

General:

Start below on the RF PC board and work through using the steps that apply to the frequency you are building. Steps and components are noted for 27mhz and 50 mhz. No construction data is given for 72mhz as the PC boards for 72mhz are factory assembled.

RF PC BOARD Assembly: Refer to Fig.3 for 27MHZ; Fig. 7 for 50MHZ; Fig. 6 for 72MHZ.

- 1.() Check for a correction sheet enclosed in this book. If none is found build per this book.
- 2.() Check parts against the parts list. Study the schematic and the appropriate overlay drawings.
Note: coils may be supplied pre-wound in the kit. If so, disregard the coil winding instructions.
- 3.() Wind 9 coils (L1 through L9) per fig. 2. "S" means start winding, "Fin" means finish. Coil forms are scramble wound(not necessary to layer wind) tightly. Leave the secondary windings leads longer than the Primary on L1, so they are easy to identify. Note that the slots in the coil forms are not equally spaced. Slots with the narrowest spacing are horizontal on the drawing in fig. 2. Write the "L" number on the ferrite coilform as you wind it. L2 and L4 for 27MHZ are wound with #30 mag. wire. All others with #28 mag. wire.
- 4.() Scrape all the leads (L1 - L9) with a knife to remove all traces of enamel from the coil from the coil form out 1/8in. Then tin this cleaned length thoroughly. The tinning must be thin enough to pass through the hole in the PCB.
- 5.() Tin the pad on the PCB located under the Hex nut. Hex nut is shown dotted on overlay drawing.
- 6.() Sand one side of both brass hex nuts(4-40). Tin the sanded surface of both nuts.
- 7.() Insert the two 4-40 x 3/8in PH. flat head machine screw into the component side of the PCB, then run the nuts on the screws, making sure the tinned side of the nut is next to the PCB Clad Side.

- 8.() Pull the nut down tight on the PCB at the same time applying the soldering iron to the portion of the Pad that sticks out from under the brass nut. When the solder on the pad and the nut have flowed together remove the iron and let the joint cool, holding the nut very still to insure a good joint. The 4-40 screw will be used later to hold the PCB in the transmitter case. Approx. a 100watt iron is best to do this job.
- 9.() Clean (scrape) all the resin from the lead side of the ferrite coil forms after they are wound and tinned.
- 10.() Install coils L1 through L9. Pull on the wire leads after the coil is installed and bend the lead toward the opposite lead while holding this tension. Make sure that the portion of the lead that shows through the PCB is thoroughly tinned before soldering. Solder the leads on all coils but do not clip. Now reheat each joint and pull gently on the leads while the solder cools, this will insure a secure mounting of the coil.
- 11.() Install R6,12 - 27 ohm Red, purp, blk.
- 12.() Install R10,11 - 1K Brn, blk, red.
- 13.() Install R7,9 - 150 ohm Brn, grn, brn.
- 14.() Install R4,13 - Yel, purp, red. 4.7K
- 15.() Install R14 - 4.7K(50MHZ and 72MHZ) 27K(27MHZ).
- 16.() Install R5 - 15K Brn, grn, org.
- 17.() Install R2,3,8 - 10K
- 18.() Install R1 - 27K red, purp, org.
- 19.() 27MHZ - Install C12, 100pf; C11, 250pf; C10, 27pf
50MHZ - Install C12, 47pf; C11, 78pf; C10, 10pf
Above all mica caps.
- 20.() Install C8, 300pf C6, 100pf Mica C14,15 .002uf disc Cap; C2,3 - .01uf Mylar (brn, blk, org, wht, red)
- 21.() Install C4,5,9 - .05uf disc cap. Tin "+" pad when soldering C4.
- 22.() Install C1 - .001uf disc Cap.
- 23.() Install D1,2 - Sil Diode Observe polarity. Tin "R" Pad when soldering D2.
- 24.() Tin hook-up wire lead pads three places.

