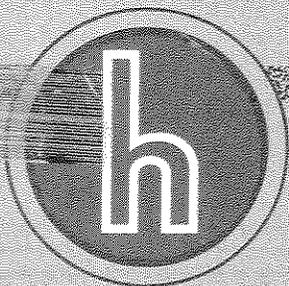


ASSEMBLING  
the

# hallicrafters kit

*model* SX-140K  
Receiver



the hallicrafters co.

4401 WEST FIFTH AVENUE • CHICAGO 24, ILLINOIS

## WARRANTY

The Hallicrafters Company warrants each part or component supplied with this kit to be free of defective material and workmanship, and agrees to replace any part or component that, under normal installation, use, and service, discloses such defect. Upon return of the intact part or component to the factory, for examination, with all transportation charges prepaid, within ninety days from the date of sale to original purchaser, and provided that such examination discloses in our judgement that it is thus defective, it will be replaced.

This warranty does not extend to any parts or components supplied with this kit that have been subjected to misuse, neglect, accident, incorrect wiring, improper installation, or use in violation of instructions furnished by us, nor does this warranty extend to units that have been repaired or altered outside of our factory, or to accessories used therewith not of our own manufacture. No replacement will be made for parts damaged by the purchaser during the assembling or handling of this kit.

Hallicrafters liability under this warranty is limited to the replacement of the part or component part determined to be defective. The Hallicrafters Company assumes no liability for consequential damages including but not limited to personal injury, damage to property and loss of time. This warranty is in lieu of all other warranties expressed or implied, and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.

### IMPORTANT NOTE

**THIS WARRANTY WILL BE COMPLETELY VOID AND THE HALLICRAFTERS COMPANY WILL NOT REPLACE, REPAIR, OR SERVICE EQUIPMENT IN WHICH ACID CORE SOLDER OR PASTE FLUXES HAVE BEEN USED.**

The registration card furnished with each Hallicrafters kit must be completed and returned to The Hallicrafters Company immediately after purchase. The above warranty applies only to equipment that is registered with Hallicrafters.

## INTRODUCTION

### GENERAL

The Hallicrafters Model SX-140K Receiver Kit is so designed that it may be constructed by individuals with minimum electronic training or experience. The component parts have been carefully selected to insure excellent performance and long life. To eliminate errors in assembly, it is suggested that each step of the assembly procedure be read and performed with care. Take your time -- work carefully -- follow instructions. The result will be a quality receiver whose operation will give you great satisfaction.

### MANUALS

Two manuals are packed with the Model SX-140K Receiver Kit: The Assembly Manual, "Assembling The Halli-Kit" (this manual), contains material to instruct the builder in the assembly of this kit. The Operation Manual, "Operating and Service Instructions," contains material designed to instruct the owner in operating procedures, system installation, alignment, trouble shooting, and any service problem which may arise. The builder is advised to read both manuals thoroughly prior to unpacking or constructing the kit. This will familiarize him with the parts and construction procedures.

The Assembly Manual includes fold-in pictorials. These pictorials may be fastened to the wall over the work area or placed where they can easily be referred to during the assembling of the receiver.

The manuals should be retained for future reference.

### UNPACKING

After carefully reading the manuals, it is suggested that a clean, well-lighted work area be prepared before unpacking the kit. Remove the parts from the carton, check the quantity and description of each item against the parts check-off list on pages at the back of this manual and group them in assembly order. Place each group in a small container such as a cup-cake tin. Parts illustrations and chart information provided on pages 26 thru 31 help to identify and determine the value of the parts in the kit. If any part is missing, broken, or of the wrong value, notify the dealer from whom the kit was purchased or The Hallicrafters Company for authorization to return the broken or incorrect parts or to obtain the parts which are missing.

In general, the transformers, terminal strips, and tube sockets will be installed first; followed by the wiring harness, jumper wires, and smaller electrical components; the assembly of the front panel, mounting of the tuning capacitors, and installation of the band selector switch and tubes. If the parts are layed out in this general order, construction will be greatly simplified.

### TOOLS REQUIRED

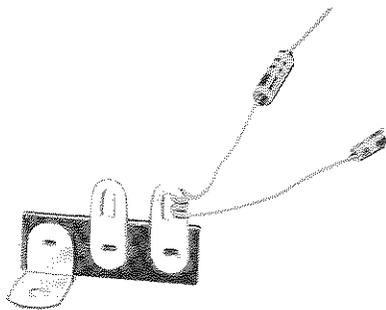
The Model SX-140K Receiver Kit can be constructed with standard tools. The builder should have long-nose pliers, diagonal or side-cutting pliers, a screwdriver with a 3/16-inch blade, a screwdriver with a 1/8-inch blade, and a soldering iron (preferably one with a heating element of not more than 60 watts) available.

### SOLDERING TECHNIQUES

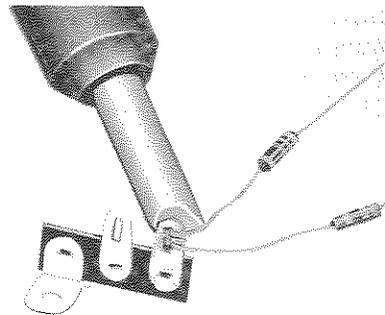
Proper soldering techniques are very important in the assembly of the kit. To obtain the performance engineered into this kit, it is essential that good solder joints be made. A good solder joint ensures an electrical connection and seals the joint from air and moisture to prevent corrosion which could introduce high resistance into the circuit. If the kit builder is unfamiliar with wiring and soldering, the following steps (illustrations A through E) should be carefully studied.

**IMPORTANT:** Only good quality, rosin core solder is to be used in the construction of this kit. A sufficient amount of rosin core solder is supplied with this kit. **NEVER** use acid core solder or a paste flux. The use of acid core solder or a paste flux will void the warranty on this equipment.

1. The soldering iron element or tip should be cleaned and tinned (covered with a thin coat of solder).

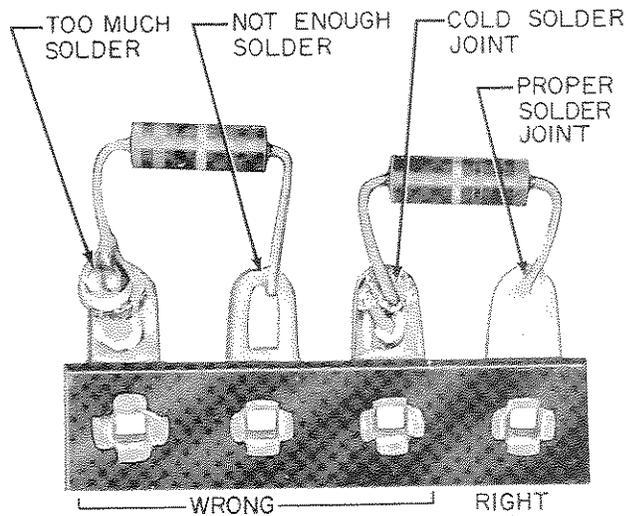


A. WIRED CONNECTION



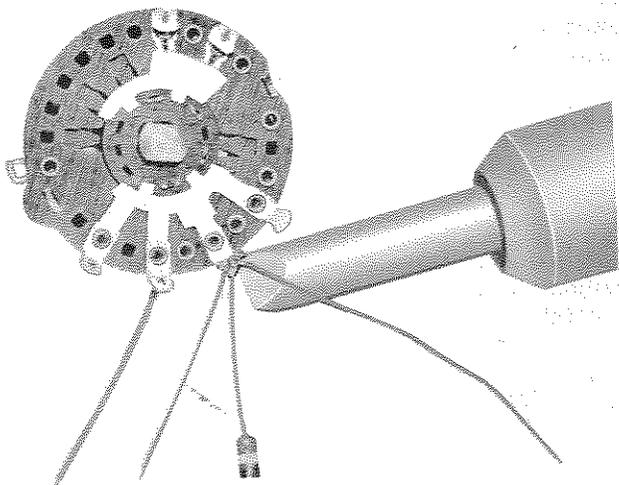
B. PROPER APPLICATION OF HEAT

092-010236



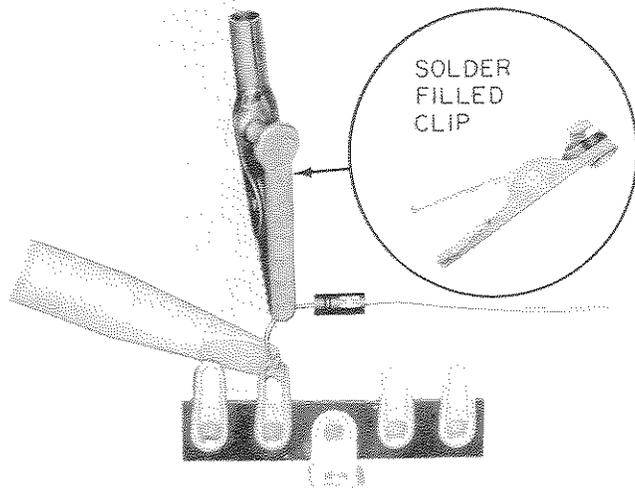
C. SOLDERED CONNECTIONS

092-010235



D. SOLDERING WAFER TERMINAL

092-010238



E. HEAT SINKING A DIODE

092-010551

**Soldering Techniques**

2. Before soldering, be sure the terminals and the leads are free from dirt and corrosion. Leads and terminals which are dirty or discolored (corroded) can be cleaned by scraping them with a knife.
3. Tin all wires and leads before making connections; this is accomplished by applying a small coating of solder to the lead.
4. Make a mechanical connection before soldering. Leads should be kept as short as possible on small items. Proper lead lengths are given for the individual parts as they are assembled. Leads should be trimmed as specified.
5. Apply heat to the connection with the flat portion of the soldering iron tip. **DO NOT** apply more heat than is necessary to allow the solder to flow evenly over the connection. Make certain that heat is applied to the whole connection (leads and solder terminal). If heat is not applied evenly, a cold solder joint will result and introduce resistance into the circuit.
6. Apply solder simultaneously to the connection and the tip of the soldering iron until the solder melts and flows around and into the connection. Apply only enough solder to cover the leads of the connection; do not apply an excessive amount of solder. Never move the component that is being soldered until after the solder has cooled or solidified.
7. When soldering to a lug on a switch wafer, the switch should be so positioned that the lug to be soldered is on the lower side of the wafer. It may be necessary to turn the chassis if the switch has already been installed. Apply heat and solder to the lower side of the lug; the solder will flow upward into the connection. This method of soldering will prevent the solder from running into the switch and shorting the contacts.
8. Components such as rectifiers (CR1, CR2, and CR3) should be protected from heat when soldering. Alligator clips filled with solder or long-nosed pliers placed on the lead between the component and the connection will conduct the heat away from the soldered component.

## ASSEMBLY INSTRUCTIONS

### GENERAL

Each step of the following assembly procedures should be read and understood in its entirety before it is performed. When each step is completed, place a check mark in the parentheses preceding the step.

Each assembly step involving the connection of wires or leads will be followed by a symbol, in parentheses, indicating if soldering is required or not. The symbols for soldering requirements are as follows: Do not solder - (DS), Solder 1 lead- (S-1), Solder 2 leads - (S-2), etc.

### WARNING

DANGEROUS VOLTAGES EXIST ON BOTH THE TOP AND BOTTOM OF THE CHASSIS. CLOSE EXAMINATION OF THE SCHEMATIC DIAGRAM AND CIRCUIT ARRANGEMENT WILL POINT OUT THESE DANGER SPOTS. HOWEVER, PRECAUTIONS SHOULD BE TAKEN TO KEEP OTHER PEOPLE AWAY FROM THE RECEIVER WHILE IT IS TURNED ON, OR WHEN IT IS BEING WORKED ON.

## SX-140K KIT INSTRUCTIONS

The SX-140K Receiver Kit is supplied to you with all of the required parts and hardware. The Antenna, RF interstage, and oscillator coils have been prewired to the band switch and pre-aligned. Under normal circumstances, readjustment of these coils will not be required. However, should readjustment be required due to component replacement, aging, or any other reason, refer to the alignment section in the Operating and Service Instruction Manual before attempting service or realignment.

