

## Why Valves?

Despite the incredible pace of technological development since the valve era, and the exceptional performance of modern solid-state devices, many musicians and audiophiles still prefer the sound of an old-fashioned valve amplifier. Others ponder; how could valves possibly survive when they are clearly technically inferior? How could a state-of-the-art audio amplifier with impeccable specifications, vanishing low distortion, and oodles more power, ever be considered inferior to something developed about a century ago?

Almost 40 years ago, (together with Ron Keeley, a noted musician), I designed and described a 140 Watt DIY valve amplifier for home constructors in the Australian edition of Electronics Today International magazine, (ETi - a popular international electronics magazine which still exists in some countries).

The words Ron and I penned on our Remington typewriters in 1980 are just as relevant today; “the valve vrs. transistor argument will probably never be settled conclusively. Despite all the obvious advantages of solid state musicians prefer valves because, they say, valve amps simply sound ‘better’, subjectively – like the preference some people have for an old Harley-Davidson or Triumph motor-bike, rather than a modern high-revving performance machine. On the other hand there are definite technical reasons why a valve amp will sound ‘different’.

### It’s All About the Sound .....

We went on to say: “The reason most often advanced is that valves produce predominantly second harmonic distortion, whereas transistor amp distortion is mainly third harmonic. While this is true, it is not the whole truth; the distinctive sound of valves is caused by the synergy of many factors, and the spectral balance of the distortion factors is just one of them. Other important factors are the shape of the distortion-power curve, the fact that valve amps are transformer coupled to the load (which affects the overall response of the amp), and the higher output impedance of valve amps (resulting in reduced damping of the loudspeaker and a more ‘colourful’ sound), and the higher ‘dynamic output’ of valve amps (the ability to deliver relatively constant power output to a varying load; i.e. a speaker).

“If all these factors could be built into a transistor amp, then possibly it would sound, subjectively, like a valve amp. Many have tried to do this – most have failed”. I do hope this little amplifier brings you lots of satisfaction, both in its construction and its use. I also really do appreciate feedback on any issues you may have and any suggestions about how we can improve this project. Send us an email at [www.redrookits.com.au](http://www.redrookits.com.au) Have fun!

Phil Wait, RedRoo Kits, Sydney.



*3-500Z transmitting valves undergoing stress testing. If you ever see anodes this colour there is something very wrong! Photo courtesy of James Hawkins (Amateur Callsign WA2WHV).*