

# HEATHKIT<sup>®</sup> MANUAL

for the

## REMOTE COAX SWITCH

Model SA-1480

595-2279-01



HEATH COMPANY • BENTON HARBOR, MICHIGAN

# HEATH COMPANY PHONE DIRECTORY

The following telephone numbers are direct lines to the departments listed:

Kit orders and delivery information ..... (616) 982-3411  
Credit ..... (616) 982-3561  
Replacement Parts ..... (616) 982-3571

## Technical Assistance Phone Numbers

8:00 A.M. to 12 P.M. and 1:00 P.M. to 4:30 P.M., EST, Weekdays Only  
R/C, Audio, and Electronic Organs ..... (616) 982-3310  
Amateur Radio ..... (616) 982-3296  
Test Equipment, Weather Instruments and  
Home Clocks ..... (616) 982-3315  
Television ..... (616) 982-3307  
Aircraft, Marine, Security, Scanners, Automotive,  
Appliances and General Products ..... (616) 982-3496  
Computers — Hardware ..... (616) 982-3309  
Computers — Software:  
Operating Systems, Languages, Utilities ..... (616) 982-3860  
Application Programs ..... (616) 982-3884  
Heath Craft Wood Works ..... (616) 982-3423



## YOUR HEATHKIT 90-DAY LIMITED WARRANTY

### Consumer Protection Plan for Heathkit Consumer Products

Welcome to the Heath family. We believe you will enjoy assembling your kit and will be pleased with its performance. Please read this Consumer Protection Plan carefully. It is a "LIMITED WARRANTY" as defined in the U.S. Consumer Product Warranty and Federal Trade Commission Improvement Act. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

#### Heath's Responsibility

**PARTS** — Replacements for factory defective parts will be supplied free for 90 days from date of purchase. Replacement parts are warranted for the remaining portion of the original warranty period. You can obtain warranty parts direct from Heath Company by writing or telephoning us at (616) 982-3571. And we will pay shipping charges to get those parts to you . . . anywhere in the world.

**SERVICE LABOR** — For a period of 90 days from the date of purchase, any malfunction caused by defective parts or error in design will be corrected at no charge to you. You must deliver the unit at your expense to the Heath factory, any Heathkit Electronic Center (units of Veritechnology Electronics Corporation), or any of our authorized overseas distributors.

**TECHNICAL CONSULTATION** — You will receive free consultation on any problem you might encounter in the assembly or use of your Heathkit product. Just drop us a line or give us a call. Sorry, we cannot accept collect calls.

**NOT COVERED** — The correction of assembly errors, adjustments, calibration, and damage due to misuse, abuse, or negligence are not covered by the warranty. Use of corrosive solder and/or the unauthorized modification of the product or of any furnished component, will void this warranty in its entirety. This warranty does not include reimbursement for inconvenience, loss of use, customer assembly, set-up time, or unauthorized service.

This warranty covers only Heath products and is not extended to other equipment or components that a customer uses in conjunction with our products.

SUCH REPAIR AND REPLACEMENT SHALL BE THE SOLE REMEDY OF THE CUSTOMER AND THERE SHALL BE NO LIABILITY ON THE PART OF HEATH FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO ANY LOSS OF BUSINESS OR PROFITS, WHETHER OR NOT FORSEEABLE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

#### Owner's Responsibility

**EFFECTIVE WARRANTY DATE** — Warranty begins on the date of first consumer purchase. You must supply a copy of your proof of purchase when you request warranty service or parts.

**ASSEMBLY** — Before seeking warranty service, you should complete the assembly by carefully following the manual instructions. Heathkit service agencies cannot complete assembly and adjustments that are customer's responsibility.

**ACCESSORY EQUIPMENT** — Performance malfunctions involving other non-Heath accessory equipment, (antennas, audio components, computer peripherals and software, etc.) are not covered by this warranty and are the owner's responsibility.

**SHIPPING UNITS** — Follow the packing instructions published in the assembly manuals. Damage due to inadequate packing cannot be repaired under warranty.

If you are not satisfied with our service (warranty or otherwise) or our products, write directly to our Director of Customer Service, Heath Company, Benton Harbor MI 49022. He will make certain your problems receive immediate, personal attention.

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# Heathkit® Manual

for the

## REMOTE COAX SWITCH

Model SA-1480

595-2279-01

**WARNING: TO PREVENT FIRE OR SHOCK  
HAZARD, DO NOT EXPOSE THE CONTROL CHAS-  
SIS TO RAIN OR MOISTURE.**

HEATH COMPANY  
BENTON HARBOR, MICHIGAN 49022

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## INTRODUCTION

The Heathkit Model SA-1480 Remote Coax Switch is a tower- or mast-mounted RF coaxial switch that you can conveniently control from inside your house.

An advantage of the remotely controlled coax switch is that only one feedline is necessary to operate up to five antennas, while a manual coax switch would require as many feedlines as antennas.

The Remote Coax Switch consists of two units, an outdoor switching network (called the "remote") and an indoor control. These two units are interconnected by an 8-wire cable (not supplied) such as the Heath IDA-1290-1, 2, or 3. The remote is rain tight and contains the RF switch that allows you to select an

antenna or ground all antennas simultaneously. You can mount the remote with a single clamp. The housing extends over the connector area to provide some weather protection.

The control contains the power supply and provides the switching signals to the remote. The front panel contains six LED's that indicate which antenna (or grounding) has been selected. The LED's also give feedback on the operation of the remote and glow dimly if the motor is jammed.

The simplicity and rugged design of the Remote Coax Switch should give you years of convenient, trouble-free operation.

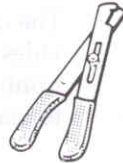
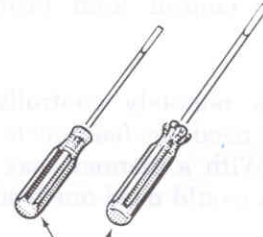
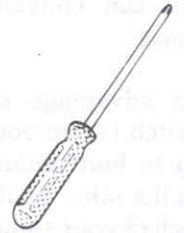
## ASSEMBLY NOTES

### TOOLS

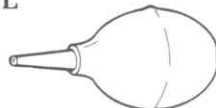
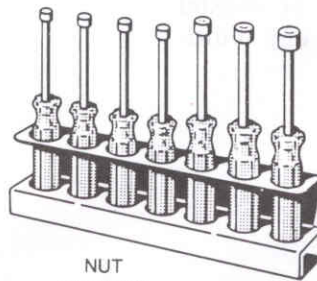
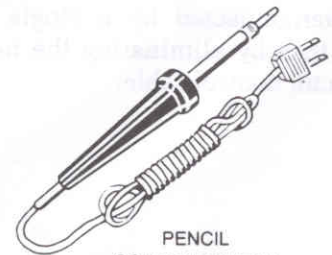
You will need these tools to assemble your kit.



PLIERS

LONG-NOSE  
PLIERSDIAGONAL  
CUTTERSWIRE  
STRIPPERS1/8" & 1/4"-BLADE  
SCREWDRIVERSPHILLIPS  
SCREWDRIVER

### OTHER HELPFUL TOOLS

NUT STARTER  
(May Be Supplied  
With Kit)DESOLDERING  
BULB\*DESOLDERING  
BRAID\*NUT  
DRIVERSPENCIL  
SOLDERING IRON  
(22 to 25 WATTS)

\*To Remove Solder From Circuit Connections.

### ASSEMBLY

1. Follow the instructions carefully. Read the entire step before you perform each operation.
2. The illustrations in the Manual are called Pictorials and Details. Pictorials show the overall operation for a group of assembly steps; Details generally illustrate a single step. When you are directed to refer to a certain Pictorial "for the following steps," continue using that Pictorial until you are referred to another Pictorial for another group of steps.
3. Most kits use a separate "Illustration Booklet" that contains illustrations (Pictorials, Details, etc.) that are too large for the Assembly Manual. Keep the "Illustration Booklet" with the Assembly Manual. The illustrations in it are arranged in Pictorial number sequence.
4. Position all parts as shown in the Pictorials.
5. Solder a part or a group of parts only when you are instructed to do so.

6. Each circuit part in an electronic kit has its own component number (R2, C4, etc.). Use these numbers when you want to identify the same part in the various sections of the Manual. These numbers, which are especially useful if a part has to be replaced, appear:
- In the Parts List,
  - At the beginning of each step where a component is installed,
  - In some illustrations,
  - In Troubleshooting Charts,
  - In the Schematic,
  - In the sections at the rear of the Manual.
7. When you are instructed to cut something to a particular length, use the scales (rulers) provided at the bottom of the Manual pages.

**SAFETY WARNING: Avoid eye injury when you cut off excessive lead lengths. Hold the leads so they cannot fly toward your eyes.**

## SOLDERING

Soldering is one of the most important operations you will perform while assembling your kit. A good solder connection will form an electrical connection between two parts, such as a component lead and a circuit board foil. A bad solder connection could prevent an otherwise well-assembled kit from operating properly.

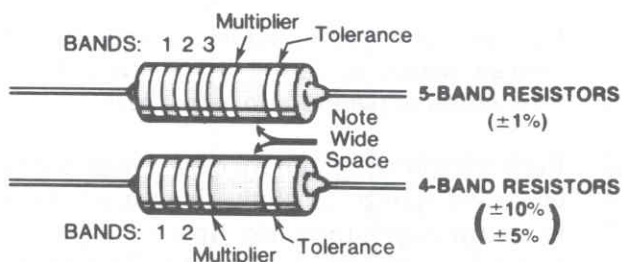
It is easy to make a good solder connection if you follow a few simple rules:

1. Use the right type of soldering iron. A 22 to 25-watt pencil soldering iron with a 1/8" or 3/16" chisel or pyramid tip works best.
2. Keep the soldering iron tip clean. Wipe it often on a wet sponge or cloth; then apply solder to the tip to give the entire tip a wet look. This process is called tinning, and it will protect the tip and enable you to make good connections. When solder tends to "ball" or does not stick to the tip, the tip needs to be cleaned and retinned.

NOTE: Always use rosin core, radio-type solder (60:40 tin-lead content) for all of the soldering in this kit. This is the type we have supplied with the parts. The Warranty will be void and we will not service any kit in which acid core solder or paste has been used.

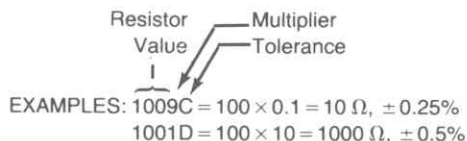
**RESISTORS**

Resistors are identified in Parts Lists and steps by their resistance value in Ω (ohms), kΩ (kilohms), or MΩ (megohms). They are usually identified by a color code of four or five color bands, where each color represents a number. See the "Resistor Color Code" chart. These colors are given in the steps in their proper order (except for the last band, which indicates a resistor's "tolerance"; see the "Resistor Tolerance Chart"). You do not need to memorize the color codes.



Occasionally, a "precision" or "power" resistor may have the value stamped on it. The letter R, K, or M may also be used at times to signify a decimal point, as in:  
 2R2 = 2.2 Ω  
 2K2 = 2.2 kΩ, or 2200 Ω  
 2M2 = 2.2 MΩ

Precision resistors may also be marked as shown in the following examples. The values of the multipliers are shown in the "Multiplier Chart," and the tolerance values are shown in the "Resistor Tolerance" chart.



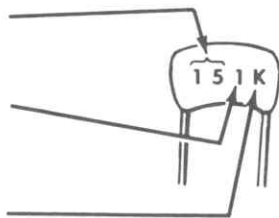
**CAPACITORS**

Capacitors will be called out by their capacitance value in μF (microfarads) or pF (picofarads) and type: ceramic, Mylar®, electrolytic, etc. Some capacitors may have their value printed in the following manner:

First and second digits of capacitor's value: 15

Multiplier: Multiply the first & second digits by the proper value from the "Multiplier Chart."

To find the tolerance of the capacitor, look up this letter in the capacitor Tolerance chart.



**RESISTOR COLOR CODE CHART**

	Band 1	Band 2	Band 3 (if used)	Multiplier
Color	1st Digit	2nd Digit	3rd Digit	
Black	0	0	0	1
Brown	1	1	1	10
Red	2	2	2	100
Orange	3	3	3	1,000
Yellow	4	4	4	10,000
Green	5	5	5	100,000
Blue	6	6	6	1,000,000
Violet	7	7	7	10,000,000
Gray	8	8	8	100,000,000
White	9	9	9	—
Silver	—	—	—	.01
Gold	—	—	—	.1

**RESISTOR TOLERANCE CHART**

	COLOR OR LETTER	
± 10%	SILVER	
± 5%	GOLD	J
± 2%	RED	G
± 1%	BROWN	F
± 0.5%	GREEN	D
± 0.25%	BLUE	C
± 0.1%	VIOLET	B
± 0.05%	GRAY	

**MULTIPLIER CHART**

FOR THE NUMBER:	MULTIPLY BY:	FOR THE NUMBER:	MULTIPLY BY:
0	1	4	10,000
1	10	5	100,000
2	100	8	0.01
3	1000	9	0.1

**CAPACITOR TOLERANCE CHART**

LETTER	10 pF OR LESS	OVER 10 pF
B	± 0.1 pF	
C	± 0.25 pF	
D	± 0.5 pF	
F	± 1.0 pF	± 1%
G	± 2.0 pF	± 2%
H		± 3%
J		± 5%
K		± 10%
M		± 20%

EXAMPLES: 151K = 15 × 10 = 150 pF  
 759 = 75 × 0.1 = 7.5 pF

NOTE: The letter "R" may be used at times to signify a decimal point, as in: 2R2 = 2.2 (pF or μF).





## PARTS LIST

Check each part against the following list. Any part that is packed in an individual envelope with the part number on it should be placed back in the envelope after you identify it until it is called for in a step. Do not discard any packing materials until all parts are accounted for. The key numbers correspond to the numbers on the Parts Pictorial in the separate Illustration Booklet, Page 1.

To order a replacement part, use the Parts Order Form furnished with this kit. If a Parts Order form is not available, refer to "Customer Service" inside the rear cover of this Manual. For prices, refer to the separate "Heath Parts Price List."

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

NOTE: The following resistors have a 5% tolerance (gold fourth band).

A1	6-225	1	2.2 M $\Omega$ , 1/2-watt (red red-green)	R1
A2	6-222-1	6	2200 $\Omega$ , 1-watt (red-red-red)	R3 through R8
A2	6-272-1	1	2700 $\Omega$ , 1-watt (red-violet-red)	R2

### CAPACITORS

B1	25-878	1	2200 $\mu$ F electrolytic	C1
B2	27-117	1	.27 $\mu$ F Mylar	C2

### DIODES-LED's

C1	57-27	5	1N2071 diode	D1, D2, D3, D4, D11
C2	412-640	1	LED lamp (red)	D10
C2	412-628	5	LED lamp (green)	D5 through D9

### TERMINAL STRIPS

D1	431-7	2	6-lug screw type
D2	431-49	1	11-lug
D3	431-81	1	6-lug

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

### SWITCHES

E1	60-619	1	Rocker switch	SW1
E2	63-1352	1	Rotary switch	SW2
E3	63-1353	1	Rotary switch section	SW4
E4	420-605	1	Motor switch assembly	SW3

### GROMMETS - INSULATORS

F1	73-43	1	3/8" plastic grommet
F2	75-24	1	Strain relief
F3	75-738	1	Insulator paper
F4	260-89	6	LED grommet
F5	260-90	6	Retainer ring

### HARDWARE

Hardware packets are marked to show the size of the hardware they contain (HDW #4, or, HDW #2 & #6, etc.). You may have to open more than one packet to locate all the hardware of any one size. (#6, for example).

