

Mastersound 300 B S.E.

Art Dudley

INTEGRATED AMPLIFIERS



DESCRIPTION Tubed integrated amplifier with single-ended, class-A output stage and four line-level inputs. Tube complement (two each): 300B, ECC82, 5687 WB. Input impedance: 100k ohms. Frequency response: 8Hz-30kHz, ± 0 dB. Output impedance: 4 or 8 ohms (selectable). Maximum output power: 12Wpc (10.8dBW).

DIMENSIONS 20" (510mm) W by 9.5" (245mm) H by 14" (360mm) D. Weight: 72.6 lbs (33kg).

SERIAL NUMBER OF UNIT REVIEWED 132/07.

PRICE \$6095. Approximate number of dealers: {To come from Stephen}.

MANUFACTURER Mastersound SAS, Via Cima XII, No.14, 36051 Creazzo, Vicenza, Italy. Tel: (39) (0)444-521-733. Web: www.mastersoundsas.it. US distributor: May Audio Marketing, 2150 Liberty Drive, Unit 7, Niagara Falls, NY 14304-4517. Tel: (800) 554-4517, (716) 283-4434. Fax: (716) 283-6264. Web: www.mayaudio.com.

Although she'll deny it, my wife thinks ill of me because I've failed to buy her a new Mini Cooper. I can point to a number of things in my defense—especially the Mini's lack of all-wheel drive, which we need for climbing our quarter-mile driveway in bad weather, and its insufficient cargo and passenger space—all of which would constrain a Dudley-owned Mini Cooper to recreational use only. And a new round of car payments would be difficult to justify for those reasons: *not* because I'm cheap, and *not* because I'm too old to appreciate a car that's fun to drive.

I admire the new Mini. Steeped as it is in the engineering tradition for which BMW, its new parent manufacturer, is rightly famous, the latest Mini has a torquey motor, a crisply precise shifter, a pleasant interior, and a very high level of fit and finish overall—none of which could be said about the Mini's earlier incarnations.¹ That's because none of the manufacturers previously associated with the Mini seemed to think that building a very-high-quality version of the thing *and pricing it accordingly* would meet with success. And indeed, 40 years ago, that may have been true.

¹ I don't doubt that this observation will be met with a few howls of indignation. I'll take pleasure in knowing that most such responses will come from men who can no longer wedge themselves into the car they would defend.

The thing is, the modern Mini is cut from the same cloth as virtually any modern single-ended amp, including the Mastersound 300 B.S.E. integrated amplifier. The Mastersound's output architecture can trace its roots all the way back to the very first electric amplifiers, yet its implementation of that architecture is decidedly modern.

In truth, the sorts of single-ended-triode (SET) amplifiers that we know and love today *could* have existed when the passenger pigeon and Lee DeForest walked the earth. But back then, no one dared dream of a commercially (let alone domestically) acceptable product built with the huge, high-quality out-

MASTERSOUND FOUNDER CESARE SANAVIO BUILT HIS FIRST TUBE AMPLIFIER **BACK IN 1947.**

put transformers needed for full-range operation. In the years since, we've learned that audio enthusiasts are more willing than most to buy all sorts of crazy things; big, expensive amps are just the tip of the iceberg.

Mastersound, a family-owned company located near the Italian city of Vicenza, seems poised to take advantage of that shift in the consumer cosmos. Founder Cesare Sanavio, who built his first tube amplifier back in

1947, dedicated most of his professional life to the design and manufacture of very-high-quality audio-frequency transformers. His audio-enthusiast sons, Luciano and Lorenzo, witnessed the birth of the modern SET movement, and realized that they were in a uniquely good position to join the industry themselves: rather like developing an interest in making furniture, then discovering that your family owns a sawmill. Mastersound's first commer-

MEASUREMENTS

To my alarm, the Mastersound B.S.E. arrived with something rattling around inside the box. It was the tubes! In my opinion, the packaging supplied with this heavy, delicate, and expensive amplifier is nowhere near robust enough to suffer the slings and arrows of outrageous UPS shipping. To add insult to injury, the tube cage can be removed only by unscrewing four internal Phillips-head bolts; screwdrivers long enough to reach these bolts are too thick to go through the slots in the cage, and screwdrivers that will go through the slots are too short. Fortunately, my local hardware store had the necessary 10" by 3/16" screwdriver. My pocket \$5 lighter, I found that, with some forcing, the blade of my new driver would go through the tube-cage slots.

