

I	MANUALE DI ISTRUZIONI PER SALDATRICI A FILO	pag.2
GB	INSTRUCTION MANUAL FOR WIRE WELDING MACHINE	pag.7
F	MANUEL D'INSTRUCTIONS POUR POSTES A SOUDER A FIL	seite.12
D	ANLEITUNGSHANDBUCH FÜR DRAHTSCWEISSMASCHINEN	pag.17
E	MANUAL DE INSTRUCCIONES PARA SOLDADORAS DE HILO	pag.23

Parti di ricambio e schema elettrico
 Spare parts and wiring diagram
 Ersatzteile und elektrische Schaltplan
 Pièces de rechange et schéma électrique
 Piezas de repuesto y esquema eléctrico

Pagg. Seiten 28 - 32



INSTRUCTION MANUAL FOR WIRE WELDING MACHINE

IMPORTANT:

BEFORE USING THIS DEVICE ALL PEOPLE AUTHORIZED TO ITS USE, REPAIR OR INSPECTION, SHOULD READ THE FOLLOWING INSTRUCTIONS ON ITS USE AND SAFETY. PLEASE CONTACT YOUR DISTRIBUTOR SHOULD YOU NOT UNDERSTAND THESE INSTRUCTIONS.

1 SAFETY RULES FOR USING WELDING MACHINE

1.1 INTRODUCTION

Before using this device all people authorized to use, repair or control should read the following use and safety instructions.

Remember: YOUR SAFETY DEPENDS ON YOU!!!

Follow all safety rules and instructions.

It is your job to protect yourselves and others against the risks related to welding.

The operator is responsible for his own safety and the safety of others in the work area. He must therefore know and obey all safety rules.

NOTHING CAN REPLACE GOOD COMMON SENSE !!!

1.2 GENERAL PRECAUTIONS

1.2.1 Fire



- Avoid causing fire because of sparks, slag, hot metal or pieces.
- Make sure that suitable fire-fighting equipment is available close to welding area.

area.

- Remove all flammable and combustible material from welding area and its surrounding.

- Do not weld containers of combustible or flammable material, even when empty. These must be carefully cleaned before being welded.

- Allow the welded material to cool down before touching it or putting it in contact with combustible or flammable material.

- Do not weld parts with hollow spaces, containing flammables.

- Do not work under conditions with high concentrations of combustible vapours, gases, or flammable dust.

- Always check the work area half an hour after welding so as to make sure that no fire has started.

- Do not keep any combustible material such as lighters or matches in your pockets.

1.2.2 Burns

- Wear fire-proof clothing all over your body in order to protect your skin against burns caused by ultra-violet radiation given off by the arc, and from weld metal sparks and slag.

- Wear protective clothing-gauntlet gloves designed for use in welding, hat and high safety-toe shoes. Button shirt collar and pocket flaps, and wear cuff-less trousers to avoid entry of sparks and slag.

- Wear helmet with safety goggles and glasses with side shields underneath, appropriate filter lenses or plates (protected by clear cover glass). This is a MUST for welding to protect the eyes from radiant energy and flying metal. Replace cover glass when broken, pitted, or spattered.

- Avoid oil or greasy clothing. A spark may ignite them. Hot metal such as electrode stubs and workpieces should never be handled without gloves.

- First-aid facilities and a qualified first-aid person should be available for each shift unless medical facilities are close by for immediate treatment of flash burns of the eyes and skin burns.

- Ear plugs should be worn when working on overhead or in a confined space. A hard hat should be worn when others work overhead.

- Flammable hair preparations should not be used by persons intending to weld or cut.

1.2.3 Fumes

Welding operations give off harmful fumes and metal dusts which may be hazardous to your health, therefore:

- Work in a well-ventilated area.
- Keep your head out of fumes.
- In closed areas, use suitable exhaust fans.
- If ventilation is not enough, use breathing sets approved for this procedure.

- Clean the material to be welded of any solvents or halogen degreasers giving rise to toxic gases. Some chlorine solvents may decompose with the radiation emitted by the arc, and create phosgene gas.

- Do not weld plated metals or those containing lead, graphite, cadmium, zinc, chrome, mercury or beryllium, unless you have the proper breathing set.

- The electric arc creates ozone. A long exposure to high concentrations may cause headaches, nasal, throat and eye irritation as well as serious congestions and chest pains. IMPORTANT: DO NOT USE OXYGEN FOR VENTILATION.

