

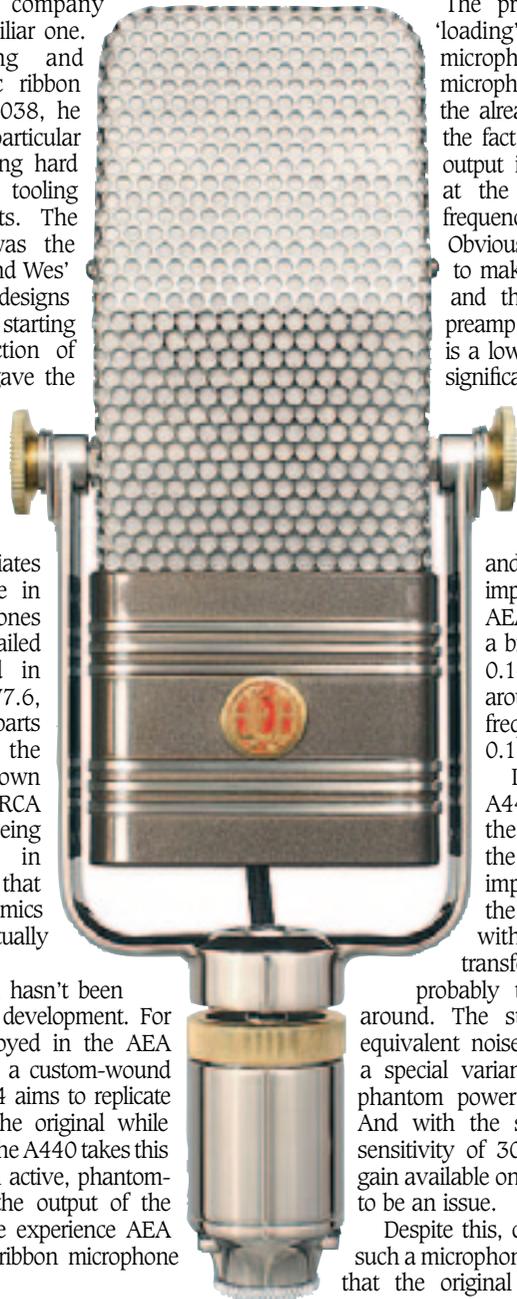
# AEA A440/RPQ ribbon pre P48

**JON THORNTON** enjoys the silence with AEA's A440, purportedly the quietest ribbon mic ever produced, together with an accompanying well-suited mic preamp.

Wes Dooley's company history is a familiar one. While servicing and repairing classic ribbon microphones, such as the 4038, he noticed that parts for a particular vintage design were becoming hard to find, which necessitated tooling his own replacement parts. The microphone in question was the venerable RCA 44B or BX, and Wes' experimenting with ribbon designs of his own resulted in him starting to manufacture a reproduction of the RCA 44. In 1998 this gave the world Audio Engineering Associates' R44C, and the microphone sitting in front of me is essentially the latest incarnation of that product: the A440.

Audio Engineering Associates (AEA) clearly takes its role in re-imagining vintage microphones extremely seriously. A detailed explanation can be found in Wes' article in *Resolution* V7.6, but the short story is that parts were retooled to match the originals exactly — even down to a stock of the original RCA aluminium ribbon material being sourced. The engineering in this respect is so faithful that parts between original RCA mics and the AEA R44 are virtually interchangeable.

But this attention to detail hasn't been blind to newer technological development. For example, the magnets employed in the AEA designs are neodymium, and a custom-wound output transformer in the R44 aims to replicate the sonic characteristics of the original while giving superior noise figures. The A440 takes this a step further by including an active, phantom-powered buffer stage from the output of the ribbon motor, building on the experience AEA has developed in the whole ribbon microphone signal chain.



