IM534

June, 1997

WIRE-MATIC™ 255

For use with machine Code Numbers **10166**
10167

IM534
June, 1997
Wire-Matic 255
10166; 10167

Safety Depends on You

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.

This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

OPERATOR'S MANUAL

World's Leader in Welding and Cutting Products

LINCOLN® ELECTRIC

Premier Manufacturer of Industrial Motors

Sales and Service through Subsidiaries and Distributors Worldwide

22801 St. Clair Ave. Cleveland, Ohio 44117-1199 U.S.A. Tel. (216) 481-8100

⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.

FOR ENGINE powered equipment.

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.

1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.

ELECTRIC AND MAGNETIC FIELDS may be dangerous

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

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ELECTRIC SHOCK can kill.

3.a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- **Semiautomatic DC Constant Voltage (Wire) Welder.**
- **DC Manual (Stick) Welder.**
- **AC Welder with Reduced Voltage Control.**

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.

ARC RAYS can burn.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES can be dangerous.

5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases.When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**

5.b. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

5.c. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.d. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

5.e. Also see item 1.b.

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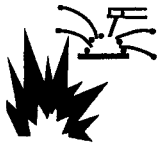


WELDING SPARKS can cause fire or explosion.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

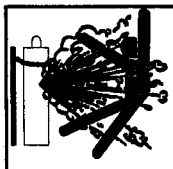
6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.



CYLINDER may explode if damaged.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

7.c. Cylinders should be located:

- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-l, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.

FOR ELECTRICALLY powered equipment.

8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.

8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.

8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

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PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté specifiques qui parraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

Sûreté Pour Soudage A L'Arc

1. Protegez-vous contre la secousse électrique:

   a. Les circuits à l'électrode et à la piéce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vétements mouillés. Porter des gants secs et sans trous pour isoler les mains.
   b. Faire trés attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher metallique ou des grilles metalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
   c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état defonctionnement.
   d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
   e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
   f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces precautions pour le porte-électrode s'applicuent aussi au pistolet de soudage.

2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas ou on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.

3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:

   a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
   b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
   c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.

4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.

5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans lateraux dans les zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.

7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidental peut provoquer un échauffement et un risque d'incendie.

8. S'assurer que la masse est connectée le plus prés possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaines de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'echauffement des chaines et des câbles jusqu'à ce qu'ils se rompent.

9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particuliérement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.

10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgéne (gas fortement toxique) ou autres produits irritants.

11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le chassis du poste conformement au code de l'électricité et aux recommendations du fabricant. Le dispositif de montage ou la piece à souder doit être branché à une bonne mise à la terre.

2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.

3. Avant de faires des travaux à l'interieur de poste, la debrancher à l'interrupteur à la boite de fusibles.

4. Garder tous les couvercles et dispositifs de sûreté à leur place.

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Thank You ——— for selecting a **QUALITY** product by Lincoln Electric. We want you to take pride in operating this Lincoln Electric Company product ••• as much pride as we have in bringing this product to you!

Please Examine Carton and Equipment For Damage Immediately

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, Claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Name & Number _____

Code & Serial Number _____

Date of Purchase _____

Whenever you request replacement parts for or information on this equipment always supply the information you have recorded above.

Read this Operators Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. The level of seriousness to be applied to each is explained below:

⚠ WARNING

This statement appears where the information **must** be followed **exactly** to avoid **serious personal injury** or **loss of life**.

⚠ CAUTION

This statement appears where the information **must** be followed to avoid **minor personal injury** or **damage to this equipment**.

MASTER TABLE OF CONTENTS FOR ALL SECTIONS

MASTER TABLE OF CONTENTS FOR ALL SECTIONS (cont.)

TECHNICAL SPECIFICATIONS – WIRE-MATIC 255

INPUT – SINGLE PHASE ONLY	
Standard Voltage/Frequency	**Input Current (@ Max Rated Output)**
208/230/60 Hz	53/49 Amps
230/460/575/60 Hz	50/25/20 Amps

RATED OUTPUT		
Duty Cycle	**Amps**	**Volts at Rated Amperes**
35%	250 Amps	26 Volts
60%	200 Amps	28 Volts
100%	145 Amps	26 Volts

OUTPUT		
Welding Current Range (Continuous)	**Maximum Open Circuit Voltage**	**Auxiliary Power**
30 – 250 Amps	40 Volts	N/A

RECOMMENDED INPUT WIRE AND FUSE SIZES				
Input Voltage/ Frequency	**Fuse or Breaker Size (Super Lag)**	**Input Ampere Rating On Nameplate**	**75°C Copper Wire in Conduit AWG (IEC) Sizes (For lengths up to 100 ft.)**	**75°C Copper Wire in Conduit AWG (IEC) Sizes (For lengths exceeding 100 ft.)**
208	60	53	8 (10 mm^2)	6 (16 mm^2)
230	60	50	10 (6 mm^2)	8 (10 mm^2)
460	30	25	14 (2.5 mm^2)	12 (4 mm^2)
575	25	20	14 (2.5 mm^2)	12 (4 mm^2)
NOTE: Use #10 AWG Grounding Wire				

PHYSICAL DIMENSIONS			
Height	**Width**	**Depth**	**Weight**
28.2 in	18.85 in	40.1 in	220 lbs
719 mm	480 mm	1019 mm	100 kg

WIRE SPEED RANGE	
Wire Speed	50 – 600 IPM (1.27 – 15.2 m/minute)

Read entire installation section before starting installation.

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Only qualified personnel should perform this installation.**
- **Only personnel that have read and understood the WIRE-MATIC 255 Operating Manual should install and operate this equipment.**
- **Machine must be grounded per any national, local or other applicable electrical codes.**
- **The Wire-Matic power switch is to be in the OFF position when installing work cable and gun and when connecting other equipment.**

UNCRATING THE WIRE-MATIC 255

Remove the staples from the bottom edge of the carton and lift off. Cut the tape securing the two rear wheels to the wooden shipping pallet. Using a 1/2 inch (or 13 mm) wrench or socket, remove the two screws which attach the pallet to the bottom of the Wire-Matic 255.

LOCATION

Locate the welder in a dry location where there is free circulation of clean air into the louvers in the back and out the front. A location that minimizes the amount of smoke and dirt drawn into the rear louvers reduces the chance of dirt accumulation that can block air passages and cause overheating.

INPUT POWER, GROUNDING AND CONNECTION DIAGRAMS

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Do not touch electrically live parts such as ouput terminals or internal wiring.**
- **All input power must be electrically disconnected before proceeding.**

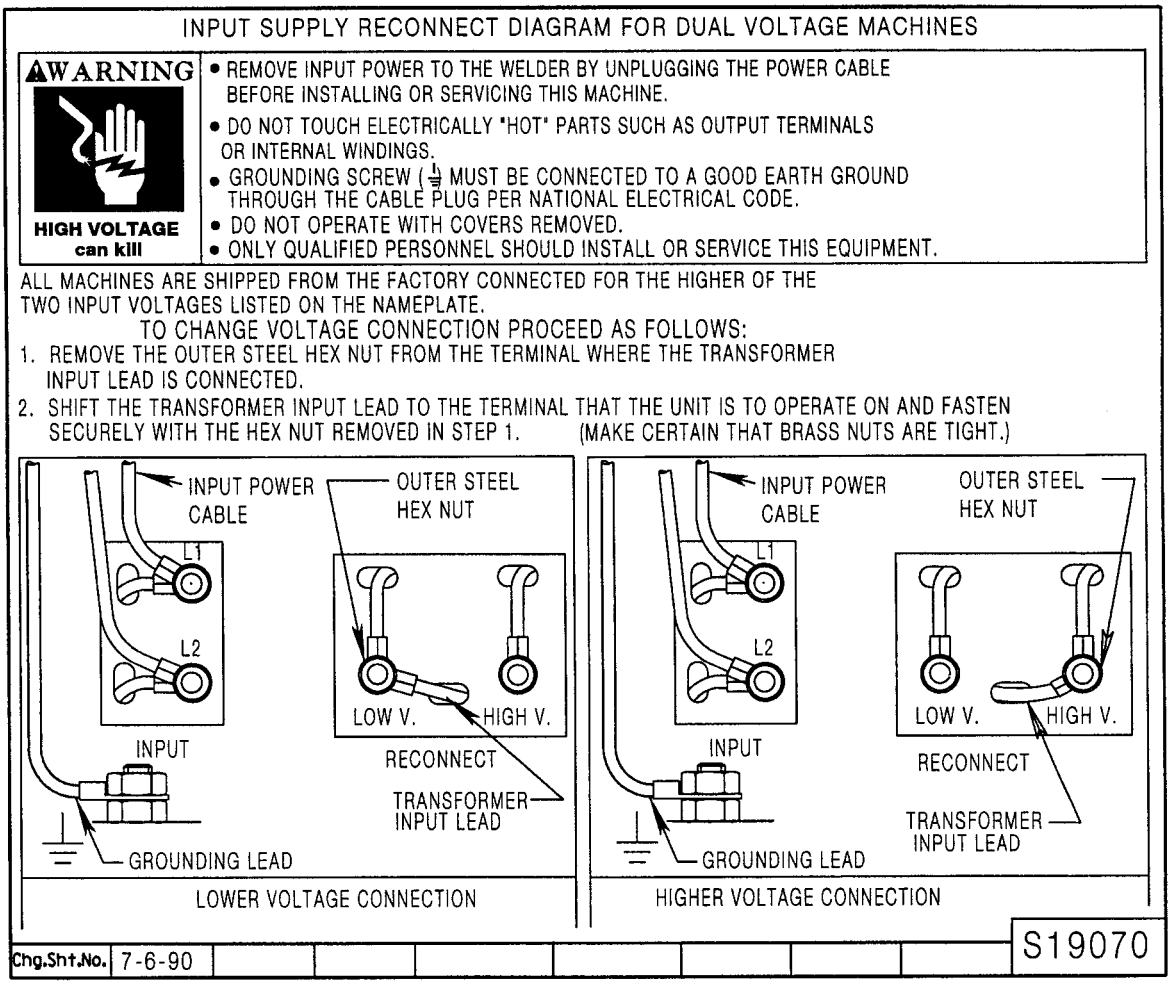
1. Before starting the installation, check with the local power company if there is any question about whether your power supply is adequate for the voltage, amperes, phase, and frequency specified on the welder nameplate. Also be sure the planned installation will meet the U.S. National Electrical Code and local code requirements. This welder may be operated from a single phase line or from one phase of a two or three phase line.

