

INSTRUCTION MANUAL FOR ARC WELDING MACHINE

IMPORTANT: BEFORE STARTING THE EQUIPMENT, READ THE CONTENTS OF THIS MANUAL, WHICH MUST BE STORED IN A PLACE FAMILIAR TO ALL USERS FOR THE ENTIRE OPERATIVE LIFE-SPAN OF THE MACHINE. THIS EQUIPMENT MUST BE USED SOLELY FOR WELDING OPERATIONS.

1 SAFETY PRECAUTIONS

WELDING AND ARC CUTTING CAN BE HARMFUL TO YOURSELF AND OTHERS. The user must therefore be educated against the hazards, summarized below, deriving from welding operations. For more detailed information, order the manual code 3.300.758

ELECTRIC SHOCK - May be fatal.



- Install and earth the machine according to the applicable regulations.
- Do not touch live electrical parts or electrodes with bare skin, gloves or wet clothing.
- Isolate yourselves from both the earth and the workpiece.
- Make sure your working position is safe.

FUMES AND GASES - May be hazardous to your health.



- Keep your head away from fumes.
- Work in the presence of adequate ventilation, and use ventilators around the arc to prevent gases from forming in the work area.

ARC RAYS - May injure the eyes and burn the skin.



- Protect your eyes with welding masks fitted with filtered lenses, and protect your body with appropriate safety garments.
- Protect others by installing adequate shields or curtains.

RISK OF FIRE AND BURNS



- Sparks (sprays) may cause fires and burn the skin; you should therefore make sure there are no flammable materials in the area, and wear appropriate protective garments.

NOISE



- This machine does not directly produce noise exceeding 80dB. The plasma cutting/welding procedure may produce noise levels beyond said limit; users must therefore implement all precautions required by law.

PACEMAKERS

- The magnetic fields created by high currents may affect the operation of pacemakers. Wearers of vital electronic equipment (pacemakers) should consult their physician before beginning any arc welding, cutting, gouging or spot welding operations.

EXPLOSIONS



- Do not work in the vicinity of containers under pressure, or in the presence of explosive dust, gases or fumes.
- All cylinders and pressure regulators used should be handled with care.

ELECTROMAGNETIC COMPATIBILITY

This machine is manufactured in compliance with the instructions contained in the harmonized standard EN50199, **and must be used solely for professional pur-**

poses in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in non-industrial environments.



IN CASE OF MALFUNCTIONS, REQUEST ASSISTANCE FROM QUALIFIED PERSONNEL.

2 GENERAL DESCRIPTIONS

2.1 SPECIFICATIONS

This welding machine is a DC power source built using INVERTER technology, engineered to weld with all types of coated electrodes (NOTE: Art. 330 does not include cellulosic) and with TIG welding with scratch starting.

2.2 EXPLANATION OF THE TECHNICAL SPECIFICATIONS LISTED ON THE MACHINE PLATE.

- N°. Serial number, which must be indicated on any request regarding the welding machine.
-  Drooping characteristic.
- SMAW. Suitable for welding with covered electrodes.
- TIG. Suitable for TIG welding.
- U0. Secondary open-circuit voltage
- X. Duty cycle percentage. % of 10 minutes during which the welding machine may run at a certain current without overheating.
- I2. Welding current
- U2. Secondary voltage with current I2
- U1. Rated supply voltage.
The machine is equipped with automatic selection of the supply voltage
- 1~ 50/60Hz 50- or 60-Hz single-phase power supply
- I1 max. This is the maximum value of the absorbed current.
- I1 eff. This is the maximum value of the actual current absorbed, considering the duty cycle.
- IP23 Protection grade of the housing, approving the equipment as suitable for use outdoors in the rain.
-  Suitable for hazardous environments.

NOTES: The welding machine has also been designed for use in environments with a pollution rating of 3. (See IEC 60664).

2.3 DESCRIPTION OF PROTECTIVE DEVICES

2.3.1 Thermal protection

This equipment is protected by a thermostat. When the thermostat is tripped, the machine stops delivering current but the fan continues to run. The yellow LED (B) lights to indicate when it is tripped. Do not shut off the welding machine until the LED has gone off.

