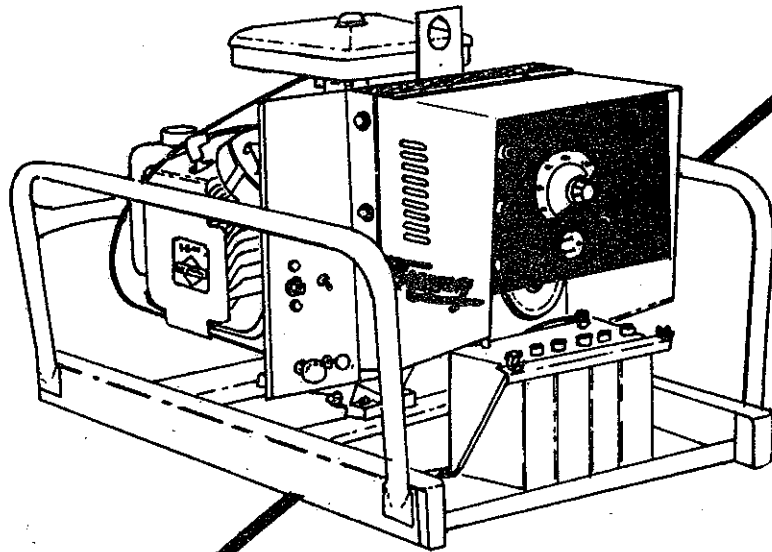


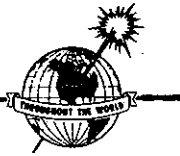
Forney

D. C. PORTABLE
Model BGW 200 Arc Welder



Owners & Service
MANUAL

FORNEY ARC WELDERS DIV. OF FORNEY INDUSTRIES, INC. Fort Collins, Colorado, U.S.A. Regina, Sask., Canada



Arc Welder

BGW-200

SERVICE MANUAL

(Multimeter with Ohms RX1 Scale required)

PART I BELT AND PULLEY

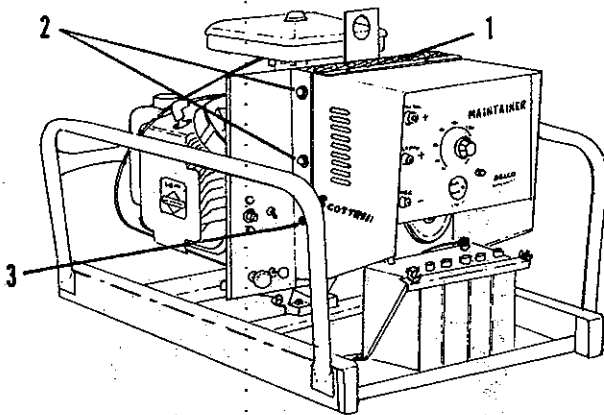


Fig. 1

Preliminary Check

1. Check for broken belt.
2. Check for slipping belt or slipping pulley.

If the belt or alternator pulley is slipping, the arc will start strong and die away as the alternator slows down. It will be noticeable at high amp settings. The belt should be tight and have very little "give" when checked by hand after removing the belt screen. (Fig.1-1)

Caution - Replace screen before starting the welder engine.

Note - The belt will burn (melt) and be ruined if allowed to slip for any length of time.

Pulley Alignment and Belt Tension

If belt breaks, turns over or jumps out of the grooves after a short period of time, or does not last when replaced, THERE IS SOMETHING WRONG WITH EITHER THE ALIGNMENT OR THE TENSION OF THE BELT. It will do no good to replace the belt without correcting the problem.

SYMPTOMS

PROBABLE CAUSE

Belt burns, melts or has small cracks on inside.

Belt too loose.

Belt breaks with clean break.

Belt too tight.

Belt breaks along one edge, jumps out of groove or turns over in groove.

Belt not in alignment or too tight.

CORRECT BELT ALIGNMENT and PROPER TENSION is crucial to belt life. MAKE SURE BELT IS ALIGNED. The belt should be checked for tightness after a few hours of operation of a new machine.

Belt Adjustment

Remove belt screen (Fig.1-1). CAUTION: Replace screen before starting the welder engine. Pry up on the welder unit by inserting a screwdriver in the third hole of the main channel (Fig.1-3). The shroud should be mounted to the welder unit when making the adjustment.

Carefully align the belt, making sure the top and bottom pulleys are parallel and straight while prying up the welder unit at the same time. Tighten belts on one side (Fig. 1-2). Finish adjustment by prying up on other side and feel the belt to make sure it is tight. The belt should be tight so that there is very little give when flexed by hand.

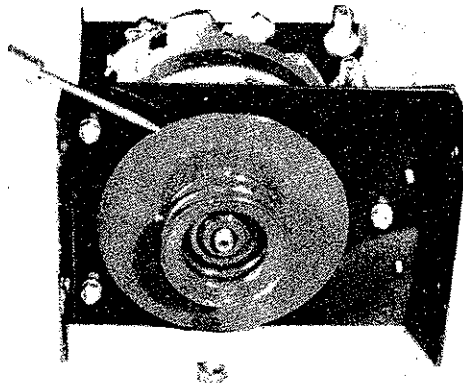


Fig. 2

Pulley Removal

Both alternator and engine pulley must have Loctite to keep them from slipping. Use high strength Loctite, Cat. No. 271-41. Use instructions supplied with the Loctite.

To remove the alternator pulley, remove the nut and lockwasher, apply even pressure to the pulley with a screw driver and heat with a propane torch (Fig.2) until the Loctite loosens and the pulley will slip off.

NOTE: Trying to remove the pulley without heat will damage it.

To remove the engine pulley, clean the shaft of dirt and rust in front of the pulley, apply pressure to the pulley with a wheel puller and apply heat to the pulley until Loctite loosens and the pulley will slip off.

NOTE: Trying to remove with a wheel puller without heat will bend the pulley.

PART II DETERMINE THE FAILING UNIT

Engine Lugs Down

If the engine powering a welder "lugs down" this indicates an engine problem, not a welder problem. The problem is simply that the welder is calling for more power than the engine can supply and the RPM's drop. If a lugging condition occurs, more output can be obtained by turning the current adjustment knob down to a lower setting so the engine RPM's do not drop.

NOTE: A drop in output and engine lug can occur because of an untuned or worn engine, high altitude or extremely hot days that cause a reduction in engine power. (There is a 1% drop for each 10 degrees F above 60 degrees F and a 3¼% drop for each 1000 feet above sea level. Contact engine manufacturer for further details.)

Low Open Circuit Voltage

The open circuit voltage will be low if the engine is not running full speed (3600 RPM).

Measure the open circuit voltage at the welding receptacles with the engine running full speed, not welding, no accessory power being used, and the current adjustment knob setting at the highest setting.

Three Circuits

The alternator on the welder has three separate circuits.

1. Control Circuit
2. Welder Circuit
3. Accessory Circuit

All three of these circuits have their own individual winding and are not connected electrically to each other.

Exciter Check

If the unit is completely dead, suspect excitation problems, especially if the unit has been sitting unused for a long time. Check the exciter wire to make sure it is not loose, broken or shorted.

