( ) R40. Connect a 10 KΩ (brown-black-orange) 1/2 watt resistor from lug 9 of tube socket V4 (NS) to the solder lug mounted on V4 (NS).

( ) C42. Connect a 30 μμf resin dipped mica capacitor from lug 9 of tube socket V4 (S-2) to lug 3 of BFO coil C (S-1).

( ) R21. Connect a 470 Ω (yellow-violet-brown) 1/2 watt resistor from lug 7 of tube socket V4 (NS) to lug 2 of terminal strip F (NS).

( ) R22. Connect a 10 KΩ (brown-black-orange) 1/2 watt resistor from lug 3 of tube socket V4 (NS) to lug 3 of terminal strip F (NS).

( ) C63. Connect a .1 μfd Mylar capacitor between lugs 2 (S-4) and 4 (S-1) of terminal strip F.

( ) R25. Connect a 6800 Ω (blue-gray-red) 1/2 watt resistor between lugs 1 (S-3) and 3 (S-4) of terminal strip F.

( ) PC1. Connect a parasitic choke (#45-43) from lug 2 of tube socket V4 (S-1) to lug 2 of IF transformer K (S-1).

Refer to Detail 3C for the following steps.

( ) C26. Connect a .1 μfd Mylar capacitor between lug 7 (S-2) and the solder lug mounted on tube socket V4 (S-3).

( ) C27. Connect a .005 μfd disc ceramic capacitor between lug 3 (S-2) and the center post (NS) of tube socket V4.

( ) C39. Connect a .005 μfd disc ceramic capacitor between lug 1 (NS) and the center post (S-4) of tube socket V4.

( ) R39. Connect a 68 KΩ (blue-gray-orange) 1/2 watt resistor from lug 1 of tube socket V4 (S-2) to lug 5 of terminal strip F (S-2).

Refer to Pictorial 3 for the following steps.

( ) R19. Connect a 100 KΩ (brown-black-yellow) 1/2 watt resistor from lug 6 of terminal strip F (S-3) to lug 4 of IF transformer K (NS).

( ) C25. Connect a .005 μfd disc ceramic capacitor from lug 4 of IF transformer K (S-2) to solder lug J (NS).

( ) C24. Connect a .005 μfd disc ceramic capacitor from lug 3 of IF transformer K (NS) to solder lug J (S-2).

( ) R18. Connect a 2200 Ω (red-red-red) 1/2 watt resistor from lug 3 of IF transformer K (S-2) to lug 3 of terminal strip L (NS).

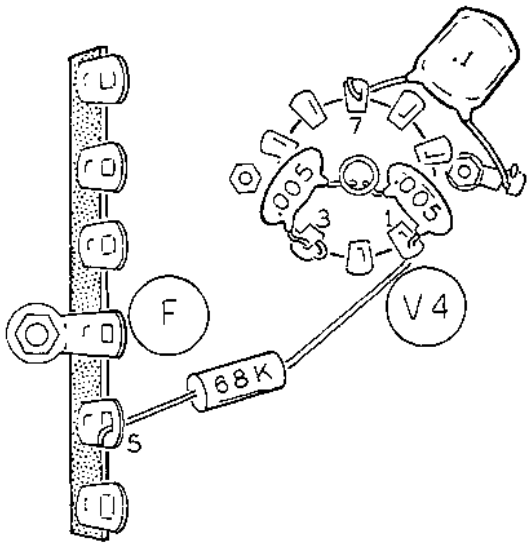
( ) C64. Connect a .005 μfd disc ceramic capacitor between lugs 2 (S-1) and 3 (NS) of terminal strip L.

( ) R17. Connect a 47 KΩ (yellow-violet-orange) 1/2 watt resistor from lug 3 of terminal strip L (NS) to lug 6 of tube socket V3 (NS).

( ) R46. Connect a 100 KΩ (brown-black-yellow) 1/2 watt resistor between lugs 3 (S-7) and 1 (NS) of terminal strip L.

( ) R16. Connect a 100 Ω (brown-black-brown) 1/2 watt resistor from lug 1 of terminal strip L (S-4) to lug 7 of tube socket V3 (NS).

( ) Place one end of a length of bare wire through lug 4 (NS) to lug 2 (NS) of tube socket V3. Connect the other end to the solder lug mounted on V3 (NS).



Detail 3C

( ) R15. Connect a 3900 Ω (orange-white-red) 1/2 watt resistor from lug 1 of tube socket V3 (S-2) to the solder lug mounted on V3 (S-2).

( ) C23. Connect a .005 μfd disc ceramic capacitor between lugs 4 (S-3) and 6 (S-2) of tube socket V3.

( ) C22. Connect a .005 μfd disc ceramic capacitor between lugs 7 (S-2) and 2 (S-2) of tube socket V3.

( ) C59. Connect a .005 μfd 1.4 kv disc ceramic capacitor between lugs 2 (NS) and 3 (NS) of terminal strip BC.

( ) C60. Connect a .005 μfd 1.4 kv disc ceramic capacitor between lugs 3 (S-2) and 4 (NS) of terminal strip BC.

( ) Connect a length of bare wire from lug 1 of octal socket BD (S-1) to the ground lug nearest lug 1 of BD (S-1).

( ) R24. Connect a 22 KΩ (red-red-orange) 1 watt resistor from lug 1 of control BE (S-1) to the ground lug nearest lug 7 of octal socket BD (S-1).

( ) C17. Connect a .005 μfd disc ceramic capacitor between lugs 1 (NS) and 4 (S-3) of IF transformer P. Be sure to solder lug 4 of P to the solder lug nearest lug 4.

( ) R14. Connect a 1000 Ω (brown-black-red) 1/2 watt resistor from lug 1 of IF transformer P (S-2) to lug 4 of octal socket CC (S-3).

( ) C51. Connect a .005 μfd disc ceramic capacitor from lug 3 of octal socket CC (S-3) to the ground lug nearest lug 3 of CC (S-1).

( ) C61. Connect a .005 μfd disc ceramic capacitor from lug 2 of octal socket CC (S-2) to the ground lug nearest lug 1 of CC (S-1).

( ) Place one end of a length of bare wire through the center post (NS) to lug 5 (S-3) of tube socket V2. Connect the other end of this wire to the solder lug mounted on V2 (NS).

