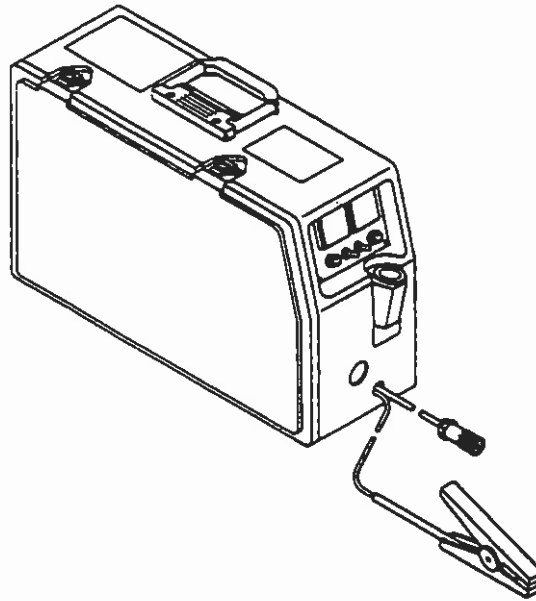




! IMPORTANT !
- FOR YOUR SAFETY -
READ THIS MANUAL BEFORE
INSTALLING OR USING EQUIPMENT

OPERATION MANUAL



PDVS-II

PowCon Incorporated
8123 Miralani Drive, San Diego, CA 92126
(619) 621-6300 • FAX (619) 621-6301

ARC WELDING SAFETY PRECAUTIONS

WARNING

ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR.

In welding, as in most jobs, exposure to certain hazards occurs. Welding is safe when precautions are taken. The safety information given below is only a summary of the more complete safety information that will be found in the Safety Standards listed on the next page. Read and follow all Safety Standards.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.



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.

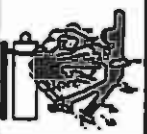


FUMES AND GASES can be hazardous to your health.

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.

**WARNING****ENGINES can be hazardous.****ENGINE EXHAUST GASES can kill.**

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

**ENGINE FUEL can cause fire or explosion.**

Engine fuel is highly flammable.

1. Stop engine and let it cool off before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.

3. Do not overfill tank – allow room for fuel to expand.
4. Do not spill fuel. If fuel is spilled, clean up before starting engine.

**MOVING PARTS can cause injury.**

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.

3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

**SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.**

Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and -) on batteries.

**STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.**

It is best to check coolant level when engine is cold to avoid scalding.

1. If the engine is warm and checking is needed, follow steps 2 and 3.
2. Wear safety glasses and gloves and put a rag over cap.
3. Turn cap slightly and let pressure escape slowly before completely removing cap.

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.

EMF INFORMATION

NOTE

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 among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.


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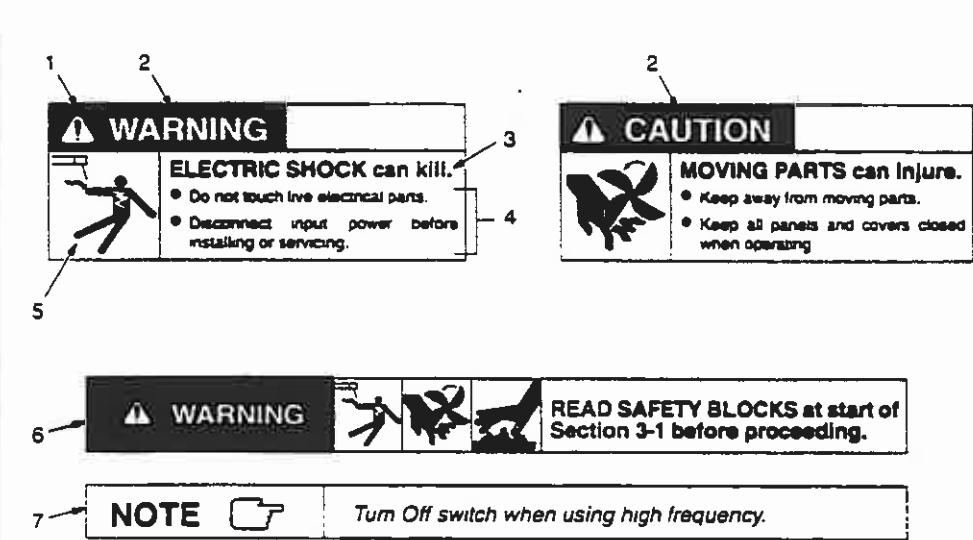
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SECTION 1 – SAFETY INFORMATION

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- Read all safety messages throughout this manual.
- Obey all safety messages to avoid injury.
- Learn the meaning of **WARNING** and **CAUTION**.



1 Safety Alert Symbol
 2 Signal Word
WARNING means possible death or serious injury can happen.
CAUTION means possible minor injury or equipment damage can happen.

3 Statement Of Hazard And Result
 4 Safety Instructions To Avoid Hazard
 5 Hazard Symbol (If Available)
 6 Safety Banner
 Read safety blocks for each symbol shown.
 7 NOTE
 Special instructions for best operation – not related to safety.

Figure 1-1. Safety Information

SECTION 2 – SPECIFICATIONS

Table 2-1. Wire Feeder

Specification	Description
Type Of Input Power	Open-Circuit/Arc Voltage, 15 To 100 Volts DC
Welding Power Source Type	Constant Voltage (CV) Or Constant Current (CC) DC
Wire Feed Speed Range	50 To 700 ipm (1.3 To 18 mpm) Depending On Arc Voltage
Wire Diameter Range	.023 To 5/64 in (0.6 To 2 mm)
Welding Processes	Flux Cored Arc (FCAW) And Gas Metal Arc Welding (GMAW)
Input Welding Circuit Rating	250 Amperes At 60% Duty Cycle
Max. Wire Spool Capacity	30 lb (13.6 kg), 12 in (304 mm)
Overall Dimensions	Length: 22-1/2 in (572 mm); Width: 8-3/4 in (222 mm); Height: 15-3/4 in (400 mm)
Weight	Net: 29 lb (13 kg); Ship: 31 lb (14 kg)

SECTION 3 – INSTALLATION

3-1. Typical Connections

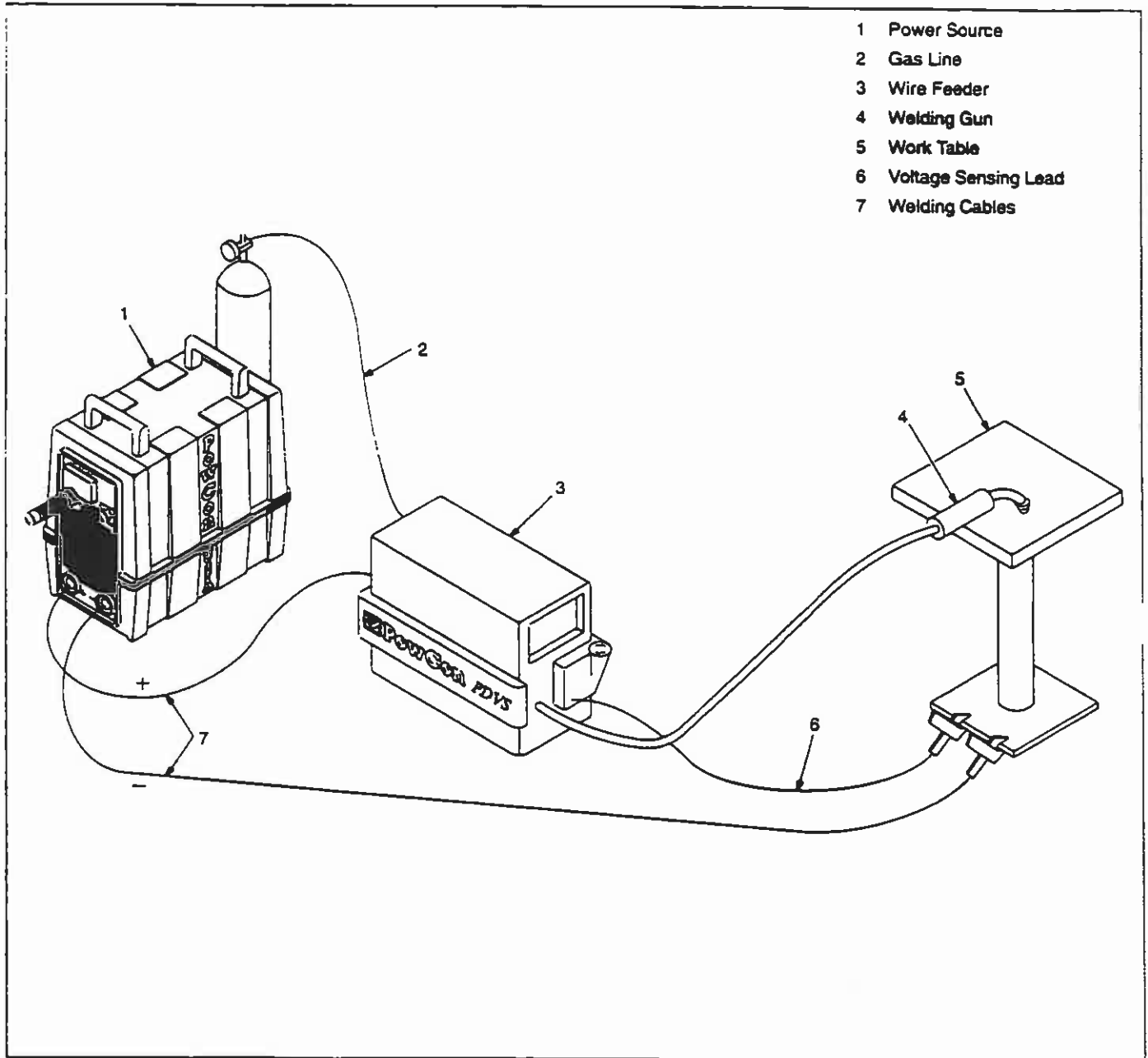


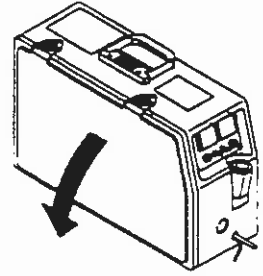


Figure 3-1. Typical Connections

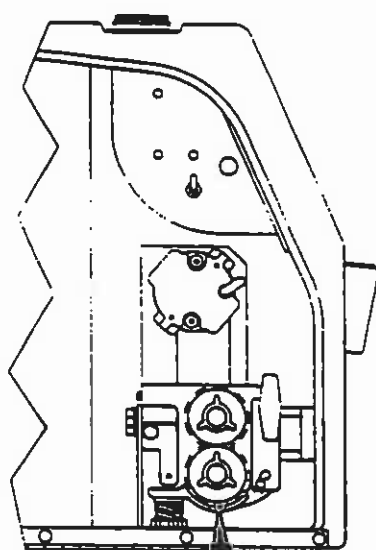
3-2. Wire Guide And Drive Roll Installation And Alignment

