

MICHAEL FREMER

VAC Statement 452 iQ Musicbloc

MONO/STEREO POWER AMPLIFIER

VAC's Statement 452 iQ Musicbloc amplifier (\$75,000 for a single amp; \$150,000/pair mono, as reviewed) is tall, young, and lovely, but unlike the girl from Ipanema, it isn't tan. Nor, at 280lb in its flight case, is it likely to "go walkin'." Getting the pair moved into my listening room required considerable effort—fortunately not mine.

Sized similarly to many modestly sized floorstanding loudspeakers, a pair of 452s makes for a striking physical presentation. They were first introduced to the public at the Capital Audiofest, November 2019—though at AXPONA earlier last year, VAC demoed, in a large room, the Statement 450 iQ integrated amplifier, which shares the 452's stellar industrial design and, no doubt, much of its circuitry.

In my much smaller room, the look is even more dramatic and appealing. The thick aluminum chassis is finished in a clear metallic base coat, while other parts are copper, nickel, or chrome-plated—including the stabilizing feet, which also call to mind the appointments of some floorstanding speakers.

The banks of horizontally situated tubes may at first seem unusual, but the arrangement has both formal and functional benefits. The layout is claimed to help air circulation efficiency, since warm air rises, resulting in better tube cooling and a narrow footprint: approximately 9" wide and 21" deep (and about 2 ½' tall), which makes this big amp more small-room-friendly. In addition, according to VAC, the vertical alignment helps keep signal runs short, allows for a ground reference that's very tightly shared between stages, places the power supply as close as possible to the circuitry that needs high current, and locates the sensitive circuits as far as possible from potential sources of noise. And gravity, it's claimed, helps damp the tubes.

A powerful and versatile tube amp

The 452 is a fully balanced, direct-coupled (no coupling caps between input and driver tubes), class-A input, point-to-point hand-wired design that uses four Tung-Sol 6SN7 twin-triode tubes (new tubes, not new old stock) for voltage amplification and as drivers. The output features eight Gold

Lion KT88 beam power tubes operating in Ultralinear. The design is fully compatible with KT90, KT99a, KT120, and KT150 output tubes. Each 452 amp employs a total of eight VAC-designed transformers in aggregate, weighing a total of 120lb.

VAC specifies the amp as outputting 225Wpc in two-channel mode or 450W in single-channel mode (see below), both into 4 ohms, though this varies somewhat depending upon powerline "stiffness" and output tube condition. Output into 6 or 8 ohms isn't specified. Frequency range is spec'd at 4Hz–75kHz, with power bandwidth listed as between 20Hz and 70kHz. If the amp meets or comes close to meeting those specs, there's power aplenty for all but the most insensitive loudspeakers. The published specifications are minimal; I wish more information was provided.

According to VAC, the output design achieves class-AB operation using its patented iQ Intelligent Continuous Automatic Bias System, which the company claims is "the only known approach to allow the true underlying quiescent current (bias point) of the output tubes to be monitored" and held steady at all times, resulting in more stable tube operation and thus a more stable loudspeaker interface. In other words, the system monitors and adjusts the bias current *in real time*, compensating as the amp warms up, as the power line varies, as tubes drift, and when you change the volume. The system is claimed to also prolong tube life.

Premium parts are used throughout, including metal film and wirewound resistors, custom film and foil caps, and Cardas rhodium connectors.

The versatile design allows the 452 to be used as a dual-mono stereo amplifier or, at the flip of a pair of rear panel-mounted switches, as a single-channel amp; VAC loaned me a pair of 452s, which I used only as monoblocks. There are three sets of binding posts: a single set for mono operation and a pair for stereo. The amp can accept single-ended RCA inputs, but those are converted via a transformer to balanced operation, which is not the ideal way to create a balanced input—so it's best to use a fully balanced preamplifier. The front panel's blue LED-lit VAC logo can be either brightly or dimly lit or turned off, which is a nice feature.

