

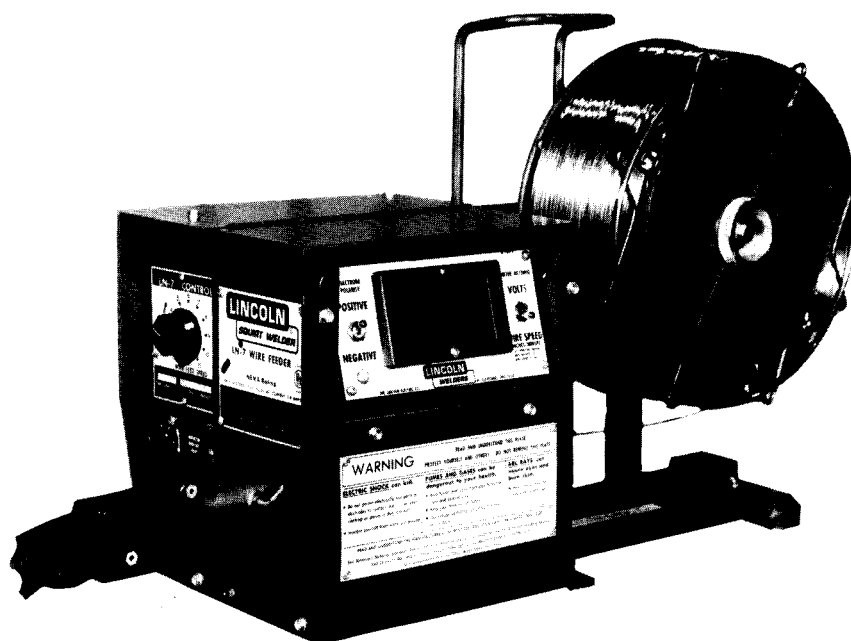
OPERATING MANUAL

LN-7 and LN-7 GMA

WIRE FEEDER

(Code 7930 and Higher.
For Older Codes see IM-267.)

This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.



Type K-290 (Code 7930)
Type K-375 (Code 8729)
Type K-379 (Code 8740 & 8750)
Type K-380 (Code 8760 & 8992)
Type K-403 (Code 9006 & 9060)

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.

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 keep 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.

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SEC. J2.2 — INSTALLATION

Sec. J2.2.0

Product Description

The LN-7 semiautomatic constant speed wire feeder is recommended for self-shielded flux-cored Innershield® electrodes, submerged arc welding (if constant voltage is satisfactory), and other open arc welding.

The LN-7 GMA is specifically equipped for gas metal arc welding. It has been factory assembled with the following features:

- Standard LN-7 wire feeder
- Factory installed gas solenoid valve and gas fittings.
- Factory installed 30 lb. reel mounting stand with Readi-Reel® Adapter and 2 in. dia. spindle (also suitable for spools)

The electrical and mechanical operation of this unit is the same as described in this manual for the standard LN-7.

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Sec. J2.2.1

Attaching Wire Reel Stand

With the standard LN-7, it is necessary to attach a wire reel stand for the electrode. The mounting hardware for mounting this stand is included with the LN-7. (Screws and washers are inserted in their respective mounting holes.) To connect:

- A. Remove the 3/8" screws from the back of the wire feed unit.
- B. Place the wire reel stand mounting bracket in position against the back of the wire feed unit.
- C. Replace and tighten the screws. The long screw and plain washer go into the top hole.

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Sec. J2.2.2

Wire Feed Drive Roll and Guide Tubes

NOTE: The maximum sizes the LN-7 will satisfactorily feed are 7/64" Innershield® and 3/32" solid electrodes.

WARNING: Turn off power source before installing or changing drive roll and/or guide tubes. After installation is completed and when inching with gun trigger, electrode and drive mechanism are "hot" to work and ground.

The drive roll, idle roll and guide tubes for the electrode size specified on the order is shipped with the wire feed unit. The electrode sizes that can be fed with each roll and guide tube are stenciled on each part. Check the kit for proper components. Instructions to install these parts on new machines or replace them on used machines, are as follows:

- A. Loosen the idle roll tension screw (item 6) or use a screwdriver between the idle roll arm and the gear box boss at point A to pry the idle arm out until the idle roll clears the drive roll.
- B. Remove hex head screw (item 1) and the drive roll clamping collar (item 2). (On new machines remove the tape and drive roll key from the collar.) Insert the key into keyway of the output shaft.
- C. Wipe the drive roll and spacer surfaces clean. A light lubricant such as WD-40® will aid cleaning. Install one drive roll, then the spacer, and the second drive roll. (For 1/16 electrode there is no spacer.) (For .030, .035, .045 and .052 electrode, the drive roll is one piece.)
- D. Install drive roll clamping collar and hex head screw previously removed. Tighten hex head screw securely.

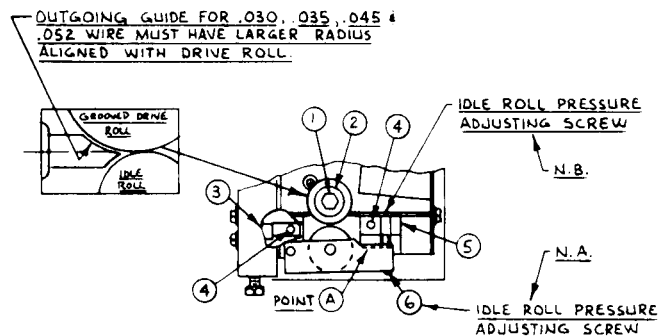
E. Back out the two guide tube clamping set screws (item 4).

F. Insert the outgoing guide (item 3) (the one with the plastic insert) into the front hole. The guide tubes for .030, .035, .045 and .052 wire have a non-symmetrical chisel end. Be certain the contour with the larger radius and the exposed oval opening for the wire faces the grooved drive roll. Push the guide tube back as far as it will go and tighten the clamping set screw. These set screws are dog points. When the two tubes are installed properly these dog points will lock into the annular grooves that are in each of the guide tubes.

G. Tighten the idle roll tension screw (item 6) or remove the screwdriver used as a wedge in Step A. The tension screw should normally* be tightened until it bottoms out and then backed out two turns for wire sizes 1/16" and larger. For smaller wire sizes and aluminum wire, the tension screw setting depends upon the type of wire, surface condition, lubrication and hardness. The optimum roll setting can be determined when there are wire stoppages at the gun. If the wire "bird nests", jams or breaks after cleaning the drive roll, the idle roll spring pressure is set too high. When properly set, during a stoppage, the drive rolls will slip and if the electrode is removed from the cable there will be a slight waviness in the electrode for about a foot beyond the slip marks on the electrode. If there is no waviness, the pressure is set too low.

H. To change drive rolls and guide tubes for a different size, reverse the above procedure.

* Reduce tension further if excessive distortion of certain tubular electrodes occurs.



N.A. USED ON SP-200 & LN-7 WITH CODE NO. 7930 AND ABOVE.

N.B. USED ON LN-7 WITH CODE NO. BELOW 7930.

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Sec. J2.2.3

Gun and Gun Cable Assemblies

General

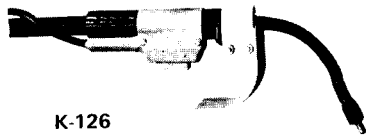
The LN-7 is used with various guns. In all cases Lincoln gun and cables are shipped assembled ready to weld. Use the gun and cable assembly for the electrode type (solid or Innershield) and electrode size to be used.

Innershield® Guns

Squirtgun K-126 is recommended for most welding with .068 through 3/32" electrodes. Install the insulated nozzle extension (or thread protector) and the nozzle contact tip for the stickout and electrode size being used.

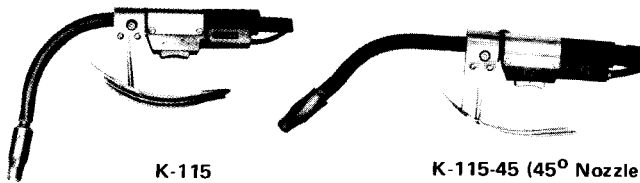
Sec. J2.2.3 (Continued)

For heavy duty welding with $\frac{3}{32}$ " electrode use K-115-3/32 or K-115-45-3/32. Install a $\frac{3}{32}$ " contact tip and the insulated nozzle extension for the stickout being used.



K-126

For welding with $\frac{7}{64}$ " electrode, use K-115-3/32 with an M-11474-.120 nozzle or a K-115-45-3/32 with an M-11510-.120 nozzle. Also install a $\frac{7}{64}$ " contact tip and the insulated nozzle extension for the stickout being used.

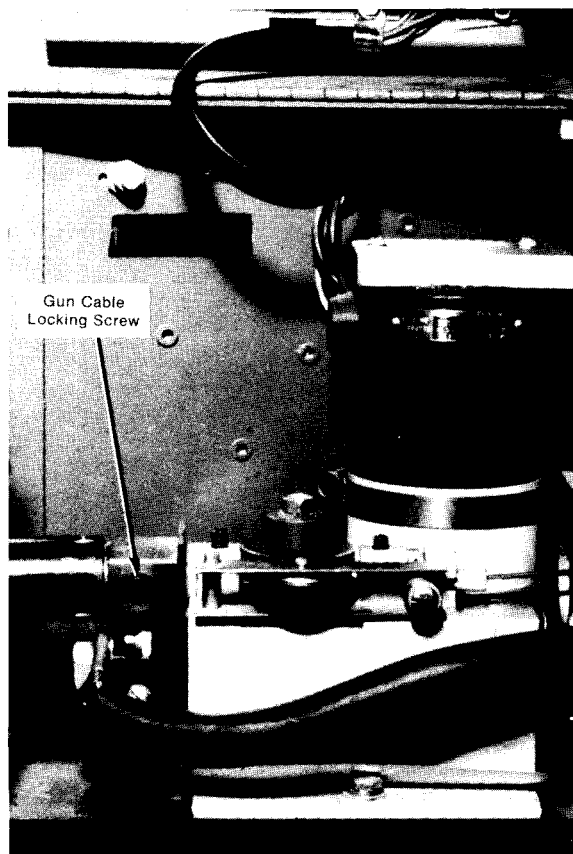


K-115

K-115-45 (45° Nozzle)

GMAW Guns

Several suitable guns are available from various manufacturers. Contact your local Lincoln distributor to help make a selection.



Gun Cable: LN-7 to Gun

Lay the cable out straight. Insert the connector on the welding conductor cable thru the large hole in the front panel of the LN-7 and into the brass block on the front of the gear box. Make sure it is all the way in and tighten the locking screw with a $\frac{3}{16}$ hex Allen wrench. Keep this connection clean and bright. Connect the control cable polarized amphenol plug into the mating receptacle on front of the control section below the nameplate.

Linconditioner™ Guns

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. Instructions are shipped with the equipment.

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Sec. J2.2.4

LN-7 GMA Shielding Gas

WARNING: GAS UNDER PRESSURE IS EXPLOSIVE. ALWAYS KEEP GAS CYLINDERS IN AN UPRIGHT POSITION AND ALWAYS KEEP CHAINED TO UNDERCARRIAGE OR STATIONARY SUPPORT. SEE AMERICAN NATIONAL STANDARD Z-49.1, "SAFETY IN WELDING AND CUTTING" PUBLISHED BY THE AMERICAN WELDING SOCIETY.

Customer must provide cylinder of shielding gas, pressure regulator, flow control valve and hose from flow valve to gas inlet fitting of the LN-7 GMA. Install per the following:

Code 9006:

Route $\frac{3}{16}$ I.D. inlet gas hose through the hole in the rear of the case that the electrode lead is routed through and push it on to the inlet ("IN" — stenciled on solenoid mounting bracket) fitting of the solenoid valve. Route $\frac{3}{16}$ I.D. gas hose from the gun through the one inch hole in the front of the case and push it on to the outlet fitting of the solenoid valve.

Above Code 9006:

1. Connect a supply hose from the gas cylinder flow valve to the $\frac{5}{8}$ -18 female inert gas fitting on the rear of the LN-7 GMA.
2. Install the barbed fitting and union nut to the $\frac{5}{8}$ -18 female inert gas fitting on the front of the LN-7 GMA. Connect $\frac{3}{16}$ " I.D. gas hose from gun to barbed fitting.

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

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SEC. J2.3 — ELECTRICAL INSTALLATION

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

Sec. J2.3.1

Input Cable: LN-7 to Power Source

The K-291 input cable between the wire feeder and the power source consists of a six-conductor control cable and a 3/0 electrode cable. It is rated at 600 amps, 60% duty cycle. The K-404 input cable is similar to the K-291 but includes a 1/0 electrode cable and is rated at 350 amps, 60% duty cycle. The control cables have lugged leads on the power source end and a polarized plug on the wire feeder end. **With the power source turned off**, install the input cable per the following instructions:

1. Connect the end of the control cable with the lugged leads to a constant voltage type power source. For Lincoln power sources follow exactly the instructions for the specific power source per the connection diagram in Sec. J2.3.2. Include any jumpers called for on the connection diagram. *Do not* add any other jumpers or connections.
2. For constant voltage power sources without an internal output contactor, and requiring a K-240 Contactor Kit, see S-15416 connection diagram, page 9. For constant voltage power sources with an output contactor but no terminal strip see S-16321 connection diagram, page 11.
3. If input cables longer than the standard length for the K-291 (available as 7, 25, 50, 75 and 100' lengths) must be used, 50' K-292 extension cables can be installed. These have polarized plugs on each end of the control cable and include a 4/0 electrode cable. Install the extensions between the standard input cable and the wire feeder. Total input cable length should not exceed 400'. When using the longer lengths of extension cables, it may be necessary to add parallel electrode cables to minimize the voltage drop in the cable.
4. Remove the screws holding the clamp to the base of the wire reel mounting assembly. Put the input cable conductors under the clamp and install the screws.
5. Route the end of the electrode cable thru the large hole in the back panel of the LN-7 case. Connect to the brass block on the front of the gear box using the 1/2-13 x .75 bolt provided. **Be sure the cable is placed to allow easy access to the idle roll tension screw and to allow the drive roll section cover to close.** (See photo on page 5.)

6. Connect the input control cable polarized amphenol plug into the mating 6 pin receptacle on the rear of the control section.
7. Connect a work lead of sufficient size and length (per the following table) 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.

Current Amps 60% Duty Cycle	Copper Work Cable Length	
	Up to 50'	50' - 100'
300	0	00
400	00	000
500	00	000
600	000	0000

8. **WARNING:** Never operate a Lincoln power source that has a jumper from #2 to #4 on the terminal strip, or a power source without a contactor, with this wire feeder. To do so would defeat the purpose of the grounding lead protector circuit and could result in overheating of the electrical ground circuit to the wire feeder.
9. The control P.C. board of LN-7's manufactured after early 1984 have a jumper pin that is used to select either "F" (fast acceleration) or "S" (slow acceleration). The jumper is shipped connected to the "S" pin except LN-7 GMA's (code 9060 and higher). The LN-7 GMA unit is shipped with the jumper on the "F" pin, (this is usually preferable for starting and higher wire feed speeds with this process). The "S" pin is normally used for welding with Innershield® electrodes. To gain access to the control P.C. board, with input power off, remove the side cover on the control side of the LN-7.

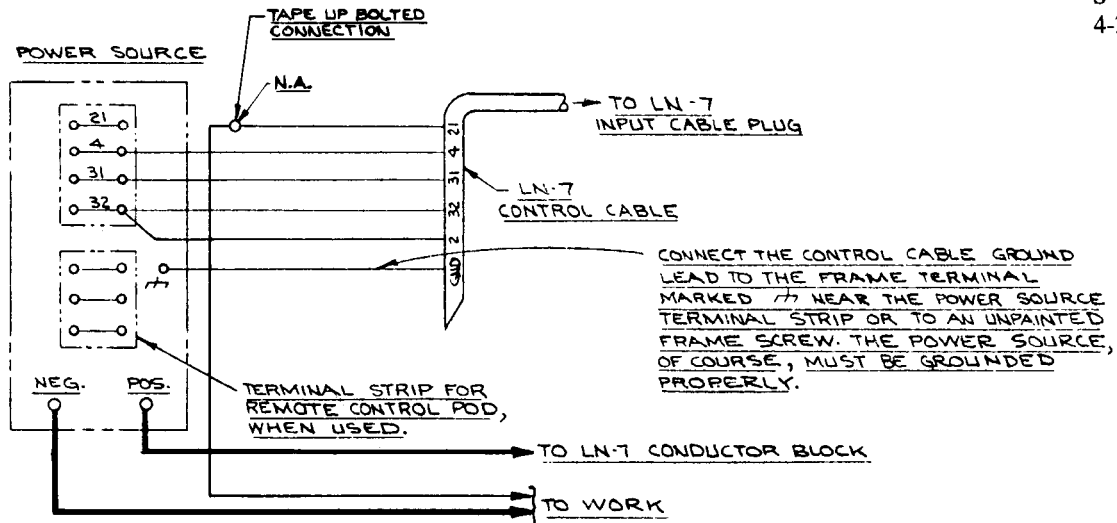
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Sec. J2.3.2

Connection Diagrams: LN-7 to Lincoln Power Sources

To an Idealarc R3S-250 or R3S-325

S-16144
4-20-79



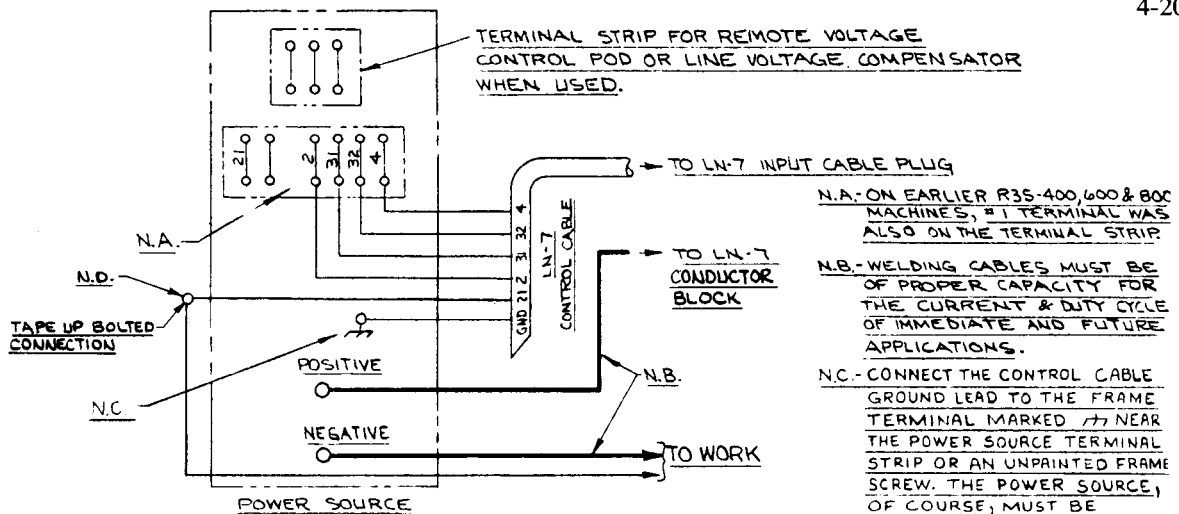
ABOVE DIAGRAM SHOWS ELECTRODE CONNECTED POSITIVE. TO CHANGE POLARITY, REVERSE THE ELECTRODE AND WORK LEADS AT THE POWER SOURCE.

N.A. EXTEND LEAD 21 USING #14 OR LARGER INSULATED WIRE PHYSICALLY SUITABLE FOR THE INSTALLATION. AN S-16586-03 REMOTE VOLTAGE SENSING WORK LEAD IS AVAILABLE FOR THIS PURPOSE. CONNECT IT DIRECTLY TO THE WORK PIECE KEEPING IT ELECTRICALLY SEPARATE FROM THE WELDING WORK LEAD CIRCUIT AND CONNECTION FOR CONVENIENCE, THIS EXTENDED #21 LEAD SHOULD BE TAPED TO THE WELDING WORK LEAD. (THIS EXTENDED #21 LEAD CONNECTION REPLACES THE NEED TO EMPLOY THE REMOTE WORK LEAD ACCESSORY ON LN-7 METER KITS WHICH HAVE A DIRECT WORK LEAD JACK. AN LN-7 NOT EQUIPPED WITH A METER KIT DOES NOT REQUIRE LEAD 21 TO BE EXTENDED.)

NOTE: LEADS #21 & GND. DO NOT APPEAR ON LN-7'S WITH CODES BELOW 7026.

To an Idealarc R3S-400, 600 or 800 Welder

S-16141
4-20-79A



ABOVE DIAGRAM SHOWS ELECTRODE CONNECTED POSITIVE. TO CHANGE POLARITY, REVERSE THE ELECTRODE AND WORK LEADS AT THE POWER SOURCE.

