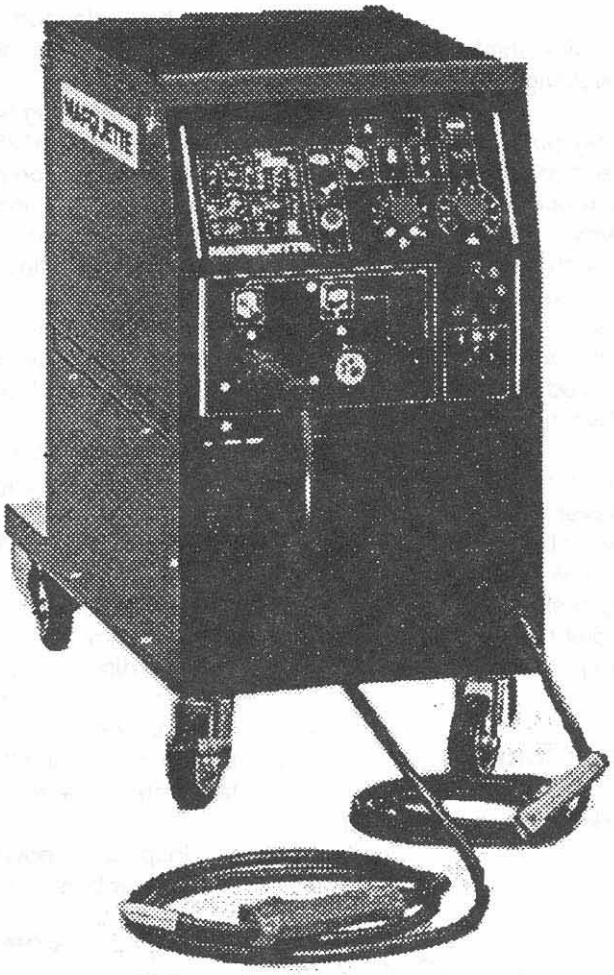
MARQUETTE®

OPERATING INSTRUCTIONS

MIG WELDER MODEL M12209



IMPORTANT OPERATING INSTRUCTIONS
SAVE THESE INSTRUCTIONS

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APRIL 6, 1994

418299

⚠WARNING⚠

Read and observe all instructions included in this manual as well as these following specific procedures

EYE AND BODY PROTECTION

WARNING: Never look at welding arc without a helmet or shield. Arc rays are extremely dangerous to the eyes.

1. Use helmet, filter an cover plate complying with ANSI Z87.1 to protect your eyes and face from sparks and the rays of the arc when welding or observing open arc welding.
2. Always wear safety goggles with side shields complying with ANSI Z87.1 when in a welding area, or when near slag snipping operation.
3. To avoid spatter and ultraviolet ray burns wear oil free woolen clothing, keep sleeves and collars buttoned, no pockets in front, cuffless trousers overlapping high shoes, and leather gauntlet gloves.
4. Protect other near-by personnel with suitable non-flammable screening, and warn bystanders as to the potential hazards in the weld area.
5. Provide adequate ventilation in the welding area, particularly when welding on galvanized lead or cadmium plated steel, and other metal which produce toxic fumes.
6. When working above floor level, protect yourself from a fall should you get a shock. Never wrap the electrode cable around any part of your body.
7. Do not weld in locations close to chlorinated hydracarbon vapors coming from degreasing, cleaning, or spraying operations. The ultraviolet rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other gases.

