



## Philips' High-Quality Pickup

**The Equipment:** Philips GP 412, a magnetic stereo phono pickup with elliptical stylus. Price: \$67.50. Manufacturer: Philips of The Netherlands; U.S. distributor: Norelco (North American Philips Corp.), 100 E. 42nd St., New York, N.Y. 10017.

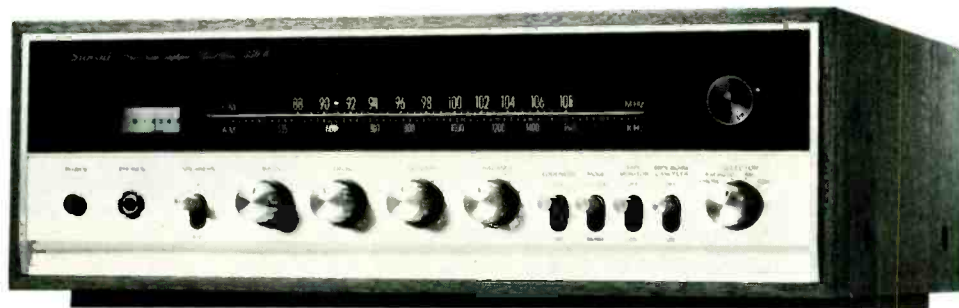
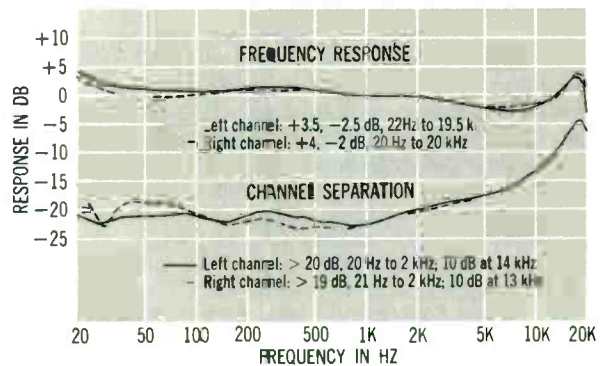
**Comment:** The GP 412 cartridge, known in Europe as the Philips Super M, is a magnetic phono pickup supplied with elliptical stylus (user-replaceable). Size and dimensions, including mounting holes, are similar to those of other current pickups; the GP 412 will fit any known tone arm. A swing-up stylus guard comes fitted to the cartridge.

Performance of the GP 412 is characterized by wide, smooth frequency response, adequate channel separation, and high compliance. While its harmonic distortion was a shade poorer than average for a pickup in its price class, its IM distortion was exceptionally low. The GP 412 needed 1.5 grams of vertical stylus force to track the torture bands of the CBS test records, and this force was used to derive the test data. Output voltage per channel was comfortably high and very well balanced at 6.3 and 6.2 millivolts respectively for

left and right channels. The stylus' vertical angle measured 19 degrees. Compliance laterally was  $25 \times 10^{-6}$  cm/dyne; vertically, 20. The tip, a true elliptical, measured 0.8 by 0.25 mils. Low-frequency resonance, in the SME arm, was well down at 6.8 Hz.

In extensive listening tests, using the GP 412 in different arms and in various record players, we found it to be an eminently satisfactory cartridge. The bass end was clean, solid, and well-defined; the mids and highs sounded smooth and "well aired" with ample bite in the upper registers. The pickup's fairly high signal output, which tends to improve the signal-to-noise ratio in a given playback system, is a definite plus, particularly when combined with the other performance virtues noted here that make the GP 412 a serious contender for attention by the critical listener and discophile.

CIRCLE 141 ON READER-SERVICE CARD



## A Budget Receiver from Sansui

**The Equipment:** Sansui 350A, a stereo FM/AM receiver. Dimensions: 16 $\frac{1}{2}$  by 5 $\frac{1}{2}$  by 12 inches. Price: \$199.95. Manufacturer: Sansui Electric Co. Ltd., Japan; U.S. distributor: Sansui Electronics Corp., 32-17 61st St., Woodside, N.Y. 11377.

**Comment:** When we describe the Sansui 350A as a budget receiver we mean just that: It will be attractive to buyers who want a component system but who must

budget themselves to a minimum price consistent with component standards.

