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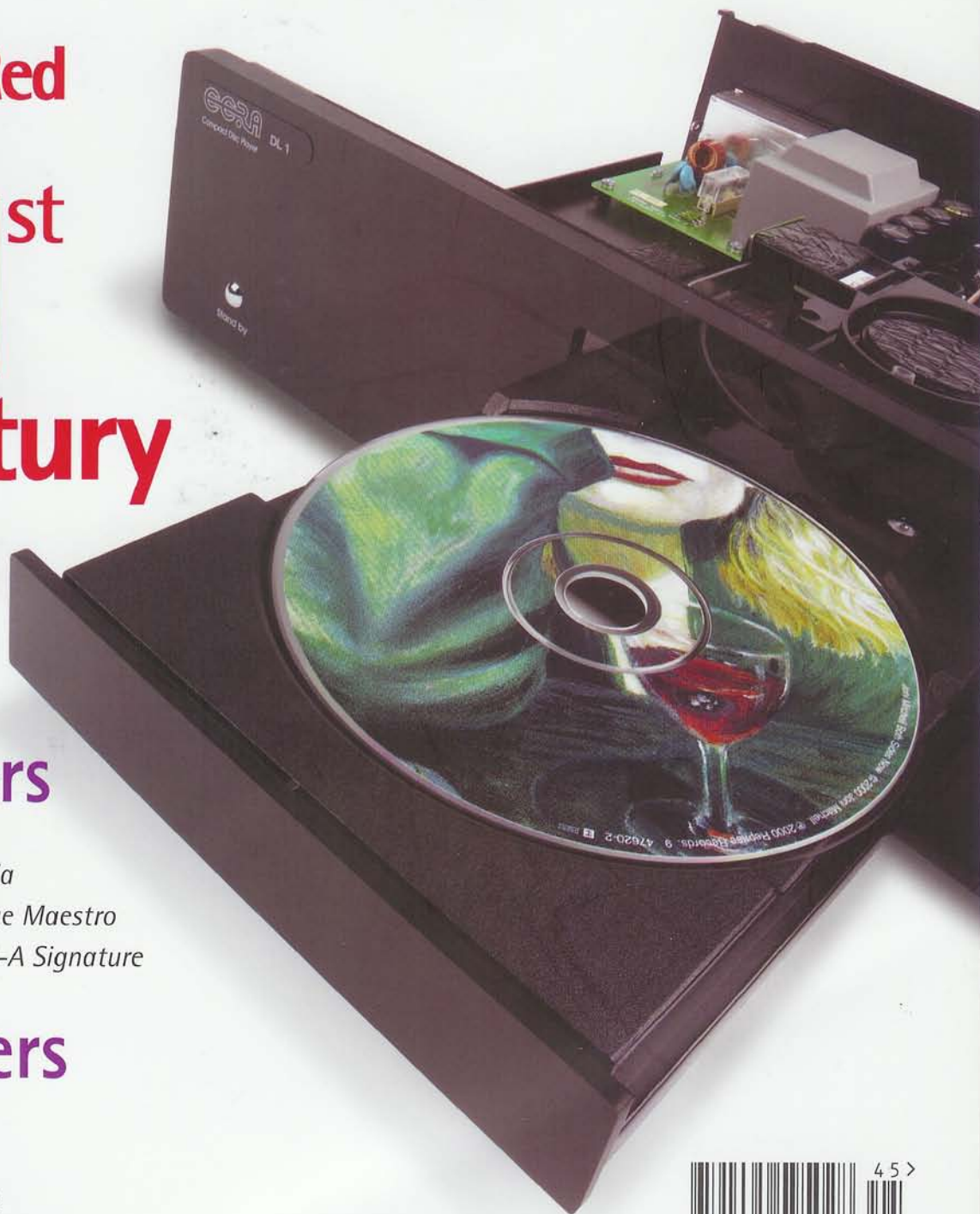
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# The Audio Research Reference 3 Line-Stage and PH7 Phono-Stage

by Roy Gregory

When Audio Research first really entered the consciousness of British audiophiles, it was as a manufacturer of valve (or tube as they would have it) pre-amplifiers. Whilst the venerable D79 power amp and various pre-amps had been around for a while, it was the SP8 and then the SP11 that firmly established the brand's credentials on this side of the pond. Indeed, for a while they stood Colossus like astride the high-end, the pre-amp benchmark to which all pretenders aspired, a tube/control equivalent to the LP12. Anybody who was anybody wanted an SP11. Of course, at just over £5000 nearly 20 years ago, wanting and owning were two different things, but just the pleasure of using the 11 on a daily basis in the dem rooms of the audio store in which I worked left a lasting impression.

