

TECHNICAL TALK

By JULIAN D. HIRSCH



JAMES B. LANSING SA-600 STEREO AMPLIFIER



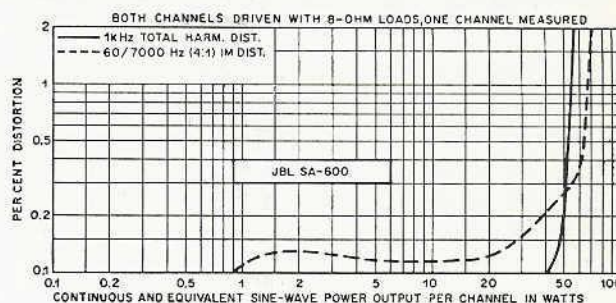
● ALTHOUGH it is now the rule rather than the exception for modern transistor high-fidelity amplifiers to be of good quality, we occasionally find one that is outstanding. The James B. Lansing SA-600 is the most recent of these to come to our attention, and it truly sets a new standard of performance for integrated amplifiers.

The JBL SA-600 is a large, powerful, and attractive unit, rated (with great conservatism) at 40 watts per channel. Like a few other amplifiers, the SA-600 is claimed to have unmeasurably low distortion within its rated power. Unlike most of them, however, it lives up to this claim. At or below its rated output, we were unable to measure its harmonic distortion, which means that whatever distortion was present was below our test-equipment residual of about 0.1 per cent. The SA-600's frequency response was flat within ± 0.25 db from 20 to 20,000 Hz. The RIAA phono equalization was accurate within 1 db from 30 to 20,000 Hz, and NAB tape equalization was within 1 db from 75 to 20,000 Hz, falling off to -2 db at 50 Hz.

The distortion characteristics of the JBL SA-600 prove that it is not necessary for a transistor amplifier to have increasing distortion at low power levels. From 0.1 watt to over 40 watts, the harmonic distortion was somewhere under 0.1 per cent, and even at 50 watts it was only 0.25 per cent. Intermodulation distortion was under 0.15 per cent up to 30 watts, increasing to only 0.25 per cent at about 50 watts.

Since the distortion at the manufacturer's rated power of 40 watts per channel was too low for us to measure reliably, we made measurements of harmonic distortion from 20 to 20,000 Hz at a 50-watt level. It was 0.25 per cent from 50 to 10,000 Hz, increasing to about 0.4 per cent at 20 and 20,000 Hz. At half power or less, the dis-

ortion was under 0.15 per cent over the entire audio-frequency band. All distortion measurements, in accord with the IHF standards, were made with 8-ohm loads, both channels driven, and with a 120-volt line. At 16 ohms, power output is reduced to 32 watts per channel. At 4 ohms, the SA-600 can put out 65 watts per channel



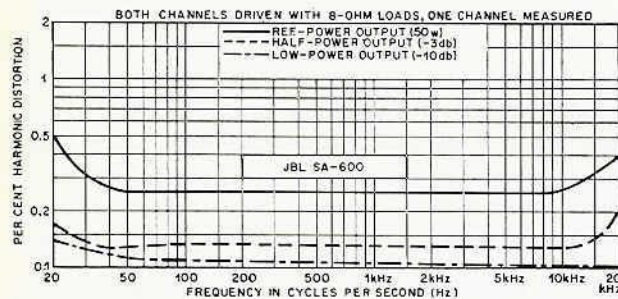
for brief periods of time. Prolonged operation with more than 40 watts output per channel will cut in the automatic protective devices.

The SA-600 had the lowest noise level we have ever measured on an integrated amplifier. In spite of the very high gain of its phono inputs (there are three switch-selected sensitivities available; on the most sensitive position only 0.2 millivolt of signal was needed for 10 watts of output), the hum and noise were 66 to 75 db below 10 watts. On the high-level inputs, hum and noise were 100 db below 10 watts. This is the *only* amplifier we have ever used that could be operated at maximum gain on the magnetic-phono input without a trace of audible hum or hiss.

Space does not permit a complete exposition of the features and performance of the JBL SA-600. Let us simply say that it was superb in every detail. We were especially impressed by its tasteful design, simplicity, and freedom from gadgetry. The input selector has only four positions: TAPE HEAD, PHONO, TUNER, and AUX. A switch underneath the amplifier converts the tape-head input for

use with a second magnetic-phonograph source. The other knobs are for setting volume, balance, bass, and treble. Toggle switches control loudness compensation, tape monitor, stereo/mono selection, and power. There is also a front-panel stereo headphone jack that mutes the speakers when phones are plugged in.

A special TEST switch provides a sensitive method of aurally balancing all inputs for equal channel gain. It connects the two speakers in series across the outputs so that they receive only the *difference* signal. With a mono program input, a definite sonic null is heard when the amplifier channels are balanced. This technique takes care



of any electrical unbalance in the system, but cannot, of course, compensate for any differences in efficiency between two speakers.

From the standpoint of operation, the JBL SA-600 is one of the simplest amplifiers imaginable. All controls function with a silky smooth, yet positive action. The

lack of the channel-reversing and other mode-switching features found on some amplifiers is no drawback, since there is really no need for them in a well-designed stereo installation.

The circuits of the SA-600 are as sophisticated as its operation is simple. In the preamplifier section, all equalization and tone-control action is accomplished by negative-feedback circuits for minimum distortion. The power-amplifier stages are direct-coupled throughout, with most being of the push-pull, complementary-symmetry type. Overall negative feedback, extending down to 0 cycles per second (d.c.), results in a rock-stable, low-distortion amplifier. Balanced positive and negative power supplies permit coupling direct to the speakers, thus preserving the damping characteristics of the amplifier from d.c. to the highest audio frequencies.

The SA-600 is designed to be stable with any kind of speaker load and to be immune to damage from any type of improper load from open circuit to short circuit. Improper operation may blow a fuse, but the amplifier's components will be undamaged. James B. Lansing backs this up with a two-year guarantee covering both parts and labor.

Using the JBL SA-600 is the quickest way to become convinced of its merit. It is absolutely noise-free, has no switching transients or crosstalk, and delivers more power than most users will ever require. It would be difficult to imagine a more satisfying amplifier for the most discriminating listener. It is worth every cent of its \$345 price.

As seen in the
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