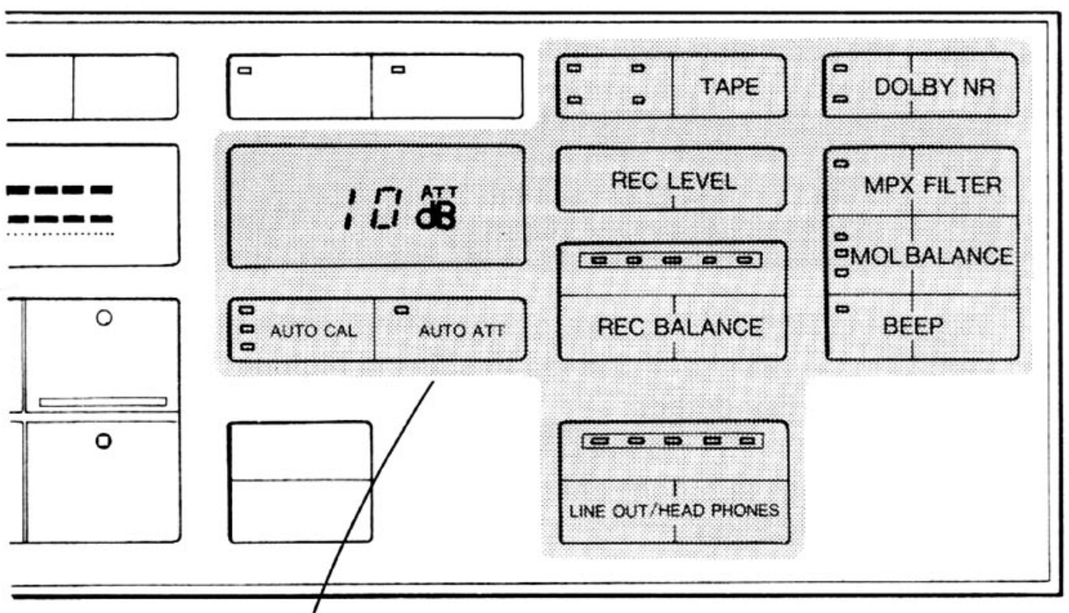
RECORDING AND PLAYBACK USING THE STATUS MEMORY FUNCTION

The TC-FX1010 can store and retrieve recording and playback settings. Once a setting has been stored on a STATUS MEMORY key, you can retrieve it by pressing the key.

WHICH KEYS CAN BE STORED?

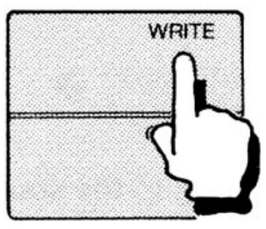


The settings of these ten keys can be stored.

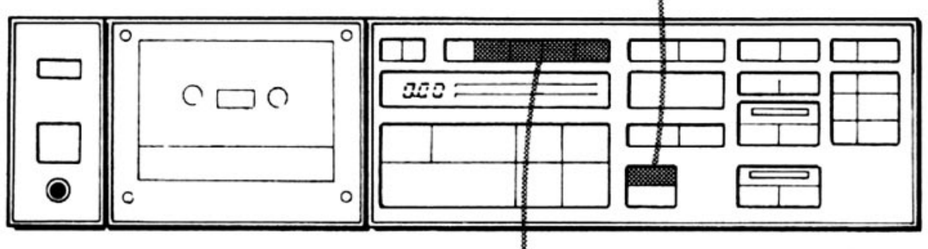
TO STORE THE SETTINGS

Adjust the settings to store in the STATUS MEMORY key before entering them into the status memory. Once the settings are committed to memory, they cannot be cancelled or adjusted until new settings are stored on the STATUS MEMORY key.

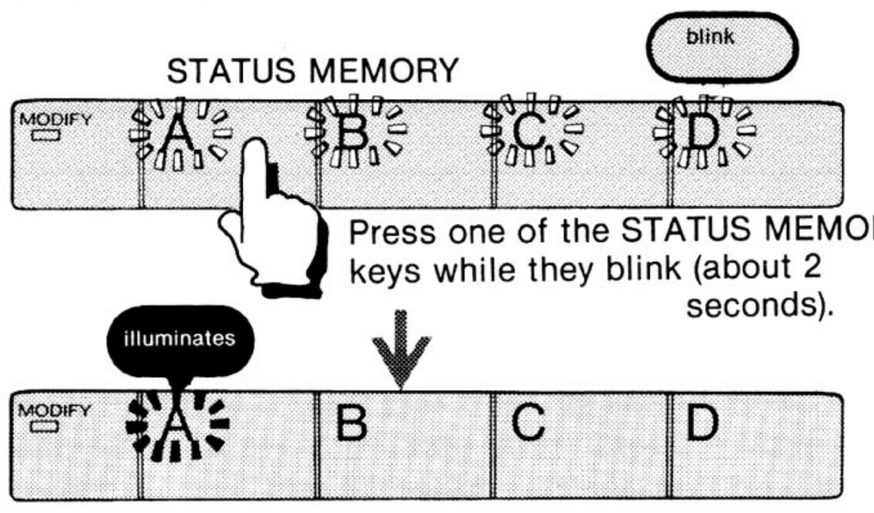
1



All the STATUS MEMORY keys will start to blink.



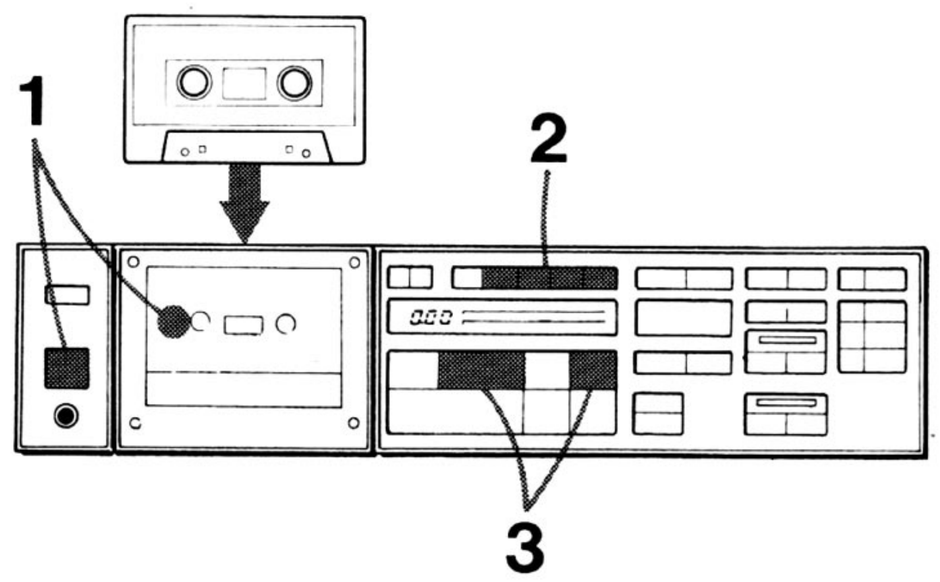
2



The pressed key illuminates to indicate that the settings have been memorized.

TO RECORD OR PLAYBACK USING THE STATUS MEMORY KEYS

❶ Press the ⏏ key and insert a cassette.
❷ Press a STATUS MEMORY key.
❸ Start recording or playback.



TO CHANGE SOME OF THE SETTINGS MEMORIZED ON A KEY

For example : To change some of the settings stored on the B key

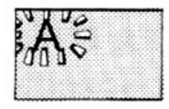
❶ Press the B key to recall the settings.
❷ Change the settings you want.
→ The MODIFY indicator will illuminate.

> **MODIFY indicator**
> This indicator illuminates to show that the some of the settings of the STATUS MEMORY key have been changed. The indicator illuminates till the STATUS MEMORY key is pressed again.

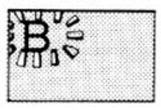
To recall the original settings, press the B key again.
To store the newly-adjusted settings, press the WRITE key and one of the STATUS MEMORY keys.

TO CHECK THE STORED SETTINGS

Once the settings have been memorized, you can check them by pressing the CHECK key. The check can be made during the stop and playback mode.

❶ Press the CHECK key. → 

The A key will blink for about 3 seconds and the settings of the keys memorized on the A key will illuminate.

❷ Press the CHECK key again while the A key indicator blinks.
→ 

The B key will blink and the settings of the keys memorized on the B key will illuminate.

In this way, you can check settings memorized on the A, B, C and D keys in order.