Voltage Check to Determine Failing Circuit

By using the following procedure and examples before removing the shroud, the failing circuit can normally be determined (i.e. welder, accessory, or control). If the welder comes to you for repair removed from the engine and no explanation of the problem, the checkout procedure in later parts of this book will still find the problem.

If the welder is putting out anything at all, measure the D.C. open circuit voltage of both the welder and accessory. Welder should be approximately 70 V.D.C. and the accessory should be approximately 120 V.D.C. Measure with knob set at Max. amps.

BEFORE CHECKING VOLTAGE TO DETERMINE FAILING UNIT, MAKE SURE PROBLEM IS NOT LOW ENGINE POWER, LOW ENGINE RPM'S, OR EXCITER PROBLEM.

Example 1 Unit completely dead, no welder or accessory voltage. Problem is in the control circuit.

Example 2 Low Output. The max open circuit voltage welder is measured at 45 volts (should be 70) and max open circuit voltage accessory is 74 volts (should be 120). The problem is in the control circuit.

Example 3 Low output. Max welder open circuit voltage is 73 (o.k.) and max accessory open circuit voltage is 122 (o.k.). Again, problem is in the control circuit.

Example 4 No welder output. Welder open circuit voltage zero (should be 70). Accessory open circuit voltage 120 (o.k.) Problem is in the welder circuit.

Example 5 Low welder output. Max welder open circuit voltage is 48 (should be 70). Max accessory open circuit voltage is 120 (o.k.). Problem is not in the control circuit but in the welder circuit.

Example 6 No accessory output. Welder open circuit voltage 70 (o.k.) Accessory open circuit voltage zero (should be 120). Problem is in accessory circuit.

Example 7 Low accessory output. Welder open circuit voltage is 74 (o.k.) Accessory open circuit voltage is 80 (should be 120). Problem is not in the control circuit but is in accessory circuit.

NOTE: If the problem is in the accessory circuit, check the 4 fuses (1 on panel and 3 under shroud). The fuses affect only the accessory power.

PART III CONTROL CIRCUIT

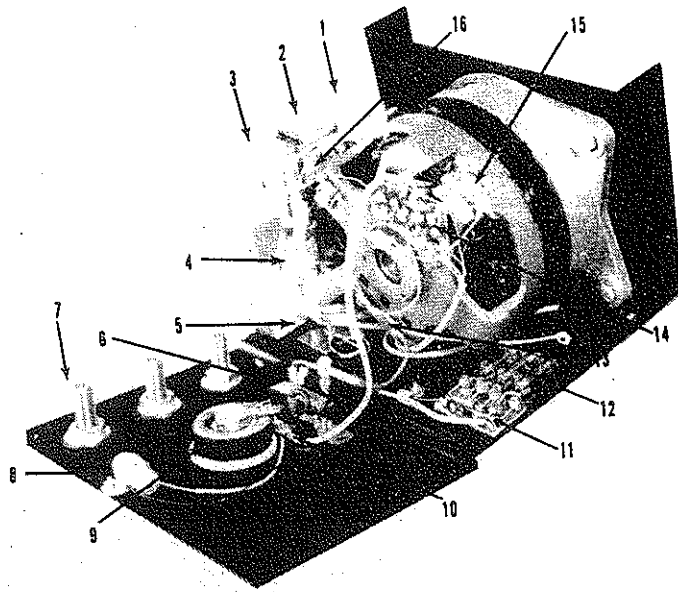


Fig. 3

1. Hi positive heat sink.
2. Lo positive heat sink.
3. Negative heat sink.
4. Main diodes
(6 on negative heat sink)
(3 on lo pos heat sink)
(5 on hi pos heat sink)
5. Terminal board
6. Accessory power receptacle
7. Welding Receptacle
8. Capacitor
9. Rheostat
10. Panel fuse holder
11. Accessory circuit board
12. Accessory 3 fuse holder
13. Accessory ground
14. Control circuit board
15. Control ground
16. Adjusting resistor

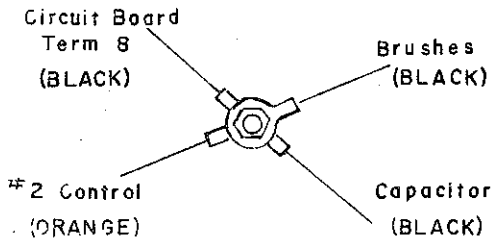


Fig. 4 Control Ground

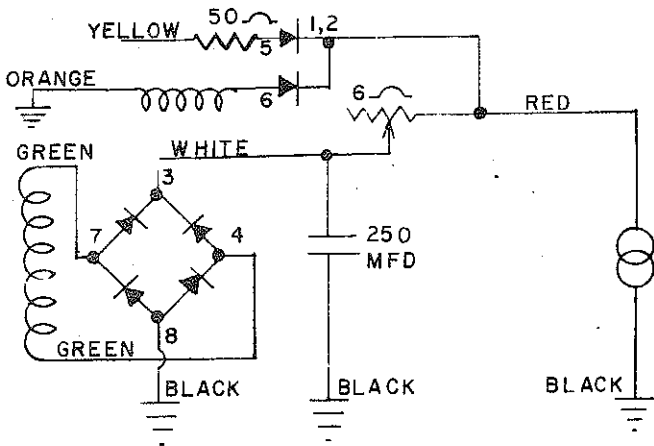


Fig. 5 Control Circuit Schematic

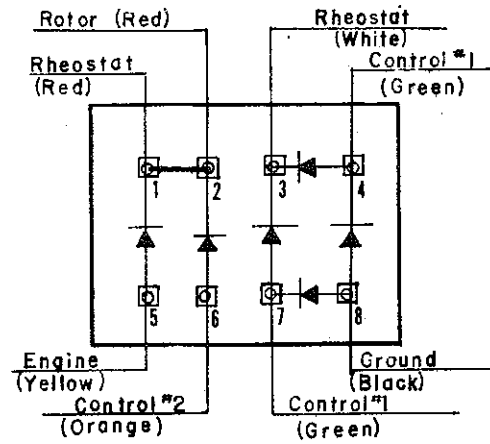


Fig. 6 Wiring Diagram

Control Circuit

The Control Circuit provides current to the Rotor (through the Brushes), to provide a Rotating Electromagnet (rotor) which in combination with the Stator (winding) generates its own control current. The control current is generated in the Control Winding rectified to D.C. by the Control Diodes, adjusted by the Rheostat, filtered by the Capacitor and used by the Rotor.

A failure in the control circuit will affect both the welder and 110 Volt accessory output equally. Since the control circuit has the most components and wires, a majority of failures will be in the control circuit. All of the 4 fuses in the machine have to do with accessory circuit and have nothing to do with the welder output or control.

Control Circuit Component Isolation

Before the testing begins, the Components must be isolated so that 'back circuits' will not give erroneous readings. This may be done by disconnecting all grounds at the terminal on the back of the alternator. There are four wires; (1) orange and (3) black. Pull the wires away so that they do not touch the alternator back.

Component Testing

The only instrument needed to check out the machine is a Multimeter with an Ohmmeter (RX1 Scale). Do not start the engine while checking the welder.

