

LARRY GREENHILL

# Bryston BP-17<sup>3</sup>

## LINE PREAMPLIFIER

Each equipment report in *Stereophile* focuses on a single audio component. When listening to a component for review, I leave unchanged all other components in my audio system. Other *Stereophile* reviewers experiment with different interconnects, speaker cables, power cords, or stands. As I found while reviewing Bryston's BP-17<sup>3</sup> (Cubed) preamplifier, being flexible has its rewards.

### Description

My first lesson in flexibility was learning what Bryston means by "Cubed."<sup>1</sup> Jim Tanner, Bryston's VP of sales and marketing, explained that all their Cubed models employ an array of 12 active devices for the first 6dB of gain. Developed by the late Dr. Ioan Alexandru Salomie, this array acts as "a super-linear" input buffer to filter out audio- and radio-frequency noise, particularly anomalies that originate in the power line, reducing the overall noise and distortion to less than 0.001%.

The BP-17<sup>3</sup>'s base price of \$3995 positions it between two other line-level preamps from Bryston: the entry-level BP-6 (\$3295) and the flagship BP-26 with MPS-2 power supply (\$5390). The BP-17<sup>3</sup> is 2.30" taller and 2" deeper than the two-chassis BP-26, and improves on the original BP-17 with an extra pair each of XLR and RCA outputs.

The BP-17<sup>3</sup> is entirely solid-state. It has seven inputs—five



single-ended (RCA), two balanced (XLR)—as well as balanced and single-ended outputs. There are pushbuttons on its front panel for selecting inputs, Power, Mute, Bypass, Record, and Balance. Also on the front panel are an IR receiver, a headphone output jack, and a large volume knob.

1 In Bryston's model nomenclature, the product's model number (eg, 4B) remains the same over the product's lifespan (the original 4B came out in 1978), but each new version gets a new modifier (eg, 4BST, 4B<sup>2</sup>, 4B<sup>3</sup>). Bryston's vice-president of marketing, James Tanner, explained: "Things began with 'NRB', which we started using when we introduced a new series of amplifiers. The shipper wanted to make sure he did not mix up the older stock with the newer, so he wrote 'NRB' on the new retail boxes and 'NPB' on the new pro boxes. The next batch of amplifiers was named for designer Stuart Taylor ('ST'). This later became 'SST' (Super Stuart Taylor). SST was shortened to 'squared,' so the 4B amplifier was renamed the '4B<sup>2</sup>.' The naming of our latest group of products, with the Salomie input circuit, used 'Cubed' as a natural progression. What's next? 'Quattro!'"

## SPECIFICATIONS

**Description** Solid-state stereo preamplifier with remote control & headphone amplifier. Inputs: 4 single-ended (RCA), 1 single-ended Record (RCA), 2 balanced (XLR). Input impedance: 6.5k ohms (RCA), 4.5k ohms (XLR, inverting and non-inverting). Outputs: 1 single-ended variable (RCA), 1 single-ended fixed (RCA), 2 pairs balanced (XLR), 1 headphone (1/4", 6.35mm TRS). Control

connectors: female DB9 for full two-way RS-232 (RJ12) suite; two 3.5mm mono (TS) miniplug DC triggers (12V); one auxiliary IR input with external IR receiver terminated with 3.5mm plug. Output impedance: not specified. Maximum output level: not specified. Line-stage gain: variable, RCA/XLR, 12/18dB; fixed, RCA in/out, 0dB; fixed, XLR in/out, 6dB. Frequency response: 20Hz–20kHz, ±0.05dB.

THD+N (20Hz–20kHz, 1V RMS for XLR): <0.0025%. IMD (60Hz, 7kHz in 4:1 ratio): <0.0003%. Signal/noise: >102dB (RCA), >108dB (XLR). Power consumption: 2W standby, 32W idle, 32W full power. **Dimensions** 17" (430mm) or 19" (483mm) W by 4.55" (116mm) H by 13" (330mm) D. Weight: 11 lbs (5kg). **Finishes** Black, Silver. **Serial number of unit reviewed** 000042.

