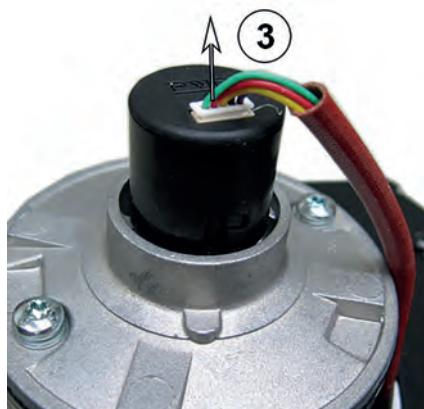
##### PROCEDURE



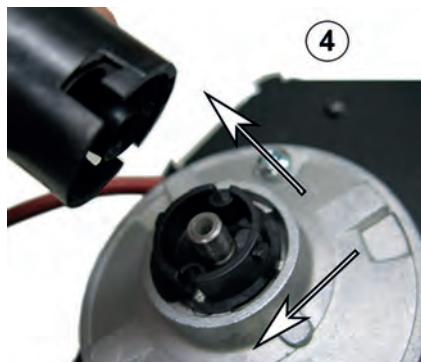
The encoder is keyed onto the motor shaft. ①  
 ▶ Pull out the motor



Pay attention to the layer of hot glue present to protect the connector contacts. ②  
 Avoid tearing the cable.



▶ Disconnect the connector. ③



- ▶ Turn the encoder counterclockwise and lift. ④



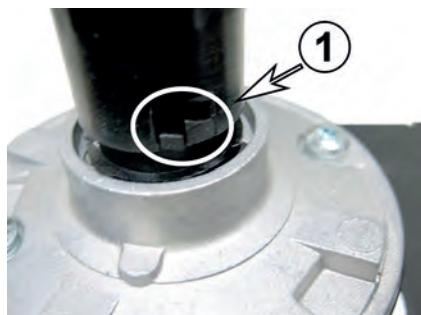
- ▶ Remove the disk in case it gets stuck on the spindle. ⑤

---

## Spare part installation instructions

### PROCEDURE

---



- ▶ Insert the new encoder and stay be careful to the insert. ①
- ▶ Press and turn clockwise.



- ▶ Connect the cable respecting the connector references. ②
- ▶ Fix the connector with glue.

## 5.19 Control panel code 15.22.353

### Spare Part Code

- 15.22.353

#### Notes

- Display not available separately

### Description and functionality

- Passive remote control, can be considered as the extension as well as the display of the digital card.
- It shows all the selection parameters and the internal set-up menu.

The panel is supplied already assembled complete with:

- Board 15.14.517.
- Display 3.5".
- Screen-printed and aluminum base panel.

The front panel includes:

- Dynamic lcd display.
- Status LED.
- Seven-segment display.
- Selection and rotary encoder.
- Four selection buttons for the various functions related to the context of the display.
- Buttons for recalling and storing programs.
- Buttons for recall and selection of synergies.
- Piezoelectric buzzer that signals the pressure of the keys.

### Position

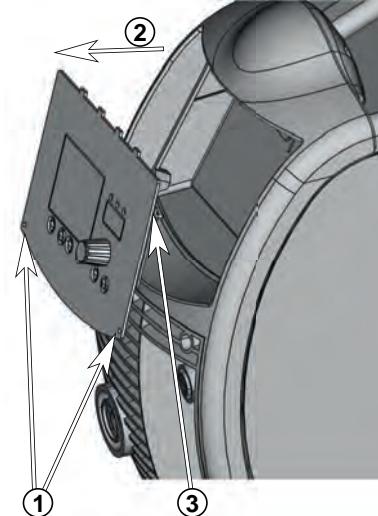
- It is located on the front of the machine at the top.

### Parts replacement



A cables marking is recommended to an easily machine reassembly.  
Always refer to the wiring diagram.

### Faulty part removal instructions



#### PROCEDURE

- Remove the fixing screws. (1)
- Turn the panel forward. (2)
- Disconnect the connectors from the board. (3)

## Diagnostics

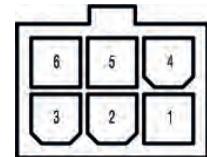
The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.



*Warning high voltage!  
Always refer to the wiring diagram.*



**Connector** CAN-BUS line connection

Pin	Function
CN/1	Power supply + 15Vdc
CN/2	Gnd
CN/5	CAN-H signal
CN/6	CAN-L signal

## 5.20 Push-pull torch power supply 15.14.5153

### Spare Part Code

- 15.14.5153

#### Notes

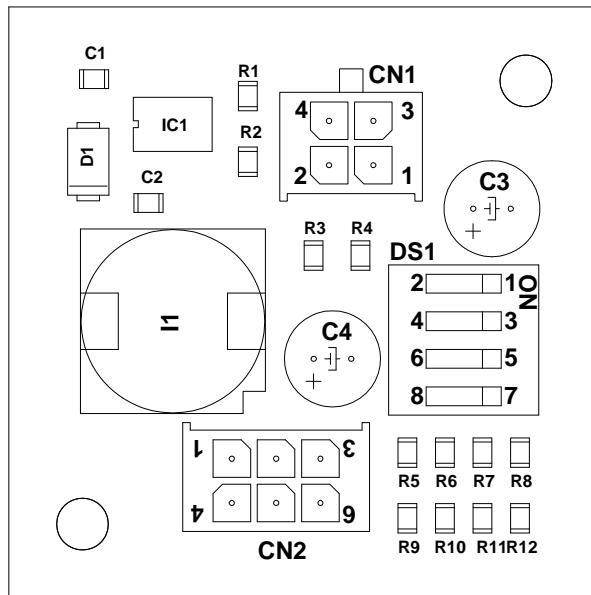
- Item not supplied as standard.
- Refer to the "Accessory Kit" section of the user manual.

### Description and functionality

- The power supply board for the push pull gun motor.
- The power supply is synchronized with the main motor's control.
- The board performs a modulated control of the current absorbed by the push pull motor.
- Through the dip switches on board it is possible to set the output current from a minimum to a maximum, thus allowing a better external towing capacity.
- Supply voltage = 48Vdc

### Diagnostics

#### Board layout

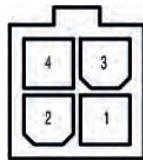


### Connectors and connections

The following section describes:

- Connectors on the board with description of the Pin-out where necessary for diagnostics.
- Description of the connections.

The description of the tests to be carried out with the relative reference values are discussed in the "Diagnostic tests" section.

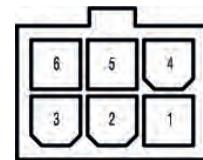


**CN1**      Board power supply

Pin	Function
-----	----------

CN1/3	48Vdc power supply
-------	--------------------

CN1/4	Gnd
-------	-----



**CN2** Board connection H.F. 15.14.5035

**Pin**      **Function**

CN2/5 Push-Pull torch voltage

CN2/6 Push-Pull torch voltage

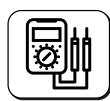
### Diagnostic tests

In the following section for each functional part to be tested are reported:

- Indication of the components involved in the test.
- Instructions on how to set up the generator to run the test.
- Table with measurement points and reference values.
- Notes or warnings to perform the test correctly.



*Warning high voltage!  
Always refer to the wiring diagram.*



### Power supply CN1,CN2

*Measurements to be made with the generator on.*

*Carry out the measurements keeping the torch trigger pressed*

Mode	Test point	Value	Unit of measure
(V)	CN1/3 ← CN1/4	+48	Vdc
(V)	CN2/5 ← CN2/6	+48	Vdc



### DIP-SWITCH DS1

*For the dip switch configuration, refer to the following table*

A	B	C	D	Current minimum	Current maximum	Unit of measure	Notes
1	0	0	0	85	174		
1	1	0	0	131	300	mA	
1	1	1	0	167	432		Push-Pull motor current
1	1	1	1	217	542		

## 6. USE OF THE PRODUCT

### 6.1 Parameter set up and setting

Permits set-up and adjustment of a series of additional parameters for improved and more accurate control of the welding system.

The parameters present at set up are organised in relation to the welding process selected and have a numerical code.

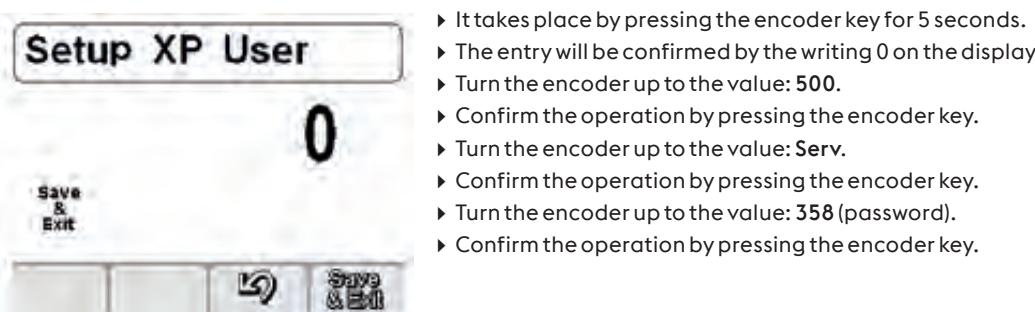
#### Entry to set up

##### PROCEDURE



#### Entrance to advanced set up SERV

##### PROCEDURE



#### Selection and adjustment of the required parameter

##### PROCEDURE

- ▶ Rotate the encoder until you display the numerical code for the required parameter.
- ▶ If the encoder key is pressed at this point, the value set for the parameter selected can be displayed and adjusted.

#### Exit from set up

##### PROCEDURE

- ▶ To exit the "regulation" section, press the encoder again.
- ▶ To exit the set up, go to parameter "O" (save and exit) and press the encoder.
- ▶ Cancel the operation by pressing button .
- ▶ To save the change and exit the set up, press the key: .



## 6.2 Parameter description

**SERV** Parameters accessible only from the advanced menu.

### 6.2.1 List of set up parameters (MMA)

- 0 Save and Exit**  
 Allows you to save the changes and exit the set up.
- 1 Reset**  
 Allows you to reset all the parameters to the default values.
- 2 Slope-up (Hot start) SERV**  
Allows adjustment of the hot start value in MMA.  
Permits an adjustable hot start in the arc striking phases, facilitating the start operations.

Minimum	Maximum	Default
0.01	2.00	0.08

Parameter setting in seconds (s)
- 3 Hot start**  
 Allows adjustment of the hot start value in MMA.  
Permits an adjustable hot start in the arc striking phases, facilitating the start operations.

Standard process			Cellulosic process		
Minimum	Maximum	Default	Minimum	Maximum	Default
0	500	80	0	500	150

CrNi process			Aluminum process		
Minimum	Maximum	Default	Minimum	Maximum	Default
0	500	100	off	500	150

Cast Iron process		
Minimum	Maximum	Default
0	500	100

Parameter setting in percentage of welding current (%)
- 4 Slope-down (Hot start) SERV**  
Allows adjustment of the hot start value in MMA.  
Permits an adjustable hot start in the arc striking phases, facilitating the start operations.

Minimum	Maximum	Default
0.01	2.00	0.80

Parameter setting in seconds (s)
- 7 Welding current**  
 Allows the regulation of the welding current.

Minimum	Maximum	Default
3	I <sub>max</sub>	100

Parameter setting in Ampere (A)

**8**

## Arc force

Allows adjustment of the Arc force value in MMA.

Permits an adjustable energetic dynamic response in welding, facilitating the welder's operations.

Increase the value of the Arc force to reduce the risk of electrode sticking.

### Standard process

Minimum	Maximum	Default
0	500	30

### CrNi process

Minimum	Maximum	Default
0	500	30

### Cast iron process

Minimum	Maximum	Default
0	500	70

### Cellulosic process

Minimum	Maximum	Default
off	500	350

### Aluminum process

Minimum	Maximum	Default
0	500	100

Parameter setting in percentage of welding current (%)

**201**

## No-load voltage

Vrd is a generator Open Circuit voltage control device.

Refer to section "VRD Voltage Reduction Device (Set up 201)".

Minimum	Maximum	Default
12	80	80.0

Parameter setting in Volt(V)

**203**

## Antisticking enable

Permits enabling or disabling of the antisticking function.

The antisticking function permits reduction of the welding current to 0A in the event of a short circuit occurring between the electrode and the piece, protecting the gun, electrode and welder and guaranteeing safety in the condition that has occurred.

**The short circuit time before the antisticking function intervenes:**

Value	Antisticking
on	ACTIVE
off	INACTIVE

Minimum	Maximum	Default
0.1	2.0	0.5

Parameter setting in seconds (s)

**204**

## Dynamic power control (DPC)

It enables the desired V/I characteristic to be selected.

**Increase the value of the Arc force to reduce the risk of electrode sticking.**

I=C      Constant current

The increase or reduction in arc length has no effect on the welding current required.

**recommended for electrode:**

Basic, Rutile, Acid, Steel, Cast iron

1:20      Falling characteristic with adjustable slope

The increase in arc length causes a reduction in welding current (and vice versa) according to the value imposed by 1 to 20 amps per volt.

**recommended for electrode:**

Cellulosic, Aluminum

P=C      Constant power

The increase in arc length causes a reduction in the welding current (and vice versa) according to the law: V·I=K

**recommended for electrode:**

Cellulosic, Aluminum



**312**
**Arc detachment voltage**


Allows you to set the voltage value at which the electric arc switch-off is forced.

Allows to manage better the various operating conditions that are created.

In the spot welding phase, for example, a low arc detachment voltage reduces re-striking of the arc when moving the electrode away from the piece, reducing spatter, burning and oxidisation of the piece.

If using electrodes that require high voltages, you are advised to set a high threshold to prevent arc extinction during welding.



*Never set an arc detachment voltage higher than the no-load voltage of the power source.*

**Standard process**

Minimum	Maximum	Default
0	99.9	57

Parameter setting in Volt(V)

**Cellulosic process**

Minimum	Maximum	Default
0	99.9	70

Parameter setting in Volt(V)

**500**
**Machine setting**


Allows the selection of the required graphic interface.

Allows access to the higher set-up levels.

Value	User interface
XE	Easy mode
XA	Advanced mode
XP	Professional mode

Value	Selected level
USER	User
SERV	Service
vaBW	vaBW

**501**
**Info SERV**


Allows the display of a set of information related to the system.

Refer to section "INFO screen (Set up 501)".

**502**
**Alarm list SERV**


Allows the intervention of an alarm to be indicated and provides the most important indications for the solution of any problem encountered.

**551**
**Lock/unlock**


Allows the locking of the panel controls and the insertion of a protection code

Refer to section "Lock/unlock (Set up 551)".

**552**
**Buzzer tone**


Permits adjustment of the buzzer tone.

Minimum	Maximum	Default
off	10	5

**601**
**Regulation step**


Allows the regulation of a parameter with a step that can be personalised by the operator.

Functionality controlled by torch up/down button.

Minimum	Maximum	Default
1	Imax	1

**602**
**External parameter CH1, CH2, CH3, CH4**


Allows the management of external parameter 1, 2, 3, 4 (minimum value, maximum value, default value, selected parameter).

Refer to section "External controls management (Set up 602)".

**700****Welding voltage value compensation**  SERV

Value	Callback function
on	active circuit resistance calibration Compensation ACTIVE
off	active circuit resistance calibration Compensation IGNORED

With active parameter the generator applies the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) to the welding voltage. The correction is applied both to the set value and to the value read.

With parameter NOT active, the generator ignores the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) at the welding voltage.

**701****Current calibration**  SERV

Allows access to the specific system calibration procedure.

Refer to section "Current calibration (Set up 701)" of the generator repair manual.

**702****Voltage calibration**  SERV

Allows access to the specific system calibration procedure.

Refer to section "Voltage calibration (Set up 702)" of the generator repair manual.

**704****Offset calibration**  SERV

Allows access to the specific system calibration procedure.

Refer to section "Offset calibration (Set up 704)" of the generator repair manual.

**748****Standard level Validation**  SERV

Allows access to the specific system validation procedure.

Refer to the appropriate section of the specific manual.

**749****Accuracy level Validation**  SERV

Allows access to the specific system validation procedure.

Refer to the appropriate section of the specific manual.

**751****Current reading**

Allow the real value of the welding current to be displayed.

**752****Voltage reading**

Allows the real value of the welding voltage to be displayed.

**753****Feeding phases numbers**  SERV

Indicates the number of phases of the power supply.

**754****Reading voltage supply**  SERV

Displays the voltage value for each phase of the power supply.

**800****Values filter (Guard limits)**  SERV

Allow to filter current and voltage readings.

Minimum	Maximum	Default
1	5	1



böhler welding  
by voestalpine

**802**

**Starting filter  SERV**

Allow to filter current and voltage readings.

Allows the control of the guard limits to be enabled with an adjustable delay in relation to the arc striking.

Makes it possible to filter the striking phase.

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

Parameter setting in seconds (s)

**803**

**Output filter  SERV**

Makes it possible to disable the control of the guard limits in advance of the natural closing of the weld.

Makes it possible to filter the extinction phase

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

Parameter setting in seconds (s)

## 6.2.2 List of set up parameters (TIG-DC)

### 0 Save and Exit



Allows you to save the changes and exit the set up.

### 1 Reset



Allows you to reset all the parameters to the default values.

### 2 Pre gas



Allows you to set and adjust the gas flow prior to striking of the arc.

Permits filling of the torch with gas and preparation of the environment for welding.

Minimum	Maximum	Default
0.0	99.9	0.1

Parameter setting in seconds (s)

### 3 Initial current



Allows regulation of the weld starting current.

Allows a hotter or cooler welding pool to be obtained immediately after the arc striking.

Minimum	Maximum	Default
1	500	50

Parameter setting in percentage (%)

Minimum	Maximum	Default
3	I <sub>max</sub>	-

Parameter setting in Ampere (A)

### 5 Initial current time



Allows setting of the time for which the initial current is maintained.

Minimum	Maximum	Default
off	99.9	off

Parameter setting in seconds (s)

### 6 Slope-up



Allows you to set a gradual passage between the initial current and the welding current.

Minimum	Maximum	Default
off	99.9	off

Parameter setting in seconds (s)

### 7 Welding current



Allows the regulation of the welding current.

Minimum	Maximum	Default
3	I <sub>max</sub>	100

Parameter setting in Ampere (A)

### 8 Bilevel current



Permits adjustment of the secondary current in the bilevel welding mode.

