

**MODEL 7000**  
**AUTOMATIC PIN WELDER**  
**OPERATOR'S MANUAL**

**Revision 1**

**May 8, 1998**

Gripnail Corporation  
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East Providence, Rhode Island 02914

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## **FOREWORD**

The Gripnail Model 7000 APW Resistance Welding System is the first in a new line of state-of-the-art fastening systems pioneered by Gripnail Corporation.

This Gripnail Welding System has been carefully constructed with the finest quality parts and materials. Because of its unique circuitry, this system will be inexpensive to operate and maintain. To ensure long and trouble free performance, it has been subjected to rigid inspection and extensive reliability testing.

This manual is designed to provide the operator with all the knowledge necessary to operate the system in the most reliable and productive manner.

For further information and service, contact your Gripnail representative, or contact Gripnail directly.

## **LIMITED WARRANTY**

All Gripnail Fastening Equipment is thoroughly inspected and tested before leaving the factory. Gripnail Corporation warrants its equipment to be free from defects in workmanship and materials under normal and proper use for a period of 1 year from date of sale to original end purchaser.

The warranty does not apply where repairs or attempted repairs have been made by persons other than Gripnail Corporation's authorized service personnel, or where it is determined by our service personnel that the equipment has been subjected to misuse, negligence or accident. If it is determined that any fasteners other than those manufactured by Gripnail Corporation have been used in this machine or tool, the warranty is terminated.

This warranty is not effective unless equipment is properly registered with the factory through the use of our warranty information card prior to use. Gripnail Corporation shall not be liable for contingent damages or delays caused by defective materials or any other means beyond our control.

## SERVICE POLICY

Proper operation of your machine is a top priority with Gripnail Corporation. We will be happy to assist you to the best of our abilities, to see it is kept in peak operating condition.

In many cases, service needs can be met by simply calling Gripnail's Customer Service Department. If it becomes necessary for a service technician to visit your plant, we can make the arrangements.

All Gripnail machines are covered under a one (1) year New Machine Warranty. Replacement parts covered by this warranty are supplied free of charge, provided the original parts are returned to Gripnail. Please note--- Consumable parts, such as weld tips, are not covered by this warranty.

At the end of the warranty period, the original end buyer has the option to purchase an Extended Parts Warranty. This warranty covers specified machine parts. See your Local Gripnail Distributor for details or call Gripnail's Service Department.

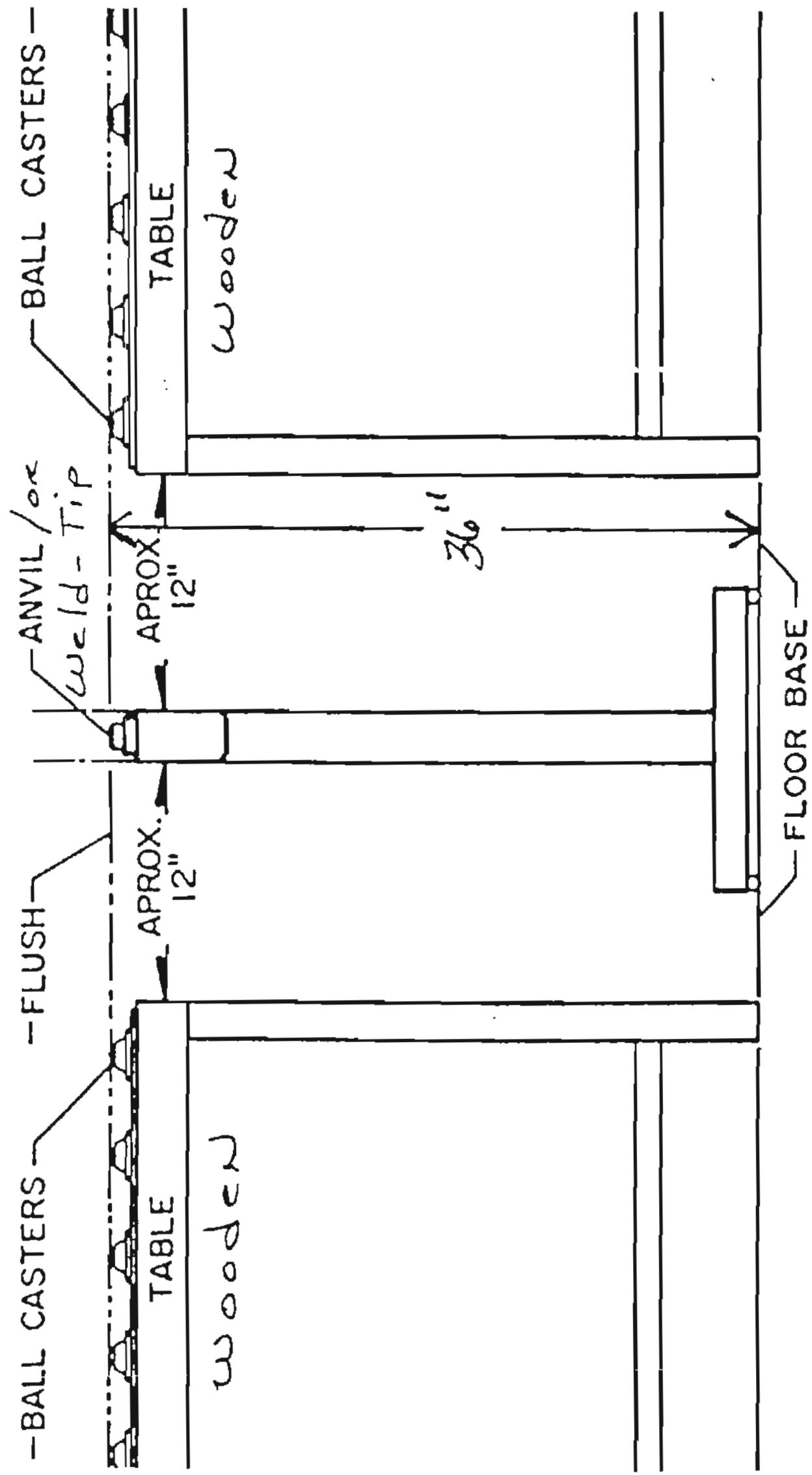
All warranties on Gripnail machines are good only if Gripnail manufactured fasteners are used. If it is determined that fasteners other than those have been used, the warranty is terminated.

At Gripnail, we believe in servicing what we manufacture for the lifetime of the equipment. If you are having any difficulty with your machine or if you have any questions regarding service and warranty policy, please call or write:

Customer Service Department  
Gripnail Corporation  
97 Dexter Road  
East Providence, Rhode Island 02914

1-401-431-1791,  
1-401-438-8520 fax, or  
1-800-GRIPNAIL (474-7624)

RECOMMENDED SHOP SET-UP



## **SECTION I. OPERATOR SAFETY**

- 1.000.** As with any new piece of equipment, proper safety precautions must be observed. This section contains guidelines designed to ensure operator safety. FOLLOW THESE DIRECTIONS AT ALL TIMES.

### **REMEMBER - SAFETY FIRST!**

1. Insulate yourself from ground with rubber-soled shoes or rubber mat.
2. Maintain equipment in good operating condition.
3. Wear protective clothing to avoid injury from sparks or molten metal.
4. Remove all flammable materials from the welding vicinity.
5. Wear protective mask, etc., to avoid breathing fumes and particulate debris.
6. Connect chassis ground in accordance with local or National Electrical Code.
7. Troubleshooting should be done by qualified personnel.
8. Disconnect ALL power sources before servicing.
9. Do not operate this welder without all covers and guards in place.
10. Do not wear oil-soaked clothing or cuffed trousers when welding.

## **SECTION II. DESCRIPTION OF WELDING SYSTEM**

### **2.000. POWER UNIT AND CONTROL TIMING**

- 1.** The Gripnail Model RW-7000 Automatic Pin Welder is a self contained, single phase, solid state, power unit and control system designed for use with resistance weld pins in the HVAC industry. This system is capable of welding pin lengths of 1/2" to 2" and diameters up to 9 gauge. The power unit and control system contain all the electronics and logic necessary to accurately and repeatedly deliver compensated output power to the weld area.
- 2.** The welder can operate at 190, 208, or 230 VAC, 50/60 Hz. This input voltage flexibility is achieved by means of a movable jumper wire. It is connected to the transformer input terminal block which is located behind the access panel at the rear of the welder. The system operates at approximately 35 welds per minute.

### **2.050. -OPTIONAL- HAND WELDING GUN AND CABLES**

**THIS SECTION TO BE ADDED LATER.**

## 2.100. SYSTEM SPECIFICATIONS

GRIPNAIL RW-7000 RESISTANCE WELDER	
INPUT VOLTAGE 190, 208, 230 VAC	OPEN CIRCUIT SECONDARY VOLTS 5.82 VAC
INPUT CURRENT 31.0, 28.4, 25.5 AMPS	SHORT CIRCUIT SECONDARY CURRENT 2480 AMPS
PHASE SINGLE PHASE, 50/60 CYCLE	
KVA RATING 5.3 KVA	
DUTY CYCLE 50 %	FUSING 50 AMP

### 1. ELECTRICAL REQUIREMENTS

CONTROL CIRCUITRY: 120 VAC 50/60 Hz 10 A

WELD TRANSFORMER: 208\* VAC 1Ø 50/60 Hz 50 A

\* (taps; 190, 208, 230 VAC) **see Section 3.100.**

FUSING: 50 Amp

### 2. AIR REQUIREMENTS

**IMPORTANT:** See **SECTION 3.130, "CONNECTING AIR SUPPLY"**

PRESSURE: 80 PSI minimum

PIPING SIZE: 1/2 " NPT Connection

CONSUMPTION: 7.0 CFM @ 80 PSI **WITH** Tip Cooling operating  
1.0 CFM @ 80 PSI **WITHOUT** Tip Cooling operating



## SECTION III. INSTALLATION AND SETUP INSTRUCTIONS

### 3.000. LOCATING THE WELDER

The unit is convection cooled, and **MUST** be placed in an area that allows good air flow and ventilation. Be sure that the air vents on the sides and bottom of the unit are protected from debris and are not obstructed.