27 MHZ RF PC BOARD

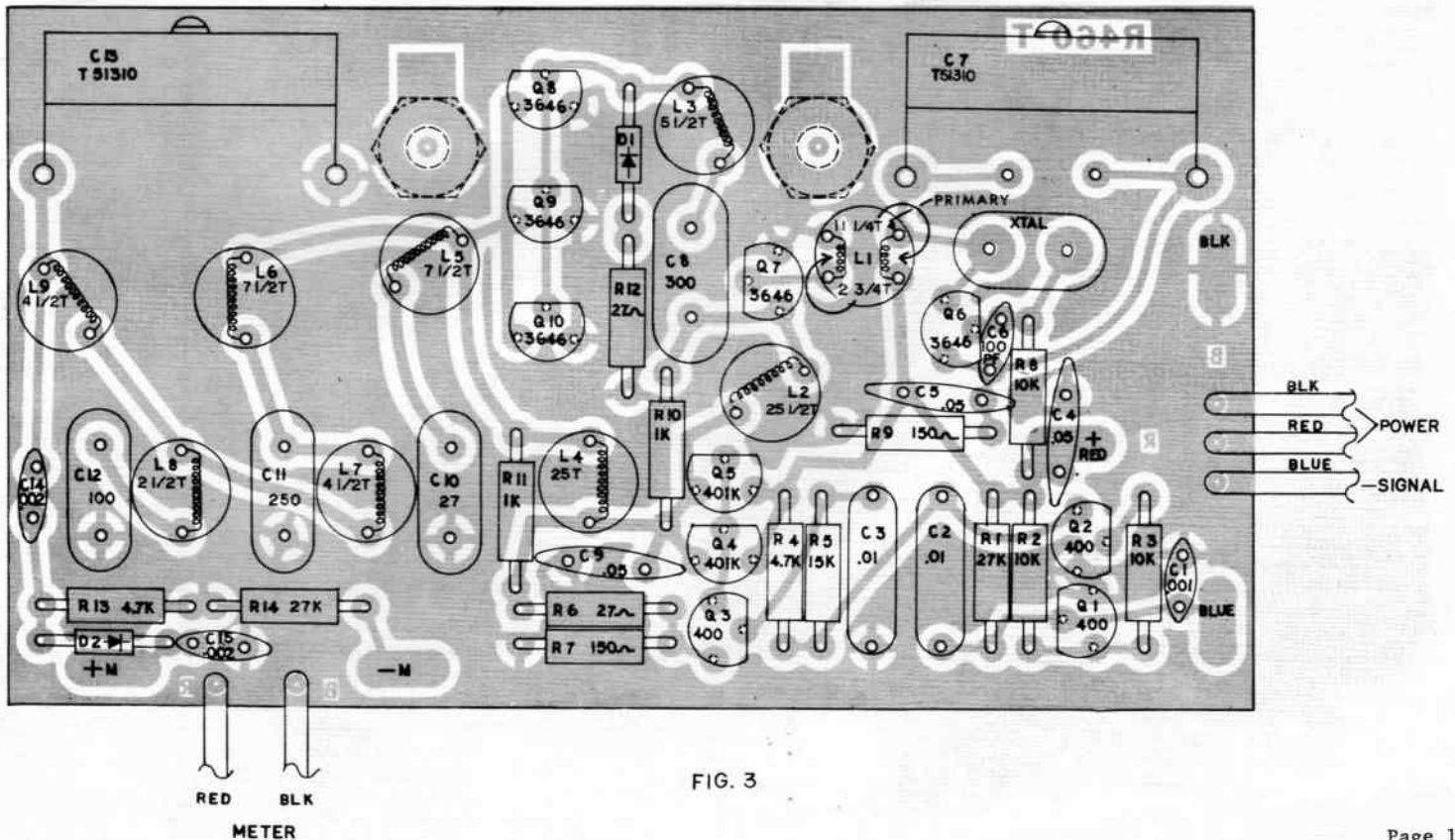
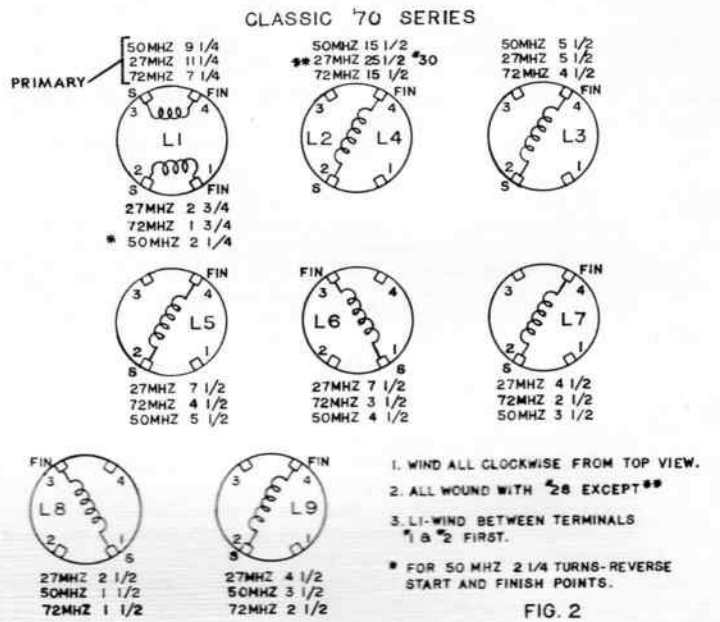
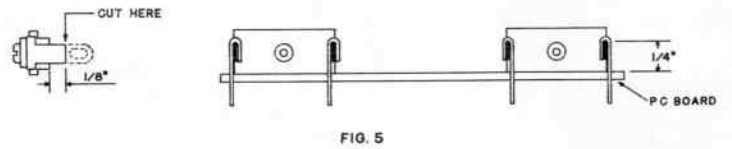


