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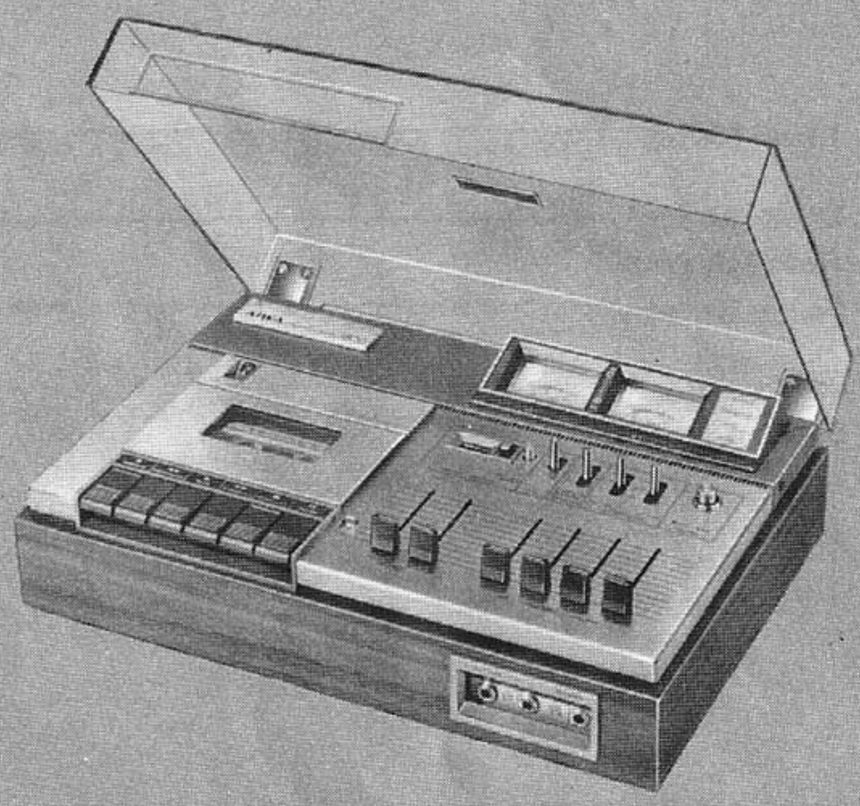


STEREO CASSETTE DECK

WITH DOLBY SYSTEM AND DNL

AD-1800

• OPERATING INSTRUCTIONS

AIWA®

We thank you for your having chosen AD-1800, the new stereo cassette tape deck from AIWA.

Your AD-1800 is a professional-quality stereo tape deck designed by the AIWA engineers who are highly qualified, zealous and untired in pursuit of better sound. Properly operated, it will assure you of the optimum performance for years. Before starting to use the new instrument, read this operating instructions manual to familiarize yourself with the proper operation.

FEATURES

- **2 Noise Reduction Systems Built-in:**
  Dolby NR System and Dynamic Noise Limiter (DNL) are built-in to provide astonishing reduction of annoying tape hiss. Clear sound quality can be enjoyed that is unbelievable from cassette tape.
- **Fe-Cr (Ferrichrome) Tape Can Be Employed:**
  In addition to LH (high performance) and CrO_2 tape, Fe-Cr tape can also the used for outstanding results.
- **Bias & Equalization Selectable in 3 Steps:**
  Bias and equalization are independently switchable in 3 steps, allowing maximum tape performance.
- **MPX Filter Switch:**
  The MPX filter circuit can be switched ON/OFF. High band frequency response is enhanced, while coupling this switch with the Dolby NR switch permits extremely easy operation.
- **SST (Solid & Stabilized Transport) System:**
  High reliability mechanical construction includes firm securing of the pinch roller shaft to the chassis, massive 448 gram 104 mm dia. flywheel with 5090 g cm inertial energy, low speed idler rotation, new mechanism drive system, and high performance capstan The mechanism is new at 6 points and is complemented by stabilized electrical circuitry. Stable tape transport, plus low distortion sound can be enjoyed from this luxurious design.
- **Memory Counter:**
  Automatic cuing can be easily performed by simply depressing the REW button.
- **Ferrite Guard Head (FGH):**
  Uses the newly developed ferrite guard head (FGH) featuring excellent frequency characteristic and increased abrasion resistance.
- **Cue and Quick Review:**
  Quck-finding of any desired program in the tape is easy with the Cue and Quck Review system. You will find the Quick Review function especially convenient for tape rewinding direct from the Record operation.
- **Oil Damped Elevation:**
  An oil damped elevation mechanism is provided for removing the cassette tape, lending a precision touch appropriate for high quality equipment.
- **Automatic Stop Mechanism:**
  Functions in all transport modes: RECORD, PLAY, FAST FORWARD and REWIND. When the end of the tape is reached, tape is automatically stopped, and all locked control buttons are released.
- **Mixing:**
  Line input and microphone input can be mixed and recorded.
- **New Disign Tape Running Indicator:**
  The convenient indicator can also confirm places where tape running has been interrupted. Prevents recording errors caused by neglecting to depress the PAUSE button, etc.
- **Adjustable Bias for LH Tape:**
  Bias for LH tape is adjustable by ±10%.

DOLBY SYSTEM & DYNAMIC NOISE LIMITER (DNL) TECHNICAL PRINCIPLES

The low tape speed and narrow track employed for cassette recording make it vulnerable to tape hiss noise, which can become particularly objectionalble at low input levels. Eliminating these drawbacks and obtaining performance which can be favorably compared with open reel recording formed major reasons for developing the Dolby and DNL system.

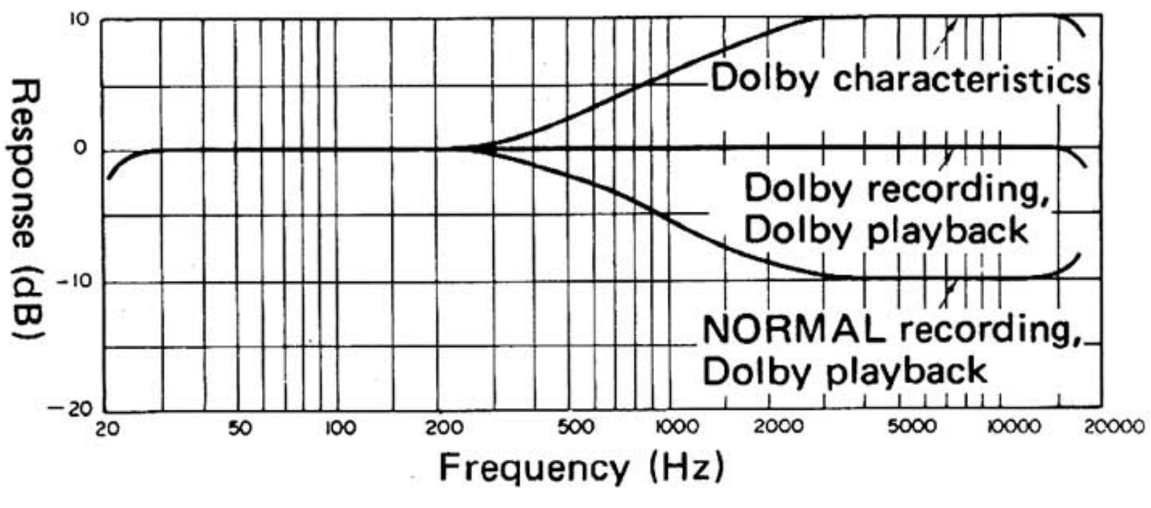
Dolby System

The Dolby system is effective for hiss noise arising in the middle and high frequency ranges. When signals in these ranges are below a predetermined level, the system functions to record them at higher than normal level (compression). Amazing reduction in annoying hiss noise is achieved by this Dolby system. SN ratio improvement is a remarkable 5 dB at 1 kHz and 10 dB above 5 kHz.

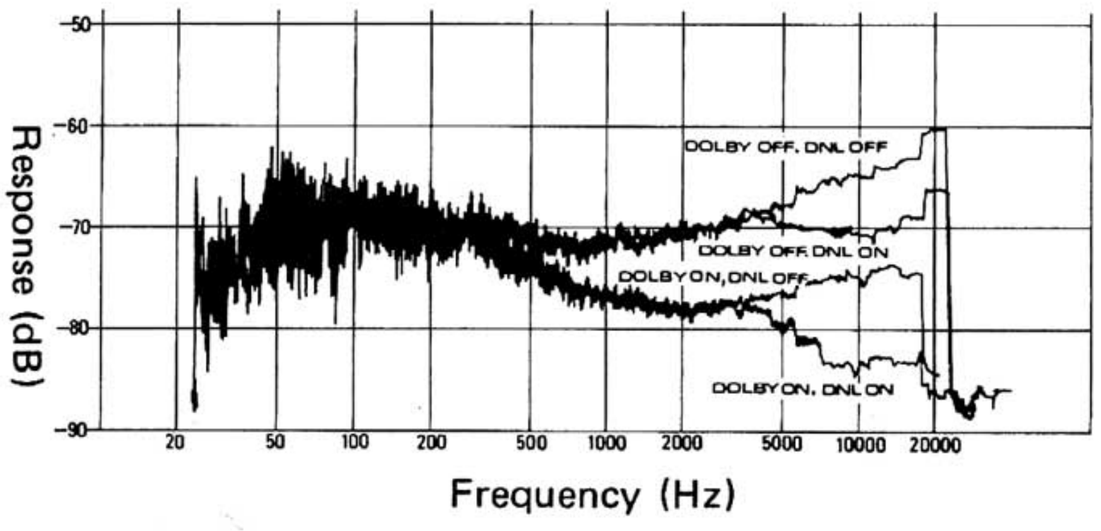
DNL System

This system functions to block hiss noise according to the input level. At high levels, such noise is barely noticeable, while it becomes conspicuous at low levels. As the DNL system reduces hiss noise during playback, it is extremely convenient for use with commercially sold music tapes. By combining both Dolby and DNL systems, clear sound quality can be enjoyed.

