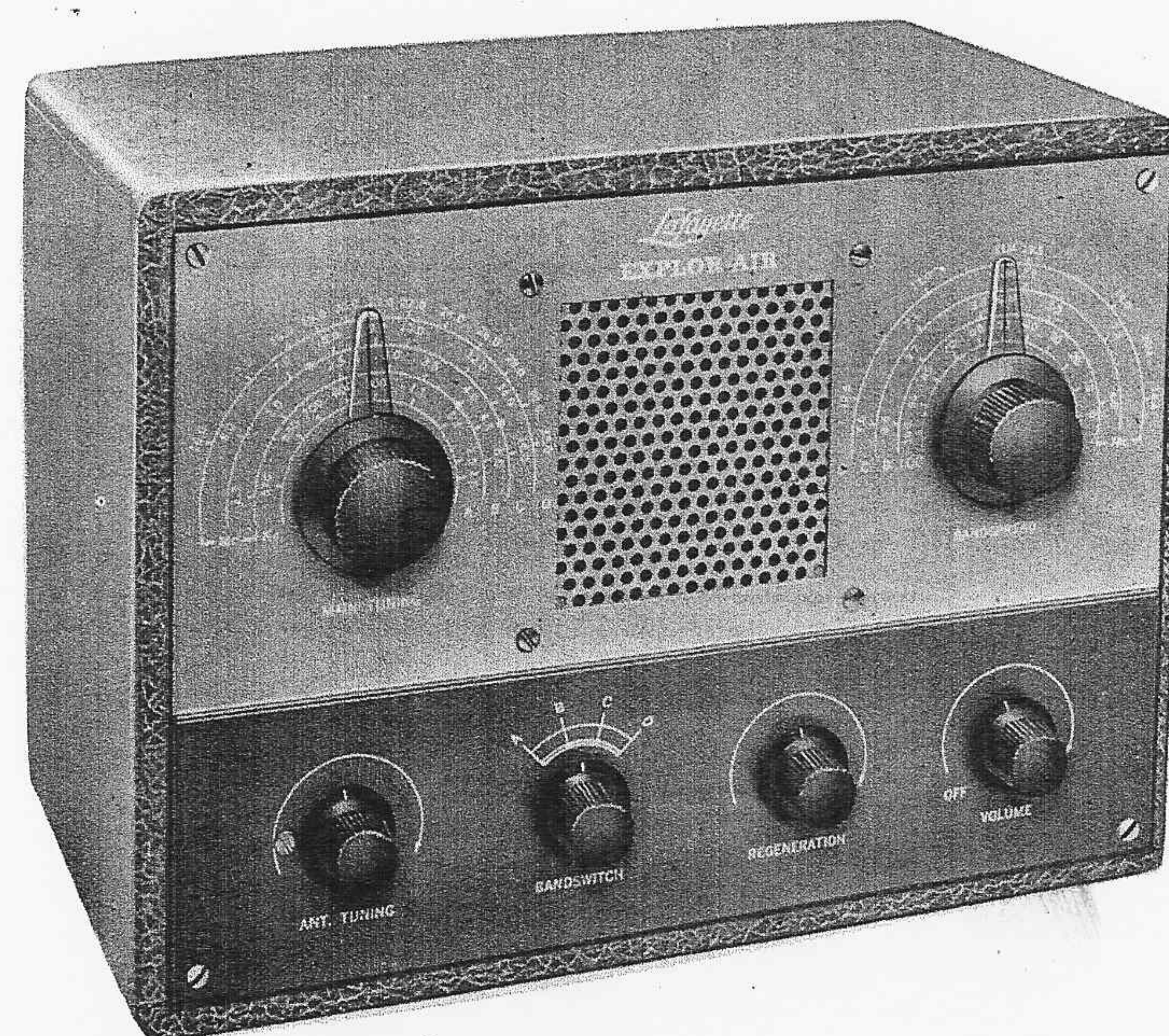




LAFAYETTE®



"EXPLOR-AIR"

4-BAND

RECEIVER KIT

Model KT-135

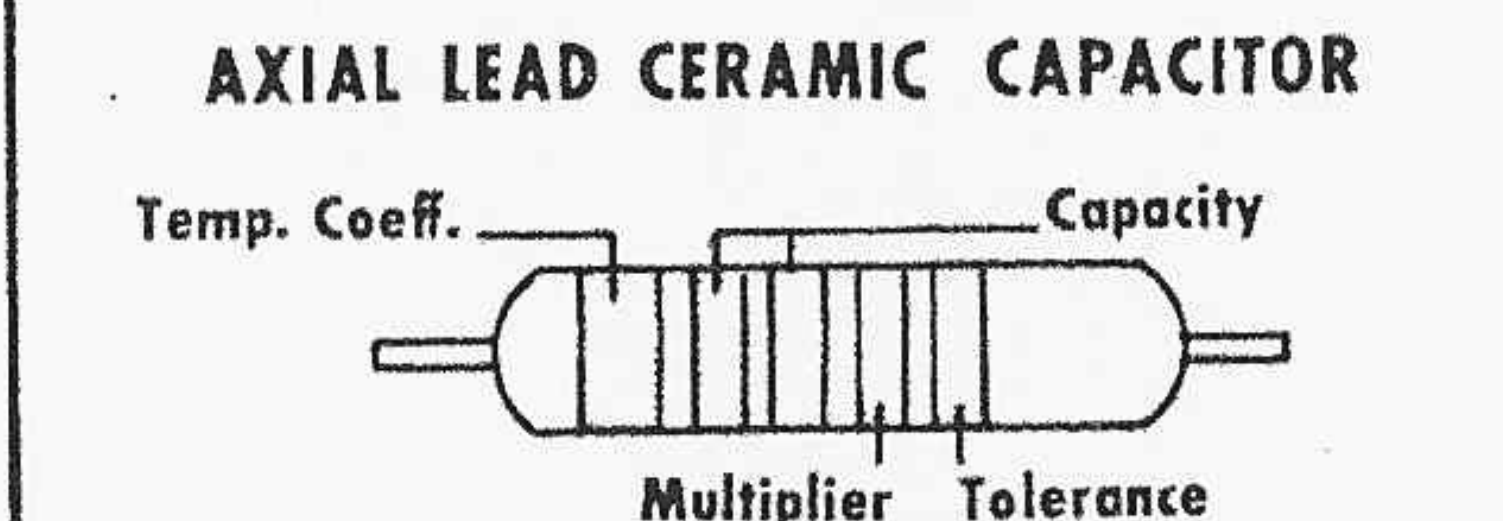
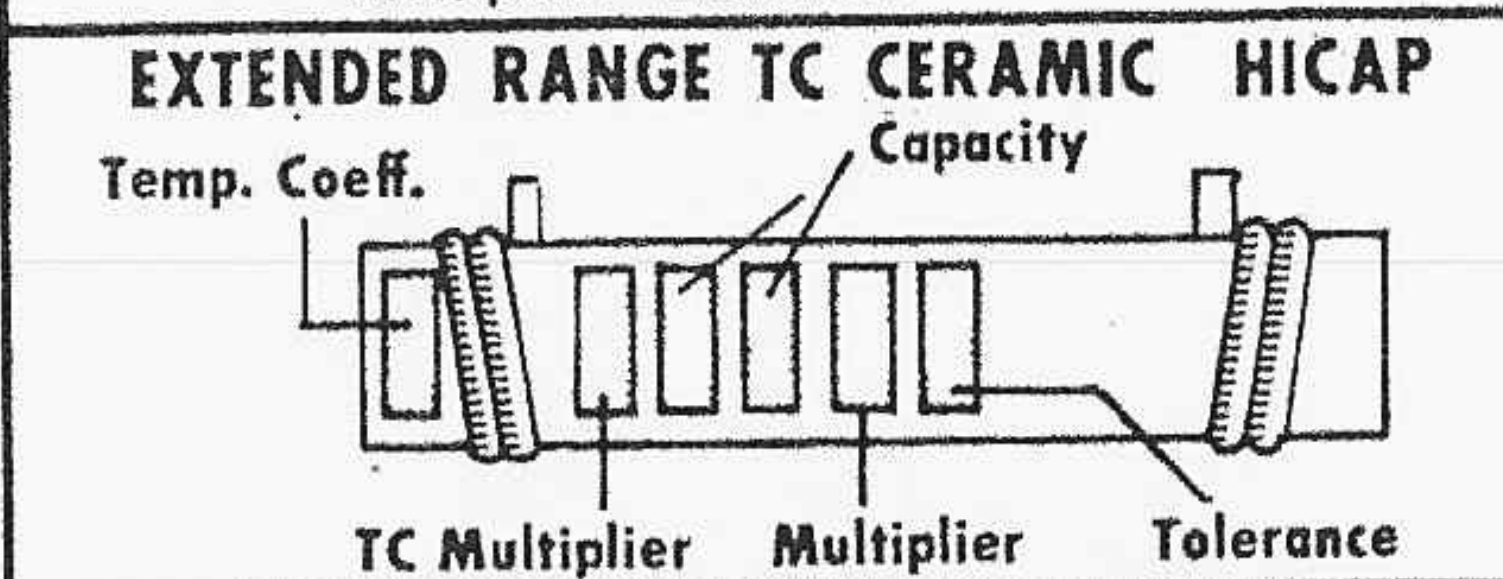
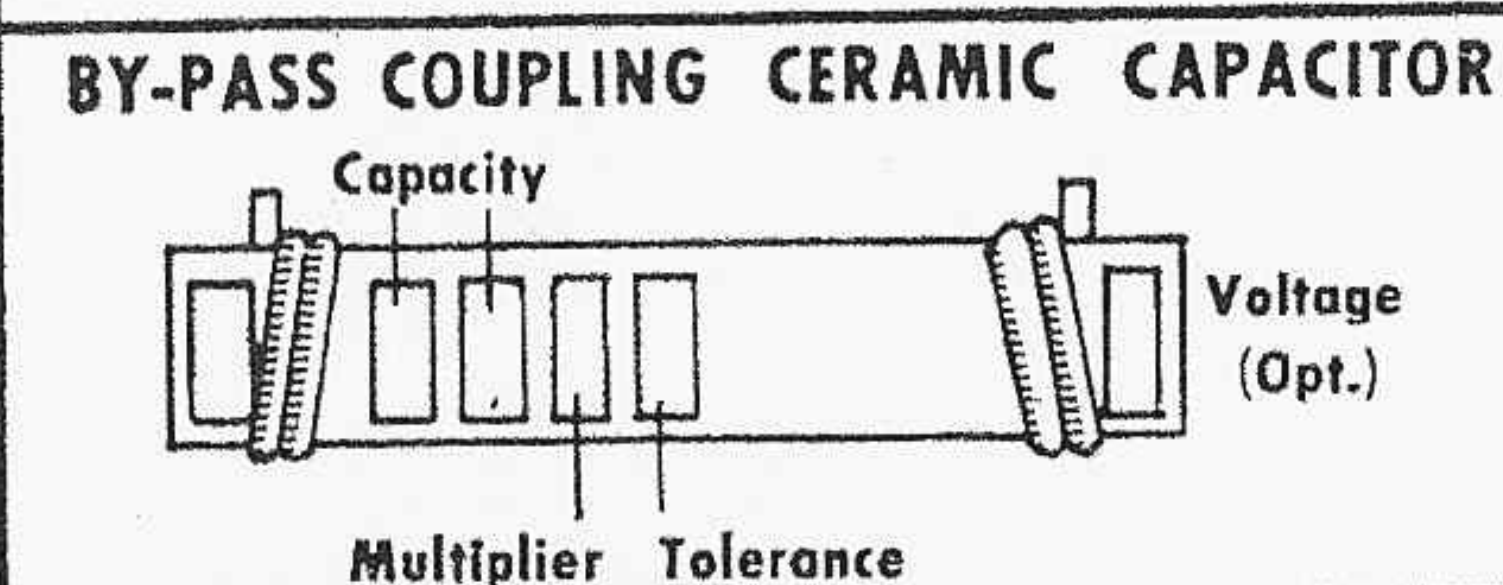
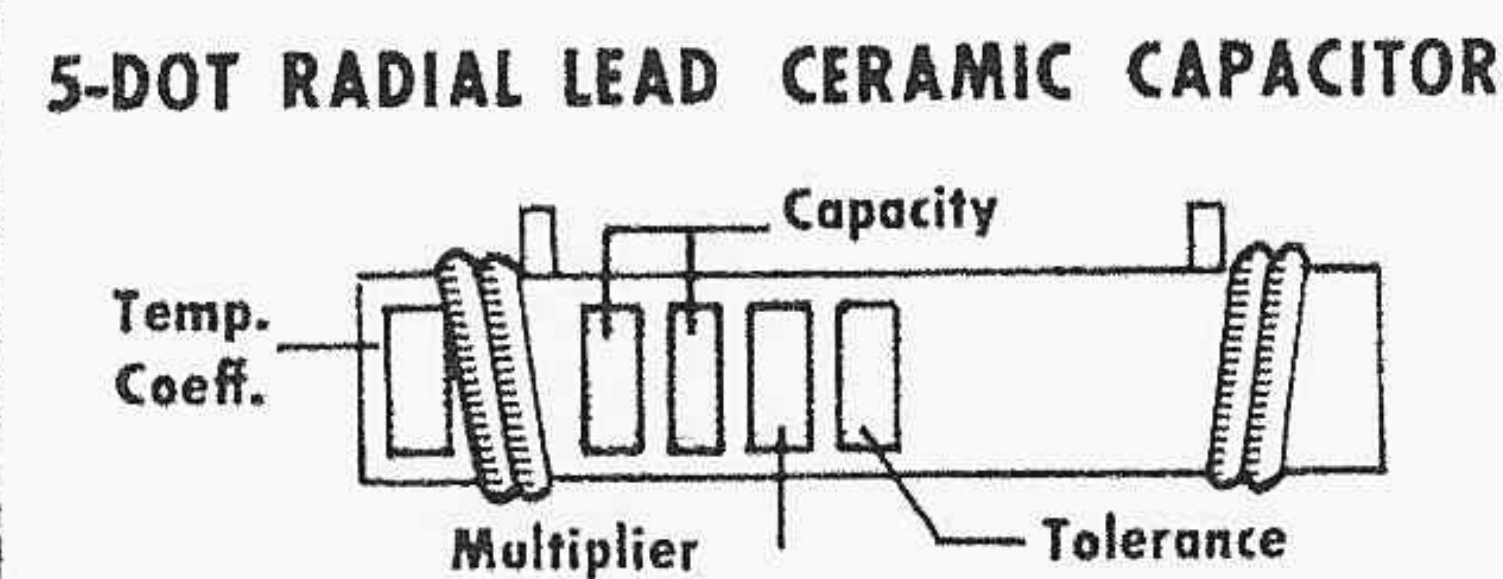
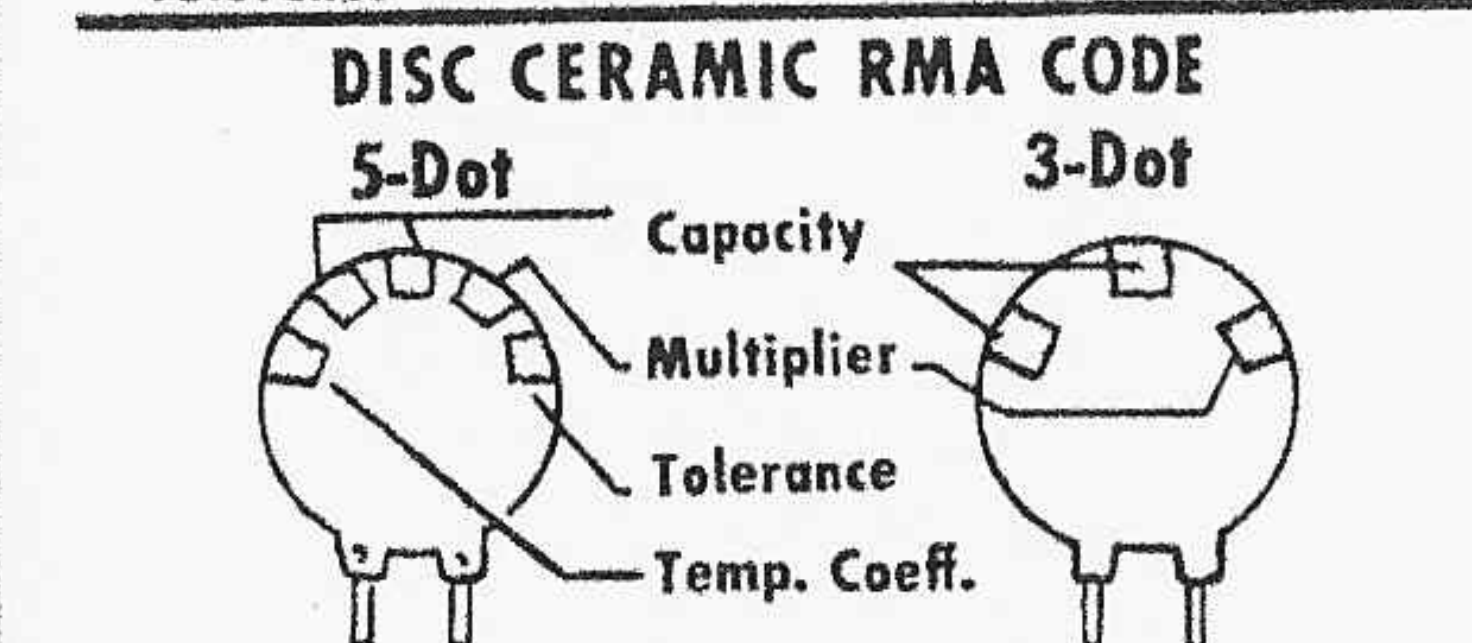
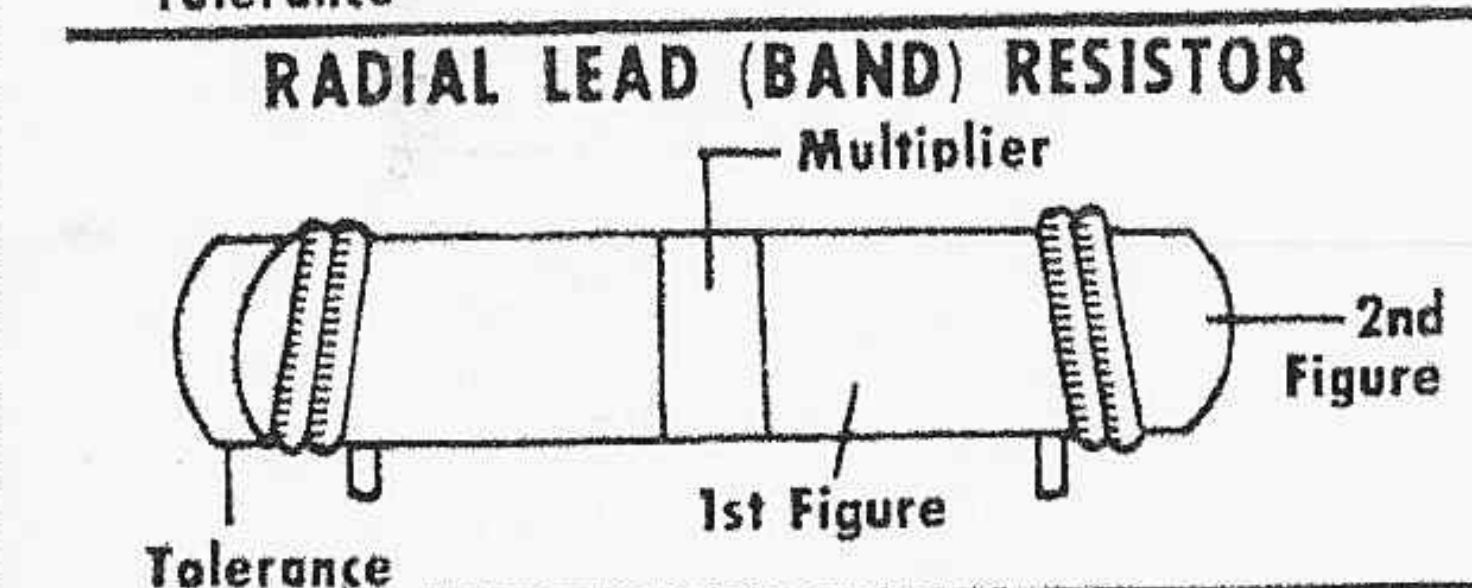
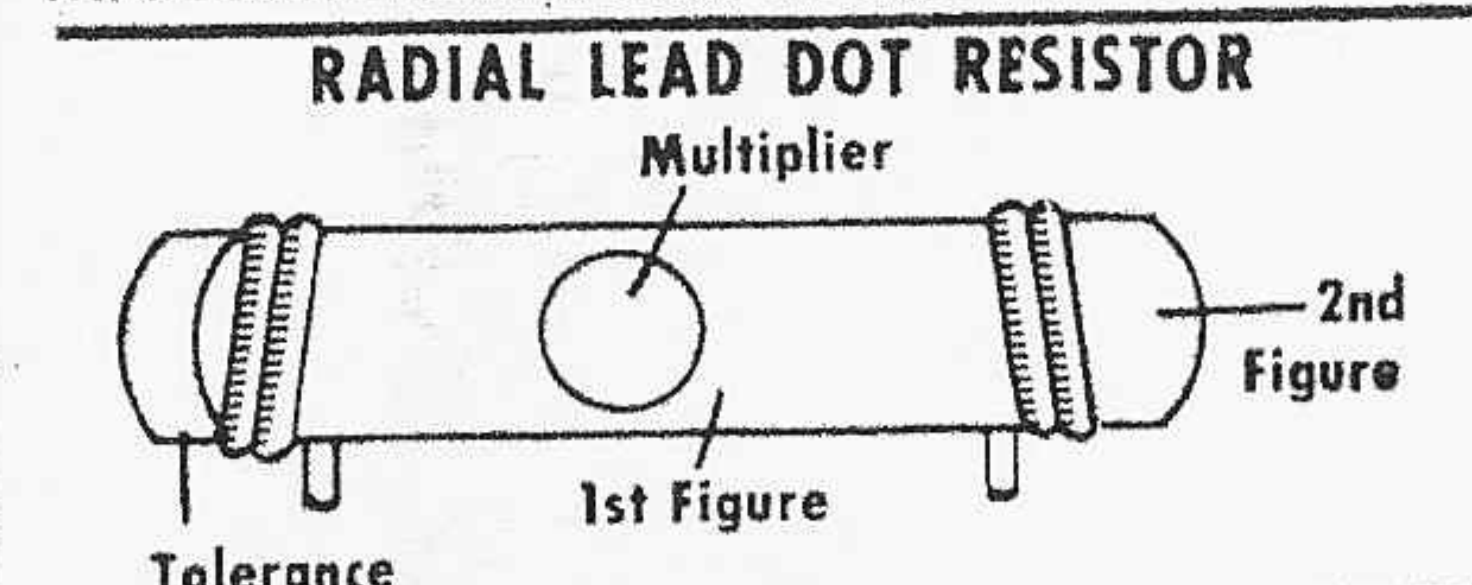
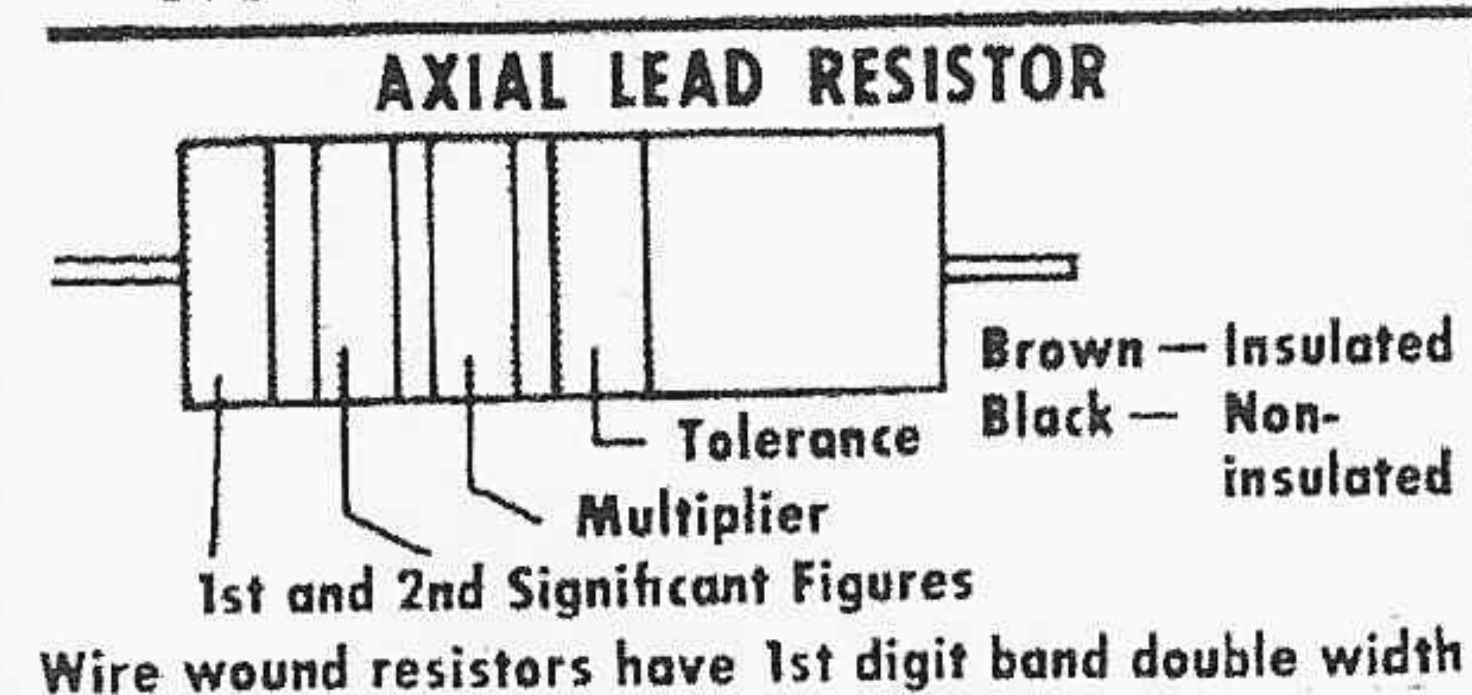
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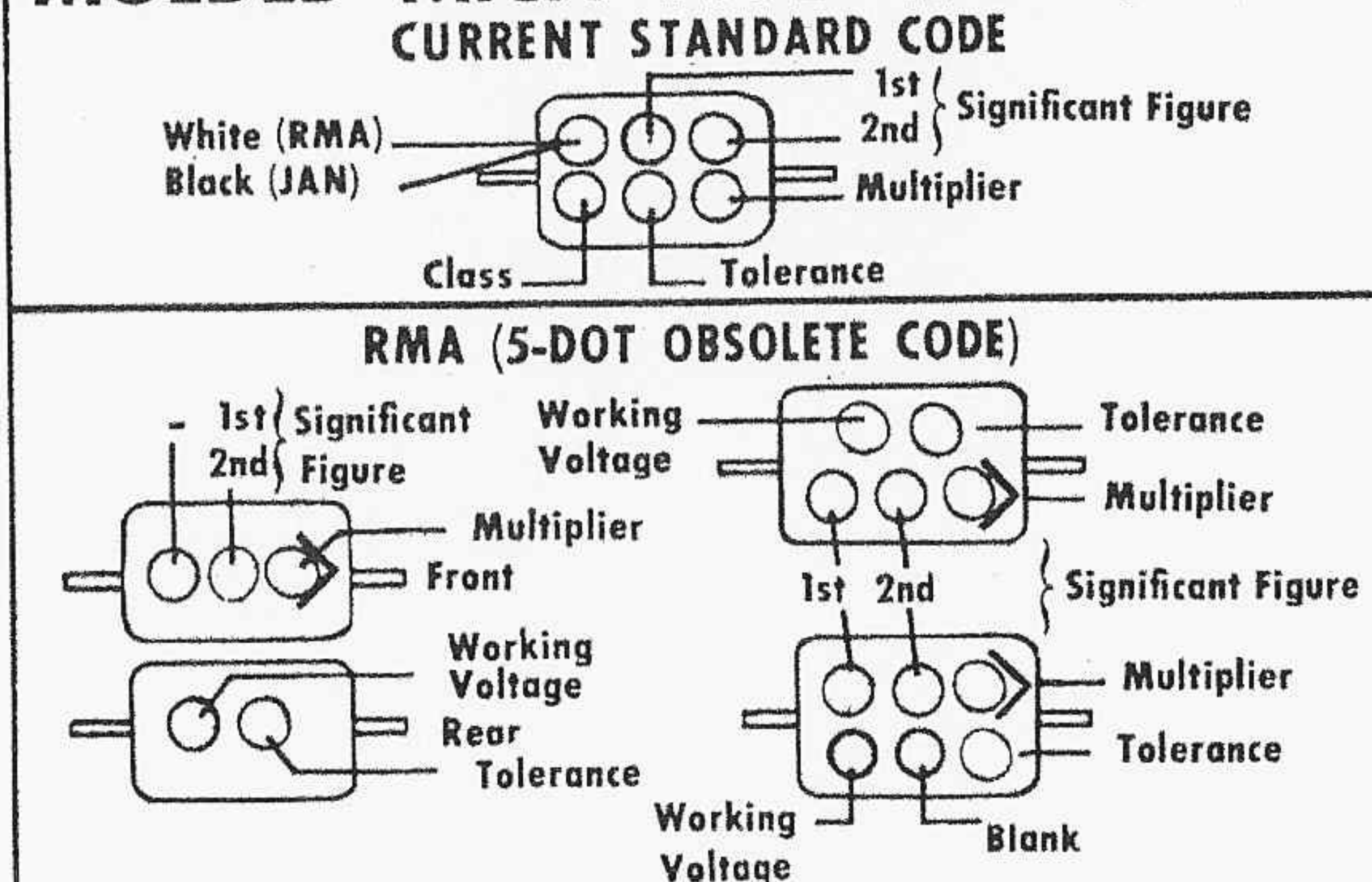
KIT ASSEMBLY MANUAL