On first pressing the torch button, the pre-gas starts, the arc strikes and the initial current will be used when welding.

At the first release there is the ramp to go up to the current "I<sub>1</sub>".

If the welder now presses and releases the button quickly, "I<sub>2</sub>" can be used.

By pressing and releasing it quickly again, "I<sub>1</sub>" is used again, and so on.

If you press the button for a longer time, the lowering ramp for the current starts, thus reaching the final current.

By releasing the button again, the arc goes out and the gas continues to flow for the post-gas stage.

Minimum	Maximum	Default
3	I <sub>max</sub>	-

Parameter setting in Ampere (A)

Minimum	Maximum	Default
1	500	50

Parameter setting in percentage (%)

**10****Basic current**

Permits adjustment of the base current in pulsed and fast pulse modes.



Minimum	Maximum	Default
3	Isald	50

Parameter setting in Ampere (A)

Minimum	Maximum	Default
1	100	50

Parameter setting in percentage (%)

**12****Pulsed frequency**

Allows activation of the pulse mode.

Allows activation of the pulse mode.

Allows better results to be obtained in the welding of thin materials and better aesthetic quality of the bead.



Minimum	Maximum	Default
0.1	25	5

Parameter setting in Hertz (Hz)

**13****Pulsed duty cycle**

Allows regulation of the duty cycle in pulse welding.

Allows the peak current to be maintained for a shorter or longer time.



Minimum	Maximum	Default
1	99	50

Parameter setting in percentage (%)

**14****Fast Pulse frequency**

Allows activation of the pulse mode.

Allows focusing action and better stability of the electric arc to be obtained.



Minimum	Maximum	Default
0.02	2.5	off

Parameter setting in KiloHertz (KHz)

**15****Pulsed slope**

Allows setting of a slope time during the pulse operation.

Allows a smooth step to be obtained between the peak current and the basic current, having a more or less soft welding arc.



Minimum	Maximum	Default
off	100	off

Parameter setting in percentage (%)

**16****Slope-down**

Allows you to set a gradual passage between the welding current and the final current.



Minimum	Maximum	Default
off	99.9	off

Parameter setting in seconds (s)

**17****Final current**

Permits adjustment of the final current.



Minimum	Maximum	Default
3	Imax	10

Parameter setting in Ampere (A)

Minimum	Maximum	Default
1	500	-

Parameter setting in percentage (%)

**19****Final current time**

Makes it possible to set the time for which the final current is maintained.



Minimum	Maximum	Default
off	99.9	off

Parameter setting in seconds (s)

**20**


### Post gas

Permits setting and adjustment of the gas flow at the end of welding.

Minimum	Maximum	Default
0.0	99.9	syn

Parameter setting in seconds (s)

**203**


### Tig start (HF)

Allows selection of the required arc striking modes.

Value	Default	Callback function
on	X	HF START
off	-	LIFT START

**204**


### Spot welding

Allows you to enable the "spot welding" process and establish the welding time.

Allows the timing of the welding process.

Minimum	Maximum	Default
off	99.9	off

Parameter setting in seconds (s)

**205**


### Restart

Allows the activation of the restart function.

Allows the immediate extinguishing of the arc during the down slope or the restarting of the welding cycle.

Value	Default	Callback function
0	-	off
1	X	on

**206**


### Easy joining

Allows striking of the arc in pulsed current and timing of the function before the automatic reinstatement of the pre-set welding conditions.

Allows greater speed and accuracy during tack welding operations on the parts

Minimum	Maximum	Default
0.1	25.0	off

Parameter setting in seconds (s)

**208**


### Microtime spot welding

Allows you to enable the "microtime spot welding" process.

Allows the timing of the welding process.

Minimum	Maximum	Default
0.01	1.00	off

Parameter setting in seconds (s)

**306**


### Short-circuit current (Lift start) SERV

It allows to vary the trigger current

Minimum	Maximum	Default
3	I <sub>max</sub>	30

Parameter setting in Ampere (A)

**307**


### Start current (HF start) SERV

It allows to vary the trigger current

Minimum	Maximum	Default
3	I <sub>max</sub>	100

Parameter setting in Ampere (A)

**312****Arc detachment voltage**

Allows you to set the voltage value at which the electric arc switch-off is forced.

Allows to manage better the various operating conditions that are created.

In the spot welding phase, for example, a low arc detachment voltage reduces re-striking of the arc when moving the electrode away from the piece, reducing spatter, burning and oxidisation of the piece.

If using electrodes that require high voltages, you are advised to set a high threshold to prevent arc extinction during welding.

**Standard process**

Minimum	Maximum	Default
0	99.9	57

**Cellulosic process**

Minimum	Maximum	Default
0	99.9	70

Parameter setting in Volt(V)

**500****Machine setting**

Allows the selection of the required graphic interface.

Allows access to the higher set-up levels.

Value	User interface
XE	Easy mode
XA	Advanced mode
XP	Professional mode

Value	Selected level
USER	User
SERV	Service
vaBW	vaBW

**501****Info **

Allows the display of a set of information related to the system.

Refer to section "INFO screen (Set up 501)".

**502****Alarm list **

Allows the intervention of an alarm to be indicated and provides the most important indications for the solution of any problem encountered.

**551****Lock/unlock**

Allows the locking of the panel controls and the insertion of a protection code

Refer to section "Lock/unlock (Set up 551)".

**552****Buzzertone**

Permits adjustment of the buzzer tone.

Minimum	Maximum	Default
off	10	5

**601****Regulation step (U/D)**

Permits adjustment of the variation step on the updown keys.

Minimum	Maximum	Default
off	max	1

**602****External parameter CH1, CH2, CH3, CH4**

Allows the management of external parameter 1, 2, 3, 4 (minimum value, maximum value, default value, selected parameter).

Refer to section "External controls management (Set up 602)".

**606****U/D torch**

Allows the management of external parameter (U/D).

Value	Default	Callback function
off	-	off
I	X	Current
	-	program retrieval

**612****Setting Torch DgTig**

It allows the management of the channels of the digital torch.

**656****WU management**  **SERV**

Allows to set the operating parameters of the WU.

Refer to section "WU operation management (Set up 656)".

Value	Callback mode
off	No active
Syn	Synergic mode
1÷600	Manual mode
on	Active

**700****Welding voltage value compensation**  **SERV**

With active parameter the generator applies the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) to the welding voltage. The correction is applied both to the set value and to the value read.

With parameter NOT active, the generator ignores the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) at the welding voltage.

Value	Callback function
on	active circuit resistance calibration Compensation ACTIVE
off	active circuit resistance calibration Compensation IGNORED

**701****Current calibration**  **SERV**

Allows access to the specific system calibration procedure.

Refer to section "Current calibration (Set up 701)" of the generator repair manual.

**702****Voltage calibration**  **SERV**

Allows access to the specific system calibration procedure.

Refer to section "Voltage calibration (Set up 702)" of the generator repair manual.

**704****Offset calibration**  **SERV**

Allows access to the specific system calibration procedure.

Refer to section "Offset calibration (Set up 704)" of the generator repair manual.

Refer to section "Offset calibration (Set up 704)" of the generator repair manual.

**748****Standard level Validation**  **SERV**

Allows access to the specific system validation procedure.

Refer to the appropriate section of the specific manual.

**749****Accuracy level Validation**  **SERV**

Allows access to the specific system validation procedure.

Refer to the appropriate section of the specific manual.

**751****Current reading**

Allow the real value of the welding current to be displayed.

**752****Voltage reading**

Allows the real value of the welding voltage to be displayed.

**753****Feeding phases numbers**  **SERV**

Displays the number of phases of the power supply.

**754****Reading voltage supply**  **SERV**

Displays the voltage value for each phase of the power supply.

**800****Values filter (Guard limits) 🔧 SERV**

Allow to filter current and voltage readings.

Minimum	Maximum	Default
1	5	1

**801****Guard limits**

Allows the setting of the warning limits and of the guard limits.

Allows the welding process to be controlled by setting warning limits and guard limits for the main measurable parameters.

Allows accurate control of the various welding phases.

Refer to section "Guard limits (Set up 801)".

**802****Starting filter 🔧 SERV**

Allows the control of the guard limits to be enabled with an adjustable delay in relation to the arc striking.

Makes it possible to filter the striking phase.

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

Parameter setting in seconds (s)

**803****Output filter 🔧 SERV**

Makes it possible to disable the control of the guard limits in advance of the natural closing of the weld.

Makes it possible to filter the extinction phase

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

Parameter setting in seconds (s)

### 6.2.3 List of set up parameters (Standard MIG/MAG)

#### 0 Save and Exit



Allows you to save the changes and exit the set up.

#### 1 Reset



Allows you to reset all the parameters to the default values.

#### 2 Synergy



Allows selection of the manual MIG ( $\diamond$  off) or synergic MIG ( $\diamond$  6) process by setting the type of material to be welded.

#### 3 Wire speed



Allows the regulation of the wire feed rate.

Minimum	Maximum	Default
0.5	22	1.0

Parameter setting in meters per minute (m/min)

#### 4 Current



Allows the regulation of the welding current.

Minimum	Maximum
6	I <sub>max</sub>

Parameter setting in Ampere (A)

#### 5 Workpiece thickness



Allows the thickness of the part being welded to be set.

#### 6 Corner bead



Lets you set bead depth in a corner joint.

#### 7 Arc length



Allows regulation of the arc length during welding.

Minimum	Maximum	Default
-5.0	+5.0	syn

Parameter setting in Volt (V)

#### 10 Pre gas



Allows you to set and adjust the gas flow prior to striking of the arc.

Permits filling of the torch with gas and preparation of the environment for welding.

Minimum	Maximum	Default
off	99.9	0.1

Parameter setting in seconds (s)

#### 11 Soft start



Permits adjustment of the wire feed speed in the phases prior to arc striking.

Permits striking at reduced speed, therefore softer and with less spatter

Minimum	Maximum	Default
10	100	50

Parameter setting in percentage of the set wire speed (%)

**12****Motor slope**

Allows you to set a gradual transition between the sparking wire speed and the welding wire speed.

Minimum	Maximum	Default
off	1.0	off

**15****Burn back**

Permits adjustment of the wire burn time, preventing sticking at the end of welding.

Permits adjustment of the length of the piece of wire outside the torch.

Minimum	Maximum	Default
-2.00	+2.00	0.00

**16****Post gas**

Permits setting and adjustment of the gas flow at the end of welding.

Minimum	Maximum	Default
off	99.9	2

Parameter setting in seconds (s)

**24****Bilevel (4T - crater filler)**

Permits adjustment of the secondary wire speed in the bilevel welding mode.

If the welder now presses and releases the button quickly, “” can be used.

By pressing and releasing it quickly again, “” is used again, and so on.

Minimum	Maximum	Default
1	200	off

Parameter setting in percentage (%)

**25****Initial increase**

Allows regulation of the wire speed value during the first “crater-filler” welding phase.

Makes it possible to increase the energy supplied to the part during the phase when the material (still cold) requires more heat in order to melt evenly.

Minimum	Maximum	Default
20	200	120

Parameter setting in percentage (%)

**26****Crater filler**

Allows regulation of the wire speed value during the weld closing phase.

Makes it possible to reduce the energy supplied to the part during the phase when the material is already very hot, thus reducing the risk of unwanted deformations.

Minimum	Maximum	Default
20	200	80

Parameter setting in percentage (%)

**27****Initial increment time**

Lets you set the initial increment time.

Allows to automate the “crater filler” function.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**28****Crater filler time**

Lets you set the “crater filler” time.

Allows to automate the “crater filler” function.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**30****Spot welding**

Allows you to enable the "spot welding" process and establish the welding time.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**31****Pause point**

Allows you to enable the "pause point" process and establish the pause time between one welding operation and another.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**32****Secondary voltage (MIG Bilevel)**

Allows regulation of the secondary pulsation level voltage.

Makes it possible to obtain greater arc stability during the various pulsation phases.

Minimum	Maximum	Default
-5.0	+5.0	syn

**33****Secondary inductance (MIG Bilevel)**

Allows regulation of the secondary pulsation level inductance.

Makes it possible to obtain a quicker or slower arc to compensate for the welder's movements and for the natural welding instability.

Low inductance = reactive arc (more spatter).

High inductance = less reactive arc (less spatter)..

Minimum	Maximum	Default
-30	+30	syn

**34****Initial increase slope**

Allows to set a gradual transition between the initial wire speed and the welding wire speed.

Minimum	Maximum	Default
0	10	off

Parameter setting in seconds (s)

**35****Crater filler slope**

Allows to set a gradual transition between the welding wire speed and crater filler wire speed.

Minimum	Maximum	Default
0	10	off

Parameter setting in seconds (s)

**202****Inductance**

Allows electronic regulation of the series inductance of the welding circuit.

Makes it possible to obtain a quicker or slower arc to compensate for the welder's movements and for the natural welding instability.

Low inductance = reactive arc (more spatter).

High inductance = less reactive arc (less spatter)..

Minimum	Maximum	Default
-30	+30	0

**331****Tensione media compensata**

Lets you set welding voltage.



böhler welding

by voestalpine

## USE OF THE PRODUCT

**399**

### **Welding speed**

Allow to set the welding speed.

Default 35cm/min: reference speed for manual welding.

Syn: Sinergic value.



Minimum	Maximum	Default
20	200	35

Parameter setting in centimeters per minute (cm/min)

**500**

### **Machine setting**

Allows the selection of the required graphic interface.

Allows access to the higher set-up levels.



Value	User interface
XE	Easy mode
XA	Advanced mode
XP	Professional mode

Value	Selected level
USER	User
SERV	Service
vaBW	vaBW

**501**

### **Info SERV**

Allows the display of a set of information related to the system.

Refer to section "INFO screen (Set up 501)".

**502**

### **Alarm list SERV**

Allows the intervention of an alarm to be indicated and provides the most important indications for the solution of any problem encountered.

**551**

### **Lock/unlock**

Allows the locking of the panel controls and the insertion of a protection code

Refer to section "Lock/unlock (Set up 551)".

**552**

### **Buzzertone**

Permits adjustment of the buzzer tone.



Minimum	Maximum	Default
off	10	5

**601**

### **Regulation step**

Allows the regulation of a parameter with a step that can be personalised by the operator.

Functionality controlled by torch up/down button.



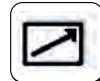
Minimum	Maximum	Default
1	Imax	1

**602**

### **External parameter CH1, CH2, CH3, CH4**

Allows the management of external parameter 1, 2, 3, 4 (minimum value, maximum value, default value, selected parameter).

Refer to section "External controls management (Set up 602)".

**606**

### **U/D torch**

Allows the management of external parameter (U/D).



Value	Default	Callback function
off	-	off
I	X	Current
	-	program retrieval

**612 DgMig Torch Setting**

It allows the management of the channels of the digital torch.

**653 Wire speed**

It allows wire speed regulation (during wire loading phase).



Minimum	Maximum	Default
-0.50	22	3

Parameter setting in meters per minute (m/min)

**656 WU management SERV**

Allows to set the operating parameters of the WU.

Refer to section "WU operation management (Set up 656)".



Value	Callback mode
off	No active
Syn	Synergic mode
1÷600	Manual mode
on	Active

**700 Welding voltage value compensation SERV**

With active parameter the generator applies the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) to the welding voltage. The correction is applied both to the set value and to the value read.



With parameter NOT active, the generator ignores the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) at the welding voltage.

Value	Callback function
on	active circuit resistance calibration Compensation ACTIVE
off	active circuit resistance calibration Compensation IGNORED

**701 Current calibration SERV**

Allows access to the specific system calibration procedure.



Refer to section "Current calibration (Set up 701)" of the generator repair manual.

**702 Voltage calibration SERV**

Allows access to the specific system calibration procedure.



Refer to section "Voltage calibration (Set up 702)" of the generator repair manual.

**704 Offset calibration SERV**

Allows access to the specific system calibration procedure.



Refer to section "Offset calibration (Set up 704)" of the generator repair manual.

**705 Circuit resistance calibration**

Allows the calibration of the system.



Refer to section "Circuit resistance calibration (set up 705)".

**748 Standard level Validation SERV**

Allows access to the specific system validation procedure.



Refer to the appropriate section of the specific manual.

**749 Accuracy level Validation SERV**

Allows access to the specific system validation procedure.



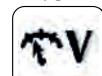
Refer to the appropriate section of the specific manual.

**751****Current reading**

Allow the real value of the welding current to be displayed.

**752****Voltage reading**

Allows the real value of the welding voltage to be displayed.

**753****Feeding phases numbers** 

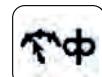
Displays the number of phases of the power supply.

**754****Reading voltage supply** 

Displays the voltage value for each phase of the power supply.

**757****Wire speed reading**

Motor 1 encoder reading.

**760****Current reading (motor 1)**

Allow the real value of the current to be displayed (motor 1).

**800****Values filter (Guard limits)** 

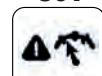
Allow to filter current and voltage readings.



Minimum	Maximum	Default
1	5	1

**801****Guard limits**

Allows the setting of the warning limits and of the guard limits.



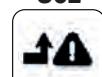
Allows the welding process to be controlled by setting warning limits and guard limits for the main measurable parameters.

Allows accurate control of the various welding phases.

Refer to section "Guard limits (Set up 801)".

**802****Starting filter** 

Allows the control of the guard limits to be enabled with an adjustable delay in relation to the arc striking.



Makes it possible to filter the striking phase.

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

Parameter setting in seconds (s)

**803****Output filter** 

Makes it possible to disable the control of the guard limits in advance of the natural closing of the weld.



Makes it possible to filter the extinction phase

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

Parameter setting in seconds (s)

### 6.2.4 List of set up parameters (Pulsed MIG/MAG)

#### 0 Save and Exit



Allows you to save the changes and exit the set up.

#### 1 Reset



Allows you to reset all the parameters to the default values.

#### 2 Synergy



Allows selection of the manual MIG ( $\diamond$  off) or synergic MIG ( $\diamond$  6) process by setting the type of material to be welded.

#### 3 Wire speed



Allows the regulation of the wire feed rate.

Minimum	Maximum	Default
0.5	22	1.0

Parameter setting in meters per minute (m/min)

#### 4 Current



Allows the regulation of the welding current.

Minimum	Maximum
6	I <sub>max</sub>

Parameter setting in Ampere (A)

#### 5 Workpiece thickness



Allows the thickness of the part being welded to be set.

