

# M 200 - M 250

**OWNER'S MANUAL**

**KEEP THIS MANUAL**



The technical specifications and the wiring diagrams contained in this owner's manual are valid only for the model that has the part number indicated below.

M 200: ALW-M120500383

M 250: ALW-M120500384



Air Liquide Welding is a trademark of L'Air Liquide S.A.

# TABLE OF CONTENTS

|           |  |    |
|-----------|--|----|
| <b>1</b>  | <b>SAFETY PRECAUTIONS - READ BEFORE USING</b>                |    |
| 1.1       | INSTALLATION OF EQUIPMENT                                    | 3  |
| 1.2       | PERSONAL PROTECTION  | 3  |
| 1.3       | FIRE AND EXPLOSION PREVENTION                                | 4  |
| 1.4       | METAL FUME HAZARDS   | 4  |
| 1.5       | TRANSPORTING THE POWER SOURCE                                | 4  |
| 1.6       | MAGNETIC FIELDS CAN AFFECT PACEMAKERS                        | 4  |
| 1.7       | H.F. RADIATION CAN CAUSE INJURY                              | 5  |
| 1.8       | ARC WELDING CAN CAUSE INTERFERENCE                           | 5  |
| 1.9       | WELDING AND THE EFFECTS OF LOW FREQUENCY AND MAGNETIC FIELDS | 5  |
| 1.10      | PRINCIPAL SAFETY STANDARDS                                   | 5  |
| <b>2</b>  | <b>SPECIFICATIONS AND DESCRIPTION</b>                        |    |
| 2.1       | SPECIFICATIONS   | 7  |
| 2.2       | DESCRIPTION  | 7  |
| 2.3       | COMES COMPLETE WITH  | 7  |
| 2.4       | DUTY CYCLE AND OVERHEATING                                   | 8  |
| 2.5       | VOLT-AMPERE CURVES   | 9  |
| <b>3</b>  | <b>INSTALLATION</b>  |    |
| 3.1       | CONNECTING THE EQUIPMENT TO THE MAIN SUPPLY                  | 10 |
| 3.2       | CHANGING INPUT VOLTAGE                                       | 10 |
| 3.3       | SELECTING A LOCATION   | 10 |
| 3.4       | CHANGING POLARITY  | 10 |
| 3.5       | INSTALLING GAS HOSE AND REGULATOR                            | 11 |
| 3.6       | INSTALLING THE WIRE SPOOL AND ADJUSTING HUB TENSION          | 11 |
| 3.7       | INSTALLING THE WIRE INTO THE WELDING GUN                     | 11 |
| 3.8       | INSTALLING THE SG 300 SPOOL GUN                              | 11 |
| <b>4</b>  | <b>OPERATION</b>   |    |
| 4.1       | FRONT PANEL CONTROLS   | 12 |
| 4.2       | BACK PANEL CONTROLS  | 12 |
| <b>5</b>  | <b>MAINTENANCE AND TROUBLESHOOTING</b>                       |    |
| 5.1       | TORCH MAINTENANCE  | 13 |
| 5.2       | WIRE FEEDER MAINTENANCE                                      | 13 |
| 5.3       | TROUBLESHOOTING  | 13 |
| <b>6</b>  | <b>M 200 ELECTRICAL DIAGRAM</b>                              | 14 |
| <b>7</b>  | <b>M 250 ELECTRICAL DIAGRAM</b>                              | 15 |
| <b>8</b>  | <b>M 200 SPARE PARTS LIST</b>                                | 16 |
| <b>9</b>  | <b>M 250 SPARE PARTS LIST</b>                                | 18 |
| <b>10</b> | <b>M 200 – M 250 COMMON SPARE PARTS LIST</b>                 | 20 |
| <b>11</b> | <b>AL2 AIR-COOLED MIG WELDING GUN</b>                        | 22 |



### **WARNING**

Read and understand this entire Owner's Manual before installing, operating or servicing this equipment. While the information contained in this Owner's manual represents our best judgment, Air Liquide assumes no liability for its use.

Reproduction of this work, in whole or part, without written permission of the publisher is prohibited.

All rights reserved.

The publisher does not assume and hereby disclaims any liability to any party for any loss or damage caused by any error or omission in the Air Liquide M 200 – M 250 Owner's Manual, whether such error results from negligence, accident or any other causes.

## **1. SAFETY PRECAUTIONS - READ BEFORE USING**

---



The use of welding equipment can cause injury to the operator. The reading and understanding of the safety standards mentioned below is compulsory prior to connecting, preparing, using or transporting welding equipment.

### **1.1 INSTALLATION OF EQUIPMENT**

Compliance with the following standards is fundamental to safety:

1. Installation and maintenance of equipment must be performed in compliance with local safety standards.



2. Frequently inspect the welder plug, receptacle and wiring. If damaged, replace immediately with approved electrical connections and adequately sized wiring.

3. Connect the welding ground as near as possible to the operating area.

4. Do not pass welding equipment cables through or near lifting chains, crane cables or any electrical lines.

5. If earth grounding of the workpiece is required, ground it directly with a separate cable.

6. Do not touch the electrode if you are in contact with the work, ground or another electrode from a different welding machine.

7. Use only well-maintained equipment. Repair or replace damaged parts immediately. Maintain welding equipment according to owner's manual.

8. Never use welding equipment near water. Do not spray water or other liquids on the welding equipment.

9. Avoid direct contact between wet garments and metal parts that are electrically charged.

10. Always wear gloves and rubber-soled shoes when working in wet areas or standing on metal surfaces.

11. Always turn off welding equipment that is not being used. Do not leave welding equipment unattended.

**SIGNIFICANT DC VOLTAGE** exists after removal of input power or inverters.

- Always discharge input capacitors before touching any parts. Service work should be completed by qualified personnel only.

### **1.2 PERSONAL PROTECTION**

1. Welding operations produce radiation, noise, heat and noxious fumes. Suitable safety precautions must be taken to minimize the risk.

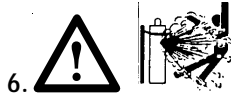


2. Wear fire resistant work gloves, long sleeve shirts, pants, safety shoes, cap and welding helmet to protect the skin from radiation and metal sparks.



3. Always wear ear protection.

4. Always wear eye protection with side shields.
5. Position a fire resistant screen around the welding area to protect bystanders from radiation, sparks and slag.



6. Compressed gas cylinders are potentially dangerous. Consult the supplier for correct handling procedures. Always protect compressed gas cylinders from the sun's rays, flames and sudden temperature changes.

### 1.3 FIRE AND EXPLOSION PREVENTION



Hot slag and sparks can cause fire. The risk of fire and explosion can be minimized by removing all flammable material from the welding area.

1. Always perform welding operation with caution. Containers and tubes that have been emptied and thoroughly cleaned still represent a potential hazard.
2. Never perform welding operations or cut a closed container or pipe.
3. Never perform welding operations on open containers or pipes that may have been contaminated with substances that could explode or react when exposed to heat or humidity.
4. As a preventative measure, keep fire extinguishers near the welding operation.

### 1.4 METAL FUME HAZARDS



Welding fumes and gases may be hazardous if inhaled.

1. Install a ventilation system in the welding area.
2. Use a forced air system when welding lead, beryllium, cadmium, zinc, zinc-coated or painted material. Always wear a protective mask.

3. If the ventilation system is inadequate, use an air respirator.
4. Beware of gas leaks. Shielding gases such as argon are heavier than air and when used in small spaces, will replace the air.
5. In the event that a welding operation occurs in a confined place, the operator should be accompanied by another person.
6. Always keep gas cylinders in a well-ventilated area. Close the main gas valve when cylinder is not in use.
7. Do not perform welding operations near chlorinated hydrocarbon vapors produced by degreasing or painting. The heat generated by arc rays can react to form phosgene, a highly toxic gas.
8. Irritation of the eyes, nose and throat are symptoms of inadequate ventilation. Take immediate steps to improve ventilation. Do not continue welding if symptoms persist.

### 1.5 TRANSPORTING THE POWER SOURCE

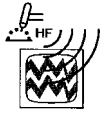
1. The welding machine may be carried by the handle.
2. Always disconnect the power source and accessories from the main supply before lifting or handling the welding equipment.
3. Do not drag, pull or lift welding equipment by the weld cables.

### 1.6 MAGNETIC FIELDS CAN AFFECT PACEMAKERS



1. Keep pacemaker wearers away from welding operations.
2. Pacemaker wearers should consult with a physician prior to being exposed to any welding or cutting operation.