### 3.050. INSTALLATION OF ELECTRICAL POWER

1. The Gripnail Model RW-7000 Automatic Pin Welder is designed to operate from about 208 volts, single phase, 50/60 Hertz AC supply. See Section 2.100.
2. The incoming power must have an earth ground. It is recommended that the line voltage be switched and fused through some type of pull box or circuit breaker of proper size, as required by National Electrical Codes and / or local codes.
3. Refer to Fig 3-1. This type of setup permits safe and easy power removal from the welder, should it become necessary to perform minor adjustments or maintenance.
4. For more information regarding wire sizes, ampacity, circuit breakers, fuses, etc., see your electrician or consult the National Electrical Code Handbook.

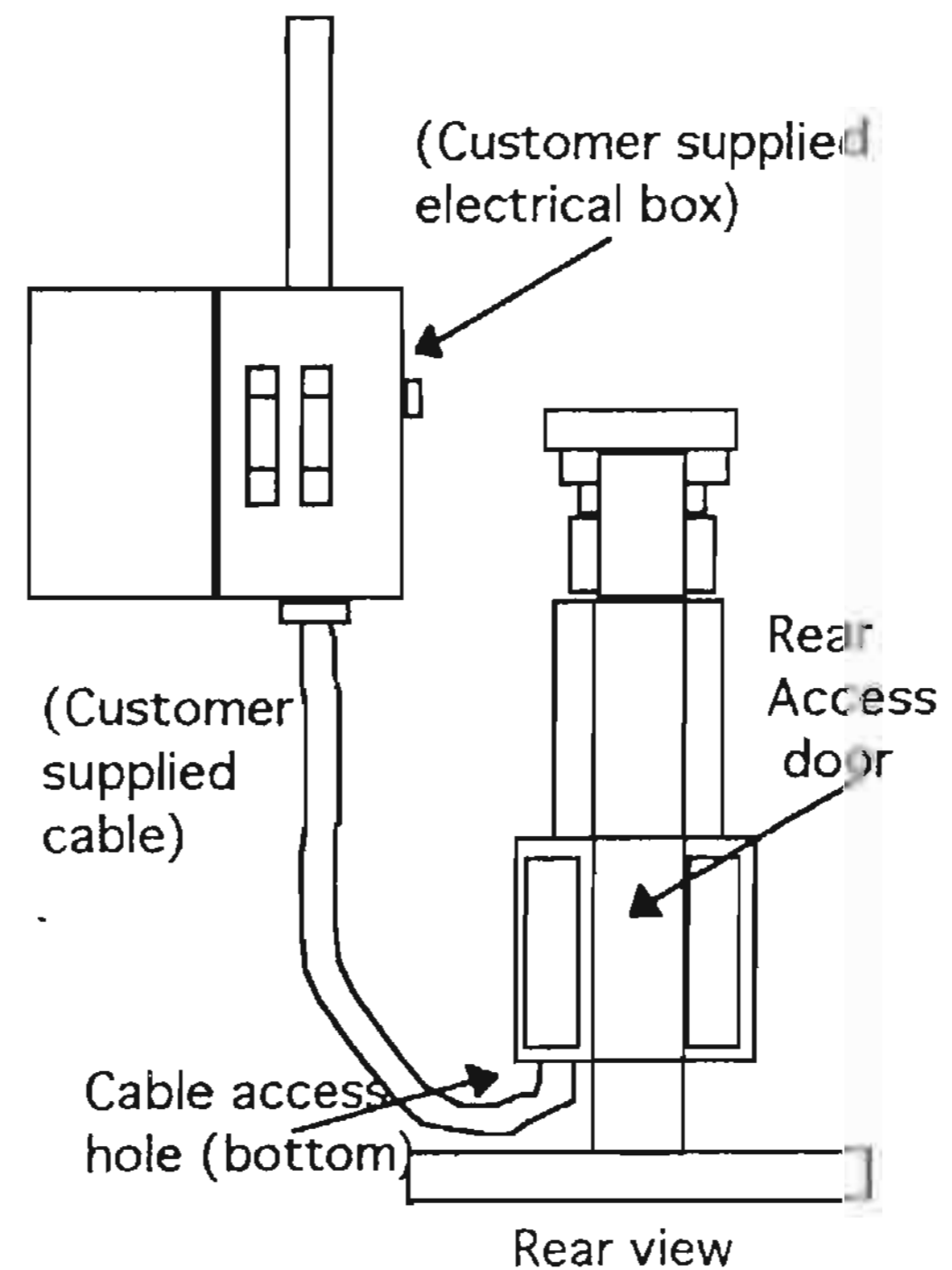


FIG 3-1

### 3.100. SELECTING THE WELDING VOLTAGE TAP

Before operating the unit, the correct operating voltage must be determined and the unit setup for operation with that voltage.

#### SETUP PROCEDURE:

1. Using a test meter, measure the line voltage at the specific location where the welder will be installed. Record here. \_\_\_\_\_ VOLTS
2. Refer to **Table 3-1** to determine the proper voltage tap position to use.
3. Open the access panel on the lower rear of the welder.
4. Refer to **Fig 3-2 & 3-3**. Move the large, black, jumper wire, on top of 4-pole terminal block Tb-2, to the voltage tap position indicated by Step 2.  
**DO NOT MOVE THE COMMON (COM) END OF THE JUMPER!!!**
5. Turn the rotary voltage reference switch, located above 4-pole terminal block Tb-2, to the voltage position indicated by Step 2.
6. Close and secure rear access panel.

