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2.1 INTRODUCTION

The Sol power supply consists of a regulator board plus additional chassis-mounted components. This section covers assembly and test of the complete power supply.

2.2 PARTS AND COMPONENTS

2.2.1 Sol Regulator (Sol-REG)

Check all parts and components against the appropriate "Parts List", Tables 2-1, 2-2 and 2-3. If you have difficulty in identifying any parts by sight, refer to Figure 3-1 on Page III-5 in Section III of this manual.

2.2.2 Power Supply Subchassis and Components

In addition to the Sol-REG, you will need the following parts and components supplied with the Sol Cabinet-Chassis Kit. Check these parts against the appropriate "Parts List(s)", Tables 6-1 and 6-2, in Section VI and separate them from the other cabinet-chassis parts.

Fan Closure Plate

Power Supply Subchassis (L-shaped)

4 each 4-40 x 3/16 Machine Screw

4 each 4-40 x 5/16 Machine Screw

4 each 4-40 Hex Nut

10 each #4 Lockwasher

14 each 6-32 x 1/2 Machine Screw

14 each 6-32 Hex Nut

16 each #6 Lockwasher

3 each 8-32 x 1/2 Machine Screw

3 each 8-32 Hex Nut

3 each #8 Lockwasher

11 each #6 x 1/4 Sheet Metal Screw

1 each #6 x 5/16 Sheet Metal Screw

2 each #4 Solder Lug

2 each 1/4" Spacer, 4-40 Tapped

Table 2-1. Sol Regulator Parts List.

<u>INTEGRATED CIRCUITS**</u> 1 1458 (U2) 1 7812 (U1) 1 7912 (U3)	<u>DIODES and RECTIFIERS</u> 1 MDA101A (FWB2) 1 MDA970-1 (FWB1) 1 IR106B2 or MCR106-2 (SCR1) 2 1N4001 (D3 & 4) 1 1N4148 (D2) 1 1N5231B (D1)
<u>TRANSISTORS</u> 2 2N2222 (Q2 & 3) 1 T1P41 (Q1)	
<u>RESISTORS</u> 1 0.1 ohm, 3 watt, 5% or 5 watt, 5% 1 68 ohm, 1/4 watt, 5% 1 330 ohm, 1/4 watt, 5% 2 1 K ohm, 1/4 watt, 5% 4 10 K ohm, 1/4 watt, 5% 1 56 K ohm, 1/4 watt, 5% 1 1690 ohm, 1/4 watt, 5% 1 4020 ohm, 1/4 watt, 5%	<u>CAPACITORS</u> 2 .1 ufd, disc 3 15 ufd, tantalum dipped 2 2500 ufd, tubular electrolytic 1 "18,000 ufd, electrolytic
<u>CABLE ASSEMBLIES</u> 1 *Single wire, 3" (Fuse Holder to Power Switch) 1 *Single wire, 3 1/4" (Power Switch to Commoning Block) 1 Two wire, 10" (C8 to Regulator Board)	

*Chassis-mounted component

**When identifying IC's, you can ignore prefix and suffix characters in the IC nomenclature since these vary with the manufacturer. For example a 1458CP, 1458CPI and MC1458N are all 1458. This applies to all Parts Lists in this manual.

Table 2-1. Sol Regulator Parts List (Continued).

<u>MISCELLANEOUS</u>	
1	Sol REG Circuit Board
1	Heat Sink, 690-220-P
1	Heat Sink, 203-AP
1	Heat Sink, aluminum
1	Package Heat Sink Compound
2	Coax Connector, female* (Video Output)
1	Coax Connector, male (Video Output Cable)
1	Coax Connector Adapter Sleeve (Video Output Cable)
1	*AC Receptacle, female
1	*Fuse Holder
1	*SPST Power Switch, pushbutton (S5)
1	AC Power Cord
2	*Commoning Blocks
1	*Clamp for C8, 1 1/2"
4	Tie Wraps
3	Mica Insulators
1	4-40 x 7/16 screw
1	4-40 x 5/8 screw
2	4-40 Hex Nut
1	6-32 x 1/2 screw, metal
2	6-32 x 1/2 screw, Nylon
3	6-32 Hex Nut
5	Lockwasher, internal tooth
1	Length Solder

*Chassis-mounted component

Table 2-2. Sol-10 Power Supply Parts List.

The Sol-10 Power Supply Kit includes all Sol-REG parts listed in Table 2-1 plus the following components:

1 *Power Transformer, T1
1 *Fuse, 3 amp Slo-Blo (F1)

*Chassis-mounted component

Table 2-3. Sol-20 Power Supply Parts List.

