



TM-1500-19C

2006-08

Eff. w/Serial LE316207

Processes



MIG (GMAW) Welding

Flux Cored (FCAW) Welding

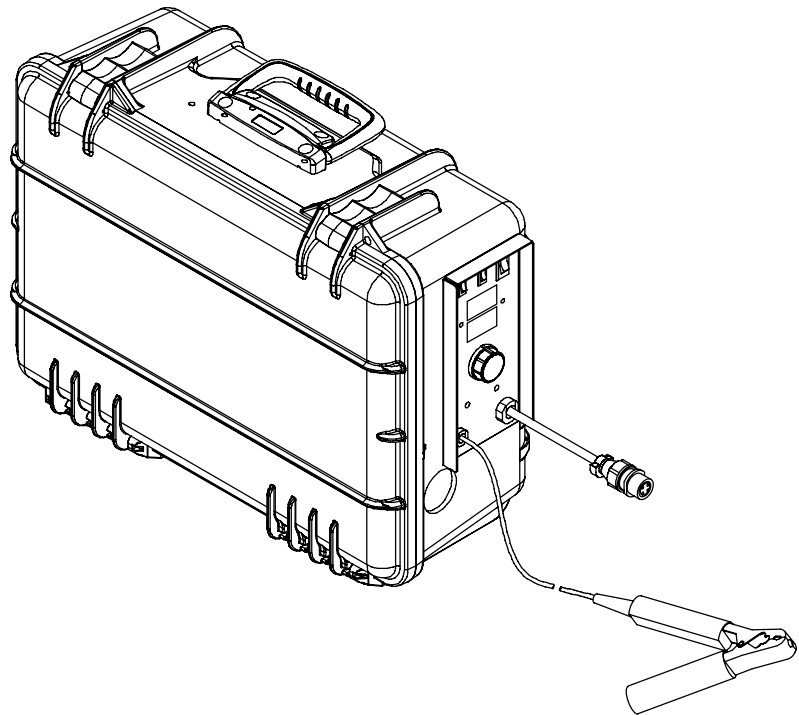
Description



Wire Feeder



SuitCaseTM X-TREMETM 12VS



Visit our website at
www.MillerWelds.com

TECHNICAL MANUAL

File: MIG (GMAW)



TABLE OF CONTENTS

SECTION 1 – SAFETY PRECAUTIONS FOR SERVICING	1
1-1. Symbol Usage	1
1-2. Servicing Hazards	1
1-3. California Proposition 65 Warnings	2
1-4. EMF Information	2
SECTION 2 – DEFINITIONS	3
2-1. Warning Label Definitions	3
2-2. Manufacturer's Rating Label For CE Products	4
2-3. WEEE Label	4
2-4. Symbols And Definitions	5
SECTION 3 – INSTALLATION	6
3-1. Specifications	6
3-2. Gun Recommendation Table	6
3-3. Equipment Connection Diagram	6
3-4. Installing And Aligning Wire Guide And Drive Rolls	7
3-5. Connecting Welding Gun And Voltage Sensing Clamp	8
3-6. Connecting Shielding Gas	8
3-7. Connecting Weld Cable	9
3-8. Installing And Threading Welding Wire	9
3-9. Display Board (PC20) DIP Switch Settings	10
SECTION 4 – OPERATION	11
4-1. Controls	11
4-2. Gun Consumables Information	12
4-3. Wire Speed Control Settings	13
4-4. Diagnostics	14
SECTION 5 – THEORY OF OPERATION	16
SECTION 6 – TROUBLESHOOTING	18
6-1. Troubleshooting Table	18
6-2. Troubleshooting Circuit Diagram For Wire Feeder	20
6-3. Motor Control Board PC1 Testing Information	22
6-4. Motor Control Board PC1 Test Point Values	23
6-5. Diagnostic LED's On Motor Board PC1	25
6-6. Display Board PC20 Testing	26
6-7. Display Board PC20 Test Point Values	27
SECTION 7 – MAINTENANCE	28
7-1. Routine Maintenance	28
7-2. Overload Protection And Thermostat Protection	28
SECTION 8 – ELECTRICAL DIAGRAMS	29
SECTION 9 – PARTS LIST FOR LE316207 THRU LF102495	36
SECTION 10 – PARTS LIST FOR LF102496 AND FOLLOWING	42

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

European Contact:

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Managing Director
ITW Welding Products Italy S.r.l.
Via Privata Iseo 6/E
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European Contact Signature: _____

Declares that the product:

SuitCase X-TREME 12VS

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-1500-19-J, - 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.

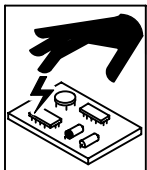
- Do not touch live electrical parts.
- Turn Off welding power source and wire feeder and disconnect and lockout input power using line disconnect switch, circuit breakers, or by removing plug from receptacle, or stop engine before servicing unless the procedure specifically requires an energized unit.

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.



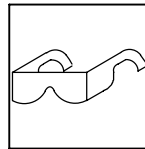
STATIC (ESD) can damage PC boards.

- 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.



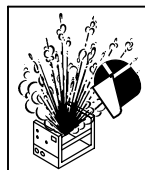
FLYING METAL or DIRT can injure eyes.

- 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.



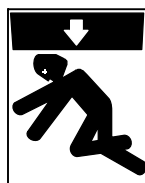
EXPLODING PARTS can cause injury.

- 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.



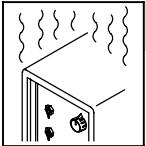
MOVING PARTS can cause injury.

- 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 re-connecting input power.



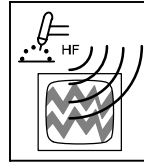
MAGNETIC FIELDS can affect pacemakers.

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



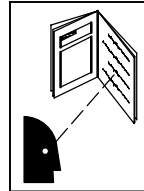
OVERUSE can cause OVERHEATING.

- 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:

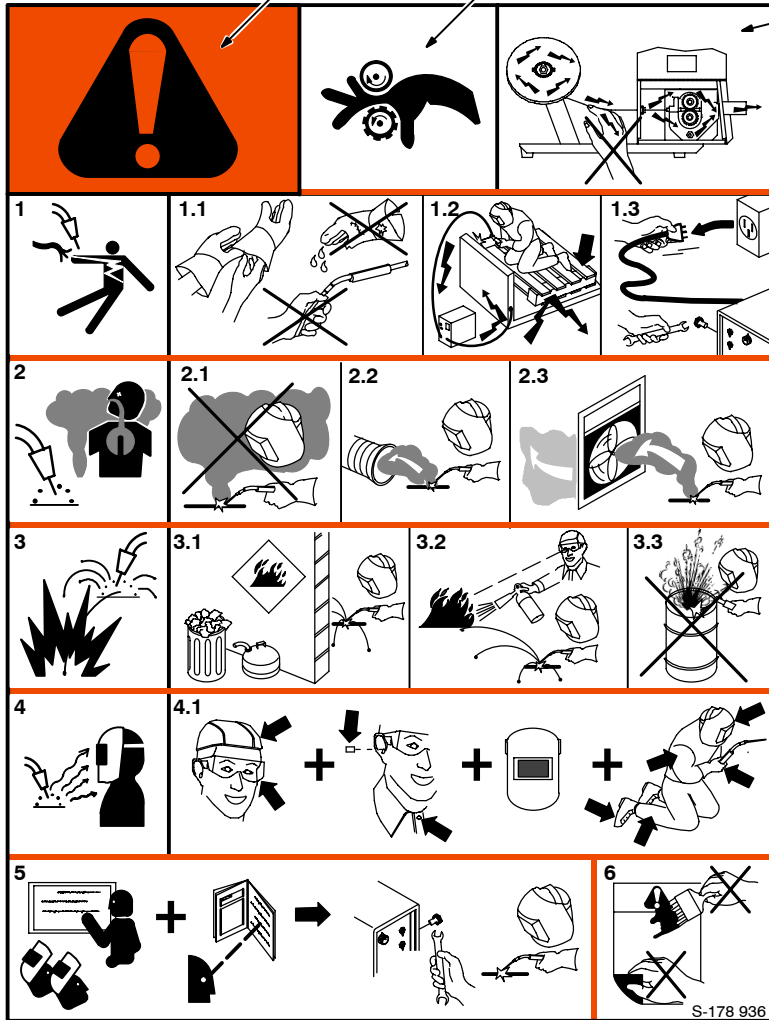
1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld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



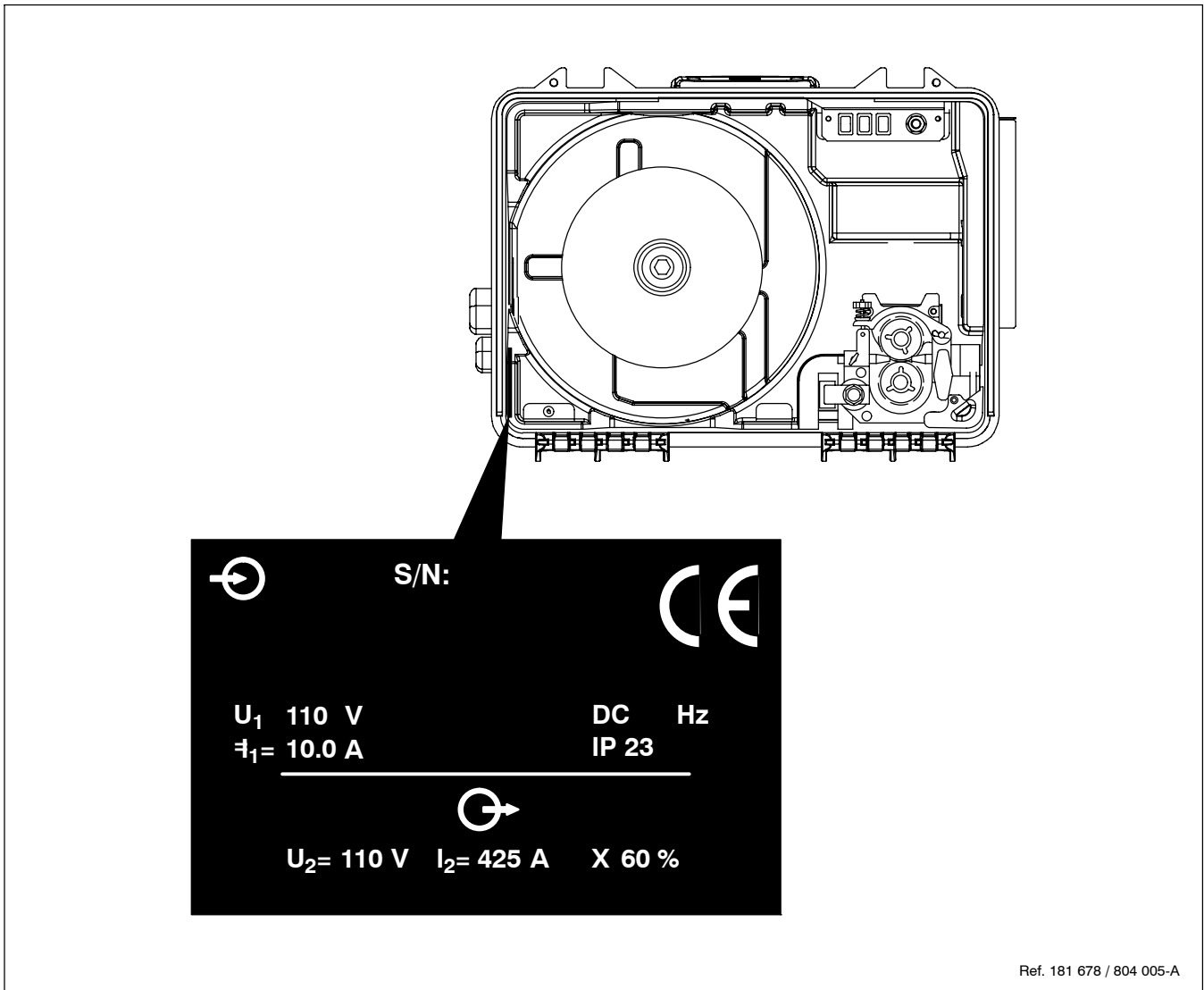
Warning! Watch Out! There are possible hazards as shown by the symbols.

Drive rolls can injure fingers

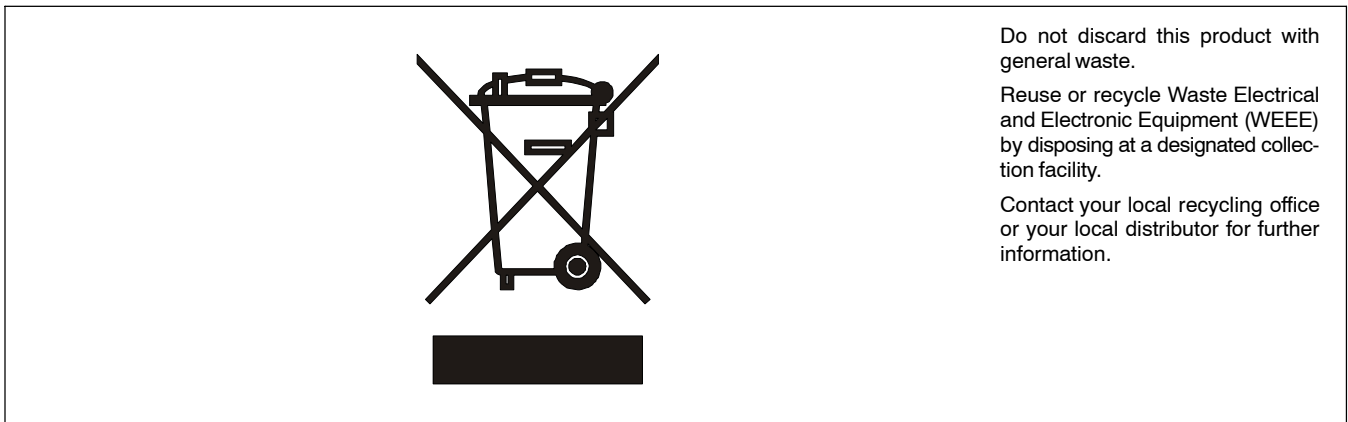
Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects clear.

