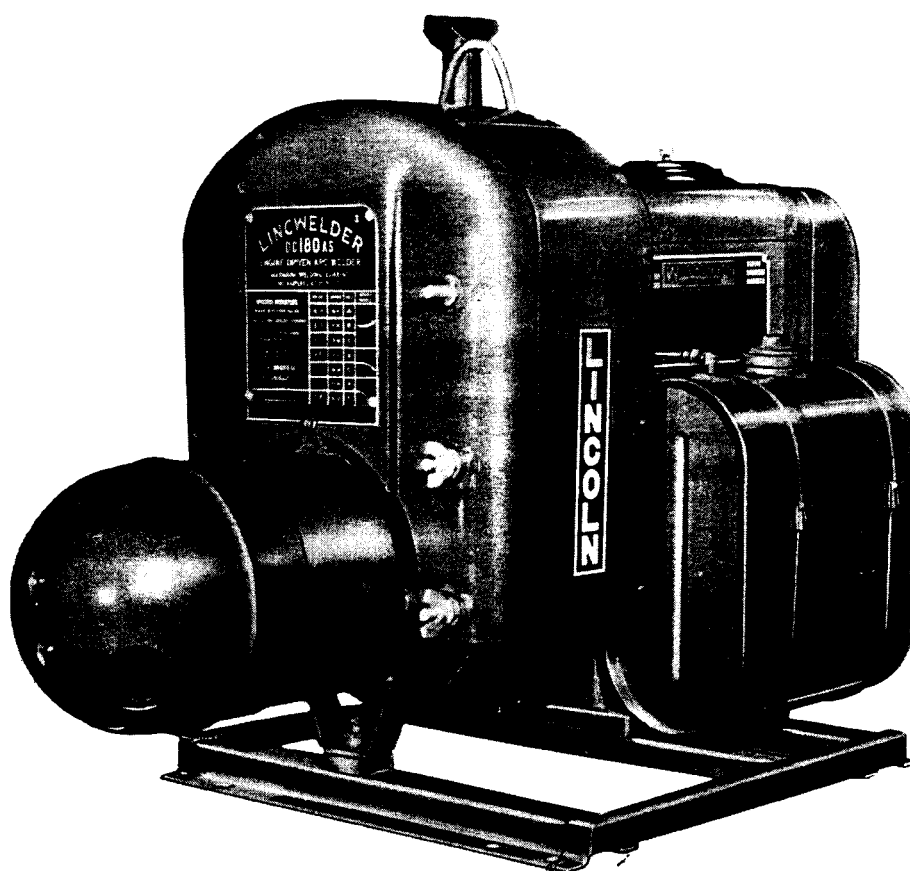


# OPERATING MANUAL

## "LINCWELDER" DC-180-AS With Wisconsin THD Engine



This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

### THE LINCOLN ELECTRIC COMPANY

*The World's Largest Manufacturer of Arc Welding Equipment and Electrodes*  
CLEVELAND 17, OHIO

## DAMAGE CLAIMS

When Lincoln 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.

## STARTING THE ENGINE

See the Wisconsin engine operating manual supplied with your welder for detailed engine starting, operating and maintenance instructions.

NOTE: The engine is stopped by pushing the ignition switch in, or by holding the button on the side of the magneto down until the engine stops.

## OUTPUT CABLE SIZES

Use #4 electrode and ground cables when welding up to 25 feet from the welder. If welding at substantially longer distances from the welder, use #2 or larger cables.

## WELDER OPERATION

### Polarity Control

The welder has one positive output stud to the left of the nameplate and three negative studs to the right of the nameplate. If you want to weld with electrode positive, connect the electrode cable to the positive stud and the ground cable to one of the negative studs. If you want to weld with electrode negative, reverse the two cables.

### Current Control

The three negative output studs are the coarse current control for the welder. The top, middle and bottom stud are for low, medium and high current respectively. Fine current adjustments are made by varying the engine speed using the throttle mounted at the right front of the engine.