⚠ WARNING	
 <p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> Do not touch live electrical parts. Turn Off wire feeder and welding power source, and disconnect input power before making connections. Do not store metal tools inside unit. <p>The welding wire, drive rolls, drive assembly, and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger. Loose metal tools inside unit can short weld circuit to other metal parts causing electric shock and arcing.</p>	 <p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none"> Keep away from moving parts. Keep away from pinch points such as drive rolls.
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A. Installing Wire Guide And Drive Rolls



Unlatch and open door.



When changing wire size or type, check drive roll and wire guide size (see Table 7-1).

- 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.

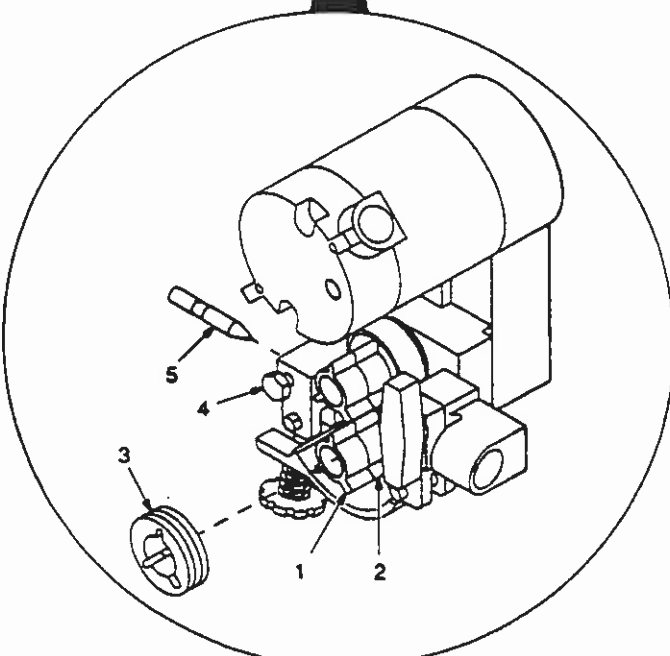
Repeat procedure for top drive roll.

- 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.

Cleaning Drive Rolls:

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



Tools Needed:

