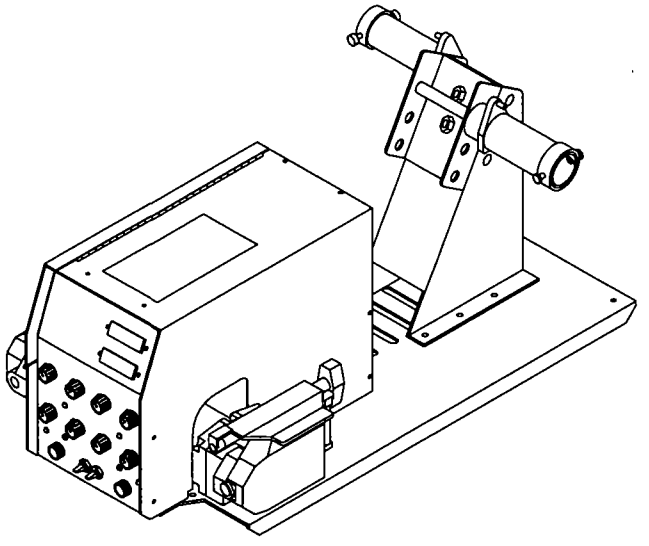
Miller®

July 1996 Form: OM-1582M
Effective With Serial No. KG149782

# OWNER'S MANUAL





CE

## D-64 Wire Feeder

**For GMAW And FCAW Welding**

| 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)<br>Optional High Speed: 90 To 1400 ipm (2.3 To 35.6 mpm) | .023 To 1/8 in (0.6 To 3.2 mm)<br>Max Spool Weight: 60 lb (27 kg) | 100 Volts, 750 Amperes, 100% Duty Cycle | IP 23 | Length: 32 in (812 mm)<br>Width: 18 in (457 mm)<br>Height: 14 in (356 mm) | 78 lb (35 kg) |

# MILLER'S TRUE BLUE® LIMITED WARRANTY

**Effective February 7, 1996**
**(Equipment with a serial number preface of "KD" or newer)**

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

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

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

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

1. 5 Years Parts – 3 Years Labor
   - Original main power rectifiers
   - Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   - Transformer/Rectifier Power Sources
   - Plasma Arc Cutting Power Sources
   - Semi-Automatic and Automatic Wire Feeders
   - Inverter Power Supplies
   - Intellitig
   - Robots (1 year labor)
3. 2 Years — Parts and Labor
   - Engine Driven Welding Generators
     (NOTE: Engines are warranted separately by the engine manufacturer.)
   - Air Compressors
4. 1 Year — Parts and Labor
   - Motor Driven Guns
   - Process Controllers
   - IHPS Power Sources
   - Water Coolant Systems
   - HF Units
   - Grids
   - Spot Welders
   - Load Banks
   - SDX Transformers
   - Miller Cyclomatic Equipment
   - Running Gear/Trailers
   - Plasma Cutting Torches (except APT, ZIPCUT & PLAZCUT Models)
   - Tecumseh Engines
   - Deutz Engines (outside North America)
   - Field Options
     (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
5. 6 Months — Batteries
6. 90 Days — Parts and Labor
   - MIG Guns/TIG Torches
   - APT, ZIPCUT & PLAZCUT Model Plasma Cutting Torches
   - Remote Controls
   - Accessory Kits
   - Replacement Parts

MILLER'S True Blue® Limited Warranty shall not apply to:

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

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

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

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

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

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

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

## WHO DO I CONTACT?

**For help,**
- contact your distributor

**For additional information, such as**

Technical Manuals (Service And Parts)
Engine Manuals
Circuit And Wiring Diagrams
Process Handbooks
User's Guides
Distributor Directories
- contact your distributor

**To file a claim for loss or damage during shipment,**
- contact the delivering carrier

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

**Miller Electric Mfg. Co.**

- CALL:
  414-735-4505

- FAX:
  800-637-2348 (in USA), or
  414-735-4136 (outside USA)

- WRITE:
  Miller Electric Mfg. Co.
  P.O. Box 1079
  Appleton, WI 54912 USA

**Always provide Model Name and Serial or Style Number**

# *Declaration of Conformity for European Community (CE) Products*

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

*Manufacturer's Name:* Miller Electric Mfg. Co.

*Manufacturer's Address:* 1635 W. Spencer Street
Appleton, WI 54914 USA

*Declares that the product:* **D-64**

*conforms to the following Directives and Standards:*

**Directives**

Low Voltage Directive: 73/23/EEC

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

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

**Standards**

Arc Welding Equipment Part I: Welding Power Sources: IEC 974-1
(April 1995 – Draft Revision)

Arc Welding Equipment: Wirefeed Systems: IEC 974-4
(May 1995 – Draft Revision)

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

Insulation Coordination For Equipment With Low-Voltage Systems:
Part I: Principles, Requirments and Tests: IEC 664-1: 1992

Electromagnetic Capatibility, (EMC): EN 50199

*European Contact:* Mr. Luigi Vacchini, Managing Director
MILLER Europe S.P.A.
Via Privata Iseo
20098 San Giuliano
Milanese, Italy

*Telephone:* 39(02)98290-1
*Fax:* 39(02)98281-552

# SECTION 1 – SAFETY PRECAUTIONS FOR ARC WELDING



## 1-1. Symbol Usage

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

▲ **Marks a special safety message.**

☞ *Means NOTE; not safety related.*

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

## 1-2. Arc Welding Hazards

### ⚠ WARNING

**The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-4. Read and follow all Safety Standards.**

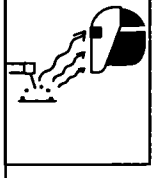
**Only qualified persons should install, operate, maintain, and repair this unit.**

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

### ELECTRIC SHOCK can kill.

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

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
7. When making input connections, attach proper grounding conductor first – double-check connections.
8. Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
9. Turn off all equipment when not in use.
10. Do not use worn, damaged, undersized, or poorly spliced cables.
11. Do not drape cables over your body.
12. If earth grounding of the workpiece is required, ground it directly with a separate cable – do not use work clamp or work cable.
13. Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
14. Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
15. Wear a safety harness if working above floor level.
16. Keep all panels and covers securely in place.
17. Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.



### ARC RAYS can burn eyes and skin; NOISE can damage hearing; FLYING SLAG OR SPARKS can injure eyes.

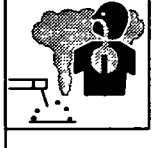
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Noise from some processes can damage hearing. Chipping, grinding, and welds cooling throw off pieces of metal or slag.

**NOISE**

1. Use approved ear plugs or ear muffs if noise level is high.

**ARC RAYS**

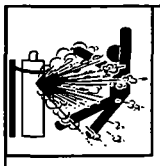
2. Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
3. Wear approved safety glasses with side shields.
4. Use protective screens or barriers to protect others from flash and glare;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



### FUMES AND GASES can be hazardous to your health.

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

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



**CYLINDERS can explode if damaged.**

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

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

**WELDING can cause fire or explosion.**

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

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

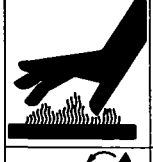
## 1-3. Additional Installation, Operation, And Maintenance Hazards

**FIRE OR EXPLOSION can result from placing unit on, over, or near combustible surfaces.**

1. Do not locate unit on, over, or near combustible surfaces.
2. Do not install unit near flammables.

**FALLING EQUIPMENT can cause serious personal injury and equipment damage.**

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



**HOT PARTS can cause severe burns.**

1. Do not touch hot parts bare handed.
2. Allow cooling period before working on gun or torch.

**MOVING PARTS can cause injury.**

1. Keep away from moving parts such as fans.
2. Keep all doors, panels, covers, and guards closed and securely in place.

**MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation.**

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

**MOVING PARTS can cause injury.**

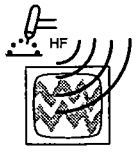
1. Keep away from moving parts.
2. Keep away from pinch points such as drive rolls.

**FLYING PIECES OF METAL or DIRT can injure eyes.**

1. Wear safety glasses with side shields or face shield.

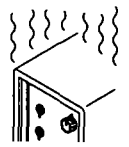
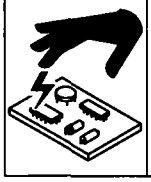
**WELDING WIRE can cause puncture wounds.**

1. Do not press gun trigger until instructed to do so.
2. Do not point gun toward any part of the body, other people, or any metal when threading welding wire.




**HIGH-FREQUENCY RADIATION can interfere with radio navigation, safety services, computers, and communications equipment.**

1. Have only qualified persons familiar with electronic equipment perform this installation.
2. The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
3. If notified by the FCC about interference, stop using the equipment at once.
4. Have the installation regularly checked and maintained.
5. 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.

| | | | |
|---|---|---|---|
|  | **OVERUSE can cause OVERHEATED EQUIPMENT.**<br>1. Allow cooling period.<br>2. Reduce current or reduce duty cycle before starting to weld again.<br>3. Follow rated duty cycle. |  | **SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters.**<br>1. Turn Off inverter, disconnect input power, and discharge input capacitors according to *instructions in Maintenance Section before* touching any parts. |
|  | **STATIC ELECTRICITY can damage parts on circuit boards.**<br>1. Put on grounded wrist strap BEFORE handling boards or parts.<br>2. Use proper static-proof bags and boxes to store, move, or ship PC boards. |  | **BUILDUP OF SHIELDING GAS can harm health or kill.**<br>1. Shut off shielding gas supply when not in use. |

## 1-4. Principal Safety Standards

*Safety in Welding and Cutting*, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126

*Safety and Health Standards*, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

*Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances*, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126

*National Electrical Code*, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

*Safe Handling of Compressed Gases in Cylinders*, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

*Code for Safety in Welding and Cutting*, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

*Safe Practices For Occupation And Educational Eye And Face Protection*, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

*Cutting And Welding Processes*, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

## 1-5. EMF Information

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

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, *Biological Effects of Power Frequency Electric & Magnetic Fields – Background Paper*, OTA-BP-E-53 (Washington, DC: U.S. Government Printing Office, May 1989): ". . . there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

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

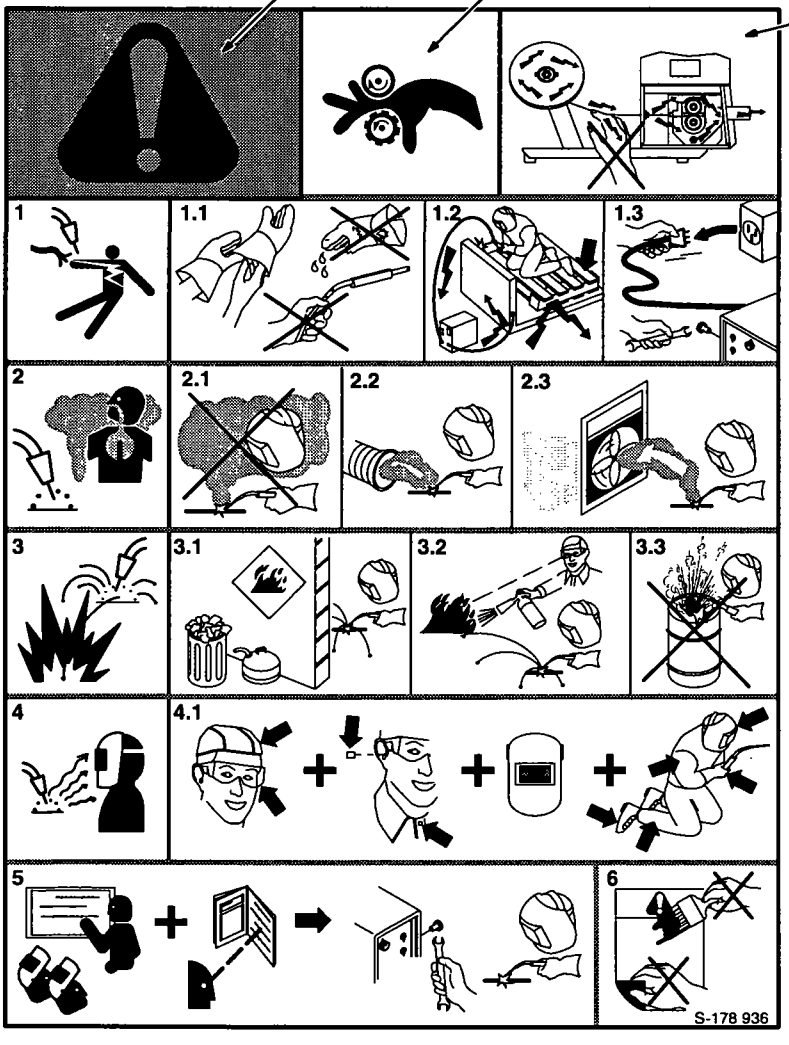
1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

**About Pacemakers:**

The above procedures are also recommended for pacemaker wearers. Consult your doctor for complete information.

# 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.

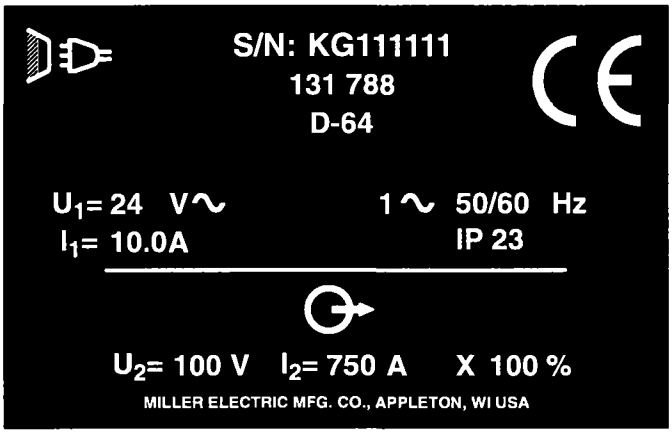
4 Arc rays can burn eyes and injure skin.