#### #2 Hardware

G1	250-1295	2	2-56 $\times$ 1-1/4" flat-head screw
G2	252-98	2	2-56 nut
G3	254-26	2	#2 lockwasher



KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.	KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
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**#4 Hardware**

H1	250-273	9	4-40 × 3/8" screw	
H2	250-428	2	4-40 × 1/4" flat-head screw	
H3	252-99	11	4-40 nut	
H4	254-34	14	#4 lockwasher	

**#6 Hardware**

J1	250-155	10	#6 × 3/8" black sheet metal screw	
J2	250-237	8	#6 × 3/8" sheet metal screw	
J3	250-535	1	#6 × 1/4" housing screw	
J4	250-1297	4	6-32 × 1-3/4" screw	
J5	252-66	1	6-32 wing nut	
J6	252-77	13	6-32 nut	
J7	255-11	1	6-32 × 1" spacer	
J8	255-146	2	6-32 × 3/8" plastic spacer	
J9	255-702	2	6-32 × 2-1/2" spacer	
J10	259-1	2	#6 locking solder lug	
J11	259-6	1	#6 flat solder lug	
J12	250-26	2	6-32 × 5/8" screw	
J13	250-233	8	6-32 × 3/8" screw	
J14	253-89	1	#6 D washer	
J15	253-96	7	#6 flat washer	
J16	254-6	1	#6 external tooth lockwasher	
J17	254-25	21	#6 lockwasher	

**#8 Hardware**

K1	250-137	2	8-32 × 3/8" screw	
K2	252-4	2	8-32 nut	
K3	259-15	7	#8 spade lug	
K4	254-2	2	#8 lockwasher	

**Other Hardware**

L1	252-7	1	Control nut	
L2	252-57	2	Large nut	
L3	253-10	1	Control flat washer	
L4	253-73	1	Rubber washer	
L5	253-103	2	#3 fiber washer	
L6	253-112	1	Felt washer	
L7	254-5	1	Control lockwasher	
L8	142-711	1	Set of parts consisting of:	
L9	142-713	1	U-bolt	
L10	142-714	2	U-bolt nut	
L11	142-715	1	U-bolt outer plate	
L12	142-716	1	U-bolt inner plate	
L13		2	Plastic end caps (not used)	
L14	255-172	3	1-3/8" spacer	

**WIRE-SLEEVING**

89-49	1	Line Cord	
340-9	12"	Bare wire	
344-59	24"	White wire	
346-21	3"	Small sleeving	
346-26	7"	Large sleeving	
347-55	18"	Flat cable	

**MISCELLANEOUS**

M1	54-915	1	Power transformer	T1
M2	90-1252-1	1	Control cover	
M3	200-1356-1	1	Control chassis	
M4	204-2426	1	Remote chassis	
M5	204-2427	4	Bracket	
M6	205-1787	1	Plate	
M7	207-4	1	Cable clamp	
M8	214-224-1	1	Remote housing	
M9	261-43	4	Foot	
M10	352-33	2	Locking compound*	
	489-1	1	Sandpaper	

\*WARNING: This locking compound contains 1,1,1 TRI-CHLOROETHANE. If swallowed, induce vomiting and call a physician. Avoid contact with skin and eyes, use with adequate ventilation. In case of eye contact, flush thoroughly with water.



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

**Miscellaneous (cont'd)**

M11	390-1023	1	Label set	
M12	390-1255	1	Fuse replacement label	
M13	390-1551	1	Control label	
M14	391-34	1	Blue and white label	
M15	421-31	1	3/16-ampere slow-blow fuse	F1
M16	422-1	1	Fuse block	
M17	432-199	1	Wire nut	
M18	436-51	6	Coaxial jack with hardware	JC, J1 through J5
M19	440-23	4	Protective cap	
M20	455-50	1	Knob insert	
M21	462-962	1	Knob	
M22	490-5	1	Nut Starter	
M23	350-11	1	Sealant	
	597-260	1	Parts Order Form	
			Solder	
		1	Assembly Manual (see Page 1 for Part Number).	

**ADDITIONAL PARTS TO BE PURCHASED**

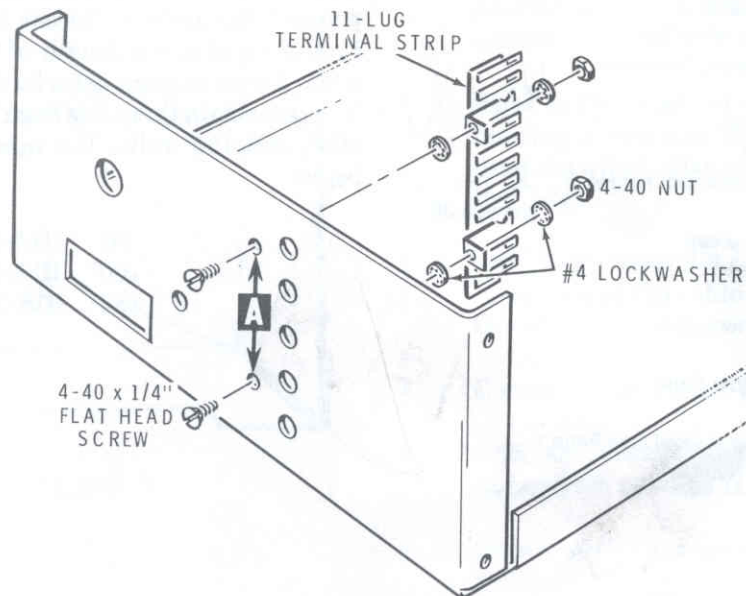
**Cable**

You will have to purchase an 8-wire cable that will connect the remote chassis to the control chassis. First determine the length of the cable that you will need. Allow enough extra for drip loops and routing. You can obtain this cable from Heath Company in 50', 100', and 150' rolls. The model numbers are listed below.

50'	IDA-1290-1
100'	IDA-1290-2
150'	IDA-1290-3



## STEP-BY-STEP ASSEMBLY

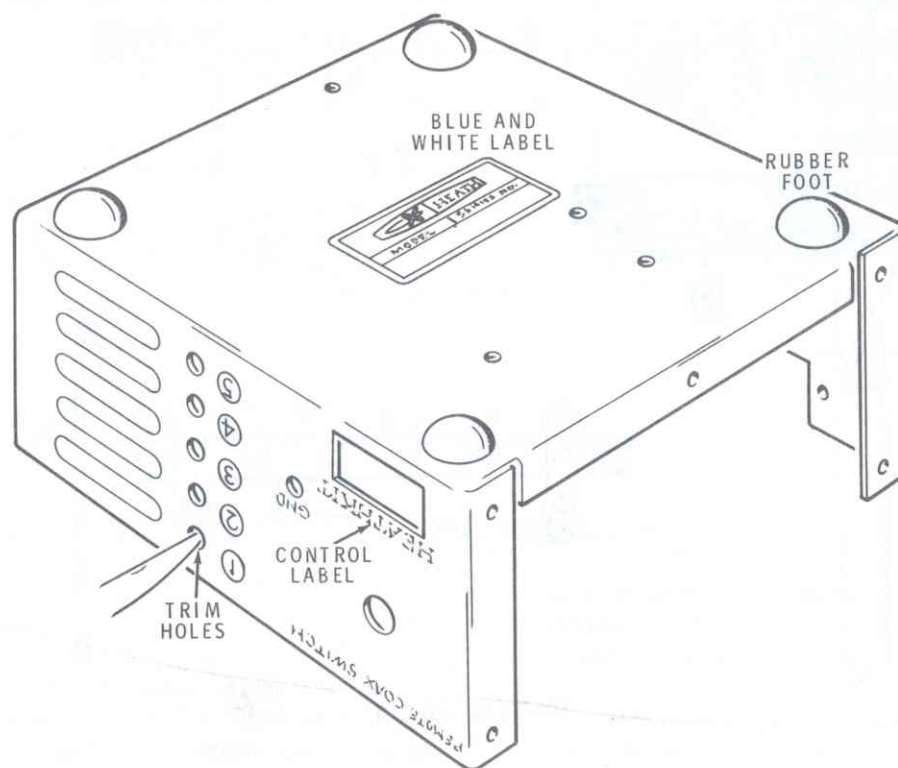


PICTORIAL 1-1

### CONTROL ASSEMBLY

#### NOTES:

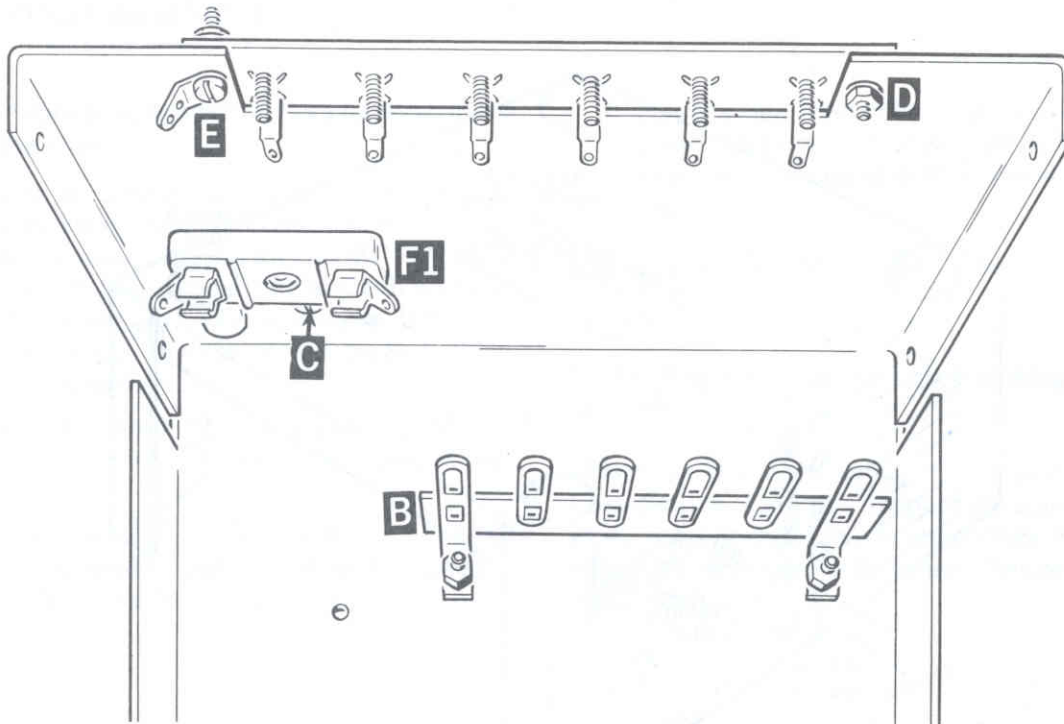
1. The term "hardware" will be used to refer to the screws, nuts, and lockwashers where parts are being mounted in some of the following steps. The phrase "Use 4-40  $\times$  1/4" hardware," for example, means to use 4-40  $\times$  1/4" screws, #4 lockwashers, and 4-40 nuts. Refer to the Pictorial or Detail called out in the step for the correct number of each piece of hardware to use and correct way to install it.
  2. Use the nut starter supplied with this kit to hold and start 4-40 and 6-32 nuts on screws.
  3. Before you mount each of the terminal strips, sand away the finish around its mounting holes, on the inside of the chassis, until bare metal is exposed. Use the sandpaper provided with the kit.
- ( ) Position the control chassis as shown in Pictorial 1-1, and mount the 11-lug terminal strip at A with 4-40  $\times$  1/4" flat head hardware.



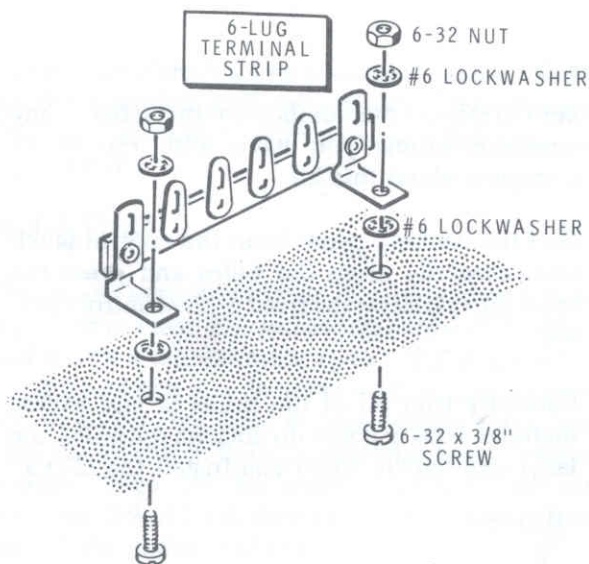
**PICTORIAL 1-2**

Refer to Pictorial 1-2 for the following steps.

- ( ) Position the control chassis upside down as shown in the Pictorial. One at a time, remove the backing paper from the four rubber feet and press them in place near the corners on the bottom of the control chassis.
- ( ) Carefully peel away the backing paper from the blue and white identification label. Then press the label on the bottom of the chassis. Make sure you do not cover any holes in the chassis. Be sure to refer to the numbers on this label in any communications you have with the Heath Company about this kit.
- ( ) Peel the backing paper from the control label; then carefully align the holes and press the label into place on the front of the control chassis.
- ( ) Carefully trim all of the holes of any excess material. NOTE: If you do not trim the holes, the label will buckle when you install the LED's.



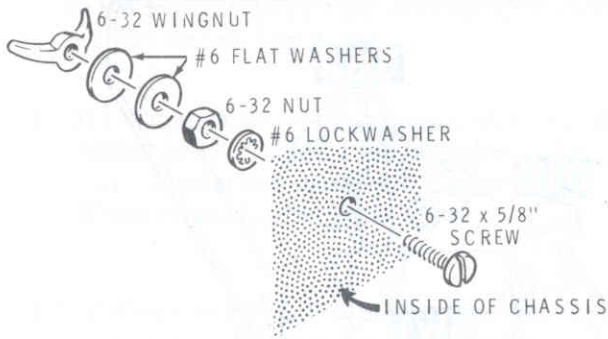
PICTORIAL 1-3



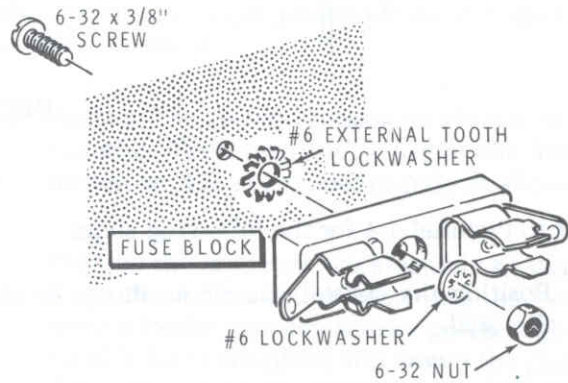
Detail 1-3A

Refer to Pictorial 1-3 for the following steps.

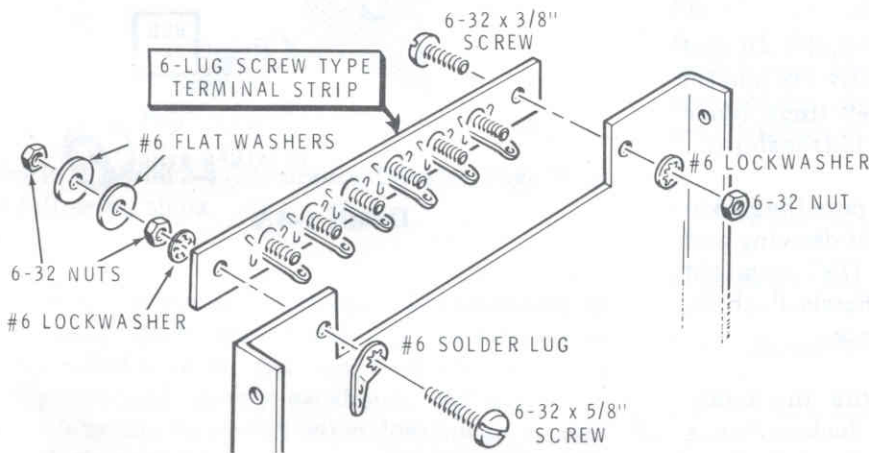
- ( ) Refer to Detail 1-3A and mount the 6-lug terminal strip at B with 6-32  $\times$  3/8" hardware.
- ( ) Refer to Detail 1-3B and install the ground post at C with 6-32  $\times$  5/8" hardware.
- ( ) F1: Refer to Detail 1-3C and mount the fuse block at F1 with 6-32  $\times$  3/8" hardware. Make sure you install the #6 external tooth lockwasher as shown.
- ( ) Refer to Detail 1-3D and mount the 6-lug screw-type terminal strip at D with 6-32  $\times$  3/8" hardware and at E with 6-32  $\times$  5/8" hardware. Position the terminal strip on the outside of the chassis when you mount it. Be sure to align the solder lug as shown.



