



OM-216 655P

2015-07

Processes



MIG (GMAW) Welding

Flux Cored (FCAW) Welding

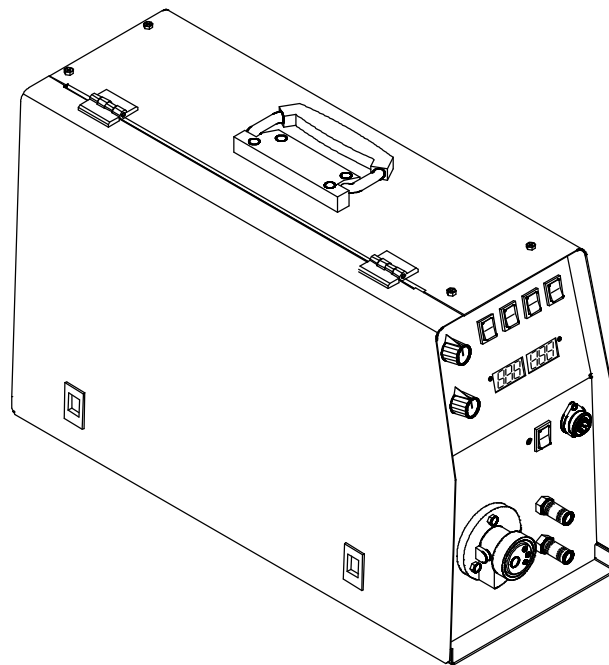
Description



Wire Feeder

ST 44 Series Wire Feeder

CE



www.MillerWelds.com

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 catalog sheets.



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



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DECLARATION OF CONFORMITY

for European Community (CE marked) products.

ITW Welding Italy S.r.l Via Privata Iseo 6/E, 20098 San Giuliano M.se, (MI) Italy declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directive(s) and Standard(s).

Product/Apparatus Identification:

Product	Stock Number
ST 44	029007406
ST 44 c/w Digital A/V/WFS, Water Kit	029007404

Council Directives:

- 2006/95/EC Low Voltage
- 2004/108/EC Electromagnetic Compatibility
- 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment

Standards:

- IEC 60974-1:2012 Arc Welding Equipment - Part 1: Welding Power Sources
- IEC 60974-5:2013 Arc Welding Equipment – Part 5: Wire Feeders
- IEC 60974-10:2007 Arc Welding Equipment - Part 10: Electromagnetic Compatibility Requirements

EU Signatory:

June 30th, 2015

Massimiliano Lavarini

Date of Declaration

ITW WELDING ITALY PRODUCTION MANAGER

SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

som 2013-09

 Protect yourself and others from injury — read, follow, and save these important safety precautions and operating instructions.

1-1. Symbol Usage



DANGER! – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

NOTICE – Indicates statements not related to personal injury.

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, ground, and operate 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

 Indicates special instructions.



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

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.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cord and ground conductor for damage or bare wiring – replace immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or repaired 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. Disconnect cable for process not in use.
- Use GFCI protection when operating auxiliary equipment in damp or wet locations.

SIGNIFICANT DC VOLTAGE exists in inverter 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.



HOT PARTS can burn.

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



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. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch-person 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 from arc rays and sparks 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 body protection made from durable, flame-resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

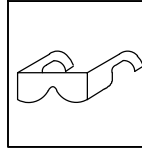


WELDING can cause fire or explosion.

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 containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0 (see Safety Standards).
- Do not weld where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- 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 body protection made from durable, flame-resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing 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.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.



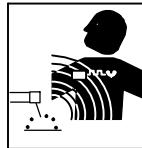
FLYING METAL or DIRT can injure eyes.

- 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.



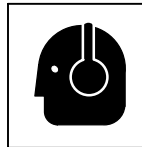
BUILDUP OF GAS can injure or kill.

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



ELECTRIC AND MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices.

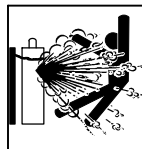
- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.



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.

Compressed 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 compressed 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. Do not stand in front of or behind the regulator when opening the 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



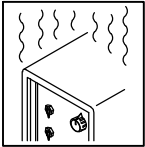
FIRE OR EXPLOSION hazard.

- 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.



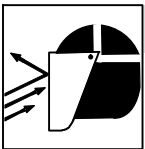
FALLING EQUIPMENT can injure.

- 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.
- Keep equipment (cables and cords) away from moving vehicles when working from an aerial location.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94–110) when manually lifting heavy parts or equipment.



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.



FLYING SPARKS can injure.

- Wear a face shield to protect eyes and face.
- Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face, hand, and body protection.
- Sparks can cause fires — keep flammables away.



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.



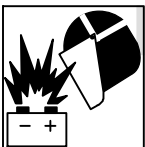
MOVING PARTS can injure.

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



WELDING WIRE can injure.

- 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.



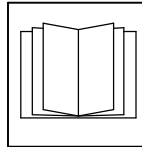
BATTERY EXPLOSION can injure.

- Do not use welder to charge batteries or jump start vehicles unless it has a battery charging feature designed for this purpose.



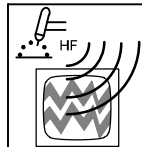
MOVING PARTS can injure.

- 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 and troubleshooting as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before reconnecting input power.



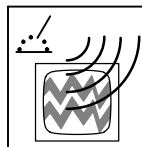
READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes.



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.)**

 **This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. Wash hands after use.**

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, is available as a free download from the American Welding Society at <http://www.aws.org> or purchased from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

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

Safe Practices for Welding and Cutting Containers that have Held Combustibles, American Welding Society Standard AWS A6.0, 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, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org and www.sparky.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151 (phone: 703-788-2700, website: www.cganet.com).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060

Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (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, Quincy, MA 02269 (phone: 1-800-344-3555, 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 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30333 (phone: 1-800-232-4636, website: www.cdc.gov/NIOSH).

1-6. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). The current from arc welding (and allied processes including spot welding, gouging, plasma arc cutting, and induction heating operations) creates an EMF field around the welding circuit. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, restrict access for passers-by or conduct individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.


4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.



