

# 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

### 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.

### ELECTRIC AND MAGNETIC FIELDS - May be dangerous.

· Electric current following through any conductor causes localized Electric and Magnetic Fields (EMF). Welding/cutting current creates EMF fields around cables and power sources.  
· 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.  
· Exposure to EMF fields in welding/cutting may have other health effects which are now not known.  
· All operators should use the following procedures in order to minimize exposure to EMF fields from the welding/cutting circuit:

- Route the electrode and work cables together - Secure them with tape when possible.
- Never coil the electrode/torch lead around your body.
- Do not place your body between the electrode/torch lead and work cables. If the electrode/torch lead cable is on your right side, the work cable should also be on your right side.
- Connect the work cable to the workpiece as close as possible to the area being welded/cut.
- Do not work next to welding/cutting power source.

### 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 standard IEC 60974-10 (CL. A), **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.

### 1.1 WARNING LABEL

The following numbered text corresponds to the label numbered boxes.



- B. Drive rolls can injure fingers.
- C. Welding wire and drive parts are at welding voltage during operation — keep hands and metal objects away.
- 1 Electric shock from welding electrode or wiring can kill.
- 1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.
- 1.2 Protect yourself from electric shock by insulating yourself from work and ground.

- 1.3 Disconnect input plug or power before working on machine.
- 2 Breathing welding fumes can be hazardous to your health.
  - 2.1 Keep your head out of fumes.
  - 2.2 Use forced ventilation or local exhaust to remove fumes.
  - 2.3 Use ventilating fan to remove fumes.
- 3 Welding sparks can cause explosion or fire.
  - 3.1 Keep flammable materials away from welding.
  - 3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watchperson ready to use it.
  - 3.3 Do not weld on drums or any closed containers.
- 4 Arc rays can burn eyes and injure skin.
  - 4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.
- 5 Become trained and read the instructions before working on the machine or welding.
- 6 Do not remove or paint over (cover) label.

## 2 GENERAL DESCRIPTIONS


### 2.1 SPECIFICATIONS


This welding machine is a constant current power source built using INVERTER technology, designed to weld covered electrodes (not including cellulosic) and for TIG procedures, with contact starting and high frequency. IT MUST NOT BE USED TO DEFROST PIPES.

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

This machine is manufactured according to the following international standards: IEC 60974.1 - IEC 60974.3 - IEC 60974.10 CL. A - IEC 61000-3-12 - IEC 61000-3-11 (see note 2).

N°. Serial number, which must be indicated on any type of request regarding the welding machine.

 Single-phase static transformer-rectifier frequency converter.

 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 has an automatic supply voltage selector.

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.

IP23S Protection rating for the housing.

Grade 3 as the second digit means that this equipment may be stored, but it is not suitable for use outdoors in the rain, unless it is protected.

**S** Suitable for hazardous environments.

Note:

- 1- The machine has also been designed for use in environments with a pollution rating of 1. (See IEC 60664).
- 2- This equipment complies with IEC 61000-3-11 provided that the maximum permissible system impedance  $Z_{max}$  is less than or equal to 0,388 at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with maximum permissible system impedance  $Z_{max}$  less than or equal to 0,388

## 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.

### 2.3.2 Motor-driven generators

These must have a power equal to or greater than 6KVA, and must not deliver a voltage greater than 270V.

## 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.

WARNING! Extension cords of up to 30m must have a cross-section of at least 2.5 mm<sup>2</sup>.

### 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 - Procedure and mode selector switch

This push-button selects the welding procedure (MMA or TIG) and mode.

The selection changes each time the button is pressed.

The LEDs light alongside the various symbols to display your choice.

#### F - LED. MMA welding

This machine can weld all types of covered electrodes\* except for cellulosic.

The welding current is adjusted using the knob H.

#### E - LED. 2-stage TIG welding (manual). Start without high frequency.

To light the arc, press the torch trigger and touch the tung-



sten electrode to the workpiece, then lift it. This move must be quick and decisive.