I reinstalled the tubes. All appeared to be working properly, though with single-ended tube amplifiers, the word properly acquires a somewhat different meaning from the usual, as you'll see.

The Mastersound 300 B.S.E. has two output transformer taps: 4 ohms and 8 ohms. I performed a full set of tests using both sets of output taps, but discuss only a representative selection here. Tested through the normal line-level

inputs, the maximum gain into 8 ohms was slightly different for each channel, at 40dB (8 ohm tap) and 38.8dB (4 ohm tap) for the left channel, but 40.5dB and 39.5dB, respectively, for the right channel. Tested via the Direct input, which bypasses the preamp circuit, the left-channel gain was 23.3dB (8 ohm tap) and 21.6dB (4 ohm tap), both figures measured into 8 ohms. The preamp therefore appeared to apply a maximum gain of 16.7dB, which is a little on the high side.

While the regular inputs preserved absolute polarity, the Direct input inverted polarity. The input impedance for the preamp section was a little lower than specified, at 67k ohms across the band for both channels, but the shortfall will be insignificant. The Direct connection had a much lower input impedance, however, ranging from 24k ohms at 20Hz to 13.3k ohms at 20kHz. While the output impedance was high compared with a solid-state design, it was not as high as I was expecting, and was well matched between the two channels, both factors a tribute to the construction of Mastersound's output transformers. From the 8 ohm tap, the output impedance was 3.5 ohms in the midrange, rising to 4 ohms at the top of the audioband;

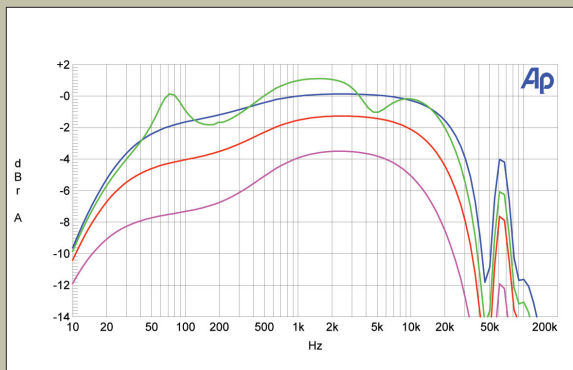


Fig.1 Mastersound 300 B.S.E., 4 ohm tap, frequency response at 2.83V into: simulated loudspeaker load (green), 8 (red), 4 (blue), 2 (magenta) ohms (1dB/vertical div.).

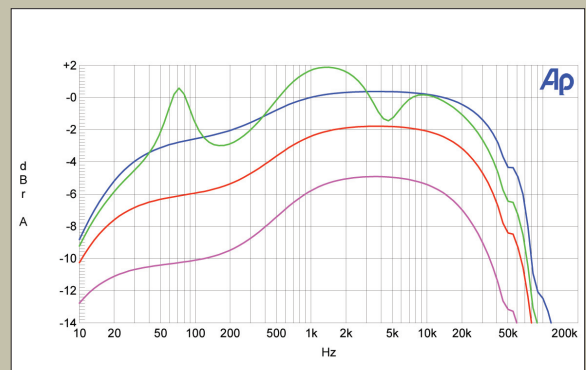


Fig.2 Mastersound 300 B.S.E., 8 ohm tap, frequency response at 2.83V into: simulated loudspeaker load (green), 8 (red), 4 (blue), 2 (magenta) ohms (1dB/vertical div.).

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cial amplifiers appeared in 1993, and the rest, as they say, is history.

Description

The Mastersound 300 B S.E. is a true integrated amplifier, with an active line-level preamplifier in front of its *final* (as they say in Italy) amplifier. The preamplifier uses both halves of a single 12AU7 dual-triode tube per channel, purely for voltage gain. The driver stage of the final amplifier comprises both halves of a 5687 dual-triode capacitively coupled to the 300B output triode, which itself is operated in cathode-bias mode. (I measured the rail voltage at a seemingly high 500V,

but the cathode-bias arrangement considerably lessens the operating voltage actually seen *across* the tube.) The output tubes are heated with DC, evidenced by the 300 B S.E.'s absence of hum through my speakers: The only unwanted noise emitted by my review sample was a brief, soft *buzz*, audible only when the power-supply capacitors were charging up.

