BASCOM H. KING

JOLIDA SJ-801A INTEGRATED AMP

The SJ-801A is the top model in Jolida's series of tube integrated amplifiers (the company also offers an attractively priced CD player with a tube output stage). It's more eye-catching than Jolida's prior models, thanks to a shiny front panel in your choice of gold or stainless steel and matching top plates on the round transformer cans. Rated at 70 watts per channel, the SJ-801A uses a pair of Svetlana 6550C output tubes in each channel, a 12AX7 dual triode for the front end, and two 6SN7s for the phase-inverter/driver tubes.

JOLIDA'S SJ-801A DROVE B&W 801s TO AMAZING VOLUMES, CLIPPING GRACEFULLY WHEN OVERDRIVEN.

Front-panel controls consist of an on/off toggle switch, a rotary volume control, and a rotary input selector. Unlike some of Jolida's other amplifiers, the SJ-801A has no balance control. On the rear are three speaker terminals per channel, for common, 4-ohm, and 8-ohm connections. These terminals are very nice, gold-plated binding posts that accept large wires (at least AWG #8), large spade lugs, or banana plugs; however, they are too far apart to accept dual banana plugs. Three pairs of input phono jacks, an IEC AC power-cord socket, and a power-line fuse complete the rear-panel lineup.

Bias test points and screwdriver-adjustable bias pots for each of the four output tubes are accessible through the bottom plate. When adjusting bias, you connect your voltmeter's negative lead to the center pin of a five-pin in-line socket, connect its positive lead to the pin corresponding to the tube whose bias you're setting, and adjust the pot for a reading of 50 millivolts, ±5 millivolts. The test voltage is measured across 1-ohm resistors connected from the output tube's cathode to ground, so the millivolt reading corresponds to milliamperes of cathode current.

The SJ-801A's chassis is made of fairly heavy steel and seems to be quite robust. An internal subplate holds the tube sockets; the audio circuitry is split between circuit boards for the input and driver stages and for the output stage. Power-supply components, including the bias-adjustment pots for the output tubes, are on two other boards, but the bias-adjustment test points are on the same board as the output stage.

Parts quality appears to be reasonable and appropriate for a product in this price class. Some of the wiring is secured with tie wraps, while larger bundles are contained in shrink tubing. Under the decorative transformer cans, the power transformer appears to be a toroid, whereas the output transformers are of the EI-lamination type.

Measurements

The Jolida SJ-801A's manual suggests that the output tubes' plate current should be 50 milliamperes, ±5 milliamperes, and it actually was about 53 milliamperes per tube for 120-volt AC line voltage when the amp reached me. (However, I did tweak the bias

Rated Power: 70 watts per channel into 8 ohms, 29 Hz to 25 kHz.
Rated THD + N: Less than 1% at 11 volts (15 watts) into 8-ohm loads, 49 Hz to 20 kHz.
Dimensions: 18¼ in. W x 8½ in. H x 13½ in. D (46.5 cm x 22 cm x 34.5 cm).
Weight: 47 lbs. (21.5 kg).
Price: $1,400.
Company Address: 10820 Guilford Rd., Annapolis Junction, Md. 20701; 800/783-2555.
For literature, circle No. 93

Photos: Michael Groen

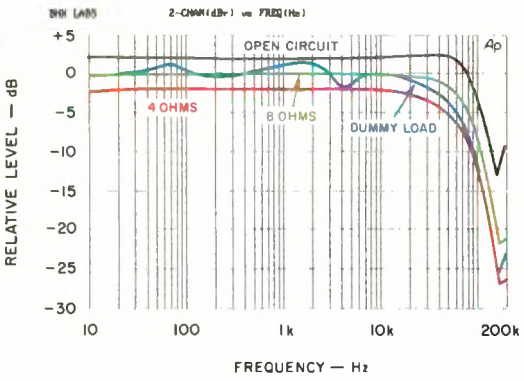

Fig. 1—Frequency response as a function of loading on the 8-ohm tap.

