

**HOW TO ORDER REPLACEMENT PARTS**

To ensure that you receive the correct replacement part the following procedure should be followed:

1. Quote the code number and serial number from the nameplate of the welder.
2. Quote the description, item number and list number of the desired part.  
When ordering parts for items carrying brand names of other companies, such as fan motors, drive shafts, etc., be sure to include the other company's name and part number and other relevant information.
3. Parts should be ordered from The Lincoln Electric Company, its offices or the nearest Authorised Field Service Shop. (The "Lincoln Service Directory" listing these shops geographically is available on request.)

Component parts of assemblies such as stator coils or armature coils, etc., which require electrical testing or locating fixtures are not considered replaceable items. This is to ensure that the customer receives parts which will keep his welder in the best operating condition.

**BUY ONLY GENUINE REPAIR PARTS**

**SERVICE**

The Lincoln Electric Company has Authorised Field Service Shops in all major industrial centres throughout Australia and in many overseas countries. These shops stock GENUINE LINCOLN REPLACEMENT PARTS and have factory trained men to service your welder. They also offer preventive service and welder rental to "Keep Them Welding". The Lincoln FSS exchange Plan, extended only through the FSS, gives you factory built and guaranteed stators, armatures and other parts at material savings over rewinding.

Information on machines and supplies is available from the Service Department located at the factory at Padstow. When referring to a particular machine, give complete nameplate information and certainly the serial number and code number.

**WARRANTY**

The Lincoln Electric Company (Australia) Pty. Limited guarantees all new equipment covered by this Instruction Manual, except as specified below, against faulty workmanship or materials for one year from date of delivery, provided the equipment has been carefully maintained and used under normal conditions with competent supervision. All claims must be made in writing to the Company. If the Company's inspection shows the claim to be justified, repair or replacement will be made at the factory or another place selected by the Company.

The Lombardini engine, and engine accessories are guaranteed by their Manufacturer against faulty workmanship or materials for 6 months from date of delivery, provided the unit has been serviced and operated under normal conditions according to the manufacturer's instructions. Parts subject to a claim should be returned to a Lombardini Service Station. If inspection shows the

claim to be justified, repair or replacement will be made.

These guarantees do not apply to any parts which must be replaced because of normal wear, misuse or accident. No responsibility is accepted for unauthorised work. There are no other guarantees or warranties expressed or implied, other than those provided for by the Trade Practices Act, 1974, and corresponding State legislation.

The batteries are warranted by their maker on a pro-rata basis for twelve months. Claims should be made directly to the Battery Manufacturer's nearest authorised dealer.

Warranties apply to new equipment from the date of delivery by the Company or its authorised Dealer/Distributor to the initial buyer for his own use. Apply to the factory for warranty details where the equipment is hired out.

IN LINE WITH THE COMPANY'S POLICY OF CONTINUING PRODUCT IMPROVEMENT, SPECIFICATIONS HEREIN ARE SUBJECT TO MODIFICATION OR CHANGE WITHOUT NOTICE



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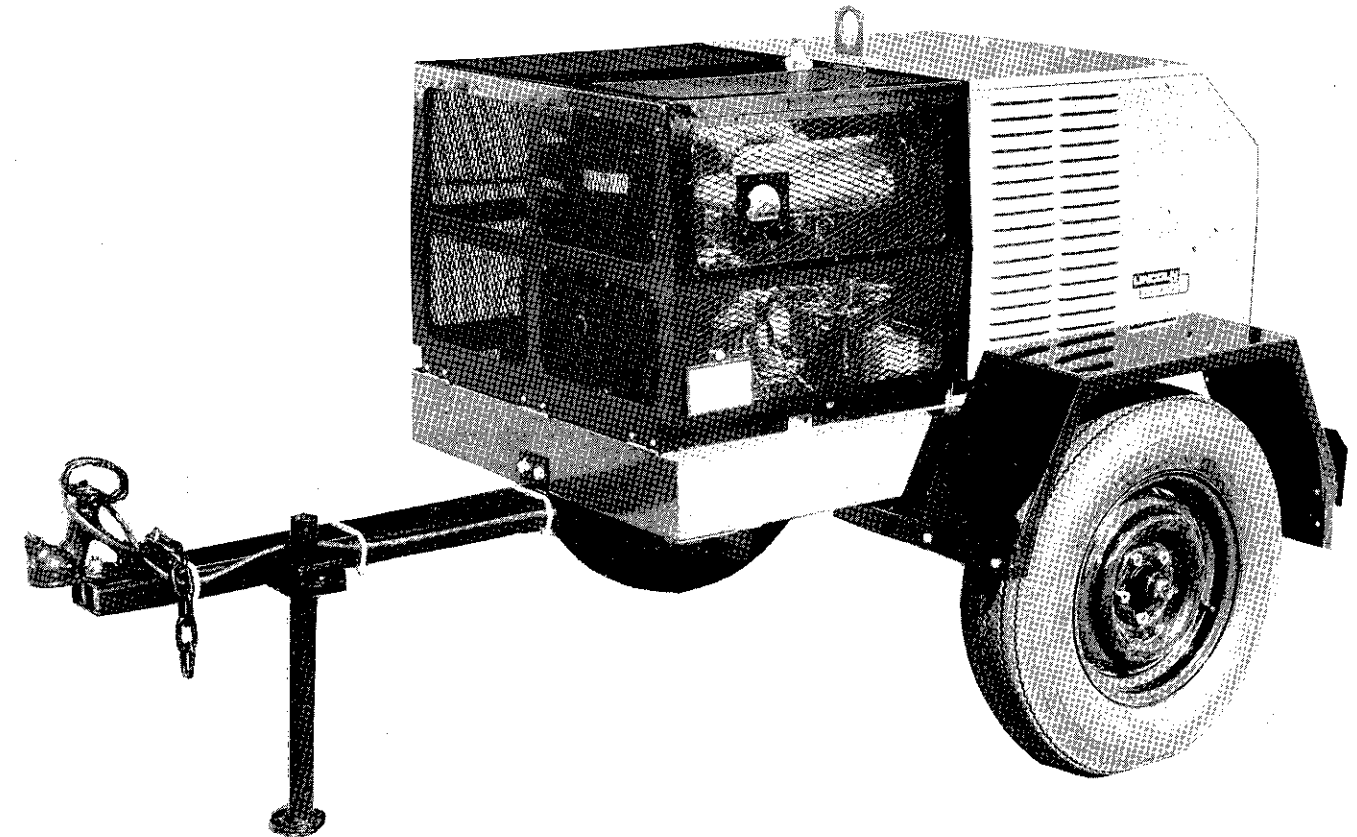
**LINCOLN ELECTRIC — WORLD'S LARGEST MANUFACTURERS OF ARC WELDING PRODUCTS**

