

# AD-6900

3 HEAD LOGIC CONTROL STEREO CASSETTE DECK WITH F.R.T.S.

AIWA for craftsmanship

# AIWA<sup>®</sup>

- 3 Head system with V-cut combination head
- Feather-touch logic controls
- Ultra-compact cabinet only 12 cm (4-3/4") high
- Flat Response Tuning System (FRTS) for ideal recording bias
- Super-wide 20 ~ 20,000 Hz response from FeCr tape
- Exclusive "Double needle" Peak/VU meters

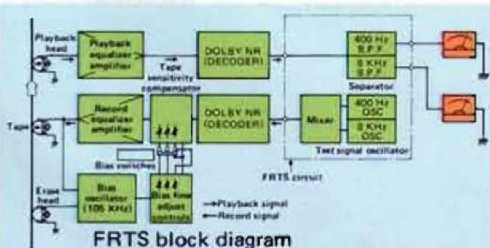
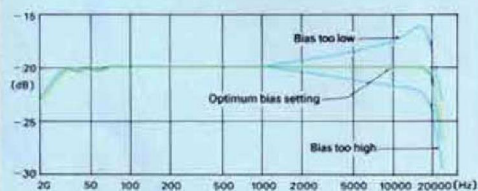


**User-adjustable bias system affords ideal matching with all tape brands; F.R.T.S. assures optimum performance from every tape.**

Stated simply, F.R.T.S. is an electronic system which "tests" magnetic tapes in order to determine the ideal recording bias. The high frequency bias signal is an essential element in the recording process, and proper bias matching between deck and tape is needed if ideal recording conditions are to be achieved. The problem was, how can the recordist determine the *exact* bias required for a specific tape (variations exist even among different batches of the same brand) without complicated equipment on a test bench? AIWA came up with the solution. Its Flat Response Tuning System, incorporating special high and low frequency oscillators, enables variation of the bias signal. The result is immediately displayed on the VU meters, and all that the user need perform is to turn the proper bias fine adjustor knob until left and right meters display the same levels. This indicates setting to the optimum bias to achieve the flattest frequency



Relationship between bias and frequency characteristics.



response and most faithful reproduction of the source. This simplified diagram of the FRTS circuitry illustrates how the Test Signal Oscillator feeds high and low frequencies into the record head at the -15 VU level. The playback/test head picks up these signals from the tape, and the 400 Hz and 8k Hz frequencies are indicated on the right and left meters.

**Peak or VU? Only AIWA gives you both — simultaneously.**

If all musical signals were the same, there would be no need to differentiate peak components (such as from drums or other percussion instruments) from the average (VU) level when recording. In actual practice, however, the setting of input levels is of critical importance. Under-recorded tapes have poor signal-to-noise performance and lack dynamism. Tapes recorded by VU meter readings only let musical peaks go unnoticed, resulting in playback distortion.



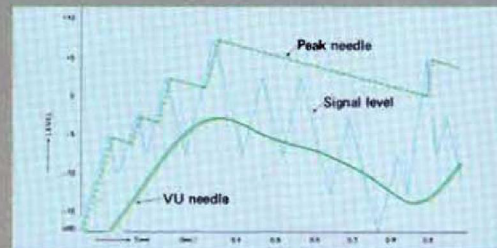
Sharp, short signal, as from a drumbeat



Signal with large presence of sine-wave components, such as organ music

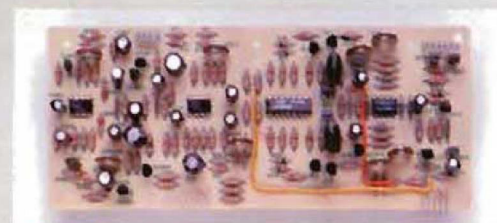
The double needle metering system on the AD-6900 ends the debate over Peak vs. VU by giving both; simultaneous Peak and VU readings. The ultra-sensitive red Peak needles have a response time of 10 milliseconds (0.01 sec.) and a slow decay time of 1.5 seconds to ensure ample time for monitoring. Unlike the -20 to +5 or +7 range found on most decks, Peak meter readings have an

extra-wide range of -40 to +10 dB. For specialized use, both Peak and VU meter operation can be switched off if desired.



