

THE Cutting Edge



A NEW REFERENCE?

**Audio Research Reference
CD7 CD Player**

Jonathan Valin

The CD7 is the first CD player that the Audio Research Corporation has called a “Reference” product. Clearly the word means something special to ARC, and though the proof, as always, is in the listening, it is fair to note that previous “Reference” products from ARC have indeed been reference quality.

Like its predecessor—the CD3—the CD7 is a remote-controlled, top-loading CD player, fitted with a Philips Pro2 transport and a 24-bit Crystal DAC.

The Cutting Edge

Like the CD3, it has both single-ended and balanced outputs (as well as digital outputs). The chief difference between it and the CD3 is an entirely new and much more sophisticated vacuum-tube output stage “taken directly” from the Reference 3 preamplifier (my current reference). Powered by four 6H30 triodes—and by a massive power supply that uses three more 6H30s for high-voltage regulation—the CD7’s gain stage is said to give the player the speed, resolution, and neutral balance of the Ref 3.

Although I was forewarned that the CD7 requires a great deal of break-in time, I didn’t count on several months. Nonetheless, that is what it took to turn

For the first time the battle has been carried to the LP’s own turf

what I first thought was merely an amiable player (not unlike a greatly improved CD3) into something of a breakthrough. All of my comments apply to the broken-in unit.

It isn’t difficult to hear what makes a broken-in CD7 extraordinary. Just listen to a piano concerto, like the Prokofiev First with Yevgeny Kissin and the Berlin Philharmonic [DG].

I suggest a piano concerto because it so neatly illustrates some of the things that CD players excel at and some of the things they don’t. For instance, CD players have always been good at reproducing certain aspects of a grand piano’s sound, in part because the power and reach of a piano plays to CD’s strengths—its superior transient response, dynamic range, pitch stability, and flat-to-near-DC bottom end. Thus, it isn’t surprising that the CD7 reproduces Kissin’s Steinway with incisiveness, authority, and tremendous bottom-octave clout. What *is* surprising is the amount of lifelike air and three-dimensional bloom the ARC recovers in the piano’s bass, middle, and top octaves—things that CD players are *not* good at.

Indeed, one of the chief problems with CD is its lack of air, bloom, and

dimensionality. Unlike analog playback or live concerts, instruments on CD tend to sound as flat and thin as playing cards. A voice on CD, for instance, doesn’t seem to come from a rounded human head but from a flat spot in space—a plane. That plane can be located in the foreground, middleground, or background—CDs have never had a problem with layered depth—but it is *a plane*, a two-dimensional surface.

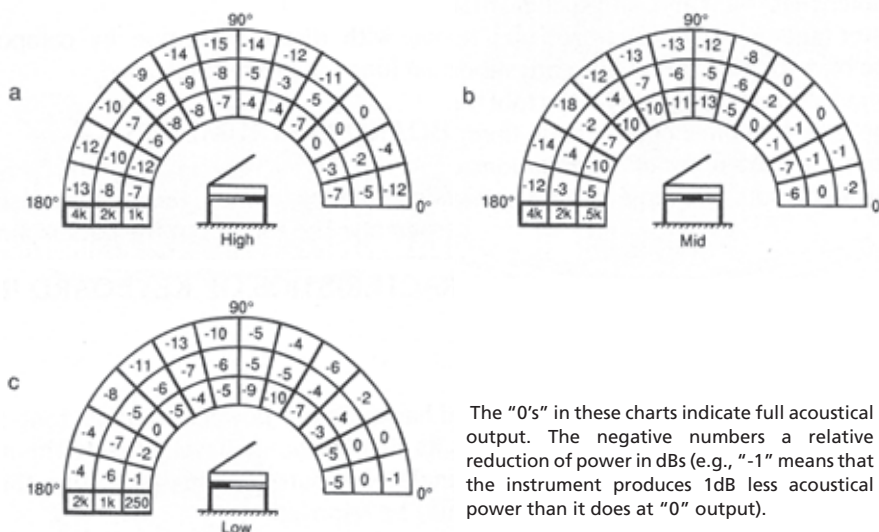
In life, instruments are *not* two-dimensional propagators of sound. A piano, for instance, generates a virtual hemisphere of tone and overtone that surrounds the body of the instrument from front to back and side to side. Of course, the piano is more “directional” (outputs more energy) in certain arcs of the hemisphere than in others, depending on the register it is played in and the intensity with which it is played. Still, as a sound source it is not a two-dimensional plane but a three-dimensional hemisphere, and I would argue that accurately capturing the way it propagates sound is one of the chief differences between hi-fi and a fair semblance of the real thing.

To illustrate my point, take a look at the charts below diagramming the directional characteristics of a grand piano (from the late John Eargle’s indispensable textbook, *Music, Sound, and Technology* [Van Nostrand Reinhold, 1995]).

