



TM-1213A

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Processes



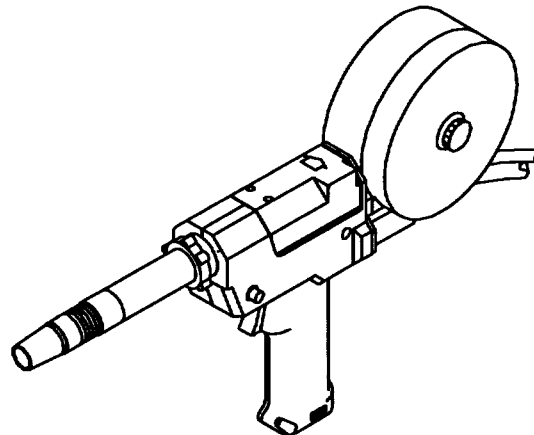
MIG (GMAW) Welding

Description



Feeder Gun

Spoolmatic® 30A Spoolmatic® 30W



Visit our website at

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TECHNICAL MANUAL

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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.

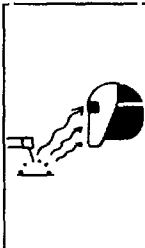


ELECTRIC SHOCK can kill.

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.
4. Disconnect input power or stop engine before installing or servicing this equipment.

5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use.
7. Do not use worn, damaged, undersized, or poorly spliced cables.
8. Do not wrap cables around your body.
9. Ground the workpiece to a good electrical (earth) ground.
10. Do not touch electrode while in contact with the work (ground) circuit.
11. Use only well-maintained equipment. Repair or replace damaged parts at once.
12. Wear a safety harness to prevent falling if working above floor level.
13. Keep all panels and covers securely in place.



ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

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



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, and cleaners.

5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air 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.



WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

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 or drums.
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.



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying sparks. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.



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, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.

3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.



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 before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.
4. Do not overfill tank – allow room for fuel to expand.
5. Do not spill fuel. If fuel is spilled, clean up before starting engine.

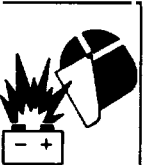


MOVING PARTS can cause injury.

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.

The coolant in the radiator can be very hot and under pressure.

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape 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.

SECTION 1 – SAFETY SIGNAL WORDS

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The following safety alert symbol and signal words are used throughout this manual to call attention to and identify different levels of hazard and special instructions.



WARNING

WARNING statements identify procedures or practices which must be followed to avoid serious personal injury or loss of life.



CAUTION

CAUTION statements identify procedures or practices which must be followed to avoid minor personal injury or damage to this equipment.

► **IMPORTANT:** *statements identify special instructions necessary for the most efficient operation of this equipment.*

SECTION 2 – SPECIFICATIONS

Table 2-1. Gun/Feeder

Specification	Description
Input Power	30 Volts DC
Ampere Rating	Air-Cooled Models: 200 Amperes; Water-Cooled Models: 400 Amperes
Duty Cycle	100% Using Argon Shielding Gas (See Section 2-1)
Approximate Wire Feed Range	70 to 875 ipm (1.7 to 22.2 mpm)
Wire Diameter Range	.025 Thru 1/16 in. (0.6 Thru 1.6 mm) Aluminum Wire .025 Thru .045 in. (0.6 Thru 1.1 mm) Hard Or Cored Wire
Maximum Spool Size	4 in. (102 mm) Diameter
Cooling Method	Air Cooled (A Models) Or Water Cooled (W Models)
Coolant Requirements (Water-Cooled Models)	1 qt./min. Minimum Flowrate Use Only 50% Distilled Water And 50% High Quality Automotive Antifreeze (See Section 3-8)
Cable Length	30 ft. (9.1 mm)
Overall Dimensions	Length: 15-3/8 in. (390 mm); Width: 2-1/2 in. (64 mm); Height: 10-3/4 in. (273 mm)
Weight	Air-Cooled Models: Gun Only 2.9 lbs. (1.3 kg); Gun With Cable Assembly 14 lbs. (6.4 kg) Water-Cooled Models: Gun Only 3.4 lbs. (1.5 kg); Gun With Cable Assembly 14.5 lbs. (6.6 kg)

2-1. Duty Cycle

Duty cycle is how long the gun/feeder can operate within a ten minute period without causing overheating or damage. This gun/feeder is rated at 100% duty cycle allowing continuous operation when using argon shielding gas.

SECTION 3 – INSTALLATION

Table 3-1. Items Included With Gun/Feeder

Item	Quantity
Drive Roll (Small Groove For .025 To .035 in. Wire, Large Groove For .047 To .062 in. Wire) Shipped With Large Groove In Feed Position	1
Contact Tubes* (1 For Each Wire Size – .023/.025, .030, .035, .045/.047, And .062 in.) Shipped With .045/.047 Installed	5
Liner (1 – .023-.035 And 1 – .047-.062 in.) Shipped With .045-.062 Installed	2
10 ft. (3 m) Gas Hose With Adapter Fitting	1
10 ft. (3 m) Water Hose With Adapter Fitting (Water-Cooled Models Only)	1
10 ft. (3 m) Water Hose (Water-Cooled Models Only)	1
Contact Tube Wrench	1

*Contact tubes are marked with wire size and inside diameter (I.D.) of tube. For example, a .035/52 contact tube is used with .035 wire, and the tube has an I.D. of 0.052 in. (1.3 mm).

► **IMPORTANT:** If contact tube, liner, and drive roll groove are not correct for wire size and type, see Service Parts Manual to change parts as needed, and also for a list of other available contact tubes.

3-1. Removing Top Cover

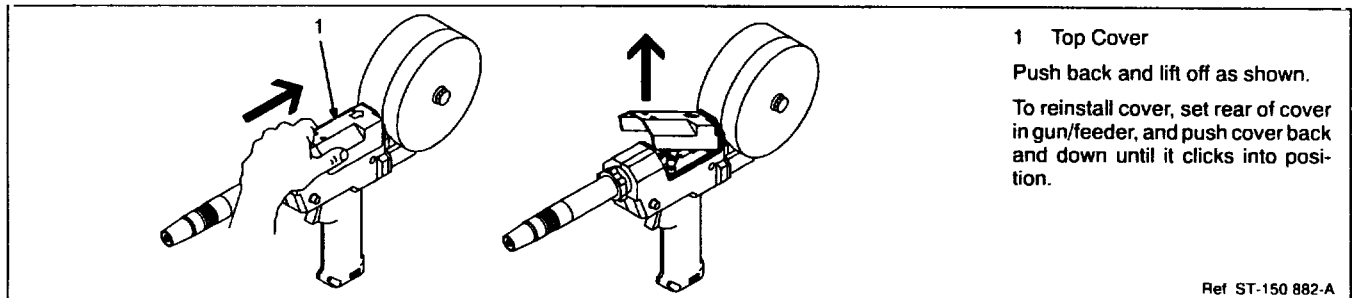







Figure 3-1. Top Cover

3-2. Installing Wire Spool And Threading Welding Wire

 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. <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.</p>
	<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>HOT SURFACES can burn skin.</p> <ul style="list-style-type: none"> • Allow gun to cool before touching.

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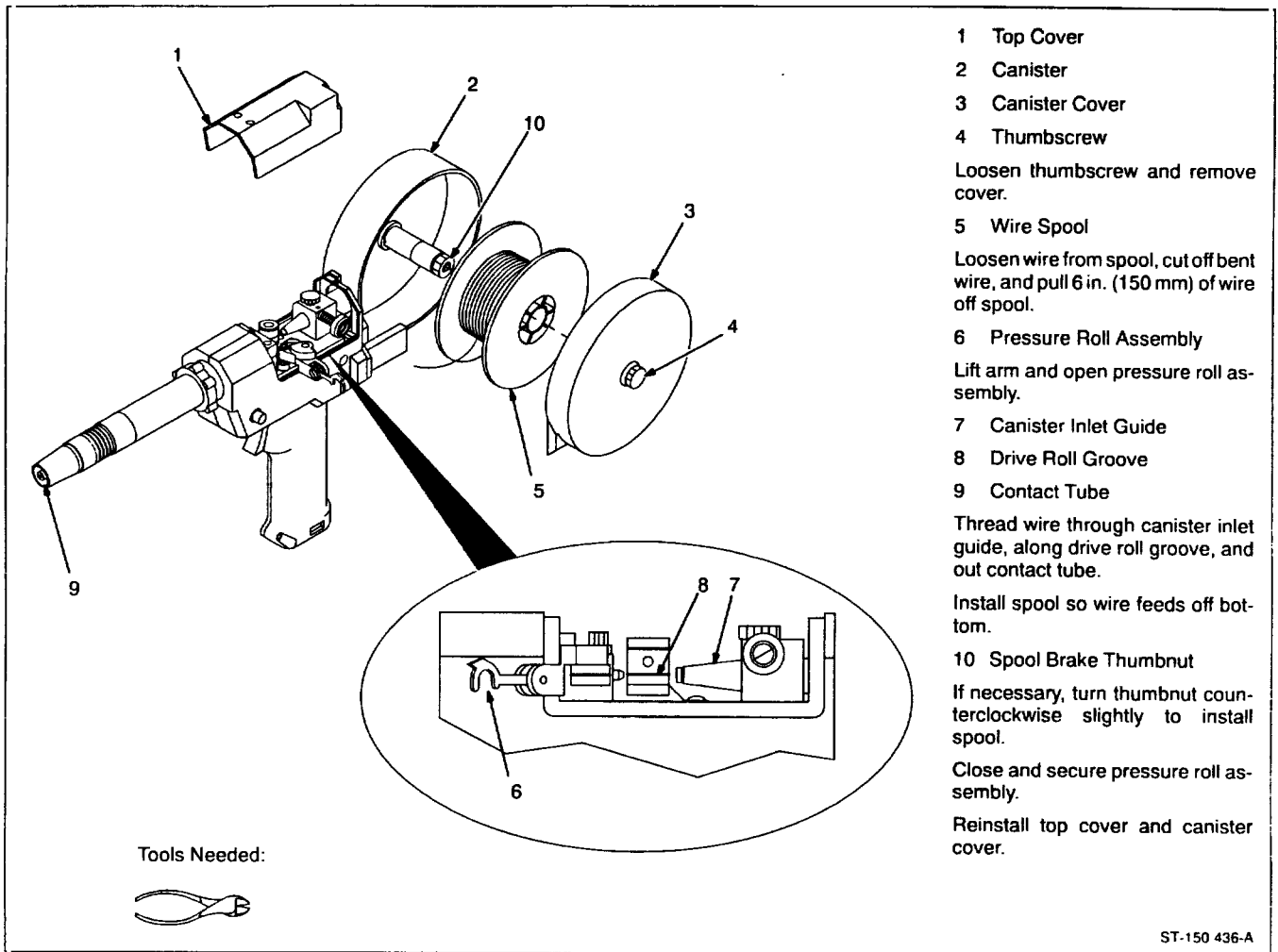


Figure 3-2. Installing Spool And Threading Wire

3-3. Adjusting Shielding Gas Nozzle

⚠ WARNING **READ SAFETY BLOCKS at start of Section 3-2 before proceeding.**

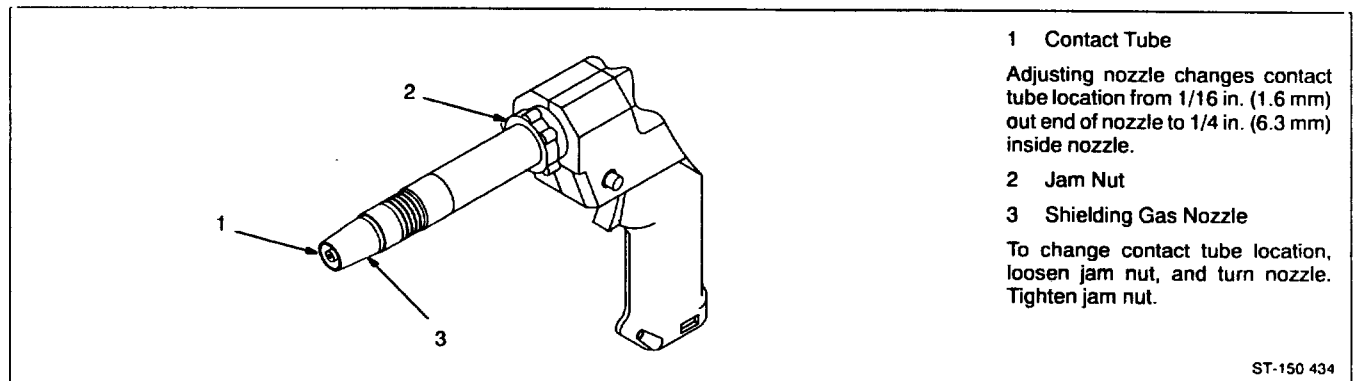


Figure 3-3. Adjusting Gas Nozzle

3-4. Rotating Canister

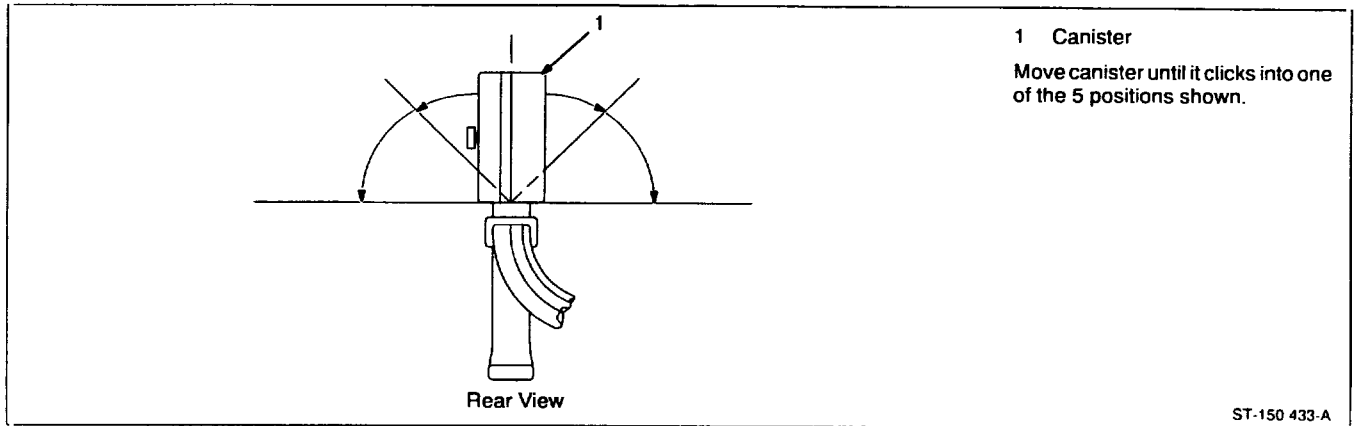


Figure 3-4. Rotating Canister

3-5. Connecting Air-Cooled Model To Weld Control

WARNING	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> Do not touch live electrical parts. Turn OFF welding power source, and disconnect input power before inspecting or installing. Stop engine on welding generators.
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A. Connections To 24 Volt Weld Control

1 Gas Hose

2 10 ft. (3 m) Gas Hose With 5/8 in. Adapter Fitting

3 24 Volt Weld Control

4 Trigger Control Cord

5 Weld Cable

Connect fitting to gun/feeder gas hose and remaining end to regulator/flowmeter (see Section 3-7).