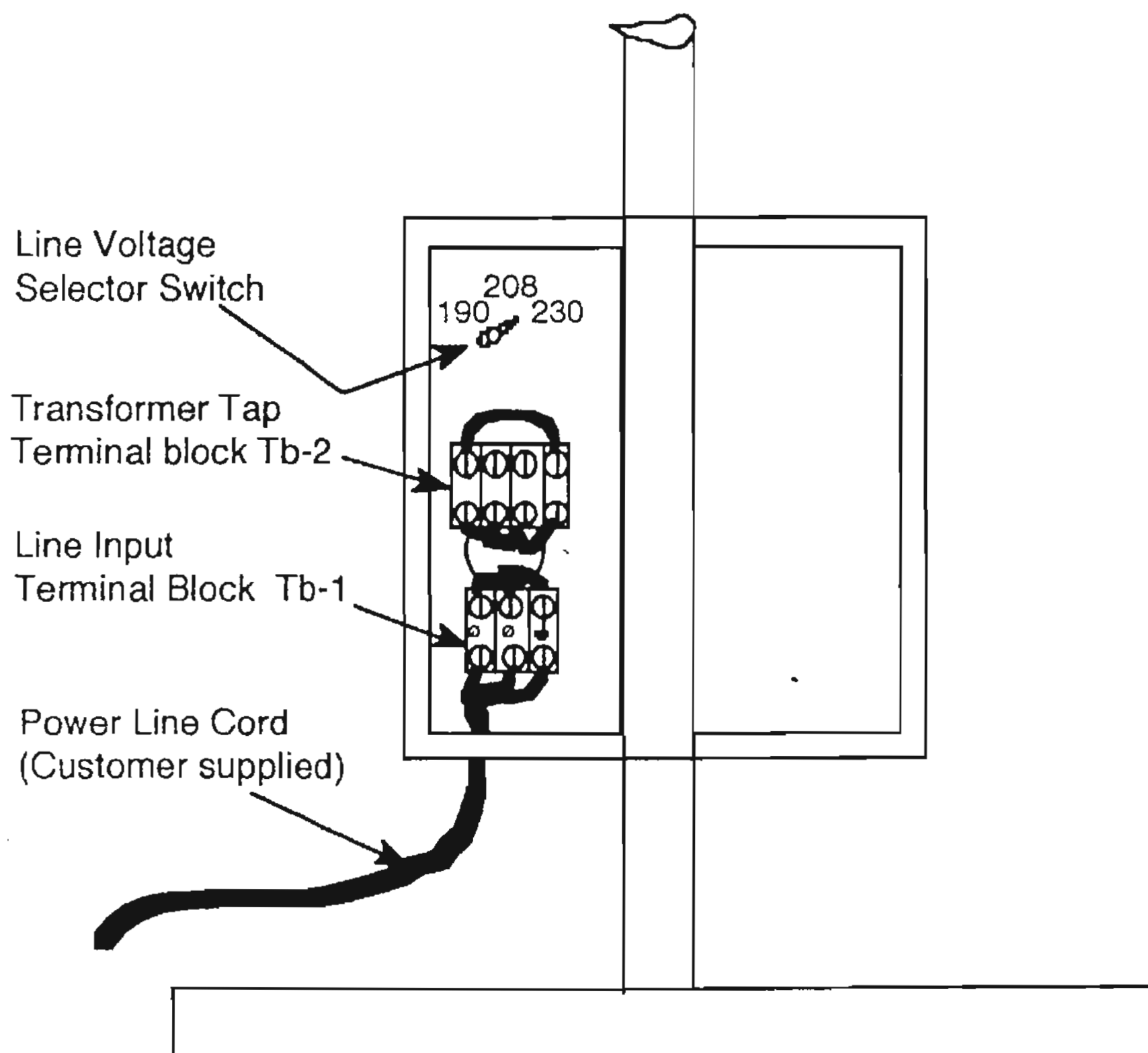


Fig 3-2

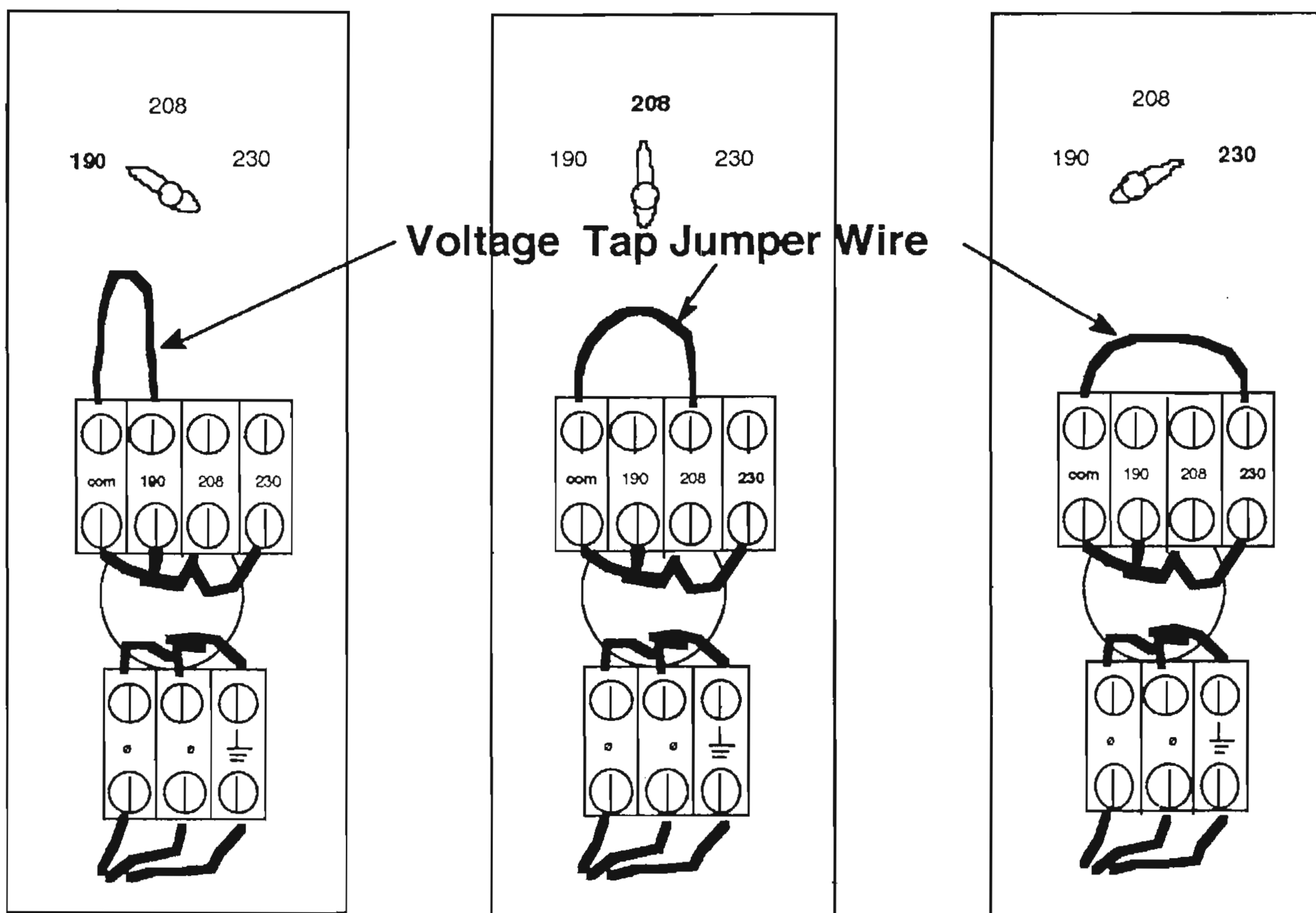
**TABLE 3-1**

VOLTAGE READING	USE THIS TAP	REFERENCE SWITCH
175 - 200 V	190 V	190 V
200 - 220 V	208 V	208 V
220 - 250 V	230 V	230 V

**190 Volt Set Up**

**208 Volt Set Up**

**230 Volt Set Up**



**Fig 3-3**



### 3.130. CONNECTING THE AIR SUPPLY

1. Refer to Section 2.100.2 Air Requirements.
2. Use 1/2" NPT pipe, hose & fittings to connect the air supply to this welder. Smaller sizes will decrease cold air generator performance.
3. Minimum recommended pipe size is 3/8" NPT.
4. The use of 1/4" NPT pipe, hose, fittings or 1/4 NPT quick disconnects is **NOT RECOMMENDED**.

### 3.150. USING THE OPERATOR CONTROL BOX

#### 1. NORMAL / HEAD TEST / MANUAL SWITCH

- a. **NORMAL** This position allows weld current to turn ON, after head cylinder extends downward and stops.
- b. **HEAD TEST** This position disables weld current. It allows the operator to test head operation without welding voltage at the weld tips.
- c. **MANUAL** This position allows use of optional hand held welding gun. It disables the drive and load cylinders.

#### 2. AUTO/ MANUAL SWITCH

- a. **AUTO** This position allows the foot pedal to activate the system.
- b. **MANUAL** This position allows the use of the optional hand held welding gun.

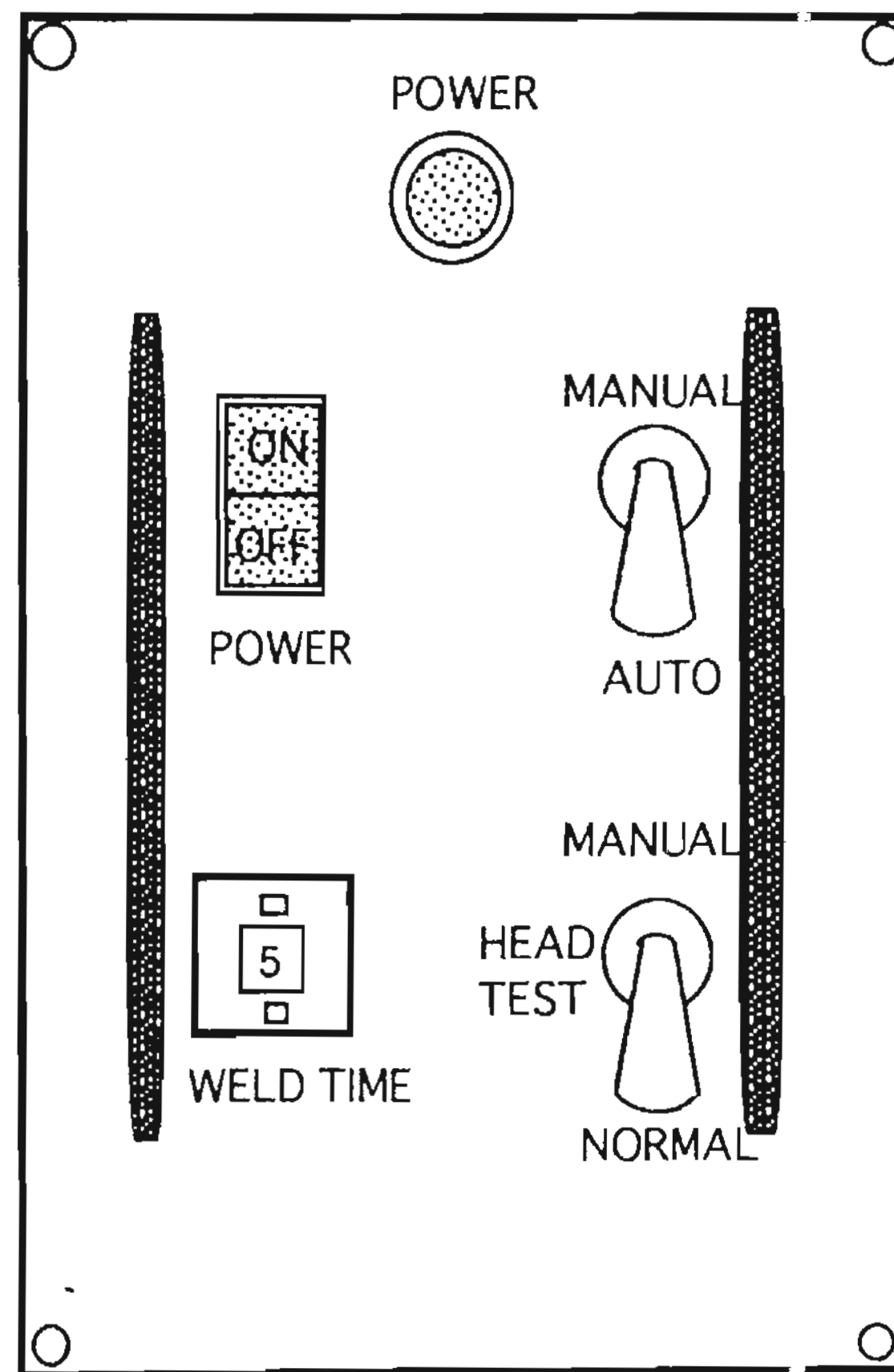


Fig 3-5

#### 3. POWER LAMPS

Two power lamps are mounted, on adjacent sides of this box, as a convenience to the operator.

#### **4. POWER ON/ OFF**

This fifty (50) amp circuit breaker, not switch, provides ON/ OFF control for the entire welding system. NOTE: It is NOT intended as a substitute for a customer supplied fuse, or circuit breaker in the wall service panel box.

#### **5. WELD TIME**

This control provides adjustment for welding to various gages of sheet metal. The numbers, visible in the window, are for reference purposes only and do not correlate to any actual time interval.

#### **3.170. PREPARING TO WELD**

1. Turn air "ON". All air regulators are preset and require no further adjustment.
2. Turn "ON" lower tip cooling. Valve is located below lower weld tip. Pivot door, on right hand side of guard, to gain access to valve.
3. Fill vibrator bowl with weld pins. (Track sensor will turn bowl OFF, automatically, when the proper level is reached.)
4. Turn "ON" power switch/ circuit breaker on the Operator's Control Box. See Section 3.150., for component layout and function.
5. Select "Auto" on the Auto/Manual Toggle Switch.
6. Select "HEAD TEST" on the "Normal/ Head Test/ Manual" toggle switch and depress foot pedal. NOTE: This will NOT cause the machine to weld. It will test cycle the weld head and load a new weld pin onto the upper tip.
7. Return toggle switch to "NORMAL".
8. Set the weld time switch to correspond to the gage of metal being fastened. See Section VI. REFERENCE.
9. Position the sheet metal flat on the lower electrode and press the foot pedal.
10. Make several test welds to insure uniformity and proper machine cycle.

## SECTION IV. COMPONENT DESCRIPTION AND OPERATION

### 4.000. CIRCUIT BOARDS

#### 1. FUNCTION CONTROL BOARD - PCB #1

a. Refer to FIG 4-1. This board, which is located in the left side of the rear control box, provides 24 VDC power and timed output signals to operate the drive and load valves. It also monitors the safety interlock function of the proximity sensor.

b. Fuses used on this board are slow blow 250 V series.

Fuse Legend	Mfr's no.	Gripnail p/n#
F1 - 1/4 AMP SLOW	3 AG (313)	#51038
F2 - 1/4 AMP SLOW	" "	"
F3 - 1 AMP SLOW	" "	#51039
F4 - 1 AMP SLOW	" "	"

c. Refer to Troubleshooting for removal and replacement procedures.

