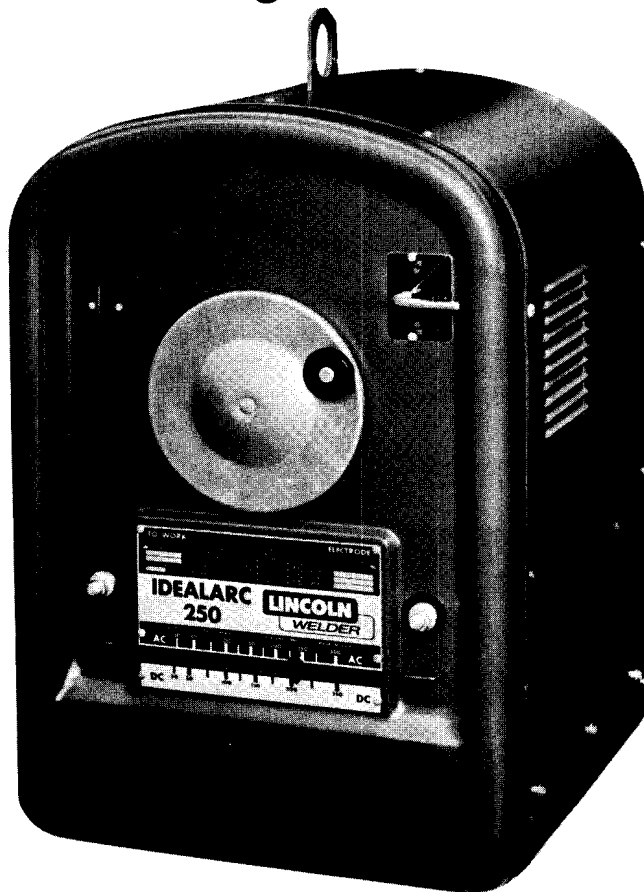


# OPERATING MANUAL

## IDEALARC<sup>®</sup> 250 250 Amp AC and AC/DC Constant Current Arc Welding Power Sources



This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

### MODELS

Idealarc	AC-250
Idealarc	250/250

### 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 National Electrical Code, all local codes and the manufacturer's recommendations.
- c. Ground the equipment in accordance with the 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.

## PRODUCT DESCRIPTION

The Idealarc 250 is a single phase constant current arc welding power source, and is available in an AC or AC/DC model. Designed for stick welding, they may also be used for TIG welding. For AC TIG welding, the K-799 Hi Freq™ unit must be used.

A polarity switch on the front of the AC/DC model selects AC, DC(+) or DC(-) polarity. The continuous current control (on the front) selects the amperage, and displays it on the current indicator at the bottom nameplate.

## INSTALLATION

**WARNING: Read "Arc Welding Safety Precautions" on page 2 before proceeding.**

**Turn the input power off at the disconnect switch before attempting to connect the input power to the Idealarc 250.**

- Only qualified personnel should perform this installation.
- Machine must be connected to system ground per the National Electrical Code and any applicable local codes.
- Turn the power switch on the Idealarc 250 "off" before connecting or disconnecting output cables or other equipment.

**Undercarriages:** If the optional K-806 undercarriage is to be installed, it should be done before connecting the welder to power lines. Instructions are included with the undercarriage.

## LOCATION

Locate the welder in a clean, dry place at least six inches away from other surfaces to allow free circulation of air. A location which minimizes the amount of smoke and dust

drawn through the louvers reduces the chance of dirt accumulation that can block air passages and cause overheating.

## CONNECTING TO POWER LINES

Be sure the voltage, phase and frequency of the input power is as specified on the welder nameplate. Either a single phase or one phase of a three phase line can be used.

Models designed for two or three input voltages (eg. 230/460, 220/380/440, etc.) are shipped connected for the highest voltage. Reconnection instructions are on the diagram pasted to the inside of the side panel.

Have a qualified electrician install the machine per the following instructions. Remove the left side panel (viewed from front). Route the input power lines through the hole in the base and connect them to the welder line switch in accordance with the National Electrical Code, all local codes, and the wiring diagram pasted to the inside of the side panel.

