

# Audio Research REF Phono 3SE

Fans of the brand know that when Audio Research adds an 'SE' suffix, the changes go beyond the cosmetic. The latest to earn this upgrade is the Reference Phono 3  
 Review: **Ken Kessler Lab: Paul Miller**

Let's talk about names. Audio Research's abiding Reference range has long been subject to shorthand – even the factory calls the models 'REF' for brevity – while updated (mk2) components are now defined by 'SE'. And that now applies to the £17,500 Reference Phono 3SE. In this case the revisions are retrofittable and, at £3500 and given my delight with every SE model I've tried, especially with the REF 6 and REF 75, I suspect most existing owners will want the upgrade. My optimism was fuelled by Audio Research's CEO Dave Gordon who told us, 'The SE changes incorporated in both the REF 6 and the REF Phono 3 are almost identical, involving many of the same passive component upgrades'.

These include capacitors and internal wiring, enhancements taken from the development of both the REF 160 mono and stereo power amplifiers [HFN Aug '18 and Feb '20]. According to Dave Gordon, ARC found that these 'transitioned nicely into the preamps. We had to install all of the changes together to achieve the improved performance, because they did not sound "right" individually – it's not always as simple as dropping in a better part and expecting everything to improve'.

## DOUBLE DELIGHT

Although the REF 6SE preamp [HFN Jan '21] arrived in 2019, due to Covid and other interruptions, the evolution from REF Phono 3 to 3SE level was a long time coming. But it was worth the wait! Accepting two cartridges simultaneously, the REF Phono 3SE accommodates an increasingly popular trend, though Japanese audiophiles have been at it for decades. Many high-end vinyl enthusiasts now employ either two turntables or a single deck which accepts two or more arms, in order to connect two

**RIGHT:** Switchable loading and FET input [top right] is tied to switchable phono eq and six 6H30P triodes [three per channel, top] with another 6H30 and larger 6550WE beam tetrode [bottom] for HT PSU rectification/regulation [left]. The low voltage PSU is separate [far right]

utterly disparate cartridges. This allows the fastidious vinyl fan to choose the better of two (or more) pick-ups for playing LPs from specific record labels, vintages or genres.

While not as extreme as some phono stages I've seen with even more dial-in values, the REF Phono 3SE's six values are comprehensive enough, and it even addresses non-RIAA EQ, with two curves which haven't been used for more than a half-century: Columbia and Decca [see PM's boxout, p51]. For a giggle, I switched to both of them during playback of regular RIAA LPs and found the changes to be subtle enough as to cause no worry if you do own a bushel of ancient LPs and don't have a phono stage so equipped.

Uncluttered at the back [see pic, p53], the REF Phono 3SE's socketry consists of phono inputs for two independent front-ends, an earthing post, balanced (XLR)

and single-ended (RCA) outputs, RS232 and IR inputs for system integration, and AC power via a 'horizontal flat-pin' plug. Despite this, my first reaction upon lifting the 16.6kg unit and peering through the transparent lid, noting it contained six 6H30P triodes, another 6H30P in the PSU plus a 6550WE, was, 'This looks more like an integrated amp than a phono stage'.

## ROCK ON DEMAND

Flexibility is king here, so the REF Phono 3SE is not one of those phono preamps that specifies MC-only for one input and MM-only for the other. Loading and gain are independently configurable, so it's truly two phono stages in one. If, like me, you're not wedded to one pick-up, you can keep a London Gold and a Koetsu moving-coil connected full-time, or two MMs or two MCs, ready to rock via either input.



Please note, however, that the RIAA and legacy Decca/Columbia EQ settings are global, so whichever you've selected works across both inputs. Why does this not even raise one of my eyebrows? Because out of my 12,000-plus LPs, I don't own a single one that isn't an RIAA pressing. For me, given the above experiment, these EQ settings are about as useful as Dolby FM. But, hey, if you own some very early-generation albums, knock yourself out.

For those who obsess about cartridge settings and want to change the loading from the hot seat – those who spend, oh, two days sorting out VTA – all can be done with the remote [see p53]. Initial set up will include display brightness, choice of Input 1 or 2, and selecting a load of 47kohm, 1000, 500, 200, 100 or 50ohm. You can even order custom loads through your retailer. The menus also provide a display

of the number of hours on the valves, and there's timing for auto-shutdown.

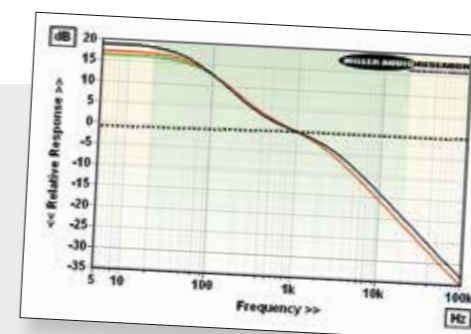
## L'ARC DE TRIOMPHE

Once you've sat through the two-minute warm-up period (ARC equipment owners are used to this), the display clearly

'The swish of a coat or scrape of a chair? I don't know...'

