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Avalon Design's newest addition to their high quality line of pre-amplifiers, equalizers and compressors is the VT-737 Vacuum Tube Direct Signal Path. The 737 is a self-contained and single-channel complete recording signal chain for processing any audio source regardless of its signal level or source impedance. When I think of all the individual pieces of equipment that I would collect and patch together to simply record a vocal, the VT-737 seems like a godsend indeed since it is a combination of microphone tube pre-amplifier, tube opto-compressor, discrete Class A transistor four-band equalizer with side-chain routing ability and tube line level balanced output stage.

To begin, the Avalon VT-737 is housed in a stout aluminum and steel, two rack-space cabinet and styled like the rest of the Avalon line with back-lit push button switches and an oval-shaped VU meter. Pushing switches reveals that all in/out switching of each section is by sealed silver contact bypass relays so, for example if you have the compressor switch out, the signal does not flow through that stage. Avalon sent me the new "SP" (or Special Performance) version that upgrades the original VT737 unit's purple knobs and face plate. Besides the standard Avalon metal knobs and a more detailed face plate, the SP has a new higher level mic input transformer. The front panel, at first glance, may seem a little busy and complicated but all four processes are grouped in an ordered and logical way. I think it is a design challenge to build a unit this comprehensive and powerful yet still simple to learn and use. Avalon helps bend the learning curve by including a "Quick Set-Up Operating Guide" in the form of a full-size drawing of the front panel. One look and you're an instant expert!



There are three separate inputs on the 737. A front panel rotary switch selects between: a rear panel mounted XLR balanced line input to the equalizer and/or the compressor; a front panel mounted 1/4 inch unbalanced mic high impedance (1 megohm) input jack for recording direct bass, guitars or synthesizers; and the rear panel balanced XLR microphone input for studio microphones. Having three inputs available means you can immediately switch the 737 between recording a direct guitar to recording a vocal to processing an already recorded track

with the EQ and compressor. There is also a front panel +48 volt phantom power switch and an output phase flip switch.

A single, continuously variable pre-amp gain control trims the input level for all three inputs: -20dB to +10dB for the balanced line; -30 to +10dB for the unbalanced line/mic; and 0db to 40dB for the balanced microphone XLR transformer input. This gain control is a ganged-pot that sets input level and gain of both dual triode stages together in the cascaded tube mic amplifier. A total of four Sovtek 6922 tubes are used in the unit: two for the mic pre-amp, one for the compressor and the fourth for the line output amp. If you need more mic gain, then a front panel switch called "High Gain" that, when pushed, zeros out the negative feedback in mic pre-amp circuit for an open loop gain increase of 18dB (for a max total of 58dB). There is a variable bass cut filter between the two pre-amp tubes. It is front panel switchable and a 6dB per octave passive design with an adjustable corner frequency of 30Hz to 140Hz. All of this internal design is "muy importante" to me since I will only use enough gain to raise the microphone's signal to a +4dBm nominal recording level with enough headroom and dynamic range. In operation I used the unit at the upper end of the gain range. I find that there is more of a "linear" feeling in setting an appropriate level. I used "high gain" for a "hotter" mic sound but then the adjustment of an exact, working level becomes touchy. In any case, getting a level is easy with the smooth and noiseless controls. When using the mic pre-amp section only (without the EQ or Compressor switched in) I compared the 737 to some of the other mic pre-amps I use. I found the sound very clear, open and flattering to everything I recorded. Using a tube U-47 mic, the 737 was a tinge brighter than some of the others. (Or I could say the others were a tinge duller...whatever) I would like to see a dedicated mic pre-amp XLR output jack so that the mic pre section and the EQ/compressor section could both be used separately.

