REL Serie R-528SE Sub-Bass System

Kick-Ass

Paul Seydor

"Paul, you need a kick-ass speaker," an audiophile friend of mine told me a while ago. This fellow isn't a headbanger, rather a serious listener and a producer of many recordings of classical music distinguished for both their musical and sonic qualities. Nor was he talking about loudness, as he is aware that my Quad ESL-2805s play plenty loud enough, even on orchestral music, in my room. He was talking about bass—big bass, deep bass, fearsome bass. Despite my arguments—made many times over in this publication—that the bass from Quads goes pretty deep (-6dB at 35Hz) and does not sound thin—I have to grant my friend his point: Quad bass is beautifully defined, extremely low in distortion, and high in resolution, but it doesn't plumb the deepest depths, it's rarely powerful, and it's never *physically* powerful. Though I've used subwoofers with great success in the past, I don't on a regular basis. But from time to time my buddy's injunction comes back to haunt me, so when Sumiko asked if I'd like to review REL's new Serie R528SE subwoofer, I quickly accepted. It's been well over a decade since I've had a go at subwoofers in TAS, and the last time I had a very good experience with an early REL.

No sooner had the new model arrived than I set it up, not even bothering to read the instructions. I just put it behind one of my Quads, set the crossover at the midposition, cranked the volume, slipped *Also Sprach Zarathustra* into the tray, and let her rip. Wow. The opening organ pedal point made the whole room shudder—it was awesomely, goosepimplingly spectacular. In another part of the house my wife found it quite unsettling because we live in Los Angeles, which is earthquake country after all, and the whole house came alive with that note. It wasn't just that the note was loud; rather it was one of the rare occasions when I've been aware of the true fundamental of a 32-foot stop reproduced on a stereo system—that is, the 16–17Hz wavelength which the pipe

is actually producing. I felt almost giddy.

I also felt a little ridiculous because I was playing it so much louder in relative terms than you'd ever hear in a concert hall or a church. I know this from experience, because the First Congregational Church in Los Angeles has the largest *church* pipe organ in the world, which I've heard on several occasions. (All local audiophiles and any who visit our city should not pass up the opportunity to hear it, an experience you'll not soon forget.) But I'm glad I started this way because it taught me three things about the 528SE real fast: its loudest outer limits I would not begin to approach in normal (or abnormal) listening, even with the most demanding material, in my 2600 cubic-foot listening room; its output is ultra-clean and unbelievably low in distortion; and its cabinet appears to be bomb-proof. Despite the insane levels, there was nary a thump, rattle, or rumble from the enclosure itself and no hint of doubling.

The Design

REL's Serie R subwoofers, of which the R-528SE, at $2799, is the flagship, are designed both for bass support in a conventional stereo system and for the LFE (low-frequency effects) channel in a multichannel setup, such as home theater. My evaluation is only on the stereo music system application. The front-facing main driver is the same heavy-duty carbon-fiber twelve-inch woofer with aluminum chassis used in REL's far more expensive Gibraltar G-1, and is reinforced by a twelve-inch carbon-fiber downward-facing passive radiator. Electronics, including crossover and Class D amplifier of 500 watts, are housed with the drivers in a cube slightly larger than seventeen inches per side—a beefed-up version of the standard R528 cabinet with large, nickel-plated feet and a black lacquer piano finish. The styling is handsomely, albeit severely contemporary, and I would personally wish for options in light or dark wood finishes. On the back panel are level, variable crossover, and phase controls. As with all REL subwoofers, a supplied cable (34 feet long) terminates in a Neutrik plug that connects the 528 to the main system by taking the signal off the speaker outputs of the amplifier—an arrangement, claims REL, that allows the integrity of the total signal to be carried forward to the subwoofer.

RELs are designed to be used in augmentation mode, which means there is no external crossover that divides the signal into low frequencies for the subwoofer while sending everything higher to the main speakers. This has an advantage and a disadvantage. The advantage is no additional electronics or cables in the signal path, which eliminates the possibility of consequent distortion and phase anomalies. The disadvantage is that the main speakers are still required to reproduce bass, which in the case of most small speakers can extract a toll in terms of a certain constriction when the going gets tough. Freeing the mains from handling bass typically has the effect of liberating the reproduction, increasing dynamic range, and reducing distortion.

