

Heathkit® Manual

for the

ACCESSORY POWER SUPPLY

Model PSA-9

595-3058

HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

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Heathkit

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INTRODUCTION

The Heathkit Model PSA-9 Accessory Power Supply is a 12.6-volt, 1-ampere, voltage-regulated power source. The Power Supply is intended to provide operating power for the HW-9 CW Transceiver, and is therefore

color coordinated and attractively styled to provide a good looking appearance with the Transceiver.

PARTS LIST

Unpack your kit and check each part against the following list. Any part that is packed in an individual envelope with the part number on it should be returned to the envelope after you identify it until all of the parts are accounted for. Key numbers in the Parts List correspond with the numbers on the "Parts Pictorial" (Illustration Booklet, Pages 1, 2, and 3).

To order a replacement part, always include the PART NUMBER. Use the Parts Order Form furnished with the kit, or refer to "Replacement Parts" inside the rear cover of this Manual. For prices, refer to the separate "Heath Parts Price List". Your Warranty is printed on the inside front cover.

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
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RESISTORS

A1	3-7-2	1	1 Ω (brn-blk-gld-sil), 2-watt	R1
A2	6-181	1	180 Ω (brn-gry-brn-gld), 1/2-watt	R3
A2	6-152-12	1	1500 Ω (brn-grm-red), 1/4-watt	R2

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
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CAPACITORS

B1	25-870	1	100 μ F electrolytic	C2
B1	25-878	1	2200 μ F electrolytic	C1

DIODES

C1	56-56	3	1N4149 diode	D5, D6, D7
C1	57-42	4	3A1 diode	D1 - D4

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
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TRANSISTOR - INTEGRATED CIRCUIT (IC)

NOTE: The following transistor and integrated circuit may be marked for identification in any of these ways:

1. Part number.
2. Type number. (On integrated circuits, this refers to the letters and numbers listed.)
3. Part number and type number.
4. Part number with a type number other than the one listed.

C2	417-852	1	TIP31 transistor	Q1
C3	442-644	1	78L12 regulator IC	U1

OTHER ELECTRICAL PARTS

D1	54-1022	1	Power transformer	T1
D2	60-70	1	Slide switch	SW1
D3	412-31	1	Lamp	PL1
D4	421-42	1	3/8-ampere slow-blow fuse	F1
D4	421-1	1	1.5-ampere fuse	F2

KEY No.	HEATH Part No.	QTY.	DESCRIPTION
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INSULATORS

E1	75-52	1	Switch insulator
E2	75-152	1	Transistor insulator

TERMINAL STRIPS

F1	431-82	1	3-lug terminal collar
F2	431-609	1	5-lug terminal strip
F3	431-81	1	6-lug terminal strip
F4	431-49	1	11-lug terminal strip

CONNECTOR PINS - CONNECTOR SHELLS

G1	432-73	2	Female connector pin
G2	432-866	4	Spring connector (one extra)
G3	432-865	1	3-hole connector shell
G4	432-196	1	2-hole female connector shell

KEY No.	HEATH Part No.	QTY.	DESCRIPTION
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HARDWARE

H1	250-1412	2	4-40 × 3/8" screw
H2	252-2	2	4-40 nut
H3	254-9	3	#4 lockwasher
H4	250-1307	4	#6 × 1/4" sheet metal screw
H5	250-1280	7	6-32 × 3/8" screw
H6	252-3	5	6-32 nut
H7	254-1	8	#6 lockwasher
H8	259-1	1	#6 solder lug
H9	250-1436	2	8-32 × 3/8" screw
H10	252-4	2	8-32 nut
H11	254-2	4	#8 lockwasher

KEY No.	HEATH Part No.	QTY.	DESCRIPTION
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LINE CORD – WIRE – SLEEVING

89-54	1	Line cord
344-219	14"	White wire
344-15	30"	Black wire
344-16	36"	Large red wire
344-92	6-1/4"	Small red wire
344-91	6-1/4"	Brown wire
344-93	3-3/4"	Orange wire
346-60	1-1/2"	Clear sleeving
346-1	2-1/2"	Black sleeving

MISCELLANEOUS

J1	75-24	1	Small strain relief
J1	75-736	1	Large strain relief
J2	252-32	1	Push-on nut



KEY No.	HEATH Part No.	QTY.	DESCRIPTION
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MISCELLANEOUS (Cont'd)

J3	253-198	1	Nylon shoulder washer
J4	261-29	4	Plastic foot
J5	413-10	1	Red lens
J6	422-1	1	Fuse block
	352-13	1	Silicone grease
J7	490-5	1	Nut starter
J8	90-1307-1	1	Cabinet top
J9	90-1308-1	1	Cabinet bottom (chassis)

KEY No.	HEATH Part No.	QTY.	DESCRIPTION
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MISCELLANEOUS (Cont'd)

J10	390-1255	2	Fuse replacement label
J11		1	Blue and white label
	597-260	1	Parts Order Form
		1	Solder
		1	Manual (See Page 1 for part number).
	597-308	1	Kit Builder's Guide

NOTE

Before you begin to assemble this kit, be sure to read the "Chassis Wiring" section of your Kit Builder's Guide. It contains valuable information on installing and soldering parts, as well as resistor and capacitor identification.