The build quality is superb, and strikingly reminiscent of the Lamm ML2.1 monoblock (\$29,990/pair). Most of the parts reside on a single, large circuit board, with various other bits rigidly fastened to the chassis itself. In another Lammian touch, all transformers are

thoroughly potted in epoxy, or something like it. Signal capacitors are mostly polypropylene types, evidently custom-made for Mastersound.

The front panel of the 300 B S.E. sports only two controls: a volume knob and a rotary selector switch, for choosing among the four line-level inputs. A fifth choice, labeled Direct, activates a pair of inputs that bypass the Mastersound's volume pot and line-level gain stage altogether, for use with an external line-out preamplifier. (Because the disappointing owner's manual doesn't say otherwise, I first assumed that Direct indicated a line-level input from which some unneces-

from the 4 ohm tap, the impedance ranged from 1.9 to 3.8 ohms.

The variation in frequency response that results from the Ohm's Law interaction between this source impedance and the impedance of the loudspeaker is large enough to be audible, even with the 4 ohm tap. The green trace in fig.1, for example, is the Mastersound's response with its 4 ohm tap driving our standard simulated loudspeaker. The response variations are ± 1 dB. Just as important, the lower frequencies into resistive loads become increasingly shelved down with decreasing load impedance, though the fact that the response peaks at the loudspeaker's bass resonant frequency might subjectively compensate for this. I note that Art Dudley did feel that the Mastersound had quite a wide bandwidth for a single-ended design.

At the other end of the spectrum, its response does extend almost 20kHz with higher impedance loads. However, the rolloff is disturbed by an ultrasonic response peak, which can be seen in fig.1, centered on 62kHz. This was almost absent from the set of responses taken from the 8 ohm tap (fig.2), but does result in a small amount of overshoot with a 1kHz squarewave (fig.3). The sloping tops and bottoms of this waveform correlate with the shelved-down

lowers seen in the frequency-response graphs. Peculiarly, it isn't as clearly seen in the 10kHz squarewave response taken from the 8 ohm tap (fig.4), but is fully developed in the 4-ohm-tap result (fig.5). Channel separation (not shown) was only moderate: 53dB in both directions across most of the audioband. The unweighted wideband sig-

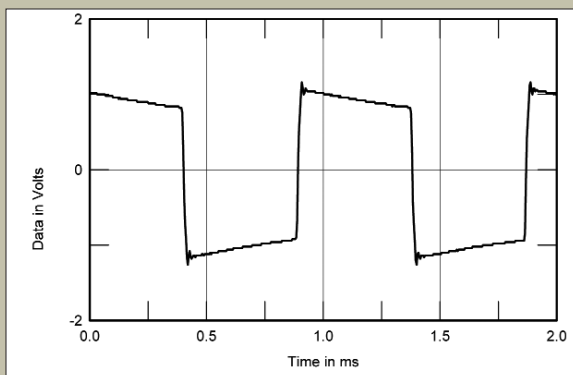


Fig.3 Mastersound 300 B S.E., 8 ohm tap, small-signal 1kHz squarewave into 8 ohms.

