# POWER ROD 1565 Cell

# POWER SOURCE art. 255

## SERVICE MANUAL

# CONTENTS

# 1 - GENERAL INFORMATION

## 1.1 - Introduction.

The purpose of this manual is to train personnel assigned to carry out maintenance on the power source art. 255 for MMA and TIG welding systems.

## 1.2 - General service policy.

It is the responsibility of the customer and/or operator to use the equipment appropriately, in accordance with the instructions in the Instruction Manual, as well as to maintain the equipment and related accessories in good working condition, in compliance with the instructions provided in the Service Manual.

Any internal inspection or repairs must be carried out by qualified personnel who are responsible for any intervention on the equipment.

It is forbidden to attempt to repair damaged electronic boards or modules; replace them with original Cebora spare parts.

## 1.3 - Safety information.

The safety notes provided in this manual are an integral part of those given in the Instruction Manual. Therefore, before working on the machine, please read the paragraph on safety instructions in the aforementioned manual.

Always disconnect the power cord from the mains, and wait for the internal capacitors to discharge (2 minutes) before accessing the interior of the equipment.

Some internal parts, such as terminals and dissipaters, may be connected to mains or otherwise hazardous potentials. It is therefore forbidden to work with the safety guards removed from the machine unless strictly necessary. In this case, take special precautions such as wearing insulating gloves and footwear, and working in a perfectly dry environment with dry clothing.

## 1.4 - Electromagnetic compatibility.

Please read and observe the instructions provided in the paragraph “Electromagnetic compatibility” of the Instruction Manual.

# 2 - SYSTEM DESCRIPTION

## 2.1 - Introduction.

The POWER ROD 1565 Cell is a system for MMA, MMA Cellulosic and TIG welding with strike starting of the arc.

It is made up of an electronic power source (art. 255), and a set of accessories to adapt to various types of applications (see list in Sales Catalogue).

The power source is controlled by a microprocessor circuit, which manages the operative functions of the welding system and the operator interface.

## 2.2 - Technical specifications.

To verify the technical specifications, see the machine plate, Instruction Manual, and Sales Catalogue.

## 2.3 - Description of power source art. 255.

Art. 255 is a direct current power source with controlled current, consisting of a single-phase rectifier bridge, a DC/AC mosfet converter (inverter), and an additional single-phase rectifier bridge.

Referring to the electrical diagram in par. 5.1, drawing 4.1 and table 4.2, we can identify the main blocks that make up the power source.

The main switch (5) powers the power board (11), which contains the power circuits and control circuits to manage the functions of the power source art. 255. It converts the alternating voltage of the network into direct current, adjusted according to welding needs. The welding current is adjusted by the microprocessor based on the signals received from the panel board (16).

The microprocessor also checks the condition of the supply voltage, to implement the protections needed to protect the power source (see Error codes, par. 3.4).

The panel board (16) represents the power source control panel and depends entirely on the power board (11), from which it receives supply voltages.

The panel board (16) contains the signaling leds (see Error codes, par. 3.4), the potentiometers for setting the operating parameters, and the connector to connect external control devices to the power source.

The fan (9), connected to the power board (11), is actually connected directly in parallel to the board mains input terminals, for which it is subjected to all variations in the mains voltage, without any control by the power board (11).

The power source requires only the mains voltage supply in order to operate. Once powered, the power source performs the “lamp-test”, during which the microprocessor analyzes the mains voltage. If the voltage is found suitable, the microprocessor then prepares the power source for the type of operation, based on the level of the START Signal (terminal 7 of CN1 on power board (11)), which in turn is determined by the jumper on terminals 8 and 3 of the connector (H), as illustrated in table 2.3.1.

### 2.3.1 - Operating mode setting.

| Accessories connected to the connector H | Jumper 8-3 connector H | Operating mode | Start button | Signal START | Output voltage |
|---|---|---|---|---|---|
| None / art. 187 | Open | MMA/MMA cell | Absent | 1.5 – 4 Vdc | YES |
| TIG torches / art. 181 | Closed | TIG | Released | >4 Vdc | NO |
| | | | Pressed | <1.5 Vdc | YES |

Note that the type of operation depends on the jumper on terminals 8 and 3 of the connector (H), and thus the accessory connected to the power source, while the output voltage generated depends on the operating mode set and/or the start button.

Similarly to what occurs for the start command, the welding current adjustment takes into account the accessory connected to the power source, according to the procedure in table 3.2.2.

**2.3.2 - Internal/external welding current setting.**

| Accessories connected to the connector H | Jumper 8-4 connector H | Operating mode | Setting the welding current using |
|---|---|---|---|
| TIG torches with potentiometer / art181 | Closed | TIG | Knob A + external |
| Art. 187 | | MMA/MMA cell | |
| None / TIG torches without potentiometer | Open | MMA/MMA cell<br>TIG | Knob A only |

Note that the jumper on terminals 8 and 4 of the connector (H) also determines the possibility of adjusting the welding current by adjusting connected external accessories. Their setting range is between 0 and the value set using the knob (A) of the panel board (16).

In TIG mode the arc must be started through contact between electrode and workpiece. The power source does not manage the gas circuit, thus a torch must be used with gas valve built into the grip (ex.: torch T150, arts. 1567.02 or 1567.20 Cebora).

The signals processed by the electronic boards and present at their connectors are listed in the table in chapter five of this manual.

# 3 - MAINTENANCE

**WARNINGS**

ANY INTERNAL INSPECTIONS OR REPAIRS MUST BE CARRIED OUT BY QUALIFIED PERSONNEL.

BEFORE BEGINNING MAINTENANCE OPERATIONS, UNPLUG THE MACHINE FROM THE MAINS AND WAIT FOR THE INTERNAL CAPACITORS TO DISCHARGE (2 MINUTES).

## 3.1 - Periodic inspection, cleaning.

Periodically make sure that air is flowing properly within the aeration tunnel.

Remove any dirt or dust to ensure adequate cooling of the internal parts of the power source.

Check the condition of the output terminals, output and power supply cables of the power source; replace if damaged.

Check the condition of the internal power connections and connectors on the electronic boards; if you find "loose" connections, tighten or replace the connectors.

