The Accessories4less inventory Mr. Rich speaks of in this article has been sold out for some time.

AR 302 and 338

Distributor: Accessories 4 Less, 5525 Force Four Parkway, Orlando, FL 32839; 407/859-3335; www.accessories4less.com

Price: See text. Latest prices available at the website.

Source: Reviewer purchase.

Reviewer: David A. Rich

In the early '50s a Hi-Fi enthusiast would put loudspeakers together by purchasing raw drivers from, say, Jensen, and would then put them in a big universal enclosure. The wonderful power of eBay (your junk is my treasure) has allowed me to get a copy of a 1954 Allied catalog, which shows this to be the real world of the time.

In 1954, Ed Villchur changed all that when he introduced the acoustic suspension bookshelf speaker. The AR 3 was introduced just in time for stereo to come out. It had the first dome midrange and tweeter, instead of the horns being used by others. By the '60s, Acoustic Research was the largest quality speaker manufacturer in the country. In the late '60s, Roy Allison redesigned the line, introducing the modern soft dome. About the same time, the company was sold out to a conglomerate. Although the change in management marked the beginning of a downhill slide, the company still managed to bring out the landmark AR-9 tower unit in the mid '70s. By the early '90s, however, AR was in bad shape, and in a demonstration on the vanquished becoming the victor, the now International Jensen purchased AR, adding it to a stable of speaker manufacturers that included NHT.

The plan that was devised to restore the company was to bring out retro designs that were updates of the late 60s Roy Allison designs. The former AR employee and at the time head of NHT, Ken Kantor, was tasked to do the designs. They must not have sold as well as expected, given that a large number of units were in a warehouse when the models were discontinued in 1996. They sat in that warehouse until this year when an Internet audio store called Accessories 4 Less purchased the inventory.

Now why are you reading about all this? Because Accessories 4 Less has priced these speakers at more than 75% off the original list price. With reasonable shipping charges and no sales tax we have a bargain that should not be ignored. The top-of-the-line AR303a, which was the redo of the AR-3a, was reviewed by JMC in Issue 57. It is in limited supply and may well be gone by the time you read this. In much greater supply are the AR-302 (in effect, an updated AR-5), which is the same as the 303 except that it uses a 10-inch woofer; and the ARB338, which is slightly different, with an 8-inch woofer. At the time of this writing, the AR-302s sell for $309 with shipping and the AR-338s sell for $200 with shipping. Sometimes the company has sales that knock another 15% or so off the price.

All units in this line are acoustic suspension, which offers the advantage of good transient response (it is a second-order system), slow roll-off, and easy interface with subwoofers. The midrange and tweeter are small dome units that were flush-mounted in a vertical array. The driver array is mirror-imaged between the pair of speakers. This is very different from the original AR-3, which had the drivers recessed 2 inch deep into the box and placed in a seemingly random fashion on the front panel.

Small domes (nobody makes 3/4 inch tweeters any more) without any horn loading and acoustic suspension woofers had the same problem in 1995 that they had in 1959 - poor efficiency. I suspect that is what caused the line to do poorly, because they would not have sounded so good in comparison to more efficient models if they were not level-matched during comparative listening sessions and how many stores bother to do any kind of meaningful level-matching?

Also working against these AR speakers is their poor vertical dispersion. You must have your ears between the midrange and tweeter if you are to hear these units sound flat. It is very unlikely that the large bookshelf speakers were displayed high enough off the floor, especially since they do not look so good when displayed that way. Bookshelf speakers may have been the way to go in the '50s and '60s, but the '90s marked the era of mini monitors and thin towers.

Why the vertical dispersion of the speaker is so poor is hard to explain. Crossovers for the 338 are 12db/octave, not the 1st order slopes that typically have this dispersion problem. The 302 uses a mix of slopes from 6dB/oct to 18dB/oct. The 302 midrange driver sports a foam cover held in place by a metal grill. This rolls off the top end and changes the dispersion characteristics. The technique was straight off the AR-3a. It made a lot of sense in the '60s, when the computer power required to optimize a high-order crossover would not have been available, but its use in a speaker from the '90s in hard to explain, except to match the cosmetics of the AR-3a. The AR-338 gets the same midrange without the foam.

Both the midrange driver and tweeter are custom designs that look to be of good quality. I would say they are at least as good as anything AR produced prior to then with the exception of the dual-dome device from the AR-9Lsi. In that speaker the midrange and tweeter were placed very close together to prevent interference problems that the 302s and 338s show.