STEP-BY-STEP ASSEMBLY

TERMINAL STRIP PREWIRING

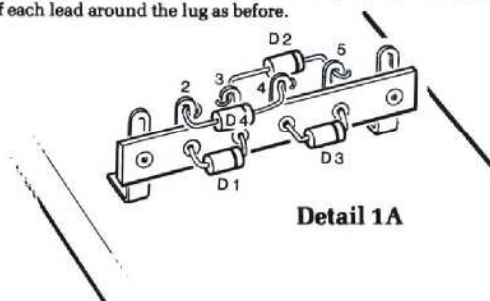
Refer to Pictorial 1 (Illustration Booklet, Page 4) for the following steps.

- () Position the chassis upside down as shown in the Pictorial.
- () Temporarily mount a 6-lug terminal strip on the chassis bottom as shown. Use a 6-32 \times 3/8" screw and a 6-32 nut at the indicated holes. It will be easier to mount and solder parts to the terminal strip in this manner than it would be after the terminal strip is mounted inside the chassis.

NOTE: In the following steps, (NS) means not to solder the connection because you will add another wire or component lead later. "S-" with a number, such as (S-2), means to solder the connection. The number after the "S-" indicates how many wires or leads should be at the connection. This will help you check your work as you assemble the kit.

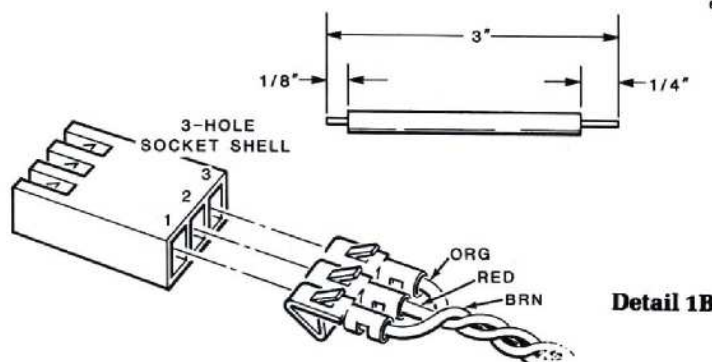
- () D1: Refer to Detail 1A and connect the leads of a 3A1 diode (#57-42) to the eyelets of lug 2 (S-1) and lug 3 (S-1) of the terminal strip. Be sure to position the banded end of the diode toward lug 3 as shown. After you solder, cut off the excess lead lengths.

- () D3: In the same manner, connect the leads of a 3A1 diode (#57-42) to the eyelets of lug 4 (S-1) and lug 5 (S-1). Position the banded end of the diode toward lug 5. Cut off the excess leads.
- () D2: Connect the banded end of a 3A1 diode (#57-42) to terminal strip lug 5 (NS) and the other end to lug 3 (NS). Bend the end of each lead around the lug to make a mechanically secure connection.
- () D4: Connect the banded end of a 3A1 diode (#57-42) to terminal strip lug 4 (NS) and the other end to lug 2 (NS). Bend the end of each lead around the lug as before.



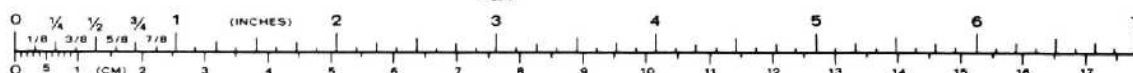
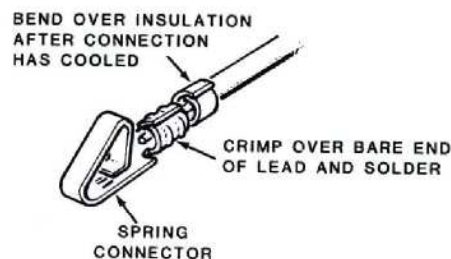
NOTE: To prepare wires and leads in the following steps, first cut each wire to the indicated length and remove 1/8" of insulation from one end. Twist together the ends of each wire and apply a thin film of solder to hold the fine wire strands together. Then remove 1/4" of insulation from the other end of each wire, twist the ends and apply solder. Use only the small wires in these steps.

- () Prepare 3" lengths of brown, red, and orange wires.



- () Refer to Detail 1B and attach a spring connector to the 1/8" stripped end of the brown wire. First, position the end of the wire between the tabs as shown and bend the tabs around the end of the wire. Then solder the wire in the tabs. When the solder cools, shape the end tabs around the insulation of the wire. Do not allow solder to flow under the spring.

- () In the same manner, attach spring connectors to the 1/8" stripped ends of the red wire and the orange wire.



- () Insert the spring connector of the brown wire into 3-hole socket shell hole 1 as shown. The connector will snap into place when it is fully seated in the shell. Position the connector as shown in Detail 1B.
- () Insert the spring connectors of the red wire and the orange wire into socket shell holes 2 and 3, respectively.
- () Twist the wires around each other and set the socket aside temporarily.

Refer to Detail 1C (Illustration Booklet, Page 5) as you perform the following steps.

- () Refer to the inset drawing and use diagonal cutters to cut off the last three lugs (including the mounting foot) of an 11-lug terminal strip. Then refer to Pictorial 1 and temporarily mount this 8-lug terminal strip with a 4-40 \times 3/8" screw and 4-40 nut.