After starting, the current reaches the value set using knob **H**. When the trigger is released, the current begins to drop over the "slope down" time previously set using knob **M**, until it returns to zero.

In this position, you may connect the pedal control accessory ART. 193,

 **D - LED. 4-stage TIG welding (automatic). Start without high frequency.**

This program differs from the previous one in that the arc is both started and shut off by pressing and releasing the torch trigger

 **C - LED. 2-stage TIG welding (manual). Start with high frequency.**

To light the arc, press the torch trigger: a high voltage/frequency pilot spark will light the arc.

The operating logic is the same as described for the LED **E**. In this position, you may connect the pedal control accessory ART. 193,

 **B - LED. 4-stage TIG welding (automatic). Start**

**with high frequency.**


This program differs from the previous one in that the arc is both started and shut off by pressing and releasing the torch trigger

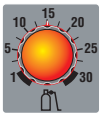
 **G - LED - THERMAL PROTECTION**

Lights when the operator exceeds the duty cycle or percentage intermittence admissible for the machine, and simultaneously blocks the current output.

**NOTE: In this condition the fan continues cooling the power source.**

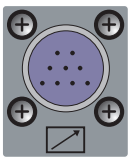
 **H - KNOB**  
Adjusts the welding current.

 **M - KNOB**  
Slope down. This is the time in which the current reaches the minimum value and the arc shuts off. (0-10 sec.)



### L - KNOB

Post gas. Adjusts the time gas flows after welding ends. (0-30 sec.)



### I - 10-PIN CONNECTOR

The following remote controls are connected to this connector:

- a) foot control
- b) torch with start button
- c) torch with up/down, etc...



### O - 1/4 GAS FITTING

This is where the gas hose of the TIG welding torch is to be connected.



### P - Negative output terminal (-)



### Q - Positive output terminal (+)



### S - switch

Turns the machine on and off



### R - gas intake fitting

good electrical contact.

Connect the power connector of the TIG torch to the negative pole (-) of the welding machine.

Connect the torch connector to the welding machine connector I.

Connect the torch gas hose fitting to the fitting O on the machine, and the gas hose from the cylinder pressure regulator to the gas fitting R on the rear panel.

### Turn on the machine.

Do not touch live parts and output terminals while the machine is powered.

The first time the machine is switched on, select the mode using the button A and the welding current using the knob H. The flow of inert gas must be set to a value (in liters per minute) approximately 6 times the diameter of the electrode.

## 4 REMOTE CONTROLS

The following remote controls may be connected to adjust the welding current for this welding machine:

Art. 193 Foot control (used in TIG welding)

Art (1266) TIG UP/DOWN Torch.

Art 1192+Art 187 (used in MMA welding)

ART. 1180 Connection to simultaneously connect the torch and the pedal control.

ART. 193 may be used in any TIG welding mode with this accessory.

**Remote controls that include a potentiometer regulate the welding current from the minimum to the maximum current set via the knob H.**

**Remote controls with UP/DOWN logic regulate the welding current from the minimum to the maximum.**

## 5 MAINTENANCE

**Any maintenance operation must be carried out by qualified personnel in compliance with standard CEI 26-29 (IEC 60974-4).**

### 5.1 GENERATOR MAINTENANCE

In the case of maintenance inside the machine, make sure that the switch S is in position "O" **and that the power cord is disconnected from the mains.**

It is also necessary to periodically clean the interior of the machine from the accumulated metal dust, using compressed air.

### 5.2 PRECAUTIONS AFTER REPAIRS.

After making repairs, take care to organize the wiring so that there is secure insulation between the primary and secondary sides of the machine. Do not allow the wires to come into contact with moving parts or those that heat up during operation. Reassemble all clamps as they were on the original machine, to prevent a connection from occurring between the primary and secondary circuits should a wire accidentally break or be disconnected.

Also mount the screws with geared washers as on the original machine.