Insert plug into receptacle, and tighten threaded collar.

Connect to positive (+) weld output terminal on welding power source according to its Owner's Manual.

Tools Needed:

1-1/8 in., 5/8 in.

ST-150 917-A

Figure 3-5. Connections To 24 Volt Weld Control

B. Connections To 115 Volt Weld Control

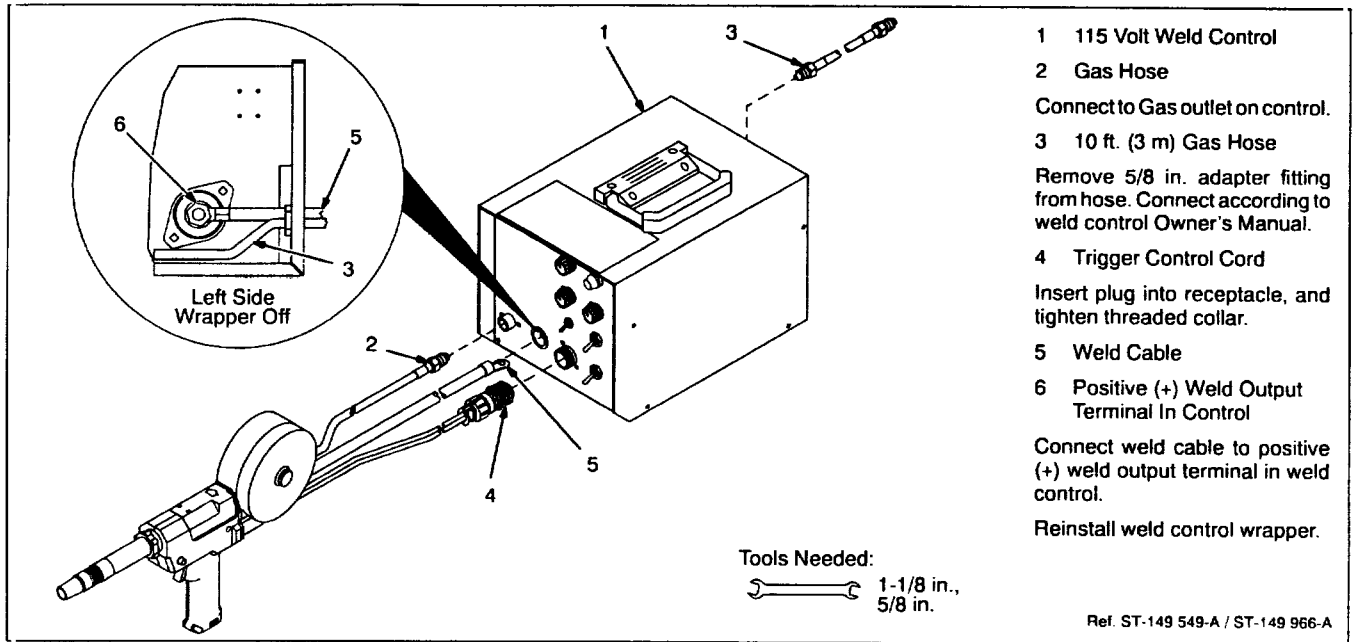


Figure 3-6. Connections To 115 Volt Weld Control

3-6. Connecting Water-Cooled Model To Weld Control

⚠ WARNING	
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> Do not touch live electrical parts. Turn OFF welding power source, and disconnect input power before inspecting or installing. Stop engine on welding generators.
	<p>OVERHEATING can damage gun parts.</p> <ul style="list-style-type: none"> If using recirculating coolant system, do not make connections from coolant system to water valve; instead make connections directly from coolant system to gun hoses. <p>INCORRECT COOLANT FLOWRATE can damage gun parts.</p> <ul style="list-style-type: none"> Maintain minimum 1qt/min. flowrate at all times. <p style="text-align: right;"><small>swarn 1.1* 9/91</small></p>

A. Connections To 24 Volt Weld Control

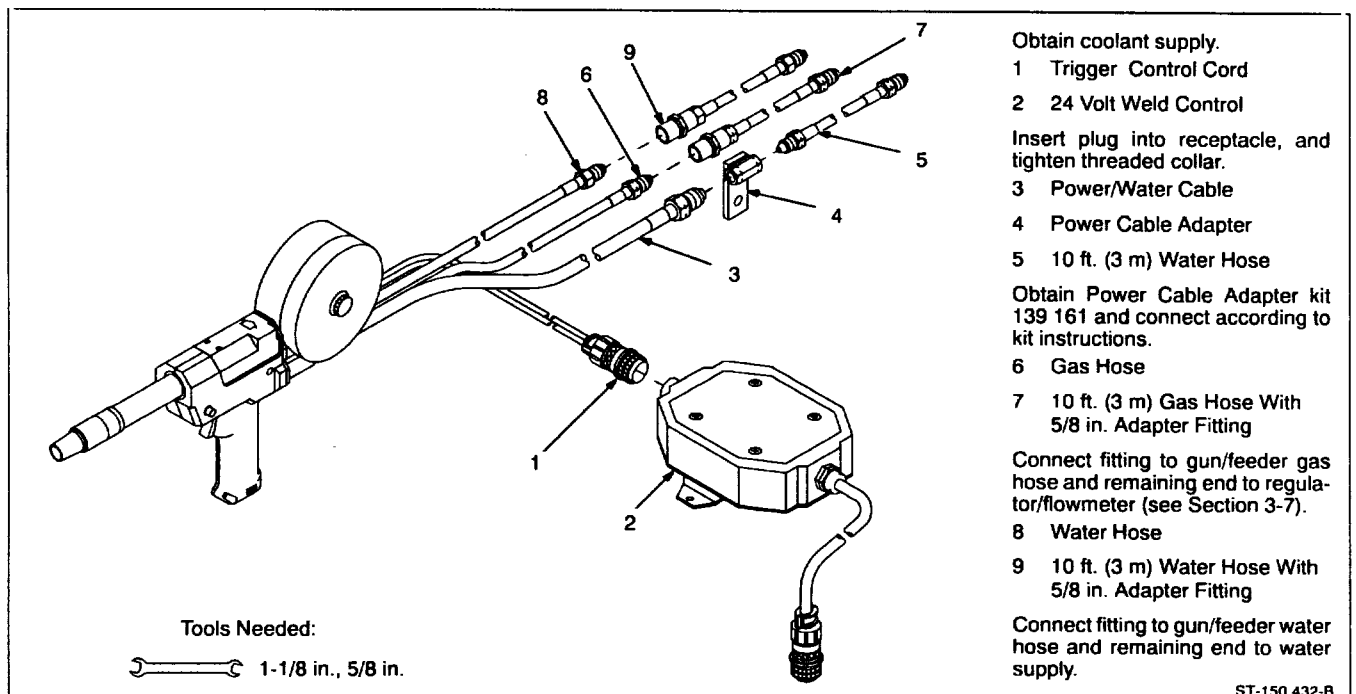


Figure 3-7. Connections To 24 Volt Weld Control

B. Connections To 115 Volt Weld Control

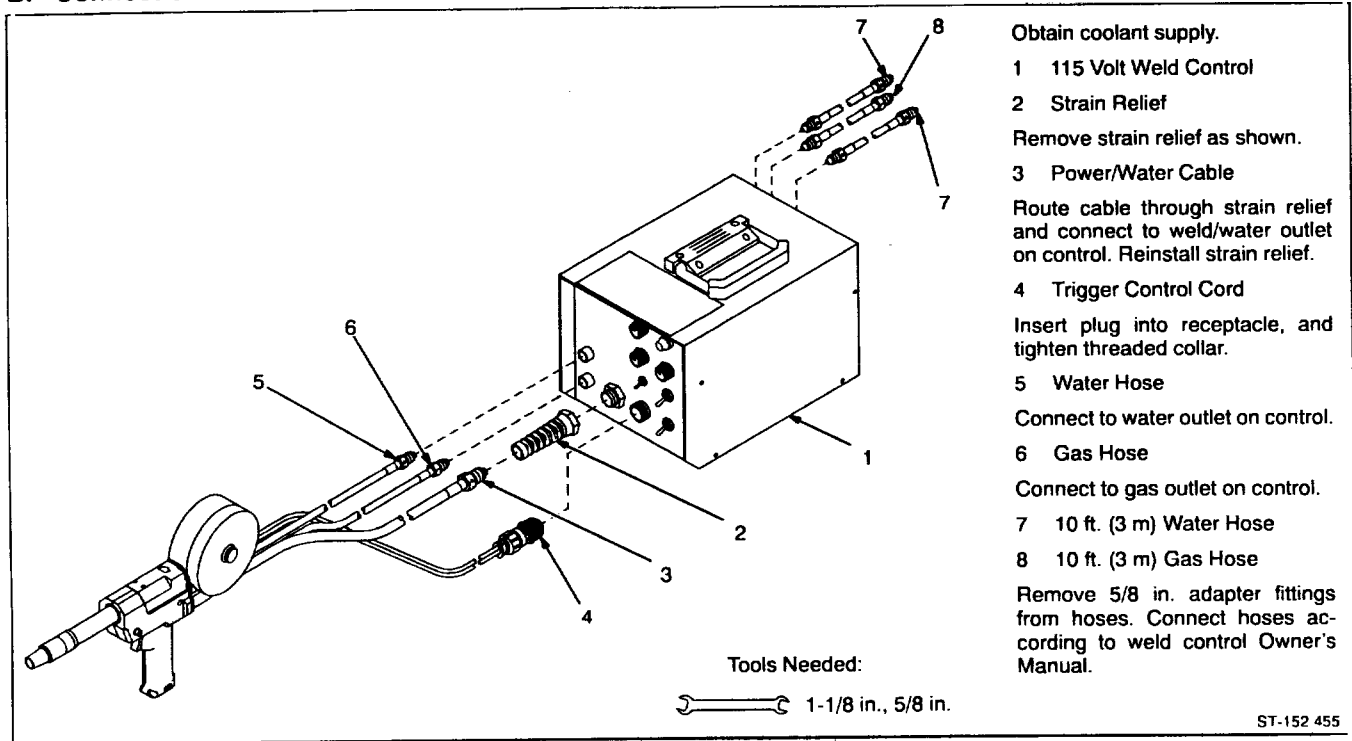





Figure 3-8. Connections To 115 Volt Weld Control

3-7. Installing Gas Supply

 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. <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.</p>	<small>wfwarn7.1 9/91</small>

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

- Cylinder
- Cylinder Valve

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

- Cap
- Regulator

Obtain regulator and install onto gas cylinder so that face is vertical.

- Flow Gauge

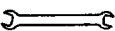
Obtain flow gauge.

- Flow Adjust

Typical flow rate is 20 cfh (cubic feet per hour).

- Gas Hose Connection


Fitting has 5/8-18 right-hand threads. Connect gas hose fitting here.

Tools Needed:
 1-1/8 in., 5/8 in.

Ref. ST-149 827

Figure 3-9. Typical Argon Regulator/Flow Gauge Installation




3-8. Coolant Guidelines To Minimize Corrosion

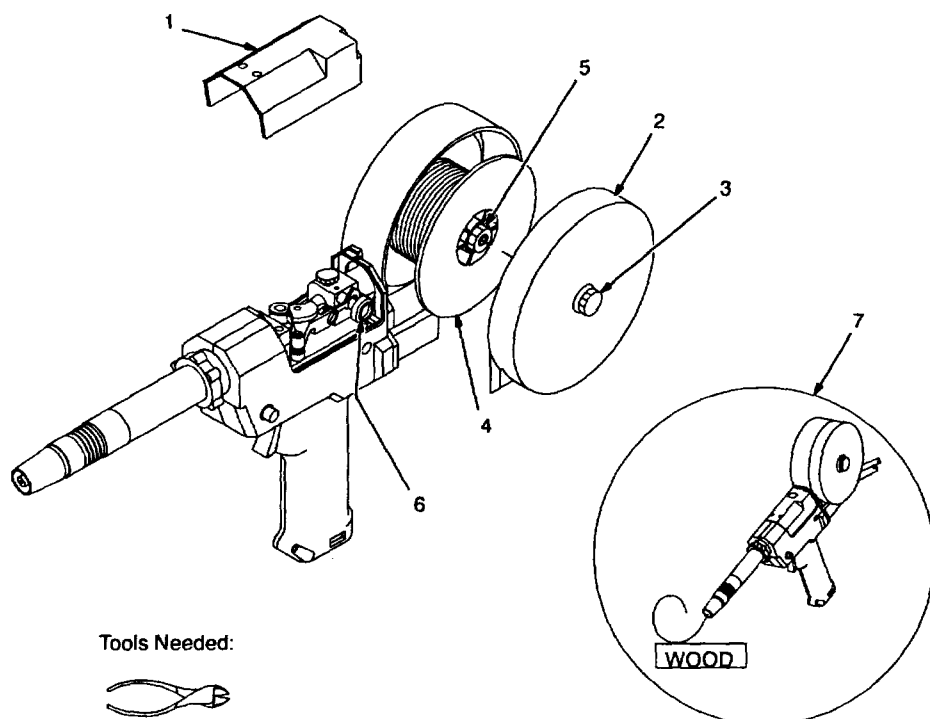
 WARNING
<p>INCORRECT COOLANT OR COOLANT CONTAINING STOP-LEAK ADDITIVES can corrode and/or plug gun/feeder cooling passages.</p> <ul style="list-style-type: none"> • Use only a mix of 50% distilled water and 50% high quality automotive antifreeze as proper coolant for this product. • Do not use antifreeze containing stop-leak additives. • Use of other coolant voids warranty.

