Advent Model 300 FM Receiver

Advent Model 300 FM stereo receiver. Dimensions: 3 7/16 inches (H) by 15 13/16 inches (W) by 9 5/16 inches (D). Weight 11 lbs. Price: $269.95. Warranty: "Limited"; 3 years. Manufacturer: Advent Corp., 195 Albany St., Cambridge, Mass. 02139.

Advent Corp.'s reputation for innovation rests on products representing either significant advances in the state of the art or exceptionally good performance for the money. In recent years there have been few new audio products from this Boston firm, perhaps because its design talents were being concentrated on development of its color TV device. But audiophiles haven't been totally ignored. The new Model 300 receiver incorporates both halves of Advent's innovative philosophy: Overall, it's a no-frills package with lots of performance per buck, and its new phono preamp design does advance the state of the art.

The new preamp stems from Advent's study of why phono preamps sound different even if their measurements are similar. The study concluded that the root of the problem lies in the interaction of the cartridge with the input impedance of the amp. Some designs present a complex load to the cartridge that impairs its performance. Advent set out to design a preamp that would present a nonvarying resistive load (with a minimum amount of capacitance) to the cartridge; would have an adequately high overload point, so as not to clip even on high-level recordings; and would have a noise level low enough to make it useful even with inefficient cartridges. These requirements tend to conflict, so compromises have to be made. The embodiment of this work appears for the first time in the Model 300.

Bench tests on the phono preamp of the Advent 300 reveal much, if not all, of the story. Through the audio band from 30 Hz to 15 kHz, the equalization is extremely accurate: -±0 dB, - ¼ dB overall. Below 30 Hz, the response falls off rapidly—faster than 12 dB/octave. (At 20 Hz, the response is down a mere ½ dB. but an octave lower, at 10 Hz, the response has fallen off by 15 ¼ dB.)

This extremely sharp infrasonic filter cannot be disabled, but it is there only where it's needed—in the phono mode, where infrasonic record warps can monopolize an amplifier's headroom and drive a loudspeaker (especially one of the vented type) to distraction. Perhaps it is because Advent also produces loudspeakers and tape decks that its designers are acutely aware of this problem. Nevertheless, other manufacturers obviously have product lines as broad as Advent's, or broader - but apparently only Advent has recognized and solved the problem where it should be solved, in the phono preamp. Designing the filter into the preamp also helps to prevent tape overload when dubbing a disc. (In most preamps, the infrasonic filter comes after the TAPE OUT jacks and therefore does nothing to prevent recording overload, regardless of how effective it may be in eliminating speaker overload.)

The phono preamp is quiet, with an equivalent A-weighted noise 71 dB below a 5-mV input at our standard volume setting. Gain is a bit on the low side, with 0.54 mV required to reach a 0 dBW output (2.1 mV for rated output). The overload point should be adequate for all ''normal" cartridges; we measured a clipping point at 1 kHz equivalent to a 112-mV input. And the equivalent input impedance can be modeled very well by a 46.3K resistor in parallel with an extremely small input capacitance (about 14 pFd). For cartridges requiring more shunt capacitance for best response, a fixed capacitor can be added to internal terminals on the circuit board.

Separation was good in the midband and upper-frequency regions—better than 38 dB from 700 Hz on out. At lower frequencies, it slipped to 30 ½ dB at 100 Hz and 25 ½ dB at 50 Hz—still more than adequate.

With bass and treble controls at their indicated center points, amplifier response was within + ½ dB, - ¾ dB from 20 Hz to 50 kHz—very good for nonswitched or detented controls. We measured -2 dB at 10 Hz and -2 ¼ dB at 100 kHz. The bass control provided a +

10 ¼ dB, -11 dB maximum range at 100 Hz (+ 11 ½ dB. -12 ½ dB at 50 Hz and below). The hinge point was about 470 Hz. The treble control hinged at 2.4 kHz and swung the 10-kHz response 11 ½ dB either way. At 20 kHz, the maximum range was + 16 ½ dB, -15 ½ dB and was still rising. At 50 kHz, we measured a 20 ¼ -dB possible boost, which could conceivably cause some problems if high-frequency signals such as a CD-4 carrier get into the amp when it is set for maximum treble boost.

The loudness contour was commendably mild. At “normal" setting of the volume control, bass boost amounted to 3 dB at 200 Hz. rose to 4 ¾ dB at 100 Hz, and peaked at 5 ¾ dB at 30 Hz. The high-end rise was also gentle: + 2 dB at 10 kHz and + 5 ¼ dB at 20 kHz. At a midpoint setting of the volume, the contour was about the same, and by 3 o’clock it had disappeared.

Separation was better than 46 dB across the board. A 26-mV input produced a 0 dBW output into 8 ohms (100 mV for the rated 11 ¾ dBW). Signal-to-noise ratio was 72 ½ dBA re a ½ -volt input.

The power amp is modest in its capabilities—15 watts/channel (11 ¾ dBW)—but met its spec easily and with low distortion. At rated output into a pair of 8-ohm loads, THD was less than 0.07% from 20 Hz to 10 kHz and 0.14% at 20 kHz. At 10 dBW (10 watts/channel), it was a bit lower—0.04% in the midband, rising to 0.06% at 20 Hz and 10 kHz, and 0.09% at 20 kHz.