1M/MG/11.84 — Printed in Australia



**OPERATING MANUAL**

**WELDANPOWER® 300  
MULTIARC**



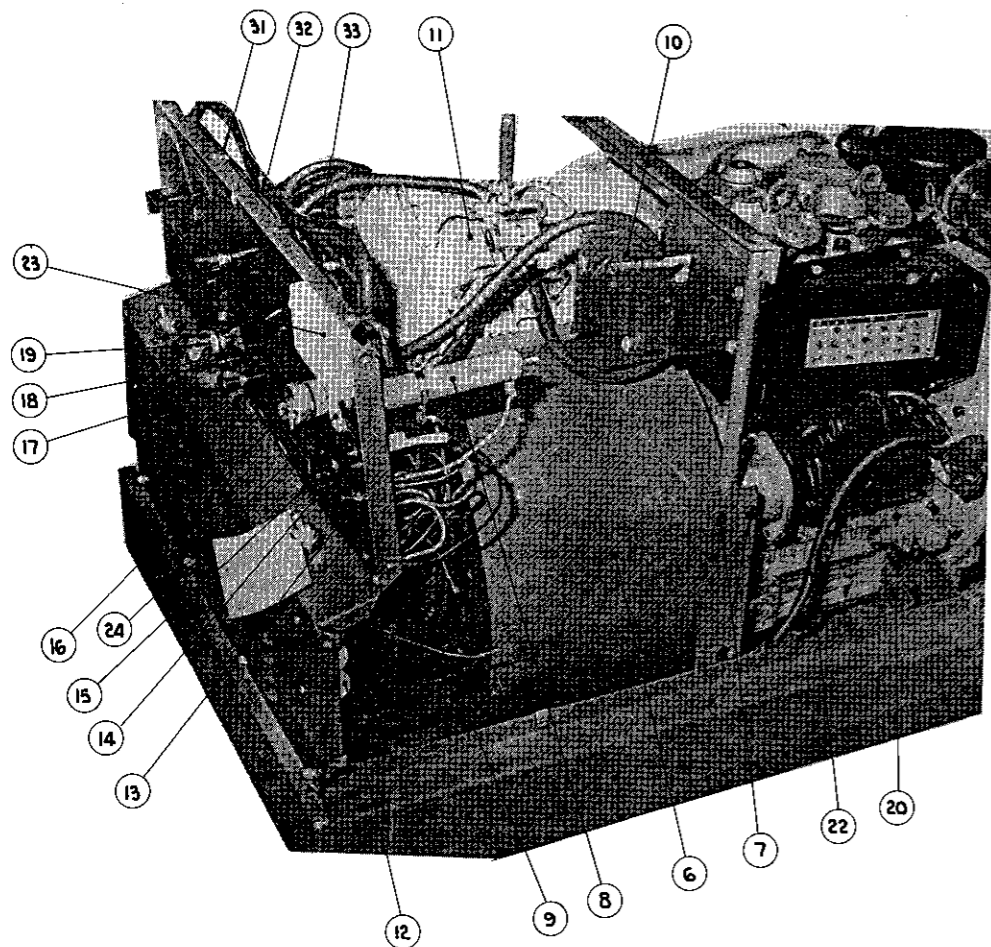
**SAFETY DEPENDS ON YOU**

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. Read and observe all instructions and specific safety precautions included in this manual as well as the common machine operating and welding precautions outlined. And, most importantly, think before you act and be careful.