Minimize corrosion in the gun/feeder and cooling system by following these guidelines:

1. Use only a mix of 50% distilled water and 50% high quality automotive antifreeze that does not contain stop-leak additives. Use of other coolant voids warranty.
2. Do not change coolant unless it is discolored or dirty. Add distilled water to maintain water level.
3. Be sure electrical connections are tight. Do not make electrical connections with connectors made of different metals.

3-9. Adjusting Drive Roll And Spool Brake Pressure

 CAUTION	<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>HOT SURFACES can burn skin.</p> <ul style="list-style-type: none"> • Allow gun to cool before touching.
		<p>wfwarn2 1 9/91</p>



- 1 Top Cover
- 2 Canister Cover
- 3 Thumbscrew

Loosen thumbscrew and remove cover.

- 4 Spool

Cut welding wire off at contact tube. Retract wire onto spool and secure.

- 5 Spool Brake Thumbnut

Grasp spool in one hand and turn while adjusting spool brake thumbnut. When a slight force is needed to turn spool, tension is set. Do not overtighten.

Thread welding wire (see Section 3-2). Reinstall canister cover.


- 6 Drive Roll Tension Thumbnut
- 7 Adjusting Pressure

Turn ON unit and check drive roll pressure by feeding wire against a wood board or concrete surface; wire should feed steadily without slipping.

Adjust drive roll tension thumbnut if necessary. Do not overtighten.

Turn OFF unit. Reinstall top cover.








Tools Needed:



Ref. ST-151 112 / S-0651

Figure 3-10. Adjusting Drive Roll And Spool Brake Pressure

SECTION 4 – OPERATION

 WARNING	
 <p>ELECTRIC SHOCK can kill.</p> <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. 	 <p>ARC RAYS can burn eyes and skin; NOISE can damage hearing.</p> <ul style="list-style-type: none"> Wear welding helmet with correct shade of filter. Wear correct eye, ear, and body protection.
 <p>FUMES AND GASES can be hazardous to your health.</p> <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. 	 <p>MOVING PARTS can cause injury.</p> <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.
 <p>WELDING can cause fire or explosion.</p> <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. 	 <p>MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation.</p> <ul style="list-style-type: none"> Pacemaker wearers keep away. Wearers should consult their doctor before going near any welding operations.
<p>See Safety Precautions at beginning of manual for basic welding safety information.</p> <p style="font-size: small;">wfwarn3.1 10/91</p>	

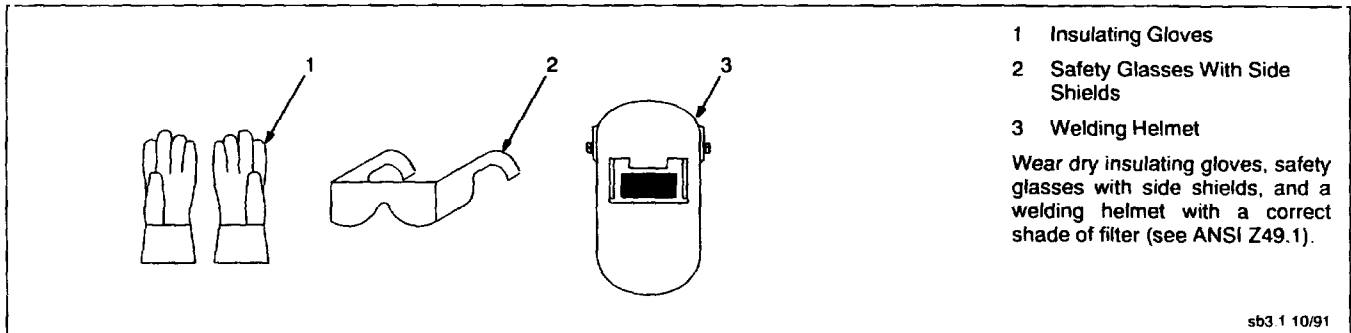


Figure 4-1. Safety Equipment

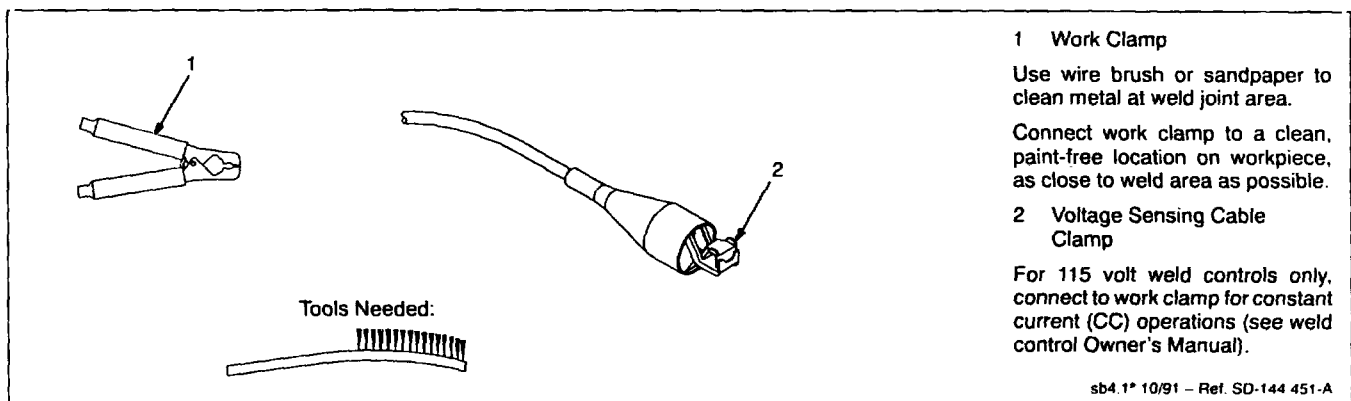


Figure 4-2. Work And Voltage Sensing Cable Clamps

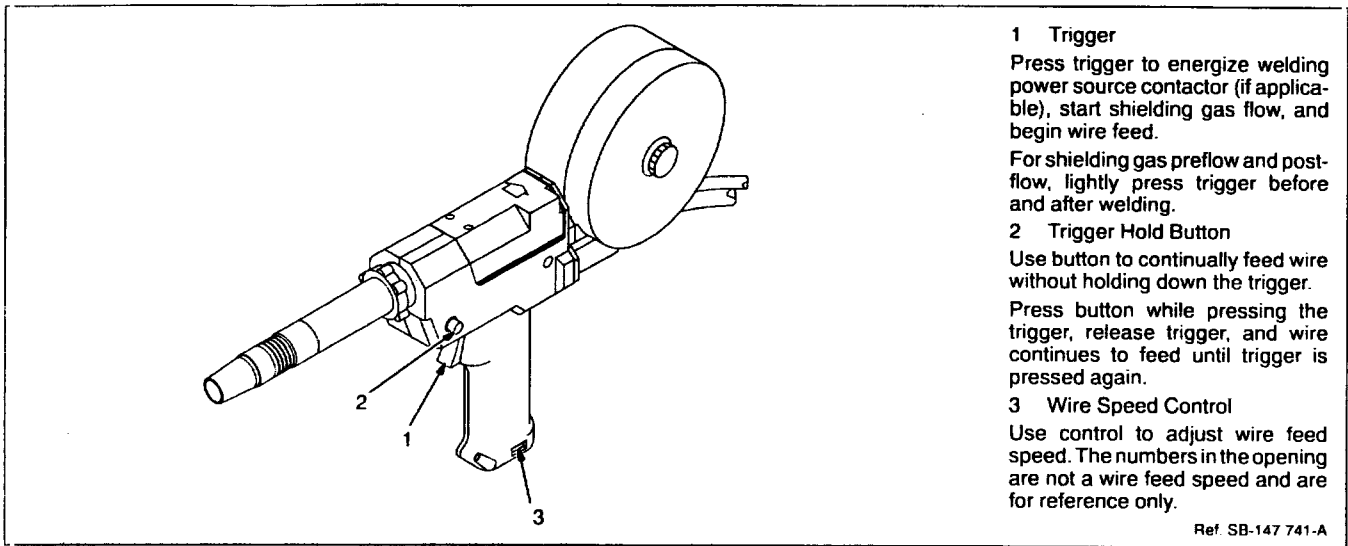


Figure 4-3. Controls

WARNING

BUILDUP OF SHIELDING GAS can harm health or kill.

- Shut off shielding gas supply when not in use.

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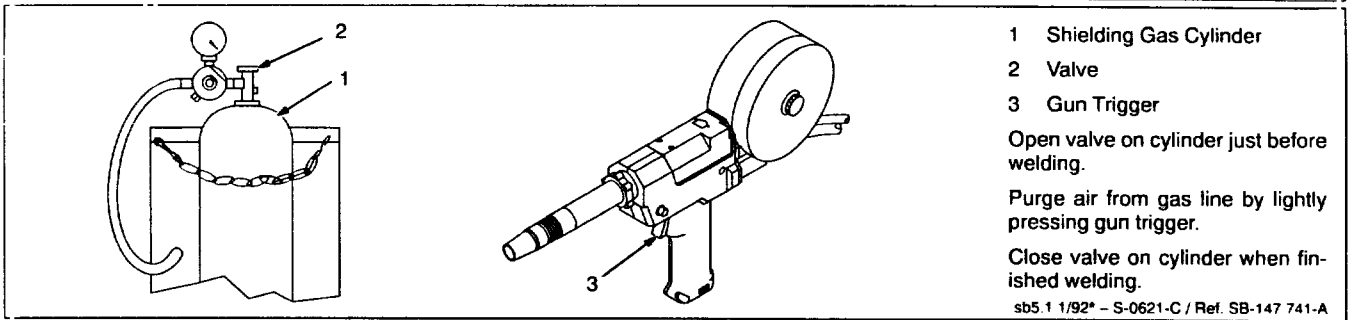