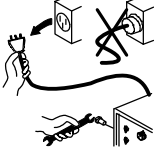




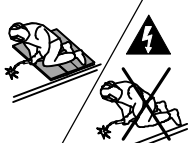
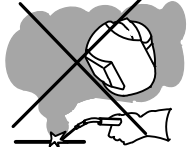

About Implanted Medical Devices:

Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – DEFINITIONS

2-1. Additional Safety Symbols And Definitions

 Some symbols are found only on CE products.

	<p>Warning! Watch Out! There are possible hazards as shown by the symbols.</p> <p style="text-align: right;">Safe1 2012-05</p>
	<p>Wear dry insulating gloves. Do not touch electrode (wire) with bare hand. Do not wear wet or damaged gloves.</p> <p style="text-align: right;">Safe57 2012-05</p>
	<p>Disconnect input plug or power before working on machine.</p> <p style="text-align: right;">Safe5 2012-05</p>
	<p>Do not remove or paint over (cover) the label.</p> <p style="text-align: right;">Safe20 2012-05</p>
	<p>Drive rolls can injure fingers.</p> <p style="text-align: right;">Safe32 2012-05</p>
	<p>Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects away.</p> <p style="text-align: right;">Safe33 2012-05</p>
	<p>Do not discard product (where applicable) 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.</p> <p style="text-align: right;">Safe37 2012-05</p>
	<p>Protect yourself from electric shock by insulating yourself from work and ground.</p> <p style="text-align: right;">Safe58 2012-06</p>
	<p>Keep your head out of the fumes.</p> <p style="text-align: right;">Safe59 2012-05</p>
	<p>Use forced ventilation or local exhaust to remove the fumes.</p> <p style="text-align: right;">Safe60 2012-06</p>

2-2. Miscellaneous Symbols and Definitions

	On
	Input
	Output
X	Duty Cycle
	Wire Feed
	Line Connection
	Continuous Weld
	Read Instructions
U₁	Primary Voltage
	Water (Coolant) Output
	Alternating Current
	Circuit Breaker

	Off
	Gas Metal Arc Welding (GMAW) Gun
	Spot Weld
	Postflow Time
I₂	Rated Current
	Water (Coolant) Input
V	Volts
Hz	Hertz
U₁	Primary Voltage
	Spot Weld Time
	Preflow Time
	Gas Flowmeter Adjustment

I₁	Primary Current
	Trigger Hold On
A	Amperes
IP	Degree Of Protection
	Jog
	Purge
	Burnback Time
U₂	Load Voltage
	Trigger Hold Off
	Remote
	Run-in Control

Notes

SECTION 3 – SPECIFICATIONS

3-1. Serial Number And Rating Label Location

The serial number and rating information for this product is located on back . Use rating label to determine input power requirements and/or rated output. For future reference, write serial number in space provided on back cover of this manual.

3-2. Unit 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 5 Amperes 50/60 Hz	Constant Voltage (CV) DC with 14 pin and Contactor Control	0 to 20 mpm (0 to 788 ipm)	0.6 to 2.0 mm (0.23 to 5/64 in.) Max Spool Weight: 15 kg (33.0 lb.)	100 Volts, 500 Amperes, 100% Duty Cycle	Length: 650 mm (25.5 in.) Width: 220 mm (8.65 in.) Height: 420 mm (16.5 in.)	20.0 kg – Gross 18.0 kg – Net

3-3. Environmental Specifications

A. IP Rating

IP Rating
IP23
This equipment is designed for outdoor use. It may be stored, but is not intended to be used for welding outside during precipitation unless sheltered.
IP23 2014-06

B. Information On Electromagnetic Fields (EMF)

<p>⚠ This equipment shall not be used by the general public as the EMF limits for the general public might be exceeded during welding.</p> <p>This equipment is built in accordance with EN 60974-1 and is intended to be used only in an occupational environment (where the general public access is prohibited or regulated in such a way as to be similar to occupational use) by an expert or an instructed person.</p> <p>Wire feeders and ancillary equipment (such as torches, liquid cooling systems and arc striking and stabilizing devices) as part of the welding circuit may not be a major contributor to the EMF. See the Owner's Manuals for all components of the welding circuit for additional EMF exposure information.</p> <ul style="list-style-type: none"> The EMF assessment on this equipment was conducted at 0.5 meter. At a distance of 1 meter the EMF exposure values were less than 20% of the permissible values. <p style="text-align: right;">ce-emf 1 2010-10</p>

C. Information On Electromagnetic Compatibility (EMC)

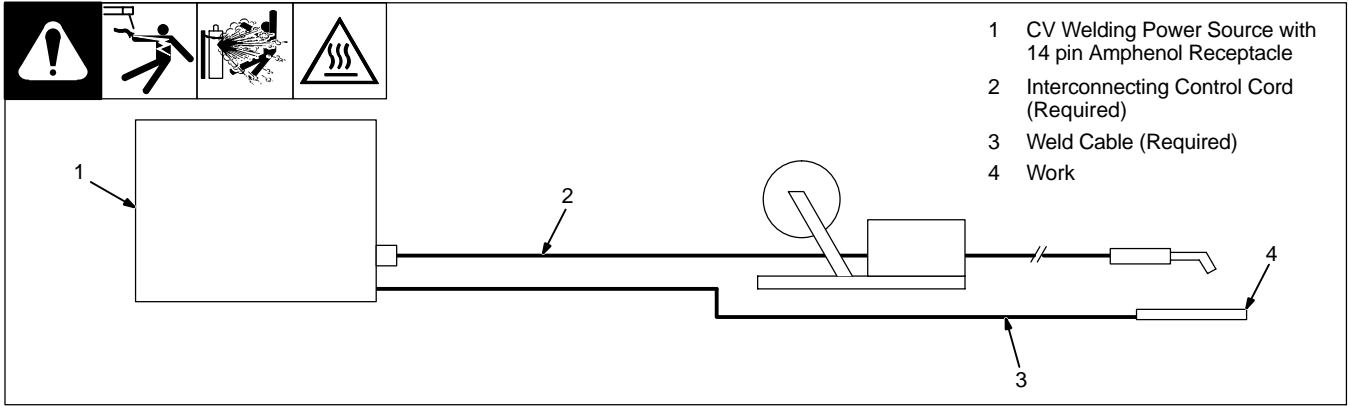
<p>⚠ This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.</p> <p style="text-align: right;">ce-emc 3 2014-07</p>

