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VACUUM TUBE LC EQUALIZER

With an uncompromising approach to audio processing, D.W. Fearn's VT-4 Vacuum Tube LC EQ follows in the steps of the company's single-channel VT-1 and 2-channel VT-2 Vacuum Tube microphone preamplifiers. In fact, much of the amplifier circuit design in this unit is based on those two mic pre's. I feel privileged to write about the VT-4, because it's immediately apparent that this handmade labor of love is in its own special class, and company owner Douglas Fearn individually inspects, tests and signs each unit.

The VT-4 is a single-channel equalizer in a three-rackspace cabinet. Everything about the construction is first-class and built to last. The chassis is fabricated of heavy-gauge, anodized aluminum plate, and the 1/4-inch-thick front panel is finished in D.W. Fearn red to match the VT-1/VT-2 units. The large, mil-spec control knobs are from original Raytheon designs that are now manufactured by Electronic Hardware Inc. The heavy-duty AC power on/off switch is located on the back panel, away from sensitive audio lines and accidental use during a recording. The internal power supply fully regulates both the high voltages and DC-filament voltage. No pots are used: All controls are semisealed, silver contact-type, with rotary switches for repeatability. All audio capacitors are polystyrene or polypropylene, and resistors

are 1% metal film. The inductors and input/output transformers are custom-made by Jensen Transformers.

SIGNAL PATH

The VT-4's passive EQ circuit is surrounded by Class-A mode input and output amplifiers using Svetlana 6N1P dual triodes. Both amps are similar with single-ended triode sections coupled to cathode follower circuits. After the input transformer, the input amplifier isolates the passive equalizer circuit, whose output is then fed to the output amplifier and output transformer. The unit is designed to accept balanced or unbalanced signals and output line-level, balanced +4dBm signals. LC refers to using inductors or coils (L) and capacitors (C) in the series/parallel filter circuitry, rather than the typical RC equalizers that use resistors (R) and capacitors to keep costs and physical size down. Passive equalizers using LC networks sound noticeably more open and smooth.

GETTING IN AND OUT

A large In/Out switch toggles the EQ in and out of circuit by substituting a resistive attenuator equaled to the level drop of the passive EQ circuit when all controls are set to flat. This is not a hard-wired bypass and works better, because you'll hear just the sound of the tube input/output amplifiers sans EQ. It would be crazy to leave an EQ this good patched in Bypass mode. I did notice an occasional soft pop when I operated this switch, and since receiving my unit (serial #008), a new make-before-break switch was added to the newer units, eliminating all possibility of noise.

The Input Level control adjusts gain of the first amp stage in 3dB steps from -9 dB to +9 dB. For the most part, I kept this switch at unity or the center position. Fearn says: this control is for maintaining proper headroom within the unit. This control worked fine for adding level when I was able, by grounding pin 3 of the input XLR connector, to process -10dBv unbalanced signals. If you boost several frequencies at once, then you may have to dial back the input level to keep from overloading the output amplifier. Of course, if you wanted the sound of an overloaded tube stage, then you can crank the Input Level up and get lots of wonderful (albeit expensive) distortion. For this purpose, it would be nice to have an Output Level control, because the unit will put out up to +22 dBm.

EQ CONTROLS

There are five frequency controls or bands on the VT-4. Gain control knobs are intuitively located directly below each frequency control. Exact frequency selection is different on the VT-4 than all other EQs and contributes to its unique sound. I found myself looking at frequency choice a little differently and making slightly different judgments and decisions throughout the session. These were decisions and judgments I was very happy with the next day! Douglas Fearn said he arrived at his frequency choices by mostly listening in a musical and subjective way. I'll bet some good old trial and error and a few clip leads went into it as well!

Low frequencies are handled by shelving Low Boost and Low Cut controls. The selectable frequency positions for Low Boost are 20, 40, 60 and 140 Hz, while the Low Cut control can be set to 30, 40, 100 or 400 Hz. These sets of overlapping frequencies make for interesting

equalizer stylings, which were different from conventional EQs or even multiband parametrics. Perhaps it's idiosyncratic like an old Pultec EQP-1 but you can boost and cut in the same frequency ranges! Typically, boosting low frequencies by large amounts will cause muddiness or boominess. However, using the VT-4 to boost 60 Hz while cutting the octave down at 30 Hz gave me more bottom with much less boominess.

The next control is the unique bell-shaped Mid Cut. Midrange frequencies available for attenuation are 200, 300, 400, 500, 600 and 700 Hz. You can cut up to 16 dB in 2dB steps. This is a progressive Q equalizer: As the Mid Cut control is advanced, the Q becomes sharper. This huge range is quite a sound change, and I wondered if Doug played electric guitar, because I liked this feature for scooping out midrange from guitar tracks. My only wish here was for a 1.5kHz position in the frequency range selection. As such, the VT-4 does not have a dedicated midrange boost control, although the next section, High Boost, does go down to 2 kHz.

High Boost is a bell-shaped equalizer with 2, 3, 4, 5, 8, 10, 12 and 16kHz frequency selection positions. You can boost up to 14 dB in 2dB steps. I would like to see a 1kHz position here: Then the equalizer would have complete overlapping frequency range selection. High Boost includes a Q or bandwidth control that goes from a broad 0.6 to 1.7 at the sharpest. I found this section just perfect for brightening vocals, guitars or drums. I never heard any stridency or harshness, no matter how much I cranked the High Boost.

High Cut, the last control, is a shelving EQ, and its frequencies are 1.7, 4, 10 or 28 kHz. Twenty-eight kHz? The 28kHz setting is just the ticket for rolling off digital artifacts you pick up sometimes. I brightened a guitar track (recorded in Pro Tools) with the High Boost section and then rolled off at 28 kHz to lose some aliasing artifacts I started to hear. As with Low Boost and Cut, using both High Boost and High Cut at the same frequencies produces a whole other equalizer sound with interesting effects.

ALL THERE!

A great-sounding equalizer with more tone-shaping possibilities than most other tube EQs, the VT-4 is crafted and built to last, like a Rolls Royce made for the U.S. Government. The D.W. Fearn VT-4, at \$3,900 MSRP, makes a fine investment for any recording and mixing studio.

Thanks go to producer David Gamson for use of his studio and helping me with my evaluation of the VT-4.

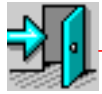
D.W. Fearn, 182 Bragg Hill Road, West Chester, PA 19382; 610/793-2526; fax 610/793-1479;
www.dwfearn.com.

Barry Rudolph is an L.A.-based recording engineer. Visit his Web site at:
WWW.BARRYRUDOLPH.COM



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