YAMAHA K-1000

Natural Sound Stereo Cassette Deck

Discrete 3 Head Design, Direct Drive Capstan

Bias Adjustment by ORBiT. Recording Amplifier with Linear EM Transduction

*Built in dbx NR** and Dolby NR*, 4 Digit Linear Digital Counter*

Wide Range Peak Meter, Versatile Auto-Function Facility

Auto Tape Selector Function

Thank you for purchasing the Yamaha K-1000 stereo cassette deck.

CONTENTS

OWNER'S MANUAL

IMPROTANT!

Please record the serial number of your unit in the space below:

Model : **K-1000**
Serial No. : 003257

The serial number is located on the rear of the chassis.

WARNING

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

CAUTION (PREPARED IN ACCORDANCE WITH UL STANDARD 1270)

1 Read Instructions – All the safety and operating instructions should be read before the appliance is operated.

2 Retain Instructions – The safety and operating instructions should be retained for future reference.

3 Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.

4 Follow Instructions – All operating and other instructions should be followed.

5 Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near swimming pool, etc.

6 Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.

7 Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.

8 Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

9 Heat – The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.

10 Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

11 Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

12 Cleaning – The appliance should be cleaned only as recommended by the manufacturer.

13 Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

14 Object and Liquid Entry – Care should be taken so that objects do not fall into and liquids not spilled into the inside of the appliance.

15 Damage Requiring Service – The appliance should be serviced by qualified service personnel when:

A. The power-supply cord or the plug has been damaged; or
B. Objects have fallen, or liquid has been spilled into the appliance; or
C. The appliance has been exposed to rain; or
D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
E. The appliance has been dropped, or the cabinet damaged.

16 Servicing – The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

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CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

* Explanation of Graphical Symbols

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION: READ THIS BEFORE OPERATING YOUR K-1000

1
The K-1000 is a sophisticated stereo cassette tape deck. To ensure proper operating for the best possible operation, please read this manual carefully.

2
Choose the installation of your K-1000 carefully. Avoid placing it in direct sunlight or close to a source of heat. Also avoid locations subject to vibration and excessive dust, heat cold or moisture.

3
If the K-1000 gets wet (from spilled liquids, rain, etc.) immediately pull out the plug; contact your dealer.

4
Do not open the cabinet; damage to the delicate circuitry can easily occur. If a foreign object should get into the set contact your dealer.

5
When removing the power plug from the wall outlet, always pull directly on the plug; never yank the cord.

6
Do not use force when using the switches and knobs.

7
When moving the set be sure to first pull out the power plug and remove cords connecting to other equipment.

8
Do not attempt to clean the K-1000 with chemical solvents as this might damage the finish. Use a clean, dry cloth.

9
Never bring a screwdriver or other metallic item near the recording/playback head assembly: not only might the mirror-smooth surface be scratched, but the magnetic characteristics could be changed, giving increased noise and degraded audio performance.

10
The recording/playback head used in this cassette tape deck is of the Pure Sendust alloy head, with inherently high signal-to-noise ratio and excellent recording distortion characteristics, but it can become dirty through the use of old tapes or from dust. This can have a disastrous effect on quality: clean the heads regularly with one of the commonly available cleaning tapes or other cleaning device. (Refer to page 13.)

11
The K-1000 is compatible with metal tapes. Use either LH, CrO_2 (Chrome), or Metal tapes.

12
Be sure to read the "troubleshooting" section for advice on common operating errors before concluding that your K-1000 is faulty.

13
Keep this manual in a safe place for future reference.

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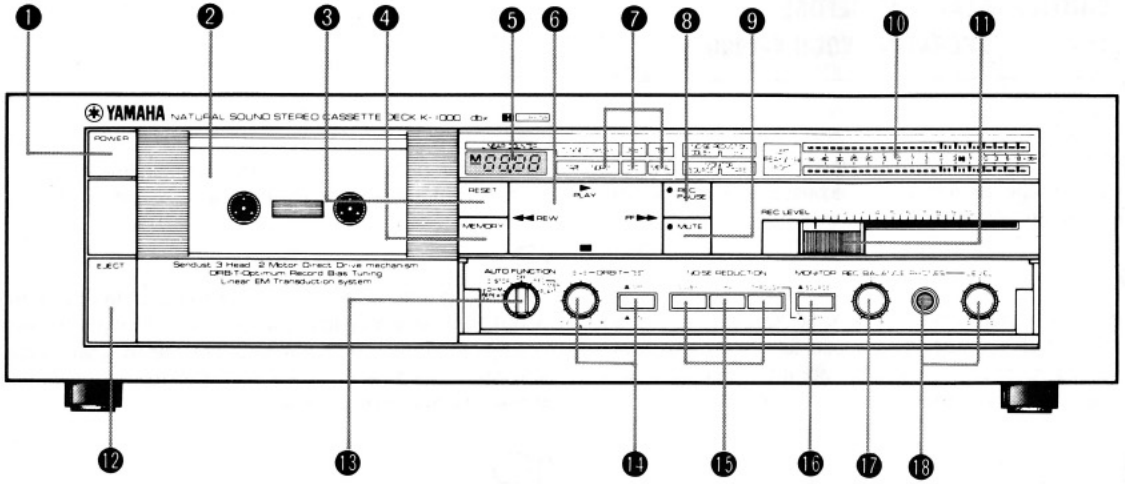

FRONT PANEL PARTS AND FUNCTIONS

❶ Power Switch (POWER)

When this switch is pressed, power is supplied to the deck, and the cassette holder and all indicators light up. If the switch is pressed again, power is switched off.

* If the centralized control button is pressed immediately after power is switched ON, it will not function as several seconds are required for the internal circuits to stablilze.

❷ Cassette Holder

Holds the cassette tape. When the eject button is pressed, the door opens forward slowly.

When not using the deck, it should be kept closed in order to protect the heads and internal mechanism from dust.

❸ Counter Reset Button (RESET)

To reset the counter display. When the reset button is pressed, the display is reset to "00".

❹ Memory Button (MEMORY)

Used for auto function operation.

If this button is pressed, the number on the counter when the button was pressed is memorized. If also the auto function switch is in the REPEAT O-M position, playback is executed repeatedly between "00" on the counter and the memorized number.

When the button is pressed, the letter "M" appears on the left edge of the tape counter. If the button is pressed again, the memory is cancelled and the sign "M" disappears.

* This memory does not function for counter numbers from "02" to "–02".

❺ Tape Counter/Tuning Display

This electronic counter indicates tape travel in terms of minutes and seconds. If reset before recording, it will provide an indication of the tape time used.

Also, after recording, it is useful for locating the beginning of a program duringning of a program during playback.

If the bias test button is pressed ( ), it functions as a tuning display, and displays tape recording sensitivity (frequency response characteristics) during bias adjustment.

* For the tuning display function, refer to page 8: "Bias Adjustment".

❻ Centralized Control Button (REWIND/PLAY/FAST FORWARD/STOP)

* The silver panel type does not have the displays "PLAY", "REW" and "FF".

In each mode, the corresponding symbol mark will light up green (except the stop mark).

REWIND:

To rewind the tape, press the ◀◀ section.