3-4. Gun Recommendation Table


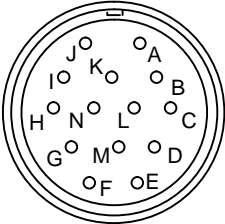
Process	Gun
GMAW – Hard or Cored Wires	Roughneck C-Series Guns: 300, 400, 500, And 600 Amp.
FCAW – Self-Shielding Wires	FC-1260 Or FC-1150

SECTION 4 – INSTALLATION

4-1. Equipment Connection Diagrams

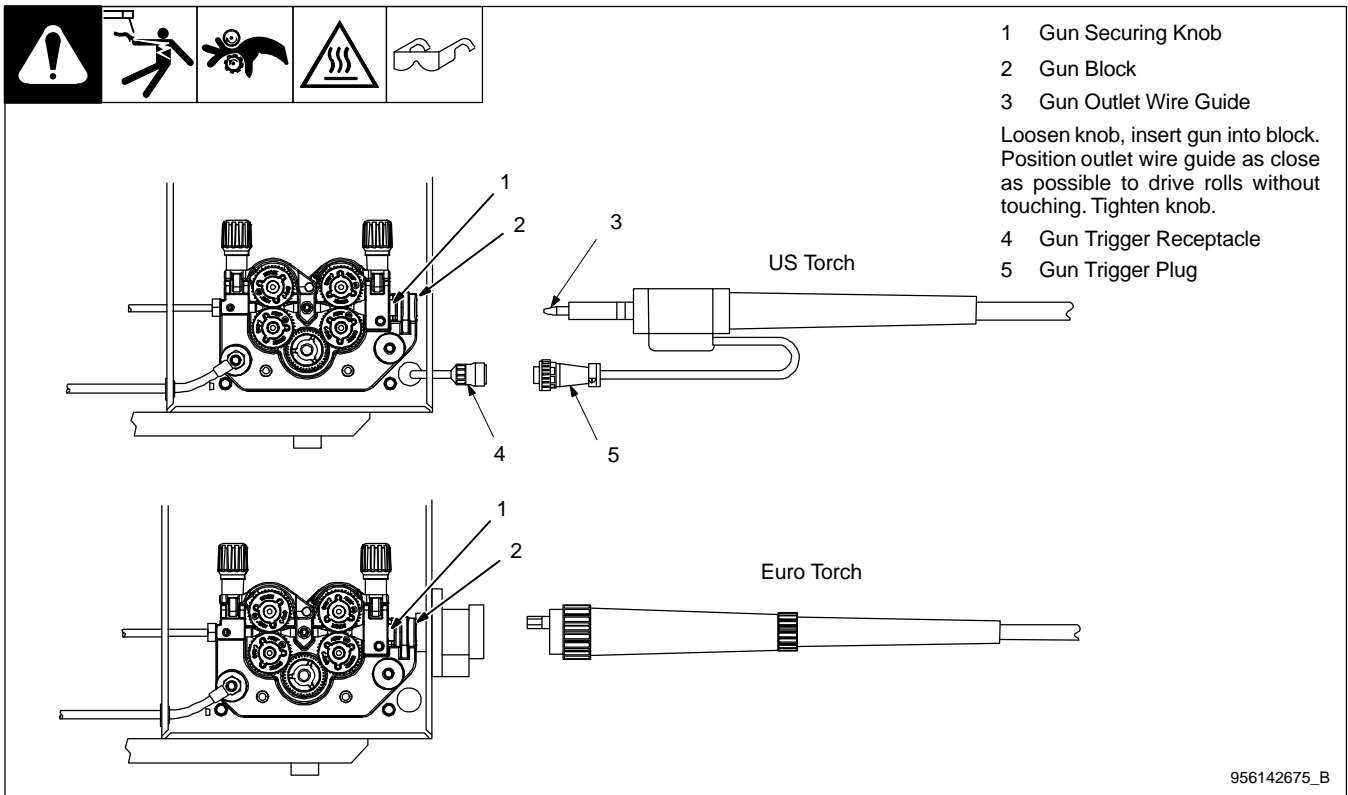


4-2. 14-Pin Plug Information

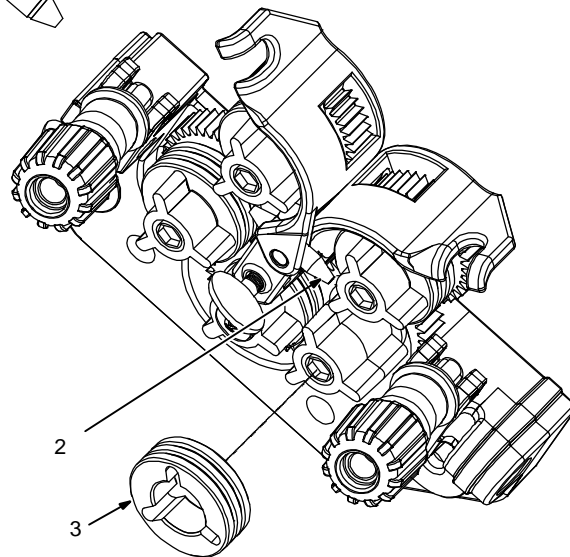
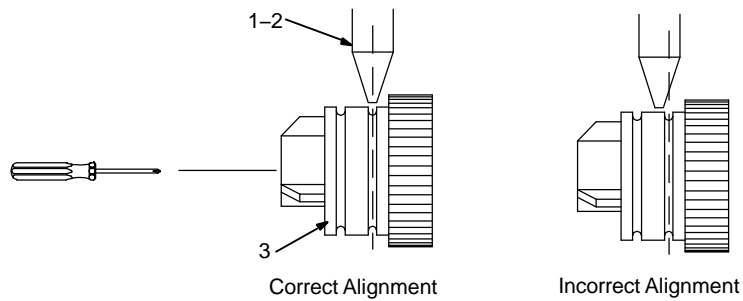
 REMOTE 14	Pin*	Pin Information
	A	24 volts AC with respect to pin G.
	B	Contact closure to A completes 24 volts AC contactor control circuit.
	G	Circuit common for 24 volts AC circuit.
	C	+10 volts DC output to remote control with respect to pin D.
	D	Remote control circuit common.
	E	0 to +10 volts DC input command signal from remote control with respect to pin D.
	H	Voltage feedback; 0 to 10 volts DC, 1 V/10 arc volts

