TM-273245D 2021–11

Eff. w/Serial No. MG135049U

Processes

MIG (GMAW) Welding
MIG (GMAW-P) Welding
Flux Cored (FCAW) Welding
(Gas- And Self-Shielded)

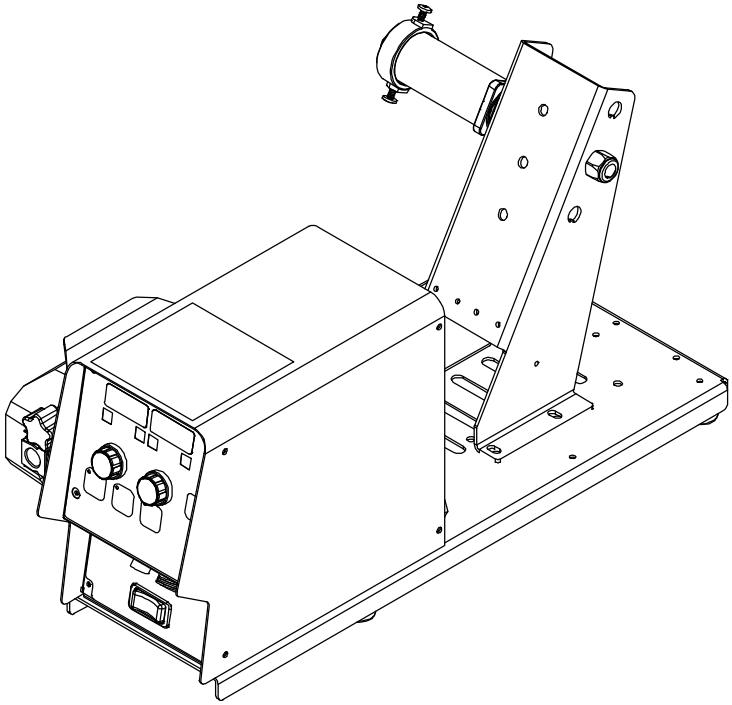
Description

CV

Wire Feeder
Aluminum Push/Pull Capable

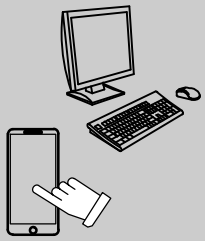
S-74 MPa Plus

CE



TECHNICAL MANUAL

File: MIG (GMAW)



For product information,
Owner's Manual translations,
and more, visit

www.MillerWelds.com

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TABLE OF CONTENTS

SECTION 1 – SAFETY PRECAUTIONS FOR SERVICING

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

1-1. Symbol Usage

OM-273245-P, safety_stm 2020-02

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.*

☞ *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 these hazards.

1-2. Servicing 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.

Only qualified persons should install, operate, maintain, and repair this equipment. A qualified person is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project and has received safety training to recognize and avoid the hazards involved.

During servicing, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Turn Off welding power source and wire feeder and disconnect and lockout input power using line disconnect switch, circuit breakers, or by removing plug from receptacle, or stop engine before servicing unless the procedure specifically requires an energized unit.
- Do not work on equipment unless it has been verified that the machine case is not energized.
- Insulate yourself from ground by standing or working on dry insulating mats big enough to prevent contact with the ground.
- Do not leave live unit unattended.
- If this procedure requires an energized unit, have only personnel familiar with and following standard safety practices do the job.
- When testing a live unit, use the one-hand method. Do not put both hands inside unit. Keep one hand free.
- Disconnect input power conductors from deenergized supply line BEFORE moving a welding power source.

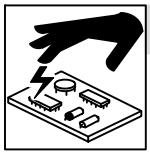
SIGNIFICANT DC VOLTAGE exists in inverter welding power sources AFTER removal of input power.

- Turn off unit, disconnect input power, and discharge input capacitors according to instructions in Manual before touching any parts.

ARC FLASH can kill.

Arc flash is the rapid and violent release of energy that occurs when electric current leaves its intended path and arcs to other conductors or to ground. Arc flash can be caused by equipment failure (faulty insulation, corrosion, dust) improper installation, human error (improper tool placement), and other factors. Conductive vapors can sustain the arc until over-current devices open the circuit. Individuals within the arc flash boundary are at risk.

- Do not work on energized equipment unless an assessment of arc flash risk from the electrical supply circuit has been conducted by a qualified person and you have been trained in safe work practices by your employer.
- Follow requirements in NFPA 70E for safe work practices and Personal Protective Equipment (PPE).

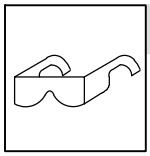


STATIC (ESD) can damage PC boards.

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

FIRE OR EXPLOSION hazard.

- Do not place unit on, over, or near combustible surfaces.
- Do not service unit near flammables.



FLYING METAL or DIRT can injure eyes.

- Wear safety glasses with side shields or face shield during servicing.
- Be careful not to short metal tools, parts, or wires together during testing and servicing.

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.

EXPLODING PARTS can injure.

- Failed parts can explode or cause other parts to explode when power is applied to inverters.
- Always wear a face shield and long sleeves when servicing inverters.

SHOCK HAZARD from testing.

- Turn Off welding power source and wire feeder or stop engine before making or changing meter lead connections.
- Use at least one meter lead that has a self-retaining spring clip such as an alligator clip.
- Read instructions for test equipment.

FALLING EQUIPMENT can injure.

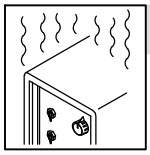
- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use correct procedures and equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94–110) when manually lifting heavy parts or equipment.

MOVING PARTS can injure.

- Keep away from moving parts such as fans.
- Keep away from pinch points such as drive rolls.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance and troubleshooting as necessary.
- Keep hands, hair, loose clothing, and tools away from moving parts.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before reconnecting input power.

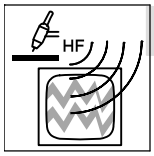
ELECTRIC AND MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away from servicing areas until consulting their doctor and the device manufacturer.



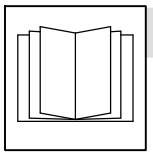
OVERUSE can cause OVERHEATING.

- 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.



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 install, test, and service H.F. producing units.
- 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.



READ INSTRUCTIONS.

- Use Testing Booklet (Part No. 150 853) when servicing this unit.
- Consult the Owner's Manual for welding safety precautions.
- Use only genuine replacement parts from the manufacturer.
- Read and follow all labels and the Technical Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Perform installation, maintenance, and service according to the Technical Manual, industry standards, and national, state, and local codes.

1-3. California Proposition 65 Warnings

WARNING: This product can expose you to chemicals including lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

1-4. 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 can 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.

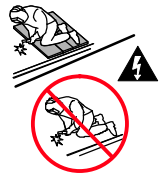
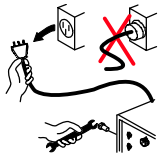
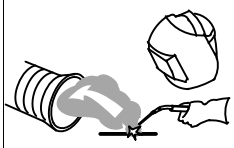
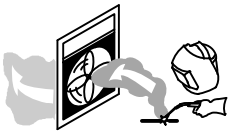
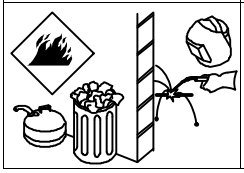
About Implanted Medical Devices:

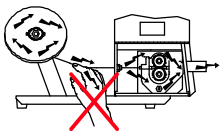
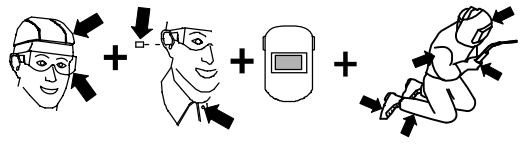
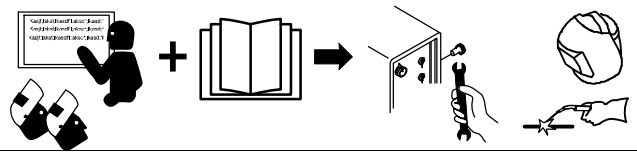
Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – DEFINITIONS

2-1. Additional Safety Symbols And Definitions

☞ *Some symbols are found only on CE products.*

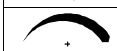
	Warning! Watch Out! There are possible hazards as shown by the symbols. Safe1 2012–05
	Do not discard product (where applicable) with general waste. Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility. Contact your local recycling office or your local distributor for further information. Safe37 2017–04
	Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves. Safe2 2017–04
	Protect yourself from electric shock by insulating yourself from work and ground. Safe3 2017–04
	Disconnect input plug or power before working on machine. Safe5 2017–04
	Keep your head out of the fumes. Safe6 2017–04
	Use forced ventilation or local exhaust to remove the fumes. Safe60 2012–06
	Use ventilating fan to remove fumes. Safe61 2012–06
	Keep flammables away from welding. Do not weld near flammables. Safe62 2012–06

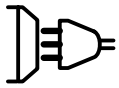
	Welding sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it. Safe63 2012–06
	Do not weld on drums or any closed containers. Safe16 2017–04
	Do not remove or paint over (cover) the label. Safe20 2017–04
	Drive rolls can injure fingers. Safe32 2012–05
	Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects away. Safe33 2017–04
	Environmental Protection Use Period (China) Safe123 2016–06
	Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection. Safe66 2012–06
	Become trained and read the instructions before working on the machine or welding. Safe65 2012–06

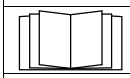
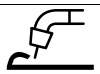
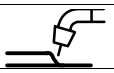
Notes

2-2. Miscellaneous Symbols And Definitions

☞ *Some symbols are found only on CE products.*

A	Amperes
⎓	Direct Current (DC)
IP	Degree Of Protection
Hz	Hertz
	Set Up
	Increase
	Process
t	Time
	Postflow Time
	Gas Input
	Purge By Gas
	Constant Voltage

I_2	Rated Welding Current
	Program
	Preflow Time
	Line Connection
U_2	Conventional Load Voltage
	Wire Feed
	Cold Jog (Inch) Towards Workpiece
	Circuit Breaker
	Sequence
U_1	Primary Voltage

	Output
X	Duty Cycle
I_1	Primary Current
	Wire Type
	Arc Length
	Single Phase
	Read Instructions
V	Volts
	Start
	Crater

Notes

SECTION 3 – SPECIFICATIONS

3-1. Serial Number And Rating Label Location

The serial number and rating information for this product is located on the rear panel. 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*	Wire Diameter Range	Welding Circuit Rating	Overall Dimensions	Weight
24 Volts AC Single-Phase 10 Amperes 50/60 Hertz	Constant Voltage (CV) DC With 14-Pin And Contactor Control	Standard: 55 To 770 ipm (1.4 To 19.6 mpm)	.035 To 5/64 in. (0.9 To 2 mm) Max Spool Capacity: 18 in. (457 mm) Max Spool Weight: 60 lb (27 kg)	100 Volts, 600 Amperes, 100% Duty Cycle	Length: 27 in. (686 mm) Width: 12-1/2 in. (318 mm) Height: 14 in. (356 mm)	48 lb (21.8 kg)
* See Section 4-5 for detailed information on wire type, wire size, and wire feed speed.						

3-3. Environmental Specifications

A. IP Rating

IP Rating
IP2X This equipment is designed for indoor use and is not intended to be used or stored outside. IP2X 2014-06

B. Information On Electromagnetic Compatibility (EMC)

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.

ce-emc 3 2014-07

C. Temperature Specifications

Operating Temperature Range	Storage/Transportation Temperature Range
14 to 104°F (–10 to 40°C)	–4 to 131°F (–20 to 55°C) Temp1_016-08

D. China EEP Hazardous Substance Information

中国电器电子产品中有害物质的名称及含量 China EEP Hazardous Substance Information						
部件名称 Component Name (如果适用) (if applicable)	有害物质 Hazardous Substance					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6	多溴联苯 PBB	多溴二苯醚 PBDE
黄铜和铜部件 Brass and Copper Parts	X	O	O	O	O	O
耦合装置 Coupling Devices	X	O	O	O	O	O
开关装置 Switching Devices	O	O	X	O	O	O
线缆和线缆配件 Cable and Cable Accessories	X	O	O	O	O	O
电池 Batteries	X	O	O	O	O	O

本表格依据中国SJ/T 11364的规定编制.
This table is prepared in accordance with China SJ/T 11364.

O:
表示该有害物质在该部件所有均质材料中的含量均在中国GB/T26572规定的限量要求以下.
Indicates that the concentration of the Hazardous Substance in all homogeneous materials of the part is below the relevant threshold of China GB/T 26572.

X:
表示该有害物质至少在该部件的某一均质材料中的含量超出中国GB/T26572规定的限量要求.
Indicates that the concentration of the Hazardous Substance in at least one homogeneous material of the part is above the relevant threshold of China GB/T 26572.

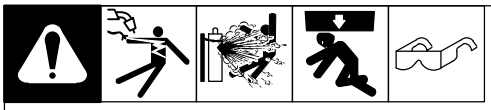
电器电子产品的环保使用期限依据中国SJ/Z11388的规定确定.
The EFUP value of this EEP is defined in accordance with China SJ/Z 11388.

EEP_2016-06

Notes

SECTION 4 – INSTALLATION

4-1. Selecting A Location



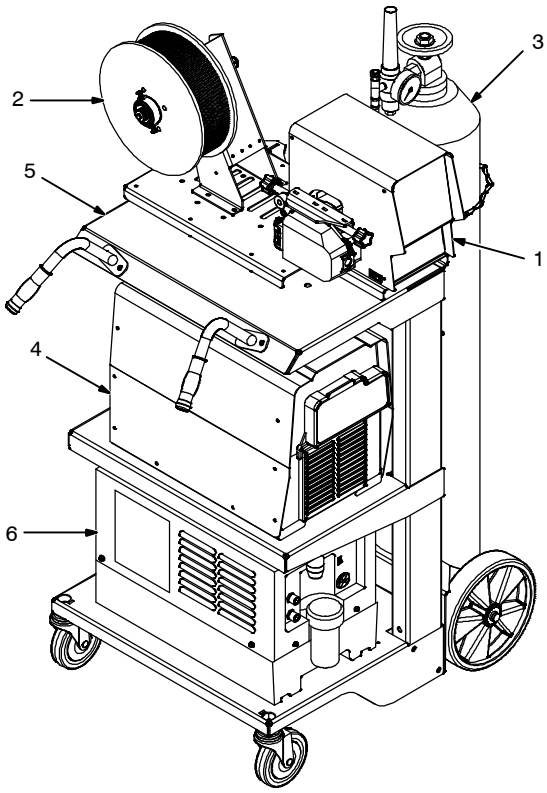
Do not put feeder where welding wire hits cylinder.

Wire feeder shown is representative only and may not reflect actual unit.

1 Wire Feeder
2 Wire Spool/Reels
3 Gas Cylinder w/Hose And Regulator (Customer Supplied)

Shielding gas pressure not to exceed 100 psi (689 kPa).

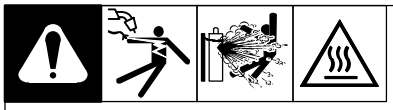
4 Welding Power Source
5 Running Gear
6 Water Cooling System



Do not move or operate unit where it could tip.

loc_feeder/running gear 2015-05

4-2. Equipment Connection Diagrams



1 Welding Power Source

☞ *Select welding power source according to Section 5-11.*

2 Contactor Control/Power Cord

3 Positive (+) Weld Cable

4 Negative (–) Weld Cable

5 Workpiece

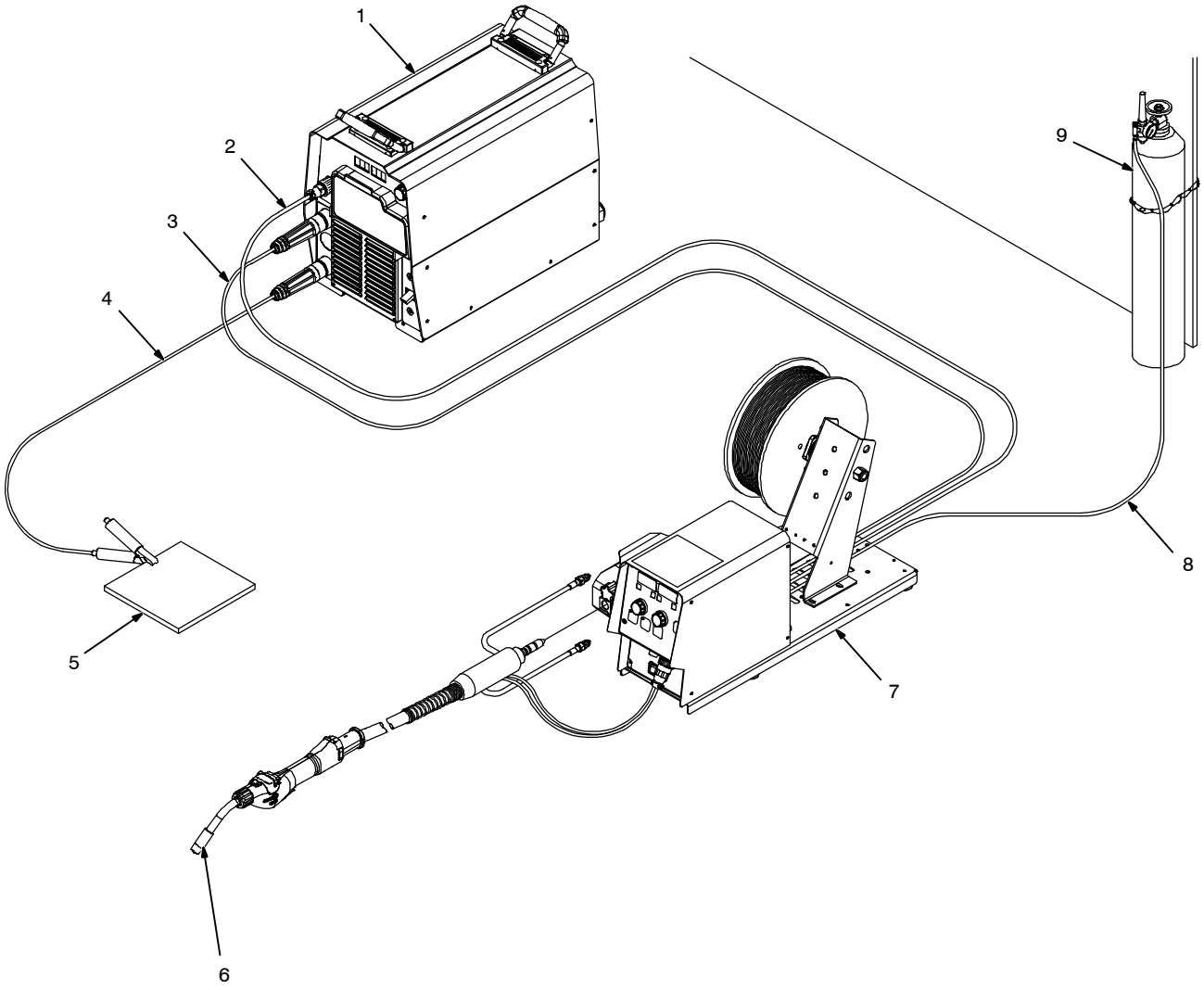
6 Welding Gun

7 Wire Feeder

8 Gas Hose

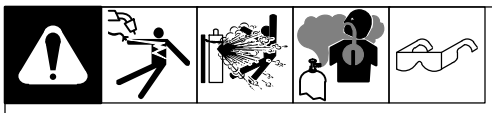
9 Gas Cylinder and Regulator (Customer Supplied)

☞ *Shielding gas pressure not to exceed 100 psi (689 kPa).*



246040-C

4-3. Rear Panel Connections And Rotating Drive Assembly



1 14-Pin Control Cable - 15 Ft (4.6 m)

2 Shielding Gas Valve Fittings

Requires fitting with 5/8-18 right-hand threads. Connect customer-supplied gas hose.

