LINCOLN ELECTRIC

GENUINE LINCOLN PARTS™

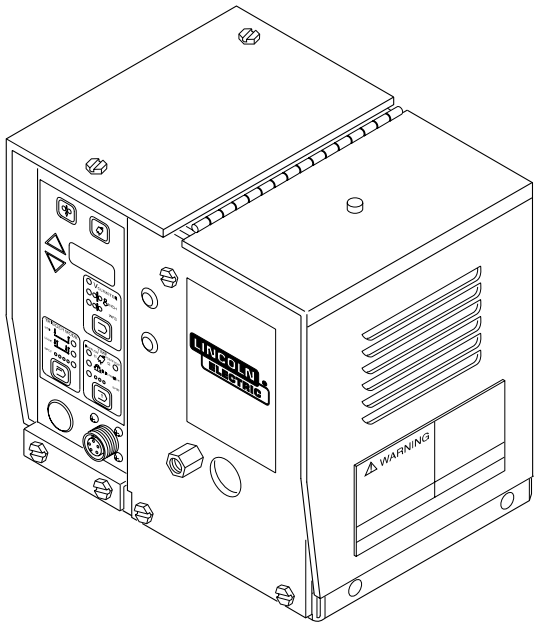
NOTE: This manual will cover most of the troubleshooting and repair procedures for the code numbers listed. Some variances may exist when troubleshooting/repairing later code numbers.

LN-742 & LN-742H WIRE FEEDERS

For use with machines having Code Numbers:

10027, 10028, 10048, 10049,
10238, 10239, 10240, 10241

SERVICE MANUAL



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WARNING

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.

ELECTRIC SHOCK can kill.

1.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.

1.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.**

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

1.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.

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

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

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

1.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.

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

1.j. Also see Items 4.c. and 6.

ARC RAYS can burn.

2.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.

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

2.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.

3.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.**

3.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.

3.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.

3.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.

3.e. Also see item 7b.

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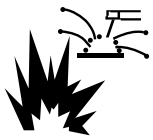


WELDING SPARKS can cause fire or explosion.

4.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 or cutting can easily go through small cracks and openings to adjacent areas. Avoid welding or cutting near hydraulic lines. Have a fire extinguisher readily available.

4.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.

4.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.

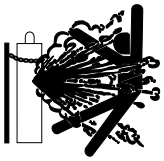
4.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been “cleaned”. For information, purchase “Recommended Safe 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).

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

4.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 or cutting area.

4.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.

4.h. Also see item 7c.



CYLINDER may explode if damaged.

5.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.

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

5.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.

5.d. Never allow the electrode, electrode holder or any other electrically “hot” parts to touch a cylinder.

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

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

5.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.

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

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

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

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FOR ENGINE powered equipment.

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

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

7.c. Do not add the fuel near an open flame welding or cutting 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.

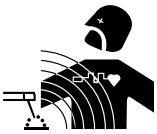
7.d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

7.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.

7.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.

7.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.

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



ELECTRIC AND MAGNETIC FIELDS may be dangerous

8.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.

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

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

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

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

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

8.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.

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

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

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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.

MASTER TABLE OF CONTENTS FOR ALL SECTIONS

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TECHNICAL SPECIFICATIONS – LN-742

INPUT VOLTAGE
40 to 42V ±10%, 50/60 Hz, 4.0 Amps

WIRE FEED SPEED	
SYSTEM	**WIRE SPEED RANGE**
LN-742	50 in. to 770 in. per minute (1.25 to 19.5 m/min)
LN-742H	80 in. to 1200 in. per minute (2.00 to 30.5 m/min)

WIRE DIAMETERS		
SYSTEM	**ELECTRODE**	**DIAMETER**
LN-742	SOLID	0.025 in. through 1/16 in. (0.6 through 1.6 mm)
LN-742H	SOLID	0.025 in. through 0.045 in. (0.6 through 1.2 mm)
LN-742	CORED	0.045 in. through 3/32 in. (1.2 through 2.4 mm)
LN-742H	CORED	0.045 in. (1.2 mm)

TEMPERATURE RATING (ALL MODELS)	
OPERATING	-4˚F to 104˚F (-20˚C to +40˚C)
STORAGE	-40˚F to 104˚F (-40˚C to +40˚C)

PHYSICAL DIMENSIONS				
BOTH LN-742 AND LN-742H	**LENGTH**	**WIDTH**	**HEIGHT**	**TOTAL WEIGHT LESS ELECTRODE**
2 ROLL FEEDER WITHOUT WIRE STAND	9.62 in. (244 mm)	9.76 in. (247 mm)	10.89 in. (277 mm)	24 lbs (11.0 kg)
2 ROLL FEEDER WITH WIRE STAND (K377)	20.68 in. (525 mm)	9.76 in. (247 mm)	17.00 in. (432 mm)	34 lbs (15.5 kg)
4 ROLL FEEDER WITHOUT WIRE STAND	10.60 in. (269 mm)	11.60 in. (295 mm)	11.11 in. (282 mm)	28.7 lbs (13.1 kg)
4 ROLL FEEDER WITH WIRE STAND (K377)	21.66 in. (550 mm)	11.60 in. (295 mm)	17.00 in. (432 mm)	38.7 lbs (17.7 kg)

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MOUNTING LOCATION

The LN-742 wire feeders can be mounted directly on top of the power source providing that it is secure and level. The LN-742 can also be mounted to an undercarriage when portability is required.

A K178-1 mounting platform is available for mounting the LN-742 to the top of Idealarc power sources. Refer to ***Section C, Accessories,*** for details.

INPUT CABLE CONNECTIONS

Refer to ***Section C, Accessories***, for descriptions of the various input cable assemblies available for the LN-742 wire feeder.

⚠ WARNING

Turn input power off before connecting the LN-742 wire feeder.

For connecting an LN-742 to a specific Lincoln power source, follow steps 1 through 5, and refer to the connection diagram in Figure A.3. The welding cable used must be sized according to the current and the duty cycle of the application.

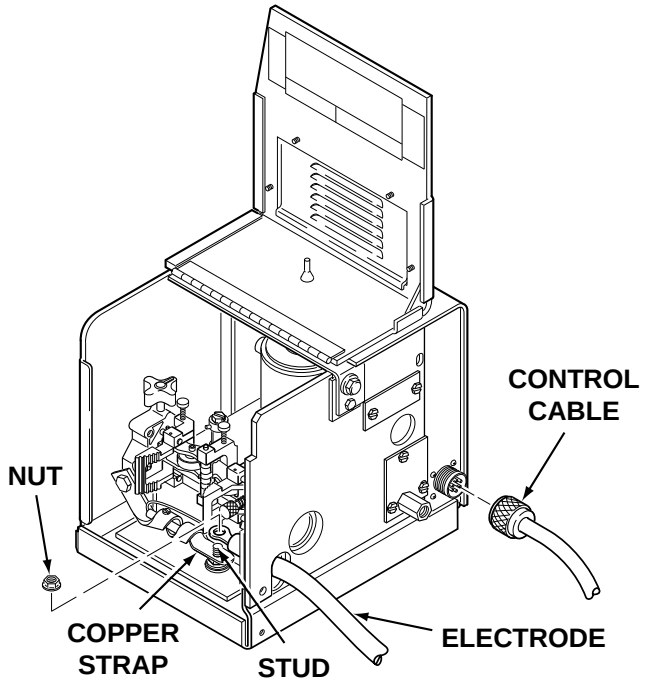
With input power disconnected at the source, install the input cable per connection diagram A.3, and complete the following instructions:

1. Connect the end of the control cable with the 14-pin cable plug to the mating receptacle on the power source.

2. Connect the electrode lead to the power source output terminal of the desired polarity.

3. Referring to Figure A.1, route the other end of the electrode cable through the large oval hole in the rear panel of the LN-742 case. Connect the electrode to the copper strap on the side of the gearbox using the stud and nut provided.

FIGURE A.1 – INPUT CONTROL CABLE AND ELECTRODE CABLE CONNECTIONS.



4. Connect the remaining end of the control cable with the eight-socket cable plug to the mating receptacle on the LN-742.

5. Referring to Figure A.2, install the input cable under the wire reel mounting stand strain relief clamp. Remove the screws holding the clamp to the base of wire reel mounting assembly. Put the input cable under the clamp and reinstall the screws.

The connection diagram, Figure A.3, shows the electrode as positive. To change polarity, turn the power source off. Reverse the electrode and work cables at the power source, and set the wire feeder voltmeter polarity switch on the power source to the proper polarity.

Pins not listed in the table in Figure A.3 are not connected on the cable.

If using the K589-1 remote control kit, set the power source control switch to the “Remote” position.

FIGURE A.2 – STRAIN RELIEF CLAMP.

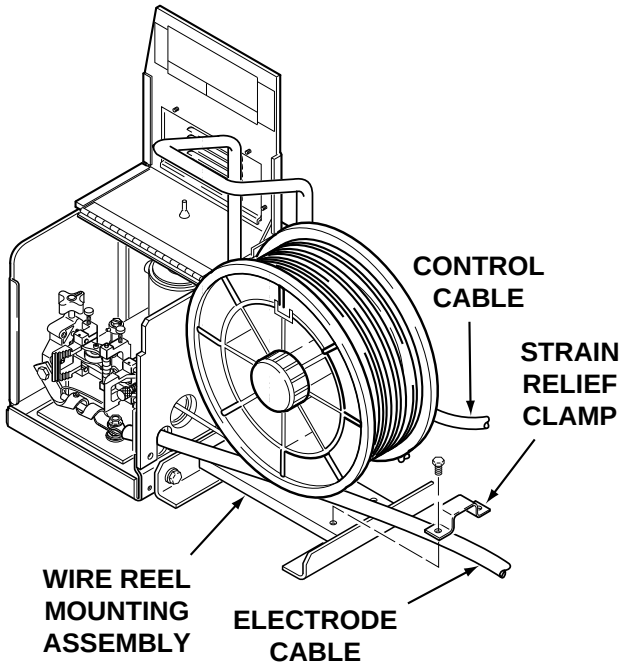
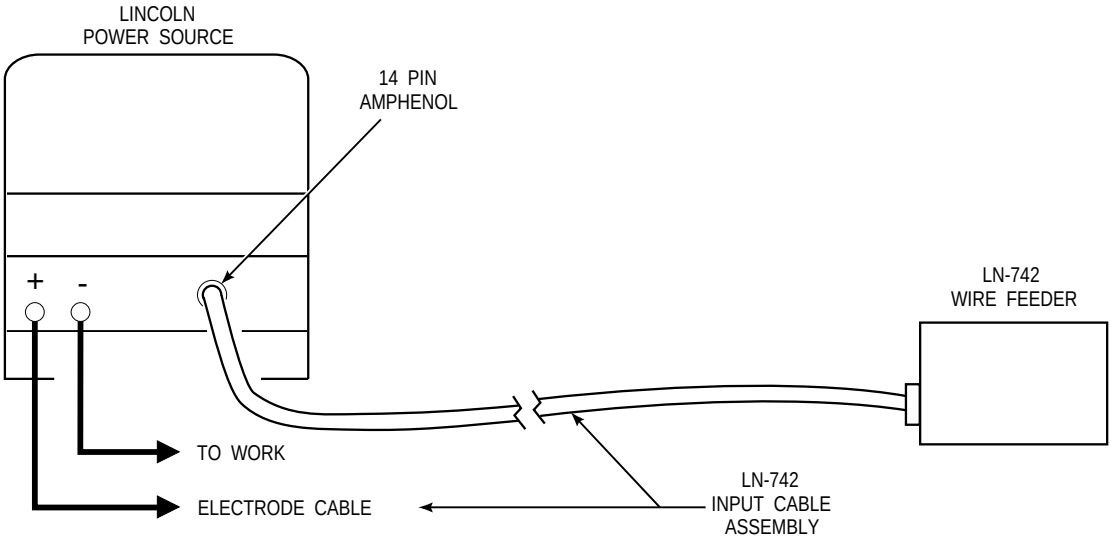
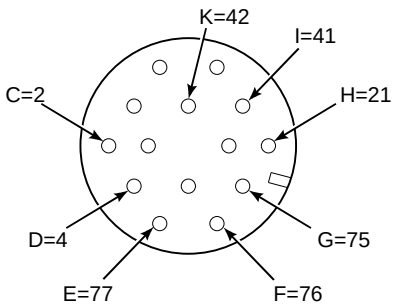


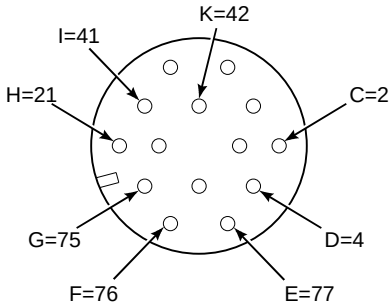
FIGURE A.3 – LN-742 WIRE FEEDER TO LINCOLN POWER SOURCE – CONNECTION DIAGRAM.

WARNING	TURN INPUT POWER OFF BEFORE CONNECTING THE LN-742 WIRE FEEDER.
ELECTRIC SHOCK CAN KILL	





14-SOCKET BOX RECEPTACLE, FRONT VIEW AND 14-PIN CABLE PLUG, REAR VIEW



14-SOCKET BOX RECEPTACLE, REAR VIEW AND 14-PIN CABLE PLUG, FRONT VIEW

PIN	LEAD	FUNCTION
C	2	TRIGGER CIRCUIT
D	4	TRIGGER CIRCUIT
E	77	OUTPUT CONTROL
F	76	OUTPUT CONTROL
G	75	OUTPUT CONTROL
H	21	WORK
I	41	42V AC
K	42	42V AC

FUNCTIONS ARE LISTED FOR REFERENCE ONLY AND EACH MAY OR MAY NOT BE PRESENT IN YOUR EQUIPMENT.

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WORK CABLE

Connect a work lead of sufficient size and length (Table A.1) between the proper output stud on the power source and the work. Be sure the connection to the work makes tight metal-to-metal electrical contact.

TABLE A.1 – WORK LEAD SPECIFICATIONS

	Copper Work Cable Size, AWG	
Current 60% Duty Cycle	Up To 50 Ft (15.2 m²)	50 Ft-100 Ft (15.2-30.4 m²)
300 Amps	0 (53 mm²)	00 (67 mm²)
400 Amps	00 (67 mm²)	000 (85 mm²)
500 Amps	00 (67 mm²)	000 (85 mm²)
600 Amps	000 (85 mm²)	0000 (107 mm²)

GUN AND CABLE ASSEMBLIES

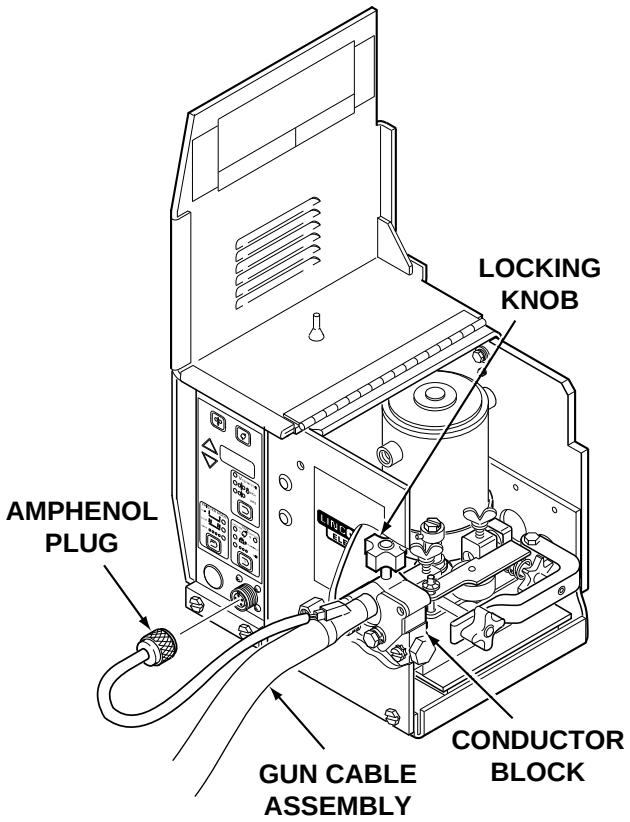
The LN-7 GMA can be used with several guns. In most cases, Lincoln guns and cables are shipped assembled, ready to weld. Use the gun and cable assembly for the electrode type (solid, Outershield , or Innershield) and electrode size to be used. Refer to ***Section C, Accessories,*** for different gun types.

GUN CABLE CONNECTIONS

Lay the cable out straight. Insert the connector on the welding conductor cable through the large hole in the front panel of the LN-7 GMA and into the brass conductor block on the front of the gearbox. Refer to Figure A.4. Make sure it is all the way in and tighten the locking knob. Keep this connection clean and bright.

Connect the control cable amphenol plug into the mating 5-cavity receptacle on the front of the control section below the keypad.

FIGURE A.4 – GUN CABLE CONNECTIONS.



WATER CONNECTIONS (FOR WATER COOLED GUNS)

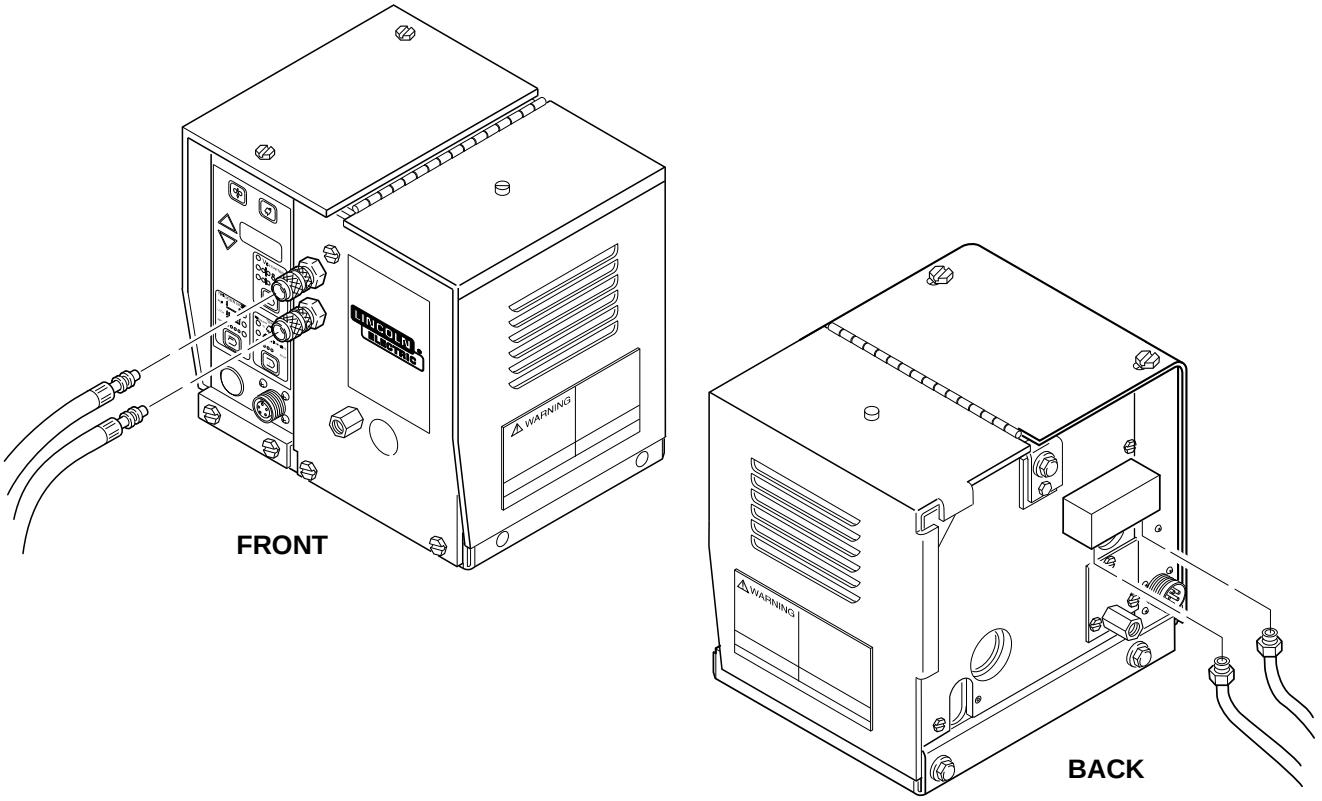
The LN-7 GMA must have a K590-1 Water Solenoid Kit installed (see ***Section C, Accessories***). Refer to Figure A.5 and perform the following steps:

NOTE: If not using a Lincoln water cooler, and if your water cooling device is not designed for use with a waterline solenoid valve, you may remove the solenoid and screw the male fitting (after applying sealant) directly into the brass manifold block.

1. Using male 5/8-18 UNF left-hand thread fittings, connect appropriate water hoses to the coolant inlet and outlet on the back of the LN-742. Connect the other ends of these hoses to the appropriate ports on your water cooling units.

2. In the event the water line fittings on your water cooled gun are incompatible with the female quick connects on the front of the LN-742, male quick connects are provided for installation on 3/16 in. I.D. hose (customer to provide appropriate clamps). The feeder connectors self seal when disconnected

FIGURE A.5 – WATER CONNECTIONS.



