Posted by Wayne Parham on Sun, 22 Sep 2002 19:30:02 GMT
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I took a moment to build a couple of loudspeakers with cable assemblies containing a 0.5mH coil, and to compare them with equivalent speakers having no coil installed.0.5mH coil and mounting screwAs you might expect the effets are pretty subtle. In fact, Michael listened with me and could not hear any difference until I repeatedly switched between two of the same model speaker - one having the coil installed, and one without. Eventually, he could hear the difference. As for me, I could hear the difference right away, even far off axis in the position I stood while switching the speakers. But then again, I knew what and where to listen for, and I knew how subtle the effect would be.Response of 0.5mH Pseudo-Butterworth filter on Alpha 8 and Alpha 10Since it's only about a 5dB difference, this still "fits" well within the +/-3dB "window" that most speakers are rated at. This also means that a speaker that doesn't contain a midrange-attenuating filter as is described in this post is still able to provide response that's flat +/-3dB throughout the bandwidth of the speaker, because the deviation is not that great. All of the great classic Klipsch speakers were rated +/-5dB, which is a 10dB variance, so really the effects of a 5dB rise in the midrange are nothing terribly annoying, and some of you may very well prefer it.The difference is most

phrase," it removes a touch of "shout" as a person might expect. But the difference is small enough that some will not notice it immediately, certainly no where near enough to sound muffled

could use a bit less midrange, but I don't like to design by the "seat of the pants." Even if the response curve is slightly biased in one direction of the other in the relatively few environments I'm

sounded great in the office and in my car, but a little thin in my home and anorexic outdoors, that says nothing about how they would sound in a rock home in Hyderabad, India, a plaster room in Moscow or a very small room in Tokyo. That's why I like to build 'em "by the book" and not to tailor the response according to local conditions.Honestly, I really like the change. As I said, the

bass is made more voluminous, by contrast. Through the upper midrange, where this filter is active, one finds that voices are made slightly less, recorded voices that tended towards "shrill" are made less so.Specifically, I really liked the system on songs with a lot of pronounced vocal content. "Carry on Wayward Son" by Kansas has vocals that are almost like a barbarshop quartet or other accapella music, but with instrumentals added. The vocals in this song are so predominant they could stand alone, and upper midrange is more pleasant after the filter was installed. Other examples of songs I really noticed an improvment included "Afterglow" by Genesis and "Heart of the Sunrise" by Yes. Jon Anderson has a pure voice and his falsetto is much improved when the speaker isn't "midrange heavy." So all-in-all, I find that the 0.5mH coil

kits will include cable assmeblies with this Pseudo-Butterworth filter from now on.Cable assembly

considered "crossoverless," because the coil doesn't act as a crossover at all. It merely adds inductance to the circuit, and phase is actually changed very little. As you can see from the response chart of the filter, no "crossover" function is performed - The coil merely attenuates midrange frequencies from 1KHz up, and this attenuation is almost perfectly linear. So those that prefer the simplicity of a "crossoverless" design might not feel their objectives defeated by

deciding to install this part. It is still a minimal component design.Installation of the coil, mounted on the bottom or rear panelI found that the coil was best mounted using a small self-tapping screw on the rear or bottom panel. Do not place the coil directly behind the woofer - Offset it down or to one side instead.Connection of the various componentsConnection is still very simple, with the wires from the coil going to the woofer and the straight wire going to the tweeter. Of course, positive goes to positive and negative to negative, on both the woofer and the tweeter.It's a very simple install, and one that I think is well worth doing.

Posted by Matts on Sun, 22 Sep 2002 20:42:22 GMT
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Glad to hear the results. I went out and got some coils yesterday and soldered them into the cables, but haven't had a chance to hear them yet. Decided to go ahead and finish the cabinets this weekend, and just put the second coat of Tried'n'True linseed oil/varnish on them, thx to Till E. Going to put a coat of oil/beeswax on them tomorrow, let 'em sit and then put 'em back together again. Can't wait.I got inductors w/ no bobbins, so I'm was planning to hang them from a cable tie screwed on through the fiberglass, unless someone has a better suggestion.

Subject: Of course it's not a crossover, it's.....
Posted by BillEpstein on Sun, 22 Sep 2002 22:05:47 GMT
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.....a Transparent Reference $10,000 speaker cable, without the mystery box.

Posted by bqc on Sun, 22 Sep 2002 22:56:59 GMT
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nice looking cable/coil assembly. I did not have .5 mh coil handy soI soldered 2 X 0.25 mh coils in series to make a .5 mh coil and soldered it in series to the woofer and made some measurements. (I onlyhave crude means a Radio Shack spl meter and a test CD with wable tones). It seems that the addition of the coil did not remove the'shout' in the 4k-5k region where the response is about 5db abovethe 3kHz region before it and the 6k HZ region after it. BTW the my 2pi's wereposition in the corner, on the carpet floor, toe in about 30 degrees.Spl metter is on tripod at the listen

position.So I decided to take out the coil and put in the tweeter compensationassembly from my theater 4pi's into the tweeter circuit (the wooferjust have straight wire going to the terminals from the terminals) and that seems to do the trick. It removes 6-7 db from 4k to 5khz. However It also removes 2-3db from 1Khz to 3khz and 4db from 6khz to 8khz. The sound is more relax. Have you tried this in the past Wayne? What values of R1 and R2 and C1 inthe tweeter compensation circuit that would be more effective in thiscase of removing the 'shout' in the 4k to 6k region and leaving therest of the response intact?

Posted by Wayne Parham on Mon, 23 Sep 2002 01:28:56 GMT
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I had considered attaching the coils to the connector panel with epoxy, or perhaps tied near them with cables ties similar to the way you've described. But I think one of the best ways would be to use a strain relief wrapped around the coil and fastened to a cabinet panel by screw. You can find strain reliefs that are made to hold a wire tie, and that would be perfect for your application.

Subject: Re: Of course it's not a crossover, it's.....
Posted by Wayne Parham on Mon, 23 Sep 2002 01:33:14 GMT
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...the easiest thing in the world to build too - Just one cut of wire, strip and tin, slip over the heat shrink tubing, solder and shrink the tubing insulator. Viola!

Subject: 20 ohm resistors across the amp outputs
Posted by Wayne Parham on Mon, 23 Sep 2002 02:39:09 GMT
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might try instead is to add a 20 ohm damping resistor in shunt across the tweeter. Some people report an improvement with this. It can be added externally, on the speaker terminals.