**Prices** \$3995; BR2 remote control, \$375; MM and DAC modules, \$750 each; TF-2 step-up transformer, \$1500. Approximate number of dealers: 295. Warranty: 20 years, analog circuits & components; 5 years, digital components. **Manufacturer** Bryston Limited, 677 Neal Drive, Peterborough, Ontario K9J 6X7, Canada. Tel: (705) 742-5325. Web: www.bryston.com.

The rear panel is divided into four sections: Outputs, containing two balanced XLRs—optionally, one of these can be configured as fixed-output, for use with Bryston’s BHA-1 or any other balanced-input headphone amplifier—a fixed-level RCA, and variable preamplifier; Inputs, comprising two pairs of balanced XLRs, five pairs of single-ended RCAs that, with the optional modules, can be used as analog or digital inputs, Control, which includes two trigger outputs, an auxiliary IR input jack, and an RS-232 jack; and an IEC inlet for the detachable power cord. Centered at the top of the rear panel is a knurled grounding post for a turntable.

The BP-17<sup>3</sup>’s motherboard takes up the entire width and half the depth of the interior, though its front half is unoccupied save for a beefy toroidal power transformer and the power-supply components, to isolate them from the audio circuits on the rear panel. Along the inside of the rear panel, several vertical daughterboards are plugged into the motherboard to handle input and output functions. The components of these wave-soldered printed-circuit boards are surface-mounted and labeled.

The BP-17<sup>3</sup> can be operated using Bryston’s BR2 universal remote-control handset, which costs an additional \$375. It has 34 pushbuttons in eight rows and worked beautifully, controlling all functions available from the front panel and more, including phase and unity bypass for home-theater mode.

Like the remote, many of the BP-17<sup>3</sup>’s desirable features are available only à la carte. The bad news is that this makes the base price deceptively low; the good news is that you can custom-design a BP-17<sup>3</sup> to have only the features you actually want, without paying for those you don’t. Modules for an internal D/A converter or moving-magnet phono stage cost \$750 each. The digital D/A module adds four digital inputs; the phono module works *only* for MM cartridges.<sup>2</sup>

**Setup**

Installation was simple. I placed the BP-17<sup>3</sup> atop my Salamander Designs Synergy S-40 Open Rack system, used its XLR jacks to make balanced connections from my Bryston BDA-3 DAC and to the Constellation Stereo 1.0 power amplifier, and its RCA jacks for connections from my Day-Sequerra 25th Anniversary FM Reference tuner and Sutherland Engineering Vibe phono preamplifier. I kept track of the numbers of the input jacks on the rear panel, as these match the labels under the corresponding buttons on the front panel. I plugged one end of the BP-17<sup>3</sup>’s power cord into its rear-panel inlet, and the other into my Torus Power RM40 line conditioner. I initially connected the ground lead of my Linn LP12 turntable to the ground post on the Bryston, but detached it when it produced lots of hum. I used no decoupling feet, isolation platforms, or other accessories.

My digital sources were Bryston’s BDP-3 media player and BCD-1 CD player; all digital-to-analog conversions were done by the above-mentioned Bryston BDA-3.

Bryston’s detailed, well-written manual doesn’t state that the BP-17<sup>3</sup> needs any warm-up or burn-in; sure enough, I heard no change in its sound quality during the time it spent in my system.

My Revel Ultima Salon2 loudspeakers were placed to each side of my equipment rack, 2.3’ from the front wall, 6’ apart (measured from the speakers’ tweeters), and 6’ from my listening chair. This produced optimal imaging and soundstaging—in short, most of my listening to the BP-17<sup>3</sup> was done in the nearfield.

<sup>2</sup> Following this review, I sent the review sample of the BP-17<sup>3</sup> back to Bryston to have the optional DAC and phono modules installed. Watch for a Follow-Up.