- Gas leaks in a confined space should be avoided. Leaked gas in large quantities can change oxygen concentration dangerously. Do not bring gas cylinders into a confined space.

- DO NOT WELD where solvent vapors can be drawn into the welding atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

1.2.4 Explosions

- Do not weld above or near containers under pressure.

- Do not weld in environments containing explosive dusts, gases or vapours.

This welding machine uses inert gases such as CO₂, ARGON, or a mixture of ARGON + CO₂ for the protection of the arc, thus you should take special precautions:

A) CYLINDERS

- Do not directly connect cylinder to the machine gas hose without a pressure regulator.

- Handle or use pressure cylinders in conformity with the existing rules.

- Do not use leaking or damaged cylinders.

- Do not use cylinders which are not well secured.

- Do not carry cylinders without the protection of the installed valve.

- Do not use cylinders whose content has not been clearly identified.

- Never lubricate cylinder valves with oil or grease.

- Do not put the cylinder in electrical contact with the arc.

- Do not expose cylinders to excessive heat, sparks, molten slags or flame.

- Do not tamper with the cylinder valves.

- Do not try to loosen tight valves by means of hammers, keys, or any other object.

- NEVER DEFACE or alter name, number, or other markings on a cylinder. It is illegal and hazardous.

- Do not lift cylinders off the ground by their valves or caps, or by chains, slings or magnets.

- Never try to mix any gases in a cylinder.

- Never refill any cylinder.

- Cylinder fittings should never be modified or exchanged.

B) PRESSURE REGULATORS

- Keep pressure regulators in good condition. Damaged

regulators may cause damages or accidents, they should only be repaired by skilled personnel.

- Do not use regulators for gases other than those for which they are manufactured.
- Never use a leaking or damaged regulator.
- Never lubricate regulators with oil or grease.

C) HOSES

- Replace hoses which appear damaged.
- Keep hoses unwound in order to avoid bending.
- Keep the excess hose wound and out of the working area in order to avoid any damage.

1.2.5 Radiations

Ultra-violet radiation created by the arc may damage your eyes and burn your skin. Therefore:

- Wear proper clothing and helmet.
- Do not use contact lenses!! The intense heat coming from the arc may cause them to stick to the cornea.
- Use masks with grade DIN 10 or DIN 11 safety lenses at the least.
- Protect people in the surrounding welding area. Remember: the arc may dazzle or damage the eyes. It is considered dangerous up to a distance of 15 meters (50 feet). Never look at the arc with the naked eye.
- Prepare the welding area so as to reduce reflection and transmission of ultra-violet radiation. Paint walls and exposed surfaces in black to reduce reflection, install sheathings or curtains to reduce ultra-violet transmissions.
- Replace mask lenses whenever damaged or broken.

1.2.6 Electric shock

Electric shock can kill.
All electric shocks are potentially fatal.

- Do not touch live parts.
- Insulate yourself from the piece to be cut and from the ground by wearing insulated gloves and clothing.
- Keep garments (gloves, shoes, hats, clothing) and body dry.
- Do not work in humid or wet areas.
- Avoid touching the piece to be welded.
- Should you work close to or in a dangerous area, use all possible precautions.
- If you should feel even the slightest electric shock sensation, stop welding immediately. Do not use the machine until the problem is identified and solved.
- Always fit an automatic wall switch with adequate power, possibly close to the machine, allowing you to immediately switch the machine off in case of an emergency.
- Frequently inspect the power supply cable.
- Disconnect power supply cable from mains before replacing cables or before removing unit covers.
- Do not use the unit without protection covers.
- Always replace any damaged parts of the unit, with original material.
- Never disconnect unit safety devices.
- Make sure that the power supply line is equipped with an efficient earth plug.
- Make sure that the work bench and the workpiece are connected to an efficient earth plug.
- Any maintenance should only be carried out by qualified personnel aware of the risks due to dangerous voltages necessary for the operation of the unit.

1.2.7 Pace maker







- Magnetic fields from high currents can affect pacemaker operation. Persons wearing electronic life support equipment (pacemaker) should consult their doctor before going near arc welding, gouging or spot welding operations.

2 GENERAL DESCRIPTIONS

2.1 SPECIFICATIONS

This welding machine is a semiautomatic constant direct voltage generator. This allows to weld mild steel stainless steel and aluminium.