SPECIFICATIONS

Description Mono/Stereo power amplifier. Tube complement: 4 6SN7GTB; 8 Gold Lion KT88. Maximum output power: 225W/channel into 4 ohms (20.5dBW); 450W into 4

ohms (23.5dBW), mono. Frequency range: 4Hz–75kHz. Power bandwidth: 20Hz–70kHz. No other specifications provided. **Dimensions** (approx.) 8.5" W × 29.5" H × 18.5"

D. Weight: 280lb (gross weight in flight case). **Serial number of units reviewed** 1929702/3. **Price** \$75,000 each, \$150,000/pair, mono (as reviewed). Approximate

number of dealers: 14.

Manufacturer Valve Amplification Company, 1911 East Ave. North, Sarasota, FL 34234. Tel: (941) 952-9695. Web: vac-amps.com.



Setup and use

Flip the on/off switch and, in a minute or so, the amp is ready to go—but I found that it takes about a half-hour’s warm-up time to sound *right*. Upon turn-on, the sound is somewhat thick and veiled, with soft transients. Designer Kevin Hayes suggested turning the amps on in the morning and off at the end of the final day’s listening session, which is what I did. Many of those sessions ended stupidly late at night—actually early the next morning.

The iQ system includes a front-panel LED monitoring system, one LED per output tube. If an LED glows green, it means the associated tube is weakening and should be replaced when possible. Meanwhile, the circuit will automatically compensate by upping the bias. If an LED glows red, the associated tube is drawing excess current, causing a possible “runaway” condition, usually produced when a component within the tube fails. In that case, the system will shut down the main power supply before a fuse can even blow, preventing amplifier damage.



Hayes left a box of extra tubes “in case,” but none were needed during the two-month-long review period, nor did an LED glow green. The amps ran trouble-free and so cool that it was like not having a tube amplifier in the house at all. If I were designing a big tube amp to be used in VAC’s Florida home, I’d aim for that.

Smooth but not too smooth

In case you’re wondering where my “The Girl From Ipanema” reference came from: When I wrote that opening paragraph, I was listening to an original pressing of Stan Getz and João Gilberto’s *Getz/Gilberto* (Verve V6-8545), engineered by the late, great Phil Ramone in March 1963. So, why not start the sonic description using that familiar record, which has been reissued on vinyl by Mobile Fidelity, Speakers Corner, Analogue Productions, UMe (an awful-sounding version on orange vinyl cut at GZ Media from a digital file), and, soon, by Impex—is this last one sourced from tape? We’ll see.

If any record can be ruined by an

MEASUREMENTS

Because of the VAC Statement 452 iQ’s bulk and weight, I drove my Audio Precision SYS2722 system and its host PC (see the January 2008 “As We See It”), test loads, oscilloscopes, cables, and other gear to Michael Fremer’s place for the measurements. The only space available for me to set everything up was in the garage, along the corridor from Michael’s basement listening room. I ran two extension cables from a 20A outlet in the corridor, one for the test system and the other for one of the amplifiers (serial number 1929703). I later repeated some of the testing on the other amplifier, SN 1929702. The graphs in this report show the results with SN 1929702, which has slightly lower distortion in the treble. The two samples otherwise behaved identically.

The Statement 452 iQ can be used as a two-channel amplifier, but as Michael had exclusively performed his listening with a pair of the amplifiers connected as monoblocks, that is how I tested it. I made sure I connected the test loads to the third, right-most pair of binding posts, which were labeled

Mono, and that both switches on the rear panel were set to Mono. As the VAC amplifier’s output in this mode floats with respect to ground, I left the analyzer’s input floating. I connected the Audio Precision’s signal generator outputs, balanced or single-ended, to the right channel’s input jacks, which is how Michael had been using the amplifiers. I let the amplifier warm up before performing any testing, and the LEDs on the front panel indicated that all was well with the eight KT88 output tubes.