#### 6 Corner bead



Lets you set bead depth in a corner joint.

#### 7 Arc length



Allows regulation of the arc length during welding.

Minimum	Maximum	Default
-5.0	+5.0	syn

Parameter setting in Volt (V)

#### 10 Pre gas



Allows you to set and adjust the gas flow prior to striking of the arc.

Permits filling of the torch with gas and preparation of the environment for welding.

Minimum	Maximum	Default
off	99.9	0.1

Parameter setting in seconds (s)

#### 11 Soft start



Permits adjustment of the wire feed speed in the phases prior to arc striking.

Permits striking at reduced speed, therefore softer and with less spatter

Minimum	Maximum	Default
10	100	50

Parameter setting in percentage of the set wire speed (%)

**12****Motor slope**

Allows you to set a gradual transition between the sparking wire speed and the welding wire speed.



Minimum	Maximum	Default
off	1.0	off

**15****Burn back**

Permits adjustment of the wire burn time, preventing sticking at the end of welding.

Permits adjustment of the length of the piece of wire outside the torch.



Minimum	Maximum	Default
-2.00	+2.00	0.00

**16****Post gas**

Permits setting and adjustment of the gas flow at the end of welding.



Minimum	Maximum	Default
off	99.9	2

Parameter setting in seconds (s)

**19****Duty cycle (duble pulsed)**

Permit adjustment of the duty cycle in double pulse.



Minimum	Maximum	Default
10	90	50

Parameter setting in percentage (%)

**20****Double pulsed**

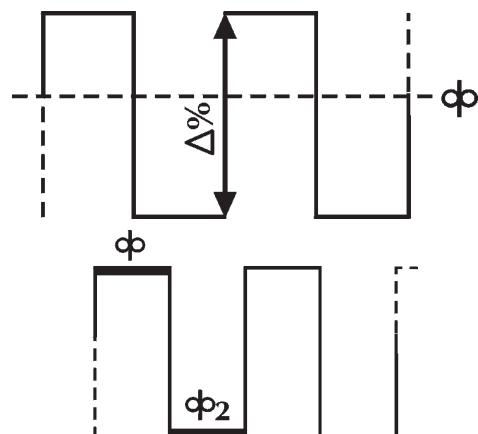
Allows enablement of the "Double Pulsed" function.

Allows regulation of the pulsation amplitude.



Minimum	Maximum	Default
0	100	$\pm 25$

Parameter setting in percentage (%)



Minimum	Maximum	Default
0.5	22	2.5

Parameter setting in meters per minute (m/min)

**21****Pulsation frequency (duble pulsed)**

Allows regulation of the cycle, i.e. of the impulse repetition cycle.

Allows the impulse frequency to be regulated.



Minimum	Maximum	Default
0.1	5.0	2.0

Parameter setting in Hertz (Hz)

**22****Secondary voltage (duble pulsed)**

Allows regulation of the secondary pulsation level voltage.

Makes it possible to obtain greater arc stability during the various pulsation phases.



Minimum	Maximum	Default
-5.0	+5.0	syn

**23****Pulsed slope (duble pulsed)**

Allows setting of a slope time during the pulse operation.



Minimum	Maximum	Default
1	100	50

Parameter setting in percentage (%)

**24****Bilevel (4T - crater filler)**

Permits adjustment of the secondary wire speed in the bilevel welding mode.

If the welder now presses and releases the button quickly, “” can be used.By pressing and releasing it quickly again, “” is used again, and so on.

Minimum	Maximum	Default
1	200	off

Parameter setting in percentage (%)

**25****Initial increase**

Allows regulation of the wire speed value during the first “crater-filler” welding phase.



Makes it possible to increase the energy supplied to the part during the phase when the material (still cold) requires more heat in order to melt evenly.

Minimum	Maximum	Default
20	200	120

Parameter setting in percentage (%)

**26****Crater filler**

Allows regulation of the wire speed value during the weld closing phase.



Makes it possible to reduce the energy supplied to the part during the phase when the material is already very hot, thus reducing the risk of unwanted deformations.

Minimum	Maximum	Default
20	200	80

Parameter setting in percentage (%)

**27****Initial increment time**

Lets you set the initial increment time.



Allows to automate the "crater filler" function.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**28****Crater filler time**

Lets you set the “crater filler” time.



Allows to automate the "crater filler" function.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**30****Spot welding**

Allows you to enable the "spot welding" process and establish the welding time.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**31****Pause point**

Allows you to enable the "pause point" process and establish the pause time between one welding operation and another.

Minimum	Maximum	Default
0.1	99.9	off

Parameter setting in seconds (s)

**32****Secondary voltage (MIG Bilevel)**

Allows regulation of the secondary pulsation level voltage.

Makes it possible to obtain greater arc stability during the various pulsation phases.

Minimum	Maximum	Default
-5.0	+5.0	syn

**33****Secondary inductance (MIG Bilevel)**

Allows regulation of the secondary pulsation level inductance.

Makes it possible to obtain a quicker or slower arc to compensate for the welder's movements and for the natural welding instability.

Low inductance = reactive arc (more spatter).

High inductance = less reactive arc (less spatter)..

Minimum	Maximum	Default
-30	+30	syn

**34****Initial increase slope**

Allows to set a gradual transition between the initial wire speed and the welding wire speed.

Minimum	Maximum	Default
0	10	off

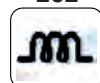
Parameter setting in seconds (s)

**35****Crater filler slope**

Allows to set a gradual transition between the welding wire speed and crater filler wire speed.

Minimum	Maximum	Default
0	10	off

Parameter setting in seconds (s)

**202****Inductance**

Allows electronic regulation of the series inductance of the welding circuit.

Makes it possible to obtain a quicker or slower arc to compensate for the welder's movements and for the natural welding instability.

Low inductance = reactive arc (more spatter).

High inductance = less reactive arc (less spatter)..

Minimum	Maximum	Default
-30	+30	0

**331****Tensione media compensata**

Lets you set welding voltage.

**399****Welding speed**

Allow to set the welding speed.

Default 35cm/min: reference speed for manual welding.

Syn: Sinergic value.

Minimum	Maximum	Default
20	200	35

Parameter setting in centimeters per minute (cm/min)

**500****Machine setting**

Allows the selection of the required graphic interface.  
Allows access to the higher set-up levels.

Value	User interface
XE	Easy mode
XA	Advanced mode
XP	Professional mode

Value	Selected level
USER	User
SERV	Service
vaBW	vaBW

**501****Info SERV**

Allows the display of a set of information related to the system.  
Refer to section "INFO screen (Set up 501)".

**502****Alarm list SERV**

Allows the intervention of an alarm to be indicated and provides the most important indications for the solution of any problem encountered.  
Refer to section "Alarms screen".

**551****Lock/unlock**

Allows the locking of the panel controls and the insertion of a protection code  
Refer to section "Lock/unlock (Set up 551)".

**552****Buzzer tone**

Permits adjustment of the buzzer tone.

Minimum	Maximum	Default
off	10	5

**601****Regulation step**

Allows the regulation of a parameter with a step that can be personalised by the operator.  
Functionality controlled by torch up/down button.

Minimum	Maximum	Default
1	I <sub>max</sub>	1

**602****External parameter CH1, CH2, CH3, CH4**

Allows the management of external parameter 1, 2, 3, 4 (minimum value, maximum value, default value, selected parameter).  
Refer to section "External controls management (Set up 602)".

**606****U/D torch**

Allows the management of external parameter (U/D).

Value	Default	Callback function
off	-	off
I	X	Current
	-	program retrieval

**612****DgMig Torch Setting**

It allows the management of the channels of the digital torch.

**653****Wire speed**

It allow wire speed regulation (during wire loading phase).

Minimum	Maximum	Default
-0.50	22	3

Parameter setting in meters per minute (m/min)



böhler welding

**656****WU management** SERV

Allows to set the operating parameters of the WU.  
Refer to section "WU operation management (Set up 656)".

Value	Callback mode
off	No active
Syn	Synergic mode
1÷600	Manual mode
on	Active

**700****Welding voltage value compensation** SERV

With active parameter the generator applies the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) to the welding voltage. The correction is applied both to the set value and to the value read.

With parameter NOT active, the generator ignores the correction factor calculated by the calibration procedure of the resistive circuit (see Parameter 705) at the welding voltage.

Value	Callback function
on	active circuit resistance calibration Compensation ACTIVE
off	active circuit resistance calibration Compensation IGNORED

**701****Current calibration** SERV

Allows access to the specific system calibration procedure.

Refer to section "Current calibration (Set up 701)" of the generator repair manual.

**702****Voltage calibration** SERV

Allows access to the specific system calibration procedure.

Refer to section "Voltage calibration (Set up 702)" of the generator repair manual.

**704****Offset calibration** SERV

Allows access to the specific system calibration procedure.

Refer to section "Offset calibration (Set up 704)" of the generator repair manual.

**705****Circuit resistance calibration**

Allows the calibration of the system.

Refer to section "Circuit resistance calibration (set up 705)".

**748****Standard level Validation** SERV

Allows access to the specific system validation procedure.

Refer to the appropriate section of the specific manual.

**749****Accuracy level Validation** SERV

Allows access to the specific system validation procedure.

Refer to the appropriate section of the specific manual.

**751****Current reading**

Allow the real value of the welding current to be displayed.

**752****Voltage reading**

Allows the real value of the welding voltage to be displayed.

**753****Feeding phases numbers** SERV

Displays the number of phases of the power supply.

**754**

## Reading voltage supply



Displays the voltage value for each phase of the power supply.

**757**

## Wire speed reading



Motor 1 encoder reading.

**760**

## Current reading (motor 1)



Allow the real value of the current to be displayed (motor 1).

**800**

## Values filter (Guard limits)



Allow to filter current and voltage readings.

Minimum	Maximum	Default
1	5	1

**801**

## Guard limits



Allows the setting of the warning limits and of the guard limits.

Allows the welding process to be controlled by setting warning limits and guard limits for the main measurable parameters.

Allows accurate control of the various welding phases.

Refer to section "Guard limits (Set up 801)".

**802**

## Starting filter



Allows the control of the guard limits to be enabled with an adjustable delay in relation to the arc striking.

Makes it possible to filter the striking phase.

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

Parameter setting in seconds (s)

**803**

## Output filter



Makes it possible to disable the control of the guard limits in advance of the natural closing of the weld.

Makes it possible to filter the extinction phase

Refer to section "Guard limits (Set up 801)".

Minimum	Maximum	Default
0.0	10.0	2.0

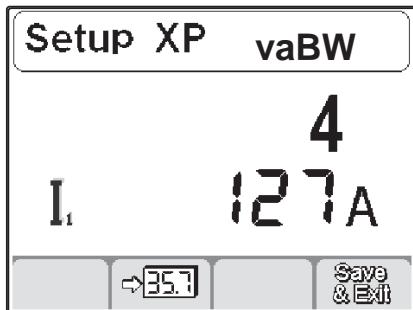
Parameter setting in seconds (s)

## 6.3 Specific procedures parameters

### 6.3.1 7 segment display personalisation

It allows you to constantly view the value of a parameter on the 7-segment display.

#### PROCEDURE



- ▶ Enter set-up by pressing the encoder button for at least 5 seconds.
- ▶ Select the required parameter by rotating the encoder.
- ▶ Store the selected parameter in the 7 segment display by pressing button. 
- ▶ Save and exit the current screen by pressing button. 

### 6.3.2 VRD Voltage Reduction Device (Set up 201)

Service parameter  SERV

Vrd is a generator Open Circuit voltage control device.

#### Generator setting

##### PROCEDURE

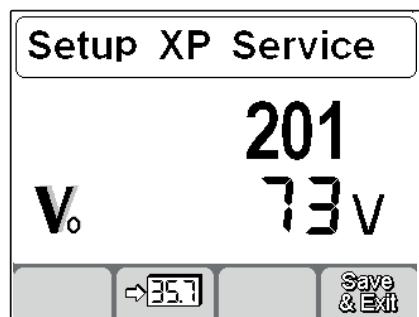
- ▶ Set the generator in mode: MMA



Keep the generator disconnected from any static loads.

#### Entry to set up

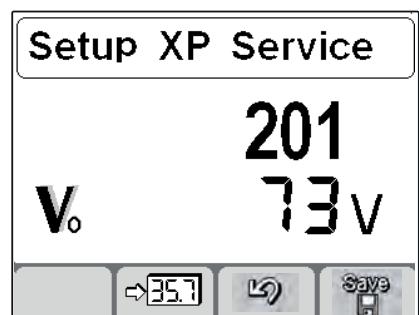
##### PROCEDURE



- ▶ Press and hold the encoder button for 5 seconds.
- ▶ The entry will be confirmed by the writing 0 on the display
- ▶ Turn the encoder up to the value: 500.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: Serv.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 358 (password).
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 201
- ▶ Confirm the operation by pressing the encoder key.

#### No-load voltage variation of the generator

##### PROCEDURE



- ▶ Press the encoder key to start the procedure.
- ▶ Change the value of the no-load voltage by turning the encoder until the desired value
- ▶ To save the change, press the button: 
- ▶ Cancel the operation by pressing button 
- ▶ To save the change and exit the set up, press the key: 

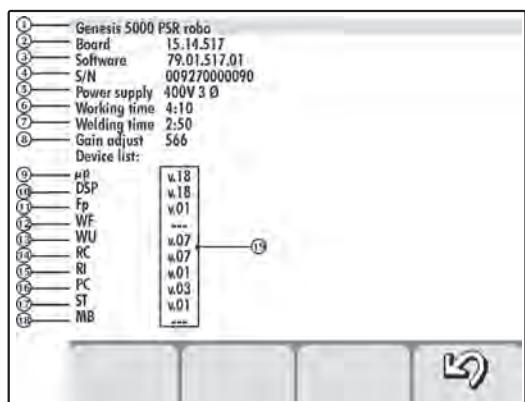
### 6.3.3 INFO screen (Set up 501)

Service parameter SERV

Allows the display of a set of information related to the system.

#### Parameter selection

##### PROCEDURE



1. System	type board
2. Board	Command board
3. Software	Software version (control board)
4. S/N	Serial number
5. Power supply	Power supply
6. Working time	System operation time
7. Welding time	System welding time
8. Gain Adjust	Calibration of the system
9. µP	Microprocessor
10. DSP	DSP (Digital signal processor)
11. FP	Control panel
12. WF	Wire feeder
13. WU	Cooling group
14. RC	Remote control
15. RI	Robot interface
16. PC	Robot interface
17. ST	TIG torch
18. MB	MIG/MAG torch
19. Software versions	

- ▶ Select the required parameter (501).
- ▶ Enter the "info" screen by pressing the encoder key.
- ▶ Enter set-up by pressing the encoder button for at least 5 seconds.



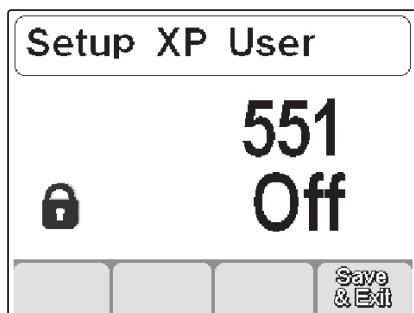
The lack of the software version next to a device (---) indicates the lack of communication with it and therefore correct operation is not guaranteed (refer to the "Diagnostics and solutions" section).

### 6.3.4 Lock/unlock (Set up 551)

Allows the locking of the panel controls and the insertion of a protection code

#### Parameter selection

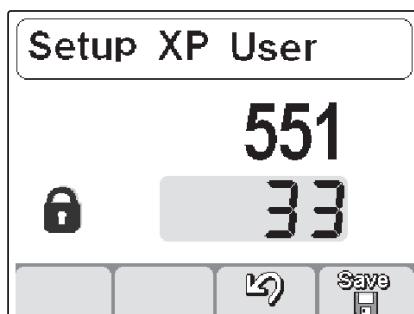
##### PROCEDURE



- ▶ Enter set-up by pressing the encoder button for at least 5 seconds.
- ▶ Select the required parameter (551).
- ▶ Activate the regulation of the selected parameter by pressing the encoder button.

#### Password setting

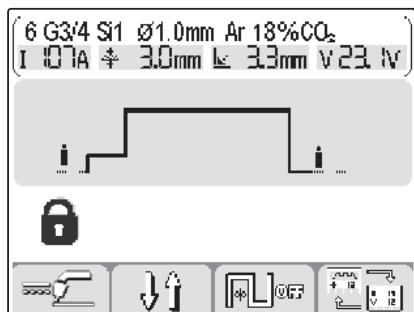
##### PROCEDURE



- ▶ Set a numerical code (password) by rotating the encoder.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Cancel the operation by pressing button .
- ▶ To save the change, press the button: .

#### Panel functions

##### PROCEDURE



The carrying out of any operation on a locked control panel causes a special screen to appear.

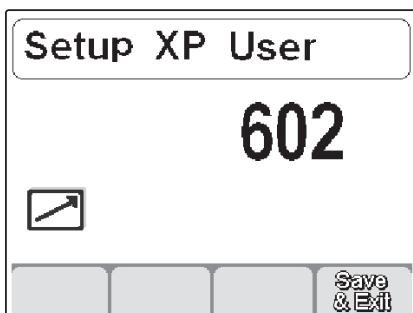
- ▶ Access the panel functionalities temporarily (5 minutes) by rotating the encoder and entering the correct password.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Unlock the control panel definitively by entering set-up (follow the instructions given above) and bring back parameter 551 to "off".
- ▶ Confirm the operation by pressing the encoder key.
- ▶ To save the change, press the button: .

### 6.3.5 External controls management (Set up 602)

Allows the management of external parameter 2 (minimum value, maximum value, default value, selected parameter).

#### Parameter selection

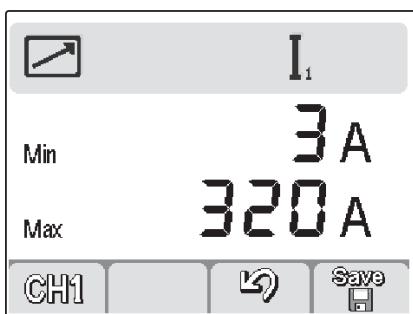
##### PROCEDURE



- ▶ Enter set-up by pressing the encoder button for at least 5 seconds.
- ▶ Select the required parameter (602).
- ▶ Enter the "External controls management" screen by pressing the encoder button.

