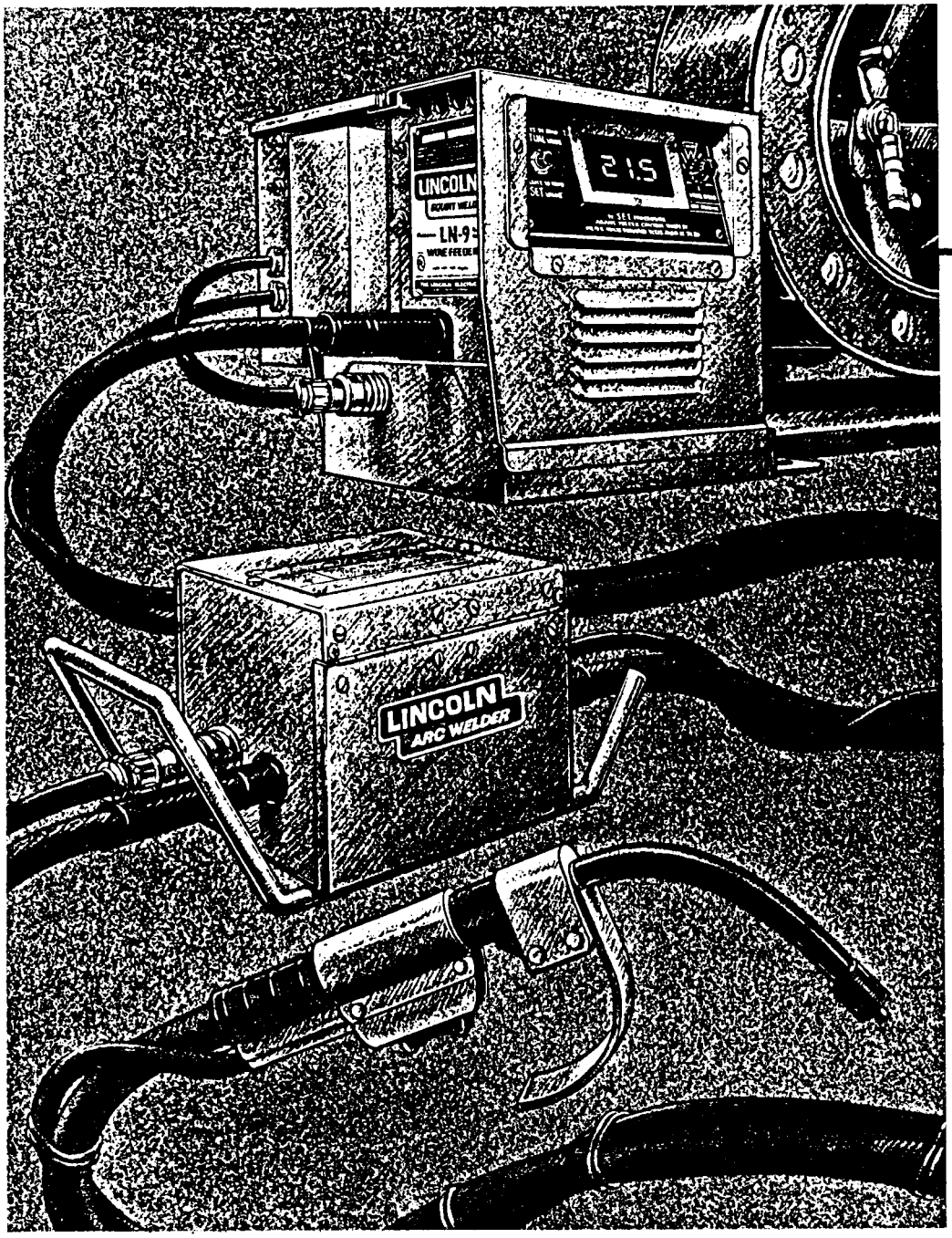
IM-334
TEMPORARY
May 1986
Ram

IM334
May 1986
Power Extended Wire Drive
K-392



K-392

Powered Extended Wire Drive

This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

SHIPPING DAMAGE CLAIMS

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

SAFETY DEPENDS ON YOU

Lincoln welders are designed and built with safety in mind. However, your overall safety can be increased by proper installation . . . and thoughtful operation on your part. DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS OPERATING MANUAL AND THE ARC WELDING SAFETY PRECAUTIONS ON THE INSIDE FRONT COVER. And, most importantly, think before you act and be careful.

LINCOLN ELECTRIC
THE LINCOLN ELECTRIC COMPANY
World's Largest Manufacturer of Arc Welding Products • Manufacturer of Industrial Motors
Cleveland, Ohio 44117 U.S.A.

Arc Welding Safety Precautions

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. READ AND UNDERSTAND BOTH THE SPECIFIC INFORMATION GIVEN IN THE OPERATING MANUAL FOR THE WELDER AND/OR OTHER EQUIPMENT TO BE USED AS WELL AS THE FOLLOWING GENERAL INFORMATION.

1. HAVE ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR WORK performed only by qualified people.

2. ELECTRIC SHOCK can kill.

   Protect yourself from possible dangerous electrical shock:

   a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Never permit contact between "hot" parts of the circuits and bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

   b. Always insulate yourself from the work and ground by using dry insulation. When welding in damp locations, on metal floors, gratings or scaffolds, and when in positions such as sitting or lying, make certain the insulation is large enough to cover your full area of physical contact with work and ground.

   c. 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.

   d. Ground the work or metal to be welded to a good electrical ground.

   e. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition.

   f. Never dip the electrode in water for cooling.

   g. 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.

   h. If using the welder as a power source for mechanized welding, the above precautions also apply for the automatic electrode, electrode reel, welding head, nozzle or semiautomatic welding gun.

   i. When working above floor level, protect yourself from a fall should you get a shock.

   j. Also see Items 6c and 8.

3. FUMES AND GASES can be dangerous to your health.

   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 on galvanized, lead or cadmium plated steel and other metals which produce toxic fumes, even greater care must be taken.

   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.

   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.

   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.

   e. Also see item 9b.

4. ARC RAYS can injure eyes and burn skin.

   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 Z87.1 standards.

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

   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.

5. FIRE OR EXPLOSION can cause death or property damage.

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

   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.

   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.

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 F4.1-80 from the American Welding Society (see address below).

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

f. Also see items 6c and 9c.

6. For Welding in General.

a. Droplets of molten slag and metal are thrown or fall from the welding arc. Protect yourself with 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 when in a welding area. Use glasses with side shields when near slag chipping operations.

b. 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.

c. Be sure the work cable is connected to the work as close to the welding area as practical. Work cables connected to the building framework or other locations some distance 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.

7. For Gas-Shielded Arc Welding.

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.

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

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.

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

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

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

g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 "Precautions for Safe Handling of Compressed Gases in Cylinders" available from the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.

8. For Electrically Powered Equipment.

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

b. Make the electrical installation in accordance with the National Electrical Code, all local codes and the manufacturer's recommendations.

c. Properly ground the equipment in accordance with the National Electrical Code and the manufacturer's recommendations.

9. For Engine Powered Equipment.

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

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

c. Do not add the fuel near an open flame, welding arc or when the engine is running. Stop the engine and, if possible, allow it to cool when 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.

d. 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.

e. 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.

f. 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.

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

For more detailed 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.