The nameplate has a series of markings for measuring the diameter of electrodes. Recommended stud and throttle settings are also listed on the nameplate.

Notice the possible currents obtained from each stud overlap. Generally better arc characteristics are obtained by using a lower current stud and higher engine speed. For example, if welding with 1/8 inch electrode, it is best to connect the cable to the top (lowest current) stud. Increase

engine speed until a smooth welding arc is obtained. The setting which the operator selects is determined by the arc characteristics he finds best for his application.

## PIPE THAWING

Your machine can be used to thaw frozen water pipes. Securely connect the electrode cable to one end of the frozen pipe. Connect the ground cable to the other end of the pipe. Use only the middle (medium current) negative stud and minimum engine speed (throttle setting A). Start and run the welder until water starts flowing. Time for thawing depends upon temperature, pipe material, and size of pipe.

## ELECTRIC STARTER AND IDLER (OPTIONAL)

### Installation

The self starter is installed at the factory. It includes a dry charged battery. Fill the battery with the electrolyte per the instructions included with the battery.

The idler is a separate accessory which reduces engine wear and conserves fuel by reducing the engine to a low idle speed when not welding. It can be installed at the factory or in the field. Idler operation and maintenance instructions are included in IM-179 supplied with the idler.

NOTE: The carburetor and governor adjusting instructions in IM-179 were written primarily for Lincoln water cooled engine driven welders. See your Wisconsin engine manual for the corresponding instructions for your engine.

### Operation

To start the engine, pull the ignition switch out and push the starter button. These switches are located on the engine control panel. Choke as necessary (see the Wisconsin engine manual). If the battery is dead, start the engine by hand cranking.

Current for charging the battery is taken from the welding generator. See the drawing S-11472 on page 7 for the charging circuit wiring diagram. The circuit includes resistors to limit the charging current and a silicon diode to prevent the battery from discharging back through the generator when the machine is not running.

If you are undercharging the battery, it cranks the engine slower at each start. If you are over-

charging the battery, you have to add water frequently. Overcharging tends to shorten battery life.

The charging rate switch on the engine control panel controls the charging rate. Actual charging current is indicated by the ammeter also located on the control panel. The charging rate switch nameplate indicates when to set the switch on high or low. At the high setting the charging rate is about 3 amperes when the engine is running at full speed. At the low setting the charging rate is about 1-1/2 amperes when the engine is running at full speed. The ammeter reads zero when the engine is stopped.

If you operate the welder with the battery disconnected, tape the battery leads to avoid damaging the charging circuit.

#### Maintenance

The ammeter is the best indicator of any trouble in the charging circuit. The ammeter should indicate the charging current when the engine is running and should read zero with the engine stopped. Any other combination of readings indicates trouble.

Meter Readings		Possible Causes
Engine Operating	Engine Stopped	
Charge	Discharge	1. Shorted diode.
Zero	Zero	1. Diode blown. 2. Open lead in circuit. 3. Welder generator output polarity reversed. (Rare.) Call nearest Field Service Shop to correct.
Charge	Charge	1. Battery connected backwards.
Zero	Charge	1. Battery connected backwards and welder generator output polarity reversed. (Rare.) Call nearest Field Service Shop to correct.

## COMMUTATOR AND BRUSHES

The commutator and brushes are inspected by removing the end cover. Do not remove or replace the end cover while the welder is running.

The brushes are properly adjusted when the welder arrives. No particular attention is required

to keep the brushes in good condition. As the brushes wear within 1/8 inch of the pigtail, they must be replaced with new ones. One complete set of brushes should always be kept on hand. Lincoln brushes have a bearing face specially curved to fit the commutator surface. These brushes are fitted by lightly stoning the commutator while the armature rotates at full speed. This operation is complete when the brushes make positive contact over the entire contact face. Visually inspect the brushes to make sure they are fully seated. After stoning blow out the carbon dust with low pressure air. **DO NOT SHIFT THE BRUSHES.**

The commutator requires practically no attention. It should be cleaned periodically with a clean rag, or while running with a piece of fine sandpaper. Never use emery cloth or paper for this purpose.

