

303 Krode

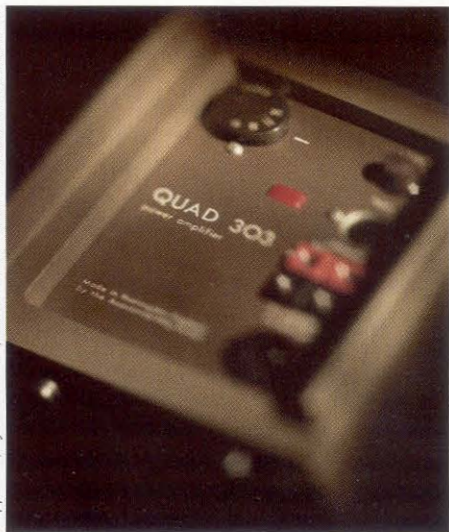


Launched in 1967, the 33 and 303 became Quad's all-time best sellers. Ken Kessler celebrates the only transistor amp of its era that's still sought after today



Aah, if only every manufacturer had this dilemma – too many classics in its CV! With Quad, do you think first of the original ESL or the ESL63? The Quad 22/II? Or do you picture Quad's biggest-selling pre-amp ever and its second-best-selling power amp, the 33/303 combination? For those of a certain age, who arrived on the hi-fi scene after 1967 but before the dawn of CD, that was the heart of a Quad system, and for many of them, it was the introduction to the UK's most venerable brand. (And of course, they aspired to add the beautiful FM3 tuner, seen with the 33 above.) By the mid-1960s, the transistor had made such broad inroads into audio that even valve die-





That compact back panel layout looks nice...

hards like Quad, McIntosh, Leak and Radford were having to produce both. As Gordon Hill recalled in the book *Quad – The Closest Approach*: 'Quad was one of the last audio manufacturers to introduce a transistor amplifier... Many famous names were early adopters and they were a commercial, if not an audiophile success. The original Leak Stereo 30 is one such example.'

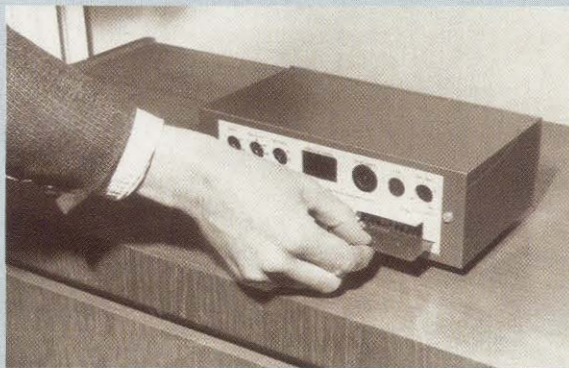
'In many ways Quad had built a rod for its own back. Prevailing transistor amplifiers had neither the power response nor the stability to drive the ESL-57 satisfactorily and the world at large would just have to wait if the remarkable qualities of this speaker were not to be thrown away by an unsuitable design.'

A DEPENDABLE DEVICE

Unlike some, Quad did wait for a dependable device. It came in the form of the silicon epitaxial transistor which, Hill states, 'had virtually none of the disadvantages of its germanium cousin. There was a learning curve, but manufacturers did eventually produce high-gain, low-noise input devices and stable, wide bandwidth output transistors. The EF86 and KT66 were the devices of yesterday, the BC109 and the 2N3055 were the devices of tomorrow. Nearly 40 years on you can still find them, or some of their variants, in many modern amplifiers.'

Quad launched the 33 pre-amplifier and 303 stereo power amplifier in 1967 after a typically long gestation period. Many have noted that the Quad 33 is in many ways a solid-state Quad 22. Quad employee Roger Hill notes that 'if you look

Ross Walker recalls the 33/303



Peter Walker's son, Ross, worked for Quad during the entire life of the 33/303 combination.

'Peter [Walker] and Peter Bax [Baxandall] worked together on the 33 and 303 and did their triples [a way of making output devices so that the biasing wouldn't shift with temperature]. That worked very well, so the 33/303 really started to motor, although we managed to build into the 33 a catastrophic failure.'

'They used to have these bloody little plug-in circuit boards that were frightfully dinky and frightfully clever and we thought we could change those for servicing, etc. It was done for all the right reasons. But the original edge connectors had tinned contacts and the boards were silver-copper, and of course with subtle vibrations they went through the tinning and oxidised, so you got resistance building up.'