2. Models that have multiple input voltages specified on the nameplate (e.g. 208/230) are shipped connected for the highest voltage. If the welder is to be operated on lower voltage, it must be reconnected according to the instructions on the inside of the removable panel near the top left side of the rear panel. These instructions are repeated in Figure A.1.

⚠ WARNING

Make certain that the input power is electrically disconnected before removing the screw that holds the removable rear panel in place.

FIGURE A.1 — Dual Voltage Machine Input Connections



3. The 208/230 volt 60 Hz model Wire-Matic is shipped with a 10 ft. input cable and plug connected to the welder. A matching receptacle is supplied with the machine. Mount the receptacle in a suitable location using the screws provided. Be sure it can be reached by the plug on the input cable attached to the welder. Mount with the grounding terminal at the top to allow the power cable to hang down without bending.

   The 230/460/575 volt 60 Hz model is not equipped with a plug, an input cable or a receptacle.

4. Using the instructions in Figure A.2, have a qualified electrician connect the receptacle or cable to the input power lines and the system ground per the U.S. National Electrical Code and any applicable local codes. See "Technical Specifications" at the beginning of this chapter for proper wire sizes. For long runs over 100 feet, larger copper wires should be used. Fuse the two hot lines with super lag type fuses as shown in the following diagram. The center contact in the receptacle is for the grounding connection. A green wire in the input cable connects this contact to the frame of the welder. This ensures proper grounding of the welder frame when the welder plug is inserted into the receptacle. Refer to Figure A.3

FIGURE A.2 — Triple Voltage Machine Input Connections

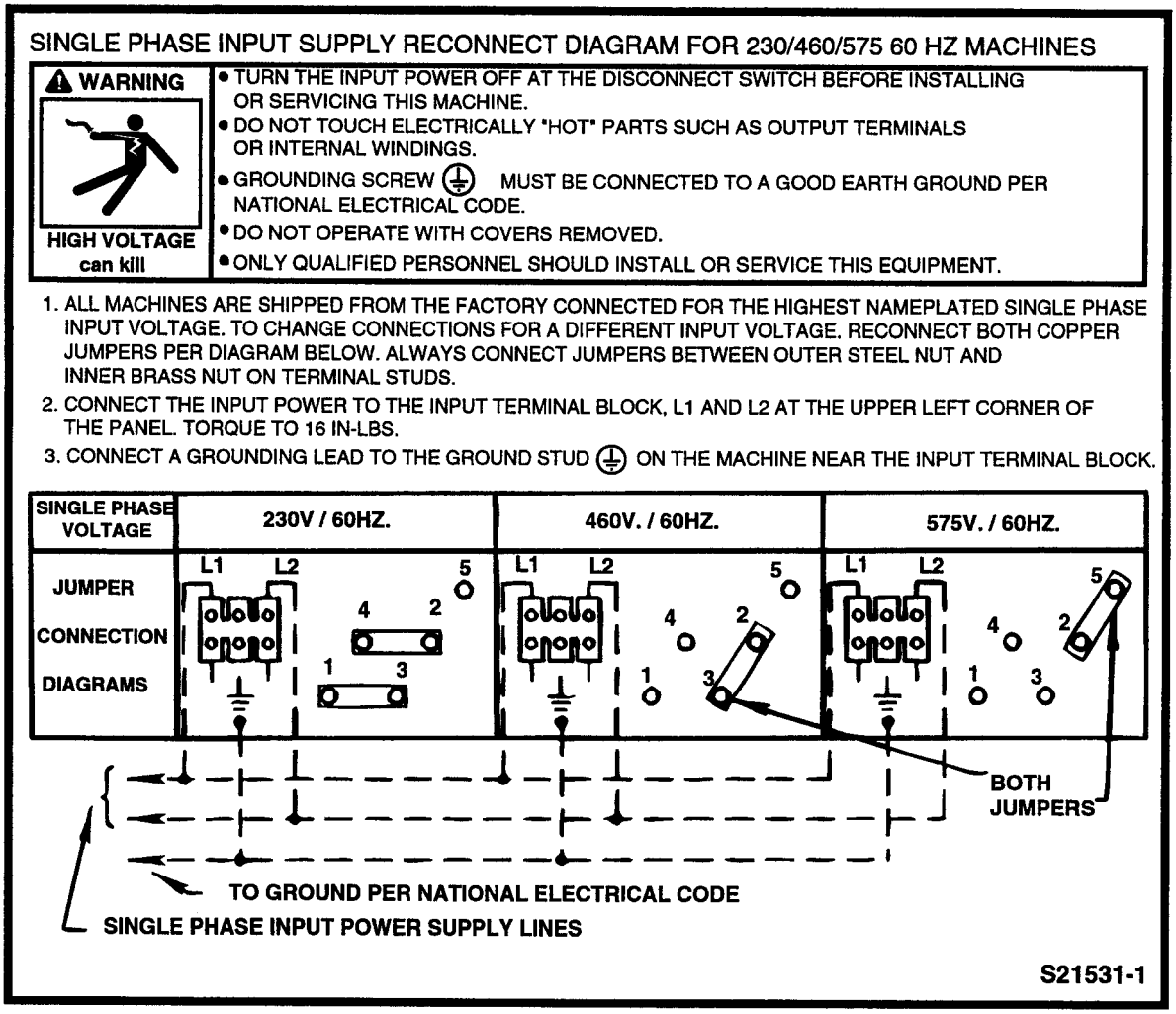
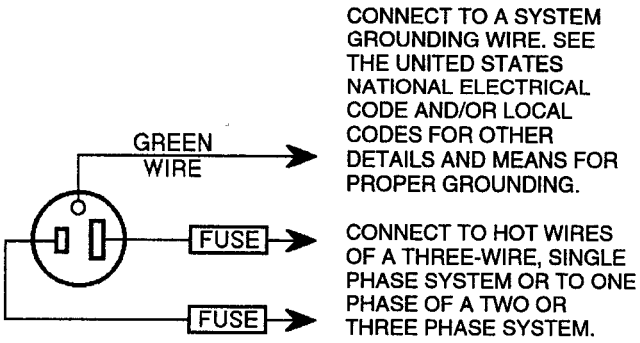


FIGURE A.3 — Receptacle Diagram



OUTPUT POLARITY CONNECTIONS

The welder, as shipped from the factory, is connected for electrode positive (+) polarity. This is the normal polarity for GMA welding.

If negative (–) polarity is required, interchange the connection of the two cables located in the wire drive compartment near the front panel. The electrode

cable, which is attached to the wire drive, is to be connected to the negative (–) labeled terminal and the work lead, which is attached to the work clamp, is to be connected to the positive (+) labeled terminal.

GUN AND CABLE INSTALLATION

The Magnum 250L gun and cable provided with the Wire-Matic 255 is factory installed with a liner for .035-.045" (0.9-1.2 mm) electrode and an .035" (0.9 mm) contact tip. Install the .045 tip (also provided) if this wire size is being used. Using the optional K466-6 Magnum Connection Kit for the Wire-Matic permits use of standard Magnum 200, 300 or 400 gun and cable assemblies.

⚠ WARNING

Turn the welder power switch off before installing gun and cable.

1. Lay the cable out straight.

2. Unscrew thumbscrew on conductor block inside wire feed compartment until tip of screw no longer protrudes into gun opening as seen from front of machine.

3. Insert the brass connector on end of gun cable into conductor block through opening in front panel. Make sure connector is fully inserted and tighten thumbscrew.

4. Connect the gun trigger connector from the gun and cable to the mating receptacle on the front panel. Make sure that the keyways are aligned, insert and tighten retaining ring.

   NOTE: If a gun and cable other than the Magnum 250L is used, it must conform to connector specifications and the gun trigger switch must be capable of switching 5 milliamps at 15 volts DC– resistive.

⚠ CAUTION

The gun trigger switch connected to the gun trigger control cable must be a normally open, momentary switch. The terminals of the switch must be insulated from the welding circuit. Improper operation of or damage to the Wire-Matic 255 might result if this switch is common to an electrical circuit other than the Wire-Matic 255 trigger circuit.

SHIELDING GAS

(For Gas Metal Arc Welding Processes)

Customer must provide cylinder of appropriate type shielding gas for the process being used.

A gas flow regulator, for CO_2 or Argon blend gas, and an inlet gas hose are factory provided with the Wire-Matic 255.

⚠ WARNING

CYLINDER may explode if damaged.

- **Gas under pressure is explosive. Always keep gas cylinders in an upright position and always keep chained to undercarriage or stationary support. See American National Standard Z-49.1, "Safety in Welding and Cutting" published by the American Welding Society.**

Install shielding gas supply as follows:

1. Set gas cylinder in rear platform of Wire-Matic 255. Hook chain in place to secure cylinder to rear of welder.

2. Remove the cylinder cap. Inspect the cylinder valves for damaged threads, dirt, dust, oil or grease. Remove dust and dirt with a clean cloth.

   DO NOT ATTACH THE REGULATOR IF OIL, GREASE OR DAMAGE IS PRESENT! Inform your gas supplier of this condition. Oil or grease in the presence of high pressure oxygen is explosive.