FIG. 3

25. () Cut the #18 gage bus wire into 4 equal lengths.
26. () Trial fit C7 and C13 on the PCB. Straighten the cap lugs if necessary so that they are 90 degrees to the cap body. Clip off the lugs 1/8in long. See fig. 5.
27. () Form all four #18 g. standoffs. See fig. 5. Press the standoffs into the PCB and space them 1/4in. off the PCB. Note the position of the loops in fig. 5.
28. () Insert the lugs of C7 and C13 into the loops formed on the #18g. standoffs. Slide the caps back so that the adjusting screw clears the edge of the PCB by 1/32in. min., then solder the standoffs to the cap lugs. Next solder the standoffs in the PCB.
29. () Install Q1,2,3 - M400 transistor
30. () Install Q4,5 - SPS401K transistor
31. () Install Q6,7,8,9,10 - MPS3646 transistor.
32. () Install the crystal. Some crystal pins may be too large for the holes provided.. If so, drill the holes with a #55 drill .
33. () Solder a 4in. red and black wire to the meter lead pads "B" and "R". Run the wires through the hole in the PCB nearest the pad.
34. () Solder 6in. red and blk. power leads to the pads "R" and "B". Solder the 6in. blue wire to the pad next to C1. Run the wires through the hole in the PCB nearest to the pad.
35. () Clean the PCB to remove all solder resin. Use dope thinner or 1,1,1 trichloreoethane. Recheck all solder joints visually.
36. () Twist both groups of wires into neat bundles.
37. () Check the resistance between the red and black power leads. This should be approx. 1K(Simpson 270). Some import meters will not make this measurement accurately. If your reading is too low, look for solder bridges, or parts in wrong.
38. () Set the RF PCB aside for use later in the mechanical assembly.