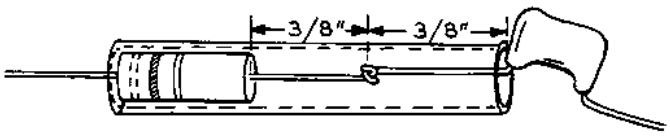
( ) R42. Connect a 100 KΩ (brown-black-yellow) 1/2 watt resistor from lug 9 of tube socket V2 (NS) to the solder lug mounted on V2 (NS).

( ) R12. Connect a 470 Ω (yellow-violet-brown) 1/2 watt resistor from lug 7 of tube socket V2 (NS) to the solder lug mounted on V2 (NS).

( ) C43. Connect a .005 μfd disc ceramic capacitor from lug 1 of tube socket V2 (NS) to the solder lug mounted on V2 (NS).

( ) R11. Connect a 100 KΩ (brown-black-yellow) 1/2 watt resistor from lug 2 of tube socket V2 (NS) to the solder lug mounted on V2 (S-5).

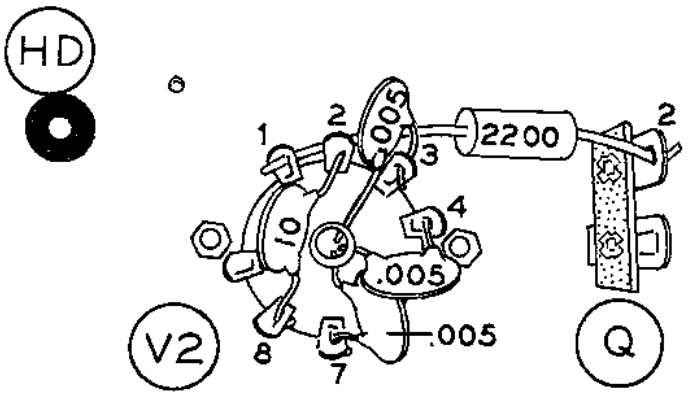
( ) R10, C18. Referring to Detail 3D, prepare a 10 Ω (brown-black-black) resistor and a 30 μμf resin dipped capacitor in a series combination (S-2). Place a length of clear plastic sleeving over this combination as shown.



Detail 3D

( ) Connect the resistor lead of this combination to lug 2 of tube socket V2 (NS). Connect the capacitor lead to lug 5 of tube socket V1 (NS). Use sleeving on this lead.

( ) R13. Connect a 47 KΩ (yellow-violet-orange) 1/2 watt resistor from lug 3 of tube socket V2 (NS) to lug 2 of terminal strip Q (NS).



Detail 3E

Refer to Detail 3E for the following steps.

( ) C19. Connect a 10 μμf disc ceramic capacitor between lugs 2 (S-3) and 8 (NS) of tube socket V2.

( ) C21. Connect a .005 μfd disc ceramic capacitor between lug 3 (S-2) and the center post (NS) of tube socket V2.

( ) C53. Connect a .005 μfd disc ceramic capacitor between lug 4 (S-3) and the center post (NS) of tube socket V2.

( ) C20. Connect a .005 μfd disc ceramic capacitor between lug 7 (S-2) and the center post (S-5) of tube socket V2.

( ) R41. Connect a 2200 Ω (red-red-red) 1/2 watt resistor from lug 2 of terminal strip Q (S-4) to lug 1 of tube socket V2 (S-2).

Refer to Pictorial 3 for the following steps.

( ) R4. Connect a 150 Ω (brown-green-brown) 1/2 watt resistor from lug 2 of tube socket V1 (NS) to lug 2 of terminal strip S (NS).

( ) C9. Connect a .005 μfd disc ceramic capacitor between lugs 1 (S-1) and 2 (S-3) of terminal strip S.

( ) Place one end of a length of bare wire through the center post (NS) to lug 3 (S-1) of tube socket V1. Connect the other end of this wire through lug 7 (S-2) to the solder lug mounted on V1 (S-1).

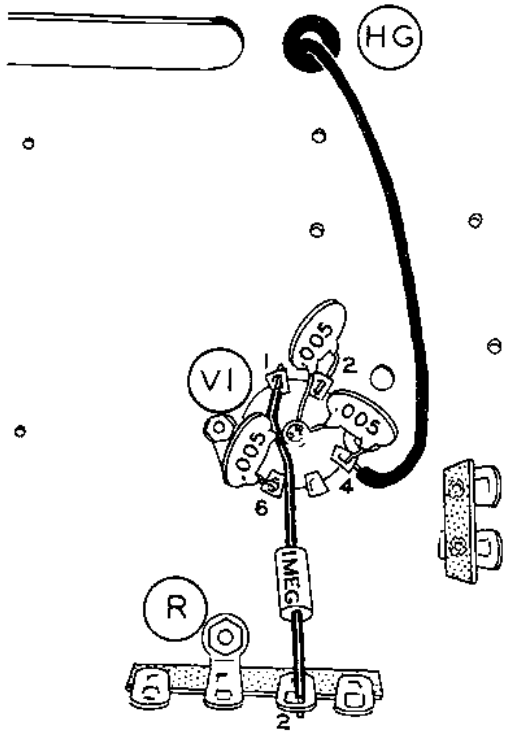
( ) R3. Connect a 100 KΩ (brown-black-yellow) 1/2 watt resistor between lugs 1 (S-2) and 2 (NS) of terminal strip R.

( ) C8. Connect a .005 μfd disc ceramic capacitor between lugs 2 (NS) and 3 (NS) of terminal strip R.

( ) C65. Connect a .005 μfd disc ceramic capacitor between lugs 3 (NS) and 4 (NS) of terminal strip R.

( ) R8. Connect a 120 KΩ (brown-red-yellow) 1/2 watt resistor from lug 3 of terminal strip R (S-3) to lug 6 of tube socket V1 (NS).

( ) R7. Connect a 47 KΩ (yellow-violet-orange) 1/2 watt resistor from lug 4 of terminal strip R (NS) to lug 6 of tube socket V1 (NS).