**Peak Hold facility**

Peak Hold is a special facility designed to serve as a reference during recordings. Rather than swing constantly, the Peak needles can be fixed to remain at their highest single position reached during a recording. If a signal occurs which is *higher* than the former Peak, the needle will move forward to remain at the new position.



Meter drive circuit

**"Double Dolby" with calibration**

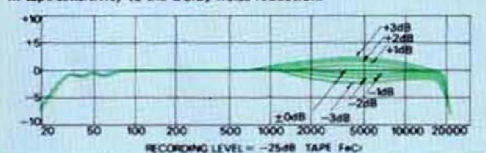
"Double Dolby" means that separate Dolby circuits are utilized in the left and right channels of both the record and playback amplifiers, making a total of four circuits. This enables the user to not only monitor the source in Dolby, but also to hear the noise reduction effect in the "Tape" mode immediately after recording. In order to obtain full benefits of the noise reduction system, the Dolby circuit must correspond to the sensitivity of the tape in use. In the AD-6900, the same oscillator used for the FRTS bias adjustment is employed for this purpose. Calibration can be performed by



turning the screw housed within the bias fine knob until the left VU meter indicates "0". \* Dolby is a registered trademark of Dolby Laboratories, Inc.

Rec. calibration assures that the AD-6900's superb signal-to-noise ratio of 68 dB (with FeCr tape) can be fully realized.

Frequency response change according to differences in tape sensitivity to the Dolby noise reduction.

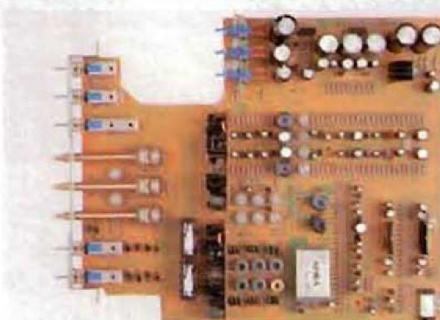
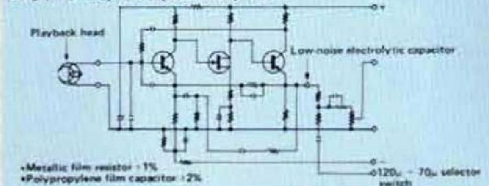


### **New condenserless amplifier circuitry eliminates noise**

The equalizer amplifier is a three-stage direct-coupled type employing ultra low-noise transistors and a low-noise FET. Moreover, the condenser has been eliminated to permit direct coupling between the playback head and amplifier; this measure, combined with the AD-6900's plus-minus split power supply, results in significant enhancement of sound quality and noise reduction. In addition, a stabilized current regulated circuit in the record amplifier means superb

dynamic range from tapes, with head-room even at the saturation level inputs at 0 VU/+20 dB or greater. Finally, a new toroidal-core transformer is used to provide excellent voltage regulation while reducing problems of noise-producing magnetic flux.

Diagram of Playback equalizer amplifier



### **New combination V-cut head assures widest dynamic range, permits source/tape monitoring**

The gap width on two-head decks,

usually about 2 microns, is a compromise between the wider gap needed for recording and the narrower gap required for playback. The precision made Ferrite head on the AD-6900 separates these functions. Set at a wide 4 microns, the record head's gap is the ideal width to project a strong signal into the tape. The narrower 1 micron playback head gap has the extra sensitivity to detect even the most delicate signals.\* As a single unit, they are free from the need for azimuth adjustments or alignment problems.

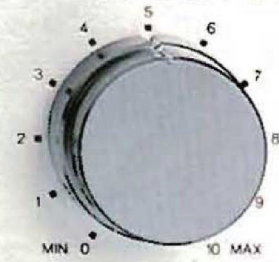
\* AIWA's CVC head is the main reason why the AD-6900 can realize its wide 20 ~ 20,000 Hz frequency response.