You will install components to the eyelets of the 8-lug terminal strip in the following steps.

- () D6: 1N4149 diode (56-56) to the eyelets of lug 1 (S-1) and lug 2 (NS). Position the banded end of the diode toward lug 2.
- () D7: 1N4149 diode (56-56) to the eyelets of lug 2 (S-2) and lug 3 (NS). Position the banded end of the diode toward lug 3.
- () Cut four 3/8" pieces of black sleeving.

- () R2: Slide 3/8" pieces of black sleeving over the leads of a 1500 Ω (brn-grn-red) resistor. Then connect the 1500 Ω resistor to the eyelets of lug 3 (S-2) and lug 8 (S-1).

- () Cut off the excess lead lengths of the resistor and diodes.

NOTE: In the following steps you will connect component leads and wires to the upper part of the lugs of the terminal strip. Wrap the end of each wire or lead around the lug to make a mechanically secure connection, then cut off any excess lead lengths. Solder instructions will not include any leads that are already soldered to the eyelets of the lugs.

- () D5: Slide 3/8" pieces of sleeving over the leads of a 1N4149 diode (#56-56). Then connect the banded end to 8-lug terminal strip lug 1 (S-1) and connect the other end to lug 5 (NS).

Connect the wires of the 3-hole socket to the 8-lug terminal strip as follows:

- () Brown to lug 6 (NS).
- () Red to lug 4 (NS).
- () Orange to lug 7 (NS).
- () Prepare a 3" brown wire and a 3" red wire. Remove 1/4" of insulation from both ends of each wire.

- () Connect one end of the brown wire to 8-lug terminal strip lug 3 (S-1) and connect the red wire to lug 7 (NS). The free ends of these wires will be connected later.
- () R1: Cut one lead of a 1 Ω , 2-watt, resistor (brn-blk-gold-silver) to 1". Then connect this lead to 8-lug terminal strip lug 4 (NS). The other lead will be connected later.
- () U1: Position the flat of the 78L12 regulator integrated circuit (#442-644) as shown and connect the left lead to lug 4 (S-3), the center lead to lug 5 (S-2), and the right lead to lug 6 (S-2).

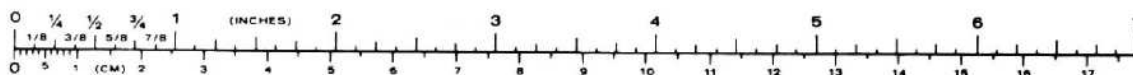
NOTE: When you install an electrolytic capacitor, as in the following step, look at it and identify the leads. One lead will have a positive (+) mark or a negative (-) mark near it. Be sure you have the positive lead when a step calls for the positive lead.

- () C2: Cut the positive (+) lead of the 100 μ F electrolytic capacitor to 1". Then pass this lead through lug 8 (NS) to lug 7 (S-3). The negative (-) lead will be connected later.

- () Prepare an 8" length of large red wire. Remove 1/4" of insulation from each end, twist the strands, and apply a thin film of solder.

NOTE: When a wire passes through a lug and goes to another lug, such as the capacitor lead in the following step, it will count as two wires in the soldering instructions.

- () Connect one end of the 8" large red wire to 8-lug terminal strip lug 8 (S-3). The other end will be connected later.
- () Check each lug of the 8-lug terminal strip to see that all connections are soldered and that no wire ends touch other lugs or component leads. Clip off any excess lead lengths and remove both terminal strips from the bottom of the chassis.
- () Remove the paper backing from a plastic foot. Then press the adhesive side of the foot to the chassis bottom 1/4" in from the edges as shown in the Pictorial.
- () In the same manner, install the remaining three plastic feet.

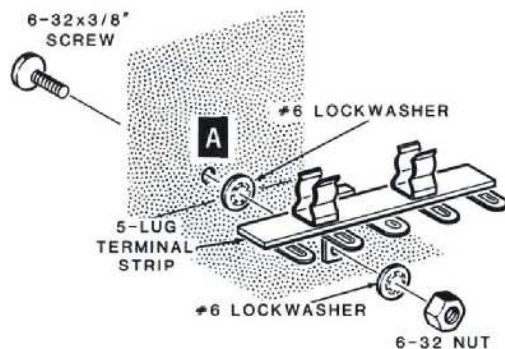


CHASSIS PARTS MOUNTING

Refer to Pictorial 2 (Illustration Booklet, Page 6) for the following steps.

NOTE: Use the plastic nut starter to hold and start 4-40 and 6-32 nuts on screws.

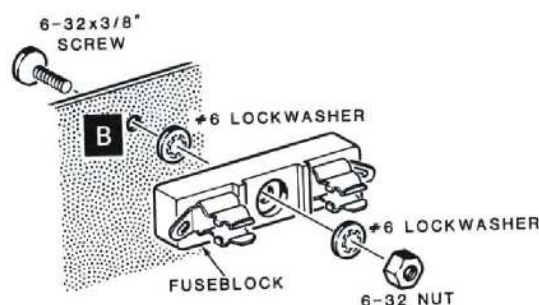
- () Position the chassis as shown and install a 5-lug terminal strip (with fuse clips) at A inside the rear panel. Use a 6-32 \times 3/8" screw,



Detail 2A

screw, two #6 lockwashers, and a 6-32 nut as shown in Detail 2A.