## 3.2 - Operating sequence (fig. 3.2.1).

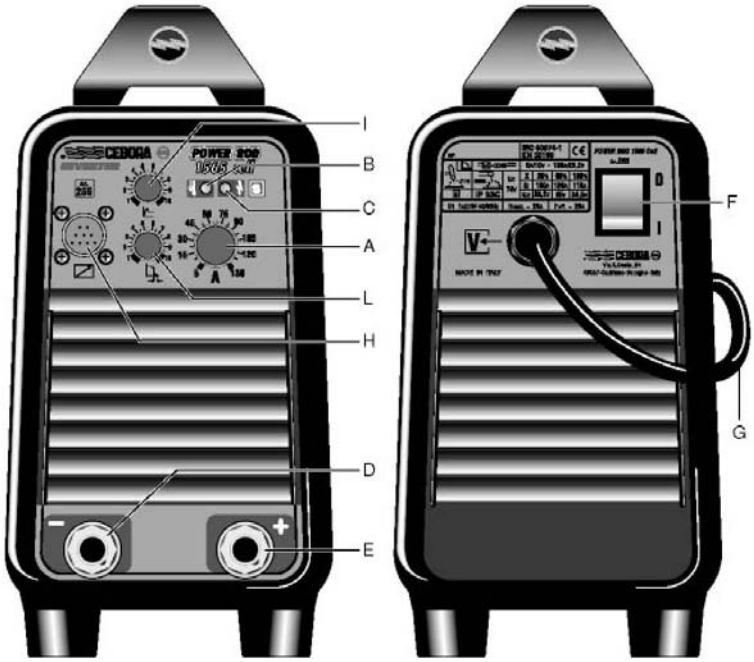
The following sequence represents correct functioning of the machine. It may be used as a guiding procedure for troubleshooting.

It must be carried out after each repair without any errors.

**NOTE**

- ❑ Steps marked with this symbol refer to actions by the operator.
- ♦ The operations marked with this symbol refer to machine responses that must occur following an operator action.

### 3.2.1 - Power source commands and signals.



### 3.2.2 - Power source operation.

- System shut off and disconnected from the mains.
- In MMA mode, connect the electrode clamp to the positive pole of the power source, and the negative pole cable of the power source to the workpiece.
- In TIG mode, connect the cable of the positive pole of the power source to the workpiece, the TIG torch (Cebora torch T150 recommended) to the negative pole of the power source, and the torch control cable to the connector (H) on the front of the power source.
- In TIG mode, connect the gas supply to the specific fitting on the TIG torch.
- Plug the power source into the mains and turn on the switch (F).
    - ♦ System powered, lamp on switch (F) lit.
    - ♦ Fan (9) running, yellow (B) and green (C) leds lit (lamp-test).
    - ♦ Yellow led (B) off after five seconds. Voltage begins to be generated at the power source output (without accessories connected to the connector (H), or with art. 187 connected. With the other accessories connected to the connector (H) the power source awaits the start signal, without generating output voltage).

Correct? NO (see 3.3.1, 3.3.2, 3.3.3).

▼ YES

**WARNING**

DURING THE TIG MODE TEST, DO NOT POINT THE TORCH AT PEOPLE OR PARTS OF THE BODY, BUT ALWAYS TOWARDS AN OPEN SPACE OR THE WORKPIECE.

- Press the start button of the accessories connected to the connector (H), if present.
    - ♦ Voltage begins to be generated at the power source output, for as long as the button is held down.

Correct? NO (see 3.3.4, 3.3.5).

▼ YES

- Use the knob (A) and the current settings of any accessories connected to the connector (H) to adjust the welding current based on the electrode to be used, or based on the TIG welding to be carried out.
- Move the clamp with electrode or TIG torch with start button pressed near the workpiece.
    - ♦ Begin welding. Adjust the knob (A) or the current settings of the accessories, to maximize the welding quality.

Correct? NO (see 3.3.6, 3.3.7, 3.3.8).

▼ YES

- After welding, release the start button and/or move the electrode clip or TIG torch away from the workpiece.
    - ♦ The welding arc is interrupted, the power source returns to its initial condition with yellow led (B) off and green led (C) on.

Correct? NO (see 3.3.4, 3.3.5).

▼ YES

REGULAR OPERATION.

### 3.3 - Troubleshooting.

**WARNINGS**

ANY INTERNAL INSPECTIONS OR REPAIRS MUST BE CARRIED OUT BY QUALIFIED PERSONNEL.

BEFORE REMOVING THE PROTECTIVE GUARDS AND ACCESSING INTERNAL PARTS, DISCONNECT THE POWER SOURCE FROM THE MAINS AND WAIT FOR THE INTERNAL CAPACITORS TO DISCHARGE (2 MINUTES).

**NOTE**

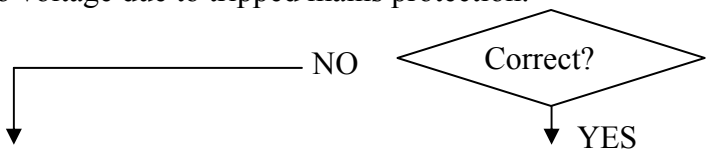
Items in **boldface** describe problems that may occur on the machine (symptoms).

- ❑ Steps marked with this symbol refer to situations for which the operator must determine the causes (causes).
- ♦ Steps marked with this symbol refer to actions that the operator must carry out to solve the problem (solutions).

#### 3.3.1 - The power source does not start, panel off.

MAINS SUITABILITY TEST.

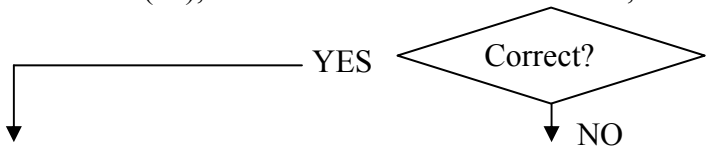
- ❑ No voltage due to tripped mains protection.




- ♦ Eliminate any short-circuits on the connections between power cable, switch (5) and power board (11).
- ♦ Make sure that the mains input terminals F5 and F6 on power board (11) are not short-circuited between them or towards earth.
- ♦ Mains not suited to power the power source (ex.: insufficient installed power).

MAINS CONNECTION TEST.