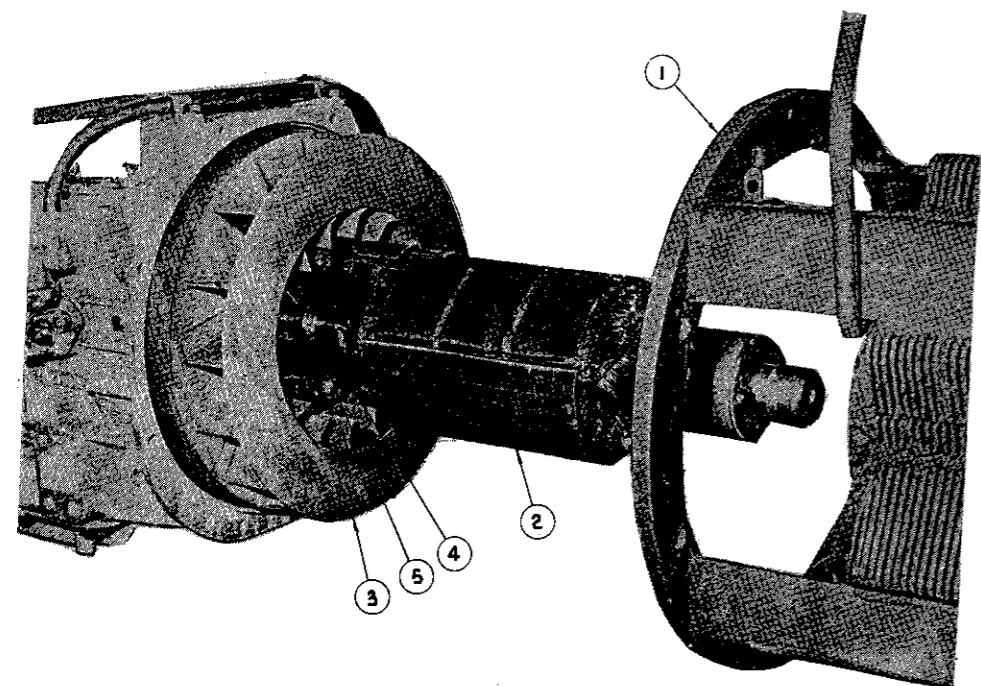
**THE LINCOLN ELECTRIC COMPANY (AUST.) PTY. LTD.**

**LINCOLN ELECTRIC — WORLD'S LARGEST MANUFACTURERS OF ARC WELDING PRODUCTS**





ITEM	REQ'D.
1	1
2	1
3	1
4	4
5	8
6	1
7	4
8	1
9	1
10	1
11	1
12	1
13	1
14	1
15	1
16	2
17	1
18	1
19	1
20	2
21	4
22	1
23	1
24	1
25	1
26	1
27	3
28	1
29	1
30	2
31	1
32	1
33	1
34	3
35	2
36	1
37	1
38	1
39	1
40	1
41	1
42	1
43	4



## WELDER

### Rating

300A @ 32V. A.C. 60% duty cycle  
 275A @ 31V. D.C. 60% duty cycle  
 225A @ 29V. A.C. 100% duty cycle  
 200A @ 28V. D.C. 100% duty cycle

### To AS1966

300A @ 32V. A.C. 30% duty cycle  
 275A @ 31V. D.C. 30% duty cycle

### Rating Class

Light Industrial

### Current Range

30-300 amps A.C.  
 30-275 amps D.C.

### O.C.V.

Variable Voltage 80V. maximum A.C.  
 83V. maximum D.C.  
 Constant Voltage 45V. maximum D.C.

### ★ Duty Cycle:

The percentage specified is for a 5 minute period.

- e.g. 1) 60% 3 minutes on 2 minutes off  
 2) 30% 1.5 minutes on 3.5 minutes off

### Auxiliary Power Ratings

240V. 50Hz. 6.0kVA or 4.8kW @ 0.8 power factor  
 115V. 50Hz. 3.0kVA or 2.4kW @ 0.8 power factor

**Note:** The engine will not develop maximum power until after the run in period (refer engine manual). As a result, maximum welding performance will improve after the run in period.