- () Refer to Detail 2B and install a fuse block at B inside the rear panel. Use a 6-32 \times 3/8" screw, two #6 lockwashers, and a 6-32 nut.

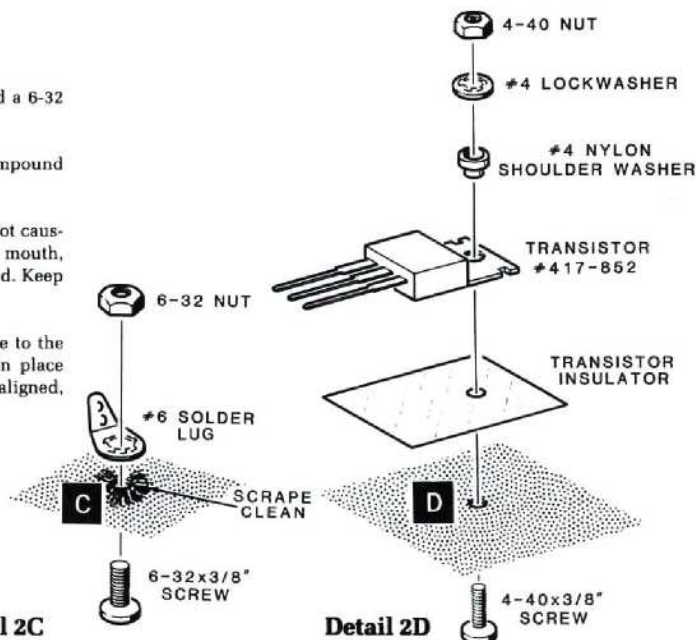


Detail 2B

- () Scrape any paint from around chassis hole C.
- () Install a #6 solder lug at C with a 6-32 \times 3/8" screw and a 6-32 nut, as shown in Detail 2C.
- () Use scissors to cut a corner from the packet of thermal compound for use in the next step.

NOTE: The silicone grease you will use in the following step is not caustic. However, make sure you do not get it in your eyes, ears, nose, mouth, or on your clothing. Wash your hands after you use the compound. Keep this and all chemicals out of the reach of children.

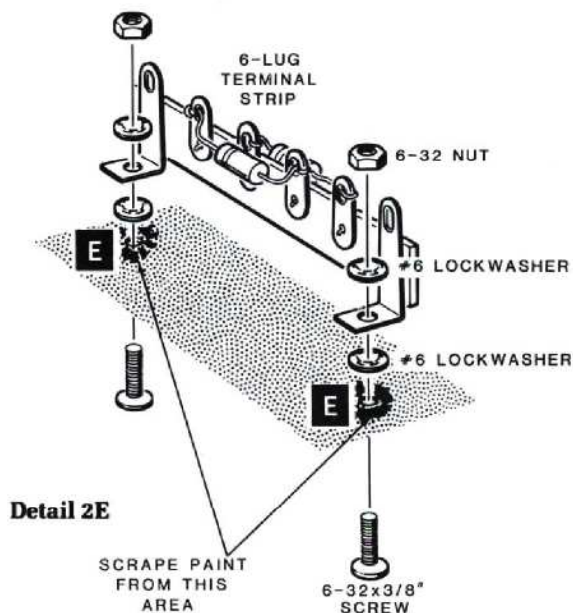
- () Q1: Refer to Detail 2D and apply a film of silicone grease to the bare metal side of the TIP31 transistor (#417-852). Then place the transistor insulator over this metal side with the holes aligned, and apply a film of thermal compound to the insulator.



