



# FRONT PANEL FACILITIES

## POWER SWITCH

Power is supplied to the deck which this switch is set to ON, and the level meter lights up.

## CASSETTE HOLDER

The cassette tape is loaded into this holder. When the STOP/EJECT (■) lever is depressed, the holder will jump forward. To close it, push the top part of the holder back into position until it is locked.

## RECORD INDICATOR

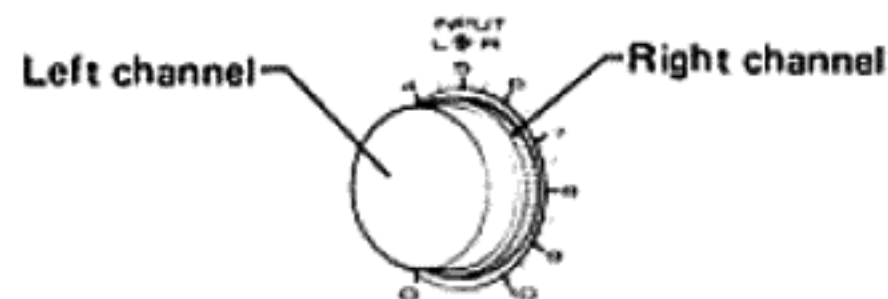
This light comes on when the play (▶) and REC levers are depressed together to indicate that the cassette deck is now set to the recording mode.

## TIMER START SWITCH

Set this switch to ON when you are making use of the unattended recording or wake-up playback function together with the timer. For details, read the section on page 8 entitled "Recording and playback using the timer." When the PAUSE lever is depressed, this switch is released to the OFF position.

## INPUT LEVEL CONTROLS

Use these controls to adjust the input signal from the MIC jacks and the rear panel INPUT jacks. Turning them to the right increases the signal level. They are coupled to the left and right channels when rotated, but you can also use them to adjust the right channel and left channel independently by rotating the appropriate control and holding the other in position.

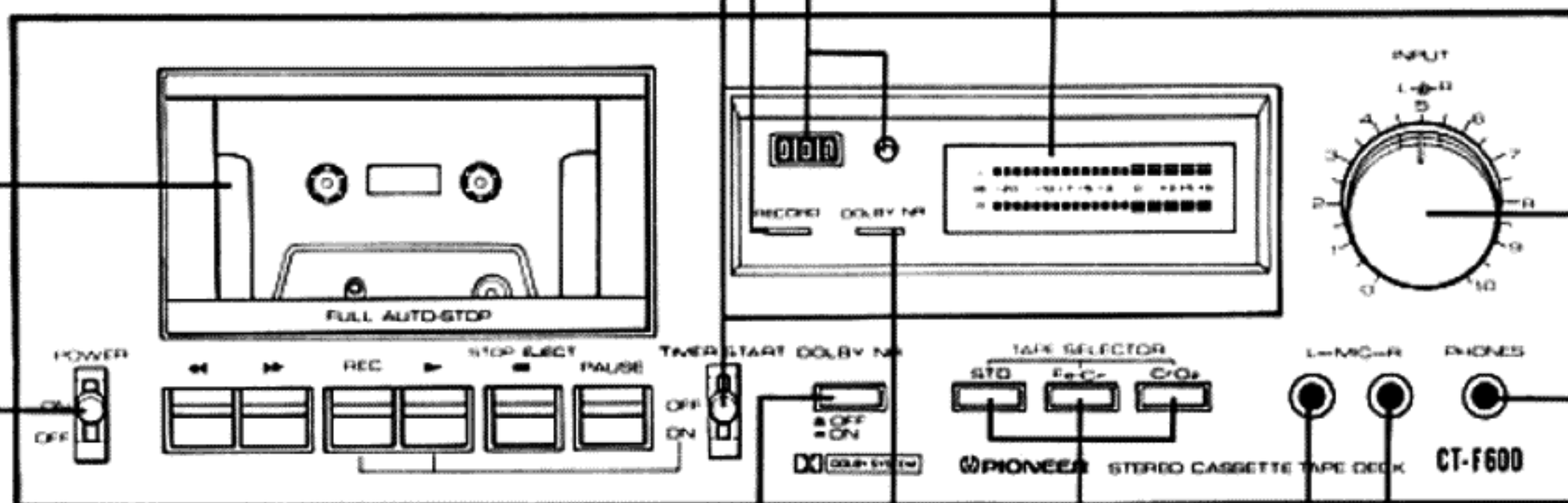


## COUNTER RESET BUTTON/TAPE COUNTER

Depress this button to reset the tape counter display to "000." Tape counter indicates the position of the tape run.

## LEVEL METERS

These indicate the input level during recording and the output level during playback.



## DOLBY NR SWITCH

Push this button to ON for recording with the built-in Dolby noise reduction system and for the playback of tapes which have been recorded using the Dolby NR system.

## DOLBY NR INDICATOR

This light comes on when the DOLBY NR switch is set to ON to indicate that the cassette deck is now set up for recording using the Dolby NR system or playback using the Dolby NR system.

## TAPE SELECTOR SWITCHES

Depress the switch which corresponds to the type of tape you are using (refer to "Using the tape selector switches" on page 7).

- STD: For ordinary tapes, and LH tapes.
- Fe-Cr: For ferrichrome tapes
- CrO<sub>2</sub>: For chrome tapes

## MIC JACKS

These are the input jacks for microphone recording. Plug the left channel microphone into L and the right channel microphone into R.

### NOTE:

Disconnect your microphones from the MIC jacks when you are not using them, otherwise you will not be able to record to LINE and DIN input terminals.

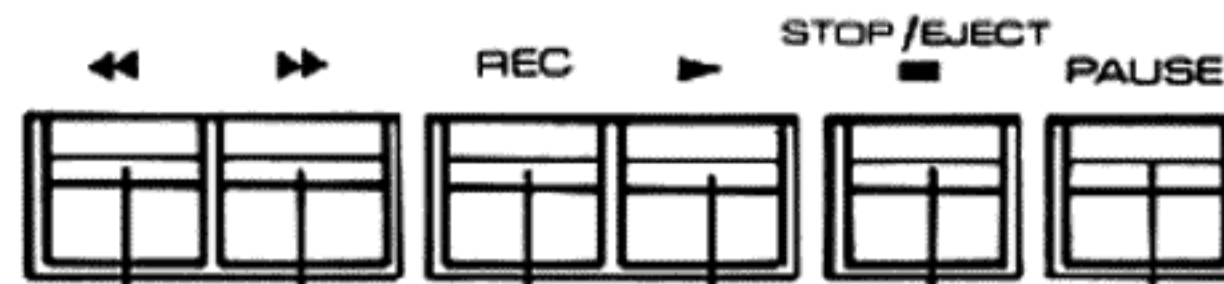
## HEADPHONE JACK

This is the output jack for stereo headphones. Plug your headphones into this jack when you want to monitor the quality of a recording or when you want to listen to a tape privately.

### NOTE:

Do not connect a microphone to this Jack as the microphone may be damaged.

**OPERATING LEVERS**



**REC LEVER**

To record, depress this lever and the play lever together. This lever will not work when a cassette is not loaded or when the erasure prevention tabs of a loaded cassette have been broken off.

**FAST FORWARD LEVER (▶▶)**

Depress this lever to send the tape forward at top speed (the tape will travel from left to right).

**REWIND LEVER (◀◀)**

Depress this lever to rewind the tape (the tape will travel from right to left at high speed).

**PAUSE LEVER**

Depress this lever to stop the tape temporarily during recording or playback. When it is released, the tape will continue to travel as before.

**STOP/EJECT LEVER (■)**

Depress this lever to stop the tape. The operating levers in use will be released and the tape will stop. Depress this lever again after the tape has stopped in order to make the cassette holder spring forward.

**PLAY LEVER (▶)**

Depress this lever when playing back a tape. Depress it together with the REC lever for recording (the tape will travel from left to right).

**NOTES:**

1. *Apart from the play and REC levers, do not depress any of the levers simultaneously.*
2. *The operating levers will not return to their original positions even when the power is switched OFF.*

**PRECAUTIONS**

**HANDLING THE POWER CORD**

- Do not handle the power cord with wet hands. This is extremely dangerous since you may get an electric shock.
- Always take hold of the plug to unplug it from the power outlet -- do not unplug it by pulling on the cord. The cord may be damaged if you keep pulling on it.

**PRECAUTIONS FOR USE**

- Under no circumstances should the bonnet be removed, and the internal parts touched or modified in any way. Pioneer will not be held responsible in the event of a deterioration in performance or a breakdown if the cassette deck is modified in any way.
- Do not bring screwdrivers and other metal objects or magnets near the heads since you may damage and magnetize them.