- The settings illuminated during the check will automatically return to the original settings.
- Note that the CHECK key doesn't operate in the recording mode.

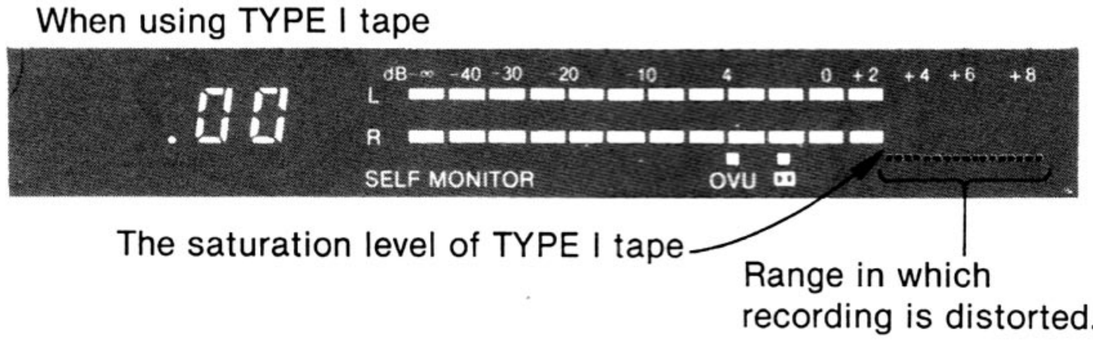
Note on the memory back-up circuit

The memorized settings will not be cancelled even when the power goes off for several months so you can retrieve them whenever you want. This is because the unit has a battery-powered back-up circuit which permits you to move the unit from one place to another or to operate it after a blackout. If the power cord is disconnected for a long time, however, the memorized settings will be cancelled. In this case, connect the power cord to charge the battery.

RECORDING LEVEL ADJUSTMENT

Adjust the recording level while monitoring on the peak program meters the input level of the program source to be recorded. If the recording level setting is too high, the recording will be distorted, and if the setting is too low, the recording will be noisy. The recording level should be set as high as possible while still avoiding distortion. This level will depend on the type of tape being used.
When the tape type is set, the range above the saturation level of the selected type of tape is indicated by the red line. Generally speaking, adjust the recording level by making sure that the meters deflect only to the left end of the red line at the highest signal level.

When using TYPE I tape



Since the saturation level of any tape is lower in the higher frequencies than in the lower frequencies, the recording level may still be too high if adjusted in this way if the program to be recorded contains many high frequency signals. Consideration has to be given to the program source to be recorded as well as to the characteristics of the cassette to be used, since each cassette, even cassettes using the same type of tape, may have different characteristics.

Setting the recording level using the AUTO ATT key
Play the program source in the recording standby mode. Set the recording level a little higher than the saturation level on the peak program meter. Then set the AUTO ATT key on. When signals at an excessive are input, the AUTO ATT function automatically attenuates the recording level to the proper level. In this way, the optimum recording level according to the tape type can be set to start recording.

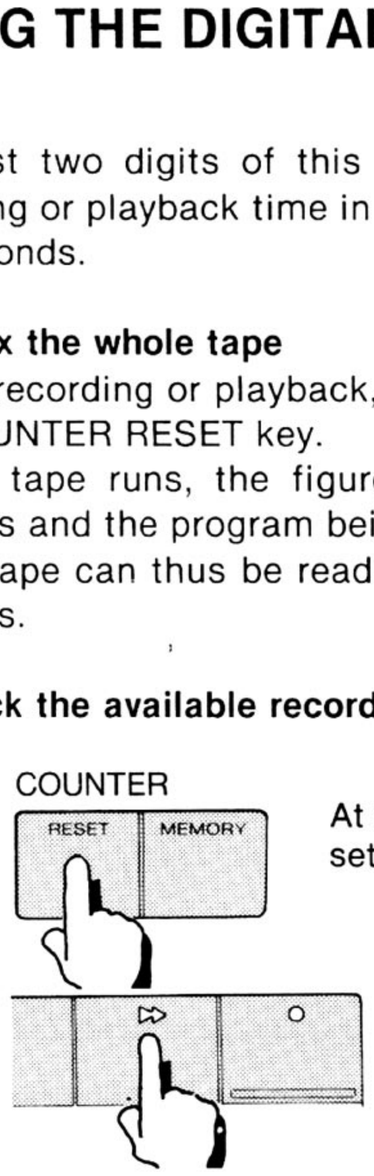
USING THE DIGITAL LINEAR COUNTER

The first two digits of this tape counter show the approximate recording or playback time in minutes, and the last two digits show the seconds.

To index the whole tape

Before recording or playback, set the counter to "0.00" by pressing the COUNTER RESET key.
As the tape runs, the figures of the counter change. Note the numbers and the program being recorded or played back. Any point of the tape can thus be readily located later by reference to these numbers.

To check the available recording time on one side of a cassette

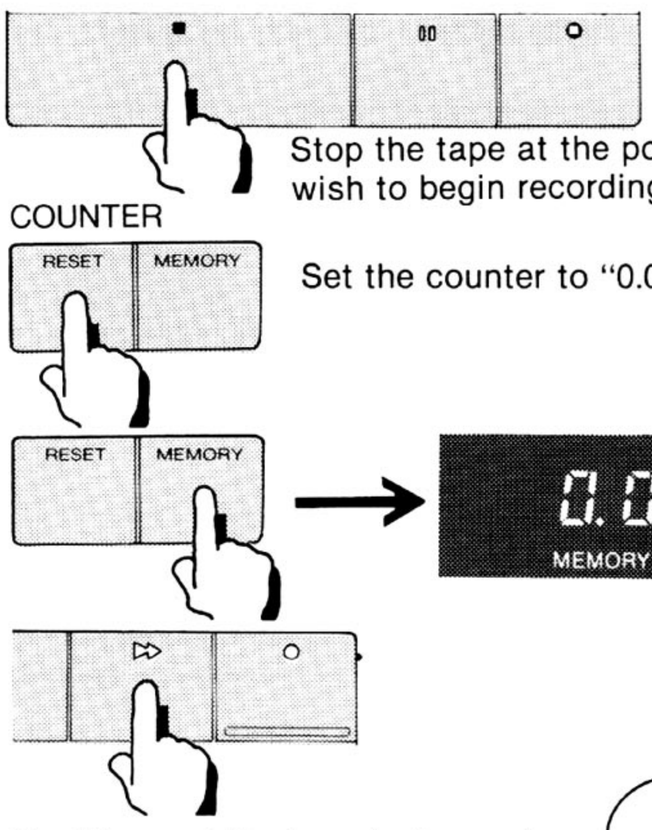


At the beginning of the tape, set the counter to "0.00".

Fast-forward the tape to the end.

The digits will show the approximate available recording time.

To determine the remaining recording time



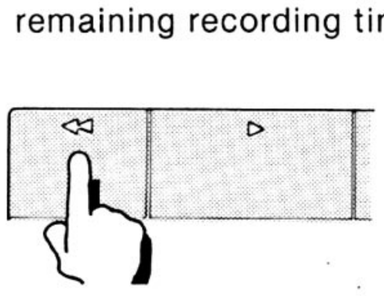
Stop the tape at the point at which you wish to begin recording.

Set the counter to "0.00".

Fast-forward the tape to the end.

3 min. 45 sec. remaining.

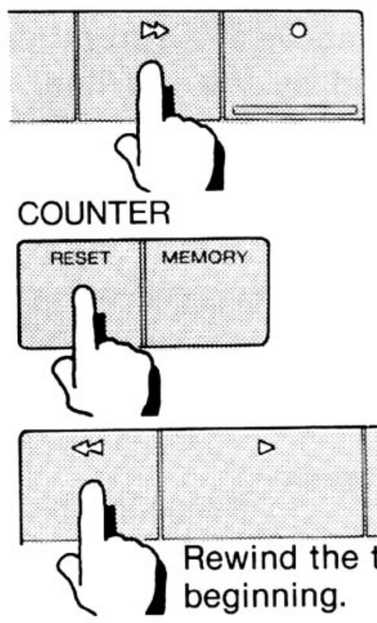
The digits will show the approximate remaining recording time.



The tape will stop at "0.00".

To monitor the remaining recording time while recording
—Using the minus display

The counter shows the recording or playback time from the "0.00" point preceded by a minus sign when the tape is rewound beyond "0.00".

