

INSTRUCTION MANUAL FOR MIG WELDERS

GENERALITIES

This booklet is meant to instruct the user on the correct utilization of the welder.

The welder you have bought has been simplified so as to be serviceable and easy to operate.

It can weld mild steel, stainless steel and aluminium.

INSTALLATION

Assemble the parts supplied with the welder as shown in Fig. 1.

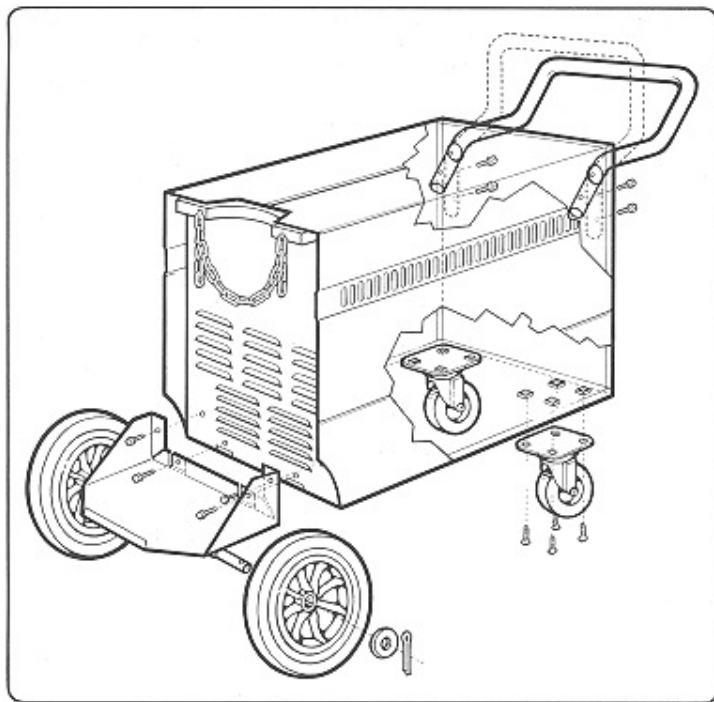


Fig. 1

Remove the side cover (5) and extract the torch (49) and the welding mask. Install the torch by fitting it into the attachment on the front panel (3). Insert the wire in the reduction unit (11) as well as in the torch, according to the following steps:

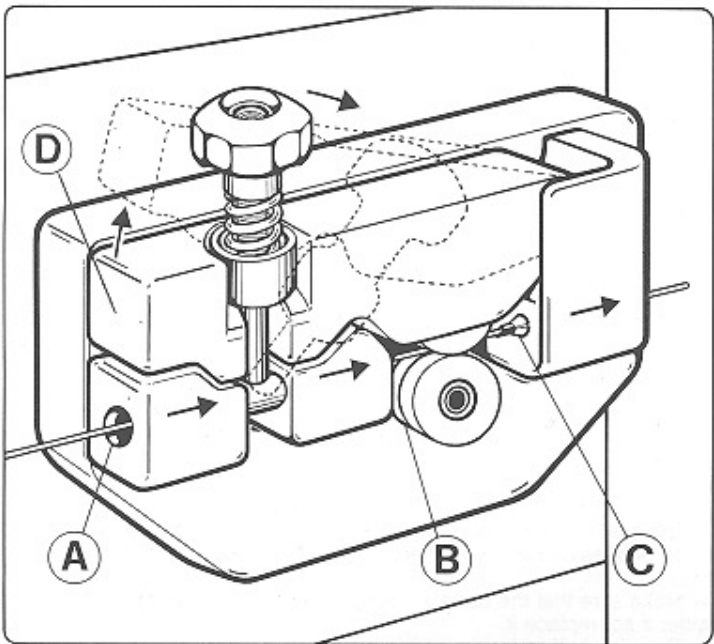


Fig. 2

- Cut the wire end with a well sharpened tool.
- Release the wire pressing unit (D), slip the wire into the hole (A), pass it on the roller (B), and insert it at least 10 inches in the sheath (C). Fasten the unit (D) making sure the wire stays in the groove of the wire slide roller.
- Always ensure that the wire diameter fits the race on the wire slide roller and the hole in the current nozzle.
- Prepare the mask as shown in figure 3.