PROTECTION FROM ELECTRICAL SHOCK

1. Do not let bare skin or wet clothing come between the following combinations:

   Welding Gun
   AND
   Ground Clamp, or Workpiece,
   or Metal Work Table

   40 volts exist between these parts when welder is on and gun trigger pressed!
   Wear dry, hole free, clothing and gauntlet type gloves to protect and insulate the body.
2. Take special care to insulate yourself from ground using dry insulation (such as dry wood) of adequate size when welding in damp locations, on metal floors or gratings, and in positions (such as sitting or lying) where parts or large areas of your body can be in contact with possible grounds.
3. Maintain the welding gun/torch assembly, work clamp, welding cable and welding machine in good, safe operating condition

FLAMMABLE AND EXPLOSIVE MATERIALS

1. Remove flammable and explosive material at least 100 feet from the welding arc to prevent welding sparks or molten metal from starting a fire. Keep a type ABC fire extinguisher within easy reach.
2. Welding on or near containers which hold combustibles can cause an explosion, even when they have been cleaned. For information purchase "Safe Practices for Welding and Cutting Containers that Have Held Combustibles" (A6-0-65) from the American Welding Society AWS, 2501 N.W. 7th St., Miami, Florida 33125.
3. Electrodes shall be removed from electrode holders when not in use, and holders shall be so placed that they cannot make electrical contact with persons, conducting objects, flammable liquids, or compressed gas cylinders.
4. Never connect the work cable or clamp to any object but the work piece or metal work table. Connecting to other objects such as building ground can create a fire hazard.
5. Never weld anything on or to the power source cabinet, as a burn through may cause transformer failure.

PREVENTATIVE MAINTENANCE

1. Never apply power to the welder with any part of the "cabinet"removed. Position on-off switch in "Off" position and disconnect power supply at the circuit breaker or fuse box before doing maintenance work inside the machine.
2. Before connecting the welder power cord to the receptacle, check the following:

   a. Inspect the power cord and welding cables for cuts or burns and make sure blades and ground pin on hot plug are straight.
   b. Inspect "On-Off" switch lever for cracks or broken parts.
   c. Inspect electrode holder jaw insulators for cracks or broken parts.
   d. For additional safety information purchase copies of "Practice for Occupational and Educational Eye & Face Protection" (ANSI Z87.1) and "Safety in Welding and Cutting" (ANSI Z49.1) from the American Welding Society or the American National Standards Institute ANSI, 1430 Broadway, New Your, New York 10018, and "Code for Safety in Welding and Cutting" (CSA Standard W117.2-1574) from the Canadian Standards Association, 178 Resdale Blvd., Rexdale, Ontario M9W1R3.

WARNING

1. Read, study and understand all warnings and operating instructions furnished with this equipment prior to installation or use. If any part of this material is unclear, contact the factory for clarification.

2. Only qualified persons are to install, operate, and maintain this equipment in accordance with applicable codes, safety practices and manufacturer's instructions.
3. Electric shock can be fatal; therefore:
   a. Install and ground unit in compliance with national, regional and local codes.
   b. Protect yourself with dry, insulated gloves and clothing.
   c. Insure that workpiece is grounded prior to activating torch.
   d. Do not operate in damp or wet area.
4. Arc rays can injure eyes and burn skin; therefore:
   a. Always wear welding eye shield with proper filter lens.
   b. Wear appropriate protective clothing to cover exposed skin.
   c. Make sure bystanders are also protected from arc rays when operating this unit.

5. Fumes and gases can be seriously harmful to your health; therefore:
   a. Operate this equipment in well ventilated area. If this is not possible,m use air-supplied breathing apparatus.
   b. Welding of containers can result in poisonous fumes. Insure all containers are empty an properly cleaned prior to welding.
6. Hot metal slag and sparks may cause fire, burns and explosions; therefore:
   a. Do not operate in explosive atmosphere such as one containing paint, solvent, degreaser or gasoline fumes.
   b. Do not operate near combustible materials.
   c. Have appropriate fire extinguisher, available and know how to use it.
   d. Allow workpiece to cool before handling.
   e. It is recommended that a person other than the operator be assigned to observe the welding operation to watch for fire.
7. Refer to the Operator's Manual supplied with this equipment for a listing of additional safety publications available.
8. It is the owner's responsibility to keep all warning decals legible and intact. Replacement decals are available from the factory.
9. Failure to heed these warnings may result in personal or fatal injury and /or equipment and property damage.