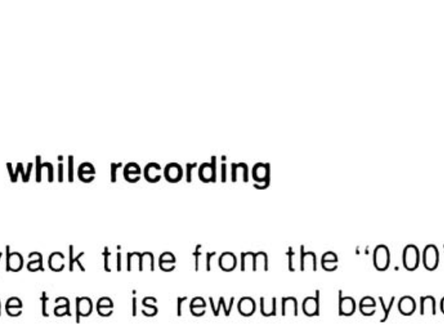


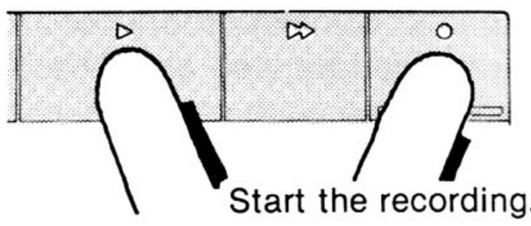
Fast-forward the tape to the end.

Set the counter to "0.00".

Rewind the tape to the beginning.

The digits will show the approximate recording time on one side of the cassette.





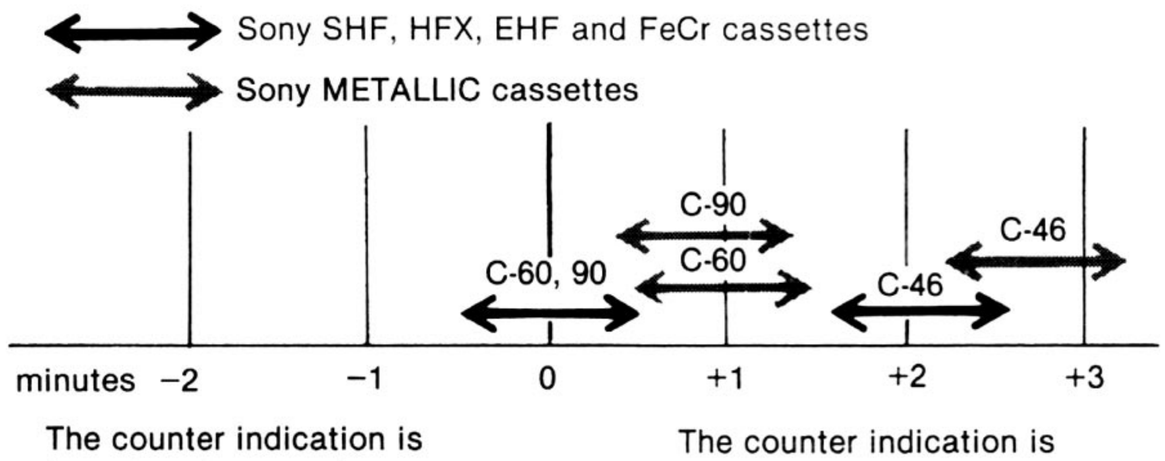
Start the recording.

The digits will change from −30.00 to −29.59, -29.58 . . . as the recording goes on, and you can monitor the remaining recording time at any point on the tape.

The accuracy of the counter

This counter is not actually a digital clock, so that the displayed figures are not exactly equal to the actual elapsed time. The accuracy will vary depending on the type of tape being used. This counter has been designed using C-60 cassettes as the standard. Make sure that the displayed time is greater than the time required when using a C-46 cassette.

Difference between the counter indication and the actual tape running time on one side of a cassette



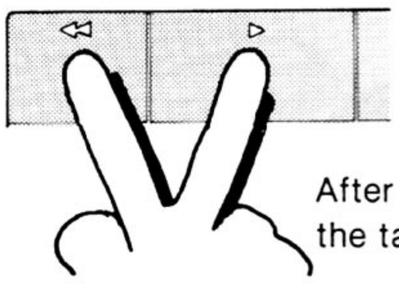
The counter indication is less than the actual tape running time.

The counter indication is more than the actual tape running time.

AUTO PLAY

To rewind the tape and play from the beginning of the tape, use the auto play function. The tape deck can automatically replay a tape immediately after rewinding.

Check that the MEMORY indicator is not displayed below the tape counter. If it is displayed, press the COUNTER MEMORY key.



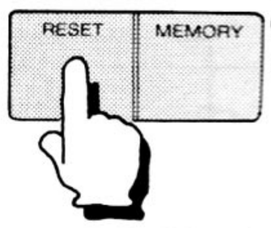
Press the ◀◀ key and the ▶ key simultaneously.

After the tape is completely rewound, the tape will automatically replay.

MEMORY STOP/PLAY

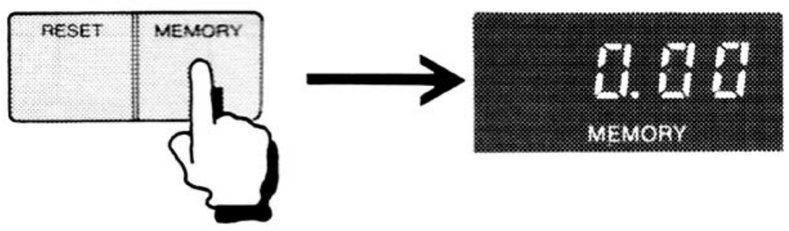
To rewind the tape to a desired point use the memory stop function. To play from a desired point use the memory play function. You can easily locate any particular point on a tape.

1. COUNTER



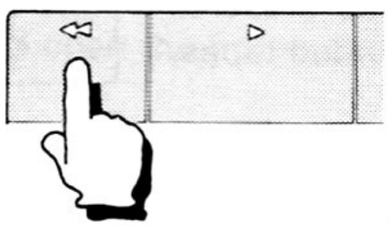
At the desired point on the tape, press the COUNTER RESET key to set the tape counter to "0.00."

2.



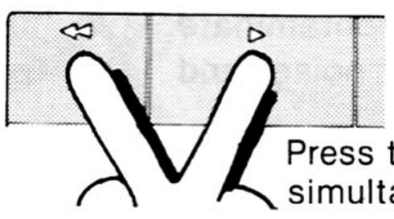
3. When rewinding the tape,

Memory stop



The tape stops automatically when it is rewound to the "–0.01" point.

Memory play



The tape replays automatically after rewinding to the "–0.01" point.

Press the ◀◀ and ▶ keys simultaneously.

Why does the tape stop around "–0.01"?
In order to avoid any chance of cutting off the starting point.

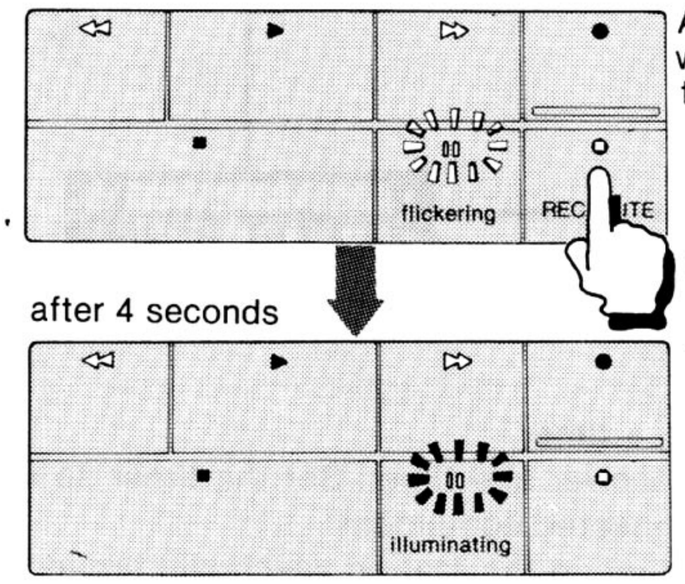
How can the tape be rewound further than "0.00"?
Press the ◀◀ key again.

RECORD MUTING

By pressing the O (record muting) key during recording, four seconds interspacing is provided automatically, eliminating unwanted program material such as broadcasting commercials. While the record muting is operating, the incoming signal is not recorded on the tape but it continues to register on the meters and feed to the monitor so that you know exactly what is going on.

To insert a 4-second blank automatically

When the segment you do not wish to record begins,



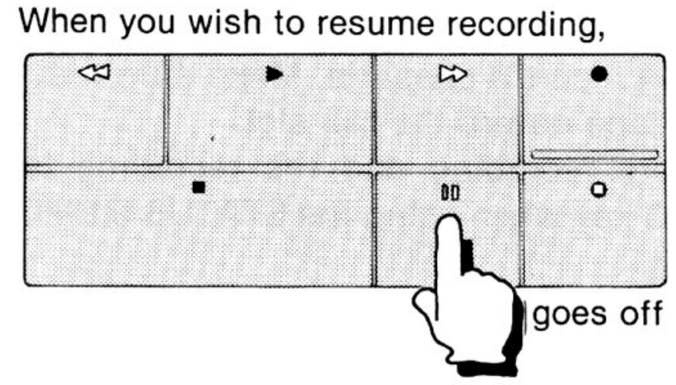
A blank is made while the tape continues to run.

