TM-1500-10D 2006–07

Eff. w/Serial Number LC029720

Processes

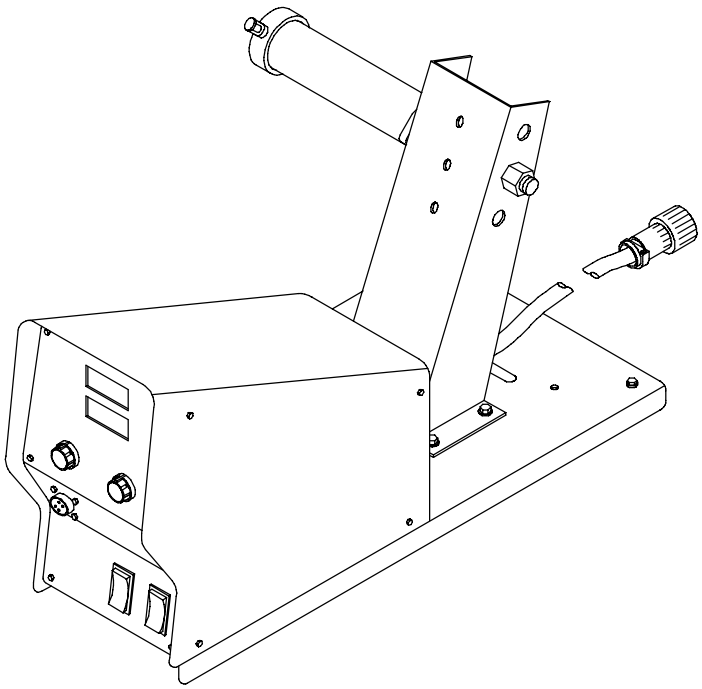
MIG (GMAW) Welding
Flux Cored (FCAW) Welding
(Gas- And Self-Shielded)

Description

CV

Wire Feeder

S-74S, S-74D



TECHNICAL MANUAL

File: MIG (GMAW)

Visit our website at
www.MillerWelds.com

TABLE OF CONTENTS

Declaration of Conformity for European Community (CE) Products

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

Manufacturer:

Miller Electric Mg. Co.
1635 W. Spencer St.
Appleton, WI 54914 USA
Phone: (920) 734-9821

European Contact:

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

European Contact Signature: _____

Declares that the product: **S-74S, S-74D**

conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic Compatibility (EMC) Directive: 89/336/EEC

Machinery Directives: 98/37/EEC, 91/368/EEC, 92/31/EEC, 133/04, 93/68/EEC

Standards

Arc Welding Equipment – Part 5: Wire Feeders. IEC 60974-5 Ed. 1

Arc Welding Equipment – Part 10: Electromagnetic Compatibility (EMC) Requirements. IEC 60974-10 August 2002

Arc Welding Equipment – Part 1: Welding Power Sources. IEC 60974-1 Ed. 2.1

Degrees Of Protection Provided By Enclosure (IP Code) IEC 60529 Ed. 2.1

Insulation Coordination For Equipment Within Low-Voltage Systems –
Part 1: Principles, Requirements and Tests: IEC 60664-1 Ed. 1.1

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

SECTION 1 – SAFETY PRECAUTIONS FOR SERVICING

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

1-1. Symbol Usage

OM-1500-10L, - Date, safety_stm 3/06

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

▲ **Marks a special safety message.**

☞ *Means "Note"; not safety related.*

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

1-2. 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 service, test, maintain, and repair this unit.**

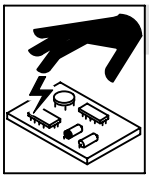
▲ **During servicing, keep everybody, especially children, away.**

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.
- 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 after removal of input power on inverters.

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

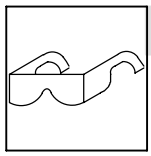


STATIC (ESD) can damage PC boards.

- 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.

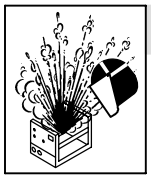


FLYING METAL or DIRT can injure eyes.

- 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.

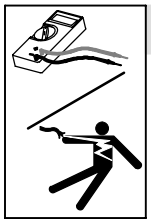
HOT PARTS can cause severe burns.

- 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 cause injury.

- 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.

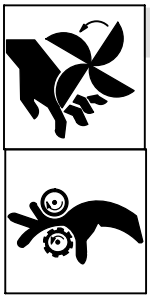


SHOCK HAZARD from testing.

- 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 UNIT can cause injury.

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

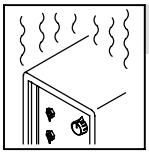


MOVING PARTS can cause injury.

- 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 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.

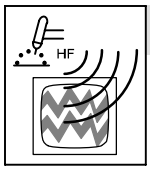
MAGNETIC FIELDS can affect pacemakers.

- Pacemaker wearers keep away from servicing areas until consulting your doctor.



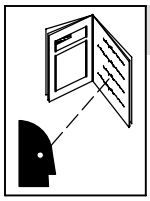
OVERUSE can cause OVERHEATING.

- 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.

1-3. California Proposition 65 Warnings

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

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

For Gasoline Engines:

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

For Diesel Engines:

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

1-4. EMF Information

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

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

To reduce magnetic fields in the workplace, use the following procedures:

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

About Pacemakers:

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

SECTION 2 – DEFINITIONS

2-1. Warning Label Definitions

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

B. Drive rolls can injure fingers.

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

1 Electric shock can kill.

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

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

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

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

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

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

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

3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

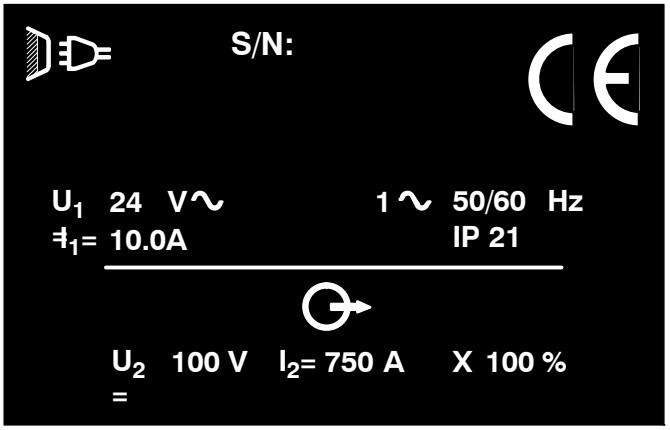
4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

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

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

2-2. Rating Label For CE Products

For label location see Section 4-2.



ST-178 794-A

2-3. Symbols And Definitions

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

A	Amperes	V	Volts		Alternating Current	X	Duty Cycle
IP	Degree Of Protection	Hz	Hertz		Program		Wire Feed
	Jog		Output		Trigger		Line Connection
	Set Up		Sequence		Trigger Hold On		Trigger Hold Off
	Purge		Press To Set		Start		Crater
t	Time	t1	Preflow Time	t2	Postflow Time		Read Instructions
	Increase	I_1	Primary Current	I_2	Rated Current	U_2	Load Voltage
U_1	Primary Voltage	A B	Dual Schedule				

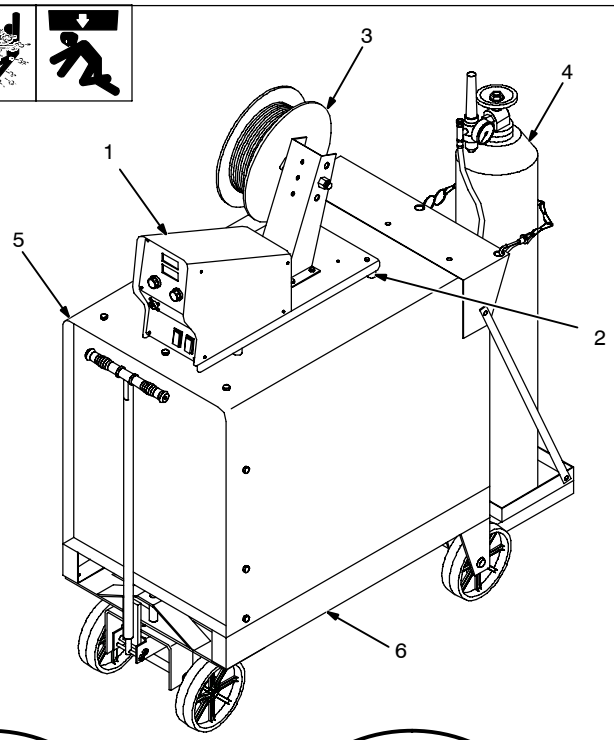
SECTION 3 – INTRODUCTION

3-1. Specifications

Type of Input Power	Welding Power Source Type	Wire Feed Speed Range	Wire Diameter Range	Welding Circuit Rating	IP 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: 50 To 780 ipm (1.3 To 19.8 mpm) Optional High Speed: 92 To 1435 ipm (2.3 To 36.4 mpm)	.023 To 1/8 in (0.6 To 3.2 mm) Max Spool Weight: 60 lb (27 kg)	100 Volts, 750 Amperes, 100% Duty Cycle	IP 21	Length: 27 in (686 mm) Width: 12-1/2 in (318 mm) Height: 14 in (356 mm)	45 lb (20.41 kg)

SECTION 4 – INSTALLATION

4-1. Site Selection



▲ **Do not put feeder where welding wire hits cylinder.**

▲ **Do not move or operate equipment when it could tip.**

1 Wire Feeder

2 Rubber Feet

Choose slot that allows all rubber feet to sit securely on top of welding power source.

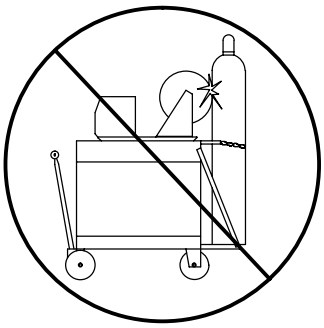
3 Wire Spool/Reel

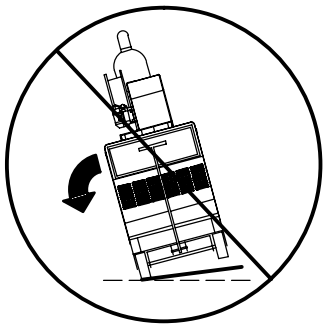
4 Gas Cylinder w/Hose And Regulator (Customer Supplied)

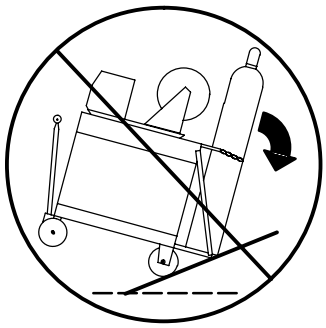
☞ *Shielding gas pressure not to exceed 100 PSI (689 kPa).*

5 Welding Power Source

6 Running Gear



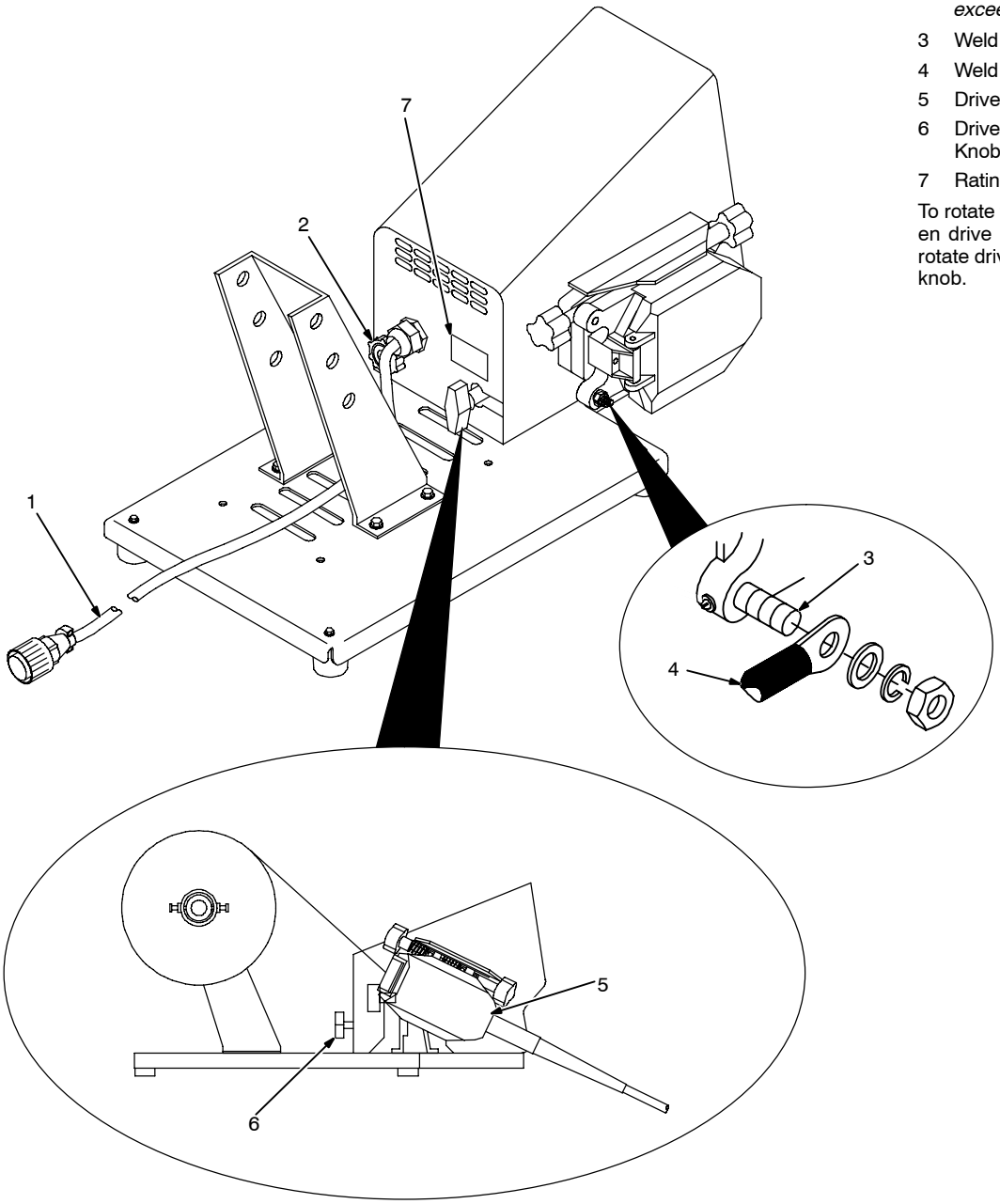




Wire feeder shown is representative only and does not reflect actual unit.

802 806-A

4-2. Rear Panel Connections And Rotating Drive Assembly



1 14-Pin Control Cable - 10 ft (3.0 m)

2 Shielding Gas Valve Fitting

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

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

3 Weld Cable Terminal

4 Weld Cable

5 Drive Assembly

6 Drive Assembly Rotation Knob

7 Rating Label Location

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

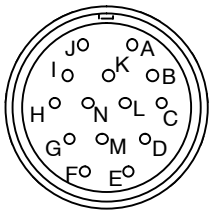
Tools Needed:

9/16, 5/8 in

3/16 in

802 824-A / 802 825-A

4-3. 14-Pin Plug PLG12 Information

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.
*The remaining pins are not used.		

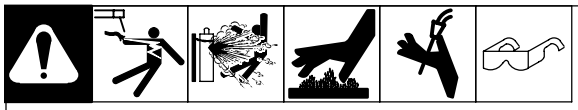
4-4. Gun Recommendation Table

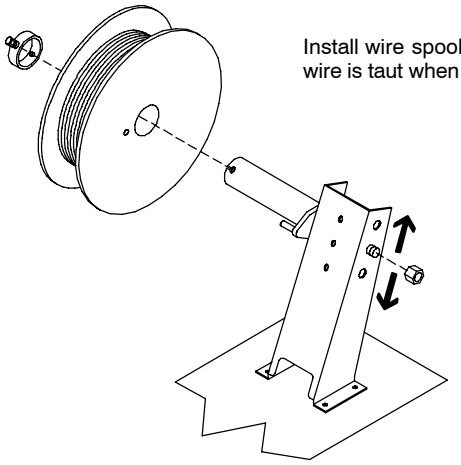
Process	Gun
GMAW – Hard or Cored Wires	Roughneck C-Series Guns: 300, 400, 500, And 600 Amp.
FCAW – Self-Shielding Wires	FC-1260 Or FC-1150

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

Motor Speed	Wire Type	Wire Size	Feed Speed Capability
Standard	All	.023 To 5/64 in (0.6 To 2 mm)	50 To 780 ipm (1.3 To 19.8 mpm)
Standard	All	3/32 To 7/64 in (2.4 To 2.8 mm)	50 To 700 ipm (1.3 To 17.8 mpm)
Standard	All	1/8 in (3.2 mm)	50 To 300 ipm (1.3 To 7.6 mpm)
Optional High Speed	All	.023 To 5/64 in (0.6 To 2 mm)	92 To 1435 ipm (2.3 To 36.4 mpm)

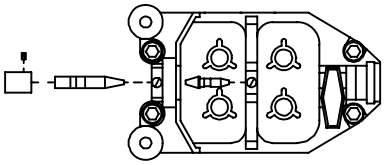
4-6. Installing And Threading Welding Wire



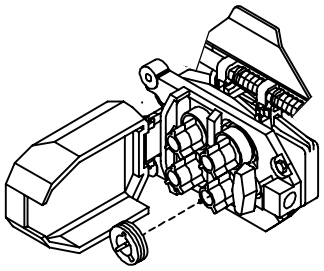


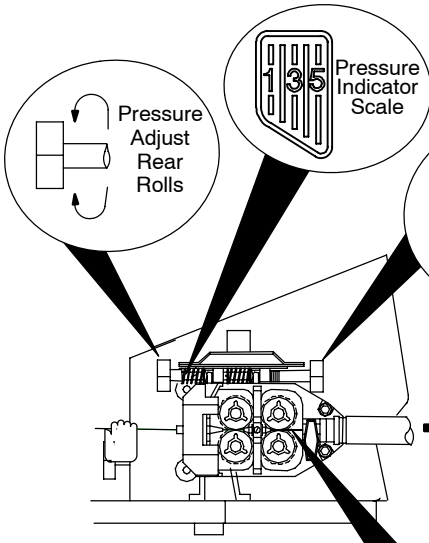
Install wire spool. Adjust tension nut so wire is taut when wire feed stops.

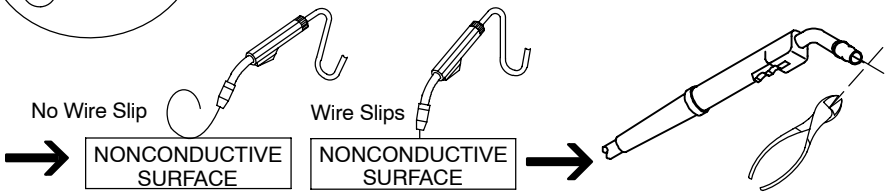
Install wire guides and anti-wear guide.

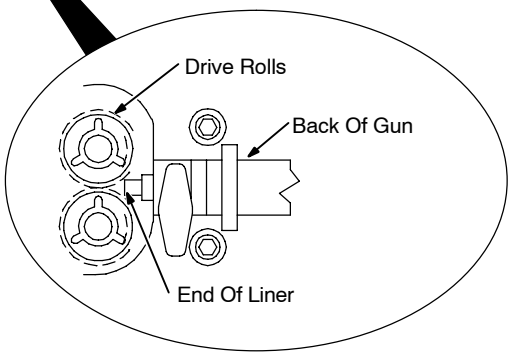


Install drive rolls.

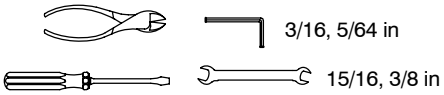








Tools Needed:



☞ *Be sure that outlet cable has proper size liner for the welding wire size.* ***When installing gun, position liner (extending from outlet wire guide) as close as possible to drive rolls 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.

☞ *For soft wire or small diameter stainless steel wire, reduce drive roll pressure on the rear roll to half that of the front rolls.*

☞ 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

4-7. Setting Internal DIP Switches - Prior to S/N LC203769

Remove wrapper.

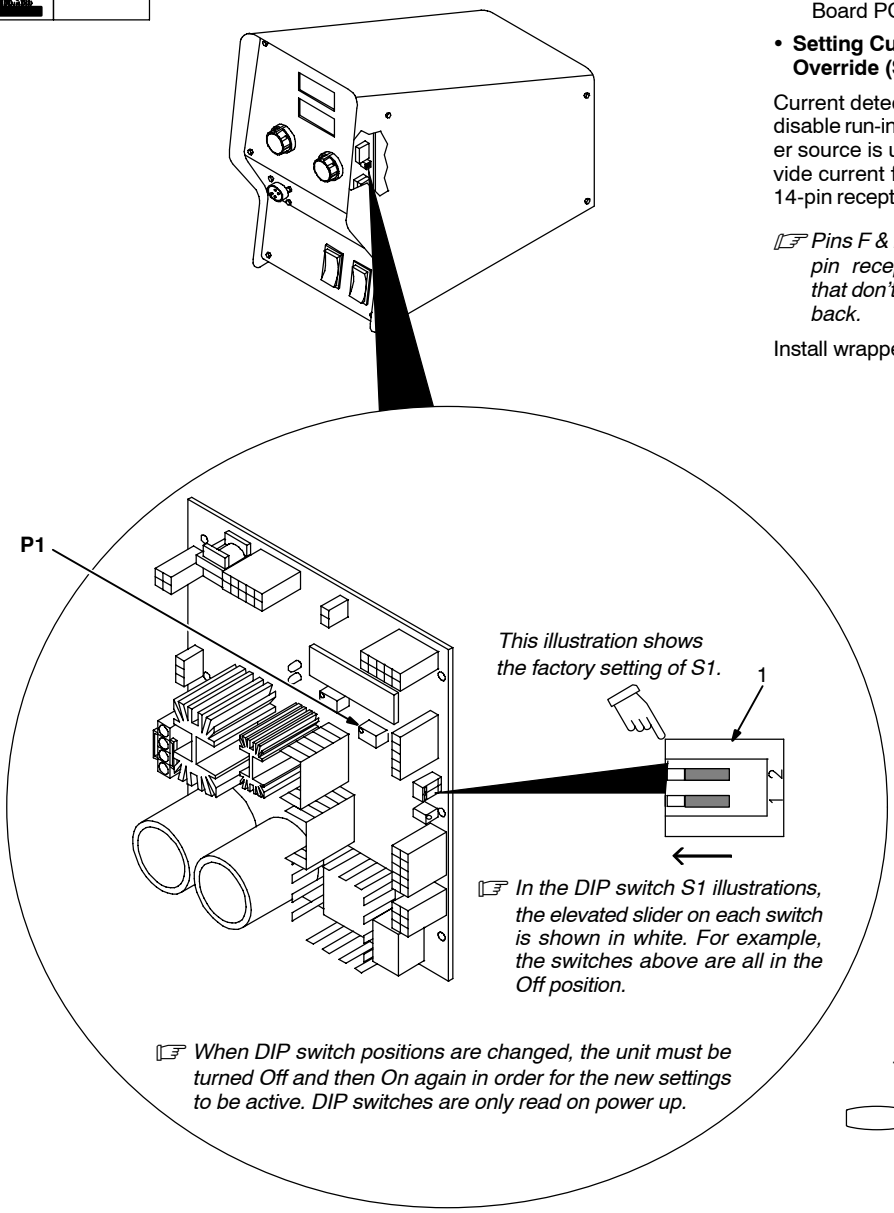
1 DIP Switch S1 On Motor Board PC1

- **Setting Current Detect Override (S1-1)**

Current detect override is used to disable run-in when a welding power source is used that doesn't provide current feedback through the 14-pin receptacle.

☞ *Pins F & H are not present in 14 pin receptacle on machines that don't provide current feedback.*

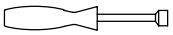
Install wrapper when finished.



