

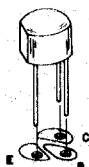
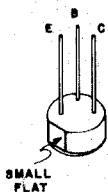
Transistor Installation

There is one CS4410 NPN transistor to be installed on the 8800 CPU Board.

NOTE: When installing this transistor, ensure that you check the part number on it before soldering it into place. Some transistors are identical in physical appearance but differ in electrical characteristics. If the part numbers of your transistors do not match the numbers called for in the instructions, it may be that you have substitutions. In this case, refer to the Transistor Identification Chart included with your manual.

- (1) This transistor is rounded and has a flat edge near one of the leads. The lead nearest this flat edge is called the emitter. The hole for the emitter is marked with an "E" on the board. If the emitter lead is placed into this hole, the other two leads should fit into their holes with little or no bending and should not cross over each other. (see drawing below)

- (2) Orient transistor Q1 (CS4410) so that the lead nearest the flat edge aligns with the hole marked "E" on the board. Insert the transistor into the holes from the silk-screened side of the board.
- (3) Holding the transistor in place, turn the board over and bend the three leads slightly outward.
- (4) Solder the leads to the foil pattern on the back side of the board; then clip off any excess lead lengths.



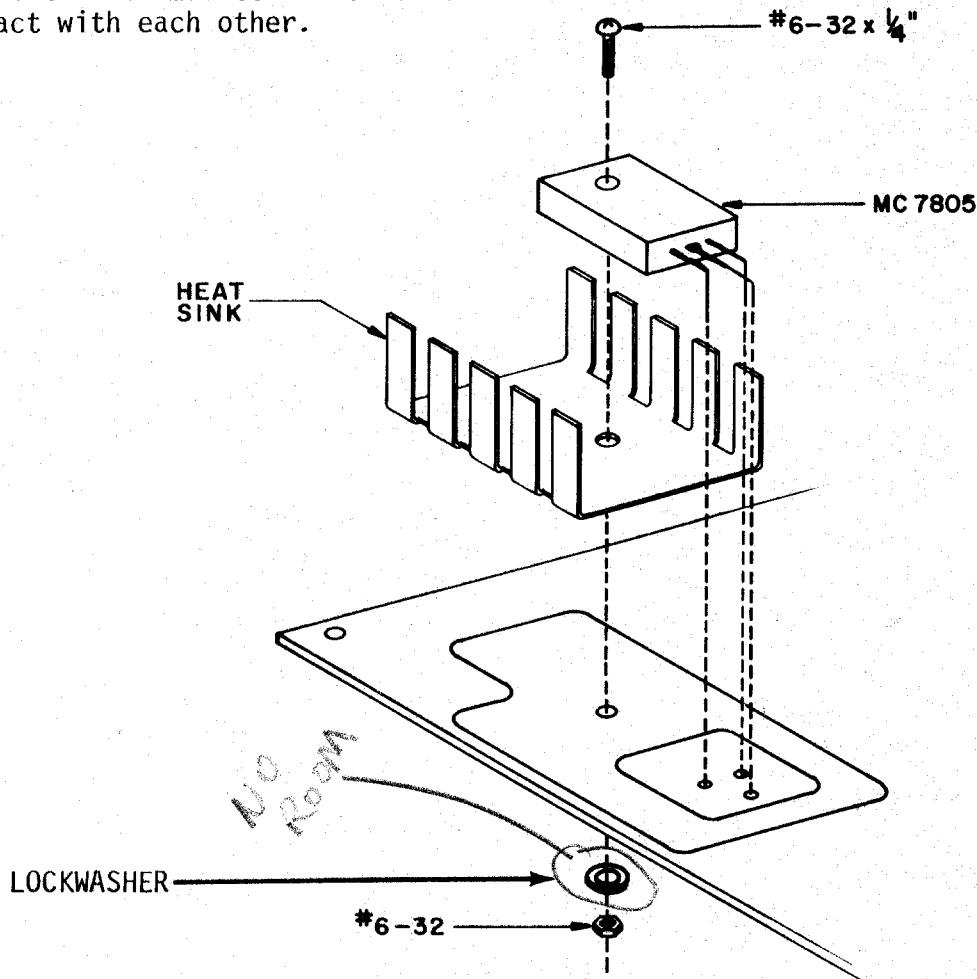
Voltage Regulator Installation

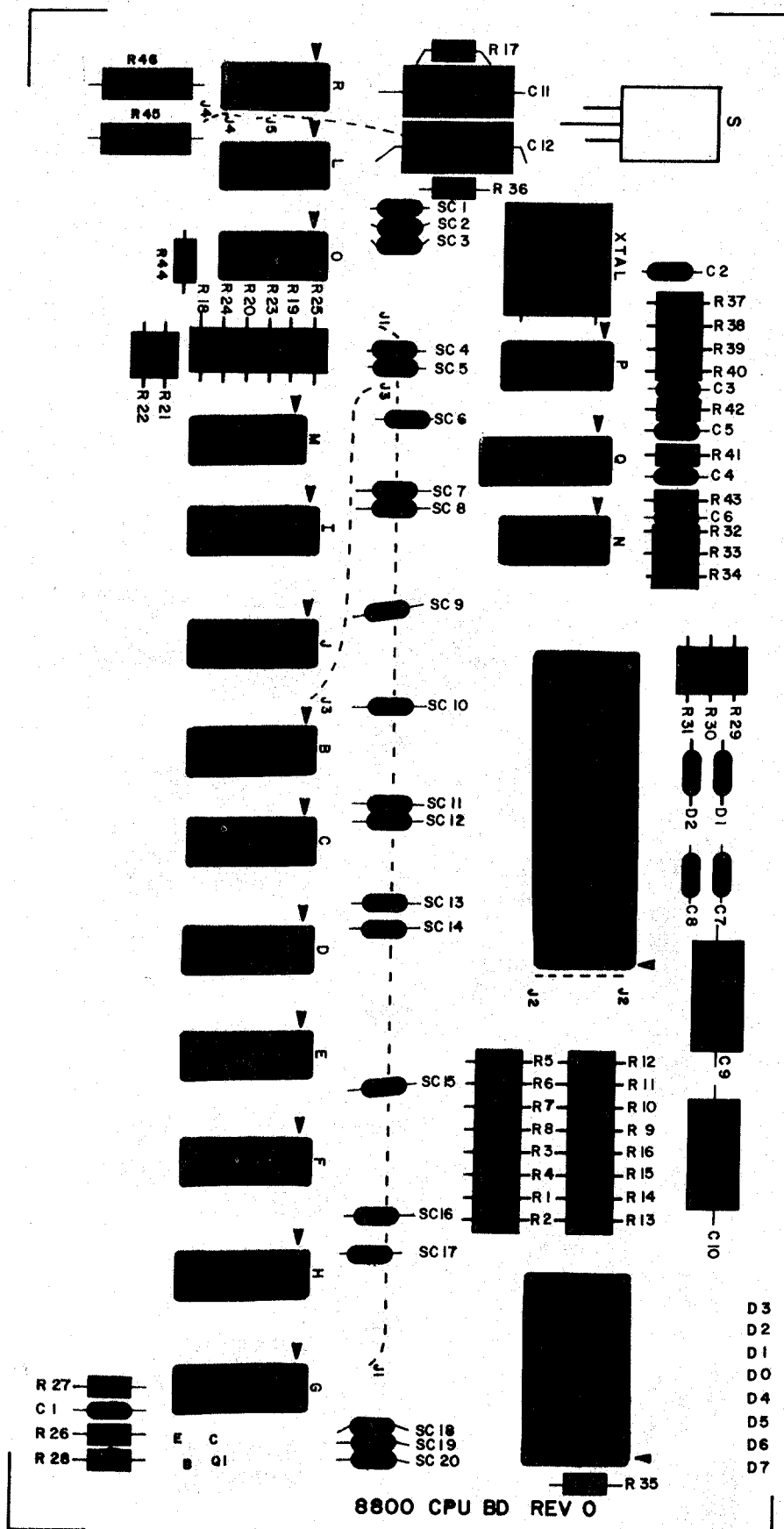
There is one MC7805 5-volt regulator to be installed on the 8800 CPU Board.

- (/) Set the MC7805 in place on the board and align the mounting holes. (see drawing)
- (/) Use a pencil to mark the point on each of the three leads where they line up with their respective holes on the board.
- (/) Use needle-nose pliers to bend each of the three leads at a right angle on the points where you made the pencil marks.

NOTE: Use heat-sink grease when installing this component. Apply the grease to all surfaces which come in contact with each other.

- (/) Referring to the drawing, set the regulator and heat sink in place on the silk-screened side of the board. Secure them to the board using a #6-32 nut. Hold the regulator in place as you tighten the nut to keep from twisting the leads.
- (/) Turn the board over and solder the three leads to the foil pattern on the back side of the board. Be sure not to leave any solder bridges.
- (/) Clip off any excess lead lengths.





8800 CPU BD REV 0

() S is a UA7805

() Q1 is a CS4410, NPN transistor.

