

SERVICEMAN'S LOG



Dave Thompson*

Well-made 1980s amplifiers are worthwhile to repair

While a great deal of recently manufactured consumer audio equipment is rarely considered worth repairing when it fails, older brand-name stereo amplifiers from the 1970s and 1980s were usually well made and had impressive extruded aluminium front panels with large, smooth-as-silk controls. They are still well regarded by enthusiasts in-the-know and are usually well worth repairing when they ultimately fail.

It could be something in the water, or perhaps a phase of the moon that is to blame for a recent surge in the number of audio amplifiers arriving at the workshop. Four all turned up at around the same time, although to be honest this is more likely down to me advertising musical instrument and amplifier repairs in the local telephone directories.

However, this year will be the first time in almost 20 years I won't have a display ad for my computer-repair

company in our version of the yellow pages, the reason being that when I worked the numbers for last year's phone directory advertising, I didn't achieve a return on that investment.

It's a sign of the times, probably due to the fading popularity of the printed version of the yellow pages over online searches, but also (and more unfortunately for me) because of the diminishing need for the traditional computer repair guy.

Anyway, for whatever reason, these four amps turned up and all had similar faults; no sound at all from one channel or very low and distorted sound from one channel.

The other striking simi-

Items Covered This Month

- JVC and Fountain amplifier repairs
- Electric golf trundlers
- 2002 Toyota Echo repair

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larity is that all these amps were made in the 1980s, and the reason their owners hadn't junked them long before now is because they were regarded as top-of-the-line back then, or at least close to it and had cost a fair bit of money, while giving years of trouble-free and great-sounding service. That is until ultimately, they didn't.

Everything gets old, there's nothing more definite. Part of it is down to the laws of nature, and when you take the laws of physics into account as well, it is inevitable that hardware and components fail.

You don't need to be an audiophile to know what sounds good to your own ears, and when you finally put together a good-sounding system, it is natural to want to keep it going for as long as you can.

Plenty of us have discovered that just because an amp or audio component is shiny and new, or is a much-anticipated new model of whatever hardware we already own, this doesn't automatically mean it is or sounds better.

To most of us, it is apparent that over the years the goal of most serious audio amplifier designers has been shaving off those last few fractions of a percent of distortion, and many (including the luminaries behind SILICON CHIP designed and produced amps) have pretty much reached the practical and physical limits of this goal.

With well-made components and clever design, distortion figures less than one thousandth of one percent are now achievable.



PEAK MUSIC POWER OUTPUT IS A
MARKETING CREATED MEASUREMENT
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Service Man's Log – continued

However, most of the plastic-cased, flashing-LED-festooned, mass-produced rubbish one sees (and hears) pounding out bass-heavy beats at the local big-box warehouses don't seem to care about such hard-won audio-related specifications at all, except to ensure some ridiculous PMPO wattage figure is emblazoned across the fascia in large, glittering and bold-coloured stickers.

(Peak Music Power Out is a marketing-created measurement designed to entice ignorant buyers into believing that the only figure worth knowing about in any given audio system is wattage.)

Modern buyers aren't impressed with an amplifier rated at only 30W RMS per channel, so many manufacturers will use PMPO instead. 200W PMPO is a far more hairy-chested figure and will get far more interest from potential buyers who couldn't care less about signal-to-noise ratios or input sensitivity.

It is a scientifically-proven fact that people, and by people I mean men, and by men I mean me, if given the choice between two similar-priced systems where one has, say, 25W of power and the other 30W, will almost always buy the higher-powered system, even though a human ear could not possibly

be able to discern the difference in loudness between the two systems.

Due to the way sound is perceived and measured, doubling the output power from 50W to 100W results in just a 3dB gain, which is generally acknowledged to be the smallest volume difference us mere humans can detect. This means the difference between a 25 and a 30W system is moot, but I guarantee if given the option that I'd buy the bigger one!

My point, as usual an absolute age in arriving, is that a lot of modern audio amplification is aimed at people who aren't all that interested in super-low distortion and noise-floor measurements. Instead, they want the system with the biggest speakers, the most flashing lights and the highest PMPO figures in the store.

Of course, there are audiophile-level amplifiers out there for sale but these tend to be sold in boutique stores and priced accordingly and often aren't a real replacement option for the owners of these former high-class amps, which is why they would prefer to repair rather than replace them.

The first amp I opened up is a (still) very nice JVC JA-S series unit. In my opinion, JVC made some very good gear and from memory was at some point part of

the Panasonic consumer-electronics empire.

Interestingly, internet forums are packed with self-professed experts harping on about how anything built in the 1980s, regardless of brand, is by definition rubbish and everyone should give it a wide berth.

It is this type of hogwash that turns me from most online discussions. Everyone has – and is entitled to – their opinions, however I cut my teeth on circuits from this era and have great admiration for a lot of the hardware that came from this decade.

Of course, some of it is questionable, just like anything made in any era but there was a genuine quest to build better audio gear and in the 1980s great strides were made in this regard.

Something I like is that the amplifiers are (mostly) made using then-top-of-the-line discrete transistors and components that are both easy to recognise and accessible for troubleshooting/testing purposes.

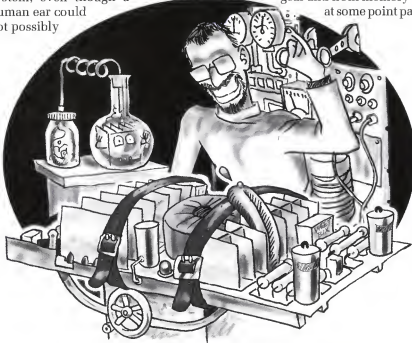
That said, the 1980s was also an era in which audio amplifier modules made their appearance and while many had decent specifications and were dead-easy to utilise, with just a few flying leads to connect to the rest of the circuitry, there was a downside.