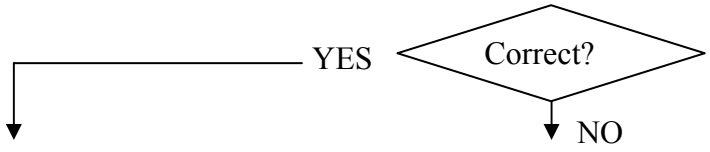
- ❑ Power board (11), terminals F5 and F6 = 230 VAC, with switch (5) closed.




- ♦ Check power cable and plug and replace if necessary.
- ♦ Check switch (5), and replace if defective.
- ♦ Check the mains voltage conditions.

PANEL BOARD (16) POWER SUPPLY TEST.

- ❑ Panel board (16), connector CN1, terminals 2 (+) and 10 (-) = +5 Vdc; terminals 3 (+) and 1 (-) = +13.8 Vdc.



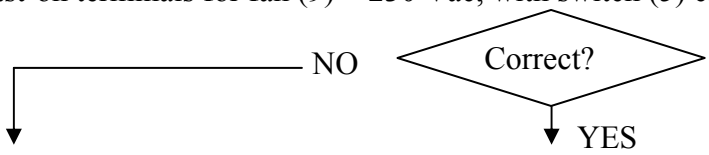
- ♦ Check the wiring between CN1 power board (11) and CN1 panel board (16).
- ♦ With the power source off, temporarily disconnect connector CN1 on panel board (16), and make sure that terminals 2 and 10 and terminals 3 and 1 of CN1 on panel board (16) are not short-circuited. If necessary, replace the panel board (16), and power the power source with the connector CN1 disconnected to make sure that the correct voltages are present on terminals 2 and 10 and terminals 3 and 1 of the patch connector CN1, left free. If missing, also replace power board (11).

♦ Replace the panel (16) and/or power (11) boards.

### 3.3.2 - Power source powered, fan (9) stopped.

FAN TEST.

❑ Fast-on terminals for fan (9) = 230 Vac, with switch (5) closed.



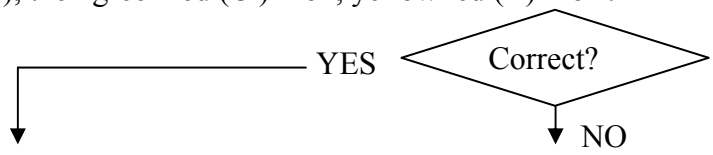

- ♦ Make sure that there are no mechanical impediments blocking the fan.
- ♦ Replace fan (9).

♦ Check the wiring between fan (9) and CN11 on power board (11). Connect the fan (9) directly downstream from the switch (5) if necessary.

### 3.3.3 - Power source powered, signals do not indicate the correct values.

LAMP-TEST AND ERROR CODE.

❑ Upon start-up, yellow (B) and green (C) leds lit for the first 5 seconds after closing the switch (5), then green led (C ) = on, yellow led (B) = off.




- ♦ See Error codes, par. 3.4.
- ♦ Check panel board (16) power supply, (see PANEL BOARD (16) POWER SUPPLY TEST, par. 3.3.1).
- ♦ Replace the display (16) and/or power (11) boards.

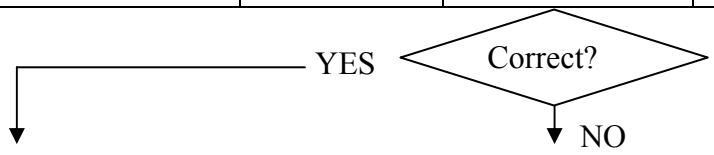
♦ Correct operation.

### 3.3.4 - In TIG mode, the start button does not generate output voltage.

START COMMAND TEST.

- Power board (11), connector CN1, terminals 7 (+) and 10 (-) = voltage of the START Signal as shown in the table.

| Accessories connected to the connector H | Jumper 8-3 connector H | Operating mode | Start button | Signal START | Output voltage |
|---|---|---|---|---|---|
| None / art. 187 | Open | MMA/MMA cell | Absent | 1.5 – 4 Vdc | YES |
| TIG torches / art. 181 | Closed | TIG | Released | >4 Vdc | NO |
| | | | Pressed | <1.5 Vdc | YES |



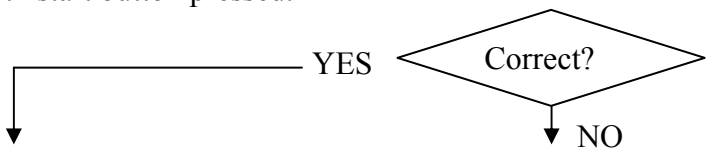

- ♦ Check the wiring between CN1 power board (11) and CN1 panel board (16).
- ♦ Check the status of the jumper on terminals 8 and 3 of the connector of the accessory connected to the connector (H), according to table conditions (see description in par. 2.3).
- ♦ Check the cable and start button of the accessory being used. If defective, replace.
- ♦ With power source off, temporarily disconnect connector CN1 on power board (11) and make sure that the terminals 7 and 10 of CN1 on power board (11) are not short-circuited. If necessary replace the power board (11).
- ♦ Check the supply voltages for the panel board (16), performing the PANEL BOARD (16) POWER SUPPLY TEST, in par. 3.3.1, if necessary.
- ♦ Replace the power (11) and/or panel (16) boards.

♦ Check the wiring between CN1 power board (11) and CN1 panel board (16).
♦ Replace the power board (11).

### 3.3.5 - In open circuit operation, the output voltage is not regular.

OPEN-CIRCUIT OUTPUT VOLTAGE TEST.

- Output terminal – power source (-) and output terminal + power source (+) = +96 Vdc approximately, in MMA without accessories connected to the connector (H), or in TIG mode with start button pressed.




- ♦ Check connections between terminals "-V" and "+V" of the power board (11) and output terminals "-" and "+"of the power source. If you find loose connections, tighten and replace any damaged terminals.
- ♦ Make sure that both the internal and external start commands are working properly, by carrying out the test in par. 3.3.4.
- ♦ Replace the power board (11).

♦ Correct operation.