The Sol-20 Power Supply Kit includes all Sol-REG parts listed in Table 2-1 plus the following components:

<p><u>RESISTORS</u></p> <p>1 *39 ohm, 2 watt, 5%</p>	<p><u>CAPACITORS</u></p> <p>1 *54,000 ufd, electrolytic</p>						
<p><u>RECTIFIERS</u></p> <p>1 *MDA980-1 (FWB3)</p>	<p><u>TRANSFORMERS</u></p> <p>1 *Power Transformer, T2</p>						
<p><u>MISCELLANEOUS</u></p> <table style="width: 100%;"> <tr> <td style="width: 50%;">1 *Fan</td> <td style="width: 50%;">1 5-wire Cable Assembly</td> </tr> <tr> <td>1 *Fan Guard</td> <td>1 *Clamp for C9, 2 1/2"</td> </tr> <tr> <td>1 *Fuse, 3 amp Slo-Blo</td> <td>2 solder lug, internal tooth</td> </tr> </table>		1 *Fan	1 5-wire Cable Assembly	1 *Fan Guard	1 *Clamp for C9, 2 1/2"	1 *Fuse, 3 amp Slo-Blo	2 solder lug, internal tooth
1 *Fan	1 5-wire Cable Assembly						
1 *Fan Guard	1 *Clamp for C9, 2 1/2"						
1 *Fuse, 3 amp Slo-Blo	2 solder lug, internal tooth						

*Chassis-mounted component

2.3 ASSEMBLY TIPS

2.3.1 Electrical

For the most part the assembly tips given in Paragraph 3.2 of Section III (Page III-1) apply to assembling the Sol regulator board and power supply.

In addition, scan Section II completely before you start to assemble the power supply.

2.3.2 Mechanical

1. If you do not have the proper screwdrivers (see Paragraph 2.5), we recommend that you buy them rather than using a knife point, a blade screwdriver on a Phillips screw, and other makeshift means. Proper screwdrivers minimize the chances of stripping threads, disfiguring screw heads and marring decorative surfaces.

2. To assure a correct fit and tight assembly, be sure you use the screws specified in the instructions.

3. Lockwashers are widely used in the power supply assembly so that screws will not loosen when subjected to stress or vibration. When a lockwasher is specified, do not omit it and make sure you install it correctly.

4. Some instructions call for prethreading holes. This is done to make assembly easier by giving you maximum working space for installing relatively hard-to-drive sheet metal screws. If you bypass prethreading instructions you will only make subsequent cabinet-chassis assembly more difficult.

To prethread a hole, insert specified screw in the hole and position it as straight as possible. While holding the screw in this position, drive it into the metal with the proper screwdriver. If started straight the screw will continue to go straight into the metal so that the head and sheet metal surfaces are in full contact.

5. The diameter of the shank (threaded portion) of a screw increases in relation to its number. For example, a 6-32 screw is larger in diameter than a 4-40 screw. Also, a #8 lockwasher is larger than a #4 lockwasher.

6. Heat sink compound is supplied with this kit in a small clear plastic package. It is a thick white substance which improves transfer between components and their heat sinks. To use the compound, pierce a small hole near the edge of the top surface of the plastic package, using a pin or sharp knife point. Squeezing the package will cause a small amount of the compound to ooze out

out of the hole, which may then be applied with a toothpick or small screwdriver blade. Spread a thin film of the compound on the mating surfaces of both the heat-generating component and the heat sink surface which it will contact. Then assemble as directed.

2.4 ASSEMBLY PRECAUTIONS

The precautions concerning soldering and the installation and removal of integrated circuits given in Paragraph 3.3 of Section III (Page 111-6) also apply to assembling the Sol regulator board.

2.5 REQUIRED TOOLS, EQUIPMENT AND MATERIALS

The following tools, equipment and materials are recommended for assembling the Sol regulator board:

1. Needle nose pliers
2. Diagonal cutters
3. Sharp knife
4. Screwdriver, thin 1/4" blade
5. Screwdriver, #2 Phillips
6. Controlled heat soldering iron, 25 watt
7. 60-40 rosin-core solder (supplied)
8. Volt-ohm meter
9. Ruler

2.6 ORIENTATION

2.6.1 Sol-REG PC Board

Location C5 (2500 ufd capacitor) will be located in the lower right-hand corner of the circuit board when locations SCR1, Q1 and FWB1 are positioned along the top of the board. In this position the component (front) side of the board is facing up and the horizontal legends will read from left to right; the other legends will read from bottom to top. Subsequent position references related to the Sol-REG board assume this orientation.

2.6.2 Fan Closure Plate

The large circular cutout will be located in the upper right quadrant of the plate when the heavy gauge doubler plate is facing up. In this position the rectangular cutouts are on the left, the front side of the plate is facing down, the back side is facing up, and the small circular cutout is at the bottom. We suggest you label the two sides.

2.7 ASSEMBLY-TEST

NOTE: Instructions that apply only to the Sol-20 are preceded by an asterisk. Skip these instructions if you are assembling a Sol-10.

2.7.1 Fan Closure Plate Assembly

Refer to Assembly Drawings on Pages X-1 and 2 in Section X.
(Figure 2-1 shows a completed fan closure plate assembly.)

