

INSTRUCTION MANUAL FOR WIRE 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 DESCRIPTION

2.1 SPECIFICATIONS

This manual has been prepared for the purpose of educating personnel assigned to install, operate and service the welding machine.

This equipment is a constant-voltage power source, suitable for MIG/MAG and OPEN-ARC welding.

Upon receiving the machine, make sure there are no broken or damaged parts.

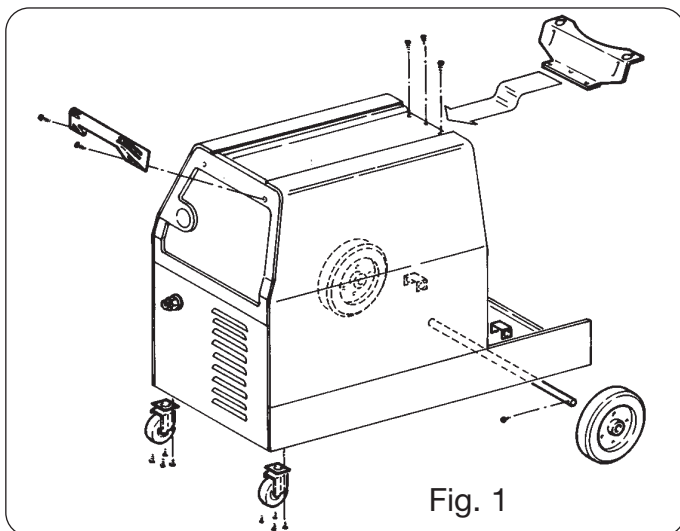
The purchaser should address any complaints for losses or damage to the vector. Please indicate the article and serial number whenever requesting information about the welding machine.

2.2 PLACEMENT

Unpack the machine and place it in an adequately ventilated area, dust-free if possible, taking care not to block the air intake and outlet from the cooling slots.

CAUTION: REDUCED AIR CIRCULATION causes overheating and could damage internal parts.

Keep at least 500 mm of free space around the machine.

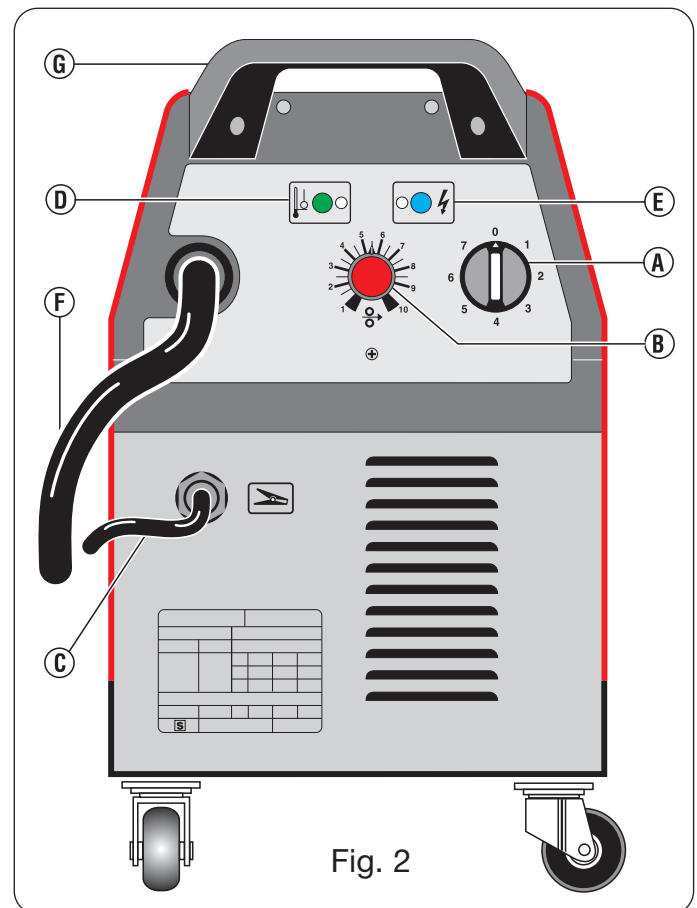


Never place any filtering device over the air intake points of this welding machine.

