



PARASITIC ENGINEERING

POWER SUPPLY KIT

### Parts List

- 1 ea. 3729 transformer
- 1 ea. 3 ufd. @ 440 VAC capacitor
- 1 ea. MDA-990-1 rectifier bridge
- 1 ea. VS-148 rectifier bridge
- 1 ea. Capacitor bracket 
- 1 ea. Rubber boot
- 1 ea. 2A. slow blow fuse
- 2 ea. 4" 14 gauge wire with fast-on connectors and lugs
- 1 ea. 6-32x3/8" machine screw
- 1 ea. 6-32x3/4" machine screw
- 3 ea. 6-32x1/2" machine nut
- 2 ea. #6 flat washer
- 2 ea. #8 flat washer
- 2 ea. #6 lockwasher
- 1 ea. 5" insulation
- 1 ea. 5" bare hook-up wire 20 gauge
- 2 ea. Terminal block jumpers 
- 2 ea. Tie wraps
- 1 ea. Adhesive foam square
- 1 roll Solder wick
- 1 roll Solder

NOTE: More #6 nuts and lockwashers than necessary are supplied in case of loss.

### Tools Needed

- 1 pair long nose pliers (4" or longer).
- 1 pair diagonal cutters (4" or longer).
- 1 pair wire strippers.
- 1 soldering iron (35 to 50 watt).
- 1 screwdriver (approx. 1/4" wide blade).

### Limited Warranty

All Parasitic Engineering products are warranted against defects in materials for a period of ninety (90) days from date of delivery. During the warranty period, Parasitic Engineering will replace at no charge any components that prove to be defective.

This warranty does not apply to any components damaged by accident, misuse or improper assembly.

No other warranty is expressed or implied. Parasitic Engineering is not liable for any damages to equipment used in conjunction with its products, nor for consequential damages.

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### ASSEMBLY INSTRUCTIONS

Save all hardware removed in the disassembly instructions.

- ( ) Remove all plug-in boards from your Altair.

Refer to Figure 1 for the following steps:

- ( ) Remove the four back panel mounting screws. Save these screws separately from the other hardware. The back panel will still be attached to the chassis with numerous wires, but the back panel can now be pulled out slightly. This will make the following steps easier.
- ( ) Remove any I/O connectors mounted on the back panel.
- ( ) Remove the twenty terminal screws, and all the lugs and wires, from the terminal block. Save these screws separately. Do NOT remove the four mounting screws.
- ( ) Remove the screw that mounts the rectifier to the chassis.
- ( ) Remove the four screws and other hardware that mount the power supply printed circuit board to the chassis. Save this hardware separately.
- ( ) Remove the nine wires connecting the three transformers to the power supply board. Note: These wires go to the holes labeled WHT, RED, GRN, YELLOW, and ORNG.
- ( ) Set aside the power supply board. You will work on it later.
- ( ) The green wire from the power cord is connected to a lug on the side of the chassis. Remove the lug from the chassis.
- ( ) The back panel should now be free from the chassis. Set the chassis aside.

- ( ) Now remove transformers T1, T2 and T3 from the Altair back panel. Remember to save all the hardware.
  - ( ) Referring to Figure 2, mount the constant voltage transformer to the back panel. Position the transformer with the smaller winding toward the bottom of the back panel. Use two 8-32x $\frac{1}{2}$ " and two 6-32x $\frac{1}{2}$ " or 3/8" machine screws as shown. Each screw should have a flat washer and a lock washer installed before installing the nut. Use some of the hardware you removed in the previous step along with the washers supplied in the kit.
  - ( ) Locate the capacitor bracket, and install it on the back panel as shown in Figure 2. Use the 6-32x3/8" machine screw supplied with this kit. Use a 6-32 nut and a #6 lockwasher that you removed earlier. Be sure to install this screw with the nut on the rear of the back panel, as shown in Figure 2. Otherwise the capacitor won't fit in the bracket.
  - ( ) Locate the adhesive foam square, peel off the backing paper from ONE SIDE only. Position the foam square on the capacitor bracket, between the notches, and press it firmly in place.
  - ( ) Peel the remaining backing paper from the foam square.
  - ( ) Position the capacitor on the bracket, and press it firmly against the foam square.
  - ( ) Locate the two tie wraps, wrap each of them around the capacitor and the bracket. Position them so that they fit into the notches on the bracket, then pull them tight and cut off the excess.
  - ( ) Locate the MDA-990-1 bridge. Refer to the insert of Figure 2 to identify the + and - terminals. Mount the bridge to the back panel with the terminals positioned as shown. Use the 6-32x3/4" screw, the 6-32x $\frac{1}{2}$ " nut, and the #6 lockwasher supplied with this kit.
  - ( ) Twist together the two black leads from the transformer. Position these leads from the transformer around the bottom of the transformer, and close along the side of the terminal block as shown in Figure 3.
  - ( ) Connect the other black lead to terminal 2, on the left side of the terminal block. Use one of the terminal screws you removed earlier.
  - ( ) Connect one of the black leads to terminal 2, on the left side of the terminal block. Use another one of the terminal screws.
- Note: If a fan is installed in your Altair, the fan power leads should be connected to terminals 1 and 2 of the terminal block.
- ( ) Twist together the two violet leads from the transformer. Locate the rubber boot and slide it over the two violet leads.

- ( ) Connect one of these violet wires to each terminal of the capacitor by slipping the fast-on connector over one of the lugs on the terminal. Caution: There are 2 lugs on each terminal. Be sure that both wires are not connected to the same terminal. Refer to Figure 3.
- ( ) Now slip the rubber boot over the lugs on the top of the capacitor and dress the leads along the transformer.  
IMPORTANT: The terminals of the capacitor have 400 volts across them when the computer is operating. Be sure the rubber boot is in place whenever the computer is in use.
- ( ) Twist together the two green leads from the transformer. Route these wires as shown in Figure 3, and connect one wire to each of the unmarked terminals of the MDA-990-1 bridge.
- ( ) Locate the two terminal block jumpers. Use four of the terminal screws that you removed previously. Install the jumpers between terminals 7 and 8 and between terminals 9 and 10 of the terminal block, as shown in Figure 3. There should be NO connection between terminals 8 and 9.
- ( ) Set aside the back panel.
- ( ) Locate the power supply board. Refer to Figure 4 and locate D8. With a pair of diagonal cutters, cut the leads of D8 as close to the diode body as possible.
- ( ) With your long nose pliers, gently grab hold of one of the diode leads then heat the lead from the other side of the board with your soldering iron. The lead should pull out as soon as the solder melts. Do not pull on the lead until the solder is fully melted.
- ( ) Remove the other lead of the diode in the same manner.

Refer to Figure 4. Using the same procedure as above, locate the following parts and remove them:

Diodes:

- ( ) D1
- ( ) D2
- ( ) D3
- ( ) D4
- ( ) D5
- ( ) D6
- ( ) D7
- ( ) D9
- ( ) D10

Capacitors:

- ( ) C8
- ( ) C13
- ( ) C15

Resistors:

- ( ) R2

Jumper:

- ( ) J1

- ( ) Now take the piece of solder wick provided and place one end of it on the bottom of the PC board over one of the holes of D8. Apply the soldering iron on top of the solder wick, directly over the hole. See Figure 5. After a few seconds the solder should begin to melt, and be sucked up into the solder wick. The hole should now be clear of solder. If a lot of solder is left, then try using a fresh area of the solder wick. If a small amount of solder is left, but the hole is still plugged, it may be easier to fill the hole with fresh solder and try again.
- ( ) Repeat this procedure on the other hole of D8.

Using the solder wick clear the holes where you removed the following parts:

- ( ) D7
- ( ) D9
- ( ) D10
- ( ) C8
- ( ) C13
- ( ) C15
- ( ) R2

- ( ) Remove the rectifier by cutting its leads close to the body.
- ( ) Remove the 4 rectifier leads from the board.
- ( ) Remove the wire connected to hole +8B.