**KEEP THE HEAD SECTION CLEAN**

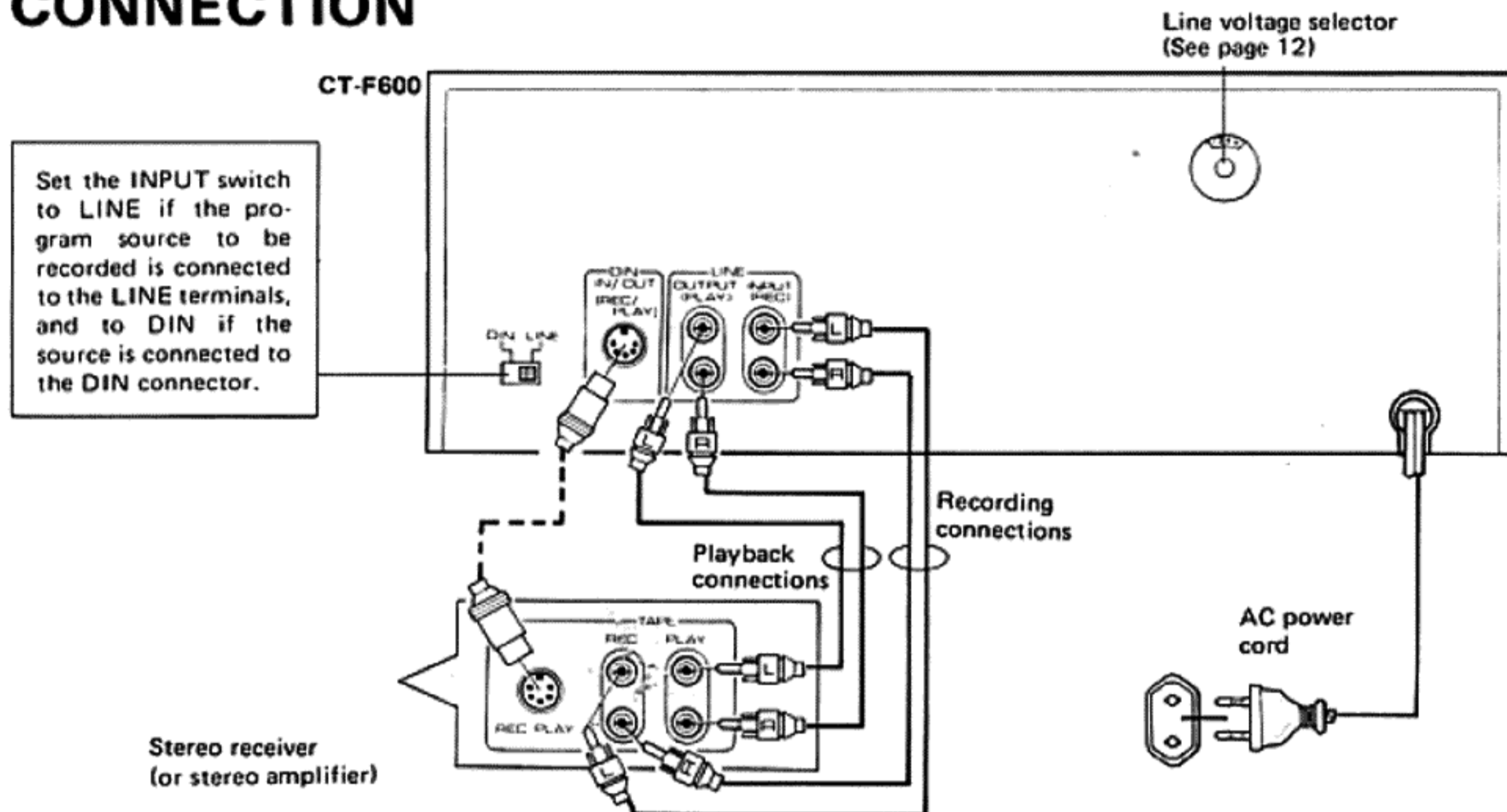
The heads, capstan and pinch roller get dirty very easily since they come in contact with the tape. For further details on cleaning the head section, refer to page 9 and the section on "Maintenance".

Moisture forms in the operating sections of this model and the model's performance will be impaired if the model is brought from cool surroundings into a warm room or if the temperature of the room rises suddenly. To prevent impairing performance, let the model stand in its new surroundings for about an hour before switching it on, or ensure that the room temperature rises gradually.

**NOTES:**

- *Do not force any of the switches, levers or knobs.*
- *Take care when operating the controls and always set them to their specified positions.*

# CONNECTION



## APPLICABLE TO HE, HB AND HP MODELS ONLY

Using the DIN (REC/PLAY) connector: if the receiver is equipped with DIN recording/playback connector, use DIN recording/playback cord, which is sold separately, to connect the DIN (REC/PLAY) connector on the tape deck and the receiver. There is no need for the accessory connecting cords since the same connections serve for both recording and playback.

### NOTE:

*If microphones are connected to front panel MIC jacks, a source connected to the LINE (INPUT) or DIN (REC/PLAY) terminals cannot be recorded.*

Connect the tape deck's terminals (OUTPUT—INPUT) to the tape terminals on the receiver (or stereo amplifier) with the accessory cords. The top terminal is for the left channel and the bottom for the right channel.

**Connections for playback:** connect the TAPE PLAY input terminals on the receiver to the tape deck's OUTPUT (PLAY) terminals.

**Connections for recording:** connect the receiver's TAPE REC output terminals to the tape deck's INPUT (REC) terminals.

# INSTALLATION PRECAUTIONS

To ensure the best sound quality and trouble-free operation, avoid setting up the tape deck in any of the locations described below.

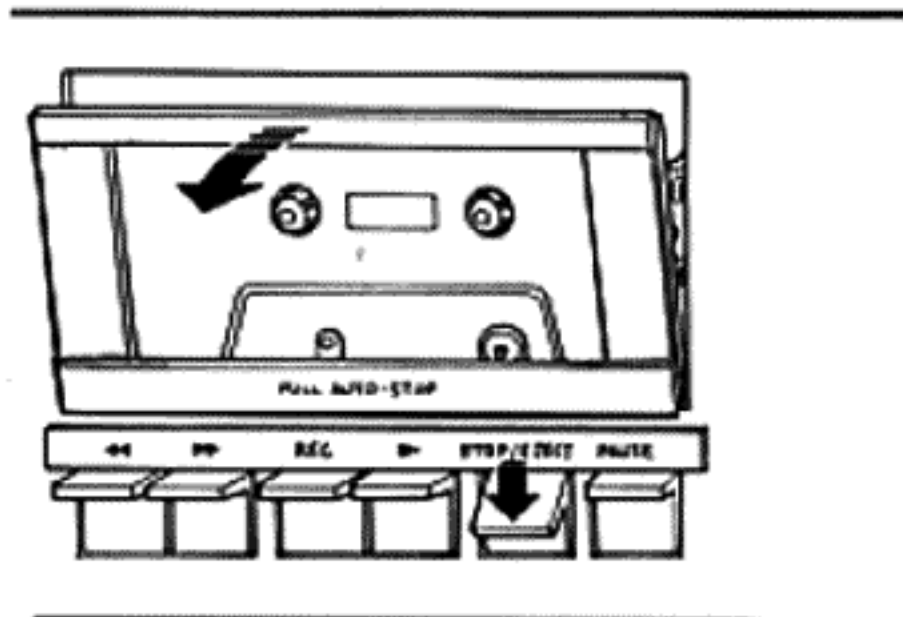
Location liable to downgrade performance and result in breakdowns	Resulting trouble
<ol style="list-style-type: none"> <li>Locations exposed to direct sunlight, or near heaters or other heat sources.</li> <li>Locations with poor ventilation, with high humidity or moisture contents, or dusty locations.</li> <li>Locations susceptible to vibration.</li> <li>Locations where there are thinners, benzene and other types of volatile liquids, insect sprays or any kind of inflammable objects at hand.</li> </ol>	<ol style="list-style-type: none"> <li>External heat causes the performance of the circuit parts to deteriorate, and operation becomes unstable.</li> <li>Cause of faulty contact in input/output terminals, and rust. High humidity and a high moisture content cause deterioration in insulation. There is also the danger of current leakage and heat generation in the circuit parts. Dust or grease in the rotating parts causes the parts to deteriorate.</li> <li>These locations affect the precision parts adversely.</li> <li>These help to corrode the front panel. In particular, the heads are precision-finished to micron dimensions. Chemicals may reduce their performance, so exercise all due care.</li> </ol>