'We started to get reports of intermittent performance and again we had a lot of internal arguments. I said, Look, something is wrong; we're getting far too high a failure rate. No, it's not, it's fine, it's fine. Because, of course, when we looked it, it *does* work, because the first time you take a board out and put it back in, you get a connection. We had about a year of

arguing before I could persuade people that there was a real problem out there.

'We then had to gold-plate the contacts. Unfortunately, because we had cracking after-sales service, everybody always thought the 33 was a very reliable product, when the first 20,000 all went bloody wrong.'

'In many respects, [Peter] made life more difficult for our customers, although he thought

he was doing them a favour. When the 33 came out, people said, "I'm not buying it with that bloody marigold thing on it." Well, Peter loved that, he thought this was great. And customers would come up and say: "Well, I'm not going to buy that unless you take that marigold thing off. You'll have to change that." And he'd say, "Well, I'm not. Bigger off. Go and buy a Leak. Go on, bigger off." And actually, we did manage to sell quite a lot of those, but we'd have sold an awful lot more. There is absolutely no doubt in my mind that if we'd been a bit more – we were customer-friendly, but not 'customer-centric'... if you bought it, you got jolly good attention, but what about the other 99.99% of the population that didn't buy the bloody thing? Because they didn't like the fact that it was marigold, and actually it looked a bit peculiar and rinky-dink and of course that's why Yamaha and Pioneer and Sony came in and took over the world. Yes, they were good at manufacturing and we were absolutely crap at it.'

Problems aside, were they immediate hits?

'No question, it went off like a rocket – I should imagine our business just about doubled the year that we brought them out.'

at the Quad 22 and the Quad 33, it fits in the same furniture by just squaring off the corners'. The styling was brought up to date, allowing the unit to be free-standing or cabinet-mounted.

Quad provided mains power for the 33 to allow it to be used as a stand-alone unit and it had two switched sockets on the rear panel to supply mains to a tuner and a power amplifier. To maximise the available space, all the signal connections were DIN, at a time before the average audiophile grew to loathe them.

Its phono input is a conventional, two-transistor amplifier with feedback equalisation,

with a plug-in board to provide different cartridge sensitivities and impedances. (Moving-coil was not a major concern in 1967.) Gordon Hill: 'The relatively low headroom of this stage requires that high-output devices be attenuated, thus failing to maximise the noise performance of the pre-amplifier. This being 1967, all options for adjusting recording characteristics have been consigned to history and the response is within 0.5dB of the RIAA curve from 30Hz-20kHz. A built-in rumble filter cuts in steeply at 30Hz.'

A second plug-in board in the tape loop allowed the user to vary the output and input sensitivities,

303 Timeline

Early ads reassured customers that the transistorised 33/303 would accommodate the new lower-efficiency speakers and lower-output pickups; [far right] two of the 'pro' versions of the 303



Peter Walker remembered by Roger Hill



Roger Hill worked with Peter Walker (left) from 1960 through Peter's retirement, remaining at Quad until 1996. 'We got lots of flak from the press when we carried on making valve amplifiers when

everybody else was making transistor amplifiers. And Mr Walker said, "We're not going to make a transistor amplifier until it's as good as our valve ones. As good as its sound, its reliability, its price."

'A lot of the inside detail of the 33 was mine, but not the 303, and I did the test gear for the pre-amp. John Collinson – a very clever chap, quite important to my training – designed the main circuit and it was finished by Mr Walker.

'I might also have done some honing of the circuit, like the pre-amplifier for disc. I did the actual values selection; I didn't change the

actual topology of the circuit. It's a detail thing. We didn't do anything for 78s at all, but we made the RIAA as close as we possibly could – nowhere near as good as the 44, but a lot better than the 22.