**MEASUREMENTS**

I measured the Bryston BP-17<sup>3</sup>’s performance with my Audio Precision SYS2722 system (see the January 2008 “As We See It,” <http://tinyurl.com/4ffpve4>). The maximum gain for both the balanced and unbalanced inputs to the balanced outputs, and from the headphone output, was 17.5dB. The maximum gain from unbalanced input to unbalanced output was 11.6dB; *ie*, an input of 1V results in an output of 3.785V.

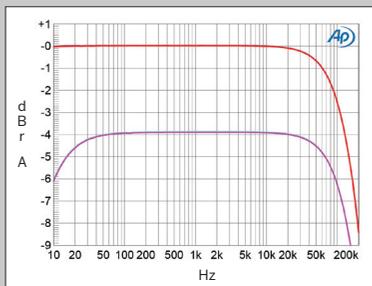
The BP-17<sup>3</sup>’s input impedance from 20Hz to 20kHz was 6800 ohms unbalanced and 10k ohms balanced, both impedances very slightly higher than specified. The preamplifier preserved absolute polarity (*ie*, was non-inverting) with both balanced and unbalanced inputs and from all outputs. Its XLR jacks are wired with pin 2 hot, the AES convention. The preamplifier’s unbalanced output impedance was a relatively low 690 ohms from 20Hz to 20kHz; unusually, the balanced impedance was lower, at 340 ohms at

1kHz and 20kHz, and slightly higher at 20Hz, at 420 ohms. The headphone output impedance was a little on the high side for use with lower-impedance headphones, at 72 ohms.

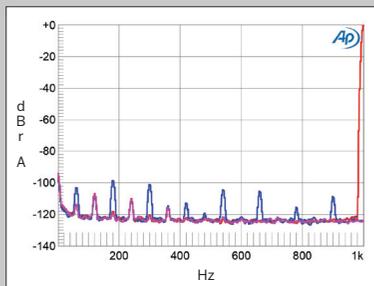
My measurements confirmed the BP-17<sup>3</sup>’s frequency-response specification of 20Hz–20kHz, ±0.05dB. In both balanced (fig.1, blue and red traces) and unbalanced modes with its volume control set to its maximum, the output

was down by just 0.05dB at 20kHz, and was –3dB at just over 100kHz. The BP-17<sup>3</sup>’s superb channel matching was preserved into lower impedances (fig.1, cyan and magenta traces) and at lower settings of the volume control. This control had a rather aggressive action, its 12:00 position reducing the gain by 32dB from its maximum!

The channel separation was superb below 2kHz, at >108dB in both direc-



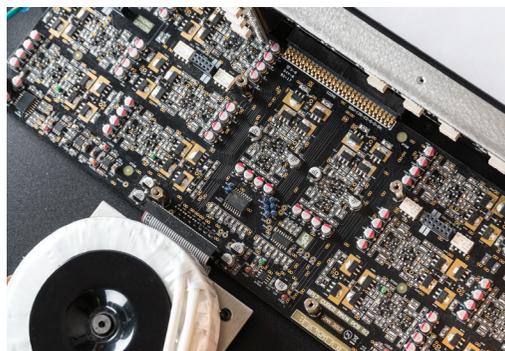
**Fig.1** Bryston BP-17<sup>3</sup>, balanced frequency response with volume control set to maximum at 1V, into: 100k ohms (left channel blue, right red), 600 ohms (left cyan, right magenta) (1dB/vertical div.).



**Fig.2** Bryston BP-17<sup>3</sup>, balanced spectrum of 1kHz sinewave, DC–1kHz, at: 2V (left channel blue, right red), 0V into 100k ohms (left cyan, right magenta) (linear frequency scale).

**Listening**

As always, the first thing I listened to was Stevie Nicks's smoky rendition of "Silver Springs," from Fleetwood Mac's *The Dance* (CD, Reprise 46702-2). Immediately, I knew something was wrong. Nicks's voice sounded etched and edgy, with more midrange presence than I know it should have. Cymbals and guitar overpowered John McVie's bass line and Mick Fleetwood's kick drum. Gone was the addictive tonal balance I'd heard through the pairing of Constellation Inspiration amp and Bryston BP-26/MPS-2 preamp. Instead, the upper midrange and lower treble dominated the rest of the audioband.



