HiFi ENGINE ®

CASSETTE TAPE DECK
CT-F9191

NB
FV
FP

OPERATING INSTRUCTIONS

⟨Ⓟ⟩ PIONEER®

CONTENTS

FEATURES

Advanced Cassette Tape Deck

Original Pioneer design provides easy front panel operation. Cassette installs vertically for fast fumble-free setting.

Precision 2 Motor Transport

Tape running at play and record speed is performed by a DC servo controlled motor, while a high torque mechanical governor equipped motor drives fast forward and rewind. Precision design and finishing of the capstan, belt, flywheel and tape take up mechanism combine to offer outstanding wow & flutter characteristics and stability.

Direct Mode Selection

The desired transport mode: record or play, fast forward, rewind, can be directly switched without alternating with the stop switch. Perfect timing is provided by a semiconductor logic circuit which functions to protect the tape from damage.

Built-in Dolby* System

Annoying tape hiss can be significantly reduced (by approximately 10dB at high frequencies) without impairing the program source quality by the built-in Dolby system.

Ferrite Solid Head

The ferrite solid record/playback head resists abrasion and possesses numerous advantages which include long life, excellent high frequency response and head touch, plus reduced problems of dirt adhesion and magnetization noise.

3-Stage Direct Coupled Head Amplifier

3-stage direct coupled circuitry is employed in the equalizer and microphone amplifiers to provide excellent phase characteristics. Effective negative feedback is applied up to ultra high frequencies, assuring stable high frequency response and a dynamic margin exceeding 40dB of the base level.

Independent Bias & Equalization Selection

Independent bias and equalization selectors permit matching the performance of most commercially sold tapes, including chrome, low noise, and standard. An automatic switching function is included for chrome tapes equipped with extra holes, while a new equalization design (3180 +70μs) is adopted. The electronic switching circuit also eliminates switching noise.

Large Size Level Meters Plus LED Peak Indicator

Logarithmic amplifier driven —40dB~+5dB wide scale level meters are provided together with an LED peak indicator which advises of instantaneous over levels. These allow reliable monitoring for low distortion recording of wide dynamic range material.

* Manufactured under license from Dolby Laboratories Incorporated.

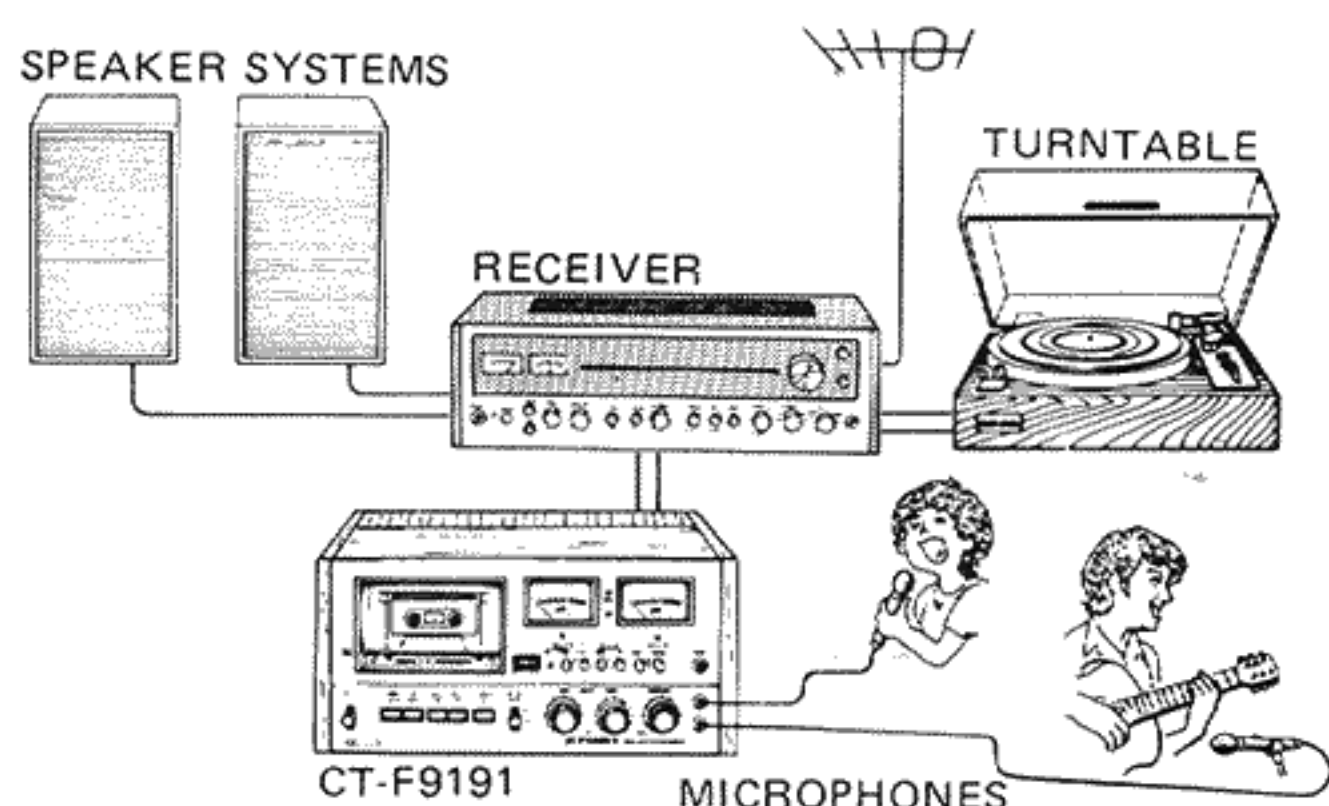* Dolby and ⊡⊡ are trademarks of Dolby Laboratories Incorporated.

INSTALLATION CAUTIONS

When installing the CT-F9191, avoid the following conditions which may impair sound quality or lead to malfunctions.

● Direct sunlight, near radiators or other heat sources.
● Sites with poor ventilation or high humidity.
● Dusty locations.
● Near magnetic field generating appliances (TV set, motors, transformers, etc.).
● Unlevel or unstable supports.

CT-F9191 APPLICATIONS

- Stereo and mono play of commercially sold pre-recorded music tapes.
- Recording from FM broadcasts and records.
- Live stereo or mono recording via microphones.
- Mixing recording between microphones and broadcast or record sounds.
- Mixing recording between broadcast and record or tape sounds.
- Follow-on recording for convenient editing.
- Desired portion of prerecorded tape can be repeatedly played (memory mechanism).
- By employing a separately sold timer, unattended recording and wake up functions can be performed.

SPEAKER SYSTEMS / TURNTABLE / RECEIVER / CT-F9191 / MICROPHONES

FOR USE IN UNITED KINGDOM ONLY

CAUTION 240V

Mains supply voltage is factory adjusted at 240 volts.

WARNING

THIS APPARATUS MUST BE EARTHED.

IMPORTANT

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

Green-and-Yellow:	Earth
Blue:	Neutral
Brown:	Live

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

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol $\perp$ or coloured green or green-and-yellow.

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

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

Do not unscrew the bottom plate and cabinet, no user serviceable parts inside.

Always disconnect all the equipment from the mains supply when connecting the signal leads.
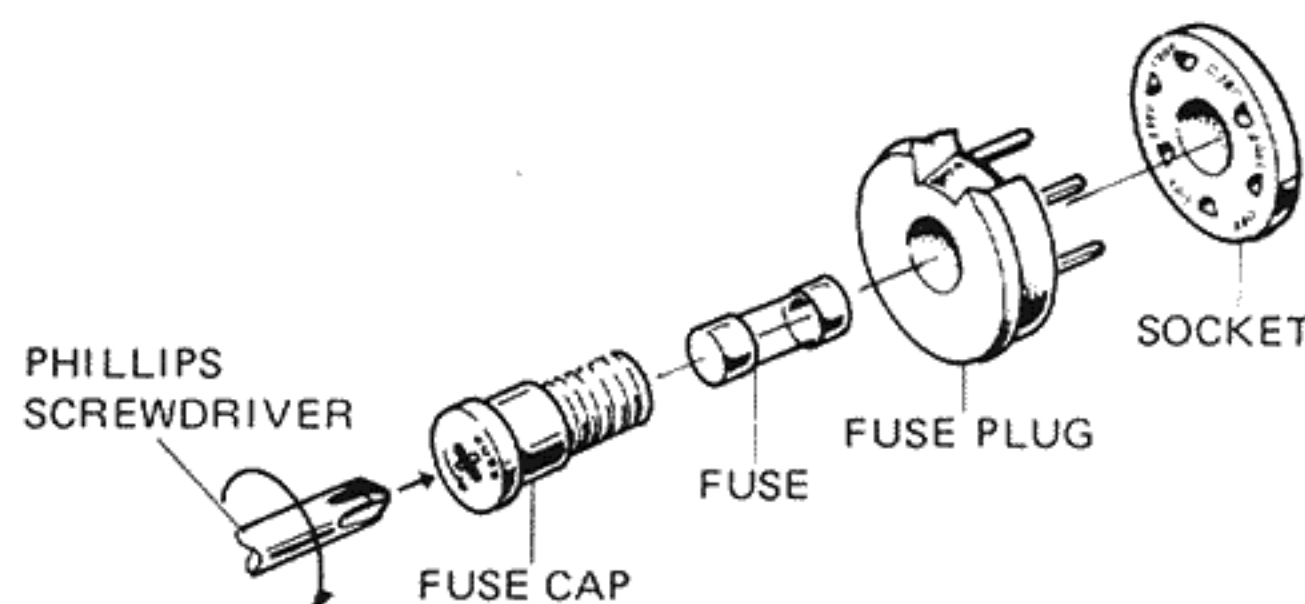

CHANGING LINE VOLTAGE SETTING AND FUSE

Each design of line voltage and fuse of this model differs according to each destination to be delivered.

To remove the fuse, unscrew the fuse cap located in the center of the line voltage selector and withdraw it, together with the fuse. Next, pull the line voltage selector plug out of its socket, rotate it until the cutaway aligns with the appropriate line voltage marked on the back of the unit, then push it back into its socket. It is important to check the rating of the fuse; a 0.5A fuse (surge proof type) should be used with either 220V or 240V, while a 1A fuse should be used for 110V, 120V or 130V operation. If the fuse rating is correct, replace it and screw in the fuse cap.

FUSE REPLACEMENT

When the fuse blows, remove the fuse cap and replace the fuse with a new one. See figure.

PHILLIPS SCREWDRIVER / FUSE CAP / FUSE / FUSE PLUG / SOCKET

FRONT PANEL FACILITIES

POWER SWITCH

Power is supplied when set to ON, at which time the level meter lamps and internal illuminating lamp light.

DOOR OPEN BUTTON

Press to open the cassette door. Close the cassette door by gently sliding it downward by hand.

CASSETTE DOOR

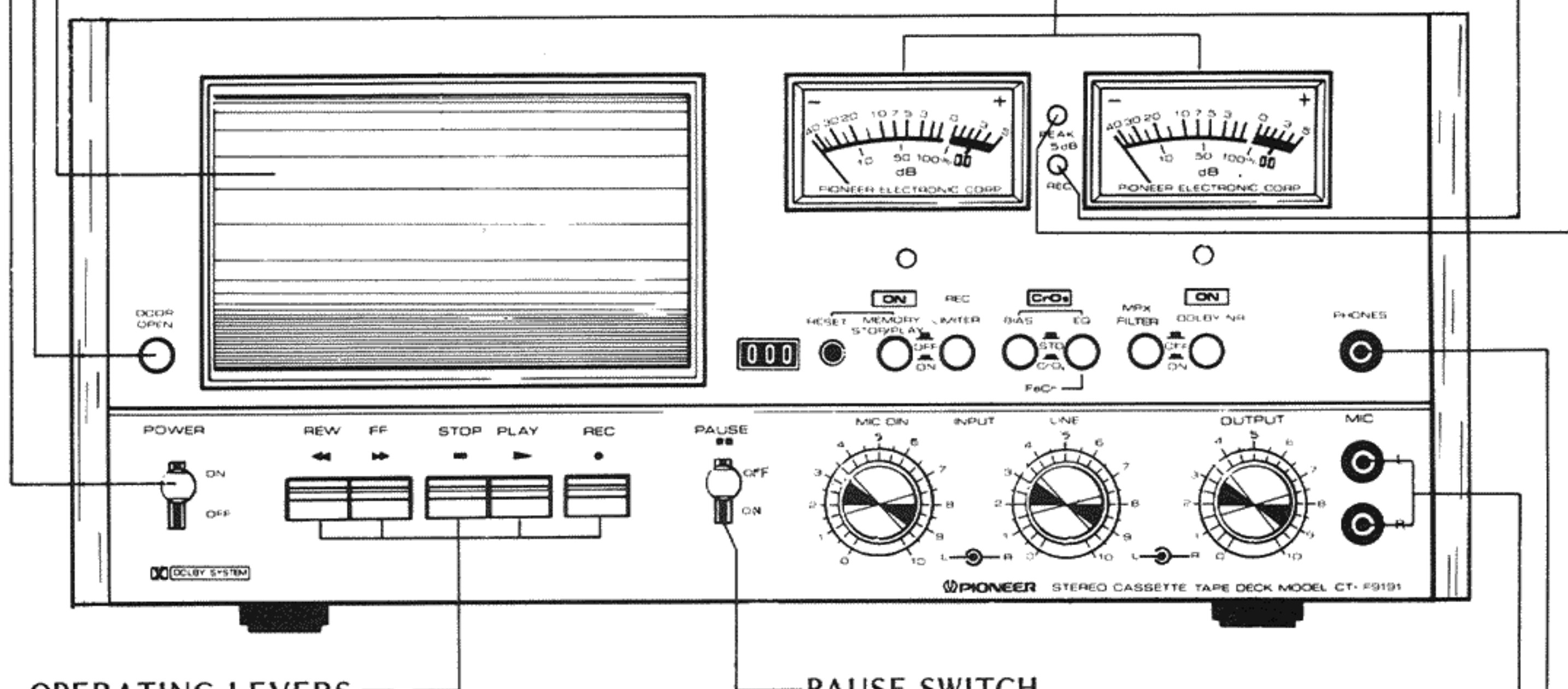Keep door closed to protect the transport and head assembly from dust.

