

# WARNING

The Intel 8080 CPU integrated circuit in this kit is very sensitive to static electricity. Do not remove it from its conductive container until instructed to do so in the assembly manual. Do not handle the container itself any more than is absolutely necessary.

Before touching this integrated circuit read the instructions in the manual very carefully, and review the MOS IC Special Handling Precautions included in the manual.

## INTRODUCTORY NOTE

The ALTAIR 8800 manual has been supplied with your ALTAIR 8800a computer kit. The reason for this is that the ALTAIR 8800 computer theory of operation and assembly is similar to the 8800a computer. Therefore, all reference made to the 8800 in the manual is understood to be 8800a.

The differences in assembly between the 8800 and 8800a computer kits have been incorporated in the additional "A pages" inserted in the front of the ALTAIR 8800 manual. The "A pages" always follow the original page number. For example, the instructions on page 53 are performed before the instructions on page 53A.

## Component Additions

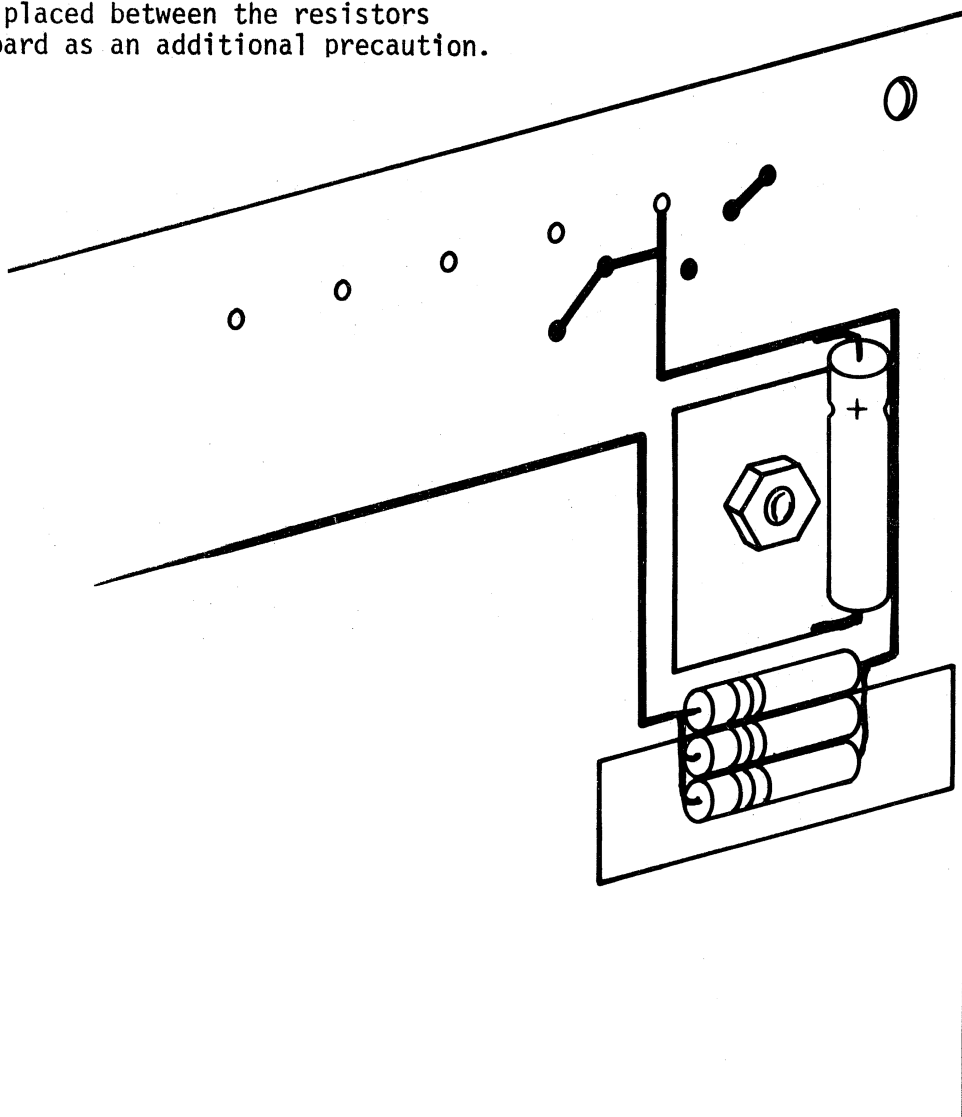
There is one bypass capacitor and three resistors to be mounted on the back (non silk-screened) side of the Display/Control Board.

( ) Referring to the drawing below, connect the capacitor and resistors to the back side of the board as shown.