So I switched from the Constellation Stereo 1.0 to a Mark Levinson No.534 (\$20,000), which had just arrived for review. To my delight, the new amp produced a more neutral tonal balance, along with transparency, clear highs, and bold dynamic contrasts. The midbass and midrange were smooth and grainless and, most important, didn't overpower the bass.

The bass response of the BP-17<sup>3</sup>-No.534 pairing was unusually strong and extended. The full weight of pedal chords captured on good recordings of pipe organ pressurized my listening room. John Rutter's *A Gaelic Blessing*, with Timothy Seelig conducting the Turtle Creek Chorale and the

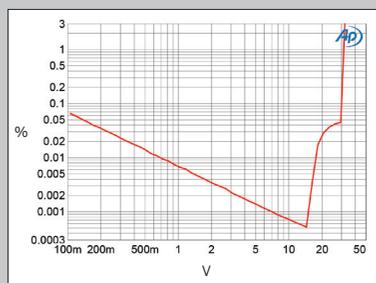
Dallas Women's Chorus (CD, Reference RR-57CD), delivered the leaden density of the organ's lowest notes while separating the various ranks of choristers. The deep synthesizer notes in "Silk Road," from I Ching's *Of the Marsh and the Moon* (CD, Chesky WO144), had impressive weight and solidity. Daniel Rossi's sustained organ-pedal chords in the second movement (*Poco adagio*) of Saint-Saëns's Symphony 3, "Organ," with Antonio Pappano conducting the Orchestra of the National Academy of St. Cecilia (CD, Warner Classics 0190295755553), were appropriately powerful.

The Bryston preamp also favored percussion recordings, such as Mark Walker's drum solo in "Nardis," from Patricia Barber's *Café Blue* (SACD/CD, Premonition/Blue Note/Mobile Fidelity Sound Lab UDSACD 2002): It teased Michael Arnpol's double-bass notes apart from the drum kit's cymbals, kick drum, tom-tom heads, and rims. It also fully reproduced the impact of the frenzied bass-drum strokes that conclude Shostakovich's Symphony 5, in the recording by the Pittsburgh Symphony Orchestra led by Manfred Honeck (24-bit/96kHz WAV, Reference Fresh! FR-724).<sup>3</sup>

<sup>3</sup> I'm not alone in loving this live recording, which in 2018 won Grammys for Best Orchestral Performance, Classical, and Best Engineered Album, Classical.

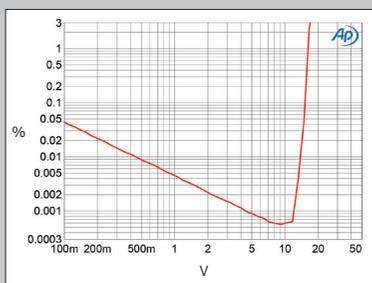
**measurements, continued**

tions, decreasing to a still very good 80dB at 20kHz. The BP-17<sup>3</sup> is a very quiet preamplifier: the audioband signal/noise ratio ref. 1V output, measured with the input shorted to ground but the volume control set to its maximum, was 89.7dB (average of both channels). Switching an A-weighting filter into circuit slightly improved this ratio, to 92dB. Spectral analysis of the Bryston's low-frequency noise floor indicated some spurious at 60Hz and its odd-order harmonics in the left channel (fig.2, blue trace), though these are all at or below -99dB (0.001%) and won't be audible.