STANDARD COLOR CODE — RESISTORS AND CAPACITORS

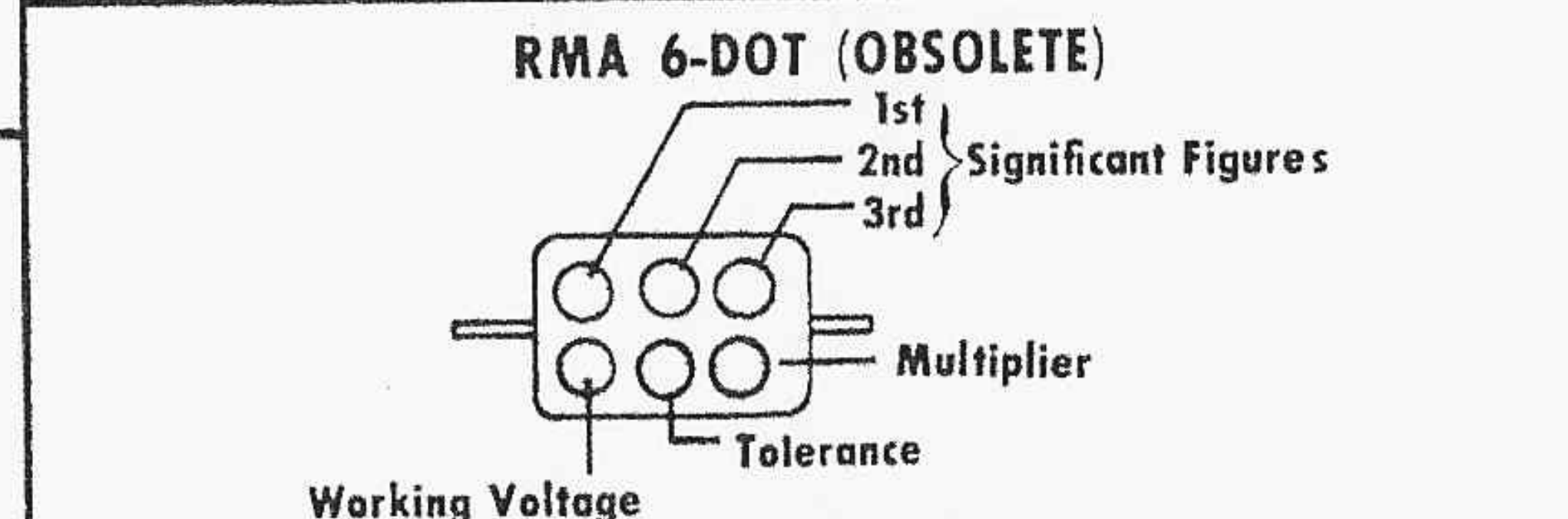
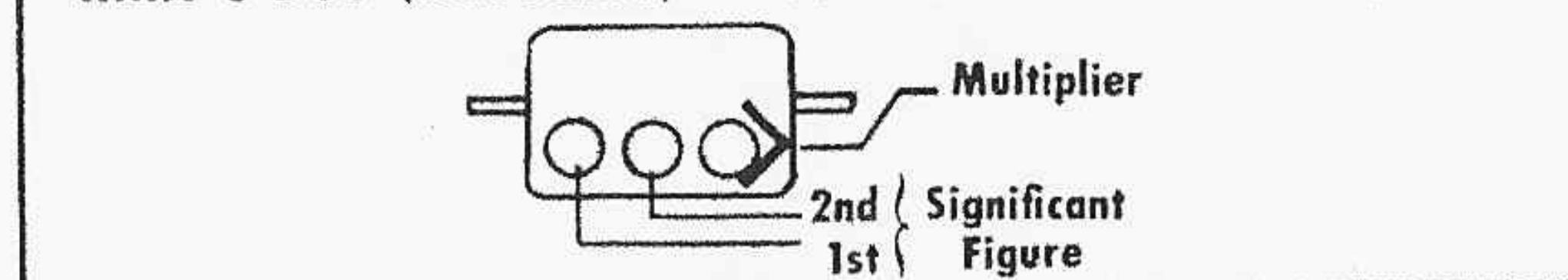
INSULATED — UNINSULATED —	FIRST RING BODY COLOR	SECOND RING END COLOR	THIRD RING DOT COLOR	FOURTH RING END COLOR
Color	First Figure	Second Figure	Multiplier	Tolerance
BLACK	0	0	1	
BROWN	1	1	10	
RED	2	2	100	
ORANGE	3	3	1,000	
YELLOW	4	4	10,000	
GREEN	5	5	100,000	
BLUE	6	6	1,000,000	
VIOLET	7	7	10,000,000	
GRAY	8	8	100,000,000	
WHITE	9	9	1,000,000,000	
GOLD				5%
SILVER				10%
NO COLOR				20%



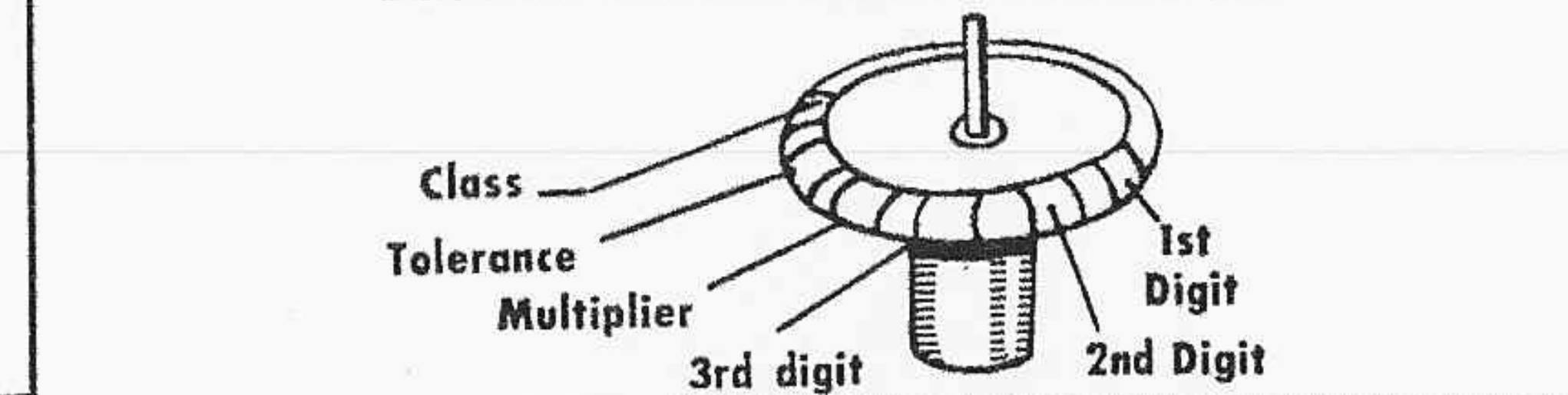
MOLDED MICA TYPE CAPACITORS



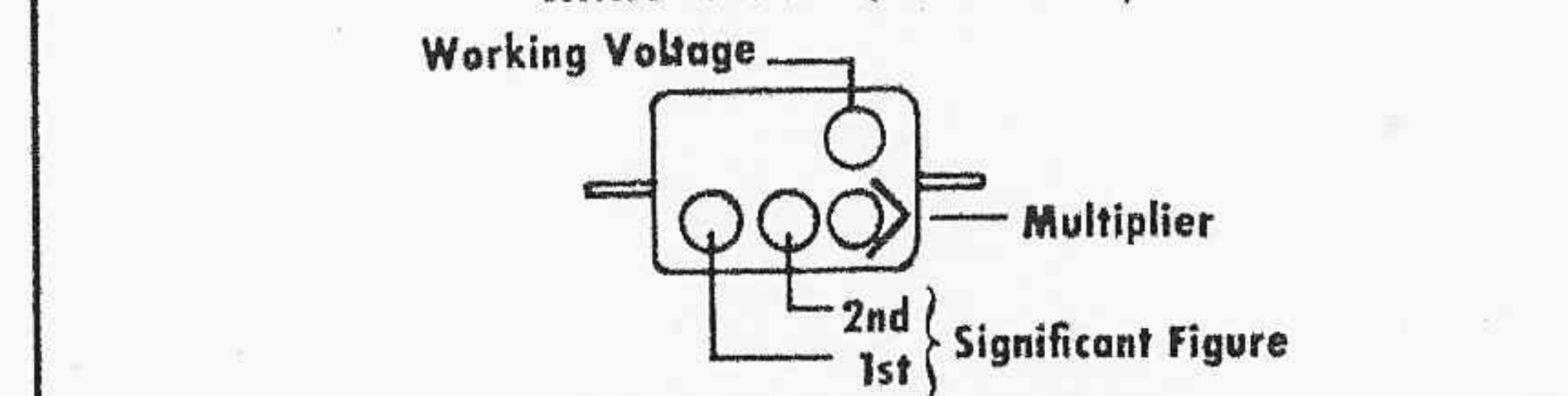
RMA 3-DOT (OBSOLETE) RATED 500 W.V.D.C. ± 20% TOL.



