OM-223 839B

2006–07

Processes

MIG (GMAW) Welding

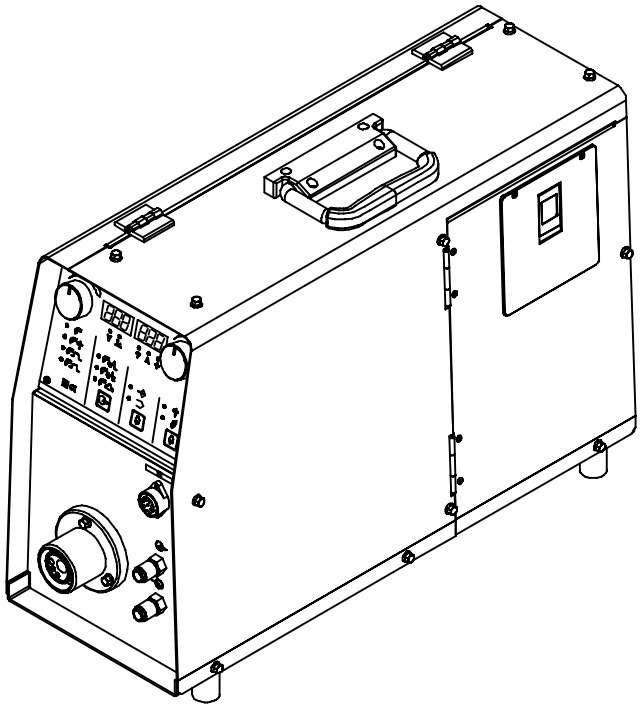
Flux Cored (FCAW) Welding

Description

CV

Wire Feeder

XMS 44 Wire Feeder



OWNER'S MANUAL

From Miller to You

Thank you and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide which exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual specification sheets.

TRUE BLUE® WARRANTY

Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.

Miller®

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Declaration of Conformity for European Community (CE) Products

NOTE ☞	*This information is provided for units with CE certification (see rating label on unit).*

Manufacturer:

ITW Welding Products Italy S.r.l.
Via dell'Industria, 55
36030 Sarcedo
Vincenza, Italy
Phone: 39(0445)367706

European Contact:

Mr. Danilo Fedolfi,
Managing Director
ITW Welding Products Italy S.r.l.
Via Privata Iseo 6/E
20098 San Giuliano
Milanese, Italy
Phone: 39(02)98290-1
Fax: 39(02)98290203

European Contact Signature: _____

Declares that this product: **XMS 44**

conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic compatibility Directives: 89/336/EEC, 92/31/EEC

Machinery Directives: 89/392/EEC, 91/368/EEC, 92/31/EEC, 133/04, 93/68/EEC

Standards

Electromagnetic Compatibility (EMC) Product standard for arc welding equipment: EN50199: August 1995

Safety Requirements for Arc Welding Equipment part 1: IEC 60974-1 1990

Degrees of Protection Provided By Enclosures (IP Code): IEC 529 1989

Insulation Coordination For Equipment Within Low-Voltage Systems:
Part 1: Principles, Requirements And Tests. IEC 664-1 1992

The product technical file is maintained by the responsible Business Unit(s) located at the manufacturing facility.

SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

som _3/05

▲ **Warning: Protect yourself and others from injury — read and follow these precautions.**

1-1. Symbol Usage

Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

▲ **Marks a special safety message.**

☞ *Means "Note"; not safety related.*

This group of symbols means Warning! Watch Out! possible ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Arc Welding Hazards

▲ **The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.**

▲ **Only qualified persons should install, operate, maintain, and repair this unit.**

▲ **During operation, keep everybody, especially children, away.**

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semiautomatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first – double-check connections.
- Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists in inverter-type welding power sources after removal of input power.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.

FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ARC RAYS can burn eyes and skin.

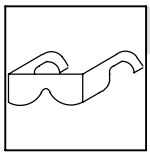
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection.

WELDING can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



FLYING METAL can injure eyes.

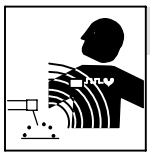
- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

BUILDUP OF GAS can injure or kill.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.

HOT PARTS can cause severe burns.

- Do not touch hot parts bare handed.
- Allow cooling period before working on gun or torch.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.



MAGNETIC FIELDS can affect pacemakers.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder – explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.

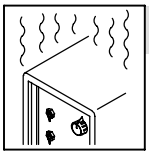
1-3. Additional Symbols For Installation, Operation, And Maintenance

FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring – be sure power supply system is properly sized, rated, and protected to handle this unit.

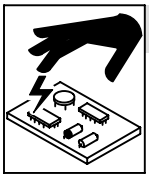
FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.



OVERUSE can cause OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

MOVING PARTS can cause injury.

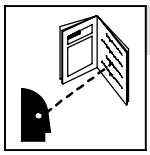
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

WELDING WIRE can cause injury.

- 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.

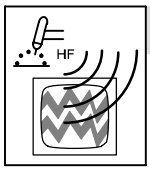
MOVING PARTS can cause injury.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before re-connecting input power.



READ INSTRUCTIONS.

- Read Owner's Manual before using or servicing unit.
- Use only genuine Miller/Hobart replacement parts.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

ARC WELDING can cause interference.

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

1-4. California Proposition 65 Warnings

▲ **Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)**

▲ **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.**

For Gasoline Engines:

▲ **Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.**

For Diesel Engines:

▲ **Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.**

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping, American Welding Society Standard AWS F4.1 from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269–9101 (phone: 617–770–3000, website: www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202–4102 (phone: 703–412–0900, website: www.cganet.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800–463–6727 or in Toronto 416–747–4044, website: www.csa–international.org).

Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036–8002 (phone: 212–642–4900, website: www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269–9101 (phone: 617–770–3000, website: www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (there are 10 Regional Offices––phone for Region 5, Chicago, is 312–353–2220, website: www.osha.gov).

1-6. EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard." However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, 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 cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor before welding or going near welding operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – DEFINITIONS

2-1. Manufacturer's Warning Label Definitions

1. Warning! Watch Out! There are possible hazards as shown by the symbols.
2. Drive rolls can injure fingers
3. Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects clear.

1 Electric shock can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Don't weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watch person ready to use it.

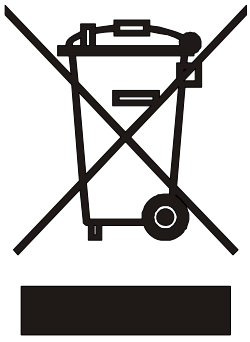
3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Become trained and read the instructions before working on the machine or welding.

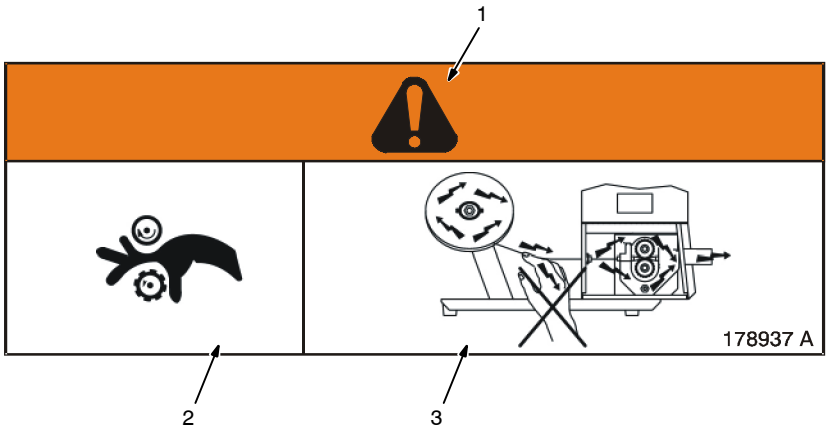
6 Do not remove or paint over (cover) the label.



Do not discard this product with general waste.

Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility.

Contact your local recycling office or your local distributor for further information.

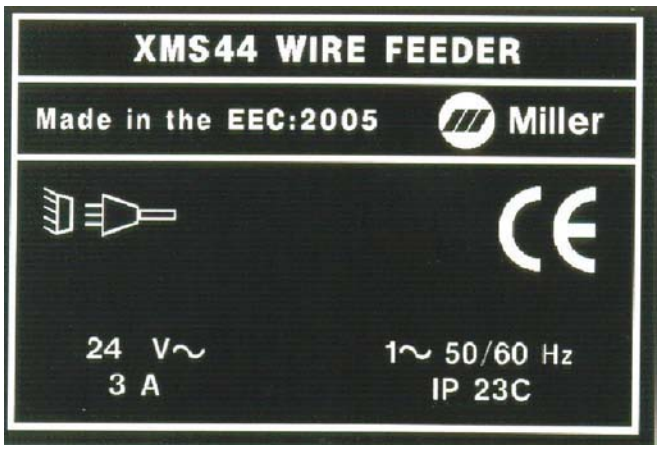


1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Drive rolls can injure fingers

3 Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects away.