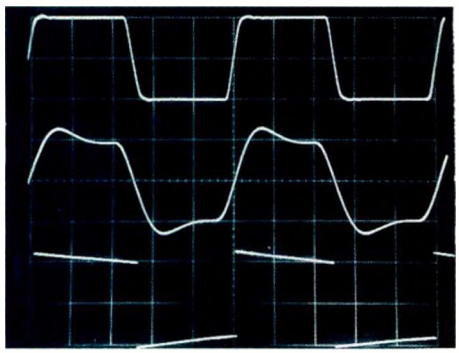

Fig. 2—Square-wave response for 10 kHz into 8-ohm load (top), 10 kHz into 8 ohms paralleled by 2 µF (middle), and 40 Hz into 8 ohms (bottom).

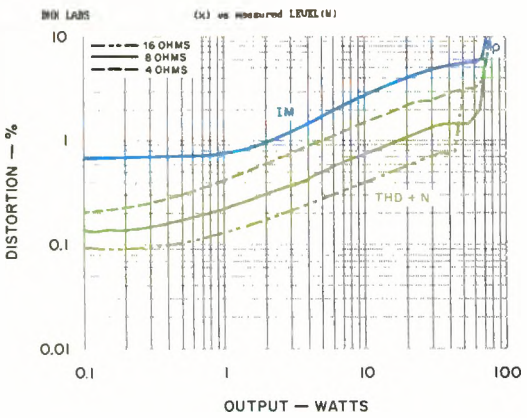

Fig. 3—THD + N at 1 kHz and SMPTE-IM distortion vs. power output, measured at 8-ohm tap.

slightly to get all four tubes as close to the same current as I could.) If plate current is much below 50 milliamperes, the SJ-801A will have higher distortion and higher output impedance; currents much above 50 milliamperes will lower the output impedance and distortion but also shorten the life of the output tubes. Distortion is not the only aspect of the amp's sound that plate current can affect. Lower current will make it brighter, more articulate, and possibly a bit edgy; higher current will make it smoother and more listenable, but with less of a sense of life.

The SJ-801A's frequency response is plotted in Fig. 1 for open circuit, 8-ohm and 4-ohm loads, and the NHT dummy speaker load, all on the left channel's 8-ohm tap at the maximum volume-control setting. (Response with the volume control turned down was not appreciably different.) As can be seen from the wide spread between the curves, output regulation and damping factor (which are related) are not very high in the SJ-801A, as is the case with many tube amps. In the SJ-801A, this is largely because of the low amount of overall negative feedback used. On the 4-ohm tap, response was essentially the same as in Fig. 1 (but for 4- and 2-ohm loading instead of 8 and 4 ohms), except that variations with the NHT dummy load were only about half as great because the 4-ohm tap's output impedance is about half the 8-ohm tap's.

Square-wave response is presented in Fig. 2 for the left channel (overshoot was a bit greater on the right channel). The moderate tilt on the 40-Hz square is acceptable; however, many amps have less tilt, signifying less low-frequency phase shift. Rise and fall times for a 10-volt peak-to-peak output into 8 ohms on the 8-ohm tap were 5.5 microseconds for the left channel and 5 microseconds for the right.

Figure 3 shows how distortion varies with output power and how changes in load affect total harmonic distortion plus noise (THD + N). Figure 4 shows how THD + N varies with frequency at different power levels. A spectrum analysis of harmonic distortion for a 1-kHz signal at 10 watts (Fig. 5) reveals that the dominant distortion components are the second and third harmonics. Higher-order harmonics are less prominent, but there's still an appreciable amount of fifth and seventh harmonic. Note also the cluster of power-supply ripple components around each harmonic.