50 MHZ RF PC BOARD

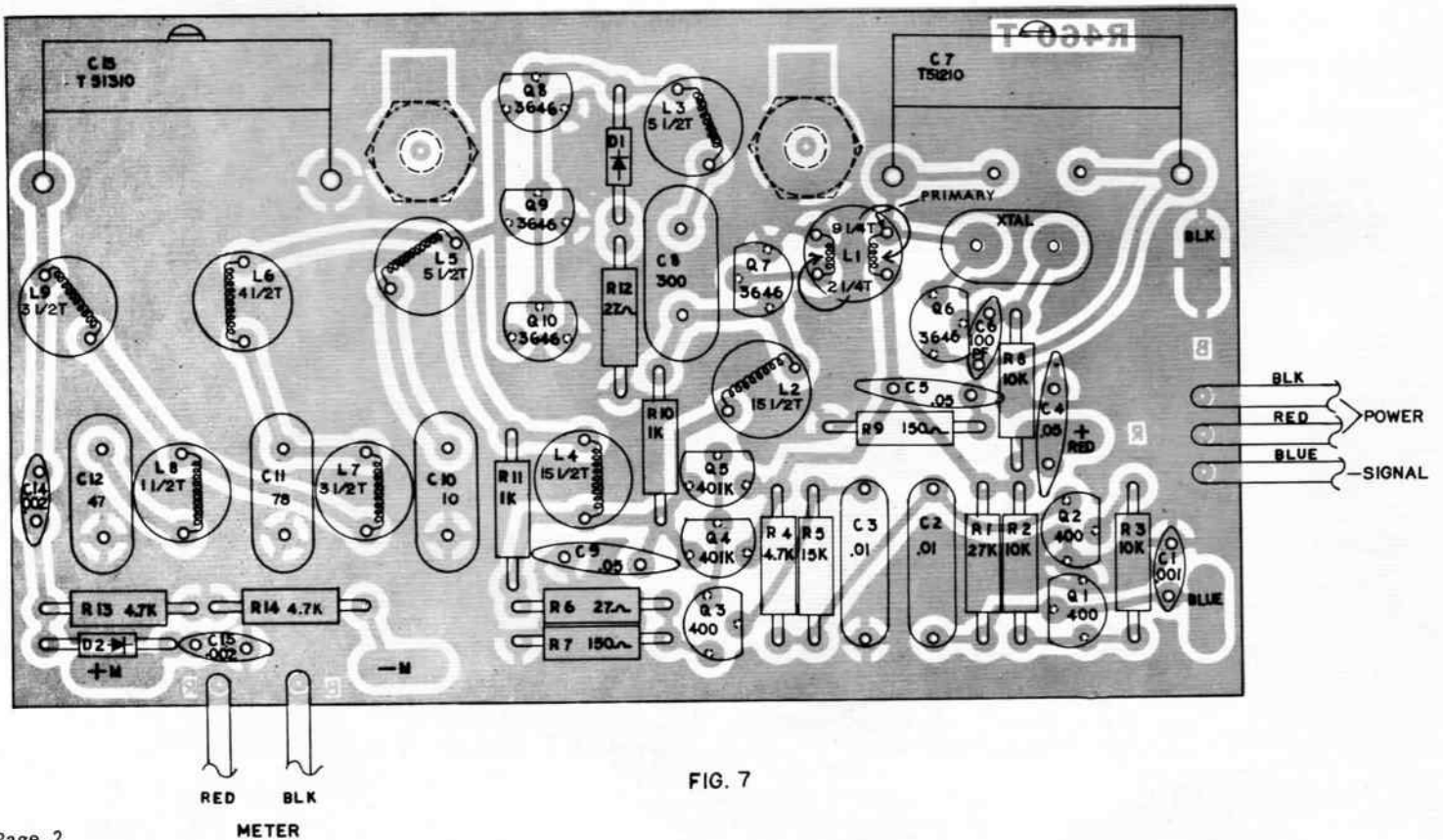


FIG. 7

72 MHZ RF PC BOARD

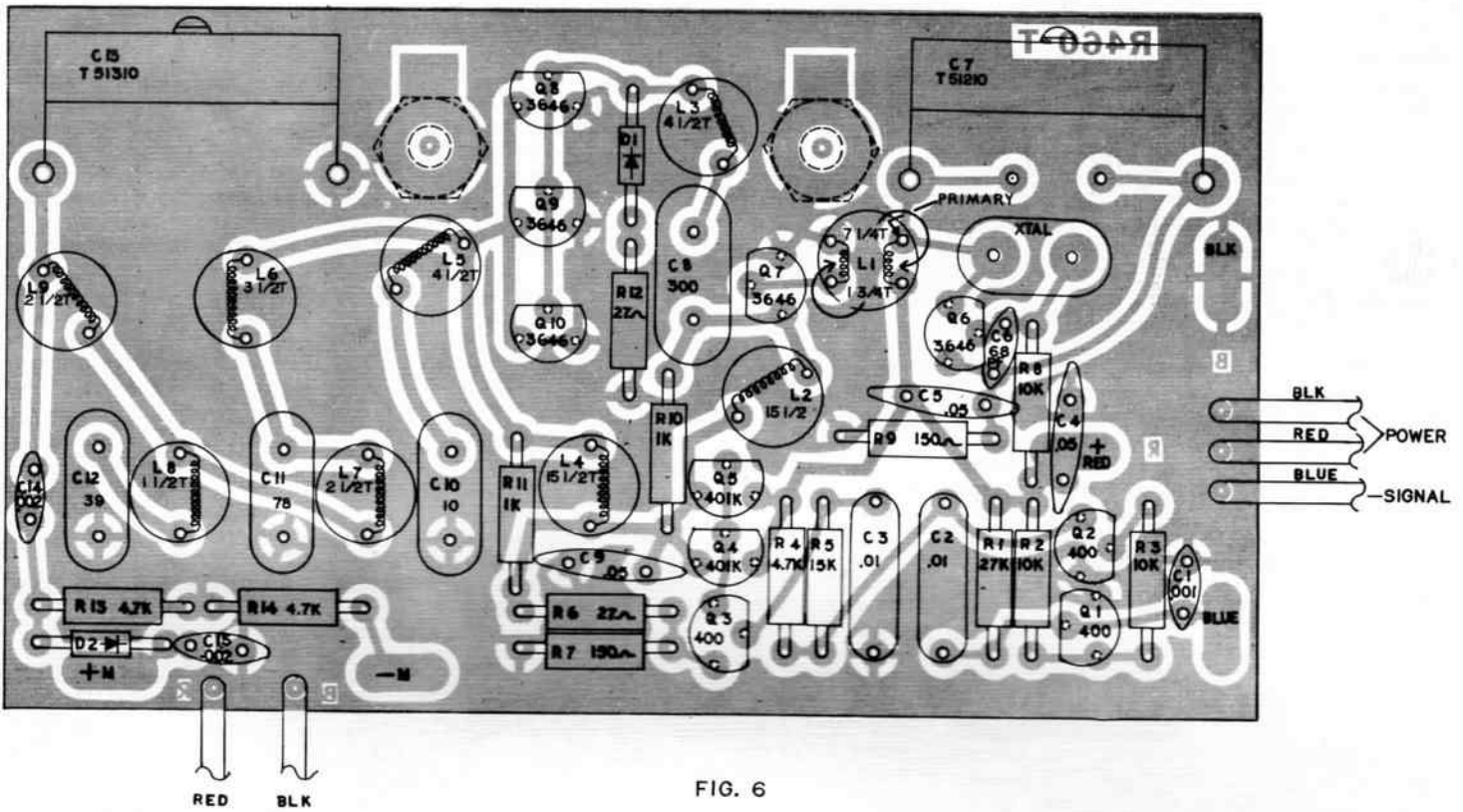