2-2. Manufacturer's Rating Labels



2-3. Symbols And Definitions

NOTE ☞ *Symbols found on product.*

I	On	O	Off		Input		Output
A	Amperes	V	Volts	~	Alternating Current	X	Duty Cycle
IP	Degree Of Protection	Hz	Hertz		Circuit Breaker		Wire Feed
	Read Instructions	U_1	Primary Voltage		Gas Metal Arc Welding (GMAW)		Line Connection
	Purge		Remote		Water (Coolant) Input		Water (Coolant) Output
U_2	Conventional Load Voltage	I_1	Primary Current	I_2	Rated Welding Current		

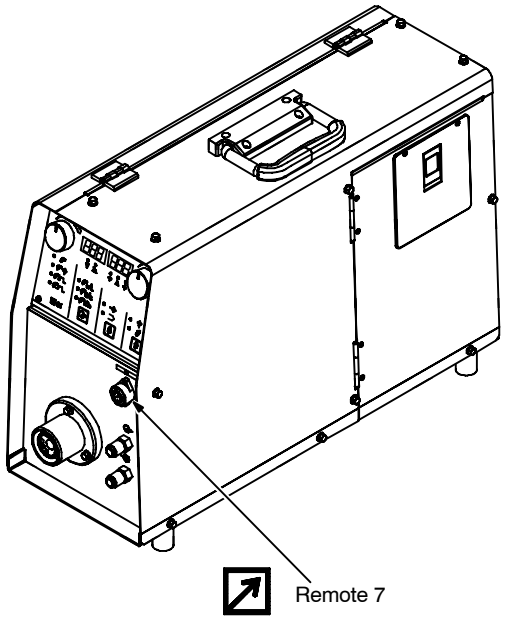
☞ *Symbols not shown here are detailed in this manual when they are relevant.*

SECTION 3 – INTRODUCTION

3-1. Specifications

Type of Input Power	Welding Power Source Type	Wire Feed Speed Range	Wire Diameter Range	Welding Circuit Rating	Overall Dimensions	Weight
24 Volts AC Single-Phase 7 Amperes 50/60 Hertz	XMS 4000 Welding Power Source	0.5 – 20 m/min	0.8 mm – 1.8 mm Max Spool Weight: 15 kg	36 Volts, 400 Amperes, 30% Duty Cycle	Length: 640 mm Width: 225 mm Height: 435 mm	23 kg

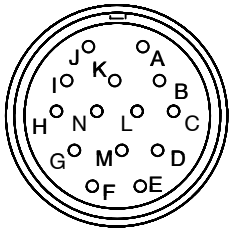
3-2. Remote 7 Receptacle Information



Pin	Pin Information
1	+10 volts DC supply voltage to remote control
2	GND Remote control circuit common
3	IREF 0 to 10 current control signal
4	VREF 0 to 10 voltage control signal
5	UP 0V/10V digital signal
6	DOWN 0V/10V digital signal
7	TYPE 0V/10V digital signal

Note: This remote receptacle cannot be used with a standard Miller remote control. A customer supplied remote control is required to use the remote receptacle.

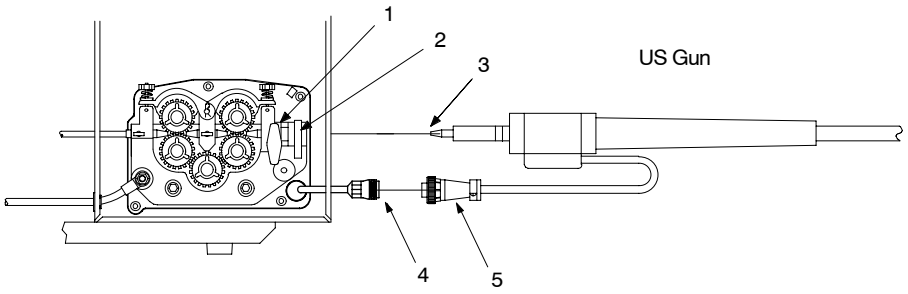
3-3. 14-Pin Plug Information

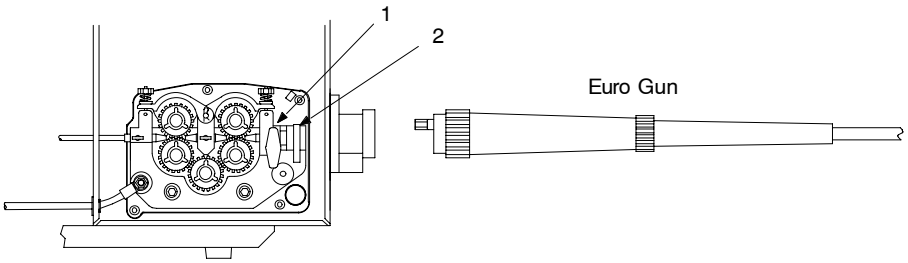


Pin*	Pin Information
A	24 volts AC with respect to socket G. Protected by circuit breaker CB1.
B	GND of communciation signals.
C	Serial communciation signal –485.
D	Serial communication signal +485.
E	Start motor signal to XMS 44.
F	Trigger switch signal to XMS 4000.
G	Circuit common for 24 volts AC circuit.
H	Wire feeder speed signal to XMS 44.

*The remaining pins are not used.

3-4. Connecting Welding Gun





1 Gun Securing Knob

2 Gun Block

3 Gun Outlet Wire Guide

Loosen knob, insert gun into block. Position outlet wire guide as close as possible to drive rolls without touching. Tighten knob.

4 Gun Trigger Plug

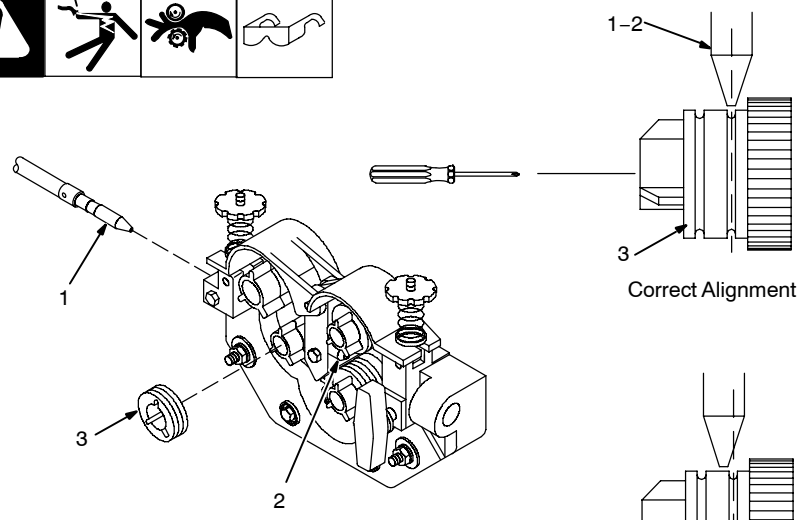
5 Gun Trigger Receptacle

☞ *Contact manufacturer for equipment needed to connect US Gun.*

☞ *Make cooling system connections as shown in Section 3-7.*

802 308

3-5. Installing Wire Guide And Drive Roll



Tools Needed:

3/8 in

1 Inlet Wire Guide

2 Intermediate Wire Guide

Install and secure inlet wire guide, and intermediate wire guide.

3 Drive Roll (4)

Install drive rolls and turn drive roll nut one click.

During maintenance intervals, remove drive rolls, and clean grooves using a wire brush. Check general condition of drive rolls.

Aligning Wire Guide And Drive Rolls:

View is from top of drive rolls looking down with pressure assembly open.

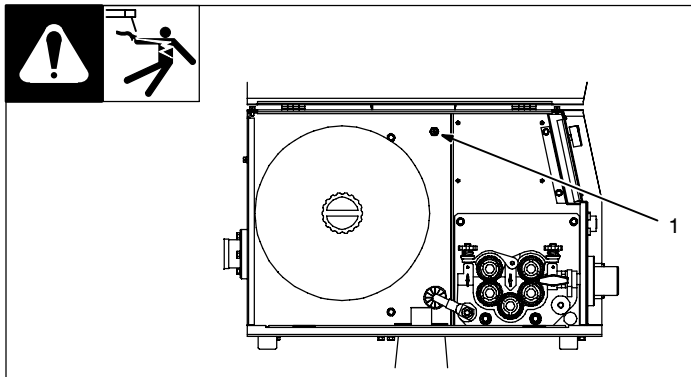
Turn screw in or out until drive roll groove lines up with wire guide.

Close pressure roll assembly.

Repeat for remaining drive rolls until all drive rolls line up with wire guides as shown.

802 310-A

3-6. Circuit Protection

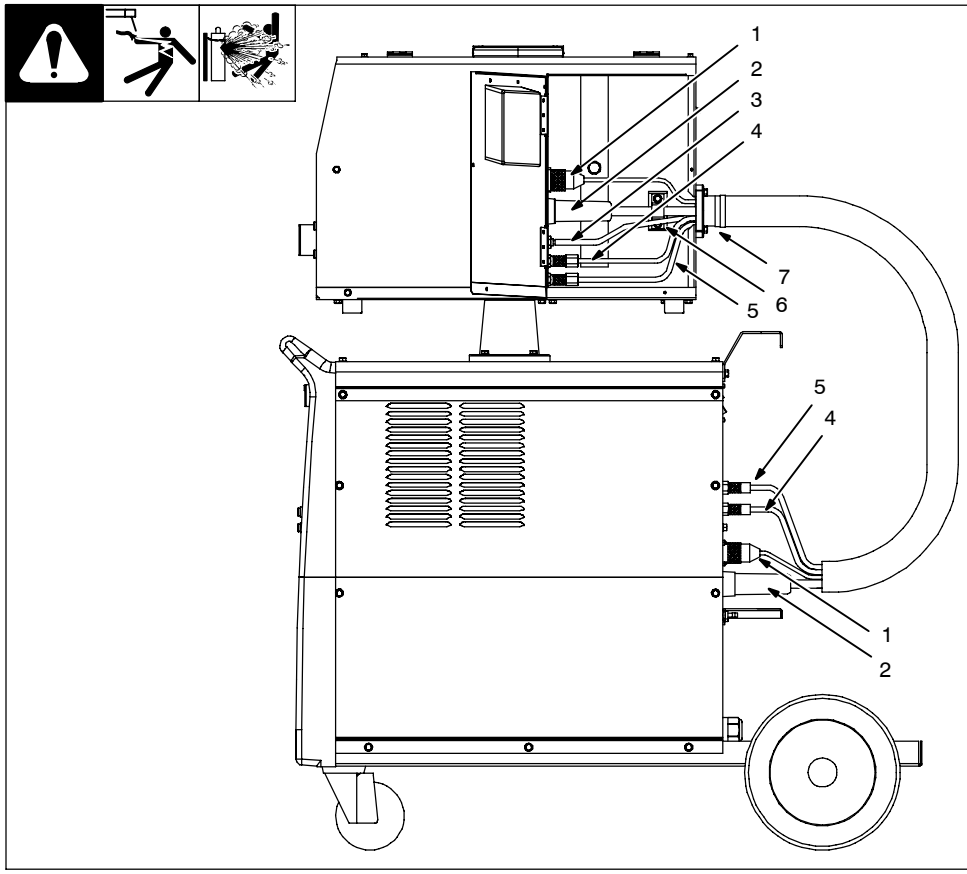


1 Circuit Breaker CB1

Circuit breaker CB1 is located inside the wire feeder as shown.