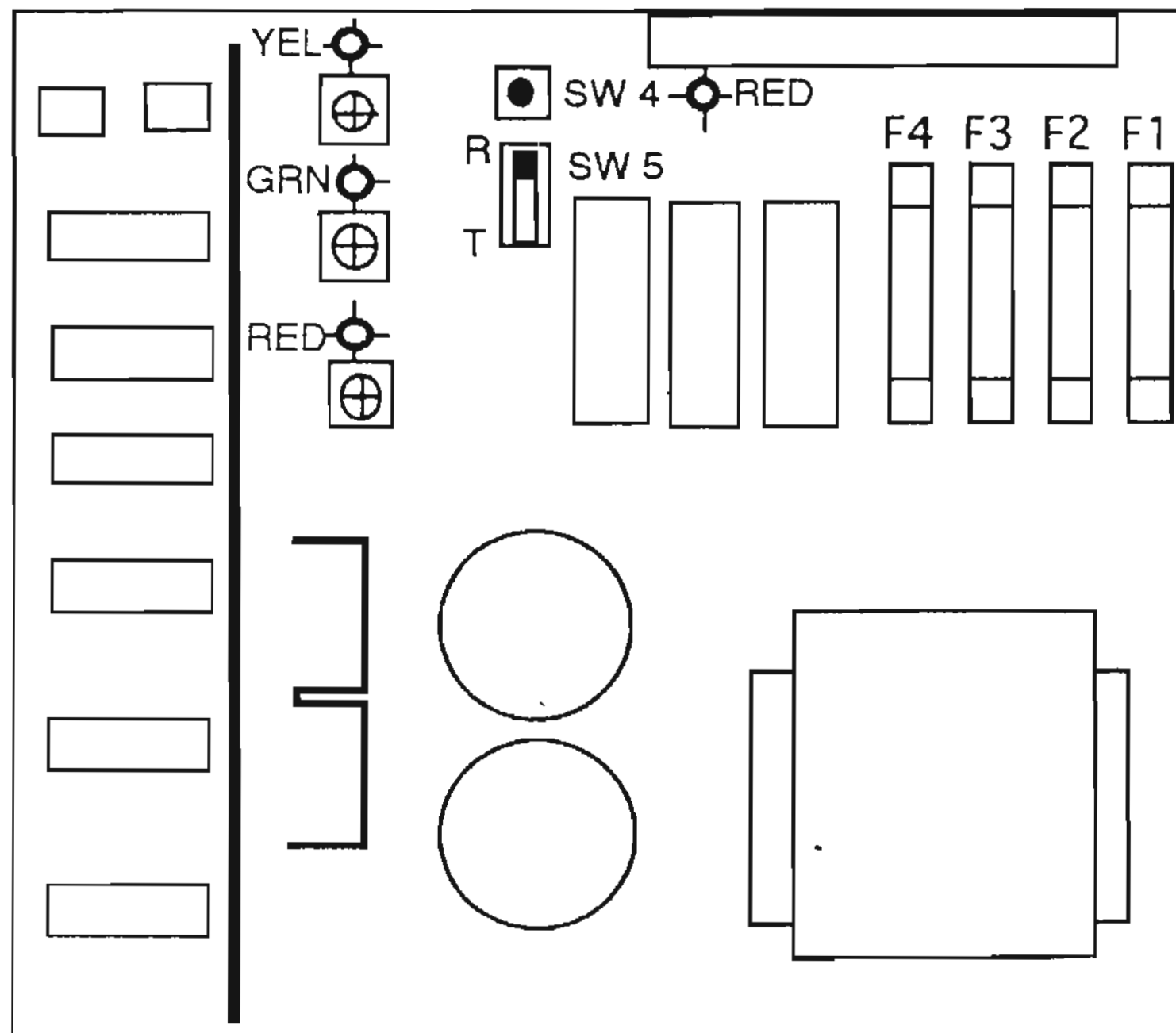


FIG 4-1

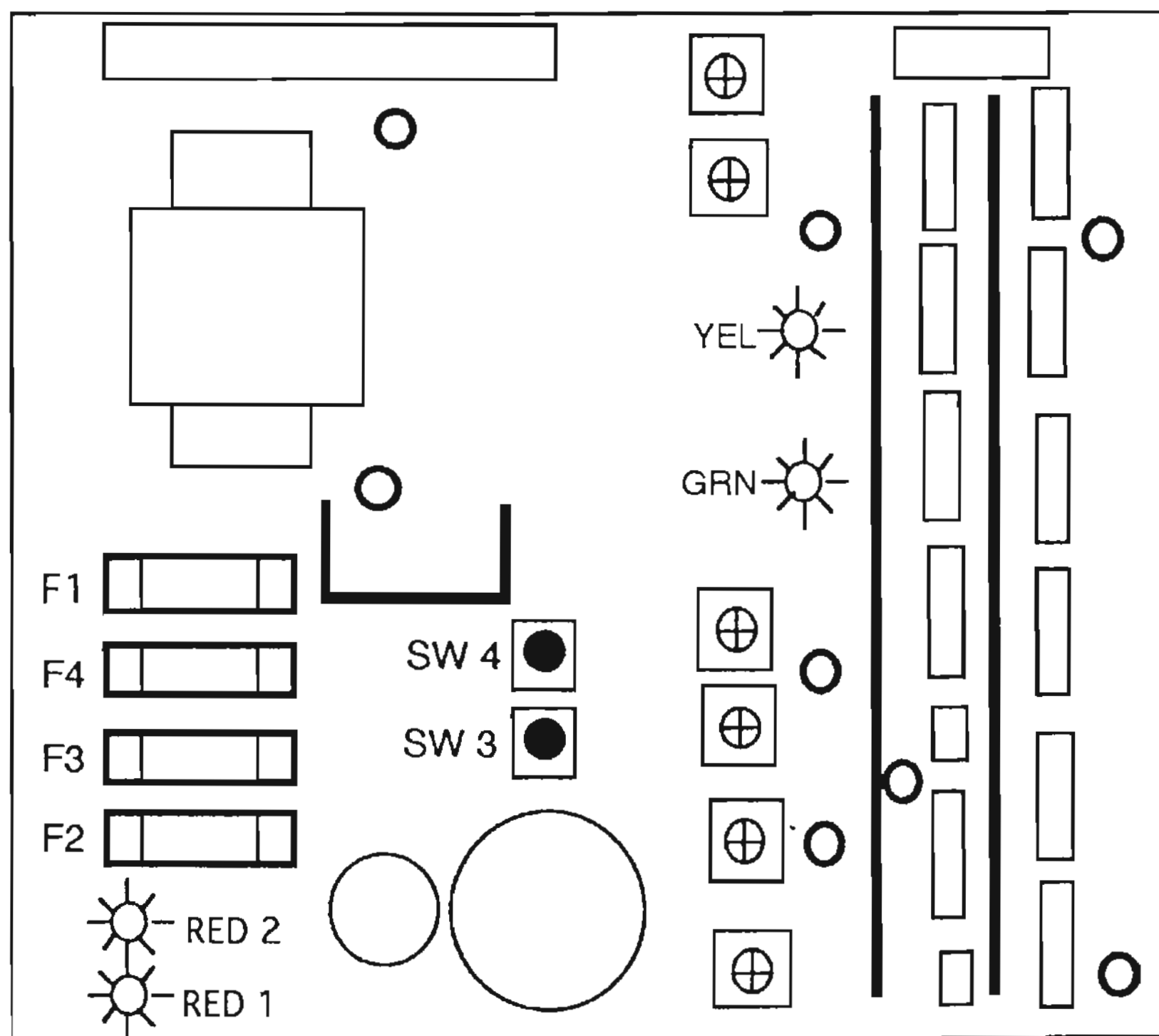
**4.000. CIRCUIT BOARDS, cont.**

**2. WELD CONTROL BOARD - PCB #2**

- a. Refer to FIG 4-2. This board, which is located in the right side of the rear control box, provides all weld initiation, timing, control and incoming line voltage monitoring.
- b. Fuses used on this board are slow and fast blow 250 V series. DO NOT MIX.

Fuse Legend	Mfr's no.	Gripnail p/n#
F1 - 1 AMP SLOW	3 AG (#313)	#51039
F2 - 1 AMP SLOW	" "	"
F3 - 2 AMP FAST	3 AG (#312)	#51085
F4 - 2 AMP FAST	" "	"

- c. Refer to Troubleshooting for removal and replacement procedures.



**FIG 4-2**



#### 4.000. CIRCUIT BOARDS, cont.

##### 3. POWER CONTROL and SNUBBER BOARD - PCB #3

- a. This board provides primary AC power distribution to the control circuitry. It filters high voltage transients (spikes) during the weld cycle. It has no user serviceable components.
- b. AC and DC relay versions of this board are used. Both are completely interchangeable.
- c. Refer to Troubleshooting for removal and replacement procedures.