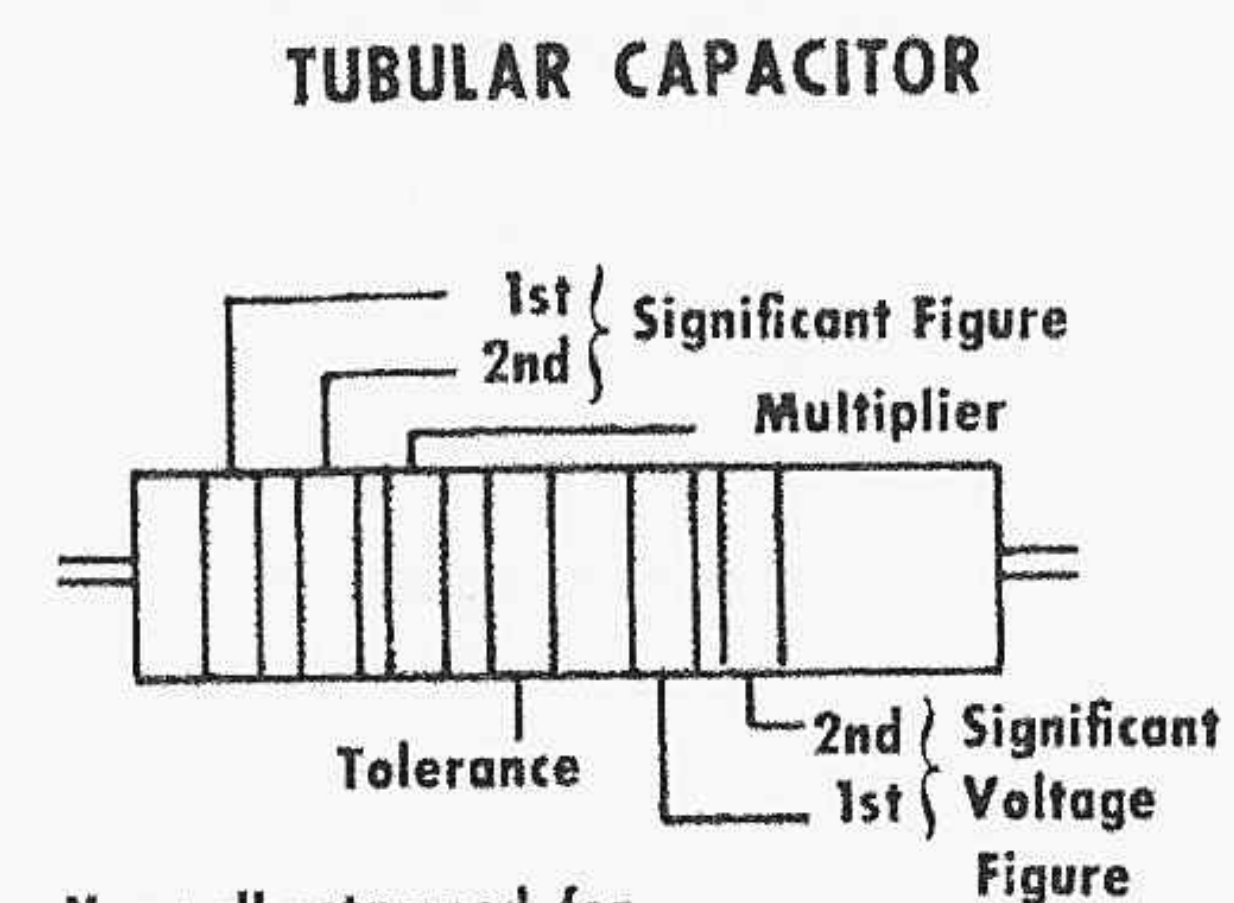
BUTTON SILVER MICA CAPACITOR



RMA 4-DOT (OBSOLETE)

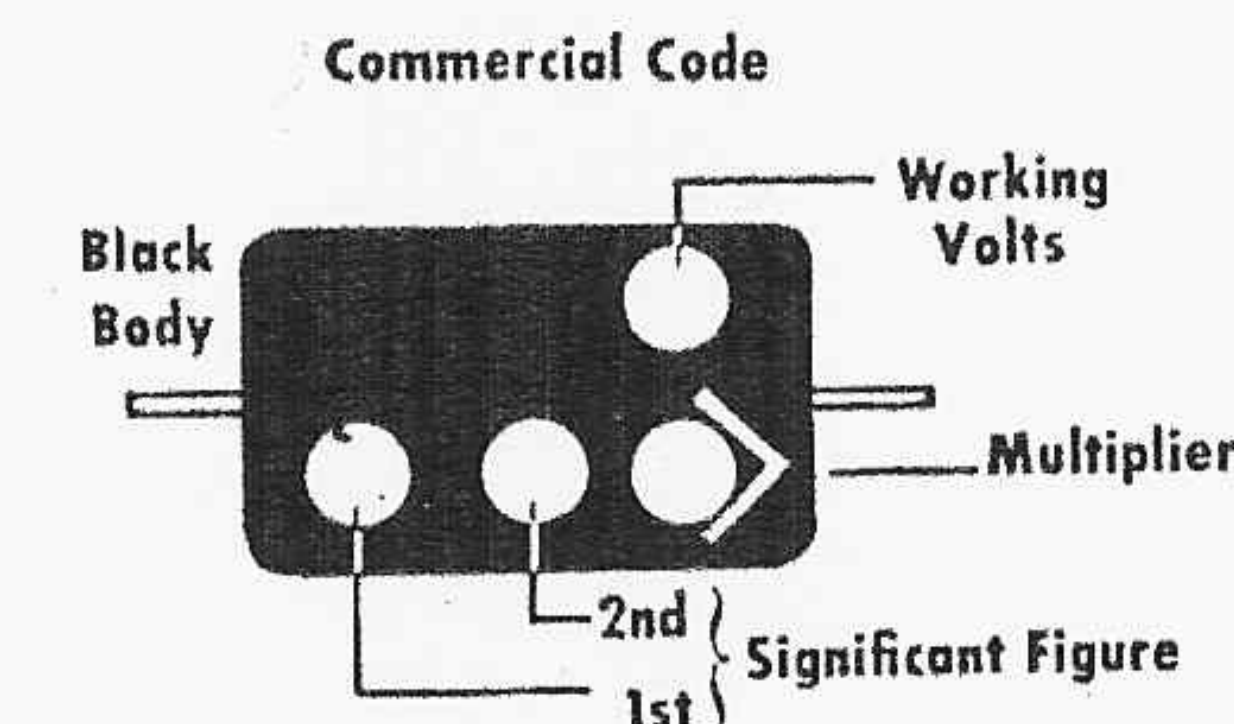


MOLDED PAPER TYPE CAPACITORS

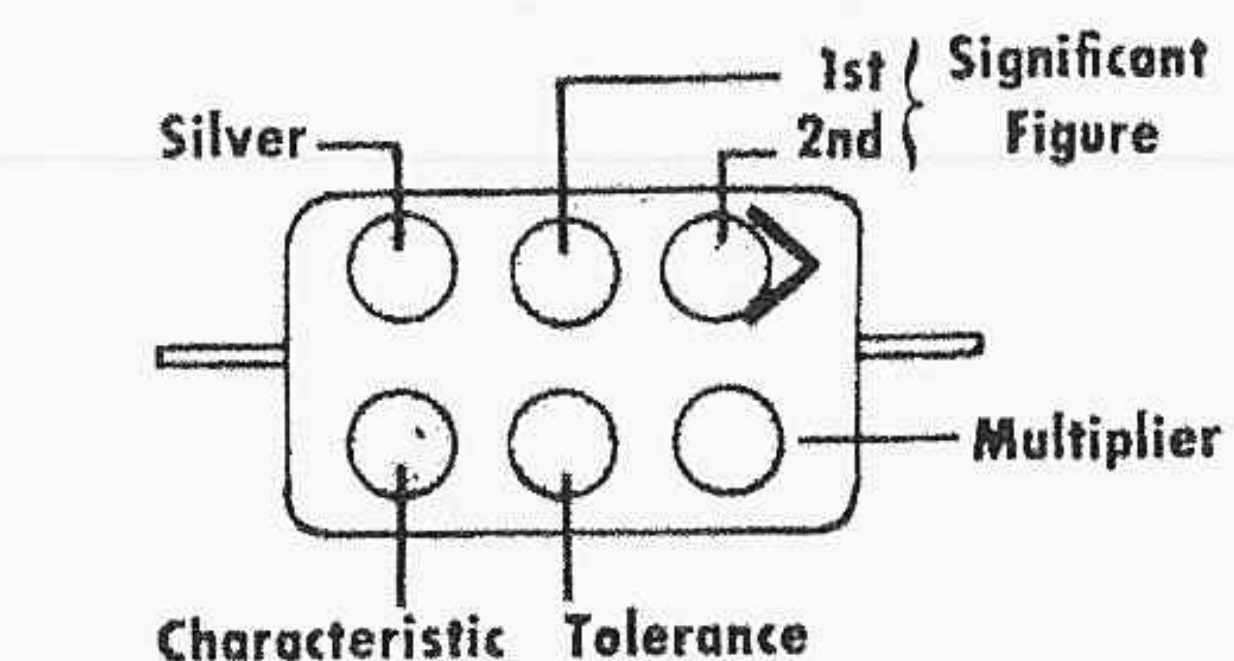


Normally stamped for
A 2 digit voltage rating indicates more than 900 V. Add 2 zeros to end of 2 digit number.

MOLDED FLAT CAPACITOR



JAN. CODE CAPACITOR



Tolerance: Color Code indicates %.
For example, green = 5% (10% is Silver).
Voltage Rating: Color value x 100 in Volts.

ASSEMBLY MANUAL FOR LAFAYETTE KT-135 4-BAND RECEIVER

UNPACKING INSTRUCTIONS

Unpack the kit carefully, and check each part against the parts list before starting construction. A color code chart is provided to help you identify questionable parts and determine component values. Some components may differ slightly from the specified values given in the parts list. Such minor differences (where the supplied value falls within the listed tolerance for the component, such as a 510K resistor for a 470K 10% resistor) do not indicate an error. These substitutions are checked carefully before being made, and are only made in circuits allowing such substitution. Any large variation from the specified value or shortage of parts should be reported to us immediately. Include with your letter the inspection slip from the package.

As you unpack the kit and check the various parts against the parts list, you may find it to your advantage

to group certain parts and place them in suitable containers. In any event, the parts should be placed where they are readily available and will not become lost or damaged.

DAMAGE IN SHIPMENT

If your kit was damaged in shipment, please notify us immediately, describing the damage, and get in touch with the carrier so that you can make a claim. We will cooperate fully in such cases, but please note that only you can recover from the carrier.

TOOLS YOU WILL NEED

Just a few standard tools are all you will need to successfully assemble this kit. You should use a small iron (about 25 to 75 watts) for soldering. A pair of long-nose pliers; a pair of diagonal or side-cutting pliers; a small screwdriver and a small adjustable wrench complete your tool requirements.

PARTS LIST KT-135

RESISTORS

PART NO.	DESIGNATION	DESCRIPTION	QUANTITY
13-1	R3, R9	100K 1/2 w. 10 % resistor (brown-black-yellow-silver)	2
13-3	R2	2.2 Meg. 1/2 w. 10 % resistor (red-red-green-silver)	1
13-4	R8	47K 1/2 w. 10 % resistor (yellow-violet-orange-silver)	1
13-5	R1	1.0 Meg. 1/2 w. 10 % resistor (brown-black-green-silver)	1
13-18	R7	4700 ohm 1/2 w. 10 % resistor (yellow-violet-red-silver)	1
13-33	R10	27K 1/2 w. 10 % resistor (red-violet-orange-silver)	1
13-34	R5	180 ohm 1/2 w. 10 % resistor (brown-gray-brown-silver)	1
13-82	R6	270 ohm 1 w. 10 % resistor (red-violet-brown-silver)	1
13-83	R4	200 ohm 10 w. resistor	1

CAPACITORS

12-3	C5	100 µf ceramic disc	1
12-8	C7, C10, C13, C14, C16	0.01 µf ceramic disc	5
12-22	C6	470 µf ceramic disc	1
12-31	C9	270 µf ceramic disc	1
12-36	C15	0.005 µf ceramic disc	1
12-60	C8	390 µf ceramic disc	1
12-61	C12	750 µf ceramic disc	1
12-41	C11	10 µf, 25 volt tubular electrolytic	1
12-59	C4	30-30-30 µf, 150 volt tubular electrolytic	1
12-56	C1	3.4-23 µf variable air trimmer	1
	(BANDSPREAD)		
12-57	C2	5-80 µf variable mica trimmer	1
	(ANTENNA TUNING)		
12-58	C3	2 gang variable capacitor	1
	(MAIN TUNING)		

SWITCH & CONTROLS

PART NO.	DESIGNATION	DESCRIPTION	QUANTITY
11-26	Control H	500K audio taper control with SPST switch	1
11-27	Control J	500 ohm linear taper control	1
14-19	Switch K	3 pole 4 position rotary switch	1

TRANSFORMER AND COILS

PART NO.	DESIGNATION	DESCRIPTION	QUANTITY
15-13	T1	Output transformer	1
23-9	L-1	500 µh RF choke	1
23-10	Band A coil	550 KC to 1600 KC coil	1
23-11	Band B coil	1650 KC to 5.5 MC coil	1
23-12	Band C coil	5 MC to 17 MC coil	1
23-13	Band D coil	17 MC to 30 MC coil	1

TUBES

26-20	12AT7	1
26-23	35W4	1
26-26	50C5	1

SOCKETS, JACKS, AND TERMINAL POSTS

PART NO.	DESIGNATION	DESCRIPTION	QUANTITY
19-17	Sockets B & C	7 pin miniature socket	2
19-24	Socket A	9 pin miniature socket	1
19-25	Jack D	closed circuit telephone jack	1
20-88	Antenna post	antenna binding post	1
20-10	Term. post BB	2 lug terminal post	1
20-78	Term. post CC	3 lug terminal post	1
20-8	Term. post FF2	1 lug terminal post	1
20-89	Term. post AA	6 lug terminal post	1

CHASSIS AND FRONT PANEL

10-45	Front panel	1
10-44	Chassis	1

HARDWARE AND MISCELLANEOUS PARTS

PART NO.	DESCRIPTION	QUANTITY
18-20	Knob with plastic pointer	2
18-21	Knob with white indicating line	4
20-84	4" PM loudspeaker	1
20-85	Extruded washer for 19-25 phone jack	1
20-86	Flat fiber washer for 19-25 phone jack	1
20-87	Flat fiber washer for 20-88 antenna post	1
20-90	1/4" to 1/4" insulated extender shaft	1
20-4	6' line cord with plug	1
20-93	Ground lug for #10 screw	1
20-91	1 3/8" x 1/4" brass spacers for #6 screw	3
20-24	Ground lug for #6 screw	1
20-3	Wire strain relief	1
22-11	6/32 x 1/4" machine screws	4
22-10	4/40 x 1/4" machine screws	14
22-16	#4 internal tooth lockwashers	22
22-23	#4 flat washers	4
22-18	1/4" x 1/4" brass spacers for #6 screw	2
22-57	#4 x 1/2" oval head wood screws	4
22-14	4/40 hex nuts	22
22-47	6/32 x 1 7/16 machine screws	3
22-24	4/40 x 1/2" machine screws	6
22-58	Cup washers for #4 wood screws	4
22-20	3/8" x 32 hex nuts for controls and switch	3
22-21	3/8" internal tooth lockwashers for controls and switch	3
22-17	#6 internal tooth lockwashers	2
22-22	#10 internal tooth lockwashers	1

WIRE

PART NO.	DESCRIPTION	QUANTITY
21-11	Yellow wire	2'
21-12	Green wire	5'
21-14	Blue wire	3'
21-15	Black wire	7'
21-16	Red wire	3'
21-17	#20 solid bare tinned wire	6"
20-487	60/40 solder	15'

INTRODUCTION

The Lafayette Model KT-135 EXPLOR-AIR is a 4-Band regenerative receiver, having excellent sensitivity and selectivity for a unit of this type. The following Bands are covered:

550 KC to 1600	KC
1650 KC to	5.5 MC
5.5 MC to	16 MC
16 MC to	30 MC

These frequency bands provide coverage of standard AM broadcasts, foreign, amateur, maritime and mobile stations, and the National Bureau of Standards

station, WWV, which transmits standard radio and audio frequencies and time signals.