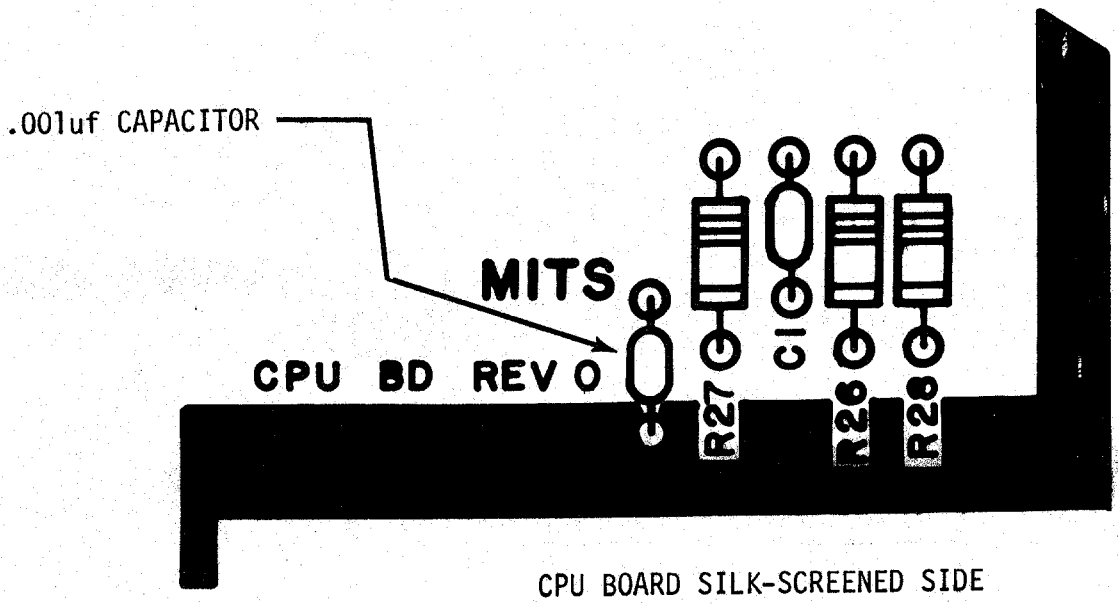
- D3
- D2
- D1
- D0
- D4
- D5
- D6
- D7

CPU BOARD REVISION

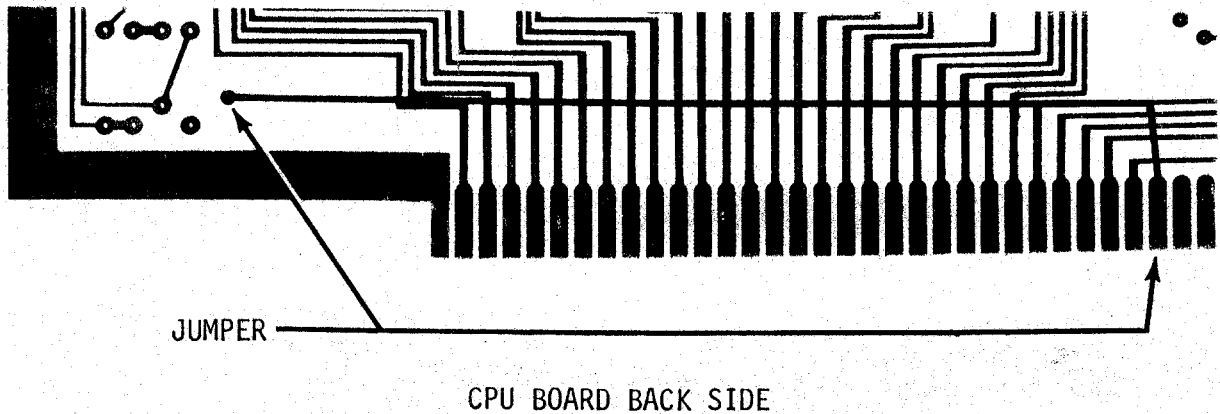
A .001uf capacitor must be added to the 8800 CPU Board between ground and the Protect line (Ref. P. 72 Bus Structure).

() 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.



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



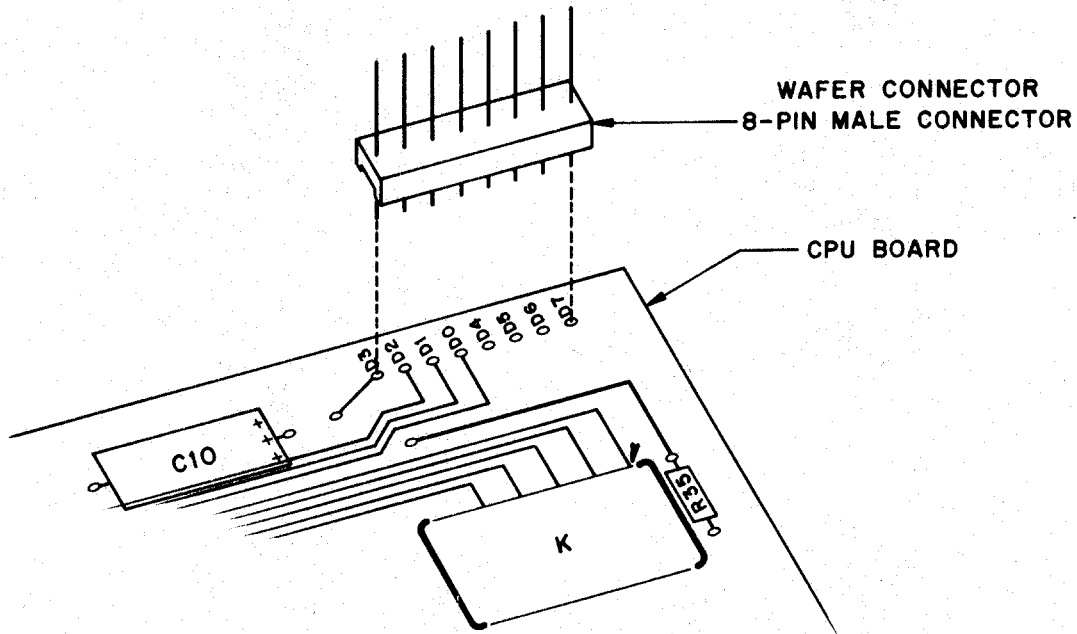
Wafer Connector Installation

There is one 8-pin male connector to be installed on the 8800 CPU Board.

(✓) Referring to the drawing below, insert the 8-pin wafer connector into the correct holes on the board from the silk-screened side. Be sure to insert the side with the shorter pins.

(✓) Holding the connector in place, turn the board over and solder the 8 pins to the foil pattern on the back side of the board.

SEE COMPUTER NOTES
PG 19



1K STATIC MEMORY BOARD ASSEMBLY

*****NOTE*****

THIS BOARD MAY OR MAY NOT BE INCLUDED WITH YOUR KIT, DEPENDING ON IF IT WAS ORDERED. IF IT IS NOT INCLUDED, SKIP THIS SECTION.

Integrated Circuit Installation

There are 20 integrated circuits (IC's) to be installed on the 8800 1K Static Memory Board. Some of these are MOS IC's and are very sensitive to static electricity and transient voltages. Read the MOS IC Special Handling Precautions sheet included with your manual before proceeding.*

- () Referring to the component layout, remove the IC with the correct part number from its holder. If there are any bent pins, straighten these using needle-nose pliers. Ensure that you choose the IC with the correct part number as you install each one.
- () Orient the IC so that its notched end corresponds with the notch printed on the PC board, and pin 1 of the IC corresponds with the pad marked with an arrowhead on the board.

NOTE: If the IC does not have a notch on one end, refer to the IC Orientation Chart included with your manual for the identification of pin 1.

- () When you have the correct orientation, start the pins on one side of the IC into their respective holes on the silk-screened side of the PC board. DO NOT PUSH THE PINS IN ALL THE WAY. If you have difficulty getting the pins into the holes, use the tip of a small screwdriver to guide them.

- () Start the pins on the other side of the IC into their holes in the same manner. When all of the pins have been started, set the IC in place by gently rocking it back and forth until it rests as close as possible to the board. Make sure that the IC is perfectly straight and as close as possible to the board; then tape it in place with a piece of masking tape.
- () Turn the board over and solder each pin to the foil pattern on the back side of the board. Be sure to solder each pin and be careful not to leave any solder bridges.
- () Turn the board over again and remove the piece of masking tape.

Use the same procedure to install each of the IC's. Be sure that you have the correct part number and the correct orientation as you install each one.

*The basic memory block includes 256 words of memory. This means that only two 8101 IC's are used. Install these two in positions MA1 & MA2. Each additional 256 word block of memory is installed in the same manner; i.e. MB1 & MB2, MC1 & MC2, MD1 & MD2.

() MA1 & MA2 through MD1 & MD2 are 8101 static RAM's.