NOTE: These components are soldered directly to the lands; so be very careful not to leave any solder bridges or shorts between lands. A piece of tape should be placed between the resistors and the board as an additional precaution.

( ) The capacitor can be any value from 20 to 35uf. Observe the polarity orientation indicated in the drawing.

( ) The resistors can be any value from 62 to 68 ohm. These three resistors are to be connected together in parallel as shown before being connected to the board.

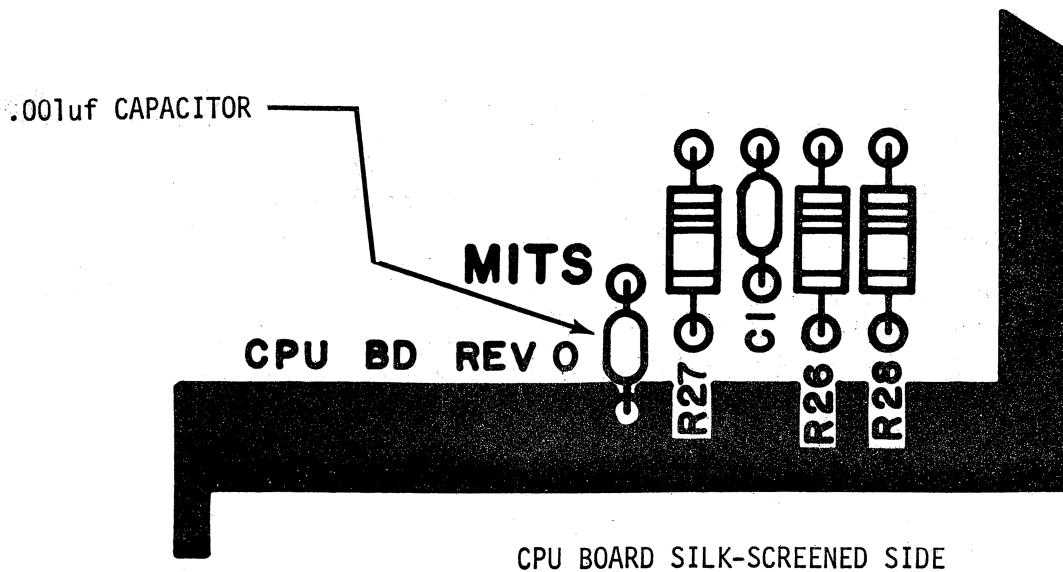


CPU BOARD REVISION

A .001uf capacitor must be added to the 8800 CPU Board between ground and the Protect line (Ref. P. 72 Bus Structure).

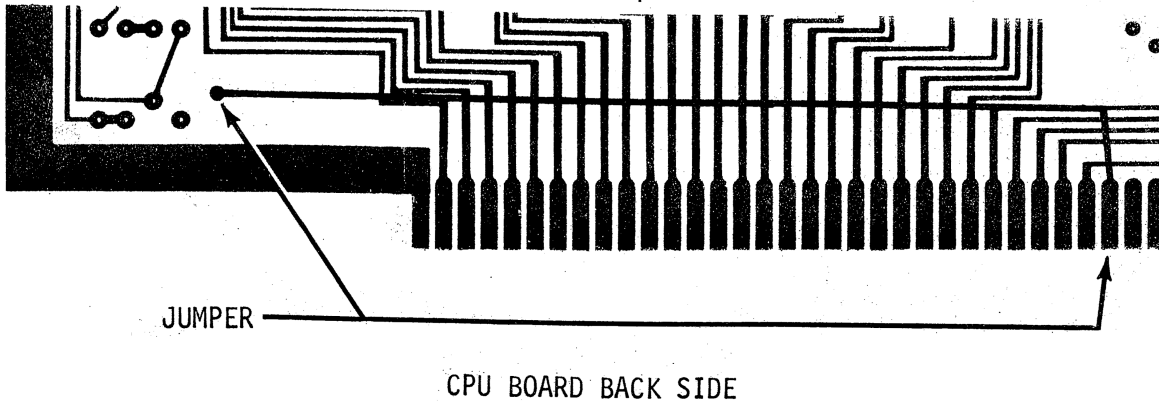
( ) Referring to the drawings below, install the capacitor and solder the lead going through the large land to both sides of the board.

( ) On the back side of the board, connect a jumper wire between the free end of the capacitor and the pad for bus line #70, PROTECT. Make the connection to the pad as small as possible and be sure it does not short to any other lands.



CPU BOARD SILK-SCREENED SIDE

NOTE: Keep the jumper connection to the pad as close to the top as possible.



## Resistor and Zener Diode Installation

There is a 47 ohm resistor and a 9.1 volt zener diode to be vertically installed on the Power Supply Board.