Frequency Response Characteristic of Dolby System



Noise Reduction Effect of Dolby and DNL System



TYPES OF TAPE

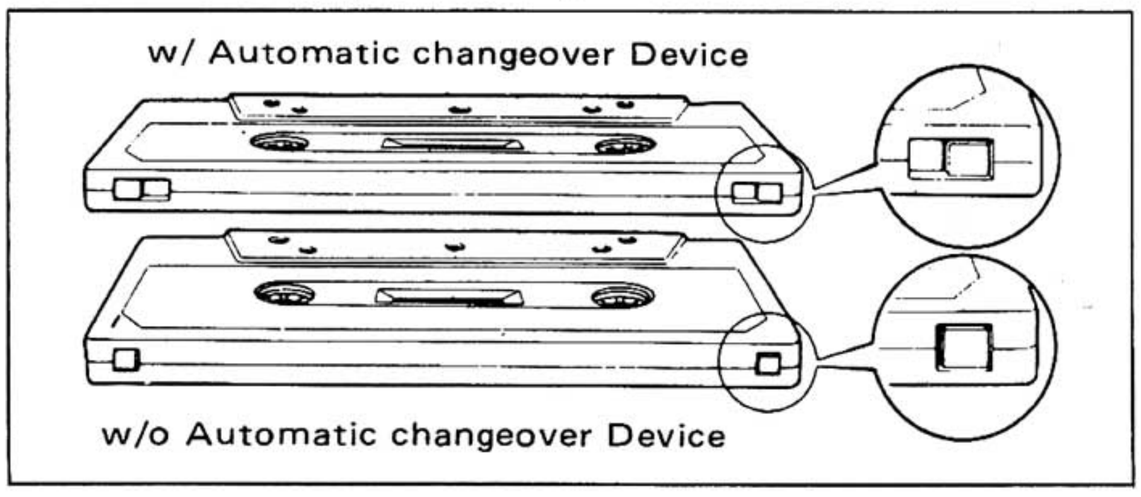
Tape can be braodly classified into 3 types according to magnetic material: ferric oxide, chromium dioxide, and ferrichrome. Ferric oxide tape is general purpose tape employing γ-Fe_2O_3. In comparison, chromium dioxide (CrO_2) tape offers advantages of: 1) improved frequency response, 2) large high frequency output with wide dynamic range, 3) improved SN ratio, and 4) clear sound. On the other hand, it possessed drawbacks in terms of differing magnetic properties, which rendered it incom patible with earlier tape recorders, plus a tendency to cause head wear. Ferrichrome tape employs 2 layers and combines the features of γ-Fe_2O_3 and CrO_2 materials. The ease of usage characteristic of ferric oxide is provided together with the performance advantages of chromium dioxide.
This set has been designed to derive full performance from each of the above 3 tape types. Both bias and equalization can be selected to match tape characteristics, while the abrasion resistant ferrite guard head (FGH) offers improved wear performance.

MPX (MULTIPLEX) FILTER FUNCTION

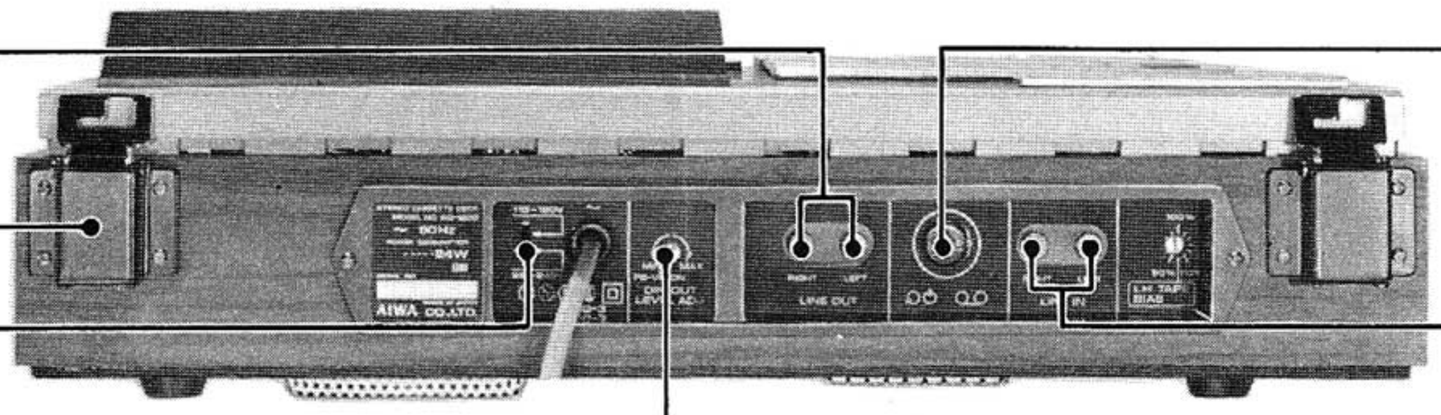
When performing Dolby recording of an FM stereo or CD-4 signal, in some cases carrier signal leakage can cause misoperation of the Dolby circuit. This filter eliminates such leakage, thereby permitting proper Dolby operation. Set the Dolby NR/MPX Filter Switch to ON when Dolby recording an FM stereo or other source which employs a carrier signal. At other times, set the switch to OFF in order to disengage the filter circuit and obtain full high frequency response.

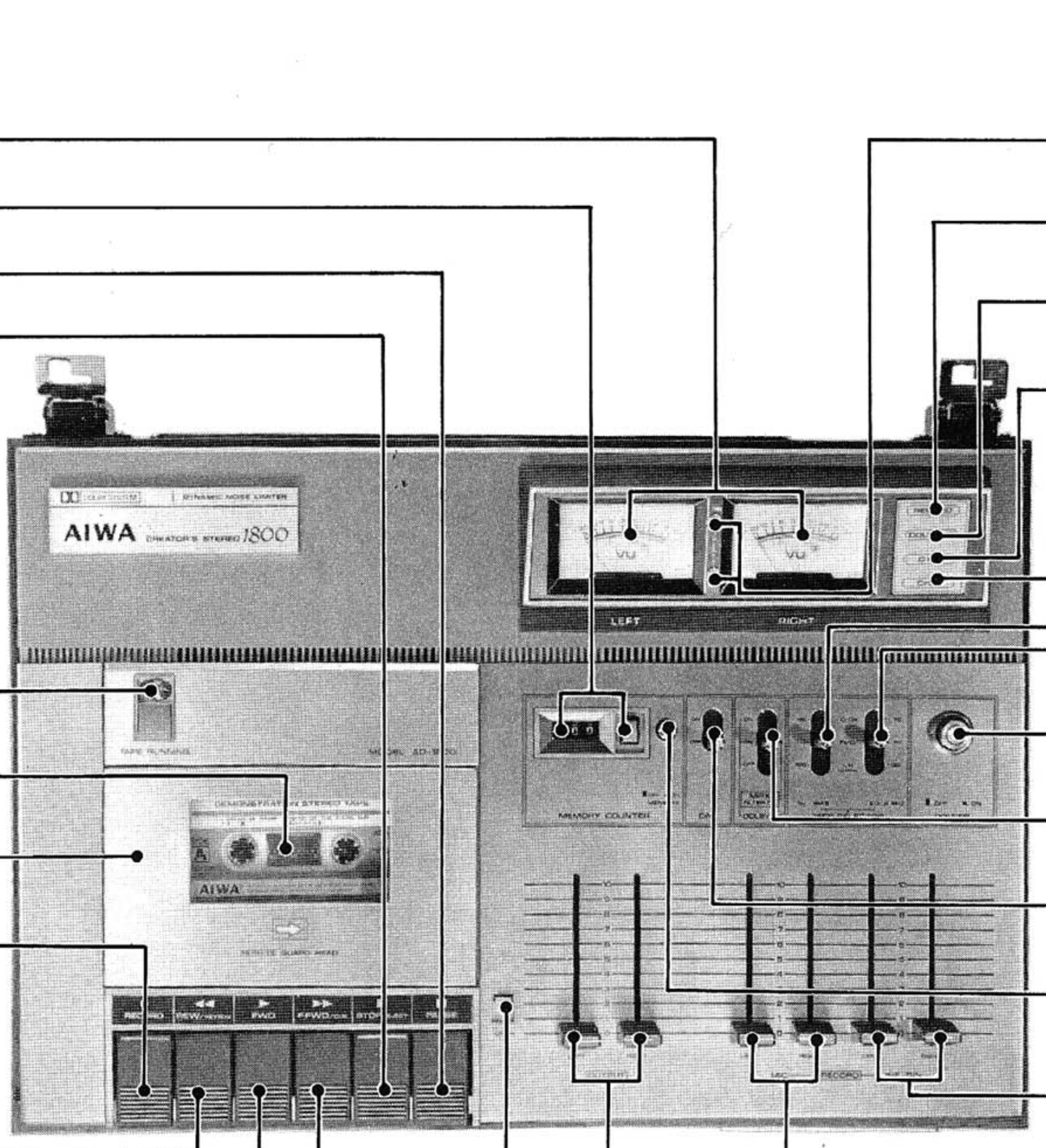
About the automatic changeover device of CrO_2 cassette tape

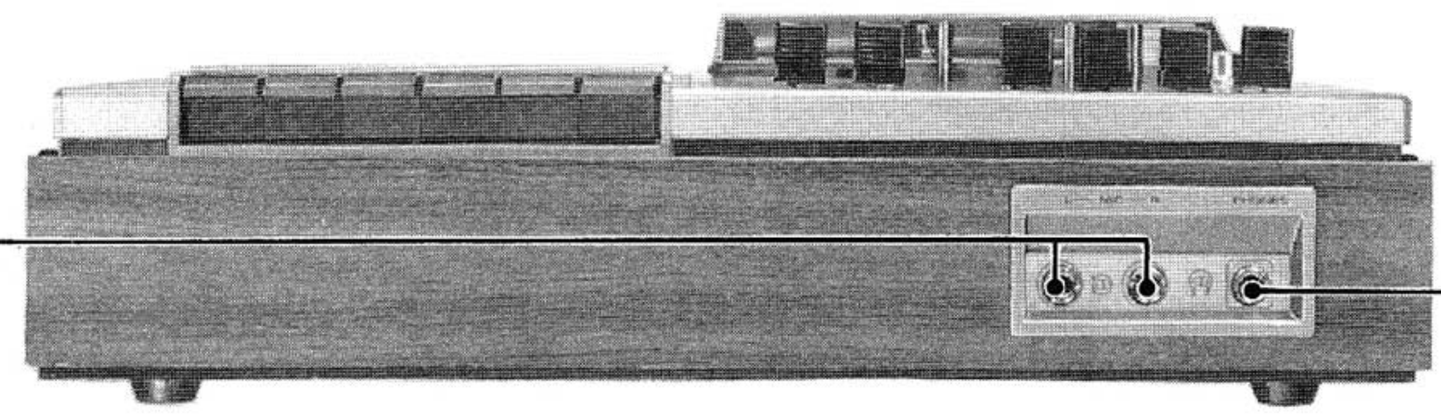
Now commercially available is a CrO_2 cassette tape provided with the device designed to unnecessitate manual changeover of the equalizer or bias current.
This device is a groove located alongside of the rear tab provided to prevent accidental erasure of the recorded tape. When a CrO_2 provided with this groove is used, it is not necessary to change over the equalizer or bias current manually. As a rule, this groove is m ade to internationally common specifications, so any CrO_2 cassette tape with such a groove can readily be used regardless of the brand.