☞ *In the DIP switch S1 illustrations, the elevated slider on each switch is shown in white. For example, the switches above are all in the Off position.*

☞ *When DIP switch positions are changed, the unit must be turned Off and then On again in order for the new settings to be active. DIP switches are only read on power up.*

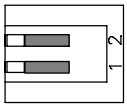
Tools Needed:



1/4 in

Position Settings And Results For DIP Switch S1 On PC1 And PC101

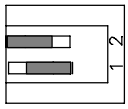
Automatic Run-In (ON) (Factory Default)



S1-1 And S1-2

On = Run-In speed is approximately 1/2 weld wire feed speed.

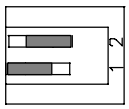
Automatic Run-In (OFF)



S1-1 And S1-2

Off = Run-In speed is set using potentiometer P1 located on Motor board PC1.

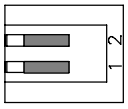
Current Detect Override (ON)



S1-1 And S1-2

On = Current detect override. For welding power sources that don't provide current feedback through the 14-pin receptacle. Run-in is inactive.

Current Detect Override (OFF) (Factory Default)



S1-1 And S1-2

Off = Current must be detected from power sources that provide current feedback through the 14-pin receptacle to go from run-in to welding condition. Run-in wire speed is active.

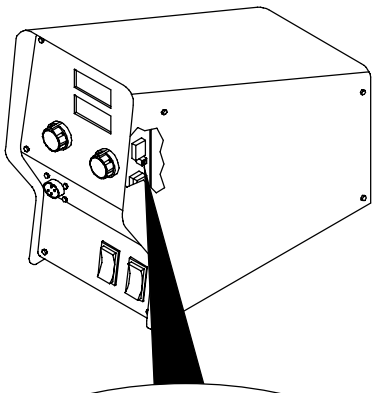
803 063 / Ref. 802 944

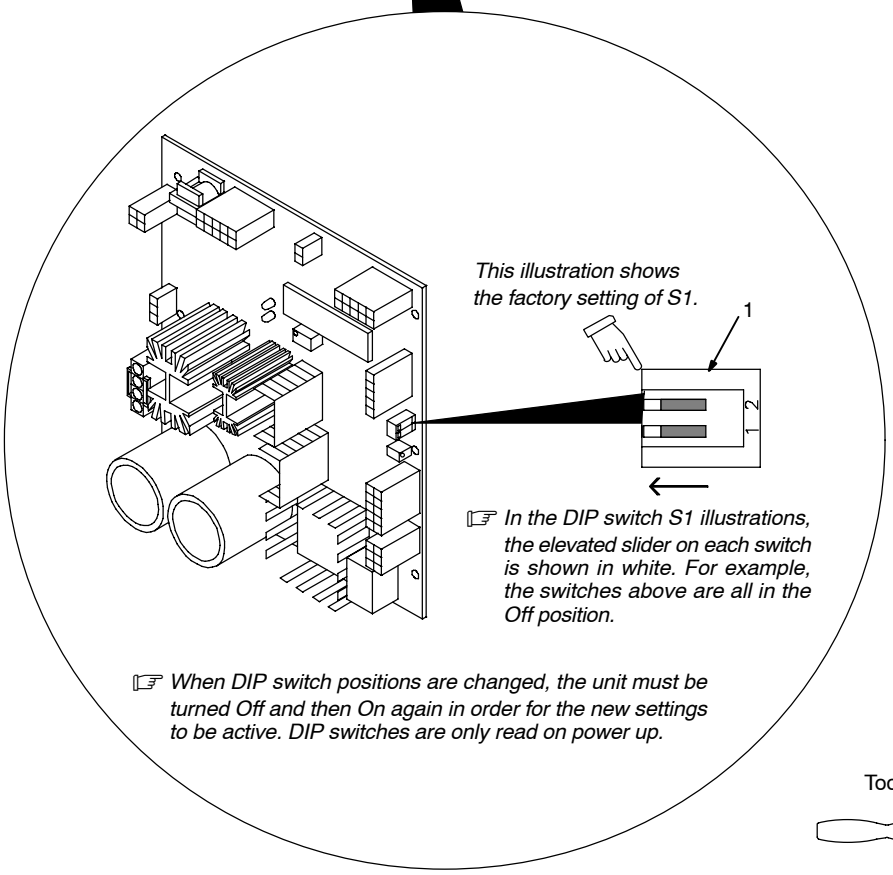
4-8. Setting Internal DIP Switches - Between S/N LC203769 & LC378938

Remove wrapper.

1 DIP Switch S1 On Motor Board PC1

Install wrapper when finished.

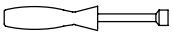




☞ *In the DIP switch S1 illustrations, the elevated slider on each switch is shown in white. For example, the switches above are all in the Off position.*

☞ *When DIP switch positions are changed, the unit must be turned Off and then On again in order for the new settings to be active. DIP switches are only read on power up.*

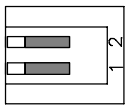
Tools Needed:



1/4 in

Position Settings And Results For DIP Switch S1

Factory Default



S1-1 And S1-2

☞ *S1-1 must remain in the OFF position at all times.*

S1-2 while in the OFF position, run-in speed is set to the factory default. Run-in speed may be adjusted by turning S1-2 ON and adjusting the run-in potientiometer P1 on Motor Board PC1.

Ref. 802 946 / Ref. 802 944

4-9. Setting Internal DIP Switches - After S/N LC378938

Remove wrapper.

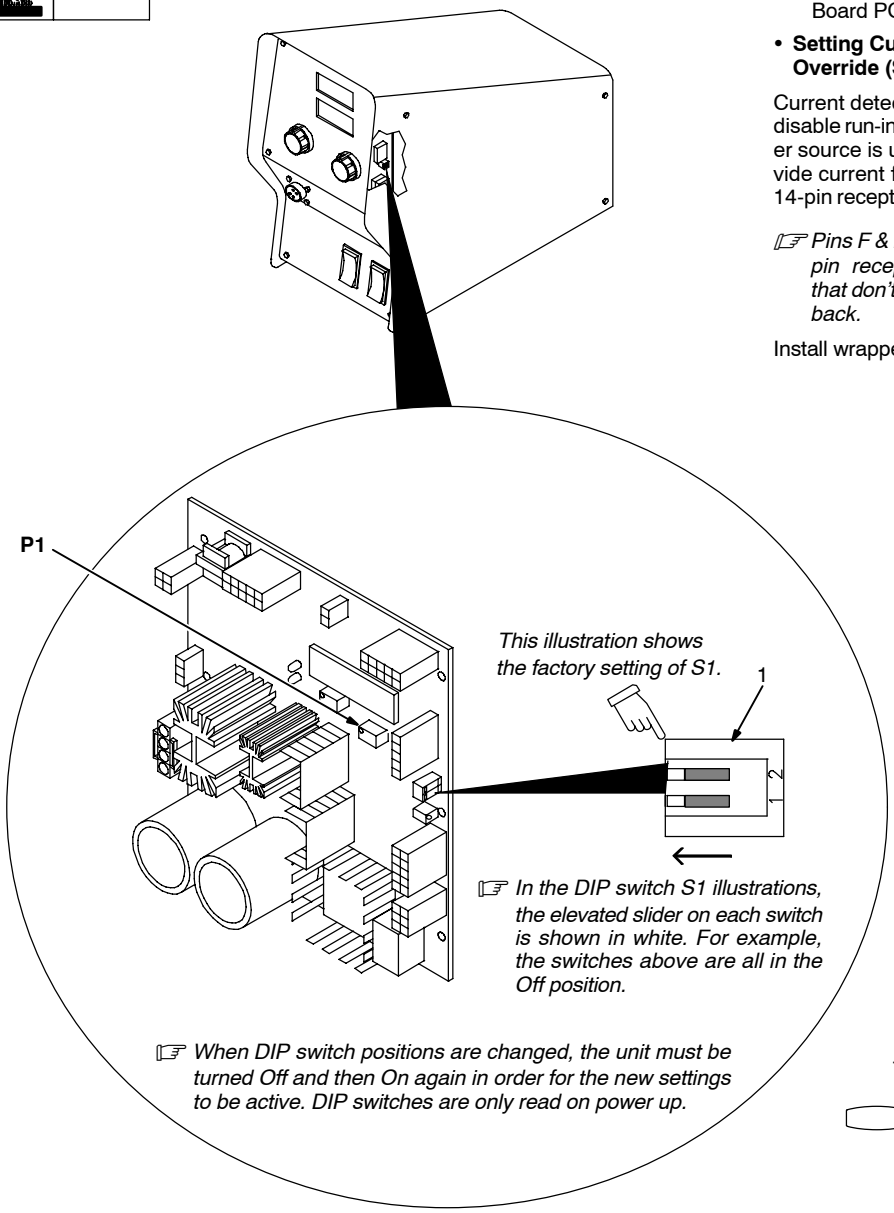
1 DIP Switch S1 On Motor Board PC1

- **Setting Current Detect Override (S1-1)**

Current detect override is used to disable run-in when a welding power source is used that doesn't provide current feedback through the 14-pin receptacle.

☞ *Pins F & H are not present in 14 pin receptacle on machines that don't provide current feedback.*

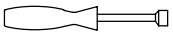
Install wrapper when finished.



☞ *In the DIP switch S1 illustrations, the elevated slider on each switch is shown in white. For example, the switches above are all in the Off position.*

☞ *When DIP switch positions are changed, the unit must be turned Off and then On again in order for the new settings to be active. DIP switches are only read on power up.*

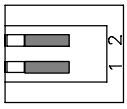
Tools Needed:



1/4 in

Position Settings And Results For DIP Switch S1 On PC1 And PC101

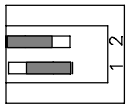
Automatic Run-In (ON) (Factory Default)



S1-1 And S1-2

On = Run-In speed is approximately 1/2 weld wire feed speed.

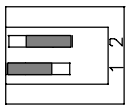
Automatic Run-In (OFF)



S1-1 And S1-2

Off = Run-In speed is set using potentiometer P1 located on Motor board PC1.

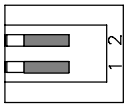
Current Detect Override (ON)



S1-1 And S1-2

On = Current detect override. For welding power sources that don't provide current feedback through the 14-pin receptacle. Run-in is inactive.

Current Detect Override (OFF) (Factory Default)

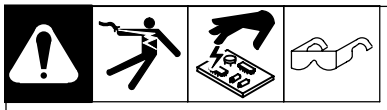


S1-1 And S1-2

Off = Current must be detected from power sources that provide current feedback through the 14-pin receptacle to go from run-in to welding condition. Run-in wire speed is active.

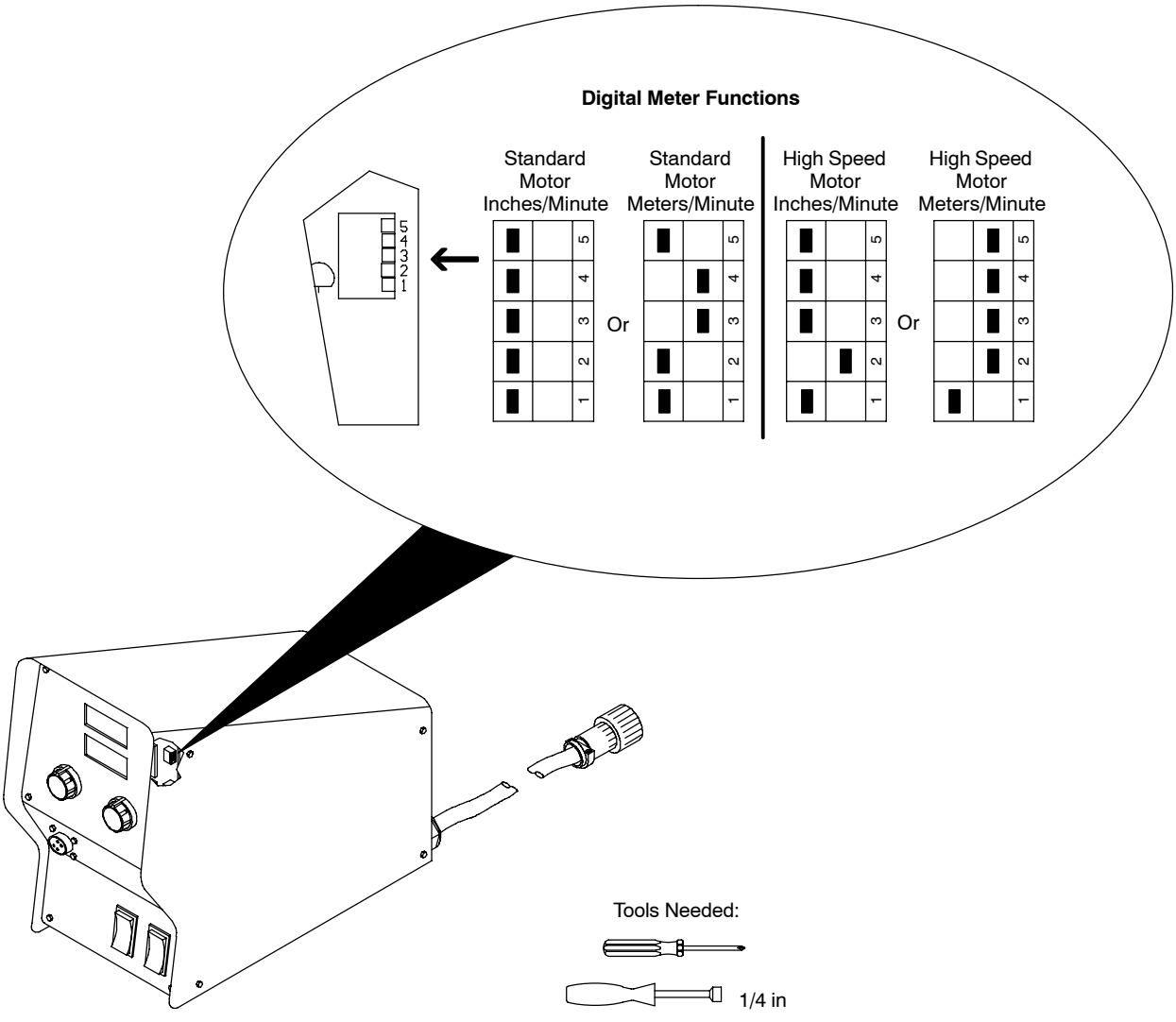
803 063 / Ref. 802 944

4-10. Equipment DIP Switch Settings (For Models With Meters Only)



Remove wrapper.

Install wrapper when finished.



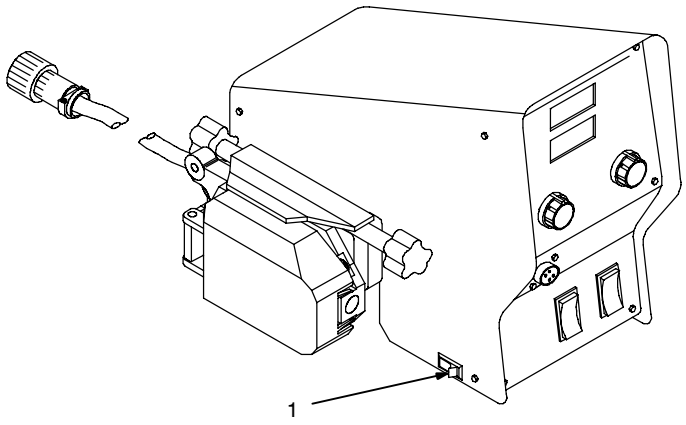
Tools Needed:

1/4 in

Ref. 802 946

SECTION 5 – OPERATION

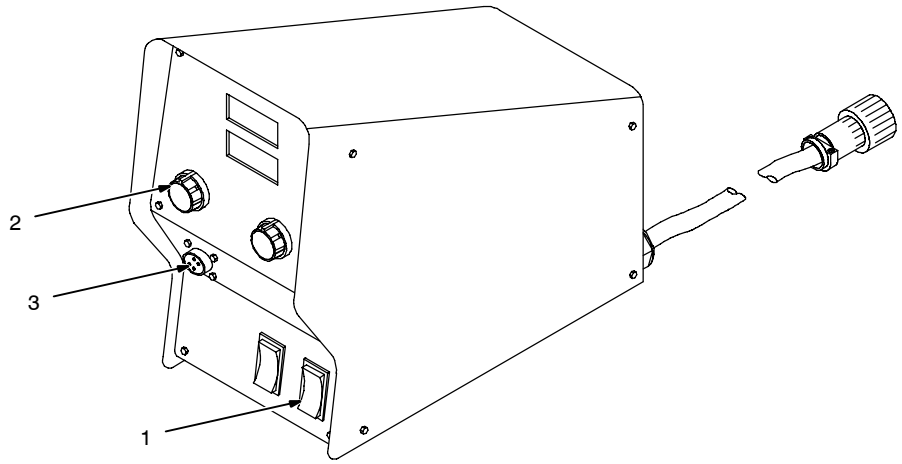
5-1. Power Switch



1 Power Switch

802 827-A

5-2. Jog/Purge



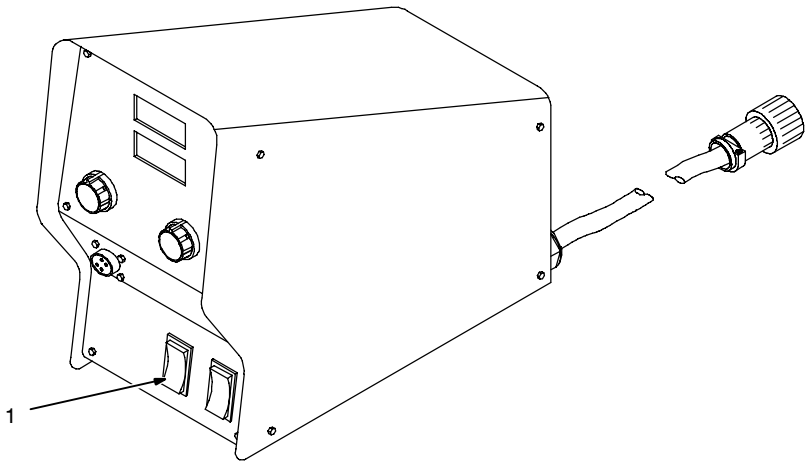
1 Jog/Purge Push Button
2 Wire Speed Control
3 Gun Trigger Receptacle

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

- The wire feeder can also be jogged by using the gun trigger. However, the contactor is energized for 3 seconds.
- 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, as in the case of a damaged gun.
- Jog speed can be adjusted with the Wire Speed control when the unit is jogging wire. If equipped with meters, the unit displays jog speed while the unit is being jogged.
- Pressing the Jog/Purge button also allows the operator to purge gas lines before welding and to preset gas pressure at the regulator.

802 828-A

5-3. Trigger Hold Switch



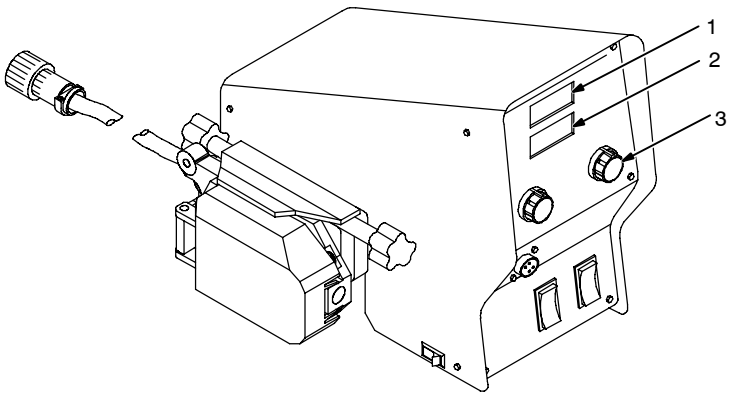
802 828-A

1 Trigger Hold Switch

Trigger hold allows the operator to weld without holding the gun trigger.

- To use the trigger hold function, place the trigger hold switch in the On position.
- The operator must hold the trigger for a minimum of 2 seconds, but not longer than 6 seconds before releasing it. Welding will continue when the trigger is released.
- To stop welding, press the trigger again.

5-4. Voltage Control And Digital Meters (For Models With Meters Only)



1 Voltmeter

The voltmeter displays actual or preset voltage from the welding power source through the 14–pin control cable.

2 Wire Speed Meter

The wire speed meter is factory set to display inches per minute. If display of meters per minute is desired, see Section 4-10.

3 Voltage Control

Use control to adjust voltage output of welding power source.

☞ *You can adjust the preset voltage display on the wire feeder to match your power source's display by adjusting P2 on motor control board PC1. See Section 8-2 for location of P2.*

802 827-A

1 14–Pin Plug PLG12

Provides 24 volts ac input power from welding power source, contactor control, voltage feedback, current 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 RC13

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 motor M1 without energizing the weld circuit or gas valve GS1.
- Purge – Energizes gas valve GS1 without energizing the weld circuit or wire drive motor M1.

5 Trigger Hold Switch S3

Provides control of trigger hold feature.

6 Wire Speed Control R1

Sets wire speed.

7 Wire Drive Motor M1

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

8 Gas Valve GS1

34volt dc valve provides shielding gas during the weld cycle.

9 Remote Voltage Control R70
(Optional on S–74S)

Adjusts output voltage of welding power source.

10 Motor Board PC1

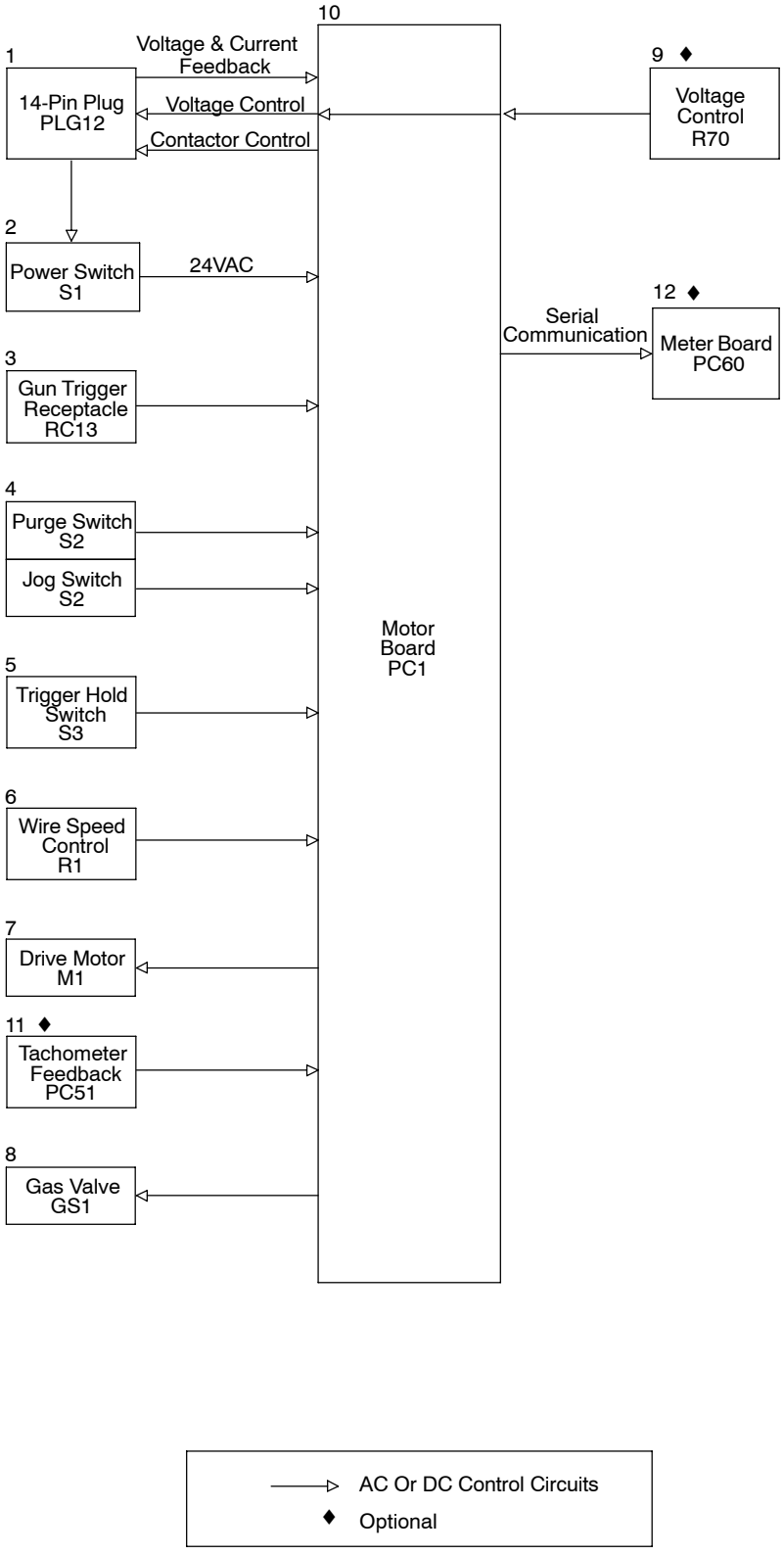
- Controls wire speed by changing the pulse width modulation signal (wider or narrower pulses meaning more or less voltage to motor) after comparing motor speed feedback signal to wire speed setting set by R1.
- If feeder is equipped with tachometer pickup board PC51 (S–74D), motor speed is regulated using the pulsed feedback signal.
- If feeder is not equipped with tachometer pickup board PC51 (S–74S), motor speed is regulated using voltage and current feedback from wire drive motor M1.
- Energizes gas valve GS1.
- 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 digital meter board PC60.