- 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. Manufacturer's Rating Label For CE Products



2-3. WEEE Label



SECTION 3 – INSTALLATION

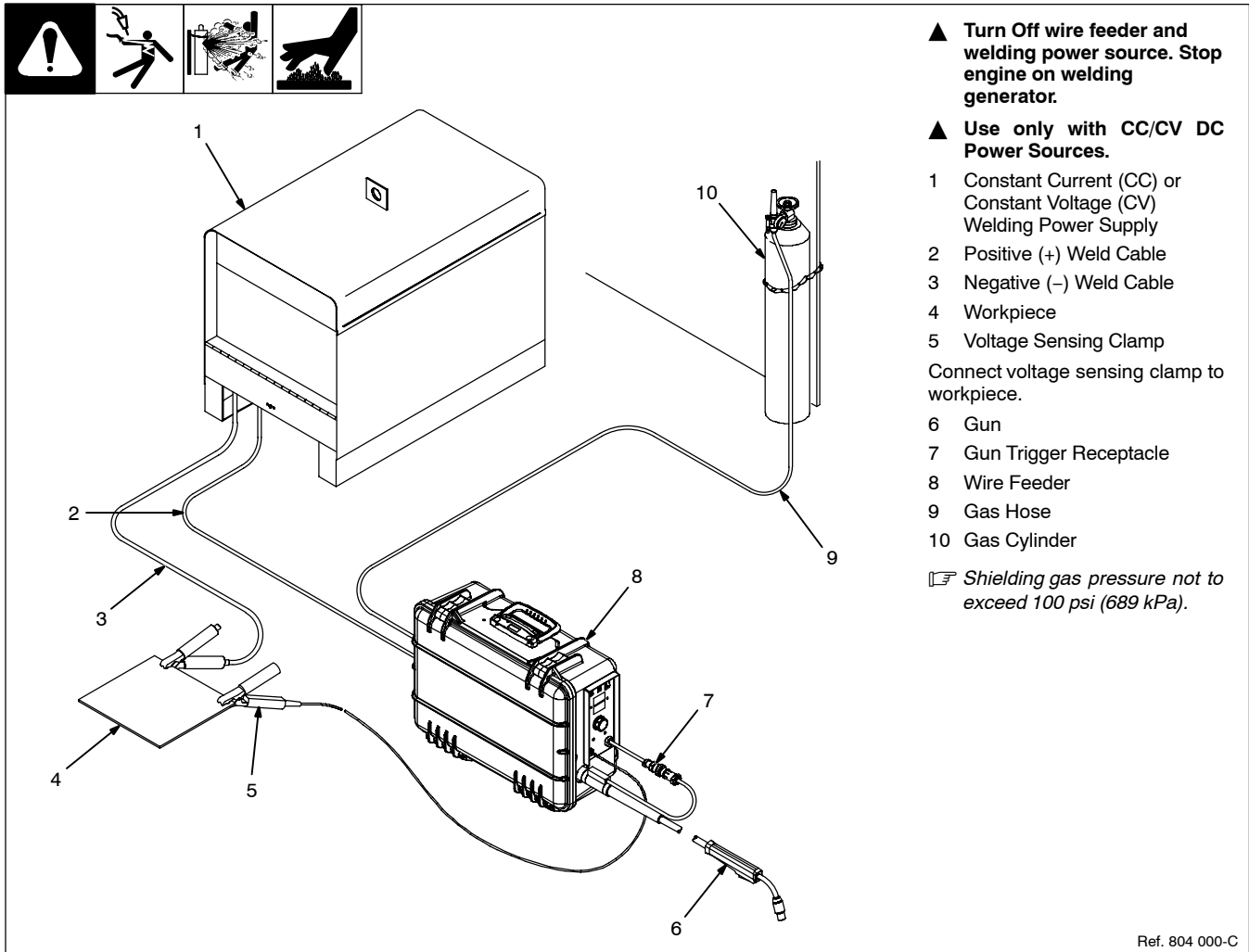
3-1. Specifications

Type of Input Power	Welding Power Source Type	Wire Feed Speed Range	Wire Diameter Range	Input Welding Circuit Rating	IP Rating	Max. Wire Spool Capacity	Overall Dimensions	Weight
Open-Circuit/ Arc Voltage, 14 – 110 Volts DC	Constant Voltage (CV) Or Constant Current (CC) DC Power Source Only	50 – 780 ipm (1.3 – 19.8 mpm) Depending On Arc Voltage	.023 To 5/64 in (0.6 To 2 mm)	425 Amperes At 60% Duty Cycle	23	45 lb (20.4 kg), 12 in (304 mm)	Length: 21 in (533 mm) Width: 9 in (229 mm) Height: 15-1/2 in (394 mm)	35 lb (16 kg)

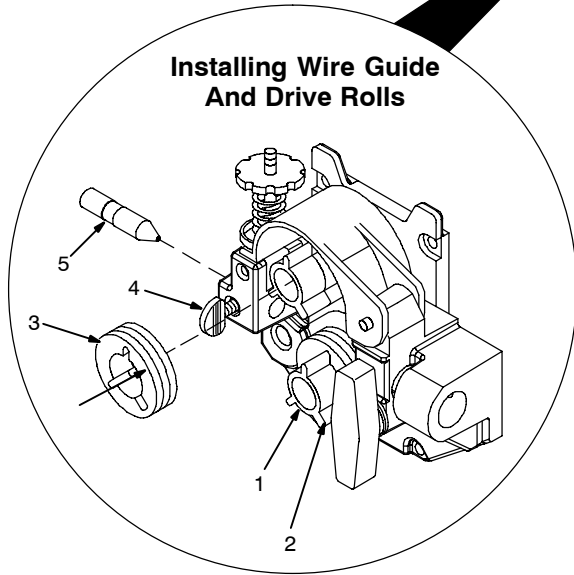
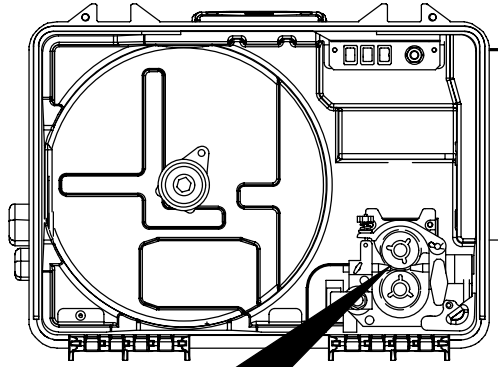
3-2. Gun Recommendation Table

Process	Gun
GMAW – Hard or Corded Wires	Bernard Q - 4015 Roughneck C - 4015
FCAW – Self-Shielding Wires	FC-1260

3-3. Equipment Connection Diagram



3-4. Installing And Aligning Wire Guide And Drive Rolls



Installing Wire Guide And Drive Rolls:

- 1 Drive Roll Nut
 - 2 Drive Roll Carrier
- Turn nut one click until lobes of nut line up with lobes of drive roll carrier.
- 3 Drive Roll
- Slide drive roll onto drive roll carrier. Turn nut one click.
- Repeat procedure for top drive roll.
- 4 Inlet Wire Guide Screw
 - 5 Inlet Wire Guide

Loosen securing screw. Install inlet guide so inlet guide screw is centered in groove in guide, or so tip is as close to drive rolls as possible without touching. Tighten screw.

Aligning Wire Guide And Drive Rolls:

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

- 6 Drive Roll Securing Nut
- 7 Drive Roll
- 8 Wire Guide
- 9 Welding Wire
- 10 Drive Gear

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

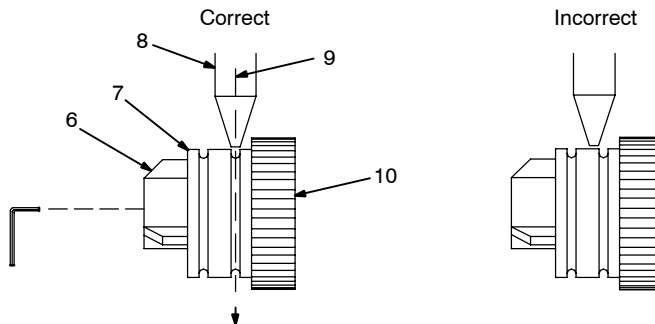
Close pressure roll assembly.

Only bottom drive roll alignment is adjustable. Turn adjustment screw in or out until groove in drive roll lines up with wire guide as shown.

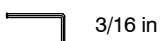
Cleaning Drive Rolls:

Remove drive rolls, and clean grooves using a wire brush.

Aligning Wire Guide And Drive Rolls



Tools Needed:



Ref. 804 001-A

3-5. Connecting Welding Gun And Voltage Sensing Clamp

Internal Side View

▲ Turn Off wire feeder and welding power source. Stop engine on welding generator.

- 1 Gun Securing Knob
- 2 Gun Block
- 3 Gun Outlet Wire Guide

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

- 4 Gun Trigger Plug
- 5 Gun Trigger Receptacle
- 6 Voltage Sensing Clamp

Connect voltage sensing clamp to workpiece.

Ref. 804 002-B

3-6. Connecting Shielding Gas

Rear View

- 1 Gas Hose With 5/8-18 Right-hand Thread Fittings (Customer Supplied)
- 2 Shielding Gas Cylinder
- 3 Valve
- 4 Flowmeter

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

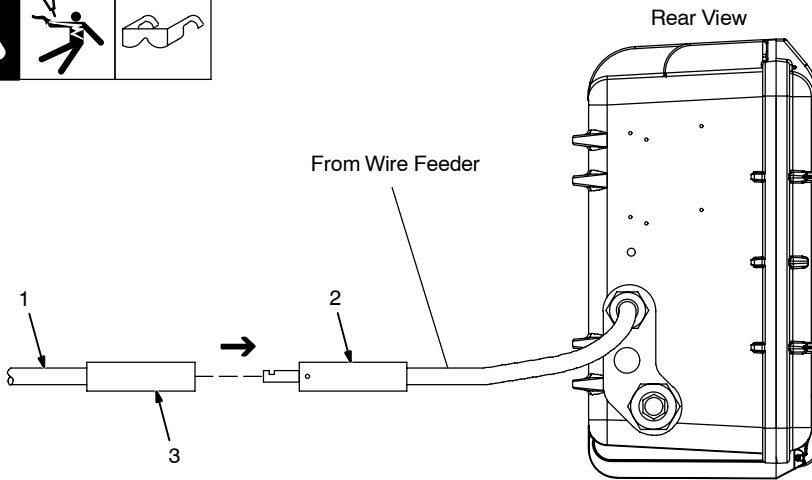
Close valve on cylinder when finished welding.

Tools Needed:

 5/8 in

Ref. 804 003-A

3-7. Connecting Weld Cable



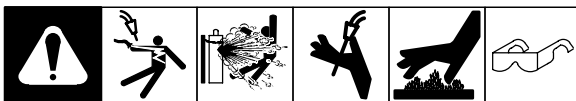
▲ **Turn Off wire feeder and welding power source. Stop engine on welding generator.**

- 1 User-Supplied Weld Cable
- 2 User-Supplied Male Connector
- 3 User-Supplied Female Connector

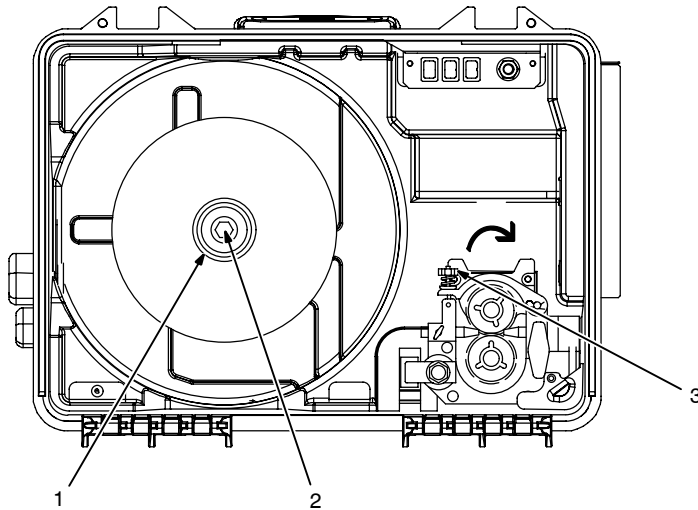
Push female connector over male connector, and turn 1/4 turn clockwise.

804 004-A

3-8. Installing And Threading Welding Wire



Hold wire tightly to keep it from unraveling.



Installing Wire And Adjusting Hub Tension:

- 1 Retaining Nut
- 2 Hub Tension Adjustment Knob

Remove retaining ring, and install spool so hub pin fits spool hole. Re-install retaining nut.

Adjust tension knob so only a slight force is needed to turn spool.

Threading Welding Wire:

- 3 Pressure Assembly Adjustment Knob

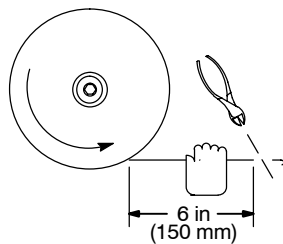
Lay gun cable out straight.

Open pressure assembly, hold wire tightly, and cut off end. Push wire through guides into gun.

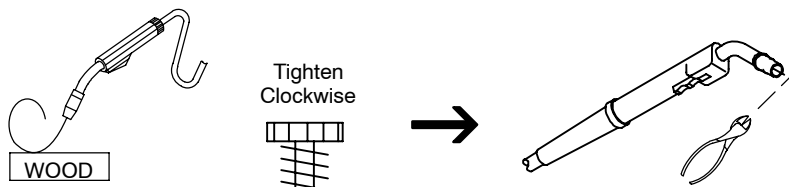
Close and tighten pressure assembly. Press jog switch until wire comes out gun.

Feed wire against wooden surface, and tighten knob so wire does not slip.

Cut off wire, and close door.

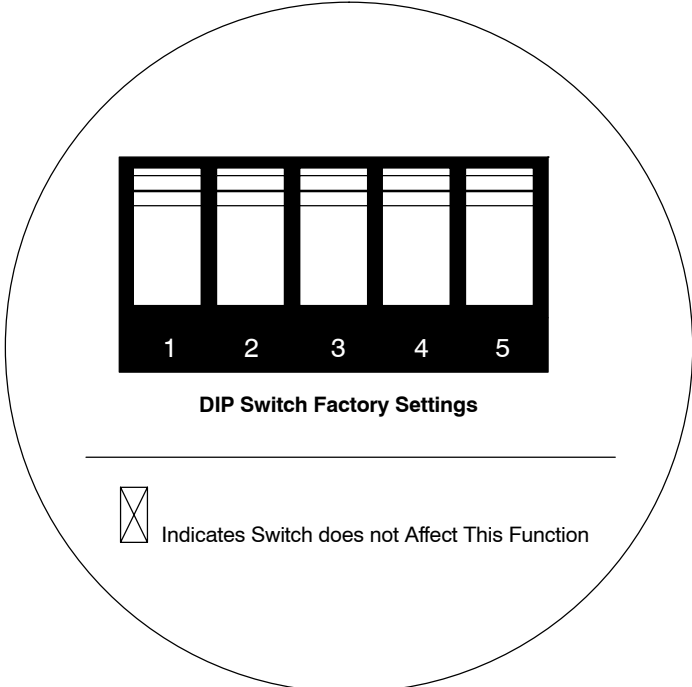


Pull and hold wire; cut off end.

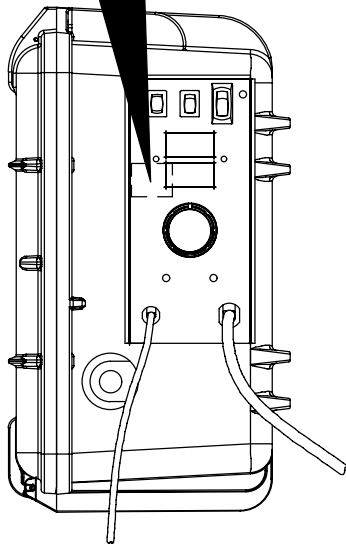


Ref. 804 005-A

3-9. Display Board (PC20) DIP Switch Settings



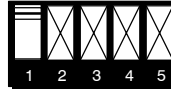
DIP switch is located behind front panel as shown.



Ref. 804 006-A

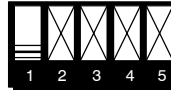
DIP Switch Settings:

Display Hold ON



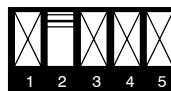
Displays will hold their last value for five seconds after the trigger is released. After the hold times out, the Voltage Display will show open circuit voltage. If the Wire Speed / Amps Display is set to display Amps, the amperage value will hold, after the hold times out, preset Wire Speed will be displayed.

Display Hold OFF



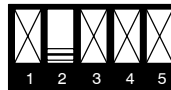
Displays will not hold values. Immediately, when the trigger is released, the Voltage Display will show open circuit voltage. The Wire Speed / Amps Display will display preset Wire Speed when the trigger is released.

Do Not Display Amperage



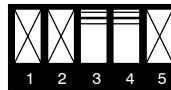
Wire Speed / Amps Display will display only Wire Speed.

Display Amperage



Wire Speed / Amps Display will display Amps while welding and Wire Speed while not welding. If the hold function is enabled, Amps will be displayed during hold also.

Wire Speed - Inches Per Minute



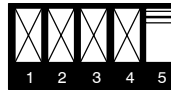
Displays Wire Speed in Inches per Minute.

Wire Speed - Meters Per Minute



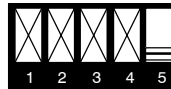
Displays Wire Speed in Meters per Minute.

Information OFF



Information is not displayed.

Information ON



With switch in ON position, at feeder power up, feeder will display various sets of information. Each set of information will be displayed for three seconds.

Display Board (PC20) Software Part Number -

Top display will show the first three digits, bottom display will show last three digits of the Display board (PC20) software revision level.