# BASIC OPERATION

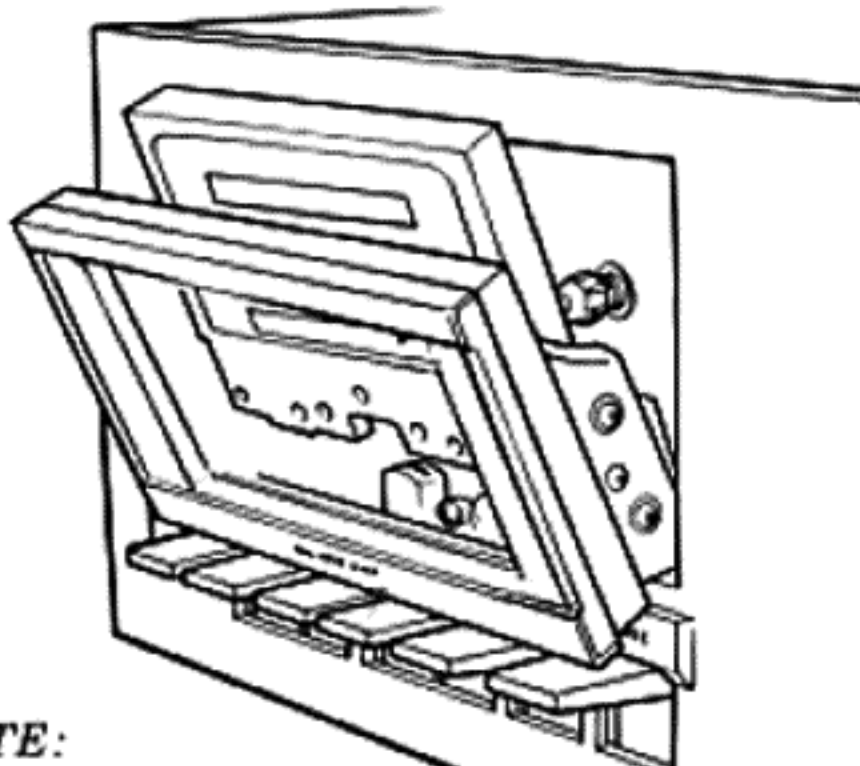
## LOADING AND UNLOADING THE TAPE

### Tape loading

1. Depress the STOP/EJECT lever until the cassette holder springs forward.



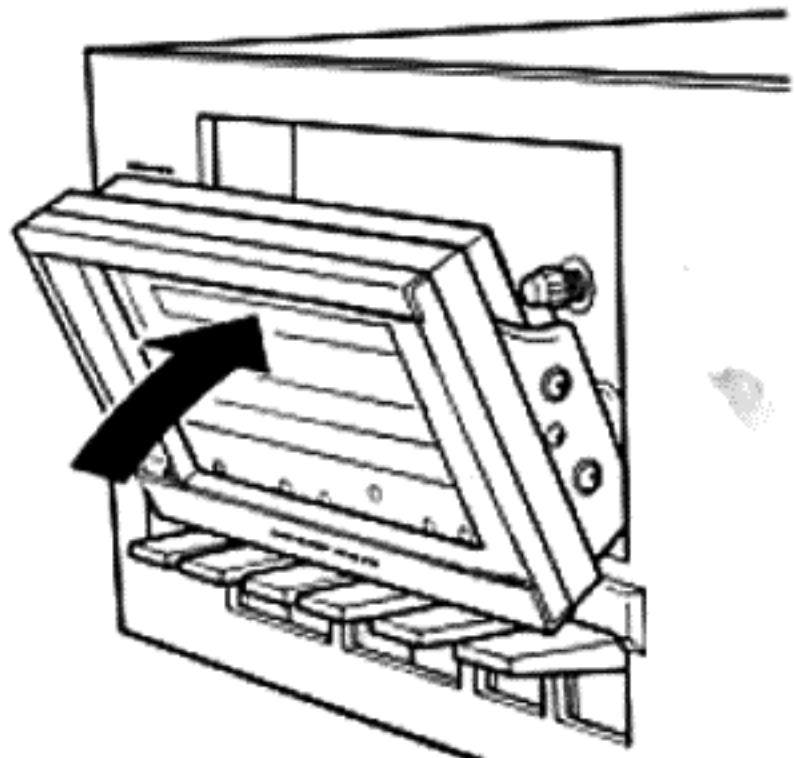
2. Load the cassette with the exposed tape at the bottom so that the tape side (side A or B) faces you.



**NOTE:**

The cassette tape can not be loaded when it is inserted adversely. Do not insert the tape forcibly since it causes the breakdowns.

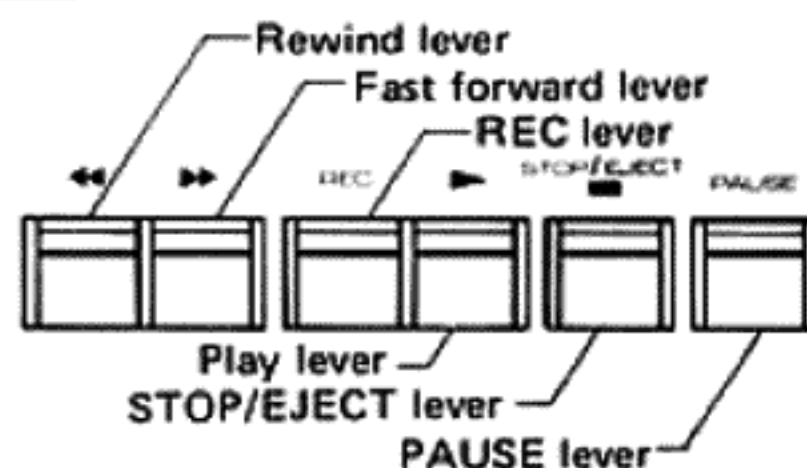
3. Push the cassette holder back into position until you hear a click that denotes the holder is locked.



### Tape unloading

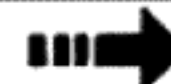
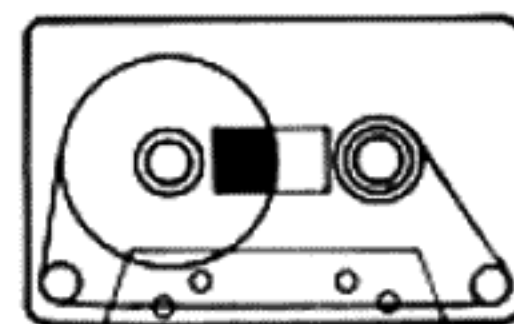
Follow the same procedure for loading the tape, and remove the tape from the cassette holder when it is open.

## TAPE RUN



### Play and record

1. Check that the tape is on the left-hand reel.
2. The tape runs from left to right when the play lever (and the REC lever if recording) is depressed.



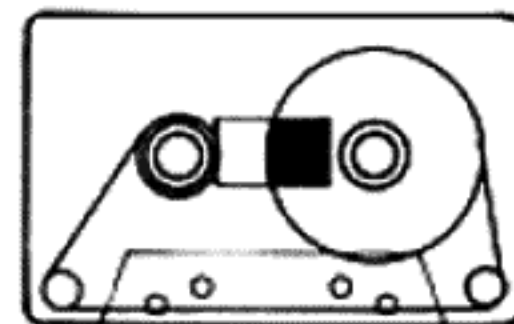
Play, Record, Fast forward

### Fast forward

1. Check that the tape is on the left-hand reel.
2. The tape runs from left to right at a high speed when the fast forward lever is depressed.

### Rewind

1. Check that the tape is on the right-hand reel.
2. The tape runs from right to left at a high speed when the rewind lever is depressed.



Rewind

### Stop

Press the stop lever to stop tape motion. This action also releases the other operating levers (except the PAUSE lever).

### PAUSE lever operation

1. The tape motion can be stopped during recording or playback by depressing the PAUSE lever. The play lever (and the REC lever if recording) is not released from its depressed position.
2. If the PAUSE lever is released, the tape will begin to run again.

**NOTES:**

1. Do not depress more than one lever at a time except when recording and for PAUSE operation.
2. The operating levers will not be released if the power is turned OFF.

### AUTO-STOP MECHANISM

The tape is automatically stopped and the operating levers released when the tape becomes completely wound onto one reel during each operating mode (record, playback, fast forward, rewind), even if the stop lever is not depressed.

**NOTES:**

1. The auto-stop mechanism swings into action several seconds after the tape has been wound up.
2. In the fast forward and the rewind modes, this mechanism will not operate if the PAUSE lever is depressed.
3. In rare cases, the auto-stop mechanism may be actuated when the rewind (◀), fast forward (▶) or play (▶) levers are depressed. This does not, however, indicate a failure. Simply press the lever again.

# OPERATING PROCEDURE

Proceed by referring to the explanation and to the numbers indicated in the figure.

## PLAYBACK

### ① Set the POWER switch to ON

Set the control on the stereo receiver (amplifier) for the desired volume and set the TAPE MONITOR switch to ON.

### ② Load the cassette tape

Check that the tape is wound onto the left reel and load securely, following the instructions on Page 5.

### ③ Set the tape counter to '000'

Depress the RESET button and the counter will be reset to '000'.

### ④ Select the TAPE SELECTOR switch

If you are using a ferrichrome tape, depress the Fe-Cr switch; for a chrome tape, depress CrO<sub>2</sub> and for a standard tape, depress STD. For details, refer to "Using the tape selector switches" on page 7.

### ⑤ Set the DOLBY NR switch

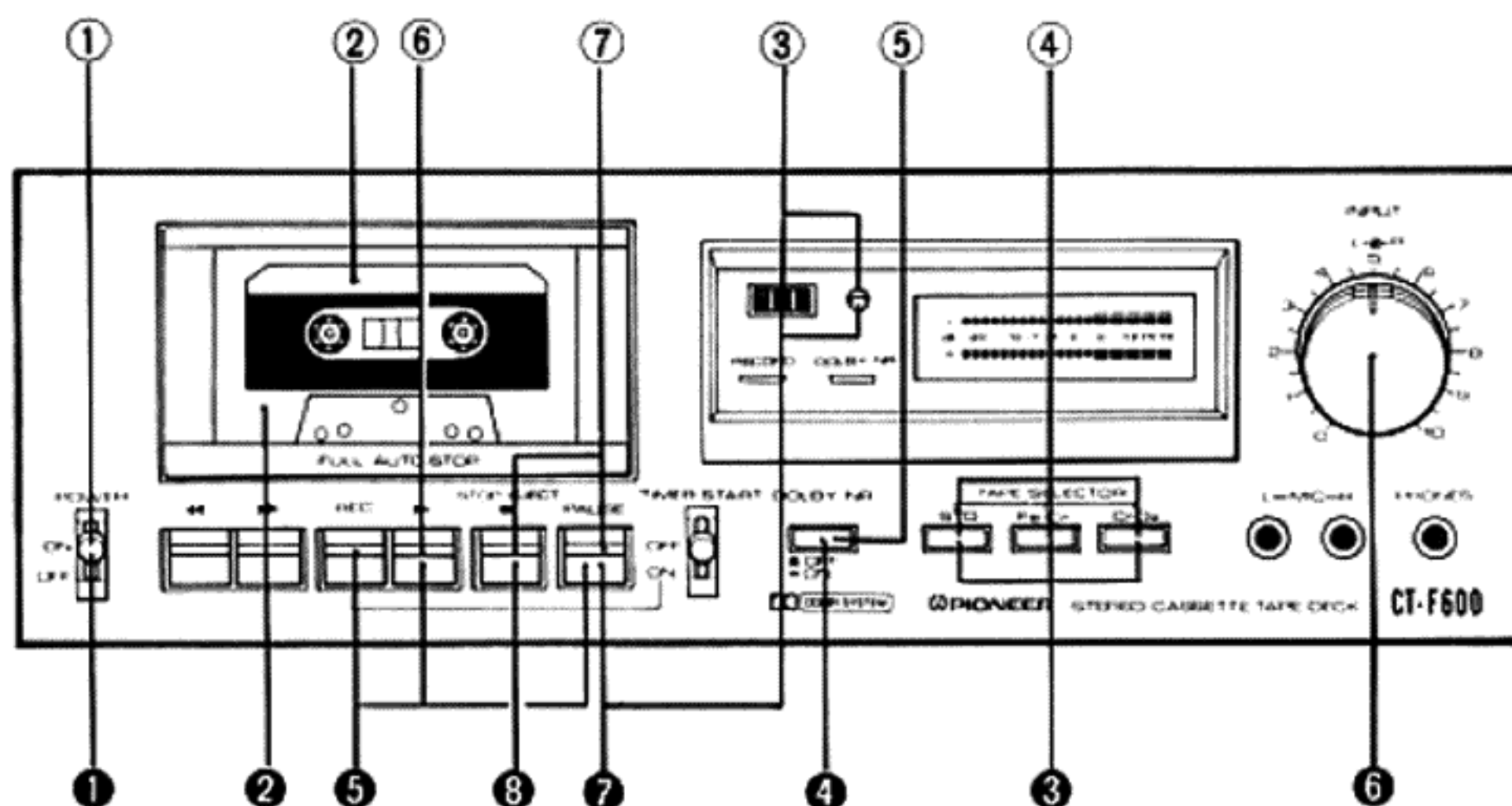
Set this switch to ON when playing back a tape, which was recorded by the Dolby NR system. For further details on the Dolby NR system, refer to page 11.