But REL subwoofers are not necessarily designed for speakers that are challenged with respect to dynamic range and bass response. As the company points out in its literature, its "products are not traditional subwoofers, but true Sub-Bass Systems...designed to augment the performance of 'full range' speaker systems in order to provide linear response down to below 12Hz [!]." If I'm reading this correctly, most mini-monitors and other subcompact and even some compact loudspeakers need not apply. From the description, I am inferring that REL's designers presuppose that their sub-bass systems—now that the explanation is out of the way, I shall continue to refer to them as subwoofers—will be paired with speakers of at least adequately flat response down into the upper end of the bass range (i.e., 70–80Hz). Although the crossover range is from 32 to 120Hz, I'd not be inclined to use the 528SE with any speaker with a -3dB point in its frequency response much higher than 50–60Hz. In other words, the 528 isn't designed to make a speaker that is seriously thin in the upper bass and baritone region sound full.

It can be made to do that to a limited extent, as I will indicate, by judiciously raising the crossover point, but even with my Quads, I wouldn't go higher than 75–80Hz. Beyond that the presentation begins to thicken ever so slightly in a way not to my taste. But "taste" is most emphatically the operative word here, inasmuch as the sound was by no means unmusical or in any other way unattractive. Usually I had the crossover at what I believe was in the 40–50Hz range (the reason for my uncertainty will be become clear soon enough). The thinking, as John Paul Lizars of Sumiko, REL's domestic importer, explained it to me, is to have the subwoofer provide the foundation, the oomph, slam, or crunch factor—supply your own figure of speech—so that the main speakers dominate in reproducing the leading edges of the transients, not to mention the harmonics. Quads are reputedly among the most difficult of all speakers to match with a subwoofer, but I am happy to report that I achieved a seamless transition between them and the REL. It took some doing, but it can be done and, once done, the results are magnificent: Anyone hearing my present setup who would seriously want more and deeper bass or a better integration must have a very different conception of natural sound from mine.

The Sound

Once the 528SE was properly situated and dialed in, absolutely the highest possible recommendation I can give is to say that I quickly forgot it was there until it was needed. But when it was needed, it didn't sound like an accessory adding something to the presentation that wasn't there before. On the contrary, the Quad 2805s continued to sound like the peerlessly pure, open, neutral, transparent, and lifelike reproducers they are, only,

SPECS & PRICING

Type: Front-firing subwoofer with 12" active woofer and down-firing 12" passive radiator
Low frequency extension: 21Hz at -6dB (in-room)
Built-in amplifier: 500 watts, Class D
Dimensions: 17.5" x 15.5" x 17.5"
Weight: 58 lbs.
Price: $2799

SUMIKO AUDIO (U.S. Importer)
(510) 843-4500
sumikoaudio.net

almost miraculously, these qualities now seemed to extend organically into the low bass and even further into the really subterranean bass, as if those characteristics were always part of the Quads themselves. And this was realized with a sense of solidity, foundation, and sheer power that I've experienced only a few times before (one of those with a previous REL woofer). This means that nonmusical sounds are also reproduced, such as the subways that run below St. John's in England, which are famously audible on any number of choral recordings made there (also traffic noise outside).

But it's not just big deep stuff that is better reproduced. All recordings made in spacious venues are reproduced with a greater sense of air, atmosphere, and the "presence" of the space itself, which results in a much richer and more enveloping presentation. This is because in most large venues that are acoustically pleasing, especially the great concert halls of the nineteenth century, level rises as response descends into the bass (so does reverberation time). On the new Dudamel *Also Sprach Zarathustra*, listen to the rush of air at the end of the organ introduction—one reason you hear this is that the REL is reproducing the true fundamental, not just its first harmonic. (Even when there's no music at low frequencies, most large spaces still have a certain amount of "bass sound," though they appear to be pretty quiet.) Finally, there is, top to bottom, a more pleasing overall tonal balance, especially on big material, but also with instruments like pianos, where you get the full muscularity and resonance of the bottom end. The coda of Richard Goode's *Waldstein* (Nonesuch) is quite overwhelming in this respect, and Valentina Lisitsa's *Totentanz* (Naxos) has to be heard to be believed. (Both of these recordings in their very different ways offer outstanding reproduction of grand pianos.)