N.D. EXTEND LEAD 21 USING #14 OR LARGER INSULATED WIRE PHYSICALLY SUITABLE FOR THE INSTALLATION. AN S-16586-03 REMOTE VOLTAGE SENSING WORK LEAD IS AVAILABLE FOR THIS PURPOSE. CONNECT IT DIRECTLY TO THE WORK PIECE KEEPING IT ELECTRICALLY SEPARATE FROM THE WELDING WORK LEAD CIRCUIT AND CONNECTION FOR CONVENIENCE, THIS EXTENDED #21 LEAD SHOULD BE TAPED TO THE WELDING WORK LEAD. (THIS EXTENDED #21 LEAD CONNECTION REPLACES THE NEED TO EMPLOY THE REMOTE WORK LEAD ACCESSORY ON LN-7 METER KITS WHICH HAVE A DIRECT WORK LEAD JACK. AN LN-7 NOT EQUIPPED WITH A METER KIT DOES NOT REQUIRE LEAD 21 TO BE EXTENDED.)

N.A. ON EARLIER R3S-400, 600 & 800 MACHINES, #1 TERMINAL WAS ALSO ON THE TERMINAL STRIP.

N.B. - WELDING CABLES MUST BE OF PROPER CAPACITY FOR THE CURRENT & DUTY CYCLE OF IMMEDIATE AND FUTURE APPLICATIONS.

N.C. - CONNECT THE CONTROL CABLE GROUND LEAD TO THE FRAME TERMINAL MARKED WITH AN ARROW NEAR THE POWER SOURCE TERMINAL STRIP OR AN UNPAINTED FRAME SCREW. THE POWER SOURCE, OF COURSE, MUST BE GROUNDED PROPERLY.

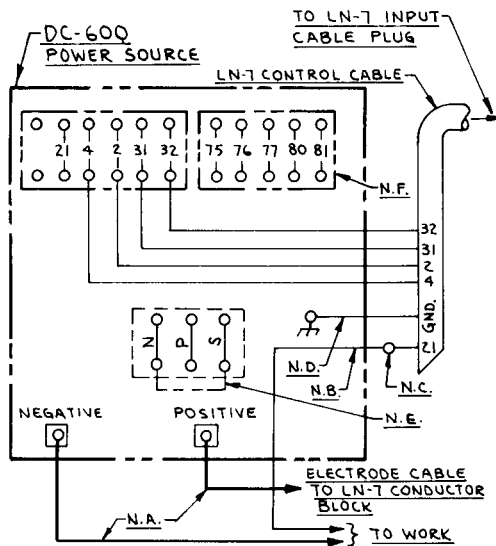
NOTE: LEADS #21 & GND. DO NOT APPEAR ON LN-7'S WITH CODES BELOW 7026.

Sec. J2.3.2 Continued

Connection Diagrams: LN-7 to Lincoln Power Sources

To an Idealarc DC-600

S-16368
5-11-84M



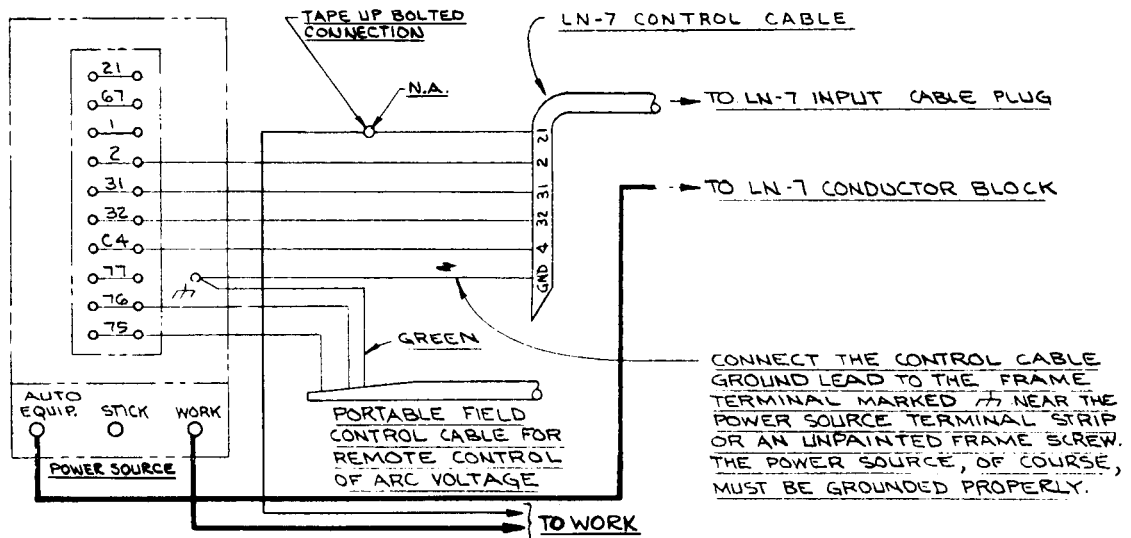
Above diagram shows electrode connected positive. To change polarity, turn power off, reverse the electrode and work leads at the power source and position the switch on power source to proper polarity.

WARNING: Turn input power to power source off before connecting the LN-7 wire feeder.

- N.A. welding cables must be of proper capacity for the current and duty cycle of immediate and future applications. See LN-7 Operating manual for proper sizes.
- N.B. If LN-7 is equipped with a meter kit, extend LN-7 control cable lead #21 using #14 AWG or larger insulated wire physically suitable for the installation. An S-16586-LENGTH remote voltage sensing work lead may be ordered for this purpose. Connect it directly to the work piece independent of the welding work cable connection. For convenience, this extended #21 lead should be taped to the welding work lead. (If the length of welding work cable is short, less than 25 feet, and connections can be expected to be reliable, then control cable lead #21 does not need to be extended and can be directly connected to terminal #21 on the terminal strip.)
- N.C. Tape up bolted connection if lead #21 is extended.
- N.D. Connect the control cable ground lead to the frame terminal marked ⏏ near the power source terminal strip. The power source grounding terminal (marked ⏏ and located near the power source input power connections) must be properly connected to electrical ground per the power source operating manual.
- N.E. For DC-600 codes below 8200. Connect a jumper from "N" to "S". There is no U.P.S. terminal strip on codes above 8200.
- N.F. If an optional remote voltage control is used, connect it to this terminal strip.

To a SAM-400 Motor-Generator or Engine Welder

S-16145
4-20-79



N.A. EXTEND LEAD #21 USING #14 OR LARGER INSULATED WIRE PHYSICALLY SUITABLE FOR THE INSTALLATION. AN S-16586-LENGTH REMOTE VOLTAGE SENSING WORK LEAD IS AVAILABLE FOR THIS PURPOSE. CONNECT IT DIRECTLY TO THE WORK PIECE KEEPING IT ELECTRICALLY SEPARATE FROM THE WELDING WORK LEAD CIRCUIT AND CONNECTION. FOR CONVENIENCE, THIS EXTENDED #21 LEAD SHOULD BE TAPED TO THE WELDING WORK LEAD. (THIS EXTENDED #21 LEAD CONNECTION REPLACES THE NEED TO EMPLOY THE REMOTE WORK LEAD ACCESSORY ON LN-7 METER KITS WHICH HAVE A DIRECT WORK LEAD JACK. AN LN-7 NOT EQUIPPED WITH A METER KIT DOES NOT REQUIRE LEAD #21 TO BE EXTENDED.)

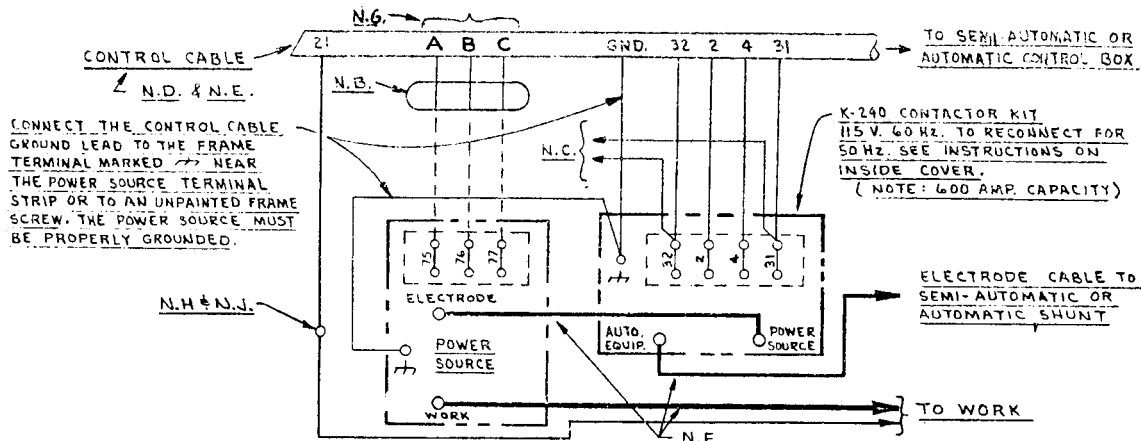
NOTE: LEADS #21 & GND DO NOT APPEAR ON LN-7'S WITH CODES BELOW 7026

Sec. J2.3.2 Continued

Connection Diagrams: LN-7 to Lincoln Power Sources

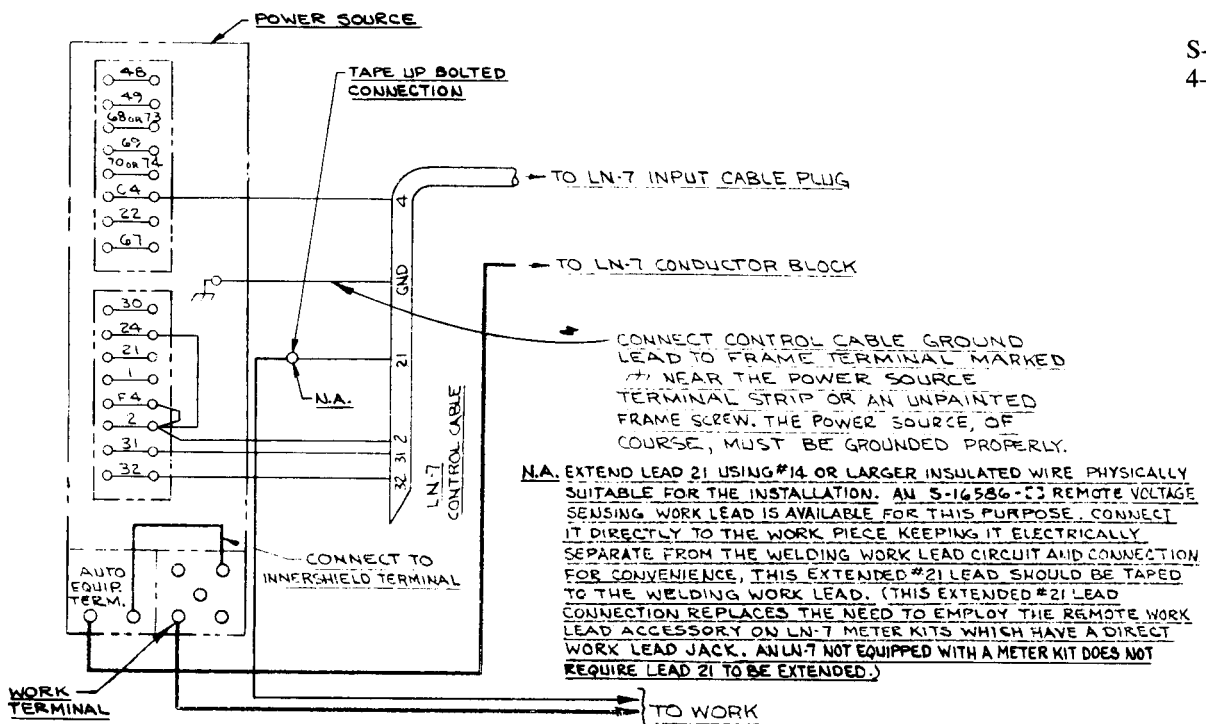
To Power Sources Without Output Contactor Requiring a K-240 Contactor Kit

S-15416
1-25-80A



- N.A.** 115 V. A.C. will not be turned off when power source is turned off. Contactor kit and semi-automatic or automatic equipment will still have 115 V. control power supplied until power supplied to terminals #31 and 32 is turned off.
- N.B.** On Lincoln power sources without a remote control terminal strip having these numbers or when using non-Lincoln power sources tape up these leads separately.
- N.C.** To 115 V. A.C. 500 V. A. plus 250 V.A. additional if Lincoln travel carriage is used.
- N.D.** Leads #21, #75, #76, #77, Ground, A, B, & C do not appear on LN-7's with codes below 7026.
- N.E.** Leads #75, #76, #77, A, B & C do not appear on LN-7's with codes above 7026.
- N.F.** Welding cables must be of proper capacity for the current and duty cycle of immediate and future applications.
- N.G.** If using an older control cable: Connect Lead #77 to #75 on terminal strip, connect lead #76 to #76 on terminal strip, connect lead #77 to #77 on terminal strip.
- N.H.** Extend lead 21 using #14 or larger insulated wire physically suitable for the installation. An S-16586-C3 remote voltage sensing work lead is available for this purpose. Connect it directly to the work piece keeping it electrically separate from the welding work lead circuit and connection. For convenience, this extended #21 lead should be taped to the welding work lead. (This extended #21 lead connection replaces the need to employ the remote work lead accessory on LN-7 and LN-8 meter kits which have a direct work lead jack. An LN-7 not equipped with a meter kit does not require lead 21 to be extended.)
- N.J.** Tape up bolted connection.

To a SAF-600, SA-800 or SAF-600-B ("-OA") Welder



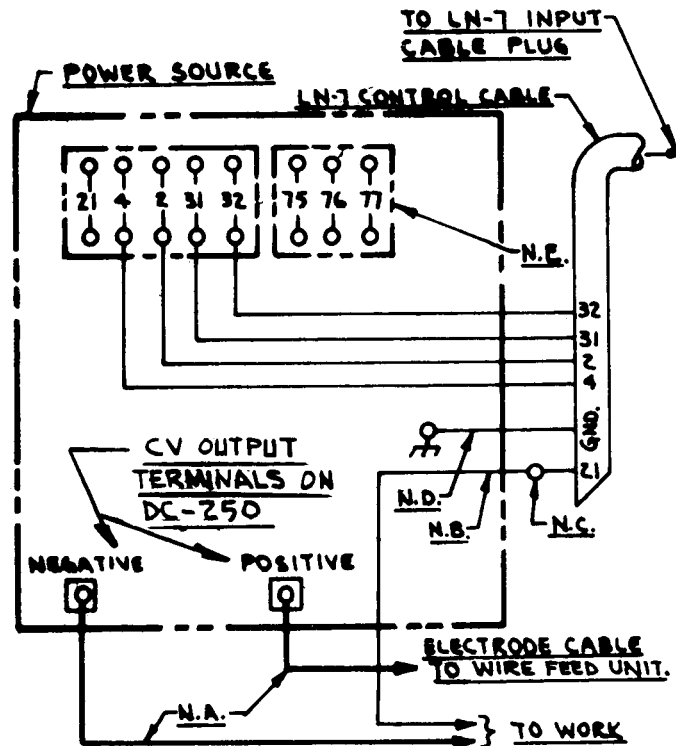
S-16140
4-20-79

NOTE: LEADS #21 & GND. DO NOT APPEAR ON LN-7'S WITH CODES BELOW 7026

Sec. J2.3.2 Continued

Connection Diagrams: LN-7 To Lincoln Power Sources

To an Idealarc DC-400



Above diagram shows electrode connected positive. To change polarity, turn power off, reverse the electrode and work leads at the power source.

WARNING: Turn input power to power source off before connecting the LN-7 wire feeder.

- N.A.** Welding cables must be of proper capacity for the current and duty cycle of immediate and future applications. See LN-7 Operating Manual for proper sizes.
- N.B.** If LN-7 is equipped with a meter kit, extend LN-7 control cable lead #21 using 14 AWG or larger insulated wire physically suitable for the installation. An S-16586-~~LN-7~~ remote voltage sensing work lead may be ordered for this purpose. Connect it directly to the work piece independent of the welding work cable connection. For convenience, this extended #21 lead should be taped to the welding work lead. (If the length of welding work cable is short, less than 25 feet, and connections can be expected to be reliable, then control cable lead #21 does not need to be extended and can be directly connected to terminal #21 on the terminal strip.)
- N.C.** Tape up bolted connection if lead #21 is extended.
- N.D.** Connect the control cable ground lead to the frame terminal marked ⚡ near the power source terminal strip. The power source grounding terminal (marked ⚡ and located near the power source input power connections) must be properly connected to electrical ground per the power source operating manual.
- N.E.** If an optional remote voltage control is used, connect it to this terminal strip.

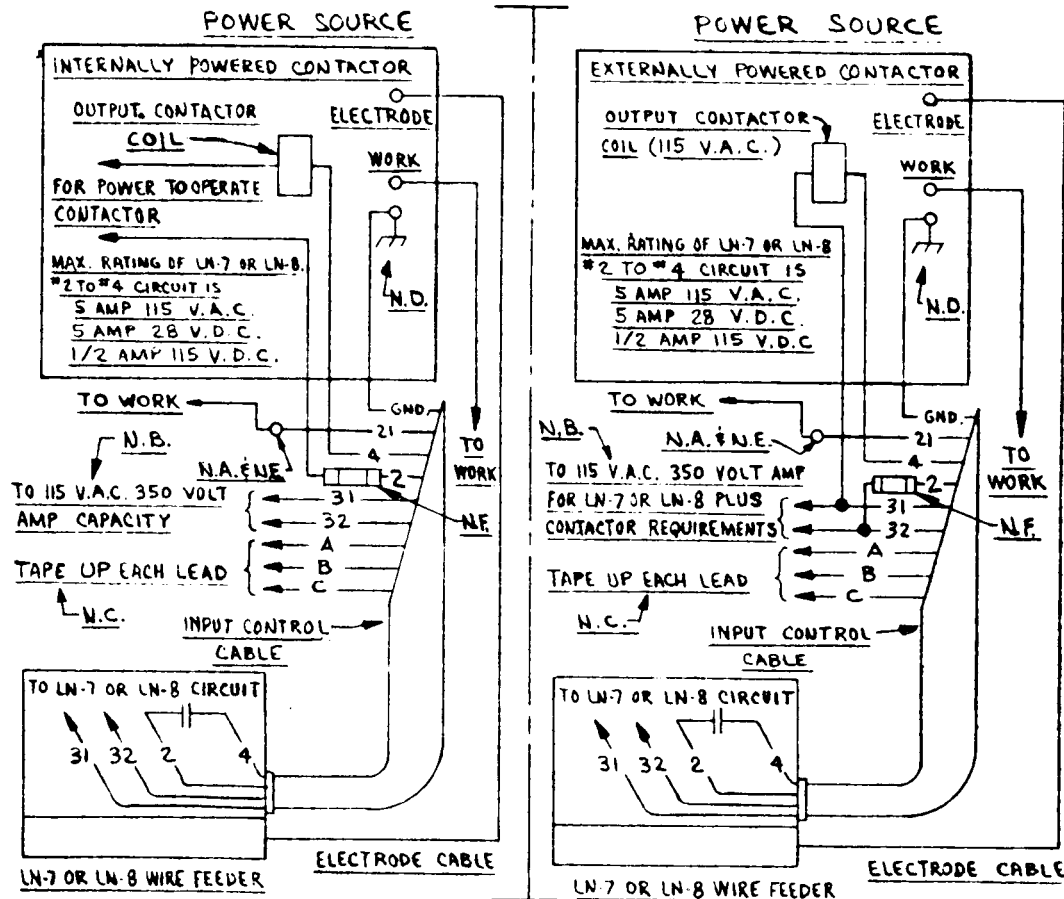
S-17372
(5-11-84M)

ELECTRICAL INSTALLATION — CONT'D

Sec. J2.3.3

Connection of LN-7 to Power Sources Equipped with a Contactor But No Terminal Strip


REFER TO WIRING DIAGRAM OF POWER SOURCE TO BE USED TO FIND THE TYPE OF CONTACTOR CIRCUIT.



N.A. TAPE UP BOLTED CONNECTION.

N.B. 115 V.A.C. WILL NOT BE TURNED OFF WHEN POWER SOURCE IS TURNED OFF. SEMI-AUTOMATIC EQUIPMENT WILL STILL HAVE 115 V. CONTROL POWER SUPPLIED UNTIL POWER SUPPLIED TO TERMINALS #31 AND #32 IS TURNED OFF.

N.C. LEADS "A", "B" AND "C" DO NOT APPEAR IN THE LN-7 CONTROL CABLE, LN-7'S WITH CODE NO. 7025 AND BELOW, ALSO DO NOT HAVE LEADS #21 AND GND. IN THE CONTROL CABLE. OLDER LN-8 CONTROL CABLES ARE TAGGED #75, #76 AND #77 INSTEAD OF "A", "B" AND "C".

N.D. CONNECT THE INPUT CONTROL CABLE GROUND LEAD TO THE FRAME TERMINAL MARKED  OR TO AN UNPAINTED FRAME SCREW. THE POWER SOURCE, OF COURSE, MUST BE GROUNDED PROPERLY.