Cut the following lengths of 20 gauge bare wire and insulation:

Bare Wire:

- ( ) 1½" ( ) 1½"

Insulation:

- ( ) ¾" ( ) 1"

Refer to Figure 6 for the following steps:

- ( ) Locate the holes you removed C13 from. Insert one end of the 1½" wire into the C13 hole furthest from the edge of the board. Slide the ¾" piece of insulation over the wire. Locate the holes you removed C15 from. Insert the other end of the 1½" wire into the C15 hole furthest from the edge of the board. Turn the board over and solder both ends of the wire. Cut off any excess leads.
- ( ) Locate the holes you removed C8 from. Insert one end of the 1½" wire into the C8 hole furthest from the edge of the board. Slip the 1" piece of insulation over the wire. Locate the holes you removed R2 from. Insert the other end of 1½" wire into the R2 hole furthest from the edge of the board. Turn the board over and solder both ends of the wire. Cut off any excess leads.

- ( ) Locate the VS-148 bridge. Refer to the exploded view in Figure 6 and locate the +, -, and unmarked leads. Cut two 3/4" pieces of insulation, slip the insulation over the indicated leads. Then bend the leads as shown.
- ( ) Install the VS-148 bridge on the top of the power supply board. Insert the leads in the following holes:  
The unbent, unmarked lead goes in the D8 hole nearest the band mark.  
The - lead goes in the other D8 hole.  
The + lead goes in the D7 hole nearest the band mark.  
The bent, unmarked, lead goes in the D10 hole nearest the band mark.  
Solder these leads and cut off the excess.
- ( ) Position the back panel near the power supply board. Twist together the two yellow and the blue wires from the transformer. Route these wires along the left side of the transformer, under the violet wires, and against the back panel. Insert one of the yellow wires into each of the two holes marked yellow on the power supply board. Solder these wires in place, and cut off any excess leads. The blue wire will be connected later.
- ( ) Position the back panel and the power supply board near to where they will be mounted on the chassis.

Install each lead on the terminal block as detailed below. Use the rest of the terminal screws that you removed earlier. A terminal number followed by an "R" refers to the right hand screw of that terminal. A terminal number followed by an "L" refers to the left hand screw of that terminal. Refer to Figure 7 for the terminal locations.

#### JUMPERS

- ( ) Locate the two pre-made jumpers, and connect one of the jumpers from the + terminal of the MDA-990-1 bridge to terminal 7R.
- ( ) Connect the other jumper from the - terminal of the MDA-990-1 bridge to terminal 9R of the terminal block.

#### TRANSFORMER

- ( ) Connect the blue lead from the transformer to 10R of the terminal block.

#### MOTHER BOARD

- ( ) Connect the wire from hole 1 of the mother board to terminal 8R of the terminal block. This is the +8V wire.
- ( ) Connect the wire from hole 50 of the mother board to 10R of the terminal block. This is the GND wire.

- ( ) Connect the wire from hole 2 of the mother board to 6R of the terminal block. This is the +16V wire.
- ( ) Connect the wire from hole 52 of the mother board to 5R of the terminal block. This is the -16V wire.

FRONT PANEL CONTROL AND DISPLAY BOARD

- ( ) Connect one of the "AC SW" wires from the front panel to 2L of the terminal block.
- ( ) Connect the other "AC SW" wire to 3L of the terminal block.
- ( ) Connect the wire from the +8V hole of the front panel to 8L of the terminal block.
- ( ) Connect the GND wire from the front panel to 9L of the terminal block.

POWER CORD

- ( ) The white lead from the power cord is connected to 1L.
- ( ) The black lead goes to 4L.
- ( ) Remount the green lead where it was originally mounted on the side of the chassis.

POWER SUPPLY BOARD

- ( ) Connect one of the fuse wires coming from the power supply board to 3L.
- ( ) Connect the other fuse wire to 4L.
- ( ) Connect the wire from the -16V hole of the power supply board to 5L of the terminal block.
- ( ) Connect the wire from the +16V hole of the power supply board to 6L of the terminal block.
- ( ) The wire from hole +8A goes to 7L of the terminal block.
- ( ) The wire from GND goes to 10L of the terminal block.
- ( ) Install the remaining terminal screws in terminal numbers 1R, 2R, 3R, 4R, and 7R. There should be no wires connected to these terminals.
- ( ) Remount the power supply board using the same hardware you removed earlier. Do not use any hardware where the rectifier was mounted.
- ( ) Reinstall any I/O connectors that you removed earlier.



- ( ) Remount the back panel using the same hardware that you removed before.
- ( ) Replace the fuse with the 2 amp slow blow fuse supplied.
- ( ) Reinstall the plug-in boards which were removed earlier.
- ( ) Replace page 71, and the power supply schematic in your Altair Manual with the pages provided.

This completes the installation of your power supply kit.

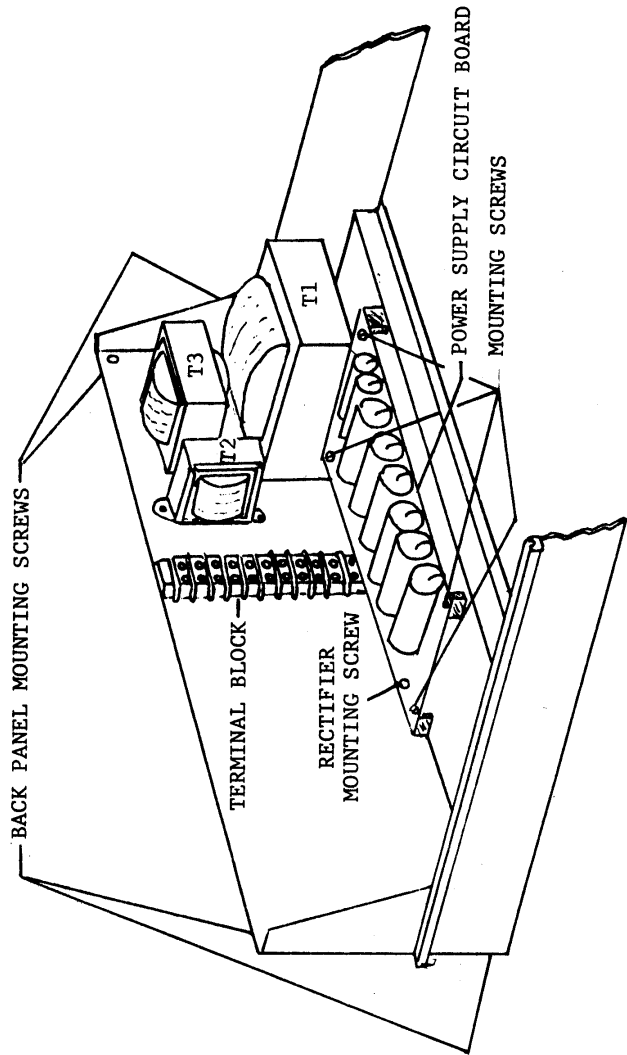
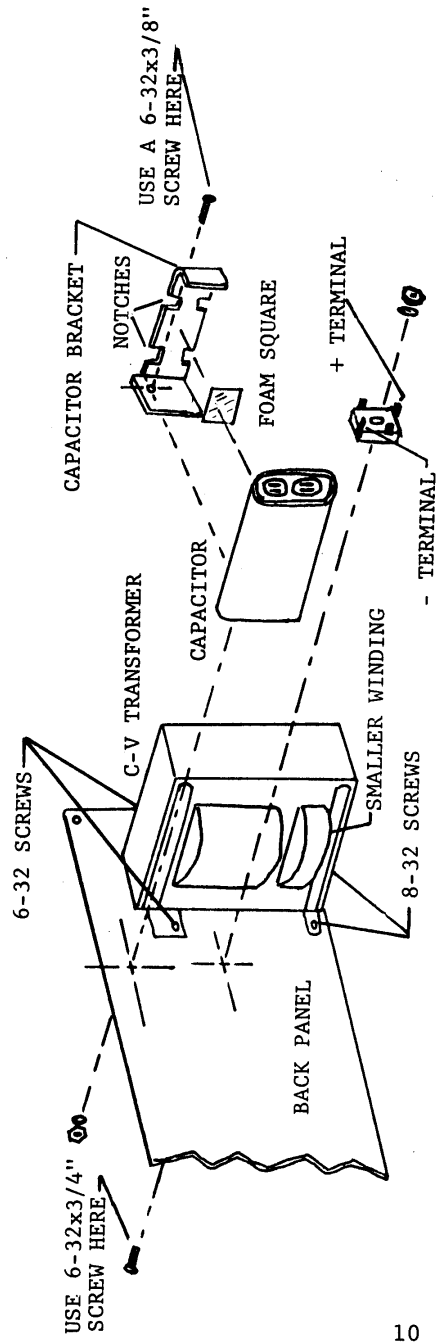
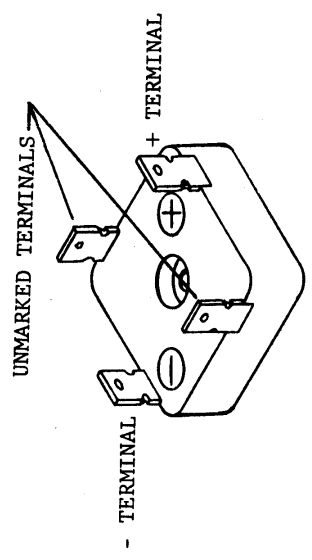


