

Idealarc R3S-325
IM285
February, 1990
7611; 7631; 7721; 7724; 7790; 7803;
7817; 7841; 7901; 7915; 7971; 8004;
8112; 8137; 8142; 8152; 8153; 8316;
8433; 8448; 8449; 8487; 8520; 8521;
8529; 8543; 8891; 9137; 9551

OPERATING MANUAL

IDEALARC[®] R3S-325 DC ARC WELDING POWER SOURCE Constant Voltage, 3 Phase, Rectifier Type



This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

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 arc welding equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation . . . and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS 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



WARNING: PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH.



ELECTRIC SHOCK can kill.

1. a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- b. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".
- c. Insulate yourself from work and ground using dry insulation. When welding in damp locations, on metal framework such as 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.
- d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- e. Ground the work or metal to be welded to a good electrical (earth) ground.
- f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- g. Never dip the electrode in water for cooling.
- h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- i. When working above floor level, protect yourself from a fall should you get a shock.
- j. Also see Items 4c and 6.



ARC RAYS can burn.

2. a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 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.



FUMES AND GASES can be dangerous.

3. a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding 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 7b.



WELDING SPARKS can cause fire or explosion.

4. a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding 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. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- h. Also see item 7c.



CYLINDER may explode if damaged.

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



FOR ELECTRICALLY powered equipment.

- 6. a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.



FOR ENGINE powered equipment.

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



- b. Operate 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 allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.



- d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.
- e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.
- g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.




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


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

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.

INSTALLATION

LOCATION


WARNING



**FALLING
EQUIPMENT can
cause injury.**


- Do not lift this machine using lift bale if it is equipped with a heavy accessory such as trailer or gas cylinder.
- Lift only with equipment of adequate lifting capacity.
- Be sure machine is stable when lifting.


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

R3S welders can be stacked three high when the following precautions are observed:

1. Be sure the bottom machine is on a firm, level surface suitable for the total weight [up to 2300 pounds (1043 kg)] of the stacked machines.
2. Stack the machines with the fronts flush. Be certain the pins on the top front corners of the lower machines fit through the holes in the base rails of the upper machines.
3. The length (or depth) of different amperage R3S welders vary. Do not stack a longer case on top of a shorter case.

INPUT WIRING


WARNING



**ELECTRIC SHOCK
can kill.**

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

230/460 or 220/440 volt models are shipped connected for 460 or 440 volts. To change the connection, see the connection diagram pasted to the inside of the access panel in the case back.

Be sure the voltage, phase and frequency of the input power is as specified on the welder nameplate.

Have a qualified electrician remove the access panel in the case back and connect three-phase AC power to terminals L₁, L₂, L₃ of the input connection panel in accordance with the U.S. National Electrical Code, all local codes and the wiring diagram located inside the machine.

The welder frame must be grounded. A stud marked with the symbol \equiv located on the input connection panel is provided for this purpose. See the U.S. National Electrical Code for details on proper grounding methods.

**Recommended Input Wire, Ground Wire and Fuse Sizes
Based on U.S. National Electrical Code
For 60 Hertz, 3 Phase Welders at 100% Duty Cycle**

Input Volts	Input Amps	Wire Size-Type 75°C in Conduit				Super Lag Fuse Amps
		3 Input- Copper		1 Ground- Copper		
		Wire	T&B Terminal	Wire	T&B Terminal	
230	51	6	31005	8	31005	80
460	25.5	10	31003	10	31003	40

Thomas & Betts wire terminals (or equal) recommended in table are required to comply with applicable U.L. standards for safety. Tooling required to assemble terminals is a screwdriver.

OUTPUT CONNECTIONS (Turn welder off before making output connections.)

a. Output Studs

Studs for electrode and work cable connections are located at the bottom corners of the front panel. The cables should be run up through the strain relief loops below the studs to prevent loosening the cable connection or damage to the studs if the cables are pulled excessively. Tighten nuts with a wrench.

Cables in accessory kits recommended below are terminated as required to comply with applicable U.L. standards for safety.

Combined Copper Cable Lengths up to 100' (30 m)	Lincoln Accessory Kit Number
2/0	K796 (electrode and work cables) ⁽¹⁾

⁽¹⁾ Specify length of each

b. Optional Line Voltage Compensator

When using the R3S-325 in locations where line voltage variations cause welding problems, the Optional "R3S-325 Line Voltage Compensator" may be used. It is designed for use with a single R3S-325 machine and not paralleled machines. When

installed the machine output voltage is adjusted with the "Fine Voltage Control" on the "Line Voltage Compensator" instead of the "Fine Voltage Control" on the R3S, a remote control or the wire feeder voltage control.

