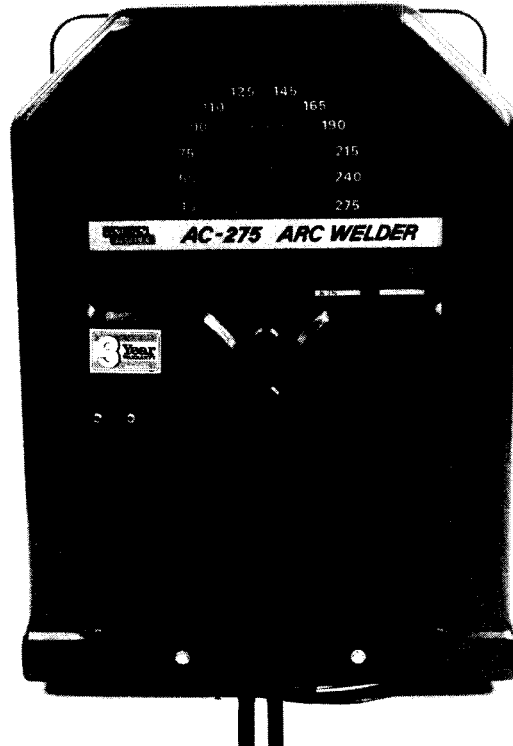


OPERATING MANUAL

Ram

AC-275



This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.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



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 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.

AC-275

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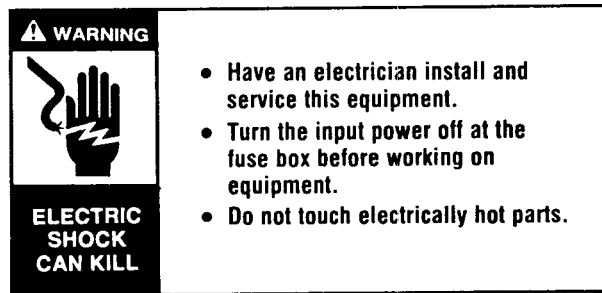
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1. GENERAL DESCRIPTION

The AC-275 is a constant current AC welder designed for light duty fabricating, erecting, and repair. Its output is controlled by a selector switch.

2. INSTALLATION



2.1 UL Requirements (60 Hz only)

READ BEFORE CONNECTING POWER

Listing by Underwriters Laboratories, Inc. covers the 60 hertz welder only. Listing does not cover an evaluation of the suitability of the attachment plug which is provided and installed in the field.

Machines built for 60 hertz power lines of 250 volts or less are provided with an input plug and receptacle. These are UL approved for use at 250 volts or less. On units over 250 volts 60 hertz, the plug and receptacle are not provided.

When an attachment plug is field installed, it must be UL listed, complying with UL 551, Transformer-Type Arc Welding Machines. A plug such as the NEMA type pin configuration with typical manufacturer's catalog number is shown in chart #1. Make sure that the chosen pin configuration is appropriate for the primary current and voltage you are using.

CHART #1

60 Hertz Input Voltage	PLUG	
	NEMA Pin Configuration	Hubbell Catalog Number
251-277	7-50	9379
340-480	L8-30	2641
481-515	L9-30	2651
516-600	L9-20	2351

2.2 Installation Preparation


Before starting the installation:

1. Check with the power company to be sure your power supply is adequate for the voltage, amperes, phase and frequency specified on the welder nameplate.
2. Be sure the planned installation will meet the National Electrical Code and local code requirements. This welder may be operated from a single phase line or from one phase of a two or three phase line.
3. Place the welder so there is free circulation of air in through the louvers in the back and side of the case and out of the bottom on all four sides.

IMPORTANT SAFETY NOTE:

These installation instructions apply to the input wiring and overload protection installed to supply ONE AC-275 and comply with the National Electrical Code as it applies to electric welders. Other equipment should not be connected to this supply without consulting the input power requirements for that equipment, the National Electrical Code, and all local codes.

2.3 Input Power and Grounding


⚠ WARNING	<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.
	