3 Weld Cable Terminal

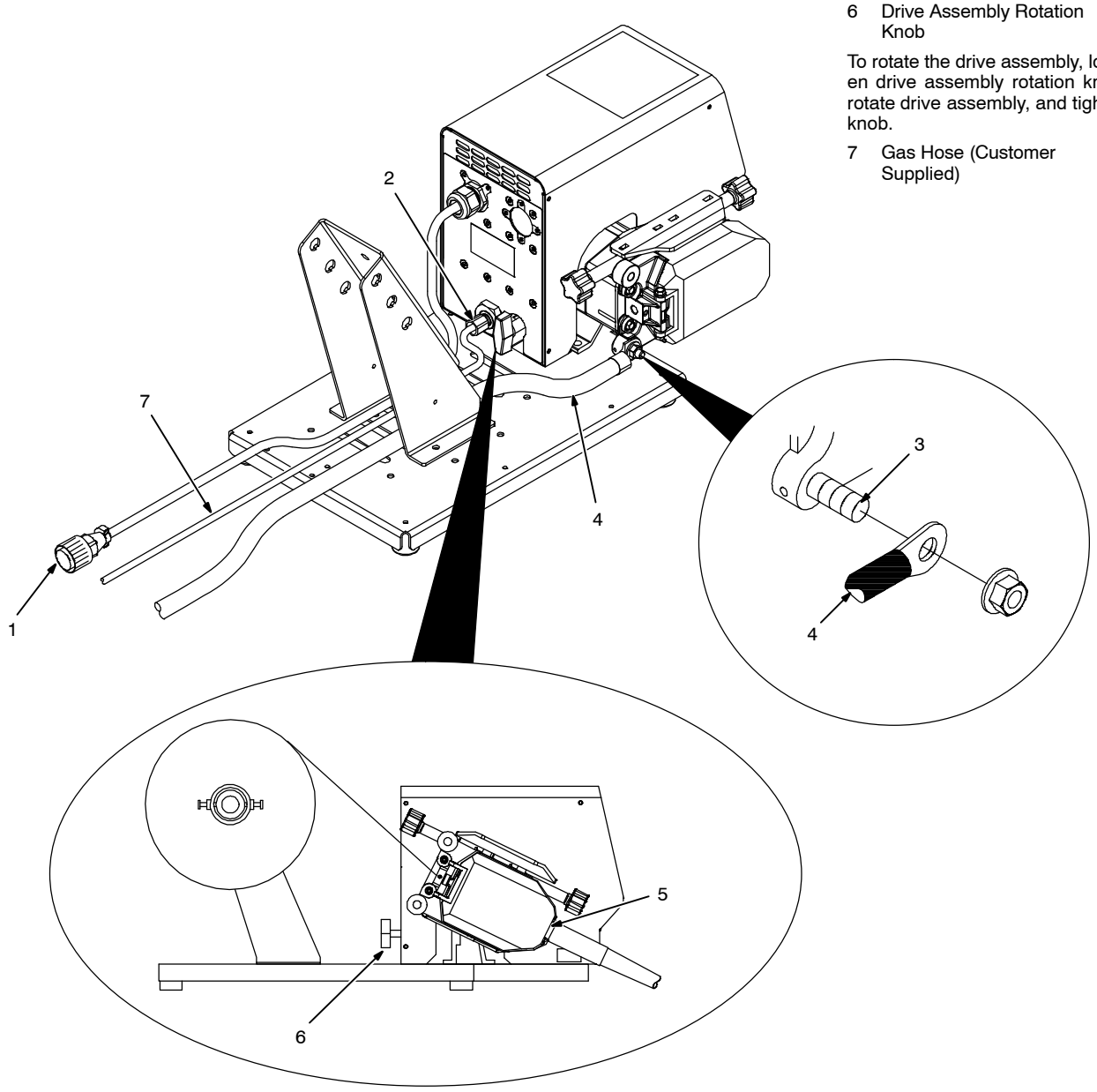
4 Weld Cable

5 Drive Assembly

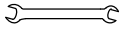
6 Drive Assembly Rotation Knob

To rotate the drive assembly, loosen drive assembly rotation knob, rotate drive assembly, and tighten knob.

7 Gas Hose (Customer Supplied)



Tools Needed:

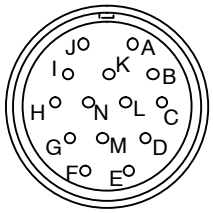


9/16, 5/8 in.

3/16 in.

246041-D

4-4. 14-Pin Plug Information For Connecting Wire Feeder To Power Source

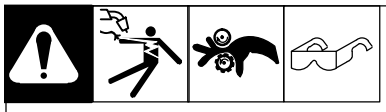
REMOTE 14	Pin*	Pin Information
	A	24 volts AC with respect to socket G.
	B	Contact closure to A completes 24 volts AC contactor control circuit.
	G	Circuit common for 24 volts AC circuit.
	C	+10 volts DC input from power source to wire feeder with respect to socket D.
	D	Remote control circuit common.
	E	0 to +10 volts DC output signal from wire feeder to power source with respect to socket D.
	H	Voltage feedback; 0 to +10 volts DC, 1 volt per 10 arc volts.
	F	Current feedback; 0 to +10 volts DC, 1 volt per 100 amperes.
	L	0 to +10 volts DC output signal from wire feeder to power source with respect to socket N.
	M	CC/CV select 0 to +10 volts DC.
	N	Feeder common.
	K	Not used.
*The remaining pins are not used.		

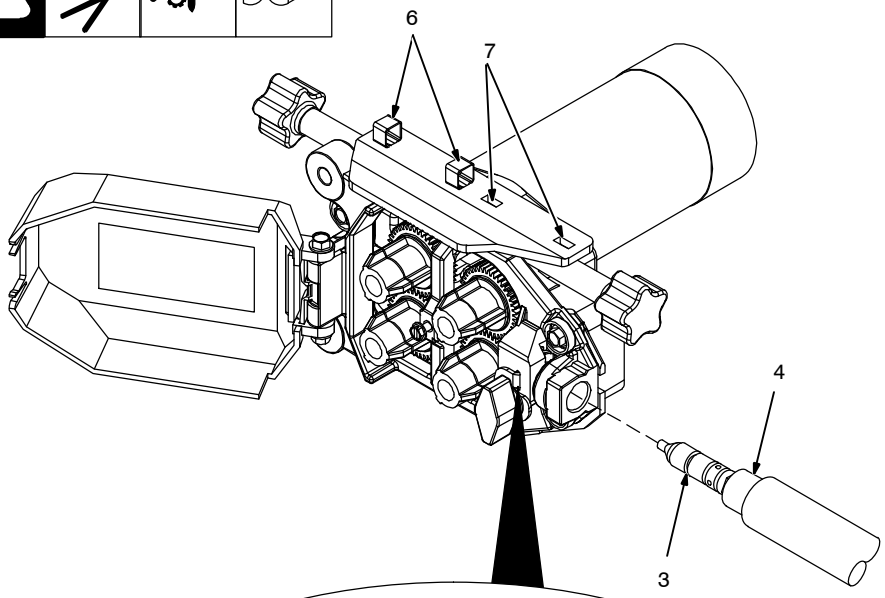
4-5. Wire Type, Size, And Optimal Wire Feed Speed Table

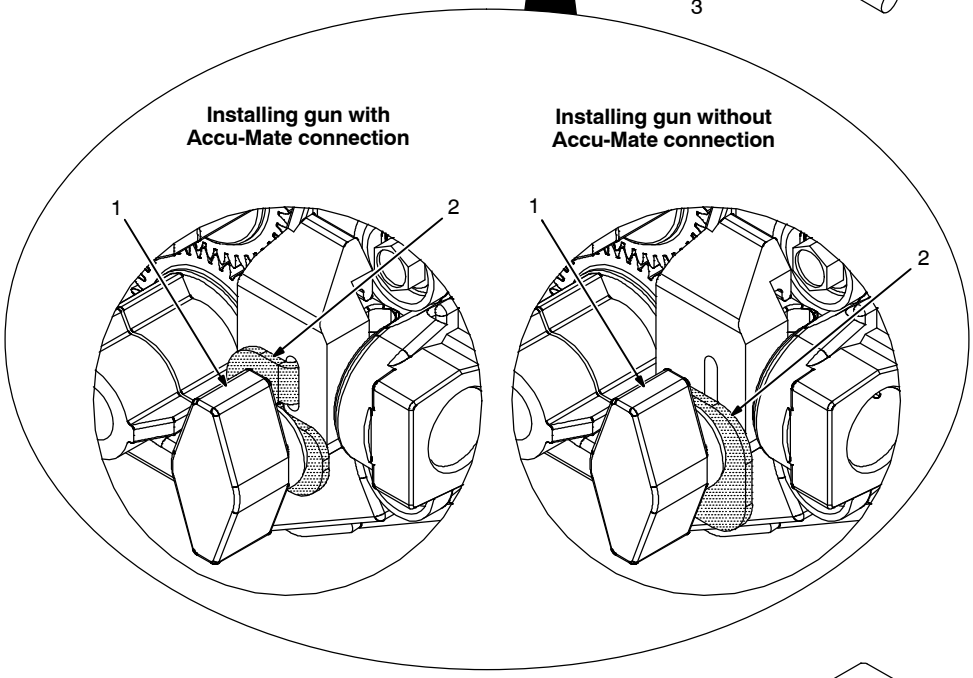
Motor Speed	Wire Type	Wire Size	Rated Speed Range (per IEC 60974–5)
Standard	All	.035 To .062 in. (0.9 To 1.57 mm)	55 To 770 ipm (1.4 To 19.6 mpm)
Standard	All	5/64 in. (2 mm)	55 To 700 ipm (1.4 To 17.8 mpm)

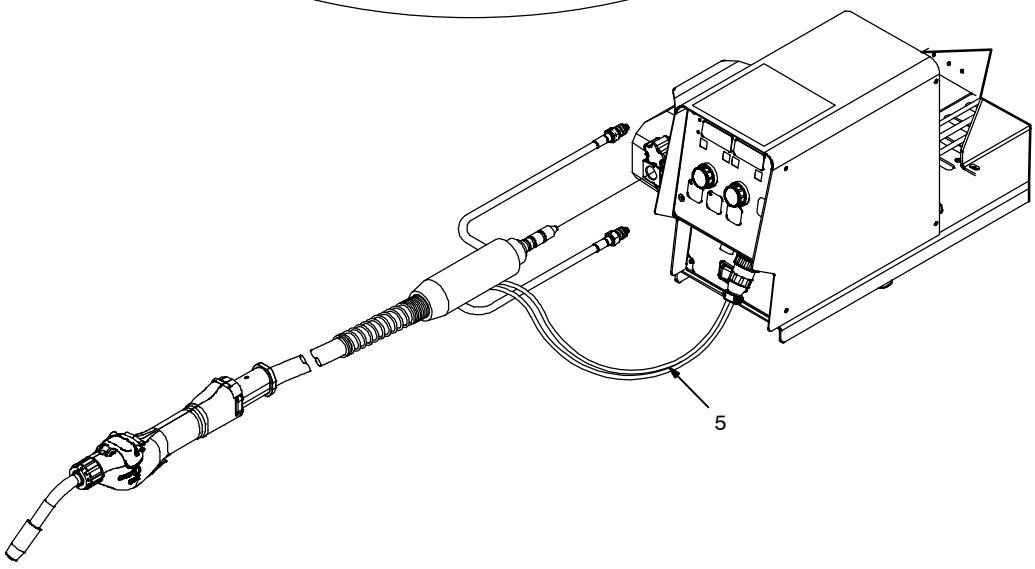
Notes

4-6. Installing Welding Gun









1 Power Clamp Knob

2 Gun Locking Tab

3 Power Pin Groove

4 Gun Connection End

Installing gun with Accu-Mate connection

Loosen power clamp knob to allow power pin of gun to clear the gun locking tab.

Push power pin into power clamp as far as possible to align the groove in the power pin of the gun with the gun locking tab.

Secure gun by tightening power clamp knob.

Installing gun without Accu-Mate connection

When using a gun without the groove in the power pin, loosen power clamp knob and rotate gun locking tab 180 degrees. This prevents the locking tab from extending into the power pin gun connection.

Push power pin into power clamp as far as possible.

Secure gun by tightening power clamp knob.

5 Gun Control Cable

Insert plug into Gun Control receptacle, and tighten threaded collar.

6 Pressure Blocking Clip

7 Empty Pressure Slots

Installing A Push/Pull Gun

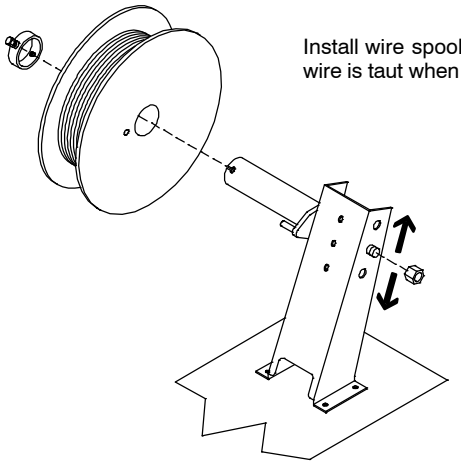
When using a push/pull gun, leave pressure blocking clips in position. Do not adjust pressure as shown in Section 4-7.

Installing A Push Only Gun

When using a push only gun, remove the blocking clips and place them in the empty pressure slots for storage and adjust pressure as shown in Section 4-7.

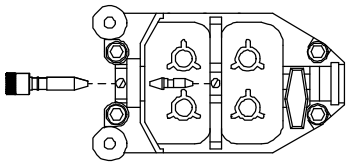
245985-B / Ref. 246040-C

4-7. Installing And Threading Welding Wire

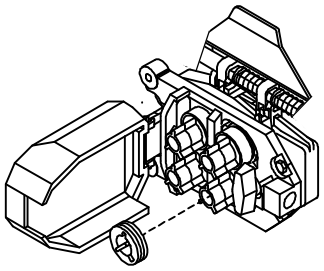


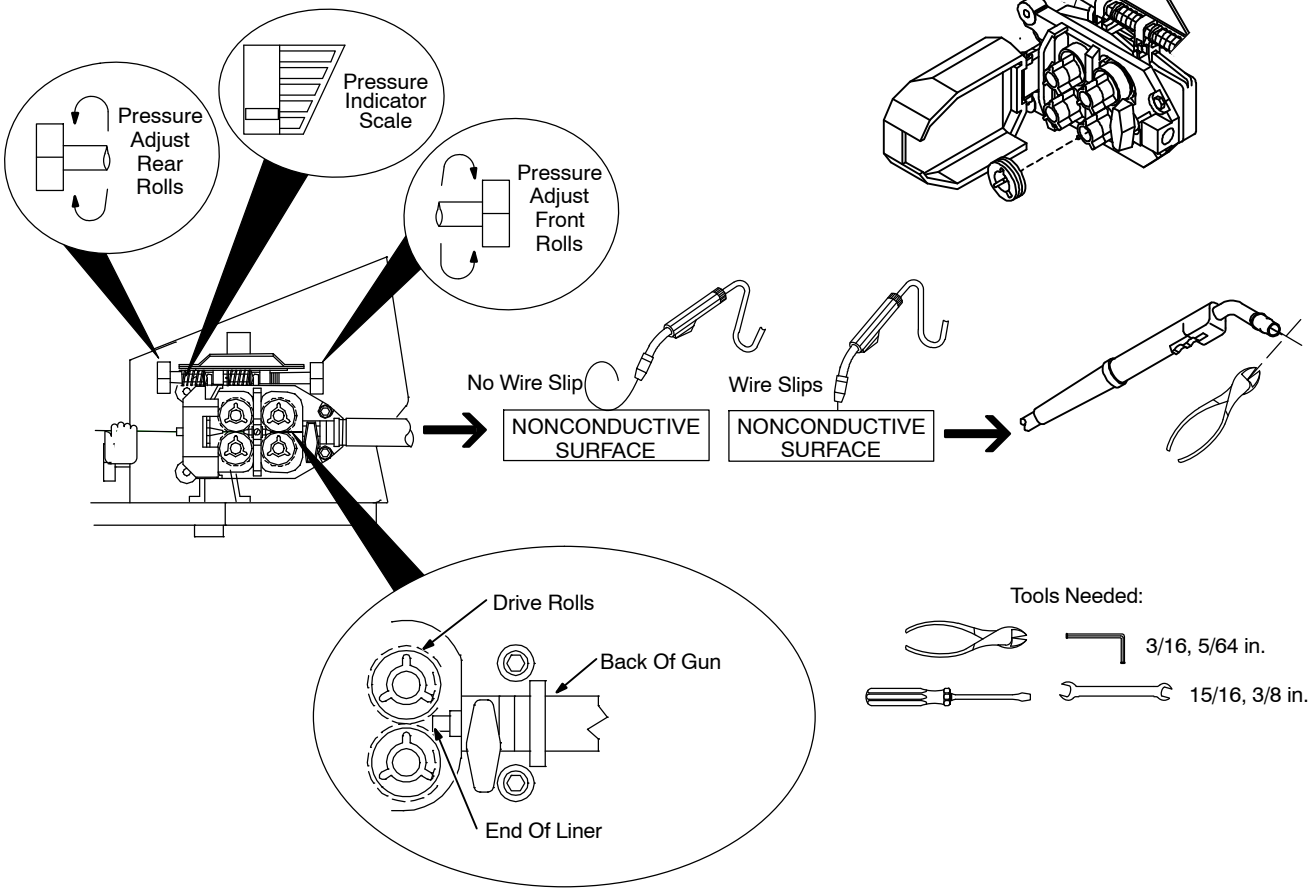
Install wire spool. Adjust tension nut so wire is taut when wire feed stops.

Install wire guides and anti-wear guide.



Install drive rolls.





Tools Needed:

☞ *For best wire feeding performance, be sure that the outlet cable has the proper size liner for the welding wire size being used. Also, when the gun is installed, the liner extending from the back of the gun should be as close to the drive rolls as possible, without touching.*

Install gun. Lay gun cable out straight. Cut off end of wire. Push wire through guides up to drive rolls; continue to hold wire. Press Jog button to feed wire out gun.

☞ *When using a push/pull gun and pressure blocking clips, do not adjust pressure.*

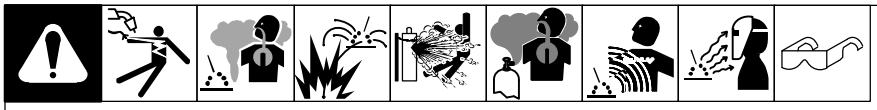
☞ *For aluminum wire set pressure indicator scale as light as possible.*

☞ *To adjust drive roll pressure, hold nozzle about 2 in. (51 mm) from nonconductive surface and press gun trigger to feed wire against surface. Tighten knob so wire does not slip. Do not overtighten. If contact tip is completely blocked, wire should slip at the feeder (see pressure adjustment above).Cut wire off. Close cover.*

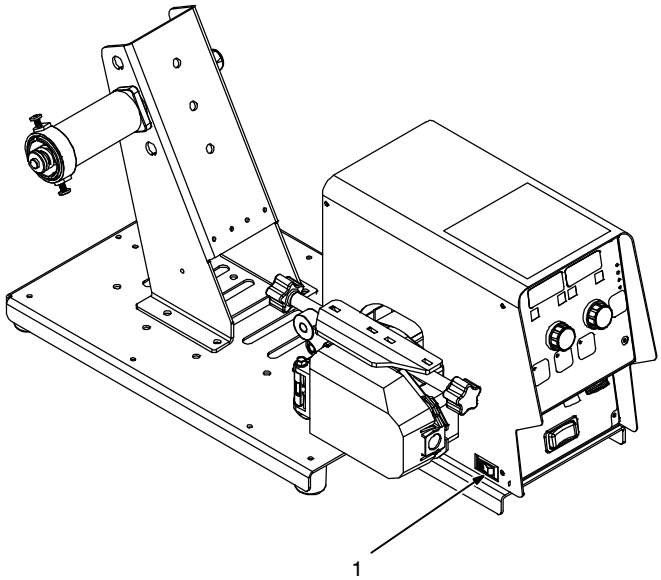
Ref. 156 929-A / Ref. 150 922 / Ref. 156 930 / S-0627-A

SECTION 5 – OPERATION

5-1. Power Switch

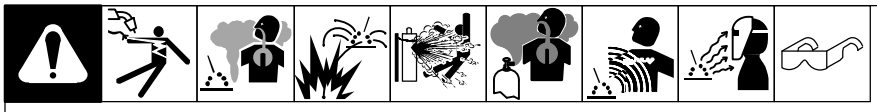


1 Power Switch

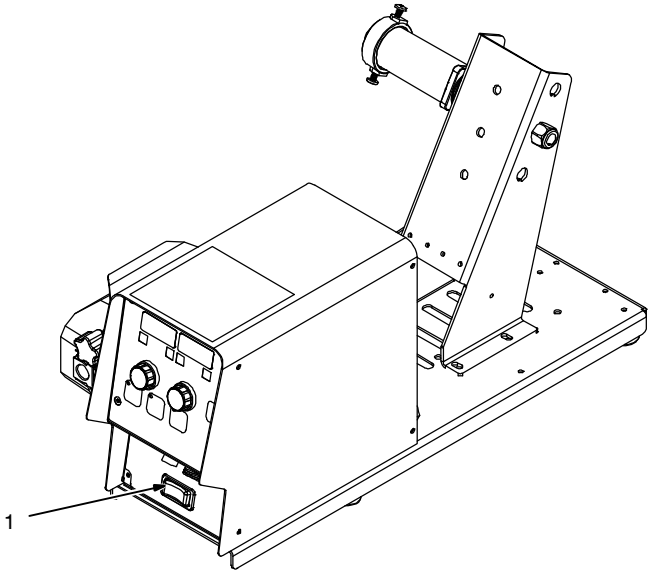


Ref. 246039-C

5-2. Jog/Purge Switch



1 Jog/Purge Switch

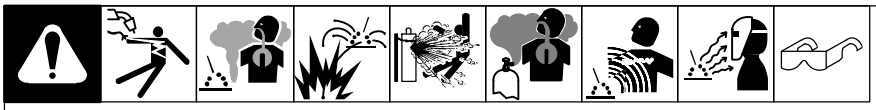


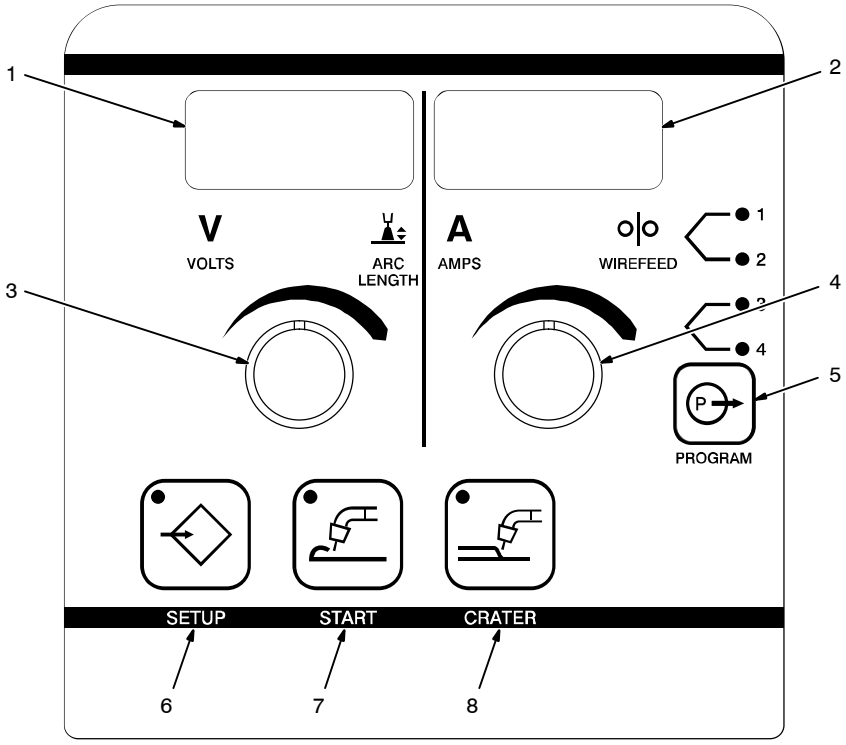
Ref. 246039-C

Pressing the Jog/Purge switch allows the operator to jog wire without energizing the weld power or gas valve circuit.

