SECTION D, VERTICAL RANGE SWITCH, AND SECTION E, HORIZONTAL SWEEP SELECTOR SWITCH

Vertical Range Switch S-1

PARTS LIST

Symbol	Description *Markings Indicated by Quotation Marks (" ")*	Qty.
C-2	Capacitor, tubular, 0.1 mf, 400 volt, ".1, 400 WVDC"	1
C-3, C-4, C-5, C-6	Trimmer capacitor, 4-to-40 mmf, "ceramic body ¾" L, ⅛" T, ⅜" W"	4
C-8	Capacitor, disc, 22 mmf, 5%, "22, 5%"	1
C-9	Capacitor, disc, 64 mmf, 5%, "64J, 750"	1
C-10	Capacitor, disc, 140 mmf, 5%, "140, 5%"	1
C-11	Capacitor, disc, 410 mmf, 10%, "410, 10%"	1
C-12	Capacitor, disc, 1500 mmf, 5%, "1500, 5%"	1
R-1	Resistor, 680K ohms, 5%, ½-watt, "680K, 5%5"	1
R-2	Resistor, 910K ohms, 5%, ½-watt, "910K, 5%5"	1
R-3	Resistor, 1 megohm, 5%, ½-watt, "1MΩ, 5%5"	1
R-4	Resistor, 1 megohm, 5%, ½-watt, "1MΩ, 5%5"	1
R-5	Resistor, 15K ohms, 5%, ½-watt, "15KΩ, 5%5"	1
R-6	Resistor, 470K ohms, 5%, ½-watt, "470K, 5%5"	1
R-7	Resistor, 110K ohms, 5%, ½-watt, "110K, 5%5"	1
R-8	Resistor, 33K ohms, 5%, ½-watt, "33KΩ, 5%5"	1
R-9	Resistor, 10K ohms, 5%, ½-watt, "10KΩ, 5%5"	1
R-10	Resistor, 820 ohms, 5%, ½-watt, "820Ω, 5%5"	1
R-12	Resistor, 8.2K ohms, 1 watt, 10%, "gray, red, red, silv"	1
R-19	Resistor, 4.7K ohms, 1 watt, 10%, "ylw, viol, red, silv"	1
S-1	Vertical Range Switch, has "four white wafers"	1

MISCELLANEOUS

(The quantity of bare cooper wire listed below is sufficient for complete assembly of kit.)
Bare copper wire, tinned 6"

Illustrations: Figures 4A, 4B, 4C, 4D, 4E.

Steps 1 through 42. Check (✓) each step as it is completed.

1. ( ) Cut the following lengths of insulated hookup wire:
   White: 4½" ( ) 4½" ( )
   Orange: 3½" ( ) 10" ( )
   Yellow: 7½" ( ) 10¼" ( )
   Violet: 6" ( ) 8" ( )
   Gray: 3" ( ) 3½" ( ) 9" ( )
2. ( ) Strip and tin the above cut-wires as in previous section.
3. ( ) Identify the Vertical Range Switch S-1 by referring to Figure 4A and the Parts List. Note that two of its white wafers are side-by-side, and the other two are spaced about 1-inch apart. With the shaft-end to your right, rotate the switch so that lugs #16, 17 and 18 on wafer #4 are toward you. The switch is now in the position as illustrated, therefore the lug numbers can be identified easily in the following steps.
4. ( ) Identify the four ceramic trimmer capacitors, C-3, C-4, C-5, C-6, by referring to Figures 4A, 4B, and to the Parts List. Note the "U"-shaped cutout in the metal on one end—this will be referred to in a later step.
5. ( ) Select C-3 and R-1. Refer to Figure 4B, and place R-1 alongside of C-3, with the "U"-shaped cutout on C-3 to your right. Run the R-1 leads through the C-3 lugs, and bend around and outward as shown. Solder the leads to the lugs.

NOTE: The above assembly process (Step 5) will be referred to and used in several succeeding steps.

CAUTION: Use care in the following steps to avoid chipping the enameled resistors. Make sure the bodies of these resistors do not touch the metal spacing wafers between the white wafers on S-1.

6. ( ) Mount the C-3/R-1 assembly on switch S-1 between wafer #1, lug #9 and wafer #2, lug #9 as shown in Figure 4A. Be sure the "U"-shaped cutout on C-3 is positioned toward the shaft-end of S-1. Run the R-1 leads through the switch lugs; make a ½-turn wrap around the lugs; crimp tight with pliers; cut off the excess ends. Solder connection at wafer #1, lug #9 only.