As you can see in Illustration A, a grand piano playing in its upper octaves projects most of its acoustical energy in a relatively narrow band from about

midway above the sounding board to the piano’s lid. Listening to a typical CD player, you would think that this narrow beam emanating from a point in space was all there was to the piano’s sound. Note, however, that the grand piano has additional lower-level output throughout the 180° of its soundfield—that it not only “beams” but “blooms” in a hemispherical pattern. Note, as well, how the distribution of acoustical energy throughout the hemisphere changes with changes in register—and how the relative directionality of the piano’s notes changes along with it.

High notes being the most directional tend to sound more “focused,” higher up, and more forward in acoustic space than mids and lows, with only a faint feathery cushion of tone and overtone from the piano’s hemispherical dispersion pattern giving them their shallower sense of depth and volume. Midrange notes, on the other hand, project their fullest acoustical power in a considerably wider arc than treble notes (see Illustration B) and, depending on register, have considerably more acoustical output throughout their 180° of dispersion. As a result, they tend to sound bigger and more diffused in focus than treble notes, with that more substantial cushion of omnidirectional sound also making them fuller in depth and volume than treble notes. Bass notes sound bigger still, since at 250Hz and below the piano is projecting its full power in a nearly omnidirectional pattern, both to the rear and to the front of the



The “0’s” in these charts indicate full acoustical output. The negative numbers a relative reduction of power in dBs (e.g., “-1” means that the instrument produces 1dB less acoustical power than it does at “0” output).

The Cutting Edge

piano (see Illustration C). As a result, bass notes sound huge, “deep,” broad, thickly cushioned—often seeming to extend “through the floor” on powerful sustained notes (as they almost literally do).

I haven’t given this short course in musical acoustics for no reason. I’m trying to suggest, however inadequately, that reproducing the characteristic way an instrument *projects* its sound in various registers—what I call action or bloom—goes a long way toward creating the illusion of a real instrument playing in a real space, and that LP and, to a much lesser degree, SACD reproduce instrumental bloom (or as much of it as microphones are capable of capturing), and that CD players typically do not. Thus the flatness of their imaging.

I used to think that a CD player’s lack of bloom indicated a loss of information, that the lower-level signals that add volume and density to timbres and dimensionality to instrumental images weren’t being

adequately quantized at 16 bits. But the Ref CD7 has made me question that assumption. Either the CD7 is adding an analog-like coloration that makes it sound as if it has bloom, or it is actually better resolving very-low-level information that has been encoded on the disc.

What makes me lean strongly toward the latter position is the magical way that the CD7 also conjures up air. Once again, this is not something that typical high-end CD players reproduce well. Indeed, one of the chief complaints leveled against early digital was the unnatural darkness and deadness of its silences, which seemed more like the black inert silences of outer space than the active silences of concert halls. Once again, like bloom, the ambient air in a hall or recording studio is a very-low-level sound that generally isn’t fully replicated by most CD players. In this case, I think, because of CD’s biggest problem: its treble filter.

It’s very old news, but cutting off

frequency response at 20kHz also cuts off information. All you have to do is listen to an LP or SACD to hear how much is lost—and not just in the treble. A large part of the reason why CDs sound so airless and closed in on top and so unnaturally dark in overall tonal balance is because of that 20kHz brickwall filter, above which nothing is recorded or reproduced. I once compared it to turning off the lights above the stage, because that’s the way it sounds—as if every instrument is shrouded in darkness and is itself darker-hued in timbre.

What is surprising is the amount of lifelike air and bloom the ARC recovers—things that CD players are not good at

From the very inception of CD, some engineers have attempted to inject LP-like air and light into digital’s dark landscapes via various analog kludges, be they tubes in the output stage (starting with CAL Labs, which is almost starting at the start), belt-drives on the transport mechanism (beginning with CEC in 1983), turntable-like isolation techniques (mass-loading, clamps, etc.), or the lavish use of high-quality component parts. The trouble with most of these analog “fixes” was that, in trying to turn the CD into something that sounded more like an LP, analog-minded designers sacrificed some of the things that CD did right—particularly in the ways of dynamics and bottom-end power, speed, and extension. But that is not the case with the CD7.

It retains in full CD’s characteristic virtues of superior transient speed, dynamic range, and bottom-end extension and sock, while adding not analog’s colorations but some of its subtlest virtues—some of the very things that make LPs sound like live music and musicians, things that aren’t typically part of the digital skill set.

To return to the Prokofiev First Piano Concerto on DG, through the CD7 the top-octave of Kissin’s Steinway (and of the Berlin Phil’s strings and winds, for that



The Cutting Edge

Specs & Pricing

Type: Top-loading, vacuum-tube CD player/transport
Analog outputs: (Stereo) balanced XLR, single-ended RCA
Digital outputs: XLR balanced AES/EBU, BNC coax SPDIF 75-ohm
Frequency response: 0.5–20kHz ±1dB
S/N ratio: 110dBA
Distortion: .005% 1kHz
DAC: 24-bit Delta-Sigma
Channel separation: 95dB 1kHz
Sampling Frequency: 44.1kHz
Quantization: 16-bit linear per channel
Dimensions: 19" x 5 1/4" x 15 3/8"
Weight: 32.5 lbs.
Price: \$8995