The 350A has much of the styling and "feel" of Sansui's higher-priced models. The top of the front panel features the typically wide Sansui tuning dial with even spacing between FM channels. To its left is a signal-strength tuning meter; to its right, the tuning knob. Across the bottom are the power on/off switch; headphone jack; speaker switch (main or main-plus-remote); bass, treble, volume, and balance controls; loudness/volume, stereo/mono, tape-monitor, and multiplex-noise-filter switches; and the selector knob (phono, FM, AM, aux). The FM switching illustrates Sansui's way of keeping costs down. Most receivers have a mono-FM position that disables the multiplex circuitry and prevents stereo reception. The 350A does not: Any subcarrier above its stereo sensitivity threshold will produce stereo reception (and light its stereo indicator). If the station still is not strong enough to produce good, quiet listening you can either switch to the mono mode (which recombines left and right signals in the set's amplifier section, effectively canceling the extra noise) or switch in the multiplex noise filter (actually a high-blend circuit that similarly reduces high-frequency noise).

The back panel has clip-type (no spade lugs needed) terminals for 300-ohm FM antenna (twin-lead), 75-ohm FM antenna (coaxial), long-wire AM antenna, and two stereo pairs of speakers. Phono jacks, in right-and-left pairs, are provided for magnetic-phono input, aux input, tape-recording output, and tape-monitor input. Other elements on the back panel include grounding connections, a local/distant FM switch, a ferrite AM antenna, the AC cord, fuse, and a switched convenience outlet. Hidden under the nameplate is an unusually versatile voltage selector, which need not concern most U.S. buyers since the unit is delivered set for standard U.S. house current.

The interrelationship between control and connection features generally is kept as simple as possible in the 350A—reducing costs but imposing some practical limitations. For instance, the speaker selector allows the A system (normally, the main speaker pair) to play either alone or with the B pair, but the B pair cannot be played alone. Inserting a headphone plug into the front-panel jack turns off all speakers—preventing headphone listening in one room while the speakers are used in another. And left and right channels cannot be varied individually at the tone controls. A great many users—perhaps the vast majority—need no more flexibility than that supplied by the 350A, however, and Sansui evidently has chosen its economies with considerable care.

Lab tests of technical performance further confirm this care. In terms of both distortion and frequency response, the deep bass is somewhat disappointing in the CBS Labs test data. But chances are that budget speakers appropriate for the 350A will not reproduce this region adequately in any event. To put it a different way: Don't expect to get 30-Hz organ tones on a budget stereo system. In the rest of the range, where performance really counts, the 350A generally does very well—particularly by comparison to budget equipment of only a few years ago.

Its tuner section also performs well, though it obviously is no record-breaker. At 2.5 microvolts, its IHF FM sensitivity figure is only a little poorer than the 2.0 microvolts figure that is common in better equipment. As input signal strength increases, quieting

increases rapidly from the 30 dB at which the IHF figure is measured to greater than 40 dB—a figure at which fairly quiet listening is possible. Then the curve descends gradually to the ultimate quieting of 48 dB, achieved by the time signal strength has reached 125 microvolts. In our cable tests the FM section logged forty-two stations, of which thirty-three were judged suitable for long-term listening or recording.

The 350A does not have much reserve power, and very inefficient speakers are to be avoided—particularly if two pairs are to be used—unless the listening room is exceptionally small or live, or you play music only at background-music levels. But with these reservations, we believe that the 350A is admirably suited to anyone who has only \$200 to spend for both a tuner and an amplifier.

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### Sansui 350A Receiver Additional Data

Tuner Section			
Capture ratio	3 dB		
S/N ratio	75 dB		
IM distortion	0.76%		
THD	Mono	L ch	R ch
80 Hz	0.30%	0.52%	0.33%
1 kHz	0.21%	0.24%	0.23%
10 kHz	0.45%	7.5%	7.4%
19-kHz pilot	-55.5 dB		
38-kHz subcarrier	-51.0 dB		
Amplifier Section			
Damping factor	60		
Input characteristics (for 20 watts output)			
	Sensitivity	S/N ratio	
phono	2 mV	61.0 dB	
tape monitor	150 mV	72.5 dB	
aux	164 mV	68.0 dB	



Square-wave response.