NOTE: The above assembly process (Step 6) will be referred to and used in several succeeding steps.

7. ( ) Select C-9 and R-6. Scrape off any excess sealant paint extending along the leads of R-6, and bend the leads straight out from the body of the resistor. See Figure 4D. Place C-9 alongside of R-6, and wrap the C-9 leads 2-turns around the R-6 leads. Solder both of the lead junctions, and cut off the excess ends of the C-9 leads.

NOTE: The above assembly process (Step 7) will be referred to and used in several succeeding steps.

8. ( ) Mount the C-9/R-6 assembly on switch S-1 between wafer #2, lug #9 and wafer #4, lug #8 as shown in Figure 4A and 4E. Run the R-6 leads through the switch lugs; make a ½-turn wrap around the lugs; crimp tight with pliers, cut off the excess ends. Solder connection at wafer #2, lug #9 only.

NOTE: The above assembly process (Step 8) will be referred to and used in several succeeding steps.

9. ( ) Assemble C-4 and R-2 as described in Step 5 above.
10. ( ) Mount the C-4/R-2 assembly on switch S-1 between wafer #1, lug #11 and wafer #2, lug #11 as described in Step 6 above. *Solder connection at wafer #1, lug #11 only.*
11. ( ) Assembly C-10 and R-7 as described in Step 7 above.
12. ( ) Mount the C-10/R-7 assembly on switch S-1 between wafer #2, lug #11 and wafer #4, lug #10 as described in Step 8 above. *Solder connection at wafer #2, lug #11 only.*
13. ( ) Assemble C-5 and R-3 as described in Step 5 above.
14. ( ) Mount the C-5/R-3 assembly between wafer #1, lug #18 and wafer #2, lug #18 as described in Step 6 above. *Solder the connection at wafer #1, lug #18 only.*
15. ( ) Assemble C-11 and R-8 as described in Step 7 above.
16. ( ) Mount C-11/R-8 assembly between wafer #2, lug #18 and wafer #3, lug #17 as described in Step 8 above. *Solder connections at wafer #2, lug #18 only.*
17. ( ) Assemble C-6 and R-4 as described in Step 5 above.
18. ( ) Mount the C-6/R-4 assembly between wafer #1, lug #20 and wafer #2, lug #20 as described in Step 6 above. *Solder connections at wafer #1, lug #20 only.*
19. ( ) Assemble C-12 and R-9 as described in Step 7 above.
20. ( ) Mount the C-12/R-9 assembly between wafer #2, lug #20 and wafer #3, lug #19 as described in Step 8 above. *Solder connection at wafer #2, lug #20 only.*
21. ( ) Remove an extra ¼-inch of insulation from each end of the 3-inch cut-length of gray wire, and insert one end through wafer #4, lug #10 and connect to wafer #4, lug #8. (NS)
22. ( ) Insert the other end of the above 3-inch gray wire through wafer #3, lug #17 and connect to wafer #3, lug #19. *Solder connection at lug #17 only.*
23. ( ) Clip one lead of R-10 to a length of ½-inch, and connect to wafer #3, lug #19. (S)
24. ( ) Clip the other lead of R-10 to a length of ½-inch, and connect to wafer #2, lug #22. (NS)
25. ( ) Clip one lead of R-5 to a length of ½-inch, and connect to wafer #2, lug #22. (S)
26. ( ) Clip other lead of R-5 to a length of ½-inch, and connect to wafer #3, lug #21. (NS)
27. ( ) Connect one end of a 6-inch cut-length of violet wire to wafer #3, lug #21. (S)
28. ( ) Connect one end of 3½-inch cut-length of orange wire to wafer #2, lug #3. (S)
29. ( ) Insert a 2-inch length of bare wire through wafer #2, lug #7 and connect to wafer #1, lug #7. Solder at wafer #1, lug #7 only. Cut off excess end.
30. ( ) Clip each lead of C-8 to a length of ¾-inch, and connect between wafer #2, lug #7 and wafer #4, lug #8. Solder wafer #2, lug #7, and wafer #4, lug #8.
31. ( ) Clip each lead of R-12 to a length of ¾-inch and connect between wafer #4, lug #18 and wafer #4, lug #6, placing R-12 across the back end of wafer #4. (NS)
32. ( ) Connect one end of a 10-inch cut-length of orange wire to wafer #4, lug #6. (S)
33. ( ) Connect one end of a 3½-inch cut-length of gray wire to wafer #4, lug #18. (S)