- The unit provides the ability to jog the wire feeder by means of the gun trigger or the Jog/Purge switch.
- If the welding arc does not initiate in 3 seconds after the gun trigger is activated, the unit will perform a jog operation for a maximum of two minutes. If the gun trigger is still activated after two minutes, the jog operation is terminated to prevent complete despooling of the wire, in the case of a damaged gun.
- The unit displays the “TRIG ERR“ message to inform the operator that the trigger is activated.
- Jog speed can be adjusted by the Adjust control when the unit is jogging wire. The unit displays jog speed when the unit is being jogged.
- Jogging can also be accomplished by pressing the Jog/Purge button.
- Pressing the Jog/Purge button also allows the operator to purge gas lines before welding and to preset gas pressure at the regulator.

5-3. Front Panel Controls



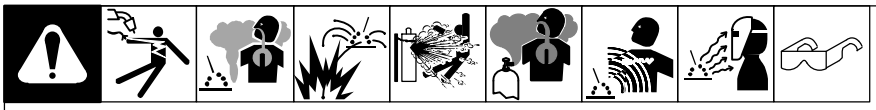


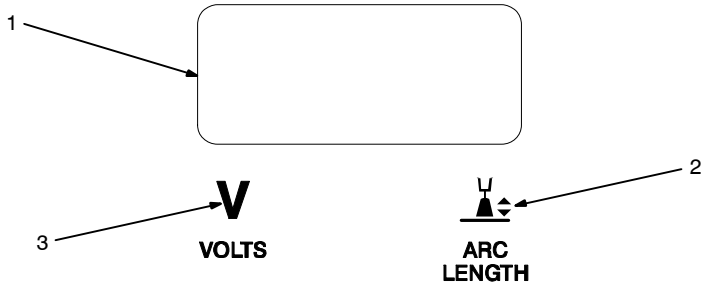
Ref. 271 487-A

1 Left Display (See Section 5-4)
2 Right Display (See Section 5-5)
3 Adjust Control Left (See Section 5-6)
4 Adjust Control Right (See Section 5-6)
5 Program Select Push Button (See Section 5-10)
6 Setup Push Button (See Section 5-7)
7 Start Push Button (See Section 5-8)
8 Crater Push Button (See Section 5-9)

Notes

5-4. Left Display





1 Left Display

2 Arc Length LED

3 Volts LED

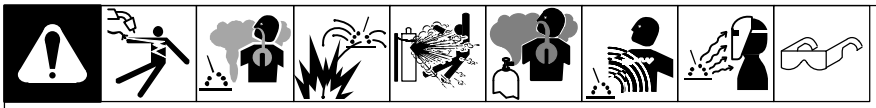
☞ *To set the correct voltage range for a particular power source, see Section 5-11 – Power Source Selection Menu.*

Left Display

The left display shows voltage or arc length. The unit displays both preset and actual arc voltage. When the unit is in a welding state, actual arc voltage is displayed.

☞ *See Section 7-2 for selection of arc length and voltage display.*

5-5. Right Display



1 Right Display

The right display shows wire feed speed or amperage. The unit displays and adjusts only preset wire feed speed at idle. When the unit is in a welding state, actual wire feed speed is displayed for the active welding sequence.

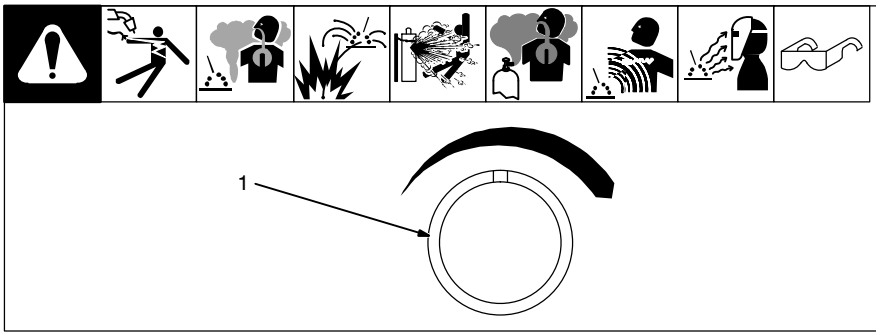
2 Wire Feed Speed LED

3 Amps LED

The LEDs below the display illuminate to indicate which value is being shown.

- If the unit is in a welding state that does not involve feeding wire, the unit displays the weld sequence wire feed speed. At any time during welding, the weld sequence wire feed speed can be adjusted and overrides the preset wire feed speed display. In other words, if the Adjust control is activated while welding, the unit displays and permits adjustment of the weld sequence wire feed speed regardless of the active welding sequence.
- When the unit is displaying amperage, the Amps LED illuminates. Amperage is only displayed if the unit is in a welding state and the amperage is above a minimum value of 25 Amps.

5-6. Adjust Control Left/Right



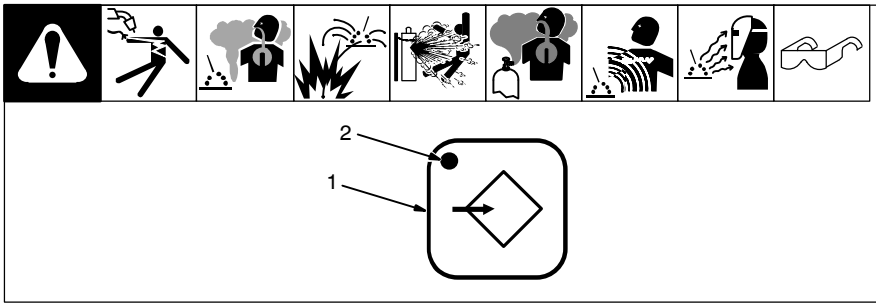
1 Adjust Control

Use Adjust control to change various parameters or menu items.

Use left control to adjust volts or arc length.

Use right control to adjust amperage or wire feed speed.

5-7. Setup Push Button



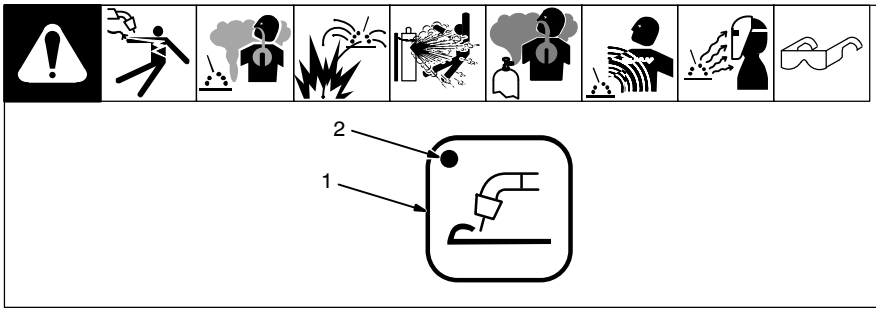
1 Setup Push Button

2 Setup LED

When the Setup button is pressed, the Setup push button LED turns on.

Press button to enter basic setup features. Hold button to enter more advanced setup features

5-8. Start Push Button

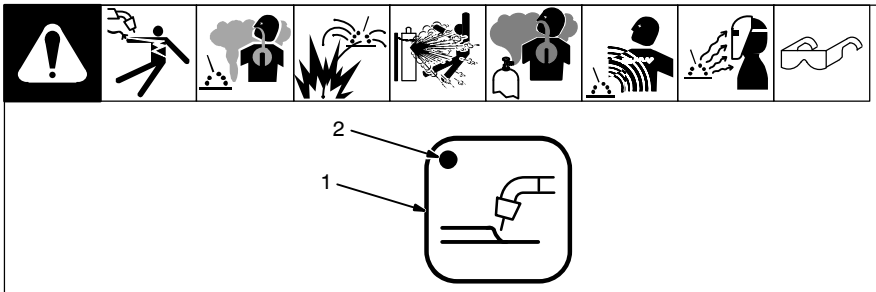


1 Start Push Button

2 Start LED

Press button to activate/deactivate start parameters. LED is on when start is enabled. Press and hold button for 1 second to access start parameter menu.

5-9. Crater Push Button

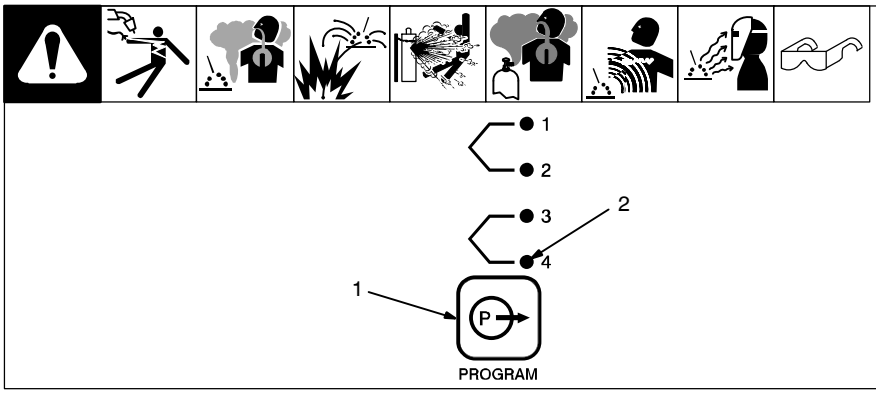


1 Crater Push Button

2 Crater LED

Press button to activate/deactivate crater parameters. Press and hold button for 1 second to access crater parameter menu.

5-10. Program Select Push Button

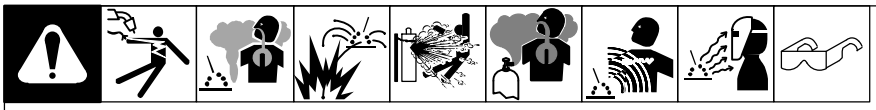


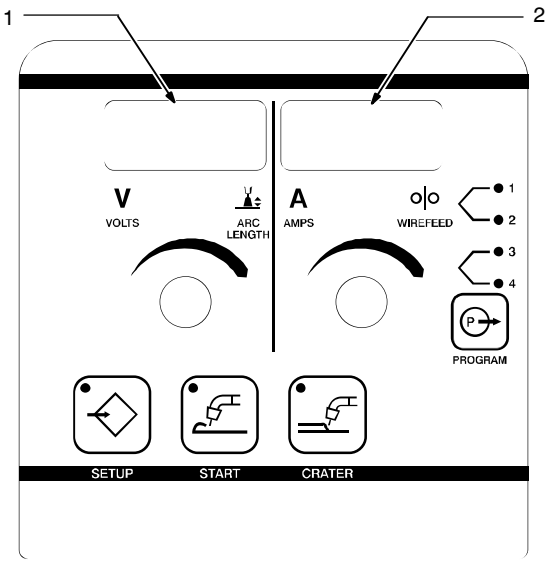
1 Program Select Push Button

2 Program Indicating LEDs

☞ Program *select is for setup adjustments and initial weld. Active function (TPS or Dual Schedule) will override previous functions.*

5-11. Power Source Selection Menu





** Power Source	Left Display	Right Display	Voltage Range	
Invision/XMT 35X MPa	MPa	35X	Vmin =10	Vmax =38
Invision/XMT 450 MPa	MPa	450	Vmin =10	Vmax =38
Deltaweld 302	DELT	302	Vmin =10	Vmax =32
Deltaweld 452	DELT	452	Vmin =10	Vmax =38
Deltaweld 652	DELT	652	Vmin =10	Vmax =44
Dimension 302	DIM	302	Vmin =10	Vmax =32
Dimension NT 450	DIM	450	Vmin =10	Vmax =38
Dimension 452	DIM	452	Vmin =10	Vmax =38
Dimension 652	DIM	652	Vmin =10	Vmax =65
XMT 304	XMT	304	Vmin =10	Vmax =35
XMT 350	XMT	350	Vmin =10	Vmax =38
XMT 456	XMT	456	Vmin =10	Vmax =38
Invision 456	INV	456	Vmin =10	Vmax =38
Invision 354	INV	354	Vmin =10	Vmax =35
Optima	OPT	IMA	Vmin =10	Vmax =38
Custom	CUST	PWR.S	Vmin =10	Vmax =38

**** For any power sources not listed, pick a matching voltage range or see Section 5-6 to set Vmin and Vmax.**

1 Left Display

2 Right Display

☞ When the feeder is turned on, the Power Source Selection Menu allows the operator to select a default power source. Selecting a default power source, automatically sets the correct Vmin and Vmax settings for adjusting the output voltage of the power source.

First Time Feeder Is Turned On

The feeder automatically goes into the Power Source Selection Menu. The feeder displays “MPA” on the Left Display and “35X” on the Right Display, meaning that a MPa 350 amp machine is the default power source, and has a voltage range of 10V as Vmin and 38V as Vmax.

At power up, the operator has three seconds to select a default power source from the list shown on the display. Operator may scroll through the list of power sources by using the Adjust control. After selecting a power source the operator has three seconds to change to a different power source or begin welding. When turning off the feeder, the default power source will be retained.

Next Time Feeder Is Turned On

The feeder will display the last selected default power source. The operator has three seconds to select another power source, or press the Program Button to exit the Power Source Selection Menu.

Ref. 271 487-A

5-12. Operational Terms

The following is a list of terms and their definitions as they apply to this wire feeder:

General Terms:

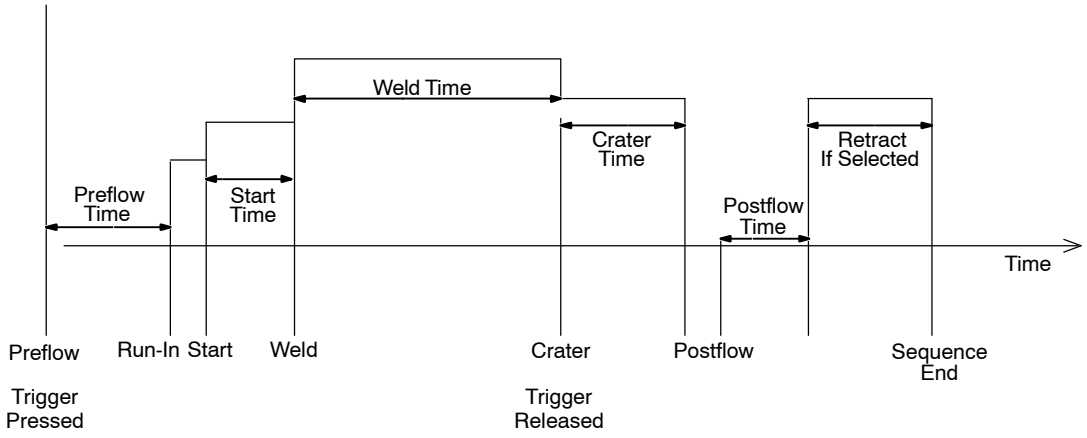
Cold Wire Jog	Feeding wire without contactor or gas valve being energized.
Sequence	A portion of the weld program, such as preflow, run-in, start, weld, crater, burnback, and postflow.
Weld Program	A group of sequences that make up a weld cycle.
MIG	CV weld process with individual settings of voltage and wire feed speed.
Pulsed MIG	CC weld process with factory taught data using peak and background current, pulse width and pulses per second. Adaptive pulse control methods modulate one or more of the taught data parameters to regulate or maintain a fixed arc length.
Synergic	Refers to the system's ability to match the power setting to the set wire feed speed using a single knob control. In synergic Pulsed MIG, the pulse parameters are automatically increased or decreased to match the power output to the set wire feed speed.
Non- Synergic	Refers to independent control of wire feed speed and power output. In non–synergic mode, increasing or decreasing the set wire feed speed requires corresponding adjustment of the arc length or voltage setting.
STD	Basic trigger function, weld sequence starts when the trigger is pressed and ends when the trigger is released.
Trigger Hold	Trigger function allowing the operator to weld without continuously pressing the gun trigger. In Trigger Hold mode, momentarily press the gun trigger until an arc is established, and welding will continue until the gun trigger is momentarily pressed again.
Spot	Trigger function that automatically shuts the weld off after a set amount of time. The weld will end when the set time has expired or the trigger has been released, which ever occurs first. The spot time is reset when the trigger is released.
Arc Length	Refers to physical distance between wire electrode and molten puddle. Term also used to represent adjustments in the Pulsed MIG weld process.
Dual Schedule	Allows selecting a pair of weld parameter settings that can be used together.
Preflow	The amount of time that the shielding gas will flow after the trigger is pressed and before the welding arc will be allowed to be active.
Postflow	The amount of time that the shielding gas will flow after the arc has been shut off.
Start	Provides voltage/arc length, wire feed speed and time values for modified arc start.
Profile Pulse	Profile Pulse optimizes aluminum weld bead appearance by producing welds with consistently spaced ripple patterns, similar to GTAW.

SECTION 6 – SETTING SEQUENCE PARAMETERS

6-1. Sequence Parameters In A Program

Sequence	Parameters			
	Volts	IPM	Seconds	Inches
1. Preflow			0-5.0	
2. Run-In		X	x0.1-x1.00	
3. Start	X	X	.1-.5	
4. Weld	X	X	0-100.0	
5. Crater	X	X	0.00-5.00	
6. Postflow			0.0-10.0	
7. Retract				0.0-1.5

X = Setting available.



SECTION 7 – PROGRAMMING

7-1. Setup Menu

To enter the **SETUP MENU** press and release the **SETUP** button. The **SETUP MENU INDICATOR** and the **SETUP BUTTON INDICATOR** will illuminate.

Rotate the **LEFT ADJUST KNOB** to select different menu items shown in the **LEFT DISPLAY**. Rotate the **RIGHT ADJUST KNOB** to change menu item values shown in the **RIGHT DISPLAY**.

To exit the **SETUP MENU** press and release the **SETUP** button.

Items that can be adjusted in this menu are:

Trigger Control (TRIG) – Sets the gun trigger control. The trigger control can be configured as (STD, HOLD, or SPOT).