11 Tachometer Pickup Board PC51
(Optional on S–74S)

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.

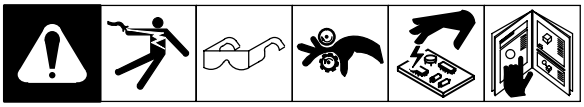
12 Digital Meter Board PC60
(Optional on S–74S)

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 PC60 using serial communication.



SECTION 7 – TROUBLESHOOTING

7-1. Troubleshooting Table

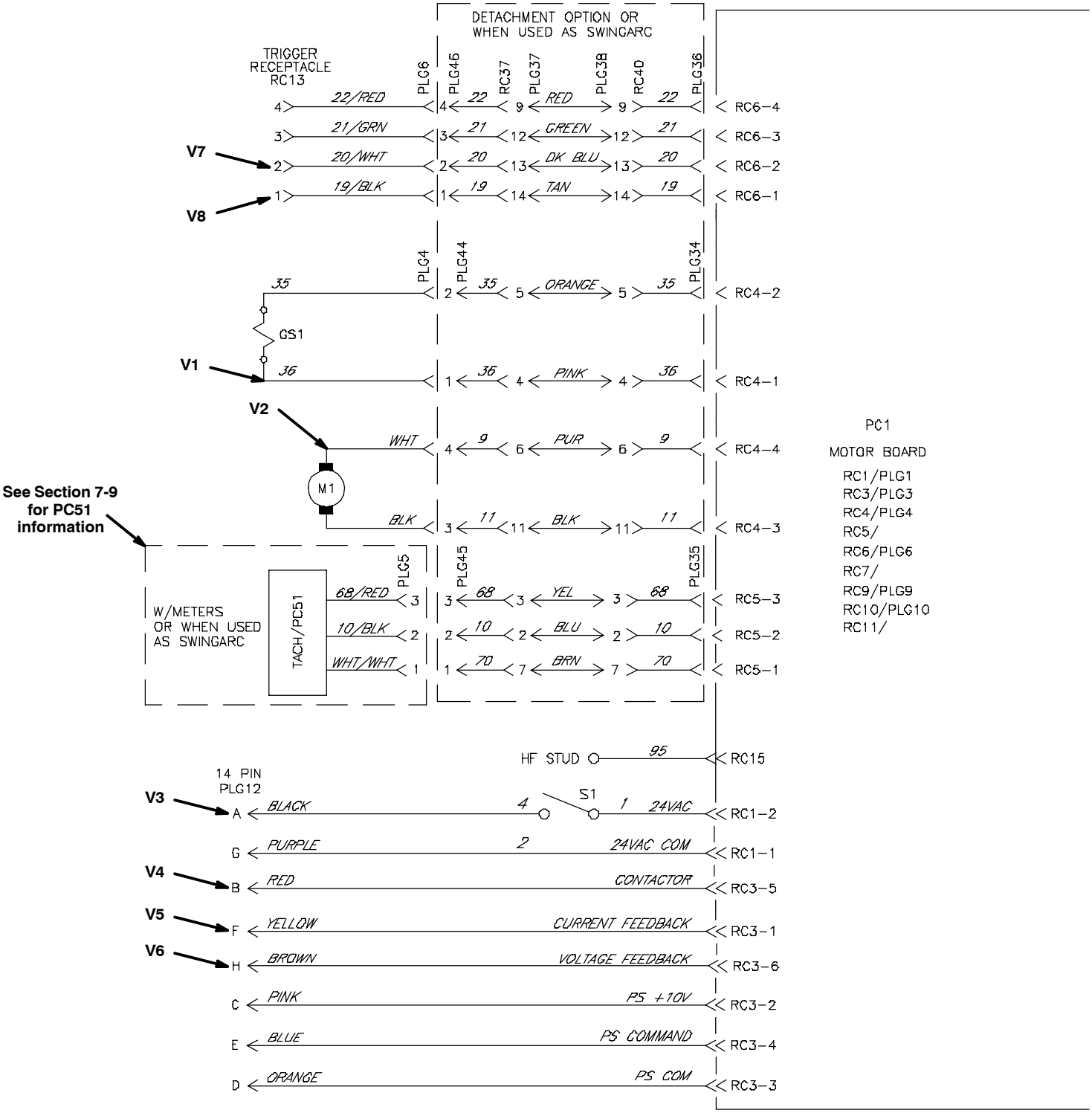


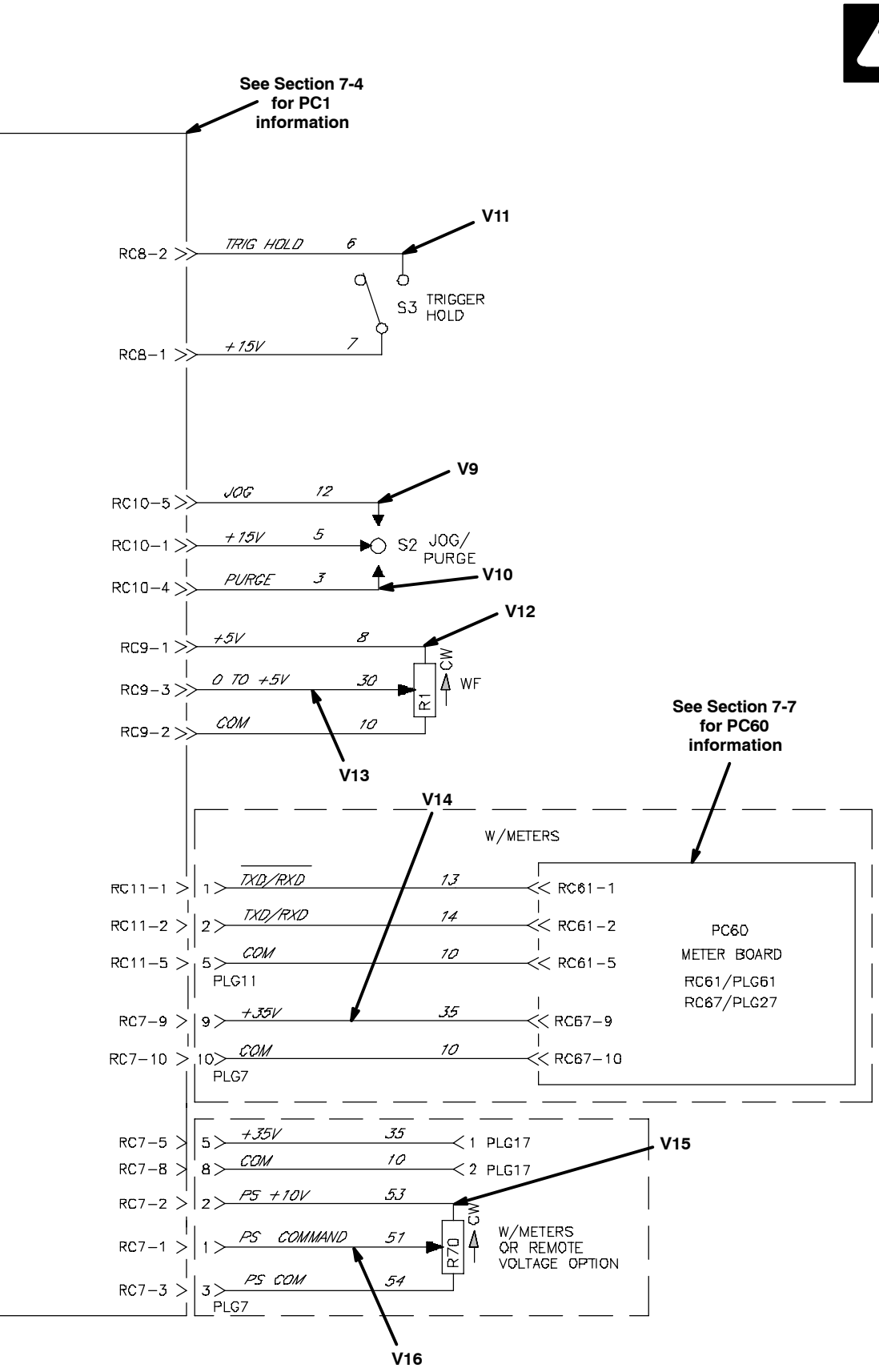
☞ *See Section 7-2 for test points and values and Section 10 for parts location.*

Trouble	Remedy
Unit completely inoperative.	Check circuit breaker on welding power source.
	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 motor board PC1 and connections, and replace if necessary (see Section 7-4).
Wire does not feed. Electrode wire is energized, and shielding gas flows.	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 7-4).
Motor does not run while pressing either gun trigger. Motor runs while Jog switch is pressed.	Check continuity of gun trigger switch and leads. Repair or replace welding gun. See gun Owner's Manual. Check motor board PC1 and connections, and replace if necessary (see Section 7-4).
Motor does not run when Jog switch is pressed.	Check continuity of Jog switch and replace if necessary.
	Check motor board PC1 and connections, and replace if necessary (see Section 7-4).
Motor runs slowly.	Check for correct line voltage.
	Check and replace contact tip or liner if necessary.
	Check motor board PC1 and connections, and replace if necessary (see Section 7-4).
	If unit has meters check tachometer feedback board PC51 is properly installed, and replace if necessary.
	Check resistance and connections of active wire speed potentiometer, and replace if necessary.
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.
	Readjust drive roll pressure (see Section 4-6).
	Readjust hub tension (see Section 4-6).
	Change to correct size and type drive roll (see Section 4-6).
	Clean or replace dirty or worn drive roll (see Section 4-6).
	Incorrect size or worn wire guides (see Section 4-6).
	Clear obstruction in gun contact tip or liner.
	Remove weld spatter from around nozzle opening.
	Check wire drive motor brushes.
	If equipped with meters clean and check alignment of encoder disc on tachometer board PC51 (see Section 7-9).
	Check motor board PC1 and connections, and replace if necessary (see Section 7-4).

Trouble	Remedy
Motor runs at high speed regardless of wire speed control setting.	Check motor board PC1 and connections, and replace if necessary (see Section 7-4).
	Check resistance and connections of active wire speed potentiometer, and replace if necessary.
Limited wire speed control.	If equipped with meters clean and check alignment of encoder disc on tachometer board PC51 (see Section 7-9).
	If equipped with meters check tachometer board PC51 and connections, and replace if necessary (see Section 7-9).
	Check resistance and connections of active wire speed potentiometer, and replace if necessary.
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.
Motor coasts after releasing gun trigger.	Check motor board PC1 and connections, and replace if necessary (see Section 7-4).
Wire Feed Speed Meter display does not match actual wire feed speed.	Set DIP switch S2 on display board PC60 to proper setting.
	Clean and check alignment of encoder disc on tachometer board PC51 (see Section 7-9).
	Check tachometer board PC51 and connections, replace if necessary (see Section 7-9).
Shielding gas does not flow when Purge switch is pressed.	Check continuity of Purge switch S2 and replace if necessary.
	Check coil voltage and connections of gas valve GS1. Check continuity of coil. Replace GS1 if necessary.
	Check motor board PC1 and connections, and replace if necessary (see Section 7-4).
	Clear blockage in gas hose or replace hose.
	Clear blockage in welding gun.
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.
	Clear blockage in gas hose or replace hose.
	Clear blockage in welding gun.
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 motor board PC1 and connections, and replace if necessary (see Section 7-4).
	See Troubleshooting Section in welding power source Technical Manual.
Welding arc is too cold 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 resistance and connections of voltage control potentiometers.
Actual arc voltage display on meter is held after trigger is released, or arc voltage does not change while welding.	DIP switch S2 on digital meter board PC60 is in hold mode.
If voltage display on meter doesn't match voltage on power source.	Adjust P2 on motor board PC1.
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 resistance and connections of voltage control potentiometers.

7-2. Troubleshooting Circuit Diagram For S-74S/D Swingarc





Voltage Readings

a) Tolerance – ±10% unless specified

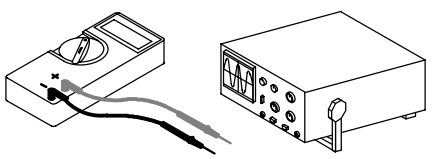
b) Reference – DC Voltage to RC7-10 (Unless noted)

c) Reference – AC Voltage to RC1-1 (Unless noted)

V1	+35 volts dc, 0 volts when triggered or purged
V2	0 to +22 volts dc when triggered or jogged
V3	24 volts ac
V4	24 volts ac when triggered
V5	0 to +10 volts dc (ref. to RC3-3) current feedback from power source
V6	0 to +10 volts dc (ref. to RC3-3) voltage feedback from power source
V7	+14 volts dc (ref. to anode of D1) when triggered
V8	+15 volts dc, +14 volts dc (ref. to anode of D1) when triggered
V9	+15 volts dc when Jog is pressed
V10	+15 volts dc when Purge is pressed
V11	+15 volts dc when Trigger Hold is on
V12	+5 volts dc
V13	0 to +5 volts dc Wire Speed Command
V14	+35 volts dc
V15	+10 volts dc (ref. to RC7-3)
V16	0 to +10 volts dc (ref. to RC7-3) Voltage Command

202 246-C

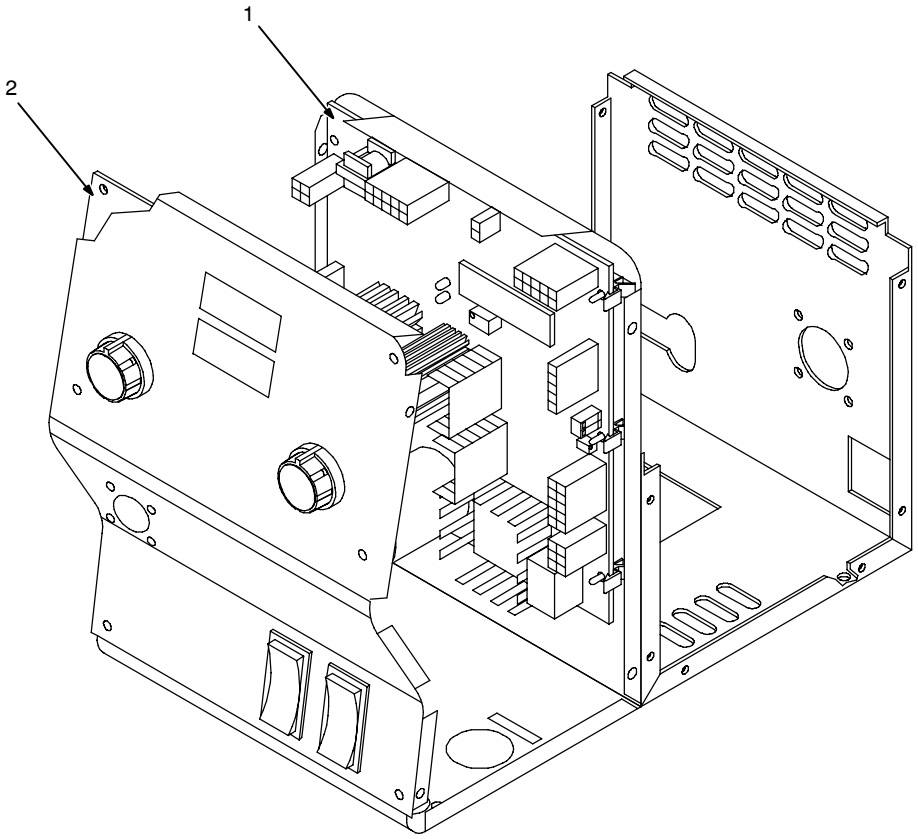
Test Equipment Needed:



7-3. Location Of Circuit Boards

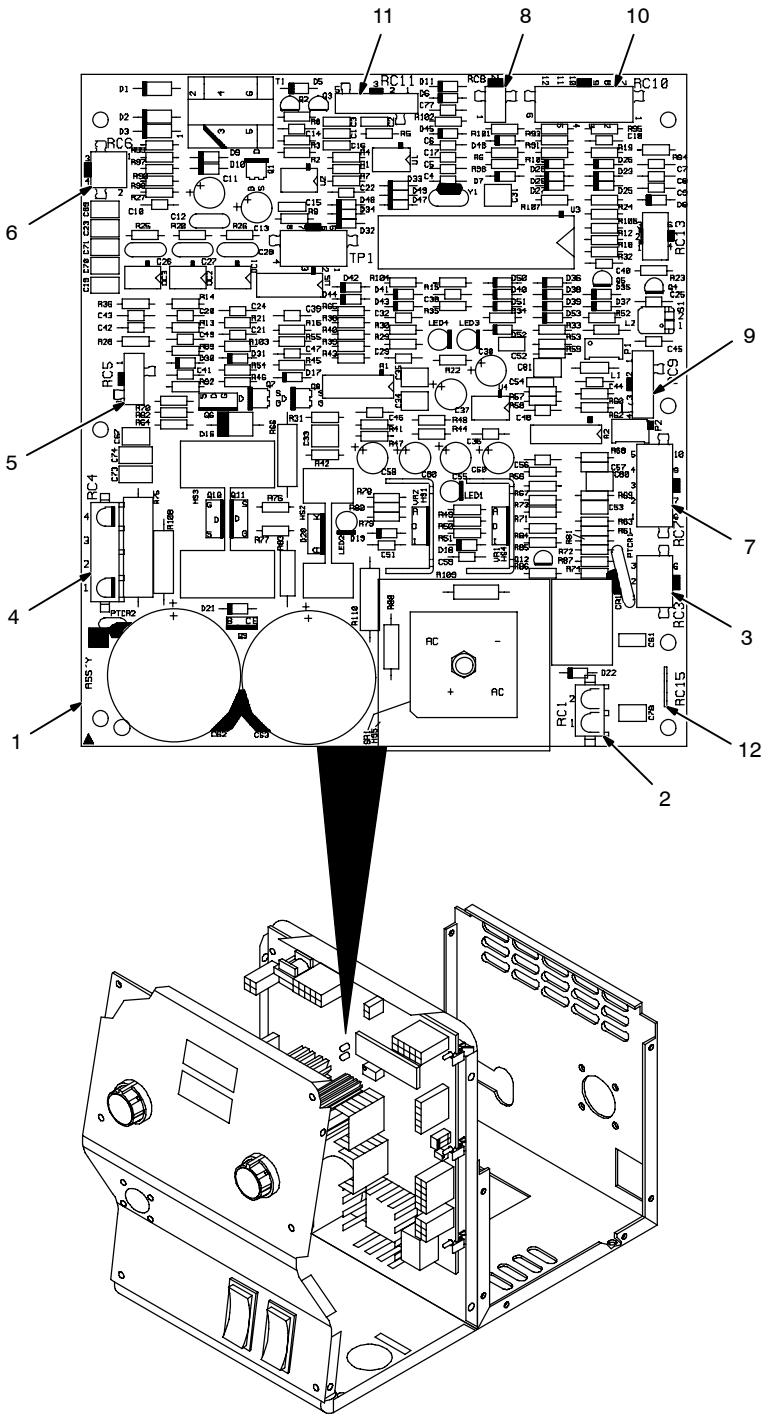
1 Motor Board PC1
(See Section 7-4)

2 Meter Board PC60 -
(S-74D Only)
(See Section 7-7)



803 279

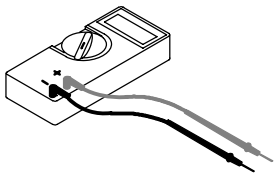
7-4. Motor Board PC1 Testing Information



Be sure plugs are secure before testing. See Section 7-5 for specific values during testing.