REC INDICATOR

Lights red during recording.

NOTE:
Be sure to confirm REC indicator lighting before proceeding to record.

LEVEL METERS

Display input level during recording and output level during playback.

OPERATING LEVERS

REW ◄◄ (Rewind):	Press downward to rewind tape. (Tape travels from right to left.)
FF ►► (Fast Forward):	Press downward for tape fast forward. (Tape travels from left to right.)
STOP ■:	Press downward to stop tape motion; this will also release other operating levers.
PLAY ►:	Press downward to play tape. To record, press simultaneously with the REC lever. (Tape travels from left to right.)
REC ● (Record):	Press downward simultaneously with the PLAY lever to perform recording.

NOTES:
1. Avoid simultaneously depressing two or more levers (except for the PLAY and REC levers during recording).
2. With the CT-F9191, it is not necessary to depress the STOP lever when switching between modes.

PAUSE SWITCH

Set to ON to temporarily stop the tape motion during record or playback. Return it to OFF to resume tape motion. This switch does not function during fast forward or rewind.

MIC JACKS

Microphone recording input jacks. Independent left (L) and right (R) channel jacks are provided.

PHONES JACK

Stereo headphones can be plugged into this jack for private listening or monitoring a recording.

PEAK +5dB INDICATOR

Lights when +5dB over level is reached during recording. When recording, adjust MIC/DIN or LINE controls so that it does not light continuously.

MEMORY INDICATOR LAMP

Lights when MEMORY button is depressed.

COUNTER RESET BUTTON

Depressing button resets counter indication to 000.

TAPE COUNTER

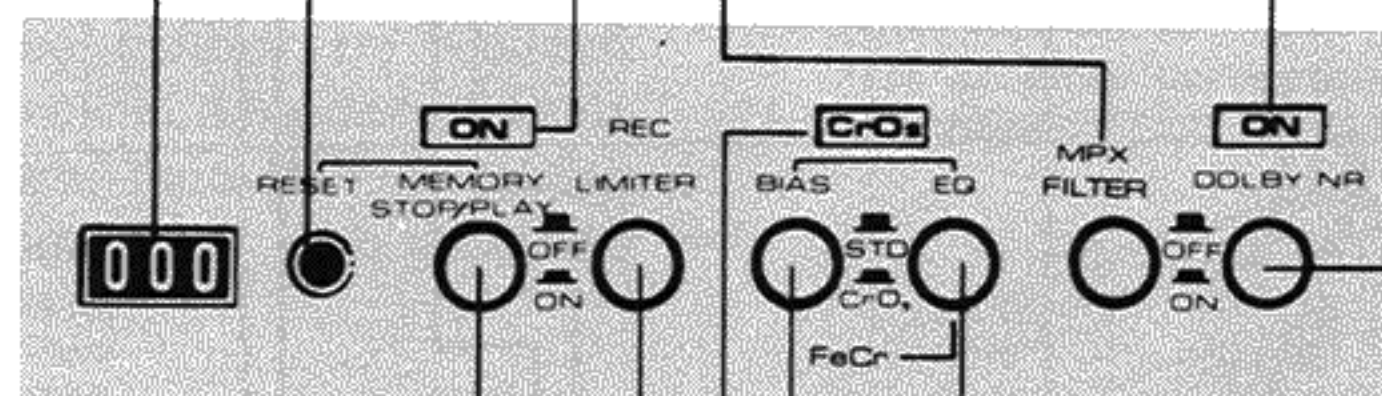Indicates tape running position.

MPX FILTER BUTTON

Set to ON when performing FM DOLBY "ON" recording. At other times, set to OFF.

DOLBY INDICATOR LAMP

Lights when DOLBY NR button is depressed.

DOLBY NR BUTTON

Depress for Dolby recording and for playback of Dolby recorded tape.

MEMORY BUTTON

When set to ON (depressed), the tape running position during record or playback corresponding to the 000 counter indication is registered. Memory play and memory stop functions can then be performed.

REC LIMITER BUTTON

When recording sources with large level variations which cause over levels and render control adjustment difficult, depress this button for easier recording.

CrO₂ INDICATOR LAMP

Lights to indicate chromium dioxide tape.
Also lights when cassette has not been installed.

EQ (EQUALIZATION) SELECTOR BUTTON

Employ according to tape. Depress for chrome or ferrichrome tape. Set to OFF (undepressed) to play chrome tape recorded to earlier specifications ($120\mu s$).
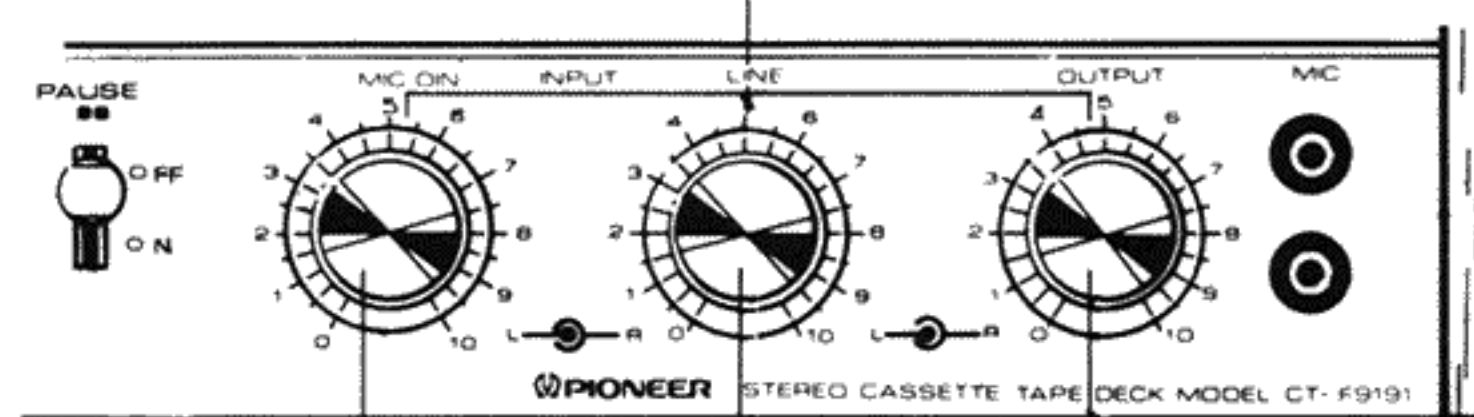
BIAS SELECTOR BUTTON

Employ according to tape. Depress when using chrome tape.

NOTE:
If the chrome tape is provided with index holes, EQ and BIAS selection becomes automatic. It is not necessary in this case to depress the EQ and BIAS buttons.

MEMORY MARKER DIALS

Set these outer rings to mark preferred control positions.

MIC/DIN RECORDING LEVEL CONTROLS

Adjust the input signal from the front panel MIC jacks or rear panel DIN REC/PLAY jack. The outer knob controls the right (R) channel, while the inner knob controls the left (L) channel.

LINE RECORDING LEVEL CONTROLS

Adjust input signal from the INPUT (REC) jacks. The outer knob controls the right (R) channel while the inner knob controls the left (L) channel.
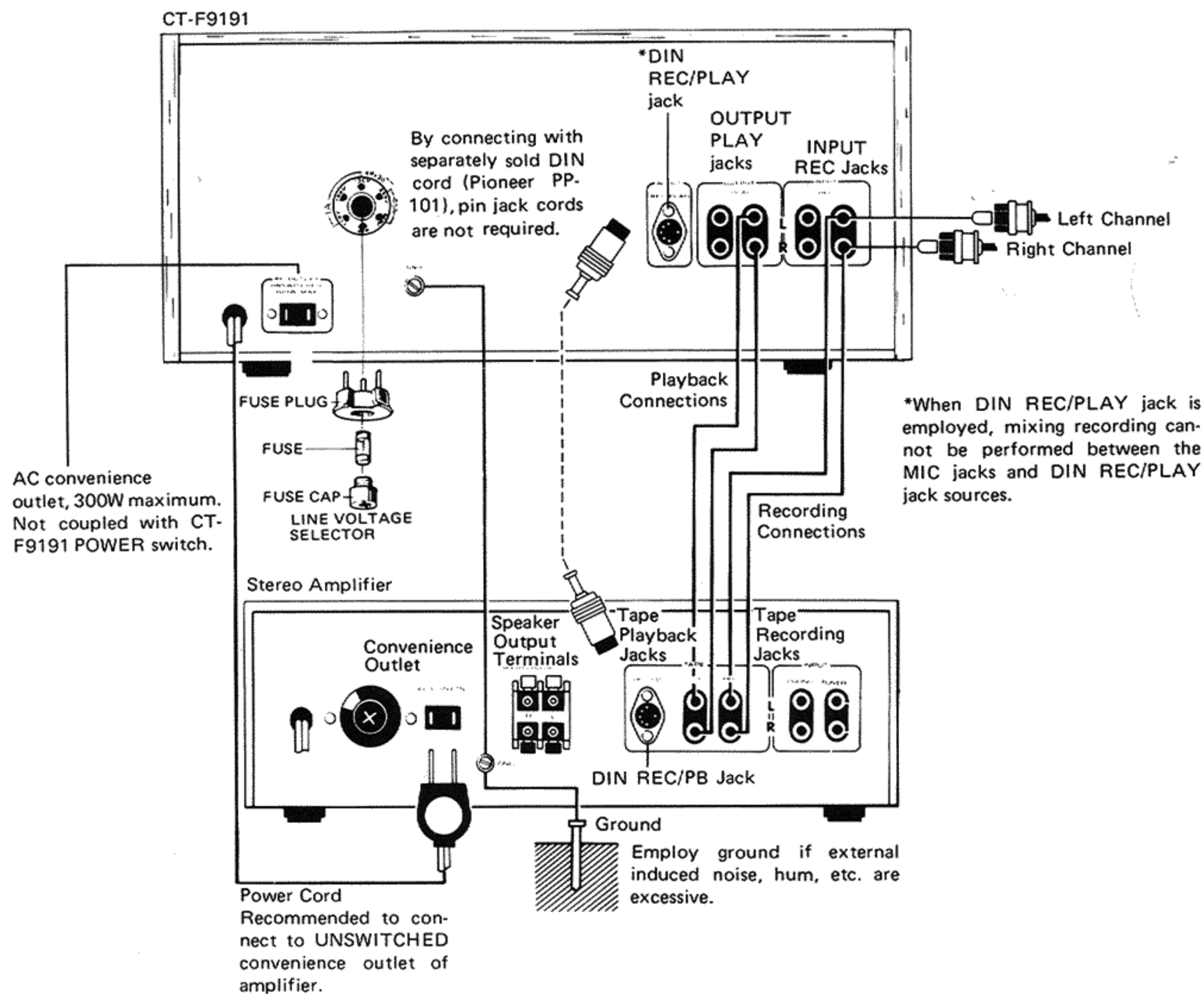
OUTPUT LEVEL CONTROLS

Adjust the output signal level during playback. The outer knob controls the right (R) channel while the inner knob controls the left (L) channel.

NOTE:
LEVEL controls can be employed for adjusting R and L channels independently. If there is a difference in input or output levels, turn one of the controls so that the levels become equal.

CONNECTION DIAGRAM

CT-F9191

*DIN REC/PLAY jack

OUTPUT PLAY jacks

INPUT REC Jacks

By connecting with separately sold DIN cord (Pioneer PP-101), pin jack cords are not required.

Left Channel

Right Channel

FUSE PLUG

FUSE

FUSE CAP
LINE VOLTAGE SELECTOR

AC convenience outlet, 300W maximum. Not coupled with CT-F9191 POWER switch.

Playback Connections

*When DIN REC/PLAY jack is employed, mixing recording cannot be performed between the MIC jacks and DIN REC/PLAY jack sources.

Recording Connections

Stereo Amplifier

Convenience Outlet

Speaker Output Terminals

Tape Playback Jacks

Tape Recording Jacks

DIN REC/PB Jack

Ground
Employ ground if external induced noise, hum, etc. are excessive.

Power Cord
Recommended to connect to UNSWITCHED convenience outlet of amplifier.

INPUT & OUTPUT JACKS

2 sets each of INPUT and OUTPUT jacks, which are connected in parallel, plus a DIN REC/PLAY jack are provided on the CT-F9191.

INPUT Jack Connections

Connect one set of INPUT jacks to the tape recording output jacks of a stereo amplifier. Since the INPUT jacks are connected in parallel, the recording input jacks of an additional tape deck (open reel or cassette) can be connected to one set to allow simultaneous recording of the same program source together with the CT-F9191.

OUTPUT Jack Connections

Connect one set of OUTPUT jacks to the TAPE PB jacks of a stereo amplifier. If a second tape deck is available, its recording input jacks can be connected with the other set of OUTPUT jacks. This will allow a tape played on the CT-F9191 to be duplicated onto another tape by the second deck.

DIN REC/PLAY Jack

By connecting this jack to a program source, mixing recording can be performed with a program source connected to the INPUT (REC) jacks. Adjust the recording level of a source connected to the DIN REC/PLAY jack with the MIC/DIN controls.

If microphones are connected to MIC jacks, recording cannot be performed from source connected to this jack.

TYPES OF CASSETTE TAPE

Cassette tapes are manufactured according to international standards and are generally classified by tape performance and recording time.

Performance Classifications

1. Standard tape.
2. Low noise or low noise high output tape (also known as LH tape).
3. Chrome (i.e., chromlum dioxide) tape.
4. Ferrichrome tape

Although 2, 3 and 4 are termed high performance tape, their full performance cannot be realized unless the employed tape deck is matched to their characteristics. In some cases, incorrect matching can even yield inferior results than with standard tape.

