

**FUNCTIONAL DESCRIPTION.**

The R76 is a new generation VHF FM Receiver Kit available for the 10M, 6M, 2M, and 220 MHz ham bands and adjacent commercial bands. It features a new compact integrated i-f section, improved audio amplifier and squelch circuits, and a new low-noise front end design; and volume and squelch controls are supplied on the board. The R76 is a single channel receiver; an "A24 Multichannel Adapter" is available with a rotary switch for up to 5 channels.

Complete specs are contained in the catalog; however, the following specs are notable. Sensitivity is 0.2  $\mu$ V typical for 12dB SINAD or 0.3  $\mu$ V for 20dB quieting. (Slightly less on 220 MHz band or with eight pole crystal filter.) Selectivity of the R76C (4 pole crystal filter) is  $\pm 7.5$  kHz at -6dB,  $\pm 13$  kHz at -80dB and  $\pm 14$  kHz at -140dB. The R76E (8 pole crystal filter) is  $\pm 7.5$  kHz at -6dB,  $\pm 10$  kHz at 80dB and  $\pm 13$  kHz at -140dB. The R76C replaces earlier model R75B & C models. The R76E replaces earlier model R75D & E units.

**A WORD ABOUT CONSTRUCTION.**

If you are unfamiliar with this type of kit, it is important to note that instructions are more on the order of a good magazine article than a part-by-part assembly manual. This saves you time and boredom; but it requires that you read over explanatory material several times before starting construction and follow the parts list, schematic diagram, and component location diagram carefully to be sure you understand the techniques involved in completing the kit.

**CONSTRUCTION.**

- Install volume and squelch controls R17 and R27 on board as shown in component location diagram, and solder tabs on copper side. Align pots vertically while soldering.
- Install socket pins in terminals E1-E3 and crystal Y1. Cut them from carrier strip close to body. Rock them while firmly pressing into board. They will snap in place. Solder pins lightly on copper side of board to avoid picking solder up into pins.
- Install transistors Q1-Q4, orienting them as shown. Also install IC's U1 and U2, making sure dot or notch is aligned as shown.

**NOTE:** All parts used in vhf construction should have leads as short as possible without damaging parts.

- Install zener diodes VR1 and VR2 and signal diode CR1, observing polarity. Banded end is cathode.
- Install variable capacitor C2, orienting flat end as shown. Turn board over, and tack solder C1 across C2 terminals with short leads.
- While board is up side down, tack solder C14 from gate 2 of Q3 to ground, using very short leads.
- Install remaining capacitors as shown. Observe polarity on electrolytics. C27 and C28 are only used in 8 pole filter applications.

**NOTE:** Disc capacitors with values of 100 pF and over are marked in pF, with two significant figures and a multiplier similar to resistors. Any letter after the numbers should be disregarded, as it is not a part of the value, rather it indicates tolerance. Some examples: 101=100 pF, 102=1000 pF (.001  $\mu$ F), 103=10,000 pF (.01  $\mu$ F), 473=47,000 pF (.047  $\mu$ F), 221=220 pF, etc.

h. Install resistors as shown. On resistors installed vertically, the body of the resistor is shown as a dark circle. Be sure to install them with bodies in the positions shown. Top leads of R6 and R30, which are used as test points, should be left a little higher than normal so you can connect a test probe for alignment.

i. Install shielded coils L1-L6 and T1. Install shield cans over coils, and solder coil leads and both shield tabs. Install tuning slugs in all coils, except T1 has core already in place. Be careful to use proper plastic hex tuning tool for coil slugs. A worn tool, allen wrench, etc. can break the slugs, which are made of compressed powdered iron. Do not try to turn slug beyond bottom of coil, etc.

j. Install ferrite bead Z1 by stringing on light gauge bus wire (clipping).

k. Install ceramic filter FL5 and 10.245 MHz i-f crystal Y2.

l. Install crystal filter elements FL1-FL4 as follows for the particular filter option you ordered with your kit.

Option "C" provides a matched set of two monolithic filters connected in tandem with a matching capacitor between them. The filters are installed in positions marked FL1 and FL4. The dots on the top of the filters must be facing the center junction as shown because the filters were factory matched to operate together that way. The unmarked ends go toward the "outside world." A capacitor must be installed in position C26 but not in positions C27 and C28.

Option "E" provides a matched set of four filters to be operated in tandem with a matching capacitor between each section. The filters are installed in positions shown in broken lines as FL1, FL2, FL3, and FL4. The filters with only one dot are installed in positions FL1 and FL4 with the dots facing as shown in the diagram. (The particular color is not important as to which is FL1 and which is FL4.) The filters with two color dots are used for FL2 and FL3. The dot colors must match the colors of adjacent dots so that the units are connected in tandem the same way they were at the factory when matched. For example, if FL1 has a black dot, then FL2 must have a black dot adjacent to the black dot on FL1. Likewise, if FL4 has an orange dot, then FL3 must be mounted with an orange dot next to FL4's orange dot. The left hand dots on FL2 and FL3 should also match because those ends are connected together electrically. For example, FL2 and FL3 lower dots could both be green. It really isn't as complicated as the explanation may sound. The color dots are only significant to the extent that filters be installed with like dots connected together. Three capacitors must be installed in positions C26, C27, and C28 for this option. When the eight pole filter option is used (4 filter cans) it is necessary to remove the pc board land area conductor connecting the right hand side of FL2 directly to FL3. Refer to diagram. This small land area can be opened up by removal with Exacto knife or Dremel tool.

m. Install antenna jack, J1, and solder all four lugs under board.

n. Check over all parts and solder connections. If you are missing any parts, check to see if you have other parts left over. If so, you may have used a wrong value somewhere else, so recheck values.

**CRYSTALS.**

Channel crystal plugs into sockets identified in component location diagram as Y1. We can order crystals for you for any frequency