*The remaining pins are not used. Ref. S-0004-A

4-3. Connecting Welding Gun And Weld Cable



4-4. Installing Wire Guide And Drive Roll



- 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:

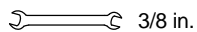
View is from top of drive rolls looking down with pressure assembly open.

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.

Tools Needed:



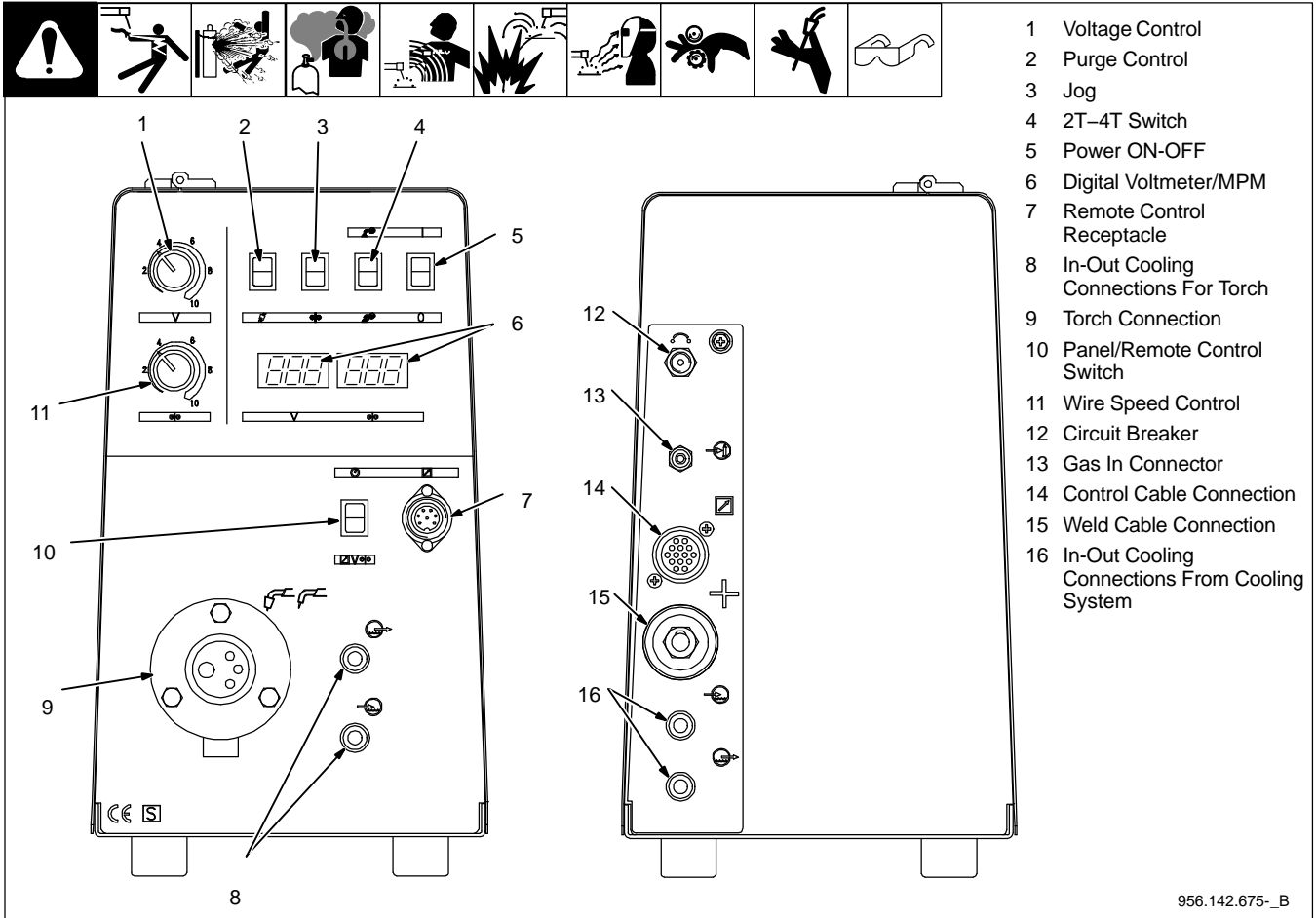
3/8 in.



1/4 in.