Motor Board (PC1) Software Part Number -

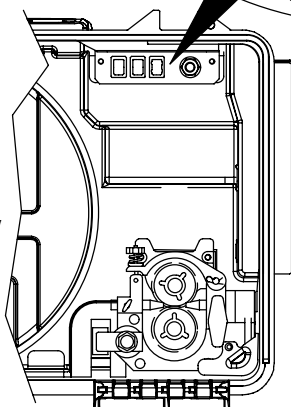
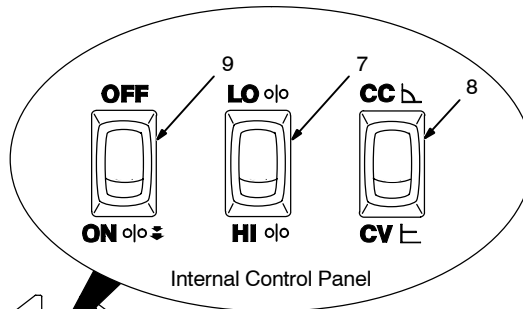
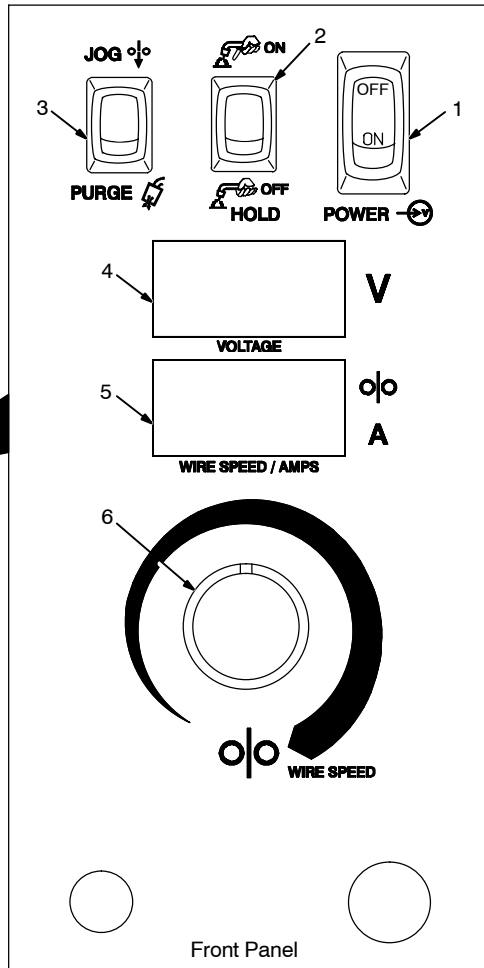
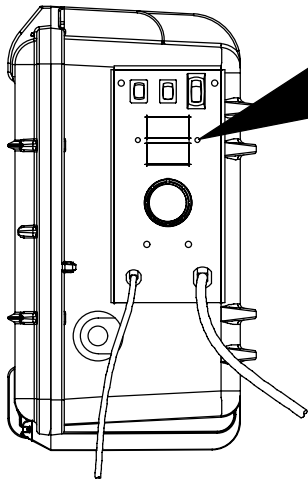
Top display will show the first three digits, bottom display will show last three digits, of the Motor board (PC1) software revision level.

Accumulated Weld Time -

This is the time the feeder has actually been used for welding. This information will be displayed in two halves. First being years and days, second in hours and minutes. Top display will show years/hours, bottom display will show days/minutes.

SECTION 4 – OPERATION

4-1. Controls



Internal Side View

1 Power Control Switch

2 Trigger Hold Switch

Trigger hold allows operator to weld without holding gun trigger.

To use trigger hold function, place trigger hold switch in the ON position.

The operator must hold the trigger for a minimum of 2 seconds, but no longer than 6 seconds before releasing it. Welding will continue when trigger is released.

To stop welding, press and release the trigger.

3 Jog/Purge Switch

Pressing the Jog switch allows the operator to jog wire without energizing the contactor or gas valve.

Pressing the Purge switch allows the operator to purge gas lines before welding and to preset gas flow rate at the flowmeter.

4 Voltmeter

Displays actual arc voltage or open circuit voltage at the feeder.

5 Wire Speed / Amperage Meter

Displays wire speed in Inches per Minute. To display wire speed in Meters per Minute, see Section 3-9.

Amperage displayed at the feeder is approximate. Refer to power source for actual amperage. To display Amperage, see Section 3-9.

6 Wire Speed Control

Use control to adjust wire speed within the speed range selected by the wire speed range switch, located on the inner control panel.

7 HI/LO Speed Range Switch

Use switch to select speed range. High range is 50 to 780 Inches per minute. Low range is approximately half of high range.

8 CC/CV Switch

Use switch to match feeder with the output of the power source.

9 Soft Start Switch

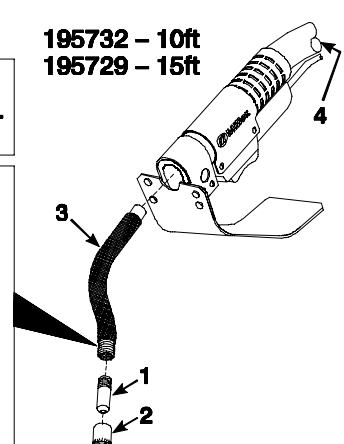
The Soft Start feature provides a smooth start during most weld conditions. When the trigger is pulled, the wire speed is approximately 25% of the weld wire speed, as set by the wire speed control knob. After an arc is established, the wire speed increases to the weld wire speed.

When using small diameters wire, or with inverter power sources, it may be necessary to turn switch off to obtain smooth starts.

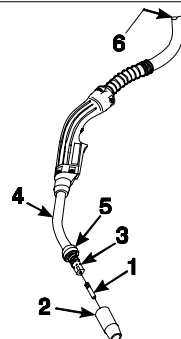
After adjusting the switches, close and latch the door before welding.

4-2. Gun Consumables Information

IRONMATE FC-1260 Consumables

<p>1. Contact Tips</p> <p>198784 – .045" 198785 – 1/16" 198786 – .068-.072" 198788 – 5/64"</p> <p>2. Insulated Nozzles</p> <p>198801 – 1/8" stickout 198802 – 2" stickout 198803 – 2 3/4" stickout 198800 – Thread protector</p>	<p>3. Goosenecks (Includes Liners)</p> <p>198796 – 6"/30° 199335 – 6"/30° jacketed 198794 – 6"/50° 199332 – 6"/50° jacketed</p> <p>198798 – 6"/90° 199334 – 6"/90° jacketed 198799 – straight 8"/5°</p> <p>198797 – 12"/30° 199336 – 12"/30° jacketed 198795 – 12"/50° 199333 – 12"/50° jacketed</p>	<p>Liners</p> <p>198791</p> <p>198792</p> <p>198793</p>	<p>4. Gun Liners</p> <p>195731 – 1/16-3/32" dia. 199178 – .045" dia.</p> <p>These parts are included with gooseneck. See Owner's Manual to order separately.</p> <p>Ceramic Insert Steel Insert Locking Screw</p>	<p>195732 – 10ft 195729 – 15ft</p> 
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ROUGHNECK Consumables

<p>1. Standard FasTip</p> <p>206175 – .023" 206176 – .030" 206177 – .035" 206179 – .045" 206180 – .052" 206181 – 1/16" 206182 – .068" 206183 – 5/64"</p>	<p>1. Heavy Duty FasTip</p> <p>206186 – .035" 206187 – .040" 206188 – .045" 206189 – .052" 206190 – 1/16" 206191 – .068" 206192 – 5/64"</p>	<p>2. Standard Nozzle</p> <p>198855 – 300/400 A 199618 – 500/600 A</p> <p>3. Diffuser</p> <p>206195 – 1/8" recess 206196 – flush 210664 – 1/4" recess</p>	<p>4. Goosenecks</p> <p>199625 – 4.5"/48 199626 – 6"/48 199627 – 8"/48 213450 – 6"/straight</p> <p>5. Insulator</p> <p>198856</p> <p>Additional parts available – call your local distributor for details.</p>	<p>6. Gun Liners</p> <p>202889 – .023-.030" wire 202890 – .035-.045" wire 202891 – .052-1/16" wire 202892 – 1/16-.078" wire 202893 – 5/64-3/32" wire</p> 
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200 007-B

Notes

4-3. Wire Speed Control Settings

RECOMMENDED WELD PARAMETER TABLE

Use this table to set the wire speed setting at the feeder, and amperage or arc voltage settings at the welding power source.

Wire size: 0.030		Wire Type: ER70S-6				Gas Mix: 75/25								
Wire Speed	100	150	200	250	300	350	400	450	500	550	600	650	700	750
Voltage		17.0	17.1	17.9	18.9	19.3	20.0	20.7	21.2	24.6				
Amperage		65	83	97	116	125	139	153	152	160				

Wire size: 0.035		Wire Type: ER70S-6				Gas Mix: 75/25								
Wire Speed	100	150	200	250	300	350	400	450	500	550	600	650	700	750
Voltage		16.5	17.2	17.6	19.0	20.4	21.0	24.0	28.0	28.0				
Amperage		96	100	137	140	147	160	180	200	213				

Wire size: 0.045		Wire Type: ER70S-6				Gas Mix: 75/25								
Wire Speed	100	150	200	250	300	350	400	450	500	550	600	650	700	750
Voltage	16.5	17.2	17.5	20.5	22.3	23.5	28.5	31.2	32.3					
Amperage	100	158	168	198	207	232	255	278	306					

Wire size: 0.045		Wire Type: E71T-1M H-8				Gas Mix: 75/25								
Wire Speed	100	150	200	250	300	350	400	450	500	550	600	650	700	750
Voltage			19.7	20.5	22.5	24.0	27.2	28.0	28.4	29.5				
Amperage			131	155	170	207	218	236	264	284				

Wire size: 0.052		Wire Type: E71T-1M H-8				Gas Mix: 75/25								
Wire Speed	100	150	200	250	300	350	400	450	500	550	600	650	700	750
Voltage		18.0	18.5	23.0	24.7	26.0	29.7	32.0	33.2	35.5				
Amperage		140	160	190	225	240	271	300	328	340				

Wire size: 0.062		Wire Type: E71T-1M H-8				Gas Mix: 75/25								
Wire Speed	100	150	200	250	300	350	400	450	500	550	600	650	700	750
Voltage		18.5	20.0	23.3	24.0	27.2								
Amperage		170	202	228	270	302								

When welding in CC mode, adjust wire feed speed on feeder and amperage on power source, to get desired arc voltage.
 When welding in CV mode, adjust wire feed speed on feeder and arc voltage on power source, to get desired weld amperage.
NOTE: CV is the recommended mode whenever possible.
 Wire Speed is shown in inches per minute. Gas mix is 75% Argon and 25% CO₂.
 Arc characteristics may vary due to cable length, size and type of wire used, and gas type.

Ref. 222 307A

Notes

4-4. Diagnostics

Error Indicators		
Shown On Display	RED LED on Motor Board PC1	Error
HLP 11	1 Blink	Communication Error
HLP 14	4 Blinks (Constant Blinking)	Motor Overload Error
HLP 15	3 Blinks	Bus Bar Overheat Error

Error Indications

Error conditions are indicated by a “HLP” message on the display, or by the blinking of the Red LED on Motor Board PC1. To view the Red LED, turn Off power source, remove shroud, and turn power source On. The Red LED blinks in a 2.5 second cycle. The number of blinks in this period indicates the type of error. If an error condition does not exist on the motor board, the Red LED is on steady.

Communication Error

The communication error occurs 2.5 seconds after a loss of communication between the motor board and the meter board. 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.

Motor Overload Error

The motor overload error can indicate 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. The error may be cleared by turning power Off, waiting a minimum of two seconds, and turning power On.

Bus Bar Overheat Error

The bus bar overheat error can be caused by the arc drawing too much current for too long. To remedy this, reduce the weld amperage or duty cycle.

SECTION 5 – THEORY OF OPERATION

1 Circuit Breaker CB1

Provides overload protection for wire feeder.

2 Power Switch S1

Provides on/off control for wire feeder.

3 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 command.
- Motor board controls operation of gas valve GS1.
- Motor board controls operation of contactor W1.
- Uses weld current feedback signal from transducer HD1 to regulate the soft start feature.
- Converts wire speed command, arc voltage, and weld current, signals from analog to a digital signals, to display on display board PC20.
- Monitors motor current to shut down motor, if motor current is too high for too long of a time.
- Provides an isolated trigger control circuit.

4 Gun Trigger Receptacle RC2

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

5 Transducer HD1

Senses weld current and sends the information to motor board PC1. The information is used to display amperage on the Display board PC20 and regulate the soft start feature.

6 Thermostat TP1

Monitors temperature of the input bus bar (bus bar between the weld cable and primary side of the contactor) to shut down the feeder if the temperature limit is exceeded. Thermostat will reset when the temperature of the bus bar cools down.

7 Thermostat TP2

Monitors temperature of the interconnecting bus bar (bus bar between the secondary side of the contactor and the wire drive housing) to shut down the feeder if the temperature limit is exceeded. Thermostat will reset when the temperature of the bus bar cools down.

8 Wire Drive Motor M1

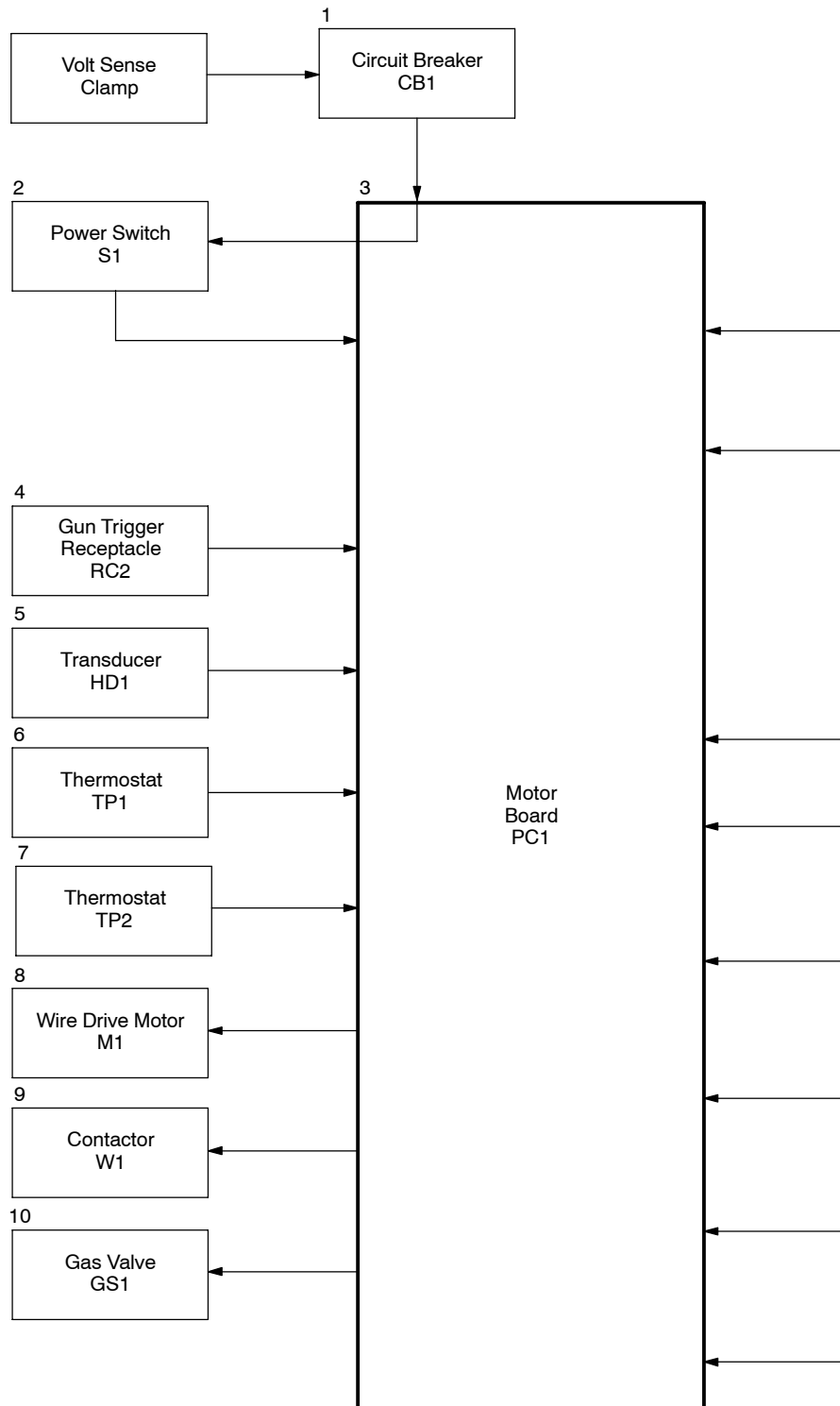
Feeds wire at a speed set by wire speed control R1 on display board PC20. Motor speed is regulated by motor board PC1.