The VAC’s voltage gain into 8 ohms

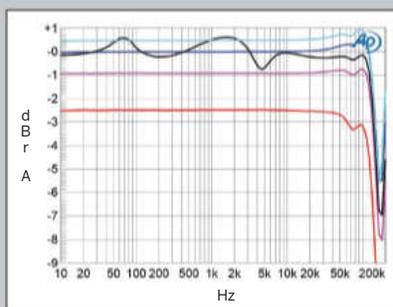


Fig.1 VAC Statement 452 iQ, frequency response at 2.83V into: simulated loudspeaker load (gray), 16 ohms (cyan), 8 ohms (blue), 4 ohms (magenta), 2 ohms (red) (1dB/vertical div.).

measured 27dB from both inputs, and the amplifier preserved absolute polarity (ie, was noninverting). The balanced input impedance was a usefully high 96k ohms at low and middle frequencies, dropping slightly and inconsequentially to 92k ohms at the top of the audioband. The unbalanced input impedance was a high 83k ohms at 1kHz but, unusually, dropped to 3.2k ohms at 20Hz and 8.85k ohms at 20kHz.

The Statement 452 iQ’s output impedance was 0.94 ohm at all audio

¹ See stereophile.com/asweseeit/108aws/i/index.html.

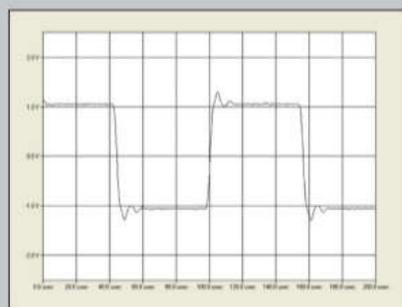


Fig.2 VAC Statement 452 iQ, small-signal 10kHz squarewave into 8 ohms.

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overly warm and soft-sounding tube amp, it would be this one, which already has so much built-in warmth in the upper bass/lower midrange. On “The Girl From Ipanema,” percussionist Milton Banana’s jingly accompaniment is distantly miked and placed purposely down in the mix—it’s barely audible—while João Gilberto’s bossa nova-rhythm guitar plucks hover gently in the air just below his warm, chesty vocals. Pianist (and composer) Antônio Carlos Jobim, barely striking the keys, taps out occasional piano fills, and an uncredited bass player—it’s Sebastião Neto—adds an equally gentle, minimal foundation. Only Getz’s feathery, wet sax pushes well forward in the mix—and of course Astrud Gilberto’s almost whispered voice floats subtly out of one channel (right on the original, left on the reissues; mastering engineer Kevin Gray insists that the original had the channels reversed).

The VAC amp *nailed* this track, as if it were voiced specifically for it. Especially noteworthy was how the 452s reproduced the subtle jangle of Banana’s percussive accents: metallic, not “velvet,” and in a discernible space well back in



space, the envelope of which was visible (sonically) in the backdrop. Neto’s bass lines were supple, yet the attack was sufficiently forceful and well-defined to rhythmically drive the tune. Gilberto’s plucked-chord rhythm guitar fills were fast and cleanly delivered in a well-delineated three-dimensional space. Getz’s breathy sax sat centerstage, well in front of the rest in three-dimensional relief. The whole was vivid, relaxed, well-defined, and as wide open and naturally delivered as I’ve ever heard the track—and I bought the original pressing in 1964 when it was first released.

The presence of the images and the absence of reproductive artifacts were remarkable.

By the time I wrote my opening paragraph, I’d spent almost two months of solid musical enjoyment, marveling at the relaxed and fully immersive presentation. No wonder Herb Reichert described the sound produced by *two* pairs of these amps, biamping a pair of Von Schweikert Ultra 11 speakers, as

measurements, continued

frequencies, which is low for a tube amplifier. As a result, the modulation of the amplifier’s frequency response, due to the Ohm’s law interaction between this source impedance and the impedance of our standard simulated loudspeaker,² was relatively small, at $\pm 0.7\text{dB}$ (fig.1, gray trace). The response into resistive loads (fig.1, cyan, blue, magenta, and red traces) was flat in the audioband, with then a steep rolloff above 100kHz. A very small peak just before the ultrasonic rolloff is associated with the VAC’s reproduction of a 10kHz squarewave (fig.2), which features a small amount of overshoot and three damped cycles of ultrasonic ringing. A 1kHz squarewave was reproduced with superbly flat tops and bottoms (not shown), confirming the extended low-frequency response, a tribute to the amplifier’s output transformers.