The warranty shall become void if any type of filtering device is used. Mount the parts supplied with the machine as shown in the figure 1.

3 DESCRIPTION OF THE MACHINE

- A) **Switch**
Turns the machine on and off, and also regulates the welding voltage range.
- B) **Setting knob**
This knob serves to adjust the welding wire speed.
- C) **Earth cable**
- D) **Yellow LED**
Lights only when the thermostat is tripped and interrupts the machine operation.
- E) **Green LED**
Indicates that the machine is turned on.
- F) **Welding torch**
- G) **Handle**
Must not be used to lift the machine.



4 GENERAL DESCRIPTIONS

4.1 SPECIFICATIONS


This welding machine allows welding of soft steel, stainless steel and aluminium.


4.2 EXPLANATION OF TECHNICAL SPECIFICATIONS

The welding machine is built according to these international standards: EN60974.1 - IEC 60974-10 (Cl. A) -

IEC 61000-3-11 - IEC 61000-3-12.

N° Serial number, which must always be indicated in any inquiry regarding the welding machine.

1~ Single-phase rectifier - transformer.

 External machine characteristic.
U_o Secondary no-load voltage (peak value)
X The duty cycle expresses the percentage of 10 minutes during which the welding machine can run at a certain current without overheating.
Example: X = 60% at I₂ = 100 A. This means that the machine can weld with a current I₂ = 100A for 6 out of 10 minutes, thus 60%.
I₂ Welding current
U₂ Secondary voltage with welding current I₂
U₁ Rated power voltage.
1~ 50/60 Hz Single-phase 50-or 60-Hz 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.
IP21S Protection rating for the housing.
Grade 1 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 use in increased hazard areas.

NOTE: The welding machine has also been designed for use in environments with grade 3 pollution (see IEC 664)

4.3 DESCRIPTION OF PROTECTION

This device is protected by a normally closed thermostat on the power transformer.

When the thermostat is tripped the machine stops welding, while the motor-driven fan continues to run and the yellow LED lights.

After it has been tripped, wait a few minutes to allow the generator to cool down.

5 INSTALLATION

The machine must be installed by skilled personnel. All connections must be made in compliance with current regulations and in full respect of safety laws (see standards CEI 26-23 - CEI CLC 62081).

Make sure that the wire diameter corresponds to the one indicated on the roller, and mount the wire reel. Make sure that the welding wire passes through the groove in the small roller 7.

Before connecting the power cable 23, make sure that the power voltage corresponds to that of the welding machine, then:

- for permanent connection to the power mains without a plug, you must insert a main switch having a suitable capacity in compliance with the rated specifications.
- for a plug-socket connection, use a plug having a suitable capacity in compliance with the rated specifications. In this case the plug must be used to completely disconnect the machine from the mains, after

setting the switch 47 to "O" (off).

The yellow-green wire must be connected to the earth terminal. Connect the earth clamp 37 to the part to be welded.

The welding circuit must not be deliberately placed in direct or indirect contact with the protection wire except in the workpiece.

If the workpiece is deliberately grounded using the protection wire, the connection must be as direct as possible, using a wire at least as large as the welding current return wire, and connected to the workpiece at the same point as the return wire, using the return wire clamp or a second grounding clamp placed next to it.

All precautions must be taken to avoid stray welding currents.

Turn the machine on using the switch 47.

Remove the tapered gas tip 44 by turning it clockwise.

Unscrew the contact tip 43.

Do not press the torch trigger until you have read the instructions carefully.

It is important to make sure the machine is turned off whenever changing the wire reel and wire roller, to prevent the wire feed motor from starting accidentally.

Press the torch trigger 39 and release it only when the welding wire comes out.

Welding wire can cause puncture wounds.

Never aim the torch at parts of the body, other people or metals when loading the welding wire.

Screw the contact tip 43 back on, making sure that the hole diameter corresponds to the wire used.

Slide the tapered gas welding tip 44 on, always turning clockwise.