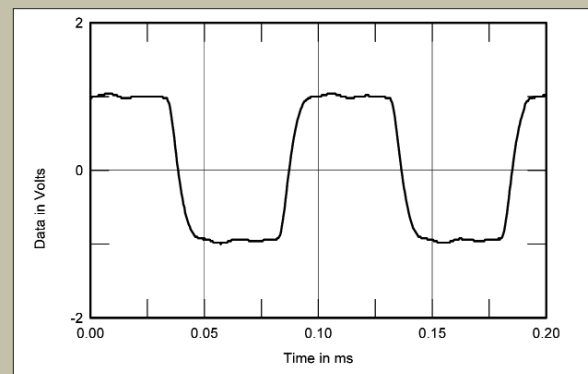


Fig.4 Mastersound 300 B S.E., 8 ohm tap, small-signal 10kHz squarewave into 8

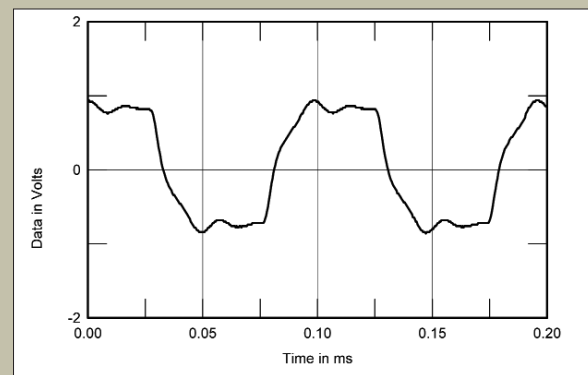


Fig.5 Mastersound 300 B S.E., 4 ohm tap, small-signal 10kHz squarewave into 8 ohms.

sary parts had been removed, and that I would hear something *wonderful* if I used those inputs for my CD player. My family was in the next room at the time; they're still angry with me for the deafening loudness that resulted.) Source input impedances are all specified as 100k ohms, while Mastersound claims that the inputs for the power amp are closer to 50k ohms.

The remote handset supplied with the 300 B S.E. is the height of simplicity and elegance. It functions only as a volume control, and sports just two buttons: one up, one down. There are no words, numbers, or markings of any sort—the two buttons are closer to one end than the other, so you can easily tell at a glance which one is up and which is

THE MASTERSOUND'S **MOST APPARENT** QUALITY WAS ITS VERY WIDE BANDWIDTH, ESPECIALLY FOR A TUBE **AMPLIFIER** OPERATING IN SINGLE-ENDED MODE.

down—and, best of all, it's carved from solid wood, with a light oil finish. If I were expecting visitors, especially female visitors, the Mastersound handset is the only one in the house that I would neither hide nor throw away.

I tried without success to remove the 300 B S.E.'s tube cage. For one thing, I was curious to hear if the Mastersound's audible performance would change

with different output tubes. (I have other 300Bs on hand.) For another, experience tells me that some tube amps sound better with the tubes uncovered—although I'm darned if I know why. In any event, I failed, because I lack a screwdriver with a shaft sufficiently long and thin to reach the screw heads tucked inside the corners of the cage. *Caveat tinkerer.*

measurements, continued

nal/noise ratio, taken in the worst case—with the input shorted but the volume control at its maximum—was quite good, at 74dB ref. 1W/8 ohms/8 ohm tap. A-weighting improved this figure to 82dB.

The Mastersound 300 B S.E.'s maximum output power is specified as 12W, equivalent to 10.8dBW into 8 ohms. However, the graphs of output power against the THD+noise percentage (fig.6, 8 ohm tap; fig.7, 4 ohm tap) show that the amplifier reaches this power at 4% THD only when the load impedance is twice the nominal output transformer tap; ie, 8 ohm tap into 16 ohms, 4 ohm tap into 8 ohms. Into lower impedances, the THD rises to alarming (and audible) levels much above 100mW. However, in the best case—the 4 ohm tap driving 16 ohms—the distortion is quite low below 100mW.

The level of distortion doesn't change appreciably with frequency (fig.8, 8 ohm tap; fig.9, 4 ohm tap), but again rises considerably with decreasing load impedance, especially from the 8 ohm tap. The two channels behaved very similarly, however. As J. Gordon Holt first wrote almost 40 years ago, what matters subjectively with distortion is not so much the absolute level but the spectrum. The Master-

sound generates what looks like almost pure second-harmonic distortion (fig.10); ie, each musical note is accompanied by another note exactly an octave higher in pitch. FFT analysis reveals some third-, fourth-, and fifth-harmonic content (fig.11), but this is much lower in level. This graph

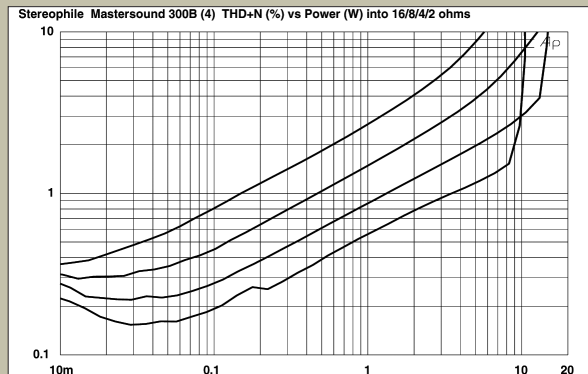


Fig.7 Mastersound 300 B S.E., 4 ohm tap, distortion (%) vs 1kHz continuous output power into (from bottom to top at 1W): 16, 8, 4, 2 ohms.