**NOTE:** A strain relief clamp (not supplied) should be used to secure this connection.

## GROUNDING

The welder frame must be grounded. A stud marked with the symbol  $\perp$  located inside the welder is provided for this purpose. See the United States National Electrical Code for details on proper grounding methods. (If an old machine does not have a grounding stud, connect the grounding wire to an unpainted frame screw or bolt.)

## CONNECTING WELDING LEADS

With the input power off, connect the output cables to the proper output studs. The cables should be terminated with connectors which have straight lugs and routed through the strain relief loops below the studs. These loops are provided to prevent damage to the output studs if the cables are pulled excessively. Minimum cable sizes recommended are listed in the table below.

## RECOMMENDED INPUT WIRE, GROUND WIRE AND FUSE SIZES

Based on U.S. National Electrical Code  
For 60 Hertz, Single Phase Welders at 200 Amps, 30 Volts Output and 50% Duty Cycle

Welder	Input Volt	Input Amperes				Copper Wire Sizes — 75°C in Conduit				Recommended Fuse Sizes (Super Lag)	
		With P.F. Capacitors		Without P.F. Capacitors		2 Input		Grounding Conductor		With Capacitors	Without Capacitors
		DC	AC	DC	AC	With Capacitors	Without Capacitors	With Capacitors	Without Capacitors		
250	230	50	46	70	68	#8	#8	#8	#8	70	90
250	460	25	23	35	34	#12	#10	#10	#10	35	45
250	575	20	18.4	28	27	#14	#12	#10	#10	30	40

# OPERATING INSTRUCTIONS

Read this Warning



## WARNING

Protect yourself  
and others



**ELECTRIC SHOCK can kill.**

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



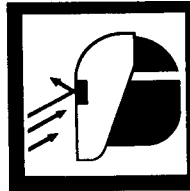
**WELDING SPARKS can cause fire or explosion.**

- Keep flammable material away.



**FUMES AND GASES can be dangerous.**

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



**ARC RAYS can burn.**

- Wear eye, ear and body protection.

## CURRENT CONTROL HANDLE

Rotating the hand wheel raises and lowers the output current allowing the operator to dial the desired current. Turning the current control handle also drives the output pointer at the bottom of the nameplate which indicates the stick welding current at NEMA arc volts.

## POLARITY SWITCH (On AC/DC Idealrcs)

Turn the arc polarity switch in the upper right hand corner of the case front to AC, DC(−) or DC(+) as required for

the particular application. **DO NOT CHANGE THE POLARITY SWITCH WHILE WELDING.** Doing this can seriously damage the switch.

## RECOMMENDED WELDING CABLE SIZES (Copper)

Welding Current (Amps)	Duty Cycle %	Cable Sizes for Combined Lengths of Electrode and Work Cables			
		0 to 100 ft	100 to 150 ft	150 to 200 ft	200 to 250 ft
200	50	3	2	1	1/0
250	30	3	2	1	1/0

**TIG WELDING** — The Idealrc with the optional Hi-Freq is an inexpensive equipment combination for part-time production or repair TIG welding of aluminum, magnesium, thin stainless steel and many space-age metals. The Idealrc can be used for normal stick electrode welding with the Hi-Freq attached.

**WARNING:** Reduce the Idealrc duty cycle by 50% when AC TIG welding, i.e., the welder should be operated for only two and one half minutes out of every ten at rated current of 200 amperes.

The Hi-Freq includes high frequency generator, gas valve and needed controls. It operates on 115 volt, 60/50 hertz AC power. Contact your Lincoln representative for full details.

**NOTE:** The Hi-Freq unit includes an R.F. by-pass capacitor kit for power source protection. Installation instructions are in the kit. (When using the Idealrc with any other high frequency equipment, an R.F. by-pass capacitor **must** be installed. Order kit T-12246.) To pro-



**HI-FREQ™**

vide protection, the welder grounding stud or frame must be connected to ground (see instructions on page 4). Also follow the grounding instructions given in the Hi-Freq instruction manual (IM-298 for codes 8001 to 8999), (IM-238-B for older codes), (IM-362 for codes 9000 and higher).