Nothing lasts forever; with hindsight, the seeds of destruction were already sprouting in the shape of products that were to supercede the Audio Research giants. In truth, those emergent products and technologies more often than not represented an extension of performance in a particular rather than a general sense and two decades later we are re-learning the value of overall balance in audio reproduction. Nor were ARC themselves immune to the tendency, with the SP9, SP15, M300 and D125 all eschewing the holistic sound of the SP11 in search of greater resolution and transparency. It's been a long road but all the indicators suggest that Audio Research are back...

Firstly, there are the CD players; apparently modest machines whose outward simplicity conceal a musically convincing and authoritative perform-

ance. Secondly, on a recent trip to the states I found Audio Research components cropping up in manufacturers' reference systems once again, predominantly the Reference 3 pre-amplifier. Thirdly (and on a personal note) there's the new PH7 phono-stage – and I'm ever a sucker for a fancy phono-stage.

Spiritual and aesthetic descendant of the Reference 2, the Reference 3 is outwardly almost identical to the earlier design. A large, bluff, single-box unit,

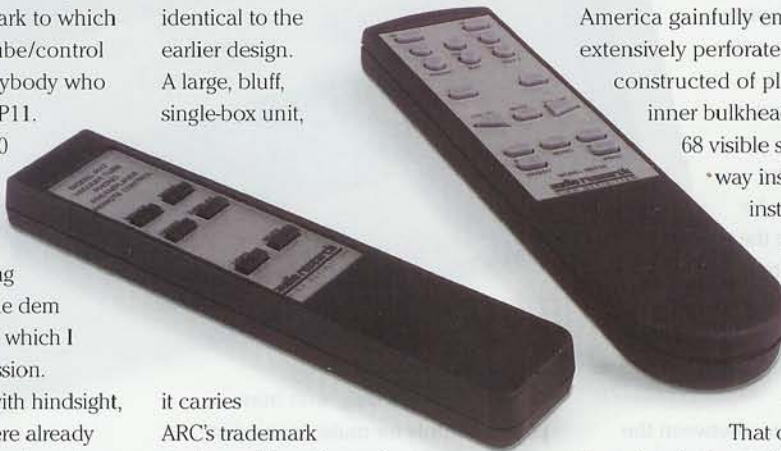
it carries ARC's trademark fascia, grab-handles and a pair of their ovoid, rotary controls, in this instance flanking a huge, green LCD display that informs the listener of status, level, etc. It also offers balanced input and output options, although the all-tube audio circuitry does not employ a fully complementary topology. In all, there are seven line-level inputs (including a processor input with unity gain) a record and two main outputs, all switchable between balanced and single-ended connection. Somewhat bizarrely, the IEC connection is of the 20 Amp variety. Once again, in traditional ARC style, appearance is workmanlike and practical rather than stylish, with just a hint of 1950's comms gear to provide continuity with the company's previous designs (or evidence of a chronic lack

of imagination, depending on your point of view). I'd never describe ARC kit as attractive, but the resonance with the SP11 is somehow reassuring. Likewise, the front-panel is also available in black, but the traditionalist in me says that ordering one in that finish would be a bit like buying a yellow Ferrari...

The Ref 3's casework seems like a single-handed attempt to keep the machine screw manufacturers of America gainfully employed. The extensively perforated exterior is constructed of plates attached to inner bulkheads by no fewer than 68 visible screws. Fight your way inside (essential to install the tubes) and you'll discover neatly compartmentalized circuitry, based on vertically mounted PCBs.

That of course disposes the tubes horizontally (a subject of some debate). The audio circuit employs four 6H30P twin triodes, the same type used in c-j's ACT2, with a further 6H30P and a 6550C providing power-supply regulation. The input stage is arranged as a long-tailed pair to accommodate both the balanced and single-ended connections, whilst overall gain is 12dB in balanced mode and 6dB single-ended. The audio valves each come equipped with a pair of rubber damping rings around their elongated envelope, another sensible step.