## ENGINE

### Model

Lombardini 9LD560-2 Diesel

### Cycles

Four

### Cylinders

Two

### Bore

90 mm

### Stroke

88 mm

### Capacity

1.12 litres

### Cooling

Air, fan forced high capacity

### Power

At 3,000rpm 17.0kW (DIN 6270)

### No load speed

3,100rpm

### Full load speed

3,000rpm

### Governor

Centrifugal

### Compression Ratio

18:1

### Fuel Tank Capacity

24 litres

### Lubrication

Forced by gear pump

### Oil Capacity

2.8 litres

### Starting

12 volt starter, alternator and battery

### Engine Slope

Lubrication and fuel systems require that machine inclinations be limited as follows:

	Continuous	Intermittent
Longitudinal — Engine up	20°	20°
— Engine down	8°	8°
Transverse	25°	35°

## Engine Operation and Maintenance

See the engine manufacturer's operating manual supplied with the welder for detailed engine operating and maintenance instructions, parts lists and safety precautions.

### ENGINE OPERATION

Before attempting to start the welder, the following should be carried out:

1. Oil Level: Check crankcase oil level. Maintain between the full and low marks on the dip stick. Use HD Series 3 oil — Mil-L-2104C. Do not overfill.

AIR TEMPERATURE	OIL VISCOSITY
Above 20°C	SAE40
0°C to 20°C	SAE20W
Below 0°C	SAE10W

2. Fill air cleaner with oil to the "full" mark on the air cleaner body. Use the grade of oil recommended for the engine. Make sure the cleaner and intake parts are tight and properly installed to prevent unfiltered air from entering the engine.
3. The battery supplied with the welder is dry charged. Fill with electrolyte as per the instructions furnished with the battery.
4. Fill fuel tank (always use clean fuel).
5. In the case of a new engine or an engine which has been standing idle for any length of time, it is important to bleed the fuel system. Refer to the instruction manual for the correct procedure.
6. Cooling air intake screens and cooling fins must be clean and unrestricted at all times.

### IMPORTANT NOTE ABOUT "RUNNING IN" YOUR ENGINE

All diesel engines require some additional care during running in for about the first 50 hours. Care should be taken that the engine is not run at very light loads (say less than 2.4 kVA, or a 10 amp radiator) for extended periods as this can lead to glazing of the cylinder bores. On the other hand it is wise not to exceed 70% of the maximum output of the engine for the same period while bearing surfaces are bedding in. Cylinder glazing can lead to excessive oil consumption and smoky exhaust and overloading of the engine during the first few hours can lead to excessive wear and shorten the life of the engine.

### STARTING THE ENGINE

**Caution:** Operate internal combustion engine in open well ventilated areas or vent the exhaust fumes outdoors.

Whenever starting the engine, be sure any welding loads are removed and any A.C. auxiliary loads either turned off or the plugs pulled. If the load is left connected it may prevent the generator from building up to full voltage.

### TO START THE ENGINE

(Refer engine operating manual)

1. Set the throttle lever at the centre of its travel and lock it with the knurled nut.
2. Turn the "Start Switch" on the welder control panel to the "start" position and hold until the engine starts.
3. Return "Start Switch" to the "on" position.
4. Now set the throttle lever to the idle position and allow the engine to reach its operating temperature unloaded, approximately 5 minutes should be adequate.
5. Move throttle to maximum speed setting and lock with knurled nut.

**AFTER 25 HOURS USE OF YOUR NEW WELDER ALL NUTS AND BOLTS SHOULD BE CHECKED FOR TIGHTNESS**

IM533 — 3

6. The Weldanpower 300 Multi-Arc is now ready for use.

**Note:** Never run the engine with the "Start Switch" in the "off" position or with the battery disconnected, otherwise damage may result to the charger circuit and the welder's correct operation may be impaired.

## TO STOP THE ENGINE

1. Remove all loads, both welding and auxiliary power.
2. Return the throttle to the idle position and let the engine idle for approximately 5 minutes.
3. Pull the stop cable situated on the front panel.
4. Turn the "Start Switch" to the "off" position.

**Note:** Never leave the "Start Switch" in the "on" position while the engine is **not** running, otherwise the battery will be quickly discharged.

## Operation as a Welding Machine

### GENERAL

#### Output Characteristics

This machine generates both Variable Voltage and Constant Voltage output. Variable voltage is always used for stick electrode welding. Constant voltage is always used for Innershield and other open arc welding processes.

#### Stick Welding

Connect the electrode and ground cables to the output studs marked "electrode" and "work" on the front panel. (Note: The engine should not be running while these connections are made.)

Switch the "Output Selector Switch" to the "Variable Voltage" position.

#### Semi Automatic Welding

Connect the wire feeder to the "electrode" terminal and ground cable to "work" terminal.

Switch the "Output Selector Switch" to the "Constant Voltage" position.

Connection diagrams for wire feeders appear on page 8

**Note:** The electrode wire is always electrically "HOT". (Refer pages 6 and 7 for visual presentation of switch settings.)

## EXPLANATION OF WELDER CONTROLS

### 1. Output Selector

(do not switch while welding)

The function of this switch is to select either "Variable Voltage" or "Constant Voltage" output.

### 2. Electrode Polarity Switch

(do not switch while welding)

Three options are available:

A.C., D.C.(+), and D.C.(-)

A.C. or D.C. may be used for "Variable Voltage" welding.

Use D.C. for "Constant Voltage" welding.