I mentioned earlier that using a crossover to divide the spectrum by diverting the lows away from the main speakers will often yield greater dynamic range because the main speakers don't have to work to reproduce the bass. This is true, yet I

found that with the Quad/REL combination the subwoofer now produces so well balanced and properly proportioned bass that it's not necessary to play the system as loud to try to get a *physical* feeling from bass drums, tympani, organ, and the like.

The definition, resolution, and transparency of the REL seem to me beyond reproach, and there is no sense that the speaker is lagging behind or dragging the so-called "speed" of the Quads down. "Speed" in any case is both the wrong word and the wrong idea here. The difficulty with matching most woofers to Quads doesn't have to do with the quickness of their response—most good or better subwoofers respond plenty fast enough unless they're incompetently designed—but with the fact that Quads are dipole radiators and woofers are direct radiators. Once this new REL was optimally set up, however, I heard no trace—zero, *nada*, none—of cone driver versus planar discontinuity. The integration was seamless. (This is yet another reason why it's advisable to set as low a crossover frequency as you can get away with, consistent with having as smooth a response as possible throughout the bass range.)

A couple of recordings that really drove this home to me were provided by longtime TAS reader Jim Williams, a great pipe-organ aficionado. A pipe organ happens to be an exceptionally revealing instrument when it comes to evaluating the degree to which a multi-driver transducer or, as in this instance, main speakers and subwoofer speak with a single voice. Volume 2 of Kei Koito's Claves recital of Bach organ music opens with a literally stupendous recording of the Toccata and Fugue in D Minor. (The venue is the *Frauenkirche* Cathedral in Dresden, the instrument a Silbermann organ, originally installed in 1736, destroyed in 1945, and gloriously restored in 2005.) Jim tells me this CD is used by *Diapason* magazine as a reference for how an organ should be recorded. Little wonder: It's almost unprecedentedly clean, clear, and transparent, hugely dynamic, airy, and spacious with some of the deepest, truest, most jaw-dropping bass I've heard in over forty years as an audiophile. When the 32-foot stops come in, you really do feel as if the music is welling up under and around you as if from the center of the earth. And as with *Zarathustra*, you certainly feel the fundamental and at least hear it as sound pressure on your ears. I must emphasize again that the presentation evinces no sense that there is a separate subwoofer, let alone a separate subwoofer that propagates sound differently from the main speakers. But that's a misleading way to put it. What is more accurate is to say that there is a sense of the transducers disappearing and of your being transported to the venue. The same is true of Dorian's *Organ Encores*. Though a very different organ, miking, and acoustical setting, there is the same seamless, organic presentation and thoroughly natural impression of huge size and space. If you love pipe organs, I would urge you to run to your nearest REL dealer for an audition. At the very least, you'll come away with a better idea of what is really down there on some of your favorite recordings.

The Setup

There are probably as many different kinds of advice when it comes to setting up a subwoofer as there are subwoofers. Regardless of the method, the job goes much faster if you have a helper. I did it both ways—on my own and later with fellow TAS reviewer Robert E. Greene (REG). The REL method, which was actually devised by the folks at Sumiko, is unusual but it does work—sort of. First, you're advised to place the woofer in a corner behind one of the speakers. This is good advice for two reasons: efficiency (from boundary reinforcement) and the fact that corner placement drives all the room modes equally. (Corner placement does not in and of itself yield a boomy bass unless your listening position happens to coincide with a spot where a standing wave is at or near maximum pressure.) Put on material with a lot of bass response, switch the phase between 0 and 180, and leave it in whichever position is louder. Then start to move the woofer out from the corner diagonally by increments until it reaches a point where—I am quoting from the manual—"the REL will go lower, play louder, and, if it truly locks on to the room and is fully pressuring it, the air around the REL will seem to be energized, stop right there! This is the correct position from the corner for the REL." Once this is achieved, you orient the woofer physically (i.e., firing forward, to either side, presumably also to the rear or at any point around the center axis) so that the playing is "loudest and lowest." (That isn't an intentional oxymoron, merely bad writing. What I think it means is that you stop when are get the loudest sound in combination with the deepest extension.)