Recording (Playback) Time Classifications

Although the external dimensions of cassettes are standardized, playing and recording time differs according to tape thickness (length).

Table 1

RECORDING TIME (MINUTES)		CASSETTE TAPE DESIGNATION
ONE SIDE	BOTH SIDES	
15	30	C-30
30	60	C-60
45	90	C-90
60	120	C-120

Currently C-60 and C-90 are the most commonly used.
C-120 is not recommended due to excessive mechanical and electrical differences.

CASSETTE TAPE CAUTIONS

CHECK FOR PROTRUDING AND SLACK

If the tape protrudes from the cassette, as shown in Fig. 1, or is slack, the tape can run without passing between the capstan and pinch roller, and possibly be damaged. Take up the slack in this case by inserting a pencil through the reel hub and turning as indicated in Fig. 1.
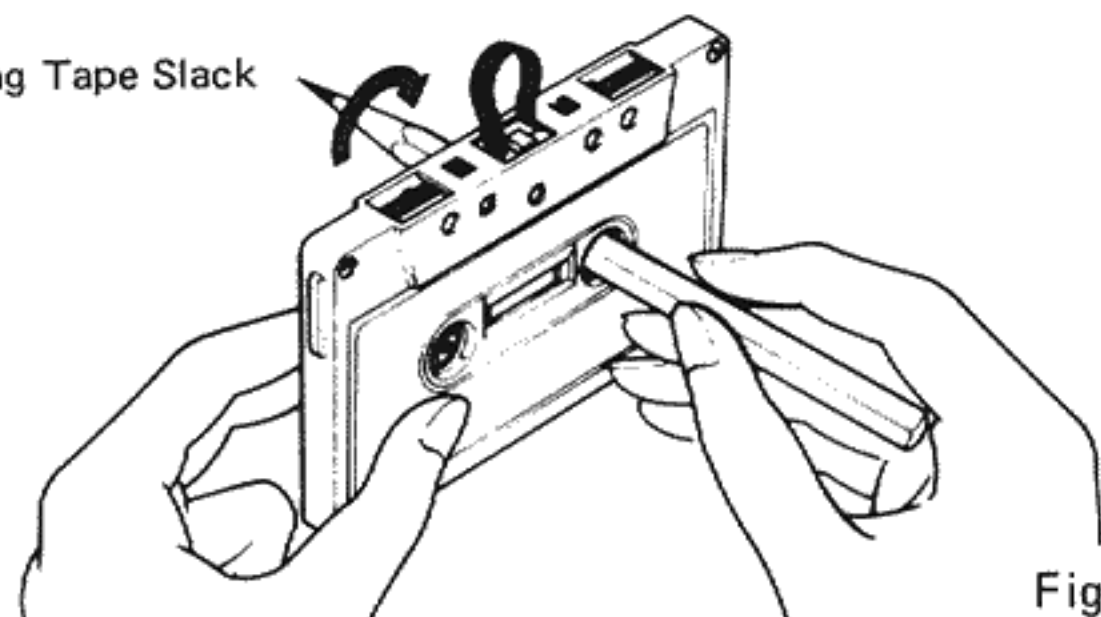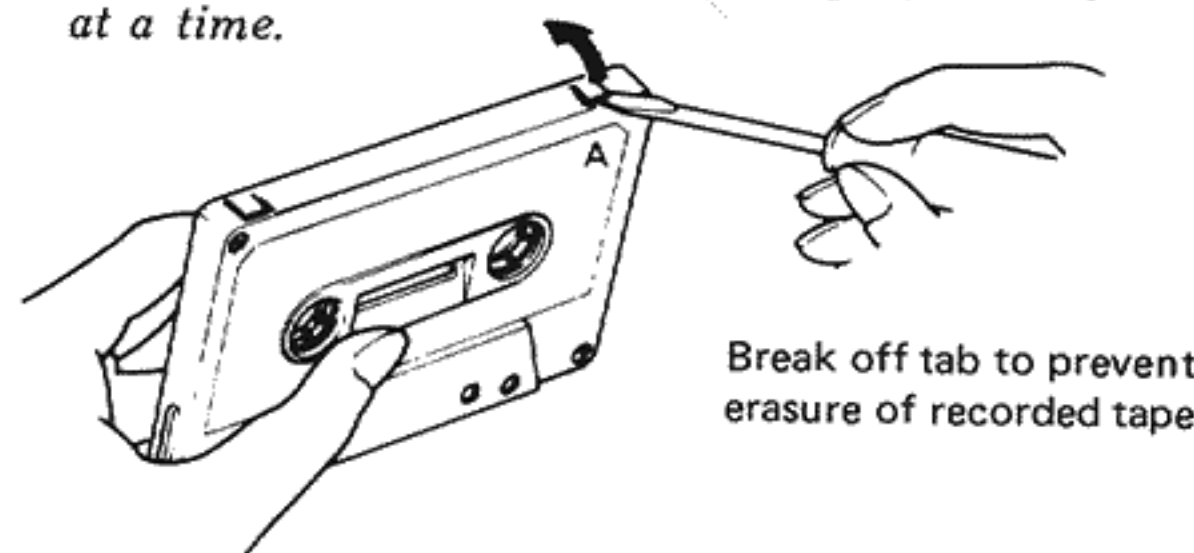
Removing Tape Slack

Fig. 1

ERASE PREVENTING TABS

Cassette tapes are provided with erase preventing tabs, as shown in Fig. 2. To prevent accidental erasure of an important tape, use a screwdriver or similar tool to break off the tab corresponding to the desired side of the tape. With the tab broken off, the CT-F9191 will not record even if the REC lever is depressed, thus protecting the tape from erasure.

NOTE:
Since tabs are provided for each side of the tape (A & B or 1 & 2) erase prevention can be performed for each side at a time.

Break off tab to prevent erasure of recorded tape

Fig. 2

To again record, cover tab opening with cellophane tape.

Fig. 3

CASSETTE HANDLING RECOMMENDATIONS

Check Tape before Recording

Before recording, first run the tape through fast forward and rewind. This is to prevent tape running irregularities from affecting the tape deck.

Allow for Leader Tape

Leader tape (which cannot be recorded) is provided at the beginning of the cassette tape. Since the leader tape takes about 5 seconds to clear the heads, allow for it when recording.

Store Cassettes in Individual Packages

Avoid storing uncovered cassette tapes. Store them in their individual packages to protect from dust, tape slackening, etc.

Do Not Set Tape Immediately after Cleaning Heads

After cleaning heads with head cleaning fluid, allow them to dry completely (2~3 minutes) before setting tape.
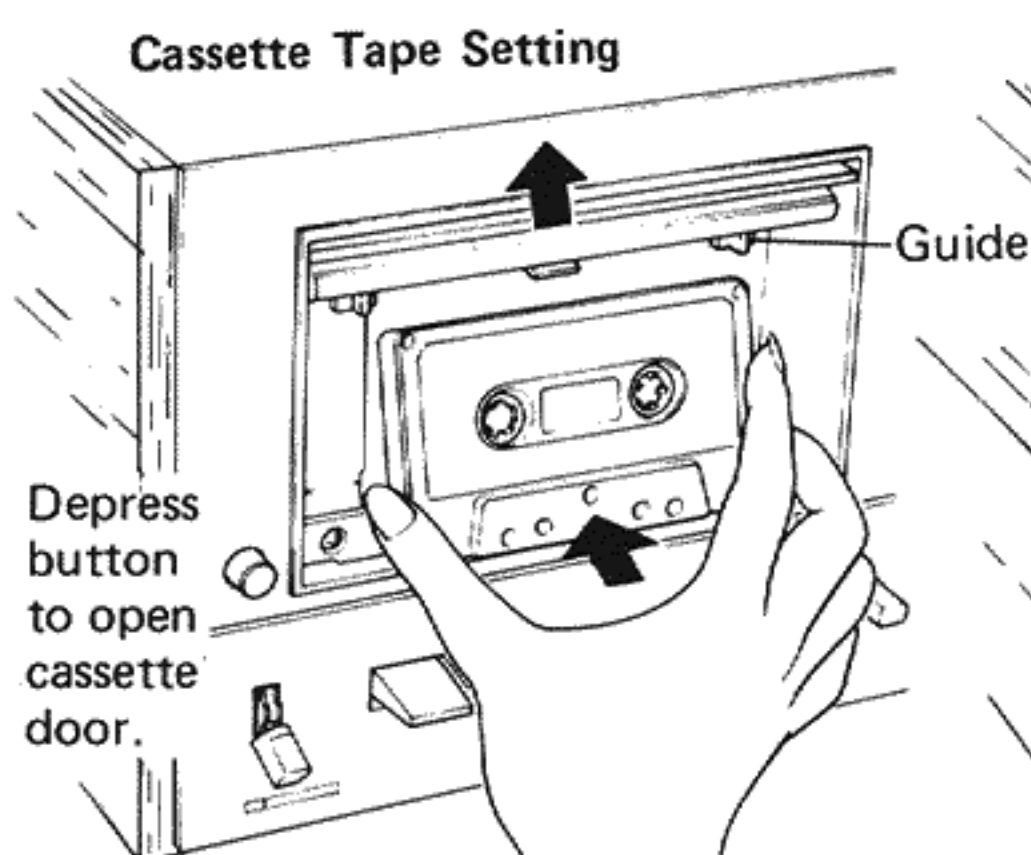
Tape Storage Location

When storing cassette tapes, select a location that is free from dust, oil and magnetic fields.
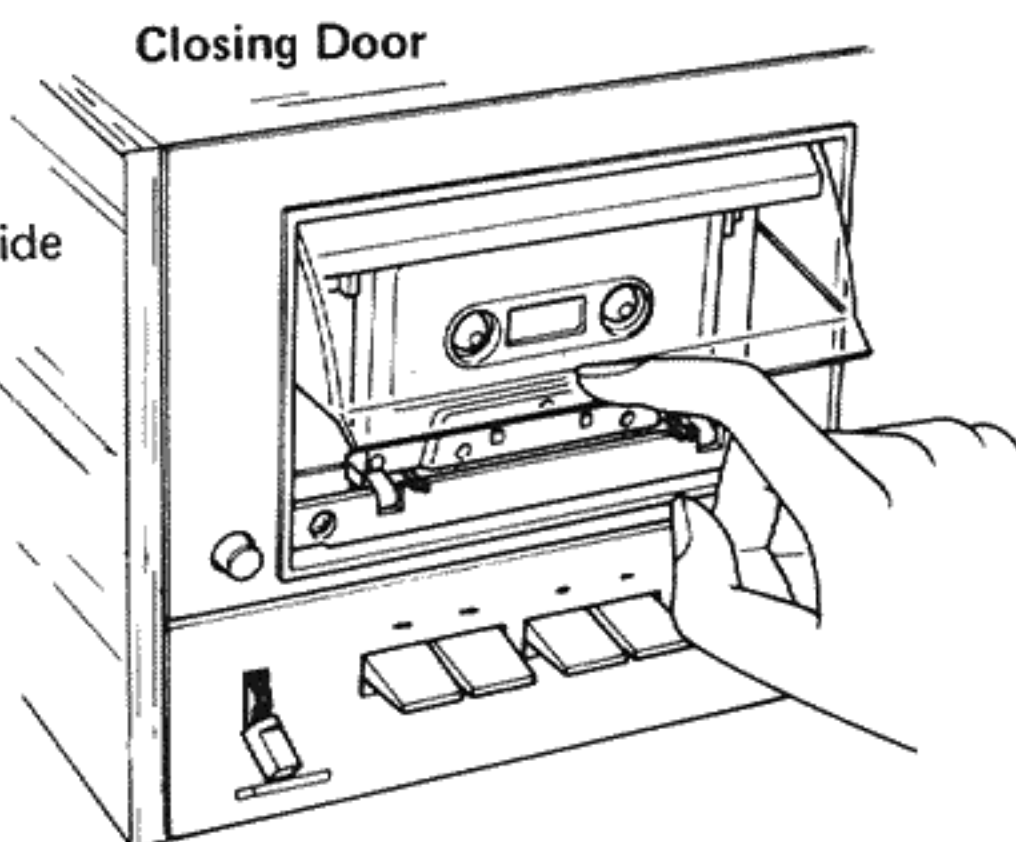
Do Not Touch Tape

Do not touch the tape directly with the hand. This can cause possible sound skipping.
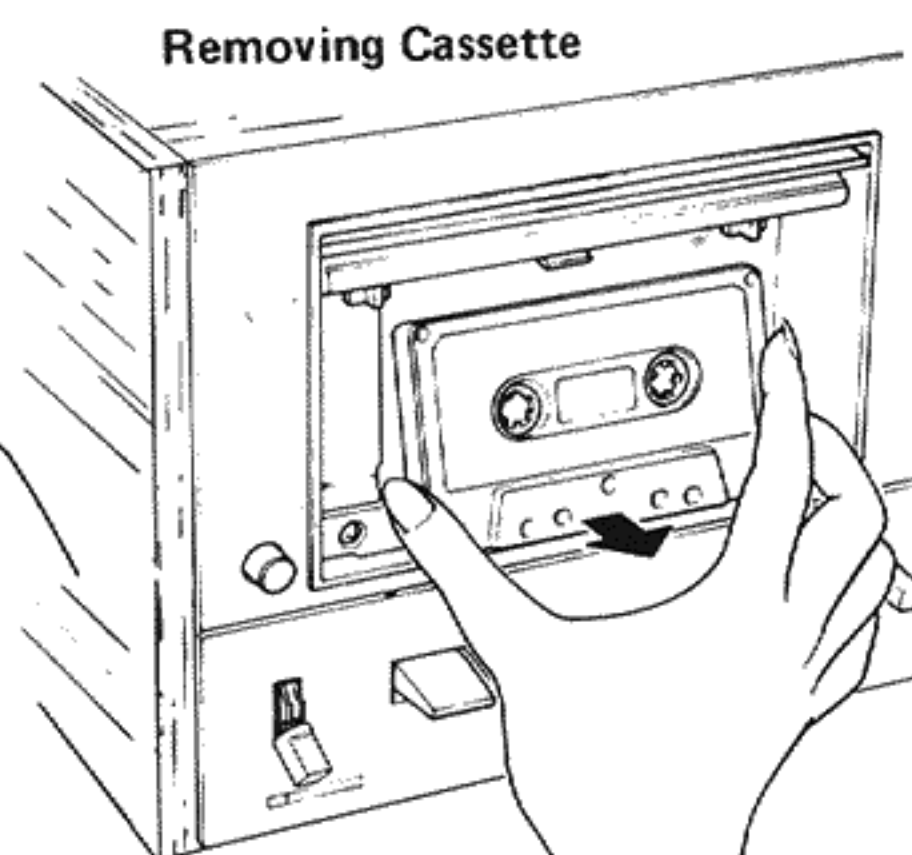
BASIC OPERATION

TAPE SETTING AND REMOVAL

Cassette Tape Setting

Guide

Depress button to open cassette door.