5.1 CONNECTING THE GAS HOSE

- The gas cylinder must be equipped with a pressure reducer and flow meter.
- If the cylinder is placed on the cylinder holder of the machine, it must be held in place by the chain provided and be of an appropriate size to avoid jeopardizing the stability of the machine.
- Connect the gas hose leaving the back of the machine to the pressure reducer only after the cylinder is in place.
- Open the gas cylinder and set the flow meter to approximately 8-10 lt./min.

CAUTION: Make sure the gas used is compatible with the material to be welded.

5.2 GENERAL NOTES

Before using this welding machine, carefully read the regulations CEI 26-23 - CEI CLC 62081. Also make sure that the insulation on cables, torch and earth cable is intact.

6 WELDING

6.1 WELDING MILD STEEL

6.1.1 With gas protection.

Either 75% ARGON + 25% CO₂ or 100% CO₂ may be used for welding mild steel.

Connect the cables as shown in the figure 3.

Select the welding current by means of the rotary switch 47.

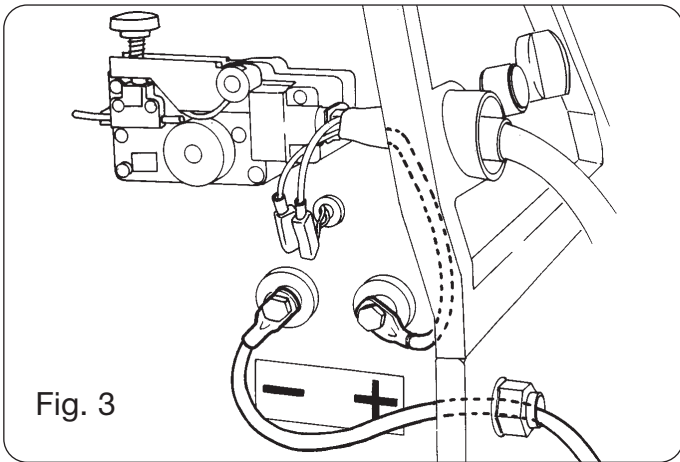


Fig. 3

Move the torch near the welding point and press the trigger **39**.

Adjust the potentiometer knob **2** until the welding is done with a constant, continuous noise.

If the speed is too fast, the wire tends to stick to the piece and cause the torch to skip; if the speed is too low, the wire melts in spaced drops or the arc does not remain lit. When you have finished welding, turn off the machine and close the gas cylinder.

For the correct welding angle see figure 5.

6.1.2 Without gas protection.

Connect the cables as shown in the figure 4.

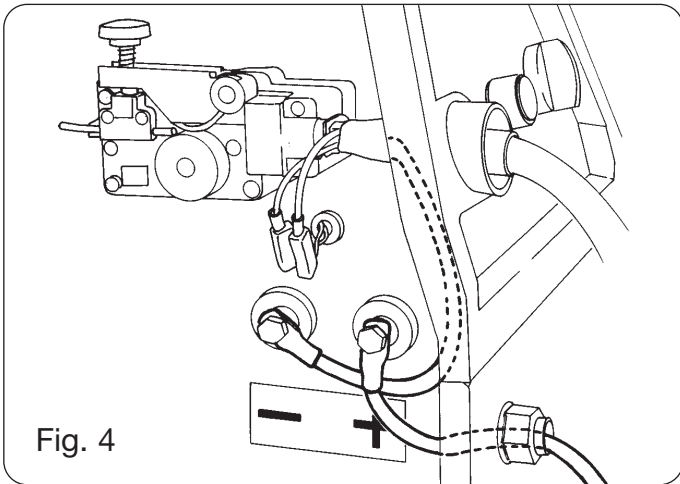


Fig. 4

Use only diam. 0.9 flux cored wire that complies with the standard AWS AS.20 E71 TII or E71 TGS, suitable for use without gaseous protection.

Connect the earth cable clamp to the workpiece.

After connecting the cables, follow the instructions given in paragraph 5.1.1.

NOTE: For compact, well-protected welds always work from left to right and from top to bottom.

Remove all waste after each welding operation.

For the correct welding angle see figure 5.