K-392 POWERED EXTENDED WIRE DRIVE

K-392 Powered Extended Wire Drive

1. Product Description

A. General Comments

This new wire feeding system is made up of a small rugged portable helper feeder, an extension cable, and an auxiliary control box which are used with standard LN-8 or LN-9 wire feeders. The advantage of this system is that since the welding gun can be up to 95 feet from the wire supply, which can be in a package size of up to 1,000 lbs., the operator has maximum mobility while still using the most economical electrode packaging. Specifications are as follows:

a. Wire sizes - .045 thru 1/16 solid steel and .045 thru 5/64 cored steel.
b. Wire speed range - 50 to 500 IPM.
c. Current rating - 350 amps at 60% duty cycle. (Can be increased if additional welding cable is parallel with the extension cable.)
d. Standard extension cable length supplied with K-392 - 40 ft. An extra 40 ft. extension cable with coupler (K-393) can be added for a total length of 80 ft.

The time for a complete installation and connection to the master wire feeder will normally take a person not familiar with the equipment between 2 and 2 1/2 hours. After becoming familiar with the procedure, the time for repeated installations should normally be between 1/2 hour and one hour.

B. Description of the Components

1. The master wire feeder can be an LN-8N/8S (Code Number 7926 and higher) or an LN-9N/9S (Code Number 8180 and higher) and is located at the wire source.

2. The helper feeder control box mounts on the side of the LN-8/9. The input control cable from the power source is connected to this box and cables from this box connect to the LN-8/9 and the helper feeder.

3. The extension cable assembly is made up of a cored conductor cable rated at 350 amperes and a six conductor control cable. The standard length is 40 feet. An additional length of 40 feet can be coupled to the standard length giving a total maximum overall length of 95 feet from the LN-8/9 to the end of a 15 foot gun and cable. Order K-393 for optional 40 foot extension and coupler.

4. The helper feeder module is made up of a motor-gearbox assembly which is mounted in a rugged sheetmetal box with a hinged door giving easy access to the drive roll and guide tubes. The permanent magnet motor is mounted to a 41:1 ratio LN-7 type gearbox. Standard gun assemblies attach to the front of the helper unit and the extension cable connects to the rear. Weight without gun and cables is 16 lbs.

II. Installation

WARNING: Turn the input power to the power source off at the disconnect switch before performing the work below.

Tools Required

1. Medium Phillips head screwdriver
2. Medium flat blade screwdriver
3. 5/16" nut driver
4. 11/32" nut driver
5. 3/8" nut driver
6. 7/16" open end or box wrench
7. 1/8" Allen wrench
8. 3/16" Allen wrench (shipped with K-392)
9. Electrical tape

A. Master Wire Feeder

The K-392 Powered Extended Wire Drive can be used with the following wire feeders: The LN-8N/8S (Code Number 7926 and higher) and LN-9N/9S (Code Number 8180 and higher). Install the master wire feeder per the instructions in the Operating Manual shipped with the wire feeder. Do not connect, or if already connected, disconnect the input cable from the master wire feeder. The master LN-8 or LN-9 wire feeder is to be used with the acceleration jumper set on "F" (fast) pin.

B. Powered Extension Conrol Box

1. Remove the screws (5 on LN-8 and 4 on LN-9) that hold the master feeder control section cover in place and swing upward.

2. Locate the Extension Control Box next to the LN-8 or LN-9 as shown in Fig. 1. Route the 6 lead control cable assembly into the control side of the LN-8 or LN-9 through the area where the electrode cable is routed. Connect the 9 cavity polarized connector coming from the Extension Control Box to the mating connector on the rear of the wire feeder.

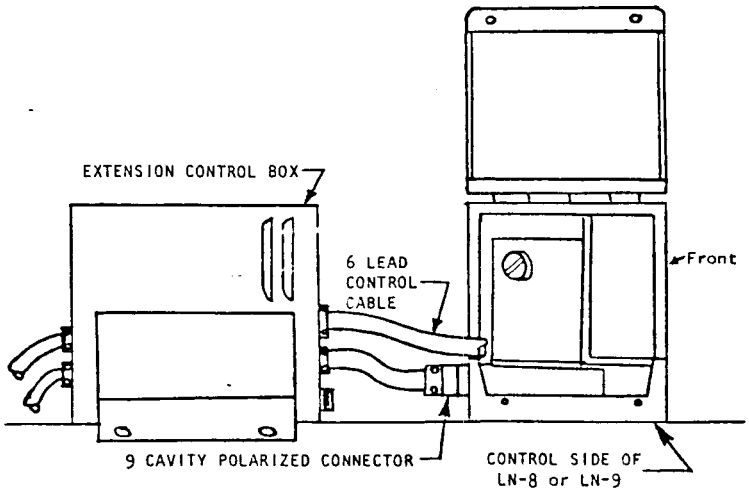
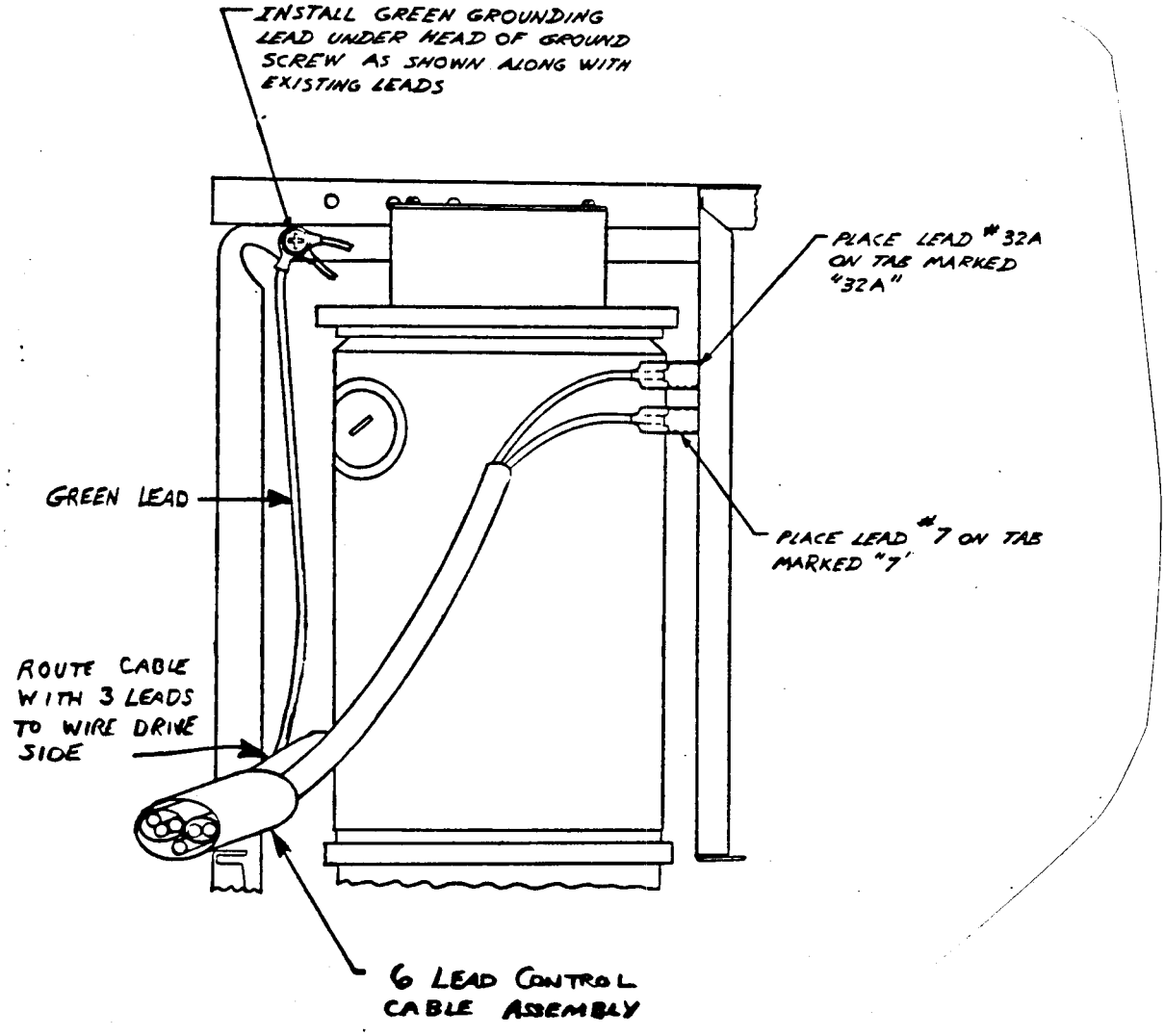