N.E. EXTEND LEAD 21 USING #14 OR LARGER INSULATED WIRE PHYSICALLY SUITABLE FOR THE INSTALLATION. AN S-16286-2 REMOTE VOLTAGE SENSING WORK LEAD IS AVAILABLE FOR THIS PURPOSE. CONNECT IT DIRECTLY TO THE WORK PIECE KEEPING IT ELECTRICALLY SEPARATE FROM THE WELDING WORK LEAD CIRCUIT AND CONNECTION. FOR CONVENIENCE, THIS EXTENDED #21 LEAD SHOULD BE TAPED TO THE WELDING WORK LEAD. (THIS EXTENDED #21 LEAD CONNECTION REPLACES THE NEED TO EMPLOY THE REMOTE WORK LEAD ACCESSORY ON LN-7 AND LN-8 METER KIT WHICH HAVE A DIRECT WORK LEAD JACK. AN LN-7 NOT EQUIPPED WITH A METER KIT DOES NOT REQUIRE LEAD 21 TO BE EXTENDED.

N.F. INSTALL A 5 AMP OR SMALLER FUSE IN LEAD #2 TO PROTECT THE 2-4 CIRCUIT IN WIRE FEEDER.

S-16321
4-20-79A

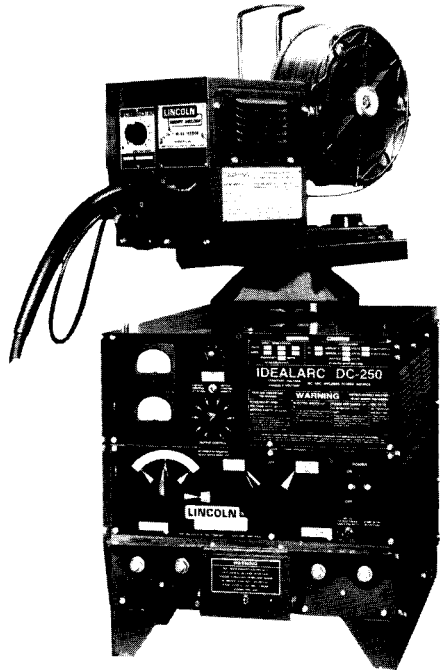
SEC. J2.5 — OPTIONAL FEATURES INSTALLATION

Sec. J2.5.3

K-178 Mounting Platform — LN-7 on Idealarc Power Sources

(Requires a K-303, K-376, K-377 or K-378 Wire Reel Assembly)

This is a turntable type platform for mounting the LN-7 on the top of Idealarc power sources. Bolt the platform to the lift bail per instructions (S-14817) supplied with the platform.



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Install ¼" quick connect terminals to the leads from the auxiliary equipment. Route the leads through the same hole that the motor leads pass through to the inside of the control box and connect to terminals #32A and #7 on the relay P.C. board. Route such that the leads are .50" or greater away from the chassis mounted power resistor.

The current draw of this circuit must not exceed ½ ampere. **CAUTION: Do not connect the power source contactor to these terminals.**

NOTE: The auxiliary equipment contacts open when the trigger is released. If it is desired to continue power to auxiliary equipment during the K-295 burnback time, this can be accomplished *only* if using an R3S, DC-400 or DC-600 power source by connecting the 115 volt AC auxiliary equipment leads to #4 and #31 on the power source terminal strip. The auxiliary equipment power requirements should not exceed 15 watts.

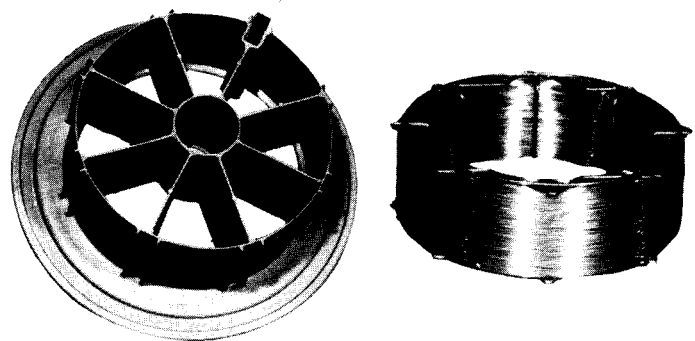
October 1982

Sec. J2.5.7

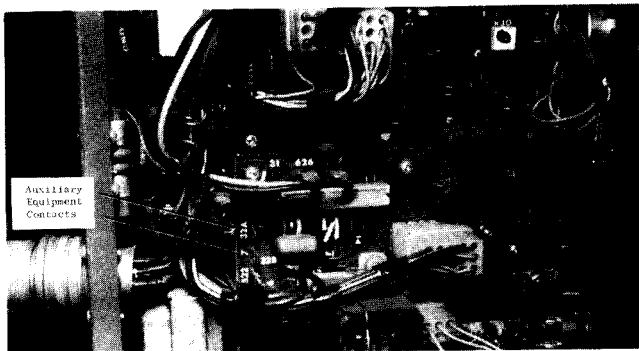
K-162 Spindle for Mounting Readi-Reels and 10 thru 30 Pound Spools (For use with K-303 or K-376 Wire Reel Stand)

To mount the spindle kit for 10 thru 30 pound spool, remove the shaft for the standard 50-60 pound wire coils from the mounting framework. Install the spindle per the instructions shipped with the kit.

When used with Readi-Reels the K-363-P Readi-Reel Adapter is required.



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Sec. J2.5.5

Auxiliary Equipment Contacts

The power for 115 volt AC auxiliary equipment can be obtained from the terminals inside the control box. The contacts are "hot" only when the welding circuit is "on."

Turn input power to LN-7 off.

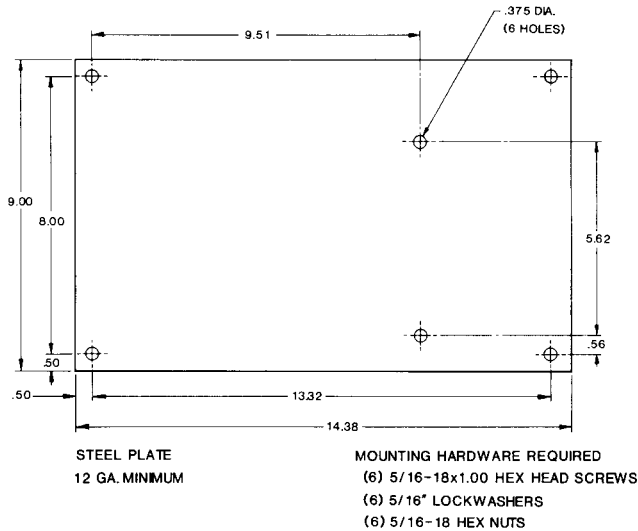
Sec. J2.5.8

K-163 Undercarriage (LN-7 Requires K-303, K-376, K-377 or K-378)

The undercarriage includes the wheels, handle and hardware. Mount the casters at the front and the wheels to the rear of the platform. Be sure the round, rear axle is to rear of the mounting bolts that hold the U-shaped axle member to the frame. Bolt the handle to the front of the platform so the LN-7 can be tilted back and wheeled like a two-wheel truck. Holes for installing the K-303 or K-376 wire stand are provided in the platform.

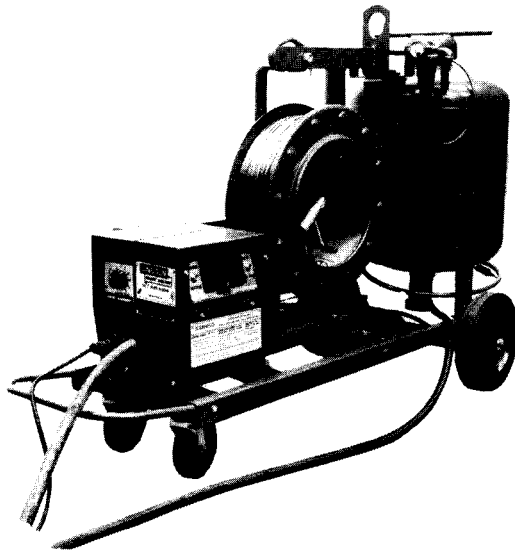
Newer models also include holes for installing the K-377 or K-378 wire reel stand. With older style K-163's, the plate below is required for mounting these smaller wire reel stands.

April 1985



STEEL PLATE
12 GA. MINIMUM

MOUNTING HARDWARE REQUIRED
(6) 5/16-18x1.00 HEX HEAD SCREWS
(6) 5/16" LOCKWASHERS
(6) 5/16-18 HEX NUTS



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Sec. J2.5.9

K-295 Burnback Kit

This kit is available for those applications where the LN-7 is used for small wire (1/16-.030) feeding and there is a tendency for the electrode to overrun at the end of the weld and stick in the crater. The kit provides a precise time delay that allows the wire to be burned off at the end of the weld. The delay is adjustable for optimum burn back depending on wire size, process, procedure, etc.

The kit is also useful for those installations where the gun is clamped in a fixture and cannot be lifted from the work at the end of the weld.

Installation instructions (S-16155) are included with the kit.

October 1982

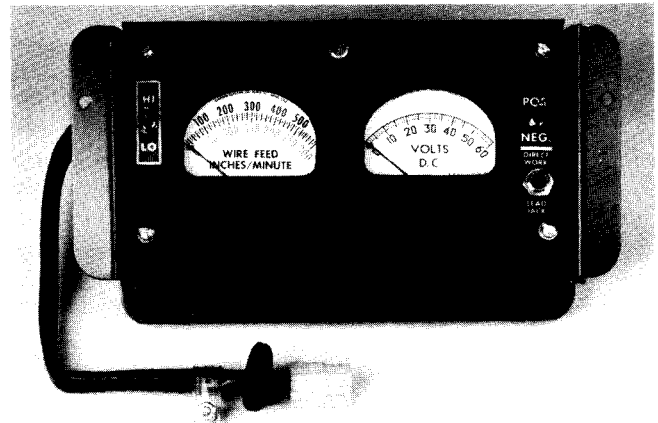
Sec. J2.5.10

K-293 and K-294 Meter Kits (For K-290 and K-379 LN-7's)

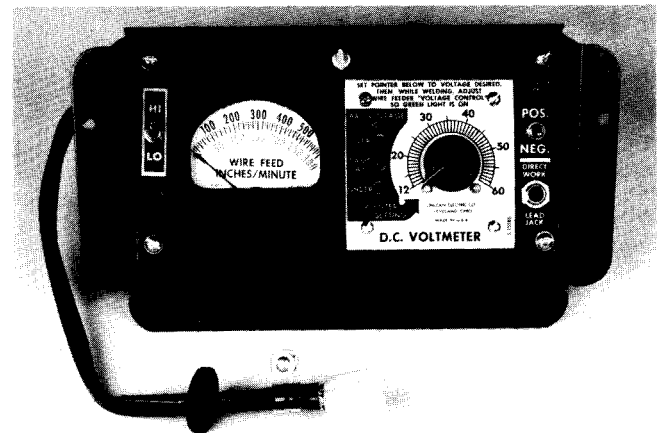
Both kits include a dual range analog wire feed speed meter, a voltmeter and a voltmeter polarity switch. Installation instructions (M-13495) are included with the kits and may also be found at the back of this manual.

The wire feeder must be recalibrated if the motor or the control P.C. board is replaced. (See the meter kit installation instructions.)

The K-293 kit includes an analog voltmeter which indicates voltage directly on a scale.



The K-294 kit includes an electronic voltmeter with indicator lights. A green light flows when the actual voltage matches the voltage preset on the voltmeter dial. Either red light glows when the voltage is higher or lower than the preset voltage.



Digital Meter Kit (Included with K-380 LN-7's)

The K-380 LN-7's include a factory installed and calibrated digital meter kit. The meter has a three digit LED display. A meter reading switch selects either wire speed (50-600 in/min) or volts (0-80 V). A polarity switch selects either positive or negative

Sec. J2.5.10 (Continued)

electrode. A hold feature freezes the display for approximately 6 seconds at the reading just prior to stopping welding. This feature allows the operator to easily check his procedures at the end of welding and make adjustments if required.

April 1985

Sec. J2.5.10a

Installation Instructions (LN-7 Meter Kits)

1. Turn off power source and remove the input control cable from receptacle at rear of the LN-7.
2. Remove the louvered panel from the door which covers the drive roll section by removing the (4) self-tapping screws.
3. Remove the cover on the control side of the LN-7 by removing the (4) self-tapping screws.
4. Mount the meter kit to the LN-7 drive roll cover door using the same holes and screws used to mount the louvered panel removed in Step 2 above. For the K-293 analog kit, or the K-294 analog-electronic kit, the guard bar is to be installed as shown in Figure 1, to protect the meter.
5. Remove the hole plug from the .88 dia. hole in the inside panel of the control section above the motor.
6. Route the meter kit plug thru the .88 dia. hole. Connect plug to the LN-7 meter receptacle located on the upper left portion of the LN-7 Control P.C. Board (upper board) as shown in Figure 2.
7. Push the rubber grommet on the meter kit cable into position in the .88 diameter hole. Attach the lead clamp on the meter kit cable to the top of the power resistor mounting screw as shown in Figure 3. Check to see that the meter kit cable does not touch the power resistor and that it is not pinched or strained when the drive roll cover door is raised and lowered. With the door raised, there must be 1/2" or greater clearance from the cable to the hinge.
8. Replace the control side cover and (4) self-tapping screws. Reconnect input control cable.

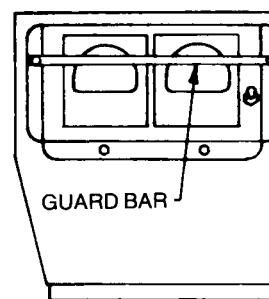
Field Calibration of the Wire Feed Speedmeter

The LN-7 wire feed units are adjusted at the factory for correct calibration to the LN-7 meter kits. The only time it should need readjustment is when a field replacement of the LN-7 control P.C. board is made, or if an LN-7 control is used with an LN-7 feed motor not originally shipped with the control.

The recalibration is made as follows:

1. Disconnect the electrode cable at the power source.
2. Run the feed motor at full speed for about 6 minutes.
3. Set the speed control knob to "5" on the dial plate. (If best accuracy at a particular speed setting is desired, that setting may be used.)
4. If a K-283 Portable Digital Wire Speed Meter is not available, use the following procedures to measure wire speed. While feeding wire through a straight cable, cut the wire off at the tip of the nozzle and in the same instant, start timing a 30 second time interval. At precisely the end of the 30 second interval, again cut off the wire at the tip of the nozzle.

5. Accurately measure the length of this fed wire (in inches), then multiply this length by two to obtain the calculated inches per minute feed speed.
6. While feeding again with the same conditions, adjust the correct trimmer [CAL D for digital kit and CAL A (CAL trimmer on earlier units) for analog kit]* on the LN-7 control P.C. board so the speedmeter reads the measured or calculated in/min. With the analog kit, always use the speedmeter scale which will permit the reading to be nearest to full scale.
7. To be sure the adjustment is correct, repeat steps 4 and 5 and check if it matches the speedmeter reading during the feeding period.
8. If using a digital meter kit adjust **only** the CAL D trimmer. If using an analog kit, adjust **only** the CAL A trimmer (CAL trimmer on earlier units). Do **NOT** adjust trimmers in the meter kits.
9. Reconnect the electrode cable to the power source.



K-293 or K-294 METER KIT*

FIG. 1

M-13495
10-29-82M

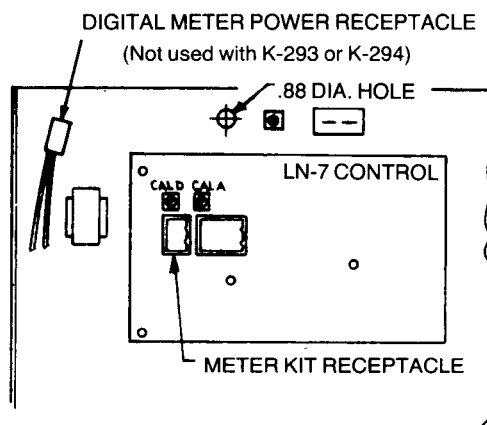


FIG. 2

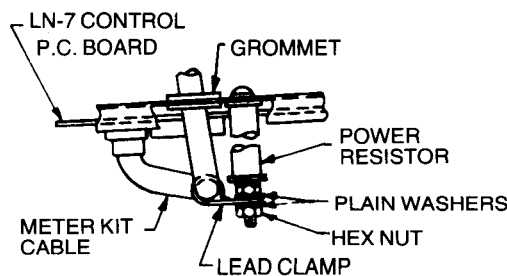


FIG. 3

NOTE: LN-7's with codes 7930 and 8740 can accept only the K-293 or K-294 meter kit.

April 1985

Sec. J2.5.11

Remote Voltage Control

Install on the side of the control box cover per the instructions (S-14267) included with the kit.

The K-775 remote output control kit can be installed on the LN-7 when it is used with R3S, DC-400 or DC-600 power sources.

A remote output control is also available for use with SAM power sources.

October 1982

Sec. J2.5.12

Wire Reel Dust Shield for K-376

If the user desires to protect the wire from falling dirt and dust, there is a shield available to cover the wire reel. Order S-14543. Instructions are included with the kit.

October 1982

Sec. J2.5.13

Wire Reel Dust Shield Door for K-303 and K-376 (when equipped with an S-14543 shield)

In extremely dusty and dirty locations there is a door kit available (M-11514) which can be added to those units having the shield kit (S-14543). 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.

October 1982

Sec. J2.5.14

K-320 Flux Tank

A flux tank is available to permit the LN-7 to be used for submerged arc welding.

Install per the instructions shipped with the kit.

October 1982

Sec. J2.5.15

K-376 50-60 Lb. Wire Reel Mounting Stand

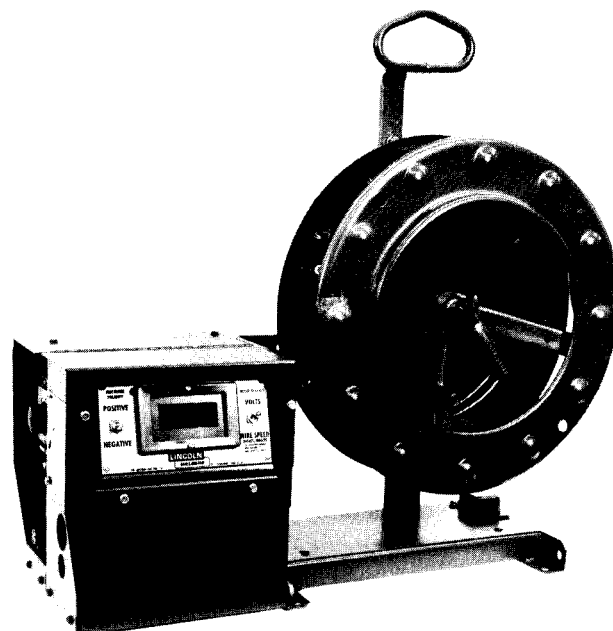
(without dust shroud)

K-303 50-60 Lb. Wire Reel Mounting Stand (with dust shroud)

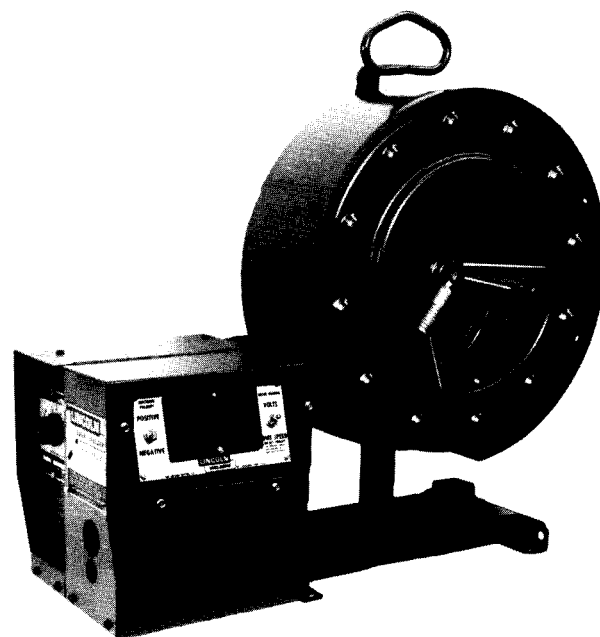
The assembly includes a framework to which is attached the 50-60 lb. wire reel, mounting spindle, a lift bale, and a cable clamp for fastening the input cable assembly. It is easily mounted to the basic wire feed unit by three bolts (see Sec. J2.2.1). The reel mounting spindle is the pull knob type with a built-in brake.

The brake pad is adjustable for proper braking at low or high wire feed speeds.