Figure 4-4. Shielding Gas

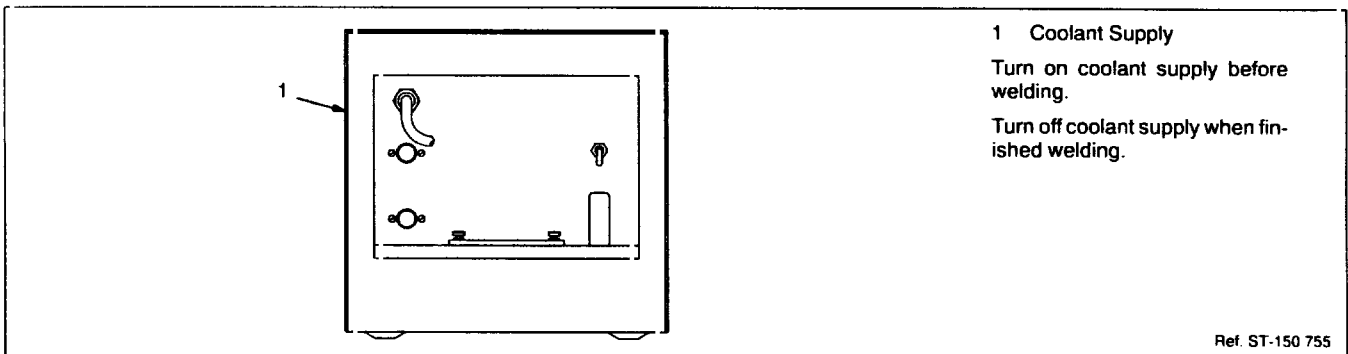


Figure 4-5. Coolant Supply For Water-Cooled Models Only

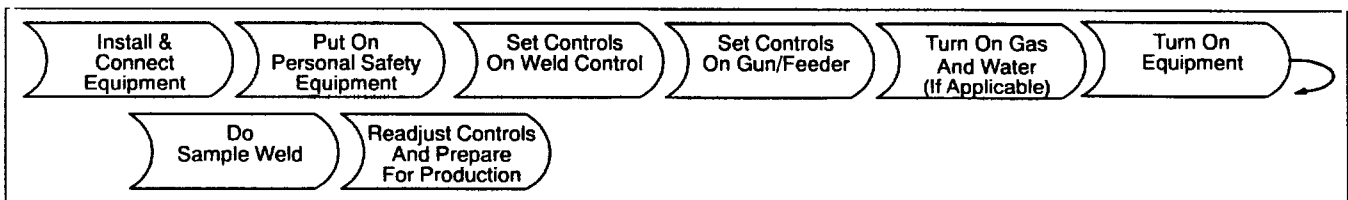


Figure 4-6. Sequence Of Gas Metal Arc Welding (GMAW) - Continuous Or Spot

SECTION 5 – THEORY OF OPERATION

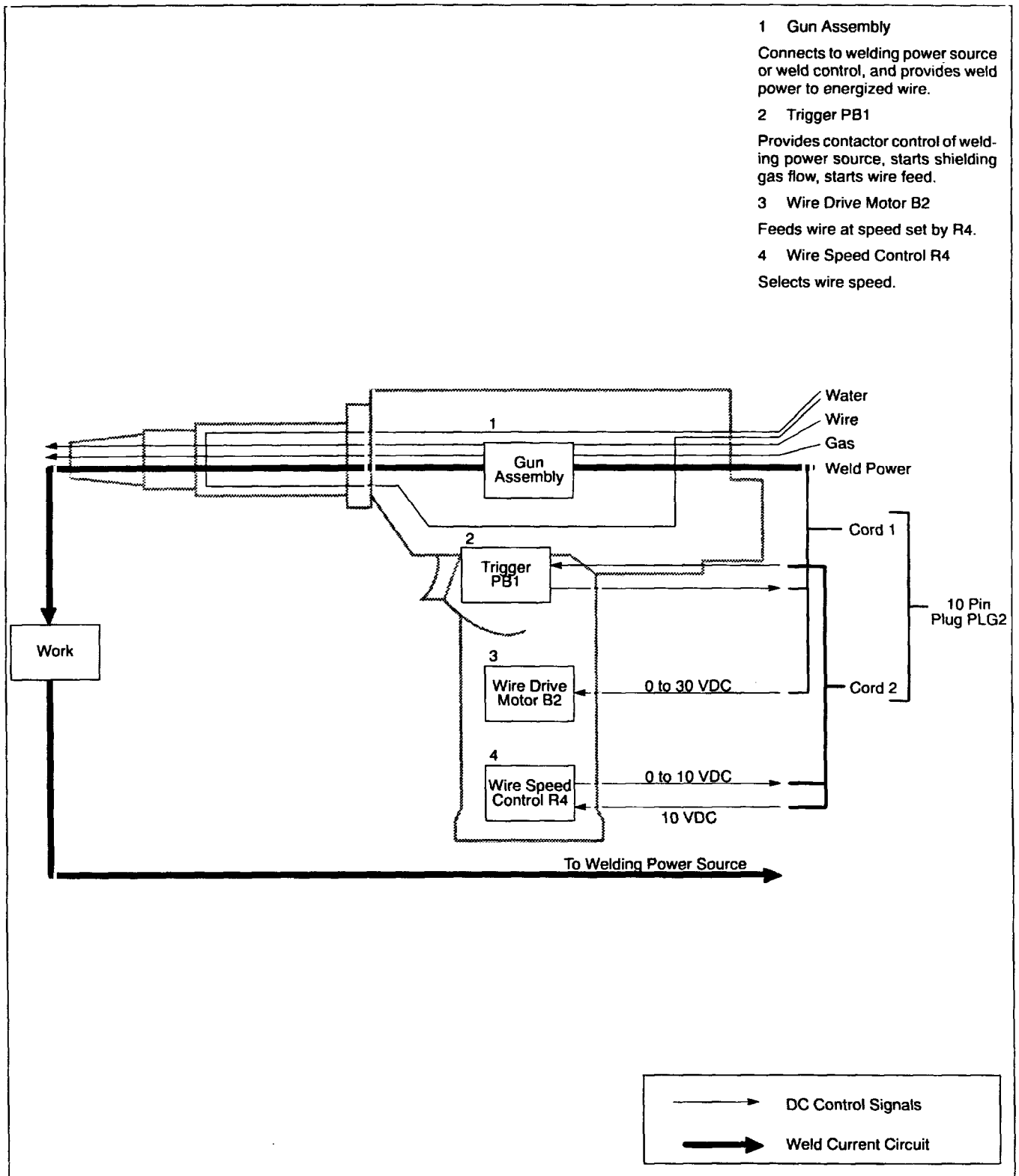


Figure 5-1. Functional Diagram

SECTION 6 – TROUBLESHOOTING

6-1. Troubleshooting Table

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 inspecting, maintaining, or servicing. Stop engine on welding generator. Have only qualified persons familiar with and following standard safety practices perform troubleshooting procedures.
	<p>HOT PARTS can cause severe burns.</p> <ul style="list-style-type: none"> Allow cooling period before servicing gun or unit.
	<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.
Troubleshooting to be performed only by qualified persons.	

smwarn1.3 5/92A

Table 6-1. Troubleshooting

Trouble	Remedy	Section
Motor does not run; pressing gun trigger does not energize weld control/welding power source.	Check connection of 10 pin plug PLG2 to weld control or welding power source. Repair if necessary.	3-5, 3-6
	Check continuity of gun trigger switch and leads. Repair or replace if necessary.	6-2, 7
	Check control cords for continuity. Repair or replace if necessary.	6-2, 7
	Readjust drive roll pressure.	3-9
	Be sure coolant flowrate is at least 1 qt./min.. Backflush gun and coolant system, clean coolant system filter, and clean fittings.	3-8
	See Troubleshooting Section in weld control and/or welding power source Service Manual.	--
Wire feeds; welding wire is not energized.	Check switch positions on welding power source.	--
	Check connection of 10 pin plug PLG2 to weld control. Repair if necessary.	3-5, 3-6
	Check control cords for continuity. Repair or replace if necessary.	6-2, 7
	See Troubleshooting Section in weld control and/or welding power source Service Manual.	--
Wire does feed but is energized.	Check motor B2. Replace if necessary.	6-2, 7
	Check control cords for continuity. Repair or replace if necessary.	6-2, 7
	See Troubleshooting Section in weld control and/or welding power source Service Manual.	--
Wire feeds erratically and/or no control of wire speed by Wire Speed Control R4.	Change to correct size contact tube or liner.	8-2
	Clear obstruction in contact tube or liner.	8-2
	Readjust drive roll pressure.	3-9
	Change to correct size drive roll.	8-3

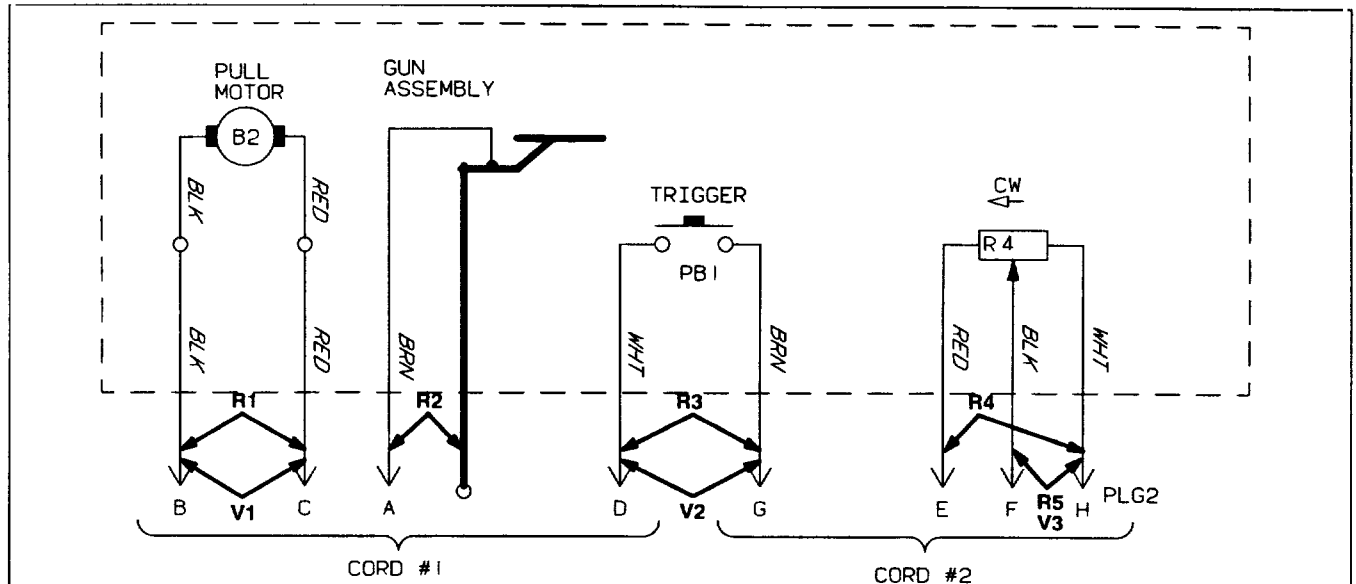
Trouble	Remedy	Section
	Clean or replace dirty or worn drive roll.	8-3
	Readjust spool brake pressure.	3-9
	Check Wire Speed Control R4 for proper operation; R4 is 0 to 10K ohms. Replace if necessary.	6-2, 7
	Check motor B2. Replace if necessary.	6-2, 7
	Check control cords for continuity. Repair or replace if necessary.	6-2, 7
	See Troubleshooting Section in weld control and/or welding power source Service Manual.	--
Erratic weld output.	Replace worn or damaged contact tube.	8-2
	Repair loose or incorrect welding connections	--
	Check control cords for continuity. Repair or replace if necessary.	6-2, 7
	See Troubleshooting Section in weld control and/or welding power source Service Manual.	--
Wire feeds but burnsback into contact tube.	Readjust voltage setting on welding power source.	--
	Repair ground cable connection.	--
	Readjust burnback time on weld control (see weld control Owner's Manual).	--
	Replace worn or damaged contact tube.	8-2
	Clean or replace current pickup tab (located between bottom of drive roll and the gun housing).	7
	Readjust wire speed ramp up setting (see weld control Owner's Manual).	--
No gas flow.	Turn on gas cylinder.	--
	Check and repair or replace valve cap.	7
	Repair gas hose.	7
Continuous gas flow.	Reduce regulator pressure to below 50 psi.	--
	Check and repair or replace valve cap.	7
	Check and repair or replace misaligned or missing spring.	7
	Check orifice in gun housing. Replace if necessary.	7
Gun overheating (water cooled models only)	Be sure coolant flowrate is at least 1 qt./min.. Backflush gun and coolant system, clean coolant system filter and clean fittings.	3-8
	See Troubleshooting Section of Coolant System Service Manual.	--
Gun leaking coolant.	Replace O-rings.	7
	Check and repair water connections, fittings, and hoses.	3-6

6-2. Troubleshooting Circuit Diagram For Spoolmatic 30A And 30W Guns

WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Turn OFF wire feeder and welding power source before making or changing meter lead connections and before disconnecting or connecting any leads. Stop engine on welding generator.
- Have only qualified persons familiar with and following standard safety practices perform troubleshooting procedures.



Voltage Readings: a) 10-pin plug PLG2 CONNECTED b) power applied c) Tolerance ±10% unless specified

For Gun Using WC-24 Or Welding Power Source With REMOTE 10 Option		For Gun Using WC-115		For Gun Using XR Feeder	
V1	2 volts dc input, motor running, R4 totally CCW 30 volts dc input, motor running, R4 totally CW	V1	2 volts dc input, motor running, R4 totally CCW 30 volts dc input, motor running, R4 totally CW	V1	2 volts dc input, motor running, R4 totally CCW 30 volts dc input, motor running, R4 totally CW
V2	15 volts dc 0 volts dc with trigger pressed	V2	28 volts dc (±4V) 0 volts dc with trigger pressed	V2	32 volts dc (±4V) 0 volts dc with trigger pressed
V3	0 volts dc, R4 totally CCW 7.5 volts dc, R4 totally CW	V3	0 volts dc, R4 totally CCW, WC-115 in Constant Speed Mode 6.8 volts dc, R4 totally CW, WC-115 in Constant Speed Mode	V3	0 volts dc, R4 totally CCW 9 volts dc, R4 totally CW

Voltage Readings And Resistance Values:

a) 10-pin plug PLG2 CONNECTED

b) Tolerance ±10% unless specified

V1	0.5 to 2.5 volts dc while slowly rotating motor by hand (use drive roll)
R1	10 to 100 ohms
R2	0 ohms
R3	0 ohms with trigger pressed
R4	10k ohms
R5	0 ohms totally CCW 10K ohms totally CW

Test Equipment Needed:

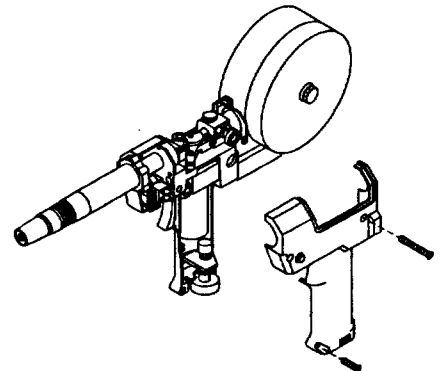
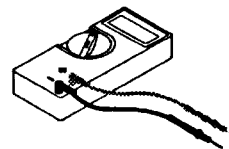
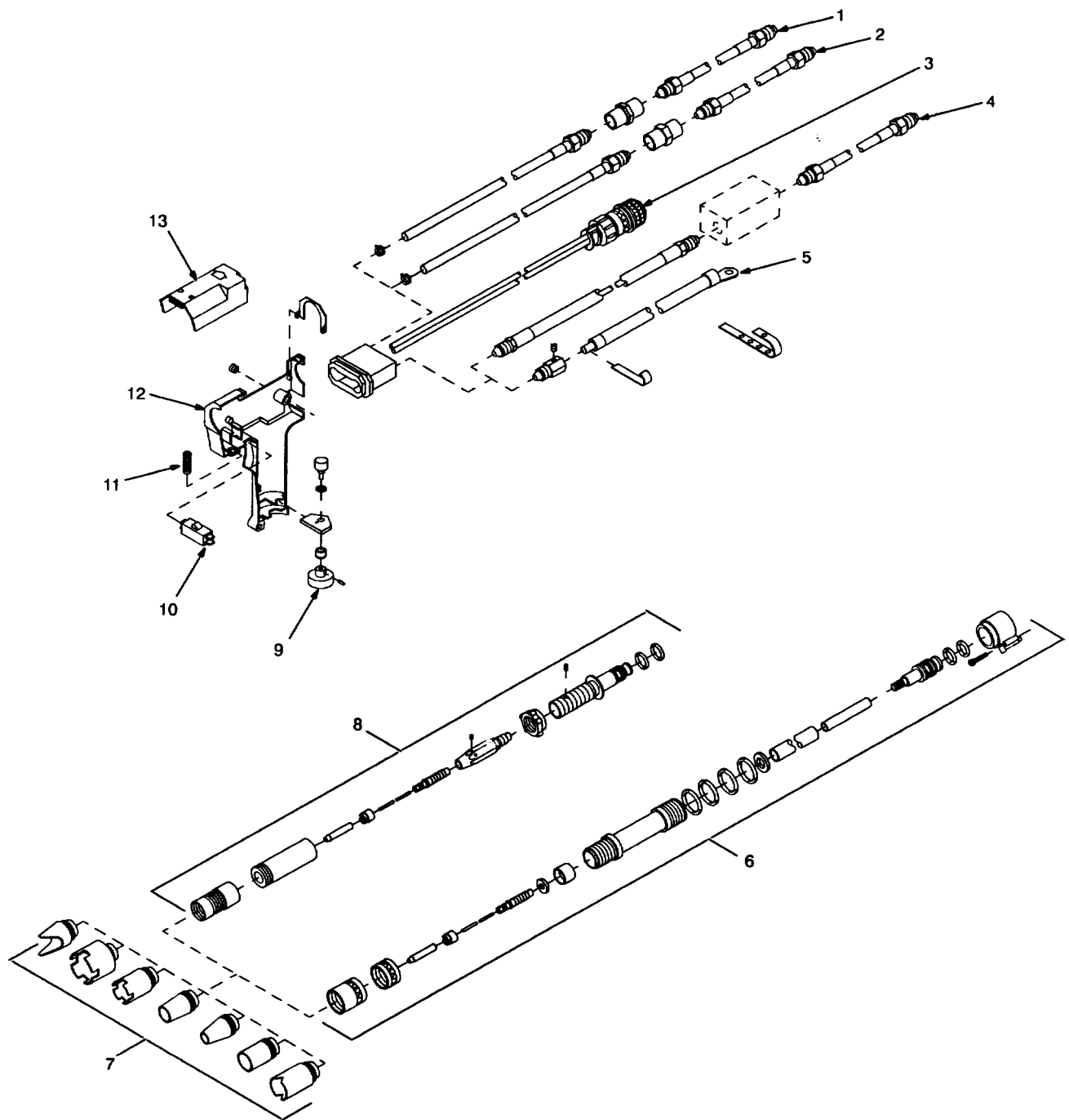


Figure 6-1. Troubleshooting Circuit Diagram For Spoolmatic 30A And 30W Guns

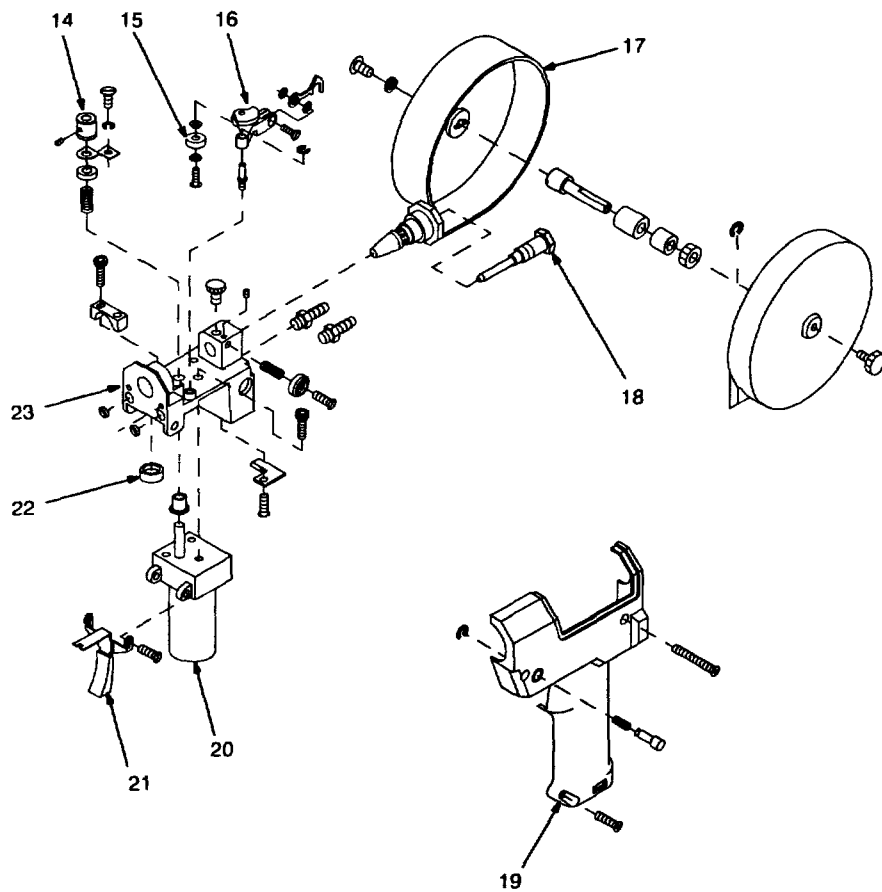
SECTION 7 – LOCATION OF PARTS



- | | | |
|--------------------------------|-------------------------|-----------------------|
| 1 Water Cable (30W only) | 6 Barrel Assembly (30W) | 10 Trigger Switch PB1 |
| 2 Gas Hose | 7 Nozzles | 11 Spring |
| 3 Control Cord With Plug PLG2 | 8 Barrel Assembly (30A) | 12 Right Hand Case |
| 4 Power/Water Cable (30W only) | 9 Wire Speed Control R4 | 13 Cover |
| 5 Weld Cable | | |

Figure 7-1. Main Assembly And Component Locations

**USE SERVICE PARTS MANUAL
TO ORDER PARTS.**



- 14 Drive Roll
- 15 Drive Roll Bearing
- 16 Drive Roll Pressure Arm
- 17 Cannister

- 18 Cannister Inlet Guide
- 19 Left Hand Case
- 20 Motor B2

- 21 Trigger
- 22 Valve Cap
- 23 Wire Drive Housing

SECTION 8 – MAINTENANCE

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. Stop engine on welding generators. 		HOT PARTS can cause severe burns. <ul style="list-style-type: none"> Allow cooling period before servicing gun or unit.
	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. 	Maintenance to be performed only by qualified persons.	

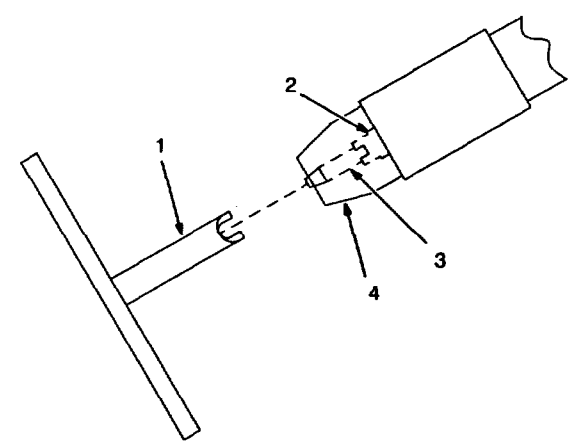
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8-1. Routine Maintenance

Table 8-1. Maintenance Schedule

Time	Maintenance
Before each use	Check gun parts for looseness, cracks, and breaks; tighten, repair, and replace parts as required. Carefully clean weld spatter or dirt from around nozzle opening using a hardwood stick, never a metal tool.
Every month	Above normal equipment use: Repair any damaged insulation or replace gun cable or work cable, clean internal parts (see 6 month entry), clean and tighten connections at gun cable and work clamp.
Every 3 months	Repair cable insulation damage or replace gun cable or work cable. Clean and tighten gun cable and work clamp connections.
Every 6 months	Remove unit outer enclosure to blow out or vacuum dust and dirt from inside using a clean, dry airstream or vacuum suction.


8-2. Changing Contact Tube And Liner

WARNING		READ SAFETY BLOCKS at start of Section 8 before proceeding.
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;">  </div> <div style="width: 50%; padding-left: 20px;"> <p>Turn OFF weld control and welding power source.</p> <p>Remove top cover and open pressure roll assembly as shown in Figure 8-2.</p> <p>1 Contact Tube Wrench Insert wrench into nozzle over contact tube.</p> <p>2 Compression Nut Loosen nut. Pull out contact tube.</p> <p>3 Contact Tube</p> <p>4 Nozzle</p> <p>Pull wire out nozzle and liner should slide out. If necessary, tilt nozzle down to remove liner.</p> <p>Close pressure roll assembly. Re-install top cover.</p> <p>Install new liner and contact tube over wire. Cut off wire at end of contact tube.</p> <p>Tighten nut just until contact tube is secure. Overtightening nut will damage adapter.</p> </div> </div> <div style="margin-top: 20px; text-align: center;"> <p>Tools Needed:</p> </div>		


ST-150 437

Figure 8-1. Changing Contact Tube And Liner

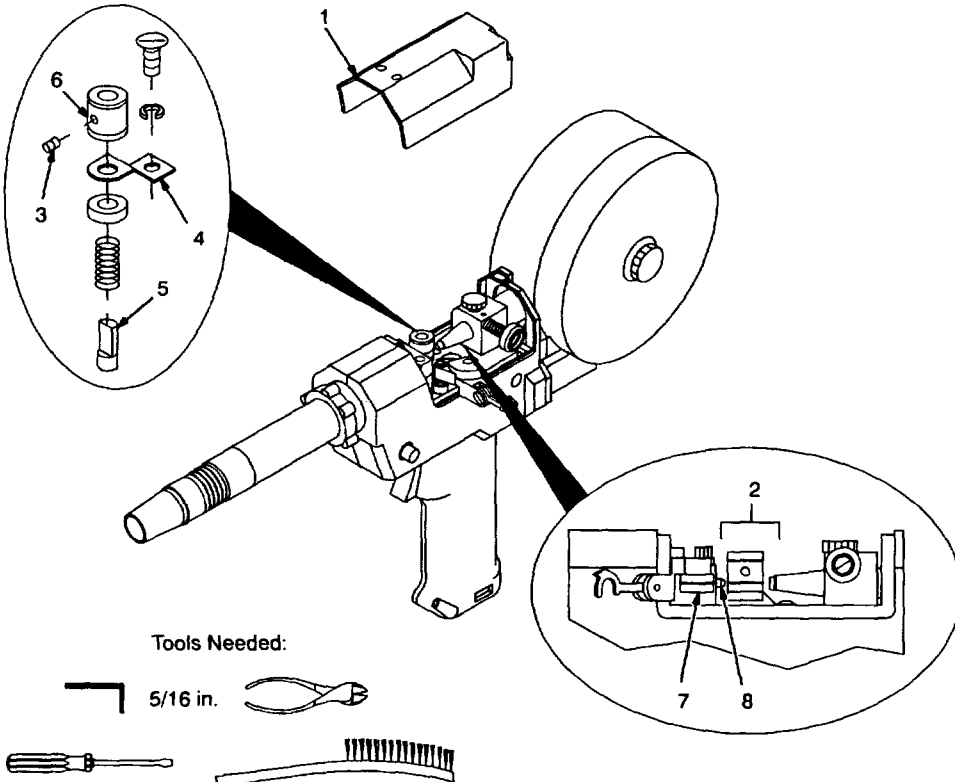
8-3. Changing Or Cleaning Drive Roll







WARNING



READ SAFETY BLOCKS at start of Section 8 before proceeding.



Tools Needed:

-  5/16 in.
- 
- 
- 

Turn OFF weld control and welding power source.

- 1 Top Cover
- 2 Pressure Roll Assembly

Cut off wire where it enters pressure roll assembly area.

- 3 Setscrew
- 4 Current Pick-Up Tab

This tab helps prevent burnback caused by welding arcs inside the contact tube. This tab may be removed to provide an insulated drive roll. (If tab is removed, a smaller diameter contact tube is recommended. See options in Service Parts Manual.) Lightly grease top of tab before reinstalling.

- 5 Motor Shaft
- 6 Drive Roll

Use wire brush to clean drive roll. Install drive roll with desired groove down, and turn drive roll so one set-screw faces flat side of shaft.

- 7 Bearing
- 8 Liner


Line up drive roll groove with bearing groove and liner opening. Tighten setscrews.

Thread welding wire (see Section 3-2). Adjust drive roll pressure, if necessary (see Section 3-9). Close and secure pressure roll assembly. Reinstall top cover.


Ref. ST-149 967-A

Figure 8-2. Removing Drive Roll

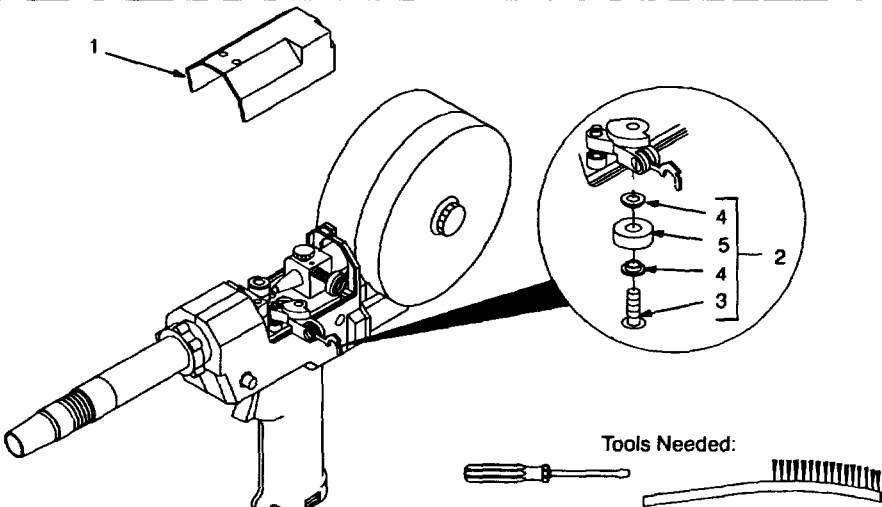
8-4. Replacing Or Cleaning Drive Roll Bearing





WARNING



READ SAFETY BLOCKS at start of Section 8 before proceeding.