#### External controls management

##### PROCEDURE



- ▶ Select the required RC remote control output (CH1, CH2, CH3, CH4) by pressing button **CH1**.
- ▶ Select the required parameter (Min-Max-parameter) by pressing the encoder button.
- ▶ Adjust the required parameter (Min-Max-parameter) by rotating the encoder.
- ▶ To save the change, press the button: **Save**.
- ▶ Cancel the operation by pressing button **Undo**.

### 6.3.6 WU operation management (Set up 656)

Service parameter  SERV

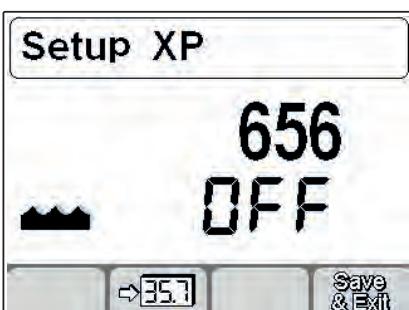
Allows to set the operating parameters of the WU.

#### Entry to set up

##### PROCEDURE



- ▶ Press and hold the encoder button for 5 seconds.
- ▶ The entry will be confirmed by the writing 0 on the display
- ▶ Turn the encoder up to the value: 500.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: Serv.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 358 (password).
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 656.
- ▶ Confirm the operation by pressing the encoder key.



Value	Callback mode
off	No active
Syn	Synergic mode
1÷600	Manual mode
on	Active

#### Synergic mode

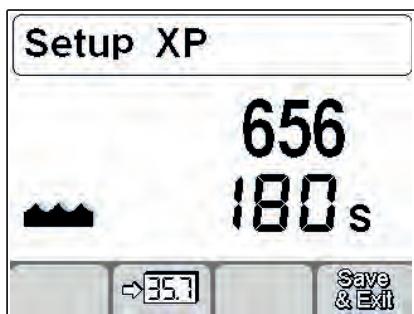
##### PROCEDURE



Value	Callback mode
off	No active
Syn	Synergic mode
1÷600	Manual mode
on	Active

## Manual mode

## PROCEDURE



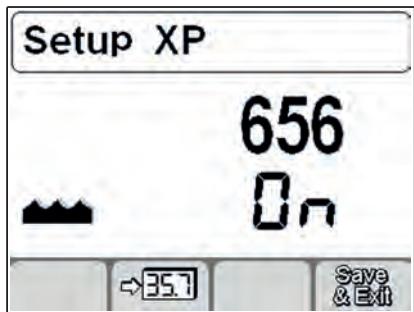
Mode	Operation
START WU	- Torch button - TH2O<5°C
STOP WU (ARC OFF)	- System inactivity-(TH2O<30°C+t>180s) - System inactivity-(TH2O>30°C+t>600s) - MMA welding process - Water pressure alarm
Regulation WU (AR CON)	- Power WU 100%-TH2O<5° - Power WU 80%-TH2O<5÷30° - Power WU 100%-TH2O>40°

TH2O = Coolant temperature

t = Time elapsed since last welding

## Activated mode

## PROCEDURE



Mode	Operation
START WU	- Torch button -TH2O<5°C
STOP WU (ARC OFF)	- System inactivity (TH2O<30°C+t>180s) - System inactivity (TH2O>30°C+t>600s) - MMA welding process - Water pressure alarm
Adjustment WU (AR CON)	- Power WU 100% TH2O<5° - Power WU 80% TH2O<5÷30° - Power WU 100% TH2O>40°

TH2O = Coolant temperature

t = Time elapsed since last welding

## 6.3.7 Offset calibration (Set up 704)

Service parameter  SERV



The calibration does not provide for output current, consequently the short circuit is to be understood as a simple reference of potential at "0".

### Generator setting

#### PROCEDURE

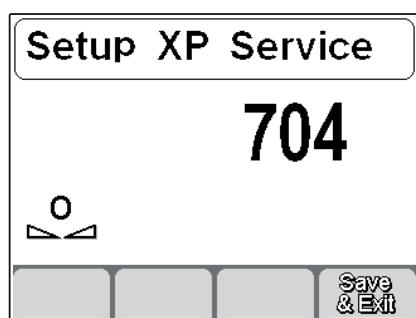
- ▶ Set the generator in mode: MIG/MAG  
↓ or:
- ▶ Set the generator in mode: TIG DC  
constant current, do not insert ramps or functions other than 2T.



Do not perform calibration with generator set in mma.

### Entry to set up

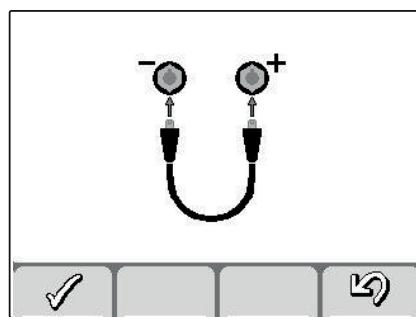
#### PROCEDURE



- ▶ Press and hold the encoder button for 5 seconds.
- ▶ The entry will be confirmed by the writing 0 on the display
- ▶ Turn the encoder up to the value: 500.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: Serv.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 358 (password).
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 704.
- ▶ Confirm the operation by pressing the encoder key.

### Offset calibration

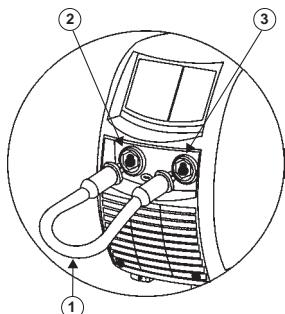
#### PROCEDURE



- ▶ As the figure suggests, to produce it is necessary to short-circuit the bushings.

## Short circuit connection

### PROCEDURE

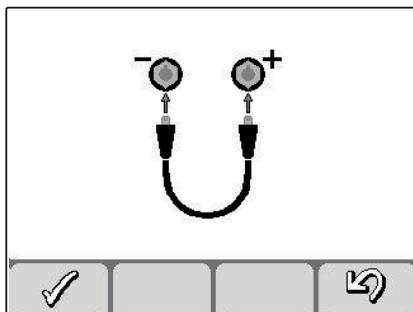


- ① Copper cable to perform short circuit
- ② Negative power socket (-)
- ③ Positive power socket

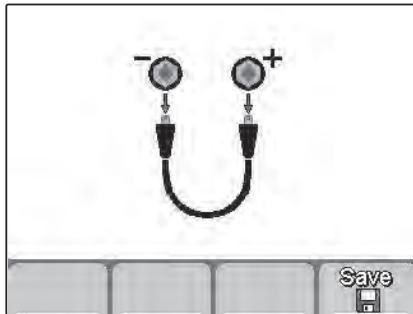
► Short the Negative socket  to the Positive socket  using a copper wire.

## Offset calibration

### PROCEDURE



- Confirm the operation by pressing button .
- Cancel the operation by pressing button .



- Wait for the schematic to change indicating that the short circuit can be removed.
- Remove the short circuit.
- To save the change, press the button: .
- Once the operation is completed, the system will reposition the display to the parameter entry screen.
- To save the change and exit the set up, press the key: .

### 6.3.8 Voltage calibration (Set up 702)

Service parameter SERV

#### Generator setting

##### PROCEDURE

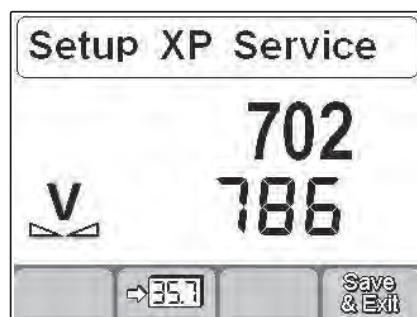
- ▶ Set the generator in mode: TIG DC
- ▶ constant current, do not insert ramps or functions other than 2T.
- ▶ Set the digital multimeter to DC voltage measurement mode.



Keep the generator disconnected from any static loads.

#### Entry to set up

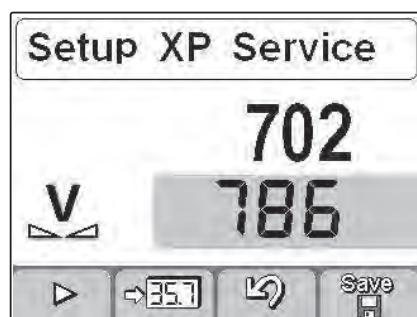
##### PROCEDURE



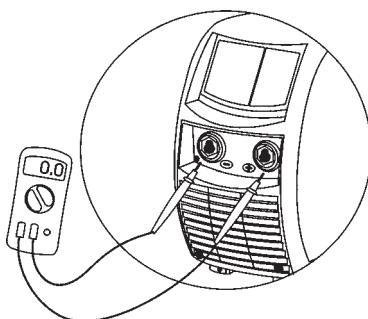
- ▶ Press and hold the encoder button for 5 seconds.
- ▶ The entry will be confirmed by the writing 0 on the display
- ▶ Turn the encoder up to the value: 500.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: Serv.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 358 (password).
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: 702.
- ▶ Confirm the operation by pressing the encoder key.

#### Offset calibration

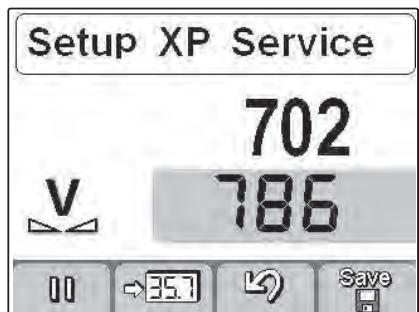
##### PROCEDURE



- ▶ Press the button to start the procedure.



- ▶ Measure the no-load voltage of the generator with the multimeter by positioning the test leads between the socket and the socket.
- ▶ Use the encoder knob to change the value of the parameter shown on the display until the voltage measured on the multimeter is set at 35Vdc.



- ▶ Press the button  to finish the procedure.
- ▶ To save the change, press the button: 
- ▶ Cancel the operation by pressing button .
- ▶ Once the operation is completed, the system will reposition the display to the parameter entry screen.
- ▶ To save the change and exit the set up, press the key: 

 A pure number not an electrical quantity is displayed on the generator display.

### 6.3.9 Current calibration (Set up 701)

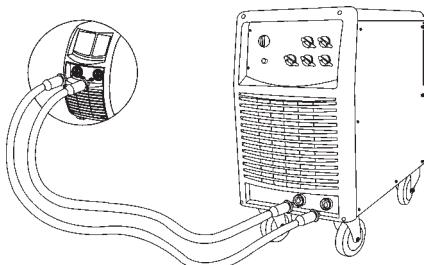
Service parameter  SERV

#### Generator setting



Calibration provides for output current so take precautions and connect everything you need to weld at the set current.

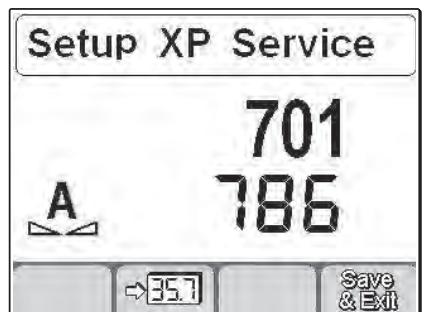
#### PROCEDURE



- ▶ Use a suitable calibrated instrument for reading the output current.
- ▶ Set the generator in mode: **TIG DC**
- ▶ constant current, do not insert ramps or functions other than 2T.  
 ↓ alternatively, if available:
  - ▶ Use a static load of appropriate size.
  - ▶ Set the generator in mode: **MMA**
- ▶ Prepare the static load for an output current of: **200A**.

#### Entry to set up

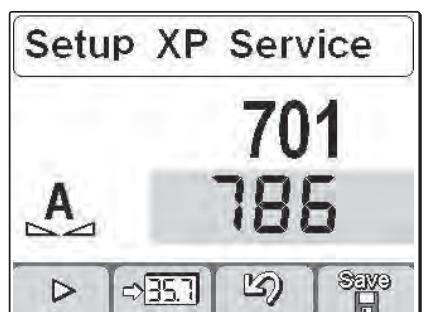
#### PROCEDURE



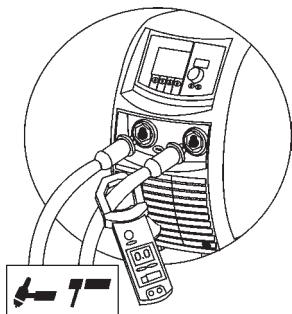
- ▶ Press and hold the encoder button for 5 seconds.
- ▶ The entry will be confirmed by the writing 0 on the display
- ▶ Turn the encoder up to the value: **500**.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: **Serv**.
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: **358** (password).
- ▶ Confirm the operation by pressing the encoder key.
- ▶ Turn the encoder up to the value: **701**
- ▶ Confirm the operation by pressing the encoder key.

#### Offset calibration

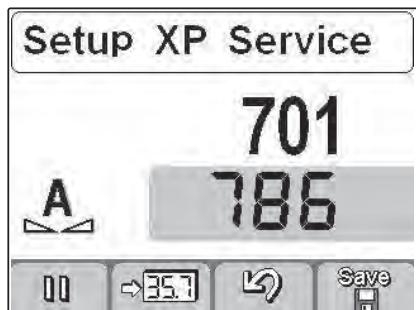
#### PROCEDURE



- ▶ Press the button  to start the procedure.
- ▶ The generator will set itself to deliver a current of: **200A**.



- ▶ Allow the generator to deliver current by pressing the torch trigger or by activating the static load.
- ▶ Rotate the encoder and then modify the factory value found until reaching the real 200A read by the appropriately calibrated amperometric clamp.



- ▶ Press the button  to finish the procedure.
- ▶ To save the change, press the button:  
- ▶ Cancel the operation by pressing button .
- ▶ Once the operation is completed, the system will reposition the display to the parameter entry screen.
- ▶ To save the change and exit the set up, press the key: .

## 6.3.10 Circuit resistance calibration (set up 705)

Allows to calibrate the generator on the current welding circuit resistance.

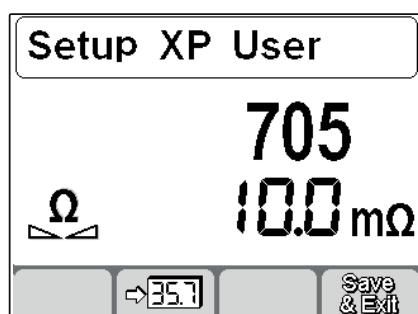
### Generator setting

#### PROCEDURE

- ▶ Set the generator in mode: MIG/MAG
- ▶ Connect the generator to the welding circuit (bench or piece).
- ▶ Remove the cap to put the nozzle holder tip of the exposed torch.

### Parameter selection

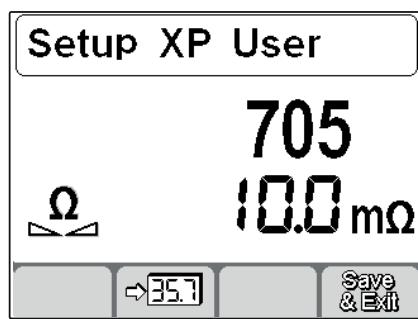
#### PROCEDURE



- ▶ Enter set-up by pressing the encoder button for at least 5 seconds.
- ▶ Select the required parameter (705).
- ▶ Activate the regulation of the selected parameter by pressing the encoder button.

### Calibration

#### PROCEDURE



- ▶ Press the button  to start the procedure.
- ▶ Touch the piece to be welded with the tip of the torch.
- ▶ Maintain contact for at least one second.
- ▶ The value shown on the display will update after calibration.
- ▶ Confirm the operation by pressing button .
- ▶ Cancel the operation by pressing button .
- ▶ To save the change and exit the set up, press the key: .

### 6.3.11 Guard limits (Set up 801)

Allows the welding process to be controlled by setting warning limits and guard limits for the main measurable parameters



#### Warning limits



#### Guard limits



#### Welding current



#### Welding voltage



#### Gas flow reading



#### Robot movement speed



#### Current reading (motor 1)



#### Current reading (motor 2)



#### Coolant flow reading



#### Wire speed reading



#### Coolant temperature reading

---

#### Parameter selection

#### PROCEDURE

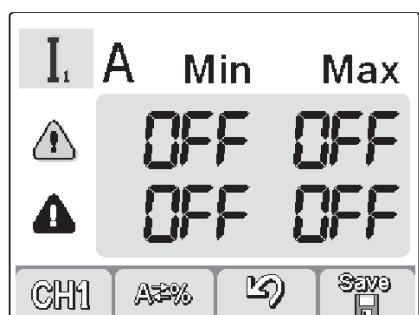
---



- ▶ Enter set-up by pressing the encoder button for at least 5 seconds.
- ▶ Select the required parameter (801).
- ▶ Enter the "Guard limits" screen by pressing the encoder button

## Parameter selection

## PROCEDURE

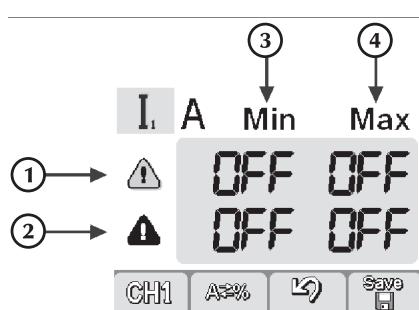


- ▶ Select the required parameter by pressing button **CH1**.
- ▶ Select the method of setting the guard limits by pressing button **A±%**.

Mode selectionAbsolute valuePercentage value

## Guard limits setting

## PROCEDURE



- 1** Warning limits line
- 2** Alarm limits line
- 3** Minimum levels column
- 4** Maximum levels column

- ▶ Select the required box by pressing the encoder key  
(the selected box is displayed with reverse contrast).
- ▶ Adjust the level of the selected limit by rotating the encoder.
- ▶ To save the change, press the button: **Save**.



Passing one of the warning limits causes a visual signal to appear on the control panel.



Passing one of the alarm limits causes a visual signal to appear on the control panel and the immediate blockage of the welding operations.



It is possible to set start and end of welding filters to prevent error signals during the striking and extinction of the arc (see section "Set up" - Parameters 802-803-804).