October 1982



K-380 WITH K-376



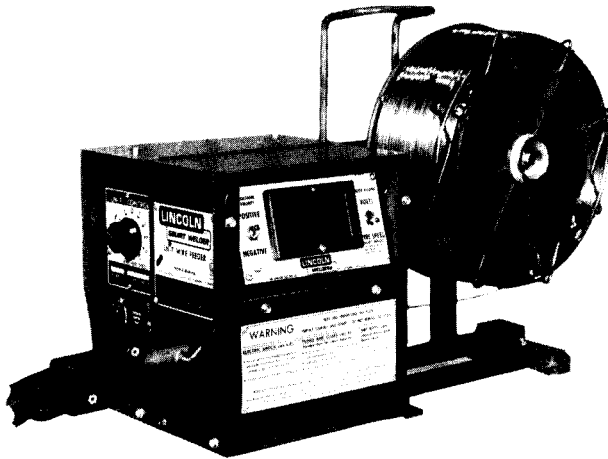
K-380 WITH K-303

Sec. J2.5.16

K-377 Small Mounting Stand for Readi-Reel Coils or 10-30 Pound Spools with 2" I.D.

This assembly includes a small frame to which is attached a wire reel spindle similar to the K-162 Spindle. The unit is supplied with the K-363 Readi-Reel Adapters so the Lincoln "Readi-Reel Electrode Coils" can be used. Without the adapters the unit is capable of handling spools with a two inch I.D., a 12 inch max. O.D., and 4.06 max. width. A spacer for 10 pound coils is also supplied. The spindle has an adjustable braking system. (See Sec. J2.2.1.)

April 1985



K-380 WITH K-377

Sec. J2.5.17

K-378 Small Mounting Stand for 13-14 Pound Innershield Coils

This assembly includes the same smaller frame as used in the K-377 and the fully enclosed cannister system used on the LN-22 and LN-23P for de-reeling of the 14 pound coil. This system has a fixed brake for the 14 pound coil. (See Sec. J2.2.1)

October 1982



K-380 WITH K-378

Sec. J2.5.18

K-291 Power Input Cable (600 amps)

See Sec. J2.3 — Electrical Installation.

April 1985

Sec. J2.5.19

K-292 Power Input Extension Cable (600 amps)

Can be used to a maximum of 400 feet. Cannot be used on LN-7's below Code 7900.

See Sec. J2.3 — Electrical Installation.

April 1985

Sec. J2.5.20

K-404 Power Input Cable (350 amps)

See Sec. J2.3 — Electrical Installation.

April 1985

Sec. J2.5.21

K-340-P Gas Solenoid Valve Kit

This is included with the LN-7 GMA. For LN-7's with Code 7930 and higher, install on the LN-7 case front per the instructions (M-14888) included with the kit.

1. Route the $\frac{3}{16}$ " I.D. inlet gas tubing through the hole in the rear of the case that the electrode lead is routed through and push it on to the inlet (IN) fitting of the solenoid valve.
2. Route the $\frac{3}{16}$ " I.D. gas tubing from the gun through the one inch hole in the front of the case and push it on to the outlet fitting of the solenoid valve.

April 1985

SEC. J3 — OPERATING INSTRUCTIONS

Sec. J3.1.1

Adjusting Current and Voltage

Use only constant voltage type power 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.

Set the voltage using the controls on the power source or the K-775 Remote Voltage Control, if used.

Set the power source polarity switch or properly connect the electrode and work leads for the correct electrode polarity.

On constant wire feed speed type wire feeders like the LN-7, welding current is controlled by the wire feed speed. With the 'Wire Feed Speed' control set on 1 the wire feeds at a little under 50 in/min and the welding current is low. When set on 11, the electrode feeds at approximately 600 in/min and the welding current is high.

If the power source is equipped with meters, the welding current can be read directly on the ammeter while welding.

If the power source has no meters and the relationship between current and wire feed speed is known, current can be accurately set by measuring the wire feed speed. To measure wire feed speed without a meter kit **disconnect the electrode cable at the power source:**

1. Press the gun trigger and feed electrode for 15 seconds.
2. Measure the wire feed in inches and multiply by 4. This gives the wire feed speed in inches/minute.
3. Adjust the 'Wire Feed Speed' control until the desired speed is obtained.

September 1982

Sec. J3.1.3

Circuit Protection

A manual reset circuit breaker protects the AC line and the LN-7 from overloads, usually caused by excessive wire drag or other wire feeding problems. To reset the circuit breaker, push the white button on the side of the control box above the drive rolls. If it opens again, see Maintenance (Sec. J6.1.7).

The LN-7 also includes a field circuit fuse and a grounding lead protector circuit. See Maintenance (Sec. J6.1.7) for a description of these components.

May 1978

Sec. J3.1.4

Adjustable Wire Reel Brake K-303 and K-376

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. It should be at the outer position for the faster wire speeds often used when feeding small 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.

K-377

The K-377 small mounting stand for the standard 30 pound Readi-Reel® electrode coil is equipped with a shaft spindle similar to the K-162 spindle. The spindle has an adjustable braking system built into it.

K-378

The K-378 small mounting stand for the 14 pound Innershield coil does not have an adjustable brake. It has a fixed drag built into the reel spindle.

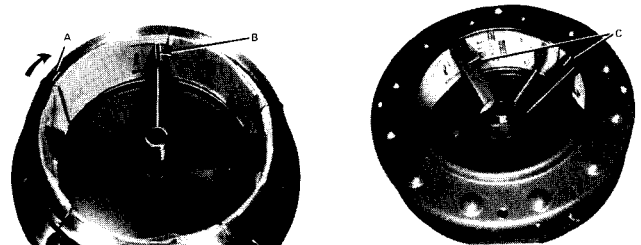
See Sec. J3.1.6 for adjustment instructions for the brake on the spindle for 10 – 25 pound spools.

October 1982

Sec. J3.1.5

Wire Reel Loading — 50 and 60 Pound Coils (K-303 and K-376)

1. To remove the wire reel from its shaft, grasp the spring loaded knob and pull it 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.
3. Before cutting the tie wires place the coil of electrode on the reel so it unwinds as the reel rotates clockwise.
 - a. Be sure the coil is placed so the spring loaded arms will not interfere with the later removal of the coil tie wires. (See photo.)
 - b. When loading .030, .35 and .45" 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. (See photo.)
 - c. Put the cover plate on the reel so the four arms of the cover straddle and are in line with the spring loaded arm of the reel proper.



4. Tighten the cover as much as possible by hand. DO NOT hammer on the spinner nut arms.
5. 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.

NOTE: 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 so it must either be untangled or discarded.

Sec. J3.1.5 (Continued)

6. Replace the reel on the wire feeder. Grasp the shaft knob, pull it out and swing it across the reel hub.
7. Turn the reel until the free end of the electrode is accessible. While tightly holding the electrode, cut off the bent end.

Straighten the first 6 inches and cut off the first inch. Insert the free end thru the incoming guide tube. Press the gun trigger and push the electrode into the drive roll. Inch the electrode thru the gun. (If the electrode is not properly straightened, it may not feed or may not enter the outgoing guide tube causing a "bird nest".)

WARNING: When inching, the electrode and wire feeding system are always "hot" to work and ground.

October 1982

Sec. J3.1.6

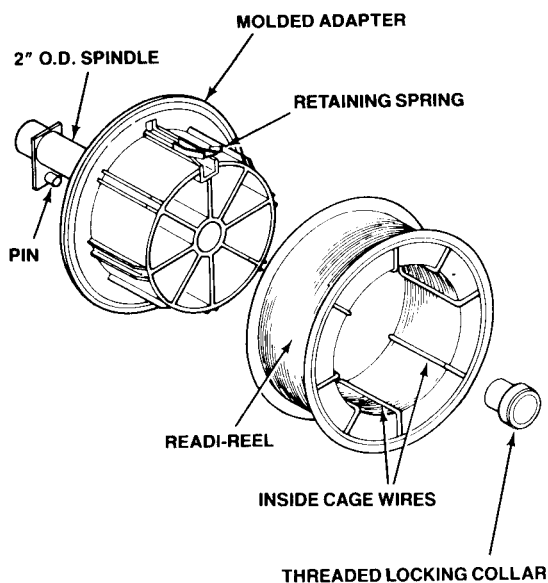
Wire Reel Loading — Readi-Reels® and Spools (K-377 and K-162)

Two types of Readi-Reel® Adapters may be used, a molded plastic design and a two-piece formed sheet metal design.

To mount a 30 lb. Readi-Reel package using the molded plastic K-363-P type adapter:

1. Rotate the spindle and adapter so the retaining spring is at 12 o'clock position.
2. Position the Readi-reel so that it will rotate in a **clockwise** direction when feeding (wire is to be dereeled from **bottom** of the coil).
3. Set one of the Readi-Reel inside cage wires on the slot in the retaining spring tab.
4. Lower the Readi-Reel to depress the retaining spring and align the other inside cage wires with the grooves in the molded adapter.
5. Slide cage all the way onto the adapter until the retaining spring "pops up" fully.

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



To remove Readi-Reel from Adapter, depress retaining spring tab with thumb while pulling the Readi-Reel cage from the molded adapter with both hands. Do Not remove adapter from spindle.

To mount a 30 lb. Readi-reel package using the formed sheet metal K-363 type adapters:

1. Remove the locking collar and remove the outside Readi-Reel adapter arm.
2. Engage the inside Readi-Reel adapter arm in the brake driving pin and rotate the spindle until the inside adapter arm is in the vertical position.
3. Set the Readi-Reel on the adapter arm. The Readi-Reel must be installed so that it will rotate in a *clockwise* direction when feeding (wire is dereeled from the top of the coil).
4. The outside adapter arm is then to be placed on the spindle at an angle of 90° from the inside adapter and the locking collar installed. Tighten the locking collar securely.

To mount 10 to 30 lb. spool:

1. Remove the locking collar and the Readi-Reel adapter shipped on the 2 inch dia. spindle (adapter is not required).
2. Place the spool on the spindle making certain the brake driving pin enters one of the holes in the back side of the spool. Be certain the wire comes off the reel in a clockwise direction when dereeled from the bottom of the coil.
3. Replace and tighten the locking collar.

Feeding Electrode

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 gun trigger and push the electrode into the drive roll.

WARNING: When inching, the electrode and drive mechanism are always "hot" to work and ground and remain "hot" 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 over tighten.

April 1985

Wire Loading of 13-14 Pound Innershield Coils (K-378)

1. Remove the snap-on lid from the plastic cannister.
2. Remove the center clamping nut and the cover plate from the wire reel.
3. Unpack the 14-pound coil of wire. Be sure not to bend the side tangs of the coil liner and 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. Thread it through the cannister wire feed liner until about four inches of electrode is exposed.
5. Place the coil onto the disc support.
6. Replace the front reel cover and center clamping nut, keep the reel from turning and tighten the clamping nut securely.

Sec. J3.1.6 (Continued)

7. Thread the exposed end of the electrode into the wire feeder until it touches the drive rolls. Actuate the gun trigger and feed the electrode through the system. (If the electrode is not properly straightened, it may not feed or may not go into the outgoing guide tube causing a "birdnest".)

WARNING: When inching the gun trigger, the electrode and wire feeding system are always "hot" to work and ground.

October 1982

Sec. J3.1.7

Sequence of Welding and Arc Starting

1. Install the proper stickout extension guide on the gun.
2. Press the gun trigger to inch the wire until it protrudes about $\frac{3}{4}$ inch beyond the end of the gun.
3. Using proper face and body protection, position the gun so the electrode is just off or lightly touching the work. Avoid pushing the electrode against the work before starting to weld. Press the gun trigger to start welding.

The LN-7 starts at a slow wire feed speed and low current and automatically accelerates quickly to the welding speed set by the "Wire Feed Speed" control. This low starting current improves the starting characteristics and minimizes skipping, stubbing, and spatter when striking the arc with both normal and Linc-Fill long stickout welding procedures. This standard feature requires no adjustment.

4. The current can be adjusted while welding using the "Wire Feed Speed" control on the LN-7.
5. To stop welding, release the gun trigger and lift the gun from the work. The wire feed motor stops and the welding circuit is de-energized the moment the trigger is released. If an auxiliary device is connected to #7 and #32 in the LN-7 control box, this device is de-energized when the trigger is released. See Section J2.5.5 if some delay is desired.

October 1982

Sec. J3.1.9

Wire Reel Changing

At the end of a coil remove the last of the old electrode coil from the conductor cable with the following procedures:

1. Cut the end of the electrode off at the gun end. Do not break it off by hand because this 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 connection block on the LN-7 drive unit.
3. Lay the gun and cable out straight.
4. Using pliers to grip the wire, pull it out of the cable from the connector end. Do not pull it from the gun end.
5. After the electrode has been removed, connect the gun conductor cable back to the LN-7.

Load a new reel of electrode per the instructions in Sec. J3.1.5 or J3.1.6.

September 1971

Sec. J3.1.10

Optional Meter Kits, K-293 and K-294 (For Type K-290, K-379, and K-403 LN-7's)

1. The Wire Feed Speed Meter reads wire feed speed in in/min. Set the range switch next to the meter to "lo" when using speeds below 300 in/min and read the feed speed on the red (0 - 3000 in/min) scale. For higher feed speeds, set the range switch to "HI" and read the speed on the black (0 - 600 in/min) scale.
2. The Electrode Polarity Switch must be set so the analog voltmeter reads up scale or the electronic voltmeter indicator lights operate.
3. The Analog Voltmeter indicates voltage directly on a scale.
4. To operate the Electronic Voltmeter preset the desired voltage on the dial and start to weld. The green light glows when actual voltage matches the preset voltage. Either red light glows when the actual voltage is higher or lower than the preset voltage.

Adjust the power source output until the green light is on. When using Innershield connect the jumper on the meter back between A and B and the red lights will glow whenever the actual voltage is $\frac{1}{2}$ volt above or below the meter pointer setting. When submerged arc welding set the jumper between B and C and the red lights will glow whenever the actual voltage is 1 volt above or below the meter setting.

5. Lincoln Specified Procedures give voltmeter readings taken between the work and the gun cable brass connection block inside the LN-7. To match these voltage readings, the #21 lead must be extended directly to the work per the connection diagrams in Sec. J2.3.2.

April 1985

Sec. J3.1.11

Digital Meter (K-375 and K-380 LN-7's)

Note: The digital meter is only available factory installed.

1. Lincoln Specified Procedures give voltmeter readings taken between the work and the gun cable brass connection block inside the LN-7. To match these voltage readings, the #21 lead must be extended directly to the work per the connection diagrams in Sec. J2.3.2.
2. To read volts, set the "Meter Reading" switch to "Volts". Set the "Electrode Polarity" switch to the same polarity as the electrode lead connection to the power source. If the switch is not set for the correct polarity, an erroneous minus voltage will show on the digital meter when the gun trigger is closed.

Do not attempt to preset the volts to the exact welding procedure voltage because the power source open circuit voltage is different than the welding voltage. Adjustment of arc voltage to within $\pm .2$ volts is normally sufficient.

3. To read wire speed in inches/minute, set the "Meter Reading" switch to "Wire Speed". Wire speed can be preset by feeding wire and adjusting the LN-7 wire speed control prior to welding. Adjustment to within ± 1 or ± 2 in/min is normally sufficient. **NOTE:** The LN-7 wire speed accuracy can be affected by input voltage and temperature variations. When the operation is such that the wire speed is crucial, use a K-283 Portable Wire Speed Meter to verify accuracy. See M-13495 instruction sheet in case recalibration of Digital Meter Kit is required.
4. The digital meter has a hold feature that will freeze the display at either the wire speed or volts reading just prior to stopping welding. This feature allows the welding operator to easily check his procedure and make adjustments if required.

Sec. J3.1.11 (Continued)

The hold circuit automatically releases about six seconds after the gun trigger is released. It also is released when the gun trigger is closed again. While the display is frozen during the "hold", the wire speed or volts digital reading does not change when the Meter Reading switch is operated; however, the decimal point will change. To avoid confusion, do not change this switch setting until the meter is read.

April 1985

Sec. J3.1.12

Flux Tank Loading**1. Flux Tank (Optional)**

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 through the holes in the side of the cap. After pressure has been released, remove cap from the tank. Using the funnel provided, put 100 pounds of flux into 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 vibrated screen having .065 – .075 openings and be put through a magnetic separator. The K-310 vibrated screen and K-58 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. Screw the tank cap back on and tighten hand tight. Reconnect the incoming air line to the tank.

There will always be a small amount of air and possibly 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.

2. K-310 Flux Screen (Optional)

The unit was designed to fit the top of either the standard fill funnel of a continuous flux feed system or a K-58 magnetic separator. The unit has a steel screen with .065 to .075 openings and an air vibrator attached to the frame. The vibrator can be used with air line pressures ranging from 20 psi thru 100 psi.

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

It is very important that reclaimed flux to be used in the continuous flux feeding system be passed through the K-310 screen or its equivalent.

3. Magnetic Separator (Optional)

The K-58 is a permanent magnet type separator designed to fit the top of the standard fill funnel of the continuous flux feed 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 reused in the continuous flux feeding system. 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.

Fit the magnetic separator into the funnel or hopper. Pour the flux to be reclaimed into the top pan of the separator. The separator is designed so the flux flows around three permanent magnets. The magnets remove all magnetic particles. When the magnets become covered with their full load, they automatically stop the flux flow. When the flux flow stops, remove the separator from the funnel or hopper. Turn it over and open the panel that covers the magnets. Remove the magnetic particles with brushing or an air blast. Be careful to protect yourself and others in the area from flying particles.

The magnetic separator is used with all Lincoln mild steel fluxes — 760, 761, 780, 781, 860, and 880. Do not use the magnetic separator with any stainless steel, alloy, or hardsurfacing flux except H-535. The magnetic separator removes some of the alloying elements from these fluxes thus changing their characteristics.

February 1980

SEC. J6.1 — 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.

Sec. J6.1.1

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 ¼" long.

April 1985

Sec. J6.1.2

Drive Rolls and Guide Tubes

After every coil of wire inspect the drive roll section. Clean it as necessary. Do not use solvents for cleaning the idle roll because it may wash the lubricant out of the bearing. 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 ⅛, .068, ⅜, ⅜ and ⅜" electrode have a double set of teeth so they can be reversed for additional life. Between the two knurled rolls (except ⅛" rolls) is a shim washer which limits the damage to the electrode if wire feeding problems occur. See Sec. J2.2.2 for roll changing instructions.

Drive rolls for .030, .035 and .045 electrodes have no teeth. They are not reversible.

September 1982

Sec. J6.1.3

Wire Reel Mounting — 50 and 60 Pound Coils

To prolong the life of the reel shaft, periodically coat it with a thin layer of grease.

No maintenance of the two position adjustable brake installed on machines built after November 1972 is needed. If the brake shoe wears through to metal, replace the brake assembly.

May 1978

Sec. J6.1.5

Control Box

The control box requires no routine maintenance.

September 1971

Sec. J6.1.7

Circuit Protection

1. Field Circuit Fuse

The ½ amp slow blow fuse on the relay P.C. board inside the control box protects the field circuit. This fuse blows if the field shorts or if one of the field circuit components on the relay P.C. board fails.

2. Circuit Breaker

The 3 amp circuit breaker located above the drive rolls normally trips only when an overload occurs because of excessive loading in the wire feed cable or a defective motor or control component. A red band on the reset button gives visual indication when the circuit breaker is tripped. After allowing a minute for cooling, push the reset button and weld. If it trips again, be sure the wire feed cable is clean and the proper size for the wire diameter being fed. If it still trips, look for a defective electrical component.

3. Grounding Lead Protectors

The frame of the LN-7 wire feed unit is grounded to the frame of the power source by a lead in the control cable. An overload protector prevents welding current from damaging this lead if the electrode circuit touches the wire feeder frame while the gun trigger is pressed. When the protector circuit is tripped, the wire feed rolls will not turn and the welding contactor in the power source will not close when the gun trigger is pressed. To reset the protector circuit, press the red button above the drive rolls and to the left of the circuit breaker. There is no visual indication when the protector circuit is tripped. See "WARNING" (para. 8), section J2.3.1.

Avoiding Shutdowns Caused by the Grounding Lead Protector Being Activated

Do not allow the electrode to contact the case of the wire feeder or uninsulated part of its wire reel stand when the gun trigger is activated.

Be sure that all work lead connections to the work make tight metal-to-metal electrical contact.

Do not allow excess electrode cable or work cable that is coiled up to be placed closer than three feet to the wire feeder. The magnetic field that is generated by welding current going through the coiled cable can falsely activate the GLP.

January 1980

SEC. J6.2 — GUN AND CABLE MAINTENANCE

WARNING: Before any gun is serviced or disassembled remove it from the wire feeder, or turn off the power source.