FIGURE #1



MDA-990-1 BRIDGE



INSERT  
MDA-990-1 BRIDGE

FIGURE #2



RECTIFIER (Mounted on bottom of board)

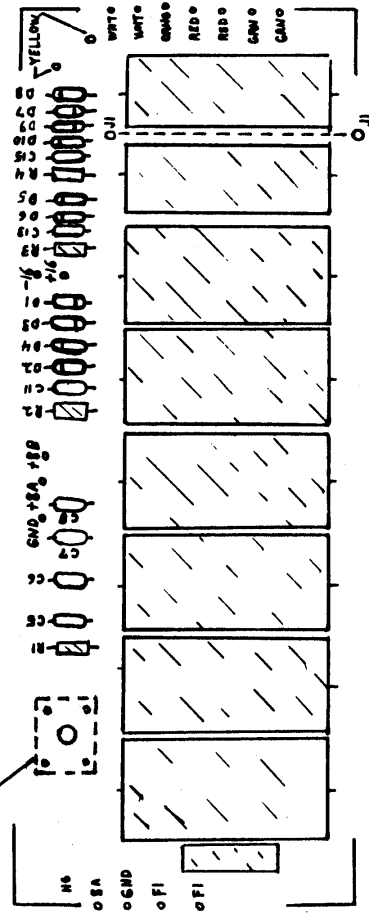


FIGURE #4

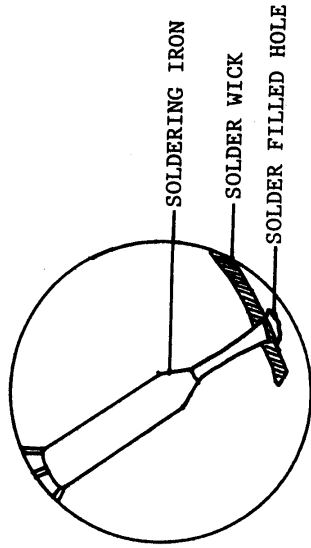
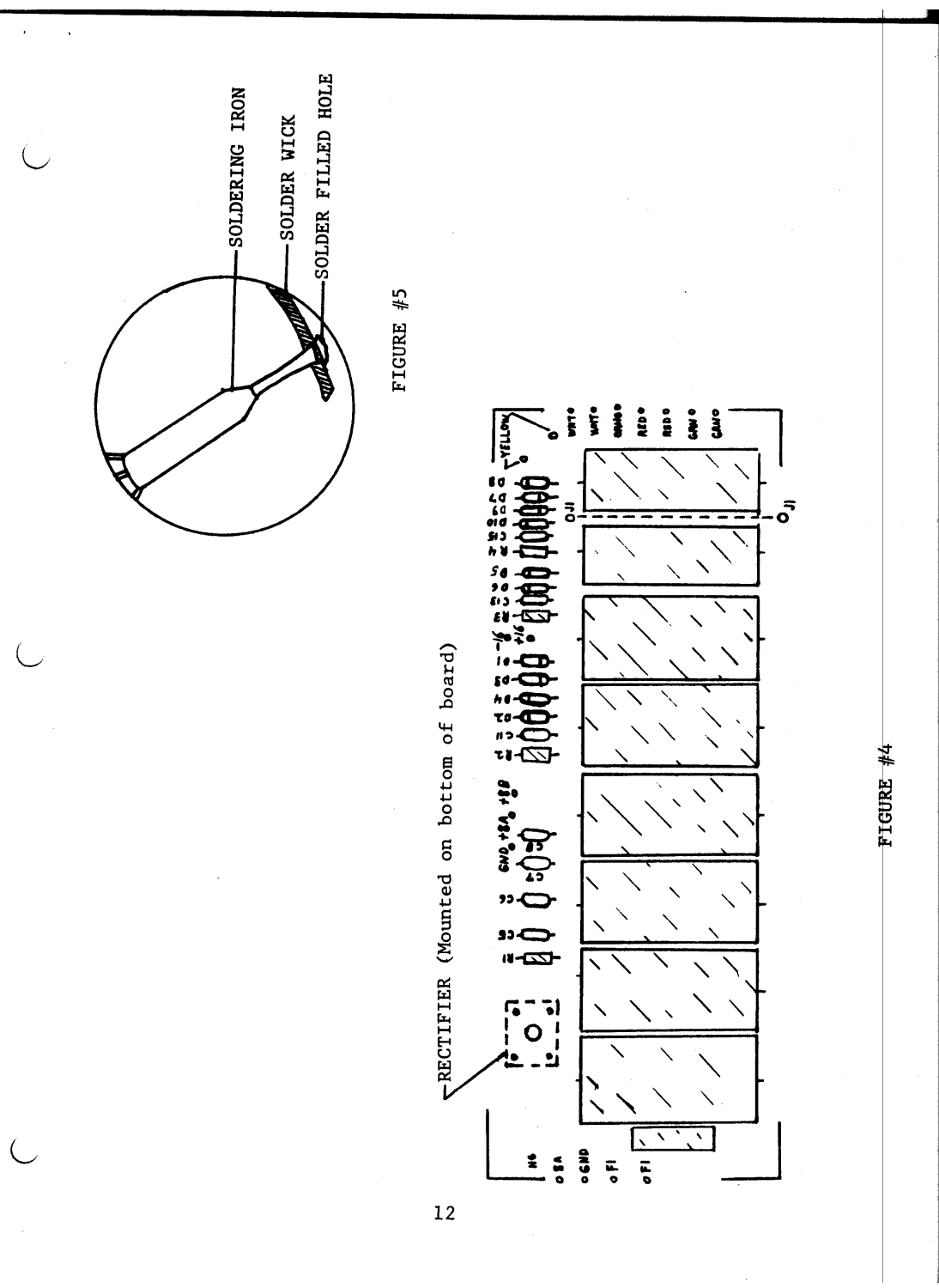