PLAY:

To playback the tape, press the ▶ section.

If pressed in the record standby mode, recording will begin.

FAST FORWARD:

To fast forward wind the tape, press the ▶▶ section.

STOP:

To stop the tape in either record, playback, fast forward or rewind, press the ■ section.

* When the tape has been completely wound in either record, playback, fast forward or rewind, it will stop automatically.
* Take care not to press the control in between the symbol marks, otherwise the deck may function in a mode other than that which is desired.

❼ Auto Tape Selector Indicator

The type of tape is displayed automatically on the indicator when it is loaded. Recording bias, current, equalizer characteristics and tape sensitivity are selected automatically.

* If no tape is loaded and the power is switched on, the METAL position lights up.
* For earlier types of cassette with no metal tape detection hole, the auto tape selector will not function. Refer to page 12: "Cassette Tapes".

❽ Record/Pause Button (REC/PAUSE)

When this button is pressed, the deck enters the record standby mode and the indicator lights up red. In this mode, recording level may be adjusted.

If ▶ (Play) is then pressed, the tape advances and recording begins.

If the button is pressed during recording, the tape stops and the deck enters the pause (record standby) mode. To resume recording, press ▶ (Play) again.

⑨ Record Mute Button (MUTE)

If this button is pressed during recording, the tape continues moving but the recording signal is cut off while the button is depressed.

When recording FM broadcasts, cutting out commercials or inserting blank spaces, an unrecorded portion of tape can be put in at the touch of a button.

⑩ Peak Level Indicator

This is a block graph type indicator with display from –40 dB to +18 dB.

⑪ Recording Level Control

Adjusts the input level of the recorded signal.

⑫ Eject Button (EJECT)

When this button is pressed, the cassette holder opens. Use when loading and unloading cassette tapes.

⑬ Auto Function Switch (AUTO FUNCTION)

This computer command function is for using the timer or locating the beginning of a tune with counter memory.

TIMER REC:

When the power comes on, the deck enters the recording mode. Used for making recordings with the timer when the operator is absent, etc.

* With cassette tapes where the accidental erasure protection tabs have been broken out, the deck will enter the PLAY mode.

TIMER PLAY:

When the power comes on, the deck will enter the playback (PLAY) mode. Can be used for timer playback, etc., with the timer.

0 STOP:

When the tape is rewound and the counter reaches "00", the tape will stop.

It is easy to locate the beginning of a tune if the counter is previously set to "00" at that point.

REPEAT 0-M:

Playback is repeated over and over between "00" on the counter and the counter number memorized with the memory button.

If the counter is set to "00" at the beginning of a tune and the end of the tune is memorized, the tune can be played back exclusively over and over again. If, on the other hand, the counter is set to "00" at the end of the tune and a negative display on the counter at the beginning of the tune is memorized, the tune can still be played back repeatedly as above.

REPEAT FULL:

Either side of a tape (A or B according to the setting) is played over and over from beginning to end.

When the tape comes to the end in the PLAY mode, it is fully rewound in the "Rewind" mode. After rewinding has been completed, playback is repeated in the PLAY mode. In this way, one side of a tape can be played over and over.

⑭ Bias Adjustment Control/Test Button

This function is provided to adjust the recording bias to its optimum value according to the type of tape used.

Choose the optimum bias by watching the tuning display indicator.

* Refer to page 7: "Bias Adjustment".

⑮ Noise Reduction Button (NOISE REDUCTION)

DOLBY NR:

DOLBY NR is a system for effectively reducing tape hiss noise when recording at low signal levels. For recording or playback with the Dolby System, press this button. Very low noise playback can be enjoyed even if the recording is "pianissimo".

For playing back tapes which are not Dolby recorded, set to the THROUGH position.

* DOLBY NR and the DD symbol are the trademark of Dolby Laboratorie Licensing Corp. The noise reduction system is manufactured under license from Dolby Laboratorie Licensing Corp.

dbx NR:

When recording with dbx NR, input signals with a large dynamic range are compressed to 1/2, and expanded by a factor of 2 to their original state when played back. This means that a large dynamic range can be obtained even from cassette tapes with small dynamic range recordings, and noise can also be reduced at the same time. If metal tapes are used for recording and playback, a dynamic range which would have been thought impossible with cassette tapes can be obtained. For recording and playback with the dbx system, press this button.

For playing back tapes which are not dbx recorded, set to the THROUGH position.

** "dbx" is a trade mark of dbx Incorporated.

THROUGH:

For recording and playback without using the DOLBY NR or dbx systems, press this button.

In the THROUGH position, signals do not pass through the noise reduction circuits and are output directly by the shortest route.

⑯ Tape Monitor Button (MONITOR)

Selects the signal to be monitored when recording.

SOURCE:

The signal input from LINE IN can be monitored directly.

TAPE:

The sound can be monitored at the same time as it is recorded only when not using noise reduction (THROUGH position). When using noise reduction, it becomes a monitor for the signal from LINE IN and the SOURCE indicator lights up.

⑰ Recording Balance Control (REC BALANCE)

This control adjusts the sound balance between the left (L) and right (R) channels when recording.

⑱ Headphones Jack/Level Volume

When using headphones, insert the headphones plug into this jack, and the sound can be monitored during recording and playback.

To adjust sound volume for monitoring, use the level volume. The level volume is independent of the line output (REC OUT), and controls only the volume in the headphones.