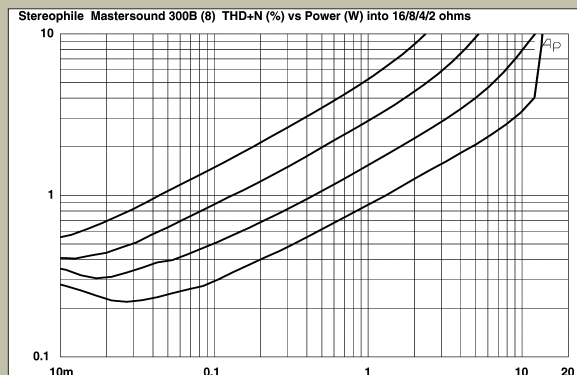


Fig.6 Mastersound 300 B S.E., 8 ohm tap, distortion (%) vs 1kHz continuous output power into (from bottom to top at 1W): 16, 8, 4, 2 ohms.

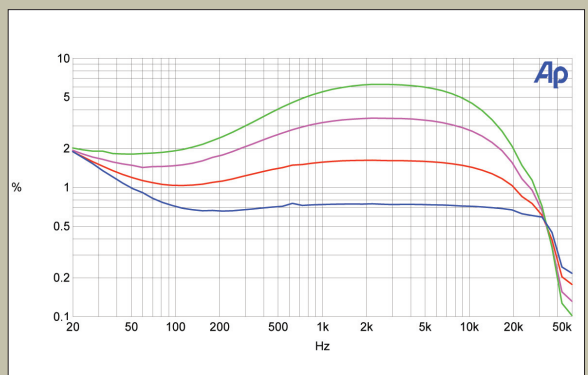


Fig.8 Mastersound 300 B S.E., 8 ohm tap, THD+N (%) vs frequency at 2.83V into: 16 (blue), 8 (red), 4 (magenta), 2 (green) ohms.

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Installation

For the most part, I used the Master-sound 300 B S.E. in my main system, where it drove a pair of Audio Note AN-E SPe/HE loudspeakers. Most of that time was spent using the Master-sound as an integrated amp, driven only by a line-level source. I also devoted some listening time to using the 300 B S.E. as a power amp only, driven by my Shindo Masseto preamp (output impedance: 600 ohms) and fed by line-level and phono sources. Although the latter was more musically satisfying overall, the Mastersound's character remained the same in both arrangements.

I also tried using the Mastersound in the next room, with my Quad ESL speakers. But I did so only long

enough to note that the zero-feedback 300 B S.E. was unsuitable for driving such a wiggly load: It just wasn't happening.

I tend to place integrated amplifiers much closer to my source components than to my speakers: either on a rigid oak table next to my turntable stand, or, in the case of very large or heavy amps, on the hardwood floor. Due to the Mastersound's extraordinary weight (73 lbs), the floor was the only realistic choice, and while I tried a couple of different isolation



also shows that while some low-frequency random noise is present, AC supply-related spurious are commendably low in level for this kind of amplifier. At low frequencies

(fig.12), the second harmonic remains the highest in level, meaning that the output transformer is free from saturation, at least at moderate powers. The 120Hz power-supply

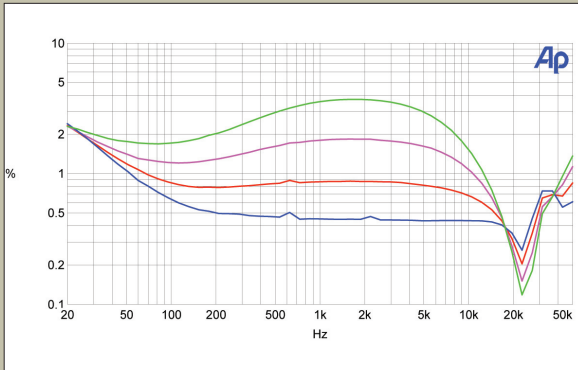


Fig.9 Mastersound 300 B S.E., 4 ohm tap, THD+N (%) vs frequency at 2.83V into: 16 (blue), 8 (red), 4 (magenta), 2 (green) ohms.