FIGURE #5



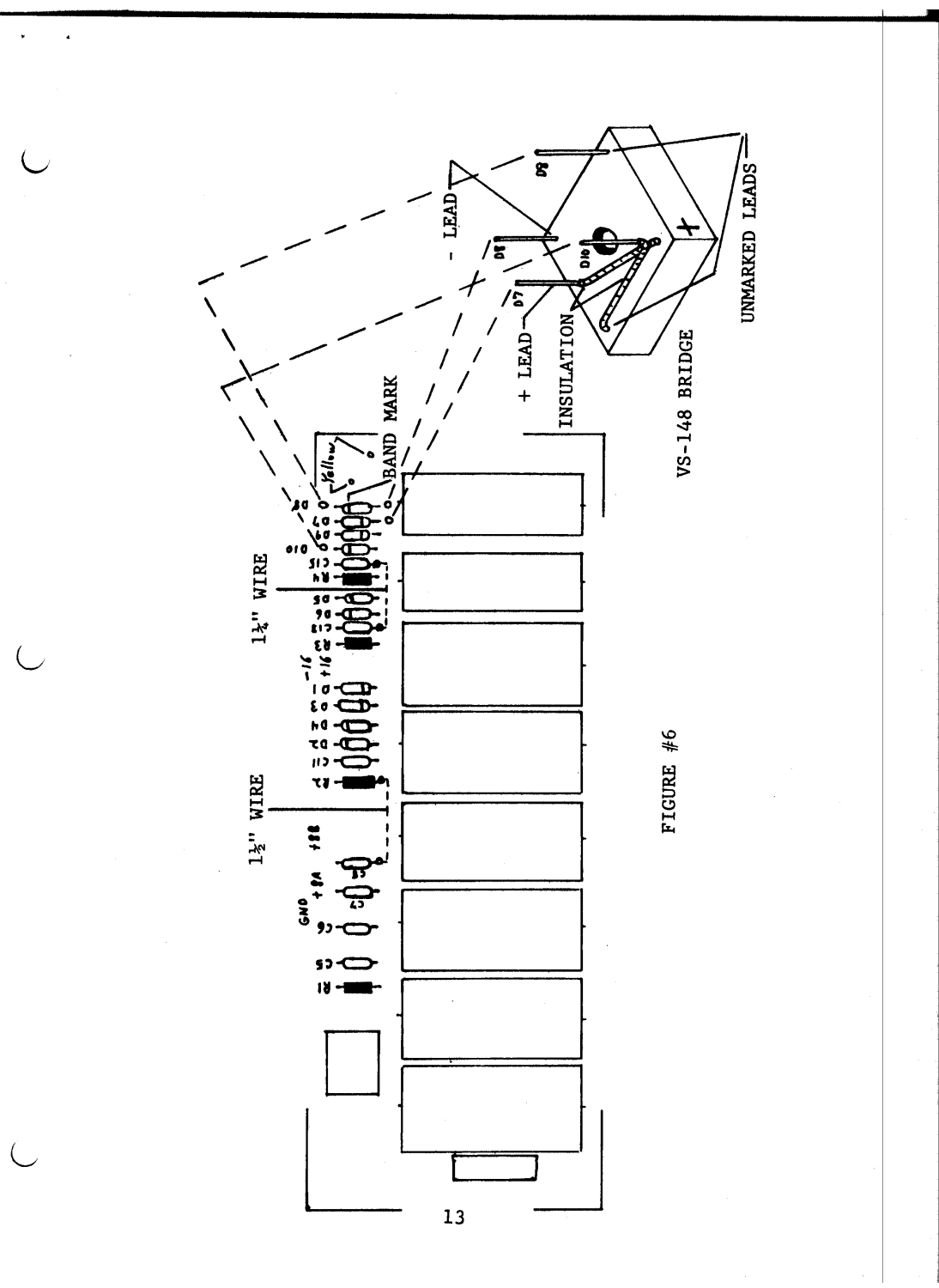


FIGURE #6

VS-148 BRIDGE

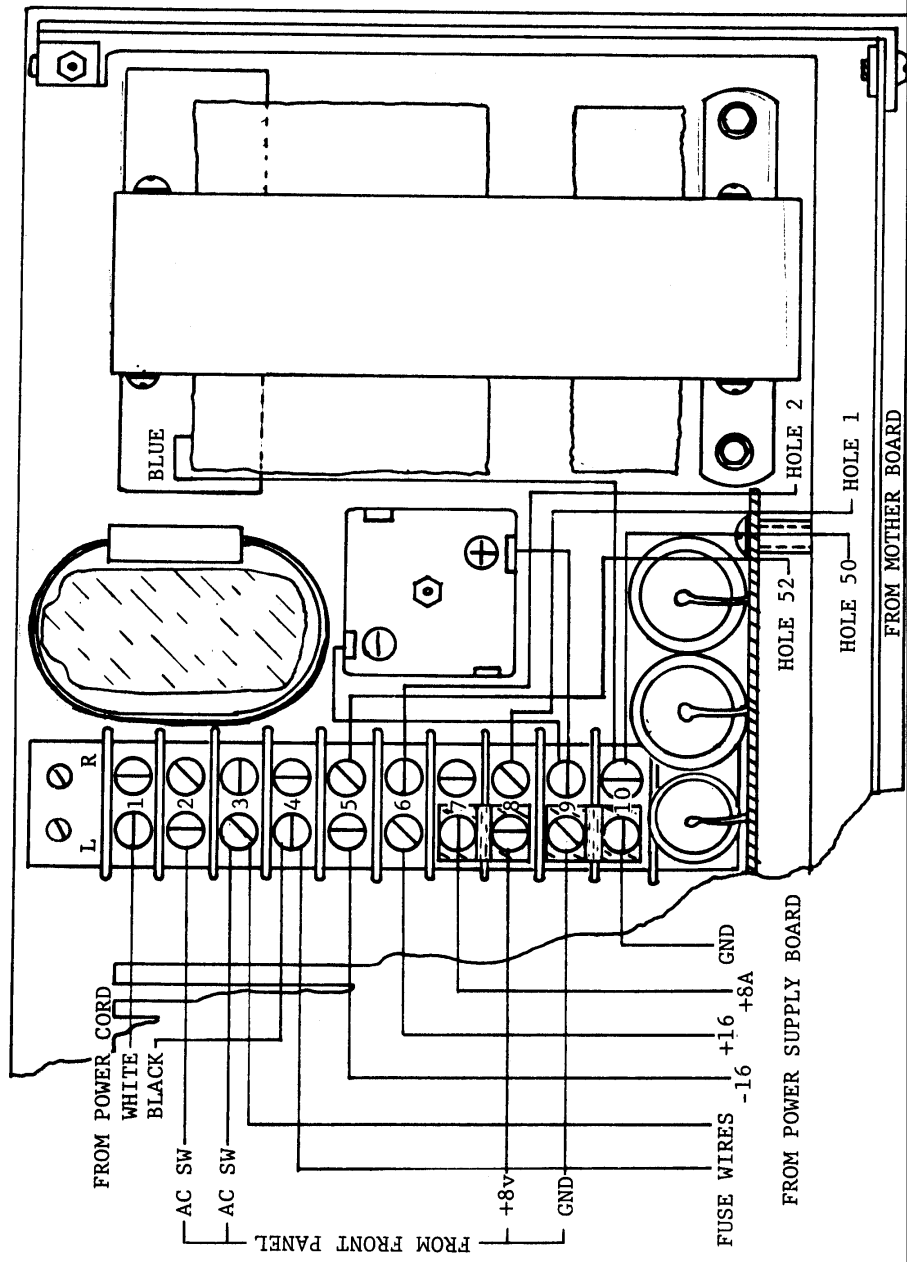
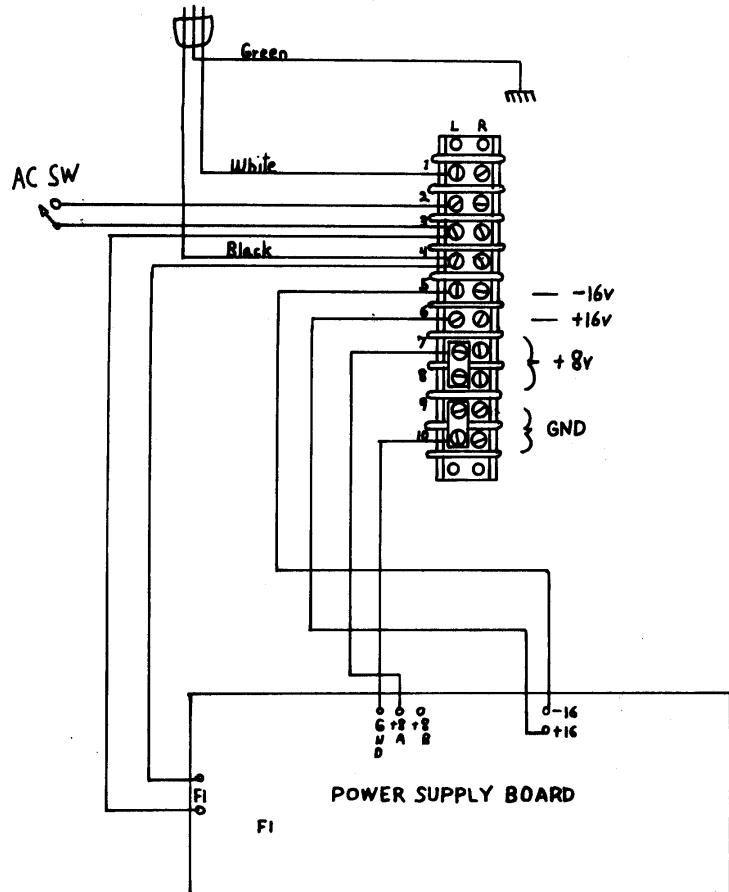