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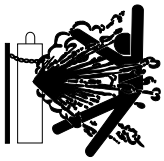
SHIELDING GAS HOOKUP

⚠ WARNING



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

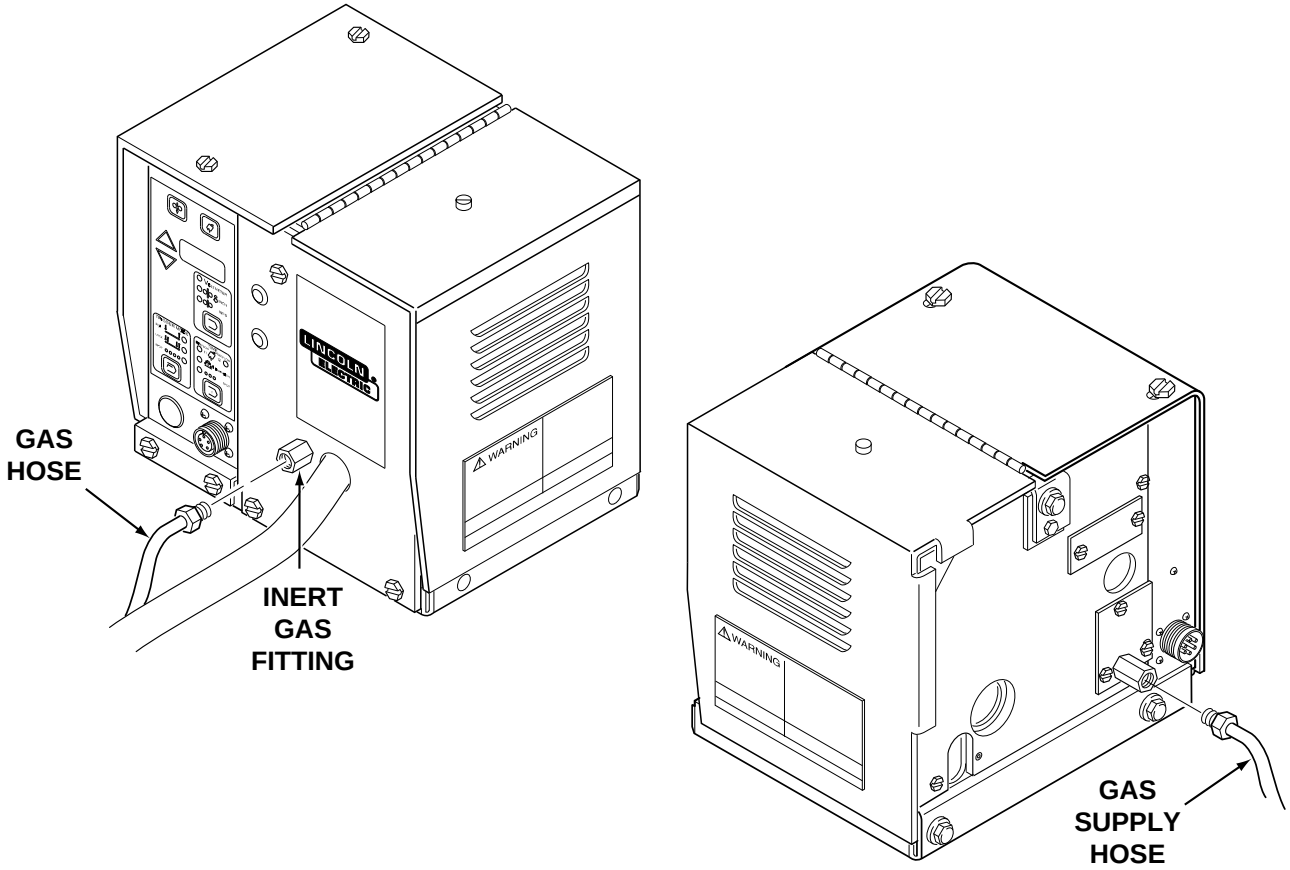
Customer must provide a cylinder of shielding gas, a pressure regulator, a flow control valve, and a hose from the flow valve to the gas inlet fitting of the LN-742. Install per Figure A.6 and the following:

1. Connect the supply hose from the gas cylinder flow valve outlet to the 5/8-18 female inert gas fitting on the back panel of the LN-742.

2. Install the barbed fitting and union nut to the 5/8-18 female inert gas fitting on the front of the LN-742. Connect 3/16 in. (4.8 mm) I.D. gas hose from the gun to the barbed fitting.

   When the gun is to be removed, this fitting can be easily detached by loosening the union nut.

FIGURE A.6 – SHIELDING GAS HOOKUP.



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OPERATING INSTRUCTIONS

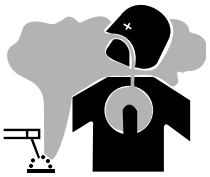
Read and understand the entire Operation Section prior to operating the machine.

SAFETY PRECAUTIONS

⚠ WARNING

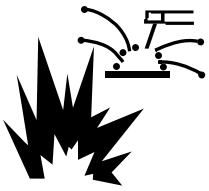
ELECTRIC SHOCK can kill.

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



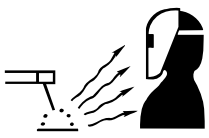
FUMES AND GASES can be dangerous.

- 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 containers that have held combustibles.



ARC RAYS can burn.

- Wear eye, ear, and body protection.

Observe additional Safety Guidelines detailed in the beginning of this manual.

GENERAL DESCRIPTION

The K617 LN-742 semiautomatic constant speed wire feeder is specifically equipped for gas metal arc welding using flux-cored Outershield electrodes and solid wire. The LN-742 is also suitable for self-shielded flux-cored Innershield electrodes, submerged arc welding (if constant voltage is satisfactory), and other open arc welding. It has been factory assembled with the following features:

- Wire feed control [50 to 770 in./min (1.25 to 19.5 m/min) for the LN-742; 80 to 1200 in./min (2.00 to 30.5 m/min) for the LN-742H].
- Factory installed gas solenoid valve and gas fittings.
- Wire drive uses a permanent magnet motor and includes tool-less “quick-release” idle roll pressure arm, outgoing guide tube and gun cable fastening.
- Optional factory installed water solenoid and fittings for use with water cooled welding guns.

The LN-742 4-Roll is designed to provide the additional feeding force required when using gun cables over 15 ft (4.6 m) long or when the wire is pulled long distances (such as when bulk packages are used). Because the four-roll feeder has twice the contact surface, it can also help when feeding softer wires by delivering the same or more feeding force as the two-roll with less overall wire deformation.

RECOMMENDED PROCESSES AND EQUIPMENT

The LN-742 is recommended for use in MIG and Innershield welding applications with constant voltage power sources with 42 VAC auxiliary power and a 14-pin connector receptacle, such as the Invertec V300-PRO, DC-650-PRO, or Lincoln CV type power sources.

The LN-742 is capable of the following wire feed ranges:

- 0.025 to 1/16 in. (0.6 to 1.6 mm) solid wire for gas-metal-arc or CV submerged arc processes.
- 0.045 to 3/32 in. (1.2 to 2.4 mm) cored wire for Outershield gas-metal-arc processes.

- 0.045 to 5/64 in. (1.2 to 2.0 mm) cored wire for Innershield processes.

The LN-742H is capable of the following wire feed ranges:

- 0.025 to 0.045 in. (0.6 to 1.2 mm) solid wire for gas-metal-arc or CV submerged arc processes.
- 0.045 in. (1.2 mm) cored wire for Outershield gas-metal-arc or Innershield processes.

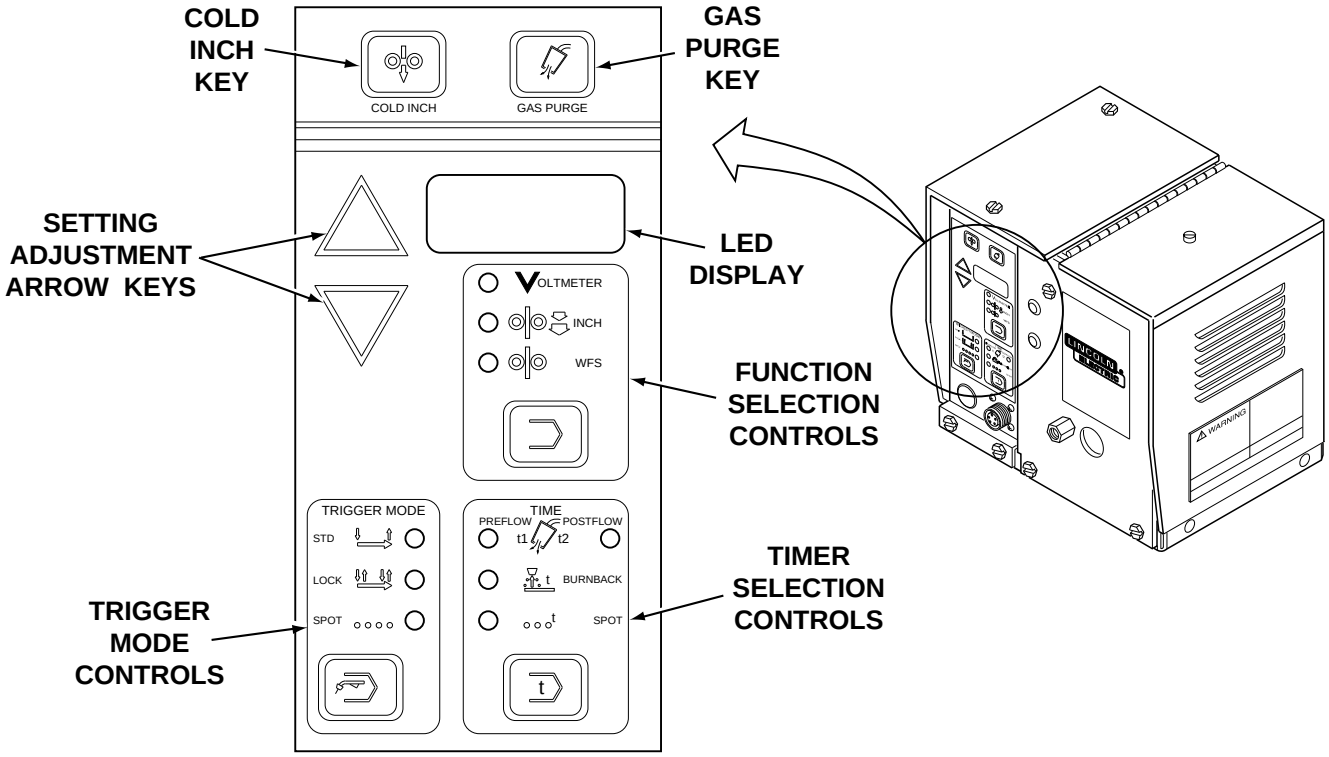
CONTROLS AND SETTINGS

The operator controls are located on the keypad shown in Figure B.1. The keypad consists of: 7 membrane keys with tactile-feel embossed domes, that are generously spaced to provide easy selection, even while wearing welding gloves; a long-life, 3-1/2 digit, 7 segment LED display with 0.56 in. (14.2 mm) character height, permitting easy viewing even from long gun cable distances; and high intensity, red, LED indicator lights that allow for viewing at almost any angle.

TRIGGER MODE CONTROLS. This control enables the operator to choose the mode of operation as shown by the indicator lights. Pressing the key causes the mode lights to sequence (from top to bottom). The top light indicates standard (two-step) trigger mode. In this mode the unit will only be active when the trigger is pressed. The middle light indicates lock (four-step) trigger mode. In this mode the solenoid is energized when the trigger is pressed, the power source and wire feeder are energized after preflow time when the trigger is released. Closing the trigger a second time turns off the wire feeder and then the power source after burnback time. Releasing the trigger a second time turns off the solenoid after Burnback time. The bottom light indicates spot weld trigger mode. Closing the trigger allows a single, timed, weld cycle. The duration of the weld cycle is set with the time selection controls. The spot on timer starts when welding current flows.

TIME SELECTION CONTROLS. This control enables the operator to choose which timer will be displayed as shown by the indicator lights. Pressing the key causes the mode lights to sequence (from top to bottom). Any timers not available to the currently selected mode will be skipped. Times displayed in the LED display are adjusted using the setting adjustment arrows to the left of the LED display. The top left light indicates the preflow time is being displayed in seconds. The top right indicator light indicates the postflow time is being displayed in seconds. The middle light indicates the burnback time is being displayed in seconds. The bottom light indicates the spot weld time is being displayed in seconds.

FIGURE B.1 – WIRE FEEDER CONTROLS.



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FUNCTION SELECTION CONTROLS. This control enables the operator to select the function that will be displayed as shown by the indicator lights. Pressing the key causes the mode lights to sequence (from top to bottom). Settings displayed in the LED display are adjusted using the setting adjustment arrows to the left of the LED display. The top light indicates the arc voltage is being displayed in volts. The middle light indicates the inch speed is being displayed. The bottom light indicates the weld feed speed (WFS) is being displayed.

INCREASE ARROW. This key increases the setting of the parameter selected to be displayed, using the "Quick-Set" feature for fast and accurate setting.

DECREASE ARROW. This key decreases the setting of the parameter selected to be displayed, using the "Quick-Set" feature for fast and accurate setting.

QUICK-SET FEATURE. This feature permits the arrow keys to control each display digit one at a time. The display digits blink in sequence from left to right. Pressing an arrow key immediately after a digit blinks alters that digit. Releasing the arrow key causes the left-to-right sequencing to resume.

COLD INCH KEY. This key energizes the wire feeder to inch the wire forward, but does not energize the power source or solenoid valve.

GAS PURGE KEY. This key energizes the solenoid valve to purge any remaining gasses, but does not energize the wire feeder or power source.

ACCELERATION SETTING

Pressing both the Gas Purge key and the Function Selection key at the same time, on the keypad shown in Figure B.1, enables the acceleration setting display. The LED display will indicate "A-X" with "X" being a number from 1 (slowest) to 5 (fastest). This number is adjusted using the setting adjustment arrow keys. To exit the acceleration setting function, press both keys a second time, or press any other key except for the setting adjustment arrow keys.

ENGLISH OR METRIC SPEED DISPLAY UNITS

Pressing both the Gas Purge key and Timer Selection key causes the speed display units to toggle between inches per minute (no decimal point displayed) or meters per minute (decimal point displayed). If the LED display is showing the voltmeter or one of the timer settings when these keys are pressed, the display will change to the weld speed to indicate the selected speed display units. See Figure B.1 for key locations.

CIRCUIT PROTECTION

The LN-742 has solid-state overload protection of the wire drive motor. If the wire drive motor becomes overloaded for an extended period of time, the protection circuitry turns off the power source, wire feeder, and solenoid, then displays the error code E30 on the LED display. This indicates the wire drive motor is overloaded, with the number indicating the time remaining in seconds before the unit will automatically reset. This number continues to decrement every second until it reaches zero. At that time the unit resets automatically and the previous display will return indicating that the unit is ready for operation.

Over loads can result from: improper tip size, liner, drive rolls, or guide tubes; obstructions or bends in the gun cable; feeding wire that is larger than the rated capacity of the feeder; or any other factors that would impede normal wire feeding.

DRIVE ROLL INSTALLATION

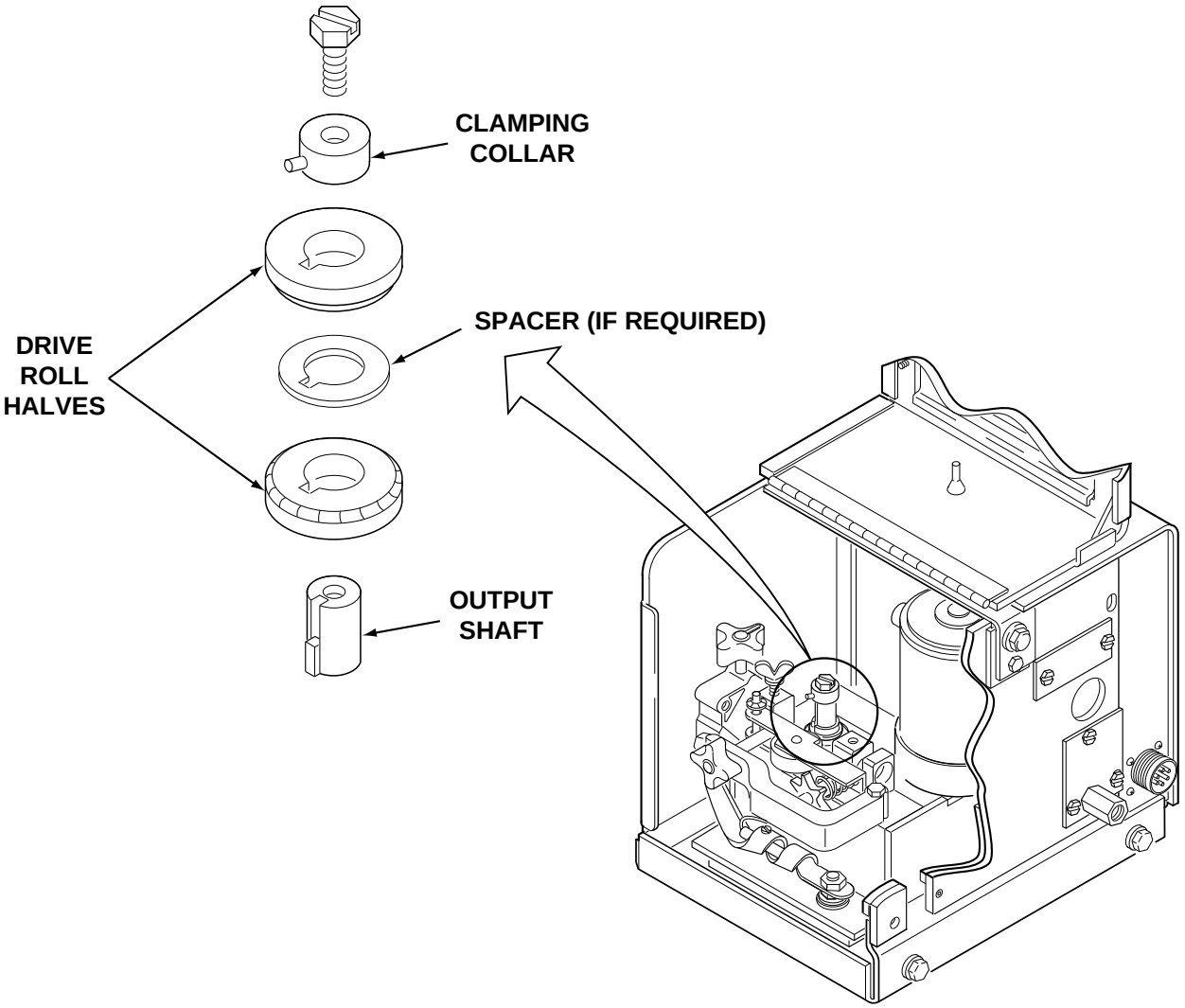
CHANGING DRIVE ROLLS FOR TWO-ROLL WIRE FEEDERS:

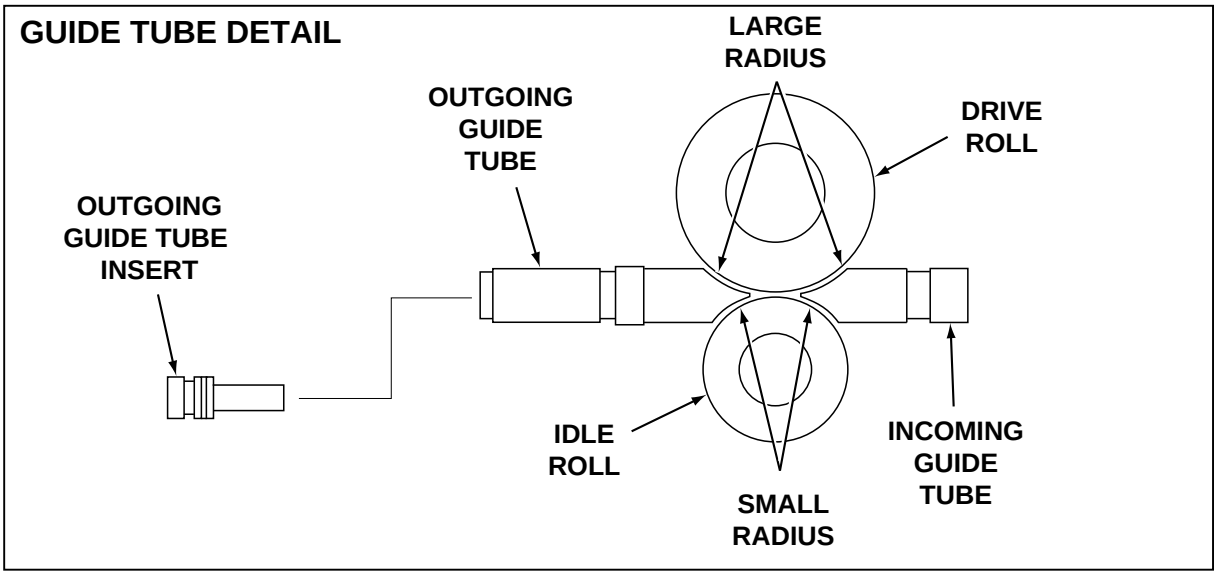
To change drive rolls on a two-roll wire feeder, refer to Figure B.2 and perform the following steps:

1. Turn off the welding power source.

2. Rotate the latch knob on the quick release arm.

FIGURE B.2 – INSTALLING DRIVE ROLLS ON A TWO-ROLL FEEDER.





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3. Remove the hex head screw and clamping collar. Remove the drive roll from the shaft.

4. The new roll to be installed is stamped for the size wire to be fed. An “A” after the size indicates aluminum wire. Remove the rolls from the kit and wipe them clean. Wipe the output shaft and locating shoulder clean.

5. Use the clamping collar and hex head screw to install the roll on the output shaft. Certain size drive rolls consist of two roll halves, and may contain a spacer. If the drive roll you are installing contains a spacer, the spacer fits between the two halves of the drive roll. Tighten the hex head screw.

6. Back out the guide tube clamping screws. Remove the old guide tubes, if installed.

7. Insert the longer guide tube into the rear hole and the other guide tube through the front hole. The fine wire chisel point end of the guide tube must have the larger radius end next to the drive roll. See Figure B.2. Push the guide tube back as far as it will go and tighten the clamping screw. Insert the incoming guide tube as far back as it will go and tighten the clamping screw. The clamping screws are dog points. When the guide tubes are properly installed these dog points will lock into the annular grooves in each of the guide tubes.

8. Set the idle roll pressure as detailed in the ***Idle Roll Pressure Setting*** procedure detailed later in this section.

CHANGING DRIVE ROLLS FOR FOUR-ROLL WIRE FEEDERS:

To change drive rolls on a four-roll wire feeder, refer to Figure B.3 and perform the following steps:

1. Turn off welding power source.

2. Remove the gun and cable from the conductor block on the feeder by loosening the hand screw and pulling the gun straight out of the block.

3. Open both quick release levers by moving the levers outward and pulling them toward you.

4. Loosen the thumb screws holding the guide tubes in place. Remove the incoming and outgoing guide tubes, if installed.

5. Remove the hex head screws and clamping collars from the output shafts. Remove the drive rolls and middle guide tube.

6. The new rolls to be installed are stenciled with the wire size that will be fed. An “A” after the number indicates aluminum wire. Remove the rolls from the kit and wipe them clean. Wipe the output shafts and locating shoulders clean.

7. Install one roll onto the output shaft closest to the incoming side of the feeder clamping collar and hex head screw. Certain size drive rolls consist of two roll halves, and may contain a spacer. If the drive roll you are installing contains a spacer, the spacer fits between the two halves of the drive roll. Tighten the hex head screw.

8. Install the middle guide tube, but do not tighten at this time. When installing a 0.035” middle guide tube the larger radius should be aligned towards the drive roll. Slide the guide tube up against the installed drive roll.

9. Install the second drive roll on the remaining shaft the same way as the first. Center the middle guide tube between the rolls and tighten the thumbscrews holding it in place.