## 3.3 MMA WELDING (MANUAL METAL ARC)

- This welding machine is suitable for welding all types of electrodes, with the exception of cellulosic (AWS 6010)\*.

- Make sure that the switch S is in position 0, then connect the welding cables, observing the polarity required by the manufacturer of the electrodes you will be using; also connect the clamp of the ground cable to the workpiece, as close to the weld as possible, making sure that there is good electrical contact.

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

- Turn the machine on using the switch S.

- Select the MMA procedure by pressing the button A: LED F lit.

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

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

## 3.4 TIG WELDING

This welding machine is suitable for welding stainless steel, iron, or copper using the TIG procedure.

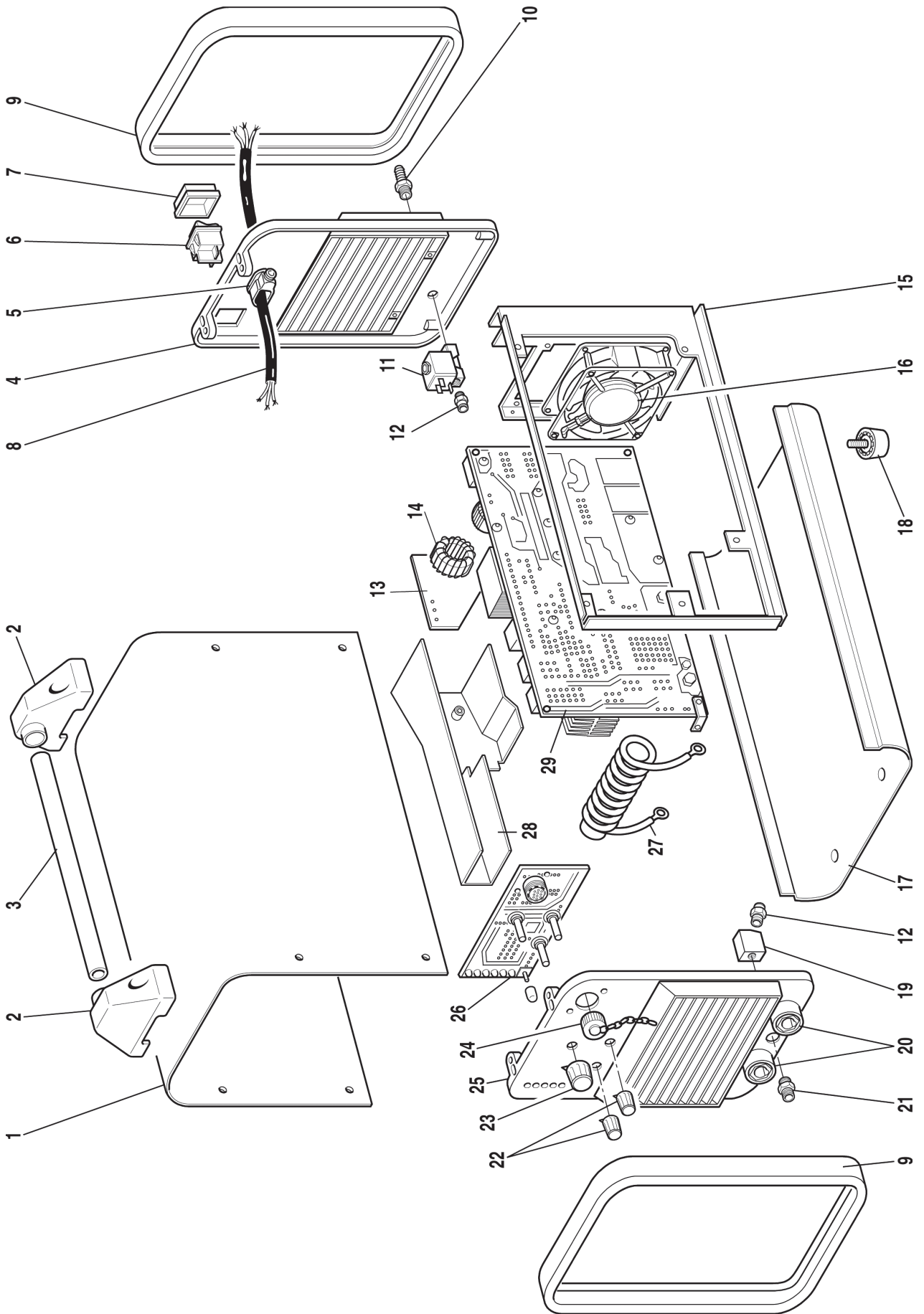
Connect the earth cable connector to the positive pole (+) of the welding machine, and the clamp to the workpiece as close as possible to the welding point, making sure there is