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. Rating Label For CE Products




ST-178 794-A

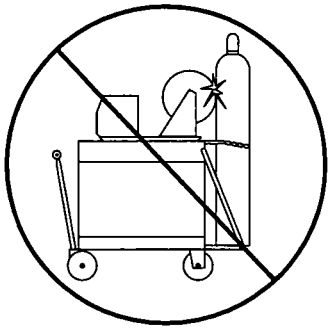
## 2-3. Symbols And Definitions

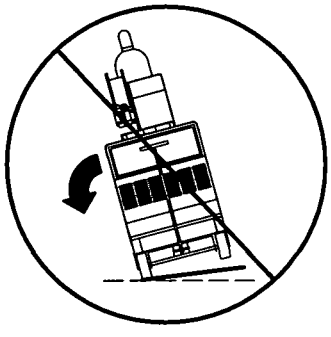
| NOTE | *Some symbols are found only on CE products.* |
|---|---|

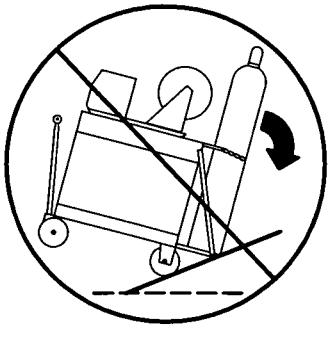
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | Amperes | V | Volts | ~ | Alternating Current | X | Duty Cycle |
| IP | Degree Of Protection | Hz | Hertz | $U_1$ | Primary Voltage | | Wire Feed |
| | Jog | | Output | | Trigger | | Line Connection |
| | Press To Set | $U_2$ | Load Voltage | | Trigger Hold On | | Trigger Hold Off |
| | Purge | ••••t | Spot Weld Time | | Spot Weld | | Continuous Weld |
| t | Burnback Time | $t_1$ | Preflow Time | $t_2$ | Postflow Time | | Read Instructions |
| | Increase | $I_1$ | Primary Current | $I_2$ | Rated Current | | |

# SECTION 3 – INSTALLATION

## 3-1. Site Selection







1 Wire Feeder

2 Lifting Eye

3 Rubber Feet

4 Slot

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

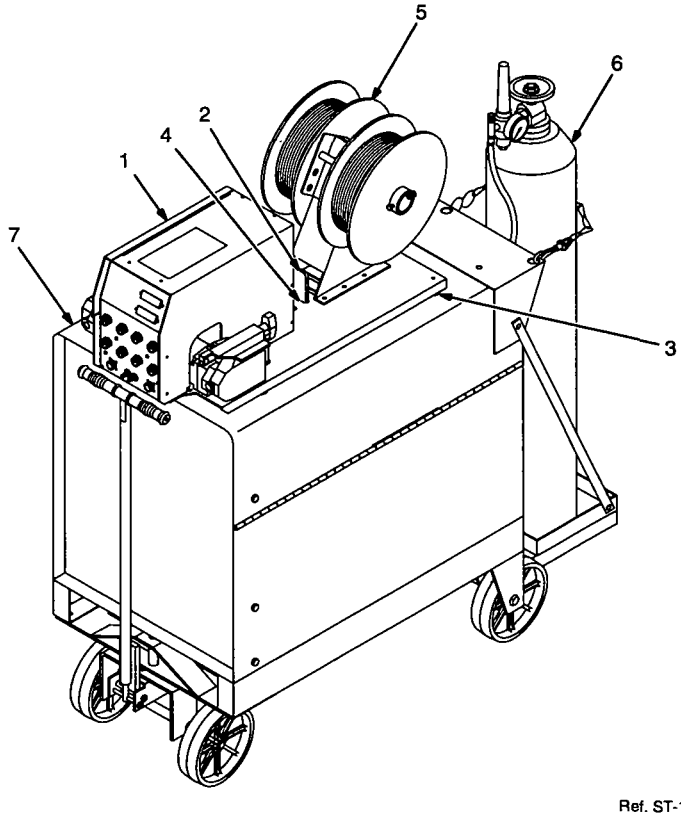
5 Wire Spool/Reel

6 Gas Cylinder (Customer Supplied)

7 Welding Power Source

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

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

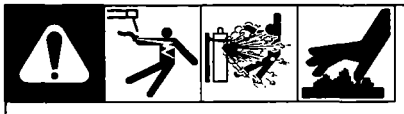


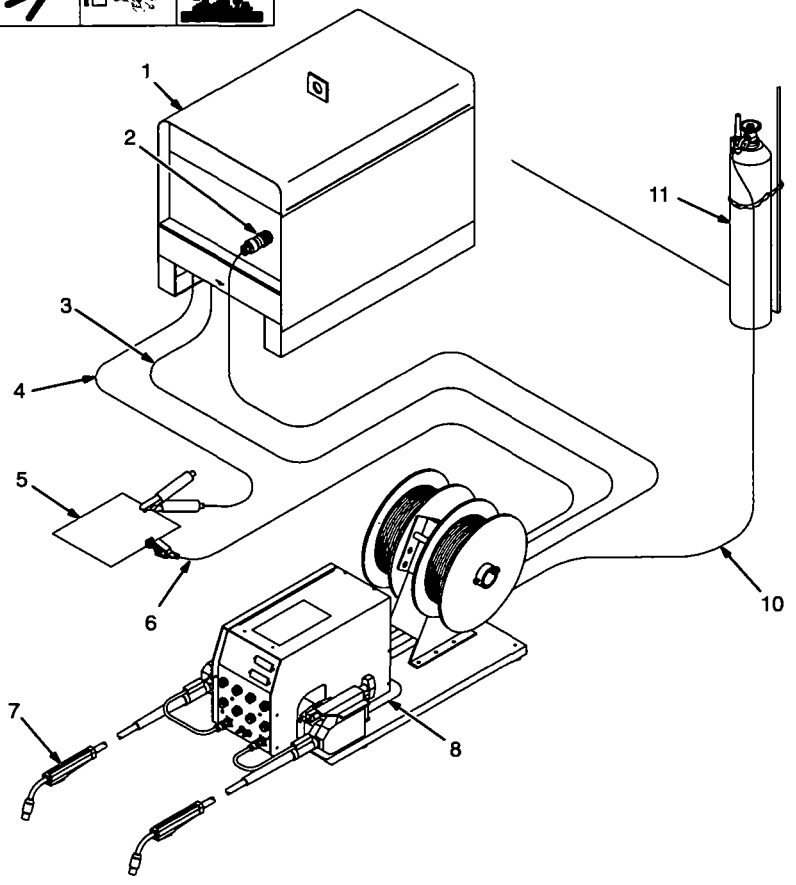

Ref. ST-152 468-A / ST-152 566-A

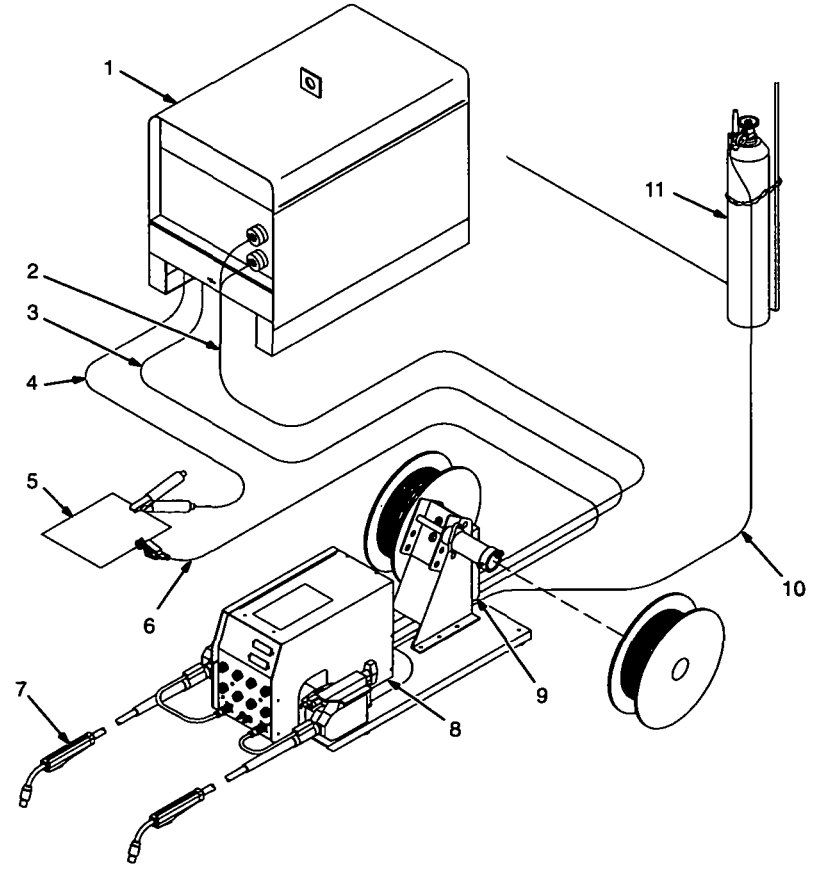
## 3-2. Gun Recommendation Table

| Process | Gun |
|---|---|
| GMAW – Hard or Cored Wires | M25, M40, GA-50C, GW-500, Or GW-600 |
| FCAW – Self-Shielding Wires | GA-40GL Or GA-50GL |

## 3-3. Equipment Connection Diagrams





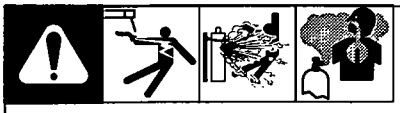

1 Welding Power Source
2 Contactor Control/Power Cord
3 Positive (+) Weld Cable
4 Negative (–) Weld Cable
5 Workpiece
6 Voltage Sensing Lead (Optional)
7 Gun
8 Wire Feeder
9 PSA-2 Control (Optional)

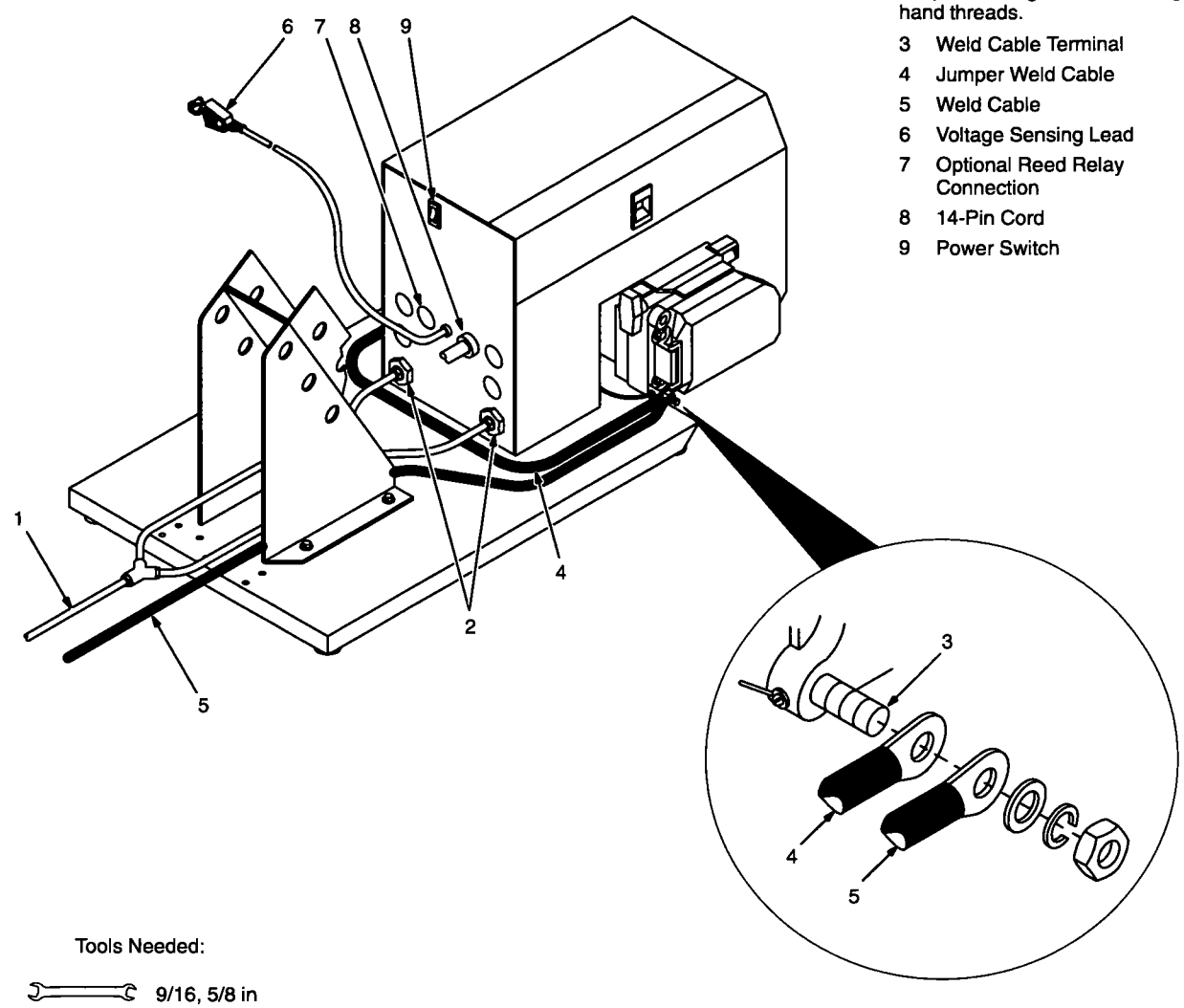
Use with welding power sources supplying 115 volts ac power.