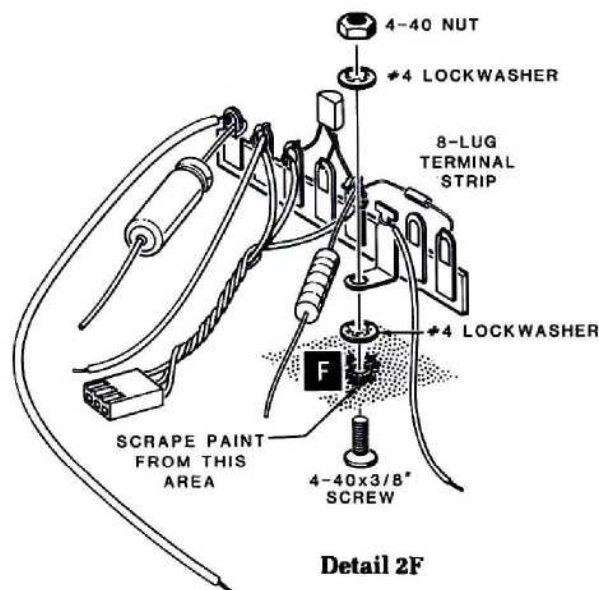
Detail 2C

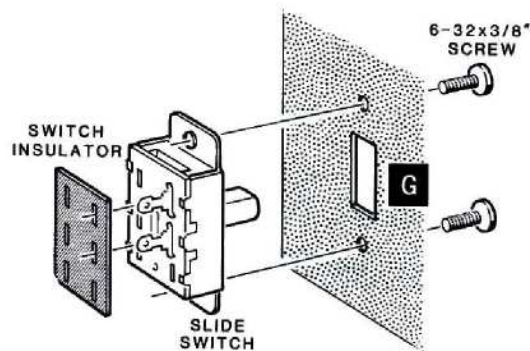
Detail 2D

- () Check for and remove any burrs from chassis hole D.
- () Install the transistor at D on the chassis with a 4-40 \times 3/8" screw, a #4 nylon shoulder washer, a #4 lockwasher, and a 4-40 nut. Position the transistor as shown and tighten the hardware. Be sure the shoulder of the nylon shoulder washer is seated in the hole of the transistor.
- () Refer to Detail 2E and scrape any paint from around holes E. Then mount the prepared 6-lug terminal strip at E. Use a 6-32 \times 3/8" screw and a 6-32 nut with two #6 lockwashers for each mounting foot (one under and one over).

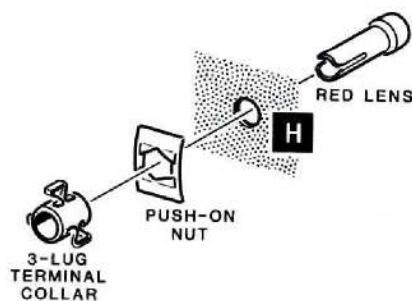


- () Refer to Detail 2F and scrape any paint around hole F. Then mount the prepared 8-lug terminal strip at F with a 4-40 \times 3/8" screw, 4-40 nut, and two #4 lockwashers as shown.
- () Refer to Detail 2G and install a slide switch at G. Position the switch lugs as shown and secure the switch with two 6-32 \times 3/8" screws. Place the switch insulator over the lugs of the switch.
- () Insert a red lens into hole H as shown in Detail 2H and secure the lens with a push-on nut. Then slide a 3-lug terminal collar onto the end of the lens.





Detail 2G



Detail 2H

FINAL WIRING

Refer to Pictorial 3 (Illustration Booklet, Page 7) for the following steps.

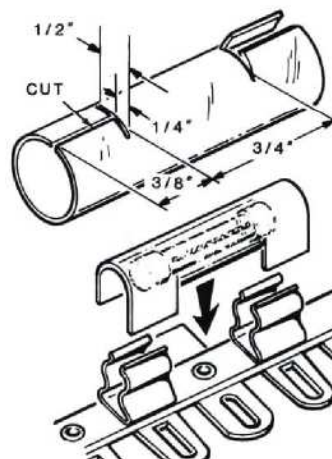
- () With its slots facing upward, install the 3-wire socket on the pins of transistor Q1 as far as it will go.

In the following steps you will install a resistor and attach wires on the terminal collar of the red lens. You may find it easier to do if you first remove the collar from the lens.

- () R3: Connect the 180 Ω (brn-gry-brn) resistor between terminal collar lugs 2 (NS) and 3 (NS).
- () Twist together the red and brown wires coming from the 8-lug terminal strip. Then connect the red wire to terminal collar lug 2 (S-2) and the brown wire to lug 1 (NS).
- () If you removed the terminal collar, replace it on the red lens for the following step.
- () Cut two 3/8" pieces of black sleeving and slide the sleeving over the leads of the lamp.
- () Insert the lamp into the red lens. Connect one lamp lead to terminal collar lug 1 (S-2) and the other lead to lug 3 (S-2).
- () Connect the free end of the 1 Ω , 2-watt resistor (from the 8-lug terminal strip) to 6-lug terminal strip lug 5 (NS).
- () Connect the negative (-) lead of the 100 μ F electrolytic capacitor (C2) to lug 6 (S-1).
- () Connect the free end of the 8" large red wire coming from lug 8 of the 8-lug terminal strip to fuse block lug 2 (S-1). Position the wire down against the chassis.
- () Prepare two 6-1/2" white wires. Remove 1/4" of insulation from each end, twist the strands and apply a thin film of solder.
- () Connect one 6-1/2" white wire from Off/On switch lug 1 (S-1) to 5-lug terminal strip lug 4 (S-1).
- () Connect the other 6-1/2" white wire from Off/On switch lug 2 (S-1) to 5-lug terminal strip lug 5 (NS). Position the two white wires down against the chassis.



- () Refer to Detail 3A and cut a 1-1/2" length of clear tubing. Use scissors or a knife to cut the tubing as shown in the Detail.
- () Place the prepared tubing over a 3/8 ampere fuse. Then mount the fuse in the fuse clips on the 5-lug terminal strip.
- () Install a 1.5 ampere fuse in the fuse block.
- () Write the following information on one of the fuse labels:
"3/8-ampere, 3AG, slow-blow"
- () Remove the paper backing from the 3/8-ampere fuse label. Then press the label onto the bottom of the chassis as shown.
- () Write the following information on the other fuse label:
"1-1/2-ampere, 3AG"
- () In the same manner, press the 1-1/2-ampere fuse label onto the inside of the rear panel as shown.