Exciter Wire

This wire can be checked by disconnecting the wire from the ignition switch to the welder and measuring the resistance from the wire end to terminal 5 on the control board (Fig. 3-13). The resistance should be approximately 56 Ohms, on RX1 scale.

Brushes (Fig.3-15)- Rotor

Measure between terminal 2 and the brush ground for a reading of 4 to 10 ohms. If the reading is bad, the problem is inside the alternator in the brush area. After removing the back housing from the Alternator, check rotor for 4 ohms, check the brush area for problems.

To service brushes or check rotor, do not remove fans or release belt tension. Remove the four screws holding the back housing on and remove the housing. **NOTE** - Do not lose the two springs which will come out from behind the brushes. These springs **MUST NOT BE LEFT INSIDE THE ALTERNATOR**. Insert a pin (fine wire) under the brushes to hold the brushes and springs in place while reinstalling the brush block.

WARNING: Remove pin after re-assembling.

Control Windings

The No. 1 control winding starts at control board terminal 7, winds through the Alternator and ends at the control board terminal 4.

The No. 2 control winding starts at control board terminal 6, winds through the alternator, and is grounded at the grounding lug on alternator back. It is orange and also may run through adjusting resistors before being grounded.

Normally the only problem within a winding is broken wire or a short to ground. Check with the Ohmmeter (RX1) and make sure there is a short (zero Ohms plus the value of the adjusting resistors if any) between terminal 6 and the ungrounded orange wire. Check for a short between terminals 7 and 4. Check for an open circuit (infinite ohms) between terminal 4, 6, 7 and the alternator housing. If these readings are correct the control windings are good.

WARNING: Winding must be isolated from ground or incorrect reading will result. See instructions above under "Control Circuit Component Isolation."

Capacitor (Fig. 3-8)

Touch the ohmmeter leads (RX1) to terminal 1 and the capacitor ground removed in the control circuit component isolation. When first touched, the ohmmeter pointer should 'flick' as the capacitor charges and then returns to a high resistance reading. Reverse the leads and the pointer should 'flick' again.

NOTE - The capacitor can fail while the engine is running due to a breakdown when voltage is applied and still test normal with the ohmmeter. This will cause hard to analyze problems with the welder. **IF THE CAPACITOR IS SUSPECTED, TEST IT BY REPLACEMENT.** Also intermittent problems can be caused by a faulty capacitor, for instance the machine will work when cold but fade out when hot.

WARNING: If the capacitor is not isolated (see instructions above). Incorrect reading will result.

Diodes (Control) (Fig. 3-11)

Check each diode (6) on the control board (Fig.3-11) for high resistance one way and low resistance with the leads reversed.

WARNING: Diodes must be isolated or incorrect readings will result.

Rheostat (Fig. 3-9)

With the ohmmeter leads (RX1) between terminal 2 and 3, turn the control knob from (high) to (low). The ohmmeter reading should vary with the knob setting from 0 to 12 ohms.

PART IV WELDER CIRCUIT MAINTENANCE

General

The welder circuit provides the D.C. welding current and consists of a 3 phase winding and a full wave, 3 phase rectifier.

Welder Circuit Check

1. Check diodes (Fig.3-4) with ohmmeter (RX1) by touching the wire ends and the corresponding heat sink (Fig.3-1 and Fig.3-3). The ohmmeter reading should read high resistance one way and low resistance with leads reversed.
2. Check welder windings (3 wires to each heat sink) for grounds to alternator housing and make sure they are shorted one to another (RX1).

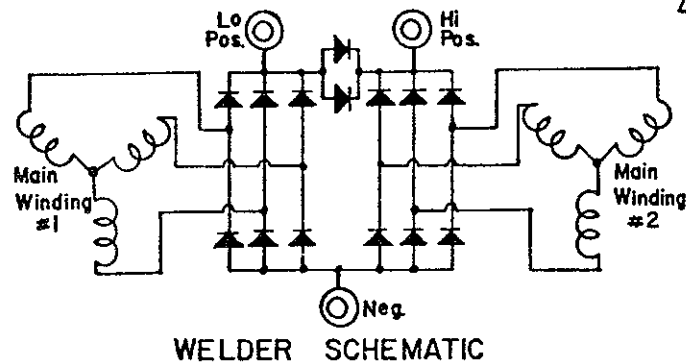
Component Isolation

Note that because of back circuits through the main winding, checking one diode at a time is not possible. Normally there is no need to unsolder the diodes to check them. A shorted diode (which is the normal way the diodes fail) will cause all the welder current to go into one phase of the winding and damage the winding. The burned wire will indicate the bad diode. **CAUTION: If a winding is burned be sure to change the bad diode or the winding will burn again.**

If a diode opens (not very likely) the open circuit voltage (should be approximately 70 V) will be reduced. The welder output will also be reduced. The accessory voltage will be normal (approx. 120).

Main Diode Change

1. Unsolder the wire to the diode and pry off with a screwdriver.
2. Knock out the faulty diode with a punch or screwdriver and a hammer.
3. Press in the new diode. Epoxie resin should be used around the diode especially if the hole is enlarged. Be careful not to damage the new diode. A 1/2" socket and a "c" clamp can be used to press in the diode. Check with an ohmmeter after installing.



PART V ACCESSORY CIRCUIT MAINTENANCE

General

The accessory circuit has its own separate 3 phase winding which is rectified to DC by the accessory diodes. (Fig.3-11) The winding is fused (Fig.3-12) on the inside of the machine to prevent an external short (if the 12 amp fuse (Fig.3-6) has been bypassed) from damaging the accessory winding.

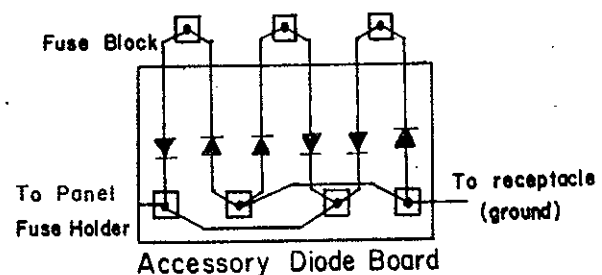
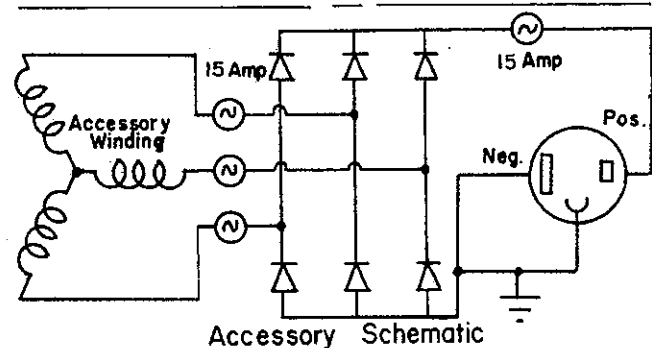
Accessory Circuit Testing

1. Isolate accessory circuit by removing the three 12 amp fuses (Fig.3-12) and the 12 amp fuse (Faceplate, Fig.3-10)
2. Check accessory winding on the winding side of the three fuse holder (Fig.3-1) to make sure the three leads from the alternator are shorted to each other.