ELECTRIC SHOCK CAN KILL	

2.3.1 Input Power Connections for 230 Volt, 60 Hz AC-275

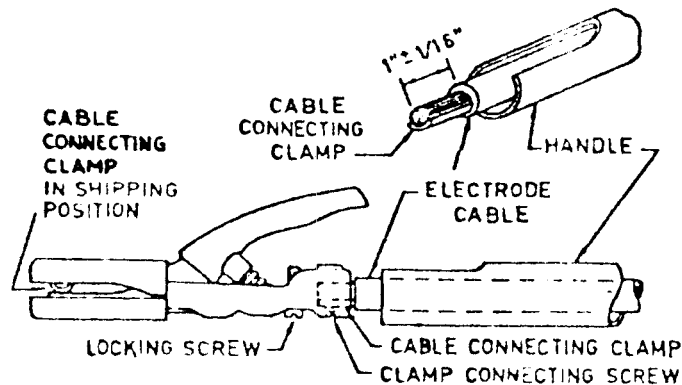
1. Mount a 50 amp receptacle (NEMA TYPE 6-50R) in a location where the line cord will reach.
2. Connect the receptacle to a 230 Volt, 60 Hz, single phase power supply through a fused two-pole disconnect. Fuses should be 60 amp super lag type for 230 volt installations. Use #10 or larger copper wires if conduit is used. For long power supply runs over 100 feet, use #8 or larger copper wires.
3. The center contact in the receptacle (green wire in input cable) is for the grounding connection -- connect it to a system ground per the National Electrical Code, and all local codes.

NOTE: Machines built for power lines over 250 volts, 60 Hz and all 50 Hz machines, are not provided with an input line plug and line receptacle.

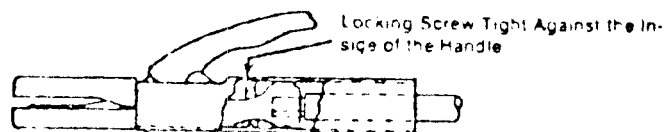
2.4 Attaching Electrode Cable to Holder

	WARNING
ELECTRIC SHOCK CAN KILL	<ul style="list-style-type: none">o Electrode cable and holder are always electrically "hot" when machine is on.o Turn off input power to the machine using the disconnect switch at the fuse box before attaching electrode holder or ground clamp to cables or servicing equipment.o Always be sure insulation is secure and screws are tight and cannot be touched.o Only qualified persons should install, use or service this equipment.

1. Loosen locking screw and slide handle off holder. Place handle over electrode cable.



2. Remove insulation from electrode cable $1" \pm 1/16"$ from end.
3. Back out cable connecting screw until end is flush with inside surface of jaw body.
4. Remove cable connecting clamp from holder jaws. Place clamp over bare end of electrode cable and insert into holder with clamp centered against connecting screw.
5. Tighten cable connecting screw securely against clamp.
6. Slide handle into position and secure with locking screw. When installing, turn the locking screw in until it is tight. The threaded end of the screw will then press against the inside of the handle and the head of the screw will be completely inside the handle.



WARNING! IF SCREW CAN BE TOUCHED-DO NOT USE ELECTRODE HOLDER-CONTACT YOUR DEALER!

2.5 Attaching Work Cable to Clamp

Insert work cable through strain relief hole in work clamp and fasten securely with bolt and nut provided.

3. PRODUCT APPLICATION

 WARNING	
	ELECTRIC SHOCK can kill <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
	FUMES AND GASES can be dangerous <ul style="list-style-type: none">• Keep your head out of fumes• Use ventilation or exhaust to remove fumes from breathing zone
	WELDING SPARKS can cause fire or explosion <ul style="list-style-type: none">• Keep flammable material away
	ARC RAYS can burn <ul style="list-style-type: none">• Wear eye, ear and body protection

3.1 Welding

For the correct electrode size and current range information refer to the Lincoln Weldirectory. Listed below are electrode types recommended for use with this unit.

Fleetweld 37	Jet LH BU 90	Ferroweld	Mangjet
Fleetweld 47	Jetweld LH-90	Abrasoweld	Fleetweld 35
Fleetweld 57	Jetweld LH-110	Softweld	Jetweld 1
	Stainweld 308-16	Faceweld 1	Jetweld LH-73
Fleetweld 180	Stainweld 347-16	Faceweld 12	

The welding output is controlled by a selector switch. Each position on the current sensor switch is marked with the output amperes for that setting. Turn the switch to the current required for each application.

There is a slight amount of play in each switch position. It is good practice to move the switch back and forth once within this play after switching to a new position. This wiping action keeps the contacts free from dirt and oxides.

CAUTION: Do not turn the selector switch while welding as this will damage the contacts.

3.2 Duty Cycle



The AC-275 welder is rated 20% duty cycle on all switch positions. Duty cycle is based on a ten minute period. This means that the arc can be drawn for 2 minutes out of each ten minute period without any danger of overheating. If it is used for more than two minutes during several successive ten minute periods, it may overheat.

