

CAR STEREO



Sanyo MDR-300 MD Changer Receiver

KEN C. POHLMANN • HAMMER LABORATORIES

The Sanyo MDR-300 is a head unit with a detachable face. It's also a receiver with pretty healthy power output. It's also a CD changer controller. And last, but definitely not least, it's also a MiniDisc player—three of them actually. No, it's not some kind of cockamamie cartridge-loading deal. It's an MD player with three loading slots and three eject buttons.

At first glance, the MDR-300 does not look like a MiniDisc changer. If you hit the Open button, however, the front panel falls forward on its bottom hinges, revealing three MD loading slots stacked horizontally alongside their eject buttons. Each slot is marked with a back-lighted number. Three MiniDiscs can be loaded at a time, and one or two of them can be ejected and replaced while the third is playing.

The front panel does have an Off button, but if you're like me, and you simply grab the detachable face and go, the MDR-300 will remember what it was doing, and when you put the face back on it will start CD or MD playback where it left off or tune to the radio station you were listening to. The Off button has another function: When you hold it down for more than 3 seconds, it switches the display color between green and amber.

The Audio Control button is a weirdly designed four-sided rocker; the upper right and lower left corners let you vary volume, bass, treble, balance, and fader. These various controls are selected with the bottom right corner of the rocker. The top left corner is a bass-expander (BSX) control—it punches up bass response. Three mode buttons let you choose radio, CD, or MD playback; each of them turns the head unit on. The CD and MD buttons also act as play/pause controls. The radio mode button lets you step through the available bands—FM1, FM2, FM3, and AM—and if you hold it down the tuner scans the preset stations in the selected band.

The Tuning/Track double rocker lets you tune the radio incrementally with its + and – ends. A quick touch gives you seek tuning, and a longer touch switches to manual tuning (an-

other long touch switches you back). When you're playing an MD or CD, the rocker provides track selection or, when it's held down, audible fast search. The Display button switches the alphanumeric readout from an MD between playing time, disc title, and track title. In radio mode, the Display button selects stereo or mono.

There are six radio preset buttons. Preset 1 also provides an MD Scroll function; the selected title information (up to thirty-two characters) scrolls across the display. Preset 2 also lets you audition the first 10 seconds of CD and MD tracks, or the first 10 seconds of the first track of each disc. Preset 3 also provides track and disc repeat. Preset 4 also provides random track selection or random track and disc selection. Presets 5 and 6, designed as a double rocker with + and – ends, double as disc-select controls for the MD and CD changers.

An ATP (Auto Travel Preset) button surveys either the AM or FM band and places the six strongest stations in special ATP presets (six each in AM and FM), arranged from strongest to weakest in signal strength. Hit ATP again and it will scan the ATP presets. In CD mode, the ATP button can be used to switch between two different Sanyo changers; a special divider unit is needed in the changers' control lines. An L/DX button switches the tuner between low and high sensitivity to optimize reception for local and distant stations. The mute button kills the audio output temporarily, but if it's left engaged for more than 5 minutes during MD or CD playback, the MDR-300 powers itself down.

The dot-matrix LCD screen provides a full set of alphanumerics for the usual track, timing, and clock information as well as MD track and disc titles. In addition, you'll find icons and labels for tuner band, volume level, bass and treble levels, stereo or mono reception, distant sensitivity, repeat or random playback, and so on. The display also flashes diagnostic messages—for example, when a blank MD has been loaded or when the ambient temperature is too high for proper operation.

The rear of the MDR-300 has an antenna lead, four line-level phono jacks,

DIMENSIONS

7 INCHES WIDE, 2 INCHES HIGH, 6 1/4 INCHES DEEP

PRICE

\$1,500

MANUFACTURER

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an eight-pin DIN pigtail for connecting a CD changer, and a wiring-harness socket. The harness has eight speaker-lead pigtails as well as wires for remote turn-on, power, ignition, and ground. The three power leads run through a beefy line filter, suggesting that the head is either sensitive to RF noise or is dirty with it. Both the power and ignition leads have an in-line 10-ampere fuse—about the biggest you'll see in a head unit. The unit's power hunger and heat sensitivity are verified by an exhaust fan on the rear panel.

The inside of the MDR-300 is stuffed with disc-changer and transport mechanics as well as tuner and MD-playback circuitry, including a RAM (random-access memory) chip that stores up to 12 seconds of read-ahead music to buffer disc skipping, an ATRAC decoder, and 1-bit digital-to-analog (D/A) converters. The unit comes with a credit-card-size wireless remote control whose eighteen buttons duplicate the front-panel controls.