THE EXPLOR-AIR employs a 12AT7 dual triode as a regenerative detector and first audio amplifier, a 50C5 audio output stage, and a 35W4 rectifier. A 4" loudspeaker is used for normal listening, and a jack is provided for operation with headphones if desired.

The KT-135 operates on 105 to 125 volts AC or DC, at a power consumption of 25 watts.

STEP-BY-STEP INSTRUCTIONS

The instructions which follow have been carefully planned and arranged in the most logical and practical sequence possible. Skilled engineers and technical writers have prepared these instructions while actually assembling samples of this kit. We are certain that we have provided you with the best and fastest method of assembling your "EXPLOR-AIR" receiver. Each instructional step should be read and thoroughly understood before it is performed. In this way, errors will be avoided. Check off each step in the check space () provided. In this way you will avoid omitting any steps. You might also use a colored pencil to cross out each wire and component

on the wiring pictorials after installation. Assembly and wiring pictorials have been provided to assist you in following the step-by-step instructions. All components have been assigned letter and/or number designations. Those components which also appear on the schematic diagram have been assigned the same designations on the wiring pictorials. Other components, such as terminal strips, solder lugs, etc. have been assigned letter and/or number designations following, in general, the order in which they are installed.

MECHANICAL ASSEMBLY

The first step in the assembly of the KT-135 Receiver is to mount all the sockets, terminal posts, etc. on the chassis with their associated hardware. To assist you in assembling these parts, four mechanical assembly views are shown which supplement the step-by-step instructions. **Pictorial 1** is an exploded view of the main chassis and the parts to be mounted. In order to clarify the drawing not all the mounting hardware is shown. The amount of hardware used to assemble each part is specified in the step-by-step instructions.

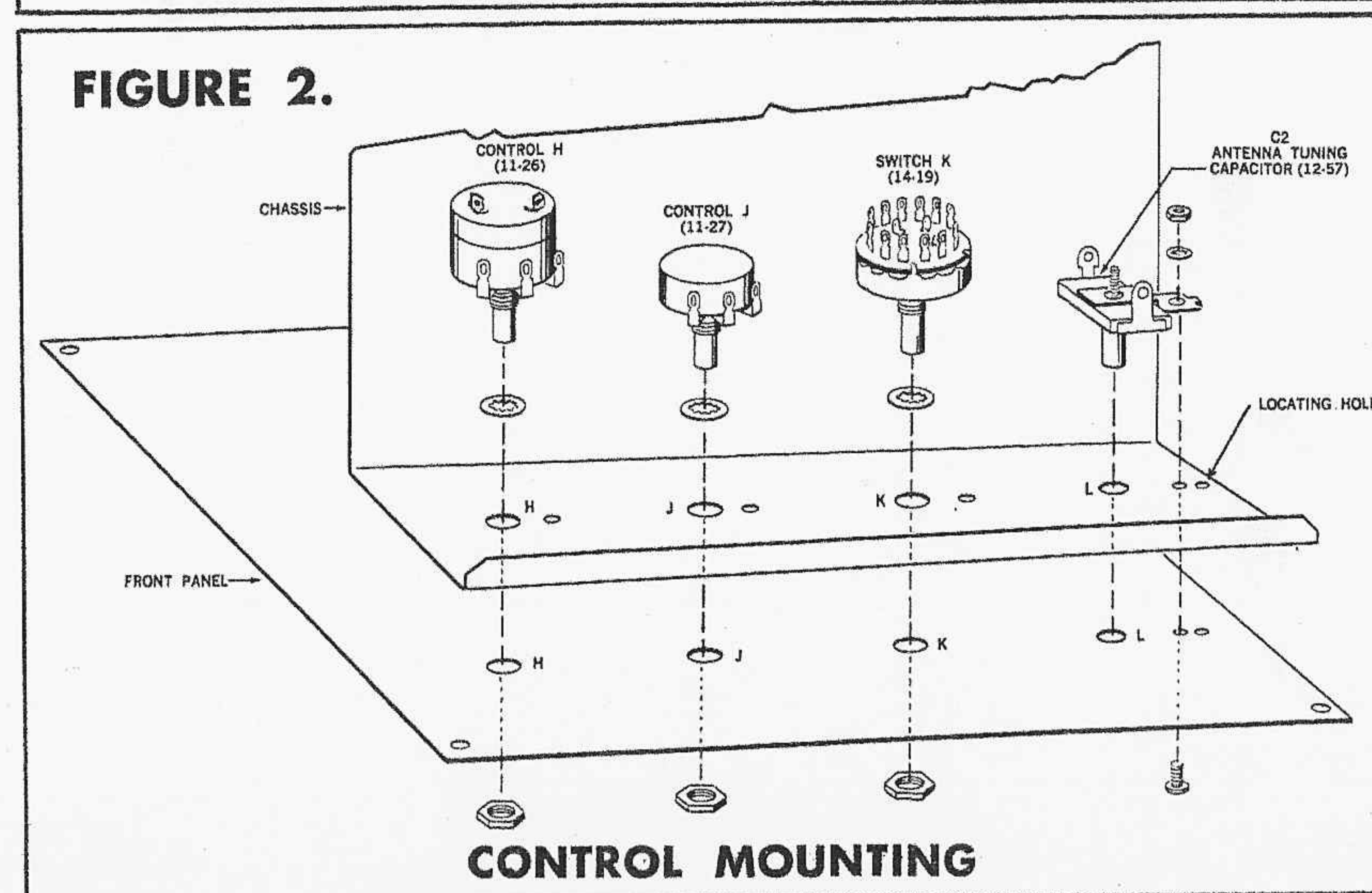
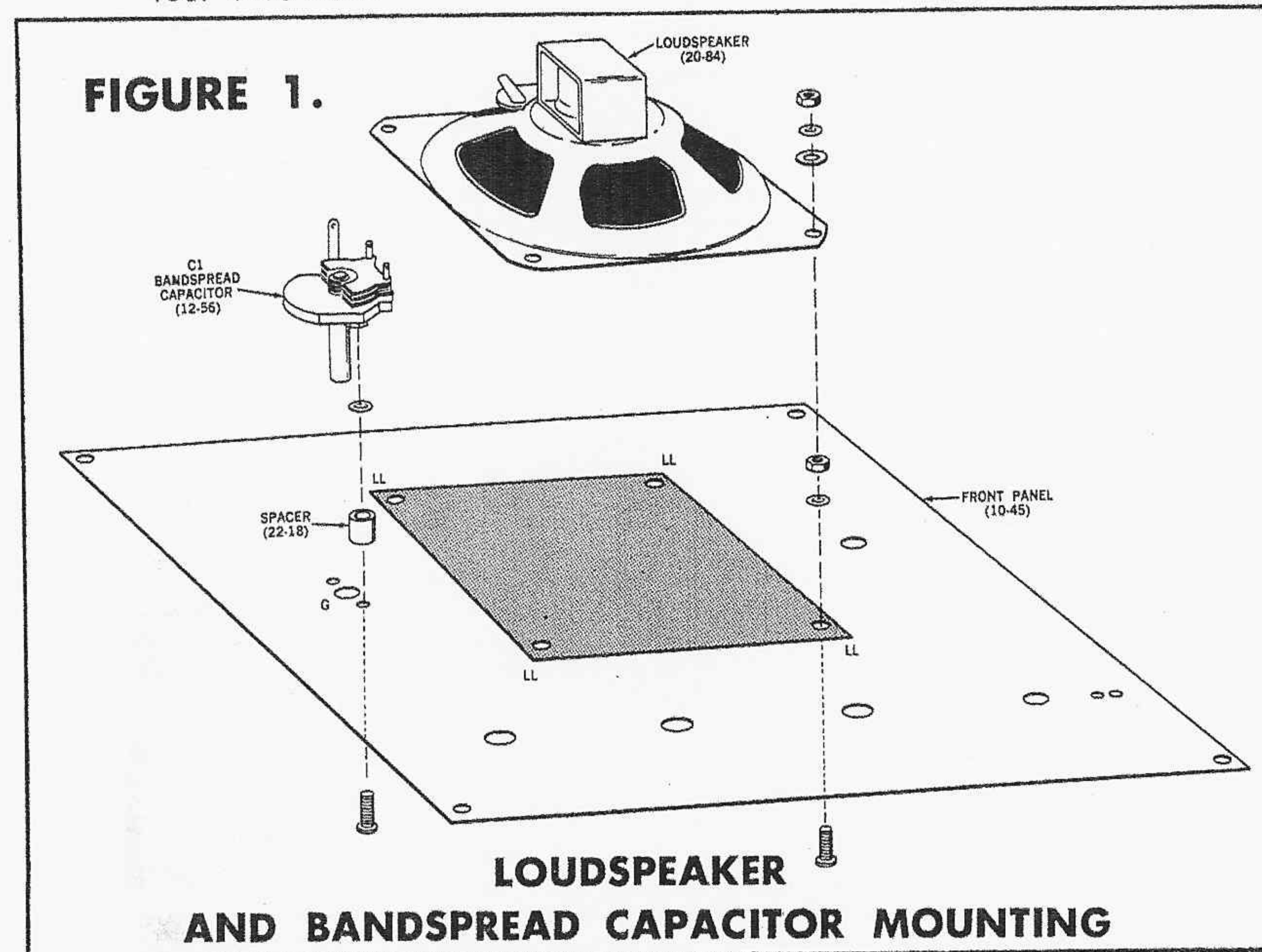
NOTE: 4-40 Hardware (2) means to use two 4-40 x 1/4" screws, two #4 lockwashers, and two 4-40 x 1/4" hex nuts to mount the part.

Observing Pictorial 1, mount the following components as shown:

1. () Using 4-40 hardware (2), mount the 9 pin miniature tube socket A (part #19-24) in the chassis hole A, observing the position of the wide space between the pins on the socket.
2. () Using 4-40 hardware (2), similarly mount the 7 pin miniature tube socket B (part #19-17) in hole B.

3. () Using 4-40 hardware (2), similarly mount the 7 pin miniature tube socket C (part #19-17) in hole C.
4. () Using 4-40 hardware (2), mount the 6-lug terminal post AA (part #20-89) at AA.
5. () Using 4-40 hardware (1), mount the 2-lug terminal post BB (part #20-10) at BB.
6. () Mount the headphone jack D (part #19-25) in hole D. Jack mounts with 3/8" hex nut, metal washer, fiber washer (part #20-86) and fiber shoulder washer (part #20-85) as shown. Orient jack as shown in Pictorial 1.
7. () Mount the 3 lug terminal post CC (part #20-78) at CC. Use 4-40 hardware (1).
8. () Mount the antenna post E (part #20-88) in hole E. The antenna post mounts with two hex nuts, fiber washer (part #20-87), soldering lug (part #20-93), and a #10 lockwasher, as shown in Pictorial 1.
9. () Using a 6-32 x 1/4" screw and a #6 lockwasher, mount the "Band A" coil (part #23-10) at DD.

10. () Now observe Figure 1, which shows the mounting of the loudspeaker and the bandspread capacitor to the front panel. First attach (4) 4-40 x $\frac{1}{2}$ " screws to panel at four holes LL. Fasten with four #4 lockwashers and four 4-40 nuts. Then mount the loudspeaker (part #20-84) to the four screws, and attach with four flat washers, four #4 lockwashers, and four 4-40 nuts.

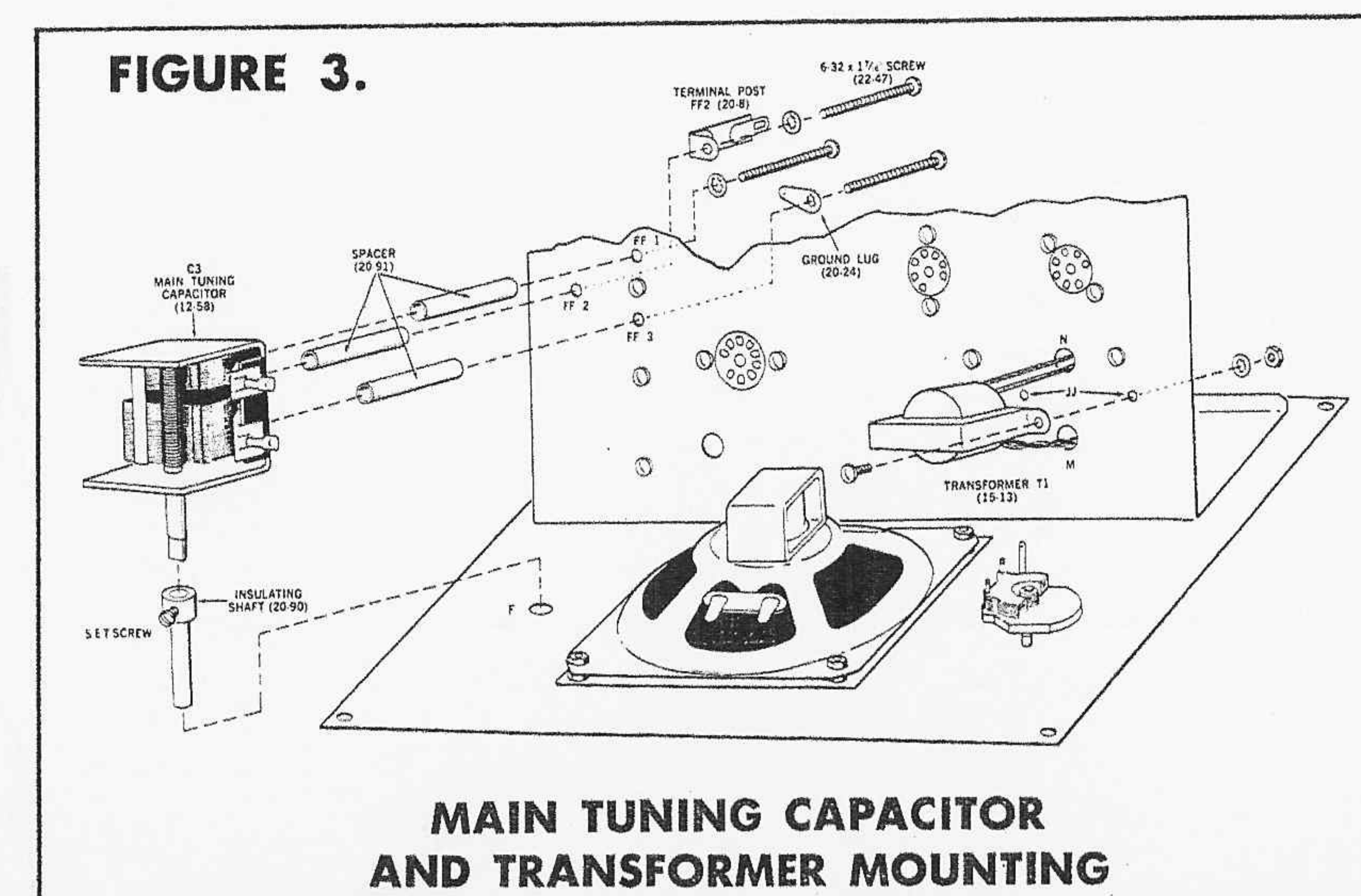


11. () Mount the bandspread capacitor C1 (part #12-56) at G. Use two 4-40 x $\frac{1}{2}$ " screws, two $\frac{1}{4}$ " spacers, two #4 lockwashers, and two 4-40 nuts. Position C1 as shown in Figure 1.

12. () Attach the front panel to the chassis as shown in Figure 2 by mounting the control H (part #11-26) in the holes H on the chassis and the front panel. Mount using a $\frac{3}{8}$ " lockwasher and $\frac{3}{8}$ " hex nut as shown in Figure 2. Be sure the holes J, K, and L in the front plate line up with holes J, K, and L in the chassis before tightening the nut on the control H.

Note: Make sure the locating tab (on the face of the control) enters the small hole provided in the chassis.

13. () Similarly, mount the control J (part #11-27) in the hole J.
14. () Similarly, mount the switch K (part #14-19) in the hole K.
15. () Using 4-40 hardware (1), mount the antenna tuning capacitor C2 (part #12-57) in the hole L. Position as shown in Figure 2.
16. () Now observe Pictorial 1. Using a 6-32 x $\frac{1}{4}$ " screw, mount "Band B" coil (part #23-11) at EE.
17. () Using a 6-32 x $\frac{1}{4}$ " screw, mount the "Band D" coil (part #23-13 at GG.
18. () Using a 6-32 x $\frac{1}{4}$ " screw, mount the "Band C" coil (part #23-12) at HH.
19. () Now observe Figure 3. Loosen the set screw of the insulating shaft (part #20-90) and slide it on the shaft of the main tuning capacitor C3 (part #12-58). Push the insulating shaft all the way onto C3 shaft and tighten the set screw against the flat of the C3 shaft.



20. () Mount the main tuning capacitor C3 at the three holes FF, as shown in Figure 3. Use three 6-32 x 1 7/16 screws, three 1 3/8" spacers (part #20-91), two #6 lockwashers, 1 ground lug (part #20-24), and 1 terminal post part #20-8). Mount the terminal post FF2 under the screw at hole FF2, and the ground lug under the screw at FF3 as shown.
 21. () Refer to Figure 3. Feed the red and blue leads of the output transformer, T1 (part #15-13), through hole N, and the yellow and black leads through hole M. Mount T1 at the two holes JJ using 4-40 hardware (2).
 22. () Mount the 30-30-30 μ f, 150 volt electrolytic capacitor C4 (part #12-59) at KK, as shown in Pictorial 1. Use 4-40 hardware (1).
- The mechanical assembly of the chassis is now completed.

READ CAREFULLY BEFORE PROCEEDING NOTES ON WIRING

Each EXPLOR-AIR kit is supplied with more than enough hookup wire for complete wiring. A length of insulated hook-up wire, unless otherwise specified, should have about 1/4" of insulation removed or "stripped" from each end. Excessive wire exposure increases the possibility of shorts to nearby wiring or terminals. Use a razor blade or sharp knife to cut off the insulation; during this operation, be sure not to cut into the wire itself. The length to which each hook-up wire is to be cut is specified in the step-by-step instructions, and allowance has been made for the removal of the insulation from each end. The hook-up wire supplied is solid wire, but some of the transformer leads are stranded; the latter should be tinned (coated with solder) before connecting to the specified point. To prepare these transformer leads, remove a 1/4" length of insulation from the end of the lead, twist all the strands together with your fingers, and tin the end. To connect a wire to a lug as specified in the step-by-step instructions, put about three-quarters of the bared end of the wire through the hole in the lug, and then, using the long-nose pliers, wrap the wire around the lug.