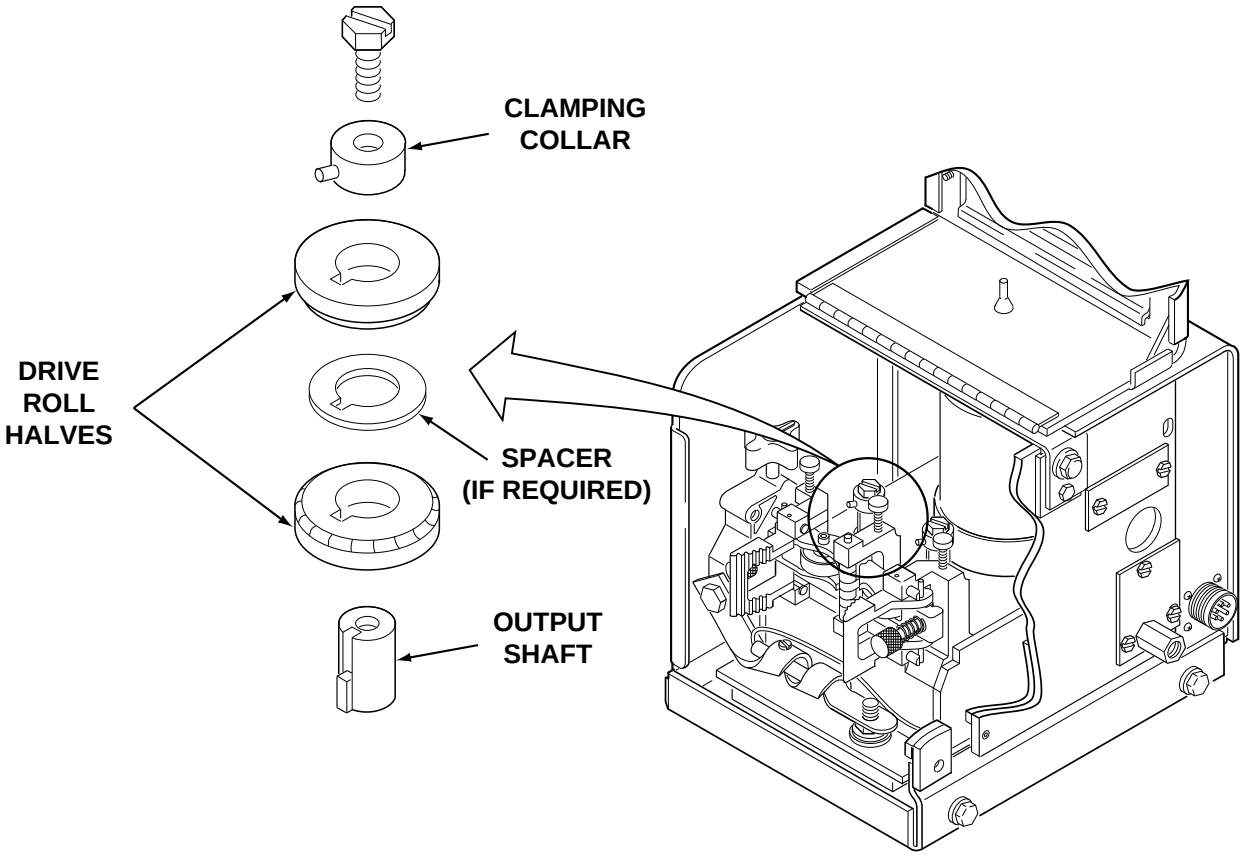
10. Close and latch both quick release levers.

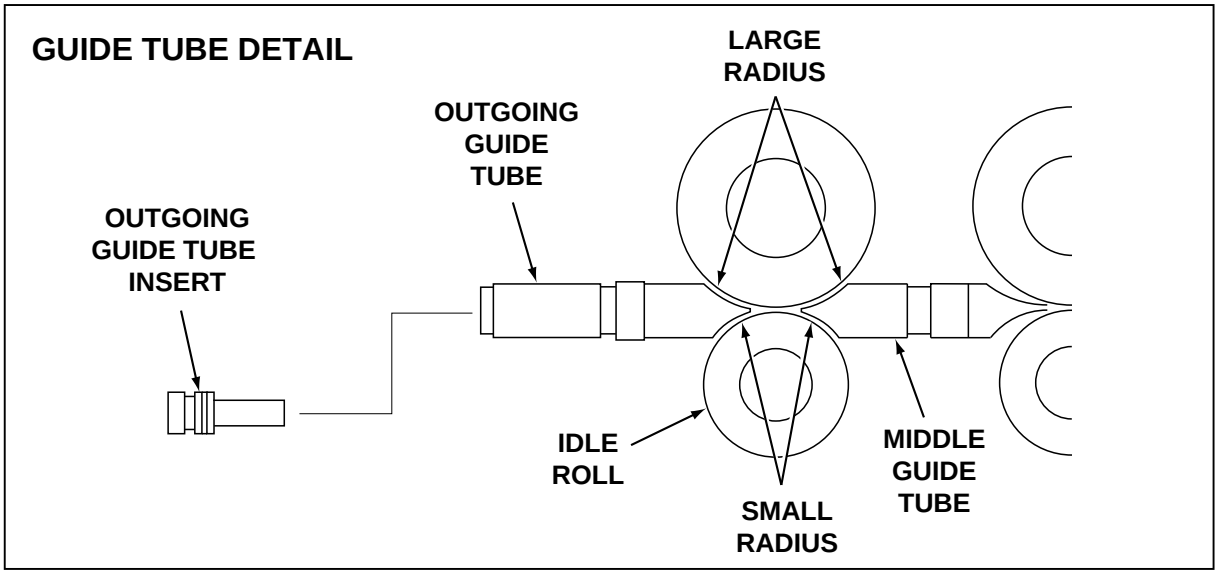
11. Slide the longer guide tube into the rear hole of the gearbox until it almost touches the drive roll and guide tube. Tighten the thumbscrew to hold it in place.

12. Install the outgoing guide tube into the front hole of the gearbox (through the conductor block) and tighten the thumb screw. The 0.035 in. outgoing guide tube should have the larger radius oriented toward the drive roll. For proper installation of the outgoing guide tube insert, refer to Figure B.3.

13. Be certain that the guide tubes do not touch the drive rolls or idle rolls. If they do touch, readjust them and tighten in place.

FIGURE B.3 – INSTALLING DRIVE ROLLS ON A FOUR-ROLL FEEDER.





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IDLE ROLL PRESSURE SETTING

The idle roll pressure is set at the factory. Two-roll feeders are set with the pressure adjustment knob backed out two turns from full pressure, and four-roll feeders are set backed out three turns. This is an approximate setting. For small wire sizes and aluminum wire the optimum idle roll pressure varies with type of wire, surface condition, lubrication, and hardness. The optimum idle roll setting can be determined as follows:

Two-roll wire feeders:

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

2. If the wire “birdnests”, jams, or breaks at the drive roll, the idle roll pressure is set too high. Back the pressure adjustment knob, Figure B.4, out 1/2 turn. Run new wire through the gun and repeat step 1.

3. If the only result is drive roll slippage, loosen the gun cable clamping screw on the conductor block and pull the gun cable forward about six inches. There should be a slight waviness in the exposed wire. If there is no waviness, the pressure is too low. Increase the pressure setting 1/4 turn. Lock the gun cable in place and repeat steps 1 and 2.

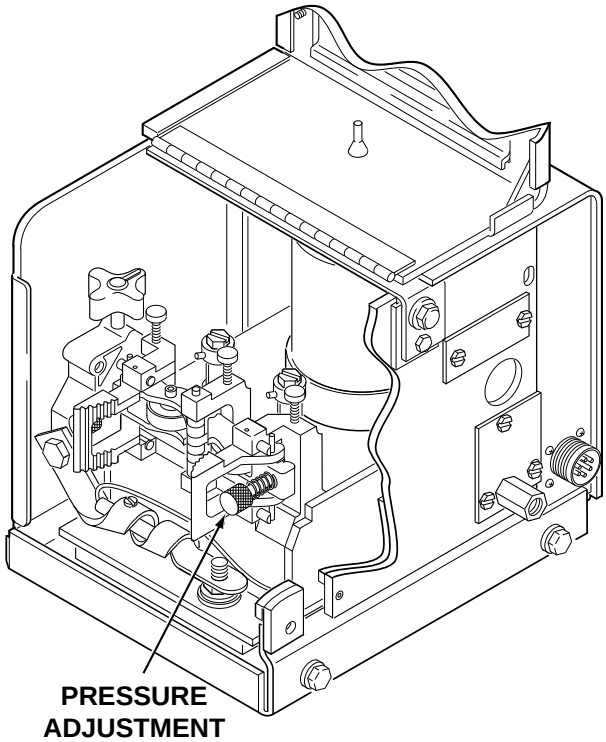
Four-roll wire feeders:

1. Release the incoming idle roll and perform the pressure setting procedure for two roll feeders to set outgoing idle roll pressure.

2. After outgoing pressure is set, determine how many turns away from full pressure the setting is.

3. Set both idle roll tensions to this setting. Engage both idle rolls before welding. For most applications, best wire feeding will occur when both idle roll pressures are set the same.

FIGURE B.4 – IDLE ROLL PRESSURE SETTING.



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WIRE LOADING

WIRE REEL LOADING – READI-REELS AND SPOOLS

TO MOUNT A 30 LB READI-REEL PACKAGE USING THE MOLDED PLASTIC K363-P TYPE ADAPTER:

1. Make certain that the threaded locking collar is tight and securely locks the adapter on the spindle. See Figure B.5.

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 clockwise direction when feeding (wire is to be de-reeled from the bottom of the coil).

4. Set one of the Readi-Reel inside cage wires on the slot in the retaining spring tab.

5. Lower the Read-Reel to depress the retaining spring and align the other inside cage wires with the grooves in the adapter.

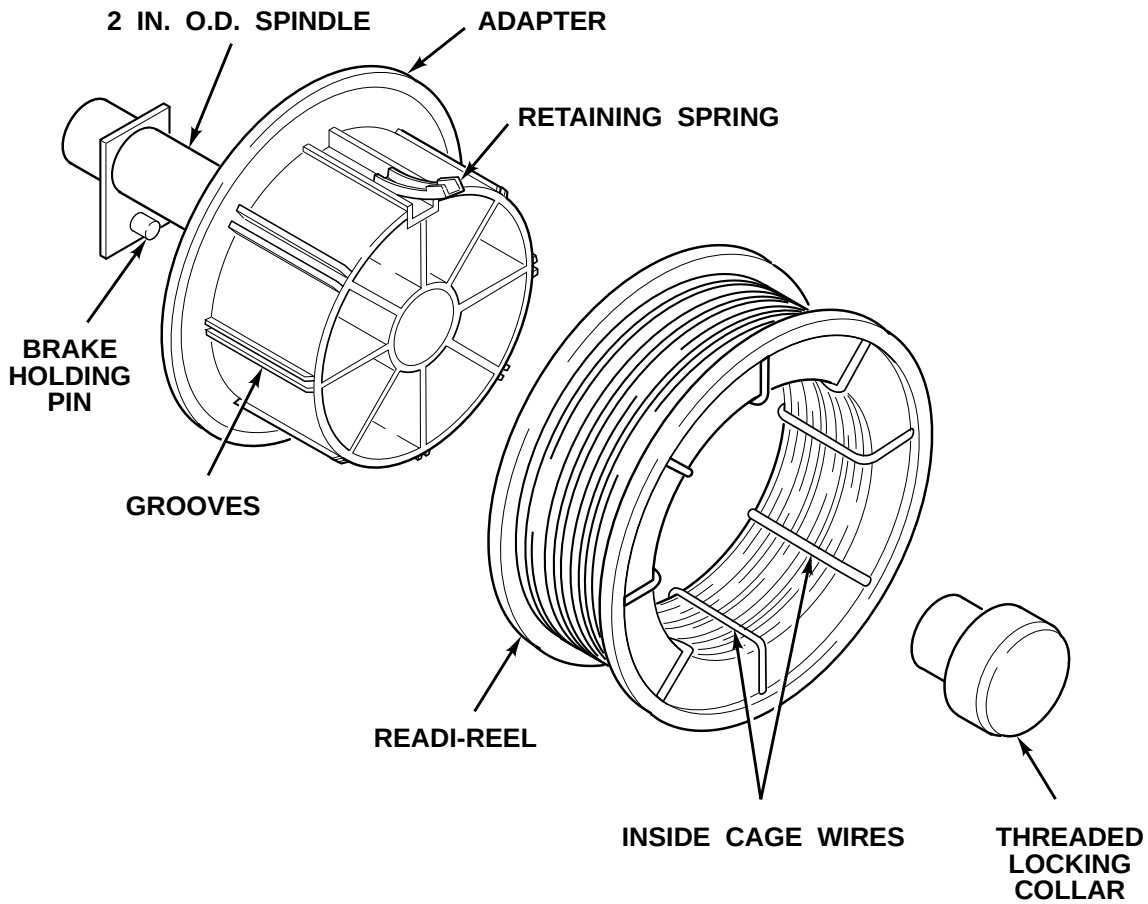
6. Slide the cage all the way onto the adapter until the retaining spring "pops up" fully.

⚠ WARNING

Check to be sure the retaining spring has been 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.

7. To remove the Readi-Reel from the adapter, depress the retaining spring with thumb while pulling the Readi-Reel cage from the adapter with both hands. Do not remove the adapter from the spindle.

FIGURE B.5 – INSTALLING A 30 LB READI-REEL PACKAGE.



TO MOUNT 10 TO 30 LB SPOOL (12" DIAMETER):
(For 8 in. spools a K468 spindle adapter must be used.)

1. Remove the locking collar and Readi-Reel adapter shipped on the 2 in. diameter spindle (adapter is not required).

2. Place the spool on the spindle making certain the brake holding 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 de-reeled form the bottom of the coil.

3. Replace and tighten the locking collar.

ELECTRODE FEEDING AND BRAKE ADJUSTMENT

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

2. While tightly 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 or may not go into the outgoing guide tube, causing a "birdnest".)

3. Insert the free end through the incoming guide tube.

4. Press the cold inch key or gun trigger and push the electrode into the drive roll.

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as output terminals or internal wiring.
- When inching with the gun trigger, electrode and drive mechanism are "hot" to work and ground and could remain "hot" for several seconds after the gun trigger is released.

5. Inch the electrode through the gun.

6. Adjust the brake tension with the thumbscrew on the spindle hub until the reel turns freely but with little or no overrun when wire feeding is stopped. Do not overtighten.

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WIRE REEL LOADING – 50 AND 60 LB COILS (K303 OR K376 WIRE REEL STAND)

ADJUSTABLE WIRE REEL BRAKE

The mount for standard 50 and 60 pound electrode coils includes a two-position brake assembly. Generally the brake should be at the inner position (nearest to the wire reel shaft) for wire feed speeds below 400 in./min (10 m/min). It should be at the outer position for the faster wire speeds often used when feeding smaller diameter electrode.

To adjust the brake position, remove the wire reel. Pull the cotter pin that holds the brake shoe to the arm, move the shoe and replace the cotter pin. Do not bend the cotter pin - it is held in place by a friction fit.

TO MOUNT A 50 OR 60 LB COIL:

1. To remove the wire reel from its shaft, grasp the spring loaded knob and pull out. This straightens the knob so it seats into the shaft when released. Remove the reel.

2. Lay the reel flat on the floor. Loosen the spinner nut and remove the cover plate. See Figure B.6.

3. Place the coil of electrode on the reel so it unwinds as the reel rotates clockwise. DO NOT cut the tie wires at this time.

4. Be sure the coil is placed so the spring loaded arms will not interfere with the later removal of the coil tie wires.

5. When loading 0.030 to 0.045” electrode, be certain the coil is placed on the reel so the spring loaded arms are at the center of the slots in the cardboard coil liner. This provides the positive compression of the coil sides needed for trouble-free wire feeding.

6. Put the cover plate on the reel so the four arms of the cover plate straddle and are in line with the spring loaded arms of the reel.

7. Tighten the cover as much as possible by hand. DO NOT hammer on the spinner nut arms.

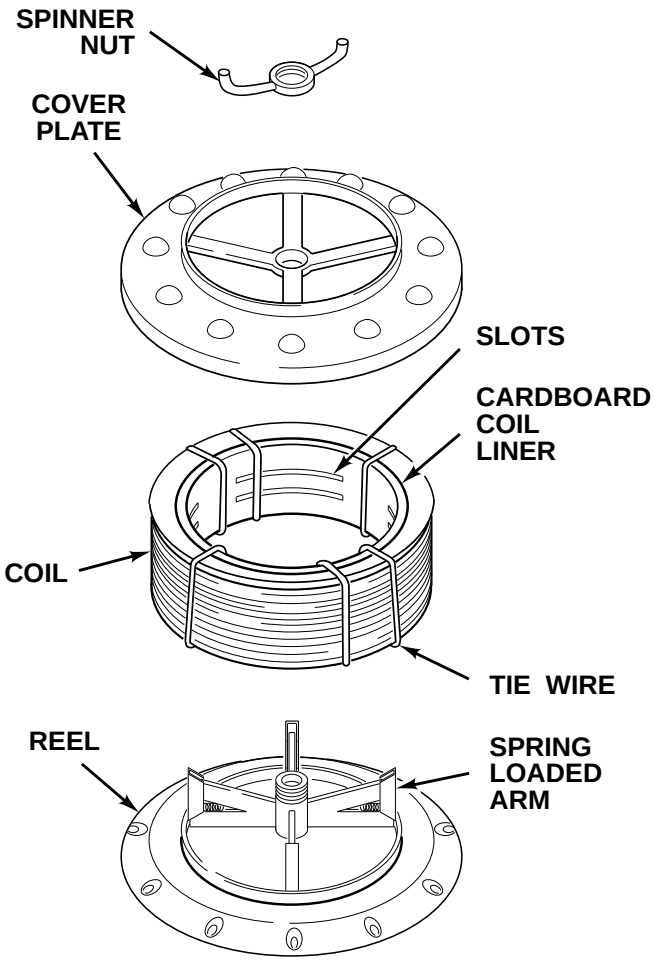
⚠ CAUTION

Always be sure the free end of the coil is securely held while the tie wires are being cut and until the wire is feeding through the drive rolls. Failure to do this will result in “back lashing” of the coil, which may tangle the wire. A tangled coil will not feed. It must be untangled or discarded.

8. Cut and remove **only** the tie wire holding the free end of the coil. Insert the free end into one of the holes in the cover and secure it by bending it back. Cut and remove the remaining tie wires.

9. Replace the reel on the wire feeder. Grasp the shaft knob, pull it out and swing it across the reel hub, locking the reel in place.

FIGURE B.6 – LOADING A 50 OR 60 LB COIL.



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FEEDING ELECTRODE

1. Turn the reel until the free end of the electrode is accessible.
2. While tightly 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 or may not go into the outgoing guide tube causing a “birdnest”.)
3. Insert the free end through the incoming guide tube.
4. Press the cold inch key gun trigger and push the electrode into the drive roll.

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as output terminals or internal wiring.
- When inching with the gun trigger, electrode and drive mechanism are “hot” to work and ground and could remain “hot” for several seconds after the gun trigger is released.

5. Inch the electrode through the gun.

WIRE LOADING – 13-14 LB INNERSHIELD COILS

The K378 small mounting stand for the 14 lb Innershield coil does not have an adjustable brake. It has a fixed drag built into the reel spindle.

To load a 14 lb coil:

1. Remove the snap-on lid from the plastic canister.
2. Remove the center clamping nut and the cover plate from the wire reel.
3. Unpack the 14 lb coil of wire. Be sure not to bend the side tangs of the liner. Straighten any tangs that may have been bent.
4. Remove the start end of the coil from its holding slot in the coil liner. Cut off the bent end, straighten the first six inches, and cut off the first inch. (If the electrode is not properly straightened, it may not feed or may not enter the outgoing tube, causing a “birdnest”.)
5. Thread the end through the canister wire feed liner until about four inches of electrode are exposed.
6. Place the coil onto the disc support.
7. Replace the front reel cover and center clamping nut. Keep the reel from turning and tighten the center clamping nut securely.
8. Thread the exposed end of the electrode into the wire feeder until it touches the drive rolls. Press the cold inch key or the gun trigger and feed the electrode through the system.

MAKING A WELD

1. Use only constant voltage power type sources. If using a multiple process power source, be sure it is set for constant voltage output per instructions in the manual for the power source.
2. Set the power source polarity switch or properly connect the electrodes and work leads for the correct electrode polarity.
3. Set the voltage using the control on the power source or, if used, the optional K589-1 Remote Kit or K857 Remote Voltage Control. Set the open circuit voltage to approximately 2 volts higher than the desired procedure voltage. The final setting must be made according to the arc voltage while welding.
4. Use the Mode Selection key to set the desired operating mode.
5. Use the Function Selection key and Selection Setting arrow keys to set the desired Inch and Weld Feed speeds.

6. Use the Time Selection key and Selection Setting arrow keys to set the desired timers.

7. Inch the electrode through the gun and cable. For solid wire, cut the electrode within approximately 3/8 in. of the end of the contact tip. If using cored wire, cut the electrode within 3/4 in. of the extension guide.

8. Connect the work cable to the metal to be welded. The work cable must make good electrical contact with the work. The work must also be grounded.

⚠ WARNING

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

9. Position the electrode over the joint. The end of the electrode may be lightly touching the work.

10. Lower your welding helmet. Close the gun trigger and begin welding. Hold the gun so the contact tip to work distance gives the correct electrical stickout as required for the procedure being used.

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

WIRE REEL CHANGING

At the end of a coil, remove the last of the old electrode from the conductor cable. Either pull it out at the nozzle, or use the following procedure:

1. Cut off the end of the electrode at the gun end. Do not break it off by hand. Breaking by hand puts a slight bend in the wire, making it difficult to pull it back through the nozzle.

2. Uncouple the gun conductor cable from the conductor block on the wire feeder drive unit and lay the gun cable out straight.

3. Using pliers, grip the wire and pull it out of the cable from the connector end.

4. After the electrode has been removed, connect the gun conductor back to the wire feeder.

5. Load a new reel of electrode per the instructions for the specific reel type given previously in this section.

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GENERAL

The following is a list of the accessories that can be used with the LN-742 wire feeder.

A detailed description of each item is given later in this section.

TABLE C.1 – LN-7 GMA ACCESSORIES.

Product Number	Name
K163	Undercarriage
K178-1	Mounting Platform
K589-1	Remote Control Kit
K590-1	Water Solenoid Kit
K590-2	Water Connection Kit
K857	Remote Voltage Control Kit
K58	Magnetic Separator
K310	Flux Screen
K320	Flux Tank
K591	Input Cable - 400 Amps
K592	Input Cable - 600 Amps
K593-10	Input Cable and Gas Hose - 400 Amps
K619	Input Cable - 350 Amps
K112	Submerged Arc Welding Gun - 500 Amps
K115	Innershield Welding Gun - 400 Amps
K126	Innershield Welding Gun - 350 Amps
K470	Magnum GMA Welding Gun - 200 Amps
K471	Magnum GMA Welding Gun - 300 Amps
K497	Magnum GMA Welding Gun - 400 Amps
K162H	Spindle
K363P	22 to 30 lb Readi-Reel Adapter
K376 and 303	50 to 60 lb Wire Reel Mounting Stands
K377	Small Mounting Stand for Readi-Reel Coils and 22 to 30 lb Spindle with 2 in. O.D.
K378	Small Mounting Stand for 13 to 14 lb Innershield Coils
K435	Spindle Adapter for 14 lb Coils
K438	50 to 60 lb Readi-Reel Adapter
K445	Mounting Stand for Readi-Reel Coils and 50 to 60 lb Spindle with 2 in. O.D.
K468	Spindle Adapter for 8 in. O.D. Spools
M11514	Wire Reel Dust Shield Door for K303 and K376
S14543	Wire Reel Dust Shield for K376 50 to 60 lb Wire Reel Mounting Stand

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K163 UNDERCARRIAGE

The undercarriage includes casters, wheels, a handle, and related hardware. Casters are mounted at the front and wheels at the rear of the platform. The handle is bolted to the front of the platform so the wire feeder can be tilted back and wheeled like a two-wheel truck. Installation sheet M13424 is provided with the undercarriage.