10 Gas Hose
11 Gas Cylinder

ST-152 616-A / ST-152 615-A

## 3-4. Rear Panel Connections






1 "Y" Adapter Gas Hose (Supplied)
2 Shielding Gas Valve Fitting
Requires fitting with 5/8-18 right-hand threads.
3 Weld Cable Terminal
4 Jumper Weld Cable
5 Weld Cable
6 Voltage Sensing Lead
7 Optional Reed Relay Connection
8 14-Pin Cord
9 Power Switch

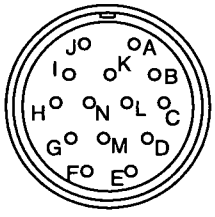
Tools Needed:

9/16, 5/8 in

3/16 in

Ref. ST-800 353

## 3-5. 14-Pin Plug 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 output to remote control with respect to socket D. |
| | D | Remote control circuit common. |
| | E | 0 to +10 volts dc input command signal from remote control 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.

## 3-6. 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 1440 ipm (2.3 To 35.6 mpm) |

## 3-7. Rotating The Drive Assembly

Tools Needed:

1/4 in

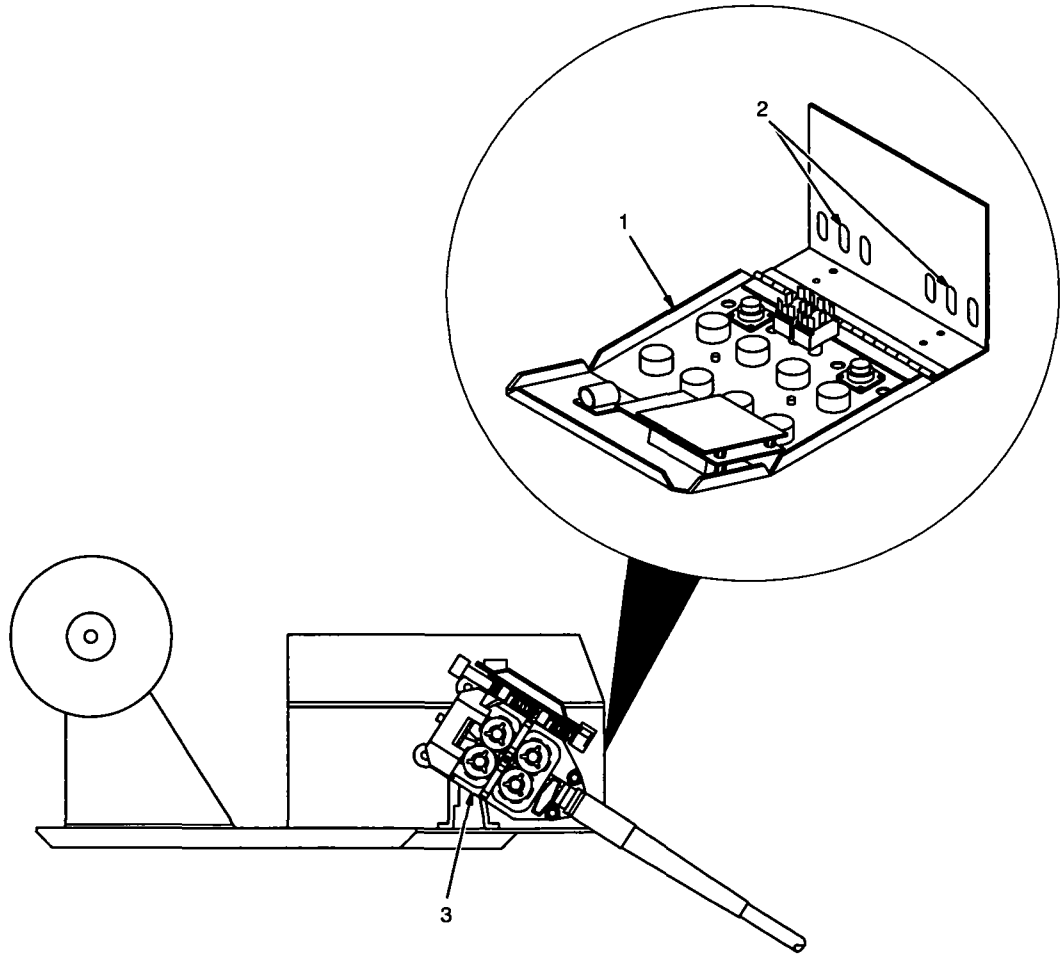
3/16 in

Remove screws (6) from front edge of wrapper, and loosen screws on back edge of wrapper.

1 Front Panel

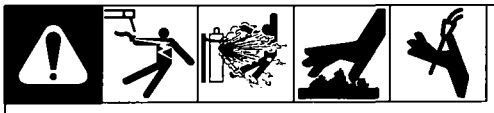
2 Drive Assembly Rotation Adjustment Opening

3 Drive Assembly

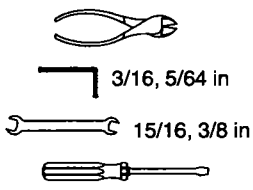



Ref. ST-143 259-E / Ref. ST-153 093

## 3-8. Installing And Threading Welding Wire



Tools Needed:




If necessary, move hub and spool support so wire runs straight from the spool through the drive rolls. Install wire spool.

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

Install wire guides and anti-wear guide.

Install drive rolls. 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.

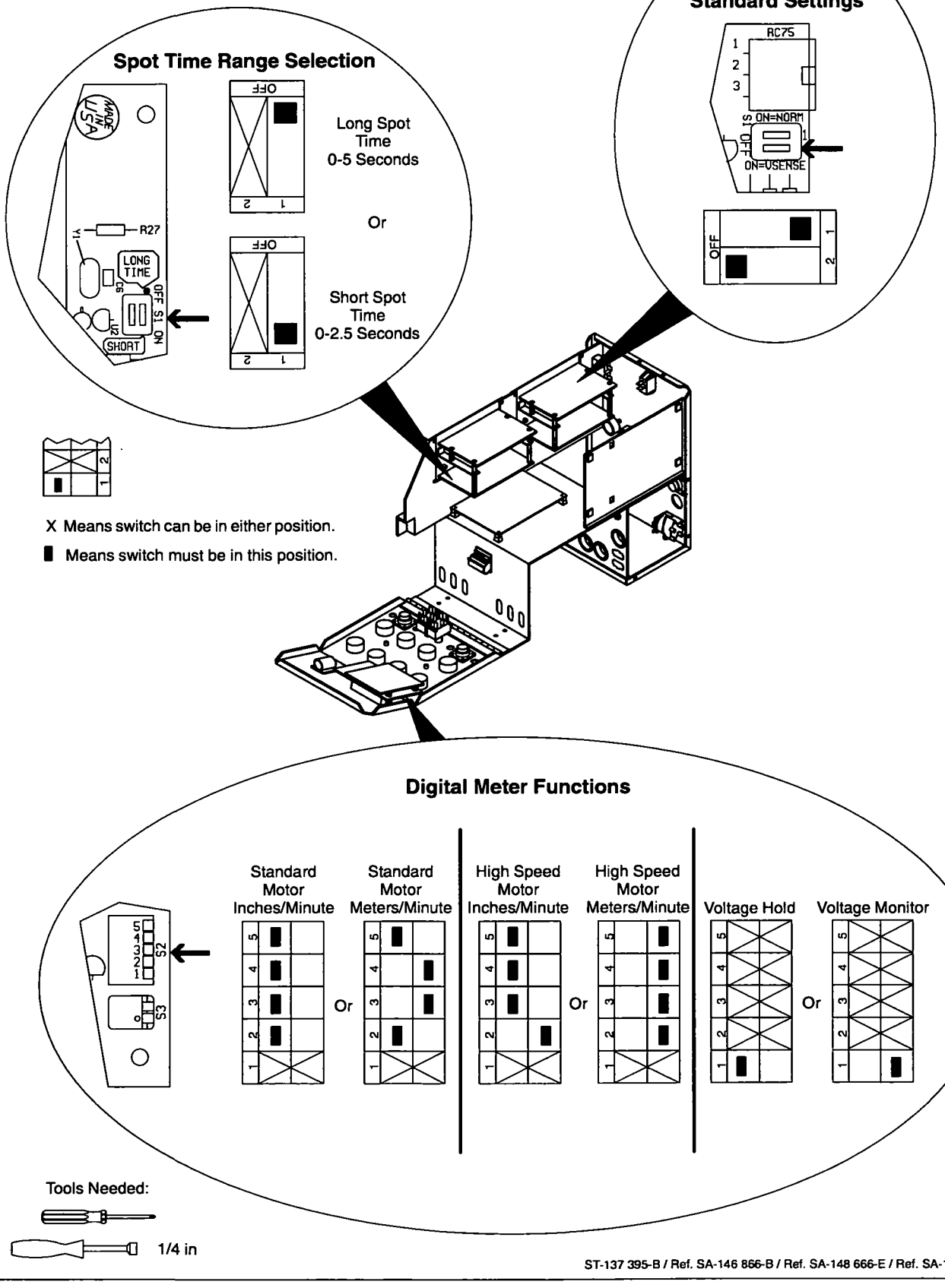
To adjust drive roll pressure, press gun trigger to feed wire against wood surface. Tighten knob so wire does not slip.

Cut wire off. Close cover.



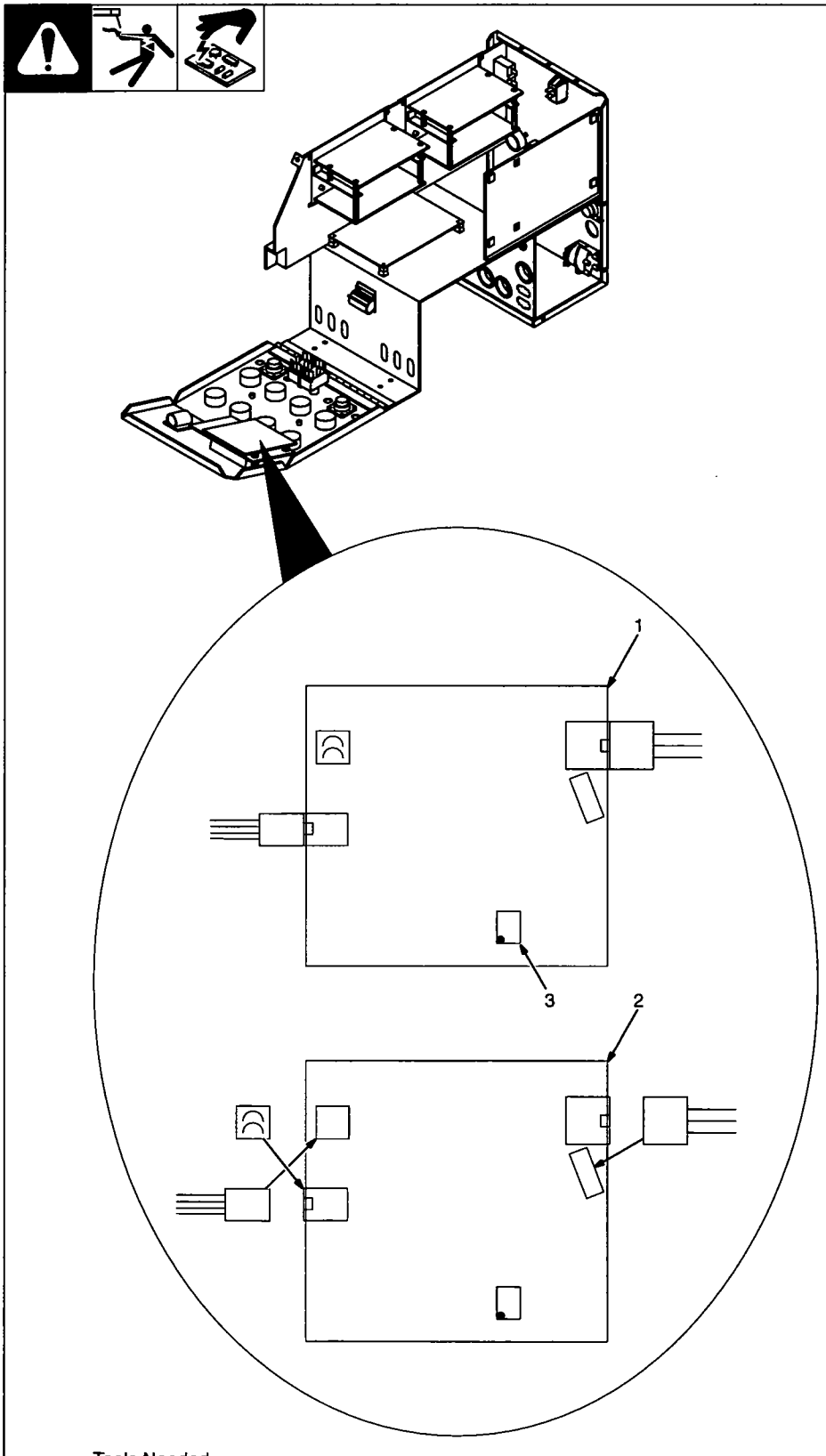

ST-152 564-B / Ref. ST-156 929 / Ref. SC-150 922 / Ref. ST-156 930 / S-0627-A

## 3-9. Optional Equipment DIP Switch Settings




ST-137 395-B / Ref. SA-146 866-B / Ref. SA-148 666-E / Ref. SA-150 588-D

## 3-10. Changing Optional Digital Voltage Control For Use With A MILLER Inverter-Type Power Source




1 Digital Voltage Control Board Connections For Standard Use

2 Digital Voltage Control Board Connections For Use With Inverter-Type Welding Power Source

Change plug connections as shown.

3 Calibration Potentiometer R31

☞ *If wire feeder is being used with a MILLER inverter-type power source that has a voltage range of 10 to 35 volts in the CV mode, no calibration is required.*

Calibrate Volts meter as follows:

Rotate Schedule A or Schedule B Voltage Control, whichever is active, to the maximum position.

Turn On wire feeder and welding power source.

Adjust R31 until wire feeder Volts meter displays a voltage equal to the maximum voltage listed on the Voltage/Amperage control of the welding power source nameplate.