CB1 Protects the auxiliary 24 volt AC circuit from overload.

3-7. Connecting Wire Feeder to Power Source



Make connections as shown. Be sure connections are tight.

1 14 Pin Control Cord

2 Weld Cable (see Section 3-8 for connection inside wire feeder)

3 Gas Hose

Connect hose to feeder using supplied clamp. Connect other end of gas hose to the power source gas cylinder or gas circuit.

4 Blue Quick Connect Fitting (Coolant Output to Gun)

Connect blue to blue and red to red.

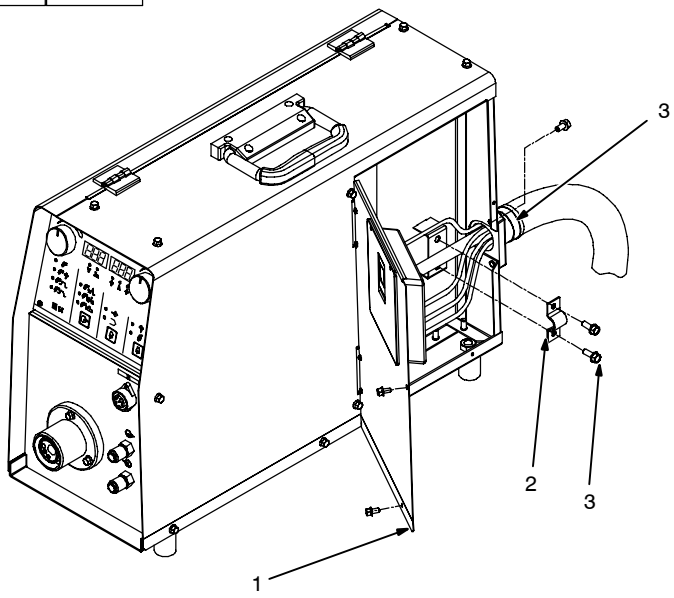
5 Red Quick Connect Fitting (Coolant Return From Gun)

Connect blue to blue and red to red.

6 Work Cable Clamp (see Section 3-8)

7 Cable Bundle Collar (see Section 3-8)

3-8. Changing Cable Between Wire Feeder and XMS 4000



▲ **Disconnect power before changing cables.**

1 Access Door

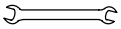
2 Clamp

3 Plastic Collar

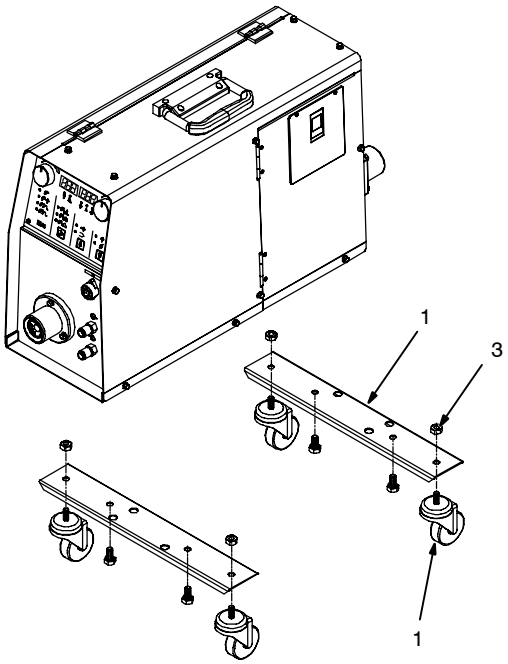
Connect weld cable to terminals behind access door.

Remove screws securing door, clamp and collar. Make cable connections. Reinstall clamp, collar, and door.

Tools Needed:



3-9. Installing Wheels On Wire Feeder (Optional)



1 Wheels

2 Bars

3 Screws

Remove rubber feet from wire feeder.

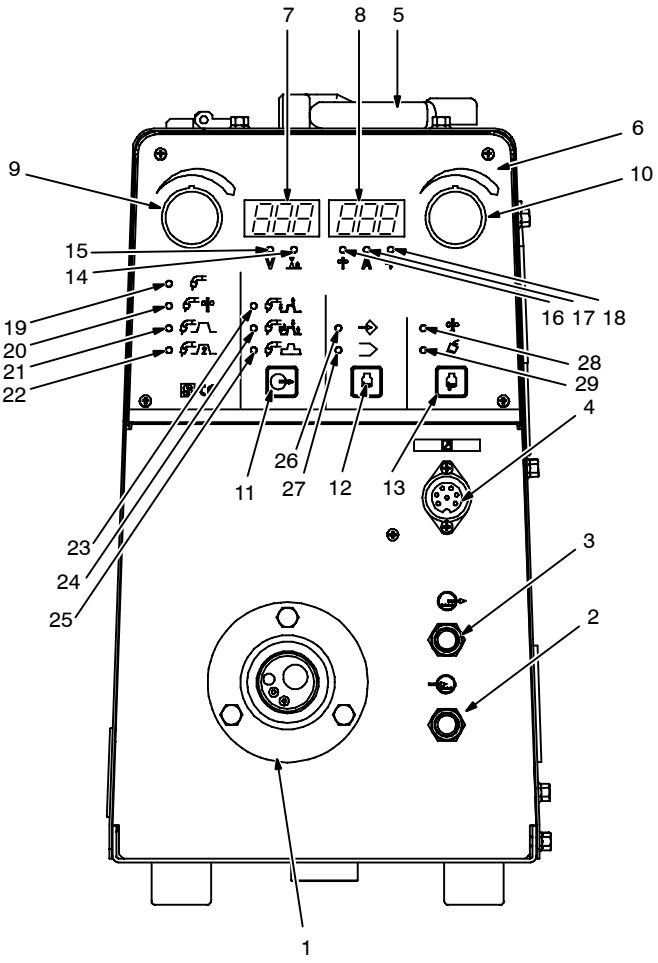
Install only wheels on feeder if smaller dimensions are desired, unit will be used on level floors, or if optional turntable is used.

Install wheels and bars for increased stability on uneven floors.

Tools Needed:

SECTION 4 – OPERATION

4-1. Control Panel



1 MIG Gun Connector

2 Red Quick Connect Fitting (Coolant Return From Gun).

3 Blue Quick Connect Fitting (Coolant Output To Torch)

4 Remote Control Receptacle

5 Handle

6 Panel

7 D1 – (Display 1)

Displays values and parameters for selected welding process.

8 D2 – (Display 2)

Displays values and parameters for selected welding process.

9 E1 (Encoder Control 1)

Use control to change values and parameters that appear on D1.

10 E2 (Encoder Control 2)

Use control to change values and parameters that appear on D2.

11 P1 (Trigger Selection Push Button)

Allows selecting desired trigger mode.

12 P2 (Memory/Setup Push Button)

Allows selecting Memory and Setup menus for MIG welding.

13 P8 (Jog/Purge Push Button)

Performs jog and purge operations.

14 L1 ON means that D1 shows the voltage value

15 L2 ON means that D1 shows the Trim value

16 L3 ON means that D2 shows Wire Speed value

17 L4 ON means that D2 shows Amperage value

18 L5 ON means that D2 shows Material Thickness value

19 L6 selection is Manual MIG welding

20 L7 selection is Synergic MIG welding

21 L8 selection is Synergic Pulsed MIG welding

22 L9 selection is Synergic Double Pulsed MIG welding

23 L10 ON selects 2 times trigger function

24 L11 ON selects 4 times trigger function

25 L12 ON selects 3 levels trigger function

26 L13 ON selects Setup menu

27 L14 On selects Memory menu

28 L15 ON selects Jog function

29 L16 ON selects Purge function

4-2. Switching On Unit And Recalling Factory Parameters

Install power source and wire feeder according to supplied Owner's Manuals. Turn On welding power source.

Displays D1 and D2 will show the wire feeder software version. Welding system is ready to weld with the factory-set default values or or the values and parameters of the last weld.

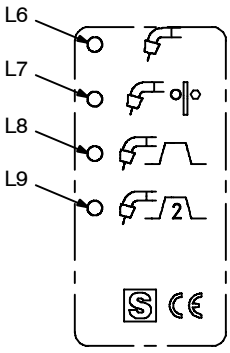
When Stick or TIG welding the wire feeder is energized but does not work. Displays D1 and D2 will show hyphens. When MIG welding, wire feeder is always on. Displays D1 and D2 will show set voltage and wire speed (or correlated parameters) and the measured welding voltage and current while welding.