### **New "V-cut" design**

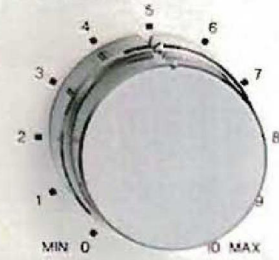
In ordinary decks, it is common to find significant roughness (Contour effect) in the lower frequency ranges. This is caused by the physical interaction of the tape and the playback head, and is especially a problem in decks with combination heads, due to the shorter tape-to-head contact surface.



LINE RECORD LEVEL L-R



MIC/DIN RECORD LEVEL L-R



OUTPUT LEVEL

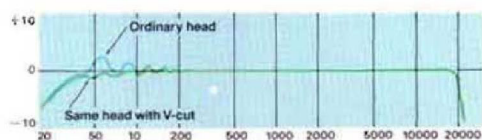
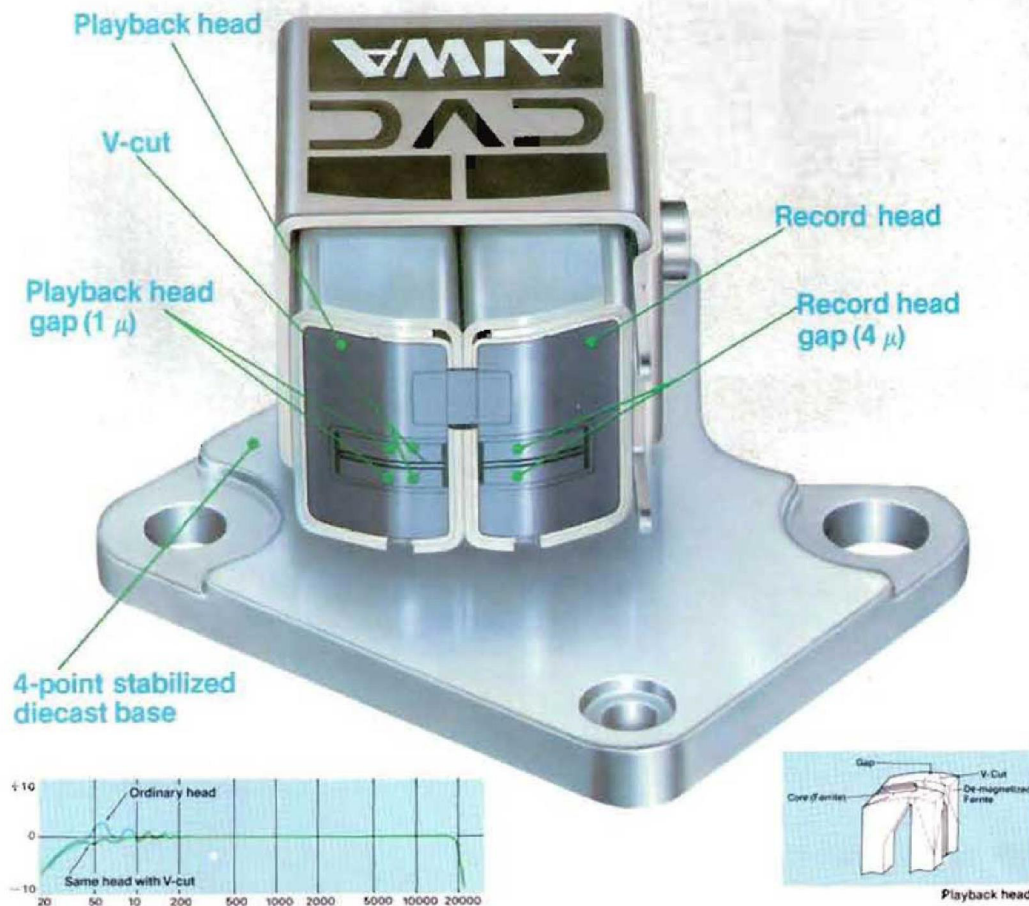


To eliminate low-frequency irregularities, AIWA has designed a special V-cut at the gap edge, which serves to produce multi-wavelengths

of the signals below 100 Hz. The result is to reduce the Contour effect and achieve low-frequency smoothness on par with open-reel equipment.