K178-1 MOUNTING PLATFORM

This is a turntable type platform for mounting the LN-742 to the top of Idealarc power sources. Bolt the platform to the lift bail per the instructions (M16260) supplied with the platform.

K589-1 REMOTE CONTROL KIT

Provides remote potentiometer control of weld speed and arc voltage up to 16.4 ft (5.0 m) from the wire feeder. Power source must have remote control capability. (K856 Power Source Remote Kit required for CV-300/400-I, and smaller CV- Model machines below Code 9900.) Install K589-1 Kit per S20520 installation instructions provided with the kit.

K590-1 WATER SOLENOID KIT

Includes a solenoid valve already attached to a mounting bracket and supply connection manifold assembly for easy installation on the upper rear panel of the LN-742 case. Also includes water-cooled gun tube fittings and self-sealing outlet and inlet quick-connectors for mounting to the front of the LN-742 case.

K590-2 WATER CONNECTION KIT

This kit is the same as the K590-1 except that it does not include the solenoid for water coolers requiring continuous flow.

K857 REMOTE VOLTAGE CONTROL KIT

Installs on the side of the LN-742 control box cover and gives voltage control at the wire feeder.

K857 can be installed on the LN-742 when it is used with newer Lincoln power sources that are equipped with a 6-socket ms-type receptacle or K864 14-pin connector adaptor for connection of the plug on the 28 ft (8.5 m) control cable of the K857. See the instructions (S19103) included with the kit.

FLUX SYSTEM COMPONENTS

The flux system is available to permit the LN-742 to be used for submerged arc welding. It is comprised of the components described below.

K58 MAGNETIC SEPARATOR

The K58 is a permanent magnet type separator designed to fit the top of the standard fill funnel of the continuous flux feeding system.

The purpose of the separator is to remove magnetic materials such as mill scale and any other extraneous magnetic materials which may have been recovered along with the flux to be processed.

It is important to remove these magnetic particles from the flux which is to be used in the continuous flux feeding systems. If the magnetic material is not removed it will gather around the nozzle of the gun and impede or shut off the flux flow when making relatively long welds or welding continuously. The magnetic particles can also cause porosity in the weld.

K310 FLUX SCREEN

The unit was designed to fit the top of either the standard fill funnel or a K58 magnetic separator. The unit has a steel screen with 0.065 to 0.075 in. openings and an air vibrator attached to the frame. The vibrator can be used with air line pressures ranging from 20 through 100 psi.

For ease of handling, the user should connect the incoming air line to the 1/8 in. pipe elbow with the aid of a quick disconnect type air coupling.

It is very important that reclaimed flux to be used in the continuous flux feeding system be passed through the K310 screen or its equivalent.

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K320 FLUX TANK

Either turn off the incoming air line or remove the quick disconnect if one has been installed. Slightly loosen the tank cap and let the air in the tank escape in the holes in the side of the cap. After pressure has been released, remove the cap from the tank. Using the funnel provided, put 100 pounds of flux in the tank. It is very important that only new or properly reclaimed flux be put in the tank. Coarse particles and/or magnetic particles will stop the flux feeding process. New Lincoln flux is properly screened at the factory. All reclaimed flux must be separately screened through a vibrating screen with 0.065 in. to 0.075 in. openings and be put through a magnetic separator. The K310 vibrated screen and K58 magnetic separator are available for this purpose. The screen in the funnel supplied with the tank has much larger openings and its only purpose is to keep paper and slag out of the tank.

There will always be a small amount of air and possible drops of water coming out of the end of the tube coiled under the tank. This is an automatic disposal system in case the plant air has water and dirt in it.

POWER INPUT CABLES

A variety of power input cable assemblies are available for various current ratings and power source connection types. All provide a polarized control cable plug and a lugged electrode cable for connection to the wire feeder.

K591 INPUT CABLE

Consists of an eight-conductor control cable with 14-pin control cable plug and a 2/0 (67 mm^2) electrode cable with Twist-Mate™ connector. It is rated at 400 amps, 60% duty cycle, and is available in lengths of 10, 25**,** and 50 feet (3.0, 7.6, and 15.2 m).

K592 INPUT CABLE

Consists of an eight-conductor control cable with 14-pin control cable plug and a 3/0 (85 mm^2) electrode cable with stud terminals. It is rated at 600 amps, 60% duty cycle, and is available in lengths of 10, 25, and 50 feet (3.0, 7.6, and 15.2 m).

K593-10 INPUT CABLE AND GAS HOSE

Similar to the K591, but includes a gas hose with a 5/8-18 male fitting for the LN-742 inlet, and water hoses with 5/8-18 left-hand male fittings to connect between the water cooler and an LN-742 equipped with the optional K590-1 water solenoid kit. It is rated at 400 amps, 60% duty cycle, and is available in a 10 ft (3.0 m) length.

K619 INPUT CABLE

Consists of an eight-conductor control cable with 14-pin control cable plug and a 1/0 (53 mm^2) electrode cable with stud terminals. It is rated at 350 amps, 60% duty cycle, and is available in lengths of 10, 25, and 50 feet (3.0, 7.6, and 15.2 m).

WELDING GUNS

Welding guns can be broken down into groups, according to the type of welding that is to be accomplished. Select the appropriate welding gun from the following weld-type groups.

INNERSHIELD GUNS

K122. This submerged arc gun and its cable assemblies are rated 500 amps, 60% duty cycle.

K115. This Innershield gun and its cable assemblies are rated at 450 amps, 60% duty cycle. Maximum wire size for LN-742 models is 5/64 in. (2.0 mm).

K126. This Innershield gun and its cable assemblies are rated at 350 amps, 60% duty cycle. Maximum wire size for LN-742 models is 5/64 in. (2.0 mm).

NOTE: The K115 and K126 are not recommended for LN-742H models.

NOTE: Linconditioner™ guns are recommended for locations where smoke accumulation is a problem and conventional exhaust systems are ineffective. The available smoke removal type Innershield guns and vacuum units can be used in these locations. Instructions are shipped with the equipment.

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SUBMERGED ARC GUNS

The K112 gun and cable assembly is recommended for welding with 1/16 in. solid steel electrode at up to 500 amps. Gun cable length is 15 feet.

GMAW GUNS

An expanding line of Magnum GMA gun and cable assemblies are available to allow welding with solid and cored electrodes using the GMAW process. See the appropriate Magnum literature for descriptions of the 200-400 ampere air cooled guns and cables that are available. Gun cable lengths range from 10 to 25 ft. (3.0 to 7.5 m) and feed electrode sizes 0.025 in. to 5/64 in. (0.6 to 2.0 mm).

SPINDLES, STANDS, AND ADAPTERS

There are a variety of spindles and wire reel adapters available for use with the LN-742. Select the desired setup according to your specific welding needs.

K162H SPINDLE

The K162H spindle is used for mounting Readi-Reels and 2 in. I.D. spools with a 60 lb capacity on a K303 or K376 Wire Reel Stand. When used with Readi-Reels, a Readi-Reel Adapter is required. For 8 in. O.D. spools, a K468 Spindle Adapter is available.

K363P 22 TO 30 LB READI-REEL ADAPTER

Adapts Lincoln Readi-Reel coils of 22 and 33 lb (10 and 14 kg) to a 2 in. (51 mm) spindle. Durable, molded plastic, one piece construction. Designed for easy loading -- adapter remains on spindle for quick changeover. (Included with K377.)

K376 AND K303 50 TO 60 LB WIRE REEL MOUNTING STANDS

The K376 50 to 60 lb Wire Reel Mounting Stand and the K303 Wire Reel Mounting Stand are the same with the exception that the K303 stand includes a dust shield. The assembly includes a framework to which is attached the 50 to 60 lb wire reel, a mounting spindle, a lift bale, and a cable clamp for fastening the input cable assembly. It is easily mounted to the basic wire feed unit by following the ***Attaching the Wire Reel Stand*** procedure at the end of this section.

K377 SMALL MOUNTING STAND FOR READI-REEL COILS AND 22 TO 30 LB SPINDLE WITH 2 IN. I.D.

This assembly includes a wire reel spindle (similar to the K162 spindle) attached to a small frame. The unit is supplied with the K363 Readi-Reel Adapter for using the Lincoln “Readi-Reel Electrode Coils”. Without the adapter the unit is capable of handling spools with a 2 in. I.D., a 12 in. maximum O.D., and a 4 in. width. For spools with an 8 in. O.D., a K468 spindle adapter is available. The spindle has an adjustable braking system. See ***Attaching the Wire Reel Stand*** procedure at the end of this section for installation procedures.

K378 SMALL MOUNTING STAND FOR 13 TO 14 LB INNERSHIELD COILS

This assembly includes the same smaller frame as used in the K377 and the fully enclosed canister system for dereeling of the 14 lb coil. This system has a fixed brake for the 14 lb coil. See ***Attaching the Wire Reel Stand*** Procedure at the end of this section for installation procedures.

K435 SPINDLE ADAPTER FOR 14 LB COILS

Permits 14 lb (6 kg) Innershield coils to be mounted on 2 in. (51 mm) O.D. spindles. For K377 and K445, or K303 and K376 with optional K162H adapter.

K438 50 TO 60 LB READI-REEL ADAPTER

Adapts Lincoln Readi-Reel coils of 50 to 60 lb (22.7 to 27.7 kg) to a 2 in. (51 mm) spindle. (Included with K445.)

K445 MOUNTING STAND FOR READI-REEL COILS AND 50 TO 60 LB SPINDLE WITH 2 IN. O.D.

50 to 60 lb (22.7 to 27.7 kg) Readi-Reel mounting stand. This assembly includes framework that a 2 in. (51 mm) O.D. spindle with adjustable brake and 50 to 60 lb (22.7 to 27.7 kg) (K438) Readi-Reel adapter. Includes a lift bail and cable clamp for fastening the input cable assembly. Does not include a dust shield. A dust shield that covers the wire reel and protects the wire from falling dirt and dust is available for this unit. Order part number S14543. This unit will accept the M11514 door kit (see K303) but only if already equipped with optional dust shield (S14543).

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K468 SPINDLE ADAPTER FOR 8 IN. O.D. SPOOLS

Permits 8 in. (203 mm) O.D. spools to be mounted on 2 in. (51 mm) O.D. spindles. For K377 and K445, or K303 and K376 with optional K162H adapter.

M11514 WIRE REEL DUST SHIELD DOOR FOR K303 AND K376

In extremely dusty and dirty locations this door kit can be added to those units having the dust shield kit (S14543). This door kit includes a hinged door and sliding bottom seal. When these parts are attached to the reel support per the instructions included, the unit becomes a completely enclosed housing. Order part no. M11514.

S14543 WIRE REEL DUST SHIELD FOR K376 50 TO 60 LB WIRE REEL MOUNTING STAND

A shield is available to cover the wire and reel to protect the wire from falling dirt and dust. Order part no. S14543. Instructions are provided with the kit.

ATTACHING THE WIRE REEL STAND

The mounting hardware for mounting the stands is included with the LN-742. Screws and washers are inserted in their respective mounting holes. To connect:

1. Remove the three 3/8 in. hex head bolts from the back of the wire feed unit.
2. Place the wire reel mounting stand mounting bracket in position against the back of the wire feed unit.
3. Replace and tighten the hex head bolts. The long screw and plain washer go into the top hole.

DRIVE ROLL KITS

Table C-2 lists the appropriate drive roll kits for each type of wire used.

TABLE C.2 – DRIVE ROLL KIT NUMBERS.

	2-Roll	4-Roll
Steel Wire Sizes		
0.068-3/32 in. (1.7-2.4 mm) Cored	KP653-3/32C	KP655-3/32C
1/16 in. (1.6 mm) Cored or Solid	KP653-1/16	KP655-1/16
0.045-0.052 in. (1.2-1.3 mm) Solid	KP653-052S	KP655-052S
0.045-0.052 in. (1.2-1.3 mm) Cored	KP653-052C	KP655-052C
0.035 in. (0.9 mm) Solid	KP653-035S	KP655-035S
0.035 in. (0.9 mm) Cored	KP653-035C	KP655-035C
0.030 in. (0.8 mm) Solid	KP653-030S	KP655-030S
0.023-0.025 in. (0.6 mm) Solid	KP653-025S	KP655-025S
Aluminum Wire Sizes		
1/16 in. (1.6 mm)	KP654-1/16A	KP656-1/16A
3/64 in. (1.2 mm)	KP654-3/64A	KP656-3/64A

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ROUTINE MAINTENANCE

DRIVE ROLLS AND GUIDE TUBES

After feeding every coil of wire, inspect the drive roll section. Clean the assembly as necessary. Do not use solvent to clean the drive roll assembly as it may wash the lubricant out of the bearings. The drive rolls and guide tubes are stamped with the wire sizes they will feed. If a wire size other than that stamped on the rolls is to be used, the rolls and guide tubes must be changed.

The drive rolls for 0.045 and 0.052 cored electrode and 1/16, 0.068, 5/64, 3/32, and 7/64 electrode have a double set of teeth so they can be reversed for additional life. Drive rolls for 0.023 through 0.052 solid electrodes have no teeth.

Refer to the instructions in ***Section B, Operation*** for installation of drive rolls.

WIRE REEL MOUNTING

To prolong the life of the reel shaft on the 50 to 60 lb coils, periodically coat it with a thin layer of grease. No maintenance to the two position brake is required. If the brake shoe wears through to metal, replace the brake assembly.

No routine maintenance is required for Readi-Reels and 10 to 30 lb spools. Do not lubricate the 2 in. spindles.

PERIODIC MAINTENANCE

WIRE DRIVE MOTOR AND GEARBOX

Every year inspect the gearbox and coat the gear teeth with a moly-disulfide filled grease. Do not use graphite grease.

Every six months check the motor brushes. Replace them if they are less than 1/4 in. long.

GUN AND CABLE MAINTENANCE

For instructions on periodic maintenance for the welding gun and cables, refer to the instructions included with your specific model of welding gun.

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GENERAL DESCRIPTION

The LN-742 is a semiautomatic constant speed wire feeder with a gas solenid valve and fittings. It also has standard Lincoln gun connector. An LED display and a soft touch keypad provide selection of operating mode, function selection, timer selection, and parameter adjustment. Two touch keys operate the cold-inch and gas purge functions.

POWER INPUT CIRCUITS

The LN-742 receives 42 VAC (usually from the welding power source) by way of the input cable connector. The 42 VAC is rectified to a DC voltage and applied to the control board. The control board regulates the rectified voltage to a ±12.8 VDC supply and also +5 VDC supply. A variable 0 to 23 VDC is also applied to the wire drive motor via the control board.

FIGURE E.1 – POWER INPUT CIRCUITS.

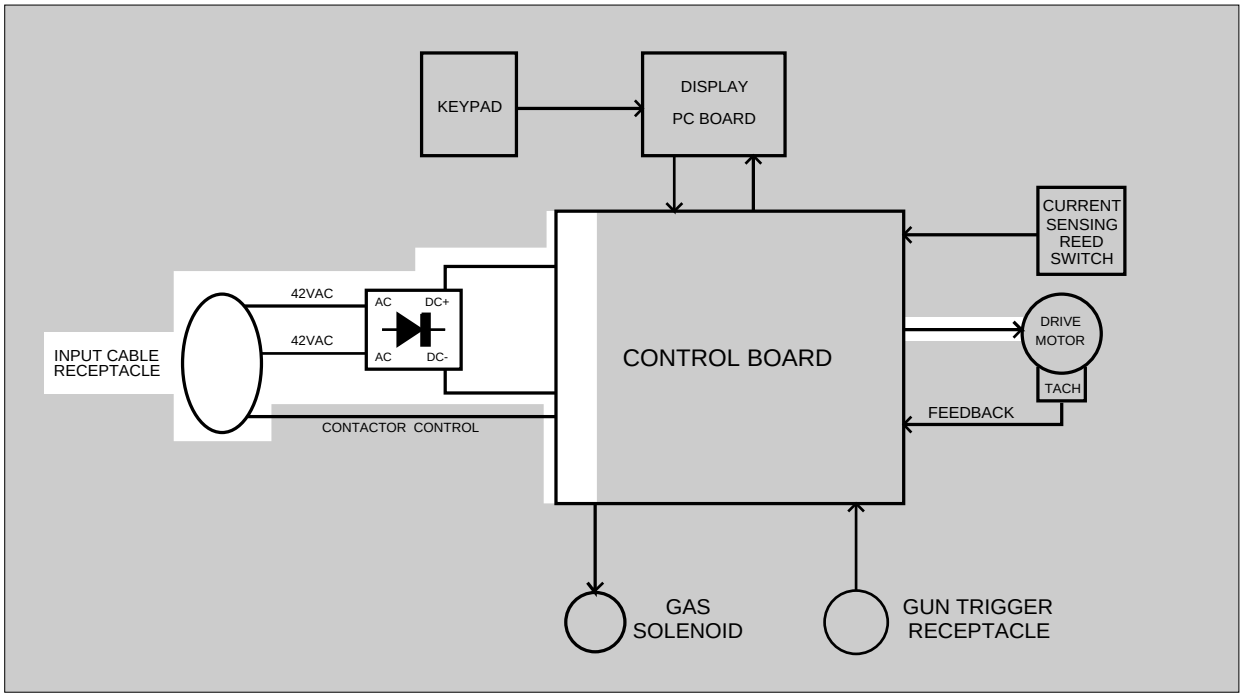
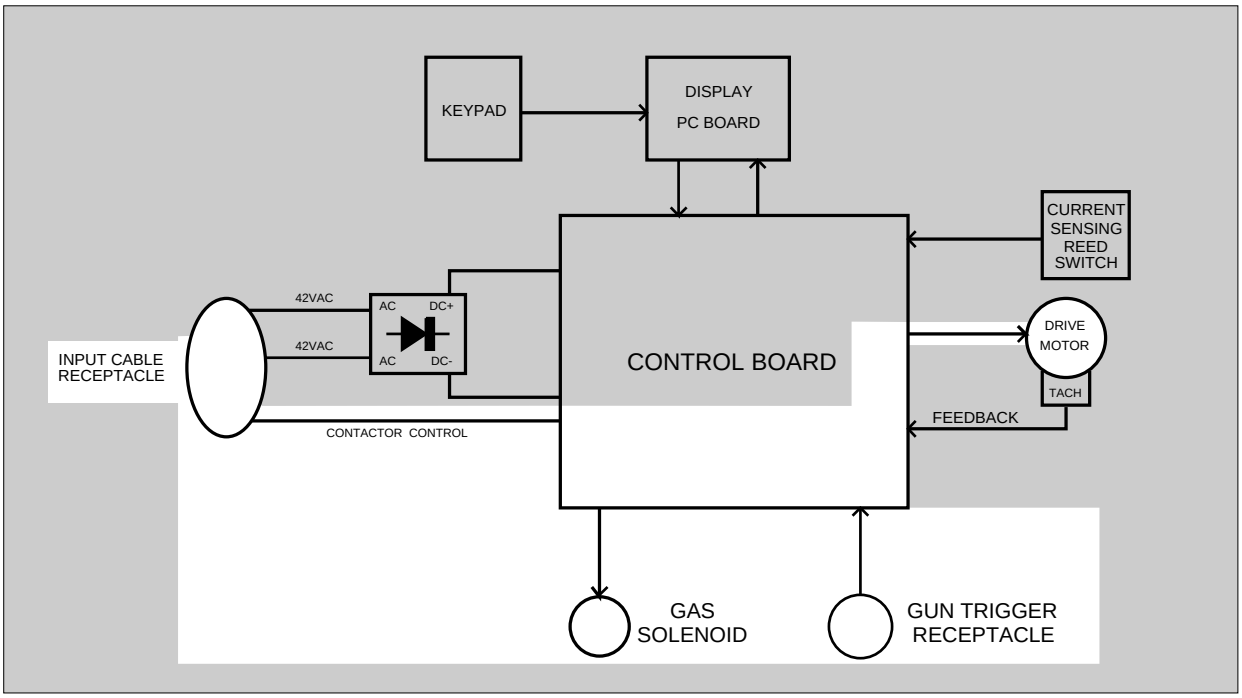


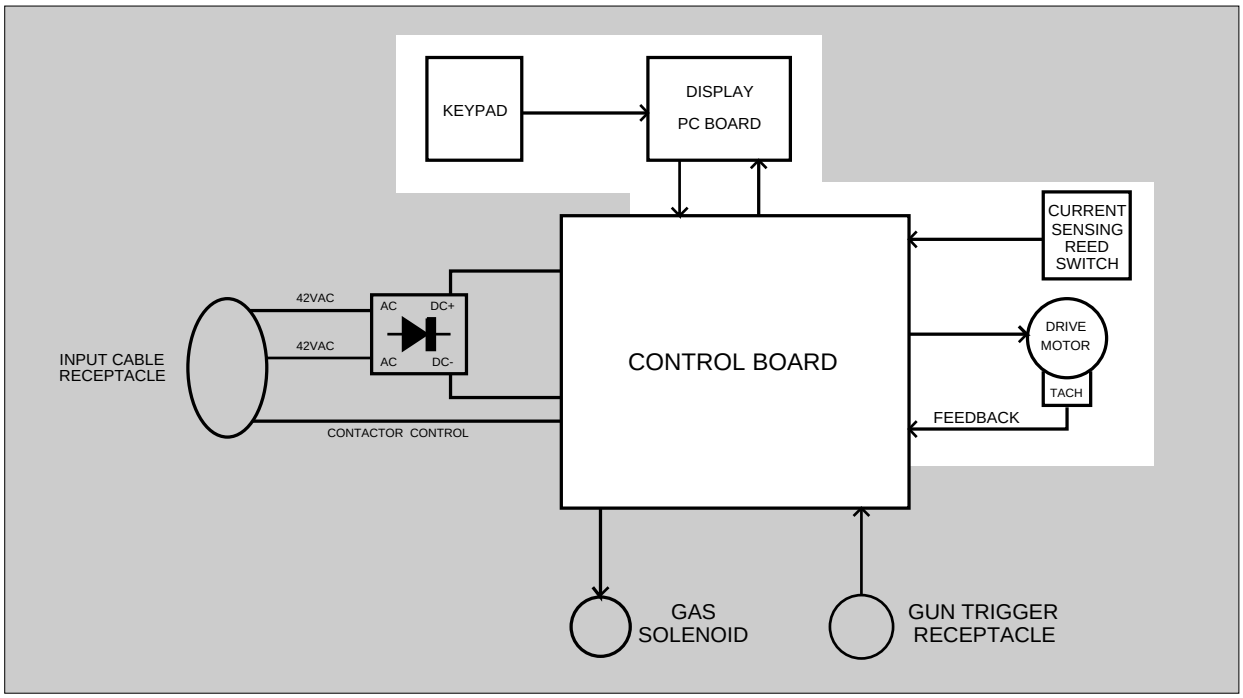
FIGURE E.2 – TRIGGER CIRCUIT.



