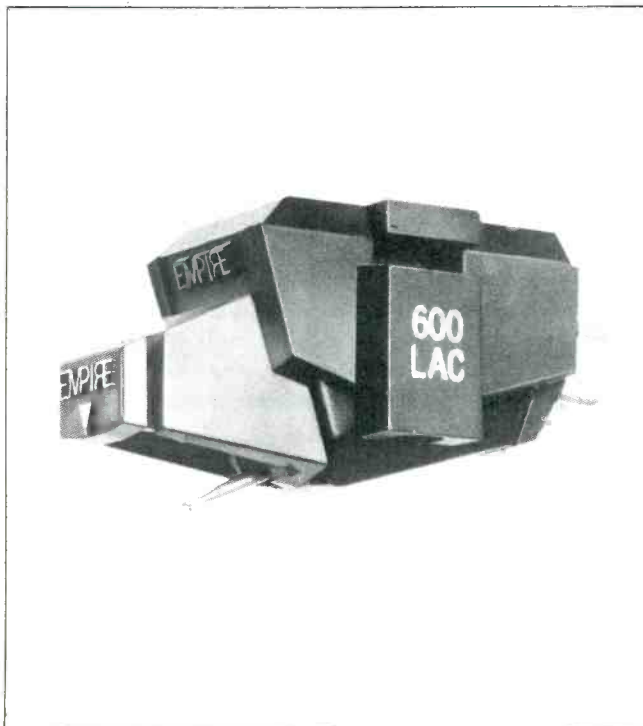


3

**EMPIRE 600 LAC
PHONO
CARTRIDGE****Manufacturer's Specifications****Type:** Variable reluctance, moving iron.**Stylus:** 0.3 × 3.0 mil diamond.**Frequency Response:** 20 Hz to 28 kHz, ±1.75 dB.**Separation:** 30 dB at 1 kHz, 17 dB at 12.5 kHz.**Recommended Tracking Force Range:** 1 to 2 grams.**Static Compliance:** 28.8×10^{-6} cm per dyne.**Load:** 47 kilohms, 150 pF.**VTA:** 20°.**Output:** 4 mV at 3.54 cm/S.**Price:** \$175.00; user-replaceable stylus, \$87.50.

Empire's 600 LAC is the top model in their Dynamic Interface series of six phono cartridges, and it bears some resemblance to the slightly higher priced EDR.9. Both use the same kind of Large Area Contact (LAC) stylus and feature the Inertially Damped cantilever construction. This method involves the use of a tiny bar of iron, really a miniature tuning fork, inside the hollow cantilever which damps the resonance of the moving mass and raises its frequency. Effective tip mass is specified at 0.6 mg, somewhat higher than the EDR's 0.3 mg but still significantly below average. (As a matter of interest, some highly regarded MC cartridges have a tip mass of over 1 mg.) The



cantilever is made from tapered aluminum, and it is boron-vaporized to give it extra strength.

Three magnets are used, one of Indox and two made from samarium cobalt, which helps to keep the weight down to just over 5 grams. The cartridge comes complete with mounting hardware, stylus brush, and a small screwdriver.

Measurements

For test purposes, the 600 LAC cartridge was mounted on the arm of a Luxman PD-375 turntable and the tracking force set to 1.5 grams, a value in the middle of the recommended range. The anti-skating force was turned to about 1.7 grams for the initial tests.

As shown in Fig. 1, the frequency response was within 0.5 dB from 40 Hz to 12 kHz, falling slightly from 14 kHz and maintaining that level to 20 kHz. Using the CBS STR-120 wide range test record, it was ascertained that the output rose to a maximum at 26 kHz, falling from 30 kHz. Channel separation was a high 32 dB in the midrange, falling to 22 dB at 10 kHz and a very creditable 11 dB at 20 kHz. Square-wave resolution was excellent (see Fig. 2), and the

