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VACUUM TUBE  
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REFERENCE 110  
HIGH DEFINITION

POWER

# The Audio Research LS17 Line-Stage and Ref 110 Power Amplifier

by Chris Birns

If any company has established a distinctive visual identity over the last thirty years or so it has to be Audio Research. Witness the fact that I still regularly use an SP 10 pre-amplifier dating from around 1986, yet sitting the LS17 next to it I think that the casual observer would be hard pushed to determine which is current and which is the 'vintage' model. That continuity, disturbed only by a few labels and control functions, is as strong on the inside as it is on the surface.

My first experience of Audio Research products dates back to the D115 power amp and SP8 pre-amp somewhere in the early 80s, and they made quite an impression, partly because they were both stunningly good products, but also because they were my first contact with US high-end valve gear, designs that didn't adhere to the established Mullard/GEC model. Somehow, despite reviewing various bits of Audio Research kit in the intervening years, nothing has quite elevated me to the dizzy plane of that first encounter. And initial impressions did little to suggest that the LS17 and Ref 110 were about to change this, but living with this Audio Research combination for a few weeks has caused me to considerably modify that opinion.

While clearly reticent to change the external aesthetics, when it comes to electronics the company have been continuously updating and refining their products with new topologies and components, and it has been interesting to observe this. Different models over the years have swung from the highly complicated, incorporating large numbers of semiconductors, to elegantly simple purist designs with

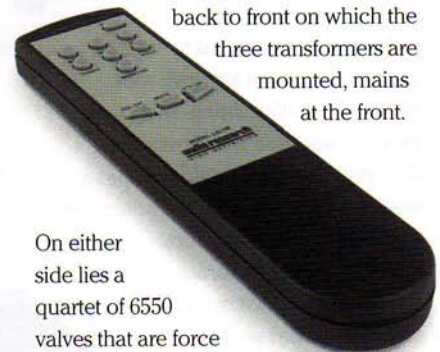
barely a transistor in sight, typified on one hand by the D125 and on the other by one of the 'Classic' or VS series power amplifiers. Both the LS17 and the REF110 tend towards the latter school. Concepts that initially appear within flagship products are often passed down through the range, and this is an intrinsic part of the product development process. Thus we have the LS17 replacing the LS16, incorporating circuitry inherited from the flagship Ref 3 pre-amp, while the Ref 110 looks up to the mighty Ref 610 mono-blocs.

The 17 has a large, solid-state regulated power supply, and active circuitry based around a pair of Russian military 6H30 double triodes and an FET or two, to provide around 17dB of gain. There are five single-ended and two balanced inputs that are switched via discrete relays, two balanced and one SE output, together with both tape and processor loops. On the front panel, two rotary controls provide input selection and volume. Between these are two recessed panels the lower of which has small push button switches for power, mute, tape and processor selection, while the upper displays status and position of the 104 step volume control. The basic but functional remote handset controls volume, mute and input selection.

The REF 110 is, save for the power switch and a small green led on the front panel, a featureless box within which all the electronics are enclosed. Only balanced inputs are provided, which on the face of it might seem a little inflexible, but my understanding is that as this was conceived as a fully balanced design from the ground up, the addition of a single ended input

would not have been a viable option. Loudspeaker outputs for 4, 8 and 16 Ohms are provided (as with previous ARC designs be aware that the 4 Ohm tap is at ground potential) and mains input is via a 20 Amp IEC socket, not the usual kettle type connection. The custom made binding posts are of high quality, but offer no easy way of connecting 4mm plugs (which is a pain from a reviewer's point of view). Spades would be the connection of choice.

Internal layout represents a bit of a departure from previous Audio Research designs. A central channel runs from back to front on which the three transformers are mounted, mains at the front.



On either side lies a quartet of 6550 valves that are force cooled by two fans situated on the back panel (three speeds are internally selectable depending on the ambient temperature). At its lowest speed there is still a small amount of noise, audible if you are sitting close, but bear in mind that cooler running valves will tend to last longer. A small LCD display on one of the circuit boards counts valve use in hours. Bias adjustment is a little more accessible (and slightly less hairy) than with previous ARC designs, with sockets now provided on the board for meter measurement, together with adjustment for each pair of valves via trim pots.