Align cassette between guides and insert with an upward motion.

Closing Door

Slide cassette door downward with fingertips to close.

Removing Cassette

Open cassette door and pull cassette outward.

TAPE RUNNING

REW ◄◄ FF ►►   STOP ■ PLAY ►   PLAY ► REC ●

Rewind (REW)

1 Confirm presence of tape on right reel.
2 Depress REW lever. Tape will travel from right to left at high speed.

Fast Forward (FF)

1 Confirm presence of tape on left reel.
2 Depress FF lever. Tape will travel from left to right at high speed.

Stop

Depress STOP lever to stop tape motion. This also releases other operating levers.

Play & REC Motion
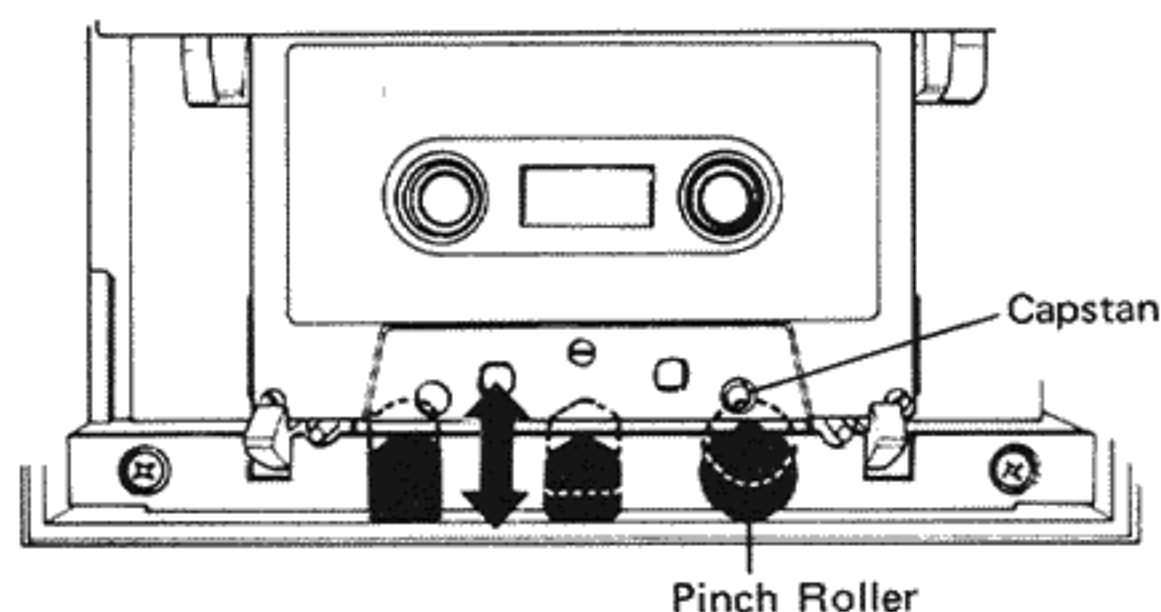
1 Confirm presence of tape on left reel.
2 Depress PLAY lever (and REC lever if recording). Tape will travel from left to right at play speed and tape counter will advance.

NOTES:
1. Do not depress more than one lever at a time, except for the PLAY and REC levers during recording.
2. It is not necessary to depress the STOP lever between selecting different modes.

PAUSE SWITCH OPERATION

1. Tape motion can be stopped during record or play without releasing the PLAY lever (and REC lever if recording) by setting the PAUSE switch to ON.
2. Set PAUSE switch to OFF to resume tape motion.

Capstan

Pinch Roller

With PAUSE switch ON, pinch roller separates from capstan to temporarily stop tape motion; motor (capstan) and amplifier continue to operate.

Fig. 4

AUTOMATIC STOPPING MECHANISM

During each operating mode (record, play, fast forward, rewind) when the tape becomes completely wound onto one reel, even if the STOP lever is not depressed the tape will be automatically stopped and the operating levers released. This automatic stopping function takes several seconds to complete.

CHROME TAPE DETECTOR

A chrome tape detector mechanism is provided in the CT-F9191. If the employed cassette tape is provided with extra holes, the bias and equalization become automatically set for chrome tape. In this case, it is not necessary to depress the BIAS and EQ buttons.
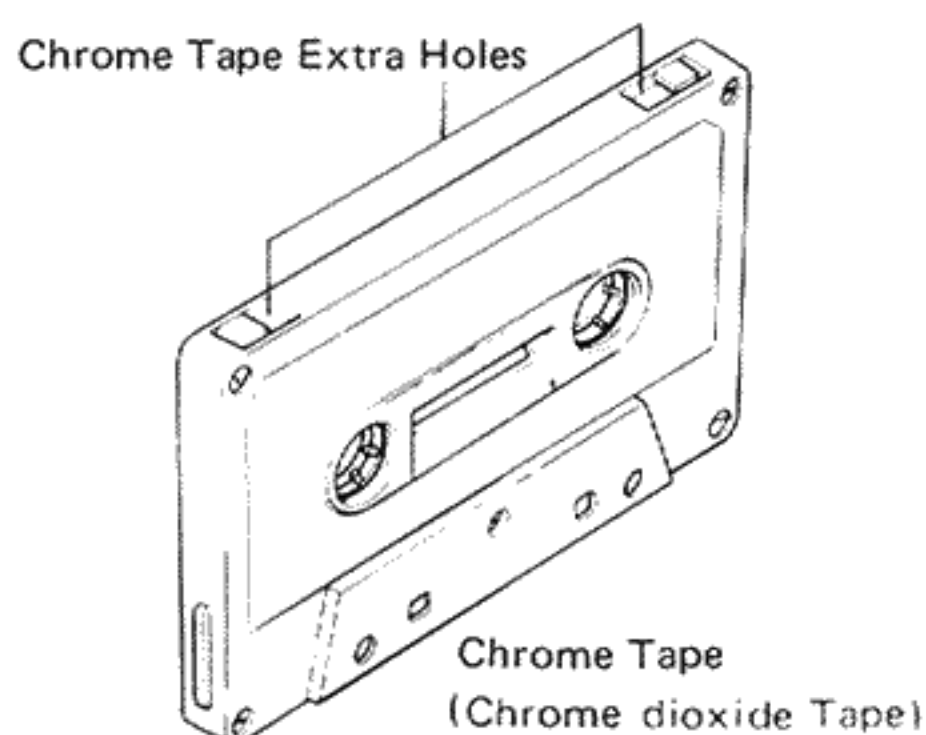

Chrome Tape Extra Holes

Chrome Tape
(Chrome dioxide Tape)

Fig. 5

MEMORY BUTTON OPERATION

Memory stop and memory play functions are provided. The memory stop automatically stops the rewind operation at a preselected point and releases the operating levers, while the memory play function will in addition automatically switch to the play mode.

Memory Stop

1. Depress MEMORY button to ON.
2. While the tape is running, when the desired playback starting location is reached, depress the counter RESET button to obtain a 000 counter indication.
3. Begin play or recording.
4. Stop play (or recording) at desired location and depress the REW lever. Tape will rewind.
5. When the counter indication reaches 999, the tape will be automatically stopped and the REW lever released.

Fig. 6

Memory Play

1. Depress MEMORY button to ON.
2. While the tape is running, when the desired playback starting location is reached, depress the counter RESET button to obtain a 000 counter indication.
3. Continue play or recording.
4. Stop play (recording) at the desired location and depress the REW lever. Tape will rewind.
5. During tape rewind, depress the PLAY lever. Rewind will continue.
6. When the counter indication reaches 999, the tape will be automatically stopped and switched to play mode.
● If tape runs out during play, the CT-F9191 will automatically stop and release the PLAY lever.
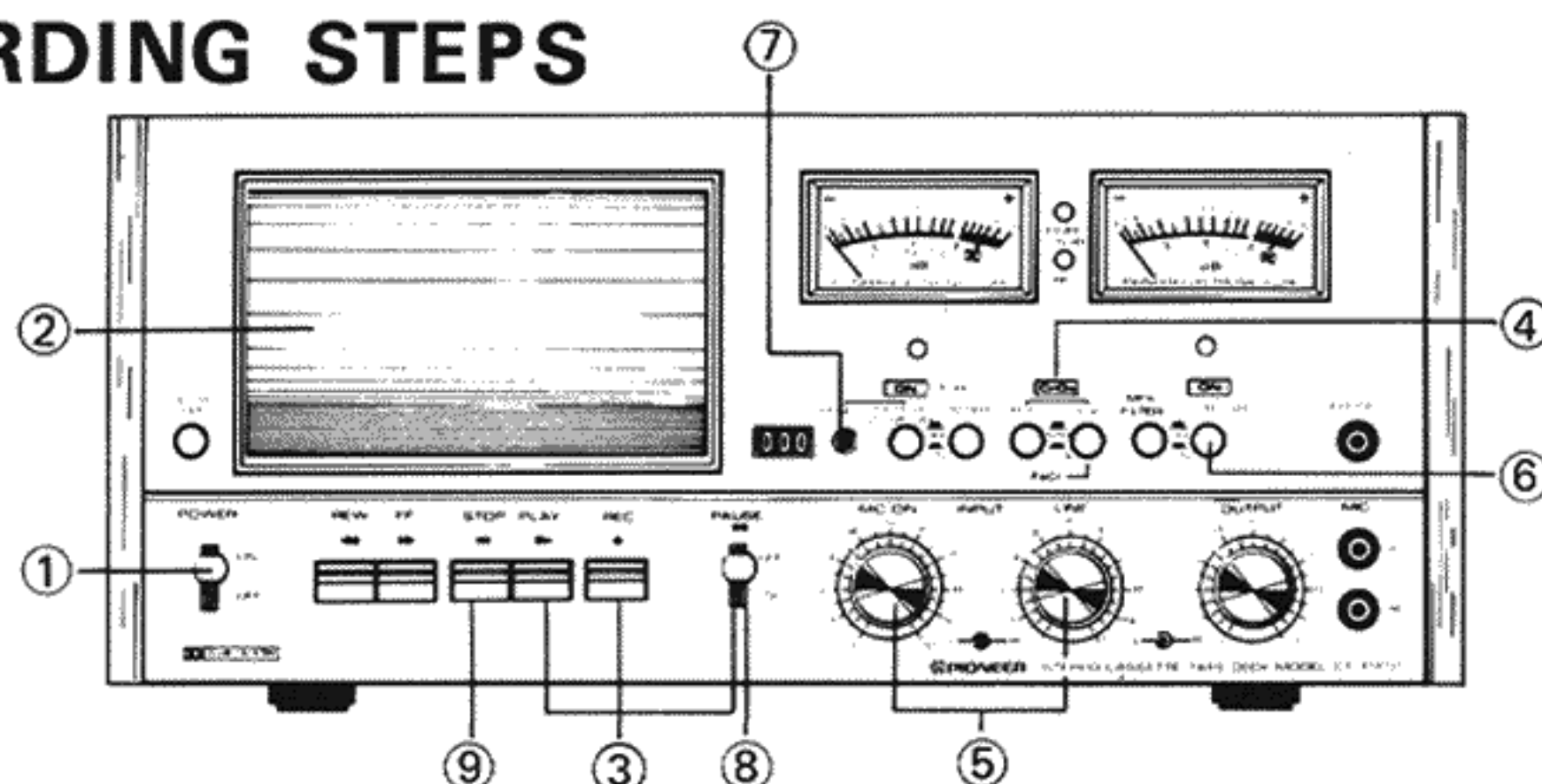
NOTE:
Be sure to set the MEMORY button to OFF (undepressed) when not employing the memory stop or memory play functions.

MEMORY MARKER DIALS

These dials are provided for marking preferred settings for the MIC/DIN, LINE and OUTPUT controls. If recordings are often made from FM broadcasts, for example, the markers can be set to indicate optimum recording level and optimum output level for the employed stereo amplifier.

RECORDING STEPS

Numbers in figure correspond to following operating step sequence.

1. Set POWER switch to ON

2. Insert cassette

Confirm presence of tape on left reel.

3. Recording standby

Set PAUSE switch to ON, then simultaneously depress the REC and PLAY levers. The REC indicator lamp will light.

4. Set BIAS and EQ buttons

Set BIAS and EQ buttons according to the employed tape. Refer to BIAS & EQ Selector Buttons on the next page.

5. Adjust recording level

Refer to the following section "Recording Level Setting" and set the recording level.

NOTE:
When recording only from a source connected to the INPUT (REC) jacks, be sure to turn the MIC/DIN controls fully counterclockwise.

6. Select DOLBY NR button position

Depress button to ON to perform Dolby recording. Refer to "Employing Dolby System" on page 16.

