# Magnepan MG12 Crossover Upgrade

by James Carroll

**Disclaimer:** This is not factory endorsed, I can't promise you won't destroy your speakers, fry your amp, burn down your house, and kill off your family if you try this. It's pretty simple, but remember capacitors store electricity and can zap you even if not powered, and you will burn yourself with the soldering iron if you poke it in your eye...be careful.

The following is a crossover upgrade that can be performed on the Magnepan MG12 speakers to improve the clarity, detail, low-end, and imaging of the MG12 speakers. This upgrade is intended to be less invasive than those that upgrade the inductor, as it can be done without any external changes. Personally I felt it wasn't worth the hassle, however that's a purely subjective opinion and I have not heard the improvement that the foil inductor makes, I just didn't want to mess with an external box.

I can't promise that all MG12's have the exact circuit of mine, but it does seem to be a normal setup. Also, note that I have blatantly copied the schematic diagram that Ed Morawski used for his article. It's interesting to note, however, that my MG12's had a 20mfd capacitor in the hi-pass circuit, while his diagram indicated that his had a 33mfd...go figure...

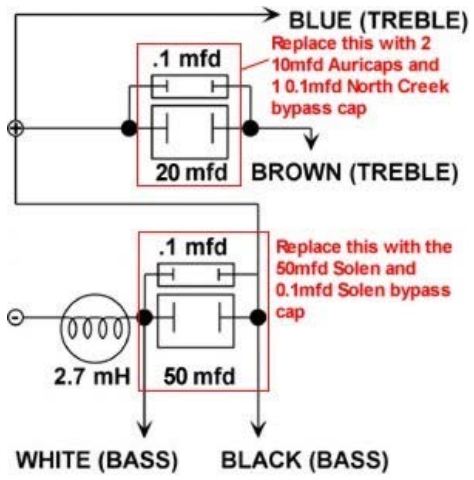
To get the ball rolling, here's a parts list of what you'll need (per speaker):

- 2 10mfd Auricaps
- 1 0.1mfd Northcreek bypass cap
- 1 50mfd Solen cap
- 1 0.1 mfd Solen cap to bypass the 50mfd

To install, you'll need:

- Philips screwdriver
- wire cutters
- soldering iron and solder
- electrical tape
- possibly some zip-ties
- flathead screwdriver, hammer, pliers, staple gun (to remove the sock staples on the base and replace them)

Keep in mind, I intended to make the install as simple as possible, and reuse as much factory wiring as possible. You could readily upgrade the internal wiring if you wanted and upgrade the binding posts. You'll be cutting the stock capacitors out, as close to the capacitor as you can, and resoldering the new caps to the resulting leads. No fancy wiring here, no need for it on this install. First off, here's the schematic, showing what we will replace:

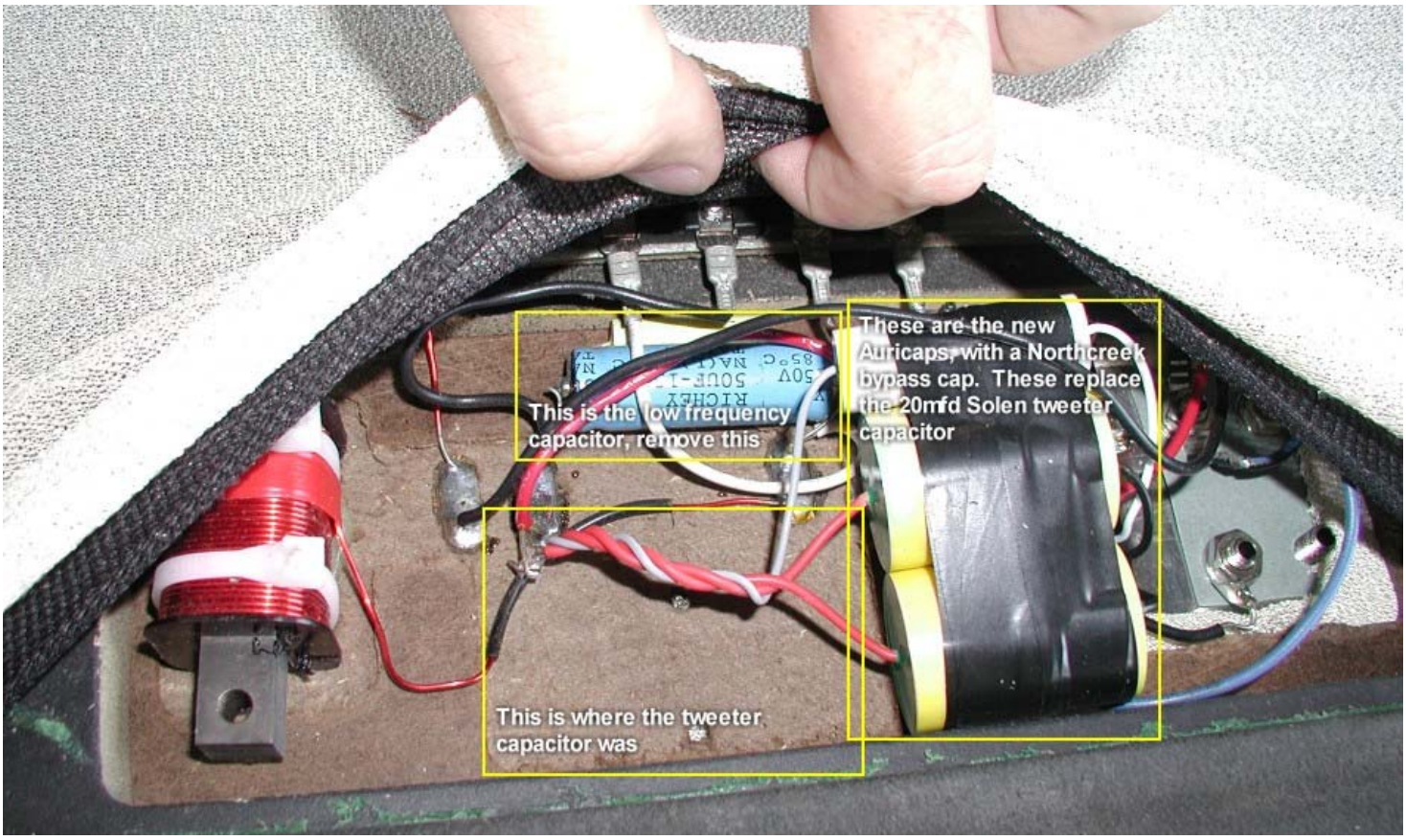



Step 0: If you haven't already TAKE THE FUSE AND JUMPER OUT OF THE CIRCUIT. This makes a noticeable improvement in the clarity of the speaker and requires no soldering. There are a few tweek articles on how to do this. It's completely reversible on the MG12's, unlike other Magnepans, there is no soldering involved.

Step 1: remove the side rails with the screwdriver.

Step 2: remove the staples on the base of the speaker so that the sock is unattached at the bottom

Step 3: remove the 4 screws holding the binding post/fuse plate on, this should allow you to pull the sock up and out of the way. You can actually get by without removing this, but it gives you a little more room. You'll find that there might be a second sock glued in front of the crossover, you'll have to pull it up. Below is a picture of the crossover from the front. At this point I have cut the Solen high-pass capacitor out, and already replaced it with the Auricap/Northcreek set. Remember, that on the MG12, the x-over is on the front, not the back like all the other Maggies that I've seen.