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IMPORTANT:
BEFORE USING THIS WELDER ALL PEOPLE AUTHORIZED TO USE REPAIR OR INSPECT IT, 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 welder all people authorized to use, repair or service it 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 yourself 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.
- Remove all flammable and combustible material from the welding area and its surrounding (35 foot area).
- 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 flammable materials.
- Do not work under conditions with high concentrations of combustible vapors, gasses, 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 gasses. Some chlorine solvents may decompose with the eradiation 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 or trichlorethylene 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 vapors.

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 avoid bending.
- Keep the excess hose wound and out of the working area in order to avoid any damage.

1.1.5 Radiations

Ultra-violet radiation created by the arc may dam age 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 SHADE 10 or SHADE 11 safety lenses as 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 ultr-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

All electric shocks are potentially fatal.

- Do not touch live parts.
- Insulate yourself from the workpiece 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 workpiece.
- 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.

1.2.8 Caution!

Welding wire can cause puncture wounds.

- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

1.2.9 Moving parts can cause injury.

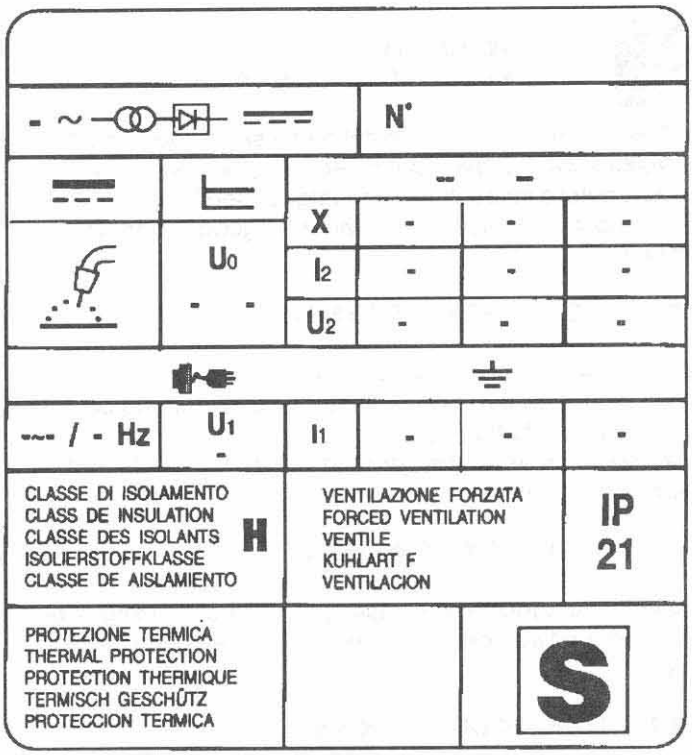
Moving parts, such as fans, can cut fingers and hands and catch loose clothing.
Keep all doors, panels, covers and guards closed and securely in place.
Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
Keep hands, hair, loose clothing, and tools away from moving parts.
Reinstall panels or guards and close doors when servicing is finished and before starting the machine.

2 GENERAL DESCRIPTION\

2.1 SPECIFICATIONS

This welding machine is a semiautomatic constant voltage generator. It is possible to weld mild steel, stainless steel, and aluminum.

2.2 EXPLANATION OF TECHNICAL SPECIFICATIONS



N° Serial number which must be stated when asking for information or servicing related to this machine.

Single-phase Transformer - Rectifier

Three-phase Transformer - Rectifier

External characteristics of the unit.

Uo Secondary no-load voltage.

X The duty-cycle expresses the percentage of 10 minutes during which the welding machine can operate at a determined current level without overheating:
e.g. X = 60% at I_2 = 100 A.
This means that the welding machine can weld with a current I_2 = 100A for 6 minutes out of 10, i.e. 60%.

I_2 Welding current

U_2 Secondary voltage with welding current I

U_1 Nominal supply voltage at the rated frequency.

