

INSTRUCTION MANUAL FOR SPOT 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 welding 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) shall consult their physician before beginning any arc welding, cutting, gouging or spot welding operations.

EXPLOSIONS



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

ELECTROMAGNETIC COMPATIBILITY

This machine is manufactured in compliance with the instructions contained in the harmonized standard IEC 62135-2 (cl.A2), and must be used solely for professional purposes in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in non-industrial environments.



DISPOSAL OF ELECTRICAL AND ELECTRONIC EQUIPMENT

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!
IN CASE OF MALFUNCTIONS, REQUEST ASSISTANCE FROM QUALIFIED PERSONNEL.

2 GENERAL DESCRIPTIONS

2.1 SPECIFICATIONS

This machine was developed to handle the problems that arise in auto body repair

NOTE: Only steel bodies.

It makes it possible to eliminate dents or bulges on the body, working from just one side.

The welding machine must not be used for any other purpose, such as defrosting pipes or performing mechanical tasks. The machine was designed to be used by the operator using the planned control devices

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
IEC 62135-1	The welding machine is manufactured according to these international standards.
$1\sim\text{---}\text{---}\sim$	Single-phase transformer
U ₂₀	Secondary open-circuit voltage
I _{2cc}	Max. short circuit current
U _{1n}	Rated supply voltage.
1-50/60Hz	50/60-Hz single-phase power supply
S ₅₀	Power at 50%
IP23	Protection rating for the housing. Grade 3 as the second digit means that the equipment is suitable for use outdoors in the rain.
S	Suitable for use in high-risk environments.
NOTES:	Suitable for use in environments with a pollution rating of 3 (see IEC 60664-1)

2.3 DESCRIPTION OF PROTECTIVE DEVICES

2.3.1 Thermal protection

This machine is protected by a thermostat, which prevents the machine from operating if the allowable temperatures are exceeded. In this condition the display will show the error code E1.

3 INSTALLATION

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 26-10 - CENELEC HD 427).

- Place the welding machine in a stable and safe position. Air must circulate freely, both incoming and outgoing, and the welding machine must be protected from entry by liquids, dirt, metal filings, etc.
- 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. Any extension cords must be sized appropriately for the absorbed current I1.

- Pacemaker wearers are prohibited from using the machine or approach the cables.
- Fully insert the earth cable plug into one socket (U or V) and turn clockwise.
- Fully insert the gun plug into one socket (U or V) and turn clockwise.
- Insert the 3-pin control connector into the socket provided; if the manual cycle "MAN" is selected, the spot-welding cycle begins when the torch trigger is pressed.
- Turn on the welding machine using the switch X on the back of the machine.
- To limit exposure to the magnetic field, keep the gun cable on the side of the hand holding it, avoiding wrapping the cable around.

4 DESCRIPTION OF THE EQUIPMENT

A- Key to select the operator "USER".

B- LED. Signals the activation or shutdown of the operator selection function.

C- Key. Activates the pulse heating function.

It is used to produce heat on thick sheet metal. It delivers three consecutive pulses at a fixed interval of 360 msec.

The buttons S and T adjust the power; display R shows the setting.

Minimum = 20 Maximum = 90.