## 1.7 H.F. RADIATION CAN CAUSE INJURY



1. High frequency (HF) emissions can interfere with radio navigation, safety devices, computers and communication equipment.
2. Installation of welding equipment should be performed by a qualified electrician.
3. The operator is responsible for having a qualified electrician correct any interference problem resulting from the welding equipment installation.
4. If notified by the FCC about interference, stop using the welding equipment immediately.
5. Have the welding equipment installation checked and maintained on a regular basis.
6. Keep high-frequency source doors and panels tightly shut. Keep spark gaps at the correct setting and use grounding to minimize the possibility of interference.

## 1.8 ARC WELDING CAN CAUSE INTERFERENCE



1. Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment like robots.
2. Be sure that all equipment in the welding area is electro-magnetically compatible.
3. To reduce possible interference, keep weld cables as short as possible, close together and down low.
4. Locate welding operations at least 100 meters (350 feet) away from any sensitive electronic equipment.
5. Be sure welding equipment is installed and grounded according to this manual.
6. If interference still occurs, the operator must take extra measures such as moving the welding machine, using shielded cables, using line filters or shielding the work area.

## 1.9 WELDING AND THE EFFECTS OF LOW FREQUENCY AND MAGNETIC FIELDS

As welding current flows through welding cables, it can cause electromagnetic fields. To reduce magnetic fields, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape coils around operators body.
4. Keep welding power source and cables as far away from the operator as practically possible.
5. Connect work clamp to workpiece as close to the weld as possible.

## 1.10 PRINCIPAL SAFETY STANDARDS

*Safety in Welding and Cutting*, ANSI Standard Z49.1 from the American Welding Society, 550 N.W. Lejeune Rd., Miami, FL 33126.

*Safety and Health Standards*, OSHA 29 CFR 1910, from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

*Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances*, American Welding Society Standard AWS F4.1, from the American Welding Society, 550 N.W. Lejeune Rd., Miami, FL 33126.

*National Electrical Code*, NFPA Standard 70, from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

*Safe Handling of Compressed Gases in Cylinders*, CGA Pamphlet P-1, from the Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

*Code for Safety in Welding and Cutting*, CSA Standard W117.2, from the Canadian Standards Association, Standard Sales, 178 Rexdale Boulevard, Rexdale, Ontario M9W 1R3.

*Safe Practices For Occupation And Educational Eye And Face Protection*, ANSI Standards Z87.1 from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

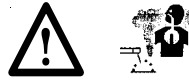
*Cutting And Welding Processes*, NFPA Standards 51B, from the National Fire Protection Association,

**EQUIPMENT INSTALLATION AND MAINTENANCE MUST BE PERFORMED IN COMPLIANCE WITH LOCAL SAFETY STANDARDS.**



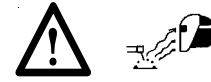
**Electric shock could be fatal**

1. Never touch exposed electrical parts.
2. Switch off and disconnect the power source before installing or opening.
3. Installation may be performed by qualified persons only.
4. Installation procedure must comply with national electricity standards and all other relevant regulations.



Fumes and gases may represent a safety hazard. Fumes and gases generated during welding may be dangerous if inhaled over a long period of time.

1. Keep clear of fumes.
2. Ventilate welding area or wear a breathing mask.
3. Install a natural or forced air ventilation system in the work area.



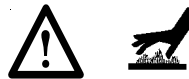
Use a protective mask with suitable glass filter (at least NR10) to safeguard eyes.

1. Wear appropriate eye, ear and body protection equipment.
2. Protect face, ears and neck during welding operations. Advise other persons in the vicinity to look away and stand clear of arc rays and hot metal.



**Moving parts may cause injury.**

1. Keep clear of hazardous areas, such as moving rollers.
2. Keep all doors, panels and covers closed and in place.



**Hot areas may cause injury.**

Let the power source or other parts cool before performing any maintenance or servicing.



**Welding wire may cause injury.**

Do not point the torch toward any part of the body, other persons or any type of metal when unwinding welding wire.



**WELDING MAY CAUSE FIRES OR EXPLOSIONS. Never weld near inflammable materials.**

1. Beware of weld flame. Always keep a fire extinguisher close at hand.
2. Never place welding equipment on inflammable surfaces.
3. Do not weld in closed containers.
4. Let welding equipment and material cool before handling them.



**A falling power source or other equipment may cause serious injury to persons or damage to objects.**

1. Always make use of the handle to lift power source (applies to portable models).
2. Use eye bolts and adequate lifting equipment to raise the power source.



**The positioning of welding equipment on inflammable surfaces could lead to fire outbreak or explosion.**

1. Never position equipment on combustible or inflammable surfaces.
2. Do not install equipment in the vicinity of inflammable liquids.

- **INSTALLATION AND MAINTENANCE OPERATIONS MUST BE PERFORMED BY QUALIFIED PERSONS ONLY.**
- **BEFORE INSTALLING** the power source, check that the power socket satisfies ampere and voltage requirements (see data table plate). **ENSURE** that the socket is protected by appropriate fuses and automatic switches.
- **CONNECT** an approved standard plug corresponding to the system socket to the power supply cable.

## 2. SPECIFICATIONS AND DESCRIPTION

---

### 2.1 SPECIFICATIONS

#### M 200

| Welding Amp Range |       | 30-200 Amps |       |      |  |
|-------------------|-------|-------------|-------|------|--|
| Rated AC Input    | Volts | Phase       | Hertz | Amps |  |
|                   | 208   | 1           | 60    | 25   |  |
|                   | 230   | 1           | 60    | 23   |  |
| Rated DC Output   | Amps  | Duty Cycle  | Volts |      |  |
|                   | 150   | 60%         | 23    |      |  |
| Max OCV 38V(rms)  |       | 150         | 60%   | 23   |  |

#### M 250

| Welding Amp Range |       | 30-250 Amps |       |      |  |
|-------------------|-------|-------------|-------|------|--|
| Rated AC Input    | Volts | Phase       | Hertz | Amps |  |
|                   | 208   | 1           | 60    | 40   |  |
|                   | 230   | 1           | 60    | 36   |  |
|                   | 460   | 1           | 60    | 18   |  |
|                   | 575   | 1           | 60    | 15   |  |
| Rated DC Output   | Amps  | Duty Cycle  | Volts |      |  |
|                   | 200   | 60%         | 23    |      |  |
| Max OCV 54V       |       | 200         | 60%   | 23   |  |

### 2.2 DESCRIPTION

The M 200 - M 250 sets a new standard for semi-automatic, constant-voltage, DC arc welding machines. These ruggedly-built welders are proven performers with serious welding capabilities. A patented four-roll drive system delivers wire in a smooth and consistent manner, resulting in improved arc performance and stability. A standard Euro quick connection for the welding gun of your choice increases the versatility and adaptability of this established performer. Throw on an optional spool gun to the Euro quick connections and you have a convenient, immediate solution for all your aluminum welding needs.

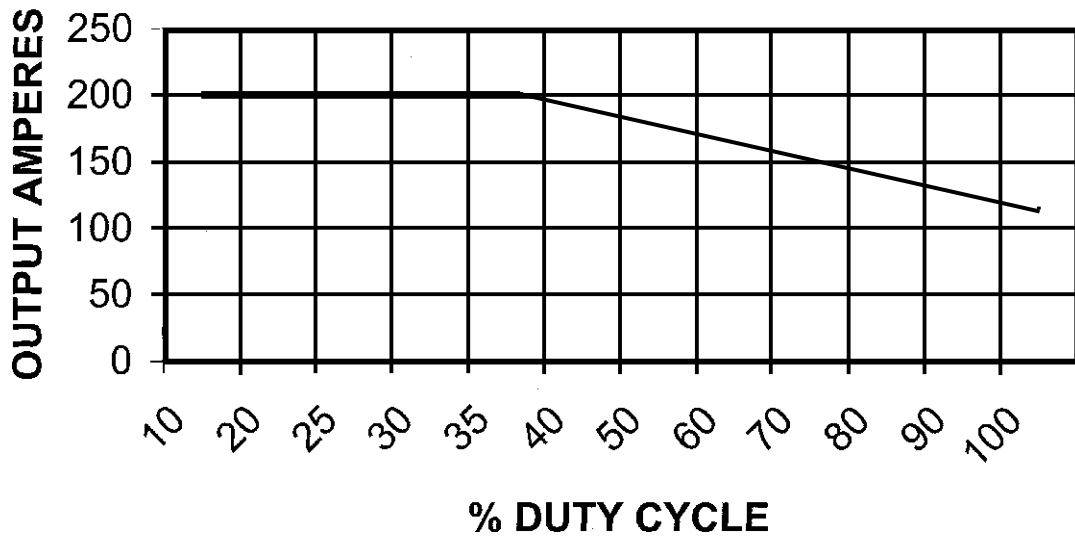
### 2.3 COMES COMPLETE WITH:

1. 3.0 m (10 ft), 250 A, Air Liquide Welding gun with Euro quick connect (M 200 only).
2. 3.6 m (12 ft), 250 A, Air Liquide Welding gun with Euro quick connect (M 250 only).
3. 2.43 m (8 ft) power cord with plug (M 200 only).
4. 2.43 m (8 ft) power cord without plug (M 250 only).
5. 3.0 m (10 ft) work cable with heavy duty ground clamp.
6. Regulator / flowguage with 2.43 m (8 ft) gas hose.
7. Running gear and cylinder rack.