Refer to consumable literature for correct polarity.

### 3. Output Control

(do not switch while welding)

#### (a) Constant Voltage Welding

Use this control to select the desired slope of the output characteristic (i.e. volts vs amps). Setting #1 gives the flattest curve, and Setting #5 the steepest curve. The flatter curves are more commonly used for CV welding (i.e. #1 to #2).

### (b) Variable Voltage Welding

The output control now varies the output current. The dial scale indicates the A.C. or D.C. current when the Fine Output Control is on "10" and the Range Switch is in the "High" position. Adjust the Fine Output Control between "1" and "10" for currents less than or up to the scale current.

## 4. Fine Output Control

(may be varied while welding)

### (a) Constant Voltage Welding

Vary between "1" and "10" to control the welding arc voltage.

Note: The open circuit voltage varies little with this control.

### (b) Variable Voltage Welding

Vary between "1" and "10" for fine welding current control.

### (c) Set at "10" for full auxiliary power voltage.

## 5. Range Switch (can be switched while welding)

This switch is usually used in "low" position for constant voltage applications which require arc voltages of 20V or less. This setting can also be used at any other time to give a lower output.

Set in "high" position for full auxiliary power voltage. The "low" setting does provide the 115V to operate wire feeder auxiliaries. See note under Auxiliary Power Ratings, below.

The "off" position turns off the total machine output.

## Operation as A.C. Auxiliary Power Source

Start the engine. After it has warmed up set the throttle control so that the engine runs at full speed. Full voltage is now at the receptacles for auxiliary power.

Do **not** apply a load to the machine until the engine is up to full speed. Starting under load may prevent the unit from building up to its correct voltage. Should this happen, remove the load and then the unit will again provide output voltage.

## AUXILIARY POWER RATINGS (240/115V, 50 Hz)

Maximum auxiliary power load is 25 amps.

For example, if 15 amps is drawn from one 240V outlet, a total of 10 amps may be drawn from the other three outlets.

Each 240V outlet is rated at 15 amps.

Each 115V outlet is rated at 20 amps.

For full auxiliary power voltage the Fine Output Control must be on "10" and the Range Switch on "high".

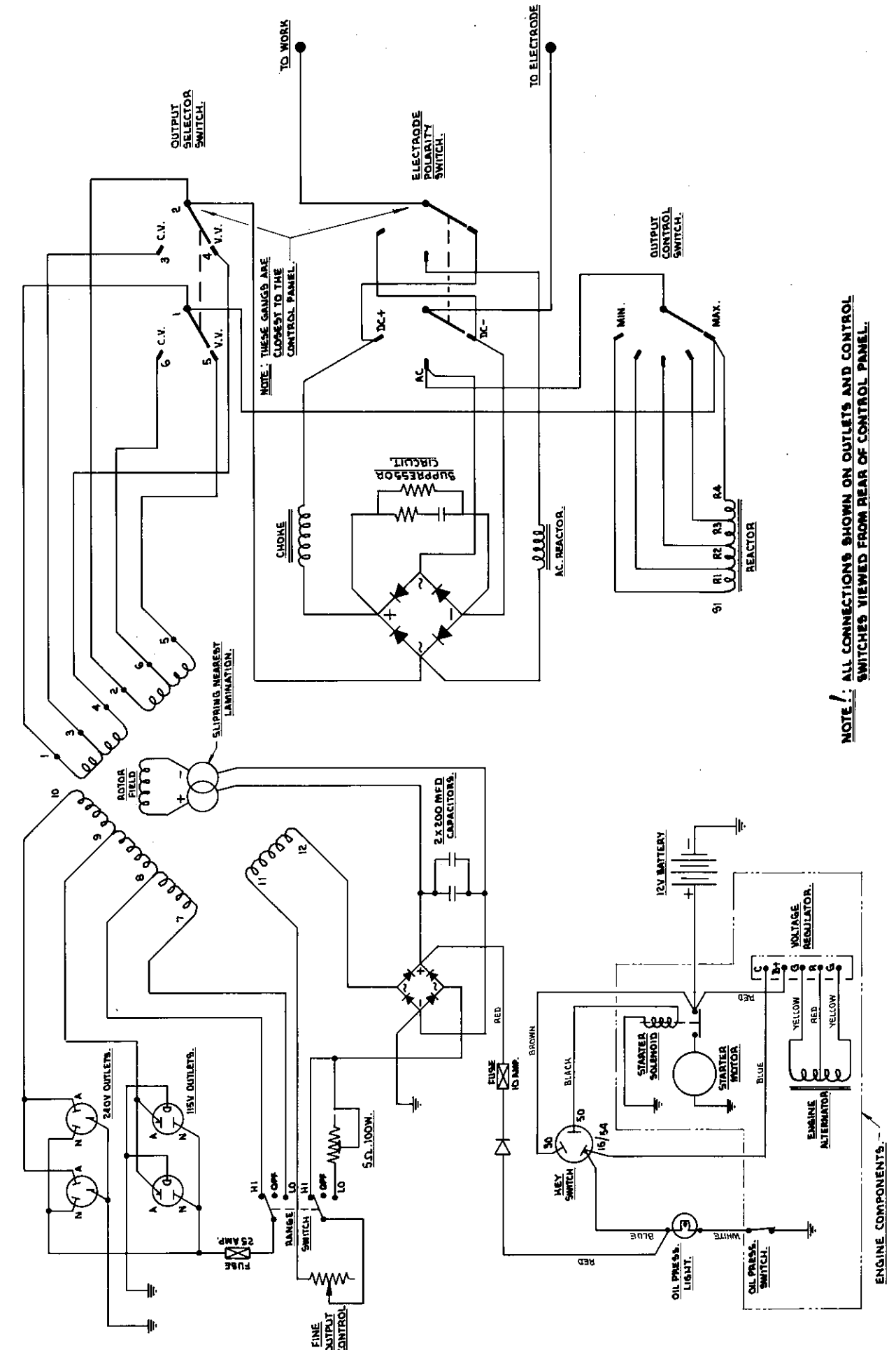
With the Range Switch in the "low" position up to 5 amps of 115V can be used. (Do not use 240V outlets while Range Switch is in the "low" position.)