## BEARINGS

The generator is equipped with double-shield ball bearing having sufficient grease to last indefinitely under normal conditions. Where the welder is used constantly or in excessively dirty locations, it may be necessary to add 1/2 ounce of grease per year.

When greasing the bearings, keep all dirt out of the area. Wipe the fittings clean and use clean grease and equipment. More failures are caused by dirt introduced while greasing than from insufficient grease.

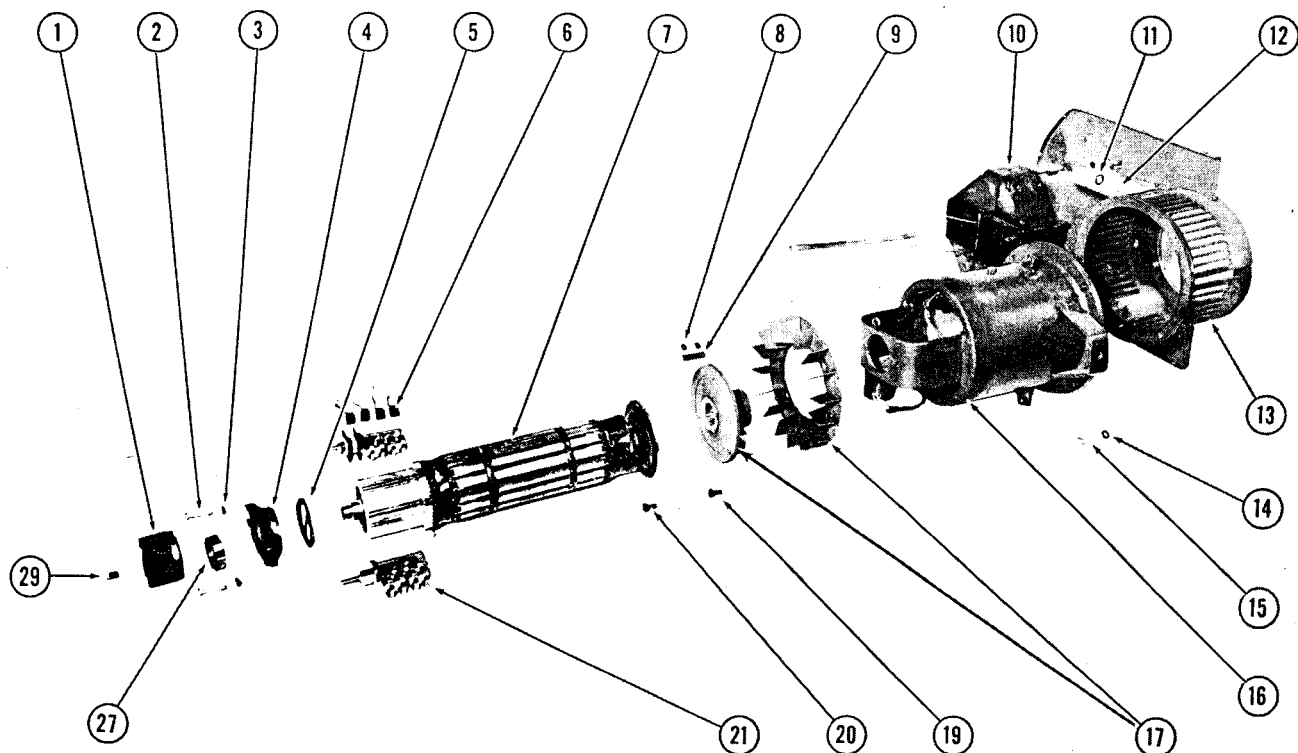
## MAINTENANCE INSTRUCTIONS

1. Blow out the welder and controls with low pressure air periodically. In particularly dirty locations, this may be required once each week.
2. Replace the engine crankcase oil every 50 hours of operation.
3. Clean the oil bath air filter every 50 hours of normal operation.
4. Governor and carburetor joints and the throttle shaft must be kept clean and lubricated.
5. Refer to the Wisconsin engine manual for engine maintenance and trouble shooting instructions.