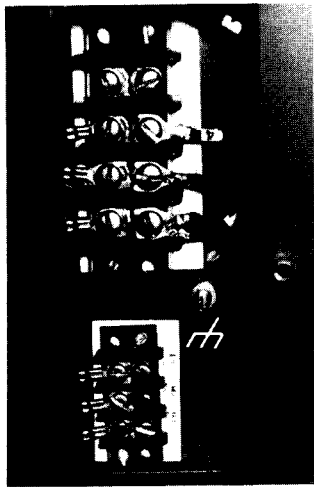
c. Connection to Lincoln Wire Feeders

The R3S-325 is designed as a power source primarily for the LN-7 but other wire feeders can be used.

Turn the "Power" switch off and remove the panel on the case front that covers the terminal strips located above the "Positive" output stud. Run the control leads from the wire feeder input cable through the upper of two cable clamps near the front edge of the right side of the R3S-325. Connect the leads to the appropriate terminals as indicated on the connection diagrams shipped with the wire feeder. Tighten the cable clamp and replace the cover panel.

d. Connection to Other Feeders

This power source can be used with most wire feeders manufactured by other companies. To install, turn the "Power" switch off and remove the panel




covering the terminal strips located above the "Positive" output stud. Run the control leads from the wire feeder input cable through the upper of the two cable clamps near the front edge of the right side of the R3S-325. For 115 volt AC power to operate the wire feeder, use terminals #31 and #32. Maximum AC output from these terminals is 600 volt-amperes. For remote operation of the machine

contactor, a wire feeder control circuit must complete the #32 and #4 circuit on the terminal strip. Tighten the cable clamp and replace the cover panel. If the wire feeder is not equipped with a contactor circuit, put a jumper between #32 and #4 to close the machine contactor.

WARNING: Output terminals will be "hot" at all times.






e. Connection of Optional K775 Remote Control

To install the optional remote control, turn the "Power" switch off. Remove the panel covering the terminal strips located above the "Positive" output stud. Run the cable from the optional Remote Con-

trol through the lower of two cable clamps near the front edge of the right side of the R3S-325. Connect the numbered leads to the appropriate terminals — #75 to #75 etc. — on the lower terminal strip. Connect the green lead to the ground terminal marked with the symbol  located near the access hole. Tighten the cable clamp. Replace the cover panel.

The control cable can be lengthened to any length by splicing four conductor rubber covered cords to the standard 25' (7.5 m) cable before connecting to the power source. Use care. A misconnection or improper insulation can cause P.C. board failures.

OPERATING INSTRUCTIONS

 WARNING	
	<ul style="list-style-type: none"> • Do not touch electrically live parts or electrode with skin or wet clothing. • Insulate yourself from work and ground.
ELECTRIC SHOCK can kill.	
	<ul style="list-style-type: none"> • Keep your head out of fumes. • Use ventilation or exhaust to remove fumes from breathing zone.
FUMES AND GASES can be dangerous.	
	<ul style="list-style-type: none"> • Keep flammable material away.
WELDING SPARKS can cause fire or explosion.	
	<ul style="list-style-type: none"> • Wear eye, ear and body protection.
ARC RAYS can burn.	

Duty Cycle (Based on 10 minute period)

Model	Hertz	Amps	Volts	Duty Cycle
R3S-325	60	325	33	100%
	50	325	33	80% ⁽¹⁾

⁽¹⁾ 80% means 8 minutes operating time in a 10 minute period.

1. To Set Polarity turn off machine

- Connect the electrode cable to the "Positive" or "Negative" stud, depending upon the electrode polarity desired. Connect the work cable to the other stud.
- Set the switch on the machine control panel to the same polarity as the electrode cable connection, "Positive" or "Negative". This switch setting is required for proper operation of Lincoln Wire Feeding equipment when equipped with meters. The switch has no function when operating with other wire feeders.

2. To Start the Welder

Move the "Power Switch" to "On". This lights the red pilot light next to the switch and starts the cooling fan. Operate the gun trigger (or the wire feeder contactor circuit) for welder output.

3. To Set the Welding Output

- Set the "Voltage Range Selector" to the higher (20 to 35 volts) or lower (12 to 28) range as required for the application. **DO NOT** turn this switch when welding because damage to the switch can result.
- Set the precise desired voltage either from the R3S control panel or from a remote location as follows: (This setting can be adjusted while welding.)