To recall factory-set parameters:

☞ *Write down any parameters that need to be restored before performing this procedure.*

Turn power source Off then On again. Immediately press wire feeder P1 and P3. Release P1 and P3 when MEM CLR appears on D1 and D2. Turn power source Off when DON appears on D1. All parameters will return to factory default settings the next time unit is turned on.

4-3. Welding Process Selection



MIG welding selection is made on the power source. Wire Feeder shows the welding process selected with four LED's.

Values and parameters that appear on D1 and D2 are either factory default settings or last settings entered for the selected process.

L6 selection is Manual MIG welding. See Section 4-9.

D1 value is welding voltage; default is 18.5 volts (range is 10 to 50 volts).

D2 value is wire feed speed; default is 5 m/min (range is 1 m/min to 20 m/min).

L2 selection is Synergic MIG welding (non-pulsed). See Section 4-10.

D1 value is trim, default is 0.0 T (range is −5.0 T to 5.0 T).

D2 value is wire feed speed (from min to max value according to welding curve selection).

☞ *When L7 is flashing, material transfer in the arc is by large droplets (globular transfer) and produces considerable spatter. This is the result of selecting a specific material, wire, gas, voltage, and current combination. To avoid this situation, Synergic Pulsed MIG welding with the same parameter combination is recommended. When L7 is On continuously (not flashing), material transfer in the arc is either short circuit (Short Arc) or by small droplets (Spray Transfer). Both MIG processes provide a stable arc and minimum spatter.*

L8 selection is Synergic Pulsed MIG welding. See Section 4-12.

D1 value is Trim, default is 0.0 (range is −5.0 to 5.0).

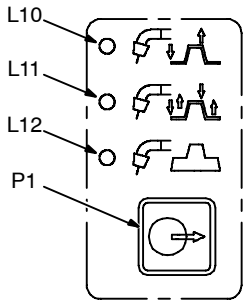
D2 value is wire feed speed (from minimum to maximum value according to welding curve selection).

L9 selection is Synergic Double Pulsed MIG welding. See Section 4-12.

D1 value is trim, default is 0.0 (range is −5 to 5).

D2 value is wire feed speed (from min to max value according to welding curve selection).

4-4. Trigger Mode Selection



☞ *Always check and set a trigger mode. If trigger mode is undefined for a welding process, select the desired mode.*

Trigger mode can be set for Manual MIG, Synergic MIG, Synergic Pulsed MIG, and Synegic Double Pulsed MIG welding to change when output power is present at the weld connectors. In Manual MIG, Synergic MIG, Synergic Pulsed MIG, and Synergic Double Pulsed MIG welding, pressing P1 will change trigger mode, but D1 and D2 will not change values.

Press P1 to select the desired trigger mode:

L10 ON selects 2 times trigger function.

When trigger is pressed, welding starts.

When trigger is released, welding stops.

L11 ON selects 4 times trigger function.

When trigger is pressed, welding starts.

When trigger is released, welding continues.

When trigger is pressed and released a second time, welding stops.

L12 ON selects 3 levels trigger function.

When trigger is pressed, welding starts with level 1 parameters.

When trigger is released, welding continues with main parameters.

When trigger is pressed a second time, welding continues at level 2 parameters.

When trigger is released the second time, welding stops.

L12 trigger mode is useful for aluminum and for a crater fill sequence.

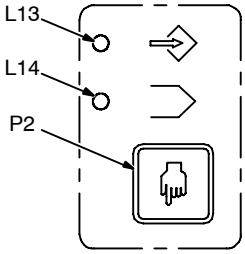
In Manual MIG process, 2 times and 4 times trigger mode can be selected.

In Synergic MIG process, 2 times, 4 times and 3 levels can be selected.

In Synergic Pulsed MIG process, 2 times, 4 times, and 3 levels can be selected.

In Synergic Double Pulsed MIG process, 2 times, 4 times, and 3 levels can be selected.

4-5. Setup Menu and Memory Menu Selection



L13 and L14 are generally OFF.

P2 selects the Setup Menu and the advance programming of MIG welding and to memorize and manage personal welding parameters in MIG welding.

Press P2 to select Setup Menu. L13 is ON.

Press P2 a second time to select Memory Menu. L14 is ON.

Press P2 again to exit Setup and Memory Menu. L13 and L14 are OFF.

In order to complete Setup and/or Memory procedures you have to exit these menus. L13 and L14 must be off.

☞ *In Setup Menu and Memory Menu you cannot weld. This avoids setting errors in the welding parameters and in the memorized welding parameters.*

4-6. Setup Menu

Press P2 to enter SET UP menu.

Setup allows viewing and changing default parameter values for all welding processes for the desired weld characteristics.

D1 shows the welding parameter.

D2 shows the parameter value.

E1 changes the welding parameter.

E2 changes the parameter value.

P2 allows to exit setup Menu and Advanced Programming and to save the changed parameters.

☞ *Incorrect settings in any process can result in a program with undesirable weld characteristics. Setup should only be used by operators familiar with various welding processes and parameters.*

Setting Menu Type

To set menu type, proceed as follows:

Press P2 to enter Setup menu.

Use E1 to select SET (setup) SHO (short) on D1 and D2 (default setting).

Use E2 to change D2 to FULL.

☞ *MENU SHORT only shows basic parameters for welding processes. SET-UP FULL shows all parameters for welding processes. Menu selection is set when exiting the Setup Menu.*

4-7. Memory Menu

Press P2 to enter Memory menu.
D1 shows the first free memory position or the last memory used.
E1 changes the memory position number from P.01 to P.99.
Any memory position contains all the selected MIG welding parameters in the Wire Feeder and in the Power Source.

When a memorized welding point is loaded the Wire Feeder and the Power Source is set accordingly.
Verify the Power Source status before welding, if needed.

D1 shows the memory position.
E1 changes the memory position.
D2 shows the action you can perform on the memory position.
E2 changes the action on the memory position.

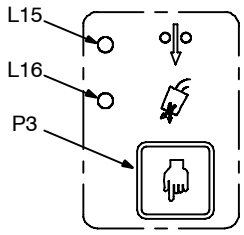
When D2 shows Ld (load), you can load in the welder the parameters in the memory position selected by D1.
When D2 shows Sto (storage), you can memorize the actual welding parameters in the memory position selected by D1.

When D2 shows dEL (delete), you can delete the parameters memorized in the memory position selected by D1.

In order to confirm the action, press P2 until D1 and D2 flash.
Release P2 and wait until flashing stops. The action is now performed and the welder exits the Memory menu.

☞ *Do not perform any operation on the welder when in Memory menu to prevent incorrect weld parameters and poor operation.*

4-8. Jog And Purge Selection



☞ *If a function is selected and not used within several seconds, the LED will turn off .*

To use the jog and purge function, proceed as follows:

Pressing P3 once selects jog. Pressing P8 a second time selects purge.

When L15 illuminates, press and hold P3 to perform jog function.

Jog feeds welding wire without weld output power applied to the wire.

In Jog mode, D1 shows JOG and D2 shows wire feed speed.

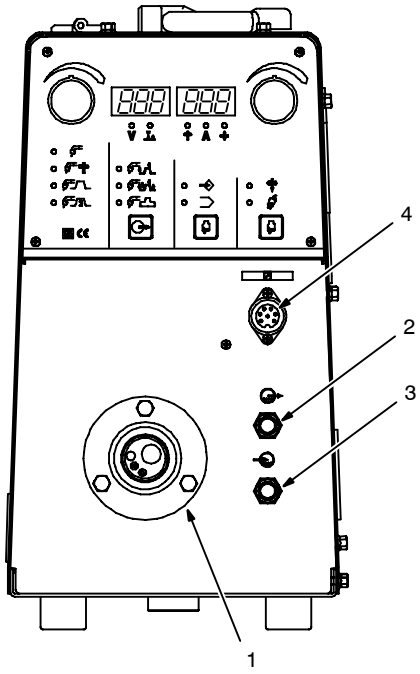
Use E2 to change wire feed speed setting.

☞ *Jog will be performed if gun trigger is pressed and held without striking a welding arc. Front panel Jog is recommended.*

When L16 illuminates, press and hold P3 to perform purge function.

☞ *Purge is used to remove impurities and fill the gas hose with shielding gas. Pre−Gas is a similar function, but only operates at the beginning of a welding process. Purge can be performed in the TIG process by pressing the torch trigger without striking an arc.*

4-9. Preparing Unit For MIG Welding



To select MIG welding process, proceed as follows:

Follow safety precautions according to Section 1.

Prepare unit according to Section 3.

1 Using a cable with a proper adapter, connect gun to the MIG gun connector.

Connect work clamp cable to the WORK connector on the power source.

2 If using a water-cooled gun, connect input coolant hose to blue quick connect fitting

3 Connect return coolant hose to red quick connect fitting.

Check coolant level after attaching torch coolant hoses and running cooler. Be sure coolant appears in upper half of indicator. Add coolant if necessary (see Power Source manual).

4 If a remote control is desired, connect it to the Remote Control receptacle

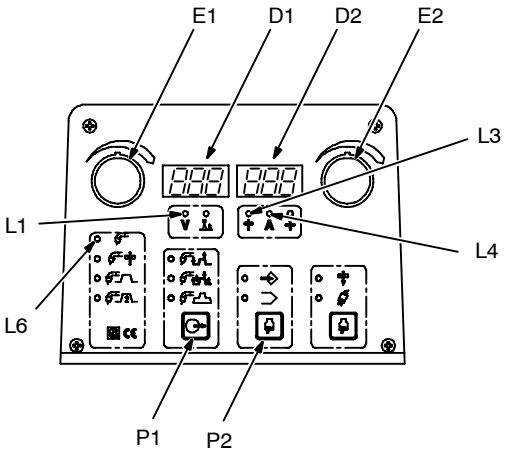
Turn unit On.