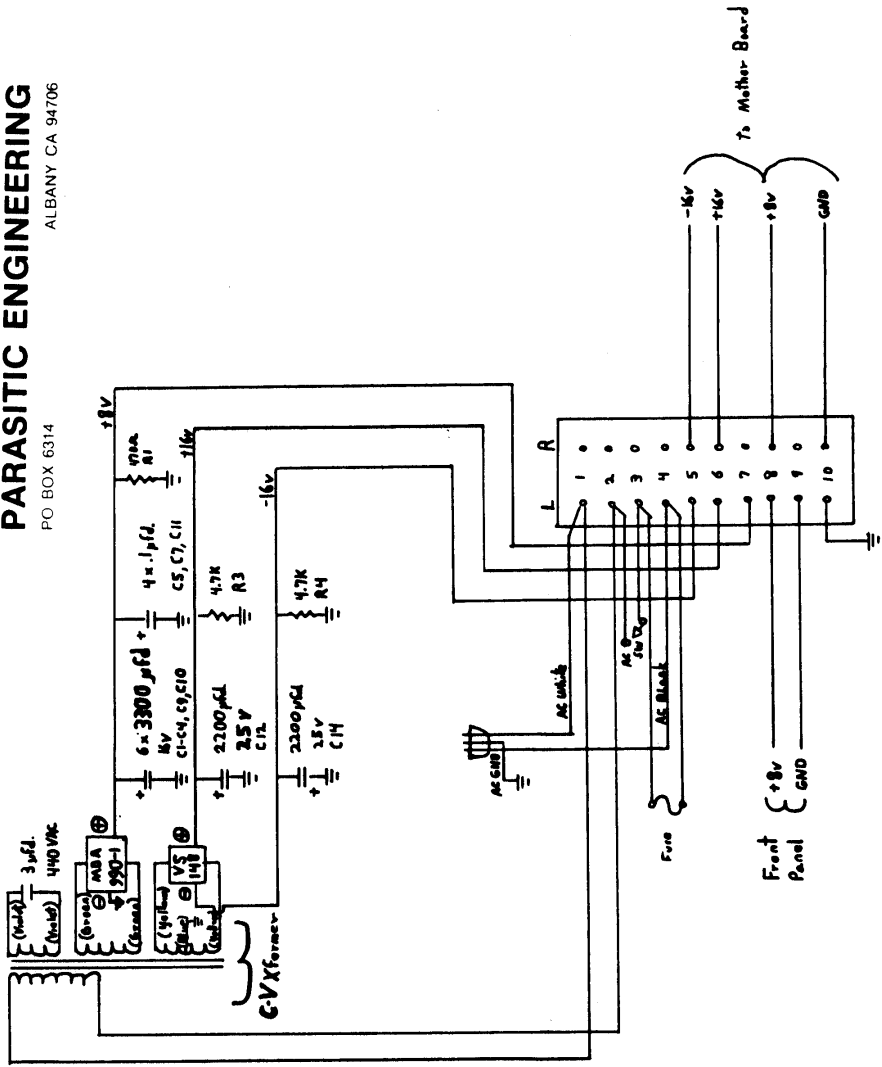
FIGURE #7





# PARASITIC ENGINEERING



PO BOX 6314  
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PARASITIC ENGINEERING

POWER SUPPLY KIT

### Parts List

- 1 ea. 3729 transformer
- 1 ea. 3 ufd. @ 440 VAC capacitor
- 1 ea. MDA-990-1 rectifier bridge
- 1 ea. VS-148 rectifier bridge
- 1 ea. Capacitor bracket 
- 1 ea. Rubber boot
- 1 ea. 2A. slow blow fuse
- 2 ea. 4" 14 gauge wire with fast-on connectors and lugs
- 1 ea. 6-32x3/8" machine screw
- 1 ea. 6-32x3/4" machine screw
- 3 ea. 6-32x1/2" machine nut
- 2 ea. #6 flat washer
- 2 ea. #8 flat washer
- 2 ea. #6 lockwasher
- 1 ea. 5" insulation
- 1 ea. 5" bare hook-up wire 20 gauge
- 2 ea. Terminal block jumpers 
- 2 ea. Tie wraps
- 1 ea. Adhesive foam square
- 1 roll Solder wick
- 1 roll Solder

NOTE: More #6 nuts and lockwashers than necessary are supplied in case of loss.

### Tools Needed

- 1 pair long nose pliers (4" or longer).
- 1 pair diagonal cutters (4" or longer).
- 1 pair wire strippers.
- 1 soldering iron (35 to 50 watt).
- 1 screwdriver (approx. 1/4" wide blade).

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### ASSEMBLY INSTRUCTIONS

Save all hardware removed in the disassembly instructions.

- ( ) Remove all plug-in boards from your Altair.

Refer to Figure 1 for the following steps:

- ( ) Remove the four back panel mounting screws. Save these screws separately from the other hardware. The back panel will still be attached to the chassis with numerous wires, but the back panel can now be pulled out slightly. This will make the following steps easier.
- ( ) Remove any I/O connectors mounted on the back panel.
- ( ) Remove the twenty terminal screws, and all the lugs and wires, from the terminal block. Save these screws separately. Do NOT remove the four mounting screws.
- ( ) Remove the screw that mounts the rectifier to the chassis.
- ( ) Remove the four screws and other hardware that mount the power supply printed circuit board to the chassis. Save this hardware separately.
- ( ) Remove the nine wires connecting the three transformers to the power supply board. Note: These wires go to the holes labeled WHT, RED, GRN, YELLOW, and ORNG.
- ( ) Set aside the power supply board. You will work on it later.
- ( ) The green wire from the power cord is connected to a lug on the side of the chassis. Remove the lug from the chassis.
- ( ) The back panel should now be free from the chassis. Set the chassis aside.

( ) Now remove transformers T1, T2 and T3 from the Altair back panel. Remember to save all the hardware.

( ) Referring to Figure 2, mount the constant voltage transformer to the back panel. Position the transformer with the smaller winding toward the bottom of the back panel. Use two 8-32x $\frac{1}{2}$ " and two 6-32x $\frac{1}{2}$ " or 3/8" machine screws as shown. Each screw should have a flat washer and a lock washer installed before installing the nut. Use some of the hardware you removed in the previous step along with the washers supplied in the kit.

( ) Locate the capacitor bracket, and install it on the back panel as shown in Figure 2. Use the 6-32x3/8" machine screw supplied with this kit. Use a 6-32 nut and a #6 lockwasher that you removed earlier. Be sure to install this screw with the nut on the rear of the back panel, as shown in Figure 2. Otherwise the capacitor won't fit in the bracket.

( ) Locate the adhesive foam square, peel off the backing paper from ONE SIDE only. Position the foam square on the capacitor bracket, between the notches, and press it firmly in place.

( ) Peel the remaining backing paper from the foam square.

( ) Position the capacitor on the bracket, and press it firmly against the foam square.

( ) Locate the two tie wraps, wrap each of them around the capacitor and the bracket. Position them so that they fit into the notches on the bracket, then pull them tight and cut off the excess.

( ) Locate the MDA-990-1 bridge. Refer to the insert of Figure 2 to identify the + and - terminals. Mount the bridge to the back panel with the terminals positioned as shown. Use the 6-32x3/4" screw, the 6-32x $\frac{1}{2}$ " nut, and the #6 lockwasher supplied with this kit.

( ) Twist together the two black leads from the transformer. Position these leads from the transformer around the bottom of the transformer, and close along the side of the terminal block as shown in Figure 3.

( ) Connect the other black lead to terminal 2, on the left side of the terminal block. Use one of the terminal screws you removed earlier.

( ) Connect one of the black leads to terminal 2, on the left side of the terminal block. Use another one of the terminal screws.

Note: If a fan is installed in your Altair, the fan power leads should be connected to terminals 1 and 2 of the terminal block.