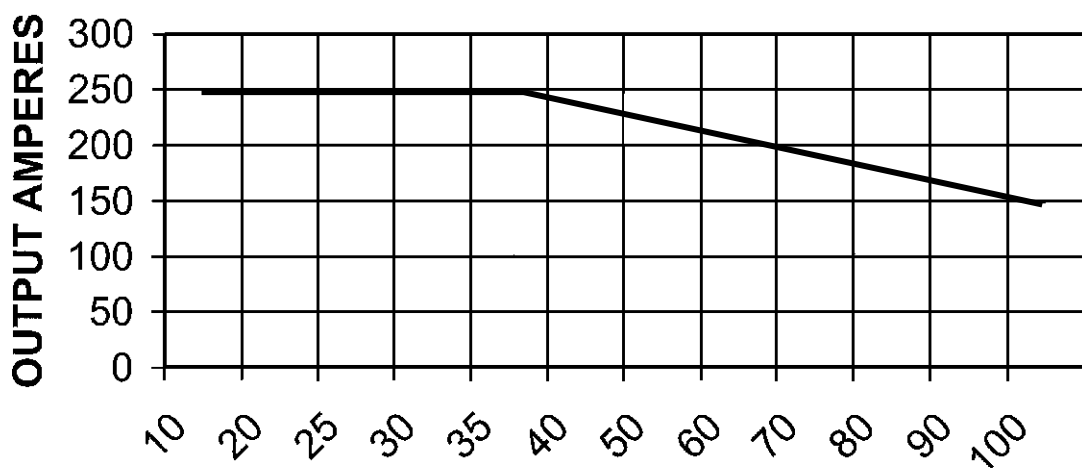
## 2.4 DUTY CYCLE AND OVERHEATING

Duty cycle is the percentage of 10 minutes that the unit can weld at its rated output without overheating. If the unit overheats, the weld output will stop. To correct this situation, wait fifteen minutes for the unit to cool. Reduce amperage or duty cycle before starting to weld again.

### M 200 Duty Cycle



### M 250 Duty Cycle

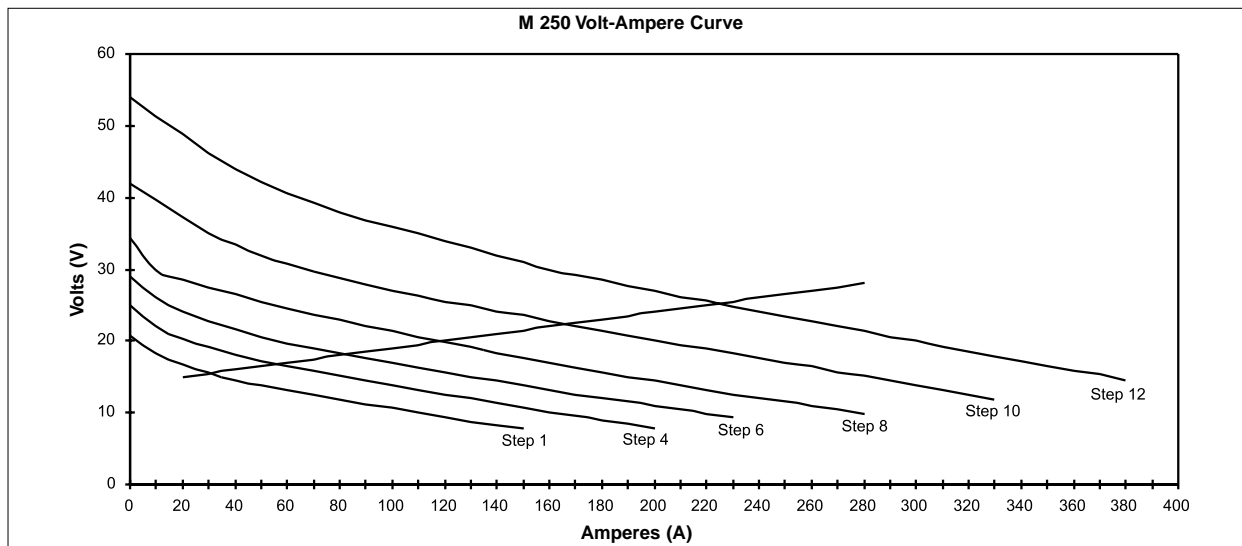
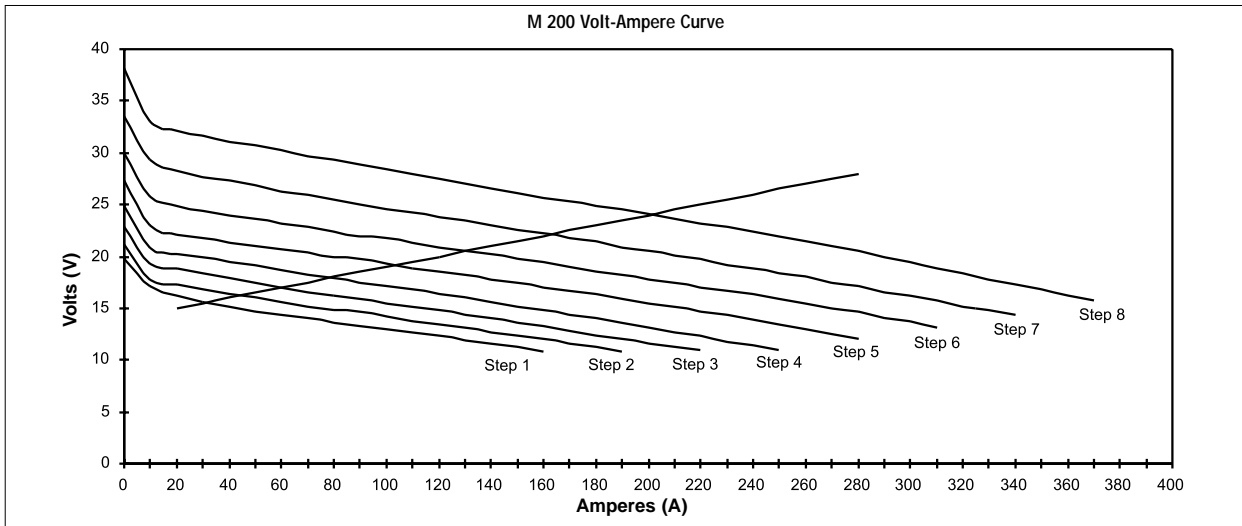


- 
- Exceeding the duty cycle can damage the unit and void the warranty.
-



## 2.5 VOLT-AMPERE CURVES

Volt-ampere curves show maximum voltage and amperage output capabilities of welding power source. Curves of other settings fall under curves shown.



# 3. INSTALLATION

## 3.1 CONNECTING THE EQUIPMENT TO THE MAIN SUPPLY

The equipment works within a  $\pm 10\%$  input voltage. Check that the power outlet is equipped with a fuse that is capable of carrying the amperes indicated on the units dataplate.

The M 200 is wired for 230 VAC input from the factory.

The M 250 is wired for 575 VAC input from the factory.

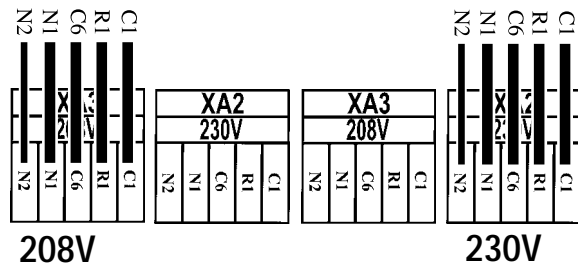


Deactivation of the power source during welding could cause serious damage to the equipment.

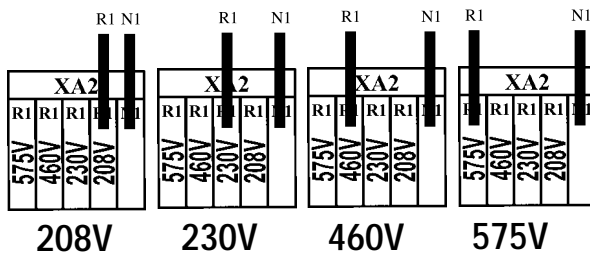
1. Use data plate to determine input power requirements.
2. The operator must have unobstructed access to all controls and equipment connections.
3. Do not position equipment in small, closed places. Ventilation of the power source is extremely important. Make sure that the louvers on the side panels are not obstructed and that there is no risk of obstruction during operation.
4. Avoid areas where dust or other objects could be sucked into the system.
5. Equipment must not obstruct corridors or work activities of other personnel.
6. Position the power source securely to avoid falling or overturning.
7. Understand the risk of falling equipment situated in overhead positions.

