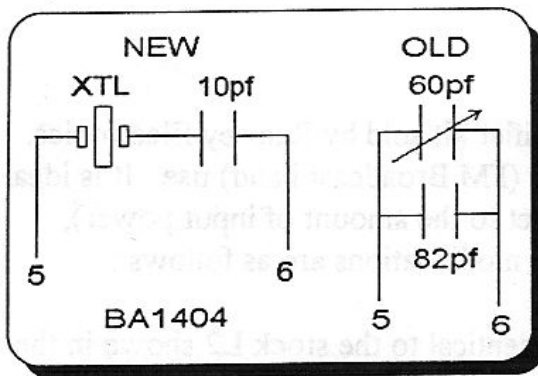


## The Ramsey FM-10

The Ramsey FM-10 is one of the more popular BA-1404 stereo transmitters on the market. What makes it so popular is that it has a small output amplifier. The BA1404's RF output is very small, around a tenth of a milliwatt. The FM-10's output amplifier boosts this up to about 8 mw, so the range is much greater than kits that don't provide an output amplifier. With a good antenna you could get up to 1/4 mile range with a stock FM-10. The following list of modifications assumes you have an FM-10.

### Stereo Pilot Modification

(Ramsey has just released a fix that does basically what this mod does, also the newer kits will contain this mod. Call Ramsey to get a free mod for your FM-10 today!) One of the most frustrating things about the FM-10 is the stereo pilot. Ramsey really skimmed on this one. Where many of the other kits include a 38Khz crystal for a rock solid stereo pilot, Ramsey decided to



use a couple of capacitors. This has created nothing but problems for the kit builder. If you are having problems with stereo separation, you can solve this by lowering the value of C7 to 60pf (this usually works.) But messing with this mess you almost need a frequency counter so you can 'see' 19Khz at the test point.

The best thing to do is do it the way it should of been done in the first place. Purchase a 38Khz crystal (see sources) and insert it in place of C7 and C8. See diagram at left for details. Once mod is done, the stereo

signal should be rock solid, with no adjustments necessary.

### Anti-Drift Modification

Another big problem with all BA1404 Transmitters that use an inductor-capacitor to generate the frequency that they broadcast on is that they drift, meaning that the frequency changes over time. This can be a problem when you are using a digital PLL receiver to listen to your transmitter. The receiver expects the signal to stay in one place, and if it drifts the receiver could lose the signal.

There is not much we can do to prevent the FM-10 from drifting, it is the nature of the beast. But we can make a modification that will minimize the drift. The FM-10 was designed to be a low cost kit so cost saving measures with components are inevitable. Silver Mica, tantalum and negative temperature compensated disc capacitors are more expensive than regular disc capacitors, but they are much more stable. Replacing C16 with the same value of one of the above mentioned capacitors will minimize the drift.

### Treble Boost Mod

The FM-10 appears to have been designed by someone outside the United States since its treble boost (pre-emphasis) is designed for the European audio standard of 50 microseconds. Receivers in the US are set up for 75 microsecond de-emphasis. R3 and R6 determine the time constant for the pre-emphasis curve. Replacing them with 75K ohm resistors (standard value 68K ohm resistors are close enough) will result in improved audio response.