When I repeated the frequency response measurement with the single-ended input (not shown), the ultrasonic rolloff started a little earlier, at 60kHz rather than 100kHz, and the low-frequency output gently sloped

down below 400Hz, reaching -1dB at 30Hz. This behavior might have been associated with the reduced input impedance at low frequencies. It wouldn’t have affected Michael’s auditioning, as he exclusively used the balanced input. However, it does suggest that the VAC amplifier’s balanced input is to be preferred to the single-ended input.

Measured with the balanced input shorted to ground, the amplifier’s unweighted, wideband signal/noise ratio was 68.7dB ref. 1W into 8 ohms, increasing slightly to 69.2dB when I restricted the measurement

bandwidth to the audioband. When the reading was A-weighted, the S/N ratio improved further to a good 83.75dB. With no signal (fig.3, blue trace), spurious were present at the 60Hz power-supply frequency and its harmonics. The odd-order harmonics, which will be due to magnetic interference from the power transformer, were lower in level than the even-order harmonics, which are due to a nonzero impedance to ground somewhere in the circuit. Peculiarly,

² See stereophile.com/content/real-life-measurements-page-2.

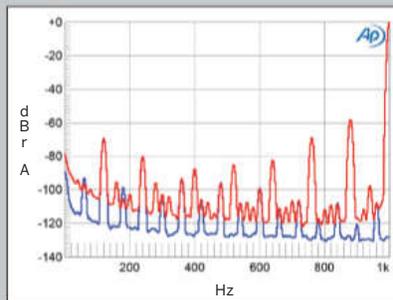


Fig.3 VAC Statement 452 iQ, spectrum of 1kHz sine wave, DC-1kHz, at 1W into 8 ohms (red) and with no signal (blue, linear frequency scale).

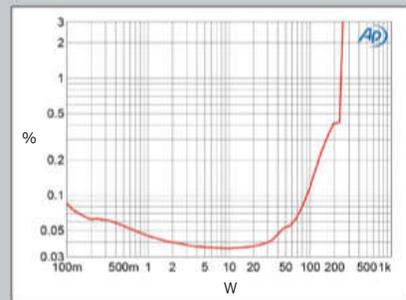


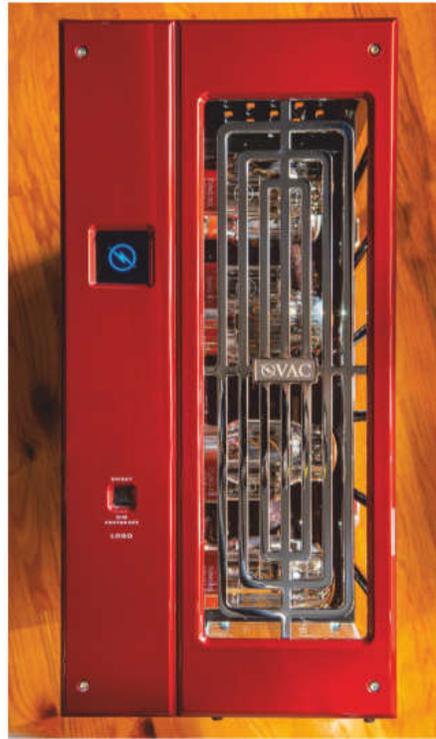
Fig.4 VAC Statement 452 iQ, distortion (%) vs 1kHz continuous output power into 8 ohms.

“Bigger than any Wilson WAMM or giant Western Electric theater system I have experienced. The soundstage went from heaven above and around the globe.”¹

Herb needs to hear the WAMMs driven by the Statement 452 iQs to be sure of *that*, because the soundstage produced by a pair of these amps on the Alexx in my room was wider, taller, and especially deeper than anything I’ve ever experienced here (other than through the enormous Sonus Faber Aida loudspeakers, which have a rear-firing multidriver array).

As expected, individual images, too, were larger than the somewhat more compact ones produced by my reference amp, but both were soundstage proportional. (Which is not to say my amps produce too small a picture, or the VAC amps too large!)

Sometimes I felt these amps produced a picture that was too large for *my* room, which of course is a room issue, not an amp issue—if it is an issue at all. Other times, the volume of space produced was simply breathtaking and transportive, as on the recent AudioNautes Recordings reissue of *O Magnum Mysterium* (AN-1801), originally released on LP in 1993 by Chesky



Records (CR83) and cut by Paul Stubblebine.

