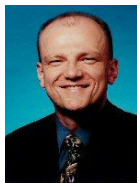

As I got my HM-154T microphone (to be used on my Icom IC-706MK2G) I recognized a real "high pitched" audio with some audio popping effects due to the needed nearby talking. The mouth had to be placed real close to the mic front case otherwise the audio level broke in significantly.

This was not new for me as some other microphones e.g. from YAESU have similar effects. My explanation is that the manufacturer might get some "noise-canceling" audio, but if this is true it is solved in a too easy way.

To improve the microphone audio and to reduce negative audio effects like the popping only few changes have to be made to the HM-154T.

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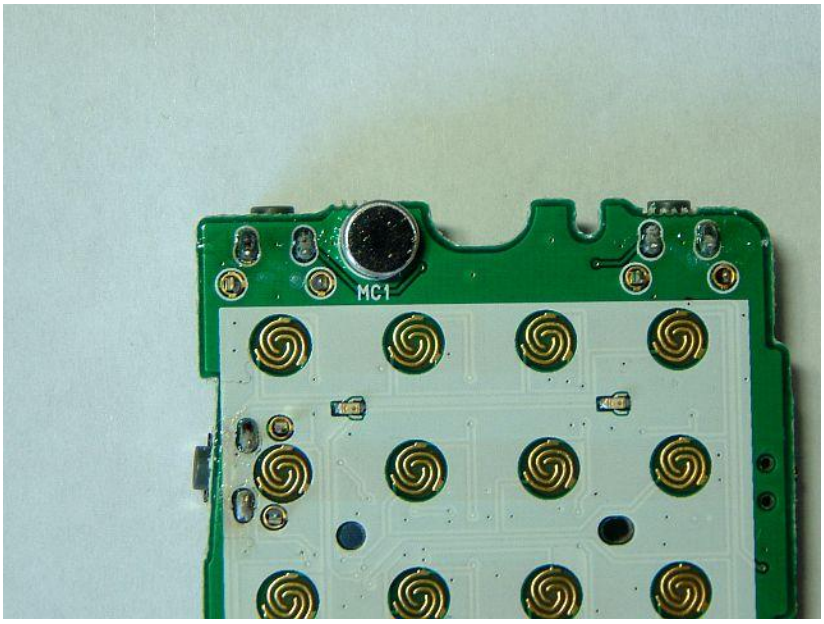
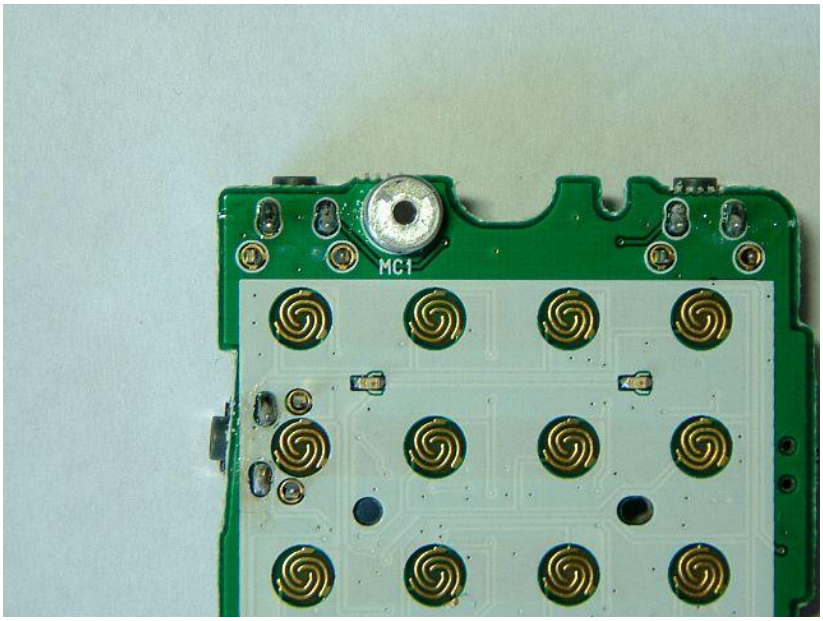
The “must have” mods



Remove the PCB and locate the electret capsule on the front.



Remove the black felt in front of the capsule.

You can do it easily with your fingernail, just remove it slowly and carefully. That’s all.

This improves the clearness of the high tones. Your audio sounds more clear and natural. The intelligibility is enhanced a little bit.

