WJ-8617B and WJ-8618B HF Upgrades: 500 KHz to 1100 MHz

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The typical frequency coverage for an 8617B or 8618B is from 20 MHz to 1100 MHz (500 MHz without FE). These versions have pre selectors with a frequency cut off at 17 MHz. It is possible to field upgrade the radios for HF coverage. Note that HF firmware is required to allow tuning down to 0, but the optional LF up-converter is required for reception below 500 KHz. This upgrade focuses on reception below 20 MHz and above 500 KHz. The LF option will not be covered in this document. A manual for the 8617B or 8618B is extremely helpful when performing these changes. For component locations please refer to the manual and listed diagrams. Calibration is not required after this up-grade.

Materials Required

U3 – U6: HF EPROM's for the Microprocessor board (A5A3 on page 2)
U1 – U2: HF EPROM's for the Diode Control board (A4A2A2 on page 3)
C8: 0.1 uF Ceramic or Film capacitor for the VHF low band pre selector (A3A4 on page 4)
Manual: WJ-8617B or WJ-8618B manual, 1984 edition
De Soldering Tool: 100W de-soldering tool with proper tips

Upgrades

The WJ-8617B and WJ-8618B receivers typically require firmware and limited hardware upgrades to make them HF capable. Much depends on what's already installed. Before you proceed with the changes be sure that you have the correct EPROM's. You can verify this by inspecting and installing the EPROM's, then enabling the HF option switch.

Step 1: EPROM's. Verify that the following cards have HF EPROM's loaded, Microprocessor board (A5A3) U3 – U6, Diode Control board (A4A2A2) U1 – U2. The EPROM's might be marked HF or be one of the versions that are HF capable (example: Ver 8618B.1.2.3). Run a simple test. On memory board A5A2, DIP switch S1, open position 4 (see manual page 2-2). The radio should tune down to 0 (or in some cases down to 2 MHz). If it does you can proceed to step 2. If it does not, you will need to locate a set of HF option EPROM's.

Step 2: VHF Low Band Pre Selector. You may need to modify the VHF low band pre selector 794095-1 or replace it with HF pre selector 794095-3. The correct A3A4 board for HF operation is part number 794095-3. It has none of the filters installed in the top row (20 to 30 MHz band). Instead there is a 0.1 uF capacitor installed at location C8 with jumper wires at each stage. You can upgrade a 794095-1 in several ways. Factory and Simple versions are described:

- **a.** Carefully remove the SMA connectors from the top of board A3A4 and slowly slide the board out of the chassis. Note that it is easy to damage adjacent boards, connectors, and springs.
- **b.** Decide which version, **c** or **d**, is proper for your application. Unsolder each component using a 100W de soldering tool. Avoid damaging traces and connectors. Work slowly.
- **c.** Option 1, Factory Version: Remove all components in line from L5 through L9. These are L5 – L9 and C6 – C25. Install the 0.1 uF capacitor at location C8. Install jumpers in place of L5, C12, L7, C18, C23, and L9 per WJ-8617B-5 Appendix 1-15, page 6.
- **d.** Option 2, Simple Version: Remove L5 and L9. Bridge locations L5 and L9 with the 0.1 uF capacitor on the top of the board between CR2 and CR4. The holes used are the set which connect to CR2 and CR4. The capacitor can be located behind filter cans L6 – L8. Be sure to install Teflon sleeving on the capacitor leads. Refer to page 5 for -1 details.

Suggestions and Comments

The upgraded 8617B / 8618B should now receive below 20 MHz and above 500 KHz. Because there are many HF EPROM part numbers I decided not to list them. Many EPROM's have hand written labels without the factory part numbers. It is a good idea to verify your EPROM's prior to making changes.

There are other upgrades which might be considered after adding HF capability:
SSB
Narrow Filters
VLF Up Converter

Many radios were field upgraded. It is not an uncommon practice and acceptable if done properly.