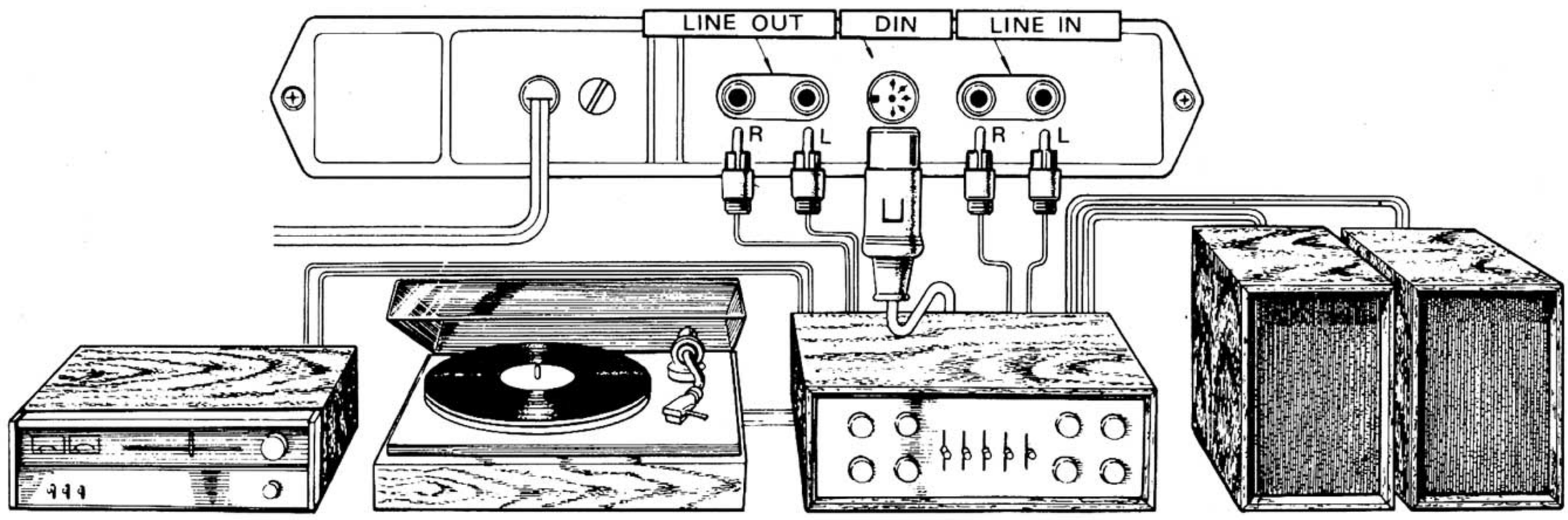
APPELLATIONS OF PARTS







CONNECTIONS



LINE OUT jack

For reproduction through an external amplifier, connect to these output jacks the Line In, Aux In, or Tape Play terminals of the amplifier by means of pin-plug connection cords.

LINE IN jack

Also using pin-plug connection cords, connect these input jacks to the Line Out or Tape Rec terminals of a program source (such as a tuner, stereo amplifier, etc.) for recording.

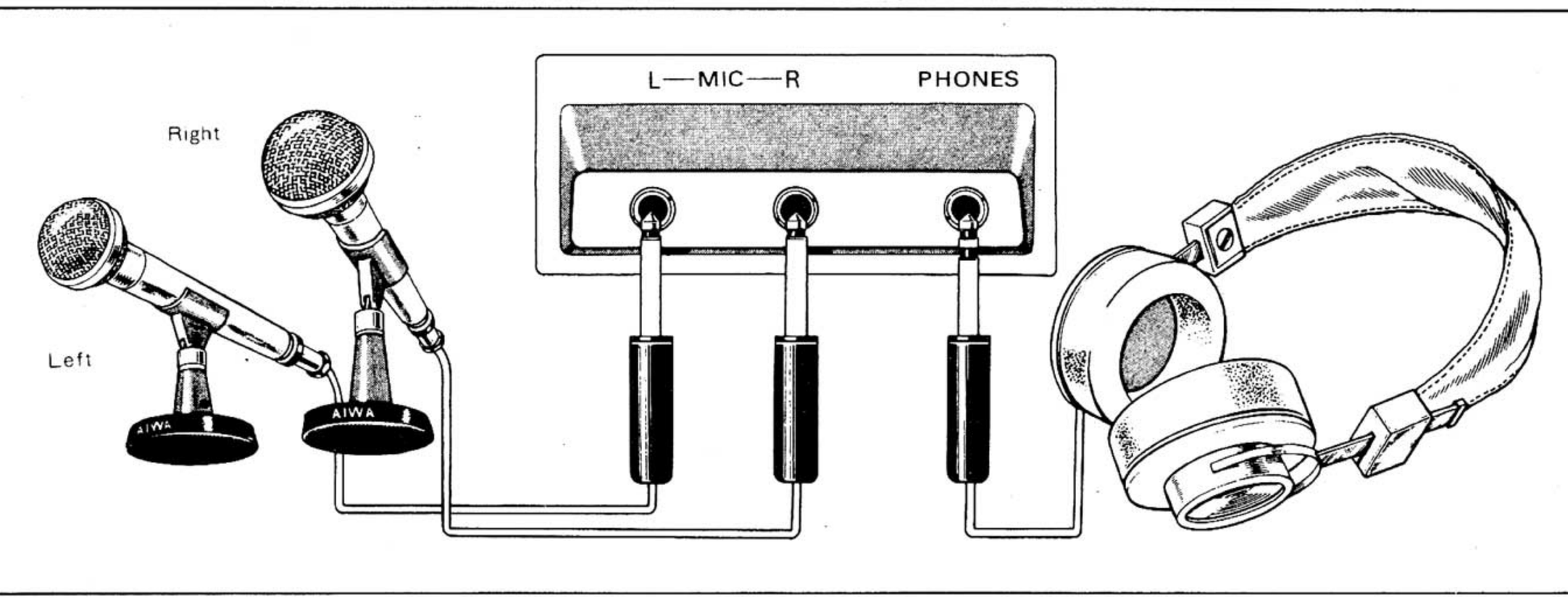
REC/PB (DIN) jack

Use this DIN jack to connect to this stereo cassette deck an amplifier equipped with a similar REC/PB (DIN) jack, using a DIN connection cord. This permits both recording and reproduction through the same connection.

NOTE: To avoid problems, do not employ DIN cord and pin plug cables sim ultaneously. Use only one or the other of these facilities for recording and playback.

DIN OUT Level Control

* The DIN jack output is adjusted to comply with DIN specifications. However, if according to the connected amplifier etc., the sound becomes distorted, the DIN jack output can be adjusted with the DIN OUT LEVEL ADJ knob.
* By turning the DIN OUT LEVEL ADJ knob completely to the left, to the PB, VR and ON positions, DIN jack output will comply with DIN specifications.



MIC (Microphone) jack

A 600 ohms type microphone is best suited for this tape deck although 200 ohms to 10k ohms types are all usable. For stereo recording with two microphones, use two unidirectional microphones and you can make quality stereo recording featuring excellent separation.

Headphone jack

Most recommendable for use with this tape deck is a dynamic headphone with 8 ohms impedance.

SOME IMPORTANT THINGS TO REMEMBER BEFORE STARTING TO USE

Power Frequency

This tape deck is finely pre-adjusted for the commerical frequency of 50 Hz or 60 Hz in our facotry. When playing on the machine in 50 Hz area after purchased it in 60 Hz area, or vice versa, please consult the shop.

Power Supply Voltage

This has been pre-set for AC 240V. To employ this set with AC 120V power, use a pin or slotted screwdriver to change the rear panel Voltage Selector Switch setting to the AC 120V position.

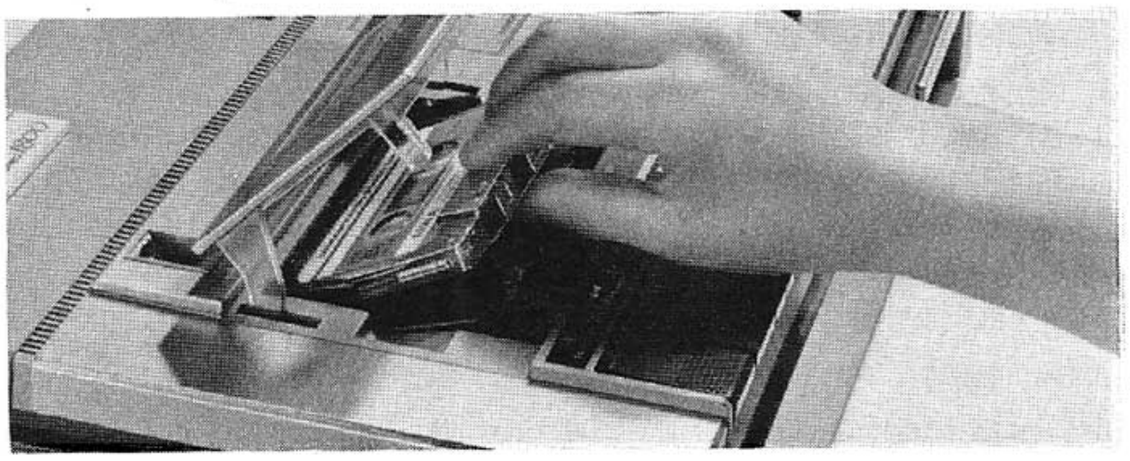
Power Source

Connect the AC power cord of this tape deck to a wall outlet of AC mains. Depress the Power On-Off Button to turn on the set. Depress it once more to turn off the set.

