

# World Design

**World Designs revive KEL84, a new kit amplifier using EL84 output valves. Tony Bolton listens.**



**L**ong standing readers of this magazine may well remember the DIY supplements that used to be a regular feature of Hi-Fi World some years ago. One of the designs was for the original version of this amp, the KEL84. Several years on, the fundamental circuit design has remained unchanged, with the pentode sections of ECF80 triode/pentodes providing the first amplification stage. The triode section is used as a phase splitter. Power is provided by a pair of EL84s working in push/pull.

The amp is available in two forms, one with the five line level inputs as in this example, and the other with just a single input that can be used as a power amplifier. If purchased as a self build kit, the amp costs £750.00 for this model (the single input unit costing £625.00). Either can be supplied built and tested for another £200.00. There is also the XL option (£60.00) which includes Vishay HT supply capacitors, Schottky Rectifier Diodes for a lower noise heater supply, Soniqs polypropylene coupling capacitors and Soniqs interconnect cable for the internal wiring.

I was impressed by the finish and fit of the pre-made example that was sent to me. I particularly liked the weight and feel of the heavily

chromed solid brass knobs that control volume and source selection. The alloy fascia and pressed steel casework were neatly executed and the whole thing gave the impression of being more expensive than it actually is. The only let down was the cheap looking speaker terminals at the back which, to me, sat a little incongruously alongside rows of gold plated phono sockets.

I initially set it up in the spare

room plugged into the Piega Premium 1 loudspeakers and fed it with a mixture of classical music and the IsoTek burn in disc for 24 hours.

"a sweet sounding nature that should win many friends"

I have a bit of a love/ hate thing going with the Piegas. They are, at times, scarily open and honest in their sound, but plugged into the KEL 84, I found myself quite taken by the combination. The high frequency clarity of the ribbon tweeters blended very well with the more gentle approach of this amp, each seeming to feed the other's positive aspects and producing some of the best sounds that I have had from these speakers.

The following day I set the amp





#### THE EL84 OUTPUT VALVE

The EL84 power pentode valve (6BQ5 in North America) dates from 1953 when it was developed by Philips for the Mullard 5-10 amplifier. It proved popular with makers of both audio equipment and guitar amps, being used in both Watkins and Vox models, and later by Fender and Mesa Boogie. It was originally developed to eliminate the need for pre-amplifier triodes in radios, having higher gain than normal which allowed it to produce full output from a relatively weak signal. This simplified the radio circuits, making them cheaper to produce.

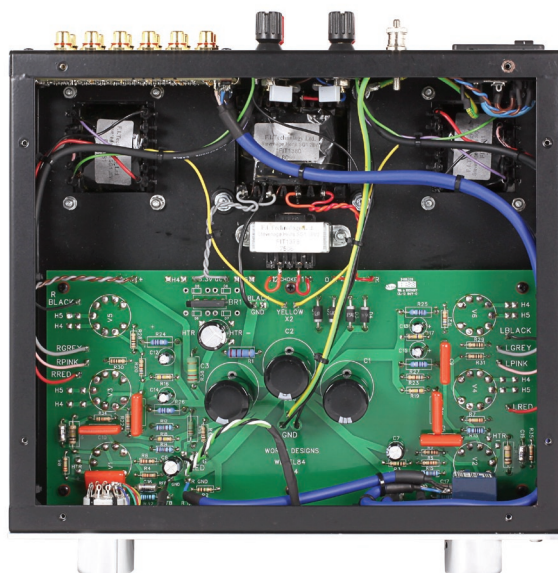
The E prefix indicates a heater voltage of 6.3V although guitar amps frequently exceed this. Production currently comes from Russia (Sovtek and Electro-Harmonix) Slovakia (JJ Electronics) and Serbia (Ei).

The ECF80 triode/ pentode was a Mullard design introduced in 1954 as a VHF frequency changer for use in television. The valve has two cathodes so is two independent valves housed within the one envelope.

it was friendly and easy-going with a smoothness and depth that are rarely heard from any other source than a valve amp. The difference to the Leak was in the higher frequencies, where there was far greater extension and clarity. I love the Leak dearly, but it does get a little soft and

gentle at the frequency extremes. The KEL84 provided a more modern take on things, with a firmer sound to the treble, giving it a greater sense of air than I would have heard through the Stereo 20.

Moving on from the Holst, I played a 1974 LP of Oscar Peterson and Dizzy Gillespie. The staging





**SYSTEM USED:**

Linn LP12/ Hadcock 242 Cryo/  
Clearaudio Concept.  
GSP Audio Revelation and Elevator  
phonostage and step-up.  
Njoe Tjoeb 400 Reference CD player.  
Kelly KT3 loudspeakers.

of this is unusual, with the piano stretching across between the speakers, bass notes appearing just to the right of the left hand cabinet and the treble reaching over to the centre of the righthand cones, as though the pianist was sitting with his back to you and the keyboard in view. Gillespie's trumpet was placed in front of this, and on several tracks I could hear his foot tapping out the beat. The images were very securely located and almost physically tangible. The most compelling thing was the infectiousness of the rhythm. I found my self joining Gillespie in keeping time to a very bebop rendition of Johnny Mercer's 'Autumn Leaves'.

