



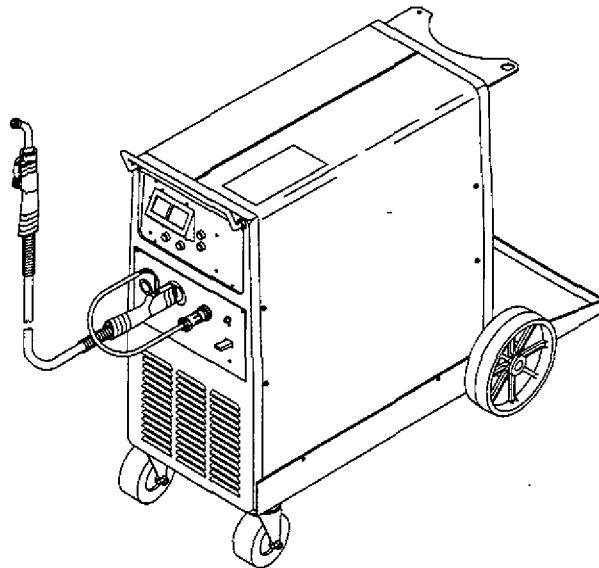
Miller®

March 1995

Form: OM-1308G

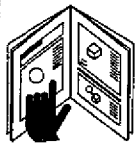
Effective With Serial No. KF848527

OWNER'S MANUAL



Millermatic® 250 And 250MP

- DC/CV Welding Power Source/Wire Feeder
- For GMAW (Hard Or Aluminum Wires) And FCAW Welding
- Output Of 200 Amperes At 28 Volts DC, 60% Duty Cycle
- Uses Single-Phase Input Power
- Overheating, Over-Use, And Motor Overload Protection
- MP Model Has Microprocessor Control
- Includes Gun, Gas Regulator/Flowmeter, And Gas Valve



- Read and follow these instructions and all safety blocks carefully.
- Have only trained and qualified persons install, operate, or service this unit.
- Call your distributor if you do not understand the directions.



- Give this manual to the operator.



- For help, call your distributor
- or: MILLER Electric Mfg. Co., P.O. Box 1079, Appleton, WI 54912 414-734-9821

MILLER'S TRUE BLUE™ LIMITED WARRANTY

Effective January 1, 1995
(Equipment with a serial number preface of "KD" or newer)

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

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

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

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

1. 5 Years Parts - 3 Years Labor
 - * Original main power rectifiers
2. 3 Years - Parts and Labor
 - * Transformer/Rectifier Power Sources
 - * Plasma Arc Cutting Power Sources
 - * Semi-Automatic and Automatic Wire Feeders
 - * Robots
3. 2 Years - Parts and Labor
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
 - * Air Compressors
4. 1 Year - Parts and Labor
 - * Motor Driven Guns
 - * Process Controllers
 - * Water Coolant Systems
 - * HF Units
 - * Grids
 - * Spot Welders
 - * Load Banks
 - * SDX Transformers
 - * Running Gear/Trailers
 - * Plasma Cutting Torches (except APT, ZIPCUT & PLAZCUT Models)
 - * Tecumseh Engines
 - * Deutz Engines (outside North America)
 - * Field Options

(NOTE: Field options are covered under True Blue™ for the remaining warranty period of the product they are installed in, or for a minimum of one year - whichever is greater.)
5. 6 Months - Batteries
6. 90 Days - Parts and Labor
 - * MIG Guns/TIG Torches
 - * APT, ZIPCUT & PLAZCUT Model Plasma Cutting Torches

- * Remote Controls
- * Accessory Kits
- * Replacement Parts

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

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

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

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

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

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

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

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

RECEIVING-HANDLING

Before unpacking equipment, check carton for any damage that may have occurred during shipment. File any claims for loss or damage **with the delivering carrier**. Assistance for filing or settling claims may be obtained from distributor and/or equipment manufacturer's Transportation Department.

When requesting information about this equipment, always provide Model Designation and Serial or Style Number.

Use the following spaces to record Model Designation and Serial or Style Number of your unit. The information is located on the rating label or nameplate.

Model _____

Serial or Style No. _____

Date of Purchase _____

ERRATA SHEET

June 6, 1995

FORM: OM-1308G

Use above FORM number when ordering extra manuals.

After this manual was printed, refinements in equipment design occurred. This sheet lists exceptions to data appearing later in this manual.

CHANGES TO SECTION 6 – MAINTENANCE & TROUBLESHOOTING

Delete Section 6-4. Inspecting And Replacing Motor Brushes

CHANGES TO SECTION 7 – ELECTRICAL DIAGRAMS

Replace Figure 7-1. Circuit Diagram For Welding Power Sources With A Microprocessor (see Page 3 on this Errata Sheet)

Delete Figure 7-3. Wiring Diagram For Welding Power Source (effective with Serial Number KF903919)

CHANGES TO SECTION 8 – PARTS LIST

Change Parts List as follows:

**	Dia. Mkgs.	Part No.	Replaced With	Description	Quantity
. 39-12		151 187	089 899	LATCH, slide flush mtg hole 1.000 wide x 1.5 lg	2
. 39-20		154 242	173 713	RECTIFIER, SCR main (Eff w/KF869436)	1
.. 41-1		144 470	+175 840	CONTROL PANEL, (EFF W/KF903919)	1
.. 41-8	PLG10	143 323	Deleted	Eff w/KF903919	
		114 656	Deleted	Eff w/KF903919	
.. 41-9	PLG8	143 322	143 322	HOUSING TERM, 24skt (MP model only) (Eff w/KF903919)	1
.. 41-		113 746	113 746	TERMINAL, female 1skt 24-11 wire (MP model only) (Eff w/KF903919)	1
. 41-15	C10	146 160	175 719	LEAD ASSEMBLY, elect (Eff w/KF903919)	1
. 41-15	C11	146 159	146 159	LEAD ASSEMBLY, elect (Eff KF903919) (MP model only)	1
. 41-15	C12	146 157	146 157	LEAD ASSEMBLY, elect (Eff KF903919) (MP model only)	1
. 41-17	C1,2	148 240	148 240	CAPACITOR ASSEMBLY, (MP model only) (Eff KF903919)	1
. 41-19		143 809	174 814	PANEL FRONT, Eff w/KF903919	1
. 43-10		170 514	174 816	BAFFLE CENTER, Eff w/KF903919	1
. 43-27	PC1	175 223	176 096	CIRCUIT CARD, control main (Eff w/KF903919 thru KF909887)	1
. 43-27	PC1	176 096	173 390	CIRCUIT CARD, control main (Eff w/KF909888)	1
. 43-29		059 712	Deleted		
.. 43-		Added	176 087	BRACKET, mtg drive assembly (Eff w/KF903919 thru KF909887)	1
.. 44-5		057 478	169 654	BRACKET, support tank (Eff KF903919)	1
.. 44-6		022 617	Deleted	Eff w/KF903919	
.. 44-7		602 389	Deleted	Eff w/KF903919	
.. 44-8		602 387	602 387	CHAIN, weldless	1
.. 44-9		602 384	Deleted	Eff w/KF903919	
.. 45-1		083 884	166 667	CLAMP, spring thyristor (Eff w/KF869436)	1
.. 45-2		143 856	173 784	HEAT SINK, rect (Eff w/KF869436)	1
.. 45-3		028 516	Deleted	Eff w/KF869436	
.. 45-7		143 855	171 405	HEAT SINK, rect (Eff w/KF869436)	1
.. 45-		Added	173 714	CLAMP, thyristor rectifier (Eff w/KF869436)	1
.. 47-1		166 005	See Note	Eff w/KF909888	
.. 47-4		081 709	172 391	HOUSING, adapter gun/feeder (Eff w/KF909888)	1
.. 47-18		130 365	Deleted	Eff w/KF909888	

Parts List continued

**	Dia. Mkgs.	Part No.	Replaced With	Description	Quantity
. 47-19	.... PM	.... 122 741	... 173 435	MOTOR, gear 24VDC (Eff w/KF909888)	1
. 47-20		.... 079 624	... Deleted	Eff w/KF909888	
. 47-21		.... 602 213	... Deleted	Eff w/KF909888	
. 47-22		.... 010 910	... Deleted	Eff w/KF909888	
. 47-23		.... 165 813	... Deleted	Eff w/KF909888	
. 47-24		.... 048 449	... Deleted	Eff w/KF909888	
. 47-25		.... 601 872	... Deleted	Eff w/KF909888	
. 47-26		.... 605 308	... Deleted	Eff w/KF909888	
. 47-27		.... 079 625	... Deleted	Eff w/KF909888	
. 47-28		.... 172 076	... 173 619	CARRIER, drive roll w/components 24 pitch (Eff w/KF909888)	1
. 47-29		.... 121 271	... 174 609	SCREW, M 4-7 x 12 sochd (Eff w/KF909888)	1
. 47-30		.... 092 865	... Deleted		
. 47-		.... Added	... 173 616	COVER, right angle motor (Eff w/KF909888)	1
. 47-		.... Added	... 173 620	BUSHING, motor mtg (Eff w/KF909888)	3
. 47-		.... Added	... 174 610	SCREW, M 6-1.0 x 20 sochd (Eff w/KF909888)	3
. 47-		.... Added	... 601 966	SCREW, .375-16 x 1.250 hexhd (Eff w/KF909888)	1

Note: All components remain the same with listed exceptions and sold as individual parts only.

+All components remain the same with listed exceptions.

**First digit represents page no - digits following dash represent item no.

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

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.

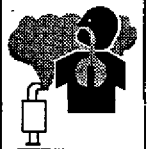
Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or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

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.

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.



MOVING PARTS can cause injury.

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

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.

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



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.

CONSIGNES DE SÉCURITÉ POUR LE SOUDAGE À L'ARC

⚠ MISE EN GARDE

LE SOUDAGE À L'ARC peut être dangereux.

SE PROTÉGER ET PROTÉGER LES AUTRES CONTRE LES BLESSURES GRAVES VOIRE MORTELLES. TENIR LES ENFANTS À L'ÉCART. LES PERSONNES QUI PORTENT UN STIMULATEUR CARDIAQUE NE DOIVENT PAS NON PLUS S'APPROCHER DU POSTE DE SOUDAGE, À MOINS D'AVOIR CONSULTÉ UN MÉDECIN.

Le soudage, comme la plupart des travaux, présente certains dangers. Par contre, le soudage peut être effectué en toute sécurité quand on prend les mesures qui s'imposent. Les consignes de sécurité données ci-après ne font que résumer l'information contenue dans les normes de sécurité énumérées à la page suivante. Lire et respecter toutes ces normes de sécurité.

L'INSTALLATION, L'UTILISATION, L'ENTRETIEN ET LES RÉPARATIONS NE DOIVENT ÊTRE CONFÉES QU'À DES PERSONNES QUALIFIÉES.

UN CHOC ÉLECTRIQUE peut tuer.

Un simple contact avec des pièces électriques peut provoquer une électrocution ou des blessures graves. L'électrode et le circuit de soudage sont sous tension dès que l'appareil est sur ON. Le circuit d'entrée et les circuits internes de l'appareil sont également sous tension à ce moment-là. En soudage semi-automatique ou automatique, le fil, le dévidoir, le logement des galets d'entraînement et les pièces métalliques en contact avec le fil de soudage sont sous tension. Des matériels mal installés ou mal mis à la terre présentent un danger.



1. Ne jamais toucher les pièces électriques sous tension.
2. Porter des gants et des vêtements de protection secs ne comportant pas de trous.
3. S'isoler de la pièce et de la terre au moyen de tapis ou d'autres moyens isolants suffisamment grands pour empêcher le contact physique éventuel avec la pièce ou la terre.
4. Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
5. Installer et mettre à la terre correctement cet appareil conformément à son manuel d'utilisation et au codes nationaux, provinciaux et municipaux.
6. Toujours vérifier la terre du cordon d'alimentation - Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien

raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.

7. En effectuant les raccordements d'entrée fixer d'abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.
8. Vérifier fréquemment le cordon d'alimentation pour voir s'il n'est pas endommagé ou dénudé - remplacer le cordon immédiatement s'il est endommagé - un câble dénudé peut provoquer une électrocution.
9. Mettre l'appareil hors tension quand on ne l'utilise pas.
10. Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
11. Ne pas enrouler les câbles autour du corps.
12. Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct - ne pas utiliser le connecteur de pièce ou le câble de retour.
13. Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d'une autre machine.
14. N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretien l'appareil conformément à ce manuel.
15. Porter un harnais de sécurité quand on travaille en hauteur.
16. Maintenir solidement en place tous les panneaux et capots.
17. Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.

LE RAYONNEMENT DE L'ARC peut brûler les yeux et la peau. Le BRUIT peut endommager l'ouïe; les PROJECTIONS DE LAITIER OU LES ÉTINCELLES peuvent blesser les yeux.

L'arc de soudage produit des rayons visibles et invisibles intenses (ultraviolets et infrarouges) qui peuvent brûler les yeux et la peau. Le bruit produit par certains procédés peut endommager l'ouïe. Des projections de métal ou de laitier sont produites par le piquage, le meulage ou le refroidissement des soudures.



BRUIT

1. Utiliser des bouche-oreilles ou des serre-tête antibruit approuvés si le niveau de bruit est élevé.

RAYONNEMENT DE L'ARC

2. Porter un masque à serre-tête muni d'un verre filtrant de nuance appropriée pour protéger le visage et les yeux quand on soude ou observe la travail de soudage (voir les normes ANSI Z49.1 et Z87.1 données sous la rubrique Principales normes de sécurité).
3. Porter des lunettes de sécurité approuvées avec écrans latéraux.
4. Utiliser des paravents ou des barrières de protection pour protéger les personnes à proximité contre les coups d'arc et l'éblouissement; avertir les autres personnes de ne pas regarder l'arc.
5. Porter des vêtements de protection en tissu ignifuge durable (laine et cuir) et des chaussures de sécurité.

LES VAPEURS ET LES FUMÉES peuvent être dangereuses pour la santé.

Le soudage produit des vapeurs et des fumées qu'il est dangereux de respirer.



1. Garder la tête à l'extérieur des vapeurs et des fumées et ne pas les respirer.
2. À l'intérieur, ventiler le poste de travail ou utiliser un dispositif placé au niveau de l'arc pour évacuer les vapeurs et fumées de soudage.
3. Si la ventilation est mauvaise, utiliser un appareil respiratoire à adduction d'air pur approuvé.
4. Consulter les fiches signalétiques et les consignes du fabricant relatives au métaux, produits d'apport, revêtements, nettoyants et dégraissants.

5. Ne travailler dans un espace confiné que s'il est bien ventilé, ou en portant un appareil respiratoire à adduction d'air pur. Demander à un observateur ayant reçu la bonne formation de toujours se tenir à proximité. Les vapeurs et fumées de soudage peuvent déplacer l'air et abaisser le niveau d'oxygène et causer des blessures graves voire mortelles. S'assurer que l'air est propre à la respiration.
6. Ne pas souder à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec les vapeurs pour former des gaz hautement toxiques et irritants.
7. Ne pas souder sur des métaux revêtus comme l'acier galvanisé, au plomb ou cadmié à moins que la pièce n'ait été entièrement décapée, que le poste de travail soit bien ventilé. S'il y a lieu, porter un appareil respiratoire à adduction d'air pur. Les revêtements et les métaux qui contiennent de tels éléments peuvent dégager des vapeurs toxiques lors du soudage.


LES BOUTEILLES peuvent exploser si elles sont endommagées.





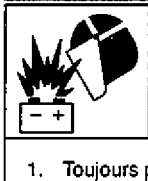

Les bouteilles contenant des gaz de protection sont à haute pression. Une bouteille endommagée peut exploser. Étant donné que les bouteilles de gaz font normalement partie du matériel de soudage, les traiter avec le plus grand soin.



1. Protéger les bouteilles de gaz comprimé contre la chaleur intense, les chocs, le laitier, les flammes nues, les étincelles et l'arc.
2. Placer les bouteilles à la verticale en les fixant à un support fixe ou à un chariot pour éviter qu'elles ne tombent ou ne basculent.
3. Tenir les bouteilles à l'écart du poste de soudage ou d'autres circuits électriques.

4. Ne jamais poser un chalumeau soudeur sur une bouteille de gaz.
5. Ne jamais laisser une électrode de soudage toucher une bouteille.
6. Ne jamais souder sur une bouteille sous pression : elle exploserait.
7. N'utiliser que des bouteilles de gaz de protection, des détendeurs, des tuyaux souples et des raccords appropriés conçus pour l'application particulière; conserver ces matériels et leurs pièces en bon état.
8. Éloigner le visage de la sortie du robinet de la bouteille quand on l'ouvre.
9. Remplacer le chapeau sur la bouteille après utilisation.
10. Lire et suivre les consignes relatives aux bouteilles de gaz comprimé, au matériel connexe ainsi que la publication P-1 de la CGA donnée sous la rubrique Principales normes de sécurité.

	<p>LE SOUDAGE peut causer un incendie ou une explosion.</p> <p>Ne pas souder sur des récipients fermés comme des réservoirs, des fûts ou des tuyaux : ils peuvent exploser. L'arc de soudage peut produire des étincelles. Des étincelles, une pièce chaude et un matériel chaud peuvent provoquer des incendies et des blessures. Le contact accidentel de l'électrode sur des objets métalliques peut produire des étincelles, l'explosion, la surchauffe ou un incendie. S'assurer que le lieu ne présente pas de danger avant d'effectuer le soudage.</p>	<ol style="list-style-type: none"> Prendre garde aux incendies et toujours avoir un extincteur à proximité. Se rappeler que si l'on soude sur un plafond, un plancher, une cloison ou autre, le feu peut prendre de l'autre côté. Ne pas souder sur des récipients fermés comme des réservoirs, des fûts ou des tuyaux à moins qu'ils ne soient préparés de façon appropriée conformément à la norme F4.1 de l'AWS (voir la rubrique Principales normes de sécurité). Raccorder le câble de retour à la pièce, le plus près possible de la zone de soudage, pour empêcher que le courant de soudage ne suive une trajectoire longue et éventuellement inconnue et qu'il ne provoque des risques d'électrocution et d'incendie. Ne pas utiliser le chalumeau soudeur pour dégeler des tuyaux. Enlever l'électrode enrobée du porte-électrode ou couper le fil de soudage au ras du bec contact quand on ne l'utilise pas. Porter des vêtements de protection non huileux comme des gants en cuir, une chemise épaisse, des pantalons sans revers, des chaussures montantes et un casque. Ne pas porter des matières combustibles sur soi comme un briquet à gaz ou des allumettes quand on soude.
<ol style="list-style-type: none"> Se protéger et protéger les personnes à proximité des étincelles et du métal chaud. Ne pas souder dans un endroit où les étincelles peuvent atteindre des matériaux inflammables. Enlever toutes les matières inflammables dans un rayon de moins de 10 m de l'arc. Si cela n'est pas possible, bien les recouvrir en utilisant des bâches approuvées. Prendre garde que les étincelles et les projections ne pénètrent dans des zones adjacentes en s'infiltrant dans des petites fissures et ouvertures. 		

 MISE EN GARDE		LES MOTEURS peuvent présenter un danger.
	<p>LES GAZ D'ÉCHAPPEMENT DES MOTEURS peuvent être mortels.</p> <p>Les moteurs produisent des gaz d'échappement nocifs.</p>	<ol style="list-style-type: none"> Utiliser le matériel à l'extérieur, dans des lieux ouverts et bien ventilés. Si on utilise un moteur dans un local fermé, évacuer les gaz d'échappement à l'extérieur et loin des prises d'air du bâtiment.
	<p>LE CARBURANT peut provoquer un incendie ou une explosion.</p> <p>Le carburant est hautement inflammable.</p>	<ol style="list-style-type: none"> Ne pas fumer en faisant le plein ou si l'appareil se trouve à proximité d'étincelles ou de flammes nues. Ne pas remplir le réservoir à ras bord : prévoir de l'espace pour la dilatation du combustible. Ne pas renverser du carburant. Si on renverse du carburant, nettoyer les lieux avant de faire démarrer le moteur.
	<p>LES PIÈCES EN MOUVEMENT peuvent causer des blessures.</p> <p>Les pièces en mouvement comme les ventilateurs, les rotors et les courroies peuvent couper les doigts et les mains et happer les vêtements amples.</p>	<ol style="list-style-type: none"> Seules des personnes qualifiées doivent démonter les protecteurs ou les capots pour faire l'entretien ou les réparations nécessaires. Pour empêcher un démarrage accidentel d'un système pendant l'entretien ou les réparations, débrancher le câble négatif (-) de la batterie. Éloigner les mains, les cheveux, les vêtements amples et les outils des pièces en mouvement. Replacer les capots ou les protecteurs et refermer les portes une fois l'entretien et les réparations terminés et avant de faire démarrer le moteur.
	<p>LES ÉTINCELLES peuvent faire EXPLOSER LE GAZ DES BATTERIES; L'ÉLECTROLYTE peut brûler la peau et les yeux.</p> <p>Les batteries contiennent un produit acide et dégagent des vapeurs explosives.</p>	<ol style="list-style-type: none"> Arrêter le moteur avant de brancher ou de débrancher les câbles de la batterie. Ne pas faire des étincelles avec les outils quand on travaille sur une batterie. Ne pas utiliser la source de courant de soudage pour charger les batteries ou pour faire démarrer un véhicule. Ne pas intervenir la polarité des batteries.
	<p>LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRÛLANT SOUS PRESSION peuvent brûler la peau et les yeux.</p> <p>Il vaut mieux vérifier le niveau du liquide de refroidissement quand le moteur est froid afin d'éviter les brûlures.</p>	<ol style="list-style-type: none"> Si l'on doit vérifier le niveau quand le moteur est chaud, suivre les étapes 2 et 3. Porter des lunettes de sécurité et des gants et placer un chiffon sur le bouchon. Tourner lentement le bouchon et laisser la pression s'échapper lentement avant d'enlever complètement le bouchon.

PRINCIPALES NORMES DE SÉCURITÉ

Safety in Welding and Cutting, norme ANSI Z49.1, de l'American Welding Society, 550 N.W. Lejeune Rd, Miami FL 33126

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

Recommended Safe Practice for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, de l'American Welding Society, 550 N.W. Lejeune Rd, Miami FL 33126

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

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

Règles de sécurité en soudage, coupage et procédés connexes, norme CSA W117.2, de l'Association canadienne de normalisation, vente de normes, 178 Rexdale Boulevard, Rexdale (Ontario) Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, norme ANSI Z87.1, de l'American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme NFPA 51B, de la 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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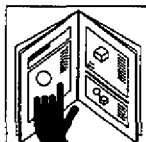
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SECTION 1 – SAFETY INFORMATION

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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 → **WARNING**

2 → **ELECTRIC SHOCK can kill.**

3 → Do not touch live electrical parts.
Disconnect input power before installing or servicing.

4 →

5 →

2 → **CAUTION**

MOVING PARTS can injure.

Keep away from moving parts.
Keep all panels and covers closed when operating.

6 → **WARNING** **READ SAFETY BLOCKS at start of Section 3-1 before proceeding.**

7 → **NOTE** *Turn Off switch when using high frequency.*

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. Welding Power Source

Specifications	Description			
Single-Phase, 60 Hz Input Power	200 V	230 V	460 V	575 V
Input Amperes At Rated Output	50 A	44 A	22 A	17 A
Type Of Output	Direct Current/Constant Voltage (DC/CV)			
Rated Weld Output	200 Amperes, 28 Volts At 60% Duty Cycle (See Section 2-2)			
KW/KVA Used At Rated Output	7.7 kW/10kVA			
Max. Open-Circuit Voltage	32 Volts DC			
Control Circuit Voltage At Gun	15 Volts DC			
Welding Processes	Gas Metal Arc (GMAW) And Flux Cored Arc (FCAW) Welding			
Wire Feed Speed Range	50 To 670 ipm (1.27 To 17.01 mpm)			
Wire Diameter Range	.030 to .045 in (0.8 To 1.1 mm) Flux Cored Wire; .023 To .045 in (0.6 To 1.1 mm) Hard Wire			
Input Power Cord	10 ft (3 m)			
Overall Dimensions	Length: 37 in (940 mm); Width 19 in (483 mm); Height 30-1/4 in (766 mm)			
Weight	Net: 225 lb (102 kg); Ship 271 lb (123 kg)			
Options	See Rear Cover			

Table 2-2. Welding Gun

Specifications	Description
Rated Output (Air Cooled)	200 Amperes Using CO ₂ Shielding Gas
Duty Cycle	100% At 200 A Or 60% At 250 A
Wire Diameter	.023 To .045 in (0.6 To 1.1 mm)
Cable Length	12 ft (3.7 m)
Weight	12 ft Gun: Net: 4.9 lb (2.2 kg); Ship: 7.4 lb (3.4 kg)