indicates your currently selected set up. However, as I found to my peril when my preamp's volume was not fully wound down, the setting to which you should pay the most attention, especially given the copious headroom of

this device [see PM's Lab Report, p53], is the *Gain*. The REF Phono 3SE mutes as you switch in the extra 23dB of gain between 'Low' and 'High', but always try 'Low' first. I used favoured Ortofon and Decca MM cartridges, and MCs from Kiseki, EAT and



## VINTAGE EQ

The REF Phono 3SE's equalised response [dashed trace, inset Graph – with 20Hz-20kHz shaded in green] is very flat and extended above 1kHz, reaching out to +0.1dB/100kHz. Below 1kHz there's a gentle bass shelf amounting to –0.45dB/100Hz, –0.7dB/20Hz and –1dB at 4Hz. The other curves on this Graph represent the REF Phono 3SE's playback eq. for RIAA [black] and the earlier Columbia [red] and Decca [green] record-cutting characteristics. The RIAA curve's turnover points correspond to 2.12kHz (75µsec), 500Hz (318µsec) and 50Hz (3180µsec), delivering slightly less HF attenuation and a slightly greater bass boost than the 2.65kHz (60µs)/500Hz/100Hz (1590µsec) constants for Decca and the 1.59kHz (100µsec)/500Hz/82Hz (1950µsec) finally utilised by Columbia (after tweaking the 1940s NAB standard). The exact points and slopes for the myriad historic eq. standards is still debated, so the overlay between the Columbia [red] and Decca [green] seen here possibly relates to ARC's interpretation of the Decca/US rather than Decca/London curve. So, if you play an old Columbia/Decca 33.3rpm LP with a modern RIAA preamp it'll sound +1.7dB/20kHz 'brighter' and +1.5dB/+2.4dB/20Hz, respectively, 'weightier'. PM

**ABOVE:** Familiar aesthetics and handles – the REF Phono 3SE's six buttons are for power, input, mute and menu/option/enter navigation, all placed under a bold, informative green display

Sumiko – every one of them turned into a kick-ass, head-banger delight.

But that's admitting there is so much gain with which to play. The REF Phono 3SE is so quiet that the dynamic swings and low-level detail were of a calibre I cannot recall experiencing. As much as I enjoyed the sheer weight of the percussion on the new mono reissue of The Dave Clark Five's *Glad All Over* [BMG BMGCAT558LP], with bass power and slam to repudiate its near-to-sexagenarian age, I knew the real character and ability of the unit would require something more subtle.

It was a wrench dragging myself away from repeated plays of 'Glad All Over' because the energy was as palpable as moving from a 60W stereo amp to a brace of 300W monsters. I sated my lust for power within ten seconds of The DC5's signature tune, also noting that the honk of Denis Payton's sax had a rich, reedy tone usually swamped by Clark's percussion.

## SOMETHING BLUE

A no-brainer: I had just spent time with the sublime release of Miles Davis' *Kind Of Blue* [Acoustic Sounds UHQ004]. Here I would partake of sax, trumpet and bass in a space uncluttered by the near-Spectorian 'wall of sound' which The DC5 created even without ol' Phil's input. With this LP, it was all about air, texture and detail, *Kind Of Blue* demanding little of the sheer muscle of the REF Phono 3SE to make its point.

How many times have jazz lovers heard this masterpiece? A small ensemble, lean, laid-back and thoughtful, in an uncrowded soundstage. It was all about transparency and openness, about three-dimensional positioning and how they enable the listener to assess that triumvirate of the above-cited air, texture and detail. It is ☞

## AUDIO RESEARCH REF PHONO 3SE



**ABOVE:** Two RCA inputs have independent 47kohm/50ohm-1kohm loading. Single-ended (RCA) and balanced (XLR) outs are capable of very high o/p [see Lab Report]

taking all of my linguistic skills to avoid the use of those hoary old audiophile tropes about 'removing veils' or 'cleaning a window'.

Instead, I would ask you all to dig deep into your own experience of upgrading your systems. Slipping the REF Phono 3SE into mine, which ain't bad by any measure, reminded me of hearing the ARC REF 160S after living with the REF 75SE (which, by the way, I will never forsake). But it wasn't just about power...

There were sounds of breathing, low-level information which might even have been the swish of a coat, the scrape of a chair. I don't know. I wasn't there. But goodness me, did this phono stage bring me even closer to Columbia's New York City studio in early 1959.

I don't play trumpet. I cannot tell you what Miles used, or which saxes Adderley and Coltrane were blowing, but the sense of realism, the presence was enhanced to a degree that can only be attributed to – as Dave Gordon surmised – 'The extremely low-level nature of the signals ... [accounting] for what we consider a startling improvement'. And 'startling' is the perfect adjective for what I was hearing.

What can be dismissed from the outset, especially for those who are not diehard MM or MC fans without considering the alternative, is that there was no discernible preference for one over the other. Moreover the gain was such that high output MCs could easily be used via

**LEFT:** Partnering remote caters for input selection, loading, gain, phono eq type, mute and display brightness



the Low Gain/47kohm setting with little loss of dynamics. I played four or five tracks with a London Gold, followed by an Ortofon 2M Bronze, then a Kiseki Blue [HFN Jul '18], and lastly the Sumiko 40th Anniversary MC [p62], all as a test.

