

BEE Stings



NAD C315BEE (£180)

Its design may have passed on decades ago, but the spirit of the legendary 3020 integrated amp lives on in this nouveau NAD



Tested by Ken Kessler

Every time NAD launches a budget integrated amplifier, it bills it as 'the new NAD 3020'. The 3020 was, probably, the most successful entry-level integrated amp of all-time. It started more Brits on the hi-fi path than anything after Rogers or Leak, and swung US tastes from AM/FM receivers into integrations. Thus it's no surprise NAD wants the world to regard the C315BEE as the heir to that particular throne. But to crown it 'the NAD 3020 of the Noughties' is to insult the C315BEE, which is better in every way imaginable, including value.

A JADED HISTORY LESSON

Numbers show that the NAD 3020 may be the best-selling integrated amplifier in hi-fi history. NAD's founder, Marty Borish, believes they sold 1.3 million units; of those, 500,000 were sold in Great Britain. Certainly it was the most successful product in the UK at the time, from its 1978 introduction at £69.99, and it transformed what was then just another hi-fi company, originally called 'New Acoustic Dimension', into one of the most influential brands of the 1980s and 1990s. And the phenomenon started here, in the UK.

In my humble opinion, quite how a gutless amplifier like the NAD 3020 became the Heinz Ketchup of audio is easy to understand. When it was launched, the UK market was in the thrall of the press, which consisted of malleable journalists who would swallow any hype thrown at them. Equally, NAD was distributed by Hi-Fi Markets, a then-omnipotent aggregate of independent retailers. Between them, the timing was as perfect as the iPod's.

Reality was quite different. The sound quality of the NAD 3020 wasn't 'superior' to far better budget amps from Trio, Marantz or Sansui. Instead, it was different simply by virtue of being innocuous – even without NAD's 'soft clipping' in play. As a result, it sounded euphonic next to far more accurate rivals, softer even than aged valves amps.

Its input sockets were feeble and easy to snap off,



SPOTLIGHT ON POWERDRIVE-S

NAD's previous integrated amplifiers have employed a proprietary form of Class G technology, a 'lifter' circuit that smooths the transition from its standard power supply to a higher voltage rail (typically about x1.4) to accommodate brief musical peaks. This 'Power Envelope' design has been supplanted by 'PowerDrive' in costlier integrated models like the C325BEE but still requires a combination of extra op-amps, thyristors, transistors and other passive components that would make the concept untenable for an entry-level model like the C315BEE. So, for PowerDrive-S, out goes the complex current-sensing circuitry to be replaced by two quartz-halogen light bulbs added in series with the transformer's higher-voltage secondary winding. For short bursts up to 100msec the low (<1ohm) resistance of the bulb's coil allows sufficient current to flow but, as the coil heats up, its increasing series-resistance limits the throughput of this second supply and, therefore, the headroom available to the amplifier. Simple, but very effective! PM



AUDIO FILE

Stereo integrated amplifier with five line-level inputs, one tape loop and remote control. Rated at 40W/8ohm

Price: £180

Made by: NAD Electronics International

Distributed by: Armour Home Electronics

Telephone: 01279 501111

Web: www.nadelectronics.com

ABOVE: Bass, treble and balance controls – just like the original NAD 3020 but with the advantage of a tone defeat option and remotely-controlled, motorised volume

the buttons had a habit of flying across the room, but the scribblers worshipped the 3020 as a stepping-stone along the path to the more costly Linn-Naim system. In 2007, because people have such a weak grasp of history, the lowly NAD 3020 still commands £70 or so on eBay.

BEE IN HIS BONNET

NAD's Director of Advanced Development Bjorn Eric Edvardsen (whose initials have cursed the C315BEE with a silly model number) couldn't avoid having the 3020 in the back of his mind when faced with the challenge of designing a new super-budget-amp. According to NAD, his brief included the need to 'maintain the same performance specification as our more expensive amplifiers while removing cost.'

Greg Stidsen, Director of Product Development, explains that, 'While we had to make some compromises compared to the C325BEE – CMOS input

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switching instead of reed relay, simplified PowerDrive circuit, etc – the basic performance under most conditions is equal.' What remains is terrifyingly good: even the C325BEE had better watch its ass.