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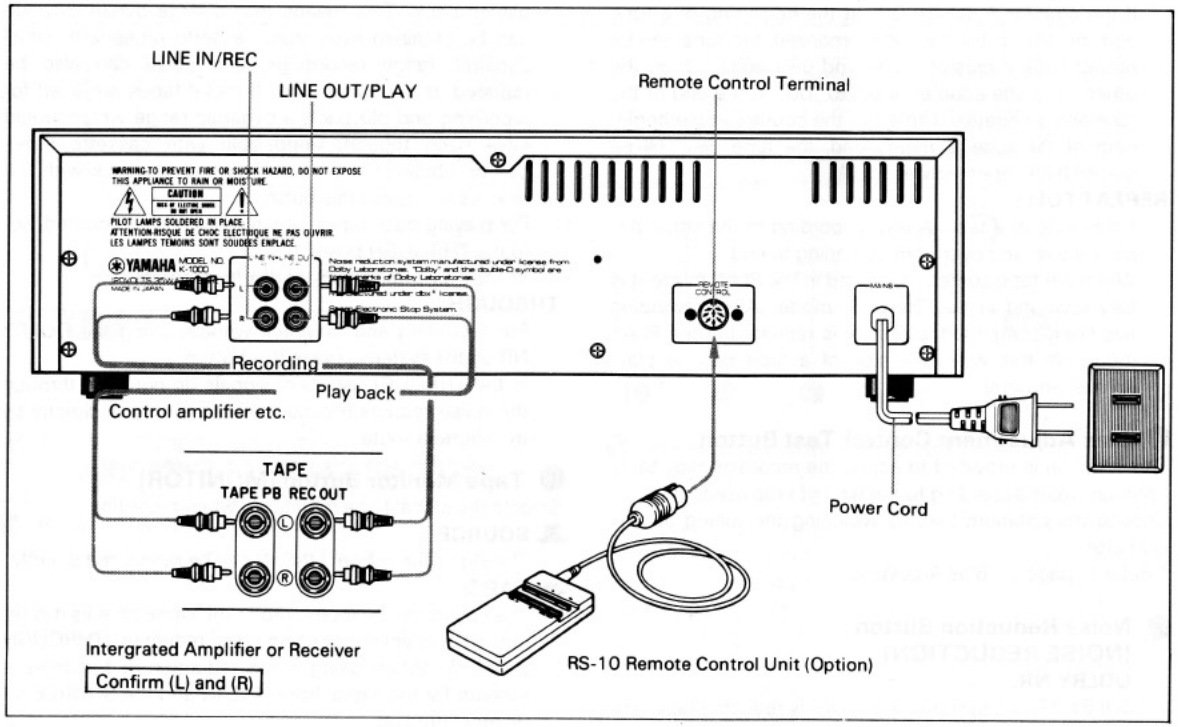
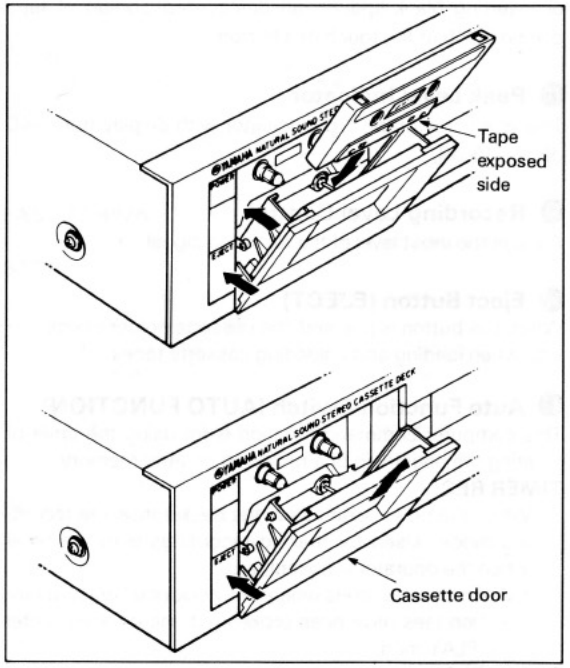
CONNECTION DIAGRAM



LOADING/UNLOADING CASSETTES

1) Pushing the EJECT button will open the cassette door.
2) With the side of the cassette to be played or recorded facing towards you, load the cassette in along the tracks on the inside of the cassette compartment window.
3) Push firmly on the top center of the door until it locks.



4) When unloading the cassette, first stop the transport if it is engaged, then reverse the procedure in 1 and 2.
5 Be sure to close the cassette compartment door to keep dust off the head and out of the mechanism.

Accessories

Check the Accessories

2 Input/Output Cords

USE OF DIGITAL LINEAR COUNTER

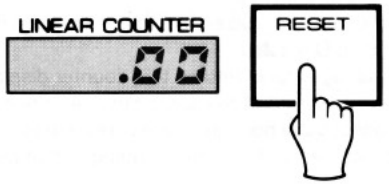
The tape counter in this deck computes tape travel time by means of a microprocessor, and displays it in minutes and seconds.

- **To find out the tape recording time**

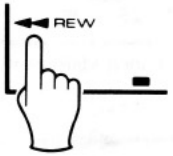
① Reset counter to "00" when beginning recording.
② The number displayed on the counter as the tape is advancing, is the present recording time.

- **To find out the total tape recording time**

① Reset counter to "00" at beginning of tape.



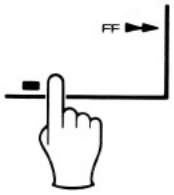
② Wind tape to the end by means of either fast forward or rewind.



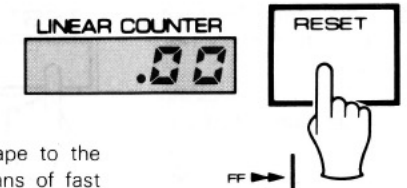
③ The number displayed on the counter when the tape has been wound to the end is the total tape recording time.

- **To find out the recording time remaining**

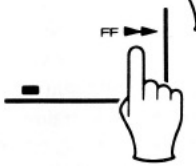
① Stop the tape during recording.



② Reset the counter to "00".

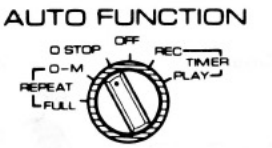


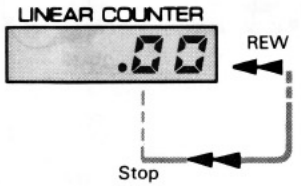
③ Wind the tape to the end by means of fast forward.



④ The number displayed on the counter when the tape has finished winding is the recording time remaining.
* As there is a leader tape at the end of the tape, care should be taken as the actual recording time will be shorter.

⑤ The AUTO FUNCTION switch is set to the 0 STOP position and the tape is rewound. The tape stops when the counter reaches "00", so begin recording again.

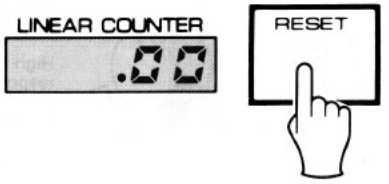




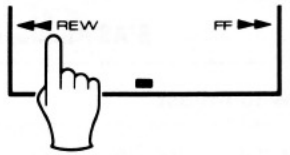
- **To find out the tape time remaining at any point during recording**

If total tape recording time is displayed as a negative quantity, the recording time remaining can be found at any time during recording.

① The tape is wound completely onto one reel.
② Load the tape such that it will be wound onto the right-hand reel.
③ Reset the counter.



④ Rewind the tape.



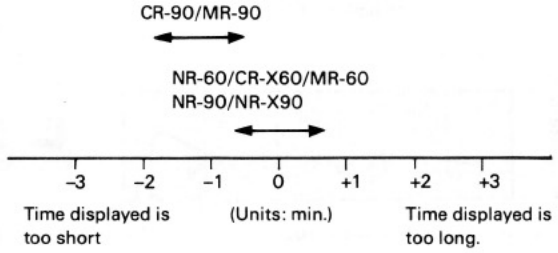
⑤ The recording time will be displayed as a negative quantity when the tape has finished winding.

In this way, the counter number will approach zero when recording begins (–30.00, –29.59, –29,58.....).
The amount of tape left can be checked at any time as recording progresses.

Precision of Counter

The tape counter is not a clock, and so there will be some errors in the time display compared to the actual recording time (this cannot be avoided, as a suitable method is adopted to provide a time display not only during recording and playback, but also during fast forward and rewind). The error depends on the type of tape being used.
The table below shows the range of error in the counter display compared to actual tape travel time, for Yamaha tapes run from beginning to end. It may be taken as a reference when using the counter.