### REFERENCE BY NAME...

What I was hearing was the best of each, not a display of bias in the REF Phono 3SE. It swiftly emerged that the term 'reference' was not a conceit, for this joins a select list of high-end phono stages so precise and yet so versatile that they are good enough to act as tools for reviewers, not just those audiophiles fortunate enough to purchase one and who will exploit the REF Phono 3SE's incredible adaptability.

I feared wearing out my copy of Bonnie Raitt's *The Glow* [Warner Bros K56706], but I just had to hear her slithery take of 'Your Good Thing (Is About To End)' and the punchy, rocking 'Standin' By The Same Old Love'. Her voice is intimately familiar. The session men on this LP are the West Coast's best. I have played it more times than I can count. But it sealed my respect for this phono stage for the simplest of reasons: I heard 'things' I'd never noticed before. And that's a deal-maker. ☺

### HI-FI NEWS VERDICT

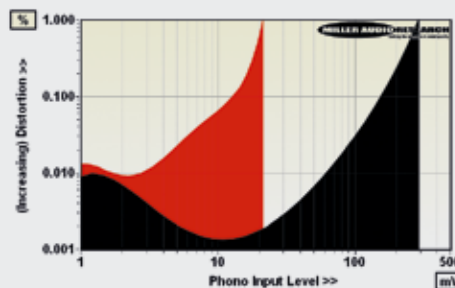
Forget that I have been using ARC gear for decades as my reference. Or that I'm a displaced Yank. Or that I authored ARC's definitive history book. The Reference Phono 3SE is without question one of the most precise, quiet, open and dynamic phono stages I have ever used – even with an eccentric London Gold. Let's put it this way: if I wasn't a pensioner on the precipice, I'd not hesitate to buy the damned thing.

Sound Quality: 89%

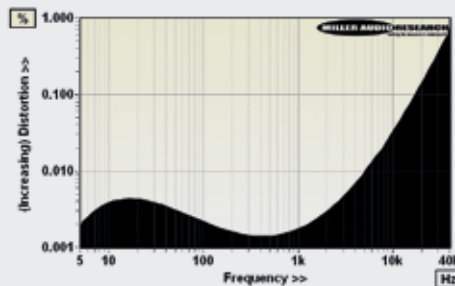


While interest is inevitably focused on the REF Phono 3SE's RIAA, Columbia and Decca phono eq options [see boxout, p51] there's also an intriguing 'high voltage' theme going on under the lid. ARC's use of close-coupled low-noise FETs for the phono input marks an alternative to tube phono stages combined with step-up transformers, but the use of three 6H30P double-triodes per side also endows this phono stage with truly mammoth input overload margins. As an aside, feedback is modest, so THD is low through the bass/midrange at ~0.0015% but increases closer to 0.15% at HF [see Graph 2]. Otherwise, the real story begins with the +51dB 'Low' and +73dB 'High' gain settings which, although either may be configured with a 47kohm or 50ohm-1kohm input load, are probably best viewed as 'MM' and 'MC', respectively.

The practical gains are +50.4dB and +73.0dB (balanced out), conferring sensitivities of 3mV and 0.224mV (re. 0dBV output). This, and the respective A-wtd S/N ratios of 83.5dB (re. 5mV) and 73.5dB (re. 500µV) suggests it'll handle everything from high o/p MMs down to very low o/p MCs. While these noise figures are short of state-of-the-art they remain better than any through-groove rumble figure and, moreover, conceal the phenomenal headroom that's 'baked in'. While some phono stages exceed 1% THD with a limited 15-20mV MM input [HFN Sep '21 and Feb '22], the REF Phono 3SE will soak-up 295mV (MM) and 21.5mV (MC) before clipping [Graph 1]. Not only does this represent a massive +35dB margin (+20dB would suffice for a 5mV-rated MM pick-up tracking the most violent grooves) but – with that +50dB gain in tow – results in a maximum balanced line output voltage of... drum roll... 93V! Do I need to say this? Never drop a stylus into a groove with your preamp's volume wound up... PM



**ABOVE:** Phono input level versus distortion (input overload) to 1% THD (MM, black; MC, red)



**ABOVE:** Distortion extended 5Hz-40kHz frequency (MM input, 'Low' gain setting, re. 0dBV output)

### HI-FI NEWS SPECIFICATIONS

Input loading (MM/MC)	47kohm / 50-100ohm
Input sensitivity (re. 0dBV)	3.01mV / 224µV
Input overload (re. 1% THD)	295mV / 21.5mV
Max. output (re. 1% THD) / Imp.	93V / 111-585ohm
A-wtd S/N ratio (re. 0dBV)	83.5dB / 73.5dB (MM/MC)
Freq. resp. (20Hz-20kHz/100kHz)	-0.7dB to +0.0dB / +0.11dB
Distortion (20Hz-20kHz, re. 0dBV)	0.0014-0.14% (MM)
Power consumption	142W
Dimensions (WHD) / Weight (Total)	480x198x419mm / 16.6kg