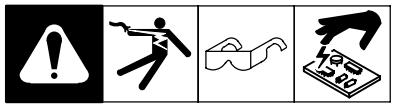
1 Motor Board PC1
2 Receptacle RC1
3 Receptacle RC3
4 Receptacle RC4
5 Receptacle RC5
6 Receptacle RC6
7 Receptacle RC7
8 Receptacle RC8
9 Receptacle RC9
10 Receptacle RC10
11 Receptacle RC11
12 Receptacle RC15

Test Equipment Needed:



803 279 / 226 271-B

7-5. Motor Board PC1 Test Point Values



PC1 Voltage Readings

a) Tolerance – ±10% unless specified

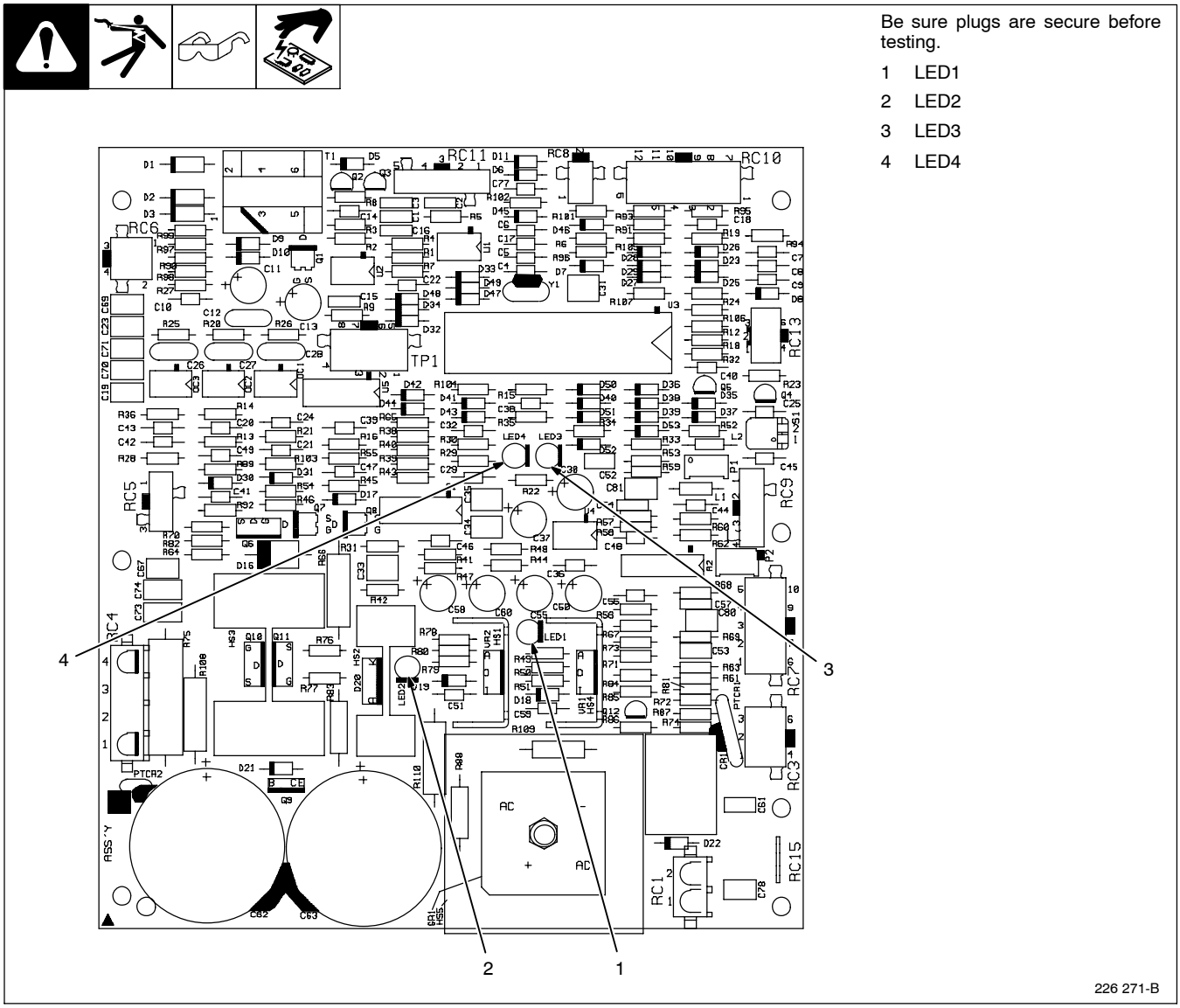
b) Triggered – means gun trigger is pressed

c) Reference –
For AC circuit common: Use RC1–1.
For all other measurements: Use RC7–10

Receptacle	Pin	Value
RC1	1	AC common
	2	24 volts ac input
RC3	1	Power supply current feedback from 14 pin plug PLG12, +1 volts dc for every 100 Amps of weld current with respect to RC3-3
	2	Power supply +10 volts dc with respect to RC3-3
	3	Power supply common
	4	Power supply voltage command to 14 pin plug PLG12, 0 to +10 volts dc with respect to RC3-3 on feeders equipped with a voltage control potentiometer
	5	Contactor control to 14 pin plug PLG12, 24 volts ac when contactor is energized
	6	Power supply voltage feedback from 14 pin plug PLG12, +1 volts dc for every 10 Volts of arc voltage or preset with respect to RC3-3
RC4	1	Gas valve control, 35 volts dc / 0 volts dc when purged or triggered
	2	+35 volts dc to gas valve
	3	Negative to motor, 0 volts dc
	4	Positive voltage to motor, 0 to +22 volts dc
RC5	1	Pulses from tachometer board, 60 pulses for every 1 RPM of motor armature (S-74D only)
	2	Circuit common
	3	+15 volts dc to tachometer board
RC6	1	Trigger +15 volts dc to trigger with respect to D1 anode
	2	Trigger input, 0 volts dc / +14 volts dc when triggered with respect to D1 anode
	3	Not used
	4	Trigger +15 volts dc with respect to D1 anode
RC7	1	Power supply voltage command from potentiometer, 0 to +10 volts dc with respect to RC3-3 on feeders equipped with a voltage control potentiometer
	2	Power supply +10 volts dc with respect to RC3-3
	3	Power supply common
	4	Power supply +10 volts dc with respect to RC3-3
	5	+35 volts dc
	6	Not used
	7	Power supply common
	8	Circuit common
	9	+35 volts dc
	10	Circuit common
RC8	1	+15 volts dc to trigger hold switch
	2	Trigger hold input, 0 volts dc / +14 volts dc with trigger hold switch closed
RC9	1	+5 volts dc to wire feed speed potentiometer
	2	Circuit common
	3	Wire feed speed command, 0 to +5 volts dc
	4	–15 volts dc

Receptacle	Pin	Value
RC10	1	+15 volts dc to jog/purge switch
	2	+15 volts dc
	3	Circuit common
	4	Purge input, 0 volts dc / +14 volts dc when purged
	5	Jog input, 0 volts dc / +14 volts dc with jogged
	6	Not used
	7	Not used
	8	Not used
	9	Not used
	10	Circuit common
	11	Not used
	12	+2.5 volts dc
RC11	1	Serial communication
	2	Serial communication
	3	Serial communication
	4	Serial communication
	5	Circuit common
RC15	1	High frequency noise filter

7-6. Diagnostic LED's On Motor Board PC1



Be sure plugs are secure before testing.

1 LED1

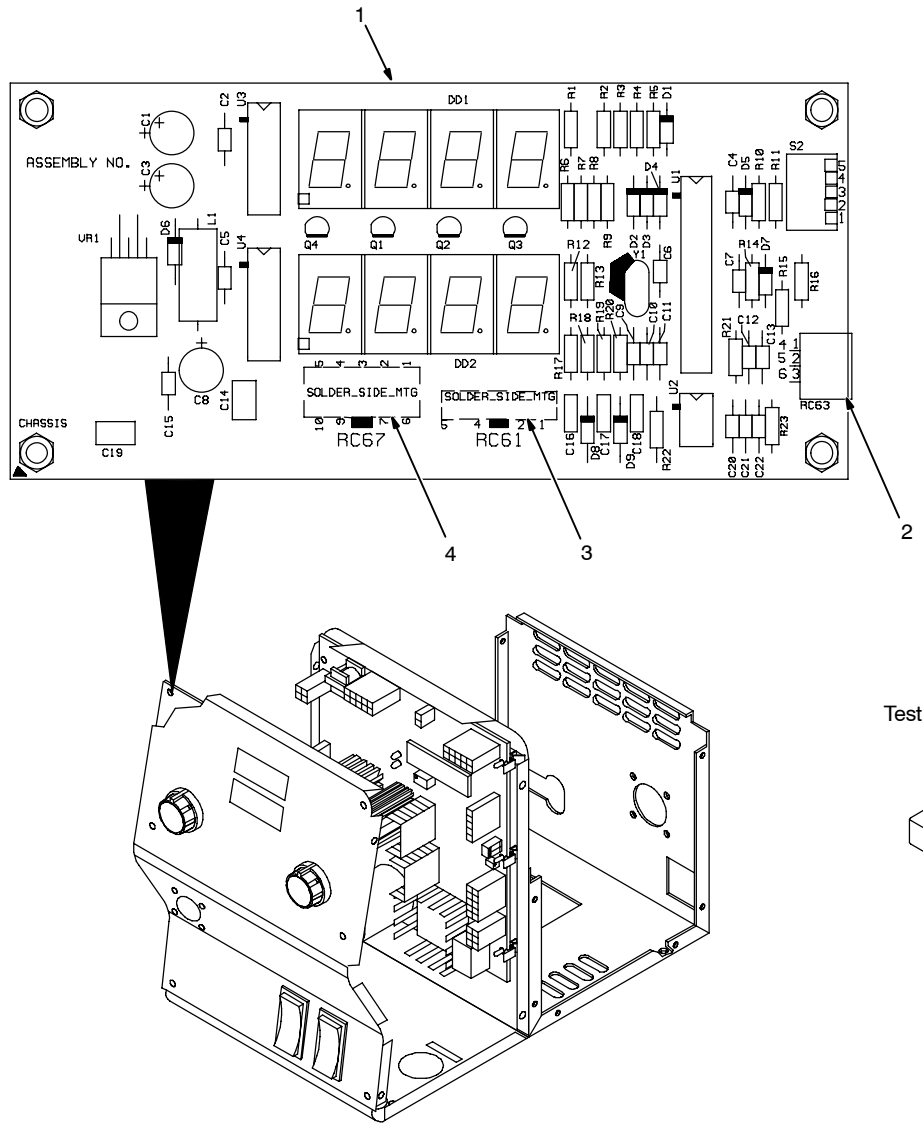
2 LED2

3 LED3

4 LED4

LED	Status	Self-Test
1	On	Indicates +15 volts dc present on motor board PC1 with respect to dc circuit common.
	Off	If LED1, LED2, and LED4 are on – power supply circuits on motor board are working properly. If one of LED1, LED2, and LED4 is on, and the other two off – Replace motor board. If two of LED1, LED2, and LED4 are on, and the other is off – Replace motor board. If LED1, LED2, and LED4 are off – Check power coming into motor board, and/or replace motor board.
2	On	Indicates +5 volts dc present on motor board PC1 with respect to dc circuit common.
	Off	If LED1, LED2, and LED4 are on – power supply circuits on motor board are working properly. If one of LED1, LED2, and LED4 is on, and the other two off – Replace motor board. If two of LED1, LED2, and LED4 are on, and the other is off – Replace motor board. If LED1, LED2, and LED4 are off – Check power coming into motor board, and/or replace motor board.
3	On	Indicates there are no error messages.
	Off	LED3 should be on. If LED3 is blinking, check display board PC20 for error messages, or check for the error by the number of blinks of LED3.
4	On	Indicates –15 volts dc present on motor board PC1 with respect to dc circuit common.
	Off	If LED1, LED2, and LED4 are on – power supply circuits on motor board are working properly. If one of LED1, LED2, and LED4 is on, and the other two off – Replace motor board. If two of LED1, LED2, and LED4 are on, and the other is off – Replace motor board. If LED1, LED2, and LED4 are off – Check power coming into motor board, and/or replace motor board.

7-7. Meter Board PC60 Testing Information



Be sure plugs are secure before testing. See Section 7-8 for specific values during testing.

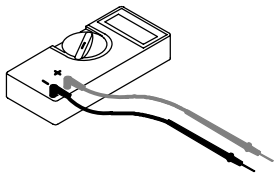
1 Meter Board PC60

2 Receptacle RC63

3 Receptacle RC61

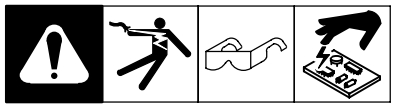
4 Receptacle RC67

Test Equipment Needed:



803 279 / 201 757

7-8. Meter Board PC60 Test Point Values



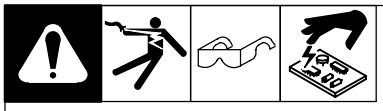
PC60 Voltage Readings

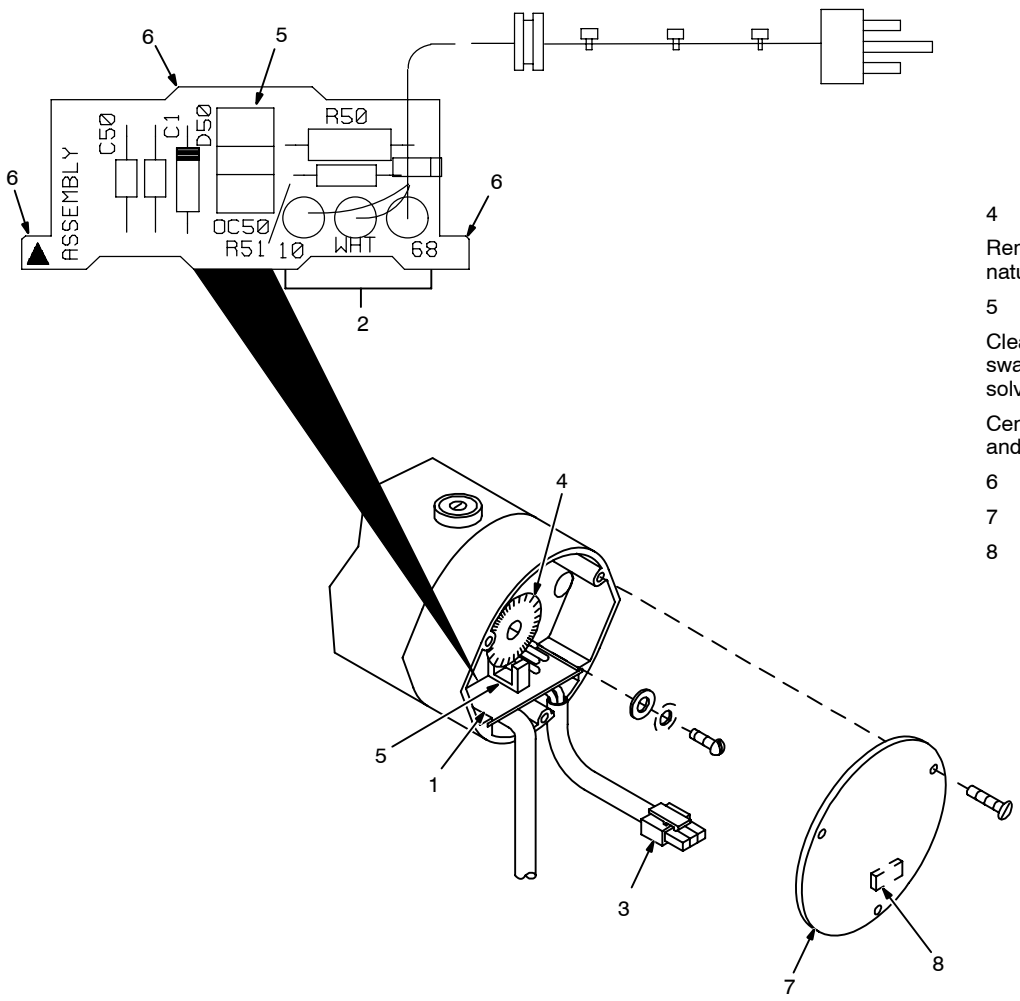
a) Tolerance – ±10% unless specified

b) Reference – To circuit common (Use RC67–10)

Receptacle	Pin	Value
RC61	1 thru 4	Serial communication
	5	Circuit common
RC63	1 thru 6	Programming header
RC67	1 thru 8	Not used
	9	+35 volts dc
	10	Circuit common

7-9. 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

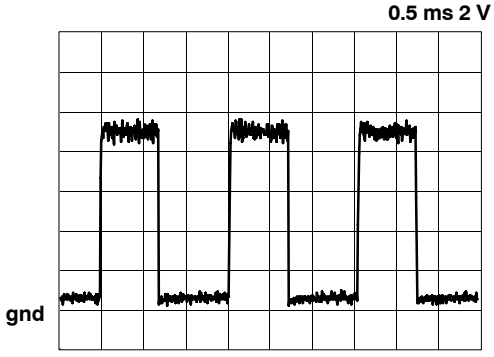
Clean inside surface with cotton swab dipped in denatured alcohol solvent.

Center encoder disk inside OC50, and secure with hardware.

6 Circuit Board Retaining Tabs

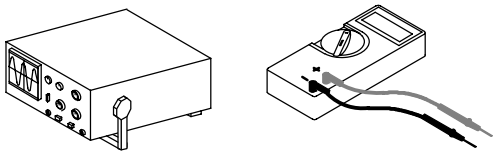
7 Motor End Cap

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:

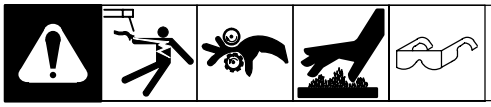


Tools Needed:

198 005-B / 153 632-D / Ref. 137 394

SECTION 8 – MAINTENANCE

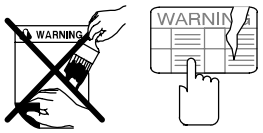
8-1. Routine Maintenance



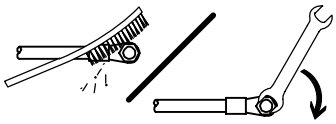
▲ **Disconnect power before maintaining.**

3 Months

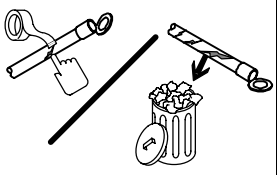
Replace unreadable labels.



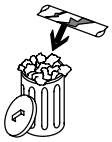
Clean and tighten weld terminals.



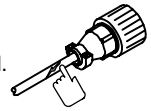
Repair or replace cracked weld cable.



Replace cracked parts.

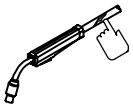


Check 14-pin cord.



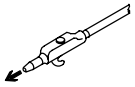
Check gas hose and fittings.

Check gun cable.

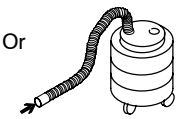


6 Months

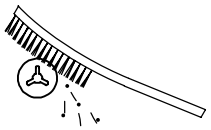
Blow out or vacuum inside. During heavy service, clean monthly.



Or

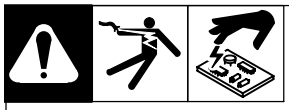


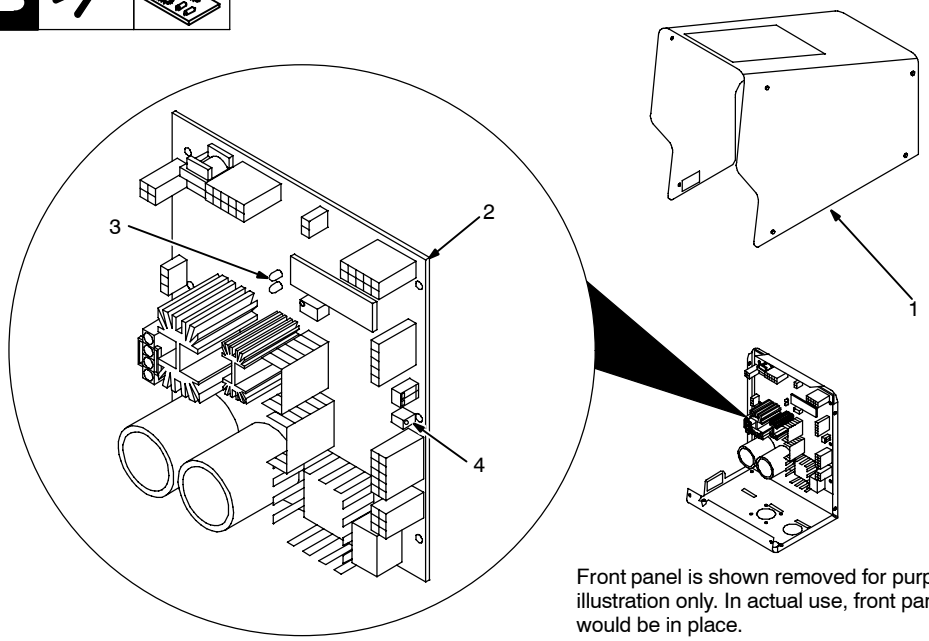
Clean drive rolls.



Notes

8-2. Diagnostics





1 Wrapper
2 Motor Control Board PC1
3 LED3
4 P2

Front panel is shown removed for purpose of illustration only. In actual use, front panel would be in place.

Display On Meter (If Equipped)	LED3 Sequence On Motor Control Board PC1	Indicated Error
HELP 1	1 Blink	Communication Error
HELP 2	2 Blinks	Trigger Error
HELP 3	3 Blinks	Tach Error
HELP 4	*4 Blinks	Motor Error

*Since blink On time and blink Off time are equal in a four-blink cycle, the four–blink sequence appears as constant blinking.

Ref. 802 687

- **Error Indications**

Error conditions are indicated by LED3 on PC1 or on display (on models with meters). To view LED3, turn Off unit, remove wrapper, and turn unit On. LED3 is most easily observed from the left side of the unit.

The LED blinks in a 2.5 second cycle. The number of blinks in this period indicates the type of error.

The priority of the errors is related to the number of blinks indicating the error. The more blinks, the more severe the error (motor error is top priority). A higher priority error overrides a lower one (if a motor error and a communication error existed, the light would blink four times for the motor error).

- **The communication error** occurs 2.5 seconds after a loss of communication between the motor and the meter board (if equipped). The user may continue to weld with this error. The error may be cleared by turning power Off, waiting a minimum of two seconds, and turning power On.
- **The trigger error** occurs if the user has the trigger held for more than two minutes without striking an arc (providing current override is not enabled), or if the user holds the trigger past the postflow phase in a timed weld. This error also occurs if the trigger is held when the feeder is powered up. The error may be cleared by releasing the trigger.
- **The tach error** occurs 2 seconds after the loss of tachometer feedback. The user may continue to weld with this error. The motor speed is regulated through the monitoring of voltage and current.
- **The motor error** indicates that the motor has been drawing too much current for too long. To remedy this, reduce the wire feed speed or the wire feeder torque load/duty cycle.

SECTION 9 – 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-74S, S-74D	LC029720 and following	202 246-C	203 198-C
Circuit Board PC1	LC029720 Thru LC713340	204 009-E	♦
	LC713341 and following	226 272-C	♦
Circuit Board PC60 (S-74D)	LC029720 and following	201 758-B	♦

♦ Not included in this manual.