The Bob Katz recording, made at New York’s Church of St. Mary the Virgin, utilized but a single AKG C-24 stereo tube mike hung on a boom 30’ in the air and about 40’ from the Westminster Choir, conducted by Joseph Flummerfelt. Scott Hull at Masterdisk cut this reissue from the original tape; plating was at Mastercraft, and pressing was done at Pallas, in Germany.

Through these VAC amps, my room evaporated, leaving an enormous space, wide, tall and deep, near the back of which appeared the 25-voice choir—and, behind them, the Aoelian-Skinner organ. When John Atkinson came to measure, I insisted he listen to this recording. He let out an involuntary “Wow!” The presence of the images and the absence of reproductive artifacts were remarkable. It’s what this hobby/pursuit is all about.

On the right recordings, the illusion of “there” produced by this amp, thanks in part to the sensation of shimmering soundstage air, is extraordinary.

¹ See stereophile.com/content/vac-statement-452iq-power-amplifiers-and-statement-line-and-phono-preamps-von-schweikert.

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I believe this quality is what blew Herb away at last fall's Capital Audiofest, and what I heard more recently at the 2020 Florida Audio Expo, where the same system delivered the goods in another large room.

Manufacturer hype is usually best ignored, but with this amp I kept returning to what I'd read in the online blurb: "You will hear more deeply into the recording space, catch delicate nuances in a singer's phrasing you've not heard before," because that was the experience with just about every familiar record or file I played, even the Grateful Dead's *American Beauty* (Mobile Fidelity MFSL 1-014), a record I thought I knew inside and out.

On "Friend of the Devil," percussive and reverberant details I'd never before noticed were revealed well toward the back of the soundstage, as if they'd been hiding for decades in plain sight. But the VAC didn't accomplish this *analytically*, as if by sharpening some sonic-detail control. Instead, these details and gobs of reverberant space floating behind appeared fully exposed, as if a previ-



ously undetected scrim had been removed—and suddenly, there they were! More important, the amps' even-handed timbral balance and unraveling transparency revealed previously buried or smeared musical threads—counterpoint and small percussive accents previously hidden in musical folds. Phil Lesh's bass, center stage, is presented with greater *force* and extension through my reference amp, but not with the elasticity and texture heard through the 452 iQ.

The 452 iQ produced stunning results with classical music, acoustic folk/rock, and jazz, where texture, touch, and harmonic structure play such critical roles in delivering musical verisimilitude. Yes, this amp can deliver the goods on music that requires a delicate touch, but what about something musically aggressive and *not* ethereal and/or delicate? Was image solidity at all compromised by this display of ethereality?

Well, yes, to a small degree.

For instance, take Charles Mingus's almost violent *The Black Saint and the Sinner Lady* (LP, Impulse A-35). Here, the

measurements, continued

when I drove the amplifier with a balanced 1kHz tone, with the output equal to 1W into 8 ohms, not only did the low-frequency noise floor rise by about 10dB (fig.3, red trace), but sidebands spaced at 120Hz now accompanied the 1kHz tone. I have no idea where these sidebands come from, but they remained unchanged when I experimented with different cables and grounding arrangements between both samples of the amplifier and the Audio Precision analyzer.

VAC specifies the Statement 452 iQ's maximum power when used as a monoblock as 450W into 4 ohms (23.5dBW). With our usual definition of clipping, which is when the output's percentage of THD+noise reaches 1%, the VAC clipped at 235W into 8 ohms (23.7dBW, fig.4).³ However, less power was available into 4 ohms at 1% THD+N: 183W (19.6dBW, fig.5), though 370W was available at 3% THD+N (22.7dBW) and 410W at 10% THD+N (23.1dBW). I doubt that this shortfall in maximum power into 4 ohms would have affected the auditioning. Given the high sensitivity of the Wilson speakers, Michael was

never asking the amplifiers to deliver more than 40W or so.