Press. (Do not keep pressing.)

after 4 seconds

The tape pauses.

When you wish to resume recording,



The tape starts to run.

goes off

To insert a blank less than four seconds long
Press the O key to mute recording. Press the ■■ key when you want to resume recording.

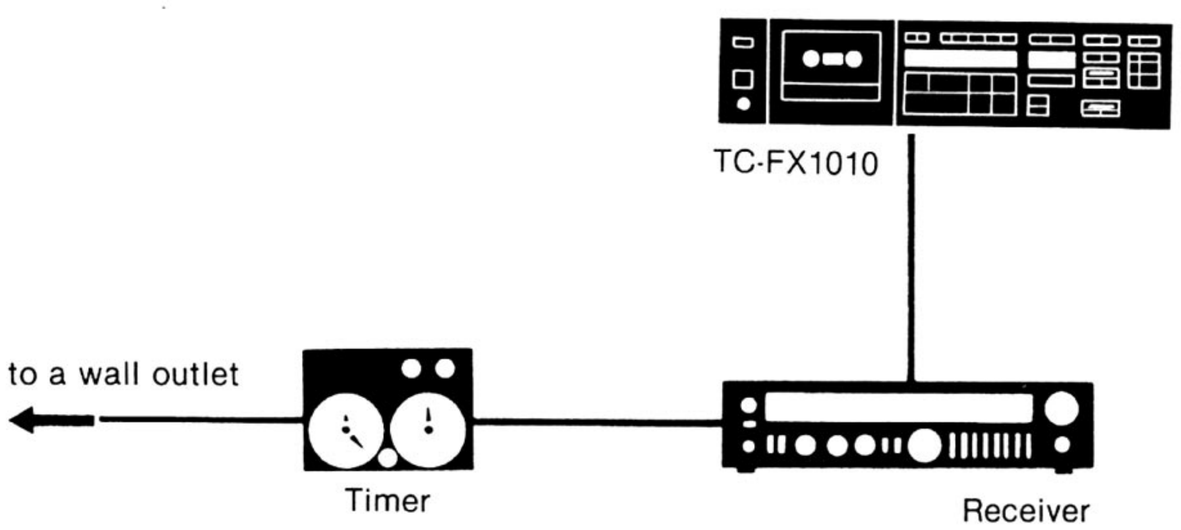
To insert a blank over four seconds long
Hold down the O key for as long as you want the blank segment on the tape to be. After four seconds, the indicator of the O key will blink more rapidly. When you release the ■■ key, the tape deck will be in the pause mode. When you want to resume recording, press the ■■ key to release the pause mode.

ERASING

When the tape deck functions in recording mode, the erase head automatically erases any previously recorded material.
To erase without recording :
❶ Make sure that the safety tab of the cassette is in place, or that the tab slot is covered with plastic tape.
❷ Check that the appropriate tape type is indicated.
❸ Keep pressed the — key of the REC LEVEL control. (Disconnecting all inputs will result in a more complete erasure.)
❹ Press the ● key and the ▶ key simultaneously.

TIMER-ACTIVATED RECORDING AND PLAYBACK

By connecting any commercially available timer to the tape deck, the deck can be set to play back or record automatically at any desired time. As timers work in different ways, be sure to read the timer's instruction manual carefully.



To record a broadcast using a timer

❶ Connect the tape deck, receiver and timer. Set the timer so that power is supplied to the connected equipment.
❷ Turn on the receiver and tune in the station which will broadcast the program you want to record.
❸ Turn on the tape deck and insert a cassette. Make sure that the tab is intact or that plastic tape covers the tab slot.
❹ Adjust the settings before recording and the recording level. (Press the appropriate A to D key when using the STATUS MEMORY key.).
❺ Press the TIMER REC key of the tape deck.
❻ Set the timer for the desired time. (At this point power to the connected equipment will be cut off.)
The tape deck is now ready to start recording at the time set on the timer.

To play back using a timer

The connections between equipment are the same as for recording using a timer.
❶ Turn on the receiver and set the appropriate switches for playback.
❷ Turn on the tape deck and insert the recorded cassette.
❸ Press the TIMER PLAY key of the tape deck.
❹ Set the timer for the desired time. (At this point power to the connected equipment will be cut off.)
The tape deck is now ready to start playback at the time set on the timer.

Notes

- Keep the power switches of the equipment to operate to ON. During the standby mode, the recording level ATT indicator and the tape counter will be as follows :
  In the timer-activated recording, 0 0 will blink.
  In the timer-activated playback, P P will blink.
- Be sure that the tab of the cassette is intact when recording using a timer.
- When the timer function is not used for a long period of time, set the timer so that the power is always supplied to the tape deck.

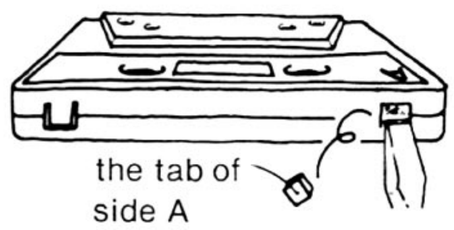
NOTES ON CASSETTES

Cassette insertion

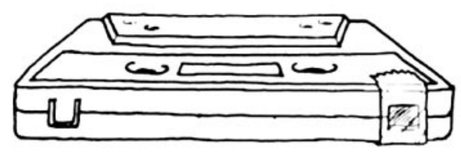
Before inserting a cassette, take up any slack in the tape to prevent it from becoming tangled around the capstan.

To protect cassettes from accidental erasure

Remove the tab as illustrated so that the record mode does not function when the ●(record) key is pressed.

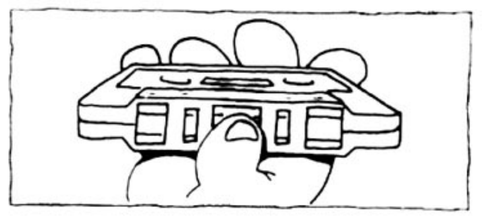


To record on a cassette once tabs have been removed, simply cover the slot with plastic tape.

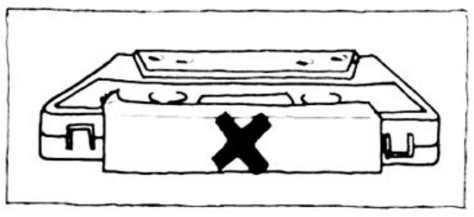


Cassette care

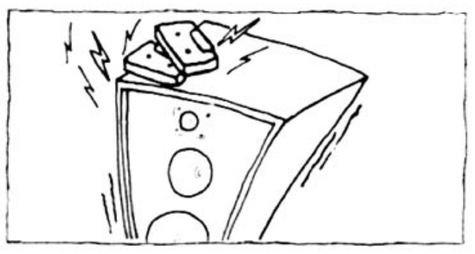
- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.



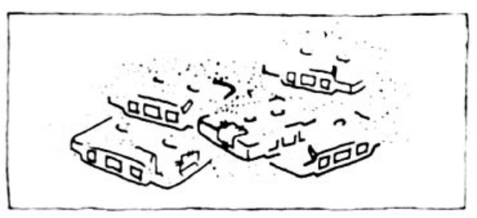
- Do not stick thick labels or tape on the cassette, as this may affect proper cassette alignment and prevent the tape from making proper contact with the heads.



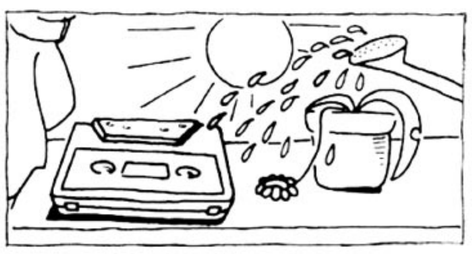
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, because their magnets could cause erasures or distortions of your recorded tapes.



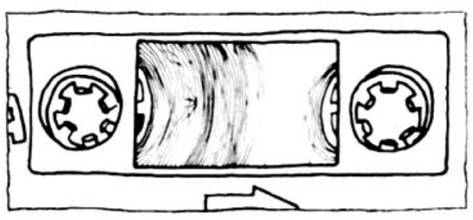
- Protect cassettes from dust by storing them in their cases. Even minor dirt or dust could contaminate the heads, resulting in noise and sound drop-outs.