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QUESTA PARTE È DESTINATA ESCLUSIVAMENTE AL PERSONALE QUALIFICATO.  
THIS PART IS INTENDED SOLELY FOR QUALIFIED PERSONNEL.  
DIESER TEIL IST AUSSCHLIEßLICH FÜR DAS FACHPERSONAL BESTIMMT.  
CETTE PARTIE EST DESTINEE EXCLUSIVEMENT AU PERSONNEL QUALIFIE.  
ESTA PARTE ESTÁ DESTINADA EXCLUSIVAMENTE AL PERSONAL CUALIFICADO.  
ESTA PARTE È DEDICADA EXCLUSIVAMENTE AO PESSOAL QUALIFICADO.  
TÄMÄ OSA ON TARKOITETTU AINOASTAAN AMMATTITAITOISELLE HENKILÖKUNNALLE.  
DETTE AFSNIT HENVENDER SIG UDELUKKENDE TIL KVALIFICERET PERSONALE.  
DIT DEEL IS UITSLUITEND BESTEMD VOOR BEVOEGD PERSONEEL.  
DENNA DEL ÄR ENDAST AVSEDD FÖR KVALIFICERAD PERSONAL.  
ΑΥΤΟ ΤΟ ΤΜΗΜΑ ΠΡΟΟΡΙΖΕΤΑΙ ΑΠΟΚΛΕΙΣΤΙΚΑ ΓΙΑ ΤΟ ΕΙΔΙΚΕΥΜΕΝΟ ΠΡΟΣΩΠΙΚΟ.



