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SONY PS-X800 TURNTABLE

Manufacturer's Specifications

Speeds: 33 $\frac{1}{3}$ and 45 rpm.

Motor Type: Direct-drive, linear torque, brushless and slotless.

Wow & Flutter: 0.025 percent W rms.

Rumble: 78 dB (DIN B).

Speed Deviation: Within 0.003 percent.

Facilities: Repeat, reject, record size selection.

Arm: Electronic Biotracer.

Tracking Error: ± 0.05 degree.

Dimensions: 17 $\frac{7}{8}$ in. (44.77 cm) W x 17 $\frac{7}{8}$ in. (44.77 cm) D x 4 $\frac{3}{4}$ in. (12.06 cm) H.

Weight: 25 lbs. 10 oz. (11.53 kg).

Price: \$850.00.



The unit was a real delight to use, and the rumble figure was one of the lowest yet measured.

Sony's Model PS-X800 is an unusually sophisticated turntable which approaches the ultimate in present-day design practice. It has a fairly conventional servo-controlled direct-drive motor but the *piece de resistance*, so to speak, is the arm itself. This is a linear tracking (SLT) design which Sony calls its "Biotracer UniMotion Tonearm," and it is controlled by no fewer than four tiny, linear-torque, brushless motors. One is used for the normal arm motion, while the second provides fast speeds; motors three and four control the vertical and lateral motion. Unlike some other SLT designs which move the arm one groove at a time, the arm on the PS-X800 moves at a constant minimum speed which, says Sony, is "calculated to be the sum of a constant value and the value which is required to reduce the stylus tracking error to zero." Magnetic sen-

sors provide the error voltages for the vertical and horizontal motors, while angular tracking errors are sensed by a Hall-effect device. Because the arm is controlled in the vertical direction, the fundamental arm resonance is reduced considerably. Tracking force is achieved by passing a current through the vertical motor, and it is determined by a calibrated control located near the front of the unit. When the arm is in its *Rest* position, the tracking control voltage is disconnected and the arm balanced automatically, thus ensuring that the correct tracking force will be applied. During this balancing process, the *Arm Standby* lamp is turned on.

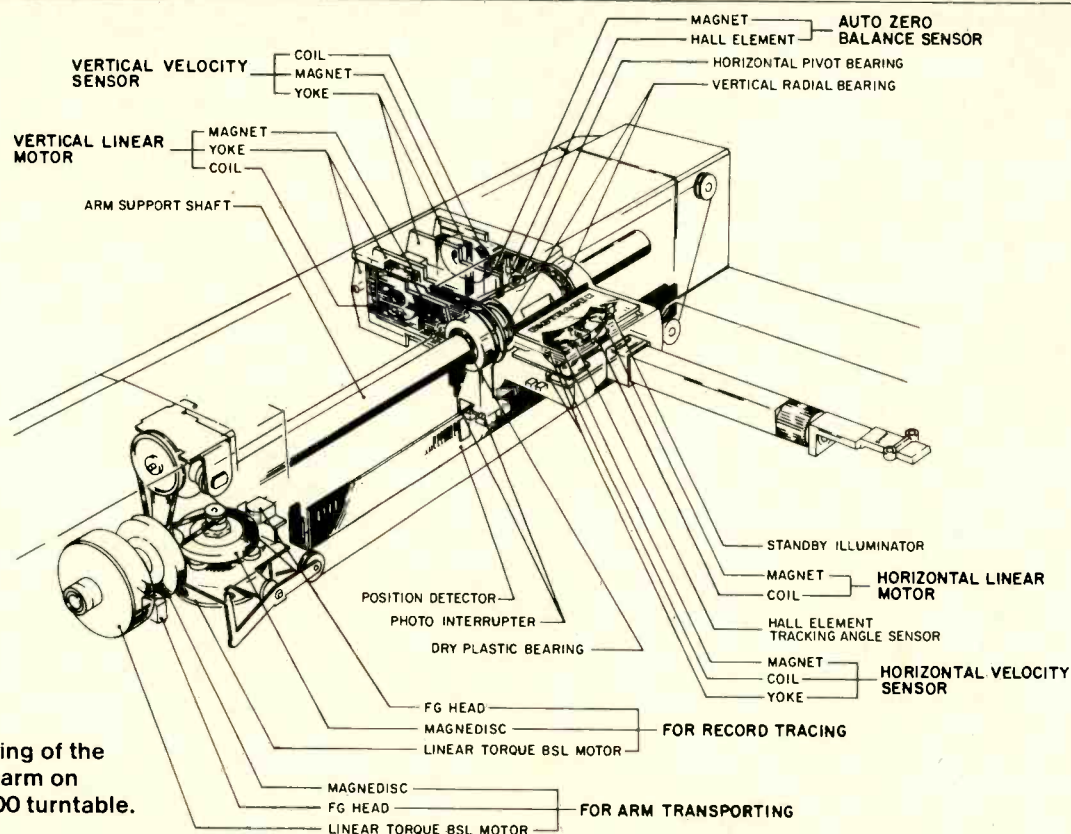
The arm is 7 $\frac{1}{8}$ inches from pivot to stylus, but half of that length is taken up by the base extrusion and low-mass headshell. The rest is made from a rigid aluminum section measuring just under