( ) Twist together the two violet leads from the transformer. Locate the rubber boot and slide it over the two violet leads.

- ( ) Connect one of these violet wires to each terminal of the capacitor by slipping the fast-on connector over one of the lugs on the terminal. Caution: There are 2 lugs on each terminal. Be sure that both wires are not connected to the same terminal. Refer to Figure 3.
- ( ) Now slip the rubber boot over the lugs on the top of the capacitor and dress the leads along the transformer. IMPORTANT: The terminals of the capacitor have 400 volts across them when the computer is operating. Be sure the rubber boot is in place whenever the computer is in use.
- ( ) Twist together the two green leads from the transformer. Route these wires as shown in Figure 3, and connect one wire to each of the unmarked terminals of the MDA-990-1 bridge.
- ( ) Locate the two terminal block jumpers. Use four of the terminal screws that you removed previously. Install the jumpers between terminals 7 and 8 and between terminals 9 and 10 of the terminal block, as shown in Figure 3. There should be NO connection between terminals 8 and 9.
- ( ) Set aside the back panel.
- ( ) Locate the power supply board. Refer to Figure 4 and locate D8. With a pair of diagonal cutters, cut the leads of D8 as close to the diode body as possible.
- ( ) With your long nose pliers, gently grab hold of one of the diode leads then heat the lead from the other side of the board with your soldering iron. The lead should pull out as soon as the solder melts. Do not pull on the lead until the solder is fully melted.
- ( ) Remove the other lead of the diode in the same manner.

Refer to Figure 4. Using the same procedure as above, locate the following parts and remove them:

Diodes:

- ( ) D1
- ( ) D2
- ( ) D3
- ( ) D4
- ( ) D5
- ( ) D6
- ( ) D7
- ( ) D9
- ( ) D10

Capacitors:

- ( ) C8
- ( ) C13
- ( ) C15

Resistors:

- ( ) R2

Jumper:

- ( ) J1

- ( ) Now take the piece of solder wick provided and place one end of it on the bottom of the PC board over one of the holes of D8. Apply the soldering iron on top of the solder wick, directly over the hole. See Figure 5. After a few seconds the solder should begin to melt, and be sucked up into the solder wick. The hole should now be clear of solder. If a lot of solder is left, then try using a fresh area of the solder wick. If a small amount of solder is left, but the hole is still plugged, it may be easier to fill the hole with fresh solder and try again.
- ( ) Repeat this procedure on the other hole of D8.

Using the solder wick clear the holes where you removed the following parts:

- ( ) D7
- ( ) D9
- ( ) D10
- ( ) C8
- ( ) C13
- ( ) C15
- ( ) R2

- ( ) Remove the rectifier by cutting its leads close to the body.
- ( ) Remove the 4 rectifier leads from the board.
- ( ) Remove the wire connected to hole +8B.

Cut the following lengths of 20 gauge bare wire and insulation:

Bare Wire:

- ( ) 1½" ( ) 1½"

Insulation:

- ( ) ¾" ( ) 1"

Refer to Figure 6 for the following steps:

- ( ) Locate the holes you removed C13 from. Insert one end of the 1½" wire into the C13 hole furthest from the edge of the board. Slide the ¾" piece of insulation over the wire. Locate the holes you removed C15 from. Insert the other end of the 1½" wire into the C15 hole furthest from the edge of the board. Turn the board over and solder both ends of the wire. Cut off any excess leads.
- ( ) Locate the holes you removed C8 from. Insert one end of the 1½" wire into the C8 hole furthest from the edge of the board. Slip the 1" piece of insulation over the wire. Locate the holes you removed R2 from. Insert the other end of 1½" wire into the R2 hole furthest from the edge of the board. Turn the board over and solder both ends of the wire. Cut off any excess leads.

- ( ) Locate the VS-148 bridge. Refer to the exploded view in Figure 6 and locate the +, -, and unmarked leads. Cut two 3/4" pieces of insulation, slip the insulation over the indicated leads. Then bend the leads as shown.
- ( ) Install the VS-148 bridge on the top of the power supply board. Insert the leads in the following holes:  
The unbent, unmarked lead goes in the D8 hole nearest the band mark.  
The - lead goes in the other D8 hole.  
The + lead goes in the D7 hole nearest the band mark.  
The bent, unmarked, lead goes in the D10 hole nearest the band mark.  
Solder these leads and cut off the excess.
- ( ) Position the back panel near the power supply board. Twist together the two yellow and the blue wires from the transformer. Route these wires along the left side of the transformer, under the violet wires, and against the back panel. Insert one of the yellow wires into each of the two holes marked yellow on the power supply board. Solder these wires in place, and cut off any excess leads. The blue wire will be connected later.
- ( ) Position the back panel and the power supply board near to where they will be mounted on the chassis.

Install each lead on the terminal block as detailed below. Use the rest of the terminal screws that you removed earlier. A terminal number followed by an "R" refers to the right hand screw of that terminal. A terminal number followed by an "L" refers to the left hand screw of that terminal. Refer to Figure 7 for the terminal locations.

#### JUMPERS

- ( ) Locate the two pre-made jumpers, and connect one of the jumpers from the + terminal of the MDA-990-1 bridge to terminal 7R.
- ( ) Connect the other jumper from the - terminal of the MDA-990-1 bridge to terminal 9R of the terminal block.

#### TRANSFORMER

- ( ) Connect the blue lead from the transformer to 10R of the terminal block.

#### MOTHER BOARD

- ( ) Connect the wire from hole 1 of the mother board to terminal 8R of the terminal block. This is the +8V wire.
- ( ) Connect the wire from hole 50 of the mother board to 10R of the terminal block. This is the GND wire.



- ( ) Connect the wire from hole 2 of the mother board to 6R of the terminal block. This is the +16V wire.
- ( ) Connect the wire from hole 52 of the mother board to 5R of the terminal block. This is the -16V wire.

FRONT PANEL CONTROL AND DISPLAY BOARD

- ( ) Connect one of the "AC SW" wires from the front panel to 2L of the terminal block.
- ( ) Connect the other "AC SW" wire to 3L of the terminal block.
- ( ) Connect the wire from the +8V hole of the front panel to 8L of the terminal block.
- ( ) Connect the GND wire from the front panel to 9L of the terminal block.

POWER CORD

- ( ) The white lead from the power cord is connected to 1L.
- ( ) The black lead goes to 4L.
- ( ) Remount the green lead where it was originally mounted on the side of the chassis.

POWER SUPPLY BOARD

- ( ) Connect one of the fuse wires coming from the power supply board to 3L.
- ( ) Connect the other fuse wire to 4L.
- ( ) Connect the wire from the -16V hole of the power supply board to 5L of the terminal block.
- ( ) Connect the wire from the +16V hole of the power supply board to 6L of the terminal block.
- ( ) The wire from hole +8A goes to 7L of the terminal block.
- ( ) The wire from GND goes to 10L of the terminal block.
- ( ) Install the remaining terminal screws in terminal numbers 1R, 2R, 3R, 4R, and 7R. There should be no wires connected to these terminals.
- ( ) Remount the power supply board using the same hardware you removed earlier. Do not use any hardware where the rectifier was mounted.
- ( ) Reinstall any I/O connectors that you removed earlier.

- ( ) Remount the back panel using the same hardware that you removed before.
- ( ) Replace the fuse with the 2 amp slow blow fuse supplied.
- ( ) Reinstall the plug-in boards which were removed earlier.
- ( ) Replace page 71, and the power supply schematic in your Altair Manual with the pages provided.

This completes the installation of your power supply kit.