## 7. ALARMS



### E01 Temperature alarm

**Alarm directly connected to the NTC on the primary side**

**The alarm can be triggered by an over temperature generated by a long working time at high currents**

- » Check that the fans are working properly
- » Wait the generator cooling down

**The alarm can be triggered when the generator is just on (generator status "cold")**

- » The NTC may be defective or a connection cable may be disconnected
- » Refer to section "Checking primary thermal probes"



### E02 Temperature alarm

**Alarm directly connected to thermal T1 on the primary side**

**The alarm can be triggered by an over temperature generated by a long working time at high currents**

- » Check that the fans are working properly
- » Wait the generator cooling down

**The alarm can be triggered when the generator is just on (generator status "cold")**

- » The TC1 may be defective or a connection cable may be disconnected
- » Refer to section "Checking primary thermal probes"



### E07 Wire feed motor supply alarm

**Possible anomaly in the engine fuel system**

- » Perform the wire feeder motor board checks as described in the specific section of the repair manual
- » Perform the generator power supply board checks as described in the specific section of the repair manual



### E08 Blocked motor alarm

**A motor lock or no encoder signal has occurred**

- » Check the correct encoder insertion on the motor shaft
- » Check the correct cables insertion
- » Check the correct roller block insertion, check there are no obstacles to the motor movement without load
- » Refer to the maintenance section of the wire feeder repair manual



### E10 Power module alarm (inverter)

**Overcurrent on primary inverter stage may occurred**

- » Perform the checks on the inverter unit as described in the specific section with particular attention to the checks on the primary
- » Perform the checks on the diodes of the output rectifier stage

## → | ← E13 Communication alarm

### **CAN BUS communication error**

- » Perform a generator reset
- » Perform a system software update

### **Lack of power supply on digital card**

- » Check the power supply circuits of the generator digital control board
- » Perform the checks indicated in the manual described in the specific section

### **Faulty device connected to the CAN BUS**

- » Disconnect all the devices that communicate with CAN BUS from the generator (WF, WU, RC, torch, etc...)
- » If the error persists, try replacing the front panel or digital control board
- » If the error disappears when the devices are disconnected, connect the previously disconnected devices in sequence and check which one causes the error
- » Check the devices found to be faulty by consulting the respective repair manual

## ? E19 System configuration alarm

### **Incompatible software versions**

- » Check the software versions of the system components. If they are incompatible, perform a software update by aligning the versions

### **Incompatible hardware versions**

- » Check the versions of the boards and components that make up the system. If they are incompatible, replace the devices with those of the correct version

### **Hardware failure**

- » Check that the Bus board connectors are correctly inserted
- » Check the integrity of the BUS RACK board
- » Perform checks on the analog control board
- » Perform the digital control board checks
- » For the checks to perform, refer to the specific sections of the manual

## █ E20 Memory fault alarm

### **Digital board EEPROM memory fault may occurred**

- » Restart the generator
- » Perform a generator reset
- » If the problem persists, replace the generator digital control board

## 📁 E21 Data loss alarm

### **Corrupt data stored on the EEPROM memory of the digital control board**

- » Perform a generator reset
- » Perform the digital control board checks and replace it if necessary

## ⚡ E40 System power supply alarm

### **The system has detected an incorrect supply voltage value**

- » Restart the system
- » Perform on the phases of the general power supply a check

### **Power supply circuit hardware failure**

- » Check the integrity of the plug and the power cable
- » Check the integrity of the power switch as illustrated in the specific section
- » Check the integrity of the input filter board as illustrated in the specific section
- » Perform the analog control board checks as illustrated in the relevant section



## E43

### Coolant shortage alarm

#### **Lack of coolant on the WU group**

- » refill with specific coolant the WU tank in an adequate quantity

#### **Insufficient pressure on the coolant circuit**

- » Exclude the torch and the assembly cables from the cooling circuit by directly connecting the WU water input and output with a by-pass
- » Check that the pump is working and that the liquid circulates correctly in the circuit
- » Access the menu and check that the value of parameter 764 is different from 0 and less than 200
- » Check for obstructions in the torch or cable assembly water circuits

#### **Cooling circuit blocked**

- » Wash the tank and the complete circuit
- » Fill the tank with suitable coolant

#### **Faulty pressure switch**

- » Exclude the torch and the assembly cables from the cooling circuit by directly connecting the WU water input and output with a by-pass
- » Check that the pump is working and that the liquid circulates correctly in the circuit
- » Access the menu and check that the value of parameter 764 is different from 0 and less than 200
- » Replace the WU front panel board

#### **Faulty pump**

- » Check the operation of the pump as described in the specific repair manual
- » Verify that the power supplies from the generator arrive correctly to the WU

## 8. TROUBLESHOOTING

The repair or replacement of any parts in the system by unauthorised personnel will invalidate the product warranty.  
The systems must not undergo any kind of modification.



The repair or replacement of any parts in the system must be carried out only by qualified personnel.

The manufacturer disclaims any responsibility if the user fails to follow these instructions.  
For any doubts and/or problems do not hesitate to contact your nearest customer service centre.

### **The system fails to come on (green LED off)**

**Cause**

- » No mains voltage at the socket.

**Solution**

- » Check and repair the electrical system as needed.
- » Use qualified personnel only.

- 
- » Faulty plug or cable.

- » Replace the faulty component.

» Contact the nearest service centre to have the system repaired.

- 
- » Line fuse blown.

- » Replace the faulty component.

- 
- » Faulty on/off switch.

- » Replace the faulty component.

» Contact the nearest service centre to have the system repaired.

- 
- » Faulty electronics.

» Contact the nearest service centre to have the system repaired.

### **No output power (the system does not weld)**

**Cause**

- » Faulty torch trigger button.

**Solution**

- » Replace the faulty component.
- » Contact the nearest service centre to have the system repaired.

- 
- » The system has overheated (temperature alarm - yellow LED on).

- » Wait for the system to cool down without switching it off.

- 
- » Side cover open or faulty door switch.

- » In order to ensure safe operation the side cover must be closed while welding.

- » Replace the faulty component.

» Contact the nearest service centre to have the system repaired.

- 
- » Incorrect earth connection.

- » Earth the system correctly.

» Read the paragraph "Installation".

- 
- » Mains voltage out of range (yellow LED on).

- » Bring the mains voltage within the power source admissible range.

- » Connect the system correctly.

» Read the paragraph "Connections".

- 
- » Faulty electronics.

» Contact the nearest service centre to have the system repaired.

## Incorrect output power

Cause	Solution
» Incorrect selection in the welding process or faulty selector switch.	» Select the welding process correctly. » Replace the faulty component. » Contact the nearest service centre to have the system repaired. » Reset the system and the welding parameters.
» System parameters or functions set incorrectly.	
» Faulty potentiometer/encoder for the adjustment of the welding current.	» Replace the faulty component. » Contact the nearest service centre to have the system repaired.
» Mains voltage out of range.	» Connect the system correctly. » Read the paragraph "Connections".
» Input mains phase missing.	» Connect the system correctly. » Read the paragraph "Connections".
» Faulty electronics.	» Contact the nearest service centre to have the system repaired.

## Wire feeder fails

Cause	Solution
» Faulty torch trigger button.	» Replace the faulty component. » Contact the nearest service centre to have the system repaired.
» Incorrect or worn rollers.	» Replace the rollers.
» Faulty wire feeder.	» Replace the faulty component. » Contact the nearest service centre to have the system repaired.
» Damaged torch liner.	» Replace the faulty component. » Contact the nearest service centre to have the system repaired.
» No power supply to the wire feeder.	» Check the connection to the power source. » Read the paragraph "Connections". » Contact the nearest service centre to have the system repaired.
» Tangled wire on the spool.	» Untangle the wire or replace the wire spool.
» Melted torch nozzle (wire stuck)	» Replace the faulty component.

## Irregular wire feeding

### Cause

» Faulty torch trigger button.

### Solution

» Replace the faulty component.  
» Contact the nearest service centre to have the system repaired.

» Incorrect or worn rollers.

» Replace the rollers.

» Faulty wire feeder.

» Replace the faulty component.

» Contact the nearest service centre to have the system repaired.

» Damaged torch liner.

» Replace the faulty component.

» Contact the nearest service centre to have the system repaired.

» Incorrect spindle clutch or misadjusted rolls locking devices.

» Release the clutch.  
» Increase the rolls locking pressure.

## Arc instability

### Cause

» Insufficient shielding gas.

### Solution

» Adjust the air flow.  
» Check that the diffuser and the gas nozzle of the torch are in good condition.

» Humidity in the welding gas.

» Always use quality materials and products.

» Ensure the gas supply system is always in perfect condition.

» Incorrect welding parameters.

» Check the welding system carefully.

» Contact the nearest service centre to have the system repaired.

## Excessive spatter

### Cause

» Incorrect arc length.

### Solution

» Decrease the distance between the electrode and the piece.  
» Decrease the welding voltage.

» Incorrect welding parameters.

» Decrease the welding current.

» Insufficient shielding gas.

» Adjust the air flow.

» Check that the diffuser and the gas nozzle of the torch are in good condition.

» Incorrect arc regulation.

» Increase the equivalent circuit inductive value setting.

» Use a higher setting inductive connection.

» Incorrect welding mode.

» Decrease the torch angle.

## Insufficient penetration

Cause	Solution
» Incorrect welding mode.	» Decrease the travel speed while welding.
» Incorrect welding parameters.	» Increase the welding current.
» Incorrect electrode.	» Use a smaller diameter electrode.
» Incorrect edge preparation.	» Increase the chamfering.
» Incorrect earth connection.	» Earth the system correctly. » Read the paragraph "Installation".
» Pieces to be welded too big.	» Increase the welding current.

## Slag inclusions

Cause	Solution
» Poor cleanliness.	» Clean the pieces accurately before welding.
» Electrode diameter too big.	» Use a smaller diameter electrode.
» Incorrect edge preparation.	» Increase the chamfering.
» Incorrect welding mode.	» Decrease the distance between the electrode and the piece. » Move regularly during all the welding operations.

## Tungsten inclusions

Cause	Solution
» Incorrect welding parameters.	» Decrease the welding current. » Use a bigger diameter electrode.
» Incorrect electrode.	» Always use quality materials and products. » Sharpen the electrode carefully.
» Incorrect welding mode.	» Avoid contact between the electrode and the weld pool.

## Blowholes

Cause	Solution
» Insufficient shielding gas.	» Adjust the air flow. » Check that the diffuser and the gas nozzle of the torch are in good condition.

## Sticking

Cause	Solution
» Incorrect arc length.	» Increase the distance between the electrode and the piece. » Increase the welding voltage.
» Incorrect welding parameters.	» Increase the welding current. » Increase the welding voltage.
» Incorrect welding mode.	» Angle the torch more.
» Pieces to be welded too big.	» Increase the welding current.
» Incorrect arc regulation.	» Increase the equivalent circuit inductive value setting. » Use a higher setting inductive connection.

## Undercuts

Cause	Solution
» Incorrect welding parameters.	» Decrease the welding current. » Use a smaller diameter electrode.
» Incorrect arc length.	» Decrease the distance between the electrode and the piece. » Decrease the welding voltage.
» Incorrect welding mode.	» Decrease the side oscillation speed while filling. » Decrease the travel speed while welding.
» Insufficient shielding gas.	» Use gases suitable for the materials to be welded.

## Oxidations

Cause	Solution
» Insufficient shielding gas.	» Adjust the air flow. » Check that the diffuser and the gas nozzle of the torch are in good condition.

## Porosity

Cause	Solution
» Grease, varnish, rust or dirt on the workpieces to be welded.	» Clean the pieces accurately before welding.
» Grease, varnish, rust or dirt on the filler material.	» Always use quality materials and products. » Keep the filler metal always in perfect condition.
» Humidity in the filler metal.	» Always use quality materials and products. » Keep the filler metal always in perfect condition.
» Incorrect arc length.	» Decrease the distance between the electrode and the piece. » Decrease the welding voltage.
» Humidity in the welding gas.	» Always use quality materials and products. » Ensure the gas supply system is always in perfect condition.
» Insufficient shielding gas.	» Adjust the air flow. » Check that the diffuser and the gas nozzle of the torch are in good condition.
» The weld pool solidifies too quickly.	» Decrease the travel speed while welding. » Pre-heat the workpieces to be welded. » Increase the welding current.

## Hot cracks

Cause	Solution
» Incorrect welding parameters.	» Decrease the welding current. » Use a smaller diameter electrode.
» Grease, varnish, rust or dirt on the workpieces to be welded.	» Clean the pieces accurately before welding.
» Grease, varnish, rust or dirt on the filler material.	» Always use quality materials and products. » Keep the filler metal always in perfect condition.
» Incorrect welding mode.	» Carry out the correct sequence of operations for the type of joint to be welded.

» Pieces to be welded have different characteristics.

» Carry out buttering before welding.

### Cold cracks

#### Cause

» Humidity in the filler metal.

#### Solution

» Always use quality materials and products.

» Keep the filler metal always in perfect condition.

» Particular geometry of the joint to be welded.

» Pre-heat the workpieces to be welded.

» Carry out post-heating.

» Carry out the correct sequence of operations for the type of joint to be welded.

### Excessive dross

#### Cause

» Incorrect welding mode.

#### Solution

» Increase the travel speed while welding.

» Worn nozzle and/or electrode.

» Replace the faulty component.

## 9. TECHNICAL SPECIFICATIONS

### 9.1 Electrical characteristics

	URANOS 2700 MTE 3x230	URANOS 2700 MTE 3x400	U.M.
Power supply voltage U1 (50/60 Hz)	3x230 ( $\pm 15\%$ )	3x400 ( $\pm 15\%$ )	Vac
Zmax (@PCC)*	39	95	m $\Omega$
Slow blow line fuse (MMA)	20	16	A
Slow blow line fuse (TIG)	16	10	A
Slow blow line fuse (MIG/MAG)	20	16	A
Communication bus	DIGITAL	DIGITAL	
Maximum input power (MMA)	10.1	10.0	kVA
Maximum input power (MMA)	9.7	9.5	kW
Maximum input power (TIG)	7.0	7.1	kVA
Maximum input power (TIG)	6.7	6.6	kW
Maximum input power (MIG/MAG)	9.1	9.1	kVA
Maximum input power (MIG/MAG)	8.7	8.5	kW
Power factor (PF) (MMA)	0.96	0.94	
Power factor (PF) (TIG)	0.96	0.93	
Power factor (PF) (MIG/MAG)	0.96	0.94	
Efficiency ( $\mu$ )	86	88	%
Cos $\phi$	0.99	0.99	
Max. input current I1max (MMA)	25.5	14.0	A
Max. input current I1max (TIG)	17.6	10.3	A
Max. input current I1max (MIG/MAG)	22.8	13.1	A
Effective current I1eff (MMA)	13.7	8.9	A
Effective current I1eff (TIG)	11.1	7.3	A
Effective current I1eff (MIG/MAG)	13.5	8.8	A
Adjustment range	3-270	3-270	A
Open circuit voltage Uo (MMA)	65	65	Vdc
Open circuit voltage Uo (TIG)	92	92	Vdc
Open circuit voltage Uo (MIG/MAG)	92	92	Vdc
Peak voltage Up (TIG)	10.1	10.1	kV



\* This equipment complies with EN/IEC 61000-3-12 if the maximum permissible mains impedance at the interface point to the public grid (point of common coupling, PCC) is smaller than or equal to the Zmax stated value. If it is connected to a public low voltage 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 may be connected.

If it is connected to a public low voltage 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 may be connected.



\* This equipment complies with EN/IEC 61000-3-11.

## 9.2 Duty factor

	<b>URANOS 2700 MTE</b> 3x230	<b>URANOS 2700 MTE</b> 3x400	U.M.
Duty factor MMA (40°C)			
(X=30%)	270	-	A
(X=40%)	-	270	A
(X=60%)	230	250	A
(X=100%)	210	230	A
Duty factor MMA (25°C)			
(X=70%)	270	-	A
(X=100%)	240	270	A
Duty factor TIG (40°C)			
(X=40%)	270	-	A
(X=50%)	-	270	A
(X=60%)	250	260	A
(X=100%)	230	240	A
Duty factor TIG (25°C)			
(X=80%)	270	270	A
(X=100%)	250	260	A
Duty factor MIG/MAG (40°C)			
(X=35%)	270	-	A
(X=45%)	-	270	A
(X=60%)	230	250	A
(X=100%)	210	230	A
Duty factor MIG/MAG (25°C)			
(X=70%)	270	-	A
(X=100%)	240	270	A

## 9.3 Physical characteristics

	<b>URANOS 2700 MTE</b> 3x230	<b>URANOS 2700 MTE</b> 3x400	U.M.
IP Protection rating	IP23S	IP23S	
Insulation class	H	H	
Dimensions	620x270x460	620x270x460	mm
Weight	25.0	25.0	Kg
Manufacturing Standards	EN IEC 60974-1 / A1:2019 EN IEC 60974-3: 2019 EN IEC 60974-5: 2019 EN 60974-10 / A1:2015	EN IEC 60974-1 / A1:2019 EN IEC 60974-3: 2019 EN IEC 60974-5: 2019 EN 60974-10 / A1:2015	
Power supply cable section	4x2.5	4x2.5	mm <sup>2</sup>
Length of power supply cable	5	5	m

## 10. Targa dati, Rating plate, Leistungsschilder

	SELCO S.R.L. Via Palladio, 19 - ONARA (PADOVA) - ITALY			
Type URANOS 2700 MTE	N°			
	EN 60974-1 EN 60974-3 EN 60974-5 EN 60974-10 Class A			
		3A/20V - 270A (270A)/30.8V (30.8V)		
	X <sub>(40°C)</sub>	40% (30%)	60%	100%
	U <sub>0</sub>	I <sub>2</sub> 270A (270A)	250A (230A)	230A (210A)
65		U <sub>2</sub> 30.8V (30.8V)	30.0V (29.2V)	29.2V (28.4V)
	Up 10.1 kV			
	X <sub>(40°C)</sub>	50% (40%)	60%	100%
	U <sub>0</sub>	I <sub>2</sub> 270A (270A)	260A (250A)	240A (230A)
92		U <sub>2</sub> 20.8V (20.8V)	20.4V (20.0V)	19.6V (19.2V)
	3A/14V - 270A (270A)/27.5V (27.5V)			
	X <sub>(40°C)</sub>	45% (35%)	60%	100%
	U <sub>0</sub>	I <sub>2</sub> 270A (270A)	250A (230A)	230A (210A)
92		U <sub>2</sub> 27.5V (27.5V)	26.5V (25.5V)	25.5V (24.5V)
	U <sub>1</sub> 50/60 Hz	V	I <sub>1max</sub> 14 (24.9)	A
	400 (230)			A 8.9 (13.7)
IP 23 S				



Prodotto europeo  
Produit d'Europe

European product  
Producto Europeo

Erzeugt in Europa



## ITALIANO

Non collocare l'apparecchiatura elettrica tra i normali rifiuti!