**Fig.3** Bryston BP-17<sup>3</sup>, balanced distortion (%) vs 1kHz output voltage into 100k ohms.

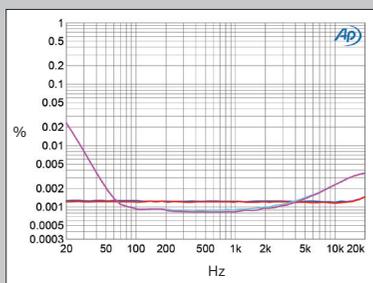
Fig.3 plots the percentage of THD+noise in the Bryston's balanced output into 100k ohms. The THD+N rises below 15V output due to the fixed level of noise becoming an increasing percentage of the signal level. The actual distortion doesn't rise above the noise floor until the output reaches 15V, when it is just 0.0005%, but rises rapidly above that level. This is of no relevance in actual use, as 15V is way more than needed to drive any power amplifier completely into clipping. When I reduced the load impedance to the current-hungry 600 ohms (fig.4), the BP-17<sup>3</sup> still delivered >15V at clip-



**Fig.4** Bryston BP-17<sup>3</sup>, balanced distortion (%) vs 1kHz output voltage into 600 ohms.

ping (ie, when the THD+N reaches 1%). The distortion was a little higher for unbalanced input to unbalanced output: the BP-17<sup>3</sup> clipped at >15V into 100k ohms, and at a still-high 7V into 600 ohms.

I measured how the BP-17<sup>3</sup>'s distortion changed with frequency at a very high level, to be sure that the reading was not dominated by noise. It remained consistently low throughout the audioband into the high 100k ohm load (fig.5, blue and red traces), and was even lower into 600 ohms (cyan, magenta), though it rose slightly at the frequency extremes. At the same high



**Fig.5** Bryston BP-17<sup>3</sup>, balanced THD+N (%) vs frequency at 10V into: 100k ohms (left channel blue, right red), 600 ohms (left cyan, right magenta).

It also captured the ambience of the recording venue, Pittsburgh's Heinz Hall for the Performing Arts, including the sounds of the performers catching their breaths between notes in the first movement, *Moderato – Allegro non troppo*, making the music all the more realistic and compelling. The BP-17<sup>3</sup> easily resolved the differences in timbre between clarinet, bassoon, and contrabassoon as they played above the tremolo of the violins.<sup>4</sup>

Subtle distinctions of vocal timbres were revealed when I played Ēriks Ešēnvalds's *The Doors of Heaven*, with the Portland State Chamber Choir directed by Ethan Sperry (24/88 WAV file from CD, Naxos 8.579008), a recording engineered by John Atkinson that's so good I chose it as one of my "Records to Die For" for 2018.<sup>5</sup> As I listened to *The First Tears*, the Portland singers were clearly positioned on a wide soundstage, echoing each other as they sang Ešēnvalds's setting of an Inuit tale of Raven. The voice of each of the three male vocalists had a distinct vocal timbre, and emanated from a position on the soundstage distinctly different from the other two. Similarly, Harry Connick, Jr.'s voice in "Don't Get Around Much Anymore," from the *When Harry Met Sally...* soundtrack (CD, Columbia CK 45319), was smooth and pure, without sounding tubby or nasal.

The BP-17<sup>3</sup>'s extended, transparent upper register captured the shimmering cymbal sounds that begin "The Mooche," from *Rendezvous: Jerome Harris Quintet Plays Jazz* (CD, Stereophile STPH013-2); made it possible for me to distinguish the delicate harp and celesta notes from the massed strings and percussion in the third movement of the Shostakovich symphony mentioned earlier; and created a compelling illusion of a waterfall spilling into a pool in the

4 Honeck's superb liner note describes how Shostakovich, fearful of being imprisoned in a Siberian labor camp by Stalin, scored a passage in the third movement, Largo, with "a clarinet, bassoon, and contrabassoon [to play] an emotional song of lament, as if somebody is completely lost in the most deserted, cold ice and left to mourn his own fate."

5 See the February 2018 issue: [www.stereophile.com/content/records-die-2018-page-4](http://www.stereophile.com/content/records-die-2018-page-4).

## ASSOCIATED EQUIPMENT

**Analog Sources** Linn Sondek LP12 turntable with Lingo power supply, Linn Ittok tonearm, Spectral MC cartridge; Day-Sequerra 25th Anniversary FM Reference, McIntosh Laboratory MR-78, Sony XDR-F2HD FM/AM tuners.

