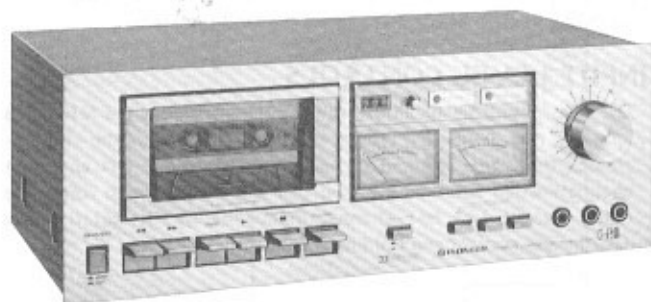


# CT-F500

KC  
KU

## OPERATING INSTRUCTIONS



## FEATURES

### Highly Dependable Tape Transport Mechanism

This deck employs a DC servo control motor featuring excellent stability for tape transport. This combines with the ultraprecision-engineered capstan, belt and large-sized (80mm) flywheel which make up the highly precise tape take-up mechanism to provide superb tape transport stability and a dramatic improvement in wow and flutter.

### Hard Permalloy Heads

Newly developed hard permalloy head is used for recording and playback to allow the tape being used to display its capabilities to the full. This is the head which is highly resistant to wear and also provide tip-top dependability with an excellent frequency response and signal-to-noise ratio. All this makes for recording and playback with a rich and varied sound quality.

### IC-Based Dolby\* System for Reduced Tape Hiss

This deck features a newly developed IC (integrated circuit) in the Dolby noise reduction circuit to reduce the amount of distortion. This results in a tremendous reduction in the amount of tape hiss which is so irritating when you are playing back a tape. And it does this without impairing the sound quality of the program source. (The improvement is about 10dB in the high-frequency range). Valuable side-effects are an expansion in the dynamic range and an enhanced signal-to-noise ratio.

## IMPORTANT NOTICE

The serial number for this equipment is located on the opposite panel on the controls. Please write this serial number on your enclosed warranty card and keep in a secure area. This is for your security.

\*Manufactured under license from Dolby Laboratories.

\*Dolby and  are trademarks of Dolby Laboratories.

**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

## CONTENTS

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# FRONT PANEL FACILITIES

## POWER SWITCH

The power comes on when the POWER switch is depressed. The level meters will then light up. To turn off the power, release the switch by depressing it again.

## 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.

## COUNTER RESET BUTTON

Depress this button to reset the tape counter display to "000."

## TAPE COUNTER

This indicates the position of the tape run.

## RECORD INDICATOR

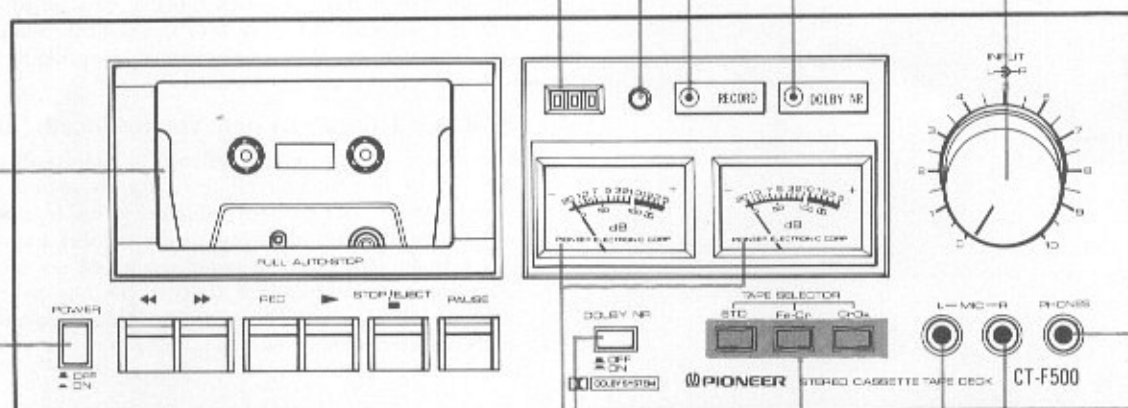
This light comes on when the play (▶) and REC levers are depressed together to indicate that the cassette deck is now set to the recording mode.

