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Subject: Piezos / 2 way designs

Posted by [Paul C.](#) on Wed, 09 May 2001 17:00:14 GMT

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I am afraid the Motorola piezo tweeters are not taken seriously. I have used the Motorolas successfully for a number of years in two way spkr, for home stereo as well as PA/musical inst use. I am a saxophonist, have experimented for many years with various speakers for good vocal and wind inst reproduction. (See my articles on Sax On The Web, <http://listen.to/saxophone/> and there also you will find one I have, Playing With A Mic... general advice to wind players in using PA equipment.) I first noticed the Motorolas many years ago at Radio Shack, and had seen the KSN1005a and KSN1001a (fluted 4khz horn, aka "Superhorn") and KSN1025 (2"x6" 1800hz horn) sold by them, and also used in a number of musical inst speakers. I was intrigued by the simplicity. I had read some good remarks on the KSN1025 in Speaker Builder magazine's letters section. I was impressed with how flat these were, rivaling some much more expensive tweeters. I was less than impressed by the 5khz peak in the little KSN1005... a harsh one note cymbal sound. Please refer to <http://www.ctscorp.com/pzt/ffpzt-home.htm> You will also find a good piezo application article there, which tracks exactly with Wayne's advice. Since my introduction to these tweeters many years ago I have concentrated on the 1800 hz unit for use in simple, yet effective 2-way systems. CTS/Motorola has now expanded the 1800 hz driver line to other variants using this same basic driver: A cheaper, and less satisfactory KSN1176 2"x6" horn similar to the 1025. There is another 2x6 variant, the KSN1141b, that is a high power 2x6 1800hz unit that is part of their "Powerline" 400 wt (!!!) series. Now we are talking serious horsepower. Also in the Powerline series, KSN1141b 2x6 horn similar to the KSN1025, and a 4" square (outside shape, round horn) KSN1165a. These are all 1800 hz units. They make a separate 1 3/8" x 18tpi screw in horn driver, KSN1142a, also in the 400 wt Powerline series. I have used this with the Motorola KSN1151a 10" x 5" horn lens. But it sounds quite similar to the 1025/1141 with built on horn lens... save your money. I have had the same experience as Wayne Parham, and doubted the 92 db SPL's of these Motorola drivers. I had used them with good results with woofers rated 95-99 db/wt/m. Wayne tells me that by his actual measurement, the Motorolas measure 96 db/wt/m at 2.83v (equiv to 1 wt at 8 ohms). My golden ears agree (OK, laugh, but being a musician, I know what REAL instruments sound like). Roll the woofer off at 1500-1600 hz with just a coil (6db) and zobel. I find it best to just wire the tweeters above with no other attached components, and choose a woofer of 95-99 db SPL. You may luck up on a likely woofer with a natural rolloff at this point. These Motorola 1800 hz units all have a built in 22 ohm 1/2 wt resistor. The two times I have smoked a KSN1025, the resistor was burnt, but soldering in a new one had it working again with no problems. I have just recently purchased the larger KSN1188a driver. These extend down to 800hz... YES!!! 800 hz - 20 khz range. I have them teamed up with a larger 5"x15" horn lens (Parts Express #260-099, at \$9 ea a real bargain!). So far, so good. New cabinets will soon be finished to mate these to some Pyle MH1560 15" woofers. So far, I just set them on top of existing cabs. But the sound is very promising. I would be glad to hear, as per my other thread, of others use of the KSN1188a's, either for home or pro audio use. I know these have been on the market for a while and used commercially. Comments? BTW, MDF does not cut it for "roadworthy" cabinets... I use birch ply. If there are resonances, I can't hear them... and certainly the strength of the ply vs MDF weighs heavily in this decision. MDF does not hold up well, in my experience, in equipment that must be moved around. Have you guys seen spray on truck bed liners? That stuff makes a great finish for road gear! Looks like black wrinkle vinyl from a few feet away. A commercial sound company in the next town had 15 pair sprayed by a local outfit, after first trying it out for several months on a pair of their rental PA speakers. Give this stuff a

consideration for your next project. One more note, I have also wired 8 ohm resistors across the terminals of piezos, making them appear to be 8 ohm dynamic units electrically, and used them with L-pads and 6 db (caps) xovers, crossing them from 1800 hz up on up to 6000 hz. This works well, with little or no SPL loss.

CTS/Motorola