

# Philips Turntable Packs Performance and Features

**The Equipment:** Philips GA-209, two-speed (33 and 45 rpm) single-play turntable-and-arm ensemble with automatic options; supplied with integral base and hinged dust cover. Dimensions: 17 1/4 by 12 1/4 by 6 9/16 inches. Price: \$349.50. Warranty: one year parts and labor. Manufacturer: Philips of Holland; U.S. distributor: No-reco, 100 E. 42nd St., New York, N.Y. 10017.

**Comment:** A number of useful features, some of them really unique, combined with excellent performance and attractive styling make the new Philips GA-209 a very desirable turntable for use in a high-quality playback system. It is, to begin with, a DC-motor/belt-driven model in which motor speed is electronically controlled. The system makes for accurate speed as well as low noise.

The turntable motor is not loaded with other functions; there actually are two more motors for tone-arm movement and cueing. Platter and tone arm share a subchassis that is suspended below the main chassis, a design feature that further isolates any motor vibrations and helps reduce the ensemble's susceptibility to external jarrings. The drive system enables the use of a relatively lightweight platter (the conventional need for a heavy platter to achieve good "flywheel effect" is obviated), and the motor's high torque makes for very brief startup time.

The platter is a two-piece affair, covered by a ridged rubberized mat on which are imprinted two strobe rings (one for 33, the other for 45 rpm) to help in fine-speed adjustments should they be needed. Actually, in CBS Labs tests, the unit—once adjusted for speed accuracy at 120 volts AC line power supply—showed no measurable error at varying line voltages for either of its operating speeds. The fine-speed adjustment itself is divided between two control knobs, one each for the two speeds. They provide a very generous margin for variation, should the owner opt to use them. The 33-rpm control varies speed over a range from -3.5 to +4.4%; the 45-rpm control, from -4.8 to +5.9%.

The platter weighs 2 lbs., 11 oz. Rumble is among the lowest ever measured: -62 dB (ARLL standard). Flutter (ANSI/IEEE weighting method) is insignificant at 0.03% average and 0.07% peak. Arm resonance was very well damped, showing a mere 3.5-dB rise at 6 Hz. Arm friction, vertically and laterally, is negligible.

The built-in stylus force gauge is utterly unique on the GA-209. It consists of a small weighing scale (a moving pointer under an imprinted transparent window) that is attached to a pressure-sensitive lever in the tone-arm rest. This device not only makes it easy to adjust the VTF, but it also serves as a constant check on VTF since you can read the amount readily each time the arm returns to rest. The gauge was checked against a laboratory gauge and found to be on the nose for settings of 1, 2, and 3 grams. For a setting of 1.5 it measured 1.6 grams; for 2.5 it measured 2.6 grams—both insignificant discrepancies. The antiskating adjustment (Philips calls it slide-thrust compensation) has separate scales for elliptical and conical stylus tips; the values measured seem well suited for each type.

The GA-209 may be used to play a record manually or automatically, and herein lie some more surprises. The



main power off/on switch is at the left, while at the right is an elaborate group of operating controls and indicators. At the head of this group are four panels that light up to show "automatic" or "manual" and "33" or "45." In front of them is a well, covered by a sliding plastic door, in which you will find the 33- and 45-rpm speed selectors, a stop bar, the individual fine-speed trimmers, and the antiskating dial. In front of the well are two more controls—touch-sensitive "buttons" that, on gentle contact, light up, raise or lower the tone arm, and mute the sound or let it come through. One touchplate, marked with the symbol of a stylus contacting a disc, is the "play" button; the other's symbol shows the stylus above the disc, and it acts as the "pause" control.

On the platter itself are three small pressure-sensitive pins, and one, two, or all three will be depressed depending on what size record you put on. These pins activate a sensing device that automatically selects the correct speed (33 for 10-inch and 12-inch discs; 45 for 7-inch discs) and that sets the arm down at the lead-in edge of the record.

To play a record automatically, you release the arm lock at the foot of its rest and make sure the sliding door over the control well is shut. The word "automatic" will be lighted, and—depending on what size record you put on the platter—the turntable will start at the appropriate speed and the arm will come off its rest and descend gently into the lead-in groove of the disc.

During automatic use, you may interrupt play by opening the control cover and pressing the stop bar. The arm will return to rest. Or you can leave the control cover shut and simply touch the pause touchplate. The arm will rise and the sound will be muted, but the platter will continue to rotate. Pressing the play touchplate will, of course, lower the arm (to the exact spot it left on the record) and restore the sound. You can repeat a record in the automatic mode simply by opening the cover and closing it again. At the end of play, the arm lifts off the record and returns to its rest. The turntable will stop.

To play a record manually, turn on the power as before but this time open the control door. The word "manual" will light up. Unlock the arm rest, place a disc on the platter, and select the correct speed. (The 33 and 45 buttons, in manual mode, override the three pins on the turntable; this feature enables you to play any size

record at either speed as you choose.) You may now cue manually or with the aid of the raise-and-lower buttons for the arm lift. At the end of the record, the arm will return to rest and the motor will switch off.