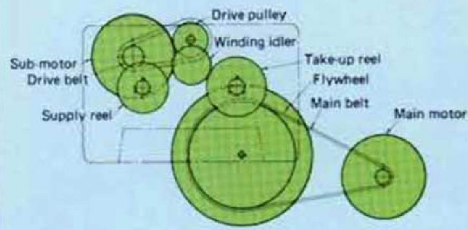
**Dual-motor drive system holds wow & flutter to less than 0.04% (wrms).**

Rejecting the elaborate closed-loop dual capstan design as being too costly

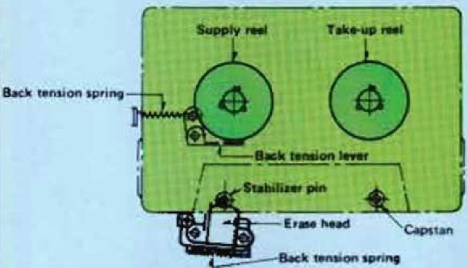


and complicated, AIWA engineers set out to develop a tape drive system which could achieve similar results in maintaining proper winding torque and tape tension. In the AD-6900, a dual back-tension design is used to put necessary "drag" on the tape at the supply reel axis and stabilizer pin points, assuring stabilized tape to head contact. To drive the capstan, AIWA's

## Feather touch logic controls with the world's first cue & review system

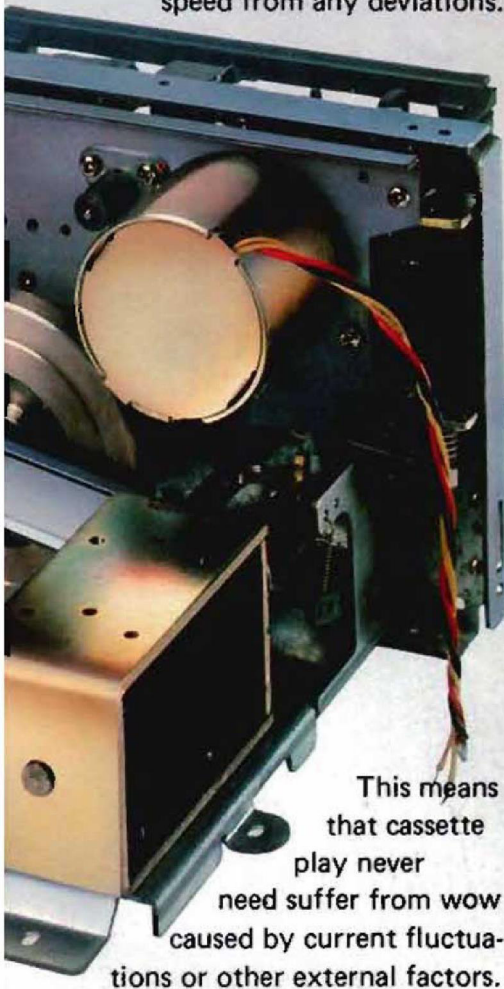


Dual-motor drive on AD-6900

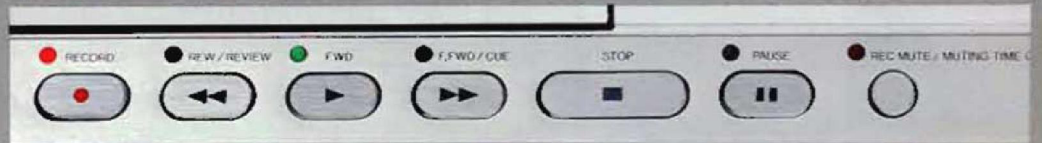


Dual back-tension design

high-reliability 38 pulse FG (frequency generated) servo motor is employed. Using a speed-detector circuit, the motor governs its own speed from any deviations.