**Digital Sources** Bryston BCD-1 CD player & BDP-3 media player (IAD soundboard) & BDA-3 DAC; Oppo digital BPD-103 universal BD player; Lenovo P50 ThinkPad computer running Windows 10 Pro (64-bit), Bryston Windows USB driver, JRiver Media Center 23, Room Core V1.4 (build 300).

**Preamplification** Sutherland Engineering KC Vibe phono stage & Vibe head amplifier; Bryston BP-26, Mark Levinson ML-7 (with optional phono boards),

**Power Amplifiers** Constellation Audio Inspiration Stereo 1.0, Mark Levinson No.334 & No.534.

**Loudspeakers** Quad ESL-989, Revel Ultima Salon2.

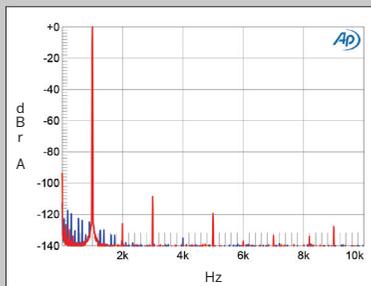
**Cables** Digital: Wireworld Starlight coaxial. Interconnect: Bryston (balanced), Mark Levinson Silver, Pure Silver Cable (balanced), Red Rose Silver One, Totem Acoustic Sinew (single-ended). Speaker: Coincident Speaker Technology CST 1, Pure Silver Cable R50 (biwire double ribbon), QED X-Tube 400, Ultralink Excelsior 6N OFJC. AC: manufacturers' own.

**Accessories** JL Audio CR-1 electronic crossover; Apple iPhone 6 with Studio Six iTestMic & Audio Analyzer App, v.10.7.11; Apple iPad; Torus Power RM 20 power conditioner; Salamander Designs Synergy System Twin-width S40 Rack.

**Listening Room** 13' L by 11.5' W by 8' H with flat ceiling, sparsely furnished with IKEA area rug & overstuffed chair; 6' by 2.5' by 7' alcove in rear wall filled with desk and books; windows in front wall covered with closed blinds; rear of room opens to upstairs hall through 7' by 4' doorway. —Larry Greenhill

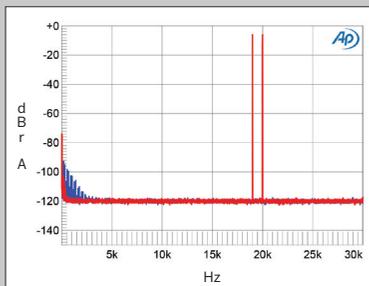
### measurements, continued

output level into 600 ohms, the spectrum of the distortion comprised the third and fifth harmonics (fig.6), but these are very low in level, at a respective -110 and -120dB. At the same level into 100k ohms, these harmonics were at the residual level in the generator's



**Fig.6** Bryston BP-17<sup>3</sup>, balanced spectrum of 1kHz sine wave, DC-1kHz, at 10V into 600 ohms (left channel blue, right red; linear frequency scale).

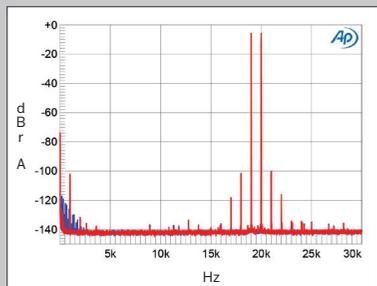
output. Intermodulation distortion at a typical level at which the preamplifier will be used was unmeasurable (fig.7), though the power-supply harmonics in the left channel can be seen. Even at a peak signal level of 10V into 600 ohms (fig.8), the second-order differ-



**Fig.7** Bryston BP-17<sup>3</sup>, balanced HF intermodulation spectrum, DC-30kHz, 19+20kHz at 1V into 100k ohms (left channel blue, right red; linear frequency scale).

ence product at 1kHz lay at just -112dB (0.00025%)!