Trigger Hold Delay (HOLD) – Additional trigger setting only appearing in the menu when the trigger control is set to (TRIG HOLD). Trigger hold delay time is the minimum amount of time the trigger must be held for trigger hold to become active. There is a built in maximum trigger hold time which the trigger must be released within for trigger hold to become active. The maximum trigger hold time is always 4.0 seconds after the trigger hold delay time. For Example, if the trigger hold delay time is set to 2.0 seconds, the trigger must be held for at least 2.0 seconds and released within 6.0 seconds for trigger hold to become active. Once the trigger hold function is active, the wire feeder will continue feeding wire until the trigger is pressed and released again.

Trigger 4T – Allows the operator to select between weld parameters and crater parameters using the gun trigger. Crater time must be set for at least 0.2 seconds to make this function operational. If gun trigger is released during welding the unit goes into trigger hold - pressing and holding trigger again will cause the unit to stay in crater until trigger is released and crater parameter times out.

Trigger Spot Time (SPOT) – Additional trigger setting only appearing in the menu when the trigger control is set to (TRIG SPOT). The SPOT time is the length of combined time for the start (if applicable) and the weld sequence. The weld will end when the set time has expired or the trigger has been released, whichever occurs first. The spot time is reset when the trigger is released.

Remote Process Select – For MIG (MIG) operation, the Left Display always shows Voltage. For Pulsed MIG (PULS) operation, the Second Level Setup Menu Display (PULS) option selects whether Voltage (VOLT) or Arc Length (ARC.L) is shown in the Left Display.

☞ *A Remote Process Select capable power source automatically switches to the selected weld process when this option is changed at the wire feeder. The wire and gas program selections for each weld process must be set at the power source.*

☞ *When Trigger Schedule Select (see Section 7-2) is enabled, the Weld Process option can be set independently for each schedule. This allows the operator to remotely change the weld process at the wire feeder and power source with a single tap of the welding gun trigger.*

Preflow (PRE) – The amount of time that the shielding gas will flow after the trigger is pressed and before the welding arc will be allowed to be active. Range of this setting is from (0.0 to 5.0) seconds.

Postflow (POST) – The amount of time that the shielding gas will flow after the arc has been shut off. Range of this setting is from (0.0 to 10.0) seconds.

Run–In Speed (R–IN) – The wire feed speed prior to the welding arc being struck. This setting is a percentage of the wire feed speed the unit is set to for welding. Range of this setting is from (X0.10 to X0.99 to OFF). Example: If the weld wire speed is 200 and R–IN is X0.50, the run–in wire speed is 100.

Burnback (B.BAK) – Burnback sets a time from 0 to 0.25 seconds in increments of 0.01 seconds. This is the time that the arc is allowed to stay on after the wire stops feeding.

Burnback Volts (VLTS) – Sets the voltage used for burnback. The range is the same as the selected power source. Measured in 0.1 volt increments.

Retract (RTRK) – When enabled, the user can set a distance in inches from 0 to 1.5 inches. This is the distance the wire will backup after welding stops.

Profile Pulse ON/OFF – When Profile Pulse is On, the pulse parameters and wire speed are coordinated to produce a consistent ripple pattern.

☞ *Additional PROFILE PULSE menu items may appear in the **SETUP MENU** when PROFILE PULSE is active. See Section 7-7.*

Notes

7-2. Setup Menu Level 2

To enter the **SETUP MENU LEVEL 2** press and hold the **SETUP** button. The **SETUP MENU INDICATOR** and the **SETUP BUTTON INDICATOR** will illuminate.

Rotate the **LEFT ADJUST KNOB** to select different menu items shown in the **LEFT DISPLAY**. Rotate the **RIGHT ADJUST KNOB** to change menu item values shown in the **RIGHT DISPLAY**.

To exit the **SETUP MENU LEVEL 2** press and release the **SETUP** button.

Items that can be adjusted in this menu are:

Parameter Lock (LOCK) – When set to (ON), the Trigger, Process, Preflow, Postflow, Run–In, Start, and Crater parameters are locked and cannot be adjusted. Attempting to change a locked parameter causes the display to momentarily display (LOCK).

Range Limits (LMTS) – When set to (ON), the wire feed speed and arc length or voltage weld settings are limited to minimum and maximum adjustable ranges. The minimum and maximum range settings appear next in the menu when (LMTS) is set to (ON). When set to (OFF), range limits are inactive and do not appear in the menu.

Wire Feed Range Limit (MIN) – Indicated in the LEFT DISPLAY with the WIREFEED SPEED INDICATOR illuminated. Sets the minimum wire feed speed. Range of this setting is from 70 to 780 IPM.

Wire Feed Range Limit (MAX) – Indicated in the LEFT DISPLAY with the WIREFEED SPEED INDICATOR illuminated. Sets the maximum wire feed speed. Range of this setting is from (MIN) setting to 780 IPM.

Arc Length Range Limit (MIN) – Indicated in the LEFT DISPLAY with the ARC LENGTH INDICATOR illuminated. Sets the minimum arc length. Range of this setting is from 0 to 100.

Arc Length Range Limit (MAX) – Indicated in the LEFT DISPLAY with the ARC LENGTH INDICATOR illuminated. Sets the maximum arc length. Range of this setting is from (MIN) setting to 100.

☞ *When the Pulse Display (PULS) option in the SETUP MENU LEVEL 2 is set to (VOLT), the Arc Length Range Limits are replaced by Voltage Range Limits.*

Voltage Range Limit (MIN) – Indicated in the LEFT DISPLAY with the VOLTS INDICATOR illuminated. Sets the minimum voltage. Range of this setting is dependent on the power source voltage range in the MIG process, and varies with the selected wire and gas program in the PULSED MIG process. If the power source weld process is set to PULSED MIG, the minimum voltage range limit setting will change if the wire and gas program selection is changed.

Voltage Range Limit (MAX) – Indicated in the LEFT DISPLAY with the VOLTS INDICATOR illuminated. Sets the maximum voltage. Range of this setting is dependent on the power source voltage range in the MIG process, and varies with the selected wire and gas program in the PULSED MIG process. If the power source weld process is set to PULSED MIG, the maximum voltage range limit setting will change if the wire and gas program selection is changed.

Power Source Synergic Mode (PWR.S) – Sets the synergic mode to (AUTO) or manual (MAN). When set to (AUTO), the wire feeder and a synergic capable power source function as a synergic Pulsed MIG system. When set to (MAN), the power source and wire feeder function as a non–synergic MIG or Pulsed MIG welding system.

• For proper operation, this setting should be set to match the power source pulse (PULS) mode setting.

Pulse Display (PULS) – Allows the preset weld parameter adjustment to be set as voltage or arc length. This setting affects only the display appearance and will not affect operation. The (PULS) setting should be set to match the power source display. When set to (VOLT), the preset voltage set point will be shown in the Left Display with the VOLTS INDICATOR illuminated. When set to (ARC.L), the preset arc length will be shown in the Left Display with the ARC LENGTH INDICATOR illuminated.

Trigger Program Select (T.PGM) – Enable (YES/NO) sets trigger program select. This is a global setting and sets one side left or right either YES “ON” or OFF “NO”. Setting this function allows changing programs when not welding by tapping the trigger.

☞ *Programs can only be selected if preflow is greater than .2 seconds.*

Trigger Schedule Select (SCHD) – Allows the operator to select the alternative schedule by quickly tapping the gun trigger when welding. When set to (OFF), trigger schedule select is disabled. When set to (TRIG), the schedule is selected by tapping the gun trigger when welding. The pulling and release of the gun trigger must happen within 0.2 seconds for the schedule to change. When set to (DSS), guns with a dual schedule switch are enabled. This selection is only allowed in PGM 1 or 3.

Profile Pulse Menu (PROF) – Allows Profile Pulse to appear in the Setup Menu. When set to (NO), (PROF) will not appear in the Setup Menu. When set to (YES), (PROF) will appear in the Setup Menu. Profile Pulse parameters cannot be adjusted when Parameter Lock is set to (ON).

Retract (RTRK) – Enables the retract function (YES/NO). Retract distance is set in menu setup 1. Setting is in inches of retract.

Menu Lock Code (CODE) – Allows setting a numerical password code to obstruct access to the Setup Menu Level 2. By default, (CODE) is (OFF) allowing access to the menu without entering a password. The password can be programmed to values between 0 and 999. Once programmed, the password must be re–entered each time the menu is accessed. A failed password attempt causes the display to momentarily show (DENY). (CODE) will continue to show on the display until the correct password is entered or the power is cycled.

☞ *Anytime the menu is exited with (CODE OFF), a special sequence is required before a new password can be set. With (CODE OFF) shown on the display, press and hold the SETUP button and rotate the RIGHT ADJUST KNOB to set the password to (0123). Release the SETUP button, the display should read (CODE 0000). The password can now be set to a new value.*

Weld Time – This setting displays weld time for each feeder side. You can scroll through the menu by rotating the right knob in the menu. Left side time, right side time then total time are displayed sequentially.

Weld Runs – This setting displays weld cycles for each feeder side. You can scroll through the menu by rotating the right knob in the menu. Left side cycles, right side cycles then total weld cycles are displayed sequentially.

Life Zero – This setting will erase left and right weld time and weld cycles. Total time and total cycles are not reset. Time reset is initialized by rotating the right knob which initiates a second counter. When “Life Done” is displayed you must exit the menu by pressing the setup button. The 5 second counter can be reset by rotating the right knob back before “Life Done” is displayed.

Power Source Menu (P.MEN) – This setting turns the power on power source menu “ON” or “OFF” at power up.

Product Version Information (INFO) – Provides information about the firmware revision levels for the Motor Control and the User Interface PCBs. The default value is (INFO NONE). To read the firmware versions rotate the Right Adjust Knob until the display reads (INFO MOTR) or (INFO FRNT). The corresponding firmware revision level will momentarily appear following a short delay.

7-3. Setting A Start Sequence In Synergic Pulse

To turn on a Start sequence, press the **START** button. The **START ON INDICATOR** will illuminate indicating Start is active.

To turn off the Start sequence, press the **START** button**.** The **START ON INDICATOR** will turn off indicating Start is inactive.

☞ *The factory default mode for Start is (AUTO). The (AUTO) setting has preset parameters. Start can also be set to (MAN) for manual settings. The Start mode can be changed in the* ***START MENU****.*

To enter the **START MENU** press and hold the **START** button until the **START MENU INDICATOR** illuminates.

Rotate the **LEFT ADJUST Knob** to select different menu items shown in the **LEFT DISPLAY**. Rotate the **RIGHT ADJUST Knob** to change menu item values shown in the **RIGHT DISPLAY**.

To exit the **START MENU,** press and release the **START** button.

Items that can be adjusted in this menu are:

Start Mode (STRT) – Sets the Start Mode to (AUTO or MAN). When the Start mode is set to (AUTO), factory default parameters are used. The (AUTO) parameter values appear in the menu but are not adjustable. When the Start Mode is set to (MAN), each of the parameters are adjustable.

Start Wire Feed Speed (WFS) – Sets the wire feed speed used during the Start Time. This setting is a percentage of the wire feed speed the unit is set to for welding. Range of this setting is from (X0.5 to X2.50). Example: If the weld wire feed speed is 200 and WFS is X1.50, the Start wire feed Speed is 300.

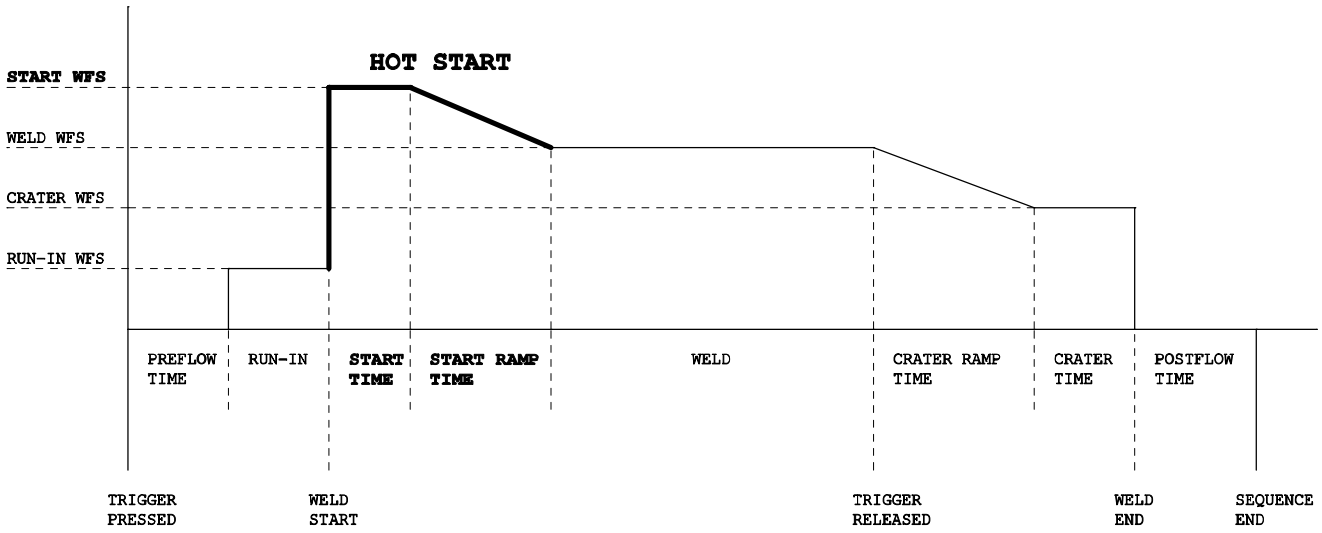
Start Arc Length (ARC.L) – Sets the arc length longer or shorter during the Start Time. This setting is a percentage of the arc length the unit is set to for welding. Range of this setting is from (X0.50 to X1.50). Example: If the weld arc length is set to 50 and ARC.L is X0.50, the Start Arc Length is 25.

☞ *When the PULS option in the* ***SETUP MENU LEVEL 2*** *is set to VOLT, the Start Arc length setting will be replaced by the Start Voltage (VOLT) setting.*

Start Voltage (VOLT) – Sets the voltage during the Start Time. Range of this setting varies with the selected wire and gas program in the PULSED MIG process. With the weld process set to PULSED MIG, the Start Voltage setting will change if the wire and gas program selection is changed.

Start Time (TIME) – The amount of time the wire feed speed is active at the Start setting. Range of this setting is from (0.1 to 0.5) seconds.

Start Ramp Time (RAMP) – The amount of time it takes to transition from the Start to the weld wire feed speed setting. Range of this setting is from (0.1 to 5.0) seconds.



7-4. Setting A Start Sequence In Non–Synergic Pulse Or MIG

To turn on a Start sequence, press the **START** button. The **START ON INDICATOR** will illuminate indicating Start is active.

To turn off the Start sequence, press the **START** button**.** The **START ON INDICATOR** will turn off indicating Start is inactive.

To enter the **START MENU** press and hold the **START** button until the **START MENU INDICATOR** illuminates.

Rotate the **LEFT ADJUST Knob** to select different menu items shown in the **LEFT DISPLAY**. Rotate the **RIGHT ADJUST Knob** to change menu item values shown in the **RIGHT DISPLAY**.

To exit the **START MENU,** press and release the **START** button.

Items that can be adjusted in this menu are:

Start Wire Feed Speed (WFS) – Sets the wire feed speed used during the Start Time. Range of this setting is from (70 to 780 IPM).

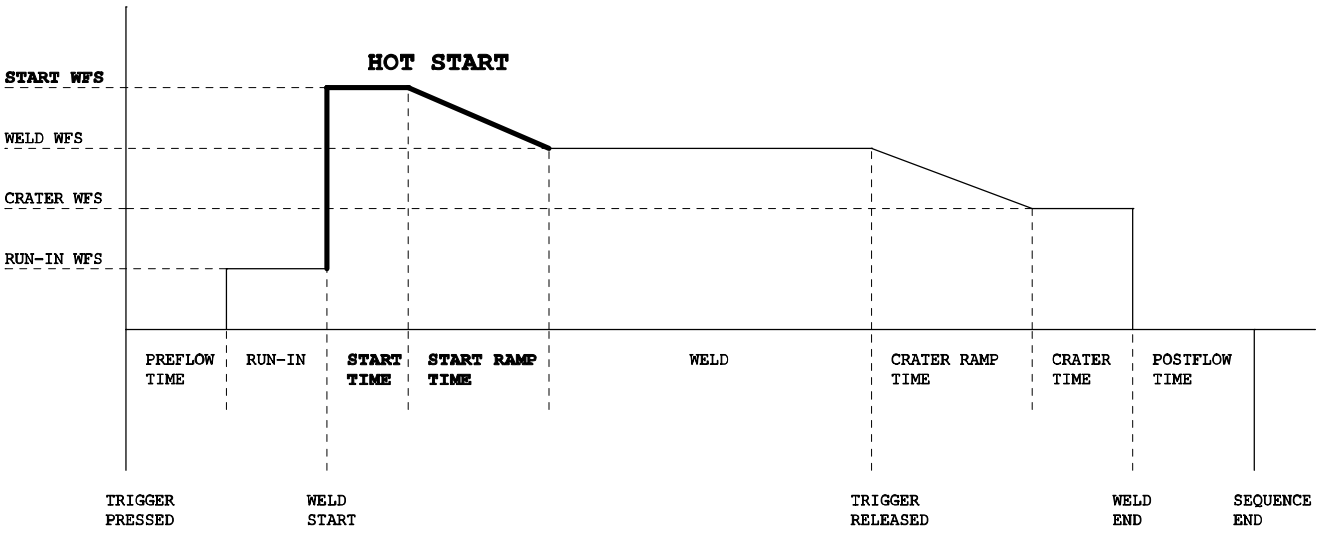
Start Arc Length (ARC.L) – Sets the arc length during the Start Time. Range of this setting is from (0.0 to 100.0) and the level is set to match start WFS.

☞ When MIG is selected in Setup Menu Level 1 the start arc length setting will be replaced by Start Voltage (VOLT).

Start Voltage (VOLT) – Sets the voltage during the Start Time. Range of this setting is dependent on the power source voltage range or voltage range of the selected pulse program.

Start Time (TIME) – The amount of time the wire feed speed is active at the Start setting. Range of this setting is from (0.1 to 0.5) seconds.

Start Ramp Time (RAMP) – The amount of time it takes to transition from the Start to the weld wire feed speed setting. Range of this setting is from (0.1 to 5.0) seconds.



7-5. Setting A Crater Fill Sequence In Synergic Pulse

To turn on Crater Fill, press the **CRATER** button. The **CRATER ON INDICATOR** will illuminate indicating Crater Fill is active.

To turn off Crater Fill, press the **CRATER** button. The **CRATER ON INDICATOR** will turn off indicating Crater Fill is inactive.

☞ *The factory default mode for Crater Fill is (AUTO). The (AUTO) setting has preset parameters. Crater Fill can also be set to (MAN) for manual settings. The Crater mode setting can be changed in the CRATER MENU.*

☞ *The Crater Tack Time (TACK) is adjustable in both AUTO and MAN modes.*

To enter the **CRATER MENU** press and hold the **CRATER** button until the **CRATER MENU INDICATOR** illuminates.

Rotate the **LEFT ADJUST Knob** to select different menu items shown in the **LEFT DISPLAY**. Rotate the **RIGHT ADJUST Knob** to change menu item values shown in the **RIGHT DISPLAY**.

To exit the **CRATER MENU** press and release the **CRATER** button.

Items that can be adjusted in this menu are:

Crater Mode (CRTR) – Sets the Crater mode to (AUTO or MAN). When the Crater mode is set to (AUTO), factory default parameters are used. The (AUTO) parameter values appear in the menu but are not adjustable. When the Crater mode is set to (MAN), each of the parameters are adjustable.

Crater Wire Feed Speed (WFS) – Sets the Crater Fill wire feed speed. This setting is a percentage of the wire feed speed the unit is set to for welding. Range of this setting is from (X0.30 to X1.00). Example: If the weld wire feed speed is 200 and WFS is X0.50, the Crater Wire Feed Speed is 100.

Crater Arc Length (ARC.L) – Sets the arc length longer or shorter during the Crater Fill Time. This setting is a percentage of the arc length the unit is set to for welding. Range of this setting is from (X0.50 to X1.50). Example: If the weld arc length is set to 50 and ARC.L is X0.50, the Crater Arc Length is 25.