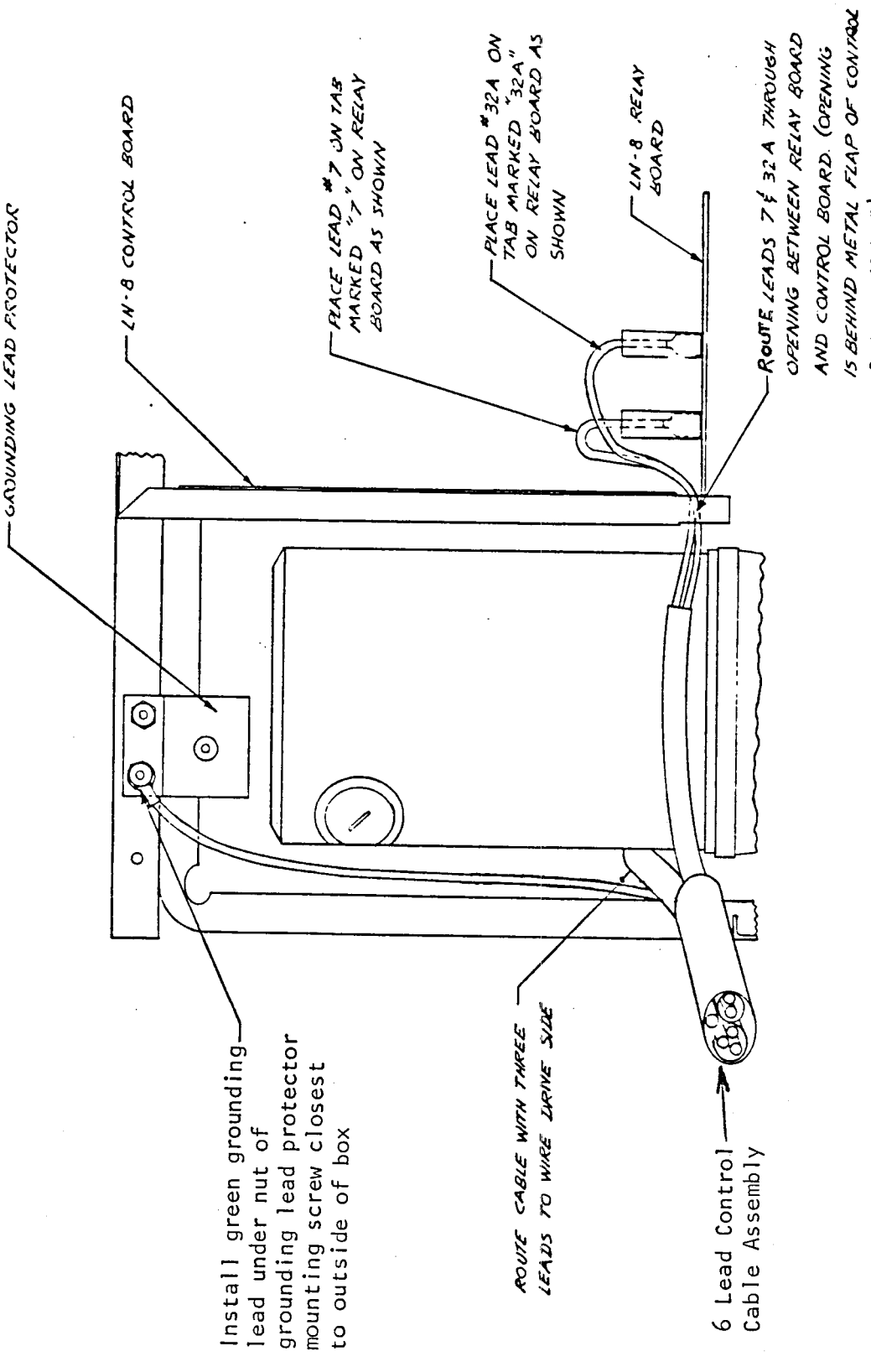
FIGURE 1

3. Route the 7 and 32A auxiliary power leads and the green grounding lead into the motor compartment and connect per Fig. 2 for an LN-9 installation or connect per Fig. 3 for an LN-8 installation.



VIEW OF LN-9 CONTROL SIDE (COVER RAISED)

FIGURE 2



VIEW OF LN-8 CONTROL SIDE (COVER RAISED)

FIGURE 3

4. Close the control section cover and attach the Extension Control Box to the control side of the wire feeder as shown in Fig. 4. Replace the screws previously removed in step B-1. The two bottom screws are to go through the slots in the Extension Control Box mounting bracket.