() J & H are 8T97's

() D & N & L are 74L00's

() F is a 7400 or a 74L00

() C & A are 74L04's

() E is a 7404

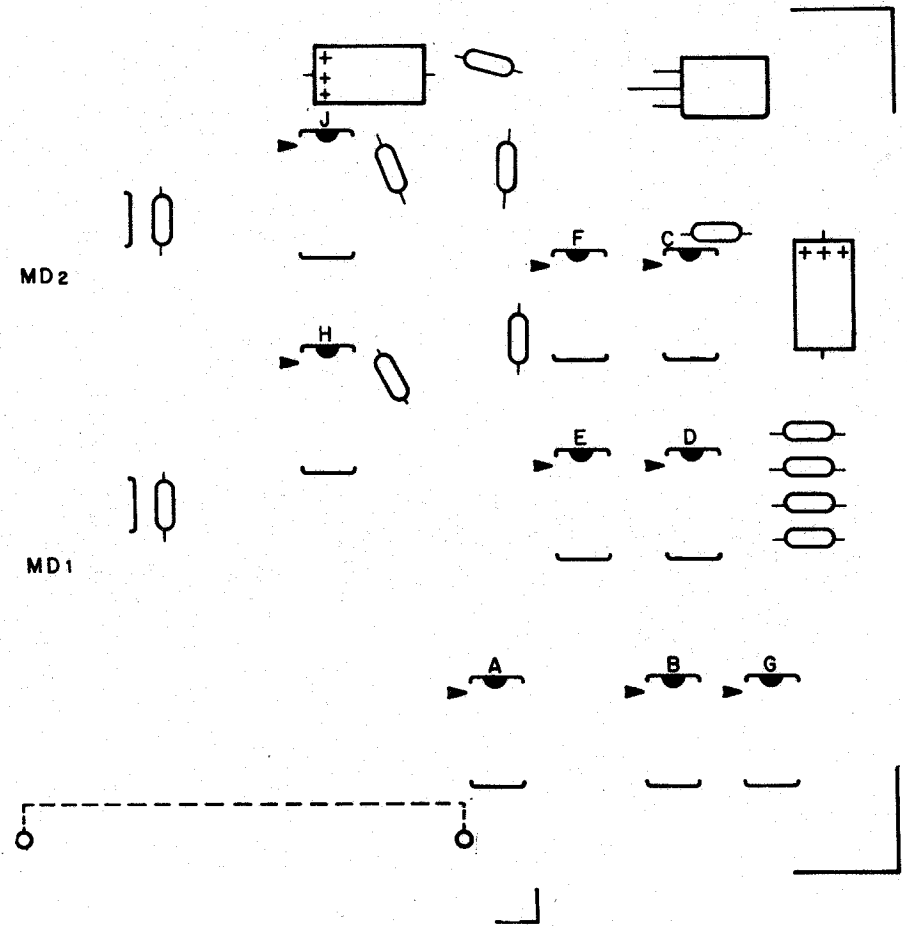
() K is a 74L73

() B is a 74L30

() G is a 7432

41

8800 1K STATIC MEM BOARD
REV 0



Capacitor Installation

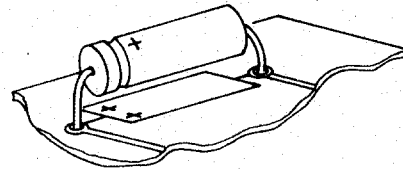
There are 21 ceramic disk and 2 electrolytic capacitors to be mounted on the 8800 1K Static Memory Board.

Refer to the component layout and install the ceramic disk capacitors according to the following procedure.

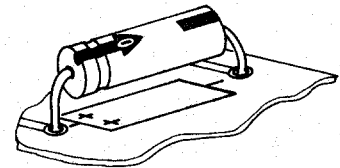
- () Choose the capacitor with the correct value as called for in the instructions. Straighten the two leads and bend them as necessary to fit their respective holes on the PC board.
- () Insert the capacitor into the correct holes from the silk-screened side of the board. Push the capacitor down until the ceramic insulation almost touches the foil pattern.
- () Holding the capacitor in place, turn the board over and bend the two leads slightly outward.
- () Solder the two leads to the foil pattern on the back side of the board; then clip off any excess lead lengths.

Install all of the ceramic disk capacitors in this manner. Be sure that you have the correct value capacitor as you install each one.

The two electrolytic capacitors for the memory board have polarity requirements which must be noted before installation. Those contained in your kit may have one or possibly two of three types of polarity markings. To determine the correct orientation, look for the following: (see drawing above right)



ELECTROLYTIC
CAPACITOR

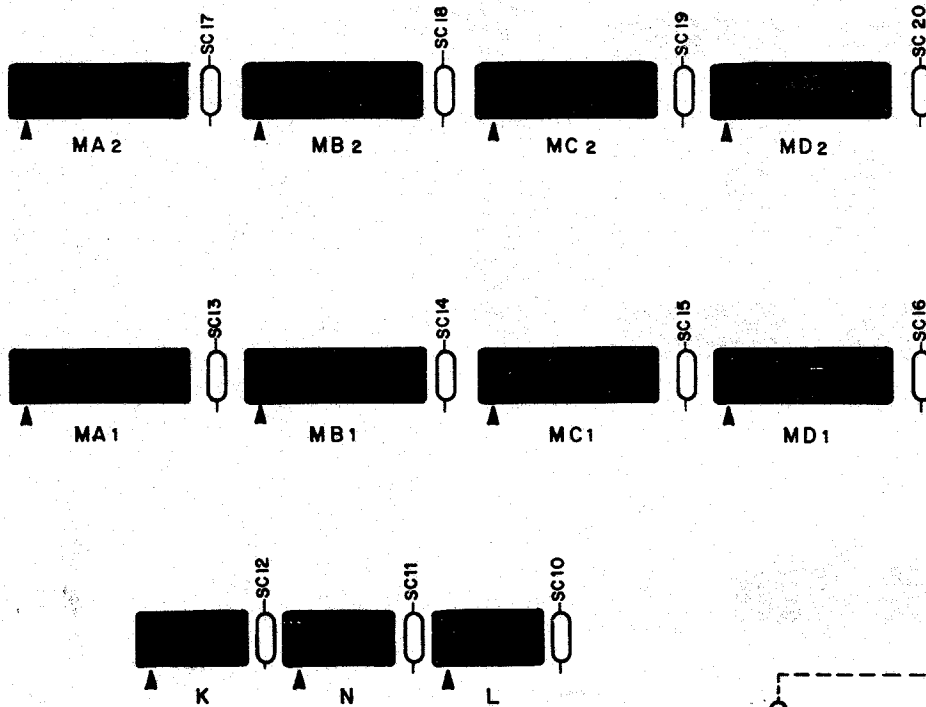


One type will have plus (+) signs on the positive end; another will have a band or a groove around the positive side in addition to the plus signs. The third type will have an arrow on it; in the tip of the arrow there is a negative (-) sign and the capacitor must be oriented so the arrow points to the negative polarity side.

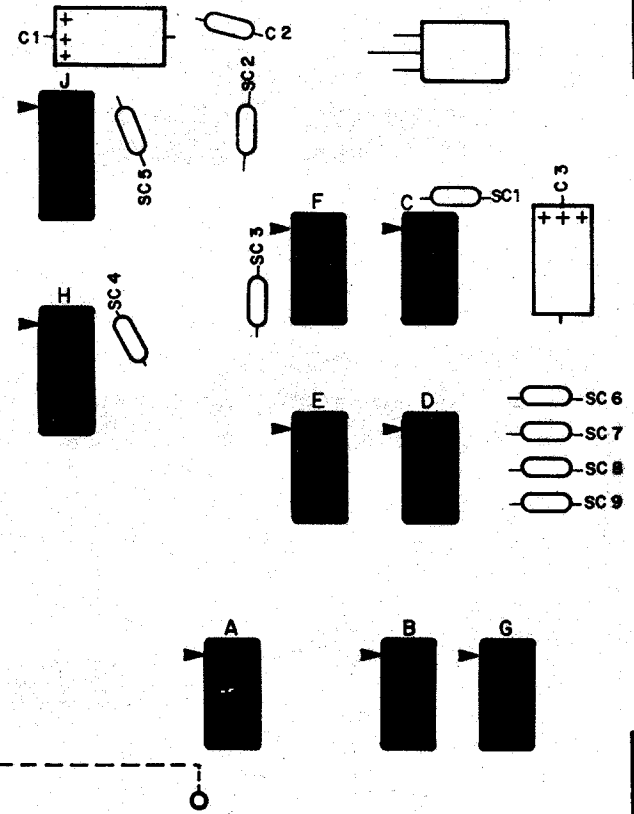
Referring to the component layout, install the electrolytic capacitors on the board.

- () Bend the two leads of the capacitor with the correct value at right angles to match their respective holes on the board. Insert the capacitor into the holes on the silk-screened side of the board. Be sure to align the positive polarity side with the "+" signs printed on the board.
- () Holding the capacitor in place, turn the board over and bend the two leads slightly outward. Solder the leads to the foil pattern and clip off any excess lead lengths.
- () Install the second electrolytic capacitor in the same manner.

8800 1K STATIC MEM BOARD
REV 0



- () C1 & C3 are 20uf to 35uf
- () SC1 through SC20 are .1uf
- () C2 is .1uf

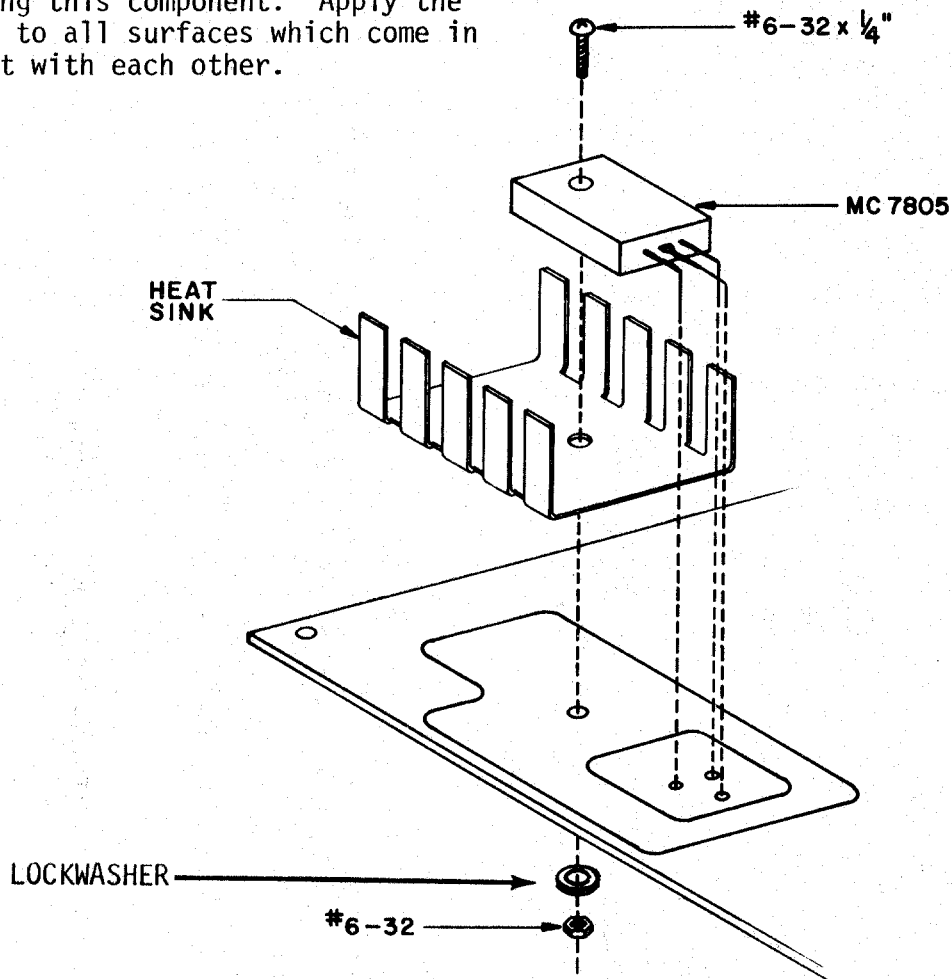


Voltage Regulator Installation

There is one MC7805 5-volt regulator to be installed on the 8800 1K Static Memory Board.