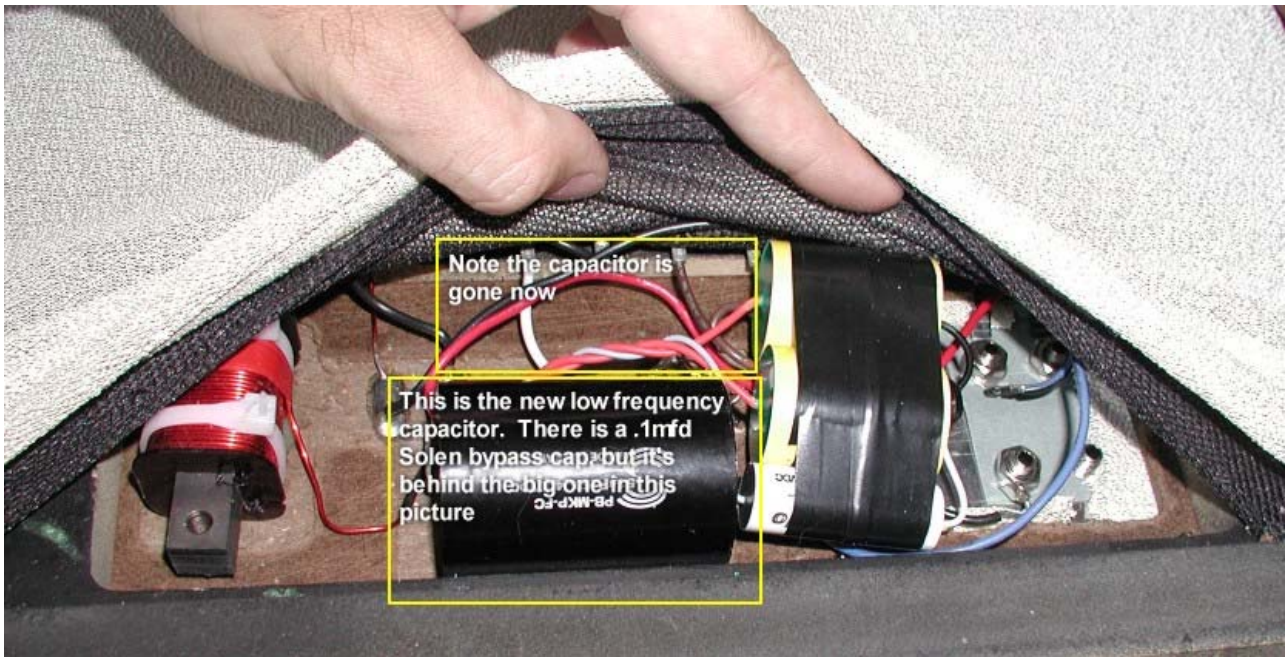



Step 4: Cut the Solen high-pass capacitor out of the circuit. Try to cut as close to the cap as you can, so that you have as much extra lead available, you will be soldering the Auricaps right back where the Solen was, so keep track of things.

Step 5: Solder the 2 Auricaps, and Northcreek cap in parallel where the Solen cap was. To do this I taped them together, twisted the leads, and pre-soldered them before installing in the speaker. You will notice from the previous image, that you will have to push things around a little to make them fit. I didn't bother to glue them down, the sock holds it all in just fine.

Step 6: Cut the cheapo low-pass capacitor, again, cut close to the cap to leave extra lead to reattach the new cap.

Step 7: Solder the 50mfd and 0.1mfd Solen caps in parallel (this is how a bypass cap is put in the circuit, in parallel with the main cap) to the exact same leads you just cut. Below is an image of the finished product. Notice that while I was able to solder to the original leads with no change, the 50mfd Solen is pretty big so rather on top of the image where the original cap was, it had to be mounted on the bottom where there was more room. If you wanted to be really creative, you could probably cut some of the backplate out to sink the capacitor in, so that it doesn't bulge the sock as much.



Step 8: Fire it up. It's pretty hard to screw this circuit up since you're just re-soldering to stock locations, and not really changing the circuit, but just in case you might want to verify your work, and possibly hook it up to a cheap amp for the first run just in case, but that's up to you.

Step 9: Restaple the sock at the bottom, I stapled then tapped the staples all the way in with a hammer and reattach the side rails and you're done. You might want to leave this step undone for a while just in case you want to tinker a bit more with the binding posts or some other items.

## Impressions?

For comparison, my system is:

- Meridian 565 surround preamp (surprisingly good for a surround unit)
- Meridian 518 digital processor
- Bel Canto 200.2 amp
- Pioneer DVD player as transport
- home-spun silver interconnects
- Cat 5 speaker cable
- 2 home-made subs
- Surround speakers, but I turned them off for critical comparison

Wow...huge improvement in clarity an imaging. Any sign of grunge, harshness, or fuzziness is gone. I think the Northcreek bypass cap is critical to taming the sound, keeping is smooth and not harsh sounding. The speakers are improved in every respect, however they have become less forgiving of poor recordings. Imaging on a bad recording that used to be in the general area of the speaker is now smack dab right on the tweeter of that speaker. The good thing is that the same can be said of good image sources. Image depth is also much better, and the character of the speaker is overall much cleaner, but without a harsh treble.

Feel free to e-mail with questions, and if you do the upgrade please e-mail you impressions and I'll put them on the page.

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## Update

I recently upgrade to a set of Martin Logan Requests and sold the MG12's. In getting a new factory box from the dealer, I had an opportunity to take the moded MG12's in and listen to them head to head against stock MG12's. This is an opportunity to do another comparison now that the "newness" of the upgrade is past, so I should be able to be more objective. For comparison, I listened to both speakers on the same Arcam CD player and Arcam integrated amp.

Well...the sound improvement I heard when I originally did the mod had nothing to do with me wanting to like the upgrade. The stock speakers don't even sound close to the moded ones. The stock ones have a 2D soundstage, are very forward, and harsh. Voices don't sound natural at all. I didn't realize just how harsh they were. The moded ones took on a whole new character, and could easily have passed for much more expensive speakers. The sound is much warmer and natural, and the soundstage seems to come out of nowhere, with the speakers completely disappearing. The moded speakers are almost eerie with the sound they make. While the Maggies don't have the immediacy that the 'stats do, the moded MG12 even does a better disappearing act than the ReQuests. If I had to scale back my system for any reason, the moded MG12's would top my list. I really can't get over how improved they sounded, it seemed as if I'd gone from a cheap Sony receiver to full class A monoblock tube amps.

If you have MG12's, I can say confidently that there is no upgrade you can do for less than $1k to your system that would come close to the difference this upgrade makes. It really is that good, and since it's pretty cheap, I consider it a must-do for any MG12 owner.

Also, just a final note to anyone who's considering this upgrade, based on my experience of trying to use a single Auricap with the 1.6QR's, I do think it's important to stick with the exact capacitor size that the stock speaker has. I think Magnepan has done a careful job of picking the values to use, so just do a one-to-one upgrade to the higher quality caps.