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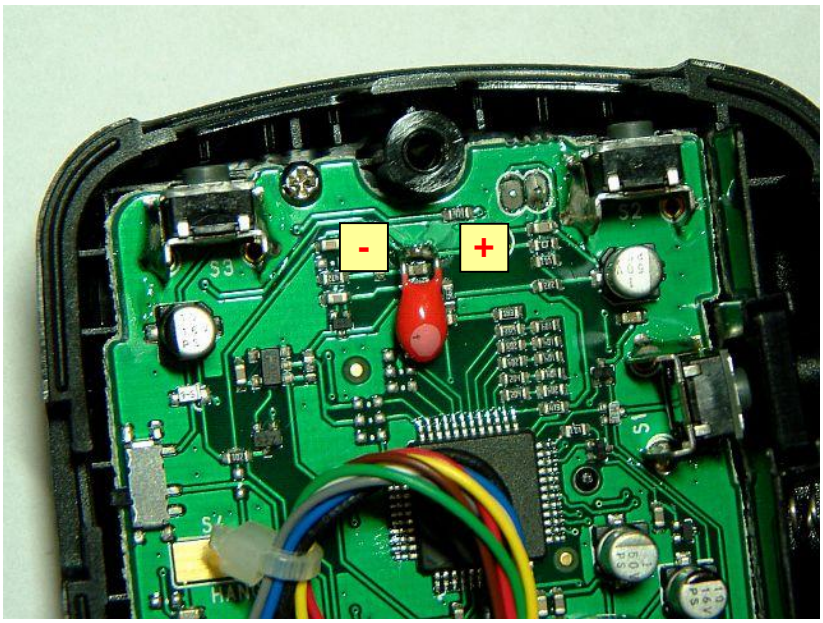
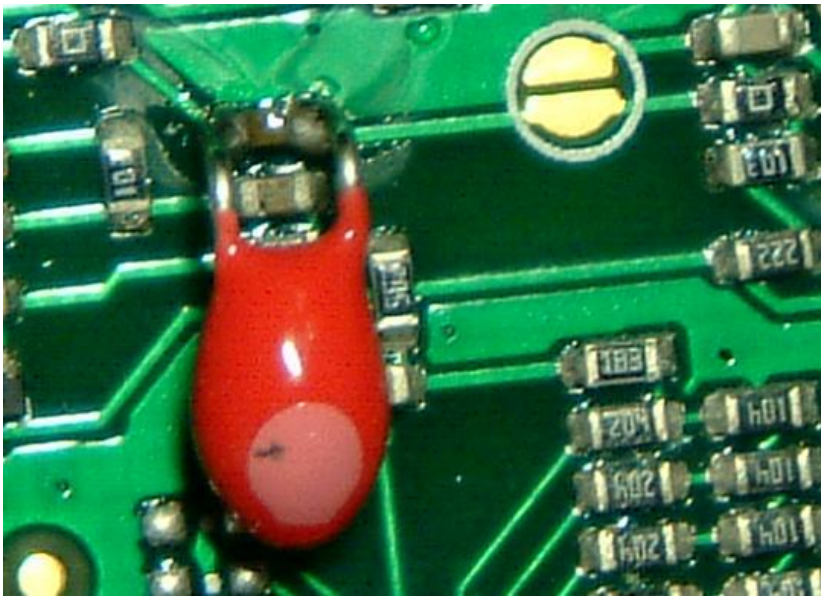


Now it's time to raise the basses significantly. The audio gets much richer and louder and sound much more natural as well.

For this purpose just add a 2.2mF (= 2,2µF microfarad) tantalum electrolyt capacitor in parallel to C2 (this is the upper one). The original ICOM schematic of the HM152/154 doesn't show the values of the parts, but I would expect that the originally C2 should have about 0.1mF = 100nF only. Or maybe even less ?!



Another detailed view of C2 and the parallel cap.

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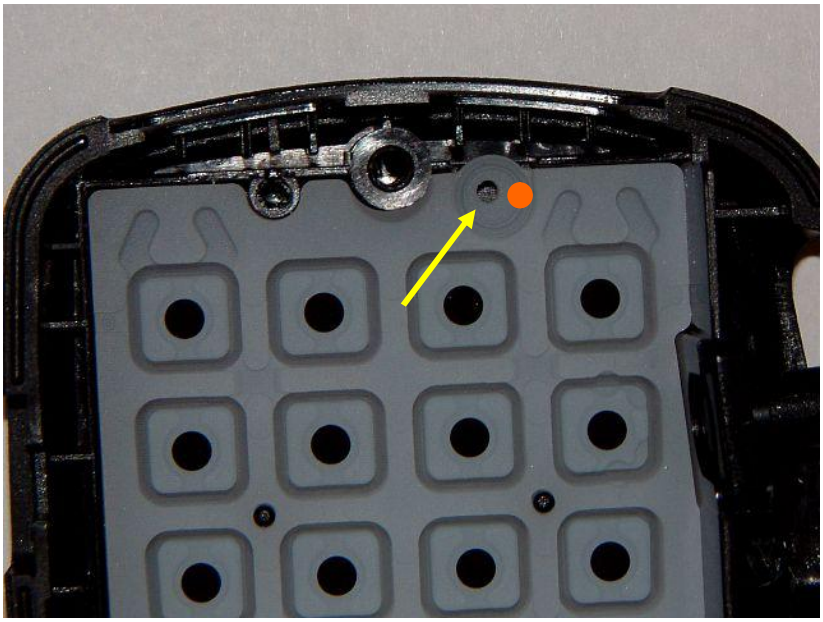
The “nice to have” add-on mods