Sec. J6.2.1

Gun Nozzles (All)

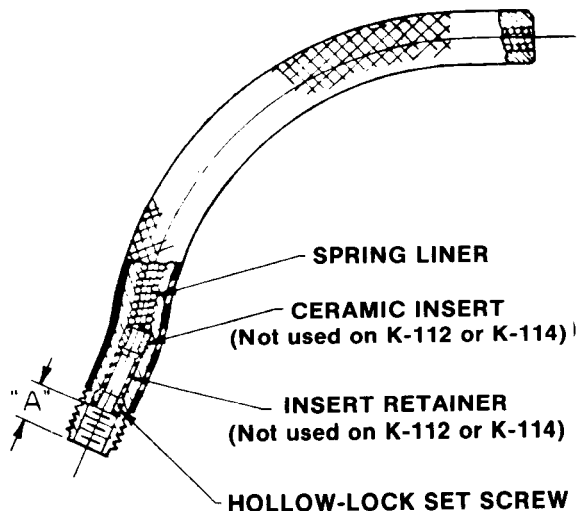
1. Replace worn contact tips as required.
2. On Innershield guns, remove spatter from tip or extension guide after each ten minutes of arc time or as required.
3. Replace worn spring liners in nozzles. The life of the liner can be doubled by rotating liner 180°. The liner can be pulled out the back end of the nozzle by wedging the blade of a small screwdriver in the I.D. and pulling.
4. Inner parts of nozzles can be removed and replaced by removing the internal hollow-lock set screw from the contact tip end of the nozzle with a 5/32 or 3/16 Allen wrench.

The insert and retainer will normally fall out the end of the nozzle but if they do not, gently drive the spring liner towards the outgoing end of the nozzle.

See appropriate parts list page for construction details and replaceable parts. For guns using similar nozzles for different wire sizes, note the identifying wire size that is stenciled or molded-in an area close to the incoming end.

When re-assembling nozzle, make certain the ceramic nozzle insert (if used) is placed next to the spring liner. The hollow-lock set screw is to be tightened to give the dimension specified below as measured from the end of the nozzle to the hollow-lock set screw.

Gun	"A"
K-112 (500)	.38
K-113	.38
K-114	.38
K-115	.75
K-116	.75
K-126	.38
K-206	.38
K-289-5/64"	.44
K-289-3/32 & .120"	.75
K-309	.38



Sec. J6.2.2

Gun Cables (All)

A dirty gun cable can cause rough and erratic wire feeding. Therefore, the cable liner must be cleaned periodically. Clean Innershield gun cables after using approximately 300 pounds of electrode; clean submerged arc gun cables after using approximately 600 pounds of electrode.

Remove the cable from the wire feeder. Lay it out straight on the floor. Remove the contact nozzle tip from the gun. Using an air hose and only partial pressure, gently blow out the cable. Work the full length of the cable by bending it back and forth and then blow it out again. Repeat this procedure until no more dirt comes out.

October 1982

Sec. J6.2.3

Gun Disassembly: K-115 and K-126 Innershield Squirtguns

To remove the nozzle from the gun, loosen (do not remove) the 1/4-20 socket head screw in the gun handle with a 3/16" Allen wrench and pull the nozzle straight out. To reinstall, insert the nozzle into the gun handle. Push it in as far as possible and tighten the socket head screw.

To disassemble Innershield Squirtguns K-115 and K-126, first loosen the screws which hold the heat shield in place. Remove the heat shield.

To disassemble the switch housing from all guns, remove the four screws holding the saddle around the gun handle.

Then hold the housing with the cable toward the floor and look into the switch cavity. The tight side of the larger roll pins is to the right. Drive these pins to the left. They can be easily removed when they clear the right side of the casting. Do not remove the smaller roll pins unless the trigger is being replaced. The height of the Z spring controls the operating point of the switch with respect to the trigger movement. Set the spring so the switch operates at about the mid-point of the trigger travel.

To remove the handle from the cable, slip the spatter shield out of the front of the handle. Loosen the 1/4-20 socket head screw in the side of the handle. Remove the snap ring. The handle and connector clamp can then be slipped off the cable.

October 1982

SEC. J6.3 — AUTOMATIC FLUX FEEDING SYSTEM MAINTENANCE

Sec. J6.3.1

Automatic Flux Feeding System (K-320)

The only maintenance required on the flux feeding system is cleaning the water and sludge trap sump. Do this every six months or whenever air no longer escapes from the coiled tube under the flux tank.

To Clean:

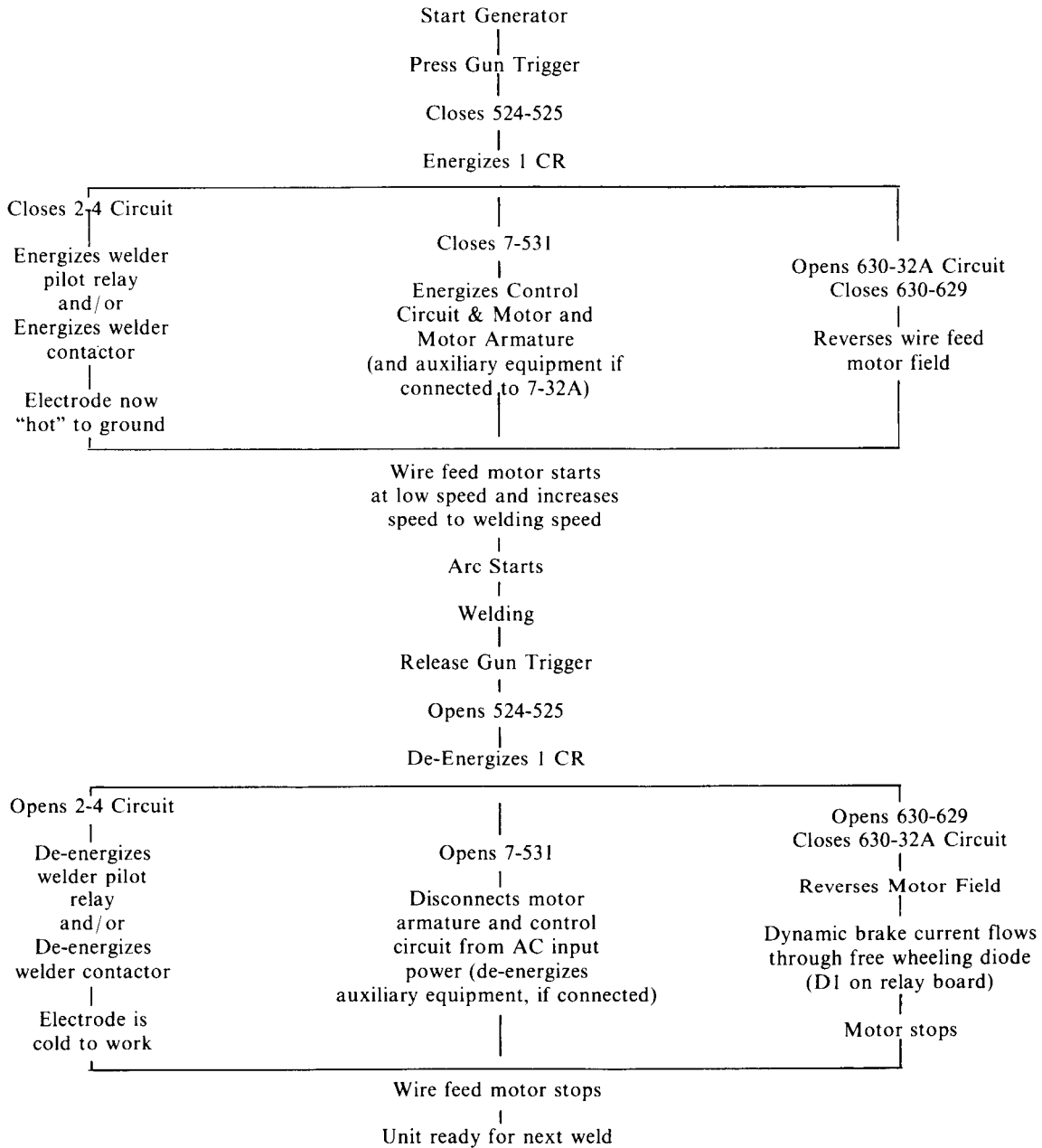
Remove the coiled aluminum tubing from the bottom of the filter unit. Remove the pinched copper end piece from the end of the aluminum tube. Wash all the material out of the aluminum tube. Clean out the short pinched section; this should have a gap of between .005/.050 to allow a small amount of air to escape when the equipment is being used. If this end piece is badly corroded, replace it with a new piece.

Loosen the collar on the 2 $\frac{1}{8}$ -inch steel filter tube and take the filter tube off the machine. Wash out completely. Fit steel tube back into its bracket and attach the aluminum tube to its bottom. Fill steel tube to within two inches of the top with any clean Lincoln submerged arc welding flux.

Raise the steel tube into place and tighten the collar. When the air pressure is turned on again, part of the flux in the steel tube will be forced into the coiled tube. Be certain a small amount of air is escaping from the pinched end of the copper tube.

May 1978

SEC. J6.4 — LN-7 SEQUENCE OF OPERATION



May 1978

SEC. J6.6 — TROUBLESHOOTING

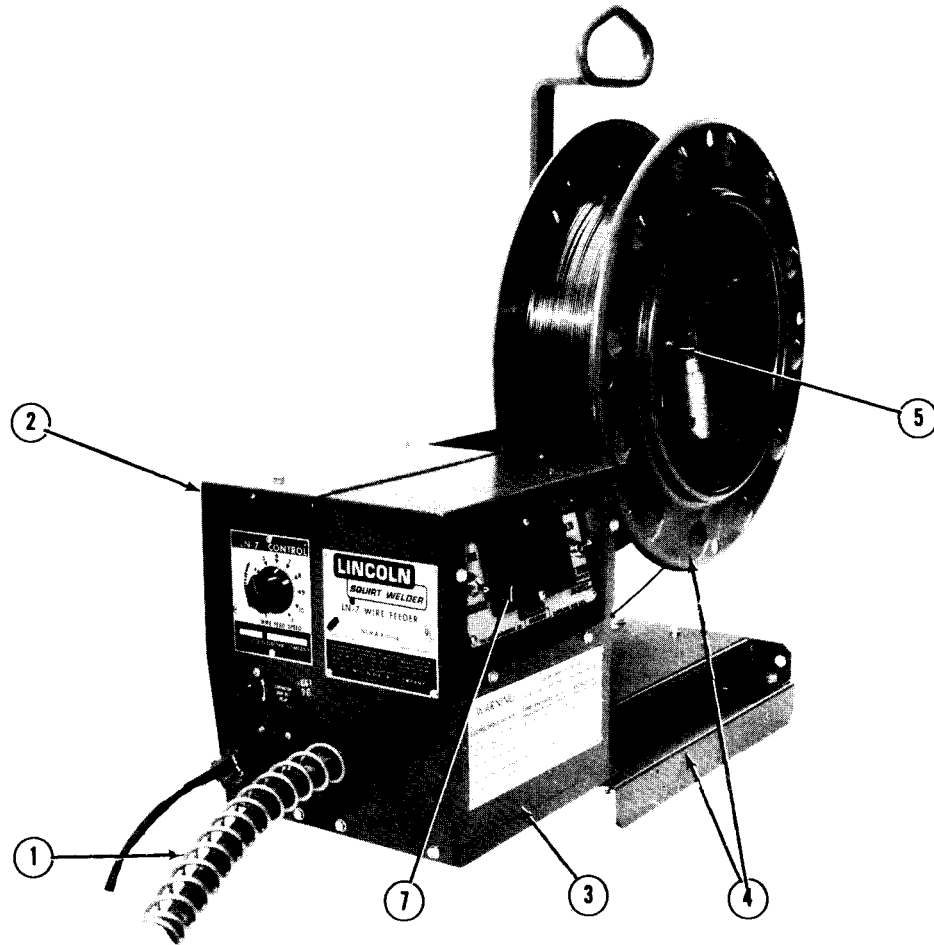
(Code 7930 and Up)

WARNING: Have qualified personnel do the maintenance and trouble shooting work. Turn the power off before working inside the machine. 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.

Trouble	Cause	What To Do
1. Rough wire feeding or wire not feeding but drive rolls turning.	<ul style="list-style-type: none"> a. Gun cable kinked and/or twisted. b. Wire jammed in gun and cable. c. Incorrect drive rolls and guide tubes. d. Drive rolls loose. e. Gun cable dirty. f. Worn drive rolls. g. Electrode rusty and/or dirty. h. Worn nozzle liner. j. Partially flashed or melted contact tip. 	<ul style="list-style-type: none"> a. Inspect gun cable and replace if necessary. b. Remove wire from gun and cable — feed in new wire. Note any obstructions in gun and cable. Replace gun and cable if necessary. c. Check wire diameters stamped on drive rolls, wire guides and drive roll spacers for correct combination for wire being used. d. Remove, clean, install and tighten. e. Clean per Sec. J6.2.1. f. Replace and/or reverse split drive roll type. g. Replace. h. Replace. j. Replace contact tip.
2. Variable or "hunting" arc.	<ul style="list-style-type: none"> a. Worn and/or melted contact tip. b. Worn or undersize work cable or poor work connection. c. Loose electrode connections. 	<ul style="list-style-type: none"> a. Replace tip — remove any spatter on end of tip. b. Inspect — repair or replace as necessary. c. Be sure electrode lead is tight. Gun cable tight in wire feeder contact block. Gun nozzle and gun tip tight.
3. Weld Porosity, narrow and ropey bead, or electrode stubbing into plate when welding.	<ul style="list-style-type: none"> a. Dirty plate or improper procedures. b. Lack of shielding gas 	<ul style="list-style-type: none"> a. See troubleshooting information in Bulletin N675, "Innershield Semiautomatic Welding Guide."
4. LN-7 circuit breaker trips while welding.	<ul style="list-style-type: none"> a. See Trouble 1 above. b. High ambient temperature (causing circuit breaker to trip). c. Electrical problems in power source or LN-7. 	<ul style="list-style-type: none"> a. Correct problems. b. Provide better ventilation for LN-7. c. See Trouble 5.
5. LN-7 or power source electrical problems such as: Power source fuse blows. LN-7 circuit breaker trips. No control of wire feed motor. Wire feed motor won't run. LN-7 motor field fuse blows (fuse on printed circuit board). Auxiliary equipment connected to 32A and 7 won't work. Power source contactor won't work, but LN-7 feeds wire.	<ul style="list-style-type: none"> a. Loose connection or broken lead. b. Grounding lead protector tripped. c. Electrical component has failed. 	<ul style="list-style-type: none"> a. Turn power source and LN-7 off and check leads and connections. b. Push reset button. c. Replace blown fuses or reset circuit breaker and try to weld. If trouble reoccurs, call Lincoln semiautomatic distributor, local representative or authorized Field Service Shop.

May 1978

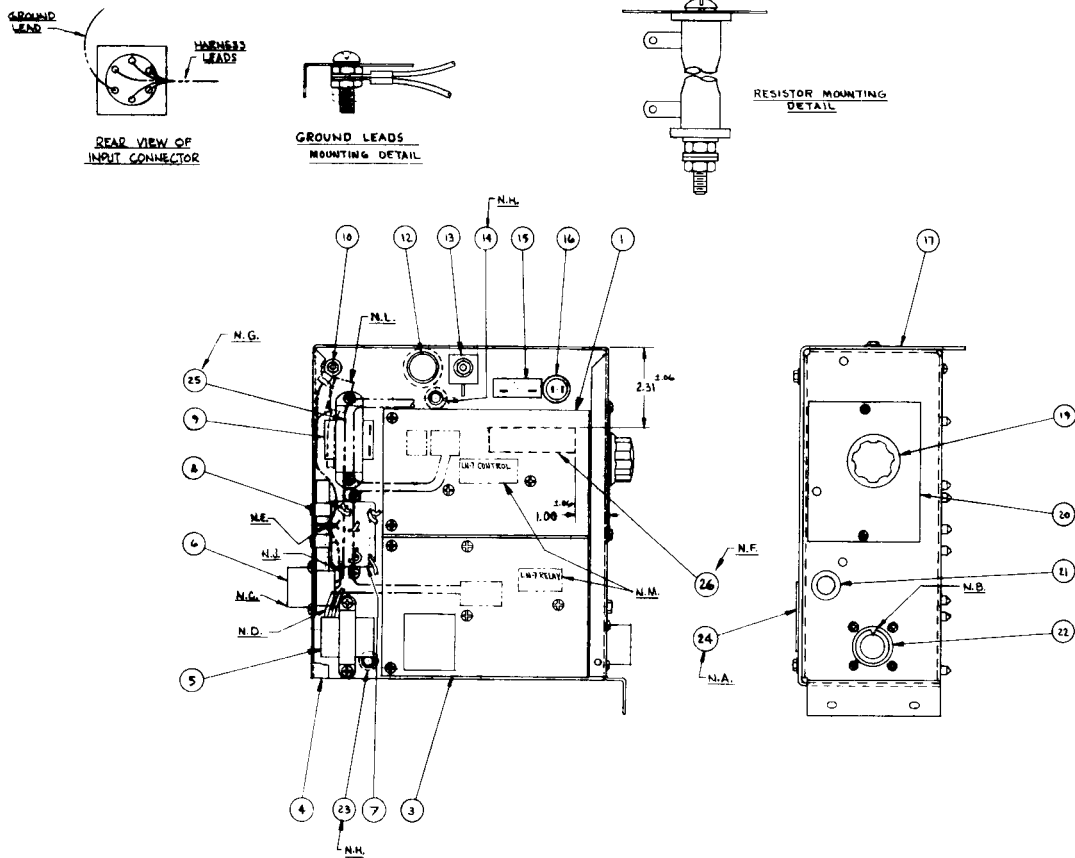
GENERAL ASSEMBLY



Parts List P-125-C

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Gun and Cable Assembly	1
2	Control Box Assembly	1
3	Wire Drive Unit & Control Box Assembly	1
4	Wire Reel Support (50# and 60#) (K-303 and K-376)	1
4	Stand Assembly for Readi-Reel (K-377)	1
4	Stand Assembly for 14 Pound Reel (K-378)	1
5	Wire Reel Shaft	1
6	Input Cable & Extension Cable Assemblies	1
7	Digital Meter	1

CONTROL BOX ASSEMBLY

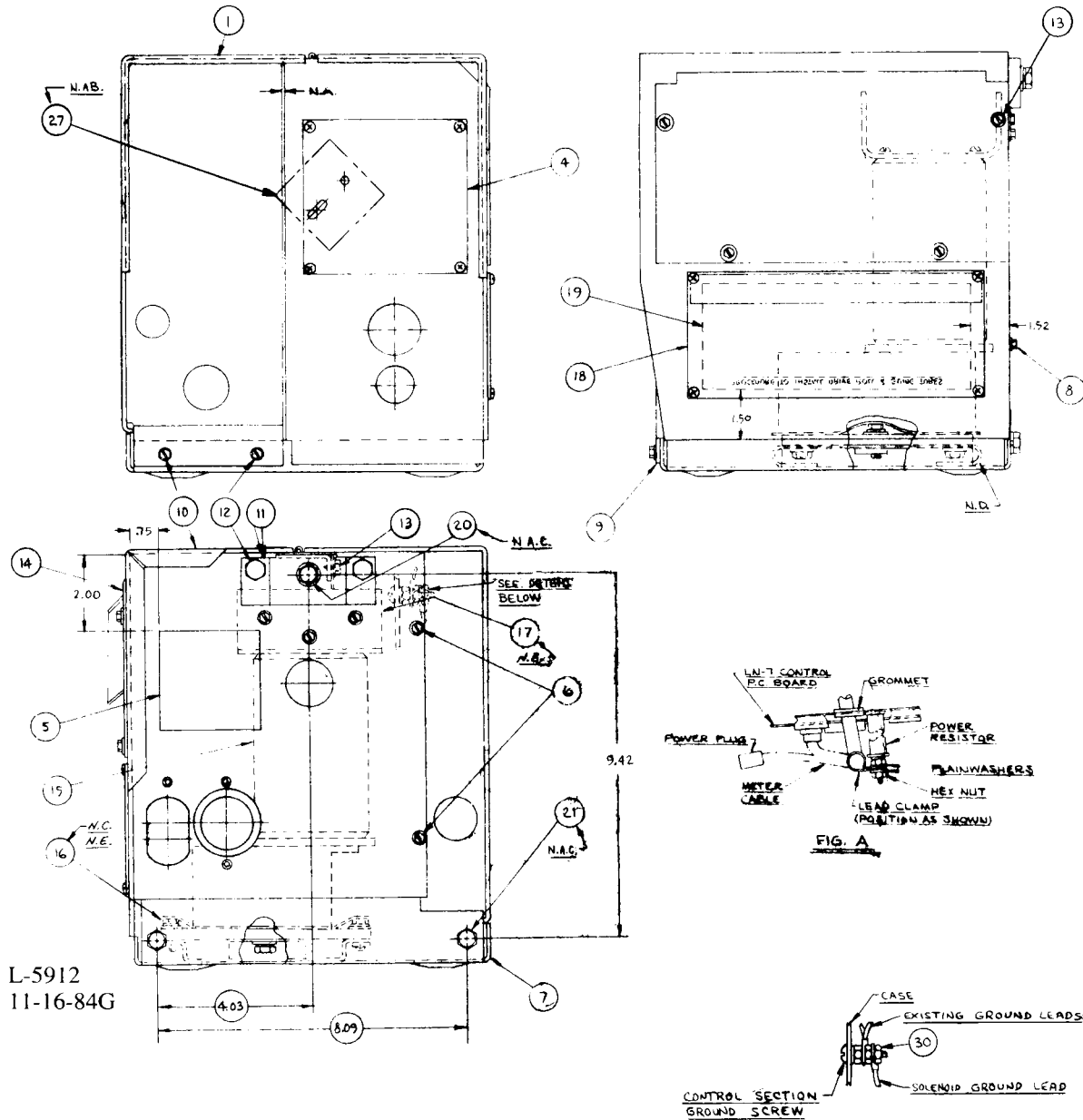


L-5883
6-29-84F

Parts List P-125-D

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Control Box Assembly	1
1	Control P. C. Board	1
3	Relay P.C. Board	1
	ICR Relay	1
4	Control Box Side	1
5	Transformer	1
6	"Male" Input Connector	1
7	Ground Lead Protector Relay	1
8	Reel Switch Assembly	1
	Clamp	2
9	Choke Coil	1
12	Hole Plug (Below Code 8700 Only)	1
13	Resistor	1
	Round Head Screw	1
	Round Insulating Washer	1
	Square Insulating Washer	1
14	Grommet	1
15	Circuit Breaker	1
16	Push Button Switch	1
17	Control Box Cover	1
19	Wire Feed Speed Rheostat	1
	Rheostat Insulation	1
	Knob	1
20	Nameplate	1
21	Hole Plug	1
22	"Female" Output Connector	1
23	Grommet	1
24	Warning Decal	1
26	Identification Decal	1
27	P.C. Board Insulation	1