### 3.3.6 - In resistive load operation, the output voltage is not regular.

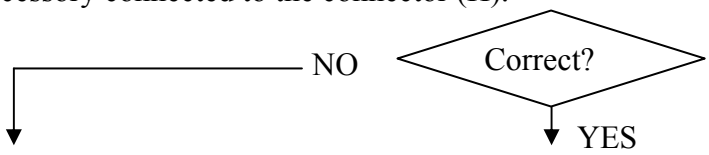
**NOTE**

For the following tests use a resistive load capable of withstanding the maximum power source current. The appropriate values are shown in the table.

| Process | Resistive load resistance | Maximum output current | Power source output voltage | Condition |
|---|---|---|---|---|
| TIG | 0.117 ohm | 130 Adc | +15 Vdc | Start button pressed |
| MMA | 0.194 ohm | 130 Adc | +25 Vdc | Power source powered |

OUTPUT VOLTAGE TEST ON RESISTIVE LOAD.

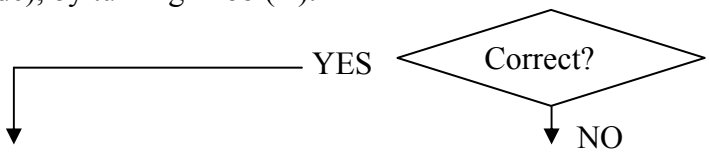
- Turn knob (A) in max. clockwise (to maximum), and adjust the current on any accessory connected to the connector (H) to the maximum current value.
- Output terminal – power source (-) and output terminal + power source (+) = voltage and current values as shown in the table, adjustable both with knob (A) and by adjusting on the accessory connected to the connector (H).




  - Correct operation.
- Make sure that open circuit operation is working properly, performing the OPEN-CIRCUIT OUTPUT VOLTAGE TEST, in par. 3.3.5, if necessary.

INTERNAL CURRENT REFERENCE TEST.

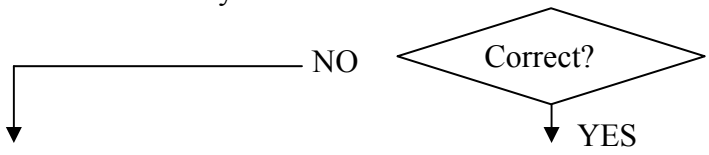
- Temporarily disconnect any accessories from the connector (H). Power board (11), connector CN1, terminals 5 (+) and 1 (-) = voltage adjustable from 0 to maximum (approximately +3.9 Vdc), by turning knob (A).




  - Check the wiring between CN1 power board (11) and CN1 panel board (16).
  - Check the supply voltages for the panel board (16), performing the PANEL BOARD (16) POWER SUPPLY TEST, in par. 3.3.1, if necessary.
  - With power source off, temporarily disconnect connector CN1 on power board (11) and check the resistance between terminals 5 and 1 of CN1 on power board (11). Correct value = approximately 200 Kohm. If 0 ohm (short-circuit) or >Mohm (circuit broken), check the resistive network RR2 and its connection with CN1 terminal 5, or replace the power board (11).
  - Replace the panel board (16).

EXTERNAL CURRENT REFERENCE TEST.

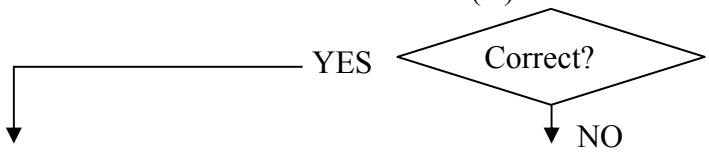
- Temporarily connect an accessory with potentiometer to adjust the current at the connector (H). Power board (11), connector CN1, terminals 5 (+) and 1 (-) = voltage adjustable from 0 up to the value set with knob (A) (max. +3.9 Vdc), by turning the potentiometer on the connected accessory.



- ♦ Check the connection between terminals "-V" and "+V" on the power board (11), with the output terminals – and + of the power source. If you find loose connections, tighten and replace any damaged terminals.
- ♦ Replace the power board (11).

EXTERNAL CURRENT REFERENCE ENABLE TEST.

- ❑ Panel board (16), connector J1, terminals 4 (+) and 8 (-) = +13.8 Vdc, external reference disabled, without accessories connected to the connector (H), or with art. 1567.20 connected (TIG torch with start button only); 0 Vdc, external reference enabled, (with arts. 181, or 187, or 1567.02 connected to the connector (H).




- ♦ Check the wiring between CN1 power board (11) and CN1 panel board (16).
- ♦ Check the wiring of the accessory connected to the connector (H), especially the presence, where necessary, of the jumper between terminals 4 and 8 of the connector of the accessory being used.
- ♦ Make sure that the accessory being used is compatible with the power source art. 255 (see tables 2.3.1 and 2.3.2, and electrical diagram in par. 5.1 for connections, or Sales Catalogue, and the power source Instruction Manual).
- ♦ Replace the panel board (16).

- ♦ Check cable and potentiometer of the accessory being used. If defective, replace.
- ♦ Make sure that the accessory being used is compatible with the power source art. 255 (see tables 2.3.1 and 2.3.2, and electrical diagram in par. 5.1 for connections, or Sales Catalogue, and the power source Instruction Manual).
- ♦ Replace the panel board (16).

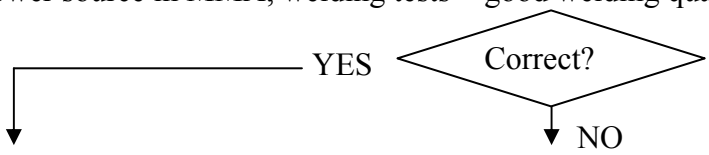
### 3.3.7 - In TIG, arc unstable, welding irregular.

**NOTE**

In TIG, the welding quality may not be acceptable due to current instability. In this case we recommend carrying out MMA welding tests.

WELDING QUALITY TEST IN MMA.

- ❑ Power source in MMA, welding tests = good welding quality.




- ♦ Perform the tests "open circuit operation" (par. 3.3.5) and "operation on resistive load" (par. 3.3.6).
- ♦ Replace the power board (11).

- ♦ Check the condition of the torch and electrode. If necessary, sharpen the tip of the electrode.
- ♦ Check for the presence and continuous flow of gas in output from the torch.
- ♦ Check the operation of the gas valve in the torch.
- ♦ Replace the power board (11).

### 3.3.8 - In MMA, difficulty striking the arc, welding irregular.

**NOTE**

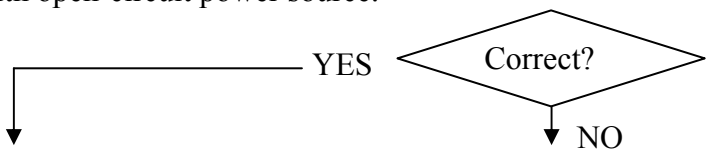
The power source art. 255 offers the functions HOT-START, to assist striking the arc in both MMA and TIG modes, and ARC-FORCE, to maximize transferring the electrode drop to the workpiece in MMA welding.