While good for manufacturing and probably very economical to produce, many of these modules went out of production relatively quickly, some within a few years, meaning that replacing a faulty one after that time meant having a few stored away for such occasions.

For example, I had an amp in the shop a few years ago that utilised a Sanken 80W per channel stereo module as the main output device. One side was faulty, and thus it needed replacing.

I was fortunate that I experimented a lot in the 1980s with Sanken, ILP and other amplifier modules for musical instrument amplification and sound reinforcement and therefore had a collection of various used and NOS (New, Old Stock) modules in amongst my spare parts, one of which was an exact replacement for the faulty one. Bullet dodged, but I was lucky.

Others I came across in the 1990s and 2000s used weird and wonderful modules like Sinclair and even some exotic no-name types and replacing them was out of the question, as I hadn't even seen any in real life until I had to replace one. Any amp made



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OTHER AMPLIFIER MODULES...

with those components that came in for repair and required a module replacement had to be either junked or heavily modified to use something else if it was to be kept alive.

This JVC amp is typical of those of the era; a solid metal chassis with minimum plastics and lots of beefy screws holding things together. All the components are easily identified, with none of this part-number obfuscation that became so prevalent in later years.

The various circuit boards are easily identified and isolated (should the need arise) and inter-board connections use quality plugs and sockets and ribbon cables.

The output devices in this amp are modular, being labelled Darlington Power Pack and while initially I thought it might be some weird component, in smaller type near the bottom was a part number: STK-0040, which I recognised as a Sanyo-designed stereo output module rated at 40W.

There were two of these modules bolted to a large heatsink; like most serious audio output devices, Sanken modules will perform well as long as they are kept cool, hence the substantial heatsink.

The DPP is a "thick-film, hybrid" device, which means it is made from different layers containing the various components that comprise the module, such as resistors, capacitors and transistors. All are connected to the outside world via a row of pins, making it very easy to use in a circuit.

These went out of fashion in a big way as better output devices were created but millions of amplifiers were made using these modules and as replacements eventually sold out, they became harder and harder to obtain.

Now I needed an STK-0040, and I didn't have one, so I hit the usual suspects and found a replacement pulled, NOS component on eBay. A pulled component is either used and salvaged from a discarded unit or as a NOS component is stripped from a new but unsold spare-parts replacement circuit board. At around US\$20 it wasn't a bad price either but the US\$25 shipping charges put the brakes on buying that one.

Then I had an idea, and hit my new favourite site, www.AliExpress.com A search pulled up dozens of brand-new Sanken modules, including the 0040 for a couple of bucks and free shipping, so I promptly ordered two, one

for this job and one for a spare.

In amazement, I also searched for other, older and (I thought) no-longer-available chips like the SN76477N sound-effects generator and the MN300X series of bucket-brigade delay lines and discovered they are being sold on the site for very little money compared to what they used to sell for in the 1980s and 1990s.

While these components are not likely to be of interest to anybody else outside of the DIY, analog guitar effects line, it is a trip down memory lane for me. Now I'm not sure whether these are being made again or whether they are simply stocks of unsold components being flicked off until they're gone. I suppose it doesn't really matter, as long as I can get what I need. It's a Godsend to be able to get replacement components for these older yet still cherished devices.

The STK-0040s duly arrived and sure enough, they appeared to be brand new. Removing the old one was as simple as de-soldering its 10 pins and unbolting it from the heatsink. I gave the new one a dollop of thermal paste before squishing it into place on the heatsink and doing up the nuts. I then flipped the whole caboodle over and soldered the pins back in.

Once reassembled, a quick test showed everything was working as it should and the amplifier was sounding sweet once again. If only all fixes were this easy!

The second amplifier I looked at is an older Fountain branded unit. Fountain was a New Zealand manufacturer of a range of domestic hi-fi and musical instrument amplifiers from the 1970s through to the late 1980s.

Their home stereo amps were actually very well made and well-regarded, though when many Kiwis think of Fountain products they are more likely to recall their early 'stereograms' as being rather dowdy and dated in their design.

This amp is a more modern-looking unit with linear controls, as was the fashion for a time. It worked but was very distorted on the left channel. The biggest clue to the problem came when I altered the balance control; the lightest touch produced some very nasty static from the speakers, though nothing really changed from one end of the control to the other.

When a squirt of contact cleaner didn't resolve the issue, I looked

through my parts boxes for a replacement slider. Fortunately, my dabbling in a lot of audio circuits back in the day (especially the ETI 10-band-a-side Graphic Equaliser) left me with a large collection of pots of all types, including linear models, which are quite difficult to find these days.

Those that are for sale sell for a premium, so having a few known-good ones lying around certainly helps in cases like this.

The hardest part of this repair was getting the knob off the slider; it appeared to have been glued on at the factory, something some manufacturers resorted to due to the selected knobs not grabbing the shaft very well.

A bit of carefully-applied heat from my heat gun softened the adhesive enough to release the knob and the slider was then unscrewed from the top of the chassis so it could drop out the bottom.

I re-soldered the leads onto the relevant terminals one at a time and bolted the new control back into place; a quick test proved that I now had excellent sound from each speaker and nice, quiet tracking when operating the slider. I'm not sure what I'll do when I run out of these hard-to-get parts but I have quite a few so hopefully they'll see me out!