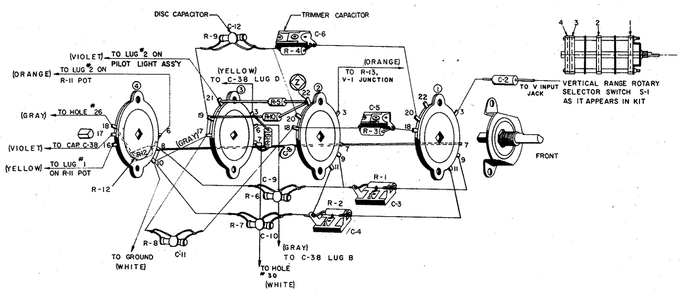


FIGURE 4A

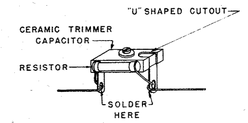


FIGURE 4B

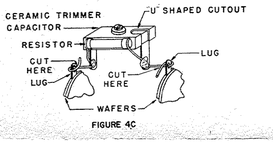


FIGURE 4C

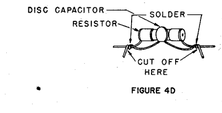


FIGURE 4D

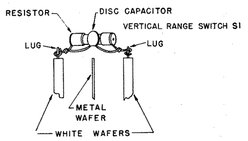


FIGURE 4E

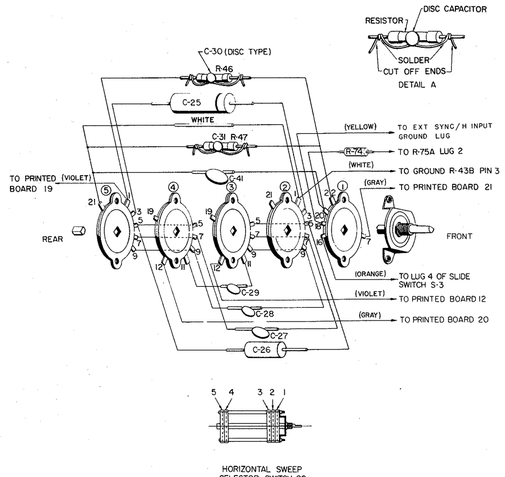


FIGURE 5

Horizontal Sweep Selector Switch Assembly

PARTS LIST

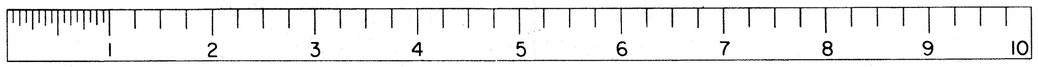
Symbol	Description *Markings Indicated by Quotation Marks (" ")*	Qty.
C-25	Capacitor, tubular, 0.22 mf, 400 volt, ".22 MFD, 400 WVDC"	1
C-26	Capacitor, tubular, 0.022 mf, 400 volt, ".022 MFD, 400 WVDC"	1
C-27	Capacitor, disc, 2200 mf, 5%, "2200, 5%"	1
C-28	Capacitor, disc, 220 mmf, 5%, "220, 5%"	1
C-29	Capacitor, disc, 15 mmf, 5%, "15J, NPO"	1
C-30	Capacitor, disc, 180 mmf, 10%, "180, 10%"	1
C-31	Capacitor, disc, 150 mmf, 10%, "150, 10%"	1
C-41	Capacitor, disc, 0.01 mf, 20%, ".01, 20%"	1
R-46	Resistor, 2.7 megohms, 5%, ½-watt, "2.7M, 5%5"	1
R-47	Resistor, 3.3 megohms, 5%, ½-watt, "3.3M, 5%5"	1
R-74	Resistor, 120K ohms, 10%, ½-watt, "brn, red, ylw, silv"	1
S-2	Horizontal Sweep Selector Switch, has "five white wafers"	1

Illustrations: Figure 5; Figure 5, Detail A.

Steps 1 through 28. Check (✓) each step as it is completed.