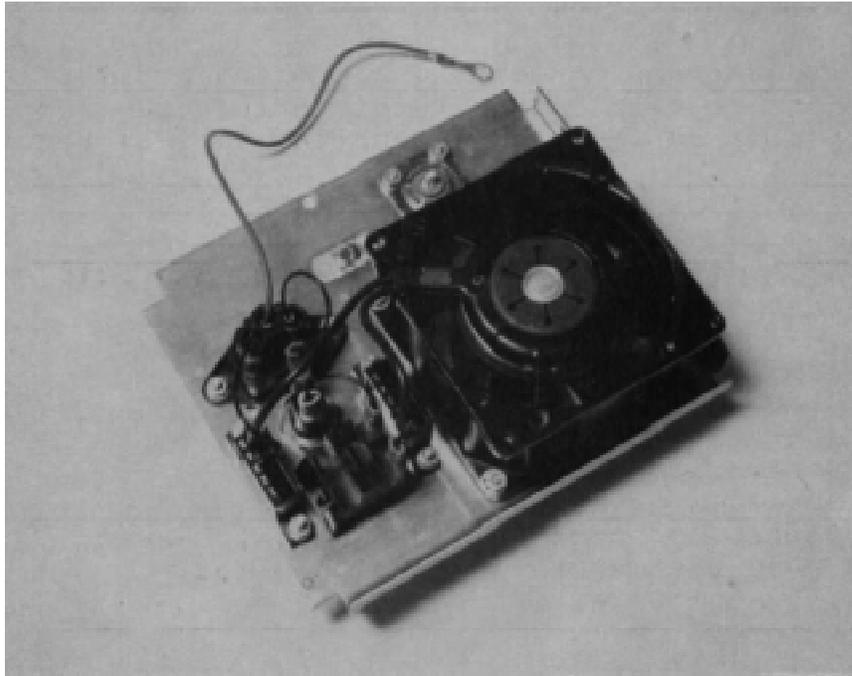


Figure 2-1. Sol-20 fan closure plate assembly.
(Top of plate in foreground.)

* () Step 1. Mount cooling fan and guard to fan closure plate.

Insert four 6-32 x 1/2" binder or pan head screws from back side of fan closure plate. (Use the holes positioned in each quadrant of the large circular cutout.) Slip fan guard over screws on front side of plate. Position fan so that air flow will be from front to back side of plate and with its leads next to the rectangular cutouts in the plate. Place #6 lockwasher on each screw and secure with 6-32 hex nut.

WARNING

FAILURE TO INSTALL FAN GUARD MAY RESULT
IN DAMAGE TO THE Sol AND/OR PERSONAL
INJURY.

() Step 2. Install power on-off switch in upper rectangular cutout in fan closure plate.

(Step 2 continued on Page il-S.)

Bend four retainer tabs on switch in and position switch with terminals facing front side of fan closure plate. Push switch unit from back side of plate through mounting hole and bend retainer tabs outward if needed to hold switch in place.

- () Step 3. Install commoning blocks (Item 6 on drawing on Page X-1) on front side of fan closure plate, one on each side of on-off switch.

Position each block with terminal #1 at top and terminal #5 at bottom and attach each block to front side of fan closure plate with two 6-32 X 1/2 binder or pan head screws. Insert screws from back side of plate, place block over screws, on front side of plate, put #6 lockwasher on each screw and secure with 6-32 hex nut.

- () Step 4. Install fuse holder in mounting hole located between the two rectangular cutouts in the fan closure plate.

Insert fuse holder from back side of plate, position large tab at top, next to on-off switch, and secure holder to plate with the large lockwasher and nut supplied with holder.

- () Step 5. Install AC Power cord receptacle on fan closure plate.

Position receptacle on front side of fan closure plate over the rectangular cutout below fuse holder. Orient receptacle with green lead at the bottom and align the receptacle and closure plate mounting holes. Insert two 6-32 x 1/2 binder or pan head screws from back side of plate through each mounting hole, put #6 lockwasher on each screw and secure with 6-32 hex nut. Be sure receptacle is properly seated in cutout before tightening to avoid damage.

- () Step 6. Install female coaxial connector on fan closure plate.

Insert connector from front side of plate so that the threaded end projects through to the back side. Then insert four 4-40 X 5/16 binder or pan head screws from back side of plate through the four connector and plate mounting holes. Place #4 lockwasher on each screw except the upper one which is closest to the AC receptacle. Secure with 4-40 hex nuts. (Leave upper nut closest to receptacle loose.)

- () Step 7. Prepare RG59/U coaxial cable.

Cut a 13" piece of coaxial cable from that supplied with the Sol-PC kit. Strip away one inch of the outer insulation at both ends to expose shield. Unbraid shield at one end and twist it into a single lead. Do the same thing at the other end. Tin shield lead at each end and solder a #4 lug to each lead. Then remove 1/2" of the inner conductor insulation at both ends. (See Figure 2-2.)

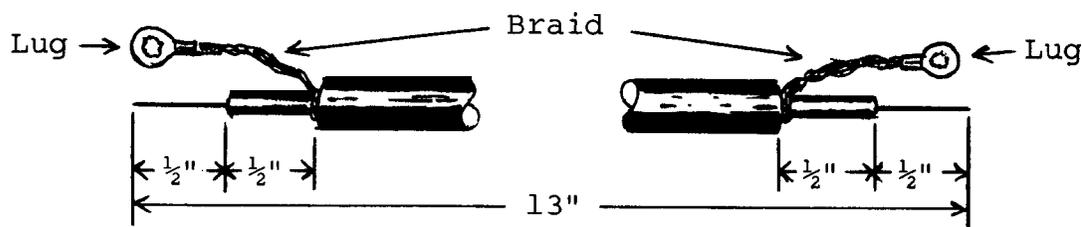


Figure 2-2. Coaxial cable preparation.

- () Step 8. Connect coaxial cable to coaxial connector installed in Step 6.

Solder inner conductor on one end to the pin of the connector. Remove hex nut on upper connector mounting Screw closest to AC receptacle, place lug (coaxial shield) on screw and reinstall hex nut.