3. Stand to one side away from the outlet and open the cylinder valve for an instant. This blows away any dust or dirt which may have accumulated in the valve outlet.

⚠ WARNING

Be sure to keep your face away from the valve outlet when "cracking" the valve.

4. Inspect the regulator for damaged threads, dirt, dust, oil or grease. Remove dust and dirt with a clean cloth.

   DO NOT USE THE REGULATOR IF OIL, GREASE OR DAMAGE IS PRESENT! Have an authorized repair station clean the regulator or repair any damage.

5. Attach the flow regulator to the cylinder valve and tighten the union nut(s) securely with a wrench.

   NOTE: If connecting to 100% CO_2 cylinder, insert regulator adapter between regulator and cylinder valve. If adapter is equipped with a plastic washer, be sure it is seated for connection to the CO_2 cylinder.

6. Attach one end of the inlet gas hose to the outlet fitting of the flow regulator, the other end to the Wire-Matic 255 rear fitting, and tighten the union nuts securely with a wrench.

7. Before opening the cylinder valve, turn the regulator adjusting knob counterclockwise until the adjusting spring pressure is released.

8. Open the cylinder valve slowly a fraction of a turn. When the cylinder pressure gauge pointer stops moving, open the valve fully.

⚠ WARNING

Never stand directly in front of or behind the flow regulator when opening the cylinder valve. Always stand to one side.

9. The flow regulator is adjustable. Set is for the flow rate recommended for the procedure and process being used before making the weld.

Read entire Operation section before operating the Wire-Matic 255.

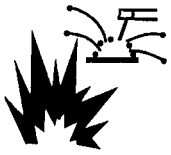
⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch electrically live parts or electrode with skin or wet clothing. Insulate yourself from work and ground.
- Always wear dry insulating gloves.

FUMES AND GASES can be dangerous.

- Keep your head out of fumes.
- Use ventilation or exhaust to remove fumes from breathing zone.



WELDING SPARKS can cause fire or explosion.

- Keep flammable material away.
- Do not weld on closed containers.

ARC RAYS can burn eyes and skin.

- Wear eye, ear and body protection.

Observe all safety information throughout this manual.

PRODUCT DESCRIPTION

The Wire-Matic™ 255 is a complete semiautomatic constant voltage DC arc welding machine built to meet NEMA specifications. It combines a constant voltage power source and a constant speed wire feeder with a microcomputer-based controller to form a reliable high-performance welding system. A simple control scheme, consisting of continuous full range calibrated voltage and wire feed speed controls, provides versatility with ease of use.

Other features include a 2" (51 mm) O.D. wire reel spindle with adjustable brake, an integral gas cylinder mounting undercarriage, an adjustable CO_2 or Argon blend flow regulator with cylinder pressure gauge and inlet hose, a 12 ft. (3.6 m) Magnum 250L GMAW gun and cable with fixed (flush) nozzle, a 10 ft. (3.0 m) power cable with plug and mating receptacle, and a 10 ft. (3.0 m) work cable with clamp.

An Optional Timer kit provides variable burnback control, spot and stitch functions, and a selectable 4-step trigger interlock. Also optional are a Spool Gun Adapter kit and a Dual Cylinder Mounting kit.

RECOMMENDED PROCESSES AND EQUIPMENT

The K669 Wire-Matic 255 is recommended for GMA welding processes using 10 to 44 lb (4.5 to 20 kg) 2" (51 mm) I.D. spools or Readi-Reel® coils (with optional adapter) of .025" through .045" (0.6 – 1.2 mm) solid steel, .035" (0.9 mm) stainless, 3/64" (1.2 mm) aluminum and .045" (1.2 mm) Outershield®; as well as .035" (0.9 mm) and .045" (1.2 mm) Innershield® self-shielding electrodes.

The Wire-Matic is factory equipped to feed .035" (0.9 mm) and .045" (1.2 mm) electrodes and includes a 200A, 60% duty cycle (or 250A, 35% duty cycle) rated, 12 ft. (3.6 m) GMAW gun and cable assembly equipped for these wire sizes. Use of GMAW processes requires a supply of shielding gas.

WELDING CAPABILITY

The Wire-Matic 255 is rated at 250 amps @ 26 volts, at a 35% duty cycle based on a ten minute basis. It is capable of higher duty cycles at lower output currents.

LIMITATIONS

The Wire-Matic 255 MAY NOT operate satisfactorily if powered with a portable or in-plant generating system.

DESCRIPTION OF CONTROLS

Power ON/OFF Switch — Place the lever in the "ON" position to energize the Wire-Matic 255. When the power is on, the red LED pilot light, next to the power switch, will be lit.

Voltage Control — This is a continuous control that gives full range adjustment of power source output voltage. It can be adjusted while welding over the rated 12 to 28 volt range.

Wire Speed Control — This controls the wire feed speed from 50 – 600 inches per minute (1.2 – 15.2 m/min). The control can be preset on the dial to the setting specified on the Procedure Decal on the inside of the wire compartment door. Wire speed is not affected when changes are made in the voltage control.

WIRE DRIVE ROLL

The drive roll provided with the Wire-Matic has two grooves, one for .030-.035" (0.8-0.9 mm) solid steel electrode, and the other for .045" (1.2 mm) solid steel electrode. The welder is shipped with the drive roll installed in the .030-.035" (0.8-0.9 mm) position as indicated by the stencilling on the exposed side of the drive roll. If .045" (1.2 mm) electrode is to be used or one of the optional drive rolls is required, then the drive roll must be reversed or changed. See "Procedure for Changing Drive Roll" in this section. This information also appears on the Procedure Decal on the door inside the wire compartment.

WIRE SIZE CONVERSION PARTS

The Wire-Matic 255 is rated to feed .025 through .045" (0.6-1.2 mm) solid or cored electrode sizes.

The drive roll kits and Magnum 250L gun and cable parts are available to feed different sizes and types of electrodes. See Accessories section.

PROCEDURE FOR CHANGING DRIVE ROLL

Different wire sizes may require changing the drive roll. The applicable wire sizes are stamped on the drive roll. Dual groove rolls must be installed so the side with the proper wire size stamp faces out.

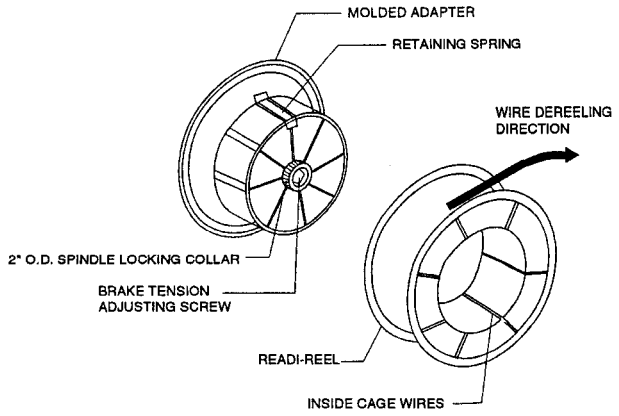
1. Turn off the power source.
2. Release the pressure on the idle roll by swinging the pressure arm off the idle roll arm.
3. Remove the wire from the drive system.
4. Remove the thumb screw from the drive roll. Turn the drive roll over or change to another roll as required. Reinstall the thumb screw.
5. Be sure the gun liner and contact tip are properly sized for wire being used.

WIRE REEL LOADING

TO MOUNT 22 TO 30 LB READI-REELS

To mount a 22-30 lb. (10-14 kg) Redi-Reel package using the optional Redi-Reel Adapter (k363P), perform the following steps:

1. Remove the locking collar from the 2" O.D. spindle and mount the K363P Adapter so the spindle pin engages the role provided in the Adapter. Replace and tighten the locking collar.
2. Rotate the spindle and adapter so the retaining spring is at the 12 o'clock position.
3. Position the Readi-Reel so that it will rotate in a *counterclockwise* direction (as viewed from retaining spring side of Adapter) when wire is dereeled from the *top* of the coil as shown below:



4. Set one of the Readi-Reel inside cage wires on the slot in the retaining spring tab.
5. Lower the Readi-Reel to depress the retaining spring and align the other inside cage wires with the grooves in the molded adapter.
6. Slide cage all the way onto the adapter until the retain spring "pops up" fully.

⚠ CAUTION

Check to be sure the retaining spring has fully returned to the locking position and has securely locked the Readi-Reel cage in place. Retaining spring must rest on the cage not the welding electrode.

To remove Readi-Reel from Adapter, depress retaining spring tab with thumb while pulling the Readi-Reel cage from the molded adapter with both hands. It is not necessary to remove adapter from spindle.

TO MOUNT 10 TO 44 LB SPOOLS (8" and 12" diameter)

For 8" spools a K468 adapter must be used.

1. Remove the locking collar and the Readi-Reel adapter (if installed) from the 2 inch dia. spindle.
2. If using an 8" spool, place the K468 adapter on the spindle first. The hole in the adapter arm is to engage the pin on the spindle.
3. Place the spool on the spindle making certain the brake driving pin enters one of the holes in the back side of the spool. Be certain the wire comes off the reel in a clockwise direction when dereeled from the top of the coil.
4. Replace and tighten the locking collar.

TO START THE WELDER

Turn the "Power Switch" switch to "ON". This lights the red LED pilot light. With the desired voltage and wire speed selected, operate the gun trigger for welder output and to energize the wire feed motor.

FEEDING ELECTRODE

⚠ WARNING

When inching, the electrode and drive mechanism are electrically "hot" relative to work and ground and remain "hot" several seconds after the gun trigger is released.

NOTE: Check that drive rolls and gun parts are proper for the wire size and type being used. Refer to Table C.1 in Accessories section.