Allow time for unit to complete its start up cycle.

Set MIG welding process on the Power Source and check L1, L2, L3 and L4 on the Wire Feeder.

Purge air from the gas hose using P3 pushbutton (see Section 4-8).

4-10. Selecting Manual MIG Welding



Set Manual MIG welding process on the power source. L6 is On.

In Manual MIG mode, the operator may need to adjust main welding parameters for specific arc characteristics. Wire feed speed and arc voltage will appear on D1 and D2.

During Setting :

D1 value is default voltage setting of 18.5 V (range is 10 V to 50 V). L1 is On.

Use E1 to change voltage.

D2 value is default wire feed speed setting of 5.0 m/min (range is 1.0 m/min to 20.0 m/min). L3 is On.

Use E2 to change wire feed speed.

While Welding:

D1 shows the measured welding voltage in volts. L1 is On.

D2 shows the measure welding current in amperes. L4 is On.

Set wire speed and welding voltage with E1 and E2.

Select trigger mode using P1 push button (see Section 4-4).

If necessary, use P2 to adjust the welding parameters.

Purge air from gun hose using P3 pushbutton. (see Section 4-8).

Manual MIG Welding Advanced Settings

To change all values list, unit must be SETUP FULL. To set unit to SETUP FULL, proceed as follows:

Press P2 to enter SET UP menu.

Select SET FULL on D1 and D2 (see Section 4-6).

Setting Inductance

Press P2 to enter SET UP menu.

Use E1 to select on D1 ind. D2 shows 100.wi

If necessary, use E2 to adjust inductance value (range is 1% to 200%).

☞ *Higher inductance setting produces a softer weld puddle and less spatter, but arc starts may be more difficult. Lower inductance setting produces a stiffer weld puddle and more spatter, but arc starts may be easier.*

Wire Feed Speed Unit (only in SETUP FULL)

Use E1 to change D1 to Uni.

D2 value is the default setting of mpm (meters per minute). D2 shows IS.

Use E2 to change D2 to IPM (inches per minute). D2 shows Inc.

L3 is always on in MIG Manual welding.

Setting Pre-Gas (only in SETUP FULL)

Use E1 to change D1 to PrE.

D2 value is default setting of 0.0 s (range is 0.0 s to 10.0 s).

Use E2 to change D2 value.

Setting Post-Gas (only in SETUP FULL)

Use E1 to change D1 to PoS.

D2 value is default setting of 0.1 s (range is 0.0 s to 10.0 s).

Use E2 to change D2 value.

Setting BurnBack (only in SETUP FULL)

Use E1 to change D1 to bur.

D2 value is default setting of Aut (range is 1% to 200%).

Auto is a setting below 1% that provides an automatic burnback time.

Use E2 to change D2 value.

Setting Run-In (only in SETUP FULL)

Use E1 to change D1 to rin.

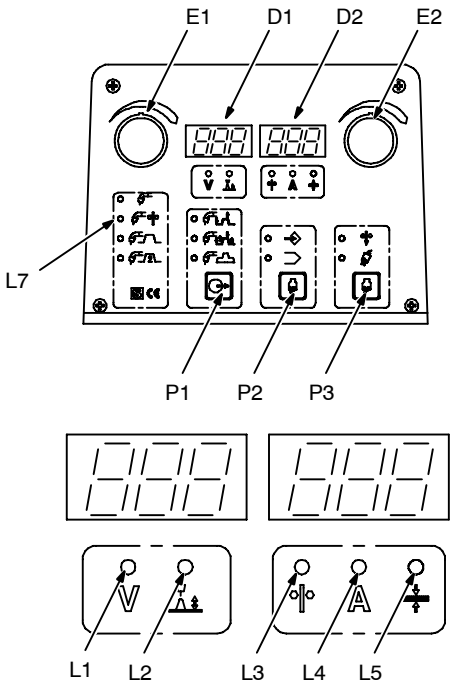
D2 value is default setting of Aut (range is 1% to 200%).

Auto is a setting below 1% that provides an automatic run-in time.

Use E2 to change D2 value.

Run-In is the speed of the wire feed before arc starting in percent of the set wire speed. It is used for improving arc starts.

4-11. Selecting Synergic MIG Welding



Set Synergic MIG welding process on the power source. L7 is ON.

In Synergic MIG mode, the operator may need to adjust welding data (wire type, wire diameter, and gas type) and only one weld parameter. Generally, wire feed speed is adjusted and the synergic process automatically sets appropriate weld voltage. Synergic welding also sets many secondary welding parameters automatically for improved weld quality.

Trim parameter appears on D1 and D2:

D1 value is default trim setting of 0.0 T (range is –5.0 T to 5.0 T).

D2 value is default wire feed speed setting of 5.0 m/min (minimum (MIN), maximum (MAX), or default (DEF) values are arbitrary based on set welding data). Use P2 and E2 to change this display to amperes or to the thickness of the material.

While Setting Parameters:

- L2 ON means that D1 shows Trim value.

- L3 ON means that D2 shows the wire speed in meter/min or inch/min.

- L4 ON means that D2 shows the set welding current in amperes.

- L5 ON means that D2 shows the thickness of material to weld.

While Welding:

- D1 shows the measured welding voltage in Volts. L1 is ON.

- D2 shows the measured welding current in amperes. L4 is ON.

Set wire speed, welding current or material thickness and welding voltage with E2 and E1.

Select trigger mode using P1 pushbutton (see Section 4-4).

If necessary, use P2 to adjust the welding parameters.

Purge air from gun hose using P3 pushbutton (see Section 4-8).

Setting Trim

D1 value is default trim setting of 0.0 T (range is –5.0 T to 5.0 T).

Trim is an arbitrary value related to MIG arc length. Higher values produce a longer and hotter arc. Lower values produce a shorter and cooler arc. Recommended value for trim is default setting or near 0.0T. L2 is On.

Synergic MIG Welding Advanced Settings

To change all values list, unit must be SETUP FULL. To set unit to SETUP FULL, proceed as follows:

Press P2 to enter SET UP menu.

Select SETUP FULL on D1 and D2 (see Section 4-6).

Setting Main Welding Regulations

Enter SET UP and select rEG on D1 with E1.

D2 shows the main parameter and E2 changes it.

When D2 shows SPE (wire speed) the main regulation is the speed of the welding wire. L3 is ON.

When D2 shows A (ampere) the main regulation is the welding current in Amperes. L4 is ON.

When D2 shows thc (thickness) the main regulation is the material thickness in mm. L5 is ON.

☞ *The modification to the main welding regulation is confirmed when exiting the Set Up Menu.*

☞ *The measured welding current can be different from the set value. This difference can be greater if there are changes on the default parameters and if the welding conditions are not conventional. Setting amperage must be considered a reference.*

☞ *Material thickness setting is a reference value only.*

Setting Inductance

Press P2 to enter SET UP menu.

Use E1 to select on D1 ind. D2 shows 100.

If necessary, use E2 to adjust inductance value (range is 1% to 200%).

☞ *Higher inductance setting produces a softer weld puddle and less spatter, but arc starts may be more difficult. Lower inductance setting produces a stiffer weld puddle and more spatter, but arc starts may be easier.*

Wire Feed Speed Unit (only in SETUP FULL)

See Section 4-10.

Setting Pre–Gas (only in SETUP FULL)

See Section 4-10.

Setting Post-Gas (only in SETUP FULL)

See Section 4-10.

Setting Burnback (only in SETUP FULL)

See Section 4-10.

Setting Run-In (only in SETUP FULL)

See Section 4-10.

Setting 3 Level Trigger Mode (only in SETUP FULL)

Use E1 to change D1 to 3L.1

D2 value is the default setting of 130% (range is 20% to 200%).

Use E2 to change D2 value.

Use E1 to change D1 to 3L.2

D2 value is the default setting of 80% (range is 20% to 200%).

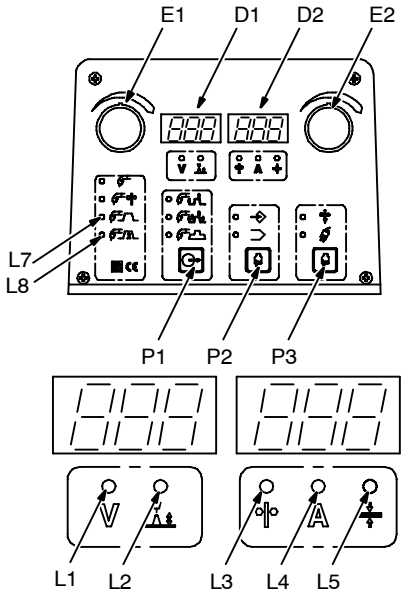
Use E2 to change D2 value.

Use E1 to change D1 to 3L.r

D2 value is the default setting of 0.5 s (range is 0.1 s to 0.5 s).

This value is the ramp time in seconds to reach the following level wire speed.

4-12. Selecting Synergic Pulsed MIG Welding



Set Synergic Pulsed MIG welding process on the power source. L7 is On.

Synergic Pulsed MIG welding is a high quality welding process that produces very little spatter. This process works well on thin metals such as stainless steel and aluminum. In Synergic Pulsed MIG mode, the operator may need to adjust welding data (wire type, wire diameter, and gas type) and only one weld parameter. Generally, wire feed speed is adjusted and the synergic process automatically sets appropriate weld voltage. Synergic welding also sets many secondary welding parameters automatically for improved weld quality.