7. Reset tape counter

Depress counter RESET button to obtain 000 indication.

8. Begin recording

Set PAUSE switch to OFF to start tape running. Confirm level meter deflection, peak indicator lighting, tape counter advancement, and visually observe tape running condition.

9. End recording

When recording is completed, depress the STOP lever. The REC and PLAY levers will be released. If tape runs out during recording, the CT-F9191 will automatically stop and release the REC and PLAY levers.

RECORDING LEVEL SETTING

The recording level setting strongly influences the playback sound. If set too high, where the level meters deflect beyond scale, distortion will be produced. Conversely, insufficient recording level results in lowered SN ratio, making noise more apparent during playback. Normally set the recording level so that at high signal points within the source, the level meters indicate in the range of —3dB ~ 0dB and where the PEAK indicator does not light rhythmically. Use care when setting, since meter deflection varies considerably according to the program source.

PEAK Indicator

When the program source (broadcast or microphone) applied to the CT-F9191 reaches +5dB (approximately 1.8 times) the recording reference level, the PEAK indicator lights to advise of over

level. Since peak levels are indicated, the indicator will sometimes light even though the meters may show less than 0dB. If the PEAK indicator lights only occasionally during a recording, the recording will not be adversely affected.
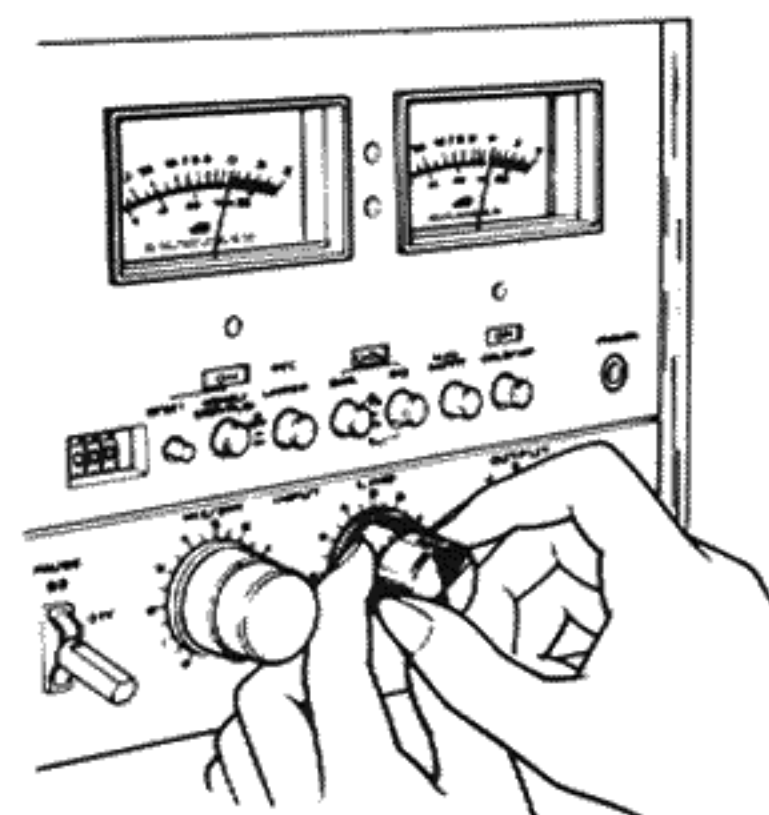

Fig. 7

LIMITER RECORDING

With the exception of special cases, the over level limiter functions to automatically reduce a large input signal so that the recorded waveform does not distort. Set the REC LIMITER button to ON after adjusting the recording level. Low distortion recording can then be performed even with occasional high level input signals. When the button is not depressed (OFF) and recording levels are adjusted in reference to the meters for absence of distortion, noise may become apparent and objectionable at low levels.

Depressing the REC LIMITER button is effective with program sources such as the following.

- Live or on-location recordings, where difference between high and low levels is severe.
- Memo recording at meetings or social gatherings.
- Situations where instantaneous high level sounds occur during recording.

EMPLOYING MPX FILTER

If FM stereo pilot signal (19kHz) leakage is incurred from the FM tuner, Dolby response can be affected. Therefore, set this button to ON when performing FM Dolby "ON" recording. By setting the button to OFF during other types of recording, the filter effect is eliminated to provide a wider bandwidth and more faithful recording.
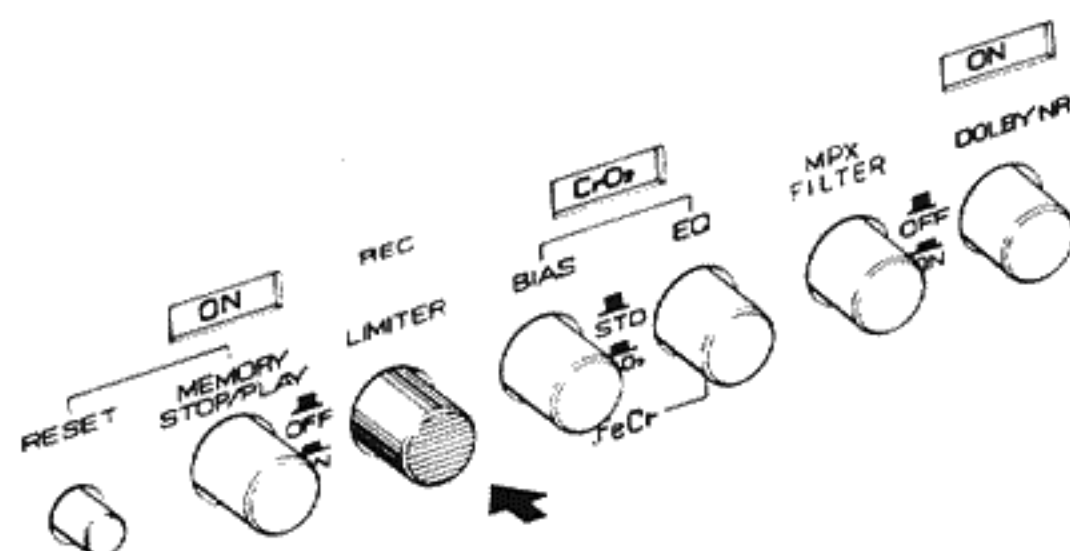

Fig. 8

EMPLOYING THE PAUSE SWITCH

It is convenient to set the PAUSE switch to ON in the following situations.

- When setting the recording level.
- To skip unnecessary portions of the program source, then continue recording.
- To temporarily interrupt the sound during play.

NOTES:
1. Be sure to depress the STOP button to stop the tape for an extended period.
2. When recording onto previously recorded tape, operating the PAUSE switch will cause a section of the earlier sound to remain. This should be allowed for when recording.

ERASING TAPE

- Recording onto previously recorded tape automatically erases the earlier sound.
- To completely erase a tape, set the MIC/DIN and LINE level controls fully counterclockwise to 0, then record (without an input signal). This will erase the tape.

BIAS & EQ SELECTOR BUTTONS

Bias and equalization selector buttons are provided for matching tape characteristics in order to derive full tape performance and produce low distortion recordings. Although these buttons can be set according to personal preference, Table 2 shows the recommended settings based on tape types.

Major Tape Brands & Button Settings

Table 2

BIAS & EQ SETTINGS	TAPE	
STD POSITION (BUTTONS IN UNDEPRESSED POSITION)	MEMOREX	C-60, C-90
	BASF	C-60LH, C-90H
	AGFA	C-60, C-90
		SUPER C-60 - 6
		SUPER C-90 + 6
	SCOTCH	C-60, C-90 (DYNARANGE)
	MAXELL	LN C-60, C-90
		UD C-60, C-90
		UDXL C-60
	TDK	D C-60, D C-90
		SD C-60, SD C-90
		ED C-60, ED C-90
	FUJI	FM C-60, FL C-60, FX C-60
		FM C-90, FL C-90, FX C-90
	SONY	C-60, C-90
		C-60HF, C-90HF
CrO₂ POSITION (BUTTONS IN DEPRESSED POSITION)	MEMOREX	CHROMIUM DIOXIDE C-60
		CHROMIUM DIOXIDE
	BASF	CHROMDIOXID C-60
		CHROMDIOXID C-90
	PHILIPS	CHROMIUM DIOXIDE C-60
		CHROMIUM DIOXIDE C-90
	MAXELL	CHROME DIOXIDE C-60(CR)
		CHROME DIOXIDE C-90(CR)
	TDK	KR C-60, KR C-90
		SA C-60
	FUJI	FC C-60, FC C-90
	SONY	C-60CR, C-90CR
DURING RECORDING BIAS-STD EQ-CrO₂ DURING PLAY EQ-CrO₂	SONY	DUAD C-60, C-90
	SCOTCH	CLASSIC C-60
		CLASSIC C-90
		In some cases, setting EQ to STD may be preferable on playback.

In addition to these, different button settings according to tape type may provide improved results.

NOTES:
1. When playing commercially pre-recorded chrome tape, set EQ to CrO₂ (depressed) for 70µs high frequency response tape, and to STD (undepressed) for general type chrome tape.
2. If the chrome tape is provided with indexing holes, the CT-F9191 BIAS and EQ settings become automatically performed. In this case, it is not necessary to operate these buttons.

RECORDING VIA MICROPHONES

STEREO RECORDING

This requires a stereo type microphone or two units of the same model microphone. Plug into the front panel L & R MIC jacks. Use care to plug the left channel microphone into the L jack and the right channel microphone into the R jack. Proceed with recording as described in "Recording Steps" on page 10.

MIXING RECORDING

Mixing recording can be performed between the MIC and INPUT (REC) jack signals, and between the DIN REC/PLAY and INPUT (REC) jack signals.

Mixing between MIC & INPUT (REC) Jack Signals

1. Connect microphones to MIC jacks, and signal from stereo amplifier to INPUT (REC) jacks.
2. Use the MIC/DIN controls to·adjust the microphone levels, and the LINE controls to adjust the signal levels from the stereo amplifier.
3. Proceed with recording as described in "Recording Steps" on page 10.

Mixing between DIN REC/PLAY and INPUT (REC) Jack Signals

1. Connect DIN plug equipped program source to the DIN REC/PLAY jack, and signal from stereo amplifier to the INPUT (REC) jacks.
2. Use the MIC/DIN controls to adjust the DIN REC/PLAY jack source levels, and the LINE controls to adjust the signal levels from the stereo amplifier.
3. Proceed with recording as described in "Recording Steps" on page 10.

NOTES:
1. *When mixing recording is completed, set the unused level controls fully counterclockwise to minimum.*
2. *Better results can usually be obtained during mixing recording by setting the LINE recording levels to a slightly lower value than used for independent microphone or input (INPUT REC) signal recording.*

Example of Recording with Microphones

Fig. 9

Separate Microphones from Speakers When Employing.

Connecting Example for Mixing Recording

Connect to MIC Jacks   Fig. 10

Mono Recording

- When connecting only one monophonic microphone, turn the MIC/DIN level control of the unused channel (L or R) fully counterclockwise to minimum.
- If recording via the INPUT (REC) jacks, improved results may be obtained by connecting the mono signal to both left and right channels of the CT-F9191. This requires a separately sold connecting cord.

FOLLOW-ON RECORDING

While playing a previously recorded program, a new program source can be recorded immediately following it.