Detail 1-3B

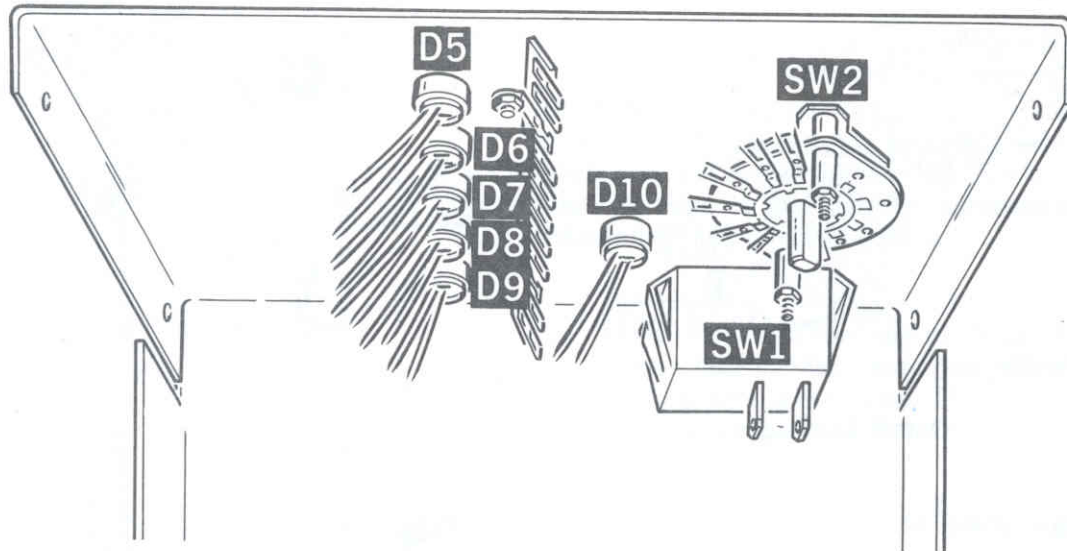


Detail 1-3C



Detail 1-3D

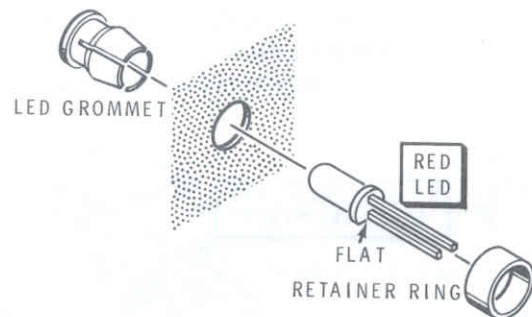




PICTORIAL 1-4

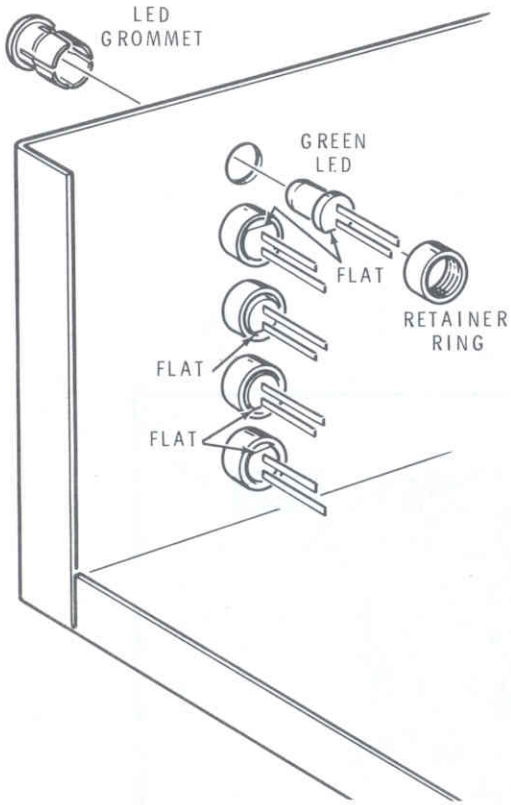
Refer to Pictorial 1-4 for the following steps.

- ( ) Position the control chassis as shown in the Pictorial.
- ( ) D10: Refer to Detail 1-4A and install the red LED at D10 with one LED grommet and one retainer ring. Make sure you position the flat of the LED down as shown.
- (✓) D5, D6, D7, D8, D9: Refer to Detail 1-4B and install the green LED's at D5, D6, D7, D8, and D9 with LED grommets and retainer rings. Make sure you position the flat of each LED as shown.
- (✓) SW1: Refer to Detail 1-4C and mount the rocker switch at SW1. Refer to the inset drawing and position the switch so the word "ON" is upright as viewed from the front of the chassis. Push the switch in until it snaps into place.
- (✓) Refer to Detail 1-4D and mount the rotary switch at SW2 with a control lockwasher, a control flat washer, and a control nut. Position the lugs as shown.

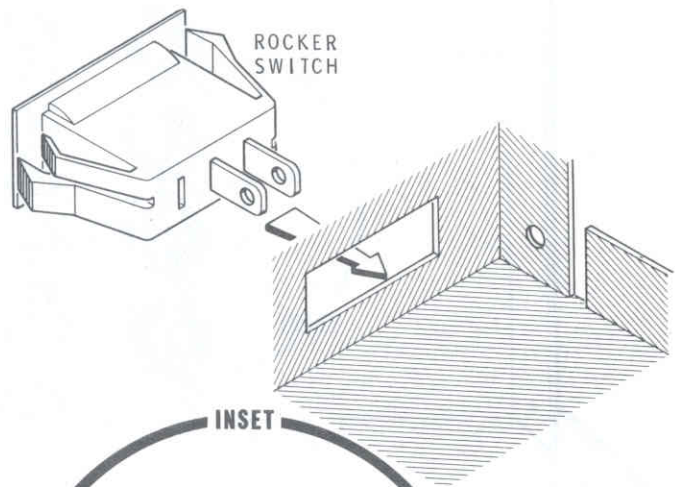


Detail 1-4A

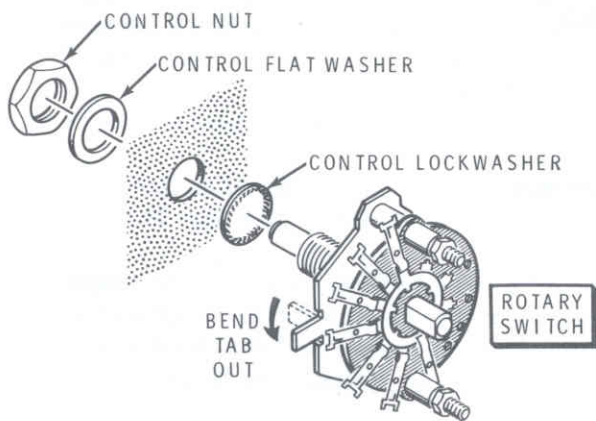




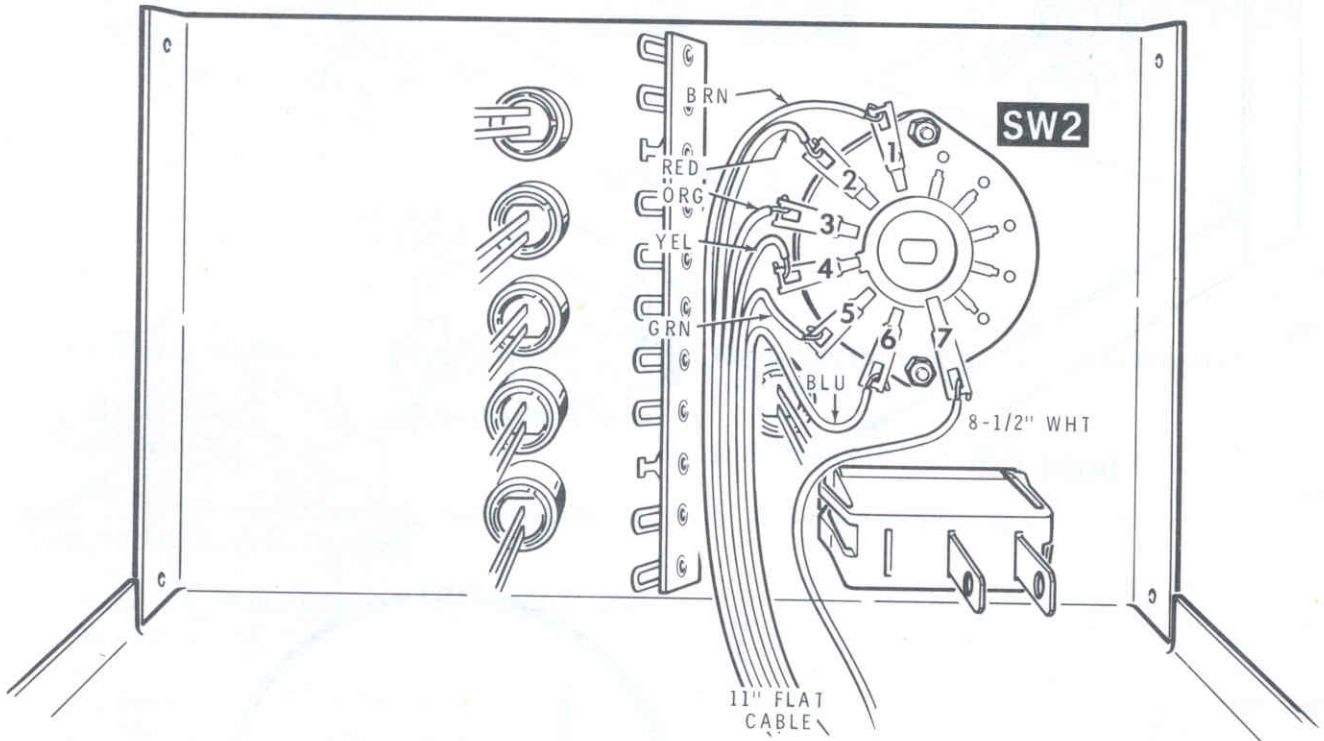
Detail 1-4B



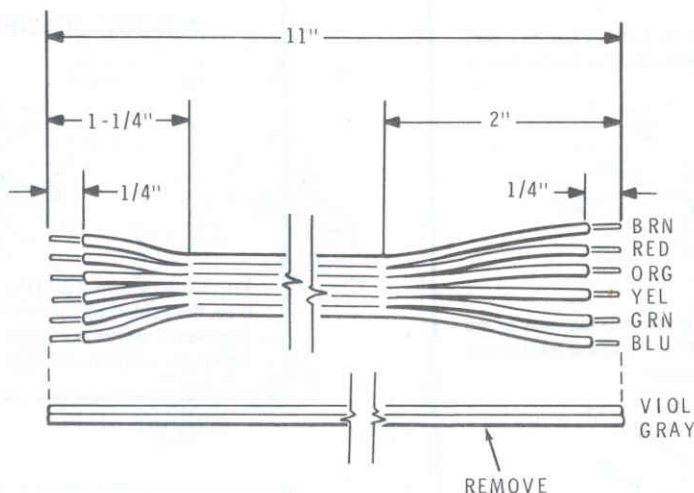
Detail 1-4C



Detail 1-4D



PICTORIAL 1-5



Detail 1-5A

Refer to Pictorial 1-5 for the following steps.

## NOTES:

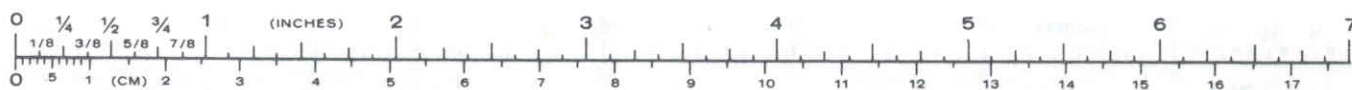
1. In the following steps, (NS) means not to solder the connections because other wires will be added later. (S-) with a number, such as (S-3), means to solder the connection. The number tells how many wires are in the connection.
  2. When a step calls for wire, cut the wire to the indicated length and remove 1/4" of insulation from each end. Then connect the wire as directed in the step.
- ( ) Connect one end of an 8-1/2" white wire to SW2 lug 7 (S-1). The other end will be connected later.

NOTE: Good solder connections are very important. Compare yours to those shown on the next page and, if necessary, reheat the connections.

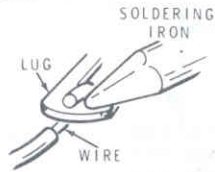
- ( ) Refer to Detail 1-5A and cut an 11" length of 8-wire flat cable. Then remove and discard the violet and gray wires, leaving a 6-wire cable. Prepare the 6-wire cable as shown. Twist the fine strands together and apply a small amount of solder to each wire end.

Connect the flat cable wires at the 2" separated end to SW2 in the following steps.

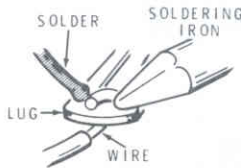
- ( ) Brown to lug 1 (NS).
- ( ) Red to lug 2 (NS).
- ( ) Orange to lug 3 (NS).
- ( ) Yellow to lug 4 (NS).
- ( ) Green to lug 5 (NS).
- ( ) Blue to lug 6 (NS).



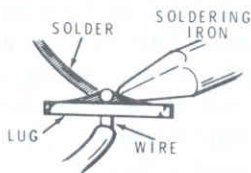
1. Push the soldering iron tip against the wire and the lug. Heat both the wire and the lug for two or three seconds.



2. Apply solder to the wire and the lug, **not** to the soldering iron. **IMPORTANT:** Let the heat of the wire and lug melt the solder.



3. As the solder begins to melt, allow it to flow around the connection. Then remove the solder and the iron and let the connection cool.



### MECHANICAL CONNECTIONS

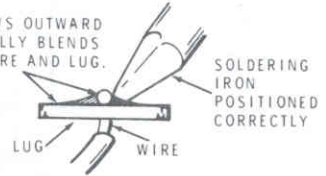
Some steps in your Manual may instruct you to "make a secure mechanical connection." To make a secure mechanical connection:

1. Wrap the wire or lead end all the way around the indicated connector.
2. Crimp the connection together firmly with pliers.
3. Solder the connection when directed to do so in a step.



### A GOOD SOLDER CONNECTION

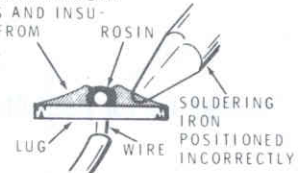
SOLDER FLOWS OUTWARD AND GRADUALLY BLENDS WITH THE WIRE AND LUG.



When both the wire and the lug are heated at the same time, the solder will flow onto the wire and the lug evenly. The solder will make a good electrical connection between the wire and the lug.

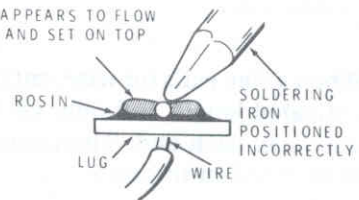
### POOR SOLDER CONNECTIONS

SOLDER DOES NOT FLOW ONTO THE LUG AND WIRE. A DARK ROSIN BEAD SURROUNDS AND INSULATES THE WIRE FROM THE CONNECTION.