- ( ) Align one end of the resistor to the 8A hole on the Power Supply Board and insert it. (See drawing.)
- ( ) Solder the resistor lead to the foil (bottom) side of the Power Supply Board, and clip off any excess resistor lead.
- ( ) Align the non banded end of the 9.1 volt zener to the GND hole on the Power Supply Board and insert it. (See drawing.)

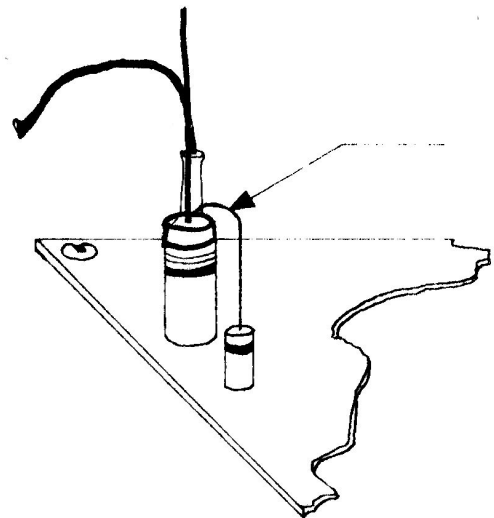
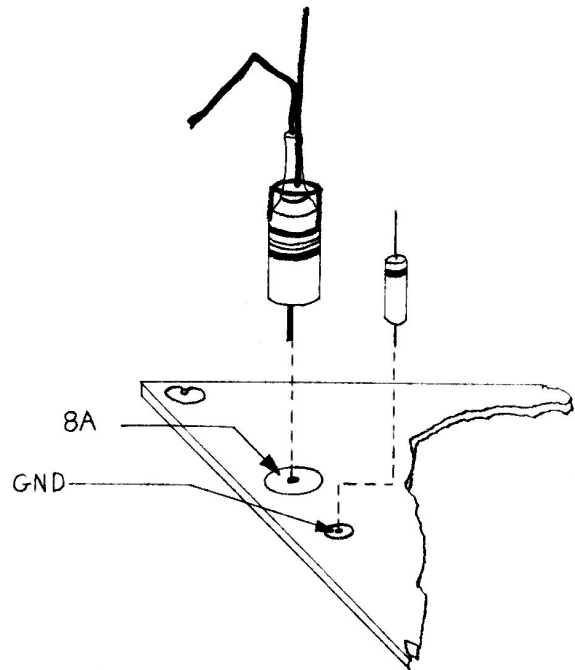
### NOTE

Insure the zener is installed with the band end up.

- ( ) Solder the zener lead to the foil (bottom) side of the Power Supply Board, and clip off any excess zener lead.
- ( ) Bend the top lead of the zener so it can be soldered to the top end of the resistor lead.
- ( ) Solder the zener lead to the resistor lead, and clip off any excess zener lead.

### NOTE

Do not clip off the top resistor lead. It will be needed later.



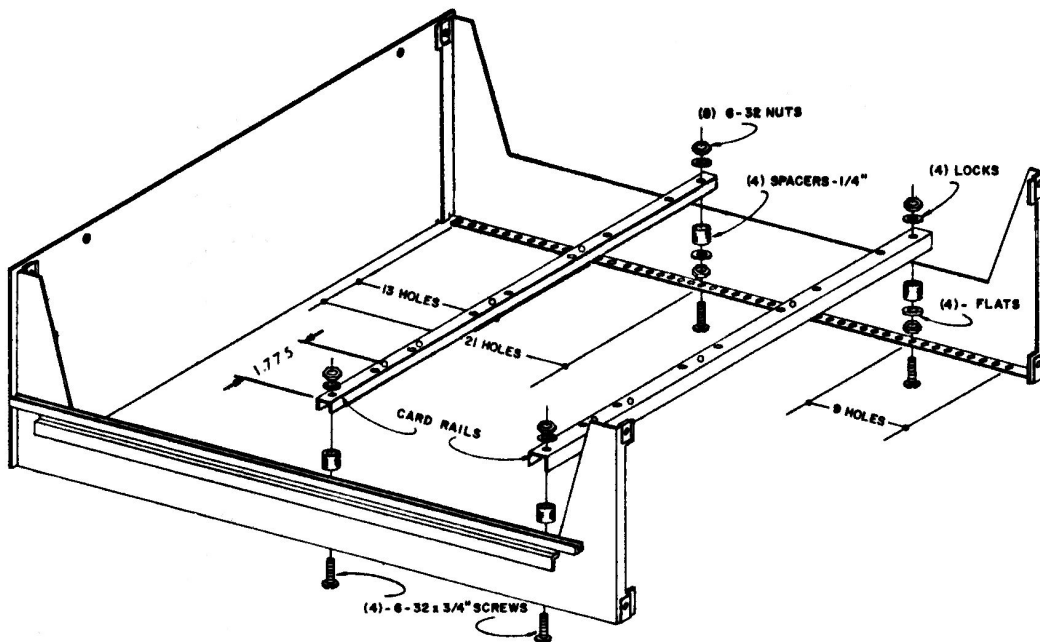
## Rail Installation

- ( ) Insure the rails are installed according to the drawing on this page. They have been modified to insure the holes line up with the motherboard.