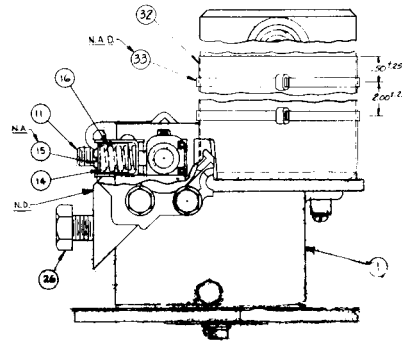
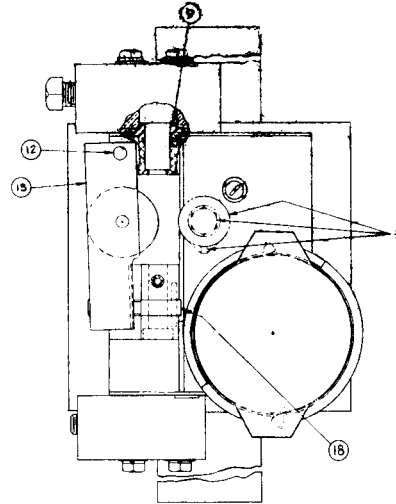
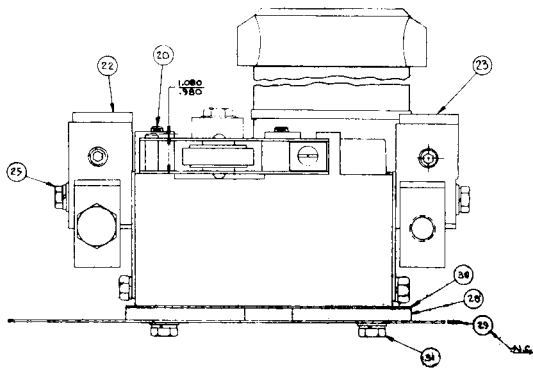
WIRE DRIVE UNIT AND CONTROL BOX ASSEMBLY



Parts List P-125-E

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Wire Drive Unit & Control Box Assembly	1
1	Control Box Assembly	1
4	Nameplate	1
5	Patent Decal	1
7	Base Plate Welded Assembly	1
8	Rear Panel Assembly	1
9	Case Front	1
10	Door and Hinge Assembly	1
11	Mounting Bracket	1
14	Cover Panel (Without Meters)	1
14	Meter (Optional)	See P-125-L or -M
15	Wire Drive Assembly	See P-125-F
17	Heat Sink	1
18	Warning Label	1

WIRE DRIVE ASSEMBLY

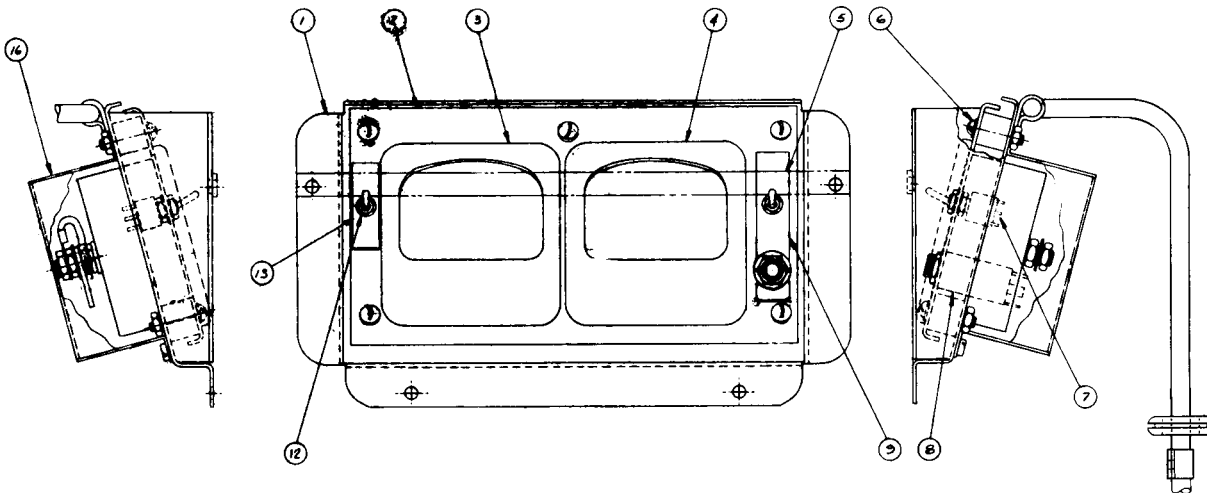


L-5708
 7-13-84D

Parts List P-125-F

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Wire Drive Assembly, Includes: Gear Box Assembly, Includes: Drive Motor, Includes:	1 1 1
	Brush and Spring Assembly	2
	Brush Cap	1
	Pinion Gear	1
	Roll Pin (Gear to Shaft)	1
2	Sems Screw	1
3	Collar Assembly	1
4	Drive Roll (Only 1 required for .035 & .045)	2
5	Spacer	1
6	Key	1
8	Outgoing Guide Tube	1
9	Locator Bushing	1
10	Outgoing Guide Tube Insert	1
11	Socket Set Screw	1
12	Groove Pin	1
13	Idle Roll Assembly	1
14	Idle Roll Arm Bracket	1
15	Thread Cutting Screw	1
16	Spring	1
17	Incoming Guide Tube Assembly	1
18	Idle Roll Pull Arm	1
20	Slotted Headless Set Screw	2
22	Conductor Block	1
25	Hex Head Screw	2
	Lockwasher	2
	Plainwasher	2
26	Hex Head Screw	1
27	Round Head Screw	1
	Lockwasher	1
28	Gear Box Mounting Plate	1
29	Gear Box Insulation	1
30	Gear Box Insulation	1
31	Hex Head Screw	2
	Plain Washer	2
	Lockwasher	2

K-293 WIRE FEED SPEED METER-ANALOG VOLTMETER KIT

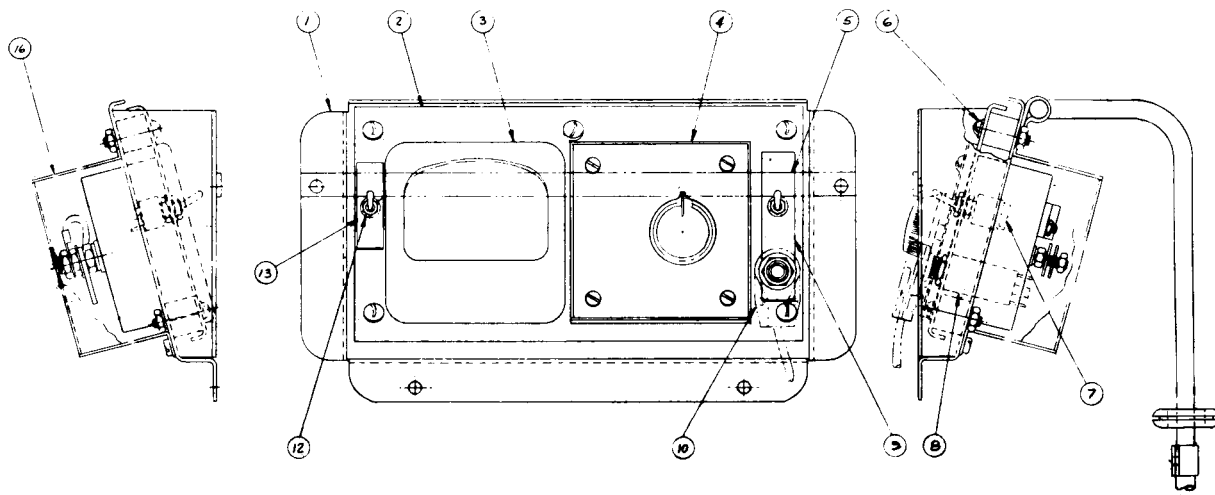


L-5906-1
7-23-82C

Parts List P-125-L

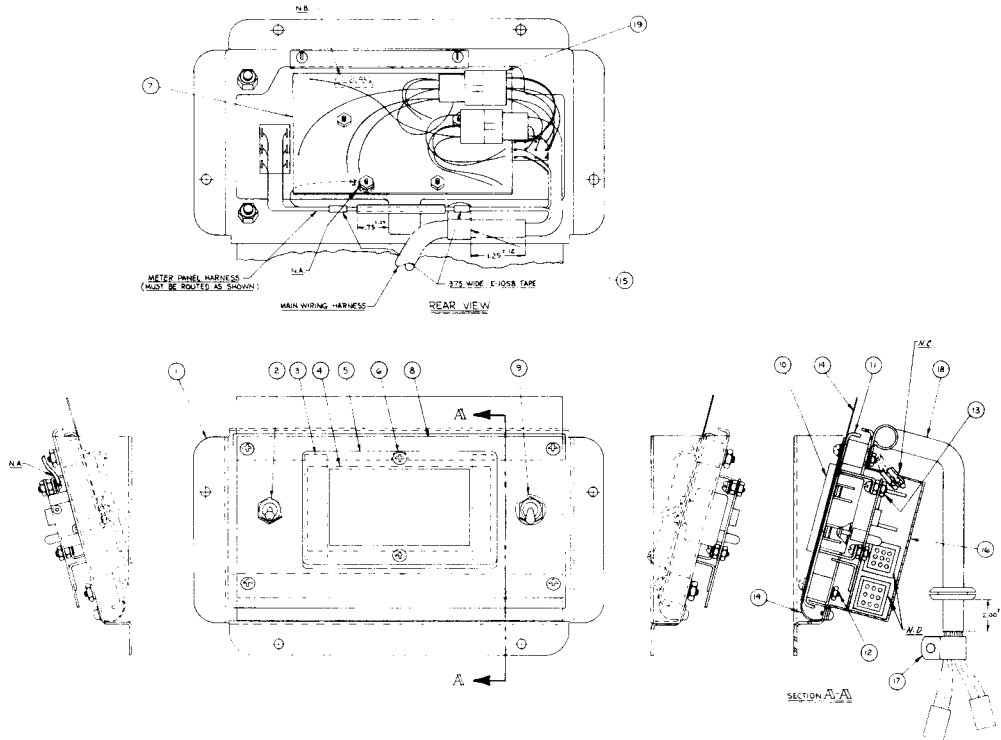
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Meter Kit, Includes:	1
1	Meter Housing	1
2	Meter Panel	1
3	Feed Speed Ammeter	1
4	Analog Voltmeter for K-293	1
4	Electronic Voltmeter for K-294	1
5	Meter Guard	1
6	Shock Mounting	4
7	Polarity Switch	1
9	Switch Plate	1
12	Toggle Switch	1
13	Switch Plate	1
16	Meter Shield	1

K-294 WIRE FEED SPEED METER-ELECTRONIC VOLTMETER KIT



L-5906-2
7-23-82C

DIGITAL METER PANEL (K-375 and K-380 LN'7's)

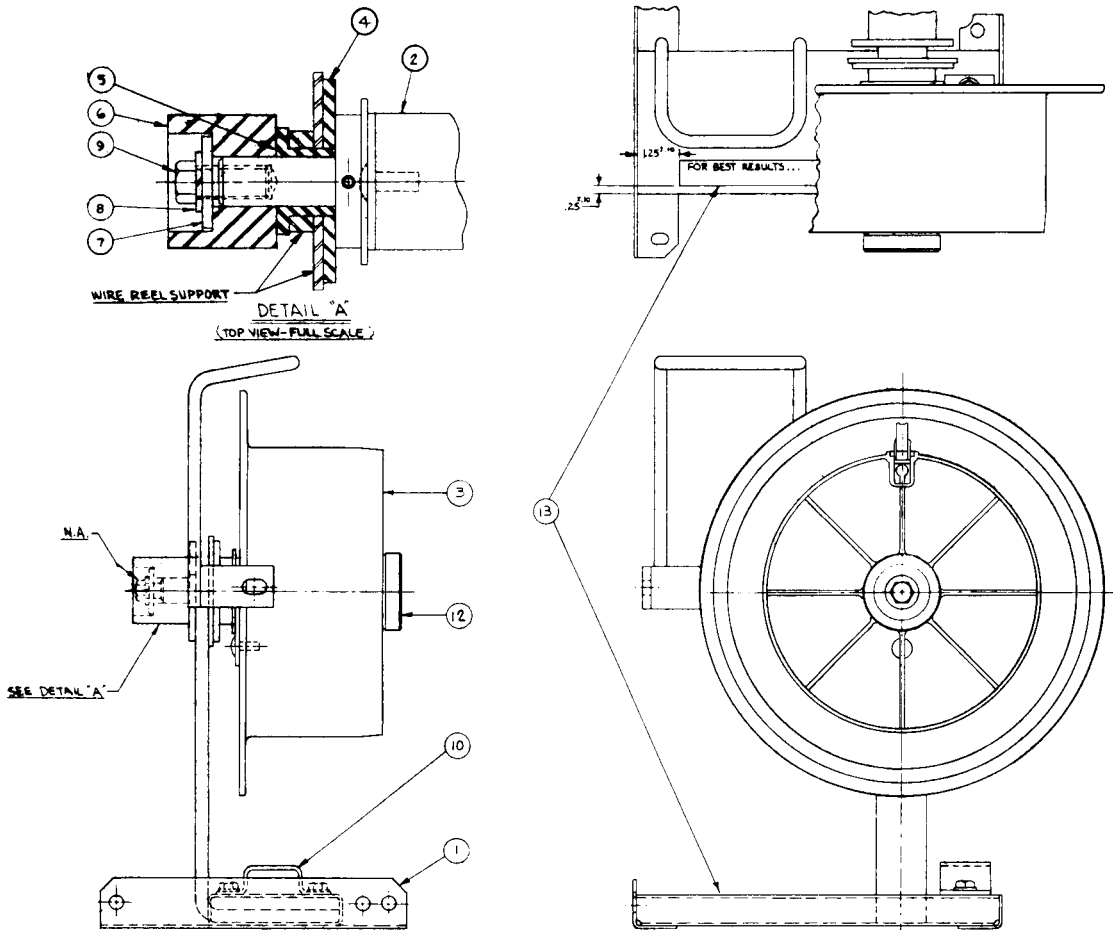


L-6745
 10-29-82F

Parts List P-125-M

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Digital Meter Panel Assembly, Includes:	1
1	Meter Housing	1
2	Switch (Polarity)	1
3	Gasket	2
4	Meter Shield	1
5	Meter Shield Frame	1
6	Sems Screw	2
7	Meter P.C. Board	1
8	Nameplate	1
9	Switch (Volts - W.F. Sw.)	1
10	Meter and Pin Assembly	1
11	Meter Panel Assembly	1
12	Shock Mounting	4
	Sems Screw	4
	Lockwasher	4
	Hex Nut	4
13	Round Head Screw	4
	Lockwasher	4
	Hex Nut	8
14	Spatter Shield	2
15	Lead Clamp	1
	Self Tapping Screw	1
16	Meter Shield	1
	Self Tapping Screw	3
17	Lead Clamp	1
18	Harness Assembly	1
19	Receptacle & Lead Assembly	1
20	Sleeving	1

STAND ASSEMBLY FOR READI-REEL (K-377)

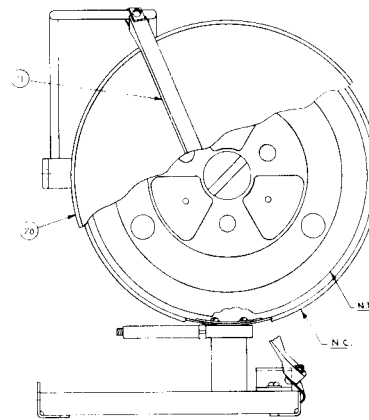
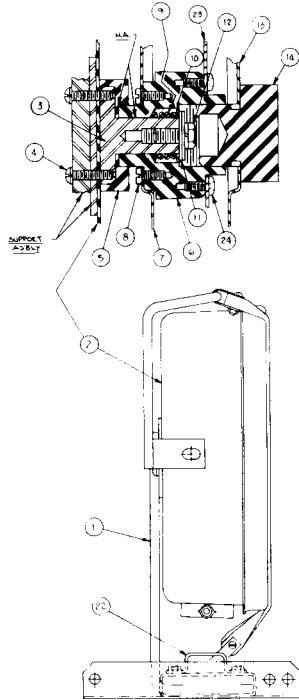


L-6832
3-15-85B

P-125-N

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Wire Reel Support Assy.	1
2	Wire Reel Shaft Assy.	1
3	Readi-Reel Adapter	2
4	Insulating Washer	1
5	Insulating Tube	1
6	Brake Disc Spacer	1
7	Plain Washer	1
8	Lockwasher	1
9	Hex Hd. Screw	1
10	Cable Clamp	1
	Thread Cutting Screw	2

STAND ASSEMBLY FOR 13-14 POUND REEL



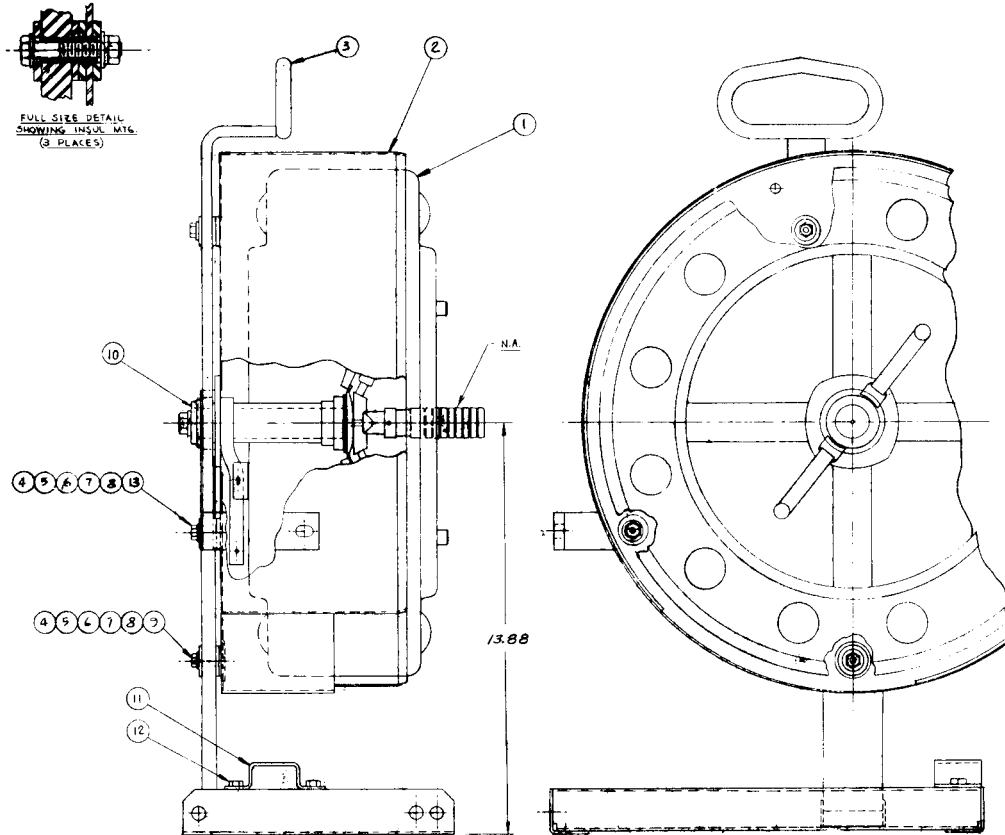
L-6833
 5-25-84A

P-125-O

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Wire Reel Support Assy.	1
2	Wire Reel Housing	1
3	Axle	1
4	Round Head Screw	4
	Lockwasher	4
5	Washer	1
6	Axle Housing	1
7	Wire Reel Cover (Back)	1
8	Self Tapping Screw	4
9	Spring	1
10	Plain Washer	1
11	Insulating Washer	1
12	Hex Head Screw	1
	Lockwasher	1
	Plain Washer	1
13	Wire Reel Cover (Front)	1
14	Axle Nut	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
15	Support Washer	1
16	Mounting Block	2
17	Wire Feed Cable	1
18	Wire Feed Cable Retainer	1
19	Sems Screw	6
20	Housing Cover	1
	Decal	1
21	Cover Retaining Assy.	1
	Cover Retaining Strap	1
	Door Hook	1
	Door Hook	1
	Round Head Screw	2
	Plain Washer	1
	Hex Nut	4
22	Cable Clamp	1
	Thread Cutting Screw	2
23	Coil Support Disc	1
24	Thread Cutting Screw	2