Tools Needed:

- 
- 

Turn OFF weld control and welding power source.

- 1 Top Cover
- 2 Pressure Roll Assembly

- 3 Screw
- 4 Shoulder Washer
- 5 Drive Roll Bearing

Remove as shown.

Use a wire brush to clean bearing. Reinstall with washers, and tighten screw.


Close pressure roll assembly. Reinstall top cover.

Ref. ST-149 967-A

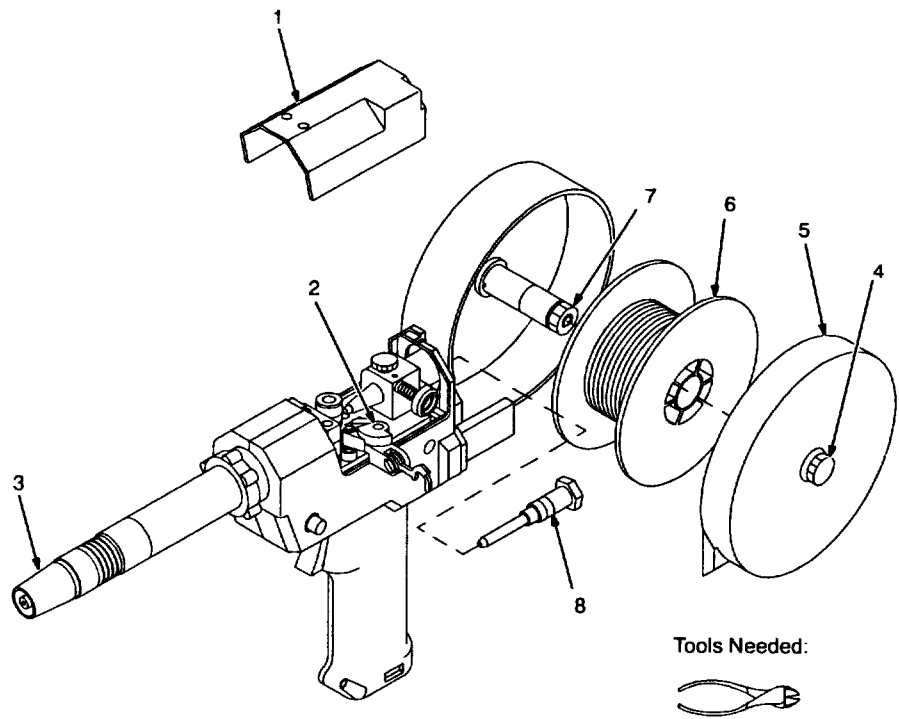
Figure 8-3. Removing Drive Roll Bearing

8-5. Replacing Canister Inlet Guide

⚠ WARNING



READ SAFETY BLOCKS at start of Section 8 before proceeding.



Turn OFF weld control and welding power source.

1 Top Cover

2 Pressure Roll Assembly

Cut off welding wire where it enters pressure roll assembly area.

3 Nozzle

Pull wire out nozzle.

4 Thumbscrew

5 Canister Cover

Loosen thumbscrew and remove cover.

6 Wire Spool

7 Spool Brake Thumbnut

Loosen thumbnut, retract wire onto spool, secure, and remove spool.

8 Canister Inlet Guide

Turn counterclockwise to remove. Install new guide.

Reinstall spool and thread welding wire (see Section 3-2).

Adjust spool brake pressure and drive roll pressure if necessary (see Section 3-9).


Close pressure roll assembly. Reinstall canister cover and top cover.

Ref. ST-150 436 / Ref. ST-149 967

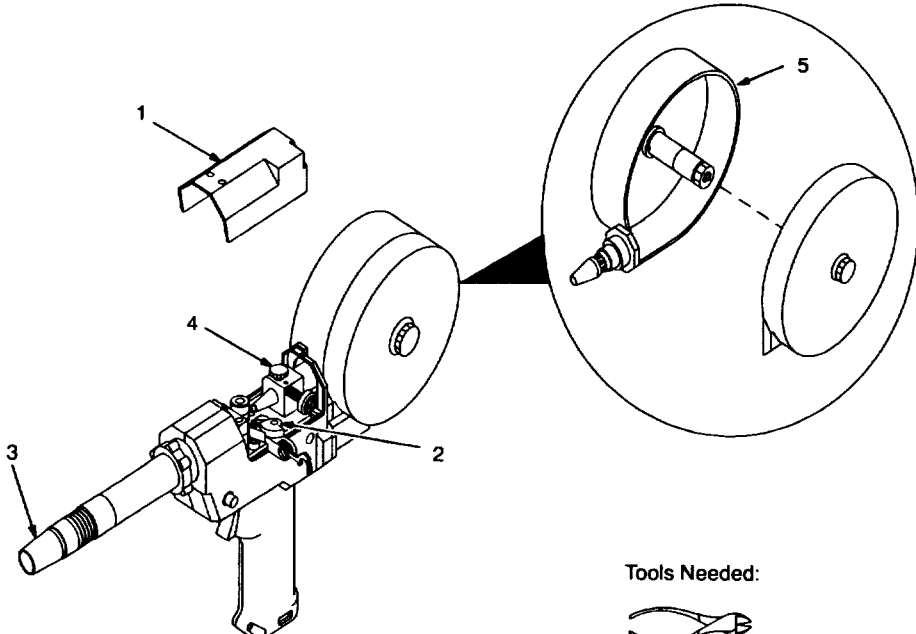
Figure 8-4. Removing Canister Inlet Guide

8-6. Replacing Spool Canister

⚠ WARNING



READ SAFETY BLOCKS at start of Section 8 before proceeding.



Turn OFF weld control and welding power source.

1 Top Cover

2 Pressure Roll Assembly

Cut off welding wire where it enters pressure roll assembly area.

3 Nozzle

Pull wire out nozzle.

4 Spring Plunger Thumbscrew

Turn thumbscrew counterclockwise three full turns.

5 Spool Canister

Remove as shown. Push new canister into wire drive housing until fully seated. Tighten thumbscrew.

Install spool and thread welding wire (see Section 3-2).

Adjust spool brake pressure and drive roll pressure as necessary (see Section 3-9).

Close pressure roll assembly. Reinstall top cover and canister cover.

Ref. ST-149 967

Figure 8-5. Removing Canister

8-7. Replacing Contact Tube Adapter

A. Air-Cooled Models


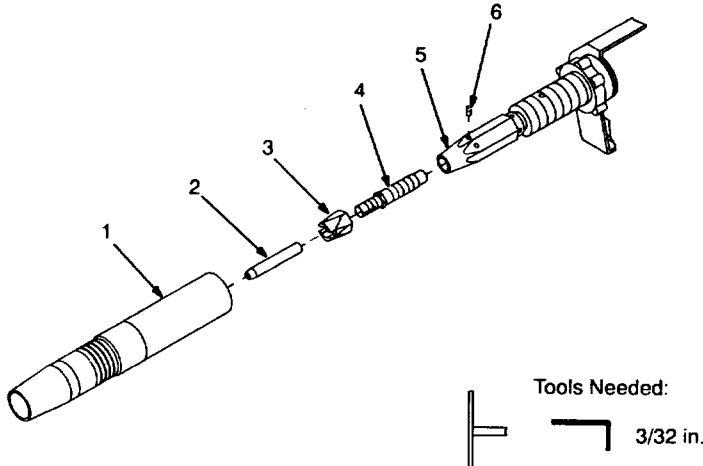
⚠ WARNING		READ SAFETY BLOCKS at start of Section 8 before proceeding.
		
<p>Turn OFF weld control and welding power source.</p> <p>1 Barrel Extension Remove as shown.</p> <p>2 Contact Tube 3 Compression Nut To remove, see Section 8-2.</p> <p>4 Contact Tube Adapter 5 Head Tube 6 Head Tube Setscrew</p> <p>Loosen setscrews and remove adapter.</p> <p>Install new adapter and tighten setscrews. Reinstall contact tube, compression nut, and nozzle.</p> <p style="text-align: right;">ST-150 430-A</p>		

Figure 8-6. Removing Contact Tube Adapter

B. Water-Cooled Models

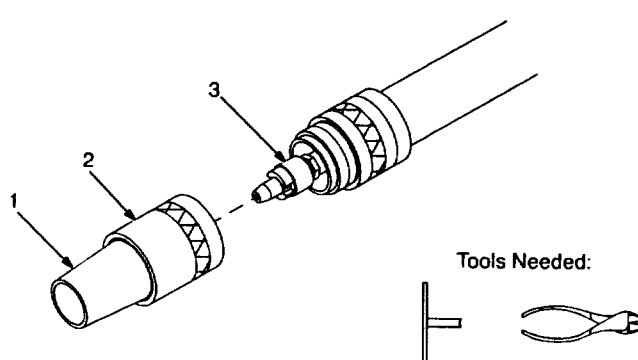
⚠ WARNING	
<p>WATER IN GUN PARTS can cause ELECTRIC SHOCK and can lower weld quality.</p> <ul style="list-style-type: none">• Turn OFF welding power source and water supply before working on gun. Stop engine on welding generators.• Always point gun downward when removing water-cooled barrel to keep water out of gun parts.• Wipe gun dry before putting it back together.	
	
<p>Turn OFF weld control and welding power source.</p> <p>1 Nozzle 2 Nozzle Adapter Remove as shown.</p> <p>3 Contact Tube Adapter</p> <p>Use wrench to remove adapter.</p> <p>Coat new adapter with threadlocking compound (such as Loctite No. 242), and install.</p> <p style="text-align: right;">ST-150 431</p>	

Figure 8-7. Removing Contact Tube Adapter

SECTION 9 – SHIPPING AND STORAGE

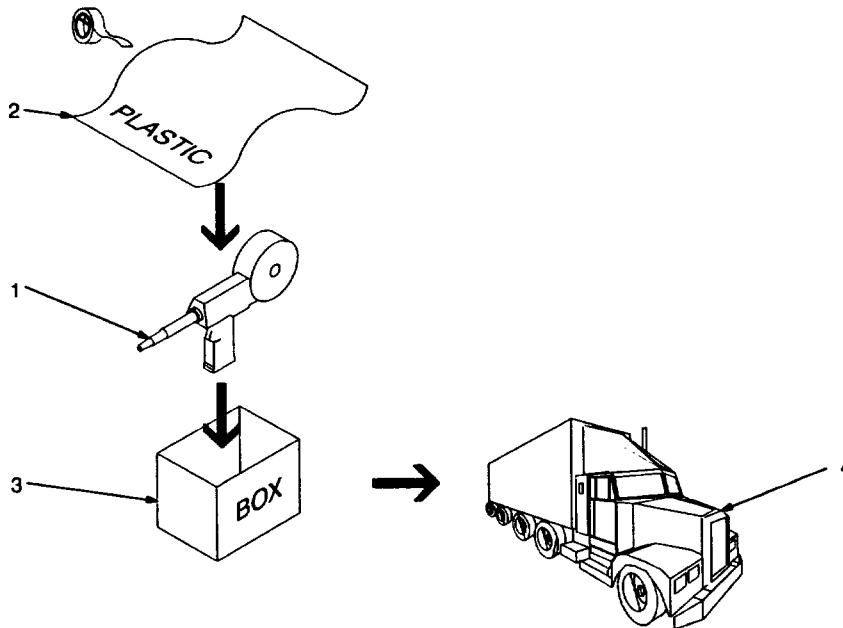
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⚠ WARNING



ELECTRIC SHOCK can kill.

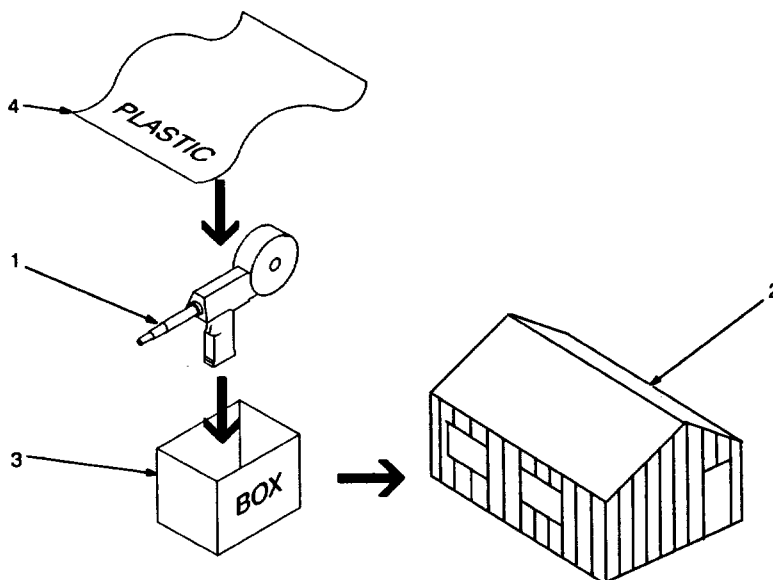
- Do not touch live electrical parts.
- Turn OFF wire feeder and welding power source, and disconnect input power before preparing unit for shipping or storage.



- 1 Welding Gun
Disconnect input power, gas, and water.
Remove welding wire from gun.
 - 2 Plastic
Tape plastic around gun.
 - 3 Cardboard Box
 - 4 Truck
- If sending gun to factory, ship gun as directed by factory Service Department or Transportation Department.