## 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 system or playback using the Dolby system.

## 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.



## 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 system.

## TAPE SWITCH

Push this button according to the tape to be used.

STD: For ordinary tapes and low-noise/high-output tapes.

Fe-Cr: For ferrichrome tapes.

CrO<sub>2</sub>: For chrome tapes.

### NOTE:

Be sure to use a chrome tape employing detection holes (see page 7).

## MIC JACKS

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

## PHONES 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:

You can damage a microphone if you plug it into the PHONES jack by mistake.

## OPERATING LEVERS

### 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).

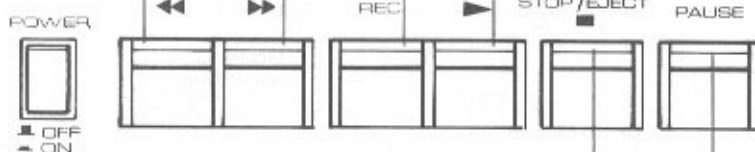
### REC LEVER

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.

### 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).



### 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.

### 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.

#### 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.

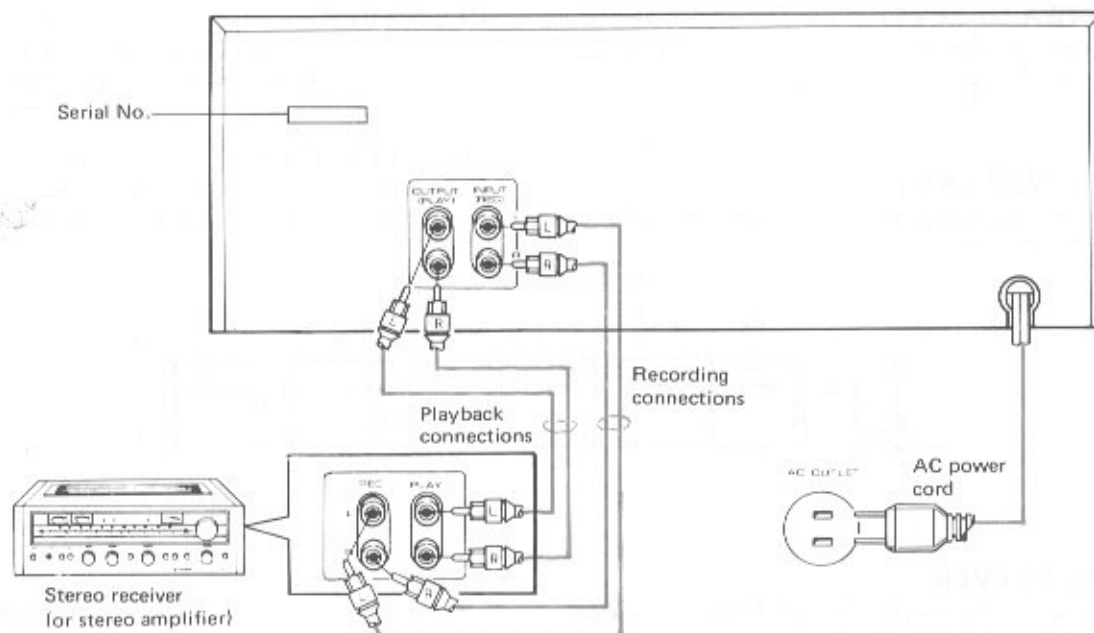
### KEEP THE HEAD SECTION CLEAN

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 8 and the section on 'Maintenance'.

#### 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



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.