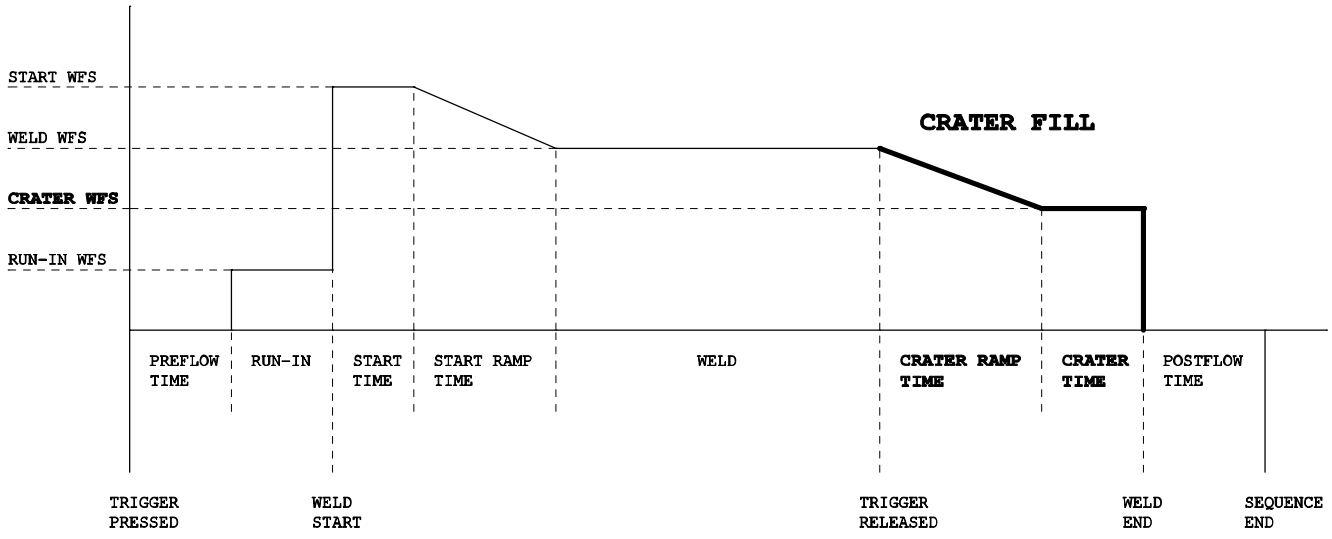
☞ *When the PULS option in the **SETUP MENU LEVEL 2** is set to VOLT, the Crater Arc Length setting will be replaced by the Crater Voltage (VOLT) setting.*

Crater Voltage (VOLT) – Sets the voltage during the Crater Fill time. Range of this setting is dependent on the power source in the MIG process, and varies with the selected wire and gas program in the PULSED MIG process. If the power source weld process is set to PULSED MIG, the Crater Voltage setting will change if the wire and gas program selection is changed.

Crater Ramp Time (RAMP) – The amount of time it takes to transition from the weld to the Crater wire feed speed setting. Range of this setting is from (0.1 to 5.0) seconds.

Crater Fill Time (TIME) – The amount of time the wire feed speed is active at the Crater setting. Range of this setting is from (0.1 to 5.0) seconds.

Crater Tack Time (TACK) – This setting is for tack welding without crater fill. The Crater fill will not be active if the arc time is less than the set time. Range of this setting is from (0.1 to 5.0) seconds.



7-6. Setting A Crater Fill Sequence In Non−Synergic Pulse Or MIG

To turn on Crater Fill, press the **CRATER** button. The **CRATER ON INDICATOR** will illuminate indicating Crater Fill is active.

To turn off Crater Fill, press the **CRATER** button. The **CRATER ON INDICATOR** will turn off indicating Crater Fill is inactive.

To enter the **CRATER MENU** press and hold the **CRATER** button until the **CRATER MENU INDICATOR** illuminates.

Rotate the **LEFT ADJUST Knob** to select different menu items shown in the **LEFT DISPLAY**. Rotate the **RIGHT ADJUST Knob** to change menu item values shown in the **RIGHT DISPLAY**.

To exit the **CRATER MENU** press and release the **CRATER** button.

Items that can be adjusted in this menu are:

Crater Wire Feed Speed (WFS) – Sets the Crater Fill wire feed speed.

Crater Arc Length (ARC.L) – Sets the arc length during the crater time. Range of this setting is from (0.0 to 100.0) and the level is set to match crater WFS.

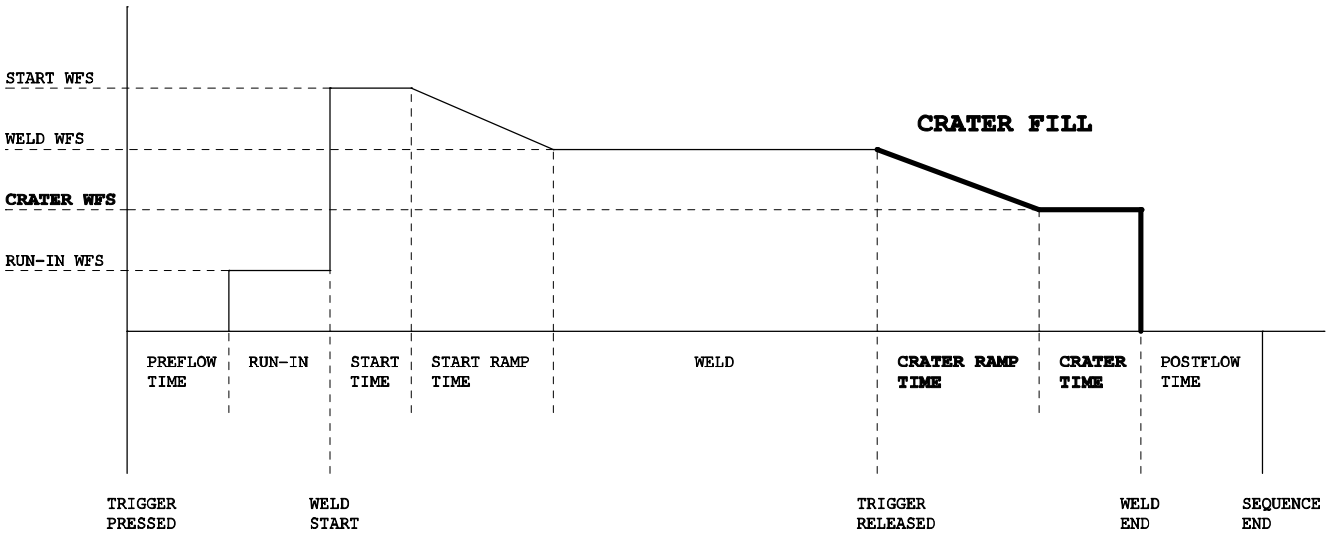
☞ *When MIG is selected in Setup Menu Level 1 the crater arc length setting will be replaced by Crater Voltage (VOLT).*

Crater Voltage (VOLT) – Sets the voltage during the Crater Fill time. Range of this setting is dependent on the power source or voltage range of selected power source.

Crater Ramp Time (RAMP) – The amount of time it takes to transition from the weld to the Crater wire feed speed setting. Range of this setting is from (0.1 to 5.0) seconds.

Crater Fill Time (TIME) – The amount of time the wire feed speed is active at the Crater setting. Range of this setting is from (0.1 to 5.0) seconds.

Crater Tack Time (TACK) – This setting is for tack welding without crater fill. The Crater fill will not be active if the arc time is less than the set time. Range of this setting is from (0.1 to 5.0) seconds.



7-7. Profile Pulse

Profile Pulse optimizes Aluminum weld bead appearance by producing welds with consistently spaced ripple patterns, similar to GTAW. This feature has been designed to operate in a Synergic Pulsed MIG system. The consistent ripple pattern is achieved by periodically changing both the wire feed speed and power level. The average wire feed speed is determined by the value the unit is set to for welding.

☞ *By default, Profile Pulse parameters are hidden from the Setup Menu. To view the parameters, the (PROF) setting in the Setup Menu Level 2 must be set to (YES). See section 7-2.*

Profile Pulse Items that can be adjusted in the Setup Menu are:

Profile Pulse ON/OFF (PROF) – Allows Profile Pulse to be turned on or off.

Profile Pulse Frequency (P.FRQ) – Sets the spacing between ripples in the weld bead. Range of this setting is from (0.1 to 5.0) pulses per second. See Figures 1 and 2 below.

Profile Pulse Wire Feed Speed Change (P.WFS) – Sets the percentage of change above and below the wire feed speed the unit is set to for welding. Range of this setting is (X0.00 to X0.30). Example: If the wire feed speed is 200 and (P.WFS) is set to (X0.10), the wire feed speed will alternate between 180 and 220 ipm.

Profile Pulse Arc Length (P.AL) – Sets an arc length correction factor for the lower wire feed speed. This setting is a percentage of the arc length the unit is set to for welding. Range of this setting is from (X0.5 to X1.5). Example: If the arc length for welding is set to 50 and (P.AL) is set to (X1.1), the arc length setting for the lower wire feed speed is 55.

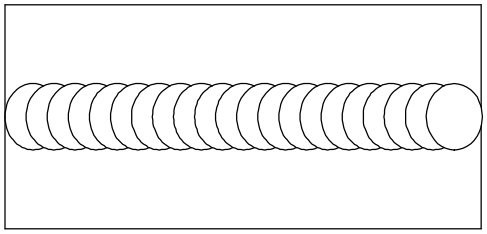


Figure 1
Constant travel speed with P.FRQ set to 0.1

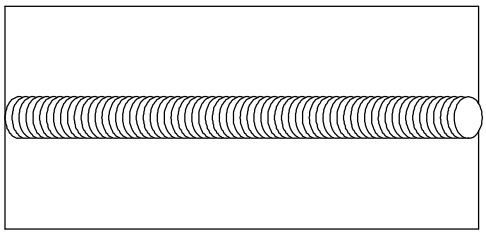


Figure 2
Constant travel speed with P.FRQ set to 5.0

7-8. Factory Reset Procedure

☞ *Start with the wire feeder on.*

1 Press and hold the Setup button until SET UP appears in display.
2 Rotate left Adjust knob until INFO NONE appears.
3 Press Setup button and hold again until FACTORY appears. The first menu is FACT DFLT. For AlumaFeed - turn left knob until FACT DFLT displays.
4 Turn the Adjust knob to the right one click, and a 5 second timer will start counting down in the right display.
5 After timer reaches zero, FACT DONE will appear.
6 Press and release Setup button one last time, and the front display will illuminate as if it were turned on. SET UP will be exited back to the normal voltage and wire feed speed display.

Reset is now complete.

1 14–Pin Plug PLG12

Provides 24 volts AC input power from welding power source, contactor control, voltage feedback, current feedback, wfs (wirefeed speed) feedback, and voltage control when used with a constant voltage (CV) welding power source.

2 Power Switch S1

Provides On/Off control of 24 volts AC to wire feeder.

3 Gun Trigger Receptacle RC21

Connect gun trigger circuit to wire feeder. Gun trigger circuit is isolated from the rest of the circuitry in the feeder.

4 Jog/Purge Switch S2

- Jog – Permits jogging of wire drive motors without energizing the weld circuit or gas valve.
- Purge – Energizes gas valves GS1 without energizing the weld circuit or wire drive motors.

5 Wire Drive Motor M1

Feeds wire at a speed set by wire speed control R1. Motor speed is regulated by motor board PC1.

6 Tachometer Pickup Board PC8

Converts motor RPM to a pulsed feedback signal used by motor board PC1 to regulate speed of wire drive motor M1. 60 pulses are generated for every revolution of drive motor armature.

7 Gas Valve GS1

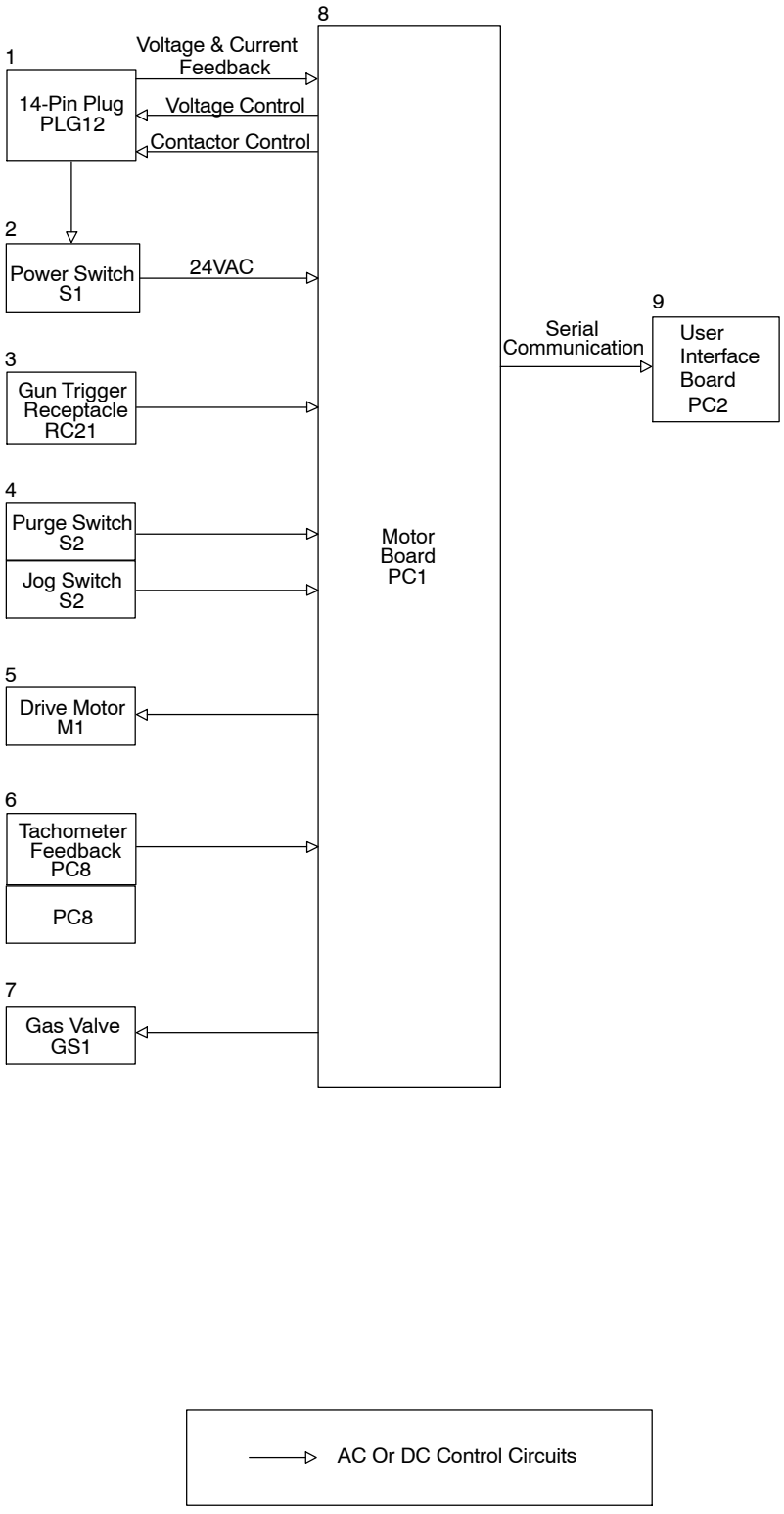
24 volt AC valve provides shielding gas during the weld cycle.

8 Motor Board PC1

- Controls wire speed by changing the pulse width modulation signal (wider or narrower pulses meaning more or less voltage to motor) after comparing motor speed feedback signals to wire speed command.
- Generates wfs command signal to send to power supply.
- Motor speed is regulated using the tachometer feedback signal.
- Energizes gas valve.
- Energizes contactor in welding power source.
- Uses current feedback from the welding power source, through the 14–pin plug PLG12, to switch feeder out of run–in. Run–in wire speed is a percentage of the weld wire feed speed.
- Converts voltage feedback signal, from welding power source through 14–pin plug PLG12, from an analog to digital signal to display on user interface board PC2.

9 User Interface Board PC2

Displays wire speed, arc voltage, and help messages. The analog signals, of wire speed and arc voltage, are converted to a digital signal by motor board PC1. Motor board PC1 communicates with digital meter board PC2 using serial communication.



SECTION 9 – TROUBLESHOOTING

9-1. Troubleshooting Table

Before connecting welding equipment to input (primary) power for servicing, be sure the input-power circuit protection is correct for the welding equipment. Connect equipment to a dedicated circuit sized and fused for the rated output and duty cycle of the welding equipment you are servicing. See the Electrical Service Guide section in this manual and National Electrical Code (NEC) article 630, Electric Welders.

☞ *Equipment serviced may need to meet additional requirements as specified in IEC60974-4, Arc Welding Equipment – Part 4: Periodic Inspection and Testing.*

☞ *See Section 9-2 for test points and values, and Section NO TAG and following for parts location.*

☞ *Use Miller Testing Booklet (Part No. 150 853) when servicing this unit.*

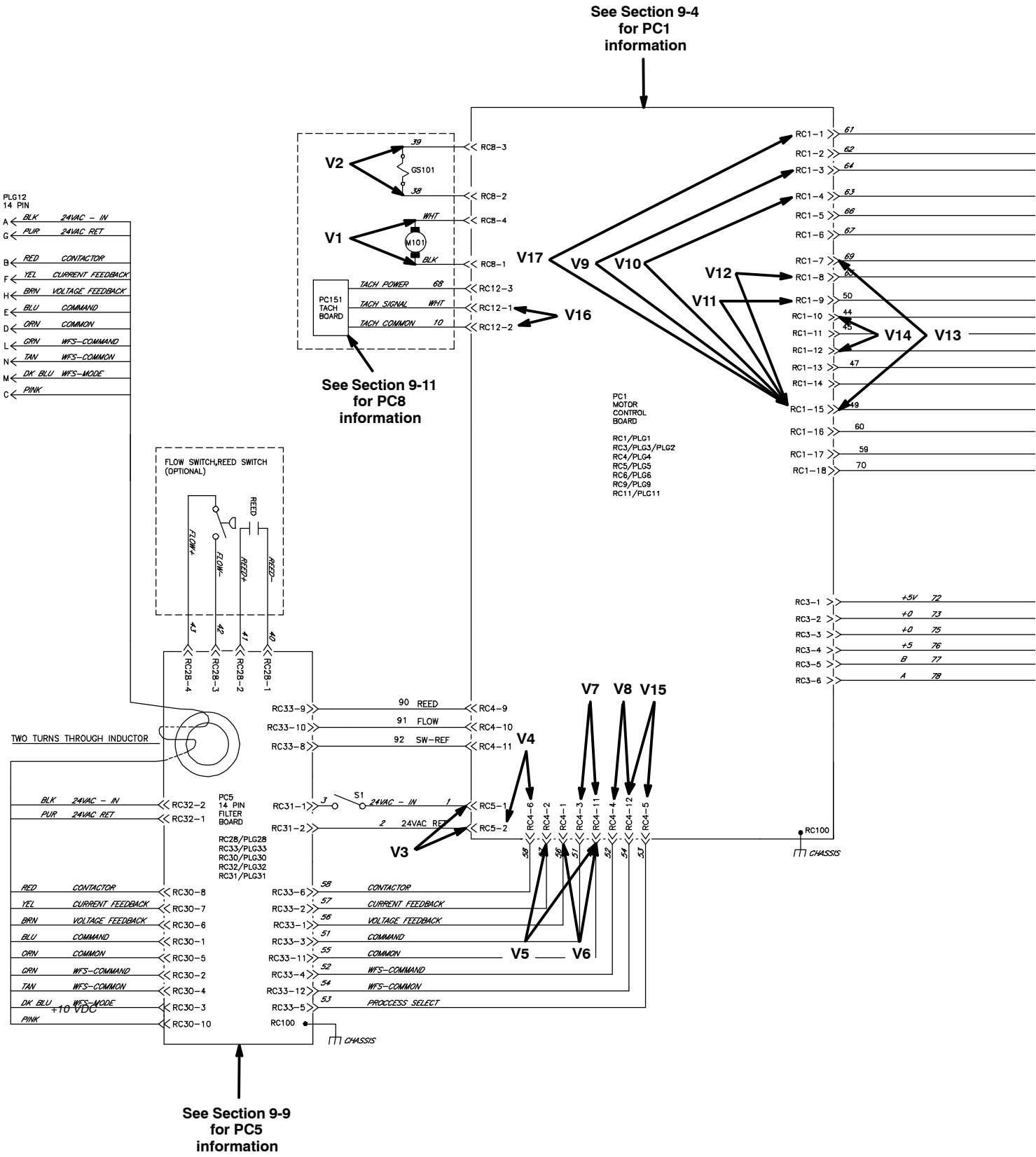
☞ *See the Miller Extranet for service memos that may aid in the repair of this product.*

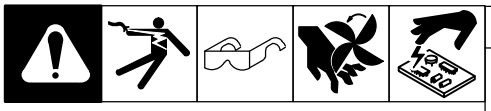
Trouble	Remedy
Unit completely inoperative.	Check circuit breaker on welding power source.
	Check circuit breaker on wire feeder.
	Check 14-pin plug and cord connections to welding power source; check welding power source.
	Check continuity of Power switch S1, and replace if necessary.
	Check 14-pin filter board and connections, and replace if necessary (see Section 9-10).
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Motor does not run while pressing either gun trigger.	Check continuity of gun trigger switch and leads. Repair or replace welding gun. See gun Owner's Manual.
	Check trigger filter board PC8 RC18, and replace if necessary (see Section 9-11).
	Check motor board PC1 RC8 and RC, and replace if necessary (see Section 9-4).
Motor does not run when Jog switch is pressed.	Check continuity of Jog switch, and replace if necessary.
	Check trigger filter board PC8 RC18 & RC19, and replace if necessary (see Section 9-11).
	Check motor board PC1 RC1 & RC9, and replace if necessary (see Section 9-4).
Motor runs slowly.	Check for correct line voltage.
	Check push-pull gun WFS potentiometer and control cable, and replace if necessary (see push-pull gun technical manual).
	Check functionality of the encoders on the display board, and replace if necessary (if the encoders can navigate the setup menus they are functioning properly).
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Motor coasts after releasing gun trigger.	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Motor runs at high speed or wide open regardless of wire speed control setting.	Check push-pull gun WFS potentiometer and control cable, and replace if necessary (see push-pull gun technical manual).
	Check tachometer board PC51 for correct feedback, and replace if necessary (see Section 9-13).
	Check trigger filter board PC8 RC18, and replace if necessary (see Section 9-11).
	Check functionality of the encoders on the display board, and replace if necessary (if the encoders can navigate the setup menus they are functioning properly).
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Gun does not seat correctly.	Check to see if gun has groove for Accu-mate connection (see section 4-6).
	Inspect gun power pin for damage, and replace if necessary.