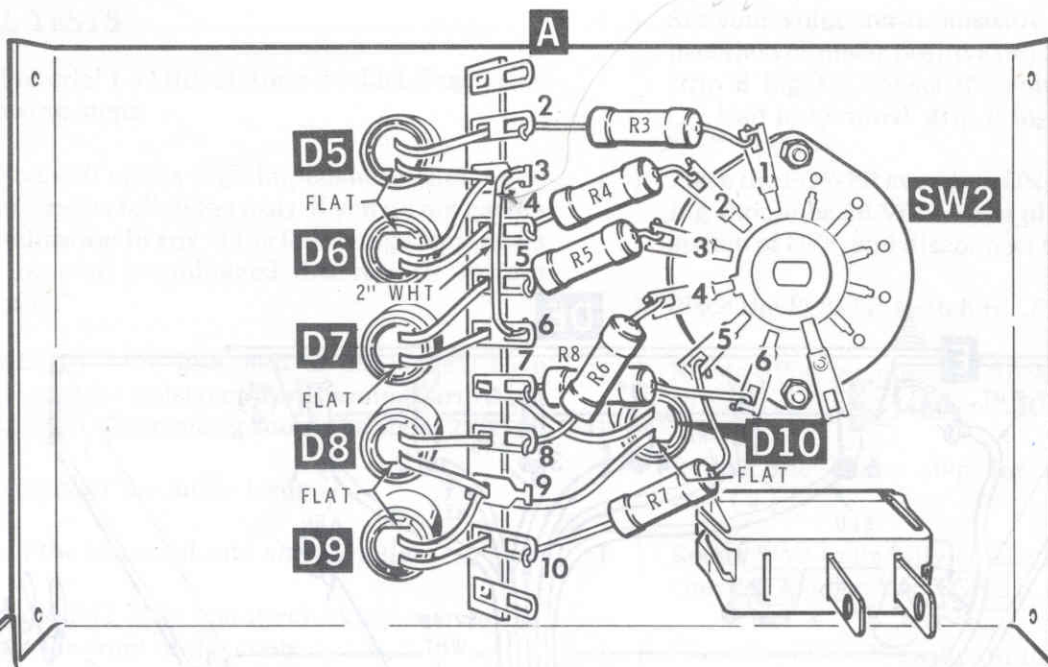
When the wire is not heated sufficiently, the solder will not flow onto the wire as shown above. To correct, reheat the connection and, if necessary, apply a small amount of additional solder to obtain a good connection.

SOLDER APPEARS TO FLOW INWARD AND SET ON TOP OF LUG.



When the lug is not heated sufficiently, the solder will blob on the lug as shown above. To correct, reheat the connection and, if necessary, apply a small amount of additional solder to obtain a good connection.





PICTORIAL 1-6

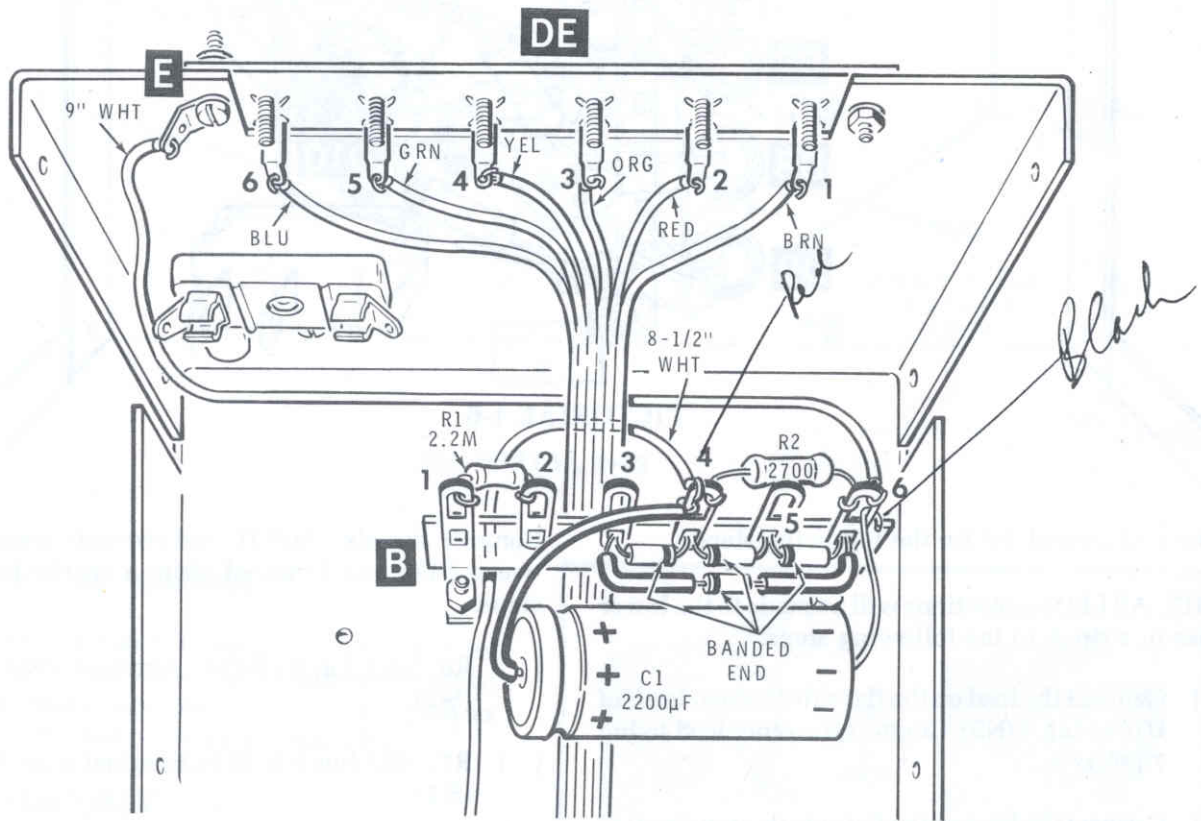
Refer to Pictorial 1-6 for the following steps.

NOTE: All LED connections will be made to the lower holes in strip A in the following steps.

- ( ) Connect the lead on the flat side (bottom lead) of D10 to lug 9 (NS). Connect the other lead to lug 7 (NS).
- ( ) Connect the lead on the flat side (bottom lead) of D5 to lug 3 (NS). Connect the other lead to lug 2 (NS).
- ( ) Connect the lead on the flat side (top lead) of D6 to lug 3 (NS). Connect the other lead to lug 4 (NS).
- ( ) Connect the lead on the flat side (bottom lead) of D7 to lug 6 (NS). Connect the other lead to lug 5 (NS).
- ( ) Connect the lead on the flat (bottom lead) of D8 to lug 9 (NS). Connect the other lead of lug 8 (NS).
- ( ) Connect the lead on the flat side (top lead) of D9 to lug 9 (S-3). Connect the other lead to lug 10 (NS).

Connect the six 2200 Ω (red-red-red) resistors between SW2 and terminal strip A in the following steps.

- ( ) R8: SW2 lug 6 (S-2) to terminal strip A lug 7 (S-2).
- ( ) R7: SW2 lug 5 (S-2) to terminal strip A lug 10 (S-2).
- ( ) R6: SW2 lug 4 (S-2) to terminal strip A lug 8 (S-2).
- ( ) R5: SW2 lug 3 (S-2) to terminal strip A lug 5 (S-2).
- ( ) R4: SW2 lug 2 (S-2) to terminal strip A lug 4 (S-2).
- ( ) R3: SW2 lug 1 (S-2) to terminal strip A lug 2 (S-2).
- ( ) Connect a 2-1/2" white wire from terminal strip A lug 3 (S-3) to lug 6 (S-2).
- ( ) Check to be sure that none of the resistor or LED leads short to adjacent connections.



PICTORIAL 1-7





Refer to Pictorial 1-7 for the following steps.

Position the control chassis as shown in the Pictorial.

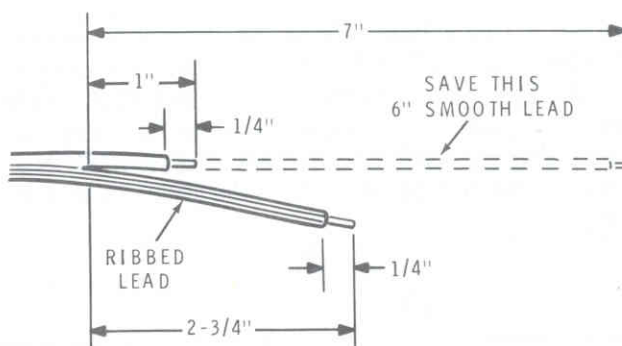
- ( ) Connect a 9" white wire from terminal strip B lug 6 (NS) to solder lug E (S-1). Route the wire as shown in the Pictorial.
- ( ) R1: Connect a 2.2 M $\Omega$  (red-red-green) resistor from terminal strip B lug 1 (S-1) to lug 2 (NS).
- ( ) Route the 8-1/2" white wire under the 2.2 M $\Omega$  resistor as shown. Then connect the free end of this wire to terminal strip B lug 4 (NS).

Connect four 1N2071 diodes (#57-27) to terminal strip B in following steps. Use the lower holes.

- ( ) D2: Banded end to lug 4 (NS); other lead to lug 3 (NS).
- ( ) D4: Banded end to lug 4 (S-2); other lead to lug 5 (NS).
- ( ) D3: Banded end to lug 5 (S-2); other lead to lug 6 (NS).
- ( ) D1: Place a 1/2" length of small sleeving over each lead. Then connect the banded end to lug 3 (S-2); other lead to lug 6 (S-2).
- ( ) R2: Connect a 2700  $\Omega$  (red-violet-red) resistor from terminal strip B lug 4 (NS) to lug 6 (NS).
- ( ) C1: Connect the lead at the negative (-) marked end of a 2200  $\mu$ F capacitor to terminal strip B lug 6 (S-3). Place a 1-1/2" length of small sleeving over the other capacitor lead and connect it to lug 4 (S-3).

Route the flat cable under terminal strip B as shown and connect the wires to terminal strip DE as follows:

- ( ) Brown to lug 1 (S-1).
- ( ) Red to lug 2 (S-1).
- ( ) Orange to lug 3 (S-1).
- ( ) Yellow to lug 4 (S-1).
- ( ) Green to lug 5 (S-1).
- ( ) Blue to lug 6 (S-1).

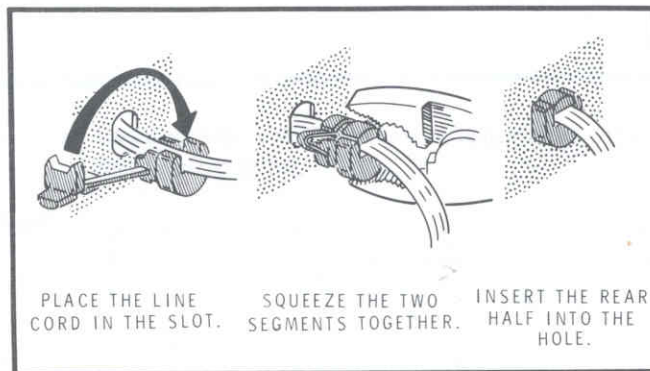


**Detail 1-8A**

Refer to Pictorial 1-8 (Illustration Booklet, Page 4) for the following steps.

Refer to Detail 1-8A for the next three steps, and prepare the line cord.

- ( ) 1. Separate the line cord for a distance of 7".
- ( ) 2. Identify the ribbed lead from the smooth lead. Then, measuring from the point of separation, cut the smooth lead to 1" (Save the 6" you cut off) and cut the ribbed lead to 2-3/4".
- ( ) 3. Remove 1/4" of insulation from the end of each lead. Then twist the strands together and melt a small amount of solder on the strands to hold them together.
- ( ) Install the line cord strain relief from outside the chassis at G as shown in Detail 1-8B. It may be necessary to squeeze the strain relief with pliers when you install it. Allow 2-3/4" of line cord on the inside of the chassis.



**Detail 1-8B**

Two sets of line voltage wiring instructions are given below, one for 120 VAC line voltage and the other for 240 VAC line voltage. In the U.S.A., 120 VAC is most often used, while in foreign countries 240 VAC is more common. USE ONLY THE INSTRUCTIONS THAT AGREE WITH THE LINE VOLTAGE IN YOUR AREA.

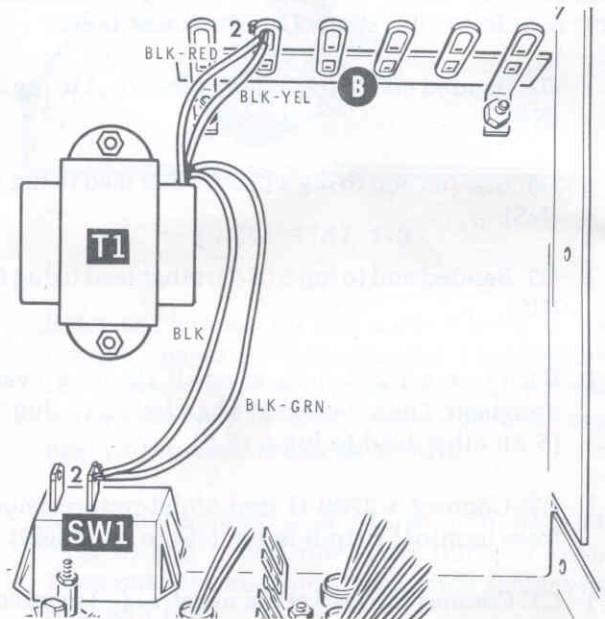
### 120 VAC WIRING

- ( ) T1: Refer to Detail 1-8C (Illustration Booklet, Page 4) and cut the leads of the power transformer to the lengths shown. Then remove 1/4" of insulation from the end of each lead. If the transformer leads are not presoldered, twist the strands together and melt a small amount of solder on the end of each lead.
- ( ) Refer again to Detail 1-8C and mount the transformer at T1 with 8-32 × 3/8" hardware. Position the leads as shown in the Pictorial.

NOTE: When you connect the transformer leads and line cord leads in the following steps, make "mechanically secure" connections as shown in the inset drawing of Pictorial 1-8.

Refer to Detail 1-8D for the following steps.

- ( ) Connect the black-green lead to SW1 lug 2 (NS).
- ( ) Connect the black lead to SW1 lug 2 (S-2).
- ( ) Connect the black-yellow lead to terminal strip B lug 2 (NS).



Detail 1-8D

- ( ) Connect the black-red lead to terminal strip B lug 2 (NS).





## 240 VAC WIRING

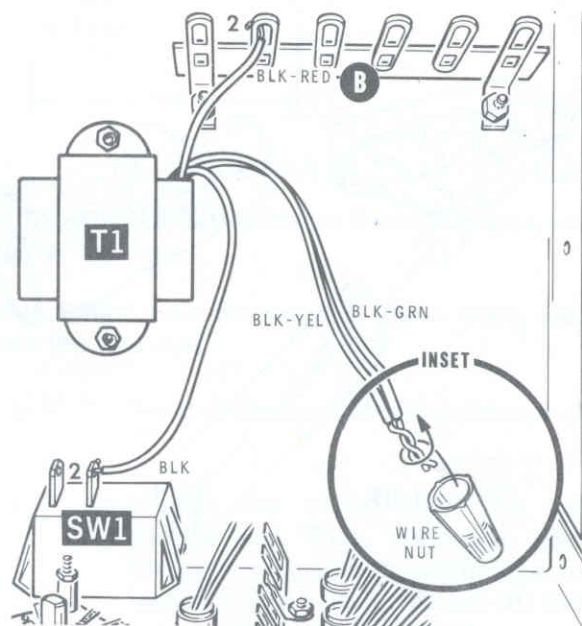
NOTE: For 220/240 volt operation, you must change the plug on the line cord to the appropriate type specified by your local electrical code.

- ( ) T1: Refer to Detail 1-8C and cut the leads of the power transformer to the lengths shown. Then remove 1/4" of insulation from the end of each lead. Melt a small amount of solder on the end of each lead, if not already done.
- ( ) Refer again to Detail 1-8C and mount the power transformer at T1 with 8-32 × 3/8" hardware. Position the leads as shown in the Pictorial.