ARC-FORCE AND HOT-START REFERENCES TEST.

**NOTE**

The ARC-FORCE function is timed (maximum duration = 400 msec.) and begins when the output voltage, during MMA welding, exceeds a certain threshold (not adjustable). Therefore, for the following test we recommend **temporarily setting up a jumper on terminals 8 and 3 of the connector (H),** to prevents the output voltage from being generated and thus stabilizing the welding test condition. Without the jumper on the connector (H), the test voltage may be measured only during the initial "lamp-test" and the subsequent 400 msec, or during MMA welding.

- ARC-FORCE FUNCTION REFERENCE. Power board (11), connector CN1, terminals 4 (+) and 1 (-) = voltage adjustable from 0 to maximum (approximately +4 Vdc), using the knob (L), with open-circuit power source.
- HOT-START FUNCTION REFERENCE. Power board (11), connector CN1, terminals 8 (+) and 1 (-) = voltage adjustable from 0 to maximum (approximately +4 Vdc) using the knob (I), with open-circuit power source.




  - ♦ Check the wiring between CN1 power board (11) and CN1 panel board (16).
  - ♦ Check the supply voltages for the panel board (16), performing the PANEL BOARD (16) POWER SUPPLY TEST, in par. 3.3.1, if necessary.
  - ♦ With the power source off, temporarily disconnect connector CN1 on power board (11) and check the resistance between terminals 8 and 1 and between terminals 4 and 1 of CN1 on power board (11). Correct value = approximately 200 Kohm for both measurements. If 0 ohm (short-circuit) o >Mohm (circuit broken), check the resistive network RR2 and its connection with CN1 terminals 8 and 4, or replace the power board (11).
  - ♦ Make sure that the potentiometers PT1 and PT3 on panel board (16) are intact. Replace if defective, or replace the panel board (16).

♦ Replace the power board (11).

## 3.4 - Error codes.

### 3.4.1 - Yellow led (B) lit steadily.

Alarm for temperature above limits.

The thermostat is located on the dissipater of the power mosfets of the power board (11).

The power source delivers no current, but the fan remains in operation; we therefore recommend leaving the power source powered in case of alarm for overtemperature.

Check the temperature of the power module dissipaters on the power board (11), and wait for them to cool completely if necessary. If the alarm persists, replace power board (11). If the alarm is reset, check the efficiency of ventilation, make sure the ambient temperature is not too high, and that the working cycle is not greater than the one specified.

### 3.4.2 - Yellow led (B) flashing (4 rapid flashes with interval of 5" of steady light).

Alarm for high supply voltage, greater than approximately 260 Vac, at the start-up.

The power source delivers no current.

Proper operation returns when the voltage falls below 260 Vac.

This system also protects the power source against accidental power supply at 400 Vac. In this condition the electronic circuits are protected, but the fan subjected to the mains voltage may be damaged in just a few seconds.

### 3.4.3 - Yellow led (B) flashing (2 rapid flashes with interval of 2" of steady light).

Alarm for excessive supply voltage of the internal driver circuits. Generally, something has occurred which may damage the power source if the activity continues.

To restore operation, shut off the power source, wait for the capacitors inside to discharge completely (4 minutes), and restart the power source at the rated voltage. If the alarm persists, the power board (11) may be faulty, and it is therefore recommended to replace it.

### 3.4.4 - Yellow led (B) flashing (1 rapid flash with interval of 2" of steady light).

Alarm for low supply voltage, below approximately 160 Vac, both at start-up and while operating.

The power source delivers no current.

Proper operation returns when the voltage rises above approximately 160 Vac, remaining at reduced performance levels until the voltage reaches values close to the rated value.

### 3.4.5 - Yellow led (B) off during the first 5 seconds upon start-up (no lamp-test).

Alarm for low supply voltage, less than approximately 150 Vac, at start-up.

The power source delivers no current, even though the signals are the same as for normal operation after the lamp-test.

Proper operation returns when the voltage rises above approximately 160 Vac, remaining at reduced performance levels until the voltage reaches values close to the rated value.

# 4 - COMPONENTS LIST

## 4.1 - Power source art. 255: see file ESP255.pdf enclosed at the end of the manual.

## 4.2 - Components table: see file ESP255.pdf enclosed at the end of the manual.

## 4.3 - List of spare parts.

**Essential spare parts.**

| Ref. | Code | Description | Qty. |
|---|---|---|---|
| 11 | 5602125 | power board | 1 |

**Recommended spare parts.**

| Ref. | Code | Description | Qty. |
|---|---|---|---|
| 5 | 3190014 | switch | 1 |
| 9 | 3165075 | fan | 1 |
| 16 | 5602126 | panel board | 1 |