 3/8 in

Ref. ST-132 809-B / Ref. ST-132 808-E / Ref. ST-162 079-A

Figure 3-2. Installing Wire Guide And Drive Rolls

B. Aligning Wire Guide And Drive Rolls

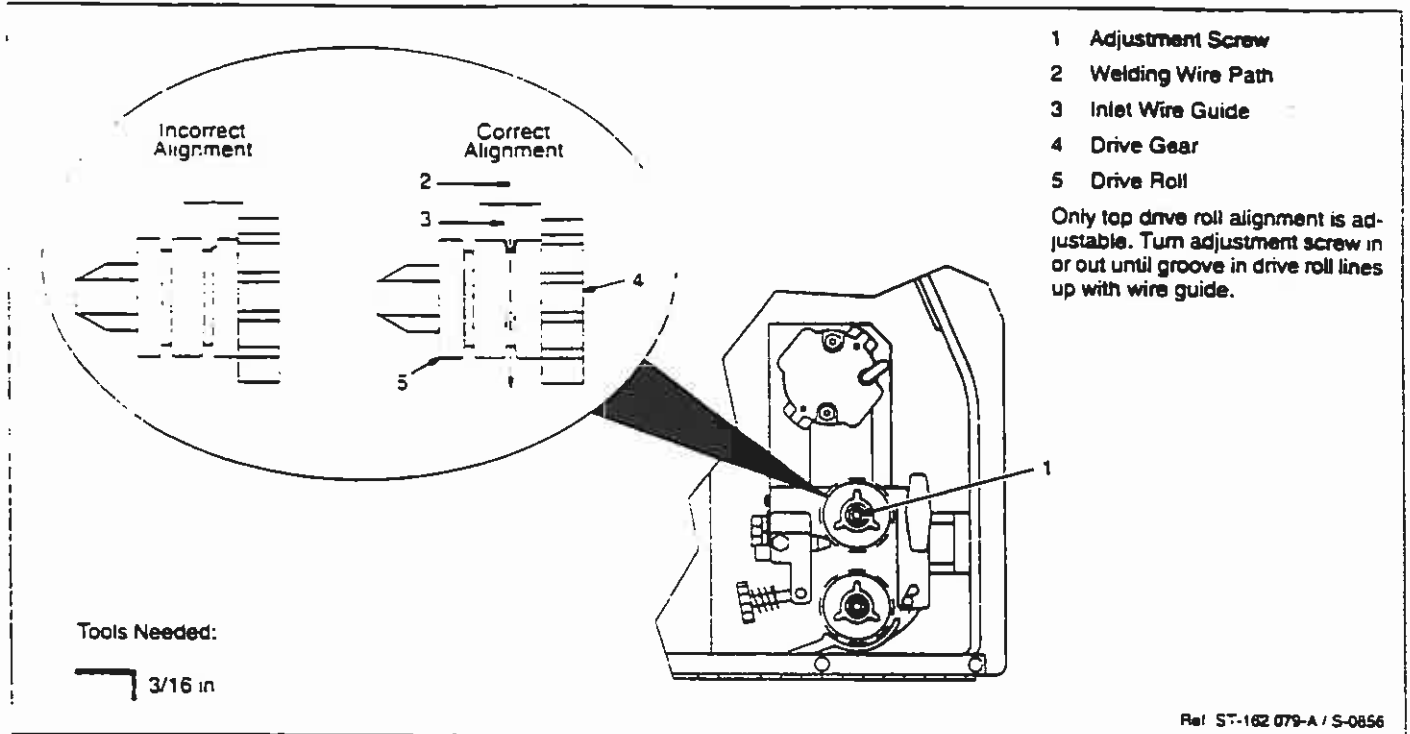


Figure 3-3. Aligning Wire Guide And Drive Rolls

3-3. Welding Gun And Voltage Sensing Lead Connections

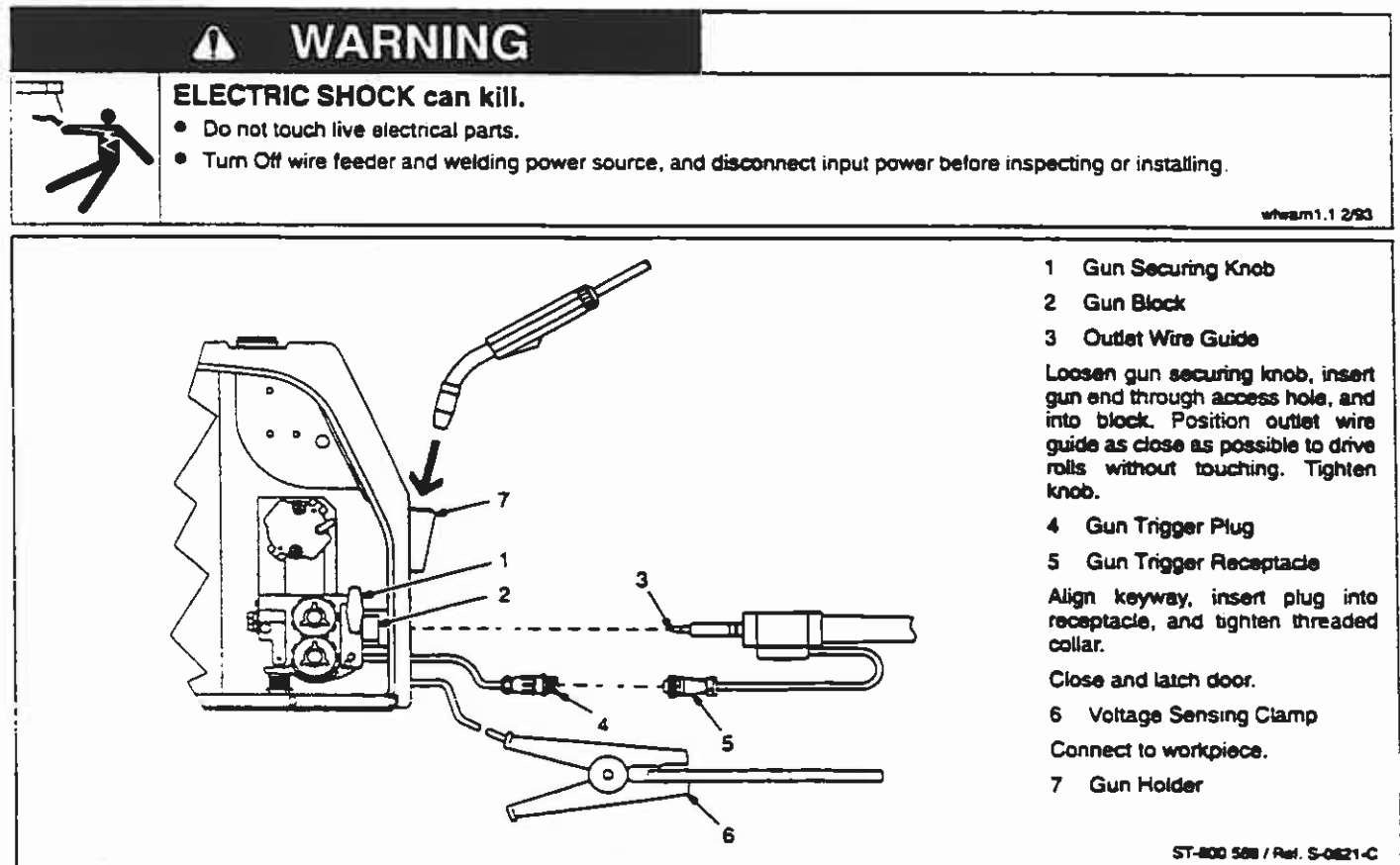



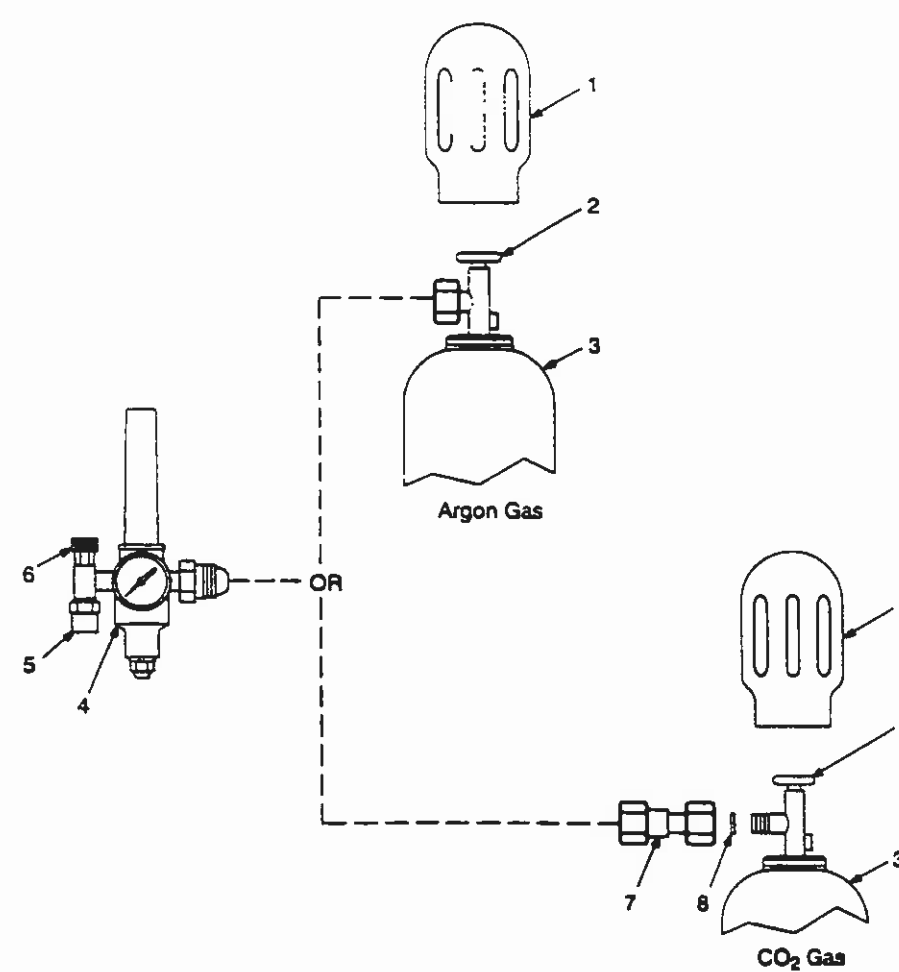


Figure 3-4. Welding Gun And Voltage Sensing Lead Connections

3-4. Shielding Gas Connections

⚠ WARNING	
 <p>CYLINDERS can explode if damaged.</p> <ul style="list-style-type: none"> • Keep cylinders away from welding and other electrical circuits. • Never touch cylinder with welding electrode. • Always secure cylinder to running gear, wall, or other stationary support. 	 <p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> • Do not touch live electrical parts. • Turn Off wire feeder and welding power source, and disconnect input power before inspecting or installing.
 <p>BUILDUP OF SHIELDING GAS can harm health or kill.</p> <ul style="list-style-type: none"> • Shut off shielding gas supply when not in use. 	
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A. Shielding Gas Connections To Regulator/Flowmeter



Obtain gas cylinder and chain to running gear, wall, or other stationary support so cylinder cannot fall and break off valve.

- 1 Cap
- 2 Cylinder Valve

Remove cap, stand to side of valve, and open valve slightly. Gas flow blows dust and dirt from valve. Close valve.

- 3 Cylinder
- 4 Regulator/Flowmeter

Install so face is vertical.

- 5 Gas Hose Connection

Fitting has 5/8-18 right-hand threads.

- 6 Flow Adjust


Typical flow rate is 20 cfh (cubic feet per hour). Check wire manufacturer's recommended flow rate.

Make sure flow adjust is closed when opening cylinder to avoid damage to the Flowmeter.

- 7 CO₂ Adapter
- 8 O-Ring

Install adapter with O-ring between regulator/flowmeter and CO₂ cylinder.

Tools Needed:

 1-1/8, 5/8 in

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Figure 3-5. Typical Regulator/Flowmeter Installation

B. Shielding Gas Connections To Wire Feeder

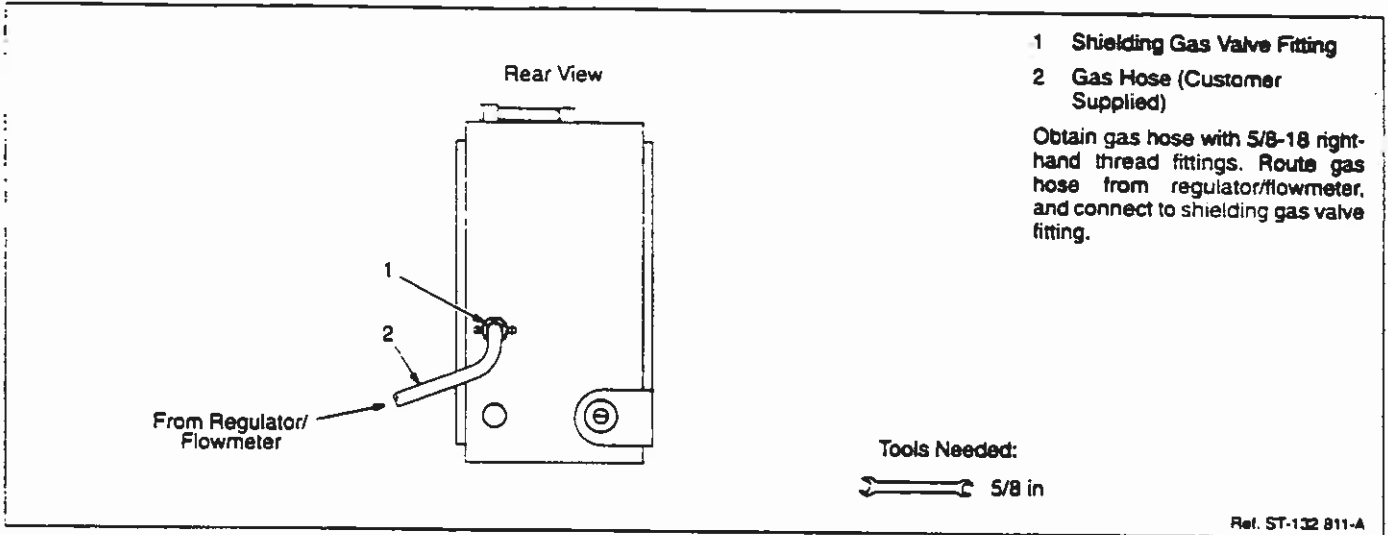



Figure 3-6. Shielding Gas Connections

3-5. Weld Cable Connections

⚠ WARNING	
	ELECTRIC SHOCK can kill; ARCING can damage unit.
	<ul style="list-style-type: none">• Do not touch live electrical parts.• Turn Off wire feeder and welding power source, and disconnect input power before making connections.• Do not store metal tools inside unit.
	<p>The welding wire, drive rolls, drive assembly, and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger. Loose metal tools inside unit can short weld circuit to other metal parts causing electric shock and arcing.</p> <ul style="list-style-type: none">• Have only qualified persons install this unit.