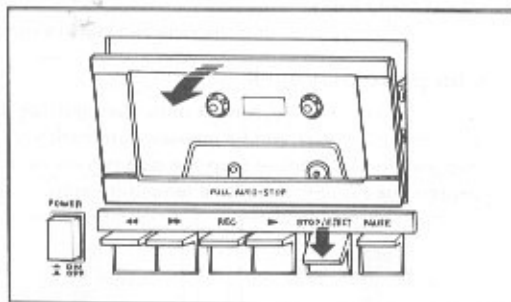
| Location liable to downgrade performance and result in breakdowns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 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> <li>Locations heavily affected by magnetism (electromagnetic flux) such as on or near high power amplifier or transformer.</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> <li>High flux causes hum.</li> </ol> |

## BASIC OPERATION

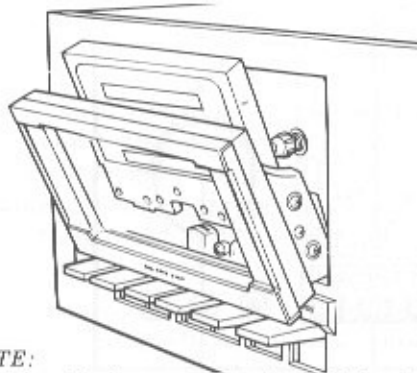
### LOADING AND UNLOADING THE TAPE

#### Tape loading

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



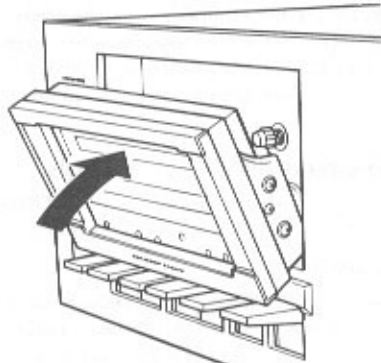
2. Load the cassette with the exposed tape at the bottom so that the tape side (side A or B) faces you.



#### NOTE:

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

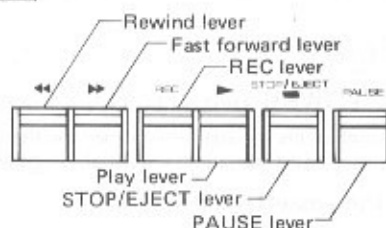
3. Push the cassette holder back into position until you hear a click that denotes the holder is locked.



#### Tape unloading

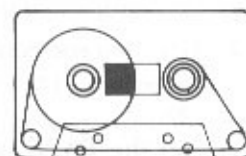
Follow the same procedure for loading the tape, and remove the tape from the cassette holder when it is open.

### 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.



#### Fast forward

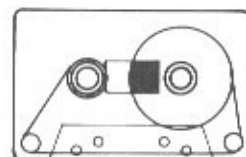
1. Check that the tape is on the left-hand reel.
2. The tape runs from left to right at a high speed when the fast forward lever is depressed.



Play, Record,  
Fast forward

#### 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 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 Set the TAPE switch

Set this switch to the Fe-Cr position if you intend to use a ferrichrome tape, to the STD position if you are going to use a standard tape, and to the CrO<sub>2</sub> position if you are going to use a chrome tape. Be sure to use a chrome tape employing detection holes (see page 7).

### ⑤ Set the DOLBY NR switch

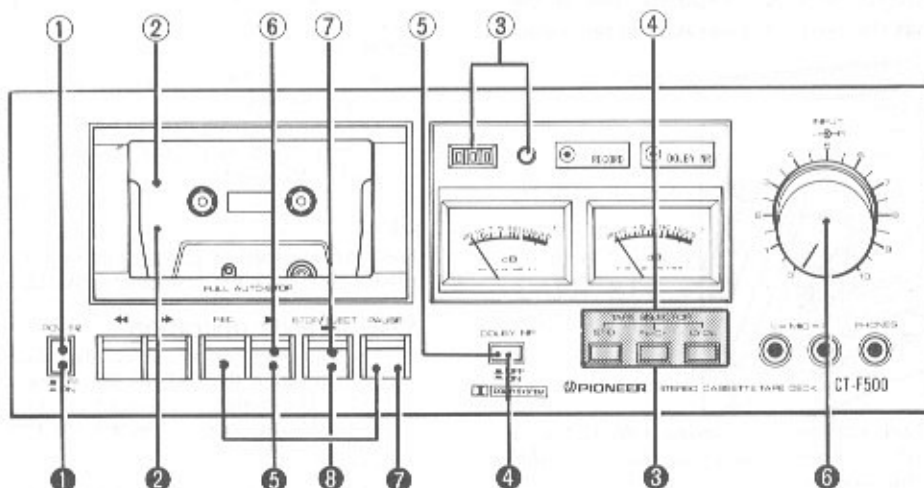
Set this switch to ON when playing back a tape, which was recorded by the Dolby system. For further details on the Dolby system, refer to page 9.