The clipping point into a pair of 8-ohm loads occurred at 12.5 dBW (18 watts channel); into a single lead, we measured 13.4 dBW (22 watts). Corresponding figures into 4-ohm leads were 13.8 dBW (24 watts/channel) and 15.2 dBW (33 watts). (The circuit breaker tripped when both channels were driving clipping power into 4-ohm loads for more than a few seconds.) Into 16-ohm loads, we measured 10.6 dBW (11.6 watts/channel) and 11.2 dBW (13 watts). The damping factor was 80 from 20 Hz to 1 kHz; 40 at 10 kHz.

The FM tuner set no new records but its performance was yeomanlike. Noise and distortion were suppressed by 30 dB with a 15.6 dBf (3.3-µV) input in mono and a 24.2 dBf (8.9-µV) signal in stereo. Fifty-dB quieting was achieved with a 20 dBf (5.5-µV) mono signal or a 44.3 dBf (90-µV) stereo input. The tuner was somewhat more sensitive at the ends of the band than at the 98- mHz standard frequency. At 90 mHz, we achieved 50-dB mono quieting with a 19.4- dBf (5.1-µV) input; at 106 mHz, a 19.6 dBf (5.2-µV) input did the trick.

The tuner went into the stereo mode with an input of 15.1 dBf (3.5 µV) with the mute off. Only a 20 ¾ dB quieting was realizable with this input. The mute point corresponded to a 21.5 dBf (6.5-µV) input, which produced somewhat better than 50 dB quieting in mono but only about 26 dB quieting in stereo. Fifty-five dB quieting was reached with 49.3 dBf (160-µV) stereo input or a 23.4 dBf (8.1-µV) mono signal. Sixty- dB quieting was reached with a 28.3 dBf (15-µV) mono input or a 55 dBf (310-µV) stereo signal. Ultimate quieting (at 65 dBf) was 68 ½ dB(mono) and 64 dB (stereo), using a bandpass filter to eliminate subcarrier leakage.

Frequency response was good— ± ¾ dB from 30 Hz to 15 kHz in mono; + ¾ dB, -1 dB over that range in stereo. Response at 20 Hz was down 1 ¾ dB in either case. Stereo separation was better than 37 ½ dB from 20 Hz to 4 kHz, 31 dB at 10 kHz. and 26 ½ dB at 15 kHz. Midband separation amounted to better than 40 dB.

THD was very low in the mono mode—0.12% at 1 kHz and 6 kHz: 0.25% at 100 Hz and 10 kHz. In stereo, distortion was higher but still less than 0.35% at 100 Hz and 1 kHz. At 6 kHz, THD was 0.15%, using a 15- kHz low-pass filter to remove the subcarrier.

As receivers go, the Advent 300 can't be called expensive. It's intriguing to see what you get (and don't get) at this price. In the amplifier, you’re limited in input switching to tape, aux, and tuner. There are no fancy detents on the tone controls, nor any means of defeating them. But their indicated ‘'flat” position is dead accurate, and so is that of the balance control.

You don’t get low- and high-cut filters, but there's an infrasonic filter that’s the best we’ve seen—and it's built into the phono preamp, which is exactly where it’s needed. There’s no midrange or presence control, but the loudness contour suits our taste precisely. Power capability is modest, and you can drive the amp into clipping. (It gasps for breath when you do. but not to a distracting degree.) It’s not suited for high- power applications—filling a large room with sound from inefficient speakers—but it will handle the majority of more modest situations. The key here is to use speakers of high efficiency.

As for the phono preamp, we've not heard better at any price. It's exceedingly quiet, doesn't overload with typical cartridges, has exceptional clarity and transient response, and brings out the best in a pickup—especially in the upper midrange and highs. We would have liked a bit more gain, and we did run into some radio-frequency-interference (RFI) problems (picking up a radio broadcast).

A check with Advent indicated an awareness of this problem. The anomaly is probably due to the fact that the designers, in an effort to achieve the ideal impedance, have included no RFI filter in the phono front-end. The situation arises more frequently with some turntables than others and obviously depends upon proximity to a transmitter.

Such RFI usually is eliminated by adding a capacitor to the input circuit on the printed-circuit board. The value should be that which is necessary to bring the total capacitance (including to cables) to the value that is ideal for your cartridge. Advent reasons that this is a relatively simple field modification, required only in specific circumstances. and thus chose not to compromise the basic design.

The tuner section does not match the performance of really expensive

equipment, but in many cases it is hard to tell the difference. There are no tuning or signal strength meters, only a pair of LED tuning aids. Ultimately, we used our ears to establish the optimal point. (They are, after all, the final judge.) A planetary drive mechanism, rather than the typical slide-rule, dialstring drive, is used on the tuner. The whole band is covered by only 3 ¾ turns, which means you can't be an ape on The knob. But there is no backlash in the mechanism, so tuning is precise if you're careful. The markings are few and far between, and the dial is nonlinear: thus, you can't tell the precise frequency to which you are tuned. Since most of us know the sound of our favorite stations, however, this is hardly a problem.

Only a 300-ohm balanced antenna input is provided, but that's what most of us use anyway. (A balun to convert the Model 300 for 75-ohm cable can be bought for a pittance.) The mute is effective in suppressing interstation noise—albeit letting through some marginal stations—and it does so without thumps. (There is an annoying transient when the receiver is turned on or off, but it's not sharp enough to damage your speakers.)

The tuner's sensitivity is not so good as some we've tested, but it should be adequate in most areas of reasonably strong signals. Mono quieting is essentially noise free, stereo quieting a bit less so. (Some low-level hiss can be heard, even on strong stations.) And, of course there's no AM tuner—but that's no loss considering the quality of most of them.

In sum, it appears to us that Advent has maintained its reputation—this time with an unusual approach to low-cost FM receiver design. *– Fall '77*