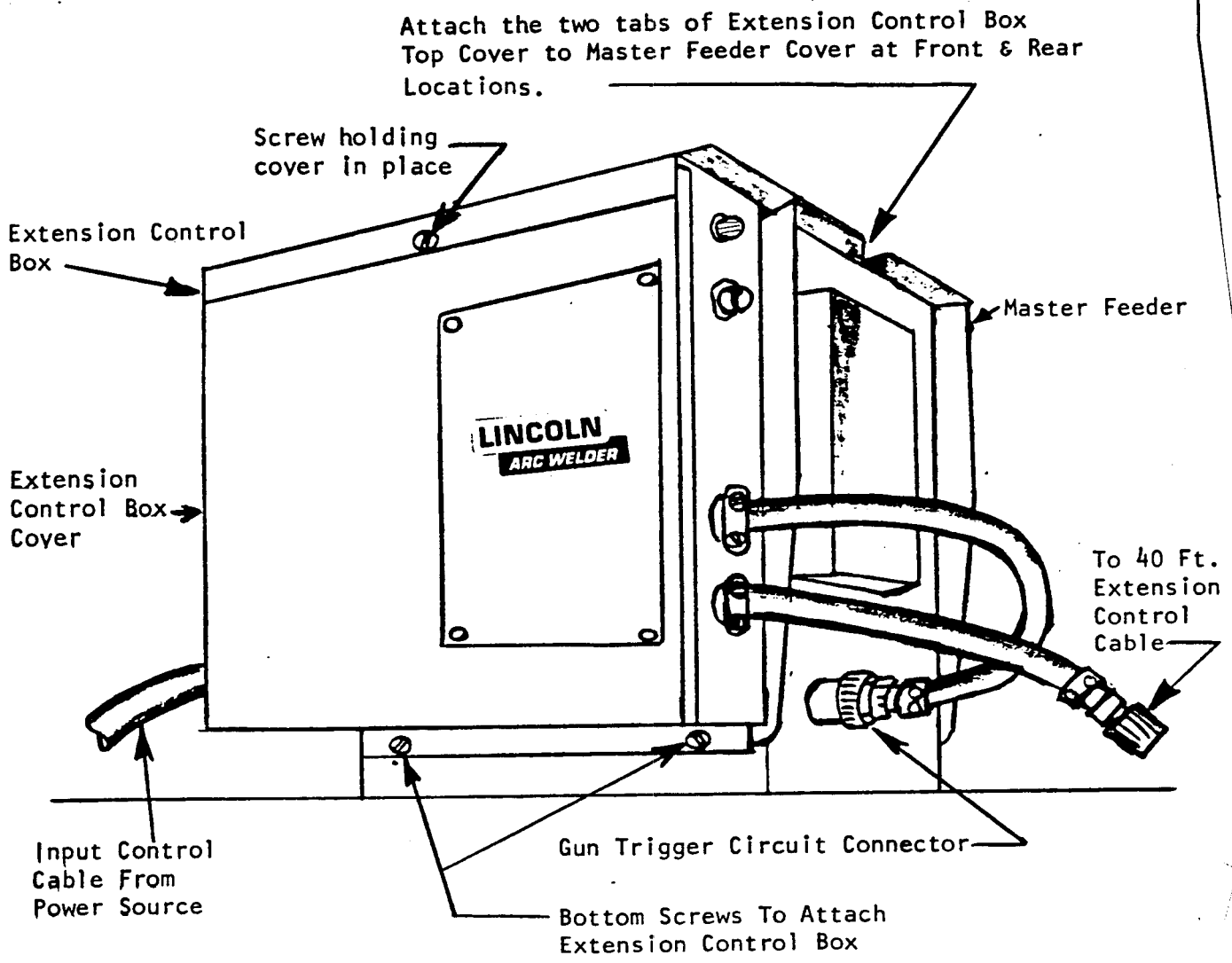
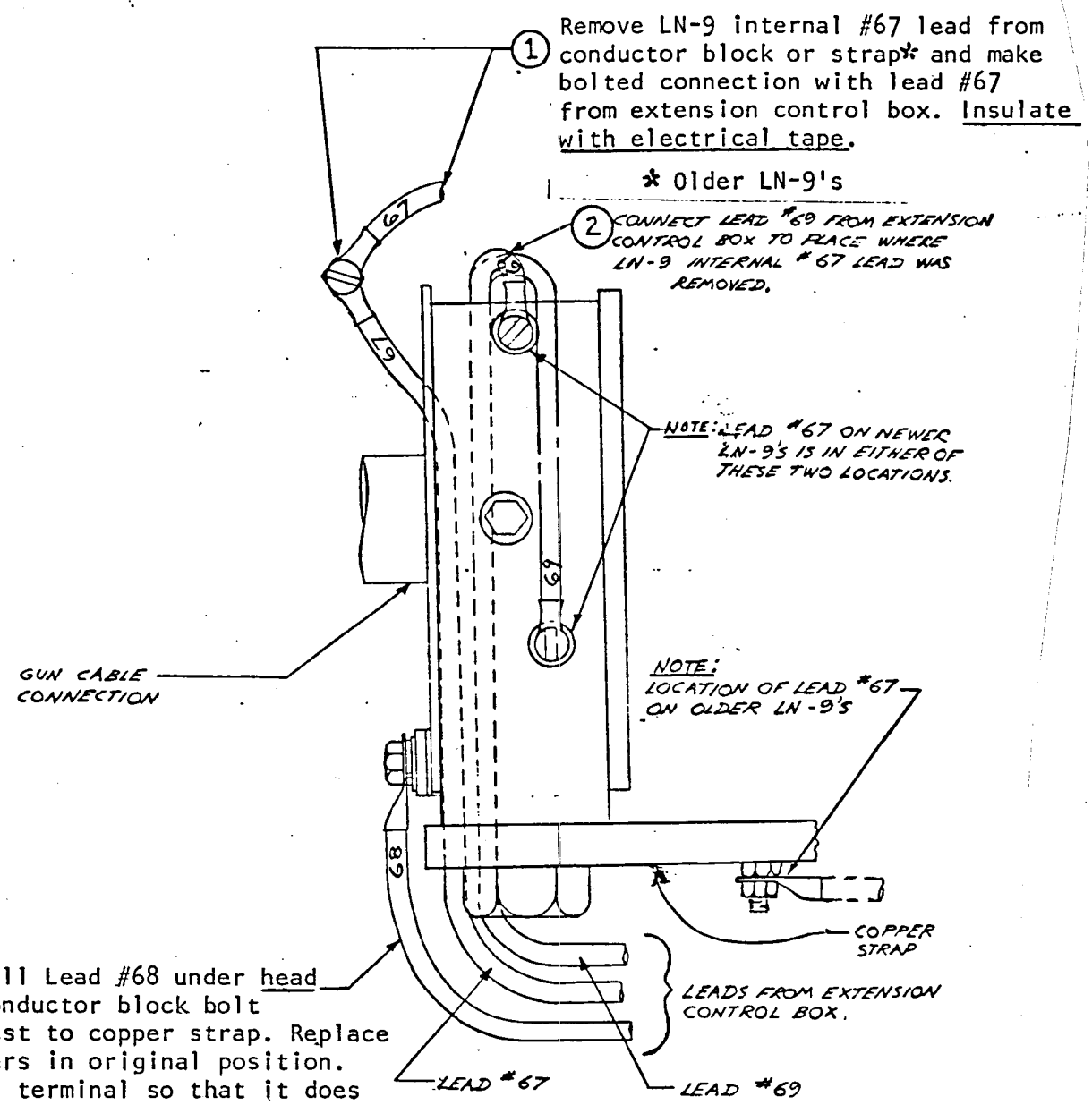