### 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 Set the TAPE switch

Set this switch to the Fe-Cr position if you intend to use a ferrichrome tape, to the STD position if you are going to use a standard tape, and to the CrO<sub>2</sub> position if you are going to use a chrome tape. Be sure to use a chrome tape employing detection holes (see page 7).

### ④ Set the DOLBY NR switch

Set this switch to ON for recording using the Dolby system. For further details on the Dolby system refer to page 9.

### 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. Check that the pointers of the level meters deflect, that the tape counter counts and that the tape is running.

### 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

Set the recording level controls so that the level meter pointers deflect across a -3 to 0dB range when there are relatively high signal peaks in the program source that you are recording.

The signal level fluctuates widely according to the program source and so it is a good idea to keep an eye on the deflection of the pointers while you are recording.

If the setting of the recording level is not satisfactory and you proceed with the recording without adjustment, the signal-to-noise ratio and the distortion will be downgraded.

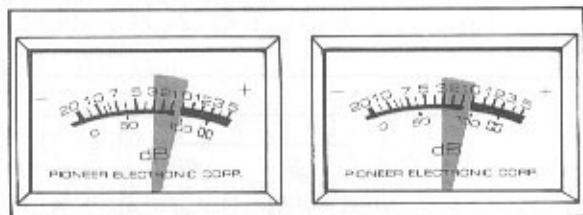


Fig. 1

## 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.

## CHROME TAPE DETECTOR

A chrome tape detecting mechanism is incorporated into this tape deck. When the employed chrome tape is equipped with extra detecting holes, as shown in Fig. 2, bias is automatically switched for chrome tape specifications, however equalization should be selected by setting the TAPE SELECTOR switch.

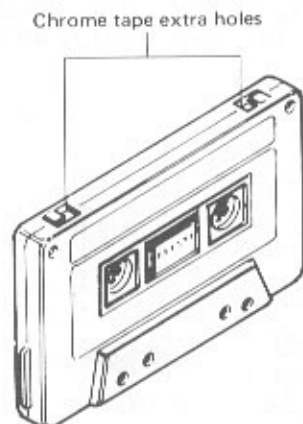


Fig. 2

## SETTING THE TAPE SWITCH

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.

### NOTE:

*Do not use chrome tapes that are not provided with chrome detection holes since the automatic BIAS selector mechanism will not be actuated (see Fig. 2).*

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

| Brand of tape |                                                                        | TAPE switch position |
|---------------|------------------------------------------------------------------------|----------------------|
| BASF          | LH C-60, LH C-90<br>LN C-60, LN C-90<br>LH SUPER C-60<br>LH SUPER C-90 | STD                  |
|               | AGFA                                                                   |                      |
|               | SCOTCH                                                                 |                      |
|               | TDK                                                                    |                      |
| MAXELL        | LN C-60, LN C-90<br>UD C-60, C-90<br>UD XLII C-60, C-90                |                      |
|               | FUJI                                                                   |                      |
|               | SONY                                                                   |                      |
|               | SONY                                                                   |                      |
| BASF          | FERROCHROM C-60<br>FERROCHROM C-90                                     | Fe-Cr                |
|               | SCOTCH                                                                 |                      |
|               | AGFA                                                                   |                      |
|               | BASF                                                                   |                      |
| SCOTCH        | MASTER 70 $\mu$ EQ C-60                                                | CrO <sub>2</sub>     |
|               | TDK                                                                    |                      |
|               | MAXELL                                                                 |                      |
|               | FUJI                                                                   |                      |
| SONY          | CR C-60<br>CR C-90                                                     |                      |
|               | AGFA                                                                   |                      |
| AGFA          | STEREO CHROM C-60<br>STEREO CHROM C-90                                 |                      |

## MICROPHONE RECORDING

### STEREO RECORDING

As shown in Fig. 3 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".