NOTE: When you connect the transformer leads and line cord leads in the following steps, make "mechanically secure" connections as shown in the inset drawing of Pictorial 1-8.

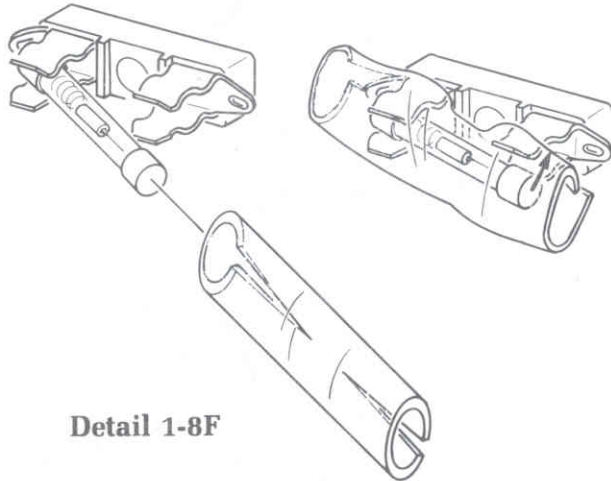
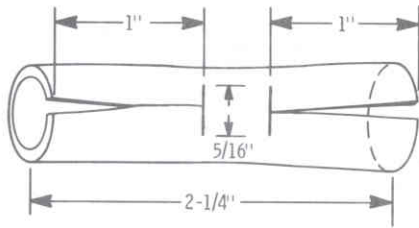
Refer to Detail 1-8E for the following steps.

- ( ) Connect the black lead to SW1 lug 2 (S-1).
- ( ) Twist the ends of the black-yellow and black-green leads together in a clockwise direction. Then turn a wire nut on the twisted leads, also in a clockwise direction.
- ( ) Connect the black-red lead to terminal Strip B lug 2 (NS).



Detail 1-8E

- ( ) Connect the smooth (short) line cord lead to fuse block lug 1 (S-1). Make a mechanically secure connection.
- ( ) Connect the ribbed line cord lead to terminal strip B lug 2 (S-4). NOTE: (S-3) for 240 VAC. Make a mechanically secure connection.
- ( ) Connect the 6-1/4" red transformer lead to terminal strip B lug 5 (S-1).
- ( ) Connect the 5-3/4" red transformer lead to terminal strip B lug 3 (S-1).
- ( ) Connect one end of the 6" smooth lead cut from the line cord to fuse block lug 2 (S-1). Connect the other end of the lead to SW1 lug 1 (S-1).

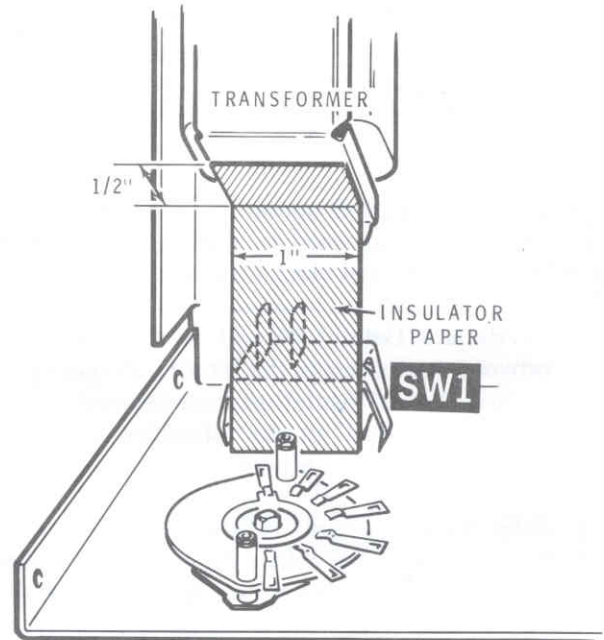


Detail 1-8F

- ( ) Refer to Detail 1-8F and prepare the large sleeving as shown.

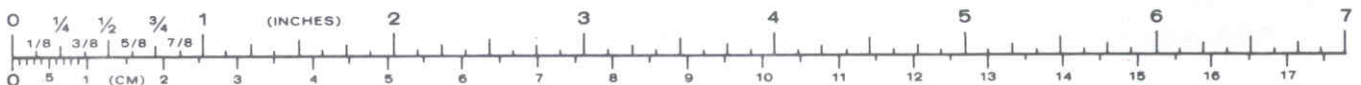
NOTE: In the next step, if you wired your unit for 120 VAC, use the 3/16-ampere, slow-blow fuse supplied. If you wired your unit for 240 VAC, use a 3/32-ampere, slow-blow fuse (not supplied).

- ( ) F1: Place the sleeving over the fuse as shown and install the fuse in the fuse block at F1.
- ( ) Write the correct fuse type and size on the fuse replacement label. Then peel the backing paper from the label and mount the label on the inside rear of the chassis as shown in the Pictorial.



PICTORIAL 1-9

- ( ) Refer to Pictorial 1-9 and make a bend in the insulator paper 1/2" from one end. Then remove the backing paper and press the insulator into place over switch SW1. Press the bent end against the transformer as shown.
- ( ) Refer to Pictorial 1-10 (Illustration Booklet, Page 5) and install the insert into the knob. Then push the knob onto the switch shaft as far as it will go.
- ( ) This completes the Step-By-Step Assembly of the control chassis. Recheck your work for unsoldered components and wires. Be sure to clip off excess lead lengths that may short to adjacent lugs or to the chassis. Then proceed to Initial Tests.





## INITIAL TESTS

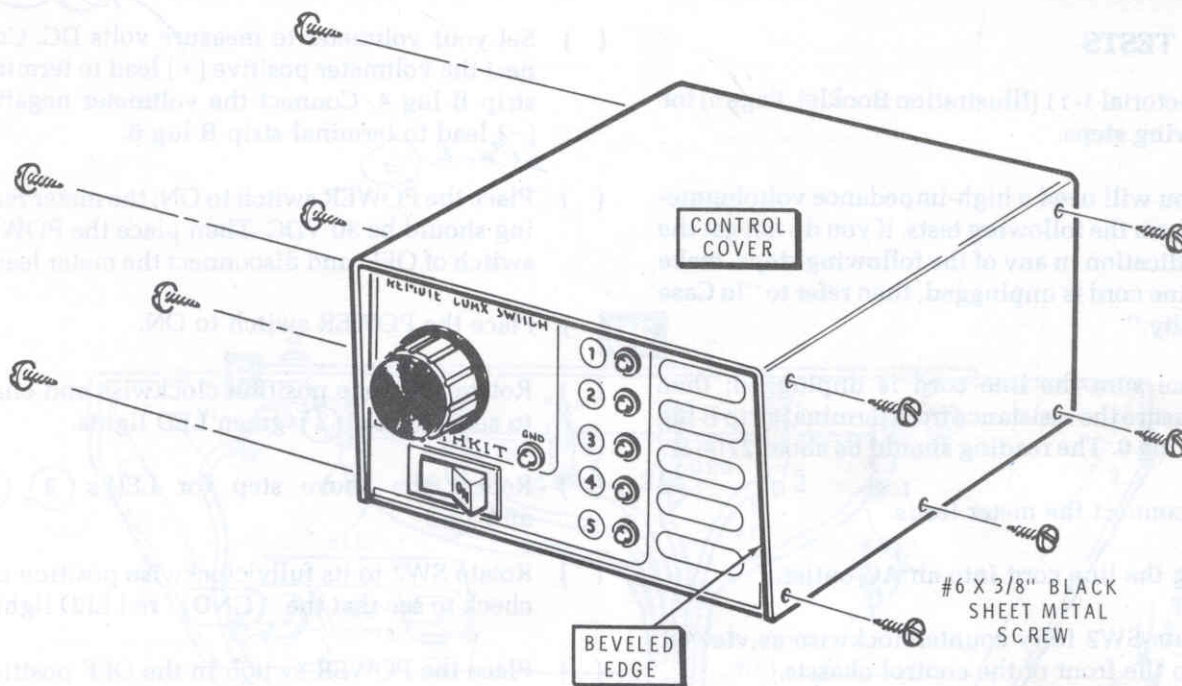
Refer to Pictorial 1-11 (Illustration Booklet, Page 5) for the following steps.

NOTE: You will need a high-impedance voltohmmeter to perform the following tests. If you do not get the proper indication in any of the following steps, make sure the line cord is unplugged, then refer to "In Case of Difficulty."

- ( ) Make sure the line cord is unplugged; then measure the resistance from terminal strip B lug 4 to lug 6. The reading should be about 2700  $\Omega$ .
- ( ) Disconnect the meter leads.
- ( ) Plug the line cord into an AC outlet.
- ( ) Rotate SW2 fully counterclockwise as viewed from the front of the control chassis.
- ( ) Place the POWER switch in the ON position. The (1) green LED should light.
- ( ) Place the POWER switch to OFF.

- ( ) Set your voltmeter to measure volts DC. Connect the voltmeter positive (+) lead to terminal strip B lug 4. Connect the voltmeter negative (-) lead to terminal strip B lug 6. *Red (4)*  
*Black (6)*
- ( ) Place the POWER switch to ON; the meter reading should be 30 VDC. Then place the POWER switch of OFF, and disconnect the meter leads.
- ( ) Place the POWER switch to ON.
- ( ) Rotate SW2 one position clockwise and check to see that the (2) green LED lights.
- ( ) Repeat the above step for LED's (3), (4), and (5).
- ( ) Rotate SW2 to its fully clockwise position and check to see that the (GND) red LED lights.
- ( ) Place the POWER switch in the OFF position.
- ( ) Unplug the line cord.

This completes the Initial Tests. Proceed to "Control Final Assembly."



PICTORIAL 1-12

### CONTROL FINAL ASSEMBLY

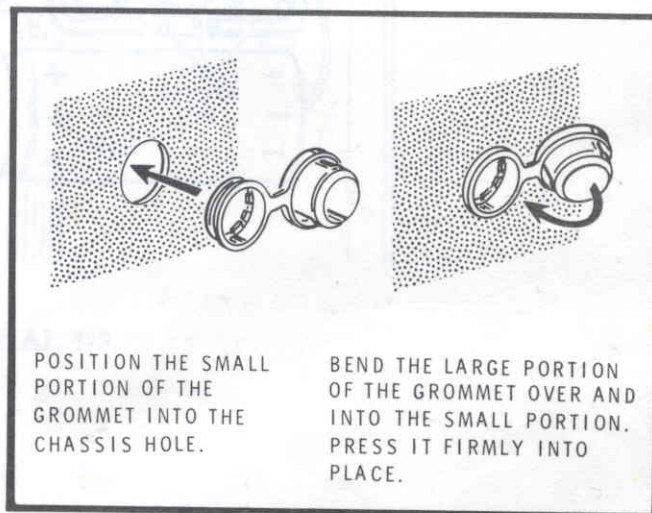
- ( ) Refer to Pictorial 1-12 and install the control cover with ten #6 × 3/8" black sheet metal screws. Make sure the cover is positioned as shown. Proceed to "Remote Assembly."

### REMOTE ASSEMBLY

Refer to Pictorial 2-1 (Illustration Booklet, Page 6) for the following steps.

Position the remote chassis as shown in the Pictorial.

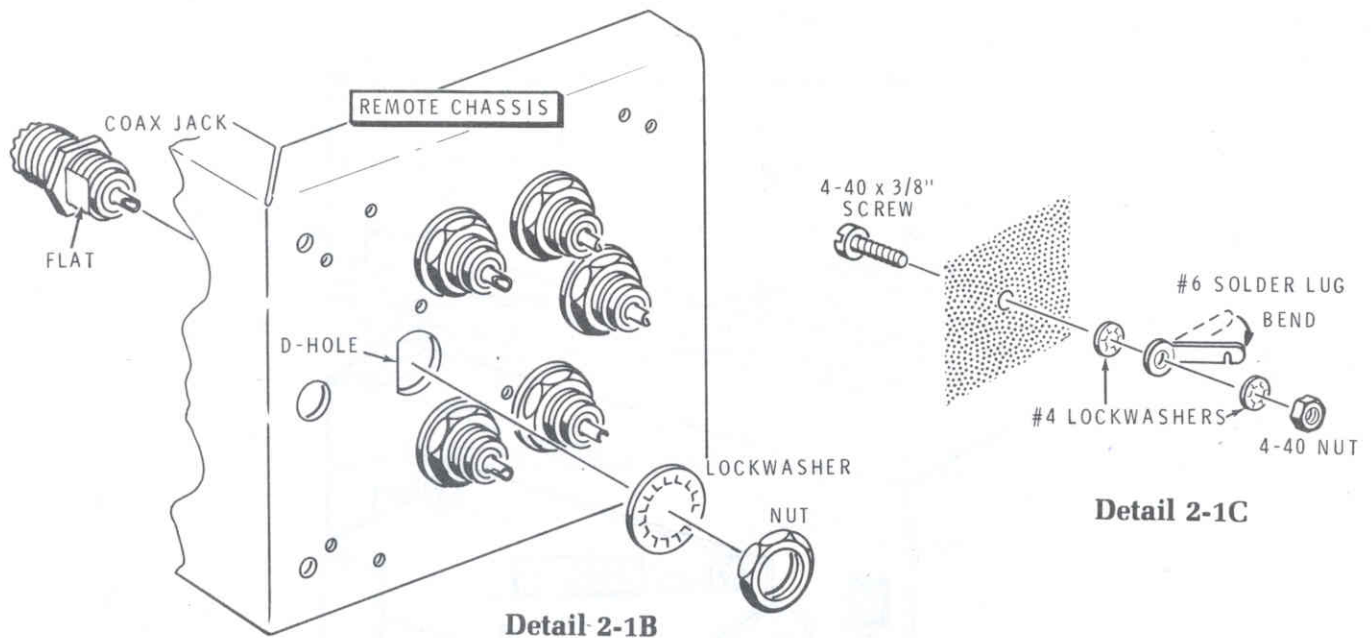
- ( ) Refer to Detail 2-1A and install the plastic grommet at H from the front side of the chassis.
- ( ) JC: Refer to Detail 2-1B and install a coax jack at JC. Use the hardware furnished with the jack. Make sure the flat is lined up with the flat side of the D-hole.
- ( ) J1-J5: Mount the five remaining coax jacks at J1, J2, J3, J4, and J5.



POSITION THE SMALL PORTION OF THE GROMMET INTO THE CHASSIS HOLE.

BEND THE LARGE PORTION OF THE GROMMET OVER AND INTO THE SMALL PORTION. PRESS IT FIRMLY INTO PLACE.

Detail 2-1A



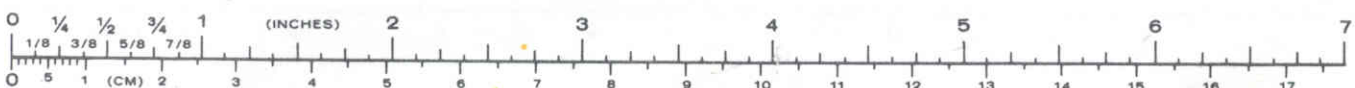
- ( ) 1. Refer to Detail 2-1C and mount a #6 flat solder lug at K with 4-40 × 3/8" hardware. Position the lug as shown in the Pictorial. Then bend the lug up as shown in the Detail.
- ( ) 2. Refer to Detail 2-1D (Illustration Booklet, Page 6) and mount the rotary switch section at SW4 with two plastic spacers, 2-56 × 1-1/4" hardware, and two #3 fiber washers. **IMPORTANT:** Make sure the switch section is positioned as shown. The front lug and rear lug called out in the Detail will be in the position shown **only** when the switch section is positioned properly.
- ( ) 3. Cut six 3/4" bare wires. Bend each wire in the middle to form a narrow loop.
- ( ) 4. Cut off any excess bare wire that extends below the lugs at each location so that it doesn't short to the coax jack threads.
- ( ) 5. Position the other end of the wire loop down into the coax jack lug and solder the wire to the lug at each location.
- ( ) 6. Bend lug 2R of the switch over against the solder lug at K and solder them together.