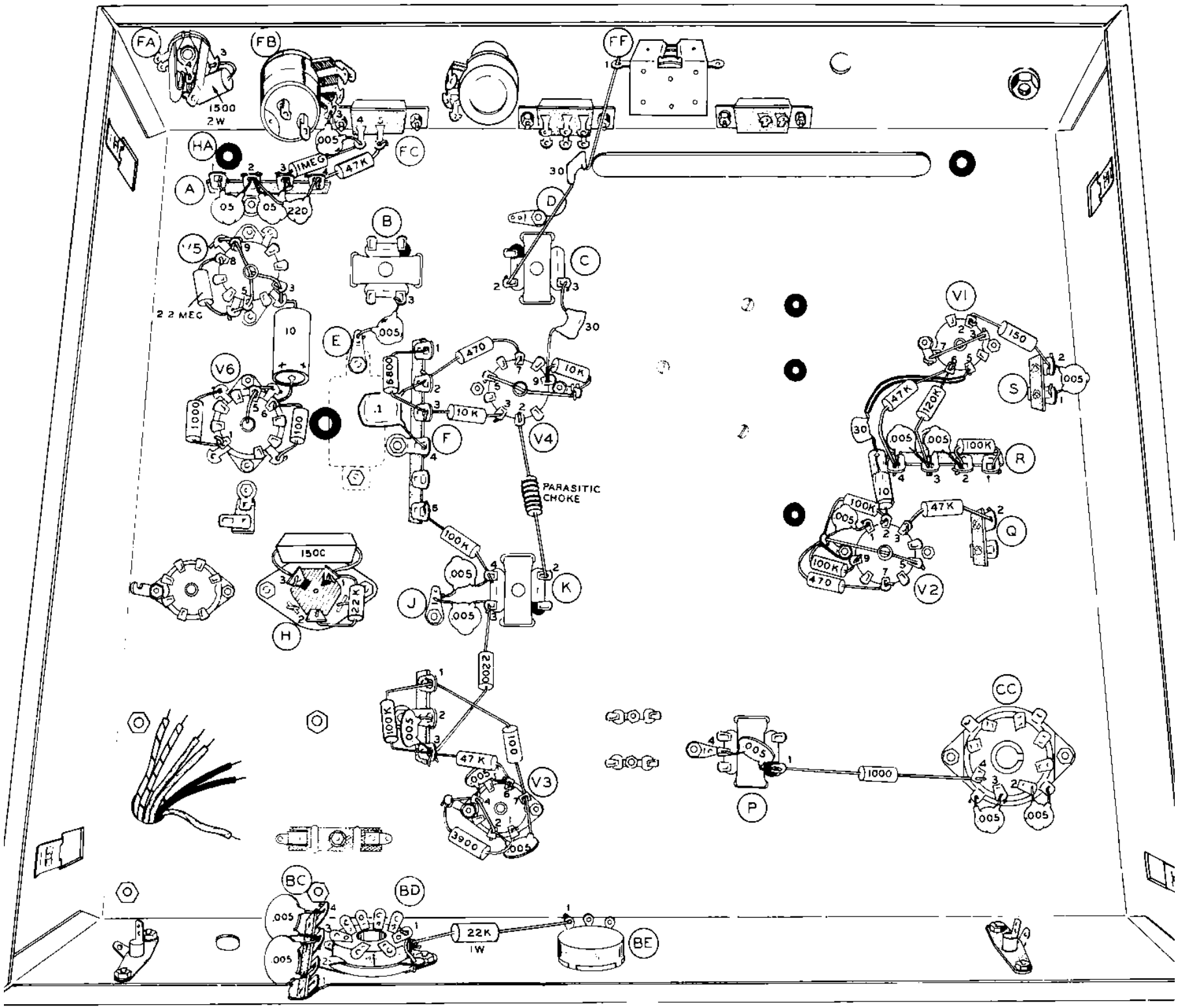
Detail 3F

Refer to Detail 3F for the following steps.

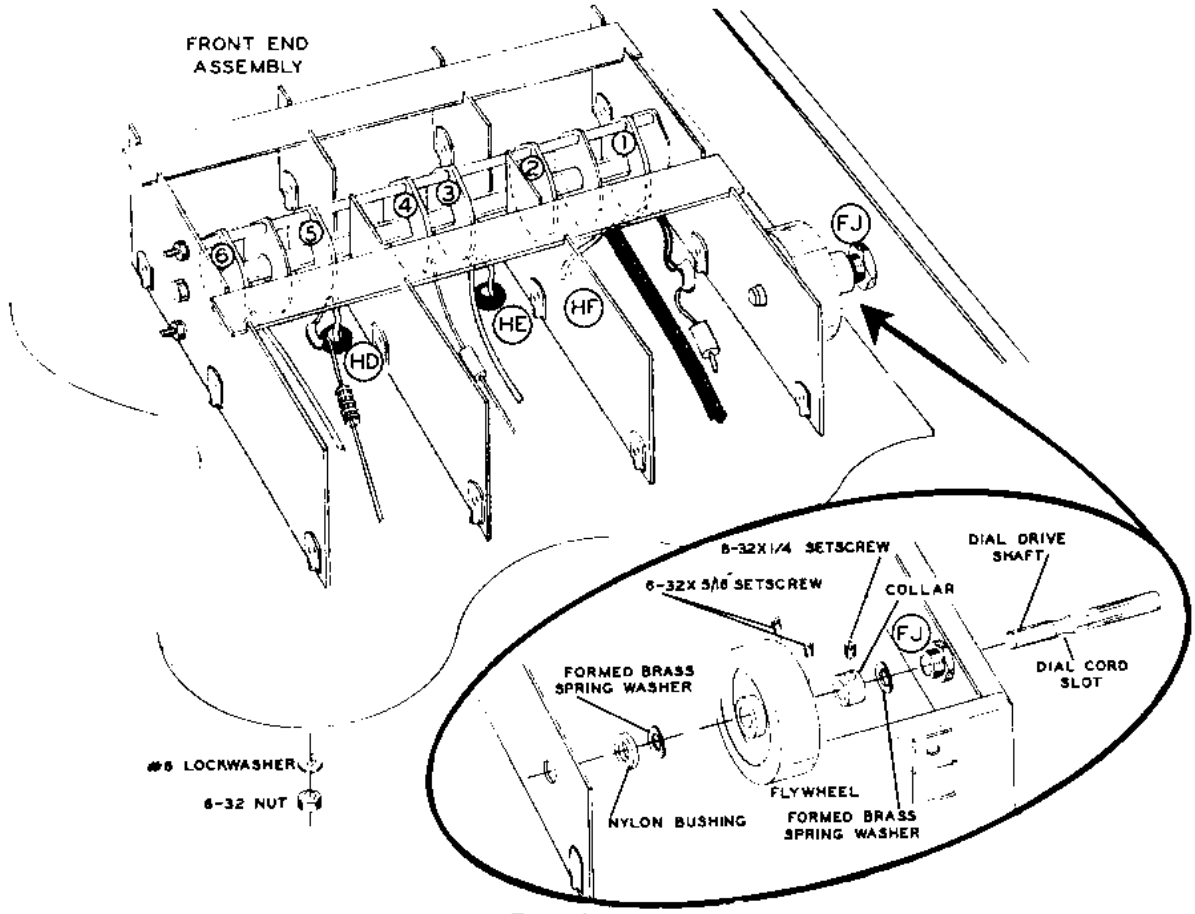
( ) C52. Connect a .005 μfd disc ceramic capacitor between lug 4 (NS) and the center post (NS) of tube socket V1.