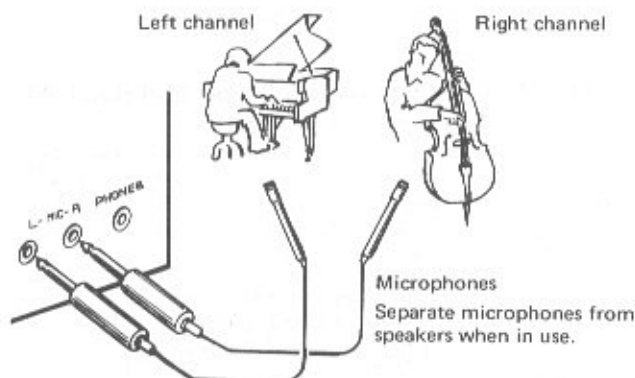


Fig. 3

#### 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.

### RECORDING PROGRAMS IN MONO

- When recording with a mono microphone, set the mic recording level control of the channel which is not being used (left or right) to its lowest setting.
- When recording a program source in mono with the INPUT (REC) terminals, it is a good idea to connect the mono signal to both the tape deck's channels (left and right). Special connecting cords are required for this.

## 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. Make it a rule to clean this section regularly with a cleaning swab dipped in the cleaning fluid.

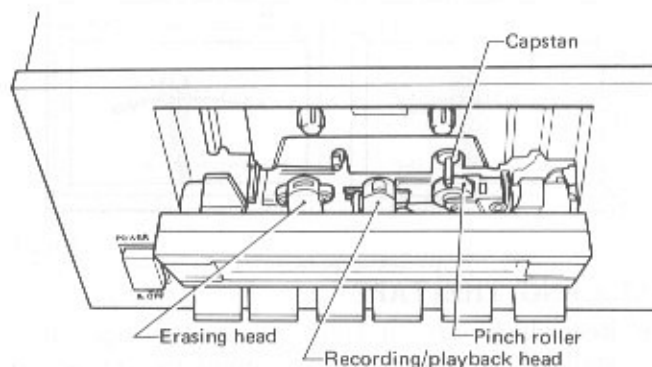


Fig. 4

#### Head cleaning steps (Fig. 4)

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.

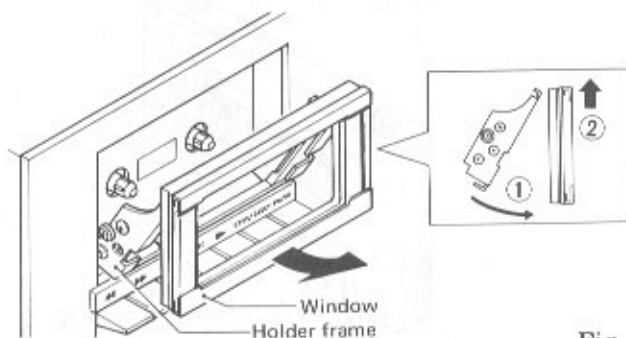


Fig. 5



## 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.*

## THE DOLBY 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 per cent in comparison. The cassette tape is thus clearly at a disadvantage with respect to the signal-to-noise ratio.

The Dolby 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 behind the Dolby system is as follows: when signals with a relatively low level are recorded, the Dolby 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. In the same way, if the Dolby 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 system is not used.
- In order to make the most of the Dolby effect, choose a program source with as little noise as possible.
- If you have used the Dolby 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 system and playing back normally a tape, which was recorded by the Dolby system, will result in an unnatural reproduction of the sound on the tape.