SEE THE BACK COVER FOR INSTRUCTIONS ON HOW TO ORDER SPARE PARTS. ALWAYS GIVE THE WELDER CODE NUMBER WHEN ORDERING PARTS.

# WELDING GENERATOR

Parts List P-41-C

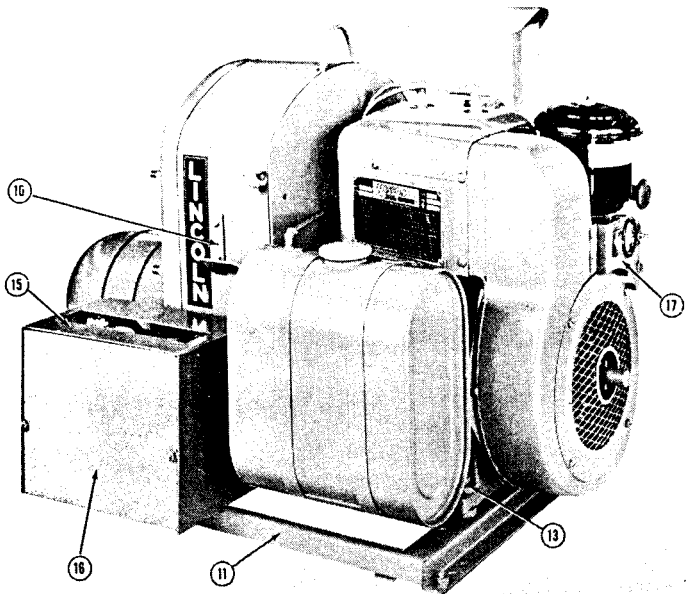
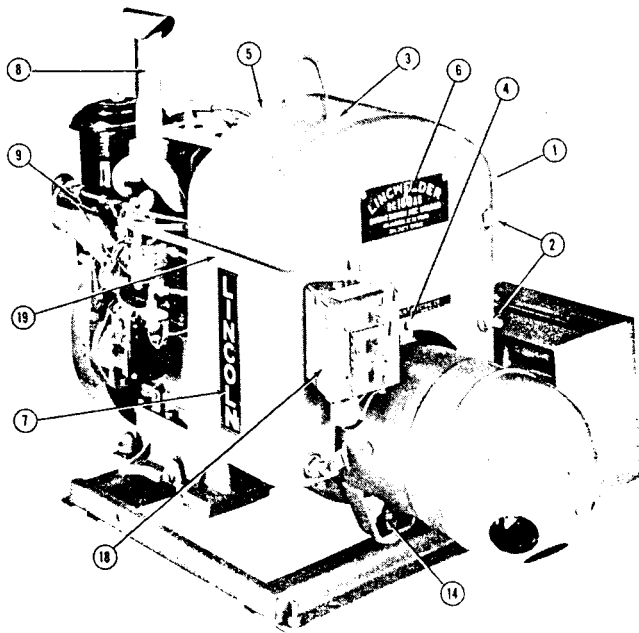


ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Dust Cap	Note 1
2	Screw, Cage to frame	2
3	Lockwasher, Cage to frame	2
4	Bearing Cage	1
5	Rocker Clamping Ring	1
6	Brushes	8
7	Armature	1
8	Set Screw	1
8A	Set Screw	1
9	Key, Coupling Hub	1
10	Stabilizer	1
11	Lockwasher, Stabilizer Mounting	4
12	Screw, Stabilizer Mounting	4
13	Connecting Ring and Lift Bale Assembly	1
14	Lockwasher, Connecting Ring to Engine	4
15	Hex Head Screw, Connecting Ring to Engine	4

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
16	D. C. Frame	1
	Pole Piece	2
	Coil	2
17	Fan and Coupling Assembly	1
19	Hex Head Screw, Frame to Connecting Ring	4
	Coupling Screw Clip	3
20	Hex Head Screw, Armature to Coupling	6
21	Brush Holder Assembly, Code 2528 and Below	2
	Old Style Brush Holder Parts	See P-37-G
21	Brush Holder Assembly, Code 3127 and Higher	2
	New Style Brush Holder Parts	See P-25-N
27	Bearing	1
29	Pipe Plug	1
	Note 1: Replace this obsolete dust cap with items 4 and 5.	