# 5 - ELECTRICAL DIAGRAMS

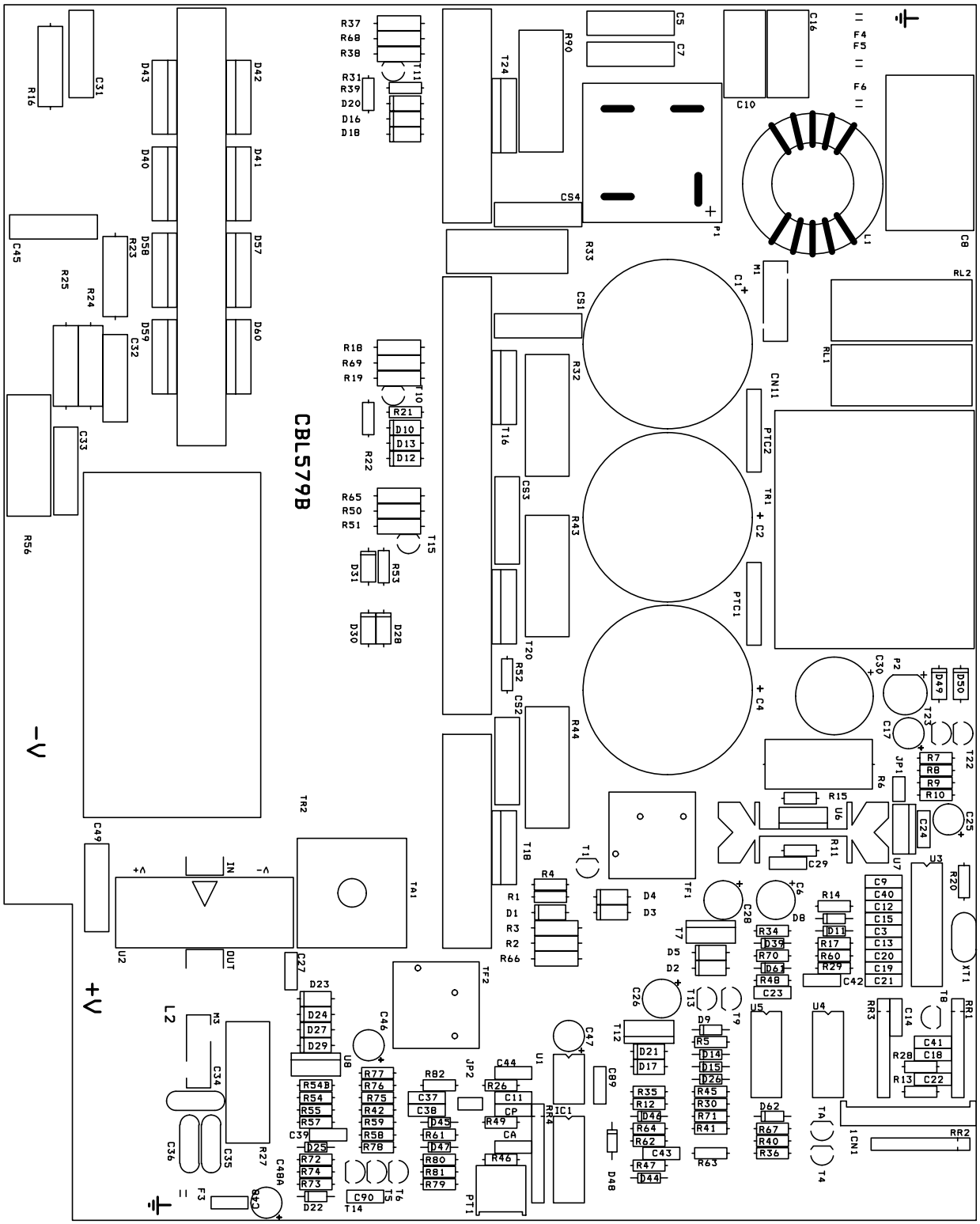
## 5.1 - Power source art. 255: see file SCHE255.pdf enclosed at the end of the manual.

## 5.2 - Power board (11) code 5.602.125.

### 5.2.1 - Connector table.

| Connector | Terminals | Function |
|---|---|---|
| CN1 | 2(+) – 1(-) | 5Vdc power supply output for panel board (16). |
| CN1 | 3(+) – 10(-) | 13.8 Vdc power supply output for panel board (16). |
| CN1 | 4 | ARC-FORCE reference input. |
| CN1 | 5 | welding current reference input. |
| CN1 | 6 | power source blocked signaling output. |
| CN1 | 7 | start command input (from external button or internal command). |
| CN1 | 8 | HOT-START reference input. |
| CN1 | 9 | HOT-START enable output. |
| CN11 | - | output for fan (9). |
| | F3 - F4 | earth connections of the power board (11). |
| | F5 - F6 | 230 Vac power supply input for power board (11). |
| | +V - -V | power circuit output of power board (11). |