TRIGGER CIRCUIT

When the gun trigger is activated, the EPROM which is located on the control board, signals the motor circuitry to start the wire drive motor and also activates an electronic switch which closes leads #2 and #4. The closure of leads #2 and #4 energize the welding output terminals on the Lincoln power source. The gas and or water solenoid are also energized by a solid state circuit on the control board.

FIGURE E.3 – KEYPAD, DISPLAY BOARD, CONTROL BOARD, REED SWITCH, DRIVE MOTOR AND TACH FEEDBACK.



KEYPAD, DISPLAY BOARD, CONTROL BOARD, REED SWITCH, DRIVE MOTOR, AND TACH FEEDBACK

The control board receives commands from the keypad via the display board. The control board compares these commands with the information it receives from the tach feedback and current sensing reed switch and sends the appropriate signals to the wire drive motor. Thus the wire is fed at the correct speed and at the correct time dependent upon the commands issued from the keypad. The display board exhibits the commands set forth by the keypad as well as displays the actual arc voltage.

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⚠ WARNING

ELECTRIC SHOCK can kill.

- Never work on the inside of the machine without turning off the input power. You can receive a life threatening electrical shock if you fail to do this. Only qualified technicians should perform installation, maintenance, and troubleshooting work on the machine.

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HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. 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 and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

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

Step 1. LOCATE PROBLEM (SYMPTOM). Look under the column labeled "PROBLEM (SYMPTOMS)". This column describes possible symptoms that the machinery may exhibit. Find the listing that best describes the symptom that the machine is exhibiting. Symptoms are grouped according to: function problems, feeding problems, and welding problems.

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. PERFORM COMPONENT TESTS. The last column labeled "RECOMMENDED COURSE OF ACTION" lists the most likely components that may have failed in your machine. It also specifies the appropriate test procedure to verify that the subject component is either bad or good. If there are a number of possible components, check the components in the order listed to eliminate one possibility at a time until you locate the cause of your problem.

All the necessary test specifications and repair procedures are described in detail following the troubleshooting guide. All electrical test points, terminal strips, junctions, etc., can be found on the electrical wiring diagrams and schematics in ***Section G, Electrical Diagrams***.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Service Department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

PC BOARD TROUBLESHOOTING PROCEDURES

⚠ WARNING

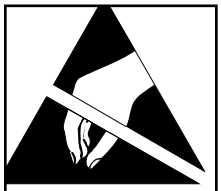
ELECTRIC SHOCK can kill.

- 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.

⚠ CAUTION

Sometimes machine failures appear to be due to PC board failures. These problems can sometimes be traced to poor electrical connections. To avoid problems when troubleshooting and replacing PC boards, please use the following procedure:

1. Determine to the best of your technical ability that the PC board is the most likely component causing the failure symptom.
2. Check for loose connections at the PC board to assure that the PC board is properly connected.
3. If the problem persists, replace the suspect PC board using standard practices to avoid static electrical damage and electrical shock. Read the warning inside the static resistant bag and perform the following procedures:



ATTENTION
Static-Sensitive Devices
Handle only at Static-Safe Workstations

Reusable Container
Do Not Destroy

P.C. Board can be damaged by static electricity.

- Remove your body's static charge before opening the static-shielding bag. Wear an anti-static wrist strap. For safety, use a 1 Meg ohm resistive cord connected to a grounded part of the equipment frame.

- If you don't have a wrist strap, touch an unpainted, grounded, part of the equipment frame. Keep touching the frame to prevent static build-up. Be sure not to touch any electrically live parts at the same time.

- Tools which come in contact with the P.C. Board must be either conductive, anti-static or static-dissipative.

- Remove the P.C. Board from the static-shielding bag and place it directly into the equipment. Don't set the P.C. Board on or near paper, plastic or cloth which could have a static charge. If the P.C. Board can't be installed immediately, put it back in the static-shielding bag.

- If the P.C. Board uses protective shorting jumpers, don't remove them until installation is complete.

- If you return a P.C. Board to The Lincoln Electric Company for credit, it must be in the static-shielding bag. This will prevent further damage and allow proper failure analysis.

4. Test the machine to determine if the failure symptom has been corrected by the replacement PC board.

NOTE: It is desirable to have a spare (known good) PC board available for PC board troubleshooting.

NOTE: Allow the machine to heat up so that all electrical components can reach their operating temperature.

5. Remove the replacement PC board and substitute it with the original PC board to recreate the original problem.
   a. If the original problem does not reappear by substituting the original board, then the PC board was not the problem. Continue to look for bad connections in the control wiring harness, junction blocks, and terminal strips.
   b. If the original problem is recreated by the substitution of the original board, then the PC board was the problem. Reinstall the replacement PC board and test the machine.
6. Always indicate that this procedure was followed when warranty reports are to be submitted.

NOTE: Following this procedure and writing on the warranty report, "INSTALLED AND SWITCHED PC BOARDS TO VERIFY PROBLEM," will help avoid denial of legitimate PC board warranty claims.

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TROUBLESHOOTING GUIDE

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
FUNCTION PROBLEMS		
The display is blank. No wire feed when the gun trigger is activated.	1. Make sure the control cable is connected to the welding power source correctly. 2. Make sure the welding power source is turned on and functioning properly. 3. Check the 42 VAC fuse or circuit breaker in the welding power source.	1. Check for opens or shorts in the control cable. 2. Perform the ***Input Voltage Test.*** 3. Perform the ***Drive Motor Test.*** 4. Observe LED 1 located on the control board. It should blink on and off at a controlled rate of 1 second on and 1 second off. If it does NOT the control board may be faulty. If LED does function properly the display board may be faulty.
No wire feed when the gun trigger is activated. The solenoid does not function. No arc voltage present. The display board indicates the LN-742 has input power applied.	1. Check or replace the gun trigger switch. 2. Check the gun trigger receptacle. Check for loose or faulty connections.	1. Check the leads between the gun trigger receptacle (J14) and plug J1 located on the control board. See wiring diagram. 2. The control board may be faulty. Replace.

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Service Department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
FUNCTION PROBLEMS (Continued)		
When the gun trigger is activated the wire feed motor runs and the solenoid functions but no arc voltage is present.	1. Make sure the welding power source is functioning properly. Disconnect the control cable from the Lincoln power source. Place a jumper across sockets C and D of the 14 pin amphenol plug at the power source. Open circuit voltage should be present at the welder output terminals. If no voltage is present at the output terminals the power source is faulty. 2. The control cable may be faulty. Check leads #2 and #4 (pins C and D) for continuity (zero ohms). 3. The welding cables may me faulty. Check for loose or faulty connections. 4. The gun may be faulty. Check or replace.	1. The control board may be faulty. Replace.
The wire feeds when the gun trigger is activated but there is no control of the wire feed speed.	1. Check for loose or faulty connections between the tach and the control board plug J3.	1. Perform the ***Tach Feedback Test.*** 2. Perform the ***Drive Motor Test.***
The wire feed speed does not change when welding current begins to flow.	1. The inch and weld speeds may be set to the same value. 2. If the display shows the ---- symbol the inch speed has been disabled. To enable the inch speed press the increase arrow key. 3. Check plug J2 on the control board for loose or faulty connections.	1. Disconnect plug J2 from the control board. There should not be continuity between the two blue wires until welding current flows. When welding there should be continuity between the two blue wires. If the above conditions are not met the reed switch may be faulty. Replace. 2. The control board may be faulty. Replace.

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Service Department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
FUNCTION PROBLEMS (Continued)		
The LN-742 voltmeter does not function or read correctly when the actual arc voltage is present. The wire feeder is feeding wire correctly.	1. Make sure the polarity switch on the Lincoln welding power source is in the correct position for the welding process. 2. Check or replace the control cable. Check the continuity (zero ohms) of leads #21 and #67.	1. Check the DC voltage at plug J1 pin 6 (lead #67) to pin 11 (lead #21) when arc voltage is present at the power source output terminals. Arc voltage should be present at these leads. If not, check the leads between the input cable receptacle and plug J1. Plug J1 is located on the control board. See wiring diagram. 2. If arc voltage is present at plug J1 the control board may be faulty. Replace.
The LN-742 shuts down while welding and the HXX symbol appears on the display.	1. Check for mechanical restrictions in the wire feed path.	1. Perform the ***Drive Motor Test.*** 2. The gear box may be defective. Check or replace. 3. The control board may be faulty.
The display and/or indicator lights do not change when the arrow or select keys are pressed.	1. Make sure the control cable is connected to the welding power source correctly. 2. Check the 42 VAC fuse or circuit breaker in the welding power source.	1. Perform the ***Keypad Resistance Test.*** 2. The display board may be faulty. 3. The control board may be faulty.
The arrow keys do not change the welding wire feed speed.	1. If a remote control unit is connected to the LN-742 the arrow keys will not change welding wire feed speed. Use the WFS pot on the remote control unit or disconnect the remote control unit and use the arrow keys.	1. The display board may be faulty.

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Service Department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
FUNCTION PROBLEMS (Continued)		
The purge key does not activate the gas solenoid. The solenoid does activate when the gun trigger is pulled.	1. Contact your local Lincoln Authorized Field Service Facility.	1. Perform the ***Keypad Resistance Test.*** 2. The display board may be faulty.
The gas solenoid does not activate either when the purge key is pressed or when the gun trigger is pulled.	1. Check plug J6, located on the control board for loose or faulty connections.	1. With the Purge key pressed, check for approximately 12 VDC from 2J6 (+) to 1J6 (-). If the correct voltage is present, the solenoid may be faulty. If the 12 VDC is low or missing, the Control Board may be faulty.
The cold inch key does not activate the wire feed motor. The wire feed motor operates normally when the gun trigger is pulled.	1. Contact your local Lincoln Authorized Field Service Facility.	1. Perform the ***Keypad Resistance Test.*** 2. The display board may be faulty.
The HI symbol appears on the display when the voltmeter function is selected.	1. If the arc voltage is greater than 44 VDC, this is a normal condition. The voltmeter only reads 0-44 VDC.	1. The display board may be faulty. 2. The control board may be faulty.
The Er symbol appears on the display.	1. This is an EPROM error. The parameter recalled at power-up is out of range. Press any key to reset unit. Check all weld settings before proceeding with weld.	1. If this condition persists, the control board may be faulty. Replace.
The EXX appears on the display. (XX is some number from 1 to 10.)	1. Remove input power to the feeder (42 VAC). Wait 5 seconds. The symbol should not reappear when power is returned.	1. If the EXX symbol reappears, the control board may be faulty.
The EP symbol appears on the display.	1. Remove input power to the feeder (42 VAC). Wait 5 seconds. The symbol should not reappear when power is returned.	1. If the EP symbol reappears, the EPROM may be faulty. Replace. 2. The control board may be faulty.
The uP symbol appears on the display. (Microprocessor RAM error.)	1. Remove input power to the feeder (42 VAC). Wait 5 seconds. The symbol should not reappear when power is returned.	1. If the uP symbol reappears, the control board may be faulty.

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Service Department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
FEEDING PROBLEMS		
The wire is feeding rough or not feeding. The drive rolls are turning.	1. Check for mechanical restrictions in the wire feeding path. Check the gun and gun components. 2. Check the drive roll position and idle roll pressure. 3. The electrode may be dirty or rusty. 4. Check for the correct gun liner, tip, and guide tubes.	1. Contact the Lincoln Electric Service Department, 1-216-383-2531 or 1-888-935-3877.
The drive rolls do not turn when the gun trigger is pressed. The gas solenoid activates and arc voltage is present.	1. Check plug J5 on the control board for loose or faulty connections.	1. Perform the ***Drive Motor Test.*** 2. The control board may be faulty. Replace.

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Service Department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
WELDING PROBLEMS		
The welding arc is variable or “hunting”.	1. Check the welding cables for loose or faulty connections. 2. Make sure the wire feed speed, voltage, polarity and shielding gas are correct for the process being used. 3. Check for mechanical restrictions in the wire feed path. 4. Make sure the welding power source is functioning properly.	1. Contact the Lincoln Electric Service Department, 1-216-383-2531 or 1-888-935-3877.
Poor arc striking with sticking or “blast-offs”. The weld bead may be ropy and narrow.	1. Make sure the wire feed speed, voltage, polarity and shielding gas are correct for the process being used. 2. Make sure the welding power source is functioning properly. 3. Make certain the gas solenoid is operating properly and the gas flow rate is correct for the procedure. 4. The welding gun may be faulty. Check for gas leaks or replace gun.	1. Contact the Lincoln Electric Service Department, 1-216-383-2531 or 1-888-935-3877.

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Service Department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

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Return to Master TOC

TEST PROCEDURES

TACHOMETER FEEDBACK TEST

⚠ WARNING

Service and repair should only be performed by Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric service department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

TEST DESCRIPTION

The following procedure will help determine if the tachometer circuit is receiving the correct voltage and also if the tachometer is developing the correct feedback signal.

MATERIALS NEEDED

5/19” Nutdriver
Volt/Ohmmeter

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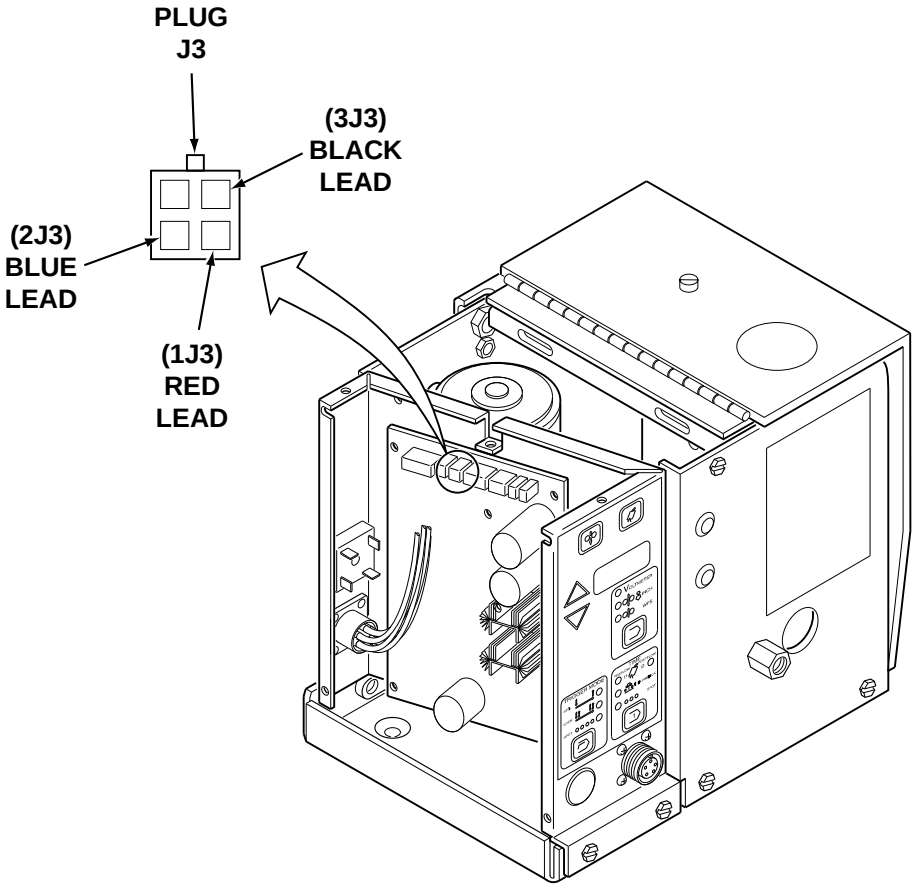
TACHOMETER FEEDBACK TEST *(continued)*

FIGURE F.1 – TACHOMETER FEEDBACK TEST POINTS.



TEST PROCEDURE

1. Remove input power to wire feeder.
2. Remove electrode wire or disengage drive rolls.
3. Using 5/16" nutdriver, remove the screws from the left side cover assembly.
4. Remove the left side cover assembly.
5. Locate plug J3 on the control board shown in Figure F.1. Do not remove.
6. Apply input power to the wire feeder (42 VAC).
7. Check from the red lead (+) (1J3) to the black lead (-) (3J3) for the presence of +12.8 VDC. If this voltage is missing or low, the control board may be faulty.
8. With the gun trigger activated, or the gun trigger terminals jumpered together (refer to ***Section G, Electrical Diagrams***), and the motor running, check from the blue lead (+) (2J3) to the black lead (-) (3J3) for the presence of approximately 1.5 VDC. **Note: When the motor is not running, the voltage may be from 0 to 2.5 VDC.** If this feedback voltage is missing, the tachometer assembly may be faulty. Replace the tachometer.
9. Install the left side cover assembly using screws and the 5/16" nutdriver.

DRIVE MOTOR TEST

⚠ WARNING

Service and repair should only be performed by Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric service department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

TEST DESCRIPTION

The following procedure will determine if the wire drive motor is functioning properly.

MATERIALS NEEDED

5/16” Nutdriver
Voltage source (variable 0 to 23 VDC)
Volt/Ohmmeter

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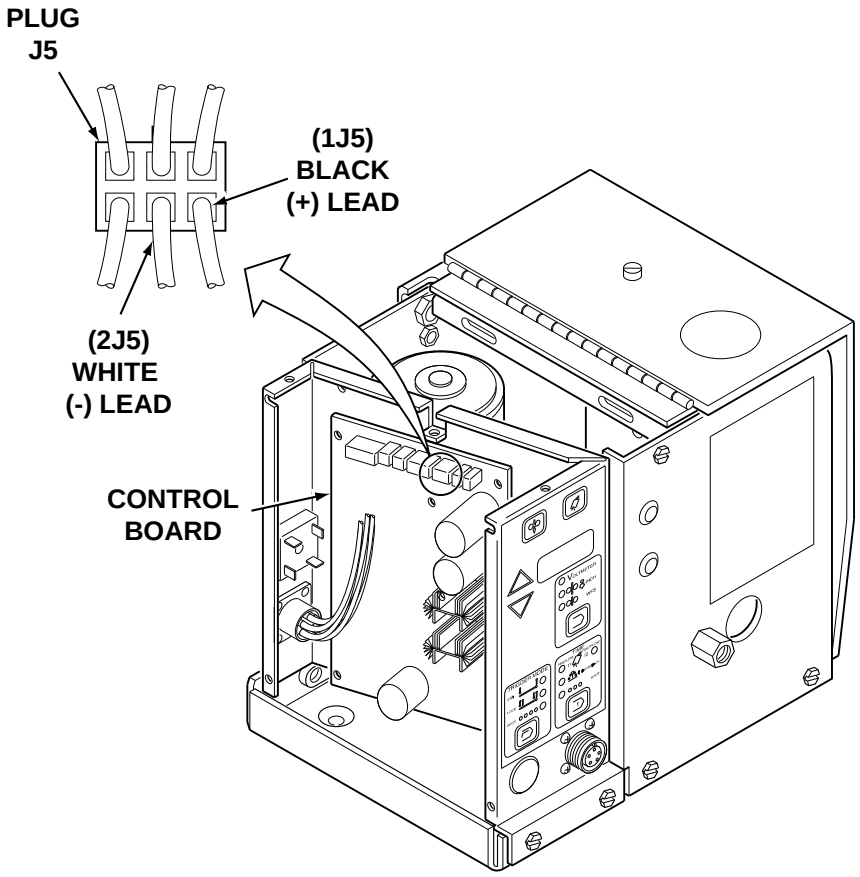
DRIVE MOTOR TEST *(continued)*

FIGURE F.2 – DRIVE MOTOR TEST POINTS.



TEST PROCEDURE

1. Remove input power to wire feeder.
2. Remove electrode wire or disengage drive rolls.
3. Using the 5/16" nutdriver, remove the screws from the left side cover assembly.
4. Remove the left side cover assembly.
5. Locate and remove plug J5 from the control board as shown in Figure F.2.
6. Carefully apply the variable DC voltage source to the black (+) (1J5) lead and the white (-) (2J5) lead.
7. The drive motor should run at slow speed with approximately 1.5 VDC applied. As the variable DC voltage is increased to 23 VDC the drive motor should increase to maximum speed.
8. If the motor does not run or varies in speed, the motor brushes, gearbox, or motor may be faulty. Check each and replace as needed.
9. Check the resistance from each of the motor leads on plug J5 to the motor case. The resistance should be very high (at least 500,000 ohms). If the resistance is low, the armature is grounded to the motor case and should be replaced.
10. Install plug J5 into the control board.
11. Install the left side cover assembly using screws and the 5/16" nutdriver.

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INPUT VOLTAGE TEST

⚠ WARNING

Service and repair should only be performed by Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric service department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the LN-742 is receiving the correct input voltage and also if the control board is developing the correct regulated DC voltages.

MATERIALS NEEDED

5/16” Nutdriver
Volt/Ohmmeter

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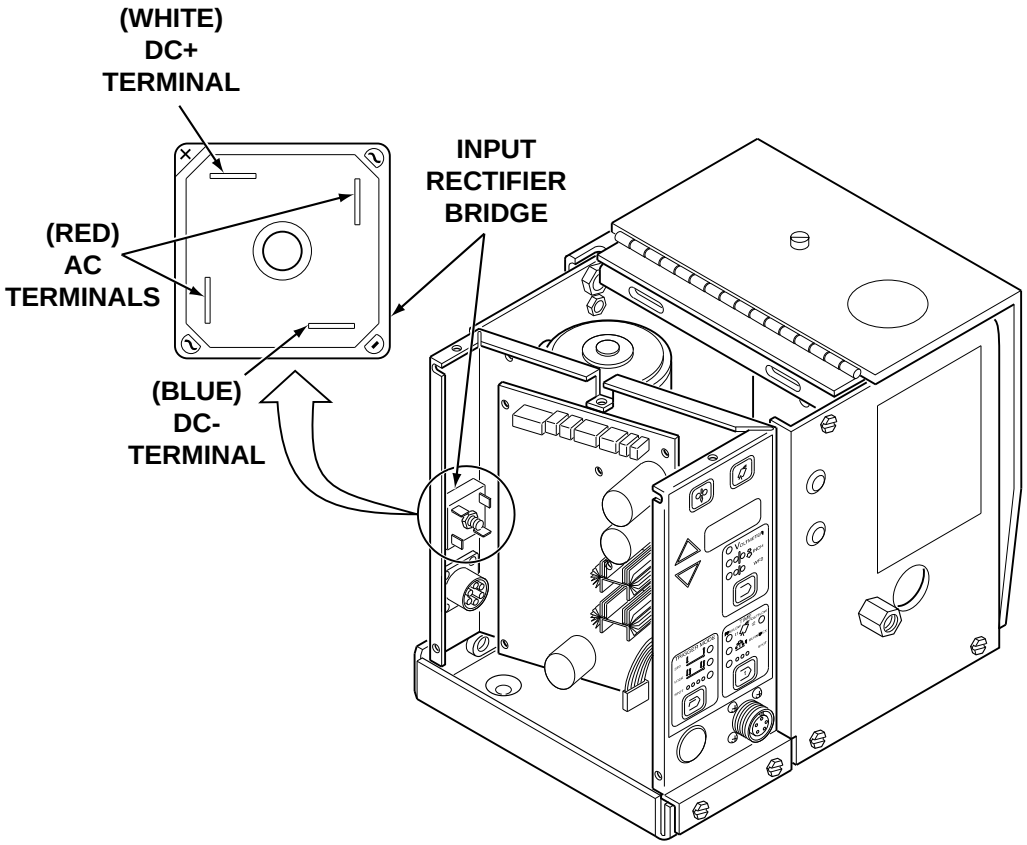
INPUT VOLTAGE TEST *(continued)*

FIGURE F.3 – INPUT VOLTAGE TEST POINTS.