Range of error in display compared to travel time of one side of tape
(for Yamaha cassette tapes)



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BIAS ADJUSTMENT

How to Adjust

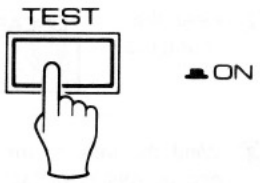
The ORBiT system, with its microcomputer, enables full use to be made of the 3-head deck facilities. It makes the previously troublesome task of bias adjustment easier and clearer, so that tape performance can be fully exploited.

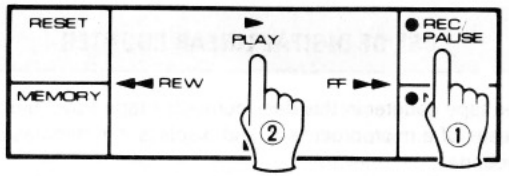
The optimum bias level can be set very easily; further adjustment is made to the bias level selected by the auto selector, watching the tuning display and adjusting the BIAS fine adjustment control.

* When the TEST button is ON (▬), recording and playback cannot take place.

① Load cassette tape which it is desired to record.

② Press ORBiT TEST button into the ON (▬) position.
The TEST indicator flashes on and off.

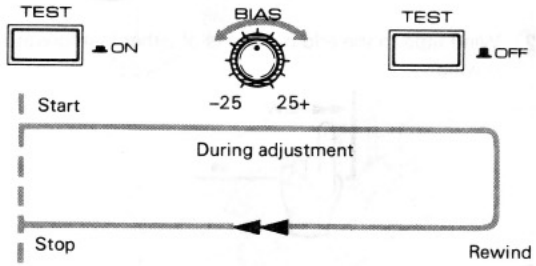




③ Press the REC/PAUSE button and the ► (Play) section of the centralized control button. The deck then enters the recording mode.
The counter display is replaced by the tuning display, and the frequency response is indicated.
The TEST button now changes from flashing to steady illumination.

④ Watching the tuning display, adjust the BIAS control to give a flat frequency response.
* Refer to bias – frequency response curve.
The frequency response is flat when the tuning display is as shown in Fig. 1.

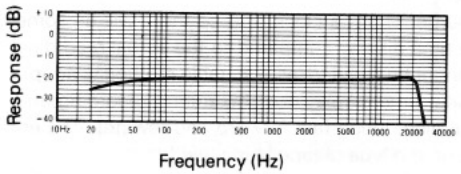
⑤ After completing bias adjustment, switch ORBIT TEST button to OFF (▬).
The tuning display returns to a counter display, and the tape is rewound at the same time. As the counter has memorized the point at which bias adjustment began, it stops at the number corresponding to that point.

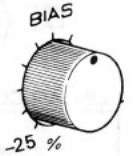


⑥ The bias is now set to its optimum value.
* If the heads are dirty or the tape is unsatisfactory, etc., it may not be possible to carry out bias adjustment.
* When the TEST button is ON (▬), ordinary recording and playback cannot be carried out.
(TEST indicator flashes on and off or remains lit).

● Bias vs. Frequency Response

Recording Frequency Response | **Tuning Display** | **BIAS Control**



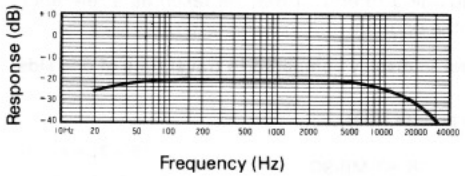


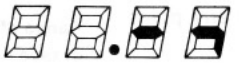
Optional Bias setting

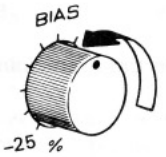
Flat frequency response

Sound quality normal

Fig. 1





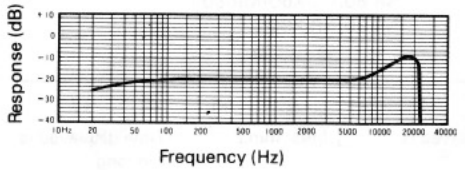


Reduced Bias setting

High frequency response drop-off

Sound muffled

Fig. 2



Increased Bias Setting

High frequency response rising

Gravelly sound

Fig. 3

dbx SYSTEM AND RECORDING LEVEL

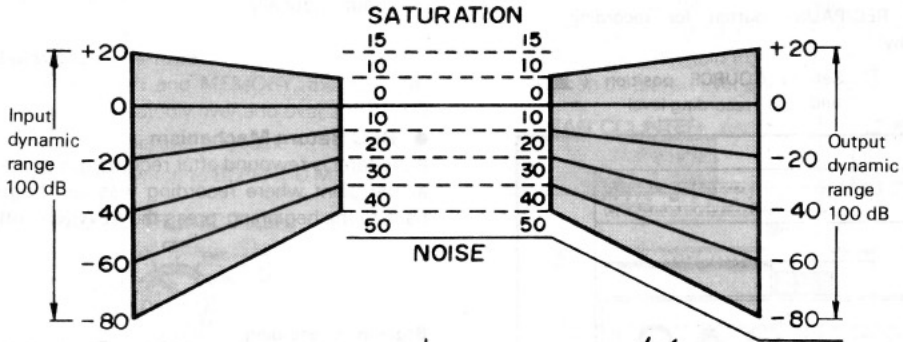
dbx SYSTEM

The K-1000 incorporates a dbx system which greatly expands the dynamic range of cassette tapes. If the softest sound that the human ear can hear is "1", then the loudest is "1 million", or 120 dB. This is the dynamic range of the human ear. The dynamic range of cassette tapes, however, is only about 55 dB. Even metal tapes only offer an improvement of 3 dB in the midrange and 8 dB in the high frequencies.

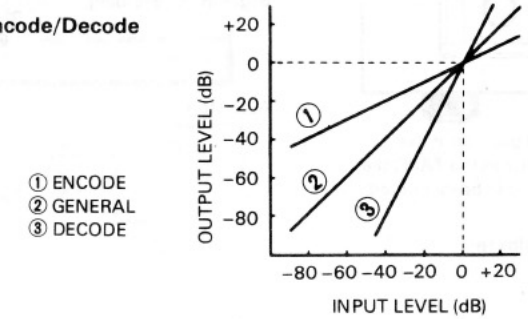
The dbx system works by compressing the dynamic range of the record signal by half and then doubling the dynamic range of the playback signal. (see diagram). With the dbx system functioning, a program source compressed to 50 – 60 dB at recording will be expanded to a dynamic range of 100 – 120 dB. At the same time, noise levels will be reduced throughout the entire frequency range, and the effective saturation level of the tape will be increased.

* Tapes not recorded with the dbx system should be played back with the dbx system off.