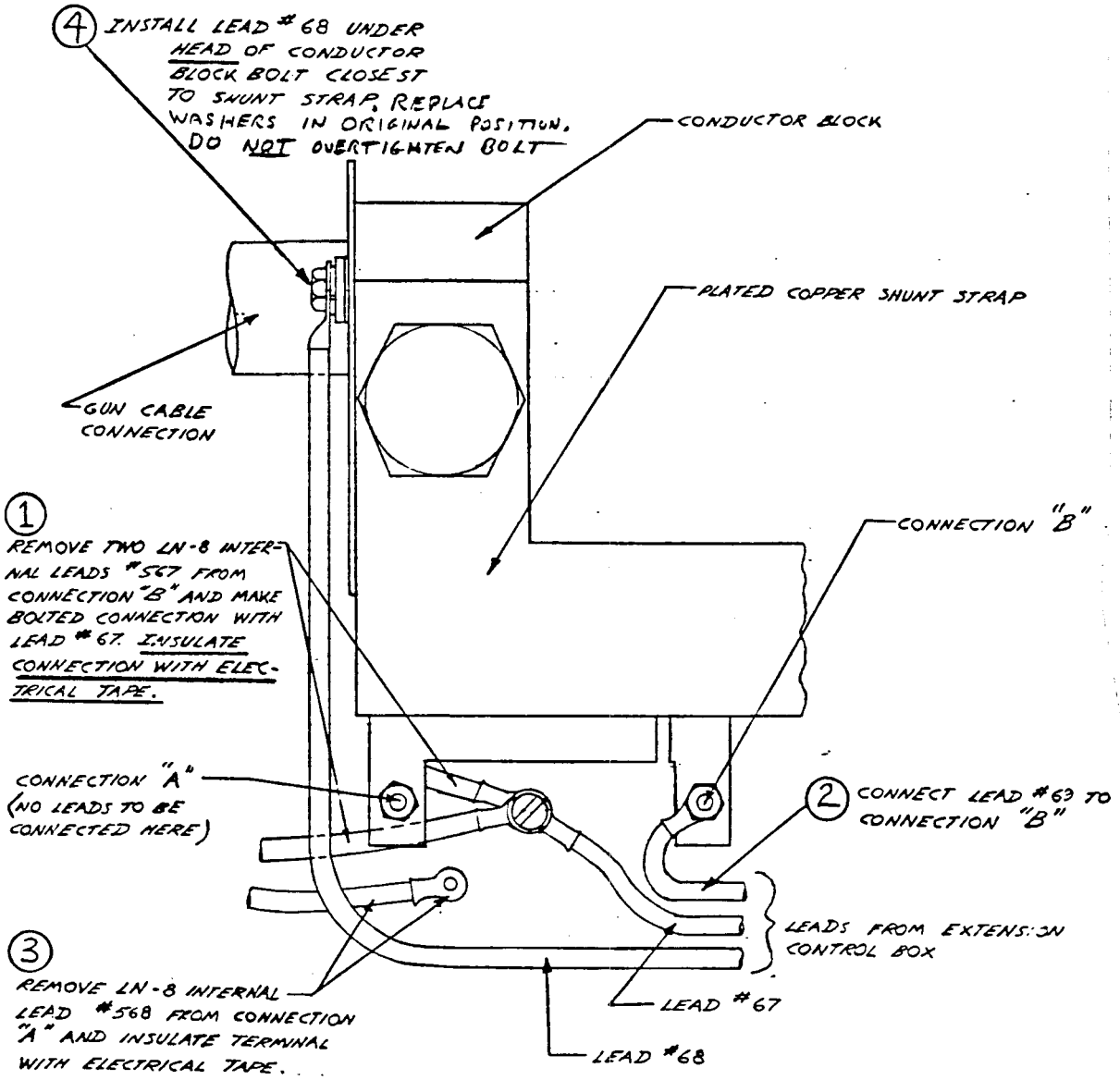
FIGURE 4

5. Open the door on the wire drive side of the master wire feeder case. Route the cable with three leads under the incoming guide and along the case bottom and towards the front of the feeder. Connect the three leads per Fig. 5 for an LN-9 and per Fig. 6 for an LN-8. Make certain that the lead 67 bolted connection is properly isulated.



TOP VIEW OF LN-9 FRONT CONDUCTOR BLOCK

FIGURE 5



SIDE VIEW OF LN-8 FRONT CONDUCTOR BLOCK

FIGURE 6

6. Connect the 5 pin polarized connector on the cable coming from the front of the Extension Control Box to the mating gun trigger circuit connector on the front of the wire feeder. (See Fig. 4)

7. Connect the 9 cavity polarized connector on the control cable of the input cable assembly coming from the power source to the mating connector on the rear of the Extension Control Box. Connect the electrode cable of the input cable assembly to the electrode connection terminal at the rear conductor block of the master feeder.

8. Note: If an LN-8 with a meter kit is used as the master feeder, the ammeter portion of the meter kit will not be operable after the installation of the power Extension Control Box.

C. Torque Selection Jumper Plug on Extension Control Printed Circuit Board

The Extension Control is shipped with the jumper on the "HI" pin. The pin selected must correspond to the following wire sizes:

"HI" for .062 solid and .072, 5/64 cored.

"LO" for .045, .052 solid/cored and .062, .068 cored.

To gain access to the control P.C. board, turn off input power, and remove the screw located in the upper portion of Extension Control Box cover above the upper left corner of the nameplate. See Figure 4. Slide the cover down and away. Change pin selection if required and replace cover and screw.

D. Installation of Special Insert and Guide Tube in LN-8 or LN-9 (See Fig. 7)

1. Remove the LN-8 or LN-9 outgoing guide tube with its plastic insert through the front conductor block of the LN-8 or LN-9 by first loosening the locking screw with a 3/16 Allen wrench and then pushing the guide out the front of the wire feeder.

2. Unscrew the plastic insert from the guide. Three new threaded inserts are shipped with K-392 Powered Extended Wire Drive in a small parts bag. Install the appropriate insert to match the wire size stenciled on the guide as follows:

Stenciling on Outgoing Guide	Wire Sizes Used	Description of New Plastic Insert	Part No.
.052	.045 and .052	Long insert with small hole	S-17567-.052
1/16	1/16 (.062)	Long insert with large hole	S-17567-1/16
3/32	.068, .072 and 5/64	Short insert (.75" long)	S-17568

3. Install the outgoing guide with the new plastic insert through the front conductor block and tighten the locking screw.

4. Loosen the locking screw and remove the large ingoing guide from the rear conductor block of the LN-8 or LN-9. Replace with new insulated ingoing guide (T-14919) that is shipped in the parts bag with the inserts. Insert insulated end into gearbox. Tighten the locking screw (do not overtighten).

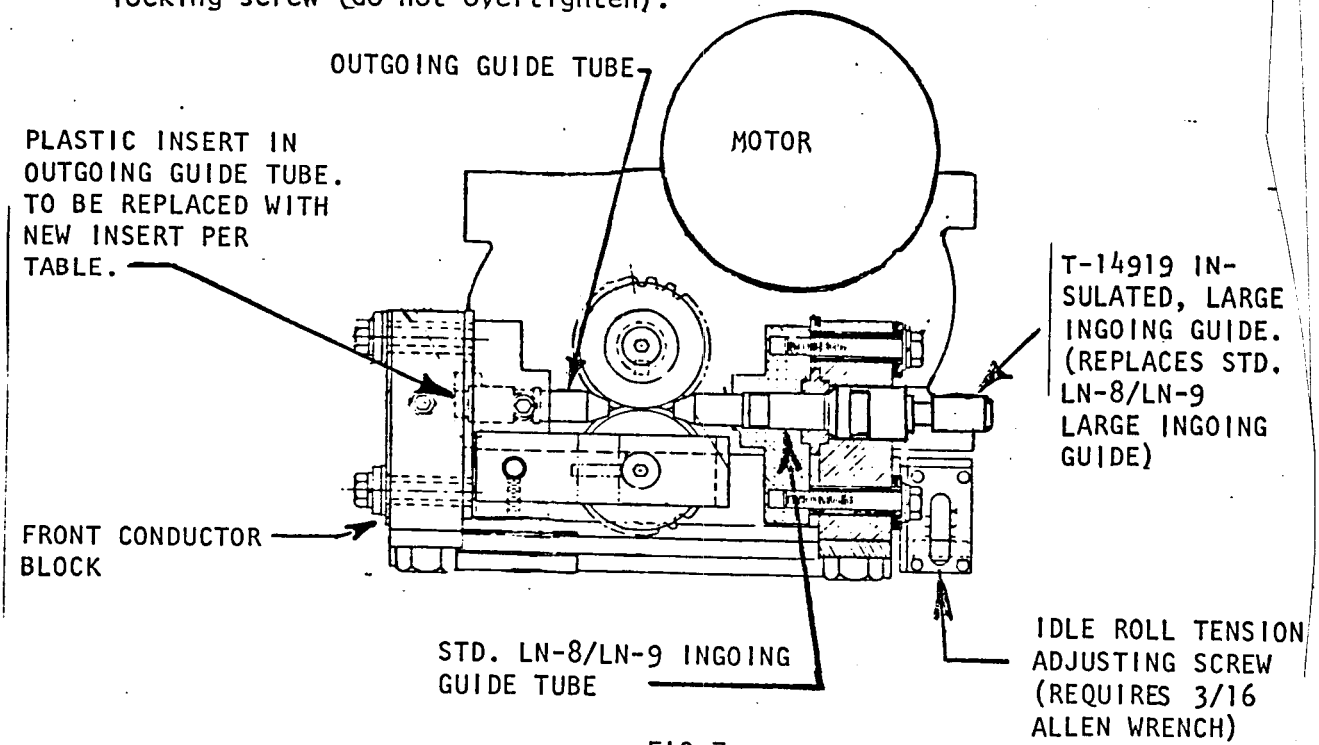


FIG. 7

TOP VIEW OF LN-8 OR LN-9 WIRE DRIVE ASSEMBLY

E. Wire Feed Roll and Guide Tubes for Extended Wire Drive Unit (See Fig. 8)

The drive roll and guide tube kit for the electrode size specified on the order is shipped with the K-392 Powered Extended WireDrive. The kits used are standard LN-7 kits. Install per the instruction sheet shipped with the kit.