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JV's Reference System

Loudspeakers: MAGICO Mini, MBL 101 E, Ascendo M-5 MkII
Linestage preamps: Audio Research Reference 3, Audio Space Reference 2, MBL 6010 D, Lamm Industries L2
Phonostage preamps: Audio Research PH-7, Lamm Industries LP-2 Deluxe
Power amplifiers: Audio Research Reference 610T, Lamm ML-2, MBL 9008, MBL 9011, Pass Labs X350.5
Analog source: Walker Audio Proscenium Black Diamond record player
Phono cartridges: Air Tight PC-1
Digital source: ARC Reference CD7
Cable and interconnect: Tara Labs "Zero" interconnect, Tara Labs "Omega" speaker cable, Tara Labs "The One" power cords, Synergistic Research Absolute Reference speakers cables and interconnects
Accessories: Shakti Hallographs; Walker Prologue Reference equipment stand; Walker Prologue amp stands; Richard Gray Power Company 600S/Pole Pig line/power conditioner; Cable Elevators Plus; Walker Valid Points and Resonance Control discs; Winds Arm Load meter; Clearaudio Matrix record cleaner; HiFi-Tuning silver/gold fuses

matter) isn't just clear; virtually any good CD player can do clarity with count-the-angels precision. And it isn't just joltingly dynamic; virtually any good CD player can do dynamics. It is delicate, dimensional, very finely detailed, and—yes—airy, almost like a piano sounds in life.

The sense of Kissin's piano blooming into acoustic space—of tone and overtone *blossoming* from and around the instrument rather than being beamed from a single plane—is unparalleled in my experience of digital, and so close to what I hear in a concert hall and on my analog rig that I am genuinely nonplussed. Here, for the first time in my experience with CD, is a realistic sense of how that big instrument projects its sound (and not just in the treble), of the hemispherical dispersion pattern that gives it its characteristic timbre, texture, and three-dimensional size and shape.

Add to this the Reference CD7's remarkably "analog-like" (in the sense of color-neutral, rather than warm or cool or bright or, most especially, dark) tonal balance. Indeed, the Reference CD7 sounds so neutral and transparent from top to bottom that it is even harder to tell it from LP playback, whereas normally the differences would be unmistakable because of CD's darkness. It is as if instead of taking their customary separate paths to the absolute sound, CD and LP had suddenly chanced upon a common road—as if the aspects of live music that both reproduce *well* aren't entirely different ones but some of the same ones, as if, once broken in, the CD7 preserves all that CD is good at, while diminishing many of the colorations (the darkness, the flatness, the airlessness, the lack of bloom) that make CDs sound less like real music.

So where's the rub?

Well, there are a few. First, while the CD7's treble is the best—the ariest, the most nearly neutral, and the most finely detailed—I've heard from CD, there is still a sense of a "ceiling," of things being spun out so far and no farther. I suppose this is inevitable in a digital player with a 44.1kHz sampling rate. It's not as if anything blatant goes missing; rather, it is the very sense of a top-end limit (or the absence of limitlessness, if you will) that slightly nags at you, particularly if you're coming from LP or SACD.

Second, while a superior soundstager in comparison to other digital players, the CD7 does not have the stage width of a first-rate analog rig like my Walker Proscenium Black Diamond record

player, Air Tight PC-1 moving coil, and ARC PH7 phonostage.

Third, the ARC's neutrality and reproduction of low-level details of timbre and dynamic are remarkable by any measure. But there is a very slight, very fine grain to the CD7's sound—probably a tube artifact—that is, frankly, a hallmark of many ARC front-end products. What makes critiquing this problematical is that it is an extremely attractive coloration, which makes things like delicate overtones or dynamic nuances stand forth, as if the very slight grain of the CD7 were "bringing out" details the way the texture of canvas takes paint.

I have often heard the argument made that digital *should* sound digital, that making it sound anything but what it is diminishes its virtues (as analog kludges admittedly often have), that it is its own thing with its own set of virtues—a parallel sonic universe to those of vinyl and SACD. In my opinion, this argument is a bit misleading. CD shouldn't sound "digital"; it shouldn't have any sound of its own, no more than analog should. Ideally, what both should aim to sound like is music, the absolute sound.

Of course, both CD and LP *do* have their own characteristic sonic signatures, and I think what people mean when they object to analog-like digital playback is that, in aping analog, CD makers are not carrying the medium closer to the real thing but nudging it closer to the colorations of another medium. However, the Reference CD7 proves that analog means do not have to result in analog colorations, that they can be a direct route to the subtle sonic virtues that LPs have, until now, had almost sole access to. (It also proves, in passing, that well-executed tube-based gain stages are capable of higher low-level resolution than solid-state gain stages.)

Is there room for improvement in the CD7? Goodness, yes. The best analog still sounds considerably more realistic than the best digital. But the gap is narrowing, and for the first time (at least in my experience) the battle has been carried to the LP's own turf. For that achievement alone, the CD7 deserves to be called "Reference." **TAS**