MOUNTING TRANSFORMERS, SOCKETS, TERMINAL STRIPS, AND SPEED NUTS

(Refer To Pictorials 1 and 2 and Figures 1, 2, 3, and 4 when assembling this section)

1. (✓) Mount the power transformer T1 and a four-lug terminal strip, TS1, to the chassis with two No. 6 x 3/8 inch sems screws, two No. 6 flat washers, a No. 6 Kep nut, a No. 6 internal tooth lockwasher, and a No. 6 hex nut as shown in pictorial 1.
2. (✓) Mount a four-lug terminal strip, TS2, at chassis hole 5 with a No. 4 x 5/16 inch sems screw, a No. 4 lockwasher, and a No. 4 hex nut as shown in pictorial 2 and figure 1.
3. (✓) Mount the six-lug terminal strip TS3 at chassis hole 71 as in step 2.
4. (✓) Mount the three-lug terminal strip TS4 at chassis hole 14 as in step 2.
5. (✓) Mount the five-lug terminal strip TS5 at chassis hole 15 as in step 2.
6. (✓) Mount the three-lug terminal strip TS6 at chassis hole 16 as in step 2.
7. (✓) Mount the four-lug terminal strip TS8 at chassis hole 13 as in step 2.
8. (✓) Mount the 9-pin miniature tube sockets XV1, XV2, XV4, and XV5 in chassis holes 8, 9, 11, and 12 with No. 4 x 5/16 inch sems screws, No. 4 internal tooth lockwashers, and No. 4 hex nuts as shown in pictorial 2 and figure 3. Be sure that the open space in the socket's terminal arrangement is as shown in pictorial 2.
9. (✓) Mount the 7-pin miniature tube socket XV3 in chassis hole 10 with No. 4 x 5/16 inch sems screws, No. 4 lockwashers, and No. 4 hex nuts as shown in pictorial 2 and figure 3. Be sure that the open space in the socket terminal arrangement is as shown in pictorial 2.
10. (✓) Mount the single-pole double-throw (SPDT) slide switch S4 in chassis holes 35, 36, and 37 with No. 4 x 1/4 inch flat head screws as shown in pictorial 2. Be sure to bend the three terminal lugs back as shown in the pictorial.
11. (✓) Mount the double-pole double-throw (DPDT) slide switch S3 in chassis holes 32 and 33 with a No. 4 x 1/4 inch flat head screw. Mount a No. 4 solder lug at chassis hole 31, between the switch and the chassis front flange, with a No. 4 x 1/4 inch flat head screw as shown in pictorial 2. Be sure to bend each of the six terminal lugs as shown in the pictorial.
12. (✓) Mount the two-connector board TA1, marked with "A" & "G", at chassis holes 41, 66, 67 and 42 so that the letters (A&G) are located as shown in pictorial 2. Use two No. 4 x 5/16 inch sems screws, a No. 4 solder lug (hole 41), a No. 4 internal tooth lockwasher (hole 42), and two No. 4 hex nuts as shown in pictorial 2.
13. (✓) Mount the four-connector board TA2, marked 1,2,3, and 4 at chassis holes 43, 68, and 44 so that the numerals (1,2,3, and 4) are located as shown in pictorial 2. Use two No. 4 x 5/16 inch sems screws, two No. 4 internal tooth lockwashers, and two No. 4 hex nuts as shown in pictorial 2.
14. (✓) Mount the two-connector board TA3, marked SPKR and GND, at chassis holes 45, 69, 70, and 46 so that the letters (SPKR and GND) are located as shown in pictorial 2. Use two No. 4 x 5/16 inch sems screws, a No. 4 solder lug (hole 46), a No. 4 internal tooth lockwasher (hole 45), and two No. 4 hex nuts as shown in pictorial 2.
15. (✓) Mount R40, the 2K ohm, screwdriver adjustable potentiometer (control with slot in shaft), at chassis hole 47 by inserting the threaded bushing on the control through hole 47 and the locating tab in hole 64. Secure with a 3/8-inch, cadmium-plated pal nut as shown in pictorial 2.
16. (✓) Mount the crystal socket XY1 at chassis hole 25 with a No. 2 x 1/2 inch machine screw, a No. 2 internal tooth lockwasher, and a No. 2 hex nut as shown in pictorial 2.

17. (✓) Mount the audio output transformer T4 at chassis holes 17 and 18. Use a No. 6 x 3/8 inch sems screw and a No. 6 kep nut at hole 18 as shown in pictorial 2. Mount a six-lug terminal strip, TS7, at chassis hole 17. Use a No. 6 x 3/8 inch sems screw, a No. 6 internal tooth lockwasher, and a No. 6 x 1/4 inch hex nut at hole 17. Be sure to place the lockwasher between the chassis and terminal strip TS7.
18. (✓) Insert two Tinnerman speed nuts over the edge of the chassis, as shown in pictorial 2, so that the threaded side of the speed nut is located on the top of the chassis and over cut holes 20 and 21.
19. (✓) Insert four Tinnerman speed nuts over the edge of the chassis so that the threaded side of the speed nuts are located on the inside of the rear flange and are over holes 48, 49, 50, and 51.
20. (✓) Insert the 1/4-inch rubber grommet in chassis hole S.
21. (✓) Mount IF transformer T2 by inserting the four terminal lugs through the oblong chassis holes 57 and 59. Be sure that terminal lug No. 1 (Green Dot) is located as shown in pictorial 2. While holding the transformer firmly in place, insert the transformer mounting clip through chassis holes 56 and 58. Slide this clip up along the outside of the transformer until the clip snaps into the triangular shaped holes on the side of the IF transformer can (See figure 4).
22. (✓) Mount IF transformer T3 in chassis holes 61 and 63. Refer to step 21.

#### WIRING OF POWER TRANSFORMER T1 AND AUDIO TRANSFORMER T4

(Refer to Pictorial 3 when wiring this section)

- 7 23. (✓) Connect the short black lead from chassis hole X to terminal 3 of terminal strip TS1 (DS).
24. (✓) Connect the short red lead from chassis hole X to terminal 4 of terminal strip TS1 (DS).
25. (✓) Connect one of the green leads from chassis hole Y to terminal 3 of terminal strip TS2 (DS).
26. (✓) Connect the other green lead from chassis hole Y to terminal 4 of terminal strip TS2 (DS).

This completes the wiring of power transformer T1 (leads coming out of holes X and Y), except for the long black and red leads which will be connected later.

27. (✓) Locate the brown and white leads at chassis hole L. Connect the white lead to terminal 9 on tube socket XV5 (DS) and the brown lead to terminal 2 on terminal strip TS7 (DS).
28. (✓) Locate the yellow and black leads at chassis hole K. Connect the black lead to terminal 3 on terminal strip TS7 (DS) and connect the yellow lead to terminal 4 on terminal strip TS7 (DS).

This completes the wiring of the audio output transformer T4 (leads coming out of chassis holes K and L).

#### PRELIMINARY WIRING

(Refer to pictorial 3 for the wiring of this section.)

**NOTE 1:** Strip 3/8 inch of insulation off each end of all insulated wires used in the assembly of this kit before making a connection to any terminal. Leads or cut wires may be further trimmed if so desired.

29. (✓) Run a short piece of No. 22 bare tinned wire from the center post on tube socket XV2 (S-1), through socket terminal 4 (S-1), to socket GND lug 2 (DS).
30. (✓) Run a short piece of No. 22 bare tinned wire from the center post on tube socket XV3 (S-1), through socket terminal 3 (S-1), to socket GND lug 2 (DS).

31. (✓) Connect a short piece of No. 22 bare tinned wire to terminal 7 on tube socket XV4 (S-1). Run this wire through the socket center post (S-1), through socket terminal 4 (S-1), to socket GND lug 2 (S-1).
32. (✓) Connect a short piece of No. 22 bare tinned wire to terminal 4 on tube socket XV5 (S-1). Run this wire through the socket center post (S-1), through socket terminal 1 (S-1), to socket GND lug 1 (DS).
33. (✓) Connect a short piece of No. 22 bare tinned wire to terminal 7 on tube socket XV1 (S-1). Run this wire through the socket center post (S-1), through socket terminal 5 (S-1), to socket GND lug 3 (DS).
34. (✓) Connect a short piece of No. 22 bare tinned wire between terminal 2 on connector board TA1 (S-1) and the solder lug at chassis hole 41 (S-1).
35. (✓) Connect a 3-inch length of brown wire from terminal 5 on tube socket XV5 (S-1) to terminal 5 on tube socket XV4 (DS). (See Note 1.)
36. (✓) Connect a 6-inch length of yellow wire from terminal 2 on slide switch S4 (S-1) to terminal 1 on terminal strip TS4 (DS).
37. (✓) Connect a 4-inch length of yellow wire from terminal 1 on terminal strip TS4 (DS), to terminal 3 on tube socket XV4 (DS).
38. (✓) Connect a 3-inch length of red wire from terminal 8 on tube socket XV5 (DS) to terminal 3 on R40, the 2K ohm control (DS).
39. (✓) Connect a 3 1/2-inch length of red wire from terminal 1 on terminal strip TS8 (DS) to terminal 8 on tube socket XV5 (S-2).
40. (✓) Connect a 5-inch length of red wire from terminal 2 on terminal strip TS6 (DS) to terminal 4 on IF transformer T3 (DS).
41. (✓) Connect a 2-inch length of green wire from terminal 9 on tube socket XV1 (S-1) to terminal 2 on crystal socket XY1 (DS).

#### INSTALLATION AND WIRING OF CABLE HARNESS WH-1

(Refer to pictorial 3 when wiring this section)

**NOTE 2:** Each cable harness breakout is designated with the cable harness nomenclature (WH-1) and a letter suffix (a), (b), etc. (i.e., WH-1a).

42. (✓) Locate and position the cable harness WH-1 on the chassis as shown in pictorial 3.
43. (✓) Connect the white wire at WH-1a to terminal 3 on terminal strip TS5 (DS).
44. (✓) Locate the two red wires at WH-1a. Connect the shorter wire to terminal 4 (DS) and the longer wire to terminal 1 on terminal strip TS8 (DS).
45. (✓) Locate the three brown wires at WH-1a. Connect the two short wires to terminal 4 on tube socket XV3 (DS), and the longer wire to terminal 5 on tube socket XV4 (S-2).
46. (✓) Connect the red wire at WH-1b to terminal 4 on IF transformer T2 (DS).
47. (✓) Connect the two white wires at WH-1b to terminal 2 on IF transformer T2 (S-2).
48. (✓) Connect the two brown wires at WH-1c to terminal 5 on tube socket XV2 (S-2).
49. (✓) Connect the brown wire at WH-1d to terminal 4 on tube socket XV1 (DS).
50. (✓) Connect the two white wires at WH-1e to terminal 1 on terminal strip TS7 (DS).
51. (✓) Connect the green wire at WH-1e to terminal 4 on terminal strip TS7 (S-2).

52. (✓) Connect the red wire at WH-1e to terminal 6 on terminal strip TS7 (DS).
53. (✓) Connect the yellow wire from WH-1e to terminal 2 on connector board TA3 (S-1).
54. (✓) Connect a short piece of No. 22 bare tinned wire to terminal 1 on connector board TA3 (DS) and to the solder lug at chassis hole 46 (S-1).
55. (✓) Connect the two red wires at WH-1f to terminal 1 on tube socket XV2 (DS).
56. (✓) Connect the two red wires at WH-1g to terminal 1 on terminal strip TS3 (DS).
57. (✓) Connect the yellow wire at WH-1g to terminal 2 on terminal strip TS3 (DS).
58. (✓) Connect the violet wire at WH-1g to terminal 4 on terminal strip TS3 (DS).
59. (✓) Connect the orange wire at WH-1g to terminal 6 on terminal strip TS3 (DS).
60. (✓) Connect the red wire at WH-1h to terminal 2 on slide switch S3 (DS).
61. (✓) Connect the orange wire at WH-1h to terminal 4 on slide switch S3 (S-1).
62. (✓) Connect the yellow wire at WH-1h to terminal 3 on slide switch S3 (S-1).