Ref. S-0670

Figure 9-1. Preparation For Reshipment

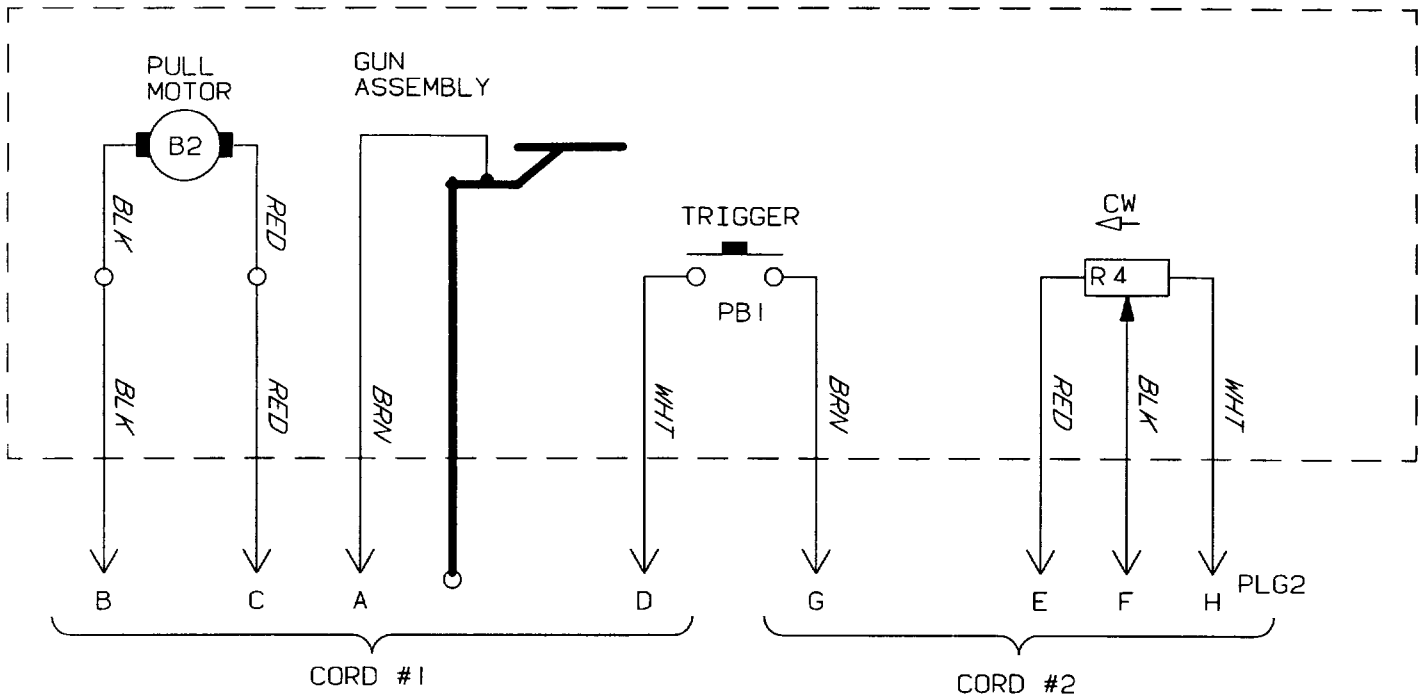


- 1 Welding Gun
Disconnect input power, gas, and water.
Remove welding wire from gun.
Clean gun.
- 2 Storage Location
No wide temperature changes, dust, dirt, or corrosive vapors.
- 3 Cardboard Box
- 4 Plastic Or Tarp
Cover gun.

Ref. S-0671

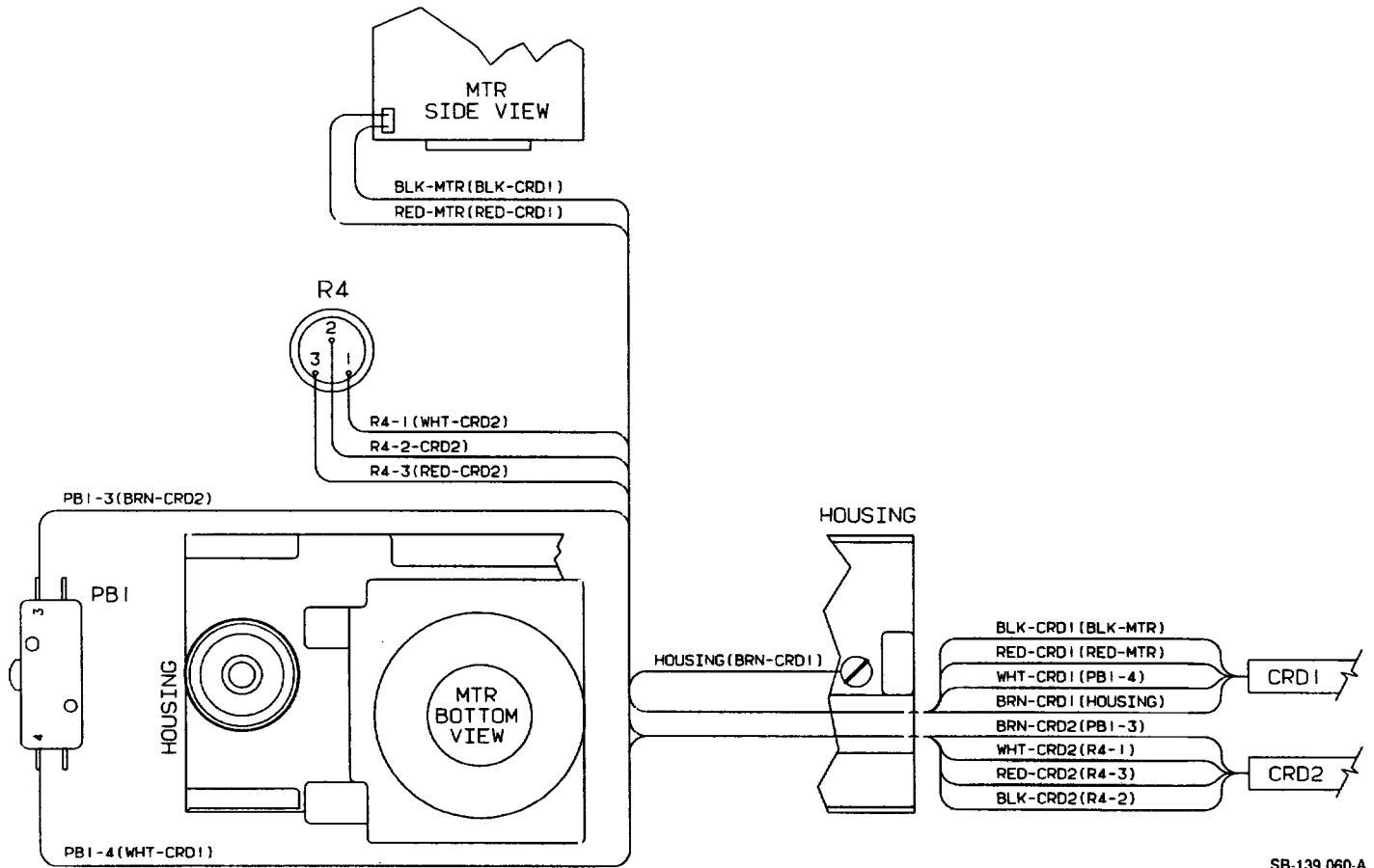
Figure 9-2. Preparation For Storage

SECTION 10 – ELECTRICAL DIAGRAMS



SA-138 956-A

Figure 10-1. Circuit Diagram For Spoolmatic 30A And 30W Guns Effective With Serial No. KC184391



SB-139 060-A

Figure 10-2. Wiring Diagram For Spoolmatic 30A And 30W Guns Effective With Serial No. KC184391