2-1. Volt-Ampere Curves

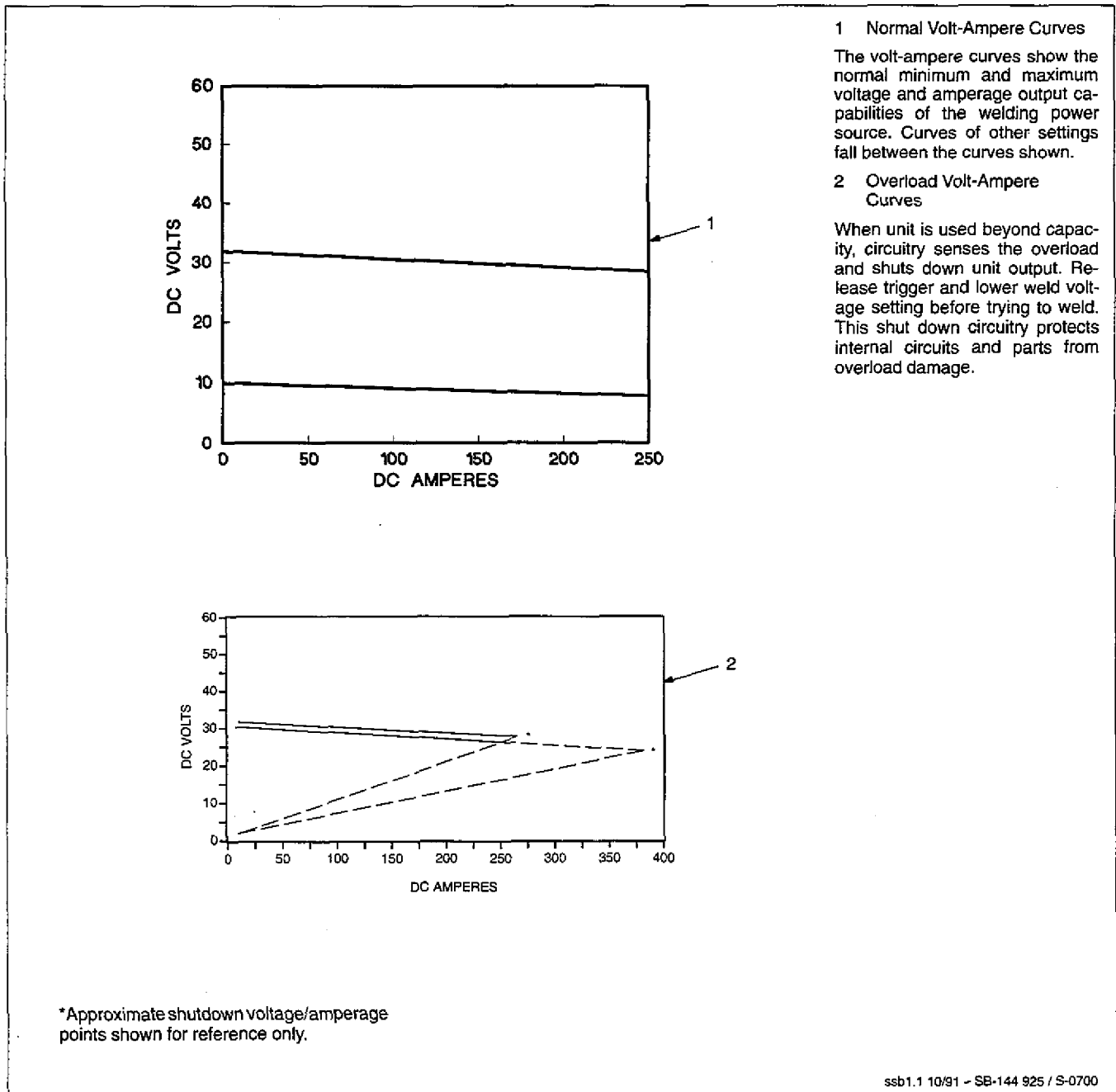


Figure 2-1. Volt-Ampere Curves

2-2. Duty Cycle

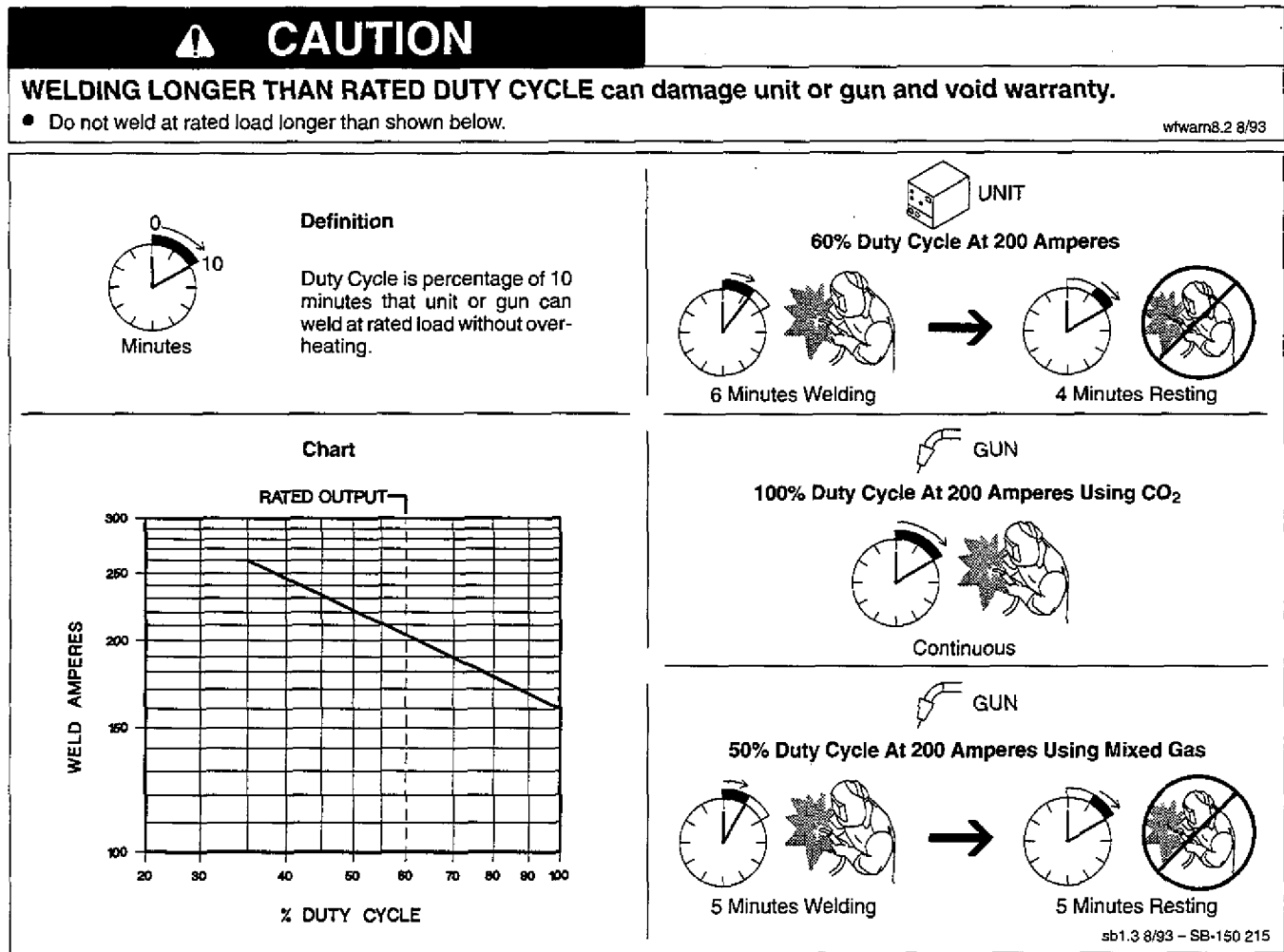







Figure 2-2. Duty Cycle

SECTION 3 – INSTALLATION

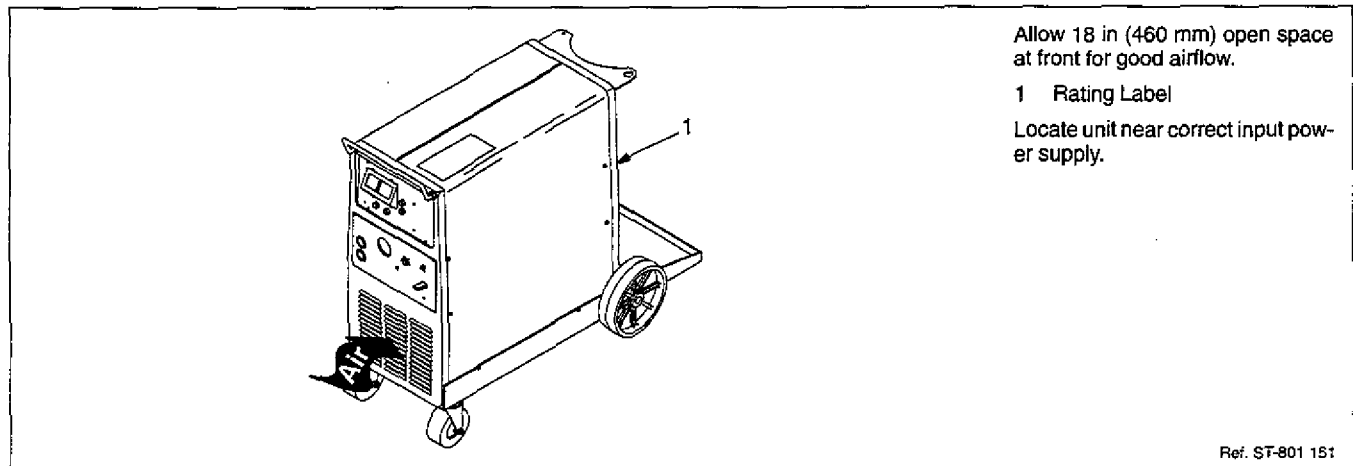
Table 3-1. Items Included With Welding Power Source

Item	Quantity
Welding Gun	1
Spool Of .035 in (0.9 mm) Hard Wire	1
VHS Videotape (Microprocessor Models)	1
10 ft (3 m) Work Cable And Clamp	1
Contact Tips (3 - .030 in And 3 - .035 in)	6
.030 in (0.8 mm) And .035 in (0.8/0.9 mm) Drive Rolls	1 set each
5 ft (1.5 m) Gas Hose	1
Argon/CO ₂ Gas Regulator/Flow Gauge	1

3-1. Selecting A Location

 WARNING	
 <p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> Do not touch live electrical parts. Disconnect input power conductors from de-energized supply line BEFORE moving welding power source. 	 <p>FUMES can be hazardous; LACK OF FRESH AIR AND PROPER VENTILATION can be harmful.</p> <ul style="list-style-type: none"> Do not breathe welding fumes. Place unit only where there is a good fresh air supply and proper ventilation.
 <p>FIRE OR EXPLOSION can result from placing unit on, over, or near combustible surfaces.</p> <ul style="list-style-type: none"> Do not locate unit on, over, or near combustible surfaces. Do not install unit near flammables. 	 <p>FALLING EQUIPMENT can cause serious personal injury and equipment damage.</p> <ul style="list-style-type: none"> Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories. Use equipment of adequate capacity to lift the unit.
<p>BLOCKED AIRFLOW causes overheating and possible damage to unit.</p> <ul style="list-style-type: none"> Do not block airflow. Use only factory-approved filter. <p>Warranty is void if any unapproved filter is used.</p>	

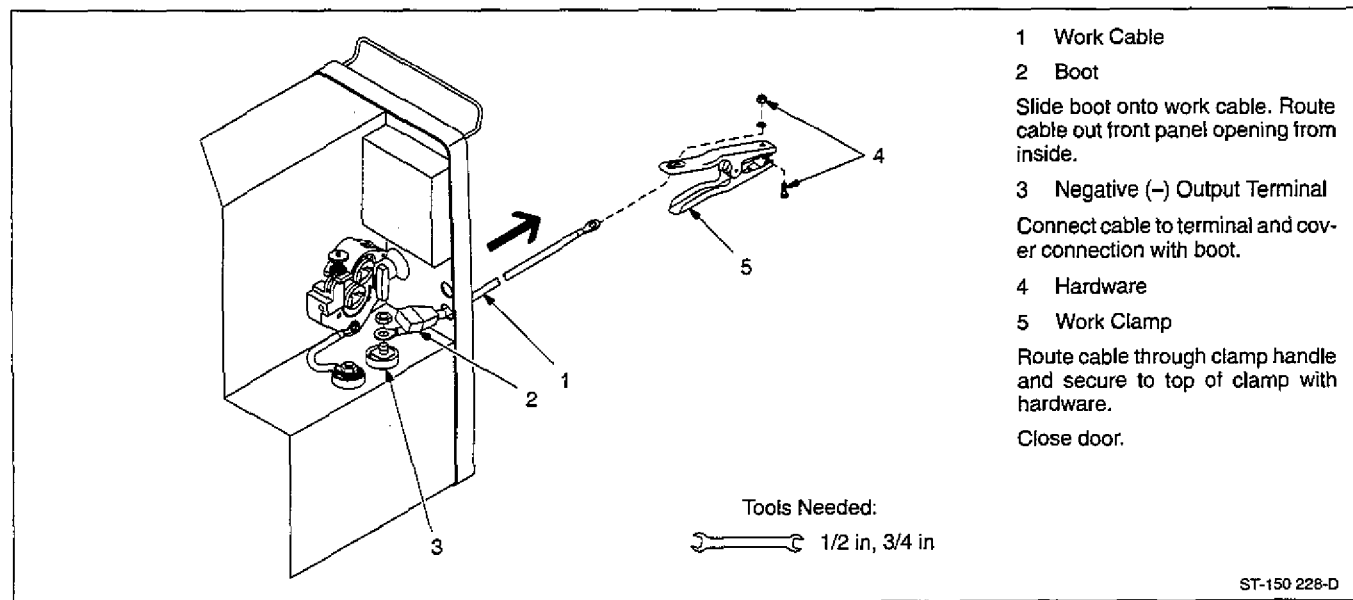
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Ref. ST-801 151

Figure 3-1. Selecting A Location

3-2. Installing Work Clamp



ST-150 228-D

Figure 3-2. Installing Work Clamp

3-3. Gun Polarity For Wire Type

⚠

WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Turn Off welding power source, and disconnect input power before inspecting or installing.

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1 Polarity Changeover Label
 2 Wire Drive Assembly
 3 Negative (-) Output Terminal
 4 Positive (+) Output Terminal

Always read and follow wire manufacturer's recommended polarity.
Close door.

Shown As Shipped – Set For Electrode Positive (DCEP) For Solid Steel Or Aluminum Wires (GMAW Process).

Wire Drive Assembly Lead To Positive (+) Output Terminal

Work Clamp Lead To Negative (-) Output Terminal

GUN POLARITY CHANGEOVER CONNECTIONS

Reverse Lead Connections – For Electrode Negative (DCEN) For Flux Cored Wires (FCAW Process). Drive Assembly Becomes Negative

Tools Needed:
 3/4 in

S-144 449-C

Ref. ST-148 266-B

Figure 3-3. Gun Polarity Connections

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3-4. Installing Safety Chain

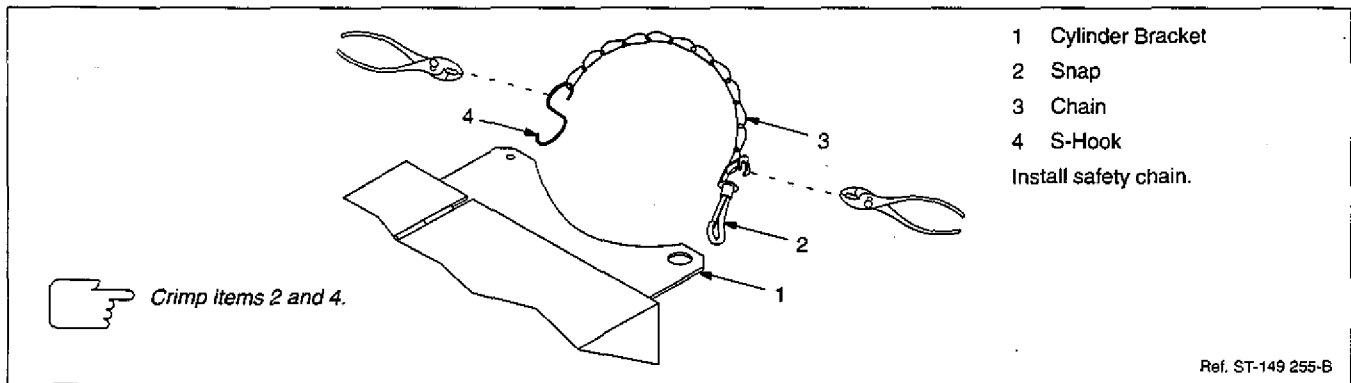




Figure 3-4. Installing Safety Chain

3-5. 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>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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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/Flow Gauge
Install so face is vertical.
5 Gas Hose Connection
Fitting has 5/8-18 right-hand threads. Install gas hose.
6 Flow Adjust
Typical flow rate is 20 cfh (cubic feet per hour). Check wire manufacturer's recommended flow rate. This flow gauge can be adjusted between 5 and 25 cfh.
7 CO₂ Adapter
Customer supplied.
8 O-Ring
Install adapter with O-ring between regulator/flow gauge and CO₂ cylinder.

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

ssb3.2* 3/93 - Ref. ST-148 265-B / Ref. ST-149 827-B / Ref. ST-158 697-A

Figure 3-5. Typical Argon/CO₂ Regulator/Flow Gauge Installation

3-6. Installing Drive Rolls And Wire Inlet Guide

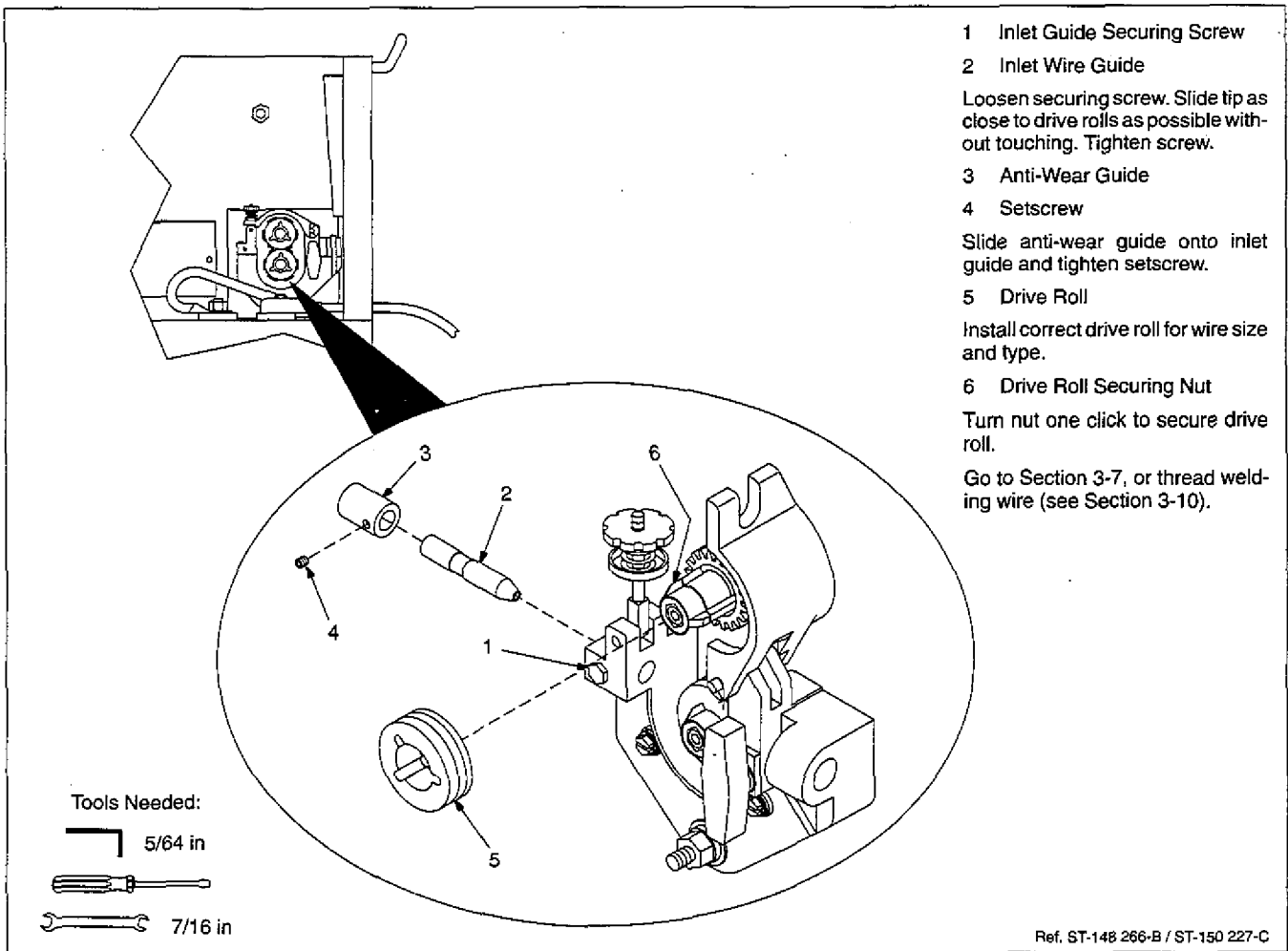


Figure 3-6. Drive Roll And Wire Guide Installation

3-7. Installing Welding Gun

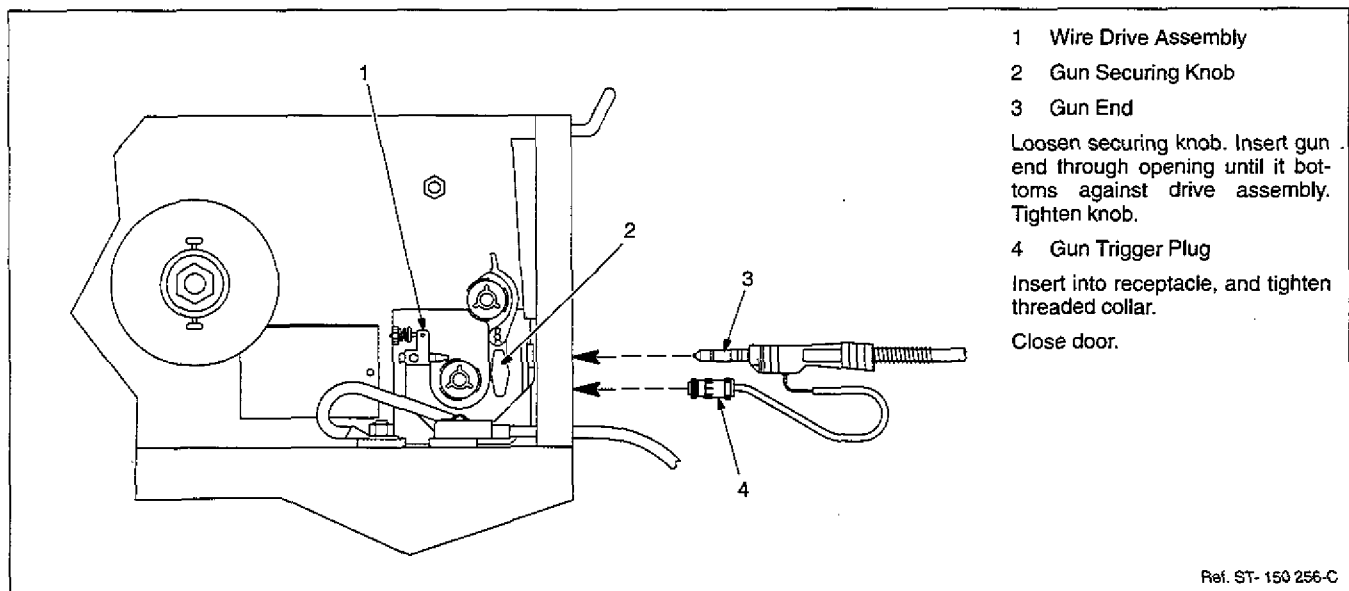
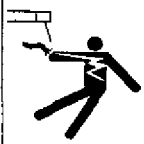


Figure 3-7. Gun Connections

3-8. Connecting Input Power

⚠ WARNING



ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Turn Off welding power source, and disconnect input power before inspecting or installing.
- Have only qualified persons install unit.
- Installation must meet National Electrical Code and all other codes.

swam3.1 2/93

A. Positioning Jumper Links

Jumper Link

200 VOLTS

230 VOLTS

460 VOLTS

S-144 918-C

230 VOLTS

460 VOLTS

575 VOLTS

S-144 916-A

1

2

3

4

Door In Open Position

Tools Needed:

3/8 in

Jumper links allow operation on different input voltages and are factory set for the highest input voltage.

Check input voltage available at site.

If a spool of wire is installed, remove according to Section 3-9 before checking or changing jumper links.

- 1 Input Voltage Label – Only One Is On Unit

Look at jumper links and compare link position with applicable label.

- 2 Screw
- 3 Clear Access Door

To change link position, remove screw and pivot door up.

- 4 Input Voltage Jumper Links

Move links to match input voltage. For example, use 200 volts position when 200 volts input power is available.

Close door and secure with screw.

Close side door.

ssb5.1* 2/92 / Ref. ST-148 264-C \ Ref. ST-148 263-B

Figure 3-8. Input Voltage Jumper Links Location

B. Connecting Input Power

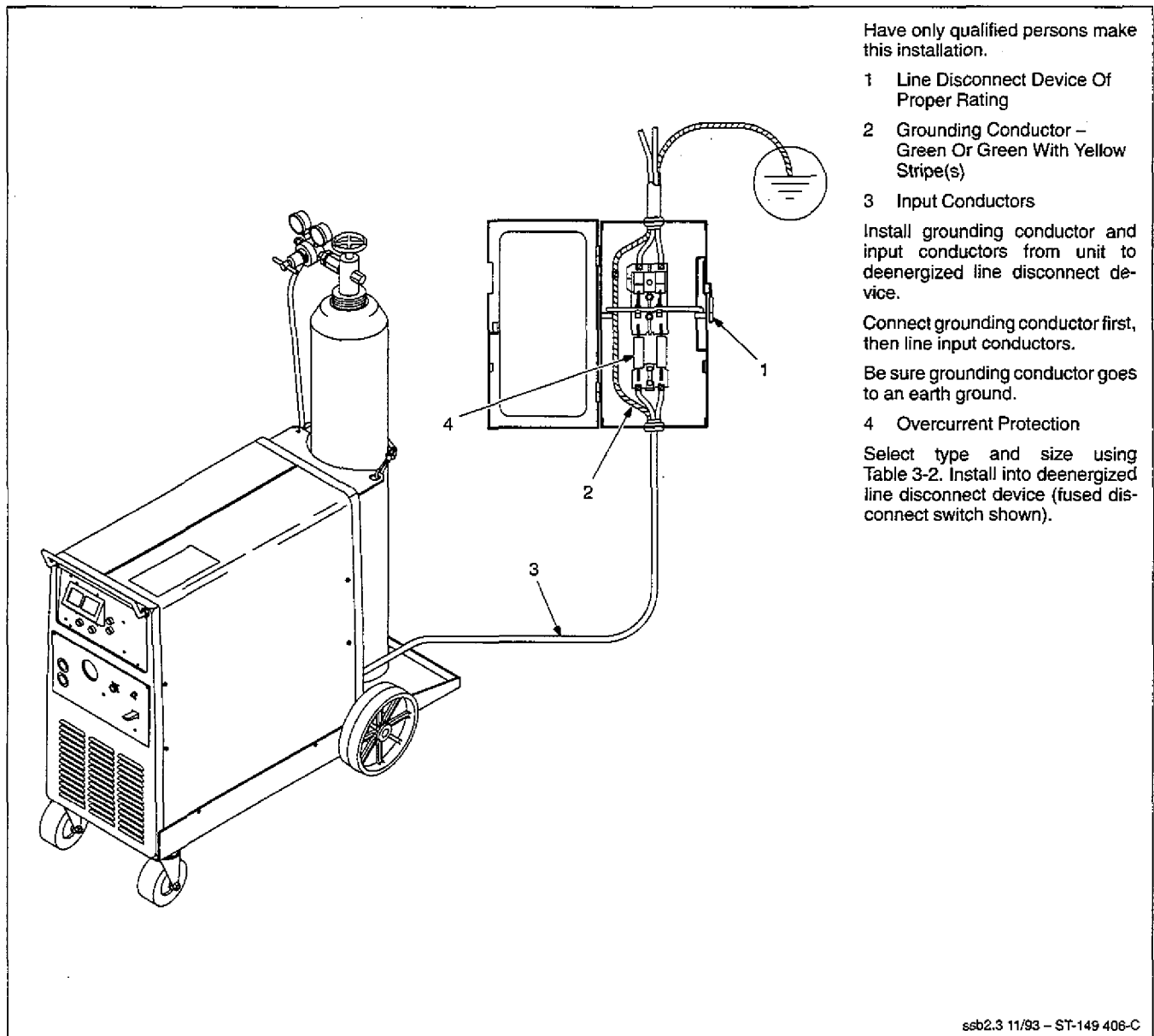


Figure 3-9. Input Power Connections

Table 3-2. Electrical Service Guide

Input Voltage	200	230	460	575
Input Amperes At Rated Output	50	43	22	17
Max Recommended Standard Fuse Or Circuit Breaker Rating In Amperes	80	70	35	25
Min Input Conductor Size In AWG/Kcmil	8	8	10	12
Max Recommended Input Conductor Length In Feet (Meters)	93 (28)	124 (38)	329 (100)	313 (95)
Min Grounding Conductor Size In AWG/Kcmil	8	8	10	12
Reference: 1993 National Electrical Code (NEC).				
				S-0092J

3-9. Installing Wire Spool And Adjusting Hub Tension

Turn Off unit.