- () Set the MC7805 in place on the board and align the mounting holes. (see drawing)
- () Use a pencil to mark the point on each of the three leads where they line up with their respective holes on the board.
- () Use needle-nose pliers to bend each of the three leads at a right angle on the points where you made the pencil marks.
- () Referring to the drawing, set the regulator and heat sink in place on the silk-screened side of the board. Secure them to the board using a #6-32 nut. Hold the regulator in place as you tighten the nut to keep from twisting the leads.
- () Turn the board over and solder the three leads to the foil pattern on the back side of the board. Be sure not to leave any solder bridges.
- () Clip off any excess lead lengths.

NOTE: Use heat-sink grease when installing this component. Apply the grease to all surfaces which come in contact with each other.



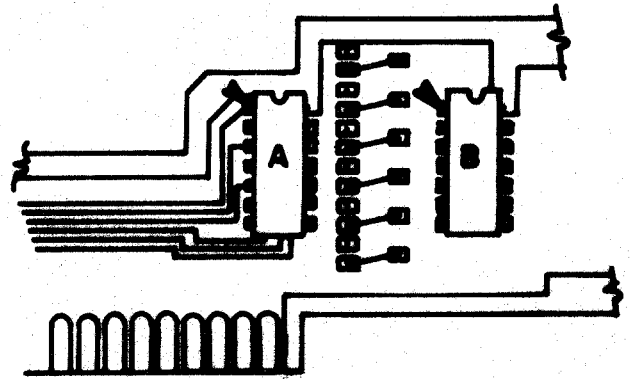
Hardwire Jumper Connections

There are seven jumper connections to be made on the 8800 1K Static Memory Board.

- () One jumper is indicated on the board by two pads marked "J1" connected with a broken line.
- () Insert the two ends of the jumper wire from the silk-screened side of the board into the correct holes.
- () Solder the wire ends to the foil pattern on the back side of the board; then clip off any excess lead lengths.

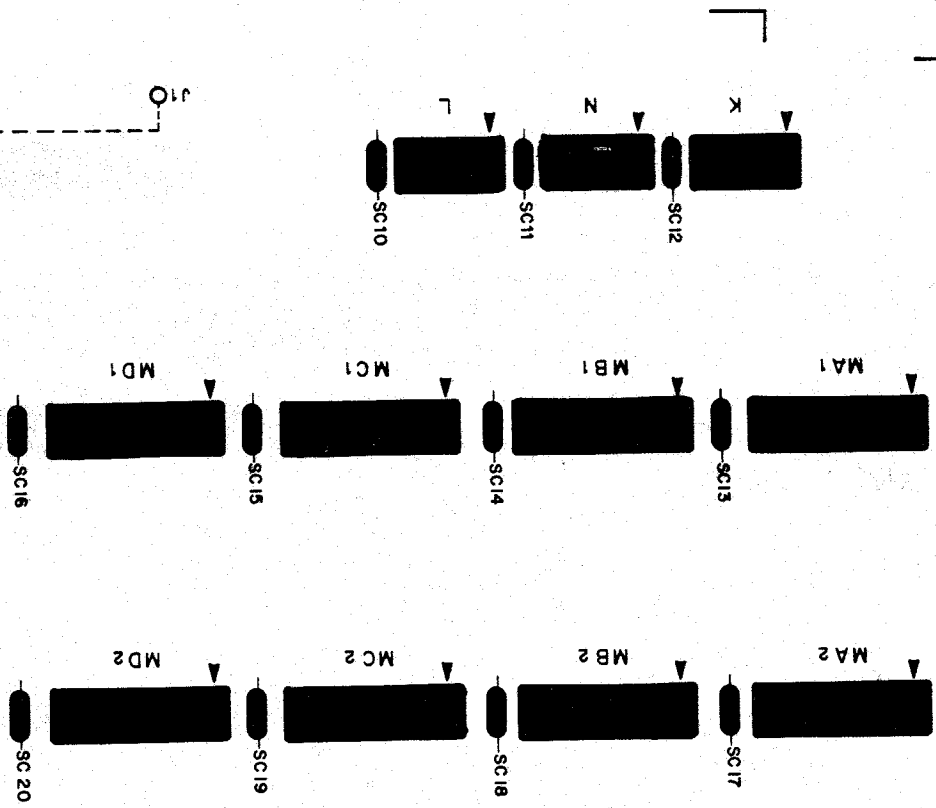
The remaining six jumpers can be made using uninsulated wire or the leftover leads clipped off of previously installed components.

- () These six jumpers are located in the bottom right corner of the board, between IC's A and B.
- () There is a row of 12 pads next to IC A, and a row of 6 pads directly opposite next to IC B. Each of the pads in the row of 6 is to be connected to one of the pads in the row of 12.
- () Start with the bottom pad in the row of 6 pads and connect it in the same manner as above to the bottom pad in the row of 12.
- () In the same manner, connect each of the remaining pads in the row of 6 to every other one of the pads in the row of 12. Start at the bottom and work up. This should leave the top pad in the row of 12 empty.

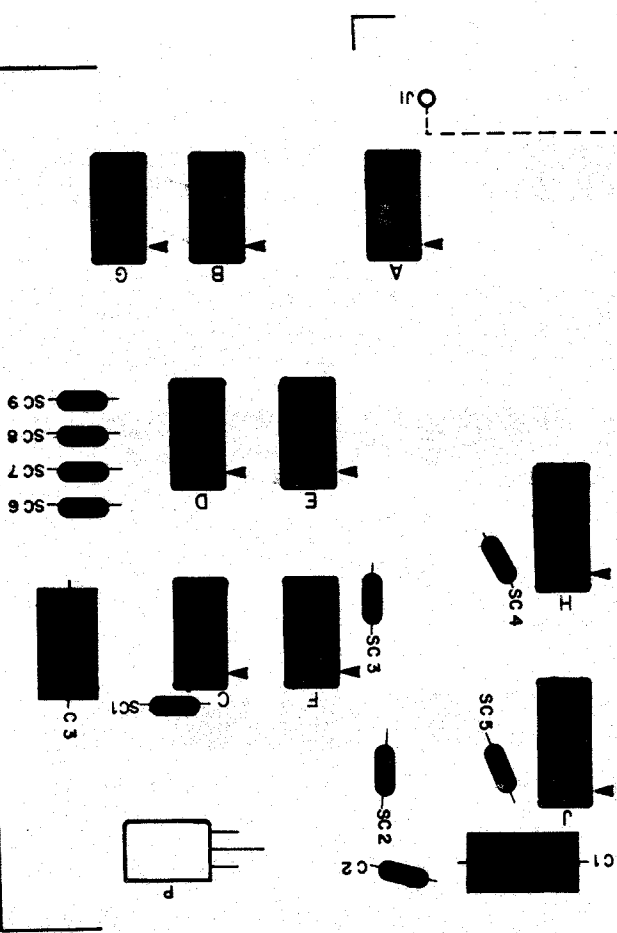


NOTE: Further information on the function of these six jumpers will be received as necessary for future memory expansion.

8800 1K STATIC MEM BOARD
REV 0



() P is a uA7805
() Install J1



8800 POWER SUPPLY BOARD ASSEMBLY

Resistor Installation

There are 4 resistors to be installed on the 8800 Power Supply Board.

NOTE: Resistors are color-coded according to their value. The resistors in your kit will have four or possibly five bands of color. The fourth band in both cases will be gold or silver, indicating the tolerance. In the following instructions we will be concerned only with the three bands of color to one side of the gold or silver band. Be sure to match these three bands of color with those called for in the instructions as you install each resistor.