To set the output from the R3S, set the toggle switch to "Fine Voltage Control at R3S" and adjust the "Fine Voltage Control" located on the R3S control panel.

To set the output from a remote location, set the toggle switch to "Fine Voltage Control Remote". Adjust the voltage using either the optional Remote Control, the voltage control on the wire feeder or the Fine Voltage Control on the optional "Line Voltage Compensator" as appropriate.

- When welding with a short circuiting type transfer using low currents and voltages, turn the optional "Arc Control" to adjust the pinch effect for the desired arc characteristics as follows:
 - Turn the control clockwise for a cold puddle (small and less fluid) and reduced spatter.
 - Turn the control counter-clockwise when a hotter puddle (more fluid and larger droplets) and more weld metal can be handled.


The "Arc Control" can be adjusted while welding.

4. To Read the Meters

Welding current and voltage can be read on the voltmeter and ammeter only when welding.

With the "Power Switch" on and the wire feeder gun trigger pulled, the voltmeter indicates about 55 volts when the "Voltage Range Selector" is set for the higher range and about 40 volts when the "Voltage Range Selector" is set on the lower range. This reading is not affected by changing the "Fine Voltage Control". The voltage drops to actual welding voltage as soon as the arc is struck.

MAINTENANCE AND TROUBLESHOOTING

	
WARNING	
ELECTRIC SHOCK can kill.	<ul style="list-style-type: none">• Have an electrician install and service this equipment.• Turn the input power off at the fuse box before working on equipment.• Do not touch electrically hot parts.

OVERLOAD PROTECTION

A ten amp fuse in the auxiliary AC (#31 and #32) circuit to protect the auxiliary transformer from overload is located on the front of the machine. If replacing, use a Bussman MDA or equivalent.

These machines have built-in protective thermostats that respond to excess temperature and current. They open the contactor if the rectifier or transformer exceed the maximum safe operating temperature because of frequent overload, high room temperature plus overload or abnormally high input voltage. The thermostats automatically reset when the temperature reaches a safe operating level.

GENERAL MAINTENANCE

1. The fan motor has sealed bearings which require no service.

2. In extremely dusty locations, dirt may clog the air channels causing the welder to run hot. Blow dirt out of the welder at regular intervals.


RECTIFIER TROUBLESHOOTING


If the welder trips off the line under no load or DC welding output is lower than normal, test for a possible failed rectifier as follows:

1. Turn the input power off.
2. Disconnect all input and output leads from the rectifier bridge.
3. Connect the ohmmeter between the DC positive (red) terminal and each diode pigtail. Note the ohmmeter reading using the 10 to 100 scale.
4. Reverse the ohmmeter leads. Note the reading.
5. The readings taken in steps 3 and 4 should be different. If the readings are the same and near zero, the diode has shorted. If the readings are the same and near full scale, the diode has failed open.
6. Repeat steps 3, 4 and 5 between the DC negative (black) terminal and each diode pigtail.

NOTE: Since it is unlikely that all rectifiers of a full wave bridge would fail simultaneously, check the test method and the ohmmeter if the testing indicates that all the diodes have failed.

TROUBLESHOOTING

 **WARNING**



ELECTRIC SHOCK
can kill.