- () Step 9. Connect fan closure plate wiring.
- () Install the 3" power switch-to-commoning block cable supplied with your Sol-REG kit. Connect the female spade lug end to the upper terminal of the on-off switch and the commoning block lug end to the #1 terminal of the commoning block closest to the fan. NOTE: To install commoning block lugs, position lug with its open side facing away from the terminal numbers on the block. Then gently push lug into appropriate terminal receptacle until it is fully seated.
 - () Install the 3 1/4" fuse holder-to-power switch cable supplied with your Sol-REG kit. (This cable has female spade lugs at both ends.) Connect one end to the bottom terminal of the on-off switch and the other to the longer male spade lug on the fuse holder.
 - () Connect the AC receptacle wire closest to the fan to the other fuse holder lug. NOTE: The green AC receptacle wire will be connected later.
 - () Connect other AC receptacle wire to terminal #4 on the commoning block furthest away from the fan.
 - *() Connect upper wire of fan cord to terminal #3 of the commoning block closest to fan.
 - *() Connect lower wire of fan cord to terminal #5 of commoning block furthest from fan.
 - () Put fan closure assembly aside.

2.7.2 Sol-REG Assembly and Test

Circuit references, values and outlines are printed on the component side of the board to assist in assembly.

- () Step 10. Visually check Sol-REG board for solder bridges (shorts) between traces, broken traces and similar defects.

If visual inspection reveals any defects, return the board to Processor Technology for replacement. If the board is not defective, proceed to next paragraph.

- () Step 11. Install the following resistors in the indicated locations. Bend leads to fit distance between mounting holes, insert leads, pull down snug to board, solder and trim.

<u>LOCATION</u>	<u>VALUE (ohms)</u>	<u>COLOR CODE</u>
() R1	.1, 3 watt	none
() R2	330 5 watt	orange-orange-brown
() R3	10 K	brown-black-orange
() R4	10 K	" " "
() R5	1 K	brown-black-red
() R6	68	blue-gray-black
() R7	10 K	brown-black-orange
() R8	1 K	brown-black-red
() R9	56 K	green-blue-orange
() R10	10 K	brown-black-orange
() R11	1690	bronw-blue-white-brown
() R12	4020	yellow-black-red-brown

- () step 12. Install U2 (1458) in its location between C2 and C3. U2 is positioned with pin 1 in the lower left-hand corner and soldered into place. See "Loading DIP Devices" in Appendix IV.

- () Step 13. Install diodes D1 (1N5231B), D2 (1N4148), D3 and D4 (1N4001). Bend leads to fit distance between mounting holes, insert leads, pull down snug to board, solder and trim. BE SURE to position D1 with its cathode (dark band) to the left, D2 and D3 with their cathode at the bottom, and D4 with its cathode at the top.

- () Step 14. Install the following capacitors in the indicated locations. Take care to observe the proper value, type and orientation, if applicable, for each installation. Bend leads outward on solder (back) side of board, solder and trim.

(See NOTE on Page 11-11.

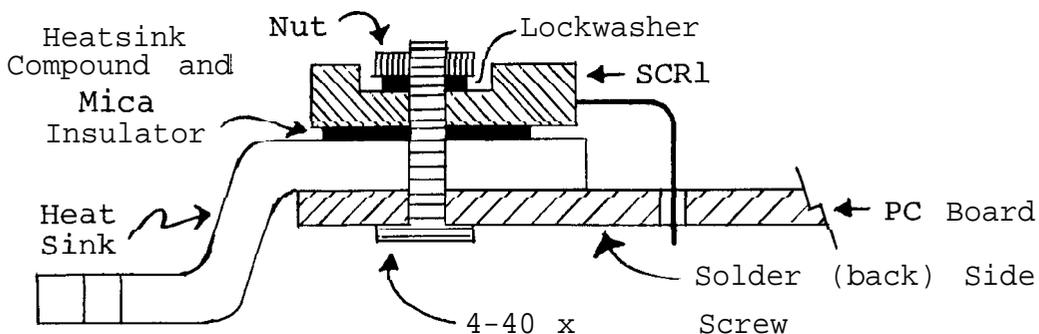
NOTE

Disc capacitor leads are usually coated with wax during the manufacturing process. After inserting leads through mounting holes, remove capacitor and clear the holes of any wax. Reinsert and install.