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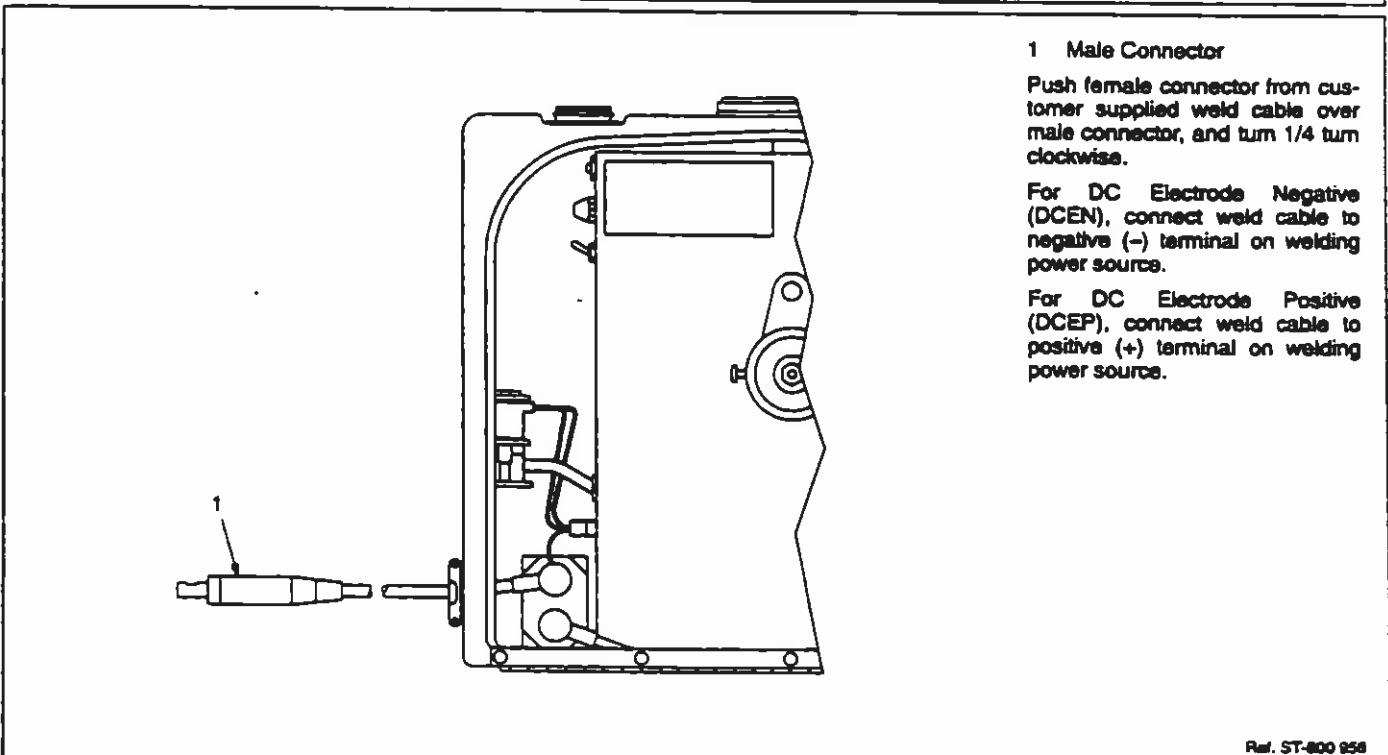