### NOTE

The rails are not identical and must be installed as shown. If they are not installed correctly, the 18 slot motherboard cannot be installed later.

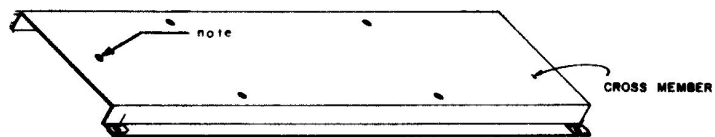
Disregard rail installation procedure on page 56 of the assembly manual.



### Addition of Hole on Cross Member

A transistor is to be installed on the cross member board. In order to mount it a hole has to be drilled through the cross member for mounting purposes.

- ( ) Using a #32 (.116 in) drill bit, drill a hole through the cross member as shown in the drawing.

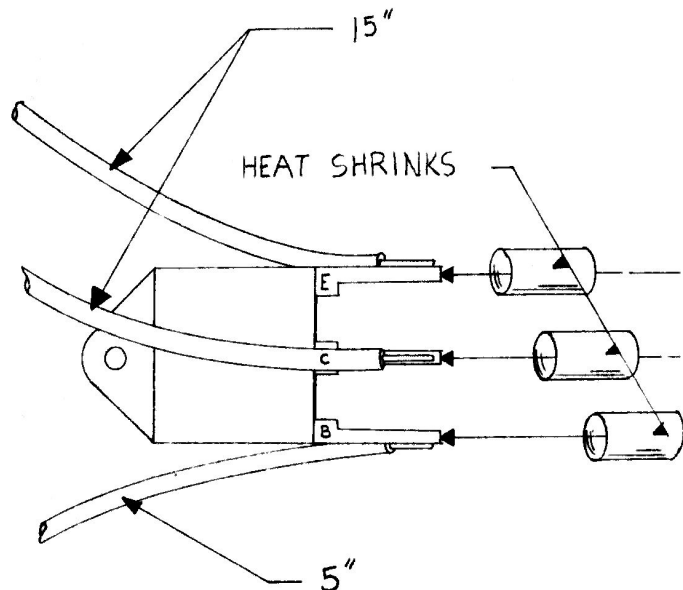


## Transistor (TIP 140 or 142) and Wiring Installation

After the Power Supply Board is mounted the transistor (TIP 140 or 142) is to be installed to the cross member. However, before it is installed, wires must be prepared and soldered to the transistor. The transistor is then mounted and wired to the terminal block and Power Supply Board.

### Wiring

- ( ) Using the 20 gauge wire, cut two lengths at 15 inches and one at 5 inches, and strip both ends of the wire (approximately 1/8 inch).
- ( ) Solder one 15 inch wire to the emitter (E) of the TIP 140. Solder the other 15 inch wire to the collector (C) of the TIP 140 (see drawing).
- ( ) Solder the 5 inch wire to the base (B) of the TIP 140. (See drawing.)
- ( ) Insulate these solder connections using the Heat Shrink Tubing or tape. (See drawing.)
- ( ) Connect terminal lugs to the free ends of the 15 inch pieces of wire.