NOT THE NAD 3020

Fed by the Marantz CD12/DA12 CD player via Kimber cables, with Yter delivering the signal to PMC DB1+, Sonus faber Guarneri or Rogers LS3/5A speaker systems, the C315BEE's performance continually surprised and enchanted, especially the way it caressed the LS3/5As. Two characteristics marked this stand-out performance, the most obvious being its real-world power. It could make the LS3/5As crack, but best of all, it could genuinely access the full range of the Guarneri. This is no mean feat: I've heard far costlier, more powerful amplifiers fail to drive the Italian masterwork. ☺

BELOW: Single pairs of 4mm speaker outputs are joined by five line inputs and one tape loop. The 'Disc' input (not MM/MC) is disabled if a 3.5mm jack is inserted into the front socket marked 'MP'

When fed Keb' Mo's 'For What It's Worth', the richness and attack of the bass had the same substance I expect of and experienced not long before with massive Krells. While there's no substitute for wattage, the NAD certainly has the right stuff for normal rooms, through probably any speaker in its price class. It was only when hammering the Guarneris that power became an issue.

I am not saying that NAD has defied all reason and come up with a dreadnought of an amplifier for under £200, able to massacre £6000-plus powerhouses. Close scrutiny reveals a slight restraint in the absolute dynamic swings, the lowest reaches of the bass will not cause the room to quake and massive drums will reveal its absolute limits. But neither is it so painfully obvious at sane listening levels as to undermine the way this amplifier excels at its price level.



Far more important is the other characteristic that turned me into a champion of this amplifier: a mid-band so lifelike that the textures of vocals, its intimations of warmth, a sort of realistic sibilance presented in the correct context so authentic that even the LS3/5As could not embarrass it. Gravel-throated Johnny Cash at San Quentin, singing with his crystal-clear-voiced wife June Carter Cash, benefitted from the amplifier's ability to retain their voices' characteristics even in tandem, as tricky a situation to resolve as any in music playback. To confirm this, I pulled out Lou Rawls' duets with Dianne Reeves, and Louis Armstrong with Ella Fitzgerald to see if these juxtapositions enjoyed the same respectful handling. And so they did: perfect balance.

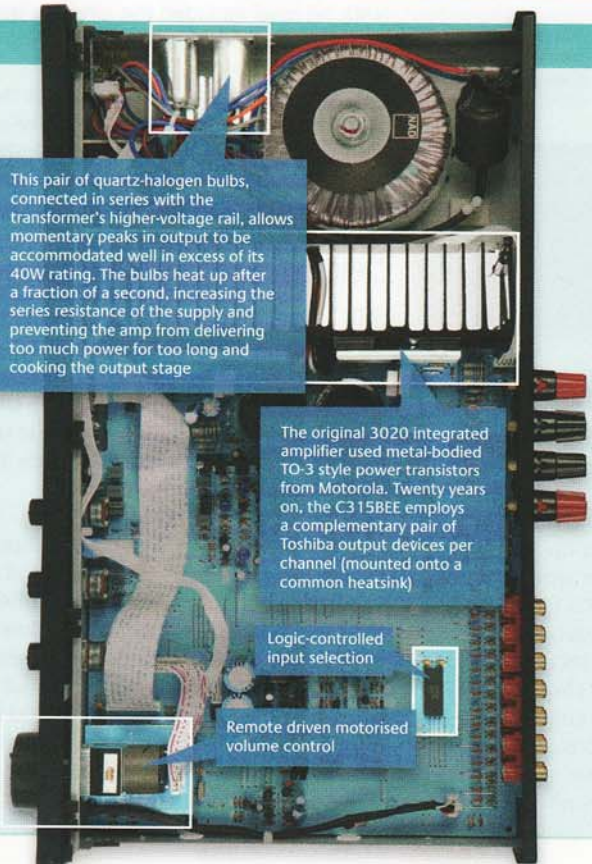
TIME FOR THE CRUNCH

Forgive my use of politically incorrect stereotypes, but one might posit that most £180 amps end up with students or those newly added to the work force, not ordinarily fans of lounge-style vocals. The good news? The '315 fears no genre. From Prince to Velvet Revolver to the White Stripes, the NAD could deliver hot transients and the requisite crunch. Headroom? In abundance, provide you use the '315 with real-world speaker loads. While there are occasional hints of top-end restraint – shades of the accursed '3020 – the '315 is rarely less than commanding.