Using needle-nose pliers, bend the leads of the following resistors at right angles to match their respective holes on the PC board. (see component layout)

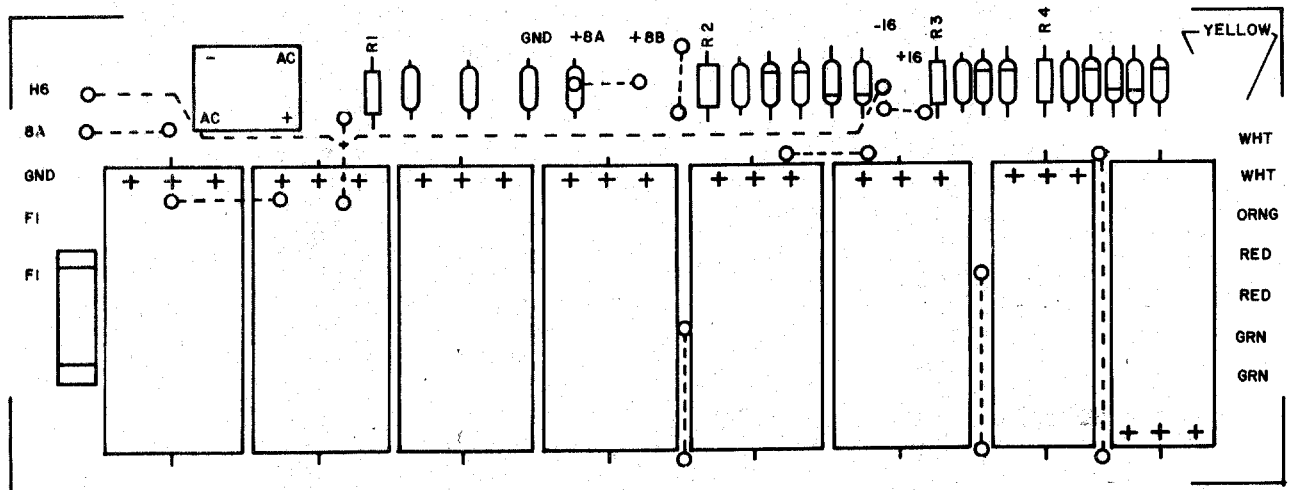
- (/) R1 (470-ohm, 1/2W, yellow-violet brown)
- (/) R2 (1K-ohm, 1/2W, brown-black-red)

NOTE: All resistors on the 8800 Power Supply Board are 1/2 Watt.

- (/) Install resistor R1 (470-ohm, yellow-violet-brown) into the correct holes on the silk-screened side of the PC board.
- (/) Holding the resistor in place with one hand, turn the board over and bend the two leads slightly outward.
- (/) Solder the leads to the foil pattern on the back side of the board; then clip off any excess lead lengths.

Referring to the component layout, install the remaining resistors in the same manner. Be sure you have the correct color-coding for each one as you install them.

- (/) R3 (4.7K-ohm, 1/2W, yellow-violet red)
- (/) R4 (4.7K-ohm, 1/2W, yellow-violet red)



Diode Installation

There are 10 diodes (1N4004's) to be installed on the 8800 Power Supply Board.

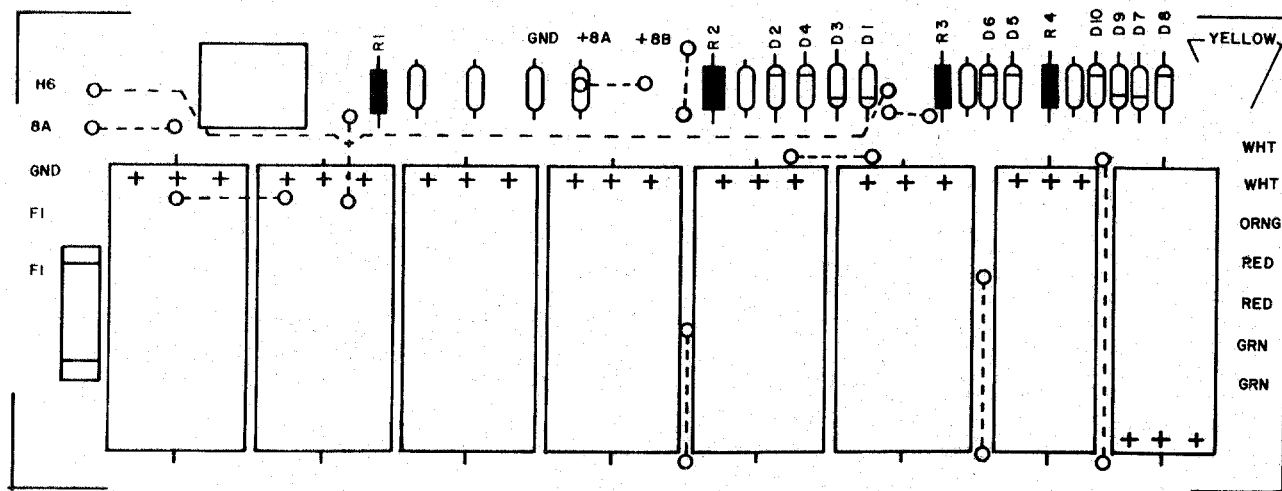
NOTE: Diodes are marked with a band on one end indicating the cathode end. The diode must be oriented so that the end with the band is towards the band printed on the board when being installed.

- () Referring to the component layout, bend the leads of diode D1 (1N4004) at right angles to match the correct holes on the board.
- () Insert the diode into the correct holes from the silk-screened side of the board. Turn the board over and bend the two leads slightly outward.
- () Solder the two leads to the foil pattern on the back side of the board; then clip off any excess lead lengths.

Install the remaining 9 diodes in the same manner. Be sure that you have the band on the diode aligned with the band printed on the board as you install each one. Failure to orient these diodes correctly may result in permanent damage to your unit.

D1 through D10 are all 1N4004 diodes.

- (/) D1 (/) D2 (/) D3 (/) D4
- (/) D5 (/) D6 () D7 (/) D8
- (/) D9 (/) D10



Ceramic Disk Capacitor Installation

There are 7 ceramic disk capacitors to be installed on the 8800 Power Supply Board.

Refer to the component layout and install the capacitors according to the following procedure.

- () Choose the capacitor with the correct value as called for in the instructions. Straighten the two leads and bend them as necessary to fit their respective holes on the PC board.
- () Insert the capacitor into the correct holes from the silk-screened side of the board. Push the capacitor down until the ceramic insulation almost touches the foil pattern.

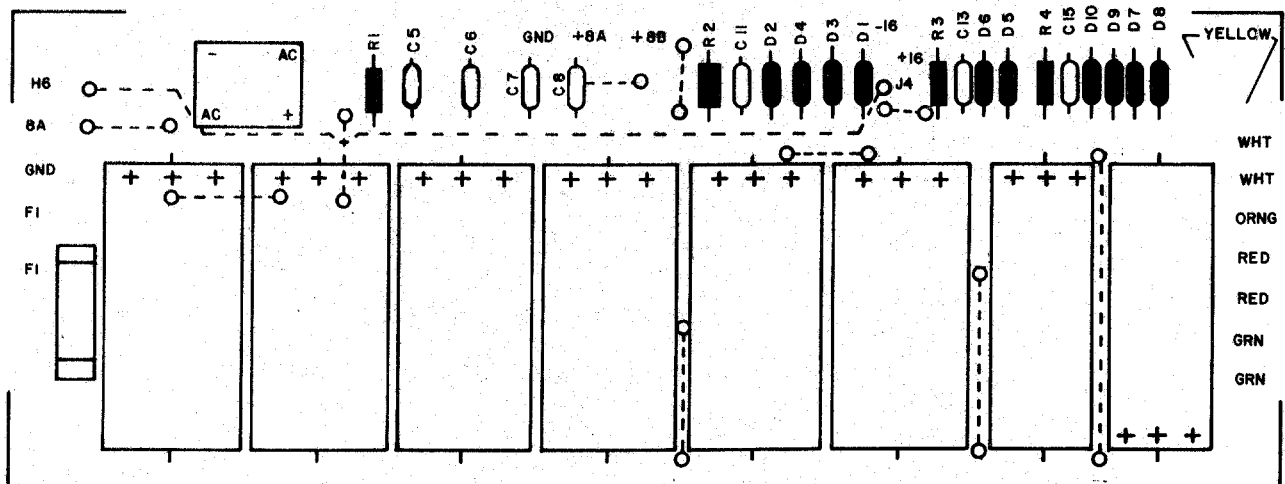
- () Holding the capacitor in place, turn the board over and bend the two leads slightly outward.
- () Solder the two leads to the foil pattern on the back side of the board; then clip off any excess lead lengths.

Install all of the ceramic disk capacitors in this manner. Be sure you have the correct value capacitor as you install each one.

All ceramic disk capacitors are .1uf.

- (/) C5 () C6 (/) C7 (/) C8
- (/) C11 (/) C13 (/) C15

NOTE: Capacitors C13 and C15 must be rated at 50V. The voltage rating on the other capacitors may vary with the stock supply.



Rectifier Installation

There is one 10 amp bridge rectifier (VJ048) to be installed on the 8800 Power Supply Board.

WARNING: It is very important that this component be properly oriented before it is soldered into place. If it is not in the correct orientation it may cause major damage to the rest of your unit.

There is a "+" and a "-" sign on opposite sides of the VJ048 rectifier. The four leads of this component should be aligned so that the "+" and "-" signs printed on the board correspond with the signs marked on the rectifier itself.

SEE
COMPUTER
NOTES
PG 19

- (✓) Referring to the drawing on the opposite page, physically mount the rectifier to the foil pattern side of the board as shown. It is very important that the spacing be precisely as indicated in the drawing.
- (✓) Check to make sure that the "+" and "-" signs on the board and the VJ048 correspond.
- (✓) Very carefully solder the four leads to the foil pattern. You will be soldering between the board and the body of the rectifier, so take extra care not to leave any solder bridges.
- (✓) Clip the excess lead lengths from the top of the board; then remove the nut and other hardware so that only the solder connections are holding the rectifier in place.

Hardwire Jumper Connections

There are 11 jumper connections to be made on the 8800 Power Supply Board.

The jumper connections are indicated on the board by two pads with the same designation and connected by a broken line. (see component layout)

Care must be taken when installing these jumpers to be sure that you do not short them to any other components on the top of the board. All of the jumpers except the one marked "J4" can be made with uninsulated bus wire if desired.