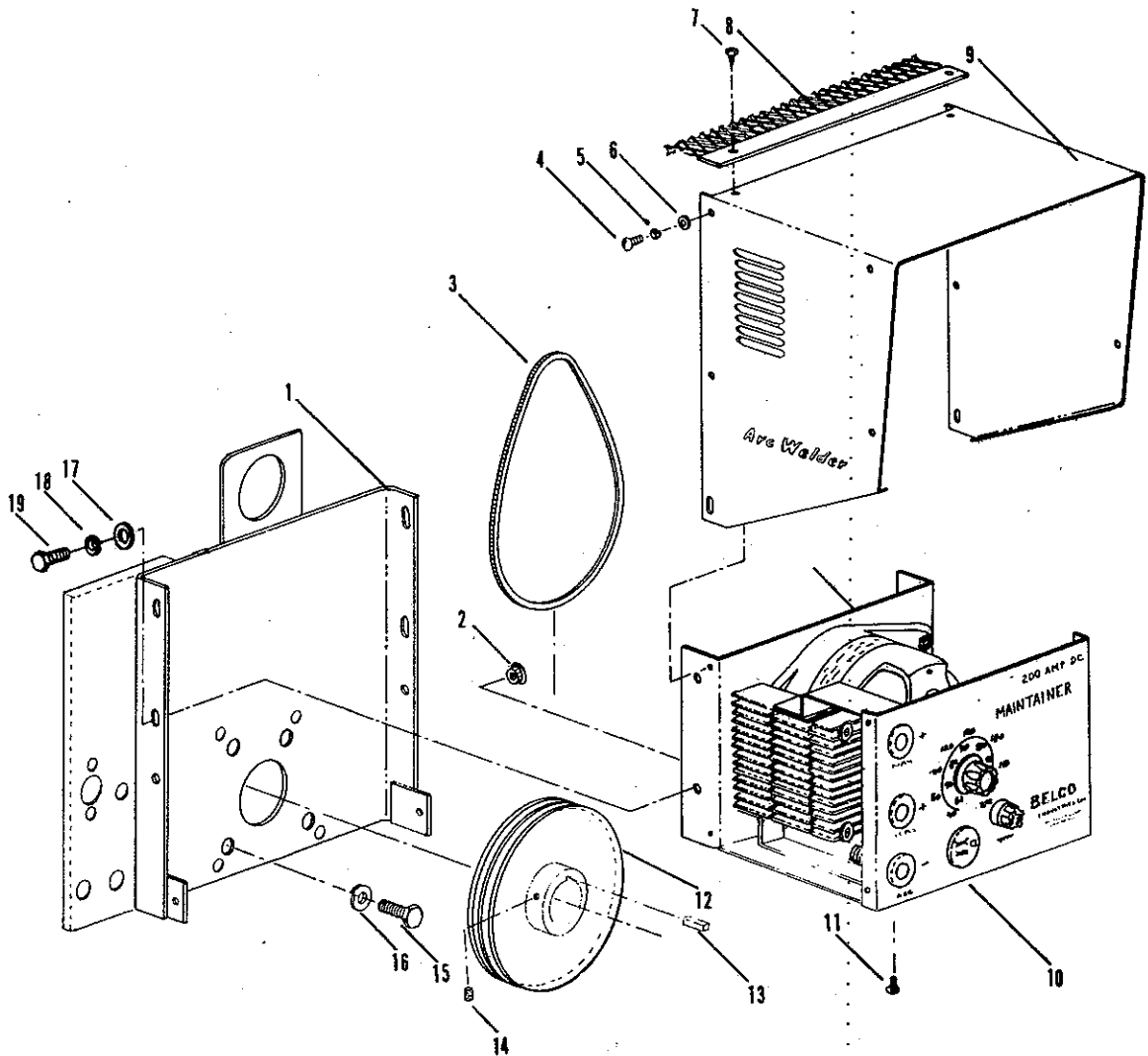
NOTE - If there is a short to the alternator housing or an open between two leads, check the winding 'visually' for a loose wire, and repair if possible. If the short is inside the winding, the winding must be replaced.

WARNING: WINDING MUST BE ISOLATED FROM GROUND BY REMOVING THE THREE FUSES OR INCORRECT READING WILL RESULT.

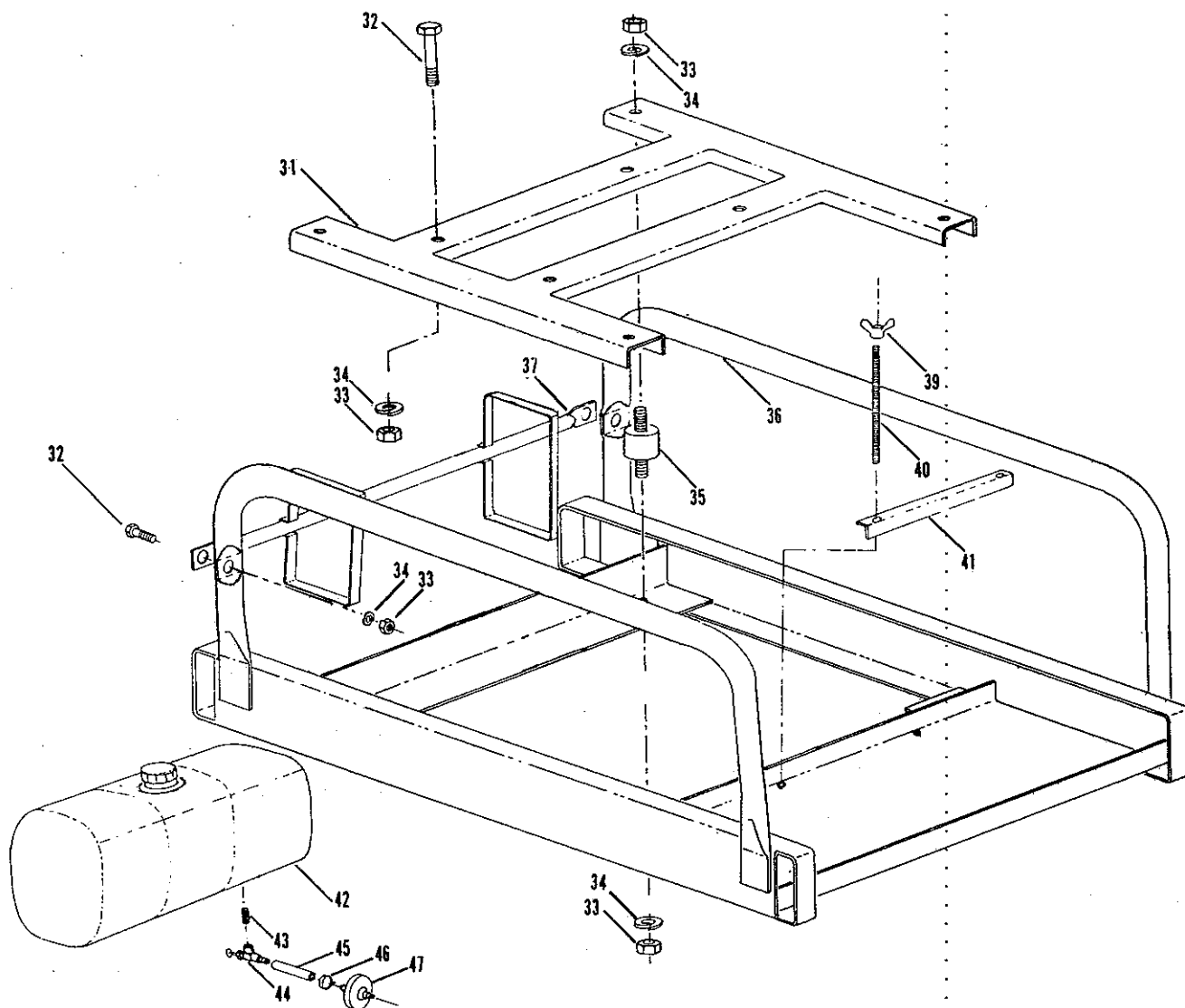
3. Check diodes with ohmmeter for high resistance one way, low resistance with leads reversed (Fig.3-4).
4. Check accessory circuit wiring from accessory circuit board to fuse and receptacle (Fig.3-10, 3-11, 3-7).