● **The principle of dbx SYSTEM**



● **Characteristics of dbx Encode/Decode**



Setting the Recording Level

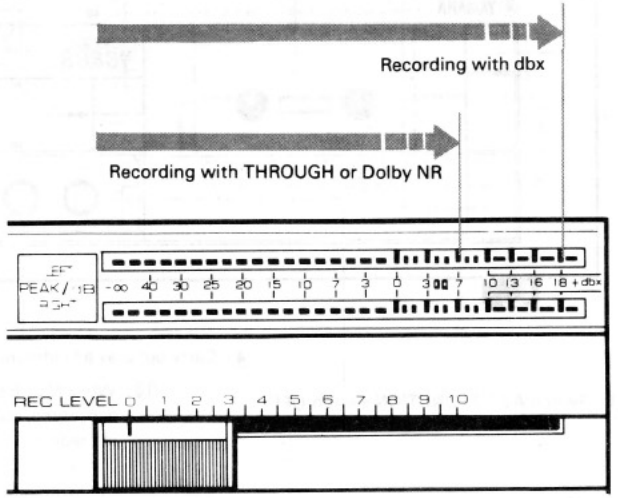
The recording level setting differs depending on the program source being recorded (live recording or FM broadcast) and to the tape being used, but it is necessary to set a high SN ratio i.e. a high input level without producing distortion.

Magnetic tapes become more sensitive as the frequency increases, and when the recording level rises they become saturated in higher frequencies. For this reason, the frequency response degenerates and distortion occurs more easily at higher recording levels. The tape, however, has a natural hiss, and if the recording level is lowered too much, the signal becomes lost in the hiss. A high recording level is therefore chosen at which there is not too much degeneration of frequency response.

For recording with THROUGH or DOLBY NR, adjust the recording level so that the maximum value on the peak level indicator is below +7 dB.

For recording with dbx, adjust the recording level so that the maximum value is below +18 dB.

When recording from records, lower the stylus onto various points on the record surface to check the level beforehand. In this way, no mistakes will be made.



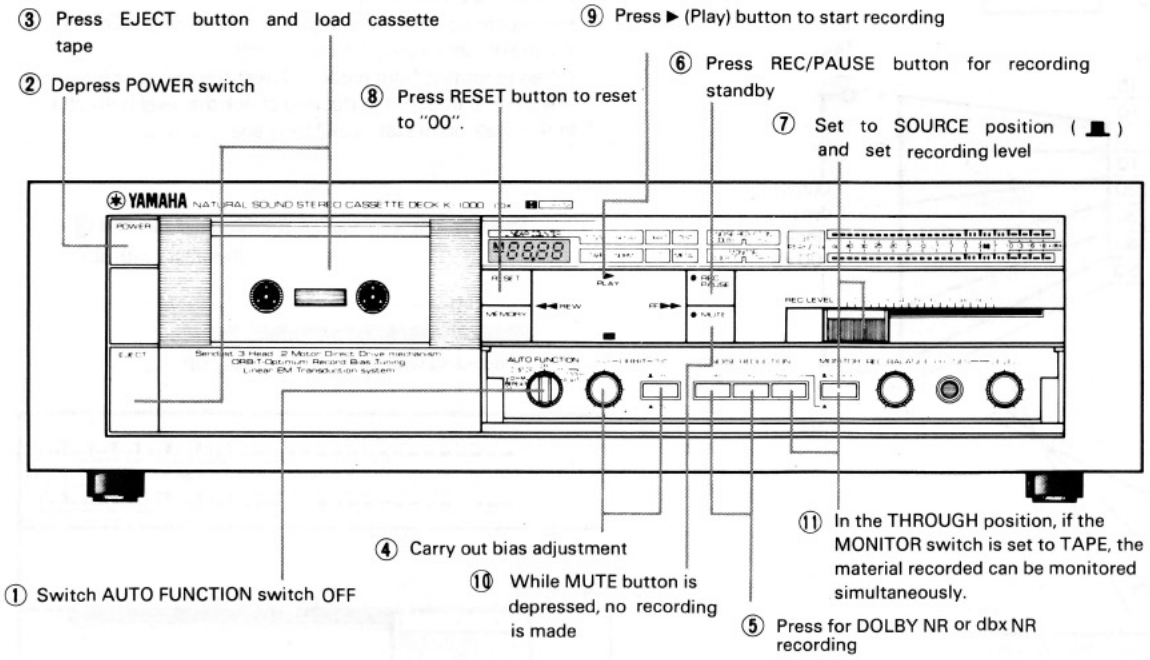
RECORDING/PLAYBACK

● How to Record

● Before recording

Refer to Page 5 "Connection Diagram". Check that leads and power cord are correctly wired.

① Set AUTO FUNCTION switch to OFF.
② Set POWER switch to ON.
③ Press EJECT button, open cassette holder and load a cassette tape.
When recording from the beginning of a tape, allow the tape to run a short distance (about 10 seconds on the counter) until the leader tape has passed through.
④ Set the optimum bias for the tape according to "Bias Adjustment".
⑤ When recording with noise reduction systems, press the DOLBY or dbx buttons.
⑥ Press the REC/PAUSE button. The deck enters the record standby mode.
⑦ Set the MONITOR to the SOURCE position ( ), and set the recording level to suit the program source being recorded.
⑧ Press the RESET button to reset the counter.
This is a reference for recording time and remaining tape time. It is also useful for locating recordings after they have been made.



● Beginning recording

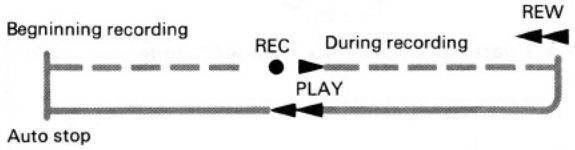
⑨ Press the ▶ (Play) section of the centralized control button. The deck enters the recording mode.
* When not using noise reduction (THROUGH position), switch MONITOR to ON ( ). The sound being recorded on tape can then be monitored at the same time.
* If the MUTE button is pressed during recording, an unrecorded passage can be put on the tape for as long as the button is pressed.

⑩ If it is desired to interrupt recording temporarily, press the REC/PAUSE button. The deck enters the record standby (pause) mode.
When it is desired to start recording again, press the ▶ (Play) section on the centralized control button.

⑪ After the recording has been completed, press the ■ (Stop) section on the centralized control button.
* When the tape is completely wound, the auto shut off mechanism functions and the deck comes to a stop automatically.

● REC Return Mechanism

If the tape is rewound after recording, it stops automatically at the point where recording was last begun. To rewind back to the beginning, press the REWIND button again.



● How to Playback

● Before playback

Refer to wiring diagram. Check that leads and power cord between units are correctly wired.

① Set AUTO FUNCTION switch to OFF.
② Set POWER switch to ON.
③ Press EJECT button, open cassette holder and load a pre-recorded cassette tape.
④ For a tape recorded with a noise reduction system, press either the DOLBY NR or dbx NR button according to the system used.

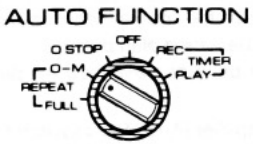
● Beginning playback

① Press the ▶ (Play) section of the centralized control button. The deck enters the playback mode.
② Set the volume and tone controls on the amplifier to adjust sound quality as desired.
③ To stop playback, press the ■ (Stop) section of the centralized control button.

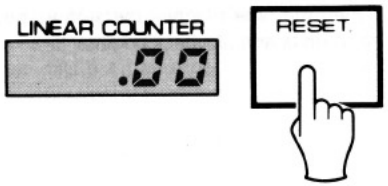
● Repeated playback of a tune

Using the AUTO FUNCTION and MEMORY, the deck can play one or more tunes repeatedly over and over again.