Figure 3-7. Weld Cable Connections

3-6. Installing Welding Wire And Adjusting Hub Tension

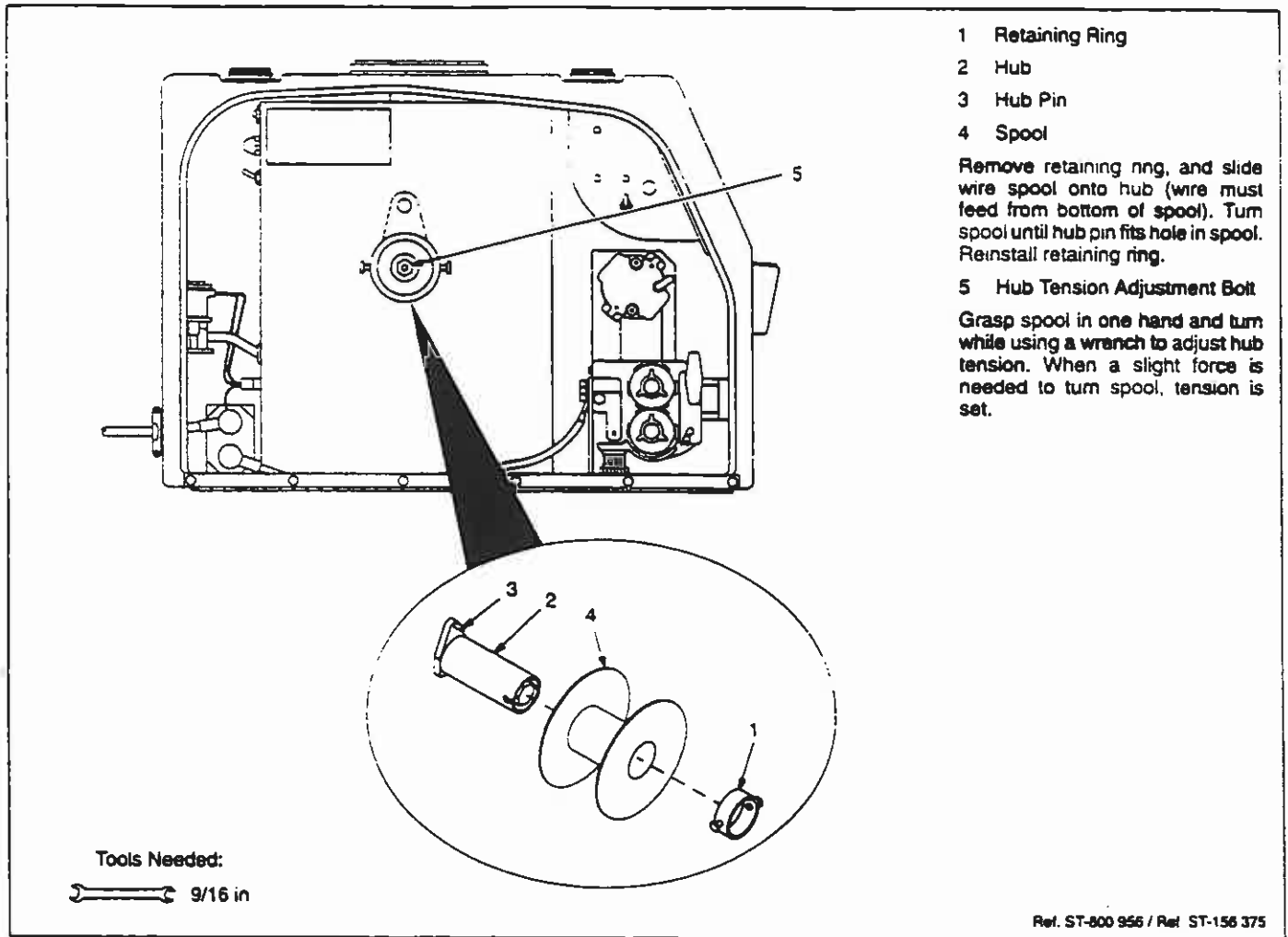



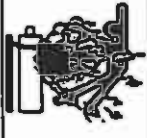



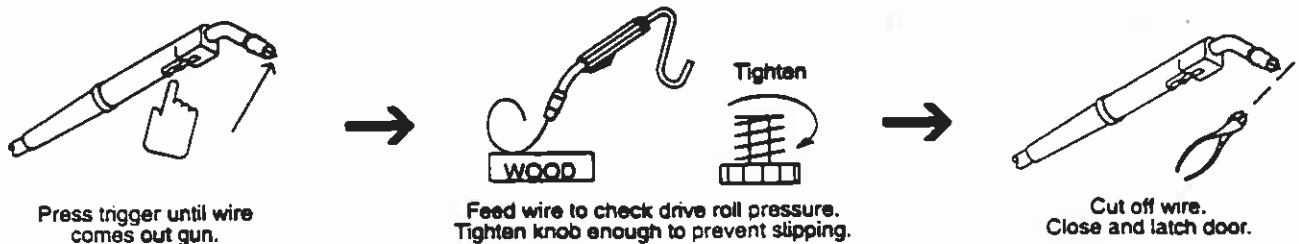
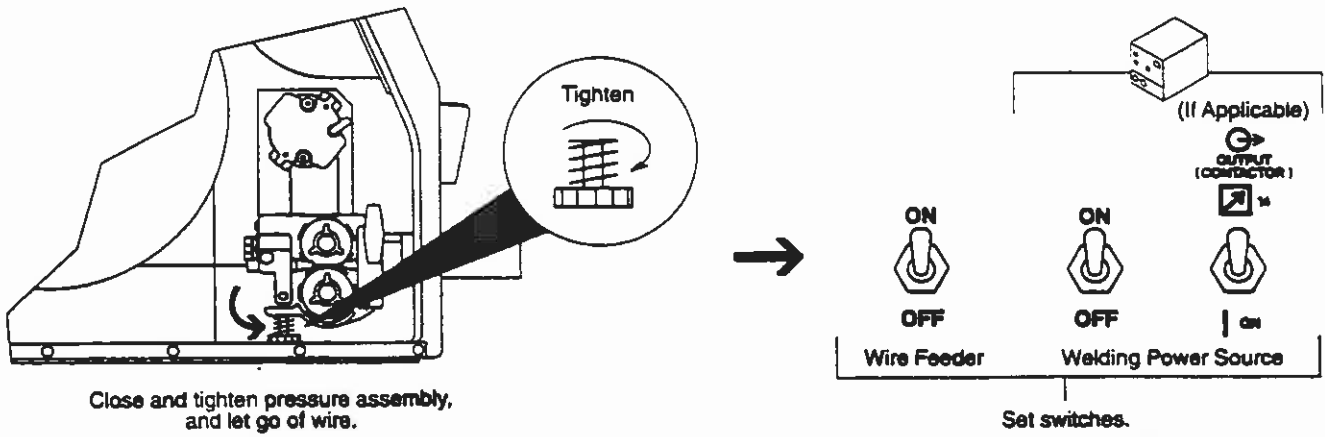
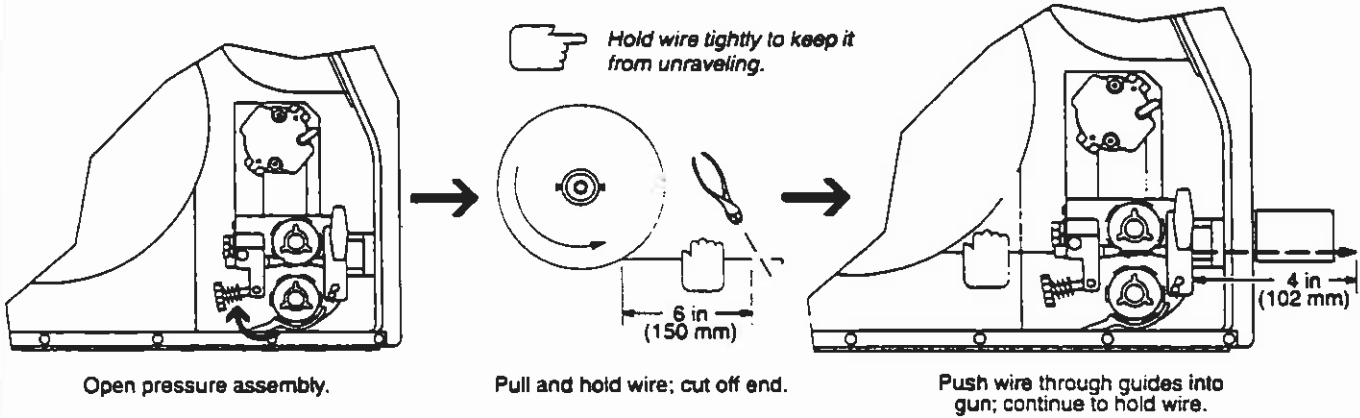
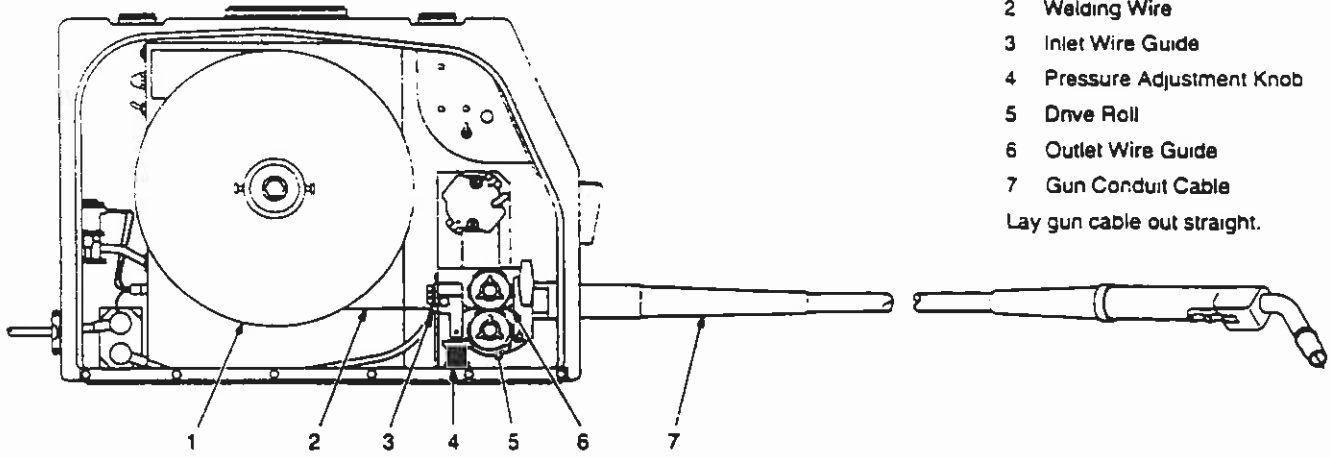
Figure 3-8. Installing Welding Wire And Adjusting Hub Tension

3-7. Threading Welding Wire

 WARNING	
 <p>ELECTRIC SHOCK can kill; ARCING can damage unit.</p> <ul style="list-style-type: none"> Do not touch live electrical parts. Do not store metal tools inside unit. <p>The welding wire, drive rolls, drive assembly, and all metal parts touching the welding wire are electrically live when welding or feeding wire using gun trigger. Loose metal tools inside unit can short weld circuit to other metal parts causing arcing and damage.</p> <ul style="list-style-type: none"> If wire stops feeding, turn off wire feeder and welding power source, and determine the cause. Correct any hub tension, jammed wire, or gun liner damage problems before trying to continue welding. 	 <p>WELDING WIRE can cause puncture wounds.</p> <ul style="list-style-type: none"> Do not press gun trigger until instructed to do so. Do not point gun toward any part of the body, other people, or any metal when threading welding wire.
 <p>CYLINDERS can explode if damaged.</p> <ul style="list-style-type: none"> Keep cylinders away from welding and other electrical circuits. Never touch cylinder with welding electrode. Always secure cylinder to running gear, wall, or other stationary support. 	 <p>HOT SURFACES can burn skin</p> <ul style="list-style-type: none"> Allow gun to cool before touching.

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- 1 Wire Spool
 - 2 Welding Wire
 - 3 Inlet Wire Guide
 - 4 Pressure Adjustment Knob
 - 5 Drive Roll
 - 6 Outlet Wire Guide
 - 7 Gun Conduit Cable
- Lay gun cable out straight.



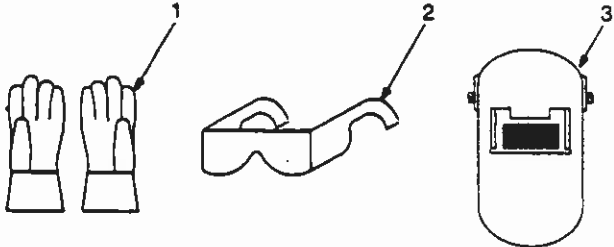
ST-800 957-A / Ref ST-159 048-A / S-0827-A

Figure 3-9. Welding Wire Threading

SECTION 4 – OPERATION

 WARNING			
	ELECTRIC SHOCK can kill. <ul style="list-style-type: none"> Do not touch live electrical parts. Always wear dry insulating gloves. Insulate yourself from work and ground. Keep all panels and covers securely in place. 		ARC RAYS can burn eyes and skin; NOISE can damage hearing. <ul style="list-style-type: none"> Wear welding helmet with correct shade of filter. Wear correct eye, ear, and body protection.
	FUMES AND GASES can be hazardous to your health. <ul style="list-style-type: none"> Keep your head out of the fumes. Ventilate area, or use breathing device. Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used. 		MOVING PARTS can cause injury. <ul style="list-style-type: none"> Keep away from pinch points such as drive rolls. Keep all doors, panels, covers, and guards closed and securely in place.
	WELDING can cause fire or explosion. <ul style="list-style-type: none"> Do not weld near flammable material. Watch for fire; keep extinguisher nearby. Do not locate unit over combustible surfaces. Do not weld on closed containers. Allow work and equipment to cool before handling. 		MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation. <ul style="list-style-type: none"> Pacemaker wearers keep away. Wearers should consult their doctor before going near any welding operations.
			See Safety Precautions at beginning of manual for basic welding safety information.

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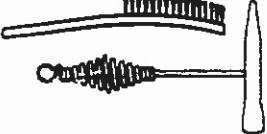
Wear the following while welding:

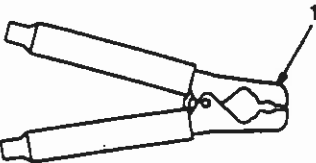
- Dry, Insulating Gloves
- Safety Glasses With Side Shields
- Welding Helmet With Correct Shade Of Filter (See ANSI Z49.1)

sb3.1 1/94

Figure 4-1. Safety Equipment

Tools Needed:





1 Work Clamp

Connect work clamp and voltage sensing clamp to a clean, paint-free location on workpiece, as close to weld area as possible (see Section 3-3).

Use wire brush or sandpaper to clean metal at weld joint area. Use chipping hammer to remove slag after welding.