## 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.

### (Dolby system)

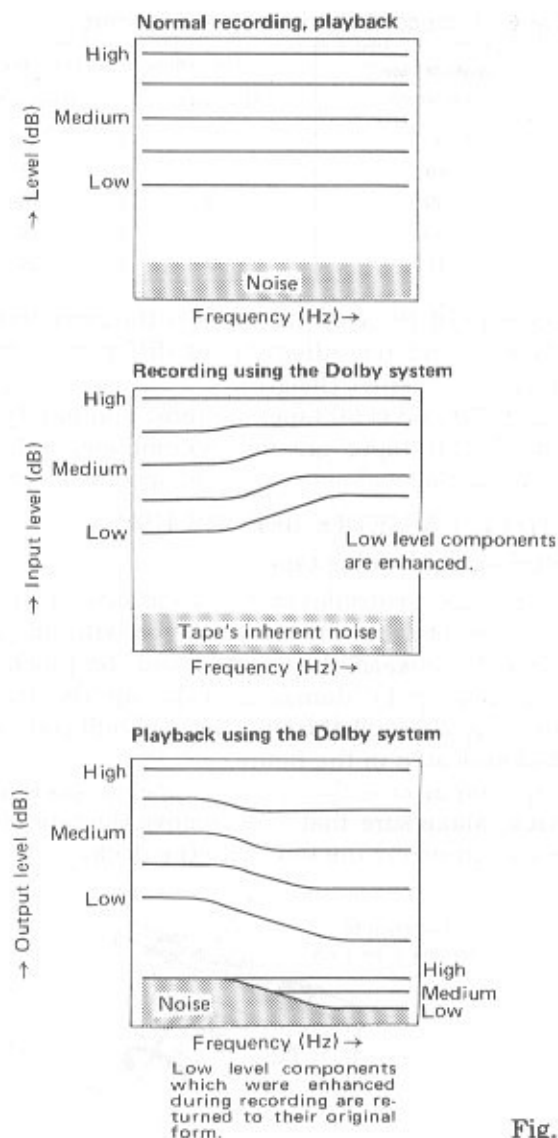


Fig. 6

# 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 |
|-----------------|-------------------------------|-----------------------|
| • Standard tape | • Low-noise tape              | • Chrome tape         |
| • Dynamic tape  | • Low-noise, high-output tape | • Ferrichrome tape    |

**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 "SETTING THE TAPE SWITCH."

**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).

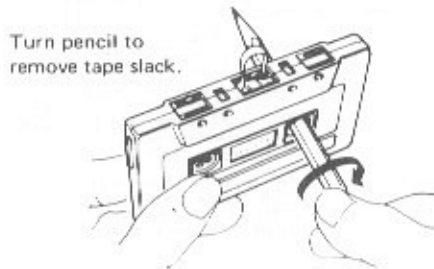
The C-60 and C-90 tapes are most commonly used. The C-120 tapes are not recommended because their mechanical and electrical specifications vary.

## CHECK CASSETTE BEFORE USE

### Slack or protruding tapes

If the tape protrudes from the cassette as shown in Fig. 7 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.



**Fig. 7**

## Erasure prevention tabs

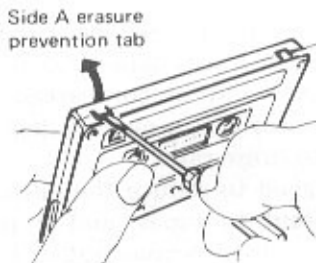
Cassette tapes are provided with erasure prevention tabs, as shown in Fig. 8, which act as a protection device to prevent the accidental erasure of a recording which you want to keep. If you remove the tabs, as shown in Fig. 8, with a screwdriver you will be able to prevent erasure if you accidentally 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. 9).