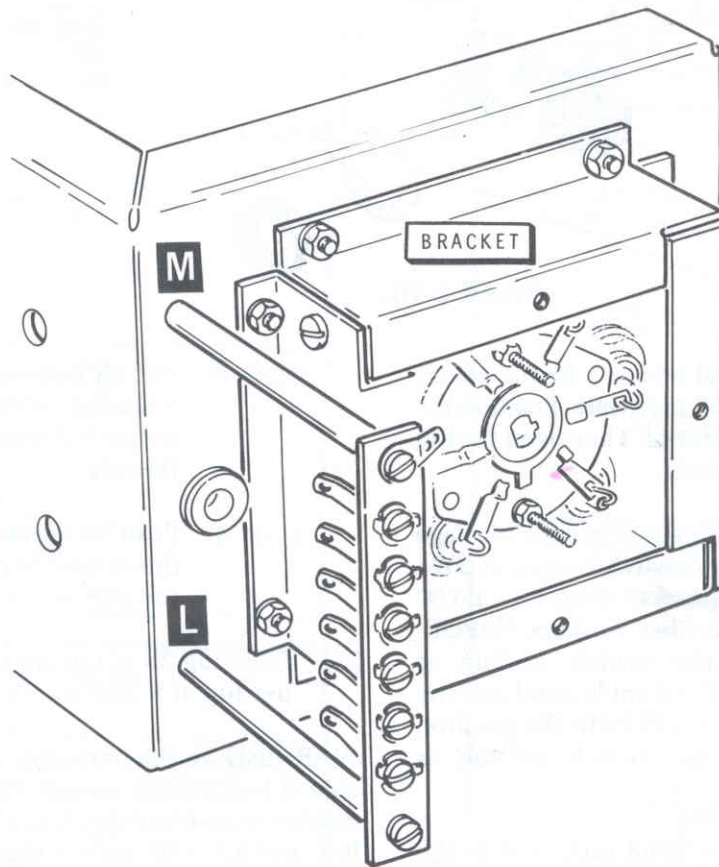
Refer to the inset drawing on the Pictorial for the next four steps.

- ( ) 1. Use a pair of needle-nose pliers, and carefully squeeze together each pair of the switch lugs as shown.
- ( ) 2. Solder a bare wire loop to each of the five pairs of lugs and the one single lug as shown in the inset drawing. Be sure to use enough heat to solder both lugs at each location.

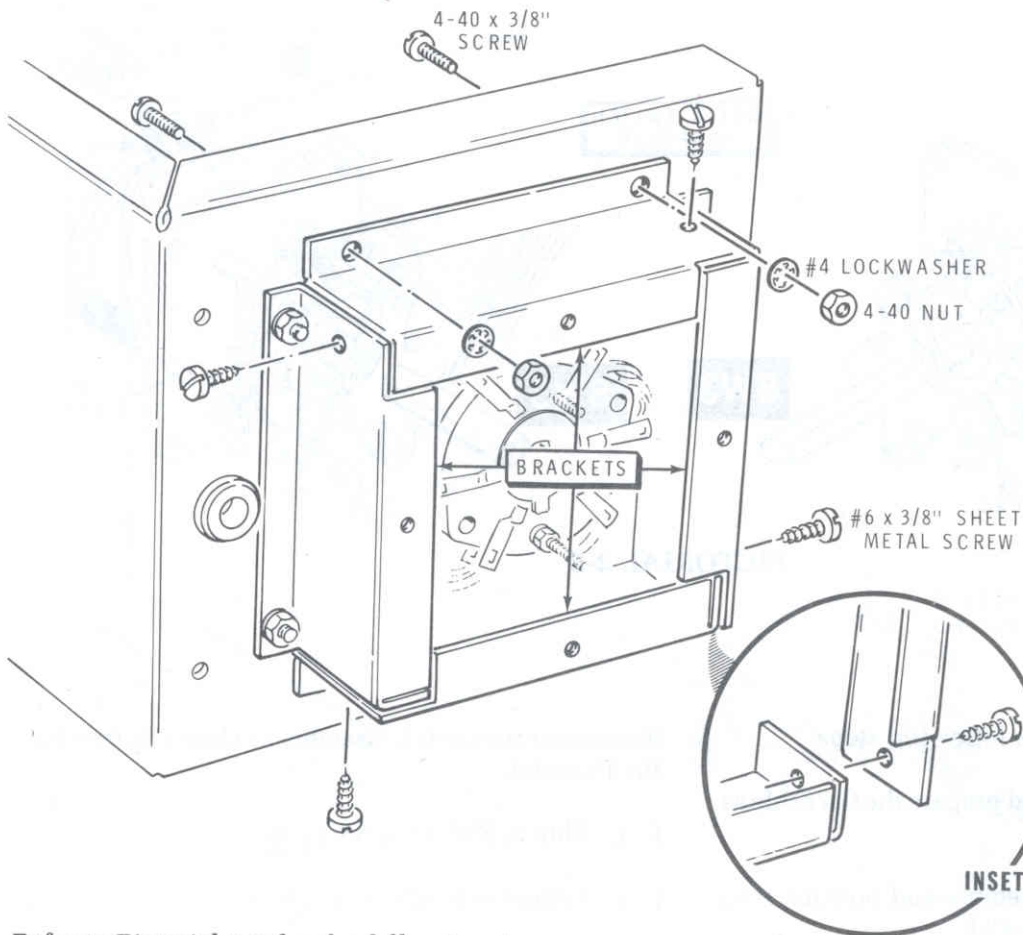
**WARNING:** In the next step, you will open the capsule of locking compound. Treat this substance with care because it contains 1, 1, 1-TRICHLOROETHANE. If it is swallowed, induce vomiting and call a physician. Avoid contact with skin and eyes. Use with adequate ventilation. In case of eye contact, flush thoroughly with water.

- ( ) 3. Use a sharp knife or scissors to clip off the nipple on one of the locking compound capsules.
- ( ) 4. Apply a small dab of locking compound on the screw heads and nuts at each of the 9 indicated points as shown in the Pictorial. Dispose of the remaining locking compound in a safe place.





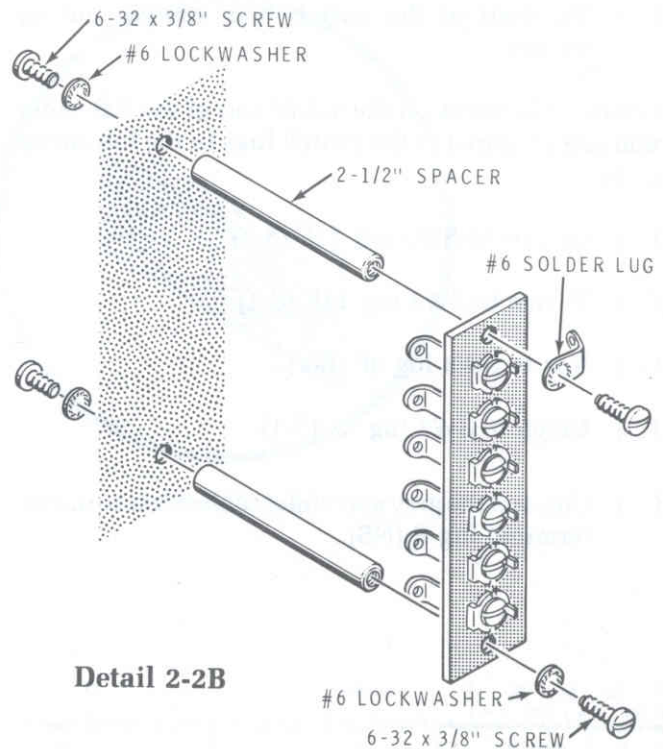
PICTORIAL 2-2



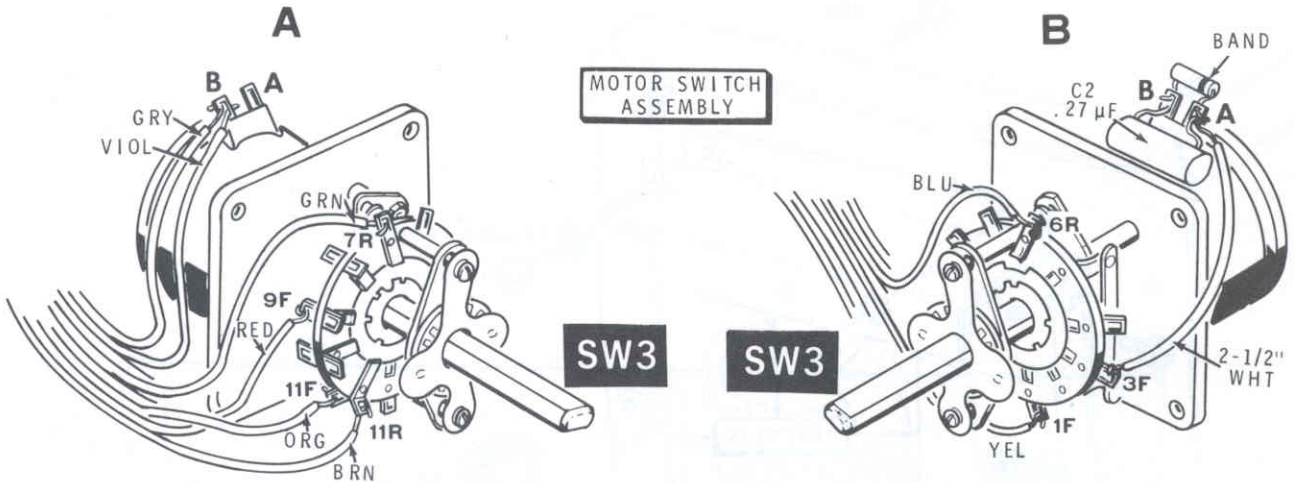
Detail 2-2A

Refer to Pictorial 2-2 for the following steps.

- ( ) Refer to Detail 2-2A and loosely mount four brackets as shown. Use 4-40  $\times$  3/8" hardware. Make sure the flange of each bracket is inside, as shown in the inset drawing.
- ( ) Fasten the brackets together at each corner with four #6  $\times$  3/8" sheet metal screws as shown in Detail 2-2A.
- ( ) Tighten all hardware.
- ( ) Refer to Detail 2-2B and install 2-1/2" spacers at L and M with 6-32  $\times$  3/8" hardware.
- ( ) Again refer to Detail 2-2B and mount a 6-lug screw-type terminal strip on spacers L and M. Use 6-32  $\times$  3/8" hardware with a #6 locking solder lug at M. Position the solder lug as shown.



Detail 2-2B



PICTORIAL 2-3

Refer to Pictorial 2-3 for the following steps.

- ( ✓ ) Refer to Detail 2-3A and prepare the flat cable as shown.

Locate the motor switch assembly and position it as shown in Part A of the Pictorial.

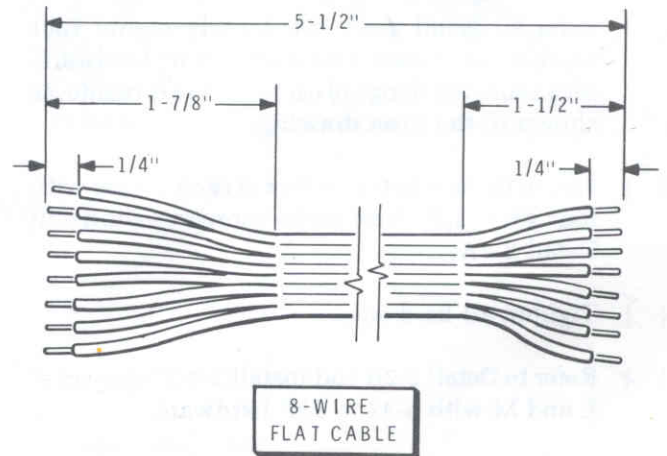
- ( ) Bend all of the switch lugs straight out as shown.

Connect the wires on the 1-7/8" end of the flat cable you just prepared to the switch lugs in the following steps.

- ( ) Orange to SW3 lug 11F (S-1).
- ( ) Brown to SW3 lug 11R (S-1).
- ( ✓ ) Red to SW3 lug 9F (S-1).
- ( ✓ ) Green to SW3 lug 7R (S-1).
- ( ✓ ) Connect the gray and violet cable wires to motor terminal lug B (NS).

Reposition the switch assembly as shown in Part B of the Pictorial.

- ( ) Blue to SW 3 lug 6R (S-1).
- ( ✓ ) Yellow to SW3 lug 1F (S-1).



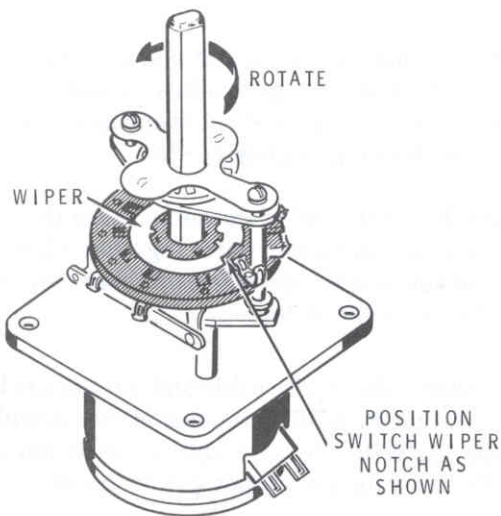
Detail 2-3A







- ( ) Prepare a 2-1/2" white wire and connect one end to SW3 lug 3F (S-1). Connect the other end to motor terminal lug A (NS).
- ( ) D11: Connect the lead at the **banded** end of a 1N2071 (#57-27) diode to motor terminal lug A (NS). Connect the other lead to lug B (NS). Cut off the excess lead lengths.
- ( ) C2: Connect a .27  $\mu$ F capacitor from motor terminal lug B (S-4) to motor terminal lug A (S-3). Position the capacitor as shown.



Detail 2-4A

Refer to Pictorial 2-4 (Illustration Booklet, Page 7) for the following steps.

- ( ) Hold the motor switch assembly as shown in Detail 2-4A and rotate the switch counterclockwise so the notch of the wiper is positioned exactly as shown. **IMPORTANT: Make sure the switch wiper does not get rotated during the following steps.**
- ( ) Remove the backing paper from the felt washer, and place the washer on the shaft of the motor switch assembly with the sticky side out.

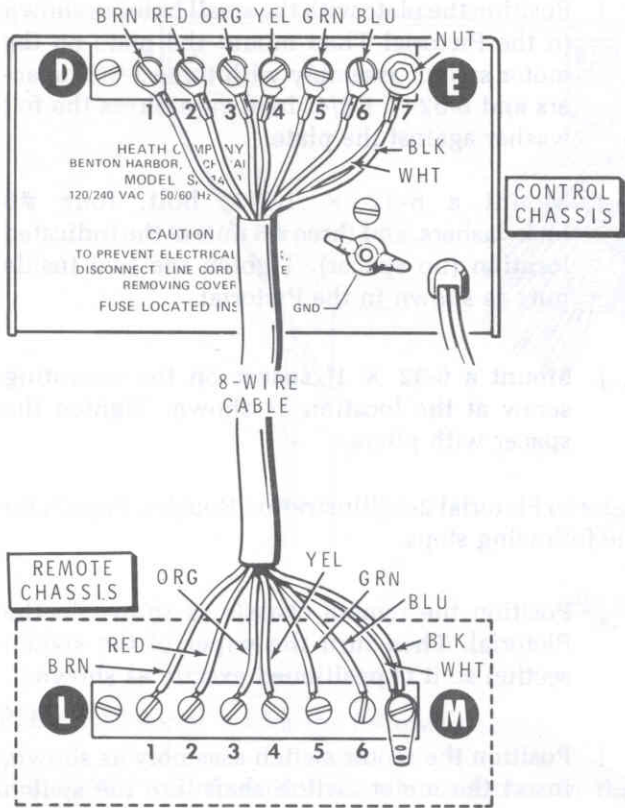
- ( ) Position the plate with the small holes as shown in the Pictorial. Then mount the plate on the motor switch assembly with three 1-3/8" spacers and 6-32  $\times$  1-3/4" hardware. Press the felt washer against the plate.
- ( ) Mount a 6-32  $\times$  1-3/4" bolt, four #6 lockwashers, and three #6 nuts at the indicated location (no spacer). Tighten the two inside nuts as shown in the Pictorial.
- ( ) Mount a 6-32  $\times$  1" spacer on the mounting screw at the location as shown. Tighten the spacer with pliers.