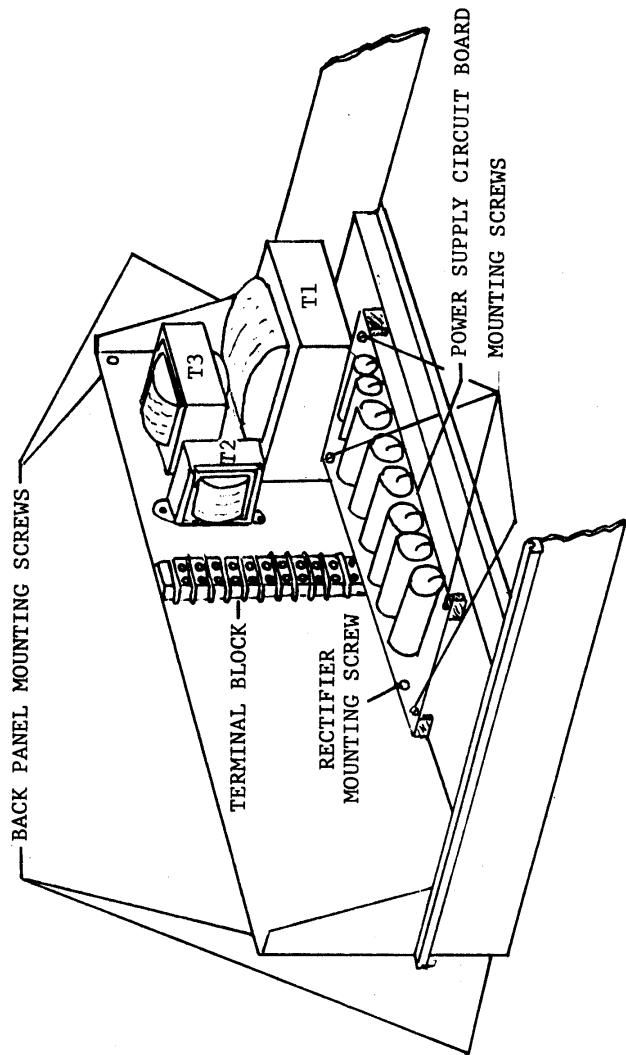
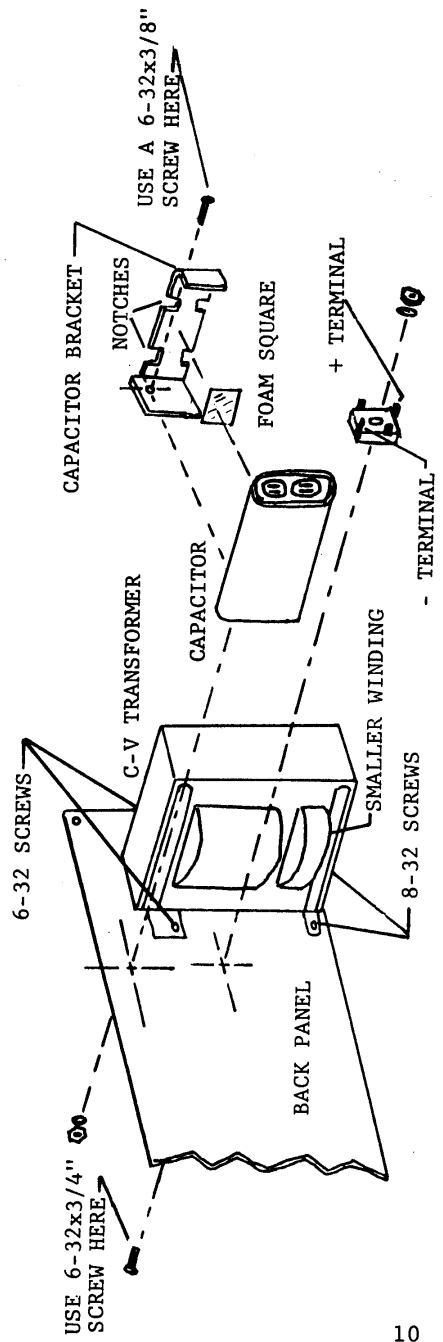
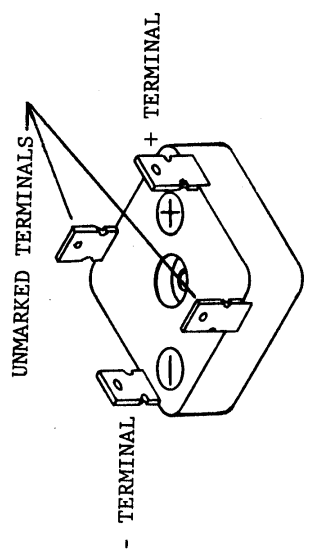