- 1 Wire Spool
- 2 Gun Contact Tip

If necessary, cut welding wire off at contact tip, and retract wire onto spool and secure.

- 3 Retaining Ring
- 4 Compression Spring

Remove ring and pull off spool. Compression spring is used with 8 in (200 mm) spools.

- 5 Hub
- 6 Hub Pin

Slide spool onto hub so wire feeds off bottom. Turn spool until hub pin fits hole in back of spool. Reinstall retaining ring.

- 7 Hub Tension Nut

Grasp spool in one hand and turn while using a wrench to adjust hub tension nut. When a slight force is needed to turn spool, tension is set.

Thread welding wire (see Section 3-10). Close door.

Tools Needed:

- Wire cutters
- Pliers
- 15/16 in Wrench

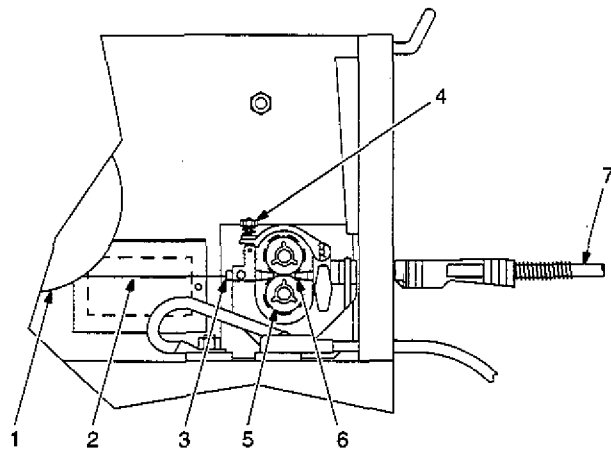
Ref. ST-148 261-B / Ref. ST-072 573-B

Figure 3-10. Installing Wire Spool And Adjusting Hub Tension

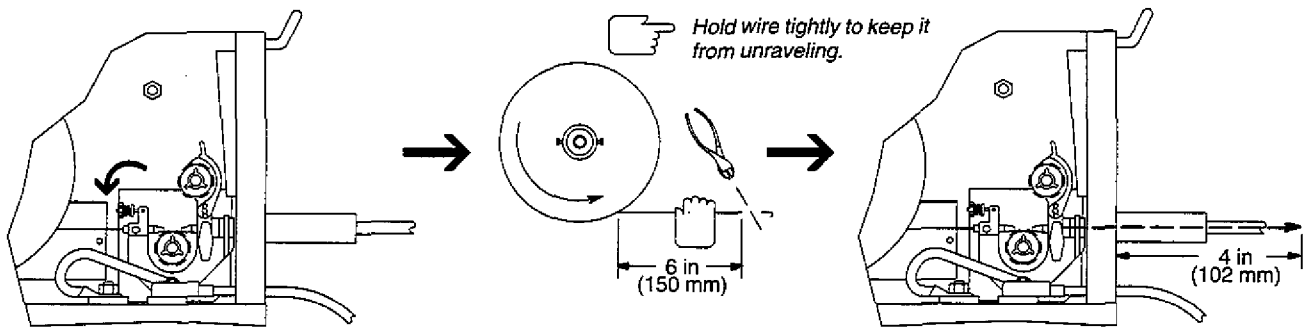
3-10. Threading Welding Wire

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

swam5.1 / swam2.1 10/91



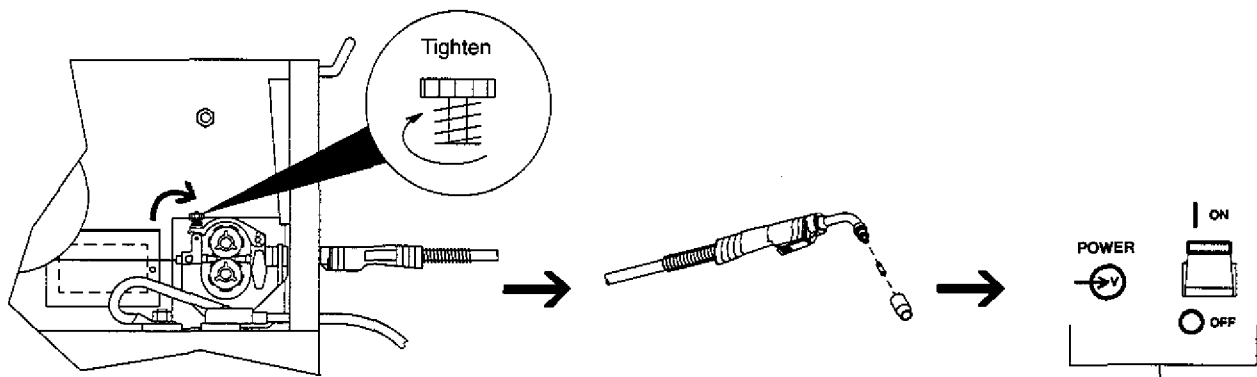
- 1 Wire Spool
 - 2 Welding Wire
 - 3 Inlet Wire Guide
 - 4 Pressure Adjustment Knob
 - 5 Drive Roll
 - 6 Outlet Wire Guide
 - 7 Gun Conduit Cable
- Lay gun cable out straight.



Open pressure assembly.

Pull and hold wire; cut off end.

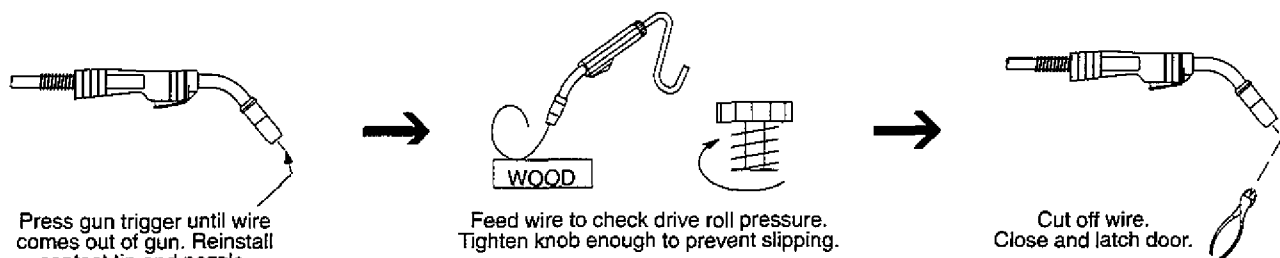
Push wire thru guides into gun; continue to hold wire.



Close and tighten pressure assembly, and let go of wire.

Remove gun nozzle and contact tip.

Set switch.



Press gun trigger until wire comes out of gun. Reinstall contact tip and nozzle.








Feed wire to check drive roll pressure. Tighten knob enough to prevent slipping.

Cut off wire. Close and latch door.

Ref. ST-148 261-B / ST-159 218-A / ST-801 083 / S-0627-A

Figure 3-11. Threading Welding Wire

SECTION 4 – OPERATION

 WARNING		
	ELECTRIC SHOCK can kill. <ul style="list-style-type: none"> Always wear dry insulating gloves. Insulate yourself from work and ground. Do not touch live electrical parts. Keep all panels and covers securely in place. 	
	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. 	
	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. 	
		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.
		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.
		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 arc welding, gouging, or spot welding operations.
		WELDING CURRENT can damage electronic parts in vehicles. <ul style="list-style-type: none"> Disconnect both battery cables before welding on a vehicle. Place work clamp as close to the weld as possible.
		See Safety Precautions at beginning of manual for basic welding safety information. swam6.2 8/92

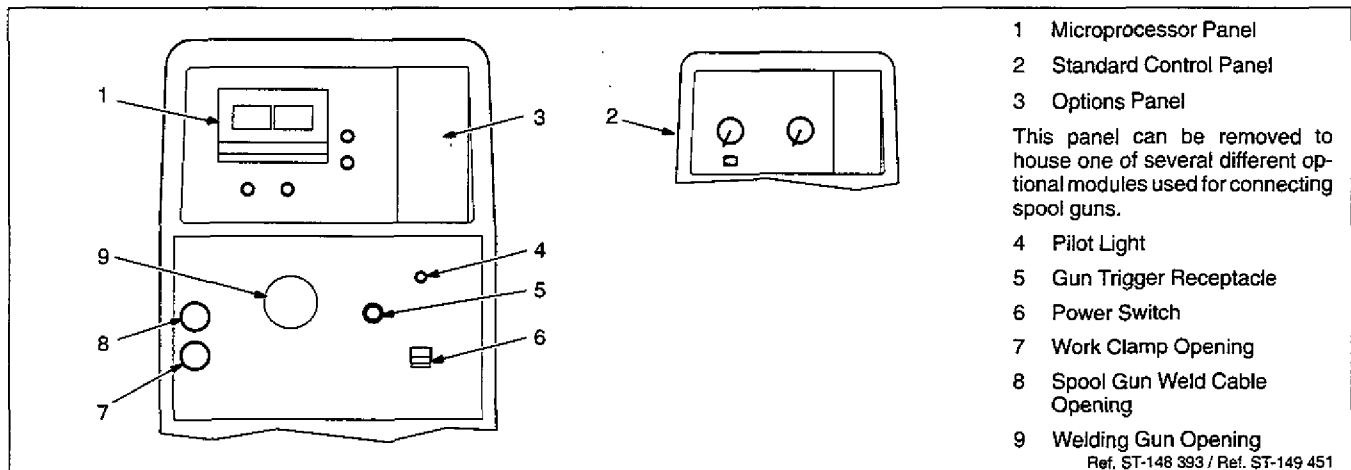


Figure 4-1. Controls

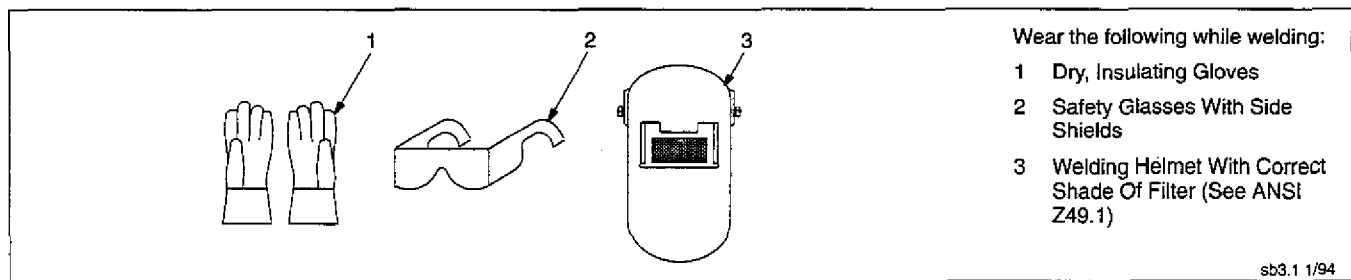


Figure 4-2. Safety Equipment

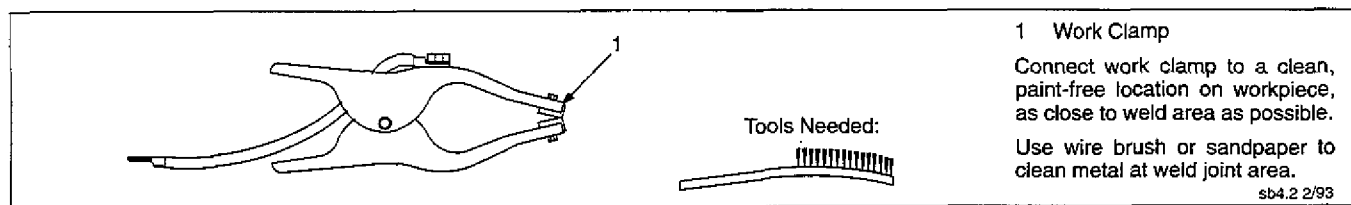


Figure 4-3. Work Clamp

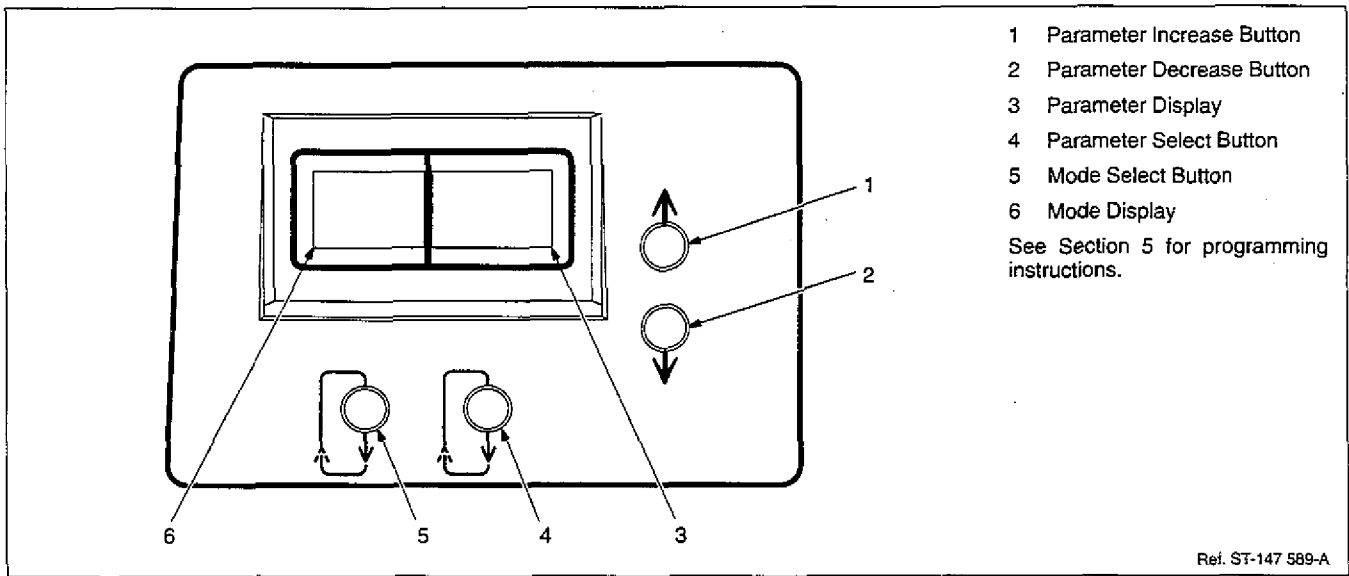


Figure 4-4. Microprocessor Panel

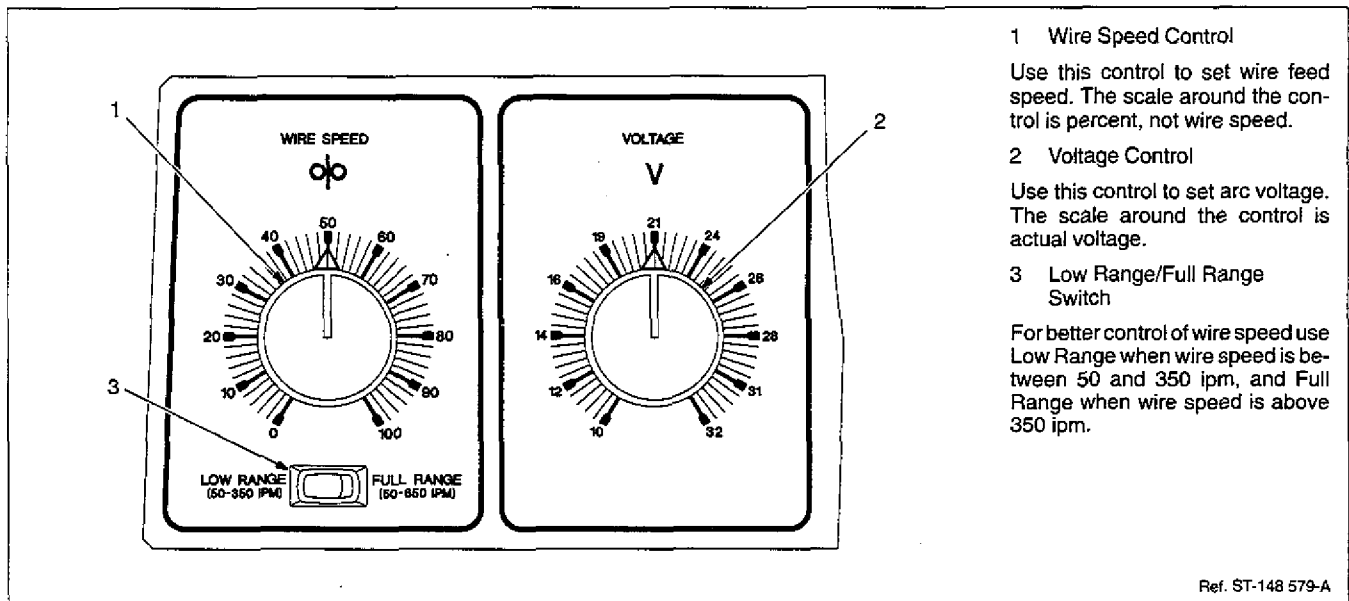


Figure 4-5. Standard Control Panel

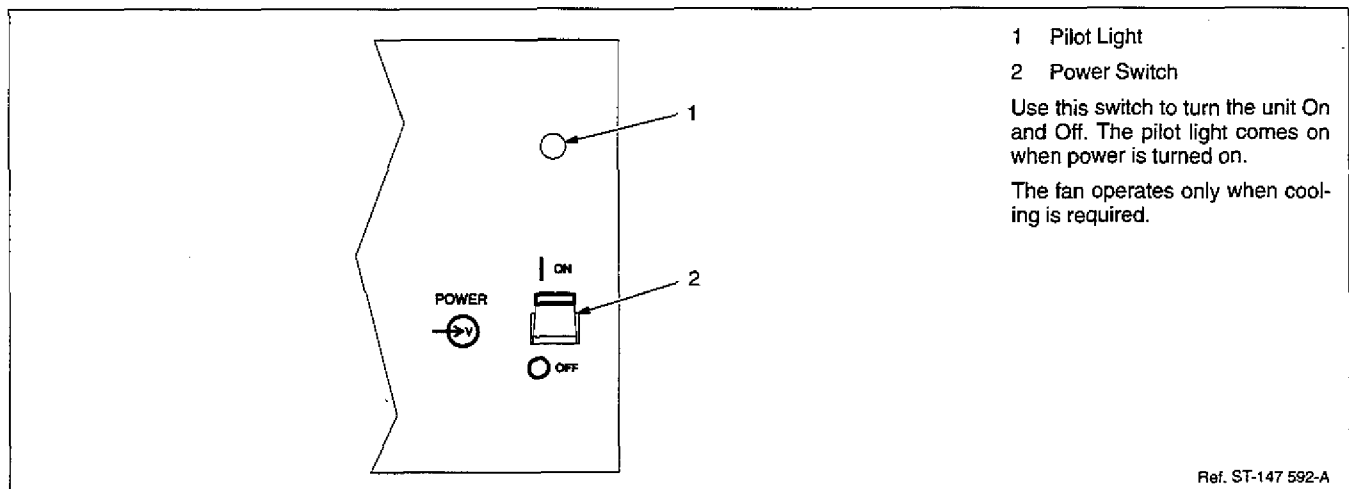
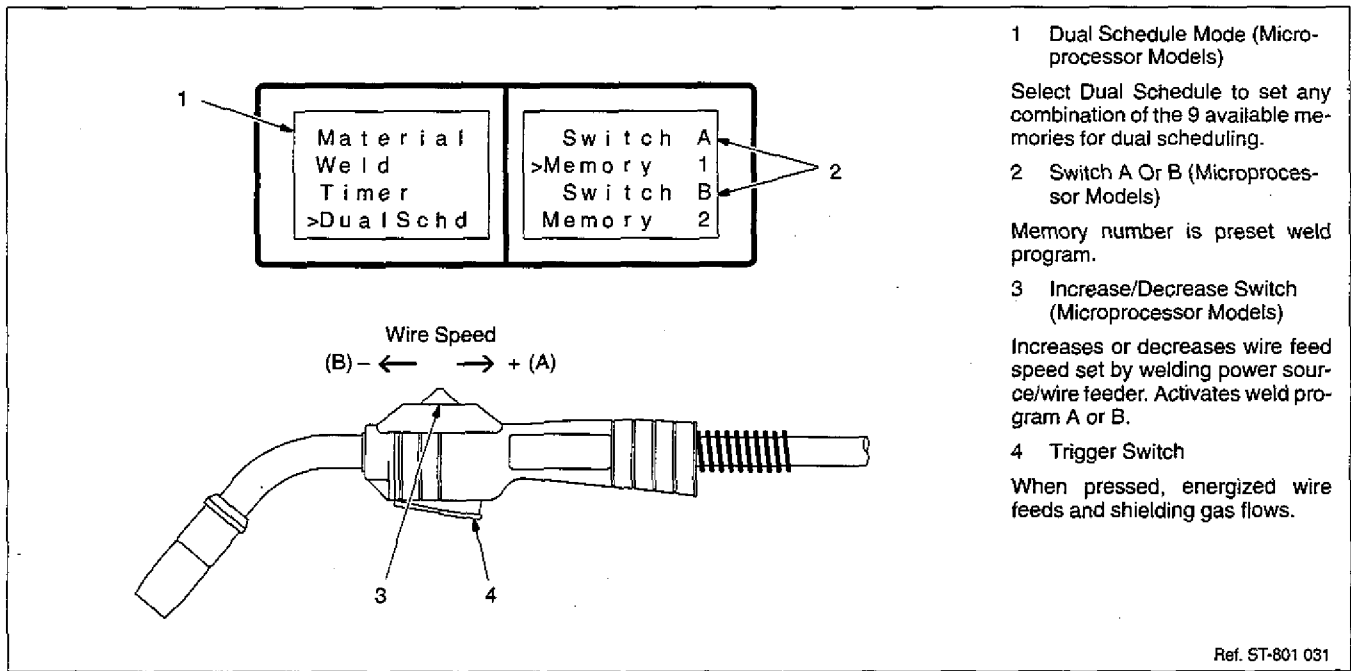


Figure 4-6. Power Switch And Pilot Light



- 1 Dual Schedule Mode (Microprocessor Models)
Select Dual Schedule to set any combination of the 9 available memories for dual scheduling.
- 2 Switch A Or B (Microprocessor Models)
Memory number is preset weld program.
- 3 Increase/Decrease Switch (Microprocessor Models)
Increases or decreases wire feed speed set by welding power source/wire feeder. Activates weld program A or B.
- 4 Trigger Switch
When pressed, energized wire feeds and shielding gas flows.

Ref. ST-801 031

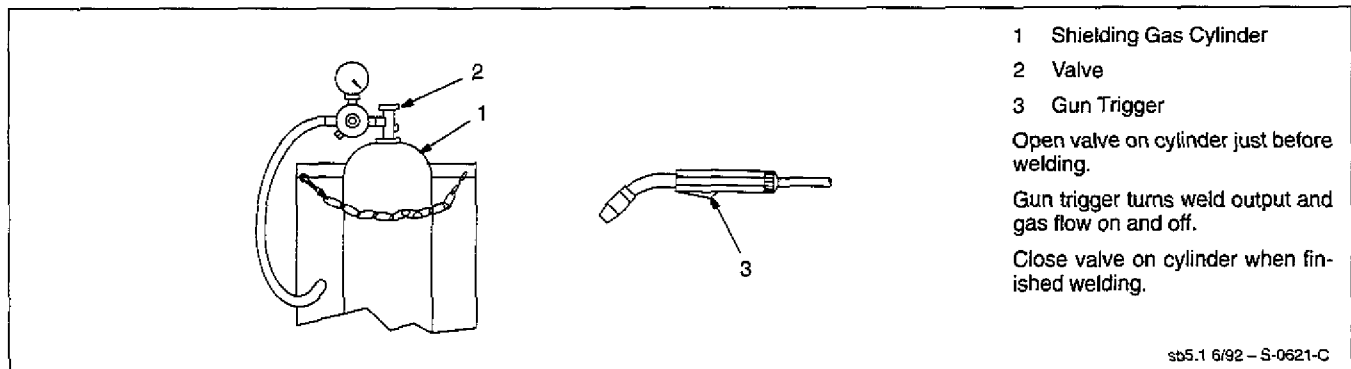
Figure 4-7. Gun Switches

⚠ WARNING

BUILDUP OF SHIELDING GAS can harm health or kill.

- Shut off shielding gas supply when not in use.

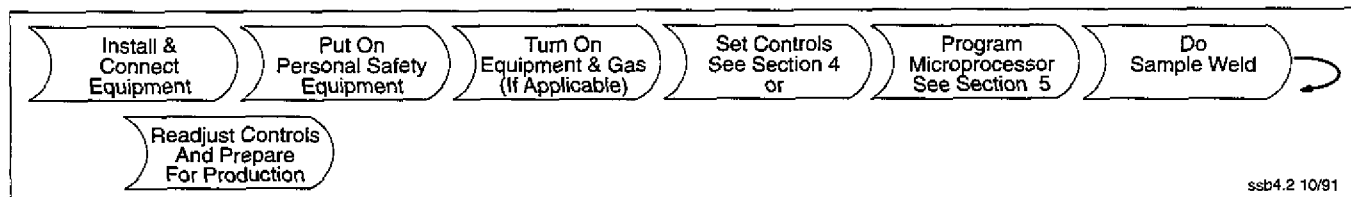
warn.1.1 9/91



- 1 Shielding Gas Cylinder
 - 2 Valve
 - 3 Gun Trigger
- Open valve on cylinder just before welding.
- Gun trigger turns weld output and gas flow on and off.
- Close valve on cylinder when finished welding.

sb5.1 6/92 - S-0621-C



Figure 4-8. Shielding Gas



ssb4.2 10/91

Figure 4-9. Sequence Of Operation

SECTION 5 – PROGRAMMING THE MICROPROCESSOR

⚠ WARNING	
	ELECTRIC SHOCK can kill. <ul style="list-style-type: none">Do not touch live electrical parts. Weld output power is present anytime the Power switch is On and the gun trigger is pressed.
	WELDING WIRE can cause puncture wounds. <ul style="list-style-type: none">Do not point gun toward any part of the body, other people, or any metal when programming. The welding wire is electrically live and moves out of the gun whenever the Power switch is On and the gun trigger is pressed.