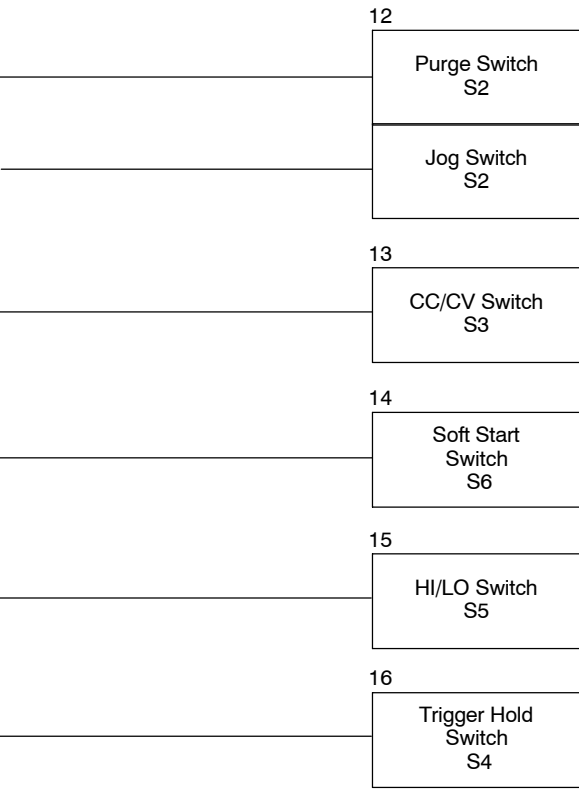
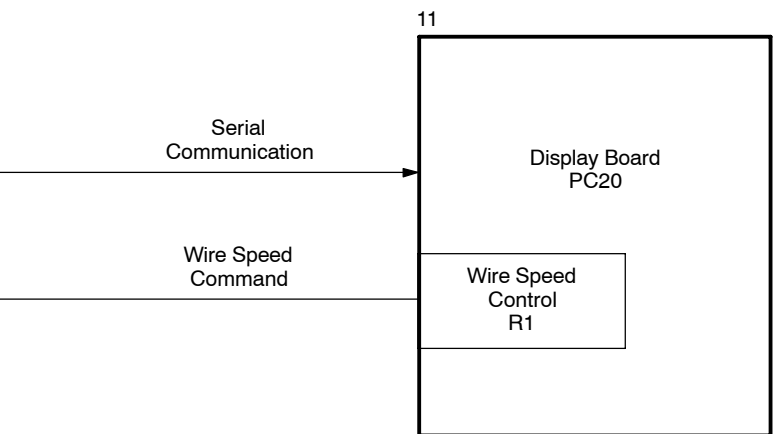
9 Contactor W1

Provides means to turn on and off open-circuit and weld voltage to welding gun.

10 Gas Valve GS1

12VDC valve provides shielding gas during the weld cycle.





11 Display Board PC20

Wire speed control R1 sends an analog wire speed command to motor board PC1. The analog signals: amperage, wire speed, and arc voltage are converted to a digital signal by motor board PC1. Motor board PC1 communicates with Display board PC20 using serial communication. The Display board displays error messages and information regarding the weld such as: arc voltage, wire speed, and weld amperage.

The Display board simply displays the information. The information being displayed is generated by the Motor board PC1.

12 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.

13 CC/CV Switch S3

Matches wire feeder to welding power source output.

14 Soft Start Switch S6

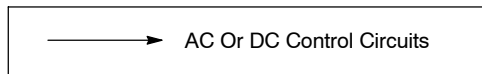
Provides control of soft start feature.

15 Hi/Lo Switch S5

Selects high or low range wire feed speed.





16 Trigger Hold Switch S4

Provides control of trigger hold feature.

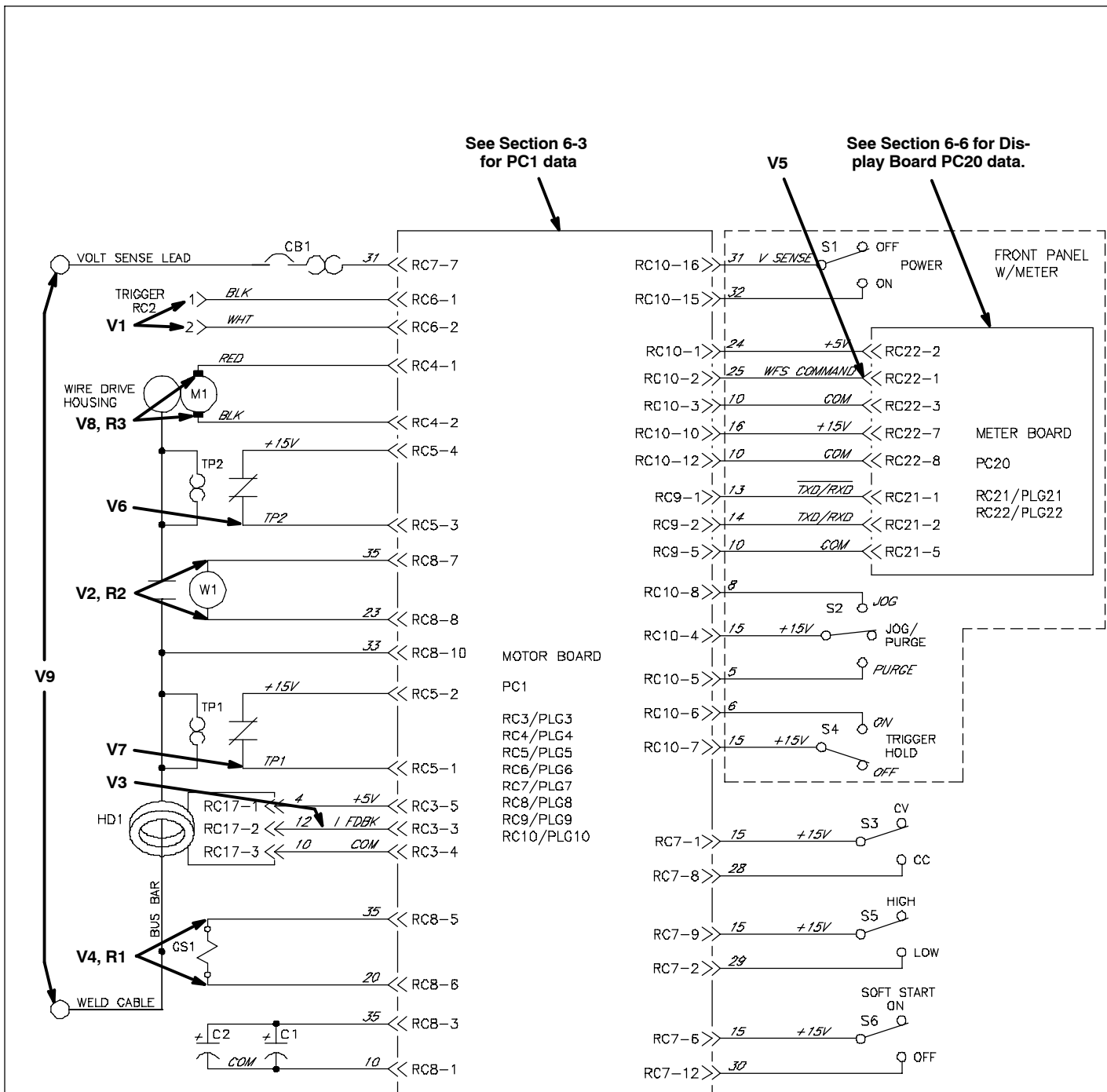



SECTION 6 – TROUBLESHOOTING

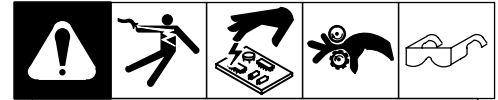
6-1. Troubleshooting Table

   			
Trouble	Remedy		
Wire does not feed; open-circuit voltage available.	Check circuit breaker CB1. Reset CB1.		
	Unit overheated. Allow unit to cool.		
	Check sensing lead connection.		
	Check gun trigger plug connection.		
	Check gun trigger. See gun Owner's Manual.		
	Check Motor Control board PC1 and connections, and replace if necessary (see Section 6-3).		
Wire feeds erratically.	Readjust hub tension.		
	Readjust drive roll pressure.		
	Clean or replace dirty or worn drive roll (see Section 3-4).		
	Remove weld spatter around nozzle opening.		
	Replace contact tip or liner. See gun Owner's Manual.		
	Change to correct size and type drive roll (see Section 3-4).		
	Incorrect size or worn wire guides (see Section 3-4).		
	Check wire drive motor brushes.		
Check Motor Control board PC1 and connections, and replace if necessary (see Section 6-3).			
Motor runs slowly.	Check and replace contact tip or liner if necessary.		
	Check Motor Control board PC1 and connections, and replace if necessary (see Section 6-3).		
	If soft start is not on, motor will switch to slower speed if current is not sensed by HD1.		
	When soft start is on, motor will run slow until weld current is sensed by HD1.		
Unit does not switch out of Soft Start.	Check transducer HD1 and connections, and replace if necessary.		
Wire feeds when Jog switch is pressed but not when gun trigger is pressed.	Check gun trigger connection at wire feeder. Check gun trigger leads and trigger switch. See gun Owner's Manual.		
	Check Motor Control board PC1 and connections, and replace if necessary (see Section 6-3).		
Wire stubbing on low end using a constant current power source or feeder resets.	Make sure CC/CV switch is in CC position (see Section 4-1).		
	Increase power source inductance setting if available.		
	Increase output setting of power source or decrease wire feed speed.		
Gas does not flow or does not stop flowing; wire feeds.	Check gas valve.		
	Check coil voltage and connections of gas valve GS1. Check continuity of coil. Replace GS1 if necessary.		
	Check Motor Control board PC1 and connections, and replace if necessary (see Section 6-3).		
	Clear blockage in gas hose or replace hose.		
	Clear blockage in welding gun.		
Wire remains energized after trigger is released.	Check contactor W1 to see if contacts are frozen closed.		

6-2. Troubleshooting Circuit Diagram For Wire Feeder



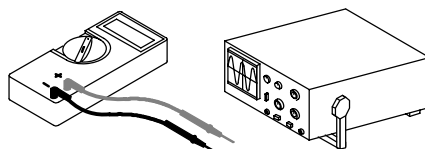
 ELECTRIC SHOCK HAZARD	WARNING
	<ul style="list-style-type: none"> • Do not touch live electrical parts. • Disconnect input power or stop engine before servicing. • Do not operate with covers removed. • Have only qualified persons install, use, or service this unit.



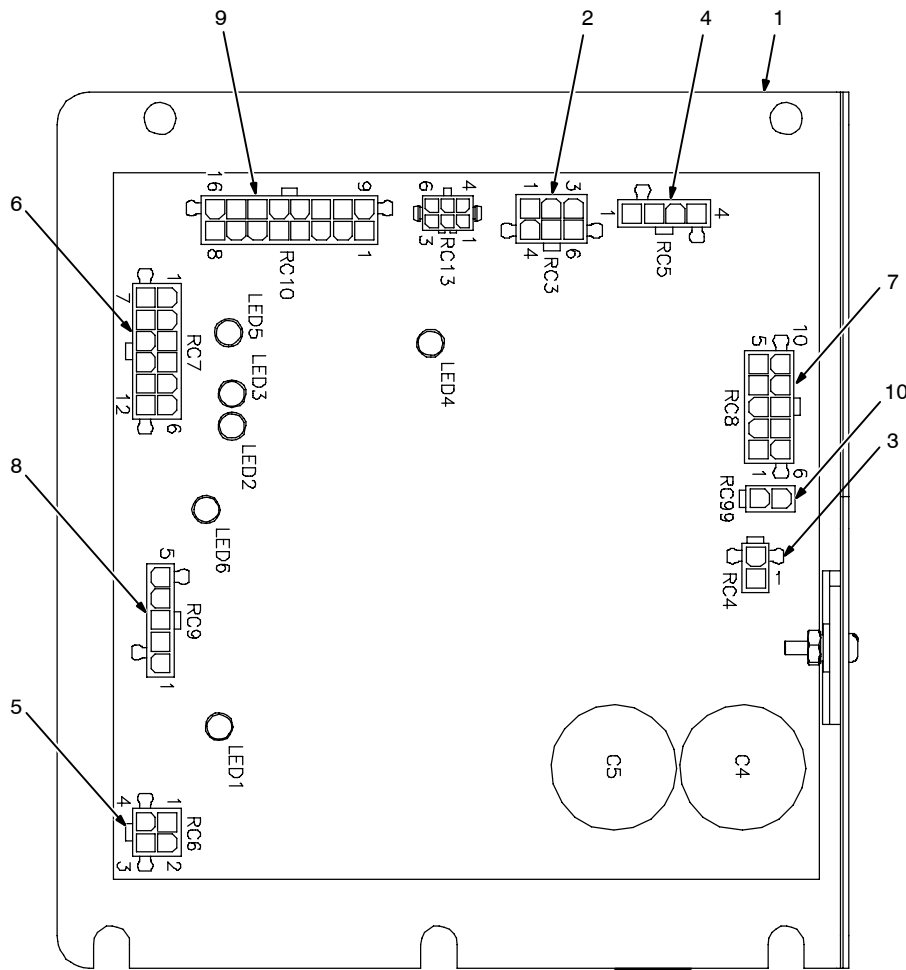
Resistance Values	
a) Tolerance – $\pm 20\%$ unless specified	
b) Resistance measurements made on device isolated from rest of circuit	
c) Turn off unit and disconnect power	
R1	14 ohms
R2	4 ohms
R3	0.7 ohms

Voltage Readings	
a) Tolerance – $\pm 10\%$ unless specified	
b) Reference – PC1 pin RC10-2 or C1 or C2 circuit common (10) unless noted	
c) Wiring Diagram – see Section 8	
V1	24 volts dc when not triggered
V2	12 volts dc output when contactor W1 is energized
V3	0 to 4 volts dc dependant on weld current, 2.5 volts dc with no weld current
V4	12 volts dc when gas valve GS1 is energized
V5	0 to 5 volts dc dependant on setting of wire speed control
V6	13 volts dc or 0 volts dc if thermostat TP2 detects an overheat condition
V7	13 volts dc or 0 volts dc if thermostat TP1 detects an overheat condition
V8	3 to 24 volts dc dependant on wire speed control and arc voltage
V9	Arc voltage or open circuit voltage

Test Equipment Needed:

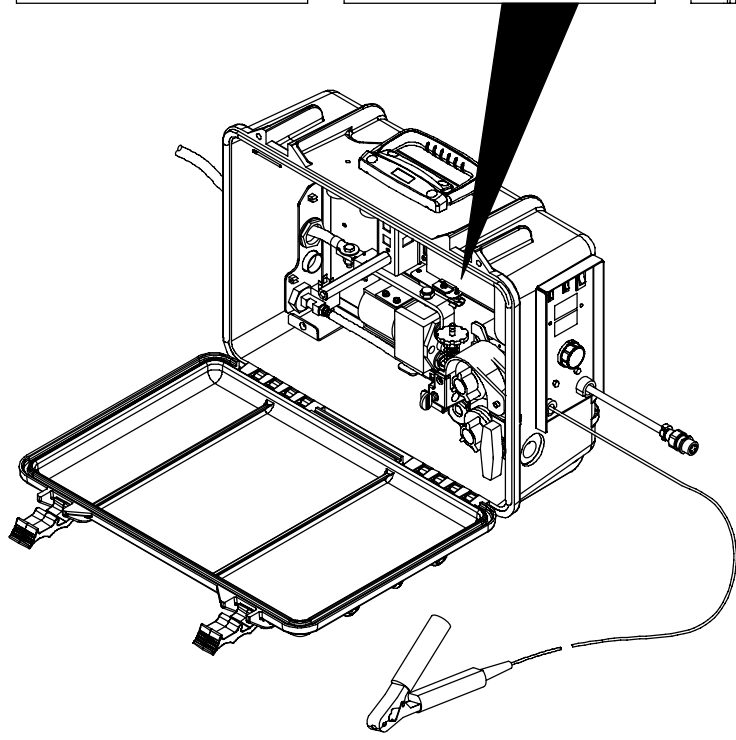


6-3. Motor Control Board PC1 Testing Information

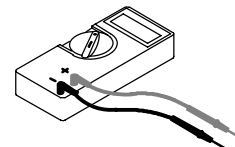


Be sure plugs are secure before testing. See Section 6-4 for specific values during testing.