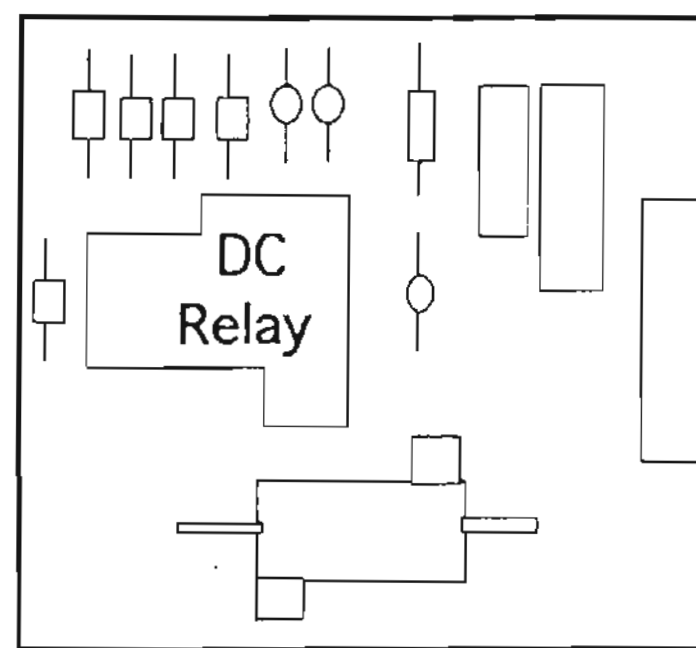
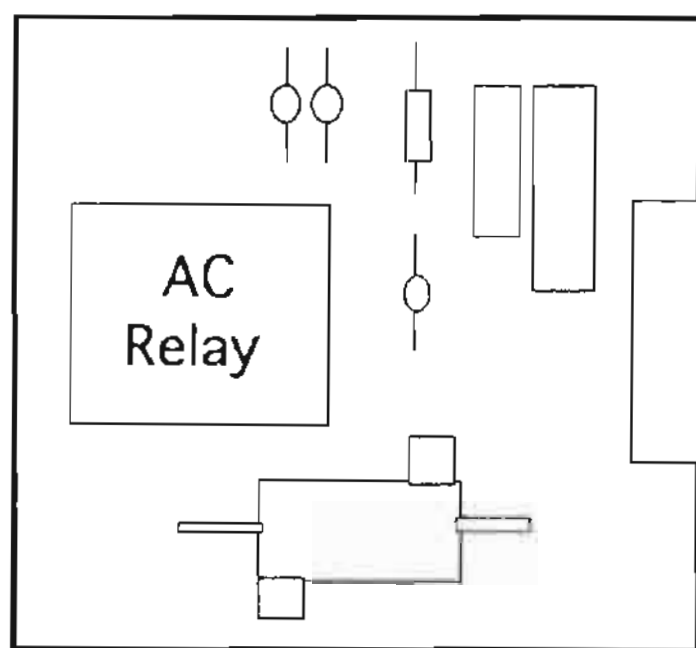


Fig 4-3

#### 4.050. WELD TIPS

1. The upper weld tip is manufactured of RWMA Class #3 copper. It is threaded and quickly replaced without disassembling the upper magnetic tip holder.
2. The lower weld tip is a quick change, double sided design for long life. It is also manufactured of RWMA Class #3 copper.

#### 4.100. WELD POWER CONTROL UNIT

The weld power control is mounted on the rear frame upright, at operator's left and within the transformer box. This solid state device controls the current supplied to the primary side of the welding transformer.

#### 4.150. CIRCUIT BREAKER

A fifty amp circuit breaker, mounted within the operator's control box, provides ON/ OFF control for the welding voltage. This component is not intended as a substitute for a customer supplied fuse, or circuit breaker in the wall service panel box.

#### 4.200. PORT SENSORS

1. Two port sensors are used on the Model 7000 welder. They send signals to initiate the weld and load cycles. See Fig 4-4.
2. Both are installed in the output ports of the DRIVE VALVE. They are provided with quick change, in line plugs and are fully interchangeable.
3. The weld initiate sensor is installed in the NORMALLY OPEN (B) valve port.
4. The load sensor is installed the NORMALLY CLOSED (A) valve port.

#### 4.250. PROXIMITY SENSOR

1. A 24 VDC proximity sensor with LED indicator is used to sense the retracted position of the loading V-block. The sensor acts as an electrical interlock to prevent accidental operation of the main welding cylinder whenever the loading operation is in process.
2. A clearance gap of 1/16" - 1/8" is provided to sense properly. Physical contact must be avoided between the sensor and the V-block. The LED will glow BRIGHTLY to indicate the sensor and V-block are adjusted and operational.

IMPORTANT NOTE: All Model 7000 welders use one of two basic sizes of proximity sensor. All units have provision for 12 mm and 18 mm sensors, except for early units that use only 18 mm. Sensors may be used interchangeably and require no cable change.

3. 12 mm & 18 mm sensors, **WITH 4 QUADRANT LED** indicators, have 2 operating modes.
  - a. Whenever power is ON, and the sensor is NOT ACTIVATED, the red LED will be DIM.
  - b. When ACTIVATED by the V-block, the sensor's red LED will be BRIGHT.
4. 18 mm sensors **WITH SINGLE (1) LED** indicator, have one operating mode.
  - a. Whenever power is ON, and the sensor is NOT ACTIVATED by the V-block, there will be no red LED light visible.
  - b. When ACTIVATED by the V-block, the sensor's red LED will be BRIGHT.

#### 4.300. FOOT PEDAL PRESSURE SWITCH

1. The foot pedal is used to initiate the machine cycle. The foot pedal actuates a pressure switch located next to PCB #1 in the rear control box.
2. A signal pressure of 10 PSI, activates this switch to start the machine cycle. The pressure regulator is preadjusted to 15 PSI, with a maximum range of 25 PSI.

#### 4.320. TRACK LEVEL PRESSURE SWITCH

1. An air stream, directed across the track, is blocked by the fastener caps when the track is full. As fasteners are used, pressure is restored to the output sensor. This supplies a signal to a pressure switch which turns ON the vibrator unit.
2. This pressure switch is located inside the rear control box on the front panel. It operates the vibrator bowl unit, automatically, as fasteners are used. It is signaled by low pressure air coming from the output track sensor.

#### 4.350. DRIVE AND LOAD VALVES

1. Both DRIVE and LOAD VALVES are 24 VDC. They have interchangeable electric coils. Each coil contains a recessed, white button which, when depressed, operates as a manual override to test valve/ cylinder function. Electrical power does NOT have to be present to operate this override feature.
2. IMPORTANT! When using manual override to test the **DRIVE VALVE**, visually check the position of load cylinder and V-block to insure they are fully retracted. Damage to the LOAD CYLINDER may occur if struck by the DRIVE CYLINDER. The override defeats the safety interlock function of the proximity sensor.

#### 4.400. DRIVE AND LOAD CYLINDERS

1. The DRIVE CYLINDER is a 5" stroke , 1.5" bore pneumatic cylinder. This cylinder has been specially designed by Gripnail to be repairable. In addition, a special composite bearing is used to resist the highly abrasive properties of the fiberglass environment and provide long life.
2. The LOAD CYLINDER is a standard, 2" stroke, 3/4" bore cylinder with a hexagon shaft. NOTE: Round shaft replacement cylinders are NOT RECOMMENDED due to their erratic loading characteristics, lateral instability and should be avoided.

#### 4.450. PRESSURE REGULATORS / FILTER / LUBRICATOR

Refer to **Section VI. REFERENCE** for pressure adjustments.

##### 1. MAIN REGULATOR / FILTER

- a. A main regulator/ filter unit, containing a water trap, is used to clean the incoming air supply as it enters at the rear of the welder. It utilizes a 10 micron washable/ replaceable filter element.
- b. The operating pressure range is 0-125 PSI. It has a maximum line pressure rating of 250 PSI.

**NOTE:** REFER TO FIG 4-4

##### 2. LOAD REGULATOR

The load regulator is located in the multi-regulator assembly, at the Operator's lower left hand position. It provides a constant pressure to consistently operate the load cylinder during each reloading cycle. The gage has an operating range of 0-160 psi.

##### 3. FOOT PEDAL REGULATOR

The foot pedal regulator is located in the multi-regulator assembly, at the Operator's lower right hand position. It provides a constant pressure to operate the foot pedal pressure switch, assembled on PCB#1, when the pedal is depressed. The gage has an operating range of 0-30 psi.

##### 4. DRIVE REGULATOR

The drive regulator is located in the upper middle section of the multi-regulator assembly. It provides a constant pressure to operate the welding cylinder. The gage has an operating range of 0-160 psi.

##### 5. LUBRICATOR

The lubricator contains a heavy duty zinc bowl which holds approximately 5 ounces of oil. A light weight (10W), non-detergent oil is recommended. The flow rate should be adjusted to approximately one drop for every 50 to 100 machine cycles.