1. ( ) Cut the following lengths of insulated hookup wire:
   White: 2" ( ) 3" ( )
   Yellow: 2¾" ( )
   Orange: 2" ( )
   Gray: 6½" ( ) 7¼" ( )
   Violet: 5" ( ) 5" ( )
2. ( ) Strip and tin the above cut-wires as in previous procedures.
3. ( ) Identify the Horizontal Sweep Selector Switch S-2 by referring to Figure 5 and the Parts List. Note that the front three white wafers are side-by-side, and the rear two white wafers are side-by-side. With the shaft end to your right, rotate the switch so that lugs #16 and #18 on wafer #1 are toward you. The switch is now in the position as illustrated, therefore the lug numbers can be identified easily in the following steps.
4. ( ) Clip the banded-end lead of C-25 to a length of ¾-inch and connect to wafer #2, lug #3. (S)
5. ( ) Clip the remaining lead of C-25 to a length of ¾-inch, and connect to wafer #5, lug #3. (S)
6. ( ) Clip the banded-end lead of C-26 to a length of 1-inch, and run the lead through wafer #2, lug #5 and connect to wafer #3, lug #5. Solder to lugs on both wafers.
7. ( ) Clip the remaining lead of C-26 to a length of 1-inch, and run lead through wafer #5, lug #5 and connect to wafer #4, lug #5. Solder to lugs on both wafers.
8. ( ) Clip one lead of C-27 to a length of 1¼-inches, and run lead through wafer #2, lug #7 and connect to wafer #3, lug #7. Solder to lugs on both wafers.
9. ( ) Clip the remaining lead of C-27 to a length of 1¼-inches, and run lead through wafer #4, lug #7 and connect to wafer #5, lug #7. Solder to lugs on both wafers.
10. ( ) Clip one lead of C-28 to a length of 1¼-inches and run lead through wafer #2, lug #9 and connect to wafer #3, lug #9. Solder to lugs on both wafers.
11. ( ) Clip the remaining lead of C-28 to a length of 1¼-inches, and run lead through wafer #4, lug #9 and connect to wafer #5, lug #9. Solder to lugs on both wafers.
12. ( ) Clip each lead of C-29 to a length of 1-inch, and connect between wafer #3, lug #11, and wafer #4, lug #11. Solder to lugs on both wafers.
13. ( ) Clip each lead of C-41 to a length of 1¼-inches, and connect between wafer #1, lug #20 and wafer #5, lug #21. (NS)
14. ( ) Select C-31 and R-47. Scrape off any excess sealant paint extending along the leads of R-47, and bend the leads straight out from the body of the resistor. See Detail A. Place C-31 and R-47 side-by-side, and wrap the C-31 leads 2-turns around the R-47 leads. Solder both of the lead junctions, and cut off the excess ends of the C-31 leads.
15. ( ) Assemble C-30 and R-46 in the same manner as C-31 and R-47 above. (S)
16. ( ) Insert one lead of the C-31/R-47 assembly into wafer #5, lug #21, and the other lead into wafer #1, lug #22. Wrap the leads ½-turn around the lugs, crimp with pliers, and cut off the excess ends. (NS)
17. ( ) Insert one lead of the C-30/R-46 assembly into wafer #5, lug #1, and the other lead into wafer #1, lug #22. Wrap the leads ½-turn around the lugs, crimp with pliers, and cut off the excess ends. Solder connections at wafer #1, lug #22 only.
18. ( ) Connect one end of a 5-inch cut-length of violet wire to wafer #5, lug #1. (S)
19. ( ) Connect one end of a 3-inch cut-length of white wire to wafer #5, lug #21. (S)
20. ( ) Pass the open end of the above 3-inch white wire underneath the C-31/R-47 assembly, and connect to wafer #2, lug #1. (NS)
21. ( ) Connect one end of a 2-inch cut-length of white wire to wafer #2, lug #1. (S)
22. ( ) Clip one lead of R-74 to a length of 1-inch and connect to wafer #1, lug #20. (S)
23. ( ) Connect one end of a 2¾-inch cut-length of yellow wire to wafer #1, lug #18. (S)
24. ( ) Connect one end of a 2-inch cut length of orange wire to wafer #1, lug #16. (S)
25. ( ) Connect one end of a 5-inch cut-length of violet wire to wafer #3, lug #12. (S)
26. ( ) Connect one end of a 6½-inch cut-length of gray wire to wafer #1, lug #7. (S)
27. ( ) Connect one end of a 7¼-inch length of gray wire to wafer #4, lug #12. (S)
28. ( ) Inspect work. All lugs with attached resistors, capacitors, or lead wires should be soldered. The body or leads of any component must not touch the body or leads of any other component.

WORK AREA



RADIO CORPORATION OF AMERICA
ELECTRON TUBE DIVISION, CAMDEN, N. J.
Trade Mark(s) Registered — Marca(s) Registrada(s)
Printed in U. S. A.