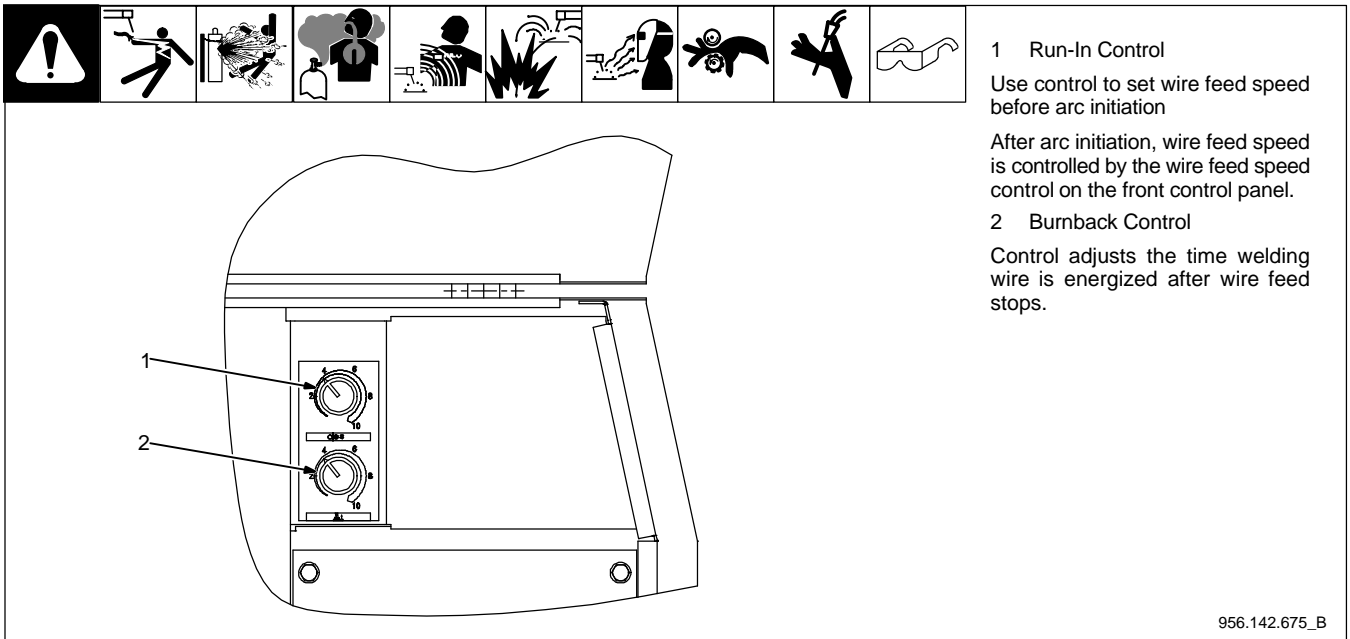
SECTION 5 – OPERATION

5-1. ST 44 Series Panel Controls



956.142.675- B




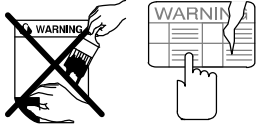
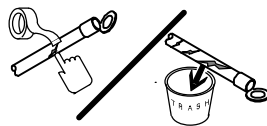
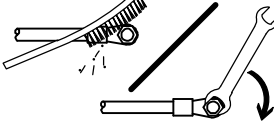
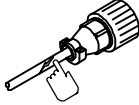
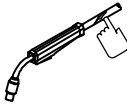



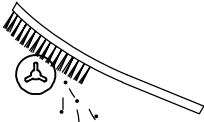
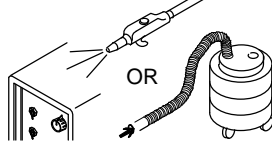
5-2. Run-In Control and Burnback Control



956.142.675- B

SECTION 6 – MAINTENANCE & TROUBLESHOOTING

6-1. Routine Maintenance

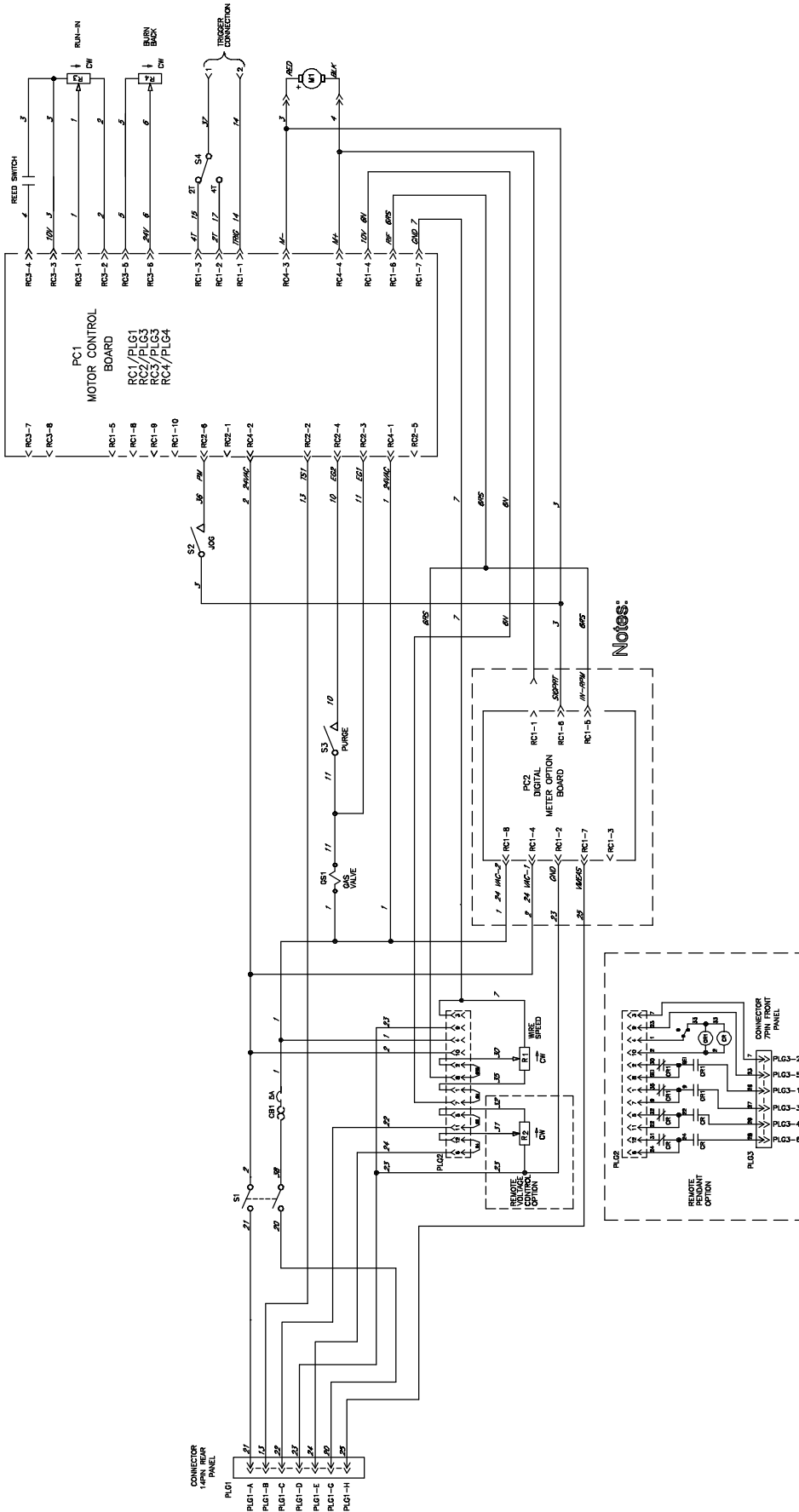
	<p> Disconnect power before maintaining.</p>		
<p> 3 Months</p>			
<p> Replace Unreadable Labels</p>	<p> Repair Or Replace Cracked Weld Cable</p>	<p> Clean And Tighten Weld Terminals</p>	
<p> 14-Pin Cord</p>	<p> Gun Cable</p>	<p> Gas Hose</p>	<p> Replace Cracked Parts</p>
<p> 6 Months</p>			
<p> Clean Drive Rolls</p>	<p> OR Blow Out Or Vacuum Inside, During Heavy Service, Clean Monthly</p>		

