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Subject: Mass loading ring - explanation (an attempt, anyway)

Posted by [mollecon](#) on Fri, 11 Jul 2003 09:36:41 GMT

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Hi Adrian! Looks like the road to Sound Heaven is paved with banana peels, huh? ;-))The explanation on the mass loading ring thing, in part stolen from memory from Martin Colloms "High Performance Loudspeakers": Suppose you have developed a diaphragm which shows a given, wanted behavior over it's frequency area - we are here talking drivers used pretty high up in frequency their size taken into consideration, large bass/ midrange drivers really. And suppose you want to increase the drivers moving mass (for example, to make it able to work lower in frequency in a given box volume). Now, just adding mass to the diaphragm as a whole will alter it's HF behavior, which we already have 'in place'. So instead, you increase the moving mass by attaching a ring (with the wanted mass increase) to the diaphragm, usually at the 'neck', where voice coil former & diaphragm is attached to each other. Placed here, the ring will have as little influence on the diaphragms behaviour as a whole as possible. This way, you alter the units low frequency characteristics without destroying it's good behaviour in it's HF range. In some cases, manufacturers have made additional use of the mass ring by placing it strategically on the diaphragm &/or gluing it with a 'soft' glue, thereby controlling unwanted resonances/standing wave modes. I don't think that's the case with JBL, though. If the manufacturer does nothing with the suspension after adding the mass control ring, only two T/S parameters are changed; The  $F_s$ , which will go down, & the  $Q_t$ , which will go up - the  $V_{as}$  should stay the same. Hope this helps, Adrian - I'm sorry I can't help you with the rest of your questions :-)