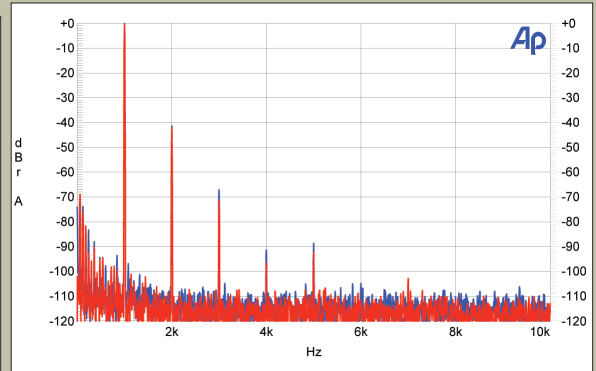


Fig.11 Mastersound 300 B S.E., 4 ohm tap, spectrum of 1kHz sine wave, DC-1kHz, at 1W into 8 ohms (linear frequency scale, left channel blue, right channel red).

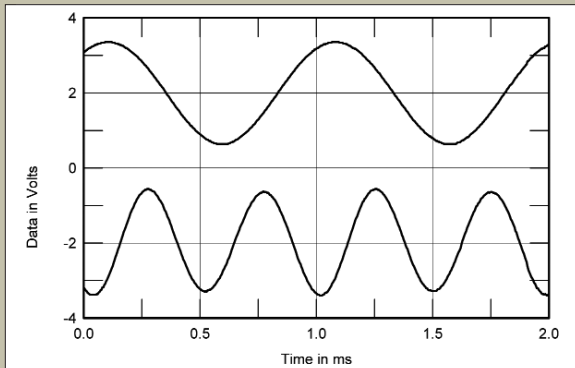


Fig.10 Mastersound 300 B S.E., 4 ohm tap, 1kHz waveform at 1W into 8 ohms (top), 0.874% THD+N; distortion and noise waveform with fundamental notched out (bottom, not to scale).

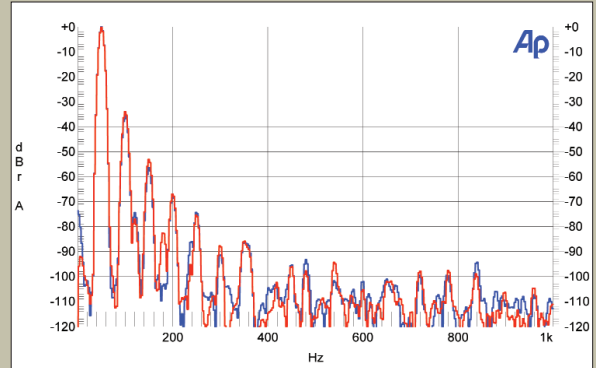


Fig.12 Mastersound 300 B S.E., 4 ohm tap, spectrum of 50Hz sine wave, DC-1kHz, at 1W into 8 ohms (linear frequency scale, left channel blue, right channel red).

platforms between floor and amp, neither made more than a slight and quite possibly imagined difference. Speaker cables were a different matter altogether: My choices were limited to the few on hand that were long enough to reach from one end of my room to the other, and the Mastersound 300 B S.E. clearly sounded best through the copper Auditorium 23 cables.

Listening

In a general sense, the Mastersound's most apparent quality was its *very* wide bandwidth, especially for a tube amplifier operating in single-ended mode. That quality may indeed have stemmed from a superior approach to designing and making output transformers, although I doubt if such good performance could result from any *single* thing. Whatever the reason, the 300 B S.E. had an enjoyably open sound, with a better-than-average—if not the absolute best—degree of realistic detail and texture. To the consumer who fears that this old technology will make his records sound murky or lo-fi, the Mastersound 300 B S.E. will be a pleasant surprise.

In addition to simply sounding good, and in common with other high-quality SETs, the 300 B S.E. was musically expressive. Melodic and rhythmic nuances remained largely undistorted, and the amp's sense of flow was satisfying. Tonally, it was surprisingly uncolored overall: Hobbyists looking for a decidedly warm, sweet sound will be

better served by other SET amps, while those who cherish tube amplification for other reasons, and who prize timbral neutrality above all else, will find much to enjoy in the 300 B S.E.'s performance.