5-1. Microprocessor Push Buttons

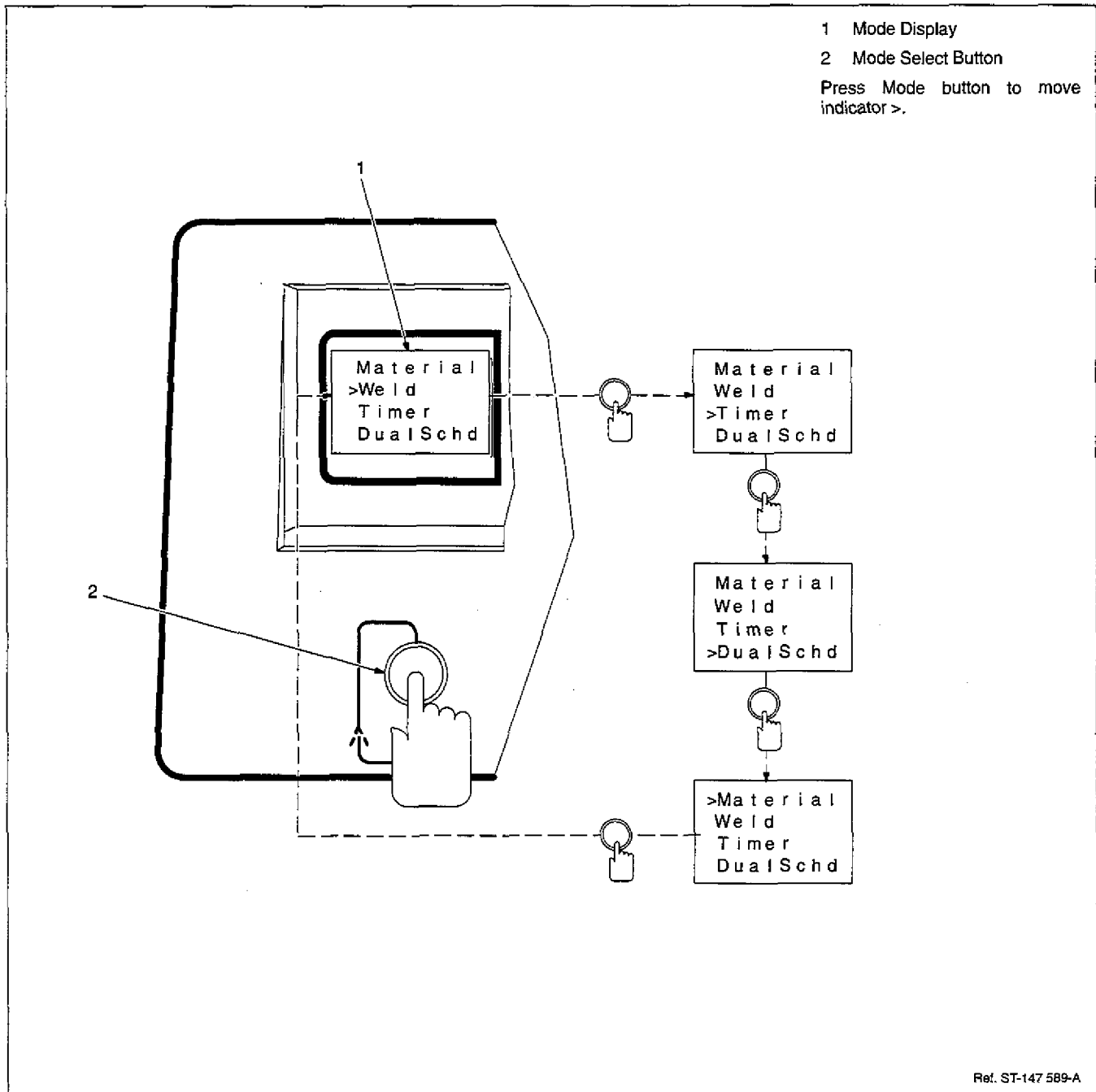


Figure 5-1. Mode Select Button

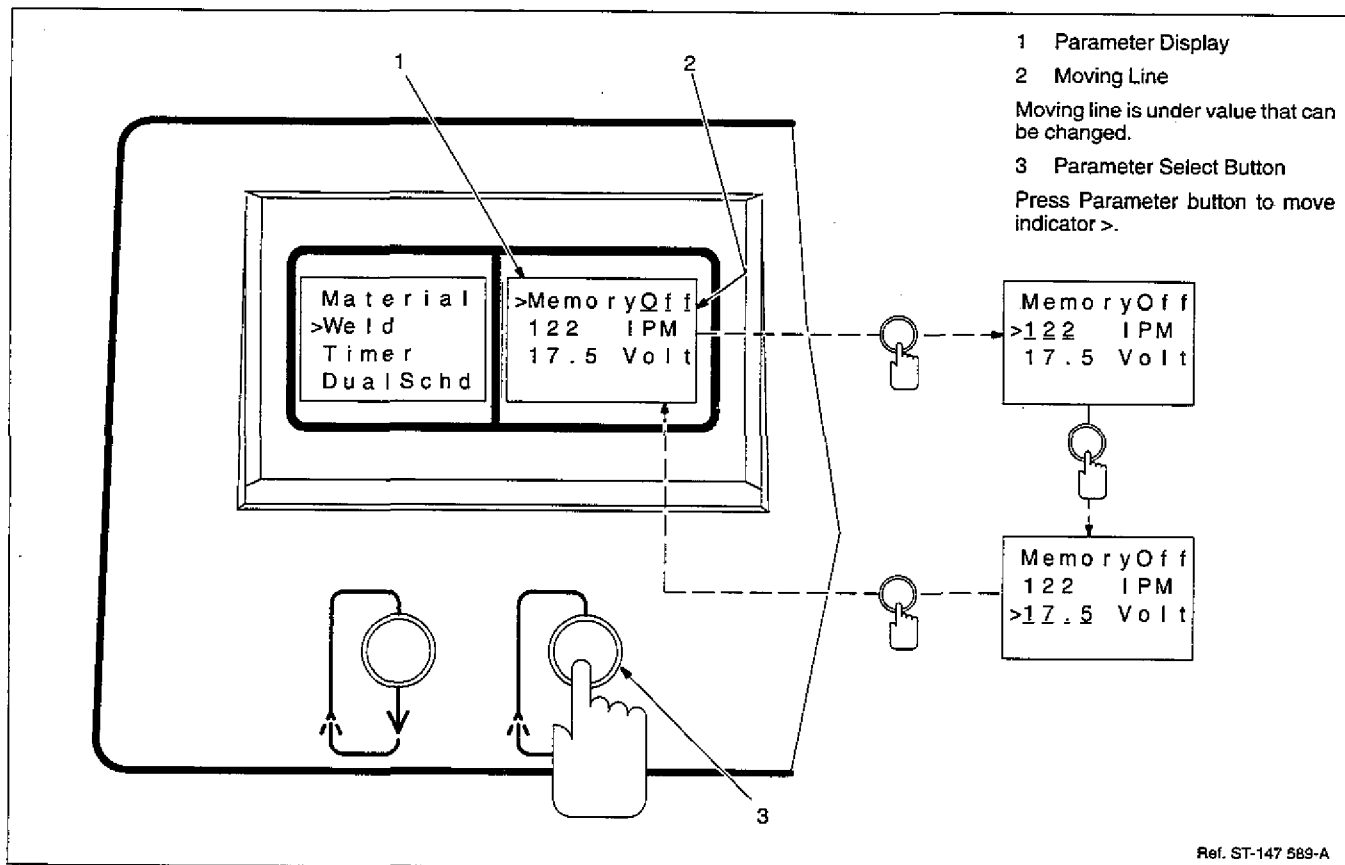


Figure 5-2. Parameter Select Button

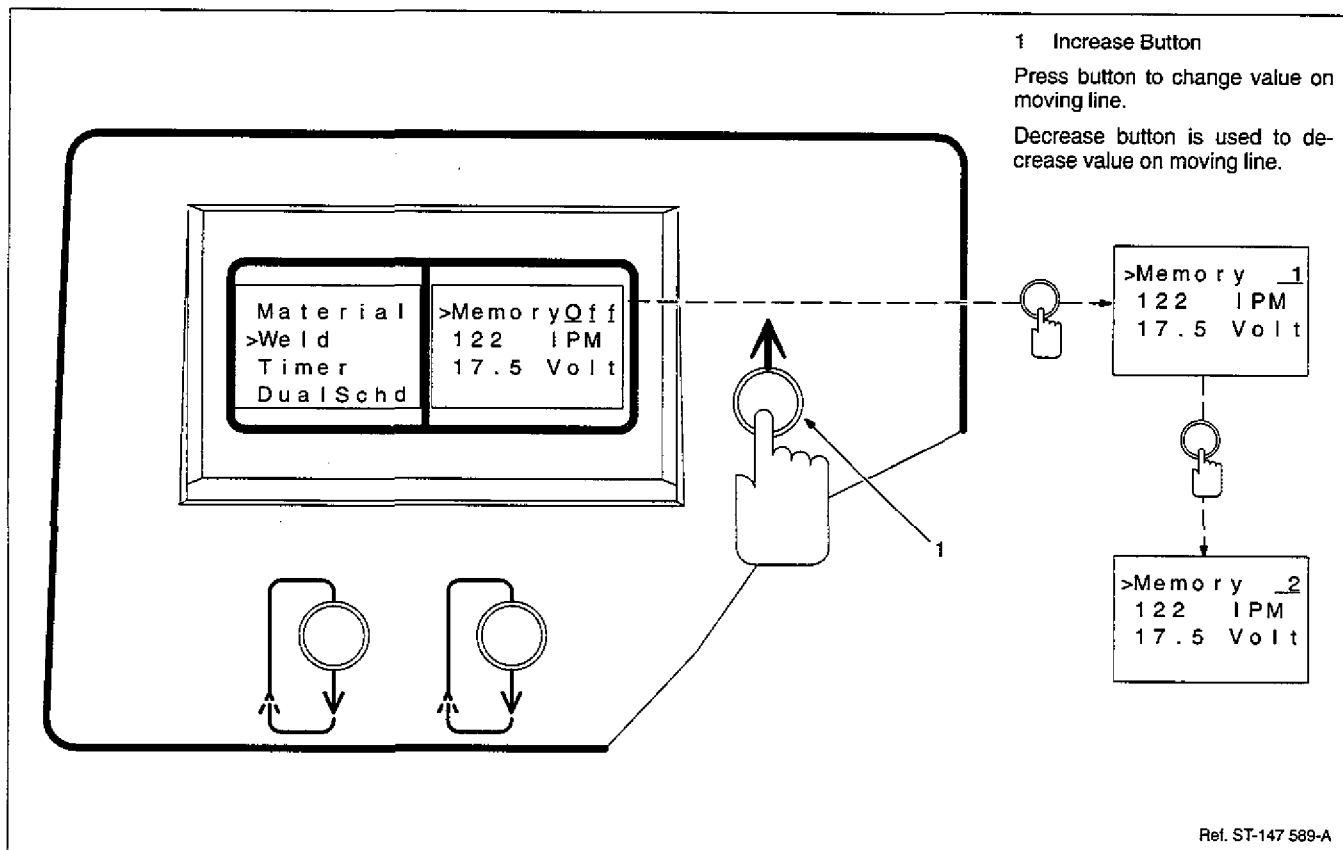


Figure 5-3. Parameter Increase And Decrease Buttons

5-2. Mode Parameter Screens

1 Weld Mode
 Select Weld to set wire speed and volts. Unit must be in Weld mode to select program Memory number.

2 Memory
 Memory can store up to 9 weld programs. On power up, "Memory Off" is displayed. Values are a copy of last weld program used.
 Value changes in "Memory Off" do not affect other programs.

3 Wire Speed
 Value can be set between 50 and 670 ipm (1.3 to 17.0 mpm).
 Use the Increase/Decrease buttons or gun switch to change values.

4 Volts
 Value can be set between 10.0 and 32.0 volts.
 Use the Increase/Decrease buttons or gun switch to change values.

Figure 5-4. Weld Mode

1 Timer Mode
 Select Timer to set spot, skip, or burnback time.

2 Memory
 Memory displays number set in Weld mode.

3 On Time (Spot Time)
 Value can be set between 0.1 and 30.0 seconds.

4 Off Time
 Value can be set between 0.5 and 30.0 seconds.
 Skip welds use both on and off time.

5 Burnback
 Value can be set between 0.00 and 0.25 seconds when unit is configured for burnback (see Section 5-3).

Figure 5-5. Timer Mode

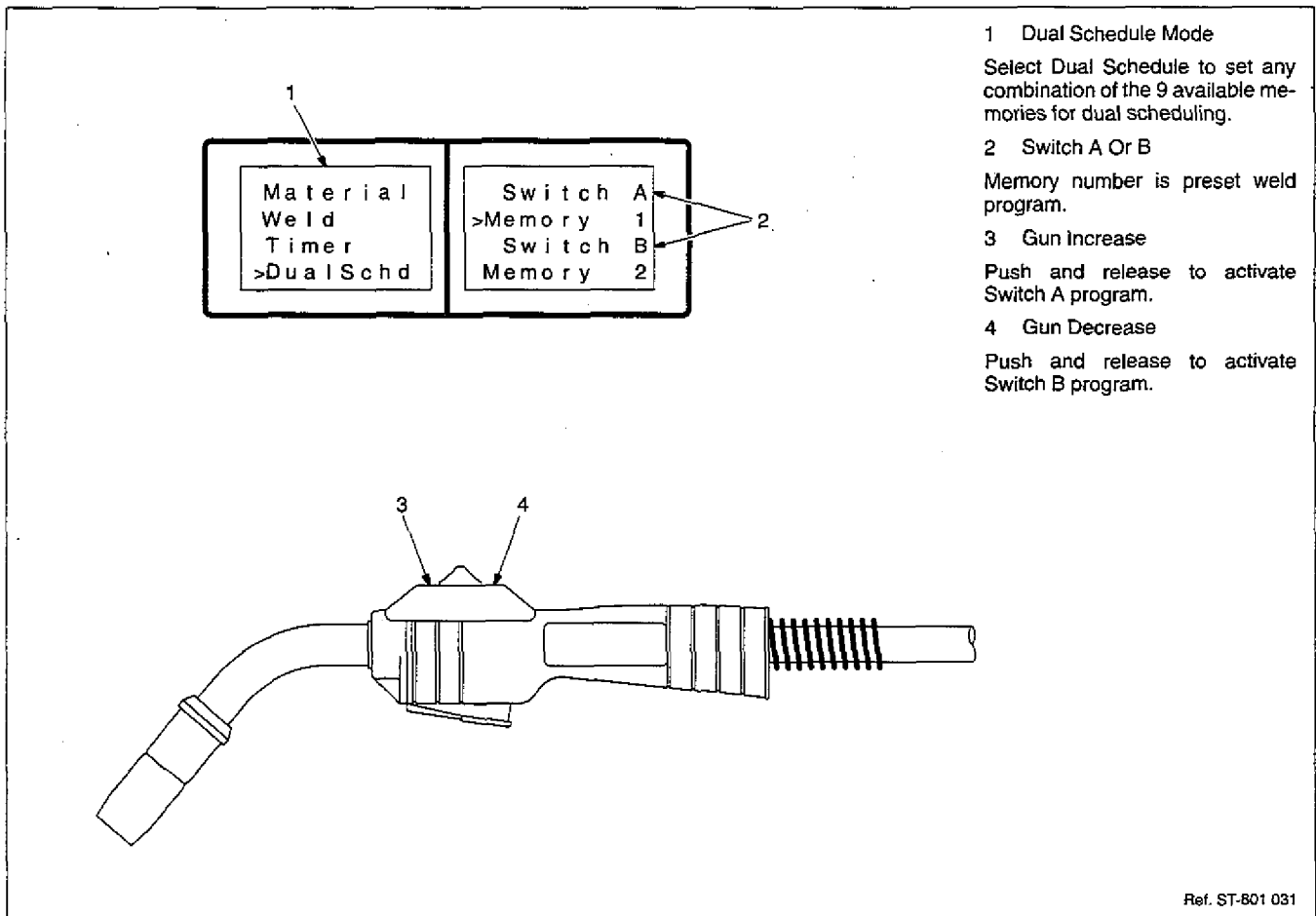


Figure 5-6. Dual Schedule Mode

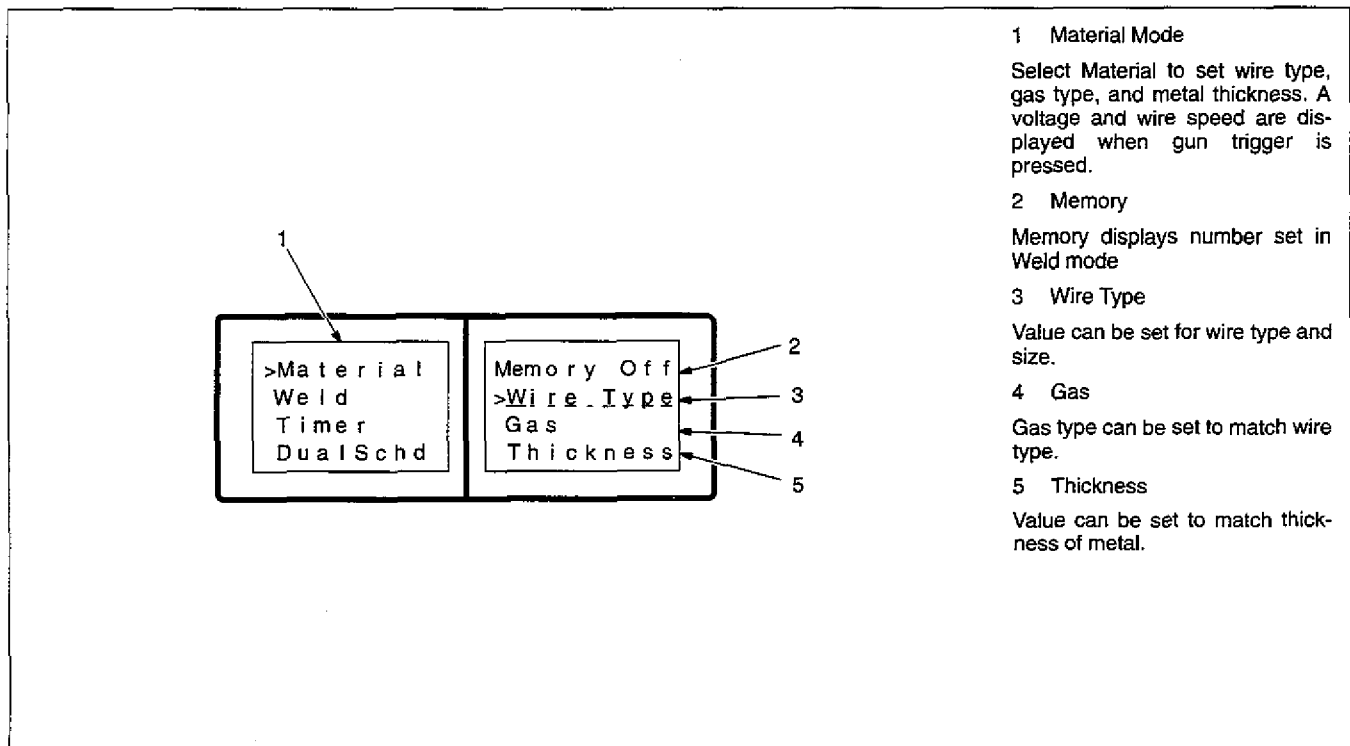


Figure 5-7. Material Mode

5-3. Setting Language, Wire Speed Units, And Burnback

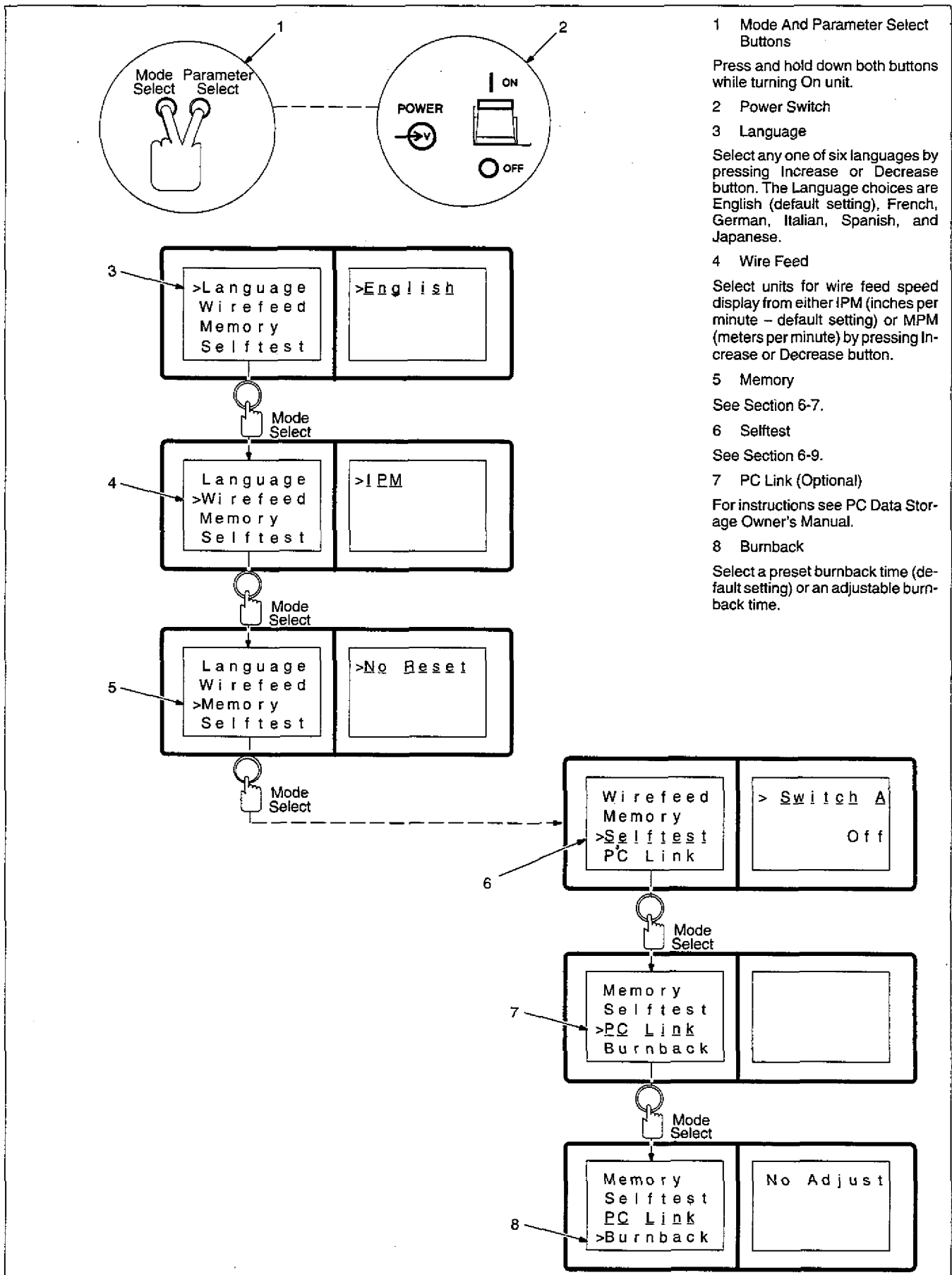


Figure 5-8. Setting Language, Wire Speed Units, And Burnback

5-4. Manually Setting Voltage And Wire Speed

NOTE 

Use these instructions to manually set wire speed and voltage.

WARNING 



READ SAFETY BLOCKS at start of Section 5 before proceeding.

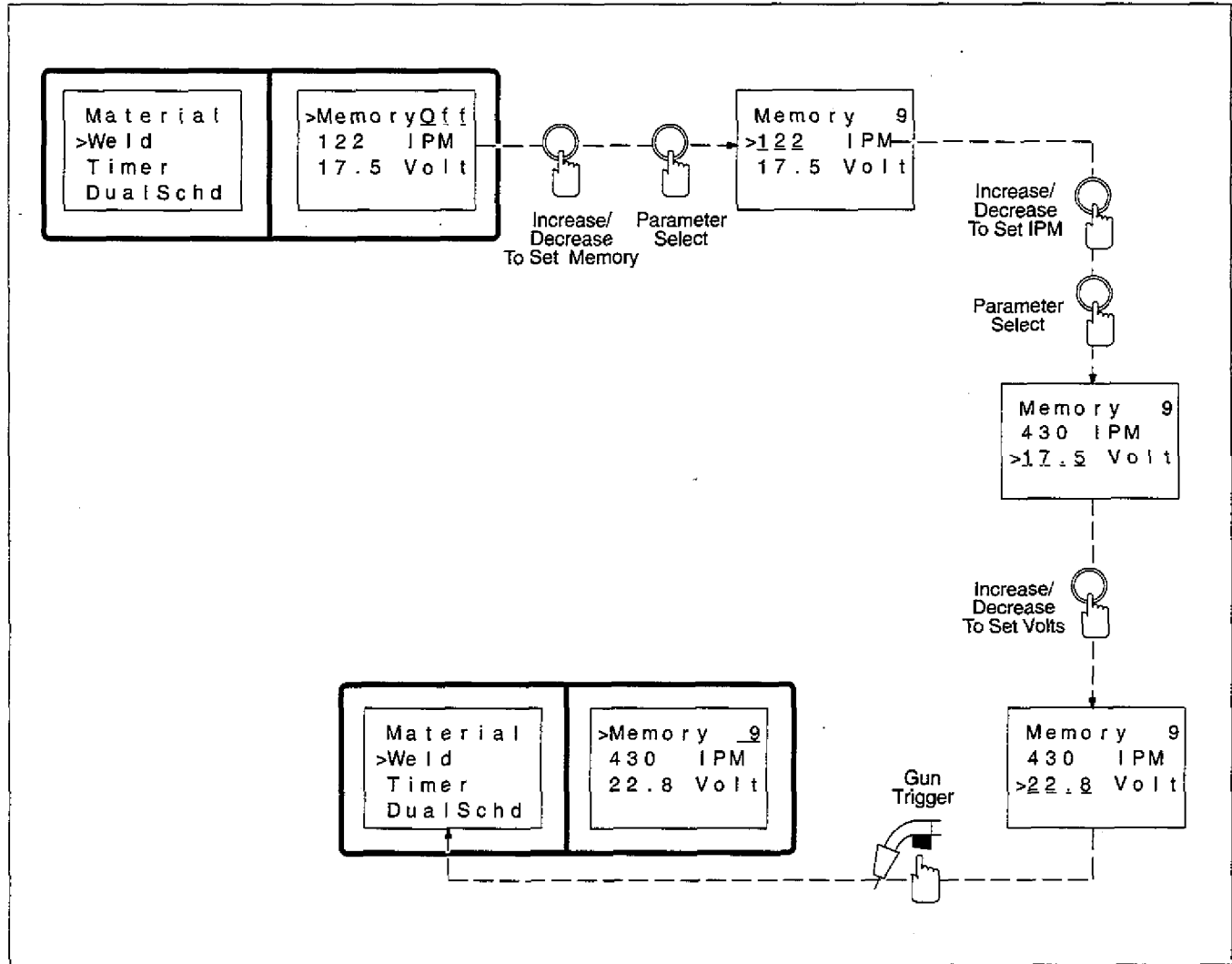


Figure 5-9. Setting Weld (Manual) Parameters

5-5. Using Microprocessor To Set Voltage And Wire Speed

NOTE

Use these instructions to set wire type, shielding gas, and material thickness. A wire speed and voltage are displayed when gun trigger is pressed.

WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

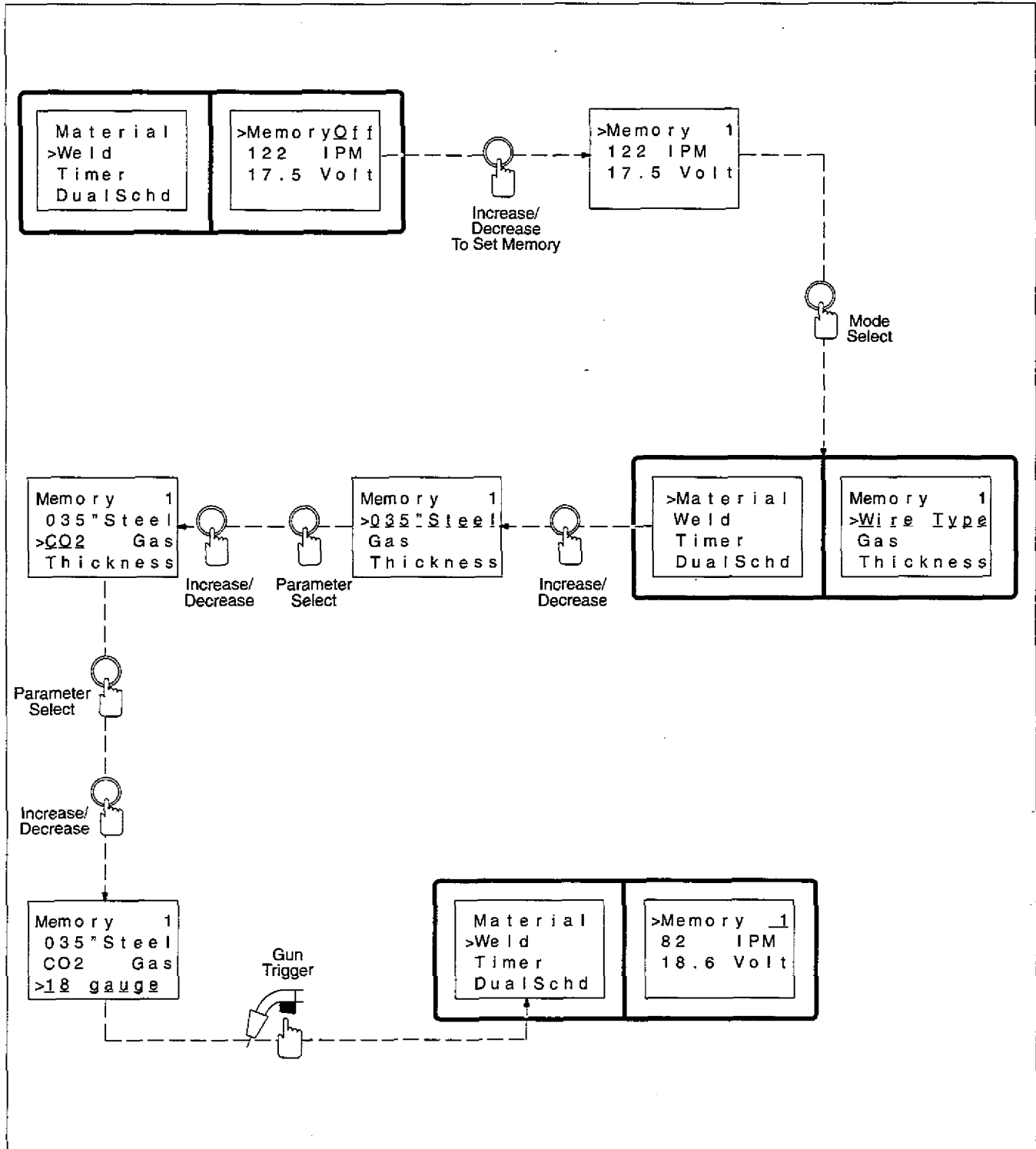


Figure 5-10. Setting Material (Microprocessor) Parameters

5-6. Timer Weld – Spot

NOTE

Use these instructions to make a weld program into a spot weld program. Spot welds are made using the weld on time set in this mode.

WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

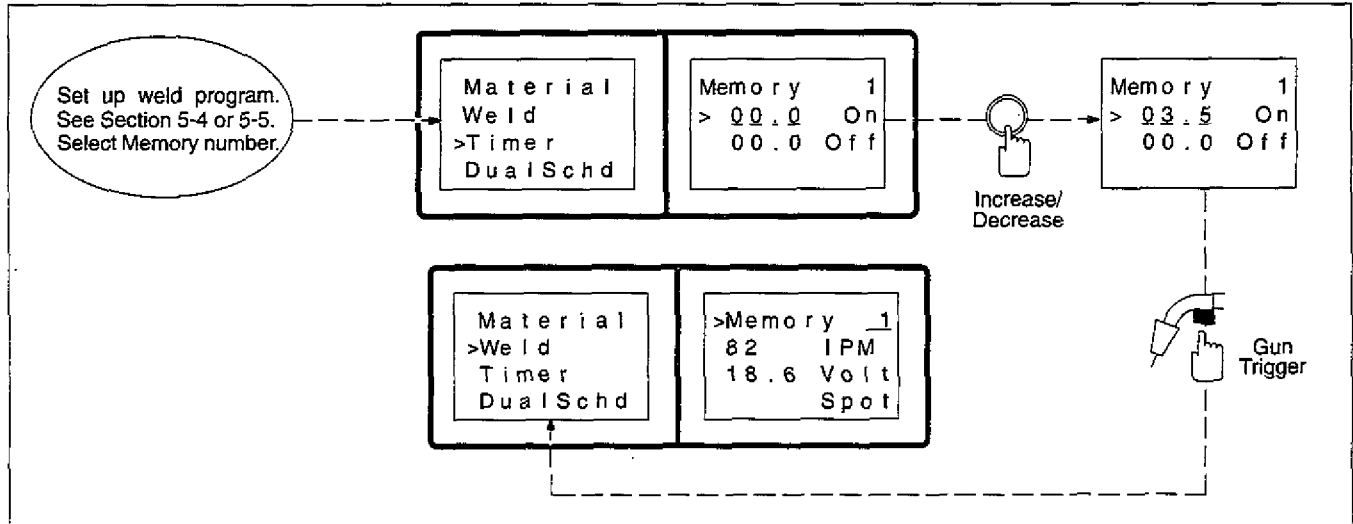


Figure 5-11. Setting Timer Weld – Spot Parameters

5-7. Timer Weld – Skip

NOTE

Use these instructions to make a weld program into a skip weld program. Skip welds are made using the weld on and off time set in this mode.

WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

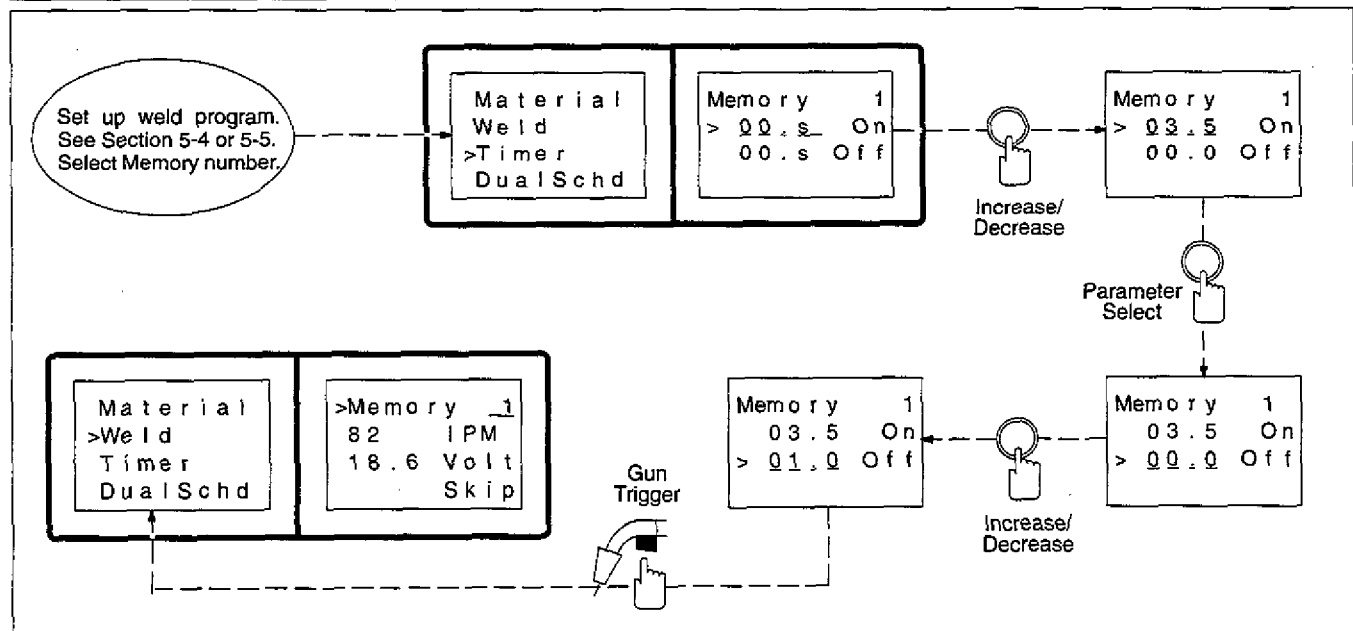


Figure 5-12. Setting Timer Weld – Skip Parameters

5-8. Dual Schedule Welding

NOTE

Use these instructions to set up two weld programs used alternately to make a weld. A combination of continuous, spot, and skip welds may be used.

WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

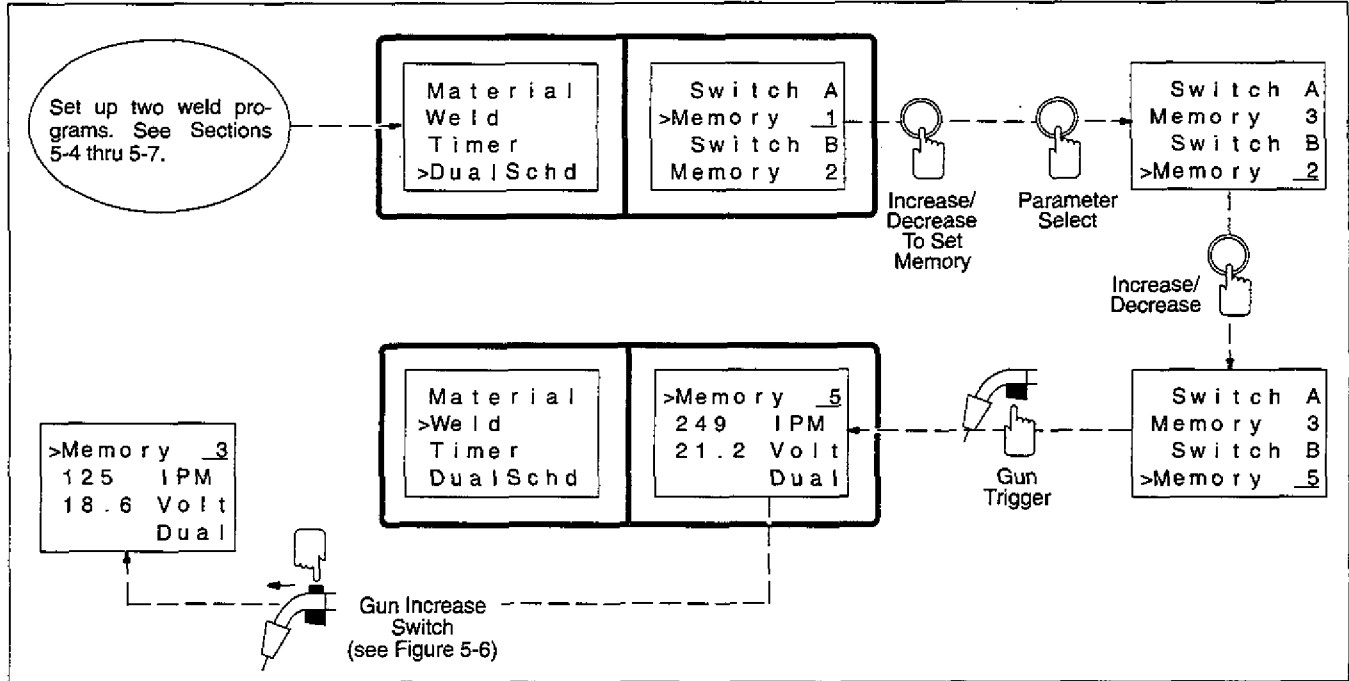


Figure 5-13. Setting Dual Schedule Welding Parameters

5-9. Using One Switch To Control Voltage And Wire Speed (Synergic Welding)

WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

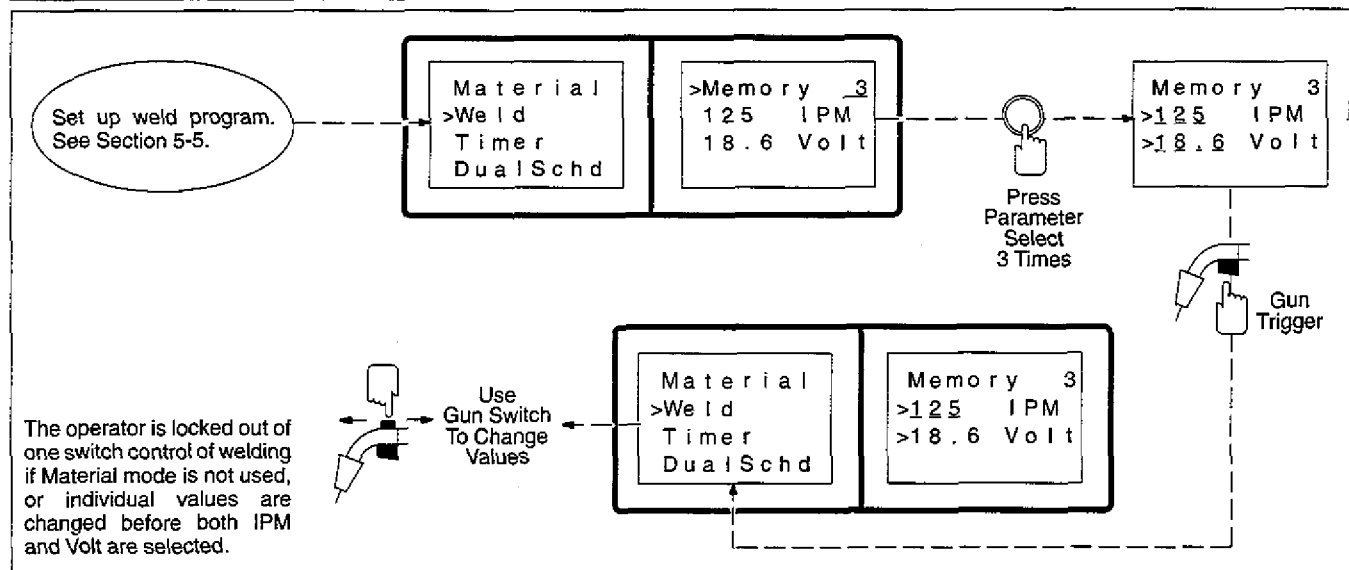








Figure 5-14. Setting Synergic Welding Parameters

SECTION 6 – MAINTENANCE & TROUBLESHOOTING

 WARNING			
	ELECTRIC SHOCK can kill. <ul style="list-style-type: none"> Do not touch live electrical parts. Turn Off 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 maintaining or servicing. 		
		Maintenance to be performed only by qualified persons.	
		<small>swam8.2 2/93</small>	

6-1. Routine Maintenance

 Turn Off all power before maintaining.



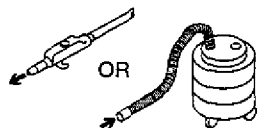

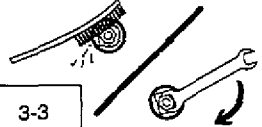
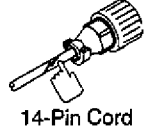


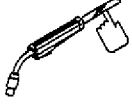
Each Spool Of Wire	3 Months	6 Months
 See Section 6-6	 Replace Unreadable Labels	 Blow Out Or Vacuum Inside
 Clean Nozzle And Check Contact Tip	 Clean And Tighten Weld Terminals	--- During Heavy Service, Clean Monthly
--- Replace Cracked Parts	 14-Pin Cord	 Clean Drive Rolls
 Gas Hose	 Gun Cable	3-6

Figure 6-1. Maintenance Schedule

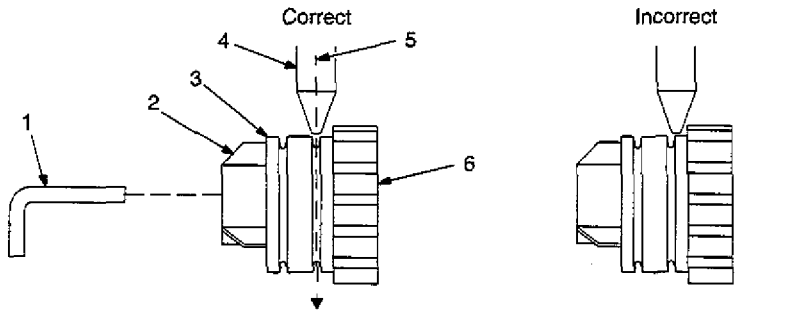
6-2. Aligning Drive Rolls And Wire Guide

WARNING



READ SAFETY BLOCKS at start of Section 6 before proceeding.

Horizontal Alignment



Turn Off unit.

Horizontal Alignment

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

- 1 Allen Wrench
- 2 Drive Roll Securing Nut
- 3 Drive Roll
- 4 Wire Guide
- 5 Welding Wire
- 6 Drive Gear

Insert wrench, and turn screw in or out until drive roll groove lines up with wire guide.

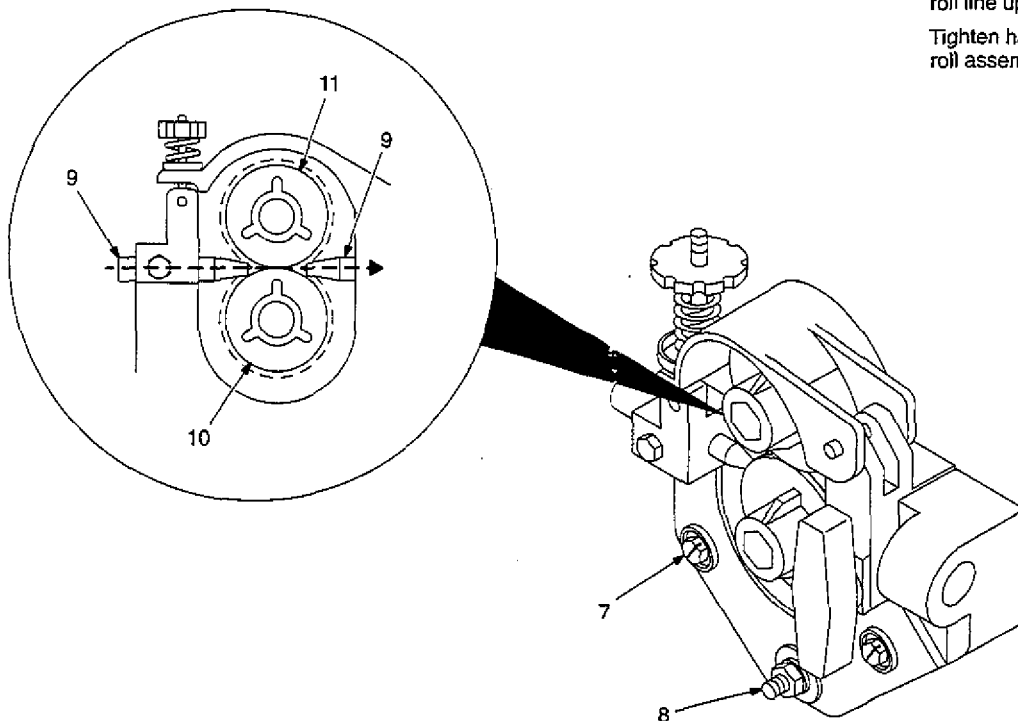
Vertical Alignment

- 7 Housing Bolts
- 8 Weld Cable Terminal
- Loosen bolts and terminal nut(s).
- 9 Wire Guide
- 10 Drive Roll
- 11 Pressure Roll

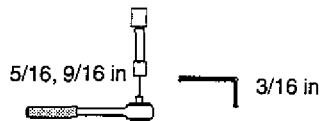
Slide housing up or down until groove in drive roll and pressure roll line up with wire guide.

Tighten hardware. Close pressure roll assembly.

Vertical Alignment



Tools Needed:



Ref. ST-800 412-A

Figure 6-2. Aligning Drive Rolls And Wire Guide

6-3. Replacing Hub Assembly

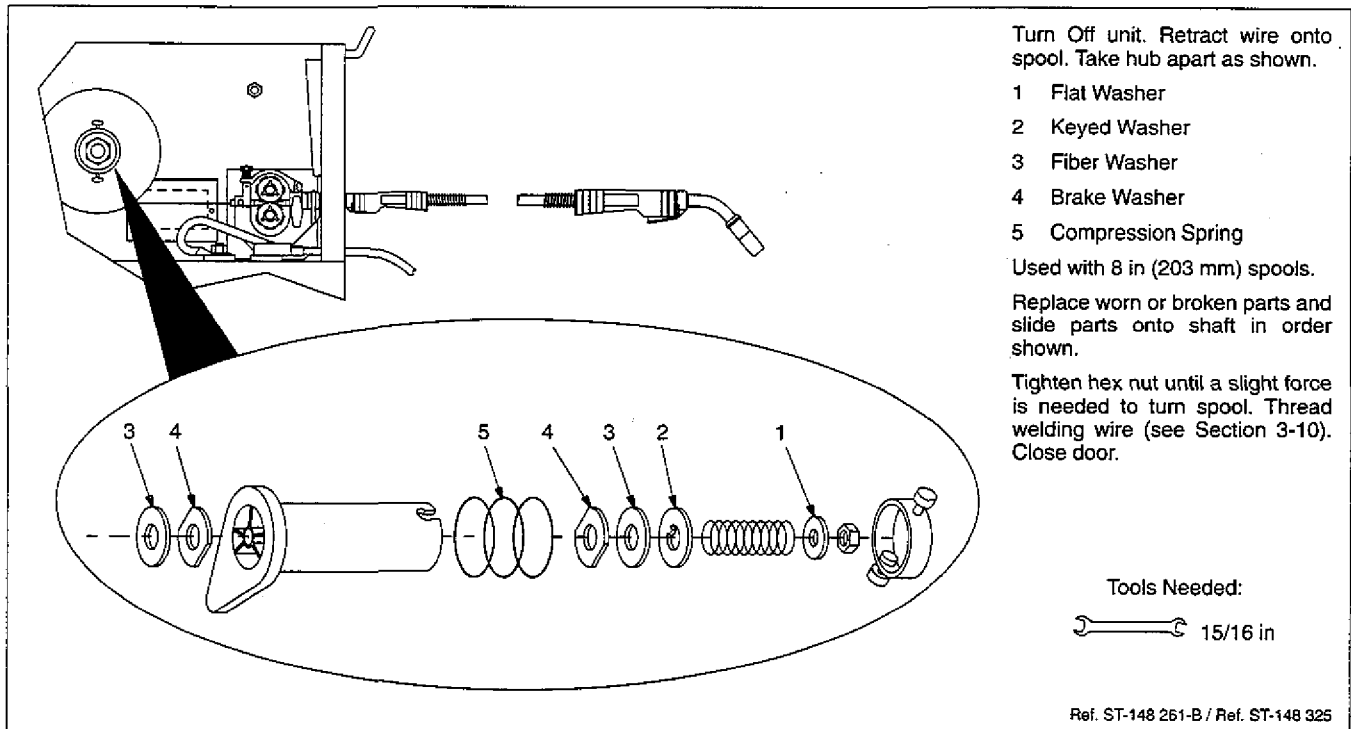


Figure 6-3. Hub Assembly

6-4. Inspecting And Replacing Motor Brushes

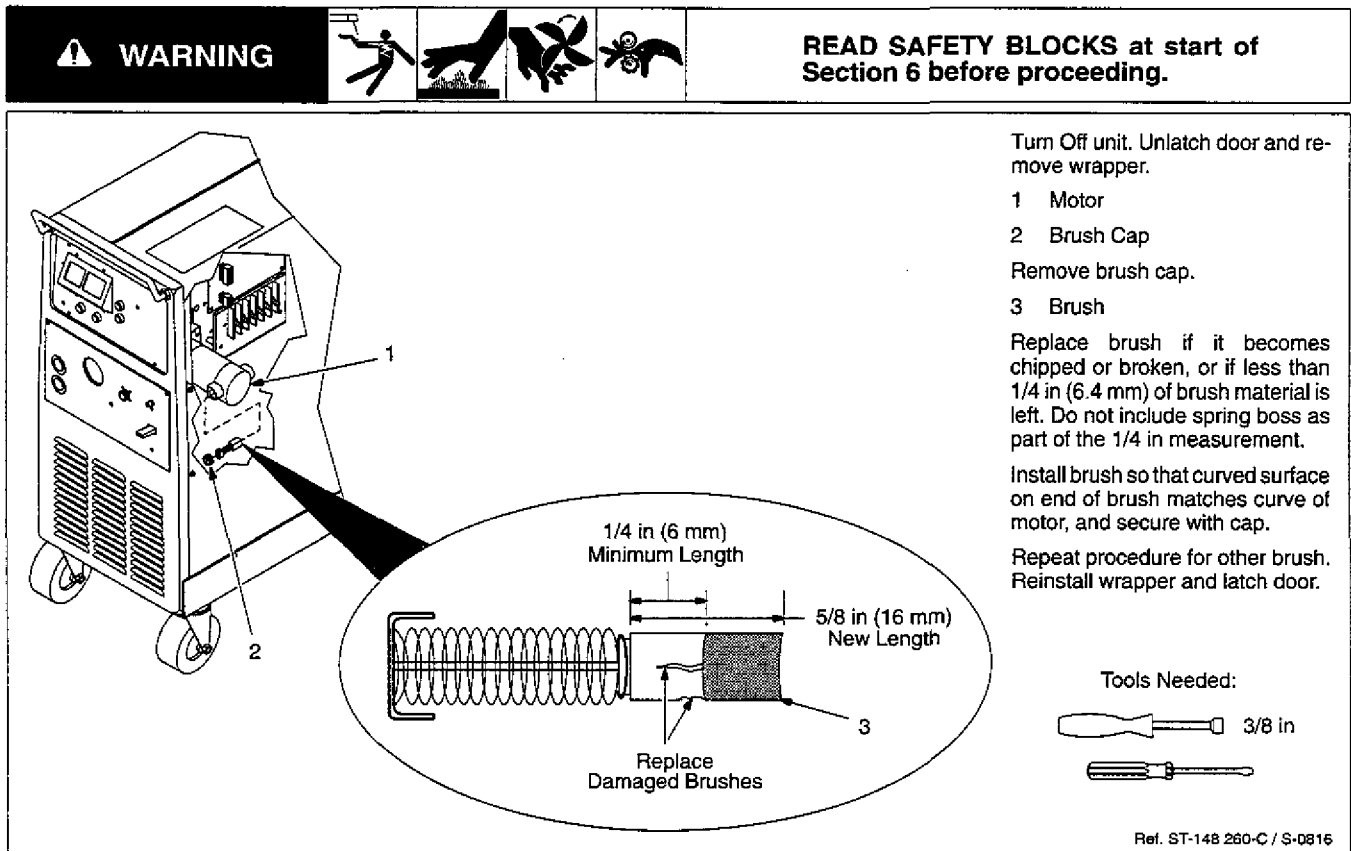


Figure 6-4. Motor Brush Location

6-5. Overload Protection

⚠ WARNING		READ SAFETY BLOCKS at start of Section 6 before proceeding.
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A. Circuit Breaker CB1

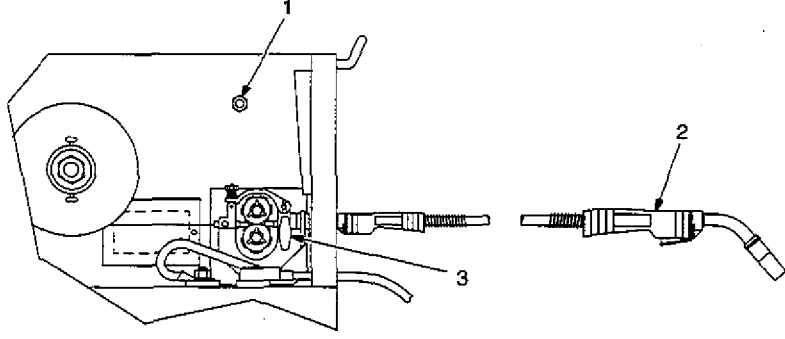
	<p>1 Circuit Breaker CB1 CB1 protects the wire drive motor from overload. If CB1 opens, no wire feed is available.</p> <p>2 Welding Gun Check gun liner for blockage or kinks.</p> <p>3 Wire Drive Assembly Check for jammed wire, binding drive gear or misaligned drive rolls.</p> <p>Allow cooling period and reset breaker. Close door.</p> <p style="text-align: right; font-size: small;">Ref. ST-148 261-B</p>
--	---

Figure 6-5. Circuit Breaker CB1 Location

B. Unit Overload

If the unit is used beyond capacity (excessive wire feed, shorted output, etc.), wire feeds but is not energized. Release the gun trigger to reset this condition.