Trouble	Remedy
Wire does not feed. Electrode wire is energized, and shielding gas flows.	Check settings for preflow, run-in, and start parameters, and adjust if necessary (See sections 7-1 & 7-3).
	Check drive roll tension, and adjust if necessary (see Section 4-7).
	Contact tip or liner too small for wire being used. Welding wire has pinned to the tip of the gun. Inspect and replace if necessary.
	Remove weld spatter ball or wire piece in drive roll gears (gears jammed).
	Check wire drive motor M1, and replace if necessary.
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Excessive wire shaving at push-pull.	Check tension settings (see section 4-7).
	Check tension settings in push-pull gun (refer to push-pull gun manual).
	Verify pressure blocking clips are in correct position (see section 4-6).
	Verify that nylon guides are used with aluminum wire.
Wire feeds erratically or stops while welding.	Check gun trigger connection.
	Check continuity of gun trigger switch and leads. Repair or replace welding gun. See gun Owner's Manual.
	Clean or replace dirty or worn drive rolls (see Section 10).
	Clean or replace dirty or worn drive rolls in push-pull gun (refer to push-pull gun manual).
	Change to correct size and type drive roll (see Section 4-7).
	Readjust drive roll pressure (see Section 4-7).
	Readjust hub tension (see Section 4-7).
	Check wire drive motor brushes.
	Check alignment of encoder disc on tachometer board PC51 (see Section 9-13).
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Limited wire speed control.	Check push-pull gun wire speed potentiometer and control cable, and replace if necessary.
	Check trigger filter board PC8 RC18, and replace if necessary (see Section 9-11).
	Check tachometer board PC51 for correct feedback, and replace if necessary (see Section 9-13).
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Wire Feed Speed Meter display does not match actual wire feed speed.	Verify correct power source has been selected (see section 5-11).
	Clean and check alignment of encoder disc on tachometer board PC51 (see Section 9-13).
	Check tachometer board PC51 and connections, and replace if necessary (see Section 9-13).
Electrode wire is not energized, but wire feeds and shielding gas flows.	Check extension cord and 14 pin plug connections. If secure, check cord for continuity and repair or replace if necessary.
	Check 14-pin filter board and connections, and replace if necessary (see Section 9-10).
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
	See Troubleshooting Section in welding power source Technical Manual.
Unit does not switch out of Run-In Speed.	Check extension cord and 14-pin plug connections. If secure, check cord for continuity and repair or replace if necessary.
	Check 14-pin filter board and connections, and replace if necessary (see Section 9-10).
Shielding gas does not flow when Purge switch is pressed.	Clean filter screen in valve.
	Check continuity of Purge switch S2, and replace if necessary.
	Clear blockage in welding gun.

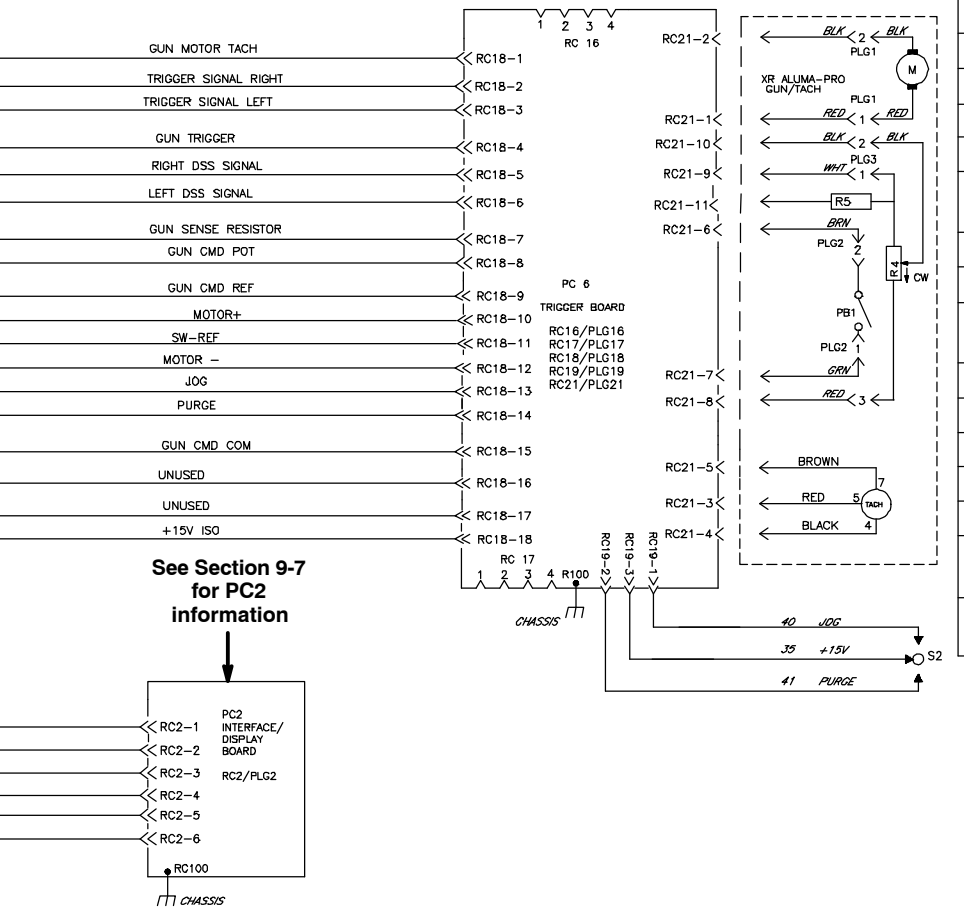
Trouble	Remedy
	Clear blockage in gas hose or replace hose.
	Check coil voltage and connections of gas valve GS1. Check continuity of coil. Replace GS1 if necessary.
	Check trigger filter board PC8 and connections, and replace if necessary (see Section 9-11).
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
Shielding gas flow is irregular, but wire feeds and electrode wire is energized.	Check coil voltage and connections of gas valve GS1. Check continuity of coil. Replace GS1 if necessary.
	Clean filter screen in valve.
	Clear blockage in gas hose or replace hose.
	Clear blockage in welding gun. See gun Owner's Manual.
Welding arc is too cold regardless of voltage control preset.	Check extension cord and 14 pin plug connections. If secure, check cord for continuity and repair or replace if necessary.
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
	Check 14-pin filter board and connections, and replace if necessary (see Section 9-10).
Welding arc is too hot regardless of voltage control preset; power source works with it's panel setting.	Check extension cord and 14-pin plug connections. If secure, check cord for continuity and repair or replace if necessary.
	Check motor board PC1 and connections, and replace if necessary (see Section 9-4).
	Check 14-pin filter board and connections, and replace if necessary (see Section 9-10).

9-2. Troubleshooting Circuit Diagram For S-74 MPa Plus

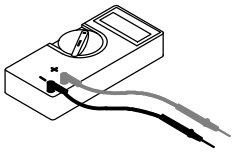


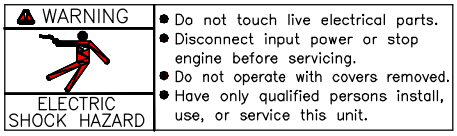


Voltage Readings	
a) Tolerance – ±10% unless specified	
b) Reference – DC Voltage to RC3-3 (Unless noted)	
c) Reference – AC Voltage to RC5-2 (Unless noted)	
V1	+2 to +24 volts DC when triggered or jogged
V2	+24 volts AC when triggered or purged
V3	+24 volts AC - IN
V4	+24 volts AC contactor
V5	+1 volt/100 amps current feedback
V6	+1 volt/+10 volts DC voltage feedback
V7	0 to +10 volts DC command voltage/arc length
V8	0 to +10 volts DC wirefeed speed command
V9	+15 volts DC when triggered
V10	+15 volts DC when AlumaPro Plus gun is triggered
V11	+5 volts DC gun command reference
V12	0 to +5 volts DC gun command pot
V13	+1.8 volts DC gun sense AlumaPro Plus
V14	+2 to +22 volts DC push-pull motor voltage
V15	+3.5 VDC in MIG mode, +2.5 VDC in Pulse
V16	+1.5 VDC or +7.2 VDC at rest, +3.4–4 VDC when running
V17	+0.35 VDC or +3 VDC at rest, +1.6 VDC when running



Test Equipment Needed:





244221-G

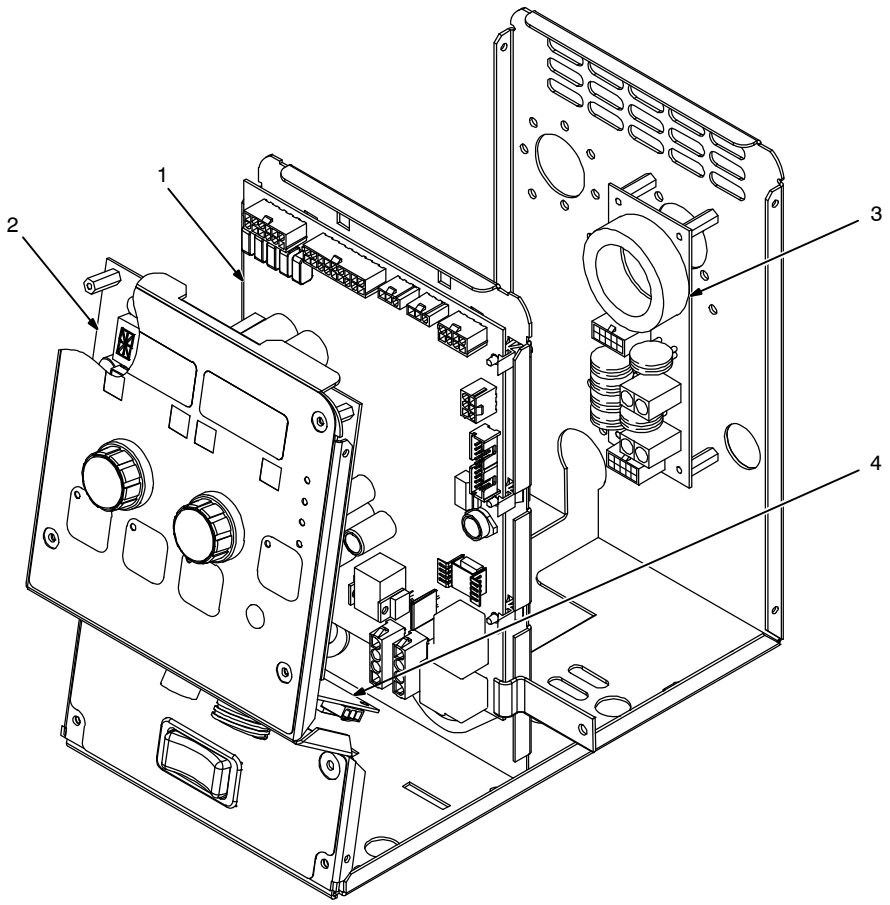
9-3. Location Of Circuit Boards

1 Motor Board PC1
(See Section 9-4)

2 User Interface Board PC2
(See Section 9-7)

3 14 Pin Filter Board PC5
(See Section 9-9)

4 Trigger Filter Board PC8
(See Section 9-11)



246 913-C

Notes

MATERIAL THICKNESS REFERENCE CHART

24 Gauge (.025 in.)

22 Gauge (.031 in.)

20 Gauge (.037 in.)

18 Gauge (.050 in.)

16 Gauge (.063 in.)

14 Gauge (.078 in.)

1/8 in. (.125 in.)

3/16 in. (.188 in.)

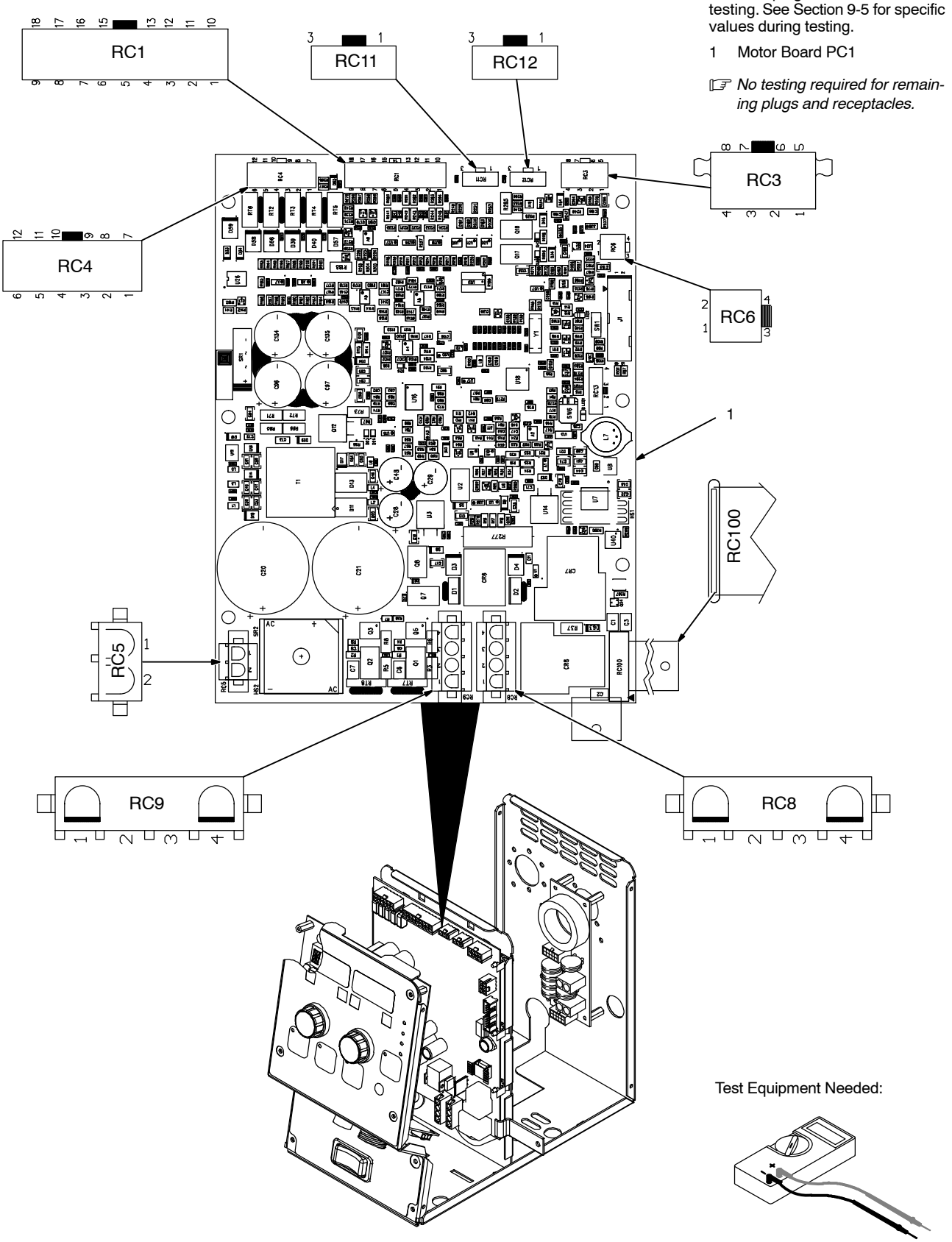
1/4 in. (.25 in.)

5/16 in. (.313 in.)

3/8 in. (.375 in.)

1/2 in. (.5 in.)

9-4. Motor Board PC1 Testing Information

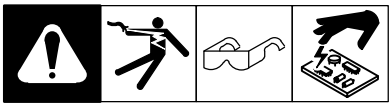


Be sure plugs are secure before testing. See Section 9-5 for specific values during testing.

1 Motor Board PC1

☞ *No testing required for remaining plugs and receptacles.*

9-5. Motor Board PC1 Test Point Values



PC1 Voltage Readings

a) Tolerance – ±10% unless specified

b) Triggered – means gun trigger is pressed

c) Reference –
Reference RC5–2 for AC circuit common – unless noted otherwise
Reference RC3–3 for DC circuit common – unless noted otherwise

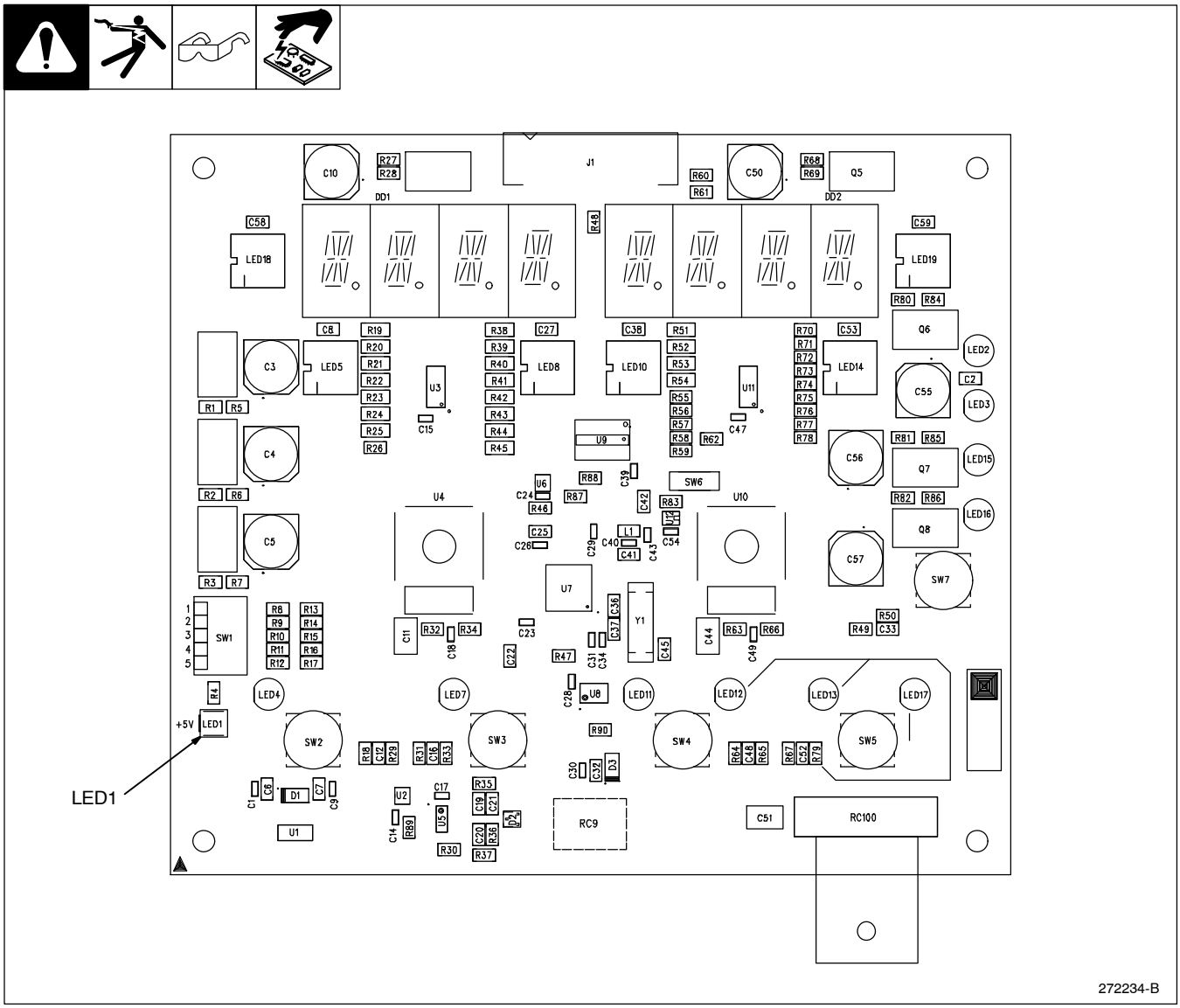
d) 15 VDC measurements will be closer to 14 V

e) Gun motor tach measure RC1–1 to –16, turn drive roll on gun, should vary between 0 and 5 VDC