- 1 Motor Control Board PC1
- 2 Receptacle RC3
- 3 Receptacle RC4
- 4 Receptacle RC5
- 5 Receptacle RC6
- 6 Receptacle RC7
- 7 Receptacle RC8
- 8 Receptacle RC9
- 9 Receptacle RC10
- 10 Receptacle RC99

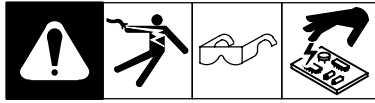


Test Equipment Needed:



804 076-A / 224 677 (ILeaf)

6-4. Motor Control Board PC1 Test Point Values



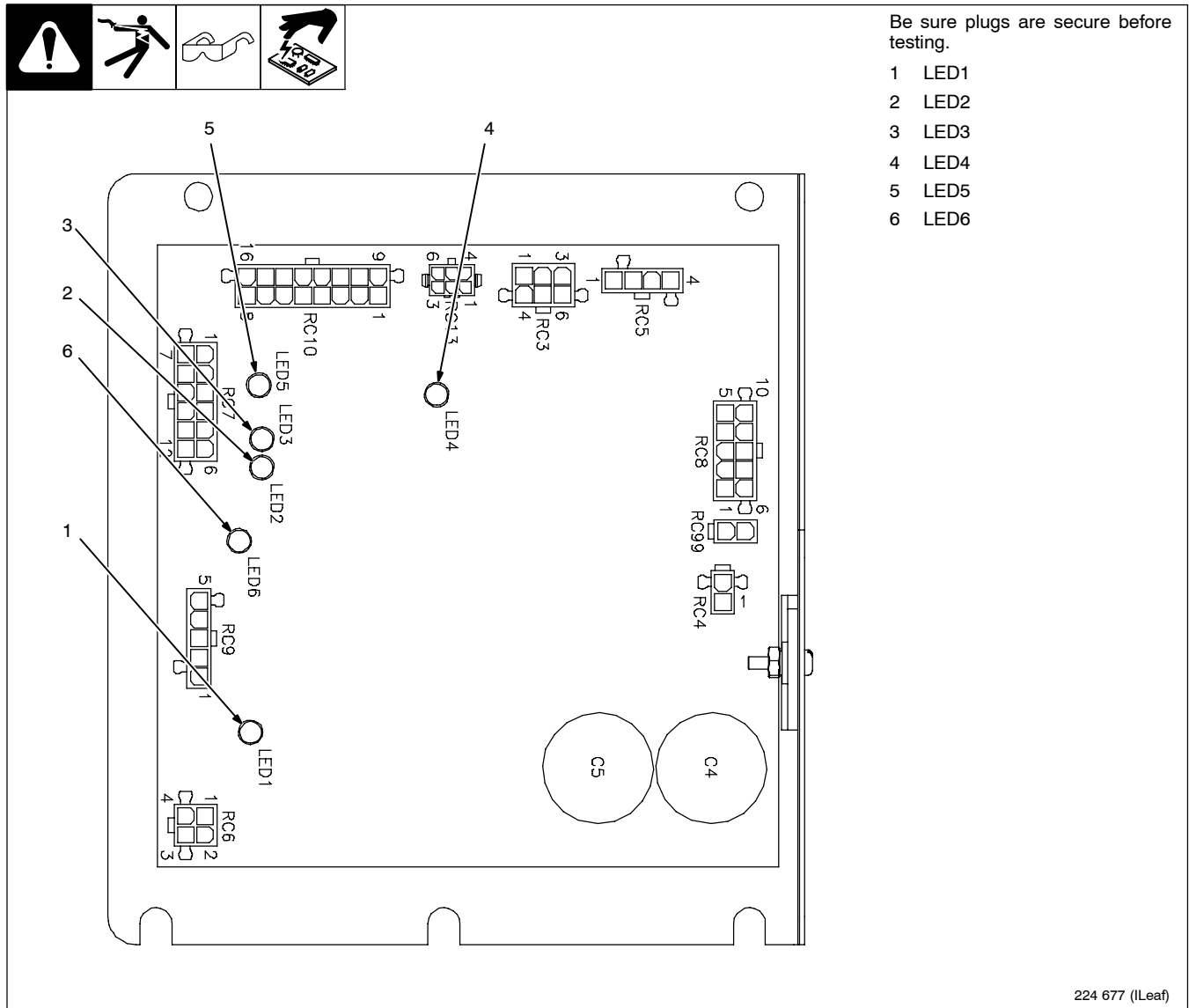
PC1 Voltage Readings

- a) Tolerance – $\pm 10\%$ unless specified
- b) Reference – PC1 pin RC10-2 or C1 or C2 circuit common (10) unless noted

Receptacle	Pin	Value
RC3	1	Not used
	2	Not used
	3	Weld current feedback from HD1 – 0A = 2.5volts dc, 300A of weld current will produce a current feedback signal of 1.5 or 3.5 volts dc, dependent on weld current polarity.
	4	DC circuit common
	5	+5 volts dc to HD1
	6	Not used
RC4	1	Positive voltage to motor – 3 to 24 volts dc
	2	Negative voltage to motor – 0 volts dc
RC5	1	+13 volts dc / 0 volts dc if TP1 senses an overheat condition
	2	+13 volts dc to TP1
	3	+13 volts dc / 0 volts dc if TP2 senses an overheat condition
	4	+13 volts dc to TP2
RC6	1	+24 volts dc / 0 volts dc when triggered. REF to RC6-2
	2	Trigger signal input
	3	Not used
	4	Not used
RC7	1	+13 volts dc to CC/CV switch S3
	2	0 volts dc / 13 volts dc when HI/LO switch (S5) is closed. (LO mode)
	3	Not used
	4	Not used
	5	Not used
	6	+13 volts dc to soft start switch S6
	7	Voltage sense input from volt sense lead
	8	0 volts dc / 13 volts dc when CC/CV switch (S3) is closed. (CC mode)
	9	+13 volts dc to HI/LO switch S5
	10	Not used
	11	Not used
	12	0 volts dc / 13 volts dc when Soft Start switch (S6) is closed. (Soft Start off)

Receptacle	Pin	Value
RC8	1	DC – circuit common to capacitors C1 & C2
	2	Not used
	3	+V to capacitors C1 & C2 – +V voltage reading is dependant on input voltage
	4	Not used
	5	+V to gas valve GS1 – 12volts dc when GS1 in energized. ref to RC8-6
	6	Gas valve (GS1) control
	7	+V to contactor W1 – 12volts dc when W1 in energized. ref to RC8-8
	8	Contactor (W1) control
	9	Not used
	10	Voltage sense input from bus bar
RC9	1	Serial communication to Display board PC20
	2	Serial communication to Display board PC20
	3	Not used
	4	Not used
	5	DC – circuit common
RC10	1	Not used
	2	0 TO 5 volts dc wire speed command, from Display board PC20
	3	DC – circuit common
	4	+13 volts dc to Jog/Purge switch S2
	5	0 volts dc / +13 volts dc when Purge switch (S2) is closed. (Purge switch activated)
	6	0 volts dc / +13 volts dc when Trigger Hold switch (S4) is closed. (Trigger Hold on)
	7	+13 volts dc to Trigger Hold switch S4
	8	0 volts dc / 13 volts dc when Jog switch (S2) is closed. (Jog switch activated)
	9	Not used
	10	+15 volts dc to Display PCB PC20
	11	Not used
	12	DC – circuit common
	13	Not used
	14	Not used
	15	Voltage sense input from volt sense lead (when power switch S1 is closed)
	16	Voltage sense input from volt sense lead
RC99	1	Not used
	2	Not used

6-5. Diagnostic LED's On Motor Board PC1



224 677 (Leaf)

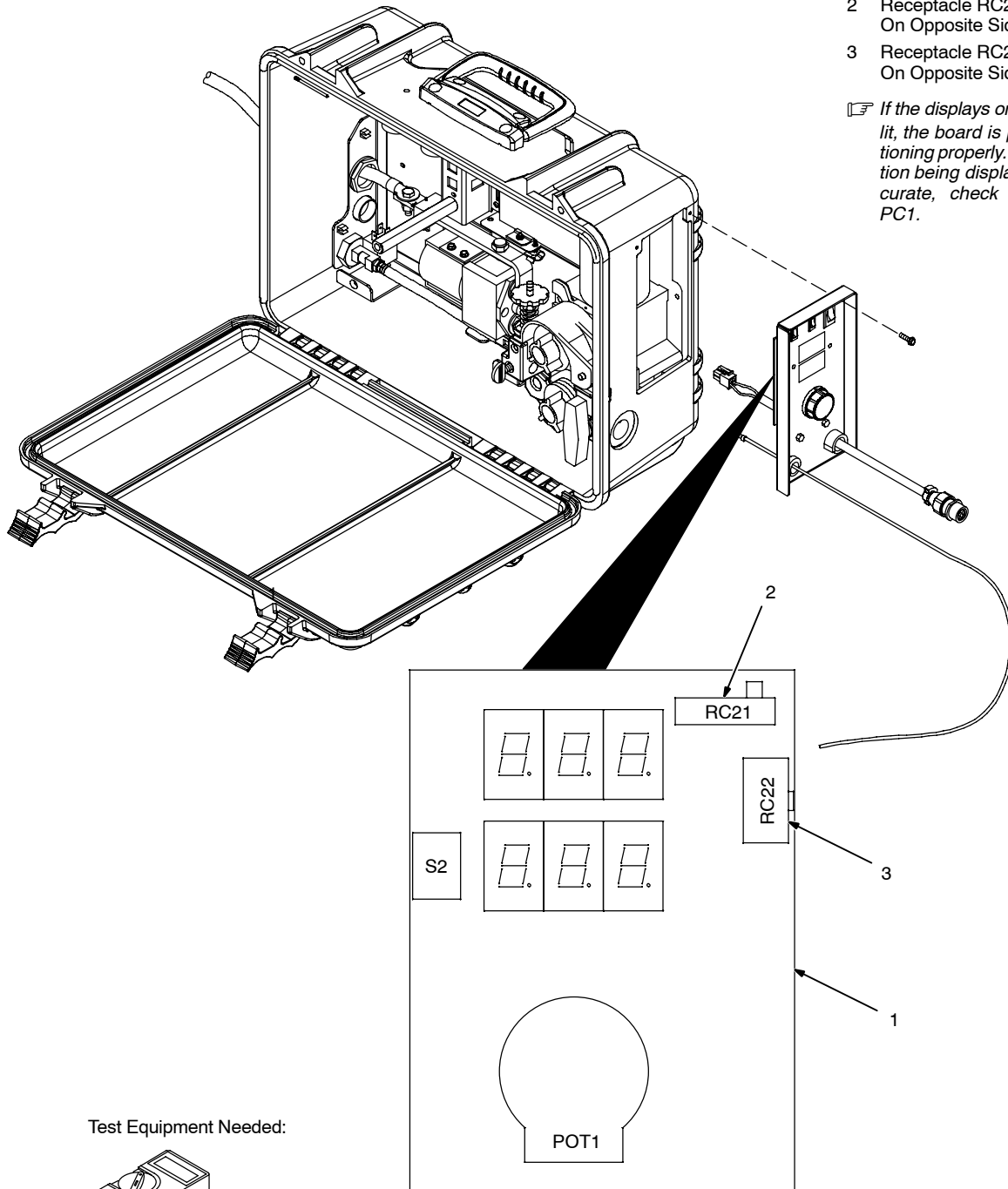
LED	Status	Self-Test
1, 2, 3, And 6	On	LED1 - Indicates +24 volts dc present on Motor board PC1 (Isolated Trigger Circuit). LED2 - Indicates -15 volts dc present on Motor board PC1. LED3 - Indicates +15 volts dc present on Motor board PC1. LED6 - Indicates +5 volts dc present on Motor board PC1.
	Off	If LED1, LED2, LED3, and LED6 are on - Power supply circuits on Motor board are working properly. If any of LED1, LED2, LED3, and LED6 is on, and the rest are off - Replace Motor board. If all of LED1, LED2, LED3, and LED6 are off - Check power coming into Motor board, and/or replace Motor board.
4	On	Indicates whether the feeder is in CC or CV mode.
	Off	If LED4 is RED - mode is CC. If LED4 is GREEN - mode is CV. If LED4 is blinking or not on - Replace Motor board.
5	On	Indicates errors when blinking (Health).
	Off	LED5 should be on. If LED5 is blinking, check Display board PC20 for error messages, or check for the error by the number of blinks of LED5 (see Section 4-4).

6-6. Display Board PC20 Testing

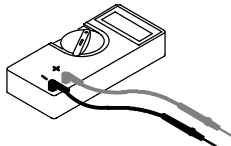
Be sure plug is secure before testing. See Section 6-7 for specific values during testing.

- 1 Display Board PC20
- 2 Receptacle RC21 (Located On Opposite Side Of Board)
- 3 Receptacle RC22 (Located On Opposite Side Of Board)

If the displays on the board are lit, the board is probably functioning properly. If the information being displayed is not accurate, check Motor Board PC1.