- | | LOCATION | VALUE (ufd) | TYPE | ORIENTATION |
|-----|----------|-------------|----------|-----------------------|
| () | C1 | 15 | Tantalum | "+" lead bottom right |
| () | C2 | .1 | Disc | None |
| () | C3 | .1 | Disc | None |
| () | C6 | 15 | Tantalum | "+" lead right |
| () | C7 | 15 | Tantalum | "+" lead left |
- () Step 15. Install 2500 ufd capacitors in locations C4 and C5. Bend leads to fit distance between mounting holes, insert leads, pull down snug to board, solder and trim. Be sure to install C4 with its "+" lead to the right and C5 with its "+" lead to the left.
- () step 16. Install Q2 and Q3 (2N2222) in their locations. The emitter lead (closest to tab on can) of Q2 is oriented toward the left and the base lead toward the bottom. The emitter lead of Q3 is oriented toward the bottom and the base lead toward the right.
- () Step 17. Read assembly tip 6, on page 11-5. Apply heat sink compound to the inside of the small black "star-shaped" cooling fin, and install it, with the cylindrical grip down, on Q2 by slipping it down onto the can. Be sure heat sink does not touch any other component on the board.
- () Step 18. Install bridge rectifier FWB 2 (MDA101A) in its location at the bottom of the board. Apply heat sink compound, per Assembly tip 6 on page 11-5. Position FWB2 with its "+" lead at the top and its "-" lead at the bottom, insert leads, solder and trim.
- () Step 19. Install large heat sink, U1 and U3 in their locations on the bottom left corner of the circuit board.
- () Position large black heat sink, (flat side to board) over the square foil area in the lower left corner of the PC board. Orient sink so that the two triangular cutouts in the sink are over the two triangles of mounting holes in the board.
- () Position U1 (7812) on heat sink and observe how leads must be bent to fit mounting holes. Note that the center lead must be bent down approximately 0.2 inches.

further from the body than the other two leads. Bend leads so that no contact is made with the heat sink when U1 is flat against the sink and its mounting hole is aligned with the holes in the sink and PC board. Apply heat sink compound per Assembly Tip 6, on page 11-5. Fasten U1 and sink to board using a 6-32 x 1/2 metal screw, lockwasher and nut. Insert screw from back (solder) side of board and drive nut finger tight.

- () Position U3 (7912) on heat sink, determine how leads must be bent as you did for U1, and bend leads. Place a rectangular mica insulator over the leads of U3 so that it fully covers the bottom side of the U3 package. Apply heat sink compound to U3, the heat sink, and both sides of the mica insulator. Bend the two outside leads of U3 slightly in toward the center lead, insert leads in mounting holes as you did for U1, and fasten U3 to heat sink and PC board using a 6-32 x 1/2 Nylon screw, lockwasher and nut. Insert screw from back (solder) side of board and drive nut finger tight.
- () Position heat sink, U1 and U3 as needed to obtain correct fit and tighten the U1 and U3 mounting screws. REMEMBER, NO LEADS CAN CONTACT THE SINK. Solder all leads and trim if required.
- () Step 20. Install aluminum heat sink, SCR1, Q1 and bridge rectifier FWB1.
- () Position aluminum heat sink (see Figure 2-3) along top of PC board so that the three holes in one side of the sink are aligned with the SCR1, Q1 and FWB1 mounting holes in the PC board.



(Left end, cross-section view)

Figure 2-3. Aluminum heat sink installation.

- () Position Q1 (TIP41), with component nomenclature up, on heat sink so hole in Q1 package is aligned with the holes in sink and PC board. Observe how the leads of Q1 must be bent down to fit the pads for Q1 and bend them accordingly. Apply heat sink compound to Q1, the heat sink, and both sides of the rectangular mica insulator. Place mica insulator between heat sink and Q1, insert leads (emitter lead to right) and fasten Q1, insulator and heat sink to board with a 6-32 x 1/2 Nylon screw, lockwasher and nut. Insert screw from back (solder) side of board and drive nut finger tight.
- () Position FWB1 (MDA970-1), with "+" lead to the right, on heat sink, determine how leads must be bent as you did for Q1, and bend leads. Apply heat sink compound. Insert leads ("+" lead to right) and fasten FWB1 and heat sink to PC board with a 4-40 x 5/8 screw, lockwasher and nut. Insert screw from back (solder) side of board and drive nut finger tight.
- () Position SCR1 (IR106B2 or MCR106-2) on heat sink with component nomenclature up and prepare it for installation as you did Q1 and FWB1. Apply heat sink compound to SCR1, the heat sink, and both sides of the circular mica insulator. Place the mica insulator between the heat sink and SCR1, insert leads and fasten SCR1, insulator and heat sink to PC board with a 4-40 x 7/16" screw, lockwasher and nut. Insert screw from back (solder) side of board and drive nut finger tight.
- () Check alignment of heat sink, SCR1, Q1 and FWB2 and tighten the three mounting screws. Solder all leads and trim if required. Wipe off excess heat sink compound, if necessary. NOTE: The heat sink may have to be repositioned when you mount the Sol-REG on the power supply subchassis. This will require that you loosen the mounting screws for SCR1, Q1 and FWB2 and retighten them after repositioning the heat sink.
- () Step 21. Connect two wire cable assembly (C8 to Regulator Board cable) to regulator. Tin ends without lugs and solder green (+) lead to pad X2 and white (-) lead to pad X3.
- () Step 22. Test Sol-REG for short circuits. Check for continuity between FWB1 (MDA970-1) mounting screw and the following points: (The resistance should be greater than 20 ohms in all cases.)

x2	Q1, Base	D3, top lead
T2	Q1, Collector	D4, top lead
T1	D1, right-hand lead	*D3, bottom lead
Q1, Emitter	R1, left-hand lead	*D4, bottom lead

*Resistance will be initially low due to C4 and C5, but it should increase to greater than 20 ohms after a few seconds.

- () Step 23. Set Sol-REG to one side.

2.7.3 Power Supply Subchassis Assembly and Test

- () Step 24. Mount transformer (T1 for Sol-10, T2 for Sol-20) on power supply subchassis (L-shaped chassis).