794109-2 Microprocessor Board showing locations U3 through U6

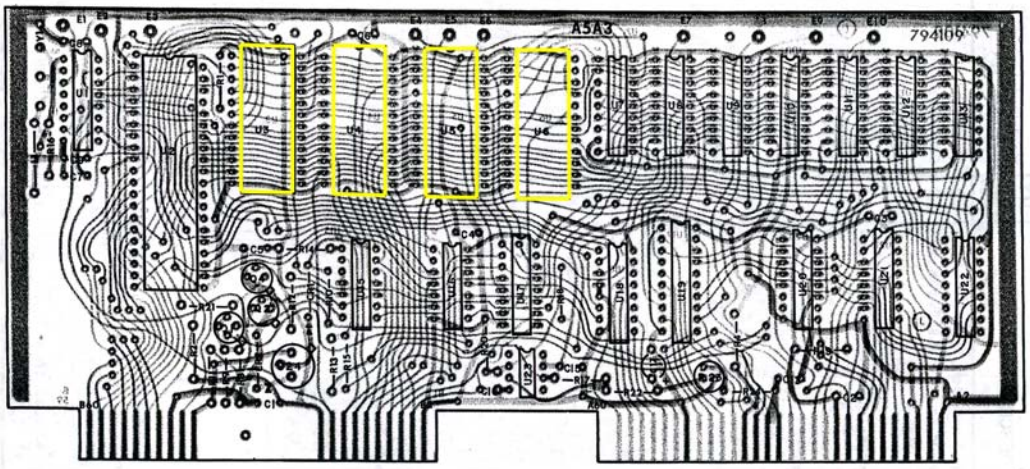

Figure 5-56. Type 794109-2 Microprocessor (A5A3), Location of Components

FIGURE 5-56

290443-1 Diode Control Board showing locations U1 and U2

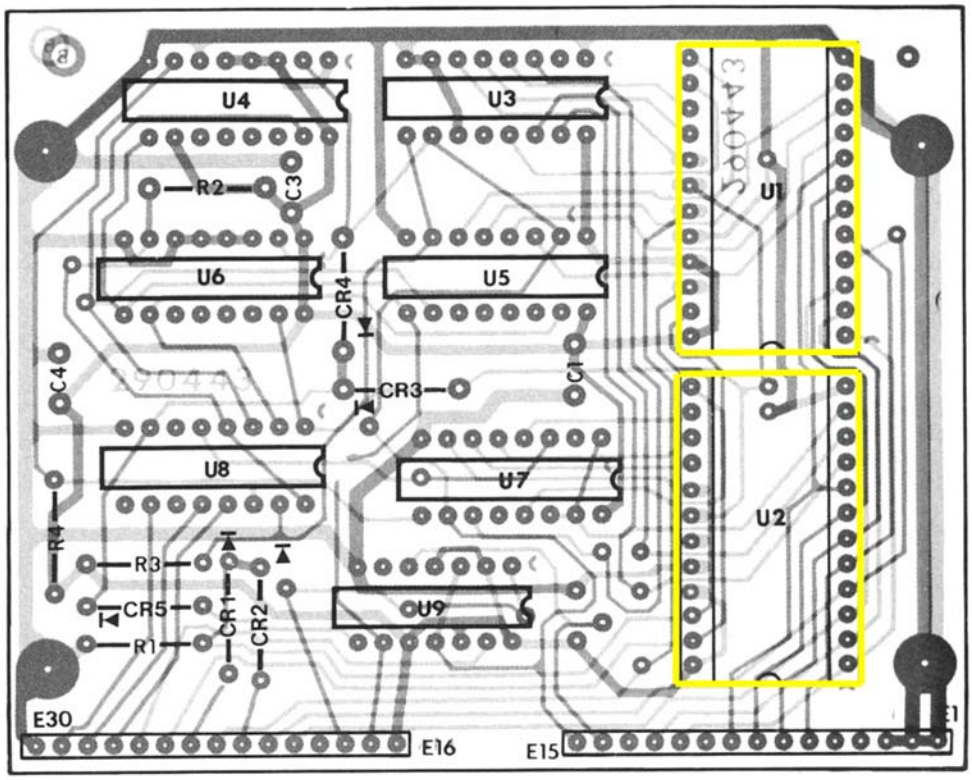

Figure 5-30. Part 290443-1 Diode Control (A4A2A2), Location of Components

794095-1 VHF Low-Band Preselector Board showing (d) mod: C8

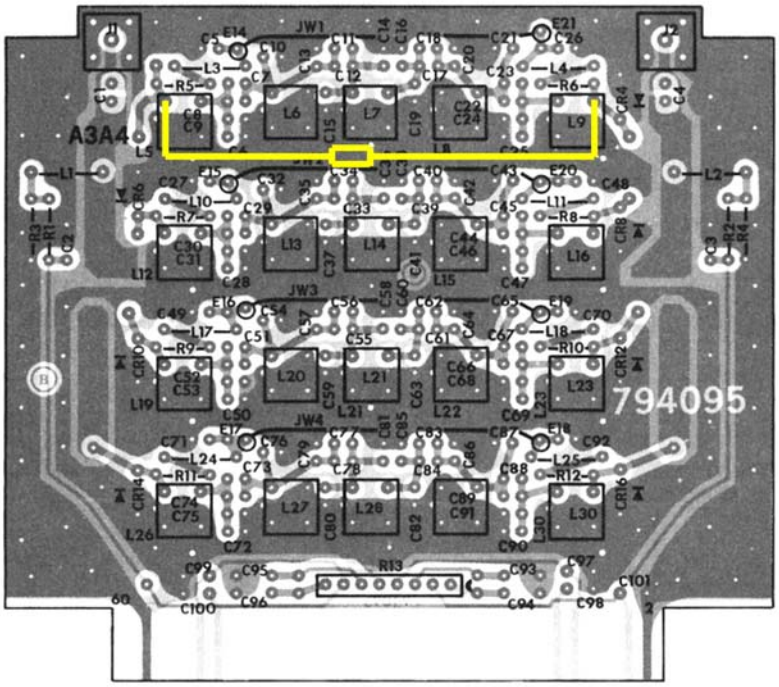

Figure 5-8. Type 794095-1 VHF Low-Band Preselector (A3A4), Location of Components