'We were looking for a new pre-amplifier while the 33 was still running. So the 33 went on for a few years while we were making the 44. The things we wanted to do were all in the 44 – marketing wanted all of the inputs on separate modules so that it could be made to measure. They wanted more inputs than the 33. Mr Walker and the senior engineers had been doing tests on tone controls, because no doubt you've heard Mr Walker say that we put them on as a marketing exercise because our dealers said they couldn't sell the stuff without it. But we also put on the cancel facility, so that customers, having paid for these expensive tone controls could then switch them off. [Laughs.] The old-fashioned tone controls hadn't really much use once you'd got into the 1970s. They had when you were playing 78s, but not into the 1970s.'

while the tape output could be adjusted to the correct DIN-standard level. Gordon Hill remarked that, 'those who were around at the time will recollect what a blessing that was. On just about every other British pre-amp of the period the presence of DIN sockets did not indicate conformity with the DIN standard!'

At the front, the 33 looked like no other pre-amp – other than a modernised 22. Customer loyalty was a huge part of the Quad client profile;

amplifier's performance features low distortion and a controlled bandwidth of 20Hz-35kHz, -1dB. As transistor amplifiers go, the output impedance is a relatively high 0.3 ohms, fine for 16 ohm loads, less good into lower impedances. At very low impedances, performance falls off.'

303 variations do exist, including models adapted for pro use, but the basic model featured a special DIN-type connector to take the signal feed from the 33, with mains in via a three-pin

If you look at the Quad 22 and the Quad 33, it fits in the same furniture by just squaring off the corners

to prevent culture shock for users moving to the 33 from the 22, Quad provided an extensive filtering and tone control system, with small rotaries for the tone controls, plus press buttons for source select and filter settings. A primary rotary knob provided on/off and volume.

Its sister, the 303, was rated at 45W/ch into 8 ohms, producing 28W into 16 ohms and was believed to be unconditionally stable into any load. Gordon Hill felt that it was, 'outstanding in partnership with the 16 ohm ESL-57; the

connector. Earlier versions (serial numbers 80,500 and below) use a tiny three-pin Bulgin socket; later versions use a three-pin IEC connector.

Gordon Hill remains impressed with the 303. 'In complete contrast to today's design philosophy, the 303 uses a fully regulated power supply. The genius of the circuit lies in the innovative use of "output triples", which renders the current in the output stage virtually immune from temperature changes and ensures stable performance under widely varying conditions.' Additionally, Quad fitted the 303 with automatic current-limiting to render it virtually indestructible under nearly any combination of input and output, including an open circuit or dead short across the output terminals.

As for the sound, well, let's just say that a mint 33/303 combination will upset audiophiles who refuse to believe that vintage solid-state gear can produce satisfactory sounds. I lived with my 33/303 on a daily basis, using it 40 hours per week for four years, driving the LS3/5As on my



...and the 303 occupied the same space as a II

desk. I found it so easy on the ears that, most of the time, I was simply unaware of its presence – high praise, I assure you. (While the ESL 57 is an obvious match, you simply *must* hear it with LS3/5As.) Clean, sweet, devoid of the nastiness of most early tranny amps – it stood out among its contemporaries as a harbinger of doom for the commercial dominance of the valve.

Gordon Hill felt that, 'with 16 ohm loads, the amplifier behaves impeccably. On loads where the impedance plunges heavily at low frequencies, the amplifier can run out of steam and its 4 ohm performance is just about adequate. That said, there are thousands in current use all over the world and, in its day, the 303 was extensively employed in domestic, broadcasting and professional applications, satisfied users including (improbably) Pink Floyd.'

Inevitably, what goes around, comes around, and, as of 2005, Quad – like McIntosh, Audio Research and others – produces both tube and solid-state ranges. This year, Quad relaunched a facsimile of the Quad II valve amp. But will they ever reissue the 33/303? Unlikely, and for two reasons. I was once told – emphatically – that both pieces would be too expensive to produce today, using the methods and technology of their day. Change the innards to surface-mount technology, ICs, etc. Well, it wouldn't be a 33/303, then, would it?

And the other reason? The survival rates of both the 33 and the 303 are so high that, at any given time, the classifieds and the audio fairs are full of them, at bargain prices. And, yes, Quad will still repair them. ■

Ken Kessler

Production numbers

The 33/303 combination ranks amongst Quad's all-time best-sellers. Altogether 120,000 Quad 33 Control Units were produced, from 1967-1982; 94,000 Quad 303s were made, 1967-85. Quad accounts for the difference by reminding us that the arrival of the 405 power amplifier preceded the matching 44 pre-amp by four years, so a number of 405s were sold with 33s.