2.2 EXPLANATION OF TECHNICAL SPECIFICATIONS

1 ~ 		xxA/xxxVxxxV/xxxV	
		X xx% xx% xx%	
		I ₂ xxxA xxxA xxxA	
MIG - MAG 		U ₀ MIN xxV U ₀ MAX xxV	
		U ₂ xxxV xxxV xxxV	
1~xxHz 		I ₁ xxA xxA xxA	
PROTEZIONE TERMICA PROTECTION THERMIQUE THERMAL PROTECTION THERMISCH GESCHÜTZT PROTECCIÓN TÉRMICA		VENTILAZIONE FORZATA VENTILE FORCED VENTILATION KÜHLART F VENTILACIÓN FORZADA	
CLASSE DI ISOLAMENTO CLASSE DES ISOLANTS CLASS DE INSULATION ISOLIERSTOFFKLASSE CLASSE DE AISLAMIENTO		IP 21	
H		N°	
		S	

 Single-phase Transformer - Rectifier

 External characteristics of the unit.

- U₀ Secondary no-load voltage.
X The duty-factor percentage expresses the percentage of 10 minutes in which the welding machine can operate at a determined current, without overheating: e.g. X = 60% at I = 250 A. This means that the welding machine can weld with a current I = 250A for 6 minutes out of 10, i.e. the 60%.
- I₂ Welding current
U₂ Secondary voltage with welding current I
U₁ Nominal supply voltage at the described frequency.
I₁ Absorbed current at the corresponding welding current I
- Ip 21 Grade of protection of frame.
Grade 1 as a second number means that this unit is not fit for working under the rain.
- S Fit for working in high-risk areas.

2.3 DESCRIPTION OF PROTECTION

This unit is protected by a normally closed thermostat placed inside the power transformer, namely in contact with the primary winding.

When the thermostat intervenes, the machine stops welding, while the motor-driven ventilator continues to work. After the said intervention, wait a few minutes to allow the generator to cool down.

3 INSTALLATION

3.1 SETUP

Unpack machine and place it in a properly ventilated, possibly undusty room, making sure that air flow on cooling slots is not obstructed.

WARNING: RESTRICTED AIR FLOW causes overheating and possible damage of internal parts.

● Maintain at least 10 inches (254 mm) of unrestricted space on all sides of unit.

● Do not place any filtering device over the intake air passages of this welding power source.

Warranty is void if any type of filtering device is used.

3.2 STARTUP

This unit must be installed by skilled personnel. All fittings must be in conformity with the existing rules and in full compliance with safety regulations. (See CEI standards 26-10 -CENELEC HD 427).

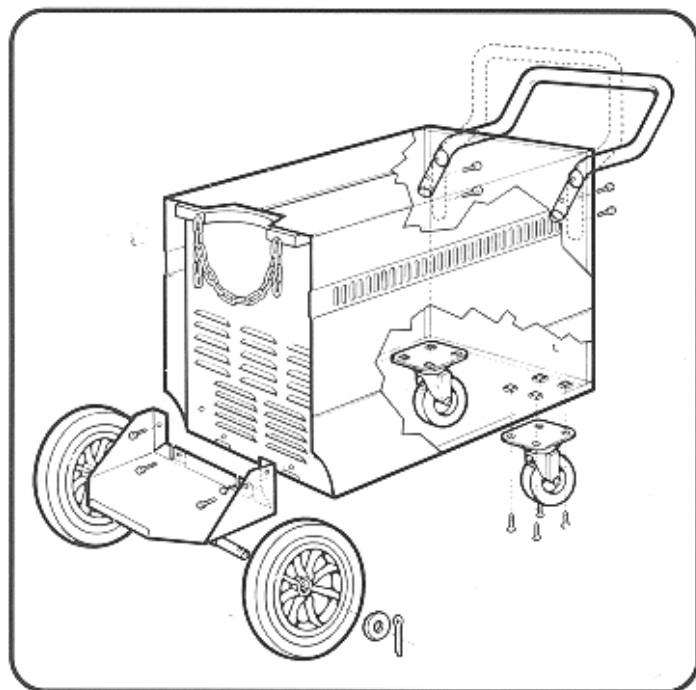


Fig.1

Install the components supplied with the welding machine as shown in fig. (1)

Install the welding torch.

Make sure that the wire diameter corresponds to that shown on the roller and fit the wire reel.

Connect the hose which comes out from the rear to the cylinder flowmeter.

Before connecting the supply cable (57) ensure that mains voltage corresponds to the welder voltage and that the earth plug is efficient.

Connect the earth terminal to the workpiece and select the polarity suitable for the wire used.

Negative polarity to earth, for welding of stainless steel or aluminium solid wires, positive polarity to earth, for welding of special flux cored wires.