The 6550 power supply valve has been dispensed with in favour of solid-

## ● EQUIPMENT REVIEW

▶ state regulation for the front end (there is no longer a need for a screen supply) where FET's feed a pair of 6H30's for gain and a cathode follower driver. The output stage continues an Audio research tradition by coupling the cathodes to the secondary of the output transformer, providing a degree of negative feedback and a tighter grip of the loudspeaker. The screens are now tapped in the more common ultra-linear configuration; for many years ARC favoured running the valves in straight pentode mode, a factor that might have contributed to the trade mark 'grunt' at the bottom-end that I associate with many of their earlier amplifiers.

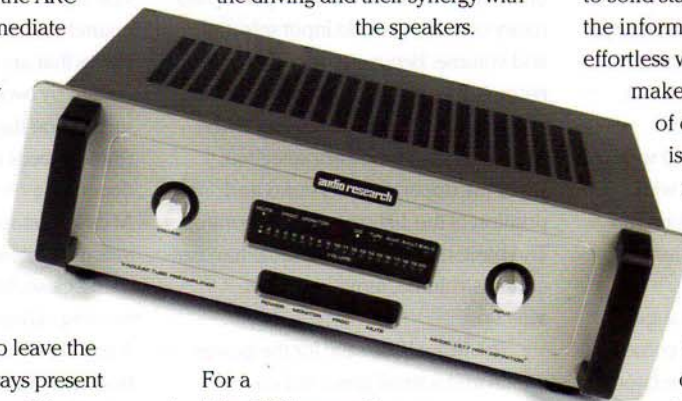
With an Audio Research CD 7 to augment the Resolution Audio Opus 21 for CD playback, the rest of the system comprised a Linn/Ekos/Helikon for vinyl, with Nordost Valhalla cabling. The pre-amp was used with Symposium Rollerblocks, their addition offered a worthwhile improvement in bottom-end transparency and dynamics.

As I mentioned earlier, the ARC combination wasn't an immediate knock out. Don't get me wrong, it sounded perfectly competent, behaved itself impeccably and never put a foot wrong, but I guess I was expecting something a little more flamboyant, more exuberant in character. It felt a bit like the last guest to leave the party, the one who was always present but you never got round to noticing because they weren't loud or colourful and they were just always there. You then bump into them a couple of weeks later, can't remember their name but end up chatting for hours and realise that in fact, they are really fascinating company and you end up becoming firm friends.

Which is exactly what happened with the LS17/Ref 110 combination; after a while I discovered that I had actually spent a lot of time listening to music (and thoroughly enjoying it) without thinking or questioning what the amplifier was doing.



The Spondor SP100's (also reviewed in this issue) loved working with the ARC, and I eventually realised that the incredible sense of flow and communication that I was hearing was down in no small part to the amps doing the driving and their synergy with the speakers.



For a start, the ARC seemed to produce a soundstage that was both large and spacious, possibly more pronounced than any other amplifier I have used. Despite being someone who doesn't put spatial attributes even near the top of the list, I actually found this quite impressive

and instrumental in broadening the range of music I was listening too. But back on more familiar ground, playing the Richard and Linda Thompson song 'The Great Valerio', the instruments and voice hung in the air, surrounded by the acoustic, and I could actually hear the difference between the natural boundary of the room in which she sung and the electronic enhancement beyond that.

The voice, which alternates between strong and hard, almost cold in its delivery and then warm and delicately poignant, had a degree of expression that was spine chilling, and together with her husband's eerie guitar drew minutes of respectful silence from everyone I played it too, even after the track was over.

So the ARC does subtle detail in a way that I don't recall many other valve amps being able to manage, and without the clinical, lifeless portrayal that is often the downside with such attributes when it comes to solid-state designs. It's not just the information they deliver, it's the effortless way you can place it and make musical sense of it. In terms of character, the combination is probably one of ARC's most neutral; it didn't have the 'fruity' kick at the bottom end of early models like the D115, but nor did it have the dry, anaemic quality that afflicted some of the hybrid designs. And the midrange? It had that lovely 'liquid' presence that makes you feel as if you are stepping into the world of the performer, rather than the other way round.

As is often the case, it was when I began to experiment a little with the individual units that I became more ▶

► aware of just what the LS17 and Ref 110 were doing. Putting my old SP10 into the system served to highlight the attributes of the LS17 the aging flagship sounding muddy and ill-defined by comparison, although still very musical. But it was difficult to live with after having been spoilt by what had gone before. Using the 17 with other power amplifiers proved extremely successful, and the combination with a Bryston 14B SST proved spectacular. But then so did most of the other power amps that I tried.