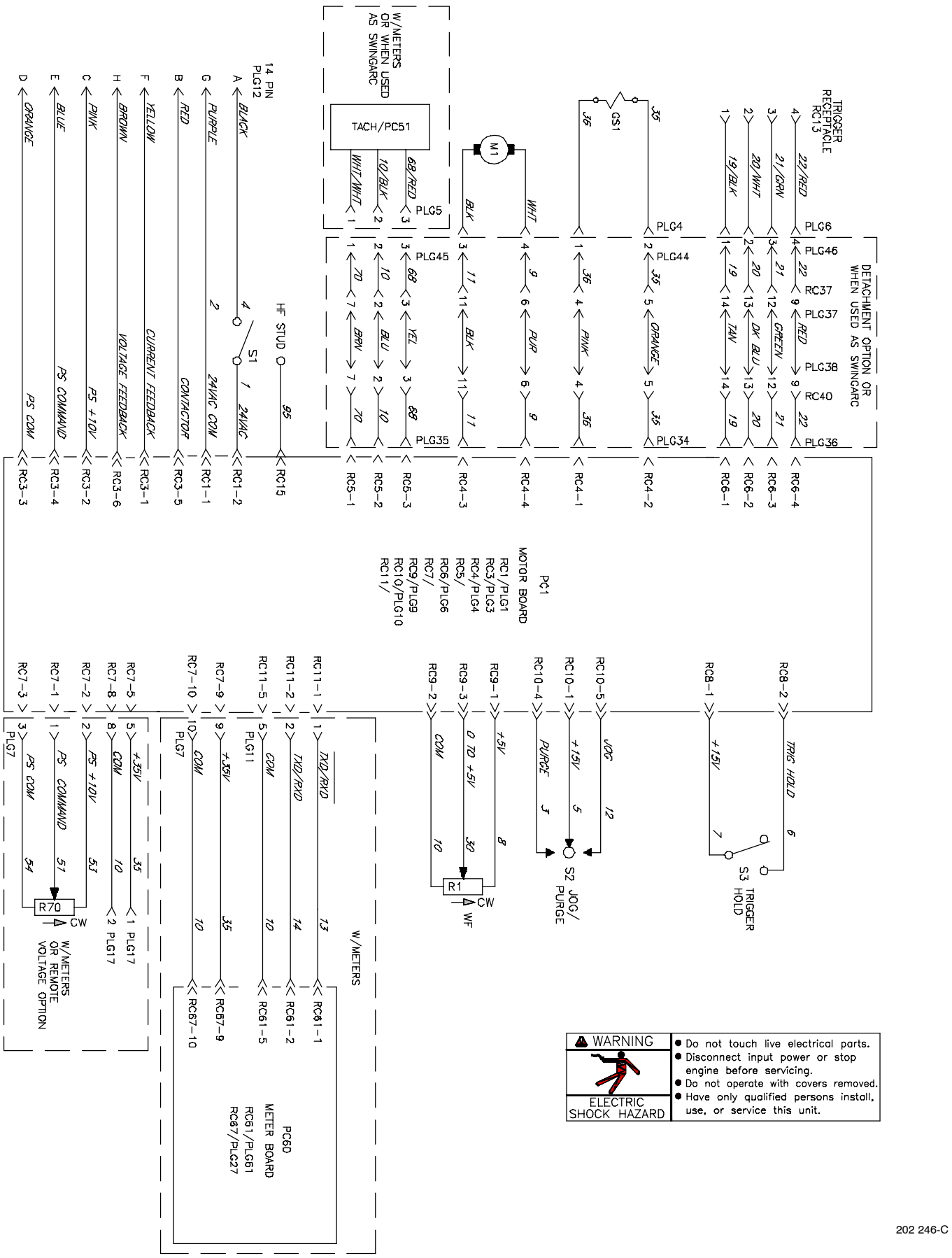


Figure 9-1. Circuit Diagram For S-74S, S-74D Eff. w/LC029720 And Following

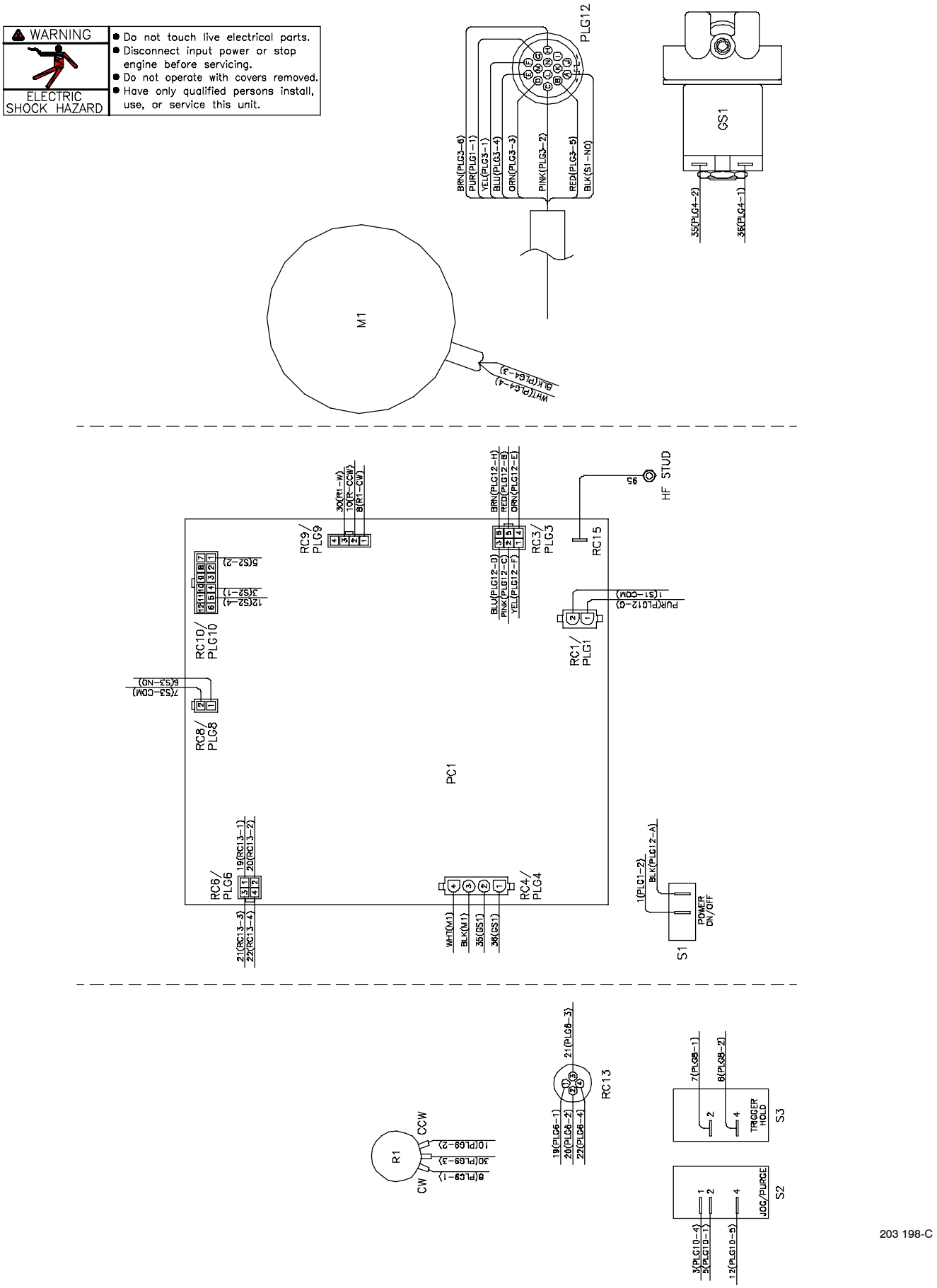


Figure 9-2. Wiring Diagram For S-74S And S-74D Eff. w/LC029720 And Following

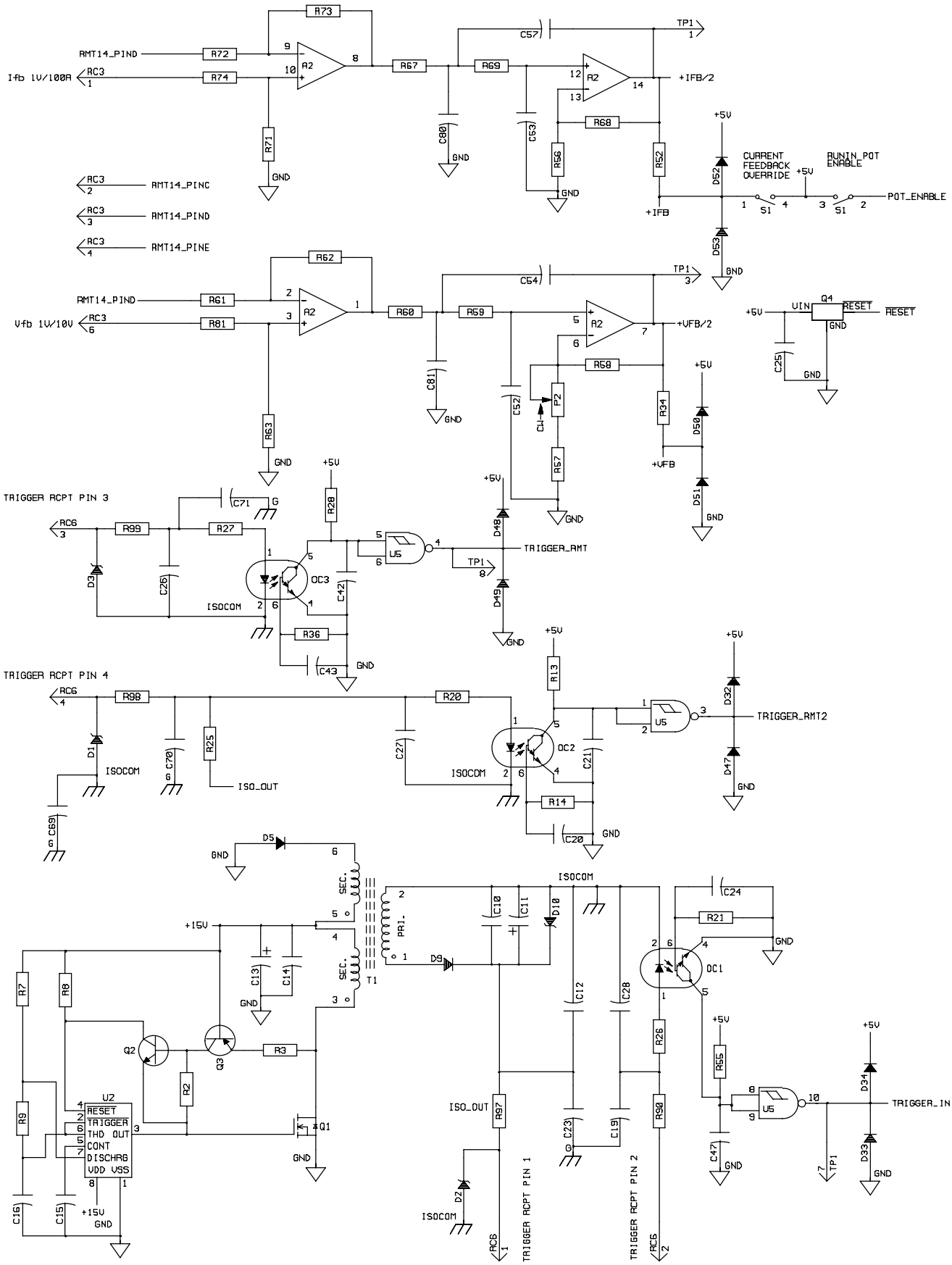
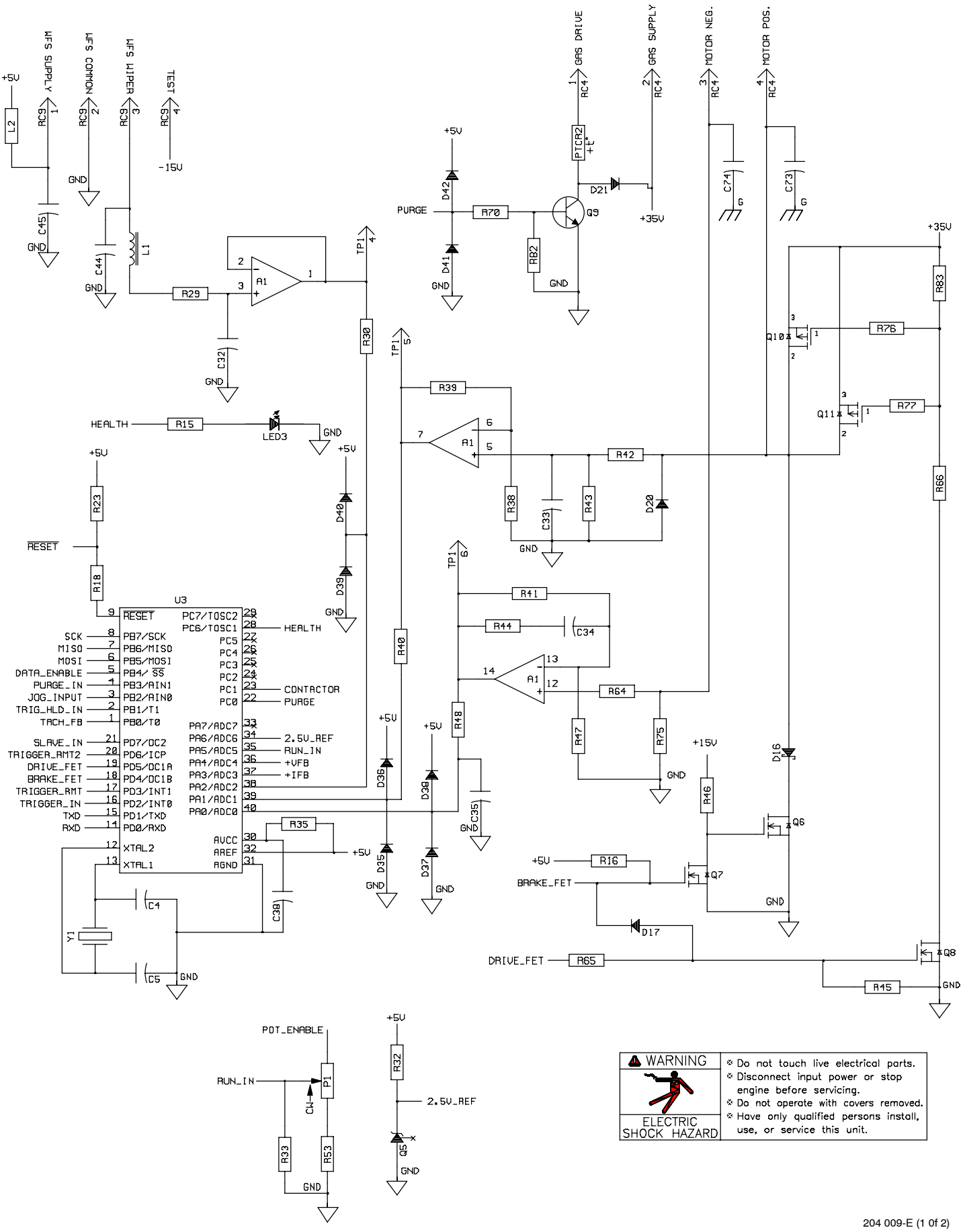
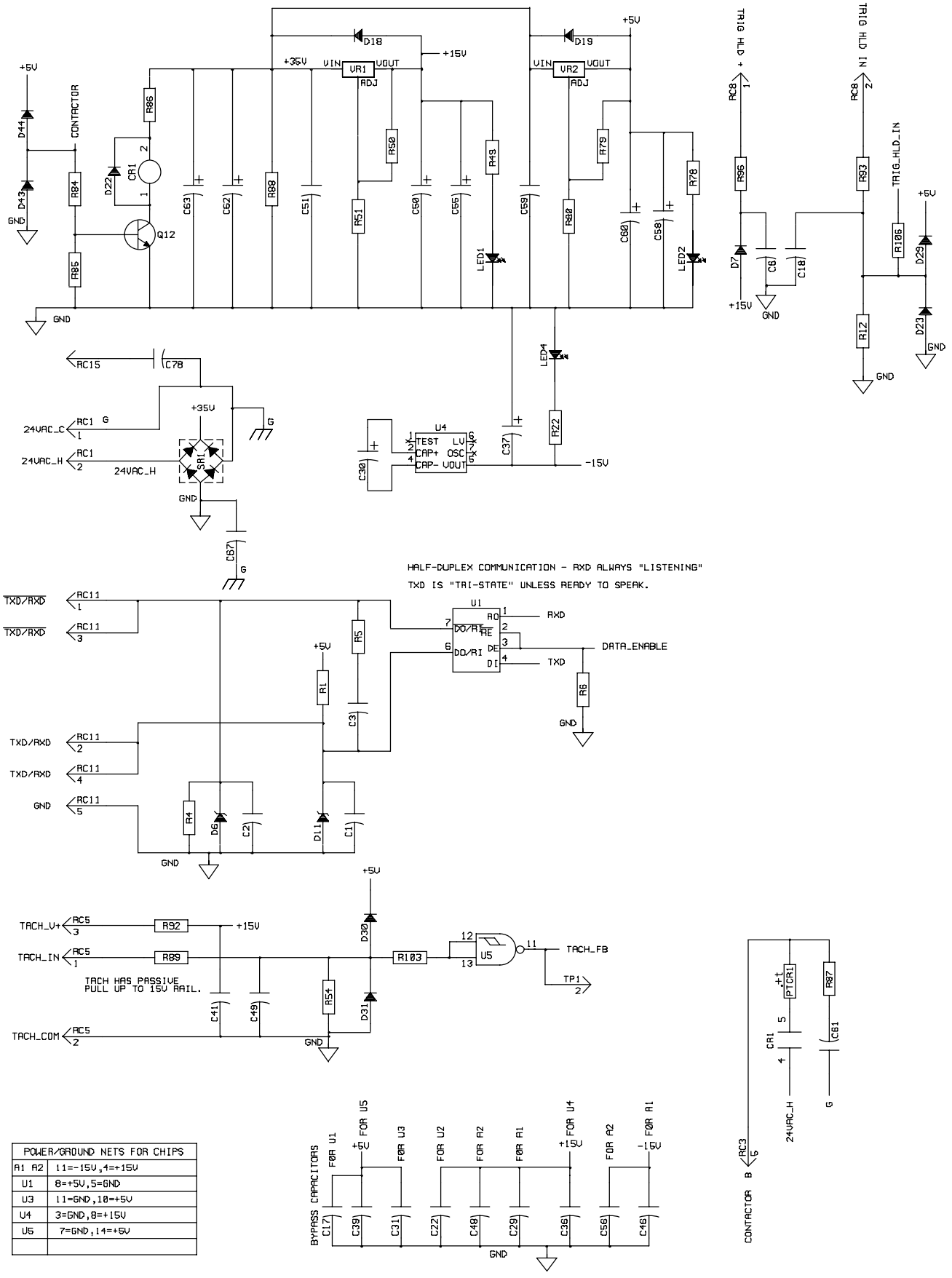


Figure 9-3. Circuit Diagram For Control Board PC1 Eff. w/LC029720 Thru LC713340 (Part 1 of 2)

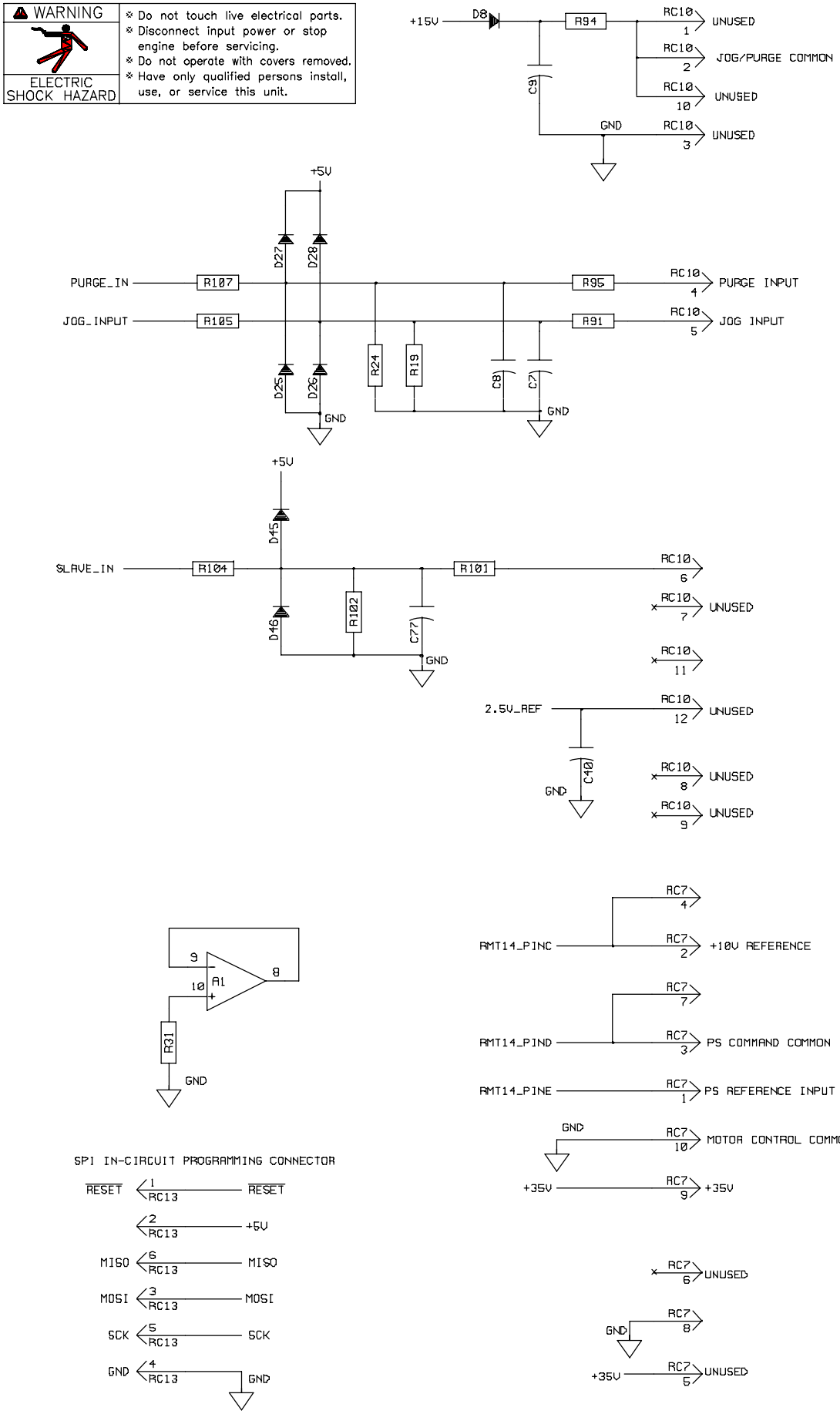


204 009-E (1 0f 2)



POWER/GROUND NETS FOR CHIPS	
A1 A2	11=-15V,4=+15V
U1	8=+5V,5=GND
U3	11=GND,10=+5V
U4	3=GND,8=+15V
U5	7=GND,14=+5V

Figure 9-4. Circuit Diagram For Control Board PC1 Eff. w/LC029720 Thru LC713340 (Part 2 of 2)



204 009-E (2 0f 2)