Make a sample weld (at desired preset voltage) to see if actual arc voltage displayed by the wire feeder Volts meter is different than preset arc voltage due to cable resistance, poor connections, etc. If there is a difference, R31 can be adjusted until preset voltage is closer to actual arc voltage.

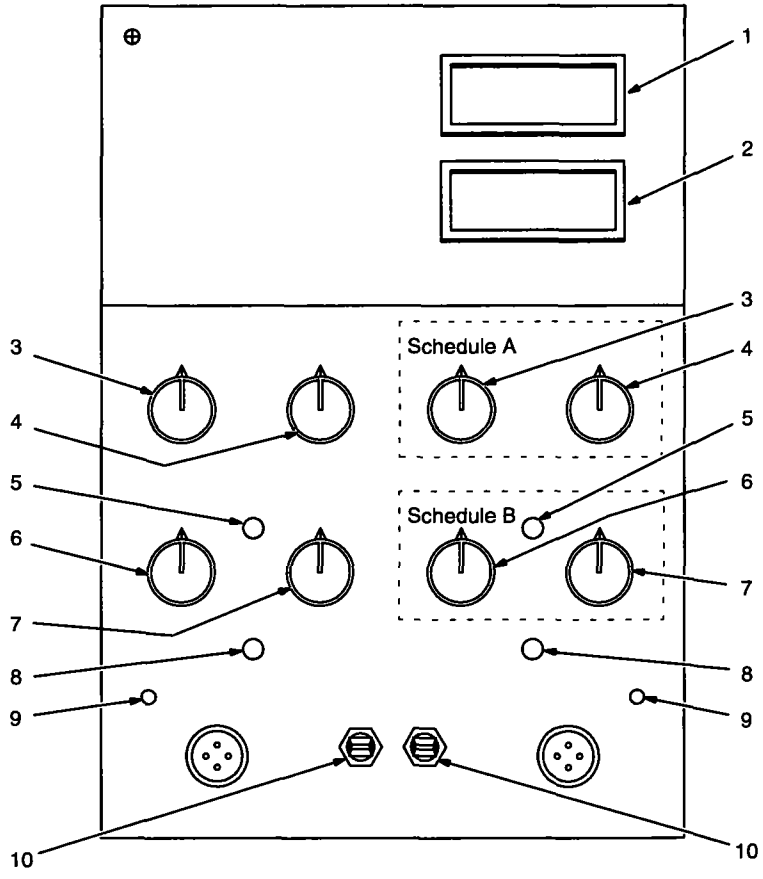
Close and secure front panel, and reinstall wrapper.

Tools Needed:

1/4 in

ST-137 395-B / S-0891

## 4-1. Front Panel Controls




ST-152 647

1 Voltmeter (Optional) (See Section 3-9)

2 Wire Speed Meter (Optional)

Factory set to display inches per minute. If display of meters per minute is desired, see Section 4-2.

3 Schedule A Wire Speed Control

The scale is calibrated in inches per minute x 100 and meter per minute.

4 Schedule A Voltage Control (Optional)

When a digital voltage control is used with a MILLER inverter-type welding power source, the control functions as a remote digital voltage control to preset arc voltage.

☞ *For dual schedule applications, a dual schedule switch is required for the gun. Obtain a proper dual schedule switch and install according to its instructions.*

5 Schedule B Indicator Light (Optional)

6 Schedule B Wire Speed Control (Optional)

7 Schedule B Voltage Control (Optional)

8 Press To Set Button (Optional)

Press and hold button to preset Schedule B wire feed speed and/or voltage.

9 Left And Right Indicator Lights

10 Jog/Purge Switch

Push up to momentarily feed welding wire at speed set on Wire Speed control without energizing welding circuit or shielding gas valve.

Push down to momentarily energize gas valve to purge air from gun or adjust gas regulator.

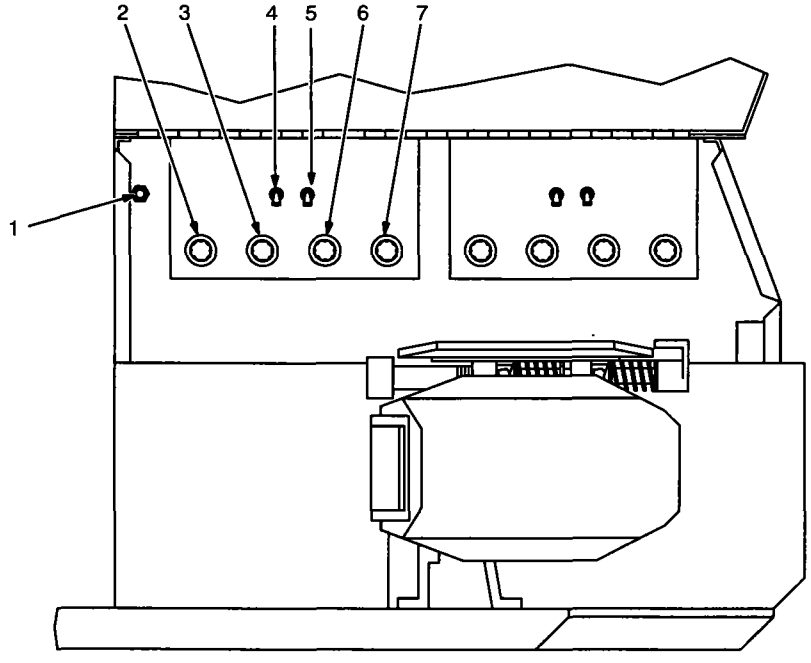
Center position is off.

## 4-2. Volts Meter Display

| Voltage Control Type | Volts Meter Display | Weld | Not Weld |
|---|---|---|---|
| Standard 1-Turn Control | Hold | See Note | Weld value for 15 seconds, then 0 or OCV |
| | Monitor | Actual | 0 or OCV |
| Digital 10-Turn Control | Hold | See Note | Weld value for 15 seconds, then preset |
| | Monitor | Actual | Preset |

**NOTE** ☞ *Voltage displayed throughout the weld is the weld voltage at 5 seconds into the weld.*

## 4-3. Overload Protection And Optional Side Panel Controls




1 Circuit Breaker CB1

CB1 protects wire feed motor from overload. Press to reset.

2 Preflow Control

Control sets time gas flows before welding wire is energized.

3 Spot Time Control

Factory set for 0 to 5 seconds of spot time. If 0 to 2.5 seconds is desired, see Section 3-9.

4 Spot Continuous Switch

Switch selects an untimed continuous weld or a timed spot weld.

5 Trigger Hold Switch (Optional)

Push up to weld without holding gun trigger throughout the weld cycle.

To start weld, press and release gun trigger within three seconds after an arc has been struck. To end weld, press and release gun trigger.

6 Burnback Control

Control adjusts time welding wire is energized after wire feed stops.

7 Postflow Control

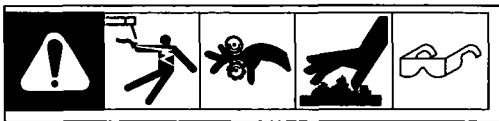
Control sets time gas flows after completion of burnback.

Close side door.

ST-143 258-B

# SECTION 5 – MAINTENANCE & TROUBLESHOOTING

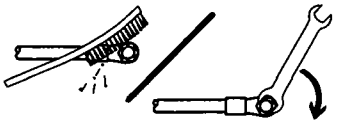
## 5-1. Routine Maintenance



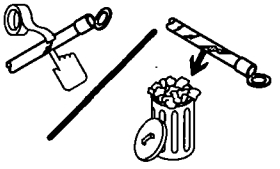
▲ **Disconnect power before maintaining.**

### 3 Months

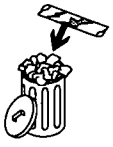

Replace Unreadable Labels



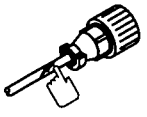
Clean And Tighten Weld Terminals



Repair Or Replace Cracked Weld Cable



Replace Cracked Parts

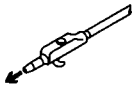


14-Pin Cord

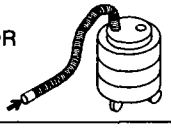
Gas Hose And Fittings

Gun Cable

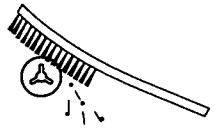
### 6 Months



OR

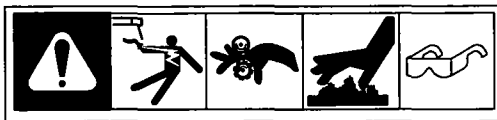


Blow Out Or Vacuum Inside. During Heavy Service, Clean Monthly



Clean Drive Rolls

## 5-2. Troubleshooting



▲ **Disconnect power before troubleshooting**

| Trouble | Remedy |
|---|---|
| Wire feeds, shielding gas flows, but electrode wire is not energized. | Check interconnecting cord connections. If secure, check cord for continuity and repair or replace (see Sections 3-3 and 3-4). |
| Wire feeder is on, meter(s) do not light up, motor does not run, gas valve and welding power source contactor do not pull in. | Check and reset CB1 (see Section 4-3). |
| Electrode wire feeding stops or feeds erratically during welding. | Check gun trigger connection. See gun Owner's Manual. |
| | Check gun trigger. See gun Owner's Manual. |
| | Readjust hub tension and drive roll pressure (see Section 3-8). |
| | Change to correct size drive roll (see Table 7-1). |
| | Clean or replace dirty or worn drive roll. |
| | Incorrect size or worn wire guides. |
| | Replace contact tip or liner. See gun Owner's Manual. |
| | Remove weld spatter or foreign matter from around nozzle opening. |
| | Have Factory Authorized Service Agency check drive motor or motor control board PC1. |
| Motor runs slowly. | Check for correct input voltage. |
| Wire does not feed until trigger is pulled, but continues to feed after trigger is released, and trigger hold is not on. | Check for a short between welding gun trigger leads and weld cable. Repair short or replace welding gun. |
| Gas valve in feeder is rattling loudly along with possible erratic or slow wire feed speed. | Check for a short between welding gun trigger leads and weld cable. Repair short or replace welding gun. |
| Unit does not switch out of Run-In Speed. | Install, reconnect, or replace voltage sensing lead (see Section 3-3). |
| Wire feeder power is on, displays light up, but unit is inoperative. | Check welding gun trigger leads for continuity, and repair leads or replace gun. |
| Schedule A Wire Feed Speed works, but Schedule B Wire Feed Speed does not work or is erratic. | DIP Switch S1(1) on Option Interface Board PC70 must be in the On position (see Section 3-9). |
| Wire Feed Speed Meter display does not match actual wire feed speed. | Set DIP Switch S2 on Meter Board PC60 in Inches/Minute mode (see Section 3-9). |
| Actual arc voltage display on meter is held after trigger is released, or arc voltage does not change while welding. | Set DIP Switch S2 on Meter Board PC60 in Voltage Monitor mode (see Section 3-9). |