1. Connect new program source to INPUT (REC) or MIC jacks.
2. Adjust recording level.
3. Depress PLAY lever to play tape. When the desired point for follow-on recording is reached, hold down the PLAY lever and depress the REC lever.
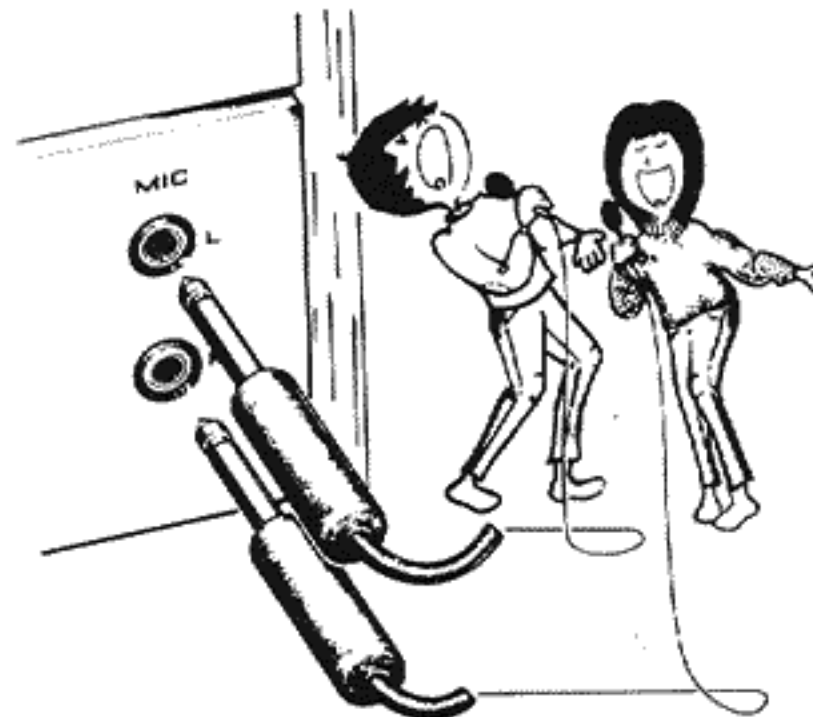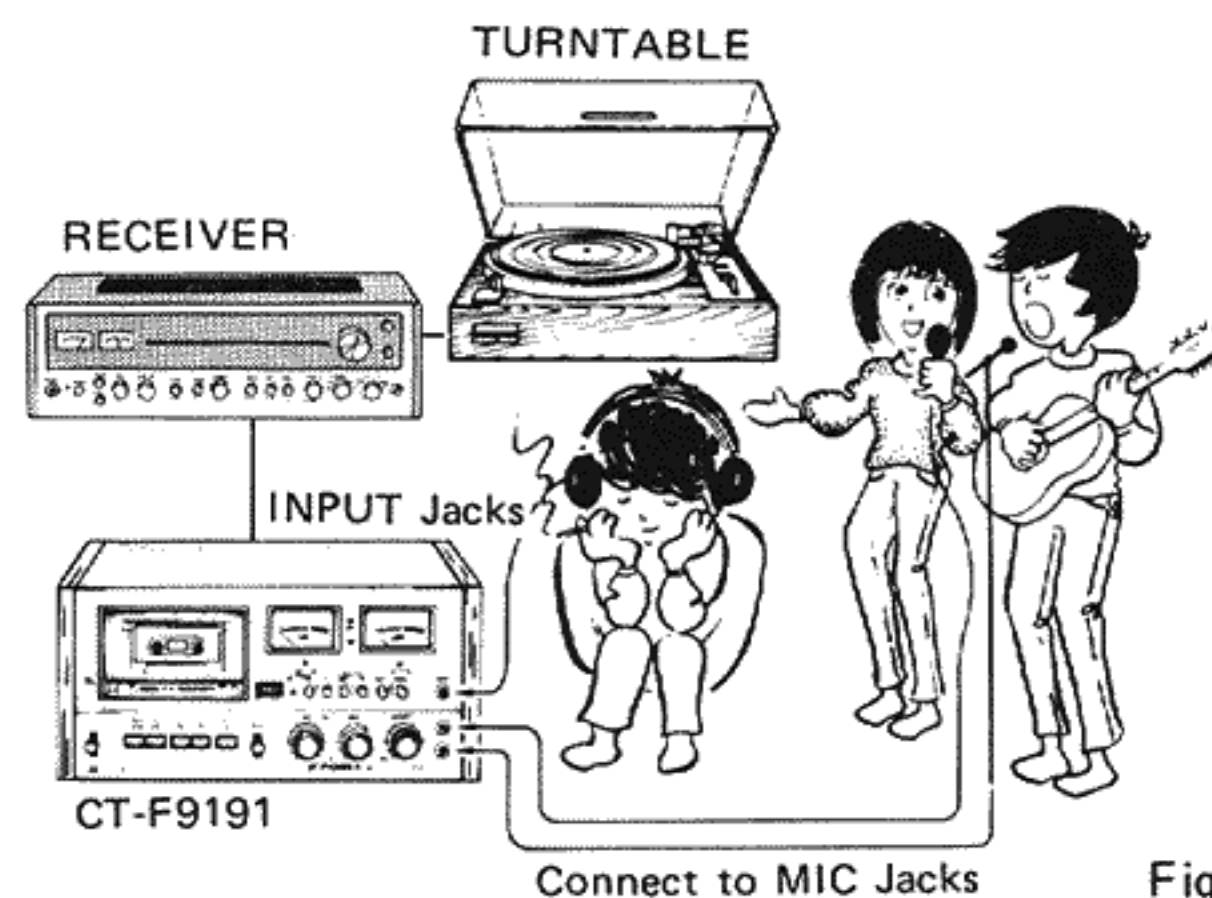
4. Recording of the new program source will begin.

NOTES:
- *Before recording onto previously recorded tape, observe that the erase protector tab of the desired side has not been broken off. If the tab has been removed, cover the tab opening with cellophane tape.*
- *If the REC lever only is depressed, the PLAY lever will become released, stopping the tape motion. Be sure to depress both PLAY and REC levers simultaneously.*

Microphone Recording Notes

Observe the following points when recording with microphones.

- Employ dynamic or electret condenser microphones.
- Use high impedance (more than 20kΩ) microphones with cord lengths of less than 5 meters (about 16 ft.)
- Be sure to unplug microphones when not employing them. If left connected, a source connected to the DIN REC/PLAY jack cannot be recorded.
- When recording with microphones, monitoring via headphones is recommended for better results.

EMPLOYING MEMORY MARKER

During mixing recording, employ the memory markers to indicate preferred settings for the MIC/DIN and LINE controls. This will also aid in employing fade in and fade out recording techniques.
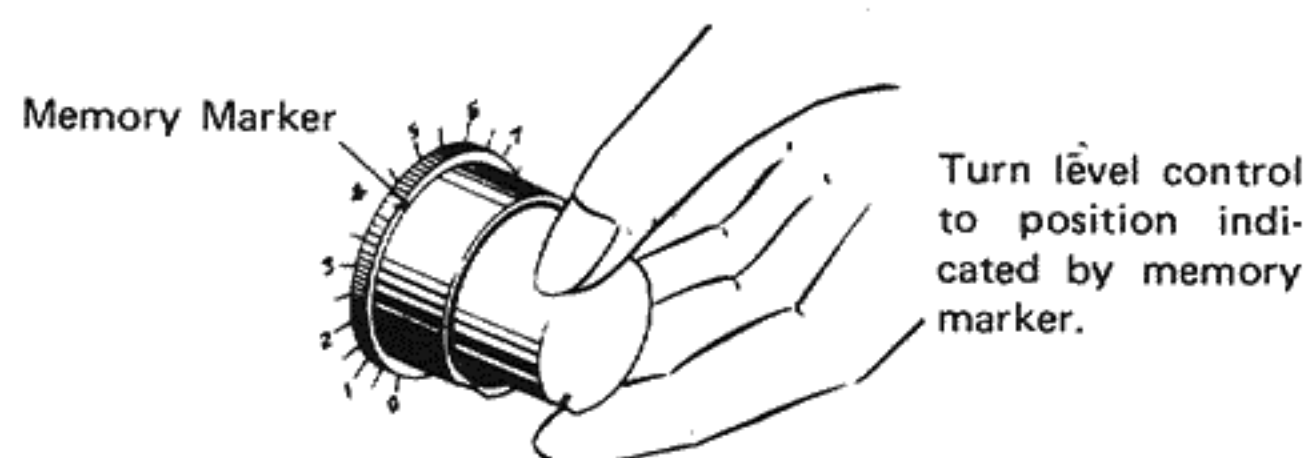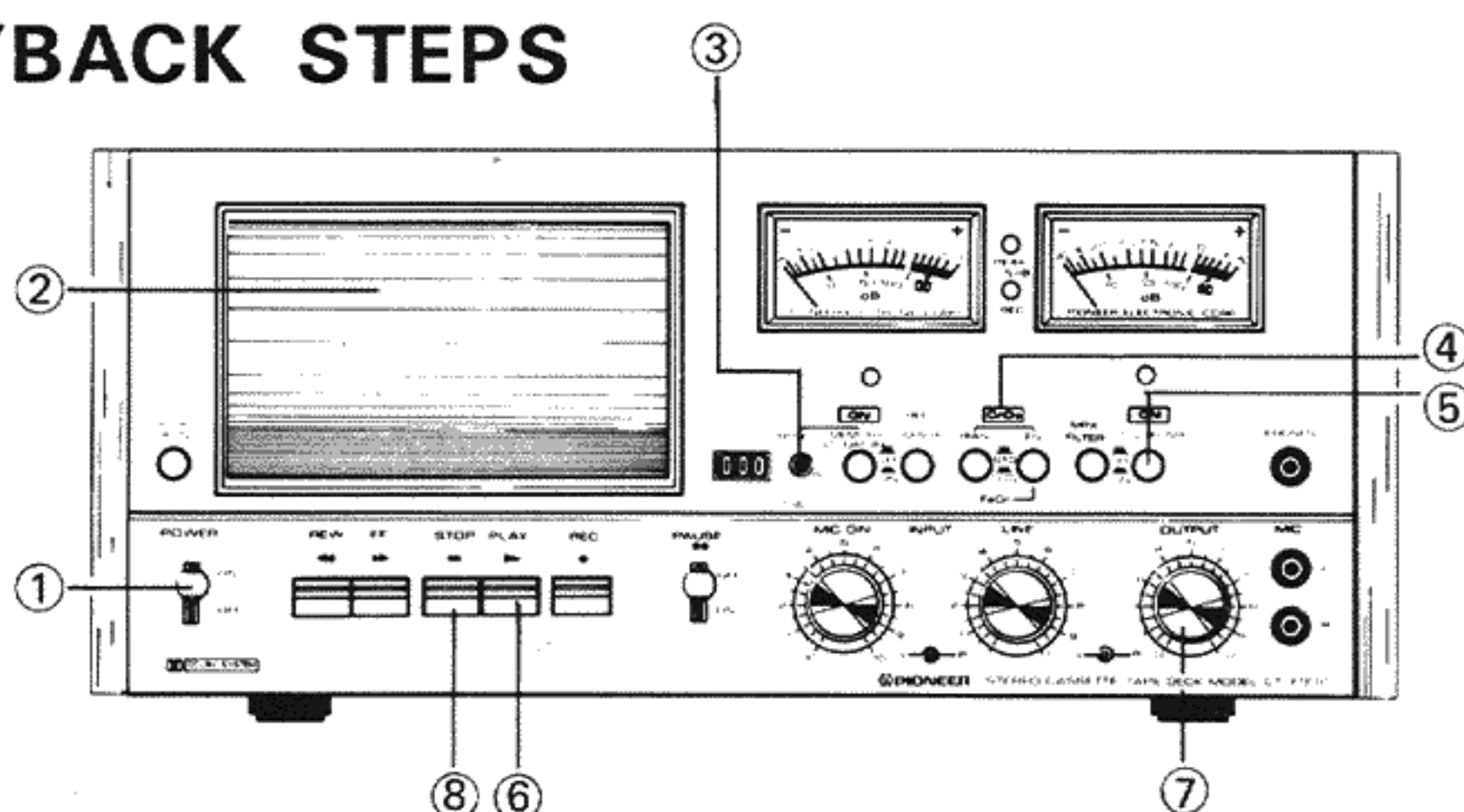

Memory Marker

Turn level control to position indicated by memory marker.

Fig. 11

PLAYBACK STEPS

Numbers in figure correspond to following operating step sequence.

1. Set POWER switch to ON

2. Insert cassette

Confirm presence of tape on left reel of pre-recorded cassette.

3. Depress counter RESET button

Depress RESET button to obtain 000 counter indication.

4. Set BIAS and EQ buttons

Set BIAS and EQ buttons according to the type of tape. Refer to BIAS & EQ Selector Buttons on page 11.

5. Set DOLBY NR button

Depress button to play Dolby recorded tape.

6. Play tape

Depress PLAY lever to start tape play.

7. Adjust OUTPUT level controls

Turn the OUTPUT level controls and set for desired level.

8. End of play

When play is completed, depress the STOP lever. The PLAY lever will be released. If the tape runs out during play, the CT-F9191 will automatically stop and release the PLAY lever.

REPETITIVE PLAY

To again listen to the same passage, as when memorizing the words of a song, operate as follows.

1. Just prior to the desired passage, depress the counter RESET and MEMORY buttons.
2. At the end of tape, or end of desired passage, depress the REW lever.
3. While the tape is rewinding, depress the PLAY lever. The tape will rewind to 999 counter indication, then automatically switch to play. If not desiring to replay the passage immediately, do not depress the PLAY button. The tape will then rewind to 999 counter indication and stop.

OPERATION WITH TIMER

UNATTENDED RECORDING

By employing a separately sold digital timer, an FM broadcast etc. can be automatically recorded at a specified time. This is convenient for recording while absent or sleeping.

1. As shown in Fig. 12, plug the CT-F9191 power cord into one of the AC outlets of a digital timer.
2. Set CT-F9191 POWER switch to ON.
3. Set the PAUSE switch to ON, then simultaneously depress the REC and PLAY levers.
4. Turn on the power switches of the other stereo system components and tune in desired station. Set the CT-F9191 recording level.
5. Refer to the digital timer operating instructions and set the operating time. Stereo system power will be cut off.
6. So that sound will not be obtained from the speaker system, turn the amplifier volume control to minimum.
7. Set CT-F9191 PAUSE switch to OFF.
8. Power becomes supplied to the equipment at the time set on the timer and recording will begin about 2 seconds later. If the tape runs out, the CT-F9191 will automatically stop, while the timer functions to eventually turn off the system power.

AUTOMATIC PLAY

A digital timer can be employed for automatically playing a pre-recorded tape at a desired time. This is convenient as a morning wake-up alarm.

1. Connect CT-F9191 power cord to a digital timer as shown in Fig. 12.
2. Set CT-F9191 and stereo system power switches to ON.
3. Turn amplifier volume control for normal listening level.
4. Set tape monitor switch of amplifier to ON.
5. Refer to the digital timer operating instructions and set the desired time. CT-F9191 and stereo system power will be cut off.
6. Depress CT-F9191 PLAY lever; this will set for automatic play.
7. Power becomes supplied to the equipment at the time set on the timer and tape play begins about 2 seconds later. If the tape runs out, the CT-F9191 will automatically stop, while the timer functions to eventually turn off the system power.

NOTE:
For detailed information, refer to digital timer operating instructions.