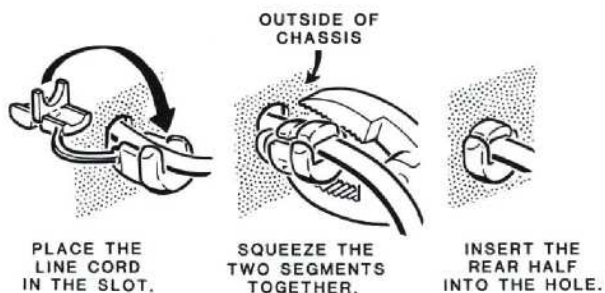


Detail 3A

- () Remove enough outer insulation from the line cord to expose two inches of the white, black, and green wires. Then twist the end of each wire and apply a thin film of solder to hold the fine strands together.
- () Insert the end of the line cord through the larger hole in the rear panel and install a large strain relief as shown in Detail 3B. Use pliers to squeeze the strain relief to fit the hole.

Refer to the inset drawing on Pictorial 3 and make mechanically secure connections in the following steps.

- () Connect the green line cord lead to the #6 solder lug (S-1).
- () Connect the white lead to 5-lug terminal strip lug 2 (S-1).
- () Connect the black lead to 5-lug terminal strip lug 1 (NS).



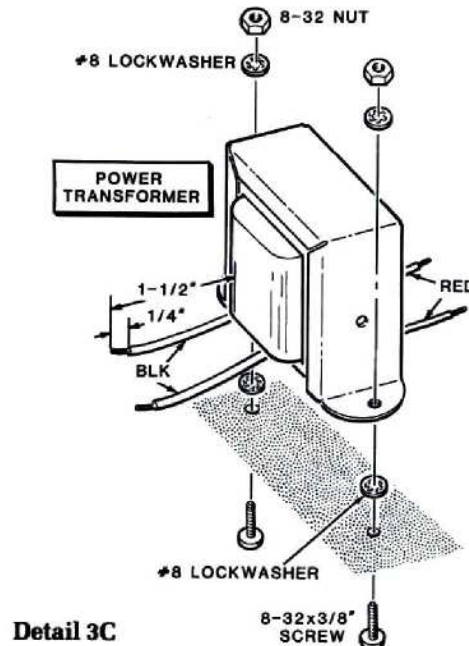
Detail 3B



- () Cut all four leads of the power transformer to 1-1/2" as shown in Detail 3C and remove 1/4" of insulation from each lead. Prepare each lead end. Be careful not to pull the leads away from the transformer windings when you prepare the ends. Then mount the transformer as shown, with the red leads toward the 6-lug terminal strip. Use two 8-32 x 3/8" screws, four #8 lockwashers, and two 8-32 nuts.

NOTE: Make mechanically secure connections for the following steps.

- () Connect either black transformer lead to 5-lug terminal strip lug 1 (S-2) and connect the other black lead to lug 5 (S-2).
- () Connect either red transformer lead to 6-lug terminal strip lug 3 (S-2) and connect the other red lead to lug 4 (S-2).

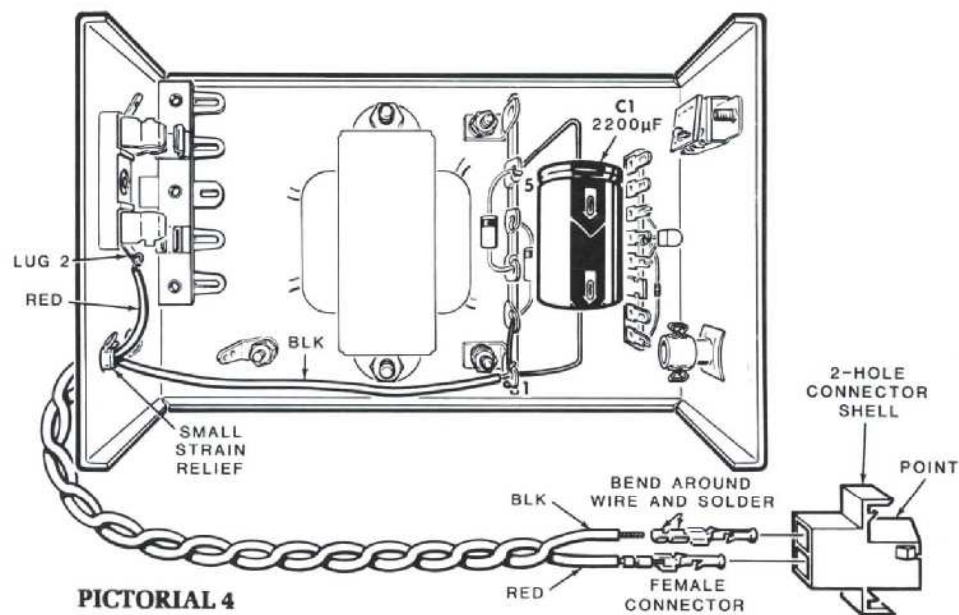


Refer to Pictorial 4 for the following steps.