Trim parameter appears on D1 and D2:

D1 value is default trim setting of 0.0 T (range is –5.0 T to 5.0 T).
D2 value is default wire feed speed setting of 5.0 m/min (minimum (MIN), maximum (MAX), or default (DEF) values are arbitrary based on set welding data). Use P2 and E2 to change this display to amperes or to the thickness of the weld.

While Setting Parameters:

- L2 ON means that D1 shows Trim value.
- L3 ON means that D2 shows the wire speed in meter/min or inch/min.
- L4 ON means that D2 shows the set welding current in amperes.
- L5 ON means that D2 shows the thickness of material to weld.

While Welding:

- D1 shows the measured welding voltage in Volts. L1 is ON.
- D2 shows the measured welding current in amperes. L4 is ON.

Set wire speed, welding current or material thickness and welding voltage with E2 and E1.
Select trigger mode using P1 pushbutton (see Section 4-4).
If necessary, use P2 to adjust the welding parameters.
Purge air from gun hose using P3 pushbutton (see Section 4-8).

Setting Trim

See Section 4-11.

Synergic Pulsed MIG Welding Advanced Settings

To change all values list, unit must be SETUP FULL. To set unit to SETUP FULL, proceed as follows:

Press P2 to enter SET UP menu.
Select SETUP FULL on D1 and D2 (see Section 4-6).

Setting Main Welding Regulation

See Section 4-11.

Setting Inductance in Synergic Pulsed MIG Welding

Press P2 to enter SET UP menu.
Use E1 to select on D1 ind. D2 shows 100.
If necessary, use E2 to adjust inductance value (range is 1% to 200%).
This parameter is related to Pulse Width. Higher values give a hotter welding arc.

☞ *Change these parameters as little as possible because the factory settings are preferred for most applications.*
Big changes can affect the arc stability and weld performance.
In general, remain in the 70% to 130% range.

Wire Feed Speed Unit (only in SETUP FULL)

See Section 4-10.

Setting Pre-Gas (only in SETUP FULL)

See Section 4-10.

Setting Post-Gas (only in SETUP FULL)

See Section 4-10.

Setting Burnback (only in SETUP FULL)

See Section 4-10.

Setting Run-In (only in SETUP FULL)

See Section 4-10.

Setting 3 Level Trigger Mode

See Section 4-11.

Setting Synergic Double Pulsed MIG

☞ *Synergic Double Pulsed MIG process is selected at the power source or recalled in the wire feeder using Synergic Double Pulsed programs. All Double Pulse parameters are selected on the wire feeder. All other MIG parameters are the same as standard Pulsed MIG process.*

Some metals weld better using the Synergic Pulsed Welding process due to the unique pulsing of the welding arc. Heat generated in the workpiece is generally lower and the arc characteristics produce a better weld bead appearance especially on aluminum. The Synergic Double Pulsed MIG process allows control all parameters to produce high quality welds on aluminum.

☞ *Incorrect settings in Synergic Double Pulsed Welding process can result in a program with undesirable weld characteristics. Setup should only be used by operators familiar with various welding processes and parameters. In some cases, standard Synergic Pulsed MIG welding can produce better welds.*

Press P2 to enter SET UP menu.
Use E1 to change D1 to 2P.F.
Use E2 to change D2 value.

The range of this setting is 0.1 Hz to 5.0 Hz. This setting allows changing double pulse frequency in hertz (cycles per second). A recommended frequency is approximately 1 hertz.

Use E1 to change D1 to 2P.C.
D2 value is default setting of 50%.
Use E2 to change D2 value.

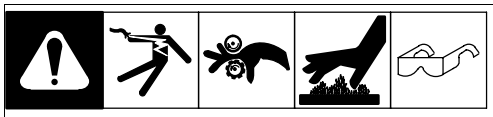
The range of this setting is 25% to 75%. This setting allows changing the time that the pulse is at high output. A lower setting will produce less heating at the welding puddle.

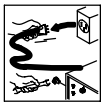
Use E1 to change D1 to 2P.O. D2 value is default setting of 20%. Use E2to change D2 value. The range of this setting is 20% to 80%. This setting allows changing the difference in high wire feed speed and low wire feed speed in percent of the wire feed speed setting. For example, if the main wire feed speed is set at 5 M and 2P.0 setting in D2 is 40%, the wire feed speed will change between 4 m/min and 6 m/min. A recommended setting is 20%.

Use E1 to change D1 to 2P.A. D2 value is the default setting of 0.0. Use E2 to change D2 value. The range of this setting is –5.0 to 5.0.
This setting allows changing the low end of trim in double pulse and the main setting for trim will be the low end. A higher 2P.A setting will produce a longer and hotter arc and lower setting will produce a shorter and cooler arc.

SECTION 5 – MAINTENANCE & TROUBLESHOOTING

5-1. Routine Maintenance

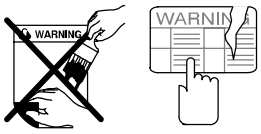




▲ **Disconnect power before maintaining.**

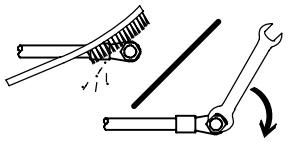
☞ *Maintain more often during severe conditions.*

3 Months

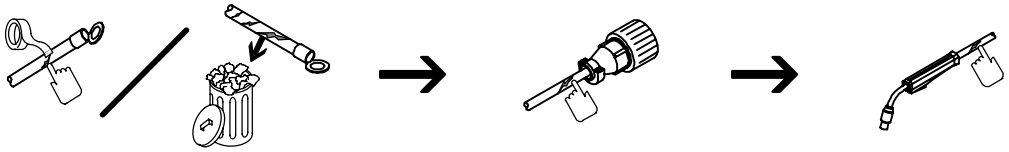


Replace Damaged Or Unreadable Labels

Replace Damaged Gas Hose

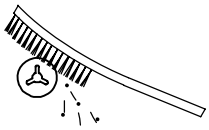


Clean And Tighten Weld Terminals

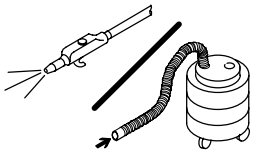


Repair Or Replace Cracked Cables And Cords

6 Months



Clean Drive Rolls



Blow Out Or Vacuum Inside

5-2. Help Displays

The XMC 44 microprocessor controls all internal parameters of the units.

In case of failure, D1 and D2 will show the following Error Signals.

HLP 100

Indicates that the 24 volt AC supplied to the unit is low.

Verify the supply to the unit and the circuit breaker status on both the wire feeder and on the power source.

HLP 101

Indicates that the current in the motor is too high.

Verify that the wire has not stopped.

HLP 102

Indicates that the voltage on the motor is too high.

Verify that the wire has not stopped.

HLP 103

Indicates that there is a short circuit in the motor or in the cabling.

Verify that the motor and cabling are functioning.

HLP 104

Indicates that the motor speed is too low or the encoder on the motor is giving incorrect signals.

Verify that the motor has not stopped and check the cabling of the encoder.

HLP 105

Indicates a communication error between the power source and the wire feeder.

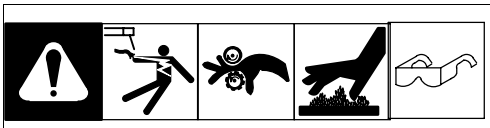
Verify that all the connectors in the path from the control board of the power source and the motor board of the wire feeder are correctly fixed.

HLP 106

Indicate that there is a communication error in the RS 485.

Verify that all the connectors in the path from the control board of the power source and the motor board of the wire feeder are correctly fixed.