- Do not expose cassettes to direct sunlight, extremely cold temperature or moisture.



- Avoid fast-winding just before storing cassettes, as this may stretch the tape edge if the cassettes are left unused over a period of time.

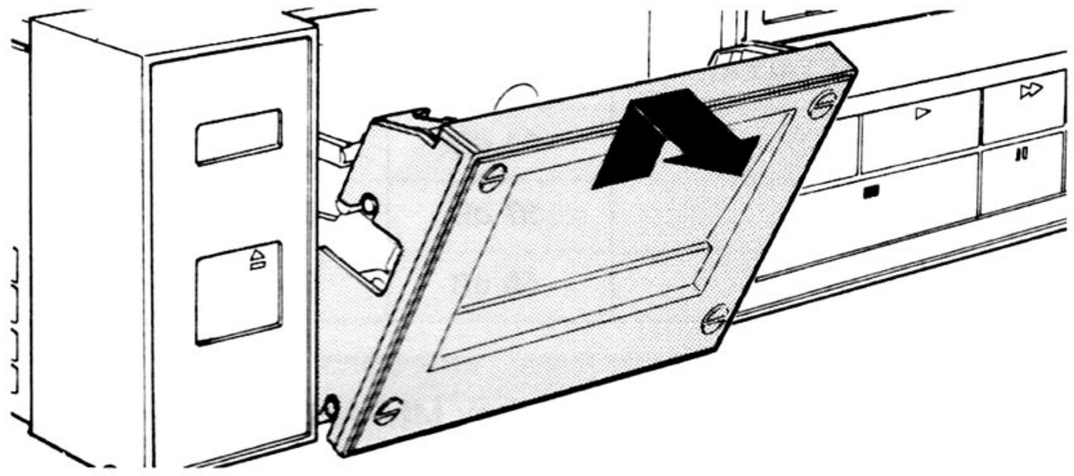


MAINTENANCE

Cleaning of heads and tape path

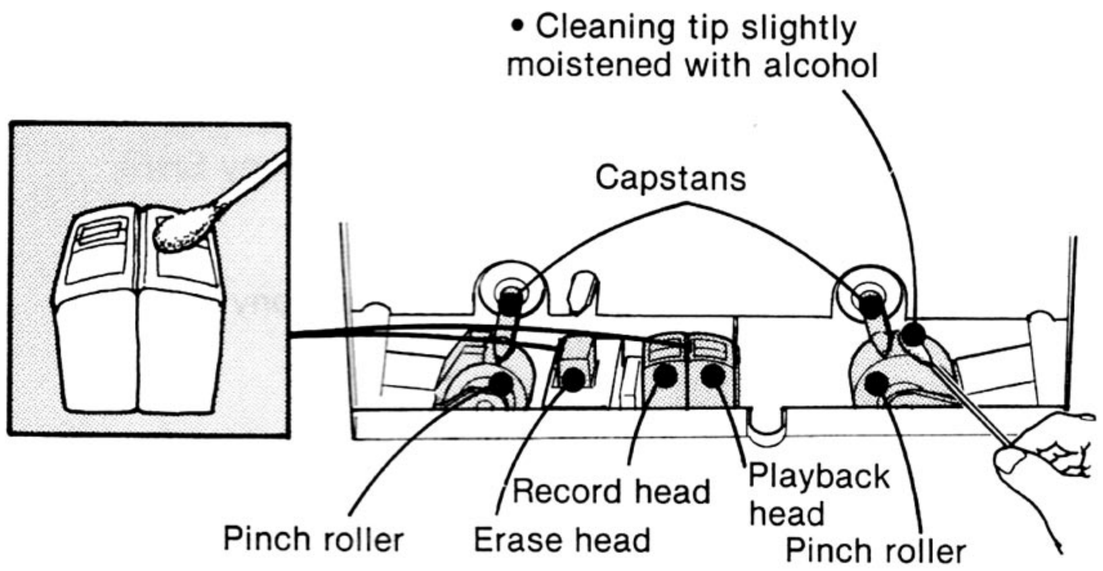
We recommend cleaning after every 10 hours of operation. To make the best possible recordings, however, you should clean all surfaces over which the tape travels before every recording.

❶ Press the ⏏ key to open the cassette holder. Remove the window as illustrated.

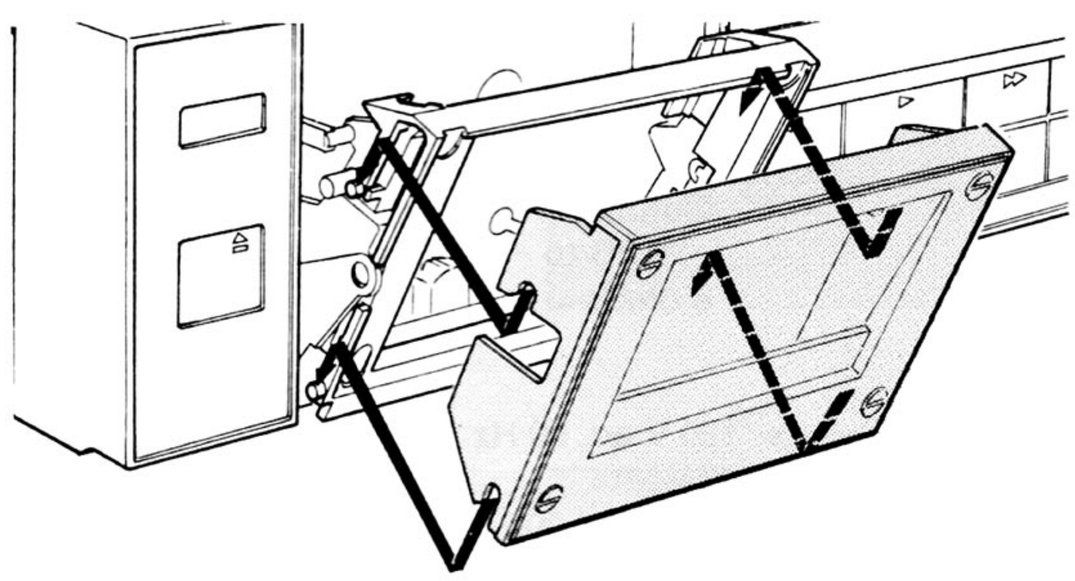


❷ Push the frame in.

❸ Wipe the heads, the pinch rollers and the capstans with a cleaning tip slightly moistened with cleaning fluid or alcohol.



❹ Press the ⏏ key to open the frame, and replace the window.



● After cleaning the heads and tape path, do not insert a cassette until the areas cleaned are completely dry.

Demagnetizing heads

After 20 to 30 hours of use, enough residual magnetism will have built up on the heads to begin to cause loss of high frequencies and hiss. At this time you should demagnetize the heads and all metal parts in the tape path with a commercially available head demagnetizer. Be sure that the tape deck is turned off while you demagnetize.

Cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

SPECIFICATIONS

Recording system 4-track 2-channel stereo
Fast-forward and rewind time
Approx. 80 sec. (with C-60 cassette)
Bias frequency 105 kHz
Signal-to-noise ratio (NAB, at peak level)

Cassette / Dolby NR key	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METALLIC)	60 dB	67 dB	73 dB
TYPE III (Sony FeCr)	61 dB	68 dB	74 dB
TYPE II (Sony EHF)	57 dB	64 dB	70 dB
TYPE I (Sony HFX)	56 dB	63 dB	69 dB

Total harmonic distortion
0.8% (with Sony METALLIC and FeCr cassettes)
Frequency response DOLBY NR OFF
- With TYPE IV cassette (Sony METALLIC)
  20 - 20,000 Hz
  25 - 18,000 Hz (±3 dB)
  25 - 13,000 Hz (±3 dB, 0 VU recording)
- With TYPE III cassette (Sony FeCr)
  20 - 20,000 Hz
  25 - 18,000 Hz (±3 dB)
- With TYPE II cassette (Sony EHF)
  20 - 19,000 Hz
  25 - 17,000 Hz (±3 dB)
- With TYPE I cassette (Sony HFX)
  20 - 18,000 Hz