# NOTES

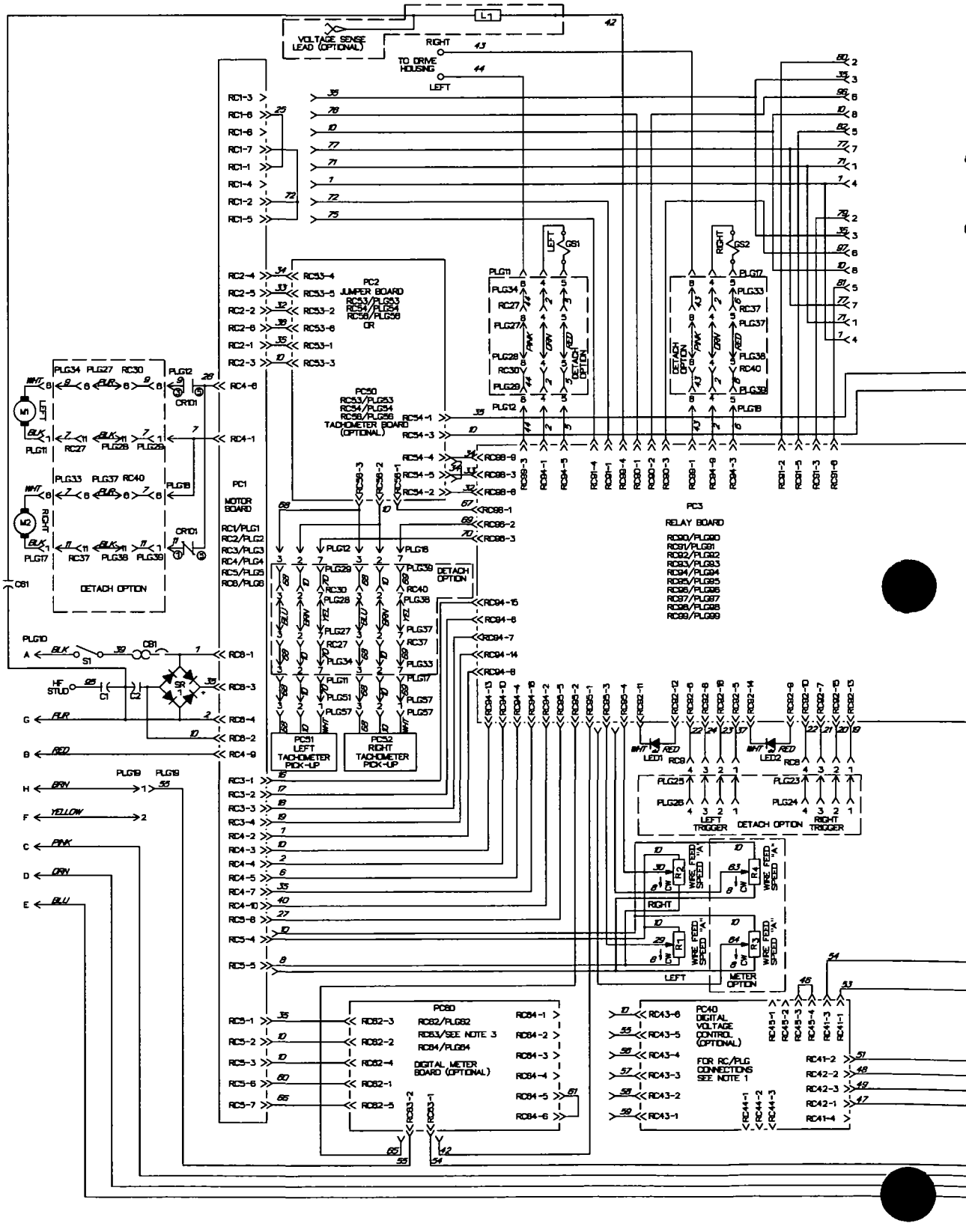
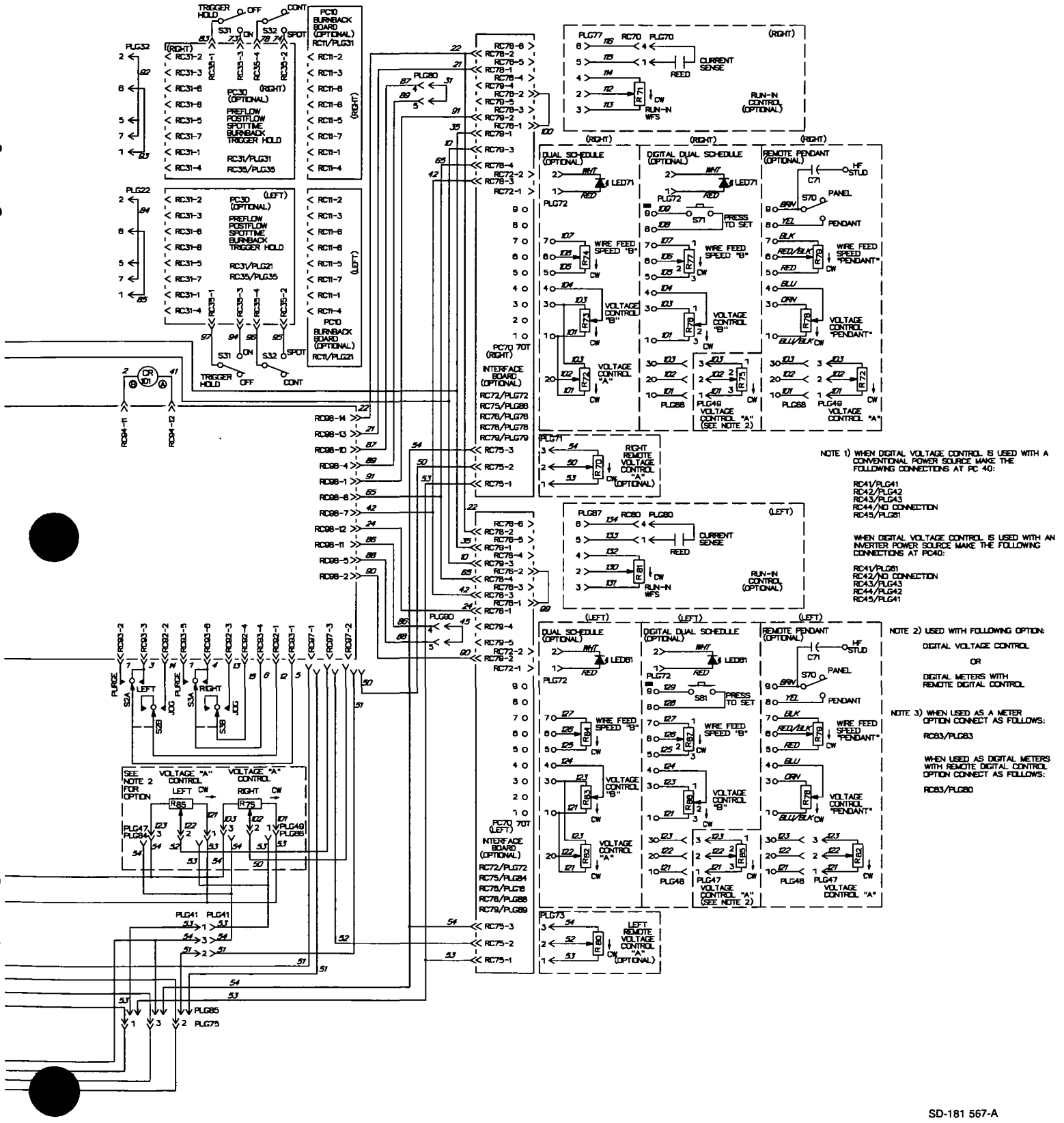



**Figure 6-1. Circuit Diagram For Wire Feeder With Optional Equipment**




NOTE 1) WHEN DIGITAL VOLTAGE CONTROL IS USED WITH A CONVENTIONAL POWER SOURCE MAKE THE FOLLOWING CONNECTIONS AT PC 40:

RC41/PLG41
RC42/PLG42
RC43/PLG43
RC44/NO CONNECTION
RC45/PLG81

WHEN DIGITAL VOLTAGE CONTROL IS USED WITH AN INVERTER POWER SOURCE MAKE THE FOLLOWING CONNECTIONS AT PC40:

RC41/PLG81
RC42/NO CONNECTION
RC43/PLG43
RC44/PLG42
RC45/PLG41

NOTE 2) USED WITH FOLLOWING OPTION:

DIGITAL VOLTAGE CONTROL

OR

DIGITAL METERS WITH REMOTE DIGITAL CONTROL

NOTE 3) WHEN USED AS A METER OPTION CONNECT AS FOLLOWS:

RC83/PLG83

WHEN USED AS DIGITAL METERS WITH REMOTE DIGITAL CONTROL OPTION CONNECT AS FOLLOWS:

RC83/PLG80

SD-181 567-A

# SECTION 7 – PARTS LIST

| Item No. | Part No. | Description | Quantity |
|---|---|---|---|
| | | **Figure 7-1. Main Assembly** | |
| ...1 | 143 160 | ...HUB & SPINDLE ASSEMBLY, (consisting of) | 2 |
| ...2 | 058 427 | .....RING, retaining spool | 1 |
| ...3 | 180 573 | .....SHAFT, support spool | 1 |
| ...4 | 010 233 | .....SPRING, cprsn .970 OD x .120 wire x 1.250pld | 1 |
| ...5 | 057 971 | .....WASHER, flat stl keyed 1.500dia x .125thk | 2 |
| ...6 | 010 191 | .....WASHER, fbr .656 ID x 1.500 OD x .125thk | 2 |
| ...7 | 058 628 | .....WASHER, brake stl | 2 |
| ...8 | 058 428 | .....HUB, spool | 1 |
| ...9 | 071 730 | .....TUBING, stl .875 OD x 12ga wall x 2.375 | 1 |
| ..10 | 135 205 | .....NUT, stl slflkg hex reg .625-11 w/nylon insert | 1 |
| ..11 | 141 411 | ...SUPPORT, spool | 1 |
| ..12 | 142 838 | ...BRACKET, mtg spool RH | 1 |