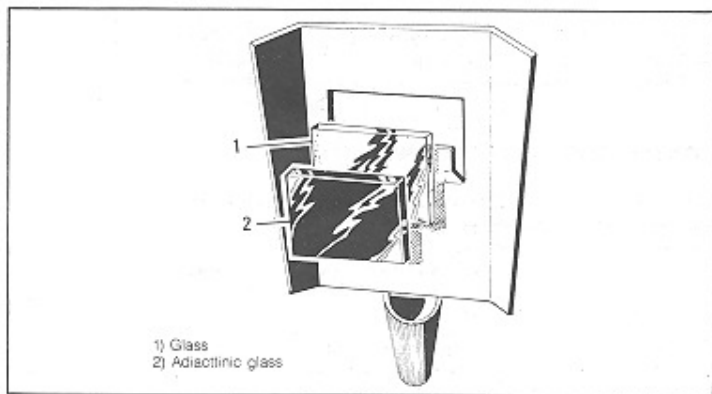


Fig. 3

— Connect the hose coming out from the rear panel to the cylinder flow-meter.

— **MAKE SURE THAT LINE VOLTAGE CORRESPONDS TO THAT SHOWN ON WELDER PLATE.**

The connection voltage can be changed on the three-phase machine by following the instructions in figure 4.

N.B. TO REACH THE VOLTAGE CHANGER REMOVE THE FIXED HOUSING ().

IMPORTANT: BEFORE CHANGING VOLTAGE MAKE SURE THAT THE MACHINE IS NO MORE CONNECTED TO THE MAINS.

— **ENSURE THAT CURRENT SOCKET IS EQUIPPED WITH AN EFFICIENT EARTH PLATE, THEN CONNECT POWER CABLE.**

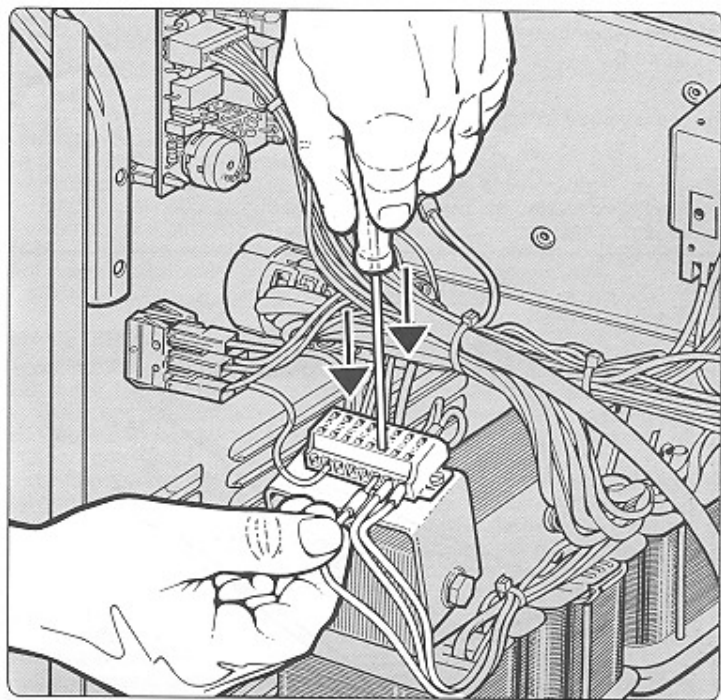


Fig. 4

Install the welder so as to allow free air circulation to avoid obstructions due to metal or paint powders.

THE MACHINE IS READY TO WELD

- Connect the earth clamp (38) to the workpiece.
- Set the luminous switch (51) in ON position.
- Remove the taper gas nozzle (45) by rotating it CLOCKWISE.
- Remove the current nozzle (44).
- Press the torch button and release it when the wire comes out approx. 5 inches from the torch (49).
- DO NOT BRING TORCH CLOSE TO FACE WHILE THE WIRE IS COMING OUT.
- Screw current nozzle (44) ensuring that hole diameter suits the wire used.
- Insert the gas nozzle (45) by rotating it CLOCKWISE.
- Screw open the gas cylinder and set the flowmeter at approx. 21 CFH.