Wow and flutter 0.04% WRMS
Inputs Line inputs (phono jacks)
Sensitivity 77.5 mV (–20 dB)
Input impedance 50 k ohms
Outputs Line outputs (phono jacks)
Maximum output level 0.435 V (–5 dB)
at a load impedance of 50 k ohms
with LINE OUT level control at "0"
Variable in sixteen steps from –5 dB to –35 dB
Load impedance over 10 k ohms
Headphone output
Output level variable in sixteen steps from –20 dB to –50 dB at a load impedance of 8 ohms

General

Power requirements 120 V ac, 60 Hz
Power consumption 40 watts
Ac outlet Switched 300 W
Dimensions Approx. 430 × 105 × 330 mm (w/h/d)
(17 × 4 1/4 × 13 inches)
including projecting parts and controls
Weight Approx. 8 kg (17 lbs 11 oz)
Supplied accessories
Connecting cord 2
Head cleaning tips ..... 1 set

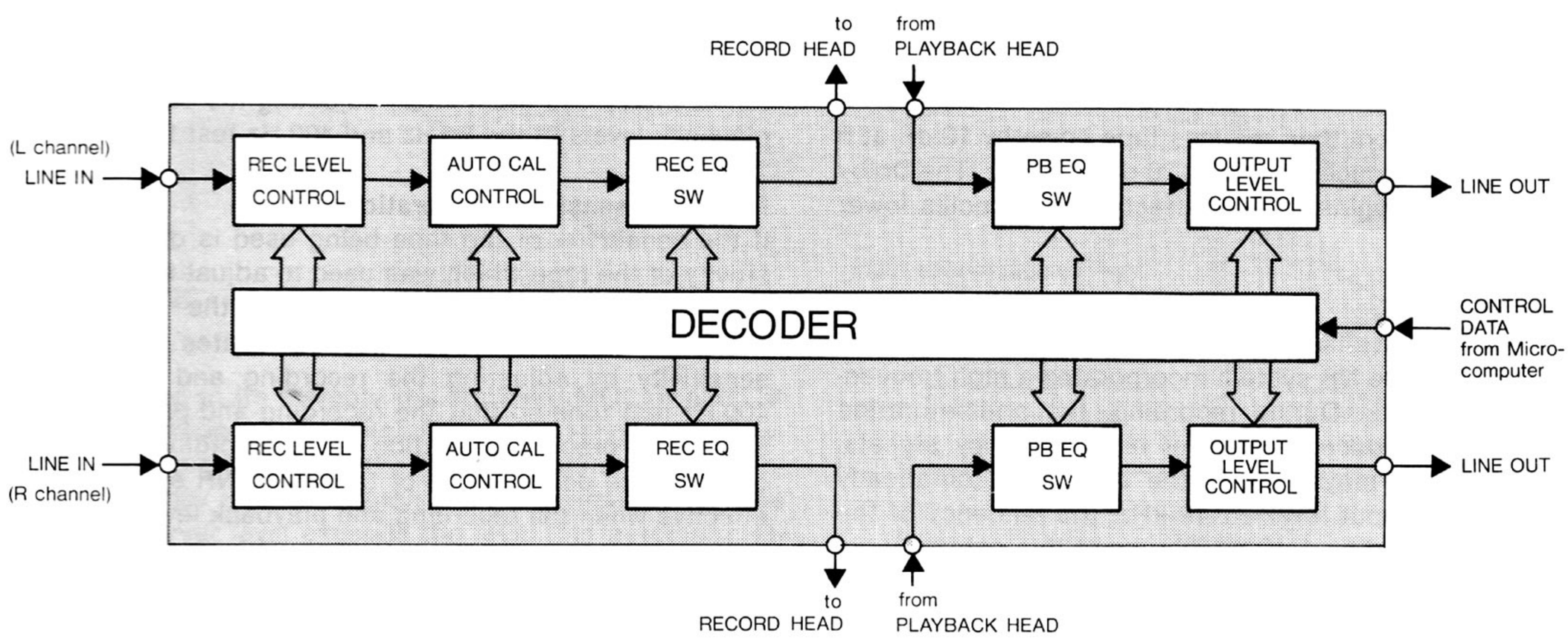
Design and specifications subject to change without notice.

TECHNICAL INFORMATION

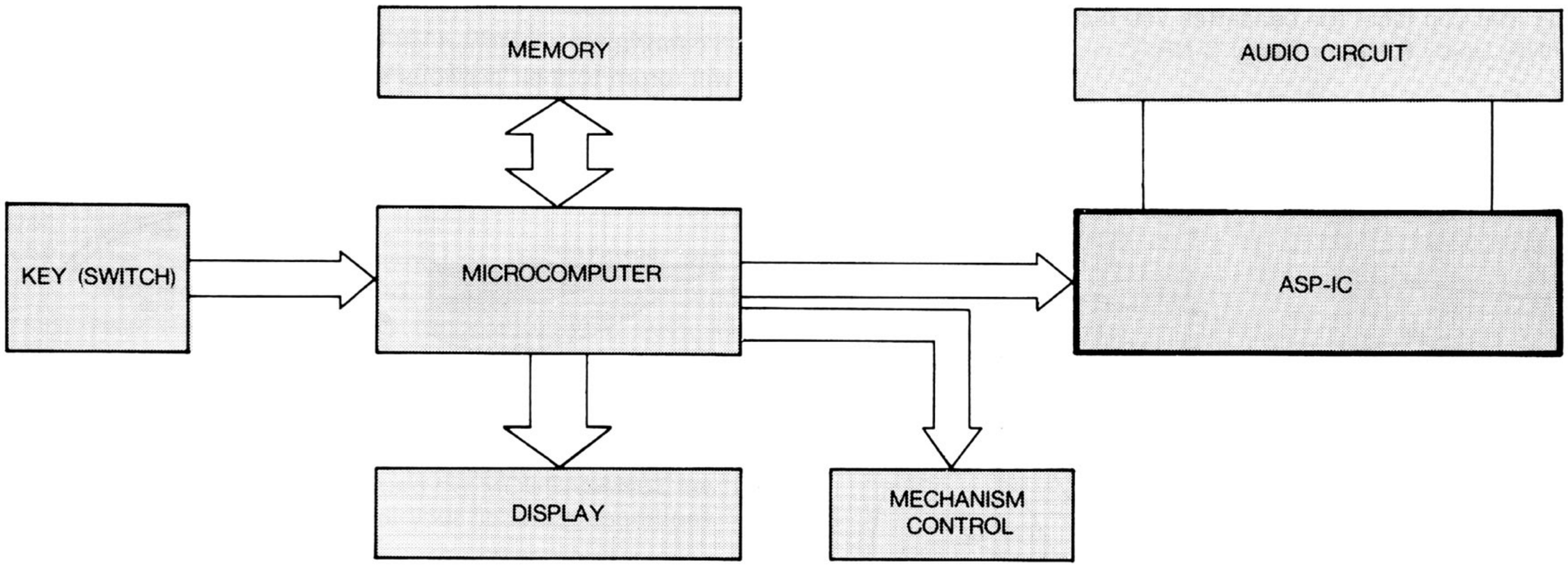
ASP (Audio Signal Processor) IC

Sony has developed a new IC, called an ASP IC, which can control all the functions of the TC-FX1010 and which greatly simplifies and shortens the signal path. This new IC makes it possible to eliminate all mechanical controls and switches from the front panel.
The ASP IC, in conjunction with the TC-FX1010's built-in microcomputer, offers more useful and easy-to-operate funcitons than ever before—status memory function, auto calibration, auto recording level attenuation, etc.

ASP IC block diagram



System control diagram



DOLBY NR (NOISE REDUCTION) SYSTEM

There have been until recently just two types of Dolby NR system: the A-type for professional use, and the B-type, a simplified version of the A-type, employed by most consumer-grade cassette decks. Now, a third type of Dolby NR system is available, the C-type. The C-type system reduces tape noise much more effectively than the B-type system.

The basis of the Dolby NR system

During recording, low-level high-frequency signals, which tend to be obscured by tape hiss, are boosted so that they are substantially higher in level than any tape noise. When these signals are played back, the level is lowered to the original input level, while simultaneously the level of any tape noise is reduced to the same extent.

The Dolby B-type NR system thus reduces tape noise by 10 dB at 5 kHz. The C-type system reduces noise by 20 dB at 5 kHz. The Dolby C-type NR system also begins to take effect at frequencies lower than the B-type system.