PLAYBACK

1. How to Install Cassette Tape

1) Depress the Stop/Eject Button to open the Cassette Case lid.
2) Insert the cassette tape in such a way that the side to be played back may be upside with the open end facing toward yourself.

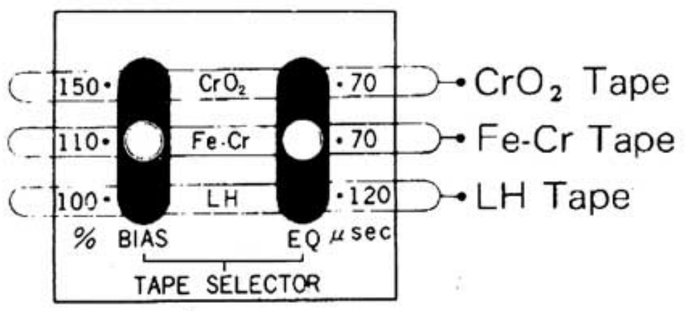


2. How to Play Back

1) Set the Tape Selector Switch to porper position to select the right equalizer as indicated below according to type of the tape used:

- Fe-Cr Tape ..... Fe-Cr
- LH Tape & Normal Tape ..... LH
- CrO_2 Tape w/o Automatic Changeover Device .....CrO_2
- CrO_2 Tape w/Automatic Changeover Device ..... Any position;

the tape deck is automatically set for CrO_2 tape.



2) For playback of a Dolby-recorded tape, set the Dolby NR/MPX Filter Switch to ON.
3) Depress the Play (Forward) Button.
4) Adjust the Output Level control of this set, and the volume, tone and balance controls of the connected stereo amplifier as required for comfortable listening.

* If hiss noise is objectionable, set the DNL switch to ON (DNL lamp lights) to reduce the nose and obtain clear sound. Use the DNL switch according to personal preference.

3. How to Rewind Tape

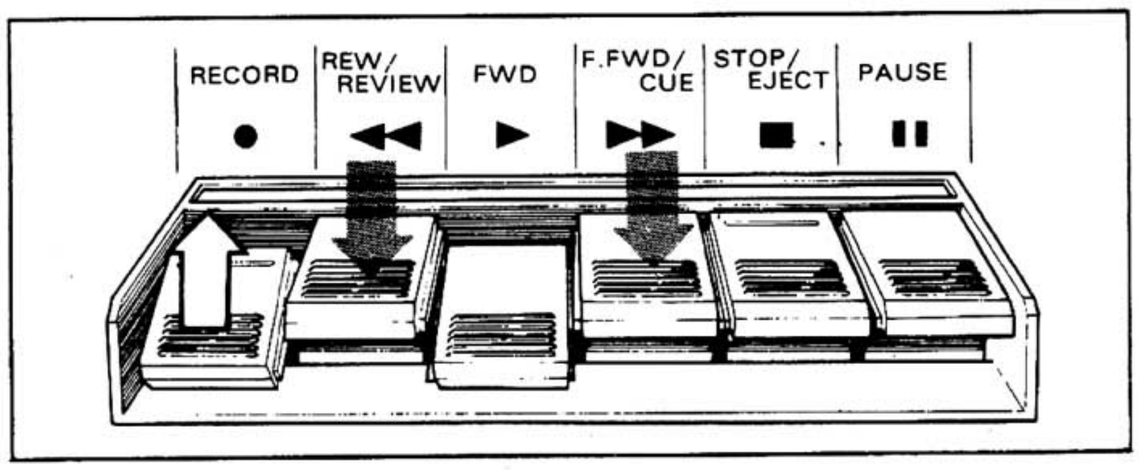
Depress the Rewind/Review Button until it locks, and the tape will rewind rapidly. To terminate Rewind operation, press the Stop/Eject Button.

4. How to Advance Tape at Faster Speed

Depress the Fast Forward/Cue Button and the tape will run forward at faster speed. Press the Stop/Eject Button to terminate the Fast Forward operation.

5. Cue/Quick Review Operation

Operational mode can be changed directly from Record or Playback to Fast Forward or Rewind. This makes it possible to rewind or fast forward tape while the tape deck is in playback position.
With the Fast Forward or Rewind Button depressed during recording, the Record Button only is released and the tape forwards or rewinds at faster speed.
The Fast Forward or Rewind Button will not lock, however. Keep on depressing the Fast Forward or Rewind Button until the desired point in the tape is reched in Fast Forward or Rewind. Take your finger off the Button and the Fast Forward or Rewind operation will stop immediately while playback is automatically started from that point at the same time. Since the Fast Forward or Rewind operation is performed in playback position, a sort of rippling sound is continuously heard during this operation, os that you can easily find where to end the Fast Forward or Rewind operation.



6. Stop

The tape traveling in any mode of operation can be stopped by depressing the Stop/Eject Button anytime. Depress the same button once more to open the Cassette Case and eject the cassette, both at the same time.

7. Automatic Stop System

When the tape is completely wound in Record, Playback, Fast Forward or Rewind, the Automatic Stop mechanism becomes activated to stop the tape and return the control button(s) to the neutral position.

8. Lid OPEN Button

Sliding this button downward opens the cassette case lid while the tape is running.

9. Employing Memory Counter

This feature is very convenient for repeatedly listening to the same passage or immediately checking results after recording.

1) Depress MEMORY button to ON.
2) Depress RESET button to set counter to 000.

Proceed with playback (or recording). When the desired portion of the tape has been completed, depress the Stop/Eject Button, then the Rewind/Review Button. The tape will rewind and when the counter indication reches 999, the tape will automatically stop, releasing the Rewind/Review Button. Fast cuing can be performed in this manner.

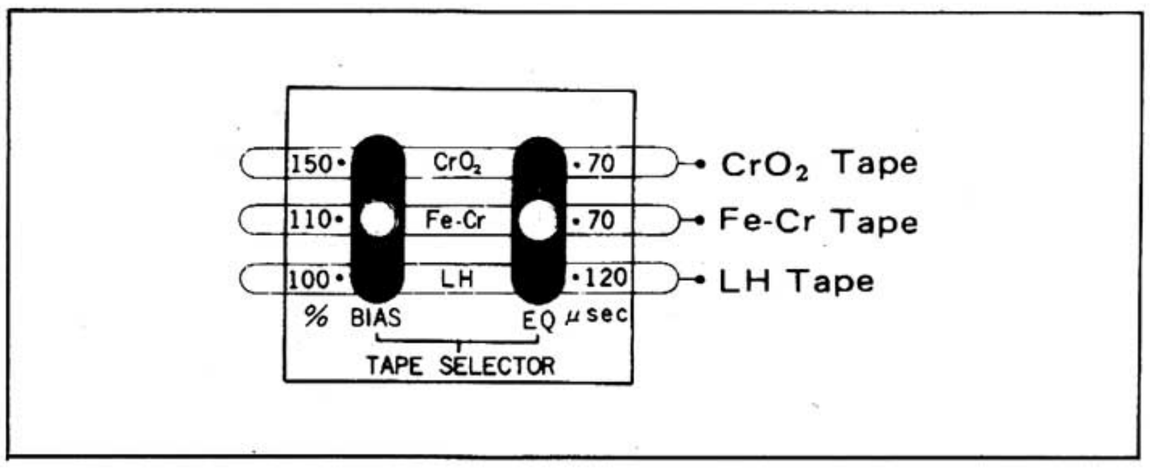
ABOUT TPAE SELECTOR SWITCH

Since the bias characteristics and equalizer characteristics differ between LH (high performance) tape, Fe-Cr tape and CrO_2 tape, it is necessary to select the bias and equalizer most suitable for a particular tape in use.

Your AD-1800 is equipped with tape selector switch that permits you to select the proper bias and equalizer for each type of tape, LH, Fe-Cr or CrO_2, so that each type of the tape may give the highest possible performance.

It is, therefore, important that you set the tape selector switch to proper position according to type of the tpae you use.

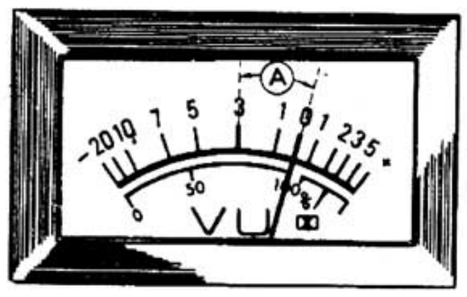
For a normal tape, set the tape selector switch to LH position.



BEFORE RECORDING

1. Recording Level Adjustment

Higher recording level is usually advantageous in obtaining a recording that gives better S/N ratio and wider dynamic range. If the level is so high as to reach the magnetic saturation point, howerver, sound will be recorded with increased distortion. While watching the Level Meter, adjust the recording level properly so that the Level Meter's power may be deflecting at most within the "A" range indicated in the illustration below.

