

MFJ-721 INSTRUCTIONS

Thank you very much for purchasing the MFJ-721 Super Selector CW/SSB Filter. You will find that the MFJ-721 offers a great deal of versatility.

INSTALLATION

1. A 9 - 18VDC power supply is needed to power the MFJ-721. For the full 2W output power, 18VDC @ 300mA is required. Use a 2.5mm miniature plug with the tip positive.
2. Connect the speaker to the $\frac{1}{4}$ " mono (2 conductor) jack marked SPEAKER on the back panel. The speaker impedance should be 4 to 16 ohms.
3. Connect 1 or 2 receivers to the RCA phono jacks marked INPUT on the back panel. Output from the receiver may come from either the speaker or headphone connection. Receiver selection is accomplished with the INPUT switch above the INPUT jacks.
4. For simulated stereo, plug a stereo headphone into the $\frac{1}{4}$ " PHONE jack on the front panel. The tip of the plug is the filtered output and the ring is connected to the output of the 2.5KHz filter. The speaker is disconnected when the PHONE jack is used.
5. When using the PHONE jack for mono headphone listening, a stereo (3 conductor) plug must be used with the tip connected to the headphones and the ring left unconnected. A mono plug may be used for the headphones by using the SPEAKER jack on the back panel.

OPERATION

FUNCTION SWITCH

- OFF** - The filter is turned off and the input signal is connected directly to the speaker jack. The SELECTIVITY switch does not function.
- ON** - The filter is turned on the the output is now determined by the SELECTIVITY switch.
- NL** - Two types of noise limiting may be selected:
1. SSB - A peak clipper is selected to help reduce pulse noise, suitable for SSB or CW operation. The input signal must be above .2V peak for the most effective operation of the circuit.
 2. CW - A peak clipper and a valley muter is selected to help reduce pulse noise and eliminate background noise between CW pulses. Input volume should be adjusted so that the CW pulse comes through but the noise between pulses does not. Too low of an input level will eliminate the background noise and the CW signal. Too high of an input level will not eliminate all of the background noise. It is not recommended that this position be used for SSB operation as the voice signal is distorted.

SELECTIVITY SWITCH

AMP - All noise limiter circuits and filter circuits are bypassed and the MFJ-721 becomes a 2W amplifier with a gain of approximately 20dB.

SSB MODE:

HP - All frequencies above 375 Hz are passed while frequencies below 375 Hz are rejected at the rate of 12dB/octave, greatly reducing 60 Hz and 120 Hz hum.

2.5KHz - The HP filter is followed by a lowpass filter that rejects frequencies above 2.5KHz.

2.0KHz - The 2.5KHz filter is followed by another lowpass filter to give a cutoff frequency of 2.0KHz.

1.5KHz - The 2.0KHz filter is followed by another lowpass filter to give a cutoff frequency of 1.5KHz. The ultimate roll-off in this position is 36dB/octave.

CW MODE:

The center frequency of the CW filters is approximately 750Hz. The signal level peaks when you tune the signal to this tone. Low Q stages are used for minimum ringing.