1. Turn the Readi-Reel or spool until the free end of the electrode is accessible.

2. While securely holding the electrode, cut off the bent end and straighten the first six inches. Cut off the first inch. (If the electrode is not properly straightened, it may not feed properly into the outgoing guide tube or welding gun causing a "birdnest".)

3. Push the wire through the ingoing guide tube, then press the gun trigger and push the electrode into the drive roll. If the electrode fails to thread itself into the outgoing guide tube of the wire drive, open the quick release idle roll arm, thread the electrode manually, and reclose the arm.

4. Inch the electrode through the gun.

   NOTE: If using the low speed starting feature of the Wire-Matic 255, the wire will feed at low speed for 2 seconds while inching, then come up to the set speed.

IDLE ROLL PRESSURE SETTING

The idle roll pressure thumbscrew is set at the factory backed out 2-1/2 turns from full pressure. This is an approximate setting. The optimum idle roll pressure varies with type of wire, wire diameter, surface conditions, lubrication, and hardness. As a general rule, hard wires may require greater pressure, and soft, or aluminum wire, may require less pressure than the factory setting. The optimum idle roll setting can be determined as follows:

1. Press end of gun against a solid object that is electrically isolated from the welder output and press the gun trigger for several seconds.

2. If the wire "birdnests", jams or breaks at the drive roll, the idle roll pressure is too great. Back the thumb screw out 1/2 turn, run new wire through gun, and repeat above steps.

3. If the only result was drive roll slippage, loosen the thumbscrew on the conductor block and pull the gun cable forward about 6" (15 cm). There should be a slight waviness in the expose wire. If there is not waviness, the pressure is too low. Tighten the thumbscrew 1/4 turn, reinstall the gun cable and repeat the above steps.

SETTING RUN-IN SPEED

FAST OR SLOW RUN-IN MODE SELECTION

The Wire-Matic 255 is factory set for fast run-in mode where the wire feed will accelerate directly to the preset wire feed speed when the gun trigger is closed.

Slow run-in mode may also be selected, where it will initially feed wire at 50 IPM until output current is sensed or for 2.0 seconds, whichever occurs first. After which it will accelerate to the preset wire feed speed.

INSTRUCTIONS TO ENTER SLOW RUN-IN

1. Turn power OFF on front panel of Wire-Matic 255.

2. Turn the wire feed speed dial to minimum, fully counterclockwise.

3. With the gun trigger closed, turn the power ON at the front panel of the Wire-Matic 255.

4. The gas solenoid will actuate two times to signal that the unit has entered the slow run-in mode (the gun trigger need only be closed until the first gas solenoid actuation is heard).

INSTRUCTIONS TO ENTER FAST RUN-IN

1. Turn power OFF on front panel of Wire-Matic 255.

2. Turn the wire feed speed dial to maximum, fully clockwise.

3. With the gun trigger closed, turn the power ON at the front panel of the Wire-Matic 255.

4. The gas solenoid will actuate four times to signal that the unit has entered the fast run-in mode (the gun trigger need only be closed until the first gas solenoid actuation is heard).

NOTE:
Arc starting characteristics may be effected when using the fast run-in mode since optimum starting processes are being overridden.

On the initial trigger closure at power up, no output power or wire feed will be available until the trigger is opened and reclosed, regardless of wire feed speed dial setting.

It is not necessary to repeat either of the above procedures each time the unit is powered up. The unit will remember the run-in mode from the previous power down and return you to that same state upon your next power up. Thus, you need only perform one of the above procedures when you want to change the run-in mode.

MAKING A WELD

1. Check that the electrode polarity is correct for the process being used, then turn the power switch ON.

2. Set desired arc voltage and wire speed for the particular electrode wire, material type and thickness, and gas (for GMAW) being used. Use the Application Chart on the door inside the wire compartment as a quick reference for some common welding procedures.

3. If Timer Kit is installed, select the desired mode as described in "Operating Instructions for Timer Kit" in the Accessories section. Refer to the Accessories section for additional welding information pertaining to Spot and Stitch modes.

4. Inch the electrode through the gun and cable and then cut the electrode within approximately 3/8" (10 mm) of the end of the contact tip [3/4" (20 mm) Outershield®].

NOTE: If set for slow run-in when the trigger is pulled, the wire feeder feeds wire at low speed regardless of the set wire feed speed until the welding arc starts or 2 seconds has elapsed. This feature enhances starting and makes it easier to set the stickout. The 2 second limit permits high speed loading of the gun and cable. To change run-in mode, see "Setting Run-In Speed" in this section.

5. If welding gas is to be used, turn on the gas supply and set the required flow rate (typically 25-35 CFH; 12-16 liters/min).

6. When using Innershield electrode, the gas nozzle may be removed from the insulation on the end of the gun and replaced with the gasless nozzle. This will give improved visibility and eliminate the possibility of the gas nozzle overheating.

7. Connect work cable to metal to be welded. Work clamp must make good electrical contact to the work. The work must also be grounded as stated in "Arc Welding Safety Precautions".

⚠ WARNING

When using an open arc process, it is necessary to use correct eye, head, and body protection.

8. Position electrode over joint. End of electrode may be lightly touching the work.

9. Lower welding helmet, close gun trigger, and begin welding. Hold the gun so the contact tip to work distance is about 3/8" (10 mm) [3/4" (20 mm) for Outershield].

10. To stop welding, release the gun trigger and then pull the gun away from the work after the arc goes out.

11. When no more welding is to be done, close valve on gas cylinder (if used), momentarily operate gun trigger to release gas pressure, and turn off Wire-Matic 255.

AVOIDING WIRE FEEDING PROBLEMS

Wire feeding problems can be avoided by observing the following gun handling procedures:

a. Do not kink or pull cable around sharp corners.

b. Keep the electrode cable as straight as possible when welding or loading electrode through cable.

c. Do not allow dolly wheels or trucks to run over cables.

d. Keep cable clean by following maintenance instructions.

e. Use only clean, rust-free electrode. The Lincoln electrodes have proper surface lubrication.

f. Replace contact tip when the arc starts to become unstable or the contact tip end is fused or deformed.

g. Keep wire reel spindle brake tension to minimum required to prevent excess reel over-travel which may cause wire "loop-offs" from coil.

h. Use proper drive rolls and wire drive idle roll pressure for wire size and type being used.

FAN CONTROL

The fan motor is thermostatically controlled to provide cooling for the transformer and other components only when required. Even though the power switch is on, the fan motor will not run when the machine does not require fan cooling, such as when first turned on, or when welding at low current or duty cycle procedures.

INPUT LINE VOLTAGE PROTECTION

High Line Voltage — If the line voltage exceeds 121% of rated input voltage, the output will be reduced to the lower level to protect voltage rating of the capacitor bank.

Low Line Voltage — You may not be able to get maximum output from the machine if the line voltage is less than rated input. The unit will continue to weld, but the output will be less than what is set.

WIRE FEED OVERLOAD PROTECTION

The Wire-Matic has solid state overload protection of the wire drive motor. If the motor becomes overloaded, the protection circuitry turns off the wire feed speed and gas solenoid. Check for proper size tip, liner, and drive rolls, for any obstructions or bends in the gun cable, and any other factors that would impede the wire feeding. to resume welding, simply pull the trigger.

WELDING THERMAL OVERLOAD PROTECTION

The Wire-Matic 255 has built-in protective thermostats that respond to excessive temperature. They open the wire feed and welder output circuits if the machine exceeds the maximum safe operating temperature because of a frequent overload, or high ambient temperature plus overload. The thermostats automatically reset when the temperature reaches a safe operating level.

OVERCURRENT PROTECTION

The machine will automatically reduce the output if the load on the machine exceeds 260 to 280 amperes. This protects the welding power SCR's from excessive short circuit currents and from exceeding their temperature rating before the thermostats can react.

DRIVE ROLL KITS

Refer to Table C.1 for various drive roll kits that are available for the Wire-Matic 255.

TABLE C.1

Steel Wire Sizes	Part No.
.025-.035" (0.6-0.9 mm)	KP674-035S
.035" Cored (0.9 mm)	KP674-035C
.030-.045" (0.9-1.2 mm)	KP674-045S
.045" Cored (1.2 mm)	KP674-045C
Aluminum Wire Sizes	
3/64" (1.2 mm)	KP674-3/64A

3/64" (1.2 mm) ALUMINUM FEEDING KIT (K673-1)

Provides gun and wire drive conversion parts to weld with 3/64" (1.2 mm) aluminum wire. 5356 alloy aluminum wire is recommended for best push feeding performance.

Kit includes drive roll and incoming guide tube for the wire drive, and 45° gun tube, liner and two contact tips for the gun, along with S21529 installation instructions.

K468 8" SPOOL ADAPTER

The K468 Spool Adapter permits the use of 8" Spools on the Wire-Matic 255 spindle.

K363P READI-REEL ADAPTER

The K363P Readi-Reel Adapter mounts to the 2" spindle. It is needed to mount the 22-30 lb. Readi-Reels.

DUAL CYLINDER MOUNTING KIT (K671-1)

Permits stable side-by-side mounting of two full size (9" dia. x 5' high) gas cylinders with "no lift" loading. Simple installation with installation kick stand and easy instructions provided (L9687). Includes upper and lower cylinder supports, wheel axles and mounting hardware.

ALTERNATIVE MAGNUM GMAW GUN AND CABLE ASSEMBLIES

The following Magnum 250L gun and cable assemblies are separately available for use with the Wire-Matic 255. Each is rated 200 amps 60% duty cycle (or 250 amps 35% duty) and is equipped with the integrated connector, twist-lock trigger connector, adjustable slip-on nozzle and insulator, and includes a liner, diffuser, and contact tips for the wire sizes specified:

Length	Part No.	English Wire Size	Metric Wire Size
10' (3.0 m) 12' (3.6 m) 15' (4.5 m)	K533-1 K533-2 K533-3	.035 – .045"	0.9 – 1.2 mm
10' *3.0 m) 12' (3.6 m) 15' (4.5 m)	K533-4 K533-5 K533-6	.025 – .030"	0.6 – 0.8 mm

MAGNUM GUN CONNECTION KIT (Optional K466-6)

Using the optional K466-6 Magnum Connection kit for the Wire-Matic permits use of standard Magnum 200, 300 or 400 gun and cable assemblies.