C. Overheating


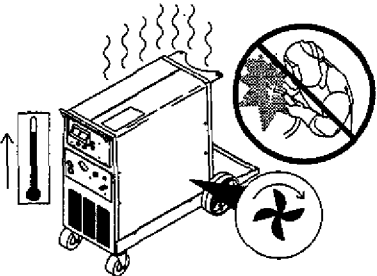
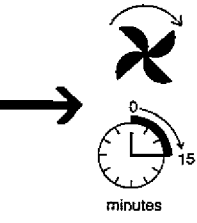
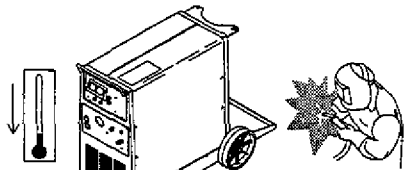
			
	<p>When overheated, thermostat opens, output stops, and cooling fan keeps running.</p>	<p>Let fan run for 15 minutes.</p>	<p>Start welding.</p>
		ssb10.1 1/94 - Ref. ST-801 151	

Figure 6-6. Overheating

6-6. Replacing Gun Contact Tip And Liner

⚠ WARNING		READ SAFETY BLOCKS at start of Section 6 before proceeding.
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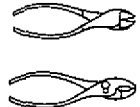
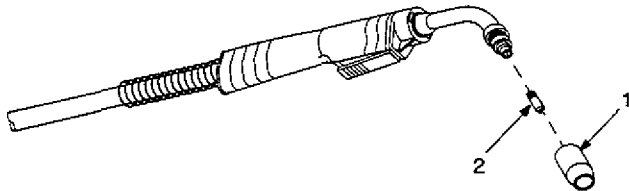
<p>Tools Needed:</p> 		<p>Turn Off unit.</p> <p>1 Nozzle Cut off welding wire at contact tip. Remove nozzle.</p> <p>2 Contact Tip Remove contact tip and install new contact tip. Reinstall nozzle.</p> <p style="text-align: right; font-size: small;">Ref. ST-801 023</p>
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Figure 6-7. Replacing Contact Tip

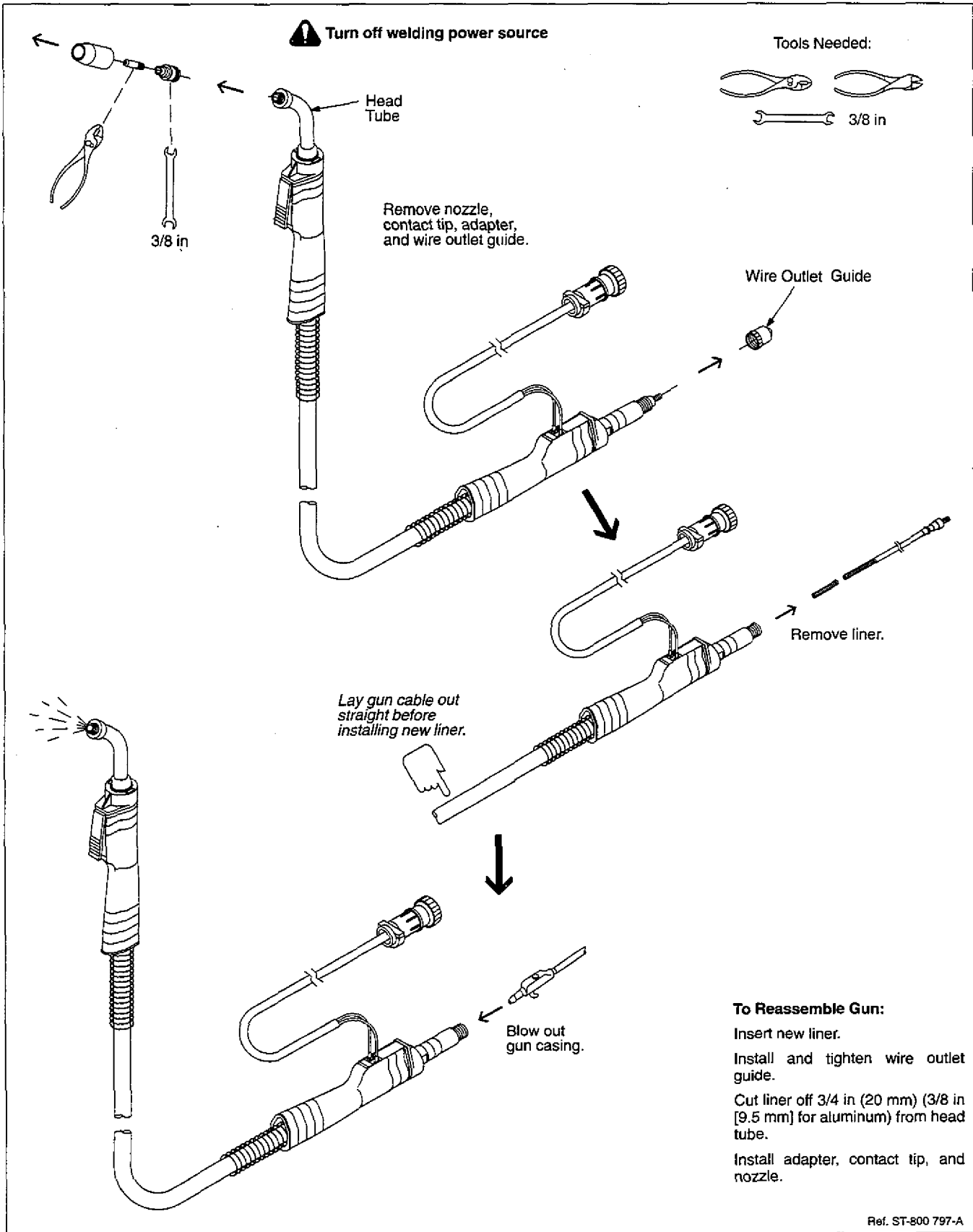
CAUTION



FLYING METAL CHIPS AND DIRT can cause injury and damage equipment.

- Point gun away from people and in a safe direction when blowing out with compressed air.

swam10.1* 10/91



Ref. ST-600 797-A

Figure 6-8. Changing Gun Liner

6-7. Resetting Memory

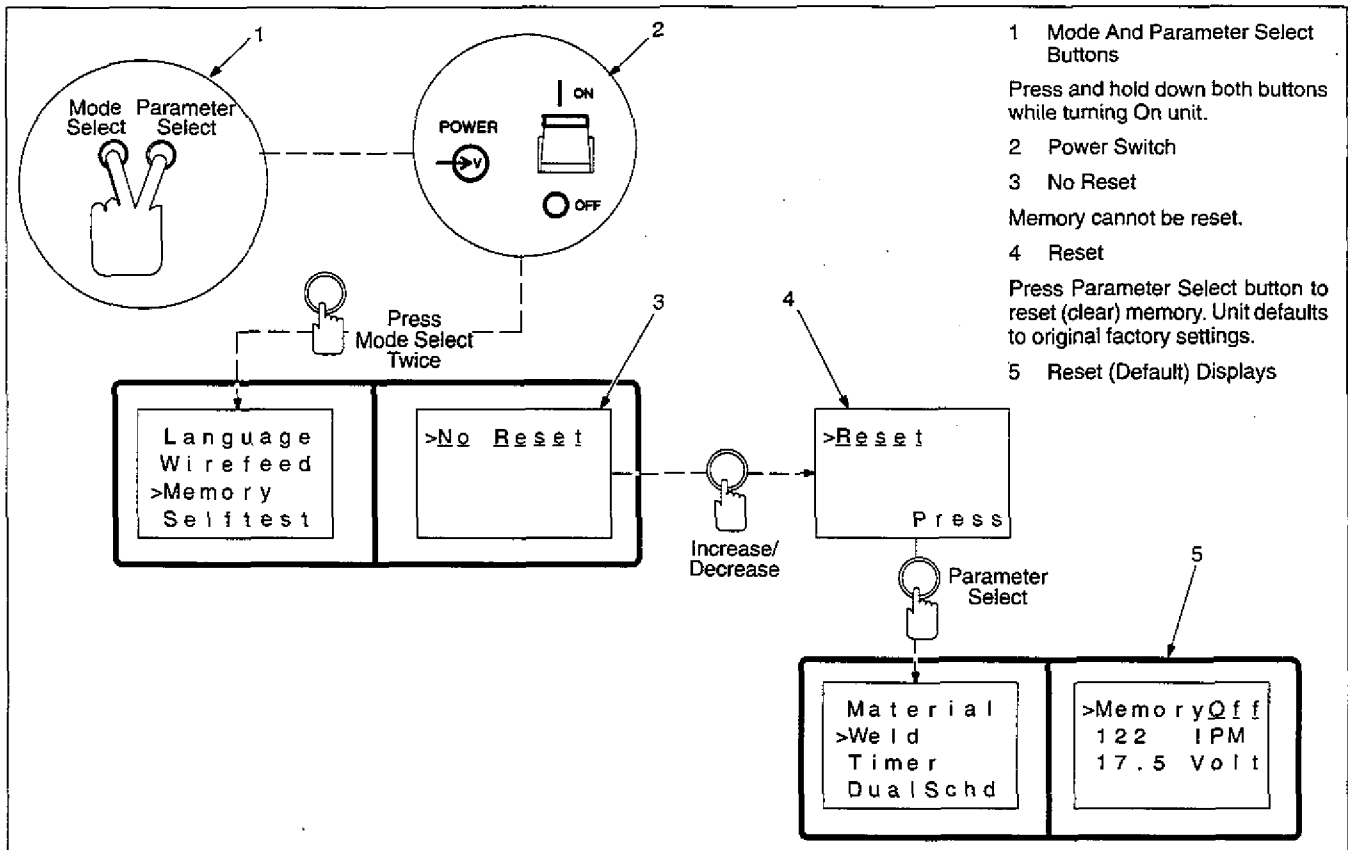


Figure 6-9. Resetting Memory

6-8. Troubleshooting

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, maintaining, or servicing.
	<p>HOT PARTS can cause severe burns.</p> <ul style="list-style-type: none"> Allow cooling period before maintaining or servicing.
	<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.
<p>Troubleshooting to be performed only by qualified persons.</p> <p style="font-size: small;">swam8.2* 2/93</p>	

Table 6-1. Welding Trouble

Trouble	Remedy	Section
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">No weld output; wire does not feed.</div>	Be sure line disconnect switch is On.	3-8
	Replace building line fuse or reset circuit breaker if open.	3-8
	Reset circuit breaker CB1.	6-5
	Secure gun trigger connections.	--
	Check and replace Power switch if necessary.	--
	Have Factory Authorized Service Station/Service Distributor check all board connections and main control board.	--

Trouble	Remedy	Section
No weld output; wire feeds.	Thermostat TP1 open (overheating). Allow fan to run; the thermostat will close when the unit has cooled.	6-5
	Connect work clamp to get good metal to metal contact.	--
	Replace contact tip.	6-6
	An overload condition occurred. Release gun trigger.	2-1, 6-5
	Have Factory Authorized Service Station/Service Distributor check main control board and main rectifier.	--
Low weld output.	Connect unit to proper input voltage or check for low line voltage.	3-8
	Check input voltage jumper links and correct position if necessary.	3-8
	Have Factory Authorized Service Station/Service Distributor check main control board.	--
Fan motor does not run.	Have Factory Authorized Service Station/Service Distributor check fan-on-demand circuit.	--
Low, high, or erratic wire speed.	Readjust front panel settings, or reprogram microprocessor.	5, Figure 4-5
	Place Low Range/Full Range switch in correct position.	Figure 4-5
	Change to correct size drive rolls.	3-6, Table 8-1
	Readjust drive roll pressure.	3-10
	Replace inlet guide, contact tip, and/or liner if necessary.	3-6, 6-6
	Check position of input jumper links.	3-8
	Inspect motor brushes, and replace if necessary.	6-4
	Have Factory Authorized Service Station/Service Distributor check main control board.	--
No wire feed.	Reset circuit breaker CB1.	6-5
	Turn Wire Speed control to higher setting, or reprogram microprocessor.	5, Figure 4-5
	Clear obstruction in gun contact tip or liner.	--
	Readjust drive roll pressure.	3-10
	Change to correct size drive rolls.	3-6, Table 8-1
	Rethread welding wire.	3-10
	Check gun trigger and leads. Repair or replace gun if necessary.	--
	Inspect motor brushes, and replace if necessary.	6-4
	Have Factory Authorized Service Station/Service Distributor check main control board.	--

6-9. Selftest Procedure

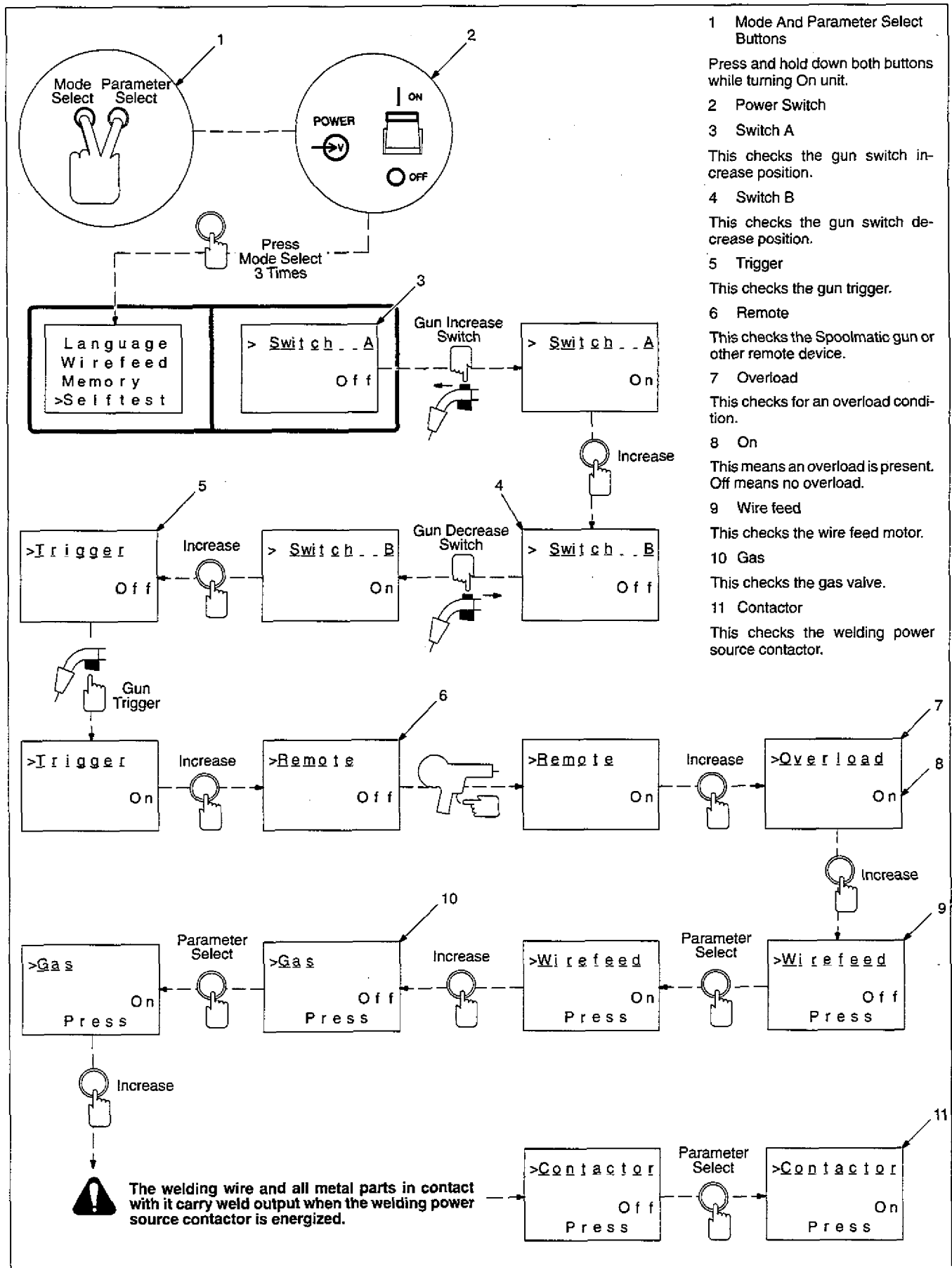


Figure 6-10. Selftest Procedure

6-10. Troubleshooting Displays (Microprocessor Only)

Table 6-2. Troubleshooting Displays

Trouble	Remedy	Section
Release Trigger displayed.	Release gun trigger.	---
	Check gun trigger and leads.	---
	There is high frequency in the area of the welder. Turn it off or move welder.	---
Release Remote displayed.	Release spool gun or remote control trigger.	---
	Check spool gun trigger and leads according to spool gun Owner's Manual.	---
	Check remote control switch and switch leads according to unit Owner's Manual.	---
	There is high frequency in the area of the welder. Turn it off or move welder.	---
Overload displayed.	Adjust weld parameters to reduce output.	---
	Keep contact tip from shorting to the workpiece.	---
	Thermal shutdown has occurred. Allow a cooling period.	6-5
	Have nearest Factory Authorized Service Station/Service Distributor check the microprocessor panel, capacitor bank, main rectifier, and main transformer.	---

