



Bryston BP-17³ preamplifier & 3B³ stereo power amplifier

SUPPLIED TO DRIVE THE PMC MB2_{SE} SPEAKERS FOR REVIEW, THIS PRE/POWER COMBINATION FROM THE CANADIAN MANUFACTURER GAVE KEVIN FISKE CONSIDERABLE CAUSE FOR THOUGHT

Blindsided. There is no other word that better describes how I felt on hearing Bryston's BP-17³ and 3B³ pre-power pairing for the first time. This Canadian built combination was loaned by Bryston's UK distributor, the speaker manufacturer PMC, as a fall-back lest my own 211 tube amplifier failed to drive adequately the review pair of PMC MB2_{se} speakers (the review of which you have probably just read).

In the event this solid-state current *was* required. My tubes sounded lovely as always, but simply ran out of grunt when asked to make the MB2s go loud. I decided enough was enough, disconnected the tube amp and put the Bryston solid state combination in its place. The change took all of five minutes, but it overturned 20 years of Fiske world view.

Readers smarter than me will be thinking to themselves: "Huh. Twenty years? He really should have got out more." I must bow my head in humility, but I tender some mitigation. In 1999 I bought a pair of Bryston 7B monoblocks based a strong published review. However, while they had been intended as

my forever amplifiers, the 7Bs were supplanted in short order in my system by Class A single-ended tubes. Many buyers and reviewers loved that generation of the 7B for its 600 Watts into eight Ohms, but I found them to sound grainy, hard, and bright. In fairness, many other manufacturers' Class B' amplifiers of the time were guilty of the same sins.

And so, for me, it was Class A from then on. I have lived with the side 'benefit' of predominantly second order harmonic distortion, and the relative lack of room-filling power, because, done well, and to my ears, Class A has a sweet sonic rightness that seems to get closer to a natural sound. Perhaps

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now it might be understood why, as this, the latest generation of Bryston amps cluttered my listening room floor awaiting their turn in the system, I was not turning cartwheels of anticipatory excitement?

Bryston's development lab had not been sitting on its hands for the past two decades. That became clear when, after adding the BP-17³ and 3B³ – otherwise known as the 'Cubed' models – to my system, the first few bars of the first disc had me boggling in disbelief at what I was hearing, then grabbing the laptop in confident expectation of Googling that Bryston had succumbed to the lure of Class A technology. Bryston's Cubed series of amplifiers is indeed a different creature to what was available from the manufacturer in the late 1990s. But it is still class A/B, and not my preferred pure Class A.

The sonic whole of what we hear is the sum of many parts. Bryston isn't alone in favouring genuine dual-mono design using a single power socket, with a toroidal mains transformer and power supply per channel, and employing circuit layouts with deliberately short signal paths. Like every manufacturer pitching at the high end, Bryston also pays attention to the usual list of test-bench must-haves including low harmonic distortion, high slew rate and maximised signal to noise ratios. But these days none of that is exceptional, and anyway measurements rarely tell the whole story. Two contending amplifier designs with identical specifications may sound quite different to each other.

Smarts, cubed

Bryston has evidently used some serious smarts with the Cubed series to create what may well be one of the sonic bargains of our era. Those smarts the company admits to are in the input stages of both the pre- and power amplifiers in the Cubed series, and also in the current (as opposed to voltage) amplification section of the power amplifiers. One technology is patented, the other not; one new, one some 36 years old.

Commentators have acknowledged Bryston amplifier qualities of grunt and neutrality, but sometimes criticised the brand's sound for a lack of 'openness' and resolution. Lately, we are told that Romanian-born engineer and physicist Dr. Ioan Alexandru Salomie collaborated with Bryston's chief designer Chris Russell to create a new design of amplifier input buffer that has greater immunity to RFI, additionally reducing overall noise and distortion to less than 0.001% per cent.

It employs no less than 12 active devices for that first 6 dB of amplification and, while I am not

equipped to critique the patented Salomie input stage from an engineering perspective, I am able to report that what I heard from the BP-17³ and 3B³ amplification was an impressive level of out-of-the-blackness micro-dynamic resolving power.

The amplification stage dealing with signal current for the B series of power amplifiers is Bryston's proprietary solution for minimising the classic Class B issue of crossover distortion. It may surprise those who have escaped this syndrome, but some early solid state amplifiers with audible crossover distortion gave some people banging headaches and, in extremis, nausea too. *Mal de audio*. Who'd have thought it?

It is standard design practice in Class B circuits to apply a modest amount of bias to active devices to mitigate crossover distortion in its primary form. Strictly speaking the amplifier is then an A/B device (just), but is still a way from 'enriched' A/B designs where even more bias is applied so that the amplifier actually runs in Class A up to a significant output before defaulting to B for the upper reaches of its power envelope. As an example, Pass Labs' excellent XA 30.8 runs in Class A up to 30 Watts before defaulting to Class B for a further 30 for a total of 60 Watts.