Which is, I suppose, a back-handed compliment. Saying that a system can resolve Rage Against the Machine is like saying you have a fine crystal goblet that also does justice to Red Bull. An area where the old '3020 won the hearts of the many was the way it rarely sounded putridly, teeth-jarringly bad. Boring, weak, cloudy – perhaps. But it never exactly drove you from the room, probably because it was so bland: it's hard to object violently to a meringue. The '315 possesses this same ability to seem continuously euphonic, but not by acting like the audio equivalent of air-brushing out

hi-finews
LAB RESULTS

NAD
C315BEE INTEGRATED AMP / £180



This pair of quartz-halogen bulbs, connected in series with the transformer's higher-voltage rail, allows momentary peaks in output to be accommodated well in excess of its 40W rating. The bulbs heat up after a fraction of a second, increasing the series resistance of the supply and preventing the amp from delivering too much power for too long and cooking the output stage

The original 3020 integrated amplifier used metal-bodied TO-3 style power transistors from Motorola. Twenty years on, the C315BEE employs a complementary pair of Toshiba output devices per channel (mounted onto a common heatsink)

Logic-controlled input selection

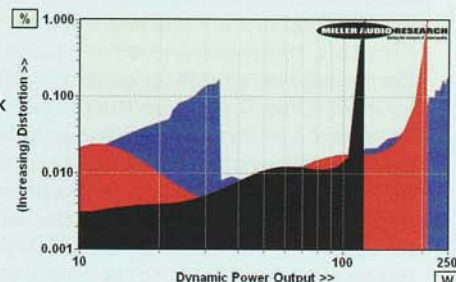
Remote driven motorised volume control

HI-FI NEWS LAB REPORT

If NAD's evergreen budget amplifiers have always punched well above their weight, then this little C315BEE model both floats like a butterfly and stings like a prehistoric hornet. Sure enough the 40W rating is twice the 20W specification of its 3020 forefather, but it actually achieves closer to 2x50W/8ohm in practice, rising to 2x75W into 4ohm. But these are not massive figures and certainly not sufficient to qualify Ken's subjective impressions.

The fact that the C315BEE sounds rather louder and more capable than perhaps it should is tied directly to the substantial increase in power output achieved under momentary or dynamic conditions. Over the 10msec period used in our tests (equivalent to 10 cycles of a 1kHz sinewave), the C315BEE delivered a full 2x120W/8ohm, representing a +3.8dB uplift in power at less than 1% distortion. This increased still further to 215W and 260W into lower

RIGHT:
Dynamic power output vs 8ohm (black trace), 4ohm (red) and 2ohm (blue) speaker load impedances



zits from a photo. The '315 does not obscure textures, dynamics, tonal hues. It does not homogenise.

Witness Mountain's *Masters Of War* (Big Rack Records), a US import by Leslie West's still-active powerhouse band, almost 40 years on. West has delivered the weirdest Bob Dylan homage yet, everything from acoustic blues to HM interpretations of Dylan's early protest classics. The set's varying textures, including fuzz-tone guitar and the sort of electro-acoustic picking used by Jimmy Page during Led Zep's quieter moments, serve up stunning contrasts that attest to the '315's speed, clarity, coherence and attack – four qualities missing from its over-rated antecedent.

AXE-WELDING GRACE

West is possibly the most underrated guitarist of the rock era, remembered mainly for the riff from 'Mississippi Queen'. His mastery of everything from raw blues to heavy metal to intricate finger-picking warrants placement alongside Randy California and Jeff

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Beck. He swings from delicate to thunderous, subtle to in-ye-face, within a single phrase. The NAD took his axe-wielding in its stride, sliding from cool-to-hot, mellow-to-acidic, with utter grace.

Best of all, it captured the rasp of West's anguished vocals, which I first heard live in 1966 when he was with the Vagrants. It bears a rawness possessed by the most tormented of bluesmen, powerful enough to rival an amplified instrument. The NAD dared not contain it.

Amusingly, the dumbest number on the CD – Corky Laing's drum-and-vocal 'Like A Rolling Stone' – is possibly



ABOVE: Input selection and volume are all addressed by this handy little remote control. The play, pause and track skip keys, however, are destined for NAD's companion CD player

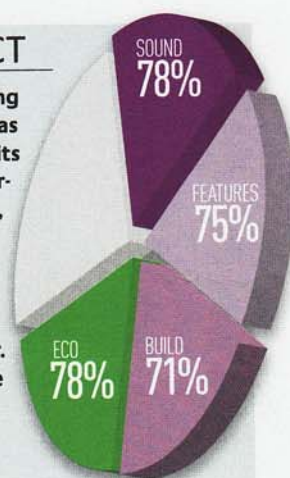
the best demo track: the NAD keeps the rap-like delivery of the lyrics perfectly separated from the taut, dry percussion. Even more revealing of the NAD's merits, via this track, is the spatial presentation, deeper, wider and more 'real' than any soundstage the '3020 ever attempted to re-recreate.