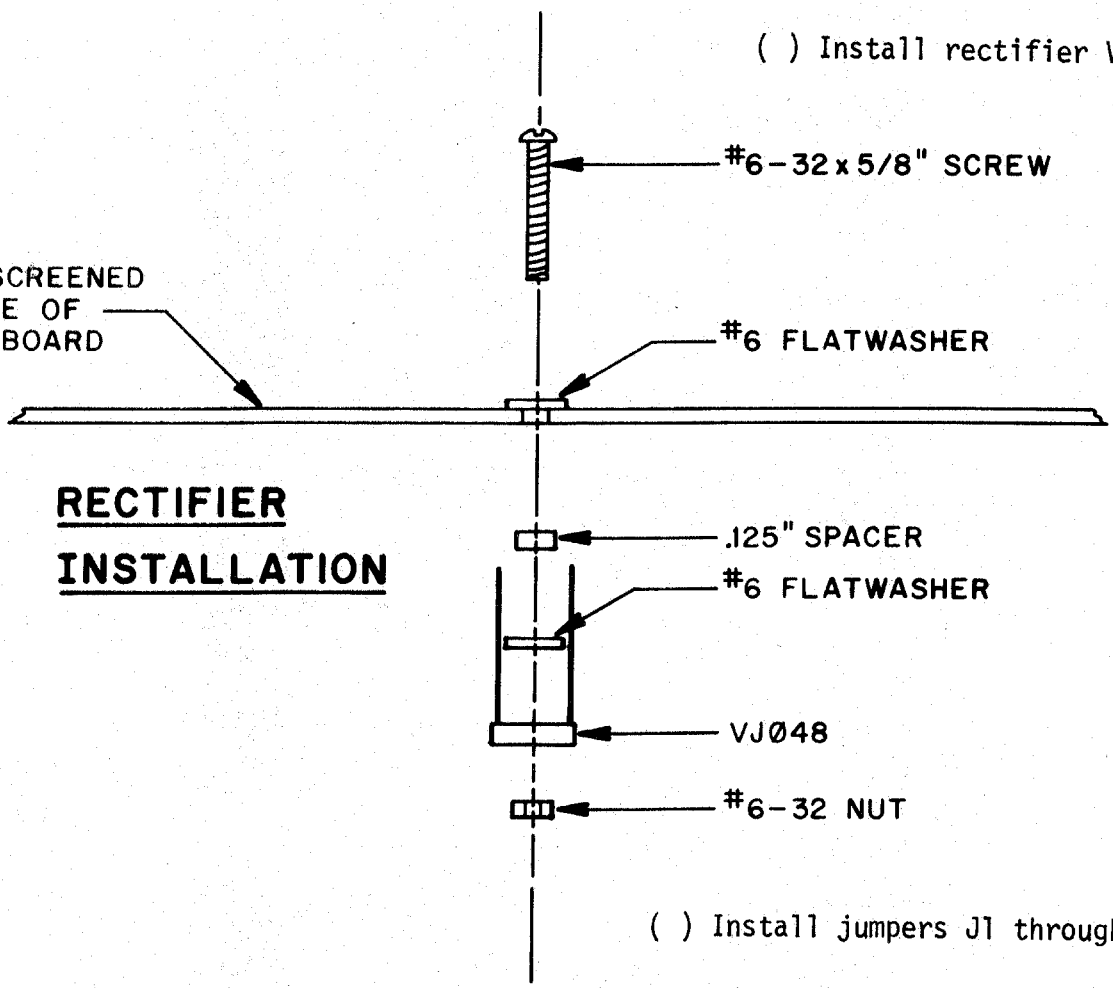
- (✓) Connect J1 to J1, J2 to J2, etc. by inserting the jumper wires from the silk-screened side of the board and soldering them to the foil pattern on the back side.

Be sure to install all 11 jumpers and be careful not to create any shorts between components.

- (✓) Clip off any excess lead lengths.

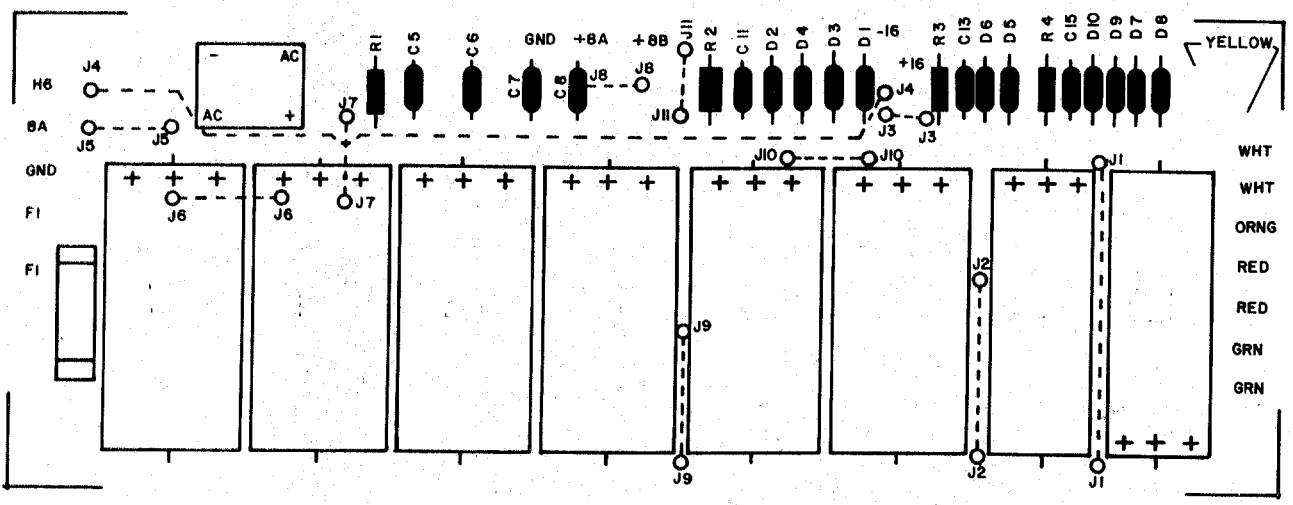
() Install rectifier VJ048

SILK-SCREENED
SIDE OF
P.S. BOARD



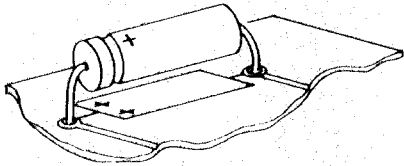
**RECTIFIER
INSTALLATION**

() Install jumpers J1 through J11

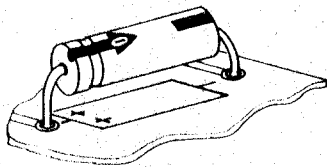


Electrolytic Capacitor Installation

There are eight electrolytic capacitors to be installed on the 8800 Power Supply Board. These capacitors have polarity requirements which must be noted before installation. Those contained in your kit may have one or possibly two of three types of polarity markings. To determine the correct orientation, look for the following: (see drawing below)



ELECTROLYTIC
CAPACITOR

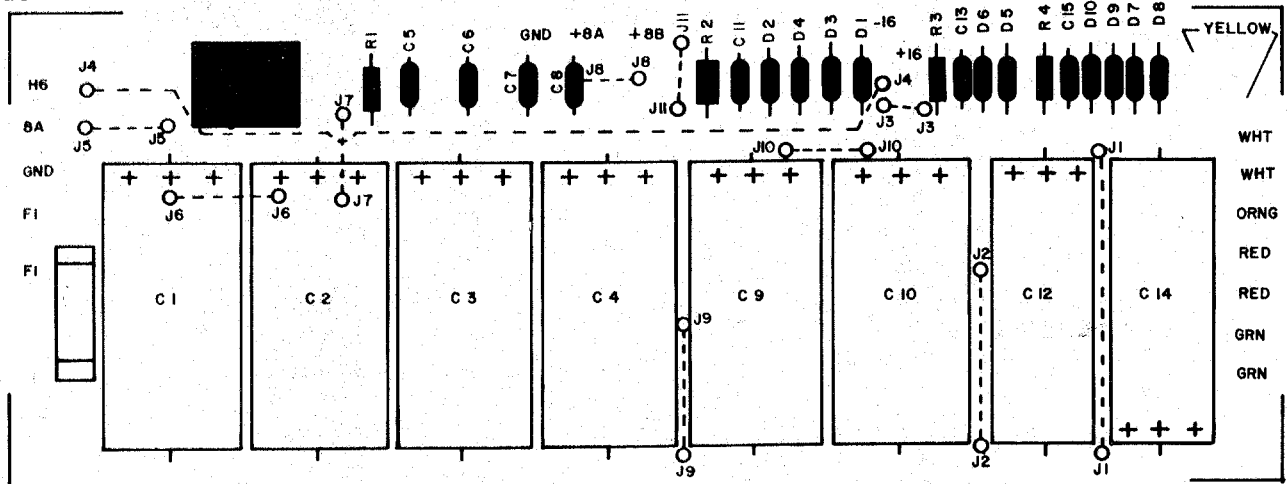


One type will have plus (+) signs on the positive end; another will have a band or a groove around the positive side in addition to the plus signs. The third type will have an arrow on it; in the tip of the arrow there is a negative (-) sign and the capacitor must be oriented so the arrow points to the negative polarity side.

Referring to the component layout, install the electrolytic capacitors on the board.

- (/) Bend the two leads of the capacitor with the correct value at right angles to match their respective holes on the board. Insert the capacitor into the holes on the silk-screened side of the board. Be sure to align the positive polarity side with the "+" signs printed on the board.
- (/) Holding the capacitor in place, turn the board over and bend the two leads slightly outward. Solder the leads to the foil pattern and clip off any excess lead lengths.
- (/) Install all of the capacitors in the same manner.