Position transformer as shown in drawing on Page X-2 and attach it to the subchassis with three 8-32 x 1/2 binder or pan head screws, #8 lockwashers and 8-32 hex nuts. Insert screws from bottom and outer side of chassis as shown. Place lockwasher on each screw and secure loosely with hex nuts. Slide transformer as close as possible to the edge of the chassis and tighten nuts.

NOTE

Only one of the holes in the side wall is used. Use the one that lines up with the transformer mounting tab.

- () Step 25. Prepare transformer leads.
 - () Twist the two black wires together except for the last two inches at the commoning block lug end.
 - () Twist the two green wires together for their full length.
 - () Twist the two yellow wires together for their full length.
 - *() Twist the two blue wires together for their full length.
- () Step 26. Connect Sol-PC power cable (4-wire cable which connects to J10 on Sol-PC) to Sol-REG. Tin ends of cable and solder green lead to pad X9, white lead to pad X1, red lead to pad X7 and white-yellow lead to pad X8.
- *() Step 27. Connect Sol-20 DC power cable (5 wire) to Sol-REG. Tin ends of cable and solder white lead to pad X4 (above R8), red-white lead to pad X5 (between C5 and FWB2) and yellow-white lead to pad X6 (left of C5).
- () Step 28. Connect transformer leads to Sol-REG.
 - () Solder green leads to pads T1 and T2, white-yellow lead to pad T3 and yellow leads to pads T4 and T5 on Sol-REG circuit board.
- () Step 29. Prethread the three Sol-REG heat sink mounting holes in the power supply subchassis shown in drawing on page X-2 with #6 x 5/16 sheet metal screws. Remove screws.

- () Step 30. Place #4 lockwashers on two 4-40 x 3/16 binder or pan head screws. Insert these screws from the bottom side of the power supply subchassis through the two mounting holes located near the middle of the bottom of the power supply subchassis, one on each side. Place another #4 lockwasher on the screws and drive each screw tightly into a 4-40 x 1/4 tapped spacer.
- () Step 31. Position Sol-REG PC board with top edge over the previously installed spacers. Place #4 lockwashers on two 4-40 x 3/16 binder or pan head screws and drive screws through Sol-REG board into spacers.
- () Step 32. Attach heat sink on Sol-REG to power supply subchassis as shown in drawing on Page X-2. At this point use only the two side screws which you used in Step 29 to pre-thread the holes. (The middle screw will be installed later.) Place a #6 lockwasher on each screw before driving it through the sink into the subchassis. Figure 2-4 shows an assembled Sol-10 power supply subchassis.

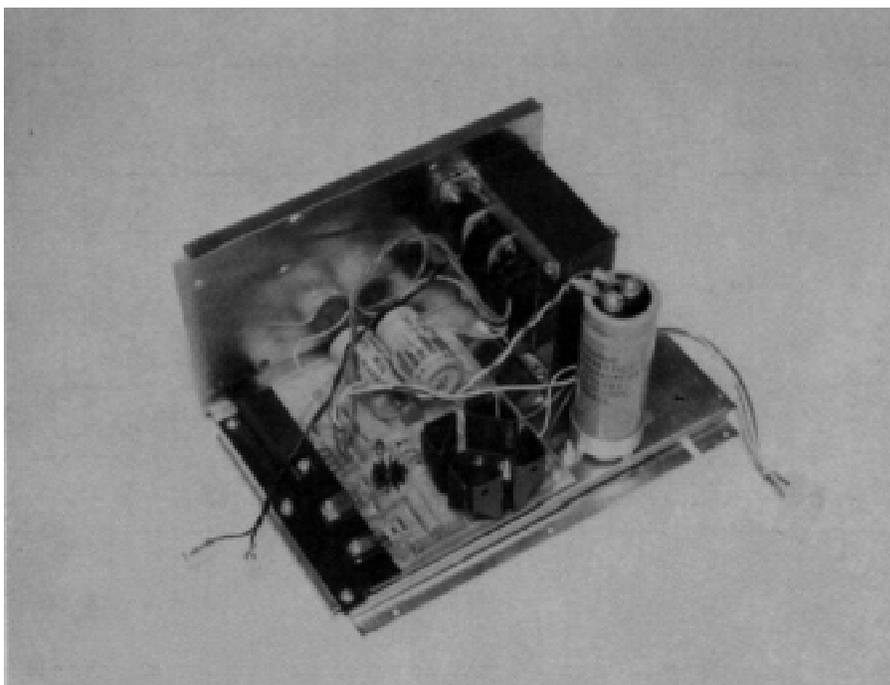


Figure 2-4. Sol-10 power supply subchassis assembly.
(Rear of subchassis at left.)

- *() Step 33. Install bridge rectifier FWB3 on power supply subchassis.

(Step 33 continued on Page 11-16.)

Position FWB3 (MDA980-1) on power supply subchassis as shown in drawing on Page X-2. BE SURE NEGATIVE (-) TERMINAL OF FWB3 is next to transformer. Insert a 6-32 x. ½ binder or pan head screw from bottom of subchassis, place #6 lockwasher on screw and secure with 6-32 hex nut.

- * () Step 34. Connect blue transformer wires to unmarked terminals of FWB3.
- * () Step 35. Install large (2½") mounting ring for C9 (54,000 ufd capacitor) on side wall of power supply subchassis as shown in drawing on Page X-2.