Another surprise: Driving the Audio Note speakers, the Mastersound 300 B S.E. was a fine rock'n'roll amp. Both sonically and musically, it was an ideal partner for such fare as *Etta James Rocks the House* (LP, Chess CH-9184), a live recording from 1963 that captures the singer with an anonymous pickup band, playing for one of the most loudly receptive audiences I've heard on record. The surprisingly well-played electric bass on "Seven Day Fool"—sung with such abandon that it almost sounds as if James is saying, "On Tuesday, I'm gonna *hurt* you!"—had more depth and rhythmic nuance through my Shindo separates, but in every other way the Mastersound played this and other up-tempo records faultlessly, with real drive and momentum.

Turning to more introspective music, the Mastersound reproduced Pieter Wispelwey's recording of Tchaikovsky's *Andante cantabile* for Cello and Strings, Op.11, with Daniel Sepec and the German Chamber Philharmonic (SACD, Channel Classics CCS SA 16501), with nice tone and an above-average sense of flow in the melody carried by the solo cello. The sound was physically big overall, which I enjoyed, but it also sounded more reverberant than usual, and was slightly more forward than with my

usual electronics, and with less spatial distinction between soloist and orchestra. Other recordings were reproduced with sufficient depth—such as the brushed snare way in the background of Leonard Cohen's "So Long, Marianne," from the recent remastering of *Songs of Leonard Cohen* (CD, Columbia/Legacy 88697 04742 2).²

Other sorts of string tone were equally well served by the 300 B S.E., as on Dolly Parton's excellent *Little Sparrow* (CD, Sugar Hill SUG-CD3927). Through the very best gear I've used, the fiddles and fretted instruments on this modern-sounding CD have decent tone and surprisingly good texture—even the string bass, which sounds deep, quick, and appropriately woody through my Shindo separates. The Mastersound did almost as well: good low-frequency extension, but not quite as much color and texture.

In my experience, the sound of the selections from Schubert's *Rosamunde* recorded in 1960 by Stanislaw Skrowaczewski and the Minneapolis Symphony (LP, Mercury Living Presence SR90218) is distinctly system-dependent. On less sophisticated gear,

² I was delighted to see that this and two other early Cohen albums were getting the reissue treatment they deserve. But I was disappointed by the unambitious bonus tracks (there's much better unreleased stuff out there than the two John Hammond-produced turkeys tacked onto this collection), the uninformative (and occasionally just plain wrong) liner notes, and the downright fuzzy sound, the last suggesting that the original two-track tapes were either in poor condition or unavailable. Stick with the LPs.

measurements, continued

harmonic can be seen at -76dB, which is low for this kind of design.

Finally, the Mastersound 300 B S.E. performed surprisingly well on the demanding high-frequency intermodulation test, even at a power level just below visible clipping on the oscilloscope screen (fig.13). The 1kHz difference component lay at -40dB (1%); I have seen worse performance from push-pull designs.

Its output transformers are well engineered, but the Mastersound 300 B S.E.'s measured performance can't escape its single-ended provenance: both its response variations and its level of distortion are large enough to have audible consequences. You get the lowest level of distortion from its 4 ohm tap, but the smoothest ultrasonic rolloff from its 8 ohm tap. And neither tap works too well with impedances below its nominal value. The question is therefore begged: Did AD like the amplifier because of what it did right despite what it did wrong, or because of what it did wrong? I have to say that I have no idea.

—John Atkinson

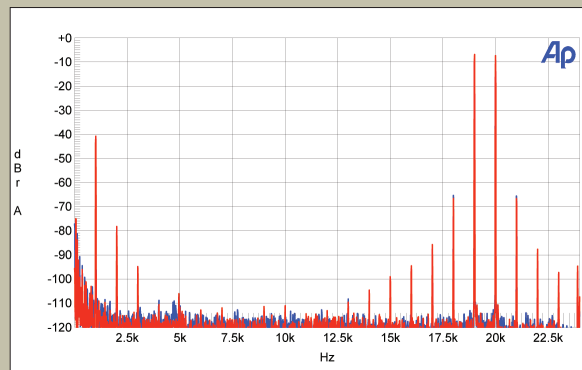


Fig.13 Mastersound 300 B S.E., 4 ohm tap, HF intermodulation spectrum, DC-24kHz, 19+20kHz at 6W peak into 8 ohms (linear frequency scale, left channel blue, right channel red).

the listener's attention is drawn to the excessively bright, in-your-face sound; but on the best gear, while the brightness and unrealistic perspective remain, the listener's attention is drawn instead to the sheer drive and bounce in the string playing, and the believable sound of the hall decay—especially following plucked notes. In that regard, the Mastersound's amp section, driven by my Shindo pre-amp, did a lovely job. The 300 B S.E. allowed this record to sound lively and tactile and, ultimately, satisfying.