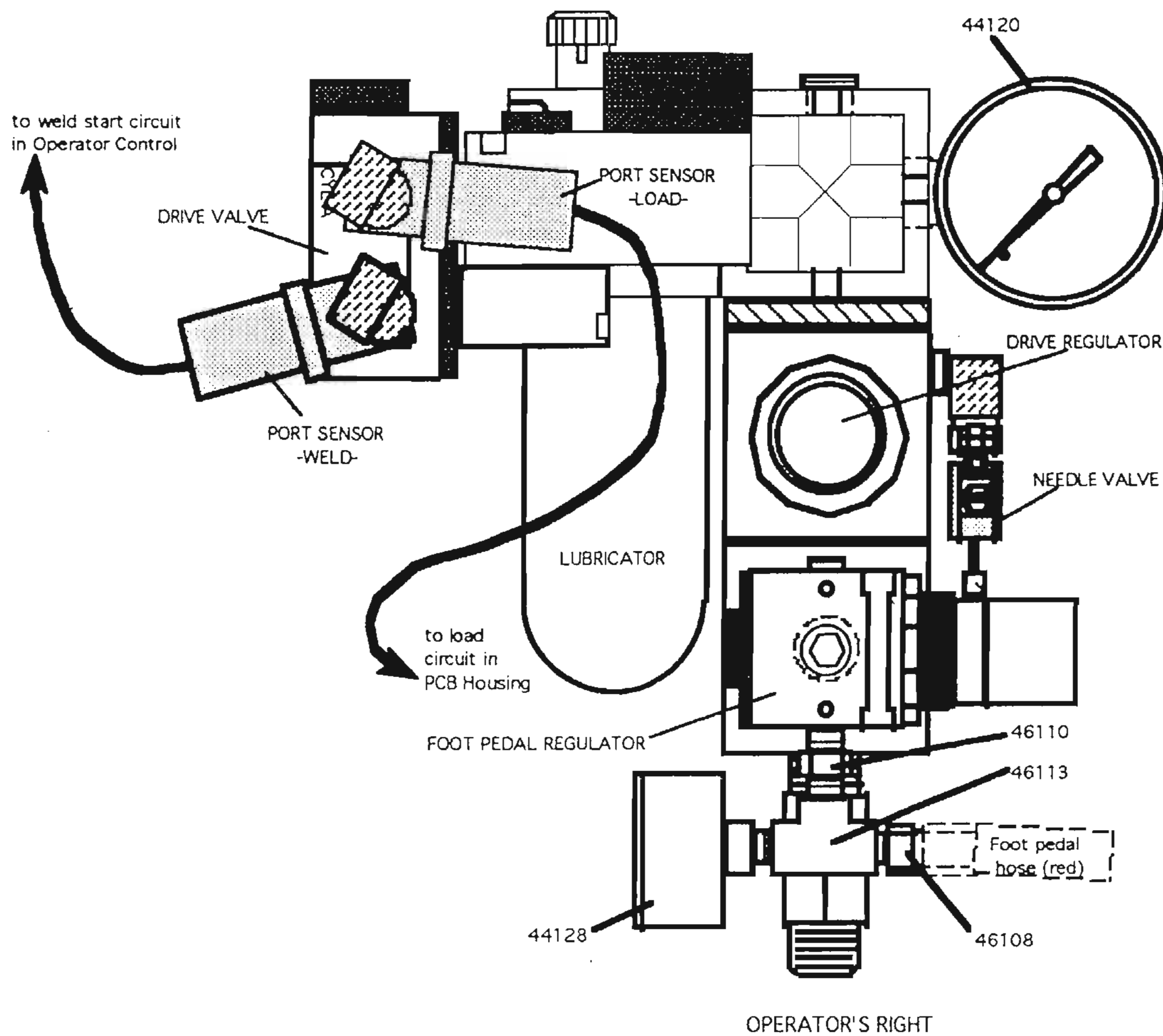


FIG 4-4

#### 4.500. VORTEX GENERATOR (COLD AIR)

1. A vortex generator is mounted on the underside of the frame which supports the lower buss bar. It produces cold air to cool the lower weld tip.
2. The generator uses only compressed air, has no moving parts to wear out and is maintenance free. It is operated by a small, 1/4 turn, ball valve. The valve is accessed through an opening in the guard, on the Operator's right.
3. NOTE! During certain conditions of temperature and humidity, condensation and/ or frost may form on the lower weld tip. This is normal and does not effect the serviceability of either the lower weld tip or the welder.

## **SECTION V. TROUBLESHOOTING**

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## 7000-7001 Welders Problems & Solutions

Problem. **Drive cylinder will not operate when foot pedal is depressed.**

### Possible Solutions

1. **Switches in wrong position**-Control panel toggle switches should be in the down position. Turn power off for 30 seconds, and then turn power on.
2. **Proximity sensor**- Check for damage from V block striking it, if damaged, replace. Check to see if light on V block sensor is on, If not adjust closer to V block.
3. **V Block movement**-If too much play is in load cylinder shaft, check jam nut on V block, If lose tighten. If not. Replace load cylinder.
4. **Air adjustments**-Make sure all gauges are good, when regulators are turned down, gauge should go to 0.lbs. If not replace. Regulator pressures are, Main 80 lbs, Drive 65 lbs, Low pressure foot pedal 15 lbs, Load 45-50 lbs.
5. **Power supply**- check for amber lights on control boxes, if lights are on machine is getting both 110v & 220v single phase. If not, check all incoming power & fuses.
6. **Port sensors**-Top sensor is for LOAD, Bottom is for WELD. Best way to check sensors is to disconnect air to machine. Switch top & bottom sensor locations at both ends and shut power off for 30 seconds then turn power back on. If machine runs replace both sensors ASAP or problem will recur. Cut cords on old sensors then discard so sensors can't be used again.

Problem. **No weld**

### Possible solutions

1. **Switches in wrong position**- Control panel toggle switches should be in down position. Turn power off for 30 seconds, and then turn power on.
2. **Weld tips**- Check upper & lower tips, to see if they are warn, dirty, or loose. Clean, tighten or replace.
3. **Weld cable is worn out & hot to the touch**- Check each end of weld cable by turning cable connectors and disconnecting cable assembly. Knock out plastic pins & slide sleeve back. If cable wire looks loose, broken, or burnt, Replace.
4. **Port sensors**- Top sensor is for LOAD, Bottom is for WELD. Best way to check sensors is to disconnect air to machine. Switch top &

bottom sensor locations at both ends and shut power off for 30 seconds then turn power back on. If machine runs replace both sensors ASAP or problem will recur. Cut cords on old sensors then discard so sensors can't be used again.

5. **Jumper & switch are not set correctly**- Check incoming 220v single phase power with meter. Set jumper & switch in lower transformer cabinet to correct voltage. (190, 208, 230).
6. **Bad weld board**- After checking port sensors, Look at weld board in top rear box, Operators right hand side. There should be a yellow then a red light that flashes on the board. If not, check for loose connections. If there is none replace board.

#### Problem. **Loading problems**

##### Possible Solutions

1. **Mechanical interference**- Check load cylinder by pulling out V block by hand & let go, Pin should be in the center of upper tip. V block should not contact track, but should return smartly with spring tension. Adjust track or replace load cylinder.
2. **Low air to load cylinder**- Check gauge to see if it goes to 0. If it does set between 45-50 lbs. If not, replace gauge
3. **Load cylinder out of adjustment**- Pull out cylinder by hand, it should place pin on center of upper tip. If not, loosen two mounting cap screws & adjust cylinder.
4. **Port sensors**- Top sensor is for LOAD, Bottom is for WELD. Best way to check sensors is to disconnect air to machine. Switch top & bottom sensor locations at both ends and shut power off for 30 seconds then turn power back on. If machine runs replace both sensors ASAP or problem will recur. Cut cords on old sensors then discard so sensors can't be used again.



## MODEL RW 7000/7001 – REPLACEMENT PARTS LIST

<u>PART#</u>	<u>DESCRIPTION</u>	<u>PART#</u>	<u>DESCRIPTION</u>
<b><u>Upper Weld Assembly Parts</u></b>		<b><u>Regulators and Gauges</u></b>	
20346	Upper Tip Holder (w/magnet)	40206	Main Regulator
20419	Rod Guide Assembly	44101	Needle Valve
31010	Upper Tip Holder	44117	Load Gauge
31008	Insulator Block (Old Style)	44120	Drive Gauge
31009	Upper Tip Adapter	44128	Low pressure gauge (foot pedal)
31011	Upper Weld Tip	20280	Watts Regulator Stack Assy.
31012	Upper Tip Spanner Wrench	44201	Drive Regulator
31014	Guide Rod, Fiberglass	44202	Foot Pedal Regulator
31050	Rod Guide, 1"	44203	Load Pedal Regulator
31051	Insulator Block with Nut & Lock Washer	42227	O-Ring (Between Air Components)
31052	Upper Tip Adapter	42238	O-Ring (Between Air Components)
31053	Guide Rod, Fiberglass	46103	Universal Elbow
31059	Guide Rod Adapter	46105	Barb Fitting ¼":
<b><u>Lower Weld Assembly Parts</u></b>		<b><u>Foot Pedal Parts</u></b>	
31032	Lower Weld Tip	20237	Foot Pedal Assembly
31058	Electrode Nut (7000 Cooling)	20275	Pedal Hose Assembly
31277	Cooling Stem (7000)	51111	Pedal Pressure Switch
31278	Electrode Nut (7001 Not- Cooling)	60504	Screw #6-32 x ½"
31057	Stem (7001)	48014	Tubing, 1/8 PVC
<b><u>Load Cylinder Assembly Parts</u></b>		<b><u>Track Parts</u></b>	
20300	Load Restrictor	20271	Track Assembly
30734	V-Block	20281	Track Pressure Switch
31038	Front Guard	20131	Escapement Assembly
44113	Load Cylinder	30199	Nail Stop Blade
44223	Load Valve (12VDC-2.5W)	30110	Input Sensor
51147	Proximity Sensor 12mm	30111	Output Sensor
62202	Jam Nut ¼-28	31099-6	Spacer .312
<b><u>Drive Cylinder Assembly Parts</u></b>		46105	Barb Fitting ¼"
20288	Restricting Muffler	48026	Tubing, white ¼"
20291	Port Sensor Assembly	46160	Barb Fitting 1/8"
20312	Straight Restrictor Adapter Assy.	48014	Tubing, 1/8" PVC
20313	Long Elbow Restrictor Assy.	60116	Screw #10-32 x 1"
20285	Straight Restrictor Adapter	60105	Screw #10-32 x ½"
20286	Long Elbow Restrictor	60103	Screw #6-32 x 1"
31005	Cylinder Spacer Block (tapped)	<b><u>Weld Cable/ Components</u></b>	
31049	Cylinder Spacer Block (plain)	20408	Weld Cable Assembly
40222	Cylinder Foot Bracket	50081	Cam Lock Connector, Male
44267	Drive Cylinder	50098	Cam Lock Angle Connector
44269	Spring Clip Port Sensor	50121	Cable AWG 4/0 x 32"
44222	Drive Valve (12VDC-2.5W)	51135	Cam Lock Connector, Female
51127	Banjo socket ¼ NPT	<b><u>Boards and Switches</u></b>	
62201	Jam Nut 7/16-20	20278	Weld Pushwheel Switch Assy.
		20602	Weld Control Board PCB #2
		20603	Power Control & Snubber PCB #3 (in transformer cabinet)
		20604	RW Function Control Board PCB #1
		50056	Fuse 5AMP
		51101	AC Triac Switch 100A
		51104	On/Off Breaker Switch