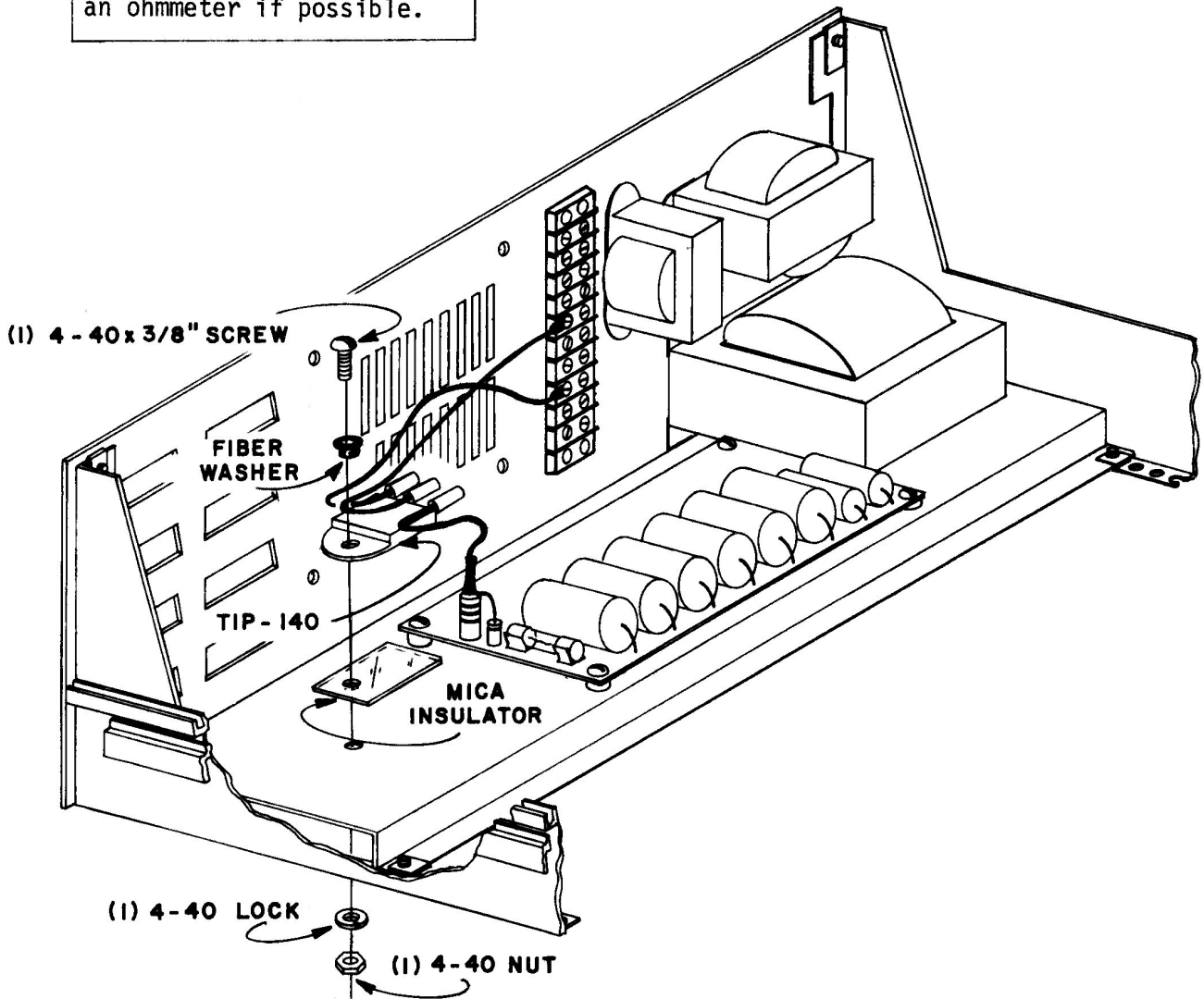


## TIP Installation

- ( ) Using a 4-40 x 3/8 inch screw, a fiber shoulder washer, mica insulator, 4-40 lockwasher, and 4-40 nut install the TIP 140 to the cross member as shown in the drawing.

### CAUTION

Insure the case of the TIP 140 is insulated from the cross member. Check with an ohmmeter if possible.