I got caught up in the beat again when playing through The Supremes' 1966 LP 'A Go-Go'. This record has the honour of being the first disc by an all girl group to top the American Billboard charts, and reached number 15 in the UK. Most of the tracks are covers of other motown hits but it also features the singles 'Love Is Like An Itching In My Heart' and 'You Can't Hurry Love'. This mono record was handled with ease, the girls standing a bit in front of the speakers with their backing band occupying about three-quarters of the area between the cabinets. The timing was tight and the sound enjoyable, and although it was not the weightiest bass that I have heard, it was supple and quite vibrant.

The bass notes tend to be the driving force in most dance music, and on Entheogenic's sixth album 'Gaia Sophia' they went very low in places. This is only available as a download so I took a copy of the FLAC option when it was released late last year. I would call it midweight progressive trance, where the focus is split between the drive of the bass and the shapes and colours created by the samples and electronic sounds and

effects moving around above it. Again the KEL84 made it seem effortlessly enjoyable to listen to and thoroughly involving.

The only real drawback that I can see with this amp is the fairly low power output. Allied to efficient speakers like my Kellys it wasn't a problem, but a bit of care in matching suitable transducers is needed. Apart from that I found it to have a very musical heart, and a willing and lucid sound that presented the delights of thermonic amplification in

a very persuasive way. If it was alive, I would liken it to a golden retriever, with a sunny temperament and a good dose of bounce and go. Like everything it is not perfect, but for the price it ticks all of the relevant boxes and does so with such a sweet sounding nature that it should win many friends.

**MUSIC USED;**

Holst 'The Planets' Andre Previn conducting London  
Symphony Orchestra EMI Records ASD 3002 1974

The Supremes 'A Go-Go' Tamla Motown Records  
TML 11039 1966

Oscar Peterson and Dizzy Gillespie 'Oscar Peterson and  
Dizzy Gillespie' Pablo Records 2310 740 1974

Entheogenic 'Gaia Sophia' Universal Symbiosis  
Records 2011.

**MEASURED PERFORMANCE**

Power output measured 12 Watts into 8 Ohms and 10 Watts into 4 Ohms so the output transformer looks optimised for around 6 Ohms and handles a lower load quite nicely. Ideally a valve amplifier will give the same amount of power from an 8 Ohm winding feeding an 8 Ohm load, as a 4 Ohm winding feeding a 4 Ohm load; KEL 84 manages well to manage a similar performance from one winding. Distortion levels do rise when feeding a 4 Ohm load though. At 1 Watt a figure of just 0.06% at 1kHz into an 8 Ohm load is good. At 10kHz this rose to 0.22% (the distortion figure we quote), all second harmonic our spectrum analysis shows. The output transformers swung full output cleanly at 40Hz too, showing there is enough iron in the core to avoid premature magnetic saturation (overload) and the soft bass it produces.

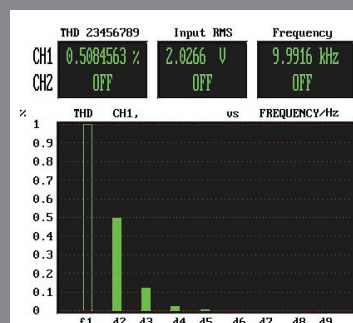
Input sensitivity was a useful 350mV for full output and noise -87dB. Hum measured 1mV out at 100Hz, acceptably low to be barely audible even close to a loudspeaker.

Frequency response was limited to 20.4kHz before rolling away slowly so KEL 84 will sound fairly easy going. At

the low end bass rolled down slowly below 50Hz, measuring -1dB down at 16Hz.

KEL 84 measured neatly all round. It will need to be used with sensitive loudspeakers, but it will give an easy valve sound. NK

Power	12watts
CD/tuner/aux.	
Frequency response	16Hz-20.4kHz
Separation	82dB
Noise	-87dB
Distortion	0.22%
Sensitivity	350mV

**DISTORTION**

# HI-FI WORLD

**VERDICT**

Affordable, sonically impressive valve amp that can be bought as a kit or pre-made.

**WORLD DESIGNS KEL 84**  
**FROM £750.00**  
☎ +44 (0) 7972 055492  
[www.world-designs.co.uk](http://www.world-designs.co.uk)

**FOR**

- musical and friendly sound
- excellent imaging
- good timing

**AGAINST**

- nothing much