TM-1213A September 1997

Eff. w/Serial Number KB087733 Thru
KE611320

Processes



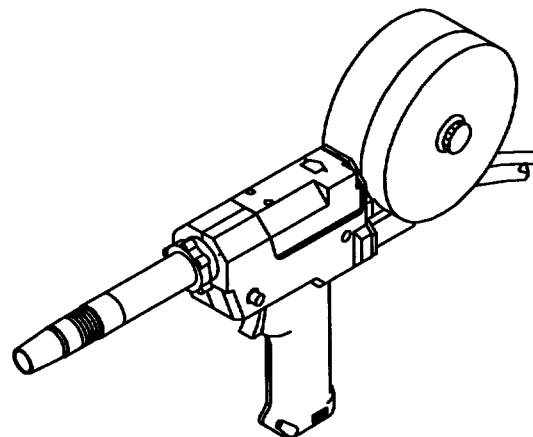
MIG (GMAW) Welding

Description



Feeder Gun

Spoolmatic® 30A Spoolmatic® 30W



Visit our website at
www.MillerWelds.com

PARTS LIST

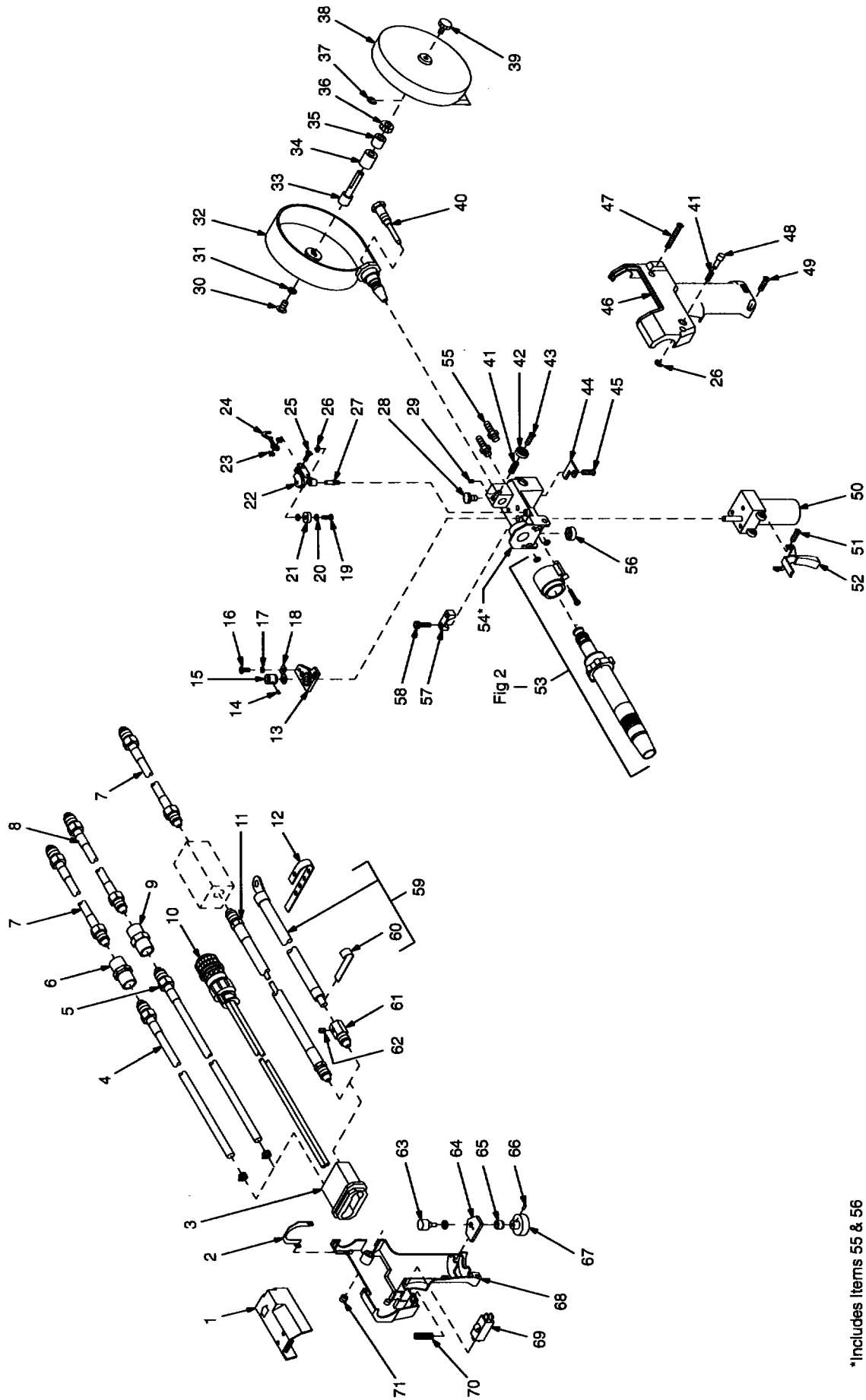


Figure 1. Main Assembly

*Includes Items 55 & 56

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 1. Main Assembly				
1		133 479	COVER	1
2		135 196	SPRING, closure cover	1
3		133 362	STRAIN RELIEF, cable	1
4		137 475	HOSE, water in (30W model only) (consisting of)	1
5		137 472	HOSE, gas in (consisting of)	1
		056 851	FITTING, hose brs barbed nipple 3/16tbg	1
		010 607	FITTING, hose brs nut .625-18 LH (water hose)	1
		010 606	FITTING, hose brs nut .625-18RH (gas hose)	1
		056 108	FITTING, hose brs ferrule .425 ID x .718 lg	1
		134 834	HOSE, SAE .187 ID x .410 OD (order by ft)	31ft
		089 120	CLAMP, hose .375-.450clp dia slftng	1
6		057 020	FITTING, hose brs coupler .625-18 LH/.625-18 LH (30W model only)	1
7		000 571	HOSE, water (30W model only) (consisting of)	2
		056 851	FITTING, hose brs barbed nipple 3/16tbg	2
		010 607	FITTING, hose brs nut .625-18 LH	2
		056 108	FITTING, hose brs ferrule .425 ID x .718 lg	2
		134 834	HOSE, SAE .187 ID x .410 OD (order by ft)	10ft
8		048 837	HOSE, gas (consisting of)	1
		010 603	FITTING, hose brs barbed nipple 1/4tbg	2
		010 606	FITTING, hose brs nut .625-18RH	2
		056 112	FITTING, hose brs ferrule .475 ID x .718 lg	2
		603 106	HOSE, nprn brd No. 1 x .250 ID (order by ft)	10ft
9		000 950	FITTING, hose brs coupler .625-18RH/.625-18RH	1
10		138 459	CABLE, control (consisting of)	1
	PLG2	146 212	PLUG, 10 pin MS-3106A-18-1PX	1
		138 033	CLAMP, cable 97-3057-1010	1
		053 212	CABLE, port No. 18 4/c (order by ft)	63ft
11		137 477	CABLE, power/water out 30ft (30W model only)	1
12		073 476	CLAMP, strap rbr 5 holes .375 wide x 4.625 lg	13
		143 836	SPRING, cprsn .445 OD x .023 wire x .370 (Prior to KD376404)	1
		008 033	WASHER, felt .234 ID x .500 OD x .093thk (Prior to KD376404)	1
13		135 473	BUSHING, shaft motor (Prior to KD376404)	1
13		162 041	BEARING BLOCK ASSEMBLY, (Eff w/KD376404)	1
		604 638	SCREW, cap stl sch 6-32 x .375	3
		143 480	SCREW, 6-32 x .625 soc hd-hex stl (Eff w/KD376404)	1
14		604 612	SCREW, set stl sch 8-32 x .125 cup point	2
15		136 135	ROLL, drive VK groove .023-1/16 wire	1
16		602 070	SCREW, 6-32 x .375 trushd stl stl (Eff w/KD376404)	1
17		602 198	WASHER, lock stl split No. 6	1
18		146 558	KIT, current pick-up contact (Prior to KD376404)	1
18		162 042	CONTACT, current pick-up (Eff w/KD376404)	1
19		132 270	SCREW, mach stl rdhph 6-32 x .500	1
20		134 624	BEARING, flg nyl .140 ID x .187 OD x .375flg x .031thk	2
21		134 623	BEARING	1
22		132 852	ARM, pressure	1
23		605 798	WASHER, shldr nyl .375 OD x .168 ID x .080	2
24		133 083	SPRING, tension adj drive roll (Prior to KC244781)	1
24		154 307	SPRING, tension adj drive roll (Eff w/KC244781)	1
25		144 860	SCREW, mach stl flh 8-32 x .437	1
26		058 968	RING, retainer E	2
27		135 474	PIN, hinge	1
28		155 565	SCREW, thumb	1
		134 799	O-RING, .176 ID x .070CS (used w/thumbscrew)	1
29		135 126	SCREW, set stl sch 6-32 x .125 cup point	1
30		132 530	SCREW, mach stl phtrh .250-20 x .500	1
31		602 209	WASHER, lock stl intl tooth .250	1
32		132 527	CANISTER, spool	1
33		148 488	POST, support spool	1
34		132 529	PAD, brake	1
35		148 489	WASHER, anti-turn	1

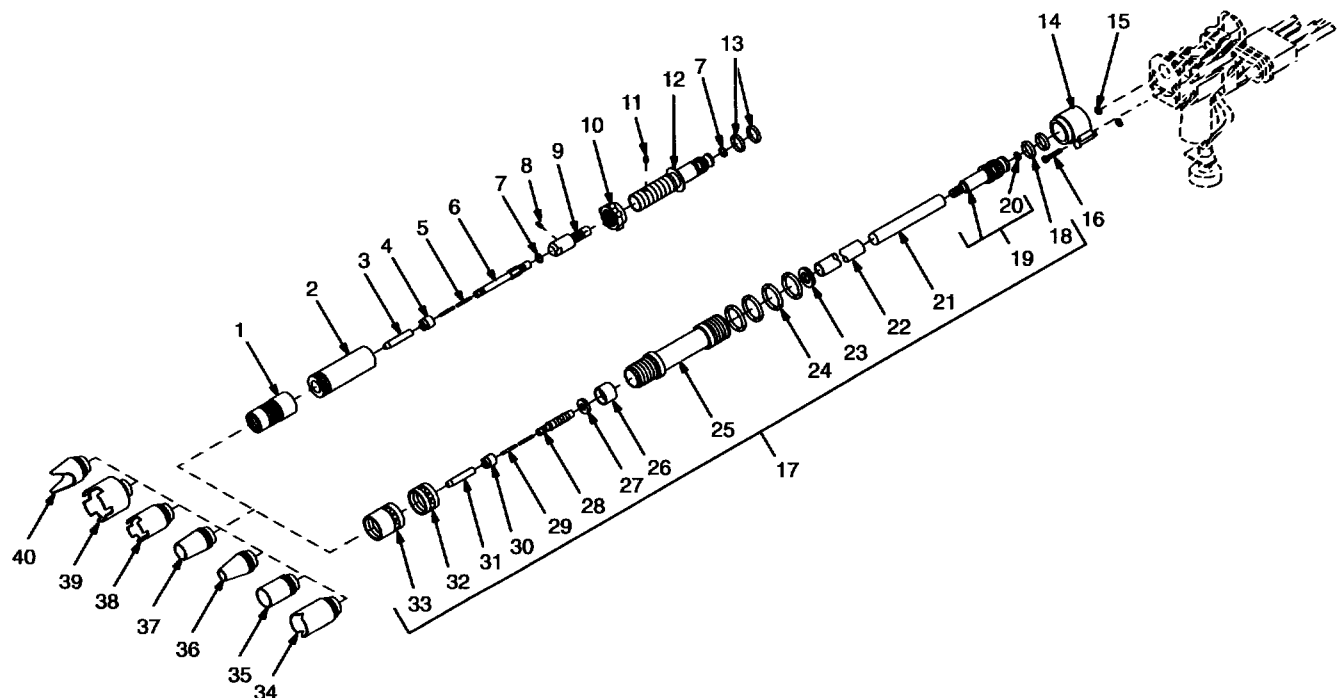
Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 1. Main Assembly (Continued)				
36		132 524	NUT, thumb brake	1
37		000 364	RING, retainer ext .188 shaft x .025thk	1
38		132 526	COVER, spool	1
39		132 528	SCREW, thumb canister	1
40		132 521	GUIDE, inlet canister	1
41		112 896	SPRING, cprsn .240 OD x .020 wire x .437	2
42		135 773	NUT, thumb tension adjusting 8-32	1
43		143 360	SCREW, mach stl rdh 8-32 x .500	1
44		136 679	CLAMP, strain relief	1
45		132 269	SCREW, mach stl rdhph 8-32 x .375	1
46		◆164 591	CASE, gun LH	1
47		135 646	SCREW, mach stl rdhph 8-32 x 1.500	2
48		135 896	PLUNGER, trigger hold	1
49		135 645	SCREW, mach stl rdhph 8-32 x .875	1
50	B2	161 813	MOTOR, gear PM 24VDC 420RPM 10.2:1 ratio	1
51		602 066	SCREW, mach stl trh 6-32 x .250 (Prior to KD376404)	3
51		602 066	SCREW, mach stl trh 6-32 x .250 (Eff w/KD376404)	2
52		+133 373	TRIGGER	1
52		◆++164 592	TRIGGER	1
53		Fig 2	BARREL ASSEMBLY	1
54		152 579	HOUSING, wire drive (30A models only) (Prior to KD432881) (consisting of)	1
54		164 582	HOUSING, wire drive (30A models only) (Eff w/KD432881) (consisting of)	1
55		135 580	FITTING, gas	1
56		058 262	CAP, valve	1
		146 555	SCREW, set 8-32 x .125 cup sch	2
54		152 578	HOUSING, wire drive (30W models only) (Prior to KD464350) (consisting of)	1
54		164 581	HOUSING, wire drive (30W models only) (Eff w/KD464350) (consisting of)	1
55		135 580	FITTING, gas	2
56		058 262	CAP, valve	1
		146 555	SCREW, set 8-32 x .125 cup sch	2
		151 661	SCREW, set 10-32 x .125 cup sch	2
57		133 365	CLAMP, head tube	1
58		000 417	SCREW, cap stl sch 10-24 x1.000	2
59		137 479	CABLE, power (30A model only) (consisting of)	1
		600 722	TERMINAL, ring tng .500 stud No. 4 cable	1
		600 318	CABLE, weld cop strd No. 3 (order by ft)	31ft
		127 893	RING, crimp cable	1
60		152 577	STRIP, cop .010 x 2.000 x .750	1
61		137 495	FITTING, connection power weld (30A model only)	1
62		141 694	SCREW, set stl sch .312-18 x .375 cone point (30A model only)	1
63	R4	137 854	POTENTIOMETER, C sltd sft 1/T .5W 10K ohm	1
64		144 861	WASHER, anti-turn	1
65		135 127	LOCK, shaft pot .250-32 x .125dia shaft	1
66		602 169	SCREW, set stl sch 8-32 x .187 cup pt	1
67		134 856	KNOB, speed control 1-10 .140 shaft x 1.125 OD	1
68		◆164 590	CASE, gun RH	1
69	PB1	000 369	SWITCH, lim 10A 125/250VAC DPST plgr	1
70		+118 774	SPRING, cprsn .240 OD x .024 wire x 1.000	1
70		◆++057 544	SPRING, cprsn .240 OD x .026 wire x 1.000	1
71		135 647	NUT, stl 8-32	3

◆These items are included with 152 578 and 152 579 Wire Drive Housings
+30A Models Prior to Serial No. KD432881 and 30W Models Prior to Serial No. KD464350
++30A Models Effective with Serial No. KD432881 and 30W Models Effective With Serial No. KD464350
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

Item No.	Part No.	Description	Quantity
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Figure 2. Barrel Assembly (Fig 1 Item 53)

1	144 862	EXTENSION, nozzle (30A models)	1
2	156 821	EXTENSION, barrel 2.875 lg (30A models)	1
3	136 171	TUBE, contact .025/31 wire	1
3	◆135 427	TUBE, contact .030/36 wire	1
3	135 428	TUBE, contact .030/41 wire	1
3	◆147 314	TUBE, contact .035/41 wire	1
3	135 430	TUBE, contact .035/52 wire	1
3	◆135 429	TUBE, contact .047/52 wire	1
3	135 424	TUBE, contact .047/61 wire	1
3	◆135 426	TUBE, contact .062/73 wire	1
3	135 425	TUBE, contact .062/81 wire	1
	136 821	WRENCH, nut tube contact	1
	166 575	WRENCH, hex .078 across the flat	1
4	136 748	NUT, compression .375-24	1
5	136 683	LINER, teflon .045-1/16 wire x 6.875 lg	1
5	136 682	LINER, teflon .023-.035 wire x 6.875 lg	1
6	+136 680	ADAPTER, contact tube (30A models)	
6	++164 421	ADAPTER, contact tube (30A models)	1
7	++164 485	O-RING .176 ID x .070CS (30A models)	2
8	604 612	SCREW, set stl sch 8-32 x .125 (30A models)	1
9	+136 681	TUBE, head (30A models)	1
9	++164 422	TUBE, head (30A models)	1
10	058 685	NUT, jam nozzle extension (30A models)	1
11	602 172	SCREW, set stl sch 10-32 x .187 cup point (30A models)	1
12	+136 730	ADAPTER, barrel (30A models)	1
12	++164 423	ADAPTER, barrel (30A models)	1
13	134 800	O-RING, .614 ID x .070CS	2
14	132 985	MANIFOLD, water (30W models)	1
15	175 946	O-RING, .176 ID x .070CS (30W models)	2
16	135 128	SCREW, cap stl sch 6-32 x 1.000 (30W models)	2



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Figure 2. Barrel Assembly

Item No.	Part No.	Description	Quantity
Figure 2. Barrel Assembly (Fig 1 Item 53) (Continued)			
.. 17	137 042	.. BARREL ASSEMBLY, water cooled (30W models) (consisting of)	1
.. 18	134 800	.. O-RING, .614 ID x .070CS	2
.. 19	136 955	.. FITTING, end tube head (consisting of)	1
.. 20	134 799	.. O-RING, .176 ID x .070CS	1
.. 21	136 956	.. TUBE, head	1
.. 22	136 943	.. TUBING, teflon	1
.. 23	136 834	.. WASHER, fbr .594 ID x .875 OD x .125thk	1
.. 24	180 966	.. O-RING, .926 ID x .070CS	4
.. 25	137 041	.. BARREL, outer	1
.. 26	136 836	.. INSULATOR, head tube from adapter	1
.. 27	136 835	.. WASHER, flat brs .390 ID x .687 OD x .125thk	1
.. 28	136 680	.. ADAPTER, contact tube	1
.. 29	136 683	.. LINER, teflon .045-1/6 wire x 6.875 lg	1
.. 30	136 748	.. NUT, compression .375-24	1
.. 31	135 424	.. TUBE, contact .047-.061 wire	1
.. 32	136 833	.. NUT, jam adapter 1.000-8	1
.. 33	136 832	.. ADAPTER, nozzle	1
..	050 622	.. NOZZLE, 5/8 orf x 1-5/8 lg	1
.. 34	◆009 925	.. NOZZLE, spot outside corner .937 ID x 2.375	1
.. 35	◆050 116	.. NOZZLE, 13/16 orf x 1-5/8 lg	1
.. 36	◆050 115	.. NOZZLE, 1/2 orf x 1-5/8 lg	1
.. 37	050 622	.. NOZZLE, 5/8 orf x 1-5/8 lg	1
.. 38	◆000 442	.. NOZZLE, spot	1
.. 39	◆004 466	.. NOZZLE, spot	1
.. 40	◆000 443	.. NOZZLE, spot inside corner	1

+30A Models Prior to Serial No. KD432881 and 30W Models Prior to Serial No. KD464350

++30A Models Effective with Serial No. KD432881 and 30W Models Effective With Serial No. KD464350

◆OPTIONAL

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

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