I examined how the percentage of THD+noise changed with frequency at 12.65V, which is when the distortion in figs.4 and 5 begins to rise above the noise floor. This voltage is equivalent to 10W into 16 ohms, 20W into 8 ohms, 40W into 4 ohms, and 80W into 2 ohms. The THD+N was commendably low in the treble into 16 and 8 ohms (fig.6, gray and blue traces), but rose at lower frequencies and into lower impedances. The distortion at 40W into 4 ohms (magenta trace) was still acceptably low, but at 80W

into 2 ohms, it rose above 1% at the frequency extremes. This suggests that the single secondary winding of the Statement 452 iQ's output transformer is optimized for loads of 8 ohms rather than the 4 ohms specified by the manufacturer.

Fortunately, the VAC amplifier's distortion in the midrange and above was predominantly the subjectively innocuous second harmonic (fig.7). The level of the third harmonic was below

³ With the amplifier idling, the AC line voltage was 119V. This dropped to 117.5V with the amplifier clipping into 8 ohms. Only a small part of the shortfall in power can be attributed to sagging line voltage.

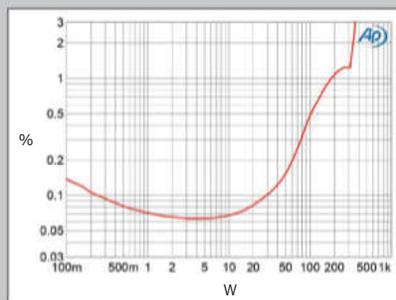


Fig.5 VAC Statement 452 iQ, distortion (%) vs 1kHz continuous output power into 4 ohms.

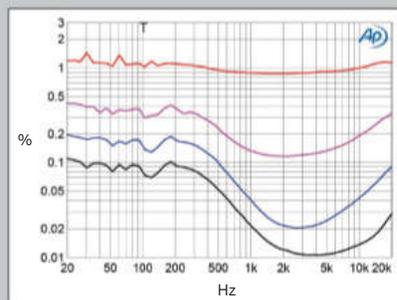


Fig.6 VAC Statement 452 iQ, THD+N (%) vs frequency at 12.65V into: 16 ohms (gray), 8 ohms (blue), 4 ohms (magenta), and 2 ohms (red).

trombone had better growl like a wild boar, the sax had better taunt and make an ugly sound, and the drums should pile up and knock you over. The 452 iQ didn't quite kick it like my solid-state reference amp, but it came close enough that the music didn't suffer. A well-regarded music writer visited recently to do some comparisons on a big rig for a feature he's writing. After we'd finished his work, we had some fun. I played him the 45rpm lacquer of Art Blakey & the Jazz Messengers' "A Night in Tunisia" that I've been taking around to shows. That knocked him back! Then I hit him with the original Bob Ludwig-mastered ("RL") version of *Led Zeppelin II* (LP, Atlantic SD 8236), and of course he was blown away by that, and so was I. Though the solid-state reference amp has greater "grunt" on bottom, never did the 452 iQ make me feel like I needed to switch amps so my guest could better appreciate the Led Zep tracks. The 452 iQ was an addictive-sounding amp, suitable for all kinds of music.

Drums and Bells

I am not sure where I got a CD called *Drums and Bells*: The disc doesn't even have a catalog number or label. I recog-



nized just one of the players, percussionist Brad Dutz. Online, I found it was produced by Madisound, the company that sells loudspeaker drivers. I have no idea who engineered it, or where, or how, but damn, this thing sounds good! It's a series of percussion solos by Dutz and some duos with another percussionist, one Chris Wabich.

Like Sheffield's *Track Record, Drums and Bells* is not something you'd actually listen to other than for system diagnostic purposes.² What it told me about the 452 iQ is that the VAC is a superfast, remarkably transparent, *quiet* tube amplifier that's capable of ultraclean transient response. Bells, gongs, stick hits, rattles, kickdrums, cymbals—all exploded, residue-free, out of blackness. The kickdrum in particular went way low, and sounded well-textured and tuneful. After hearing such weight on bottom and speed and clarity on top, preconceived notions about warm tube sound went quickly out the door.

Track 6, called "metal brush," produced shimmering metallic-sounding smacks that were somehow addic-

² Indeed, it's a loudspeaker-evaluation CD, and it's still available. See madisoundspeakerstore.com/books/drums-bells-loudspeaker-evaluation-cd.

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