Receptacle	Pin	Value
RC1	1	Gun motor tach 3.3kHz to 42kHz or 1.6 Volts DC when running
	2	Not used
	3	Trigger signal 0 volts DC/15 volts DC when triggered
	4	Trigger signal AlumaPro+ 0 volts DC/15 volts DC when triggered
	5	Not used
	6	Not used
	7	Gun sense 2.7 volts for AlumaPro Plus reference to RC1–15
	8	Gun command potentiometer 0 – 5 volts DC reference to RC1–15
	9	Gun command reference 5 volts DC reference to RC1–15
	10	Gun motor + 0–24 volts DC reference to RC1–12
	11	SW–Ref
	12	Gun motor – referenced to RC1–10
	13	Jog 0 volts DC/15 volts DC when jogged
	14	Purge 0 volts DC/15 volts DC when purged
	15	Gun command common
	16	ISO common
	17	ISO sw–out
	18	15 volts ISO
RC3	1	5 volts DC reference to DGND
	2	DGND
	3	DGND
	4	5 volts DC reference to DGND
	5	B serial communication
	6	A serial communication
	7	15 volts DC referenced to DGND
	8	24 volts DC referenced to DGND
RC4	1	Voltage Feedback 1 V/10 V reference to RC4–11
	2	Current Feedback 1 V/100 A reference to RC4–11
	3	Command voltage/arc length 0–10 volts DC reference to RC4–11
	4	Wire feed speed command 0–10 volts DC reference to RC4–12
	5	Process Select CC/CV select 3.5 volts DC in MIG, 2.5 volts DC in pulse referenced to RC4–12
	6	Contactor 24 volts AC reference RC5–2

Receptacle	Pin	Value
RC4	7	Not used
	8	SW−Reed 15 volts DC
	9	Reed switch 0 volts DC/15 volts DC
	10	Flow switch 0 volts DC/15 volts DC
	11	14 Pin D common
	12	14 Pin N common
RC5	1	24 volts AC − in 14 Pin A reference to RC5−2
	2	24 volts AC Circuit Common 14 Pin G
RC6	1	5 volts DC reference to RC6−4 DGND
	2	USB DP
	3	USB DM
	4	DGND
RC8	1	Motor common
	2	Gas valve common
	3	Gas Valve 0 volts AC/24 volts AC when purged/triggered reference to RC8−2
	4	Motor + 2 volts DC to 24 volts DC reference to RC8−1
RC9	1	Not used
	2	Not used
	3	Not used
	4	Not used
RC11	1	Not used
	2	Common
	3	+15 volts DC
RC12	1	Tach signal 60 pulses per 1 RPM of motor 183Hz to 2.5kHz or 4 to 3.4 volts DC when running
	2	Tach common
	3	Tach power +15 volts DC
RC100	1	Chassis ground
☞ *No testing required for remaining plugs and receptacles.*		

9-6. Diagnostic LED's On User Interface Board PC2

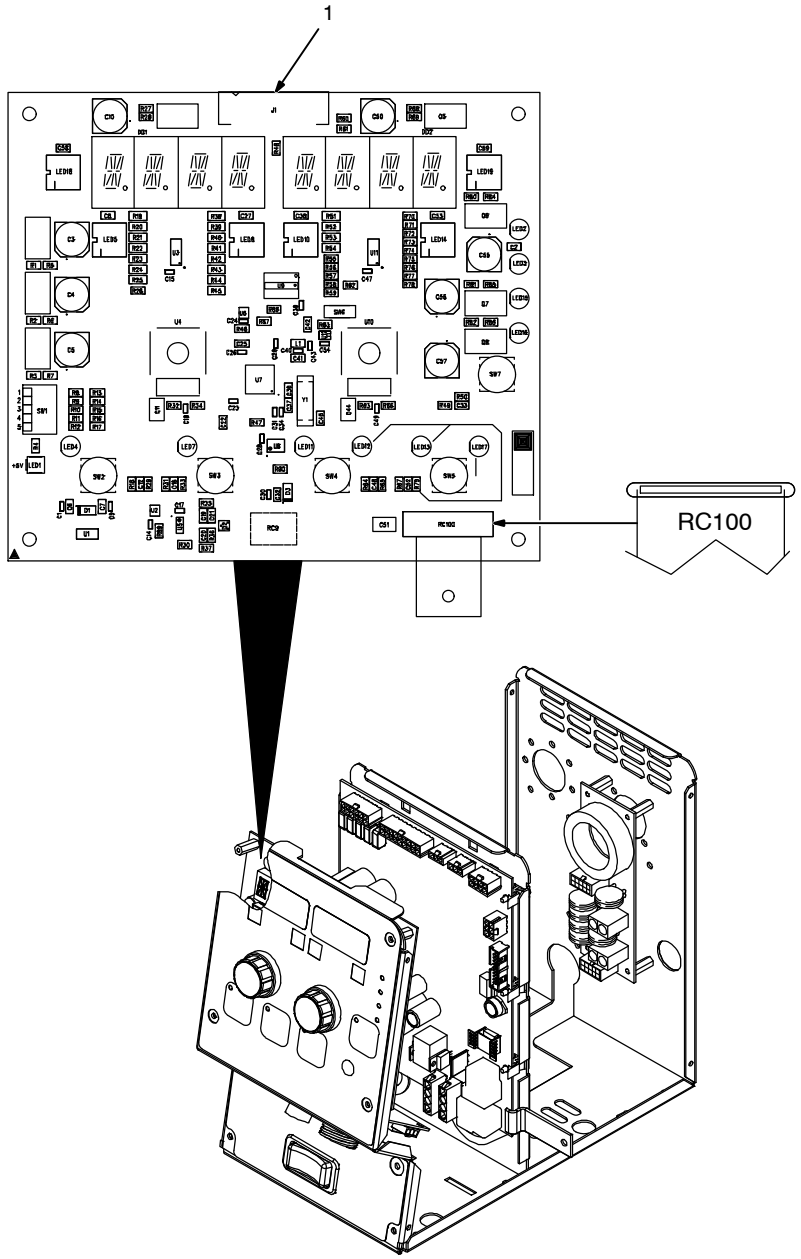


LED	Status	Self-Test
1	On	Indicates +15 volts DC present on motor board PC1 with respect to DC circuit common.
	Off	If LED1 and LED2 are on – power supply circuits on motor board are working properly. If LED1 and LED2 are off – Check power coming into motor board, and/or replace motor board. If LED1 or LED2 is off – Replace motor board.

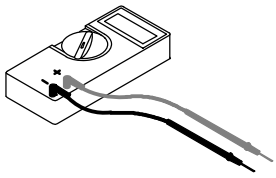
9-7. User Interface Board PC2 Testing Information

Be sure plugs are secure before testing. See Section 9-8 for specific values during testing.

1 User Interface Board PC2

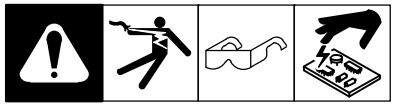


Test Equipment Needed:



246913-C / 272234-B

9-8. User Interface Board PC2 Test Point Values



PC2 Voltage Readings **a) Tolerance – ±10% unless specified**

Receptacle	Pin	Value
RC9–1	1	5 volts DC
	2	DGND
	3	DGND
	4	5 volts DC
	5	B serial comm
	6	A serial comm

Notes

MATERIAL THICKNESS REFERENCE CHART

24 Gauge (.025 in.)

22 Gauge (.031 in.)

20 Gauge (.037 in.)

18 Gauge (.050 in.)

16 Gauge (.063 in.)

14 Gauge (.078 in.)

1/8 in. (.125 in.)

3/16 in. (.188 in.)

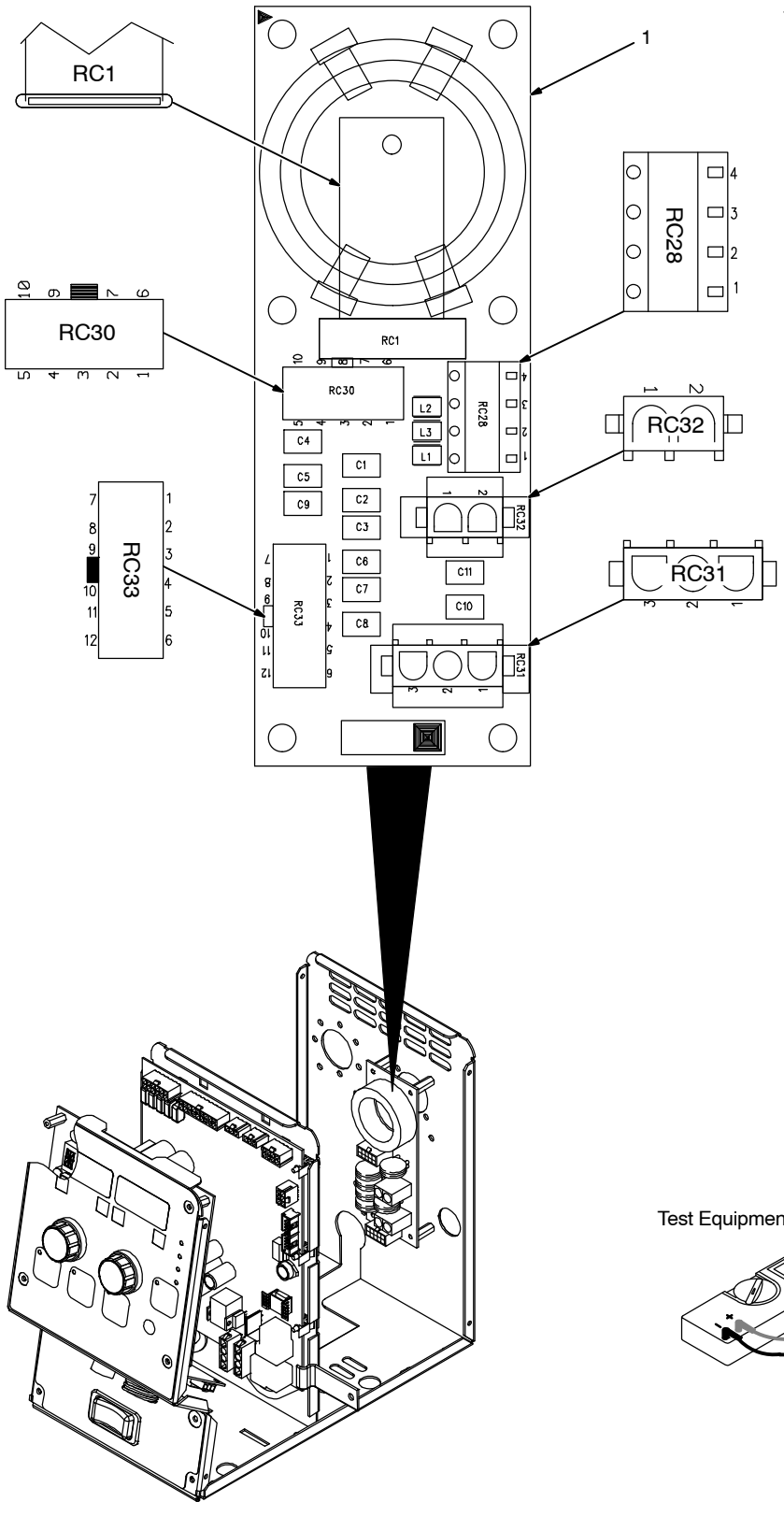
1/4 in. (.25 in.)

5/16 in. (.313 in.)

3/8 in. (.375 in.)

1/2 in. (.5 in.)

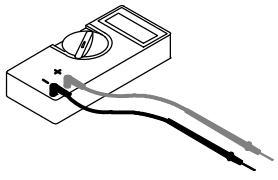
9-9. 14 Pin Filter Board PC5 Testing Information



Be sure plugs are secure before testing. See Section 9-10 for specific values during testing.

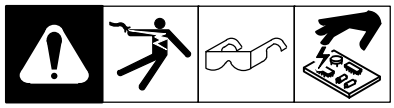
1 14 Pin Filter Board PC5

Test Equipment Needed:



246913-C / 244201-D

9-10. 14 Pin Filter Board PC5 Test Point Values



PC5 Voltage Readings

a) Tolerance – ±10% unless specified

b) Triggered – means when gun trigger is pressed

c) Reference RC5–2 for AC Circuit Common – unless noted otherwise
Reference RC3–3 for DC Circuit Common – unless noted otherwise

d) Note – 15 VDC measurements will be closer to 14 V

e) Process Select voltage measurement use PC1 RC4–5 to RC4–11

Receptacle	Pin	Value
RC1	1	Chassis ground
RC28	1	Reed –
	2	Reed +
	3	Flow –
	4	Flow +
RC30	1	14 Pin E Command 0–10 volts DC reference to RC30–5
	2	14 pin L wire feed speed command 0–10 volts DC reference to RC30–4
	3	14 Pin M wire feed speed mode (Process Select) 3.5 volts DC in MIG, 2.5 volts DC in pulse reference to RC30–4
	4	14 Pin N wire feed speed common
	5	14 pin D Power Source Common
	6	14 pin H Voltage Feedback 1V/10V reference to RC30–5
	7	14 pin F Current Feedback 1V/100A reference to RC30–5
	8	14 pin B Contactor 24 volts AC reference RC32–2
	9	Not used
	10	14 Pin C 10 volts DC reference to 14 pin D
RC31	1	14 Pin A 24 volts AC reference to RC31–2
	2	14 Pin G 24 volts AC Circuit Common
	3	Not used
RC32	1	24 volts AC In 14 Pin A reference to RC32–2
	2	24 volts AC Circuit Common 14 Pin G
RC33	1	Voltage Feedback 1V/10V
	2	Current Feedback 1V/100A
	3	Command
	4	Wire feed speed command 0–10 volts DC reference to RC30–5
	5	Process Select Mig 3.5 volts Pulse 2.5 volts
	6	Contactor 24 VAC reference RC31–2
	7	Not used
	8	Reed & Flow common
	9	Reed
	10	Flow
	11	Common
	12	Wire feed speed common

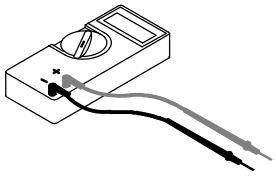
9-11. Trigger Filter Board PC6 Testing Information

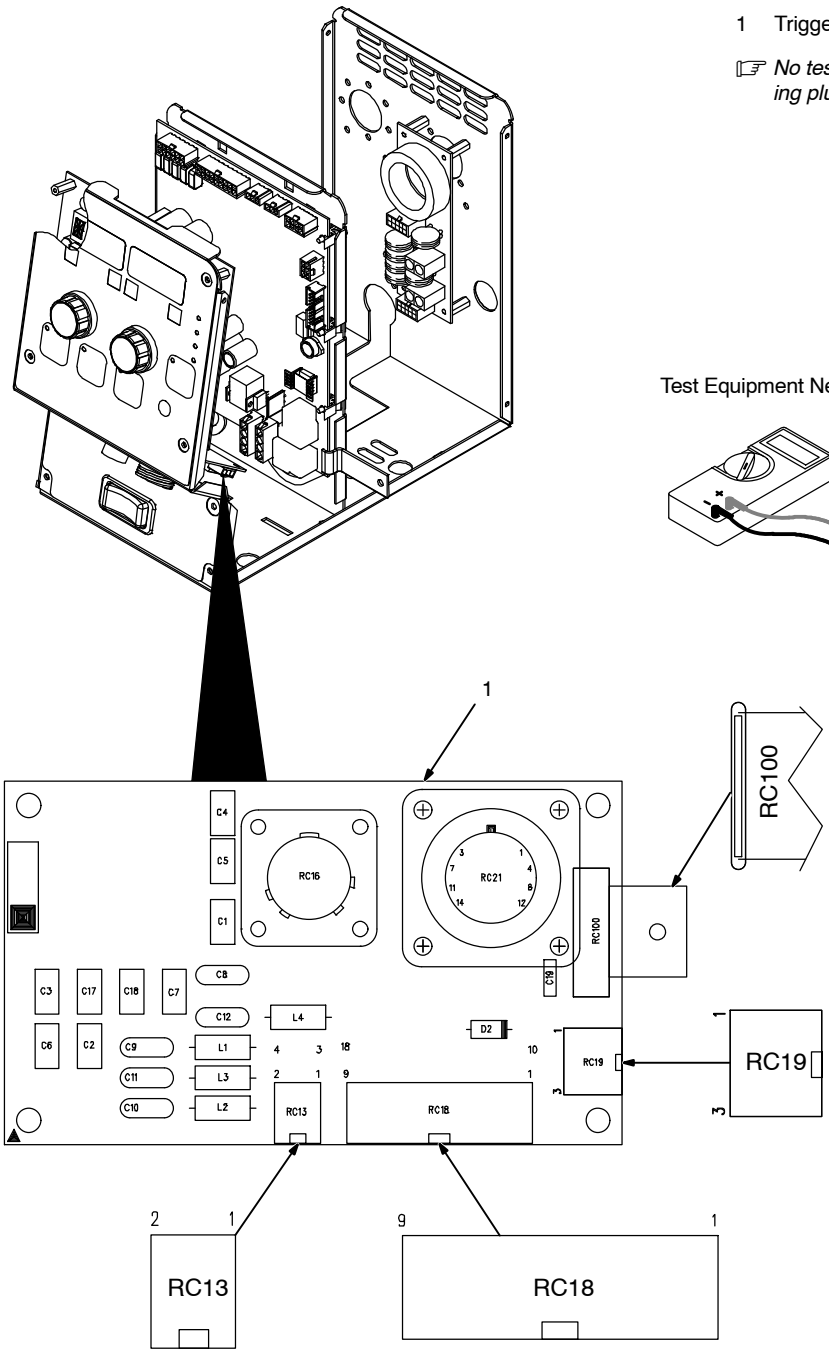
Be sure plugs are secure before testing. See Section 9-12 for specific values during testing.

