Thermionic Culture Phoenix MC

Valve Mastering Compressor

Hugh Robjohns

The classy Phoenix rises again — but this time it has been tweaked for the mastering fraternity.

Way back in *SOS* April 2000, Paul White reviewed the original Phoenix — an all-valve, variable-mu compressor, designed by Vic Keary (see our June 2004 feature). Following growing interest from the mastering fraternity, Vic has returned to the design to produce a tweaked version called the 'Master Compressor'.

A first sight, there is very little difference between the original and master versions. In fact, the visual differences really just come down to alterations to the panel markings for the input and output controls. Yet such simple changes (along with a few other more tangible differences I'll come to shortly) make the device considerably more appropriate for the mastering market. Specifically, mastering engineers require the ability to reset operating conditions precisely, and that means switched or accurately indented controls with meaningful panel markings, and that is exactly what Vic has provided in this revised model. He has also extended the range of the release time constants in the extreme positions, improved the technical performance specifications and long-term stability, and even made provision to allow user-alignment to compensate to some degree for the inevitable effects of valve ageing.

Alternatives

There is a wide variety of compressors on the market at a similar price point to the Phoenix MC, many based on vintage designs and using a range of different technologies. Solid-state options include the Chandler TG1 (based on an EMI design used on such classic albums as Pink Floyd's *DSOTM*), perennial favourite Neve 33609J and the excellent Cranesong STC8. For a little less outlay, the Focusrite Red 3 VCA-based design is also a strong contender, although with less obvious character. The most directly comparable valve design is undoubtedly the Manley Vari-mu Mastering, but also worthy of consideration are interesting options such as the hybrid DW Fearn VT7 and the Tube Tech SMC2B multi-band opto compressor.

Overview

The Phoenix appears to be a pretty straightforward two-channel valve compressor, using the variable-mu (delta-mu) principle, in which a valve is used as the gain-controlling device (as opposed to opto-electronics, or solid-state FETs or VCAs). The design is derived in part from the vintage Altec 436, and is similar in some ways to the classic Fairchild 670 — but it benefits from a lot of bespoke circuit modifications and improvements developed by Vic over the years to bestow modern performance specifications.

Variable-mu designs inherently enjoy a soft-knee characteristic, with a fixed but continuously varying ratio. The harder you drive the input, the more compression is applied, at a progressively higher ratio — in this case from about 1.2:1 at the onset of gain reduction up to about 5:1 by the time it reaches -15dB. There is no hard-limiting function, but there is lots of headroom (up to +24dBu when running into a 10kΩ load).

Like the standard model, the Phoenix MC employs matched pairs of PCC85 valves (9AQ8) to handle the input signal in each channel and to provide the compression, with pairs of ECC81 (12AT7) to drive the outputs. The side-chain control voltage is determined by matched pairs of EB91s (6AL5), but despite the same glass bottles, the MC manages slightly improved specifications compared to the original, with less distortion and a 5dB lower noise-floor.

In terms of the controls, all of the original model's knobs were scaled from 1 to 11 (one

louder than 10, innit?), but on the MC the input and output knobs are stepped, with accurate decibel scale markings, to allow precise gain structure settings. The input gain is scaled from -7 to +20dB (although fully counter-clockwise mutes the input), and the output control is scaled from -12 to +6.5dB.

The attack and release controls are now rotary switches, with six attack settings (4 to 120 ms) and seven release options (40ms to 2.4 seconds). The release-time range is slightly greater than the standard model, which ranges from 60ms to 2.2 seconds. The nature of the side-chain circuit is that the attack and release time-constants interact — hence the panel legends only denote the switch positions, rather than the absolute attack and release times.

The Threshold control still has 11 positions, but this is now switched, with the fully clockwise position being 'Out' (no compression is applied). At the end of each row of rotary controls is a toggle switch that completely bypasses the electronics, wiring the input XLR directly to the output XLR.

Between the two bypass switches, a third toggle links the side-chains of the two channels to prevent wandering of the stereo image, but all of the controls remain active, so they must be set identically for equal reaction to signal peaks in either channel.