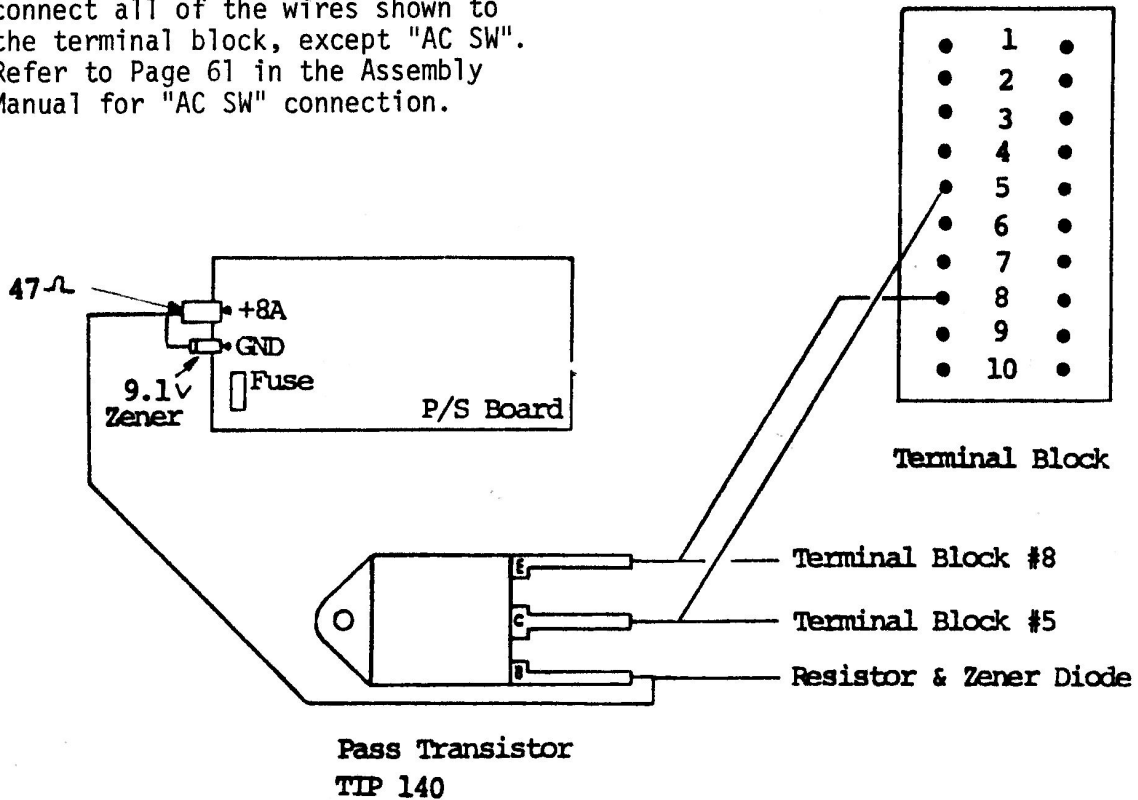
- ( ) Solder the 5 inch wire from B of the TIP 140 to the 47 ohm resistor and 9.1 volt zener connection. (See drawing)