Art. 264



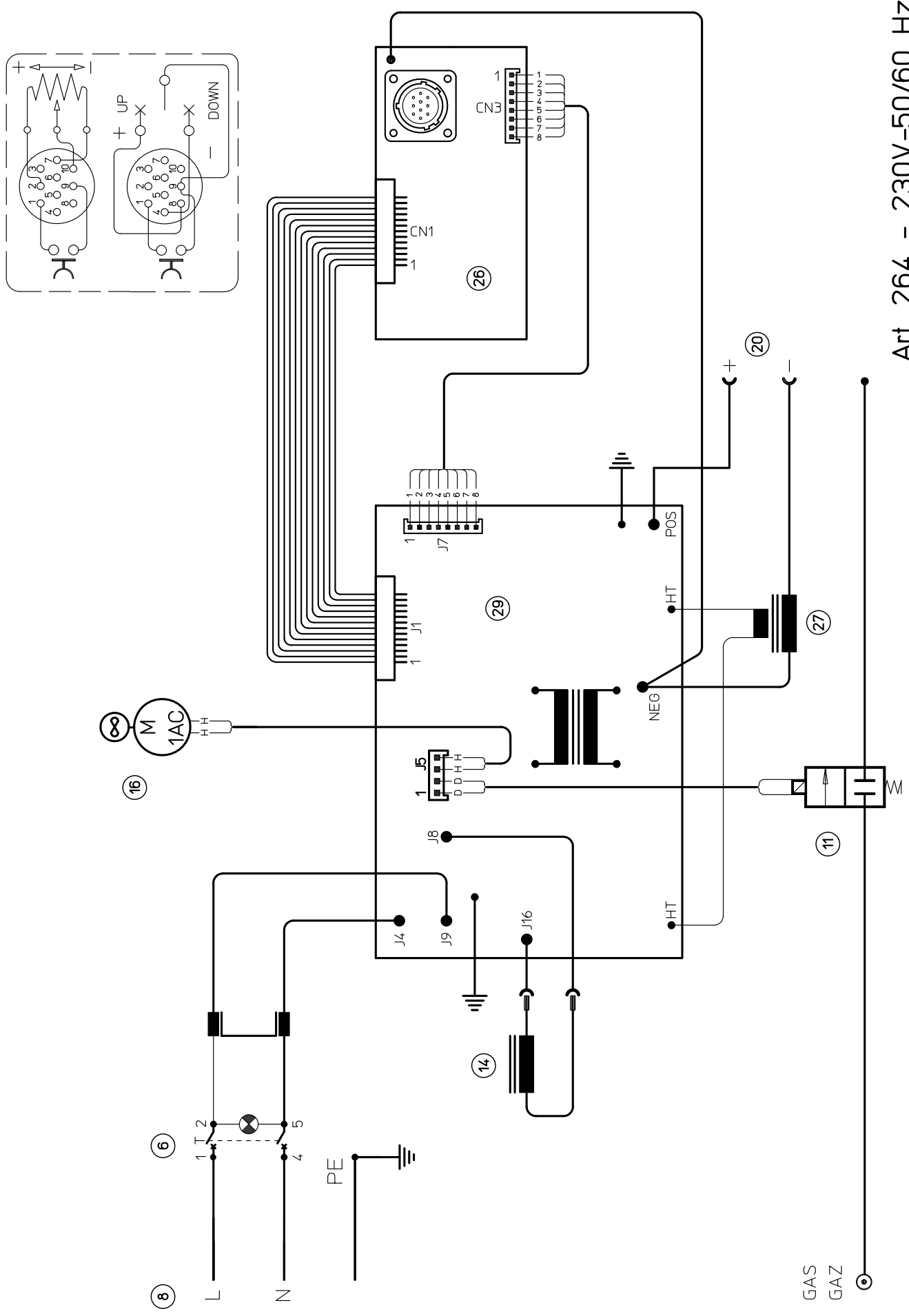
## Art. 264

pos	DESCRIZIONE	DESCRIPTION
01	FASCIONE	HOUSING
02	SUPPORTO MANICO	HANDLE SUPPORT
03	MANICO	HANDLE
04	PANNELLO POSTERIORE	BACK PANEL
05	PRESSACAVO	STRAIN RELIEF
06	INTERRUTTORE	SWITCH
07	COPERTURA IN GOMMA	RUBBER MAT
08	CAVO RETE	POWER CORD
09	CORNICE	FRAME
10	RACCORDO	FITTING
11	ELETTROVALVOLA	SOLENOID VALVE
12	RACCORDO	FITTING
13	SUPPORTO INDUTTANZA	CHOKE SUPPORT
14	INDUTTANZA PFC	PFC CHOKE
15	SUPPORTO SCHEDA	CIRCUIT SUPPORT

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

pos	DESCRIZIONE	DESCRIPTION
16	MOTORE CON VENTOLA	MOTOR WITH FAN
17	FONDO	BOTTOM
18	PIEDE IN GOMMA	RUBBER FOOT
19	RACCORDO	FITTING
20	PRESA	SOCKET
21	RACCORDO	FITTING
22	MANOPOLA	KNOB
23	MANOPOLA	KNOB
24	TAPPO	CAP
25	PANNELLO ANTERIORE	FRONT PANEL
26	CIRCUITO PANNELLO	PANEL CIRCUIT
27	TRASFORMATORE	TRANSFORMER
28	COPERTURA	COVER
29	CIRCUITO DI POTENZA	POWER CIRCUIT

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



Art. 264 - 230V-50/60 Hz