- () C1, C2, C3, C4, C9, and C10 are all 3300uf capacitors.
- () C12 is any value from 1000 to 2200uf.
- () C14 is 500uf.

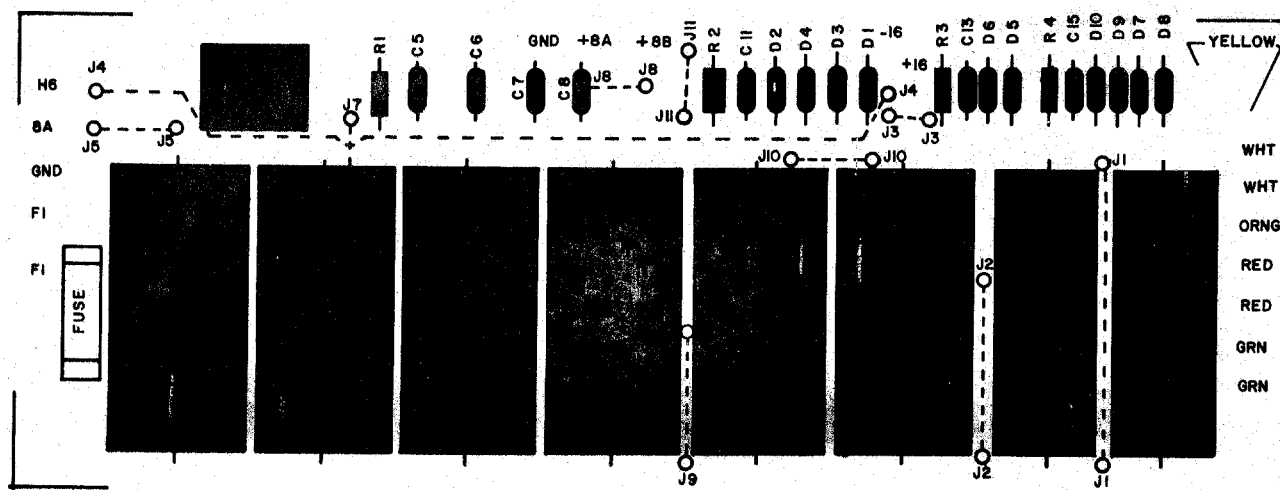
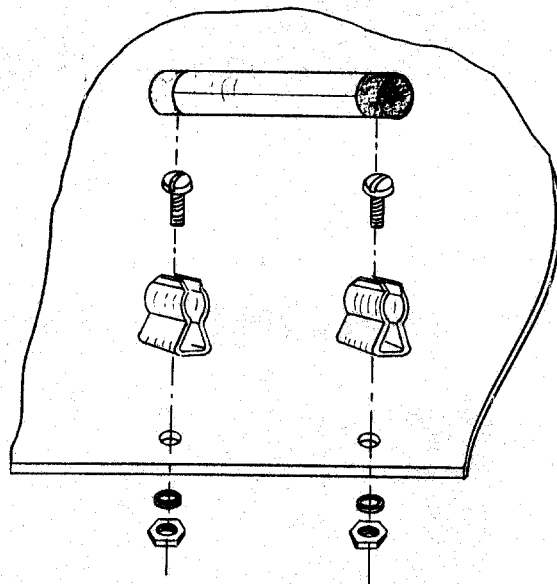


Fuse and Fuse Clip Installation

There are two fuse clips and a fuse to be installed on the 8800 Power Supply Board.

- (✓) Spread one of the fuse clips apart slightly and insert a #4-40 X 1/4 inch screw. (see drawing)
- () Align the clip and screw over the correct hole on the silk-screened side of the board and insert the screw into the hole.
- (✓) Holding the clip and screw in place with a screwdriver, place a #4-40 lockwasher and nut onto the screw on the foil side of the board and tighten them securely.
- () Install the second clip in the same manner; then push the clips back together so they will hold the fuse.

- (✓) Carefully insert the fuse into the clips. Be sure that the clips hold the fuse securely in place.



SEE
NOTE PG. 1

TRANSFORMER MOUNTING

There are three power supply transformers to be mounted on the 8800 back panel.

Transformer T1 is mounted using four #8-32 X 3/8 inch screws with a flat-washer, lockwasher and nut on each of them. (see drawing)

(✓) Referring to the drawing, set T1 in place and install the four mounting screws with washers and nuts. DO NOT TIGHTEN THE NUTS DOWN AT THIS TIME.

(✓) You will observe that the mounting holes on T1 are oval rather than round.

(✓) Set the cross member in place directly beneath T1 and allow the transformer to slide down until it rests on the cross member. Now tighten the two top mounting screws on T1 as securely as possible.

(✓) Remove the cross member and tighten the two bottom mounting screws on T1 as securely as possible.

Transformer T2 is mounted using two #6-32 X 3/8 inch screws with a lock-washer and nut on each of them. (see drawing)

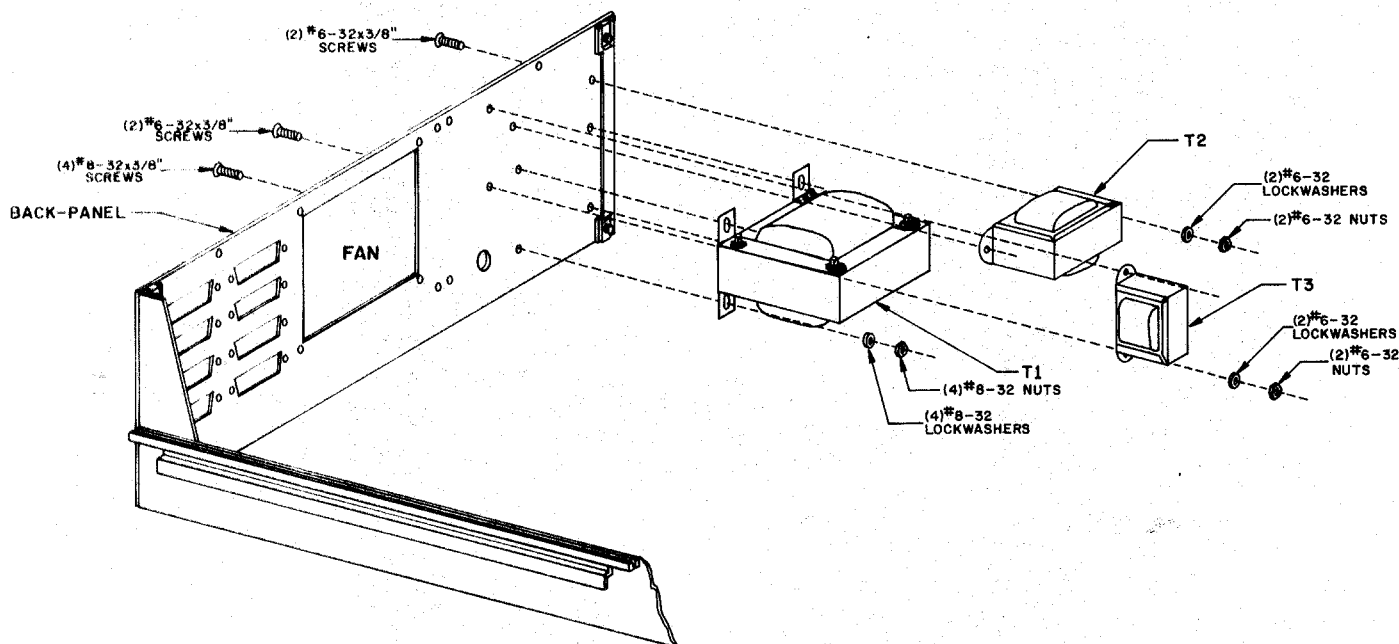
(✓) Referring to the drawing, set T2 in place and install the two mounting screws with lockwashers and nuts.

(✓) Tighten the screws down as securely as possible.

Transformer T3 is mounted using two #6-32 X 3/8 inch screws with a lock-washer and nut on each of them. (see drawing)

(✓) Referring to the drawing, set T3 in place and install the two mounting screws with lockwashers and nuts.

(✓) Tighten the two screws down as securely as possible.