NOTES ON SOLDERING

The importance of good soldering technique in the construction of fine quality kits such as the KT-135 cannot be overemphasized. Good solder joints are essential if you are to realize the quality and stability of performance that has been engineered into your receiver. If you are inexperienced in soldering, we suggest that you spend a little time practicing with pieces of scrap wire and an old tube socket or terminal strip before attempting to do any soldering on your kit. The purpose of soldering an electrical connection is to provide a permanent electrical bond between the wires and terminals to be joined. This prevents the formation of corrosion which insulates or produces unwanted resistance between the joined parts. It is not at all difficult to make a good solder connection that will provide the required electrical bond if you will simply observe a few basic rules for good soldering.

1. Use only good quality, rosin-core solder made specifically for radio and television use; a good composition is 60 per cent tin and 40 per cent lead (usually indicated as 60/40). Acid core solder or paste flux must NOT, under any circumstances, be used, as the corrosive effects of these materials will cause much damage to the circuit components.

CAUTION

THE USE OF ACID CORE SOLDER OR PASTE FLUX ON THIS KIT OR ANY PORTION THEREOF AUTOMATICALLY VOIDS OUR WARRANTY COVERAGE.

2. Use a good soldering iron, 35-75 watts. The tip of the iron must be kept clean and well tinned, in accordance with the instructions of the soldering iron manufacturer, to obtain consistently good connections. The tip should present a bright appearance and be free of excess solder. An old rag or a pad of steel wool may be used to wipe the hot tip clean occasionally during use.
3. Be sure leads and terminals to be joined are clean and free of wax or corrosion before soldering. The solder will not adhere properly to the joint if the leads and terminals are dirty or corroded. This will usually result in a "cold" or high resistance connection.
4. A good mechanical connection should always be made before soldering, by crimping the leads on the terminals with your pliers. Do not rely on solder alone for physical strength. Stranded hook-up wire should always be tinned with solder before being connected.
5. To solder properly, apply the iron to the joint for a few seconds; then apply the solder and hold the iron on the connection until the solder flows freely. The solder must flow completely over the connection. Simply melting drops of solder onto the connection will not produce the desired results, but will result in a "cold" solder connection. This presents a dull and pitted or "grainy" appearance. A good connection will have a smooth and shiny appearance. Remember, the joint itself must be heated sufficiently to melt solder before the solder will flow smoothly and freely in and around the connection; however, you must be careful not to apply heat too long. Excessive heat from the iron may damage components and insulation on wires connected to the joint. When soldering a joint having a small component connected to it (a 1/2 watt resistor, for example) the component may be protected from excessive heat from the iron by grasping the lead between the joint and the component with long-nose pliers. The pliers will then conduct most of the heat away from the component, preventing overheating. Do not use too much solder when making a connection. Use only enough to completely cover all leads and to fill lug or terminal holes. Excessive use of solder may result in the formation of solder "bridges" or shorts between adjacent terminals or nearby wiring, particularly on tube sockets and switch terminals. Also, solder may flow into the switch contacts, destroying switch action.

STEP-BY-STEP INSTRUCTIONS

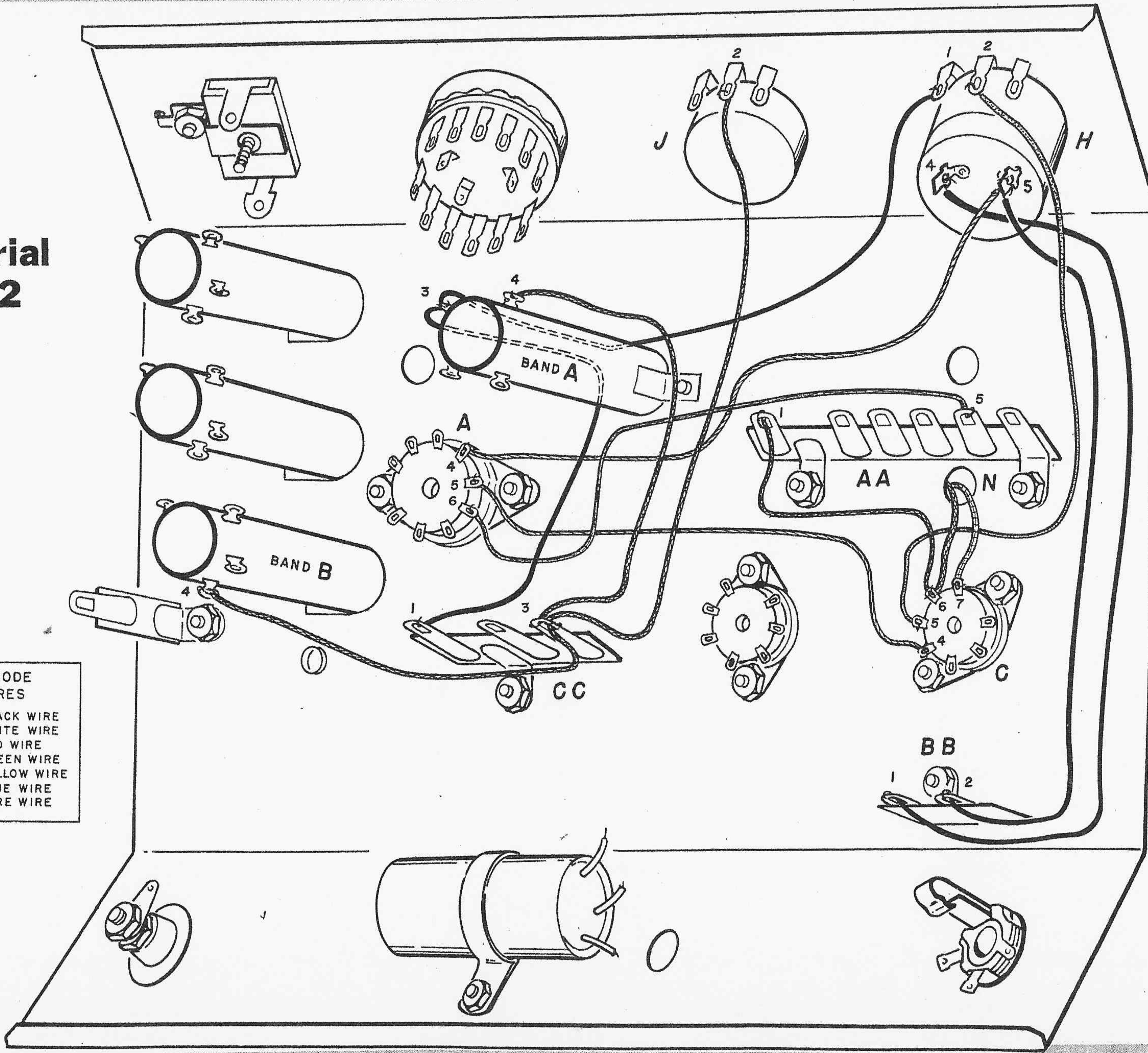
Each instructional step should be read and thoroughly understood before it is performed. In this way, errors will be avoided.

Check off each step in the check space () provided. In this way you will avoid omitting any steps. After each step cross out on the wiring pictorials the wire or component installed. Use a colored pencil.

The instructions tell you when to solder and when not to solder a connection. When you see "No Solder" (NS) after or during a step, simply wrap or "crimp" the lead to the terminal and proceed to the next step. When all leads have been connected to this terminal, a solder designation (S) will follow.

Pictorial No. 2

COLOR CODE FOR WIRES	
	BLACK WIRE
	WHITE WIRE
	RED WIRE
	GREEN WIRE
	YELLOW WIRE
	BLUE WIRE
	BARE WIRE



CAUTION

WIRING WITH ACID CORE SOLDER OR PASTE FLUX AUTOMATICALLY VOIDS THE WARRANTY. KITS AND/OR PARTS RETURNED FOR REPAIR, SERVICE, OR REPLACEMENT WILL BE RETURNED TO YOU AS RECEIVED, AT YOUR EXPENSE.

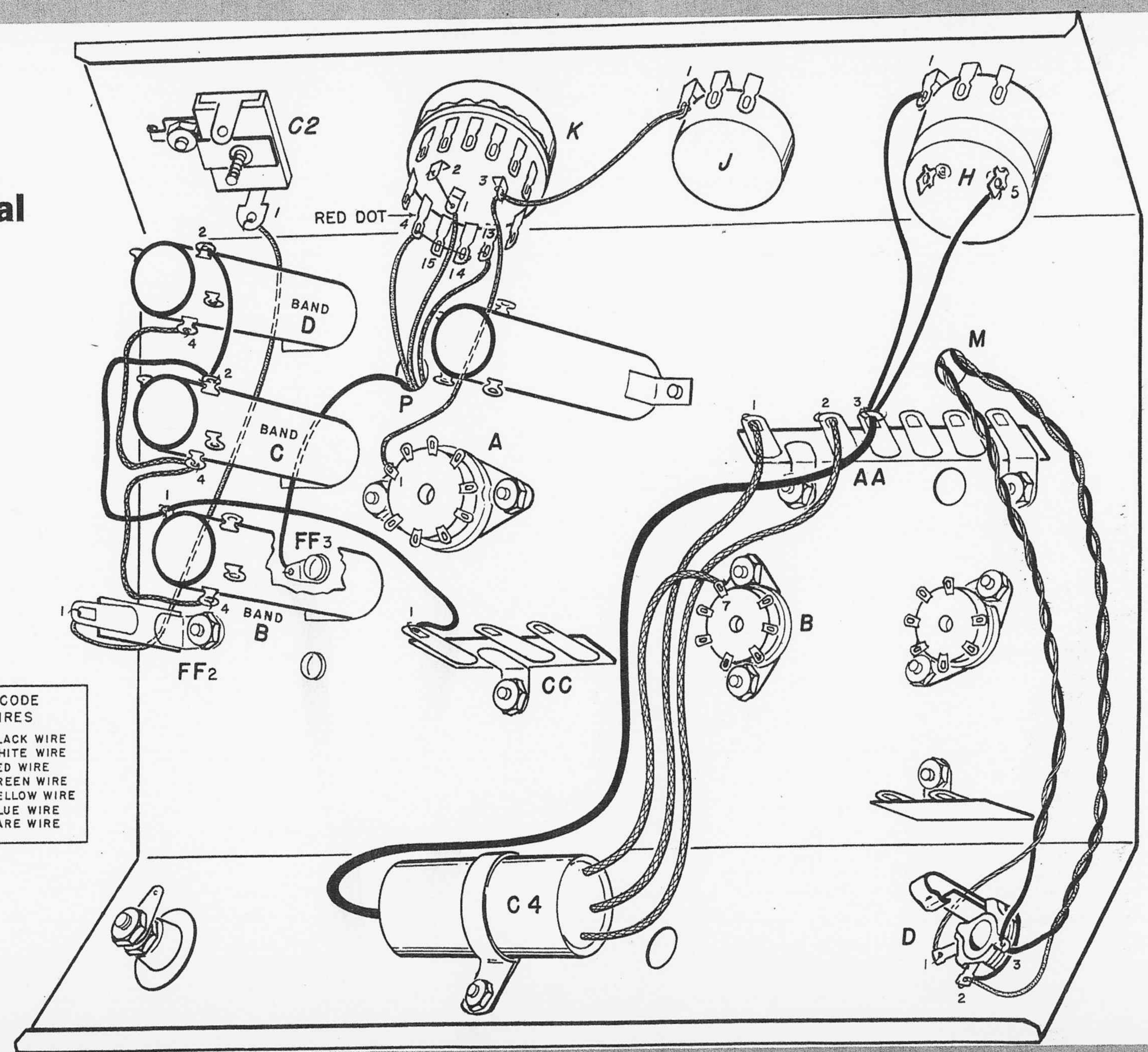
Observe Pictorial 2 which illustrates the following wiring steps.

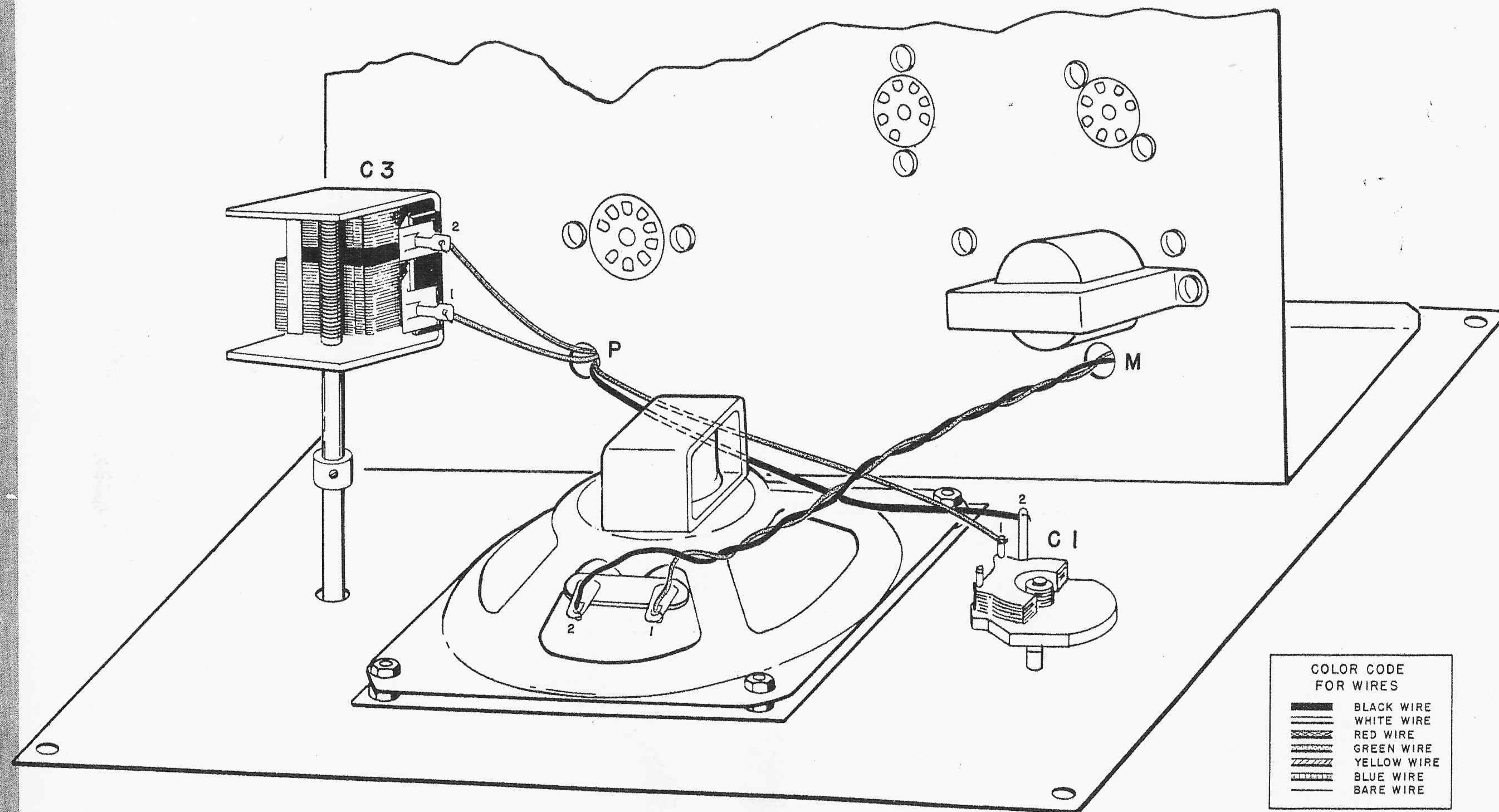
23. () Connect a 5" length of yellow wire from pin 5 of socket A (S) to pin 4 of socket C (S).
24. () Connect a 6" length of yellow wire from pin 4 of socket A (S) to lug 5 on control H (NS).
25. () Connect a 6" length of black wire from lug 5 on control H (NS) to lug 2 on terminal post BB (NS).
26. () Connect a 7" length of black wire from lug 1 on terminal post BB (NS) to lug 4 on control H (S).
27. () Connect a 4" length of green wire from pin 5 of socket C (S) to lug 2 on control H (S).
28. () Connect a 6" length of blue wire from lug 5 on terminal post AA (NS) to pin 6 of socket A (NS).
29. () Connect a 3 3/4" length of red wire from lug 1 on terminal post AA (NS) to pin 6 of socket C (NS).
30. () Cut the read lead on transformer T1 to 1 1/4" length and connect to pin 6 of socket C (NS).
31. () Cut the blue lead on transformer T1 to 1 1/4" length and connect to pin 7 of socket C (NS).
32. () Connect a 4 3/4" length of red wire from lug 4 on "Band A" coil (S) to lug 3 on terminal post CC (NS).
33. () Connect a 5 1/2" length of red wire from lug 2 on control J (NS) to lug 3 on terminal strip CC (NS).
34. () Connect a 4 1/2" length of red wire from lug 3 on terminal strip CC (NS) to lug 4 on "Band B" coil (NS).
35. () Connect a 5" length of black wire from lug 3 on the "Band A" coil (NS) to lug 1 on terminal strip CC (NS).
36. () Connect a 6 1/2" length of black wire from lug 3 on the "Band A" coil (S) to lug 1 on control H (NS).
37. () Twist the black and yellow leads of the transformer T1, which run through chassis hole M, and cut to 5 1/2" length. Connect the black lead to lug 3 on the headphone jack D (NS), and the yellow lead to lug 1 on jack D (S).
38. () Connect a 3" length of red wire from lug 4 on "Band B" coil (S) to lug 4 on "Band C" coil (NS).
39. () Connect a 2 1/2" length of red wire from lug 4 on "Band C" coil (S) to lug 4 on "Band D" coil (S).
40. () Connect a 3 3/4" length of black wire from lug 1 on "Band B" coil (NS) to lug 1 on terminal post CC (NS).
41. () Connect a 4" length of black wire from lug 1 on "Band B" coil (NS) to lug 2 on "Band C" coil (NS).
42. () Connect a 1 1/2" length of black wire from lug 2 on "Band C" coil (S) to lug 2 on "Band D" coil (S).
43. () Connect a 3 3/4" length of black wire from lug 1 on control H (S) to lug 3 on terminal post AA (NS).
44. () Connect a 2" length of black wire from lug 5 on control H (S) to lug 3 on terminal post AA (NS).
45. () Cut one of the red leads of the 30-30-30 μ f 150V electrolytic capacitor C4 to 4 1/2" length, and connect to lug 2 on terminal post AA (NS).
46. () Cut the black lead of C4 to 7 3/4" length, and connect to lug 3 on terminal post AA (NS).
47. () Cut one of the other red leads of C4 to 4" length, and connect to lug 1 on terminal post AA (NS).
48. () Cut the remaining red lead of C4 to 2 3/4" length, and connect to pin 7 of socket B (NS).
49. () Cut a 14" length of green and a 14" length of black wire. Twist the wires together to form a twisted pair. Connect one end of the green wire to headphone jack D, lug 2 (S). Connect the adjacent end of the black wire to jack D, lug 3 (S). Feed the twisted pair through hole M and leave the other ends temporarily disconnected.
50. () Connect a 4 1/2" length of green wire from lug 1 on terminal post FF2 (NS) to lug 1 on antenna tuning capacitor C2 (S).
51. () Cut a 7" length of green wire. Remove 1" of insulation from one end and 1/4" from the other. Feed the wire through hole P from the top of the chassis, with the 1" stripped end going underneath the chassis. Run this end through switch K lug 1 (NS), and connect it to switch K lug 2 (NS), as shown in Figure 4. Leave the end above the chassis temporarily disconnected.