**NOTE:**

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

Side A erasure prevention tab



**Fig. 8**

Side B erasure prevention tab



**Fig. 9**

## 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.

# SPECIFICATIONS

|                                                        |                                                                                                                                                                                                     |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Systems . . . . .                                      | Compact cassette, 2-channel stereo                                                                                                                                                                  |
| Motor . . . . .                                        | Electronically-controlled DC motor x 1                                                                                                                                                              |
| Heads . . . . .                                        | "Hard Permalloy" recording/playback head x 1<br>Ferrite erasing head x 1                                                                                                                            |
| Fast Winding Time . . . . .                            | Approximately 90 seconds (C-60 tape)                                                                                                                                                                |
| Wow and Flutter . . . . .                              | No more than 0.05% (WRMS)                                                                                                                                                                           |
| Frequency Response . . . . .                           | Standard, LH tapes: 30 to 14,000Hz (40 to 13,000Hz $\pm 3$ dB)<br>Ferrichrome tape: 30 to 16,000Hz (40 to 15,000Hz $\pm 3$ dB)<br>Chromium dioxide tape: 30 to 16,000Hz (40 to 15,000Hz $\pm 3$ dB) |
| Signal-to-Noise Ratio . . . . .                        | Dolby NR OFF: More than 54dB<br>Dolby NR ON: More than 64dB (over 5kHz, standard, LH tapes)<br>When chromium dioxide tape is used, signal-to-noise ratio is further improved by 4.5dB over 5kHz     |
| Harmonic Distortion . . . . .                          | No more than 1.5% (0dB)                                                                                                                                                                             |
| Inputs (Sensitivity/Maximum allowable input/Impedance) | MIC (L, R): 0.3mV/110mV/10kilohms, 6mm diam. jacks (Reference MIC impedance: 250 ohms to 10kilohms)<br>LINE (2-channel stereo): 65mV/14V/100kilohms, pin jacks                                      |
| Outputs (Reference level/Load impedance)               | LINE (2-channel stereo): 450mV/50kilohms, pin jacks<br>Headphones x 1; 60mV/8 ohms, 6mm diam. jack                                                                                                  |
| Semiconductors                                         |                                                                                                                                                                                                     |
| Amplifier Section . . . . .                            | Transistors x 24, Diodes x 13, ICs x 2                                                                                                                                                              |
| Motor control section . . . . .                        | Transistors x 3, Diodes x 1                                                                                                                                                                         |
| Subfunctions                                           | <ul style="list-style-type: none"> <li>• Dolby system (ON-OFF) with LED indicator lamp</li> <li>• Tape Selector (STD/FeCr/CrO<sub>2</sub>)</li> </ul>                                               |
| Power Requirements . . . . .                           | AC 120V, 60Hz                                                                                                                                                                                       |
| Power Consumption . . . . .                            | 13 watts                                                                                                                                                                                            |
| Dimensions . . . . .                                   | 380(W) x 141(H) x 261(D) mm Max.<br>15 x 5-1/2 x 10-5/16 in                                                                                                                                         |
| Weight . . . . .                                       | 5kg (11lb)                                                                                                                                                                                          |
| Furnished parts . . . . .                              | Stereo connecting cord with pin plugs x 2<br>Head cleaning swabs x 3<br>Operating instruction x 1                                                                                                   |

## NOTE:

1. Reference Tapes: Standard & LH; DIN 45513/BLATT6 or equiv.  
: CrO<sub>2</sub>; DIN 45513/BLATT7 (CrO<sub>2</sub>) or equiv.
2. Reference Recording Level: Meter 0dB indicating level (160 nwb/m magnetic level = Philips cassette reference level)
3. Reference Signal: 333Hz
4. Wow & Flutter: • JIS [3kHz, with acoustic compensation (weighted), rms value]
5. Frequency Response: • Measured at -20dB level, DOLBY NR OFF, level deviation is  $\pm 6$ dB without indication
6. Signal-to-Noise Ratio: • Measured at +4dB level (250nwb/m magnetic level = DIN 45513 specified reference level), IEC A curve with acoustic compensation (weighted)
7. Sensitivity: Input level (mV) required for reference recording level with input (REC) controls set to maximum.
8. 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.
9. Reference Output Level: Playback output level when meter indicates 0dB.

## NOTE:

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

## 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 switch is not set in accordance with tape during recording or playback.</li> <li>3. A recorded tape without using the Dolby system is being played back with DOLBY NR switch set ON.</li> </ol> | <ol style="list-style-type: none"> <li>1. Clean heads.</li> <li>2. Set TAPE switch correctly in accordance with tape.</li> <li>3. Set 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 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 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>                                                                                                    |

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 the 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.

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