Test Equipment Needed:



220 192 / 804 077-A

SECTION 7 – MAINTENANCE


7-1. Routine Maintenance

				<p>▲ Disconnect power before maintaining.</p>	<p>☞ <i>Maintain more often during severe conditions.</i></p>	
<p> 3 Months</p>						
		<p>Replace Damaged Or Unreadable Labels</p>				<p>Replace Damaged Gas Hose</p>
				<p>Repair Or Replace Cracked Cables And Cords</p>		
<p> 6 Months</p>						
		<p>Clean Drive Rolls</p>				<p>Blow Out Or Vacuum Inside</p>

7-2. Overload Protection And Thermostat Protection

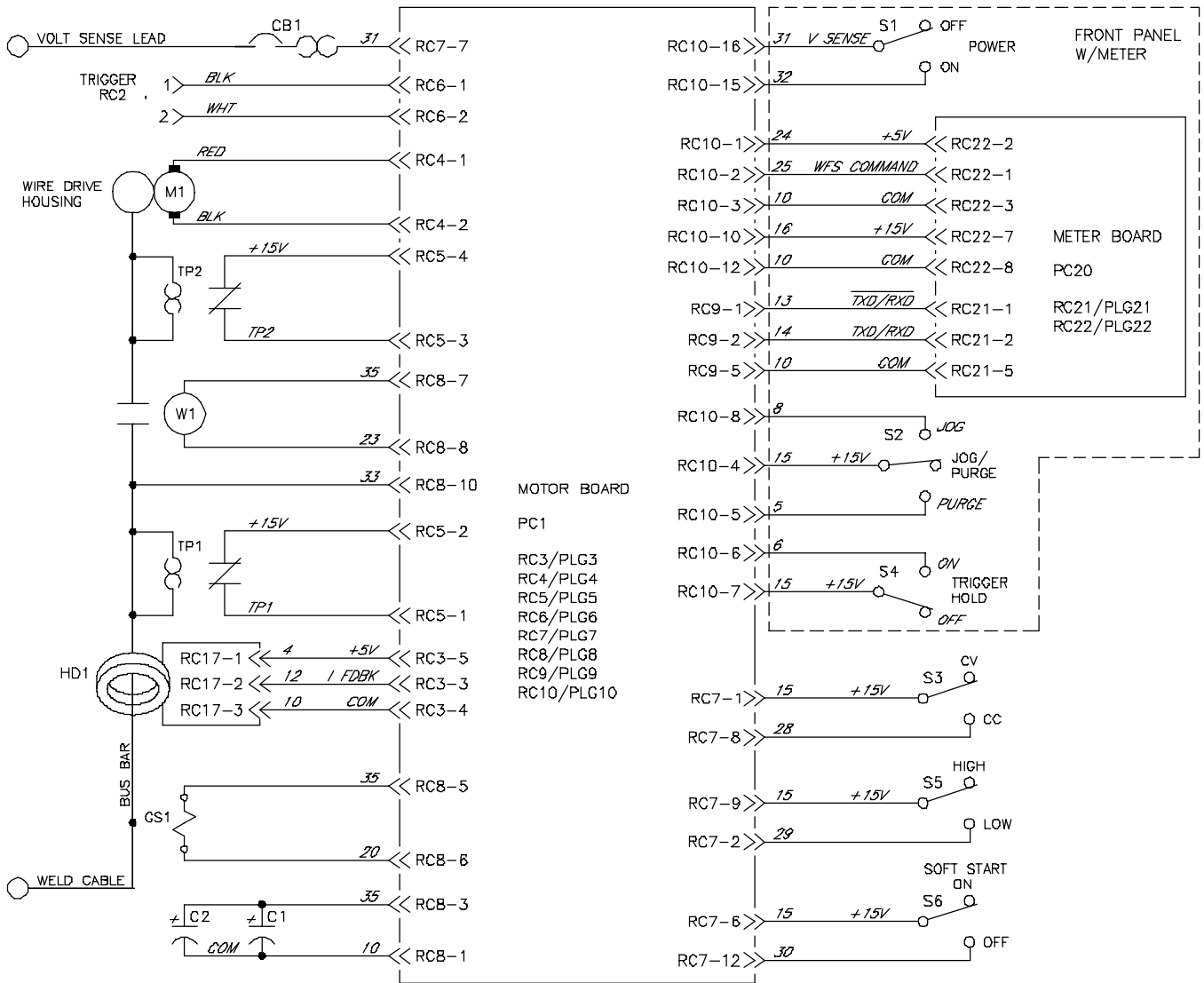
		<p>▲ Turn Off wire feeder and welding power source. Stop engine on welding generator.</p>	
		<p>1 Circuit Breaker CB1</p>	
<p>Internal Side View</p>		<p>CB1 protects wire feeder from overload. Correct problem and reset CB1.</p>	
		<p>Close and latch door.</p>	
		<p>Thermostat Protection</p>	
		<p>Unit has internal thermostat protection and will not feed wire if overheating occurs (see Section 6-1).</p>	
<p>Ref. 804 006-A</p>			

SECTION 8 – 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
SuitCase X-TREME 12VS	LE316207 and following	218 763-D	219 187-C
Circuit Board PC1	LE316207 Thru LG291096W	218 101-D♦♦	♦♦
	LG291097W and following	224 676-A♦♦	♦♦
Display Board PC20	LE316207 and following	220 193-A♦♦	♦♦
♦♦ Not included in this manual			




 ELECTRIC SHOCK HAZARD	WARNING <ul style="list-style-type: none"> Do not touch live electrical parts. Disconnect input power or stop engine before servicing. Do not operate with covers removed. Have only qualified persons install, use, or service this unit.

Figure 8-1. Circuit Diagram For SuitCase X-TREME 12VS Eff w/LE316207 And Following

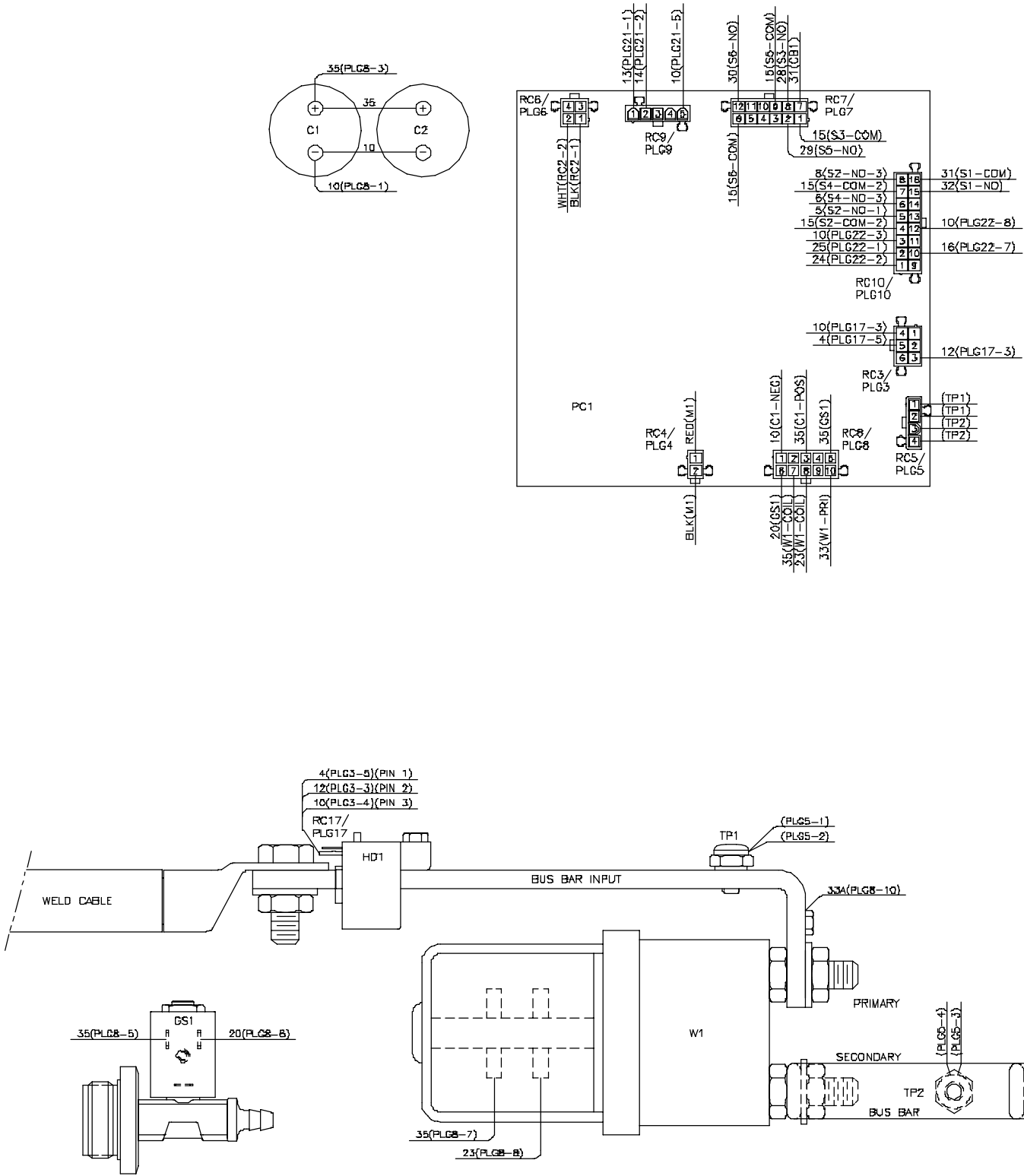
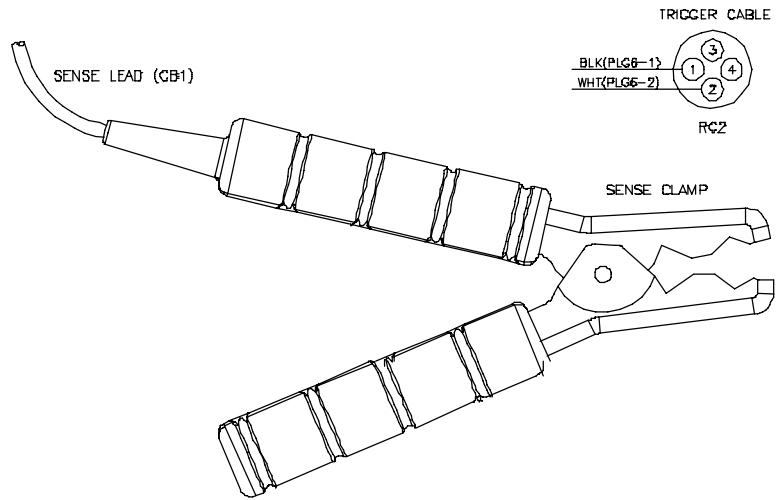
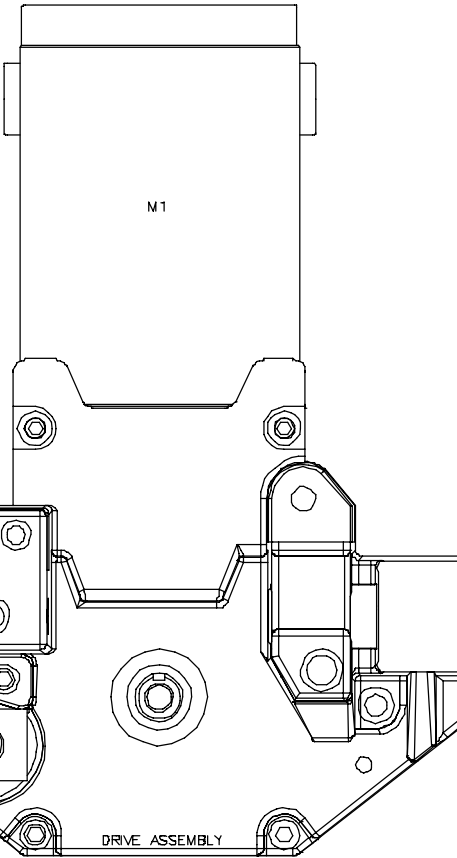
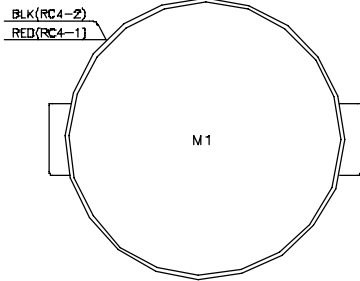
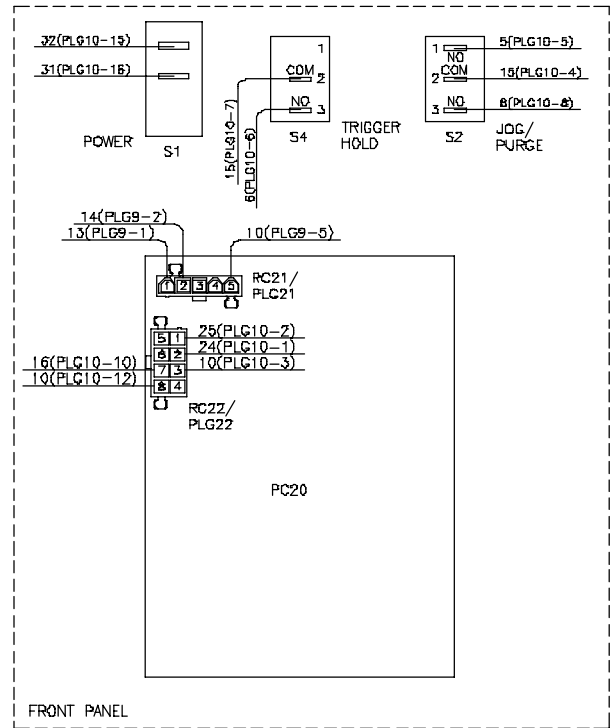
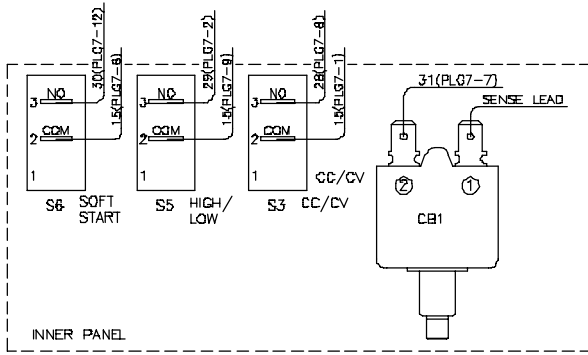


Figure 8-2. Wiring Diagram For SuitCase X-TREME 12VS Eff/w LE316207 And Following



<p>WARNING</p> <p>ELECTRIC SHOCK HAZARD</p>	<ul style="list-style-type: none"> Do not touch live electrical parts. Disconnect input power or stop engine before servicing. Do not operate with covers removed. Have only qualified persons install, use, or service this unit.
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TM-1500-19C

2006-08

Processes



MIG (GMAW) Welding

Flux Cored (FCAW) Welding

Description



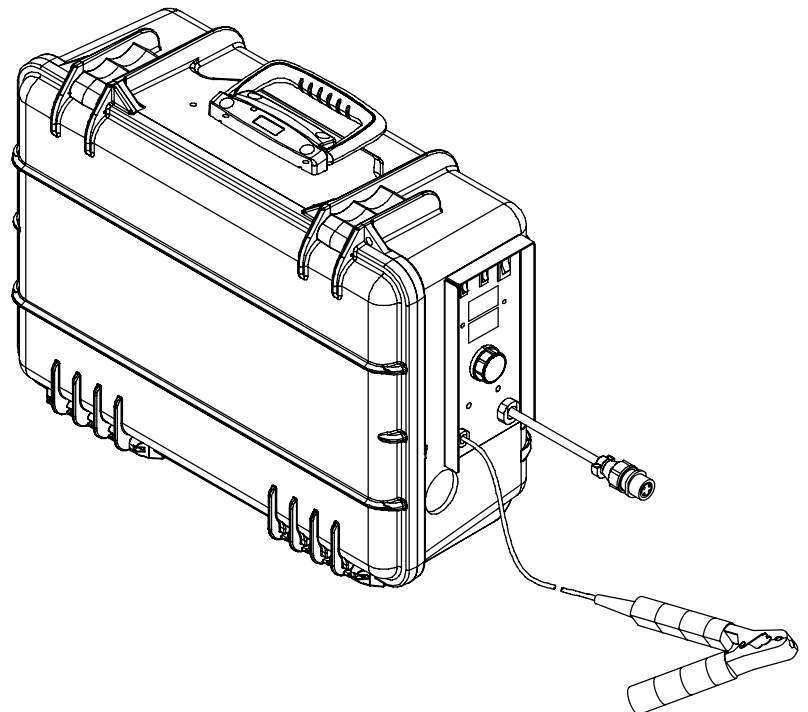
Wire Feeder

SuitCaseTM X-TREMETM 12VS

PARTS LIST

Eff w/LE316207 Thru LF102495

For OM-1500-19 (219 185) Revision A



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SECTION 9 – PARTS LIST FOR LE316207 THRU LF102495