Notes

6-2. 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.				
	Have Factory Authorized Service Agent check drive motor and control board PC1.				
Wire feeds when Jog switch is pressed but not when gun trigger is pressed.	Check gun trigger connection at wire feeder. Check gun trigger leads and trigger switch. See gun Owner's Manual.				
Wire does not feed with Jog button S2B pressed.	Check continuity of Jog button S3, and replace if necessary.				
	Check motor control board PC1 and connections, and replace if necessary				
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.				
Wire does not feed until trigger is pressed but continues to feed after trigger is released.	Check for short between gun trigger leads and weld cable. Repair or replace gun trigger leads.				
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 GS1. Check continuity of coil. Replace GS1 if necessary.				
	Check continuity of Purge switch S2A, and replace if necessary.				
Wire feeds, but gas does not flow with Purge switch S2 pressed.	Check continuity of Purge switch S2A, and replace if necessary.				
	Check coil voltage and connections of gas valve GS1. Check continuity of coil. Replace GS1 if necessary.				
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 GS1 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 PC1 and connections, and replace if necessary.				
	Check resistance and connections of active wire speed potentiometers and replace if necessary.				
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.	Check optional meter board PC2 and connections, and replace if necessary				


SECTION 7 - ELECTRICAL DIAGRAM

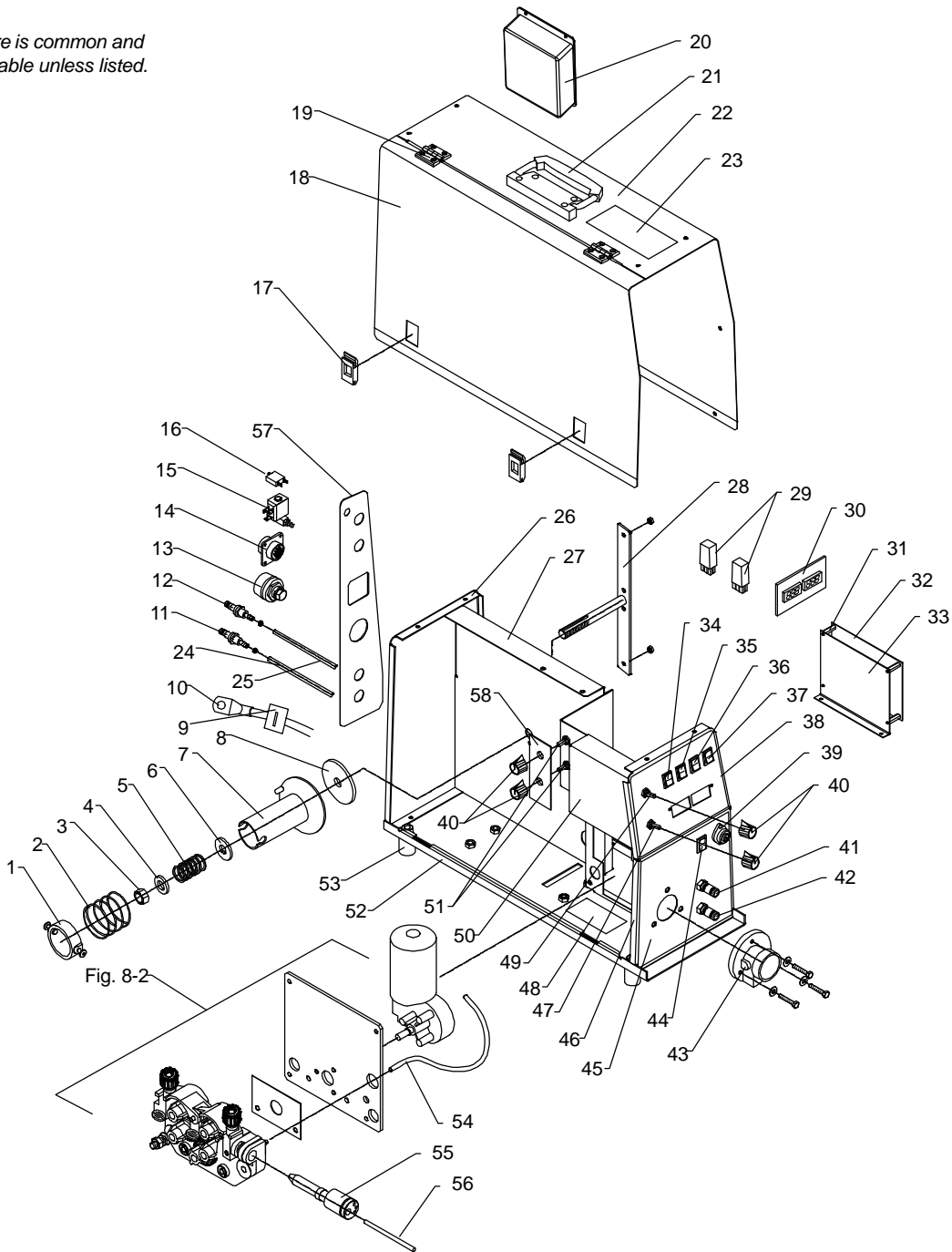


Notes:

<p>⚠ WARNING</p>	<ul style="list-style-type: none"> 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.
	<p>ELECTRIC SHOCK HAZARD</p>

SECTION 8 – PARTS LIST

 Hardware is common and not available unless listed.