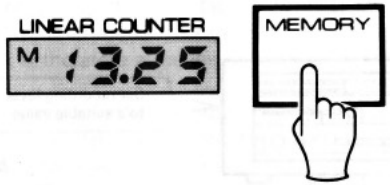
① Load a pre-recorded tape, and playback.
② Set AUTO FUNCTION switch to REPEAT 0 M position.



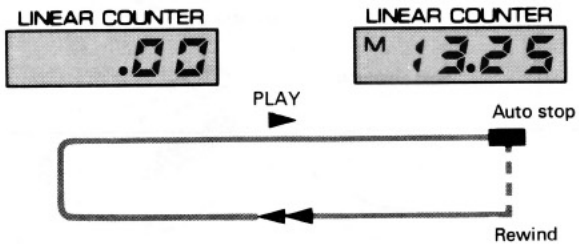
③ Press RESET button at the beginning of the tune you want to play over and over again, and set the counter to "00".



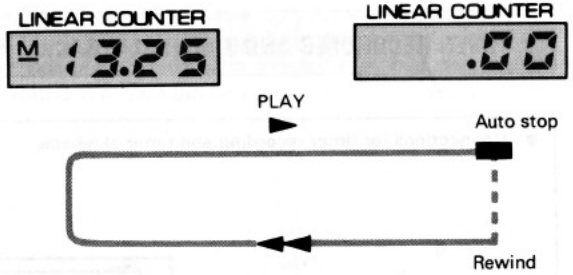
④ Press the MEMORY button at the end of the tune you want to play over and over again. The letter "M", indicating the counter number has been memorized, will appear on the left of the counter display at the point where the MEMORY button was pressed. The tape then immediately begins rewinding.



⑤ The tape is rewound until the counter has returned to "00" (beginning of tune). The deck then enters the playback mode.
⑥ The tape plays back until it reaches the memorized counter number (end of tune). It then rewinds, and playback begins again from "00". In this way, the same tune can be played over and over again.

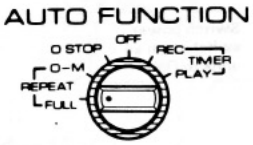


⑦ To erase the memory, press the MEMORY button once again. The letter "M" also disappears from the counter.
* If the memory is rewound beyond "00", a negative display appears. The memory will however still function even if the counter shows a negative display. In this case, playback begins from the point which was memorized, and stops at "00". The tape is then rewound to the point memorized and playback recommences. This cycle is repeated as before.

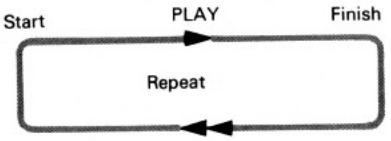


● Repeated playback of one side of a tape

① Set the AUTO FUNCTION switch to the REPEAT FULL position.

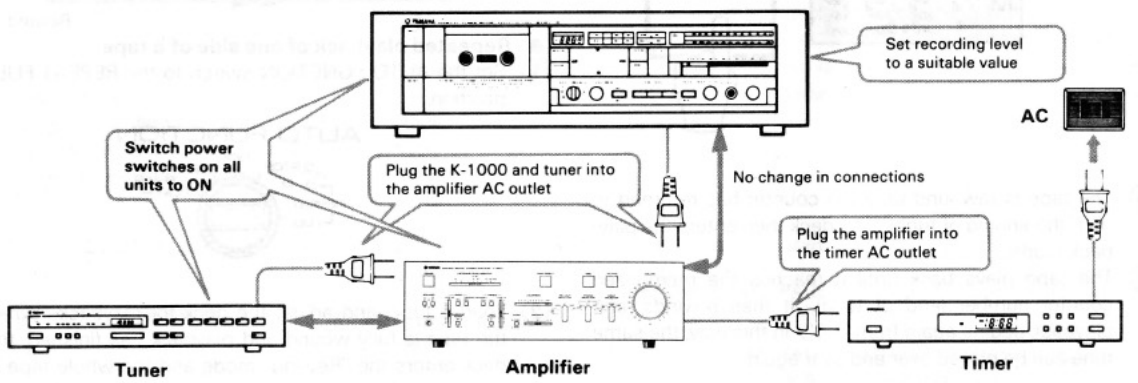


② Load a tape, and adjust the deck for playback. When the tape is fully wound and playback has finished, the deck enters the "Rewind" mode and the whole tape is run back. After rewind has finished, the deck again enters the playback mode. In this way, one side of a tape is played back over and over again.



TIMER RECORDING AND TIMER PLAYBACK

● **Connections for timer recording and timer playback**



● How to Use Timer Recording and Timer Playback

Timer recording and timer playback is possible using the Yamaha DT-2 Audio Timer (option).

● Timer recording

① Connect up the power cord between all units as shown in the wiring plan below (there is no difference for input or output connections).
② Switch on power to all units, and set the FUNCTION switch on the amplifier to TUNER. Choose a station. After selecting a station, it does not matter if the amplifier volume control is altered (it has no effect on recording level).
③ Adjust the deck as described in "Before Recording", ② ~ ⑧.
④ Set AUTO FUNCTION switch to TIMER REC position.
⑤ Set timer to time desired.
* Allow some leeway between the timer setting and the time of the broadcast.
⑥ When the time reaches the setting, power is supplied to all units and recording begins.

● Timer playback

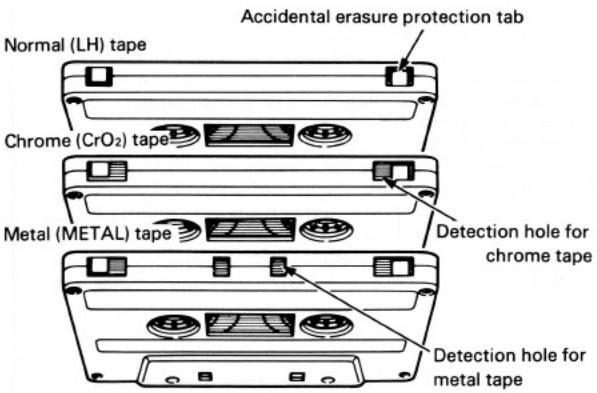
① Connect up the power cord between all units as shown in the wiring plan below.
② Adjust the deck as described in "Before Playback", ④ ~ ⑥.
③ Set the amplifier FUNCTION switch to TAPE.
④ Adjust volume with the amplifier volume control.
⑤ Set AUTO FUNCTION switch to TIMER PLAY position.
⑥ Set timer to time desired.
⑦ When the time reaches the setting, power is supplied to all units and playback begins.

CASSETTE TAPES

● Structure of Cassette

This deck has a built-in auto tape selector function. Just by loading a cassette tape, it will select correct equalizer characteristics for the tape, automatically change the tape sensitivity and adjust to the optimum bias current. Full use can therefore be made of the various properties of different tapes. This is done by means of a detection hole to detect the type of tape as shown in the figure.

Cassette structure



* For cassettes with no detection holes (e.g. earlier metal tapes, etc.), the auto tape selector does not function.
* When using earlier type metal tapes (with no detection holes), record and playback in the CrO_2 position. With some of these tapes, it may be found that the previous recording has not been erased (some sound remains on the tape), or distortion occurs.