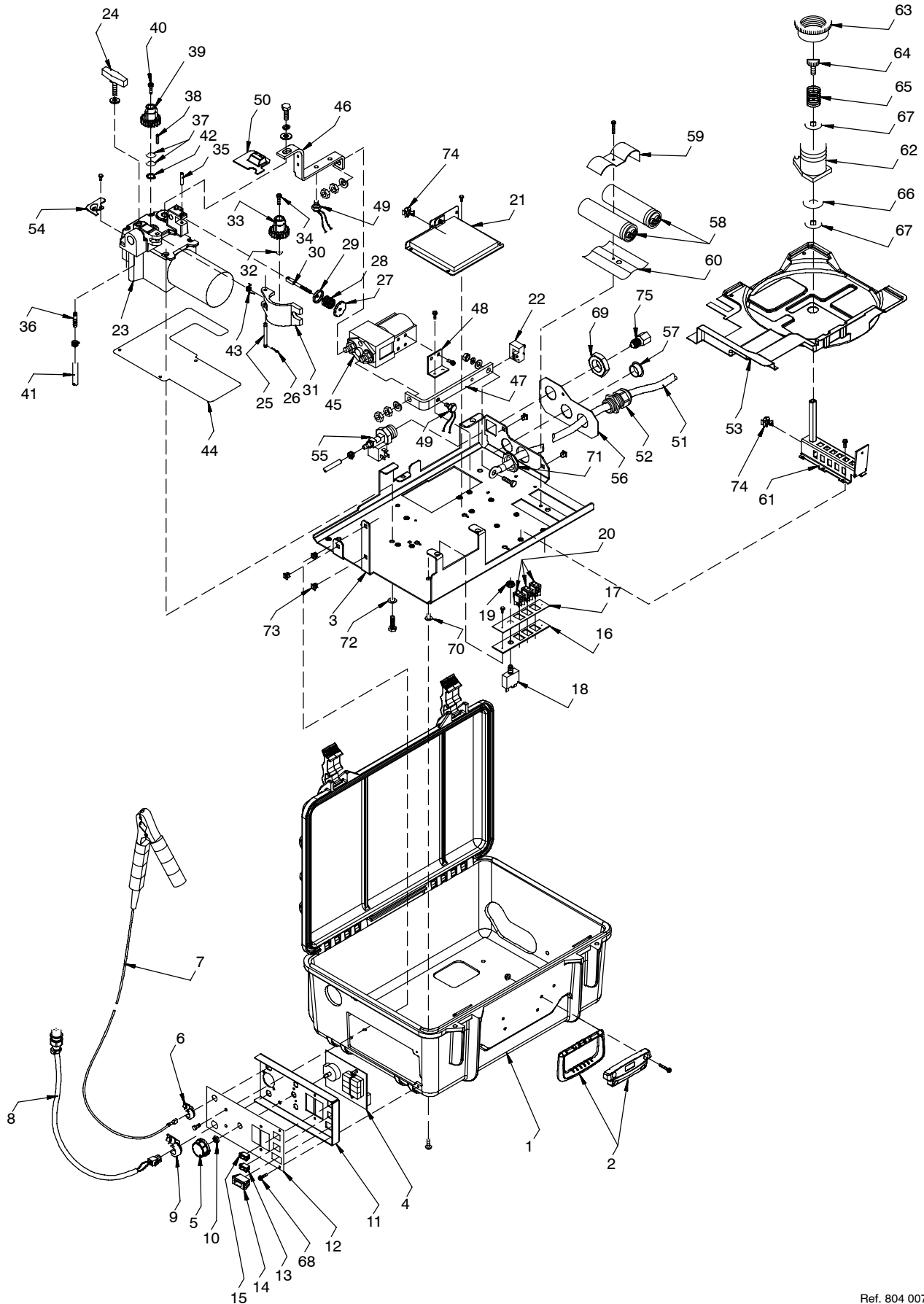


Figure 9-1. Complete Assembly

Ref. 804 007-B

Item No.	Diagram marking	Part No.	Description	Quantity
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Figure 9-1. Complete Assembly

1		221 050	Case, Control Feeder Plastic	1
2		208 015	Handle, Rubberized Carrying	1
3		221 051	Chassis, Control Box	1
4	PC20	220 186	Circuit Card Assy, Meter Suitcase W/Program	1
5		179 851	Knob, Pointer 1.670 Dia X .250 Id Push On W/Spring	1
6		138 044	Bushing, Strain Relief .120/.150 Id X .500 Mtg Hole	1
7		214 011	Cable, Sensing	1
8		221 998	Cable, Trigger 25 In	1
9		070 654	Bushing, Strain Relief .300 Id X .550 Mtg Hole	1
10		604 645	Nut, 375-32 .56Hex .09h Stl Cad Use W/Pots	1
11		220 442	Panel, Front	1
12		220 443	Nameplate, Front	1
13	S4	217 932	Switch, Rocker Spst .4va 28vdc On-None-Off .187 Ter	1
14	S1	111 997	Switch, Rocker Spst 10a 250vac On-Off Visi Red Rock	1
15	S2	216 295	Switch, Rocker Spst .4va 28vdc (On)-Off-(On) .187t	1
16		208 076	Panel, Inner	1
17		216 315	Nameplate, Inner	1
18	CB1	083 432	Circuit Breaker, Man Reset 1p 10a 250vac Frict	1
19		147 195	Nut, 375-27 .54Hex .25h Nyl Flange .62d	1
20	S3, S5, S6	217 932	Switch, Rocker Spst .4va 28vdc On-None-Off .187 Ter	3
21	PC1	219 182	Circuit Card Assy, Motor Control W/Program	1
22	HD1	218 339	Transducer, Current 600a Module Supply V +5V	1
23	M1	220 195	Motor, Right Angle 24vdc 145 Rpm 37.5 Ratio W/Plug	1
24		124 778	Knob, T 2.000 Bar W/.312-18 Stud 1.000 Lg Plstc	1
25		079 634	Pin, Hinge	1
26		151 828	Pin, Cotter Hair .042 X .750	2
27		085 243	Knob, Adjust Tension 1.250 Dia X .312-18 Thrd Stl	1
28		089 477	Spring, Cprsn .770 Od X .100 Wire X .715 Pld	1
29		085 244	Washer, Cupped .328idx .812odx.16gax.125 Lip	1
30		089 562	Fastener, Pinned	1
31		166 071	Lever, Mtg Pressure Gear	1
32		166 072	Spacer, Gear	1
33		172 075	Carrier, Drive Roll W/Components 24 Pitch	1
34		602 009	Screw, 250-20x1.25 Soc Hd-hex Gr8 Pln	1
35		010 224	Pin, Spring Cs .187 X 1.000	1
36		144 172	Ftg, Hose Brs Barbed M 3/16 Tbg X .250-20	1
37		079 625	Washer, Wave .500idx0.750odx.015t Stl Lbs	2
38		092 865	Key, Stl .1215/.1230 X .750	1
39		172 076	Carrier, Drive Roll W/Components Keyed 24 Pitch	1
40		121 271	Screw, 250-20x .50 Soc Hd-Hex Gr8 Pln Lkg Patch	1
41		098 615	Hose, Sae .187 Id X .410 Od X 20.000	1
42		605 308	Ring, Rtnng Ext .500 Shaft X .035 Thk	1
43		222 159	Spring, Torsion	1
44		222 396	Insulator, Motor	1
45	W1	220 370	Contacto, 12vdc 1pst On-Off Magnetic Blow Out	1
46		221 344	Bus Bar, Interconnecting	1
47		221 345	Bus Bar, Input	1
48		222 001	Bracket, Mtg Contactor	1
49	TP1, TP2	220 221	Thermostat, Nc Open 140c Close 110c Snap Action	2
50		221 347	Grommet, Bus Bar	1
51		600 324	Cable, Weld Cop Strd No 4/0 Epdm Jkt	18 in
52		215 980	Bushing, Strain Relief .709/.984 Id X1.375 Mtg Hole	1
53		221 052	Shroud, Wire	1
54		207 679	Insert, Corner	1
55	GS1	215 284	Valve, 12VDC 1Way .750-14 Thd 1/8 Orf 100psi	1

Item No.	Diagram marking	Part No.	Description	Quantity
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Figure 9-1. Complete Assembly (Continued)

56		222 067	Insulator, Rear Panel	1
57		070 371	Blank, Snap-In Nyl 1.093/1.125 Mtg Hole Black	1
58	C1, C2	200 606	Capacitor, Elctlt 1200 Uf 300 VDC Can 1.39 Dia	2
59		210 133	Bracket, Capacitor Support SC12	1
60		207 678	Insulator, Capacitors	1
61		222 103	Support, Spool	1
62		209 451	Hub, Spool (Mod)	1
63		209 450	Nut, Hub	1
64		172 919	Knob, Brake Adjust	1
65		172 918	Spring	1
66		058 424	Washer, Fibre (Brake)	1
67		201 309	Washer, Anti-Turn	2
		134 327	Label, Warning General Precautionary Static & Wire Fe	2
		196 956	Label, Warning Electric Shock And Pinch Wordless	1
		222 306	Label, Warning General Precautionary Static Vert	1
68		145 217	Screw, K40x 12 Pan Hd-Phl Stl Pld Pt Thread Forming	2
69		220 805	Nut, 750-14 Knurled 1.68dia .41H Nyl	1
70		081 895	Nut, 010-32 Rubber .75dia .81I Insert In .38Hole	5
71		182 445	Nut, Conduit 1.000 Npt Pld 1.688 Od X .200 Thk	1
72		208 000	Washer, Shldr .260id 0.630odx.125t .327odx.062t Nyl	4
73		222 181	Grommet, Scr No 8/10 Panel Hole .281 Sq .031 High	5
74		222 294	Clip, Wire/Cord .380 Bundle .250Hole .105 Thk Blk	2
75		211 989	Fitting, W/Screen	1
	PLG10	131 052	Housing Rcpt+Skts, (Service Kit)	1
	PLG22	115 092	Housing Plug+Skts, (Service Kit)	1
	PLG7	130 203	Housing Plug+Skts, (Service Kit)	1
	PLG8	115 092	Housing Plug+Skts, (Service Kit)	1
	PLG5	201 665	Housing Plug+Skts, (Service Kit)	1
	PLG3	130 203	Housing Plug+Skts, (Service Kit)	1
	PLG4	131 054	Housing Rcpt+Skts, (Service Kit)	1
	PLG6	115 094	Housing Plug+Skts, (Service Kit)	1
	PLG9, 21	131 055	Housing Rcpt+Skts, (Service Kit)	2
	PLG17	222 397	Housing Plug+Skts, (Service Kit)	1
	RC3	080 328	Rcpt W/Skts, Free Hanging	1

☞ *Trigger Hold and Meter feature is optional in non-CE models and standard in CE models.*

+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.

Table 9-1. Drive Roll & Wire Guide Kits (2 Drive Roll)

NOTE



Base selection of drive rolls upon the following recommended usages:

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

Wire Diameter			Kit No.	Drive Roll		Inlet Wire Guide
Fraction	Decimal	Metric		Part No.	Type	
.023/.025 in	.023/.025 in	0.6 mm	087 131	087 130	V-Grooved	056 192
.030 in	.030 in	0.8 mm	079 594	053 695	V-Grooved	056 192
.035 in	.035 in	0.9 mm	079 595	053 700	V-Grooved	056 192
.040 in	.040 in	1.0 mm	161 189	053 696	V-Grooved	056 192
.045 in	.045 in	1.2 mm	079 596	053 697	V-Grooved	056 193
.052 in	.052 in	1.3 mm	079 597	053 698	V-Grooved	056 193
1/16 in	.062 in	1.6 mm	079 598	053 699	V-Grooved	056 195
.035 in	.035 in	0.9 mm	044 749	072 000	U-Grooved	056 192
.045 in	.045 in	1.2 mm	079 599	053 701	U-Grooved	056 193
.052 in	.052 in	1.3 mm	079 600	053 702	U-Grooved	056 193
1/16 in	.062 in	1.6 mm	079 601	053 706	U-Grooved	056 195
5/64 in	.079 in	2.0 mm	079 602	053 704	U-Grooved	056 195
.035 in	.035 in	0.9 mm	079 606	132 958	V-Knurled	056 192
.045 in	.045 in	1.2 mm	079 607	132 957	V-Knurled	056 193
.052 in	.052 in	1.3 mm	079 608	132 956	V-Knurled	056 193
1/16 in	.062 in	1.6 mm	079 609	132 955	V-Knurled	056 195
.068-.072 in	.068-.072	1.8 mm	089 984	132 959	V-Knurled	056 195
5/64 in	.079 in	2.0 mm	079 610	132 960	V-Knurled	056 195
.045 in	.045 in	1.2 mm	083 318	083 489	U-Cogged	056 193
.052 in	.052 in	1.3 mm	083 317	083 490	U-Cogged	056 193
1/16 in	.062 in	1.6 mm	079 614	053 708	U-Cogged	056 195
5/64 in	.079 in	2.0 mm	079 615	053 710	U-Cogged	056 195