I_1 Input current at the corresponding welding current I

Ip 21 Grade of protection of the case.
Grade 1 as a second number means that this unit is not fit for working in 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 and in contact with the secondary winding.
When the thermostat intervenes, the machine stops welding, while the motor-driven fan continues to work.
Wait a few minutes to allow the generator to cool down.

3 INSTALLATION

3.1 PRECAUTIONS

WARNING!!
ELECTRIC SHOCK CAN KILL

- This machine must be installed by skilled personnel.
- Make sure that the input power plug has been disconnected before inspecting, repairing, or servicing.
- Connect the yellow-green wire to a good electrical ground.

3.2 INSTALLATION AND SETUP

Remove welder from shipping box.
Open side door with upper D-ring locks by turning counter-clockwise one half turn.
Remove torch assembly, ground clamp with cable and cabinet hardware.

3.2.1 ASSEMBLY OF WHEELS

Assemble the four wheel casters to base of welding cabinet. Use the two swivel casters for the front of the cabinet base.

3.2.2 TORCH CONNECTIONS

M12209 is factory equipped with a 10' torch-cable assembly. A 15' torch-cable assembly is available for use with M12209 welder and M12221 Jaw Feed Attachment. The 15' torch-cable assembly is designed for use with steel wire only.

3.2.3 ASSEMBLY OF TORCH

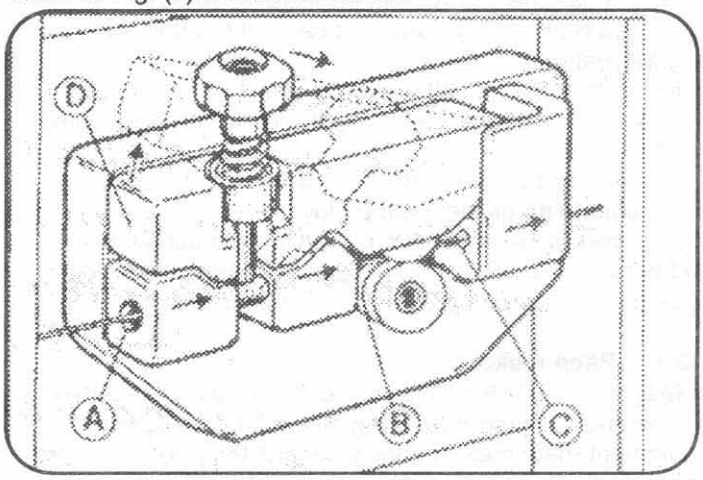
Your factory supplied torch is equipped with an easy convenient connect/disconnect torch cable assembly. This connection is referred to as an Euro-Connection. Visually inspect the Euro-Connection and there will be four types of connections.
(1) Two male pins (for electric transfer)
(2) one connection has a compression nut to retain the (wire liner) in torch cable assembly
(3) The other solid barbed connection is for (gas flow transfer).
(4) On outer housing of torch cable Euro-Connection is a right hand threaded retaining (slip ring) to secure torch cable to cabinet torch connector.

Visually locate item (G) welding torch connector as depicted in your owners manual and remove plastic dust cover. Align torch cable Euro-Connection with cabinet torch connector (G). Rotate torch slightly until all connections are aligned and torch connection slides into cabinet torch connector. Rotate torch slightly until all connections are aligned and torch connection slides into cabinet torch connector. Gently tighten retaining slip ring to cabinet side of threaded torch connector.
locate item (I) earth socket as referred to in owners manual and connect ground cable with clamp.

3.2.3 INSTALL WIRE REEL

Locate wire reel spindle and remove spool retaining ring (right hand thread). Place either 8 inch /10 lb. or 12 inch/30 lb. roll of wire (wire needs to feed from bottom of wire roll) onto reel spindle. Slide wire roll on reel spindle against reel spindle backing plate where a small dowel pin is located. Rotate wire roll until wire roll dowel hole is aligned with reel spindle dowel pin. Press wire roll into position against spindle backing plate and tighten spool retaining ring onto threaded reel spindle.