NOTES

SECTION 7 - ELECTRICAL DIAGRAMS

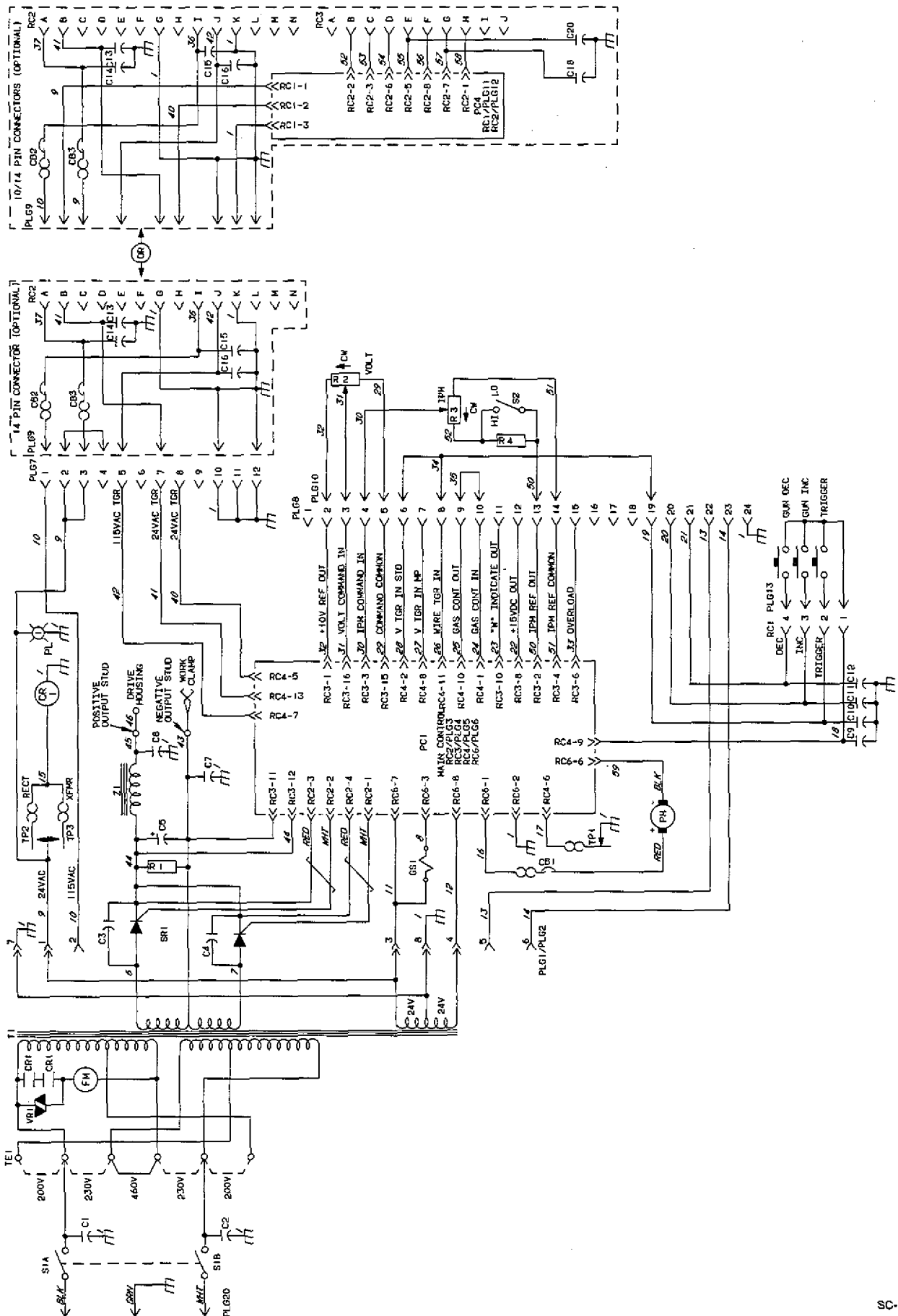


Figure 7-1. Circuit Diagram For Welding Power Sources Without A Microprocessor

SC-174 557

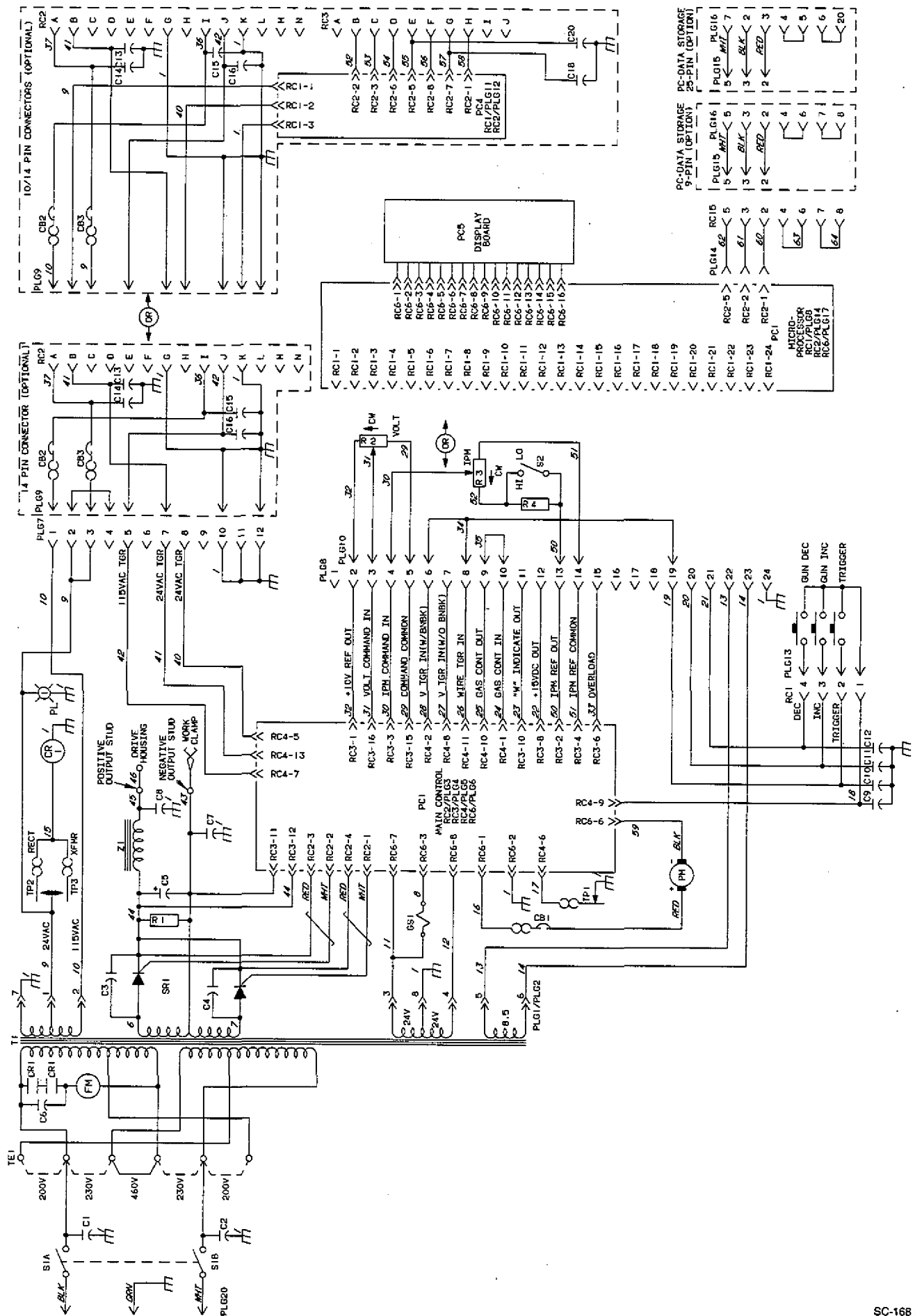


Figure 7-2. Circuit Diagram For Welding Power Sources With A Microprocessor

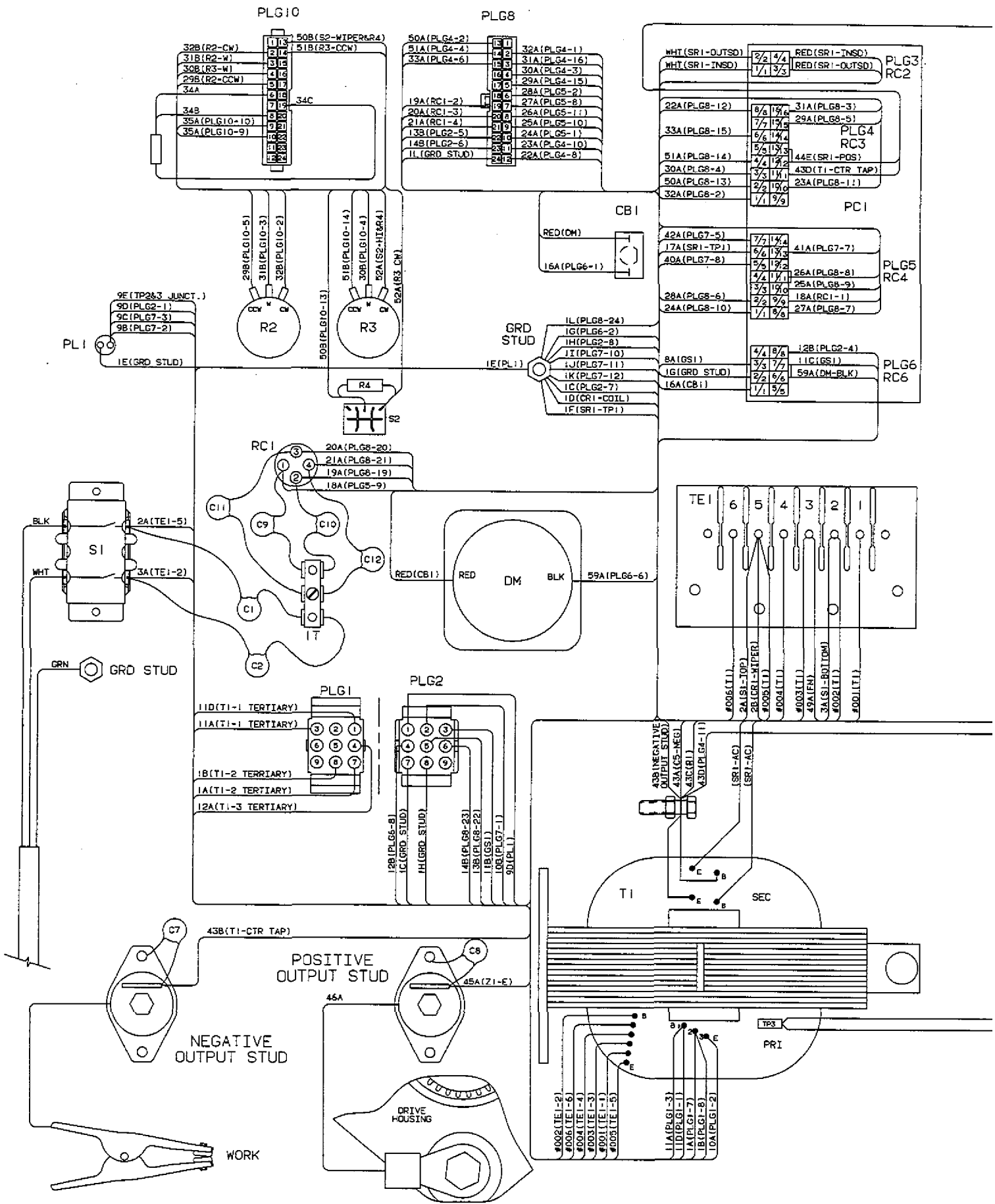
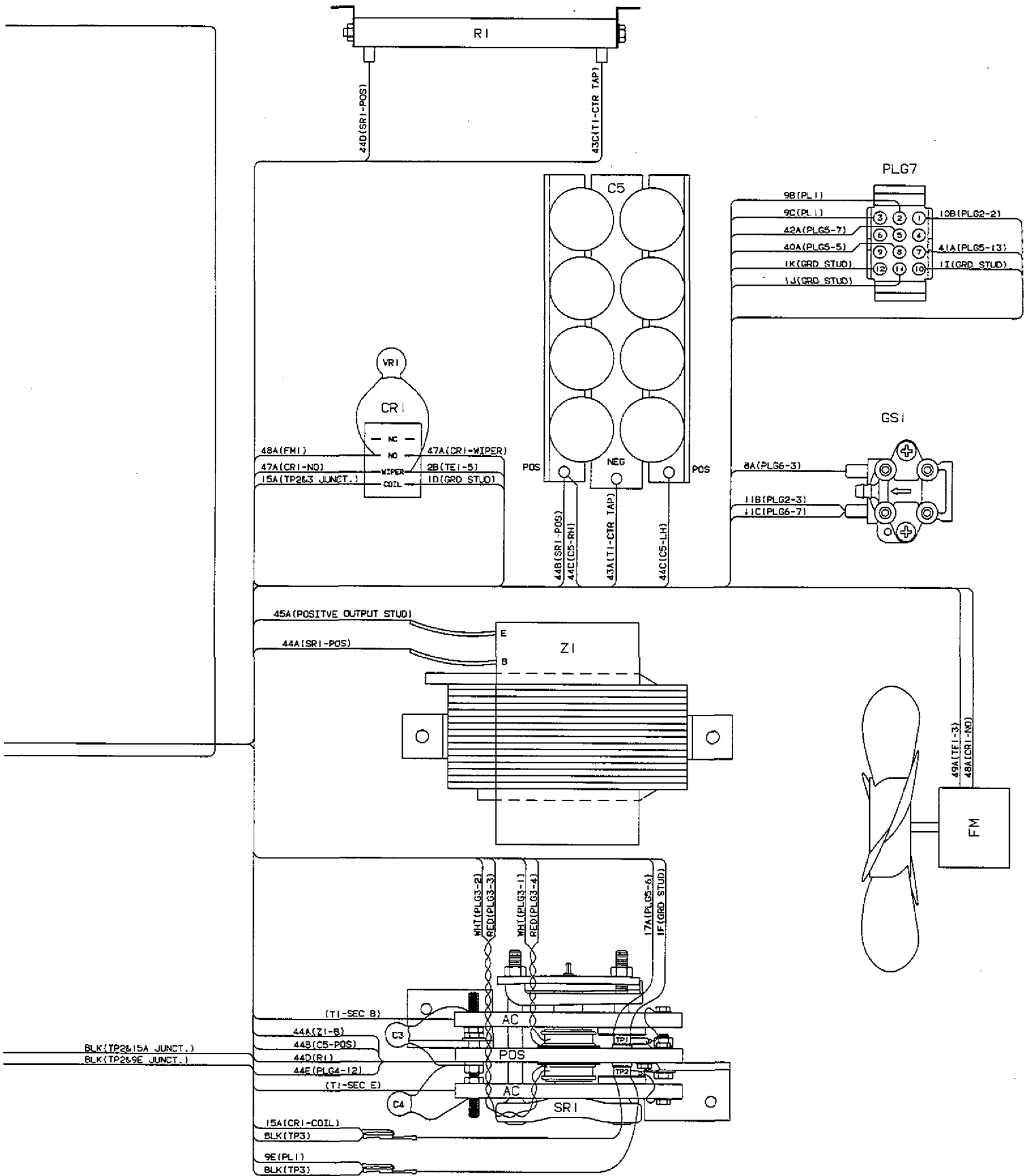


Figure 7-3. Wiring Diagram For Welding Power Source



SECTION 8 – PARTS LIST

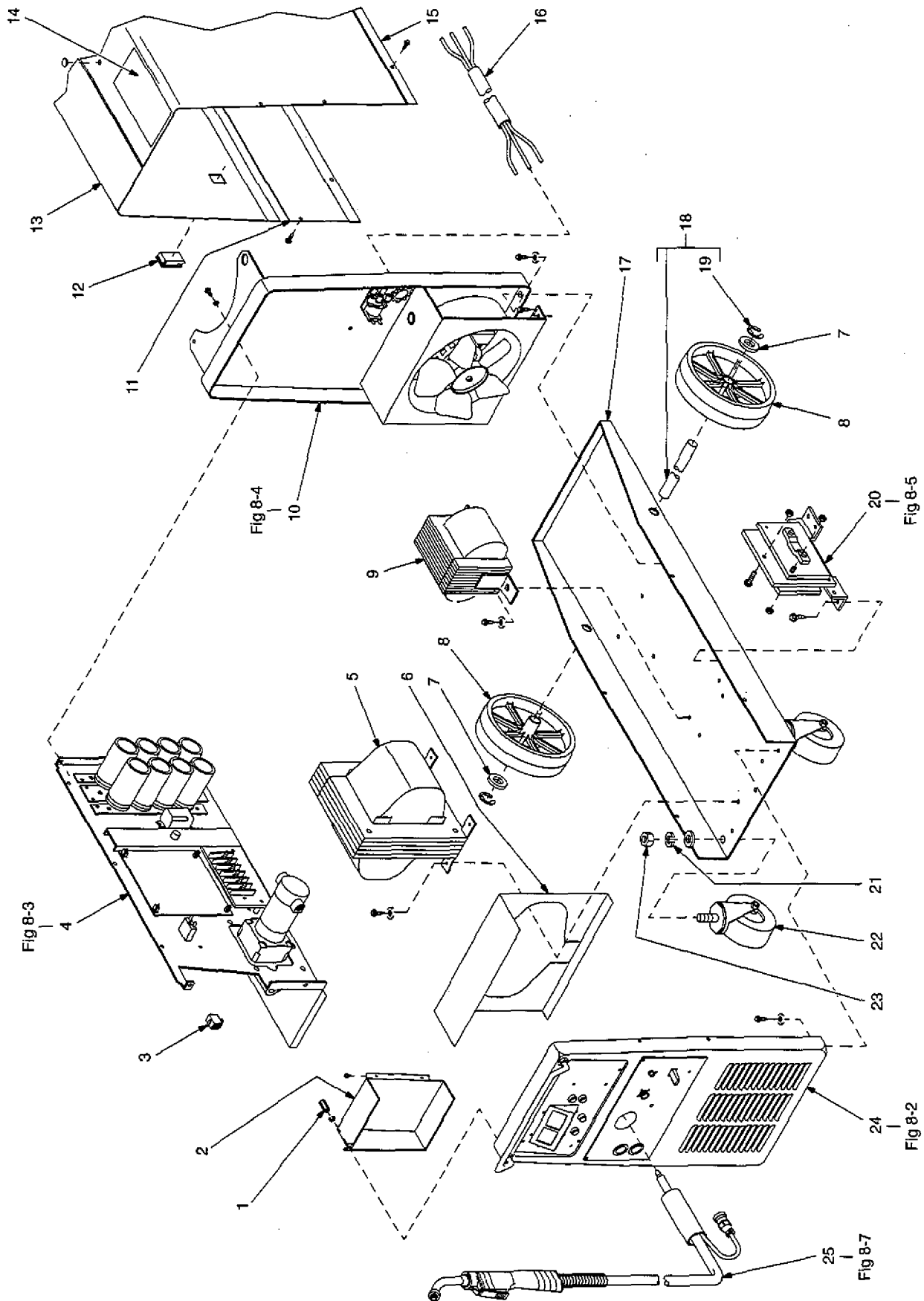
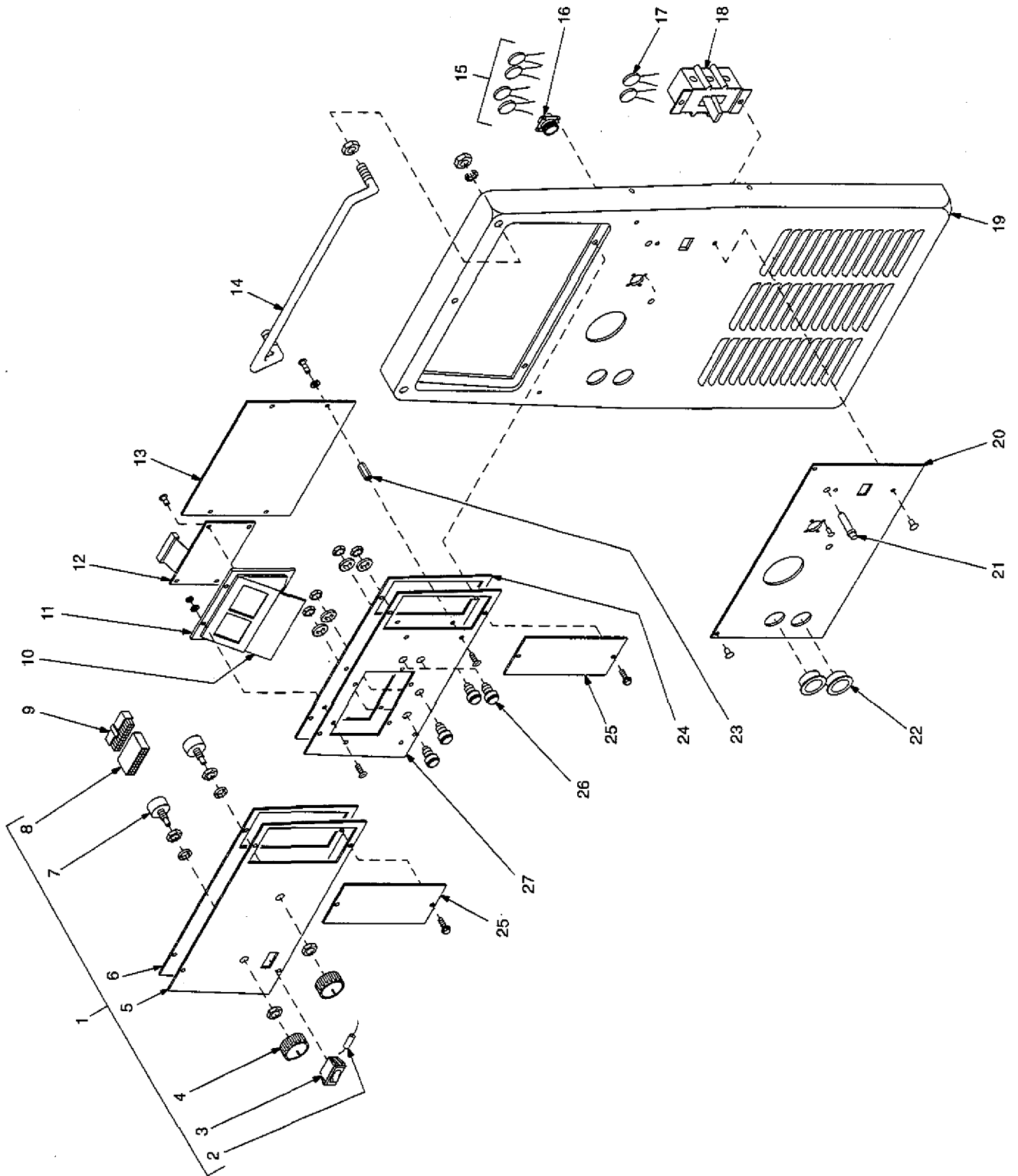


Figure 8-1. Main Assembly (MP 200/230/460V Model Illustrated)

ST-148 324-D

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 8-1. Main Assembly				
1		148 597	COUPLER, rod threaded .312-18 x 1.000	1
2		146 168	PANEL, center enclosure	1
3	PLG7	083 526	HOUSING RECEPTACLE & SOCKETS, (consisting of)	1
		009 418	TERMINAL, female 1skt 20-14 wire	12
4		Fig 8-3	BAFFLE, center w/components	1
5	T1	174 553	TRANSFORMER, pwr main (200/230/460) (Std model) (consisting of)	1
5	T1	174 554	TRANSFORMER, pwr main (230/460/575) (Std model) (consisting of)	1
		174 513	COIL, pri/sec (200/230/460)	1
		174 515	COIL, pri/sec (230/460/575)	1
	TP3	121 497	THERMOSTAT	1
5	T1	144 043	TRANSFORMER, pwr main (200/230/460) (MP model) (consisting of)	1
5	T1	150 381	TRANSFORMER, pwr main (230/460/575) (MP model) (consisting of)	1
		143 853	COIL, pri/sec (200/230/460)	1
		150 326	COIL, pri/sec (230/460/575)	1
	TP3	121 497	THERMOSTAT, NO	1
6		143 961	BAFFLE, air transformer	1
7		602 250	WASHER, flat stl SAE .750	2
8		070 799	WHEEL, rubolene 10 in dia x 2.250 wide x .750 bore	2
9	Z1	143 892	STABILIZER	1
10		Fig 8-4	PANEL, rear w/components	1
11		146 165	PANEL, side LH	1
12		151 187	LATCH, slide flush mtg hole 1.000 wide x 1.500 lg	2
13		+146 167	PANEL, side	1
		146 991	LABEL, weld parameters	1
14		134 464	LABEL, warning general precautionary	1
15		+170 513	WRAPPER	1
		117 860	BLANK, snap-in nyl .187mtg hole	2
16	PLG20	144 086	CORD SET, pwr 250V 8-10ga 3/c 600V 12ft (200/230V)	1
		039 778	RECEPTACLE, str 2P3W 50A 250V (200/230V only)	1
16		144 085	CORD SET, pwr 8-10ga 3/c 600V 12ft (200/230/460V & 230/460/575V)	1
17		146 161	BASE	1
18		052 692	AXLE, running gear (consisting of)	1
19		121 614	RING, retaining ext .750 shaft x .085grv depth	2
20	SR1	154 242	RECTIFIER, SCR main (Fig 8-5)	1
21		602 213	WASHER, lock stl split .375	2
22		008 999	CASTER, plstc swvl 4 in dia	2
23		601 871	NUT, stl hex jam .375-16	2
24		Fig 8-2	PANEL, front w/components	1
25		169 910	GUN, 12ft .030-.035 wire (Std Model) (Fig 8-7)	1
25		169 914	GUN, 12ft .030-.035 wire (MP Model) (Fig 8-7)	1
		128 434	REGULATOR/FLOWMETER, 8-25 CFH Argon/CO ₂	1
		144 108	HOSE, gas	1
		130 750	CLAMP, ground 350A	1
		600 318	CABLE, weld cop strd No. 3 (order by ft)	10ft

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



ST-148 326-A

Figure 8-2. Panel, Front w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				Std	MP
Figure 8-2. Panel, Front w/Components (Fig 8-1 Item 24)					
1		144 470	CONTROL PANEL, (consisting of)	1	
2	R4	000 032	RESISTOR, MF .5W 1.5K ohm	1	
3	S2	148 638	SWITCH, rocker SPDT 4A 250VAC	1	
4		097 924	KNOB, pointer 1.625dia x .250 ID	2	
5			PLATE, indicator upper (order by model and serial number)	1	
6		148 586	PANEL, front control	1	
7	R2,3	035 897	POTENTIOMETER	2	
8	PLG10	143 323	HOUSING, term plug nyl 24cont 2 row	1	
		114 656	TERMINAL, male 1 pin 24-18 wire	24	
9	PLG8	143 322	HOUSING, term hdr 24skt	1	1
		113 746	TERMINAL, female 1skt 24-18 wire	24	24
10		147 582	LENS, clear anti-glare .030 x 2.125 x 3.225	1	
11		147 791	BEZEL, LED	1	
12	PC5	147 583	LCD, w/ribbon cable	1	
13	PC1	147 472	CIRCUIT CARD, microprocessor	1	
14		143 974	HANDLE, running gear	1	1
15	C9	146 158	LEAD ASSEMBLY, elect	1	1
15	C10	146 160	LEAD ASSEMBLY, elect	1	1
15	C11	146 159	LEAD ASSEMBLY, elect	1	1
15	C12	146 157	LEAD ASSEMBLY, elect	1	1
16	RC1	048 282	RECEPTACLE w/SOCKETS, (consisting of)	1	1
		079 534	TERMINAL, female 1skt 18-14 wire	4	4
17	C1,2	148 240	CAPACITOR ASSEMBLY	2	2
18	S1	128 755	SWITCH, tgl DPST 40A 600VAC	1	1
19		143 809	PANEL, front	1	1
20			PLATE, indicator lower (order by model and serial number)	1	1
21	PL1	048 573	LIGHT, ind red lens 28V	1	1
22		057 357	BUSHING, snap-in nyl .937 ID x 1.125mtg hole	2	2
23		144 844	STAND-OFF, No. 6-32 x .875 lg	5	
24		147 584	PANEL, front control	1	
25		144 127	COVER, opening module	1	1
26		153 169	ACTUATOR, switch	4	
27			NAMEPLATE, (order by model and serial number)	1	