# GENERAL ASSEMBLY

Parts List P-41-D



ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Panel and Panel Parts, Includes:	1
1	Resistance Grid, (Inside Panel), Includes:	1
2	Negative Stud (Short)	3
	Plain Washer, Output Stud Parts	3
	Shakeproof Washer, Output Stud Parts	3
	Hex Jam Nuts, Output Stud Parts	3
	Hex Jam Nuts, Brass, Output Stud Parts	6
3	Panel	1
	Plain Washer, Output Stud Parts	8
	Lockwasher, Output Stud Parts	1
	Insulating Washer, Output Stud Parts	8
	Insulating Bushing, Output Stud Parts	4
	Hex Jam Nut, Brass, Output Stud Parts	5
	Weld Nut, Output Stud Parts	2
	Positive Stud (Long), Output Stud Parts	1
4	Hex Head Screw, Panel Mounting	3
	Lockwasher, Panel Mounting	3

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
5	Self Tapping Screw, Panel Mounting	10
	Speed Nuts, Panel Mounting	10
6	Nameplate	1
7	Self Tapping Screws, Nameplate Mounting	4
	Decal	2
8	Exhaust Pipe	1
9	Throttle Plate	1
	Throttle Plate Bracket	1
	Self Tapping Screw, Plate to Bracket	2
10	Crank Holding Bracket	1
11	Base	1
13	Front Mounting Hex Head Screw	2
	Front Rubber Pad	2
14	Rear Mounting Hex Head Screw	1
	Rear Rubber Pad	1
	Rubber Washer, Front and Rear Mounting	3
	Plain Washer, Front and Rear Mounting	3
	Hug Lock Nut, Front and Rear Mounting	3

## ELECTRIC STARTER AND IDLER

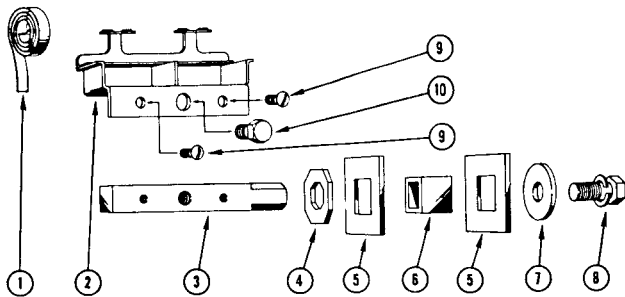
Parts List P-41-E

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
15	Battery Case	1
16	Case Front Panel, Includes:	1
	Pads	2
	Negative Battery Cable	1
	Positive Battery Cable	1
17	Starter Panel Assembly, Includes:	1
	Control Panel	1
	Start Button	1
	Ammeter	1
	Charging Rate Switch	1
	Switch Nameplate	1
	Ignition Switch	1
	Ignition Switch Plate	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Solenoid	1
	Insulating Washer, Solenoid Mounting	4
	Insulator, Solenoid Mounting	4
	Silicon Diode	1
	Resistor	2
18	Idler	1
	Idler Parts	See 1M-179
19	Throttle Rod	1
	Pivot Pin	1
	Spring Clip	1
	Throttle Rod Spring	1
	Vacuum Tube	1
	Flare Nut	1
	Elbow Check Valve Assembly	1
	Carburetor Link	1
	Carburetor Clevis	1