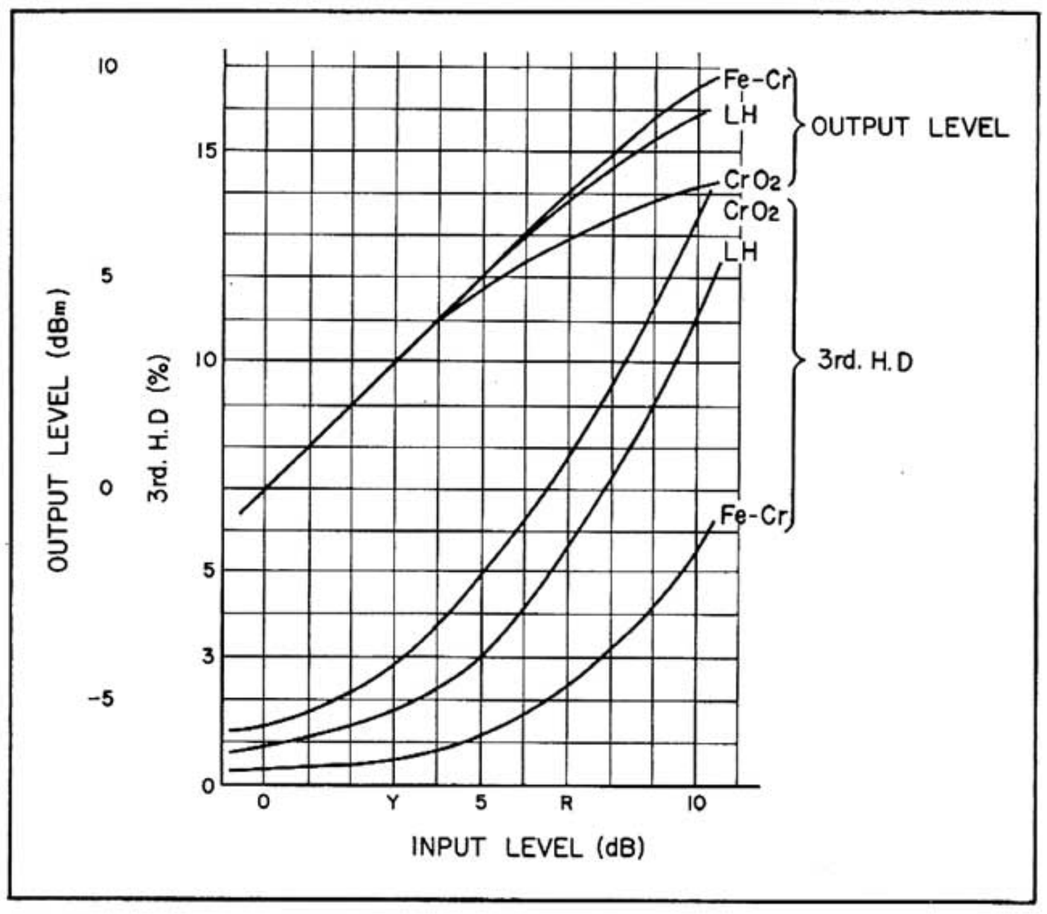


2. Peak Indicator Lamps

Level meters are not ordinarily able to respond to transient signals. For this reason, even if the indication does not exceed OVU during a recording, distortion can occasionally be experienced with transient signals such as symbols, which may actually have a 10 dB greater level. The purpose of the Peak Indicators is to prevent this type of error. In general adjust for a yellow lamp indication, while avoiding a red indication. This will provide good SN recording at low distortion.

For additional accuracy:

Input signal and distortion relationships vary according to tape type as shown in the graph. When using other than general purpose (LH) tape, take particular care in observing the +3 dB (yellow) and +7 dB (red) peak indications. Set a slightly lower value for CrO_2 tape, and a slightly higher one for Fe-Cr tape. Employing the peak indicators in this manner will provide recordings with additionally improved SN and distortion.



3. DOLBY NR/MPX Filter Switch

A) Dolby ON/MPX FILTER OFF

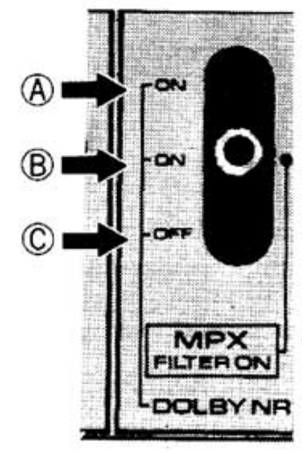
Set lever to this position for Dolby recording of sources other than FM stereo. This will provide improved high range frequency response.

B) DOLBY ON/MPX FILTER ON

For Dolby recording of FM stereo. Prevents incorrect operation of the Dolby NR circuit due to the 19 kHz pilot signal.

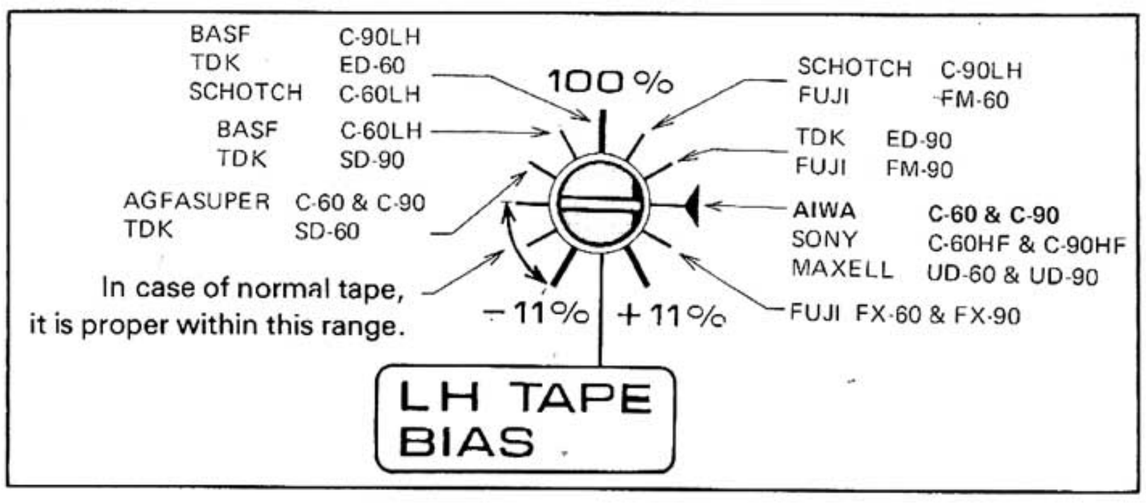
C) DOLBY OFF/MPX FILTER OFF

Coupled with DOLBY NR switch. Prevents frequency deterioration during Dolby OFF operation incurred in earlier sets when user neglected to also turn off the MPX filter.



4. LH Tape BIAS Adjusting Control

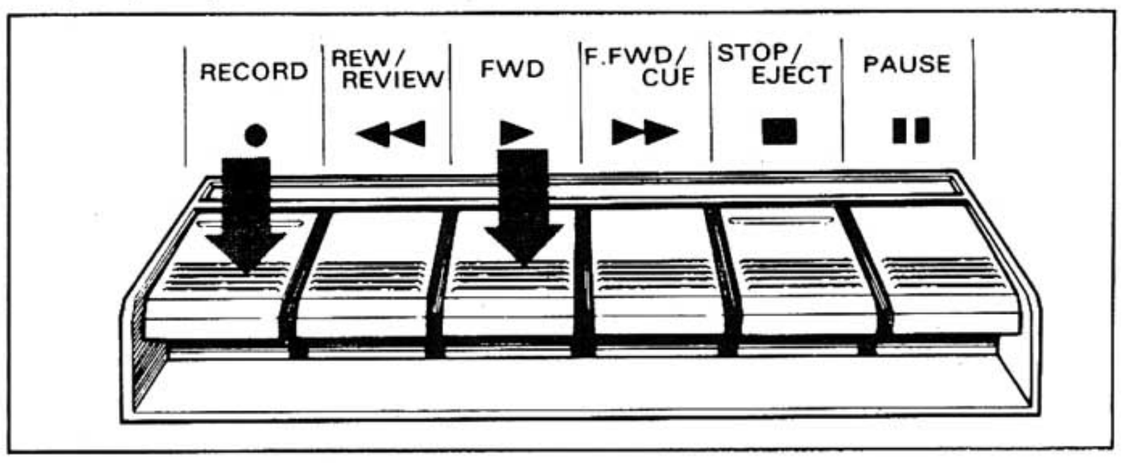
Provides bias adjustment for LH tape. There are numerous brands of LH tape on the market and each possesses slightly different characteristics. This set has been adjusted for the standard value prior to shipment. If desired, the bias can be readjusted by using a screw-driver to turn the rear panel BIAS adjusting control. Clockwise rotation of the control increases the bias, while counter-clockwise rotation decreases it. The click point signifies AIWA.



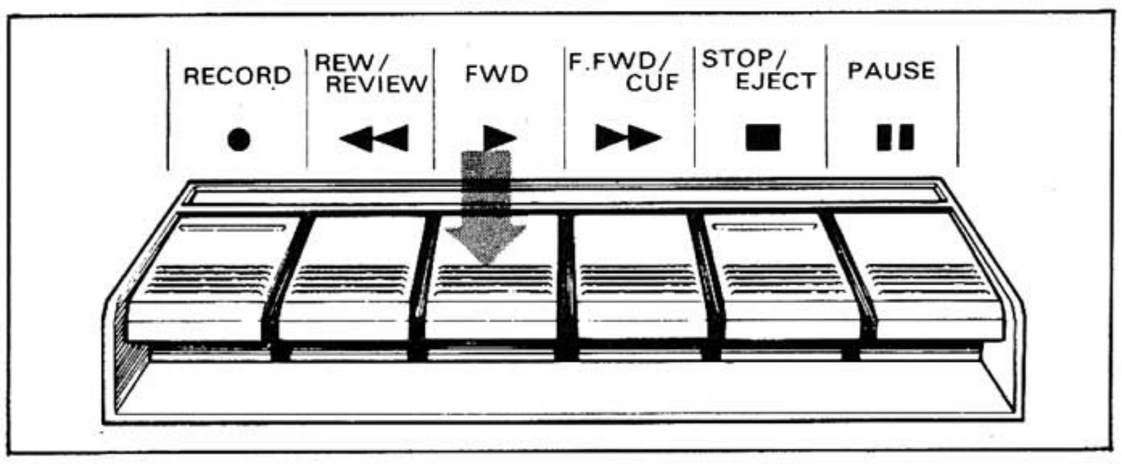
RECORDING

To Prepare for Recording

1) Install cassette tape properly.
2) Select that the Dolby NR/MPX Filter Switch is set to the proper position.
3) Confirm that the Tape Selector Switch is set to the proper position.



4) Depress the Pause Button to hold the tape deck in Pause.
5) Now, pressing the Record Button, depress the Play (Forward) Button simultaneously until both buttons lock.