In osservanza alla Direttiva Europea 2002/96/EC sui Rifiuti di Apparecchiature Elettriche ed Elettroniche e alla sua implementazione in accordo con le leggi nazionali, le apparecchiature elettriche che hanno raggiunto la fine del ciclo di vita devono essere raccolte separatamente e inviate ad un centro di recupero e smaltimento. Il proprietario dell'apparecchiatura dovrà identificare i centri di raccolta autorizzati informandosi presso le Amministrazioni Locali.

L'applicazione della Direttiva Europea permetterà di migliorare l'ambiente e la salute umana.

## ENGLISH

Do not dispose of electrical equipment together with normal waste!

In observance of European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from our local representative.

By applying this European Directive you will improve the environment and human health!

## DEUTSCH

Das Elektrogerät nicht zum normalen Müll geben!

Unter Beachtung der Europäischen Richtlinie 2002/96/EC über Elektro- und Elektronikaltgeräte und mit Bezug auf ihre Anwendung in Vereinbarung mit den nationalen Gesetzen müssen Elektrogeräte, die am Ende ihrer Lebensdauer angelangt sind, gesondert gesammelt und einer Recycling- und Entsorgungsstelle übergeben werden. Der Inhaber des Geräts muss sich bei den örtlichen Verwaltungen über die autorisierten Sammelstellen informieren.

Die Anwendung der Europäischen Richtlinie wird eine Verbesserung der Umwelt und der Gesundheit der Menschen ermöglichen.

## 11. Significato targa dati, Meaning rating plate, Bedeutung der Angaben auf dem Leistungsschild

<b>1</b>	<b>2</b>
<b>3</b>	<b>4</b>
<b>5</b>	<b>6</b>
<b>7</b>	<b>9</b>
	11
<b>8</b>	<b>10</b>
12	15
13	15A
14	15B
	16
	17
<b>7</b>	<b>9</b>
	11
<b>8</b>	<b>10</b>
12	15
13	15A
14	15B
	16
	17
<b>7</b>	<b>9</b>
	11
<b>8</b>	<b>10</b>
12	15
13	15A
14	15B
	16
	17
<b>18</b>	<b>19</b>
	20
	21
<b>22</b>	

### ITALIANO

- 1 Marchio di fabbricazione
- 2 Nome ed indirizzo del costruttore
- 3 Modello dell'apparecchiatura
- 4 N° di serie
- 5 Simbolo del tipo di saldatrice
- 6 Riferimento alle norme di costruzione
- 7 Simbolo del processo di saldatura
- 8 Simbolo per le saldatrici idonee a lavorare in un ambiente a rischio accresciuto di scossa elettrica
- 9 Simbolo della corrente di saldatura
- 10 Tensione assegnata a vuoto
- 11 Gamma della corrente assegnata di saldatura massima e minima e della corrispondente tensione convenzionale di carico
- 12 Simbolo del ciclo di intermittenza
- 13 Simbolo della corrente assegnata di saldatura
- 14 Simbolo della tensione assegnata di saldatura
- 15 Valori del ciclo di intermittenza
- 16 Valori del ciclo di intermittenza
- 17 Valori del ciclo di intermittenza
- 15A Valori della corrente assegnata di saldatura
- 16A Valori della corrente assegnata di saldatura
- 17A Valori della corrente assegnata di saldatura
- 15B Valori della tensione convenzionale di carico
- 16B Valori della tensione convenzionale di carico
- 17B Valori della tensione convenzionale di carico
- 18 Simbolo per l'alimentazione
- 19 Tensione assegnata d'alimentazione
- 20 Massima corrente assegnata d'alimentazione
- 21 Massima corrente efficace d'alimentazione
- 22 Grado di protezione

### DEUTSCH

- 1 Marke
- 2 Herstellername und -adresse
- 3 Gerätmodell
- 4 Seriennr.
- 5 Symbol des Schweißmaschinentyps
- 6 Bezugnahme auf die Konstruktionsnormen
- 7 Symbol des Schweißprozesses
- 8 Symbol für die Schweißmaschinen, die sich zum Betrieb in Räumen mit großer Stromschlaggefahr eignen
- 9 Symbol des Schweißstroms
- 10 Zugeteilte Leerlaufspannung
- 11 Bereich des zugeteilten Höchst- und Mindestschweißstroms und der entsprechenden Ladespannung
- 12 Symbol für den intermittierenden Zyklus
- 13 Symbol des zugeteilten Schweißstroms
- 14 Symbol der zugeteilten Schweißspannung
- 15 Werte des intermittierenden Zyklus
- 16 Werte des intermittierenden Zyklus
- 17 Werte des intermittierenden Zyklus
- 15A Werte des zugeteilten Schweißstroms
- 16A Werte des zugeteilten Schweißstroms
- 17A Werte des zugeteilten Schweißstroms
- 15B Werte der üblichen Ladespannung
- 16B Werte der üblichen Ladespannung
- 17B Werte der üblichen Ladespannung
- 18 Symbol der Versorgung
- 19 Zugeteilte Versorgungsspannung
- 20 Zugeteilter, maximaler Versorgungsstrom
- 21 Maximaler, wirksamer Versorgungsstrom
- 22 Schutzart

### FRANÇAIS

- 1 Marque de fabrique
- 2 Nom et adresse du constructeur
- 3 Modèle de l'appareil
- 4 N° de série
- 5 Symbole du type de soudeuse
- 6 Référence aux normes de construction
- 7 Symbole du processus de soudure
- 8 Symbole pour les soudeuses en mesure de travailler dans un local où il y a un gros risque de secousse électrique
- 9 Symbole du courant de soudure
- 10 Tension attribuée à vide
- 11 Gamme du courant de soudure maximum et minimum attribué et de la tension conventionnelle de charge correspondante
- 12 Symbole du cycle d'intermittence
- 13 Symbole du courant attribué de soudure
- 14 Symbole de la tension attribuée de soudure
- 15 Valeurs du cycle d'intermittence
- 16 Valeurs du cycle d'intermittence
- 17 Valeurs du cycle d'intermittence
- 15A Valeurs du courant attribué de soudure
- 16A Valeurs du courant attribué de soudure
- 17A Valeurs du courant attribué de soudure
- 15B Valeurs de la tension conventionnelle de charge
- 16B Valeurs de la tension conventionnelle de charge
- 17B Valeurs de la tension conventionnelle de charge
- 18 Symbole pour l'alimentation
- 19 Tension attribuée d'alimentation
- 20 Courant maximum attribué d'alimentation
- 21 Courant maximum efficace d'alimentation
- 22 Degré de protection

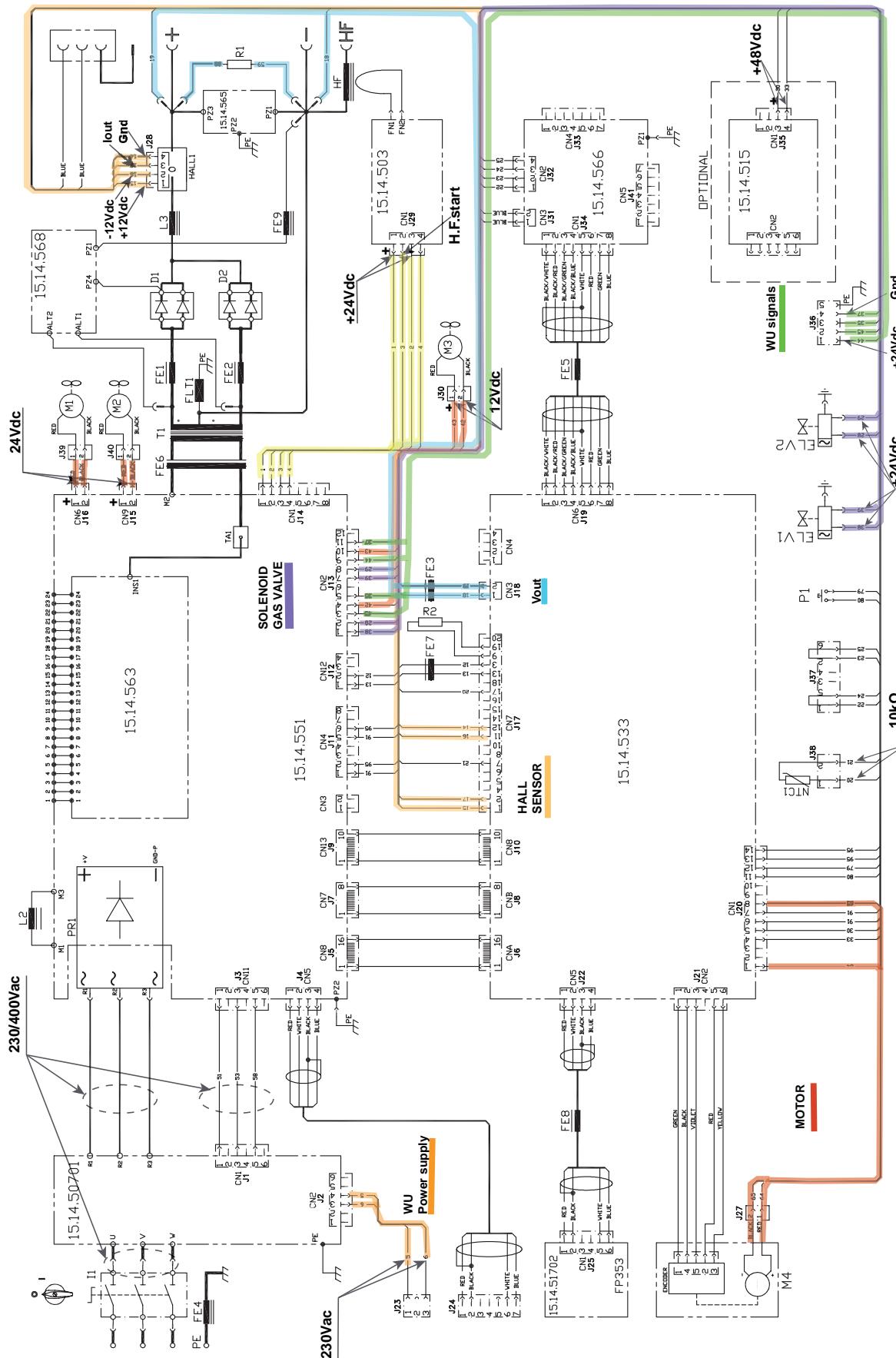
### ENGLISH

- 1 Trademark
- 2 Name and address of manufacturer
- 3 Machine model
- 4 Serial no.
- 5 Welding unit symbol
- 6 Reference to construction standards
- 7 Welding process symbol
- 8 Symbol for equipments suitable for operation in environments with increased electrical shock risk
- 9 Welding current symbol
- 10 Assigned loadless voltage
- 11 Max-Min current range and corresponding conventional load voltage
- 12 Intermittent cycle symbol
- 13 Assigned welding current symbol
- 14 Assigned welding voltage symbol
- 15 Intermittent cycle values
- 16 Intermittent cycle values
- 17 Intermittent cycle values
- 15A Assigned welding current values
- 16A Assigned welding current values
- 17A Assigned welding current values
- 15B Conventional load voltage values
- 16B Conventional load voltage values
- 17B Conventional load voltage values
- 18 Power supply symbol
- 19 Assigned power supply voltage
- 20 Maximum assigned power supply current
- 21 Maximum effective power supply current
- 22 Protection rating

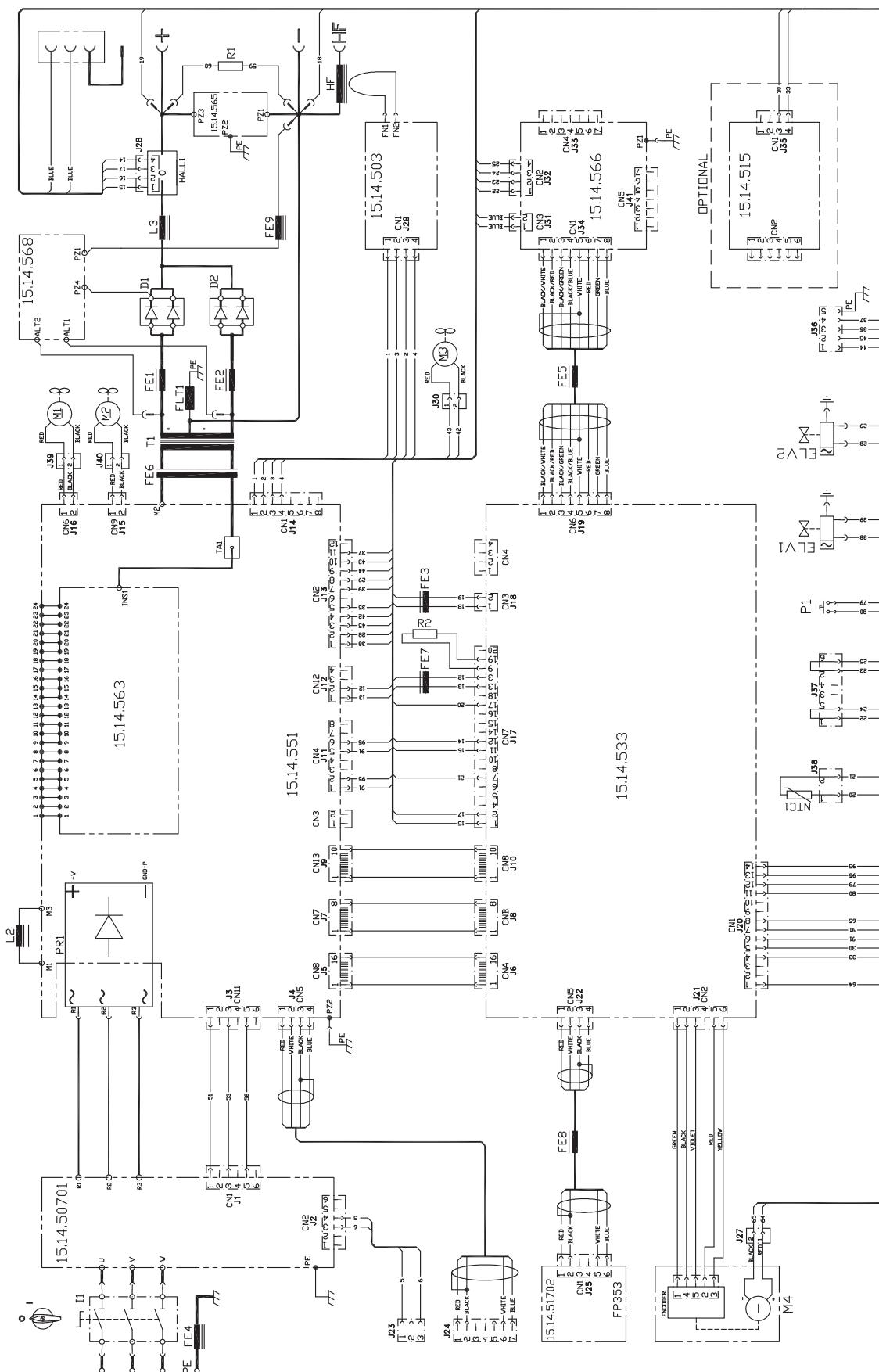
### ESPAÑOL

- 1 Marca de fabricación
- 2 Nombre y dirección del constructor
- 3 Modelo del aparato
- 4 N° de serie
- 5 Símbolo del tipo de soldadora
- 6 Referencia a las normas de construcción
- 7 Símbolo del proceso de soldadura
- 8 Símbolo por las soldadoras idóneas para trabajar en un entorno con riesgo elevado de descarga eléctrica
- 9 Símbolo de la corriente de soldadura
- 10 Tensión asignada a vacío
- 11 Gama de la corriente asignada de soldadura máxima y mínima, y de la correspondiente tensión convencional de carga
- 12 Símbolo del ciclo de intermitencia
- 13 Símbolo de la corriente asignada de soldadura
- 14 Símbolo de la tensión asignada de soldadura
- 15 Valores del ciclo de intermitencia
- 16 Valores del ciclo de intermitencia
- 17 Valores del ciclo de intermitencia
- 15A Valores de la corriente asignada de soldadura
- 16A Valores de la corriente asignada de soldadura
- 17A Valores de la corriente asignada de soldadura
- 15B Valores de la tensión convencional de carga
- 16B Valores de la tensión convencional de carga
- 17B Valores de la tensión convencional de carga
- 18 Símbolo para la alimentación
- 19 Tensión asignada de alimentación
- 20 Máxima corriente asignada de alimentación
- 21 Máximas corrientes eficaz de alimentación
- 22 Grado de protección