TEST PROCEDURE

1. Remove input power to the wire feeder.
2. Using the 5/16" nutdriver, remove the screws from the left side cover assembly.
3. Remove the left side cover assembly.
4. Apply the correct input power (42 VAC) and check for the presence of 42 VAC at the (red) AC terminals of the input rectifier bridge, shown in Figure F.3.
5. Carefully check for approximately 56 VDC from the (white) DC+ to the (blue) DC- terminals of the input rectifier bridge.
6. Check for approximately 56 VDC from plug J1 (+) (1J1) to plug J1 (-) (7J1) on the control board. If the 56 VDC is present and any or all of the following test voltages are not correct, the control board may be faulty and should be replaced.

INPUT VOLTAGE TEST *(continued)*

NOTE: It may be necessary to remove the board insulation to get good contact at the test points in steps 8 and 9.

7. Check for +12.8 VDC from plug J3 (+) (1J3) to plug J4 (-) (6J4), Figure F.4.

8. Check for 5 VDC from Test Point "A" (+) on the control board to plug J4 (-) (6J4) on the control board, Figure F.5.

FIGURE F.4 – +12.8 VDC TEST POINTS.

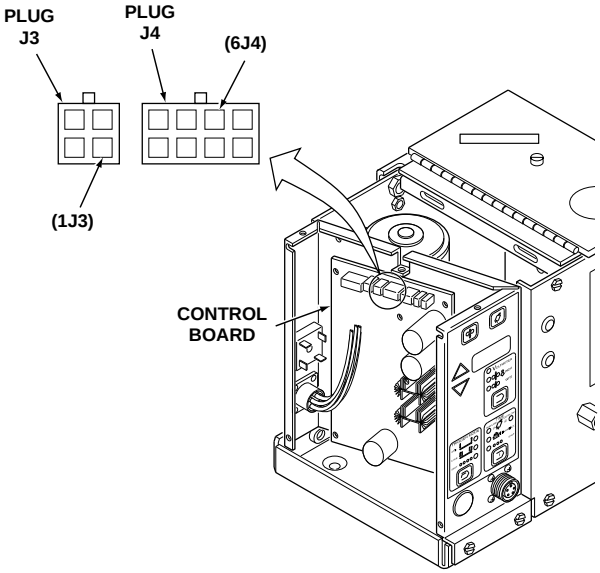
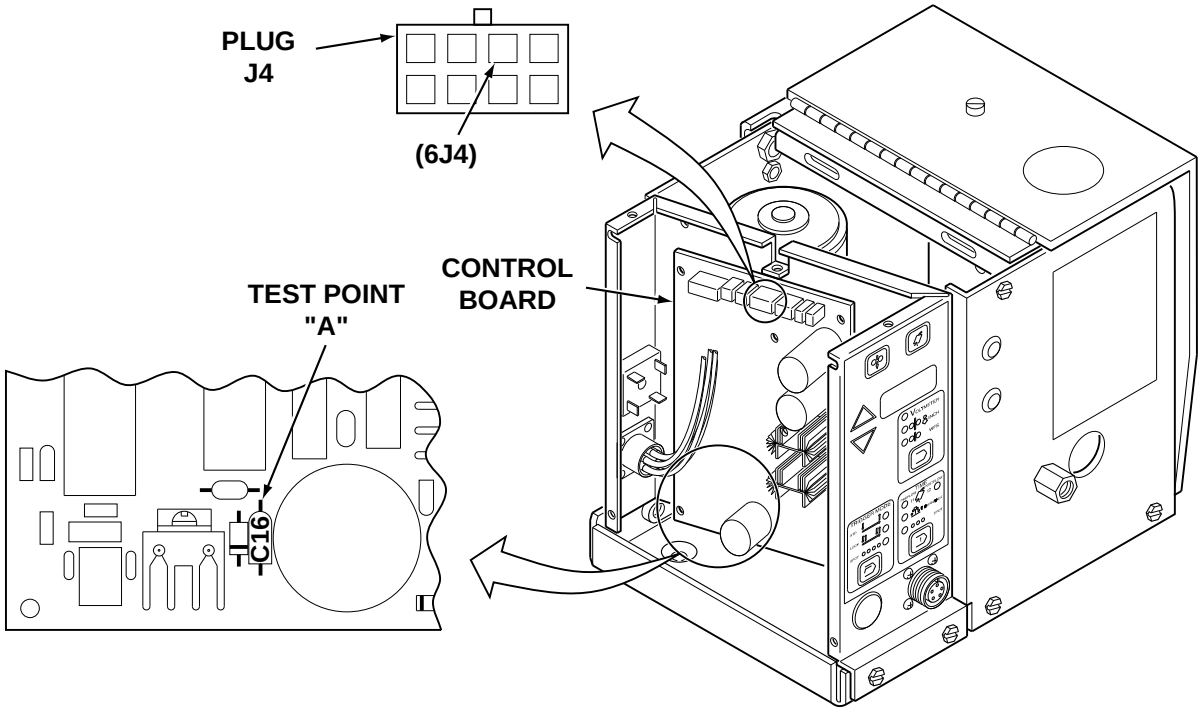


FIGURE F.5 – 5 VDC TEST POINTS.



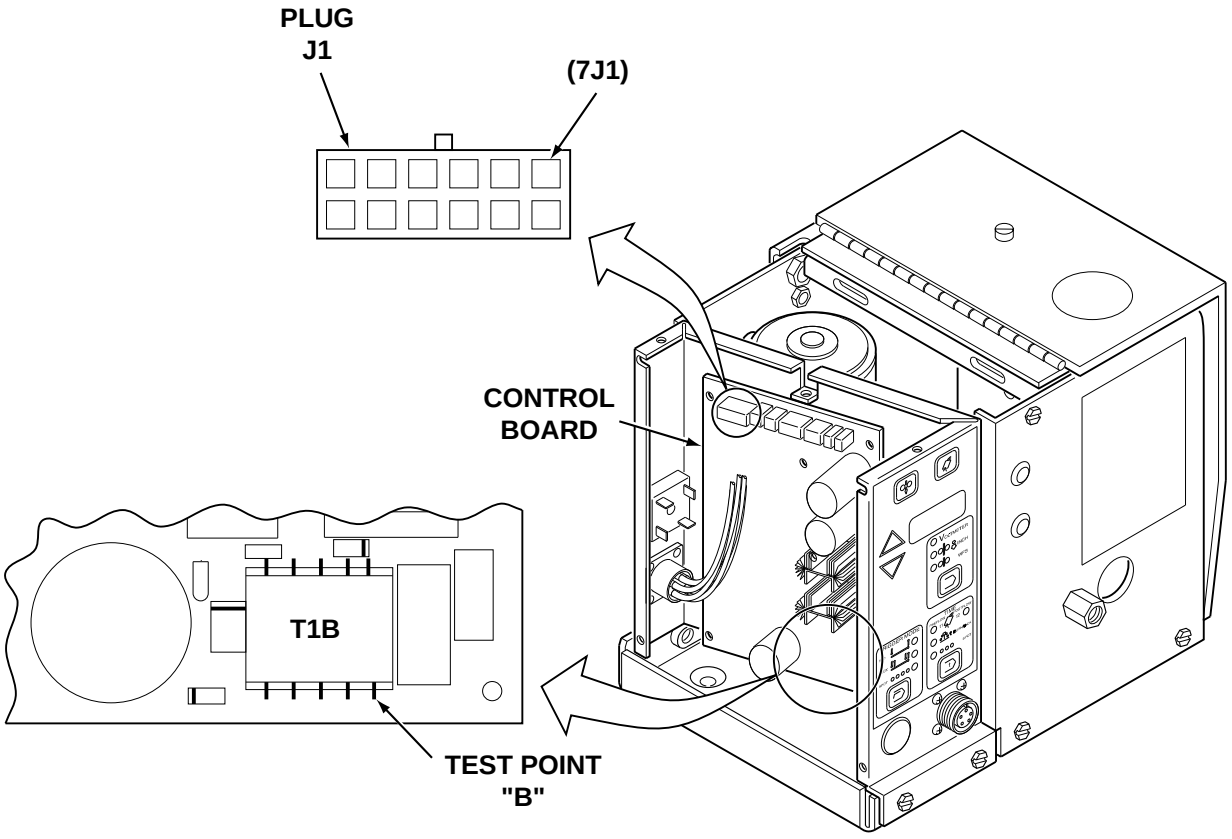
INPUT VOLTAGE TEST *(continued)*

9. Check for -12.8 VDC from Test Point "B" (-) (T18) on the control board to plug J1 (+) (7J1) on the control board, Figure F.6.

10. If any of the previous voltages in step 7, 8, or 9 are incorrect or missing, the control board may be faulty and should be replaced.

11. Install the left side cover assembly using screws and the 5/16" nutdriver.

FIGURE F.6 – -12.8 VDC TEST POINTS.



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KEYPAD RESISTANCE TEST

⚠ WARNING

Service and repair should only be performed by Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric service department for technical troubleshooting assistance before you proceed. Call 216-383-2531 or 1-888-935-3877.

TEST DESCRIPTION

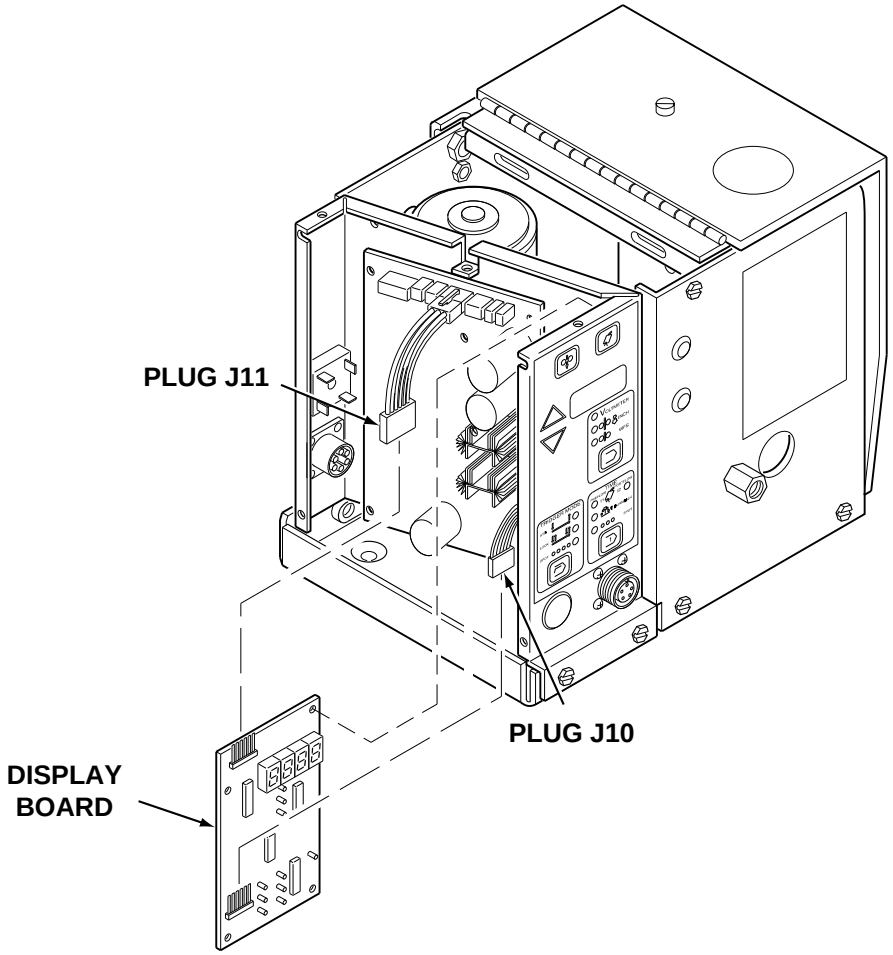
This test will determine if any key is not functioning properly.

MATERIALS NEEDED

5/16” Nutdriver
Analog Volt/Ohmmeter
Flat Blade Screwdriver

KEYPAD RESISTANCE TEST *(continued)*

FIGURE F.7 – DISPLAY BOARD REMOVAL.



TEST PROCEDURE

1. Remove input power to wire feeder.
2. Using the 5/16" nutdriver remove the screws from the left side cover assembly.
3. Remove the left side cover assembly.
4. Carefully remove plug J11 from the display board, shown in Figure F.7.

NOTE: Once the display board is free from the mounting posts do not try to remove the display board because the keypad plug, J10, will limit the travel distance.

5. Very carefully pry the display board from the four mounting posts using a flat blade screwdriver.
6. Remove plug J10 from the display board.

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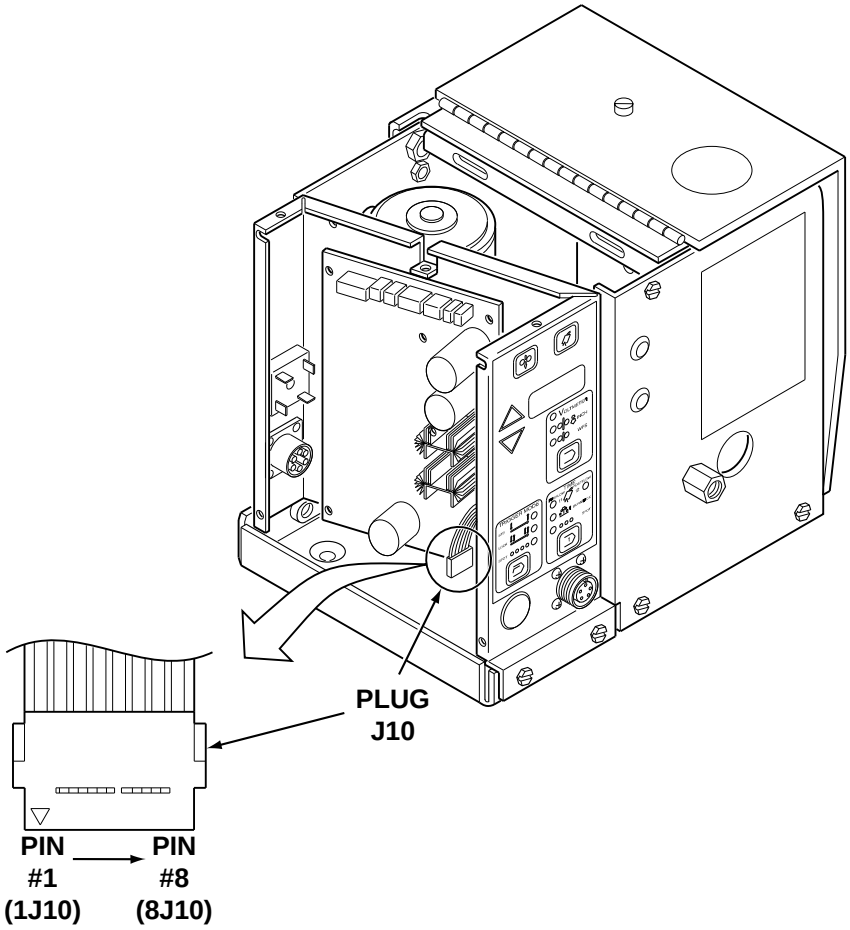
KEYPAD RESISTANCE TEST *(continued)*

7. Measure the resistance of each key at plug J10 on the keypad. The resistance measurements are taken from the pin locations on plug J10 shown in Figure F.8.

8. If any of the resistance tests are not correct per Table F.1, the keypad is faulty and should be replaced.

FIGURE F.8 – KEYPAD RESISTANCE TEST POINTS.



KEYPAD RESISTANCE TEST *(continued)*

TABLE F.1. KEYPAD RESISTANCE TESTS

TEST POINTS		KEY PRESSED	MAXIMUM ALLOWABLE RESISTANCE (TYPICAL RESISTANCE)
FROM PIN	TO PIN		
1J10	4J10	COLD INCH	100 OHMS (30 TYPICAL)
1J10	5J10	GAS PURGE	100 OHMS (30 TYPICAL)
1J10	2J10	UP ARROW	100 OHMS (30 TYPICAL)
1J10	3J10	DOWN ARROW	100 OHMS (30 TYPICAL)
1J10	6J10	METER FUNCTION	100 OHMS (30 TYPICAL)
1J10	8J10	TRIGGER MODE	100 OHMS (30 TYPICAL)
1J10	7J10	TIMER	100 OHMS (30 TYPICAL)

NOTE: There should not be continuity between pins until a key is pressed on the keypad.

9. Connect J10 plug to the display board.
10. Carefully mount the display board onto the four mounting posts.
11. Connect plug J11 into the display board.
12. Install the left side cover assembly using screws and the 5/16" nutdriver.

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COMPONENT REPLACEMENT PROCEDURES

WIRE DRIVE ASSEMBLY AND COMPONENTS REPLACEMENT

⚠ WARNING

ELECTRIC SHOCK
can kill.

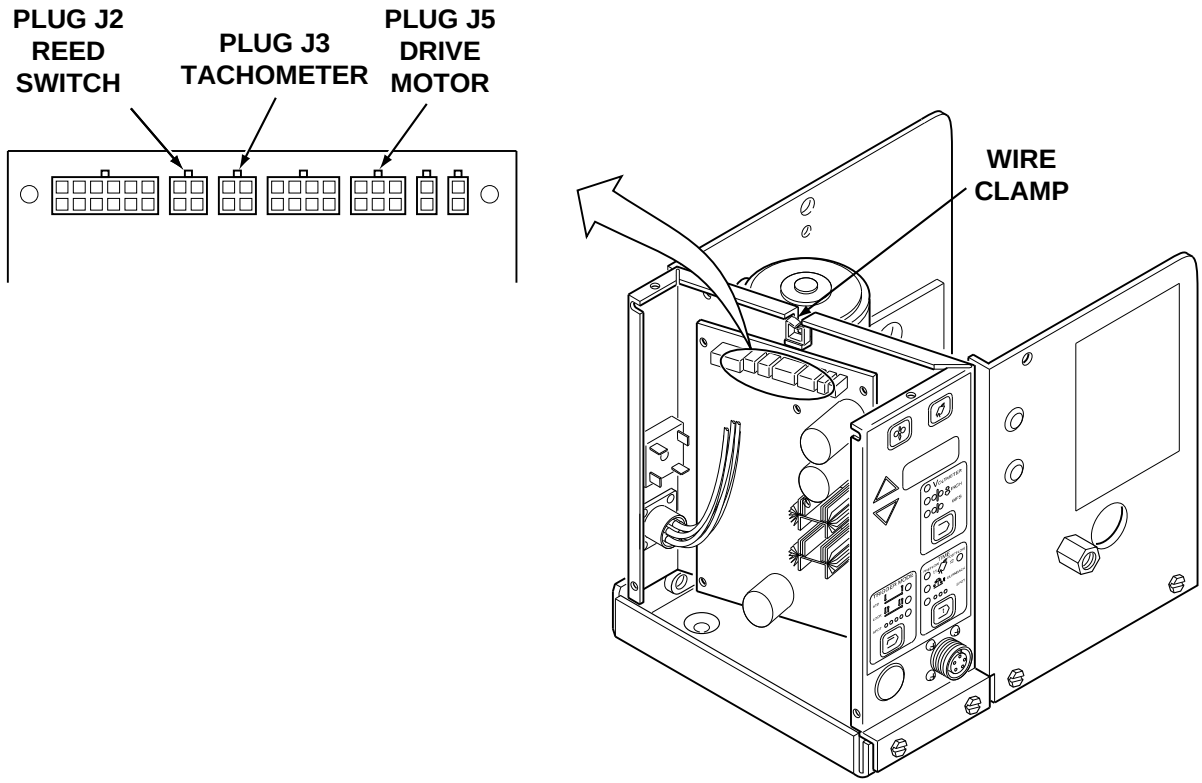
- Observe all safety precautions detailed throughout this manual. Turn off input power to the wire feeder. Only qualified technicians should perform installations, maintenance, and troubleshooting work on the machine.

TOOLS REQUIRED

5/16 in. nutdriver
Wire cutters
3/8 in. wrench
3/8 in. socket and extension
9/16 in. wrench
Slot-head screwdriver
Lubricant (part no. E2322) (Century Lubricants A-29)
Grease (part no. E2164) (Universal Oil)
Sealant (part no. E2225) (General Electric RTV 123)
Torque wrench

WIRE DRIVE ASSEMBLY AND COMPONENTS REPLACEMENT *(continued)*

FIGURE F.9 – WIRE DRIVE ASSEMBLY WIRING CONNECTIONS.



REPAIR PROCEDURE

1. Remove input power to the LN-742.
2. Using the 5/16 in. nutdriver, remove the four screws from the left side cover assembly and remove the cover.
3. Disconnect the J5 plug from the control board and remove the wiring from the wire clamp. See Figure F.9.
4. Disconnect the J3 plug from the control board and remove the wiring from the wire clamp.
5. Disconnect the J2 plug from the control board and remove the wiring from the wire clamp.
6. Cut any cable ties that interfere with the removal of the wire drive assembly.
7. Remove the cable hanger securing the toroid assembly to the side of the wire drive compartment.
8. On two-roll feeders, use a 3/8 in. open-end wrench and remove the mounting screw located beneath the reed switch energizer and mylar insulation. On four-roll feeders, use a 3/8 in. socket, with extension, and remove the two mounting screws and washers located beneath the reed switch energizer and mylar insulation. Refer to Figure F.10.
9. On two-roll feeders, use a 3/8 in. socket, with extension, and remove the two mounting screws located at the two inside corners of the drive assembly. These screws are under the mylar insulation. On four-roll feeders, use a 3/8 in. open-end wrench and remove the mounting screw centered on the inside edge of the drive assembly. Access to this screw can be gained from below the bottom edge of the control board.