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Figure 4-2. Work Clamp

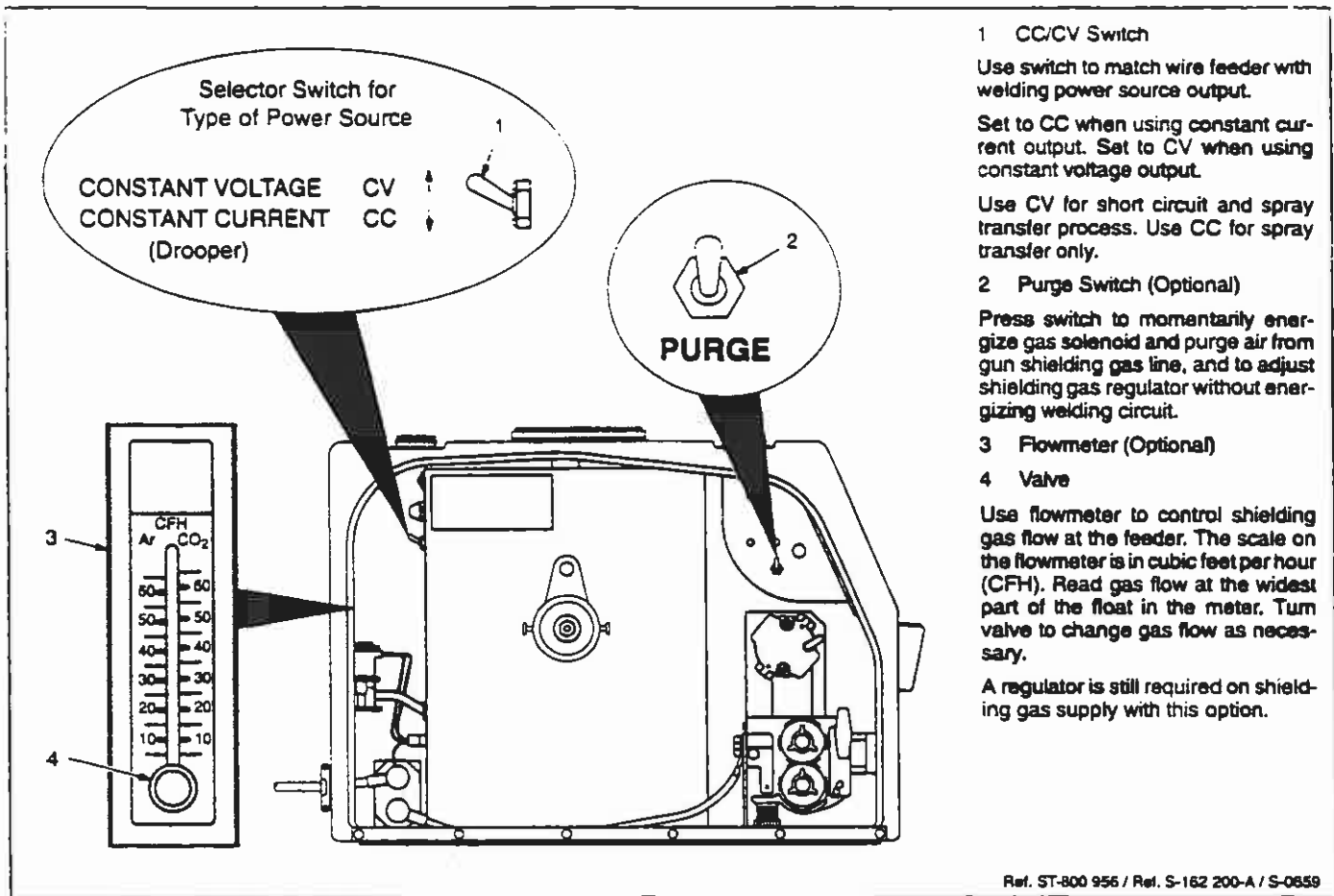


Figure 4-3. Internal Controls

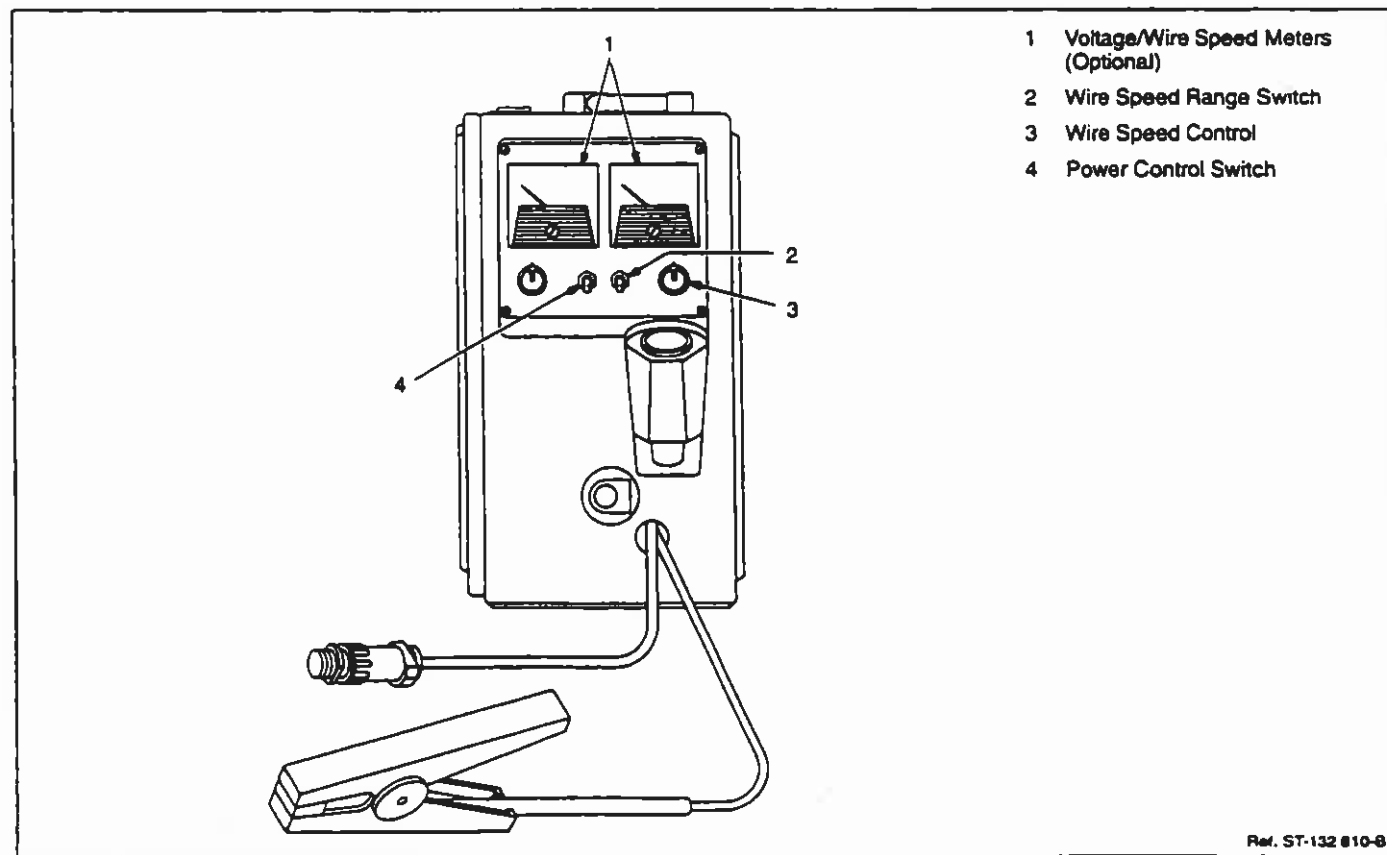
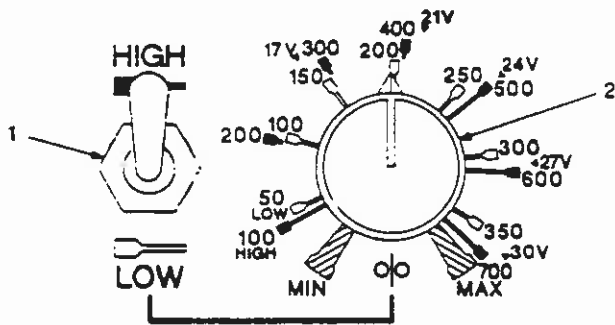


Figure 4-4. Front Panel Controls



1 Wire Speed Range Switch
Use switch to select range of wire feed speed.
Set switch to Low when using wire feed speeds of less than 350 ipm. Set switch to High when using higher wire feed speeds.

2 Wire Speed Control
Use control to select wire feed speed within range selected by Range switch.
Use outer scale for Range switch High position; use inner scale for Low position.

Setting CV Wire Feed Speed:

Desired Speed (IPM)	Desired Arc Volts
280 or below	17
410	21
500	24
610	27
700	30

For CV, the control values are actual inches per minute (ipm). Outer scale also has minimum arc voltage needed to obtain indicated wire feed speed. Use table and examples to select proper settings.

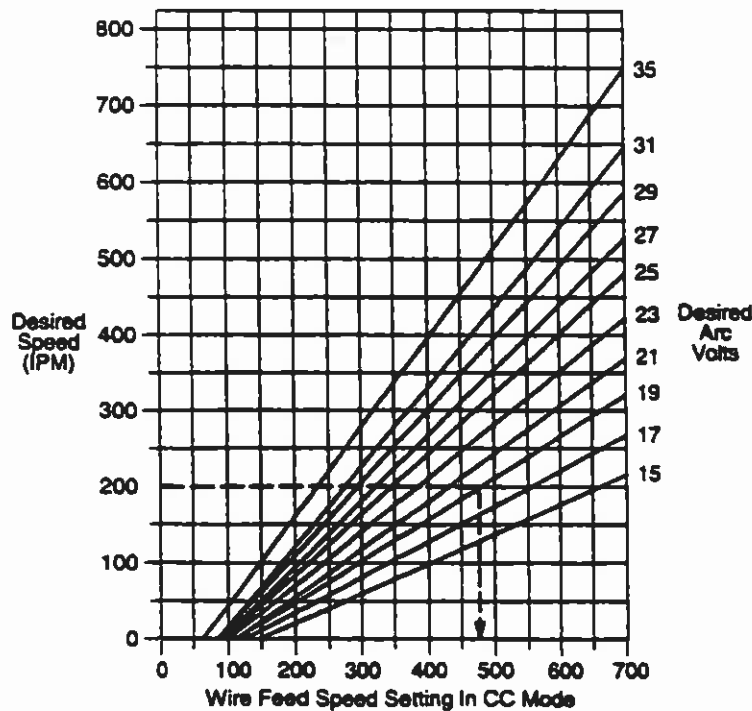
Examples:

To get 150 IPM, arc voltage should be at least 17 V. Set switch to Low and control to 150 on inner scale.

To get 500 IPM, arc voltage should be at least 24 V. Set switch to High and control to 500 on outer scale.