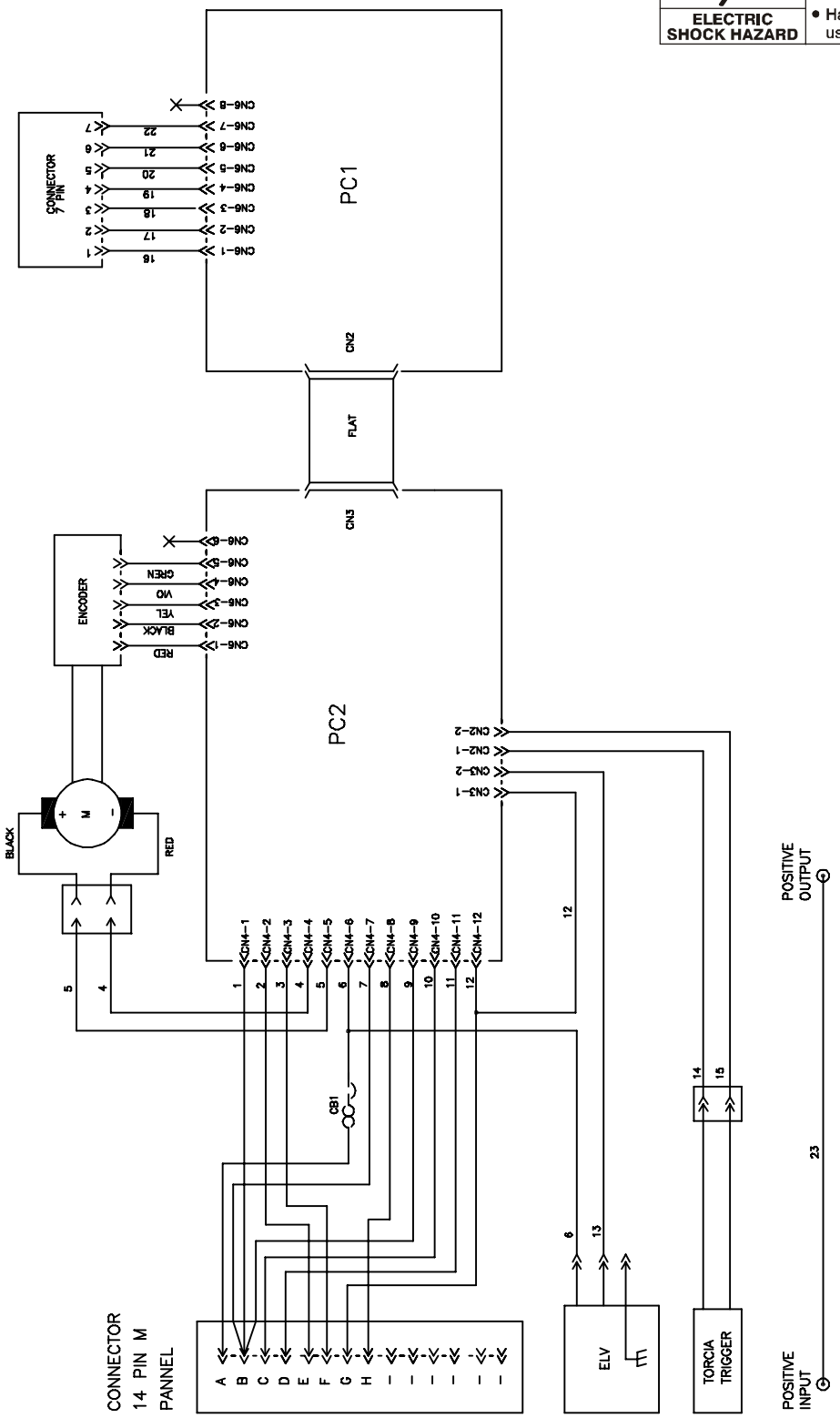
5-3. Troubleshooting



Problem	Solution
Unit is completely inoperative.	Check continuity of Power switch S1, and replace if necessary.
	Reset circuit breaker CB1 if open.
	Check input power source. See welding power source Technical Manual.
Wire does not feed, unit completely inoperative.	Turn Power switch On.
	Check 14–pin receptacle connections.
	Check input power or the CB
Wire does not feed.	Check gun trigger connection at wire feeder. Check gun trigger leads and trigger switch. See gun Owner's Manual.
	Have Factory Authorized Service Agent check drive motor and control board PC1.
Wire feeds erratically.	Readjust hub tension and drive roll pressure.
	Use correct size drive roll (see Parts List).
	Clean or replace dirty or worn drive roll.
	Remove weld spatter around nozzle opening.
	Replace contact tip or liner. See gun Owner's Manual.
	Check wiring between Motor Board and Encoder
Electrode wire feeding stops or feeds erratically during welding.	Realign drive rolls.
	Check hub assembly (see Parts List).
Wire feeds as soon as power is applied.	Check gun trigger. See gun Owner's Manual.
Gas valve rattles loudly and wire feeds slowly or erratically.	Check for short between gun trigger leads and weld cable. Repair or replace gun trigger leads.
Gas does not flow; wire feeds.	Check gas valve and flowmeter.
Wire feeds, but gas does not flow with gun trigger pressed.	Check coil voltage and connections of gas valve. Check continuity of coil. Replace if necessary.
	Check continuity of Purge switch, and replace if necessary.
Software or visualization problems.	Recall factory parameters as explained in this manual.
	Call a Factory Authorized Service Agent.
Wire feeds and electrode wire is energized, but gas flow is irregular.	Check coil voltage and connections of gas valve GS1. Check continuity of coil. Replace if necessary.
	Clear blockage in gas hose or replace hose.
	Clear blockage in gun. See gun Owner's Manual.
Motor runs at full speed.	Check motor control board and connections, and replace if necessary.
	Check wiring between Motor Board and Encoder
Wire drive motor coasts (no brake at trigger release).	Check motor control board PC1 and connections, and replace if necessary.
Meter does not work properly.	Recall factory parameters as explained in this manual.

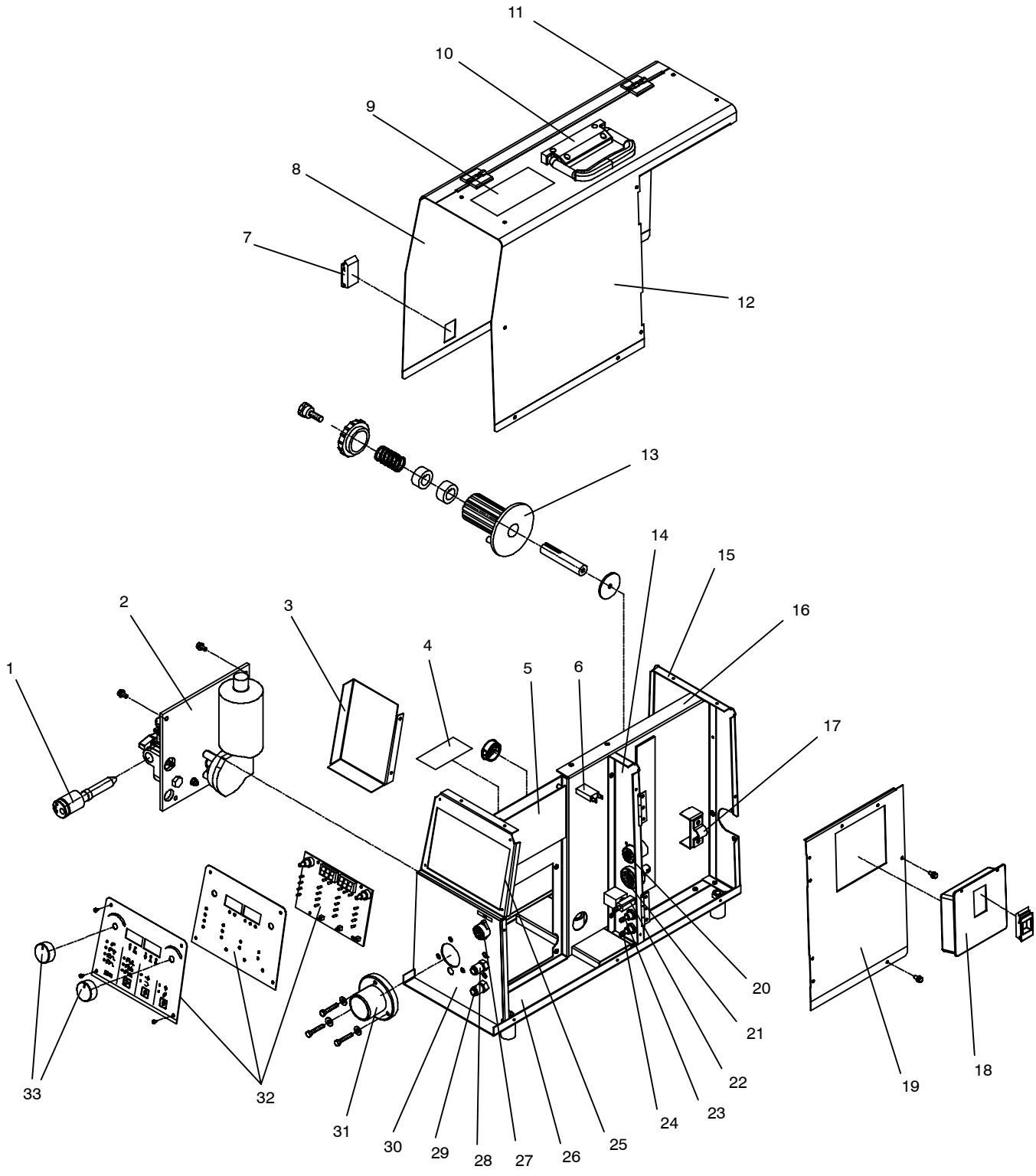
SECTION 6 – ELECTRICAL DIAGRAM

⚠ WARNING	• Do not touch live electrical parts. • Disconnect input power or stop engine before servicing. • Do not operate with covers removed. • Have only qualified persons install, use, or service this unit.
ELECTRIC SHOCK HAZARD	