Then you turn to the crossover and level settings. Sumiko's recommended procedure is to start at the lowest setting, 32Hz, and bring the volume up slowly to the point where you achieve "a subtle balance, i.e., the point at which you can hear the REL even with the main speakers playing. Now, bring the crossover point up until it is obviously too high; at this point, bring it down to the appropriate lower setting. For all intents and purposes, this is the correct crossover point." If those instructions sound unhelpfully vague to you, you're not alone. I have no idea what the "subtle balance" point is, and even less what constitutes "an appropriate lower setting" of the crossover. As for when the woofer "locks into" the room, a little more description, fellas, as to the effect you're talking about would be helpful. But the truth is, using music to determine optimal settings for any of these adjustments is not so much hopeless as simply inefficient and more time consuming than necessary, because the settings will vary with program content.

Sumiko has long recommended Track 4 from the soundtrack of the movie *Sneakers* (Sony), because it has a repeating bass-drum motif that goes on long enough to allow for several adjustments without having to repeat the cut. This is a rather good recommendation inasmuch as the bass drum here actually sounds more like a very narrow cluster of frequencies than a single frequency. Using it according to Sumiko's instructions, you can probably get a good enough result initially. The trouble is that what you're really doing is adjusting the subwoofer for that cluster of frequencies as they appear at your listening position. A few hours after the initial adjustment and more listening, I found the level was too high for most other music. What I wound up doing over a few days is using a variety of familiar recordings, raising and lowering the crossover vis-à-vis the level until I achieved a result that sounded right on most music. Or, at least, right enough that I could stop fiddling and get back to enjoying music. This, by the way, is as good as you're ever going to get. You're never going to achieve perfection, and no subwoofer, no matter how good, will change the bass signature of your room: The primary modes will always produce maximum intensity at some frequencies in some places and minimum at others.

I wish I could give you specific numbers for my settings, but I can't because REL has chosen *not* to identify the crossover values apart from the lowest and the highest. Nor do they put any markings on the level control except minimum, maximum, and high noon. This is a real mistake and the only serious criticism I have of the design, especially as regards the crossover frequencies. Assuming the crossover spectrum is distributed linearly around the clock, as it

were, then noon should be 76Hz. But this is precisely the sort of assuming we shouldn't have to do. If you know the response characteristics of your speaker system, particularly the point at which the bass slopes to its -3dB point, then you can get a considerable leg up on the whole process by setting the crossover frequency of the subwoofer to match, which is a good starting point. At least, this has been my experience with most subwoofers.

In my opinion, a better way to set up a subwoofer, including the REL, is to set the crossover frequency on the subwoofer to that frequency, then play music or random noise that is clustered around the frequency and adjust the level of the woofer until you can't tell whether the subwoofer is playing or not. This means that at the crossover point the main speakers and the subs are dovetailing perfectly with respect to level. After that you can then do whatever tweaking you like to tweak the balance a bit more precisely or in a way that you find more pleasing. For myself, I found that pushing the crossover a bit higher than the theoretically optimal 35–40Hz brought an additional weight, heft, body, and warmth to the lower strings, an effect that was subtle but very much to my taste and very close to my idea of a natural and "realistic" tonal balance.

But now I've got a guilty confession to make. What really made the process a breeze was when Robert Greene brought over the DSPeaker Anti-Mode 2.0 DualCore (see his review in Issue 204). This device generates a sweep tone that is picked up by a (supplied) microphone placed at the listening position and presented as a frequency-response graph on the Anti-Mode's LED display. In no time at all we could move the speaker around, adjust level and crossover, look at the results, and readjust until we had the flattest response at the listening position. I'm happy to say that I was able to get it in the ball park using Sumiko's method, rather closer doing it by ear, and as good as it was going to get using the Anti-Mode. Important note: We were *not* using the DSP function of the Anti-Mode, only its measuring function. (In my own arrogant opinion, REL or Sumiko might want to market such a measuring device. Stripped of its DSP function, it seems to me it could be very reasonably priced and its usefulness is self-evident. I'd certainly buy one.)