### ⑥ Start playback

Depress the play lever and the tape will start to run.

### ⑦ Complete playback

When the tape is fully wound onto the right reel during playback, the play lever will be released automatically. Depress the stop lever if you want to stop the tape run during playback. Depress the PAUSE lever for a temporary stop.



## RECORDING

### ① Set the POWER switch to ON

Set this switch to ON after preparing the program source (FM broadcast, microphone performance) which you intend to record.

### ② Load the cassette tape

Check that the tape is wound onto the left reel, and load securely. Also check that the erasure prevention tabs on the cassette tape have not been broken off (see page 10).

### ③ Select the TAPE SELECTOR switch

If you are using a ferrichrome tape, depress the Fe-Cr switch; for a chrome tape, depress CrO<sub>2</sub> and for a standard tape, depress STD. For details, refer to "Using the tape selector switches" on page 7.

### ④ Set the DOLBY NR switch

Set this switch to ON for recording using the Dolby NR system. For further details on the Dolby NR system, refer to page 11.

### ⑤ Stand-by for recording

Depress the play and REC levers together and wait about five seconds for the leader tape to clear the heads. Then depress the PAUSE lever and set to the recording stand-by mode. The recording indicator (RECORD) will come on.

Depress the reset button and the counter will be reset to "000."

### ⑥ Set the recording level controls

Refer to following the section on "SETTING THE RECORDING LEVEL", and then adjust the controls.

### ⑦ Start recording

Release the PAUSE lever and the tape will then begin to run. Observe the recording level from time to time during recording on the level meter, and also check the tape run.

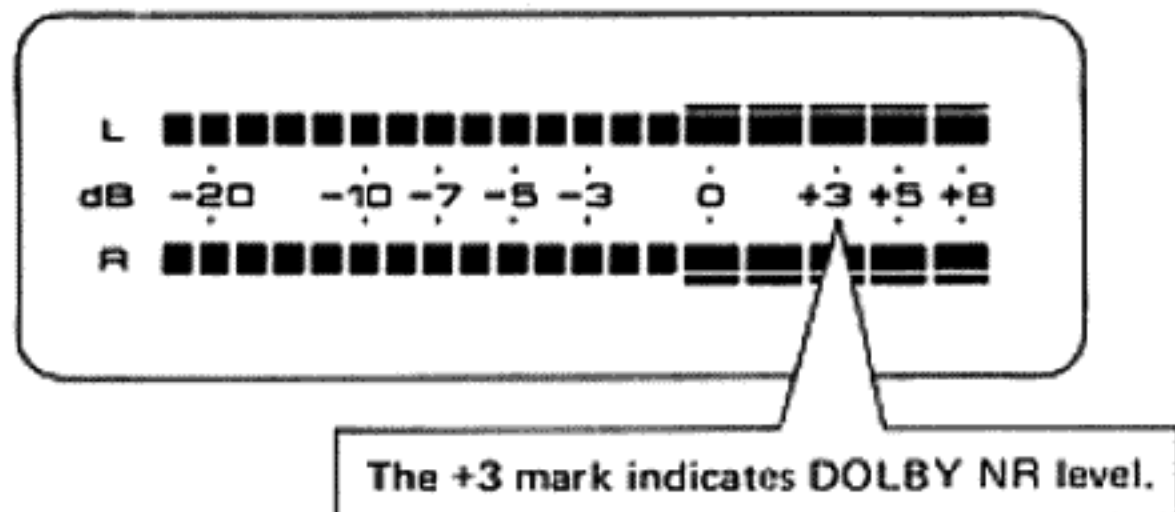
### ⑧ Complete recording

When you have finished recording, depress the STOP lever and stop the tape. Depress the PAUSE lever for a temporary stop. When the tape is fully wound onto the right reel during recording, the play and REC levers will be automatically released.

### SETTING THE RECORDING LEVEL

Setting the recording level incorrectly and then recording a program source can lead to a deterioration in the signal-to-noise ratio and to distortion. If you are recording a program source with relatively high signal levels, adjust the recording level controls so that the meter display flashes across a -5dB to 0dB range.

- If you record sound where the meter display registers a maximum input level of over +8dB, the playback sound will be distorted, and conversely, if the level is too low (-20dB to -10dB), the signal-to-noise ratio will be impaired and there will be a high noise level in the playback sound.
- Depending on the program source, the signal level undergoes wide-ranging fluctuations, and so it is a good idea to keep an eye on the meter indication while you are recording.



### ERASING THE TAPE

- Recording onto previously recorded tape automatically erases the earlier sound and replaces it with the new program source.
- To completely erase a program, turn the INPUT controls fully counter-clockwise and run the tape in recording mode.

### USING THE TAPE SELECTOR SWITCHES

This switch selects response characteristics according to the type of tape in order to fully exploit tape performance and obtain low distortion recording and playback.

Table 1 shows the standard settings for popular brands of tape.

Table 1. Leading brands of tape, and standard TAPE SELECTOR switch positions

Brand of tape		TAPE switch position	
BASF	LH C-60, LH C-90 LN C-60, LN C-90 LH SUPER C-60 LH SUPER C-90	STD	
AGFA	SUPER COLOR C-60, C-90 SUPER DYNAMIC C-60+6 SUPER DYNAMIC C-90+6		
SCOTCH	LH C-60, C-90 CRYSTAL C-60, C-90 MASTER 120 $\mu$ s C-60, C-90		
TDK	D C-60, C-90 SD C-60, C-90 ED C-60, C-90 AD C-60, C-90		
MAXELL	LN C-60, LN C-90 UD C-60, C-90 UD XL I C-60, C-90		
FUJI	FL C-60, C-90 FX C-60, FX C-90 FX Jr C-60, C-90 FX DUO C-60, C-90 FX-I C-60, C-90 FX-II C-60, C-90		
SONY	LN C-60, LN C-90 HF C-60, HF C-90		
SONY	DUAD C-60, DUAD C-90		Fe-Cr
BASF	FERROCHROM C-60 FERROCHROM C-90		
SCOTCH	CLASSIC C-60 CLASSIC C-90		
AGFA	CARAT C-60, C-90	CrO <sub>2</sub>	
BASF	CHROME C-60 CHROME C-90		
SCOTCH	MASTER 70 $\mu$ s EQ C-60		
TDK	SA C-60, C-90 KR C-60, C-90		
MAXELL	C-60 CR, C-90 CR UD XLII C-60 UD XLII C-90		
FUJI	FC C-60 FC C-90		
SONY	CR C-60 CR C-90		
AGFA	STEREO CHROM C-60 STEREO CHROM C-90		

# MICROPHONE RECORDING

## STEREO RECORDING

As shown in Fig. 1, use a stereo microphone or two identical microphones, and connect the one for the left channel to the L MIC jack and the one for the right channel to the R MIC jack. For the actual recording, refer to page 6 and the section on "RECORDING".

