

# How to install a Collins Mechanical filter in IC-7000 transceiver

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<http://www.qsl.net/va3iul/>

From the beginning I want to mention that this is not an easy modification and is presented mainly for your information.

**You need good RF background and good soldering skills to do this modification.**

IC-7000 use IF DSP and theoretically don't need any extra quality filters in the IF. But following the concept that a well filtered signal it will help the IF DSP to perform better I was thinking to replace one of the cheap 455kHz ceramic filter with a Collins Mechanical filter. The Collins filter is working in CW/SSB modes and for AM/FM/RTTY modes was used the original Murata ceramic filter.

For this modification I used an old FA-21 series mechanical filter that I bought from a flea-market.

here you can find more information about this filter:

<http://www.wa3key.com/filters.html>

This mechanical filter offers more than 60dB rejection at 10kHz from the carrier compared to the original Murata ceramic filter (CFUCG455F) that gives less than 25dB rejection at the same offset.

One problem that I got was the limited space inside of the transceiver to place the Collins FA-21 filter.

So, first of all I had to remove the filter from the original phenolic case.

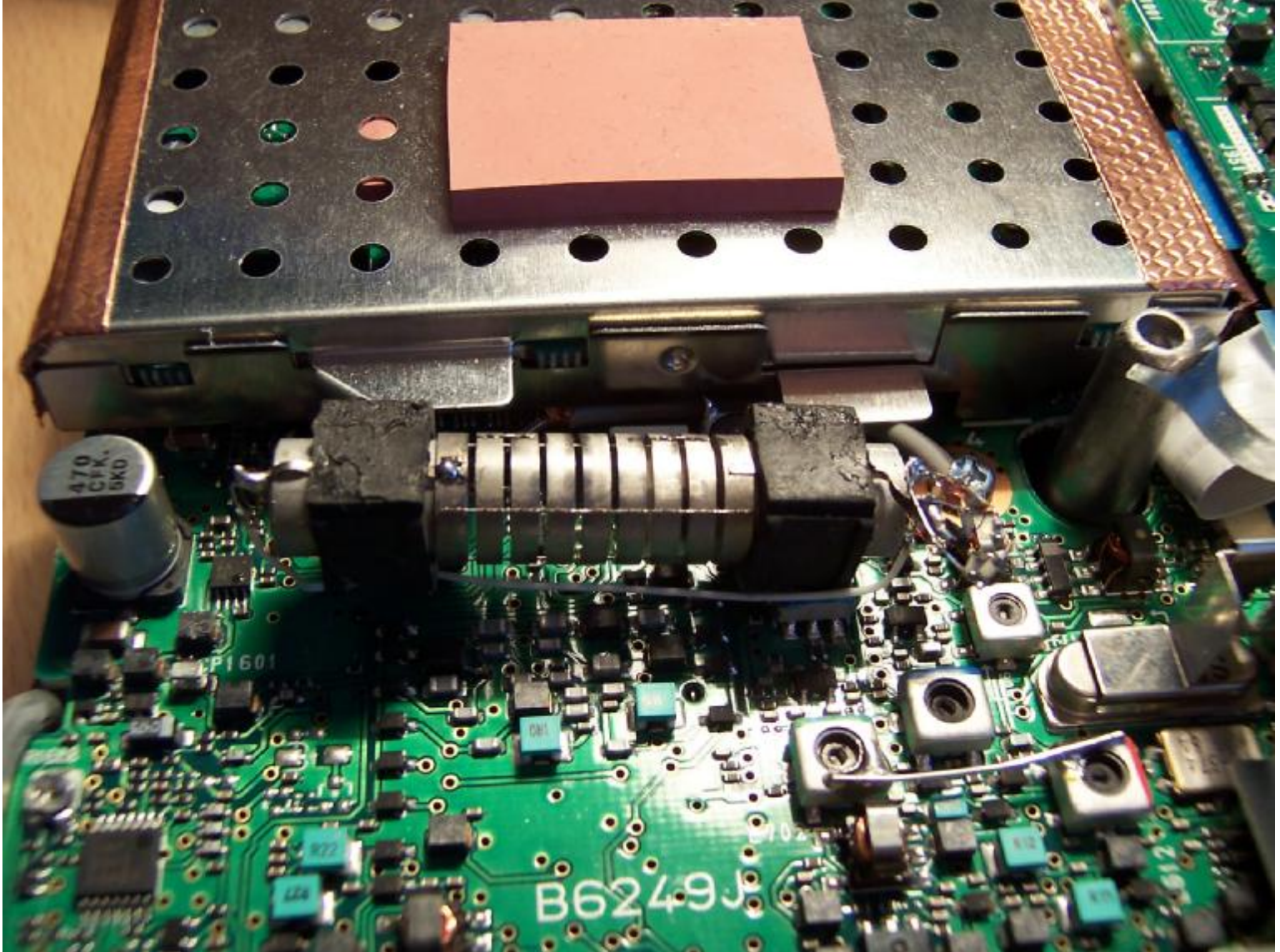
If you have a new Collins filter FP, PS or PL series you don't have to do this operation and the job is much easier.

