

ELECRAFT KFL1-2 TWO-BAND FILTER BOARD

Rev. I, December 13, 2005

NOTE: This instruction sheet should only be used if you are building an **additional** Filter board for an existing K1. If you're just starting your K1, discard this sheet and use only the instructions in the Owner's Manual.

Parts Inventory

Verify that the kit contains the items below. (An inventory of band-specific components appears in the next step.)

Ref. Designators	Description	P/N	Qty.
C29, C30	Capacitor, .001 μ F ("102")	E530001	2
C27	Capacitor, .047 μ F ("473")	E530025	1
K1, K2, K3	Latching relay, 5V (in plastic tube)	E640001	3
L1-L8	1 μ H slug-tuned inductor (red mark on top, small slot)	E690002	8
P1, P2, P3	8-pin 0.1" connector, male	E620004	3
R1	Resistor, 100 Ω , 1/4W, 5% (BRN-BLK-BRN)	E500010	1
U1	MCU IC, PIC16C620A (alt: 621A), programmed	E610006	1
Z1	Ceramic resonator, 4.000 MHz	E660001	1
Misc.	Socket for U1 (18 pins)	E620031	1
Misc.	#26 Red Enamel Wire	E760002	6 ft
PCB	PC board, 2-band Filter module (label: "K1 FIL 2")	E100095	1

Your KFL1-2 kit should contain two small bags labeled with the bands you selected, e.g. "K1B40" or "40m." Use the table below to inventory these items. Keep the components for the two bands in separate bags. **Note:** Small capacitors may use an "R" rather than a decimal point; for example, a 2.7-pF capacitor might be labeled "2R7".

Ref. Designators		Qty.	Components					
Band1____	Band2____		80 meters (3.5 MHz)	40 meters (7.0 MHz)	30 meters (10.1 MHz)	20 meters (14.0 MHz)	17 meters (18.0 MHz)	15 meters (21.0 MHz)
C1, C5	C6, C10	2	470 ("471")	390 ("391")	220 ("221")	180 ("181")	100 ("101")	100 ("101")
C2, C4	C7, C9	2	1200 ("122")	330 ("331")	180 ("181")	120 ("121")	82	68
C3	C8	1	10	4.7 or 5	2 or 2.2	1	1	1
C11, C15	C16, C20	2	5600 ("562")	2200 ("222")	1800 ("182")	1000 ("102")	680 ("681")	470 ("471")
C12, C14	C17, C19	2	2700 ("272")	560 ("561")	270 ("271")	120 ("121")	82	56
C13	C18	1	82	10	4.7 or 5	2.7, 3, or 3.3	2 or 2.2	2 or 2.2
C21, C23	C24, C26	2	1200 ("122")	470 ("471")	330 ("331")	220 ("221")	180 ("181")	150 ("151")
C22	C25	1	2200 ("222")	820 ("821")	560 ("561")	390 ("391")	330 ("331")	270 ("271")
L9, L10 (T37-6 core)	L11, L12 (T37-6 core)	2	2.5 μ H 28 turns 20" (51 cm)	1.4 μ H 21 turns 14" (36 cm)	1.0 μ H 18 turns 12" (30 cm)	0.8 μ H 15 turns 11" (28 cm)	0.6 μ H 13 turns 10" (25 cm)	0.5 μ H 12 turns 9" (22 cm)
X1	X2	1	11.500 MHz	15.000 MHz	18/18.1 MHz	22.000 MHz	26.050 MHz	29.000 MHz

80-METER BAND KIT ONLY: The K1B80 kit includes a 10- μ F electrolytic capacitor for use at C78 on the RF board. Install C78 on the bottom of the RF board as shown by its component outline, with the "+" lead oriented as indicated. Fold the leads down at a 90-degree angle and lay the capacitor flat against the board before soldering.

Assembly

To assemble the KFL1-2, refer to the Filter Board assembly instructions in the K1 Owner's Manual (pages 11-16). **Note:** On page 12, the manual refers to the **Per-Band Components Table** in the parts list, App. A. **Use the table on page 1 of this instruction sheet** rather than the table in the manual parts list.

Even if you plan to use the KAT1 antenna tuner, you should install the jumper at J2 as described in the manual. The jumper can be removed later when you install the tuner.

It is important to label both the original and new Filter boards with the two bands covered, as described in the manual. If you do confuse the two Filter boards, you can look at the crystal frequencies to identify the bands covered.

Installing or Swapping Filter Boards

Swapping filter boards takes just a couple of minutes, using the following steps.

Remove the K1's top cover (four screws). Disconnect the speaker cable (not applicable with KBT1 option).

If you have installed the KAT1 antenna tuner, remove the associated screws and unplug it from the Filter board.

Remove the existing Filter board in the K1 (1 or 3 screws, depending on whether the KAT1 was installed).

Install the desired Filter board and secure it to the RF board with 3 screws (just the center one if using the KAT1).

Turn on the K1. Tap the **BAND** switch twice, quickly. You should hear some relays switching when the band changes. If not, you may have either the relays or the microprocessor on the Filter board installed incorrectly.

Use the **Bx** menu entry to specify which two bands are now in use. (This step must be repeated any time you swap Filter boards.) Refer to the K1 owner's manual, page 39 (*Band Assignments*) for details.

Alignment

If you installed a KAT1 tuner in your K1, you were instructed to move K1 RF board jumper P3 to the "KAT1" position. Return it to the "K1" position for Filter board alignment. **Note:** If you have an older K1 (rev D. RF board or earlier), there is no jumper P3. Instead, re-solder the lead of R36 that you unsoldered when you installed the KAT1.

Make sure that you have a jumper installed on the Filter board between pins 2 and 10 of J2, as explained on page 15 of the K1 manual. If you have already installed a 10-pin connector at J2 for use with the ATU, insert a temporary wire jumper between these two connector pins. Use #24 solid bare hookup wire.

Align the band-pass filters on each band in receive mode (K1 manual, page 40, **Band-Pass Filter Alignment**).

Calibrate the operating frequency on each band using the menu's **CAL / OPF** menu function. See page 41 of the manual (**Operating Frequency Calibration**). **Note:** The calibration data for up to four unique bands is stored in nonvolatile memory. This means you won't have to re-do **CAL / OPF** when you exchange boards.

Re-peak the band-pass filters on each band in transmit mode (page 46, **Preparation for Transmit Alignment**).

Setting up Filter Boards for use with the KAT1 Antenna Tuner (if applicable)

Remove the jumper installed at J2 on the Filter board. Make sure all solder is cleaned out of the two holes used.

Install connectors J1 and J2 on the Filter board as described in the KAT1 manual. (The antenna tuner kit comes with an extra set of these connectors.) J1 is a single-row, 3-pin female. J2 is a dual-row, 10-pin female. *The connectors go on the top side of the Filter board.*

Move jumper P3 on the RF board to the "KAT1" position. **Note:** If you have a rev D or earlier K1 RF board, there is no P3. Instead, locate R36 on the RF board, near the antenna jack. Unsolder and lift the lead of R36 nearest the jack, but do not remove the resistor completely.

Plug the KAT1 module into the Filter board, and follow the operating instructions in the KAT1 manual.