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Subject: Light bulbs

Posted by [Paul C.](#) on Sun, 17 Sep 2006 12:08:16 GMT

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Wayne, I'm starting construction on the 7pi-18 kits, and looking at the crossover boards. There are what appear to be two automotive light bulbs soldered together on the board. This does not appear on any of the schematics from your crossover paper. I'll be building my own crossover for 4pi Theatres. Should I add these bulbs?

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Subject: Re: Light bulbs

Posted by [Paul C.](#) on Sun, 17 Sep 2006 12:38:11 GMT

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Found the answer in another post in your reply to Troy: "The light you see in the port is from a lamp used as a protection device for the tweeter. At high power levels, the lamp begins to glow and increases resistance, compressing the HF signal and protecting the tweeter." What part number for these bulbs? Paul

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Subject: Re: Light bulbs

Posted by [Matts](#) on Sun, 17 Sep 2006 13:54:42 GMT

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I recently built some crossovers, but left the bulbs out since I'm using the speakers with 2A3 amps @ 3.5 watts. If I ever sell them to someone else, may have to put some in then.

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Subject: Re: Light bulbs

Posted by [Wayne Parham](#) on Sun, 17 Sep 2006 15:11:47 GMT

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The bulb used is a 211-2, and there are two of 'em in parallel. The 211-2 bulb is designed for 1A at 12V (12 ohms) but cold resistance is only about 2 or 3 ohms, so the pair is about an ohm and a half. When used on the input of the crossover, there is no noticeable impact until high current makes the filament glow, increasing resistance and limiting current. It acts like a compressor and protects the tweeter, but the compression effect is very natural sounding, you can hardly even tell. And it doesn't happen until the amplifier is generating about 300 watts. You don't need the bulbs unless you're running high power. But if you use them, they limit power on the high end in a very natural sounding way. I have hundreds of these bulb-pairs in stock if you need them. I'm sure you

can find them locally, but just in case, I've got 'em.

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Subject: Re: Light bulbs

Posted by [Paul C.](#) on Sun, 17 Sep 2006 15:51:08 GMT

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Should these be inserted at input to crossover, or between tweeter and crossover pad resistors?

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Subject: Re: Light bulbs

Posted by [Wayne Parham](#) on Sun, 17 Sep 2006 16:02:33 GMT

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They'll act differently at each place. If before the crossover, the reactive components in the crossover will form part of the load. If after the crossover, the bulb resistance will affect load resistance and Q.

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Subject: Re: Light bulbs

Posted by [Paul C.](#) on Sun, 17 Sep 2006 19:27:43 GMT

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So, the bulbs need to be at the input of the crossover. Does the resistance of the bulbs affect the crossover adversely? Paul

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Subject: Re: Light bulbs

Posted by [Wayne Parham](#) on Mon, 18 Sep 2006 13:37:30 GMT

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When the resistance is placed ahead of the crossover, it acts like the amp has increased output impedance at higher frequencies. Other than that, interaction with the crossover is pretty limited.

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Subject: Re: Light bulbs

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Posted by [GarMan](#) on Mon, 18 Sep 2006 13:40:18 GMT

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Hi Paul, The lamp is not located ahead of the entire crossover network. Just ahead of the HP filter. The lamp should not be in the woofer's signal path.

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Subject: Re: Light bulbs

Posted by [Paul C.](#) on Mon, 18 Sep 2006 13:49:06 GMT

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Ahh, gotcha!

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