956.142.672_C

Figure 8-1. ST 44 Complete Assembly (Optional Equipment Shown)

Item No.	Dia. Mkgs.	Part No.	Description	Qty	Basic	Digital
Figure 8-1. ST 44 Complete Assembly						
1		000058427	Ring	1		1
2		156032128	Spring	1		1
3		156018033	Nut	1		1
4		156009079	Washer	1		1
5		156032064	Spring	1		1
6		156009075	Washer, flat	1		1
7		000186435	Hub	1		1
8		287119	Washer, plastic	1		1
9		057084128	Circuit Card, motor reed control	1		1
10		027112275	Weld cable, w/lugs	1		1


Item No.	Dia. Mkgs.	Part No.	Description	Qty	Basic	Digital
Figure 8-1. ST 44 Complete Assembly						
11		556049403	Fitting, Quick Connect Water, Male Red			1
12		556049404	Fitting, Quick Connect Water, Male Blue			1
		656043012	Cover Blanking Cap	2		
13		056076216	Receptacle, dinse	1		1
14		056076192	Receptacle, 14 pin	1		1
15	GS1	056061042	Solenoid Valve, 24VAC	1		1
16	CB1	056067188	Circuit Breaker, 5 A	1		1
17		156034005	Latch	2		2
18		116122319	Side panel	1		1
19		156034004	Hinge	2		2
20		000204326	Consumable Storage Box (Includes)	1		1
		000151187	Latch	1		1
21		208015	Handle, Rubberized Carrying	1		1
22		+156121022	Wrapper	1		1
23		000178936	Label, warning general precautionary	1		1
24		656026091	Hose, 6x11x570 red water			1
25		656026090	Hose, 6x11x570 blu water			1
26		116118168	Panel, rear	1		1
27		117060014	Baffle Plate, centre	1		1
28		156005108	Support, spool	1		1
29		000006393	Relay	2		2
30	PC2	057095012	Circuit Card, digital meter board			1
31		000134201	Circuit Card, spacer	4		4
32	PC1	057084124	Circuit Card, control board	1		1
33		156005094	Circuit Card, support	1		1
34	S3	056093022	Switch, gas purge	1		1
35	S2	056093022	Switch, wire jog	1		1
36	S4	056067260	Switch, 2T 4T trigger latch	1		1
37	S1	056067194	Switch, power on/off	1		1
38		316029689	Nameplate, front, upper	1		1
39		◆056076180	Receptacle, 7 pin (Includes)	1		1
		656043035	Cover Blanking Cap, 22.5 mm	1		1
40		000207076	Knob, pointer	3		4
41		556049402	Fitting, Quick Connect Water, Female Blue			1
42		556049401	Fitting, Quick Connect Water, Female Red			1
41		656043012	Covering Blank Cap, 12.7 mm	1		
42		656043012	Covering Blank Cap, 12.7 mm	1		
43		*756005024	Flange, Euro adapter	1		1
43		656089035	Flange, US torch	1		1
44	S4	◆056067260	Switch, SPDT 10A/250V remote control (includes)	1		1
		◆656043031	Cover Blanking Cap, 10 x 13 mm	1		1
45		316029691	Nameplate, front, lower	1		1
46		116118167	Panel, front	1		1
47	R1	056059182	Potentiometer, wire speed control	1		1
48		000178937	Label, warning electric shock and pinch	1		1
49	R2	056059182	Potentiometer, voltage control (includes)			1
		656043033	Cover Blanking Cap, 9.7 mm	1		
50		116005324	Motor Support	1		1
51	R3, R4	056059277	Potentiometer 10.0k ohm Run In/Burn Back	2		2
52		+116006130	Base	1		1
53		656110012	Foot, rubber mount	4		4
54		656026084	Hose, gas braided 5x8,5x600 black	1		1
55		*V57052030	Euroadapter	1		1
56		156090015	Guide, wire Inlet	1		1
57		956142906	Nameplate, rear ST 44	1		1
58		956142486	Nameplate, potentiometer ST 44	1		1