6) While watching the Level Meter, adjust the recording level.
* When recording through microphone, adjust the recording level with the MIC Level Control Knob. When recording directly from an external music system, adjust it with the LINE IN/DIN Level Control Knob.
7) Release the Pause Button and recording will begin.

1. Stereo Recording, Using Microphones

1) Use two microphones of the same characteristics and connect them to the left and right microphone jacks respectively.
2) Further operating procedures are same as those described under "To Prepare for Recording."
3) Use the MIC Level Control Knob to adjust the recording level.

2. Recording from External Music System

1) Connect an external music system properly, referring to to "Connections" discussed earlier.
2) Further operating procedures are same as those described under "To Prepare for Recording."
3) Adjust the recording level with the LINE IN/DIN Level Control Knob.

3. Mixing Record

Your voice being put in through a microphone can be mixed with a music program fed in from an FM receiver or record player, both inputs thus recorded simultaneously for a mixing record.

How to Make a Mixing Record

1) Referring to "Connections" discussed previously, connect to this set an external music system from which the music program to be mixed with your own voice will be taken.
2) Turn the tape deck to Record position in accordance with the procedures given under "To Prepare for Recording."
3) Using the LINE IN/DIN Level Control Knob, adjust the recording level from the external music system.
4) Connect the microphone to MIC jack and adjust the microphone input level with the MIC Level Control Knob.
* Be sure to adjust the recording level balance between the microphone and the external music systme by means of the respective level control knobs, MIC Level Control and LINE IN/DIN Level Control.

TAPE COUNTER

Press the Reset Button to set the Tape Counter to "000" at the start of a cassette tape. The Counter adds when the tape travels in the forward direction. Mark down the figures for any desired point on the tape and you can thus easily locate any recorded program on the tape.

TAPE DUPLICATING (DUBBING)

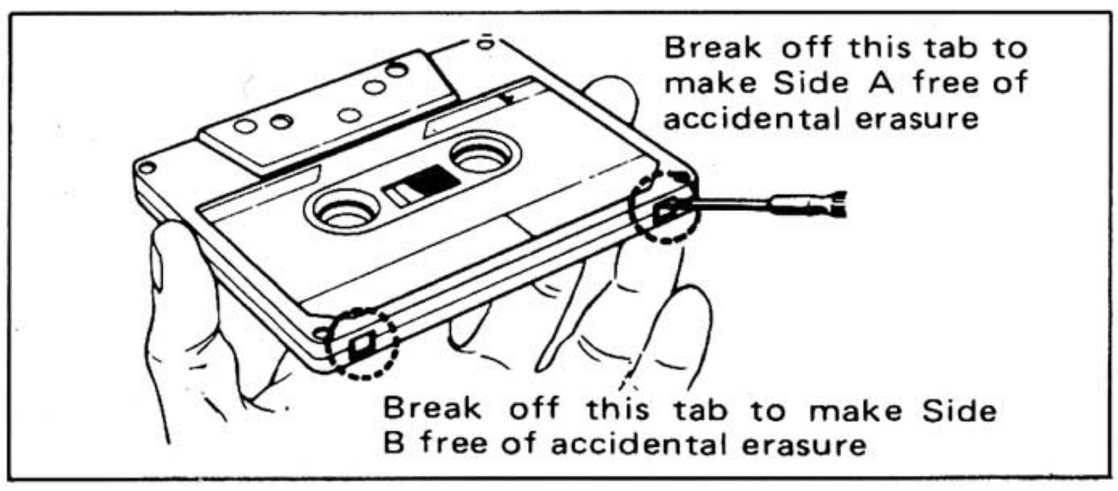
Dubbing can be performed by using this machine for recording and another tape deck for playback. Connect the LINE IN jacks of this machine with the LINE OUT jacks of the playback tape deck. Record according to the recording procedures. A Special circuitis employed in this machine which allows DIN jack to DIN jack dubbing, previously unobtainable. When dubbing with a DIN cord, be sure to use this machine for the recording function.

ERASE FUNCTION

By recording new sound over an unneeded portion of a previously recorded tape, the earlier sound becomes erased and replaced by the new sound. To completely erase a tape, set the LINE IN/DIN and MIC Level controls to "0" and perform recording. This will completely erase the tape.

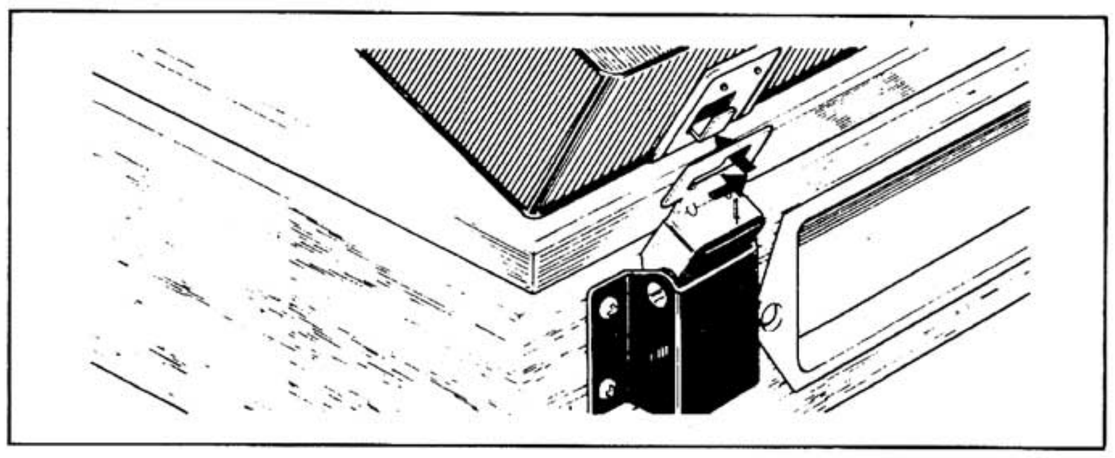
INTERLOCK DEVICE TO PREVENT ERASURE

When you want to preservep permanentl your valuable recorded materials by making the cassette free from accidental erasure, break off the rear catches of the cassette with a screwdriver or the like. Loaded with such a cassette, this set will not permit you to depress the Record Button, thus protecting the cassette from accidental erasure. To use this same cassette again for recording, cover the rear catch holes with an adhesive tape.



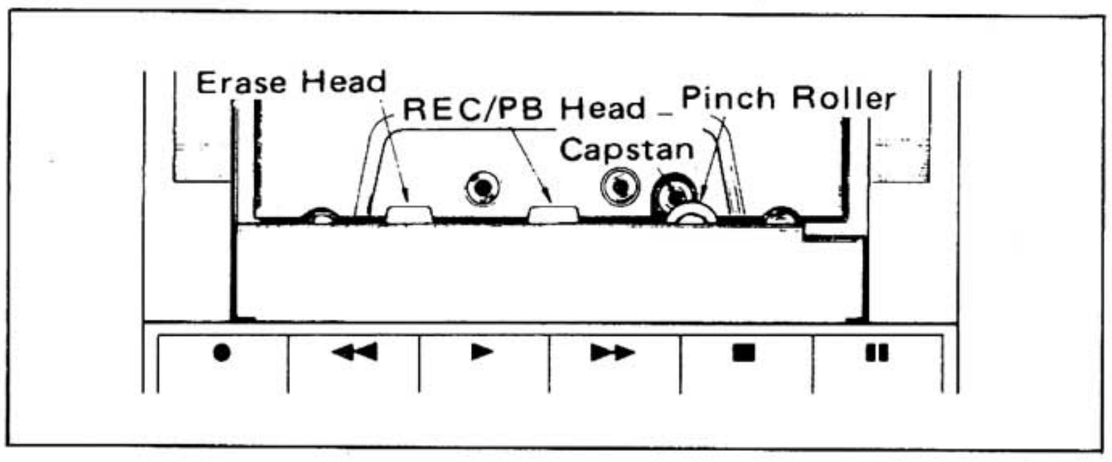
DUST COVER

Setting the Dust Cover in place during use and after use will aid in preventing dust and dirt contamination. When installing the Dust Cover, lower the free stop hinge to a slanting position to install.
To remove, raise the Dust Cover and remove as shown in the illustration.



CLEANING

Use over a long period of time, the head surface, the capstan and the pinch roller become contaminated with magnetic powder dust and other foreign materials.
This results in deterioration of tone quality and sensitivity as well as unstable tape travel.
So, clean them with the cleaning stick (swab) two times or three a month. When extremely dirty, clean them with the cleaning stick moistened with good-quality alcohol.
For cleaning of the whole casing, use a soft piece of cloth dipped in a neutral detergent solution.



SOME IMPROTANT THINGS TO REMEMBER

- Dirty head causes tone quality to deteriorate extremely. So, keep the head always clean for the optimum perform ance.
- Do not store your recorded tapes near a magnet, motor, TV receiver or the like that generates magnetism. Otherwise the tapes may become partially erased and/or marred with unwanted noises.
- Avoid using your cassette deck in a place exposed to direct sunrays or very close to a heater, or on an amplifier whose temperature will rise during use.
  Characteristics of the transistors may be adversely affected if the deck is used in such a place.

SPECIFICATON
SPECIFICATIONS

Type:	Hi-Fi stereo cassette tape deck with Dolby system and DNL
Recording track system:	4-track, 2-channel
Circuit:	1 IC, 62 transistors, 43 diodes, 2 FET, 3 LED
Power source:	AC 120V/240V switchable 50 Hz
Power consumption:	24W
Frequency response:	LH tape, 30 ~ 14,000 Hz Fe-Cr tape, 30 ~ 18,000 Hz CrO_2 tape, 30 ~ 17,000 Hz
SN ratio:	65 dB (Dolby NR/DNL ON, Fe-Cr tape)
Wow & flutter:	0.05% (WRMS)
Tape speed:	4.76 cm/sec. (1-7/8 ips) ±1.0%
Recording system:	AC bias
Erasing system:	AC erase
Rewind time:	95 sec. (w/ C-60)
FF time:	95 sec. (w/ C-60)
Usable cassette tape:	C-30, C-60, C-90, (C-120)
Motor:	AC hysterrisis synchronous motor
Head:	Ferrite guard head (FGH)
Input:	
MIC:	Max. input sensitivity: 0.25 mV Impedance: 200 ohms ~ 10k ohms
LINE (IN):	Max. input sensitivity: 50 mV Impedance: 100 k ohms or higher
DIN (IN):	Max. input sensitivity: 0.1mV/k ohm Impedance: 2.7 k ohms
Output:	
LINE (OUT):	Standard output level: 0.775V (0 VU) Optimum load impedance: 50 k ohms or higher
DIN (OUT):	Standard output level: 0.775V (0 VU) Optimum load impedance: 50 k ohms or higher
Headphone:	Load impedance: 8 ohms
Dimensions (w.h.d):	423 x 152 x 295 mm (with dust cover)
Weight:	7.5 kg (with dust cover)
Accessories:	Dust cover x 1 Tape cassette x 1 DIN cord x 1 Head cleaning pole x 1

- The external design and the specifications are subject to change without prior notice.
- Dolby Noise Reduction Circuit Under License from Dolby Laboratories Incorporated.
- The word "Dolby" and "Double-D" symbol are trademarks of Dolby Laboratories Incorporated.