794095-1 20 MHz to 120 MHz VHF Low-Band Preselector Schematic

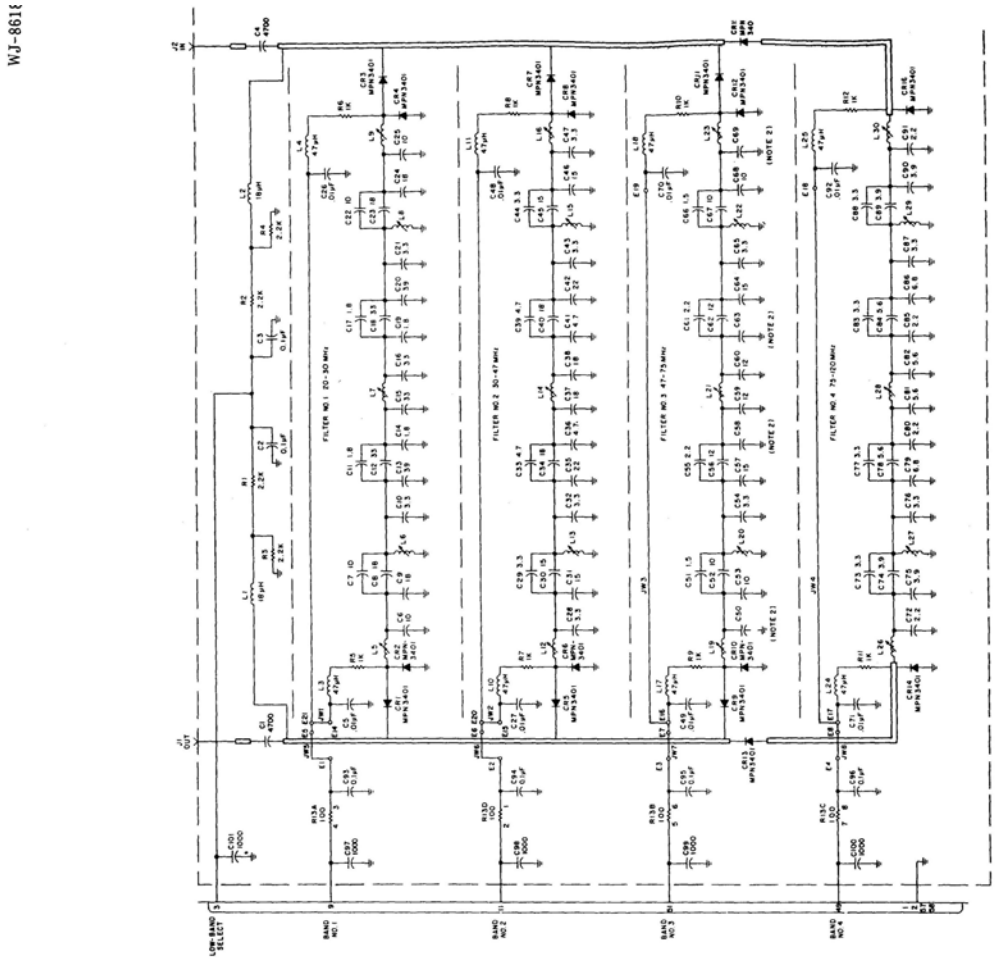

Figure 6-3. Type 794095-1 VHF Low-Band Prese
(A3A4), Schematic Diagram 570058