S-0859



TM-1500-19C

2006-08

Processes



MIG (GMAW) Welding

Flux Cored (FCAW) Welding

Description



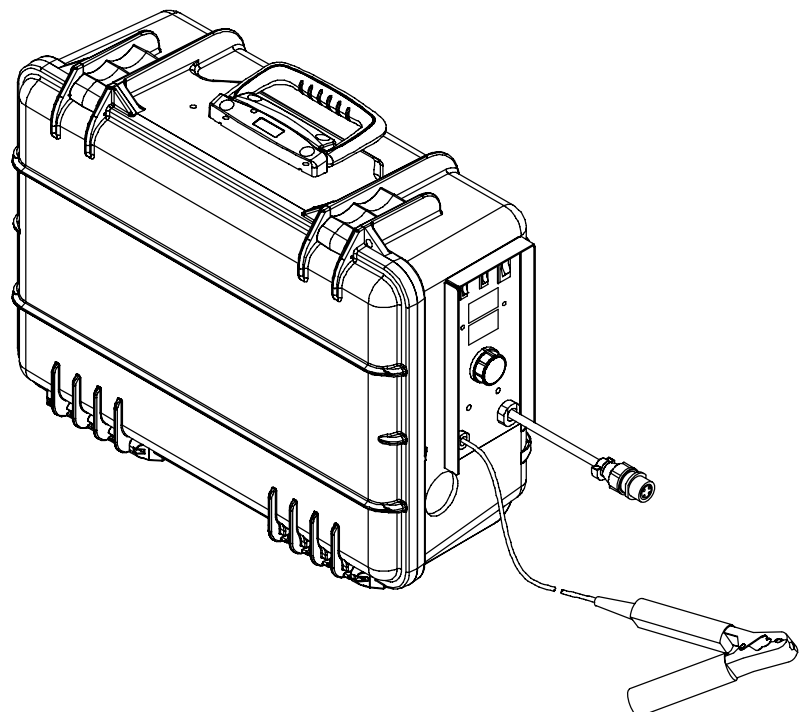
Wire Feeder

SuitCaseTM X-TREMETM 12VS

PARTS LIST

Eff w/LF102496 And Following

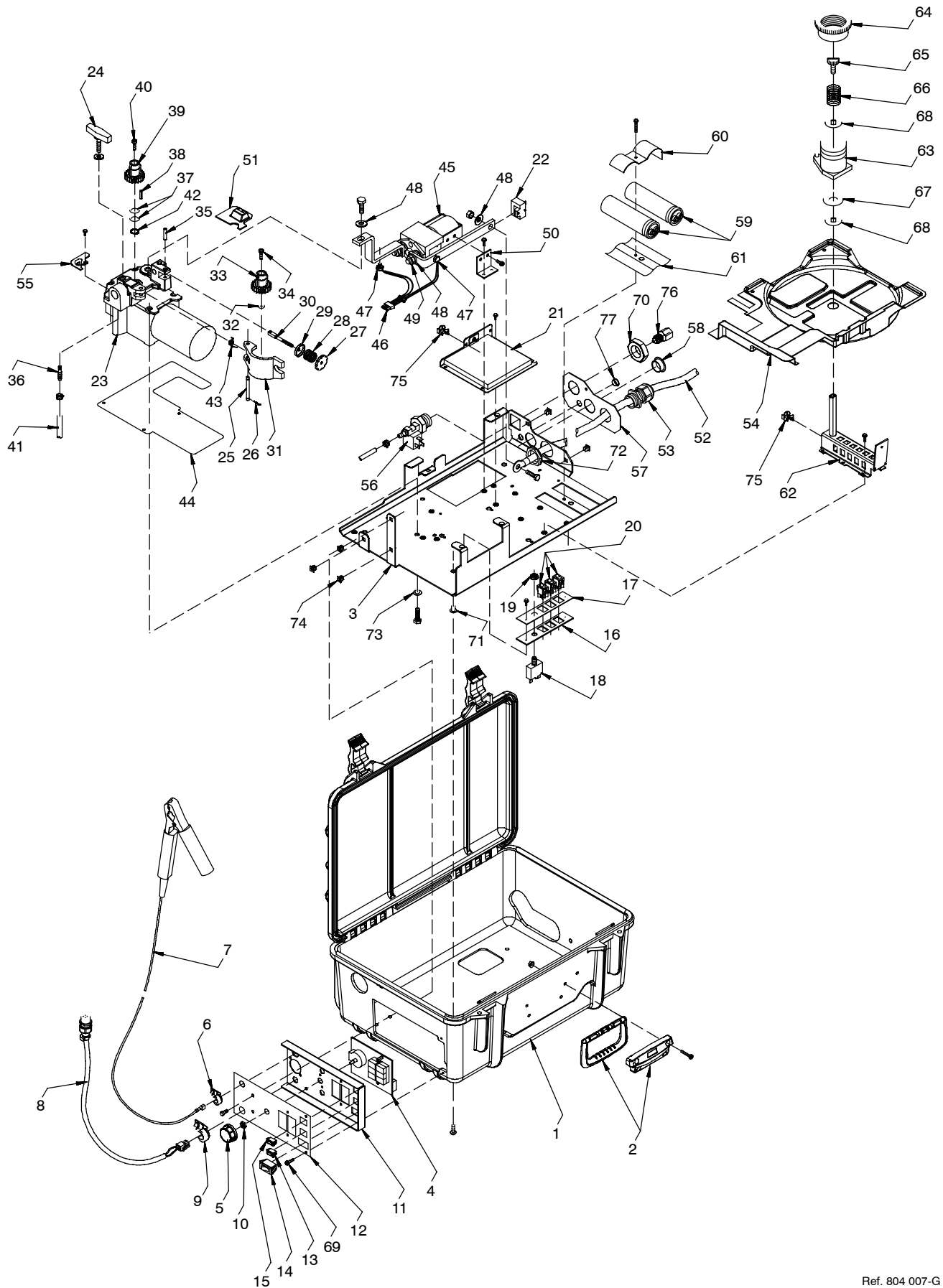
For OM-1500-19 (219 185) Revisions B Thru J



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SECTION 10 – PARTS LIST FOR LF102496 AND FOLLOWING



Ref. 804 007-G

Figure 10-1. Complete Assembly

Item No.	Diagram marking	Part No.	Description	Quantity
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Figure 10-1. Complete Assembly

1		221 050	Case, Control Feeder Plastic	1
2		208 015	Handle, Rubberized Carrying	1
3		221 051	Chassis, Control Box	1
4	PC20	220 186	Circuit Card Assy, Meter Suitcase W/Program	1
5		179 851	Knob, Pointer 1.670 Dia X .250 Id Push On W/Spring	1
6		138 044	Bushing, Strain Relief .120/.150 Id X .500 Mtg Hole	1
7		214 011	Cable, Sensing (Includes)	1
		600 848	Wire, Strd 12Ga Blk 600v 105C 65x30 Hyp (Eff W/LG012788)	16 ft
		208 820	Clamp, Work (Eff W/LG012788)	1
8		221 998	Cable, Trigger 25 In (Includes)	1
	PLG6	115 094	Housing Plug+Skts, (Service Kit) (Eff W/LG012788)	1
		049 445	Cable, Port No 18 2/C Type Sjo Nprn Jkt (Eff W/LG012788)	3 ft
	RC2	080 328	Rcpt W/Skts, Free Hanging (Eff W/LG012788)	1
		048 834	Conn, Circ Cpc Clamp Str Rlf Size 11 .329 Od (Eff W/LG012788)	1
9		070 654	Bushing, Strain Relief .300 Id X .550 Mtg Hole	1
10		604 645	Nut, 375-32 .56Hex .09H Stl Cad Use W/Pots	1
11		220 442	Panel, Front	1
12		220 443	Nameplate, Miller W/Meters	1
13	S4	217 932	Switch, Rocker Spst .4VA 28VDC On-None-Off .187 Ter	1
14	S1	111 997	Switch, Rocker Spst 10A 250VAC On-Off Visi Red Rock	1
15	S2	216 295	Switch, Rocker Spdt .4VA 28VDC (On)-Off-(On) .187T	1
16		208 076	Panel, Inner	1
17		216 315	Nameplate, Inner	1
18	CB1	083 432	Circuit Breaker, Man Reset 1P 10A 250VAC Frict	1
19		147 195	Nut, 375-27 .54Hex .25h Nyl Flange .62D	1
20	S3, S5, S6	217 932	Switch, Rocker Spst .4VA 28VDC On-None-Off .187 Ter	3
21	PC1	219 182	Circuit Card Assy, Motor Control W/Program (Prior To LG291097W)	1
21	PC1	224 675	Circuit Card Assy, Motor Control W/Program (Eff W/LG291097W)	1
22	HD1	218 339	Transducer, Current 600A Module Supply V +5V	1
23	M1	220 195	Motor, Right Angle 24VDC 145 RPM 37.5 Ratio W/Plug	1
24		124 778	Knob, T 2.000 Bar W/.312-18 Stud 1.000 Lg Plstc	1
25		079 634	Pin, Hinge	1
26		151 828	Pin, Cotter Hair .042 X .750	2
27		085 243	Knob, Adjust Tension 1.250 Dia X .312-18 Thrd Stl	1
28		089 477	Spring, Cprsn .770 Od X .100 Wire X .715 Pld	1
29		085 244	Washer, Cupped .328idx .812odx.16gax.125 Lip	1
30		089 562	Fastener, Pinned	1
31		166 071	Lever, Mtg Pressure Gear	1
32		166 072	Spacer, Gear	1
33		172 075	Carrier, Drive Roll W/Components 24 Pitch	1
34		602 009	Screw, 250-20x1.25 Soc Hd-Hex Gr8 Pln	1
35		010 224	Pin, Spring Cs .187 X 1.000	1
36		144 172	Ftg, Hose Brs Barbed M 3/16 Tbg X .250-20	1
37		079 625	Washer, Wave .500idx0.750odx.015T Stl Lbs	2
38		092 865	Key, Stl .1215/.1230 X .750	1
39		172 076	Carrier, Drive Roll W/Components Keyed 24 Pitch	1
40		121 271	Screw, 250-20x .50 Soc Hd-Hex Gr8 Pln Lkg Patch	1
41		098 615	Hose, Sae .187 Id X .410 Od X 20.000	1
42		605 308	Ring, Rtnng Ext .500 Shaft X .035 Thk	1
43		222 159	Spring, Torsion	1
44		222 396	Insulator, Motor	1
45	W1	224 039	Kit, Contactor W/Nuts (Prior To LF182745)	1
45	W1	224 697	Contactor 12VDC W/Bus Bars, (Includes) (Eff W/LF182745)	1
46	PLG5	201 665	Housing Plug+Skts, (Service Kit)	1
47	TP1, TP2	220 221	Thermostat, Nc Open 140C Close 110C Snap Action	2
48		183 387	Washer, Cone .380idx .860odx.109t Stl Pld 4000Lbs	4

Item No.	Diagram marking	Part No.	Description	Quantity
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Figure 10-1. Complete Assembly (Continued)

49		223 862	Nut, M10-1.5 17Hex 8H Brs Din 934	2
50		222 001	Bracket, Mtg Contactor	1
51		221 347	Grommet, Bus Bar	1
52		600 324	Cable, Weld Cop Strd No 4/0 Epdm Jkt	18 in
53		215 980	Bushing, Strain Relief .709/.984 Id X1.375 Mtg Hole	1
54		221 052	Shroud, Wire	1
55		207 679	Insert, Corner	1
56	GS1	215 284	Valve, 12VDC 1Way .750-14 Thd 1/8 Orf 100PSI (Prior To LG038011)	1
56	GS1	226 819	Valve, 12VDC 1Way .750-14 Thd 2mm Orf 100PSI (Eff W/LG038011)	1
57		222 067	Insulator, Rear Panel	1
58		070 371	Blank, Snap-In Nyl 1.093/1.125 Mtg Hole Black	1
59	C1, C2	200 606	Capacitor, Elctlt 1200 Uf 300 VDC Can 1.39 Dia	2
60		210 133	Bracket, Capacitor Support SC12	1
61		207 678	Insulator, Capacitors	1
62		222 103	Support, Spool	1
63		225 069	Hub, Spool W/Threads	1
64		209 450	Nut, Hub	1
65		172 919	Knob, Brake Adjust	1
66		172 918	Spring	1
67		058 424	Washer, Fibre (Brake)	1
68		201 309	Washer, Anti-Turn	2
		223 814	Label, Warn Gen Precaution Suitcase (Eff W/LF123963)	2
		223 815	Label, Warn Gen Precaution Suitcase (CE Only) (Eff W/LF123963)	2
		196 956	Label, Warning Electric Shock And Pinch Wordless	1
		222 306	Label, Warning General Precautionary Static Vert	1
		223 034	Label, Warning General Precautionary Static Vert (CE Only)	1
69		145 217	Screw, K40x 12 Pan Hd-Phl Stl Pld Pt Thread Forming	2
70		220 805	Nut, 750-14 Knurled 1.68Dia .41H Nyl	1
71		081 895	Nut, 010-32 Rubber .75Dia .81I Insert In .38Hole	5
72		182 445	Nut, Conduit 1.000 Npt Pld 1.688 Od X .200 Thk	1
73		208 000	Washer, Shldr .260id 0.630odx.125t .327odx.062t Nyl	4
74		222 181	Grommet, Scr No 8/10 Panel Hole .281 Sq .031 High	5
75		222 294	Clip, Wire/Cord .380 Bundle .250Hole .105 Thk Blk	2
76		211 989	Fitting, W/Screen	1
77		107 983	Blank, Snap-In Nyl .500 Mtg Hole Black (Eff W/LF284423)	1
	PLG10	131 052	Housing Rcpt+Skts, (Service Kit)	1
	PLG22	115 092	Housing Plug+Skts, (Service Kit)	1
	PLG7	130 203	Housing Plug+Skts, (Service Kit)	1
	PLG8	115 092	Housing Plug+Skts, (Service Kit)	1
	PLG5	201 665	Housing Plug+Skts, (Service Kit)	1
	PLG3	130 203	Housing Plug+Skts, (Service Kit)	1
	PLG4	131 054	Housing Rcpt+Skts, (Service Kit)	1
	PLG6	115 094	Housing Plug+Skts, (Service Kit)	1
	PLG9, 21	131 055	Housing Rcpt+Skts, (Service Kit)	2
	PLG17	222 397	Housing Plug+Skts, (Service Kit)	1
	RC2	080 328	Rcpt W/Skts, Free Hanging	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.

Table 10-1. Drive Roll & Wire Guide Kits (2 Drive Roll)

NOTE



Base selection of drive rolls upon the following recommended usages:

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

Wire Diameter			Kit No.	Drive Roll		Inlet Wire Guide
Fraction	Decimal	Metric		Part No.	Type	
.023/.025 in	.023/.025 in	0.6 mm	087 131	087 130	V-Grooved	056 192
.030 in	.030 in	0.8 mm	079 594	053 695	V-Grooved	056 192
.035 in	.035 in	0.9 mm	079 595	053 700	V-Grooved	056 192
.040 in	.040 in	1.0 mm	161 189	053 696	V-Grooved	056 192
.045 in	.045 in	1.2 mm	079 596	053 697	V-Grooved	056 193
.052 in	.052 in	1.3 mm	079 597	053 698	V-Grooved	056 193
1/16 in	.062 in	1.6 mm	079 598	053 699	V-Grooved	056 195
.035 in	.035 in	0.9 mm	044 749	072 000	U-Grooved	056 192
.045 in	.045 in	1.2 mm	079 599	053 701	U-Grooved	056 193
.052 in	.052 in	1.3 mm	079 600	053 702	U-Grooved	056 193
1/16 in	.062 in	1.6 mm	079 601	053 706	U-Grooved	056 195
5/64 in	.079 in	2.0 mm	079 602	053 704	U-Grooved	056 195
.035 in	.035 in	0.9 mm	079 606	132 958	V-Knurled	056 192
.045 in	.045 in	1.2 mm	079 607	132 957	V-Knurled	056 193
.052 in	.052 in	1.3 mm	079 608	132 956	V-Knurled	056 193
1/16 in	.062 in	1.6 mm	079 609	132 955	V-Knurled	056 195
.068-.072 in	.068-.072	1.8 mm	089 984	132 959	V-Knurled	056 195
5/64 in	.079 in	2.0 mm	079 610	132 960	V-Knurled	056 195
.045 in	.045 in	1.2 mm	083 318	083 489	U-Cogged	056 193
.052 in	.052 in	1.3 mm	083 317	083 490	U-Cogged	056 193
1/16 in	.062 in	1.6 mm	079 614	053 708	U-Cogged	056 195
5/64 in	.079 in	2.0 mm	079 615	053 710	U-Cogged	056 195

S-0859

Notes

DECIMAL EQUIVALENTS

	$\frac{1}{64}$	.015625
	$\frac{1}{32}$	.03125
	$\frac{3}{64}$	.046875
$\frac{1}{16}$	$\frac{5}{64}$	.0625
	$\frac{7}{64}$	.078125
	$\frac{9}{32}$	.09375
$\frac{1}{8}$	$\frac{11}{64}$	.109375
	$\frac{13}{64}$	.125
	$\frac{15}{32}$	.140625
	$\frac{17}{64}$.15625
$\frac{3}{16}$	$\frac{19}{64}$.171875
	$\frac{21}{64}$.1875
	$\frac{23}{32}$.203125
	$\frac{25}{64}$.21875
$\frac{1}{4}$	$\frac{27}{64}$.234375
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	$\frac{31}{32}$.265625
	$\frac{33}{64}$.28125
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	$\frac{37}{64}$.3125
	$\frac{39}{32}$.328125
	$\frac{41}{64}$.34375
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	$\frac{45}{64}$.375
	$\frac{47}{32}$.390625
	$\frac{49}{64}$.40625
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	$\frac{53}{64}$.4375
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	$\frac{57}{64}$.46875
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	$\frac{61}{64}$.5
	$\frac{63}{32}$.515625
	$\frac{65}{64}$.53125
$\frac{9}{16}$	$\frac{67}{64}$.546875
	$\frac{69}{64}$.5625
	$\frac{71}{32}$.578125
	$\frac{73}{64}$.59375
$\frac{5}{8}$	$\frac{75}{64}$	.609375
	$\frac{77}{64}$	.625
	$\frac{79}{32}$	.640625
	$\frac{81}{64}$	.65625
$\frac{11}{16}$	$\frac{83}{64}$	.671875
	$\frac{85}{64}$	.6875
	$\frac{87}{32}$	.703125
	$\frac{89}{64}$	.71875
$\frac{3}{4}$	$\frac{91}{64}$	.734375
	$\frac{93}{64}$	.75
	$\frac{95}{32}$	.765625
	$\frac{97}{64}$	.78125
$\frac{13}{16}$	$\frac{99}{64}$	.796875
	$\frac{101}{64}$	.8125
	$\frac{103}{32}$	.828125
	$\frac{105}{64}$	.84375
$\frac{7}{8}$	$\frac{107}{64}$	.859375
	$\frac{109}{64}$	.875
	$\frac{111}{32}$	.890625
	$\frac{113}{64}$.90625
$\frac{15}{16}$	$\frac{115}{64}$.921875
	$\frac{117}{64}$.9375
	$\frac{119}{32}$.953125
	$\frac{121}{64}$.96875
1	$\frac{123}{64}$.984375
		1.

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