If you’re still not 100% satisfied with the audio sound you can continue to improve the sound channel.

As you can see there is a small hole in the rubber sheet of the DTMF button plate.

But this hole does not fit to the hole in the plastic mic front case !! This one is located like shown with the orange bullet.

So I **drilled a 2.5mm hole** from the back (!!) into the mic front. I just used the existing rubber sheet hole to positionize the drill bit.

Now we have a nearly twice in size sound channel and it goes straight from the mic capsule to the front of the mic case.

This reduces the “sharp” sound of the prior mismatched sound channel.

But I have to say that this can enhance the talk-close popping effects, so please take care about that fact !

It can be, it must not be. On my modified HM-154T the final audio was great.

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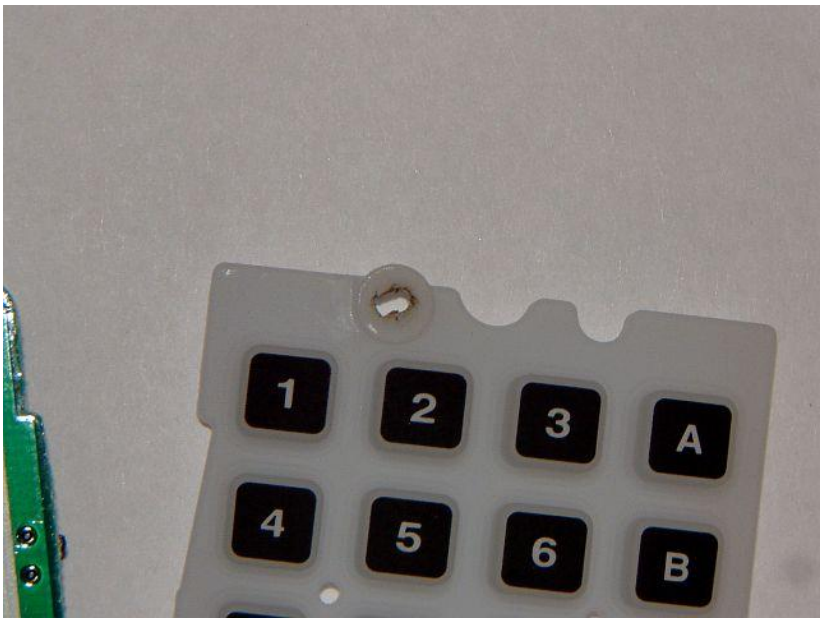

So that everything makes sense I tried to enlarge the 1mm hole of the rubber sheet as well.

As you might see I tried it with my soldering iron, but the gum is real temperature resistant !

So the best solution would be to use a sharp knife or a sharp drill bit instead.

Don't enlarge it too much otherwise there might be negative audio "plastic sound" effects of the finally closed mic case. There should always be a proper sound channel only to the front of the mic case, but all sound interferences from the sides or the back should be prevented.

Unfortunately the ICOM schematic of the HM-154T only shows the parts numbers, but not the parts values. So I only was able to speculate about the values of the capacitors as of my 25-years-experience in TRX modifications and the comparison to equipment and their schematics of other manufacturers.

But if some of the caps (to ground) in the audio line would have a value of 0.0047mF (= 4,7nF) or higher this might affect the high tones of the human speech.

So I removed 2 caps and replaced another with a defined value.