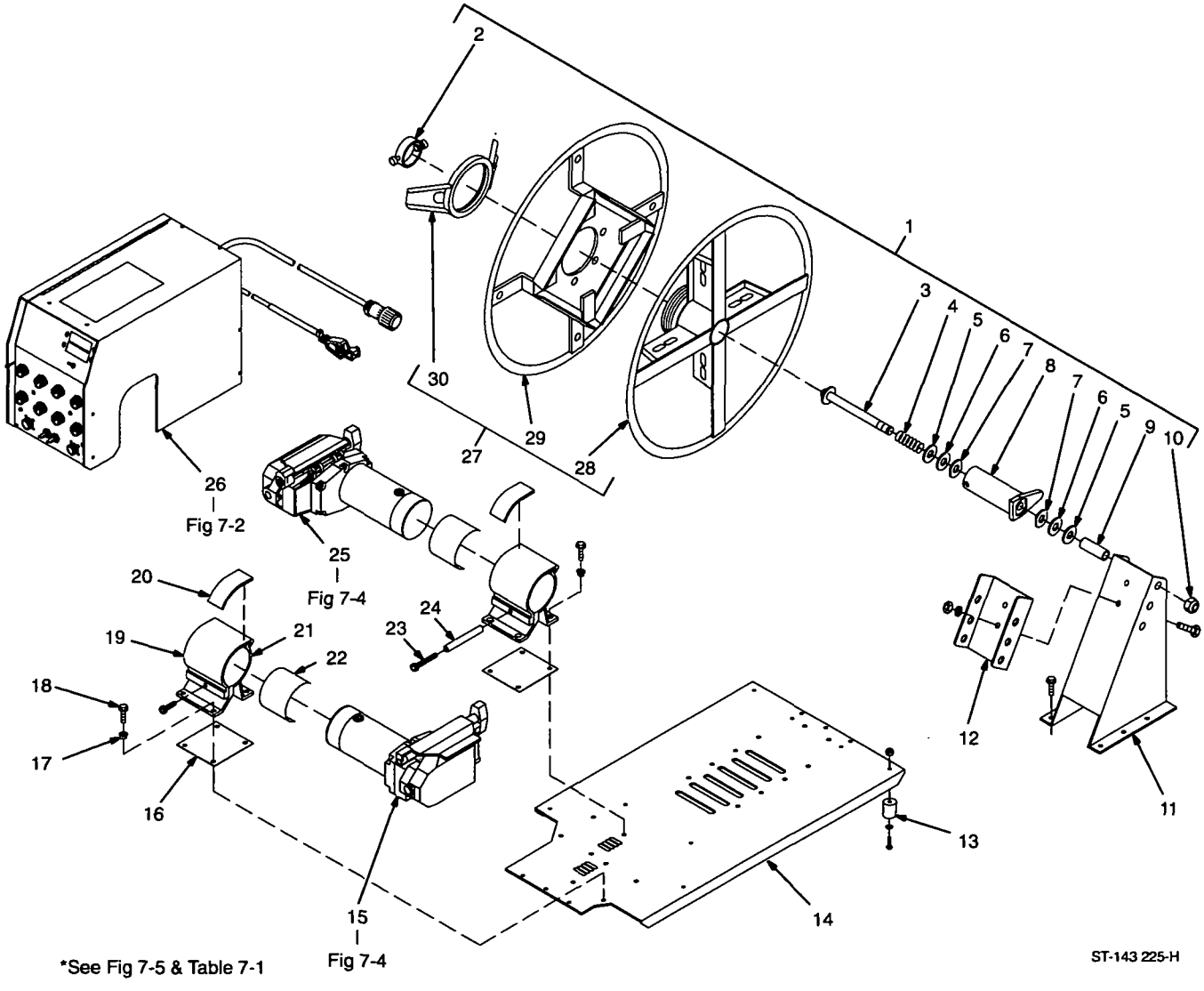


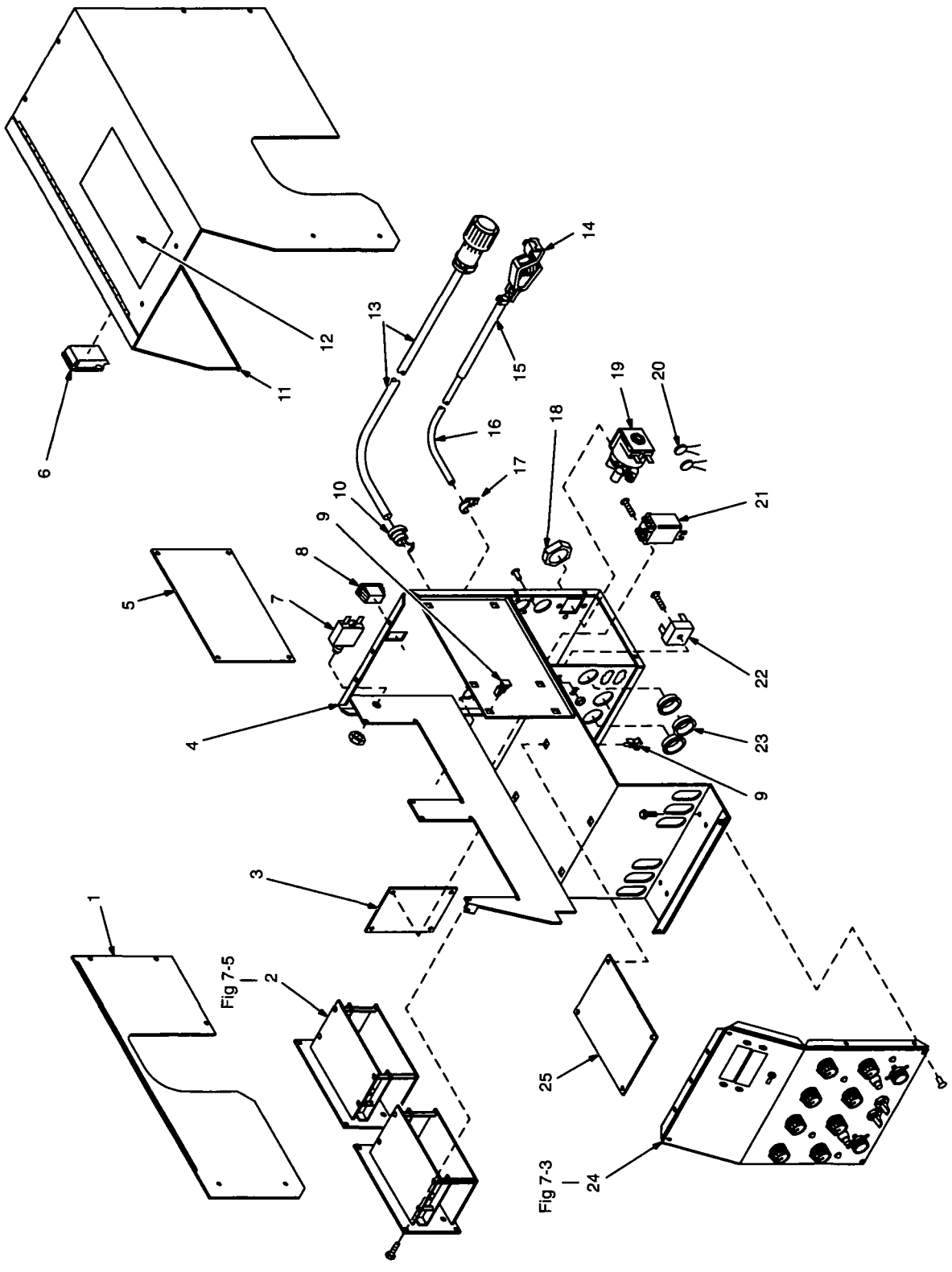

**Figure 7-1. Main Assembly**

| Item No. | Part No. | Description | Quantity |
|---|---|---|---|

**Figure 7-1. Main Assembly (Continued)**

| | | | |
|---|---|---|---|
| .. 13 | 134 306 | FOOT, rubber 1.250dia x 1.375 high | 4 |
| .. 14 | 139 226 | BASE | 1 |
| .. 15 | Fig 7-4 | WIRE DRIVE ASSEMBLY, RH | 1 |
| .. 16 | 159 647 | INSULATOR, motor clamp | 2 |
| .. 17 | 159 360 | INSULATOR, screw machine | 8 |
| .. 18 | 602 009 | SCREW, cap stl sch .250-20 x 1.250 | 2 |
| .. 19 | 156 243 | CLAMP, motor top | 2 |
| .. 20 | 083 639 | WEATHERSTRIPPING, adh .125 x 1.500 (order by ft) | 1ft |
| .. 21 | 159 646 | CLAMP, motor base | 2 |
| .. 22 | 145 639 | STRIP, buna N compressed sheet .062 x 4.000 x 4.000 | 2 |
| .. 23 | 143 152 | SCREW, cap stl sch .250-20 x 5.000 (LH only) | 2 |
| .. 24 | 139 752 | SPACER, stl .500 OD x 12ga wall x 3.750 (LH only) | 2 |
| .. 25 | Fig 7-4 | WIRE DRIVE ASSEMBLY, LH | 1 |
| .. 26 | Fig 7-2 | CONTROL BOX | 1 |
| .. 27 | ♦♦♦108 008 | REEL, wire 60 lb (consisting of) | 1 |
| .. 28 | 124 900 | . SUPPORT, reel spool | 1 |
| .. 29 | +168 104 | . RETAINER, spool support (consisting of) | 1 |
| | 166 594 | . LABEL, caution falling wire reel can cause damage | 1 |
| .. 30 | 168 103 | . NUT, spanner retaining | 1 |
| | 143 838 | CABLE, weld 26 in | 1 |
| | 164 059 | HOSE, gas | 1 |

♦♦♦OPTIONAL
+When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.




SC-143 226-E

**Figure 7-2. Control Box**

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

**Figure 7-2. Control Box (Fig 7-1 Item 26)**

| | | | | |
|---|---|---|---|---|
| 1 | | 139 235 | PANEL, side lower LH | 1 |
| 2 | | Fig 7-5 | CONTROL PANEL | 2 |
| 3 | PC2 | 134 994 | CIRCUIT CARD, tach jumper | 1 |
| 3 | PC50 | ♦132 370 | CIRCUIT CARD, tach converter | 1 |
| | PLG53 | 115 092 | CONNECTOR & SOCKETS | 1 |
| | PLG54 | 115 093 | CONNECTOR & SOCKETS | 3 |
| | PLG56 | 131 204 | CONNECTOR & SOCKETS | 2 |
| 4 | | 139 231 | CASE SECTION, bottom/rear | 1 |
| 5 | PC1 | 155 114 | CIRCUIT CARD, motor control | 1 |
| | PLG1 | 115 092 | CONNECTOR & SOCKETS | 1 |
| | PLG2 | 115 093 | CONNECTOR & SOCKETS | 1 |
| | PLG3 | 115 094 | CONNECTOR & SOCKETS | 1 |
| | PLG4 | 115 091 | CONNECTOR & SOCKETS | 1 |
| | PLG5 | 130 203 | CONNECTOR & SOCKETS | 1 |
| | PLG6 | 136 810 | CONNECTOR & SOCKETS | 1 |
| 6 | | 089 899 | LATCH, slide flush | 1 |
| 7 | CB1 | 083 432 | CIRCUIT BREAKER, man reset 1P 10A 250V | 1 |
| 8 | S1 | 111 997 | SWITCH, rocker SPST 10A 250VAC | 1 |
| 9 | | 134 201 | STAND-OFF SUPPORT, PC card .312/.375 | 12 |
| 10 | | 010 325 | BUSHING, strain relief .840 ID x .875mtg hole | 1 |
| 11 | | +139 229 | WRAPPER | 1 |
| 12 | | 178 936 | LABEL, warning general precautionary | 1 |
| 12 | | 134 464 | LABEL, warning CE | 1 |
| 13 | | 180 354 | CABLE, pwr | 1 |
| 14 | | ♦601 222 | CLAMP, univ 50A | 1 |
| 15 | | ♦603 106 | HOSE, nprn brd No. 1 x .250 ID (order by ft) | 1ft |
| 16 | | ♦600 399 | WIRE, lead mot 14ga (order by ft) | 15ft |
| 17 | | ♦138 044 | BUSHING, strain relief .120/.150 ID x .500mtg hole | 1 |
| 18 | | 605 227 | NUT, nylon hex jam .750NPST | 2 |
| 19 | GS1,2 | 125 785 | VALVE, 24VAC 2 way custom port 1/8 orf | 2 |
| 20 | C1,2 | 147 856 | CAPACITOR | 1 |
| 21 | CR101 | 072 817 | RELAY, encl 24VAC DPDT | 1 |
| 22 | SR1 | 035 704 | RECTIFIER, integ 40A 800V | 1 |
| 23 | | 030 170 | BUSHING, snap-in nyl .750 ID x 1.000mtg hole | 3 |
| 24 | | Fig 7-3 | PANEL, front w/components | 1 |
| 25 | PC3 | 151 147 | CIRCUIT CARD, relay control | 1 |
| | PLG92,94 | 131 052 | CONNECTOR & SOCKETS | 2 |
| | PLG93 | 115 093 | CONNECTOR & SOCKETS | 1 |
| | PLG95 | 135 409 | CONNECTOR & PINS | 1 |
| | PLG96 | 131 204 | CONNECTOR & SOCKETS | 1 |
| | PLG98 | 115 094 | CONNECTOR & SOCKETS | 1 |
| | PLG11,17 | 115 092 | CONNECTOR & SOCKETS | 2 |
| | PLG12,18 | 135 409 | CONNECTOR & PINS | 2 |
| | | 120 304 | BLANK, snap-in nyl .250mtg hole | 11 |
| | | 119 951 | BLANK, snap-in nyl .437mtg hole | 6 |
| | | 107 983 | BLANK, snap-in nyl .500mtg hole | 2 |
| | | 024 103 | BLANK, snap-in nyl .750mtg hole | 1 |
| | | 000 527 | BLANK, snap-in nyl .875mtg hole | 4 |

♦Part of Optional 148 099 Two Meter

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

BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

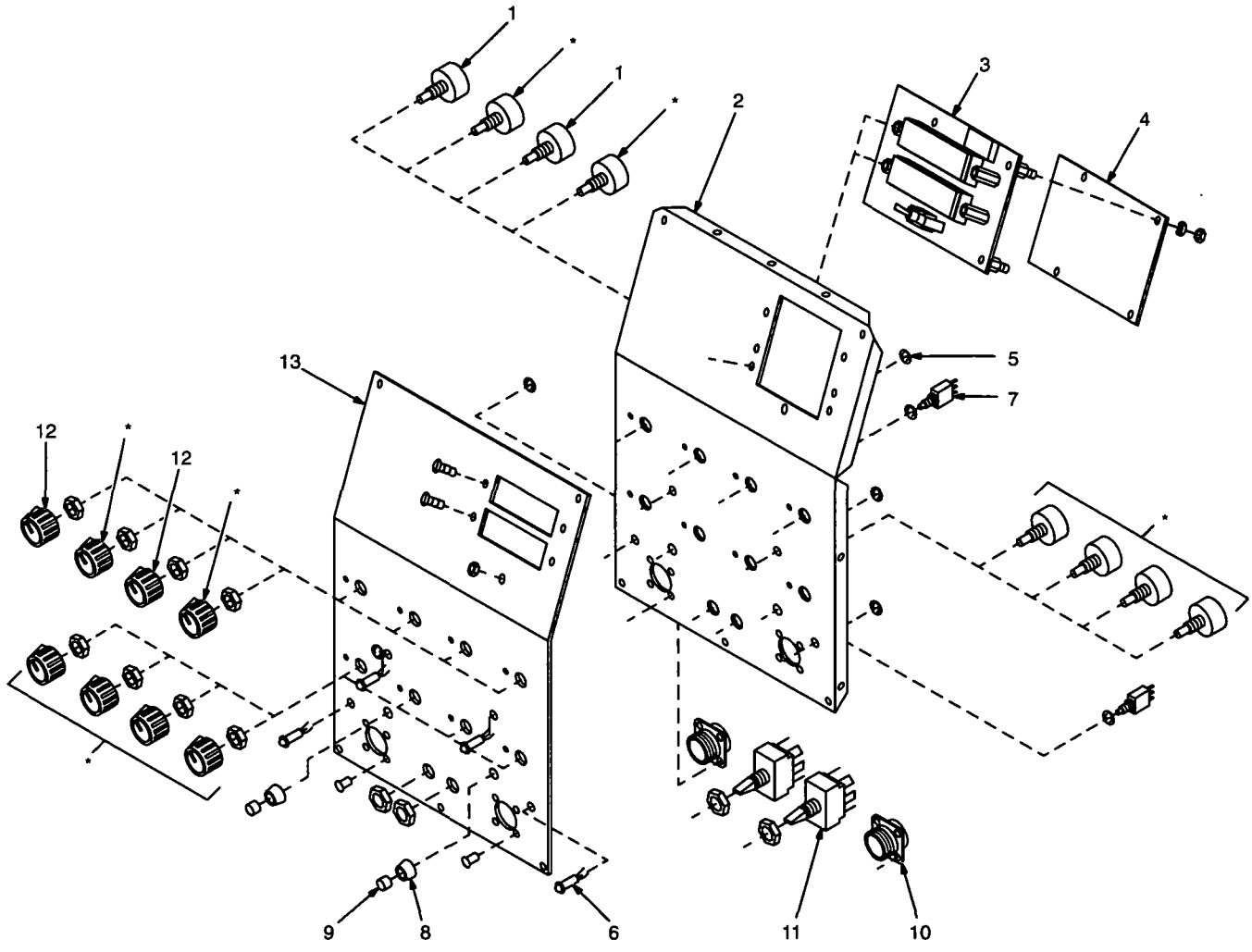



**Figure 7-3. Panel, Front w/Components**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| | | | **Figure 7-3. Panel, Front w/Components (Fig 7-2 Item 24)** | |
| 1 | R1,2 | 073 562 | POTENTIOMETER, C sltd sft 1/T 2W 10K ohm | 2 |
| 2 | | 149 654 | PANEL, front | 1 |
| 3 | | ♦148 099 | TWO METER, V/W.F.S w/tach (consisting of) | 1 |
| | PC60 | 157 721 | CIRCUIT CARD, meter dual | 1 |
| | C61 | 147 853 | CAPACITOR | 1 |
| | PLG5 | 130 203 | CONNECTOR & SOCKETS | 1 |
| | PLG62 | 131 055 | CONNECTOR & SOCKETS | 1 |
| | PLG63 | 138 045 | CONNECTOR & SOCKETS | 1 |
| | PLG64 | 167 361 | CONNECTOR & SOCKETS | 1 |
| | PLG95 | 115 092 | CONNECTOR & SOCKETS | 1 |
| | R3,4 | 603 856 | POTENTIOMETER, WW sltd sft 10/T 2W 10K ohm | 2 |
| | | 115 443 | STAND-OFF, 6-32 x .750 lg | 2 |
| | | 097 132 | STAND-OFF, 6-32 x .375 lg | 4 |
| | | 138 044 | BUSHING, strain relief .120/.150 ID x .500mtg hole | 1 |
| | | | see Fig 7-2 & 7-5 for additional parts | |
| | | 136 339 | COVER, opening meter | 2 |
| 4 | | ♦138 548 | DIGITAL VOLTAGE CONTROL, (consisting of) | 1 |
| | PC40 | 171 608 | CIRCUIT CARD, control voltage digital | 1 |
| | PLG41,61 | 115 094 | CONNECTOR & SOCKETS | 2 |
| | PLG42,84,86,97 | 131 204 | CONNECTOR & SOCKETS | 1 |
| | PLG43,44 | 167 361 | CONNECTOR & SOCKETS | 2 |
| | PLG47,49,85 | 131 203 | CONNECTOR & PINS | 1 |
| | R75,85 | 603 856 | POTENTIOMETER, WW sltd sft 10/T 2W 10K ohm | 1 |
| | | 097 922 | KNOB, pointer | 2 |
| 5 | | 134 209 | NUT, speed push-on-type .250 | 2 |
| 6 | LED1,2 | 179 203 | LED, 5100 2.0V 20mA red | 2 |
| | | ♦172 825 | DIGITAL DUAL SCHEDULE, RH (consisting of) | 1 |
| | | ♦173 748 | DIGITAL DUAL SCHEDULE, LH (consisting of) | 1 |
| 5 | | 134 209 | NUT, speed push-on-type .250 | 1 |
| 6 | LED71/81 | 174 755 | LED, 5100 2.0V 20mA red | 1 |
| | PLG68/48 | 131 204 | CONNECTOR & SOCKETS | 1 |
| | PLG72 | 131 054 | CONNECTOR & SOCKETS | 1 |
| | R76,77/86,87 | 603 856 | POTENTIOMETER, WW sltd sft 10/T 2W 10K ohm | 2 |
| 7 | S71/81 | 150 982 | SWITCH, PB MC SPDT 6A 125VAC | 1 |
| 8 | | 153 195 | NUT, face | 1 |
| 9 | | 150 981 | BUTTON, switch black | 1 |
| | | 097 922 | KNOB, pointer | 2 |
| | | | see Figure 7-3 For Additional Parts | |
| 10 | RC8,9 | 048 282 | CONNECTOR w/SOCKETS | 1 |
| 11 | S2,3 | 134 846 | SWITCH, tgl SPTT 15A 125VAC | 2 |
| 12 | | 097 922 | KNOB, pointer | 2 |
| 13 | | | NAMEPLATE, (order by model and serial number) | 1 |