Lab Tests

The MDR-300 was good but not great on the test bench. MiniDisc playback was somewhat inferior to good CD playback and not as good as that of some other MD players I've tested. Still, the numbers were respectable overall. For example, frequency response dropped only 0.92 dB at 20 kHz and total harmonic distortion plus noise (THD+N) was low at 1 kHz. But the THD+N was a high 0.45 percent at 20 kHz, and linearity erred by +3.6 dB at -90 dB.

Tuner performance was pretty good, with sensitivity and adjacent-channel selectivity particular standouts. The internal power amplifiers pumped out almost 10 watts into 4 ohms, with low distortion and noise.

Installation

Installation of the MDR-300 was no big deal. I cleared out a DIN space in my dash and affixed the mounting sleeve by bending tabs. I popped out three transport screws from the MDR-300's chassis, slid it into the sleeve, where it locked, and screwed in a rear strap. I wired up the front speaker outputs to my front speakers and the rear

MEASUREMENTS	
MD SECTION	
Maximum output level	1.77 volts
Frequency response	20 Hz to 20 kHz +0, -0.92 dB
Channel separation	
1 kHz	70.0 dB
20 kHz	46.2 dB
Dynamic range (A-wtd.)	84.6 dB
Signal-to-noise ratio (A-wtd.)	83.1 dB
Distortion (THD+N, 1 kHz)	
at 0 dB	0.08%
at -20 dB	0.45%
Linearity error (-90 dB)	+3.6 dB
Interchannel phase shift (at 20 kHz)	0.2°
Disc-change time	12 seconds
TUNER SECTION	
All measurements are for FM only except frequency response.	
Max. output (100% modulation)	0.73 volt
Sensitivity (50-dB quieting, mono)	21.2 dBf
Distortion (THD+N at 65 dBf)	
mono	0.60%
stereo	0.88%
Signal-to-noise ratio (at 65 dBf)	
mono	64.8 dB
stereo	51.9 dB
Channel separation	
(at 65 dBf, 1 kHz)	30.3 dB
AM rejection (at 65 dBf)	59.5 dB
Capture ratio (at 65 dBf)	3.0 dB
Selectivity	
adjacent-channel	20.0 dB
alternate-channel	61.3 dB
Image rejection	50.2 dB
Frequency response	
FM	30 Hz to 15 kHz +0, -3.2 dB
AM	30 Hz to 3 kHz +0, -5.9 dB
AMPLIFIER SECTION	
All measurements were made with 14.4-volt DC power supply; all channels driven into 4 ohms unless otherwise noted.	
Noise (A-wtd, re 1-watt output)	76.9 dB
Distortion (THD+N, 1 kHz, 1 watt)	0.085%
Damping factor	35
Frequency response	
20 Hz to 20 kHz +0.26, -0.33 dB	
Output at clipping (1 kHz)	
8 ohms	6.8 watts
4 ohms	9.9 watts
Tone-control range	
bass	+9.9, -10.0 dB at 100 Hz
treble	+9.3 dB at 10 kHz

line-level outputs to an external rear amplifier. I also took care of the remote turn-on, antenna, power, ignition, and ground connections. I did not have a compatible Sanyo CD changer (such as an AX-600 or AX-800), so I passed on that option. I clicked in the front panel, popped in a test MD, set sensitivity in the rear amplifier, and hit the road.

Road Tests

Putting my burning MD curiosity on hold, I first turned my attention to the radio. I tuned to both local and distant stations, changing sensitivity and stereo/mono mode as needed. The tuner did a good job of pulling in weak signals. Sound quality of strong stations was quite good, with subjectively flat frequency response and moderate distortion. In heavy urban terrain, multipath interference did intrude, with a fair amount of stoplight fade. Overall, I would rate this a B+ tuner that should give good performance under typical conditions.

Next, I opened the front panel and loaded in three MD's—a quick and easy procedure. I also quickly learned the changer's ground rules: If an MD is in a slot (not being played), it is ejected immediately after you press its eject button. If a disc is playing when you hit its eject button, it stops playing and moves back into its slot; you hit the eject button again to actually eject it. In addition, the disc in the next numerical slot is automatically moved into playing position. After putting the front panel back, I observed that disc-changing time was about 12 seconds and that mechanical noise during the process was unobtrusive.

Playing around a little, I turned the unit off and removed the front panel, as if I were parking the car. I flipped up the subplate. For reasons that defy imagination, this subplate has a cutout around the MD loading slots. In other words, when the panel is removed, the slots are open to the outside air, which surely invites dust to enter and clog the mechanics and optics. Even if

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front clearance was a tough issue, some kind of covering should have been designed into this head unit.