● Cassette Tape Material and Bias

The characteristics of cassette tapes differ depending on the magnetic materials used and the method of manufacture, and it is thus necessary to select a suitable bias level for the tape. Even if a high performance tape is used, its full characteristics cannot be exploited if the bias level is not correct.

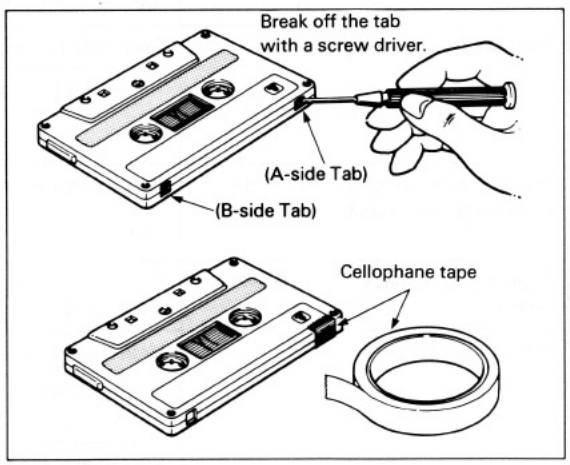
This deck can adapt to practically any tape thanks to its auto selector function and the ORBiT system. Refer to page 7: "Bias Adjustment", for details.

● Conservation of Recordings

Cassette tapes are provided with erasure protection holes to guard against accidental erasure of an important recording. If, after recording, the hole tabs are broken through with a screwdriver, no further recording on the cassette is possible. This is therefore a means of conserving finished recordings.

If it is desired to make further recordings on cassette tapes which have had their tabs broken out, the holes may be covered with cellophane tape or other such material.

*** With chrome (CrO_2) tapes, take care not to cover the chrome tape detection hole.**

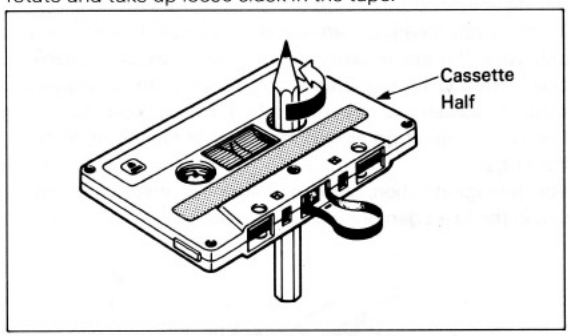


● Warning

Material recorded on this deck cannot, according to copyright laws, be used for any purpose other than personal enjoyment without the permission of the author of the material.

● Correcting slack tape

If the tape is used when it is slack or has jumped out of the cassette, there is a risk it may become tangled around the capstan or pinch roller. In order to correct this, insert a pencil or ball point pen into the center of a reel, rotate and take up loose slack in the tape.



● Storage of cassette tapes

To prevent slackening of tape, fit a stopper or keep cassettes in a case (available commercially). Do not store in locations with direct sunlight, humidity, high temperature or magnetic fields (e.g. in the vicinity of televisions or speakers). High temperature and humidity will spoil tapes, while magnetic fields will erase recordings.

● A Perfect Tape for Every Need

Every type of recording requirement demands a special kind of tape. Yamaha has specially blended tape to meet each requirement, featuring low distortion and wide dynamic range, as well as precision engineering to ensure stable tape transport and ideal tape to head contact.

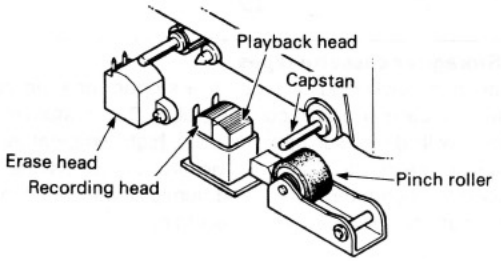
- **MR 60/90** min., Bias: Metal, EQ: 70 μS
  For Reference Quality Music Recording
- **CR-X 60/90** min., Bias: High (CrO_2), EQ: 70 μS
  For Top-Priority Music Recording
- **CR 60/90** min., Bias: High (CrO_2), EQ: 70 μS
  For Selected Music Recording
- **NR-X 60/90** min., Bias: Normal, EQ: 120 μS
  For High Fidelity Music Recording
- **NR 60/90** min., Bias: Normal, EQ: 120 μS
  For Universal Music Recording

● Maintenance

After the deck has been used for a long period of time, the heads, pinch roller and capstan will become dirty, leading to noise and uneven rotation so that recording is no longer possible. We therefore recommend that cleaning and demagnetization be carried out on a regular basis.

To carry out cleaning, remove the cassette holder cover and wipe the inside parts with a cotton swab (available commercially) impregnated with alcohol or head cleaning solution. It should be remembered that keeping the heads clean is of great importance in obtaining good recordings.

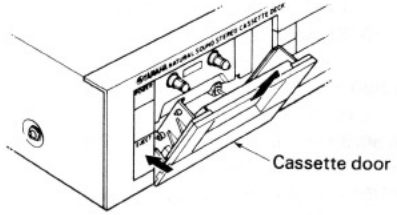
For demagnetization, carefully follow the instructions given in the head demagnetizes manual.



All parts must be kept clean.

● Removing the holder cover

Press the ejector button so that the cassette holder opens. Grasping the holder cover, pull it upwards and the cover will come off. To fit the cover back into place, follow the reverse procedure.



TROUBLESHOOTING

Before assuming that your K-1000 is faulty, check the following troubleshooting list which details the corrective action you can take yourself without having to call a service engineer. If you have any doubts or questions, get in touch with your nearest Yamaha dealer.

Fault	Cause	Cure
Although power switch is ON, no power is supplied to unit.	Power plug is not properly inserted.	Insert plug firmly, into socket.
Serious wow (sound wavering)	Dirty capstan, pinch roller or poor quality tape.	Clean all parts or replace tape.
	Tape is not wound evenly.	Wind tape properly by means of fast forward or rewind.
Sound is scratchy. Sound is jumpy.	Heads are dirty.	Clean heads with a cleaning tape.
	Tape running surface is dirty.	Replace with a fresh tape.
Recorded sound is warped	Tape is bad (stretched or deformed etc.)	Replace with a fresh tape.
	Recording tape is itself warped.	As warping of tape itself cannot be rectified, replace with another tape and test.
Recording and playback sound distorts (meter also hits full defelction).	Recording level is too high.	Check input level in level meter, and turn down recording level volume controls.
Tape is playing back, but no sound is heard.	faulty connection between deck and stereo amplifier.	Rewire all connections from beginning.
Heavy sound distortion	Heads are dirty.	Clean heads.
	Heads are magnetized.	Demagnetize heads with head demagnetizer.
	Poor quality tape.	Replace with good quality tape.
	Connections not properly inserted.	Check all input and output connections, and insert leads properly.
	Distortion due to outside factors.	Remove from the vicinity of other electrical equipment (television, neon signs, electric blankets, etc.) which could give rise to distortion.
	Recording level is too low, so tape hiss stands out.	Adjust recording level correctly.