This completes the installation and wiring of the cable harness WH-1 except for the black and violet wires at WH-1j and the red, black, white, yellow, and green wires at WH-1k which will be connected later.

#### INSTALLATION AND WIRING OF THE FUNCTION SWITCH S2

(Refer to figure 5 and pictorial 4 when wiring this section)

Locate cable harness WH-2 and function switch S2. The function switch is wired prior to installation. Place the function switch so that the locating key is as shown in figure 5 before wiring.

63. (✓) Connect one end of a 3-1/2-inch length of black wire to terminal 5 on the front of the wafer of switch S2 (DS).
64. (✓) Cut both leads of a 10K ohm, 1/2-watt resistor, R5, to 1/2-inch lengths. Connect one lead to terminal 4 on switch S2 (DS) and the other lead to terminal 5 on switch S2 (S-2).
65. (✓) Connect the yellow wire at WH-2a to terminal 3 on switch S2 (S-1).
66. (✓) Connect the violet wire at WH-2a to terminal 2 on switch S2 (S-1).
67. (✓) Connect the gray wire at WH-2a to terminal 12 on switch S2 (S-1).
68. (✓) Connect the orange wire at WH-2a to terminal 11 on switch S2 (S-1).
69. (✓) Connect the red wire at WH-2a to terminal 7 on switch S2 (DS).
70. (✓) Connect the blue wire at WH-2a to terminal 8 on switch S2 (DS).
71. (✓) Position the cable harness WH-2 in the chassis as shown in pictorial 4.

DO NOT MOUNT THE FUNCTION SWITCH S2 AT THIS TIME.

72. (✓) Connect the black wire at WH-1k to terminal 4 on switch S2 as shown in figure 5 (S-2).
73. (✓) Connect the white wire at WH-1k to terminal 9 on switch S2 (S-1).
74. (✓) Mount the function switch S2 in chassis hole 28 and insert the locating key in hole 65. Secure switch S2 with a black, 3/8-inch palnut and finger tighten only (this nut must be removed when installing the front panel).

75. (✓) Position the cable harness breakouts WH-2 in the chassis as shown in pictorial 4.
76. (✓) Connect the remaining black wire from the power transformer T1 to terminal 1 on the AC snap switch mounted on the rear of switch S2 (S-1).
77. (✓) Connect a 5-inch length of black wire from terminal 1 on terminal strip TS1 (DS) to terminal 2 on the AC snap switch on switch S2 (S-1).

This completes the installation and wiring of the function switch S2 except for resistor R15 which will connect to terminal 10 and red and blue wires which will connect to terminals 7 and 8 respectively.

#### CABLE HARNESS WH-2 INSTALLATION AND GENERAL WIRING

(Refer to pictorial 4 when wiring this section)

78. (✓) Connect the red wire at WH-2b to terminal 1 on terminal strip TS2 (DS).
79. (✓) Connect the brown wire at WH-2b to terminal 3 on terminal strip TS2 (DS).
80. (✓) Connect the orange wire at WH-2c to terminal 4 on connector board TA2 (S-1).
81. (✓) Connect the gray wire at WH-2c to terminal 3 on connector board TA2 (S-1).
82. (✓) Connect the yellow wire at WH-2c to terminal 2 on connector board TA2 (S-1).
83. (✓) Connect the violet wire at WH-2c to terminal 1 on connector board TA2 (S-1).
84. (✓) Connect the brown wire at WH-2c to terminal 4 on tube socket XY1 (S-2).
85. (✓) Connect the red wire at WH-2d to terminal 2 on terminal strip TS7 (S-2).
86. (✓) Connect the red wire at WH-2e to terminal 3 on terminal strip TS6 (DS).
87. (✓) Connect the blue wire at WH-2e to terminal 3 on control R40 (DS).
88. (✓) Connect the center conductor at one end of the blue shielded wire to terminal 8 on tube socket XV4 (DS).
89. (✓) Connect the shield braid of the same end of the shielded wire to GND lug 3 on tube socket XV4 (S-1).
90. (✓) Connect the center conductor of the other end of the shielded wire to terminal 3 on terminal strip TS4 (DS).
91. (✓) Connect the shield braid of this end of the shielded wire to terminal 2 on terminal strip TS4 (DS).
92. (✓) Connect a 3-inch length of green wire from terminal 6 on tube socket XV4 (S-1) to terminal 1 on IF transformer T3 (S-1).
93. (✓) Connect a 1-1/2-inch length of blue wire from terminal 3 on IF transformer T3 (S-1) to terminal 5 on tube socket XV3 (S-1).
94. (✓) Connect a 2-inch length of green wire from terminal 1 on tube socket XV3 (S-1) to terminal 1 on IF transformer T2 (S-1).
95. (✓) Connect a 3-inch length of blue wire from terminal 3 on IF transformer T2 (S-1) to terminal 6 on tube socket XV2 (S-1).
96. (✓) Connect a 9-1/2-inch length of violet wire from terminal 3 on slide switch S4 (S-1) to terminal 2 on tube socket XV4 (DS).

*Check to here*

97. (✓) Connect a 2-1/2-inch length of white wire from terminal 6 on tube socket XV5 (DS) to terminal 5 on terminal strip TS7 (DS).
98. (✓) Connect a 5-inch length of white wire from terminal 2 on tube socket XV5 (DS) to terminal 2 on terminal strip TS5 (DS).

This completes the installation and general wiring of cable harness WH-2.

### PRELIMINARY COMPONENT PART WIRING

(Refer to pictorial 5 when wiring this section)

99. (✓) Cut two 5/8-inch lengths of sleeving, place one length on each lead of a 10 mfd, 50V, electrolytic capacitor, C49, trim both leads so that only 3/8 inch remains beyond the sleeving. Connect the positive (+) lead to terminal 6 on tube socket XV5 (S-2) and the other lead to terminal 3 on terminal strip TS7 (DS).
100. (✓) Cut both leads of a 180 ohm, 1/2-watt resistor, R43, to 1/2-inch lengths. Connect one lead to terminal 5 on terminal strip TS7 (DS) and the other lead to terminal 1 on connector board TA3 (S-2). *Brown gray brown*
101. (✓) Cut both leads of a .005 mfd, 500V, ceramic disc capacitor, C48, to 1/2-inch lengths. Connect one lead to terminal 9 on tube socket XV5 (S-2) and the other lead to GND lug 4 on tube socket XV5 (S-1).
102. (✓) Cut both leads of a 470K ohm, 1/2-watt resistor, R41 to 3/4-inch lengths. Connect one lead to GND lug 1 on tube socket XV5 (S-2). Connect the other lead to terminal 7 on tube socket XV5 (DS). *yellow violet orange yellow*
103. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C56, to 1/2-inch lengths. Connect one lead to terminal 3 on tube socket XV5 (DS) and the other lead to GND lug 3 on tube socket XV5 (S-1).
104. (✓) Cut both leads of an 1800 ohm, 1/2-watt resistor, R38, to 1/2-inch lengths. Connect one lead to terminal 3 on tube socket XV5 (S-2) and the other lead to terminal 3 on terminal strip TS6 (DS). *Brown gray red*
105. (✓) Cut two 3/4-inch lengths of sleeving, place one length on each lead of a 2200 ohm, 1/2-watt resistor, R21, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect one lead to terminal 2 on terminal strip TS6 (DS) and the other lead to terminal 3 on control R40 (DS). *red red red*
106. (✓) Cut both leads of a 1000 ohm, 1/2-watt resistor, R14, to 1-1/4-inch lengths. Pass one end through terminal 3 on control R40 (S-4) and connect it to terminal 2 (S-1). Connect the other lead to terminal 6 on terminal strip TS7 (S-2). *Brown Black Red*
107. (✓) Cut two 1-inch lengths of sleeving, place one length on each lead of an 8 mfd, 250V, electrolytic capacitor, C21, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect the positive (+) lead to terminal 2 on terminal strip TS6 (S-3) and the other lead to terminal 2 on terminal strip TS8 (DS).
108. (✓) Cut both leads of a 2.2 megohm, 1/2-watt resistor, R37, to 1/2-inch lengths. Connect one lead to terminal 2 on tube socket XV5 (DS), and the other lead to terminal 1 on terminal strip TS6 (DS). *Red Red green*
109. (✓) Cut both leads of a .02 mfd, 500V, ceramic disc capacitor, C55, to 1/2-inch lengths. Connect one lead to terminal 2 on tube socket XV5 (S-3) and the other lead to terminal 1 on terminal strip TS6 (DS).
110. (✓) Cut both leads of a 560 ohm, 1/2-watt resistor, R39, to 3/4-inch lengths. Connect one lead to terminal 3 on terminal strip TS6 (S-3) and the other lead to terminal 1 on control R40 (S-1). *green blue brown*

111. ✓ Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C3, to 5/8-inch lengths. Connect one lead to terminal 1 on terminal strip TS7 (DS) and the other lead to terminal 3 on terminal strip TS7 (DS).
112. ✓ Cut both leads of a 10 megohm, 1/2-watt resistor, R42, to 1-1/4-inch lengths. Connect one lead to terminal 5 on terminal strip TS7 (S-3) and the other lead to terminal 1 on terminal strip TS7 (DS). *Brown Black Blue*
113. ✓ Cut both leads of a 10 megohm, 1/2-watt resistor, R29, to 3/4-inch lengths. Feed one lead through GND lug 1 on tube socket XV4 (S-1) and connect it to terminal 1 on socket XV4 (S-1). Connect the other lead to terminal 8 on tube socket XV4 (S-2).
114. ✓ Cut both leads of a .1 mfd, 200V, molded paper capacitor, C24, to 5/8-inch lengths. Connect one lead to terminal 1 on terminal strip TS6 (DS) and the other lead to terminal 5 on terminal strip TS5 (DS).
115. ✓ Cut both leads of a .001 mfd, 500V, ceramic disc capacitor, C25, to 5/8-inch lengths. Connect one lead to terminal 1 on terminal strip TS6 (S-4) and the other lead to terminal 3 on tube socket XV4 (DS).
116. ✓ Cut both leads of a 1 megohm, 1/2-watt resistor, R23, to 1/2-inch lengths. Connect one lead to terminal 3 on tube socket XV4 (S-3) and the other lead to terminal 5 on terminal strip TS5 (DS). *Brown Black green*
117. ✓ Cut both leads of a 150K ohm, 1/2-watt resistor, R27, to 1/2-inch lengths. Connect one lead to terminal 2 on tube socket XV4 (DS) and the other lead to terminal 4 on terminal strip TS5 (S-1). *Brown green yellow*
118. ✓ Cut both leads of a 270K ohm, 1/2-watt resistor, R26, to 1-inch lengths. Connect one lead to terminal 2 on tube socket XV4 (S-3) and the other lead to terminal 1 on terminal strip TS5 (DS). *Red violet yellow*
119. ✓ Cut both leads of a .1 mfd, 200V, molded paper capacitor, C23, to 3/4-inch lengths. Connect one lead to terminal 2 on terminal strip TS4 (DS) and the other lead to terminal 3 on terminal strip TS5 (DS).
120. ✓ Cut both leads of a 1 megohm, 1/2-watt resistor, R22, to 1-1/8-inch lengths. Connect one lead to terminal 5 on terminal strip TS5 (S-3) and the other lead to terminal 2 on IF transformer T3 (DS). *Brown Black green*
121. ✓ Cut both leads of a 47K ohm, 1/2-watt resistor, R24, to 1-inch lengths. Connect one lead to terminal 2 on IF transformer T3 (DS) and the other lead to terminal 1 on terminal strip TS5 (DS). *yellow violet orange*
122. ✓ Cut both leads of a 1 megohm, 1/2-watt resistor, R25, to 1/2-inch lengths. Connect one lead to terminal 1 on terminal strip TS5 (DS) and the other lead to terminal 2 on terminal strip TS5 (S-2). *Brown Black green*
123. ✓ Cut both leads of a 1 megohm, 1/2-watt resistor, R36, to 3/4-inch lengths. Connect one lead to terminal 1 on terminal strip TS5 (DS) and the other lead to terminal 3 on terminal strip TS5 (S-3).
124. ✓ Cut both leads of a 100 mmf, 500V, ceramic disc capacitor, C22, to 1/2-inch lengths. Connect one lead to terminal 1 on terminal strip TS5 (S-5) and the other lead to terminal 2 on terminal strip TS4 (DS).
125. ✓ Cut two 1-inch lengths of sleeving, place one length on each end of a 22K ohm, 1/2-watt resistor, R20, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect one lead to terminal 4 on IF transformer T3 (DS) and the other lead to terminal 6 on tube socket XV3 (DS). *Red Red orange*

126. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C19, to 1/2-inch lengths. Connect one lead to terminal 6 on tube socket XV3 (S-2) and the other lead to GND lug 4 on tube socket XV3 (DS).
127. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C18, to 5/8-inch lengths. Connect one lead to terminal 2 on terminal strip TS4 (DS) and the other lead to terminal 4 on IF transformer T3 (DS).
128. (✓) Cut both leads of a 100 mmf, 500V, ceramic disc capacitor, C20, to 1-inch lengths. Connect one lead to terminal 2 on IF transformer T3 (S-3) and the other lead to GND lug 4 on tube socket XV3 (S-2).
129. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C14, to 5/8-inch lengths. Connect one lead to terminal 4 on IF transformer T2 (DS) and the other lead to GND lug 1 on tube socket XV3 (DS).
130. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C17, to 1/2-inch lengths. Connect one lead to terminal 7 on tube socket XV3 (DS) and the other lead to GND lug 1 on tube socket XV3 (S-2).
131. (✓) Cut both leads of the small silicon diode, CR1 ("H" on one end), to 3/4-inch lengths. Connect the end with the "H" to terminal 2 on tube socket XV3 (DS) and the other end to GND lug 2 on tube socket XV3 (DS). CAUTION: WHEN INSTALLING THIS DIODE USE HEAT SINK. REFER TO STEP 8 OF SOLDERING TECHNIQUES. DO NOT OVERHEAT.
132. (✓) Cut two 1-inch lengths of sleeving, place one length on each end of a .1 mfd, 400V, molded paper capacitor, C28, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect one lead to terminal 3 on terminal strip TS8 (DS) and the other lead to terminal 2 on terminal strip TS8 (S-2). *check to have*
133. (✓) Cut both leads of a 220K ohm, 1/2-watt resistor, R30, to 5/8-inch lengths. Connect one lead to terminal 3 on terminal strip TS8 (DS) and the other lead to terminal 9 on tube socket XV4 (DS). *Red Red yellow*
134. (✓) Cut two 1-1/4-inch lengths of sleeving, place one length on each end of a .01 mfd, 500V, ceramic disc capacitor, C47, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect one lead to terminal 9 on tube socket XV4 (S-2) and the other lead to terminal 7 on tube socket XV5 (S-2).
135. (✓) Cut both leads of a 47K ohm, 1/2-watt resistor, R31, to 1/2-inch lengths. Connect one lead to terminal 1 on terminal strip TS8 (DS) and the other lead to terminal 3 on terminal strip TS8 (S-3). *yellow black orange*
136. (✓) Cut both leads of a 10K ohm, 1-watt resistor, R33, to 3/4-inch lengths. Connect one lead to terminal 1 on terminal strip TS8 (DS) and the other lead to terminal 4 on terminal strip TS8 (S-2). *brown black orange*
137. (✓) Cut the positive (+) lead of a 40 mfd, 250V, electrolytic capacitor, C54, to 1-1/4 inches and the negative (-) lead to 5/8 inch. Connect the positive (+) lead to terminal 1 on terminal strip TS8 (S-5) and the negative (-) lead to terminal 3 on terminal strip TS7 (S-4).
138. (✓) Cut both leads of a 100K ohm, 1/2-watt resistor, R9, to 1/2-inch lengths. Connect one lead to terminal 2 on tube socket XV2 (DS) and the other lead to GND lug 2 on tube socket XV2 (DS). *Brown black yellow*
139. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C15, to 1/2-inch lengths. Connect one lead to terminal 3 on tube socket XV2 (DS) and the other lead to GND lug 2 on tube socket XV2 (S-3).
140. (✓) Cut both leads of a 15K ohm, 1/2-watt resistor, R13, to 1-inch lengths. Connect one lead to terminal 3 on tube socket XV2 (DS) and the other lead to GND lug 3 on tube socket XV2 (DS). *Brown green orange*

141. (✓) Cut both leads of a 33K ohm, 1/2-watt resistor, R12, to 1-inch lengths. Connect one lead to terminal 4 on IF transformer T2 (S-3) and the other lead to terminal 3 on tube socket XV2 (S-3). *orange orange orange*
142. (✓) Cut both leads of a 22K ohm, 1/2-watt resistor, R32, to 1/2-inch lengths. Connect one lead to terminal 9 on tube socket XV2 (DS) and the other lead to GND lug 4 on tube socket XV2 (S-1). *red red orange*
143. (✓) Cut both leads of a 68 ohm, 1/2-watt resistor, R11, to 1/2-inch lengths. Connect one lead to terminal 7 on tube socket XV2 (DS) and the other lead to terminal 2 on terminal strip TS3 (S-2). *Blue gray Black*
144. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C13, to 1/2-inch lengths. Connect one lead to terminal 7 on tube socket XV2 (S-2) and the other lead to GND lug 3 on tube socket XV2 (S-2).
145. (✓) Cut both leads of a .02 mfd, 500V, ceramic disc capacitor, C44, to 1/2-inch lengths. Connect one lead to GND lug 1 on tube socket XV2 (S-1) and the other lead to terminal 1 on tube socket XV2 (S-3).
146. (✓) Cut both leads of a 10 mfd, duramica capacitor, C12, to 1/2-inch lengths. Connect one lead to terminal 8 on tube socket XV2 (DS) and the other lead to terminal 2 on tube socket XV2 (DS).
147. (✓) Cut both leads of a 15K ohm, 1-watt resistor, R7, to 3/4-inch lengths. Connect one lead to terminal 2 on tube socket XV1 (DS) and the other lead to terminal 5 on terminal strip TS3 (DS). *Brown green orange*
148. (✓) Cut two 5/8-inch lengths of sleeving, place one length on each lead of a 1K ohm, 1/2-watt resistor, R8, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect one lead to terminal 1 on terminal strip TS3 (S-3) and the other lead to terminal 5 on terminal strip TS3 (DS). *Brown Black Red*
149. (✓) Cut both leads of a .005 mfd, 500V, ceramic disc capacitor, C5, to 3/8-inch lengths. Connect one lead to terminal 3 on terminal strip TS3 (DS) and the other lead to terminal 4 on terminal strip TS3 (DS).
150. (✓) Cut two 5/8-inch lengths of sleeving, place one length on each lead of a 68 ohm, 1/2-watt resistor, R3, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect one lead to terminal 4 on terminal strip TS3 (S-3) and the other lead to terminal 3 on tube socket XV1 (DS). *Blue gray Black*
151. (✓) Cut both leads of a .005 mfd, 500V, ceramic disc capacitor, C8, to 5/8-inch lengths. Connect one lead to terminal 3 on terminal strip TS3 (S-2) and the other lead to terminal 5 on terminal strip TS3 (DS).
152. (✓) Cut both leads of a 33K ohm, 1/2-watt resistor, R6, to 1/2-inch lengths. Connect one lead to terminal 2 on tube socket XV1 (DS) and the other lead to GND lug 2 on tube socket XV1 (DS).
153. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C7, to 1/2-inch lengths. Connect one lead to GND lug 1 on tube socket XV1 (S-1) and the other lead to terminal 2 on tube socket XV1 (S-3). *orange orange orange*
154. (✓) Cut both leads of a .01 mfd, 500V, ceramic disc capacitor, C4, to 1/2-inch lengths. Connect one lead to terminal 3 on tube socket XV1 (S-2) and the other lead to GND lug 2 on tube socket XV1 (S-2).
155. (✓) Cut both leads of a 47K ohm, 1/2-watt resistor, R34, to 1/2-inch lengths. Connect one lead to GND lug 3 on tube socket XV1 (DS) and the other lead to terminal 2 on crystal socket XY1 (DS). *yellow violet orange*

156. (✓) Cut both leads of a 27 mmf, 500V, duramica capacitor, C45, to 1/2-inch lengths. Connect one lead to GND lug 3 on tube socket XV1 (DS) and the other lead to terminal 2 on crystal socket XY1 (S-3).
157. (✓) Cut both leads of a .005 mfd, 500V, ceramic disc capacitor, C46, to 5/8-inch lengths. Connect one lead to terminal 8 on tube socket XV1 (DS) and the other lead terminal 1 on crystal socket XY1 (DS).
158. (✓) Cut both leads of a 56 mmf, ceramic capacitor, C58, to 5/8-inch lengths. Connect one lead to GND lug 3 on tube socket XV1 (S-4) and the other lead to terminal 1 on crystal socket XY1 (S-2).
159. (✓) Cut both leads of a 100K ohm, 1/2-watt resistor, R35, to 1/2-inch lengths. Connect one lead to terminal 8 on tube socket XV1 (S-2) and the other lead to terminal 6 on terminal strip TS3 (S-2). *Brown Black yellow*
160. (✓) Cut both leads of a 1 megohm, 1/2-watt resistor, R1, to 1-inch lengths. Connect one lead to terminal 1 on terminal strip TS7 (S-5) and the other lead to terminal 6 on tube socket XV1 (DS).
161. (✓) Cut both leads of a .01 mfd, 1400V, ceramic disc capacitor, C51, to 1/2-inch lengths. Connect one lead to terminal 1 on terminal strip TS1 (DS) and the other lead to terminal 2 on terminal strip TS1 (DS).
162. (✓) Cut both leads of a .01 mfd, 1400V, ceramic disc capacitor, C50, to 1/2-inch lengths. Connect one lead to terminal 2 on terminal strip TS1 (DS) and the other lead to terminal 3 on terminal strip TS1 (DS).
163. (✓) Cut both leads of a 10 ohm, 1/2-watt resistor, R45, to 1-1/8-inch lengths. Connect one lead to terminal 2 on terminal strip TS2 (DS) and the other lead to terminal 4 on terminal strip TS1 (S-2). *Brown Black Black*
164. (✓) Cut both leads of silicon diode (Type 2E4), CR3, to 1-inch lengths. Connect the lead from the round yellow end to terminal 2 on terminal strip TS1 (S-3). CAUTION: USE HEAT SINK, REFER TO STEP 8 OF SOLDERING TECHNIQUES. DO NOT OVERHEAT. Connect the remaining lead to terminal 2 on terminal strip TS2 (DS).
165. (✓) Cut both leads of a silicon diode (Type 2E4), CR2, to 3/4-inch lengths. Connect the lead from the round yellow end to terminal 2 on terminal strip TS2 (S-3). CAUTION: USE HEAT SINK, REFER TO STEP 8 OF SOLDERING TECHNIQUES. DO NOT OVERHEAT. Connect the other lead to terminal 1 on terminal strip TS2 (DS). *ok*

This completes the preliminary component part wiring.

#### MOUNTING THE TUNING CAPACITORS

(Refer to pictorial 6 when wiring this section)

#### NOTE

During the following assembly procedures, extreme care must be exercised in the handling of the chassis to prevent bending or damage to the capacitor shafts. The plates of the capacitors should be fully closed (meshed) to prevent damage.

166. (✓) Bend the terminals of C1, C41, and C42, the ANT TRIM capacitor, the CAL RESET capacitor, and MAIN TUNING capacitor respectively, straight out from the body of the capacitor as shown in pictorial 6.
167. (✓) Mount capacitors C41 and C42 to the capacitor mounting bracket with eight No. 4 x 3/16 inch sems screws as shown in pictorial 6. Make certain that the capacitor terminals do not touch the mounting bracket.

168. (✓) Mount the end of the capacitor bracket assembly closest to C42, to the chassis at chassis hole 19 with a No. 6 x 3/8 inch sems screw and a No. 6 kep nut.
169. (✓) Mount the opposite end of the bracket assembly and a 4-lug terminal strip, TS9, to the chassis at chassis hole 6 with a No. 6 x 3/8 inch sems screw, a No. 6 internal tooth lock-washer, and a No. 6 hex nut.
170. (✓) Mount C1, the ANT TRIM capacitor, to the chassis with four No. 4 x 1/2 inch sems screws and four No. 4 x 5/16 inch spacers, at chassis holes 52, 53, 54, and 55.