### 5.2.2 - Topographical drawing.

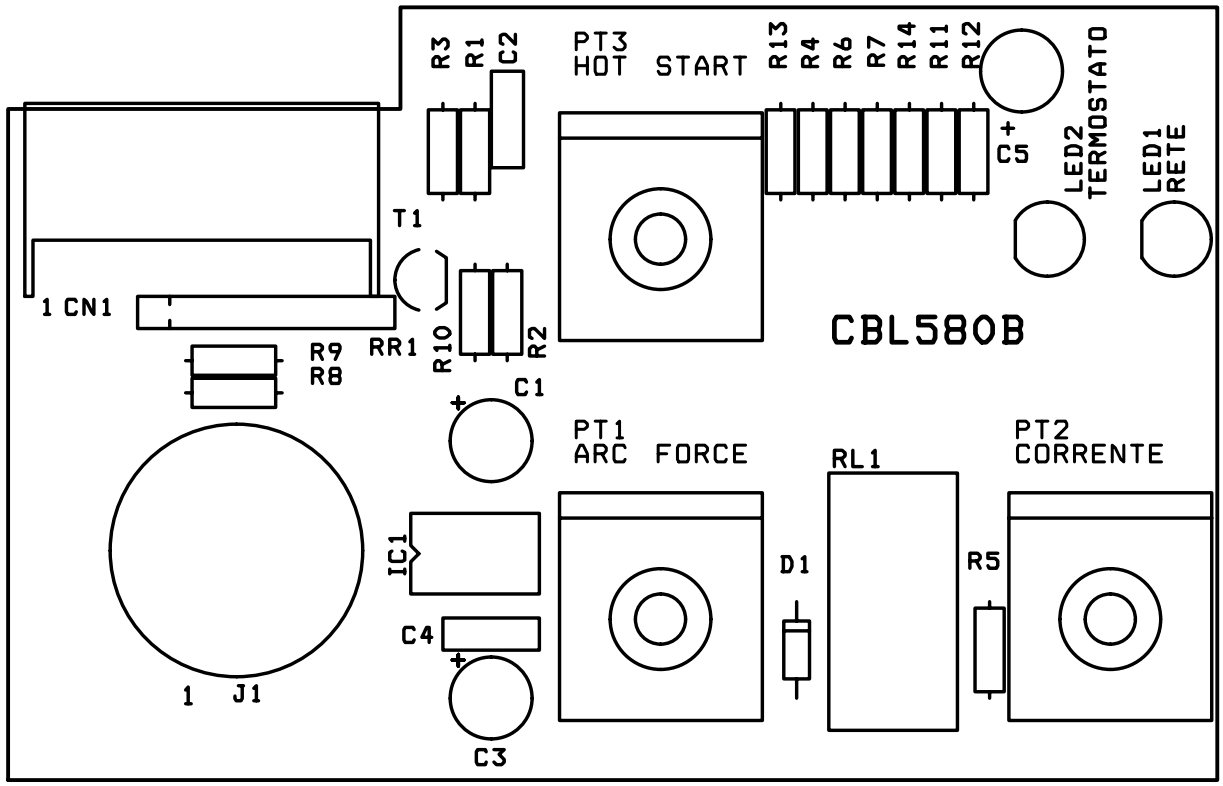


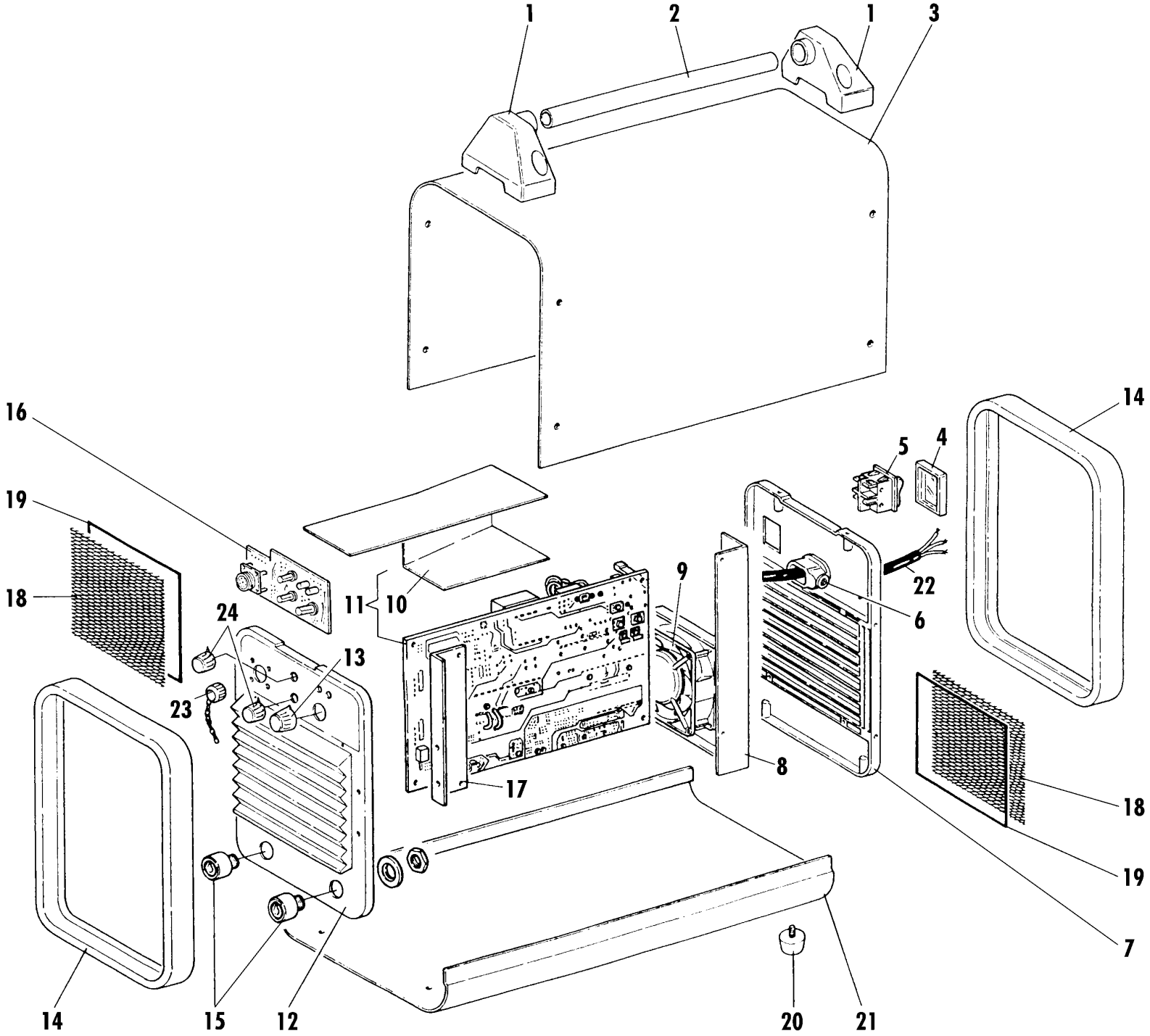
## 5.3 - Panel board (16) code 5.602.126.

### 5.3.1 - Connector table.

| Connector | Terminals | Function |
|---|---|---|
| CN1 | 2(+) – 1(-) | 5Vdc power supply input for panel board (16). |
| CN1 | 3(+) – 10(-) | 13.8 Vdc power supply input for panel board (16). |
| CN1 | 4 | ARC-FORCE reference output. |
| CN1 | 5 | welding current reference output. |
| CN1 | 6 | power source blocked signaling input. |
| CN1 | 7 | start command output (from external button or internal command). |
| CN1 | 8 | HOT-START reference output. |
| CN1 | 9 | HOT-START enable input. |
| J1 | 1 - 9 | input from external start button. |
| J1 | 2 | + power supply output for external current potentiometer. |
| J1 | 3 - 8 | external start button enable input. |
| J1 | 4 - 8 | welding current reference enable input from external potentiometer. |
| J1 | 5 | NU. |
| J1 | 6 | NU. |
| J1 | 7 | power supply output (-) for external current potentiometer. |
| J1 | 10 | current reference input from external potentiometer cursor. |

### 5.3.2 - Topographical drawing.

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| pos | DESCRIZIONE | DESCRIPTION |
|---|---|---|
| 01 | SUPPORTO MANICO | HANDLE SUPPORT |
| 02 | MANICO | HANDLE |
| 03 | FASCIONE | HOUSING |
| 04 | COPERTURA IN GOMMA | RUBBER MAT |
| 05 | INTERRUTTORE | SWITCH |
| 06 | PRESSACAVO | STRAIN RELIEF |
| 07 | PANNELLO POSTERIORE | BACK PANEL |
| 08 | SUPPORTO VENTOLA | FAN SUPPORT |
| 09 | MOTORE CON VENTOLA | MOTOR WITH FAN |
| 10 | COPERTURA | COVER |
| 11 | CIRCUITO DI POTENZA | POWER CIRCUIT |
| 12 | PANNELLO ANTERIORE | FRONT PANEL |