## PIPE THAWING

**WARNING:** Pipe thawing, if not done properly, can result in fire, explosion, damage to wiring which may make it unsafe, damage to pipes, burning up the welder, or other hazards. Do not use a welder to thaw pipe before reviewing Lincoln bulletin E-695.1 (dated May '87 or later).

## DUTY CYCLE

This machine is rated for 50% duty cycle at 200 amps, 30 volts output. Duty cycle is based on a 10 minute period. Therefore, the welder can be loaded at 200 amperes for 5 minutes out of each 10 minute period. Higher duty cycles

can be used at lower currents; see nameplate information.

## OPTIONAL FEATURES


### POWER FACTOR CAPACITORS (Optional)

Power factor correction capacitors are available factory installed or as a kit for field installation. The kit includes the required capacitors, brackets, screws, leads and installation instructions.

### K-806 UNDERCARRIAGE (Optional)

The 4 wheels and handle make it easy to move machine in shop. Mounting instructions included in kit.

## MAINTENANCE AND TROUBLESHOOTING



**ELECTRIC SHOCK  
can kill.**

**! WARNING**

- 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.

### ROUTINE MAINTENANCE

1. Keep the electrode and work cable connection tight.

2. In dusty locations dirt may clog the air channels causing the welder to run hot. Under these conditions carefully blow out the welder at regular intervals.
3. The fan motor has sealed ball bearings which require no service.
4. Every twelve months or at the first indication of a binding current pointer, turn the input power off and remove the ease wraparound. Wipe the pointer guide bar clean and lubricate with graphite grease.
5. When cleaning current pointer, clean the reactor quadrant teeth, drive gear and pinion. Lubricate with graphite grease.

Trouble	Causes	What To Do
Welder will not weld.	Line switch not turned "On". Supply line fuse blown. Power circuit dead. Broken power lead. Wrong voltage. Electrode or work lead loose or broken. Open transformer circuit. Polarity switch not centered (AC-DC units only).	Place line switch in "On" position. Replace. (Look for reason for blown fuse first.) Check supply line voltage. Repair. Check voltage against nameplate. Tighten and repair connections.  Send to repair shop to have coils replaced. Center switch handle on DC(+), DC(-) or AC.
Welder welds, but soon stops welding (using DC or AC-DC units only).	Proper ventilation hindered.  DC unit loaded beyond rating.  Fan motor inoperative.   Poor internal connections. Excessive dust accumulation in welder. Bi-metallic thermostat dirty.	Make sure all case openings are free for proper circulation of air.  Operate at normal current and duty cycle consistent with rating.  Check leads and motor bearings. Fan motor can be tested on 115 volt line; with welder on, voltage across fan motor should be approximately 115 volts.  Check for loose or hot connections and tighten. Blow out the welder with low pressure.  Carefully clean in naphtha.

## TROUBLESHOOTING (Continued)

Trouble	Causes	What To Do
Variable or sluggish welding arc.	Poor work or electrode terminal connection. Current too low. Low line voltage. Welding leads too small. Old and badly frayed welding cables.	Check and clean all connections. Check recommended currents for rod type and size. Check with Power Company. See table on page 5. Replace.
Welder won't shut off.	Line switch has failed mechanically.	Replace Switch.
Polarity switch won't turn.	Contacts rough and pitted from improper switching under load.	Replace Switch.