Setting CC Wire Feed Speed:

Actual speed in CC depends on arc voltage level. Use chart and example to select proper settings.



Example: To get 200 IPM at 19 V in the CC mode, set switch to High, and control to 475 on outer scale.

Ref. SC-161 678-B / Ref. S-164 735

Figure 4-5. Wire Feed Speed Control And Range Switch

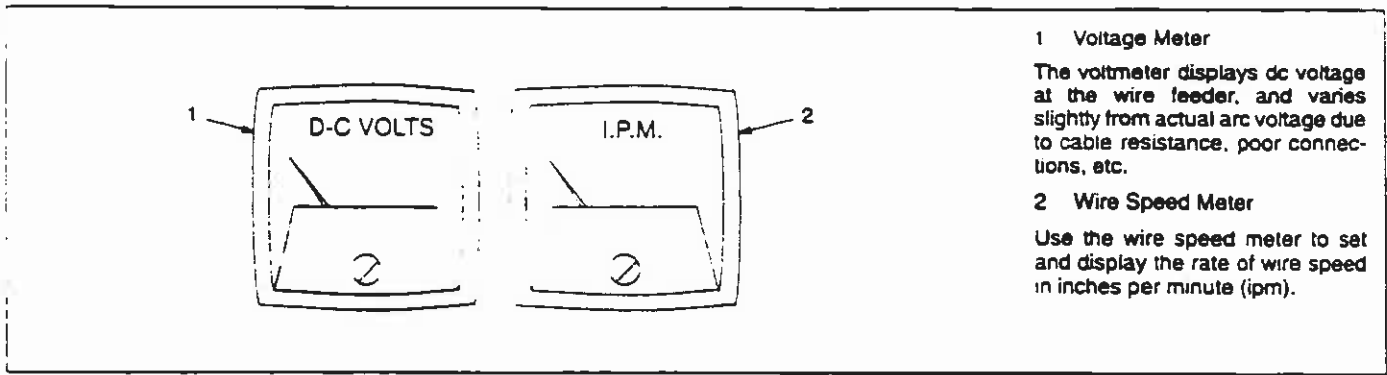


Figure 4-6. Voltage And Wire Speed Meters (Optional)

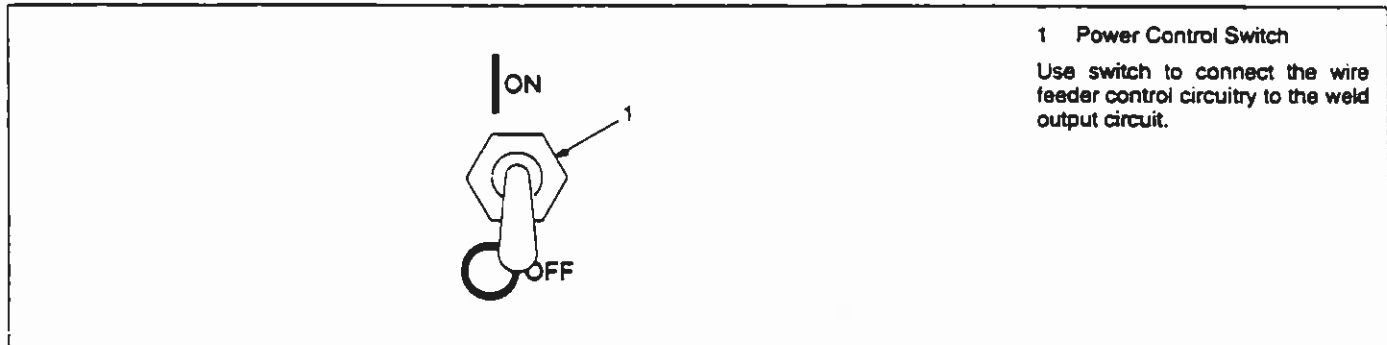


Figure 4-7. Power Control Switch

⚠ WARNING

BUILDUP OF SHIELDING GAS can harm health or kill.

- Shut off shielding gas supply when not in use.

warn1.1 9/91

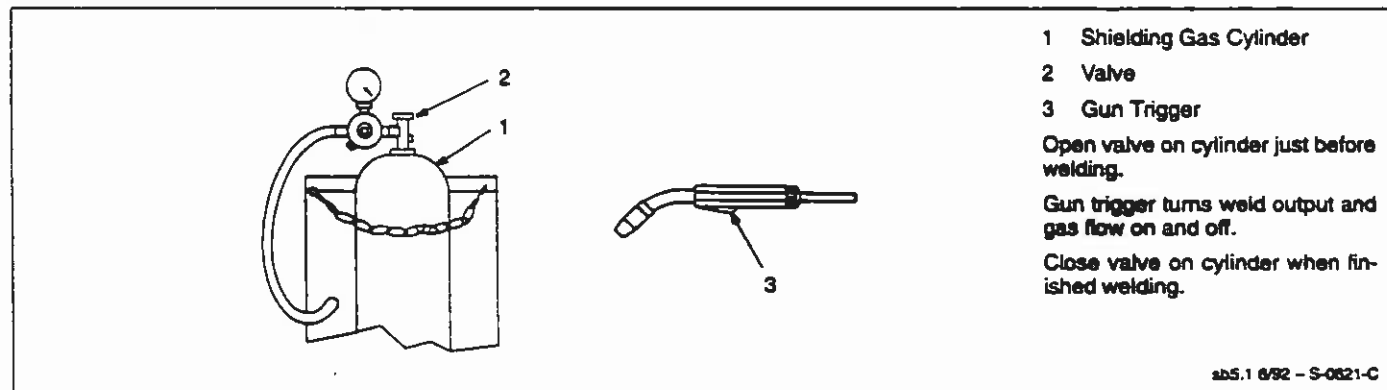


Figure 4-8. Shielding Gas

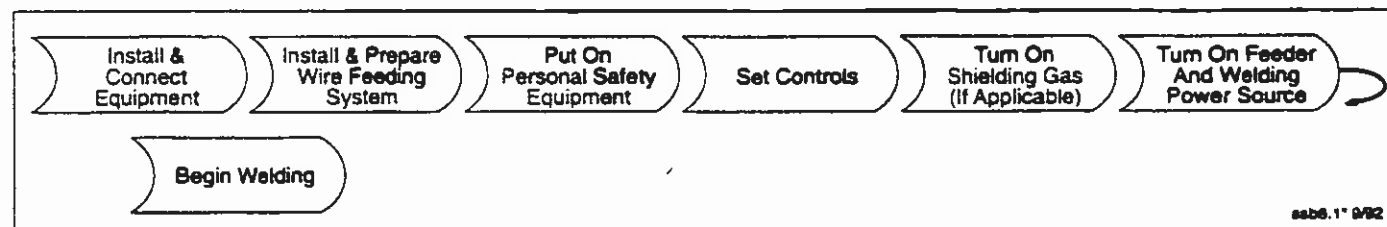





Figure 4-9. Sequence Of Flux Cored Arc Welding (FCAW) And Gas Metal Arc Welding (GMAW)

SECTION 5 – MAINTENANCE & TROUBLESHOOTING

⚠ WARNING		
	ELECTRIC SHOCK can kill. <ul style="list-style-type: none"> Do not touch live electrical parts. Turn Off wire feeder and welding power source, and disconnect input power before inspecting, maintaining, or servicing. 	
	MOVING PARTS can cause injury. <ul style="list-style-type: none"> Keep away from moving parts. Keep away from pinch points such as drive rolls. 	HOT PARTS can cause severe burns. <ul style="list-style-type: none"> Allow cooling period before servicing gun or unit. <p>Maintenance to be performed only by qualified persons.</p>
<small>wfwm4.1 2/93</small>		

5-1. Routine Maintenance

⚠ Turn Off all power before maintaining.




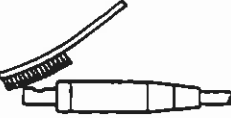






3 Months	3 Months	6 Months
 <p>See Section 7</p>	 <p>Replace Unreadable Labels</p>	 <p>Tape Or Replace Cracked Weld Cable</p>
 <p>Clean And Tighten Weld Connections</p>	 <p>Replace Cracked Parts</p>	 <p>Blow Out Or Vacuum Inside</p>
 <p>14-Pin Cord</p>	 <p>Gas Hose</p>	<p>During Heavy Service, Clean Monthly</p>
 <p>Gun Cable</p>	 <p>Clean Drive Rolls</p>	<p>3-2</p>

Figure 5-1. Routine Maintenance

5-2. Replacing The Hub Assembly


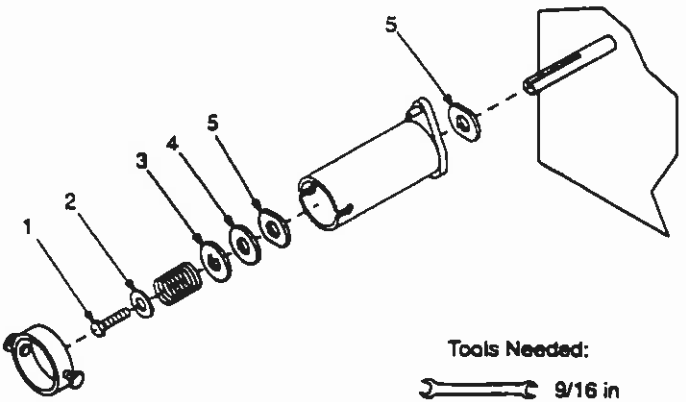

⚠ WARNING		READ SAFETY BLOCKS at start of Section 5 before proceeding.
		