This completes the mounting of the tuning capacitors.

#### ASSEMBLY, WIRING, AND MOUNTING OF THE FRONT PANEL

(Refer to pictorial 7 and figure 6 when assembling this section)

171. (✓) Locate the front panel and lay it face down on a soft cloth or other surface that will not scratch or mar the panel.
172. (✓) Locate the background plate and the calibrated dial window. Place the calibrated dial window over the opening in the front panel with the printed side of the window facing up, being careful not to leave fingerprints on the dial.

**NOTE:** The top of the printed characters should be toward the top of the panel. DO NOT INSTALL THE DIAL WINDOW BACKWARDS.

173. (✓) Place the background plate with the open side over the four weld studs on the back of the panel. Make certain that the plastic dial scale fits properly in the background plate.
174. (✓) Place the right-hand pilot lamp bracket over weld stud No. 1. Place a No. 6 solder lug over this weld stud and secure with a No. 6 hex nut.
175. (✓) Place the left hand pilot lamp bracket over weld stud No. 2 and secure with a No. 6 kep nut.
176. (✓) Place the No. 6 x 3/8 inch brass spacers over weld studs No. 3 and No. 4. Place the pointer track assembly over weld studs No. 3 and No. 4 and secure with two No. 6 internal tooth lockwashers and two No. 6 x 1/4 inch hex nuts.
177. (✓) Assemble the tuning shaft, spring washer, shaft bushing, and retaining "C" washer as follows. Apply a small amount of vaseline to the tuning shaft making sure that no vaseline comes in contact with the grooved portion where the dial cord will ride.

Refer to the cutaway view of pictorial 7.

- a. Place the spring washer on the tuning shaft with the spring edge of the washer away from the shaft shoulder.
  - b. Insert the tuning shaft into the shaft bushing.
  - c. Compress the spring washer between the shaft and the bushing until the retaining "C" washer can be inserted into the groove on the tuning shaft, behind the shaft bushing.
  - d. Place the open ends of the retaining "C" washer into the groove and snap in place with long-nosed pliers.
178. (✓) Mount the completed tuning shaft assembly to the front panel with a 3/8-inch, black palnut.
179. (✓) Connect a 7-inch length of blue wire under the positive (+) terminal screw on meter M1.
180. (✓) Connect a 7-inch length of red wire under the negative (-) terminal screw on meter M1.

181. (✓) Feed the red and blue leads from meter M1 through the meter hole in the front panel, and place the meter mounting clip over the meter. While holding the meter securely against the front panel, push the meter clip tightly against the background plate and the front panel.
182. (✓) Fold the meter insulator cover as shown in figure 6 and install it on the meter by removing the two screws from the top of M1, as shown in the cutaway of pictorial 7. Holding the top of the meter in place, pass the red and blue leads through the front and out the holes in the rear of the insulator cover. Align the holes on top of the cover over the holes on the meter and secure with the removed meter screws.
183. (✓) Connect a 3-inch length of black wire to the No. 6 solder lug at weld stud No. 1 (S-1).
184. (✓) Install the pilot lamps LM1 and LM2 into their sockets, and clip the sockets onto the brackets as shown. Install the shield over pilot lamp LM2.

This completes the front panel assembly.

#### MOUNTING THE FRONT PANEL TO THE CHASSIS

(Refer to pictorial 8 when assembling this section)

185. (✓) Remove the palnut from the function switch S2. While holding S2 in place, mount the front panel assembly onto the chassis by inserting the function switch shaft through the FUNCTION hole on the panel. Replace and finger tighten the palnut.
186. (✓) Install the 500K ohm Audio Gain control, R28, in chassis hole 39. Insert the locating tab in chassis hole 74 and secure with a 3/8-inch, black palnut.
187. (✓) Install the 12K ohm, RF Gain control, R4, in chassis hole 34. Insert the locating tab in chassis hole 72 and secure with a 3/8-inch, black palnut.
188. (✓) Install the 2K ohm, Selectivity-BFO control, R17, in chassis hole 38. Insert the locating tab in chassis hole 73 and secure with a 3/8-inch, black palnut.
189. (✓) Install the phone jack J1 in chassis hole 29 so that the arm is toward the chassis, as shown in pictorial 8, and secure with a 3/8-inch, nickel-plated flat washer and hex nut.

This completes mounting the front panel to the chassis.

#### FRONT PANEL AND CHASSIS WIRING

(Refer to pictorial 8 when wiring this section)

190. (✓) Feed the black wire from the No. 6 solder lug at weld stud No. 1 through hole T and connect it to terminal 2 on terminal strip TS4 (DS).
191. (✓) Cut both leads of a .001 mfd, 500V, ceramic disc capacitor, C26, to 3/4-inch lengths. Connect one lead to terminal 1 on resistor R28 (S-1) and the other lead to terminal 1 on terminal strip TS4 (S-3).
192. (✓) Cut both leads of a .005 mfd, 500V, ceramic disc capacitor, C27, to 5/8-inch lengths. Connect one lead to terminal 2 on resistor R28 (S-1) and the other lead to terminal 3 on terminal strip TS4 (S-2).
193. (✓) Connect a short piece of No. 22 bare tinned wire from terminal 3 on resistor R28 (S-1) to terminal 2 on terminal strip TS4 (S-6).
194. (✓) Feed the white lead from pilot lamp, LM2, through chassis hole T and connect to terminal 4 on tube socket XV3 (S-3).
195. (✓) Connect a 3-inch length of black wire from terminal 1 on control R17 (S-1) to GND lug 2 on tube socket XV3 (DS).
196. (✓) Cut both leads of a 10 mfd, 50V, electrolytic capacitor, C16, to 3/4-inch lengths. Connect the positive (+) lead to terminal 2 on control R17 (DS) and the negative (-) lead to GND lug 2 on tube socket XV3 (S-4). CAUTION: USE HEAT SINK, REFER TO STEP 8 OF SOLDERING TECHNIQUES. DO NOT OVERHEAT.

197. (✓) Cut both leads of a 1.5K ohm, 1/2-watt resistor, R16, to 1-1/4-inch lengths. Connect one lead to terminal 2 on control R17 (S-2) and the other lead to terminal 2 on tube socket XV3 (S-2). CAUTION: USE HEAT SINK, REFER TO STEP 8 OF SOLDERING TECHNIQUES. DO NOT OVERHEAT.
198. (✓) Cut both leads of a 100K ohm, 1/2-watt resistor, R19, to 1-3/8-inch lengths. Connect one lead to terminal 3 on control R17 (S-1) and the other lead to terminal 4 on IF transformer T3 (S-4). *Brown Black yellow*
199. (✓) Connect the black wire at cable harness breakout WH-1j to terminal 1 on control R4 (DS).
200. (✓) Connect an 82 ohm, 1/2-watt resistor, R18, from terminal 1 on control R4 (S-2) to terminal 7 on tube socket XV3 (S-2). *gray Red Black*
201. (✓) Connect the violet wire at WH-1j to terminal 2 on control R4 (DS).
202. (✓) Cut two 3/4-inch lengths of sleeving, place one length on each lead of a 47K ohm, 1/2-watt resistor, R10, and trim both leads so that only 3/8 inch remains beyond the sleeving. Connect one lead to terminal 2 on slide switch S3 (S-2) and the other lead to terminal 2 on control R4 (DS). *yellow violet orange*
203. (✓) Feed one end of a 5-1/2-inch length of violet wire through terminal 3 on control R4 (DS) to terminal 2 on control R4 (S-3). Connect the other lead to terminal 1 on slide switch S3 (S-1).
204. (✓) Cut both leads of a .1 mfd, 200V, molded paper capacitor, C6, to 1-1/8-inch lengths. Connect one lead to terminal 3 on control R4 (S-2) and the other lead to solder lug 1 on slide switch S3 (DS).
205. (✓) Run a short piece of No. 22 bare tinned wire from solder lug 1 on slide switch S3 (S-2) to terminal 5 on slide switch S3 (S-1).
206. (✓) Cut both leads of a 27 ohm, 1-watt resistor, R44, to 3/4-inch lengths. Connect one lead to terminal 1 on jack J1 (DS) and the other lead to terminal 3 on jack J1 (DS).
207. (✓) Connect the green wire at WH-1k to terminal 3 on jack J1 (S-2).
208. (✓) Connect the yellow wire at WH-1k to terminal 2 on jack J1 (S-1).
209. (✓) Connect the red wire at WH-1k to terminal 1 on terminal strip TS9 (DS).
210. (✓) Connect the black wire from terminal 5 on function switch S2 to terminal 3 on terminal strip TS9 (DS).
211. (✓) Feed the white wire from pilot lamp socket LM1 through chassis hole N and connect it to terminal 3 on terminal strip TS2 (S-3).
212. (✓) Feed the red and blue wires from the meter M1 through chassis hole N. Connect the red wire to terminal 7 on switch S2 (S-2). Connect the blue wire to terminal 8 on switch S2 (S-2).
213. (✓) Cut both leads of a 47K ohm, 1/2-watt resistor, R15, to 3/4-inch lengths. Connect one lead to terminal 1 on jack J1 (S-2) and the other lead to terminal 10 on switch S2 (S-1).
214. (✓) Connect the red lead from the power transformer T1 to terminal 4 on terminal strip TS9 (DS).
215. (✓) Connect a 1-3/4-inch length of red wire from terminal 4 on terminal strip TS9 (DS) to terminal 2 on terminal strip TS9 (DS).
216. (✓) Cut both leads of a 40 mfd, 150V, electrolytic capacitor, C52, to 5/8-inch lengths. Connect the positive (+) lead to terminal 1 on terminal strip TS2 (DS) and the negative (-) lead to terminal 4 on terminal strip TS9 (S-3).

217. (✓) Cut both leads of a 40 mfd, 150V, electrolytic capacitor, C53, to 5/8-inch lengths. Connect the positive (+) lead to terminal 2 on terminal strip TS9 (S-2) and the negative (-) lead to terminal 4 on terminal strip TS2 (S-2).
218. (✓) Cut both leads of a 820 ohm, 2-watt resistor, R46, to 1-3/8-inch lengths. Connect one lead to terminal 1 on terminal strip TS9 (DS) and the other lead to terminal 1 on terminal strip TS2 (S-4). CAUTION: USE HEAT SINK, REFER TO STEP 8 OF SOLDERING TECHNIQUES. DO NOT OVERHEAT.
219. (✓) Cut both leads of a 100K ohm, 1-watt resistor, R47, to 5/8-inch lengths. Connect one lead to terminal 1 on terminal strip TS9 (S-3) and the other lead to terminal 3 on terminal strip TS9 (S-2).
220. (✓) Install the line cord lock on the line cord PL1 3-1/2 inches behind the tinned ends. Insert the tinned ends of the cord through chassis hole 40 and press the line cord lock into this hole until the shoulder of the lock is against the chassis.
221. (✓) Connect one lead of PL1 to terminal 1 on terminal strip TS1 (S-3). Connect the other lead to terminal 3 on terminal strip TS1 (S-3).

This completes the front panel and chassis wiring. *check*

#### INSTALLATION OF THE PREWIRED BANDSWITCH ASSEMBLY

(Refer to pictorial 9 when wiring this section)

222. (✓) Carefully place the prewired bandswitch assembly into the chassis by inserting the switch shaft in chassis hole 30. In positioning the switch assembly, feed the blue wire through chassis hole S, and the long green wire through chassis hole M. Make certain that the free leads of the resistors, capacitors, and wires, mounted on the switch assembly are not pinched between the chassis and the switch assembly, when it is being mounted.
223. (✓) Secure the switch assembly to the front panel at chassis hole 30 with a 3/8-inch, black palnut and finger tighten.
224. (✓) Insert two No. 6 x 3/8 inch sems screws through the switch mounting bracket A and into the Tinnerman nuts mounted at chassis holes 20 and 21. Do not tighten these screws at this time.
225. (✓) Place a No. 6 flat washer on a No. 6 x 3/8 inch sems screw, and insert the screw through the foot of the power transformer T1 at chassis hole 4. Thread the screw into pem nut 3 mounted on the switch assembly bracket C. Do not tighten at this time.
226. (✓) Place three No. 6 x 3/8 inch sems screws through chassis holes 22, 23, and 24. Thread these screws into pem nuts 1, 2, and 4 mounted on switch assembly brackets B and C.
227. (✓) Tighten the 3/8-inch palnut, which secures the switch to the front panel, and the six screws that secure the switch assembly to the chassis.
228. (✓) Place a No. 6 flat washer on a No. 6 x 3/8 inch sems screw. Insert the screw through the foot of power transformer T1 at chassis hole 1, through the GND lug X, and secure with a No. 6 kep nut.