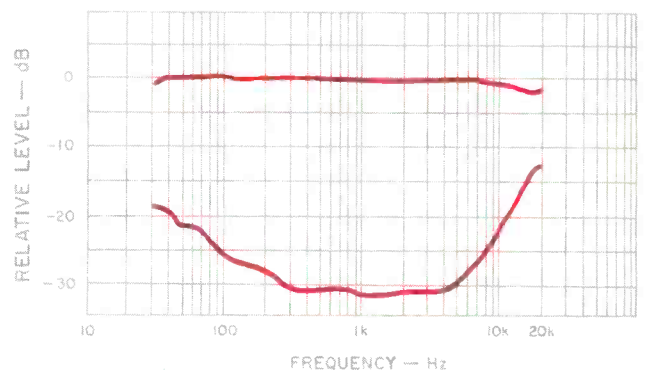


Fig. 1—Frequency response and separation, Empire 600 LAC phono cartridge.

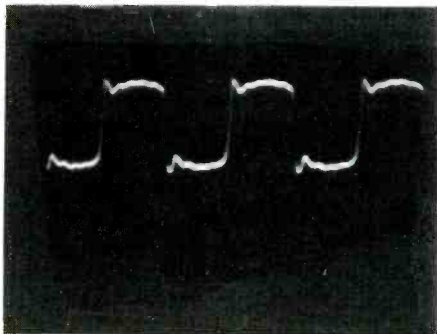


Fig. 2—Square-wave response.

normal overshoot was well-damped. Channel balance was within 0.5 dB. Trackability was 24 cm/S at high frequencies (10.8 kHz pulsed) and also at the low frequencies (400 Hz and 4 kHz), increasing to 31 cm/S at mid-frequencies (1 and 1.5 kHz). Using the DIN 315-Hz test record, levels up to 70 microns were tracked by increasing the tracking force to 1.7 grams. All bands on the Shure ERA—III big drum sec-

tion were negotiated with no trouble, but some distortion was noticed on the high velocity level five of the flute test on the ERA—IV test record. IM distortion was less than 2% up to 12 cm/S, increasing sharply to 5% at 25 cm/S. Output measured 3.95 mV at 3.54 cm/S. Inductance was 370 mH. Finally tracking angle was checked, and it was found to be exactly 20° as claimed.

Use and Listening Tests

As usual, a wide selection of records was used for the listening tests, including digital, direct discs and dbx recordings. Sound quality was notable for a clean bass with a smooth midrange and a good transient response, rather than an overemphasis of transients which can cause an unpleasant harshness. Large-scale orchestral works sounded spacious, while the stereo image was stable and well-defined. Complex scores were resolved with a nice sense of detail, and solo instruments had a satisfying presence. While the EDR.9 has a better trackability, this is probably academic as I experienced no trouble using the 600 LAC with heavily modulated records such as the *Sheffield Tower of Power* or any other record featuring high-amplitude big drum passages. All in all, the Empire 600 LAC offers performance that comes remarkably close to that of the EDR.9, which is one of my standards.

George W. Tillett

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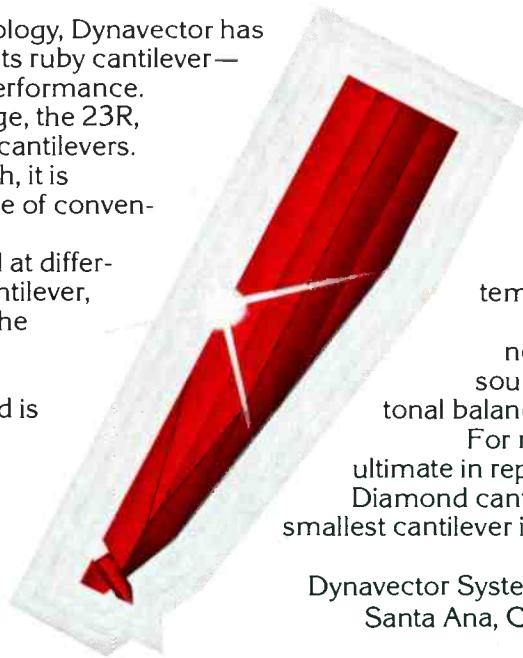
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