

Audio-Technica 5040

Audio-Technica chose its 40th anniversary year to launch what might be one of the most unusual microphone designs of recent years. **JON THORNTON** listens in quad.

In stark contrast to other areas of professional audio, microphone manufacturers have repackaged the same basic ideas for decades. Yes, there have been constant improvements in manufacturing processes leading to some quite astonishing leaps in price/performance ratios. Innovations in materials technology and electronics have also helped to improve performance in terms of noise and acoustic interference, and have in part driven a resurgence of ribbon and valve microphone designs. A variety of approaches to moving the analogue to digital conversion process closer to the microphone capsule have gained varying degrees of traction, and the role of the industrial designer has seemingly played an increasingly important role in external appearance, witnessed by some frankly bonkers looking microphones of late.

But despite this, the essential heart of the classic large diaphragm condenser microphone has remained more or less unchanged throughout. With the exception of a couple of Swedish oddities, one or two (for multipattern mics) circular diaphragms are employed. And while different choices of materials, back plate design and tensioning result in a whole variety of sonic characters the size of those diaphragms has stabilised around a relatively narrow range — roughly a 1-inch diameter.

Such Darwinian tendencies usually have clear reasons and in this case they are well understood. While increasing the size of the diaphragm has benefits in increasing signal to noise and sensitivity, it comes with certain drawbacks. These can include a more limited high frequency response, decreased transient response due to the increased diaphragm mass, and a counter-intuitive reduction in sensitivity due to the increased space required between diaphragm and back plate.

With the AT5040 (UKE2499 + VAT), Audio-Technica has come up with a slightly different approach, with the development of four separate rectangular elements whose outputs are summed together to function as a single capsule. The combined surface area of the four elements is just over 1017mm², which is more than double the surface area of a conventional circular 1-inch capsule. It's not an entirely new idea of course — a similar strategy has been employed by at least one other (strangely, also Swedish) manufacturer. And multiple capsules are common for other reasons.

The SoundField microphone, for example also employs four closely spaced capsules, a number of ribbon microphones employ a dual element to increase sensitivity, and I can think of at least



a couple of dynamic microphones such as the AKG D202 that have summed together the outputs of two separate capsules. The rectangular shape is perhaps less controversial — the aforementioned Swedes (Milab and Pearl) have long promoted this approach as a way to spread out diaphragm resonances more evenly, and it clearly makes sense in terms of packing the four elements together in the most space efficient manner.

In the AT5040, each of the four elements is a back electret design, with the back-plates artificially aged to ensure stability and consistency (quadruply important in this case). At one level this might seem a strange decision, as although Audio-Technica has a long track-record in producing back electret capsules, its higher-end large diaphragm offerings have to date featured externally polarised capsules. Audio Technica's literature suggests that the combination of its own experience and enhanced manufacturing processes have negated any performance issues with back electret capsules. There's also the added advantage of being able to dispense with the DC-DC convertor to polarise the capsules, thus ensuring optimum powering for the discrete electronics.

Another innovation here is the way in which the outputs of the four elements are summed together. The four capsules are treated as two pairs, and each pair is connected in series. The output of one pair

delivers the hot side of the differential output, while the other pair delivers the cold side resulting in an increase in sensitivity but with proportionately lower increases in self noise — Audio-Technica quotes a self-noise level of 5dB(A).

Externally, the 5040 looks and feels like one of those microphones that has been hewn rather than manufactured. It's classy looking and understated, and even without knowing the details, it's clear that there's some precision engineering involved. Internal shock-mounting of the capsule assembly and electronics, a solid machined support for the capsule assembly, double bonded dual mesh for the head grille — it all adds up to a reassuringly solid feeling microphone. That feeling extends to the supplied shockmount, which is a massive improvement on Audio-Technica's previous designs. At first glance it looks similar to the snug fitting push-fit approach employed by Brauner but what you actually get here are two curved metal arms that are held in an elastic suspension, which are in turn connected to a metal arc. The inner arms swivel, increasing the front opening to allow the mic to be pushed in, and then close in tightly around the mic body, held in place by an invisible magnetic catch. For added peace of mind there's also a tiny lever that mechanically locks the

arms in place. It looks fabulous, is quick to use, and most importantly performs well.

First impressions on plugging it in are that it's probably got the hottest output level of any mic I've encountered — requiring 10-12dB less gain than anything else I've come across. With a quoted sensitivity of 56mV/Pa that's hardly surprising but when you couple this with large diaphragm area you get a mic that seems extremely susceptible to plosives — and these can produce peak output levels that can really take you by surprise. The rather purist approach to the electronics means that no pad or high pass filter are provided but it does seem that the provision of the HPF at least would be beneficial here.

Off-axis response is reasonably smooth sounding, but quite steep in terms of attenuation of frequencies above 5 or 6kHz, even moving only slightly off-axis. Move in close and there's a definite proximity bump, but its effect is markedly different from the AT4050 set up as a comparator. While the 4050 delivers a fairly broad, shelving bass tip from about 150Hz, the 5040 sounds more like a gentle peak in the bottom octave. Perhaps this perception is due to the fact that there's a bit of a bump down there even at longer working distances, but the net effect is one of richness and depth, without any clouding of low mid detail.

The 5040 is marketed primarily as a vocal microphone so that's what it was employed for, with four very different sounding vocalists (two male, two female). A couple of characteristics stood out across all four voices. The first was that it's one of those microphones that really digs into the character of a voice. You hear nuance and detail in a way that focuses your attention on performance rather than sonics. There's a very gentle presence lift in comparison with the 4050, but nothing that sounds overly voiced. Coupled with the low frequency weight, especially working close-up, and the overall sound is thick, but open and detailed. The second is that it works equally well across a range of voices and that's unusual in my experience. Matching microphones with singers is something I take an absurd amount of pleasure in, and in review situations like this I'd be happy to find a good match with two out of four. And while the 5040 wasn't quite a full house, three out of four is very good form.

The 5040 is the first of an intended 50 series flagship studio range from Audio-Technica. Price wise, it seems that they might be starting at the top and working down but the manufacturing costs of such a design were always going to be high. As a benchmark for the new range, they've set the bar pretty high. ■

PROS

Rich and detailed, open sound; as a vocal mic performs well on a wide range of voices; extremely quiet; impressive signal to noise; extremely well built.

CONS

No HPF; seems susceptible to plosives.

Contact

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