The above Auxiliary power ratings are with no welding load. Simultaneous welding and power loads are permitted, as shown in Table 1.

TABLE 1

WELDING OUTPUT			Maximum Permissible Auxiliary Power Load (Amps)
Variable Voltage	Constant Voltage*	Slope Setting	
A.C.	D.C.		
None	None	None	25
80	65	5	21
140	90	4	15
240	140	3	8
300	230	2	4
—	275	1	4

\*With Range Switch in the "low" position, 115V, 575 watts unity power factor or 460 watts @ 0.8 power factor are available for wire feeder use at any "slope setting".



**NOTE:** ALL CONNECTIONS SHOWN ON OUTLETS AND CONTROL PANEL. SWITCHES VIEWED FROM REAR OF CONTROL PANEL.

## TROUBLE SHOOTING GUIDE

PROBLEM	CAUSES	WHAT TO DO
<b>Battery not charging and/or output fails at low output</b>	1. Key switch not in "ON" position while engine running. 2. Battery charge circuit not functioning correctly. 3. Flashing circuit fuse blown.	Switch to "ON" position.  Repair or replace charging circuit.  Replace fuse and check bridge rectifier for failure.
<b>No auxiliary voltage but welding OK.</b>	1. Fuse on front panel blown. 2. Open in auxiliary windings.	Check fuse and replace with correct type. Ensure auxiliary load does not exceed nameplate rating. Repair or replace stator.
<b>Auxiliary power fails under load (voltage drops)</b>	1. Capacitors on alternator faulty.	Replace faulty capacitor.
<b>Engine runs but no auxiliary or welding output available</b>	1. Range switch "OFF". 2. Dirty or sticking brushes. 3. Bridge rectifier faulty. 4. Open circuit in rotor. 5. Open circuit in stator. 6. Short circuited capacitors.	Check condition of slip rings to brushes, check bridge rectifier and replace if faulty, check continuity of winding and repair or replace. Replace capacitors. Select "high" or "low" range.
<b>Battery going flat quickly when machine not in use</b>	1. Key switch left in "ON" position with engine stopped. 2. Faulty key switch.	Turn "OFF" when machine not in use.  Repair or replace switch unit.
<b>Machine will not hold constant arc weld, with varying loads on auxiliary supply</b>	1. Engine speed too low. 2. Excessive auxiliary loading. 3. Capacitors faulty.	Check engine speed, if low consult engine manual. Ensure <b>total</b> loading on auxiliary outlets does not exceed nameplate rating. Check capacitors by replacement by a known good set.
<b>Welding arc is loud and spatter excessive.</b>	1. Current setting may be too high. 2. Polarity may be wrong.	Check setting and current output with ammeter. Check polarity. Try reversing polarity or try an electrode of the opposite polarity.

## CONNECTION OF APPLIANCES

The 240V three-pin plug bases have in each an active socket, a neutral socket, and an earth socket. The earth socket is bonded to the machine frame while the active and neutral are "floating" (i.e. not connected to earth).

The 115V plug bases are similar to the 240V in that the earth pins are connected to the machine frame and the active and neutral form a "floating" circuit. (See wiring diagram AM2610 on page 9.)

For your safety, all ancillary equipment, extension cords, appliance cords, plug sockets and appliances should be in good condition and correctly wired and connected. All earthing wires, where used, must be continuous. Extension cords with three wires should be used except for double insulated appliances, which require cords with only two wires and are not earthed.

## CONNECTION FOR USE AS A STAND-BY POWER UNIT

The Weldanpower 300 Multi-Arc may be permanently or temporarily installed as a stand-by power unit for a 240 volt or 115 volt, 50Hz. A.C. supply.