Unattended Recording & Automatic Playback Connections
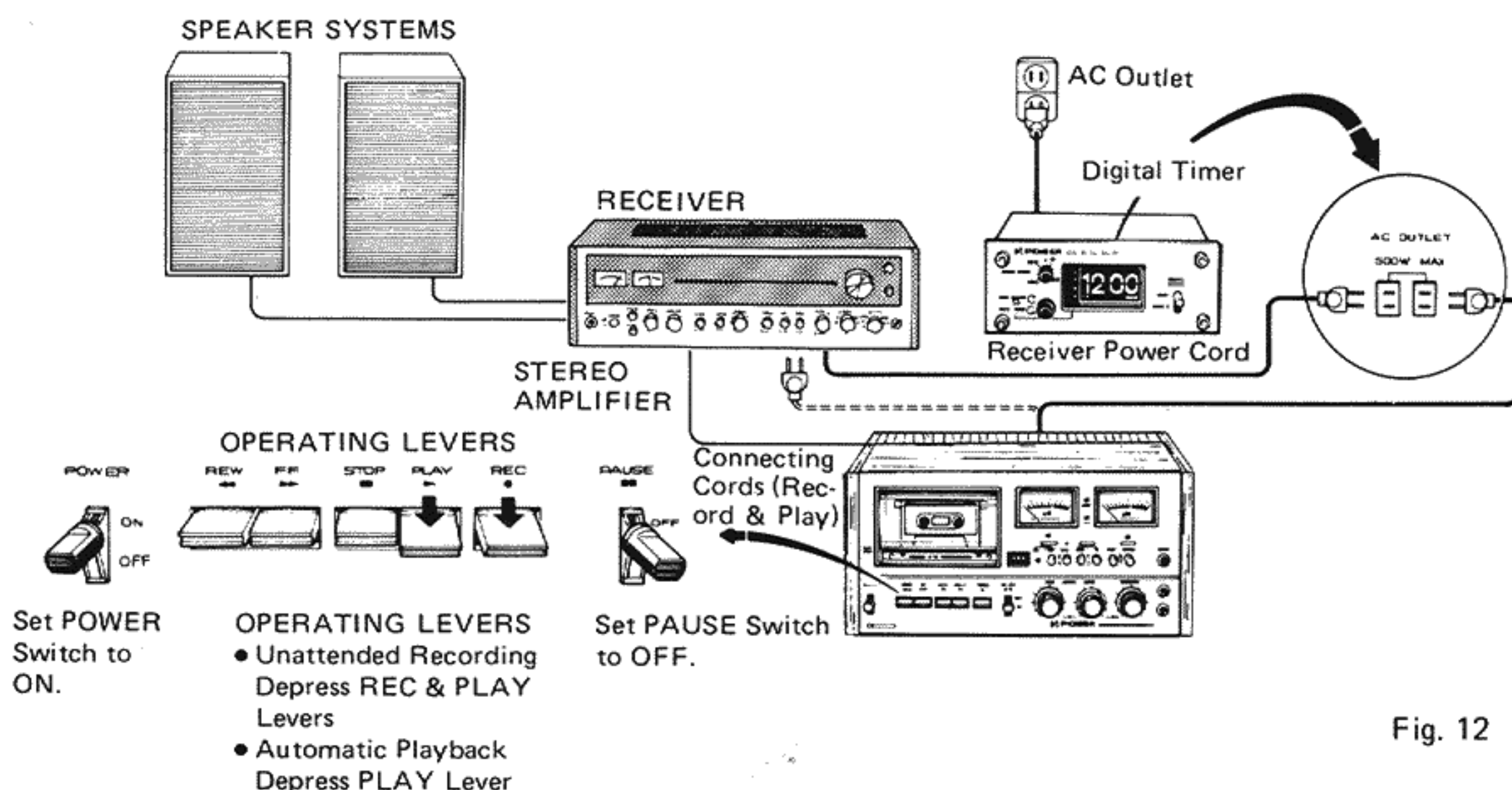

Fig. 12

MAINTENANCE

Regular maintenance is important for equipment that contains rotating parts, such as cassette tape decks. The simple maintenance steps described below should be performed regularly and carefully in order to ensure continued high performance.

HEAD ASSEMBLY CLEANING

With extended use, dust and dirt can accumulate on the heads and capstan, which can lead to deteriorated sound quality and sound skipping. To prevent this, carefully clean the heads, capstan and surrounding parts at regular intervals with the accessory cleaning stick or a soft cloth.

Extend Head Assembly for Easier Cleaning

1. Set POWER switch to ON.
2. With the fingertips (see Fig. 13) raise the cassette retainer ① and at the same time depress the cassette detector pin ②.
3. Depress the PLAY lever, release the cassette detector pin ① and proceed with cleaning.

NOTES:
1. Avoid bringing metallic objects, such as screwdrivers, pliers, magnets, etc. near the heads.
2. Do not use paint thinner, benzene, alcohol or other volatile liquids to clean the case and panel.

CLEANING DOOR INTERIOR

Use the accessory polishing cloth to clean dust and dirt from the cassette door interior as shown in Fig. 14. If dust is present at the upper section of the door, fold the cloth in thirds and wedge it between the door and upper cover. Then open and close the door several times to perform cleaning.

NOTE:
During dry weather, when static electricity causes dust to adhere to the door, dampen the polishing cloth slightly with water and perform cleaning.

HEAD DEMAGNETIZING

With long use, the heads can become slightly magnetized, while they can become more strongly magnetized if magnetic objects such as magnetic tipped screwdrivers are brought into proximity with them. This can cause loss of high frequency response and induce noise into recording and playback. At regular intervals, employ a separately sold head eraser to demagnetize the heads and surrounding parts. Refer to the head eraser operating instructions for detailed information.
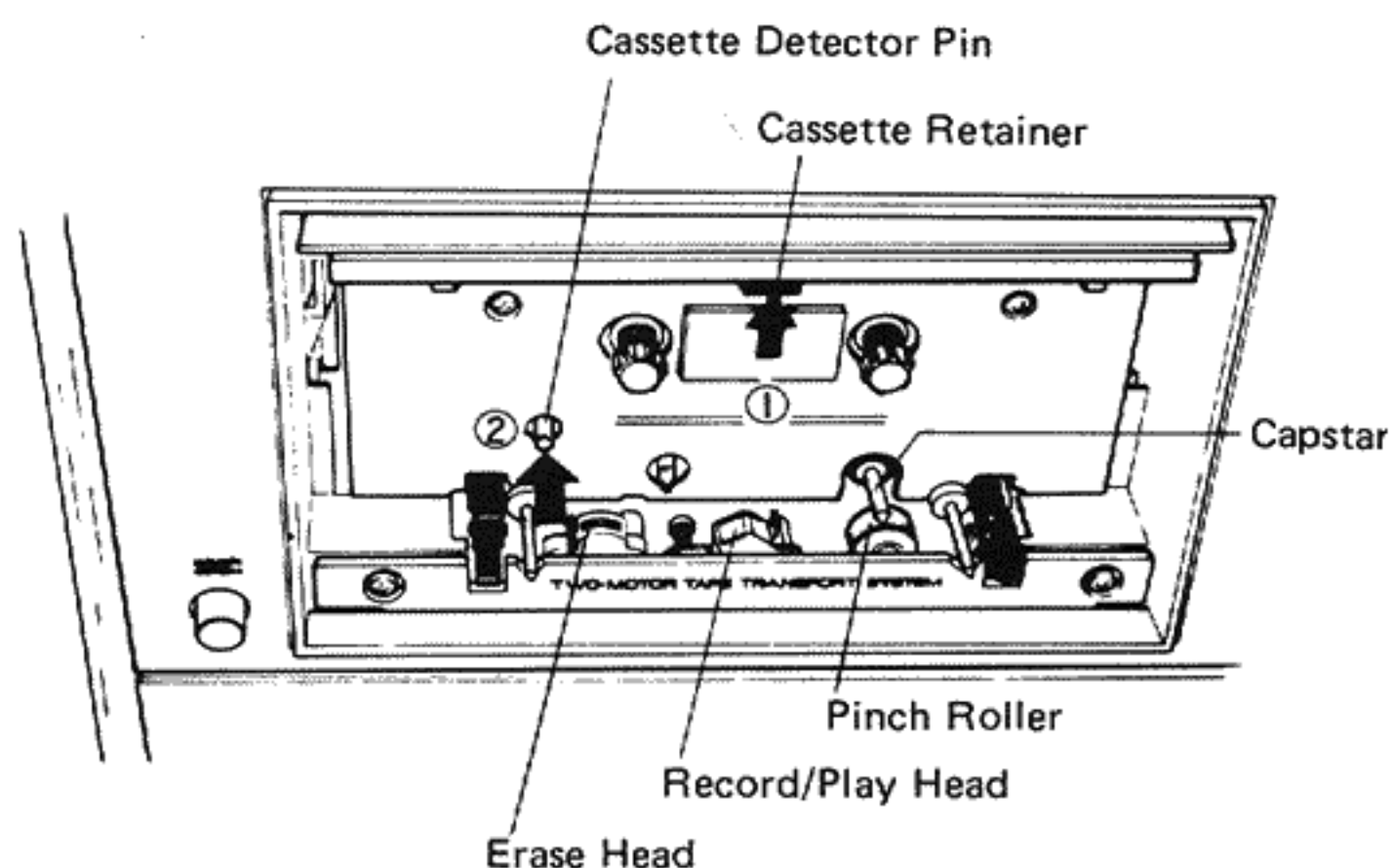
Cleaning Head Assembly

Cassette Detector Pin
Cassette Retainer
Capstar
Pinch Roller
Record/Play Head
Erase Head

Fig. 13

Cleaning Door Interior

Accessory Polishing Cloth

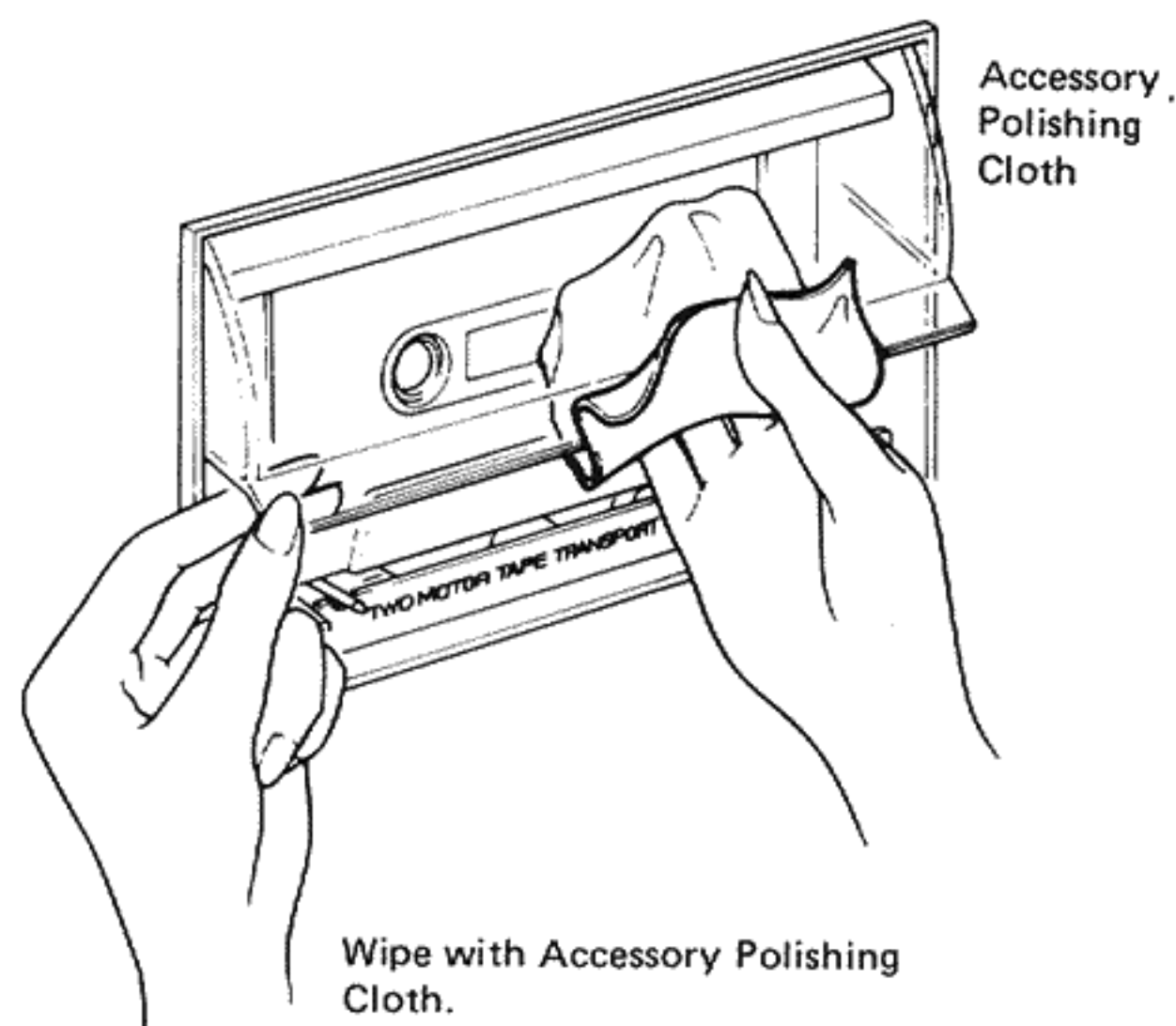Wipe with Accessory Polishing Cloth.

Fig. 14

EMPLOYING DOLBY SYSTEM

The Dolby System is a method of noise reduction pertaining to noise generated in the playback process. It is currently widely employed throughout the world. As the system is mainly concerned with noise produced by the tape itself, it cannot appreciably reduce noise contained in the program source being recorded. For this reason, the signal should be as free from noise as possible in order to derive maximum benefit from the Dolby process. Noisy records or FM signals etc. should be avoided.

PRINCIPLE

The magnetic tape employed with a tape recorder possesses a certain degree of inherent noise. Within this noise, the most easily audible is mid to high frequency hiss noise, which is considered to arise from magnetic particle size. If the magnetic particles are small, or if the tape speed is increased, which in practice is equivalent to reducing the particle size, tape hiss noise becomes reduced. The slow speed employed by cassette tape however, places it at a disadvantage in this respect.

The Dolby system (B type) built-into the CT-F9191 is intended mainly for reducing this hiss noise. An A type system is also available which reduces all types of noise (employed only in special professional applications). Although the noise reduction frequency band differs, both types under optimum conditions are capable of providing up to 10dB improvement.

The B type noise reduction system performs as follows.

During recording, when the input signal declines below the reference level, the mid and high frequency components are successively enhanced prior to recording. The opposite process is employed during playback, i.e.: mid and high frequency components below the reference level are attenuated prior to playback. Although the signal is returned to its original form, hiss noise produced in the playback process becomes significantly reduced.