The remote control is a compact plastic device that thankfully eschews the high-end penchant for handsets so heavy that mere mortals can't actually pick them up. ARC's offering might not impress your friends with its milled ▶





▶ from solid casing, but it is a model of practicality. Not over populated with useless functions, buttons are well separated and sensibly arranged making this one of the better efforts in a category I normally ignore. The Ref 3 remote actually made it into service, which is praise indeed. As well as the obvious volume and source switching options, it also offers balance, phase invert, mono and a six-step display brightness function. Finally, there's a button labeled 'Hours' that informs you just how long you've been running the current set of tubes.

Whilst ARC's claims for the Ref 3 are lodged firmly in its sonic performance, they isolate a significant drop in noise floor and increase in bandwidth as key factors in its advance over their previous designs, both criteria that can be readily measured on the test bench and traditional Achilles heels of valve designs. Indeed, in use the Ref 3 proved ghostly quiet, a fact that clearly underpinned its performance.

One big difference between the Reference 3 and the legendary SP11 is the absence of a phono-stage in the former (at which point some wags might point out that the medium-gain option fitted to the 11 barely qualifies either). Instead, ARC have chosen to offer a stand-alone device in the shape of the PH7, allowing owners to decide just how committed they are to the vinyl medium. Given that moving-coil output levels are way below the point where tubes are comfortable operating, Audio Research have sensibly opted for a j-fet input stage, feeding four 6922 twin-triodes. HT for the valves is tube regulated by a trio of 6H30s. However, even with the j-fets in the circuit, overall gain is only 57.5dB, low when compared to many solid-state designs. Low enough in fact to allow the company to describe the PH7 as both

MM and MC compatible. Ahhh, the shades of the past live on. Bear in mind also that the available gain will drop if you load down the input impedance. This is user adjustable through five sensibly spread values, ranging from 100 Ohms to the obligatory 47K, all via the remote handset (although the remote function is arguably the one area in both products where the "what if" factor has out-run actual practicality).



Inputs and outputs are single-ended only, with front-panel controls for mute, mono and adjusting the load. The remote also offers the same display and hours functions found on the Ref 3.

The Audio Research units were used in what has become a very stable set-up at home. The front-ends were the Kuzma Stabi XL/Airline/Lyra Titan and the Wadia 861SE, while power was supplied by the Hovland RADIA and sound by the Nola Pegasus speakers. Cabling was Nordost Valhalla throughout, for signal and mains. Resident line and phono-stages constitute the TEAD Groove Plus, Vibe (with the latest – and dramatically improved – Pulse 2 power supply) and the Lyra Connoisseur 4-2L SE line-stage. That's placing the bar pretty high! Of course, that's also exactly the kind of competition that these two ARC products will face out there in the

market place, but that doesn't make the prospect any less daunting.

### Reference 3 line-stage

From the very first notes, two things were immediately apparent: ARC's claims regarding noise floor are clearly reflected in the sound of the Ref 3, and the resulting performance places it clearly in the front rank of available line-stages. Whilst I never had the Ref 2 at home in any of its iterations, I heard it in many other systems and nothing suggested musical performance even approaching what's

delivered by its newer sibling. The key word is of course 'musical' and as is so often the case with pre-amplification, it's not just a question of how much information or energy is delivered, but how much sense the unit makes of it. That's where the noise floor proves so significant.

The first thing to remember is that this is a tube circuit and noise has always been their Achilles heel. Well, in some respects the Ref 3 is no different, compared to the best of its solid-state peers – but that it gets so close to them is impressive indeed. The second is that, if you go back more than five years, really good pre-amps were the rarest of breeds, which perhaps accounts for the recent blossoming of exceptional ▶