TIMER KIT INSTALLATION
(Optional K585-1)

The timer kit adds selectable 4-step trigger interlock, spot and stitch functions and manual adjustment of burnback time. Install as follows, or per the S20274 instructions included with the kit:

⚠ WARNING

Remove all input power to the Wire-Matic 255 before proceeding.

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1. Verify that the following items have been included in the kit:
   A. Timer board and panel assembly.
   B. Two sheet metal screws.
   C. Wiring harness.

2. Prepare for kit installation by turning the power switch off and disconnecting power from the machine.

3. Remove the top cover panel from the front of the machine by removing the two screws which secure it using a screwdriver, a 5/16" nut driver, or another suitable tool.

4. Reaching through the exposed panel opening, attach the rectangular 8-pin plug connector on the timer kit wiring harness to the available mating receptacle connector on the upper left corner of the printed circuit board inside the machine. Be sure that the latch on the connector is aligned with that on the board and insert it until the latch engages.

5. Confirm that the remaining connector on the opposite end of the wiring harness is firmly attached to the mating connector on the printed circuit board on the timer kit panel, and that the latch is engaged.

6. Align the timer panel for installation and carefully insert the printed circuit board and wiring harness through the opening in the front panel. Make sure the wiring harness is not pinched between panels or between printed circuit board and front panel.

7. Secure the timer assembly with either the two supplied screws or with the original screws. The installation is now complete. Refer to the following section for operating instructions.

OPERATING INSTRUCTIONS FOR TIMER KIT

If the optional Timer Kit (K585-1) is installed, select the desired mode with the selector switch:

A. **Normal Welding** mode provides weld power only while the trigger switch is depressed. this is the same operation as when the Timer Kit is not installed.

B. **4-Step Trigger** mode eliminates the need to hold the gun trigger while welding. It operates in 4 steps:

   1. Close trigger and establish welding arc.

   2. Release trigger and continue welding.

   3. Reclose trigger near end of weld.

   4. Release trigger again to stop welding.

   If the arc is broken while using this feature, the machine will reset to the "trigger off" condition automatically.

C. **Spot** mode is used for tack welding parts into position or for spot plug welds to hold thin sheet metal together prior to stitch or continuous welding. to use this feature, adjust the Spot/Stitch On-Time (0-5 seconds) as appropriate to obtain the desired results. Closing the trigger initiates a single timed spot weld cycle.

D. **Stitch** mode is used to weld thin material where warpage and burnthrough are a problem. To use this feature, adjust Spot/Stitch On-time and Stitch Off-Time (0-5 seconds each) as appropriate to obtain desired results. Closing the trigger initiates repetitive timed weld cycles for as long as trigger is held closed.

Burnback Time control provides manual adjustment of the burnback time (0-250 milliseconds) for any selected welding mode. this control should be set as low as possible without the wire "sticking" in the puddle after each weld. Too long of a burnback time may form a "ball" on the end of the wire, or may "flash back" to the gun tip.

APPLICATION OF TIMED WELD MODES

Welding with the Spot and Stitch modes provided by the Timer Kit is described below.

1. **Spot Weld Mode** is used to make spot plug welds when continuous welds are not needed or to hold thin sheet metal together prior to stitch welding or continuous welding. Plug welds are made by using a punch to make a 3/16" (5 mm) diameter hole in the top sheet and arc welding through the hole into the back sheet.

   To make spot plug welds, punch 3/16" (5 mm) holes in the top sheet. Set the Spot/Stitch On-Time control to approximately 1.2 seconds and set the procedure for the metal thickness to be welded. Install spot weld nozzle (if available) on gun and press it against the top sheet so the top and bottom sheets are tight together. Close trigger and hold it closed until the arc goes out. If a spot weld nozzle is not used, smoother welds will result by moving the welding wire in a small circle during the weld.

2. **Stitch Weld Mode** is used to weld thin material where warpage and burnthrough are a problem. Proper adjustment of Spot/Stitch On-time and Stitch Off-Time and arc travel speed permits welding thin sheet metal with small welds, minimum distortion, and no burnthrough.

   Spot/Stitch On-Time sets welding time. Start with a dial setting of 0.5 seconds. Raise setting to increase penetration and weld size; lower setting to reduce burnthrough and distortion.

Stitch Off-time sets off time between welds. Start with a dial setting of 0.5 seconds. Raise setting to reduce burnthrough; lower setting to make weld flatter and smoother.

To weld, set the procedure for the metal thickness to be welded. Close trigger and hold it closed for length of seam. Hold gun in one place during ON time and move gun just beyond edge of molten metal during OFF time.

NOTE: For smoothest welds on thinner metal, point gun slightly toward direction of travel.

SPOOL GUN ADAPTER KIT (K672-1)

⚠ WARNING

Remove all input power to the Wire-Matic 255 before proceeding.

The K672-1 Spool Gun Adapter Kit provides recessed panel "up front" direct connection and use of the K487 Spool Gun (with remote speed control), or the K469 Spool Gun (requiring K518 Connection Adapter) with the SP-255, SP255-I and Wire-Matic 255 wire feed welder machines.

It also provides single switch transfer between the machine's use with its feeder gun or the spool gun for same polarity welding with different wire and gas processes.

The kit includes a spool gun adapter module assembly with a single connecting plug, a rear gas inlet setting with hose, a gun and cable holder and mounting hardware with installation and operation instructions (L9696)

⚠ CAUTION

The spool gun module is intended for use with Lincoln Electric® Magnum™ Spool Guns only. Use with other units may cause damage to the equipment. For Spool Gun operation, refer to the instruction manual provided with the Magnum™ Spool Gun.

MAKING A WELD WITH THE SPOOL GUN ADAPTER AND SPOOL GUN (K672-1) INSTALLED

The toggle switch on the front of the spool gun adapter box permits quick transfer between the use of the Wire-Matic 255 with its feeder gun and the connected spool gun for same polarity electrodes.

⚠ CAUTION

In either transfer switch position, closing the gun trigger will cause the electrode of both guns to be electrically "HOT". Be sure unused gun is positioned so electrode or tip will not contact metal case or other metal common to work. A gun holder is provided with the K672-1 kit for this purpose.

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1. Transfer switch in FEEDER position:
   a. Disables spool gun trigger, wire feed and gas output.
   b. Closing feeder gun trigger starts feeder gun welding and makes both electrodes electrically "HOT".

2. Transfer switch in SPOOL position:
   a. Disables feeder gun wire feed and gas output. However, closing feeder gun trigger will make both electrodes electrically "HOT" and activate spool gun gas output.
   b. Closing spool gun trigger starts spool gun welding and makes both electrodes electrically "HOT".

3. Operation with Wire-Matic 255:
   a. Turn the Wire-Matic-255 input power ON, and the transfer switch is to be in the SPOOL position.
   b. Adjusting the voltage control will increase or decrease your welding voltage.
   c. Adjusting the wire speed control will increase or decrease the spool gun wire feed speed. This represents the set speed for the K469 spool gun and the maximum set speed for the K487 spool gun with the remote control in gun handle at maximum.

      The remote control turned to minimum will give approximately 50% of the maximum set WFS.

      NOTE: Wire-Matic 255 wire speed calibrated dial markings are not accurate when used for setting the spool gun speed.

Wire Dia. In. (mm)	WFS Setting Wire-Matic 255	Arc Votlage Setting
.030" (.8 mm)	270	15V
.035" (.9 mm)	250	16V
3/64" (1.2 mm)	210	21V

4. The following procedure settings can be used as initial settings for making test welds to determine final settings:

5. To return to normal Wire-matic 255 welding, set the transfer switch to FEEDER position and reset feeder gun weld procedure settings.

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Have an electrician install and service this equipment.**
- **Turn the input power off at the fuse box before working on equipment**
- **Do not touch electrically hot parts.**

GENERAL MAINTENANCE

In extremely dusty locations, dirt may clog the air passages causing the welder to run hot. Blow dirt out of the welder with low-pressure air at regular intervals to eliminate excessive dirt and dust build-up on internal parts.

The fan motors have sealed ball bearings which require no service.

DRIVE ROLLS AND GUIDE TUBES

After every coil of wire, inspect the wire drive mechanism. Clean it as necessary by blowing with low pressure compressed air. Do not use solvents for cleaning the idle roll because it may wash the lubricant out of the bearing. All drive rolls are stamped with the wire sizes they will feed. If a wire size other than that stamped on the roll is used, the drive roll must be changed.

For instructions on replacing or changing drive roll, see "Wire Drive Roll" in Operation section or instruction decal inside the Wire-Matic 255 door.

CONTACT TIP AND GAS NOZZLE INSTALLATION

a. Choose the correct size contact tip for the electrode being used (wire size is stenciled on the side of the contact tip) and screw it snugly into the gas diffuser.

b. Screw the appropriate fixed gas nozzle fully onto the diffuser. Either the standard .50" (12.7 mm) flush nozzle or other optional flush or recessed (spray arc) nozzle sizes may be used. (See Table D.2 in this section.)

c. If using optional adjustable slip-on nozzles, see Table D.2 in this section.

1. Be sure the nozzle insulator is fully screwed onto the gun tube and does not block the gas holes in the diffuser.

2. Slip the appropriate gas nozzle onto the nozzle insulator. Either a standard .50" (12.7 mm) or optional .62" (15.9 mm) I.D. slip-on gas nozzle may be used and should be selected based on the welding application.