To avoid the possibility of electric shock and/or damage to the welding machine all connections and alterations must be made by a licensed electrician, who can determine how the machine should be adapted to the particular installation so as to comply with the local Supply Authority regulations and any relevant legal requirements.

It is important that an adequately rated and properly connected isolation switch be used to ensure that the Weldanpower 300 Multi-Arc and the Authority's supply cannot be connected in parallel.

**Note:** The engine manufacturer's recommended maintenance schedule must be followed. See also special instructions about "Running In".

## Welder Maintenance

Whenever possible have a qualified electrician do the electrical maintenance and trouble shooting work. Turn the engine off when working inside the machine.

## ROUTINE MAINTENANCE

1. Blow out the welder and controls with an air hose at least once every two months. In particularly dirty locations this cleaning may be necessary once every week. Use low pressure air to avoid driving dirt into the insulation.
2. Keep electrode and work connections tight.

## BEARINGS

Your welder is equipped with a double shield ball bearing having sufficient grease to last the life of the bearing under normal conditions. Where the welder is used in excessively dirty conditions, it may be necessary to add 15 grams of grease to the bearing per year. When greasing the bearing, keep all dirt out of the area. Wipe the fittings completely clean and use clean grease and equipment. More failures are caused by dirt introduced while greasing than from insufficient grease.

## SLIP RINGS AND BRUSHES

The rotor brushes and slip rings require practically no attention. They should be inspected when a general overhaul is necessary.

Fit replacement brushes. Then place a piece of sandpaper between the slip rings and the brushes (smooth side against slip rings). Pull the sandpaper in direction of rotation and seat the brushes. Lincoln brushes have curved faces to aid the seating.

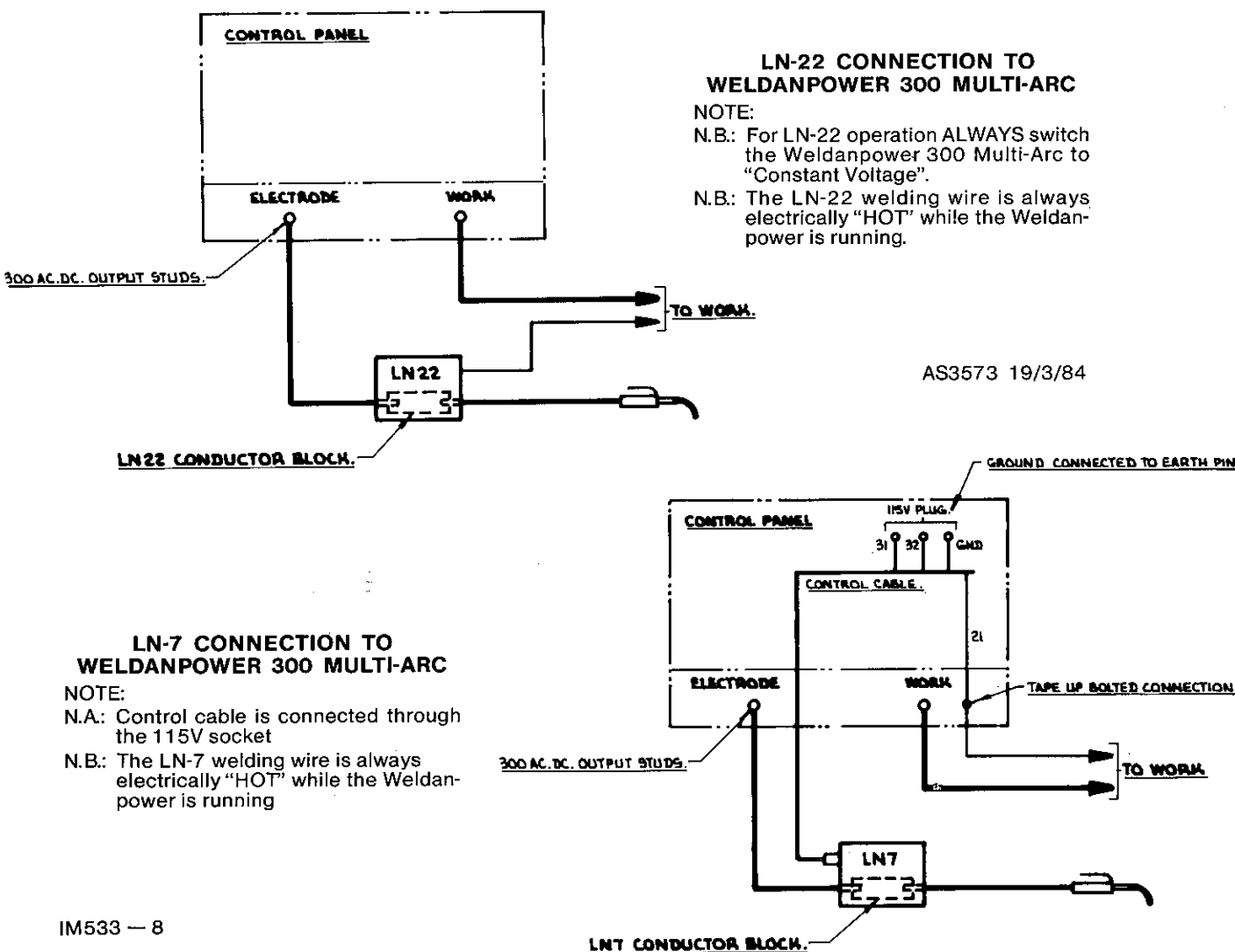
**Caution:** Uncovered rotating equipment can be dangerous. Use care so your hands, hair, clothing and tools do not catch in the rotating parts.