## 3.2 CHANGING INPUT VOLTAGE

### M 200



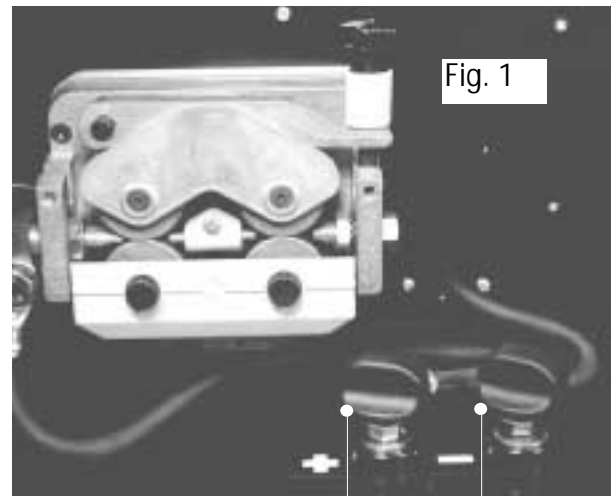
### M 250



## 3.4 CHANGING POLARITY

### TURN OFF WELDER BEFORE MAKING CONNECTIONS.

Consult wire data to verify polarity requirements.



DCEN (Straight Polarity) 1 2

1. Connect the ground cable to the positive receptacle inside the unit (See reference 1 in Fig. 1).
2. Connect the power cable to the negative receptacle inside the unit (See reference 2 in Fig. 1).

### DCEP (Reverse Polarity)

1. Connect the ground cable to the negative receptacle inside the unit (See reference 2 in Fig. 1).
2. Connect the power cable to the positive receptacle inside the unit (See reference 1 in Fig. 1).

## 3.3 SELECTING A LOCATION



Special installation may be required where gasoline or volatile liquids are present (See NEC Article 511 or CEC Section 20). Do not move or operate this equipment where it could tip over. When selecting a location for this equipment, ensure that the following guidelines are followed:

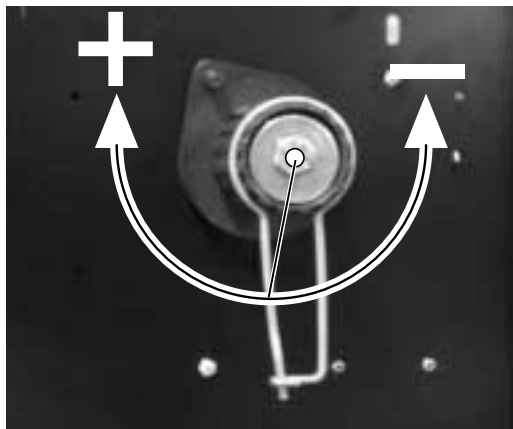
### 3.5 INSTALLING GAS HOSE AND REGULATOR

1. Install the gas hose on the inlet connection located on the rear of the machine.
2. Install the regulator on the cylinder outlet connection located on the top of the compressed gas cylinder.
3. Connect the male gas hose connection to the female regulator connection.

### 3.6 INSTALLING THE WIRE SPOOL AND ADJUSTING HUB TENSION

1. Install the wire spool.
2. To increase tension, adjust the  $^{11}/_{16}$ " nut in a clockwise direction (See figure 2).
3. To decrease tension, adjust the  $^{11}/_{16}$ " nut in a counter clockwise direction (See figure 2).

Fig. 2



### 3.8 INSTALLING THE SG 300 SPOOL GUN

1. Connect the SG 300 Euro quick connect (See reference 2 in figure 3) to the Euro connection located on the front panel of the unit (See reference 12 in figure 4).
2. Connect the 7-pin quick connect (See reference 1 in figure 3) to the receptacle located on the front panel of the unit (See reference 14 in figure 4).

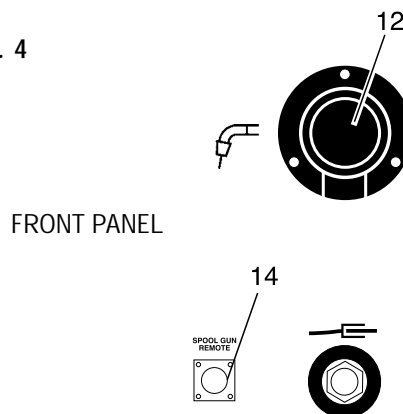
Fig. 3



### 3.7 INSTALLING THE WIRE INTO THE WELDING GUN

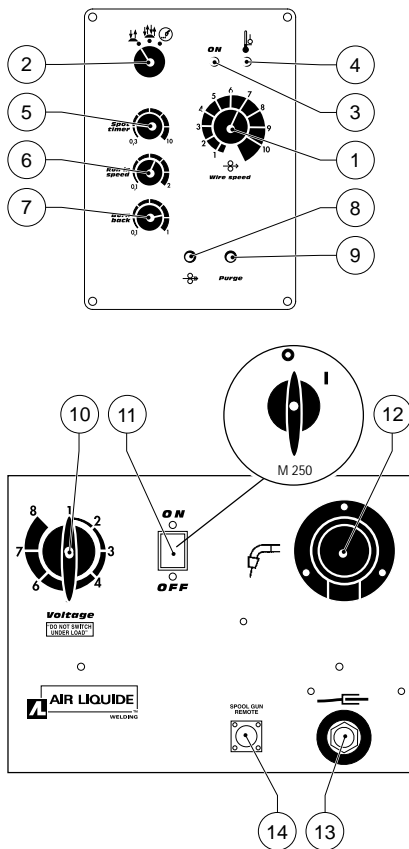
1. Open the pressure assembly on the wire feeder.
2. Push wire through guide into gun.
3. Close and tighten pressure assembly.
4. Remove gun nozzle and contact tip.
5. Press the jog control until wire comes out of the welding gun.
6. Reinstall contact tip and nozzle.
7. Feed wire by pressing the jog control to check drive roll pressure.
8. Tighten pressure assembly knob enough to prevent slippage.
9. Cut off wire and begin welding.

Fig. 4



# 4. OPERATIONS

## 4.1 FRONT PANEL CONTROLS





### 1. WIRE SPEED CONTROL


Use this control to adjust wire feed speed. When wire speed is increased, welding amperage increases. When wire feed speed decreases, welding amperage decreases..

### 2. WELDING MODE SELECTOR

Use this control to select the desired welding mode.

In 2T mode , there are two functions. When the trigger is depressed, shielding gas, weld current and wire is available for welding. When the trigger is released, the flow of shielding gas, weld current and wire is stopped.

In 4T mode , there are four functions. When the trigger is depressed the first time, shielding gas flows. When the trigger is released the first time, weld current and wire is available for welding. When the trigger is depressed the second time, weld current and wire is stopped. When the trigger is released the second time, shielding gas stops flowing.

In Spot mode , when the trigger is depressed, shielding gas, weld current and wire is fed into the weld until the time expires on the spot timer control.

### 3. ON LIGHT

### 4. TEMPERATURE LIGHT

### 5. SPOT TIMER CONTROL

Use this control to set welding time in Spot mode. The welding time can be adjusted from 0.3 – 10 seconds

### 6. RUN-IN SPEED CONTROL

Use this control to adjust wire run-in speed. A slow run-in speed will assist the operator in achieving smoother arc starts with less spatter. When the wire makes contact with the base material, the feed motor will immediately ramp up to the speed that is set on the wire speed control.

### 7. BURN BACK CONTROL

Use this control to adjust the length of time that weld current flows after the trigger is released. This feature burns the wire back toward the contact tip that will assist the operator in achieving smoother arc starts with less spatter.

### 8. JOG CONTROL

Use this control to feed electrically cold wire through the gun.

### 9. PURGE CONTROL

Use this control to purge atmospheric gases from the gas hose and gun prior to welding.

### 10. VOLTAGE CONTROL (M 200 shown)

Use this control to adjust welding voltage. Thicker material will require higher voltage settings.

### 11. ON-OFF SWITCH

### 12. EURO CONNECTOR FOR MIG GUN

### 13. GROUND RECEPTACLE

### 14. REMOTE SPOOL GUN CONNECTION

## 4.2 BACK PANEL CONTROLS

### 1 GAS CONNECTIONS

### 2 INPUT POWER CORD

## 5. MAINTENANCE AND TROUBLESHOOTING



**DISCONNECT THE POWER SOURCE FROM POWER SUPPLY BEFORE PERFORMING ANY MAINTENANCE WORK.**

Periodically, remove the side panels and blow out the machine with dry compressed air to remove dirt and dust.