AIWA® AD1800

Now that you have bought one of the most sophisticated pieces of cassette technology in its class, you'll doubtless want to know how to obtain the optimum results from your Aiwa cassette deck. Your Aiwa deck is fitted with separate bias and equalisation switches to help you make the most of today's, and tomorrow's tape technology.

This means that your Aiwa deck can be precisely matched with a far greater range of different makes of tape than is possible with a conventional tape selector switch.

For example, if a Ferric tape needs higher bias but normal equalisation, your Aiwa deck can give it, thus avoiding the unnecessary distortion resulting from recording those tapes on a conventional deck.

Aiwa are unique in having had over 40 different makes of tape independently tested by Angus McKenzie Facilities Ltd., recognised as the Number One experts in this field, on each deck in the Aiwa range. This information will tell you which are the optimum bias and equalisation settings to give you the best performance on any of these tapes on your Aiwa deck.

SUMMARY OF THE TAPE COMPATIBILITY TESTS CARRIED OUT FOR JOHNSONS OF HENDON LTD., UK DISTRIBUTORS OF AIWA AUDIO PRODUCTS, BY ANGUS McKENZIE FACILITIES LTD.

TAPE COMPATIBILITY TESTS:

All the samples tested were of C90 type (except for C60 Sony FeCr and C60 Audio-Magnetics XHE which were not available to us in C90 format), and were not from special production batches.

A minimum of three samples of each tape type were tested. Three samples of each Aiwa cassette deck were checked and an average representative one was selected for the detailed range of tests.

The recorders were all supplied and tested in our laboratories with no realignment whatsoever, and as such are typical samples of what any retailer would have on sale.

FREQUENCY RESPONSE RATINGS:

Frequency response graphs were made on each tape type, and on both record/replay channels. These plots were carried out at a level of −24dB ref. Dolby level (213 nWb/m) with the Dolby B noise reduction switched in. Where there were any particular anomalies, alternative switch positions were tried, and these appear in the table where appropriate.

MAXIMUM OUTPUT RATINGS:

The maximum output of each tape (both channels tested) was expressed in terms of the relative output level at a frequency of 333Hz which had a third harmonic distortion content of 5% (−26dB). Three stars represent the 'average' of all 40 types on the relevant recorder.

The switch positions suggested in the table were set for this maximum output test.

WOW AND FLUTTER:

Each sample cassette was tested at the beginning, middle and end of its length. At least three record/replay measurements were made on each tape, using a DIN peak weighted wow and flutter meter operating at 3150Hz. A statistically weighted 'average' figure was obtained for each tape, and the number of stars for each type indicate how much better or worse it was than the average (***) of all the tapes together.

Angus McKenzie Facilities Ltd – February 1976

THE TABLE OVERLEAF SHOULD GIVE YOU THE INFORMATION YOU NEED TO OBTAIN THE BEST POSSIBLE RESULT FROM YOUR AIWA CASSETTE DECK. FOR FURTHER INFORMATION CONTACT AIWA CUSTOMER ENQUIRIES SERVICE, JOHNSONS OF HENDON LTD., 14 PRIESTLEY WAY, LONDON NW2 7TN. TEL: 01-450 8070. A HESTAIR COMPANY.

AIWA AD 1800

Tape	LH Fine Bias	Bias	Equalisation	Frequency Response	Maximum Output	Wow & Flutter
Agfa CrO_2		● ○ ○	● ○ ○	*****	**	*
Agfa LN		○ ○ ●	○ ○ ●	****	*	***
Agfa SFD		○ ○ ●	○ ○ ●	*****	***	**
Ampex CrO_2		● ○ ○	● ○ ○	*****	***	*****
Ampex 20/20		○ ○ ●	○ ○ ●	*****	*****	****
Ampex 350		○ ○ ●	○ ○ ●	*	**	****
Ampex 370		○ ○ ●	○ ○ ●	****	**	****
Audiomag XHE		○ ○ ●	○ ○ ●	****	***	***
BASF CrO_2		● ○ ○	● ○ ○	*****	*	**
BASF FeCr		○ ● ○	○ ● ○	*****	*****	***
BASF LH		○ ○ ●	○ ○ ●	****	**	***
BASF Super		○ ○ ●	○ ○ ●	****	****	***
Capitol		○ ○ ●	○ ○ ●	****	****	*
EMI Hi Dyn		○ ○ ●	○ ○ ●	****	***	***
EMI Soundhog		○ ○ ●	○ ○ ●	**	**	***
EMI X1000		○ ○ ●	○ ○ ●	****	****	***
Hitachi LN		○ ○ ●	○ ○ ●	****	***	****
Hitachi UD		○ ○ ●	○ ○ ●	*****	****	****
Maxell LN		○ ○ ●	○ ○ ●	****	***	****
Maxell UD		○ ○ ●	○ ○ ●	*****	****	****
Maxell UD XL		○ ○ ●	○ ○ ●	*****	*****	*****
Memorex CrO_2		● ○ ○	● ○ ○	*****	*	****
Memorex MRX_2		○ ○ ●	○ ○ ●	*****	****	****
3M CrO_2		● ○ ○	● ○ ○	*****	*	***
3M Dynarange		○ ○ ●	○ ○ ●	***	***	**
3M FeCr		○ ● ○	○ ● ○	*****	****	****
3M HE		○ ○ ●	○ ○ ●	****	*****	***
Philips CrO_2		● ○ ○	● ○ ○	*****	***	***
Philips Standard		○ ○ ●	○ ○ ●	*	***	****
Philips Super		○ ○ ●	○ ○ ●	*****	***	****
Pyral LN		○ ○ ●	○ ○ ●	****	**	**
Pyral Maxima		○ ○ ●	○ ○ ●	****	***	***
Sony CrO_2		● ○ ○	● ○ ○	***	**	****
Sony FeCr		○ ● ○	○ ● ○	*****	*****	****
Sony HF		○ ○ ●	○ ○ ●	*****	****	****
Sony K		○ ○ ●	○ ○ ●	****	**	***
TDK D		○ ○ ●	○ ○ ●	****	***	****
TDK ED		○ ○ ●	○ ○ ●	*****	****	****
TDK SA		● ○ ○	● ○ ○	****	****	****
TDKSD		○ ○ ●	○ ○ ●	****	***	****

○ ○ The 'filled-in' spots indicate the
○ ○ recommended bias and equalisation
○ ○ switch positions for each tape.

***** Excellent **** Very Good
*** Good ** Marginal * Incompatible

Click 3°/c

Cambio di Frequenza

Avviso al Cliente:

L'apparecchio è stato pre-impostato per operare con la frequenza della corrente alternata disponibile nell'area d'impiego. Se si desidera usare l'apparecchio in un'area dove la frequenza è differente occorre portare l'apparecchio, assieme alle presenti Istruzioni d'Operazione, dal distributore che l'ha venduto. Il distributore effettuerà la necessaria conversione. Alfine d'evitare rischi o danni non bisogna cercare d'effettuare l'operazione da soli.

Istruzioni al Distributore:

Vogliate gentilmente effettuare la conversione della frequenza di questo apparecchio come dalle seguenti Istruzioni.

Sequenza delle Operazioni di Conversione

1. Assicurarsi che l'interruttore d'alimentazione (POWER) sia sulla posizione "OFF" e che il cordone d'alimentazione sia disinserito dalla presa di corrente.
2. Capovolgere l'apparecchio ed estrarre le 3 viti di fissaggio del coperchio del motore, quindi rimuovere il coperchio.
3. Scollegare la cinghia dalla puleggia del motore e collegarla temporaneamente alla vite di montaggio del ventilatore del motore.
4. Estrarre le 2 viti di fissaggio della puleggia del motore e rimuovere la puleggia.
5. Capovolgere l'originale posizione della puleggia ed inserire nuovamente la stessa riavvitando la viti di fissaggio.
6. Piazzare la cinghia di trasmissione attorno al tratto inferiore della puleggia del motore.
7. Allentare quindi la 2 viti della placca di circuito adiacente al motore. Per la conversione a 60 Hz occorre portare le viti alla posizione A; portare invece le viti alla posizione B per conversione a 50 Hz. Serrare quindi le viti.
8. Rimontare il coperchio del motore.

- Il tratto di maggior diametro della puleggia deve trovarsi verso l'alto per operazione a 60 Hz; per operazione a 50 Hz, invece, verso l'alto deve trovarsi il tratto di minor diametro della puleggia.

Conversión de la frecuencia

Al cliente:

Este equipo ha sido previamente ajustado para operar con la frecuencia de la energía CA local. Si se le emplea en una localidad donde la frecuencia difiere, el equipo deberá ser llevado, junto al Manual de Instrucciones, al distribuidor al que se le haya comprado el equipo. El distribuidor realizará entonces la conversión necesaria. Para evitar riesgos o desperfectos, no intente realizar usted esta conversión.