The upper case has acquired some neat cooling slots, and once this is removed two pairs of large trimmers allow easy alignment of two aspects of the Phoenix's performance. The first pair (behind the front-panel controls) minimise the low-frequency distortion and phase shift, and would normally only require attention if the signal-path valves are changed. The second pair (behind the meters) adjust the side-chain signal level, and may occasionally need adjusting as the valves age or if the mains voltage changes; the indication for adjustment is that the meters no longer read zero in the absence of an input signal.

In Use

You buy a Thermionic Culture Phoenix for what it does to the sound, plain and simple: this is a compressor in the classic vintage mould, with lots of character and sonic warming, and the almost uncanny ability to help mixes gel in a smooth and flattering way.

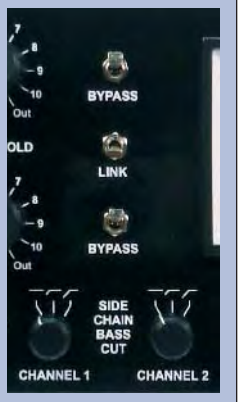
By trading the input gain, threshold and output level controls off against one another, it is possible to produce everything from very clean, fast, transparent compression through to a really rich, harmonically enhanced, meaty compression. Unlike some variable-mu designs I've heard, the Phoenix always sounds expensive, cultured and in control, never unnatural or artificial in any way. It always enhances the sound in a musically satisfying way, and controls transients and programme dynamics sympathetically and with effortless ease. The bandwidth is extended at both ends of the spectrum (within 1dB between 12Hz and 56kHz) and the noise floor is reasonably low, although this unit does benefit from being driven fairly hard to maximise the signal-to-noise ratio.

Operation is very simple, given the limited number of controls to hand. It's a case of setting nominal input and output levels, adjusting the threshold, and maybe tweaking the attack and release times to suit — although I found that I used the first three switch positions of each control most of the time. By juggling the input gain and threshold parameters, a wide range of compression effects can be produced very easily, although sometimes you'll have to back off the output control to keep the peak levels in check.

In a way, the Phoenix is something of a one-trick pony, but that trick is actually very clever and enjoyable, and I never tired of it. The quality of the analogue signal path is superlative, and just running a signal through the box with no compression produces a subtle mellowness and warmth that is the perfect antidote for anyone who fears 'sterile' all-digital recordings. Dialling in any degree of compression helps every mix to bond together to form a cohesive whole with the greatest of ease, and by playing with the controls you can generate a wide range of effects, from incredibly subtle to heavy pumping, and everything in between.

This is a very expensive — and expensive sounding — product, but the make-over will certainly increase the appeal for the mastering fraternity, and perhaps enhance its attraction for those with well-heeled project studios. The newly added side-chain functionality will also appeal. Whether the addition of stepped instead of standard rotary controls, different panel graphics and slightly better technical specs justifies the extra on the price is largely a subjective issue, but if I was looking for a classy-sounding bus compressor to complete a really top-notch recording or mastering studio, I'd make sure to audition this against other candidates — and I'd wager this would win in most cases too! SOS

Phoenix With A Sidechain!



Since I reviewed the Phoenix MC, Thermionic Culture have added an external side-chain input, along with bass-cut controls for each channel, on the front panel. This is a feature that the original Phoenix lacked, and is a welcome addition that goes some way towards justifying the extra cost of the MC model.

SOUND ON SOUND

Thermionic Culture
Phoenix MC **£3231**

pros

- Classy, expensive sound quality.
- Excellent and musical dynamic control.
- Simple controls with repeatable settings.
- Wide range of compression effects.
- External side-chain.

cons

- More expensive than the original
- Needs to be driven hard to maximise signal-to-noise ratio.

summary

A modest but important make-over to the original Phoenix to make it more attractive to mastering houses. Switched controls and more meaningful panel markings enhance operation, while the improved spec, peerless sonics and external side-chain justify the cost. Easy to use, sublime control and character: a treat for 'analogophiles'!

information

£ **Phoenix MC £3231; Phoenix standard version £2696. Prices include VAT.**

W **www.thermionicculture.com**

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