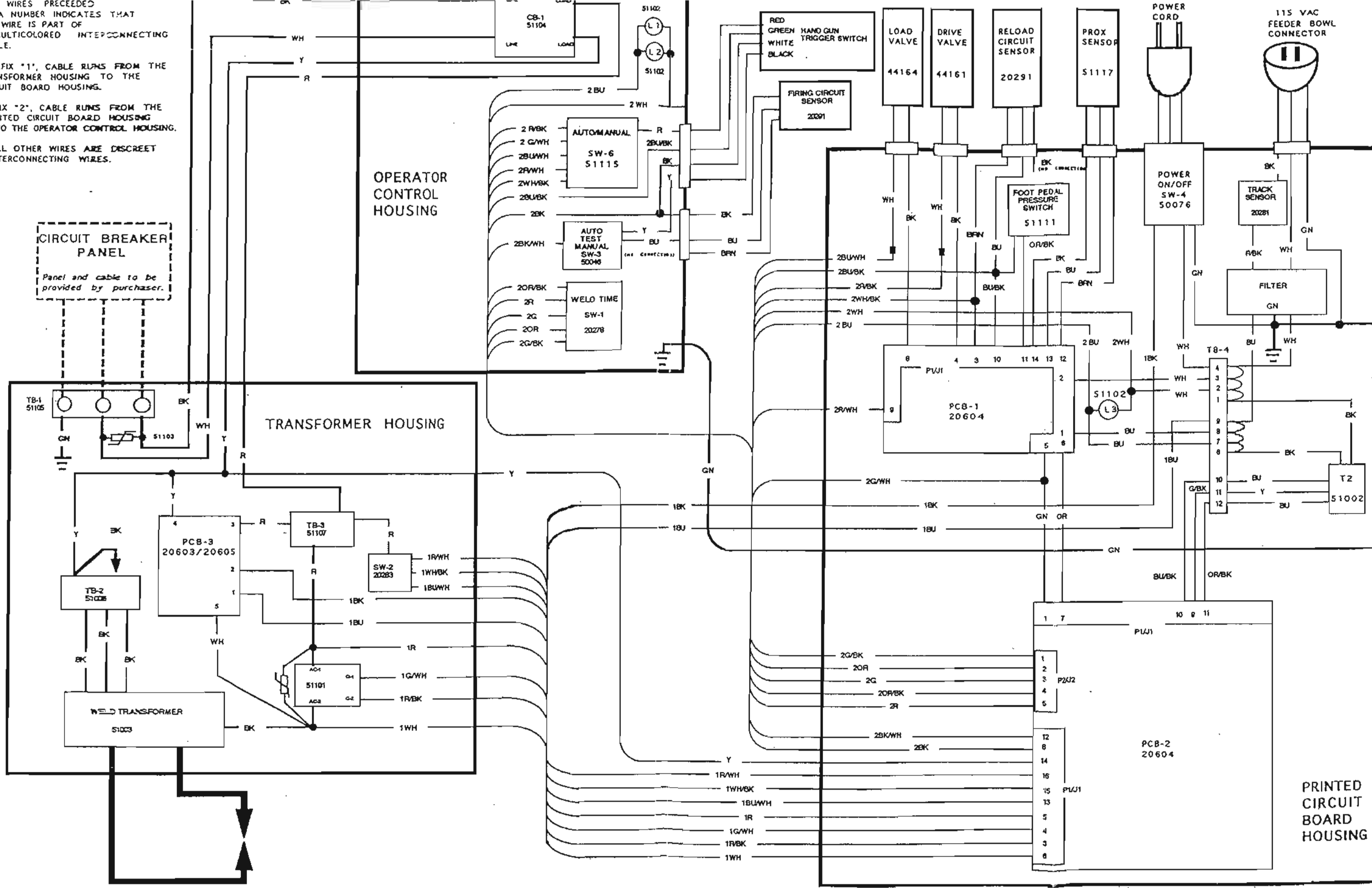
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NOTES: \* WIRES PRECEDED BY A NUMBER INDICATES THAT THE WIRE IS PART OF A MULTICOLORED INTERCONNECTING CABLE.

PREFIX "1", CABLE RUNS FROM THE TRANSFORMER HOUSING TO THE CIRCUIT BOARD HOUSING.

PREFIX "2", CABLE RUNS FROM THE PRINTED CIRCUIT BOARD HOUSING TO THE OPERATOR CONTROL HOUSING.

\* ALL OTHER WIRES ARE DISCREET INTERCONNECTING WIRES.



Dwg #50512 B, RW-7000 Simplified Wiring Diagram

## 5.300. TROUBLESHOOTING NOTES AND PROCEDURES

### 5.310. FUSE REPLACEMENT - Power Entry Module (Rear Control Box) See Fig 3-4.

1. Disconnect ALL electrical power before proceeding.
2. Pull 120 volt supply cord from socket of power entry module.
3. Carefully insert a small, straight blade screwdriver as shown below.
4. With a twisting motion, carefully pry cover free to remove fuse holder.
5. Gently pull on locking tab to release fuse carrier.
6. Slide the carrier out to access fuses.
7. Replace fuses with same type, voltage and amp ratings. (5A, 250 volt)
8. Return carrier to holder, then push into fuse compartment until flush.
9. Restore electrical power.

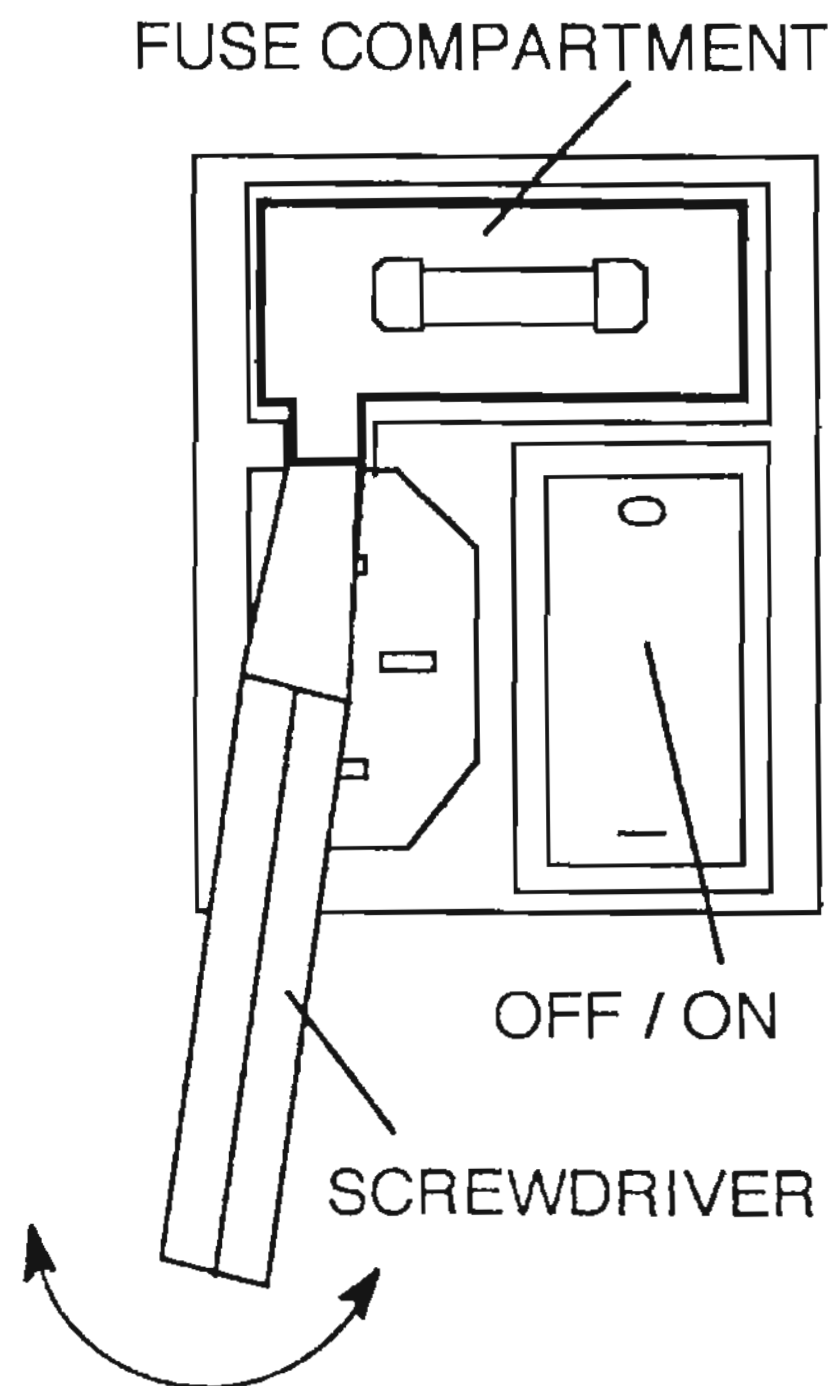


Fig 5-4

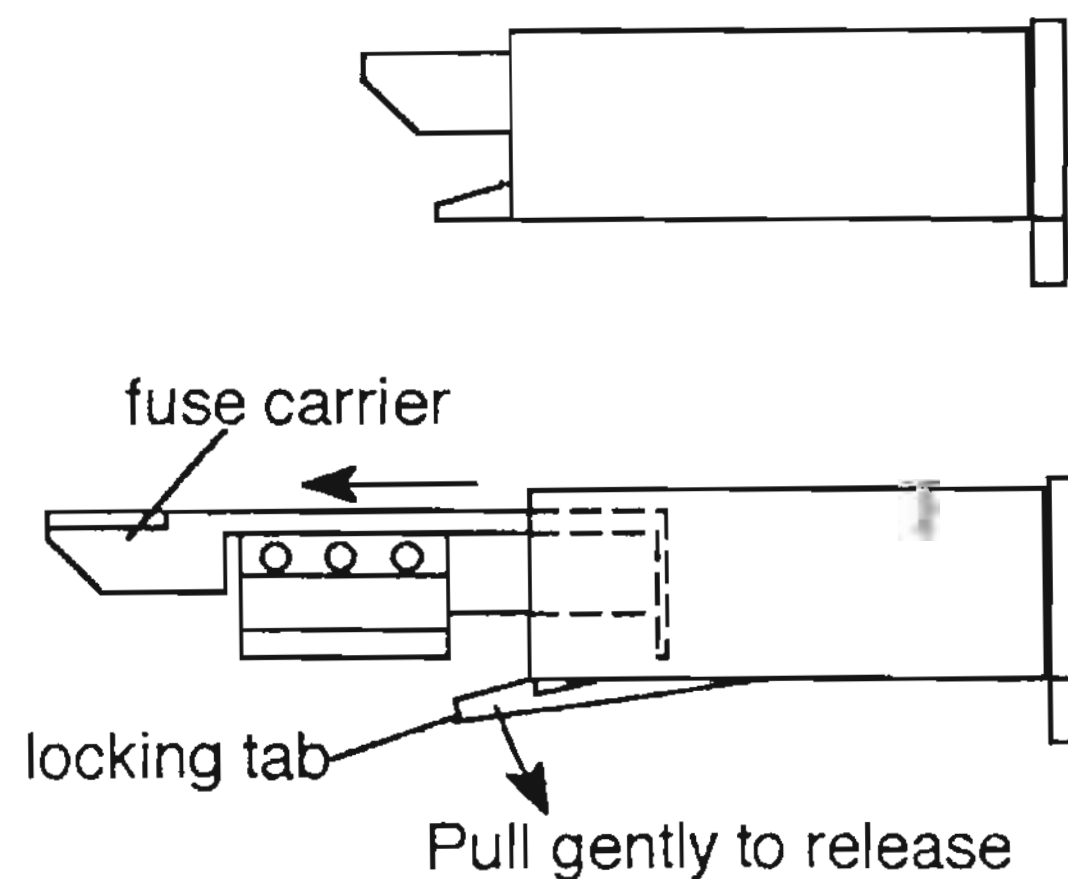


Fig 5-5

## 5.300. TROUBLESHOOTING NOTES AND PROCEDURES, cont.

### 5.320. VIBRATOR BOWL

#### 1. DOES NOT OPERATE

Before proceeding, connect vibrator's short cord to an ordinary extension cord.

a. If vibrator operates normally, reconnect to machine.