The MD format's alphanumeric titles are a strong feature. In this case, the disc or track title appears complete in the display if it has less than thirty-two characters. If it has more, it automatically scrolls. In any event, you can scroll titles by hitting the Scroll button. (Titles are always encoded in prerecorded MD's, but you have to enter them yourself when you record on a blank MD.) In my humble opinion, the MDR-300's scrolling should be faster. At about two characters per second, unless you're a really slow reader you'll lose interest (or drive into a tree) before you complete more than twenty characters.

One of MD's key benefits is its read-ahead memory, which stores a good amount of music data (12 seconds in this case) and can quickly replenish it if tracking is interrupted. I took the MDR-300 through some of the bumpiest roads I know and never heard a skip. Unless you're into some serious off-road recreation, skipping should not be a problem.

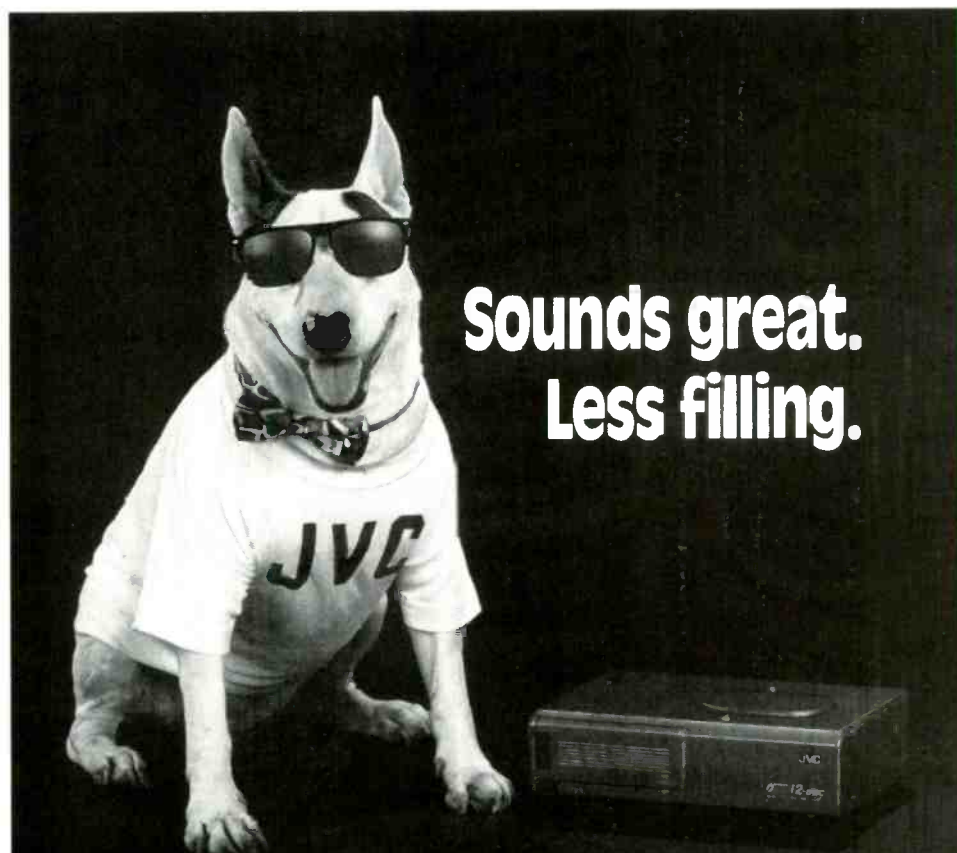
Using a number of prerecorded and personally recorded MD's, I checked out the changer's sound quality. First of all, only about half the people I've tested can hear the difference between MD and CD playback under optimal conditions. In a moving car, I doubt whether anyone could reliably do it. In that context, I was pleased with the MDR-300, but not overwhelmed. In particular, in a parked car MD's didn't sound as good as CD's do, or even MD's on some other players I've tested. Don't misunderstand—it blew away cassette tape, but it lacked the high-frequency sparkle and presence of better formats. Overall, while it sounded pretty damn good, I wished it sounded better.

The onboard amplifiers were pretty good—more power and better sound than usual. Despite the exhaust fan, the unit ran very hot to the touch.

The MDR-300 is one of the most expensive head units I've ever seen, and one of the neatest. I do not like and have never liked disc cartridges; it is simply a pain to load and unload them, especially in a car or outdoors.

The MDR-300 clearly shows there is a better way. Its three MD loading slots are a real joy to use. Once you appreciate the ability to chuck 222 minutes of music into the dashboard without

any hassles, you'll wonder how you ever lived without it. The wads of fun you'll have using this unit should make up for any loss in fidelity you might notice while driving. □



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