Now observe Pictorial 3, which illustrates the following connections:

Pictorial No. 3

COLOR CODE FOR WIRES	
	BLACK WIRE
	WHITE WIRE
	RED WIRE
	GREEN WIRE
	YELLOW WIRE
	BLUE WIRE
	BARE WIRE





Pictorial No. 4

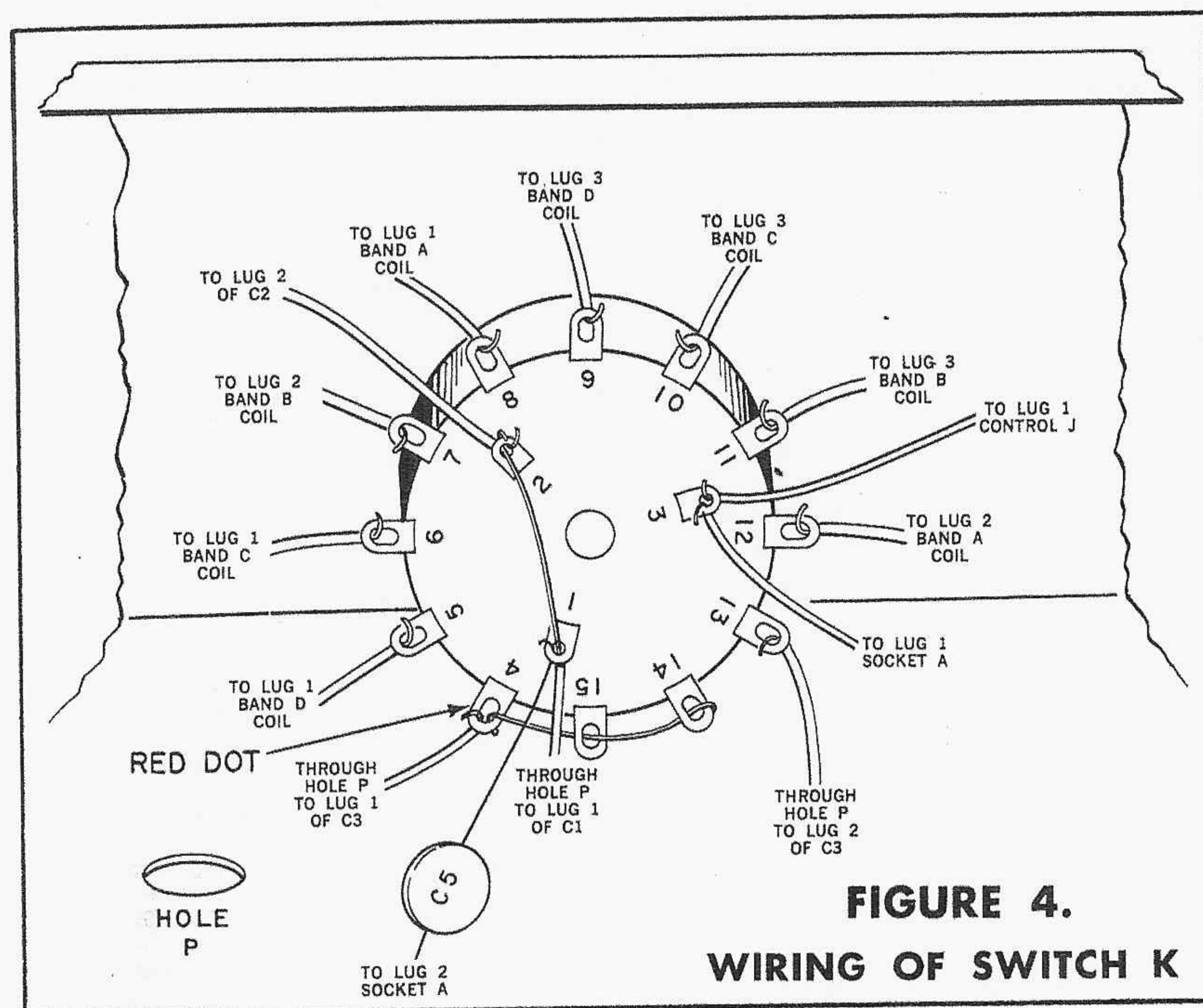


FIGURE 4.
WIRING OF SWITCH K

52. () Run a 1" length of bare wire through switch K, lug 4 (NS), through switch K, lug 15 (S), and through switch K, lug 14 (S).
11 2331155
53. () Cut a 3 1/2" length of green wire and connect one end to lug 4 on switch K (S). Feed the other end of the wire through the chassis hole P, and leave temporarily disconnected.
54. () Cut a 5" length of blue wire, and connect one end to lug 13 on switch K (S). Feed the other end of the wire through the chassis hole P, and leave temporarily disconnected.
55. () Cut a 9" length of black wire and connect one end to the ground lug at FF3 (NS). Feed the other end of the wire through the chassis hole P as shown in Pictorial 3. Leave the other end temporarily disconnected.
56. () Connect a 2 1/2" length of blue wire from lug 1 and control J (S) to lug 3 on switch K (NS).
57. () Connect a 2 3/4" length of blue wire from pin 1 of socket A (S) to lug 3 on switch K (S).

Now observe Pictorial 4 which illustrates the following connections:

58. () Connect the free end of the 7" green wire that was connected to lug 1 and 2 on switch K in step 51, to lug 1 on C1 (S).
59. () Connect the free end of the black wire that was connected to the ground lug at FF3 in step 55 in lug 2 on C1 (S).
60. () Connect the free end of the 4 1/2" green wire that was connected to lugs 4, 15, and 14 on switch K in step 52 to lug 1 on C3 (S).
61. () Connect the free end of the 5" blue wire that was connected to lug 13 on switch K in step 53 to lug 2 on C3 (S).
62. () Connect the green wire of the twisted pair that was connected to the headphone jack D lugs 1 and 2, to lug 1 on the loudspeaker (S). Connect the adjacent black wire to lug 2 on the loudspeaker (S).

Now observe Pictorial 5 which illustrates the following connections:

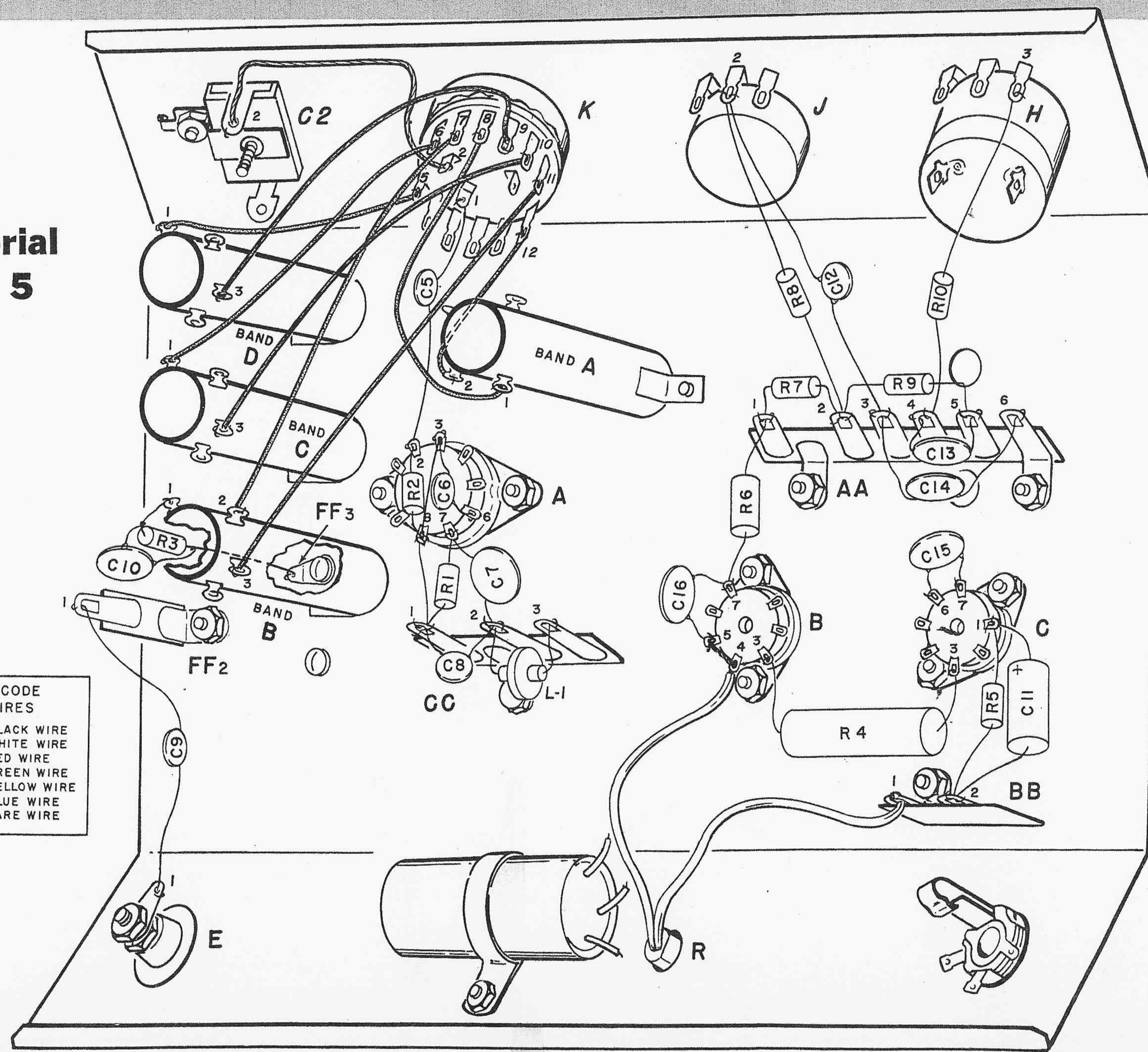
63. () Cut each lead of the 100 μ mf ceramic disc capacitor C5 (part #12-3) to 3/8" length, and connect from lug 1 on switch K (S) to pin 2 of socket A (NS).
64. () Run a 3" length of bare wire through lug 1 on terminal strip CC and then through pin 8 of socket A (NS), and connect the wire to pin 3 on the socket A (NS). Then connect to lug 1 on terminal post CC (NS).
65. () Cut each lead of a 1 megohm 1/2 w resistor R1 (brown-black-green-silver) (part #13-5) to 1/2" length, and connect from pin 7 of socket A (NS) to lug 1 on terminal post CC (NS).
66. () Cut each lead of a 2.2 megohm 1/2 w resistor R2 (red-red-green-silver) (part #13-3) to 1/2" length, and connect from pin 2 of socket A (S) to pin 8 of socket A (S).
67. () Cut each lead of the 470 μ mf ceramic disc capacitor C6 (part #12-22) to 3/8" length, and connect from pin 3 of socket A (S) to pin 6 of socket A (S).

Observe Figure 4 as well as Pictorial 5 when wiring switch K.

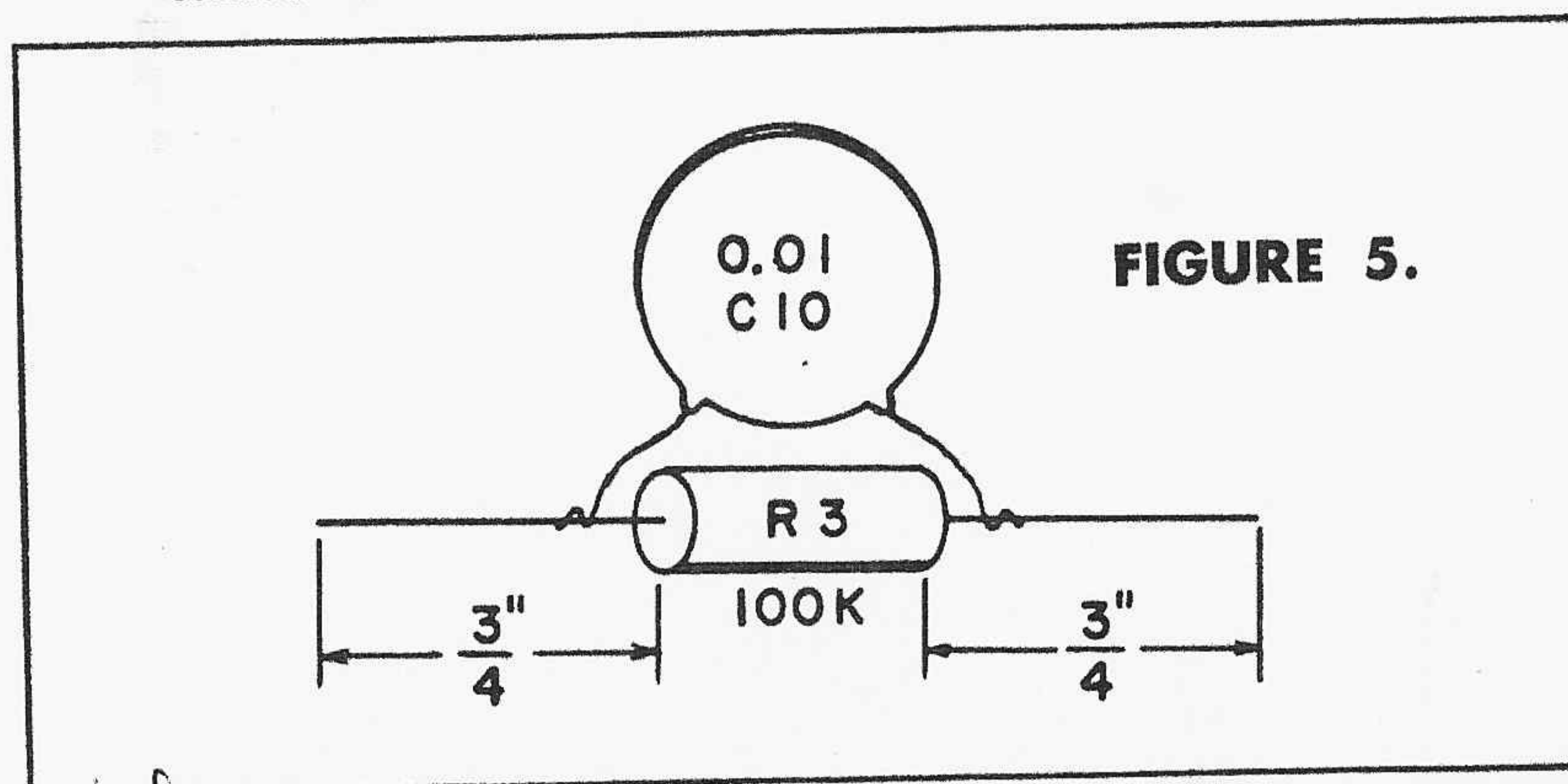
68. () Connect a 4" length of yellow wire from lug 2 on the capacitor C2 (S) to lug 2 on switch K (S).
69. () Connect a 1 3/4" length of green wire from lug 5 on switch K (S) to lug 1 on the "Band D" coil (S).
70. () Connect a 1 3/8" length of green wire from lug 6 on switch K (S) to lug 1 on the "Band C" coil (S).
71. () Connect a 2 1/8" length of green wire from lug 7 on switch K (S) to lug 2 on the "Band B" coil (S).
72. () Connect a 2 1/8" length of green wire from lug 8 of switch K (S) to lug 1 on the "Band A" coil (S).

Pictorial No. 5

COLOR CODE FOR WIRES	
	BLACK WIRE
	WHITE WIRE
	RED WIRE
	GREEN WIRE
	YELLOW WIRE
	BLUE WIRE
	BARE WIRE



73. () Connect a 1" length of blue wire from lug 12 on switch K (S) to lug 2 on the "Band A" coil (S).
74. (✓) Connect a 1 5/8" length of blue wire from lug 3 on the "Band D" coil (S) to lug 9 on switch K (S).
75. (✓) Cut each lead of a 0.01 μ f ceramic disc capacitor C7 (part #12-8) to 1/2" length, and connect from pin 7 of socket A (S) to lug 2 on terminal post CC (NS).
76. (✓) Connect a 2" length of blue wire from lug 3 on the "Band C" coil (S) to lug 10 on switch K (S).
77. (✓) Cut each lead of the 390 μ f ceramic disc capacitor C8 (part #12-60) to 1/2" length, and connect from lug 1 on terminal post CC (S) to lug 2 on terminal post CC (NS).
78. (✓) Cut each lead of the R-F choke L-1 (part #23-9) to 3/4" length, and connect from lug 2 on terminal post CC (S) to lug 3 on terminal post CC (S).
79. (✓) Cut each lead of the 270 μ f ceramic disc capacitor C9 (part #12-31) to 1" length, and connect from lug 1 on the antenna post E (S) to lug 1 on terminal post FF2 (S).
80. (✓) Cut each lead of a 0.01 μ f ceramic disc capacitor C10 (part #12-8) to 1/2" length, and wrap around the leads of a 100K 1/2 w resistor, R3 (brown-black-yellow-silver) (part #13-1), as shown in Figure 5. Solder these connections as shown.