## RECTIFIER TROUBLESHOOTING

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

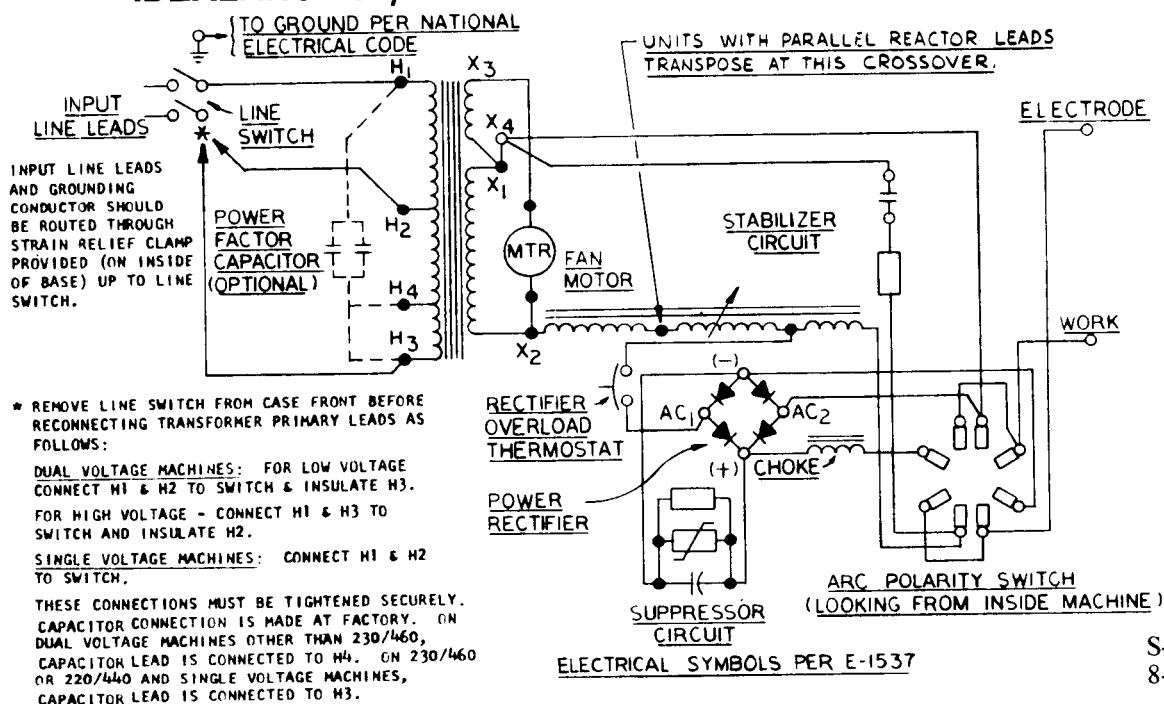
1. Turn the input power off.
2. Disconnect all input and output leads from the rectifier bridge.
3. Connect an ohmmeter between the DC positive (red) terminal and one of the AC (yellow) terminals. Note the ohmmeter reading using the 10 to 100 scale.
4. Reverse the ohmmeter leads. Note the reading.
5. The readings taken in steps 3 and 4 should be different.  
If the readings are the same and near zero, the rectifier

has shorted. If the readings are the same and near full scale, the rectifier has failed open.

6. Repeat steps 3, 4 and 5 between the DC positive (red) terminal and each of the AC (yellow) terminals.
7. Repeat steps 3, 4 and 5 between the DC negative (black) terminal and each of the AC (yellow) terminals.