( ) C10. Connect a .005 μfd disc ceramic capacitor between lug 6 (S-3) and the center post (NS) of tube socket V1.

( ) C66. Connect a .005 μfd disc ceramic capacitor between lug 2 (S-2) and the center post (S-5) of tube socket V1.


FA
FB
FC
FF
HA
A
B
C
D
E
F
H
J
K
V1
V2
V3
V4
V5
V6
P
Q
R
S
BC
BD
BE
1500
2W
.005
1MEG
47K
05
220
2.2 MEG
10
470
6800
.1
10K
PARASITIC
CHOKE
150C
22K
100K
2200
100
3900
150
120K
1000
1100
22K
1W

PICTORIAL 3



Detail 4A

( ) R2. Connect a 1 megohm (brown-black-green) 1/2 watt resistor from lug 2 of terminal strip R (S-3) to lug 1 of tube socket V1 (NS). Use sleeving on both leads.

( ) Locate the remaining pilot lamp socket and place its lead through grommet HG from the top of the chassis. Connect the end of this lead to lug 4 of tube socket V1 (S-3).

FRONT END MOUNTING

Refer to Detail 4A for the following steps.

( ) Place the short end of the 2-1/2" dial drive shaft through bushing FJ from the front side of the front panel.

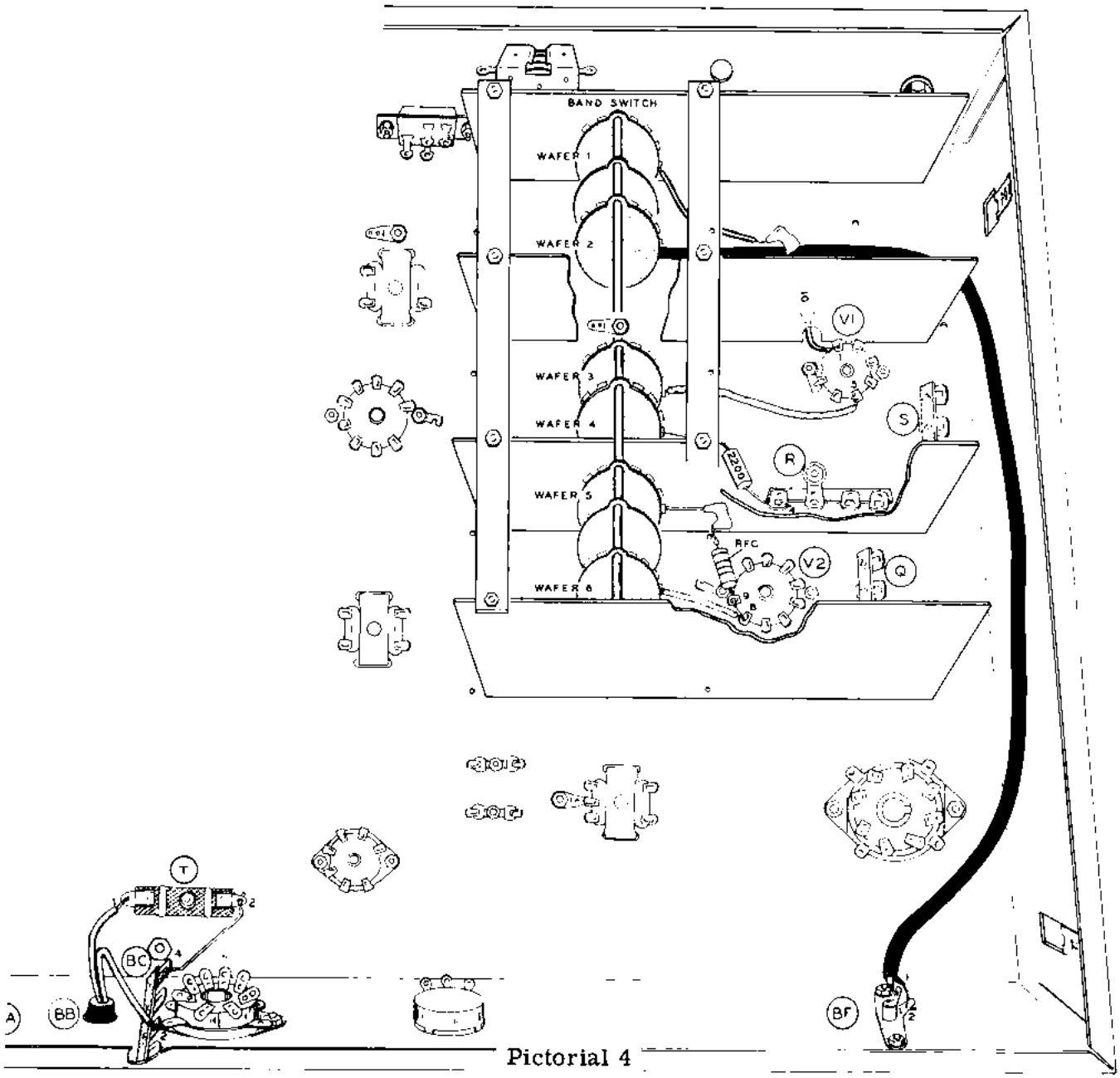
( ) Place a formed spring brass washer over the end of the shaft extending through the front panel. Start an 8-32 x 1/4" setscrew in the collar. Place the collar over the end of the dial drive shaft. Do not tighten the setscrew.

( ) Start two 6-32 x 5/16" setscrews in the flywheel. Place the flywheel over the end of the dial drive shaft until the front edge of the flywheel is flush with the rear edge of the dial cord slot in the shaft. Now tighten the two setscrews in the flywheel.