Even with primary crossover distortion tamed, there's still the problem of its secondary issue, created when the capacitance seen by transistors in a gain stage reduces the slew rate, with delay and potential non-linear behaviour at the point of crossover. Bryston's topology, which it calls *Quad Complementary*, takes the classic Darlington configuration in which each transistor is fed by the emitter of the previous device, and modifies it so that high speed PNP and NPN transistors work in series in each phase. The complementary characteristics of the upper and lower halves of this output configuration are almost ideally matched because the gain and bandwidth curves are the aggregate of the NPN and PNP type transistors that comprise each half, also the turn on voltage of the output devices.

Not only is it much easier this way to match pairs of transistors to achieve virtually zero crossover distortion, it also confers a factor of four reduction in input capacitance which reduces crossover related high frequency distortion, and which improves transient recovery and bandwidth.

Bryston's marketing department has made *Quad Complementary* a key selling point of the Cubed series, claiming that it offers the benign harmonic distribution of Class A, but with lower levels of distortion and better power consumption. I therefore assumed it to be a new topology. It is not. When I enquired, Bryston's Chris Russell told me: "We started experimenting with this circuitry



in the early '80s; we had to negotiate with our output transistor supplier to test and match for Beta between the NPN and PNP devices because they both get the same base current. Thus, to carry the same output current the two devices needed to be cross-matched."

Russell confirmed that Quad Complementary has been a standard feature of Bryston power amplifiers since 1984. As he notes, it adds some degree of complexity and cost; the matching of devices takes time, and because the normal 'Vbe' multiplier bias string is not accurate enough to track the several stages of 'distributed current-with-voltage-gain' that characterises this design, bias tracking thermal links are employed.

The 3B³ power amplifier is the second up in a family of Bryston stereo power amplifiers that spans from the 135 W 2.5B³ to the 1 kW 28B (both outputs into eight Ohms). It delivers 200 Watts into eight Ohms, 300 into four, and can be bridged using a rear-panel toggle for 400 Watts into eight Ohms. Another rear panel toggle allows a choice of 23 or 29 dB gain, and a third selects balanced or single-ended operation. Also on the rear panel is a remote power-on terminal to enable on/standby control by a BP-17 pre, or other device. Manual switch-on is via the front-panel press switch. Two LEDs indicate channel status; steady red during the soft-start sequence, turning to green once stable operation is achieved. Apparently they flash red to indicate clipping, but I did not drive my system loud enough with the review PMCs to explore this feature.

The BP-17³ preamplifier is a Class A (as most are) solid-state device with four single-ended and two

balanced inputs, plus a record input. As a line stage only, as in this review, it draws a constant 32 Watts. It can also be fitted with internal moving magnet phono and DAC boards for an additional cost. An internal mm/mc phono board is an option. The BP-17³ offers pass-through mode as well as a balance control, mute, a headphone amplifier socket (6.35 mm jack) with an output impedance of 50 Ohms, and remote DC trigger connection for two attached devices. The BP-17³'s operational status can be configured manually, through an optional IR control, or via a rear-panel RS232 DB9 female port. The input overload threshold is 6 Volts single-ended and 12 V balanced.

Sound quality

Twenty years is a very long time in audio memory terms, but I am confident that I did not hear what I term Class A naturalness from the pair of 7Bs that I owned for that short time back in 1999. As noted earlier, the Quad Complementary output stage technology had by then already been a feature of Bryston amplifiers for 15 years. Until now I'd therefore have joined with some other commentators in putting Bryston's products in the 'solid' but musically 'also ran' corner of the room.

Not any longer. Either Bryston has made tweaks elsewhere and isn't saying, or all the credit for the difference in sound quality between 1999s amplifiers and the current, Cubed series, is due to the new input stage. The BP-17³ and 3B³ – together and individually – have serious high-end sonic credentials, nailing in generous measure all four of the sonic pillars of dynamic contrast, tonality, timing