In addition to its novel control system the GA-209 has some familiar features, all of them worthwhile. The tone arm is fitted with a rear counterweight, adjustable for arm balance and VTF. The pickup fits onto a small platform that slides into the head to make positive electrical contact. Supplied with the GA-209 is an assortment of hardware to help fit any pickup to the shell, and a plastic gauge to adjust the position of the pickup for correct stylus overhang. The platter has a built-in "pop up" adapter for large-hole 45-rpm singles. The stylish base has a hinged dust cover made of sturdy plastic; the hinges are friction-regulated so that the cover will stay up in any position, and if it starts to slip you can turn the screws on the hinges to adjust the friction. The cover may be fully down while a record is playing.

The only feature of this machine one could possibly take exception to is the location of the strobe rings. Being right on the platter, they are hidden when there's a record on. However, once speed is adjusted, the addition of a disc will not change it. And since the turntable runs at constant speed despite line-voltage changes, there is no need to readjust fine-speed during use. Of course the strobe is not used for deliberate changes to alter musical pitch.

The GA-209 is, on all counts, a deluxe product. If it boasted only its more striking novelties, we would be apt to pat it gently on its tone arm and call it a harmless adult toy. However, the unit is quite obviously a technical triumph as well as a cosmetic coup. Purely from the standpoint of its function as a high-quality record player, it has a lot going for it, including its very quiet operation and its facility for accommodating the most refined of pickups.

CIRCLE 144 ON READER-SERVICE CARD

## Sony's Ultimate Cassette Deck



**The Equipment:** Sony Model TC-177SD, a stereo cassette deck with Dolby noise reduction (including Dolby-FM switching); bias and equalization switching for ferric, ferrichrome, and chromium dioxide tapes; and separate recording and playback heads; in wood case. Dimensions: 17 by 12 11/16 inches (wood base), 6 inches high plus clearance for cassette-well cover. Price: \$699.95. Warranty: two years parts and labor, shipping paid one way. Manufacturer: Sony Corp., Japan; U.S. distributor: Superscope, Inc., 8150 Vineland Ave., Sun Valley, Calif. 91352.

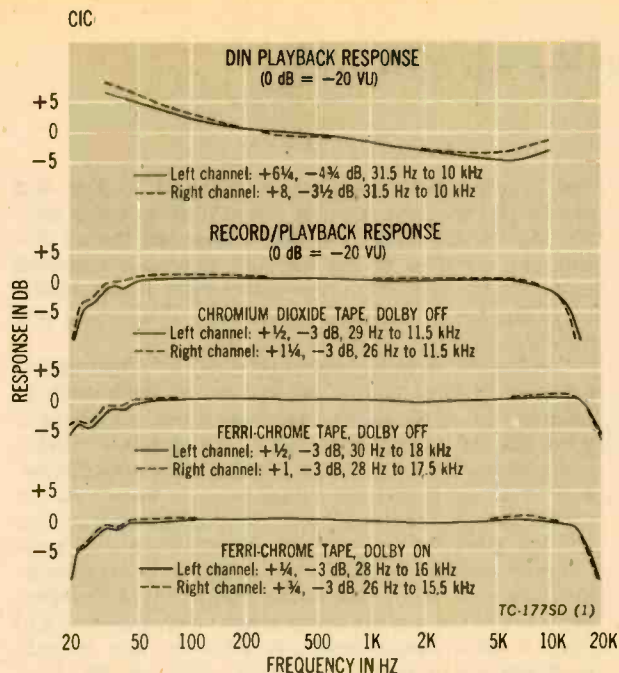
**Comment:** This is Sony's fanciest cassette deck to date, and it's an impressive bruiser. Though it resembles Sony's more conventional decks, it's larger and more feature-laden than any Sony we've yet examined; in a sense it sums up everything the company has done in the medium.

The rear portion of the top panel is angled upward to make the VU meters and the pilot-light array more easily visible from a sitting position. The pilots are for limiter (green), Dolby (yellow), recording (red), and pause (orange). Next to them is a three-digit turns counter and a "memory rewind" on/off switch. A small red light between the meters indicates peak overload condition. In front of the meters is a series of buttons: FM-pilot filter (on/off); four Dolby-mode selectors (Dolby off, Dolby on, Dolby FM on, Dolby calibration tone); and limiter (on/off). Between the calibration-tone button and that for the limiter are two screwdriver controls for adjusting Dolby recording levels to the tape in use. (These controls are factory-adjusted for Sony's Ferrichrome, and little if any readjustment should be needed with most common tape types.) The 177's separate playback head makes Dolby adjustment unusually easy, since playback levels can be monitored on the meters while you record the tone.

It is a true playback head (not a monitor head intended only for double-checking recording properties) and fits into the space normally used for a record/play head. The recording head fits into the smaller cassette opening "upstream" (to the left, as one would visualize it, looking "through" the front of the unit toward a cassette in playing position) of the playback head. Since this opening has no pressure pad, Sony controls tape tension—and therefore tape-to-head contact—by applying its biperipheral drive system, the second capstan sharing with the erase head the larger opening still farther upstream.