♦OPTIONAL

BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

## Table 7-1. Wire Drive Assembly Kits

| 2/4 Roll LH/RH | Standard | Standard w/Tach♦ | High Speed♦ | High Speed w/Tach♦ |
|---|---|---|---|---|
| 2 Roll LH | 167 749 | 167 750 | 167 751 | 167 752 |
| 2 Roll RH | 167 755 | 167 756 | 167 757 | 167 758 |
| 4 Roll LH | 167 761 | 167 762 | 167 763 | 167 764 |
| 4 Roll RH | 167 767 | 167 768 | 167 769 | 167 770 |

♦OPTIONAL S-0869

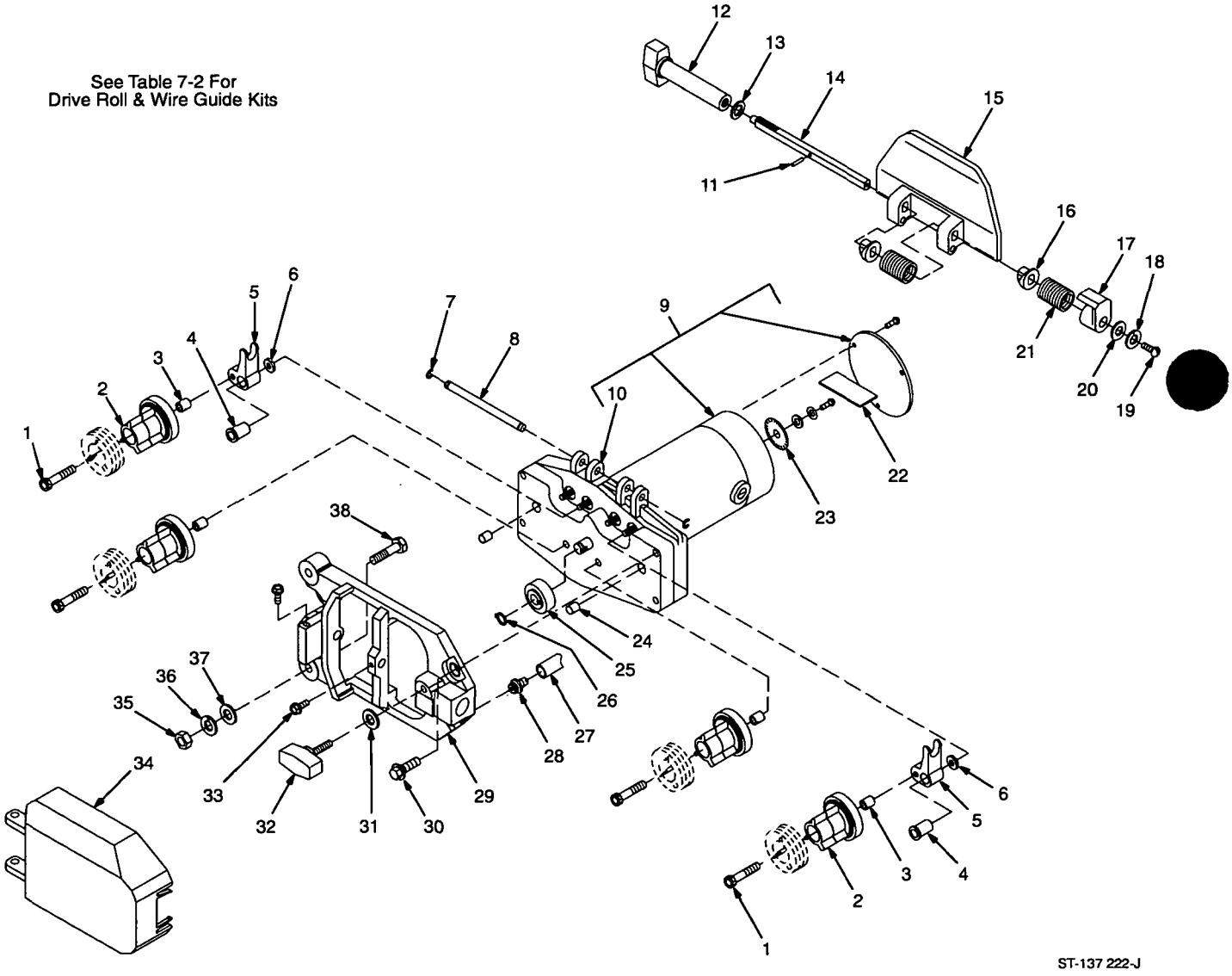



**Figure 7-4. Drive Assembly, Wire (4 Drive Roll Assembly Illustrated)**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity 2 Drive Roll | Quantity 4 Drive Roll |
|---|---|---|---|---|---|
| | | | **Figure 7-4. Drive Assembly, Wire (Fig 7-1 Items 15 & 25)** | | |
| 1 | | 010 668 | SCREW, cap stl sch .250-20 x 1.500 | 2 | 4 |
| 2 | | 172 075 | CARRIER, drive roll w/components | 2 | 4 |
| 3 | | 149 962 | SPACER, carrier drive roll | 2 | 4 |
| 4 | | 149 486 | PIN, rotation arm rocker | 1 | 2 |
| 5 | | 132 750 | ARM, pressure | 1 | 2 |
| 6 | | 150 520 | SPACER, flat stl .257 ID x .619 OD x .105 | 1 | 2 |
| 7 | | 133 493 | RING, retaining ext .250 shaft x .025thk | 2 | 2 |
| 8 | | 133 350 | PIN, hinge | 1 | 1 |
| 9 | M1 | 156 354 | MOTOR, gear 1/8hp 24VDC 272RPM (consisting of) | 1 | 1 |
| 9 | M1 | ♦156 353 | MOTOR, gear 1/8hp 24VDC 500RPM (consisting of) | 1 | 1 |
| | | 153 491 | KIT, brush replacement (consisting of) | 1 | 1 |
| | | 153 492 | CAP, brush | 2 | 2 |
| | | *153 493 | BRUSH, carbon | 2 | 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 |
| 11 | | 010 837 | PIN, spring CS .093 x .625 | | 1 |
| 12 | | 151 347 | KNOB, w/extension | 1 | 1 |
| 13 | | 133 739 | WASHER, flat buna .375 ID x .625 OD x .062thk | 1 | 1 |
| 14 | | 132 824 | SHAFT, spring | 1 | 1 |
| 15 | | 132 747 | CARRIER, shaft | 1 | 1 |
| 16 | | 132 746 | BUSHING, spring | 1 | 2 |
| 17 | | 137 248 | SPRING, indicator | 1 | 1 |
| 18 | | 602 200 | WASHER, lock stl split No. 8 | 1 | 1 |
| 19 | | 602 082 | SCREW, mach stl rdh 8-32 x .500 | 1 | 1 |
| 20 | | 604 772 | WASHER, flat stl SAE No. 8 | 1 | 1 |
| 21 | | 165 934 | SPRING, cprsn .573 OD x .088 wire x 1.062 lg | 1 | 2 |
| 22 | PC51 | ♦♦153 631 | CIRCUIT CARD, digital tach (consisting of) | 1 | 1 |
| | PLG57 | 131 204 | CONNECTOR & SOCKETS | 1 | 1 |
| | | 604 311 | GROMMET, rbr .250 ID x .375mtg hole .062 groove | 1 | 1 |
| | PLG51,57 | 131 203 | CONNECTOR & PINS | 1 | 1 |
| 23 | | ♦♦132 611 | OPTICAL ENCODER DISC | 1 | 1 |
| 24 | | 167 387 | SPACER, locating | 2 | 2 |
| 25 | | 168 825 | DRIVE, pinion | 1 | 1 |
| 26 | | 133 308 | RING, retaining ext .375 shaft x .025thk | 1 | 1 |
| 27 | | 134 834 | HOSE, SAE .187 ID x .410 OD (order by ft) | 2ft | 2ft |
| 28 | | 149 959 | FITTING, brs barbed M 3/16tbg x .312-24 | 1 | 1 |
| 29 | | 179 265 | ADAPTER, gun/feeder LH | 1 | 1 |
| 29 | | 179 264 | ADAPTER, gun/feeder RH | 1 | 1 |
| 30 | | 108 940 | SCREW, cap stl hexhd .250-20 x .750 | 4 | 4 |
| 31 | | 604 538 | WASHER, flat stl SAE .312 | 1 | 1 |
| 32 | | 151 437 | KNOB, plstc T 1.125 lg x .312-18 x 1.500 | 1 | 1 |
| 33 | | 151 290 | SCREW, mach stl hexwhd 10-32 x .500 | 2 | 2 |
| 34 | | 179 263 | COVER, drive roll (consisting of) | 1 | 1 |
| | | 178 937 | LABEL, warning electric shock | 1 | 1 |
| 35 | | 601 872 | NUT, stl hex full fnsh .375-16 | 1 | 1 |
| 36 | | 602 213 | WASHER, lock stl split .375 | 1 | 1 |
| 37 | | 602 243 | WASHER, flat stl std .375 | 1 | 1 |
| 38 | | 601 966 | SCREW, cap stl hexhd .375-16 x 1.250 | 1 | 1 |

♦Optional High Speed Motor
*Recommended Spare Parts.
♦♦Part of Optional Tach
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

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

**Figure 7-5. Control Panel (Fig 7-2 Item 2)**

| | | | | |
|---|---|---|---|---|
| 1 | S31,32 | ♦011 770 | SWITCH, tgl SPDT 6A 125VAC | 2 |
| 2 | PC70 | ♦♦150 591 | CIRCUIT CARD, option interface | 1 |
| | PLG16,54,76 | ♦♦115 093 | CONNECTOR & SOCKETS | 3 |
| | PLG78,88 | ♦♦115 094 | CONNECTOR & SOCKETS | 2 |
| | PLG79,89 | ♦♦115 091 | CONNECTOR & SOCKETS | 1 |
| | PLG80,90 | ♦♦135 531 | CONNECTOR & PINS | 1 |
| | PLG98 | ♦♦131 056 | CONNECTOR & SOCKETS | 1 |
| 3 | | ♦♦115 443 | STAND-OFF, 6-32 x .750 lg | 4 |
| | | ♦♦♦138 542 | SPOT/BURNBACK PREFLOW/POSTFLOW, RH | 1 |
| | | ♦♦♦138 547 | SPOT/BURNBACK PREFLOW/POSTFLOW, LH (consisting of) | 1 |
| 4 | | 126 689 | STAND-OFF, 6-32 x 1.500 lg | 2 |
| 5 | PC30 | 156 636 | CIRCUIT CARD, 4 in 1 timer | 1 |
| | PLG1,21,31 | 115 092 | CONNECTOR & SOCKETS | 3 |
| | PLG22,32 | 135 409 | CONNECTOR & PINS | 2 |
| | PLG35 | 115 094 | CONNECTOR & SOCKETS | 1 |
| | PLG90 | 131 204 | CONNECTOR & SOCKETS | 1 |
| | PLG91 | 115 093 | CONNECTOR & SOCKETS | 1 |
| 6 | | 093 551 | KNOB, pointer | 4 |
| 7 | | 180 636 | PLATE, control | 1 |
| 8 | | 133 344 | PANEL, option | 1 |
| | | 120 304 | BLANK, snap-in nyl .250mtg hole | 2 |
| 7 | | 180 635 | PLATE, control | 2 |