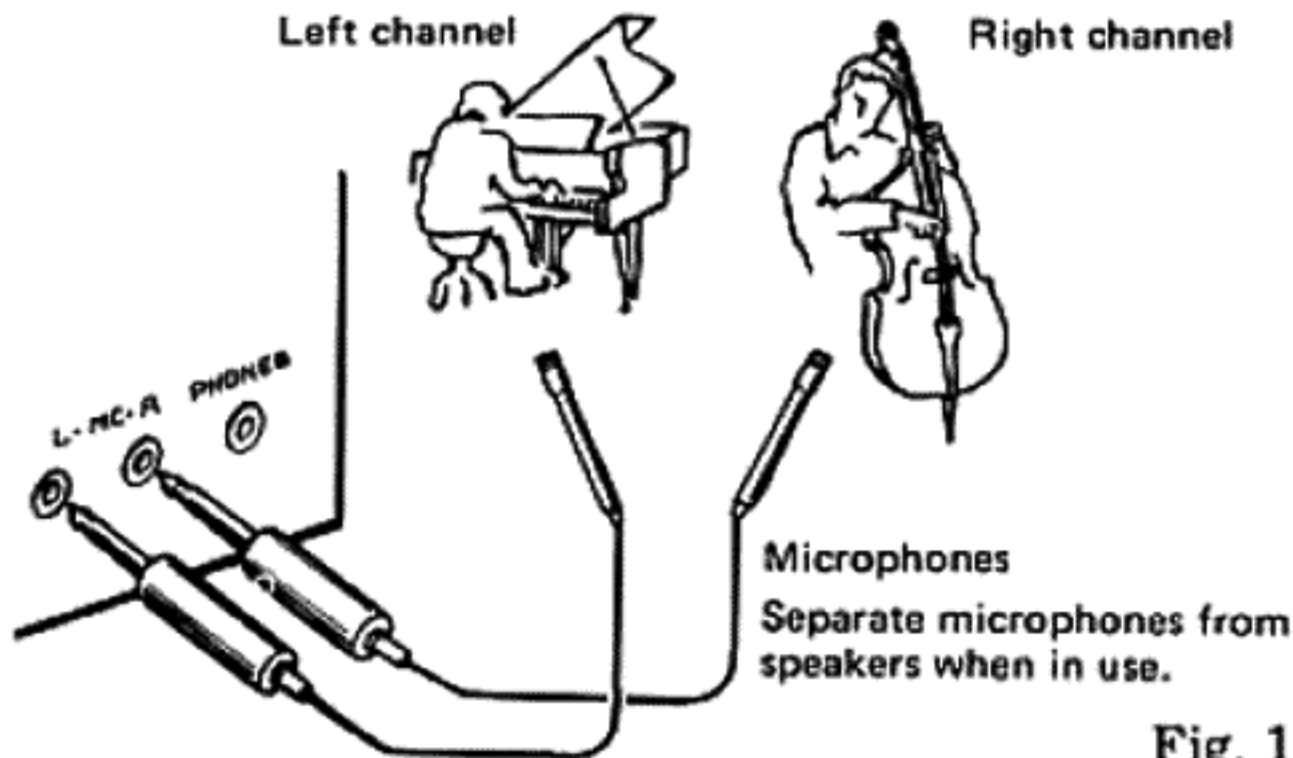


Fig. 1

### Points to bear in mind

- Use dynamic or electret microphones.
- Make sure that the connecting cord for a high-impedance microphone (over 20 kilohms) is less than 5 meters long.
- When you want to check the quality of the recording or what is being recorded, it is a good idea to use the headphones.
- Monitoring the recording with the speakers very often gives rise to howl so use the microphones as far away from the speakers as possible.
- Do not connect a microphone to the PHONES jack, as the microphone may be damaged.
- When using a microphone closer to a sound source which is unusually bigger and recording it, setting the INPUT SELECTOR switch on rear panel to DIN attenuates microphone input by 12dB. (applicable to HE, HB and HP models only)



Setting switch to DIN attenuates microphone input by 12 dB.

# RECORDING AND PLAYBACK USING THE TIMER

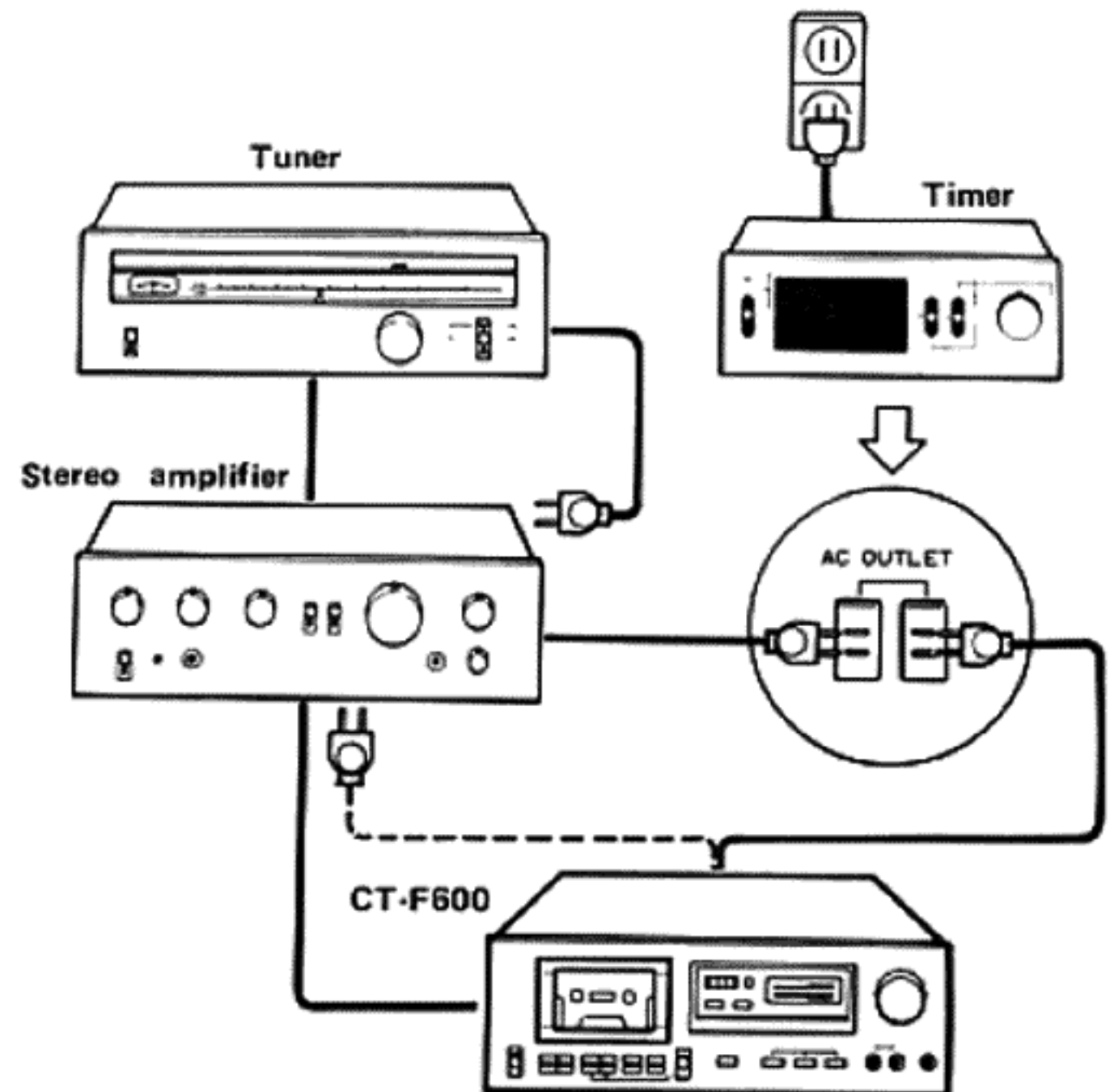


Fig. 2

## UNATTENDED RECORDING

You can record FM broadcasts, for instance, automatically at the appointed time if you employ an optional timer (such as the Pioneer Digital Timer DT-400). This is a very convenient function for recording programs while you are not at home or while you are asleep.

1. Connect the power cord of the CT-F600 to the timer (Fig. 2). Use a power cord to connect the power of the stereo system (tuner, amplifier, etc.) which you have connected to the deck so that it is switched on and off by the timer.
2. Set the power switches on the CT-F600 and stereo system to ON, and then tune in the broadcasting station whose program you want to record.
3. Follow the "Recording procedure" steps (1) through (6) on page 6 and set the recording level.
4. Set the timer so that the power is switched on at the appointed time. The power to all the components except the timer is now off.
5. Release the PAUSE lever and then depress the CT-F600's TIMER START switch.
6. At the timer's preset time the power is automatically switched on, and about two seconds later the CT-F600's TIMER START switch is released. Recording now begins.

- Once the tape has been fully rewound, the auto-stop mechanism is activated and the CT-F600 is shut down. The timer will now operate to switch off the power to the deck and the stereo system.

**NOTES:**

- Turn the amplifier's volume control right down so that the sound is not heard through the speakers while you are out.
- For more details on the connections, refer to the timer's instruction booklet.
- Set the time on the timer so that the power to the CT-F600 and stereo components is switched off after the tape is fully wound onto the right reel.

**WAKE-UP PLAYBACK**

You can have the CT-F600 play back a pre-recorded tape automatically at a desired time. You can set the timer so that the tape's music wakes you up instead of an alarm clock.

1. Connect the CT-F600 as in Fig. 11, depress the PAUSE lever and then set the deck to the playback mode by following the instructions (1) through (5) of "Playback procedure" on page 6.
2. Set the timer so that the power is switched on at the appointed time.
3. Release the PAUSE lever and depress the CT-F600's TIMER START switch.
4. At the present time on the timer, the CT-F600's TIMER START switch is returned to its original position and playback begins.

**MAINTENANCE**

Follow the maintenance instructions below to keep your tape deck working in tip-top condition.

**CLEANING THE HEAD SECTION**

The heads, capstan and pinch roller are liable to get dirty quite easily. In particular, if the heads are dirty, the high-frequency components are not reproduced and the stereo balance will be impaired resulting in a deterioration in the playback sound. Get into the habit of regularly dipping one of the accessory cleaning swabs into the cleaning liquid or absolute alcohol, which is sold separately and cleaning the head section.

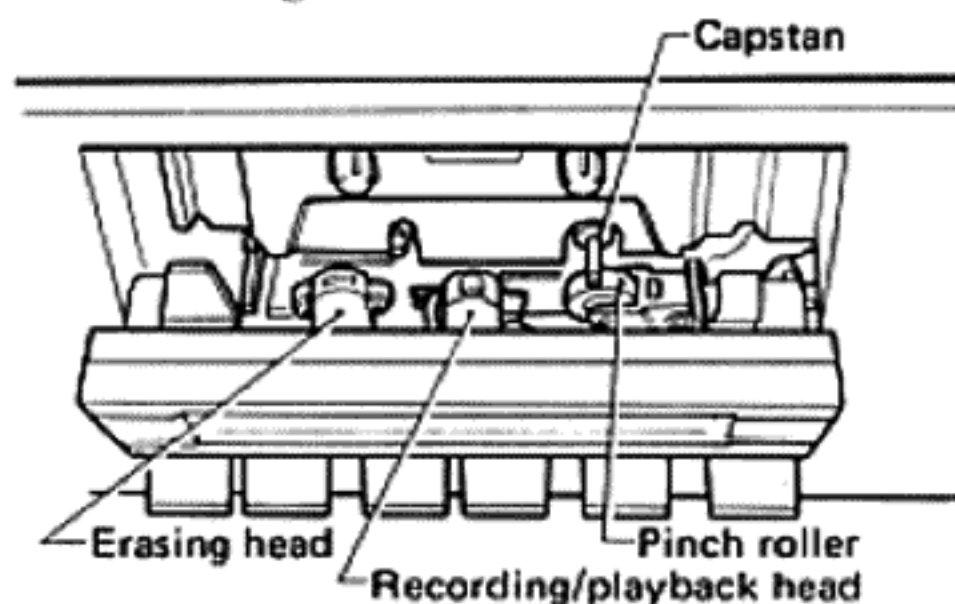


Fig. 3

**Head cleaning steps**

1. Depress the STOP/EJECT lever and after the cassette holder has sprung open, pull the bottom part of the holder toward you and detach the window.
2. Close the holder frame and proceed to clean the heads. Now turn the power on and depress the play lever. Clean the pinch roller and the capstan while these two parts are rotating.
3. Follow the procedure outlined in step (1) above in reverse and attach the holder frame.