Turn the machine on through the switch (49)

Remove the taper gas nozzle (30) by rotating it clockwise. Unscrew the current nozzle (31)

Press the torch push button and release it only when the wire comes out.

ATTENTION: Keep your face away from lance while the

wire comes out. Tighten the current nozzle (31) and make sure that the hole diameter corresponds to the wire used. Reinstall the taper gas welding nozzle (30), again rotating clockwise.

Turn the gas cylinder on and adjust the flowmeter to approx. 8/10 litre/min.

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

ATTENTION: The green/yellow wire of the welder mains cable must always be connected to the protection lead (earth of the system). The yellow/green wire must NEVER be combined with another phase wire for drawing voltage.

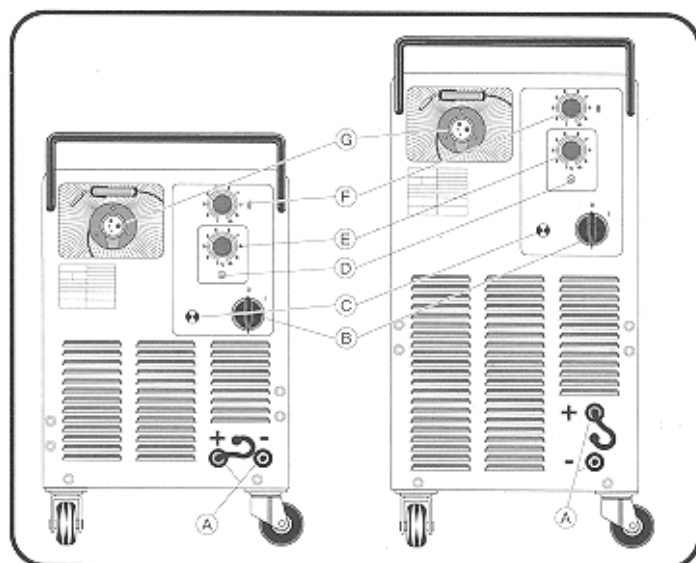
WARNING. ELECTRIC SHOCK CAN KILL.

● Do not touch live electrical parts.

● Do not touch the weld output terminals when the unit is energized.

● Do not touch torch or electrode holder and work clamp at the same time.

3.3 UNIT DESCRIPTION



A) Changing of polarity

This function allows the inversion of the positive and the negative on the earth and the welding torch.

The change of polarity also allows welding of special flux cored wires (torch in negative)

Fig. (2).

B) ON/OFF switch (49).

C) Pilot light (42).

D) Switch for change of range (43).

This switch divides the voltage regulation in two ranges. This function allows an extremely fine regulation of the potentiometer (E), in that wide angle variations of the same correspond to small voltage variations of machine.

E) Potentiometer for linear regulation of welding voltage.

F) Potentiometer for linear regulation of the wire speed.

G) Connector for the welding torch (1).

3.4 GENERAL NOTES

Before using this welding machine, carefully read the CEI Standards 26/9 or CENELEC HD 407 AND CEI 26/11 or CENELEC HD 433, also check for insulation of cables, torch and earth cable.

3.5 INSTRUCTIONS FOR REPLACEMENT OF SHEATH (PLACED INSIDE THE TORCH)

For the wires dia. 0.6 and dia. 0.8 we recommend using the

sheath (40) with internal dia. of 1.5 mm. while for the wires dia. 1 and dia. 1.2 we recommend using the sheath (40) having internal dia. of 2 mm.

3.6 ALUMINIUM WELDING

For the aluminium welding the following has to be used:

- A) 100% ARGON as shielding gas for welding.
- B) A welding rod having a composition suitable for the base material to be welded.
 - 3 - 5% silicon wire for welding ALUMAN
 - 3 - 5% silicon wire for welding ANTICORODAL
 - 5% magnesium wire for welding ERGAL
- C) A torch prepared for welding aluminium.

If only a torch for stainless steel wires is available, this has to be modified in the following way:

 - a) Ensure that length of torch cable does not exceed 3 meters (it is not advisable to use a longer torch).
 - b) Remove the brass sheath-securing nut (39), the gas nozzle (30) and the current nozzle (31), then slip the sheath off (40).
 - c) Fit the teflon sheath for aluminium making sure that it comes out from both ends.
 - d) Tighten the current nozzle so that the sheath adheres to it.
 - e) Within the free end of the sheath, insert the sheath-securing nipple, the OR gasket, then block using the nut without tightening excessively.
 - f) Fit the brass tube on the sheath and insert this into the adaptor, after removing the iron tube placed inside the adaptor.
 - g) Cut the sheath diagonally so that it stays as close as possible to the wire roller. See drawing
- D) The earth cable has to be connected to negative polarity.