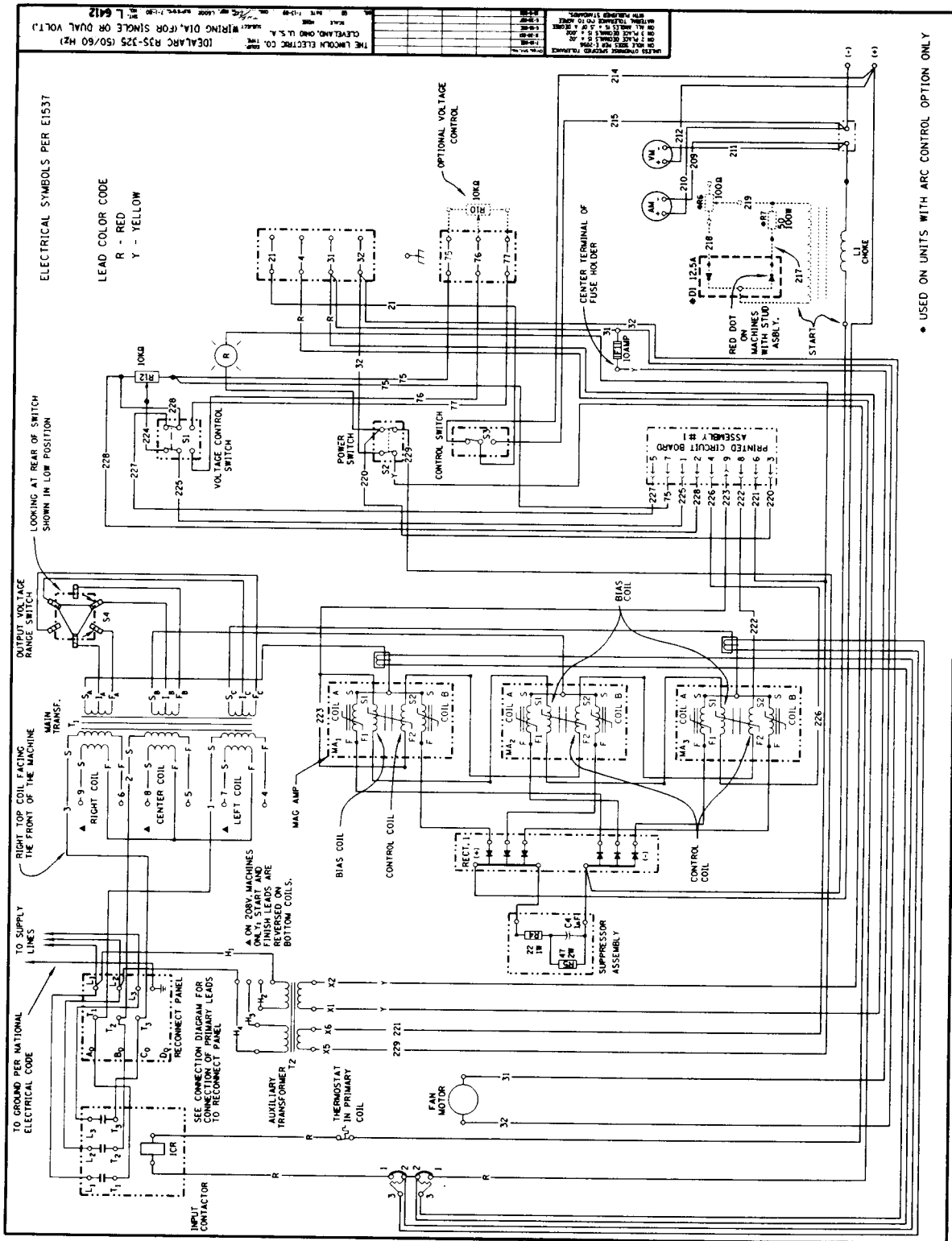
- Have an electrician install and service this equipment.
- Turn the input power off at the fuse box before working on equipment.
- Do not touch electrically hot parts.

TROUBLE	POSSIBLE CAUSE	REMEDY
Contactors chatter.	a. Check for low line volts. b. Faulty contactor.	a. Check with Power Company. b. Repair or replace.
Machine will not start (contactor not operating).	a. Supply line fuse blown. b. Power circuit dead. c. Broken power lead. d. Wrong voltage. e. Thermostat tripped (welder overheated). f. Fuse in 115 volt AC blown. g. Contactor coil open. h. Wire feeder control circuit not completing circuit 32 to 4.	a. Replace (look for reason for blown fuse first). b. Check voltage. c. Repair. d. Check voltage against instructions. e. Make sure that fan is operating and that there are no obstructions to free flow of air. Operate at rated current and duty cycle. f. Replace (look for reason). g. Replace. h. Repair.
Machine will not weld (contactor operating).	a. Electrode or work lead loose or broken. b. Open transformer circuit. c. "Voltage Range Selector" not making proper contact.	a. Tighten and repair connections. b. Have coils replaced. c. Set switch in proper position.
Welder welds but soon stops welding (thermostat tripped).	a. Proper ventilation hindered. b. Unit loaded beyond rating. c. Fan inoperative. d. Shorted diode.	a. Make sure all case openings are free for proper circulation of air. b. Operate at normal current and duty cycle. c. Check leads and motor bearings. Fan can be tested on 115 volt AC line; with welder on, voltage across fan should be 115 volts AC. d. Check rectifier assembly for shorted diode.
Variable or sluggish welding arc.	a. Poor work or electrode connection. b. Current too low. c. Open rectifier. d. Low line voltage. e. Welding cables too small or too long. f. "Voltage Range Selector" not making proper contact.	a. Check and clean all connections. b. Check recommended currents for wire type and size. c. Check each diode. d. Check with Power Company. e. See table on page 5. f. Repair switch.
Welder will not shut off.	a. Contactor contacts frozen.	a. Repair or replace the contactor.
Optional "Arc Control" not functioning.	a. Variable resistor open. b. Diodes open or shorted on choke diode assembly.	a. Replace. b. Check diodes and replace assembly if found faulty.
"Fine Voltage Control" (or optional "Remote Control") on machine not functioning.	a. "Fine Voltage Control Switch" in the wrong position. b. P.C. Board plug disconnected. c. Voltage control potentiometer open. d. Leads to voltage control broken or disconnected. e. P.C. Board components failed. f. Leads 75, 76 and 77 of Remote Control not connected to correct numbers on terminal strip. g. "Fine Voltage Control Switch" not making contact. h. An open control or bias winding in one of the mag-amps.	a. Place switch in "Fine Voltage Control at R3S" or "Remote" position as appropriate. b. Plug in properly. c. Replace. d. Repair broken leads or connection. e. Replace P.C. Board. f. Correct connection. g. Replace. h. Check for open windings. Repair or replace the mag amp.