The cassette well is otherwise of conventional construction, with a pop-up, windowed dust cover and a yellow tape-viewing light below the window area of the cassette itself. (We found it a pleasure to return to this high-visibility design after working with a few front-loading—or even unilluminated top-loading—models.) The transport controls in front of the well are solenoid-assisted; the TC-177 can be used safely with an AC-switching timer for wake-up playback or for recording (say, from FM) when you're away from home. The unit shuts off all transport modes automatically at the end of a cassette, so that no damage can occur in unattended operation even without the timer.

To the right of the cassette well are two three-position switches for bias and equalization. That for bias (which affects recording only, of course) has positions marked "low" (for most ferric tapes), "medium" (for ferrichromes and high-performance ferrics like Sony UHF



and Maxell UD), and "high" (for chromium dioxide). The equalization switch alters both recording and playback response; it has positions marked "normal" (for all ferric tapes), "Fe-Cr" (for ferrichromes), and "CrO<sub>2</sub>" (for chromium dioxide). Sony Ferri-chrome cassettes, with which most of our tests were made, thus have a special playback—as well as recording—setting.

To the right of these switches are recording-level slider pairs—one for the mike inputs, one for line—that permit input mixing. Nearby are a rotary output-level control (which alters line levels only) and a source/tape monitor switch. With this switch in the "source" position incoming levels can be read on the meters whether or not the deck is in the recording mode, obviating the pause-mode premonitoring that is needed to set levels on so many decks. And of course the switch permits A/B comparison of the taped sound with that of the incoming signal.

A button at the extreme right front corner of the top plate switches AC power. In the front surface just below the edge of the top plate are a pair of phone jacks for mike inputs and a stereo headphone jack. Its output level is controlled by a two-position switch next to it. The back panel has pin-jack pairs for line input and output.

There are no further user-accessible Dolby controls. In adjusting tracking from Dolby broadcasts you must use the station's test tone to set the line-input controls for a "cal" (0-VU) reading in both channels.

The Dolby-FM setting does *not* have compensation for the new 25-microsecond broadcast time constant; it does, however, override the off position of the FM-pilot filter. That is, the filter is manually controlled by its own switch during regular Dolby operation but is inserted automatically when you press the Dolby-FM button.

Sony obviously has taken care that the TC-177 will make optimum use of its Ferri-chrome tape and has, in a sense, designed the unit around the tape. Record/play response with Ferri-chrome is spectacularly linear: almost ruler-flat from about 50 to 15,000 Hz, even with Dolby (which tends to exaggerate any nonlinearities of course). CBS Labs was not able to get as good response, in fact, with chromium dioxide. (We suspect

that this may be due in part to the greater high-frequency boost that "drives" the head harder at these frequencies with chrome than with Ferri-chrome.) We were not able to detect a significant difference with regular program material, however. The sparkling, open high end that the narrow-gap playback head makes possible is most easily discernible with Ferri-chrome and superb source material; with regular ferric tape inherent tape hiss is (predictably) more easily heard, though the highs do seem more open than with conventional record/play heads.

The deck can stand comparison with other top models both electrically and mechanically. Speed is quite accurate at 0.2% fast and was unaffected by line-voltage changes in CBS Labs' tests. Wow and flutter are low; so are noise and distortion. The operating "feel" of the controls is excellent, attesting to careful workmanship—as does the excellent finish of the parts.

Though the price no longer is as shocking as it once would have been, a \$700 cassette deck still isn't for everybody. The TC-177SD seems specifically designed for the home user who wants all the features that promote optimum performance but wants neither the most elaborate (and possibly confusing) controls of the professional or quasi-professional gear nor the mechanically complex (and possibly problematic) "convenience" features like automatic reverse and automatic bias/eq. switching. If that is the intent, we think Sony has succeeded. Even a novice can make first-rate tapes on the 177 (the limiter can help materially in live recording). Its designers have made a logical and consistent choice of features—both for inclusion and for exclusion.

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### Sony TC-177SD Additional Data

Speed accuracy	0.2% fast at 105, 120, and 127 VAC	
Wow and flutter	playback: 0.05% record/play: 0.08%	
Rewind time (C-60 cassette)	82 sec.	
Fast forward time (same cassette)	80 sec.	
S/N ratio (re DIN 0 VU; Dolby off)		
playback	L ch: 50.5 dB	R ch: 53 dB
record/play	L ch: 50 dB	R ch: 52 dB
Erase (333 Hz at normal level)	57 dB	
Crosstalk (at 333 Hz)		
record left, play right	35 dB	
record right, play left	34 dB	
Sensitivity (re DIN 0 VU)		
line	L ch: 58 mV	R ch: 54 mV
mike	L ch: 0.18 mV	R ch: 0.17 mV
Meter action (re DIN 0 VU)	L ch: 2.5 dB high R ch: 2 dB high	
Total harmonic distortion (at -10 VU)	L ch: <2.3%, 50 Hz to 5 kHz R ch: <2.3%, 50 Hz to 5 kHz	
IM distortion (at -10 VU)	L ch: 3.0% R ch: 3.5%	
Maximum output (line, 0 VU)	L ch: 1.0 V R ch: 0.9 V	