This completes the installation of the prewired bandswitch assembly.

#### WIRING THE BANDSWITCH S1

(Refer to pictorials 9 and 10 when wiring this section)

229. (✓) Connect the blue wire from bandswitch S1, section S1b, through chassis hole S to terminal 2 on capacitor C42 (DS).
230. (✓) Run a piece of No. 22 bare tinned wire from terminal 1 on capacitor C41 (S-1) to terminal 2 on capacitor C42 (S-2).
231. (✓) Connect the green wire from section S1e, through chassis hole M, to terminal 1 on capacitor C1 (S-1).

232. (✓) Connect the yellow wire from section S1a to terminal 8 on tube socket XV2 (S-2).
233. (✓) Connect the blue wire from section S1c to terminal 1 on tube socket XV1 (S-1).
234. (✓) Connect the red wire from section S1d to terminal 5 on terminal strip TS3 (S-4).
235. (✓) Connect the green wire from section S1f to terminal A on connector board TA1 (S-1).
236. (✓) Connect the free lead of the 47 mmf, duramica capacitor, C43, from section S1b to terminal 9 on tube socket XV2 (S-2).
237. (✓) Place a 1-1/4-inch length of sleeving on the free lead of the 47 mmf, duramica capacitor, C9, from section S1c. Trim this lead so that only 3/8 inch remains beyond the sleeving and connect it to terminal 2 on tube socket XV2 (S-3).
238. (✓) Connect the free lead of the 22 ohm, 1/2-watt resistor, R2, from section S1e to terminal 6 on tube socket XV1 (S-2).

This completes the wiring of the bandswitch assembly.

### FINAL MECHANICAL INSTALLATIONS

(Refer to pictorial 11 and figure 7)

239. (✓) Insert two No. 8 x 3/16 inch set screws in the tapped holes on the side of the main tuning knob. Mount the metal knob-skirt to the back of the knob with three No. 2 x 3/16 inch machine screws. Mount the knob to the main tuning shaft.
240. (✓) Insert the remaining No. 8 x 3/16 inch set screws in the remaining plastic knobs.
241. (✓) Insert the two No. 8 x 1/8 inch set screws in the two metal knobs.
242. (✓) Mount the two plastic knobs, with the red indicator lines, on the function and band selector switch shafts. Rotate these switches fully counterclockwise and align the indicator lines with the OFF and 80 positions. Secure the knobs by tightening the set screws.
243. (✓) Install the remaining plastic knobs on the audio gain, selectivity-BFO, and RF gain control shafts. Tighten the set screws.
244. (✓) Rotate the ant trim and cal reset shafts fully counterclockwise and mount the metal knobs on these shafts so that the set screws are to the extreme left. Tighten the set screws and rotate these knobs fully clockwise.

This completes the installation of the front panel knobs.

### STRINGING THE DIAL DRIVE

(Refer to pictorials 11 and 12)

245. (✓) Tie a loop with a non-slip knot on each end of the dial cord, so that there is 37-3/16 inches ( $\pm 1/16$  inch) between the loop ends.
246. (✓) Rotate the main tuning capacitor dial drum fully clockwise as viewed from the rear. Attach one loop of the dial cord to the open end of the dial spring. Connect the closed end of the dial spring to the hook at point A on the dial drum.

Keeping just enough tension on the cord to prevent it from slipping off the drum, string the dial cord following the numbering sequence (1 through 8) as indicated by the direction arrows on the pictorial. Attach the free loop of the cord to the open end of the dial spring.

**NOTE:** It will be necessary to expand the spring by rotating the main tuning control. After the free end of the dial cord is attached, the spring should remain expanded 1/4 to 3/8 inch.

247. ( ) Rotate the main tuning control counterclockwise until the capacitor is fully meshed. Keeping the capacitor meshed, install and align the dial pointer on the dial track over the alignment mark just to the left of the 50-MC marker on the 6-meter scale. Clinch the pointer clips to hold the pointer in place. Apply a small amount of vaseline to the dial track making sure that no vaseline comes in contact with the dial cord or dial pulleys.

Connect the dial cord to the pointer and clinch the pointer clips to hold the dial in place. Re-check the pointer alignment and apply a drop of household cement to prevent slippage.

#### INSTALLATION OF TUBES AND CRYSTAL

(Refer to pictorial 10)

248. ( ) Install the tubes and the 3500-KC calibration crystal in their respective sockets.

V1 <i>OK</i>	6AZ8 Tube	Socket XV1
V2 <i>OK</i>	6U8A Tube	Socket XV2
V3 <i>OK</i>	6BA6 Tube	Socket XV3
V4 <i>✓</i>	6T8A Tube	Socket XV4
V5 <i>OK</i>	6AW8 Tube	Socket XV5
Y1	3500 KC Crystal	Socket XY1

249. ( ) This completes the construction of your SX-140K Kit receiver. Refer to the operation manual for alignment and installation information.

## PARTS LIST

QUANTITY USED	SCHEMATIC SYMBOL	DESCRIPTION	HALLICRAFTERS PART NUMBER
1	C1	Capacitor, Variable Antenna Trimmer	048-000492
11	C3, 4, 7, 13, 14, 15, 17, 18, 19, 47, 56	Capacitor, .01 mfd, 500V, $\pm 20\%$ ; Ceramic Disc	047-100224
5	C5, 8, 27, 46, 48	Capacitor, .005 mfd, 500V, $\pm 20\%$ ; Ceramic Disc	047-100442
3	C6, 23, 24	Capacitor, .1 mfd, 200V, $\pm 20\%$ ; Molded Paper	499-014104
1	C12	Capacitor, 10 mmf, 500V, $\pm 2\%$ ; Duramica	482-131100
2	C16, 49	Capacitor, 10 mfd, 50V; Electrolytic	045-000724
2	C20, 22	Capacitor, 100 mmf, 500V, $\pm 10\%$ ; Ceramic Disc	047-201182
1	C21	Capacitor, 8 mfd, 250V; Electrolytic	045-000721
2	C25, 26	Capacitor, .001 mfd, 500V, GMV; Ceramic Disc	047-200230
1	C28	Capacitor, .1 mfd, 400V, $\pm 20\%$ , Molded Paper	499-024104
1	C39	Capacitor, 59 mmf, 500V, $\pm 2\%$ , N470; Ceramic Tubular, Part of Prewired Band Switch Assembly	None
1	C41	Capacitor, Variable; Cal Reset	048-000510
1	C42	Capacitor, Variable; Main Tuning	048-000494
2	C44, 55	Capacitor, .02 mfd, 500V, $\pm 80-20\%$ ; Ceramic Disc	047-100242
1	C45	Capacitor, 27 mmf, 500V, $\pm 2\%$ ; Duramica	482-151270
2	C50, 51	Capacitor, .01 mfd, 1400V, GMV; Ceramic Disc	047-200752
2	C52, 53	Capacitor, 40 mfd, 150V; Electrolytic	045-000725
1	C54	Capacitor, 40 mfd, 250V; Electrolytic	045-000722
1	C58	Capacitor, 56 mmf, 500V, $\pm 5\%$ , N750; Ceramic Tubular	491-105560-95
NOTE: C2, 9, 10, 11, 29, 31, 33, 35, 37, 39, 43 are part of the prewired Band Switch Assembly.			
C30, 32, 34, 36, 38, 40, 57 are C numbers which are not assigned.			
1	CR1	Diode, Silicon type HO-6225	019-102354
2	CR2, 3	Diode, Silicon type 2E4	027-000283
1	J1	Jack, Phone	036-100002
	L1 to L18	Coil, Part of Prewired Band Switch Assembly	None

<u>QUANTITY USED</u>	<u>SCHEMATIC SYMBOL</u>	<u>DESCRIPTION</u>	<u>HALLICRAFTERS PART NUMBER</u>
2	LM1, 2	Lamp, Pilot, #47	039-100019
1	M1	Meter, Carrier Level	082-000492
1	PL1	Line Cord and Plug	087-100078
5	R1, 22, 23, 25, 36	Resistor, 1 Megohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252105
1	R2	Resistor, Part of Prewired Band Switch Assembly	None
2	R3, 11	Resistor, 68 ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252680
1	R4	Resistor, Variable, 12K ohm, $\pm 10\%$ ; RF Gain	025-002040
1	R5	Resistor, 10K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252103
2	R6, 12	Resistor, 33K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252333
1	R7	Resistor, 15K ohm, $\pm 10\%$ , 1 watt; fixed composition	451-352153
2	R8, 14	Resistor, 1000 ohm, $\pm 10\%$ , 1/2 watt, fixed composition	451-252102
3	R9, 19, 35	Resistor, 100K ohm, $\pm 10\%$ , 1/2 watt, fixed composition	451-252104
5	R10, 15, 24 31, 34	Resistor, 47K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252473
1	R13	Resistor, 15K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252153
1	R16	Resistor, 1.5K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252152
1	R17	Resistor, Variable, 2K ohm, $\pm 10\%$ ; Selectivity - BFO	025-001944
1	R18	Resistor, 82 ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252820
2	R20, 32	Resistor, 22K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252223
2	R21, test resistor	Resistor, 2.2K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252222
1	R26	Resistor, 270K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252274
1	R27	Resistor, 150K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252154
1	R28	Resistor, Variable, 500K ohm, Audio Gain	025-001942