FIG. 6

RF Parts List

Qty. Ref. No.

Description

Part No.

50 MHZ

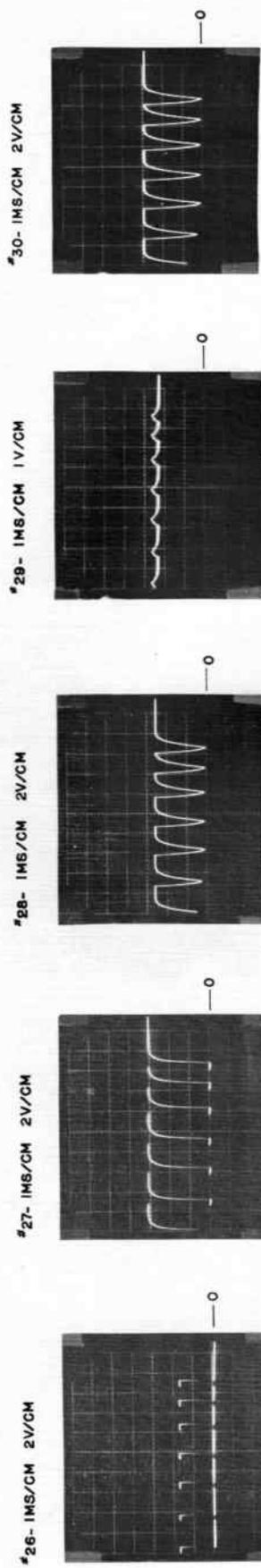
4.7K 1/4W (yel, purp, red)