Interchannel crosstalk at the highest volume setting was below –70 dB from 20 Hz to about 2.5 kHz; at 20 kHz, it increased to –54 or –57 dB, depending on the testing direction. With the volume set for 1 watt of output into 8 ohms for a 500-millivolt input (a standard IHF test condition), crosstalk was about the same.

Associated Equipment Used

Equipment used in the listening tests for this review consisted of:

- **CD Transports:** Sonic Frontiers SFT-1 and PS Audio Lambda Two Special
- **CD Electronics:** Genesis Technologies Digital Lens anti-jitter device and Threshold DAC 2, Sonic Frontiers SFD-2 MkII, and Classé Audio DAC-1 D/A converters
- **Phono Equipment:** Oracle turntable, Well Tempered Arm, Accuphase AC-2 moving-coil cartridge, and Vendetta Research SCP-2C phono preamp
- **Additional Signal Sources:** Nakamichi ST-7 FM tuner, Nakamichi 250 cassette deck, and Technics 1500 open-reel recorder
- **Preamplifiers:** Sonic Frontiers Line 3, Ayre Acoustics K-1, and Threshold T2 (or no preamp at all)
- **Power Amplifiers:** Sonic Frontiers Power-3 mono tube amplifiers, an Ayre Acoustics V-3, and an Arnoux Seven B digital switching amp
- **Loudspeakers:** Genesis Technologies Genesis Vs and B&W 801 Matrix Series 3s
- **Cables:** Digital interconnects, Illuminati DX-50 (AES/EBU balanced); analog interconnects, Transparent Cable MusicLink Reference (balanced) and Tara Labs Master and Music and Sound (unbalanced); speaker cables, Transparent Cable MusicWave Reference and Tara Labs RSC Master Generation 2

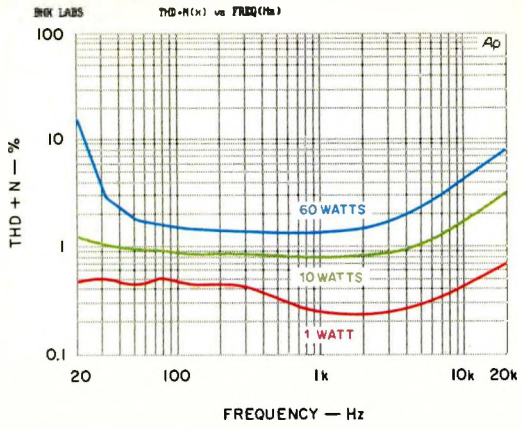

Fig. 4—THD + N vs. frequency.

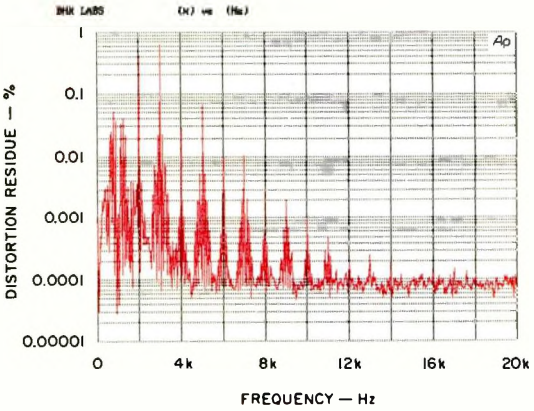

Fig. 5—Spectrum of harmonic-distortion residue for a 1-kHz signal at 10 watts out into 8 ohms.

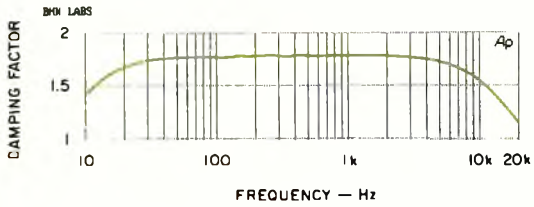

Fig. 6—Damping factor.