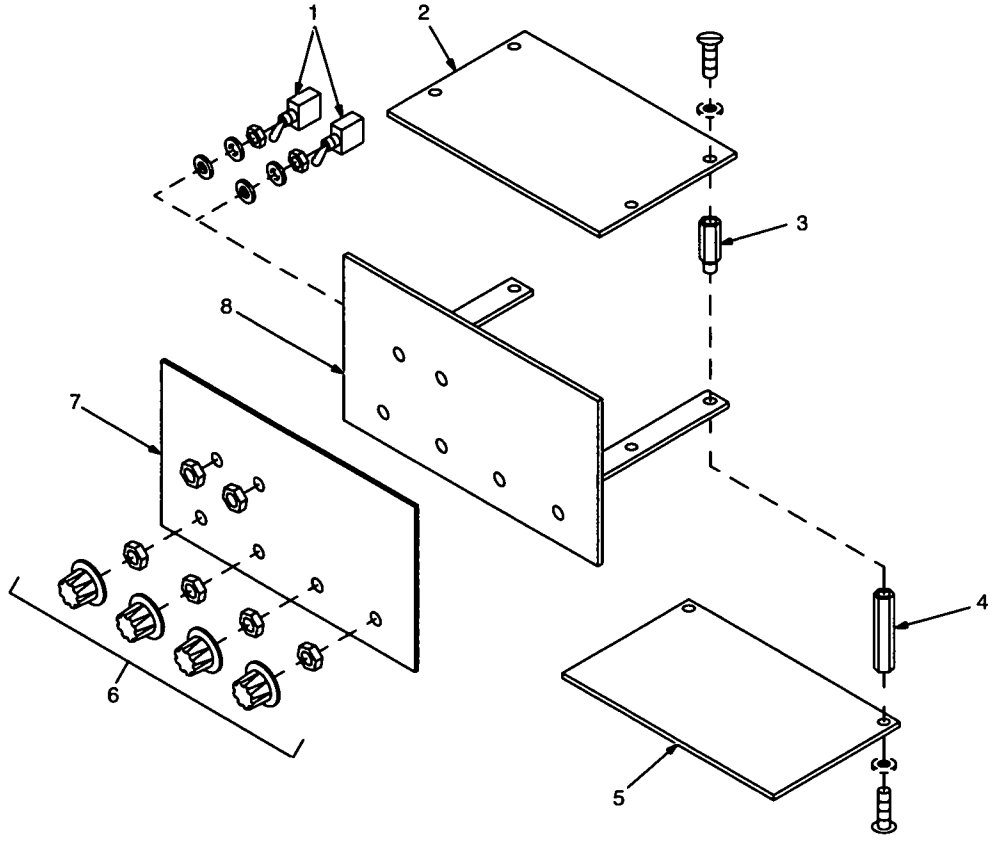



**Figure 7-5. Control Panel**

♦Part of Optional 138 542 RH and 138 547 LH Spot/Burnback, Preflow/Postflow
♦♦Part of Optional 172 825 RH and 173 748 LH Digital Dual Schedule
♦♦♦OPTIONAL
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

## Table 7-2. Drive Roll And Wire Guide Kits

| Wire Size | | Inlet Guide | Intermediate Guide | V-GROOVE | | | U-GROOVE | | | VK-GROOVE | | | UC-GROOVE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fraction | Metric | | | 2 Roll Kit | 4 Roll Kit | Drive Roll | 2 Roll Kit | 4 Roll Kit | Drive Roll | 2 Roll Kit | 4 Roll Kit | Drive Roll | 2 Roll Kit | 4 Roll Kit | Drive Roll |
| .023-.025 in. | 0.6 mm | 150 993 | 149 518 | 151 030 | 151 024 | 087 130 | | | | | | | | | |
| .030 in. | 0.8 mm | 150 993 | 149 518 | 151 031 | 151 025 | 053 695 | | | | | | | | | |
| .035 in. | 0.9 mm | 150 993 | 149 518 | 151 032 | 151 026 | 053 700 | 151 044 | 151 036 | 072 000 | 151 061 | 151 052 | 132 958 | | | |
| .040 in. | 1.0 mm | 150 993 | 149 518 | 161 189 | 161 190 | | | | | | | | | | |
| .045 in. | 1.1/1.2 mm | 150 994 | 149 519 | 151 033 | 151 027 | 053 697 | 151 045 | 151 037 | 053 701 | 151 062 | 151 053 | 132 957 | 151 077 | 151 070 | 083 489 |
| .052 in. | 1.3/1.4 mm | 150 994 | 149 519 | 151 034 | 151 028 | 053 698 | 151 046 | 151 038 | 053 702 | 151 063 | 151 054 | 132 956 | 151 078 | 151 071 | 083 490 |
| 1/16 in. (.062 in.) | 1.6 mm | 150 995 | 149 520 | 151 035 | 151 029 | 053 699 | 151 047 | 151 039 | 053 706 | 151 064 | 151 055 | 132 955 | 151 079 | 151 072 | 053 708 |
| .068-.072 in. | 1.8 mm | 150 995 | 149 520 | | | | | | | 151 065 | 151 056 | 132 959 | | | |
| 5/64 in. (.079 in.) | 2.0 mm | 150 995 | 149 520 | | | | 151 048 | 151 040 | 053 704 | 151 066 | 151 057 | 132 960 | 151 080 | 151 073 | 053 710 |
| 3/32 in. (.094 in.) | 2.4 mm | 150 996 | 149 521 | | | | 151 049 | 151 041 | 053 703 | 151 067 | 151 058 | 132 961 | 151 081 | 151 074 | 053 709 |
| 7/64 in. (.110 in.) | 2.8 mm | 150 996 | 149 521 | | | | 151 050 | 151 042 | 053 705 | 151 068 | 151 059 | 132 962 | 151 082 | 151 075 | 053 711 |
| 1/8 in. (.125 in.) | 3.2 mm | 150 997 | 149 522 | | | | 151 051 | 151 043 | 053 707 | 151 069 | 151 060 | 132 963 | 151 083 | 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 2 Or 4 Drive Rolls
2 Kits Required for D-62 & D-64

S-0527-C

# OPTIONS AND ACCESSORIES

**4–IN–1 CONTROL**
Includes: spot/burnback, preflow/ postflow, and trigger hold

**(#138 547** Factory) left side only
**(#138 542** Factory) right side only
**(#138 543** Field) left or right side

This control is mounted on an inside panel and includes 0 (zero) to 5 second gas preflow and postflow control, up to 5 seconds of spot weld time, and up to 0.25 seconds of burnback control. The trigger hold control allows the operator to make long extended welds without having to hold the gun trigger.

**VOLTAGE CONTROL (Non–Digital)**
**(#133 425** Field) right side only
**(#138 527** Field) left side only

Installs in front panel of feeder to allow remote voltage control of Miller electrically controlled CV or CC/CV power sources having a 14–pin receptacle.

***Note: If voltage control is used on only one side of dual model, the opposite side of feeder must have Dual Schedule Control.***

**DIGITAL VOLTAGE AND WIRE FEED SPEED METERS WITH MOTOR TACHOMETER FEEDBACK**
(Standard on D and DV Models)
**(#148 099** Factory)
**(#172 735** Field)

These meters utilize a back-lit LCD and are easy to read in virtually any lighting condition.

The Digital Wire Feed Speed Meter with Tachometer Feedback allow the wire feed speed to be precisely preset on the digital meter and accurately maintained, regardless of changes in arc or load conditions, compensating for line variations up to 10%.

The Digital Volt Meter allows a continuous display of arc voltage while welding. The voltmeter will hold the arc voltage reading for 15 seconds after completion of the weld.

***Note:For presettable voltage capability, refer to the optional Digital Voltage Control.***

**DIGITAL VOLTAGE CONTROL**
(Standard on DV Models)
**(#138 548** Factory)
**(#138 549** Field)

The Digital Voltage Control (DVC) allows the arc voltage to be precisely preset on the digital volt meter to the nearest 1/10 volt and accurately monitors and maintains this voltage while welding. The DVC is designed for use with Miller electrically controlled CV or CC/CV power sources having a 14–pin receptacle. Used with optional 5–pin Remote Voltage Control Cord **(#136 267)**, the DVC can also be used with older–style Miller CV power sources that have a 5–pin Amphenol receptacle.

***Note: To install and use the DVC, the optional Digital Meters with Tachometer Feedback is required.***

**DIGITAL DUAL SCHEDULE CONTROL**

**(#172 825** Factory) right side only
**(#172 826** Field) right side only

**(#173 748** Factory) left side only
**(#173 749** Field) left side only

***Note: The Digital Meters and Digital Voltage Control are required to install the Digital Dual Schedule Control. Refer to the Options and Accessories section for appropriate dual schedule switches.***

Allows two separate welding conditions (voltage and wire feed speed) to be used with one wire. The parameters can be accurately preset on the digital meters.

**HIGH–SPEED MOTOR**

**(#132 129** Factory) right side only

**(#132 130** Factory) left side only

The high–speed motor has a wire feed speed range of 90 to 1400 IPM (2.3 to 35.6 m/min.).

***Note: The high–speed motor is not recommended for wire sizes larger than 5/64 in. (2.0 mm) diameter.***

***Note: If a standard–speed motor and high–speed motor are used in combination, the optional Digital Meter(s) cannot be used.***

**CONTROL DETACHMENT KIT**
(Field installed only)

| | |
|---|---|
| **(#134 934)** | 10 ft. (3 m) |
| **(#134 935)** | 25 ft. (7.6 m) |

Allows separation of the control module from the wire drive assembly and base.

**DRIVE ROLL CONVERSION KIT**
Allows an existing D–62 to be easily converted from a two drive roll to a four drive roll feeder. (Must order one kit for each side of dual models.)

**(#172 104)**
Feeders manufactured with serial number KE756284 or newer.

**(#132 128)**
Feeders manufactured prior to serial number KE756284.

**LOCKING COVERS**
**(#134 989** Field only)
Secures the front panel controls to assure that the pre–selected welding conditions are not changed.

***Note: Padlock not included.***

**PSA–2 CONTROL**
**(#141 604)**
Required when using the D–60 wire feeders with power sources having only 115 VAC available. The PSA–2 control can be conveniently mounted on the wire feeder or positioned at the power source. The control is equipped with a 14–pin receptacle for direct connection of the wire feeder control cord. A short cord with a 4–pin Amp plug is hard wired to the control. A 10 ft. (3 m) interconnecting cord with a 4–pin Amp for connection to the PSA–2 and Hubbell connectors for older–style Miller CV power sources is included. The PSA–2 control can also be used with competitive power sources requiring a contact closure for contactor control.

***Note: If using the PSA–2 with older–style Deltaweld® 450 and 650 power sources, and remote voltage control at the feeder is needed, optional 5–pin Remote Voltage Control Cord (#136 267) is required.***

**WIRE REEL ASSEMBLY**
**(#108 008)**
For 60 lb. (27 kg) coil of wire.

**CARRYING CART**
**(#056 301)**
A utility cart for the wire feeder and other miscellaneous welding supplies. Height: 34 in. (863 mm) Lower tray height: 9 in. (228 mm) Shipped disassembled.

**FEEDER CART**
**(#142 382)**
A low–profile, creeper cart which allows the operator to easily move the feeder around the work area. Shipped disassembled.

**TURNTABLE ASSEMBLY**
**(#146 236)**
Allows rotation of the feeder as the operator changes work positions. Reduces strain and bending on the gun cable.

**HANGING BAIL**
**(Electrically Isolated)**
**(#058 435)**
Used for suspending feeder over work area.

**WIRE STRAIGHTENER**
**(#141 580)**
For .035 in. (0.9 mm) through .045 in. (1.1 mm) diameter wire.

**(#141 581)**
For 1/16 in. (1.6 mm) through 1/8 in. (3.2 mm) diameter wire.

Helps reduce the cast in wire to improve wire feeding performance and increase the service life of the gun liner and contact tip.

**SPOOL COVERS**
**(#057 607)** left side only
**(#090 389)** right side only
12 in. (305 mm) spool

**REEL COVERS**
**(#058 256)** left side only

**(#091 668)** right side only
60 lb. (27 kg) coil. Helps to protect the welding wire from dust and other contaminants.

***Note: Reel and Spool Covers cannot be installed if the wire drive assembly is in a rotated position.***

**COMPRESSION SPRING**
**(#057 745)**
Required when using 8 in. (203 mm) diameter 10 lb. (4.5 kg) and 15 lb. (6.8 kg) spools of wire.

# OPTIONS AND ACCESSORIES

**SPOOL ADAPTER**
**(#047 141)**
For use with 14 lb. (6.4 kg) spool of Lincoln® self–shielding wire.

**POLARITY REVERSING ISOLATION CONTROL**
**(#042 871)**
A dual–function control designed for use with the D–60 dual wire feeder or any application where electrical isolation and/or polarity reversing capabilities are required. For example, one wire of the D–60 feeder can be electrically cold while welding with the other wire. The wires can also be run on opposite or the same polarity (straight or reverse). Both functions can be performed at the same time.

***Note: Includes bracket to mount control on top of the dual feeder.***

**DUAL SCHEDULE SWITCHES**
**(For use with dual schedule controls)**
**DSS–8**
**(#079 691)**
For 10 ft. (3 m) gun
**(#079 693)**
For 15 ft. (4.6 m) gun
A two–position trigger switch which attaches to the gun handle and is used **in place of** the standard trigger for dual scheduling.

**DSS–9**
**(#071 832)**
For 10 ft. (3 m) gun
**(#071 833)**
For 15 ft. (4.6 m) gun
A two–position slide switch which attaches to the gun handle and is used to select the desired welding condition for dual schedule purposes. The gun trigger operates as a standard gun trigger.

**WATER COOLANT SYSTEMS**
For use with water–cooled guns.
Radiator 1A 115 VAC
**(#042 492)**
Radiator 2A 230 VAC
**(#042 493)**
Watermate™ 1A 115 VAC
**(#042 495)**
Coolmate™ 4 115 VAC
**(#042 288)**
Refer to Literature Index No. AY/7.2 for additional coolant system information.

**CORDS**
**5–PIN REMOTE VOLTAGE CONTROL CORD**
**(#136 267** Field only) 10 ft. (3 m)
This cord is connected inside the 60 Series feeder and provides a 5–pin Amphenol plug for connecting to Deltaweld® 450 and 650 power sources that have 5–pin remote control receptacles. This cord is required when one of the following options is installed in the D–60 wire feeders: Remote Voltage Control, Digital Voltage Control, Dual Schedule Control, Digital Dual Schedule, or the Remote Pendant Control.
***Note: The PSA–2 control must also be used.***

**EXTENSION CORDS**
**(#041 294)** 25 ft. (7.6 m)
Used to extend 5–pin Remote Voltage Control Cord **(#136 267)**.
**(#047 813)** 25 ft. (7.6 m)
Can be used to extend the 10 ft. cord supplied with the PSA–2 control (4–pin Amp to 4–pin Amp connection).
**(#122 972)** 10 ft. (3 m)
**(#122 973)** 25 ft. (7.6 m)
**(#122 974)** 50 ft. (15 m)
**(#122 975)** 75 ft. (23 m)
Provides 14–pin, 24 VAC, contactor and voltage control.
Can be added to the standard 10 ft. (3 m) feeder cord to extend feeder farther from power source.