Refer to Pictorial 2-5 (Illustration Booklet, Page 7) for the following steps.

- ( ) Position the remote chassis as shown in the Pictorial. Then turn the wiper of the switch section so it is positioned exactly as shown.
- ( ) Position the motor switch assembly as shown, insert the motor switch shaft into the switch section (make sure the screws go through the small holes in the plate) and mount the plate to the brackets with three #6  $\times$  3/8" sheet metal screws and three #6 flat washers as shown. Do not overtighten the screws.

Refer to Pictorial 2-6 (Illustration Booklet, Page 8) and connect the cable wires coming from the motor switch assembly to terminal strip LM in the following steps. Make sure all wires are positioned as shown in the Pictorial.

- ( ) Brown to lug 1 (S-1).
- ( ) Red to lug 2 (S-1).
- ( ) Orange to lug 3 (S-1).
- ( ) Yellow to lug 4 (S-1).
- ( ) Green to lug 5 (S-1).
- ( ) Blue to lug 6 (S-1).
- ( ) Connect the violet and gray wires to solder lug M (S-2).

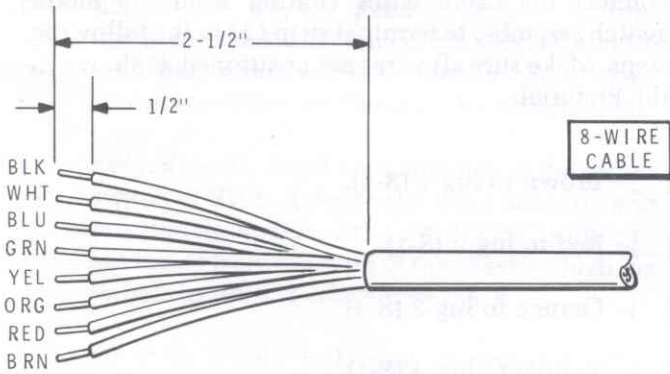


PICTORIAL 2-7

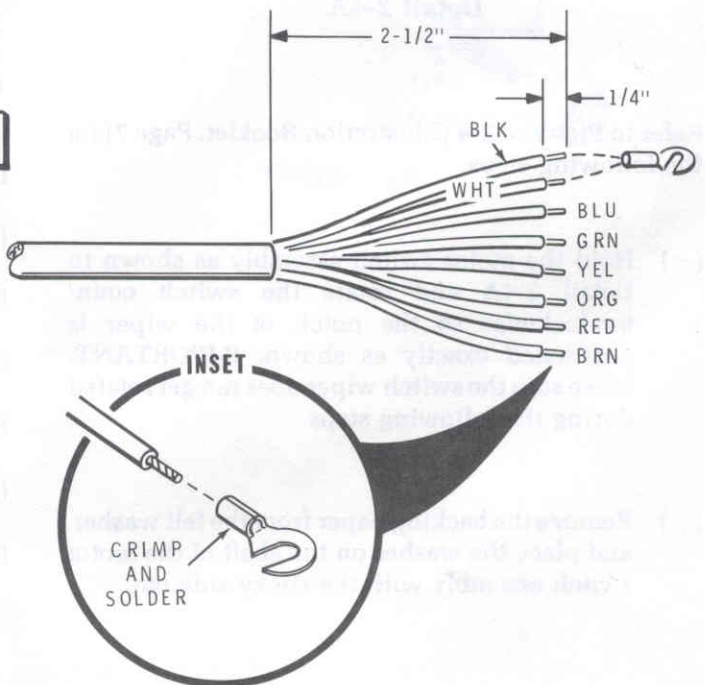
Refer to Pictorial 2-7 for the following steps.

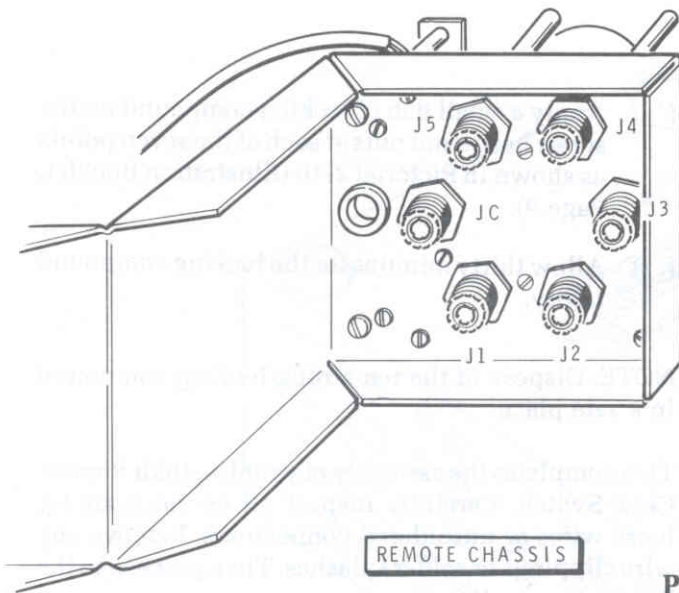
NOTE: Before you perform the following steps, you must determine the location for the control unit and where you will mount the remote. Refer to "Installation" on Page 34 and read the information under "Mounting" and "Cable Routing."

- ( ) Determine the length of 8-wire cable you will need to connect the control chassis to the remote chassis. Make sure you allow enough cable to form a drip loop. Then refer to Detail 2-7A and prepare the ends of the 8-wire cable as shown.
- ( ) Crimp and solder six #8 spade lugs on the brown, red, orange, yellow, green, and blue wires at the indicated cable end as shown in the inset drawing of Detail 2-7A.
- ( ) At this same end of the cable, twist the ends of the black and white wires together. Then crimp and solder a #8 spade lug on these two wires as shown in the Detail.
- ( ) Connect the 8-wire cable end with spade lugs to terminal strip DE on the rear of the control chassis. Refer to the wire colors called out on the Pictorial for the proper connections.

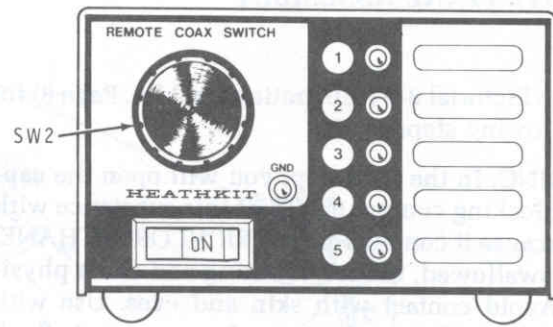


Detail 2-7A





REMOTE CHASSIS



CONTROL CHASSIS

PICTORIAL 2-8

- ( ) Position the remote chassis as shown in the Pictorial. Then connect the other end of the 8-wire cable to the remote chassis terminal strip LM. Refer to the wire colors called out in the Pictorial for the proper connections.

### Operational Test

Refer to Pictorial 2-8 for the following steps.

- ( ✓ ) Position the remote chassis and the control chassis as shown in the Pictorial.
- ( ✓ ) Plug the line cord into an AC outlet.
- ( ✓ ) Rotate SW2 fully clockwise.
- ( ✓ ) Place the POWER switch in the ON position.
- ( ✓ ) Check to see that the (GND) red LED lights. NOTE: If the motor turns, there is either an 8-wire cable wiring error or a motor flat cable wiring error. Refer back to the appropriate wiring instructions and correct any wiring errors before you proceed.
- ( ✓ ) Connect one lead of your ohmmeter to the metal chassis of the remote. Touch the other lead to the center conductor of coax jacks J1 through J5

- and measure the resistance from the center conductor to chassis ground. The reading should be zero ohms in each case.
- ( ✓ ) Measure the resistance from the center conductor of JC to chassis ground. The reading should be infinity.
- ( ✓ ) Rotate SW2 one position counterclockwise. The motor should turn, and when it stops, the ⑤ green LED should light.
- ( ✓ ) Measure the resistance from the center conductor of J5 to the center conductor of JC. The reading should be zero ohms.
- ( ) Rotate SW2 counterclockwise to each of the remaining positions each time measure the resistance between the center conductor of jack JC and the center conductor of the appropriate coax jack. In each case, the resistance should be zero ohms. Also, the motor should turn and the appropriate LED should light when the motor stops.
- ( ) Place the POWER switch in the OFF position.
- ( ) Unplug the line cord.
- ( ) Disconnect the 8-wire cable at the remote end.

This completes the Operational Test.



## REMOTE FINAL ASSEMBLY

Refer to Pictorial 2-9 (Illustration Booklet, Page 8) for the following steps.

**WARNING:** In the next step, you will open the capsule of locking compound. Treat this substance with care because it contains 1,1,1-TRICHLOROETHANE. If it is swallowed, induce vomiting and call a physician. Avoid contact with skin and eyes. Use with adequate ventilation. In case of eye contact, flush thoroughly with water.

- ( ) Use a sharp knife or scissors to clip off the nipple on one of the locking compound capsules.
- ( ) Apply a small dab of locking compound on the screw heads and nuts at each of the 14 indicated points as shown in the Pictorial.

- ( ) Apply a small dab of locking compound on the screw heads and nuts at each of the seven points as shown in Pictorial 2-10 (Illustration Booklet, Page 9).
- ( ) Allow thirty minutes for the locking compound to dry.

**NOTE:** Dispose of the remaining locking compound in a safe place.

This completes the assembly of your Heathkit Remote Coax Switch. Carefully inspect all connections for loose wires or unsoldered connections. Remove any wire clippings or solder splashes. Then proceed to the Installation section.

## INSTALLATION

This section of the Manual gives you general information for mounting and connecting the remote assembly. Your installation will vary to suit your particular requirements.

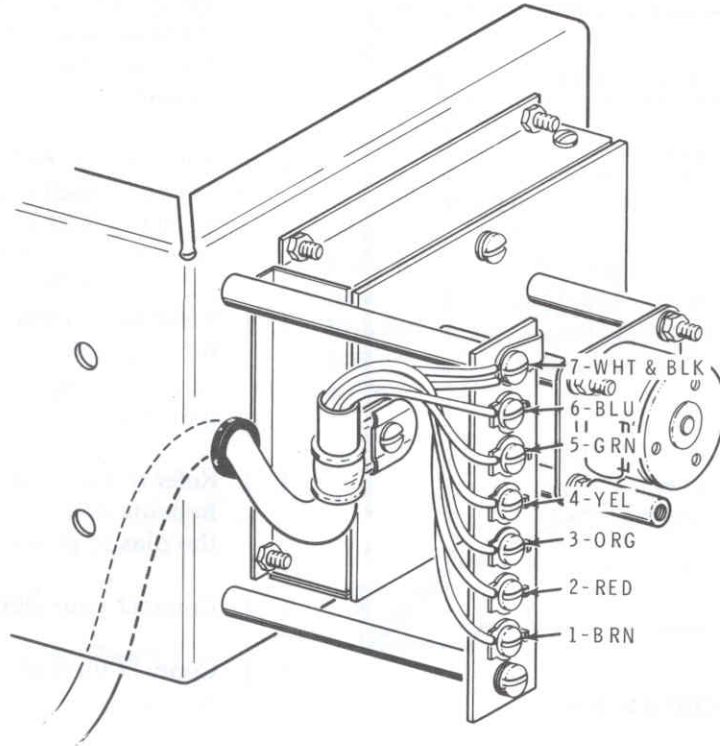
### MOUNTING

The remote assembly should be mounted on an existing tower or mast. The mounting hardware furnished will accept a tubular mast up to 1-1/2" diameter. We recommend that you do not mount the remote assembly on a chimney mast because of corrosive fumes from the chimney. Refer to Pictorial 3-1 (Illustration Booklet, Page 10) for some suggested mounting methods. Detail 3-1A shows the correct way to install the U-bolt, plates, and nuts.

### CABLE ROUTING

How you route the cable is a matter for each individual installation. We recommend you use plastic tape (not supplied) to secure the cables to a tower leg or mast. You can use staples or TV lead-in standoffs to secure the cable to wood.

You may be able to bring the cable into the building in the same manner as your existing antenna feedline. To keep out moisture, you should plug the entry hole with a good grade of caulking compound which will remain pliable and will not harden. Be sure to form a drip loop in the cable as shown in Pictorial 3-1.

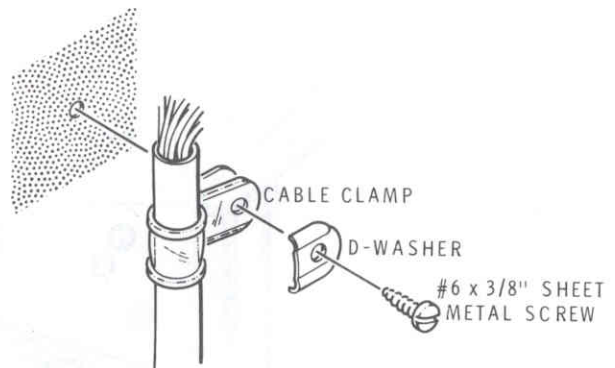


PICTORIAL 3-2

**CABLE CONNECTIONS**

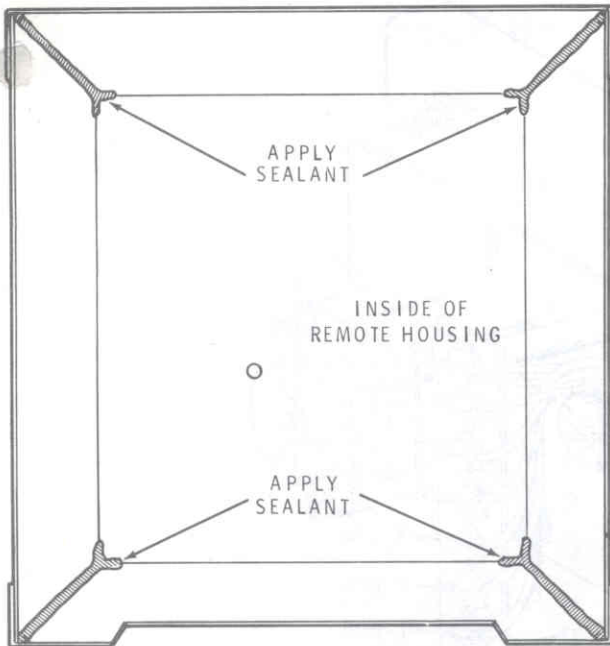
Refer to Pictorial 3-2 for the following steps.

- ( ) Route the remote end of the 8-wire cable through the plastic grommet in the remote chassis. Form a small loop in the wires and connect them to the terminal strip as follows:
- ( ) Brown to lug 1.
- ( ) Red to lug 2.
- ( ) Orange to lug 3.
- ( ) Yellow to lug 4.
- ( ) Green to lug 5.
- ( ) Blue to lug 6.
- ( ) Black and white under lug 7 (solder lug).