3 INSTALLATION

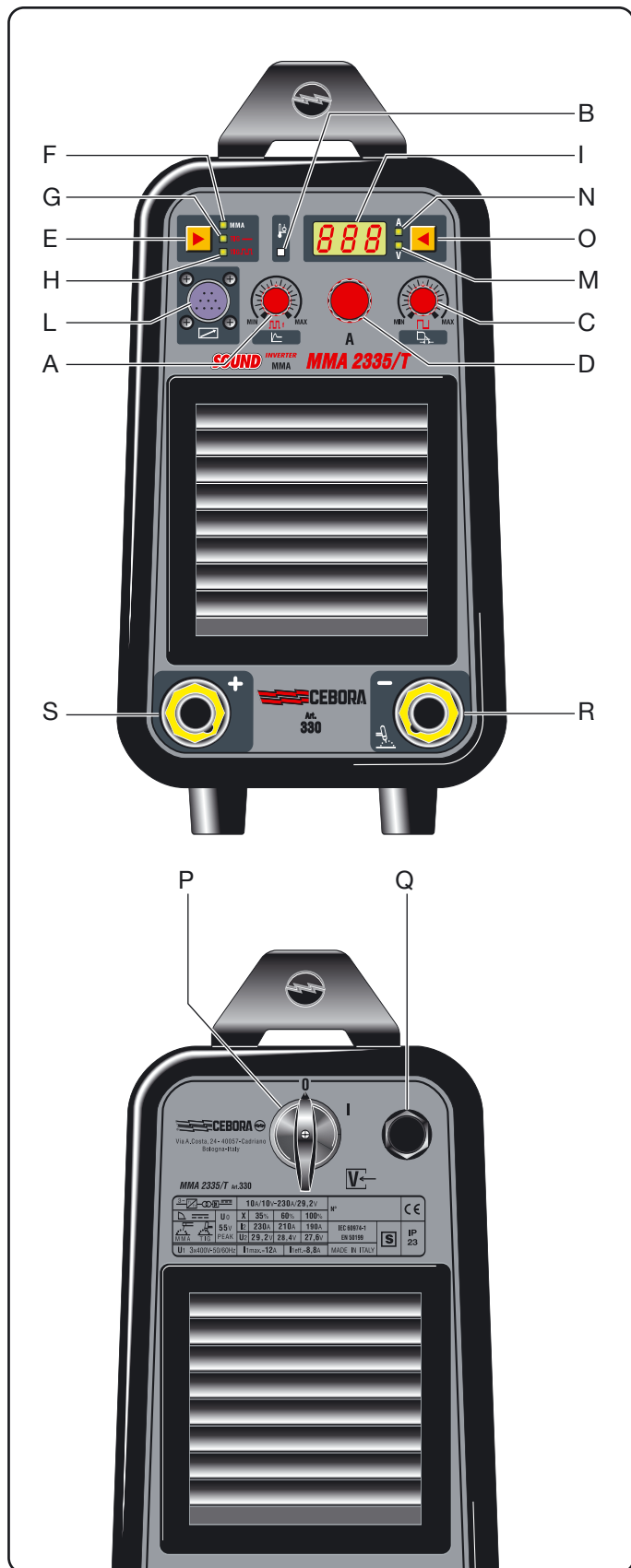
Make sure that the supply voltage matches the voltage indicated on the specifications plate of the welding machine.

When mounting a plug, make sure it has an adequate capacity, and that the yellow/green conductor of the power supply cable is connected to the earth pin.

The capacity of the overload cutout switch or fuses installed in series with the power supply must be equivalent to the absorbed current I1 of the machine.

3.1. START-UP

Only skilled personnel should install the machine. All




connections must be carried out according to current regulations, and in full observance of safety laws (regulation CEI 26-23 / IEC-TS 62081).


3.2 DESCRIPTION OF THE EQUIPMENT

A) Setting knob





During **MMA** welding it adjusts the “hot-start” current time , expressed in hundredths of a second; essentially, it sets an overcurrent that serves to improve striking. It does not make any adjustment during **continuous TIG** welding.

In **pulsed TIG** welding, it adjusts the pulse frequency  in Hz.


During welding processes in which the knob is active, the value of the adjustment is shown on the display **I**. Two seconds after the last adjustment the display returns to showing the figure previously selected using the selector switch **O**.

B) Thermostat LED


 (see 2.3.1. Thermal protection).

C) Setting knob



During **MMA** welding, it adjusts the percentage of “arc-force”  current; essentially it adjusts a current that produces the electrode transfer.

It does not make any adjustment during **continuous TIG** welding.

In **pulsed TIG** mode, it adjusts the base current in  Amperes.

During welding processes in which the knob is active, its setting is shown on the display **I**. Two seconds after the last adjustment the display returns to showing the figure previously selected using the selector switch **O**.

D) Welding current setting knob.



Adjusts the welding current in both MMA and continuous TIG mode.

In pulsed TIG welding it adjusts the peak current.

E) Procedure selector switch.