81. (✓) Connect a 3" length of blue wire from lug 11 on switch K (S) to lug 3 on the "Band B" coil (S).
82. (✓) Cut the leads of the resistor-capacitor combination soldered together in step 80 to the lengths shown in Figure 5, and connect from lug 1 on the "Band B" coil (S) to the ground lug FF3 (S).
83. (✓) Cut each lead of the 200 ohm 10 w resistor R4 (part #13-83) to 1" length, and connect from pin 3 of socket C (S) to pin 3 of socket B (S).

84. (✓) Cut each lead of the 10 μ f 25-Volt electrolytic capacitor C11 (part #12-41) to 5/8" length, and connect the negative end to lug 2 on terminal post BB (NS). Connect the + or positive end to pin 1 of socket C (NS).
85. (✓) Cut each lead of the 180 ohm 1/2 w resistor R5 (brown-grey-brown-silver) (part #13-34) to 3/4" length, and connect from lug 2 on terminal post BB (S) to pin 1 of socket C (S).
86. (✓) Cut each lead of the 270 ohm 1 w resistor R6 (red-violet-brown-silver) (part #13-82) to 1/2" length, and connect from pin 7 of socket B (NS) to lug 1 on terminal post AA (NS).
87. (✓) Cut each lead of the 4700 ohm 1/2 w resistor R7 (yellow-violet-red-silver) (part #13-18) to 5/8" length, and connect from lug 1 on terminal post AA (S) to lug 2 on terminal post AA (NS).
88. (✓) Cut each lead of the 47,000 ohm 1/2 w resistor R8 (yellow-violet-orange-silver) (part #13-4) to 1" length, and connect from lug 2 on control J (NS) to lug 2 on terminal post AA (NS).
89. (✓) Cut each lead of the 100 K 1/2 w resistor R9 (brown-black-yellow-silver) (part #13-1) to 7/8" length, and connect from lug 2 on terminal post AA (S) to lug 5 on terminal post AA (NS).
90. (✓) Cut each lead of the 750 μ f ceramic disc capacitor C12 (part #12-61) to 1" length, and connect from lug 2 on control J (S) to lug 3 on terminal post AA (NS).
91. (✓) Cut each lead of the 27,000 ohm 1/2 w resistor R10 (red-violet-orange-silver) (part #13-33) to 1" length, and connect from lug 3 on control H (S) to lug 4 on terminal post AA (NS).
92. (✓) Cut each lead of a 0.01 μ f ceramic disc capacitor C13 (part #12-8) to 1/2" length, and connect from lug 4 on terminal post AA (S) to lug 5 on terminal post AA (S).
93. (✓) Cut each lead of a 0.01 μ f ceramic disc capacitor C14 (part #12-8) to 3/4" length, and connect from lug 3 on terminal post AA (S) to lug 6 on terminal post AA (S).
94. (✓) Cut each lead of the 0.005 μ f ceramic disc capacitor C15 (part #12-36) to 1/2" length, and connect from pin 6 of socket C (S) to pin 7 of socket C (S).
95. (✓) Insert the line cord into the two-piece strain relief (part #20-3) as shown in Figure 6, a,b,c. Allow the stripped end to project 3" beyond the strain relief. Feed the stripped end through the chassis hole R, and insert the strain relief as shown in Figure 6, d,e,f. Connect one stripped end to lug 1 on the terminal post BB (S); run the other stripped end through pin 4 on socket B and connect to pin 5 of socket B (NS). Solder pin 4 (S).
96. (✓) Cut the leads of the 0.01 μ f ceramic disc capacitor C16 (part #12-8) to 1/2" length, and connect from pin 5 of socket B (S) to pin 7 of socket B (S).

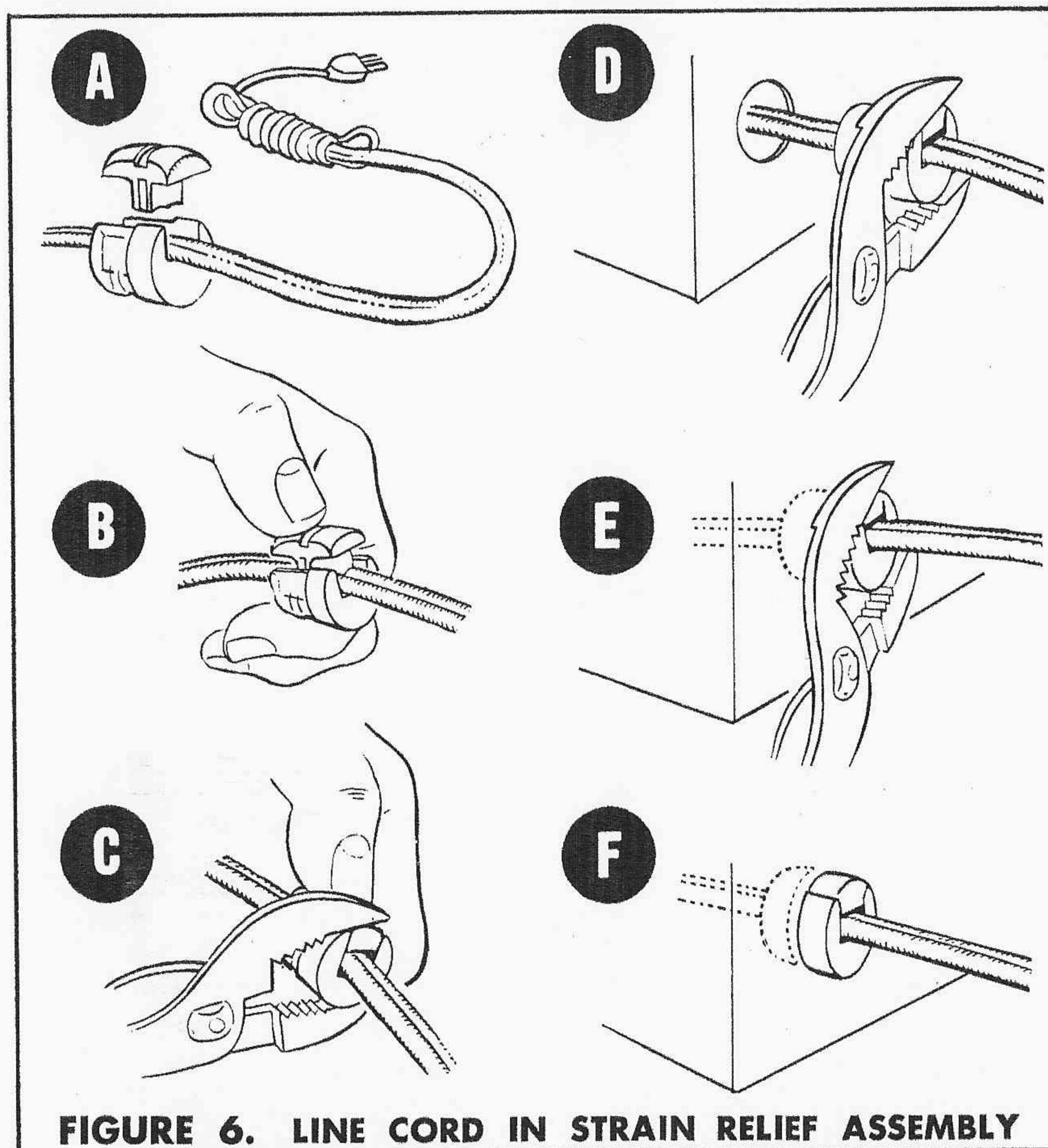


FIGURE 6. LINE CORD IN STRAIN RELIEF ASSEMBLY

This completes the wiring; check now to see that all connections are properly soldered.

97. () Insert the 50C5 tube into socket C. Refer to Figure 7; do not force the tube into the socket, as it may be inserted easily when properly oriented.
98. () Similarly, insert the 35W4 tube into socket B.
99. () Similarly, insert the 12AT7 tube into socket A.
100. () Turn the VOLUME CONTROL shaft fully counter-clockwise until a click is heard. Mount one of the small knobs (part #18-21) on the control with the white indicating line pointing towards the designation OFF. Tighten the set screw.
101. () Turn the REGENERATION CONTROL shaft fully counter-clockwise. Mount another small knob with the white indicating line pointing towards the first letter "R" in the designation REGENERATION. Tighten the set screw.

102. () Mount another small knob on the BANDSWITCH. In the extreme counter-clockwise position of the switch the white indicating line of the knob should point towards the designation "A" on the front panel. Tighten the set screw.
103. () Turn the shaft of the ANTENNA TUNING capacitor clockwise until a resistance is felt. Then mount the last small knob with the white indicating line pointing straight up. Tighten the set screw.
104. () Turn the shaft of the MAIN TUNING capacitor counter-clockwise until the plates are fully closed. Then mount one of the large knobs (part #18-20) with the plastic pointer in a horizontal position pointing to the left side of the scale.
105. () Turn the shaft of the BANDSPREAD control until the plates of the capacitor are fully open (unmeshed). Mount the other large knob with the plastic pointer towards "O" on the logging scale. Tighten the set screw.

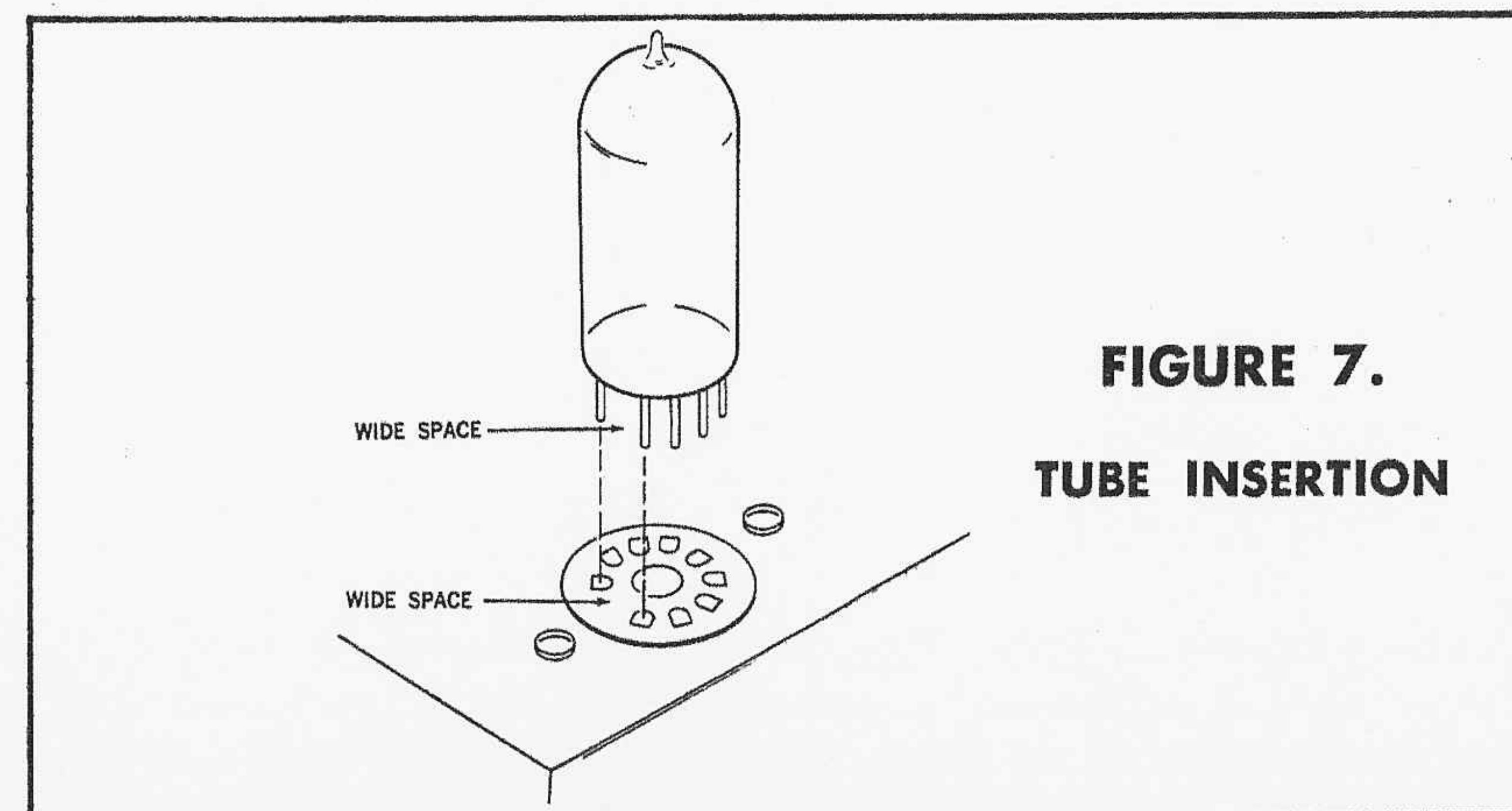
As a final visual check, compare your completed unit with the photographs on the rear cover of the instruction manual.

PRELIMINARY CHECKS

The construction of your KT-135 is now completed. Check over the unit carefully before proceeding to the next step. If possible, try to have a friend check the construction for you as a person tends to repeat the same errors.

If an ohmmeter is available, the following resistance checks should be made before plugging the receiver into the line:

A cold DC resistance of 300 ohms between the prongs of the line plug with the switch in the ON position; a DC resistance of at least 100,000 ohms between lugs 2 and 3 of terminal strip AA; approximately the same resistance should be measured between lugs 1 and 3. When making this measurement be sure to allow sufficient time for the capacitor to be charged by the ohmmeter battery. If any discrepancy exists, do not plug in the unit until the cause has been determined and the error corrected.



**FIGURE 7.
TUBE INSERTION**

IMPORTANT

OBSERVE THE FOLLOWING PRECAUTIONS BEFORE PLUGGING THE UNIT INTO AN AC OR DC OUTLET

All AC/DC equipment represents a possible shock hazard to the user unless certain precautions are taken. It is therefore recommended that you read the following before connecting the unit to any outlet.

1. NEVER USE THE UNIT ON A METAL SURFACE.
2. On a DC source, the plug must be correctly polarized. If the unit does not operate with the plug in one position, reverse the plug to the other position.*
3. To correctly polarize the plug on an AC source:—
 - (a) Do not plug into outlet, but switch unit "on".
 - (b) Insert the plug into an outlet. Do not touch any part of the unit with the bare hands. Connect a neon tester (Lafayette stock #32-8017) or other AC voltage indicating device between the screw on the AC wall plate (if necessary, scrape paint away) and any portion of the chassis that is not painted.
 - (c) If any voltage is indicated between these two points, reverse the plug in the AC outlet. When no voltage is present, leave the plug permanently in position.*

*At this point it may be advisable to mark one side of the plug and the corresponding side of the outlet with a spot of paint. In this way, the plug may be returned to the outlet in its correct position after removal.

OPERATING INSTRUCTIONS

Hook a 25 to 50 foot antenna to the antenna post at the rear of the chassis (See Figure 8 and section on antenna installation on page 17). Plug the receiver into a 105-125 volt AC or DC outlet. Turn the BANDSWITCH to the band A (broadcast band) position. Turn the REGENERATION control $\frac{3}{4}$ of the way towards maximum ("3 o'clock" position). Turn the ANTENNA TUNING control approximately two complete turns in a counter-clockwise direction. The exact setting of this control depends on the length of the antenna; some experimenting will be required in order to obtain the optimum results.

Turn the VOLUME CONTROL-ON-OFF switch to about its mid position. Allow about a minute for the receiver to warm up. Rotate the MAIN TUNING control throughout its range. You should hear several loud squeals through the speaker, indicating stations being received. Note that if the KT-135 is being operated on DC, it may be necessary to reverse the line plug in order to obtain these squeals. If the TUNING CONTROL is rotated very slowly, you will notice that the sound of the squeal or whistle changes, starting at a high pitch, dropping lower and lower until you hear no sound, and again rising as you pass through the zero point.

Tune in one of the signals, adjusting the MAIN TUNING control so that the squeal is at a low pitch or at the zero point. Now reduce the setting of the REGENERATION CONTROL (turn in a counter-clockwise direction) until the squeal stops. Re-adjust the MAIN TUNING control after adjusting the REGENERATION control. You may find that you hear more than one station after this is done; in this case, turn the ANTENNA TUNING control counter-clockwise until the interfering signal is reduced to a minimum. It may now be necessary to re-tune the MAIN TUNING control for best results. On weak signals, turn the ANTENNA TUNING control clockwise until the best sensitivity is found. Adjusting the BANDSPREAD control will give sharper tuning, as this control has the effect of spreading out a small portion of the band selected by the MAIN TUNING control. The BANDSPREAD control is particularly useful on the short wave bands (bands B, C, and D), where stations may be very close together; greater care in tuning will be required on these bands for best results. Note that the MAIN TUNING scale has a dot at 4 MC on Band B, and dots at 7 and 14 MC on Band C. These points correspond to very active sections of the frequency band; by setting the MAIN TUNING control at these calibration marks, the BANDSPREAD control permits a frequency coverage of from 3.5 to 4 MC, 7.0 to 7.3 MC, and 12.5 to 14.4 MC respectively. If you prefer to use headphones rather than the loudspeaker, simply plug a set of phones into the jack at the rear of the chassis; this automatically disconnects the loudspeaker. In either case, use the volume control to adjust the sound to the desired level.

A chart has been supplied listing the operating frequency and best time for listening of several short-wave stations broadcasting in the English language. NOTE:

$$(1 \text{ MC} = 1000 \text{ KC}) \quad \text{WAVELENGTHS IN METERS} = \frac{300}{f(\text{in MC})} = \frac{300,000}{f(\text{in KC})}$$

(MC = Megacycles per second; KC = Kilocycles per second)
(See pages 17 and 18)

SHORT-WAVE LISTENING

On the short-wave frequencies are to be found radio stations transmitting from all over the world. Many of these stations provide English-language broadcasts. The frequencies on which most short-wave broadcast stations operate are found in the two upper bands of your receiver, C and D. The majority of shortwave broadcast stations operate within certain internationally assigned groups of frequencies, or "bands". Since shortwave reception varies with the time of day, season of the year and with weather conditions, recommended listening times have been shown along with each shortwave band. "Better Shortwave Reception" by William I. Orr (available from Lafayette Radio under stock no 10-5006) is highly recommended to the shortwave listener. It provides an introduction to shortwave radio for the beginner and presents some of the practical aspects and helpful advice for the more experienced listener.