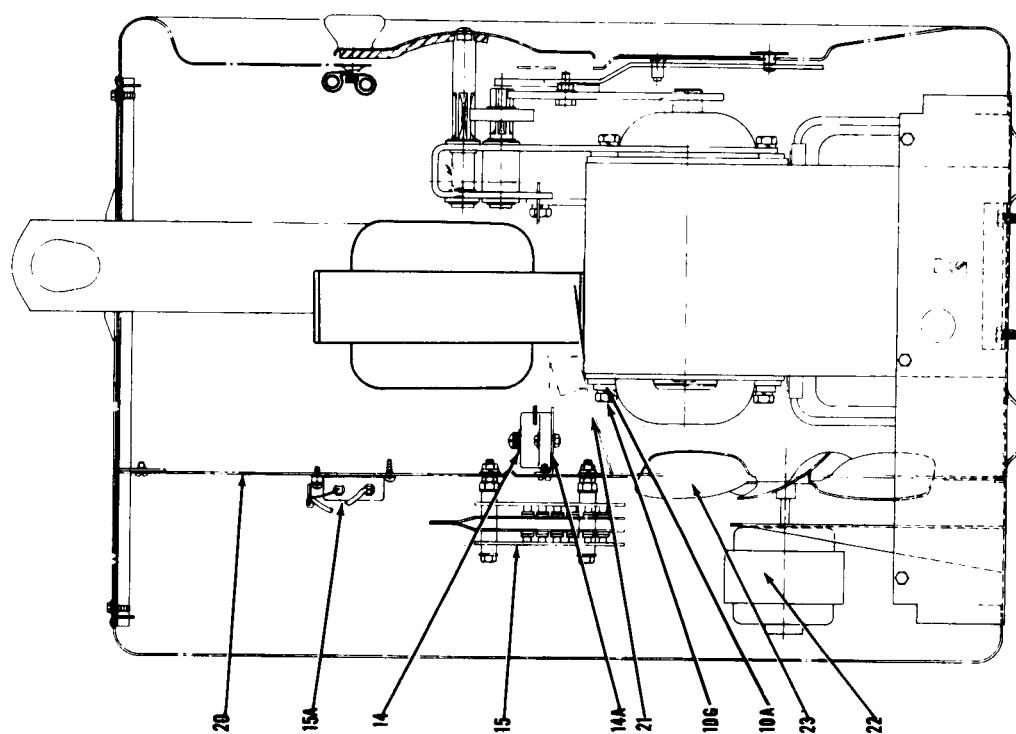
**NOTE:** Since it is unlikely that all rectifiers of a full wave bridge would fail simultaneously, check the test method and the ohmmeter if the checking indicates that all rectifiers have failed.

## IDEALARC 250/250 SCHEMATIC WIRING DIAGRAM



**NOTE:** This diagram is for reference only. The specific diagram for each machine is pasted inside the machine. If the diagram is illegible, write to the Lincoln Electric Company, Service Dept. for a replacement. Give the welder code number.