( ) Place the remaining formed spring brass washer and the flat nylon bushing over the end of the dial drive shaft.

( ) Referring to Detail 4A, and Pictorial 4 (Page 26), place the front end assembly into place. Be sure that the yellow wire extending from wafer 1 of the BAND switch passes through grommet HF, the short yellow wire from wafer 3 passes through grommet HE, and the yellow wire from wafer 5 passes through grommet HD. Secure the assembly with #6 lockwashers and 6-32 nuts. Dress the free end of the remaining wires and component lead as shown. Before tightening the mounting hardware, be sure that all wires are out from under the front end assembly.

( ) Hold the flywheel tight against the front end assembly and push the collar, on the dial drive shaft against the formed spring brass washer and tighten the setscrew.



Pictorial 4

Refer to Pictorial 4 for the following steps.

( ) Connect the free lead of the resistor capacitor series extending from wafer 1 of the BAND switch to lug 1 of tube socket V1 (S-2). Use sleeving.

( ) Connect the free end of the long yellow wire extending from wafer 3 of the BAND switch to lug 5 of tube socket V1 (S-2).

( ) Connect the free end of the 2200 Ω (red-red-red) 1/2 watt resistor extending from wafer 4 of the BAND switch to lug 4 of terminal strip R (S-5). Cut off any excess lead length.

( ) Connect the free lead of the capacitor choke combination extending from wafer 5 of the BAND switch to lug 9 of tube socket V2 (S-2). Cut off any excess lead length.

( ) Connect the free end of the yellow wire extending from wafer 6 of the BAND switch to lug 8 of tube socket V2 (S-3).

( ) Route the coaxial cable extending from wafer 2 of the BAND switch as shown and connect the inner conductor to lug 1 of phono socket BF (S-2). Connect the shield to lug 2 of BF (S-1).