A PC board holds all the crossover elements. This board is filled on both sides with components owing to the multi-order three-way design. The inductors are iron-core and the capacitors are unbypassed electrolytics. The board is attached to the plastic panel that holds the speaker terminals. The panel showed some resonance around 400Hz when mounted in the box. The AR-338 gets a limited amount of damping material and no bracing. The AR-302 is filled

with damping material to the point that it was hard to get the crossover network back in the box. I could not check for any bracing because all that damping material prevented any peeking.

Overall these speakers were a very good value at the 1995 list prices of $1,000 and $600. 1995 turns out be the date when our review samples were made. The manufacturing date is on the back of the speakers. They emerged from what appeared to be factory-fresh boxes (the 338s' boxes were marked "E Stock," but I could see no cosmetic problems) after five years in the warehouse... finally to make some music.

So what do they sound like? Both the 302s and 338s sound similar, with differences that are consistent with their crossover differences, baffle-width differences, and the funny foam on the midrange of the 302. Both speakers have a tonal balance that is totally unlike the old AR sound from the mid-'50s to mid-'70s. Back then, AR produced "East Coast"; sound, which was dull, but these retro units are forward-sounding. Indeed, they sound very much like the NHT units of the time. It is a " West Coast"; sound that is consistent with the California location of AR at this time. The 338 sounds lighter and brighter. The 302 is darker (more bass) but has a strange upper midrange coloration. Both speakers tend to call attention to themselves and not to disappear. That is especially true of the bigger 302.

I made measurements using the ETF 5.0 room acoustics analysis system and microphone. This is nifty stuff all you need is a computer to play speaker reviewer. Try the demo version at www.etfacoustic.com all you need is a Radio Shack sound level meter to join in on the fun. The full system costs less than what many pay for interconnect cables. I reviewed ETF 4.0 in Issue 24 of the The Audio Critic. ETF 5.0 for the most part is much improved.

In the time domain both speakers are very similar, with good full-frequency energy/time curves. As might be expected given the flat baffle and high-order crossovers, phase response is not minimum-phase. I am absolutely convinced this is not an issue. If you think it is, wait for the new DSP equalizers to fix it.

I confirmed the sensitivity of the frequency response (In ETF 5 you can measure out to 20KHz and sound card response variations removed automatically. Results also come back much faster) to differences in the plane of measurement. Variations of up to 5dB occur below 3kHz down to 300Hz. Clearly this is an audible effect.

Above 3kHz things get much worse. A broad 10dB dip occurred if the mic was moved from the ideal position between the midrange and tweeter to positions up to slightly above the tweeter down to just above the woofer (the new to ETF 5 overlay function is great for comparing multiple measurements). In addition to the big dip, 5 dB peaks would also appear.

On the preferred axis, the frequency response fit into a 2dB window. The 338 was flatter overall but with more narrow peaks and dips; the biggest peak being a 3dB at 450Hz. The 302 showed a broad elevation from 300Hz to 1.5kHz, then came a broad dip from 2kHz ending at 4kHz. That is probably the midrange coloration I heard (we listened before we measured).

Horizontal dispersion (on the inside axis with the mirror-imaged drivers) was excellent in the 338 and only slightly less good with the bigger-baffled 302. The domes show their stuff in this test. The ETF system showed no significant resonances in the drivers.

Far field responses were more similar than different between the two designs but one is by definition getting the response of the room mixed in. Both near- and far-field response showed

none of the classic downward slope in response that was characteristic of the original AR-3 and AR-5. Why, if they were giving us an updated speaker, did they not at least give us a switch to get the AR tonal balance?

The 302 is a true full-range system, with full response down to 35Hz (I put the mike as far inside the cone as it would go and did some sine wave sweeps from 200Hz on down. With no port in the system this method works very well). I did not have direct access to the AR-303, but many have reported that it is very bass-heavy a complaint that was also leveled at the AR-3. The AR302 and 338 also show some peaking a resonance. 4dB for the 302 and a dB more for the 338. The 302 produces very clean lows. I took the sine wave generator signal level to as high level at 35Hz as I would want with no audible distortion. They provide a good foundation without any subwoofer or the headaches associated with getting the sub to blend with the main channel. Bass freaks will no doubt find the speakers' limit. A 10-inch woofer can only do so much.

The 338 goes deeper than a mini monitor (-3dB at 50Hz) but it really needs a subwoofer. It clearly suffers in comparison to the 302 at the bottom even with string quartets. On the other hand, it does have some bottom end, and it can be used as a full-range speaker, especially in small room with lots of room gain.

The 338 is the ideal size for an AV system since it can still hold its own at 80Hz. Smaller drivers in tiny enclosures are already rolling off well above 80Hz. Even regular-sized mini monitors are showing THD problems at this frequency. Why more 3-way speakers are not available in the AR 338 size class for A/V systems, I do not know.