## 12. Schema avanzato, Advanced diagram, Erweitertes Diagramm



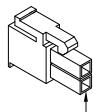
## 13. Schema, Diagram, Schaltplan



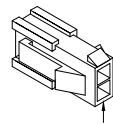
## 14. Connatori, Connectors, Verbinder



J16-J15-J18-J30-J31-J38-J39-J4030-J38-J39-J40



J27



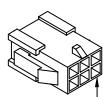
J27



J4-J12-J22-J29-J32-J35



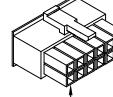
J1-J2-J3-J21-J25-J37



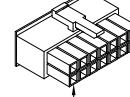
J37



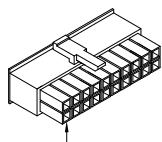
J11-J14-J19-J34



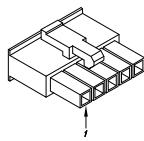
J13



J20



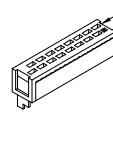
J17



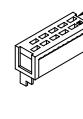
J36



J7-J8



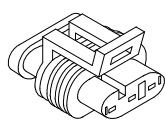
J5-J6



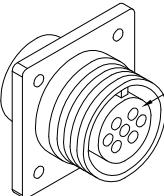
J9-J10



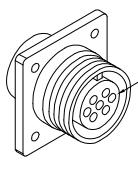
J28



J23



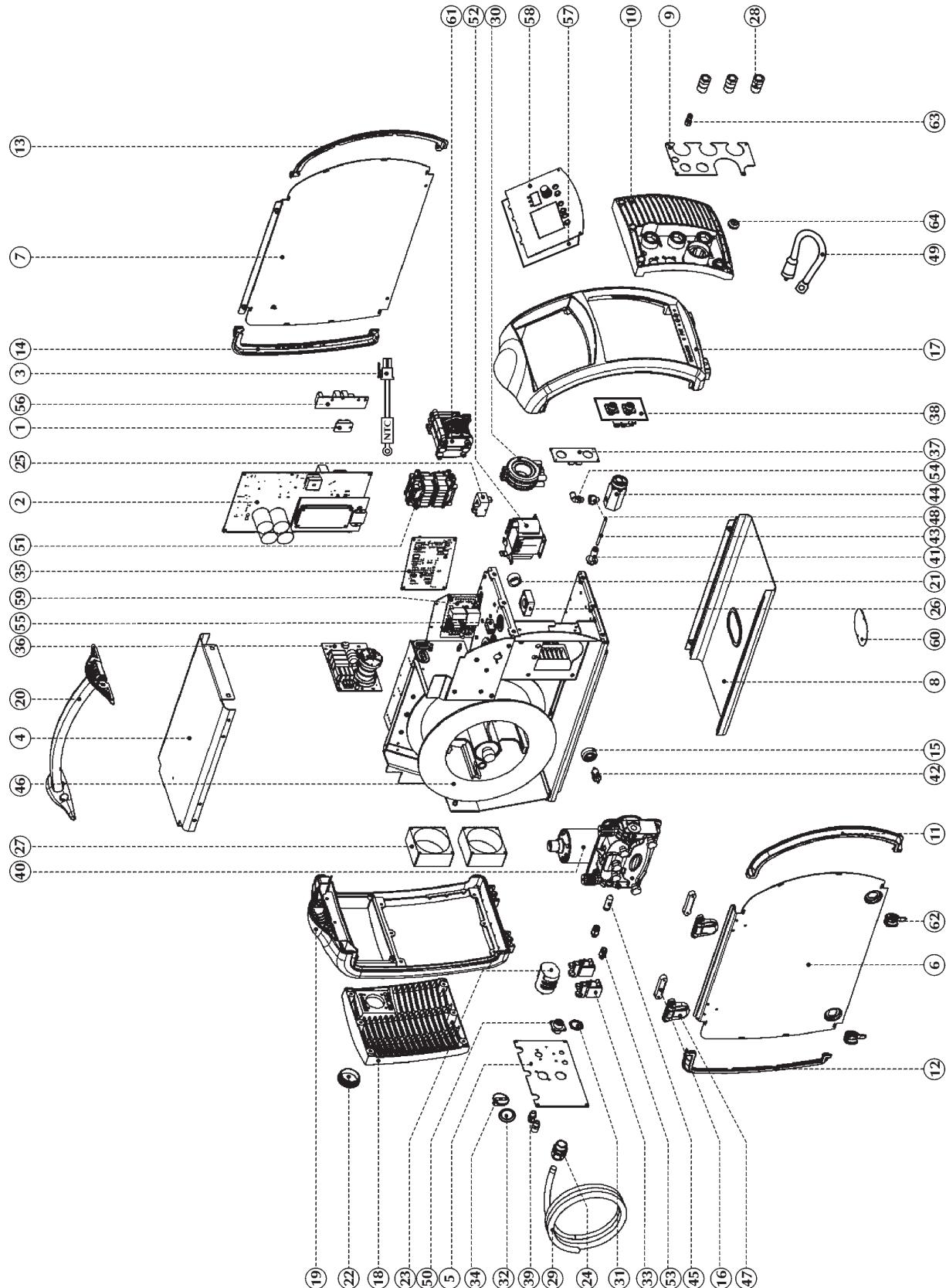
J24



J33-J41

## 15. Lista ricambi, Spare parts list, Ersatzteilverzeichnis

55.06.005 URANOS 2700 MTE 3x230/400V

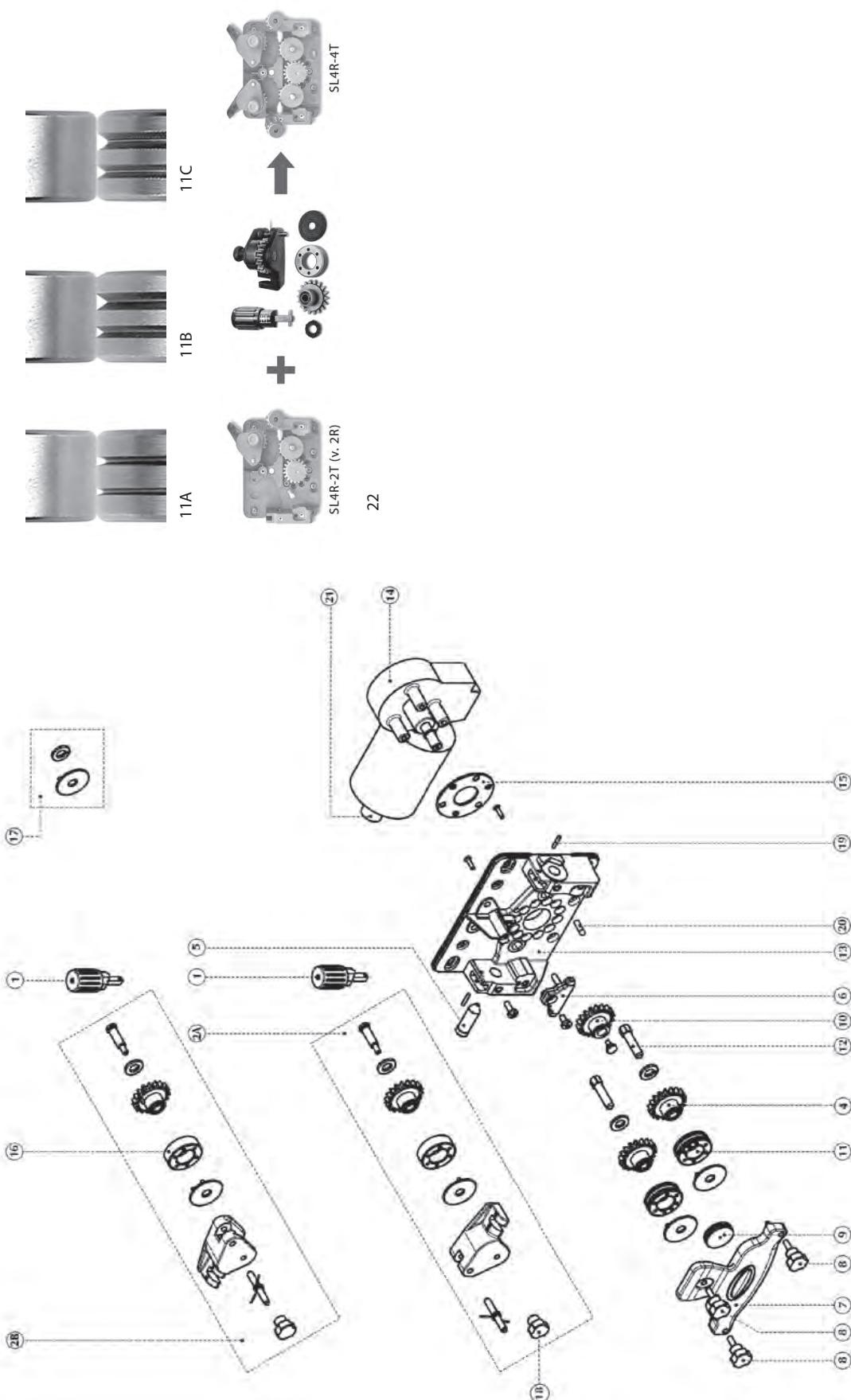


# TECHNICAL SPECIFICATIONS

POS.	CODE	ITALIANO	ENGLISH	DEUTSCH	FRANÇAIS	ESPAÑOL
1	14.05.098	Modulo Diodi	Diode Module	Diodenmodul	Module Diodes	Módulo Diodos
2	15.18.052	Kit Schede Elettroniche	P.C. Board - Spare Kit	Platinensatz	Kit Platines	Kit Tarjetas
3	49.07.447	Sensore Termico	Thermal Sensor	Wärmefühler	Capteur Thermique	Sensor-Térmico
4	01.02.03603	Cofano Superiore	Metal Cover Upper	Oberes Gehäuse	Carter Supérieur	Chapa Superior
5	03.05.147	Targa Posteriore	Rear Nameplate	Hinterschild	Plaque Arrière	Placa Posterior
6	01.03.07903	Pannello Laterale Dx	Side Panel - R	Seitenpaneeel Re	Panneau Latéral Droit	Panel Lateral Derecho
7	03.07.367	Pannello Laterale Sx	Side Panel - L	Seitenpaneeel Li	Panneau Latéral Gauche	Panel Lateral Izqdo
8	01.02.05703	Cofano Inferiore	Metal Cover Lower	Unteres Gehäuse	Carter Inférieur	Chapa Inferior
9	03.05.09601	Profilo Prese	Profile	Profil	Profil	Perfil
10	01.04.03302	Tassello Plastic Frontale	Front Grid (Plastic)	Vorderer Plastikdübel	Cheville Plastique Frontale	Taco Plástico Frontal
11	20.07.19901	Copritesta Anteriore Dx	Cover Cap Front Right	Deckel Vorne Re	Couvercle Avant Droite	Cubierta Ant. Derecha
12	20.07.20001	Copritesta Posteriore Dx	Cover Cap Rear Right	Deckel Hinten Re	Couvercle Arrière Droite	Cubierta Post. Derecha
13	20.07.20101	Copritesta Anteriore Sx	Cover Cap Front Left	Deckel Vorne Li	Couvercle Avant Gauche	Cubierta Ant. Izquierda
14	20.07.20201	Copritesta Posteriore Sx	Cover Cap Rear Left	Deckel Hinten Li	Couvercle Arrière Gauche	Cubierta Post. Izquierda
15	20.07.20301	Distanziale Switch	Switch Spacer	Abstandstück	Espaceur	Espaciador
16	20.07.20401	Distanziale Switch	Switch Spacer	Abstandstück	Espaceur	Espaciador
17	01.04.02301	Cornice Plastic Frontale	Front Frame (Plastic)	Plastikrahmen, Vorne	Encadrement Plastique Frontal	Marco Plástico Frente
18	01.05.02901	Tassello Plastic Posteriore	Rear Grid (Plastic)	Hinterer Plastikdübel	Cheville Plastique Arrière	Taco Plástico Posterior
19	01.05.02801	Cornice Plastic Posteriore	Rear Frame (Plastic)	Plastikrahmen, Hinten	Encadrement Plastique Arrière	Marco Plástico Posterior
20	74.90.074	Kit Manico	Handle - Spare Kit	Kit Griffhal	Kit Manche	Kit Mango
21	06.31.028	Ferrite	Ferrite Core	Ferrit	Noyau De Ferrite	Ferrita
22	20.04.156	Tappo	Cap	Stopfen	Bouchon	Tapón
23	09.01.006	Interruttore Tripolare	Switch - 3 Poles	Dreipoliger Schalter	Interrupteur Tripolaire	Interruptor Tripolar
24	08.20.054	Pressacavo	Cable Clamp	Kabelklemme	Serre-Câble	Racor ParaCable
25	11.19.014	Sensore Corrente 500A	CurrentSensor - 500A	Stromsensor 500A	Capteur Courant 500A	Sensor Corriente 500A
26	14.70.050	Ventilatore	Fan	Ventilator	Ventilateur	Ventilador
27	14.70.052	Ventilatore	Fan	Ventilator	Ventilateur	Ventilador
28	10.13.022	Presa Fissa 50-70Mm <sup>2</sup>	Current Socket (Panel) - 50-70Mm <sup>2</sup>	Feste Steckdose 50-70Mm <sup>2</sup>	Prise Fixe 50-70 Mm <sup>2</sup>	Base Conector 50-70Mm <sup>2</sup>
29	49.04.057	Cavo Alimentazione	Input Line Cord	Speisekabel	Câble D'Alimentation	Cable Alimentación

POS.	CODE	ITALIANO	ENGLISH	DEUTSCH	FRANÇAIS	ESPAÑOL
30	05.04.006	Induttanza Di Lavoramento	Output Choke	Induktanz	Inductance De Sortie	Inductancia De Salida
31	08.20.055	Controdado	Blocking Nut	Kontermutter	Contre-Écrou	Contratuercia
32	10.01.155	Tappo Connettore	Screw Cap	Verbinderstopfen	Bouchon Connecteur	Tapón Conector
33	09.05.001	Elettrovalvola	Solenoid Valve	Magnetventil	Électrovanne	Electroválvula
34	09.11.009	Manopola	Knob	Drehknopf	Bouton	Empuñadura
35	15.14.53333	Scheda Elettronica	P.C. Board	Platine	Platine	Tarjeta
36	15.14.50741	Scheda Elettronica	P.C. Board	Elektronische Karte	Platine	Tarjeta Electrónica
37	15.14.5652	Scheda Elettronica	P.C. Board	Elektronische Karte	Platine	Tarjeta Electrónica
38	15.14.5663	Scheda Elettronica	P.C. Board	Platine	Platine	Tarjeta
39	24.01.190	Raccordo 1/8" - 1/4"	Fitting 1/8" - 1/4"	Anschluss 1/8" - 1/4"	Raccord 1/8" - 1/4"	Racor 1/8" - 1/4"
40	07.01.099	Motor riduttore 225Rpm	Geared Motor (225Rpm)	Getriebemotor 225Rpm	Motoréducteur 225Rpm	Motorreductor 225Rpm
41	07.01.313	Dado Guidafilto	Wire Guide Nut	Drahtführungsmutter	Écrou Guidage-Fil	Tuerca Guía Del Alambre
42	09.04.402	Pulsante	Push Button	Drucktaste	Bouton	Pulsador
43	19.01.028	Cannetta L.79Mm	Insulated Liner L.79Mm	Drahtführung L.79Mm	Tuyau En Plastique L.79 Mm	Tubo Guía Hilos L.79Mm
44	19.06.008	Attacco Centralizzato	Central Adaptor System	Zentralanschluss Für Brenner	Raccord Centralisé	Conector Centralizado
45	19.50.057	Raccordo Ingresso Filo	Wire Input Fitting	Anschluss Drahteingang	Raccord Entrée Fil	Racor Entrada Alambre
46	20.02.003	Aspo Porta Rocchetto 15Kg	Wire Spool Spindle (15kg)	Drahtspulenhaspel 15kg	Support Bobine 15 Kgs	Husillo Bobina (15kg)
47	20.04.157	Cerniera A Scatto	Snap Hinge	Scharnier	Charnière	Bisagra
48	20.07.093	Isolatore Gas-Potenza	Gas-Power Insulating	Gas-Leistungsisolator	Isolateur Gaz-Puissance	Aislador Gas-Potencia
49	49.07.532	Carico Cambio Polarita'	Cable - Polarity Change	Polungswechselkabel	Câble - Changement De Polarité'	Cable Cambio Polaridad
50	49.07.511	Cablaggio	Wiring	Verdrahtung	Câblage	Cableado
51	05.18.014	Induttanza	Choke	Induktanz	Inductance	Inductancia
52	05.02.048	Trasformatore Inverter	Power Transformer	Invertertransformator	Transformateur Onduleur	Transformador Inverter
53	24.01.001	Raccordo 6 - 1/8"	Fitting 6 - 1/8"	Anschluss 6 - 1/8"	Raccord 6 - 1/8"	Racor 6 - 1/8"
54	24.01.074	Raccordo 1/8" 90°	Fitting 1/8" 90°	Anschluss 1/8" 90°	Raccord 1/8" 90°	Racor 1/8" 90°
55	11.14.085	Resistenza 470Ohm 25W	Resistor 470Ohm 25W	Widerstand 470Ohm 25W	Résistance 470Ohm 25W	Resistencia 470Ohm 25W
56	15.14.5682	Scheda Elettronica	P.C. Board	Elektronische Karte	Platine	Tarjeta Electrónica
57	15.22.353	Pannello Comandi Fp353	Control Panel Fp353	Bedienungsfeld Fp353	Panneau Commandes Fp353	Panel Mandos Fp353
58	03.05.193	Targa Frontale	Front Nameplate	Vorderschild	Plaque Frontale	Placa Frontal