794095-3 500 KHz to 120 MHz VHF Low-Band Preselector Schematic

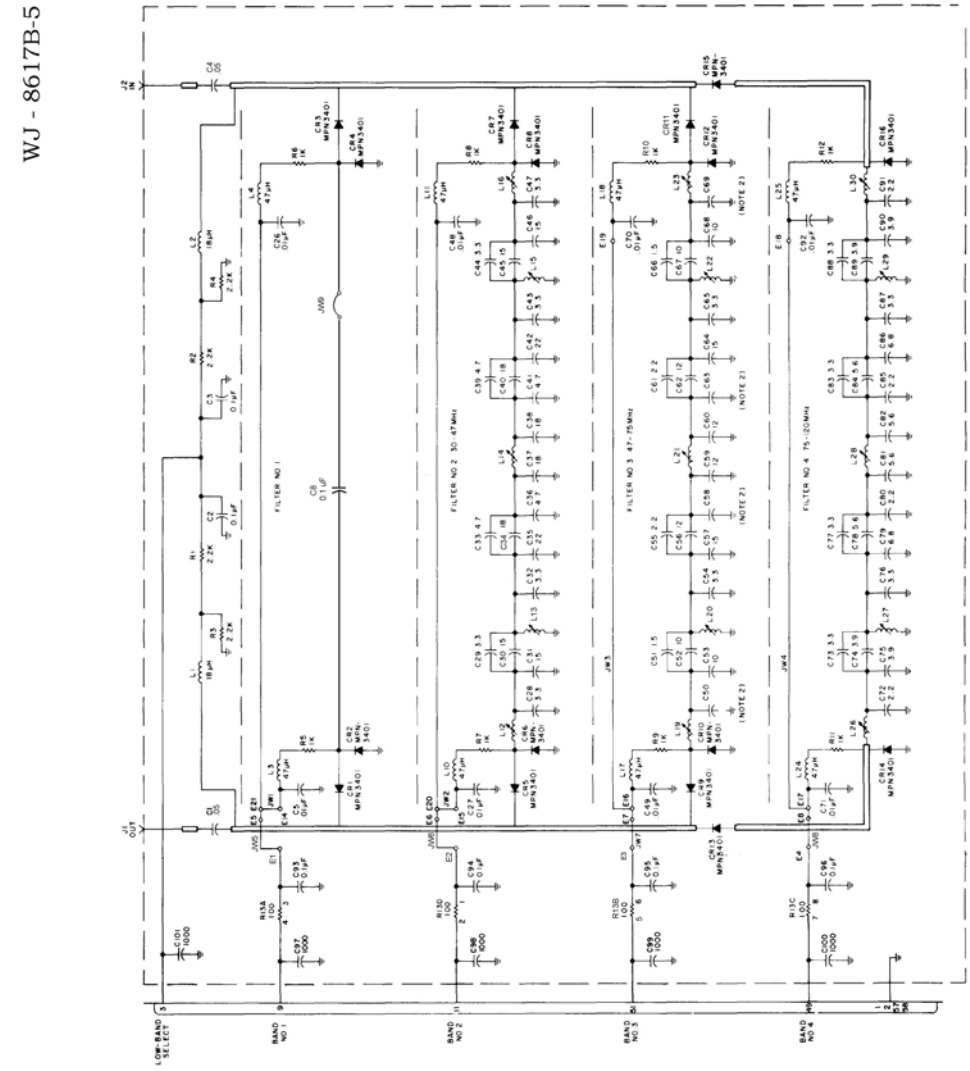

Figure 1-1, Type 794095-3, VHF Low Band Preselector, (A3A4) Schematic Diagram 580197