50 and 60# WIRE REEL SUPPORT



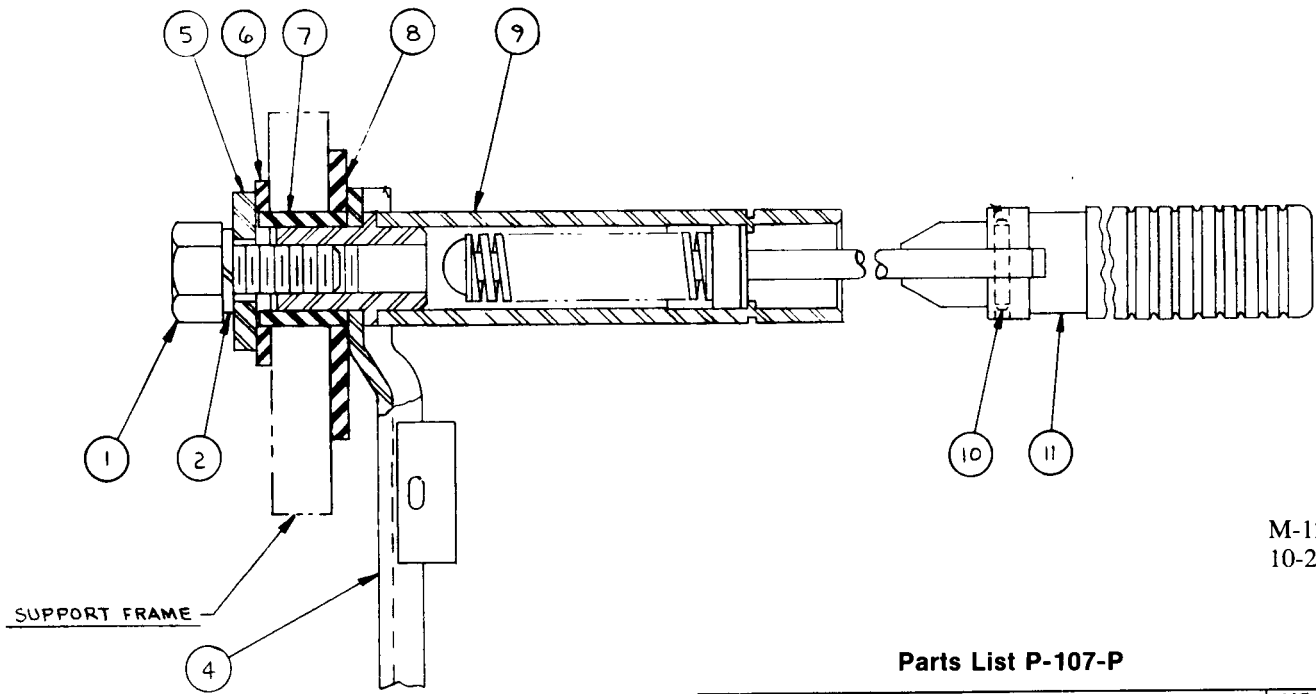
L-4699
7-27-84K

Parts List P-107-O

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	LN-7 Wire Reel Support Assembly, Includes:	1
2	Wire Reel	1
	Wire Reel Housing (For LN-7, K-376 Reel, See Note 1)	1
3	Reel Support	1
4	Flatwasher	6
5	Lockwasher	3
6	Hex Nut	3
7	Hex Head Screw	3
8	Insulating Washer	12
9	Insulating Tube	1
10	Reel Mounting Shaft Assembly	1
11	Cable Clamp	1
12	Thread Cutting Screw	2
13	Insulating Tube	2
	Note 1: To equip an LN-7, K-376 Reel, with a wire reel cover kit order S-14543. Includes items 2, 4 through 9 and 13. For LN-7, K-376 Reel, S-14543 must also be installed when an M-115T4 door is to be installed.	

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Optional Door Assembly, Includes:	
	Door and Hinge Welded Assembly	1
	Catch	1
	Sealing Panel	1
	Sealing Panel Mounting Plate	2
	LN-XNE & LN-XSE Fully Enclosed Wire Reel Support Assembly, Includes all above plus:	1
	Hand Crank Assembly	1
	Wire Feed Unit Handle	1
	LN-XNE Lightweight Wire Reel Support Assembly Includes:	1
	Wire Reel	1
	Hand Crank Assembly	1
	Cage Type Wire Reel Support	1
	Wire Feed Unit Handle	1
	Reel Mounting Shaft Assembly	1

REEL MOUNTING SHAFT ASSEMBLY



M-12460
 10-28-83L

Parts List P-107-P

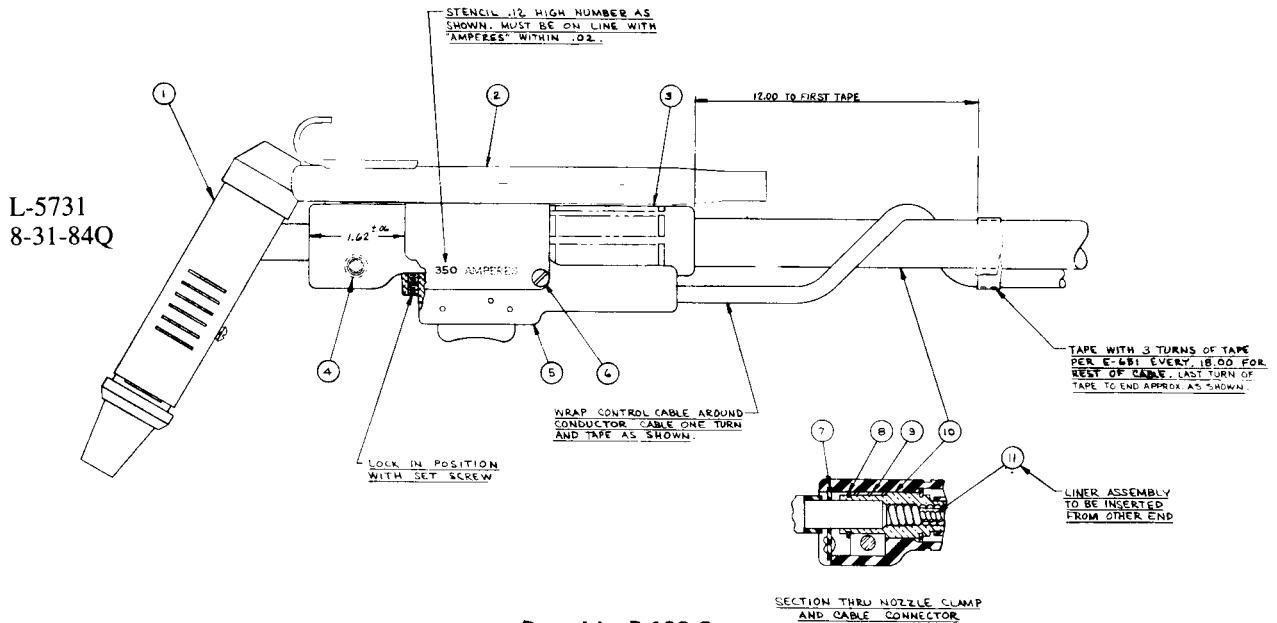
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Reel Mounting Shaft Assembly, Includes:	1
1	Hex Head Bolt	1
2	Lockwasher	1
4	Brake Assembly, Includes:	1
	Brake	1
	Cotter Pin	1
5	Plain Washer	1
6	Insulating Washer	1
7	Insulating Tube	1
8	Insulating Washer	1
9	Wire Reel Shaft Assembly	1
10	Roll Pin	1
11	Pull Knob	1

INPUT CABLE AND EXTENSION CABLE ASSEMBLIES

Parts List P-125-G

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Power Input Cable Assembly, Includes:	1
	Control Cable Assembly, Includes:	1
	Polarized Connector (Female)	1
	Clamp	1
	Electrode Cable Assembly	1
	*When ordering, always specify length required.	
	Extension Cable Assembly, Includes:	1
	Control Cable Assembly, Includes:	1
	Polarized Connector (Female)	1
	Polarized Connector (Male)	1
	Clamp	2
	Electrode Cable Assembly	1

K-112 AND K-113 SQUIRTGUNS AND CABLES



Parts List P-103-C

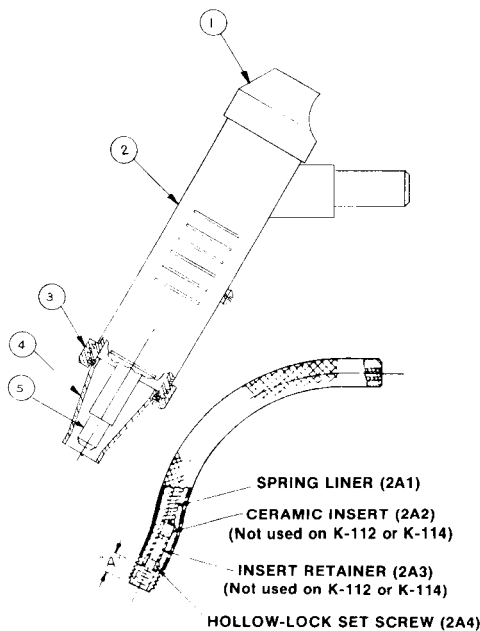
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Gun and Cable Assembly (5/64" Electrode) (No Electrode Size Stencil)	1
	Gun and Cable Assembly (5/64" Electrode) (Stenciled 5/64)	1
	Gun and Cable Assembly (3/32" Electrode) (Stenciled 3/32)	1
1	Gun Assembly (350 Amp)	1
1	Gun Assembly (500 Amp)	1
	Gun Parts	
2	Clamp and Tube Assembly	1
3	Handle	1
4	Socket Head Cap Screw	1
5	Trigger and Control Cable Assembly	1
	Assembly Parts	
6	Pan Head Screw	4
7	Spatter Shield	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
8	Conductor Cable, Includes: (350 Amp)	1
8	Conductor Cable, Includes: (500 Amp)	1
8A	Handle and Stiffener, Wire Feeder End	1
8B	Connector, Wire Feeder End (350 Amp)	1
8B	Connector, Wire Feeder End (500 Amp)	1
8C	Connector, Gun End (350 Amp)	1
8C	Connector, Gun End (500 Amp)	1
8D	Clamping Tube, Both Ends	2
9	Retaining Ring	1
10	Clamp	1
11	Cable Liner - For K-112 (1/16" Electrode, 350 Amp Only)	1
	Adapter Kit to use Squirtguns K-113 with MN-1 and ML-3 (Not Illustrated)	1
	Adapter Kit to use Squirtguns K-113 with ML-2 (Not Illustrated)	1

December 1982

GUN ASSEMBLY — SQUIRTGUNS K-112 AND K-113

Parts List P-103-D

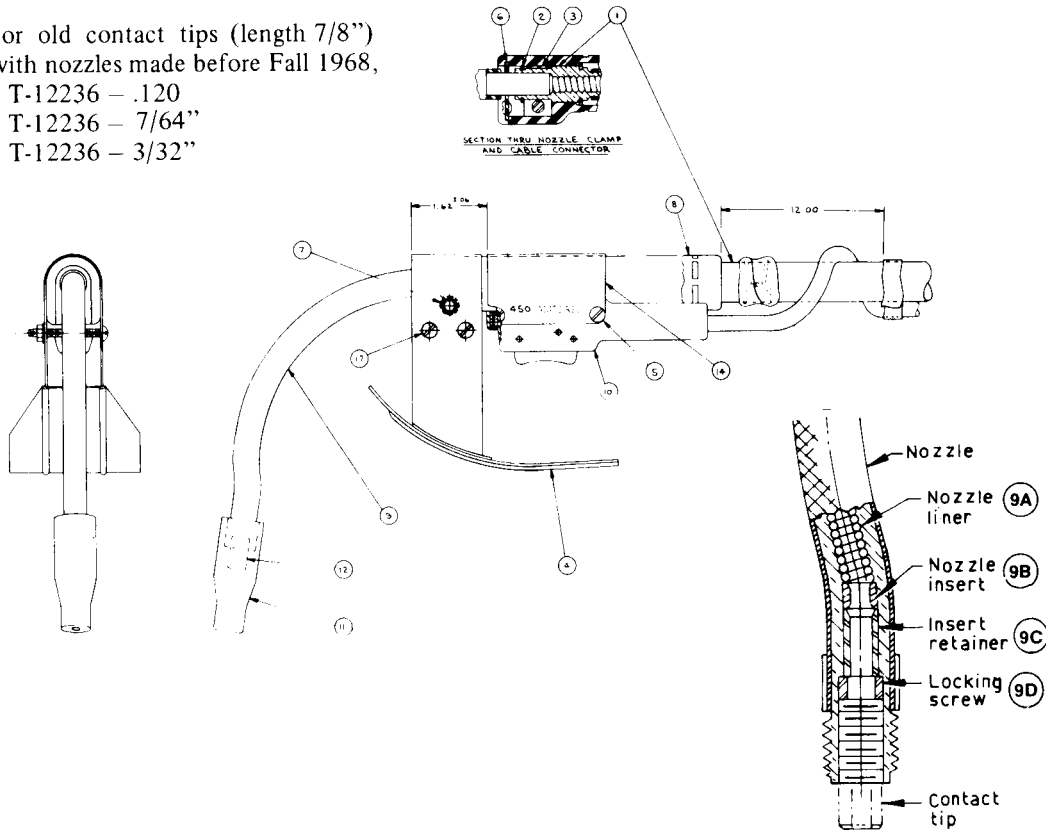


M-10614
10-5-79C

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Cap	1
2	Housing & Nozzle Assembly, Includes: (5/64, No Stencil)	1
2	Housing & Nozzle Assembly, Includes: (5/64, Stenciled)	1
2	Housing & Nozzle Assembly, Includes: (3/32, Stenciled)	1
2	Housing & Nozzle Assembly, Includes:	1
2A	Nozzle (5/64, No Stencil)	1
2A	Nozzle (3/32, Stenciled)	1
2A	Nozzle (5/64, Stenciled)	1
2A1	Nozzle Liner, Tight Wound Steel Spring (for 5/64, No Stencil)	1
2A1	Nozzle Liner, Tight Wound Steel Spring (for 5/64, Stenciled)	1
2A1	Nozzle Liner, Tight Wound Steel Spring (for 3/32, Stenciled)	1
2A2	Ceramic Insert	1
2A3	Insert Retainer	1
2A4	Hollow Lock Set Screw	1
2B	Housing	1
3	Collar	1
4	Nozzle Flux Cone	1
4	Chamfered 3/4" Nozzle Flux Cone	1
5	Contact Tip, 1/16" Electrode	*
5	Contact Tip, 5/64" Electrode	*
5	Contact Tip, 3/32" Electrode	*
	Nozzle Extension Parts	Contact Service Dept.
	* As Required	

K-115 SQUIRTGUN AND CABLE

NOTE 1: For old contact tips (length 7/8")
used only with nozzles made before Fall 1968,
order: T-12236 - .120
T-12236 - 7/64"
T-12236 - 3/32"



L-5736
5-20-83G

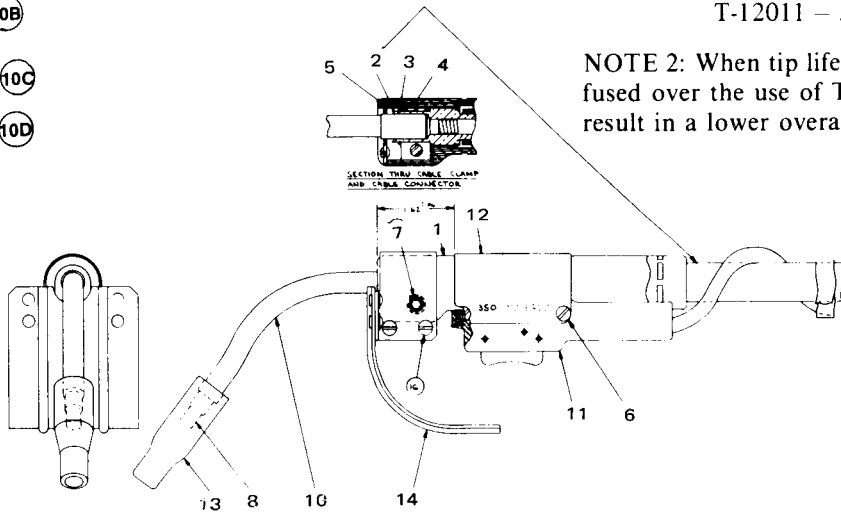
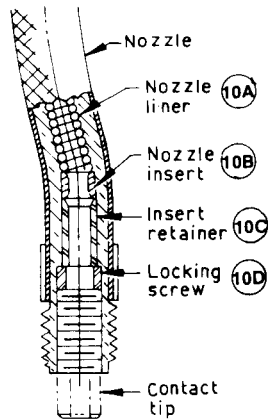
NOTE: In 1977 the semiautomatic guns were redesigned to conform to NEMA standards. To identify a new design gun an ampere rating is stencilled on the "Switch Housing Clamp" (item 14). For new design guns use columns 5, 6, 7 or 8.

Parts List P-103-F

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Gun & Cable Assembly (82° Nozzle): .120 & 7/64 Wire	1
	Gun & Cable Assembly (82° Nozzle): 3/32 Wire	1
	Gun & Cable Assembly (82° Nozzle): 5/64 Wire	1
	Gun & Cable Assembly (45° Nozzle): .120 & 7/64 Wire	1
	Gun & Cable Assembly (45° Nozzle): 3/32 Wire	1
	Gun & Cable Assembly (45° Nozzle): 5/64 Wire	1
1	Conductor Cable, Includes: Handle, Wire Feeder End Connector, Wire Feeder End	1
	Connector, Gun End	1
	Clamping Tube, Both Ends	2
2	Snap Ring	1
3	Clamp	1
4	Clamp and Shield Assembly	1
5	Pan Head Screw	4
6	Splatter Shield	1
7	Socket Head Cap Screw	1
8	Handle	1
9	Nozzle (82°), Includes:	1
9	Nozzle (45°), Includes:	1
9A	Nozzle Liner, Tight Wound Steel Spring (.120)	1
9A	Nozzle Liner, Tight Wound Steel Spring (3/32)	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
9A	Nozzle Liner, Tight Wound Steel Spring (5/64)	1
9B	Nozzle Insert (.120)	1
9B	Nozzle Insert (3/32)	1
9B	Nozzle Insert (5/64)	2
9C	Nozzle Insert Retainer	1
9D	Liner Locking Screw	1
10	Trigger and Control Cable Assembly Assembly Parts See P-103-K	1
11	Insulated Guide, 2-3/4" Electrical Stickout	1
11	Insulated Guide, 3-3/4" Electrical Stickout	1
11	Insulated Guide, 1-1/4" Electrical Stickout	1
12	Contact Tip (Length 1-1/8") Note 1	1
14	Switch Housing Clamp	1
15	Shield Mounting Block (Early Guns Only) (Not Illustrated)	1
17	Round Head Screw	2
	Lock Washer	2
	Hex Nut	2
	Adapter Kit to Use K-115 Squirtgun with MN-1 and ML-3 (Not Illustrated)	1
	Adapter Kit to Use K-115 Squirtgun with ML-2 (Not Illustrated)	1

K-126 SQUIRTGUN AND CABLE



NOTE 1: For old contact tips (length 7/8")
used only with nozzles made before Fall 1968,
order: T-12011 - 5/64"
T-12011 - 3/32"
T-12011 - .068

NOTE 2: When tip life is limited by tip being
fused over the use of T-14726-5/64 tips may
result in a lower overall cost.