# BRUSH HOLDER - NEW STYLE

Parts List P-25-N

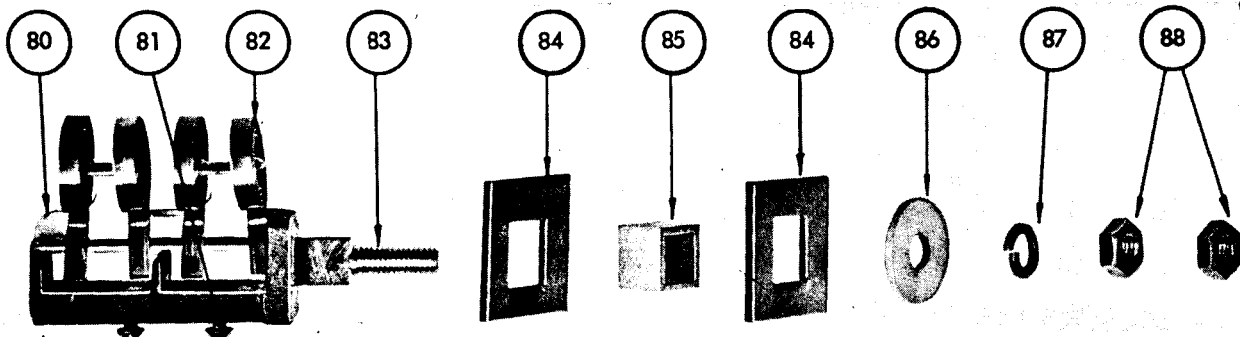


ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Brushholder Assembly Includes:	1
2	Spring	4
3	Brushholder Bracket	1
4	Stud	1
5	Stud Washer	1
6	Insulating Washer	2
7	Insulating Bushing	1
8	Plain Washer	1
9	Sems Hex Head Cap Screw	1
10	Round Head Cap Screw	2
11	Hex Head Cap Screw	1

NOTE: New and Old style Brush holders are interchangeable. However both Brush holders on one machine must be the same type.

# BRUSH HOLDER - OLD STYLE

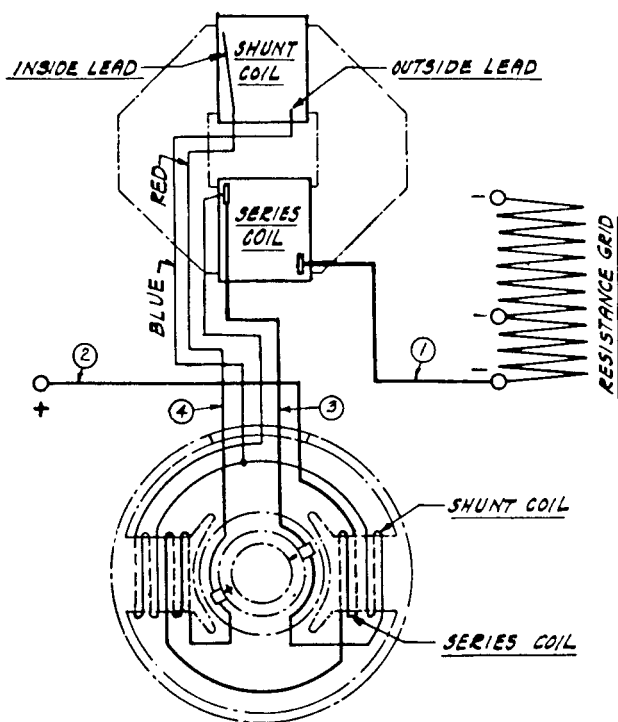
Parts List P-37-G Code No. 2528 and below.