TAPE SELECTION

The CT-F9191 does not present special requirements. Although there are some differences among standard, chrome and LH types, nearly all types of cassette tape can be employed. Caution is recommended however, regarding C-120, ultra high sensitivity LH tape, and special purpose tapes.

RECORDING LEVEL

Recording level adjustment is generally the same as with non-Dolby recordings. With wide dynamic range sources, such as live recording via microphones, it may be advisable to set the recording level lower than normal. Since the Dolby system also provides some reduction in high level sounds, it becomes an advantage during live recording.
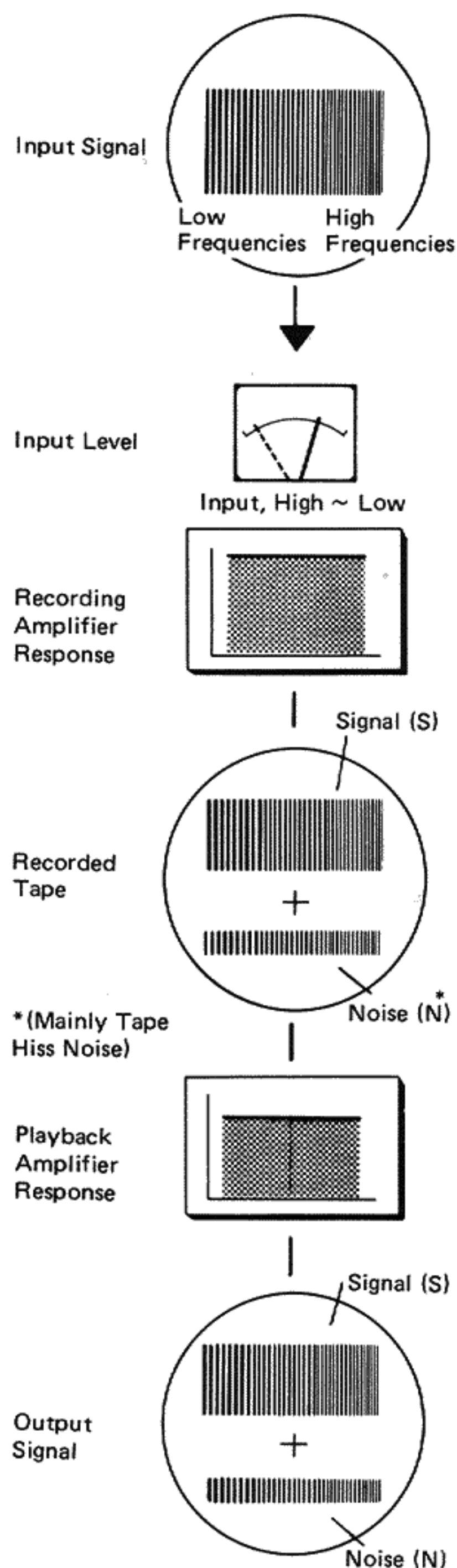
PLAYBACK

- Commercially sold pre-recorded tapes produced by the Dolby system (Dolby encoded tape) can be played via the CT-F9191 Dolby mode for low noise sound reproduction.
- The Dolby system must be applied during both recording and playback in order to provide satisfactory performance. Normal playback of Dolby recorded tape, or Dolby playback of normally recorded tape will result in unnatural frequency balance and interfere with program enjoyment.

NOTE:
In some cases with particularly high sensitivity tape, Dolby recording and playback can produce frequency response deviation, rather than the improved tone normally expected.
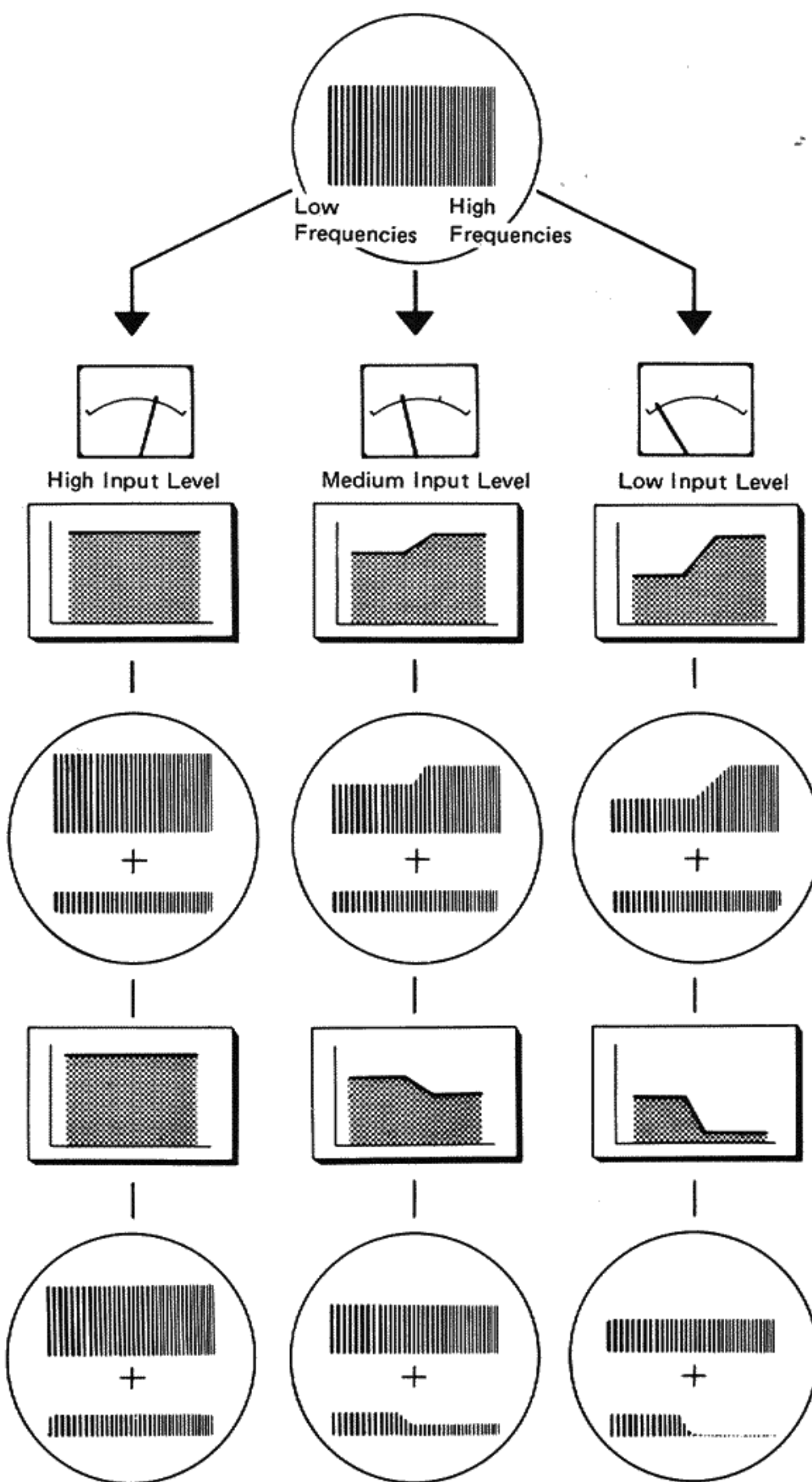
DOLBY SYSTEM PRINCIPLE

Conventional Tape Deck

Input Signal

Low Frequencies | High Frequencies

Input Level

Input, High ~ Low

Recording Amplifier Response

Recorded Tape

Signal (S)

*(Mainly Tape Hiss Noise)

Noise (N)*

Playback Amplifier Response

Output Signal

Signal (S)

Noise (N)

● Recording and playback amplifier response is fixed without regard to input and output levels. If the original level is low, the SN ratio declines, rendering hiss noise more apparent.

Dolby System Tape Deck

Low Frequencies | High Frequencies

High Input Level | Medium Input Level | Low Input Level

● Recording and playback amplifier response varies according to input and output levels. Noise reduction effect is greatest at low levels, where hiss noise in mid and high frequencies becomes more apparent due to reduced SN ratio.

TROUBLE? PLEASE CHECK

Most cases of operating difficulty can be traced to simple causes such as improper maintenance, incorrect or loose connections, defective tape, and incorrect operating method. The following checklist is provided for correcting the most commonly experienced difficulties.

DIFFICULTY	PROBABLE CAUSES	CORRECTION
Tape does not run	1. AC cord not plugged in or loose. 2. Tape has run out. 3. PAUSE switch ON. 4. Cassette tape improperly inserted.	1. Insert cord correctly. 2. Rewind tape. 3. Set PAUSE switch to OFF. 4. Remove and carefully reinsert cassette.
High frequencies weak	1. Heads soiled. 2. Incorrect BIAS & EQ settings during record or playback. 3. Normally recorded tape played with DOLBY NR button ON.	1. Clean heads. 2. Set EQ & BIAS buttons to match employed tape. 3. Set DOLBY NR button to OFF.
Playback sound distorted	1. Playback level too high. 2. Distortion recorded onto tape.	1. Reduce playback level. 2. Replace cassette.
Sound unsteady	1. Capstan soiled. 2. Cassette defective.	1. Clean heads and capstan. 2. Replace cassette.
Excessive noise	1. Tape old. 2. Dolby recorded tape played with DOLBY NR button OFF.	1. Replace cassette. 2. Set DOLBY NR button to ON.
Cannot record	Cassette erase preventing tab broken off.	Replace cassette or cover tab opening with cellophane tape.
Recorded sound distorted	1. Input level too high. 2. Heads soiled.	1. Reduce input level when recording. 2. Clean heads.
Automatic stop functions before tape runs out	1. Tape slack. 2. MEMORY button set to ON.	1. Take up tape slack. 2. Set to OFF.
Memory play does not function	MEMORY button set to OFF.	Set to ON.
During rewind, play does not begin when PLAY lever is depressed	MEMORY button set to ON.	Set to OFF, or press the STOP lever, then the PLAY lever.

CT-F9191 SPECIFICATIONS

Systems .... Compact cassette, 2-channel stereo
Motor .... Electronically-controlled DC motor (built-in generator) x 1; (4.8cm/s speed drive)
DC torque motor x 1; (Fast forward and rewind drive)
Heads .... "Ferrite Solid" recording / playback head x 1
Ferrite erasing head x 1
Operation .... Solenoid drive, direct switchable and timer play presettable
Fast Winding Time .... Approximately 65 seconds (C-60 tape)
Wow and Flutter .... No more than 0.07% (WRMS)
Frequency Response .... Standard, LH tapes: 20 to 16,000Hz (30 to 13,000Hz ±3dB)
Chromium dioxide tape: 20 to 17,000Hz (30 to 15,000Hz ±3dB)
Signal-to-Noise Ratio .... Dolby OFF: More than 53dB
Dolby ON: More than 63dB (over 5kHz, standard, LH tapes)
(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 x 2; 0.22mV/100mV/30kΩ, 6mmφ jack (Reference MIC impedance; 600Ω to 30kΩ)
LINE x 4 (2-channel stereo, Parallel connection system); 65mV/25V/100kΩ
REC/PB x 1; Input & output, 5p jack (DIN standard)
Outputs (Reference level/Maximum level/Load impedance)
LINE x 4; 315mV/530mV/50kΩ (2-channel stereo, Parallel connection system)
HEADPHONE x 1; 40mV/65mV/8Ω
With output level controls.
Semiconductors
Amplifier Section .... Transistors x 75 (including FETs x 6), Diodes x 86 (including Zener Diodes x 5, LEDs x 2)
Motor control Section ..... Transistors x 3, Diodes x 2
Subfunctions .... ●Dolby system (ON-OFF) with indicator lamp
●MPX Filter (ON-OFF)
●Tape Selector (STD/CrO₂) with indicator lamps
Automatic tape selector for CrO_2 tape, and Manual tape selector of independently BIAS/EQ (Ferri-chrome tape available)
●Cassette compartment illumination
●Mixing control used for MIC and LINE input
●Tape counter with rewind Memory switch (ON-OFF) for starting point [REW — STOP/PLAY (REC)]
●Recording limiter (ON-OFF)
●Wide scale level meter (−40 to +5dB)
●Recording Peak level indicator (Lightable level; +5dB)
●Level Memory Marker for inputs and output
Power Requirements .... AC 220V (only) or AC 110, 120, 130, 220, 240V (Switchable) 50/60Hz
Power Consumption .... 53 watts, Max.
Dimensions .... 457 (W) x 197 (H) x 315 (D)mm. Max.
17-7/8 x 7-7/8 x 12-3/8 in.
Weight .... 13.2kg/29 lb (Without package), 15.4kg/34 lb (With package)
Furnished parts .... Stereo connecting cord with pin plugs x 2
Head cleaning kit x 1 (Pioneer PP-203)
Operating instructions x 1

NOTES:
1. Reference tape: standard, LH tapes are DIN no. 45513.
: chrome tape is DIN no. 4513 (CrO_2).
2. Reference recording level: meter 0dB level (equivalent to 160 pwb/mm)
3. Reference signal: 333Hz.
4. Wow & Flutter: at 3kHz weighted rms.
5. Frequency response: measured at −20dB level, DOLBY OFF, MPX Filter OFF. Level deviation is ±6dB without indication.
6. Signal-to-Noise ratio: measured at +4dB level (equivalent to 250 pwb/mm with weighted IEC A curve, MPX Filter OFF.

7. Sensitivity: Input level (mV) for reference recording measured with input (recording) level control set at maximum position.
8. Maximum allowable input level: measured at the point where the output signal wave is clipped while gradually turning the input level control.
9. Reference output level: meter 0dB level.
10. Maximum output (playback) level: Output level to reference recording level, measured with output (playback) level control set at maximum position.

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

<76C10Y06F>

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Printed in Japan   <RRB--056-C>