**NOTE:**

After cleaning the head section, wait at least two to three minutes for the cleaning fluid to dry before loading the tape.

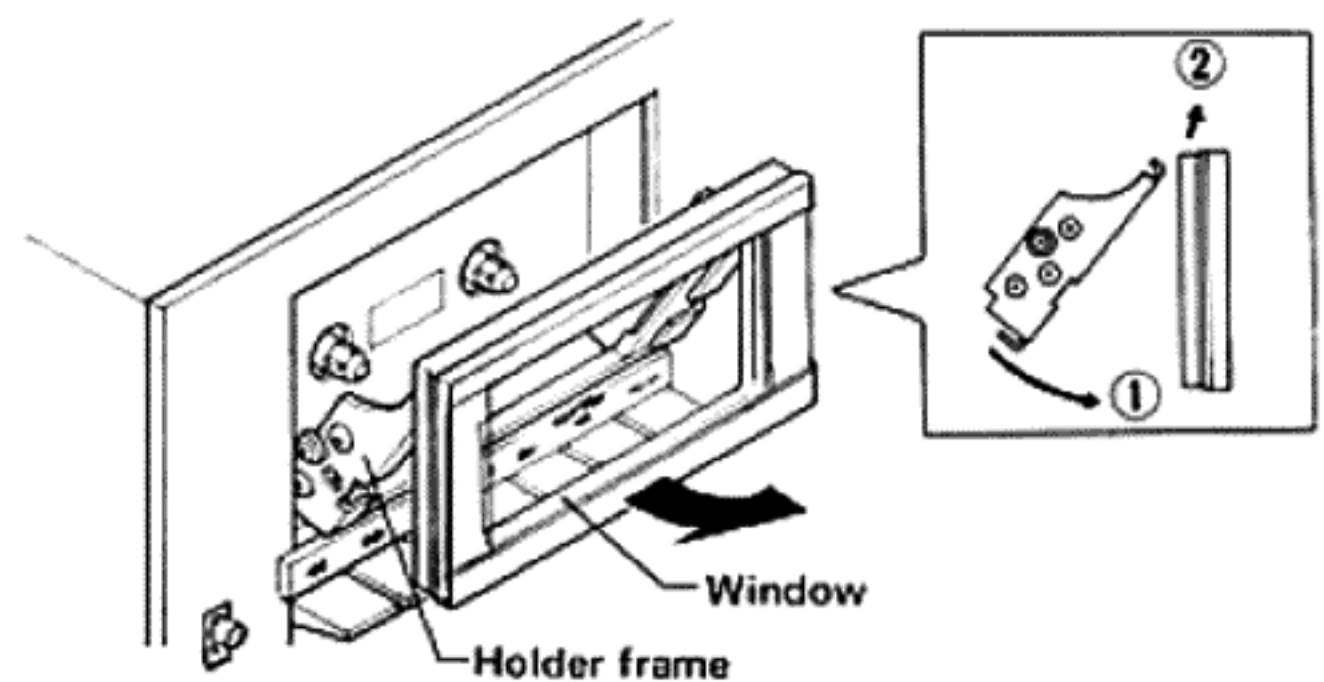


Fig. 4

**DEMAGNETIZING THE HEAD**

The recording head becomes magnetized when you use the tape deck for prolonged periods of time. This results in noise being generated and the treble dropping off during recording and playback. The recording head should therefore be regularly demagnetized with the head eraser, which is sold separately. For further details, refer to the head eraser's instruction booklet.

**NOTE:**

Do not hold screwdrivers, metal objects or magnets close to the heads.

**CLEANING THE FRONT PANEL SECTION**

Wipe the front panel and the cassette door when dusty or greasy with a soft cloth containing a small amount of ordinary washing-up liquid. Then, wipe dry with a cloth. Never use volatile spirits like thinners, benzine or alcohol because they will damage the panel's finish.

# CASSETTE TAPES

Cassette tapes are manufactured according to international standards governing their construction, and they are generally classified according to their tape performance and recording time.

**Table 2 Performance classifications**

Standard type	Low-noise type	High-performance type
<ul style="list-style-type: none"> <li>• Standard tape</li> <li>• Dynamic tape</li> </ul>	<ul style="list-style-type: none"> <li>• Low-noise tape</li> <li>• Low-noise, high-output tape</li> </ul>	<ul style="list-style-type: none"> <li>• Chrome tape</li> <li>• Ferrichrome tape</li> </ul>

**NOTE:**

You can set the **TAPE** switch to the suitable positions for all these tapes. For further details, refer to page 7 and the section on "USING THE TAPE SELECTOR SWITCHES."

**Table 3 Recording time classifications**

Cassette tape designation	Recording time (minutes)	
	One side	Both sides
C-30	15	30
C-46	23	46
C-60	30	60
C-90	45	90
C-120	60	120

The size of the cassette tapes is the same but their playing (and recording) times differ according to the tape thickness (length).

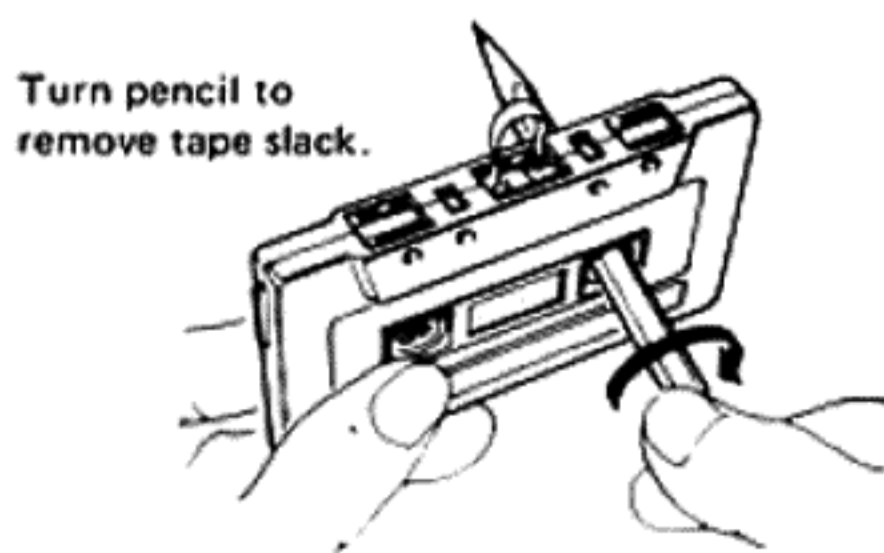
The C-60 and C-90 tapes are most commonly used. The C-120 tapes are not recommended because their mechanical and electrical specifications vary.

## CHECK CASSETTE BEFORE USE

### Slack or protruding tapes

If the tape protrudes from the cassette as shown in the figure or is slack, the tape may run without passing through between the capstan and the pinch roller and so may be damaged. Take up the slack by inserting a pencil through the reel hub and turning it as indicated in the figure.

Some tapes provide a tape stopper to prevent tape slack. Make sure that you remove the tape stopper before inserting the tape into the deck.



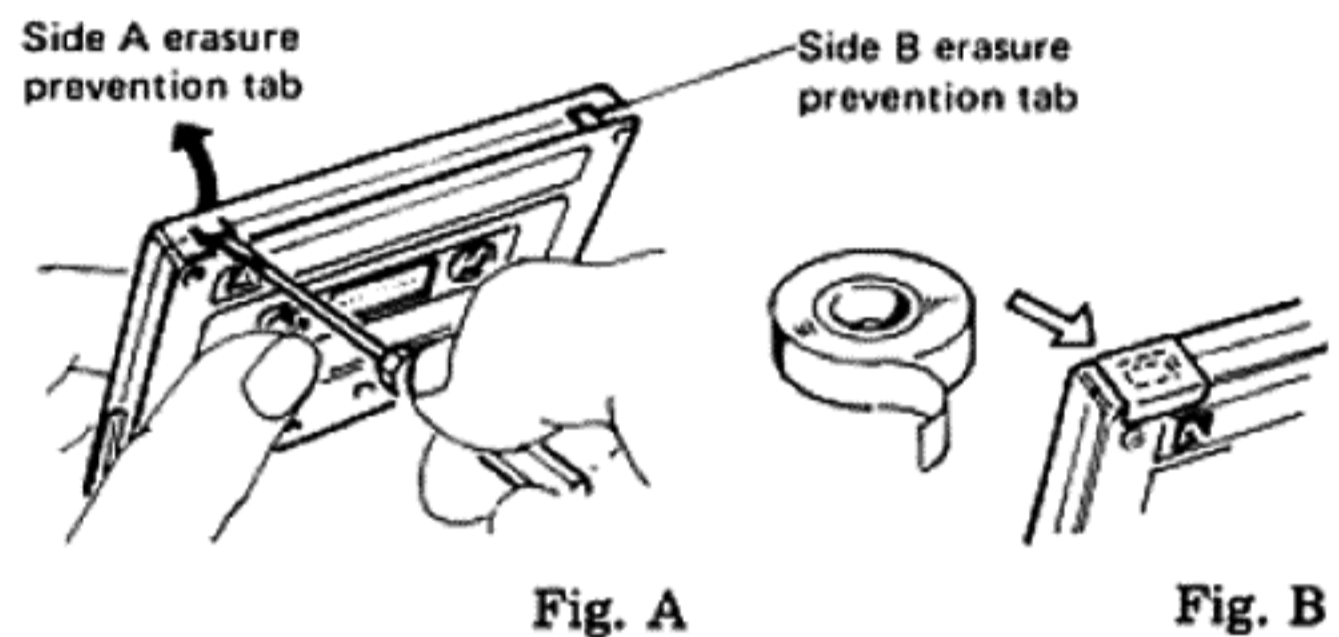
## Erasure prevention tabs

Cassette tapes are provided with erasure prevention tabs, as shown in Fig. A, which act as a protection device to prevent the accidental erasure of a recording which you want to keep. If you remove the tabs, as shown in Fig. A, with a screwdriver you will be able to prevent erasure if you accidentally set the tape deck to the recording mode by depressing the REC lever.