- () C1: Pass the negative (-) lead of the 2200 μ F electrolytic capacitor through lug 1 (NS) to lug 2 (S-2) of the 6-lug terminal strip. Then connect the positive (+) lead to lug 5 (S-3). Position the bottom of the capacitor body 1/4" above the terminal strip lugs.
- () Remove 1/4" of insulation from one end of the remaining large red and black wires. Twist together the end of each wire and apply a thin film of solder to hold the fine strands together.
- () Pass this end of these two wires through the hole in the rear panel and connect the red wire to fuse block lug 2 (S-1). Then connect the black wire to 6-lug terminal strip lug 1 (S-3).
- () Position the black wire down along the chassis and form a slight loop in the red wire. Then install a small strain relief on the two wires. Squeeze the strain relief with pliers to insert it into the hole.
- () Straighten the long red and black wires and cut the longer one even with the shorter one. Then remove 1/4" of insulation from each wire, twist the ends and apply solder.

- () Install a female connector pin on the end of one of the two wires. Lay the wire between the tabs of the connector pin, with the end of the insulation just outside the end tabs. Bend the tabs over the wire and apply solder.
- () In the same manner, install a female connector pin on the end of the other wire.
- () Beginning at the outside of the strain relief, twist the red and black wires for their full length.
- () Note the position of the pointed side of a two-hole connector shell, and insert the female connectors of the red wire and black wire into the indicated holes.

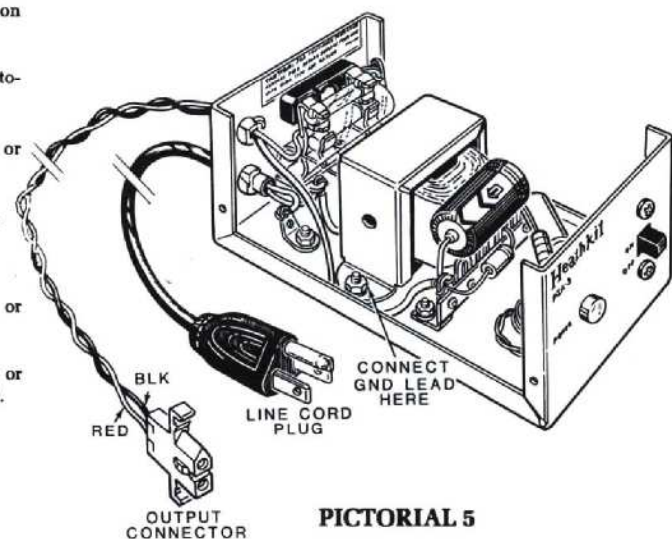
This completes the parts mounting and wiring of your Power Supply. Perform the following "Checkout" before you proceed to the "Initial Tests".



CHECKOUT

Carefully check your work to be sure the Power Supply will function properly when you perform the "Initial Tests." Check to see that:

1. Each diode is installed with its banded end as shown in the Pictorial.
2. Each electrolytic capacitor is installed with its positive (+) or negative (-) lead in the right direction.
3. IC1 is installed properly to the correct lugs of the terminal strip.
4. All connections are properly soldered and to the correct lugs.
5. No wire ends or component leads are touching other leads or lugs on the terminal strips.
6. No bits of solder or wire clippings are lodged between lugs or leads. (Tip the unit upside down and shake out possible debris).



INITIAL TESTS

NOTE: Before you connect the line cord plug to an AC power receptacle, make the following tests. They will help assure you that the Power Supply will operate properly and avoid possible damage to your unit. You will need a volt-ohmmeter for these tests.

If you do not obtain the correct results as you perform each of the following tests, check the wiring and soldering of the line cord and the 5-lug terminal strip (with fuse clips). Be sure to locate and correct any problem before you proceed any further.

RESISTANCE TESTS

() Set the front panel On/Off slide switch to the OFF position.

() Set your ohmmeter to its R x 100 ohm range.

Refer to Pictorial 5 for the following tests:

CONNECT THE METER LEADS:

READING:

() To the line cord plug, from one flat prong to the other flat prong. Open (infinite)

() To the line cord plug, from the center prong to either flat prong. Open (infinite)

() To the line cord plug, from the center prong to the other flat prong. Open (infinite)

() From the chassis to one flat prong of the line cord plug. Open (infinite)

() From the chassis to the other flat prong of the line cord plug. Open (infinite)

() From the chassis to the center prong of the line cord plug. Short (0 ohms)

() From the chassis to the connector pin on the end of the large red wire in the output connector. 120-220 ohms

() Place the On/Off switch in the ON position. Then set your ohmmeter to R x 10 and measure the resistance from one flat prong to the other of the line cord plug. 15-40 ohms

() Place the On/Off switch in the OFF position.

VOLTAGE TESTS

() Set your DC voltmeter to a 15 volt range and connect its common lead to the chassis of your Power Supply.

CAUTION: The full AC line voltage is present at several points in the Accessory Power Supply. Be careful to avoid personal shock as you perform the checks described.

() Connect the line cord plug of your Power Supply to a 120 volt

AC power receptacle and place the On/Off slide switch in the ON position. The lamp in the red lens should glow.

() Connect the positive voltmeter lead to the positive pin (on the large red wire) in the output connector. This should measure 13.2 volts.