I compared the AR302s to a couple of mini monitors that cost more than $1,000. The ARs did very well, playing cleanly to much higher levels. With mini monitors, the woofer is getting directional before it is crossed over, and the tweeter is forced to go to its low frequency limits to meet the woofer. You can really hear that on big orchestral material when you switch to a speaker (like these ARs) with a good midrange driver.

On the other hand, the smaller mini-monitors “disappeared” much better. Also, they sounded much better off-axis, because they had no crossover smack in the middle of the midrange. The coloration I heard in the ARs I think is primarily a result of the complex and unpleasant-sounding off-axis response of these speakers. Reflections from the walls bring these colored sounds back to your ears. The forward voicing exaggerates the problem. Violins bring the problem out best. Sibilance on voices also shows up the problem. Things would be better if the midrange and tweeter levels were adjustable as they were on the original ARs, but no adjustments are possible with the 302s or 338s. The treble control is the only recourse. With the edge removed I was left with a pair of speakers I could live with if I had to. On audiophile recordings with a distant milking one can run them flat and the quality of sound can become good on an absolute scale. (This for the price of average "audiophile"
speaker cable!)

After the review was concluded I came into possession of the real thing. An original AR-5 made in about 1970. The pair I got had significant restoration the result of its age and its garage sale origins. The unit was supplied by a hobbyist who specializes in the repair and restoration of speaker of this era, Robert Kuhn (rskuhn@mindspring.com). He replaced the surround of the woofer and replaced a blown midrange as well as the level controls. In addition he refinished the cabinet. Given all this repair and the age of the unit it is hard to tell how close to the original sound one has gotten but the sound was good. Smooth and sweet and not just in some sweet spot on the vertical axis. Like the 302s the speakers do not disappear and in comparison to

the 302s detail and definition is lost but the relaxed presentation of the originals can be addicting especially with the average Polygram CD. Now I know how people could listen to Columbia LPs of the 60s and live to tell the tale. Bass response of the original and 302 were very similar.

Measurements of both speakers was similar a good sign that both units had been restored correctly. Measurements were surprising in that no ideal axis could be located, as with the 302s, but the speaker was relatively flat over a wide range of microphone placement. This is how we would expect a speaker to act that was to be placed on a bookshelf or turned 90 degrees and placed on the floor but it is surprising how well AR pulled this off in a 3 way without a computer on site. No doubt the random looking driver placements are not so random after all. The far field frequency response does demonstrate the slow tilt above 2kHz that is associated with early ARs. Certainly this is the principle explanation for the sound of the speaker although the good off axis performance must also have a positive effect. So would it be successful today on demo at Circuit City? Not a chance even with a level match since the lack of detail would be the only thing noted on a quick audition. So our encounter with the AR-5 confirms what we expected - the 302s are not just a modern looking AR5. They are a totally different modern design requiring specific placement on speaker stands with a flatter, brighter and more detailed sound. One is left to ask why they went through the exercise to use any of the older AR technology since the sound has no relationship to the original. A lot of prospective customers must have asked the same thing and purchased something else. So if you want the original smooth AR sound you will have to find an original on ebay.

Conclusion: These ARs are true audiophile speakers. Driver quality is high and the crossovers are a complex design given the original list price. Nothing new could touch them in any way at the price they sell for now. For $300 in today's market you will get a small-two way system with a cheap tweeter and a 6dB/octave crossover. Such speakers would not stand a chance in a comparison to the 302s, especially with a little nudge on the tweeter control. The 302s make a great choice for a secondary system. They might even squeeze into a larger bedroom. This is also the speaker to tell your non-audiophile friends to get to replace the 1984 K Mart specials they have sitting in their living rooms. Even the most tone-deaf listeners will hear the difference these speakers will make although they may have to get used to bass that is this flat, extended, and clean.

The AR 338s work well when a smaller speaker is needed. They also can used to form a 5.1 system with a subwoofer and a center channel unit. The matching 205VC center channel speaker is available from Accessories 4 Less for around $100. It uses different drivers from the 302/338 and is a lot more efficient. The tonal balance appeared to be similar. The matching AR subwoofer may be available when you read this. It is a reworked AR1W with a built-in power amp. The whole 5.1 system should be about $1,000.

The 338 is also a great place to start a DYI project. No way could you get raw drivers of this quality at the price the 338s now sell for. The crossover components could be upgraded and the speaker re-voiced by changing the midrange and tweeter levels. Simpler projects include stiffening and dampening the cabinet. I think a remarkable speaker might be created from the 338. I have yet to start to tinker with my pair. Advanced DYI folks could bring the order of the crossovers up in either the active or passive domain and solve the dispersion problem. Besides, if you mess it all up, you will have lost very little but you will have had a lot of fun.