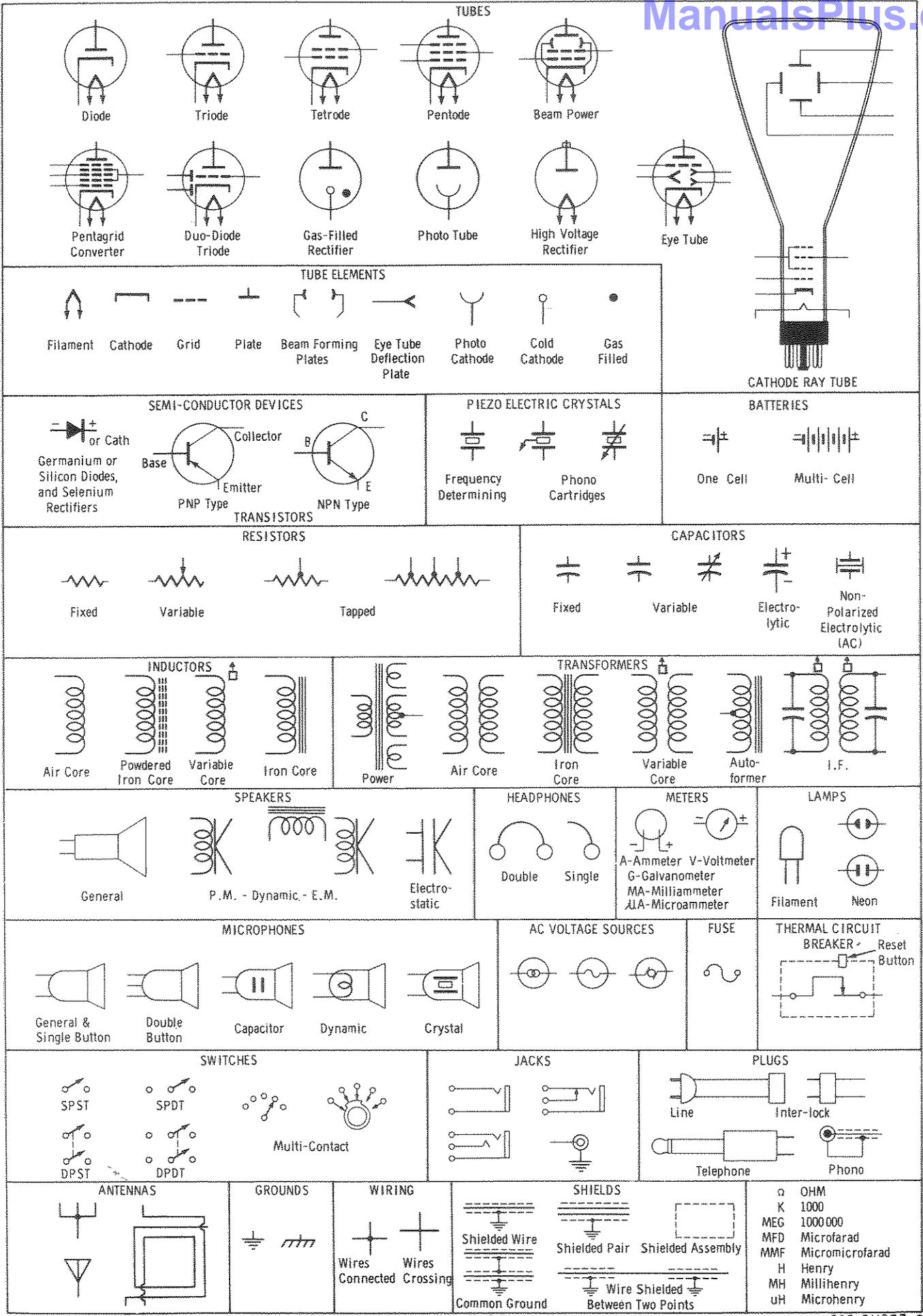
<u>QUANTITY USED</u>	<u>SCHEMATIC SYMBOL</u>	<u>DESCRIPTION</u>	<u>HALLICRAFTERS PART NUMBER</u>
2	R29, 42	Resistor, 10 Megohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252106
1	R30	Resistor, 220K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252224
1	R33	Resistor, 10K ohm, $\pm 10\%$ , 1 watt; fixed composition	451-352103
1	R37	Resistor, 2.2 megohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252225
1	R38	Resistor, 1.8K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252182
1	R39	Resistor, 560 ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252561
1	R40	Resistor, Variable, 2K ohm, Meter Adjust	025-001943
1	R41	Resistor, 470K ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252474
1	R43	Resistor, 180 ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252181
1	R44	Resistor, 27 ohm, $\pm 10\%$ , 1 watt; fixed composition	451-352270
1	R45	Resistor, 10 ohm, $\pm 10\%$ , 1/2 watt; fixed composition	451-252100
1	R46	Resistor, 820 ohm, $\pm 10\%$ , 2 watt; fixed composition	451-652821
1	R47	Resistor, 100K ohm, $\pm 10\%$ , 1 watt; fixed composition	451-352104
1	S1	Switch, Band Assembly Prewired	150-002904
1	S2	Switch, Wafer, Function	060-002267
1	S3	Switch, Slide (DPDT), Cal-Off (six-terminal)	060-002260
1	S4	Switch, Slide (SPDT), ANL-Off (three-terminal)	060-200967
1	T1	Transformer, Power	052-000853
2	T2, 3	Transformer, IF, 1650 KC	050-000751
1	T4	Transformer, Audio Output	055-000460
1	TA1	Board, Terminal 2 Screw Connector (A & G)	088-202026
1	TA2	Board, Terminal 4 Screw Connector	088-002411
1	TA3	Board, Terminal 2 Screw Connector	088-002412
1	TS1	Terminal Strip, 4 lug (Refer to Pictorial #1)	088-200297

<u>QUANTITY USED</u>	<u>SCHEMATIC SYMBOL</u>	<u>DESCRIPTION</u>	<u>HALLICRAFTERS PART NUMBER</u>
1	TS2	Terminal Strip, 4 lug (Refer to Pictorial 2)	088-200344
1	TS3	Terminal Strip, 6 lug (Refer to Pictorial 2)	088-200230
1	TS4	Terminal Strip, 3 lug (Refer to Pictorial 2)	088-301145
1	TS5	Terminal Strip, 5 lug (Refer to Pictorial 2)	088-200348
1	TS6	Terminal Strip, 3 lug (Refer to Pictorial 2)	088-200304
1	TS7	Terminal Strip, 6 lug (Refer to Pictorial 2)	088-200374
1	TS8	Terminal Strip, 4 lug (Refer to Pictorial 2)	088-200297
1	TS9	Terminal Strip, 4 lug (Refer to Pictorial 6)	088-002235
1	V1	6AZ8, RF Amplifier, Crystal Marker	090-901417
1	V2	6U8A, Mixer, Oscillator	090-901285
1	V3	6BA6, IF Amplifier	090-901112
1	V4	6T8A, AVC, Det, ANL	090-901403
1	V5	6AW8A, Meter Amplifier Audio Output	090-901103
4	XV1,2,4,5	Socket, Tube, 9-Pin Miniature	006-000947
1	XV3	Socket, Tube, 7-Pin Miniature	006-000946
1	XY1	Socket, Crystal	006-100346
1	Y1	Crystal, 3500 KC	019-002720

MISCELLANEOUS

1		Alignment Tool, type GC 8606	033-000988
1		Bracket, Pilot Lamp Mounting (right hand)	067-008984
1		Bracket, Pilot Lamp Mounting (left hand)	067-008985
1		Bracket, Capacitor Mounting	067-008970
1		Bushing, Shaft	077-002558
1		Cabinet	150-900785
1		Chassis, SX-140K	070-002025
1		Clip, Meter (Supplied With Meter)	
2		Clip, IF Transformer Mounting	076-100385
1		Cover, Meter Insulator	008-006690
1		Dial Window (calibrated)	083-000915
45 in.		Dial Cord	038-000049
1		Grommet, 1/4 inch Rubber	016-100976
1		Knob, Main Tuning	015-301315

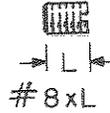
QUANTITY USED	SCHEMATIC SYMBOL	DESCRIPTION	HALLICRAFTERS PART NUMBER
2		Knob, Plastic with Red Indicator Line	015-201444
3		Knob, Plain Plastic	015-201258
2		Knob, Metal	015-001564
1		Lock, Line Cord (male and female sections)	076-200397
3		Lug, Solder, #4 Internal Tooth	011-200064
1		Lug, Solder, #6 Internal Tooth	011-100054
1		Nut, #2 Hexagon	401-011112
22		Nut, #4 Hexagon	401-023222
6		Nut, #6 x 1/4 inch	401-045222
5		Nut, #6 Kep	002-102188
6		Nut, #6 Tinnerman Speed	002-003311
1		Nut, 3/8 inch Cadmium Plated, Pal	002-101032
1		Nut, 3/8 inch Nickle Plated	002-100806
6		Nut, 3/8 inch Black, Pal	002-102142
1		Panel, Front	150-000509
1		Plate, Dial Background	063-005042
1		Pointer, Dial	082-000489
1		Pointer, Dial Track Assembly	150-000711
3		Screw, #2 x 3/16 inch Machine	406-011312-03
1		Screw, #2 x 1/2 inch Machine	406-011112-08
4		Screw, #4 x 1/2 inch Flat Head	406-023212-04
8		Screw, #4 x 3/16 inch Sems	413-023312-03
22		Screw, #4 x 5/16 inch Sems	413-023312-05
4		Screw, #4 x 1/2 inch Sems	413-023312-08
18		Screw, #6 x 3/8 inch Sems	413-045312-06
2		Screw, #8 x 1/8 inch Set	003-101027
9		Screw, #8 x 3/16 inch Set	003-100973
1		Shaft, Main Tuning	074-002451
1		Shield, Pilot Lamp	086-100037
1		Skirt, Knob	083-000914



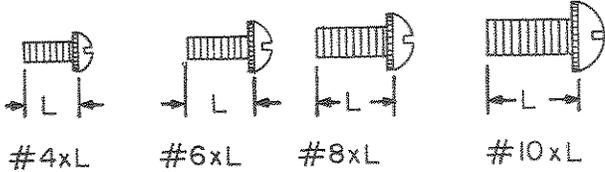
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1/22



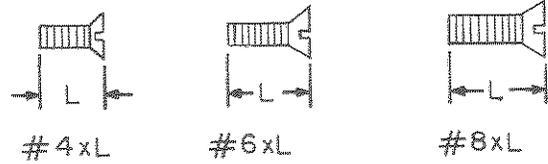
THE DIMENSION L MAY BE MEASURED BY USE OF THIS SCALE.



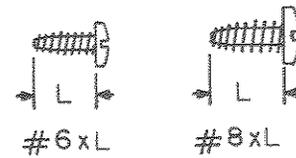
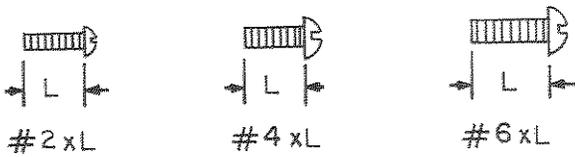
SET SCREWS



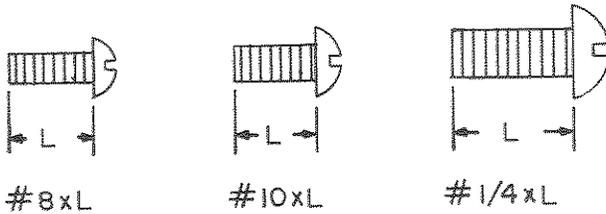
SEMS SCREWS



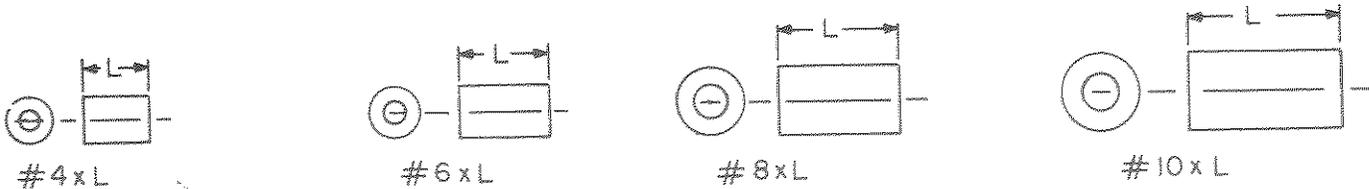
FLAT - HEAD SCREWS



THREAD-FORMING SCREWS

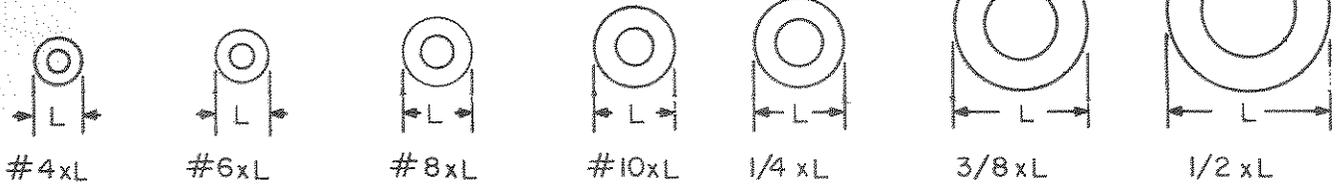


BINDING-HEAD SCREWS

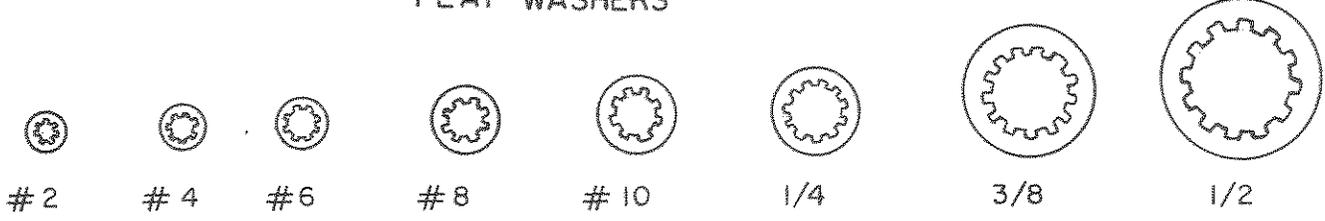


SPACERS (NOT THREADED) OR STAND-OFFS (THREADED)