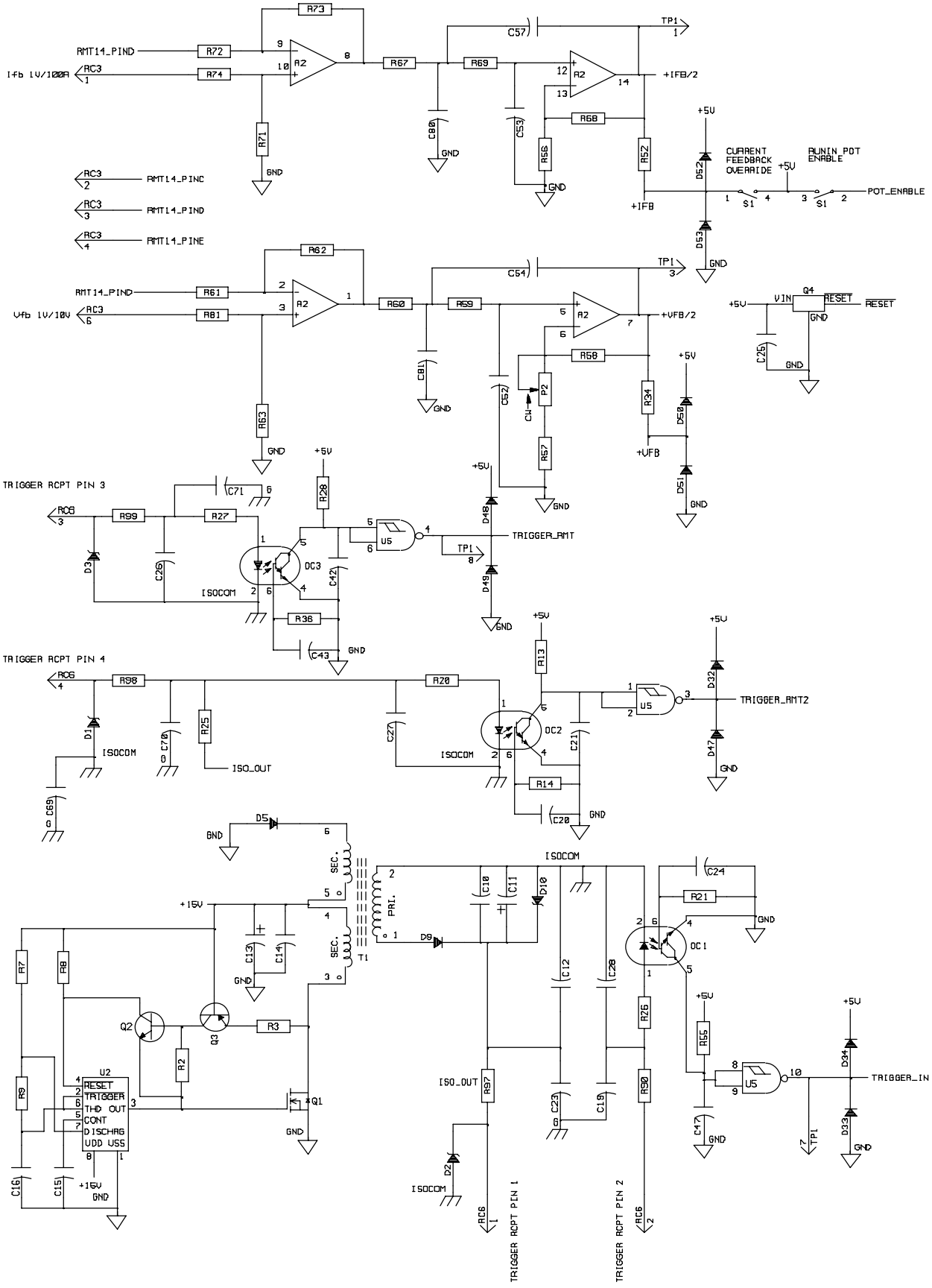
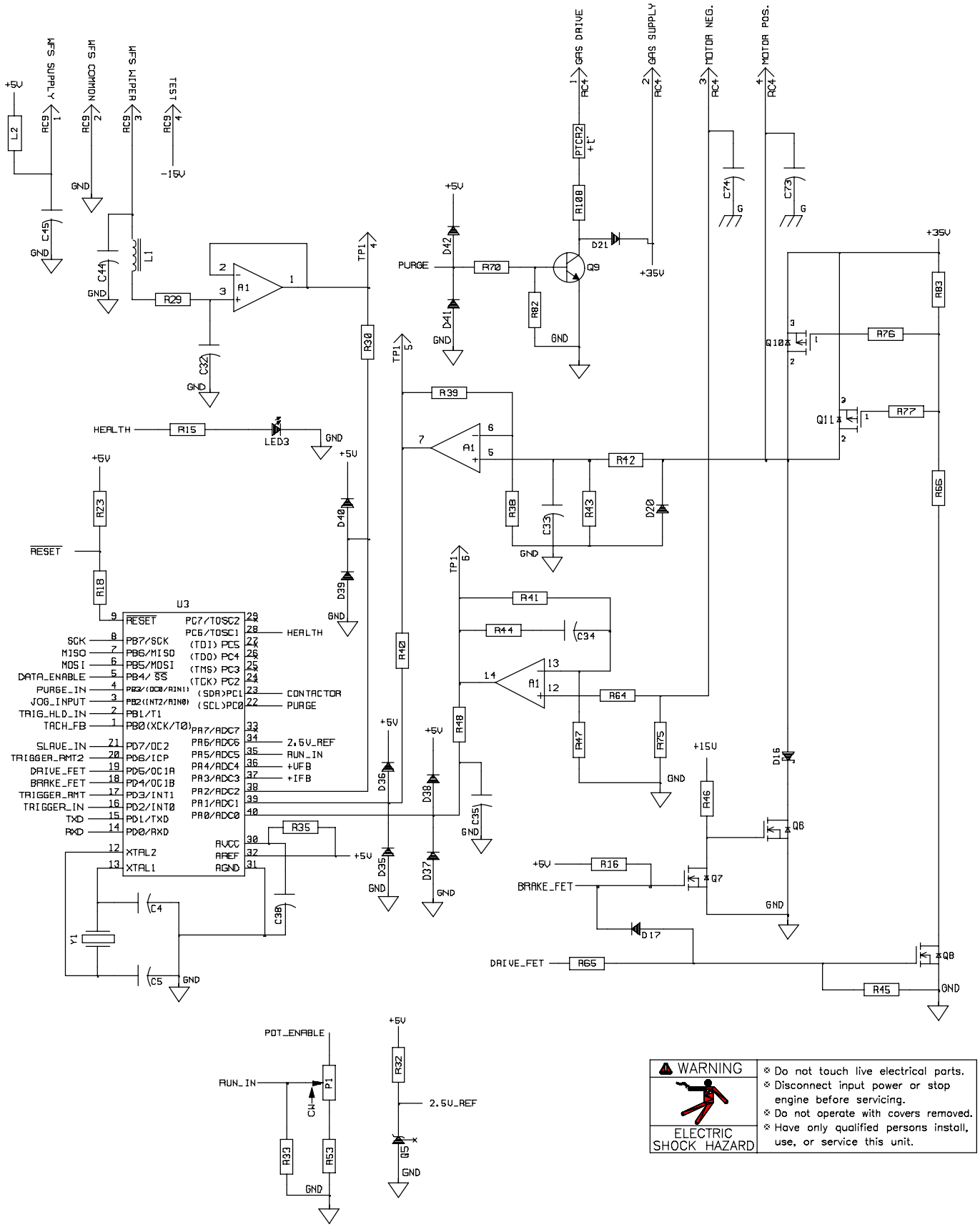
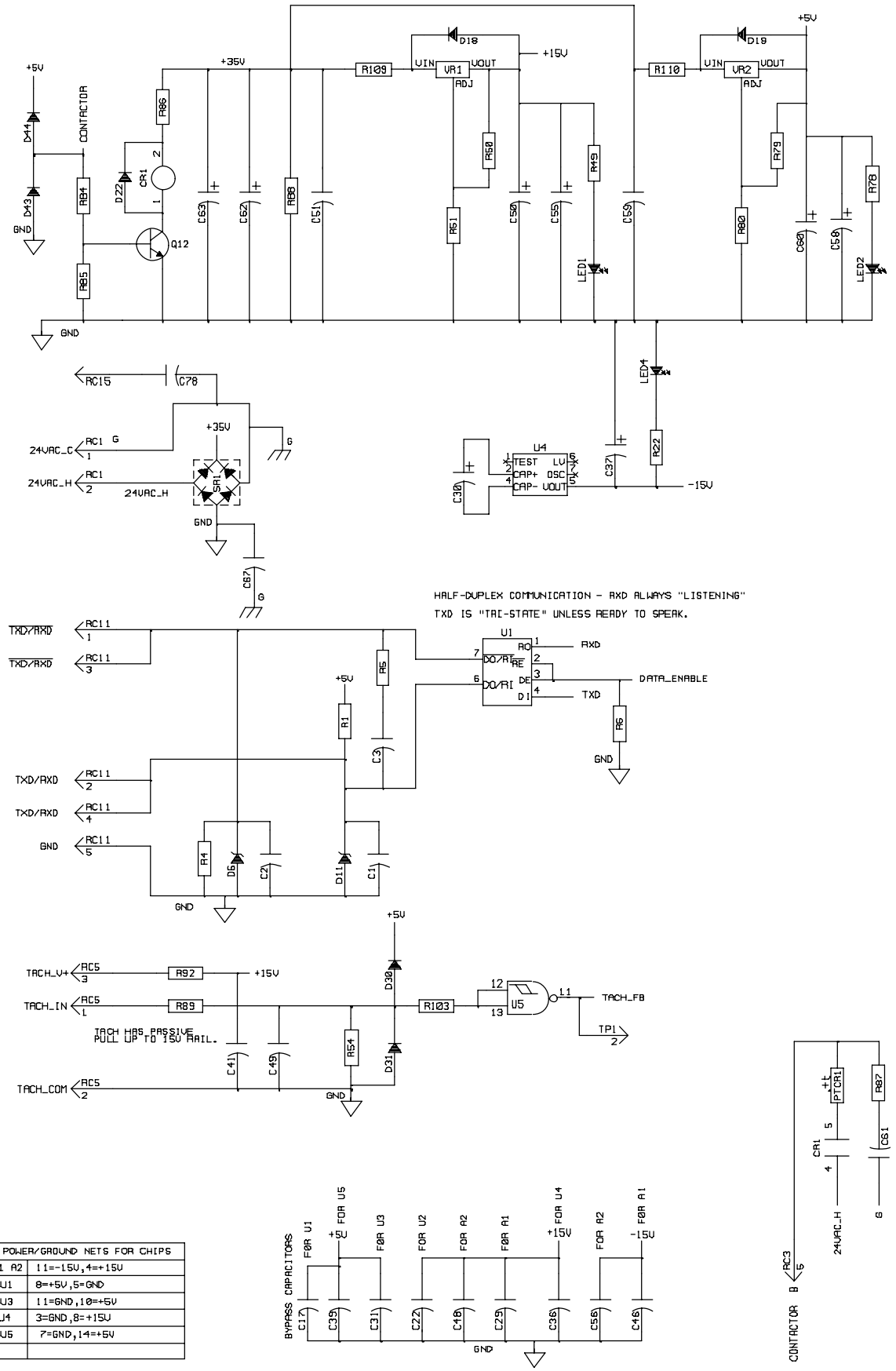


Figure 9-2. Circuit Diagram For Control Board PC1 Eff. w/LC713341 And Following (Part 1 of 2)

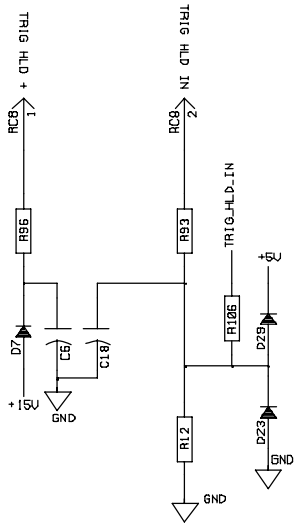


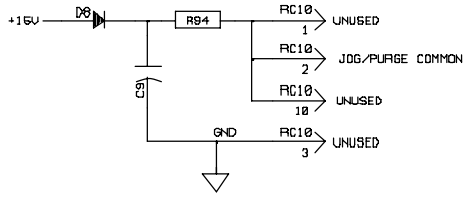
226 272-C (1 0f 2)

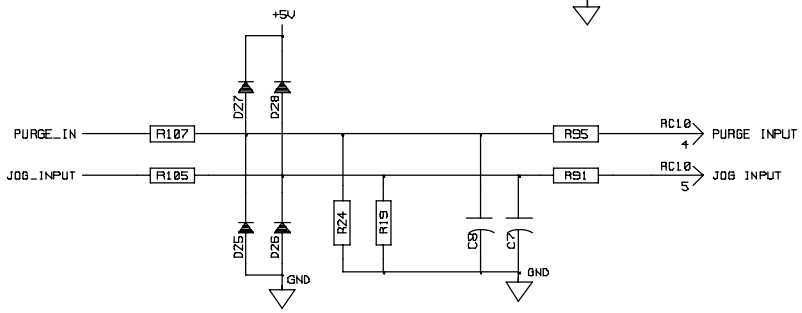


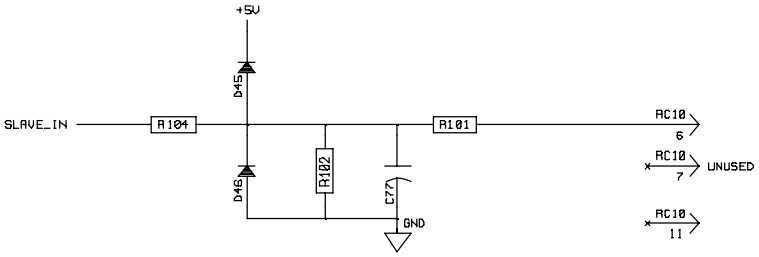
POWER/GROUND NETS FOR CHIPS	
A1 A2	11=-15V,4=+15V
U1	8=+5V,5=GND
U3	11=GND,10=+5V
U4	3=GND,8=+15V
U5	7=GND,14=+5V

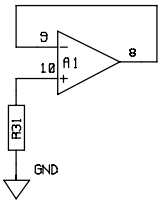
Figure 9-3. Circuit Diagram For Control Board PC1 Eff. w/LC713341 And Following (Part 2 of 2)



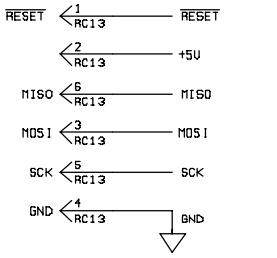


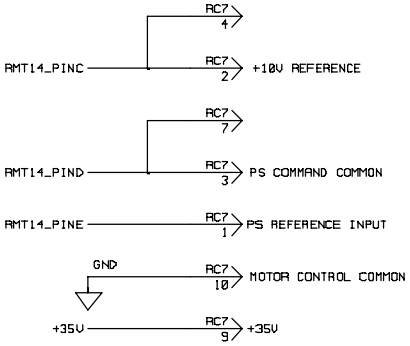


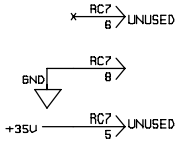


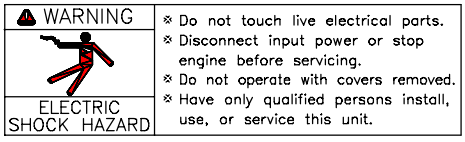


SPI IN-CIRCUIT PROGRAMMING CONNECTOR









226 272-C (2 0f 2)

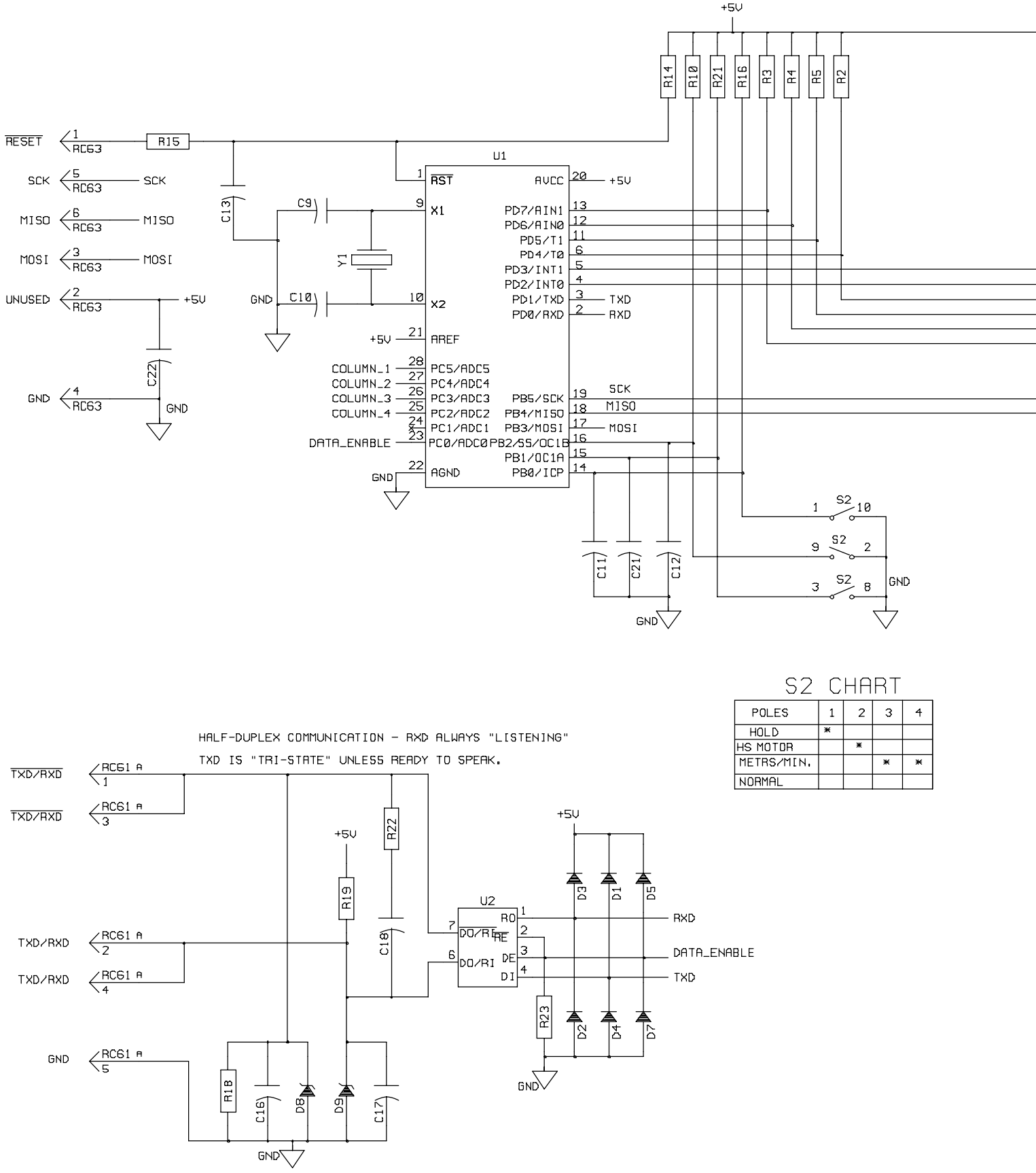
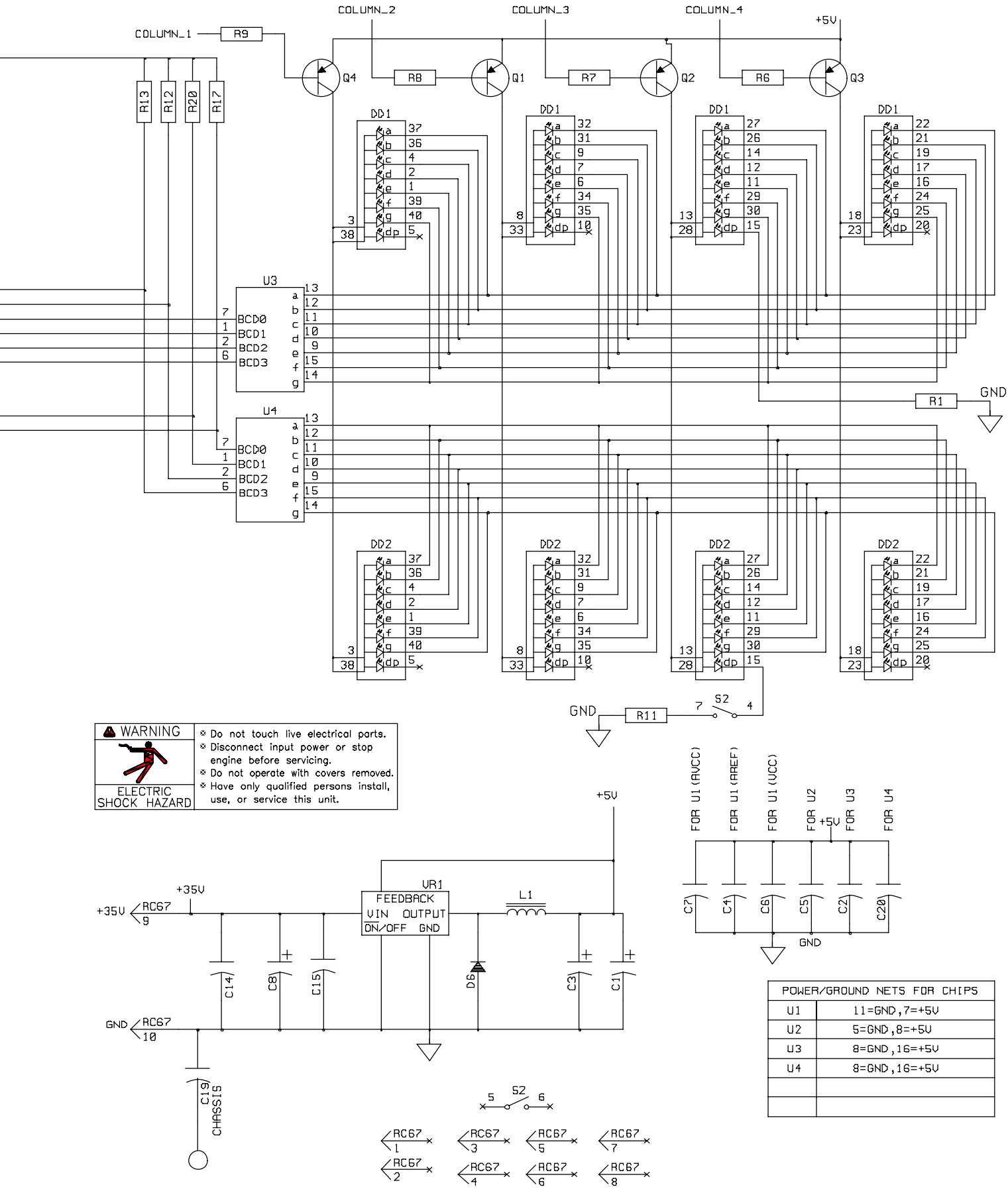


Figure 9-5. Circuit Diagram For Control Board PC60 (S-74D) Eff. w/LC029720 And Following



POWER/GROUND NETS FOR CHIPS	
U1	11=GND,7=+5V
U2	5=GND,8=+5V
U3	8=GND,16=+5V
U4	8=GND,16=+5V

201 758-B

Notes

TM-1500-10D 2006–07

Processes

MIG (GMAW) Welding

Flux Cored (FCAW) Welding (Gas-and Self-Shielded)