CONTINUOUS MILD-STEEL WELDING

75% ARGON + 25% CO₂ or 100% CO₂ can be used for mild steel welding. Set the knob (50) on «continuous» then adjust the welding voltage through the commutator (12) knob.

- Approach point to be welded and press the torch push button.
- Act on the potentiometer knob until the welding noise is constant and continuous.
- If speed is too high, the wire tends to get stuck on the workpiece which makes the torch bounce back. If speed is too low, the wire melts irregularly or else the arc switches off.
- See figure 5 for correct torch inclination.

SPOT WELDING

For spot welding, replace the gas-weld nozzle with the special spot-weld nozzle. Exert enough pressure with the torch to achieve a good junction of metal sheets.

This can be obtained by positioning the knob on SPOT TIME and adjusting the spot-welding time through the knob.

ATTENTION: Metal sheets will have to be perfectly clean.

STAINLESS STEEL WELDING

The welder will be arranged as for mild-steel welding except for following changes:

- Stainless steel wire roll compatible with composition of steel to be welded.
- Cylinder containing a mixture of 75% ARGON + 25% CO₂ or 98% ARGON + 2% O₂ (recommended mixture).

NOTE: Recommended torch inclination and welding direction are shown in figure 5.

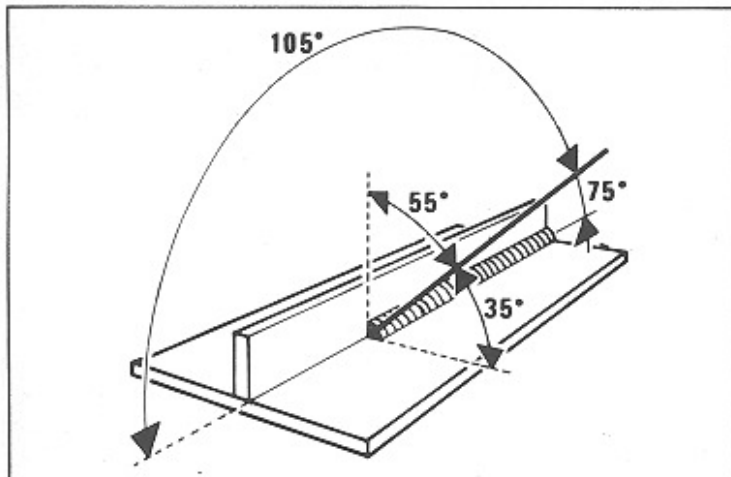


Fig. 5

ALUMINIUM WELDING

The following is required for aluminium welding:

1. 100% ARGON as welding protection gas.
2. A torch wire of composition suitable for the basic material to be welded.
 - For ALUMAN welding wire 3 + 5% silicon.
 - For ANTICORODAL welding wire 3 + 5% silicon.
 - For PERALUMAN welding wire 5% magnesium
 - For ERGAL welding wire 5% magnesium.
3. A torch prepared for aluminium welding.
 - If you only have a torch for steel wires, the same shall be modified in the following way:
 - a) Make sure that length of torch cable does not exceed 118 inches (it is advisable not to use longer torches).
 - b) Remove the brass sheath-holding nut (48), the gas- (45) and the current (44) nozzles, then slip the sheath off (46).
 - c) Insert the teflon sheath for aluminium and ensure it protrudes from both ends.
 - d) Screw the current nozzle so that the sheath adheres to it.
 - e) Insert the sheath holding nipple, the O ring in the free end of the sheath and secure with the nut without tightening too much.
 - f) Slip the brass tube on the sheath and insert both into the adapter (after removing the iron tube which was fitted inside the adaptor).
 - g) Cut the sheath diagonally so that it stays as close as possible to the wire slide roller.

SETTING UP OF THE WELDER

Use a wire slide roller having a race with diameter larger than the diameter of the wire you are going to use (E. g. for wire dia. 0.035 inches, use a race for dia. 0.045 inches).