The Bryston BP-17<sup>3</sup>'s measurements indicate that it is superbly well engineered. It is difficult to see how a preamplifier could perform any better on the test bench! —John Atkinson



**Fig.8** Bryston BP-17<sup>3</sup>, balanced HF intermodulation spectrum, DC-30kHz, 19+20kHz at 10V into 600 ohms (left channel blue, right red; linear frequency scale).

opening of “Running Water,” from the I Ching album.

### Comparisons

I matched the levels of the BP-17<sup>3</sup>, Bryston’s own BP-26 with MPS-2 power supply (\$5390), and the Mark Levinson ML-7 (\$4400 when new, *ca* 1984), all driving the Mark Levinson No.534 power amp. I also consulted the notes I took last year while listening to the Mark Levinson No.526 preamplifier.<sup>6</sup> That ultra-expensive (\$20,000) preamp has built-in DAC and MM/MC phono sections.

While all of these preamps have controls for volume, balance, source selection, and mute, only the ML-7 and BP-26/MPS-2 have toggle switches for Mono/Stereo, High/Low Gain, and Polarity/Invert. The ML-7 has no balanced inputs or outputs, and uses only CAMAC connectors, which require adapters for RCA plugs. Only the BP-17<sup>3</sup> and No.526 can be fully operated with a remote-control handset.

To listen to LPs, I used my Sutherland Engineering Vibe phono preamplifier (\$895), though the ML-7<sup>7</sup> and BP-26 have optional MC phono modules. BP-17<sup>3</sup> owners who use only MC cartridges will need to buy MM module (\$750) and TF-2 step-up transformer (\$1500) to listen to their LPs.

With some CDs, SACDs, and digital files, the BP-17<sup>3</sup>’s dynamics, punchy bass, slam, and soundstage depth matched those of the Mark Levinson ML-7 and the Bryston BP-26 and what had noted about the Mark Levinson No.526. However, neither the Bryston preamps or the ML-7 consistently bettered the No.526’s clarity, air, transparency, transient response, and freedom from midrange grain. Of course, the No.526 costs almost four times as much as a fully optioned BP-17<sup>3</sup>.

### Conclusions

Until now, I’d never changed reference components during a review. I’ve been missing out. Finding the combination of Bryston’s BP-17<sup>3</sup> and the Mark Levinson No.534 power amp was a stroke of serendipity that let me enjoy sound quality almost as good as ML’s No.526 with some recordings at a fraction of its cost. Indeed, the BP-17<sup>3</sup> costs less than any solid-state preamp listed in Class A of the April 2018 edition of “Recommended Components.”

Among new, high-value, line-level preamplifiers, the BP-17<sup>3</sup> is a welcome find. Driving the ML No.534, it produced engaging, detailed, tonally captivating, utterly natural sound that approached reference quality. Its deep bass extension, dynamic range, soundstaging, and speed were so good that I forgot about the review sample’s lack of a phono or digital inputs, the absence of Internet connectivity for firmware updates, and the omission from its standard kit of Bryston’s BR2 remote control. Matched with a top-quality, compatible power amplifier, the BP-17<sup>3</sup> is the bargain preamplifier to beat—but before buying, be sure to audition it with a variety of power amps. Strongly recommended. ■

<sup>6</sup> See my review of the Mark Levinson No.526 in the May 2017 issue: [www.stereophile.com/content/mark-levinson-no526-preamplifier](http://www.stereophile.com/content/mark-levinson-no526-preamplifier).

<sup>7</sup> In 1984, Mark Levinson supplied each ML-7 preamplifier with a pair of L-2 phono boards, for MM and MC cartridges with outputs of >0.3mV. The L-2 boards had microswitches for changing the gain (38 or 44dB), and switchable input impedance (825 or 50k ohms). Also available were user-installable MC phono boards: the L-3A board, with 53dB gain for medium-output (0.2–0.3mV) MCs; and the L-3 board, with 66dB gain for low-output (0.1–0.2mV) MCs. Both MC boards had a fixed input impedance of 825 ohms. My ML-7 has L-2 and L-3A boards.