

A Tale of Four Phono Stages

WE ASSESSED FOUR COSTLY PHONO STAGES BACK IN CRITIC VOL1 NO3.
NOW CHRIS BRYANT SEARCHES OUT THE JEWELS AT MUCH LOWER PRICES

Despite the efforts of record companies and mainstream audio manufacturers, vinyl has refused to go away, and in recent years its popularity has actually been growing again. While the software remains essentially the same, specialist hi-fi manufacturers are continuing to make serious strides to improve the art. Since CD became the dominant source format, serious amplifiers and pre-amplifiers have tended to focus on line-level inputs and leave out the phono stage with its very special (and somewhat ill-defined) requirements. Consequently the peculiar requirements of amplifying vinyl pickup cartridges has increasingly been relegated to a separate specialist unit. The Phono Stage (sometimes called a 'head amp'), has become a very important ingredient in any vinyl replay system.

The phono stage fulfils two functions: the first is to amplify the very small level signals that a phono cartridge delivers, for which well sorted and very low noise circuits must be developed. Generally (although there are exceptions), a moving magnet (MM) type cartridge will have a considerably higher output level (typically 5mV) than a moving-coil (MC) cartridge (typically 0.5mV). Consequently the latter needs substantially higher gain (typically 20dB more) to amplify the signal to the same level as that needed for an MM cartridge.

The second function is to perform RIAA equalisation, which is a form of de-emphasis which addresses the pre-emphasis applied to all records during manufacture. Records are cut with the low frequencies compressed and the high frequencies boosted, to minimise hiss and clicks

at high frequencies, and reduce the groove amplitude so that more music can be fitted onto the side of a disc.

De-emphasis accuracy is therefore important to reproduce a flat replay frequency response, and in theory it requires only a simple two-stage filter. Several alternative techniques are employed, with little consensus of what constitutes the best way. Three of units reviewed here use passive filters for the equalisation, which is popular amongst audiophiles but may have the secondary effect of reducing the overload margin. This is fine unless the cartridge has sufficient output (on loud music) to overload the circuitry and cause distortion. As always, for best sound quality, component selection, attention to detail and careful tuning and matching are paramount.

In the early days of hi-fi, even moving magnet cartridges provided a challenge for designers to create low noise circuits free from hiss and hum. This should no longer be a problem, as many current op-amps will be up to the task. However, just because a particular silicon chip is low noise doesn't mean it's going to sound good, and choosing the best sounding solution remains a selection problem for the designer.

Where low-output moving-coil cartridges are concerned, the problems of amplifying those few hundred micro volts requires exceptionally low noise electronics, and until fairly recently input stages and power supplies required very careful design just to achieve this standard. Some integrated circuits of sufficiently low noise now make this rather easier, on paper at least, but whether they achieve sufficient sound quality standards is still debatable. Then again, design details like configuration, gain settings, feedback etcetera often determine their performance. At this point the design of a piece of electronics changes from 'by the book' engineering into an art that incorporates both the technical and the aesthetic attributes in the creation of a musically capable solution.

As is normal for all *CRITIC* tests the review items were run in over as long a period as possible, and specifically left to warm up for a period of at least 24 hours before any serious listening.

CREEK OBH-15

Creek's £220 *OBH-15* phono stage is one of the company's miniature series, and combines separate MM and MC stages. It fits into a tiny aluminium case and comes with an *OBH-Uni* 15W unregulated DC outboard plug-top switch-mode power supply. Inside the *OBH-*