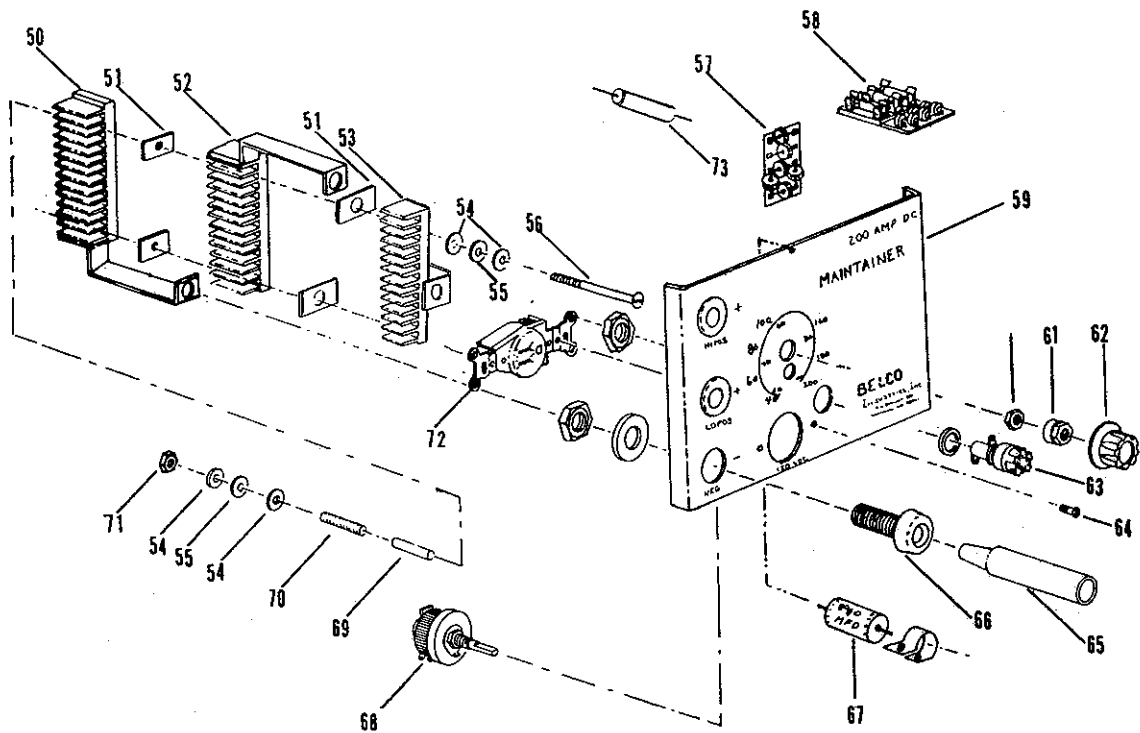
PART V PARTS LIST



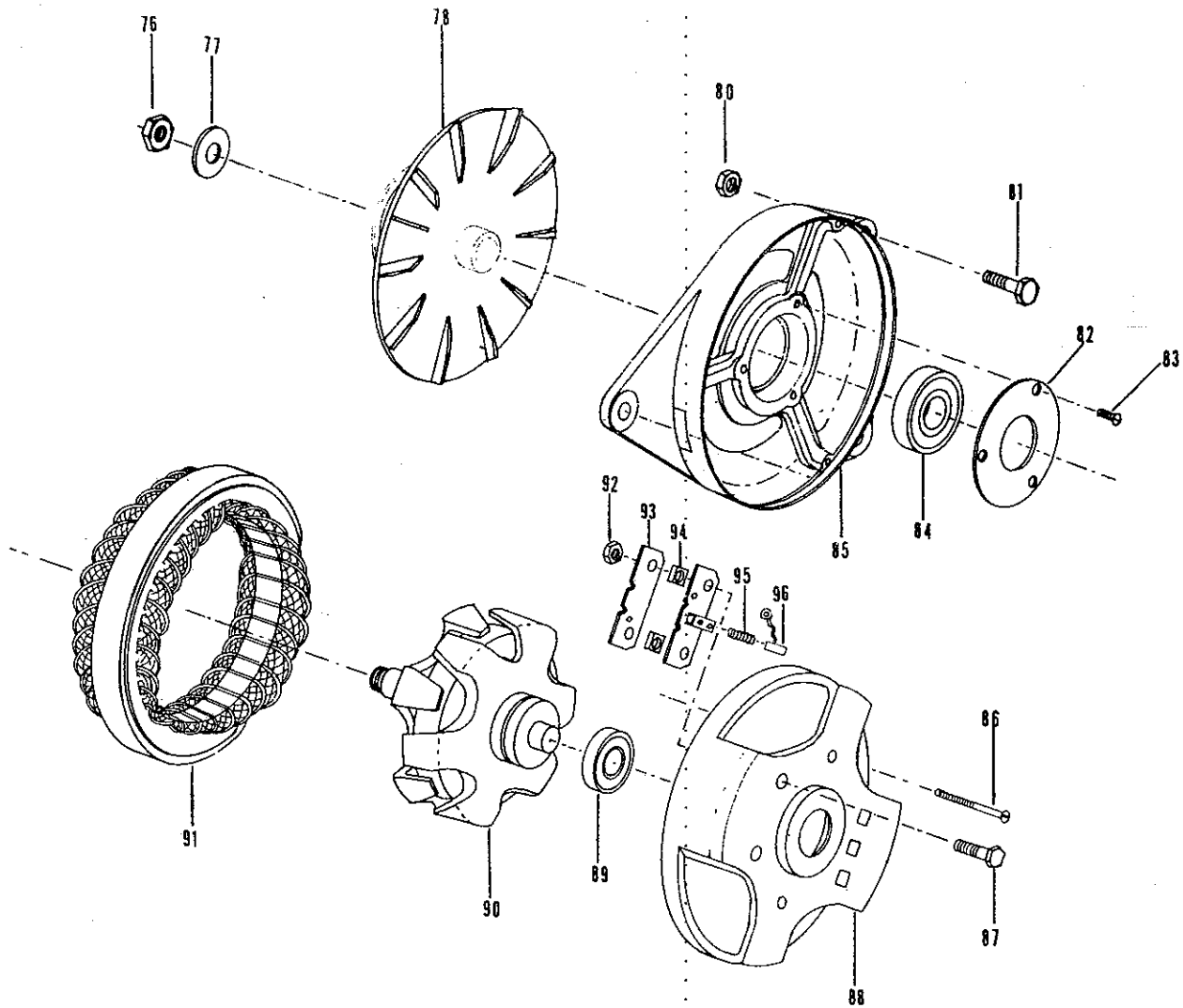
| Ref. | Description | Part.No. | Ref. | Description | Part No. |
|------|--------------------|----------|------|---|----------|
| 1 | Engine Channel | 2350 | 11 | Screw, Faceplate (2) | 1975 |
| 2 | Blind Nut (4) | 2175 | 12 | Pulley, Engine | 1292 |
| 3 | Belt (2) | 1024 | 13 | Key | 1210 |
| 4 | Screw, Shroud (10) | 1970 | 14 | Setscrew | 9695 |
| 5 | Lockwasher (10) | 2040 | 15 | Bolt, Main Frame | 1883 |
| 6 | Flatwasher (10) | 2030 | 16 | Lockwasher (8) | 2110 |
| 7 | Screw, Screen (2) | 1932 | 17 | Flatwasher (8) | 2090 |
| 8 | Screen, Belt | 2315 | 18 | Lockwasher (4) | 2100 |
| 9 | Shroud | 2297 | 19 | Bolt, Welder Unit Mounting (4) | 1871 |
| 10 | Welder Unit | 0972 | 20 | Not shown Briggs & Stratton 16 hp eng. | 1122 |