004039

Qty.	Ref. No.	Description	Part No.	50 MHZ	Description	Part No.	
1	R1	27K 1/4W (red, purp, org)	004048	1	R14	100pf Mica Cap	001200
3	R2, 3, 8	10K " (brn, blk, org)	004043	1	C7	T51210 Variable Cap	001189
2	R4, 13	4.7K " (yel, purp, red)	004039	1	C8	300pf Mica Cap	001184
1	R5	15K " (brn, grn, org)	004045	1	C10	10pf Mica "	001171
2	R6, 12	27 " (red, purp, blk)	004012	1	C11	78pf Mica "	001177
2	R7, 9	150 " (brn, grn, brn)	004021	1	C12	47pf Mica "	001174
2	R10, 11	1K " (brn, blk, red)	004031	1	C13	T51310 Variable Cap	001190
1	C1	.001uf Disc Cap	001035	1	L1	Coil Brn on top w/ Yel. on side	000918
2	C2, 3	.01uf Mylar " (brn, blk, org, wht, red)	001078	1	L2	" Red on top w/ Yel. on side	000919
3	C4, 5, 9	.05uf Disc "	001049	1	L3	" Org. on top w/ Yel. on side	000920
2	C14, 15	.002uf Disc "	001039	1	L4	" Yel. on top w/ Yel. on side	000921
3	Q1, 2, 3,	M400 Transistor	000443	1	L5	" Grn. on top w/ Yel. on side	000922
2	Q4, 5	SPS401K "	000444	1	L6	" Blue on top w/ Yel. on side	000923
5	Q6, 7, 8, 9, 10	MPS3646 "	000461	1	L7	" Purp on top w/ Yel. on side	000924
2	D1, 2	Sil. Diode	000405	1	L8	" Gray on top w/ Yel. on side	000925
1		PC Board	000650	1	L9	" Wht. on top w/ Yel. on side	000926
4in.		Red #26 Hookup wire	001302	72 MHZ			
4in.		Black " " "	001300	1	R14	4.7K 1/4W (yel, purp, red)	000039
6in.		Red " " "	001302	1	C6	68pf Mica Cap	001024
6in.		Black " " "	001300	1	C7	T51210 Variable Cap	001189
6in.		Blue " " "	001306	1	C8	300pf Mica Cap	001184
6in.		#18 Buss wire tinned	001359	1	C10	10pf Mica "	001171
2		4-40 Brass nut	002226	1	C11	78pf Mica "	001177

RF Parts determined by frequency:

Qty.	Ref. No.	Description	Part No.
1	R14	27K 1/4W (red, purp, org)	004048
1	C6	100pf Mica or NPO	001200
2	C7, 13	T51310 Var. Cap.	001190
1	C8	300pf Mica or NPO	001184
1	C10	27pf Mica cap (270J0)	001172
1	C11	250pf Mica "	001183
1	C12	100pf Mica " (101J0)	001179
1	L1	Coil Brn on top w/ Red on side	000909
1	L2	" Red on top w/ Red on side	000910
1	L3	" Org. on top w/ Red on side	000911
1	L4	" Yel. on top w/ Red on side	000912
1	L5	" Grn. on top w/ Red on side	000913
1	L6	" Blue on top w/ Red on side	000914
1	L7	" Purp on top w/ Red on side	000915
1	L8	" Gray on top w/ Red on side	000916
1	L9	" Wht. on top w/ Red on side	000917



TECH IV TRANSMITTER