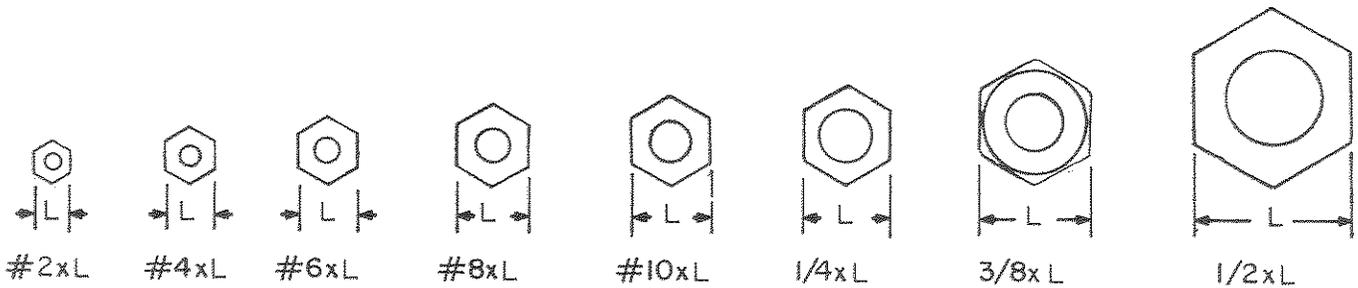
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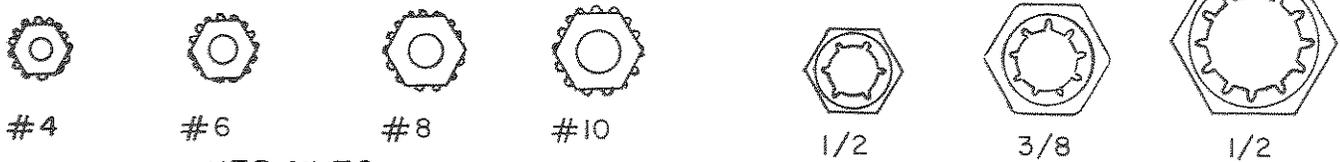
FLAT WASHERS



INTERNAL TOOTH LOCK WASHERS

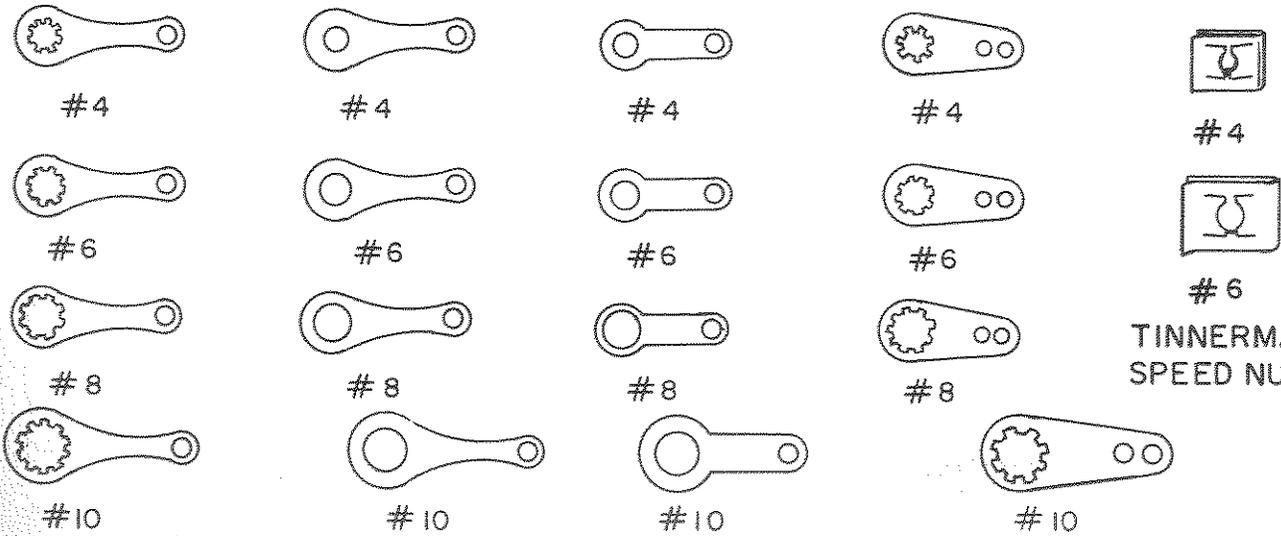


HEX NUTS



KEP NUTS

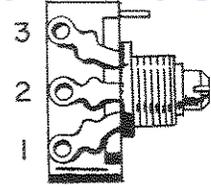
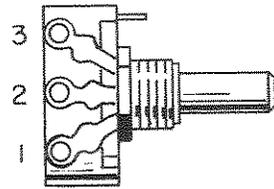
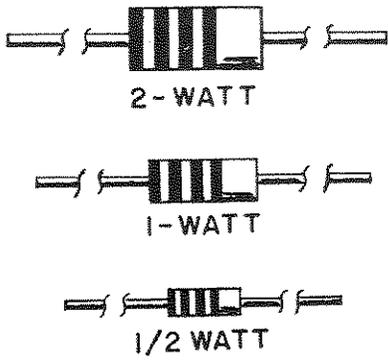
PALNUTS



SOLDER LUGS

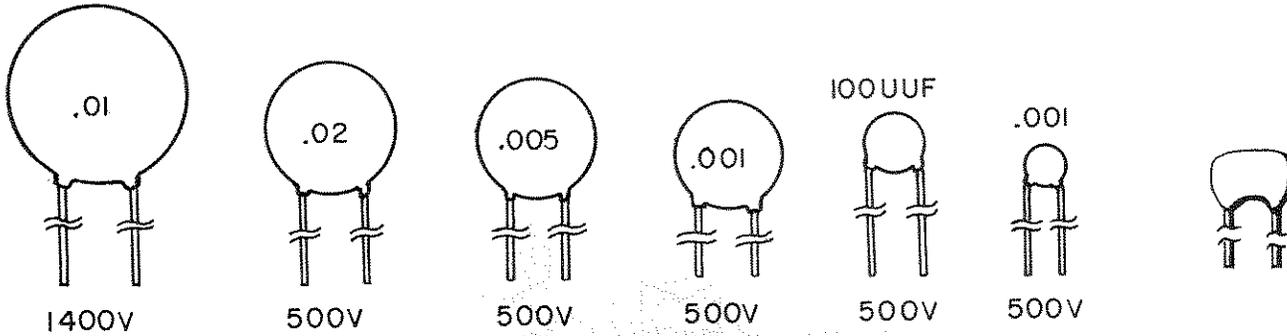
TINNERMAN SPEED NUT

092-011234-2

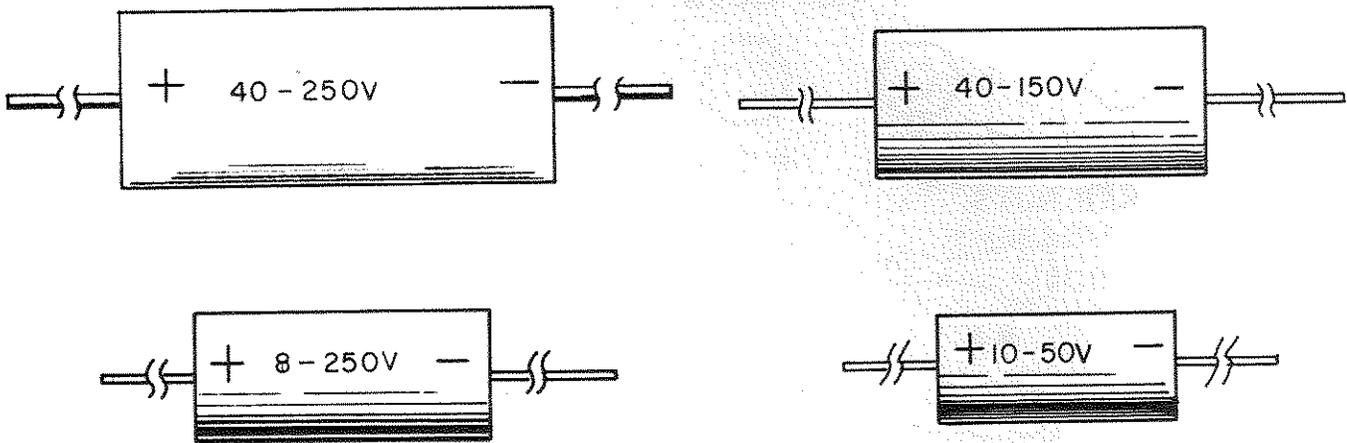


VARIABLE

RESISTORS



CERAMIC DISC

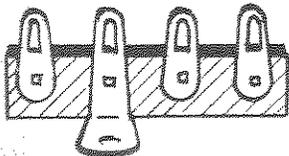


ELECTROLYTICS

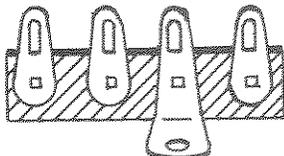


MOLDED PAPER CAPACITORS

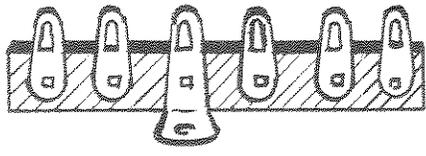
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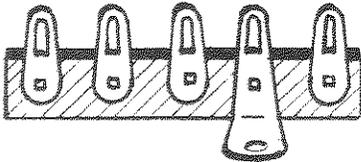
TS1, TS8



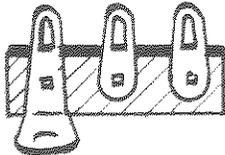
TS9



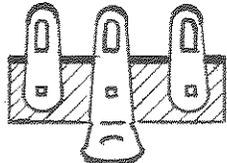
TS7



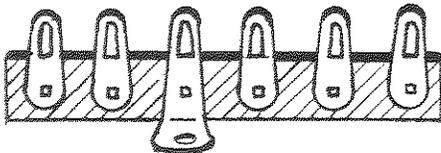
TS5



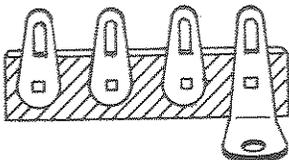
TS6



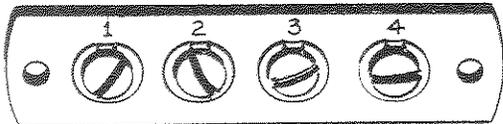
TS4



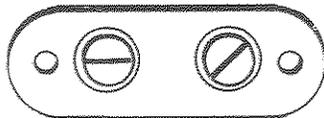
TS3



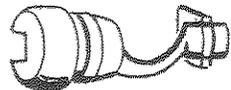
TS2



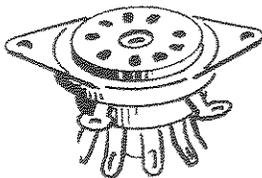
TA2



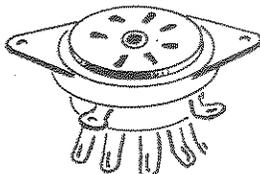
TAI, TA3



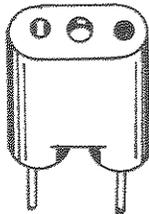
LINE CORD LOCK



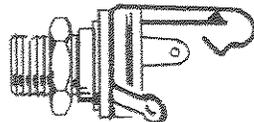
XV1, XV2  
XV4, XV5



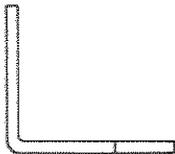
XV3



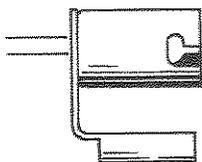
XY1



J1



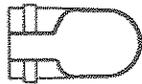
PILOT LAMP  
MTG. BRACKET



PILOT LAMP  
SOCKET



LMI, LM2



PILOT LAMP  
SHIELD

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