| Ref. | Description | Part No. | Ref. | Description | Part No. |
|------|----------------------------|----------|-----------|--------------------------|----------|
| 31 | "H" Frame | 2335 | 41 | Battery Hold down angle | 2337 |
| 32 | Engine Mounting Bolt (4) | 1873 | 42 | Gas Tank | 2780 |
| 33 | Nut (14) | 2170 | 43 | 1/4" NPT Nipple | 2810 |
| 34 | Lockwasher (12) | 2100 | 44 | Fuel shut off valve | 2785 |
| 35 | Shockmount (4) | 1370 | 45 | Gas line | 2795 |
| 36 | Main Frame | 2355 | 46 | Clamps (4) | 1090 |
| 37 | Gas Tank Mounting Bar | 2360 | 47 | Fuel Fiter | 2790 |
| 39 | Wing Nut (2) | 2160 | Not shown | | |
| 40 | Battery Hold Down Bolt (2) | 2338 | | Throttle cable | 2760 |
| | | | | Choke Cable | 2765 |
| | | | | Starter switch | 1810 |
| | | | | Ignition/exciter switch. | 1815 |



| Ref. | Description | Part No. | Ref. | Description | Part No. |
|------|---|----------|------|------------------------|--------------|
| 50 | NEG Rectifier Assembly - Heat Sink & Diodes | 2543 | 59 | Faceplate | 2263 |
| 50A | Diode, NEG (6) | 1775 | 61 | Rheostat Lock Nut | 2220 |
| 51 | Insulator (4) | 2619 | 62 | Rheostat Knot | 1220 |
| 52 | HI, POS Rectifier Assembly - Heat Sink & Diodes | 2549 | 63 | Fuseholder, Panel | 1180 |
| 52A | Diode, POS (5) | 1765 | 64 | Screw (2) | 1910 |
| 53 | LO, POS Rectifier Assembly - Heat Sink & Diodes | 2555 | 65 | Welding Jack (2) | 1231 |
| 53A | Diode, POS (3) | 1765 | 66 | Welding Receptacle (3) | 1312 |
| 54 | Flatwasher (8) | 2060 | 67 | Capacitor Clamp | 1735 1078 |
| 55 | Insulating Washer (4) | 2070 | 68 | Rheostat and Nut | 1345 |
| 56 | Bolt, Heat Sink (2) | 1958 | 69 | Insulator, Teflon (2) | 2627 |
| 57 | Control Circuit Board Asm | 2470 | 70 | Insulator, Fiberglass | 2628 |
| | Diode (6) | 1750 | 71 | Nut (2) | 2130 |
| 58 | Accessory Circuit Board Asm | 2467 | 72 | Receptacle | 1330 |
| | Fuseholder | 1186 | 73 | Resistor, Exciter | 1742 |
| | Diode (6) | 1750 | | Resistor, Adjusting | 1740 |
| | Fuse (3) | 1159 | | | |
| | Resistor (46K Ohms) | 1744 | | | |



| Ref. | Description | Part No. | Ref. | Description | Part No. |
|------|-------------------------------|----------|------|-------------------------------|----------|
| 76 | Nut, Alternator Shaft | 2211 | 87 | Bolt, Brush Mounting (2) | 1875 |
| 77 | Washer, Alternator Shaft | 2209 | 88 | Housing, Slip Ring End | 1666 |
| 78 | Fan Pulley Asm | 1623 | 89 | Bearing, Slip Ring End | 1590 |
| 80 | Nut, Alternator Mounting (3) | 2170 | 90 | Rotor | 1675 |
| 81 | Bolt, Alternator Mounting (3) | 1873 | 91 | Winding | 2650 |
| 82 | Bearing Retainer | 1665 | 92 | Nut, Brush Mounting (2) | 2170 |
| 83 | Screw, Bearing Retainer (3) | 1975 | 93 | Brush Rigging Asm (2) | 1605 |
| 84 | Bearing, Drive End | 1595 | 94 | Insulator, Brush Mounting (2) | 1624 |
| 85 | Housing, Drive End | 1655 | 95 | Spring, Brush (2) | 1612 |
| 86 | Bolt, Thru Alternator (3) | 1977 | 96 | Brush (2) | 1609 |

OWNER'S MANUAL

GENERAL DESCRIPTION

It is truly a lightweight, dependable, versatile tool. It can be used as a power supply to run lights, hand tools, sheep shears, branding irons, thaw pipes, and many other jobs with complete portability. It can do almost any welding job including stainless steel, aluminum, hard surfaces, sheet metal, and carbon brazing. Even the largest welding jobs can be accomplished by using multiple pass techniques. It is an ideal tool for maintenance, construction, farm and ranch work, metal building construction, ornamental iron works, fence construction, sheet metal work, and a variety of other uses.

CHOICE OF STRAIGHT OR REVERSED CURRENT

With this D.C. Arc Welder there is a choice of STRAIGHT or REVERSED current which affects the weld characteristics, penetration, and base heat of the metal being welded.

(With straight current the electrode holder is connected to NEGATIVE and the ground to POSITIVE. In reversed current the electrode holder is connected to POSITIVE and the ground to the NEGATIVE.)

Straight Current results in shallow penetration, higher heat in the rod and less heat in the metal being welded. This is used for thin metal, maximum build-up of the weld bead or when the metal must be kept cooler.