Getting the proper dial-in was only part of the job. Because my room doesn't have an empty corner behind the speakers, owing to built-in shelving and nearby doorways, the 528SE initially wound up in a part of the room that also serves as a traffic area. Despite its attractive finish, it looked unsightly there and rather stupid as well. So I decided to situate it in the listening area, up against the back of the sofa. This actually happens to be a really good solution to subwoofer placement, because if the crossover is low enough, directionality isn't an issue (a 100Hz wavelength is over eleven feet, 50Hz over twenty-two). With an assist from the Anti-Mode (again for calibration only), we were able to get excellent measured results that translated into superb listening.

I had to settle for some compromise, which obtained in the first as well as the final placement of the REL. As a trade-off for a bit more fullness in the 70–100Hz range and real strength at the very bottom of the spectrum, there's a mild, narrow trough around 50Hz. The listening area is a given in my room, so the only alternatives to eliminating this require moving the main speakers or the subwoofer. But the main speakers are very happy where they are, as am I, and no amount of repositioning the subwoofer to any place that wasn't too awkward to live with flattened out the trough. There is only one way this can be fixed—outside of DSP or a parametric equalizer—and that is by using a second subwoofer. I've done this before and it works like a charm. You simply find a place for the second woofer that doesn't result in a depression in that frequency range at the listening position. But if you opt for this solution, don't be surprised if your woofers wind up being in very strange, counterintuitive parts of the room. Bass modes rarely accommodate our requirements for aesthetics and convenience. REG, who's done a thorough and systematic study of this, informs me that most real acoustics experts agree that the best way to get a really smooth, flat bass response is by using several subwoofers distributed

optimally around the room. This raises an interesting question: Is it better to buy two or more smaller subwoofers than a single big one? The answer would appear to be yes. And in addition to allowing a smoother, flatter bass response, none of the woofers would have to be working all that hard as there are so many of them. The reproduction would sound less effortful, the distortion lower, and the dynamic range if anything higher. Of course, how one's domestic partners would feel about this arrangement is another matter entirely.

What about DSP or EQ? Always desirable for smoothing and flattening the response, especially when it comes to pulling down peaks or reducing broad plateaus, but risky when it comes to filling in valleys or troughs. For one thing, it requires pouring a lot more amplifier power into your speakers, thus raising the possibility of damage or distortion. For another, you may not be able to do it at all. If you have a serious null at your listening seat, you can't EQ that out. Why? Think about it: If you're faced with an absolute null, which is to say zero loudness, then no matter how much you multiply nothing by something, the result is still nothing.

Conclusion

I've devoted so much space to setup here because I believe the R-528SE is truly a great product that will perform at its best only with careful attention to placement and calibration. So that I don't scare potential buyers away, I must in fairness add that unpacking and just getting it to work are easy as can be, and if all you want is lots of subterranean bass with low distortion, you'll get it in short order. But this subwoofer is able to do something very special. It's a kind of chameleon that can liken itself, as it were, to the main speakers, extending their bass response in such a way as to make it sound as if it's organically and imperceptibly continuous with their sound, not a box that woofs along with it. But you'll get there only with some work.

The 528SE also offers truly breathtaking bass reach, low distortion, and high resolution in a compact package that I'd have little hesitation calling standard-setting both at its price and at several multiples above its price. In truth, I doubt there's even a handful of subwoofers out there for any price that would put paid to its performance.

Right now I'm winding up this review listening to Rachmaninoff's *Symphonic Dances* in the Dallas Symphony recording by Eduardo Mata (far superior sonically to the more famous one by Donald Johanos). The warmth and richness of the whole lower range of the orchestra win me over completely, while the bass drum is genuinely—well, kick-ass. Relative to which, that buddy of mine told me not long ago that he had picked up a pair of Quad ESL-63s that he's presently having restored. Does this mean that I have the last laugh? Not hardly—the day the R-528SE has to leave will be an unhappy day *chez moi*. tas