Position ring over the three mounting holes in the side wall of subchassis so the clamping screw faces the bottom of subchassis and so it will be accessible from the Sol-REG end of the subchassis. Insert three 6-32 x ½ binder or pan head screws from outer side of side wall through the mounting holes. Place #6 lockwasher on each screw and secure with 6-32 hex nut. Figure 2-5 shows an assembled Sol-20 power supply subchassis.

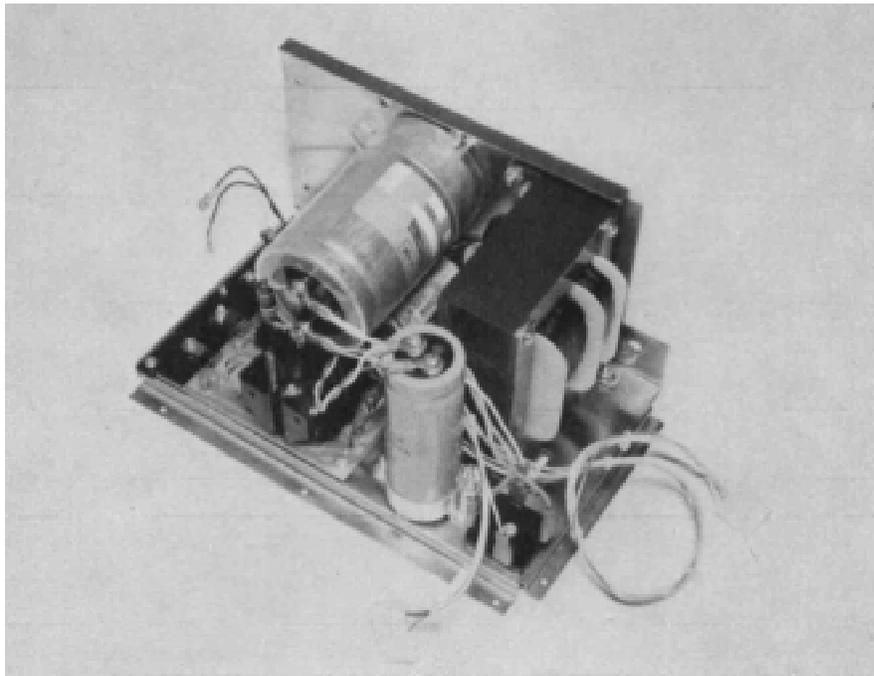


Figure 2-5. Sol-20 power supply subchassis assembly.
(Rear of subchassis at left.)

- () Step 36. Install small (1½") mounting ring for C8 (18,000 ufd capacitor) as shown in drawing on Page X-2.

(Step 36 continued on Page 11-17.)

Position ring over the two mounting holes located between FWB3 and the Sol-REG so that the clamping screw is positioned between the transformer and FWB3. Insert two 6-32 x 1/2 binder or pan head screws from bottom side of chassis through the mounting holes. Place #6 lockwasher on each screw and secure with 6-32 hex nut. (Refer to Figure 2-4.)

- () Step 37. Route Sol-PC power cable between C8 mounting ring and the transformer, mount C8 in its mounting ring, and tighten clamping-screw. (See Figure 2-4.)
- () Step 38. Connect white wire of C8 cable to negative (-) terminal of C8 and green wire to positive (+) terminal of C8. (This cable was soldered to the Sol-REG when you assembled it.) Remove terminal screws, place #10 lockwasher on each screw, place cable lugs on screws and drive screws tightly into appropriate terminals.
- *() Step 39. Mount C9 in its mounting ring with its "+" terminal slightly toward C8 and tighten clamping screw. (See Figure 2-5.)
- *() Step 40. Prepare R13 (39 ohm 2 watt) for installation on C9.
Solder a #10 lug to each lead of R13. Bend leads of R13 to fit the terminals of C9. (R13 should fit on C9 as shown in Figure 2-5.)
- *() Step 41. Connect Sol-20 DC power cable (5 wire) and R13 to C9. Route cable between C8 and transformer.

Remove terminal screws from C9. Place lockwasher, terminal screw, blue lead of Sol-20 DC cable and one R13 lead on one terminal screw and drive it into the positive (+) terminal on C9. Attach lockwasher, white cable lead and other R13 lead to negative (-) terminal on C9 in the same manner. Tighten both capacitor terminals tightly.

CAUTION

LOOSE CONNECTIONS ON C9 CAN LEAD TO ARC-
ING AND SUBSEQUENT POWER SUPPLY DAMAGE.

- *() Step 42. Connect blue pigtail of Sol-20 DC cable to positive (+) terminal of FWB3. (This pigtail has a spade lug at its free end and is connected to the lug you just attached to the positive terminal of C9.) Connect white pigtail of Sol-20 DC cable to negative (-) terminal of FWB3. (This pigtail has a spade lug at its free end and is connected to the lug you just attached to the negative terminal of C9.)