Reversed Current causes deeper penetration, higher heat in the metal and less rod heat.

DUTY CYCLE

Some small plug-in welders are rated at 20 percent...or two minutes in ten usage. Some large engine driven units are rated at 100 percent, while others are rated at only 40 to 60 percent duty cycle. The duty cycle rating on this machine is 20 to 100 percent.

DIRECT CURRENT

This Welder is a DIRECT CURRENT machine. Some advantages of a D.C. unit over an A.C. welder are: Choice of polarity. With an A.C. welder, the polarity switches twice per cycle or 120 times for a 60 cycle machine, thus the maximum benefit from the choice of polarity is not available.

Less Current is needed with a D.C. unit to do the same job.

Much less splatter (or loss of weld metal) because of the continuous flow.

Wider selection of rod usage. The "exotic" rods such as aluminum, stainless, nickle, and hard surface rods specify polarity and can't be used on A.C. units.

Easier to strike an arc (or start a weld). A D.C. unit is smoother since it has a continuous flow.

ENGINE

The engine providing power to this Arc Welder has been approved for this application by the manufacturer and is warranted by the manufacturer. Engine operating instructions, service information, and warranty is included.

PARALLEL OPERATION OF THIS WELDER

This Arc Welder can be connected PARALLEL (POS to POS, NEG to NEG) with another duplicate welder to produce an increased output. The current output will be the sum of the two knob settings. The knobs need not be at the same setting. DO NOT CONNECT POS OF ONE MACHINE TO NEG OF ANOTHER MACHINE.

WELDING CABLES

Two welding plugs are provided with the welder. Connect the plugs to the welding cable by driving the fiber pin and soldering the cable to the plugs. Connect the black plug to the Ground Lead and the red plug to the Electrode Holder.

AS A QUICK CHARGER

WARNING: Because of the possibility of damage to the welder and equipment being charged, Forney Industries, Inc., cannot assume responsibility for damage to equipment or repair under warranty any damage done to the welder while being used as a battery charger.

Since this output is D.C., it can be used as a "quickcharger" for batteries. It will charge 6, 12, or 24 volt batteries. NEVER SET THE CURRENT KNOB ABOVE HALF SCALE. TOO MUCH CURRENT COULD RESULT IN DAMAGE TO BATTERY OR WELDER.

The following precautions MUST be observed when using the unit as a quick charger:

1. Do not start the welder until the charging leads are connected. Do not remove leads while charging.
2. Before charging the battery, remove one of the leads to a battery post in order to isolate the battery from the rest of the electrical system. Damage to the electrical system fed by the battery can result if the lead is not disconnected.
3. Connect POS on welder to battery POS and NEG to NEG. If these leads are reversed, damage to the welder can result.
4. Do not overcharge, remove battery caps while charging, and be sure battery water level is correct. Battery can be damaged if these precautions are not followed. Do not exceed the maximum charging rate of the battery.

FOR THAWING PIPES

This welder will not be harmed if it is shorted indefinitely; provided THE CURRENT KNOG SETTING IS NOT ABOVE DIAL HALF SCALE. This makes it an excellent tool for pipe thawing. Connect POS to one end of the pipe being thawed, NEG to the other end. Set current desired with the current knob. BUT DO NOT SET ABOVE HALF SCALE ON THE DIAL. The current at this setting will be full when the machine is shorted. Start welder and run until pipe is thawed.

Copper pipe, because of its excellent conduction, will not usually be heated enough to thaw. Pipe size that can be thawed will depend upon conditions such as temperature, insulation, and soil conditions.

120 VOLT D. C. OUTLET

The 120 volt D.C. outlet will power incandescent light, most power hand tools, (drill, grinder, etc.) resistance heaters, and other equipment. The welder and the 120 V D.C. outlet can be used at the same time.

NOTE: Many appliances and tools will NOT run on D.C. Check the Manufacturer's label before connecting.

OUTPUT CONTROL

The welder provides infinite current control through the faceplate continuous dial knob. At maximum RPM's the nominal output will be that - which is shown on the dial. Another means of current control is to reduce engine RPM's; This will result in reduced fuel consumption, less engine noise, and reduced wear and tear. Whenever possible, to reduce current, turn knob up and engine RPM's down.

TYPE OF WELDING RODS

The open circuit voltage on this welder is 75 volts and can use electrodes rated at 30 to 125 amps, straight or reversed current D.C.

The following rods are standard, set by the A.W.S. (American Welding Society) and are for use in mild steel welding:

A.W.S. 7014 GENERAL PURPOSE welding. This rod strikes easily, has heavy slag, and iron powder in flux. The heavy slag causes the inexperienced welder to confuse the slag with the weld. Low to medium penetration. The metal to be welded should be clean.

A.W.S. 6011 GENERAL PURPOSE welding. Rod is used by maintenance and for farm or ranch purposes. Has deep penetration and is good for all positions including vertical and overhead. The light slag makes it harder to clean up. Splatter is heavy. Will weld dirty and rusty metal.

A.W.S. 6013 Similar to 6011 with a medium penetration.

A.W.S. 7018 LOW HYDROGEN. High strength weld and heavy slag. Slag chips away easily to produce a smooth bead. Has medium penetration. For use with high strength carbon steel.

OTHER RODS, for aluminum, titanium, hard surface rods - Contact the rod supplier for specific information.

TIG WELDING

Tungsten Inert Gas (TIG Welding) can be accomplished by utilizing this welder as a power source. The TIG Torch is a perfect tool for welding stainless, carbon and low alloy steel.

The ability to weld very thin sheet is an important characteristic of Tig Welding. To obtain low current for welding extremely thin sheets, a combination of RPM, dial control and, in some cases, an external resistor can be used.

The Tig Torch is an excellent "on the spot" tool for dairies, equipment installers, and maintenance shops.

ALUMINUM WELDING

As a direct current arc welder, aluminum can be welded by using the shielded metal-arc (stick electrode) process.

It is recommended that a welding supply dealer or rod manufacturer be consulted for metal preparation, rod type, and cleaning process.

CARBON ARC BRAZING

Straight polarity is mandatory for carbon-arc brazing.

By using carbon arc electrode and silicone-bronze rod, this welder is effective in welding galvanized sheets. It is a perfect portable tool for sheet-metal duct work since very little of the galvanizing is disturbed and the weld is satisfactory with little distortion.

Carbon-arc welding with silicone-bronze rod can also be used with uncoated sheet steel.

HARD FACING

This welder is excellent for the application of hard surfacing electrodes to metals thereby increasing wear resistance and longevity in products subjected to severe abrasion. It is very important to select a hard facing electrode which is homogenous with the base metal being hard faced (contact your electrode supplier for specific data).

HELPFUL OPERATING HINTS

BELT ADJUSTMENT

1. Remove belt screen on top of shroud.
2. Loosen four (4) 5/16" - 18 bolts on upper left & right side of main channel frame.
3. Insert screwdriver in third (3) hole from top on each side of frame & push DOWN to tighten drive belt.
4. When tension is correct there will be very little play in belt when flexed by hand.
5. When proper tension is reached, torque down 4 bolts in No. 2 above.