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

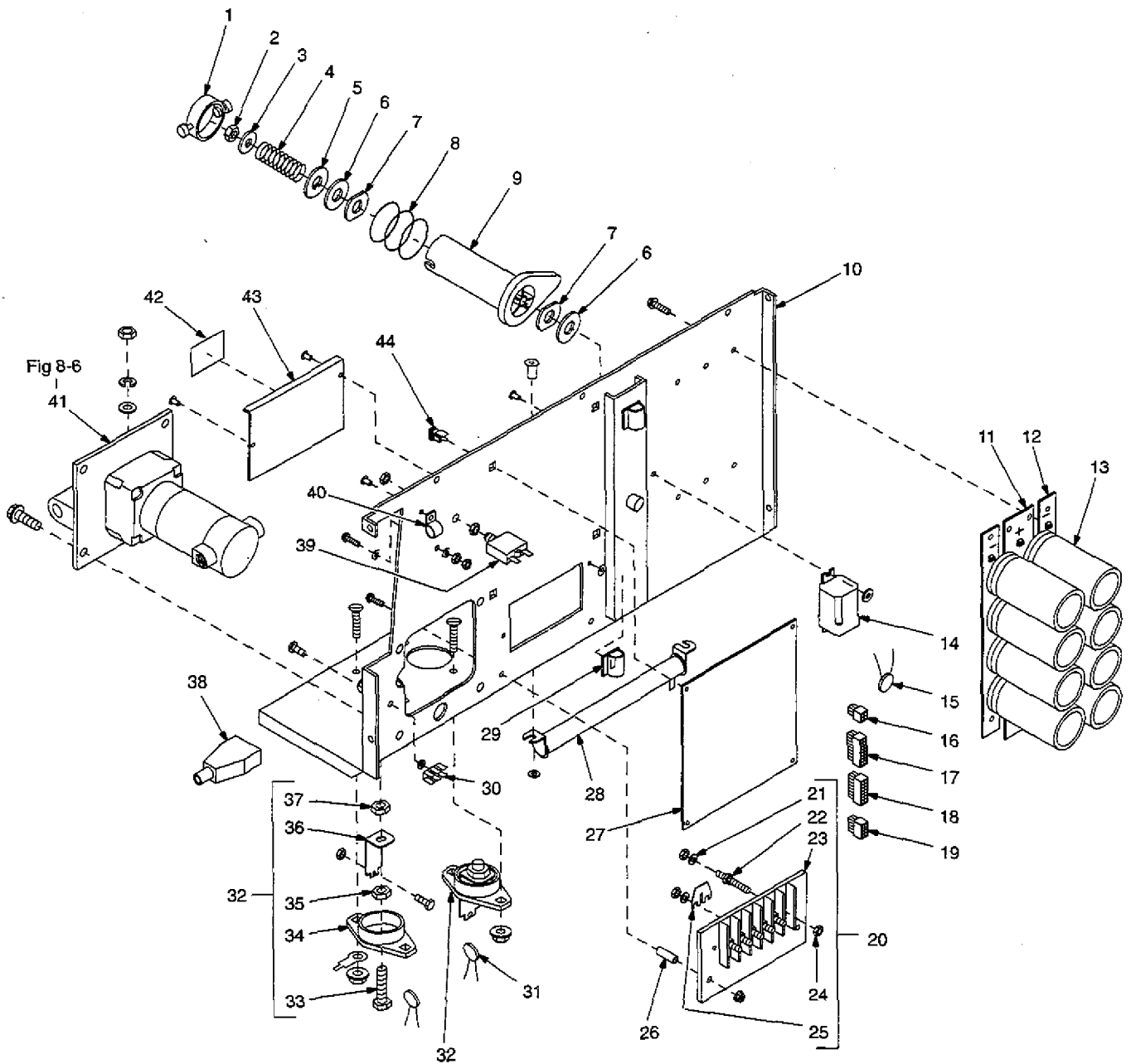


Figure 8-3. Baffle, Center w/Components

ST-148 325

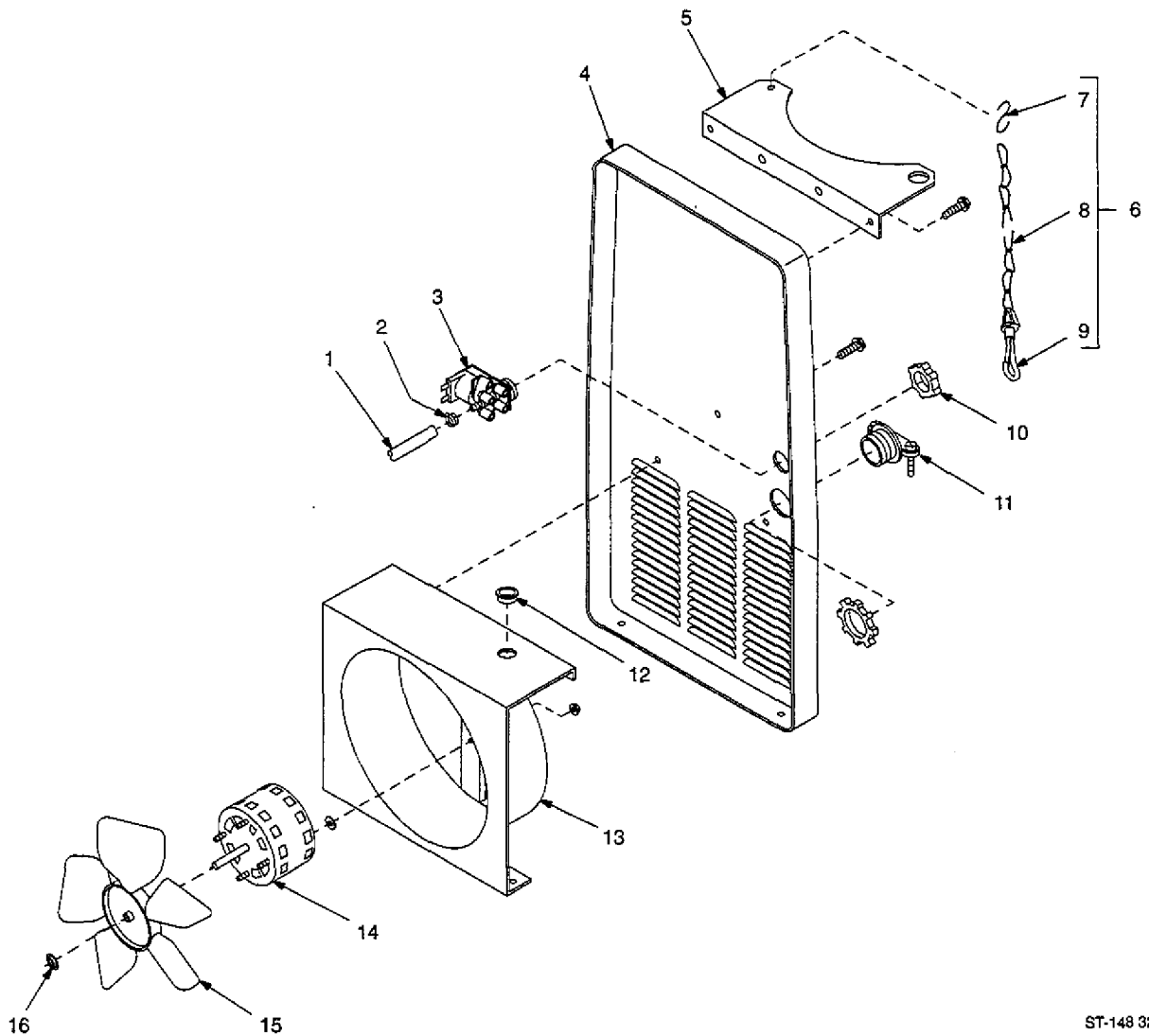
Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 8-3. Baffle, Center w/Components (Fig 8-1 Item 4)				
1		058 427	RING, retaining spool	1
2		085 980	NUT, stl hex full .625-11	1
3		605 941	WASHER, flat stl .640 ID x 1.000 OD x 14ga thk	1
4		057 543	SPRING, cprsn .845 OD x .091 wire x 1.500	1
5		057 971	WASHER, flat stl keyed 1.500dia x .125thk	1
6		010 191	WASHER, fbr .656 ID x 1.500 OD x .125thk	2
7		058 628	WASHER, brake stl	2
8		057 745	SPRING, cprsn 2.430 OD x .090 wire x 2.500	1
9		058 428	HUB, spool	1
10		170 514	BAFFLE, center	1
11		082 902	STRIP, mtg center capacitor	1
12		092 186	STRIP, mtg capacitors	2
		083 147	GROMMET, scr No. 8/10 panel hole .312sq .500 high	6
13	C5	156 517	CAPACITOR, elctt 15000uf 45VDC	8
14	CR1	006 393	RELAY, encl 24VAC DPDT	1
15	VR1	149 542	VARIATOR, 75 joule 350VDC	1
16	PLG3	115 094	HOUSING PLUG & SOCKETS, (consisting of)	1
		113 746	TERMINAL, female 1skt 24-18 wire	4
17	PLG4	131 052	HOUSING RECEPTACLE & SOCKETS, (consisting of)	1
		113 746	TERMINAL, female 1skt 24-18 wire	16
18	PLG5	131 056	HOUSING RECEPTACLE & SOCKETS, (consisting of)	1
		113 746	TERMINAL, female 1skt 24-18 wire	14
19	PLG6	115 092	HOUSING PLUG & SOCKETS, (consisting of)	1
		113 746	TERMINAL, female 1skt 24-18 wire	8
20	TE1	143 911	TERMINAL ASSEMBLY, pri 1ph triple voltage (consisting of)	1
21		010 913	WASHER, flat brs .218 ID x .460 OD x .031thk	6
22		038 887	STUD, pri bd brs 10-32 x 1.375	6
23		083 426	TERMINAL BOARD, pri	1
24		601 835	NUT, brs hex 10-32	12
25		038 618	LINK, jumper term bd pri	2
26		010 199	TUBING, stl .275 ID x .048 wall x 1.000 lg	2
27	PC1	175 223	CIRCUIT CARD, control main	1
28	R1	119 998	RESISTOR, WW fxd 300W 5 ohm	1
29		059 712	CLIP, component .437dia mtg adh back	2
30	1T	129 524	TERMINAL, frict male .250 x .032 3 pair	1
31	C7,8	128 750	CAPACITOR	2
32	POS	039 047	TERMINAL, pwr output red (consisting of)	1
32	NEG	039 046	TERMINAL, pwr output black (consisting of)	1
33		601 976	SCREW, cap stl hexhd .500-13 x 1.500	1
34		039 049	TERMINAL BOARD, red	1
34		039 045	TERMINAL BOARD, black	1
35		601 880	NUT, stl hex jam .500-13	1
36		039 044	BUS BAR, term bd	1
37		601 879	NUT, stl hex full .500-13	1
38		071 971	COVER, cable	1
39	CB1	123 745	CIRCUIT BREAKER, man reset 1P 4A 250VAC	1
		147 195	NUT, .375-27 nyl	1
40		010 143	CLAMP, nyl .375clp dia	1
41		Fig 8-6	WIRE DRIVE & GEARS	1
42		021 469	LABEL, danger high voltage	1
43		+144 933	DOOR, access chgov	1
44		134 201	STAND-OFF SUPPORT, PC card	4

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

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
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Figure 8-4. Panel, Rear w/Components (Fig 8-1 Item 10)

1		134 834	HOSE, SAE .187 ID x .410 OD (order by ft)	3ft
2		149 332	CLAMP, hose .405-.485clp dia slftrng	2
3	GS1	125 785	VALVE, 24VAC 2 way custom port 1/8 orf	1
4		143 810	PANEL, rear	1
5		057 478	BRACKET, support tank	1
6		022 617	CHAIN, cyl racks (consisting of)	1
7		602 389	HOOK, S blunt 1.500 in	1
8		602 387	CHAIN, weldless 2/0 x 27.000 lg	1
9		602 384	SNAP, chain	1
10		605 227	NUT, nyl hex jam .750NPST	1
11		044 426	CONNECTOR, clamp cable .690/1.070	1
12		010 493	BUSHING, snap-in nyl .625 ID x .875mtg hole	1
13		148 242	WINDTUNNEL, 9 in	1
14	FM1	148 808	MOTOR, fan 230V 1550RPM .312dia shaft	1
15		148 809	BLADE, fan 9 in 5wg 34deg .309 bore CCW	1
16		049 399	NUT, speed push-on-type .312 stud .625 OD x .456 ID	1

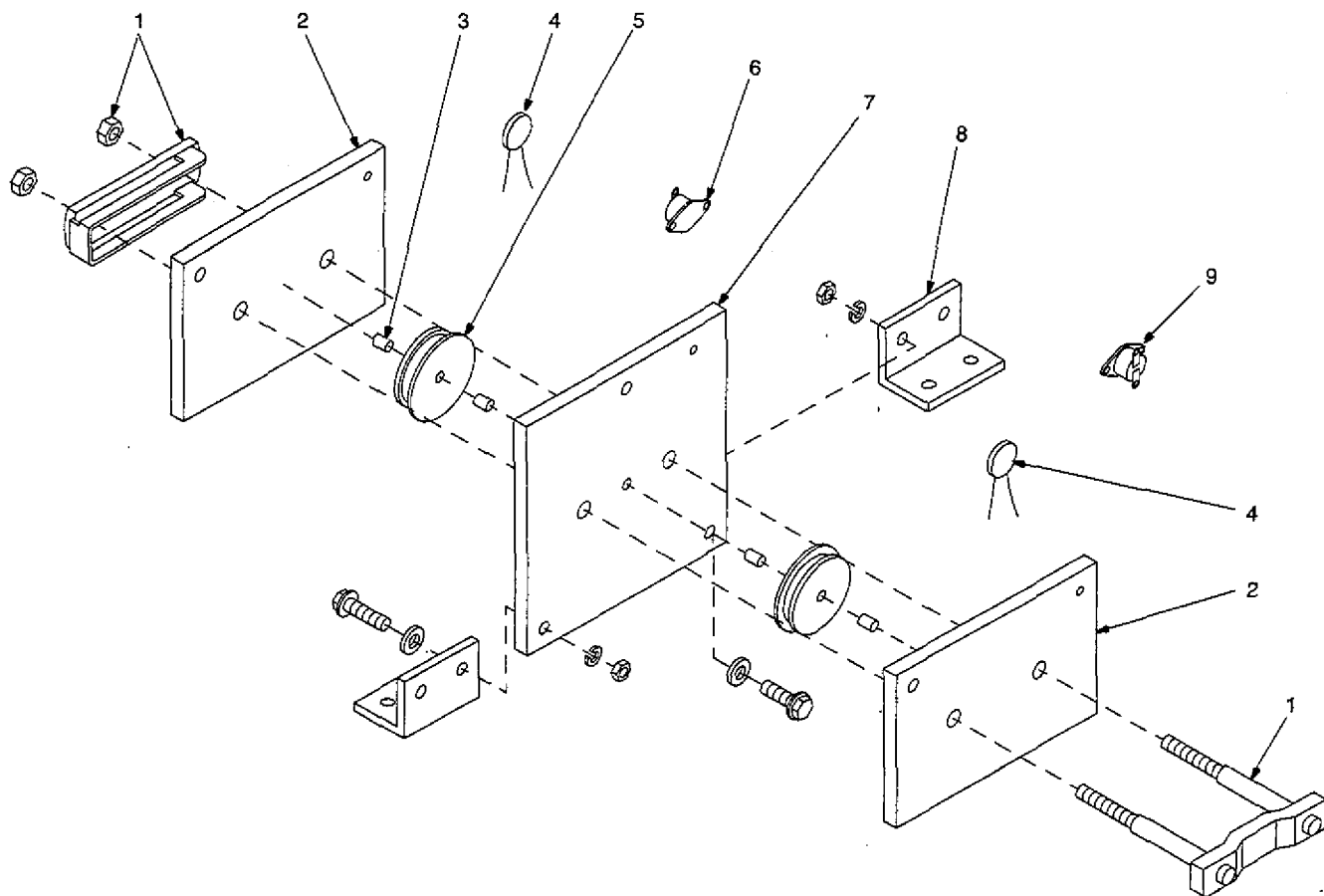


ST-148 327

Figure 8-4. Panel, Rear w/Components

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

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		SR1 154 242	Figure 8-5. Rectifier, SCR Main (Fig 8-1 Item 20)	
1		083 884	CLAMP, thyristor rectifier 4.250	1
2		143 856	HEAT SINK, rectifier	2
3		028 516	PIN, spring CS .125 x .250	4
4	C3,4	031 689	CAPACITOR, rectifier	2
5		143 818	THYRISTOR, SCR 325A 300V hockey puck	2
6	TP1	154 243	THERMOSTAT, NC	1
7		143 855	HEAT SINK, rectifier	1
8		143 852	FOOT, mtg rectifier	2
9	TP2	154 244	THERMOSTAT, NO	1



ST-148 328-B

Figure 8-5. Rectifier, SCR Main

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

See Table 8-1 For
Drive Roll & Wire Guide Kits.

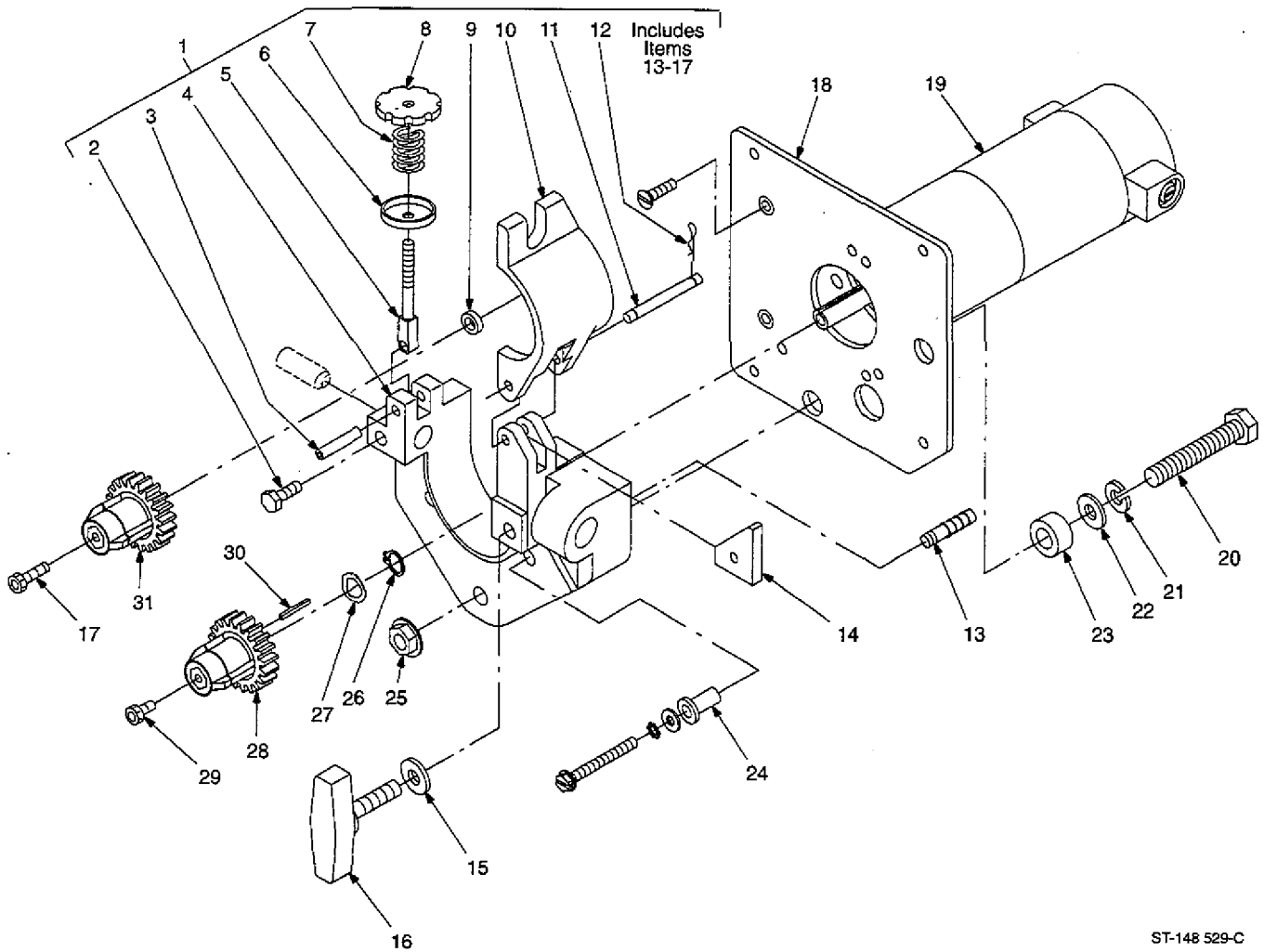


Figure 8-6. Wire Drive And Gears

Table 8-1. Drive Roll And Wire Guide Kits

► **IMPORTANT:** Base selection of drive rolls upon the following recommended usages:

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

Wire Diameter			Kit No.	Drive Roll		Inlet Wire Guide
Fraction	Decimal	Metric		Part No.	Type	
.023/.025 in.	.023/.025 in.	0.6 mm	087 131	087 130	V-Grooved	056 192
.030 in.	.030 in.	0.8 mm	079 594	053 695	V-Grooved	056 192
.035 in.	.035 in.	0.9 mm	079 595	053 700	V-Grooved	056 192
.045 in.	.045 in.	1.2 mm	079 596	053 697	V-Grooved	056 193

Ref. S-0026-B/7-91

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 8-6. Wire Drive And Gears (Fig 8-3 Item 41)				
...	1	166 005	DRIVE ASSEMBLY, wire (consisting of)	1
...	2	602 154	SCREW, cap stl hexhd .250-20 x .500	1
...	3	010 224	PIN, spring CS .187 x 1.000	1
...	4	081 709	HOUSING, adapter gun/feeder	1
...	5	085 242	FASTENER, pinned	1
...	6	085 244	WASHER, cupped stl .328 ID x .812 OD x .125 lip	1
...	7	010 231	SPRING, cprsn .770 OD x .105 wire x 1.225	1
...	8	085 243	KNOB, adj tension	1
...	9	166 072	SPACER, gear	1
...	10	166 071	LEVER, mtg pressure gear	1
...	11	079 634	PIN, hinge	1
...	12	151 828	PIN, cotter hair .054 x .750	2
...	13	079 633	FITTING, hose brs barbed M 3/16tbg	1
...	14	145 237	STOP, cover	1
...	15	604 538	WASHER, flat stl SAE .312	1
...	16	124 778	KNOB, plstc T 1.000 lg x .312-18 x 2.000 bar	1
...	17	602 009	SCREW, .250-20 x 1.25 soc hd gr 8	1
...	18	130 365	INSULATOR, housing drive	1
...	19	PM 122 741	MOTOR, gear 24VDC 122RPM 20:1 ratio	1
...		*136 745	BRUSH & SPRING ASSEMBLY	2
...	20	079 624	SCREW, stl hexhd lkg .375-16 x 2.250	1
...	21	602 213	WASHER, lock .380 ID stl split	1
...	22	010 910	WASHER, flat .406 ID stl	1
...	23	165 813	SPACER, nyl .750 OD x .406 ID x .375 lg	1
...	24	048 449	WASHER, shldr nyl .363 OD x .194 ID x .703	2
...	25	601 872	NUT, hex stl .375-16	1
...	26	605 308	RING, retaining	1
...	27	079 625	WASHER, spring stl .500 shakeproof	2
...	28	172 076	CARRIER, drive roll w/components	1
...	29	121 271	SCREW, .250-20 x .500 soc hd gr 8	1
...	30	092 865	KEY, stl .1215/.1230 x .750	1
...	31	172 075	CARRIER, drive roll w/components	1
...		◆087 130	ROLL, drive V groove .023 wire	2
...		053 695	ROLL, drive V groove .030 wire	2
...		053 700	ROLL, drive V groove .035 wire	2
...		◆053 697	ROLL, drive V groove .045 wire	2
...		056 192	GUIDE, wire inlet .023/.025 & .030-.035 wire	1
...		◆056 193	GUIDE, wire inlet .045 wire	1
...		045 233	GUIDE, anti-wear	1

*Recommended Spare Parts.

◆OPTIONAL

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

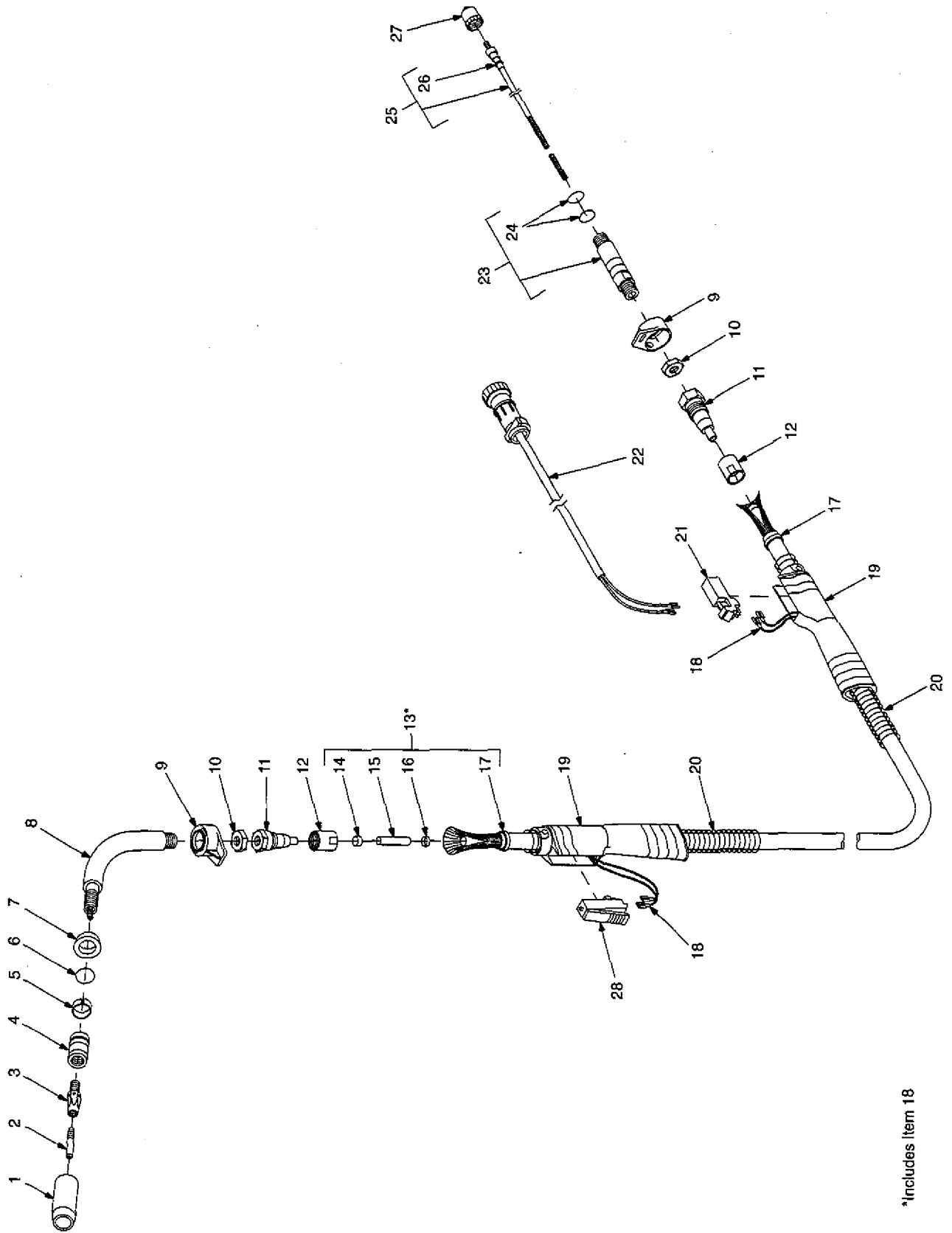


Figure 8-7. M-25, & M-25M Gun (M-25 Model Illustrated)

*Includes Item 18

ST-800 792

Item No.	Part No.	Description	Quantity		
			Model		
			M-25	M-25M	
Figure 8-7. M-25, & M-25M Gun (Fig 8-1 Item 25)			169 910	169 914	
...	1	+169 724	.. NOZZLE, slip type .500 orf .125 recess	1	1
...	1	+169 725	.. NOZZLE, slip type .625 orf .125 recess	1	1
...	1	+169 726	.. NOZZLE, slip type .625 orf flush	1	1
...	1	+169 727	.. NOZZLE, slip type .625 orf .125 stickout	1	1
...	2	+087 299	.. TIP, contact scr .023 wire x 1.125	2	2
...	2	+000 067	.. TIP, contact scr .030 wire x 1.125	2	2
...	2	+000 068	.. TIP, contact scr .035 wire x 1.125	2	2
...	2	+000 069	.. TIP, contact scr .045 wire x 1.125	2	2
...	3	169 728	.. ADAPTER, contact tip	1	1
...	4	169 729	.. ADAPTER, nozzle	1	1
...	5	170 467	.. RING, retaining	1	1
...	6	170 468	.. O-RING	1	1
...	7	169 730	.. WASHER, shock	1	1
...	8	169 731	.. TUBE, head	1	1
...	9	169 738	.. NUT, locking handle	2	2
...	10	169 732	.. NUT, jam	2	2
...	11	169 733	.. CONNECTOR, cable	2	2
...	12	169 734	.. NUT, connector	2	2
...	13	172 018	.. M25 UNICABLE CLAMP KIT, (consisting of)	2	2
...	14	169 735	.. CLIP, compression	1	1
...	15	169 742	.. TUBE, support	1	1
...	16	169 743	.. CLAMP, inner	1	1
...	17	170 469	.. CLAMP, jacket	1	1
...	18	169 746	.. CONNECTOR, switch lead	2	2
...	19	169 737	.. HANDLE	2	1
...	19	172 691	.. HANDLE, (gun end)		1
...		172 690	.. SWITCH ASSEMBLY, inc/dec		1
...		602 063	.. SCREW, 4-40 x .250mdhd slt stl		1
...	20	169 741	.. STRAIN RELIEF, cable	2	2
...	21	169 736	.. BLOCK, terminal	1	
...	21	172 689	.. BLOCK, terminal rear inc/dec		1
...	22	172 565	.. CABLE, pwr 21 in 18ga 2/c	1	
...	22	145 376	.. CABLE, pwr 21 in 18ga 4/c		1
...	23	173 521	.. CONNECTOR, feeder (consisting of)	1	1
...	24	079 974	.. O-RING, .500 ID x .103CS rbr	2	2
...	25	+172 257	.. KIT, liner monocoil .023/.025 wire x 15ft (consisting of)	1	1
...	25	+172 258	.. KIT, liner monocoil .030/.035 wire x 15ft (consisting of)	1	1
...	25	+172 259	.. KIT, liner monocoil .035/.045 wire x 15ft (consisting of)	1	1
...	26	079 975	.. O-RING, .187 ID x .103CS rbr	1	1
...	27	169 723	.. GUIDE, outlet	1	1
...	28	169 739	.. SWITCH, trigger	1	1

+These consumables are interchangeable for M-25 & M-25M models.

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

OPTIONS AND ACCESSORIES

SPOOLMATIC® 30A SPOOL GUN

(#130 831)

200 Amp, 100% duty cycle, air-cooled, 1 lb. spool gun with 30 ft. (9.1 m) cable assembly. Plugs into Receptacle Modules 2, 3, or 4. For detailed information, see Miller XR and Spoolmatic literature, Index No. M/1.2.

WC-24 CONTROL

Used with Spoolmatic 30A spool gun and Receptacle Module 1.

(#137 549)

Allows you to use a Spoolmatic 30A gun with Receptacle Module 1. Not required for use with Receptacle Modules 2, 3, or 4.

RECEPTACLE MODULES

Required if welding with spool gun.

Receptacle modules provide a convenient way for you to plug in wire feed accessories. Easy to install, in less than 15 minutes.

MODULE #1

(#042 608)

Use with Spoolmatic 3 and XR™ feeder.

MODULE #2

(#042 607)

Use with Spoolmatic 30A, Spoolmatic 3, and XR feeder.

MODULE #3

(#042 957)

Use with Spoolmatic 30A.

MODULE #4

(#042 958)

Use with Spoolmatic 30A and Spoolmatic 1.

Note: Only one spool gun can be used at a time.

.023 IN. (0.6 MM) CONVERSION KIT

(#149 284)

For use with 15 ft. (4.6 m) gun. Kit includes monocoil liner and wire guide, drive rolls, and contact tubes.

.045 IN. (1.2 MM) WIRE CONVERSION KIT

(#149 285)

For use with 15 ft. (4.6 m) gun. Kit includes monocoil liner and wire guide, drive rolls, and contact tips.

Note: When welding at higher duty cycles or with large diameter flux-cored wire, use of a Miller GA-40C, 400 Amp, 60% duty cycle gun is recommended. Refer to literature Index No. M/9.0.

DUAL CYLINDER RACK

(#042 758)

Converts single cylinder rack to a dual rack.

GUN CABLE HOLDER

(#042 701)

A convenient way to store gun and cable. Can be used with Millermatic 250 and Millermatic 250MP power sources.

GUN HOLDER

(#042 710)

Installs onto side of power source. Provides convenient way to store gun when not in use.

POWER CORD EXTENSION

(#041 688)

25 ft. (7.6 m) power cord extension with plug.

MILLER EXPERT PROGRAM™ SOFTWARE

(#042 702)

Easy-to-use computerized software program used to diagnose and service the Millermatic 250MP power source. This program incorporates the experience and knowledge of the Miller engineering and service personnel into a readily available source. For detailed information, reference Miller Expert Program literature, Index No. AV/6.0.

115V POWER MODULE

(#042 740)

Use to hook up a Millermatic 250MP simulator.