Turn power selector switch to OFF position.
locate end of wire located in the side of wire reel and remove.
Cut end of wire off as necessary for the end of the wire to be straight.
Refer to Fig. (1) in owners manual



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 torch assembly (C). Fasten the unit (D) making sure the wire stays in the grove of the wire slide roller. Tension can be increased or decreased to wire by loosening or tightening wire pressing unit.

To properly bring wire into torch cable assembly, remove torch nozzle only by rotating clockwise and pulling. (To reinstall torch nozzle rotate clockwise and push.) Remove contact tip from gas diffuser. Turn power selector switch to ON.
Locate item (B), wire speed dial, as referred to in owners manual and rotate adjuster knob 1/4 of turn to right, from extreme left position.
Caution: Hold torch away from yourself and any metal objects, welding cabinets, gas bottles or other persons.

Welding wire can cause puncture wounds
- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

Tighten the contact tip and make sure that the hole

diameter corresponds to the wire being used.
Reinstall the taper gas welding nozzle, rotating it clockwise.

Engage torch trigger and wire will drive through torch cable assembly and exit at end of gas diffuser valve. Allow 2 inches to extend past gas diffuser valve. install contact tip (same size as wire) and tighten contact tip. Install torch nozzle by rotating clockwise and pushing onto torch diffuser valve till nozzle bottoms out.
Protect torch parts by using anti-spatter spray.
Spray small amount of anti-spatter spray into nozzle for protective coating on inside of nozzle, gas diffuser valve and contact tip. Frequent use will control easy release of spatter build up and extend the life of these consumable torch components.
Clip protruding wire from torch nozzle end leaving 1/2 inch stickout.

Warning: Restricted air flow causes overheating and possible damage to internal parts of welder.
maintain at least 20 inches (500mm) of free space on all sides of welder.
Do not place any filtering device over the intake air vents of this welding power source. The warranty is void if any type of filtering device is used.

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 the torch or electrode holder and the work clamp at the same time.

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

3.4 CONNECTING THE GAS HOSE

WARNING!!
CYLINDERS CAN EXPLODE
IF DAMAGED

- Keep the cylinders in an upright position by chaining them to their support.
- Keep the cylinders in a place where they cannot be damaged.
- Do not lift the machine with the cylinder on its support.
- Never touch the cylinder with the welding wire.
- Keep the cylinder away from the welding area and uninsulated electric circuits.
- Cylinders containing inert gas have to be equipped with a regulator and a flowmeter.

After having positioned the cylinder, connect the gas hose that comes out from the rear of machine to the pressure regulator.
Turn the gas cylinder on and adjust the flowmeter to approx. 8-10 litre/min.
ATTENTION: Make sure that the gas used is compatible with the material to be welded.

3.5 UNIT DESCRIPTION

A) **On/Off switch**
Switches the welder on and off. On some versions this switch is also used to select the welding voltage range.

B) **Wire speed adjuster knob.**
Use this knob to set the wire feed speed. This knob is only enabled when the welding torch connector (G) is selected on the mode selector switch(E).

C) **Spot time adjuster knob.**
Use this knob to set the spot welding time. When the button on the welding gun is pressed, the machine will start spot welding and continue for the time set on this knob. To start the next welding cycle, release and press the welding torch button.

D) Welding voltage selector switch.
Use this selector switch to set the welding voltage.

E) Mode selector switch.
This switch is used to select one of the following operating modes;

1E) Selector switch (E) right in position
This enables the welding torch connector (G); the MIG torch (supplied) must be connected to the connector. Use the knob (B) on the front control panel to set the wire feed speed.

2E) Selector switch (E) left in position
This enables the extension cable connector (H); the extension cable (M12222 optional) must be connected to the connector. The extension cable also has a plug which must be connected to the remote connector (F) on the front control panel The extension cable can either be plugged into the spool gun (M12220) or into the jaw feed (M12221) fitted with optional accessories.