Increase the frequency of cleaning when operating in dirty or dusty conditions.

**To change the contact tip:**

1. Slide off the gas nozzle.
2. Unscrew the contact tip.
3. Fit the new contact tip.
4. Replace the gas nozzle.

**To change the gas diffuser:**

1. Slide off the gas nozzle.
2. Unscrew the contact tip.
3. Unscrew the gas diffuser and replace.
4. Fit the contact tip.
5. Fit the gas nozzle.

### 5.1 TORCH MAINTENANCE

As required, clean the interior of the gas nozzle to prevent buildup of spatter.

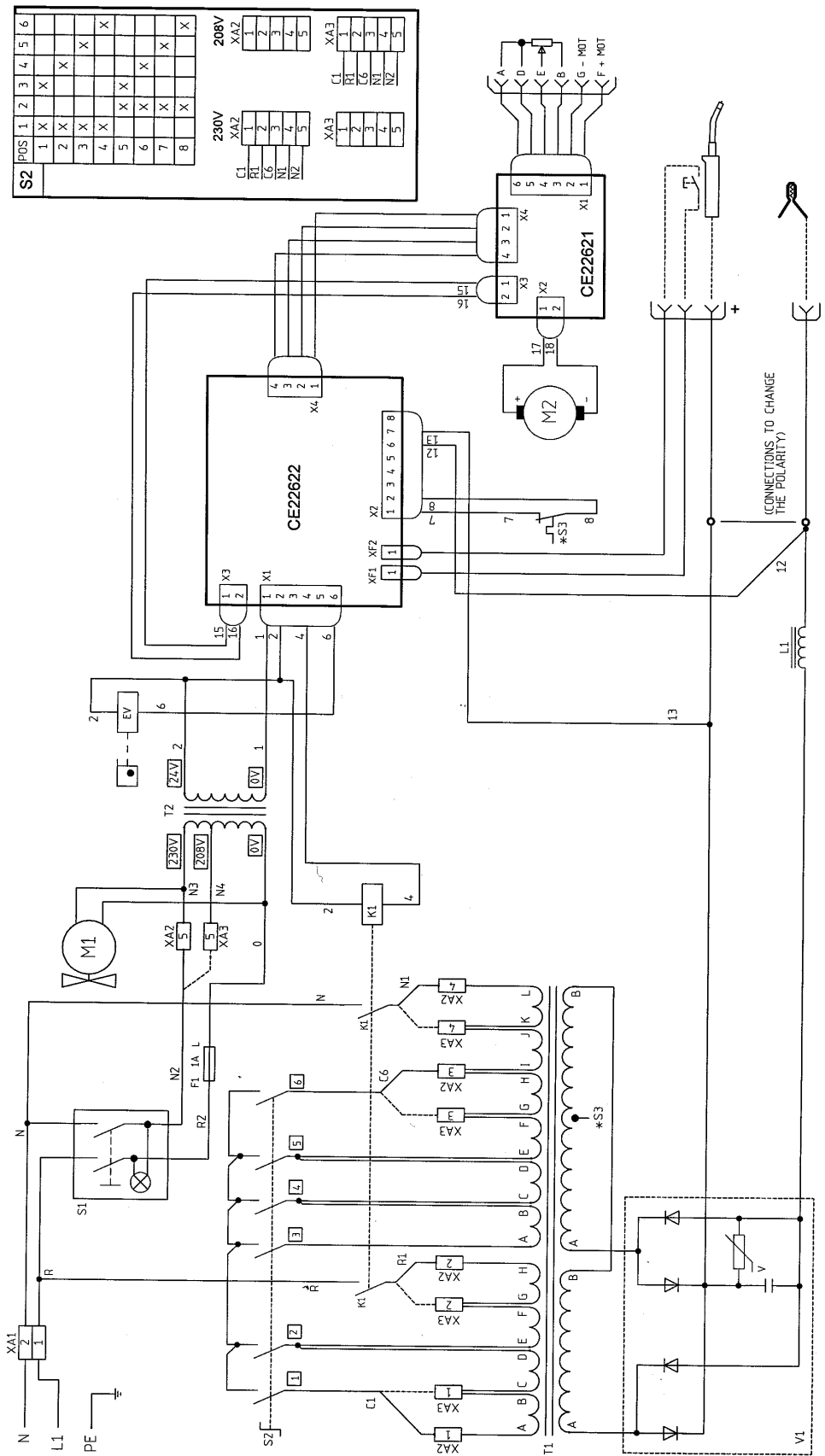
### 5.2 WIRE FEEDER MAINTENANCE

Every six months, remove drive rolls and apply light coat of oil or grease to the drive motor shaft.