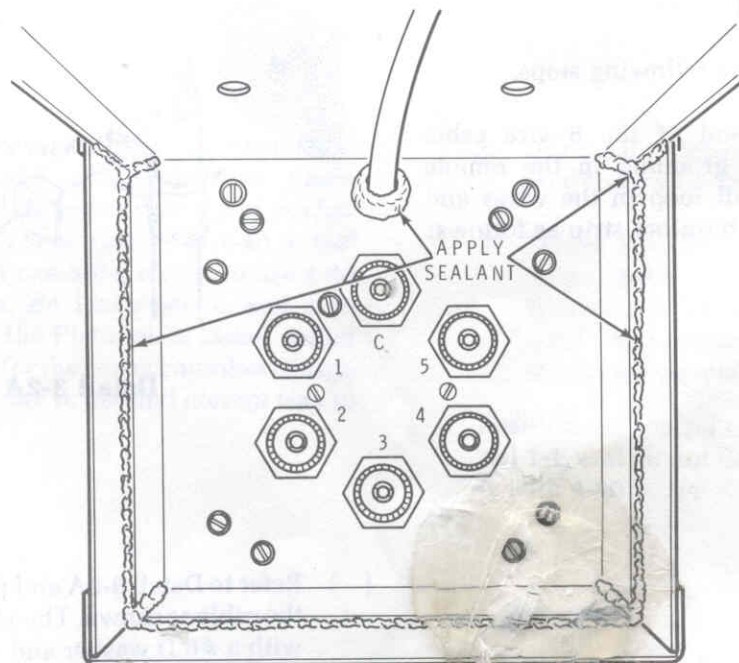
Detail 3-2A

- ( ) Refer to Detail 3-2A and place a cable clamp on the cable as shown. Then install the cable clamp with a #6 D washer and #6 x 3/8" sheet metal screw on the plate as shown.



PICTORIAL 3-3

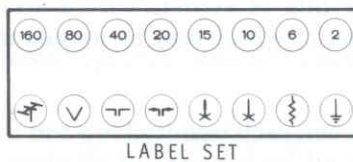
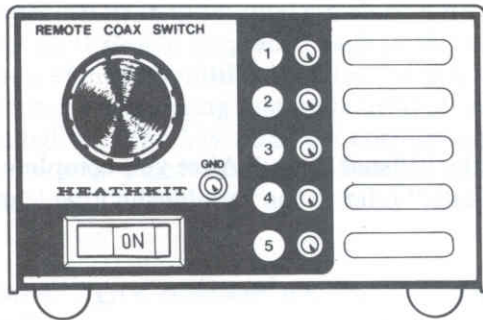
- ( ) Refer to Pictorial 3-3, position the remote housing as shown, and seal the seams of the housing. Use the tube of sealant to form a bead at each corner.
- ( ) Refer to Pictorial 3-4 (Illustration Booklet, Page 11) and install the housing on the remote chassis with a 6-32  $\times$  1/4" housing screw and rubber washer.
- ( ) Refer to Pictorial 3-4 and thoroughly seal the housing screw and washer (as shown on the inset drawing). Also seal the housing cover bottom edge.
- ( ) Refer to Pictorial 3-5 and seal the bottom of the housing and the cable where it passes through the plastic grommet.
- ( ) Connect your station feedline to coax jack JC.
- ( ) Connect your antennas to coax jacks J1-J5 and note which antenna is connected to each jack.
- ( ) Install protective caps on any unused coax jacks.



PICTORIAL 3-5



## OPERATION



**PICTORIAL 4-1**

Refer to Pictorial 4-1 as you read the following information.

The switch positions are numbered on the front of the control chassis, and a space is provided at the right of each position so you can write in a designation if you choose.

Also, a separate label set is included so that if you wish, you can place any of the numbers or symbols from the label set over the numbers on the control chassis.

To operate the Remote Coax Switch, simply press the POWER switch to the ON position. Rotate the knob to select the desired antenna. The green LED's will indicate which antenna is connected to the feedline. When the red LED is lit, all antennas are grounded and the feedline is open-circuited.

You can turn the POWER switch OFF when you are not selecting an antenna, since no power is required once a selection is made. It is normal for the LED's to remain lit for a few seconds after the power is turned off.

## IN CASE OF DIFFICULTY

Begin your search for any trouble that occurs after assembly by carefully following the steps listed

below in the "Visual Tests." After you complete the "Visual Tests," refer to the Troubleshooting Chart.

### VISUAL TESTS

1. Recheck the wiring. Trace each lead with a 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 that you have consistently overlooked.
2. About 90% of the kits that are returned to the Heath Company for repair do not function properly due to poor connections and soldering. Therefore, you can eliminate many troubles by reheating all connections to make sure they are soldered as described on Pages 5 and 18 of the Manual.
3. Check to be sure all diodes are in their proper locations. Make sure each lead is connected to the proper point. Make sure that each diode band or flat is positioned correctly.
4. Check electrolytic capacitors to be sure their positive (+) mark is at the correct position.
5. Check the values of the parts. Be sure in each step that you wired the correct part into the circuit, as shown in the Pictorial.
6. Check for bits of solder, wire ends, or other foreign matter which may be lodged in the wiring.
7. Look between each terminal lug and the chassis to be sure all leads were cut off short.
8. A review of the "Circuit Description" may also help you determine where the trouble is.

If you still have not located the trouble after the "Visual Tests" are completed, and a voltmeter is available, check voltage readings against those shown on the Schematic Diagram. Read the "Precautions for Bench Testing" before you make any measurements. NOTE: All voltage readings were taken with a high impedance voltmeter. Voltages may vary as much as  $\pm 20\%$ .

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





## PRECAUTIONS FOR BENCH TESTING

NOTE: Use a high input impedance voltmeter for voltage measurements.

1. Be sure you do not short circuit any terminals when you make voltage measurements. If the probe slips, for example, and shorts out a voltage supply point, it is almost certain to damage one or more components.

2. Do not remove any components while the kit is operating; this could cause considerable damage.

If you repair your Remote Coax Switch, make sure you eliminate the cause as well as the effect of the trouble. If, for example, you find a damaged resistor, be sure to find out what caused the resistor to become damaged. If the cause is not eliminated, the replacement resistor may also become damaged when the unit is put back into operation.

Problem	Possible Cause
LED does not light	LED is not connected properly
LED does not light	LED is not connected to the correct voltage supply point
LED does not light	LED is not connected to the correct ground point
LED does not light	LED is not connected to the correct current limiting resistor
LED does not light	LED is not connected to the correct polarity
LED does not light	LED is not connected to the correct voltage supply point
LED does not light	LED is not connected to the correct ground point
LED does not light	LED is not connected to the correct current limiting resistor
LED does not light	LED is not connected to the correct polarity

## Troubleshooting Chart

The following chart lists conditions and possible causes of several specific malfunctions. If a part is mentioned, check that part to be sure it is installed

and/or wired correctly. It is possible on rare occasions, for a part to be faulty and require replacement.

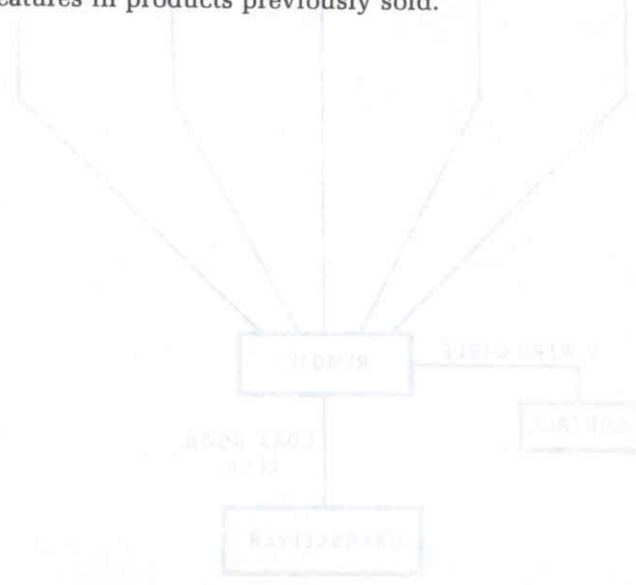
Problem	Possible Cause
Completely inoperative.	1. Fuse blown. 2. Power supply circuitry.
LED doesn't light in one position.	1. LED installed backwards.
LED lights, motor doesn't turn.	1. Open or miswired cable.
All LED's light dimly.	1. Motor stalled.

## SPECIFICATIONS

Loss at 100 MHz .....	Less than .2 dB.
VSWR .....	Under 30 MHz — 1.05:1 or less. Under 150 MHz — 1.20:1 or less.
Impedance .....	50-70 ohms.
Power Handling Capability .....	2000 watts PEP.
Temperature Range .....	-40° F to +177° F (-40° C to + 80° C).
Number of Ports .....	5.
Power Requirements .....	120/240 VAC, 50/60 Hz.

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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.



Block Diagram

## CIRCUIT DESCRIPTION

Refer to the Schematic and the Block Diagram while you read the following general description.

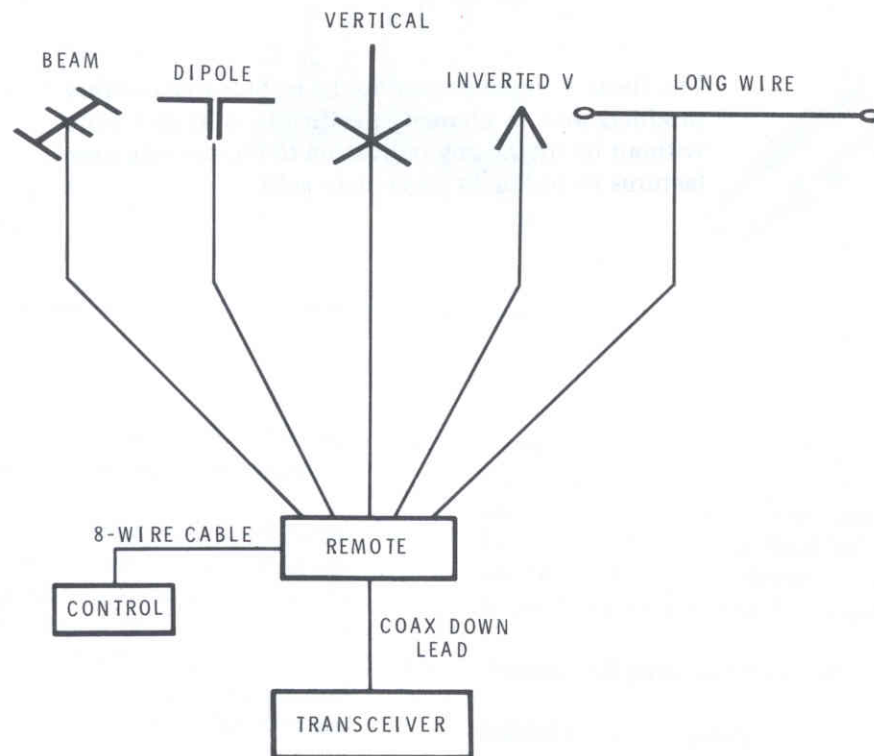
The 120 VAC or 240 VAC line voltage is applied to transformer T1 through fuse F1 and power switch SW1. Resistor R1 provides a discharge path to protect T1 from a build up of static electricity.

T1 steps down the line voltage and feeds it to the bridge rectifier consisting of D1, D2, D3, and D4. Capacitor C1 filters the AC ripple content and resistor R2 forms a bleeder when power is removed.

The +30 VDC source is supplied to SW2, which routes it through one of six positions, to the 8-wire cable, and to the motor switch, SW3.

SW3 and the pulse switch cause the motor to step in 30-degree increments until an open circuit is found. When the motor stops, the appropriate antenna (or ground) is selected through SW4 and the corresponding LED lights.

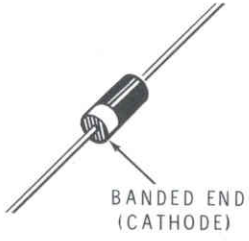
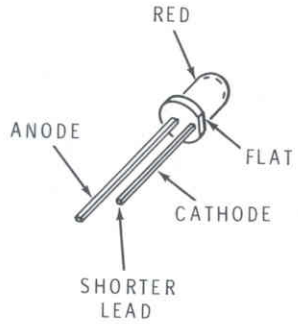
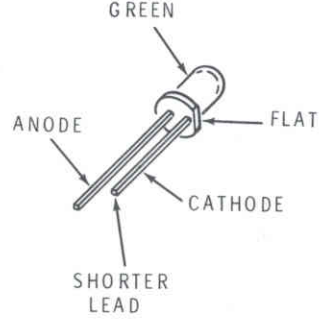
Diode D11 shunts the counter EMF across the motor and C2 suppresses any noise generated due to the pulse switching.



**Block Diagram**

## SEMICONDUCTOR IDENTIFICATION CHARTS

### DIODES

HEATH PART NUMBER	MAY BE REPLACED WITH	CIRCUIT COMPONENT NUMBER	IDENTIFICATION
57-27	1N2071	D1, D2, D3, D4, D11	
412-640		D10	
412-628	FLV360	D5, D6, D7, D8, D9	

# CUSTOMER SERVICE

## REPLACEMENT PARTS

Please provide complete information when you request replacements from either the factory or Heath Electronic Centers. Be certain to include the **HEATH** part number exactly as it appears in the parts list.

## ORDERING FROM THE FACTORY

Print all of the information requested on the parts order form furnished with this product and mail it to Heath. For telephone orders (parts only) dial 616 982-3571. If you are unable to locate an order form, write us a letter or card including:

- Heath part number.
- Model number.
- Date of purchase.
- Location purchased or invoice number.
- Nature of the defect.
- Your payment or authorization for COD shipment of parts not covered by warranty.

Mail letters to: Heath Company  
Benton Harbor  
MI 49022  
Attn: Parts Replacement

**Retain original parts until you receive replacements. Parts that should be returned to the factory will be listed on your packing slip.**

## OBTAINING REPLACEMENTS FROM HEATH ELECTRONIC CENTERS

For your convenience, "over the counter" replacement parts are available from the Heath Electronic Centers listed in your catalog. Be sure to bring in the original part and purchase invoice when you request a warranty replacement from a Heath Electronic Center.

## TECHNICAL CONSULTATION

Need help with your kit? — Self-Service? — Construction? — Operation? — Call or write for assistance. you'll find our Technical Consultants eager to help with just about any technical problem except "customizing" for unique applications.

The effectiveness of our consultation service depends on the information you furnish. Be sure to tell us:

- The Model number and Series number from the blue and white label.
- The date of purchase.
- An exact description of the difficulty.
- Everything you have done in attempting to correct the problem.

Also include switch positions, connections to other units, operating procedures, voltage readings, and any other information you think might be helpful.

**Please do not send parts for testing**, unless this is specifically requested by our Consultants.

Hints: Telephone traffic is lightest at midweek — please be sure your Manual and notes are on hand when you call.

Heathkit Electronic Center facilities are also available for telephone or "walk-in" personal assistance.

## REPAIR SERVICE

Service facilities are available, if they are needed, to repair your completed kit. (Kits that have been modified, soldered with paste flux or acid core solder, cannot be accepted for repair.)

**If it is convenient, personally deliver your kit to a Heathkit Electronic Center. For warranty parts replacement, supply a copy of the invoice or sales slip.**

If you prefer to ship your kit to the factory, attach a letter containing the following information directly to the unit:

- Your name and address.
- Date of purchase and invoice number.
- Copies of all correspondence relevant to the service of the kit.
- A brief description of the difficulty.
- Authorization to return your kit COD for the service and shipping charges. (This will reduce the possibility of delay.)

Check the equipment to see that all screws and parts are secured. (Do not include any wooden cabinets or color television picture tubes, as these are easily damaged in shipment. Do not include the kit Manual.) Place the equipment in a strong carton with at least **THREE INCHES** of *resilient* packing material (shredded paper, excelsior, etc.) on all sides. Use additional packing material where there are protrusions (control sticks, large knobs, etc.). If the unit weighs over 15 lbs., place this carton in another one with 3/4" of packing material between the two.

Seal the carton with reinforced gummed tape, tie it with a strong cord, and mark it "Fragile" on at least two sides. Remember, the carrier will not accept liability for shipping damage if the unit is insufficiently packed. Ship by prepaid express, United Parcel Service, or insured Parcel Post to:

Heath Company  
Service Department  
Benton Harbor, Michigan 49022



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***THE WORLD'S FINEST ELECTRONIC EQUIPMENT IN KIT FORM***

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