Shortwave Broadcast Band*

60 meter band
49 meter band
41 meter band
31 meter band
25 meter band
19 meter band

Frequency (Megacycles)

4.750 to 5.060
5.950 to 6.200
7.100 to 7.300
9.500 to 9.775
11.700 to 11.975
15.100 to 15.450

Listening Time

Winter nights
Winter nights
Winter nights
Nights, all year
Nights, all year
Days, all year and Summer nights
Days, all year and Summer nights
Days, all year
Days, all year

*These are separate and distinct from the Amateur Shortwave bands which operate over different groups of frequencies.

ANTENNA INSTALLATION

Although a few feet of wire will probably act as a satisfactory antenna for the broadcast band, an outdoor antenna will be necessary for good short wave reception. This antenna should be installed as shown in Figure 8, and should be located at as great a height above the ground as possible. The lead-in wire should be run away from any metal objects or electrical appliances to minimize interference. DO NOT GROUND THE KT-135 RECEIVER CHASSIS.

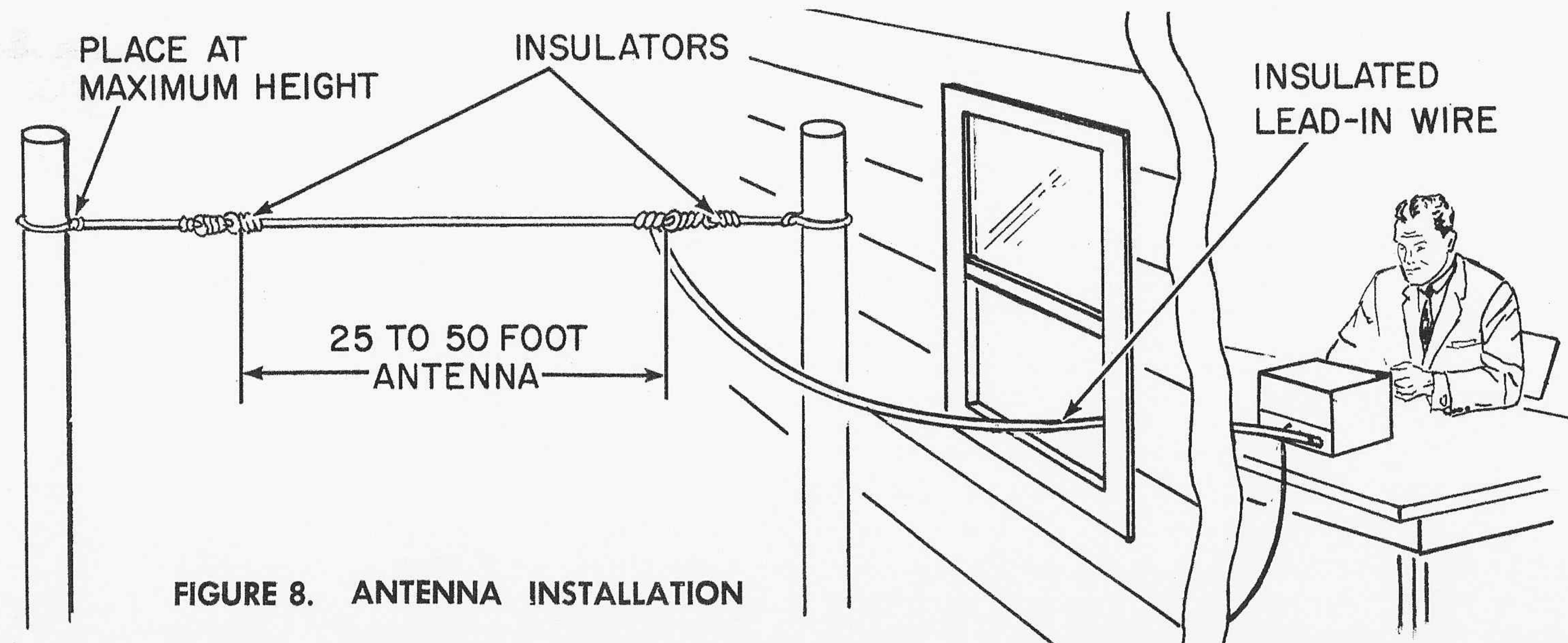


FIGURE 8. ANTENNA INSTALLATION

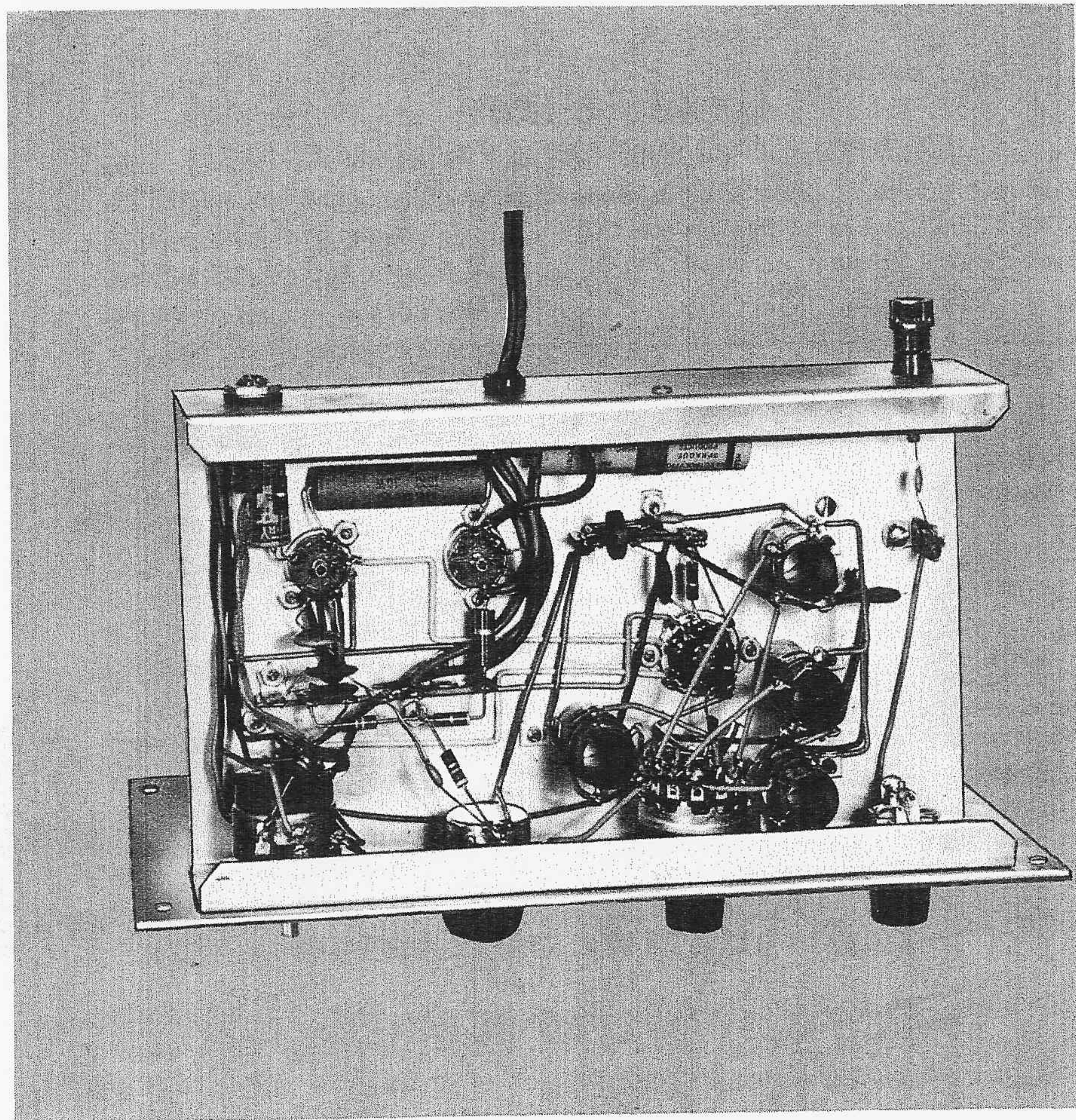
VOLTAGE CHART

All measurements made with a voltmeter from lug 1 of terminal post CC to the point indicated. VOLUME CONTROL set in minimum position (just turned on), REGENERATION CONTROL and MAIN TUNING CONTROL fully counter-clockwise, antenna disconnected. Voltages measured with 117 volt 60 cps AC line voltage applied.

TUBE	PIN NUMBER								
	1	2	3	4	5	6	7	8	9
12AT7 Socket A	56 VDC	-0.4 VDC	0 V	0 V	12.6 VAC	44 VDC	-0.4 VDC	0 V	NC *
35W4 Socket B	NC *	NC *	90 VAC **	117 VAC **	117 VAC **	NC *	135 VDC	—	—
50C5 Socket C	8.0 VDC	NC *	62 VAC **	12.6 V	0 V	125 VDC	115 VDC		

* NC = NO CONNECTION, DO NOT MEASURE

** AC VOLTAGES measured with a 1,000 ohms per volt meter
DC VOLTAGES measured with a 20,000 ohms per volt meter



IN THE EVENT OF DIFFICULTY

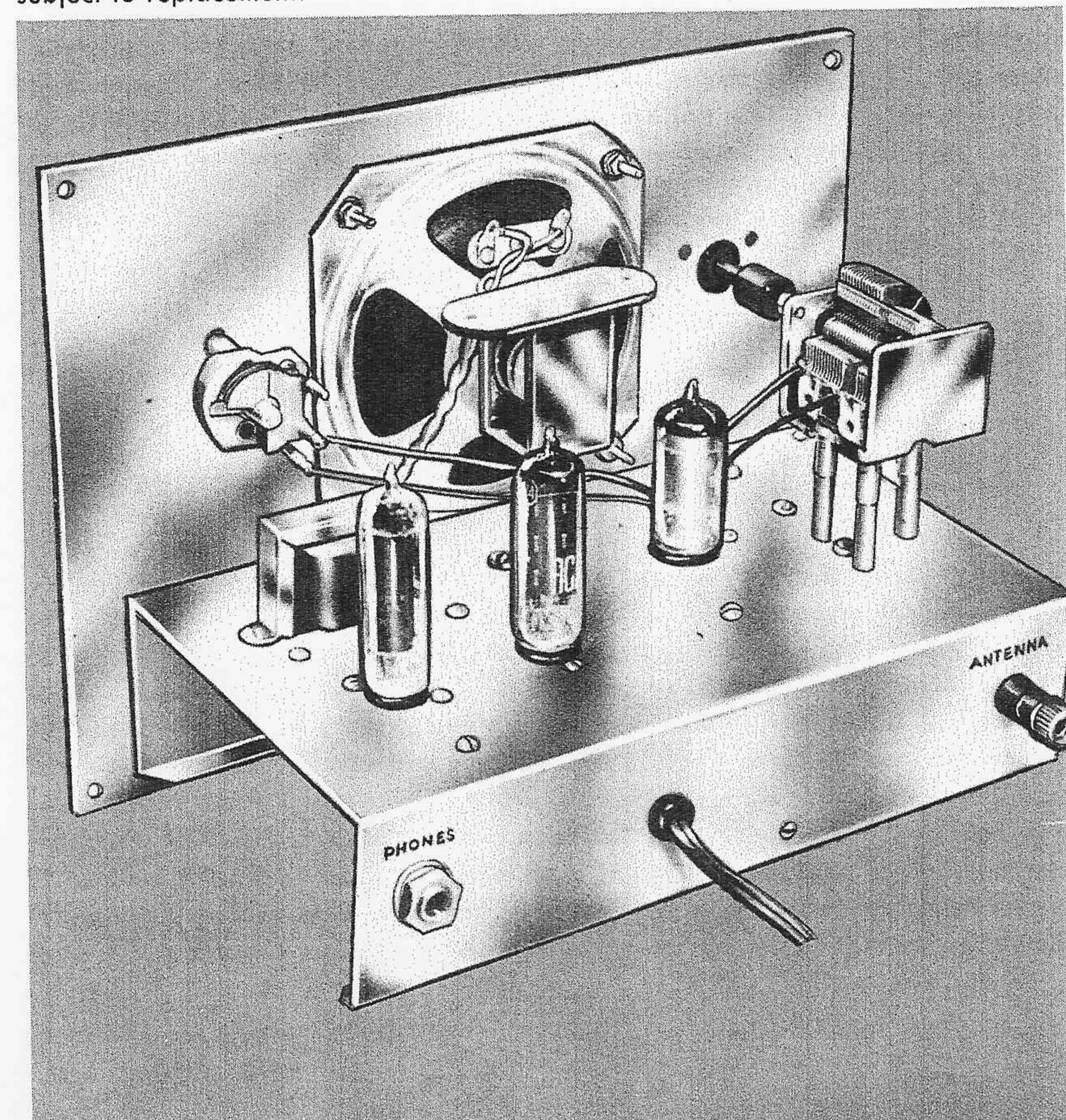
Carefully recheck all wiring, and inspect solder connections. If you have not already done so, trace each lead in the pictorials with a colored pencil. If a voltmeter is available, make measurements referring to the voltage chart below. A deviation of $\pm 20\%$ from the indicated values may be considered normal. **WARNING:** Use caution when making any checks with the KT-135 turned on. If any voltage is incorrect, recheck that part of the circuit involved carefully. If one of the components appears to be at fault, try to locate the defective one. In the event that these checks do not enable you to correct the defect, the receiver may be returned to us for repair. The charge for this service is \$4.00, plus the cost of any parts which have been damaged during installation in the kit through improper handling or soldering. Kits which were not wired in accordance with our detailed instructions, or kits wired with acid core solder or paste flux are not eligible for service, and will be returned to you at your expense.

SHIPPING INSTRUCTIONS

If the kit must be returned for service, pack it carefully, making sure that separate or loose parts are adequately covered to prevent damage and movement. The carton in which the equipment was shipped may be used, provided shredded paper or excelsior is used around the unit. Mark the shipment FRAGILE. Ship by prepaid express if possible. Shipment to you will be by express collect. Bear in mind that the carrier will disclaim responsibility for damage if in his opinion it was caused by improper packing.

REPLACEMENT WARRANTY

In accordance with the terms of the industry-wide Electronics Industry Association (EIA) warranty, Lafayette Radio will replace, free of charge, any defective parts returned to us within 90 days from date of purchase of this kit by the original purchaser. Such replacement will be made only in cases where parts were defective at the time of sale, or became defective in normal operation during the 90 day warranty period. Parts damaged during kit construction or through customer's wiring error are not subject to replacement.



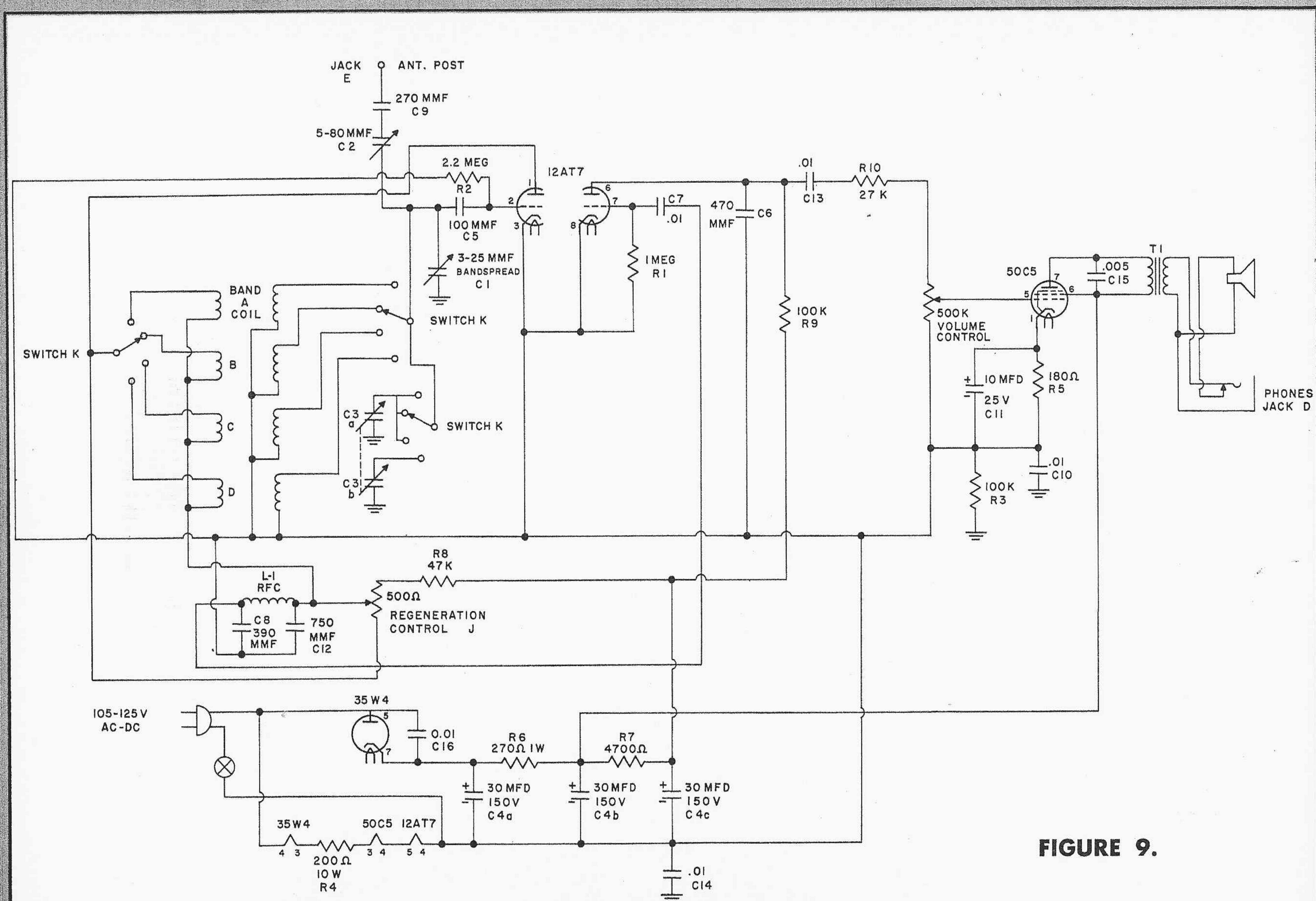


FIGURE 9.

SCHEMATIC DIAGRAM

LAFAYETTE
RADIO ELECTRONICS
CORPORATION

111 JERICO TURNPIKE
SYOSSET, L. I., NEW YORK