4 MAINTENANCE AND CHECK UP

4.1 GENERAL NOTES

WARNING: ELECTRIC SHOCK CAN KILL

- Do not touch live electrical parts.
- Turn off welding power source, and remove input power plug from receptacle before inspection, maintenance, or servicing.

MOVING PARTS can cause serious injury.

- Keep away from moving parts.
- HOT SURFACES** can cause severe burns.
- Allow cooling period before servicing.

Periodically clean the transformer or diodes from any dust or foreign bodies; for this purpose, use a dry and clean air jet. When reinstalling the wire slide roller, ensure that groove is aligned with the wire and that it corresponds to the diameter of the wire used.

Keep the inside of the gas nozzle constantly clean so as to avoid metal bridges formed by welding spatter between the gas nozzle and the current nozzle.

Make sure that the current nozzle outlet has not widened, if so, replace it.

Inside the torch there is the sheath which we recommend to remove periodically and wash with degreasing solvents.

For welding with very thin wires, we recommend using a sheath having an adequate hole (see 3.5 Instructions for replacement of sheath). This prevents an irregular wire feed. The torch absolutely must not be banged or violently knocked.

4.2 WELDING MACHINE SERVICING

Experience has shown that many fatal accidents originated from servicing which had not been perfectly executed. For

this reason, a careful and thorough inspection on a serviced welding machine is just as important as one carried out on a new welding machine.

Furthermore, in this way producers can be protected from being held responsible for defects when the fault is someone else's.

4.2.1 Prescriptions for follow for servicing

- After rewinding the transformer or the inductances, the welding machine must pass the applied-voltage test in accordance with indications in table 2 of 6.1.3 of the EN 60974 standard (CEI 26.13).

Conformity must be checked as specified in 6.1.3.

- If no rewinding is done, a welding machine which has been cleaned and/or reconditioned must pass an applied-voltage test with voltage values equal to 50% of the values given in table 2 of 6.1.3. Conformity must be checked as specified in 6.1.3.

- After rewinding and/or the replacement the no-load voltage shall not exceed the values given in 10.1 of EN 60974.

- If the servicing is not done by the producers, the repaired welding machines which underwent replacements or modifications of any component, shall be marked in a way such that the identity of the person having serviced it is clear.

4.2.2 Precautions to take while servicing.

EXCESSIVE PRESSURE can break the circuit board.

- Use only nominal pressure and gentle movement when disconnecting or connecting board plugs and removing or installing board.

INCORRECT INSTALLATION or misaligned plugs can damage circuit board.

- Be sure that plugs are properly installed and aligned before reinstalling cover.

4.3 USE ANOMALIES

DEFECT	PROBABLE CAUSE	REMEDY	DEFECT	PROBABLE CAUSE	REMEDY
The welding machine does not supply current; completely unoperative	Burnt fuse	Switch to ON position	No wire feed or irregular wire feed	Wire slide roller with too large groove	Replace the roller
	Burnt diode or diodes	Replace		Obstructed or clogged sheath	Remove and clean
	Burnt electronic card	Replace		Wire holding roller not completely tightened	Tighten all the way
	Loosened torch or earth connections or any other electrical power connections	Tighten all connections		Reel-holder clutch too tight	Loosen the clutch through the adjustment
	Burnt or damaged SCR	Replace		Clogged current nozzle	Replace
Welding with a lot of metal spatter	Wrong adjustment of welding parameters	Select the correct parameters through the welding-voltage potentiometer and the wire-speed adjustment potentiometer	The wire jams or entangles between the rollers and the torch infeed wire guide	Current nozzle with wrong diameter	Replace
	Irregular wire feed	See paragraph 4 Wrong sheath dia		Misalignment of the roller groove	Align
	Limited current supply	See paragraph 1	Porosity in the welding seam	Obstructed or clogged sheath	Remove and clean
	Insufficient earth connections	Check for efficiency of connections		Insufficient shielding gas	Increase gas delivery
				Excessive 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

ATTENTION: The service transformer has been protected by fuses; these are connected to the motor-driven ventilator (58), the electronic circuit and the secondary output 0 - 27/ V which supplies the solenoid valve and the wire slide unit.

Should any of these components not work because of a burnt fuse, replace it after discovering the cause of its intervention.