   Adjust the gas nozzle as appropriate for the GMAW process to be used. Typically, the contact tip end should be flush to .12" (3.2 mm) extended for the short-circuiting transfer process and .12" (3.2 mm) recessed for spray transfer.

GUN TUBES AND NOZZLES

a. Replace worn contact tips as required.

b. Remove spatter from inside of gas nozzle and from tip after each 10 minutes of arc time or as required.

CABLE CLEANING

Clean cable liner after using approximately 300 pounds (136 kg) of electrode. Remove the cable from the wire feeder and lay it out straight on the floor. Remove the contact tip from the gun. Using an air hose and only partial pressure, gently blow out the cable liner from the gas diffuser end.

⚠ CAUTION

Excessive pressure at the start may cause the dirt to form a plug.

Flex the cable over its entire length and again blow out the cable. Repeat this procedure until no further dirt comes out.

LINER REMOVAL AND REPLACEMENT

NOTE: Changing the liner for a **different** wire size requires replacement of the gas diffuser per Table D.1 to properly secure the different liner.

TABLE D.1

Diameter of Electrodes Used	Replacement Liner Part Number	Size Stencilled on End of Liner Bushing	Fixed Nozzle Gas Diffuser Part No. (and Stencil)	Adjustable Nozzle Gas Diffuser Part No. (and Stencil)
.025-.030" Steel (0.6-0.8 mm)	M16087-2	.030 (0.8 mm)	S19418-3	S19418-2
.035-.045" Steel (0.9-1.2 mm)	M16087-1	.045 (1.2 mm)	S19418-3	S19418-1
3/64" Aluminum (1.2 mm)	M17714-1	3/64" (1.2 mm)	S19418-3	S19418-1

LINER REMOVAL, INSTALLATION AND TRIMMING INSTRUCITONS FOR MAGNUM 250L

NOTE: The variation in cable lengths prevents the interchangeability of liners between guns. Once a liner has been cut for a particular gun, it should not be installed in another gun unless it can meet the liner cutoff length requirement. Liners are shipped with the jacket of the liner extended the proper amount.

1. Remove the gas nozzle and nozzle insulator, if used, to locate the set screw in the gas diffuser which is used to hold the old liner in place. Loosen the set screw with a 5/64" (2.0 mm) Allen wrench.

2. Remove the gas diffuser from the gun tube.

3. Lay the gun and cable out straight on a flat surface. Loosen the set screw located in the brass connector at the feeder end of the cable and pull the liner out of the cable.

4. Insert a new untrimmed liner into the connector end of the cable. Be sure the liner bushing is stencilled appropriately for the wire size bing used.

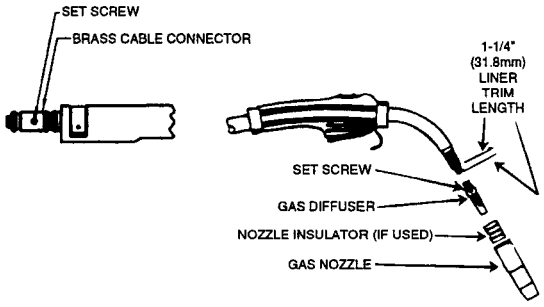
5. Fully seat the liner bushing into the connector. tighten the set screw on the brass cable connector. the gas diffuser, at this time, should **not** be installed onto the end of the gun tube.

6. With the gas diffusor still removed from the gun tube, be sure the cable is straight, and then trim the liner to the length shown in Figure D.1. Remove any burrs from the end of the liner.

7. Screw the gas diffuser onto the end of the gun tube and securely tighten. Be sure the gas diffuser is correct for the liner being used. (See table and diffuser stencil.)

8. Tighten the set screw in the side of the gas diffuser against the cable liner using a 5/64" (2.0 mm) Allen wrench.

FIGURE D.1



⚠ CAUTION

This screw should only be gently tightened. Overtightening will split or collapse the liner and cause poor wire feeding.

GUN HANDLE DISSASEMBLY

The internal parts of the gun handle may be inspected or serviced if necessary.

The gun handle consists of two halves that are held together with a collar on each end. To open up the handle, turn the collars approximately 60 degrees counterclockwise (the same direction as removing a right hand thread) until the collar reaches a stop. Then pull the collar off the gun handle. If the collars are difficult to turn, position the gun handle against a corner, place a screwdriver against the tab on the collar and give the screwdriver a sharp blow to turn the collar past an internal locking rib.

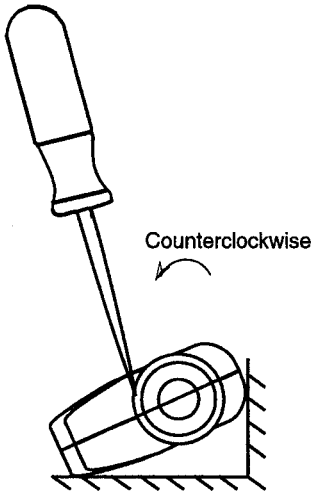


TABLE D.2
ACCESSORIES AND EXPENDABLE REPLACEMENT PARTS FOR MAGNUM 250L GUN AND CABLE ASSEMBLIES

Description	Part No.	English Size	Metric Size
CABLE LINER			
For 15' (4.5 m) or shorter Cable	M16087-2	.025 – .030"	0.6 – 0.8 mm
	M16087-1	.035 – .045"	0.9 – 1.2 mm
	M17714-1 ❑	3/64" (Alum. wire)	1.2 (Alum. wire)
CONTACT TIPS			
Standard Duty	S19391-6	.025"	0.9 mm
	S19391-7	.030"	0.8 mm
	S19391-1 *	.035"	0.9 mm
	S19391-2 *	.045"	1.2 mm
Heavy Duty	S19392-1	.035"	0.9 mm
	S19292-2	.045"	1.2 mm
Tapered	S19393-5	.025"	0.6 mm
	S19393-6	.030"	0.8 mm
	S19393-1	.035"	0.9 mm
	S19393-2	.045"	1.2 mm
Tab (For Aluminum)	S18697-46 ❑	3/64" (Alum. Wire)	1.2 mm
GAS NOZZLES			
Fixed (Flush)	M16081-1	3/8"	9.5 mm
	M16081-2 *	1/2"	12.1 mm
	M16081-3	5/8"	15.9 mm
(Recessed)	M16080-1	3/8"	9.5 mm
	M16080-2	5/8"	12.7 mm
	M16080-3	5/8"	15.9 mm
Requires: Gas Diffuser As'bly	S19418-3 *	.025 – .045"	0.6 – 1.2 mm
Adjustable Slip-On	M16093-2	1/2"	12.7 mm
	M16093-1	5/8"	15.9 mm
Requires: Nozzle Insulator As'bly	S19417-1		
Requires: Gas Diffuser As'bly	S19418-2	.025 – .030"	0.6 – 0.8 mm
	S19418-1	.035 – .045"	0.9 – 1.2 mm
Gasless Nozzle (For Innershield)	M16938 Δ		
GUN TUBE ASSEMBLIES			
Standard (60°)	S18920 *		
45°	S19890 ❑		

* Included with Wire-Matic 255
❑ Included with K673-1 3/64" (1.2 mm) Aluminum Feeding Kit. 5356 alloy aluminum wire is recommended to alleviate potential soft wire feeding problems with push-type wire feeding.
Δ Requires S19418-1 Gas Diffuser Assembly.

NOTES

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

This Troubleshooting Guide is designed to be used by the machine Owner/Operator. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety, please observe all safety notes and precautions detailed in the Safety Section of this manual to avoid electrical shock or danger while troubleshooting this equipment.

This Troubleshooting Guide is provided to help you locate and repair possible machine misadjustments. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).
Look under the column labeled "PROBLEM (SYMPTOMS)". This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. PERFORM EXTERNAL TESTS.
The second column labeled "POSSIBLE AREAS OF MISADJUSTMENT(S)" lists the obvious external possibilities that may contribute to the machine symptom. Perform these tests/checks in the order listed. In general, these tests can be conducted without removing the case wrap-around cover.

Step 3. CONSULT LOCAL AUTHORIZED FIELD SERVICE FACILITY.
If you have exhausted all of the recommended tests in Step 2, consult your local Authorized Field Service Facility.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your local Authorized Field Service Facility for technical troubleshooting assistance before you proceed.

TROUBLESHOOTING GUIDE

Observe Safety Guidelines detailed in the beginning of this manual.

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
OUTPUT PROBLEMS		
Major Physical or Electrical Damage is Evident	1. Contact your Local Lincoln Authorized Field Service Facility.	If all recommended possible areas of misadjustment have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
There is no wire feed or open circuit voltage when the gun trigger is pulled. The machine pilot light is lit indicating input power to the Wire-Matic 255.	1 The gun trigger or cable may be faulty. Check or replace gun assembly. 2. The thermal protection circuit may be activated. Allow machine to cool and then reduce duty cycle and or wire feed speed. 3. Make sure input voltage is correct and matches nameplate rating and reconnect panel configuration.	
Output voltage and wire feed is present when gun trigger is not pulled (not activated).	1. Remove gun assembly from machine. If problem is solved gun assembly is faulty. Repair or replace. 2. If problem persists when gun assembly is removed from machine then the problem is within the Wire-Matic 255.	
Machine does not put out full power. Welds are "cold".	1. Check input voltage. Make sure input voltage matches nameplate rating and reconnect panel configuration. 2. Make sure settings for wire feed speed and voltage are correct for process being used. 3. Make sure output polarity is correct for process being used. 4. Check welding cables and gun assembly for loose or faulty connections.	

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **LOCAL AUTHORIZED LINCOLN ELECTRIC FIELD SERVICE FACILITY** for assistance before you proceed.

Observe Safety Guidelines
detailed in the beginning of this manual.