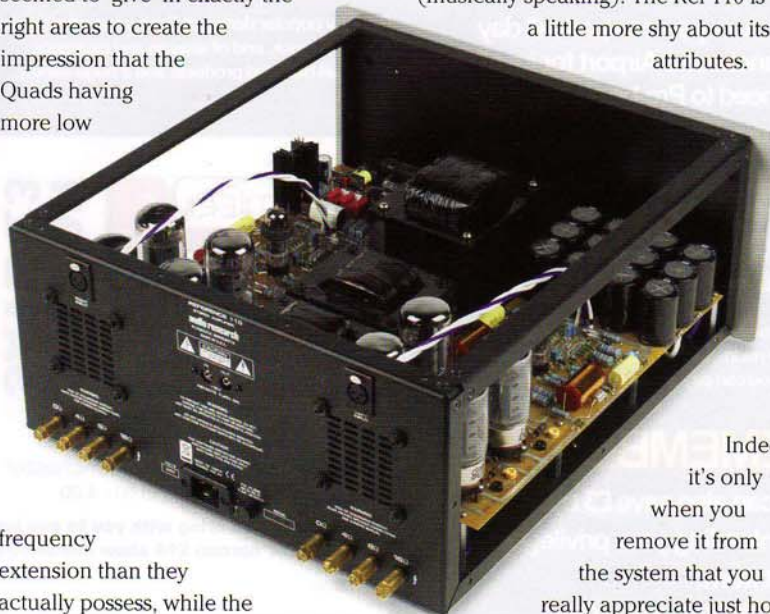
I couldn't resist the temptation to try the ARC combination with the Quad 2805 electrostatics. I had a nagging feeling that I would regret it if I missed the opportunity. If ever there was a match made in heaven, this was it, as the character of the individual units seemed to dovetail perfectly. While the bottom end of the Ref 110 did not have the taughtness of a really powerful solid-state design such as the Bryston, it seemed to 'give' in exactly the right areas to create the impression that the Quads having more low

frequency extension than they actually possess, while the speakers' midrange showed off the Audio Researches' perfect balance between warm and lucid versus detail and articulation. The top end was sweet and open, ameliorating the Quads' slight tendency toward that mild

papery aspect that occasionally afflicts them. This was the best sound that I have heard coming from any of the electrostatics from the '63 onwards.

Once I got over their rather understated presentation I grew to really

respect and like what the ARC components were doing. Individually, I think that both the pre and power amp are extremely capable performers. The LS17 is something of a bargain, especially in the context of a system that is a tad dry or mechanical and could use a little help to loosen up (musically speaking). The Ref 110 is a little more shy about its attributes.



Indeed, it's only when you remove it from the system that you really appreciate just how much it's been contributing. It has a magical touch, built on a perfectly judged balance combining precision and control with a warm, fluid and very musical presentation. On paper, the LS17 and Ref 110 might

appear to be a mismatch. But in practice, the Ref 110 is a very special amplifier – and the 17 allows that quality to shine, which given the price differential is impressive indeed. Individually excellent, together they offer a finely honed balance, a genuinely musical, heartfelt performance that slips in surreptitiously and gets right under your skin. ➤

#### TECHNICAL SPECIFICATIONS

**LS17**  
 Type: Line-stage  
 Valve complement: 2 x 6H30  
 Inputs: 5x single-ended  
 2x balanced XLR  
 1x processor loop  
 1x tape loop  
 Outputs: 1pr single-ended  
 2pr balanced XLR  
 Output impedance: 350 Ohms (S-E)  
 700 Ohms (XLR)  
 Output voltage: 2 Volts RMS  
 Dimensions (WxHxD): 480 x 134 x 305mm  
 Weight: 5.9kg  
 Price: £3199

**Ref 110 Power Amp**  
 Type: Stereo power amp  
 Valve complement: 4x 6H30, 8x 6550  
 Inputs: 1pr balanced XLRs  
 Input sensitivity: 1.8 Volts balanced  
 Input impedance: 300 kOhms  
 Power output: 110 Watts into 8 Ohms  
 Dimensions (WxHxD): 483 x 222 x 495mm  
 Weight: 30.7kg  
 Price: £8399

Guarantee: 2 years  
 Number of UK Dealers: 10

**UK Distributor:**  
 Absolute Sounds  
 Tel. (44)(0)20 8971 3909  
 Net. www.absolutesounds.com

**Manufacturer:**  
 Audio Research Corporation  
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