IMPORTANT

Belt life is dependent on proper tension & alignment; when adjusting belt visually check alignment between drive pulley & generator pulley. Adjustment for alignment is made in drive pulley...not generator pulley.

WELDING RECEPTACLES

For proper contact and to prevent arcing and burning of receptacles; insert welding cable jack fully in receptacle and rotate 90 degrees clockwise. To remove, rotate jack 90 degrees counterclockwise. Jack slot separation is critical for good contact; periodically spread the jack ends. (Applies to 135 machines only).

ENVIRONMENTAL NOISE POLLUTION POINTER

Whenever possible amperage should be adjusted by a combination of knob settings & reduced RPM... thereby lowering fuel consumption, noise levels and improving engine longevity.

ENGINE LUGS DOWN

If the engine "lugs down", this does not indicate a welder problem but an engine problem. The problem is simply that the welder is calling for more power than the engine can supply and the R.P.M.'s drop. If a lugging condition occurs, more output can be obtained by turning the current adjustment knob down to a lower setting so the engine RPM's do not drop.

NOTE

A drop in output and engine lug can occur from an unturned or worn engine, high altitude or extremely hot days that cause a reduction in engine efficiency. (There is a 1 percent drop for each 10 degrees F above 60 degrees F and a 3½ percent drop for each 1000 feet above sea level. Contact engine manufacturer for further details.)

LOW OPEN CIRCUIT VOLTAGE

The open circuit voltage will be low if the engine is not running full speed (3600 RPM Briggs, 3800 RPM Wisconsin). Measure the open circuit voltage at the welding receptacles with the engine running full speed, not welding, no accessory power being used and the Current adjustment knob setting at full amperage.

ONE YEAR LIMITED WARRANTY

Forney Industries, Inc. warrants all Arc Welders manufactured by it to be free from defective material and workmanship under normal use and service and agrees to repair such products, if investigation discloses the defect to be the fault of the manufacturer. All welders repaired under this warranty must be returned to Forney Industries Service Department or any authorized Service Center, TRANSPORTATION PREPAID by the purchaser, within one year from date of purchase.

This warranty does not apply to any Forney Arc Welder which has been damaged by an attempted repair or to which the repair has injured the reliability of the welder. Nor does this warranty cover welders which have been misused, altered or in the case of negligence or accident.

The engine providing power to the arc welder has been approved for this application by the manufacturer and is warranted by the manufacturer. Engine operating instructions, service information, and warranty is included with each unit.

Accessories shall carry only such warranty as is available from the manufacturer of such goods and are specifically excluded from this warranty.

This warranty is expressly in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on the part of Forney Industries, Inc. No person, including any dealer, agent, distributor, or representative of Forney Industries, Inc. is authorized to assume for Forney any liability on its behalf, or in its name, except to refer purchasers to this warranty.

The purchaser must mail the warranty card in immediately. Then, in making a claim, only the model and serial numbers of the unit need to be furnished. However, if for some reason, the card was not mailed, a copy of a document, such as a sales receipt or invoice, recording the date, place and proof of purchase may, at the discretion of the service department, serve to establish your warranty. Your warranty claim letter should include all pertinent details and an estimation of the cause of welder malfunction. The above information must be supplied.

Any returned items must have prior authorization. Unauthorized returns will not be accepted.

Forney reserves the right to make changes in design and improvements in its products without assuming any obligation to install the same on any of its previously manufactured products. Further, Forney reserves the right to ship new and or improved products which are similar in form, fit, and function to the products originally ordered.

WARRANTY REPAIR

If your Forney Arc Welder should need servicing under the warranty, contact your dealer for the Service Center nearest you. Please contact the Service Center before shipping your welder to him. All equipment returned for warranty repair must be accompanied by your sales invoice or sales document showing date-of-purchase.

HOW TO SHIP RETURNS

To minimize transportation charges, only the welder unit should be returned for repair.

(NOTE: IF THE UNIT IS COMPLETELY DEAD, MAKE SURE THE EXCITOR WIRE IS NOT DAMAGED OR DISCONNECTED FROM THE ENGINE.)

To prepare unit for return:

1. Remove shroud, retaining it and connecting screws along with the engine for later reinstallation.
2. Disconnect excitor wire from engine.
3. Remove welder unit (4 bolts).

Package unit as follows:

Check to see that all parts, plus fan and pulley are included. Then place unit in a strong carton that is at least 6" bigger in all three dimensions than the unit. Fill the carton equally around the unit with resilient packing material (shredded paper, excelsior, etc.). Seal it with gummed paper tape, tie it with a strong cord, and ship it by prepaid express, United Parcel Service, or insured parcel post to the Service Center.

It is very important that the shipment be well packed, prepaid, and fully insured. Damage claims must be settled between the purchaser and the carrier and this can delay repair and return of the unit.

PURCHASE OF PARTS

If parts are unavailable from local dealer or distributor, parts can be purchased from the factory Customer Service Department. All parts orders must be prepaid or COD. When ordering, please supply the following information:

1. Model number of the unit.
2. Serial number of the unit.
3. Description of the part.
4. Part number.

Address your letter to:

Forney Industries, Inc.
P. O. Box 563
Fort Collins, CO 80522

FIELD INFORMATION BULLETIN

Forney Manufacturing Co.
DIVISION OF FORNEY INDUSTRIES

NO. 3-11-1

DATE November 6, 1981

SUBJECT SERVICE - YELLOW JACKET PORTABLE WELDER (Catalog #700-E)

The following information applies to warranty repair of a Forney Yellow Jacket Portable Welder:

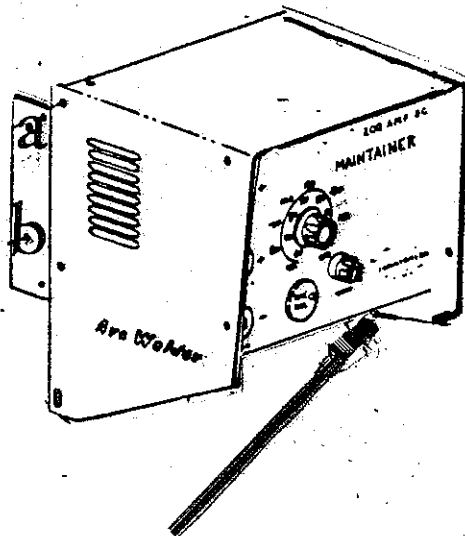
It is recommended that when this Welder is received for service, contact the Service Manager of Forney Industries (303-482-7271) before any work is performed on the Welder.

This Welder Unit is warranted for a period of one (1) year.

The engine is warranted for a period of one (1) year by Briggs & Stratton, and service may be obtained from any authorized Briggs & Stratton Service Center.

If it is found necessary to return the Welder section of the Yellow Jacket Portable Welder for repair, follow these instructions:

- A. Remove bolts A and B from the side panel of welder. (Also, corresponding bolts on the opposite side.)
- B. Disconnect the one cable which extends from the welder section to the generator.
- C. Package and ship by U.P.S. to factory as designated by Service Manager.



Exciter wire to be disconnected.

Gale Powers

GALE POWERS
NATIONAL SERVICE MANAGER
WELDING PRODUCTS DIVISION