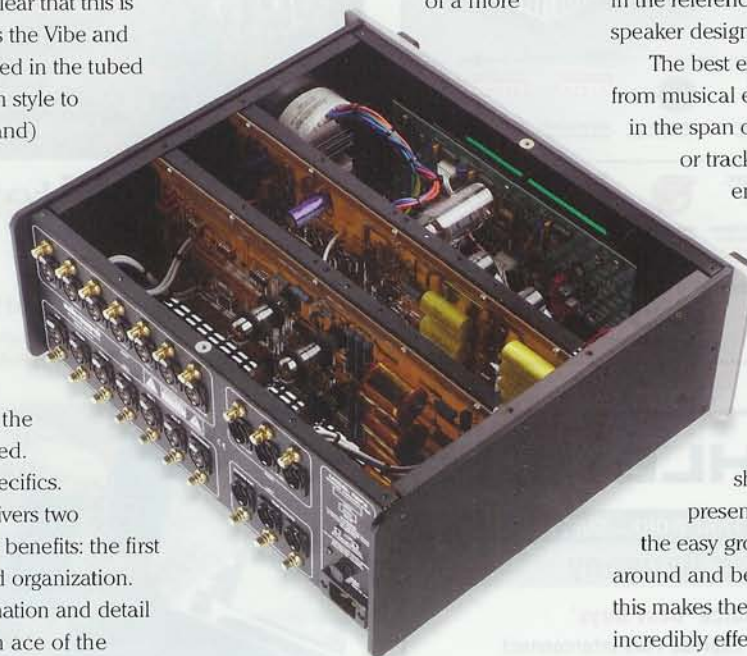


performers in the category. Back then, the Ref 3 would have been head and shoulders above the opposition; now, it's up there with the best, but with no clear winner, which can lead to a distorted response when it comes to reviews. In order to define differences and characteristics, it's essential to run close comparisons between the various units and then describe them. The resultant critique can give the impression of shredding a product when what it's actually doing is defining the subtlest of differences. Let's be clear that this is the case here. As well as the Vibe and Connoisseur, I also drafted in the tubed Herron VTSP-2 (closer in style to the Ref 3 than the Hovland) and ran the closest of comparisons. Yet in some respects the very fact that this is necessary (and worthwhile) indicates just how closely matched these products are. As I said, the Ref 3 is front rank indeed.

Now, back to the specifics. That low noise-floor delivers two immediate and obvious benefits: the first is resolution, the second organization. In terms of sheer information and detail the Ref 3 gets within an ace of the standard setting Connoisseur, while the firmness of its foundation brings phenomenal stability and coherence to its presentation. It can't match the stark clarity, the inky black contrast delivered by the Vibe, against which individual instruments and sound sources are focused pin sharp and against which they are so clearly separated. Instead there's a subtle graying haze that populates the acoustic space. The information is there, just not quite as clearly or easily resolved – at least until you stop the comparisons and go back to simply enjoying the music, when it ceases to be an issue.

The other area in which the ARC can sound a little exposed by the

competition is in terms of bass definition, transparency and texture. Here, the Connoisseur, with its amazing definition of dynamic strata and harmonic texture, leaves the Ref 3 sounding rounded and a bit woolly. And here again, listening in isolation, it's neither worrying nor intrusive. Interestingly, I tried a range of different support solutions underneath the ARC, but whilst I could improve transparency, focus and dynamic definition, those changes always came at the expense of a more



disjointed sense of musical flow and coherence. Ultimately I'll take the standard feet thanks.

However, these two aspects to the Audio Research, combined with its strengths, define its sound. Where the Ref 3 really scores is in terms of accurately reflecting the scale and extent of the soundstage and separating the instruments upon it. That slight haze I referred to almost helps to give a palpable sense of the enclosed acoustic space, which combined with the less immediate dynamic presentation (relative to the Vibe or Connoisseur) produces a classic Row G perspective,

with all the spatial coherence and holistic, organic qualities that suggests. The Audio Research doesn't sit you front and centre; instead you're slightly further back but with an easier overview of the orchestra as a whole. And the separation? That comes from the unit's astonishing neutrality, a self-effacing quality that lends instruments scale, dimensionality and individual tonal character, and one that it's definitely carried over from its predecessors. It's no surprise to see this product used in the reference systems of so many speaker designers.

The best explanation always comes from musical example and quite often in the span of a review a single disc or track steps forward to

encapsulate a product's strengths or character.

In this case it was Art Pepper's *Smack Up* (the Analogue Productions Gold CD, CAPJ 012). Track 2, the laid back groove of 'Las Cuevas De Mario' shows the Ref 3's relaxed presentation as it latches onto the easy groove. There's lots of space around and between the players and this makes the instrumental interplay incredibly effective and easy to follow. Despite the relaxed tempo, the track never wanders or loses interest, the tempo and subtle shifts within it, perfectly captured. And if the distance to the band has the effect of robbing the double bass of some of the tactile thrum and texture that I'm used to, the pitch and progress of its notes is never in doubt. On the other hand the piano is super solid, stable and weighty, with a real sense of its complexity and restrained power. So often the weakness that cracks the illusion, the ARC does piano in general superbly well and in this instance really captures the controlled genius of the playing. The brass instrument are tonally spot on, making picking their



contributions in chorus simplicity itself, while the whole track has an inner life and coherence that binds it into a single, superb whole.