It's this which makes the C315BEE so rewarding, in true high-end form. It allows the listener to 'get inside the music', involved with an intimacy denied to most components of sub-£200 price tags. For some, detail is of the utmost importance, for others tonal neutrality. And if you adore mono, then soundstage recreation means little. But when you hear how 'big' the C315BEE can sound – dimensions rather than mere level – you will appreciate how its performance defies its price.

What else would I like to see? An 'SE' version, with IEC mains socket and NAD's phono stage built in, for, say £249. And what would that do? Probably destroy the market for all amps south of £500. But, damn, suddenly there would be hordes of very happy, fiscally-challenged music lovers out there. ☺

HI-FI NEWS VERDICT

The C315BEE is a mind-boggling bargain, in real terms costing as little as one-third the price of its ancestor, the screamingly over-rated NAD 3020. Furthermore, the '315 – unlike a NAD 3020 in your wildest dreams – will drive BBC LS3/5As to serious listening levels. That makes it one helluva 'budget' amplifier. So do what I'm doing: buy one even if you don't need it. You never can tell when it might come in handy.



40hm and 20hm loads, respectively. The amplifier features some very sensitive protection circuitry that shuts it down into loads below 20hm, for fear of driving an accidental short-circuit.

So where does the transition from the 'continuous' secondary winding of the power transformer to the higher voltage secondary take place? This is clearly illustrated by the distortion versus power output graph (below, left) which shows an abrupt drop in distortion from 0.016% to 0.008% at about 34W/20hm (blue infill). This would be at about 8V or 4A into this

load. In practice, the C315BEE has a momentary current maximum of about 11.5A at <1% THD – not bad for a 'mere' 40-watter!

Naturally, there's more to a proficient amplifier than a healthy dynamic headroom. Fortunately, the C315BEE also benefits from a consistently low distortion (<0.009% from 20Hz-20kHz) and a very wide 94dB A-wtd S/N ratio. The amplifier's 0.038ohm output impedance is low enough but, as Keith revealed in our headphone tests last month, the 68ohm source impedance of its

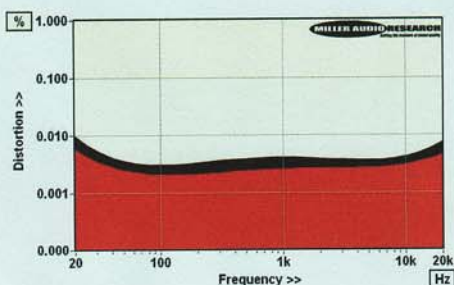
'phone socket will be too high for low impedance designs.

In this instance, the frequency response of the amplifier is also influenced by the buffering, and therefore, the position of the volume control. At 12 o'clock, the response is utterly flat from 20Hz-100kHz, but at both 10 o'clock and 3 o'clock there's a mild HF roll-off amounting to some -1.3dB at 100kHz. The impact within the audio band is very mild, but it might be audible, albeit indirectly, with CD players that kick-out high levels of ultrasonic noise.

As an aside, I am bound to point out that the C315BEE is equipped with a 'standby' power switch. However, as there's no difference in its 22W power consumption whether in 'standby mode' or switched on and idling, I'd either leave it on or switch it off altogether from the back. Incidentally, power consumption increases to 185W at its rated 40W output which is not terribly efficient by modern standards.

A full QC Suite Report for the NAD C315BEE amplifier is available to download by following the links on www.hifinews.co.uk. PM

RIGHT: Distortion versus frequency at 10W/80hm for both left (black infill) and red (right infill) channels



HI-FI NEWS SPECIFICATIONS

Power Output, 8/4ohm (<1% THD)	50W/75W
Dynamic Power, 8/4/2ohm	120W/215W/260W
Output Impedance (20Hz-20kHz)	0.038-0.067ohm
Frequency Response (20Hz-100kHz)	-0.09dB to +0.04dB
Input Sensitivity (for 0dBW/40W)	31mV/197mV
A-wtd S/N ratio (for 0dBW/full output)	94.2dB/110.5dB
Distortion (10W/80hm, 20Hz-20kHz)	0.003-0.009%