The Mastersound 300 B S.E. is rated at 12Wpc—a bit optimistic for a standard 300B tube operated in class-A, though not beyond the capabilities of modern “high-performance” versions of that output triode—while my tetrode-based Shindo Cortese is said to provide 10Wpc. This made for as interesting a comparison under real-world conditions as it looks on paper. With the Audio Note AN-Es, the Mastersound was acceptably dramatic with most music—but, subjectively, it sounded less powerful than the Shindo amp, especially with recordings of massed voices, including the famous Kempe recording of Wagner's *Lohengrin* (LP, Angel 3641), and the finale of Gilbert Kaplan's first recording of Mahler's *Symphony 2* (CD, MCA Classic MCAD 2-11011). Especially with the latter, while not sounding egregiously harsh, the Mastersound gave voices a brighter, ringing sort of sound that was less natural and listenable than did the Shindo.

I try to stay mindful of the dangers of confusing a product's appearance with its sound, at least partly by keeping in mind those many products that confound the obvious patterns: small amps that sound big, light-colored amps that sound dark, etc. But the fact remains that the very large Mastersound 300 B S.E. also *sounded* consistently huge in my system—not in the sense of “throwing a big, billowy soundstage” (ugh), but in the sense that the amp had the same believable sense of scale with large music as it did with the small stuff. Which was good.

Conclusions

I hate tight shirts, astrology, scotch whisky, overcooked pork, publicity hounds, Ayn Rand, John Sayles, greedy shopkeepers, Queen, Las Vegas, and *I Love Lucy*. But more than any of those things, I hate background music. When I hear music, I want to give it all of my attention (unless it's Queen); when music is played as a background to something

else—dining, drinking, talking, refueling my car, whatever—it only ticks me off.

The nicest thing I could say about a device intended for music playback is that it did a poor job with background music: I couldn't ignore it, so I either had to pay attention or switch it off. That has been true of literally every combination of low-power, single-ended tube amp and high-sensitivity loudspeaker I've had in my home so far. Whatever their relative frailties and strengths, they have all honored recorded music by making it unignorable.

The Mastersound 300 B S.E. integrated amp carried on that tradition, generously, and did so with style. It's among the highest-fidelity SET amps I've used, yet it filled that role without sacrificing all the good qualities that often seem to come from a different direction altogether—such as flow and momentum and the ability to sound human rather than mechanical.

The 300 B S.E. offers acceptable value for the money, especially to the hobbyist who already has a warmish-sounding system and wants the benefits of a single-ended triode without adding more *color*. It would be a fine thing to install once and enjoy, tweakless and serene. Recommended. ■

ASSOCIATED EQUIPMENT

ANALOG SOURCES Linn LP12 (with Linn Basik power supply), Thorens TD-124 Mk.II turntables; Naim Aro, Rega RB300, RS Laboratory RS-A1 tonearms; Miyabi 47, EMT JSD 5, Denon DL-103, Koetsu Black cartridges.

DIGITAL SOURCE Sony SCD-777ES SACD/CD player.

PREAMPLIFICATION Auditorium 23 Standard, K&K Audio, Koetsu step-up transformers; Shindo Maseto, DNM 3D preamplifiers.

POWER AMPLIFIERS Quad II monoblocks, Shindo Cortese, DNM PA3AS.

LOUDSPEAKERS Quad ESL, Audio Note AN-E/SPe HE.

CABLES Interconnect: Audio Note AN-Vx, Shindo silver, DNM. Speaker: Auditorium 23, DNM (new style), Naim NACA-5. AC: JPS Labs The Digital (Sony SACD player).

ACCESSORIES Mana Reference Table; 3 Mana short tables (under Linn LP12); big piece of wood (under Sony SACD player).

—Art Dudley