F) **Remote connector.**
Connector for the extension cable (M12222)

G) **Welding torch connector.**
Connector for the welding torch.

H) **Extension cable connector.**
Connector for the extension cable (M12222)

I) **Ground socket.**
Connect the machine ground terminal to this socket.

L) **Ammeter.**
The ammeter displays the welding current.

M) **Green LED.**
This lights up when the mode selector switch (E) is in the right position.

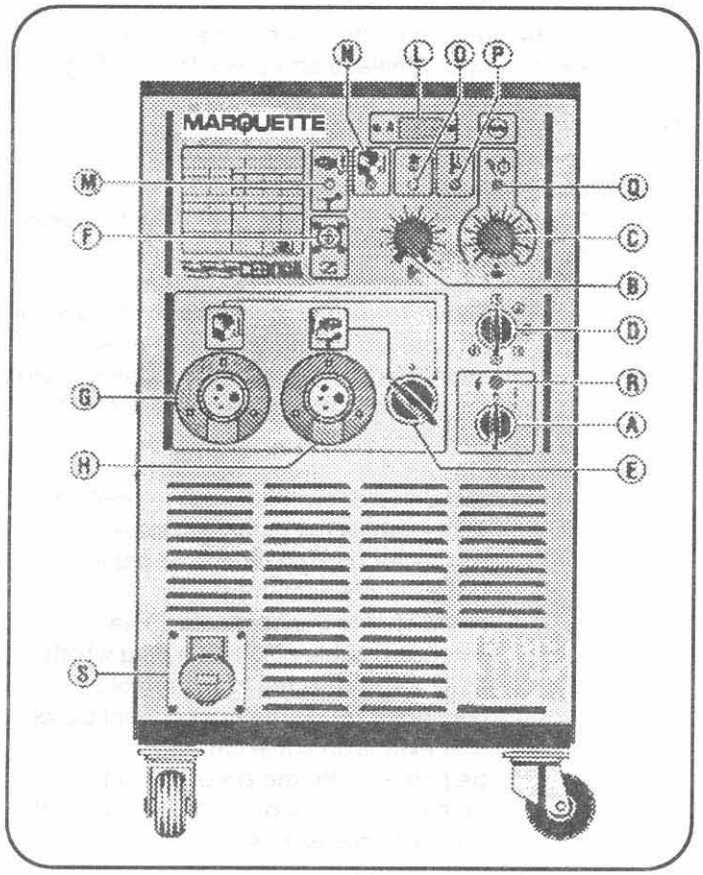
N) **Green LED.**
Th is lights up when the mode selector switch (E) is in the left position.

O) **Green LED.**
This lights up when the torch button is pressed and indicates that the two solenoid valves are operating correctly.

P) **Yellow LED.**
This lights up when the thermostat interrupts welder operation.

Q) **Green LED.**
This lights up when the selector switch (C) is on.

R) **Warning light.**
This lights up to indicate that the machine is switching on.



3.6 GENERAL NOTES

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

4 WELDING GUIDELINES

SPOT WELDING

For spot welding, replace the gas-weld nozzle with the spot-welding nozzle. Exert enough pressure with the torch to achieve a good junction of metal sheets.
This can be obtained by positioning the knob on the spot weld timer and adjusting the spot-welding time through the knob.
ATTENTION: Metal sheets will have to be perfectly clean.

4.1 MILD-STEEL WELDING

75% ARGON + 25% CO_2 or 100% CO_2 can be used for mild steel welding.
Adjust the welding voltage with switch (55)
-Approach the point to be welded and press the torch push button (70).
-Adjust the potentiometer until the welding noise is constant and continuous.
If the 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 the figure for correct torch inclination.
When you have finished welding, switch off the welder and shut off the gas cylinder.