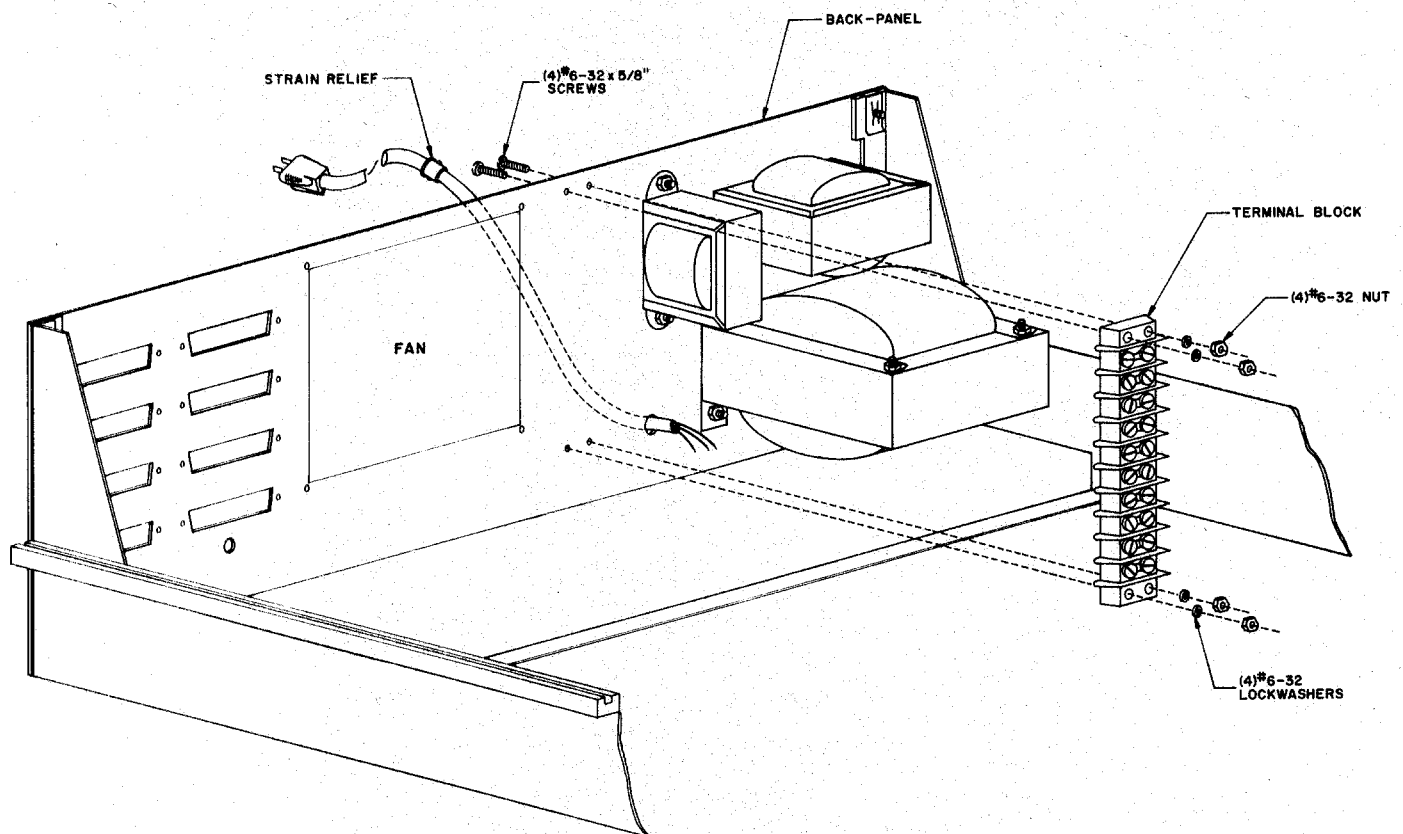
TERMINAL BLOCK MOUNTING

There is one terminal block with a double row of ten terminals to be installed on the 8800 back panel.

- () Strip approximately 8 inches of casing from the power supply cord by cutting a circle 8 inches from the end of the case and pulling the black insulation off. Be careful not to cut into any of the three wires inside the cord.

- () Referring to the drawing below, mount the terminal block as shown using four #6-32 X 5/8 inch screws with lockwashers and nuts. Tighten them securely into place.

- () Refer to the drawing again and set the AC power cord in place at this time.

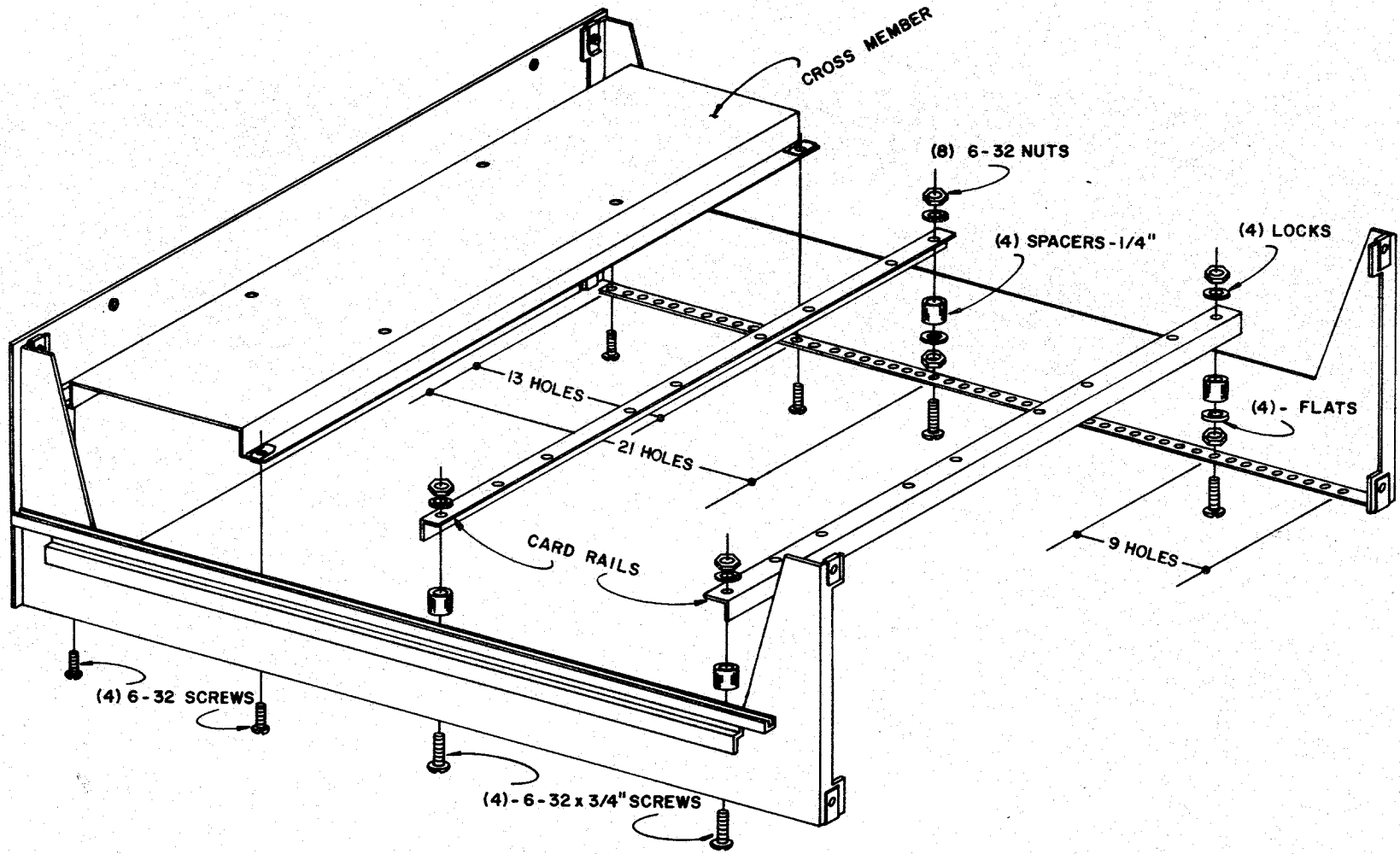


CHASSIS ASSEMBLY

There is one cross member and two card rails to be installed on the 8800 chassis.

(✓) Refer to the drawing below and set the cross member in place beneath the transformers. Tighten it down securely.

(✓) Referring to the drawing, set the two card rails in place and tighten them down securely. Be sure that you connect them to the holes as indicated in the drawing.



TERMINAL LUG INSTALLATION

SEE COMPUTER NOTES
PG. 19

There are 24 terminal lugs to be installed onto wires at this time for later connection to the terminal block.

Make all of the connections between the terminal lugs and the wires as shown in the drawing below. Try to make the connection so that the insulated portion of the wire runs right up to the lug itself; this will help prevent any accidental shorting.



TERMINAL LUG

NOTE: There is a roll of #20 insulated wire included in your kit for making the following connections. Add an inch to each of the lengths called for in the instructions and cut the wires from this roll. Strip 1/2 inch of insulation from the ends of the wires and tin them by applying a thin coat of solder.

- Connect a terminal lug to each of five 8-inch lengths of wire. Connect only one lug on one of the ends of each wire.
- In the same manner, connect a terminal lug to one end of two 12-inch lengths of wire.
- In the same manner, connect a terminal lug to one end of four 24-inch lengths of wire.

- Connect terminal lugs to the two black primary wires on each of the three transformers.
- Connect terminal lugs to each of the three wires in the AC power cord.
- Connect terminal lugs to the two wires from the Display/Control Board that you labeled "AC SW".
- Connect terminal lugs to the two wires from the Display/Control Board that you labeled "GND" and "+8vB".

POWER SUPPLY BOARD WIRE CONNECTIONS

There are 16 wire connections to be made to the 8800 Power Supply Board. Nine of these are from the transformers and the other seven will be connected to the terminal block. (see wiring diagram)

Transformer Connections

- (✓) Connect one of the green secondary wires from transformer T1 to one of the pads on the power supply board labeled "GRN". Make the connection by inserting the wire from the silk-screened side of the board and soldering it to the foil pattern on the back side. Clip off any excess lead length.

Make the following connections in the same manner.

- (✓) Connect the second green wire from T1 to the other pad labeled "GRN".
- (✓) Connect the two red wires from T2 to the two pads on the board labeled "RED".
- (✓) Connect the orange wire from T2 to the pad labeled "ORANG".

- (✓) Connect the two white wires from T2 to the two pads labeled "WHT".
- (✓) Connect the two yellow wires from T3 to the two pads labeled "YELLOW".

Terminal Block Wire Connections

- (✓) Using the same type connection as with the transformer wires, connect the bare end of one of the 8-inch wires with a terminal lug on it to the pad on the power supply board labeled "+16".

In the same manner, connect 8-inch wires with terminal lugs attached to the following pads on the board:

- (✓) -16 (✓) +8B (✓) +8A
- (✓) GND pad near C7

In the same manner, connect 12-inch wires with terminal lugs attached to the following pads on the board:

- (✓) F1 (top) (✓) F1 (bottom)

NOTE: The three pads "H6", "8A" and "GND" on the left are for future expansion.