Damping factor for the left channel on the 8-ohm tap is shown in Fig. 6; it was about the same on the 4-ohm taps. Damping was slightly higher in the right channel at either tap.

Output noise was just about equal in each channel. Wideband, it measured 1.57 millivolts in the left channel and 1.5 millivolts in the right; with A-weighting, the results were 407 and 427 microvolts, respectively. The wideband figures are dominated by power-supply hum components; 1.5 millivolts of hum could be audible in a quiet room, if your speakers' sensitivity is greater than about 90 dB. The amp's IHF signal-to-noise ratio was 77 dB for the left channel and 76.3 dB for the right.

Dynamic power attainable at the visual onset of clipping was 70 watts at the beginning of the 20-millisecond tone burst (yielding a dynamic headroom of 0 dB) and 64 watts at its end. Steady-state power at the visual onset of clipping (about 1% distortion) was 60 watts, which corresponds to a clipping headroom of –0.7 dB.

Voltage gain for 8-ohm loading on the 8-ohm taps was 36.1 dB for the left channel and 36.3 dB for the right. These figures correspond to IHF sensitivities of 44.4 and 43.3 millivolts for 1-watt output into 8-ohm loads. The SJ-801A drew 0.64 ampere from the AC line before plate current commenced to flow and 1.76 amperes when the 801A was fully warmed up.

Use and Listening Tests

Driving B&W 801 Matrix Series 3 speakers for my first, casual, listening, the SJ-801A sounded okay. When I tried it on Genesis Vs, it still sounded pretty good, but the sound was noticeably less clear and open than with the other, much more costly, amps I use. These speakers demand the utmost of a power amp, and I didn't think the SJ-801A was really a match for them—not that you'd expect it to be, at its price.

The B&Ws are a more appropriate and representative load for this amp, so I went back to them for the rest of my concentrated listening. The SJ-801A drove them to amazing volume levels and clipped gracefully when overdriven. I played a CD that I made of a train recording that my mentor, Gordon Mercer, recorded on the last day steam locomotives went through town, back in the mid-'50s. The SJ-801A played this quite impressively, handling the thunderous bass without apparent strain. Bass was reasonably tight and powerful. On other recordings, imaging and detail were good, but there was a bit of mild glare and irritation in the upper mid-range. All in all, though, the Jolida SJ-801A is a good-sounding amp that should yield fine musical reproduction for many listeners. As I said the last time I reviewed a Jolida amp, anyone who wants to get tube amplifier sound without paying a fortune should check out this company's products. A

TECHNICAL HIGHLIGHTS

The first-stage circuit and tubes of the SJ-801A are somewhat different from those of the Jolida SJ-302A amplifier, which I reviewed in the March 1996 issue.

The SJ-801A is said to have about 5 dB of overall feedback. The feedback loop runs from the 8-ohm tap, on the secondaries of the output transformer, back to the input tube cathodes through a series feedback resistor.

The SJ-801A's input jacks are wired, via a two-pole selector switch, to the volume control. The control's wipers then feed signal to the grids of the input tubes. Each channel's first stage uses half of a 12AX7 dual triode that's wired as a common-cathode amplifier with a simple resistive plate load. This stage's output is directly coupled to the second stage, a 6SN7 tube configured as a long-tailed phase inverter. The output of this stage is capacitor-coupled to the output stage—6550C beam-power tubes in an Ultra-Linear configuration, operating with fixed bias.

The term "fixed bias" means that the cathodes are operated at or near ground potential and that the control grids of the output tubes are run at an appropriate negative bias voltage. If the negative grid bias in such a circuit is adjustable, you have "adjustable fixed bias," contradictory as that sounds. If the grids are at ground potential and the cathodes are connected to ground through a common resistor, you have "cathode bias," or "self-bias." In that arrangement, the cathode resistor's value is chosen so that the voltage drop caused by the tube's current flow matches the cathode-to-grid voltage bias needed for the desired current flow. *B.H.K.*