To re-record, cover the tab opening with a double layer of adhesive tape (Fig. B).

**NOTE:**

Cassette tapes are provided with two tabs (A or 1 and B or 2) so you can protect the recordings on both sides.



## HINTS ON HANDLING CASSETTE TAPES

- **Check the tape before recording**  
Before starting to use the tape for recording, load it. Then set the tape deck to fast forward and rewind. This will safeguard the deck from damage caused by irregularities in the tape winding.
- **Take care with the leader tape**  
A leader tape is attached to the beginning of the cassette tape (you cannot record on it). It takes about 5 seconds for it to pass through, so bear this point in mind when recording.
- **Do not load a cassette immediately after cleaning the heads**  
Do not load a cassette immediately after you have cleaned the heads until the head surfaces are completely dry (this takes 2-3 minutes).
- **Storing cassette tapes**  
Do not store your cassette tapes without putting them in their cases since dust and dirt will adhere to them. Always store in a location which is free from dust, dirt, oil, and magnetic effects.

# THE DOLBY NR SYSTEM

A cassette tape travels at one quarter of the speed of an open-reel (19cm/sec, 4-track) tape, and its track width is only 60 percent in comparison. The cassette tape is thus clearly at a disadvantage with respect to the signal-to-noise ratio.

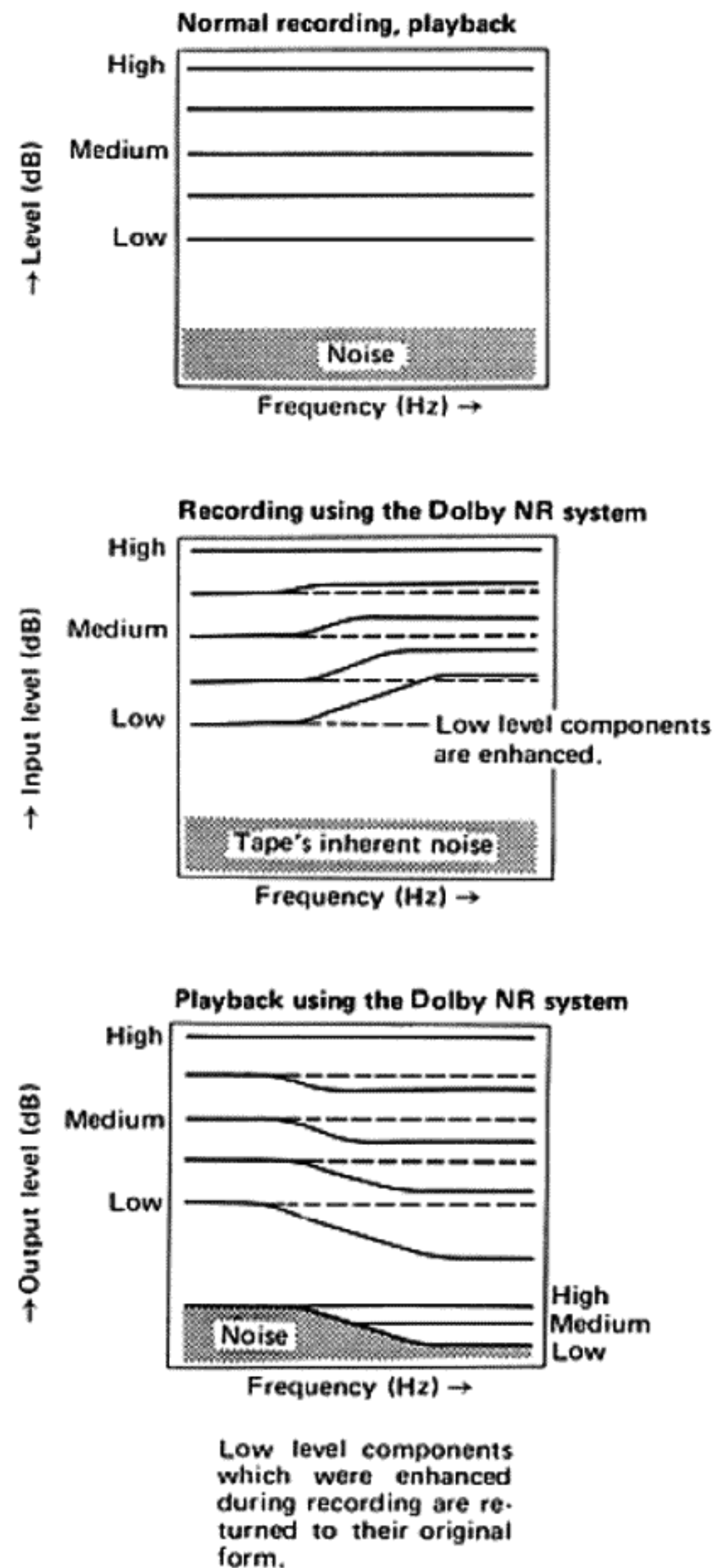
The Dolby NR system is designed to reduce the noise called hiss which is inherent to tapes, and it is effective in upgrading the signal-to-noise ratio. It is so effective, in fact, that it is now indispensable to cassette decks.

The basic principle of the Dolby NR system is as follows: when signals with a relatively low level are recorded, the Dolby NR circuitry enhances the signals in the high-frequency range which has most of the hiss components, and these signals are then recorded. When they are played back, the circuitry attenuates only those components which were enhanced during recording. This returns the signal components to the normal level, and the hiss is reduced (by a maximum of 10dB) during playback only for that level which was attenuated. When the signal is relatively high level, the S/N ratio is sufficient and so the operation of the Dolby NR system is not necessary. The Dolby NR system operates automatically in accordance with the signal level, as shown in the figure. Furthermore, if the Dolby NR system is used for recording, the recording level can be set relatively low which enables almost distortion-free good quality tape recordings.

## Operating precautions

- The adjustment of the recording level is basically the same as when the Dolby NR system is not used.
- In order to make the most of the effect of the Dolby NR system, choose a program source with as little noise as possible.
- If you have used the Dolby NR system to record a program, make sure that you use it when playing the same program back.
- Playing back a normally recorded tape with the Dolby NR system and playing back normally a tape which was recorded by the Dolby NR system will result in an unnatural reproduction of the sound on the tape.

## (Dolby NR system)



# IMPORTANT—LINE VOLTAGE

CT-F600 are designed to accept different line voltages, according to the country in which they are to be used, although the operation of the various models is the same in every respect. Fig. A shows the model designed to operate at any of two pre-selected voltages (220V, 240V).

Fig. B shows the model designed to operate at any of three selected voltages (120V, 220V, 240V). Line voltage and fuse can be changed and set as follows:

## 220V and 240V MODEL

1. Disconnect the power cord.
2. Use a Phillips screwdriver to loosen mounting screw, then remove SELECTOR plug.
3. Reinstall the SELECTOR plug with its cut out section exposing the correct voltage indication.
4. Insert and tighten mounting screw.

## 120V, 220V and 240V MODEL

1. Disconnect the power cord.
2. Use a Phillips screwdriver to take out the fuse cap and fuse (Fig. B).
3. Pull out the SELECTOR plug from the socket.
4. Put the selector plug back so that the appropriate line voltage marking can be seen through the cut in the edge of the plug.
5. Change the fuse in accordance with the table.
6. Replace the fuse and fuse cap.