6.2 WELDING ALUMINIUM

The welding machine must be prepared as for welding mild steel with gas protection, but with the following differences:

- 100% ARGON as the protection gas for welding.
- A wire having a composition suited to the base material

to be welded.

- For welding ALLUMAN: 3÷5% silicon wire
- For welding ANTICORODAL: 3÷5% silicon wire
- For welding PERALUMAN: 5% magnesium wire
- For welding ERGAL: 5% magnesium wire

Use grinding wheels and brushes specifically designed for aluminium, and never use them on other materials.

REMEMBER that cleanliness is quality!

The wire reels must be stored in nylon bags with dehumidifying packets.

For the correct welding angle see figure 5.

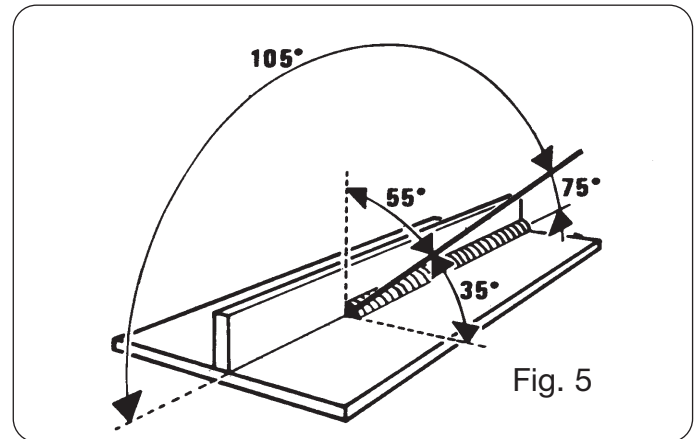


Fig. 5

6.3 WELDING STAINLESS STEEL

The welding machine must be prepared as for welding mild steel with gas protection, but with the following differences:

- Reel of stainless steel wire compatible with the composition of the material to be welded.
- Cylinder containing 98% ARGON + 2% O₂ (recommended composition)

The recommended torch angle and welding direction are shown in figure 5.

7 MAINTENANCE AND CHECKS

7.1 GENERAL NOTES

- Turn off the welding machine and unplug the power cord from the socket before each checking and maintenance operation.
- Moving parts can cause serious lesions
- Keep away from moving parts.
- INCANDESCENT SURFACES can cause serious burns.
- Let the unit cool before servicing.
- Periodically remove any dust or foreign matter that may have deposited on the transformer or diodes; to do so, use a jet of clean, dry air.
- When replacing the wire roller, make sure the groove is aligned with the wire and corresponds to the diameter of the wire used.
- Always keep the interior of the gas nozzle clean to avoid metal bridges created by welding dross between the gas nozzle and the contact tip. Make sure the outlet hole of the contact tip has not expanded excessively; if so,

replace.

- Strictly avoid striking the torch or allowing it to suffer violent impact.

7.2 MAINTENANCE

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

7.2.1 GENERATOR MAINTENANCE

In the case of maintenance inside the machine, make sure that the switch **A** 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.

7.2.2 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.

original machine to prevent a connection from occurring between the primary and secondary side if a conductor accidentally breaks or disconnects.

7.3 TROUBLESHOOTING GUIDE

ANOMALIA	PROBABILE CAUSA	RIMEDIO
The welding machine supplies limited current	Line fuse blown	Replace line fuse
	Burnt out diode or diodes	Replace
	Burnt out electronic board	Replace
	Loosened torch or earth connections or any other electrical power connections	Tighten all connections
	Voltage adjustment switch has a loose contact	Replace the switch
Welding with a lot of metal spatter	Improper adjustment of welding parameters	Select the correct parameters through the welding-voltage switch and the wire-speed adjustment potentiometer
	Insufficient grounding	Check grounding connections
The wire jams or entangles between the drive rolls and the torch infeed wire guide	Contact tip with wrong diameter	Replace
	Misalignment of the drive roll groove	Realign
	Obstructed or clogged liner	Remove and clean
	Drive roll with too large a groove	Replace the drive roll
No wire feed or irregular wire feed	Obstructed or clogged liner	Remove and clean
	Wire holding roller not completely tightened	Tighten all the way
	Clogged contact tip	Replace
Porosity in the welding seam	Insufficient shielding gas	Increase gas delivery
	Excess oxidation of the edges to be welded	Thoroughly clean the edges with a metal brush
	Gas nozzle partially or completely clogged by spatter	Remove and clean or replace being careful not to clog the gas outlets

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.