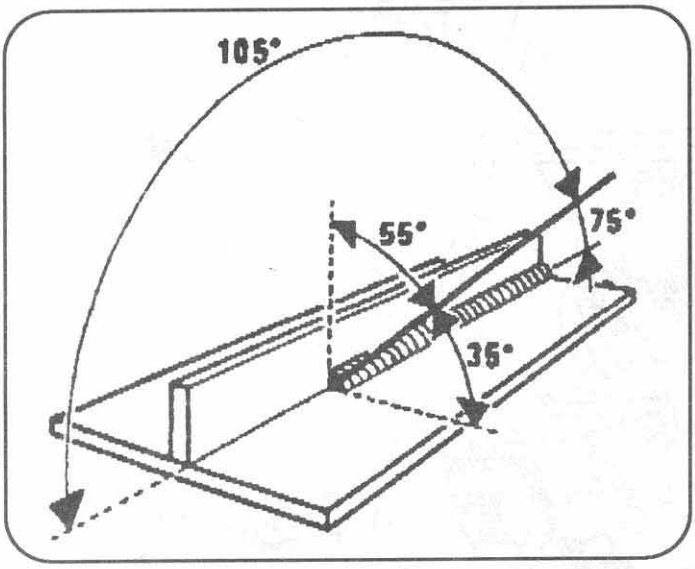
4.2 ALUMINUM WELDING

The machine will be set up as for mild steel except for the following changes:
1. 100% ARGON as welding protection gas
2. Wire of composition suitable for the material to be welded.

-For aluminum welding use 0.030" or 0.035" wire size. Alloy type 4043 or 5356.
if you only have a torch for steel wires, the same shall be modified in the following way;
-make sure that length of torch cable does not exceed 118 inches (it is advisable not to use longer torches.).
-Remove the brass sheath-holding nut, the gas and the current nozzles, then slip the sheath off.
-insert the teflon sheath for aluminum and insure it protrudes from both ends.
-Screw the current nozzle so that the sheath adheres to it.
-Insert the sheath holding nipple, the O-ring in the free end of the sheath and secure with the nut without tightening too much.
-Slip the brass tube on the sheath and insert both into the adapter (after removing the iron tube which was fitted inside the adapter).
-Cut the sheath diagonally so that it stays as close as possible to the wire slide roller.
use drive rolls that are suitable for aluminum wire. The drive rolls, when being installed, must be tightened as tight as possible.
use contact tips that are suitable for aluminum wire and make sure that the diameter of the contact tip hole corresponds to the wire diameter that is going to be used.
use abrasive grinders and tool brushes specifically designed for aluminum. never use these tools on other materials.
REMEMBER that cleanliness equals quality.
The wire spools must be stored in plastic bags with a dehumidifier.
See figure for the correct torch inclination.

4.3 STAINLESS STEEL WELDING

The machine will be set-up as for mild-steel welding except for the following changes:
-Stainless steel wire compatible with the composition of steel to be welded.
-Cylinder containing a mixture of 98% ARGON + 2% O_2 (recommended mixture)
NOTE: Recommended torch inclination and welding direction are shown in the figure.



5 MAINTENANCE AND CHECK UP

5.1 GENERAL NOTES

WARNING: ELECTRIC SHOCK CAN KILL
- Do not touch live electrical parts.
- Turn off the 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 sever 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 drive roll, ensure that the 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 contact tip.
Make sure that the contact tip outlet has not widened, if so, replace it.
The torch must not be banged or violently knocked.

5.3 TROUBLESHOOTING GUIDE

TROUBLE	PROBLABLE CAUSE	REMEDY
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 potentiometer and the wire-speed adjustment potentiometer
	Insufficient grounding	Check grounding connections

TROUBLE	PROBLABLE CAUSE	REMEDY
No wire feed or irregular wire feed	Drive roll with too large a groove	Replace the drive roll
	Obstructed or clogged liner	Remove and clean
	Wire holding roller not completely tightened	Tighten all the way
	Spool holder clutch too tight	Loosen the clutch through the adjustment
	Clogged contact tip	Replace
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
	Inlet wire guide out of position	Position it as close as possible to the drive roll.
	Obstructed or clogged liner	Remove and clean
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