This means that cassette play never need suffer from wow caused by current fluctuations or other external factors.

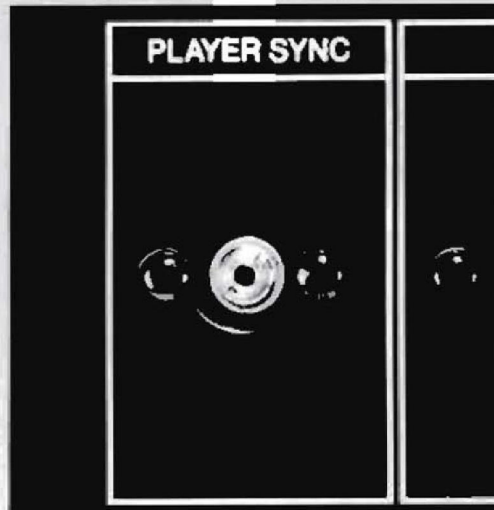


Rather than employ ready-made IC's, the logic control circuits in the AD-6900 are composed of 97 transistors, 2 FETs, 28 diodes, 254 resistors and 43 condensers. This design permits one-touch cue/review operation without leaving the play mode. Since the cue/review operate at only 1/2 the speed of the conventional fast forward/rewind, the desired spot on the tape can be easily located for replay.

Because all switching is electronic rather than mechanical, the logic controls respond almost instantaneously to the user's command; the split-second action of the controls are so foolproof that cassettes may even be ejected during play or fast forward without risk of damage.

### Exclusive "Rec Sync" feature

By connecting the AD-6900 to the AIWA AP-2500 or other AIWA-brand direct-drive turntables, disc-to-cassette recordings can be synchronized with the start and stop action of the player's tonearm. See this unique AIWA feature demonstrated at your audio dealer's.

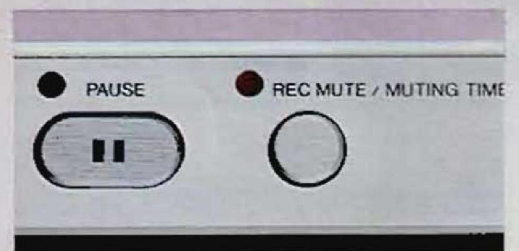


### Other convenient features

- Memory rewind replay/stop selector



- Timer standby for unattended recordings
- Standard 6.3 mmφ stereo line input/output jack on front panel
- Rec-mute control with muting time indicator

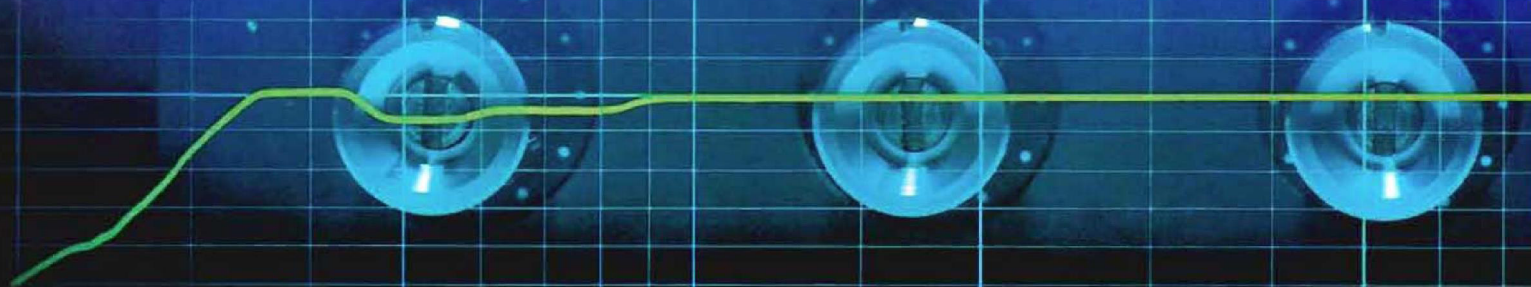


### Optional Remote Control

The optionally available RC-10 remote control unit permits operation up to 5 meters (approx. 16.5 feet) away from the set. Pause, rec-mute and cue/review controls are included. Each control button also features its own LED mode indicator.