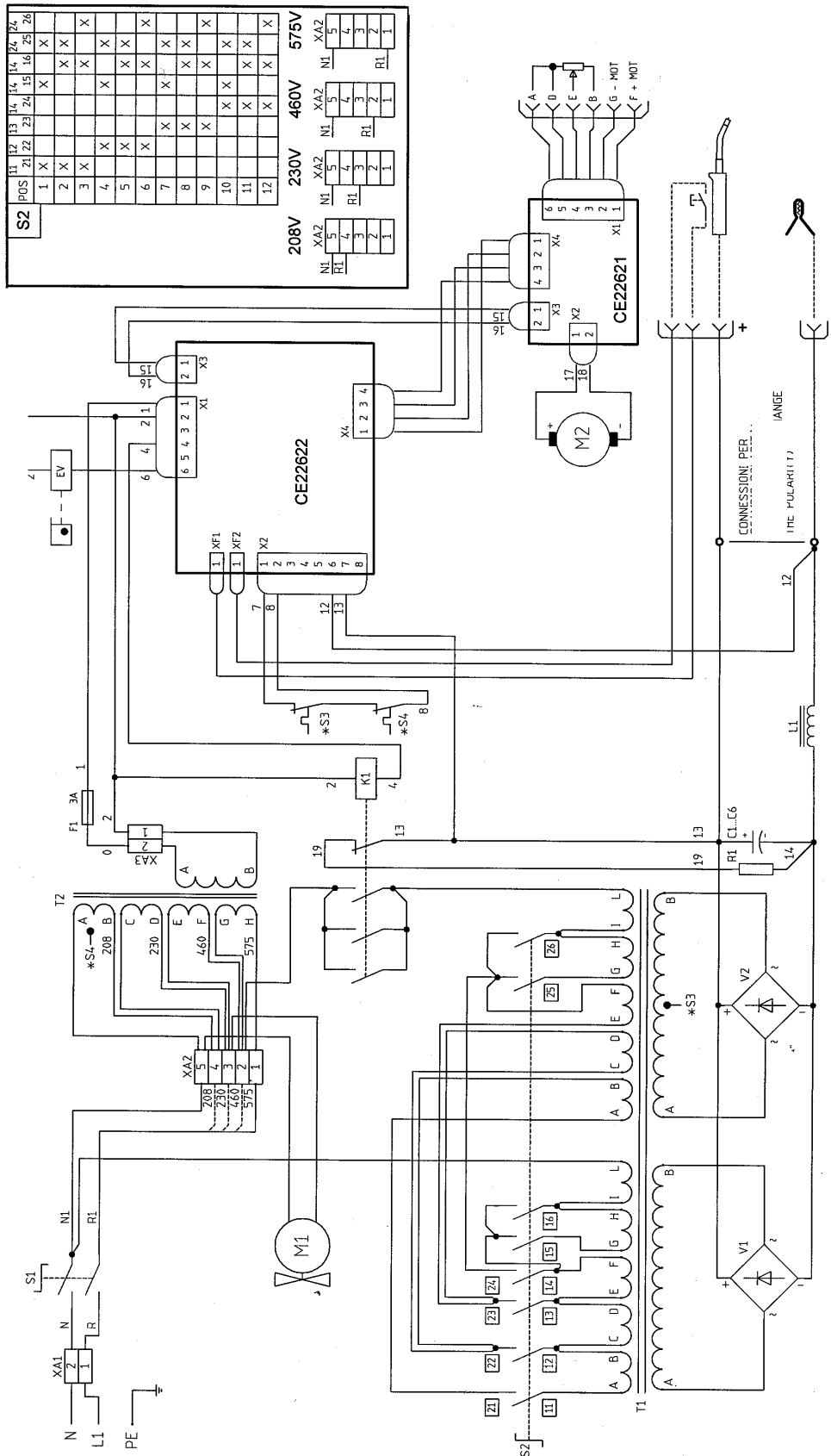
### 5.3 TROUBLESHOOTING

| TYPE OF BREAKDOWN                         | POSSIBLE CAUSES  | CHECKS AND SOLUTIONS   |
|---|--|--|
| No functions operate                      | Faulty power cord (one or more phases disconnected)                                | Check and remedy   |
|   | Blown fuse   | Replace  |
| Irregular wire feed                       | Insufficient spring pressure   | Tighten pressure assembly knob   |
|   | Wire-guide blocked   | Replace  |
|   | Wire groove - unsuitable for wire, or excessively worn.                            | Turn roller over or change it  |
|   | Excessive braking on coil  | Loosen brake using adjusting screw   |
| Reduced welding power                     | Oxidized, poorly wound, poor quality wire, with tangled or overlapping coils, etc. | Remedy by removing defective coils. If problem persists, change the wire reel  |
|   | Ground cable not connected   | Check that the power cord is in good condition and make sure that the ground clamps are firmly fixed to the workpiece                  |
|   | Detached or loose connection on switches   | Check, tighten or replace, as necessary  |
|   | Faulty contactor   | Check the state of the contacts and the mechanical efficiency of the contactor   |
| Porous or spongy welds                    | Faulty rectifier   | Visually check for signs of burn-out; if present, replace rectifier  |
|   | No gas   | Check presence of gas and gas supply pressure  |
|   | Drafts in the welding area   | Use a suitable screen. Increase gas delivery pressure if necessary   |
|   | Clogged holes in gas diffuser  | Clear clogged holes using compressed air   |
|   | Gas leakage in supply hoses<br>Solenoid valve blocked                              | Check and replace faulty component<br>Check solenoid operation and electrical connection   |
|   | Faulty regulator   | Check operation by removing the hose connecting the pressure regulator to the power source   |
| Gas supply does not switch off            | Poor quality gas or wire   | Gas must be extra-dry; change the cylinder or use a different type wire.   |
|   | Worn or dirty solenoid valve   | Replace solenoid   |
| Pressing torch trigger produces no result | Faulty torch trigger, disconnected or broken control cables                        | Remove the torch connection plug and short circuit the poles; if the machine operates properly, check the cables and the torch trigger |
|   | Fuse blown   | Replace, using a fuse of the same rating   |
|   | Faulty power switch  | Clean with compressed air. Ensure that wires are tightly secured; replace switch if necessary  |
|   | Faulty electronic circuit  | Replace circuit  |

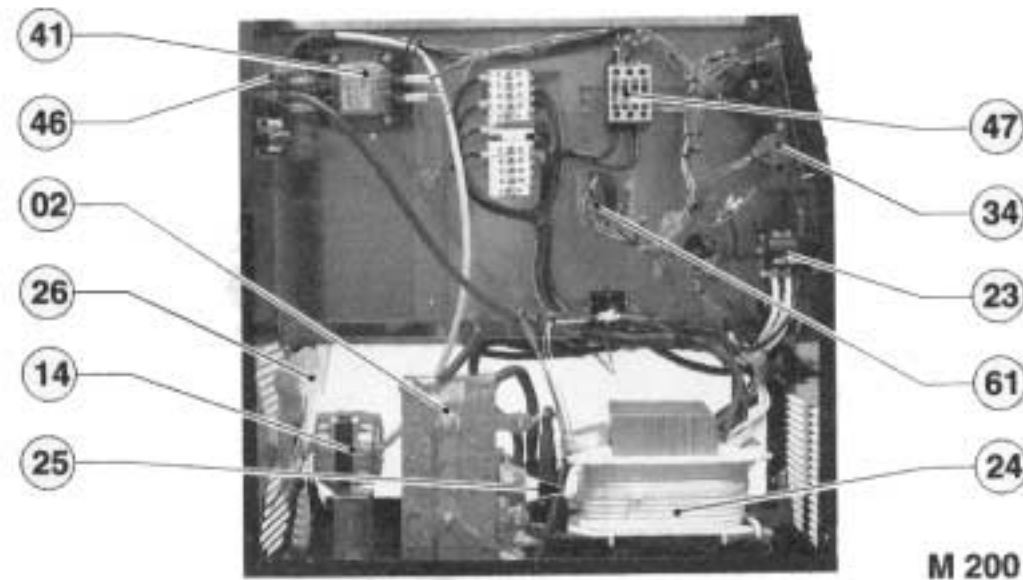
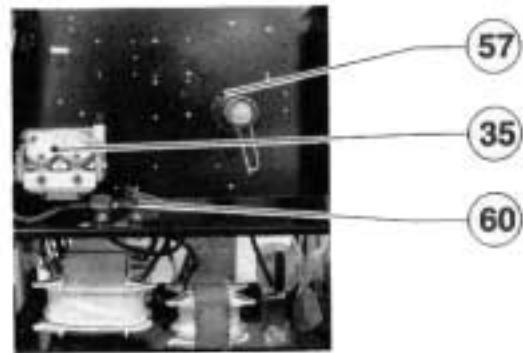
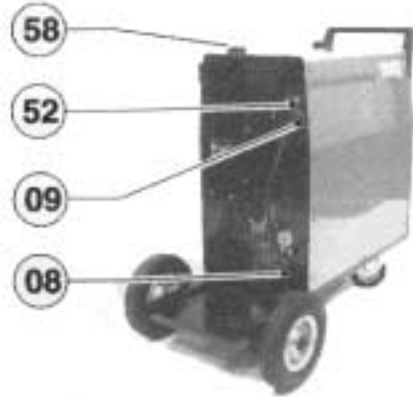
# 6. M 200 ELECTRICAL DIAGRAM