<p>Turn Off wire feeder and welding power source. Retract wire onto spool and remove. Take hub apart as shown.</p>		
<p>Replace worn or broken parts (see Parts List), and slide parts onto shaft in order shown.</p>		
<p>Install welding wire (see Section 3-6).</p>		
<p>Tools Needed:</p> 		
<small>Ref. ST-060 895-C</small>		

Figure 5-2. Hub Assembly

5-3. Overload Protection

WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

Turn Off wire feeder and welding power source.

1 Circuit Breaker CB1

CB1 protects the wire feeder from overload. If CB1 trips, the wire feeder shuts down.

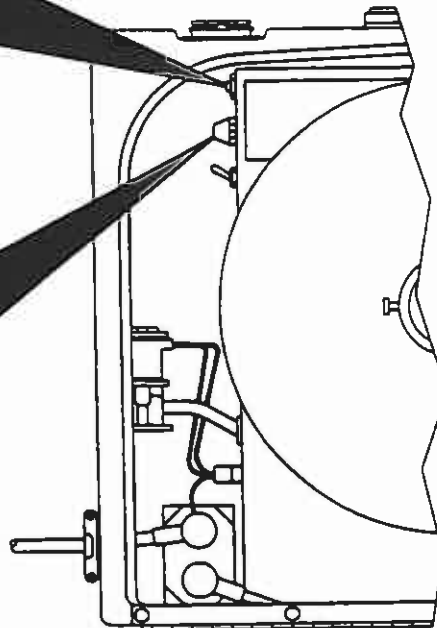
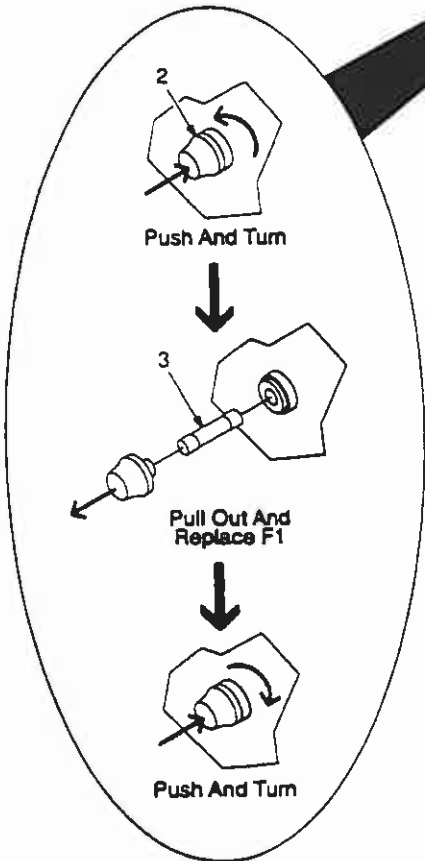
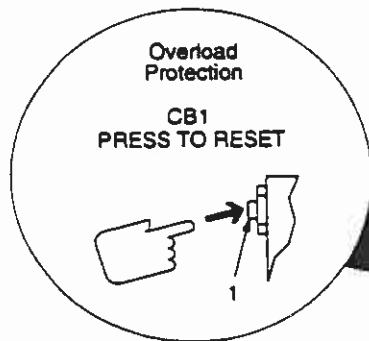
Correct problem and manually re-set breaker.

F1 protects the wire feeder from overload. If F1 opens, the wire feeder shuts down. To check or change F1 do the following:

2 Fuse Holder Cover

3 Fuse (See Parts List For Rating)

Close and latch door.



Ref. ST-600 957-A / Ref. S-162 200-A

Figure 5-3. Circuit Breaker CB1

5-4. Calibrating Optional IPM Meter

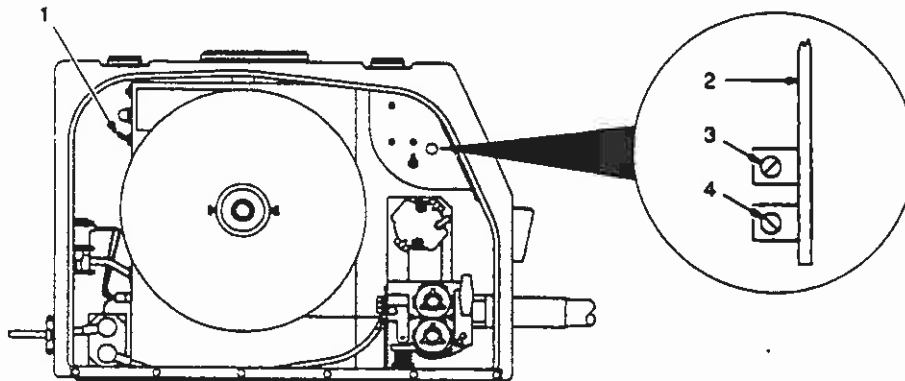
WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

NOTE

Meter is factory calibrated, but may need recalibration after motor brushes are fully seated. If recalibration is necessary, proceed as follows:



- 1 CV/CC Switch
Set switch to CV.
- 2 Meter Board PC4
- 3 Resistor R53 Adjustment Screw (High Range)
- 4 Resistor R54 Adjustment Screw (Low Range)

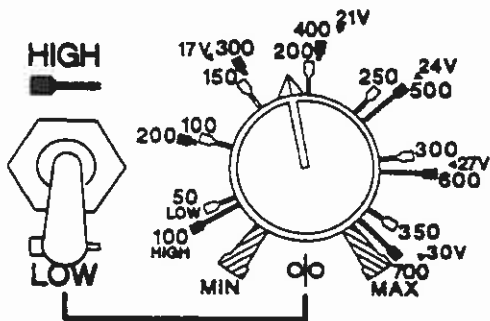
Calibrate Low range wire speed first. Remove coating from screws before adjusting.

After Low range is calibrated, set Range switch to High. Leave control at same setting (about 350 ipm). Repeat procedure to calibrate High range wire speed. If needed, adjust R53.

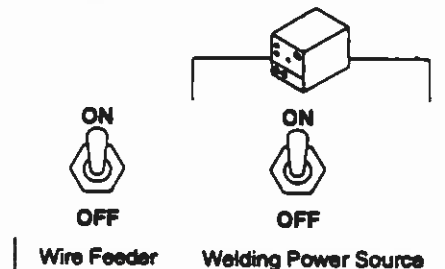
Close and latch door.

Low Range Calibration:

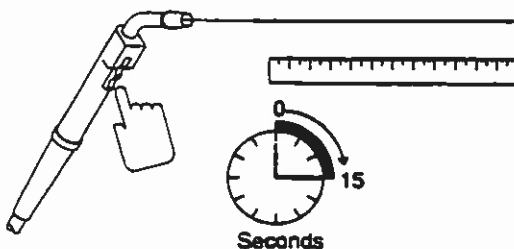
Tools Needed:



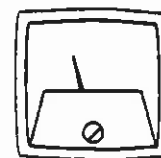
Set Range switch to Low, and control to about 180.



Turn power On.



Press trigger and feed wire for 15 seconds. Measure wire length, and multiply x 4 to get actual ipm.
Example: If 45 inches feeds in 15 sec, $45 \times 4 = 180$ ipm.



Press trigger again: Meter should read 180. If not, press trigger and carefully adjust R54 using screwdriver inserted through opening until meter reads 180.

Ref. ST-800 857-A / Ref. ST-161 876-B

Figure 5-4. Calibrating Optional IPM Meter

5-5. Troubleshooting




⚠ WARNING		
	ELECTRIC SHOCK can kill. <ul style="list-style-type: none"> Do not touch live electrical parts. Turn Off wire feeder and welding power source, and disconnect input power before inspecting, maintaining, or servicing. 	
	MOVING PARTS can cause injury. <ul style="list-style-type: none"> Keep away from moving parts. Keep away from pinch points such as drive rolls. 	HOT PARTS can cause severe burns. <ul style="list-style-type: none"> Allow cooling period before servicing gun or unit. <p>Troubleshooting to be performed only by qualified persons.</p> <p style="text-align: right; font-size: small;">wfa/m4.1* 2/93</p>

Table 5-1. Welding Trouble

Trouble	Remedy	Section
Wire does not feed; open-circuit voltage available.	Check circuit breaker CB1, and reset if necessary. Check and replace fuse F1.	5-3
	Check sensing lead connection.	3-3
	Check gun trigger plug connection.	3-3
	Check gun trigger. See gun Owner's Manual.	--
	Have Factory Authorized Service Station/Service Distributor check drive motor or control board PC1.	--
Wire feeds erratically.	Readjust hub tension.	3-6
	Readjust drive roll pressure.	3-7
	Change to correct size drive roll.	3-2, Table 7-1
	Clean or replace dirty or worn drive roll.	3-2
	Remove weld spatter around nozzle opening.	--
	Replace contact tube or liner. See gun Owner's Manual.	--
	Have Factory Authorized Service Station/Service Distributor check drive motor or control board PC1.	--
Wire feeds as soon as power is applied.	Check gun trigger. See gun Owner's Manual.	--
Wire stubbing on low end using a constant current power source.	Make sure CC/CV switch is in CC position.	Figure 4-3
	Increase output setting of power source.	--
Inaccurate optional IPM meter.	Calibrate meter.	5-4
Optional meters not working.	Have Factory Authorized Service Station/Service Distributor check meter board PC4 and control board PC1.	--
Gas does not flow; wire feeds.	Check gas valve and optional flowmeter.	--
	Have Factory Authorized Service Station/Service Distributor check optional preflow/postflow board PC2 and control board PC1.	--
Gas does not stop flowing; wire feeds.	Adjust optional flowmeter.	Figure 4-3
	Have Factory Authorized Service Station/Service Distributor check optional preflow/postflow board PC2 and control board PC1.	--