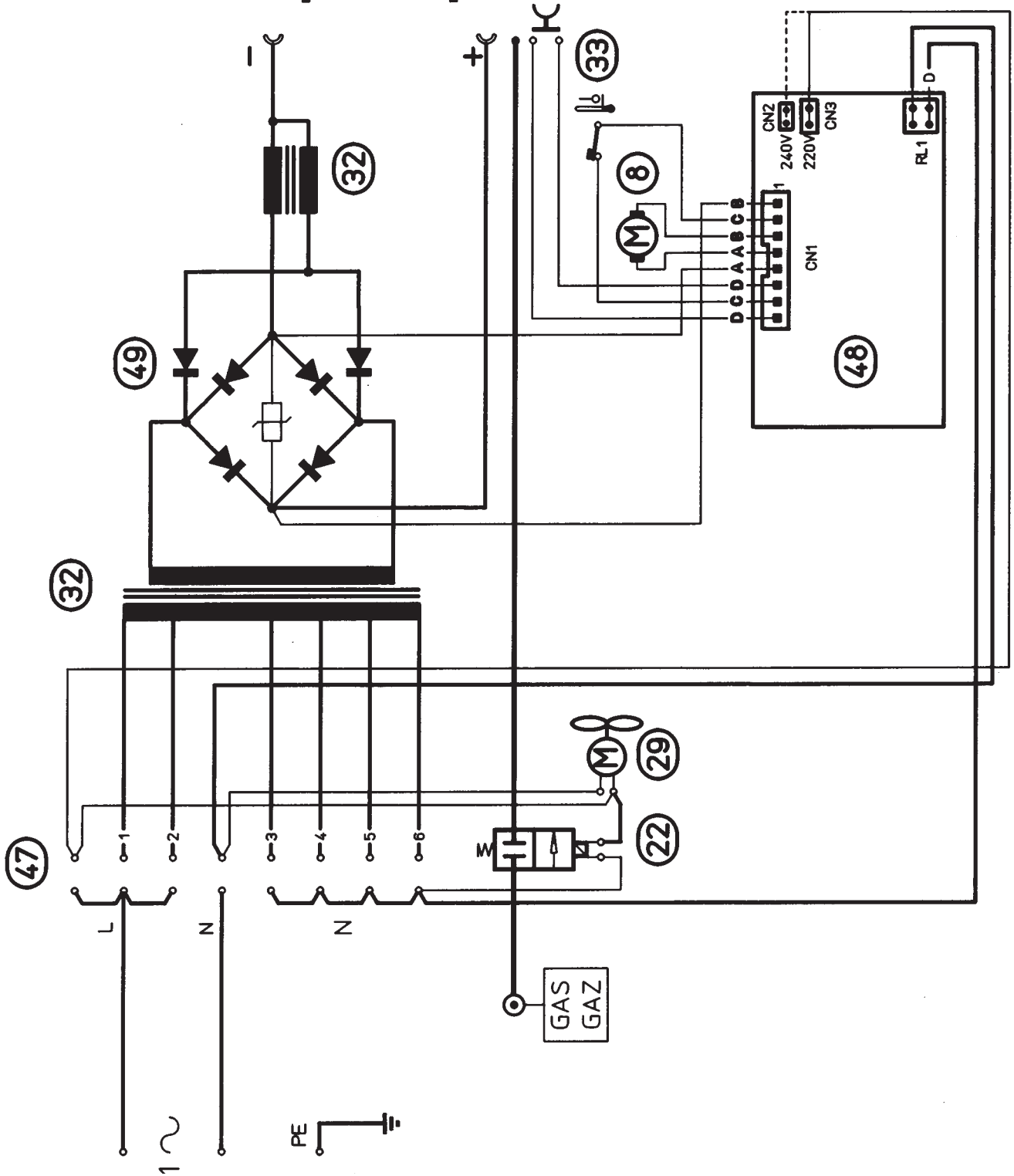
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DENNA DEL ÄR ENDAST AVSEDD FÖR KVALIFICERAD PERSONAL.