TROUBLESHOOTING (CONT'D)

TROUBLE	POSSIBLE CAUSE	REMEDY
Machine comes on (contactor closes) but open circuit voltage is low.	<ul style="list-style-type: none"> a. Low line voltage. b. Supply line to reconnect panel terminal "L₃" open. c. One open lead between reconnect panel and 1 CR (output contactor). d. One contact on 1 CR broken and open. 	<ul style="list-style-type: none"> a. Check with Power Company. b. Check for open line and repair. c. Check "L₁" on reconnect panel to "L₁" on 1 CR, "L₂" on reconnect panel to "L₂" on 1 CR, and "L₃" on reconnect panel to "L₃" on 1 CR. Repair open lead. d. Repair.
Do not get full range of control on fine voltage control when machine is under load.	<ul style="list-style-type: none"> a. Supply line to reconnect panel terminal "L₃" open. b. One open lead between reconnect panel and 1 CR. c. One mag-amp not functioning. 	<ul style="list-style-type: none"> a. Check for open line and repair. b. Check "L₁" on reconnect panel to "L₁" on 1 CR, "L₂" on reconnect panel to "L₂" on 1 CR, and "L₃" on reconnect panel to "L₃" on 1 CR. Repair open lead. c. Check for shorted mag-amp load coil, bias coil, or control coil. Replace if shorted.

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.



L6412
7-18-80E

Need Welding Training?

The Lincoln Electric Company operates the oldest and most respected Arc Welding School in the United States at its corporate headquarters in Cleveland, Ohio. Over 60,000 students have graduated. Tuition is low and the training is “hands on”.

For details write: Lincoln Welding School
22801 St. Clair Ave.
Cleveland, Ohio 44117-1199

and ask for bulletin ED-80 or call 216-481-8100 and ask for the Welding School Registrar.

LIMITED WARRANTY

STATEMENT OF WARRANTY:

The Lincoln Electric Company (Lincoln) warrants to the original purchaser (end-user) of new equipment that it will be free of defects in workmanship and material.

This warranty is void if Lincoln finds that the equipment has been subjected to improper care or abnormal operation.

WARRANTY PERIOD:

All warranty periods date from the date of shipment to the original purchaser and are as follows:

Three Years:

Transformer Welders
Motor-generator Welders
Semiautomatic Wire feeders
Plasma-cutting power source
Engine Driven Welders (except engine and engine accessories) with operating speed under 2,000 RPM

Two Years:

Engine Driven Welders (except engine and engine accessories) with operating speed over 2,000 RPM

All engine and engine accessories are warranted by the engine or engine accessory manufacturer and are not covered by this warranty.

Equipment not listed above such as torch and torch assemblies, automatic wire feeders and field installed optional equipment is warranted for one year.

TO OBTAIN WARRANTY COVERAGE:

You are required to notify Lincoln Electric, your Lincoln Distributor, Lincoln Service Center or Field Service Shop of any defect within the warranty period. Written notification is recommended.

WARRANTY REPAIR:

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

WARRANTY COSTS:

You must bear the cost of shipping the equipment to a Lincoln Service Center or Field Service Shop as well as return shipment to you from that location.

IMPORTANT WARRANTY LIMITATIONS:

- Lincoln will not accept responsibility for repairs made without authorization.
- Lincoln shall not be liable for consequential damages (such as loss of business, etc.) caused by the defect or reasonable delay in correcting the defect.
- Lincoln's liability under this warranty shall not exceed the cost of correcting the defect.
- This written warranty is the only express warranty provided by Lincoln with respect to its products. Warranties implied by law such as the Warranty of Merchantability are limited to the duration of this limited warranty for the equipment involved.



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