FIGURE #1



MDA-990-1 BRIDGE



INSERT  
MDA-990-1 BRIDGE

FIGURE #2

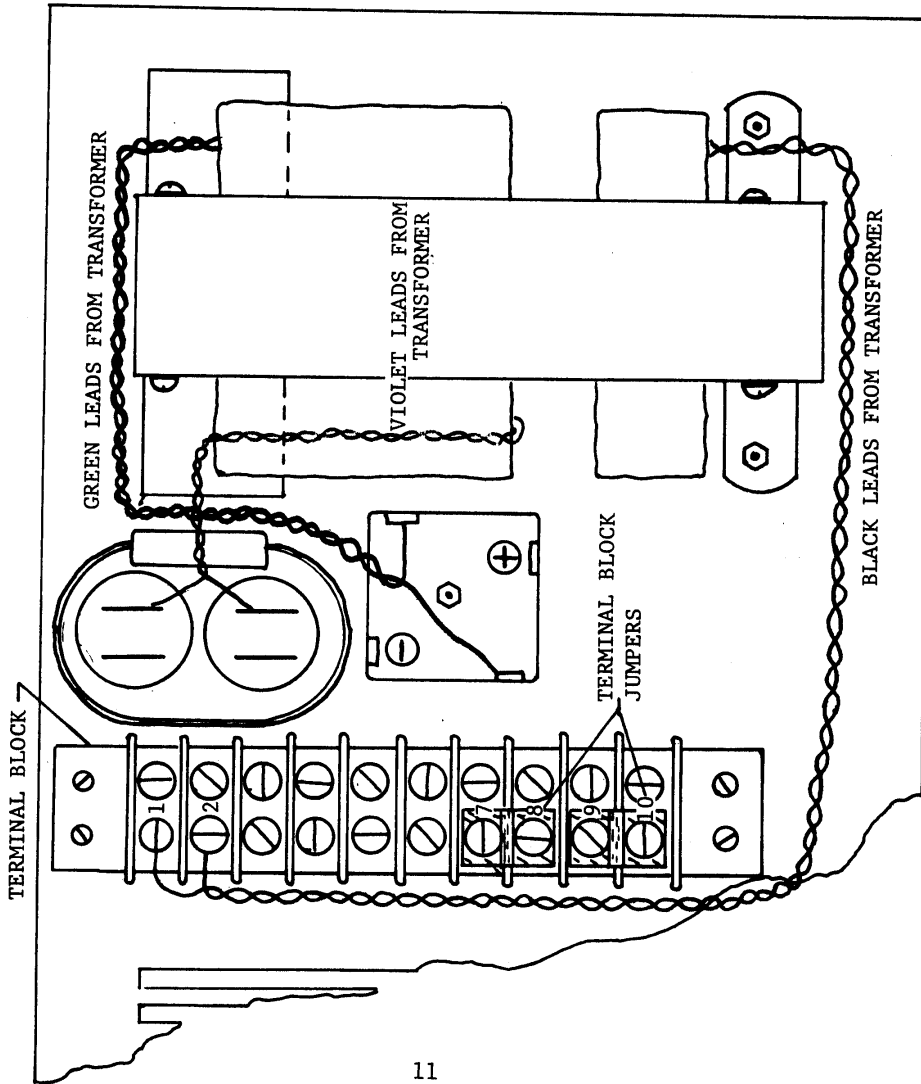


FIGURE #3





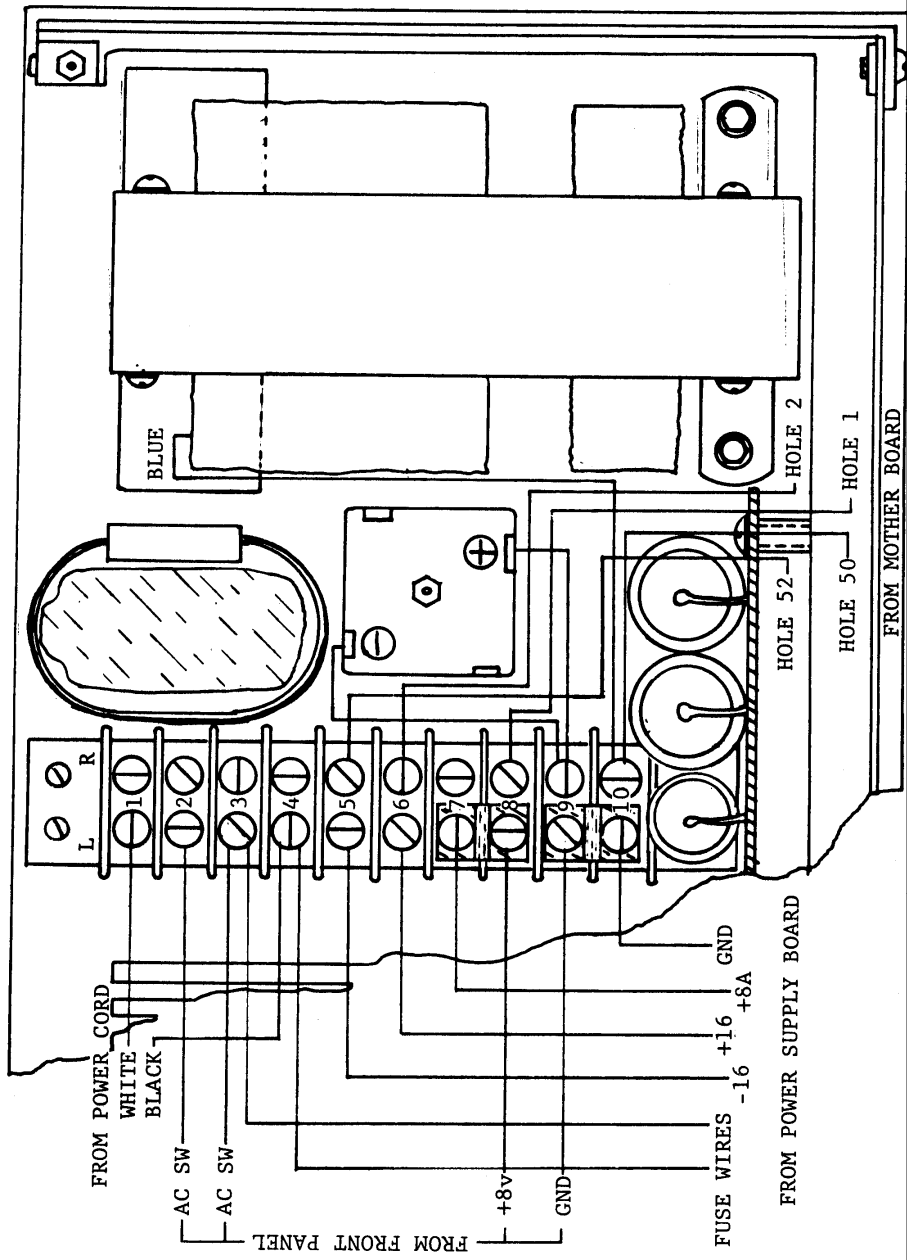
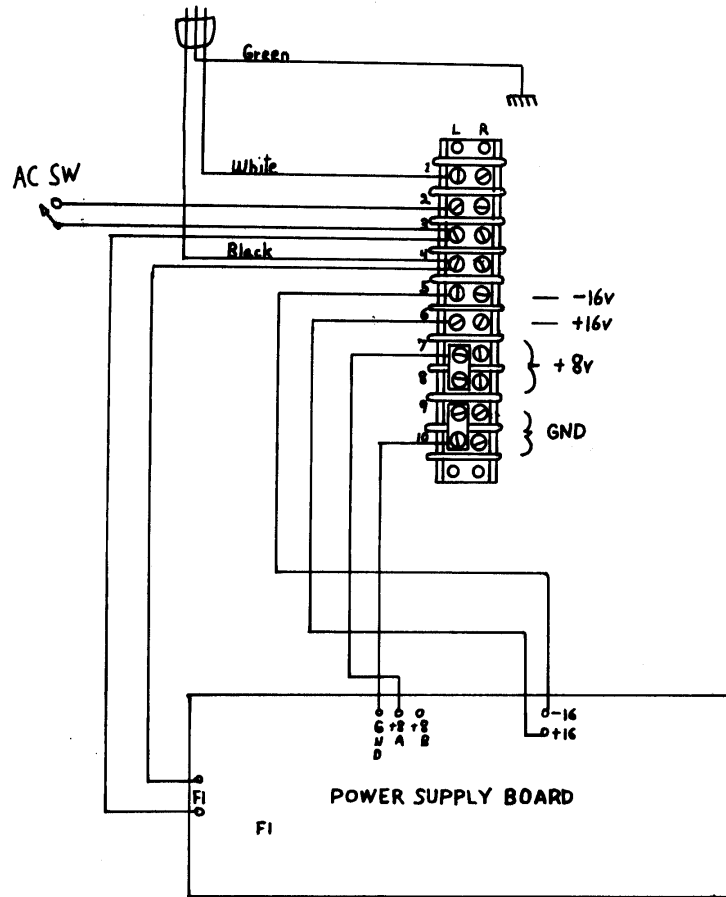


FIGURE #7





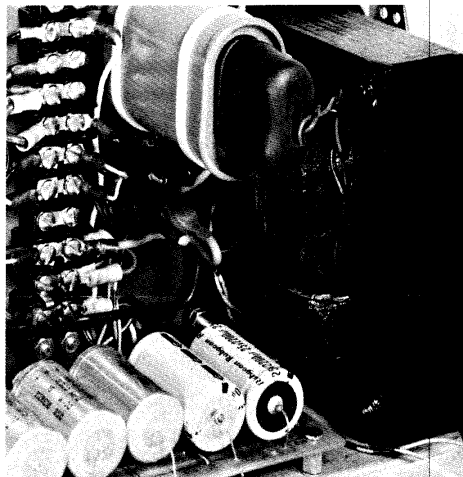


A Parasitic Engineering constant voltage power supply kit can keep your Altair up even when the power line droops. It also provides high output, increased isolation from line noise and excellent over voltage protection—and it does all this at a **price you can afford.**

The key to this superior performance is the use of a custom-wound ferro-resonant constant voltage (C-V) transformer. The kit combines the C-V transformer with high current rectifiers and improved filtering to provide full output with the line voltage as low as 90 volts, yet up to 140 volts will not produce excessive output.

#### SPECIFICATIONS

Input voltage: 90 to 140 volts.  
Output voltage (nominal): + 8 volts,  $\pm 16$  volts.  
Output current: 8 volt supply: 12 amps.  
 $\pm 16$  volt supply: 2 amps total.  
Line regulation: Less than 5% change for input from 100 to 130 volts.  
Load regulation: Less than 10% change from 10% load to full load.



Installs easily in place of the three standard 8800 transformers.

#### HOW A C-V TRANSFORMER WORKS

A C-V transformer differs from a conventional transformer in two major ways: First the primary and secondary windings are mounted on the same core, but physically separated with a fixed reluctance magnetic shunt between them; Second there is an additional secondary winding which has a capacitor connected across it to form a parallel tuned circuit. The magnetic shunt allows the primary and secondary windings to run with different levels of magnetic flux in their part of the core. Under normal operation, the secondary core is saturated and this causes the tuned secondary to behave in a non-linear manner. This non-linear tuned circuit induces a correction voltage into all of the secondary windings. The induced voltage changes its phase and amplitude as the input voltage changes. Thus, at a low input voltage, the correction voltage is in phase with the output and adds to the output. While at a high input voltage, the correction voltage is out of phase and subtracts from the output. This regulating action keeps the output constant over a wide range of input voltage. A C-V transformer has a few more useful features: It protects itself from overloads; When overloaded, the secondary core saturates harder and the current is limited to approximately twice the rated value. Also, the saturated secondary core produces an output with flattened peaks, which provides improved load regulation, and less ripple. Finally, the loose coupling between the windings attenuates spikes and other line noise.

Don't let the Byte Snatchers get your computer down. Keep your Altair 8800 up and running with a Parasitic Engineering Constant Voltage Power Supply Kit.

**only \$90** postpaid

Calif. residents add \$5.40 sales tax

The kit is simple to install, and comes complete with all necessary parts and detailed easy to follow instructions.

## PARASITIC ENGINEERING

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