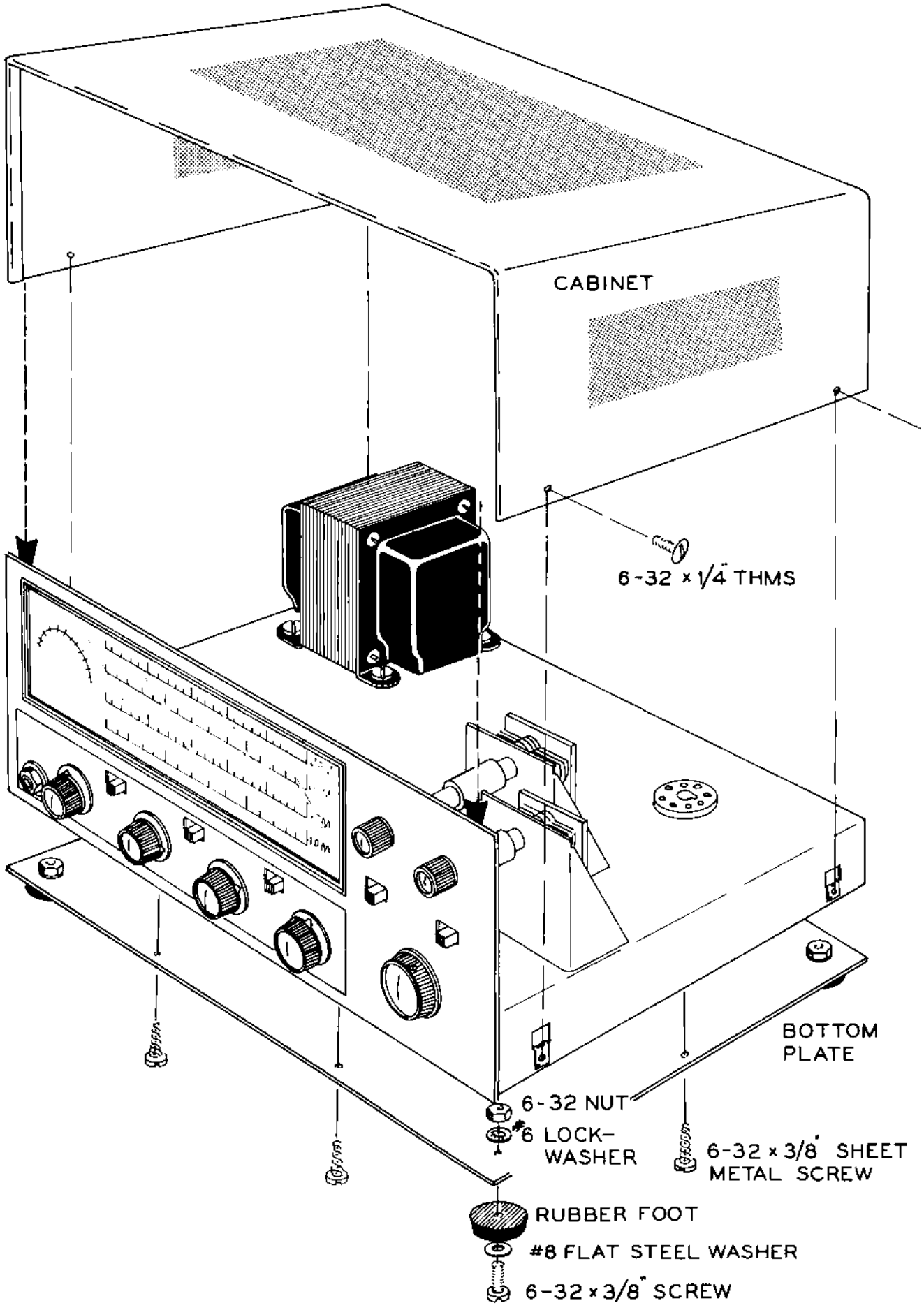
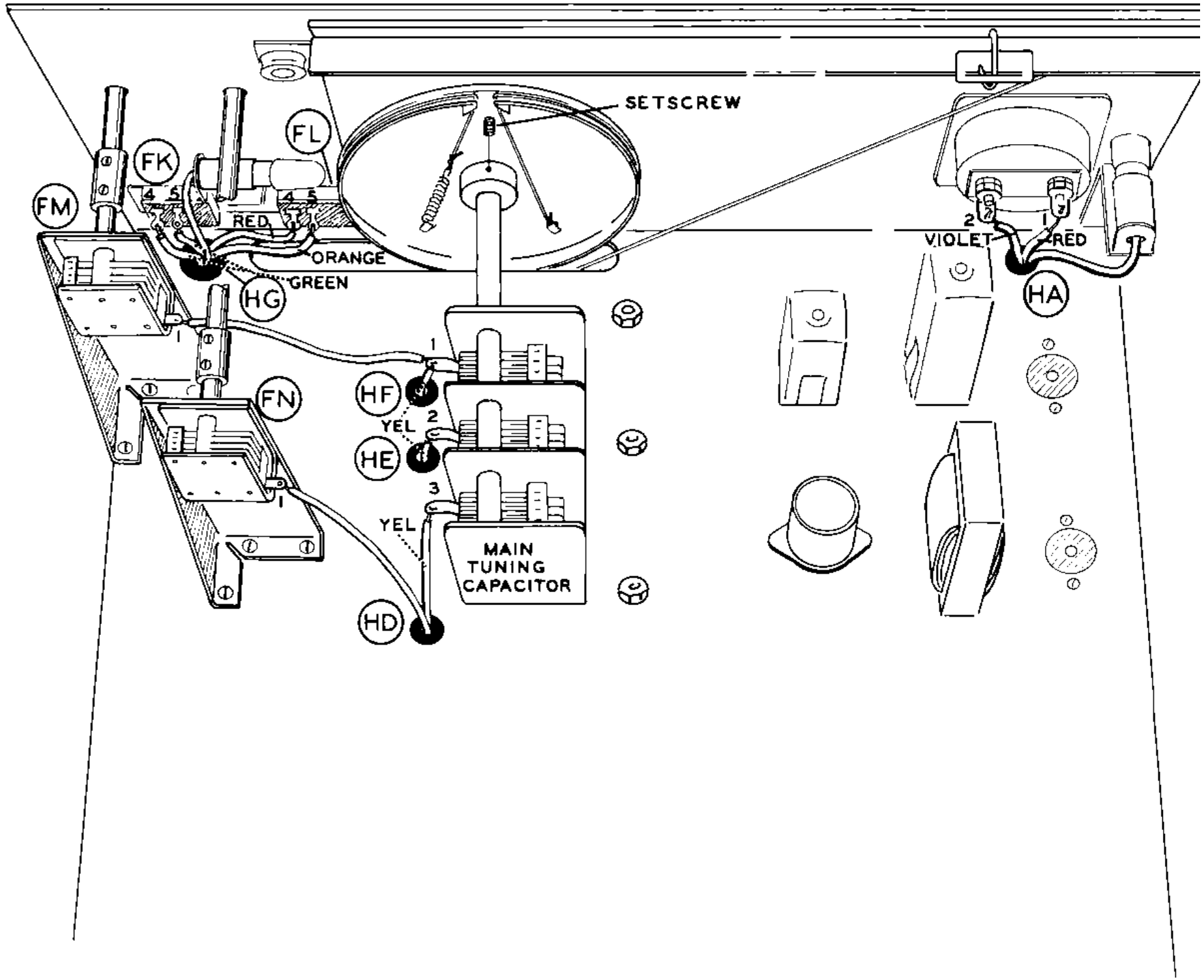
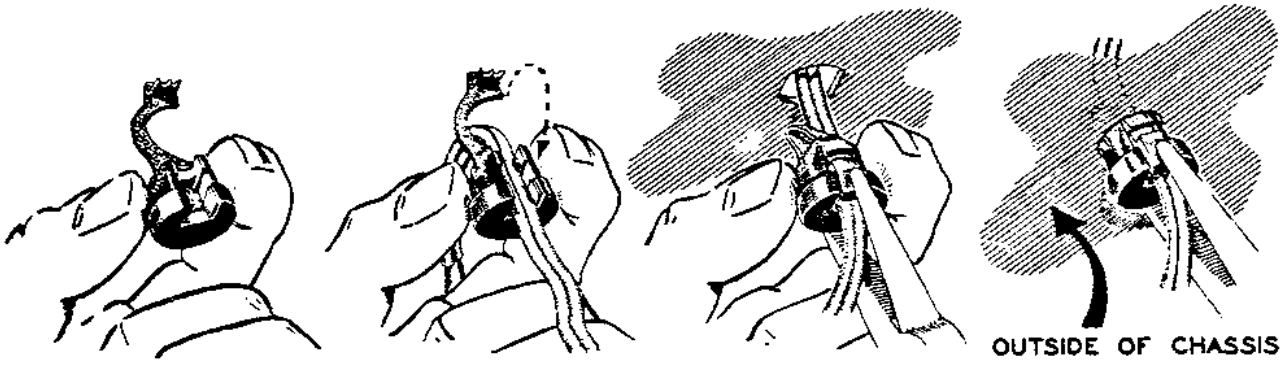

CABINET
6-32 x 1/4" THMS
BOTTOM PLATE
6-32 NUT
#6 LOCK-WASHER
6-32 x 3/8" SHEET METAL SCREW
RUBBER FOOT
#8 FLAT STEEL WASHER
6-32 x 3/8" SCREW

Figure 3


SETSCREW
FL
FK
FM
4 5
4 5
RED
ORANGE
GREEN
HG
1
FN
1
HF
1
YEL
HE
2
2
3
YEL
HD
MAIN
TUNING
CAPACITOR
2
VIOLET
1
RED
HA

Pictorial 5



Detail 4B

( ) Referring to Detail 4B and Pictorial 4, install the line cord and line cord strain relief at location BB on the rear apron. Leave 1-1/2" of line cord inside the chassis.

( ) Apply a small amount of solder to each line cord wire and then connect either wire to lug 2 of terminal strip BC (S-4). Connect the other wire to lug 1 of fuse block T (S-1).

( ) Connect a length of bare wire from lug 2 of fuse block T (S-1) to lug 4 of terminal strip BC (S-3), [S-3 if wired for 240 VAC operation]. Use sleeving.

This completes the wiring on the bottom of the chassis.

CHASSIS TOP PARTS MOUNTING AND WIRING

Refer to Pictorial 5 for the following steps.

( ) Connect the yellow wire extending through grommet HF to lug 1 of the MAIN TUNING capacitor (NS).

( ) Connect the yellow wire extending through grommet HE to lug 2 of the MAIN TUNING capacitor (S-1).

( ) Connect the short yellow wire extending through grommet HD to lug 3 of the MAIN TUNING capacitor (S-1).

( ) Connect either green harness wire extending through grommet HG to lug 4 (S-1) and the other green wire to lug 5 (S-1) of slide switch FK.