The problem here is in general 'loading' of a passive ribbon microphone by the input of a microphone preamplifier, reducing the already low output — that and the fact that a ribbon microphone's output impedance will tend to rise at the (relatively low) resonant frequency of the ribbon element. Obviously the effects differ according to make and model of microphone and the input impedance of the preamp employed, but the end result is a lower output with a sometimes significant dip in level around that resonant frequency. This led AEA to launch TRP (The Ribbon Pre) in 2005, a J-FET based design with a DC-coupled input (no need for phantom power here) and a high (circa 30kΩ) input impedance. Mating a TRP to an AEA R44C reportedly results in a broadband signal loss of only 0.1dB, with an additional dip around the ribbon's resonant frequency at 30Hz of only 0.15dB.

In essence, this is what the A440 is all about — bringing the experience gained from the TRP to include a high-impedance J-FET buffer inside the microphone itself. Coupled with a revised higher ratio transformer, the result is what is probably the quietest ribbon design around. The standard model quotes an equivalent noise level of just 9dBA, while a special variant that requires 9mA from phantom power drops that to just 6dBA. And with the standard model sporting a sensitivity of 30mV/Pa, having insufficient gain available on your preamp is never going to be an issue.

Despite this, careful choice of preamp for such a microphone is still important. Realising that the original TRP with its DC-coupled

input and no phantom power wasn't going to be viable for an active ribbon, AEA has come up with another offering in the form of the RPQ ribbon pre P48. This is a two-channel device, packaged in a neat 1U rack-mountable box. In keeping with the TRP, the RPQ ribbon pre P48 features a DC-coupled input protected from phantom power, but also has a separate AC-coupled input with switchable phantom power for each channel. A switched rotary gain control gives between 7 and 55dB worth of gain in 4 or 5dB steps, while a continuously variable output gain control puts a further 19dB of gain on tap.

Balanced and unbalanced outputs are available for each channel on the rear panel (XLR and jack connectors, respectively), with the balanced outputs having an additional 6dB of fixed gain.

It's a nicely put together unit that feels sturdy and positive in operation, and a high source impedance (>10kΩ) together with a J-FET-based circuit topology is, AEA claims, the best choice to optimise the sound of active or passive ribbon microphones.

But what really makes this preamp distinctive is the inclusion of what AEA terms 'Curve Shaping' for each channel. It's EQ by another name, but what you get here is a low frequency filter with a 20dB cut and continuously variable -3dB break-frequency in the 18Hz-360Hz range, plus a HF boost with variable gain and a tunable break-frequency between 2.1kHz and 26kHz. The idea is to provide flexible tonal shaping optimised for ribbon microphones at both ends of the spectrum — either to tighten up the low end to combat proximity boost or remove sub-sonic noise without unduly effecting the typical low frequency weight of a ribbon, or in adding a little more 'air' to the sound without causing it to sound unduly harsh.

The A440 ships with a custom nylon soft case that holds the microphone securely and in the correct orientation for storage. You also get a neat cloth bag to fit over the mic if it remains set up but not in use, which protects it from dust, unexpected air blasts (doors shutting, AC, et al) and helps prevent those huge magnet assemblies from attracting 'tramp iron' — tiny metal particles that might be floating around the place. (*It also stops it from flying off. Ed*)

AEA may well have created one of the quietest ribbon microphones out there — I can certainly attest to its output level being extremely hot, but it's also a massively heavy beast. In its lightweight case it weighs in at 3.5kg, and not much of that is the case. In anything other than a straight up and down configuration you won't want to consider anything but a seriously counter-weighted heavy duty stand with a very broad base. Thankfully, AEA makes a variety of helpful solutions in this respect.