a half-inch square. Instead of ball bearings, which can cause noise in some circumstances, the arm runs on specially designed resin bearings.

The platter drive motor is a brushless, slotless, linear (BSL) torque type, and the Magnedisc servo control circuit works in conjunction with a magnetic pickup head which derives signals from a magnetic coating on the edge of the platter. Three slots in the platter allow a photoelectric sensor to determine the size of the record so the information can be sent to the arm lowering circuit. There is also a jack which allows interface through Sony's optional RM-65 remote module to a Sony cassette deck so that recording is automatically started when the cartridge comes down. The RM-65 lists at \$25.00.

The unit comes complete with a handsome integrated dust cover which

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Cutaway drawing of the Biotracer tonearm on Sony's PS-X800 turntable.

slopes downwards towards the front to leave the controls accessible. Reading from left to right, the first control is a power switch, while further over are the cue button and left and right buttons for the arm motion. In between them is another button marked *Fast* which allows the arm to be moved quickly in either direction. Next comes an illuminated panel displaying the speeds (33 1/3 or 45 rpm) together with the word *Locked* which appears when the speed is correct. The speed selector and *Repeat* button are at the end of this panel, while the *Start-Stop* switch is over on the right. This last features a built-in green indicator light, and just behind is the tracking force control which is calibrated from 0.5 to 3 grams. The black polished base is made from a special low-Q bulk-molding compound, and it stands on four large, adjustable, gel-filled feet.

Measurements and Use Tests

For test purposes, an Adcom XC-E moving-coil cartridge was mounted in the headshell, and the tracking force set to 1.8 grams — which I found to be op-

timum for this combination. I was curious to see what effect the electronic damping would have on the arm resonance, so this particular test was made first — after the unit was properly leveled (more about that later). After some careful measurements, the resonant frequency was found to lie between 8.5 and 9 Hz, but the rise was considerably less than 1 dB and didn't show up at all with some tests! Wow and flutter was a little better than 0.03 percent (DIN 45-507), and rumble was -65 dB using the ARRL weighting — one of the lowest figures yet measured. Tracking force calibration was very accurate — certainly within the readability tolerance. Speed was accurate too, and no drift was detected after several hours playing. Correct speed was reached in under half a revolution.

The unit was a real delight to use — a touch of the buttons would send the arm in either direction with a satisfying smoothness. Although the instruction manual shows two fingers on the controls, I found one finger could easily press two buttons at the same time for fast operation. At the end of a record,

the motor is immediately switched off and the arm returns to its *Rest* position, taking about five seconds. Because of the controlled electronic damping of the rigid arm, warped records were tracked with ease — a plus feature which is probably not as important as the absorption of the arm resonance. The unit was less susceptible to acoustic feedback than most — partly due to the damping feet and nonresonant base, although the arm design undoubtedly helps. The only criticism I have to make concerns the set-up procedure, where the user is told to check the balance by operating the cue control to see that the cartridge does not veer one way or the other. Although this seems to work satisfactorily, a small spirit level would have been more reliable for this and I would have liked to see one built in. One last thing: Those readers who are following the Great Platter Mat controversy will be interested to know that the mat on the PS-X800 is made from a heavy non-ribbed rubber and weighs about 13 ounces.

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