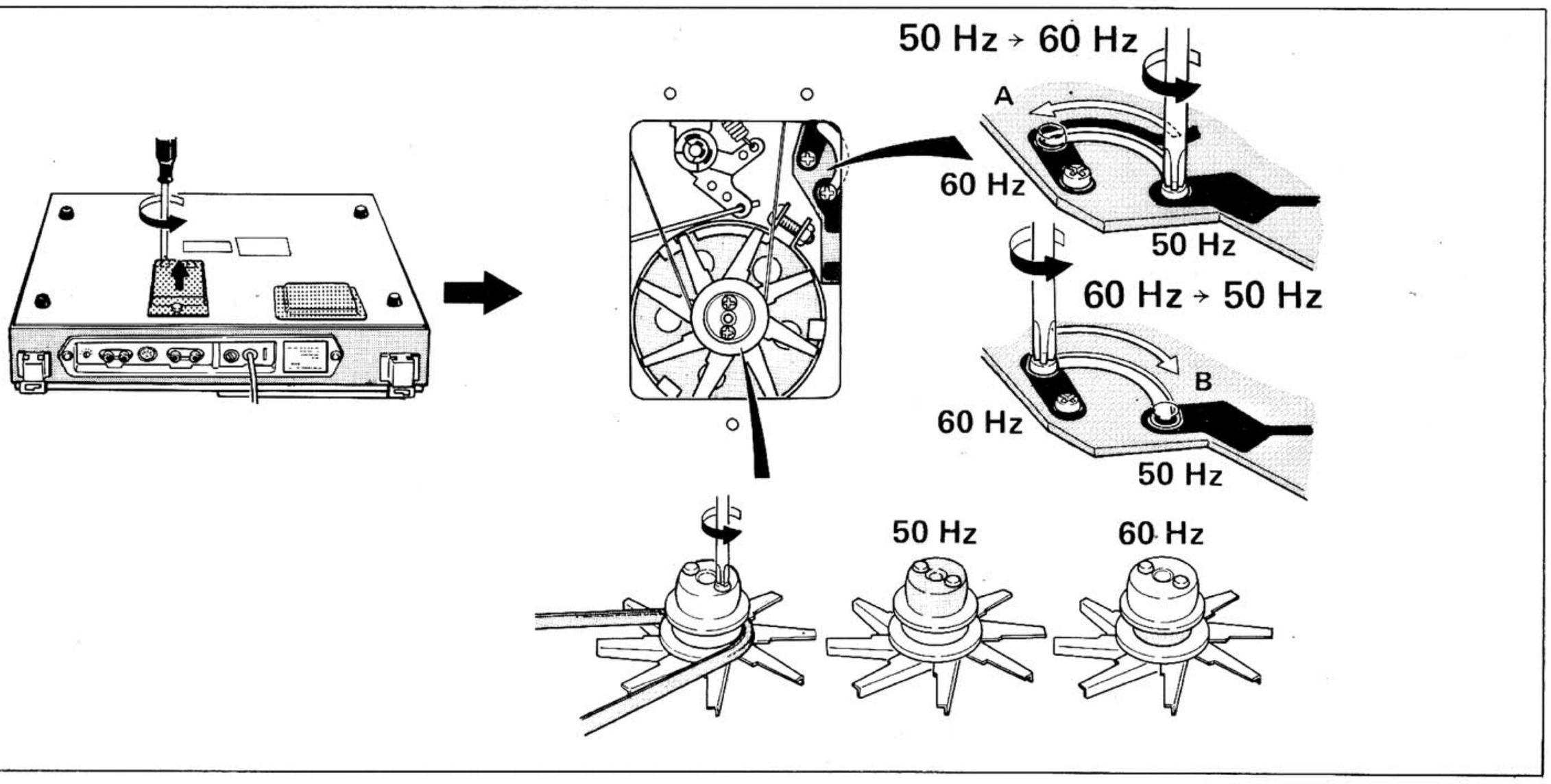
Al distribuidor:

Tenga la gentileza de realizar la conversión de la frecuencia de este equipo, tal como lo indican estas instrucciones.

Pasos a seguir para realizar la conversión

1. Verifique que el interruptor de energía esté desconectado (OFF) y que el cable de CA esté desenchufado de la red de energía.
2. Ponga el equipo al revés, saque los 3 tornillos de la cubierta del motor y retire la cubierta del motor.
3. Desmonte la correa de la polea de transmisión del motor y póngala temporalmente en el tornillo de sujección del ventilador del motor.
4. Retire los 2 tornillos de ajuste de la polea de transmisión del motor y saque la polea de transmisión del motor.
5. Ponga la polea de transmisión del motor al revés e instálela nuevamente con los tornillos de ajuste.
6. Monte la correa en la parte inferior de la polea de transmisión del motor.
7. Luego suelte los 2 tornillos del tablero del circuito adyacente al motor. Para realizar la conversión a 60 Hz, muévalo a su posición A; muévalo a su posición B para realizar la conversión a 50 Hz. Apriete entonces los tornillos hasta dejarlo bien sujeto.
8. Ponga nuevamente la cubierta del motor.

- El lado más grueso de la polea de transmisión del motor puesto hacia arriba es para operación con 60 Hz, mientras para operación con 50 Hz, el lado más delgado de la polea de transmisión debe estar hacia arriba.



Frequency Conversion

To the Customer:

This set has been preadjusted to operate from the local AC power line frequency in the area of use. If employing it in a location where the frequency differs, take the set together with these Operating Instructions to the dealer from whom it was purchased. The dealer will then perform the necessary conversion. To avoid risk of hazard or damage, do not attempt to perform the conversion yourself.

To the Dealer:

Kindly perform the frequency conversion for this set as described in these Instructions.

Conversion Steps

1. Observe that POWER switch is OFF and AC cord unplugged from power outlet.
2. Turn the set upside down, take out 3 screws from the motor cover, and remove the motor cover.
3. Disengage belt from motor pulley and temporarily position it on the motor fan securing screw.
4. Take out 2 motor pulley setscrews and remove motor pulley.
5. Turn motor pulley upside down and reinstall it with setscrews.
6. Engage belt on lower portion of motor pulley.
7. Next loosen 2 screws of the circuit board adjacent to the motor. To convert to 60 Hz, move to position A; move to position B to convert to 50 Hz. Then tighten screws to secure.
8. Install motor cover.

- The thicker side of the motor pulley upward is for 60 Hz operation, while for 50 Hz operation, the thinner side of the pulley should be upward.

Umstellen der Frequenz

Lieber Kunde!

Dieses Gerät wurde auf Betrieb über die örtliche Netzfrequenz des Gebietes voreingestellt, in dem es benutzt wird. Falls Sie es in einem Gebiet mit unterschiedlicher Frequenz benutzen, bringen Sie das Gerät zusammen mit dieser Bedienungsanleitung zu dem Fachhändler, bei dem Sie es kauften. Der Fachhändler wird dann die erforderliche Umstellung durchführen. Um mögliche Gefahren oder Beschädigungen zu vermeiden, sollten Sie nicht versuchen, die Umstellung selbst durchzuführen.

Lieber Fachhändler!

Führen Sie bitte die Umstellung der Frequenz für dieses Gerät gemäß Bedienungsanleitung durch.

Kurzanleitung für die Umstellung

1. Achten Sie darauf, daß der Ein-Aus-Schalter (POWER) auf OFF (Aus) steht und der Stecker des Netzanschlußkabels aus der Netzsteckdose gezogen wurde.
2. Stellen Sie das Gerät auf den Kopf, schrauben Sie die drei Schrauben vom Motordeckel ab und entfernen Sie den Motordeckel.
3. Nehmen Sie den Riemen von der Motor-Riemenscheibe ab und legen Sie diesen vorrübergehend auf die Halteschraube des Motor-Ventilators.
4. Schrauben Sie die beiden Stellschrauben der Motor-Riemenscheibe ab und entfernen Sie die Motor-Riemenscheibe.
5. Drehen Sie die Motor-Riemenscheibe um und befestigen Sie diese wieder mit den Stellschrauben.
6. Legen Sie den Riemen auf den unteren Teil der Motor-Riemenscheibe.
7. Lösen Sie danach die beiden Schrauben der Schaltplatte neben dem Motor. Zur Umstellung auf 60 Hz stellen Sie diese auf Position A, zur Umstellung auf 50 Hz auf Position B. Ziehen Sie dann die Schrauben zum Befestigen an.
8. Bringen Sie den Motordeckel an.

- Die stärkere, nach oben weisende Seite der Motor-Riemenscheibe ist für den Betrieb über 60 Hz vorgesehen, während für einen Betrieb über 50 Hz die dünnere Seite der Riemenscheibe nach oben weisen sollte.

Conversion de fréquence

A l'attention du Client:

Cet appareil a été préréglé pour fonctionner sur la fréquence du courant alternatif du secteur prévu. Si on l'emploie dans une région où la fréquence du courant est différente, apporter l'appareil ainsi que les feuilles d'instruction l'accompagnant chez le revendeur où a été acheté l'appareil. Le revendeur se chargera alors des modifications nécessaires. Pour éviter les risques de danger ou d'endommagement, ne pas essayer d'effectuer la conversion de fréquence soi-même.

A l'attention du revendeur:

Veuillez effectuer la conversion de fréquence de cet appareil comme il est indiqué dans cette notice d'instruction.

Opérations de conversion

1. S'assurer que l'interrupteur (POWER) est sur arrêt (OFF) et que le fil d'alimentation est débranché de la prise murale.
2. Renverser sens dessus-dessous l'appareil, enlever les 3 vis du couvercle moteur puis retirer celui-ci.
3. Désemparer la courroie de la poulie motrice et la positionner provisoirement sur la vis de fixation du ventilateur de moteur.
4. Enlever les 2 vis de fixation de poulie motrice et démonter la poulie motrice.
5. Renverser la poulie motrice et la reinstaller à l'envers à l'aide des vis de fixation.
6. Placer la courroie sur le gradin inférieur de la poulie motrice.
7. Ensuite desserrer les 2 vis de la plaque de circuit contre le moteur. Pour convertir au 60 Hz, déplacer à la position A; déplacer à la position B pour convertir au 50 Hz. Enfin bloquer les vis.
8. Installer le couvercle moteur.

- Le côté le plus épais de la poulie motrice en haut sert pour le fonctionnement sur 60 Hz, tandis que pour le fonctionnement sur 50 Hz, le côté le plus mince de la poulie doit être dirigé en haut.

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AIWA CO.,LTD.

Printed in Japan

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue:	Neutral
Brown:	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

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