1 Trigger Filter Board PC6

☞ *No testing required for remaining plugs and receptacles.*

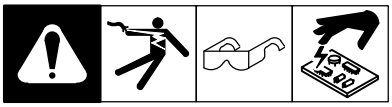
Test Equipment Needed:





246913-C / 244208-G

9-12. Trigger Filter Board PC6 Test Point Values



PC6 Voltage Readings

a) **Tolerance – ±10% unless specified**

b) **Triggered – means when gun trigger is pressed**

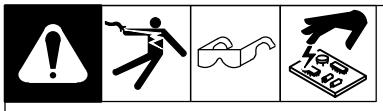
c) **Reference RC5–2 for AC Circuit Common Reference RC3–3 for DC Circuit Common – unless noted otherwise**

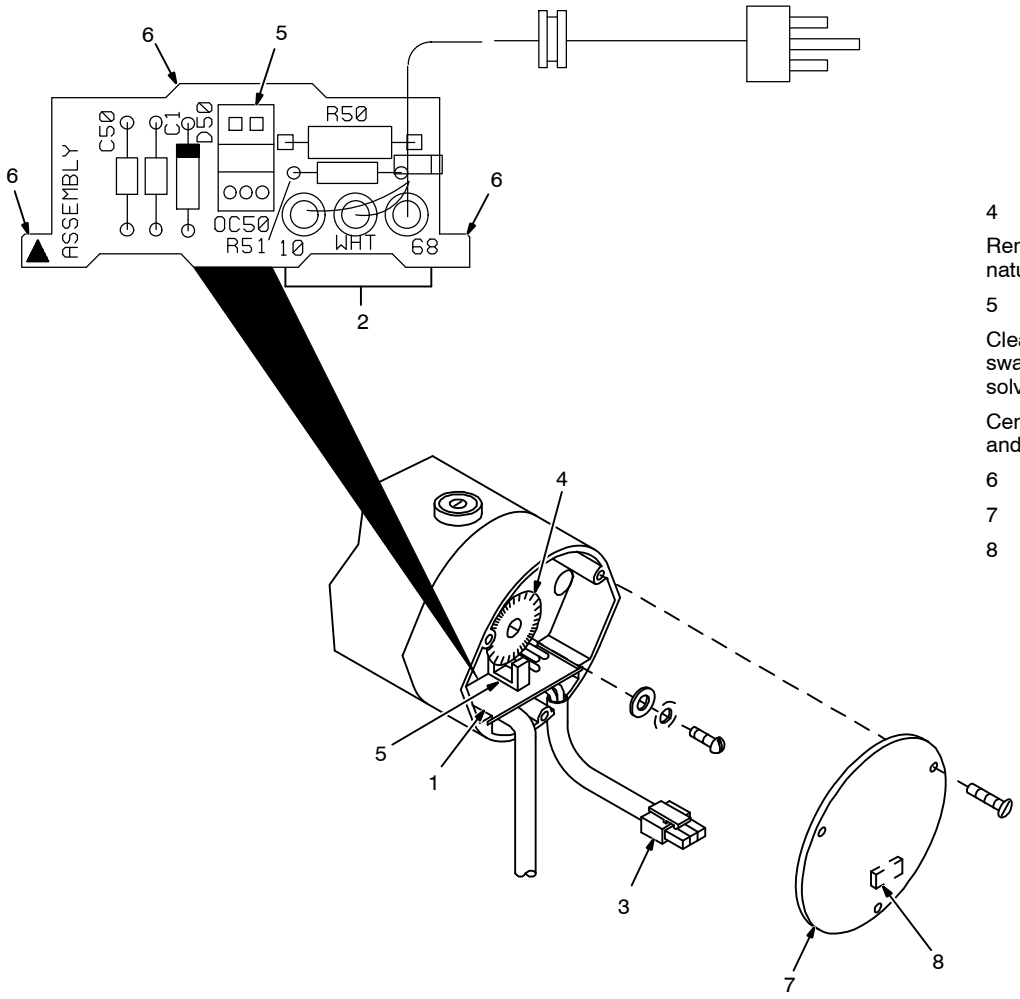
d) **Note – 15 VDC measurements will be closer to 14 V**

Receptacle	Pin	Value
RC13	1	ISO SW OUT +15 volts DC
	2	Push gun 15 volts DC when triggered
	3	Not used
	4	ISO SW OUT +15 volts DC
RC16	1	ISO SW OUT +15 volts DC
	2	Push gun trigger 0 volts DC/15 volts DC when triggered
	3	Not used
	4	ISO SW OUT +15 volts DC
RC18	1	Gun motor tach 3.3 kHz to 42 kHz or 1.6 volts DC when running reference to RC8–15
	2	Not used
	3	Left trigger signal 0 volts DC/15 volts DC when triggered
	4	Trigger signal AlumaPro+0 volts DC/15 volts DC when triggered
	5	Not used
	6	Left DSS Signal
	7	Gun sense 2.7V for AlumaPro Plus reference to RC18–15
	8	Gun command pot 0 – 5 volts DC reference to RC8–15
	9	Gun command reference +5 volts DC reference to RC8–15
	10	Gun motor 0–24 volts DC reference to RC18–12
	11	SW OUT +15 volts DC
	12	Gun motor +24 volts DC
	13	Jog 0 volts DC/15 volts DC when jogged
	14	Purge 0 volts DC/15 volts DC when purged
	15	Gun command common
	16	RS485A
	17	RS485B
	18	ISO SW OUT +15 volts DC
RC19	1	Jog 0 volts DC/15 volts DC when jogged
	2	Purge 0 volts DC/15 volts DC when purged
	3	SW OUT +15 volts DC

Receptacle	Pin	Value
RC21	1	Gun motor 0–24 volts DC reference to RC21–2
	2	Gun motor 24 volts DC
	3	Gun motor tach reference +5 volts DC
	4	Gun motor tach common
	5	Gun motor tach 0 or 5 volts DC (PC1 motor control board RC1–1 to RC1–16)
	6	Push-pull gun trigger +15 volts DC
	7	Push-pull gun trigger 15 volts DC when push-pull gun is triggered
	8	Gun command reference +5 volts DC
	9	Gun command common
	10	Gun command pot 0 – 5 volts DC reference to RC21–8
	11	Gun sense 2.7V for AlumaPro Plus reference to RC21–14
	12	RS485A
	13	RS485B
	14	Gun command common
RC100	1	Chassis ground
☞ *No testing required for remaining plugs and receptacles.*		

9-13. Tachometer Board PC51 Testing Information





Be sure plugs are secure before testing.

1 Tachometer Board PC51

2 Lead Connections To Plug PLG5

3 Plug PLG5

Pin 1 – Tachometer feedback signal; with reference to circuit common (pin 2). When motor is running; frequency of pulses is proportional to motor rpm.

Pin 2 – Circuit common

Pin 3 – +15 volts DC input

4 Encoder Disk

Remove disk, and clean using denatured solvent.

5 Optical Coupler OC50

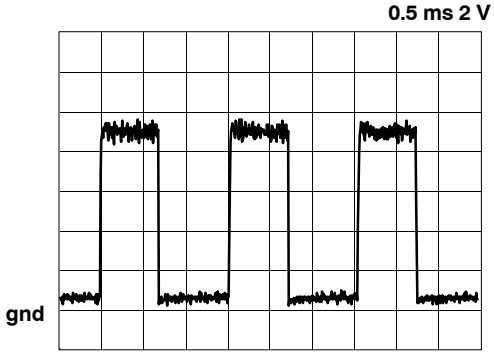
Clean inside surface with cotton swab dipped in denatured alcohol solvent.

Center encoder disk inside OC50, and secure with hardware.

6 Circuit Board Retaining Tabs

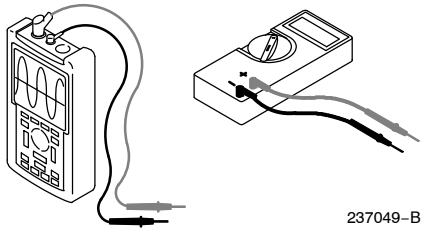
7 Motor End Cap

8 Weather Stripping On Inside Of Cover



Pulse Output At 200 IPM;
Scope On Pin 1 And Pin 2 (Circuit Common);
Frequency (Not Voltage) Changes

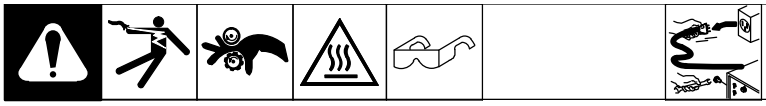
Test Equipment Needed:



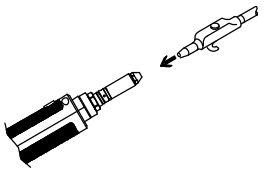
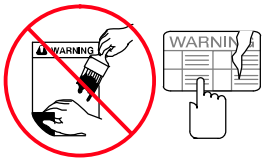
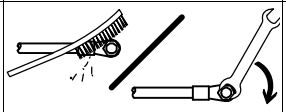
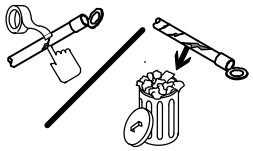
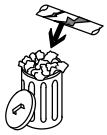
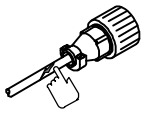
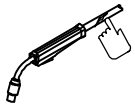
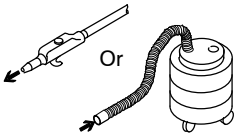
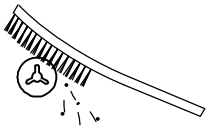
Tools Needed:

237049–B / 153632-D / Ref. 137394

SECTION 10 – MAINTENANCE



Disconnect power before maintaining.

	✓ = Check ● = Clean ☆ = Replace				
Every Spool of Wire or Wire Change	 ✓● Gun Liner				
Every 3 Months	 ☆ Unreadable Labels	 ● Weld Terminals	 ✓☆ Weld Cable	 ☆ Cracked Parts	
	 ✓ 14-Pin Cord	 ✓ Gas Hose and Fittings	 ✓ Gun Cable		
Every 6 Months	 ● Inside Unit	 ● Drive Rolls			

10-1. Diagnostics

The following error messages are shown on the upper and lower displays to indicate specific errors. Explanations are in the text below:

TRIG	**ERR**	Indicates a trigger error. A trigger error occurs if the user has the trigger held for more than two minutes without striking an arc. This error also occurs if the trigger is held when the feeder is powered up. The error may be cleared by releasing the trigger.
JOG	**ERR**	Indicates a jog switch error. A jog switch error occurs if the user has the jog switch held for more than two minutes. This error also occurs if the jog switch is held when the feeder is powered up. The error may be cleared by releasing the jog switch.
PURG	**ERR**	Indicates a purge switch error. A purge switch error occurs if the user has the purge switch held for more than one minute. This error also occurs if the purge switch is held when the feeder is powered up. The error may be cleared by releasing the purge switch.
COOL	**ERR**	Indicates a water flow switch error. A water flow switch error occurs if no water flow is detected while the trigger is pressed. Jog and purge switches will behave normally even if no water flow is detected. Dip switch 2 on the motor control pcb must be set to enable this error. The error is cleared when water flow is detected or when the error is disabled.
TEST	**ERR.1 or ERR.2**	TEST ERR.1 Indicated a button is stuck on the Display/Interface board PC 2. Release button to clear issue or inspect and replace PC2. TEST ERR.2 Indicates wirefeeder boards are not receiving enough power. Check 24 VAC power on PC1, check DC supply voltages on PC1.
COMM	**ERR**	Indicates a serial communication error. A communication error occurs 2 seconds after a loss of communication between the motor control pcb and the front panel pcb.
1234	**ERR.M**	Indicates a motor control pcb error. If this error occurs, replace Motor Control Board PC1.
1234	**ERR.F**	Indicates a front panel pcb error. If this error occurs, replace Interface/Display board PC2.
R.Tac	**ERR**	Indicates the right push motor tachometer circuit has an error.
L.Tac	**ERR**	Indicates the left push motor tachometer circuit has an error.
G.Tac	**ERR**	Indicates tachometer in push-pull gun has an error.

SECTION 11 – ELECTRICAL DIAGRAMS

☞ *The circuits in this manual can be used for troubleshooting, but there might be minor circuit differences from your machine. Use circuit inside machine case or contact distributor for more information.*

The following is a list of all diagrams for models covered by this manual.

Model	Serial Or Style Number	Circuit Diagram	Wiring Diagram
S-74 MPa Plus	MG135049U and following	244221-G	♦
Circuit Board PC1	MG135049U and following	272239-C♦	♦
Circuit Board PC2	MG135049U and following	272235-B♦	♦
Circuit Board PC5	MG135049U and following	244202-C♦	♦
Circuit Board PC6	MG135049U and following	244209-F♦	♦

♦ Not included in this manual.

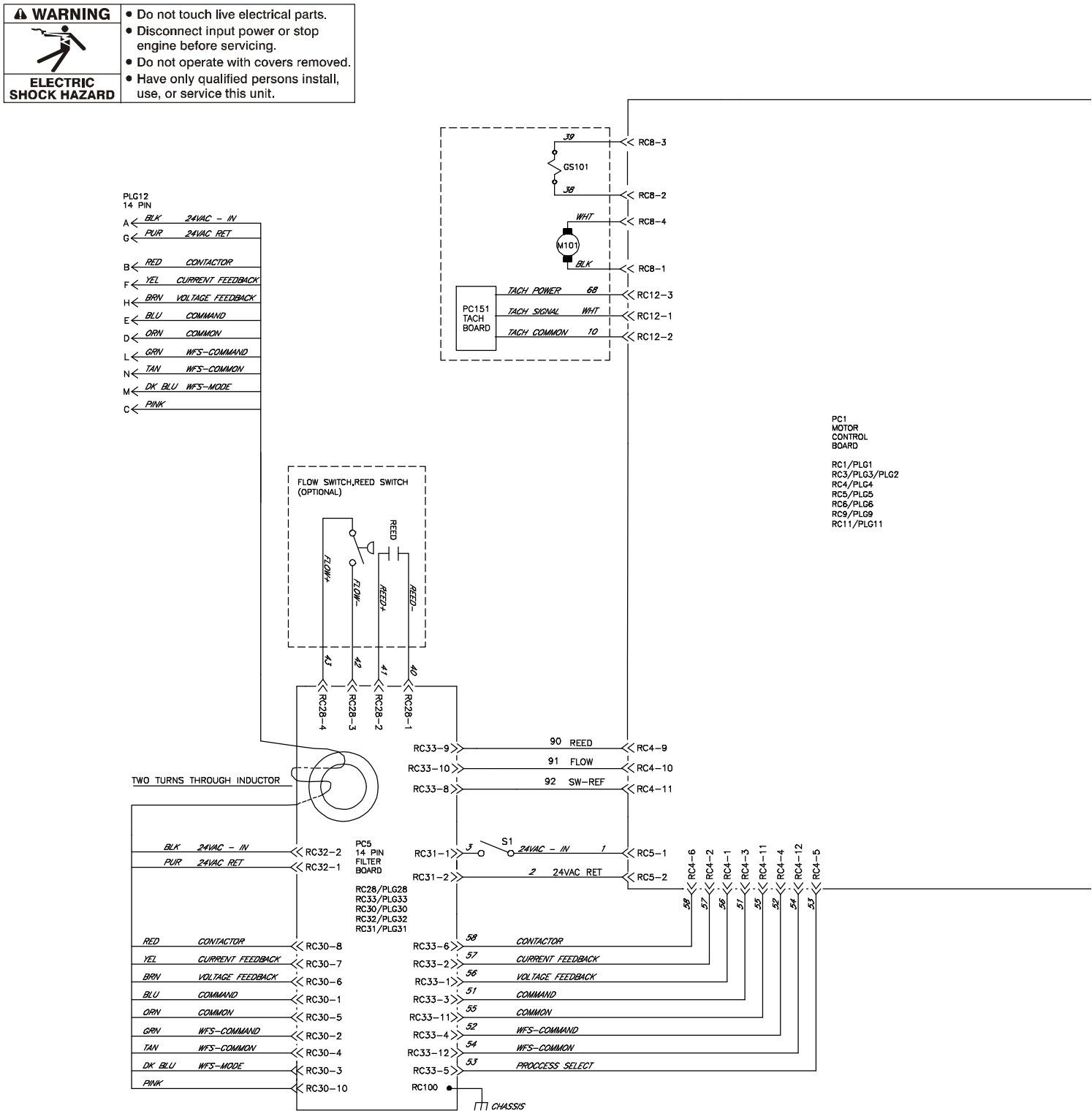
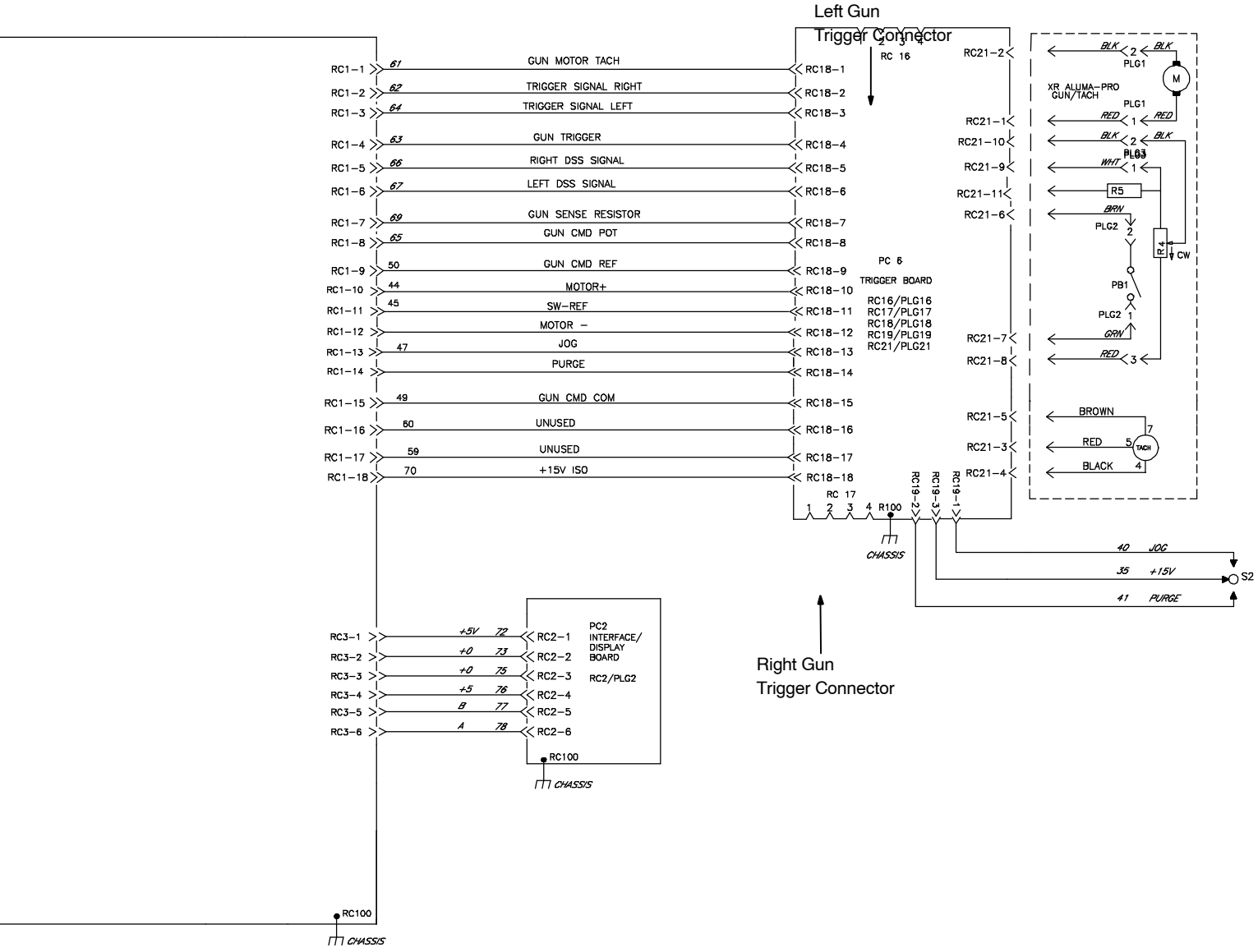


Figure 11-1. Circuit Diagram For S-74 MPa Plus Eff. w/Serial No. MG135049U And Following


Left Gun
Trigger Connector
RC 16
RC1-1
RC1-2
RC1-3
RC1-4
RC1-5
RC1-6
RC1-7
RC1-8
RC1-9
RC1-10
RC1-11
RC1-12
RC1-13
RC1-14
RC1-15
RC1-16
RC1-17
RC1-18
61 GUN MOTOR TACH
62 TRIGGER SIGNAL RIGHT
64 TRIGGER SIGNAL LEFT
63 GUN TRIGGER
66 RIGHT DSS SIGNAL
67 LEFT DSS SIGNAL
69 GUN SENSE RESISTOR
65 GUN CMD POT
50 GUN CMD REF
44 MOTOR+
45 SW-REF
MOTOR –
47 JOG
PURGE
49 GUN CMD COM
60 UNUSED
59 UNUSED
70 +15V ISO
RC18-1
RC18-2
RC18-3
RC18-4
RC18-5
RC18-6
RC18-7
RC18-8
RC18-9
RC18-10
RC18-11
RC18-12
RC18-13
RC18-14
RC18-15
RC18-16
RC18-17
RC18-18
PC 6
TRIGGER BOARD
RC16/PLG16
RC17/PLG17
RC18/PLG18
RC19/PLG19
RC21/PLG21
RC 17
1 2 3 4 R100
CHASSIS
RC19-2
RC19-3
RC19-1
RC21-2
RC21-1
RC21-10
RC21-9
RC21-11
RC21-6
RC21-7
RC21-8
RC21-5
RC21-3
RC21-4
BLK
PLG1
M
XR ALUMA-PRO
GUN/TACH
RED
BLK
WHT
R5
BRN
PLG2
R4
CW
PB1
GRN
RED
BROWN
RED
BLACK
TACH
40 JOG
35 +15V
41 PURGE
S2
Right Gun
Trigger Connector
RC3-1
RC3-2
RC3-3
RC3-4
RC3-5
RC3-6
+5V 72
+0 73
+0 75
+5 76
B 77
A 78
RC2-1
RC2-2
RC2-3
RC2-4
RC2-5
RC2-6
PC2
INTERFACE/
DISPLAY
BOARD
RC2/PLG2
RC100
CHASSIS
RC100
CHASSIS

244221-G

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