# 7. M 250 ELECTRICAL DIAGRAM



# 8. M 200 SPARE PARTS LIST



M 200

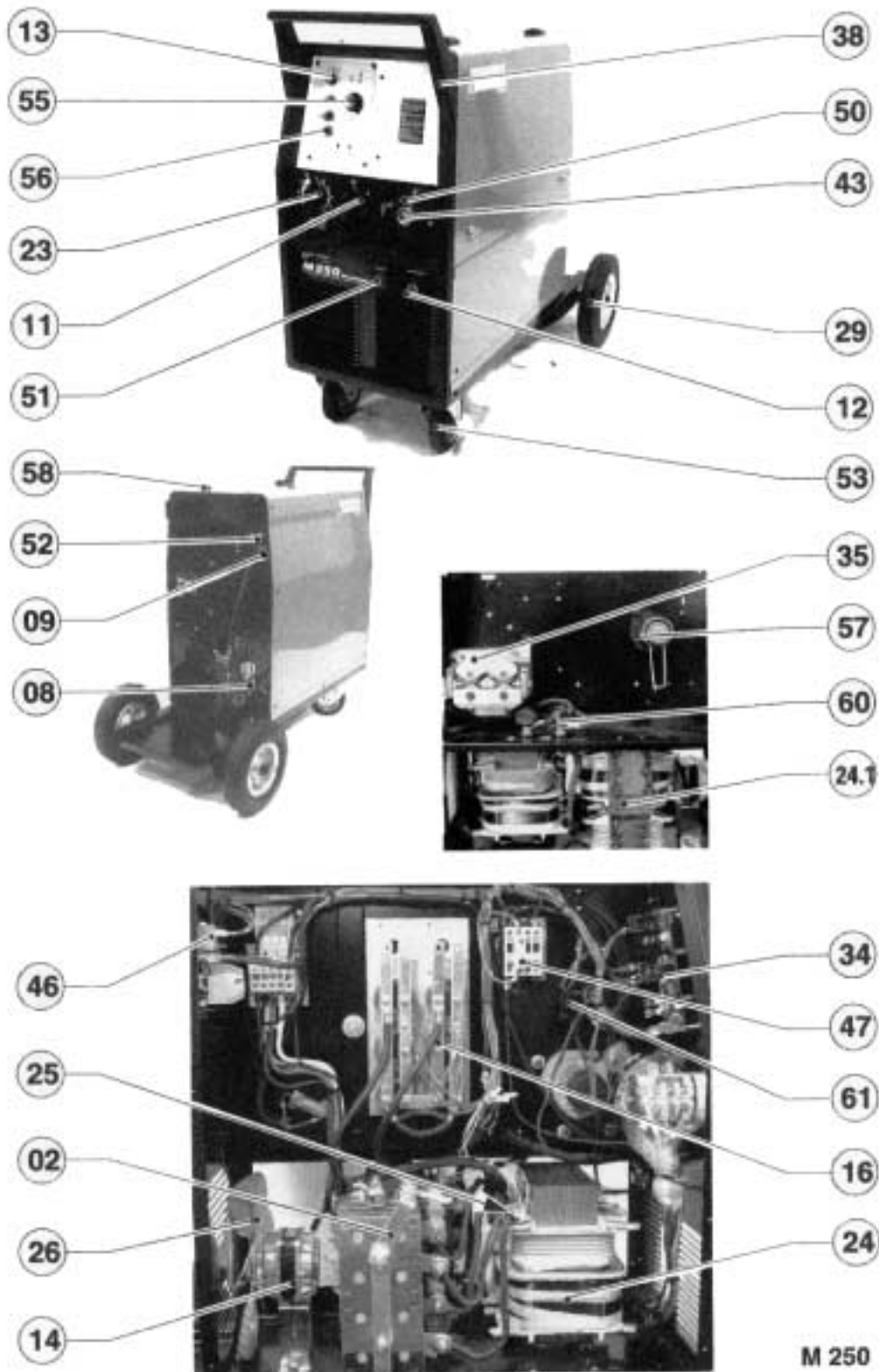


## M 200

| R. | CODE             | DESCRIPTION                    |
|----|------------------|--------------------------------|
| 02 | ALW-SP800000726  | RECTIFIER                      |
| 08 | ALW-SP800044636  | INPUT CORD                     |
| 09 | ALW-SP038088140  | STRAIN RELIEF                  |
| 11 | ALW-SP035038041  | POWER ON SWITCH                |
| 12 | ALW-SP2EINN0500F | OUTPUT WELDING RECEPTACLE      |
| 13 | ALW-SP090015025  | KNOB                           |
| 14 | ALW-SP073010156  | FAN UNIT                       |
| 23 | ALW-SP035030023  | OUTPUT VOLTAGE SWITCH          |
| 24 | ALW-SP800050883  | POWER TRANSFORMER              |
| 25 | ALW-SP041073572  | THERMAL CUT-OUT                |
| 26 | ALW-SP2VVEN250P1 | FAN                            |
| 29 | ALW-SP7825144    | FIXED WHEEL                    |
| 34 | ALW-SP800022420  | ELECTRONIC BOARD C.E.-22420    |
| 35 | ALW-SP800018834  | WIRE FEED UNIT                 |
| 38 | ALW-SP800050882  | PLASTIC TRIM                   |
| 41 | ALW-SP800002219  | AUXILIARY TRANSFORMER          |
| 43 | ALW-SP800050319  | EURO CENTRAL ADAPTOR           |
| 46 | ALW-SP2EELE02400 | SOLENOID VALVE                 |
| 47 | ALW-SP035042007  | POWER CONTACTOR                |
| 50 | ALW-SP090055317  | PLASTIC HOUSING                |
| 51 | ALW-SP800044635  | SPOOL GUN CONNECTION           |
| 52 | ALW-SP800018038  | GAS INLET                      |
| 53 | ALW-SP2VRUO1250G | CASTER WHEEL                   |
| 55 | ALW-SP090015052  | KNOB                           |
| 56 | ALW-SP090015030  | KNOB                           |
| 57 | ALW-SP800014680  | REEL HOLDER                    |
| 58 | ALW-SP800019411  | HINGE                          |
| 60 | ALW-SP090015008  | HANDLE FOR CHANGEOVER POLARITY |
| 61 | ALW-SP800022621  | ELECTRONIC BOARD C.E.-22621    |