Description

CV

Wire Feeder

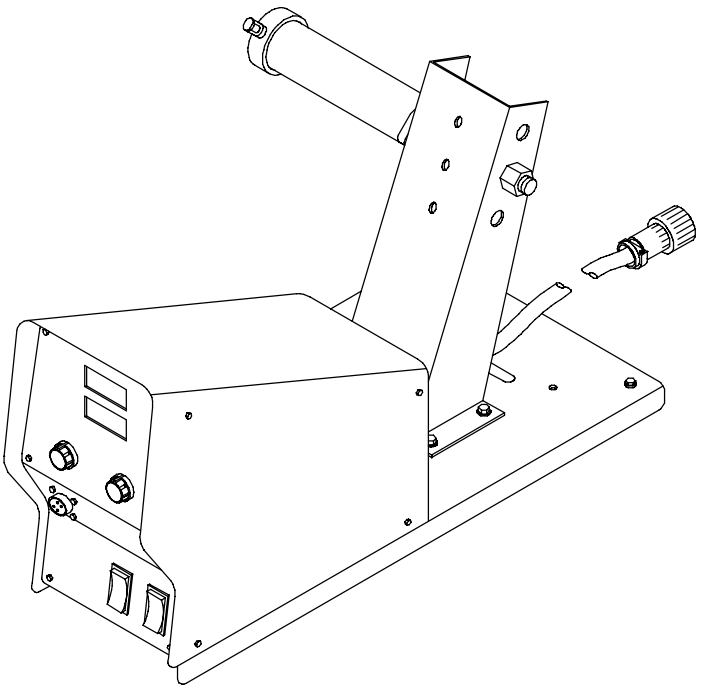
CE

S-74S, S-74D

PARTS LIST

Eff w/LC029720 THRU LC676743

For OM-1500-10 (207 748) Revisions * Thru B



Visit our website at

www.MillerWelds.com

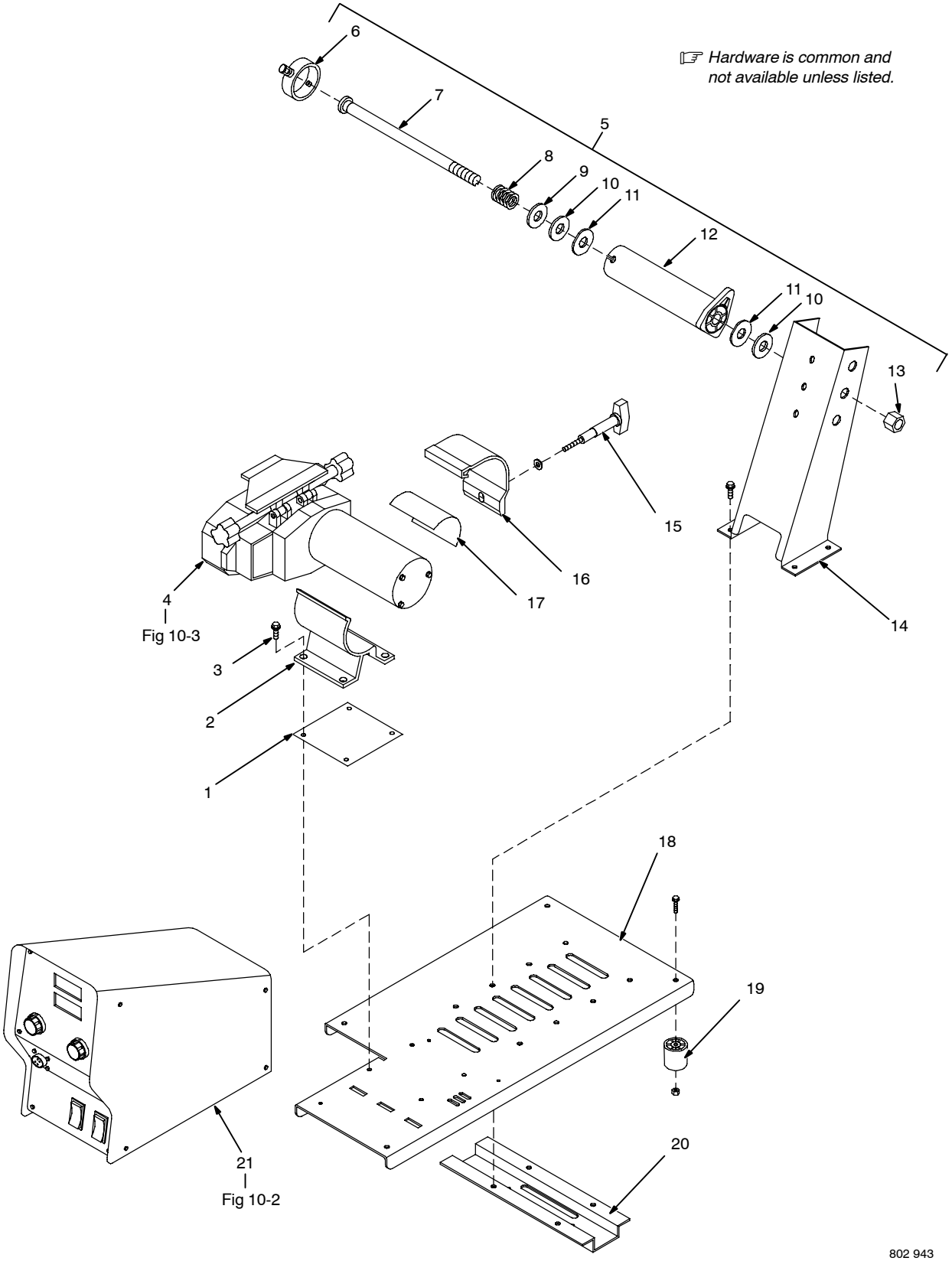


Figure 10-1. Main Assembly

Item No.	Part No.	Description	Quantity

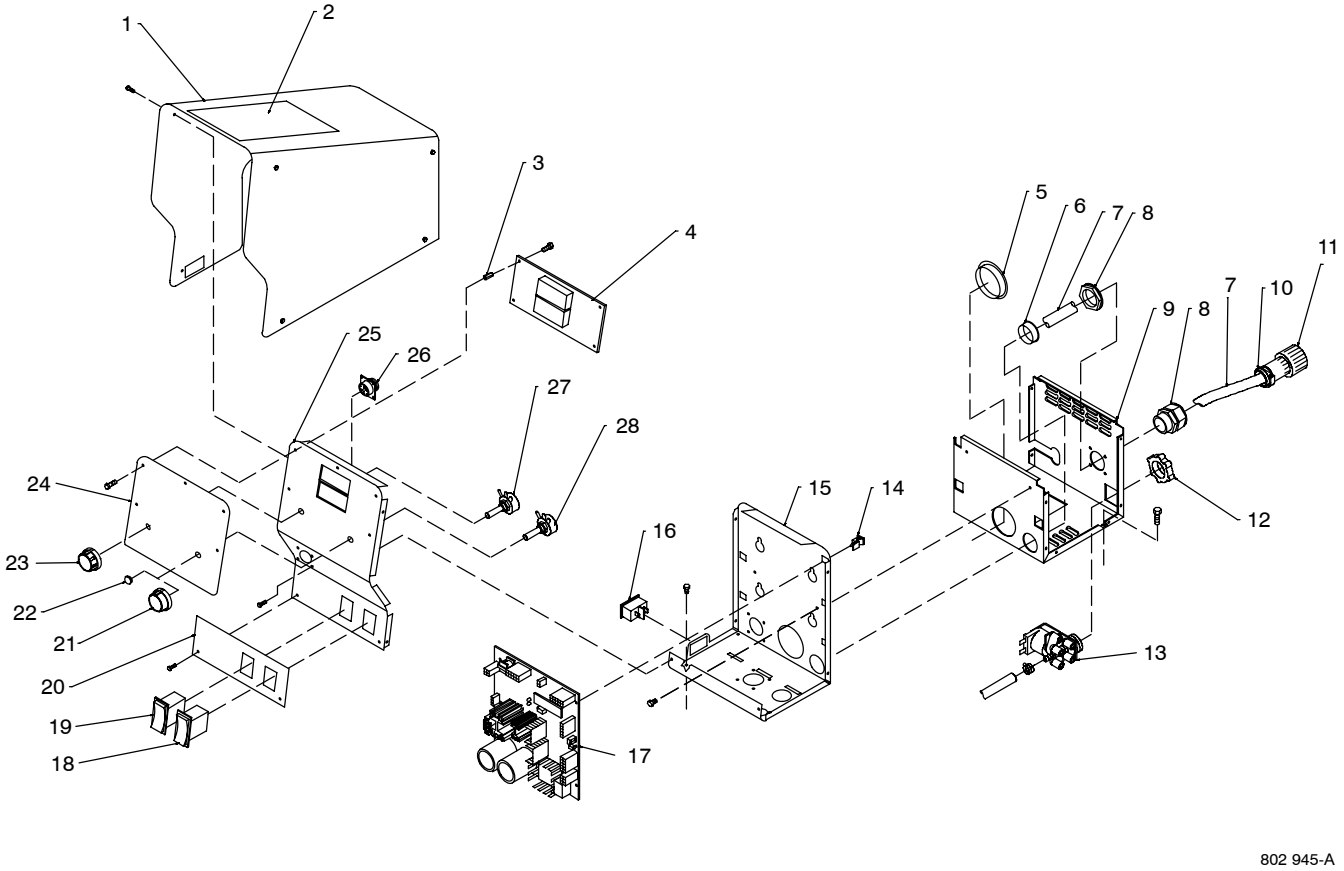
Figure 10-1. Main Assembly

1	159 647	Insulator, Motor Clamp	1
2	159 646	Clamp, Motor Base	1
3	159 360	Insulator, Screw Machine	4
4	Figure 10-3	Drive Assembly, Wire	1
5	141 753	Hub & Spindle Assembly, (Consisting Of)	1
6	058 427	Ring, Retaining Spool	1
7	180 571	Shaft, Support Spool	1
8	010 233	Spring, Cprsn .970 Od X .120 Wire X 1.250pld	1
9	057 971	Washer, Flat Stl Keyed 1.500dia X .125thk	1
10	010 191	Washer, Fbr .656 Id X 1.500 Od X .125thk	2
11	058 628	Washer, Brake Stl	2
12	058 428	Hub, Spool	1
13	135 205	Nut, Stl Slflkg Hex Reg .625-11 W/Nylon Insert	1
14	200 556	Support, Spool	1
15	201 781	Knob, W/Extension Clamp	1
16	156 243	Clamp, Motor Top	1
17	145 639	Strip, Buna N Compressed Sheet .062 X 4.000 X 4.000	1
18	200 552	Base	1
19	134 306	Foot, Rubber 1.250 Dia X 1.375 High No 10 Screw	4
20	200 557	Stiffener, Base	1
21	Figure 10-2	Control Box	1

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

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

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



802 945-A

Figure 10-2. Control Box

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model S-74S	Quantity Model S-74D
Figure 10-2. Control Box (Figure 10-1 Item 21)					
1		200 555	. . Wrapper, Feeder	1	1
2		134 464	. . Label, General Precautionary For Static & Wire Feed	1	1
2		178 936	. . Label, General Precautionary Wordless CE Wf (CE Version)	1	1
3		115 443	. . Stand-Off, No 6-32 X .750	0	4
4	PC60	207 340	. . Circuit Card Assembly, Meter W/Program (Prior To LC203769)	0	1
4	PC60	210 563	. . Circuit Card Assembly, Meter W/Program (Eff W/LC203769)	0	1
5		010 494	. . Bushing, Snap−In Nyl 1.375 Id X 1.750 Mtg Hole	1	1
6		057 357	. . Bushing, Snap−In Nyl .937 Id X 1.125 Mtg Hole	1	1
7		163 519	. . . . Cable, Port	11.5 Ft (3.5 m)	
8		139 041	. . . . Strain Relief	1	1
9		200 554	. . Enclosure, Motor	1	1
		204 910	. . Cable, Power (Consisting Of)	1	1
10		079 739	. . . . Conn, Circ Cpc Clamp Str Rlf	1	1
11	PLG12	141 162	. . . . Housing Plug+Pins, (Service Kit)	1	1
	PLG3	115 093	. . . . Housing Plug+Skts, (Service Kit)	1	1
12		605 227	. . Nut, 750−14 Knurled1.68Dia .41h Nyl	1	1
13		200 333	. . Valve, 34 VDC 2 Way Custom Port 1/8 Orf	1	1
14		134 201	. . Stand−off Support, PC Card	6	6
15		200 551	. . Enclosure, Control	1	1
16	S1	111 997	. . Switch, Rocker Spst 10A 250 VAC On−Off	1	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model S-74S	Quantity Model S-74D
			Figure 10-2. Control Box (Figure 10-1 Item 21)		
17	PC1	207 344	Circuit Card Assy, Motor Control (Prior To LC203769)	1	1
17	PC1	210 555	Circuit Card Assy, Motor Control (Eff W/LC203769)	1	1
18	S2	200 295	Switch, Rocker Spdt 15A 12V (On)–Off–(On)	1	1
19	S3	201 642	Switch, Rocker Spdt 15A 12V On–None–On	1	1
20		203 216	Nameplate, Lower	1	1
20		206 296	Nameplate, Lower (CE Version)	1	1
21		171 007	Knob, Pointer 1.670 Dia X .250 Id W/Set Screwsplstc	0	1
22		119 951	Blank, Snap-In Nyl .437 Mtg Hole Black	1	0
23		171 007	Knob, Pointer 1.670 Dia X .250 Id W/Set Screwsplstc	1	1
24		203 212	Nameplate, Upper	1	0
24		206 432	Nameplate, Upper (CE Version)	1	0
24		203 214	Nameplate, Upper W/Meters	0	1
24		206 295	Nameplate, Upper W/Meters (CE Version)	0	1
24		203 216	Nameplate, Lower	1	1
24		206 296	Nameplate, Lower (CE Version)	1	1
25		202 237	Panel, Front	1	1
26	RC13	048 282	Rcpt W/Skts, (Service Kit)	1	1
	PLG8	131 054	Housing Rcpt+Skts, (Service Kit)	1	1
	PLG9	201 665	Housing Plug+Skts, (Service Kit)	1	1
	PLG6	115 094	Housing Plug+Skts, (Service Kit)	1	1
	PLG1	202 592	Housing Plug Pins+Skts, (Service Kit)	1	1
	PLG4	136 810	Housing Plug Pins+Skts, (Service Kit)	1	1
	PLG10	130 203	Housing Plug+Skts, (Service Kit)	1	1
27	R1	073 562	Potentiometer, Cp Std Slot 1T 2W 10K Linear	1	0
27	R1	603 856	Potentiometer, Ww Sltd Sft 10/T 2W 10K Ohm	0	1
28	R70	603 856	Potentiometer, Ww Sltd Sft 10/T 2W 10K Ohm	0	1
	PLG7,27	115 091	Housing Plug+Skts, (Service Kit)	0	1
	PLG11,61	131 055	Housing Plug+Skts, (Service Kit)	0	1
	PLG17	158 719	Housing Plug+Skts, (Service Kit)	0	1

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

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

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

See Table 10-1 For Drive Roll & Wire Guide Kits

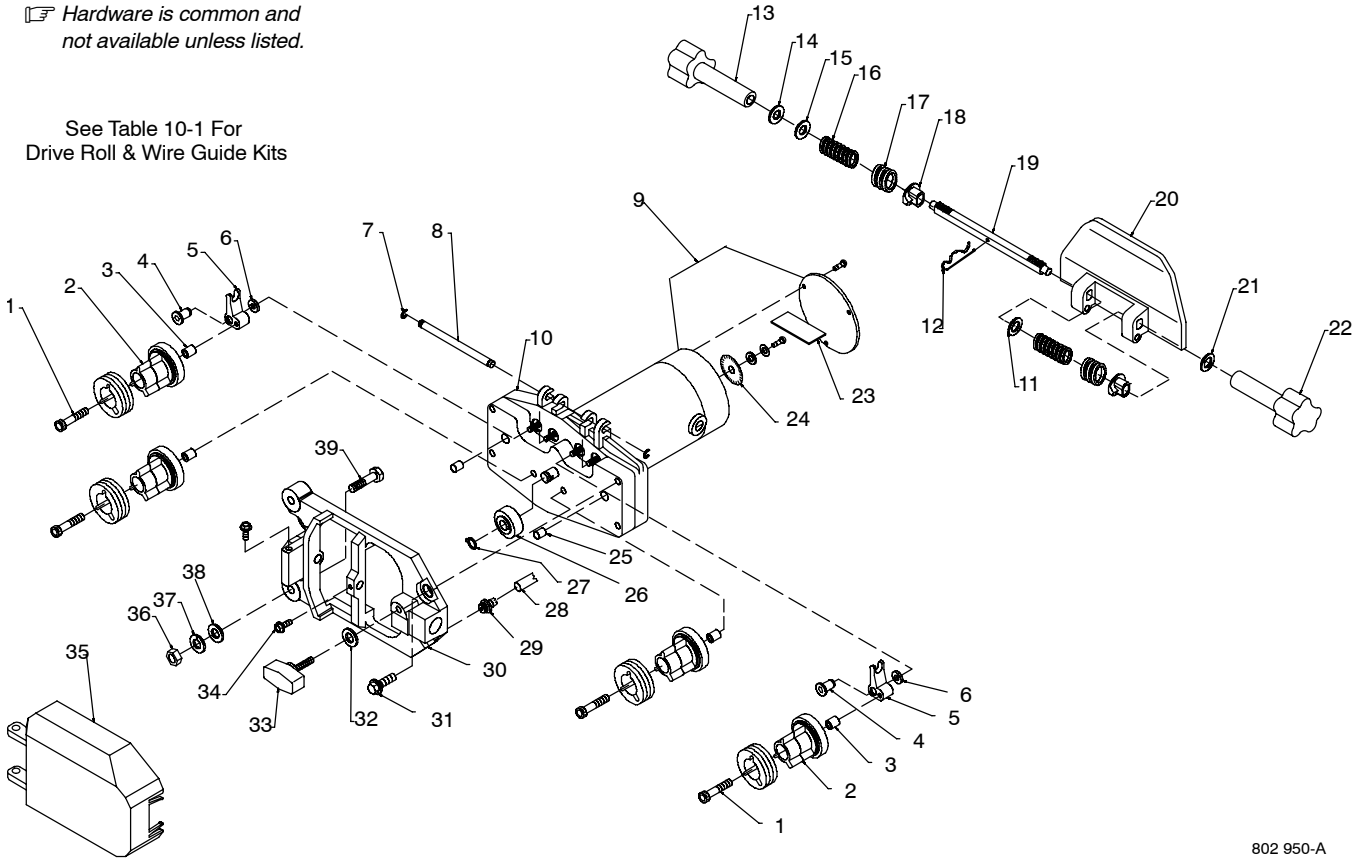


Figure 10-3. Drive Assembly, Wire

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model S-74S	Quantity Model S-74D
			Figure 10-3. Drive Assembly, Wire (Figure 10-1 Item 4)		
1		010 668	.. Screw, Cap Stl Sch .250-20 X 1.500	4	4
2		172 075	.. Carrier, Drive Roll W/Components	4	4
3		149 962	.. Spacer, Carrier Drive Roll	4	4
4		149 486	.. Pin, Rotation Arm Rocker	2	2
5		132 750	.. Arm, Pressure	2	2
6		150 520	.. Spacer, Flat Stl .257 Id X .619 Od X .105	2	2
7		133 493	.. Ring, Retaining Ext .250 Shaft X .025Thk	2	2
8		133 350	.. Pin, Hinge	1	1
9	M1	201 230	.. Motor, Gear 1/8Hp 24VDC Standard Speed	1	1
9	M1	201 231	.. Motor, Gear 1/8Hp 24VDC High Speed (Optional On S-74D)	0	1
		153 491	.... Kit, Brush Replacement (Consisting Of)	1	1
		153 492	..... Cap, Brush	2	2
		*153 493	..... Brush, Carbon	2	2
		184 136	.... Kit, Brush Holder Replacement	1	2
10		155 098	.. Kit, Cover Motor Gearbox (Consisting Of)	1	1
		153 550	.... Cover, Motor Gearbox (Consisting Of)	1	1
		155 099	..... Gasket, Cover	1	1
		155 100	..... Screw, Cover	5	5
		154 031	.... Spacer, Locating	2	2
		133 493	.... Ring, Rtng Ext .250 Shaft Grv X .025Thk	1	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model S-74S	Quantity Model S-74D
			Figure 10-3. Drive Assembly, Wire (Continued)		
		173 837	.. Pressure Arm (Consisting Of)	1	1
11		182 414	.... Washer, Flat	1	1
12		182 415	.... Pin, Cotter Hair	1	1
13		203 640	.... Knob, W/Extension Short Pressure Arm	1	1
14		602 200	.... Washer, Lock Stl Split No. 8	1	1
15		604 772	.... Washer, Flat Stl Sae No. 8	1	1
16		182 156	.... Spring, Cprsn	4	4
17		182 155	.... Spring	2	2
18		132 746	.... Bushing, Spring	2	2
19		203 633	.... Shaft, Spring	1	1
20		132 747	.... Carrier, Shaft	1	1
21		133 739	.... Washer, Flat Buna .375 Id X .625 Od X .062Thk	1	1
22		203 637	.... Knob, W/Extension Long Pressure Arm	1	1
23	PC51	201 225	.. Circuit Card, Digital Tach (Consisting Of)	0	1
	PLG5	131 204	.... Connector & Sockets	0	1
		604 311	.... Grommet, Rbr .250 Id X .375Mtg Hole .062 Groove	0	1
24		132 611	.. Optical Encoder Disc	0	1
		603 115	.. Weather Stripping, Adh .125 X .375	0	1
25		167 387	.. Spacer, Locating	2	2
26		168 825	.. Drive, Pinion	1	2
27		133 308	.. Ring, Retaining Ext .375 Shaft X .025Thk	1	1
28		134 834	.. Hose, Sae .187 Id X .410 Od (Order By Ft)	2 Ft (0.6 m)	
29		149 959	.. Fitting, Brs Barbed M 3/16Tbg X .312-24	1	1
30		179 265	.. Adapter, Gun/Feeder	1	1
31		108 940	.. Screw, Cap Stl Hexhd .250-20 X .750	4	4
32		604 538	.. Washer, Flat Stl Sae .312	1	1
33		151 437	.. Knob, Plstc T 1.125 Lg X .312-18 X 1.500	1	1
34		151 290	.. Screw, Mach Stl Hexwhd 10-32 X .500	2	2
35		179 277	.. Cover, Drive Roll (Consisting Of)	1	1
		178 937	.... Label, Warning Electric Shock	1	1
36		601 872	.. Nut, Stl Hex Full Fnsh .375-16	1	1
37		602 213	.. Washer, Lock Stl Split .375	1	1
38		602 243	.. Washer, Flat Stl Std .375	1	1
39		601 966	.. Screw, Cap Stl Hexhd .375-16 X 1.250	1	1

*Recommended Spare Parts.

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

Table 10-1. Drive Roll And Wire Guide Kits

Wire Size		Inlet Guide	Intermediate Guide	V-GROOVE		U-GROOVE		VK-GROOVE		UC-GROOVE	
Fraction	Metric			4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll
.023-.025 in.	0.6 mm	150 993	149 518	151 024	087 130						
.030 in.	0.8 mm	150 993	149 518	151 025	053 695						
.035 in.	0.9 mm	150 993	149 518	151 026	053 700	151 036	072 000	151 052	132 958		
.040 in.	1.0 mm	150 993	149 518	161 190							
.045 in.	1.1/1.2 mm	150 994	149 519	151 027	053 697	151 037	053 701	151 053	132 957	151 070	083 489
.052 in.	1.3/1.4 mm	150 994	149 519	151 028	053 698	151 038	053 702	151 054	132 956	151 071	083 490
1/16 in. (.062 in.)	1.6 mm	150 995	149 520	151 029	053 699	151 039	053 706	151 055	132 955	151 072	053 708
.068-.072 in.	1.8 mm	150 995	149 520					151 056	132 959		
5/64 in. (.079 in.)	2.0 mm	150 995	149 520			151 040	053 704	151 057	132 960	151 073	053 710
3/32 in. (.094 in.)	2.4 mm	150 996	149 521			151 041	053 703	151 058	132 961	151 074	053 709
7/64 in. (.110 in.)	2.8 mm	150 996	149 521			151 042	053 705	151 059	132 962	151 075	053 711
1/8 in. (.125 in.)	3.2 mm	150 997	149 522			151 043	053 707	151 060	132 963	151 076	053 712

Each Kit Contains An Inlet Guide, Intermediate Guide, And 045 233 Antiwear Guide w/604 612 Setscrew 8-32 x .125, along with 4 Drive Rolls.

Ref. S-0527-C

TM-1500-10D 2006–07

Processes

MIG (GMAW) Welding

Flux Cored (FCAW) Welding (Gas-and Self-Shielded)

