
Subject: Heat Exchanger / Cooling Plug Information
Posted by [Wayne Parham](#) on Mon, 19 Sep 2005 11:21:23 GMT
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extraordinary close fit between the woofer and side panel of the LABhorn prompted us to have a version made with a thinner stop. The cross-drilled holes are cut with their axis at 30 degrees from the cooling plug center axis. It's a tight fit. But the area is sufficient to support the airflow at full excursion. The angle of the vents may actually help flow. We checked T/S and both plugs worked well without modifying Fts, so that's all we really cared about as far as airflow was concerned. The main thing was that it didn't create a backpressure that increased driver Fts. There is a balance between increasing heat conduction and reducing pressure drop. Conduction is improved by leaving a lot of aluminum in the plug. Pressure drop is reduced by removing aluminum and increasing vent flow. Of course, there comes a point where flow is good enough that there is very little pressure drop at any passband frequency at full excursion. There is no point exceeding this amount of venting, as it would only reduce heat conduction. And vent area is not the only thing that affects flow. Other things like position, direction, shape and other features also affect flow characteristics. So the real trick to making the cooling plug work well is to get enough venting that there is no pressure drop but no more, because you want heat conduction through the aluminum to be maximized. One last thing. Several people have written about the cooling plug and a common misconception seems to be that the plug will work all by itself. It

exchanger also serves as the access plate. On other models, it may be located elsewhere. A simple plate of aluminum is all that is required, and I think 6" to 8" round or square would be sufficient. Cooling plug / heat exchanger - Photos