TROUBLESHOOTING GUIDE

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
OUTPUT PROBLEMS		
Poor arc striking with electrode sticking or blasting off.	1. Make sure settings for wire feed speed and voltage are correct for process being used. 2. The Run-In (Fast or Slow) speed may be wrong for process and technique being used. See Operation Section. 3. The gas shielding may be improper for process being used.	If all recommended possible areas of misadjustment have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
FEEDING PROBLEMS		
Rough wire feeding or wire will not feed but drive rolls are turning.	1. The gun cable may be kinked or twisted. 2. The wire may be jammed in the gun cable, or gun cable may be dirty. 3. Check drive roll tension and position of grooves. 4. Check for worn or loose drive roll. 5. The electrode may be rusty or dirty. 6. Check for damaged or incorrect contact tip.	If all recommended possible areas of misadjustment have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
The wire feed stops while welding. When trigger is released and pulled again the wire feed starts.	1. Check the wire feed drive rolls and motor for smooth operation. 2. Check for restrictions in the wire feed path. Check the gun and cable for restrictions. 3. Make sure gun liner and tip are correct for wire size being used. 4. Make sure drive rolls and guide tubes are clean and are the correct size.	
No wire feed but open circuit voltage is present.	1. If using Spool Gun adapter kit, make sure the transfer switch is in correct position.	

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **LOCAL AUTHORIZED LINCOLN ELECTRIC FIELD SERVICE FACILITY** for assistance before you proceed.

TROUBLESHOOTING GUIDE

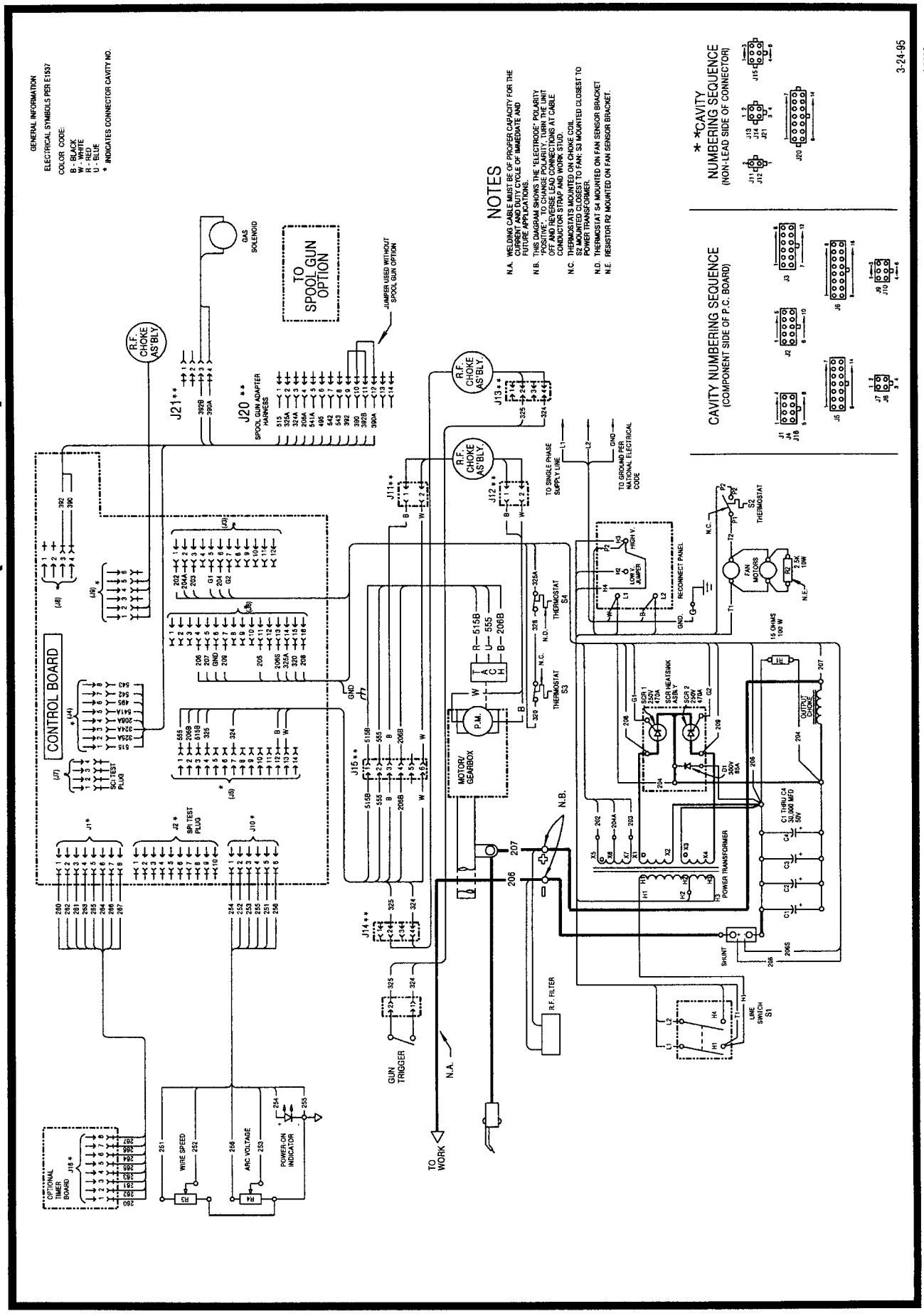
Observe Safety Guidelines detailed in the beginning of this manual.

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
GAS FLOW PROBLEMS		
Gas does not flow when gun trigger is pulled.	1. Make sure gas supply is connected properly and turned "on". 2. If the gas solenoid does actuate when the gun trigger is pulled there may be a restriction in the gas supply line. 3. The gun cable assembly may be faulty. Check or replace. 4. If gas solenoid does not operate when gun trigger is pulled the problem is within the Wire-Matic 255.	If all recommended possible areas of misadjustment have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**

⚠ CAUTION

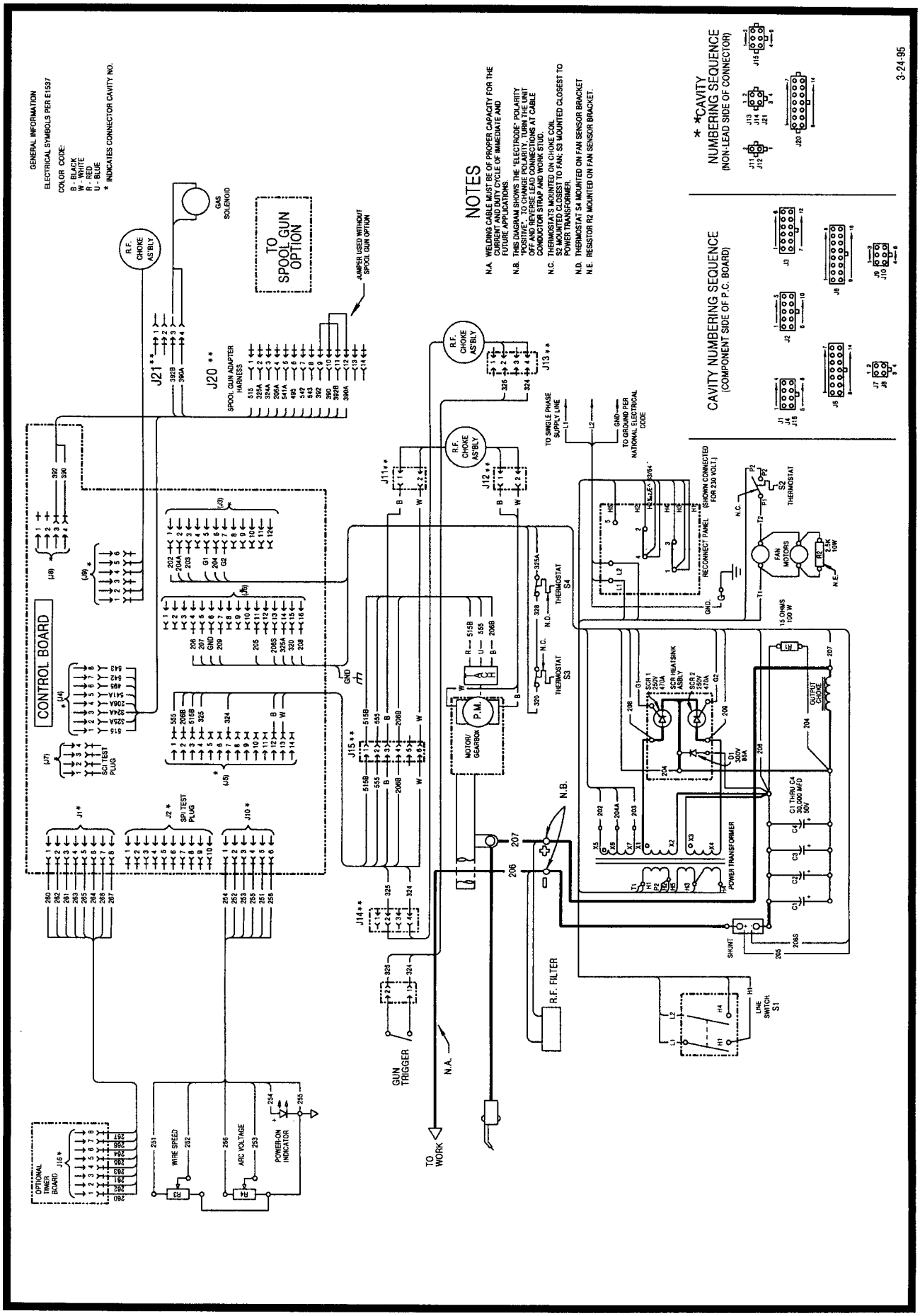
If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **LOCAL AUTHORIZED LINCOLN ELECTRIC FIELD SERVICE FACILITY** for assistance before you proceed.