Description

CV

Wire Feeder

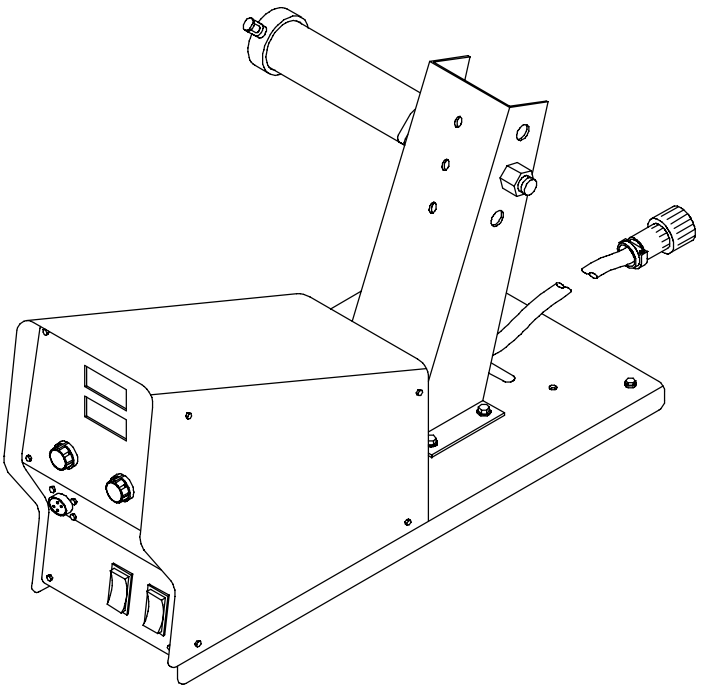
CE

S-74S, S-74D

PARTS LIST

Eff w/LC676744 AND FOLLOWING

For OM-1500-10 (207 748) Revisions C Thru L



Visit our website at

www.MillerWelds.com

SECTION 11 – PARTS LIST FOR LC676744 AND FOLLOWING

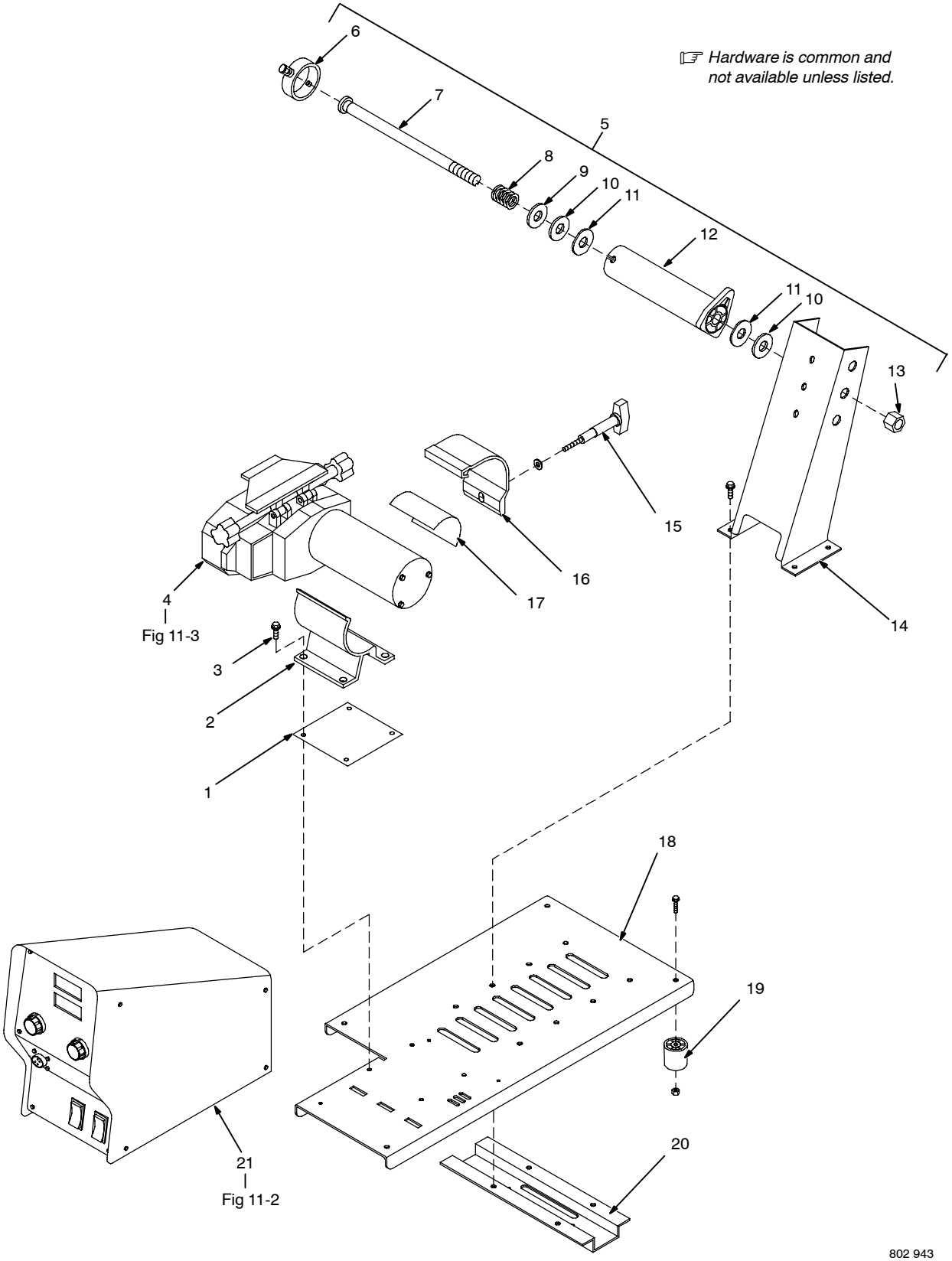


Figure 11-1 Main Assembly

Item No.	Part No.	Description	Quantity

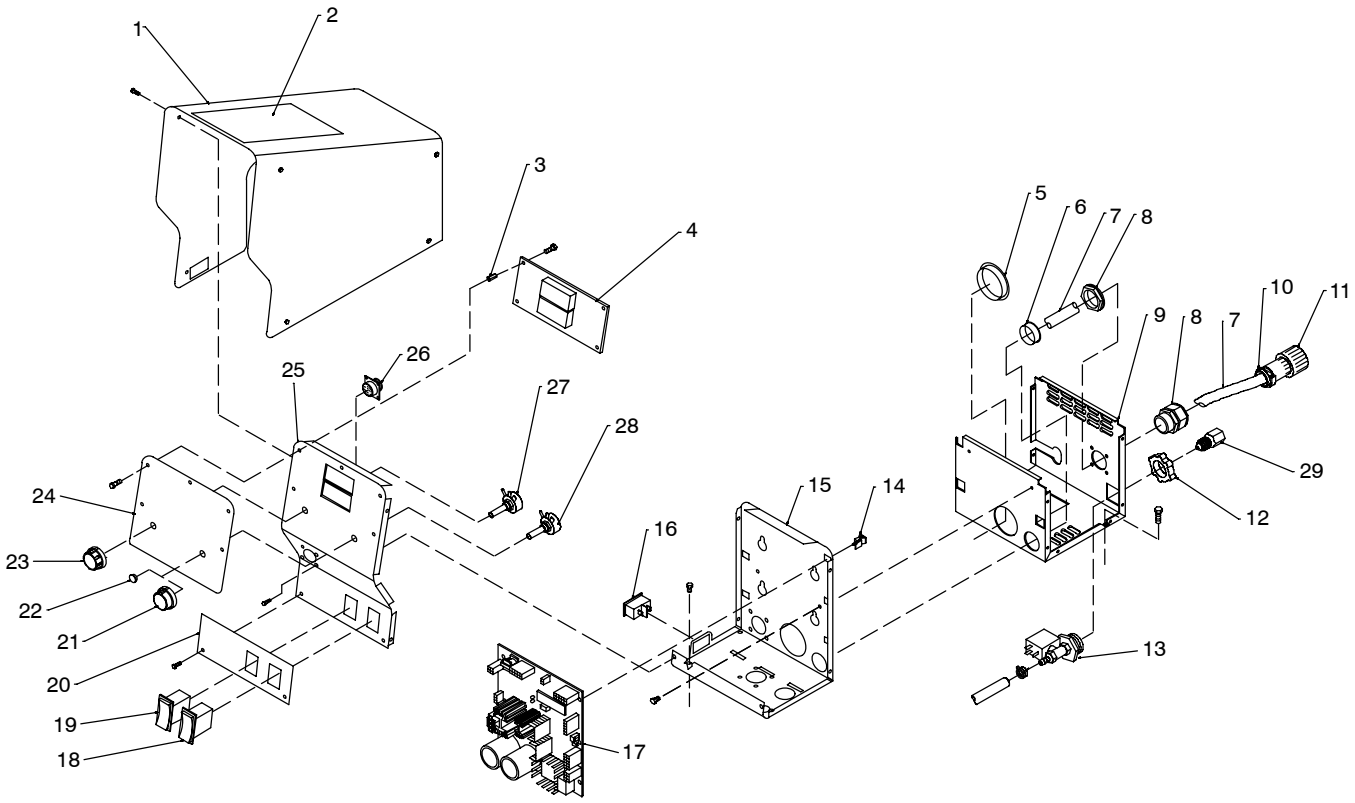
Figure 11-1. Main Assembly

1	159 647	.. Insulator, Motor Clamp	1
2	159 646	.. Clamp, Motor Base	1
3	159 360	.. Insulator, Screw Machine	4
4	Figure 11-3	.. Drive Assembly, Wire	1
5	141 753	.. Hub & Spindle Assembly, (Consisting Of)	1
6	058 427	.... Ring, Retaining Spool	1
7	180 571	.... Shaft, Support Spool	1
8	010 233	.... Spring, Cprsn .970 Od X .120 Wire X 1.250 Pld	1
9	057 971	.... Washer, Flat Stl Keyed 1.500dia X .125Thk	1
10	010 191	.... Washer, Fbr .656 Id X 1.500 Od X .125Thk	2
11	058 628	.... Washer, Brake Stl	2
12	058 428	.... Hub, Spool	1
13	135 205	.... Nut, Stl Slflkg Hex Reg .625-11 W/Nylon Insert	1
14	200 556	.. Support, Spool	1
15	201 781	.. Knob, W/Extension Clamp	1
16	156 243	.. Clamp, Motor Top	1
17	145 639	.. Strip, Buna N Compressed Sheet .062 X 4.000 X 4.000	1
18	200 552	.. Base	1
19	134 306	.. Foot, Rubber 1.250 Dia X 1.375 High No 10 Screw	4
20	200 557	.. Stiffener, Base	1
21	Figure 11-2	.. Control Box	1

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

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

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



802 945-D

Figure 11-2 Control Box

Item No.	Diagram marking	Part No.	Description	Quantity Model S-74S	Quantity Model S-74D
			Figure 11-2. Control Box (Figure 11-1 Item 21)		
1		200 555	Wrapper, Feeder	1	1
2		134 464	Label, General Precautionary For Static & Wire Feed	1	1
2		178 936	Label, General Precautionary Wordless CE WF (CE Version)	1	1
3		115 443	Stand-Off, No 6-32 X .750	0	4
4	PC60	210 563	Circuit Card Assembly, Meter W/Program (Prior To LE236980)	0	1
4	PC60	220 570	Circuit Card Assembly, Meter W/Program (Eff W/LE236980)	0	1
5		010 494	Bushing, Snap-In Nyl 1.375 Id X 1.750 Mtg Hole	1	1
6		057 357	Bushing, Snap-In Nyl .937 Id X 1.125 Mtg Hole	1	1
		204 910	Cable, Power (Consisting Of)	1	1
7		163 519	Cable, Port	11.5 Ft (3.5 m)	
8		139 041	Strain Relief	1	1
9		079 739	Conn, Circ Cpc Clamp Str Rlf	1	1
10	PLG12	141 162	Housing Plug+Pins, (Service Kit)	1	1
	PLG3	115 093	Housing Plug+Skts, (Service Kit)	1	1
11		200 554	Enclosure, Motor	1	1
12		605 227	Nut, 750−14 Knurled1.68Dia .41H Nyl	1	1
13	GS1	200 333	Valve, 34VDC 2 Way Custom Port 1/8 Orf (Prior To LE205948)	1	1
13	GS1	219 062	Valve, Gas W/Fittings 34VDC (Eff W/LE205948 Thru LG180633)	1	1
13	GS1	228 035	Valve, 34VDC 1Way .750−14 Thd 2mm Orf 100PSI (Eff W/LG180634W)	1	1
14		134 201	Stand-Off Support, Pc Card	6	6
15		200 551	Enclosure, Control	1	1

Item No.	Diagram marking	Part No.	Description	Quantity Model S-74S	Quantity Model S-74D

Figure 11-2. Control Box (Figure 11-1 Item 21)

16	S1	111 997	Switch, Rocker Spst 10A 250 Vac On-Off	1	1
17	PC1	210 555	Circuit Card Assy, Motor Control (Prior To LC713341)	1	1
17	PC1	217 872	Circuit Card Assy, Motor Control (Eff W/LC713341)	1	1
18	S2	200 295	Switch, Rocker Spdt 15A 12V (On)-Off-(On)	1	1
19	S3	201 642	Switch, Rocker Spdt 15A 12V On-None-On	1	1
20		203 216	Nameplate, Lower	1	1
20		206 296	Nameplate, Lower (CE Version)	1	1
21		171 007	Knob, Pointer 1.670 Dia X .250 Id W/Set Screwsplstc (Prior To LF191145)	0	1
21		213 134	Knob, Encoder 1.670 Dia X .250 Id Push On W/Spring (Eff W/LF191145)	0	1
22		119 951	Blank, Snap-In Nyl .437 Mtg Hole Black	1	0
23		171 007	Knob, Pointer 1.670 Dia X .250 Id W/Set Screwsplstc (Prior To LF191145)	0	1
23		213 134	Knob, Encoder 1.670 Dia X .250 Id Push On W/Spring (Eff W/LF191145)	0	1
24		203 212	Nameplate, Upper	1	0
24		206 432	Nameplate, Upper (CE Version)	1	0
24		203 214	Nameplate, Upper W/Meters	0	1
24		206 295	Nameplate, Upper W/Meters (CE Version)	0	1
24		203 216	Nameplate, Lower	1	1
24		206 296	Nameplate, Lower (CE Version)	1	1
25		202 237	Panel, Front	1	1
26	RC13	048 282	Rcpt W/Skts, (Service Kit)	1	1
	PLG8	131 054	Housing Rcpt+Skts, (Service Kit)	1	1
	PLG9	201 665	Housing Plug+Skts, (Service Kit)	1	1
	PLG6	115 094	Housing Plug+Skts, (Service Kit)	1	1
	PLG1	202 592	Housing Plug Pins+Skts, (Service Kit)	1	1
	PLG4	136 810	Housing Plug Pins+Skts, (Service Kit)	1	1
	PLG10	130 203	Housing Plug+Skts, (Service Kit)	1	1
27	R1	073 562	Potentiometer, Cp Std Slot 1T 2. W 10k Linear (Prior To LC713341)	1	0
27	R1	208 399	Potentiometer, Cp Std Slot 1T 2. W 10k Linear W/Frict Tabs (Eff W/LC713341)	1	0
27	R1	603 856	Potentiometer, Ww Sltd Sft 10/T 2W 10K Ohm (Prior To LF191145)	0	1
27	R1	224 597	Potentiometer, Cermet Std Flat 3.75T 2. W 10K Ohm Linear (Eff W/LF191145)	0	1
28	R70	603 856	Potentiometer, Ww Sltd Sft 10/T 2W 10K Ohm (Prior To LF191145)	0	1
28	R70	224 597	Potentiometer, Cermet Std Flat 3.75T 2. W 10K Ohm Linear (Eff W/LF191145)	0	1
	PLG7,27	115 091	Housing Plug+Skts, (Service Kit)	0	1
	PLG11, 61	131 055	Housing Plug+Skts, (Service Kit)	0	1
	PLG17	158 719	Housing Plug+Skts, (Service Kit)	0	1
29		211 989	Fitting, W/Screen (Eff W/LC676744)	1	1

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

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

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

See Table 11-1 For Drive Roll & Wire Guide Kits

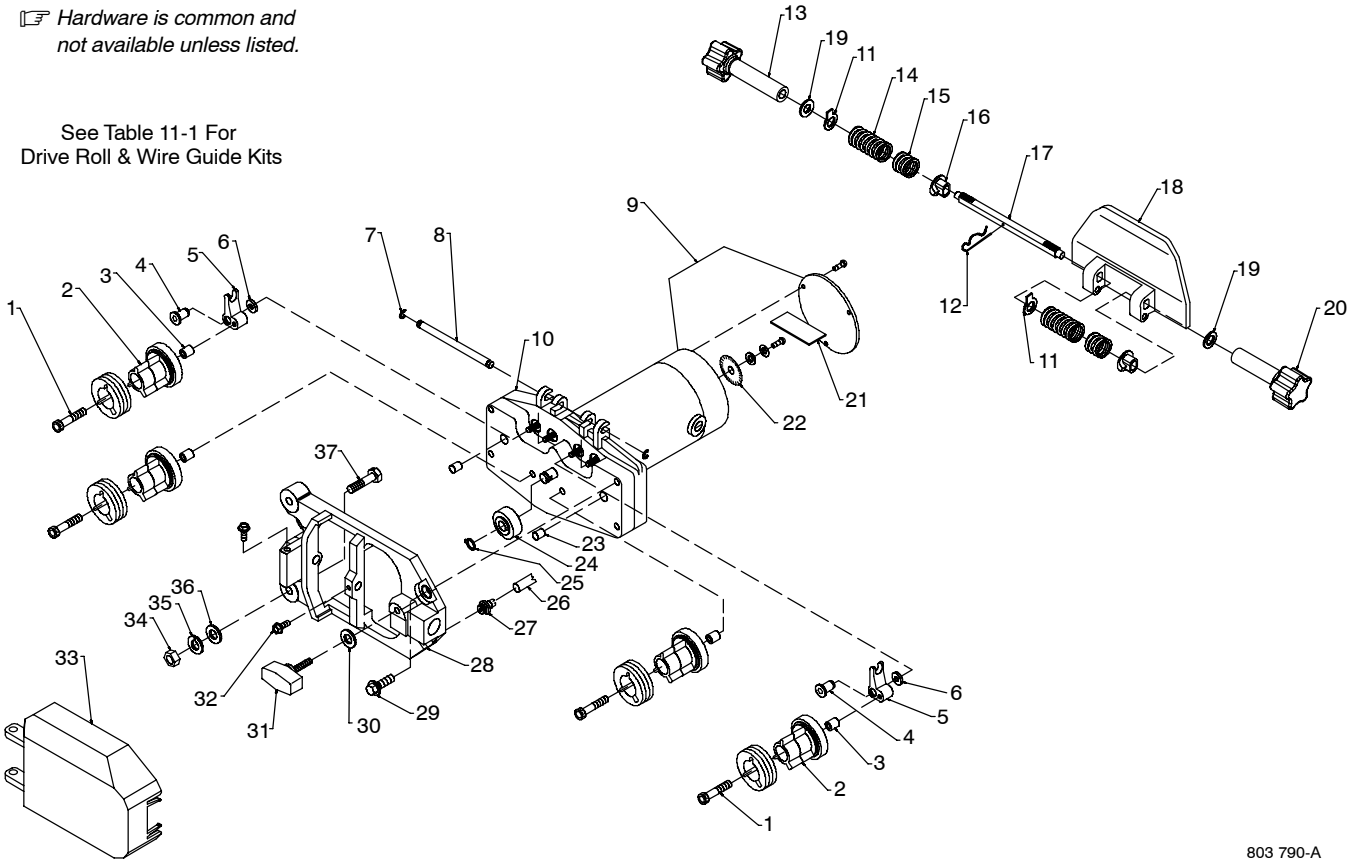


Figure 11-3 Drive Assembly, Wire (Figure 11-1 Item 4)

Item No.	Diagram marking	Part No.	Description	Quantity Model S-74S	Quantity Model S-74D
			Figure 11-3. Drive Assembly, Wire (Figure 11-1 Item 4)		
1		010 668	.. Screw, Cap Stl Sch .250-20 X 1.500	4	4
2		172 075	.. Carrier, Drive Roll W/Components	4	4
3		149 962	.. Spacer, Carrier Drive Roll	4	4
4		149 486	.. Pin, Rotation Arm Rocker	2	2
5		132 750	.. Arm, Pressure	2	2
6		150 520	.. Spacer, Flat Stl .257 Id X .619 Od X .105	2	2
7		133 493	.. Ring, Retaining Ext .250 Shaft X .025Thk	2	2
8		133 350	.. Pin, Hinge	1	1
9	M1	201 230	.. Motor, Gear 1/8Hp 24VDC Standard Speed	1	1
9	M1	201 231	.. Motor, Gear 1/8Hp 24VDC High Speed (Optional On S-74D)	0	1
		153 491	.... Kit, Brush Replacement (Consisting Of)	1	1
		153 492	..... Cap, Brush	2	2
		*153 493	..... Brush, Carbon	2	2
		184 136	.... Kit, Brush Holder Replacement	1	2
10		155 098	.. Kit, Cover Motor Gearbox (Consisting Of)	1	1
		153 550	.... Cover, Motor Gearbox (Consisting Of)	1	1
		155 099	..... Gasket, Cover	1	1
		155 100	..... Screw, Cover	5	5
		154 031	.... Spacer, Locating	2	2
		133 493	.... Ring, Rtng Ext .250 Shaft Grv X .025Thk	1	1

Item No.	Diagram marking	Part No.	Description	Quantity Model S-74S	S-74D
Figure 11-3. Drive Assembly, Wire (Continued)					
		173 837	. . Pressure Arm (Consisting Of) (Prior To LE172567)	1	1
		203 631	. . Pressure Arm, S/L & Vert S/R 4 Roll (Consisting Of) (Eff W/LE172567)	1	1
11		182 414	. . . . Washer, Flat (Prior To LE172567)	1	1
11		203 641	. . . . Washer, Flat Indicator Spring Tension (Eff W/LE172567)	2	2
12		182 415	. . . . Pin, Cotter Hair	1	1
13		203 640	. . . . Knob, W/Extension Short Pressure Arm	1	1
14		182 156	. . . . Spring, Cprsn	2	2
15		182 155	. . . . Spring	2	2
16		132 746	. . . . Bushing, Spring	2	2
17		203 633	. . . . Shaft, Spring	1	1
18		132 747	. . . . Carrier, Shaft (Prior To LF058832)	1	1
18		203 632	. . . . Carrier, Shaft Dual Knob (Eff W/LF058832)	1	1
19		133 739	. . . . Washer, Flat Buna .375 Id X .625 Od X .062Thk	2	2
20		203 637	. . . . Knob, W/Extension Long Pressure Arm	1	1
21	PC51	201 225	. . Circuit Card, Digital Tach (Consisting Of)	0	1
	PLG5	131 204	. . . . Connector & Sockets	0	1
		604 311	. . . . Grommet, Rbr .250 Id X .375Mtg Hole .062 Groove	0	1
22		132 611	. . Optical Encoder Disc	0	1
		603 115	. . Weather Stripping, Adh .125 X .375	0	1
23		167 387	. . Spacer, Locating	2	2
24		168 825	. . Drive, Pinion	1	2
25		133 308	. . Ring, Retaining Ext .375 Shaft X .025Thk	1	1
26		134 834	. . Hose, Sae .187 Id X .410 Od (Order By Ft)	2 Ft (0.6 m)	
27		149 959	. . Fitting, Brs Barbed M 3/16Tbg X .312-24	1	1
28		179 265	. . Adapter, Gun/Feeder	1	1
29		108 940	. . Screw, Cap Stl Hexhd .250-20 X .750	4	4
30		604 538	. . Washer, Flat Stl Sae .312	1	1
31		151 437	. . Knob, Plstc T 1.125 Lg X .312-18 X 1.500	1	1
32		151 290	. . Screw, Mach Stl Hexwhd 10-32 X .500	2	2
33		179 277	. . Cover, Drive Roll (Consisting Of)	1	1
		178 937	. . . . Label, Warning Electric Shock (Prior To LC676744)	1	1
		196 956	. . . . Label, Warning Electric Shock (Eff W/LC676744)	1	1
34		601 872	. . Nut, Stl Hex Full Fnsh .375-16	1	1
35		602 213	. . Washer, Lock Stl Split .375	1	1
36		602 243	. . Washer, Flat Stl Std .375	1	1
37		601 966	. . Screw, Cap Stl Hexhd .375-16 X 1.250	1	1

*Recommended Spare Parts.

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

Table 11-1. Drive Roll And Wire Guide Kits

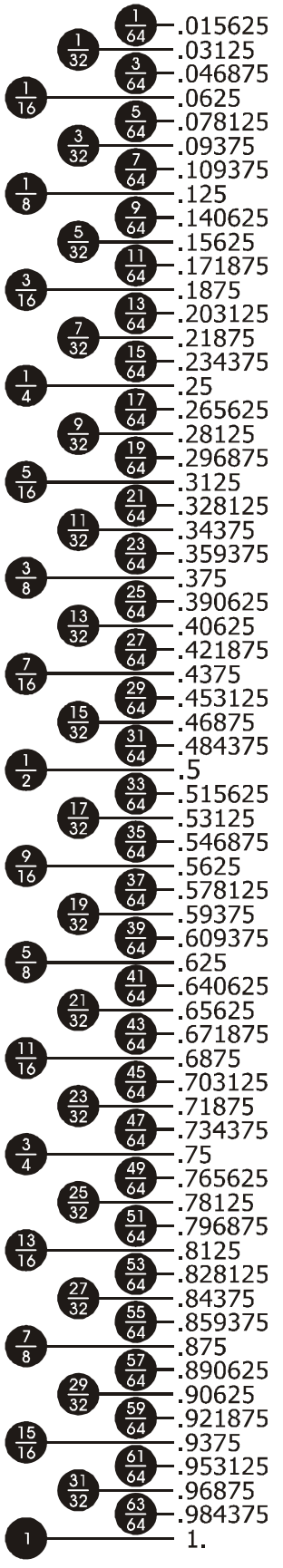
Wire Size		Inlet Guide	Intermediate Guide	V-GROOVE		U-GROOVE		VK-GROOVE		UC-GROOVE	
Fraction	Metric			4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll
.023-.025 in.	0.6 mm	150 993	149 518	151 024	087 130						
.030 in.	0.8 mm	150 993	149 518	151 025	053 695						
.035 in.	0.9 mm	150 993	149 518	151 026	053 700	151 036	072 000	151 052	132 958		
.040 in.	1.0 mm	150 993	149 518	161 190							
.045 in.	1.1/1.2 mm	150 994	149 519	151 027	053 697	151 037	053 701	151 053	132 957	151 070	083 489
.052 in.	1.3/1.4 mm	150 994	149 519	151 028	053 698	151 038	053 702	151 054	132 956	151 071	083 490
1/16 in. (.062 in.)	1.6 mm	150 995	149 520	151 029	053 699	151 039	053 706	151 055	132 955	151 072	053 708
.068-.072 in.	1.8 mm	150 995	149 520					151 056	132 959		
5/64 in. (.079 in.)	2.0 mm	150 995	149 520			151 040	053 704	151 057	132 960	151 073	053 710
3/32 in. (.094 in.)	2.4 mm	150 996	149 521			151 041	053 703	151 058	132 961	151 074	053 709
7/64 in. (.110 in.)	2.8 mm	150 996	149 521			151 042	053 705	151 059	132 962	151 075	053 711
1/8 in. (.125 in.)	3.2 mm	150 997	149 522			151 043	053 707	151 060	132 963	151 076	053 712

Each kit contains an inlet guide, intermediate guide, and 045 233 antiwear guide W/604 612 setecrew 8-32 x .125, along with 4 drive rolls.

Ref. S-0527-C

Notes

DECIMAL EQUIVALENTS



Miller Electric Mfg. Co.
An Illinois Tool Works Company
1635 West Spencer Street
Appleton, WI 54914 USA

International Headquarters–USA
USA Phone: 920-735-4505 Auto-Attended
USA & Canada FAX: 920-735-4134
International FAX: 920-735-4125

European Headquarters –
United Kingdom
Phone: 44 (0) 1204-593493
FAX: 44 (0) 1204-598066

PRINTED IN USA