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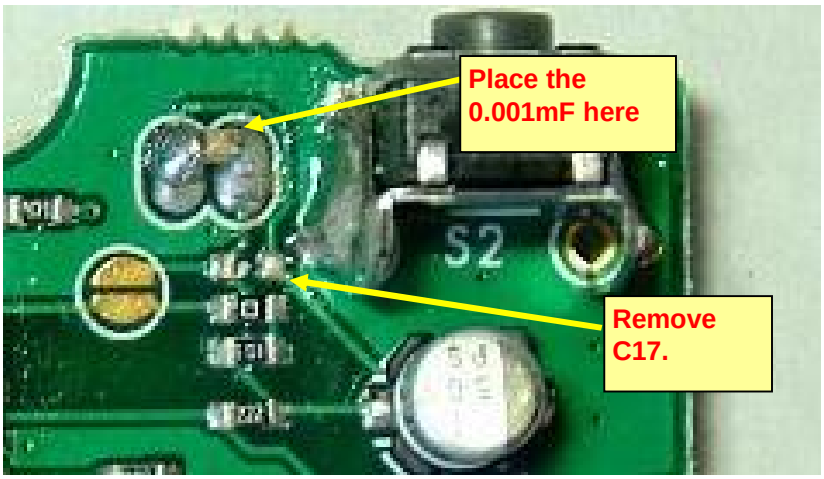
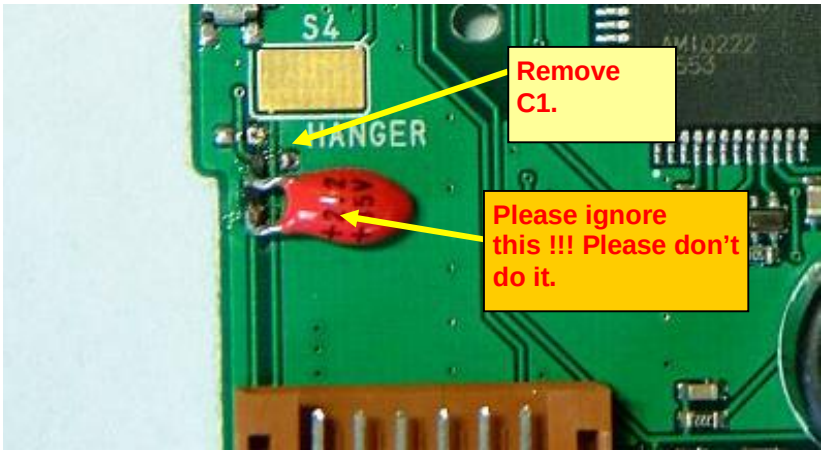


I **removed C17** and **replaced it with a 0.001mF (= 1nF)** SMT capacitor. This can easily be placed directly on the mic capsule solderings.

This blocks RFI but if the originally C17 would have been maybe 0.0047mF (= 4,7nF) or higher

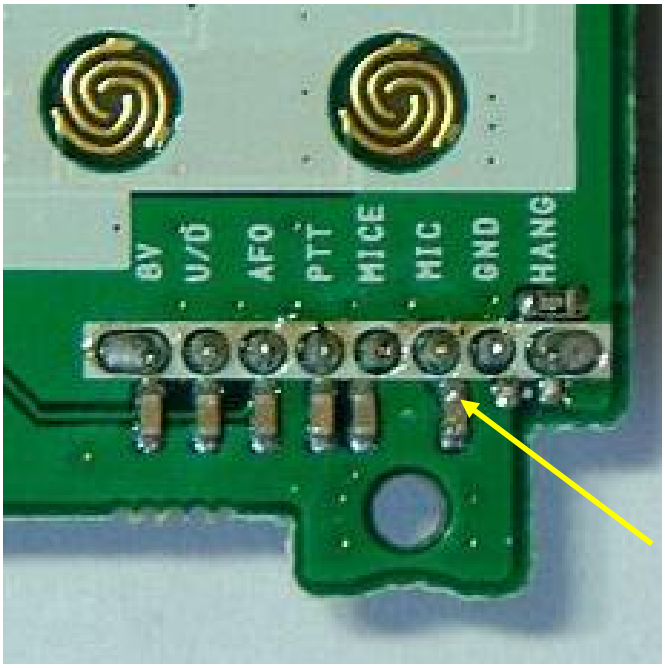


Then I **removed C1**.

Please ignore my trial of paralleling with another tantalum of 2.2mF.

One day after I did my mods a ham operator uploaded the schematic of the HM152/154 microphone into a Yahoogroup and then I realised that this one was no capacitor (which I raised to get even more basses). It is actually a RFI coil (labeled "EP1").

So finally I removed the 2.2mF tantalum again.



Finally I **removed C3** as well.

You could replace C1 and C3 with a 0.001mF (= 1nF) each , if you like.

Then you definitely won't have any audio lowpass which falls in the human speech audio range.

But even with both C1 + C3 removed I don't have any negative RFI feedbacks, so the RFI coil EP1 seems to be enough to block any stray RFI.

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This modifications mostly need to be done by a electronic specialist who had enough practise and who has knowledge in SMD soldering. You do the modifications on your own risk !

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Some circuit details are password-protected because of legal reasons. Please contact me via e-mail.

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