The plastic ingoing guide extension (T-14917) must be removed from its shipping position in the rear conductor block of extended wire drive unit by loosening the locking screw with a 3/16" Allen wrench before installing the ingoing guide tube. After installing the ingoing guide tube, insert the plastic extension through the rear conductor block and seat it on the ingoing guide tube. A 1/8" Allen wrench is required for installing the guide tubes.

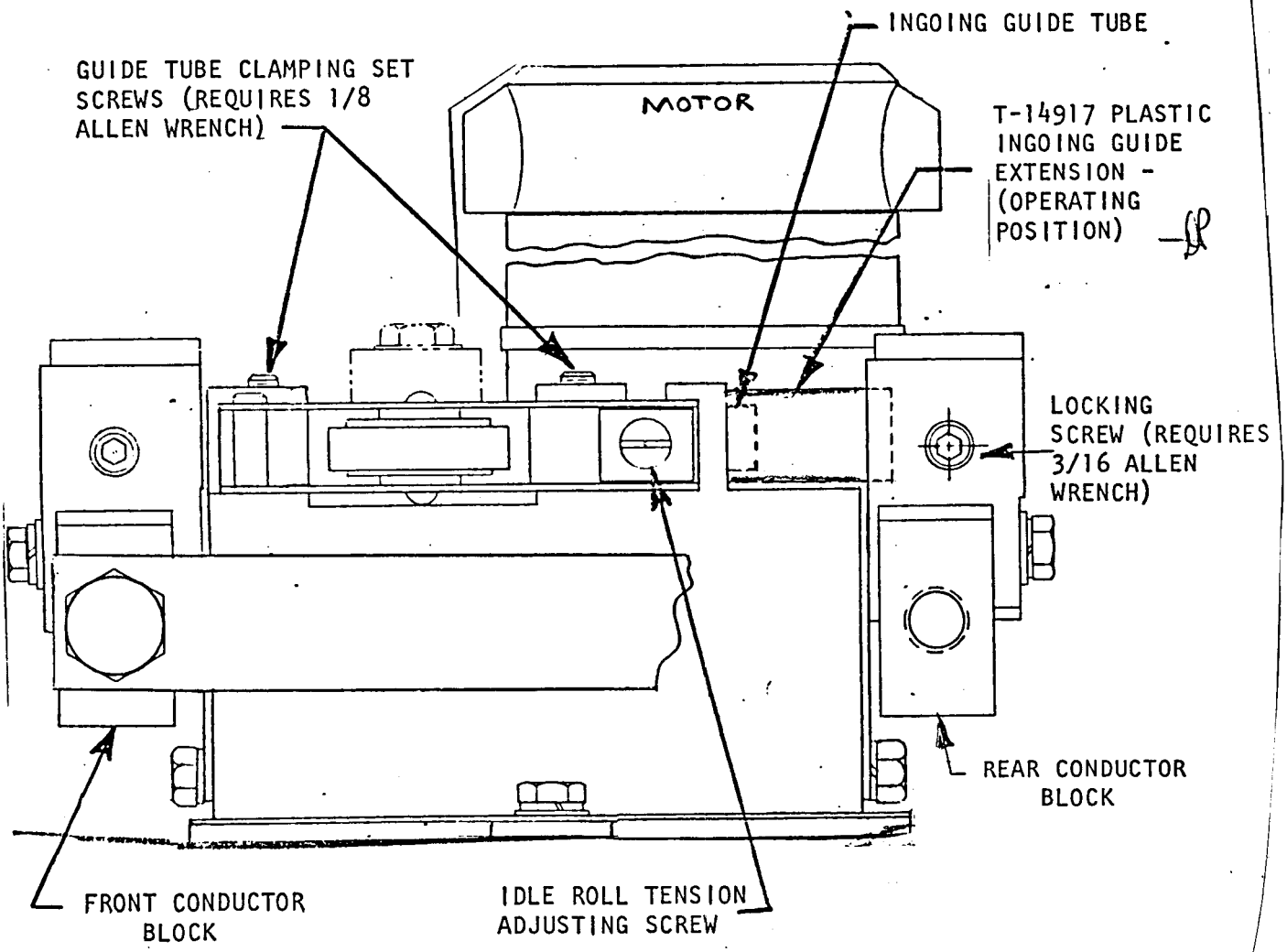


FIG. 8

SIDE VIEW OF MOTOR - GEARBOX ASSEMBLY OF EXTENDED WIRE DRIVE UNIT

The instructions for installing the drive roll and guide tubes are included with the kit and also appear on the inside of the side door of the Extended Wire Drive Unit. The electrode sizes that can be fed with each roll and guide tube are stenciled on each part. Before installing the incoming guide, the plastic incoming guide extension must be removed from the rear conductor block (loosen set screw with 3/16 Allen wrench). After installing the incoming guide, replace the plastic incoming guide extension through the hole in the rear conductor block. Push it all the way on to the incoming guide.

The .045 outgoing guide has a nonsymmetrical chisel end. If this size guide is used, be certain the contour with larger radius faces the grooved drive roll.

The Extended Wire Drive idle roll tension screw is to be set two complete turns out from being bottomed. It is very important that this setting be used for all electrode sizes.

F. Connection of 40 foot Extension Cable to Master Feeder and Extended Wire Drive

1. Connect the end of the extension control cable with the 6 pin polarized connector to the mating connector coming from the front of the Extension Control Box. (See Fig. 4)

2. Install the connector on the extension welding conductor cable in the conductor block on the front of the LN-8 or LN-9 wire feeder. Make sure it is all the way in and tighten the locking screw with a 3/16" Allen wrench.

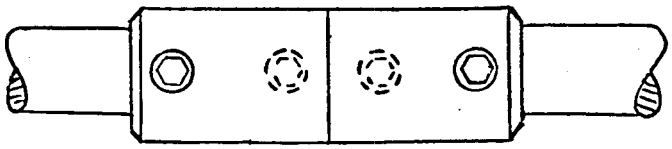
3. Uncoil the extension cable. Install the connector on the other end of the extension welding conductor cable in the rear conductor block of the Extended Wire Drive unit. Make sure it is all the way in and tighten the locking screw with a 3/16" Allen wrench. Make certain that the incoming guide extension is in place (see Sec. E).
4. Connect the 6 cavity polarized connector on the end of the extension control cable to the mating receptacle on the rear of the Extended Wire Drive.

G. Optional K-393 40 foot Extension Cable and Coupler

One K-393 40 foot extension cable can be coupled to the K-392 40 foot extension cable to give the maximum 80 foot extension.

Match mating polarized connectors on the K-392 and K-393 control cables and connect. The coupler for the extension welding conductor cables consists of two plastic insulators and a brass fitting. Slide an insulator over each conductor cable connector sleeve on mating ends corresponding to joined control cables. The end of the insulator

closest to the setscrew is to go on the cable connector first. Insert the ends of the two cable connectors into brass fittings as far as possible. It is important that there is no gap between the two cable connectors. Tighten setscrews in fitting securely with 3/16" Allen wrench. Rotate insulators until setscrews are in line with setscrews of fitting and slide insulators together. Tighten insulator setscrews with 3/16" Allen wrench (do not overtighten).



H. Paralleled Welding Cable

The maximum rating of the 40 foot spring cored, extension welding conductor cable is 350 amp at a 60% duty cycle. If the welding procedure to be used operates at greater than 350 amps, the capacity of the system can be increased by installing a welding cable in parallel to the extension welding conductor cable. Use No. 2 AWG or larger cable for current over 350 amps but less than 450 amps. Use 1/0 AWG or larger cable for current 450 to 550 amps. Use 2/0 AWG or larger cable for current 551 to 600 amps.