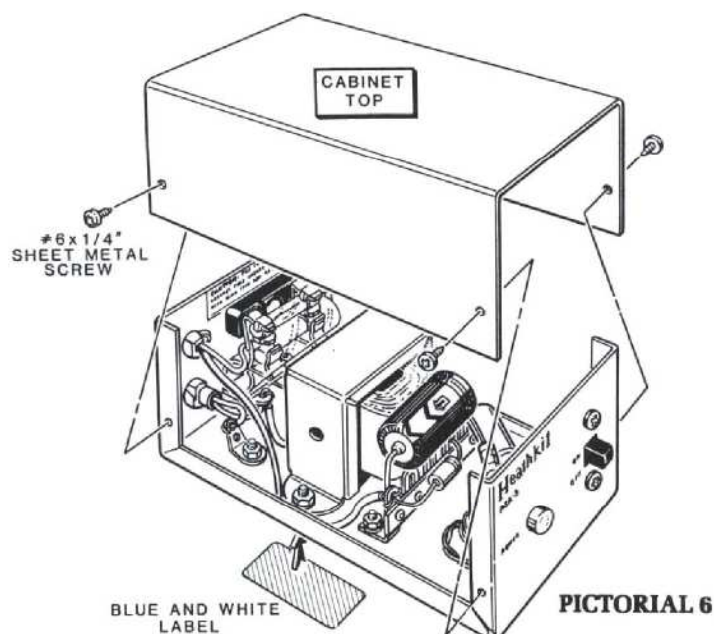
If you obtained the correct results in these Initial Tests, place the On/Off slide switch in the OFF position and disconnect the line cord plug from its receptacle. Remove the test leads from the Power Supply.

FINAL ASSEMBLY

Refer to Pictorial 6 for the following steps.

() Place the cabinet top over the chassis and secure it with four #6 x 1/4" sheet metal screws as shown.

() Peel the paper backing from the blue and white label. Then press the label to the underside of the chassis. Refer to the numbers on this label in any correspondence you might have with Heath Company about this kit.



IN CASE OF DIFFICULTY

NOTE: The following checks will be most effective if you apply them to one part of the kit at a time.

1. About 90% of the kits that are returned for repair do not function properly due to poor connections and soldering. Therefore, you can eliminate many troubles by carefully inspecting each connection to make sure it is soldered as described in the "Kit Builders Guide." Resolder any doubtful connections and be sure all the wires are soldered at places where several wires are connected.
2. Check electrolytic capacitors to be sure they are installed with the positive and negative leads connected to the correct terminals.
3. Check each resistor carefully. A resistor that is discolored, or cracked, or shows any sign of bulging would indicate that it is faulty and should be replaced.
4. Be sure the correct diode is installed at each diode location, and that the banded end is positioned correctly.
5. Recheck the wiring. Trace each lead in colored pencil on the Pictorial as you check it. It is frequently helpful to have a friend check your work. Someone who is not familiar with the unit

may notice something you have consistently overlooked.

6. If excessive current has been drawn from any section of the power supply, the fuse may be blown.
7. Transistor Q1 may be shorted or IC U1 may be shorted if the output voltage is higher than required for normal operation (13.2 VDC).
8. Diodes D4 and D5 may be shorted if the output voltage is lower than required for normal operation. Also IC U1 may be open.
9. If the transistor case is shorted to the chassis, the Power Supply will produce a low output voltage and the fuse will blow.

If you still have not found the trouble after you perform the above tests, and a voltmeter is available, check the voltage readings against those shown in the Schematic.

In an extreme case where you are unable to resolve a difficulty, refer to the "Customer Service" information inside the rear cover of the Manual. Your Warranty is located inside the front cover.

SPECIFICATIONS

Output Voltage	12.6 volts, regulated $\pm 5\%$ @ 1-ampere.
Maximum Output Current	1 ampere.
Ripple Voltage	50 millivolts or less.
Power Requirements	110 to 130 VAC, 50/60 Hz, at 38 watts.
Dimensions	2-3/4" high \times 4" wide \times 6" deep (7 \times 10 \times 15 cm) including switch and feet.
Net Weight	2.2 lbs. (.9 kg).

The Heath Company reserves the right to discontinue products and to change specifications at any time without incurring any obligation to incorporate new features in products previously sold.

CIRCUIT DESCRIPTION

Refer to the Schematic Diagram while you read the following paragraphs.

The line voltage is applied through fuse F1 and Power switch SW1 to the primary winding of transformer T1. From the secondary winding, the voltage is applied to diodes D1 through D4, which operate as a full-wave bridge rectifier. The DC from these diodes is then filtered by capacitor C1 and applied to voltage regulator IC U1 and the series pass transistor, Q1.

The ground lead of 12-volt voltage regulator U1 is held 1.8 volts above ground by diodes D5, D6, and D7. This makes the 12-volt regulator effec-

tively a 13.8-volt regulator. The regulator drives pass transistor Q1 (which is connected as an emitter follower) to produce a 13.2 output because of the voltage drop across the base-emitter junction of Q1 and load resistor R2.

The output voltage from Q1 is filtered by capacitor C2 and applied through fuse F2 to the output connector. Resistor R2 is a load resistor for the power supply and lamp PL1 indicates when the power supply is operating. Resistor R3 is a voltage dropping resistor for the 6-volt lamp, PL1.