POS.	CODE	ITALIANO	ENGLISH	DEUTSCH	FRANÇAIS	ESPAÑOL
59	15.14.5035	Scheda Elettronica	P.C. Board	Elektronische Karte	Platine	Tarjeta Electrónica
60	01.06.02707	Coperchio	Cover	Abdeckung	Couverture	Cubierta
61	05.03.022	Trasformatore H.F.	H.F. Transformer	H.F.Transformator	Transformateur H.F.	Transformador H.F.
62	20.04.080	Chiavistello	Rotary Lock Key	Riegel	Verrou	Cerrojo
63	19.50.055	Raccordo 1/8"	Fitting 1/8"	Anschluss 1/8"	Raccord 1/8"	Racor 1/8"
64	08.20.002	Gommino Passacavo	Passthrough Gasket	Gummidichtung Für Kabeldurchführung	Joint Passe Câble	Goma Pasahilo
06.31.043	Ferrite	Ferrite Core	Ferrite Core	Ferrit	Noyau De Ferrite	Ferrita
06.38.010	Ferrite	Ferrite Core	Ferrite Core	Ferrit	Noyau De Ferrite	Ferrita
49.07.296	Cablaggio	Wiring	Verdrahtung	Câblage	Cableado	Cableado
49.07.397	Cablaggio	Wiring	Verdrahtung	Câblage	Cableado	Cableado
49.07.497	Cablaggio	Wiring	Verdrahtung	Câblage	Cableado	Cableado
49.07.606	FlatCollegamento	ConnectionFlat	Verbindung	Connexion	Acoplamiento	Acoplamiento
49.07.607	FlatCollegamento	ConnectionFlat	Verbindung	Connexion	Acoplamiento	Acoplamiento
71.10.005	Tubo Pvc Retinato 5X11 L.1,70M	Braided Pvc Hose - 5X11 L.1,7M	Pvc-Gewebebeschlauch 5X11 L.1,70M	Tuyau Pvc Avec Gaine De Protection 5X11 L.1,70M	Manguera Pvc Con Malla 5x11 L.1,70M	Manguera Pvc Con Malla 5x11 L.1,70M
73.11.014	Kit Push-Pull	Push Pull - Upgrade Kit	Push-Pull Kit	Kit Push-Pull	Kit Push-Pull	Kit Push-Pull
91.08.344	Manuale Istruzione Uranos 2700 Mte It-Gb-De-Fr-Es-Ni-Dk-Fi-Se-No-Gr-Pt	Instruction Manual Uranos 2700 Mte Thit-Gb-De-Fr-Es-Ni-Dk-Fi-Se-No-Gr-Pt	Bedienungsanweisungen Uranos 2700 Mte Thit-Gb-De-Fr-Es-Ni-Dk-Fi-Se-No-Gr-Pt	Manuel D'Instructions Uranos 2700 Mte Thit-Gb-De-Fr-Es-Ni-Dk-Fi-Se-No-Gr-Pt	Manual Instrucciones Uranos 2700 Mte It-Gb-De-Fr-Es-Ni-Dk-Fi-Se-No-Gr-Pt	Manual Instrucciones Uranos 2700 Mte It-Gb-De-Fr-Es-Ni-Dk-Fi-Se-No-Gr-Pt
91.08.377	Manuale Istruzione Uranos 2700 Mte (Bg-Cz-Pi-Ro-Ru-Sk-Tr-Ee-Lv-Lt)	Instruction Manual Uranos 2700 Mte (Bg-Cz-Pi-Ro-Ru-Sk-Tr-Ee-Lv-Lt)	Bedienungsanweisungen Uranos 2700 Mte (Bg-Cz-Pi-Ro-Ru-Sk-Tr-Ee-Lv-Lt)	Manuel D'Instructions Uranos 2700 Mte (Bg-Cz-Pi-Ro-Ru-Sk-Tr-Ee-Lv-Lt)	Manual Instrucciones Uranos 2700 Mte (Bg-Cz-Pi-Ro-Ru-Sk-Tr-Ee-Lv-Lt)	Manual Instrucciones Uranos 2700 Mte (Bg-Cz-Pi-Ro-Ru-Sk-Tr-Ee-Lv-Lt)



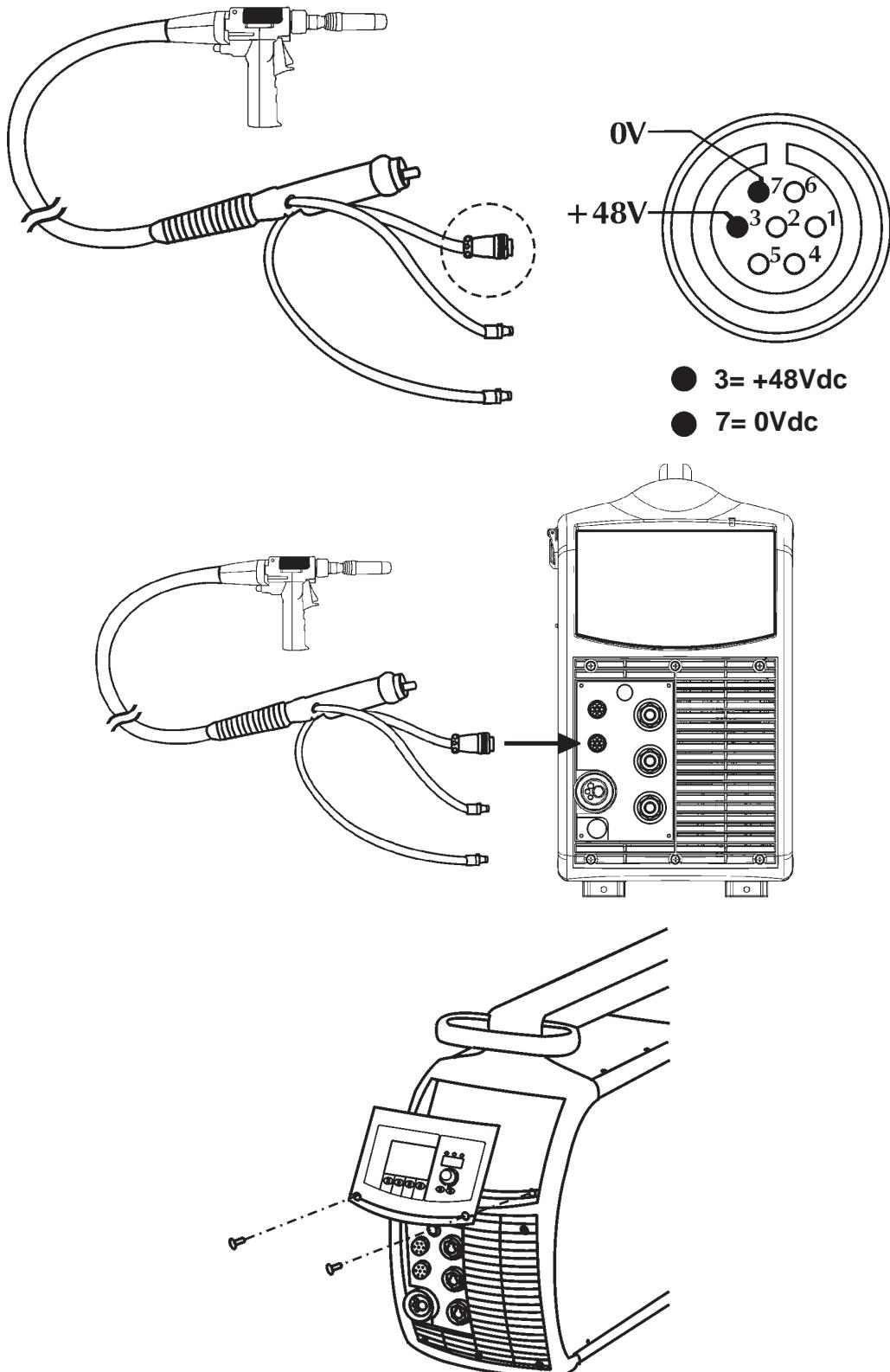
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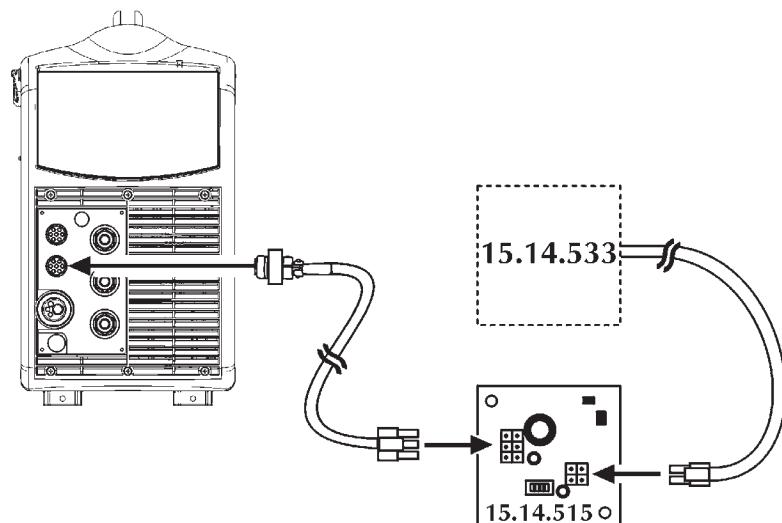
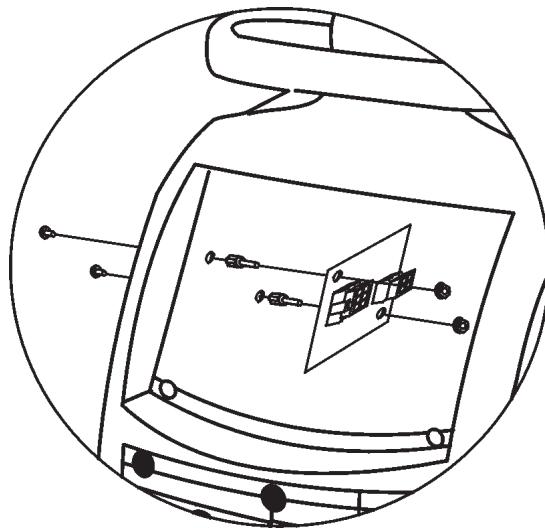


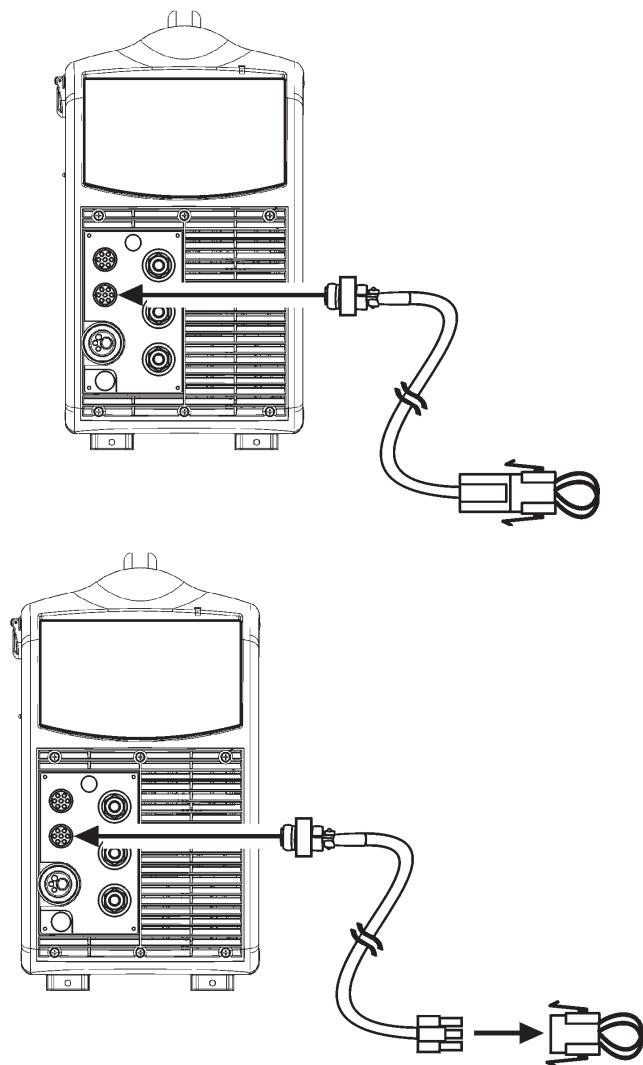
POS.	CODE	ITALIANO	ENGLISH	DEUTSCH	FRANÇAIS	ESPAÑOL
65	09.11.215	Manopola	Knob	Drehknopf	Bouton	Empuñadura
66	07.01.500	Gruppo Pressore Dx	Split Wire Guide - R	Druckhebel - R	Groupe Presseur Droit	Grupo Prensador Dcho.
67	07.01.501	Gruppo Pressore Sx	Split Wire Guide - L	Druckhebel - L	Groupe Presseur Gauche	Grupo Prensador Izqdo.
68	07.01.312	Ingranaggio Trainafilo	Feed Unit - Gear Wheel	Zahnrad	Moteur Devidoir Complet	Engranaje Alimentador De Alambre
69	19.50.057	Raccordo Ingresso Filo	Wire Input Fitting	Anschluss Drahteingang	Raccord Entrée Fil	Racor Entrada Alambre
70	20.07.053	Guida Filo Centrale 4 Rulli	Central Wire Guide - 4 Rolls Feed Unit	Zentrale Drahtführung, 4 Rollen	Guide Fil Central 4 Galets	Guia Hilo Central 4 Rodillos
71	20.07.047	Guida Superiore 4 Rulli	Rolls Cover - 4 Rolls Feed Unit	Obere Führung, 4 Rollen	Guide Supérieur 4 Galets	Guia Superior 4 Rodillos
72	20.04.058	Volantino Maschio M5X15	Knob (Male) - M5X15	Drehknopf M5X15, Male	Volant Mâle M5X15	Volante Macho M5X15
73	20.07.079	Volantino	Knob	Drehknopf	Manette	Volante
74	07.01.309	Ingranaggio Alberto Motore	Driving Gear Wheel	Motorwellenzahnrad	Moteur Devidoir Complet Avec Engrenage	Engranaje Eje Motor
75	07.01.298	Rullo Trainafilo D.0,6-0,8Mm Filo Pieno	Drive Roll - Smooth V Groove - Solid Wire -D.0,6-0,8Mm	Drahtvorschubrolle D.0,6-0,8Mm Massivdraht	Galet D.0,6-0,8Mm - Gorge EnV - Filo Plein	Rodillo Alimentador De Alambre D.0,6-0,8Mm Alambre Sólido
76	07.01.291	Rullo Trainafilo D.0,8-1,0Mm Filo Pieno	Drive Roll - Smooth V Groove - Solid Wire -D.0,8-1,0Mm	Drahtvorschubrolle D.0,8-1,0Mm Massivdraht	Galet D.0,8-1,0Mm - Gorge EnV - Filo Plein	Rodillo Alimentador De Alambre D.0,8-1,0Mm Alambre Sólido
77	07.01.292	Rullo Trainafilo D.1,0-1,2Mm Filo Pieno	Drive Roll - Smooth V Groove - Solid Wire -D.1,0-1,2Mm	Drahtvorschubrolle D.1,0-1,2Mm Massivdraht	Galet D.1,0-1,2Mm - Gorge EnV - Filo Plein	Rodillo Alimentador De Alambre D.1,0-1,2Mm Alambre Sólido
78	07.01.293	Rullo Trainafilo D.1,2-1,6Mm Filo Pieno	Drive Roll - Smooth V Groove - Solid Wire -D.1,2-1,6Mm	Drahtvorschubrolle D.1,2-1,6Mm Massivdraht	Galet D.1,2-1,6Mm - Gorge EnV - Filo Plein	Rodillo Alimentador De Alambre D.1,2-1,6Mm Alambre Sólido
79	07.01.295	Rullo Trainafilo D.0,8-1,0Mm Filo Alluminio	Drive Roll Aluminum Wire - D.0,8-1,0Mm	Drahtvorschubrolle D.0,8-1,0Mm Aluminiumimdraht	Galet D.0,8-1,0Mm Fil Aluminium	Rodillo Alimentador De Alambre D.0,8-1,0Mm Alambre Aluminio
80	07.01.296	Rullo Trainafilo D.1,0-1,2Mm Filo Alluminio	Drive Roll Aluminum Wire - D.1,0-1,2Mm	Drahtvorschubrolle D.1,0-1,2Mm Aluminiumimdraht	Galet D.1,0-1,2Mm Fil Aluminium	Rodillo Alimentador De Alambre D.1,0-1,2Mm Alambre Aluminio
81	07.01.297	Rullo Trainafilo D.1,2-1,6Mm Filo Alluminio	Drive Roll Aluminum Wire D.1,2-1,6Mm	Drahtvorschubrolle D.1,2-1,6Mm Aluminiumimdraht	Galet D.1,2-1,6Mm Fil Aluminium	Rodillo Alimentador De Alambre D.1,2-1,6Mm Alambre Aluminio
82	07.01.300	Rullo Trainafilo D.1,2-1,6Mm Filo Animato	Drive Roll Cored Wire D.1,2-1,6Mm	Drahtvorschubrolle D.1,2-1,6Mm Füldraht:	Galet D.1,2-1,6Mm Fil Fourre	Rodillo Alimentador De Alambre D.1,2-1,6Mm Alambre Tubular
83	07.01.321	Rullo Trainafilo D.1,6-2,0-2,4Mm Filo Animato	Drive Roll Cored Wire D.1,6-2,0-2,4Mm	Drahtvorschubrolle D.1,6-2,0-2,4Mm Fil Füldraht	Galet D.1,6-2,0-2,4Mm Fil Fourre	Rodillo Alimentador De Alambre D.1,6-2,0-2,4Mm Alambre Tubular
84	18.76.012	Perno Esagonale Ingr. Condotti	Hexagonal Pin	Sechskeantzapfen Eing. Leitungen	Goujon Hexagonal Entr. Conduits	Perno Hexagonal Eng. Conductos
85	20.07.046	Corpo Traino 4 Rulli	Motor Plate- 4 Rolls Feed Unit	Grundplatte Für Drahtvorschub, 4 Rollen	Corps Chariot 4 Galets	Cuerpo Alimentación Alambre 4 Rodillos
86	07.01.099	Motoriduttore 225Rpm	Geared Motor (225 Rpm)	Getriebemotor 225Rpm	Motoréducteur 225Rpm	Motorreductor 225Rpm
87	20.07.052	Flangia Motore	Motor Flange	Motorflansch	Bridge Moteur	Brida Motor
88	07.01.307	Rullo Trainafilo Liscio	Drive Roll - Without Groove	Drahtvorschubrolle, Glatt	Galet Lisse	Rodillo Alimentador De Alambre Liso
89	20.07.085	Kit Rondelle Traino 4 Rulli	Feed Unit Washer - Spare Kit	Kit Unterlegscheiben	Kit Rondelles Devidoir 4 Galets	Kit Arandela las Unidad 4 Rodillos
90	20.04.059	Volantino Femmina M5	Knob(Female) - M5	Drehknopf M5, Female	Volant Femelle M5	Volante Hembra M5
91	18.77.006	Spina	Pin	Stift	Goupille	Tapon
92	18.02.002	Grano	Hexagon socket setscrew	Encoder	Encodeur	Encoder
93	07.01.015	Encoder	Encoder	Nochrüstsatz Von 2 Rollen Angetrieben Auf 4 Antriebsachse Rollen - 1,0/1,2	Kit Upgrade 2 Galets Moteurs A 4 Galets Moteurs - 1,0/1,2	Kit Upgrade De 2 Rodillos Tractor A 4 Rodillos Tractor - 1,0/1,2
94	07.01.502	Kit Upgrade 2 Rulli Trainanti A 4 Rulli Trainanti - 1,0/1,2	Upgrade Kit From 2 Rolls Drive To 4 Rolls Drive - 1,0/1,2	Wigbrenner-Steckverbinderkit	Kit De Conectores Antorchas Tig	Kit De Connecteurs Torcia Tig
	73.12.019	Kit Connettori Torcia Tig	Tig Torch Connectors Kit			

16. Installazione kit/accessori, Installation kit/accessories, Installation kits/zubehör

73.11.024 Kit Push-Pull











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