The opto-compressor features two Class A triode tube sections. The optical attenuator acts as a passive level controller. The Threshold control sets threshold level from -30dB to +20dB with a center detent position of 0dB. You can play the balancing game of juggling threshold settings against preamp input gain settings--they are totally interactive and shape the nature of the compressed sound. The Compression control adjusts ratio and the "knee" of the slope at the same time. You have a choice of compression ratios from 1:1 to 20:1 with a continuously variable pot. The Attack control adjusts attack time from 2ms at the fastest to as slow as 200ms. Release is also adjustable from 100ms to 5 seconds. There is a compressor in/out switch, a meter switch that toggles between output and gain reduction measurement and a very cool "EQ to COMP PRE" button that inserts the equalizer section either before (Pre) the compressor or after (post). In operation I found the compressor very smooth and nearly impossible to make sound bad. I would compare the compressor to Avalon's AD2044 Opto-Compressor in operation and sound.

The VT-737 uses an all discrete, Class A transistor circuit in the four-band equalizer. The equalizer is divided into two separate equalizers: a Treble/Bass EQ and a dual mid-band circuit. The Treble/Bass equalizer is a passive, shelf response design that can boost or cut 24dB. The Bass band's frequency selection points are: 15Hz, 30Hz, 60Hz and 150Hz. The Treble band's frequency selection points are: 10kHz, 15kHz, 20kHz and 32kHz. I found this part of the equalizer very good, broad and smooth. Even boosting 32kHz affected the high frequencies in subtle and good way although I got more with less down in the consumer

ranges of 10 and 15kHz.

The dual mid-band section of the equalizer is where you can really carve. The low-mid variable frequency range is from 35Hz to 450Hz while the high-mid section goes from 220Hz to 2.8kHz. Both sections have an "Hi-Q" switch that narrows the Gaussian curve width from a Q of 0.2 to 0.8. A "X10" switch multiplies the indicated frequency ten times. You can boost or cut 16dB. I'd like to see these sections fully parametric with a little higher Q capability but, again, I might be pushing the price/performance envelope. I found the equalizer to be smooth and perfect for vocals but not quite as cranky as I sometimes want when recording certain musical instruments such as percussion or drums. I got big, fat and impressive results with the 737 on acoustic guitars, bass direct and vocals. I recommend the 737 for any recording task where an open and natural big sound is desired and appreciated.

When you push in the "EQ to SC" switch, the two mid-band sections get routed to the sidechain input of the compressor. The Treble and Bass sections remain equalizers in the final signal path and retain the ability to switch them in/out and pre/post. With EQ to SC you make the compressor more sensitive to certain frequencies or band of frequencies. With the two overlapping EQ sections of the dual mid-band equalizer you can zero in on problem frequency peaks and cause the compressor to clamp more. You must arrive at new settings of Threshold, Attack and Release that cause the desired sidechain modulation as well as proper mainchain compressor operation. In practice, I found this feature worked well on certain synth patches that present big level jumps when either the filter rolled through resonance or a chorus effect caused giant, in-phase level build ups. I also use this feature on a bass guitar part in which the particular instrument had uneven output level from one string to the next. (In this case the G string was really loud when an open G was played) For de-essing, my results were mixed since it is hard to arrive at optimum settings that squashes the S sufficiently yet doesn't over compressed the rest. If you have a singer with a big "S" problem, you probably need to rely on an external de-essor.

Finally the output tube stage, controlled by the output knob, has a trim range of -40dB to +10dB. This is where you "make up" or "take away" level to achieve your final recording level to tape. The tube amplifier is followed by a transformerless high voltage discrete transistor balanced output amp circuit.

The unit's discrete internal toroidal power supply is powered from any external AC source from 100 to 240 volts. There is a "soft start," 40 second time delay power up routine that is said to enhance tube life. The manual states that the unit should be powered up for 30 minutes for best sonic performance. Specifications are: maximum gain is 58dB using the balanced mic input; maximum input level is +10dB @25Hz from the balanced mic input; maximum output level is +30dB into 600 ohms; EIN noise 20kHz unweighted is -92dB; THD is 0.5%. Current retail price is \$2,495 for the VT-737SP while the original purple knobbed VT-737 is \$2,195. Thanks go to Lex Marasek and Dan Vacari at LAFX Rentals in L.A., Constantine Psorakis at EVIA Systems and Wynton Morro at Avalon Designs for helping me. Avalon Designs is at P.O. Box 5976, San Clemente, CA 92673. 714-492-2000 FAX 714-492-4274. Visit:

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