- Adjust pressure of the wire holding unit to the minimum but sufficiently to allow sliding. To check this, manually stop the wire coming out from the torch and ensure that the wire slide roller, still running, does not tangle or break the wire but slides on it.
- Connect the earth pincers directly to the workpiece.
- Make sure that workpiece is well cleaned and non-oxidized.
- Touch the workpiece with the wire tip and press the torch push button.

CAUTIONS

- Keep the torch cable as straight as possible.
- Ensure that gas delivery is 21 CHF/minute.
- **Note:** In poor ventilated rooms a gas delivery of 15 CHF/minute can be used.
- Do not start welding again with a too large drop at the tip of the wire.
- Should you notice aluminium chips near the reduction unit, check if sharp shavings have formed on the wire guides or on the roller; remove them, if any.
- Use good quality wires.

INSTRUCTIONS FOR REPLACEMENT OF WIRE REEL

Turn the welder off: switch (51) in OFF position.

- Remove the mobile cover (5).
- Cut the wire end coming out from the current nozzle with a well sharpened tool.
- Release the wire pressing unit.
- Wind the wire by rotating the reel anticlockwise.
- Look the wire end in the side hole of the spool.
- Loosen the knob (6), remove the carrier (8) and replace the reel.

Note: The reel carrier can be fitted both with the 8 inches (10 LB) dia. reels and the 11 13/16 inches (20 LB) dia. reel.

Position part (8) on the side suitable for the reel to be used.

MAINTENANCE

Attention: Disconnect the welder power supply cable from the mains prior to any inspection to the machine.

- The transformer and the rectifier plates should be periodically cleaned of any dust or foreign bodies using a dry and clean air jet.
- The races on the wire slide roller should be periodically cleaned. Do not use abrasive tools such as files or grinding wheels. When reinstalling the roller ensure that race is aligned to the wire and corresponds to the diameter of the wire used.
- The inside of gas nozzle should be kept constantly clean so as to avoid metal bridges caused by spatters between the gas nozzle and the current nozzle.
- Make sure that the current-nozzle outlet has not become excessively wide; if so, replace it.
- The sheath fitted inside the torch should be periodically removed and washed with degreasing solvents.
- For no reason the torch should be banged or suffer shocks.

TROUBLESHOOTING

Trouble	Possible cause	Remedy
1) Limited current supply.	One phase missing (only on threephase machines).	Check the three phases of the supply line and/or the contacts of the remote control switch.
	Line fuse burnt out.	Replace the fuse.
	Wrong connection on the terminal board.	Check connections on the terminal board according to the diagram on the welder plate.
	Rectifier diode or diodes burnt out.	Replace the rectifier.
	Loose torch or earth connections.	Tighten all connections.
2) Welding with a lot of spatter.	Welding-adjustment commutator with an irregular contact.	Replace the commutator.
	Wrong adjustment of the welding parametres.	Find the correct parametres through the welding-voltage commutator and through the potentiometer for adjustment of the wire speed.
	Irregular wire feed.	See paragraph 4
	Limited current supply.	See paragraph 1
	Insufficient earth connections.	Check efficiency of connections.

3) No wire feed or irregular feed.	Wire slide roller with too large race.	Replace the roller.
	Obstructed or clogged sheath.	Extract the sheath and clean it.
	The wire pressing roller is not completely tightened.	Screw it tight.
	The winder clutch is too tight.	Loosen the clutch through the adjustment.
	The current nozzle is clogged.	Replace it.
4) The wire jams of tangles between the rollers and the torch infeed wire guide.	Wrong diameter of current nozzle.	Replace it.
	Misalignment of the roller race.	Align it.
	Obstructed or clogged sheath.	Extract the sheath and clean it.
5) Porosity in the seam.	Insufficient protection gas.	Increase gas delivery.
	Air suction from gas connections.	Check all pipe connections.
	The edges to be welded are excessively oxidized.	Thoroughly clean the edges with a metal brush.
	The gas nozzle is partly or fully clogged by spatter.	Remove and clean it or replace it paying attention not to clog the gas outlets.

Attention The machine is provided with a thermostat which trips in case of overload. Wait a few minutes after it has tripped to allow the generator to cool down.