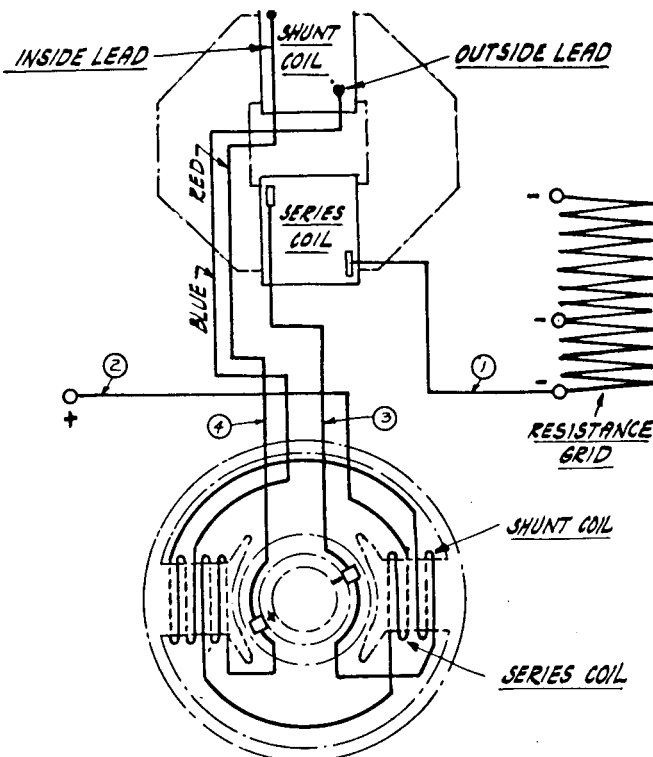
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Brushholder Assembly, Includes All Below	2
80	Spring Clip	1
81	Round Head Screw	2
82	Spring	4
83	Brushholder Stud	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
84	Insulating Washer	2
85	Insulating Bushing	1
86	Brass Washer	1
87	Lockwasher	1
88	Brass Jam Nut	2