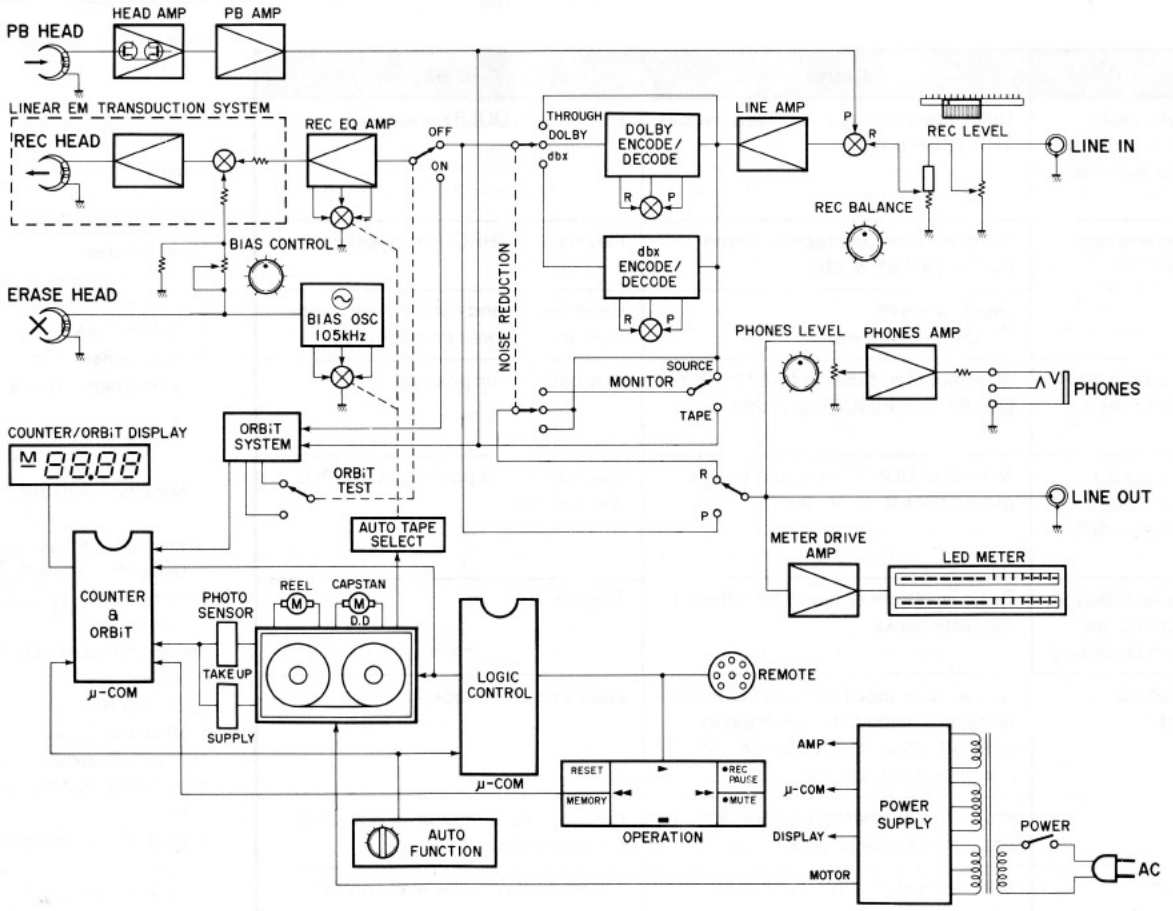
Fault	Cause	Cure
High frequencies in the playback sound are emphasized and unpleasant to listen to, and noise level (hiss) is also high.	Dolby-recorded tape is played back in THROUGH position.	Play back in DOLBY position.
Playback sound is muffled and high frequencies are inaudible	Normally-recorded tape is played back in DOLBY or dbx.	Play back in THROUGH position.
	Heads are dirty. Heads are magnetized.	Clean heads and carry out demagnetization with head demagnetizer.
Playback sound balance is poor and sound seem muffled. Sound seems rather faint.	dbx-Recorded tape is played back in DOLBY or THROUGH position.	Play back in dbx position.
Playback sound balance is poor. Sounds are sometimes too loud, sometimes too soft, and meter deflection is abnormally high.	Normal or DOLBY-recorded tape is played back through dbx.	Play back in the position in which it was recorded.
When playing back tapes recorded on other decks, meter deflections are greater (smaller) than when recording.	Basic levels are different for different cassette decks.	This is not a fault.
Does not operate when record standby button is pressed.	No cassette tape has been loaded (if no tape is loaded, the centralizing control button, REC button and MUTE button will not operate).	Load a cassette tape.
	Protective accidental erasure tabs on cassette have been broken out.	Replace cassette tape, or cover tab holes with cellophane, etc.
Recordings cannot be made.	Recording level controls (REC LEVEL) are set too low.	Adjust level with the level control.
Recordings cannot be made with TIMER REC (deck only plays back).	Protective accidental erasure tabs on cassette have been broken out.	Replace cassette tape, or cover tab holes with cellophane, etc.
Stops during recording or playback.	Tape is slack and came out, eventually winding itself around capstan. May also be due to poor tape.	Insert pencil or similar into cassette along reel axis, and rotate to tighten tape.

SPECIFICATIONS

Type ..... 4-track, 2-channel stereo
Heads ..... R & P Heads: Combination, low-impedance Sendust with double-laminated core
Erase head: Double-gap Sendust
Motors ..... Capstan: Pulse servo brushless DD motor
Reel: Flat torque DC motor
Wow & Flutter ..... No more than ± 0.08% (W.Peak);
No more than ± 0.02% (WRMS)
Fast Wind Time ..... Within 75 seconds (C-60)
Frequency Response
Normal tape (–20 dB) ..... 20 to 18,000 Hz ± 6 dB
25 to 17,000 Hz ± 3 dB
Chrome tape (–20 dB) ..... 20 to 19,000 Hz ± 6 dB
25 to 18,000 Hz ± 3 dB
Metal tape (–20 dB) ..... 20 to 21,000 Hz ± 6 dB
20 to 20,000 Hz ± 3 dB
Signal to Noise Ratio
Dolby off ..... More than 59 dB
Dolby B on ..... More than 68 dB
dbx on ..... More than 105 dB
Maximum Recording Level
Normal tape ..... +8 dB
Chrome tape ..... +8 dB
Metal tape ..... +8 dB
Harmonic Distortion ..... No more than 0.8%
Input Sensitivity/Maximum/Impedance
Line ..... 50 mV/6V/50 k-ohms
Output Level/Impedance
Line ..... 500 mV/30 k-ohms
Headphones ..... 170 mV/ 8 ohms
Power Supply ..... 120V, 60 Hz
Power Consumption ..... 35 watts
Dimensions (W × H × D) ..... 435 × 112.5 × 346 mm
17-1/8" × 4-3/4" × 13-5/8"
Weight ..... 8 kg (17 lbs. 10 oz.)

** Specifications subject to change without notice.*

BLOCK DIAGRAM



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Printed in Japan 82X (G)