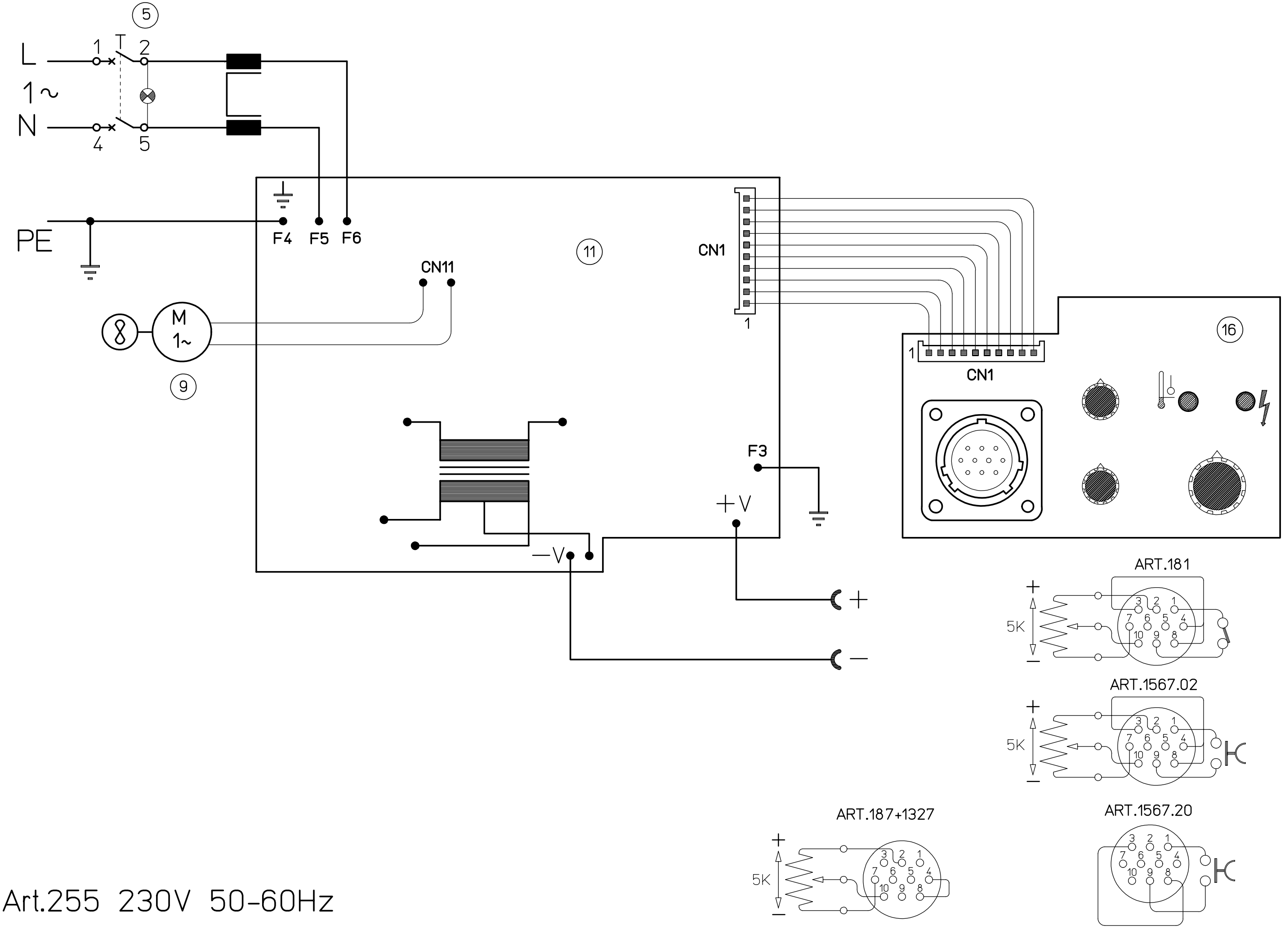
| pos | DESCRIZIONE | DESCRIPTION |
|---|---|---|
| 13 | MANOPOLA | KNOB |
| 14 | CORNICE | FRAME |
| 15 | PRESA | SOCKET |
| 16 | CIRCUITO CONNETTORE | CONNECTOR CIRCUIT |
| 17 | SUPPORTO | SUPPORT |
| 18 | RETE METALLICA | WIRE NETTING |
| 19 | CORNICE | FRAME |
| 20 | PIEDE IN GOMMA | RUBBER FOOT |
| 21 | FONDO | BOTTOM |
| 22 | CAVO RETE | POWER CORD |
| 23 | TAPPO | CAP |
| 24 | MANOPOLA | KNOB |

**La richiesta di pezzi di ricambio deve indicare sempre: numero di articolo, matricola e data di acquisto della macchina, posizione e quantità del ricambio.**

**When ordering spare parts please always state the machine item and serial number and its purchase data, the spare part position and the quantity.**

| CODIFICA COLORI CABLAGGIO ELETTRICO | | WIRING DIAGRAM COLOUR CODE |
|---|---|---|
| A | NERO | BLACK |
| B | ROSSO | RED |
| C | GRIGIO | GREY |
| D | BIANCO | WHITE |
| E | VERDE | GREEN |
| F | VIOLA | PURPLE |
| G | GIALLO | YELLOW |
| H | BLU | BLUE |
| K | MARRONE | BROWN |
| J | ARANCIO | ORANGE |
| I | ROSA | PINK |

| CODIFICA COLORI CABLAGGIO ELETTRICO | | WIRING DIAGRAM COLOUR CODE |
|---|---|---|
| L | ROSA-NERO | PINK-BLACK |
| M | GRIGIO-VIOLA | GREY-PURPLE |
| N | BIANCO-VIOLA | WHITE-PURPLE |
| O | BIANCO-NERO | WHITE-BLACK |
| P | GRIGIO-BLU | GREY-BLUE |
| Q | BIANCO-ROSSO | WHITE-RED |
| R | GRIGIO-ROSSO | GREY-RED |
| S | BIANCO-BLU | WHITE-BLUE |
| T | NERO-BLU | BLACK-BLUE |
| U | GIALLO-VERDE | YELLOW-GREEN |
| V | AZZURRO | BLUE |




Art.255 230V 50-60Hz