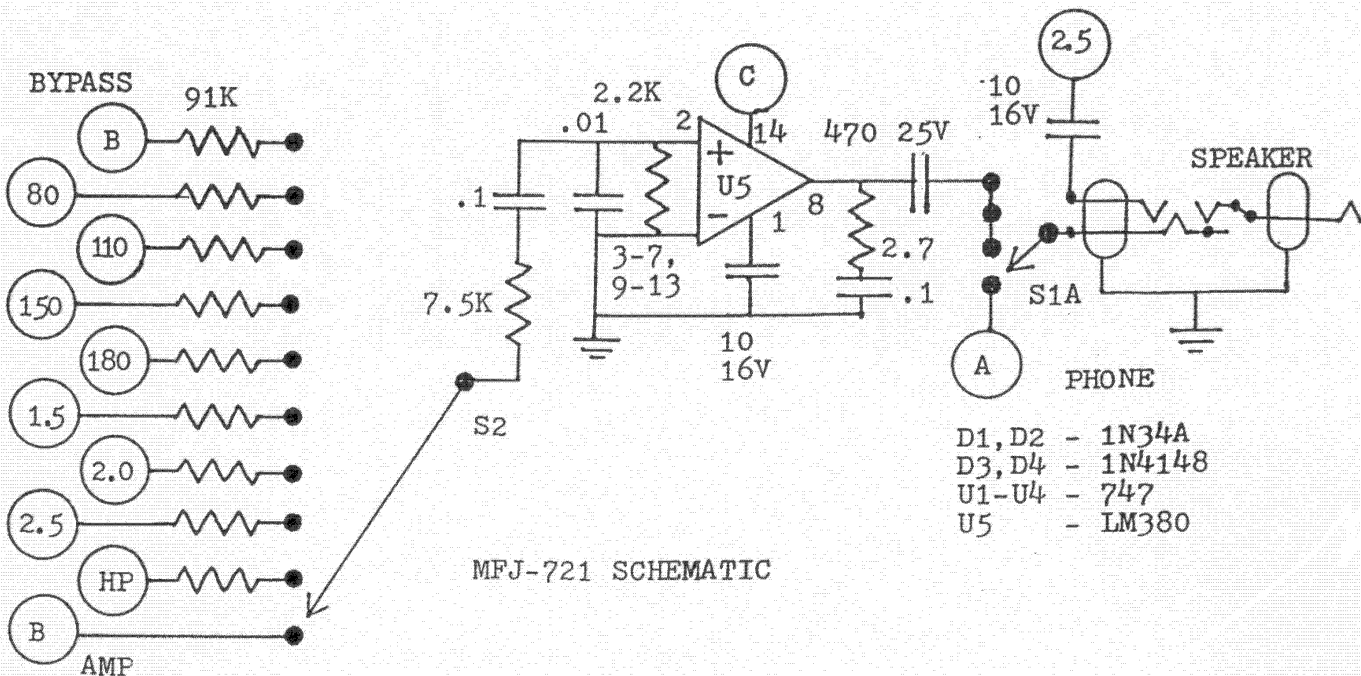
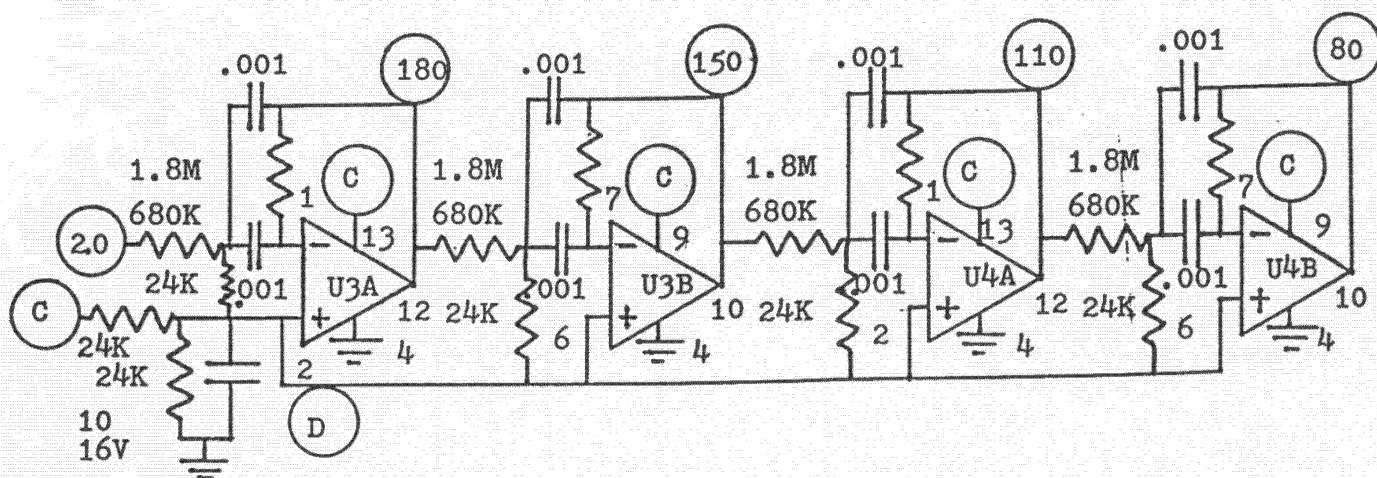
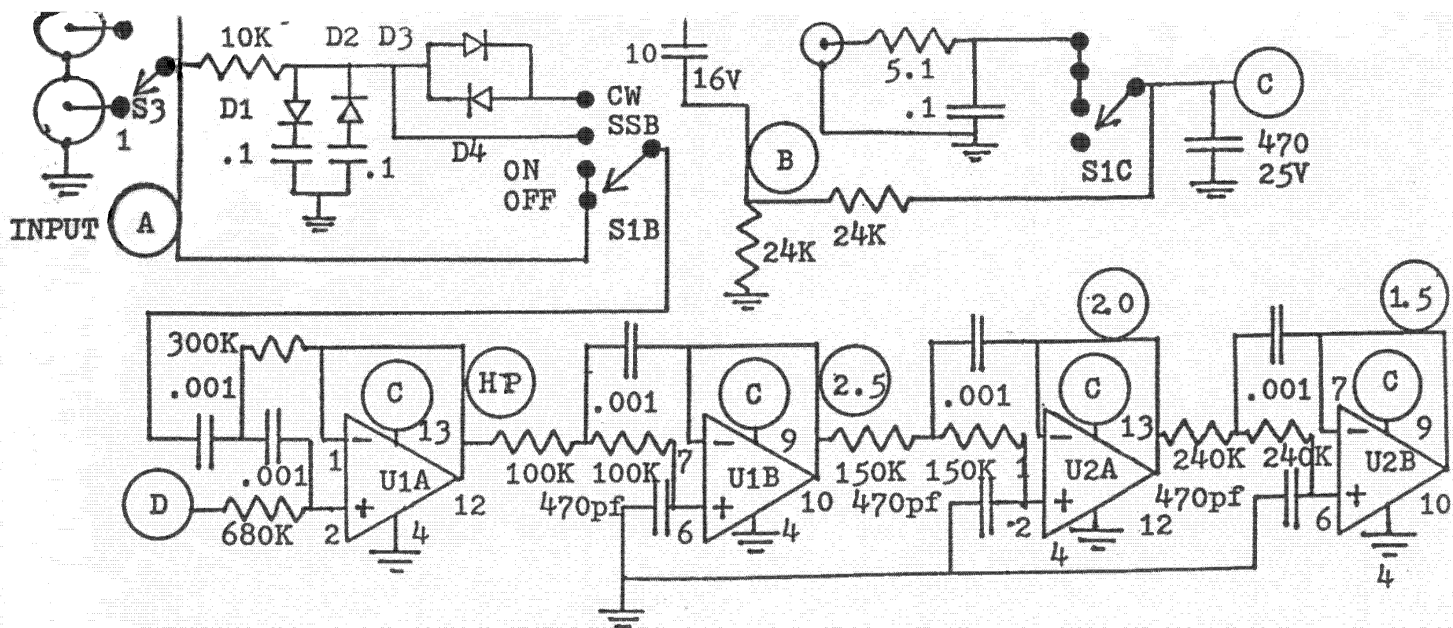
180Hz - A single-stage, 2-pole active bandpass filter is selected with a 3dB bandwidth of approximately 180Hz. This filter is useful for light QRM levels.

150Hz - A two-stage active filter is selected which is useful for light to moderate QRM levels.

110Hz - The steeper skirts of three active bandpass filter stages are selected which is useful for moderate to heavy QRM levels.

80Hz - Four active filter stages are selected for a very narrow bandwidth and very steep skirts. The response is down approximately 60dB one octave away from the center frequency. You must be careful to tune very, very slowly. Slight retuning may be needed due to drifting of your receiver and/or the transmitting station. This position is useful for heavy QRM levels. Please note that with this much selectivity you may notice a "talking in a barrel" or slight ringing effect. This is normal.

BYPASS - All noise limiter circuits and filter circuits are bypassed and the input signal is fed directly to the amplifier with a gain comparable with the filters.



MFJ-721 SCHEMATIC

- D1, D2 - 1N34A
- D3, D4 - 1N4148
- U1-U4 - 747
- U5 - LM380