In contrast, playing the same track on the Herron delivers a blacker background, more immediacy and a more insistent quality from the rhythm section. The bass is tactile but the piano has lost that sonorous complexity and natural weight that made it so appealing on the Ref 3. Separation of instruments is on a par, but the real difference is in the pace and overall feel of the track. It takes on a pushy, more urgent quality that has its own appeal – but which is right?

for the enticing, seductively holistic appeal that results. Ultimately, you can criticise its absolute dynamic range and discrimination, areas in which the Connoisseur reigns supreme; you can comment on its level of transparency or focus; but these are simply aspects and the ARC needs to be understood as a whole. The exact shape it brings to proceedings is a product of its combination of strengths and weaknesses, but take it out of

the Lyra Titan, gain was just about acceptable, although it meant wicking the volume up to 82 as opposed to 63 for the same level via the Groove Plus. I played with the loading and was unsurprised to discover a marked preference for the 100 Ohm value with the Lyra cartridge.

So much for set-up and partnering elements, the sound of the PH7 is what counts and it's a stunner. Impressive as the Ref 3 is, the phono-stage is in another league. Used together their performance on piano is simply breathtaking, the sheer weight, power and resonant complexity of the barely teamed beast brought fully to life. The newly arrived Speakers Corner re-issue of the Mercury *Pictures...* includes a second disc of Janis playing the

instrument and it's worth the price of the set on its own, especially played through the ARCs. Comparisons with the Groove Plus reveal that the Tom Evans design enjoys slightly greater bass transparency, definition and harmonic texture down in the engine room, but in every other respect the PH7 is superior – and long term readers will know that that is praise indeed. The ARC is more fluid, with better phrasing and pacing, more accurate harmonic structures and far greater expressive range. The sophistication of its temporal dimension, the placement and arrangement of notes is supremely natural. Compared directly, somewhat astonishingly, the PH7 leaves the Groove sounding mechanical and dimensionally flat, slightly forced and graceless.

Indeed, stately grace is the ARC's forte. Whilst it projects a huge sound-stage and can deliver explosive dynamic swings of impressive solidity when required, it's the ability to do so without ever sounding pushed or flustered



The answer actually lies with the first track, the up-tempo title tune. A frenetic collision of contrasting input, you might assume that it would play into the hands of the Herron, but whilst that unit's presentation is undoubtedly exciting and full of energy, the Ref 3 brings a calm and easy separation to the piece that produces order out of impending chaos, without robbing the track of energy or the sense of pace. It's this quality that really underlines what the Ref 3 is all about; sorting the elements in music but maintaining their relationship. Structures are retained intact and beautifully fleshed out, the trade-off being some excitement and immediacy in return

competition and in many ways it has an eerily uncanny grasp of the musical gestalt. The facts might be no more or less accurate than those presented by the other units here, but the sense of the musical performance matches all but the Connoisseur in this group and the Zanden in recent experience. And at this level we're talking differences that will be defined entirely by personal preference.