Wrestling the A440 onto a suitably sturdy stand, and marrying it to the RPQ ribbon pre P48 in the first instance, initial testing was conducted with male



'rock' vocals. First impressions were of a sound that lacks the typical 'fizziness' of a large diaphragm capacitor, but still sounds reasonably bright and open, coupled with an extremely weighty low-end. Altering distance on the microphone showed that the HF response starts to fall away slightly at anything much more than 30cm, but that proximity effect starts to become audible at quite significant distances from the microphone. For relatively close miked vocals, this becomes problematic, as the bass tip starts to cloud some of the detail and articulation in the voice. At this point, the tunability of the low cut on the RPQ ribbon pre P48 proves extremely useful, and careful setting of the roll-off point enables clarity to be restored without sacrificing weight.

Playing around with the other end of the spectrum by dialling in some HF gain and altering the breakpoint frequency also yields some interesting results, ranging from adding some air around the top end to bringing out some gravel — particularly on male voices. It seems like a very subtle control at first — indeed, I found myself constantly lowering the breakpoint and adding more gain to start with. Despite this subtlety, it's quite easy to overcook things; careful A/Bing nearly always resulted in moving the breakpoint higher and dropping the gain substantially to avoid accentuating some not unpleasant, but very non-ribbon-like resonances in the mid range.

Turning back to the A440 itself, more playing around with relative position and distance to the microphones shows a very uniform off-axis frequency response in the horizontal plane, with nice even drops in level down to very deep nulls at the sides. By comparison, in the vertical plane there is a noticeable reduction in HF response as you move off axis, which gives some mileage in taming overly sibilant performances through angle and placement. With the vocalist in question, the microphone delivered a rounded, smooth, and articulate sound that needed no EQ or compression, but seemed to have a touch more 'guts' to the midrange — similar in some ways to a valve microphone, when compared with a Royer 122. In the context of the production, though, while fine for harmonies, this was really a case where I'd probably be favouring a capacitor microphone in the first instance. So to task the A440 a little harder, I turned my attention to something altogether different.

Our studio complex is joined to the main building by a glassed in, five-storey atrium. What isn't glass is stone, brick, or render, so you can imagine the type of very bright, splashy reverb that the space generates. It's also a favoured place for our forty-strong choir to stage impromptu rehearsals, as they love the support the space gives to their voices. Recording in there is always a little bit of a hit and miss affair, though, largely because of the lack of HF damping, which can make things sound very cluttered, very quickly. So, spying the choir starting to congregate I spotted a chance to see what the A440 would make of things.

I'd like to say that it was a quick and easy set up, but, let's face it, rigging a 3.5kg microphone isn't something you want to rush. Matters were helped, though, by the fact that the RPQ ribbon pre P48 is quite happy driving +28dBu into 600Ω loads via its balanced outputs, so I was able to position this in the atrium with the microphone and send its outputs via tie lines to a studio. After experimenting with a couple of arrangements, I opted for a position just above head height and angled down towards the choir, approximately 3m away with the choir arrayed four deep. The results were probably the best I've ever heard in that space — a lovely blended sound of choir and reverb, with tons of depth and weight, plenty of

detail in the articulation of words, but no splashiness or 'over-reaching' of the sound stage. What I wouldn't have given for a stereo pair.

Actually, I'd have had to give a shade over UK£10,000 — more if I opted for a hand matched pair. AEA does manufacture a range of other ribbon designs that are more on the affordable side, and there's no reason to doubt that these pay a similar degree of attention to sonic quality and are probably a little better suited to close mic applications than the A440. But what you are paying for in the A440 is that 'magic' sound — and a degree of authenticity that's as close as is possible to the original 44 — in a package that delivers the goods in a more modern recording chain. And with the RPQ ribbon pre P48 you get a preamplifier that will do it — and, for that matter, any other ribbon microphone — the utmost justice. ■

**PROS**

Ultra quiet, high-output microphone; superb attention to detail; delivers a terrifically weighty, smooth sound; RPQ ribbon pre P48 quiet and clean with very useful tonal controls.

**CONS**

Not cheap and also budget for a seriously heavy-duty stand; sheer bulk and weight can make rigging 'interesting'; A440 delivers best results at a distance — close work really needs some corrective EQ in the low end.

**Contact**

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