S-17553  
8-23-85D



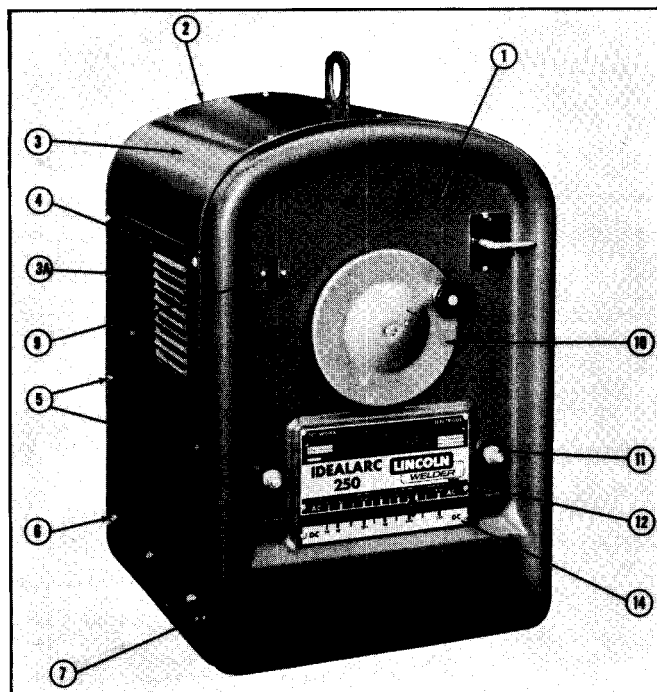


## INTERNAL ASSEMBLY

### Parts List P-24-E, 250 Amp

ITEM	PART NAME & DESCRIPTION	NO. REQ'D	ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Base	1		Capacitor Strap	
2	Transformer and Reactor Lamination	1		Resistance Wire Lead	1
3	Assembly	1	12	Choke Coil See Winding Specs	1
	Transformer Coil	1	13	Arc Polarity Switch	1
	Hex Head Screw, Aluminum, Reactor —			Switch Handle	1
	Transformer Leads	8		Groove Pin, Handle to Switch	1
	Plain Washer, Aluminum, Reactor —			Polarity Switch Nameplate	1
	Transformer Leads	16	14	Circuit Breaker	1
	Hex Nut Aluminum, Reactor — Transformer		14A	Breaker Mounting Bracket	1
	Leads	8	15	Rectifier Kit	1
	Bow Washer, Transformer — Reactor Leads	8	15	Rectifier, Includes:	1
5	Transformer Locking Pin	1		Positive Heat Sink and Diode Assembly	
6	Right Reactor Coil	1		(Red)	1
	Left Reactor Coil	1		Negative Heat Sink and Diode Assembly	
7	Reactor Coil Replacement Kit	1		(Black)	1
	Pointer Actuator	1	15A	Suppressor Assembly	1
	Drive Screw Actuator to Quadrant	1	20	Vertical Baffle	1
8	Control Shaft	1	21	Shroud	1
	Snap Ring	2	22	Fan Motor	1
	Spacer Washer	1	23	Fan Blade	1
9	Counter Shaft	1	24	Power Factor Capacitors, Includes	
	Counter Shaft Gear	1		Mounting Straps	1
	Snap Ring	2	25	Cover Seal	1
10	Quadrant and Rotor Assembly		27	Capacitor Assembly (Below Code 7900	
	Not Sold Separately			Only	1
10A	Rear Rotor Support Assembly	1			
10B	Front Rotor Support Assembly	1		NOTE 1: Below Code 4880 Only: For electrical	
10C	Spring	4			
10D	Bracket Stiffener	8		reasons, the connections between the	
10E	Hex Head Screw	4		reactor and transformer leads must be	
10F	Huglock Nut	4		made with these aluminum parts.	
11	Stabilizing Capacitor	1			