220V, 240V model

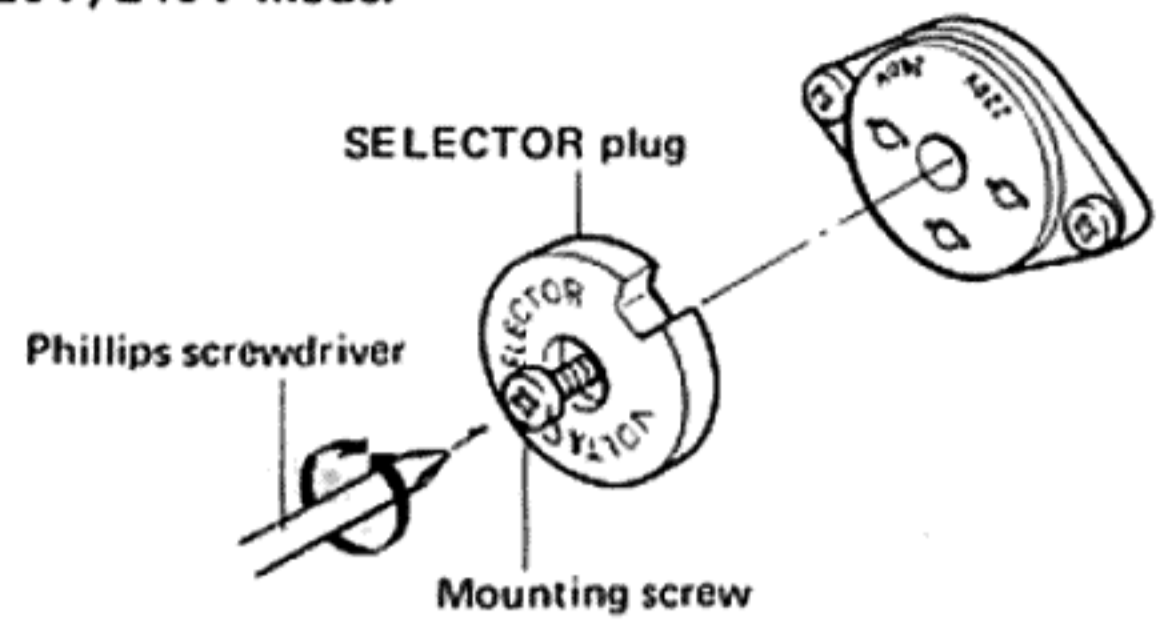


Fig. A

120V, 220V, 240V model

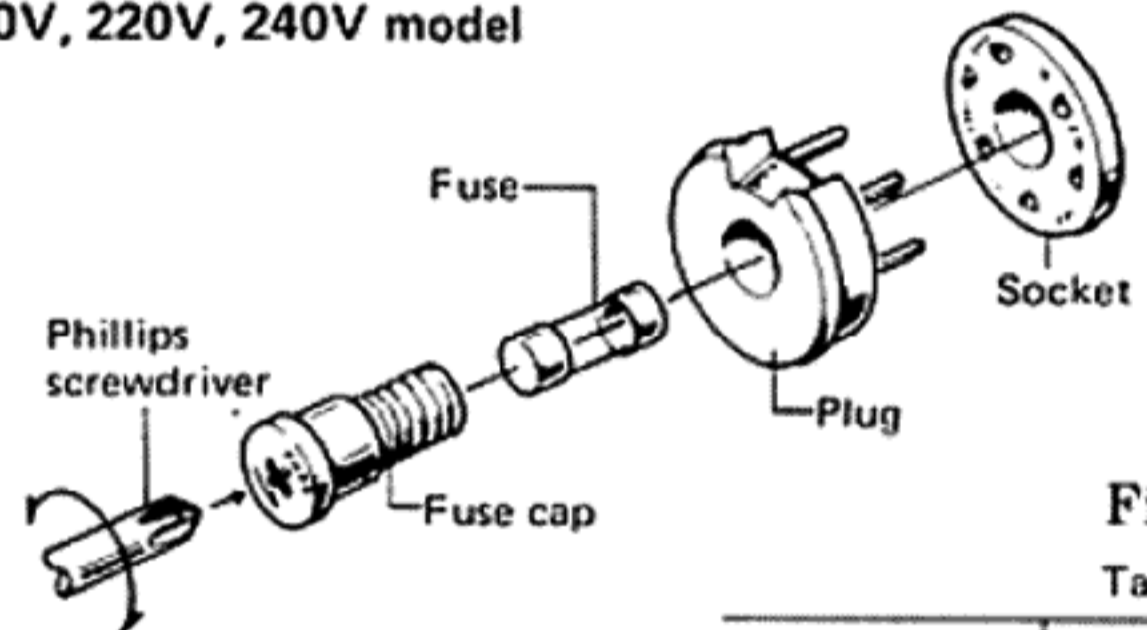


Fig. B  
Table

VOLTAGE	FUSE
120V	1A
220V 240V	1A

# TROUBLESHOOTING

Although some failures and breakdowns can be traced to legitimate mechanical faults, some are in fact the results of improper maintenance, tape

defects or lack of experience in operating the tape deck. If you think that is a failure, refer first to the following checklist.

Symptom	Cause	Remedy
Tape does not run.	<ol style="list-style-type: none"> <li>1. AC cord is not plugged in.</li> <li>2. Tape has run out.</li> <li>3. PAUSE lever to ON.</li> <li>4. Cassette is inserted improperly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Plug cord in correctly.</li> <li>2. Rewind tape.</li> <li>3. Set PAUSE lever to OFF (undepressed).</li> <li>4. Remove tape and insert properly.</li> </ol>
High frequencies are weak.	<ol style="list-style-type: none"> <li>1. Heads are dirty.</li> <li>2. TAPE SELECTOR switch is not set in accordance with tape during recording or playback.</li> <li>3. A recorded tape without using the Dolby NR system is being played back with the DOLBY NR switch set to ON.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean heads.</li> <li>2. Set TAPE SELECTOR switch correctly in accordance with tape.</li> <li>3. Set the DOLBY NR switch to OFF.</li> </ol>
Playback sound is distorted.	<ol style="list-style-type: none"> <li>1. Playback level is too high.</li> <li>2. Distortion is recorded on tape.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce playback level.</li> <li>2. Replace tape.</li> </ol>
Sound is unsteady.	<ol style="list-style-type: none"> <li>1. Dirty capstan.</li> <li>2. Irregular cassette tape winding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean capstan.</li> <li>2. Replace tape.</li> </ol>
Excessive noise.	<ol style="list-style-type: none"> <li>1. Tape is old.</li> <li>2. Recorded tape using the Dolby NR system is being played back with DOLBY NR switch set to OFF.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace tape.</li> <li>2. Set the DOLBY NR switch to ON.</li> </ol>
Cannot record.	Cassette's erasure prevention tabs have been broken off.	Replace tape or cover tab openings with adhesive tape.
Recorded sound is distorted.	<ol style="list-style-type: none"> <li>1. Input level is too high.</li> <li>2. Dirty heads.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce input level.</li> <li>2. Clean heads.</li> </ol>

# SPECIFICATIONS

Systems .....	Compact cassette, 2-channel stereo
Motor.....	Electronically-controlled DC motor x 1
Heads .....	"Hard Permalloy" recording/playback head x 1 Ferrite erasing head x 1
Fast Winding Time .....	Approximately 90 seconds (C-60 tape)
Wow and Flutter .....	No more than 0.05% (WRMS) No more than $\pm 0.17\%$ (DIN)
Frequency Response .....	Standard, LH tapes; 20 to 15,000Hz (40 to 13,000Hz $\pm 3\text{dB}$ ), (40 to 13,000Hz DIN) Ferrichrome tape: 20 to 16,000Hz (40 to 15,000Hz $\pm 3\text{dB}$ ) Chromium dioxide tape: 20 to 16,000Hz (40 to 15,000Hz $\pm 3\text{dB}$ ) (40 to 14,000Hz DIN)
Signal-to-Noise Ratio .....	Dolby NR OFF: More than 58dB Dolby NR ON: More than 68dB (over 5kHz, standard, LH tapes) (Measured at the third harmonic distortion 3% level, weighted)
Harmonic Distortion .....	No more than 1.2% (0dB)
Inputs (Sensitivity/Maximum allowable input/Impedance)	MIC (L, R); 0.3mV/100mV/10 kilo ohms, 6mm diam. jacks (Reference MIC impedance; 250 ohms to 10 kilohms) LINE (2-channel stereo); 50mV/25V/75 kilohms, pin jacks REC/PLAY x 1; Input & Output, 15mV/5V/9.1 kilohms 5P jack (DIN Standard)
Outputs (Reference level/Load impedance)	LINE (2-channel stereo); 450mV/50 kilohms, pin jacks REC/PLAY x 1; 450mV/50 kilohms, 5P jack (DIN standard) Headphones x 1; 70mV/8 ohms, 6mm diam. jack
Semiconductors	
Amplifier Section .....	Transistors x 30, Diodes x 15, ICs x 4
Motor control section ...	IC x 1, Diode x 1
Subfunctions	<ul style="list-style-type: none"> <li>• Dolby NR system (ON-OFF) with LED indicator lamp</li> <li>• Tape Selector (STD/FeCr/CrO<sub>2</sub>)</li> <li>• Standby mechanism with unattended recording</li> <li>• Full automatic stop mechanism</li> <li>• Fluorescence tube level meter (-20 to +8dB)</li> </ul>
Power Requirements .....	AC 120V, 220V, 240V (switchable) 50/60Hz (D, D/G model) or AC 220V, 240V (switchable) 50/60Hz (HB, HE, HP model)
Power Consumption .....	14 watts
Dimensions .....	420(W) x 143(H) x 290(D) mm Max. 16-9/16 x 5-5/8 x 11-7/16 in
Weight .....	5.7 kg (12 lb 10 oz)
Furnished parts .....	Stereo connecting cord with pin plugs x 2 Head cleaning swabs x 3 Operating instruction x 1

## NOTES:

- Reference Tapes: Standard & LH: DIN 45513/BLATT6 or equiv.  
: CrO<sub>2</sub>: DIN 45513/BLATT7(CrO<sub>2</sub>) or equiv.
- Reference Recording Level: Meter 0dB indicating level (160 nwb/m magnetic level = Philips cassette reference level)
- Reference Signal: 333Hz
- Wow & Flutter: • JIS [3kHz, with acoustic compensation (weighted), rms value] DIN [3,150Hz, with acoustic compensation (weighted) PEAK value]; DIN 45507
- Frequency Response: • Measured at -20dB level, DOLBY NR OFF, level deviation is  $\pm 6\text{dB}$  without indication, DIN is DIN 45500
- Signal to Noise Ratio: Measured at the third harmonic distortion 3% level, weighted.
- Sensitivity: Input level (mV) required for reference recording level with input (REC) controls set to maximum.
- Maximum Allowable Input: While decreasing settings of input (REC) level controls and increasing level at input jacks, this is the maximum input level (mV) at the point where recording amplifier output waveform becomes clipped.
- Reference Output Level: Playback output level when meter indicates 0dB.

## NOTE:

*Specifications and the design subject to possible modification without notice due to improvements.*