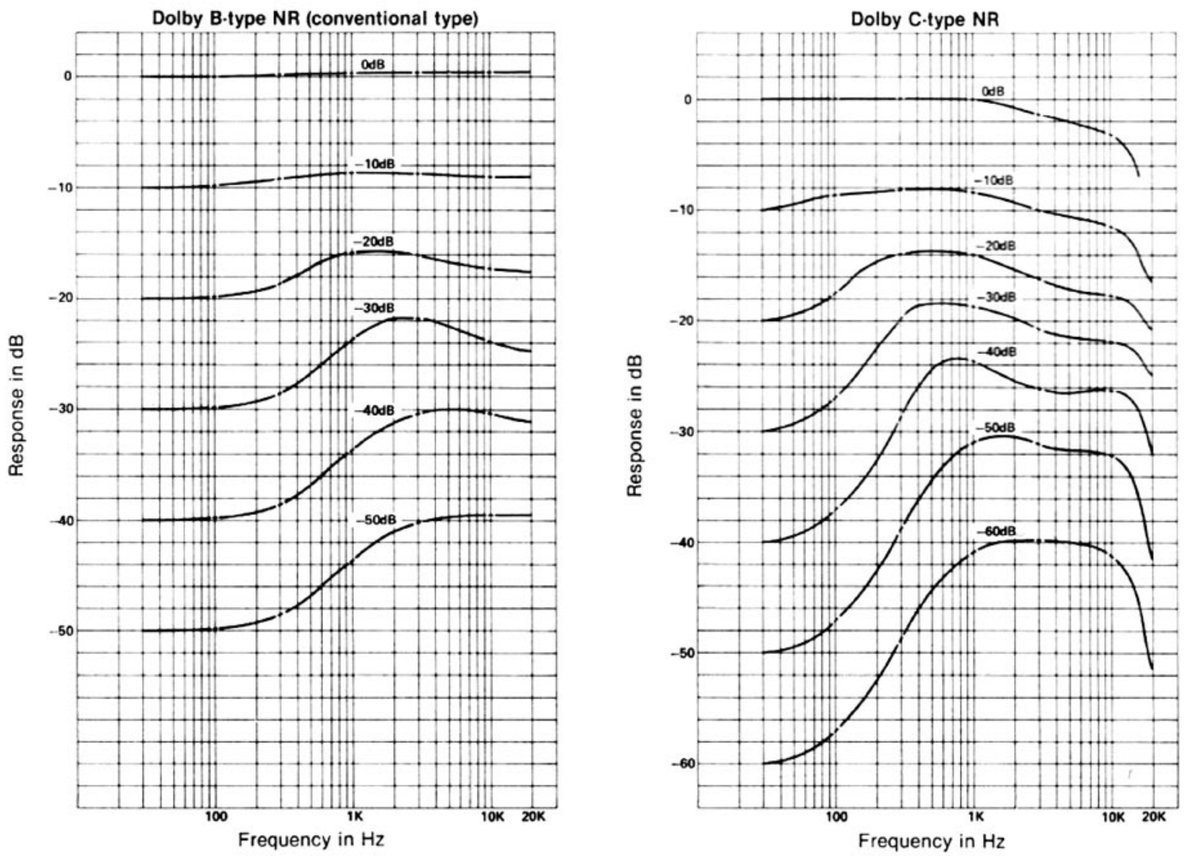
Anti-saturation network

Normally, recording tape will saturate more easily at the higher frequencies. The Dolby C-type NR system incorporates a high frequency anti-saturation network. During recording, the anti-saturation network automatically reduces high-level high-frequency signals. When these signals are played back, the level is automatically boosted to the original input level. At 10 kHz, the tendency of the tape to saturate is reduced by 4 dB by the use of this network.

Playback of Dolby NR encoded tapes

For the best sound, lowest distortion, and most effective noise reduction, it is essential that a tape recorded using either the B-type or the C-type Dolby NR system be played back using the same system that was used during the recording process. We recommend that you label the cassettes you record as being either non-Dolby NR, Dolby B NR, or Dolby C NR.

Fig. 1 Encoding characteristics



AUTOMATIC CALIBRATION

The TC-FX1010's auto tape select system detects the type of cassette tape inserted and selects the recording settings appropriate for that type of tape. This is useful since the recording characteristics of a type II tape, for example, of one manufacturer may be significantly different from those of another manufacturer. The automatic calibration system works as follows :

Bias calibration

To obtain the widest possible frequency response, the automatic calibration system first adjusts the bias current. Normally, too high a bias level gives a rolled-off high-frequency response, and too little bias reduces the signal-to-noise ratio and increases distortion. The automatic calibration system first records 8 kHz and 400 Hz test tones, then plays them back, adjusting the bias current so that the playback levels of the 8 kHz and 400 Hz test tones are the same.

Recording sensitivity calibration

If the sensitivity of the tape being used is different from the sensitivity of the tape which was used to adjust the unit at the factory, the playback level may differ from the recording level. The automatic calibration system compensates for any difference in sensitivity by adjusting the recording and playback level of a 400 Hz test tone so that the recording and playback levels are the same. This precise calibration of the recording sensitivity serves to optimize the performance of the Dolby NR system, which is most effective when the recording and playback levels are the same.

The setting of the keys during automatic calibration

When you begin automatic calibration, the setting of the following keys on the front panel will cange to :

REC LEVEL : 10 dB ATT REC BALANCE : center DOLBY NR : OFF

MPX FILTER : OFF MOL BALANCE : NORM

When calibration is finished, all keys except for the MOL BALANCE key will return to their previous setting.

Fig. 2 Noise improvement

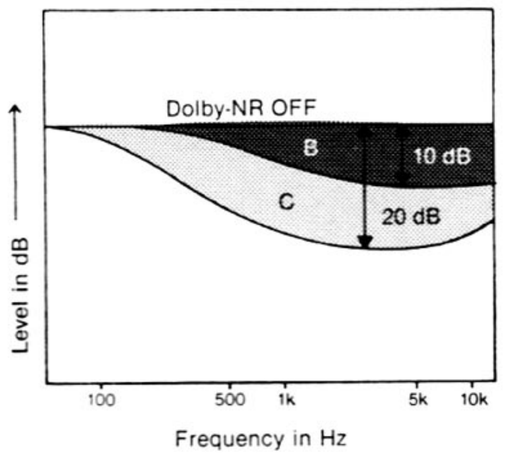
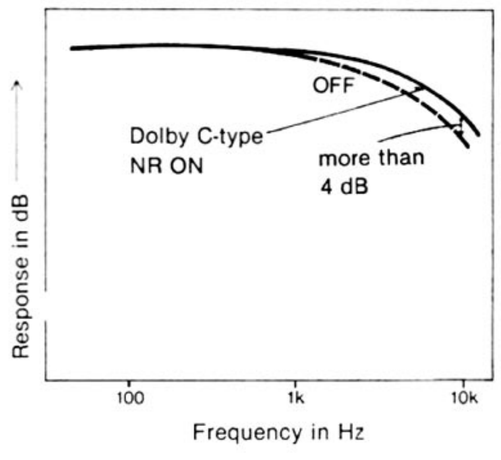


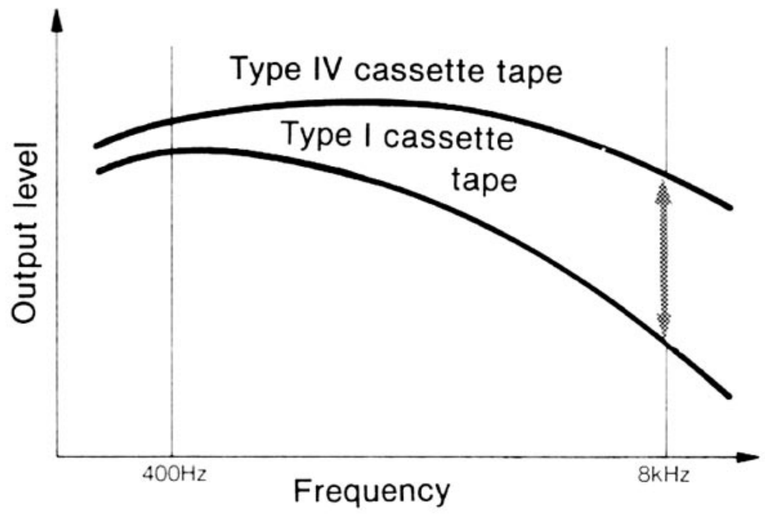
Fig. 3 Saturation level improvement



AUTOMATIC RECORDING LEVEL ATTENUATION

When the AUTO ATT key is set to ON, the TC-FX1010 attenuates the recording level if an input level higher than the MOL (Maximum Output Level) that comes in during recording. The MOL varies with type of tape and the frequency range. The MOL of a type I cassette in the high-frequency range, for example, is much lower than the MOL of a type IV cassette in the high-frequency range, as is shown in the figures below.