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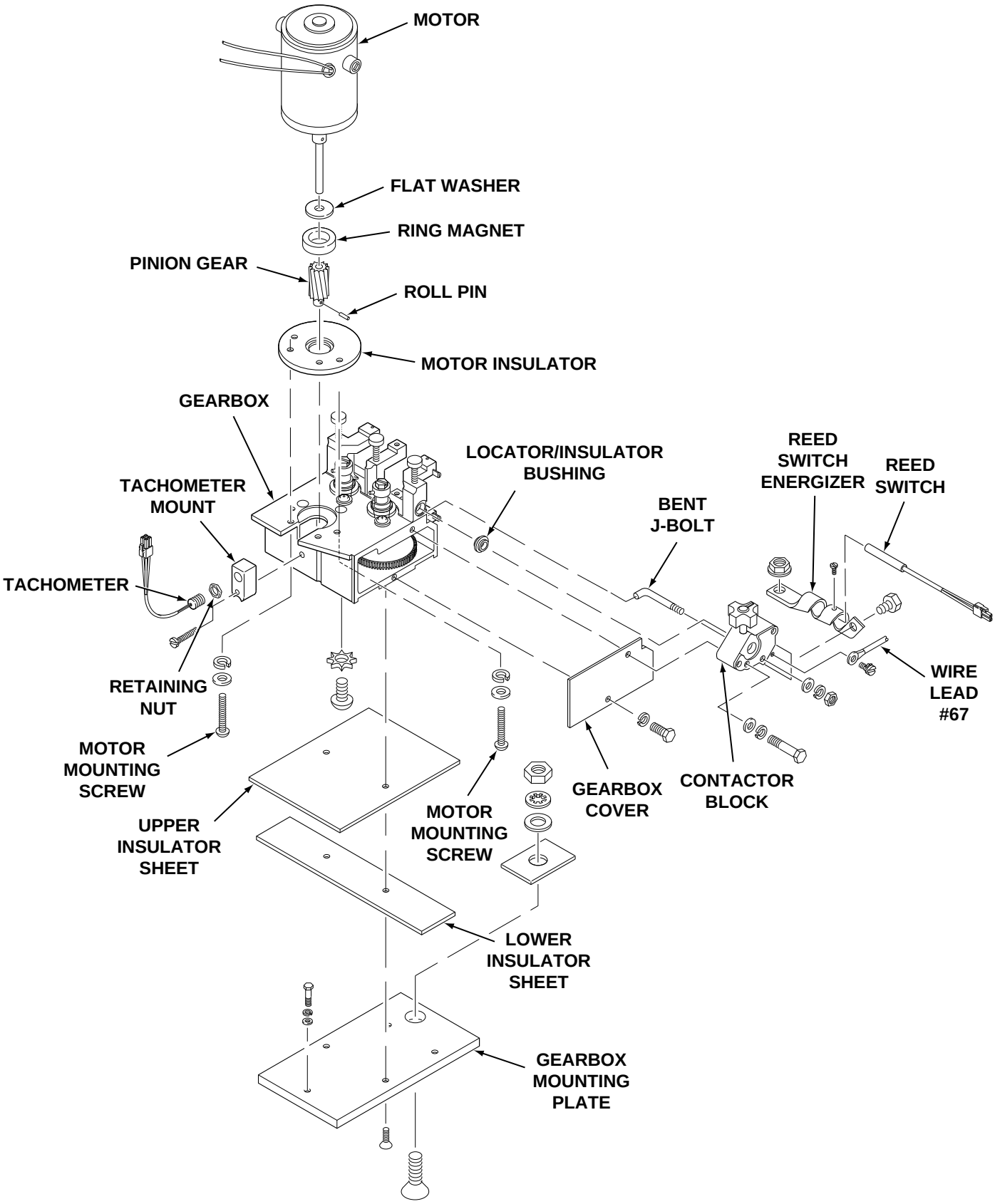
WIRE DRIVE ASSEMBLY AND COMPONENTS REPLACEMENT *(continued)*

FIGURE F.10 – WIRE DRIVE ASSEMBLY AND COMPONENTS REPLACEMENT.



WIRE DRIVE ASSEMBLY AND COMPONENTS REPLACEMENT *(continued)*

10. Carefully lift and partially remove the drive assembly.

NOTE: The #67 lead located at the front of the contactor block is still connected and will prevent complete removal of the drive assembly.

11. Remove the slot-head screw that secures wire lead #67 to the contact block.

12. Remove the wire drive assembly from the LN-742.

13. To remove the entire tachometer assembly, use the slot-head screwdriver and remove the tachometer assembly from the drive motor assembly.

14. To remove only the tachometer, use a 9/16 in. wrench and loosen the locknut.

15. Unscrew the tachometer from the tachometer mount.

16. For further disassembly of the wire drive unit, consult Figure F.10.

NOTE: Before installing the wire drive assembly, ensure that all of the insulation pieces are in their proper locations.

17. Install the tachometer mount using a slot-head screwdriver.

18. Gently screw the tachometer into the tachometer mount until it bottoms out.

19. Back the tachometer out 1/2 turn and tighten the locknut using a 9/16 in. wrench.

20. Install wire lead #67 onto the contact block using the slot-head screw.

21. Position the wire drive assembly in the center of the wire drive compartment and line up the mounting holes in the wire drive mounting plate.

22. Install one hex head bolt in the mounting plate in the control box. For four-roll feeders, also install a lockwasher and a flat washer.

23. Install two hex head bolts in the mounting plate in the wire drive compartment. For four-roll feeders, also use two lockwashers and flat washers.

24. Connect the J2 plug to the control board and place the wiring into the wire clamp.

25. Connect the J3 plug to the control board and place the wiring into the wire clamp.

26. Connect the J5 plug to the control board and place the wiring into the wire clamp.

27. Install the cable hanger into the side of the wire drive compartment, securing the toroid assembly in place.

28. Reinstall the cover on the control box using four hex head screws.

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SWING ARM ASSEMBLY REPLACEMENT FOR TWO-ROLL WIRE FEEDERS

⚠ WARNING

ELECTRIC SHOCK
can kill.

- Observe all safety precautions detailed throughout this manual. Turn off input power to the wire feeder. Only qualified technicians should perform installations, maintenance, and troubleshooting work on the machine.

TOOLS REQUIRED

7/16 in. wrench
Straight blade screwdriver

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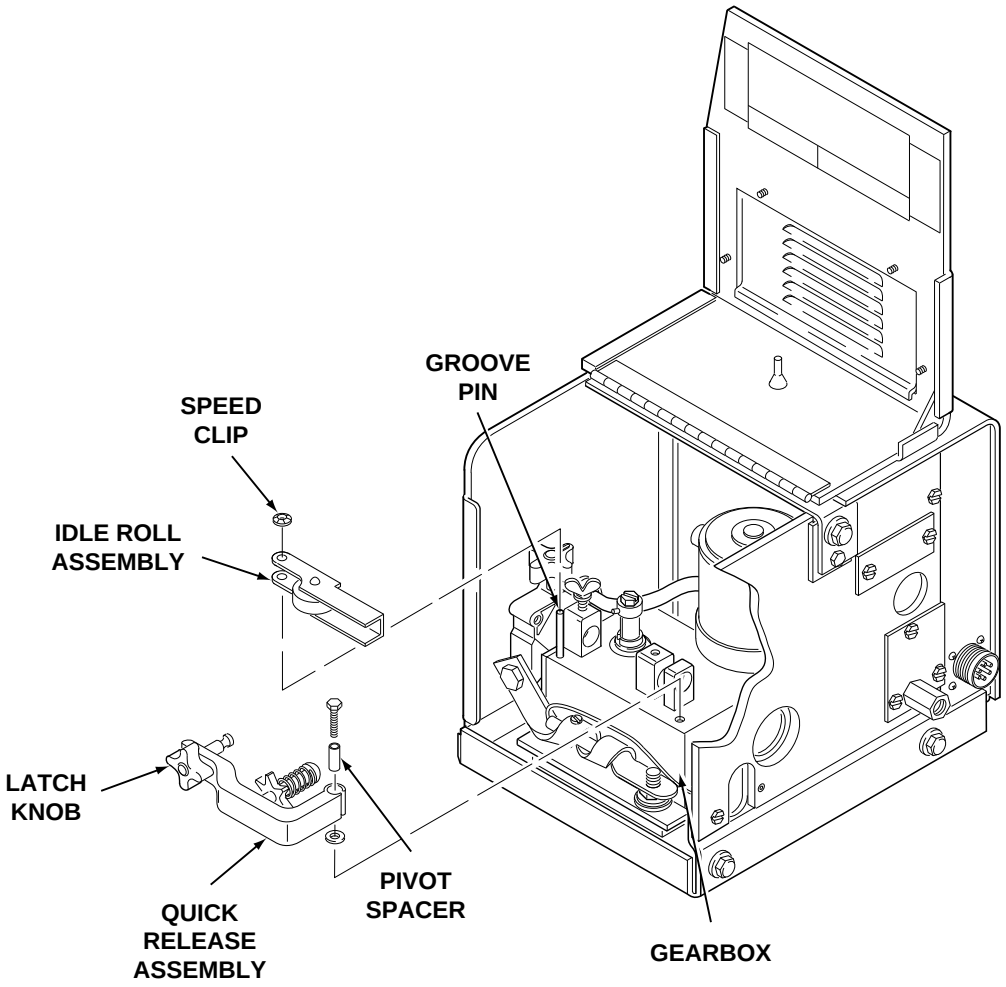
SWING ARM ASSEMBLY REPLACEMENT FOR TWO-ROLL WIRE FEEDERS *(continued)*

FIGURE F.11– SWING ARM REMOVAL FOR TWO-ROLL FEEDERS.



REPAIR PROCEDURE

1. Rotate the latch knob on the quick release assembly to the open position and swing the arm away from the gearbox. See Figure F.11.

2. Remove the hex head bolt that attaches the swing arm to the gearbox. Remove the swing arm and flat washer from the wire feeder. Remove the pivot spacer from the swing arm. This step is not necessary if you are not replacing the quick release assembly.

3. Pry the speed clip off of the groove pin and lift the idle roll assembly from groove pin.

4. Place the new idle roll assembly into the groove pin. Secure in place with a speed clip.

5. If removed, slide the pivot pin into the swing arm assembly. Place the flat washer and swing arm assembly on the gearbox assembly. Fasten in place with the hex head bolt.

6. Swing the swing arm assembly in toward the gearbox. Latch the swing arm assembly by rotating the latch knob towards the conductor block.

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SWING ARM ASSEMBLY REPLACEMENT FOR FOUR-ROLL WIRE FEEDERS

⚠ WARNING

ELECTRIC SHOCK
can kill.

- Observe all safety precautions detailed throughout this manual. Turn off input power to the wire feeder. Only qualified technicians should perform installations, maintenance, and troubleshooting work on the machine.

TOOLS REQUIRED

3/32 in. Allen wrench
9/64 in. Allen wrench
Adjustable pliers
Rubber mallet

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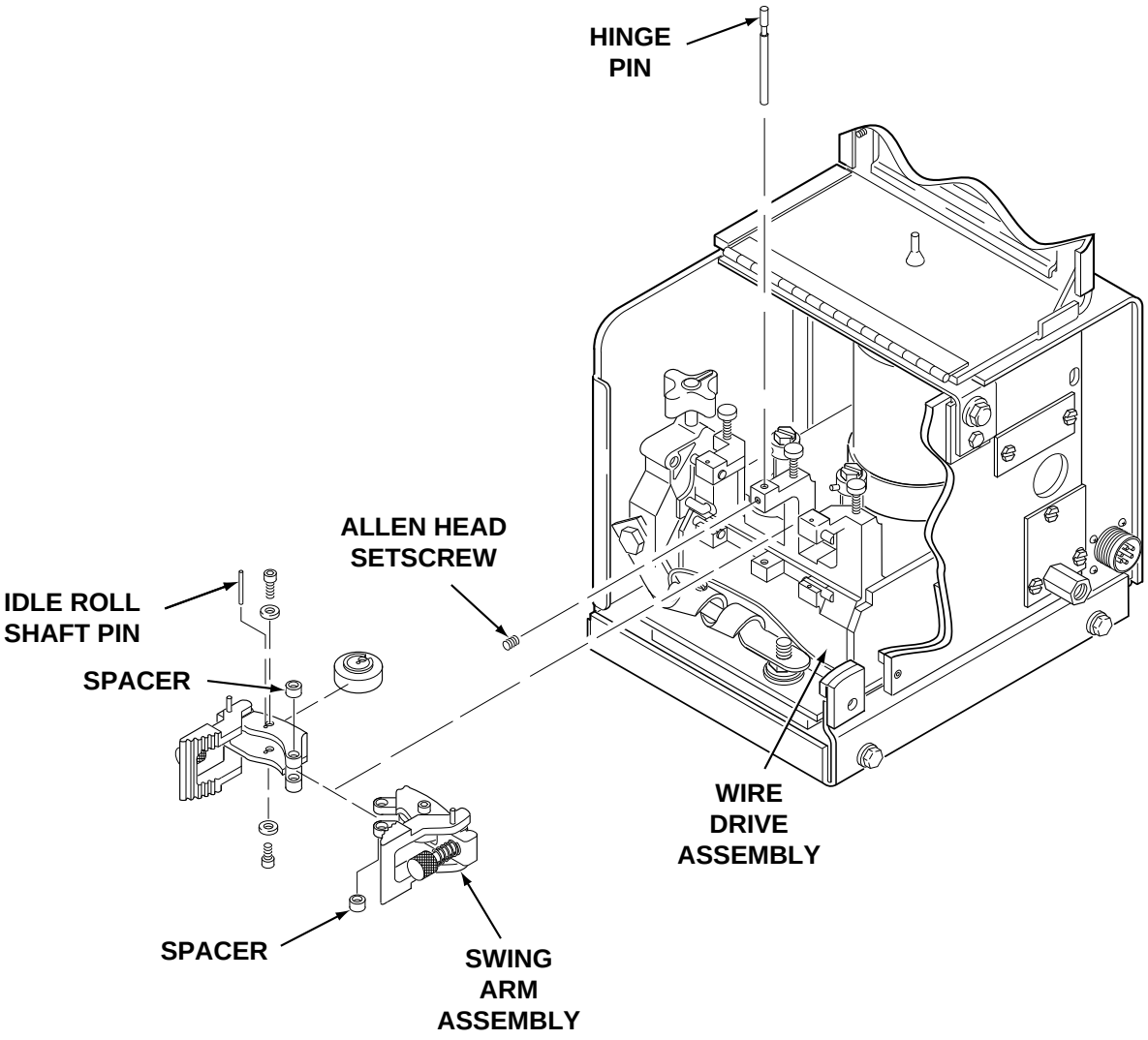
SWING ARM ASSEMBLY REPLACEMENT FOR FOUR-ROLL WIRE FEEDERS *(continued)*

FIGURE F.12 – SWING ARM REMOVAL FOR FOUR-ROLL FEEDERS.



REPAIR PROCEDURE

1. Remove the allen head setscrew from the center post of the wire drive assembly. See Figure F.12.
2. Using a pair of pliers, pull the hinge pin up and out of the wire drive assembly.
3. Note the position of the two spacers. Carefully pull the two swing arms out of the wire drive compartment. Ensure that the two spacers are not lost.
4. Remove the two socket head cap screws and flat washers from the swing arm assembly. Remove the idle roll shaft pin. Slide the idle roll from the swing arm.
5. Slide a new idle roll into the swing arm. Install one socket head cap screw and flat washer.
6. Install the idle roll shaft pin and the second socket head cap screw and flat washer.

SWING ARM ASSEMBLY REPLACEMENT FOR FOUR-ROLL WIRE FEEDERS *(continued)*

7. Place the two swing arms and spacers in the center post of the wire drive assembly. Ensure the holes in the pieces line up to accept the hinge pin.

⚠ CAUTION

Do not use excessive force when installing the hinge pin. If hinge pin does not go in, remove it and try again.

8. Slide the hinge pin into the hinge pin opening in the center post. Use a rubber mallet to drive the hinge pin in if necessary. Drive the hinge pin in until the detente in the pin is visible in the setscrew hole.

9. Install the setscrew and tighten until snug.

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GAS SOLENOID AND CONNECTIONS REPLACEMENT

⚠ WARNING

ELECTRIC SHOCK
can kill.

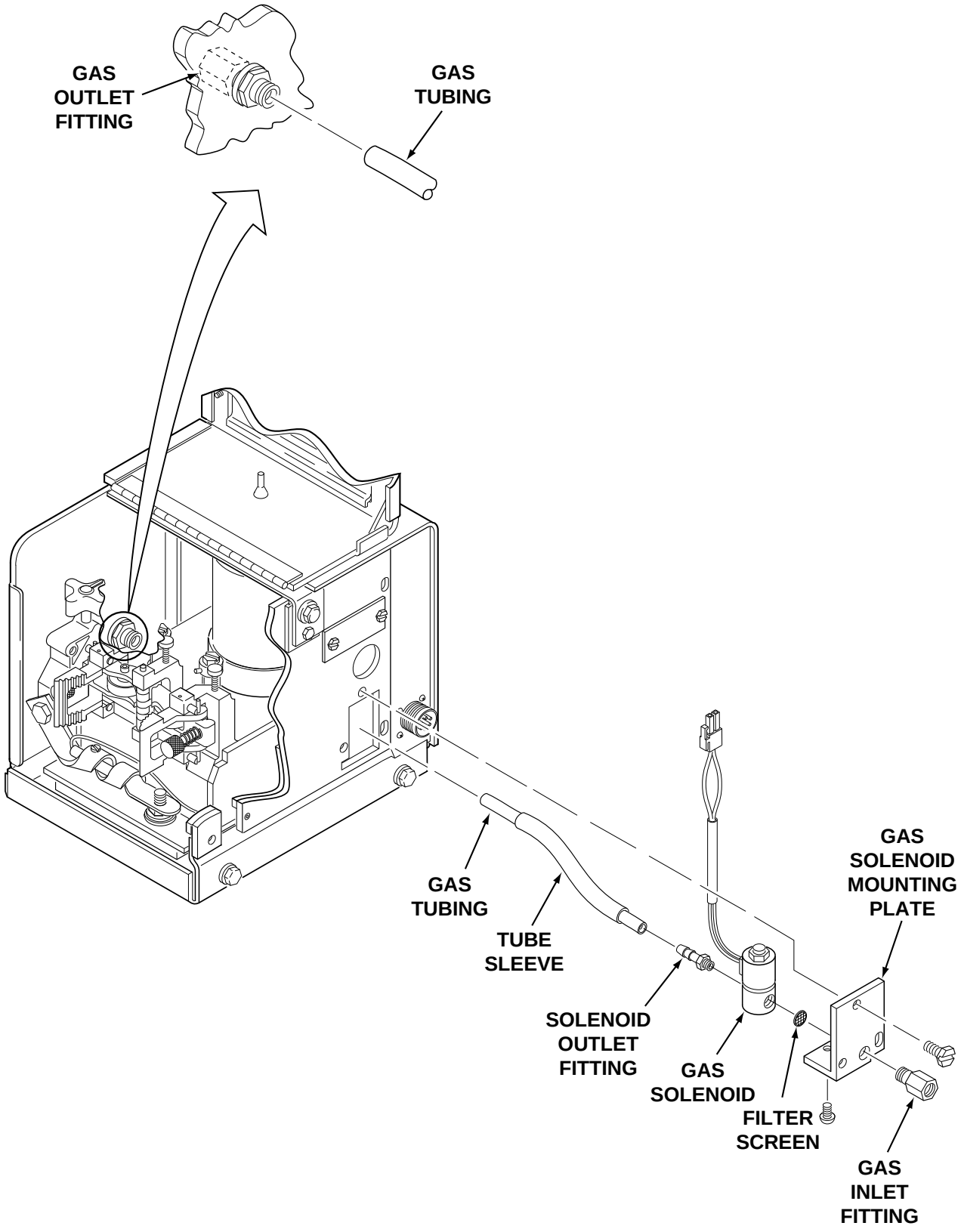
- Observe all safety precautions detailed throughout this manual. Turn off input power to the wire feeder. Only qualified technicians should perform installations, maintenance, and troubleshooting work on the machine.

TOOLS REQUIRED

5/16 in. wrench
Wire cutters
3/4 in. wrench
7/16 in. wrench
Phillips screwdriver
Knife
Thread sealant (part no. E-2442) (Loctite #592)
Tie wraps

GAS SOLENOID AND CONNECTIONS REPLACEMENT *(continued)*

FIGURE F.16 – GAS SOLENOID DISASSEMBLY.



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GAS SOLENOID AND CONNECTIONS REPLACEMENT *(continued)*

REPAIR PROCEDURE

1. Remove input power to the wire feeder.
2. Remove the cover from the control box by removing the four 5/16 in. screws from the top and side of the unit.
3. Disconnect the J6 plug from the control board and remove the wiring from the wire clamp.
4. Remove the tie wraps that secure the gas solenoid wires to the wire feeder main harness.
5. Refer to Figure F.16 and remove the gas tubing from the gas outlet fitting. If necessary, cut the gas tubing approximately one inch back from the gas fitting and remove the gas fitting. Slide the tube sleeve off the gas tubing.
6. Using the 5/16 in. nutdriver, remove the screws that attach the gas solenoid mounting plate to the case of the wire feeder. Remove the gas solenoid assembly from the wire feeder.
7. Remove the gas inlet fitting and the solenoid outlet fitting from the gas solenoid. Remove the filter screen from the inlet port of the solenoid.
8. Remove the solenoid from the solenoid mounting plate by removing the two phillips head screws from the bottom of the mounting plate.
9. Remove the tubing from the gas and solenoid outlet fittings. A knife may be required to cut the tubing.
10. Mount the new solenoid to the solenoid mounting plate using two phillips head screws.
11. Apply thread sealant (Loctite #592) to the threads of the gas inlet fitting. Place the filter screen in the inlet port of the solenoid. Connect the new gas fittings to the gas solenoid.
12. Attach a piece of 1/4 in. tubing, approximately 10 inches in length to the solenoid outlet fitting on the gas solenoid. Slide the tube sleeve over the tubing.
13. Feed the gas tubing through the mounting hole for the gas solenoid, behind the wire drive gearbox, and below the feed motor. Install the gas solenoid onto the wire feeder using the three screws previously removed.
14. Connect the tubing to the gas outlet fitting.
15. Route the wires for the gas solenoid through the hole in the case and into the control box.
16. Connect the J6 plug to the control board and place the wiring into the wire clamp.
17. Secure the solenoid wires to the wire feeder main harness using two tie wraps.
18. Reinstall the cover on the control box using four hex head screws.

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RETEST AFTER REPAIR

If a failed test indicates that any mechanical part which could affect the machine's electrical characteristics must be replaced, or if any electrical components are repaired or replaced, the machine must be retested and meet the following standards.

1. Apply input power to the wire feeder (42 VAC).

2. Press the Purge key. The gas solenoid should activate, then deactivate when the key is released.

3. Press the Inch key. Check that the direction of rotation of the drive roll shaft is correct to feed wire out of the front of the machine. Check that the drive roll shaft stops abruptly when the key is released.

4. Press the Increase Arrow key. The number displayed should increase.

5. Press the Decrease Arrow key. The number displayed should decrease.

6. Press the Function Select key. The LEDs should toggle through the various selections.

7. Press the Mode Select key. The LEDs should toggle through the various selections.

8. Press the Timer Select key. The LEDs should toggle through the various selections.

NOTE: The Spot timer LED will not light unless the trigger is in the Spot mode.

CHECK WIRE FEED SPEED

LN-742 2 roll . . . . 50 through 770 in./min.
LN-742H 2 roll . . . 80 through 1200 in./min.

LN-742 4 roll . . . . 50 through 770 in./min.
LN-742H 4 roll . . . 80 through 1200 in./min.