ΑΥΤΟ ΤΟ ΤΜΗΜΑ ΠΡΟΟΡΙΖΕΤΑΙ ΑΠΟΚΛΕΙΣΤΙΚΑ ΓΙΑ ΤΟ ΕΙΔΙΚΕΥΜΕΝΟ ΠΡΟΣΩΠΙΚΟ.

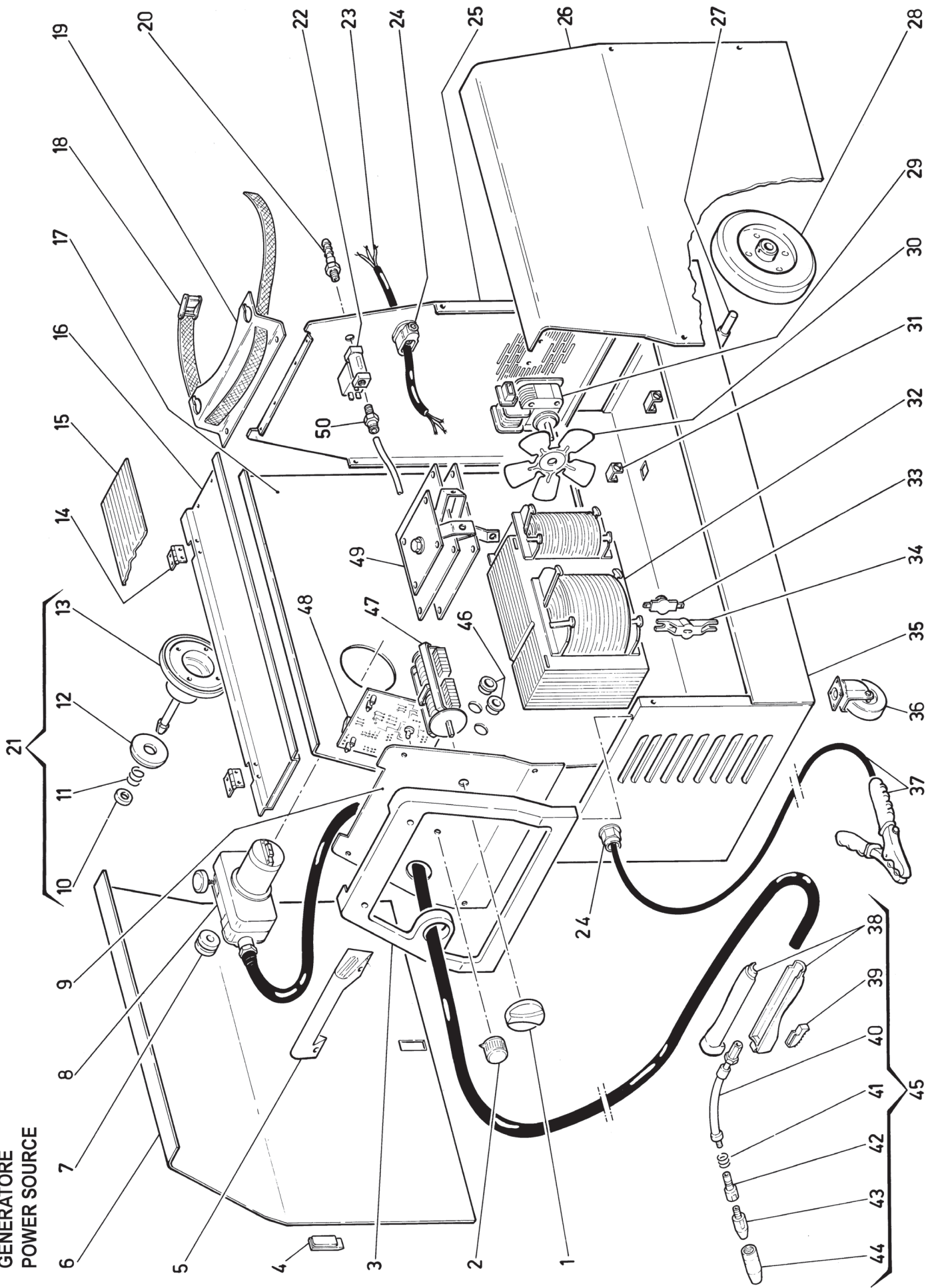
CODIFICA COLORI CABLAGGIO ELETTRICO		WIRING DIAGRAM COLOUR CODE
A	NERO	BLACK
B	ROSSO	RED
C	GRIGIO	GREY
D	BIANCO	WHITE
E	VERDE	GREEN
F	VIOLA	PURPLE
G	GIALLO	YELLOW
H	BLU	BLUE
K	MARRONE	BROWN
J	ARANCIO	ORANGE
I	ROSA	PINK