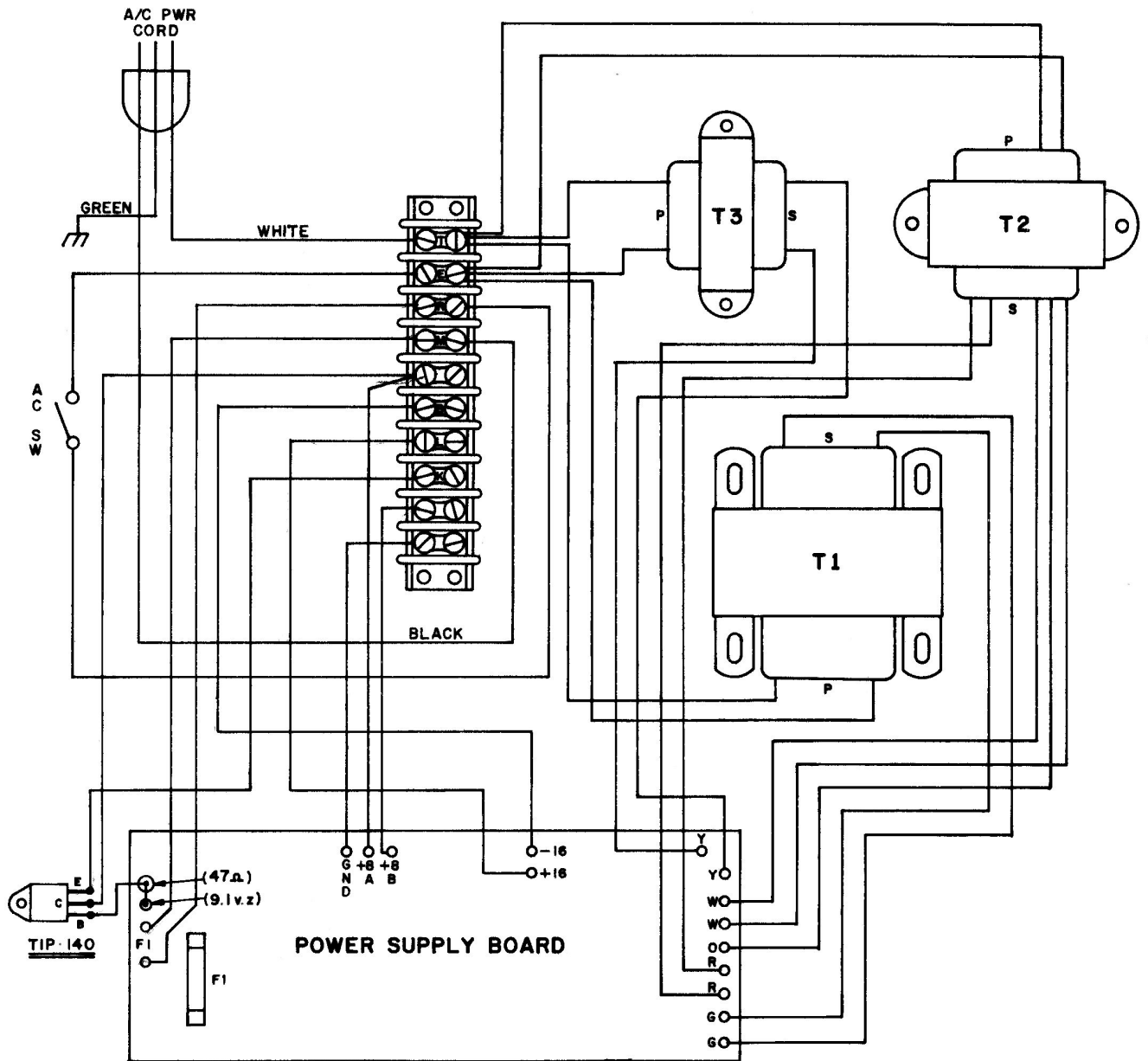
**CAUTION**

Insure the top leads of the zener and resistor are insulated in order to prevent damage.

- ( ) Attach the wire from E of TIP 140 to terminal block #8. (See drawing)
- ( ) Attach the wire from C of TIP 140 to terminal block #5. (See drawing)

Refer to the "POWER SUPPLY WIRING DIAGRAM" on the following page and connect all of the wires shown to the terminal block, except "AC SW". Refer to Page 61 in the Assembly Manual for "AC SW" connection.