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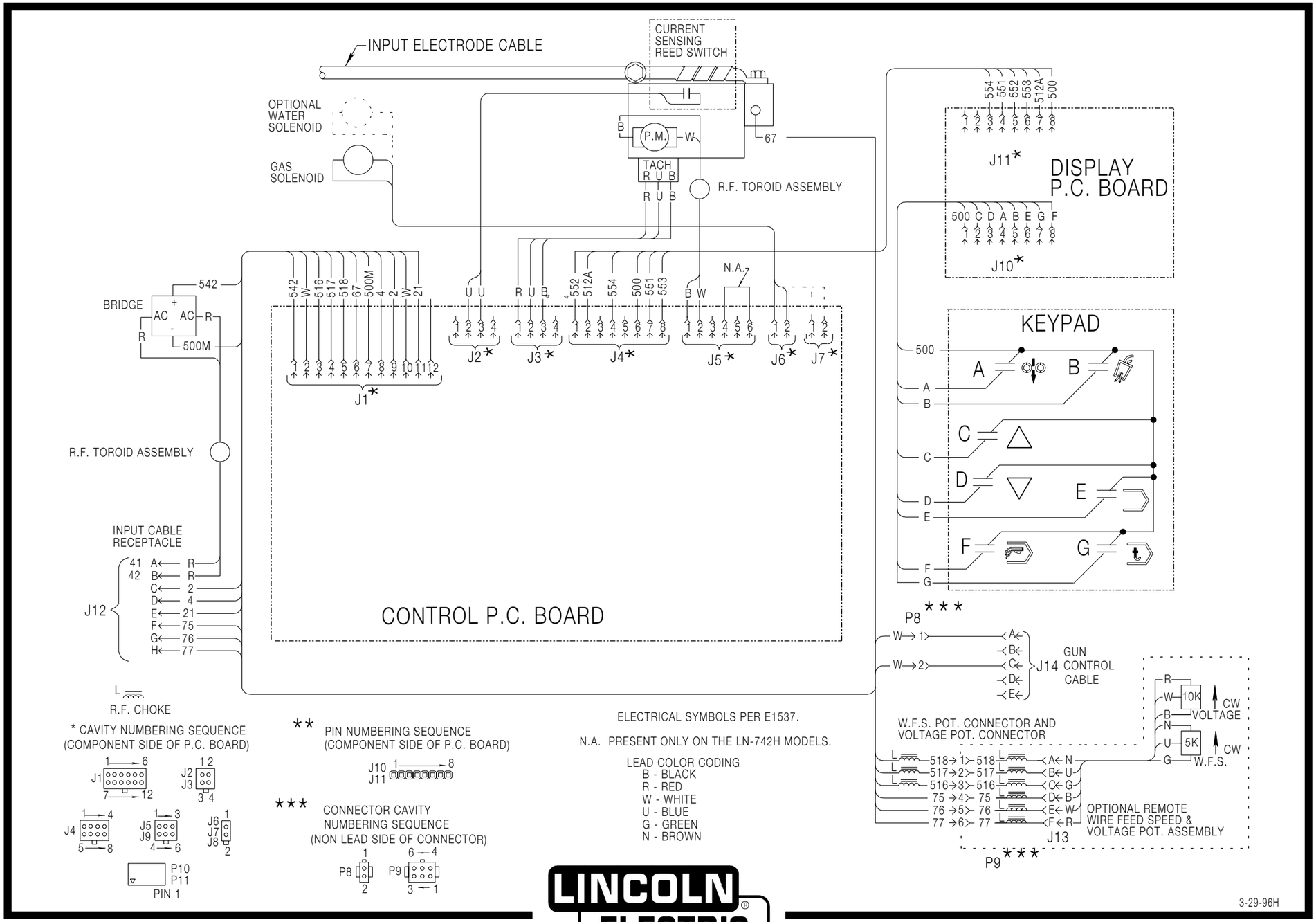
-ELECTRICAL DIAGRAMS-

NOTES

WIRING DIAGRAM LN-742



LINCOLN ELECTRIC

CLEVELAND, OHIO U.S.A.

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The wiring diagram specific to your code is pasted inside one of the enclosure panels of your machine.

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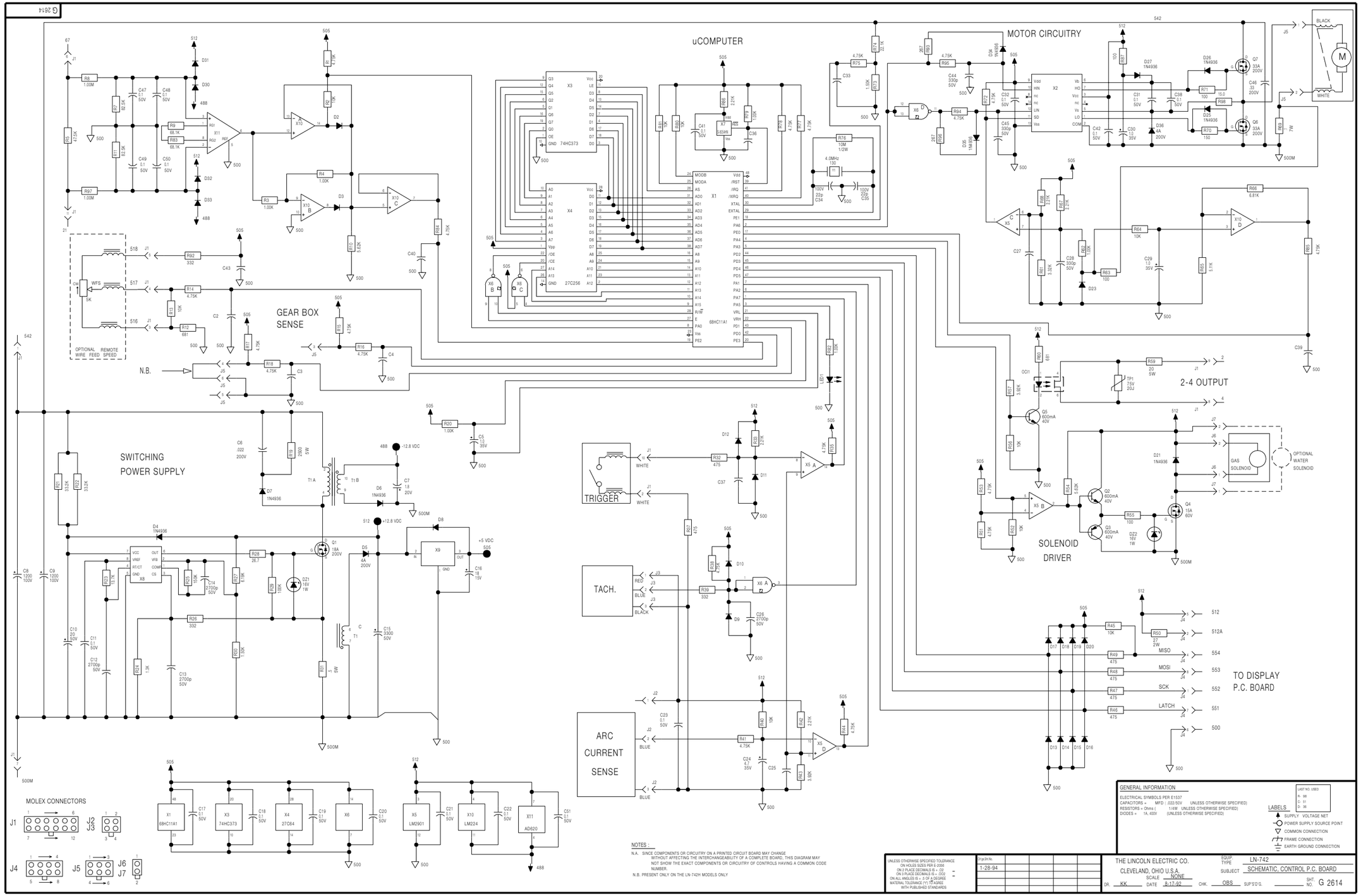
G2615 CONTROL BOARD SCHEMATIC



NOTE: Lincoln Electric assumes no responsibility for liablilities resulting from board level troubleshooting. PC Board repairs will invalidate your factory warranty. **Individual Printed Circuit Board Components are not available from Lincoln Electric.** This information is provided for reference only. Lincoln Electric discourages board level troubleshooting and repair since it may compromise the quality of the design and may result in danger to the Machine Operator or Technician. Improper PC board repairs could result in damage to the machine.

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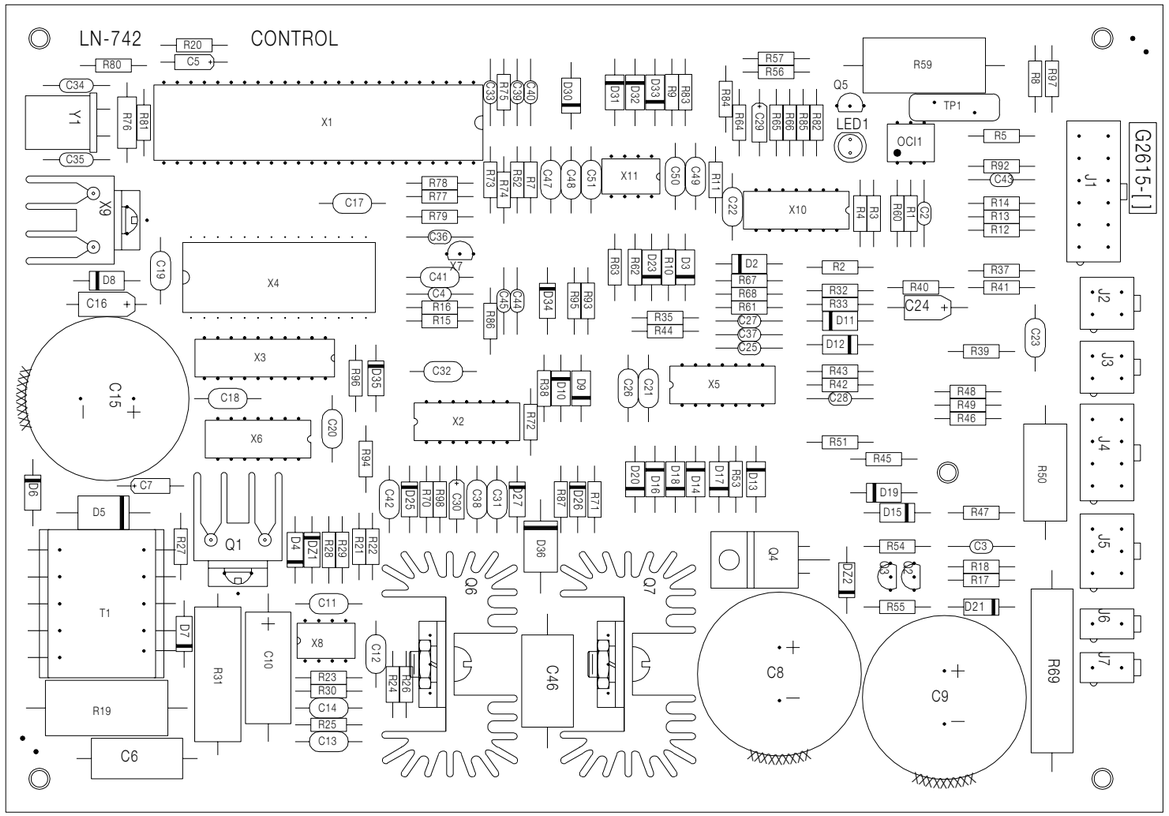
G2615 CONTROL BOARD LAYOUT



ITEM	REQ'D.	PART No.	IDENTIFICATION
C2, C3, C4, C25, C27, C33, C36 C37, C39, C40, C43	11	S16668-5	.022/50
C5, C29, C30	3	S13490-42	1.0/35
C6	1	S13490-4	.022/200
C7	1	S13490-19	1.8/20
C8, C9	2	S13490-138	1200/100
C10	1	S13490-73	20/50
C11, C17, C18, C19, C20, C21 C22, C23, C31, C32, C38, C41 C42, C47, C48, C49, C50, C51	18	S16668-11	.1/50
C12, C13, C14, C26	4	S16668-4	2700pF/50
C15	1	S13490-92	3300/50
C16	1	S13490-39	18/15
C24	1	S13490-25	4.7/35
C28, C44, C45	3	S16668-8	330pF/100
C34, C35	2	S16668-1	22pF/100
C46	1	S13490-94	.33/200
D2, D3, D8, D9, D10, D11, D12 D13, D14, D15, D16, D17, D18 D19, D20, D23, D30, D31, D32, D33	20	T12199-1	1N4004
D4, D6, D7, D21, D25, D26, D27 D34, D35	9	T12705-34	1N4936
D5, D36	2	T12705-47	4A/200V
DZ1, DZ2	2	T12702-11	1N4745A
J1	1	S18248-12	HEADER
J2, J3	2	S18248-4	HEADER
J4	1	S18248-8	CONNECTOR
J5	1	S18248-6	HEADER
J6, J7	2	S18248-2	HEADER
LED1	1	T13657-2	RED LED
OCI1	1	S15000-20	PHOTO FET
Q1	1	S18395-5	H.S. ASBLY (SS)
Q2, Q5	2	T12704-68	2N4401
Q3	1	T12704-69	2N4403
Q4	1	T12704-54	N-CHANNEL FET(SS)
Q6, Q7	2	S20106-1	(SS)
R1, R14, R15, R16, R17, R18, R35 R38, R41, R44, R51, R53, R72, R75 R77, R78, R84, R85, R94, R95	20	S19400-4751	4.75K
R2, R13, R40, R45, R52, R56, R64 R80, R81	9	S19400-1002	10K 1/4W
R3, R4, R20, R62, R79, R82	6	S19400-1001	1K 1/4W
R5	1	S19400-4752	47.5K 1/4W
R7, R11	2	S19400-8252	82.5K 1/4W
R8, R97	2	S19400-1004	1M 1/4W
R9, R83	2	S19400-6812	68.1K 1/4W
R10, R54	2	S19400-5621	5.62K 1/4W
R12, R60	2	S19400-6810	681 1/4W
R19	1	T14648-9	5W / 2500 OHM
R21, R22	2	S19400-3322	33.2K 1/4W
R23	1	S19400-1372	13.7K 1/4W
R24	1	S19400-1301	1.3K 1/4W
R25	1	S19400-1503	150K 1/4W
R26, R39, R92	3	S19400-3320	332 1/4W
R27	1	S19400-6191	6.19K 1/4W
R28	1	S19400-26R7	26.7 1/4W
R29	1	S19400-1003	100K 1/4W
R30, R73	2	S19400-1501	1.5K 1/4W
R31	1	T12300-80	5 WATT 0.5 OHM
R32, R37, R46, R47, R48, R49	6	S19400-4750	475 1/4W
R33, R42, R67, R68, R86	5	S19400-2211	2.21K 1/4W
R43, R57	2	S19400-3921	3.92K 1/4W
R50	1	T12733-7	27 OHM, 2 WATT
R55, R63, R71, R87	4	S19400-1000	100 1/4W
R59	1	T14648-23	20 ohm 5 watt
R61	1	S19400-3321	3.32K 1/4W
R65	1	S19400-5111	5.11K 1/4W
R66	1	S19400-6811	6.81K 1/4W
R69	1	T12300-77	0.1 OHMS/7WATT
R70	1	S19400-1500	150 1/4W
R74	1	S19400-2212	22.1K 1/4W
R76	1	T14231-2	10M 1/2W
R93, R96	2	S19400-2670	267 1/4W
R98	1	S19400-15R0	15 1/4W
T1	1	S20375-1	TRANSFORMER
TP1	1	T13640-9	20J
X1	1	M15101-3	48 PIN I.C. (SS)
X2	1	S15018-16	HV GATE DRIVE (SS)
X3	1	S17900-5	(SS)
X4	1	S20784-4	(SS)
X5	1	S15128-11	14 PIN I. C.
X6	1	S17900-24	(SS)
X7	1	M15102-3	(SS)
X8	1	M15458-4	8 PIN IC
X9	1	S18395-3	HEAT SINK ASBLY
X10	1	S15128-4	LM224 OP-AMP
X11	1	S15128-20	AMPLIFIER
Y1	1	S16665-2	4.0 MHz

CAPACITORS = MFD/VOLTS
INDUCTANCE = HENRYS
RESISTORS = OHMS/1/4 WATT UNLESS OTHERWISE SPECIFIED.

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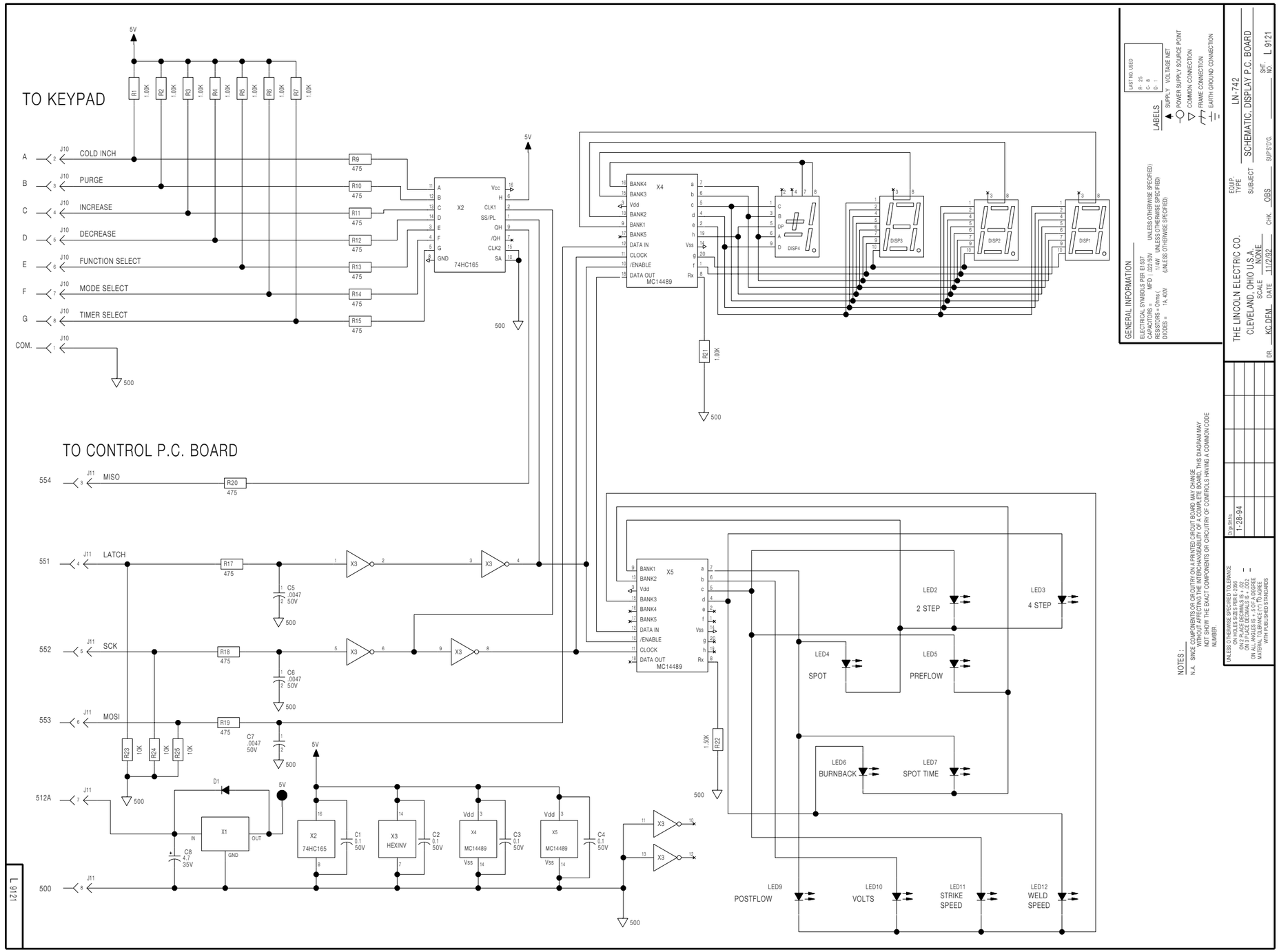
L9122 DISPLAY BOARD SCHEMATIC



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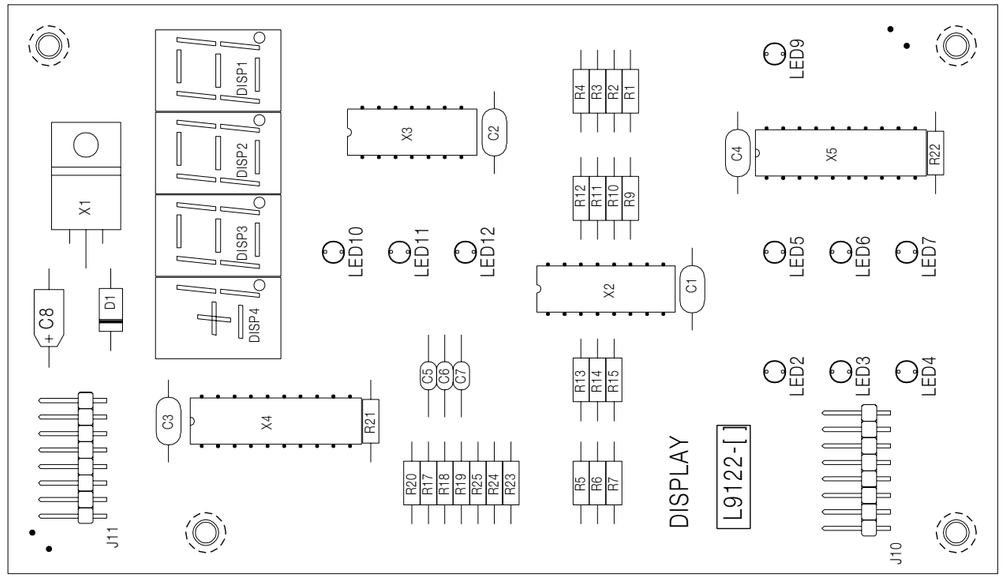
L9122 DISPLAY BOARD LAYOUT



ITEM	REQ'D	PART NO.	IDENTIFICATION
C1, C2, C3, C4	4	S16668-11	.1/50
C5, C6, C7	3	S16668-6	4700pF/50
C8	1	S13490-25	4.7/35
D1	1	T12199-1	1N4004
DISP1, DISP2, DISP3	3	S17395-2	DISPLAY
DISP4	1	S17395-1	DISPLAY
J10, J11	2	S20380-8	HEADER
LED2, LED3, LED4, LED5, LED6 LED7, LED9, LED10, LED11, LED12	10	T13657-6	RED LED
R1, R2, R3, R4, R5, R6, R7, R21	8	S19400-1001	1K 1/4W
R9, R10, R11, R12, R13, R14, R15 R17, R18, R19, R20	11	S19400-4750	475 1/4W
R22	1	S19400-1501	1.5K 1/4W
R23, R24, R25	3	S19400-1002	10K 1/4W
X1	1	S15128-5	
X2	1	S17900-10	
X3	1	S17900-8	
X4, X5	2	S20496-1	

CAPACITORS = MFD/VOLTS

RESISTORS = OHMS, 1/4 WATT (UNLESS OTHERWISE SPECIFIED)

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