1. See Section 5.330., Cleaning Track Sensor.
2. Check tubing/ connections on track's output sensor (right hand).
3. Open needle valve 1/4 turn. (Located behind multi-regulator unit)

b. If vibrator still does NOT operate;

1. Disconnect power cord.
2. Examine power cord, plug, fuse, switch, speed control. Remove outer housing and check all internal wiring connections.
3. Reassemble unit completely before testing.

#### 2. OPERATES CONTINUOUSLY

- a. Output sensor has become clogged, trapping air pressure in the signal line to the track level switch.
- b. Remove air fitting from output sensor on right side of track and the vibrator should stop immediately. See Section 5.330., Cleaning Track Sensor.
- c. If unit continues to run, replace track level pressure switch.

#### 3. UNIT IS SLOW or NOISY

- a. Tighten center bolt in feeder bowl.
- b. Check rubber isolators. They should be soft and pliable, otherwise replace.
- c. An internal spring or mount may be loose or damaged.
- d. **Avoid complications.** Please consult the factory before proceeding.

## GRIPNAIL MODEL 7000 AUTOMATIC PIN WELDER

### 5.300. TROUBLESHOOTING NOTES AND PROCEDURES, cont.

#### 5.350. WELD POWER CONTROL MODULE

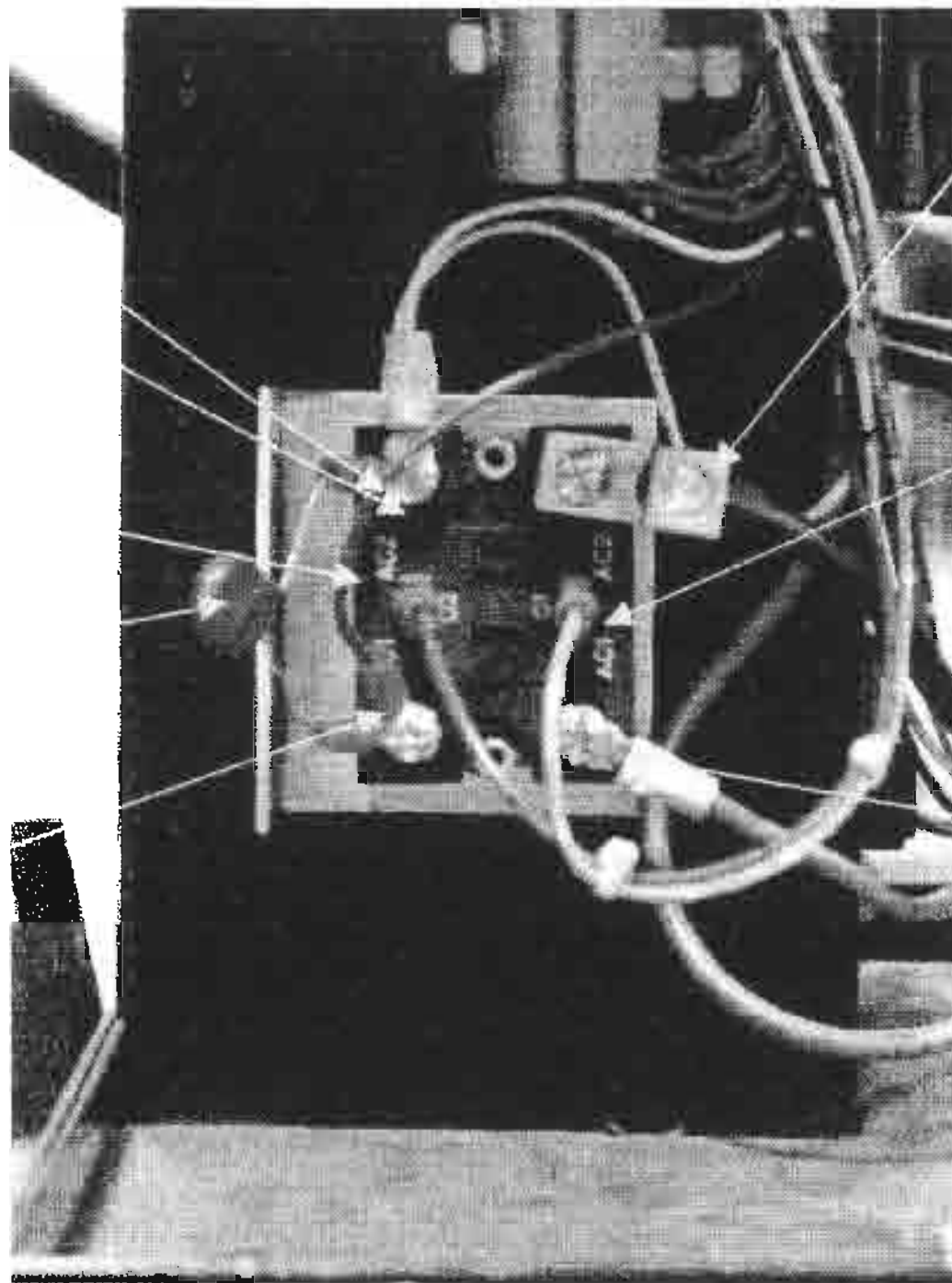
1. Continued from CHART #2—Circuit breaker trips repeatedly.
2. SAFETY FIRST! With the power from the wall panel turned OFF, use a test meter to verify that NO voltage exists at the Welder.
3. Locate the weld control module shown below. It is in the transformer box, mounted on the operator's left side of rear upright.

AC2  
1WH  
50027  
WHITE FROM PC-3  
50027

G2  
1RED/BLACK  
50096

MOV-1  
51103

AC1  
1RED  
50027



AC2  
BLACK FROM XFMR1  
51137

G1  
1GREEN/WHITE  
50096

AC1  
RED#10 FROM TB-3  
50089

Figure 5-7

4. Remove two (2) color coded wires, RED with BLACK tracer and GREEN with WHITE tracer. Quick connect tabs are attached to each.
5. Restore all electrical power.
6. Turn Operator Control Breaker ON and depress foot pedal.
  - a. If a weld occurs OR the Operator Control Breaker trips, See 5.340, Power Control and Snubber Board.
  - b. If neither occurs, nor the breaker trips, REPLACE weld control circuit board PCB#2. See Removal & Replacement Section 5.360.

## 5.300. TROUBLESHOOTING NOTES AND PROCEDURES, cont.

### 5.360. CIRCUIT BOARD REMOVAL AND REPLACEMENT

**SAFETY FIRST!** With the power from wall panel turned OFF, use a test meter to verify that NO voltage exists at the welder.

**NOTE:** These instructions apply to all three (3) circuit boards.

#### TO REMOVE:

1. Locate the wiring header/ plug along the top edge of the printed circuit board.
2. With a small screwdriver, completely loosen the end retaining screws on the wiring plug. NOTE: The Weld Control Board, PCB #2, has 2 plugs.
3. Carefully pull on the plug, using a rocking action, to disconnect from the board.
4. Locate the circuit board removal tool, shown below, in the rear control box.



**Fig 5-8**

5. Push over one of the nylon standoffs, which support the circuit board, until it contacts the board surface. This will temporarily collapse the locking tab.
6. With the tool in place, carefully pull the board from the standoff. Repeat the process with the remaining standoffs.

#### TO REPLACE:

7. Carefully align board over standoffs and push to engage each locking tab.
8. Attach wiring plug(s) and carefully tighten retaining screws.

## 5.300. TROUBLESHOOTING NOTES AND PROCEDURES, cont.

### 5.370. CHANGING WELD TIPS

**NOTE:** The weld tips are designed for quick & easy replacement. Please read the instructions below. A spanner wrench is provided for the upper tip.

#### 1. UPPER WELD TIP

- a. Turn OFF all electrical power before proceeding.
- b. Locate the spanner wrench which is stored by the lubricator on top of welder.
- c. Insert the wrench pin into one of the holes in the upper tip.
- d. Turn counterclockwise to loosen, then unscrew the upper weld tip from it's magnetic holder.
- e. Install new tip by reversing the above steps.

#### 2. LOWER WELD TIP

- a. Turn OFF all electrical power before proceeding.
- b. With a large open end wrench, loosen retaining nut approximately 1/2 turn.
- c. Slide lower tip out of nut , flip over, then reinsert into retaining nut.
- d. Tighten nut until snug.

**NOTE:** EACH SIDE OF THE LOWER WELD TIP MAY BE REDRESSED WITH A COARSE FLAT FILE FROM ABOUT 10 - 15 TIMES BEFORE ACTUAL REPLACEMENT IS REQUIRED.





## SECTION VI. REFERENCE Pressure and Weld Adjustments

1. The following air pressure adjustments are factory preset and require **no** further changes. They are provided here for reference only.

<b>AIR REGULATORS:</b>	<b>Main</b>	<b>Drive</b>	<b>Load</b>	<b>Foot Pedal</b>
	<b>80 psi</b>	<b>65 psi</b>	<b>50 psi</b>	<b>15 psi</b>

2. The following weld settings are approximate and are for reference only. They represent adjustments which provide the best welds obtained using a variety of metal brands under different conditions. The user may adjust to suit.

### **WELD SETTINGS:**

<b>METAL GAGE</b>	<b>26</b>	<b>24</b>	<b>22,20</b>	<b>18,16</b>
<b>WELD TIME</b>	<b>3,4</b>	<b>4,5</b>	<b>5,6</b>	<b>6</b>