## 9. M 250 SPARE PARTS LIST

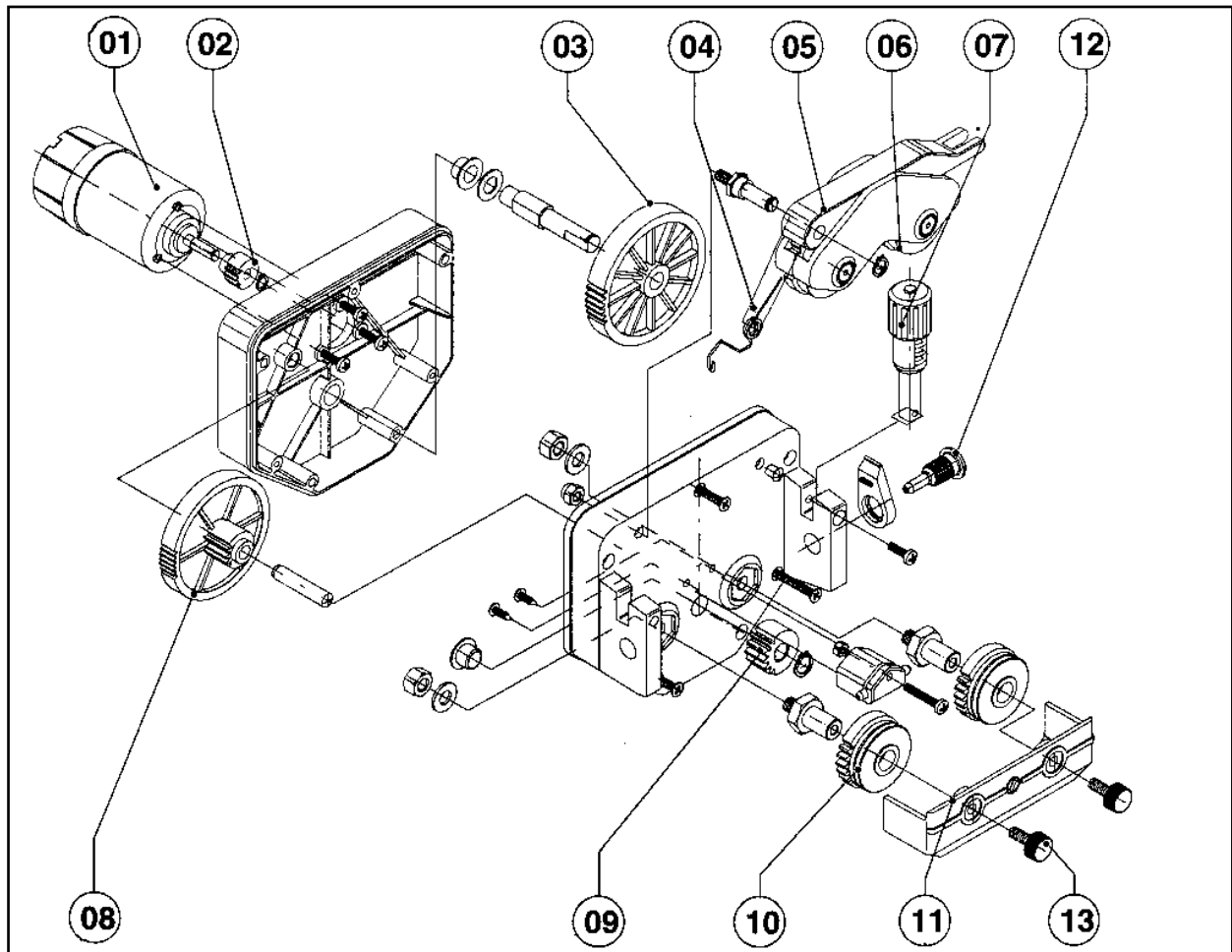
---



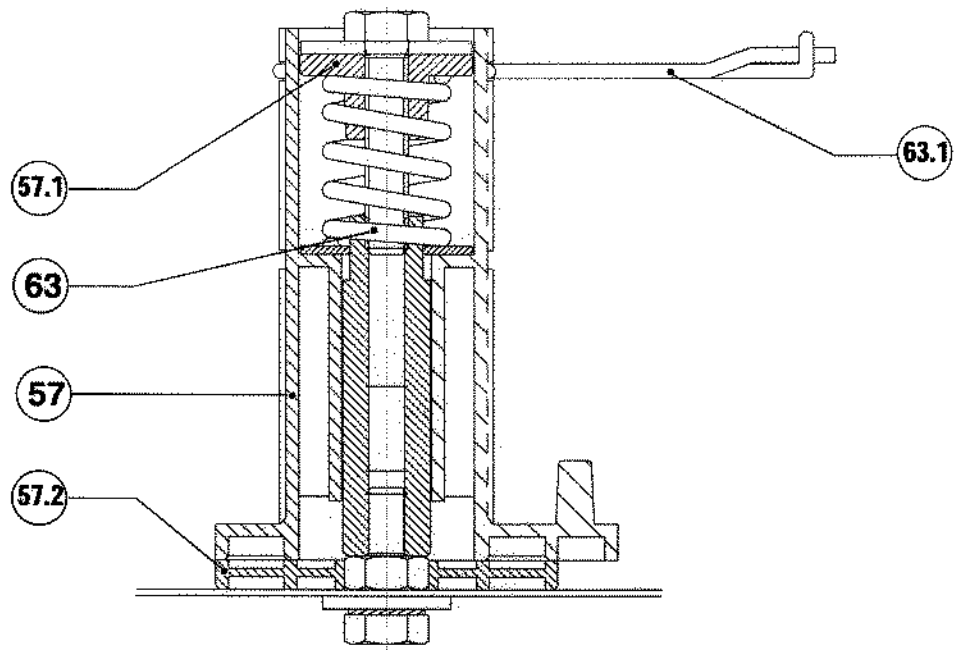
## M 250

| R.   | CODE             | DESCRIPTION                            |
|------|------------------|--|
| 02   | ALW-SP800019131  | RECTIFIER                              |
| 08   | ALW-SP800044640  | INPUT CORD                             |
| 09   | ALW-SP038088155  | STRAIN RELIEF                          |
| 11   | ALW-SP035034011  | POWER ON SWITCH                        |
| 12   | ALW-SP2EINN0500F | OUTPUT WELDING RECEPTACLE              |
| 13   | ALW-SP090015025  | KNOB                                   |
| 14   | ALW-SP073010156  | FAN UNIT                               |
| 16   | ALW-SP800019129  | CAPACITORS                             |
| 23   | ALW-SP035032015  | OUTPUT VOLTAGE SWITCH                  |
| 24   | ALW-SP800050905  | POWER TRANSFORMER                      |
| 24,1 | ALW-SP800050908  | INPUT POWER TRANSFORMER AND STABILIZER |
| 25   | ALW-SP041073572  | THERMAL CUT - OUT                      |
| 26   | ALW-SP2VVEN250P1 | FAN                                    |
| 29   | ALW-SP7825144    | FIXED WHEEL                            |
| 34   | ALW-SP800022420  | ELECTRONIC BOARD CE 22420              |
| 35   | ALW-SP800050946  | WIRE FEED UNIT                         |
| 38   | ALW-SP800050882  | PLASTIC TRI M                          |
| 41   | ALW-SP800026041  | AUXILIARY TRANSFORMER                  |
| 43   | ALW-SP800018678  | EURO CENTRAL ADAPTOR                   |
| 46   | ALW-SP2EELE02400 | SOLENOID VALVE                         |
| 47   | ALW-SP2ECOT00300 | POWER CONTACTOR                        |
| 50   | ALW-SP090055317  | PLASTIC HOUSING                        |
| 51   | ALW-SP800044635  | SPOOL GUN CONNECTION                   |
| 52   | ALW-SP800018038  | GAS INLET                              |
| 53   | ALW-SP2VRUO1250G | CASTER WHEEL                           |
| 55   | ALW-SP090015052  | KNOB                                   |
| 56   | ALW-SP090015030  | KNOB                                   |
| 57   | ALW-SP800014680  | REEL HOLDER                            |
| 58   | ALW-SP800019411  | HINGE                                  |
| 60   | ALW-SP090015008  | HANDWHEEL CHANGEOVER POLARITY          |
| 61   | ALW-SP800022621  | CIRCUIT BOARD C.E.-22621               |

## 10. M 200 – M 250 COMMON SPARE PARTS LIST

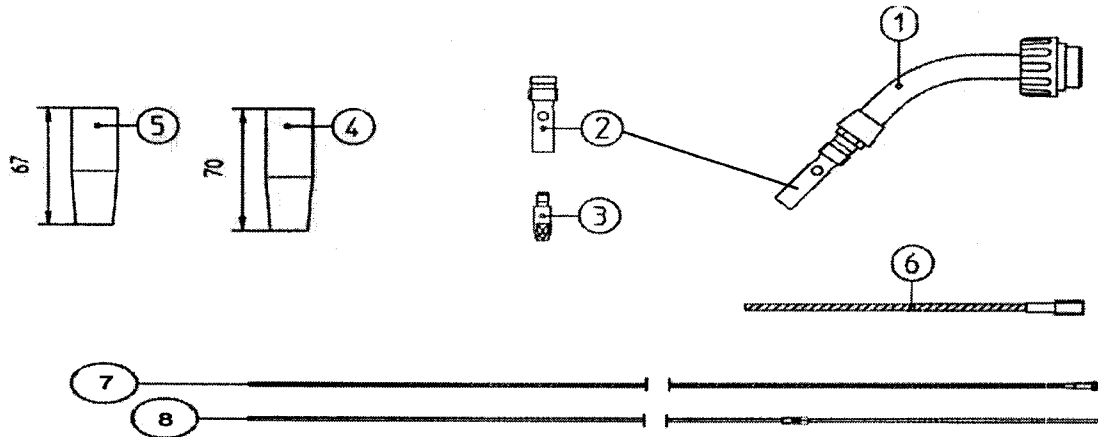


| R. | CODE            | DESCRIPTION                  |
|----|-----------------|------------------------------|
| 01 | ALW-SP800051062 | Motor                        |
| 02 | ALW-SP800018810 | Gear                         |
| 03 | ALW-SP800018808 | Nylon gear                   |
| 04 | ALW-SP800019270 | Spring                       |
| 05 | ALW-SP190100102 | Pressure assembly            |
| 06 | ALW-SP190100080 | Pressure roll                |
| 07 | ALW-SP190100101 | Adjustable pressure assembly |
| 08 | ALW-SP800018809 | Nylon gear                   |
| 09 | ALW-SP800018826 | Gear                         |
| 10 | ALW-SP190100081 | Kit n° 2 drive roll D. 0,6   |
| 10 | ALW-SP190100082 | Kit n° 2 drive roll D. 0,8   |
| 10 | ALW-SP190100083 | Kit n° 2 drive roll D. 0,9   |
| 10 | ALW-SP190100085 | Kit n° 2 drive roll D. 1,2   |
| 11 | ALW-SP800018830 | Protection                   |
| 12 | ALW-SP800050898 | Wire guide                   |
| 13 | ALW-SP090015290 | Screw                        |



| R.   | CODE              | DESCRIPTION  |
|------|-------------------|--------------|
| 57   | ALW-SP800014680   | Reel holder  |
| 57.1 | ALW-SP800000790   | Bush         |
| 57.2 | ALW-SP800018720   | Clutch plate |
| 63   | ALW-SP2VMOLD10560 | Spring       |
| 63.1 | ALW-SP800019029   | Spring       |

## 11. AL2 AIR-COOLED MIG WELDING GUN



| ITEM | DESCRIPTION   | PART NUMBER   |
|------|---|---|
| 1    | Swanneck 60-degree<br>Swanneck 45-degree<br>Swanneck 22-degree  | BIN-AL012D037<br>BIN-AL012D036<br>BIN-AL012D043                                   |
| 2    | Tip Holder / Diffusor   | BIN-ALH2T6  |
| 3    | Contact Tip 0.6 mm (0.024 in) M6<br>Contact Tip 0.8 mm (0.30 in) M6<br>Contact Tip 0.9 mm (0.35 in) M6<br>Contact Tip 1.0 mm (0.40 in) M6<br>Contact Tip 1.2 mm (0.45 in) M6  | BIN-ALCT024M6<br>BIN-ALCT030M6<br>BIN-ALCT035M6<br>BIN-ALCT040M6<br>BIN-ALCT045M6 |
| 4    | Nozzle AL 2 Threaded 12 mm (1/2 in) ID Recess<br>Nozzle AL 2 Threaded 14 mm (9/16 in) ID Recess<br>Nozzle AL 2 Threaded 16 mm (5/8 in) ID Recess  | BIN-ALN2TR50<br>BIN-ALN2TR56<br>BIN-ALN2TR62                                      |
| 5    | Nozzle AL 2 Threaded 12 mm (1/2 in) ID Flush<br>Nozzle AL 2 Threaded 14 mm (9/16 in) ID Flush   | BIN-ALN2TF50<br>BIN-ALN2TF56  |
| 6    | Neck Liner Steel 0.6 - 0.9 mm (0.024 - 0.035 in)<br>Neck Liner Steel 0.9 - 0.12 mm (0.035 - 0.045 in)<br>Neck Liner Brass 0.6 - 0.8 mm (0.024 - 0.040 in) (for aluminum)<br>Neck Liner Brass 0.8 - 1.4 mm (0.040 - 0.052 in) (for aluminum) | BIN-ALS2435<br>BIN-ALS3545<br>BIN-ALB2440<br>BIN-ALB4052                          |
| 7    | Liner Steel Insulated 0.6 - 0.9 mm (0.024 - 0.035 in) 5 m (17 ft)<br>Liner Steel Insulated 0.9 - 1.2 mm (0.035 - 0.045 in) 5 m (17 ft)  | BIN-ALL1243517<br>BIN-ALL1344517  |
| 8    | Liner Carbon Teflon® 0.6 - 0.8 mm (0.024 - 0.030 in) 5 m (17 ft)<br>Liner Carbon Teflon® 0.9 - 1.2 mm (0.035 - 0.045 in) 5 m (17 ft)  | BIN-ALLT243017<br>BIN-ALLT354517  |