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



	L	L1	L2	N	N3	N4	N5	N6
pos.0								
pos.1	●	●		●				●
pos.2	●	●		●		●		
pos.3	●	●		●				
pos.4	●	●		●				●
pos.5	●	●		●			●	
pos.6	●	●		●		●		
pos.7	●	●		●				

GENERATORE
POWER SOURCE



pos	DESCRIZIONE	DESCRIPTION
01	MANOPOLA	KNOB
02	MANOPOLA	KNOB
03	CORNICE	FRAME
04	CHIUSURA	CLOSING
05	MANICO	HANDLE
06	LATERALE MOBILE	HINGED SIDE PANEL
07	RULLO TRAINAFILO	DRIVE ROLL
08	MOTORIDUTTORE	WIRE FEED MOTOR
09	PANNELLO ANTERIORE	FRONT PANEL
10	ANELLO	RING
11	MOLLA	SPRING
12	SUPPORTO ESTERNO BOBINA	COIL OUTER SUPPORT
13	SUPPORTO BOBINA	COIL SUPPORT
14	CERNIERA	HINGE
15	COPERTURA IN GOMMA	RUBBER MAT
16	COPERCHIO	COVER
17	PIANO INTERMEDIO	INSIDE BAFFLE
18	CINGHIA	BELT
19	APPOGGIO BOMBOLA	GAS CYLINDER SUPPORT
20	RACCORDO	FITTING
21	KIT SUPPORTO BOBINA	COIL SUPPORT KIT
22	ELETTROVALVOLA	SOLENOID VALVE
23	CAVO RETE	POWER CORD
24	PRESSACAVO	STRAIN RELIEF
25	PANNELLO POSTERIORE	BACK PANEL

pos	DESCRIZIONE	DESCRIPTION
26	LATERALE FISSO	FIXED SIDE PANEL
27	ASSALE	AXLE
28	RUOTA FISSA	FIXED WHEEL
29	MOTORE	MOTOR
30	VENTOLA	FAN
31	SUPPORTO	SUPPORT
32	TRASFORMATORE DI POTENZA	POWER TRANSFORMER
33	TERMOSTATO	THERMOSTAT
34	SUPPORTO TERMOSTATO	THERMOSTAT SUPPORT
35	FONDO	BOTTOM
36	RUOTA PIROETTANTE	SWIVELING WHEEL
37	CAVO MASSA	EARTH CABLE
38	IMPUGNATURA	GRIP
39	PULSANTE	SWITCH
40	LANCIA TERMINALE	SWAN NECK
41	MOLLA	SPRING
42	DIFFUSORE	DIFFUSER
43	UGELLO P. CORRENTE	CONTACT TIP
44	UGELLO GAS	GAS NOZZLE
45	TORCIA	TORCH
46	PASSACAVO	CABLE OUTLET
47	COMMUTATORE	SWITCH
48	CIRCUITO DI COMANDO	CIRCUIT BORD
49	RADDRIZZATORE	RECTIFIER
50	RACCORDO	FITTING

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.



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