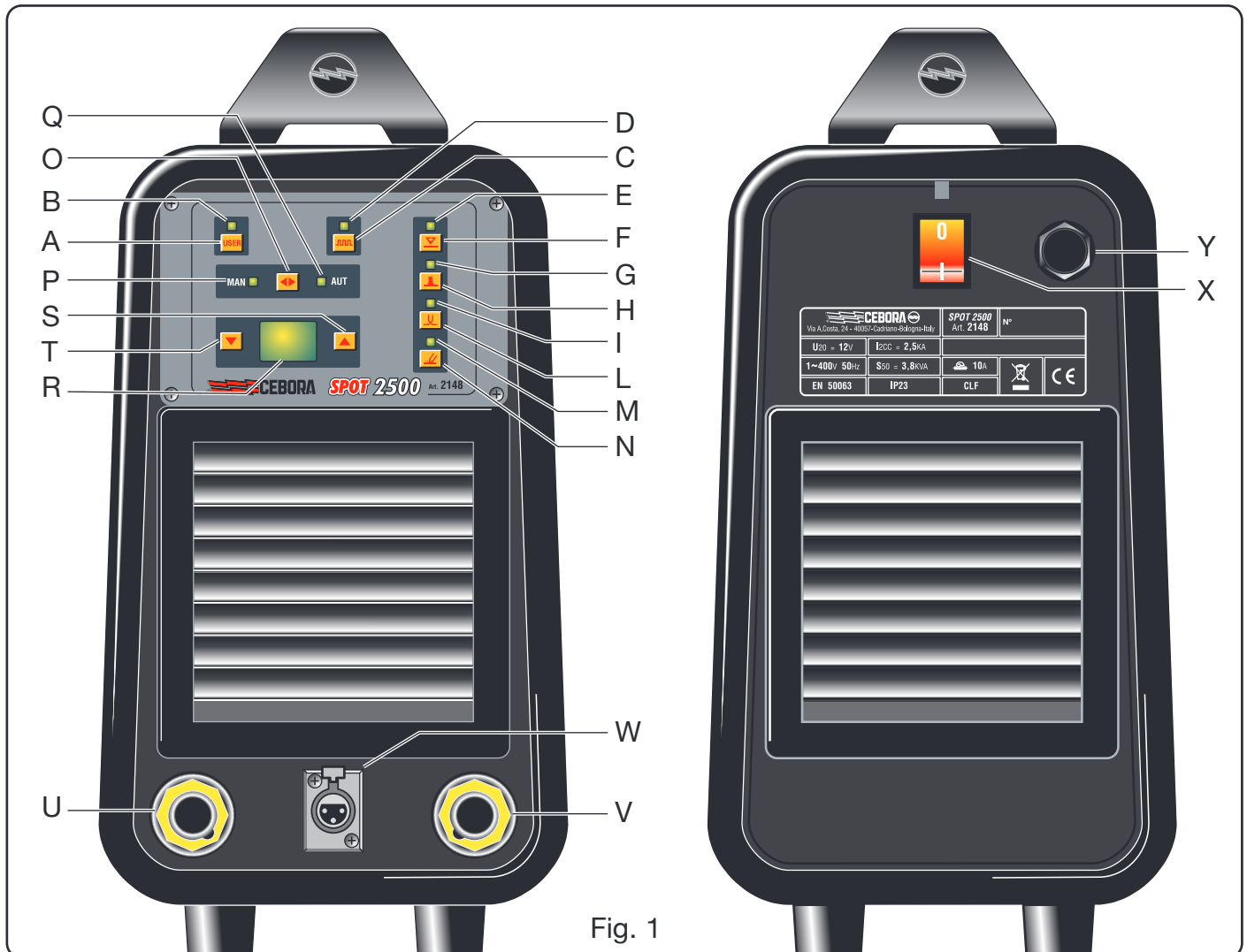


Fig. 1

D-LED. Signals activation of the pulse heating function. For operation, read “manual – automatic function” LED **O**.

E- LED. Signals activation of the rosette spot-welding function. For operation, read “manual – automatic function” LED **O**.

F- Key. Activates the rosette spot-welding function. Performs traction on sheet metal after first mounting the hammer on the gun and fastening the three-pointed rosette to the hammer head. The power is constant. Time is adjusted using the buttons **S** and **T**. The display **R** shows the setting: Minimum = 01 Maximum = 15.

G- LED. Signals activation of the insert spot-welding function. For operation, read “manual – automatic function” LED **O**.

H- Key. Activates the insert spot-welding function. Fastens the various threaded inserts present in modern auto bodies. The power is constant. Time is adjusted using the buttons **S** and **T**. The display **R** shows the setting: Minimum = 01 Maximum = 50.

I- LED. Signals activation of the metal pressing function. For operation, read “manual – automatic function” LED **O**.

L- Key. Activates the sheet metal pressing function. Serves to flatten sheet metal that has become misshapen. It is carried out using the specific electrode. Time is fixed, and the buttons **S** and **T** adjust the power; the display **R** shows the setting: Minimum = 20 Maximum = 60.

M- LED. Signals activation of the sheet metal heating function. For operation, read “manual – automatic function” LED **O**.

N- Key. Activates the sheet metal heating function. Heats deformed sheet metal using carbon. The time is unlimited. Use the buttons **S** and **T** to set a power; the display **R** shows the setting. Minimum = 20 - Maximum = 60.

O- Automatic mode or manual selection key.

Upon start-up, if the machine is set up for manual mode “**MAN**” the LED **P** lights.

NOTE: upon power source start-up the LEDs flash, indicating “stand-by” status: the machine is on, with no voltage, awaiting commands.

Select an operating function.

Selecting between manual and automatic mode takes place by pressing the **O** key.

Manual mode means that, once the function is selected, **spot-welding is controlled by the trigger**; the LED that indicates the function choice remains lit without flashing, and the display **R** shows the setting.

Warning: in this operating mode the power source never enters “stand-by.”