# WELDER WIRING DIAGRAM

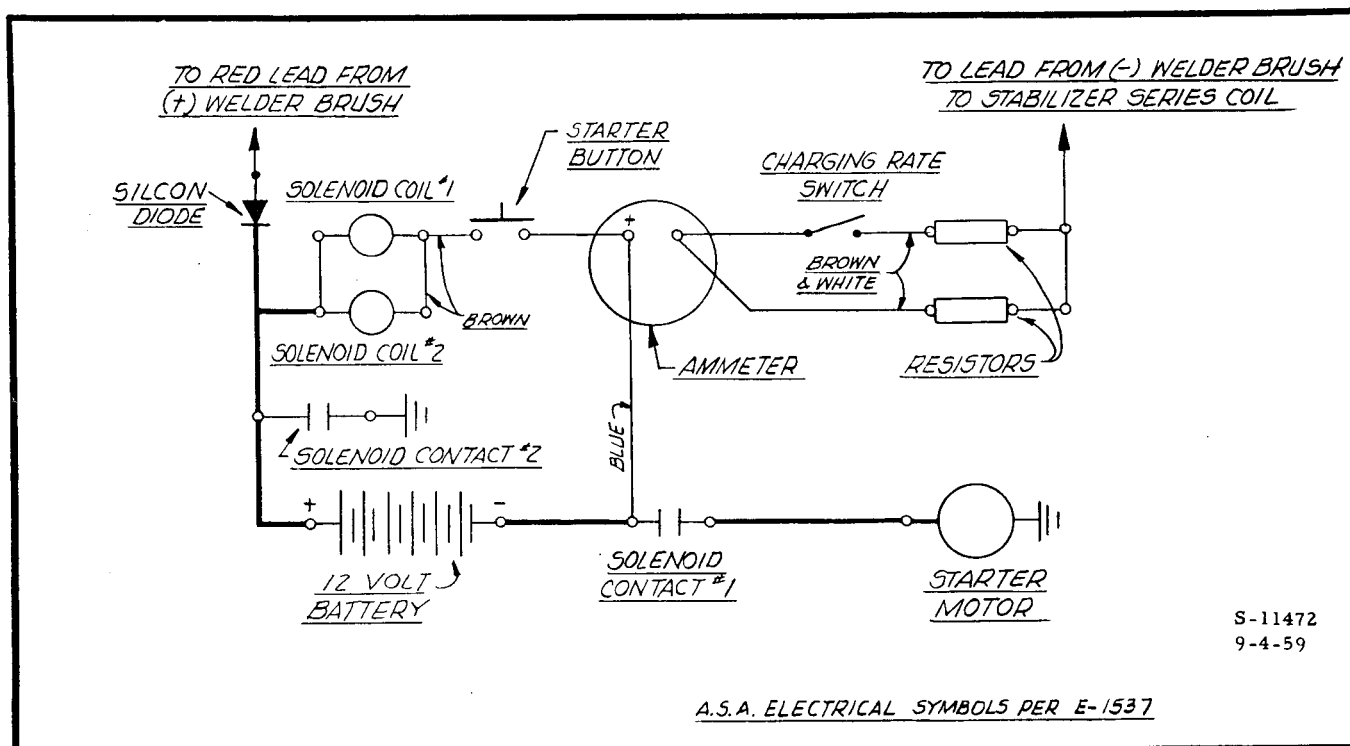


CODES 1026 & 1051  
PRINT T-8762



CODE 1402 and higher.  
PRINT T-9169

## ELECTRIC STARTER WIRING DIAGRAM



S-11472  
9-4-59

A.S.A. ELECTRICAL SYMBOLS PER E-1537

## HOW TO ORDER REPLACEMENT PARTS

All parts should be ordered from Authorized Field Service Shops or branch offices. The "Field Service Directory" listing all Authorized Field Service Shops geographically is supplied with each machine or is available upon request. These shops stock GENUINE replacement parts and have factory trained men to service your machine.

In ordering replacement parts give the following information:

- (a) From the machine nameplate - Machine model, code number and serial number.
- (b) From the Instruction Manual - Part name, item number, quantity required, and the number of the parts list used to get this information. To obtain this information refer to the pictures of the machine shown in this manual and find the required part and its item number. Get the part name and quantity required from the accompanying parts list.

All items in the parts lists which are indented in the parts name column are integral parts of the assembly which they are listed immediately under. If the entire assembly is required, do not order the indented items as they will be supplied as part of the assembly. The indented parts may be ordered separately if only parts of the assembly are required.

## SAFETY PRECAUTIONS

When using a welder, as with all machinery, certain safety precautions should be observed.

- (1) Protect the arms and hands from rayburns and hot slag by wearing good leather gloves whenever welding.
- (2) Wear a good shield fitted with the proper safety lenses to protect your eyes from sparks and arc flash.
- (3) Use extreme care whenever chipping slag that chips do not fly and hit your eyes or those of your helper.
- (4) Although, with rated input, this welder will have a maximum output voltage well within prescribed safety limits, carelessness can result in a serious accident. Be Careful.
  - (a) Ground the welder frame.
  - (b) Use a well constructed, properly insulated electrode holder connected to the welder by insulated welding cable.
  - (c) Make certain the work is well connected to the ground cable, as close to the point of welding as possible. This is particularly important when standing on wet ground or a metal framework. Under such conditions be sure you are well insulated from the ground by dry gloves and rubber soled shoes.
  - (d) The electrode holder should be used for welding and not for lighting cigarettes.
- (5) Provide adequate ventilation for weldor.

## WARRANTY

The Lincoln Electric Company, Cleveland, Ohio, 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 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.

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 there are no other guarantees or warranties either expressed or implied.

## THE LINCOLN ELECTRIC COMPANY

*The World's Largest Manufacturer of Arc Welding Equipment and Electrodes*  
CLEVELAND 17, OHIO



**Branch Offices, Field Service Shops, and Distributing Agencies in All Principal Cities**

LINCOLN ELECTRIC CO., (Australia) Pty., Ltd., Padstow, N. S. W.  
LINCOLN ELECTRIC CO., of Canada, Ltd., Leaside, Toronto 17, Canada  
LA SOUDURE ELECTRIQUE LINCOLN, Grand Quevilly, Seine-Maritime, France

### Export Representatives

THE ARMCO INTERNATIONAL CORPORATION, Middletown, Ohio, U.S.A.