3.3 Pipe Thawing

Although not specifically designed for the work, the output of arc welding machines is sometimes used to thaw frozen water pipes by electrical resistance heating of the pipe metal. This may involve fire hazards.

IMPORTANT SAFETY NOTE:

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 December 1976 or later).


	WARNING
	
PIPE THAWING can result in fire or explosion.	<ul style="list-style-type: none">● Only connect welder across FROZEN section of CONTINUOUS METAL PIPE.● While thawing, remove any ground leads connected to frozen pipe.● Turn welder on AFTER cables are connected to pipe. Turn off when done.

Use only the 75 amp setting (on 60 Hz machines) for thawing. It can be operated for 1 hour continuously (50 Hz units are not recommended for pipe thawing). Cool the welder for 1 hour by running at no load between uses.

3.4 Soldering

The best soldering can be done on the lowest current taps of the welder. Use approximately 1/4" diameter carbon and make certain it bring it into firm contact with the piece to be soldered to avoid arcing. After the soldering is completed, the carbon must be removed quickly to prevent arcing.

4. MAINTENANCE

⚠ WARNING	<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.
	
ELECTRIC SHOCK CAN KILL	

Routine preventative maintenance is not required. The fan motor is lubricated for the life of the unit with oil reservoirs in each of the two bearing enclosures.

Access for repair or replacement of the current range selector or line switches damaged in operation may be made by removal of the cover.

Substitution of output cables with larger sizes requiring connections to be made internally is not recommended. Connections for additional lengths or larger sizes should be properly made externally. Lincoln Electric QD (Quick Disconnect) connectors are available for this purpose.

If either output cable requires replacement for other reasons, it should be replaced with the appropriate Lincoln part -- and only by qualified personnel. It is important that the connection to the transformer lead is made in the same manner that it was originally. The cable terminal should be placed on one surface of the transformer lead with a flatwasher on the other surface of the transformer lead followed by a lockwasher and nut.

5. PARTS LIST

Code 9285: 230 Volt; 60 Hertz
 Wiring Diagram: S-18530 (230V 60 Hz only)

<u>PART NAME</u>	<u>PART NO.</u>	<u>NO REQUIRED</u>
Case	L-3786-19	1
Lower Case Back	L-6650	1
Upper Case Back	G-1395-1	1
Warning Decal	M-14330	1
Nameplate	M-15486	1
Line Switch	S-7670	1
Selector Switch	M-10830-18	1
Switch Handle	S-16664-12	1
Fan Motor	M-13539-6	1
Fan	M-13525	1
Input Cable	S-13699-3	1
Work Cable	S-11609-13	1
Electrode Cable	S-11609-14	1
Lead Clamp	S-15761	1
Transformer Assembly	M-15162-5 (Includes Selector Switch)	1
Ground Clamp	M-12033	1
Electrode Holder	M-13306	1
Receptacle (230V or less)	S-13700	1

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.

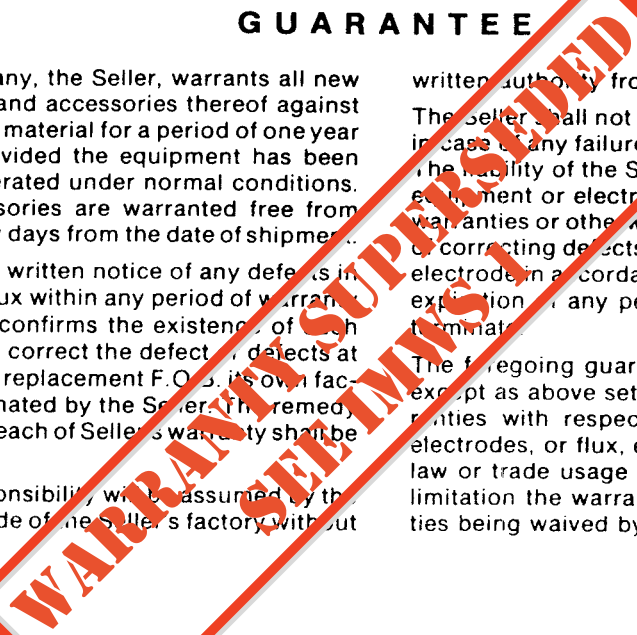
If the Buyer gives the Seller written notice of any defects in equipment or electrode or flux within any period of warranty and the Seller's inspection confirms the existence of such defects, then the Seller shall correct the defects at its option, either by repair or replacement F.O.B. its own factory 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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