MOL change with frequency



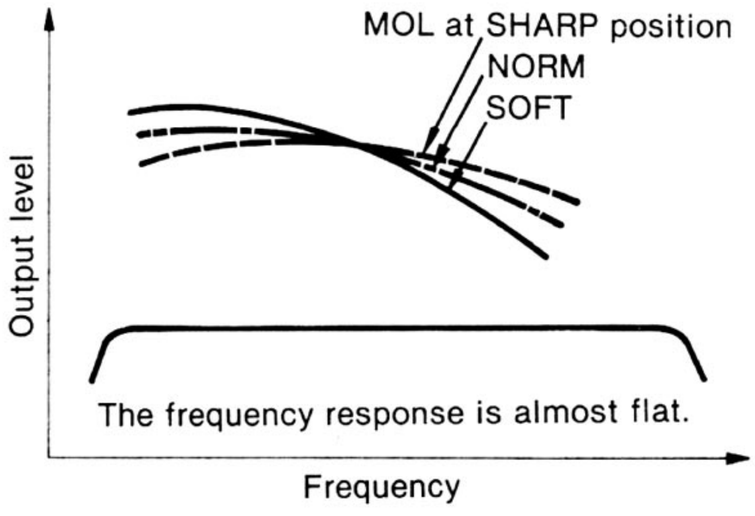
The TC-FX1010 stores in its memory the standard MOL of each of the four types of tape in the high-frequency range and low-frequency range. During recording, the input signals are divided into high- or low-frequncy range and their level is compared with the memorized MOL. If their level exceeds the MOL, the automatic attenuator lowers the recording level. After the recording level has been lowered, it does not return to the original level.

MOL BALANCE

Using the auto tape select system and the auto calibration system, the optimum recording settings for standard program sources can be obtained. The MOL BALANCE key permits you to adjust the recording settings to suit particular program sources.
The MOL BALANCE key sets the MOL by adjusting the bias current. To maintain a flat frequency response the recording equalization characteristics are adjusted simultaneously. The MOL BALANCE key has the following 3 positions.

NORM : Normal setting.
SHARP : The bias level is lowered, so the MOL in the high-frequency range is raised. This setting is appropriate for recording high-frequency range programs, such as jazz or synthesizer music.
SOFT : The bias level is raised, so the MOL in the low-frequency range is raised. This setting is appropriate for recording low-frequency range programs, such as classical music.

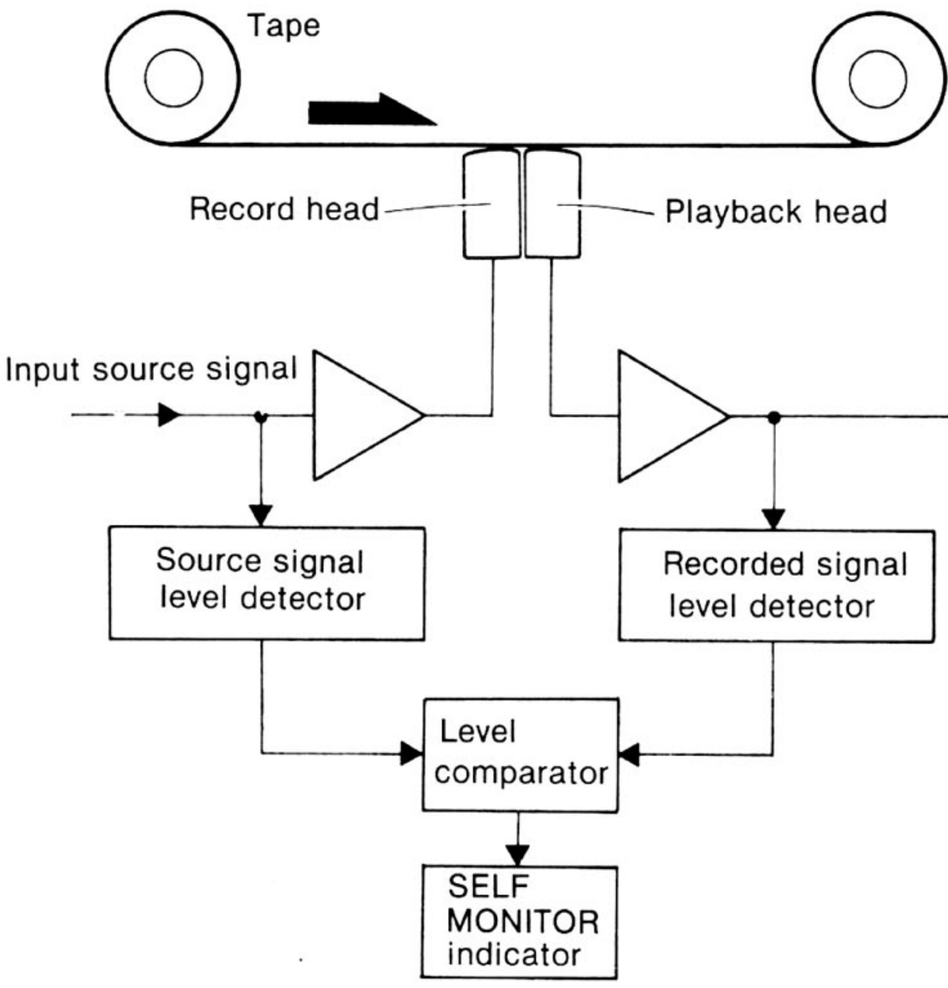
Since there is no fixed rule for setting the MOL BALANCE key, set it to the position that seems right for your listening conditions.



SELF MONITOR SYSTEM

The TC-FX1010 compares the levels of the input source signal and the recorded signal during recording. The SELF MONITOR indicator flickers to warn if the recorded signal level is lower than the source signal level, a situation which can be caused by a contaminated head or saturation of the tape.

- If the difference between source signal level and the recorded signal level is more than 3 dB . . . . . the white indicator flickers.
- If the difference is more than 6 dB . . . . . the white and red indicators flicker.



TROUBLE CHECKS

The following trouble checks will help you correct the most common problems encountered with a tape deck. Should any problem persist after you have made these checks, consult your nearest Sony service facility.

Before proceeding with these trouble checks, first check these basic points :

- The power cord must be firmly connected.
- Amplifier connections must be firmly made.
- Heads, capstans and pinch rollers should be clean.
- The amplifier controls and switches should be set correctly.

FUNCTION KEYS AND TAPE TRANSPORT PROBLEMS

The function keys do not activate right after the power is turned on.

- Logic-controlled function keys operate approximately 4 seconds after the power is turned on.
- No cassette in the holder.
- The cassette holder is not fully closed.

The ● key does not activate.

- The tab has been removed from the cassette.

The automatic shut-off mechanism activates before the end of the tape.

- The tape is slack.
- The COUNTER MEMORY key is set to on.
- This situation may also be caused by a deformed cassette shell.

Tape transport noise seems excessively loud in rewind or fast-forward mode.

- This situation depends upon the cassette used and is not a problem.

RECORDING AND PLAYBACK PROBLEMS

Recording or playback cannot be made or there is a decrease in sound level.

- Contamination or magnetic build-up on the record/playback heads.
- Improper connection.
- Improper setting of the amplifier controls.

Recording or playback using a timer cannot be made.

- Built-in battery for memory back-up is discharged. See page 12.

Excessive wow or flutter or drop out

- Contamination of the capstans or pinch rollers.

Incomplete erasure

- Contamination of the erase head.

Increase of noise or erasure of high frequencies

- Magnetic build-up on the heads.

Unbalanced tone in higher frequencies

- Improper setting of the DOLBY NR key. When playing back, set the key to the same position used in recording.
- The tape to be used and the TAPE indicator is not the same.

The indicator does not light up even the AUTO CAL key is pressed.

- No cassette in the holder.
- A function key other than the ■ (stop) key is pressed.
- The tab has been removed from the cassette.

The AUTO CAL is cancelled during operation.

- The automatic shut-off mechanism is activated.
- The function key, CHECK key or POWER key is pressed during operation.

OTHERS

The power is turned off automatically.

- The set has not been operated in the stop mode for one hour.

The REC and PLAY indicators of the TIMER keys are both illuminated.

- Built-in battery for memory back-up is discharged. See page 12.

Hum noise

- The tape deck is stacked on or under the amplifier. Separate the unit.