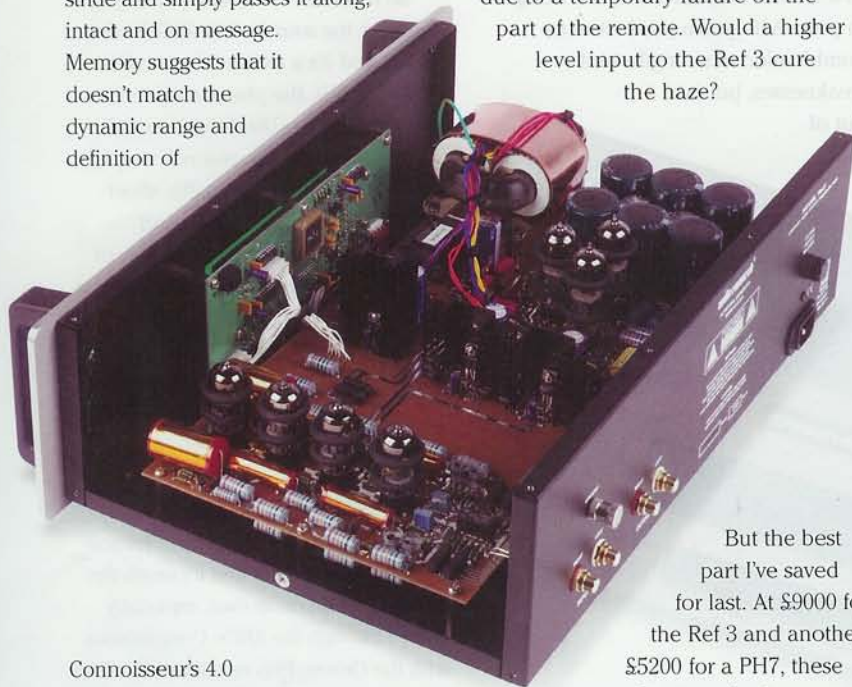
### The PH7 phono-stage

I ran the Audio Research phono-stage with both the Ref 3 and Connoisseur line-stages. It was perfectly happy with the solid-state unit, but there was no denying the synergy that existed with the Ref 3, where the sonic characters of the two units blended seamlessly to produce a result that was even greater than the sum of the considerable parts. Run with



▶ that really impresses. Seemingly, nothing disturbs its impeccable manners whilst it still retains the fullest range of expression. Playing the orchestral version of Pictures... really brings that home, but then so to does *Transformer*, *Way Out Basie* or Alison Krause. The PH7 takes whatever you throw at it in its stride and simply passes it along, intact and on message. Memory suggests that it doesn't match the dynamic range and definition of

important low-noise performance and the results are sublime. This I can't wait to hear with the Koetsu Jade Platinum, a natural partnership if ever there was one, and a fascinating counterpoint to the Kondo analogue replay chain. Furthermore, the Wadia 861SE is set to a lower output, locked due to a temporary failure on the part of the remote. Would a higher level input to the Ref 3 cure the haze?



But the best part I've saved for last. At \$9000 for the Ref 3 and another \$5200 for a PH7, these products are far from

Connoisseur's 4.0 (The 4-2 SE is coming soon) or its immediacy, but I suspect that if you prefer the ARC's more mid-hall perspective and richer, slightly more mellow tonality, then there's little to separate the units in terms of musical expression.

#### A parting shot of sorts...

By now it should be apparent that I'm mightily impressed with these two units. The Ref 3 represents a genuine return to form for ARC; spiritual descendent of the pre-amps that propelled the brand to fame, it's finally also a more than worthy successor, restoring the company to a front-rank position when it comes to pre-amp performance.

The PH7 takes a step beyond even the Ref 3's impressive standards. ARC have played the low-gain card to perfection in order to achieve the all

cheap, until you consider the competition. Both compare extremely favourably with some seriously exotic and expensive alternatives and neither can be readily outperformed for less money – particularly the PH7. You may find products that handle one aspect of musical reproduction or another better than these ARC designs. Likewise the Audio Research option will offer its own strengths when it comes to staging, dimensionality and overall coherence. But few alternatives will better the Ref 3 and PH7 when it comes to sheer musical expression and involvement. With the Koetsu now back in play, along with ARC's own Ref 210 monoblocks, believe me there's more - much more to say on this particular score. Meanwhile it's, "Welcome back to where you belong".



#### TECHNICAL SPECIFICATIONS

##### Reference 3

Type:	Vacuum tube line-stage
Valve Complement:	6x 6H30P 1x 6550C
Inputs:	7x line-level (balanced XLR or single-ended RCA) (balanced XLR or single-ended RCA)
Input Impedance:	120 kOhms (balanced) 60 kOhms (single-ended)
Gain:	11.6 dB (balanced) 5.8 dB (single-ended) 0 dB (unity-gain on Processor input)
Outputs:	2x main outputs (balanced XLR or single-ended RCA) 1x tape out (balanced XLR or single-ended RCA)
Output Impedance:	600 Ohms (balanced) 300 Ohms (single-ended)
Dimensions (WxHxD):	480 x 178 x 394mm
Weight:	13.5 kg
Finishes:	Silver or black (if you must!)
Price:	£8998

##### PH 7

Type:	Hybrid J-fet/tube phono-stage
Tube Complement:	4x 6922 3x 6H30 regulators
Inputs:	1pr single-ended RCA
Input Impedances:	100, 200 or 500 Ohms, 1 or 47 kOhms
Capacitive Loading:	200 pf
Gain:	57.5 dB
Maximum Input Level:	70 mV
Outputs:	1pr single-ended RCA
Output Impedance:	200 Ohms
Dimensions (WxHxD):	480 x 132 x 305mm
Weight:	6.8 kg
Finishes:	Silver or black (if you must!)
Price:	£5200

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