[http://www.rockwellcollins.com/about/additionalproducts/collinsfilters/app\\_notes/index.html](http://www.rockwellcollins.com/about/additionalproducts/collinsfilters/app_notes/index.html)



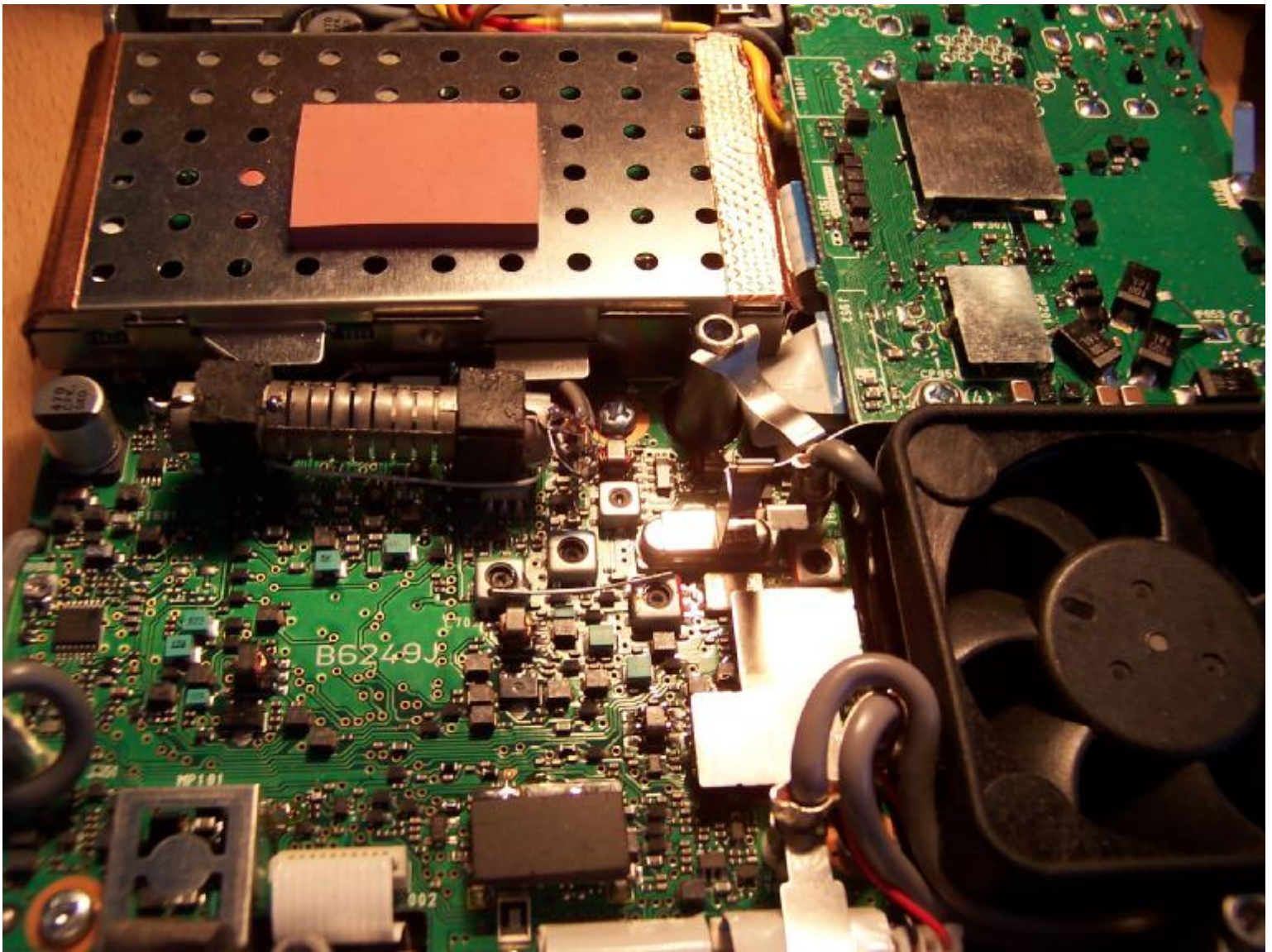
Carefully you have to unsolder the four thin wires that are coming from the transducers. Also have to unsolder the ground connections (one on each side). After that have to remove the rubber supports from the filter base. This is a very sensitive operation to don't damage the coupling wires that keeps together the metal disks.

Next step after removing the filter from the case is to glue it inside of the transceiver in the place that you see in the picture below:



The Collins filter have to be placed near the Logic Unit (between FL1001 and L703), to be far as possible from the internal speaker which is mounted on the top of the case of the transceiver.





Part of the block diagram and of the schematic of the IC-7000 are presented below.  
The switched filter is FL1001