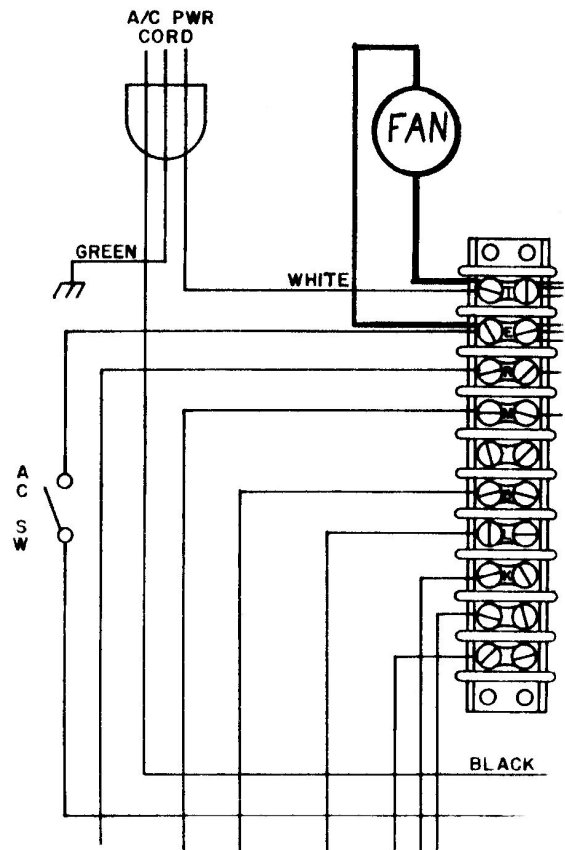


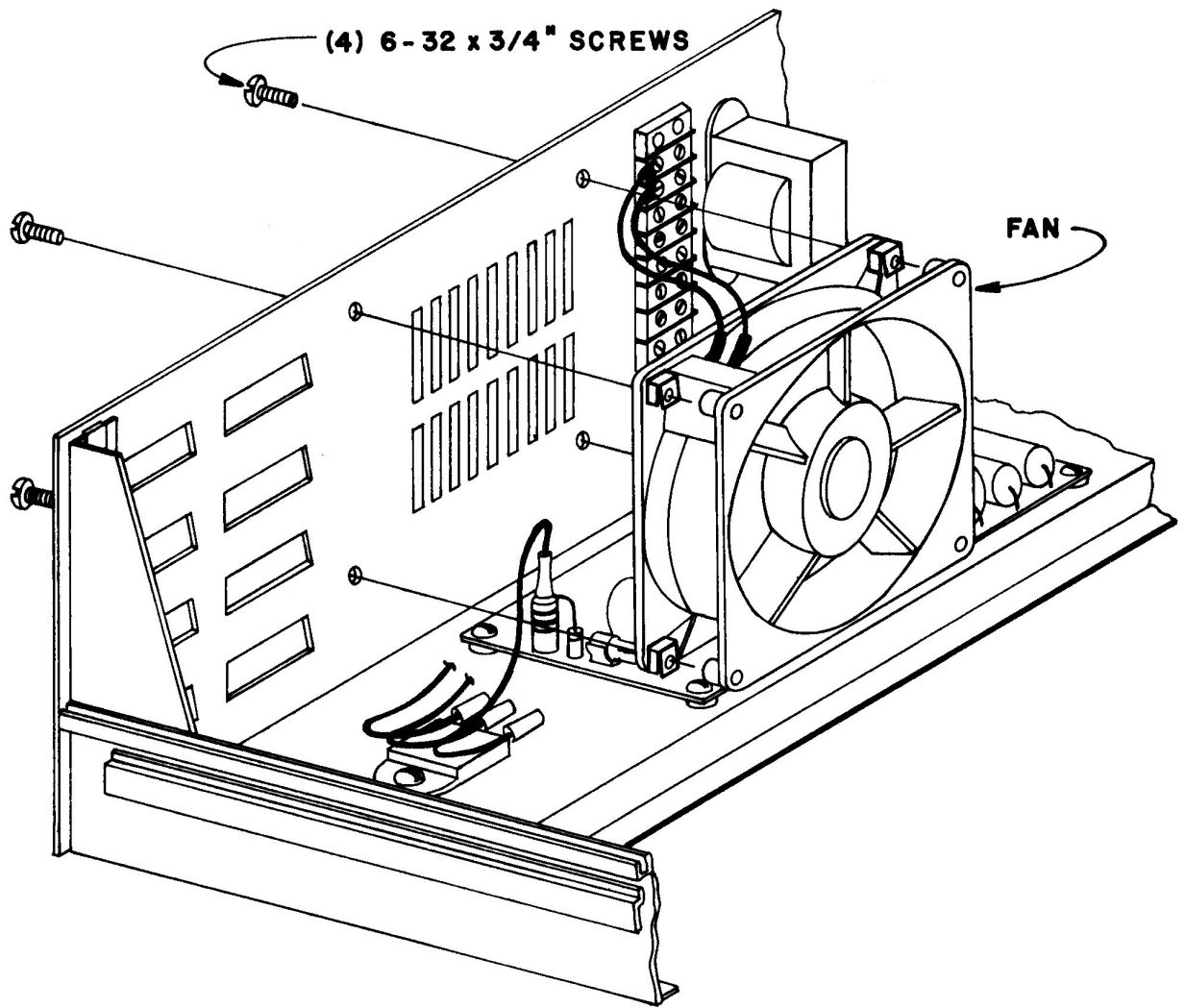
## FAN INSTALLATION

There is a 110 vac cooling fan which is to be mounted on the 8800 Back Panel.

- ( ) Cut two 3 inch lengths of wire and strip 1/4 inch of insulation from both ends of each wire. Tin the ends by applying a thin coat of solder.
- ( ) Attach a terminal lug to one end of each of the wires and solder it in place.
- ( ) Orient the fan so that the arrow with the word "AIRFLOW" is facing upwards. There are two terminals on one side of the arrow. Attach the end of one of the wires opposite the terminal lug to one of the terminals on the fan and solder it in place. Attach the other wire to the other terminal in the same manner. (See drawing on following page.)
- ( ) There are four clip nuts included with the fan hardware. These should be pressed into place over the four screw holes in the corners of the fan on the side towards which the arrow is pointing. Place them on the inside portion of the fan body which is generally shaped the same as the clip nut itself.
- ( ) Before mounting the fan, insulate the two terminals on the fan with plastic tape or tubing.
- ( ) Mount the fan to the 8800 back panel using the four screws supplied with the hardware. Orient the fan with the arrow on top pointing towards the back panel. Insert the screws from the outside of the panel and tighten them into place.

- ( ) The two terminal lugs on the three inch wires should now be connected to the terminal block. The terminals should be connected to the two top connectors on the left side of the block as shown in the circuit diagram below. Be careful not to short any of the lugs together when making these connections.





## 18-Slot Motherboard Installation

The motherboard and the display/control board can now be mounted onto the chassis.

- ( ) Before mounting the motherboard, refer to the drawing on the following page and set the board in place on the card rails. Observe where the board comes in contact with the rails themselves. Place a length of tape along the bottom (foil patterned) side of the motherboard covering all of the lands where the board comes in contact with the front rail (closest to the display/control board). Be sure that this is done for the front rail, and that no lands come in contact with the rail before continuing.

- ( ) Refer to the drawing and mount the motherboard and the sub-panel with the display/control board attached to the chassis.
- ( ) Re-mount the sub panel using the four screws you removed earlier. Be careful not to catch any of the wires beneath the boards or between the metal parts when making the installation. Disregard the Board Installation instructions on page 68 of the manual, but install the card guides as explained.