Connect one end of the additional conductor cable to the electrode connection terminal on the wire drive of the master feeder. Route the cable out the rear of the feeder along with the input electrode cable. Route the additional conductor cable to the Extended Wire Drive and pass the end through the oval hole in the rear of case. Connect the cable to the outgoing conductor block using the 1/2" hex screw that bolts the copper strap to the outgoing conductor block.

I. Gun Cable

Lay the cable out straight. Insert the male connector of the welding cable into the front conductor block of the Extended Wire Drive unit. Make sure it is in all the way and tighten the locking screw with a 3/16" Allen wrench. Connect the trigger circuit control cable polarized connector to the mating receptacle next to welding conductor connector. The gun must be used within its current rating.

J. Gas Solenoid Valve Connection

The power for 115 volt AC auxiliary equipment such as a gas solenoid valve is to be obtained from screw terminals 4A and 31 on the terminal strip in the Extension Control Box. The current draw of this circuit must not exceed 1/4 ampere. This circuit is energized only while the gun trigger is closed with wire being fed through the master feeder. It is not energized when the "Inching Control" button is pressed or when the gun trigger is closed without wire being fed through the master feeder.

Note:
When using a DC-250, SAF-600 or SA-800 type power source, or a non-Lincoln power source, the solenoid leads must be connected to screw terminals 7 and 32A on the terminal strip in the extension control box. With this connection, the solenoid will be energized whenever the "Inching Control" button or trigger is closed.

III. Operating Instructions

A. Check List Before Loading Electrode

1. Is the special outgoing guide tube insert installed in LN-8/9? (The diameter at the largest end is .50 for the special insert vs. .38 for the standard.) (See Installation Section, D1 through D3.)

2. Is the special insulated incoming guide installed in the LN-8/9? (See Installation Section, D4.)

3. Are the correct size drive rolls and guide tubes installed in both feeders?

4. Is the idle roll tension set properly on both feeders? Use settings in these instructions and not those shown on the LN-8/9 idle roll pressure indicator. Two turns out for Extended Wire Drive.

5. Is the jumper on the P.C. board in the Extension Control Box connected to the proper pin for the wire size to be used? (See Installation Section, Part C.)

6. Make certain that it is understood that the wire feed speed is never to be set above 500 IPM.

7. Make certain that it is understood that the LN-8/9 conductor blocks must be cleaned on a regular basis. See Maintenance Section.

B. Loading the LN-8/9 with Electrode and Idle Roll Pressure Setting

1. Load the reel of electrode per the instructions in the LN-8 or LN-9 operating manual.

2. Adjustment of LN-8/9 idle roll spring pressure for .045 and .052 solid and cored steel wire:

   For wire sizes .045 and .052, set the idle roll pressure indicator with wire in the drive roll to the 5/64 solid mark with wire through drive roll. Do not set to the .045 mark. This setting should give a satisfactory pressure, but the optimum setting can be determined as follows:

   a. The 40 foot extension conductor cable is to be connected in the LN-8/9 outgoing conductor block but do not connect the opposite end of the conductor cable to the extended wire drive. Coil the complete cable up to approximately a six foot diameter or leave in a large loop.
   b. Reduce the idle roll pressure to the .035 mark. Set the wire feed speed to 500 IPM and feed the wire through the 40 foot cable by pressing the Inching Control.
   c. Cut the wire off as close to the end of the 40 foot cable connector as possible.

d) Press the end of the 40 foot cable connector tightly against the floor or any solid object which will block the wire and press the inch button for approximately two seconds.

e) Loosen the set screw holding the 40 foot extension cable to the LN-8/9 conductor block and slide it forward about one foot.

f) Check the exposed wire for waviness. It should have waviness within the limits shown.

g) If the measured waviness is too low, cut the wire, pull the 40 foot length from the extension cable, and repeat steps a) through f) but with the idle roll tension screw increased in pressure by 1/2 turn. Do not exceed the above waviness limits or buckling of the wire in the extension cable will result.

3. Adjustment of LN-8/9 idle roll spring pressure for .062 solid and .062 through 5/64 Innershield electrode -

Wire	LN-8/9 Drive Roll Kit	Pressure Indication Setting*
.062 solid	T-12999-1/16	.045 solid
.062 Innershield	T-12999-1/16	midway between 5/64In & 3/32In
.068 Innershield	T-12999-3/32	.068In
.072 Innershield	T-12999-3/32	.068In
5/64 Innershield	T-12999-3/32	5/64In

* With wire through drive roll.

4. Extended Wire Drive idle roll pressure setting - as stated in Step E of Installation Instructions, the idle roll tension screw is to be set two complete turns out from being bottomed.

5. Connect the extension conductor cable to the Extended Wire Drive and inch electrode through the gun.

C. Welding and Allowable Bending of Extension Cable While Welding

1. See the LN-8 or LN-9 Operating Manual for instructions on welding.

2. While welding, make certain that there are no bends in the extension cable with less than a 12 inch radius or loops with less than a 36 inch diameter. (See Sec. III D.3 for allowable bending of extension cable while loading electrode)

D. Electrode Changeover

1. When the end of the coil is reached while welding, the end of coil shutdown circuit senses the end of the wire as it clears the LN-8/9

drive roll and opens the power source welding power output and de-energizes the gas solenoid valve (if used). When the arc goes out, release the gun trigger to stop wire feed and pull the gun away from the weld. This feature prevents welding at a wire feed speed that is different than that set on the master feeder.

2. Close the gun trigger and feed the remaining length of wire through the extension cable. Observe that the ready light on the Extension Control box is off, indicating that the electrode is "cold" (power source output off). When the wire stops feeding, pull the remaining length from the gun. Scrap this electrode.

3. Walk back to the LN-8/9 master feeder. In doing so, straighten the extension cable if required so that there are no excessively tight bends in it, expecially in the area of the coupler if two 40 ft. cables are being used. Also, keep the cable straight for at least three feet from the extension feeder. For loading purposes, the cable should not have any bends with less than a 2 foot radius or loops with less than a six foot diameter. (See Sec. IIIC.2 for allowable bending of extension cable while welding.)

   Note: See Maintenance section for cleaning of conductor block cavities.

4. Load a new coil of electrode in the master feeder per the instructions in the LN-8 or LN-9 Operating Manual. Turn the new reel until the free end of the electrode is accessible and detach. While tightly holding the electrode, cut off the bent end. Straighten the first six inches and cut off the first inch. It is important that the electrode be properly straightened so that it is picked up by the roll in the Extended Wire Drive. Insert the straightened free end through the insulated incoming guide tube. Press the "Inching Control" button and push the electrode into the drive roll. Release inch button.

5. Set the wire feed speed of the LN-8/9 at 450 to 500 inches per minute. Do not set higher than 500 inches per minute. To do so may result in jamming at the LN-8/9 outgoing guide when the wire reaches the Extended Wire Drive feed rolls. Press the inch button and hold for one minute if using on 40 foot extension cable or two minutes when using two 40 foot extensions. After release of the inch button, and after a one or two second delay, the ready light will come on. Note: Ready light does not function if using a DC-250, SAF-600 or SA-800 type power source.

6. Set the wire feed speed back to that called for by the welding procedure. Walk back to Extended Wire Drive and close the gun trigger to feed electrode through the gun. The system is now ready for welding.

E. Clearing a Feeding Problem

1. If a wire feeding problem develops, stop welding and do not try to inch wire through the system.

2. Cut the burnt end of electrode off at the end of the gun.

3. Loosen the idle roll pressure adjusting screw at the Extended Wire Drive until there is no force on the wire.

4. Loosen the locking screw holding the extension conductor cable into the rear conductor block of the Extended Wire Drive. Pull the extension cable connector out and cut the wire. Pull the length of wire in the gun out through the rear conductor block.