May 9, 2005

☞ *Hardware is common and not available unless listed.*



May 9, 2005

Figure 7-1. Main Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

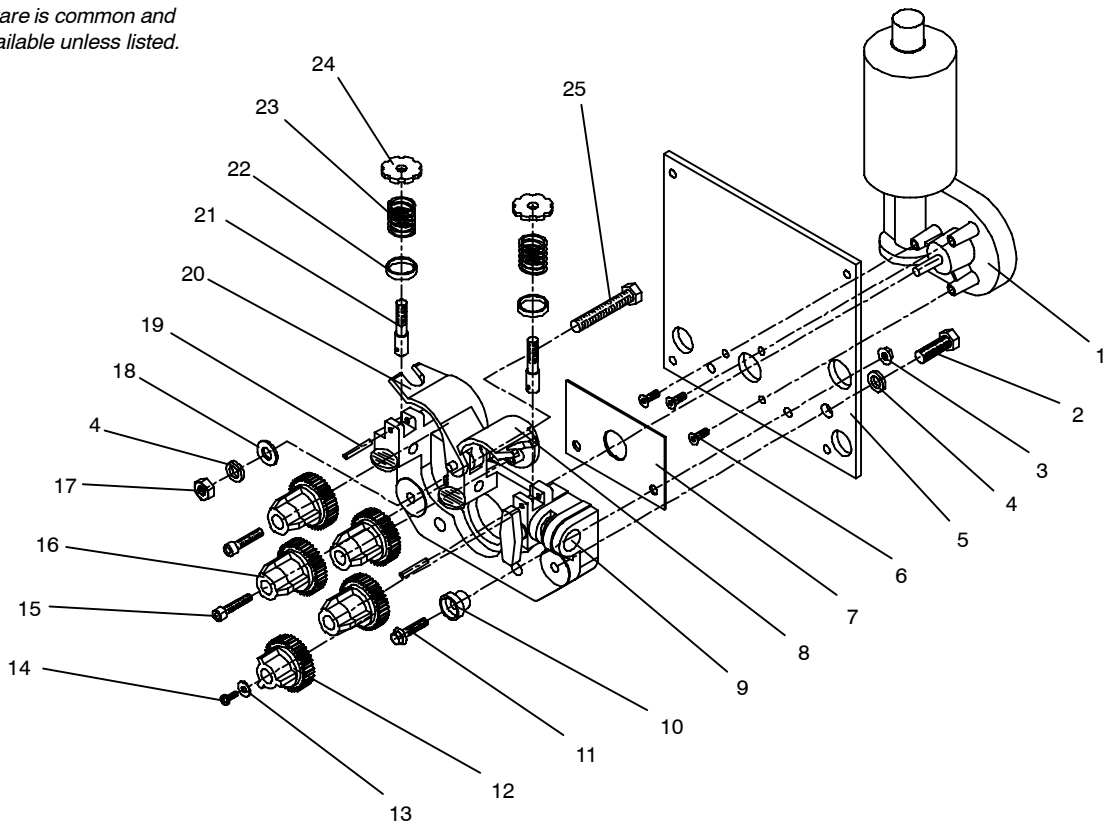
Figure 7-1. Main Assembly

1		V57052030	Euro adapter	1
2		028066243	Wire drive system with encoder motor	1
3		V56014178	Board protection	1
4		000178937	Label, warning, gears	1
5	PC2	V57084045	Circuit board, motor	1
6	CB1	000083432	Circuit breaker, 10 A	1
7		000151187	Latch	2
8		V16122177	Panel, side	1
9		000178936A	Label, warning	1
10		000206108	Handle	1
11		156034004	Hinge	2
12		+V16121130	Cover	1
13		V56161034	Reel, holder	1
14		V56031169	Baffle, intermediate	1
15		+V16118172	Panel, rear	1
16		+V57060135	Baffle plate	1
17		V56079197	Collar, stauff din 1593 15.5 mm	1
18		000204326	Tool tray	1
19		V16122168	Panel, side rear	1
20		V27028202	Kit, receptacle, 14 pin M	1
21		056076216	Power connector M	1
22	ELV	056061042	Valve, solenoid, 24 VAC	1
23		556049372	Connector, coupling, blue fast	1
24		556049373	Connector, coupling, red fast	1
25		V16118129	Panel, front	1
26		+V17026131	Base	1
27		V57094063	Kit, receptacle, 7 pin	1
28		556049368	Connector, coupling, blue fast	1
29		556049369	Connector, coupling, red fast	1
30		V16029155	Panel, front, plastic	1
31		756005024	Flange, euro adapter	1
32	PC1	V57084166	Circuit board, control board	1
33		000193919	Knob, pointer	2

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

☞ *Hardware is common and not available unless listed.*



May 9, 2005

Figure 7-2. Wire Drive Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 7-2. Wire Drive Assembly	
1	M	057010052	Motor, 24 VDC, 60 W	1
2		000601966	Screw	1
3		156018021	Nut	2
4		000602213	Washer	2
5		656005026	Insulator	1
6		000604673	Screw, hex	4
7		000187325	Insulator, drive assembly	1
8		000166338	Lever, mounting pressure gear	1
9		000166337	Housing adapter gun/feeder	1
10		000072010	Bushing, insulating	2
11		000108943	Screw	2
12		000173618	Carrier, drive roll, keyed, 24 pitch	2
13		000602239	Washer	1
14		000174609	Screw, .250-20 x .500 soc hd	1
15		000602009	Screw, .250-20 x 1.250 soc hd hex gr 8	4
16		000172075	Carrier, drive roll, with component, 24 pitch	4
17		000601872	Nut	1
18		000602213	Washer	1
19		000010224	Pin, spring CS .187 x 1.000	2
20		000166071	Lever, mounting pressure gear	1
21		000089562	Fastener, pinned	2
22		000085244	Washer, cupped stl, .328 ID x .812 OD x .125	2
23		000089477	Spring, cprsn .770 OD x .105 wire x 1.225	2
24		00089243	Knob, tension adjustment	2
25		000202562	Screw	1

Table 7-1. Drive Roll And Wire Guide Kits (4 Drive Roll)

NOTE ☞

Base selection of drive rolls upon the following recommended usages:

1. *V-Grooved rolls for hard wire.*
2. *U-Grooved rolls for soft and soft shelled cored wires.*
3. *U-Cogged rolls for extremely soft shelled wires (usually hard surfacing types).*
4. *V-Knurled rolls for hard shelled cored wires.*
5. *Drive roll types may be mixed to suit particular requirements (example: V-Knurled roll in combination with U-Grooved).*

Wire Diameter			Kit No.	Drive Roll		Wire Guide	
Metric	Fraction	Decimal		Part No.	Type	Inlet	Intermediate
0.6 mm	0.023/0.025 in	0.023/0.025 in	087 132	087 130	V-Grooved	056 192	056 206
0.8 mm	0.030 in	0.030 in	046 780	053 695	V-Grooved	056 192	056 206
0.9 mm	0.035 in	0.035 in	046 781	053 700	V-Grooved	056 192	056 206
1.0/1.2 mm	0.035/0.045 in	0.035/0.045 in	N/A	189 285	V-Grooved	156 193	056 207
1.0 mm	0.040 in	0.040 in	191 917	053 696	V-Grooved	056 192	056 206
1.2 mm	0.045 in	0.045 in	046 782	053 697	V-Grooved	056 193	056 207
1.6 mm	1/16 in	0.062 in	046 784	053 699	V-Grooved	056 195	056 209
0.9 mm	0.035 in	0.035 in	044 750	072 000	U-Grooved	056 192	056 206
1.2 mm	0.045 in	0.045 in	046 785	053 701	U-Grooved	056 193	056 207
1.3 mm	0.052 in	0.052 in	046 786	053 702	U-Grooved	056 193	056 207
1.6 mm	1/16 in	0.062 in	046 787	053 706	U-Grooved	056 195	056 209
2.0 mm	5/64 in	0.079 in	046 788	053 704	U-Grooved	056 195	056 209
0.9 mm	0.035 in	0.035 in	046 782	132 958	V-Knurled	056 192	056 206
1.2 mm	0.045 in	0.045 in	046 793	132 957	V-Knurled	056 193	056 207
1.3 mm	0.052 in	0.052 in	046 794	132 956	V-Knurled	056 193	056 207
1.6 mm	1/16 in	0.062 in	046 795	132 955	V-Knurled	056 195	056 209
1.8 mm	0.068-0.072 in	0.068-0.072 in	089 985	132 959	V-Knurled	056 195	056 209
2.0 mm	5/64 in	0.079 in	046 796	132 960	V-Knurled	056 195	056 209
1.2 mm	0.045 in	0.045 in	083 319	083 489	U-Cogged	056 193	056 207
1.3 mm	0.052 in	0.052 in	083 320	083 490	U-Cogged	056 193	056 207
1.6 mm	1/16 in	0.062 in	046 800	053 708	U-Cogged	056 195	056 209
2.0 mm	5/64 in	0.079 in	046 801	053 710	U-Cogged	056 195	056 209

Notes

TRUE BLUE® WARRANTY

Effective January 1, 2006

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY – Subject to the terms and conditions below, ITW Welding Products Italy S.r.l., warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a European distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts – 3 Years Labor
   * Original main power rectifiers
   * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Sources (unless otherwise stated)
   * Water Coolant Systems (integrated)
   * Intellitig
   * Maxstar 150
   * Engine Driven Welding Generators **(NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 2 year – Parts and Labor (Panther only)
   * Hydramate 1&2 Water Cooling Unit
4. 1 year – Parts and Labor unless specified
   * DC 253 & 403 Rectifier (April 06>)
   * Migmatic 171 (April 06>)
   * Motor Driven Guns (w/exception of Spoolguns)
   * Process Controllers
   * Positioners and Controllers
   * Automatic Motion Devices
   * RFCS Foot Controls
   * IHPS Power Sources and Coolers
   * Water Coolant Systems (non–integrated)
   * Flowgauge and Flowmeter Regulators (No Labor)
   * HF Units
   * Grids
   * Spot Welders
   * Load Banks
   * Arc Stud power sources and Arc Stud guns
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT & SAF Models)
   * Field Options (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
5. 6 Months — Batteries
6. 90 Days — Parts
   * MIG Guns/TIG Torches
   * Induction heating coils and blankets
   * APT Model Plasma Cutting Torches
   * Remote Controls
   * Accessory Kits
   * Replacement Parts (No labor)
   * Spoolmate Spoolguns
   * Canvas covers

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear.**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at ITW Welding Products Group Europe, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL Miller BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

milan_warr 1/06

Owner's Record

Please complete and retain with your personal records.

Model Name Serial/Style Number

Purchase Date (Date which equipment was delivered to original customer.)

Distributor

Address

Country Zip/Postal Code

For Service

Contact a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:

- Welding Supplies and Consumables
- Options and Accessories
- Service and Repair
- Replacement Parts
- Owner's Manuals

Contact the Delivering Carrier to:

File a claim for loss or damage during shipment.

For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

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