Pressing this key allows you to choose the welding mode (**F**, **G** or **H**).

F) Coated MMA welding.



Cellulosic electrodes can be melted only using art. 333 (A.W.S. 6010).

G) Continuous TIG welding.



The arc strikes by creating a short-circuit between the electrode and the workpiece; the welding current is adjusted by means of the knob **D**.

H) Pulsed TIG welding.



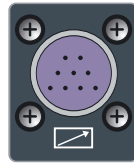
The arc strikes by creating a short-circuit between the electrode and the workpiece, the peak current is adjusted by means of the knob **D**, the base current is adjusted by means of the knob **C**, the frequency is adjusted by means of the knob **A**.

I) Display.



Displays the value of the Amperes or Volts based on the selections made using the button **O**. In addition, it displays the values set using the knobs **A** and **C**.

L) Connector



To which the remote controls are connected

M) LED



When lit, it indicates that display **I** is showing the welding voltage. Activated by means of selector switch **O**.

N) LED



When lit, it indicates that display **I** is showing the welding current. Activated by means of selector switch **O**.

O) Selector switch.



Pressing this key selects the LEDs **M** and **N**.

P) On/Off switch.

Q) Power cord.

R) (-) Output terminal.

S) (+) Output terminal.

3.3 MMA WELDING

- Make sure that the switch (**P**) is in position 0, then connect the welding cables, matching the polarity required by the manufacturer of the electrodes you will be using.

VERY IMPORTANT: Connect the terminal of the grounding cable to the workpiece, making sure that contact is good to ensure smooth equipment operation and avoid voltage dips with the workpiece.

- Do NOT touch the torch or electrode clamp simultaneously with the mass terminal.

- Turn the machine on using the switch (**P**).

- Press the selector switch **E** until the LED **F** lights.

- Adjust the current based on the electrode diameter, welding position and type of joint to be made.

- Also adjust the hot-start using the knob **A** (recommended setting 15) and the arc-force using the knob **C** (recommended setting 30 for basic electrodes).

Always remember to shut off the machine and remove the electrode from the clamp after welding.

Article 330 is suitable for melting cellulosic electrodes (A.W.S. 6010).

3.4 TIG WELDING

- This welding machine is suitable for welding the following materials using the TIG procedure: stainless steel, iron, copper.

- Make sure that the switch (**P**) is in position 0.

- Connect the mass cable connector to the positive pole (+) of the welding machine, and the clamp to the workpiece as close as possible to the welding point.

- Connect the power connector of the TIG torch to the

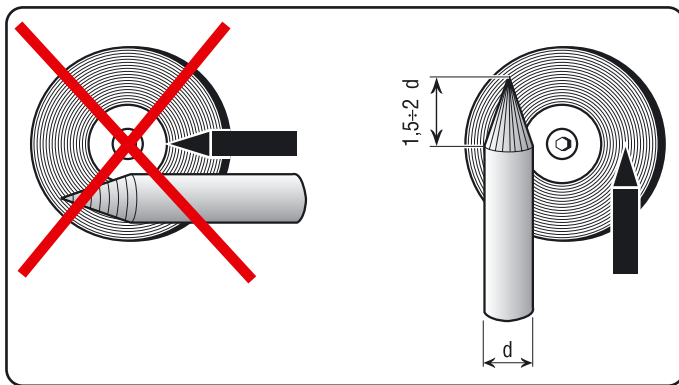
negative pole (-) of the welding machine.

- Connect the gas hose to the outlet of the pressure regulator, connected to an ARGON cylinder.
- Use a tungsten electrode with 2% thorium (red stripe).
- Do not touch the electrode and mass terminal simultaneously.
- Turn the machine on using the switch (P).
- Use the selector switch E to set the type of TIG welding, continuous or pulsed.
- Strike the arc by contact using a firm, rapid stroke.
- **Remember to shut off the machine and close the gas cylinder valve when you have finished welding.**

3.3.1 Preparing the electrode

Grind the electrode tip so that it has vertical grooves as shown in the figure.

- To profile the tungsten, use a hard, fine-grained abrasive grinding wheel used solely for this purpose.
- Be careful with metal particles.



4 ACCESSORIES.

This welding machine is intended for use with the following accessories:

Art 181. Foot control to adjust the welding current. Equipped with 5m of cable and ON-OFF switch.

Art 187+ extension art 1192. For current adjustment during MMA welding.

Art 1284.05. Clamp + earth 35mm² for MMA welding. (Art. 330).

Art 1286.05. Clamp + earth 50mm² for MMA welding. (Art. 333).

Art 1432. Trolley.