

Meticulously designed circuitry, drive mechanism, construction reflect the best of DENON's technology and experience.

The "S1 Series" that appeared in 1993 was a reference-class audio series designed to please the most discerning of all audiophiles. The primary objective of the S1 Series was to reproduce "reality"---- a deeper, more natural sound.

Continuing the same quest for high-quality sound reproduction that the S1 Series had been pursuing, the DCD-SA1 combines the latest audio technologies with the reliability that DENON's CD players have earned over the past 10 years. From the external design to the details on the inside, the DCD-SA1 has been developed as a member of the new SA Series embodying the essence of DENON's advanced audio technologies. With new advances in audio formats and the ability now of many households to enjoy multi-channel sound in their own homtheaters, "authentic sound" is in even greater demand. The SA Series represents DENON's latest offering of possibilities in pure 2-channel audio for today's most dedicated music lovers.



#### ■ 'Advanced AL24 Processing,' the latest technology for high sound quality

The DCD-SA1 employs Advanced AL24 Processing, the ultimate analog waveform reproduction technology developed by DENON, for use during PCM signal input (during stereo signal processing). In addition to the data expansion of existing AL24 Processing Plus technology, up-converted sampling is used to achieve natural interpolation without losing original data. Greater optimisation in digital processing algorithm has also been achieved for ringing-free pulse response and for pulsive music data and attack sounds. This enhances naturalness in the reproduction of spatial information such as the delicate nuances in the music, the locations of the performers, and the breadth, height, and depth of the concert hall.

#### ■ Original Drive Mechanism, the heart of DENON's digital disc playback technology

DENON has been developing original drive mechanisms for a large number of digital disc players from CD players to universal DVD players. In addition, the control firmware (for the signal processor and loader drive circuit) to operate these mechanisms was also developed by DENON. These technologies as well as DENON's track record of supplying mechanism engines to other manufacturers have earned high marks. Since Super Audio CDs rotate at high speed during playback, the length of the motor shaft has been considerably shortened. A long-life brushless motor capable of withstanding vibration caused by high-speed rotation has also been used. In addition, thorough consideration has been given to mechanical deviations in the optical axis of the laser beam being irradiated by the pickup onto the disc, mechanical unevenness in the base of the pickup mechanism, and the mechanical inclination of the brushless motor shaft. The DCD-SA1's mechanism uses a vibration-resistant coating that was used in the highly-acclaimed SVH loader. In addition to an optimum mechanism base floating design, the DCD-SA1 features a thorough hybrid vibration-resistant construction based on vibration analyses in order to suppress the resonance of components caused by disc rotation.

#### ■ High-accuracy master clock oscillator, to suppress jitter and noise

The importance of a master clock has been growing with the spread of high-grade, high-sampling audio sources such as Super Audio CD and DVD-Audio and advances in high sampling and signal processing during CD playback. The DCD-SA1 employs an oscillator with high accuracy and high stability. Extremely stable oscillation output has been achieved by modularising the oscillator's circuit blocks and suppressing influences such as load capacity from PC boards and other areas

compared to general crystal oscillators. In particular, the physical distance between the clock and the DAC has been shortened, resulting in a clock design that would not be possible without internal oscillation centred on the DAC. This design thoroughly minimises the adverse influences of jitter and noise. Greater clock accuracy and higher volume of information were achieved through the slave operation of the PCM and DSD decoder LSI. During Super Audio CD playback, the DCD-SA1 reads DSD decoder data from the high-accuracy master clock for the DAC and performs frequency division on the clock. This process strictly follows oscillation precision. By setting the DSD decoder to slave operation, it is possible to achieve operation with the same high-accuracy clock as the DAC.

#### ■ Fully balanced output using 4-DAC configuration

The DCD-SA1's D/A conversion circuitry, configuring a differential output circuit, uses 2 D/A converters for each stereo channel. Independent converters are used for each of the hot and cold terminals to realise a fully differential balanced circuit. This configuration is very different from a balanced output configuration that uses an operational amp to invert phase following conventional D/A converter output. Since delays between hot and cold terminals no longer occur and interference is avoided, it is an ideal high-quality sound output. The differential drive circuit configuration is also used for the unbalanced output circuit.

#### ■ Triple floating power supply

The elimination of the adverse effects of vibration from the power supply transformer not only suppresses resonance among all components and prevents noise from influencing the audio signal, it also ensures a clean, stable supply of power. The DCD-SA1 features a triple floating construction from the base of the power supply to the transformer.

(1) Vibration-resistant construction between the transformer and the case: A base filling material is first poured onto the bottom of the cast aluminum case, and the power supply transformer is placed into the case after it hardens. The filling material is then inserted again.

(2) Suppression of vibration onto the secured base: Shock absorbing material is inserted between the transformer case and the cast aluminum transformer base.

(3) Control of vibration transmitted to the chassis in all frequencies: Four types of shock absorbing materials of different resonance frequencies have been combined between the transformer base and the chassis.