( ) Connect the orange harness wire extending through grommet HG to lug 5 of slide switch FL (S-1).

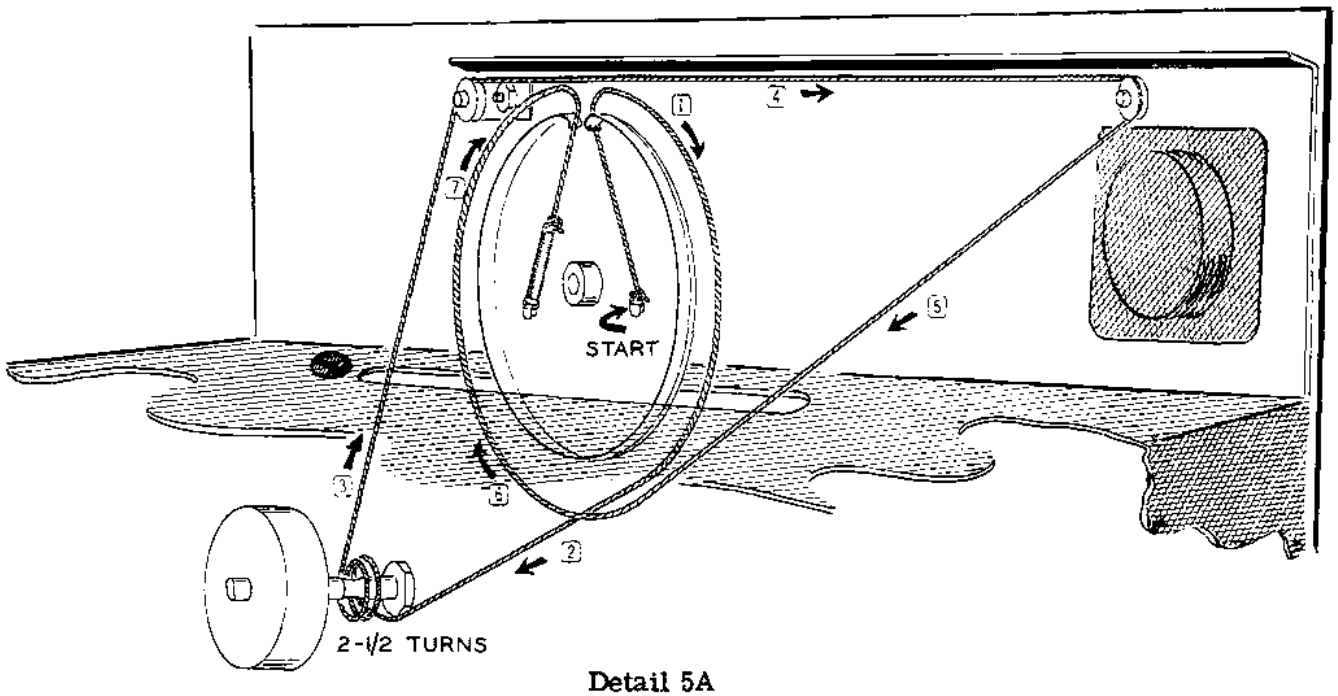
( ) Connect the red harness wire extending through grommet HG to lug 4 of slide switch FL (S-1).

( ) Connect a 3" yellow wire from lug 1 of the MAIN TUNING capacitor (S-2) to lug 1 of variable capacitor FM (S-1)

( ) Connect the free end of the remaining yellow wire extending through grommet HD to lug 1 of variable capacitor FN (S-1).

( ) Connect the red harness lead extending from grommet HA to lug 1 (S-1) and the violet harness lead to lug 2 (S-1) of the meter.

( ) Turn the MAIN TUNING capacitor until the capacitor plates are fully meshed. Position the rim opening in the dial drum as shown in Pictorial 5 and tighten the setscrew. Make sure it rotates freely in the chassis cutout.



Detail 5A

( ) Locate the dial cord and tie a loop in one end, approximately 1" from the end. Place this loop over the tab on the dial drum as shown in Detail 5A.

( ) Referring to Detail 5A, finish stringing the dial cord on the dial drum, dial back plate assembly, dial drive shaft, and the dial pulley assembly. Tie the dial cord spring on the dial cord. Cut off any excess cord length. Attach the free end of the spring to the dial drum.

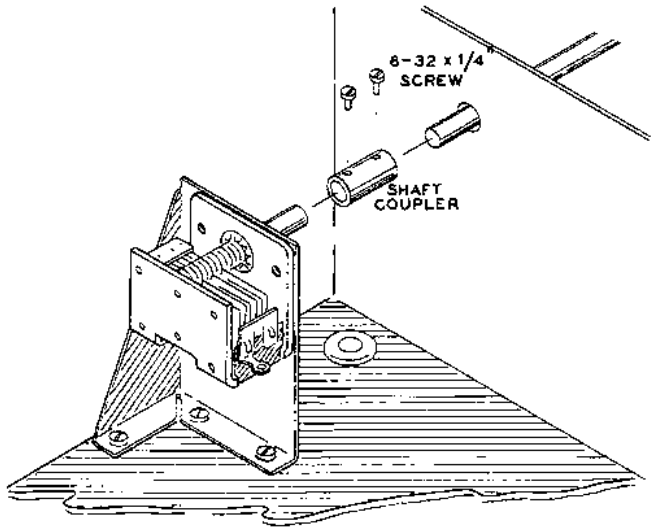
( ) Install an 8-32 x 3/8" setscrew in the large knob.

( ) Install the large knob on the MAIN tuning shaft. Rotate the MAIN TUNING capacitor fully counterclockwise. Place the dial cord through the fingers on the bottom of the dial pointer. Holding the tuning capacitor plates closed slide the pointer on the dial cord until it is 1/8" to the left (as viewed from the front panel) of the 3.5 mc calibrating mark. Secure the pointer to the dial cord by squeezing the fingers on the cord. Be careful not to cut the cord.

( ) Referring to Detail 5B, start two 6-32 x 1/4" screws in one of the shaft couplers. Place one end of this coupler on the shaft of the variable capacitor at FM. Tighten the setscrew.

( ) Place one end of the 1-7/8" extension shaft through the ANT TRIM hole in the front panel and into the open end of the shaft coupler. Tighten the setscrew. The end of the shaft should extend 3/8" beyond the front of the panel.