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Specifications

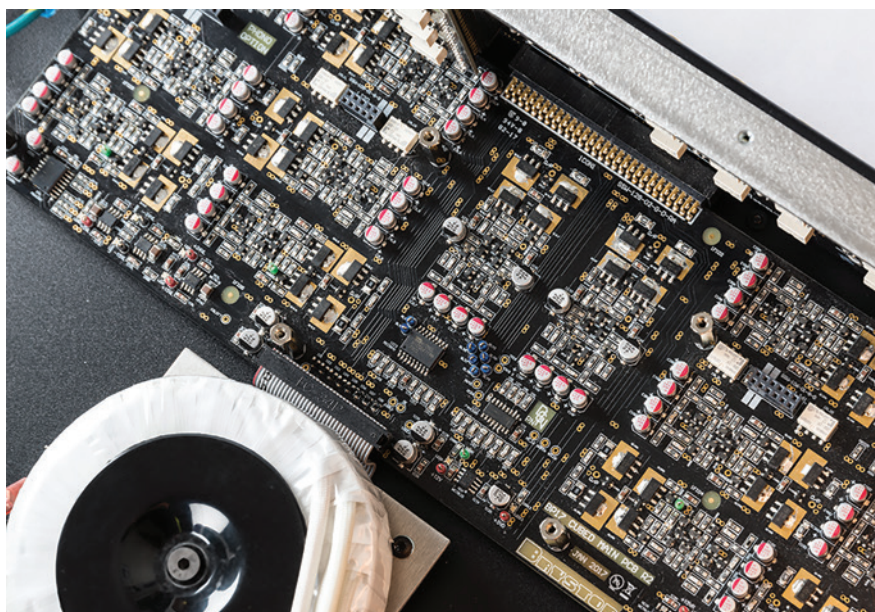
Bryston BP-17³

Type	Preamplifier
Price	
Inputs	4 line RCA, 2 Line XLR. mm phono option mm/mc phono option DAC option
Outputs	Preamp on RCA and XLR, line out on RCA and XLR
Dimensions (WxHxD)	43x11.6x33cm

Bryston 3B³

Type	Power amplifier
Price	
Inputs	RCA and XLR, with switchable gain
Power output	200Wpc into 8ohms, 300Wpc into 4 ohms
Dimensions (WxHxD)	43.2x13.3x22.9cm

bryston.com
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and dynamic energy. Driving the powerful PMC MB2se monitors, they produced a musically natural and confident performance that put listeners firmly in touch with the emotional dimension of well recorded material. Are there amplifiers out there worthy of better still subjective marks for dynamic contrast, timing, tonal veracity and dynamic energy? Of course, but at what; twice, four times the price?

No need to go loud

PMC's MB2se speakers don't need to be played loud in order to deliver the sensation of dynamic energy. Even at modest loudness they put the musical performance in the room space, rather than pasting it to the front wall like so much detailed but uninvolved wallpaper. The Bryston pairing is from the same mould, engineered to deliver dynamic power at ultra-low distortion right from the first watt or so. Little surprise, then, that what I experienced was a notable performance consistency. Whether it was during the day when the volume control could be advanced without complaint from the rest of the household, or late at night when the setting had to be very low indeed, whatever I played was presented with the span and proportion of bandwidth pretty much intact.

Measured by *Stereophile* shortly after launch in 2017, the BP-17³ preamp posted benchmark figures. No Audio Precision test set to hand, I did the highly scientific by-ear test, by-passing the BP-17³, plugging my DAC straight into the 3B³, and playing a quiet track. I then connected the DAC to the BP-17³ using the RCA sockets, used a dB meter to set the volume control for the same SPL as before and played the track again. The preamp seemingly added nothing, took nothing away. It is impressively neutral, vanishingly quiet, and preserves more or

less completely whatever sound staging, tonal density and dynamics the output stage of the connected audio source device is capable of.

The 3B Cubed power amp is also commendably neutral, adding no obvious colouration and sounding, well, just *natural*. Apart from a 30 second trial on high gain, I ran it permanently on its lower gain setting: the volume available through the PMC MB2s was more than sufficient in my four by six metre room while on the higher gain setting I fancy that I heard a *very slight* increase in grain, and a decrease in relaxed naturalness.

The BP-17³/3B³ performance has real substance: no cardboard cut-outs here; instead, a properly convincing representation of the 3D complexity of the human voice, and of plucked, drawn, struck and blown contrivances. Playing a large variety of material from baroque and symphonic through country to prog rock, I noted the absence of artificiality, of hardness, brittleness or glare, call it what you will. Along with its neutrality and high level of transparency, the Bryston Cubed combination impressed with its impeccable timing, a subjectively wide bandwidth and agreeable dynamic expression.

Bass-right

Bryston's Chris Russell correctly understands that these qualities are absolutely key to creating the illusion of performance, and his insight is plainly audible in the Cubed series, right across the audio band. I heard it when Sutherland or Domingo really let go and dug deep from their diaphragms, where there was no compression, no sense of the crescendo being capped. Likewise, at the lower end of the audio band the Brystons are equally powerful and free-flowing.

Perhaps controversially, I do not consider them the bass-masters that some reviewers have suggested. What they do is to simply carry on transcribing recorded energy after other amps have hit their stops. Some amps are *bass-light*, but the Brystons are *bass-right*: in the lower reaches of the audio band, as in the higher regions, they have marked reserves of dynamic energy and finesse.

The BP-17³ and 3B³ deliver real sonic value, in my view. And that is not to damn them with faint praise. In terms of measured performance they give little to nothing away to many more costly alternatives, and they combine that technical accomplishment with an ability to preserve and transcribe in very good measure the organic, emotional content of recordings.

Here we have solid engineering by a design team informed by a profoundly nuanced understanding of what it takes to reproduce music in a convincingly natural way.