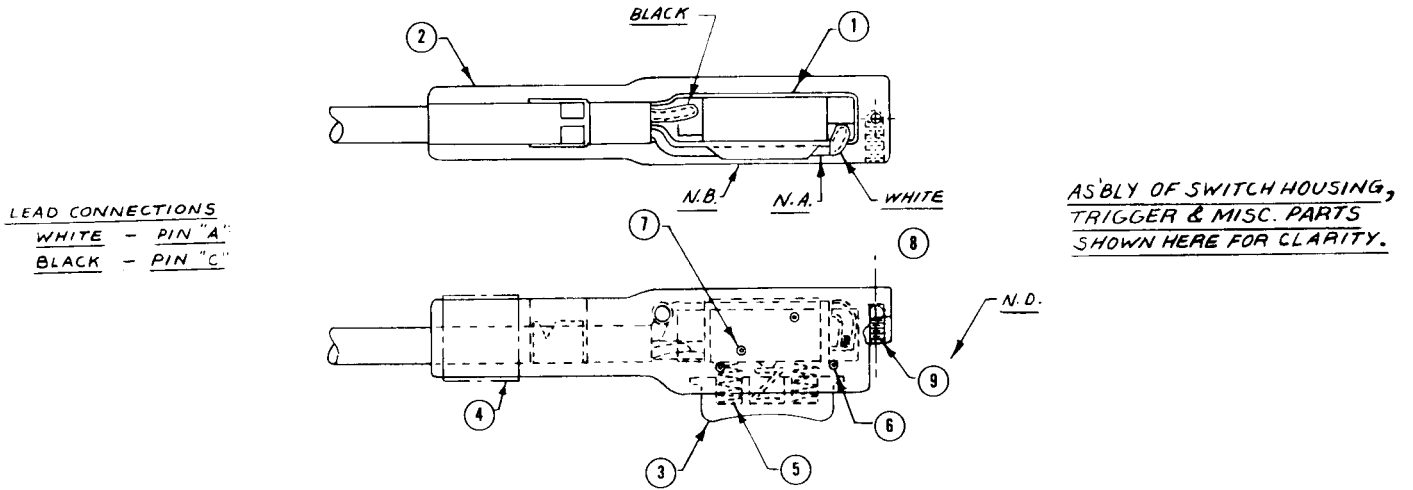
L-5729
8-31-84Q

Parts List P-103-J

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Gun and Cable Assembly	1
2	Handle	1
2A	Conductor Cable, Includes:	1
2B	Handle and Stiffener, Wire Feeder End	1
2C	Connector, Wire Feeder End	1
2D	Connector, Gun End	1
2D	Clamping Tube, Both Ends	1
3	Snap Ring	1
4	Clamp	1
5	Spatter Shield	1
6	Pan Head Screw	4
7	Socket Head Cap Screw	1
8	Contact Tip, 5/64" Electrode (Length 1-1/8")	1
	Note 1 & 2 As Req'd.	
8	Contact Tip, 3/32" Electrode (Length 1-1/8")	1
	Note 1 As Req'd.	
8	Contact Tip, .068" & .072" (Length 1-1/8")	1
	Note 1 As Req'd.	
10	Nozzle, Includes:	1
10A	Nozzle Liner, Tight Wound Steel Spring	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
10B	Nozzle Insert	1
10C	Nozzle Insert Retainer	1
10D	Liner Locking Screw	1
11	Trigger and Control Cable Assembly	1
	Assembly Parts See P-103-K	
12	Clamp	1
13	Insulated Guide, 2-3/4" Electrical Stickout	1
13	Thread Protector, 3/4 to 1-1/2" Stickout	1
14	Heat Shield Assembly	1
16	Round Head Screw	4
	Lock Washer	2
	Hex Nut	2
	Adapter Kit to Use K-126 with MN-1 or ML-3	1
	Adapter Kit to Use K-126 with ML-2	1

TRIGGER AND CONTROL CABLE ASSEMBLY



NOTES

- N.A. LEAD TO BE PLACED UNDER INSULATION FLAP.
- N.B. END OF ROLL PINS MUST BE FLUSH WITH THIS SIDE OF HOUSING
- N.D. BACK SOCKET SET SCREW DOWN INTO TAPPED HOLE

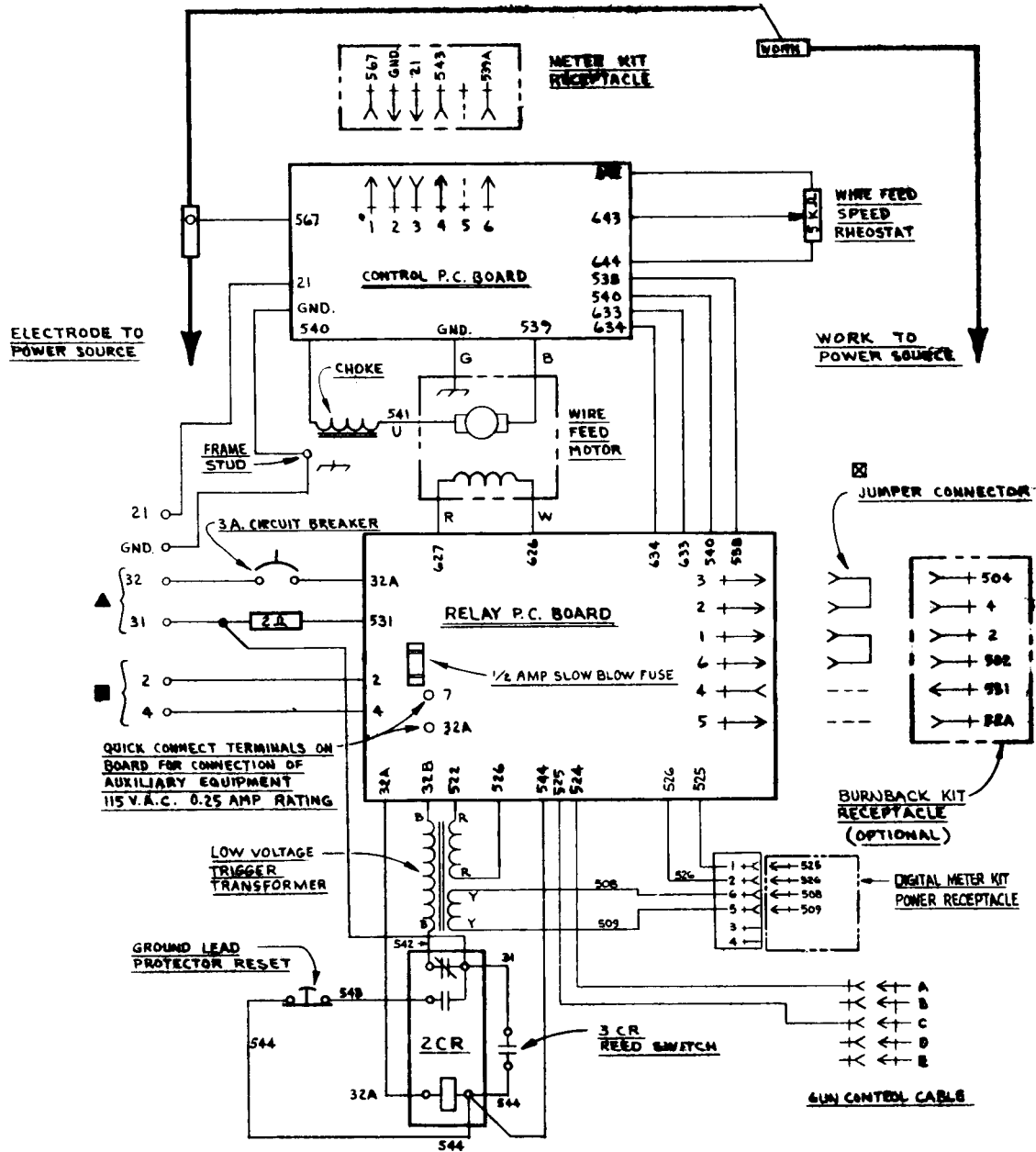
M-12462
 5-14-820

Parts List P-103-K

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Trigger and Control Cable Assembly, Includes:	1
1	Micro-Switch	1
2	Switch Pod	1
3	Trigger Assembly	1
4	Cord Clamp	1
5	Coil Spring	2
6	Roll Pin	2
7	Roll Pin	2
8	Insulating Sleeving	1
9	Set Screw	1
12	Polarized Plug, Wire Feeder End, Not illus.	1
12A	Clamp at Polarized Plug	1

LN-7 CONNECTION SCHEMATIC

(Codes 8729, 8759 and 8760)
(For Codes 7930 and 8740, request M-13503)



- ▲ 115 V.A.C.
- TO POWER SOURCE TO OPERATE CONTACTOR
- ☒ JUMPER CONNECTOR IS REMOVED WHEN OPTIONAL BURNBACK P.C. BOARD IS PLUGGED IN.

LEAD COLOR CODING

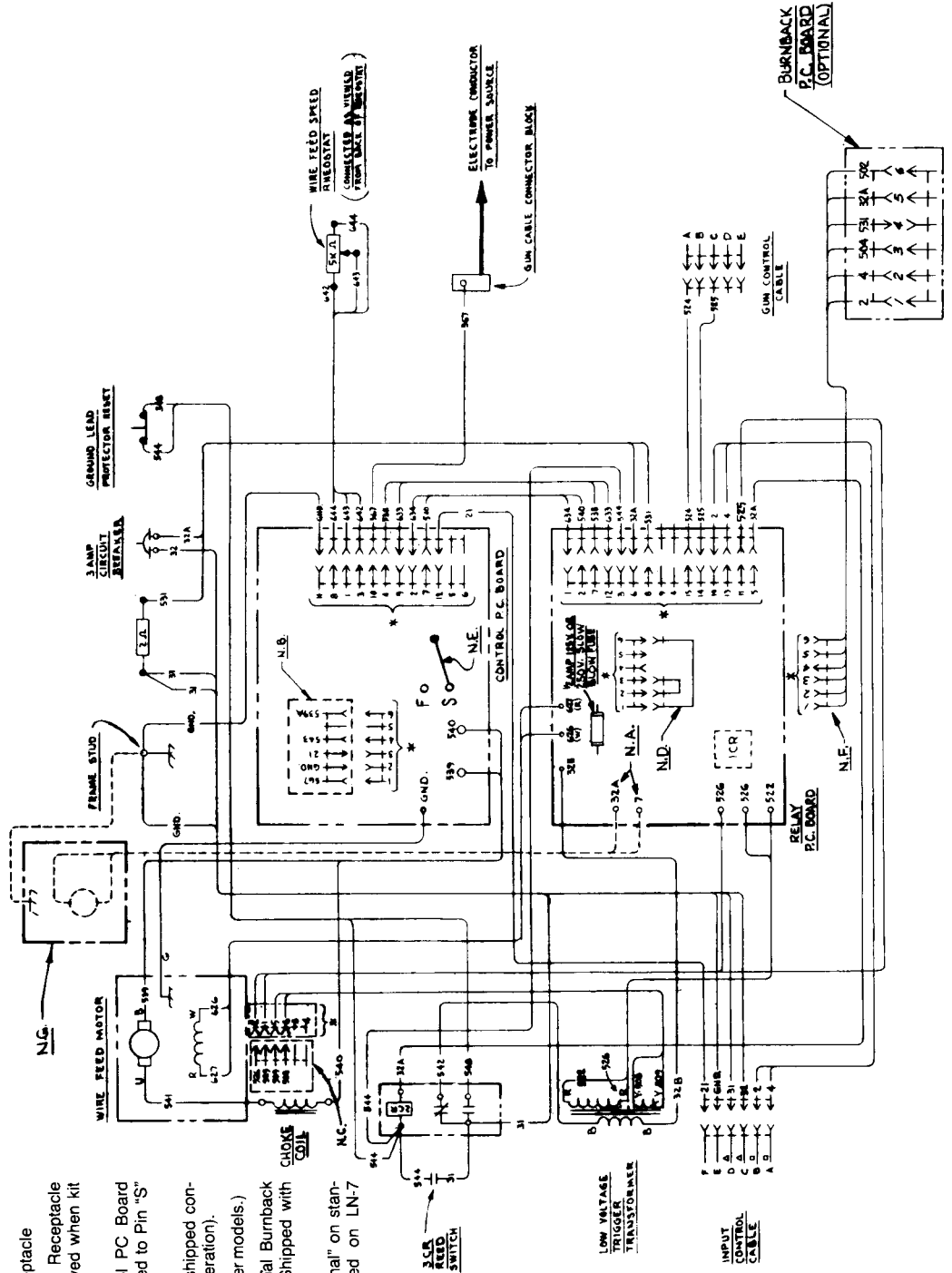
B = BLACK U = BLUE
G = GREEN W = WHITE
R = RED Y = YELLOW

STRUCTURAL SYMBOLS PER E-1032

LN-7 WIRING DIAGRAM

(Codes 8729, 8759 and 8760)

NOTE: This diagram is for reference only. It is not accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the welder code number.



ELECTRICAL SYMBOLS PER E-1537



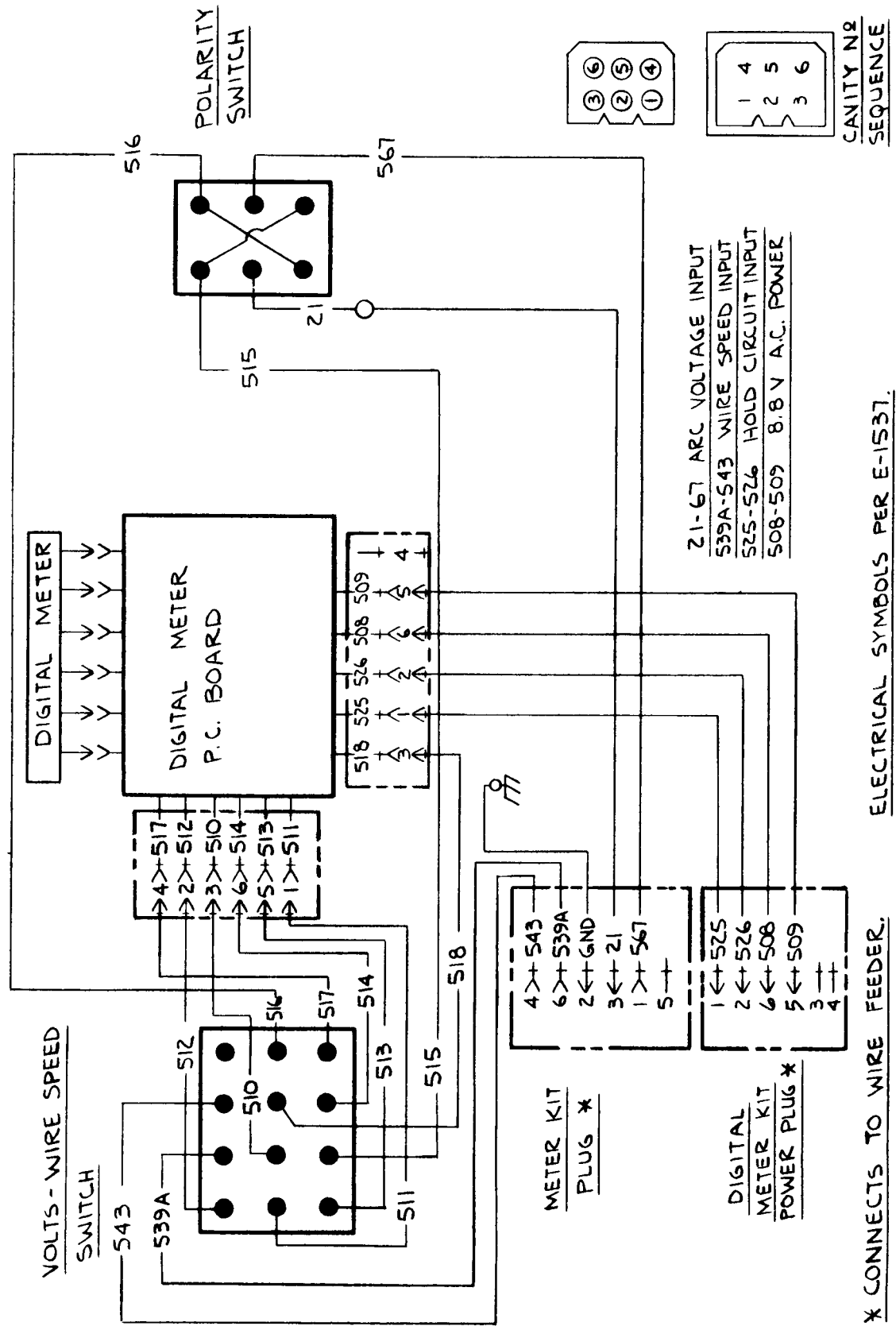
LEAD COLOR CODING
 B - BLACK
 G - GREEN
 W - WHITE
 U - BLUE
 Y - YELLOW

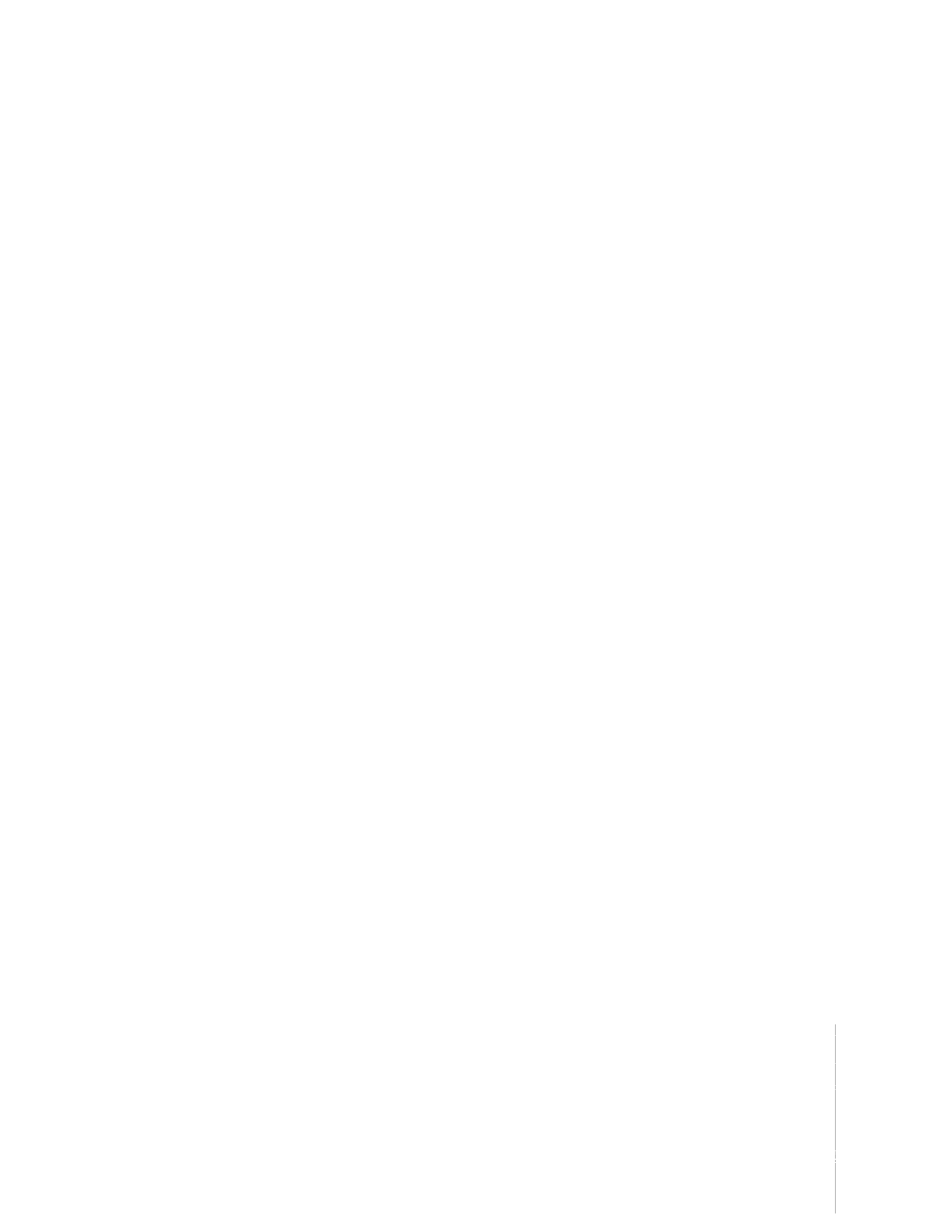
CONNECTOR CAVITY NUMBER
 TO CONTACTOR CIRCUIT
 115 V.A.C.

NOTES

- N.A. Quick Connect CT Terminals 7, & 32A to connect auxiliary equipment 115 V.A.C. 0.25 amp rating
- N.B. Meter Kit Receptacle
- N.C. Digital Meter Kit Power Receptacle
- N.D. Optional Burnback Kit Receptacle Jumper Connector is removed when kit is installed.
- N.E. On Standard LN-7, Control P.C Board Jumper is shipped connected to Pin "S" (Slow Acceleration).
 On LN-7 GMA, Jumper is shipped connected to Pin "F" (Fast Acceleration).
 (Jumper not present on earlier models.)
- N.F. Harness Cable from Optional Burnback Kit to Relay P.C. Board (Shipped with kit).
- N.G. Gas Solenoid Valve "Optional" on standard LN-7 Factory installed on LN-7 GMA.

DIGITAL METER WIRING DIAGRAM





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 descrip-

tion, 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.



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