- () Step 43. Connect green lead from AC receptacle (mounted on fan closure plate) to power supply subchassis assembly as shown in drawing on Page X-2. (Use the #6 x 1/4 sheet metal screw with which you prethreaded the middle Sol-REG heat sink mounting hole in Step 29.) Place lug on screw and drive screw into the middle Sol-REG heat sink mounting hole.
- () Step 44. Route black transformer leads along side wall of power supply subchassis out toward the Sol-REG heat sink. (See Figure 2-4.) Attach one lead to pin 2 of the commoning block (mounted on fan closure plate) nearest the fan. Attach other lead to pin 3 of the other commoning block.
- () Step 45. Install cable tie wraps.
 - () Install one wrap around the wires that connect to Sol-REG pads T1,2,3,X2 and X3 as shown in the Detail A - Wiring portion of the drawing on Page X-2.
 - *() Install another wrap around the leads from C9 as shown in Detail B of drawing on Page X-2.

Two other wraps are supplied with your kit. Use them as appropriate to make your power supply cabling neater.
- () Step 46. Using a #6 x 1/4 sheet metal screw, attach fan closure plate to power supply subchassis as shown in Drawing No. X-2.
- () Step 47. Push on-off switch in and out to determine the OFF position (switch mechanically out). With switch in OFF position, connect AC power cord to AC receptacle. Then plug power cord into 110 V ac outlet.
- () Step 48. Test power supply for proper operation.
 - () Make sure on-off switch is in OFF position.
 - () Install fuse in fuse holder. CAUTION: NEVER INSTALL OR REMOVE FUSE WITH POWER ON.
 - () Check connector on Sol-PC power cable (4 wire) to insure it is wired as shown in Figure 2-6.
 - *() Check connector on Sol-20 power cable (5 wire) to insure it is wired as shown in Figure 2-7.
 - () Turn on-off switch ON.
 - () Measure the voltages at the Sol-PC connector at the points indicated in Figure 2-6. The voltages must be as given in Figure 2-6. NOTE: Do not take voltage measurements at any other points in the power supply, even through they may be more accessible. It is important that the indicator voltages be available at the connector.

- *() Measure the voltages at the Sol-20 connector at the points indicated in Figure 2-7. The voltages must be within the ranges given in Figure 2-7. (See preceding NOTE.)
- () If the power supply fails any of the preceding tests, locate and correct the cause before proceeding.

If the power supply is operating correctly, turn on-off switch OFF, disconnect power cord, set power supply to one side and go on to Section III.

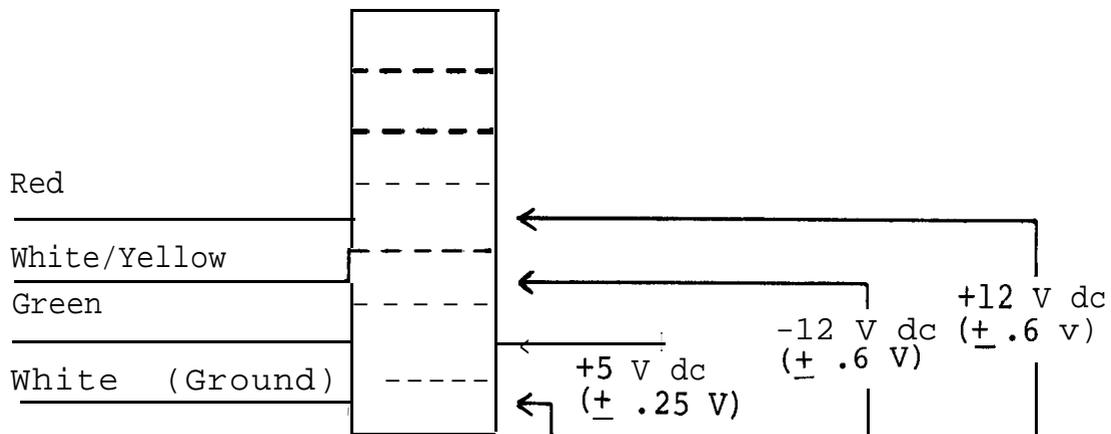


Figure 2-6. Sol-PC power connector and voltage measurements.

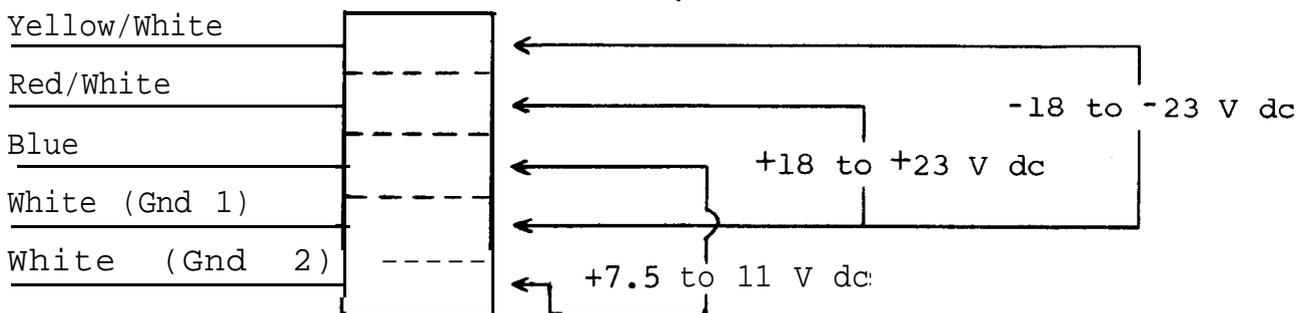


Figure 2-7. Sol-20 power connector and voltage measurements.