( ) Start two 6-32 x 1/4" screws in the remaining shaft coupler and secure one end to the variable capacitor shaft at FN.



Detail 5B

( ) Place one end of the remaining shaft through the CAL RESET hole in the front panel and into the open end of the shaft coupler on FN. Tighten the setscrew. The end of the shaft should extend 3/8" beyond the front of the panel.

( ) Insert all tubes in their respective tube sockets and install the tube shields.

( ) Install the 1/2 ampere fuse in the fuse block. (Use a 1/4 ampere fuse if the Receiver was wired for 240 VAC operation. NOTE: This fuse is not furnished with the kit.)

( ) Place a pilot lamp in each pilot lamp socket. Install the sockets on the pilot lamp brackets.

( ) Install a 1680.70 kc crystal in its crystal socket and the 1682.40 kc crystal in its crystal socket.

( ) Install a 6-32 x 1/8" setscrew in each of the two small knobs.

( ) Install the two small knobs on the CAL RESET and ANT TRIM control shafts.

( ) Install an 8-32 x 1/4" setscrew in each of the remaining four knobs.

( ) Install the remaining medium knobs on the remaining shafts. Turn each shaft fully counterclockwise and set the pointer on the knob at the beginning of rotation.

This completes the assembly of your Receiver. Continue with the Initial Test Procedure.

INITIAL TEST

( ) Locate the octal plug and octal plug cap. Referring to Figure 1, connect a bare jumper wire between lugs 1 (S-1) and 6 (S-1). Now install the octal plug cap.

( ) Plug the prepared octal plug into the accessory socket on the rear apron.

If an ohmmeter is available measure the resistance from lug 1 of terminal strip G to ground. After approximately 30 seconds the resistance reading should be 30 KΩ or over. If it is lower, refer to the In Case Of Difficulty section of the manual.

( ) Set all front panel controls as follows:

AF GAIN	OFF
RF GAIN	Maximum clockwise
BFO TUNE	12 o'clock
BAND Switch	80 meters
MAIN TUNING	3.5 mc
ANL	OFF
AVC	OFF
BFO	OFF
CAL	OFF
STBY-REC	REC

( ) Connect an 8 Ω speaker to Speaker jack BA on the rear apron.

( ) Plug the line cord into an AC outlet supplying the voltage for which the Receiver was wired (105-125 or 210-250 volts). CAUTION: Connecting the Receiver to the wrong line voltage could result in severe damage.

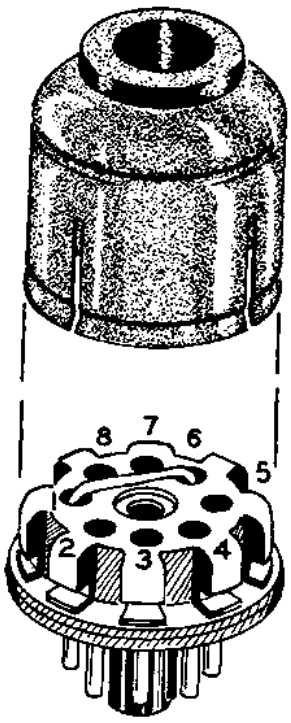


Figure 1

( ) Turn the AF GAIN control to the 12 o'clock position. The pilot lamps and all tube filaments should glow. After several seconds, a rushing noise should be heard in the speaker. If these conditions exist, unplug the line cord and proceed to the Alignment section of this manual. If they do not, unplug the line cord and refer to the In Case Of Difficulty section.

ALIGNMENT

IF TRANSFORMER ALIGNMENT AND METER ZERO ADJUSTMENT

Equipment Required: An amplitude modulated RF signal generator and an AC voltmeter.

( ) Set all front panel controls as follows:

AF GAIN	12 o'clock
RF GAIN	Maximum clockwise
BFO TUNE	12 o'clock
BAND Switch	80 meters
MAIN TUNING	3.5 mc
ANL	OFF
AVC	OFF
BFO	OFF
CAL	OFF
STBY-REC	REC

( ) Connect a jumper wire from lug 9 of tube socket V2 to lug 1 of terminal strip Q. This disables the oscillator for IF transformer alignment.

( ) Connect one lead of the AC voltmeter to lug 1 of Speaker jack BA on the rear apron. Connect the other test lead to ground.

( ) Make sure that the speaker is still connected to the Speaker jack.

( ) Connect the positive or hot lead of the signal generator to the center lug of the ANTenna connector on the rear apron.

( ) Turn all of the equipment on and let it warm up for approximately 30 minutes to stabilize all circuits.

( ) Place the meter on the 3 or 5 volt range and set the generator for a high output level. The output of the generator should be reduced as the alignment procedure increases the sensitivity of the Receiver to keep the meter reading at approximately 1-1/2 volts.

( ) Start alignment of the IF transformer by adjusting the signal generator for maximum indication on the meter. The generator reading at this time may be slightly above or below the 1682 kc IF frequency.

( ) Adjust the bottom slug of the IF transformer T3 for maximum meter indication. Then adjust the top slug of T3 for a maximum indication. Proceed to transformer T2 and adjust the bottom slug for a maximum indication, then adjust the top slug.

( ) Adjust the top slug of T1 for a maximum indication, and then adjust the bottom slug.

( ) Adjust the signal generator frequency for a maximum meter indication. Then repeat the above IF transformer alignment steps.

( ) Repeat the entire procedure described above, each time adjusting the signal generator until further adjustment does not cause an increase in meter reading.

Refer to Figure 2 for the locations of the transformers called for in the following steps.

( ) Place the BFO switch in the ON position. Turn the modulation switch on the signal generator to off. Turn the slug in the BFO coil until you obtain a zero beat. Be sure that the BFO tuning knob is in the 12 o'clock position and that the signal generator is peaked for maximum voltage reading.

( ) Rotate the BFO tuning knob each side of the 12 o'clock position. For the same amount of rotation in each direction, the tone should be the same frequency except at the extreme clockwise and counterclockwise positions, where there is nonlinearity of the variable capacitor. If the tone is not the same frequency, readjust the BFO coil.

( ) Turn the BFO switch to OFF and turn the modulation of the generator on.

( ) This completes the alignment of the IF stages in your Receiver. Disconnect the test equipment and remove the jumper wire from lug 9 of tube socket V2 to lug 1 of terminal strip Q.

( ) Temporarily place a short from the center lug of the ANTenna connector to ground with a screwdriver.