Automatic mode means that spot-welding is **not controlled by the torch trigger**. In relation to this the LEDs that show activation of the function have two operating modes:

1) **Flashing** the machine does not deliver voltage. This means that it is waiting for the operator to select a function, or that the machine has been inactive for more than two minutes. The display **R** shows two lines (“stand-by”).

2) **NOT flashing** the machine delivers reduced voltage, and to carry out the job set by the operator, it automatically makes sure there is contact between the torch and the workpiece. The display **R** shows the setting numerically, and the keys **T** and **S** are **active**.

NOTE: In automatic mode, once a function is enabled, the machine generates a low voltage that serves to check the contact between the gun and the workpiece; thus to correctly perform the job, proceed as follows:

Rest the spot-welding electrode firmly and steadily on the workpiece.

Let the machine perform the job.

Lift up from the working position **and do not rest the gun in zones that might accidentally come into contact with earth**.

P- LED which signals manual mode.

Q- LED which signals automatic mode.

R- Display shows the settings made with the keys S and T.

S- Key increases the values shown on the display R.

T- Key reduces the values shown on the display R.

U-V- Power sockets for earth cable and spot-welding gun.

W- 3-pin socket to which to connect the male patch connector of the spot-welding gun, **essential for manual mode**.

Warning: use only original torches; others might damage the machine.

X- Switch that turns the machine on and off.

Y- Mains cable.

5 EARTH CONNECTION

The earth cable must be fastened as close as possible to the point where you will be working.

To fasten the quick earth supplied with the cable, proceed as follows:

For **manual mode** LED **P** lit.

- 1) Fasten the heating electrode to the welding gun
- 2) Press the button **H**; the LED **G** lights.
- 3) Use the key **T** to adjust the time to the minimum (05)
- 4) Rest the earth as close as possible to the working area, after first removing all paint.
- 5) Rest the gun near the earth and press the trigger.
- 6) Raise the gun and turn the nut screwed onto the earth probe clockwise.

For **automatic mode**, LED **Q** is lit.

- 1) Fasten any electrode to the welding gun
- 2) Press the button **H**; the LED **G** stops flashing.
- 3) Use the key **T** to adjust the time to the minimum (05)
- 4) Rest the earth probe as close as possible to the working area, after first removing all paint.

- 5) Rest the gun near the earth; wait for the machine to detect the contact and make the spot-weld.
- 6) Raise the gun and turn the nut screwed onto the earth probe clockwise.

6 WORKING WITH MULTIPLE OPERATORS

It may occur that multiple operators need to use the machine with different settings; this is why the USER function was introduced. This function allows you to save and call up customized values, always recording the last value set for each program and for each operator level. The LED **B** lights if the machine is being used by an operator. Briefly pressing the key **A** causes the display **R** to show the letter **L** followed by a number, which is the one selected by the user. Press it briefly again to confirm the operator and re-enable use of the power source.

How operator recognition works.

Briefly pressing (“brief” means less than 0.7 sec) the button **A** (USER) causes the display **R** to show the abbreviation **L1** (level 1), and LED **B** is off; pressing the **S** key activates level 2 and activates the function. The LED **B** lights and the display **R** shows the abbreviation **L2**. Pressing the key **A** confirms the level shown on the display and enables power source operation. The operator may activate, select, and adjust the desired functions. The settings are saved in the various operating modes whenever the function changes, or 5 seconds after the last adjustment.

Let us imagine that operator 1 has stopped using the machine, and a second operator wishes to set up his or her work.

The LED **B** lights to signal to the second operator that the machine is already being used by a colleague; s/he then presses the key **A**. Display **R** shows the abbreviation “**L2**” (abbreviation of the operator who is using the machine). S/he selects level “**L3**” and confirms it by pressing the key **A**. At this point the machine suggests the settings, corresponding to the various functions set in “**L3**”; at this point the new user may set his or her adjustments without changing the settings already saved by “**L2**.”

TO EXIT DAL OPERATOR RECOGNITION SIMPLY select level **L1**. The LED **B** shuts off. Then briefly press the button **A** to confirm exiting the function.

The button on the back of the gun allows the operator to select the machine functions without moving from the working position.



7 MAINTENANCE

Keep all instructions and figures on the welding machine clear and legible. The mains cable and welding cables must be insulated and in perfect condition; be careful at the flex points: near the connector terminals, earth clamps and gun input. All maintenance operations must be carried out by qualified personnel. Before removing the panels, make sure that the machine plug is disconnected from the power supply panel. The electrodes in use must be frequently cleaned of ferrous waste. Periodically remove oil and grease NOT USING SPRAYED WATER NOR SOLVENTS ON THE PAINTED PARTS.