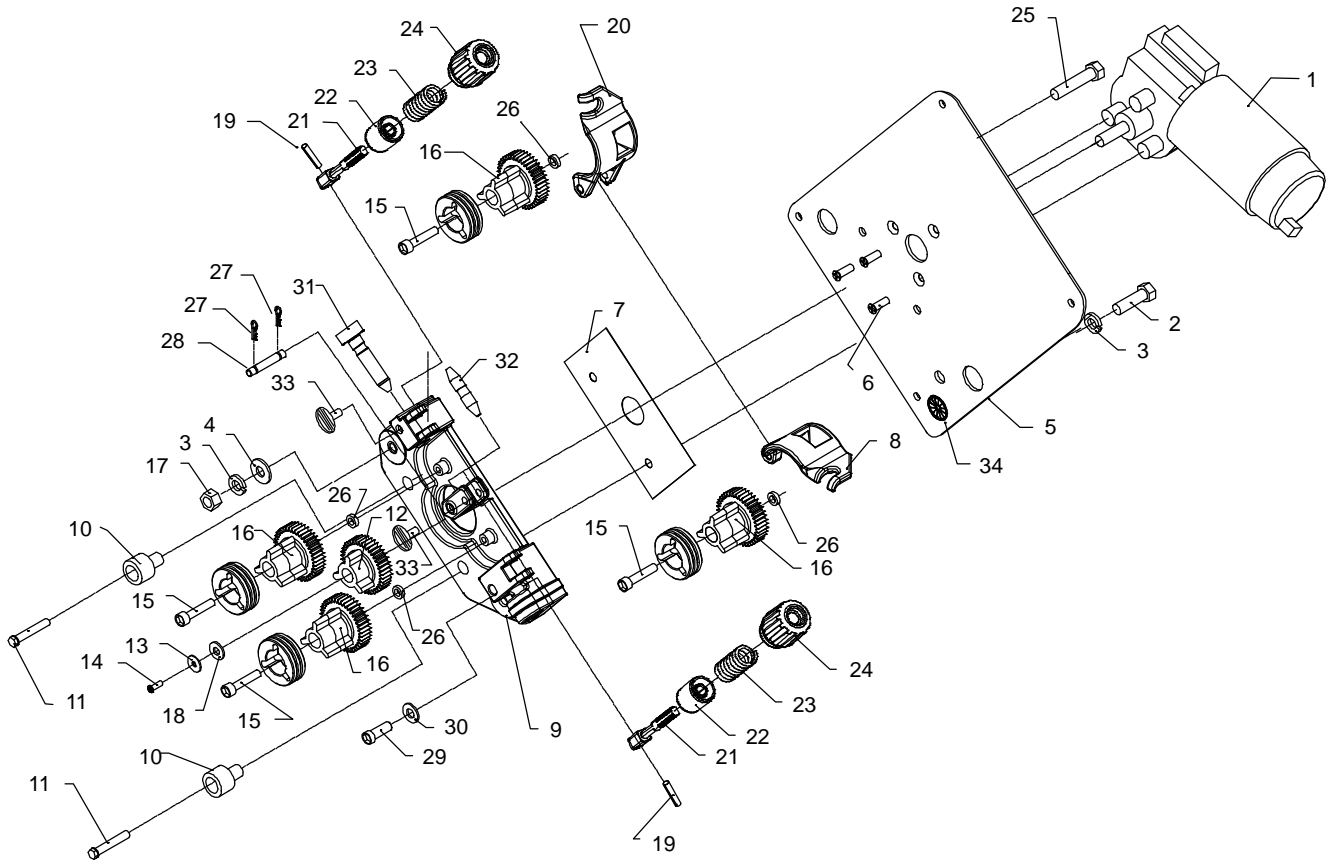
To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

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

* Euro torch models only.

◆ Optional

 Hardware is common and not available unless listed.



956.142.674_B

Figure 8-2. 4 Roll Wire Drive Assembly (All Models)

Item No.	Dia. Mkgs.	Part No.	Description	Qty
----------	------------	----------	-------------	-----

Figure 8-2. 4 Roll Wire Drive Assembly (All Models)

... 1	M1	057010051	Motor, Gear 24 V 100W	1
... 2		601966	Screw	1
... 3		602213	Washer, Lock	2
... 4		010910	Washer, Flat	1
... 5		656005026	Insulator, Plate	1
... 6		156019746	Screw, M6 x 16	3
... 7		656005027	Insulator, Motor	1
... 8		238728	Lever, Mounting Pressure Gear	1
... 9		238726	Housing, Adapter Drive Motor	1
... 10		221654	Bushing, Insulating	2
... 11		156019200	Screw, M6 x 35	2
... 12		173618	Carrier Drive, Gear	1
... 13		602200	Washer, Medium Lock	1
... 14		174609	Screw, M 4- .7X 12	1
... 15		602209	Screw, 250-20 x 1.25 Soc Hd-Hex Gr8 Pln	1
... 16		172075	Carrier, Drive Roll w/Component 24 Pitch	4
... 17		601872	Nut	1
... 18		156009124	Washer, D5 x 15 x 1.2	1
... 19		010224	Pin, Spring CS .187 x 1.000	2
... 20		230691	Lever, Mounting Pressure Gear	1
... 21		225718	Fastener, Pinned	2
... 22		198080	Cup, Spring	2
... 23		196897	Spring, CPRSN .695 Od x .095 Wire x 1.500	2
... 24		196895	Knob, Tension	2
... 25		203562	Screw	1
... 26		166072	Spacer, Gear	4
... 27		151828	Pin, Cotter Hair .042 x .750	2
... 28		079634	Pin, Hinge	1
... 29		156019804	Screw, 5/16-18 x 1 Alloy Steel Socket Head Cap Screw Plain Finish	1
... 30		156009145	Washer, Flat	1
... 31		045127	Guide, Wire Intermediate Brass .023 - .052	1
... 32		056207	Inlet, Wire Intermediate Brass	1
... 33		054263	Screw, Thumb	2
... 34		756033039	Bushing, Snap-in D 22.9	1

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.

Table 8-1. Drive Roll And Wire Guide Kits (4 Drive Roll)

☞ 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

TRUE BLUE® WARRANTY

Effective January 1, 2015
(Equipment with a serial number preface of MF or newer)

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 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. If notification is submitted as an online warranty claim, the claim must include a detailed description of the fault and the troubleshooting steps taken to identify failed components and the cause of their failure.

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 the equipment was delivered to the original retail purchaser or one year after the equipment is shipped to a European distributor or twelve months after the equipment is shipped to an International distributor.

1. 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers only to include SCRs, diodes, and discrete rectifier modules with exclusion of STR, Si, STI, STH and MPi series.
2. 3 Years — Parts and Labor
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Process Controllers
 - * Semi-Automatic and Automatic Wire Feeders
 - * Transformer/Rectifier Power Sources
3. 2 Years — Parts
 - * Auto-Darkening Helmet Lenses (No Labor)
 - * Migmatic 175
 - * HF Units
4. 1 Year — Parts and Labor Unless Specified
 - * Automatic Motion Devices
 - * 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.)
 - * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
 - * Motor-Driven Guns (w/exception of Spoolmate Spoolguns)
 - * Positioners and Controllers
 - * Powered Air Purifying Respirator (PAPR) Blower Unit (No Labor)
 - * Racks
 - * Running Gear and Trailers
 - * Subarc Wire Drive Assemblies
 - * Water Coolant Systems
 - * Work Stations/Weld Tables (No Labor)
5. 6 Months — Parts
 - * Batteries

6. 90 Days — Parts
 - * Accessory (Kits)
 - * Canvas Covers
 - * Induction Heating Coils and Blankets
 - * MIG Guns
 - * Remote Controls
 - * Replacement Parts (No Labor)
 - * Spoolmate Spoolguns
 - * Cables and Non-Electronic Controls

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

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, switches, 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.





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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