WIRE - MATIC 255 (208 / 230V)

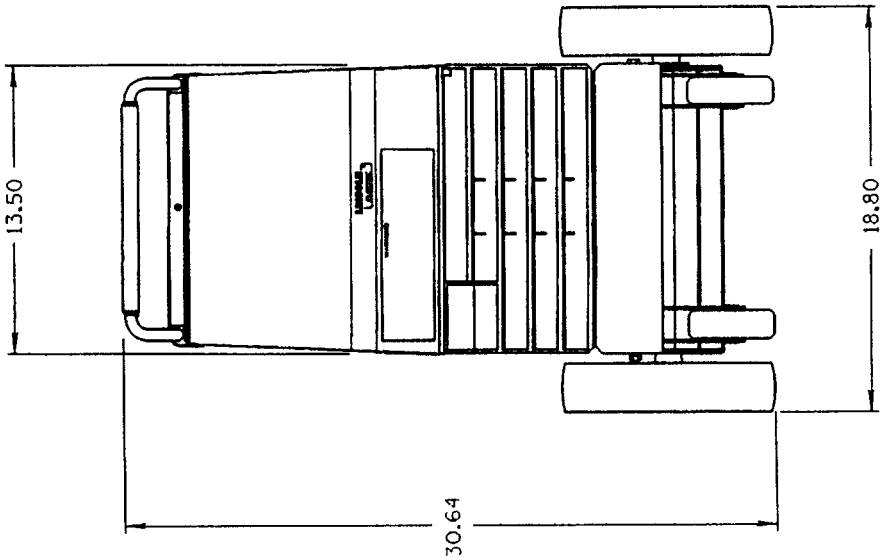


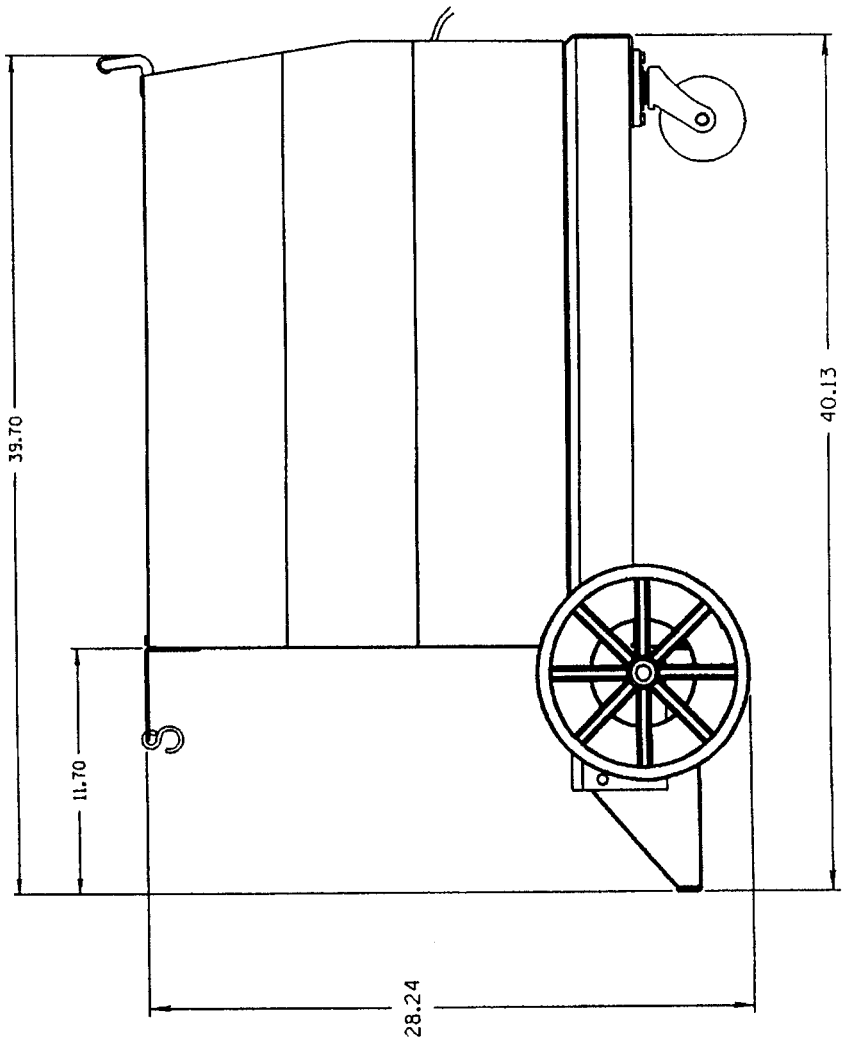
WIRING DIAGRAMS

WIRE - MATIC 255 (230 / 460 / 575V)



LINCOLN ELECTRIC





Dimension Print for Wire-Matic 255

M16352

NOTES

			
WARNING	● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground.	● Keep flammable materials away.	● Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislese del trabajo y de la tierra.	● Mantenga el material combustible fuera del área de trabajo.	● Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre.	● Gardez à l'écart de tout matériel inflammable.	● Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden!	● Entfernen Sie brennbarres Material!	● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra.	● Mantenha inflamáveis bem guardados.	● Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。	● 燃えやすいものの側での溶接作業は絶対にしてはなりません。	● 目、耳及び身体に保護具をして下さい。
Chinese **警 告**	● 皮肤或濕衣物切勿接觸帶電部件及銲條。 ● 使你自己與地面和工件絕緣。	● 把一切易燃物品移離工作場所。	● 佩戴眼、耳及身體勞動保護用具。
Korean **위 험**	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	● 인화성 물질을 접근 시키지 마시요.	● 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic **تحذير**	● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل.	● ضع المواد القابلة للاشتعال في مكان بعيد.	● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone.	● Turn power off before servicing.	● Do not operate with panel open or guards off.	**WARNING**
● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	● No operar con panel abierto o guardas quitadas.	Spanish **AVISO DE PRECAUCION**
● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	● Débranchez le courant avant l'entretien.	● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French **ATTENTION**
● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German **WARNUNG**
● Mantenha seu rosto da fumaça. ● Use ventilação e exhaustão para remover fumo da zona respiratória.	● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas.	● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas.	Portuguese **ATENÇÃO**
● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	Japanese **注意事項**
●頭部遠離煙霧。 ●在呼吸區使用通風或排風器除煙。	●維修前切斷電源。	●當表板打開或沒有安全罩時不準作業。	Chinese **警 告**
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Korean **위 험**
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهربائي قبل القيام بأية صيانة.	● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.	Arabic **تحذير**

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有関勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

LIMITED WARRANTY

STATEMENT OF LIMITED WARRANTY

The Lincoln Electric Company (Lincoln) warrants to the end user (purchaser) of all new welding and cutting equipment, electrode and flux (collectively called the "Goods") that it will be free of defects in workmanship and material.

This warranty is void if Lincoln or its Authorized Service Facility finds that the equipment has been subjected to improper installation, improper care or abnormal operations.

WARRANTY PERIOD (1) (2)

Lincoln will assume both the parts and labor expense of correcting defects during the full warranty period. All warranty periods date from the date of purchase to the original end user and are as follows:

7 Years

- Main power rectifiers on all non-inverter low frequency (50 and 60 Hz) type welders.

3 Years

- All Lincoln welding machines, wirefeeders and plasma cutting machines unless listed below.

2 Years

- Power Arc 5000
  Ranger 10, Ranger 10-LX
  Weldanpower 125, Weldanpower 150

1 Year

- AC-100
  Invertec V100-S, Invertec V130-S, Invertec V200-T
  Power Arc 4000
  Pro-Cut 20
- All stick electrode, welding wire and flux.
- Arc welding and cutting robots and robotic controllers
- All Environmental Systems equipment, including portable units, central units, gun and cable assemblies and accessories. (Does not include consumable items listed under 30 day warranty.)
- All welding and cutting accessories including water coolers, gun and cable assemblies, TIG and plasma torches, spool guns, wire feed modules, undercarriages, field installed options that are sold separately, unattached options, welding supplies, standard accessory sets, replacement parts, and Magnum products. (Does not include expendable parts listed under 30 day warranty)

30 Days

- All consumable items that may be used with the environmental systems described above. This includes hoses, filters, belts and hose adapters.
- Expendable Parts - Lincoln is not responsible for the replacement of any expendable part that is required due to normal wear.

CONDITIONS OF WARRANTY

TO OBTAIN WARRANTY COVERAGE:

The purchaser must contact Lincoln or Lincoln's Authorized Service Facility about any defect claimed under Lincoln's warranty.

Determination of warranty on welding and cutting equipment will be made by Lincoln or Lincoln's Authorized Service Facility.

WARRANTY REPAIR:

If Lincoln or Lincoln's Authorized Service Facility confirms the existence of a defect covered by this warranty, the defect will be corrected by repair or replacement at Lincoln's option.

At Lincoln's request, the purchaser must return, to Lincoln or its Authorized Service Facility, any "Goods" claimed defective under Lincoln's warranty.

FREIGHT COSTS:

The purchaser is responsible for shipment to and from the Lincoln Authorized Service Facility.

WARRANTY LIMITATIONS

Lincoln will not accept responsibility or liability for repairs made outside of a Lincoln Authorized Service Facility.

Lincoln's liability under this warranty shall not exceed the cost of correcting the defect of the Lincoln product.

Lincoln will not be liable for incidental or consequential damages (such as loss of business, etc.) caused by the defect or the time involved to correct the defect.

This written warranty is the only express warranty provided by Lincoln with respect to its products. Warranties implied by law such as the warranty of merchantability are limited to the duration of this limited warranty for the equipment involved.

This warranty gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state.

(1) Equipment manufactured for the Lincoln Electric Company is subject to the warranty period of the original manufacturer.

(2) All engines and engine accessories provided by the engine manufacturer are warranted by the engine manufacturer and are not covered by this warranty.