## GROUND TESTS

This machine is equipped with solid-state electronic components which can be damaged if subjected to a ground test or a megger test without observing special precautions as outlined here:

1. Prior to the ground test always turn the engine load off and disconnect **all** loads.
2. Disconnect the red lead between the oil pressure light and the bridge rectifier ((+) ve terminal) at the bridge rectifier end. Do not ground test this lead otherwise damage could occur in the engine battery charging circuit.
3. Disconnect the black lead between frame and the bridge rectifier ((-) ve terminal) at the bridge rectifier end.
4. Place jumpers to connect both A.C. terminals and the (+) ve and (-) ve terminals together on the bridge rectifier and another set of jumpers on the main welding rectifier again connecting the two A.C. terminals to the (-) ve terminal and to the (+) ve terminal.

**Note:** All jumpers must be as short as possible.



## Innershield or "Out of Position" Gas Metal Arc Welding (GMAW) (Constant Voltage)



1. Select Constant Voltage
  2. Select DC+ or DC-
  3. Select slope  
(use #2 for most positional GMAW  
#1 for most Innershield)
  4. Select Low Range
  5. Adjust Arc Voltage
- DO NOT SWITCH  
WHILE WELDING

## Stick Electrode Welding DC (Variable Voltage)



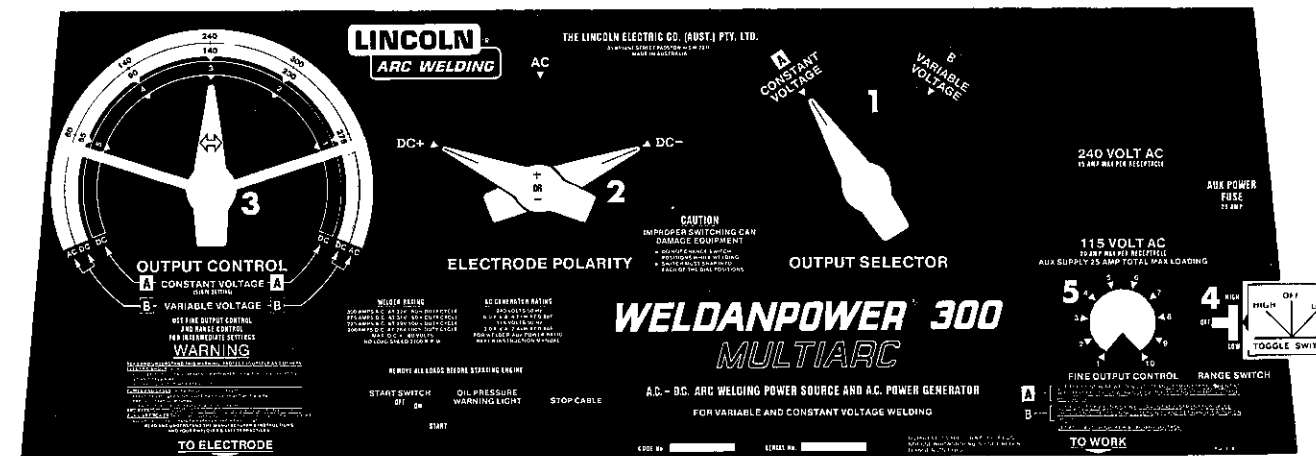
1. Select Variable Voltage
  2. Select DC+ or DC-
  3. Select appropriate current setting
  4. Select High Range\*
  5. Fine Tune Current
- DO NOT SWITCH  
WHILE WELDING
- \* LOW RANGE COULD BE USED IN SOME TIG APPLICATIONS

## Stick Electrode Welding AC (Variable Voltage)



1. Select Variable Voltage
  2. Select AC
  3. Select appropriate current setting
  4. Select High Range\*
  5. Fine Tune Current
- DO NOT SWITCH  
WHILE WELDING
- \* LOW RANGE COULD BE USED IN SOME TIG APPLICATIONS

## Submerged Arc, Innershield and most Gas Metal Arc Welding (GMAW) — (Constant Voltage)



1. Select Constant Voltage
  2. Select DC+ or DC-
  3. Select Slope (use #1 for most Innershield, submerged arc and spray transfer GMAW).
  4. Select High Range
  5. Adjust Arc Voltage
- DO NOT SWITCH  
WHILE WELDING