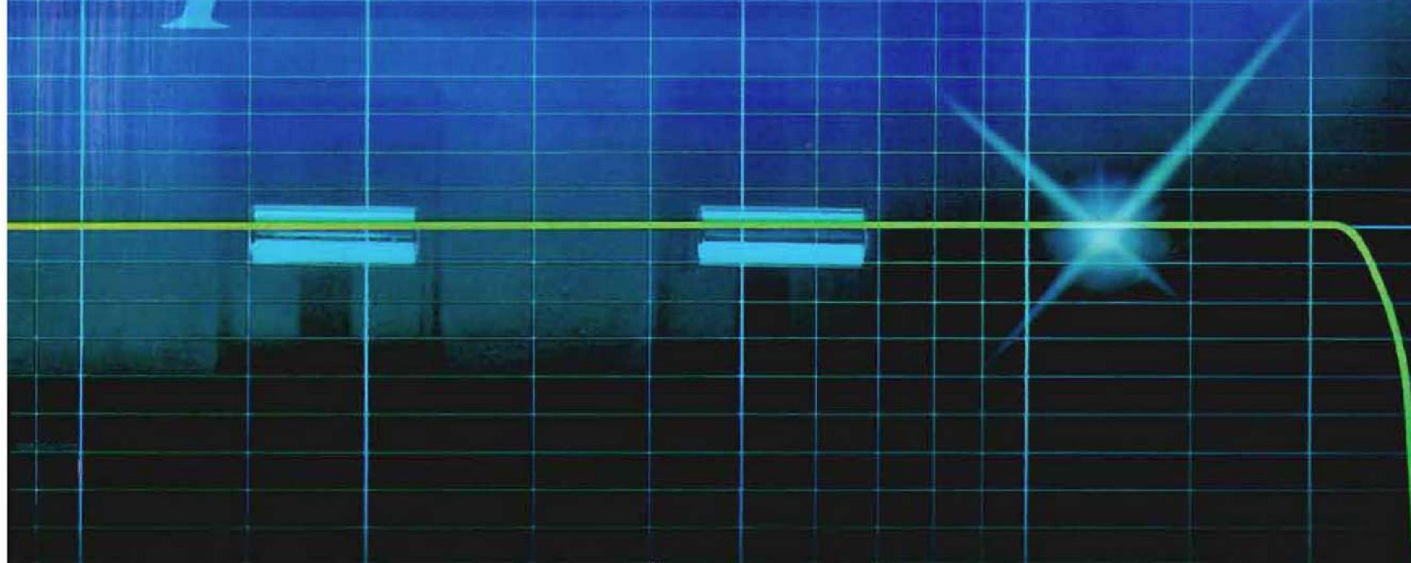


# A of pure sound



A "flat" response, to the audio purist, means faithful, uncolored reproduction of the sound source. Now with the AIWA AD-6900, true flat response cassette technology has arrived. F.R.T.S. — an exclusive user-operated bias test-and-adjust system — and Rec. calibration actually let you tailor the deck's electronics to "fit" the cassette. The result is incomparable sound fidelity.

# portrait reproduction.

A stylized graphic of a cassette tape is centered horizontally, appearing to glow with a blue light. The background is a dark blue grid. To the right of the cassette, a bright blue starburst or lens flare effect is visible. A thin, glowing blue line runs horizontally across the middle of the image, passing through the cassette and ending in a curve on the right side.

To complement the advanced circuitry, AIWA fitted the AD-6900 with its newest combination V-cut head; the most accurate metering system in audio; and a tape drive system so close to mechanically perfect as one might dare to imagine. Right at the forefront of an exciting new age of component design, the AIWA AD-6900's captivating performance is what your ears were waiting for all along.