5. At the master feeder, loosen the set screw holding the extension conductor cable in the conductor block. Pull on the extension cable connector and press the inch control on the Extension Control Box. Cut the wire after the connector is inched out several inches. Pull the wire out of the extension cable and discard it.

6. Reconnect both ends of the extension conductor cable. Tighten the Extended Wire Drive idle roll tension screw to two turns out from being bottomed. Reload electrode per Section C Steps 5 and 6 of Operating Instructions.

IV. Maintenance

WARNING: Have qualified personnel do the maintenance and troubleshooting work. Turn the input power off at the power source before working inside the wire feeder.

A. Master Feeder

See LN-8 or LN-9 Operating Manual for maintenance of master feeder and of gun and cable.

B. Conductor Block Cavities of Master Feeder

NOTE: It is very important that the following cleaning be done on a regular basis in order to keep the end of coil shutdown feature operating properly.

After every 100 to 600 lbs. of electrode, loosen the setscrew with a 3/16" Allen wrench and remove the extension welding conductor cable connector from the front conductor block of the LN-8 or LN-9 master feeder. Also remove the insulated, large incoming guide from the rear conductor block. Use a compressed air nozzle or a small brush to remove accumulated material in the conductor block cavities of both front and rear blocks. Clean off the ends of the extension cable connector and the incoming guide. Reinstall and tighten setscrews.

C. Drive Rolls and Guide Tubes of Extended Wire Drive

1. After every coil of wire, lift up the door on the Extended Wire Drive case and inspect the area around the drive roll. Blow or brush out any accumulation of material. Do not use solvents for cleaning the idle roll, because is may wash the lubricant out of the bearing.

2. The drive roll, idle roll 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 .045 thru 5/64 cored electrode have a double set of teeth so they can be reversed for additional life. Between the two knurled rolls (except 1/16" and smaller rolls) is a shim washer which limits the damage to the electrode if wire feeding problems occur.

D. Extension Welding Conductor Cable

An excessive buildup in the cable can cause wire feeding problems. The spring core liner of the cable must be cleaned periodically.

Remove the cable from the wire feeders. If two 40 foot lengths are being used, remove the coupler. Using an air hose and only partial pressure, gently blow out the cable(s) from the outgoing end. Too much pressure at the start can cause the dirt to form a plug. Flex the cable over its entire length and again blow out the cable. Repeat this procedure until no more dirt is blown out of the cable.

The minimum extension length to be used is 40 feet, and the maximum is 80 feet (two 40 ft. lengths).

E. Extended Wire Drive Motor and Gear Box

Every year inspect the gear box 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" long.

F. Extension Control Box

The control box requires no routine maintenance.

G. Circuit Protection of Extension Control

1. There are two 4 amp, fast blow, 250 volt fuses on the P.C. board in the Extension Control Box. One or both of these fuses will blow if components on the P.C. board fail or if the Extended Wire Drive motor fails. Wire feeding jam ups will not cause these fuses to blow.

H. Grounding Lead Protection

The frame of the Extended Wire Drive motor, which is insulated from the gearbox and the case of Extended Wire Drive, is grounded to the case of the LN-8 or LN-9, which in turn is grounded to the frame of the power source, by a lead in the extension control cable. The grounding lead protector circuit in the LN-8 or LN-9 will be activated if the electrode circuit by some fault, touches the motor while the gun trigger is pressed, providing the LN-8 or LN-9 is not making a good electrical contact with the workpiece or a grounded structure. When the protector circuit is tripped, the trigger circuit will not operate. To reset the circuit, clear the fault, and press the "G.L.P. Reset" button at the LN-8 or LN-9. For more information on the G.L.P., see the Maintenance section of the LN-8 or LN-9 Operating Manual.

PARTS ORDERS LIST

K-392 Powered Extended Wire Drive - Code 8923

Part Name	Part Number
Wire Drive Assembly	L-5708-1
Wire Drive Motor	M-14735
Incoming Guide	T-14917
Front Conductor Block	S-16768
Rear Conductor Block	S-17564
Locator Bushing	T-14031
Incoming Guide Extension	T-14917
Drive Roll & Guide Tube Kit for .045 & .052 solid steel wire	T-13355-052
Drive Roll & Guide Tube Kit for .045 & .052 cored electrode	T-13355-052C
Drive Roll & Guide Tube Kit for .052 & 1/16 (.062) wire	T-13355-1/16
Drive Roll & Guide Tube Kit for .068, .072 & 5/64 wire	T-13355-3/32
Incoming Guide Assembly *	T-14919
Outgoing Guide Insert for .045 & .052 wire *	S-17567-052
Outgoing Guide Insert for 1/16 (.062) wire *	S-17567-1/16
Outgoing Guide Insert for .068, .072 and 5/64 wire *	S-17568-3/32
Control Printed Circuit Board	G-1663-1
Inch Control Switch	T-13541-5
Pilot Light	T-13486
Relay	S-14293-2
4 Amp, 250 V Fuse	T-10728-24
2 ohm, 25 Watt Resistor	S-10404-73
15 MFD, 220 V AC Capacitor	T-11577-64
40 Ft. Extension & Coupler (Includes following 4 items)	Order K-393
40 Ft. Extension Conductor Cable	L-7009-1
40 Ft. Extension Control Cable	M-14738-40
Coupler	S-17565-2
Coupler Insulator	S-17566-2

* Used on Master Feeder

HOW TO ORDER REPLACEMENT PARTS

Order parts only from Lincoln offices or from the Authorized Field Service Shops listed in the "Service Directory". Give the following information:

(a) From the nameplate — machine model, code and serial numbers.
(b) From this manual — complete part name and description, item number, quantity required and the number of the list used to get this information.

Any items indented in the "Parts Name" column are included in the assembly under which they are listed. The indented items may be ordered separately. If the entire assembly is needed, do ***not*** order the indented parts.

GUARANTEE

The Lincoln Electric Company, the Seller, warrants all new equipment except engines and accessories thereof against defects in workmanship and material for a period of one year from date of shipment, provided the equipment has been properly cared for, and operated under normal conditions. Engines and engine accessories are warranted free from defects for a period of ninety days from the date of shipment.

If the Buyer gives the Seller written notice of any defects in equipment or electrode or flux within any period of warranty and the Seller's inspection confirms the existence of such defects, then the Seller shall correct the defect or defects at its option, either by repair or replacement F.O.B. its own factory or other place as designated by the Seller. The remedy provided Buyer herein for breach of Seller's warranty shall be exclusive.

No expense, liability or responsibility will be assumed by the Seller for repairs made outside of the Seller's factory without written authority from the Seller.

The Seller shall not be liable for any consequential damages in case of any failure to meet the conditions of any warranty. The liability of the Seller arising out of the supplying of said equipment or electrode or its use by the Buyer, whether on warranties or otherwise, shall not in any case exceed the cost of correcting defects in the equipment or replacing defective electrode in accordance with the above guarantee. Upon the expiration of any period of warranty, all such liability shall terminate.

The foregoing guarantees and remedies are exclusive and except as above set forth. There are no guarantees or warranties with respect to engines, accessories, equipment, electrodes, or flux, either express or arising by operation of law or trade usage or otherwise implied, including without limitation the warranty of merchantability, all such warranties being waived by the Buyer.

WARRANTY SUPERSEDED SEE IMM 5.1

LINCOLN ELECTRIC®

THE LINCOLN ELECTRIC COMPANY

World's Largest Manufacturer of Arc Welding Products • Manufacturer of Industrial Motors
Sales and Service Worldwide
Cleveland, Ohio 44117-1199 U.S.A.
Toronto M4G 2B9 – Canada • Sydney 2211 – Australia • Rouen 76120 – France