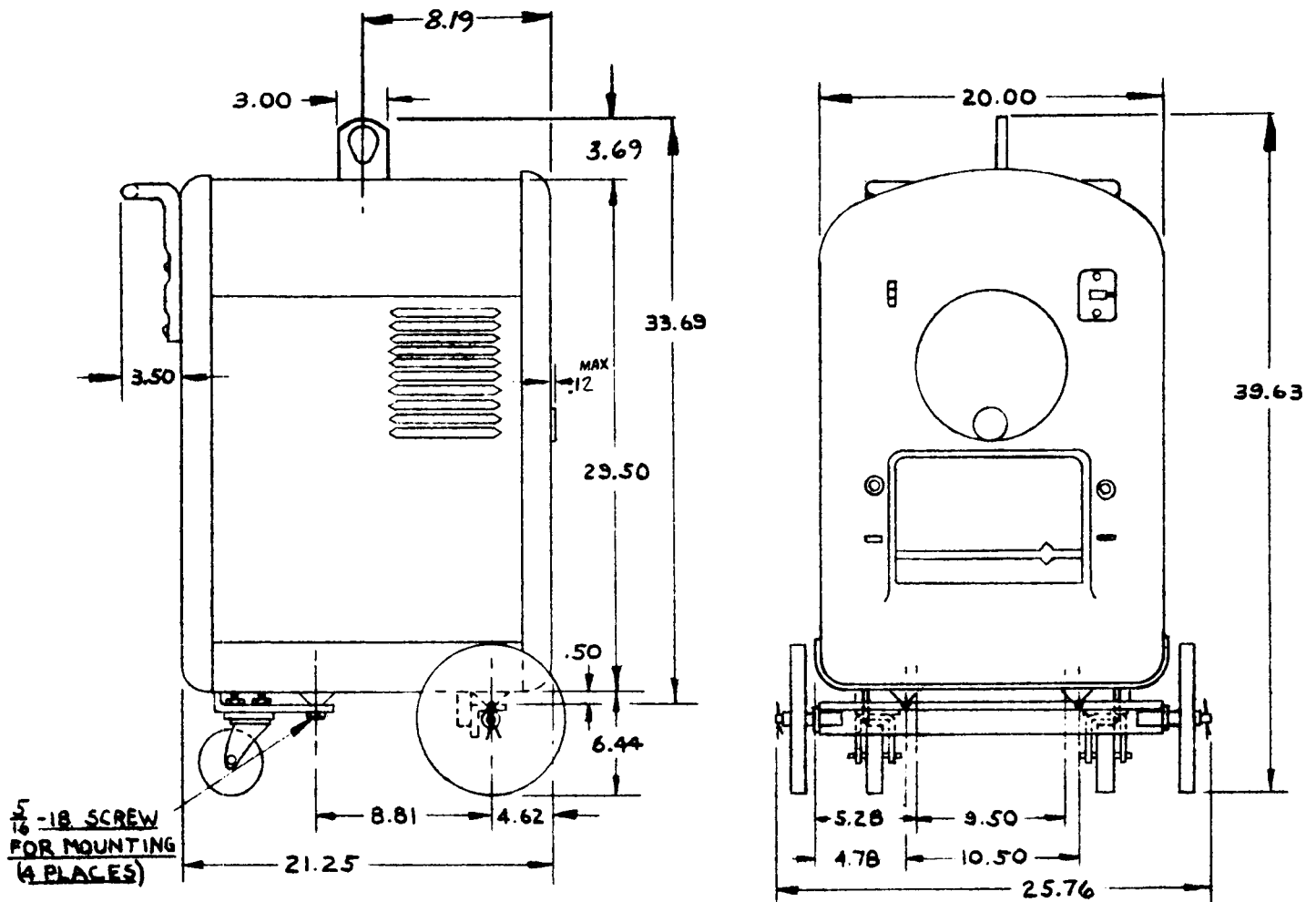
## CASE AND EXTERIOR



Parts List P-24-C

ITEM	PART NAME & DESCRIPTION	NO. REQ'D	ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Front Panel, Includes: Pointer	1 1		Includes: Stud	2 1
2	Rear Panel	1		Brass Hex Nut	1
3	Case Center Section	1		Plain Washer	2
3A	Case Side Panel, Above Code 4880 Only	1		Insulating Washer	1
4	Round Head Screw, Front Panel to Center Section	2		Insulating Bushing	1
5	Self Tapping Screw	13		Lock Washer	1
6	Thread Cutting Screw, Center Section to Base	6		Flanged Weld Nut	1
7	Self Tapping Screw, Panels to Base			Hex Nut	1
	and Lift Bail	6		Plain Washer (Used With Aluminum Copper Leads Only)	1
9	Line Switch	1	11	Output Terminal Kit (Above Code 8300), Includes: Output Terminal	2 1
	Line Switch Lug	2		Output Stud Nut	1
	Line Switch Nameplate (Dual Voltage 250 Amp Machines Below Code 4880)	1		Hex Head Cap Screw	1
	Self Tapping Screw, Nameplate to Panel	2		Self Tapping Screw	1
10	Control Handle	1		Plain Washer	1
	Oval Head Screw, Handle Mounting	1		Lock Washer	1
11	Output Stud Assy., Below Code 4880	2	12	Nameplate	1
	Stud	1		Self Tapping Screw, Nameplate Mounting	4
	Brass Hex Nut	2	14	DC Nameplate, AC/DC Only (Part of Item 12 on Codes Above 6930)	1
	Plain Washer	2		Self Tapping Screw, Nameplate Mounting	2
	Insulating Washer	2			
	Insulating Washer	1			
	Lock Washer	1			
	Flanged Weld Nut	1			
	Hex Nut	1			
11	Output Stud Assy., (Code 4880-8300),				

# **DIMENSION PRINT** **INTERNAL ASSEMBLY — 250 Amp. Only**



## **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  
 Cleveland, Ohio 44117

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 guns, cable 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.



## THE LINCOLN ELECTRIC COMPANY

World's Largest Manufacturer of Arc Welding Products • Manufacturer of Industrial Motors

Sales and Service Worldwide

Cleveland, Ohio 44117-1199 U.S.A.

Toronto M4G 2B9 - Canada

Sydney 2211 - Australia

Rouen 76120 - France

Eff. June '89

*Ram*

7-88

Litho in U.S.A.